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Evaluation of the Healthy Incentives Pilot (HIP): Participant Survey Weighting Methodology

Author:
Adam Chu
Westat

Submitted by:
Abt Associates Inc.
55 Wheeler Street
Cambridge MA 02138

Submitted to:
Office of Policy Support
Food and Nutrition Service
3101 Park Center Drive
Alexandria, VA 22302-1500

Project Director:
Susan Bartlett

Project Officer:
Danielle Berman

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1. Introduction

The Healthy Incentives Pilot (HIP) investigates the impact of making fruits and vegetables more affordable for participants in the Supplemental Nutrition Assistance Program (SNAP). The Food, Conservation, and Energy Act of 2008, also known as the 2008 Farm Bill, authorized funds for pilot projects to determine if financial incentives provided to SNAP recipients at the point of sale increase the consumption of fruits, vegetables, or other healthful foods. On the basis of this legislative authority, USDA's Food and Nutrition Service (FNS) designed HIP.

HIP is being evaluated using a rigorous research design in which SNAP participating households in Hampden County were randomly assigned to a HIP group or a non-HIP group. Within both groups, households were divided into three waves, which corresponded to when DTA enrolled households into HIP. The HIP households in the first wave began receiving the HIP incentive on November 1, 2011, the second wave on December 1, 2011, and the third wave on January 1, 2012.

Within the HIP and non-HIP groups (and within each of the three waves), individuals were randomly selected to complete data collection activities. Eligibility for the survey depended on whether or not the person was an active SNAP participant in the wave to which the person was assigned. Special monthly SNAP enrollment files provided by Hampden County (referred to as "update" files) were used to determine SNAP eligibility status in a particular month.

The overall goal of the evaluation is to assess the impact of HIP on participants' intake of fruits and vegetables, which required surveys of HIP participants and persons not participating in HIP. We collected three rounds of data on sampled participants:

- Round 1: baseline or pre-implementation data were collected prior to HIP implementation. Data collection extended from August to December 2011.
- Round 2: early post-implementation data were collected when households had been earning HIP incentives for 4-6 months. Data collection occurred between March and July 2012.
- Round 3: late post-implementation data collection occurred when households had been earning HIP incentives for 9-11 months. The data collection period began in August and was completed in November 2012.

Each round was fielded in three waves, with waves beginning about 4 weeks apart.

The evaluation design required that we develop sampling weights for analyses of the participant surveys so that findings would be representative of SNAP participating households in Hampden County. Weights were constructed at the end of each data collection round, computed for the completed cases in the sample. In general, weights were needed to compensate for differential probabilities of selection and nonresponse. This volume discusses the weighting methodology.

As discussed in the following chapters, *sampled-person weights* were constructed for analysis of the Round 1 (pre-implementation) sampled person interviews. A parallel set of *primary-shopper weights* were constructed for the primary shopper interviews. For many household-level variables, the primary-shopper weights serve as household weights, because there is only one primary shopper per household, and the corresponding questions appeared on the primary shopper portion of the survey. In

addition to the two sets of full-sample weights, a series of replicate weights using a jackknife method was constructed for variance estimation purposes.

Similarly, sampled-person and primary shopper-level weights were created for Round 2. The starting point for the construction of the Round 2 sampling weights was the set of final nonresponse-adjusted person weights developed for analysis of respondents in Round 1. The Round 2 weights serve as longitudinal weights for participants that responded to both rounds. Nonresponse adjustments were calculated to reflect the fact that nonresponse could occur either prior to or after ascertaining eligibility for the survey. For the 10 percent of respondents completing a second 24-hour dietary recall interview, weights for analysis of the second intake were constructed by applying appropriate inflation factors to the final weights previously created for the first intake interview.

Round 3 weights were created using the final nonresponse-adjusted person weights developed for Round 2 as the starting point. Non-response adjustments were calculated and additional weights for the second 24-hour dietary recall interview were constructed following a process identical to that used in creating the Round 2 weights.

Chapter 2 discusses construction of the Round 1 participant survey weights, Chapter 3 discusses construction of the Round 2 weights, Chapter 4 discusses construction of the Round 3 weights, and Chapter 5 discusses the non-response bias analysis.

2. Round 1 Participant Survey Weights

This chapter describes the procedures used to construct the weights for the participant survey sample respondents from Round 1 (baseline) of the Healthy Incentives Pilot (HP) evaluation surveys. In addition to the sampled-person weights and the primary-shopper weights, corresponding sets of replicate weights were constructed for variance estimation purposes.

The sampled-person weights for analysis of the Round 1 (baseline) interviews are described in Section 2.1. The primary-shopper weights for analysis of the Round 1 (baseline) interviews are described in Section 2.2. Within these two sections, we describe (1) base weights and the population that is described by the sum of the base weights, (2) nonresponse adjustment, and (3) construction of replicate weights for variance estimation.

2.1 Construction of Sampled-Person Weights

Base Weights

The base weights are theoretically unbiased weights designed to inflate the selected sample to population levels. As described in the *Healthy Incentives Pilot (HIP) Final Report* (Bartlett, et al., 2014; see Appendix B), as part of the random assignment process, evaluation households were randomly assigned to three *waves* of data collection (corresponding to the three waves of implementation). Within each wave, households in the sampling frames were classified in 12 *blocking groups* based on location and demographic characteristics (e.g., see the numbered rows 1-12 in Exhibits 1 and 2). Within each wave and blocking group, households were randomly assigned a treatment status (HIP or non-HIP).

Within each of the three waves, the basic design would have yielded 24 possible classes or sampling strata (12 blocking groups by 2 treatment statuses). However, within a few of these classes, we needed to distinguish households according to the number of adults in the household, because some large households were sampled with certainty. This distinction slightly increased the number of sampling classes within each wave (as shown in Exhibits 1 and 2), and also led to some variation in sampling rates within the blocking groups. For brevity, we refer to the (nonempty) cells defined in Exhibits 1 and 2 as *strata* in the sections that follow.

The wave-specific base weight for person *i* in stratum *s* in wave *v* is equal to the reciprocal of the probability of selecting that individual for the sample and was computed as:

$$w_{vsi}^{base} = 1/P_{vs} \quad (1)$$

where P_{vs} = the probability of selecting persons in stratum *s* and wave *v* (*v* = 1, 2, 3). This probability generally equals the number of adults sampled in a given wave and stratum divided by the corresponding number of adults in the sampling frame.

For waves 1 and 2, all initially sampled adults were released for data collection. For wave 3, a portion of the initially-selected sample was withheld from data collection, resulting in somewhat smaller

sample sizes than for waves 1 and 2.[1] About 83 percent of the original HIP sample (703/846) and 82 percent of the non-HIP sample (693/846) were released for data collection in wave 3. As a result, the wave-specific selection probabilities for sampled persons in wave 3 were reduced by these percentages as compared with the wave-specific selection probabilities for waves 1 and 2.

Exhibits 1 and 2 summarize the wave-specific base weights by wave and stratum in the HIP and non-HIP evaluation samples, respectively. Exhibits 3 and 4 show the corresponding numbers of sampled persons in the HIP and non-HIP samples. Since the samples for the evaluation were selected independently from each of the three waves defined in the sampling frame, the sum of the base weights for a particular wave provides an estimate of the number of adults that had been preassigned to that wave at the time the sample was drawn in July 2011.

Exhibit 5 summarizes the weighted sample counts using the base weights given by formula (1) by treatment status, blocking group, and wave. These weighted counts are estimates of the SNAP population at the time of sampling; i.e., July 2011. Exhibit 6 summarizes the corresponding numbers of adults in the sampling frame (population) at the time of sampling. Note that the sum of the base weights across all three waves of data collection provides a consistent estimate of the total number of persons in the July 2011 sampling frame for a particular treatment group. For wave 3, it can be seen that the weighted counts in Exhibit 5 differ slightly from the corresponding population counts in Exhibit 6. This is due to sampling variance resulting from the fact that a random subsample of the originally-designated wave 3 sample was released for interviewing.

Exhibit 1: Person Base Weights for the Round 1 HIP Sample by Wave, Blocking Group, and Size of Household

WAVE/Blocking Group	Number of adults in household				
	1-3	4	5	6	7
WAVE 1					
1. Springfield, HH Size 1, Female Head	3.70	--	--	--	--
2. Springfield, HH Size 1, Male Head	3.70	--	--	--	--
3. Springfield, HH Size 2+, Female Head	3.61	4.00	5.00	--	--
4. Springfield, HH Size 2+, Male Head	3.40	4.00	--	--	--
5. Chicopee/Holyoke HH Size 1, Female Head	3.73	--	--	--	--
6. Chicopee/Holyoke HH Size 1, Male Head	3.72	--	--	--	--
7. Chicopee/Holyoke HH Size 2+, Female Head	3.54	4.00	--	--	--
8. Chicopee/Holyoke HH Size 2+, Male Head	3.57	--	--	--	--
9. Hampden Balance, HH Size 1, Female Head	3.72	--	--	--	--
10. Hampden Balance, HH Size 1, Male Head	3.68	--	--	--	--
11. Hampden Balance, HH Size 2+, Female Head	3.74	4.00	5.00	--	--

[1] SNAP exit rates were lower than anticipated and thus survey eligibility rates were expected to be higher than anticipated. See following section for additional details.

WAVE/Blocking Group	Number of adults in household				
	1-3	4	5	6	7
12. Hampden Balance, HH Size 2+, Male Head	3.38	--	--	--	--
WAVE 2					
1. Springfield, HH Size 1, Female Head	3.70	--	--	--	--
2. Springfield, HH Size 1, Male Head	3.71	--	--	--	--
3. Springfield, HH Size 2+, Female Head	3.53	4.00	5.00	6.00	--
4. Springfield, HH Size 2+, Male Head	3.62	4.00	--	--	--
5. Chicopee/Holyoke HH Size 1, Female Head	3.73	--	--	--	--
6. Chicopee/Holyoke HH Size 1, Male Head	3.70	--	--	--	--
7. Chicopee/Holyoke HH Size 2+, Female Head	3.58	4.00	--	--	--
8. Chicopee/Holyoke HH Size 2+, Male Head	3.36	--	--	--	--
9. Hampden Balance, HH Size 1, Female Head	3.72	--	--	--	--
10. Hampden Balance, HH Size 1, Male Head	3.68	--	--	--	--
11. Hampden Balance, HH Size 2+, Female Head	3.76	4.00	5.00	--	--
12. Hampden Balance, HH Size 2+, Male Head	3.60	--	5.00	--	--
WAVE 3 *					
1. Springfield, HH Size 1, Female Head	4.45	--	--	--	--
2. Springfield, HH Size 1, Male Head	4.45	--	--	--	--
3. Springfield, HH Size 2+, Female Head	4.38	4.81	6.02	7.22	--
4. Springfield, HH Size 2+, Male Head	4.09	4.81	--	--	--
5. Chicopee/Holyoke HH Size 1, Female Head	4.49	--	--	--	--
6. Chicopee/Holyoke HH Size 1, Male Head	4.47	--	--	--	--
7. Chicopee/Holyoke HH Size 2+, Female Head	4.22	4.81	6.02	--	--
8. Chicopee/Holyoke HH Size 2+, Male Head	4.38	--	0.00	--	--
9. Hampden Balance, HH Size 1, Female Head	4.47	--	--	--	--
10. Hampden Balance, HH Size 1, Male Head	4.46	--	--	--	--
11. Hampden Balance, HH Size 2+, Female Head	4.62	4.81	--	--	--
12. Hampden Balance, HH Size 2+, Male Head	4.06	4.81	--	--	--

*Base weights correspond to the subsample released for data collection in wave 3.

Exhibit 2: Person Base Weights for the Round 1 non-HIP Sample by Wave, Blocking Group, and Size of Household

WAVE/Blocking Group	Number of adults in household				
	1-3	4	5	6	7
WAVE 1					
1. Springfield, HH Size 1, Female Head	23.47	--	--	--	--
2. Springfield, HH Size 1, Male Head	23.50	--	--	--	--
3. Springfield, HH Size 2+, Female Head	23.14	31.38	31.38	--	--
4. Springfield, HH Size 2+, Male Head	22.32	38.50	--	--	--
5. Chicopee/Holyoke HH Size 1, Female Head	23.69	--	--	--	--
6. Chicopee/Holyoke HH Size 1, Male Head	23.57	--	--	--	--
7. Chicopee/Holyoke HH Size 2+, Female Head	23.16	36.00	36.00	--	--
8. Chicopee/Holyoke HH Size 2+, Male Head	24.14	24.14	--	--	--
9. Hampden Balance, HH Size 1, Female Head	23.61	--	--	--	--
10. Hampden Balance, HH Size 1, Male Head	23.42	--	--	--	--
11. Hampden Balance, HH Size 2+, Female Head	23.76	34.75	34.75	--	--
12. Hampden Balance, HH Size 2+, Male Head	23.27	23.27	--	--	--
WAVE 2					
1. Springfield, HH Size 1, Female Head	23.47	--	--	--	--
2. Springfield, HH Size 1, Male Head	23.50	--	--	--	--
3. Springfield, HH Size 2+, Female Head	22.77	49.17	--	--	--
4. Springfield, HH Size 2+, Male Head	23.12	12.00	--	--	--
5. Chicopee/Holyoke HH Size 1, Female Head	23.69	--	--	--	--
6. Chicopee/Holyoke HH Size 1, Male Head	23.54	--	--	--	--
7. Chicopee/Holyoke HH Size 2+, Female Head	23.06	32.33	--	--	--
8. Chicopee/Holyoke HH Size 2+, Male Head	23.00	23.00	--	--	--
9. Hampden Balance, HH Size 1, Female Head	23.63	--	--	--	--
10. Hampden Balance, HH Size 1, Male Head	23.39	--	--	--	--
11. Hampden Balance, HH Size 2+, Female Head	23.54	20.80	20.80	--	--
12. Hampden Balance, HH Size 2+, Male Head	20.76	48.00	--	--	--
WAVE 3*					
1. Springfield, HH Size 1, Female Head	28.64	--	--	--	--
2. Springfield, HH Size 1, Male Head	28.70	--	--	--	--
3. Springfield, HH Size 2+, Female Head	28.10	55.14	55.14	--	55.14
4. Springfield, HH Size 2+, Male Head	29.15	--	26.86	--	--

WAVE/Blocking Group	Number of adults in household				
	1-3	4	5	6	7
5. Chicopee/Holyoke HH Size 1, Female Head	28.92	--	--	--	--
6. Chicopee/Holyoke HH Size 1, Male Head	28.74	--	--	--	--
7. Chicopee/Holyoke HH Size 2+, Female Head	28.32	36.62	--	--	--
8. Chicopee/Holyoke HH Size 2+, Male Head	28.08	28.08	--	--	--
9. Hampden Balance, HH Size 1, Female Head	28.85	--	--	--	--
10. Hampden Balance, HH Size 1, Male Head	28.58	--	--	--	--
11. Hampden Balance, HH Size 2+, Female Head	28.12	59.41	--	--	--
12. Hampden Balance, HH Size 2+, Male Head	26.45	31.74	--	--	--

*Base weights correspond to the subsample released for data collection in wave 3.

Exhibit 3: Number of Persons Selected for the Round 1 HIP Sample by Wave, Blocking Group, and Size of Household

WAVE/Blocking Group	Number of adults in household					Total
	1-3	4	5	6	7	
WAVE 1						
1. Springfield, HH Size 1, Female Head	93	0	0	0	0	93
2. Springfield, HH Size 1, Male Head	106	0	0	0	0	106
3. Springfield, HH Size 2+, Female Head	207	7	1	0	0	215
4. Springfield, HH Size 2+, Male Head	25	2	0	0	0	27
5. Chicopee/Holyoke HH Size 1, Female Head	45	0	0	0	0	45
6. Chicopee/Holyoke HH Size 1, Male Head	46	0	0	0	0	46
7. Chicopee/Holyoke HH Size 2+, Female Head	100	3	0	0	0	103
8. Chicopee/Holyoke HH Size 2+, Male Head	14	0	0	0	0	14
9. Hampden Balance, HH Size 1, Female Head	46	0	0	0	0	46
10. Hampden Balance, HH Size 1, Male Head	41	0	0	0	0	41
11. Hampden Balance, HH Size 2+, Female Head	80	3	1	0	0	84
12. Hampden Balance, HH Size 2+, Male Head	26	0	0	0	0	26
WAVE 2						
1. Springfield, HH Size 1, Female Head	93	0	0	0	0	93
2. Springfield, HH Size 1, Male Head	106	0	0	0	0	106
3. Springfield, HH Size 2+, Female Head	209	4	1	1	0	215
4. Springfield, HH Size 2+, Male Head	26	1	0	0	0	27
5. Chicopee/Holyoke HH Size 1, Female Head	45	0	0	0	0	45
6. Chicopee/Holyoke HH Size 1, Male Head	46	0	0	0	0	46
7. Chicopee/Holyoke HH Size 2+, Female Head	100	3	0	0	0	103
8. Chicopee/Holyoke HH Size 2+, Male Head	14	0	0	0	0	14
9. Hampden Balance, HH Size 1, Female Head	46	0	0	0	0	46
10. Hampden Balance, HH Size 1, Male Head	41	0	0	0	0	41
11. Hampden Balance, HH Size 2+, Female Head	79	3	2	0	0	84
12. Hampden Balance, HH Size 2+, Male Head	25	0	1	0	0	26
WAVE 3 *						
1. Springfield, HH Size 1, Female Head	79	0	0	0	0	79
2. Springfield, HH Size 1, Male Head	90	0	0	0	0	90
3. Springfield, HH Size 2+, Female Head	172	3	1	1	0	177
4. Springfield, HH Size 2+, Male Head	20	2	0	0	0	22

WAVE/Blocking Group	Number of adults in household					Total
	1-3	4	5	6	7	
5. Chicopee/Holyoke HH Size 1, Female Head	37	0	0	0	0	37
6. Chicopee/Holyoke HH Size 1, Male Head	38	0	0	0	0	38
7. Chicopee/Holyoke HH Size 2+, Female Head	82	2	1	0	0	85
8. Chicopee/Holyoke HH Size 2+, Male Head	13	0	0	0	0	13
9. Hampden Balance, HH Size 1, Female Head	37	0	0	0	0	37
10. Hampden Balance, HH Size 1, Male Head	34	0	0	0	0	34
11. Hampden Balance, HH Size 2+, Female Head	69	2	0	0	0	71
12. Hampden Balance, HH Size 2+, Male Head	19	1	0	0	0	20
TOTAL	**2,349**	**36**	**8**	**2**	**0**	**2,395**

*Counts correspond to the subsample released for data collection in wave 3.

Exhibit 4: Number of Persons Selected for the Round 1 non-HIP Sample by Wave, Blocking Group, and Size of Household

WAVE/Blocking Group	No. adults in household					Total
	1-3	4	5	6	7	
WAVE 1						
1. Springfield, HH Size 1, Female Head	93	0	0	0	0	93
2. Springfield, HH Size 1, Male Head	106	0	0	0	0	106
3. Springfield, HH Size 2+, Female Head	207	7	1	0	0	215
4. Springfield, HH Size 2+, Male Head	25	2	0	0	0	27
5. Chicopee/Holyoke HH Size 1, Female Head	45	0	0	0	0	45
6. Chicopee/Holyoke HH Size 1, Male Head	46	0	0	0	0	46
7. Chicopee/Holyoke HH Size 2+, Female Head	100	2	1	0	0	103
8. Chicopee/Holyoke HH Size 2+, Male Head	13	1	0	0	0	14
9. Hampden Balance, HH Size 1, Female Head	46	0	0	0	0	46
10. Hampden Balance, HH Size 1, Male Head	41	0	0	0	0	41
11. Hampden Balance, HH Size 2+, Female Head	80	2	2	0	0	84
12. Hampden Balance, HH Size 2+, Male Head	23	3	0	0	0	26
WAVE 2						
1. Springfield, HH Size 1, Female Head	93	0	0	0	0	93
2. Springfield, HH Size 1, Male Head	106	0	0	0	0	106
3. Springfield, HH Size 2+, Female Head	209	6	0	0	0	215
4. Springfield, HH Size 2+, Male Head	26	1	0	0	0	27
5. Chicopee/Holyoke HH Size 1, Female Head	45	0	0	0	0	45
6. Chicopee/Holyoke HH Size 1, Male Head	46	0	0	0	0	46
7. Chicopee/Holyoke HH Size 2+, Female Head	100	3	0	0	0	103
8. Chicopee/Holyoke HH Size 2+, Male Head	13	1	0	0	0	14
9. Hampden Balance, HH Size 1, Female Head	46	0	0	0	0	46
10. Hampden Balance, HH Size 1, Male Head	41	0	0	0	0	41
11. Hampden Balance, HH Size 2+, Female Head	79	4	1	0	0	84
12. Hampden Balance, HH Size 2+, Male Head	25	1	0	0	0	26
WAVE 3 *						
1. Springfield, HH Size 1, Female Head	75	0	0	0	0	75
2. Springfield, HH Size 1, Male Head	87	0	0	0	0	87
3. Springfield, HH Size 2+, Female Head	171	3	1	0	1	176
4. Springfield, HH Size 2+, Male Head	20	0	2	0	0	22

WAVE/Blocking Group	No. adults in household					Total
	1-3	4	5	6	7	
5. Chicopee/Holyoke HH Size 1, Female Head	38	0	0	0	0	38
6. Chicopee/Holyoke HH Size 1, Male Head	41	0	0	0	0	41
7. Chicopee/Holyoke HH Size 2+, Female Head	81	2	0	0	0	83
8. Chicopee/Holyoke HH Size 2+, Male Head	10	1	0	0	0	11
9. Hampden Balance, HH Size 1, Female Head	36	0	0	0	0	36
10. Hampden Balance, HH Size 1, Male Head	33	0	0	0	0	33
11. Hampden Balance, HH Size 2+, Female Head	66	2	0	0	0	68
12. Hampden Balance, HH Size 2+, Male Head	22	1	0	0	0	23
TOTAL	**2,334**	**42**	**8**	**0**	**1**	**2,385**

*Counts correspond to the subsample released for data collection in wave 3.

Exhibit 5: Base-Weighted Counts of Sampled Adults in the HIP and non-HIP Groups by Block and Wave of Round 1

Blocking Group	HIP				Non-HIP			
	Wave 1	Wave 2	Wave 3*	Total	Wave 1	Wave 2	Wave 3*	Total
1. Springfield, HH Size 1, Female Head	344	344	352	1,040	2,183	2,183	2,148	6,514
2. Springfield, HH Size 1, Male Head	392	393	401	1,186	2,491	2,491	2,497	7,479
3. Springfield, HH Size 2+, Female Head	781	764	780	2,325	5,040	5,054	5,080	15,174
4. Springfield, HH Size 2+, Male Head	93	98	91	282	635	613	637	1,885
5. Chicopee/Holyoke HH Size 1, Female Head	168	168	166	502	1,066	1,066	1,099	3,231
6. Chicopee/Holyoke HH Size 1, Male Head	171	170	170	511	1,084	1,083	1,178	3,345
7. Chicopee/Holyoke HH Size 2+, Female Head	366	370	362	1,098	2,424	2,403	2,367	7,194
8. Chicopee/Holyoke HH Size 2+, Male Head	50	47	57	154	338	322	309	969
9. Hampden Balance, HH Size 1, Female Head	171	171	166	508	1,086	1,087	1,039	3,212
10. Hampden Balance, HH Size 1, Male Head	151	151	152	454	960	959	943	2,862
11. Hampden Balance, HH Size 2+, Female Head	316	319	328	963	2,040	1,964	1,975	5,979
12. Hampden Balance, HH Size 2+, Male Head	88	95	82	265	605	567	614	1,786
TOTAL	3,091	3,090	3,107	9,288	19,952	19,792	19,886	59,630

*These are base-weighted counts for the subsample released for data collection in wave 3.

Exhibit 6: Number of Adults in the Round 1 HIP and Non-HIP Sampling Frames as of July 2011 by Block and Wave

Blocking Group	HIP				Non-HIP			
	Wave 1	Wave 2	Wave 3	Total	Wave 1	Wave 2	Wave 3	Total
1. Springfield, HH Size 1, Female Head	344	344	344	1,032	2,183	2,183	2,182	6,548
2. Springfield, HH Size 1, Male Head	392	393	392	1,177	2,490	2,491	2,491	7,472
3. Springfield, HH Size 2+, Female Head	781	764	787	2,332	5,038	5,054	5,081	15,173
4. Springfield, HH Size 2+, Male Head	93	98	93	284	635	612	641	1,888
5. Chicopee/Holyoke HH Size 1, Female Head	168	168	168	504	1,066	1,066	1,066	3,198
6. Chicopee/Holyoke HH Size 1, Male Head	171	170	171	512	1,084	1,083	1,083	3,250
7. Chicopee/Holyoke HH Size 2+, Female Head	366	370	364	1,100	2,423	2,403	2,410	7,236
8. Chicopee/Holyoke HH Size 2+, Male Head	50	47	51	148	338	322	322	982
9. Hampden Balance, HH Size 1, Female Head	171	171	171	513	1,086	1,087	1,087	3,260
10. Hampden Balance, HH Size 1, Male Head	151	151	152	454	960	959	960	2,879
11. Hampden Balance, HH Size 2+, Female Head	316	319	323	958	2,040	1,964	2,012	6,016
12. Hampden Balance, HH Size 2+, Male Head	88	95	89	272	605	567	572	1,744
TOTAL*	3,091	3,090	3,105	9,286	19,948	19,791	19,907	59,646

*Counts exclude six duplicate records in sampling frame.

Adjustment for Differences in Population Coverage by Wave

Because Round 1 data collection began in August 2011, some individuals who were originally selected from the July 2011 sampling frame left SNAP before they could be interviewed in their designated wave. This meant that an individual who was enrolled in SNAP in August 2011 but left SNAP in the following month would have been eligible for the survey if he/she had been assigned to wave 1 of data collection but not waves 2 or 3. Thus, as described below, the overall probability of selecting a person for Round 1 depended on SNAP participation status in the subsequent months. Persons leaving SNAP during the data collection period generally had lower chances of selection than persons who were enrolled in SNAP throughout the period. To account for these differential selection

probabilities, the base weights were adjusted so as to minimize the variation in weights across the three waves to the extent feasible, while at the same time providing unbiased estimates of the corresponding population counts. The construction of these adjusted weights, referred to as "pooled" or composite weights, are described below.

Although the samples for the three waves of data collection were selected from the same July 2011 sampling frame, the corresponding wave-specific respondent samples represent slightly different populations. This occurs because eligibility for the survey depended on whether or not the person was an active SNAP participant in the wave to which the person was assigned. Hampden County provided monthly update files on SNAP enrollment which were used to determine SNAP eligibility status in a particular month. The differing coverage of the three sample waves can be seen in Exhibit 7, which summarizes the numbers of persons in the sampling frame and the evaluation samples by wave and the following four mutually exclusive subgroups defined by SNAP participation status.

Exhibit 7: Distribution of Evaluation Sample and Implied Weights Under Simple Random Sampling by SNAP Eligibility Status, Treatment Status (HIP/non-HIP) and Wave

SNAP Participation Status	Coverage in sample	HIP (H)			Non-HIP (K)		
		Frame	Sample	Implied weight*	Frame	Sample	Implied weight*
(a) clients with statusCD of ACTIVE in both Aug file and Sep file	All Waves	8,368	2,154	3.88	54,028	2,125	25.42
(b) clients with statusCD = any non-ACTIVE code in both Aug file and Sep file	W1	399	108	3.69	2,369	107	22.14
(c) clients with statusCD = any non-ACTIVE code in Aug file but a code of ACTIVE in the Sep file	W1 and W3	118	28	4.21	711	26	27.35
(d) clients with statusCD = ACTIVE in Aug file but a code = any non-ACTIVE in the Sep file	W1 and W2	401	105	3.82	2,538	127	19.98
TOTAL	---	9,286	2,395	3.88	59,646	2,385	25.01
SNAP participation status—*wave 1*							
(a) clients with statusCD of ACTIVE in both Aug file and Sep file	Yes	2,820	783	3.60	18,053	769	23.48
(b) clients with statusCD = any non-ACTIVE code in both Aug file and Sep file	Yes	108	33	3.27	819	27	30.33
(c) clients with statusCD = any non-ACTIVE code in Aug file but a code of ACTIVE in the Sep file	Yes	33	5	6.60	250	11	22.73
(d) clients with statusCD = ACTIVE in Aug file but a code = any non-ACTIVE in the Sep file	Yes	130	25	5.20	826	39	21.18
TOTAL	---	3,091	846	3.65	19,948	846	23.58
SNAP participation status—*wave 2*							
(a) clients with statusCD of ACTIVE in both Aug file and Sep file	Yes	2,790	774	3.60	17,965	753	23.86
(b) clients with statusCD = any non-ACTIVE code in both Aug file and Sep file	No	151	34**	---	783	42**	---
(c) clients with statusCD = any non-ACTIVE code in Aug file but a code of ACTIVE in the Sep file	No	41	11**	---	209	5**	---
(d) clients with statusCD = ACTIVE in Aug file but a code = any non-ACTIVE in the Sep file	Yes	108	27	4.00	834	46	18.13
TOTAL	---	3,090	846	3.65	19,791	846	23.39

SNAP Participation Status	Coverage in sample	HIP (H)			Non-HIP (K)		
		Frame	Sample	Implied weight*	Frame	Sample	Implied weight*
SNAP participation status—*wave 3*							
(a) clients with statusCD of ACTIVE in both Aug file and Sep file	Yes	2,758	597	4.62	18,010	603	29.87
(b) clients with statusCD = any non-ACTIVE code in both Aug file and Sep file	No	140	41**	---	767	38**	---
(c) clients with statusCD = any non-ACTIVE code in Aug file but a code of ACTIVE in the Sep file	Yes	44	12	3.67	252	10	25.20
(d) clients with statusCD = ACTIVE in Aug file but a code = any non-ACTIVE in the Sep file	No	163	53**	---	878	42**	---
TOTAL	---	3,105	703	4.42	19,907	693	28.73

*Hypothetical weight for analysis of pooled samples under simple random sampling assumptions.
**Not eligible to be sampled in given wave.

Subgroup *a*: Persons known to be in SNAP at the time of sampling and were still active in both the end-of-August and end-of-September update files.

Subgroup *b*: Persons known to be in SNAP at the time of sampling and were coded as non-active in both the end-of-August and end-of-September update files.

Subgroup *c*: Persons known to be in SNAP at the time of sampling and were coded as non-active in the end-of-August update file but coded as active in the end-of-September update file.

Subgroup *d*: Persons known to be in SNAP at the time of sampling and were coded as active in the end-of-August update file but coded as non-active active in the end-of-September update file.

As indicated in Exhibit 7, subgroup *a* is represented by all three waves, whereas subgroup *b* is represented by wave 1 only. On the other hand, subgroup c is represented only by waves 1 and 3, while subgroup *d* is represented by waves 1 and 2. To account for these differences in coverage, a composite or "pooled" base weight was constructed as described later in this section.

To illustrate the basic idea behind the method of pooling or compositing, consider the HIP treatment group in Exhibit 7. For subgroup *a*, the total sample for this subgroup is composed of 783 persons from wave 1, 774 persons from wave 2, and 597 persons from wave 3. If the samples from each wave were simple random samples (SRS) from the *same* population, the three wave-specific samples could be combined to form a pooled sample of 2,154 persons. These 2,154 sampled persons would then represent 8,368 individuals in the sampling frame. Thus, assuming SRS, each sampled person in subgroup *a* would be assigned an implied pooled weight of 3.88 (= 8,368/2,154). Note that the variation in the wave-specific weights across the three waves of data collection would be eliminated under this procedure.

Similarly, consider subgroup *b* of the HIP treatment group in Exhibit 7. In this case, individuals in this subgroup can only be sampled in wave 1. Thus, the sample of 33 persons in wave 1 represent the corresponding 399 individuals in the sampling frame. Again assuming SRS, each sampled person in subgroup *b* would receive an implied weight of 12.09 (= 299/33).

Individuals in subgroup *c* of the HIP treatment group can only be sampled in waves 1 and 3. In this case, the combined sample of five persons in wave 1 and 12 persons in wave 3 represent the corresponding 118 individuals in the sampling frame. Under SRS, each person in the pooled sample would receive an implied weight of 6.94 (= 118/17).

Finally, individuals in subgroup *d* of the HIP treatment group can only be sampled in waves 1 and 2. In this case, the combined sample of 25 persons in wave 1 and 27 persons in wave 2 represent the corresponding 401 individuals in the sampling frame. Under SRS, each person in the pooled sample would receive an implied weight of 7.71 (= 401/52).

The method of deriving pooled weights described above would be appropriate if the wave-specific samples were simple random samples. However, as indicated at the beginning of Section 2.1, special procedures were used in sampling that departed from strict simple random sampling. As a result, the use of the ratio of population counts to sample counts to construct the pooled base weights is not appropriate. Instead, an unbiased procedure using composite weighting factors was applied that takes account of the variable selection probabilities used to select the wave-specific samples.

Exhibit 8 summarizes the base-weighted counts of the sample by treatment status and subgroup along with the corresponding sampling frame (population) counts. The "scaling factor" shown in the last column of the table is the ratio of the frame count to the weighted sample count. Although the base-weighted counts are unbiased estimates of the corresponding population count, the actual weighted counts for any particular sample can differ considerably from the population numbers. This can be seen in Exhibit 8, where the wave-specific scaling factors range from around 0.7 to 1.8. This variation around the theoretical value of 1.0 is a consequence of the fact that SNAP participation status (defined by the four subgroups) could not be controlled for in the sampling process. Thus, prior to the compositing steps described below, the wave-specific base weights were scaled up or down by the corresponding wave-specific scaling factors shown in Exhibit 8 to align the resulting weighted sample counts to the known population counts. That is, a rescaled base weight for the ith sample person in wave *v* and subgroup *g* was computed as:

$$w_{vgi}^{adj} = S_{vg}\, w_{vgi}^{base} \quad (1a)$$

where S_{vg} is the appropriate wave-specific scaling factor from Exhibit 8.

The goal of the compositing was to adjust the w_{vgi}^{adj}'s of the eligible sampled persons in a manner that minimized the variation in weights across the three waves, while at the same time providing unbiased estimates of the corresponding population counts. This was accomplished through the use of appropriate composite estimation factors, A_{vg} (v = 1, 2, 3), that depended on wave (denoted by the subscript *v*) and subgroup (denoted by the subscript *g*). The values of the A_{vg}'s that approximately minimize the variation of the resulting pooled weights are proportional to the wave-specific sample sizes, subject to the condition that $A_{1g} + A_{2g} + A_{3g} = 3$. These factors were applied to the wave-specific weighted counts to produce an overall (combined) estimate for a particular subgroup *g* as follows:

$$A_{1g} \sum_{i=1}^{1g} w_{1gi}^{adj} + A_{2g} \sum_{i=1}^{2g} w_{2gi}^{adj} + A_{3g} \sum_{i=1}^{3g} w_{3gi}^{adj} \quad (2)$$

where w_{vgi}^{adj} = the wave-specific rescaled base weight (defined by formula 1a) for sampled person *i* in subgroup *g* and wave *v*.

The pooled weight resulting from formula (2) for sampled person *i* in subgroup *g* and wave *v* was then computed as:

$$w_{vgi}^{pool} = A_{vg}\, w_{vgi}^{adj} \quad (3)$$

where the values of the optimum compositing factors A_{1g}, A_{2g}, and A_{3g} are summarized in Exhibit 9 by treatment status, wave, and subgroup.

Exhibit 8: Weighted Counts of the Evaluation Sample by SNAP Eligibility Status, Treatment Status (HIP/Non-HIP) and Wave

SNAP Participation Status	Coverage in sample	HIP (H)				Non-HIP (K)			
		Frame	Sample	Base-wtd count*	Scaling factor	Frame	Sample	Base-wtd count*	Scaling factor
(a) clients with statusCD of ACTIVE in both Aug file and Sep file	All Waves	8,368	2,154	8,328	1.00	54,028	2,125	53,073	1.02
(b) clients with statusCD = any non-ACTIVE code in both Aug file and Sep file	W1	399	108	426	0.94	2,369	107	2,683	0.88
(c) clients with statusCD = any non-ACTIVE code in Aug file but a code of ACTIVE in the Sep file	W1 and W3	118	28	111	1.06	711	26	667	1.07
(d) clients with statusCD = ACTIVE in Aug file but a code = any non-ACTIVE in the Sep file	W1 and W2	401	105	423	0.95	2,538	127	3,207	0.79
TOTAL	---	9,286	2,395	9,287	1.00	59,646	2,385	59,630	1.00
SNAP Participation Status—*Wave 1*									
(a) clients with statusCD of ACTIVE in both Aug file and Sep file	Yes	2,820	783	2,861	0.99	18,053	769	18,124	1.00
(b) clients with statusCD = any non-ACTIVE code in both Aug file and Sep file	Yes	108	33	121	0.89	819	27	640	1.28
(c) clients with statusCD = any non-ACTIVE code in Aug file but a code of ACTIVE in the Sep file	Yes	33	5	18	1.84	250	11	268	0.93
(d) clients with statusCD = ACTIVE in Aug file but a code = any non-ACTIVE in the Sep file	Yes	130	25	91	1.43	826	39	920	0.90
TOTAL	---	3,091	846	3,091	1.00	19,948	846	19,952	1.00
SNAP Participation Status—*Wave 2*									
(a) clients with statusCD of ACTIVE in both Aug file and Sep file	Yes	2,790	774	2,827	0.99	17,965	753	17,613	1.02
(b) clients with statusCD = any non-ACTIVE code in both Aug file and Sep file	No	151	34**	124	1.22	783	42**	967	0.81
(c) clients with statusCD = any non-ACTIVE code in Aug file but a code of ACTIVE in the Sep file	No	41	11**	40	1.02	209	5**	116	1.80
(d) clients with statusCD = ACTIVE in Aug file but a code = any non-ACTIVE in the Sep file	Yes	108	27	98	1.10	834	46	1,096	0.76
TOTAL	---	3,090	846	3,090	1.00	19,791	846	19,792	1.00

SNAP Participation Status	Coverage in sample	HIP (H) Frame	HIP (H) Sample	HIP (H) Base-wtd count*	HIP (H) Scaling factor	Non-HIP (K) Frame	Non-HIP (K) Sample	Non-HIP (K) Base-wtd count*	Non-HIP (K) Scaling factor
SNAP Participation Status—*Wave 3*									
(a) clients with statusCD of ACTIVE in both Aug file and Sep file	Yes	2,758	597	2,639	1.05	18,010	603	17,336	1.04
(b) clients with statusCD = any non-ACTIVE code in both Aug file and Sep file	No	140	41**	181	0.77	767	38**	1,076	0.71
(c) clients with statusCD = any non-ACTIVE code in Aug file but a code of ACTIVE in the Sep file	Yes	44	12	53	0.83	252	10	283	0.89
(d) clients with statusCD = ACTIVE in Aug file but a code = any non-ACTIVE in the Sep file	No	163	53**	234	0.70	878	42**	1,191	0.74
TOTAL	---	3,105	703	3,107	1.00	19,907	693	19,886	1.00

*Wave-specific base weights defined by formula (1). The weighted counts include all persons selected for the sample, including those not eligible for the given wave.
**Not eligible to be sampled in given wave.

Exhibit 9: Composite Estimation Factors by Treatment Status, Wave, and Participation Subgroup

	HIP (H)			Non-HIP (K)		
	Wave 1	Wave 2	Wave 3	Wave 1	Wave 2	Wave 3
SNAP PARTICIPATION STATUS	A1	A2	A3	A1	A2	A3
(a) clients with statusCD of ACTIVE in both Aug file and Sep file	1.0905	1.0780	0.8315	1.0856	1.0631	0.8513
(b) clients with statusCD = any non-ACTIVE code in both Aug file and Sep file	3.0000	0.0000	0.0000	3.0000	0.0000	0.0000
(c) clients with statusCD = any non-ACTIVE code in Aug file but a code of ACTIVE in the Sep file	0.8824	0.0000	2.1176	1.5714	0.0000	1.4286
(d) clients with statusCD = ACTIVE in Aug file but a code = any non-ACTIVE in the Sep file	1.4423	1.5577	0.0000	1.3765	1.6235	0.0000

Exhibit 10 summarizes the sum of the resulting pooled weights, w_{vgi}^{pool}, the coefficient of variation (CV) of the weights expressed as a percentage of the mean weight, and the ratio of the frame count to the corresponding weighted count, by blocking group. The CV of the weights provides a measure of the variability of the weights and is informative because $1 + (CV/100)2$ represents a variance inflation factor relative to a self-weighting (equal probability) sample of the same size. For example, in Exhibit 10 it can be seen that the CV of the weights for the total HIP sample is 22.1 percent. This means that the variance of an estimated proportion can be expected to be roughly (.221)2 = 0.049 (or 4.9 percent) larger than the corresponding variance based on a self-weighting sample of the same size. This minor loss in precision of the pooled weights results from the differential adjustment of the four participation subgroups.

Exhibit 10: Weighted Counts of the Sample Using the Pooled Weights, the Coefficient of Variation (CV) of the Weights, and the Ratio of Frame Counts to Weighted Sample Counts by Treatment Status and Blocking Group

	HIP				Non-HIP			
Blocking Group	Wtd. count (pooled) wt)*	CV of weights (%)	Frame Count	Ratio frame to wtd. count	Wtd. count (pooled wt)*	CV of weights (%)	Frame Count	Ratio frame to wtd. count
1. Springfield, HH Size 1, Female Head	1,022	13.0%	1,032	1.01	6,382	4.2%	6,548	1.03
2. Springfield, HH Size 1, Male Head	1,173	25.9%	1,177	1.00	7,627	31.9%	7,472	0.98
3. Springfield, HH Size 2+, Female Head	2,309	24.2%	2,332	1.01	15,259	33.6%	15,173	0.99
4. Springfield, HH Size 2+, Male Head	272	20.1%	284	1.04	1,733	13.3%	1,888	1.09
5. Chicopee/Holyoke HH Size 1, Female Head	488	1.1%	504	1.03	3,246	3.6%	3,198	0.99
6. Chicopee/Holyoke HH Size 1, Male Head	500	17.5%	512	1.02	3,216	22.9%	3,250	1.01
7. Chicopee/Holyoke HH Size 2+, Female Head	1,072	18.8%	1,100	1.03	7,291	26.3%	7,236	0.99
8. Chicopee/Holyoke HH Size 2+, Male Head	156	32.9%	148	0.95	1,008	40.7%	982	0.97
9. Hampden Balance, HH Size 1, Female Head	496	5.6%	513	1.03	3,249	22.7%	3,260	1.00
10. Hampden Balance, HH Size 1, Male Head	463	26.5%	454	0.98	2,940	23.4%	2,879	0.98
11. Hampden Balance, HH Size 2+, Female Head	953	28.4%	958	1.01	6,040	37.5%	6,016	1.00
12. Hampden Balance, HH Size 2+, Male Head	274	20.8%	272	0.99	1,740	44.7%	1,744	1.00
TOTAL	9,178	22.1%	9,286	1.01	59,731	28.9%	59,646	1.00

*Weights are the pooled (composite) weights, w_{vgi}^{pool}.

Ratio Adjustment of Pooled Weights

Although the pooled weights constructed in the previous section are theoretically unbiased, it can be seen in Exhibit 10 that the sum of the weights by blocking group differs from known population counts in the July 2011 sampling frame due to sampling variability. Therefore, we applied a ratio adjustment to the pooled weights so that weighted counts of the sample agreed with the corresponding population (frame) counts for the 12 blocking groups. The resulting weights are referred to as the "poststratified pooled" weights.

The ratio (or "poststratification") adjustment factor for blocking group (stratum) s, $F_s^{(ps)}$, was computed as:

$$F_s^{(ps)} = N_s \ / \sum_{i=1}^{n_s} w_{si}^{pool} \quad (4)$$

where N_s is the population control total for blocking group *s*, w_{si}^{pool} is the pooled (composite) base weight described in the previous section associated with the i^{th} sampled person in the blocking group *s*, and where the sum in the denominator of $F_s^{(ps)}$ extends over the sampled persons in the given blocking group. The poststratified pooled weight was then computed as:

$$w_{si}^{ps} = F_s^{(ps)} \, w_{si}^{pool} \quad (5)$$

Exhibit 11 summarizes the sum of the poststratified pooled weights, w_{si}^{ps}, the coefficient of variation (CV) of the weights expressed as a percentage of the mean weight, and the ratio of the frame count to the corresponding weighted count, by blocking group. Comparing the CVs of the weights in this exhibit with those in Exhibit 10, we see that the poststratification adjustment had minimal impact on the variation of the weights.

Exhibit 11: Weighted Counts of the Sample After Ratio Adjustment and the Coefficient of Variation (CV) of the Weights, by Treatment Status and Blocking Group

Blocking Group	HIP			Non-HIP		
	Frame count	Wtd. count (PSWT)	CV of weights (%)	Frame count	Wtd. count (PSWT)	CV of weights (%)
1. Springfield, HH Size 1, Female Head	1,032	1,032	13.0%	6,548	6,548	4.2%
2. Springfield, HH Size 1, Male Head	1,177	1,177	25.9%	7,472	7,472	31.9%
3. Springfield, HH Size 2+, Female Head	2,332	2,332	24.2%	15,173	15,173	33.6%
4. Springfield, HH Size 2+, Male Head	284	284	20.1%	1,888	1,888	13.3%
5. Chicopee/Holyoke HH Size 1, Female Head	504	504	1.1%	3,198	3,198	36.2%
6. Chicopee/Holyoke HH Size 1, Male Head	512	512	17.5%	3,250	3,250	22.9%
7. Chicopee/Holyoke HH Size 2+, Female Head	1,100	1,100	18.8%	7,236	7,236	26.3%
8. Chicopee/Holyoke HH Size 2+, Male Head	148	148	32.9%	982	982	40.7%
9. Hampden Balance, HH Size 1, Female Head	513	513	5.6%	3,260	3,260	22.9%
10. Hampden Balance, HH Size 1, Male Head	454	454	26.5%	2,879	2,879	23.4%
11. Hampden Balance, HH Size 2+, Female Head	958	958	28.4%	6,016	6,016	37.5%
12. Hampden Balance, HH Size 2+, Male Head	272	272	20.8%	1,744	1,744	44.7%
TOTAL	9,286	9,286	21.0%	59,646	59,646	28.7%

*Weights are the poststratified pooled weights, w_{si}^{ps}.

Nonresponse Adjustment

The final step in the weighting process was to adjust the post-stratified pooled weights defined by formula (5) to compensate for nonresponse in the baseline survey (Round 1). The adjustments were made in two phases separately for the two treatment groups. The second-phase nonresponse-adjusted weight is the final analytic weight for analysis of Round 1 data. See Exhibit B-3 in Appendix B for additional information about the response rates achieved in Round 1. The procedures used are described below.

(a) We specified the five response status groups shown in Exhibit 12. Note that two types of "ineligibles" are specified. Response-status group 3 consists of sampled persons who were precoded as ineligible because they were not active in SNAP as of the sample determination date (i.e., "lock down" date) specified for the particular data collection wave. Such cases were identified in advance of data collection. On the other hand, response-status group 4 consists of other types of ineligible persons who could not be identified in advance of data collection. This group includes persons who were found during data collection to have moved, become institutionalized, died, etc. To ascertain whether a sampled person is in group 4, it was generally necessary to contact the sampled person or a knowledgeable household member. Consequently, nonresponse could have occurred either (1) prior to determining eligibility (e.g., the sampled person could not be contacted or located); or (2) after determining eligibility (e.g., the person was located and eligibility was determined). Thus, the nonresponse adjustment was done in two phases as described in (b) and (c) below.

Exhibit 12: Distribution of the Evaluation Sample by Treatment Group, Wave, and Round 1 (Baseline) Response Status

Round 1 response status group*		Total	HIP				Non HIP			
			Wave 1	Wave 2	Wave 3	Total	Wave 1	Wave 2	Wave 3	Total
1.	Respondent	2,784	447	511	430	1,388	464	521	411	1,396
2.	Eligible non-respondent	964	271	133	83	487	217	145	115	477
3.	Ineligible - not in SNAP per lock-down date	266	0	45	94	139	0	47	80	127
4.	Ineligible - other	111	12	14	20	46	14	30	21	65
5.	Eligibility unknown	655	116	143	76	335	151	103	66	320
TOTAL		4,780	846	846	703	2,395	846	846	693	2,385

*See Appendix A for definition of response status groups.

(b) Excluding the cases in response-status group 3 (which were deleted from the sample prior to data collection), the purpose of the first-phase adjustment was to distribute a portion of the weighted count of the cases in response status group 5 (unknown eligibility) to the three remaining groups (1, 2, and 4) defined in Exhibit 12. First, we conducted a CHAID analysis (Chi Square Automatic Interaction Detector) separately for each treatment group to identify cells within which the predicted probabilities of ascertaining eligibility were similar.

The person-level "dependent" variable used in the analysis was defined by the zero-one variable:

$$Y = \begin{cases} 1, \text{if the sampled person belonged to response status group } 1, 2, or\ 4 \\ 0, \text{if the sampled person belonged to response status group } 5 \end{cases}$$

In addition to the 12 blocking groups, we specified the variables listed in Exhibits B-1 and B-2 of Appendix B as potential independent (predictor) variables in the CHAID analysis.

The output from the CHAID analysis was a tree diagram that defined the final cells (labeled r = 1, 2, ..., R) used in the first-phase nonresponse adjustment. Exhibits 13 and 14 summarize the first-phase nonresponse adjustment cells determined by the CHAID analysis for the HIP and non-HIP groups, respectively. It can be seen that for both HIP and non-HIP samples, the weighted response rate varies from around 50 percent to over 95 percent across the adjustment cells.

Exhibit 13: Definition of First-Phase Nonresponse Adjustment Cells for the HIP Treatment Group, Round 1 Person Weights

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	hmls_h = 0, block = 1, wave = 1, 2	83.1%
2	hmls_h = 0, block = 1, wave = 3	95.8%
3	hmls_h = 0, block = 2, age_p = 1, 2, 3	72.4%
4	hmls_h = 0, block = 2, age_p = 4	90.5%
5	hmls_h = 0, block = 3, 4, 5, wave = 1, 3	89.5%
6	hmls_h = 0, block = 3, 4, 5, wave = 2, gende_p = 0	61.9%
7	hmls_h = 0, block = 3, 4, 5, wave = 2, gende_p = 1, lang_h = 0	86.8%
8	hmls_h = 0, block = 3, 4, 5, wave = 2, gende_p = 1, lang_h = 1	73.2%
9	hmls_h = 0, block = 6	76.6%
10	hmls_h = 0, block = 7, 8, 9, 10, 11, age_h = 1	81.9%
11	hmls_h = 0, block = 7, 8, 9, 10, 11, age_h = 2, 3, 4	93.6%
12	hmls_h = 0, block = 12	97.3%
13	hmls_h = 1	57.4%

*See Exhibits B-1 and B-2 of Appendix B for definitions of variables used to construct cells.
**Poststratified pooled weights.

Exhibit 14. Definition of First-Phase Nonresponse Adjustment Cells for the non-HIP Group, Round 1 Person Weights

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	hmls_h = 0, ben_h = 1, dsbl_p = 0	96.6%
2	hmls_h = 0, ben_h = 1, dsbl_p = 1, race_p = 1, 4	83.2%
3	hmls_h = 0, ben_h = 1, dsbl_p = 1, race_p = 2, 3	94.1%
4	hmls_h = 0, ben_h = 2, age_p = 1	69.6%
5	hmls_h = 0, ben_h = 2, age_p = 2, 3, 4	84.5%
6	hmls_h = 0, ben_h = 3, 4, reeva_h = 1, race_p = 1	81.0%
7	hmls_h = 0, ben_h = 3, 4, reeva_h = 1, race_p = 2, 3, 4, gende_p = 0	82.8%
8	hmls_h = 0, ben_h = 3, 4, reeva_h = 1, race_p = 2, 3, 4, gende_p = 1	92.6%
9	hmls_h = 0, ben_h = 3, 4, reeva_h = 2, 3, age_p = 1, 2, 4	91.6%
10	hmls_h = 0, ben_h = 3, 4, reeva_h = 2, 3, age_p = 3	98.7%
11	hmls_h = 1, gende_p = 0	50.7%
12	hmls_h = 1, gende_p = 1	72.9%

*See Exhibits B-1 and B-2 of Appendix B for definitions of variables used to construct cells.
**Poststratified pooled weights.

The first-phase nonresponse adjustment factor, A_r , was computed as the inverse of the weighted first-phase response rate in final cell *r*:

$$A_r = \sum_{i=1}^{n_{123b4}^{(r)}} w_{ri}^{ps} / \sum_{i=1}^{n_{123b}^{(r)}} w_{ri}^{ps} \quad (6)$$

where the sum of poststratified pooled weights in the numerator extends over the $n_{1245}^{(r)}$ sampled persons in response-status groups 1, 2, 4, and 5 in final cell r, while the sum of poststratified pooled

weights in the denominator extends over the $n_{124}^{(r)}$ sampled persons in response-status groups 1, 2, and 4 in final cell *r*.

The first-phase adjusted weight for the i^{th} sampled person in cell *r* for whom eligibility was determined (i.e., cases in response status groups 1, 2, and 4) was computed as:

$$w_{ri}^{NR1} = A_r \, w_{ri}^{ps} \quad (7)$$

Exhibit 15 summarizes the (nonresponse-adjusted) weighted counts of the sampled persons in response-status groups 1, 2, and 4 and the CV of the weights by treatment status and blocking group.

Exhibit 15. Sum of First-Phase Nonresponse-Adjusted Weights and CV of Weights by Treatment and Blocking Group, Round 1 Person Weights

Blocking group	HIP			Non-HIP		
	Frame count	Wtd. count (NR1WT)*	CV of weights (%)	Frame count	Wtd. count (NR1WT)*	CV of weights (%)
1. Springfield, HH Size 1, Female Head	1,032	1,014	13.8%	6,548	6,609	9.4%
2. Springfield, HH Size 1, Male Head	1,177	1,160	28.4%	7,472	6,714	28.5%
3. Springfield, HH Size 2+, Female Head	2,332	2,336	24.2%	15,173	15,157	32.1%
4. Springfield, HH Size 2+, Male Head	284	288	30.9%	1,888	1,935	17.8%
5. Chicopee/Holyoke HH Size 1, Female Head	504	480	9.4%	3,198	3,274	9.4%
6. Chicopee/Holyoke HH Size 1, Male Head	512	502	17.0%	3,250	3,362	32.5%
7. Chicopee/Holyoke HH Size 2+, Female Head	1,100	1,162	22.4%	7,236	7,493	22.9%
8. Chicopee/Holyoke HH Size 2+, Male Head	148	149	33.3%	982	948	38.8%
9. Hampden Balance, HH Size 1, Female Head	513	508	8.8%	3,260	3,190	10.8%
10. Hampden Balance, HH Size 1, Male Head	454	453	39.7%	2,879	3,088	37.1%
11. Hampden Balance, HH Size 2+, Female Head	958	954	31.2%	6,016	6,083	35.9%
12. Hampden Balance, HH Size 2+, Male Head	272	280	23.7%	1,744	1,793	46.2%
TOTAL	9,286	9,286	25.8%	59,646	59,646	28.6%

*Weighted counts using w_{ri}^{NR1}.

(c) For the second-phase adjustment, we restricted the sample to cases with response-status codes of 1 (respondents) or 2 (eligible non-respondents). We conducted separate CHAID analyses for each treatment group to identify cells with similar conditional response propensities (i.e., conditional on the subset of cases that were determined to be eligible for the study).

The person-level "dependent" variable for the second-phase adjustment was defined by the zero-one variable:

$$Z = \begin{cases} 1, \text{if the sampled person belonged to response status group 1} \\ 0, \text{if the sampled person belonged to response status group 2} \end{cases}$$

We specified the same set of independent variables used previously for the first-phase adjustment as potential independent variables in the second-phase CHAID analyses. The output from the CHAID analysis was used to define the second-phase nonresponse-adjustment weighting cells (denoted by the subscript s = 1, 2, ..., S). Exhibits 16 and 17 summarize the second-phase nonresponse adjustment cells determined by the CHAID analysis for the HIP and non-HIP groups, respectively.

Exhibit 16: Definition of Second-Phase Nonresponse Adjustment Cells for the HIP Treatment Group, Round 1 Person Weights

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	wave = 1, dsbl_p = 0, hh_typ = 1, 2, in_h = 1, 4	44.8%
2	wave = 1, dsbl_p = 0, hh_typ = 1, 2, in_h = 2, 3	63.4%
3	wave = 1, dsbl_p = 0, hh_typ = 3	63.9%
4	wave = 1, dsbl_p = 1, gende_p = 0	59.4%
5	wave = 1, dsbl_p = 1, gende_p = 1, rsdi_h = 0	67.9%
6	wave = 1, dsbl_p = 1, gende_p = 1, rsdi_h = 1	82.7%
7	wave = 2, 3, citzn_h = 0	64.3%
8	wave = 2, citzn_h = 1, lang_h = 0	78.0%
9	wave = 3, citzn_h = 1, lang_h = 0, reeva_h = 1, 3	89.0%
10	wave = 3, citzn_h = 1, lang_h = 0, reeva_h = 2	75.3%
11	wave = 2, 3, citzn_h = 1, lang_h = 1, age_h = 1, 2, 4	82.9%
12	wave = 2, 3, citzn_h = 1, lang_h = 1, age_h = 3	97.0%

*See Exhibits B-1 and B-2 of Appendix B for definitions of variables used to construct cells.
**First-phase nonresponse-adjusted weights.

Exhibit 17: Definition of Second-Phase Nonresponse Adjustment Cells for the non-HIP Group, Round 1 Person Weights

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	wave = 1, age_p = 1, reeva_h = 1	69.9%
2	wave = 1, age_p = 1, reeva_h = 2, 3	54.1%
3	wave = 1, age_p = 2	78.8%
4	wave = 1, age_p = 3, 4, gende_p = 0	57.7%
5	wave = 1, age_p = 3, 4, gende_p = 1	71.2%
6	wave = 2, 3, block = 1-8, gende_p = 0	76.7%
7	wave = 2, 3, block = 1-8, gende_p = 1, res_h = 1	81.6%
8	wave = 2, 3, block = 1-8, gende_p = 1, res_h = 2, 3	91.0%
9	wave = 2, 3, block = 9, 10, 12	61.8%
10	wave = 2, 3, block = 11	74.8%

*See Exhibits B-1 and B-2 of Appendix B for definitions of variables used to construct cells.
**First-phase nonresponse-adjusted weights.

The second-phase nonresponse adjustment factor, B_s, was computed as the inverse of the weighted second-phase response rate in final cell s:

$$B_s = \sum_{i=1}^{n_{12}^{(s)}} w_{ri}^{NR1} / \sum_{i-1}^{n_1^{(s)}} w_{ri}^{NR1} \qquad (8)$$

where the sum of the first-phase nonresponse-adjusted weights in the numerator extends over the $n_{12}^{(s)}$ eligible sampled persons in final cell s, while the sum of first-phase nonresponse-adjusted weights in the denominator extends over the $n_1^{(s)}$ responding persons in final cell *s*.

The final nonresponse-adjusted weight for the i[th] responding person in cell *s* (i.e., cases in response status group 1) was then computed as:

$$w_{si}^{NR2} = B_s \, w_{si}^{NR1} \qquad (5)$$

Exhibit 18 summarizes the (second-phase nonresponse-adjusted) weighted counts of the sampled persons in response-status group 1 (the survey respondents) and the CV of the weights by treatment status and blocking group.

Exhibit 18: Sum of Second-Phase Nonresponse-Adjusted Weights and CV of Weights by Treatment and Blocking Group, Round 1 Person Weights

	HIP			Non-HIP		
Blocking group	Frame count	Wtd. count (NR2WT)*	CV of weights (%)	Frame count	Wtd. count (NR1WT)*	CV of weights (%)
1. Springfield, HH Size 1, Female Head	1,032	1,001	22.8%	6,548	6,648	14.5%
2. Springfield, HH Size 1, Male Head	1,177	1,137	32.4%	7,472	5,975	20.4%
3. Springfield, HH Size 2+, Female Head	2,332	2,291	31.7%	15,173	14,590	35.4%
4. Springfield, HH Size 2+, Male Head	284	269	27.6%	1,888	1,968	22.9%
5. Chicopee/Holyoke HH Size 1, Female Head	504	439	15.7%	3,198	3,123	13.3%
6. Chicopee/Holyoke HH Size 1, Male Head	512	449	19.8%	3,250	2,839	29.9%
7. Chicopee/Holyoke HH Size 2+, Female Head	1,100	1,186	33.8%	7,236	7,739	32.1%
8. Chicopee/Holyoke HH Size 2+, Male Head	148	181	56.6%	982	879	50.7%
9. Hampden Balance, HH Size 1, Female Head	513	476	14.3%	3,260	2,959	11.6%
10. Hampden Balance, HH Size 1, Male Head	454	374	39.8%	2,879	3,076	50.0%
11. Hampden Balance, HH Size 2+, Female Head	958	973	44.9%	6,016	6,125	42.4%
12. Hampden Balance, HH Size 2+, Male Head	272	261	36.9%	1,744	1,504	15.4%
TOTAL	9,286	9,035	33.6%	59,646	57,425	32.8%

*Weighted counts using w_{ri}^{NR2} do not include ineligible cases in the sample. For this reason, the weighted counts in the table are generally lower than the frame counts.

Replicate Weights for Variance Estimation

For variance estimation, 100 jackknife replicates were created from the full sample, where each jackknife replicate reflects the stratification of the full sample. The entire weighting process described in the previous sections was applied to each replicate, resulting in a set of 100 replicate-specific weights for each responding person. Together with the full-sample weight, the replicate weights can be used to generate sampling errors of the survey-based estimates as follows:

Let y_i denote a survey characteristic (variable) for the i^{th} responding person in the sample, and let w_i^F denote the corresponding final full-sample weight. Let $w_{(k)i}$ denote the k^{th} replicate weight for the i^{th} person, where $k = 1, 2, ..., K$. The estimated total for a survey variable y_i based on the full sample is given by the weighted sum

$$\hat{y} = \sum_{i=1}^{n} w_i^F \, y_i \qquad (9)$$

The corresponding replicate estimates are given by the weighted sums

$$\hat{y}k = \sum_{i=1}^{n} w_{(k)i} \, y_i \quad \text{for } k = 1, 2, ..., 100 \quad (10)$$

The variance of the full-sample estimate can then be computed as:

$$\text{var}(\hat{y}) = \sum_{k=1}^{K} G_k \, (\hat{y}k - \hat{y})2 \quad (11)$$

where the G_k 's are appropriate scaling factors referred to as JKN factors. The values of JKN factors (i.e., the G_k 's) to be used for variance estimation are summarized in Exhibit 19. For example, see WesVar User's Guide (http://www.westat.com/Westat/pdf/wesvar/WV_4-3_Manual.pdf) for examples of the use of the JKN factors in variance estimation.

Exhibit 19: JKN Factors to be Used for Variance Estimation

Block (variance stratum)	No. of variance units used to form replicates in variance stratum	JKN factor	Replicates to which factors are applied
1	11	0.9091	1 to 11
2	13	0.9231	12 to 24
3	25	0.9600	25 to 49
4	3	0.6667	50 to 52
5	5	0.8000	53 to 57
6	6	0.8333	58 to 63
7	12	0.9167	64 to 75
8	2	0.5000	76 to 77
9	5	0.8000	78 to 82
10	5	0.8000	83 to 87
11	10	0.9000	88 to 97
12	3	0.6667	98 to 100

2.2 Construction of Weights for Analysis of Shopper Data

A second set of person weights was constructed for analysis of respondents for which the corresponding shopper survey was also completed in Round 1. The construction of these weights essentially followed the same steps described in Section 2.1. The only difference was in the manner in

which the nonresponse adjustments were calculated. Note that it was not necessary to recompute the required poststratified pooled weights created above.

Nonresponse Adjustment

The first step in the weighting process was to adjust the poststratified pooled weights computed previously to compensate for nonresponse in the shopper survey. Similar to the procedures described in the Nonresponse Adjustment section of Section 2.1 above, the adjustments were made in two phases separately for each of the two treatment groups. The second-phase nonresponse-adjusted weight is the final analytic weight for analysis of Round 1 shopper data. See Exhibit B-4 in Appendix B for additional information about the response rates achieved in Round 1.

(a) We defined the five response status groups specified in Exhibit 20. Note that this table differs from Exhibit 12 in that the set of respondents (response status group 1) includes persons for which *both* the baseline and shopper interviews were completed. Since nonresponse could have occurred either (1) prior to determining eligibility (e.g., the sampled person could not be contacted or located); or (2) after determining eligibility (e.g., the person was located and eligibility was determined), the nonresponse adjustment was done in two phases as described in (b) and (c) below.

Exhibit 20: Distribution of the Round 1 Evaluation Sample by Treatment Group, Wave, and Response Status for the Shopper Survey

		HIP				Non-HIP			
Response status group*	Total	Wave 1	Wave 2	Wave 3	Total	Wave 1	Wave 2	Wave 3	Total
1. Respondent **	2,645	425	487	409	1,321	437	492	395	1,324
2. Eligible non-respondent	1,069	286	147	102	535	240	167	127	534
3. Ineligible - not in SNAP per lock-down date	266	0	45	94	139	0	47	80	127
4. Ineligible - other	112	12	14	20	46	15	30	21	66
5. Eligibility unknown	688	123	153	78	354	154	110	70	334
TOTAL	4,780	846	846	703	2,395	846	846	693	2,385

*See Appendix A for definition of response status groups for the main (baseline) interview.
**In this table, a respondent is a person who completed the main (baseline) survey *and* for whom a shopper interview was also completed.

(b) Initially, we distributed a portion of the weighted count of the persons in response status group 5 (unknown eligibility) to three of the remaining groups (response-status groups 1, 2 and 4) defined in Exhibit 20. We conducted a CHAID analysis (Chi Square Automatic Interaction Detector) for each treatment group to identify cells within which the predicted probabilities of ascertaining eligibility were similar.

The person-level "dependent" variable was defined by the zero-one variable:

$$Y = \begin{cases} 1, \text{if the sampled person belonged to response status group } 1, 2, \textit{or } 4 \\ 0, \text{if the sampled person belonged to response status group } 5 \end{cases}$$

In addition to blocking group, the household-level variables listed in Exhibit 1 and the person-level variables listed in Exhibit B-2 of Appendix B were specified as potential independent (predictor) variables in the CHAID analysis.

The output from the CHAID analysis was a tree diagram that defined the final cells (labeled r = 1, 2, ..., R) used in the first-phase nonresponse adjustment. Exhibits 21 and 22 summarize the first-phase nonresponse adjustment cells determined by the CHAID analysis for the HIP and non-HIP groups, respectively. It can be seen that for both HIP and non-HIP samples, the weighted response rates varied from around 50 percent to over 95 percent across the adjustment cells.

Exhibit 21: Definition of First-Phase Nonresponse Adjustment Cells for the HIP Treatment Group, Round 1 Shopper Weights

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	hmls_h = 0, block = 1, wave = 1, 2	81.4%
2	hmls_h = 0, block = 1, wave = 3	95.8%
3	hmls_h = 0, block = 2, age_p = 1, 2, 3	70.8%
4	hmls_h = 0, block = 2, age_p = 4	89.2%
5	hmls_h = 0, block = 3-5, wave = 1, 3	88.3%
6	hmls_h = 0, block = 3-5, wave = 2, lang_h = 0, race_h = 1, 2	78.3%
7	hmls_h = 0, block = 3-5, wave = 2, lang_h = 0, race_h = 3, 4	96.3%
8	hmls_h = 0, block = 3-5, wave = 2, lang_h = 1	62.8%
9	hmls_h = 0, block = 6	75.8%
10	hmls_h = 0, block = 7-11, age_h = 1	81.4%
11	hmls_h = 0, block = 7-11, age_h = 2, 3, 4	93.1%
12	hmls_h = 0, block = 13	97.3%
13	hmls_h = 1	57.5%

*See Exhibits B-1 and B-2 of Appendix B for definitions of variables used to construct cells.
**Poststratified pooled weights.

Exhibit 22: Definition of First-Phase Nonresponse Adjustment Cells for the non-HIP Group, Round 1 Shopper Weights

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	hmls_h = 0, ben_h = 1, dsbl_p = 0	96.0%
2	hmls_h = 0, ben_h = 1, dsbl_p = 1, lang_h = 0	91.1%
3	hmls_h = 0, ben_h = 1, dsbl_p = 1, lang_h = 1	80.3%
4	hmls_h = 0, ben_h = 2, age_p = 1	68.6%
5	hmls_h = 0, ben_h = 2, age_p = 2-4	84.4%
6	hmls_h = 0, ben_h = 3, 4, reeva_h = 1, res_h = 1	81.8%
7	hmls_h = 0, ben_h = 3, 4, reeva_h = 1, res_h = 2, 3	92.4%
8	hmls_h = 0, ben_h = 3, 4, reeva_h = 2, 3, dsbl_h = 0, age_p = 1, 2	92.3%
9	hmls_h = 0, ben_h = 3, 4, reeva_h = 2, 3, dsbl_h = 0, age_p = 3, 4	100.0%
10	hmls_h = 0, ben_h = 3, 4, reeva_h = 2, 3, dsbl_h = 1	84.5%
11	hmls_h = 1, gende_p = 0	50.7%
12	hmls_h = 1, gende_p = 1	72.9%

*See Exhibits B-1 and B-2 of Appendix B for definitions of variables used to construct cells.
**Poststratified pooled weights.

The first-phase nonresponse adjustment factor, A_r , was computed as the inverse of the weighted first-phase response rate in final cell r:

$$A_r = \sum_{i=1}^{n_{123b4}^{(r)}} w_{ri}^{ps} / \sum_{i-1}^{n_{123b}^{(r)}} w_{ri}^{ps} \quad (12)$$

where the sum of the weights in the numerator extends over the $n_{1245}^{(r)}$ sampled persons in response-status groups 1, 2, 4, and 5 in final cell *r*, while the sum of weights in the denominator extends over the $n_{124}^{(r)}$ sampled persons in response-status groups 1, 2, and 4 in final cell *r*.

The first-phase adjusted weight for the i^{th} sampled person in cell *r* for which eligibility was determined (i.e., cases in response status groups 1, 2, and 4) was computed as:

$$w_{ri}^{NR1} = A_r \; w_{ri}^{ps} \quad (13)$$

Exhibit 23 summarizes the (nonresponse-adjusted) weighted counts of the sampled persons in response-status groups 1, 2, and 4 and the CV of the weights by treatment status and blocking group.

Exhibit 23: Sum of First-Phase Nonresponse-Adjusted Weights and CV of Weights by Treatment and Blocking Group, Round 1 Shopper Weights

Blocking group	HIP			Non-HIP		
	Frame count	Wtd. count (SNR1WT)*	CV of weights (%)	Frame count	Wtd. count (SNR1WT)*	CV of weights (%)
1. Springfield, HH Size 1, Female Head	.	1,014	14.4%	6,548	6,616	9.1%
2. Springfield, HH Size 1, Male Head	1,177	1,160	28.3%	7,472	6,695	28.5%
3. Springfield, HH Size 2+, Female Head	2,332	2,330	23.9%	15,173	15,116	12.3%
4. Springfield, HH Size 2+, Male Head	284	275	26.4%	1,888	1,951	17.6%
5. Chicopee/Holyoke HH Size 1, Female Head	504	499	12.8%	3,198	3,272	9.1%
6. Chicopee/Holyoke HH Size 1, Male Head	512	502	16.9%	3,250	3,379	32.1%
7. Chicopee/Holyoke HH Size 2+, Female Head	1,100	1,168	23.3%	7,236	7,492	23.1%
8. Chicopee/Holyoke HH Size 2+, Male Head	148	150	33.3%	982	923	39.4%
9. Hampden Balance, HH Size 1, Female Head	513	511	8.7%	3,260	3,216	10.2%
10. Hampden Balance, HH Size 1, Male Head	454	451	39.6%	2,879	3,101	36.7%
11. Hampden Balance, HH Size 2+, Female Head	958	946	31.4%	6,016	6,133	36.4%
12. Hampden Balance, HH Size 2+, Male Head	272	280	23.7%	1,744	1,752	45.2%
TOTAL	9,286	9,286	25.4%	59,646	59,646	28.6%

*Weighted counts using w_{ri}^{NR1}.

(c) For the second-phase adjustment, we restricted the sample to persons with response status codes of 1 (respondents) or 2 (eligible non-respondents). We conducted separate CHAID analyses for each treatment group to identify cells with similar (conditional) response propensities.

The person-level "dependent" variable for the second-phase adjustment was defined by the zero-one variable:

$$Z = \begin{cases} 1, \text{if the sampled person belonged to response status group 1} \\ 0, \text{if the sampled person belonged to response status group 2} \end{cases}$$

We specified the same independent variables used previously for the first-phase adjustment as independent variables in the second-phase CHAID analyses. The output from the CHAID analysis was used to define the second-phase nonresponse-adjustment weighting cells (denoted by the subscript s = 1, 2, ..., S). Exhibits 24 and 25 summarize the second-phase nonresponse adjustment cells determined by the CHAID analysis for the HIP and non-HIP groups, respectively.

Exhibit 24: Definition of Second-Phase Nonresponse Adjustment Cells for the HIP Treatment Group, Round 1 Shopper Weights

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	wave = 1, race_p = 1, 4, dsbl_p = 0, reeva_h = 1	32.6%
2	wave = 1, race_p = 1, 4, dsbl_p = 0, reeva_h = 2, 3	52.7%
3	wave = 1, race_p = 1, 4, dsbl_p = 1, in_h = 1, 2	43.8%
4	wave = 1, race_p = 1, 4, dsbl_p = 1, in_h = 3, 4	74.8%
5	wave = 1, race_p = 2, dsbl_p = 0, age_h = 1, 4	41.7%
6	wave = 1, race_p = 2, dsbl_p = 0, age_h = 2, 3	66.1%
7	wave = 1, race_p = 2, dsbl_p = 1	71.0%
8	wave = 1, race_p = 3	77.6%
9	wave = 2, 3, citzn_h = 0	63.3%
10	wave = 2, 3, citzn_h = 1, gende_p = 0	74.7%
11	wave = 2, 3, citzn_h = 1, gende_p = 1	81.1%

*See Exhibits B-1 and B-2 of Appendix B for definitions of variables used to construct cells.
**First-phase nonresponse-adjusted weights.

Exhibit 25: Definition of Second-Phase Nonresponse Adjustment Cells for the non-HIP Group, Round 1 Shopper Weights

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	wave = 1, age_p = 1, reeva_h = 1	65.5%
2	wave = 1, age_p = 1, reeva_h = 2, 3	52.3%
3	wave = 1, age_p = 2	77.0%
4	wave = 1, age_p = 3, 4, reeva_h = 1, lang_h = 0, gende_p = 0	48.6%
5	wave = 1, age_p = 3, 4, reeva_h = 1, lang_h = 0, gende_p = 1	69.8%
6	wave = 1, age_p = 3, 4, reeva_h = 1, lang_h = 1	41.7%
7	wave = 1, age_p = 3, 4, reeva_h = 2, 3	70.7%
8	wave = 2, 3, block = 1-7, gende_p = 0	72.0%
9	wave = 2, 3, block = 1-7, gende_p = 1, res_h = 1	78.7%
10	wave = 2, 3, block = 1-7, gende_p = 1, res_h = 2, 3	87.5%
11	wave = 2, 3, block = 8-10, 12	60.0%
12	wave = 2, 3, block = 11	71.8%

*See Exhibits B-1 and B-2 of Appendix B for definitions of variables used to construct cells.
**First-phase nonresponse-adjusted weights.

The second-phase nonresponse adjustment factor, B_s , was computed as the inverse of the weighted second-phase response rate in final cell *s*:

$$B_s = \sum_{i=1}^{n_{12}^{(s)}} w_{ri}^{NR1} / \sum_{i-1}^{n_1^{(s)}} w_{ri}^{NR1} \quad (14)$$

where the sum of the first-phase nonresponse-adjusted weights in the numerator extends over the $n_{12}^{(s)}$ eligible sampled persons in final cell *s*, while the sum of first-phase nonresponse-adjusted weights in the denominator extends over the $n_1^{(s)}$ responding persons in final cell *s*.

The final nonresponse-adjusted weight for the i^{th} responding household in cell *s* (i.e., cases in response status group 1) was computed as:

$$w_{si}^{NR2} = B_s \, w_{si}^{NR1} \quad (19)$$

Exhibit 26 summarizes the (second-phase nonresponse-adjusted) weighted counts of the sampled persons in response-status group 1 (the survey respondents) and the CV of the weights by treatment status and blocking group.

Exhibit 26: Sum of Second-Phase Nonresponse-Adjusted Weights and CV of Weights by Treatment and Blocking Group, Round 1 Shopper Weights

Blocking Group	HIP			Non-HIP		
	Frame count	Wtd. count (SNR2WT)*	CV of weights (%)	Frame count	Wtd. count (SNR2WT)*	CV of weights (%)
1. Springfield, HH Size 1, Female Head	1,032	1,020	29.8%	6,548	6,653	18.0%
2. Springfield, HH Size 1, Male Head	1,177	1,113	33.4%	7,472	5,960	24.1%
3. Springfield, HH Size 2+, Female Head	2,332	2,274	31.9%	15,173	14,216	37.0%
4. Springfield, HH Size 2+, Male Head	284	239	29.4%	1,888	1,952	28.8%
5. Chicopee/Holyoke HH Size 1, Female Head	504	478	19.4%	3,198	3,139	20.0%
6. Chicopee/Holyoke HH Size 1, Male Head	512	502	26.9%	3,250	2,911	34.2%
7. Chicopee/Holyoke HH Size 2+, Female Head	1,100	1,206	36.9%	7,236	7,893	34.2%
8. Chicopee/Holyoke HH Size 2+, Male Head	148	177	37.5%	982	963	41.7%
9. Hampden Balance, HH Size 1, Female Head	513	494	18.1%	3,260	2,966	11.7%
10. Hampden Balance, HH Size 1, Male Head	454	369	36.1%	2,879	3,094	50.8%
11. Hampden Balance, HH Size 2+, Female Head	958	912	35.1%	6,016	6,236	41.9%
12. Hampden Balance, HH Size 2+, Male Head	272	249	34.5%	1,744	1,411	19.0%
TOTAL	9,286	9,033	33.1%	59,646	57,393	34.5%

*Weighted counts using w_{ri}^{NR2} do not include ineligible cases in the sample. For this reason, the weighted counts in the table are generally lower than the frame counts.

Replicate Weights

Corresponding to the full-sample weights described above, 100 jackknife replicates were created for variance estimation from the full sample, where each jackknife replicate reflects the stratification of the full sample. The entire weighting process described in the previous section was applied to each replicate, resulting in a set of 100 replicate-specific weights for each respondent. Together with the full-sample weight, the replicate weights can be used to generate sampling errors of the survey-based estimates (see Section 2.1).

3. Round 2 Participant Survey Weights

This chapter describes the procedures used to weight the sample respondents from Round 2 of the Healthy Incentives Pilot (HIP) evaluation surveys. Two versions of person-level weights were constructed: a set for analysis of persons who completed the first intake (AMPM) interview, and another for analysis of the persons for whom both the intake interview and the associated shopper interview were completed. Corresponding to each of the two versions of weights, a set of replicate weights was also constructed for variance estimation purposes. Finally, second-day intake weights were constructed for the 10 percent of respondents who completed a second 24-hour dietary recall interview.

3.1 Starting Point

The starting point for the construction of the Round 2 sampling weights was the set of final nonresponse-adjusted person weights developed for analysis of respondents in the baseline (Round 1) survey, described in the previous chapter. These weights are designed to provide for substantially unbiased estimation of the characteristics of SNAP beneficiaries (by treatment group) who (a) resided in Hampden County, Massachusetts, (b) were listed as active participants in the July 2011 case files provided by the Massachusetts DTA, and (c) remained eligible through the end of Round 1 data collection.

Exhibit 27 summarizes the unweighted and weighted counts for the two sets of person weights that were previously created for analysis of Round 1 survey data. As indicated in the table, weights were created for 2,784 persons who completed the baseline respondent interview, and for 2,645 persons for whom both the baseline interview and the associated shopper interview were completed. Note that only the first set of weights corresponding to the 2,784 respondents completing the respondent interview were used to develop the Round 2 weights described in this report. The results shown for the second set of weights (referred to as the "Round 1 shopper" weights) are given for reference only, since they were not used to construct the Round 2 weights.

Exhibit 27: Summary of Previously-Constructed Round 1 Analysis Weights by Type and Treatment Status

Type of weight	Weighted cases	Treatment Group		
		Total	HIP	Non-HIP
Round 1 "person" weight	Number	2,784	1,388	1,396
	Weighted count*	68,681	9,035	59,646
Round 1 "shopper" weight	Number	2,645	1,321	1,324
	Weighted count**	66,426	9,033	57,393

*Weights apply to persons completing the Round 1 respondent interview.
**Weights apply to persons completing the Round 1 respondent interview and for whom the primary shopper interview was also completed (i.e., participant-shopper "dyads"). Counts exclude dyads with no eligible shoppers.

3.2 Nonresponse Adjustment

Since all of the still-eligible responding cases from Round 1 were carried over into (i.e., "sampled" for) Round 2 the final weights from Round 1 are essentially the "base" weights for Round 2 weighting. If there were no nonresponses in Round 2, the final weights from Round 1 would also be the final analytic weights for Round 2. However, as can be seen in Exhibit 28, sample losses due to

both nonresponse and attrition were experienced in Round 2, and the rates of loss varied by type of interview. The response rates for the four types of interviews conducted in Round 2 are shown at the bottom of Exhibit 28. To reflect the fact that nonresponse could occur either prior to or after ascertaining eligibility for the survey, the overall Round 2 response rate for a particular type of interview was computed as the product of the two preceding percentages in the table.

Exhibit 28: Distribution of Round 2 Sample by Type-of-Interview and Response Status

Response status*	Type of Interview			
	Person	Shopper	First intake**	Second intake
1. Respondent	1,998	1,974	2,006	230
2. Eligible non-respondent***	351	375	343	245
3. Ineligible based on DTA case files (non-released)	311	311	311	---
4. Ineligible based on survey	64	64	64	15
5. Unknown eligibility (not locatable)	60	60	60	14
TOTAL	2,784	2,784	2,784	504
Percentage of released sample for which eligibility was determined	97.6%	97.6%	97.6%	97.2%
Percentage of known eligible cases for which interview was completed	85.1%	84.0%	85.4%	48.4%
Round 2 response rate	83.0%	82.0%	83.3%	47.1%

* See Appendix A for definition of response status groups
**Intake interview was first module of person survey; some respondents broke off after the intake module.
***Counts include four cases that were not released in Round 2 because they were precoded as "do not contact" cases and were still active participants in DTA case files.

Exhibit 29 provides a cross-tabulation of the 2,784 cases from Round 1 by response status for each of the three primary components of the Round 2 surveys: intake (AMPM), shopper, and respondent interview. Prior to fielding the second round of interviews, 315 of the 2,784 cases were deleted from the sample for various reasons (e.g., were no longer active in SNAP according to DTA case files, opted out of the study, moved to a household of a different treatment status (shifters), or were ineligible for other reasons). Five of the 315 were “do not contact” cases, of which one was no longer active according to DTA case files. Thus, of the 315 cases that were not fielded in Round 2, four were still active in SNAP and were included in the weighting process as eligible non-respondents. The remaining 311 were excluded from the weighting process.

Exhibit 29: Distribution of Round 2 Sample by Response Status for Intake, Shopper, and Respondent Interviews

Response status* by type of interview			
Intake (AMPM)	Shopper	Respondent	Number
1	1	1	1,933
1	2	1	21
1	2	2	52
2	1	1	41
2	2	1	3
2	2	2	299
4	4	4	64
5	5	5	60
Not released (ineligible)			311**
Total			2,784

*See Exhibit 28 for description of response-status codes 1-5.
**Out of a total of 315 non-released cases, five were "do not contact" cases, of which four were eligible according to updated DTA case files. These four cases are treated as non-respondents for weighting purposes (i.e., have response status = 2 for intake, shopper, and respondent interviews).

Similar to the general procedures used to weight the Round 1 sample, nonresponse adjustments were made separately for the two treatment groups, for each of the following two types of Round 2 weights.

- Round 2 person weights. These weights apply to the 2,006 respondents completing the first *intake* (AMPM) interview. Note that interview data from Round 2 are missing for 52 of the 2,006 AMPM respondents (see Exhibit 29).
- Round 2 shopper weights. These weights are analogous to the shopper weights created for Round 1. These weights apply to the 1,933 respondents who completed the first intake interview *and* for whom the associated shopper interview was also completed. (All 1,933 respondents also completed the respondent interview.)

Nonresponse Adjustment of Person Weights

We specified the five response status groups shown in Exhibit 30. Note that two types of "ineligibles" were specified. Response-status group 3 consisted of 311 persons who were precoded as ineligible because they were no longer active in SNAP, opted out of the study, or moved to a household in a different treatment group. Such cases were removed from the sample in advance of data collection. On the other hand, response-status group 4 consisted of other types of ineligible persons who could not be identified in advance of data collection. This group included persons who moved, were no longer in SNAP at the time of the interview, became institutionalized, died, etc. To ascertain whether a sampled person is in group 4, it was generally necessary to contact the sampled person or a knowledgeable household member. Consequently, nonresponse could have occurred either (1) prior to determining eligibility (e.g., the sampled person could not be contacted or located); or (2) after determining eligibility (e.g., the person was located and eligibility was determined). Thus, the nonresponse adjustment was done in two phases as described below.

Exhibit 30: Distribution of the Evaluation Sample by Treatment Group, Wave, and Round 2 Intake (AMPM) Response Status

Round 2 intake interview (AMPM) response status group*		HIP				Non HIP			
	Total	Wave 1	Wave 2	Wave 3	Total	Wave 1	Wave 2	Wave 3	Total
1. Respondent	2,006	337	378	294	1,009	335	389	273	997
2. Eligible non-respondent	343	40	60	62	162	59	56	66	181
3. Ineligible—not released	311	48	61	51	160	49	53	49	151
4. Ineligible—other	64	10	8	10	28	9	18	9	36
5. Eligibility unknown	60	12	4	13	29	12	5	14	31
TOTAL	2,784	447	511	430	1,388	464	521	411	1,396

*See Appendix A for cross-walk of final result codes to response-status groups.

First-Phase Adjustment of Person Weights

The purpose of the first-phase adjustment was to distribute a portion of the weighted count of the cases in response status group 5 (unknown eligibility) to the three remaining groups (1, 2, and 4) defined in Exhibit 30. The cases in response-status group 3, which were deleted from the sample prior to data collection, were excluded from this process. First, we conducted a CHAID analysis (Chi Square Automatic Interaction Detector) separately for each treatment group to identify cells within which the predicted probabilities of ascertaining eligibility were similar.

The person-level "dependent" variable used in the analysis was defined by the zero-one variable:

$$Y = \begin{cases} 1, \text{if the sampled person belonged to response status group } 1, 2, \textit{or } 4 \\ 0, \text{if the sampled person belonged to response status group } 5 \end{cases}$$

In addition to the classification variables used previously to weight the Round 1 sample, we also used selected responses from the Round 1 baseline interview as potential independent (predictor) variables in the CHAID analysis. See Appendix C for a list of the variables from the baseline interview that were used in the CHAID analysis.

The output from the CHAID analysis was a tree diagram that defined the final cells (labeled r = 1, 2, ..., R) used in the first-phase nonresponse adjustment. Exhibits 31 and 32 summarize the first-phase nonresponse adjustment cells determined by the CHAID analysis for the HIP and non-HIP groups, respectively. It can be seen that for both HIP and non-HIP samples, the weighted (conditional) response rates were high, varying from around 87 percent to 100 percent across the adjustment cells. The response rates in this table are "conditional" response rates since they apply to the set of Round 1 respondents and do not reflect the earlier nonresponse losses.

Exhibit 31: Definition of First-Phase Nonresponse Adjustment Cells for the HIP Treatment Group, Round 2 Person Weights

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	hh_typ = 1	100.0%
2	hh_typ = 2, 3, uc_h = 1	100.0%
3	hh_typ = 2, 3, uc_h = 0, tryvg = 1, 2, 3, wave = 1, 3	89.4%
4	hh_typ = 2, 3, uc_h = 0, tryvg = 1, 2, 3, wave=2	100.0%
5	hh_typ = 2, 3, uc_h = 0, tryvg = 4, 5, 99, ben_h = 1, 4	96.8%
6	hh_typ = 2, 3, uc_h = 0, tryvg = 4 ,5, 99, ben_h = 2, 3	99.8%

*See Appendix C for definitions of the variables used to construct cells.
**Conditional response rates using the final Round 1 person weights.

Exhibit 32: Definition of First-Phase Nonresponse Adjustment Cells for the non-HIP Group, Round 2 Person Weights

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	edlv = 1, 2, 3, 4, 99	94.6%
2	edlv = 5, 6, 7	98.4%
3	edlv = 8, 9, 10, age_h = 1	86.9%
4	edlv = 8, 9, 10, age_h = 2, 3, ben_h = 1, 4	95.3%
5	edl v= 8, 9, 10, age_h = 2, 3, ben_h = 2, 3	100.0%
6	edlv = 8, 9, 10, age_h = 4	100.0%
7	edlv = 11	100.0%
8	12 =< edlv <= 22, vegh = 1, 2, 99	100.0%
9	12 =< edlv <= 22, vegh = 3, 4, 5, shopv = 1, 2, 3, block = 1, 2, 3	95.4%
10	12 =< edlv <= 22, vegh = 3, 4, 5, shopv = 1, 2, 3, block = 4, 5, 12	100.0%
11	12 =< edlv <= 22, vegh = 3, 4, 5, shopv = 1, 2, 3, block = 6, 7, 8	96.9%
12	12 =< edlv <= 22, vegh = 3, 4, 5, shopv = 1, 2, 3, block = 9, 10, 11	95.9%
13	12 =< edlv <= 22, vegh = 3, 4, 5, shopv = 4, 5, 99	100.0%

*See Appendix C for definitions of the variables used to construct cells.
**Conditional response rates using the final Round 1 person weights.

The first-phase nonresponse adjustment factor, A_r , was computed as the inverse of the weighted first-phase response rate in final cell *r*:

$$A_r = \sum_{i=1}^{n_{1245}^{(r)}} w_{ri}^{Round\ 1} \Big/ \sum_{i=1}^{n_{124}^{(r)}} w_{ri}^{Round\ 1}, \quad (1)$$

where the sum of the final Round 1 weights in the numerator extends over the $n_{1245}^{(r)}$ sampled persons in response-status groups 1, 2, 4, and 5 in final cell *r*, while the sum of the final Round 1 weights in the denominator extends over the $n_{124}^{(r)}$ sampled persons in response-status groups 1, 2, and 4 in final cell *r*.

The (intermediate) first-phase adjusted weight for the i^{th} sampled person in cell *r* for whom eligibility was determined (i.e., cases in response status groups 1, 2, and 4) was computed as:

$$w_{ri}^{NR1} = A_r\, w_{ri}^{Round\ 1} \quad (2)$$

Exhibit 33 summarizes the (first-phase nonresponse-adjusted) weighted counts of the sampled persons in response-status groups 1, 2, and 4 and the coefficient of variation (CV) of the weights by treatment status and blocking group. The CV of the weights is informative because $1+(CV/100)^2$ represents the design effect due to unequal weighting.

Exhibit 33: Sum of First-Phase Nonresponse-Adjusted Weights and CV of Weights by Treatment and Blocking Group, Round 2 Person Weights

Blocking group	HIP			Non-HIP		
	Frame count*	Wtd. count**	CV of weights (%)	Frame count*	Wtd. count**	CV of weights (%)
1. Springfield, HH Size 1, Female Head	1,032	933	24.5	6,548	6,140	20.6
2. Springfield, HH Size 1, Male Head	1,177	887	27.5	7,472	5,635	25.5
3. Springfield, HH Size 2+, Female Head	2,332	2,042	34.3	15,173	12,945	29.6
4. Springfield, HH Size 2+, Male Head	284	238	28.3	1,888	1,719	24.1
5. Chicopee/Holyoke HH Size 1, Female Head	504	432	21.1	3,198	2,971	18.3
6. Chicopee/Holyoke HH Size 1, Male Head	512	422	28.1	3,250	2,435	34.9
7. Chicopee/Holyoke HH Size 2+, Female Head	1,100	1,027	34.8	7,236	6,277	25.6
8. Chicopee/Holyoke HH Size 2+, Male Head	148	133	25.6	982	734	56.1
9. Hampden Balance, HH Size 1, Female Head	513	416	10.2	3,260	2,671	22.2
10. Hampden Balance, HH Size 1, Male Head	454	282	36.2	2,879	2,506	32.3
11. Hampden Balance, HH Size 2+, Female Head	958	766	26.3	6,016	5,027	25.5
12. Hampden Balance, HH Size 2+, Male Head	272	198	27.2	1,744	1,264	10.6
TOTAL	9,286	7,773	30.6	59,646	50,324	28.1

*Population counts in original sampling frame.
**Weighted counts using w_{rl}^{NR1}.

Second-Phase Adjustment of Person Weights

For the second-phase adjustment, we restricted the sample to cases with response-status codes of 1 (respondents) or 2 (eligible non-respondents). We conducted separate CHAID analyses for each treatment group to identify cells with similar conditional response propensities (i.e., conditional on the subset of cases that were determined to be eligible for the study).

The person-level "dependent" variable for the second-phase adjustment was defined by the zero-one variable:

$$Z = \begin{cases} 1, \text{if the sampled person belonged to response status group 1} \\ 0, \text{if the sampled person belonged to response status group 2} \end{cases}$$

We specified the same set of independent variables used previously for the first-phase adjustment as potential independent variables in the second-phase CHAID analyses. The output from the CHAID

analysis was used to define the second-phase nonresponse-adjustment weighting cells (denoted by the subscript s = 1, 2, ..., S). Exhibits 34 and 35 summarize the second-phase nonresponse adjustment cells determined by the CHAID analysis for the HIP and non-HIP groups, respectively.

Exhibit 34: Definition of Second-Phase Nonresponse Adjustment Cells for the HIP Treatment Group, Round 2 Person Weights

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	rsdi_h = 1, fixv = 1	98.6%
2	rsdi_h = 1, fixv = 2, 3, 4, 5, 99	89.0%
3	rsdi_h = 0, tryvg = 1, 2, 3, 99, wave = 1	88.4%
4	rsdi_h = 0, tryvg = 1, 2, 3, 99, wave = 2, 3	70.8%
5	rsdi_h = 0, tryvg = 4, 5, ensp = 1, reeva_h = 1	93.6%
6	rsdi_h = 0, tryvg = 4, 5, ensp = 1, reeva_h = 2,3	83.8%
7	rsdi_h = 0, tryvg = 4, 5, ensp = 2	81.2%

*See Appendix C for definitions of the variables used to construct cells.
**Weighted using first-phase nonresponse-adjusted person weights.

Exhibit 35: Definition of Second-Phase Nonresponse Adjustment Cells for the non-HIP Group, Round 2 Person Weights

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	blk = 1, ssi_h = 1	98.3%
2	blk = 1, ssi_h = 0	87.8%
3	blk = 2, 99, wave = 1, 2	85.3%
4	blk = 2, 99, wave = 3, age_p = 1, 4	72.1%
5	blk = 2, 99, wave = 3, age_p = 2, 3	86.4%

*See Appendix C for definitions of the variables used to construct cells.
**Weighted using first-phase nonresponse-adjusted person weights.

The second-phase nonresponse adjustment factor, B_s , was computed as the inverse of the weighted second-phase response rate in final cell s:

$$B_s = \sum_{i=1}^{n_{12}^{(s)}} w_{ri}^{NR1} \Big/ \sum_{i=1}^{n_1^{(s)}} w_{ri}^{NR1} \qquad (3)$$

where the sum of the first-phase nonresponse-adjusted weights in the numerator extends over the $n_{12}^{(s)}$ eligible sampled persons in final cell s, while the sum of first-phase nonresponse-adjusted weights in the denominator extends over the $n_1^{(s)}$ responding persons in final cell s.

The final nonresponse-adjusted weight for the i^{th} responding person in cell s (i.e., cases in response status group 1) was then computed as:

$$w_{si}^{Round\ 2} = B_s\, w_{si}^{NR1} \qquad (4)$$

Exhibit 36 summarizes the final nonresponse-adjusted weighted counts of sampled persons in response-status group 1 (the survey respondents) and the CV of the weights by treatment status and blocking group.

Exhibit 36: Sum of Second-Phase Nonresponse-Adjusted Weights and CV of Weights by Treatment and Blocking Group, Round 2 Person Weights

Blocking Group	HIP			Non-HIP		
	Frame count*	Wtd. count**	CV of weights (%)	Frame count*	Wtd. count**	CV of weights (%)
1. Springfield, HH Size 1, Female Head	1,032	908	24.6	6,548	5,918	15.6
2. Springfield, HH Size 1, Male Head	1,177	897	22.3	7,472	5,650	19.3
3. Springfield, HH Size 2+, Female Head	2,332	1,964	29.2	15,173	12,627	22.8
4. Springfield, HH Size 2+, Male Head	284	228	27.8	1,888	1,609	22.7
5. Chicopee/Holyoke HH Size 1, Female Head	504	472	19.6	3,198	3,025	14.5
6. Chicopee/Holyoke HH Size 1, Male Head	512	432	21.4	3,250	2,080	30.1
7. Chicopee/Holyoke HH Size 2+, Female Head	1,100	997	29.0	7,236	6,296	19.7
8. Chicopee/Holyoke HH Size 2+, Male Head	148	124	25.1	982	654	61.8
9. Hampden Balance, HH Size 1, Female Head	513	410	14.3	3,260	2,746	15.1
10. Hampden Balance, HH Size 1, Male Head	454	266	23.1	2,879	2,308	23.4
11. Hampden Balance, HH Size 2+, Female Head	958	743	25.5	6,016	4,787	20.3
12. Hampden Balance, HH Size 2+, Male Head	272	148	19.7	1,744	992	13.1
TOTAL	9,286	7,588	27.0	59,646	48,692	23.0

*Population counts in original sampling frame.

**Weighted counts using the final Round 2 person weights, $w_{ri}^{Round\ 2}$. The weighted counts represent the portion of the persons in the original frame who remained eligible through the end of Round 2.

Replicate Person Weights for Variance Estimation

For variance estimation, 100 jackknife replicates were created from the full Round 2 sample using the same procedures as in Round 1. See Chapter 2, Replicate Person Weights for Variance Estimation section for a description of the process.

Nonresponse Adjustment of Shopper Weights

A second set of person-level weights was constructed for analysis of persons completing the intake interview for whom the corresponding shopper survey was also completed in Round 2. These are referred to as the Round 2 "shopper" weights. The construction of these weights essentially followed the same steps described in the previous section for constructing "person weights." The main difference was in the manner in which the response status groups were defined.

First-Phase Adjustment of Shopper Weights

The first step in the weighting process was to adjust the final person-level weights from Round 1 to compensate for nonresponse in the shopper survey. Similar to the procedures described in the previous section, the adjustments were made separately for each of the two treatment groups.

We defined the five response status groups specified in Exhibit 37. Note that this table differs from Exhibit 30 in that the set of respondents (response status group 1) includes persons for which *both* the intake and shopper interviews were completed. Since nonresponse could have occurred either (1) prior to determining eligibility (e.g., the sampled person could not be contacted or located); or (2) after determining eligibility (e.g., the person was located and eligibility was determined), the nonresponse adjustment was done in two phases as described below.

Exhibit 37: Distribution of the Round 2 Evaluation Sample by Treatment Group, Wave, and Response Status for the Shopper Survey

Round 2 intake-shopper dyad response status group*	Total	HIP				Non-HIP			
		Wave 1	Wave 2	Wave 3	Total	Wave 1	Wave 2	Wave 3	Total
1. Respondent**	1,933	329	366	276	971	329	372	261	962
2. Eligible non-respondent	416	48	72	80	200	65	73	78	216
3. Ineligible—not released	311	48	61	51	160	49	53	49	151
4. Ineligible—other	64	10	8	10	28	9	18	9	36
5. Eligibility unknown	60	12	4	13	29	12	5	14	31
TOTAL	2,784	447	511	430	1,388	464	521	411	1,396

*See Appendix A for cross-walk of final result codes to response-status groups.
**Persons completing the intake and for whom a shopper interview was also completed.

Initially, we distributed a portion of the weighted count of the persons in response status group 5 (unknown eligibility) to three of the remaining groups (response-status groups 1, 2 and 4) defined in Exhibit 37. We conducted a CHAID analysis (Chi Square Automatic Interaction Detector) for each treatment group to identify cells within which the predicted probabilities of ascertaining eligibility were similar.

The person-level "dependent" variable was defined by the zero-one variable:

$$Y = \begin{cases} 1, \text{if the sampled person belonged to response status group } 1, 2, \textit{or } 4 \\ \\ 0, \text{if the sampled person belonged to response status group } 5 \end{cases}$$

In addition to blocking group, the variables listed in Appendix C were specified as potential independent (predictor) variables in the CHAID analysis.

The output from the CHAID analysis was a tree diagram that defined the final cells (labeled r = 1, 2, ..., R) used in the first-phase nonresponse adjustment. Exhibits 38 and 39 summarize the first-phase nonresponse adjustment cells determined by the CHAID analysis for the HIP and non-HIP groups, respectively. It can be seen that for both HIP and non-HIP samples, the weighted (conditional) response rates varied from around 87 percent to 100 percent across the adjustment cells.

Exhibit 38: Definition of First-Phase Nonresponse Adjustment Cells for the HIP Treatment Group, Round 2 Shopper Weights

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	hh_typ = 1	100.0%
2	hh_typ = 2, 3, uc_h = 1	100.0%
3	hh_typ = 2, 3,uc_h = 0,tryvg = 1, 2, 3, wave = 1, 3	89.4%
4	hh_typ = 2, 3,uc_h = 0,tryvg = 1, 2, 3, wave = 2	100.0%
5	hh_typ = 2, 3,uc_h = 0,tryvg = 4, 5, 99, ben_h = 1, 4	96.8%
6	hh_typ = 2, 3,uc_h = 0,tryvg = 4, 5, 99, ben_h = 2, 3	99.8%

*See Appendix C for definitions of the variables used to construct cells.
**Conditional response rates using the final Round 1 person weights.

Exhibit 39: Definition of First-Phase Nonresponse Adjustment Cells For the non-HIP Group, Round 2 Shopper Weights

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	edlv = 1, 2, 3, 4, 99	94.6%
2	edlv = 5, 6, 7	98.4%
3	edlv = 8, 9, 10, age_h = 1	86.9%
4	edlv = 8, 9, 10, age_h = 2, 3, ben_h = 1, 4	95.3%
5	edlv = 8, 9, 10, age_h = 2, 3, ben_h = 2, 3	100.0%
6	edlv = 8, 9, 10, age_h = 4	100.0%
7	edlv = 11	100.0%
8	12 = < edlv < = 22, vegh = 1, 2, 99	100.0%
9	12 = < edlv < = 22, vegh = 3, 4, 5, shopv = 1, 2, 3, block = 1, 2, 3	95.4%
10	12 = < edlv < = 22, vegh = 3, 4, 5, shopv = 1, 2, 3, block = 4, 5, 12	100.0%
11	12 = <edlv < = 22, vegh = 3, 4, 5, shopv = 1, 2, 3, block = 6, 7, 8	96.9%
12	12 = < edlv < = 22, vegh = 3, 4, 5, shopv = 1, 2, 3, block = 9, 10, 11	95.9%
13	12 = < edlv < = 22, vegh = 3, 4, 5, shopv = 4, 5, 99	100.0%

*See Appendix C for definitions of the variables used to construct cells.
**Conditional response rates using the final Round 1 person weights.

The first-phase nonresponse adjustment factor, A_r , was computed as the inverse of the weighted first-phase response rate in final cell r:

$$A_r = \sum_{i=1}^{n_{1245}^{(r)}} w_{ri}^{Round\ 1} \Big/ \sum_{i=1}^{n_{124}^{(r)}} w_{ri}^{Round\ 1} \quad (8)$$

where the sum of the final Round 1 weights in the numerator extends over the $n_{1245}^{(r)}$ sampled persons in response-status groups 1, 2, 4, and 5 in final cell *r*, while the sum of weights in the denominator extends over the $n_{124}^{(r)}$ sampled persons in response-status groups 1, 2, and 4 in final cell *r*.

The first-phase adjusted weight for the i^{th} sampled person in cell *r* for which eligibility was determined (i.e., cases in response status groups 1, 2, and 4) was computed as:

$$w_{ri}^{SNR1} = A_r \; w_{ri}^{Round\ 1} \quad (9)$$

Exhibit 40 summarizes the (first-phase nonresponse-adjusted) weighted counts of the sampled persons in response-status groups 1, 2, and 4 and the CV of the weights by treatment status and blocking group.

Exhibit 40: Sum of First-Phase Nonresponse-Adjusted Weights and CV of Weights by Treatment and Blocking Group, Round 2 Shopper Weights

Blocking group	HIP			Non-HIP		
	Frame count*	Wtd. count**	CV of weights (%)	Frame count*	Wtd. count**	CV of weights (%)
1. Springfield, HH Size 1, Female Head	1,032	933	24.5	6,548	6,140	20.6
2. Springfield, HH Size 1, Male Head	1,177	887	27.5	7,472	5,635	25.5
3. Springfield, HH Size 2+, Female Head	2,332	2,042	34.3	15,173	12,945	29.6
4. Springfield, HH Size 2+, Male Head	284	238	28.3	1,888	1,719	24.1
5. Chicopee/Holyoke HH Size 1, Female Head	504	432	21.1	3,198	2,971	18.3
6. Chicopee/Holyoke HH Size 1, Male Head	512	422	28.1	3,250	2,435	34.9
7. Chicopee/Holyoke HH Size 2+, Female Head	1,100	1,027	34.8	7,236	6,277	25.6
8. Chicopee/Holyoke HH Size 2+, Male Head	148	133	25.6	982	734	56.1
9. Hampden Balance, HH Size 1, Female Head	513	416	10.2	3,260	2,671	22.2
10. Hampden Balance, HH Size 1, Male Head	454	282	36.2	2,879	2,506	32.3
11. Hampden Balance, HH Size 2+, Female Head	958	766	26.3	6,016	5,027	25.5
12. Hampden Balance, HH Size 2+, Male Head	272	198	27.2	1,744	1,264	10.6
TOTAL	9,286	7,773	30.6	59,646	50,324	28.1

*Population counts in original sampling frame.
**Weighted counts using w_{ri}^{SNR1}.

For the second-phase adjustment, we restricted the sample to person-shopper dyads with response status codes of 1 (respondents) or 2 (eligible non-respondents). We conducted separate CHAID analyses for each treatment group to identify cells with similar (conditional) response propensities.

The "dependent" variable for the second-phase adjustment was defined by the zero-one variable:

$$Z = \begin{cases} 1, \text{if the sampled person belonged to response status group 1} \\ 0, \text{if the sampled person belonged to response status group 2} \end{cases}$$

We specified the same independent variables used previously for the first-phase adjustment as independent variables in the second-phase CHAID analyses. The output from the CHAID analysis was used to define the second-phase nonresponse-adjustment weighting cells (denoted by the subscript s = 1, 2, ..., S). Exhibits 41 and 42 summarize the second-phase nonresponse adjustment cells determined by the CHAID analysis for the HIP and non-HIP groups, respectively.

Exhibit 41: Definition of Second-Phase Nonresponse Adjustment Cells for the HIP Treatment Group, Round 2 Shopper Weights

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	wave = 1, 2, race_h = 1, 4, ben_h = 1, 2, 4	82.2%
2	wave = 1, 2, race_h = 1, 4, ben_h = 3	67.7%
3	wave = 1, 2, race_h = 2, 3, wave = 1, in_h = 1, 2, 4	89.7%
4	wave = 1, 2, race_h = 2, 3, wave = 1, in_h = 3	100.0%
5	wave = 1, 2, race_h = 2, 3, wave = 2, shopf = 1, 99	75.8%
6	wave = 1, 2, race_h = 2, 3, wave = 2, shopf = 2, 3, 4, 5	88.4%
7	wave = 3	77.1%

*See Appendix C for definitions of the variables used to construct cells.
**Weighted using first-phase nonresponse-adjusted shopper weights.

Exhibit 42: Definition of Second-Phase Nonresponse Adjustment Cells for the non-HIP Group, Round 2 Shopper Weights

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	blk = 1, rsdi_h = 1	96.5%
2	blk = 1, rsdi_h = 0	86.8%
3	blk = 2, 99, wave = 1, 2, race_p = 1, 2, dsbl_h = 1	84.8%
4	blk = 2, 99, wave = 1, 2, race_p = 1, 2, dsbl_h = 0	78.2%
5	blk = 2, 99, wave = 1, 2, race_p = 3, 4	94.8%
6	blk = 2, 99, wave = 3, age_p = 1, 4	67.8%
7	blk = 2, 99, wave = 3, age_p = 2, 3	82.4%

*See Appendix C for definitions of the variables used to construct cells.
**Weighted using first-phase nonresponse-adjusted shopper weights.

Second-Phase Adjustment of Shopper Weights

The second-phase nonresponse adjustment factor, B_s , was computed as the inverse of the weighted second-phase response rate in final cell *s*:

$$B_s = \sum_{i=1}^{n_{12}^{(s)}} w_{ri}^{SNR1} / \sum_{i=1}^{n_1^{(s)}} w_{ri}^{SNR1} \quad (10)$$

where the sum of the first-phase nonresponse-adjusted weights in the numerator extends over the $n_{12}^{(s)}$ eligible sampled persons in final cell *s*, while the sum of first-phase nonresponse-adjusted weights in the denominator extends over the $n_1^{(s)}$ responding persons in final cell *s*.

The final nonresponse-adjusted weight for the i^{th} responding person-shopper dyad in cell *s* (i.e., cases in response status group 1) was computed as:

$$w_{si}^{R2\ Shopper} = B_s\, w_{si}^{SNR1} \quad (11)$$

Exhibit 43 summarizes the (second-phase nonresponse-adjusted) weighted counts of the sampled persons in response-status group 1 (the survey respondents) and the CV of the weights by treatment status and blocking group.

Exhibit 43: Sum of Second-Phase Nonresponse-Adjusted Weights and CV of Weights by Treatment and Blocking Group, Round 2 Shopper Weights

Blocking Group	HIP			Non-HIP		
	Frame count*	Wtd. count**	CV of weights (%)	Frame count*	Wtd. count**	CV of weights (%)
1. Springfield, HH Size 1, Female Head	1,032	919	18.4	6,548	5,794	16.2
2. Springfield, HH Size 1, Male Head	1,177	897	18.3	7,472	5,565	21.4
3. Springfield, HH Size 2+, Female Head	2,332	2,000	29.4	15,173	12,520	22.5
4. Springfield, HH Size 2+, Male Head	284	213	25.0	1,888	1,576	24.3
5. Chicopee/Holyoke HH Size 1, Female Head	504	463	14.8	3,198	3,073	16.1
6. Chicopee/Holyoke HH Size 1, Male Head	512	409	18.0	3,250	2,131	31.6
7. Chicopee/Holyoke HH Size 2+, Female Head	1,100	972	27.8	7,236	6,393	20.2
8. Chicopee/Holyoke HH Size 2+, Male Head	148	122	25.3	982	631	60.8
9. Hampden Balance, HH Size 1, Female Head	513	417	11.6	3,260	2,757	16.2
10. Hampden Balance, HH Size 1, Male Head	454	274	19.1	2,879	2,383	24.9
11. Hampden Balance, HH Size 2+, Female Head	958	752	22.6	6,016	4,837	22.1
12. Hampden Balance, HH Size 2+, Male Head	272	150	24.0	1,744	1,031	15.5
TOTAL	9,286	7,588	25.2	59,646	48,692	23.6

*Population counts in original sampling frame.

**Weighted counts using the final Round 2 shopper weights, $w_{ri}^{R2\ Shopper}$. The weighted counts represent the portion of the persons in the original frame who remained eligible through the end of Round 2.

Replicate Shopper Weights for Variance Estimation

Corresponding to the full-sample weights described above, 100 jackknife replicates were created for variance estimation from the full sample, where each jackknife replicate reflects the stratification of the full sample. The entire weighting process described in an section and detailed in Chapter 2 was applied to each replicate, resulting in a set of 100 replicate-specific weights for each respondent. Together with the full-sample weight, the replicate weights can be used to generate sampling errors of the survey-based estimates.

3.3 Second–day Intake Weights

Approximately 10 percent of the respondents completing the first 24-hour dietary recall interview also completed a second 24-hour dietary recall interview. Weights for analysis of the second intake were constructed by applying appropriate inflation factors to the final weights previously created for the first intake interview. Note that the second-day intake weights apply to those respondents that completed ***both*** the first and second intake interviews. In Round 2, three cases that completed the second intake do not have corresponding Day 1 intake data. These cases were excluded from the weighting process described below.

Two second-day weights were created for each of the HIP and non-HIP treatment groups: Round 2 person weight; and Round 2 person/shopper dyad weight.

Due to the small numbers of respondents completing the second intake, all of the second-day weights specified above were derived within four weighting cells defined by location of residence and composition of household (at the time of Round 1 sampling):

- Cell 1: Single-person (adult 16 or older) households in Springfield
- Cell 2: Multi-person (adults 16 or older) households in Springfield
- Cell 3: All households in Chicopee
- Cell 4: All households in Balance of Hampden County

Let *i* denote a second-day intake respondent corresponding to one of the four sets of weights listed above, and let *c* denote a particular weighting cell. In general, the second-day intake weight, $\boldsymbol{w^*_{c,i}}$, for the i^{th} respondent in weighting cell *c* was computed as follows:

$$\boldsymbol{w^*_{c,i}} = \boldsymbol{w_{c,i}} \times \frac{\sum_{k \in S_c} \boldsymbol{w_{c,k}}}{\sum_{k \in S_{cr}} \boldsymbol{w_{c,k}}}$$

where $\boldsymbol{w_{c,i}}$ denotes the final first-day intake weight previously derived for respondent *i* in weighting cell *c*, $\boldsymbol{S_c}$ denotes the set of respondents completing the first-intake in weighting cell *c*, and $\boldsymbol{S_{cr}}$ denotes set of respondents completing the second-intake in weighting cell *c*.

Exhibit 44 summarizes the numbers of cases with a second-day intake weight and corresponding weighted counts, by treatment status, round, and type of weight.

Exhibit 44: Unweighted and Weighted Counts of Cases with Second Intake Weight by Treatment Group, and Type of Weight

Treatment Group		Round 2	
		Person weight	Person-shopper dyad weight
HIP	Respondents	106	106
	Weighted Count	7,588	7,588
NON-HIP	Respondents	121	121
	Weighted Count	48,692	48,692
Total	Respondents	227	227
	Weighted Count	56,280	56,280

4. Round 3 Participant Survey Weights

The following describes the procedures used to weight the sample respondents from Round 3 of the Healthy Incentives Pilot (HIP) evaluation surveys. Two versions of person-level weights were constructed: (a) a set of weights for analysis of persons who completed both the Round 2 and Round 3 intake (AMPM) interviews, and (b) another for analysis of the subset of persons in (a) for whom the associated shopper interviews in Rounds 2 and 3 were also completed. Corresponding to each of the two versions of weights, a set of replicate weights was also constructed for variance estimation purposes. Finally, second-day intake weights were constructed for the 10 percent of respondents who completed a second 24-hour dietary recall interview.

4.1 Starting Point

The starting point for the construction of the Round 3 sampling weights was the set of final nonresponse-adjusted person weights previously developed for analysis of respondents in the Round 2 survey described in Chapter 3. These weights were designed to provide for substantially unbiased estimation of the characteristics of SNAP participants (by treatment group) who (a) resided in Hampden County, Massachusetts, (b) were listed as active participants in the July 2011 case files provided by the Massachusetts DTA, and (c) remained eligible through the end of Round 2 data collection.

Exhibit 45 summarizes the unweighted and weighted counts for the two sets of person weights that were previously created for analysis of Round 2 survey data. As indicated in the table, Round 2 weights were created for 2,006 persons who completed the Round 2 intake (AMPM) interview, and for 1,933 persons for whom both the AMPM and the associated shopper interview were completed.

Exhibit 45: Summary of Previously-Constructed Round 2 Analysis Weights by Type and Treatment Status

Type of weight		Treatment group		
	Weighted cases	Total	HIP	Non-HIP
Round 2 “person” weight	Number	2,006	1,009	997
	Weighted count	56,280	7.588	48,692
Round 2 “shopper” weight	Number	1,933	971	962
	Weighted count	56,280	7,588	48,692

*Weights apply to persons completing the Round 2 intake (AMPM) interview.
**Weights apply to persons completing the Round 2 intake interview and for whom the primary shopper interview was also completed (i.e., participant-shopper “dyads).

4.2 Nonresponse Adjustment

Since all of the still-eligible responding cases from Round 2 were carried over into (i.e., “sampled” for) Round 3, the final weights from Round 2 are essentially the “base” weights for Round 3 weighting. If there were no nonresponse in Round 3, the final weights from Round 2 would also be the final analytic weights for Round 3. However, as can be seen in Exhibit 46, sample losses due to both nonresponse and attrition were experienced in Round 3, and the rates of loss varied by type of interview. The response rates for the four types of interviews conducted in Round 3 are shown at the bottom of Exhibit 46. To reflect the fact that nonresponse could occur either prior to or after ascertaining eligibility for the survey, the overall Round 3 response rate for a particular type of interview was computed as the product of the two preceding percentages in the table.

Exhibit 46: Distribution of Round 3 Sample by Type-of-Interview and Response Status

Response status*	Type of interview			
	Interview	Shopper	First intake	Second intake**
1. Respondent	1,520	1,506	1,514	207
2. Eligible non-respondent	286	298	292	158
3. Ineligible based on DTA case files (not fielded)	157	157	157	95
4. Ineligible based on survey	24	26	24	2
5. Unknown eligibility (not locatable)	63	63	63	15
TOTAL***	2,050	2,050	2,050	477
Percentage of released sample for which eligibility was determined	96.7%	96.7%	96.7%	96.1%
Percentage of known eligible cases for which interview was completed	84.2%	83.5%	83.8%	56.7%
Round 3 response rate	81.4%	80.7%	81.0%	54.5%

*See Appendix A for definition of response status groups.
**A random sample of respondents completing the first intake was selected for the second intake to measure "usual" intakes. Separate weights for the second intake are described in Section 4.3.
***First intake total includes 2,006 cases completing the first Round 2 intake (AMPM) and 44 cases completing the Round 2 respondent interview but not the corresponding intake.

Exhibit 47 provides a cross-tabulation of the 2,050 cases that completed either the intake or respondent interviews in Round 2, by response status in Round 3 for each of the three primary components of the Round 3 surveys: intake (first AMPM), shopper, and respondent interview. Prior to fielding the third and final round of interviews, 157 of the 2,050 cases were deleted from the sample for various reasons (e.g., were no longer active in SNAP according to DTA case files or were ineligible for other reasons). These 157 cases were excluded from the weighting process described below.

Exhibit 47: Distribution of Round 3 Sample by Response Status for the Intake, Shopper, and Respondent Interviews

Round 3 response status*by type of interview			
Intake (AMPM)	Shopper	Respondent	Number
1	1	1	1,479
1	2	1	11
1	2	2	22
1	4	1	2
2	1	1	27
2	2	1	1
2	2	2	264
4	4	4	24
5	5	5	63
Not released (ineligible)			157
Total			2,050**

*See Exhibit 46 for description of response-status codes 1-5.
**Total includes 2,006 cases completing the Round 2 intake (AMPM) and 44 cases completing the Round 2 respondent interview but not the corresponding intake.

Note that although 2,050 prior respondents were selected for Round 3, only the 2,006 cases that completed the Round 2 intake interview are involved in the Round 3 weighting process described in this report. Exhibit 48 summarizes the distribution of the 2,006 cases that completed the intake

interview in Round 2 by Round 3 response status; Exhibit 49 summarizes the distribution of the 1,933 cases that completed both the intake and shopper interviews in Round 2 by Round 3 response status.

Exhibit 48: Distribution of Cases in the Round 3 Sample that Completed the Round 2 Intake by Response Status in Round 3

Round 3 response status*by type of interview			
Intake (AMPM)	Shopper	Respondent	Number
1	1	1	1,445
1	2	1	11
1	2	2	22
1	4	1	2
2	1	1	26
2	2	1	1
2	2	2	258
4	4	4	24
5	5	5	63
Not released (ineligible)			154
Total			2,006**

*See Exhibit 46 for description of response-status codes 1-5.
**Total includes the 2,006 cases completing the Round 2 intake (AMPM).

Exhibit 49: Distribution of Cases in the Round 3 Sample that Completed Both the Round 2 Intake and Shopper Interviews by Response Status in Round 3

Round 3 response status*by type of interview			
Intake (AMPM)	Shopper	Respondent	Number
1	1	1	1,425
1	2	1	10
1	2	2	21
1	4	1	2
2	1	1	25
2	2	1	1
2	2	2	228
4	4	4	23
5	5	5	53
Not released (ineligible)			145
Total			1,933**

*See Exhibit 46 for description of response-status codes 1-5.
**Total includes the 1,933 cases completing the Round 2 intake (AMPM) and the associated Round 2 shopper interview.

Similar to the procedures used previously to weight the Round 2 sample, nonresponse adjustments were made separately by treatment group for two types of Round 3 weights.

- **Round 3 person weights**. These weights apply to the 1,480 respondents completing both Round 2 and Round 3 intake (AMPM) interviews. Note that interview data from Round 2 are missing for 22 of the 1,445 AMPM respondents (see Exhibit 48).
- **Round 3 shopper weights**. These weights are analogous to the shopper weights created for Round 2. These weights apply to the 1,425 respondents who completed both Round 2 and Round 3 intake interviews *and* for whom both of the associated shopper interviews were also completed (see Exhibit 49).

Nonresponse Adjustment of Person Weights

For weighting purposes, we specified the five response status groups shown in Exhibit 50. Note that two types of "ineligibles" are specified. The ineligible cases in response-status group 3 consist of the 154 persons who were precoded as ineligible because they were no longer active in SNAP or otherwise ineligible for the study. These 154 cases were removed from the sample in advance of data collection. On the other hand, the ineligible cases in response-status group 4 consist of other types of ineligible persons who could not be identified in advance of data collection. This group includes persons who moved, were no longer in SNAP at the time of the interview, became institutionalized, died, etc. In order to assign a sampled person to group 4, it was generally necessary to contact the sampled person or a knowledgeable household member to determine status. Consequently, nonresponse could have occurred either (1) prior to determining eligibility (e.g., the sampled person could not be contacted or located); or (2) after determining eligibility (e.g., the person was located and eligibility was determined). Thus, the nonresponse adjustment was done in two phases as described in the following sections. Exhibit 50 summarizes the distribution of the 2,006 persons who completed the Round 2 intake interview by treatment status, data collection wave, and response status in Round 3.

Exhibit 50: Distribution of the Evaluation Sample by Treatment Group, Wave, and Round 3 Intake (AMPM) Response Status

Round 3 intake interview (AMPM) response status group*	Total	HIP				Non-HIP			
		Wave 1	Wave 2	Wave 3	Total	Wave 1	Wave 2	Wave 3	Total
1. Respondent	1,480	267	278	203	748	261	292	179	732
2. Eligible non-respondent	285	39	56	44	139	39	57	50	146
3. Ineligible - not released	154	21	31	30	82	21	22	29	72
4. Ineligible - other	24	4	5	2	11	5	6	2	13
5. Eligibility unknown	63	6	8	15	29	9	12	13	34
TOTAL	2,006	337	378	294	1,009	335	389	273	997

*See Appendix A for definition of response status groups.

First-Phase Adjustment of Person Weights

As described in Chapter 3 for the Round 2 weights, the purpose of the first-phase adjustment was to distribute a portion of the weighted count of the cases in response status group 5 (unknown eligibility) to the three remaining groups (1, 2, and 4) defined in Exhibit 50. The cases in response-status group 3, which were deleted from the sample prior to data collection, were excluded from this process. First, we conducted a CHAID analysis (Chi Square Automatic Interaction Detector) separately for each treatment group to identify cells within which the predicted probabilities of ascertaining eligibility were similar.

The person-level "dependent" variable used in the analysis was defined by the zero-one variable:

$$Y = \begin{cases} 1, \text{if the sampled person belonged to response status group } 1, 2, \text{or } 4 \\ 0, \text{if the sampled person belonged to response status group } 5 \end{cases}$$

In addition to the variables used previously to weight the Round 2 sample, we also used selected variables from the Round 2 respondent interview as potential independent (predictor) variables in the

CHAID analysis. See Appendix C for a list of the variables that were used as potential predictors in the CHAID analysis.

The output from the CHAID analysis was a tree diagram that defined the final cells (labeled $r = 1, 2, ..., R$) used in the first-phase nonresponse adjustment. Exhibits 51 and 52 summarize the first-phase nonresponse adjustment cells determined by the CHAID analysis for the HIP and non-HIP treatment groups, respectively. It can be seen that for both HIP and non-HIP samples, the weighted (conditional) response rates were high, varying from around 75 percent to 100 percent across the adjustment cells. The response rates in this table are "conditional" response rates since they apply to the set of Round 2 respondents and do not reflect the earlier nonresponse losses.

Exhibit 51: Definition of First-Phase Nonresponse Adjustment Cells for the HIP Treatment Group

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	edlv=1-6 or 99	100.0%
2	edlv=7,8	97.5%
3	edlv=9,10,11, dsbl_h=1, race_h=1	93.3%
4	edlv=9,10,11, dsbl_h=1, race_h=2,3,4	100.0%
5	edlv=9,10,11, dsbl_h=0	100.0%
6	edlv=12,13,14, tryfd2r=1,2,3	100.0%
7	edlv=12,13,14, 4<=tryfd2r<=99, age_h=1,2, block=1,2,3,4,12	95.0%
8	edlv=12,13,14, 4<=tryfd2r<=99, age_h=1,2, 5<=block<=11	75.4%
9	edlv=12,13,14, 4<=tryfd2r<=99, age_h=3,4, ssi_h=1	100.0%
10	edlv=12,13,14, 4<=tryfd2r<=99, age_h=3,4, ssi_h=0	96.9%
11	edlv=15	100.0%
12	edlv=16,17	93.3%
13	18<=edlv<=22	100.0%

*See Appendix C for definitions of the variables used to construct cells.
**Conditional response rates using the final Round 2 person weights.

Exhibit 52: Definition of First-Phase Nonresponse Adjustment Cells for the non-HIP Treatment Group

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	vegs=1,99	100.0%
2	vegs=2,3,4, vegc2r=1,99	87.8%
3	vegs=2,3,4, vegc2r=2, shopf=1,2, wave=1,2	96.9%
4	vegs=2,3,4, vegc2r=2, shopf=1,2, wave=3	89.1%
5	vegs=2,3,4, vegc2r=2, 3<=shopf<=99	100.0%
6	vegs=2,3,4, vegc2r=3,4, tryfd2r=1,2,3,99	100.0%
7	vegs=2,3,4, vegc2r=3,4, tryfd2r=4,5, fmlk=1,2,99	94.8%
8	vegs=2,3,4, vegc2r=3,4, tryfd2r=4,5, fmlk=3,4,5	100.0%
9	vegs=2,3,4, vegc2r=5	100.0%
10	vegs=5	100.0%

*See Appendix C for definitions of the variables used to construct cells.
**Conditional response rates using the final Round 2 person weights.

The first-phase nonresponse adjustment factor, A_r , was computed as the inverse of the weighted first-phase response rate in final cell *r*:

$$A_r = \sum_{i=1}^{n_{1245}^{(r)}} w_{ri}^{Round\ 2} / \sum_{i=1}^{n_{124}^{(r)}} w_{ri}^{Round\ 2}, \quad (1)$$

where the sum of the final Round 2 weights in the numerator extends over the $n_{1245}^{(r)}$ sampled persons in response-status groups 1, 2, 4, and 5 in final cell *r*, while the sum of the final Round 2 weights in the denominator extends over the $n_{124}^{(r)}$ sampled persons in response-status groups 1, 2, and 4 in final cell *r*.

The (intermediate) first-phase adjusted weight for the i^{th} sampled person in cell *r* for whom eligibility was determined (i.e., cases in response status groups 1, 2, and 4) was then computed as:

$$W_{ri}^{NR1} = A_r\ w_{ri}^{Round\ 2} \quad (2)$$

Exhibit 53 summarizes the (first-phase nonresponse-adjusted) weighted counts of the sampled persons in response-status groups 1, 2, and 4 and the coefficient of variation (CV) of the weights by treatment status and blocking group. The CV of the weights is informative because $1+(CV/100)^2$ represents the design effect due to unequal weighting.

Exhibit 53: Sum of First-Phase Nonresponse-Adjusted Weights and CV of Weights by Treatment Status and Blocking Group

Blocking group	HIP			Non-HIP		
	Frame count*	Wtd. count**	CV of weights (%)	Frame count*	Wtd. count**	CV of weights (%)
1. Springfield, HH Size 1, Female Head	1,032	865	23.7	6,548	5,574	16.7
2. Springfield, HH Size 1, Male Head	1,177	802	22.6	7,472	5,277	18.2
3. Springfield, HH Size 2+, Female Head	2,332	1,823	29.4	15,173	11,764	22.7
4. Springfield, HH Size 2+, Male Head	284	196	28.0	1,888	1,620	23.1
5. Chicopee/Holyoke HH Size 1, Female Head	504	454	21.7	3,198	2,836	14.5
6. Chicopee/Holyoke HH Size 1, Male Head	512	363	24.0	3,250	1,840	26.1
7. Chicopee/Holyoke HH Size 2+, Female Head	1,100	903	32.5	7,236	5,739	18.6
8. Chicopee/Holyoke HH Size 2+, Male Head	148	113	24.7	982	450	14.8
9. Hampden Balance, HH Size 1, Female Head	513	401	17.6	3,260	2,591	14.0
10. Hampden Balance, HH Size 1, Male Head	454	236	26.5	2,879	2,064	23.7
11. Hampden Balance, HH Size 2+, Female Head	958	671	28.3	6,016	4,152	21.1
12. Hampden Balance, HH Size 2+, Male Head	272	123	21.2	1,744	861	13.7
TOTAL	9,286	6,950	28.5	59,646	44,788	21.5

*Population counts in original sampling frame.

**Weighted counts using w_{ri}^{NR1}.

Second-Phase Adjustment of Person Weights

For the second-phase adjustment, as was done for the Round 2 weights, we restricted the sample to cases with response-status codes of 1 (respondents) or 2 (eligible non-respondents). We conducted separate CHAID analyses for each treatment group to identify cells with similar conditional response propensities (i.e., conditional on the subset of cases that were determined to be eligible for the study).

The person-level "dependent" variable for the second-phase adjustment was defined by the zero-one variable:

$$Z = \begin{cases} 1, \text{if the sampled person belonged to response status group 1} \\ 0, \text{if the sampled person belonged to response status group 2} \end{cases}$$

We specified the same set of variables used previously for the first-phase adjustment as potential independent variables in the second-phase CHAID analyses. The output from the CHAID analysis was used to define the second-phase nonresponse-adjustment weighting cells (denoted by the subscript s = 1, 2, ..., S). Exhibits 54 and 55 summarize the second-phase nonresponse adjustment cells determined by the CHAID analysis for the HIP and non-HIP treatment groups, respectively.

Exhibit 54: Definition of Second-Phase Nonresponse Adjustment Cells for the HIP Treatment Group

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	frth2r=1,2	89.0%
2	frth2r=3,99	63.3%
3	frth2r=4,5, rsdi_h=1, in_h=1,2,3, reeva_h=1	93.0%
4	frth2r=4,5, rsdi_h=1, in_h=1,2,3, reeva_h=2,3	79.0%
5	frth2r=4,5, rsdi_h=1, in_h=4	97.6%
6	frth2r=4,5, rsdi_h=0, ensp=1, wave=1	87.7%
7	frth2r=4,5, rsdi_h=0, ensp=1, wave=2,3	77.1%
8	frth2r=4,5, rsdi_h=0, ensp=2	88.6%

*See Appendix C for definitions of the variables used to construct cells.
**Weighted using first-phase nonresponse-adjusted person weights, w_{ri}^{NR1}.

Exhibit 55: Definition of Second-Phase Nonresponse Adjustment Cells for the non-HIP Treatment Group

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	tryfd2r=1,2,99, rsdi_h=1	86.8%
2	tryfd2r=1,2,99, rsdi_h=0	65.1%
3	tryfd2r=3	93.1%
4	tryfd2r=4, ensp=1, wave=1,2, age_p=1,2,4	80.4%
4	tryfd2r=4, ensp=1, wave=1,2, age_p=3	93.1%
5	tryfd2r=4, ensp=1, wave=3	72.5%
6	tryfd2r=4, ensp=2	87.7%
7	tryfd2r=5	90.4%
8	tryfd2r=1,2,99, rsdi_h=1	86.8%

*See Appendix C for definitions of the variables used to construct cells.
**Weighted using first-phase nonresponse-adjusted person weights, w_{ri}^{NR1}.

The second-phase nonresponse adjustment factor, B_s , was computed as the inverse of the weighted second-phase response rate in final cell *s*:

$$B_s = \sum_{i=1}^{n_{12}^{(s)}} w_{ri}^{NR1} / \sum_{i=1}^{n_1^{(s)}} w_{ri}^{NR1} \quad (3)$$

where the sum of the first-phase nonresponse-adjusted weights in the numerator extends over the $n_{12}^{(s)}$ eligible sampled persons in final cell *s*, while the sum of first-phase nonresponse-adjusted weights in the denominator extends over the $n_1^{(s)}$ responding persons in final cell *s*.

The final nonresponse-adjusted weight for the i*th* responding person in cell s (i.e., cases in response status group 1) was then computed as:

$$w_{si}^{Round\ 3} = B_s\, w_{si}^{NR1} \quad (4)$$

Exhibit 56 summarizes the final nonresponse-adjusted weighted counts of sampled persons in response-status group 1 (the survey respondents) and the CV of the weights by treatment status and blocking group.

Exhibit 56: Sum of Final Round 3 Person Weights and CV of Weights by Treatment Status and Blocking Group

Blocking group	HIP			Non-HIP		
	Frame count*	Wtd. count**	CV of weights (%)	Frame count*	Wtd. count**	CV of weights (%)
1. Springfield, HH Size 1, Female Head	1,032	881	25.4	6,548	5,462	17.4
2. Springfield, HH Size 1, Male Head	1,177	713	27.7	7,472	5,139	20.4
3. Springfield, HH Size 2+, Female Head	2,332	1,755	32.0	15,173	11,806	24.7
4. Springfield, HH Size 2+, Male Head	284	203	27.7	1,888	1,399	21.7
5. Chicopee/Holyoke HH Size 1, Female Head	504	453	24.0	3,198	3,022	16.9
6. Chicopee/Holyoke HH Size 1, Male Head	512	397	26.7	3,250	2,086	23.7
7. Chicopee/Holyoke HH Size 2+, Female Head	1,100	942	32.8	7,236	5,466	19.9
8. Chicopee/Holyoke HH Size 2+, Male Head	148	123	29.8	982	369	20.5
9. Hampden Balance, HH Size 1, Female Head	513	408	24.3	3,260	2,649	20.6
10. Hampden Balance, HH Size 1, Male Head	454	237	32.7	2,879	1,792	27.1
11. Hampden Balance, HH Size 2+, Female Head	958	642	26.3	6,016	4,094	22.5
12. Hampden Balance, HH Size 2+, Male Head	272	108	21.5	1,744	820	16.3
TOTAL	9,286	6,861	30.56	59,646	44,103	22.9

*Population counts in original sampling frame.

**Weighted counts using the final Round 3 person weights, $w_{ri}^{Round\ 3}$. The weighted counts represent the portion of the persons in the original frame who remained eligible through the end of Round 3.

Replicate Person Weights for Variance Estimation

For variance estimation, 100 jackknife replicates were created from the full sample using the same procedures as in Round 1. See Chapter 2, Replicate Person Weights for Variance Estimation section for a description of the process.

Nonresponse Adjustment of Shopper Weights

A second set of person-level weights was constructed for analysis of persons completing both Round 2 and Round 3 intake interviews and for whom the respective Round 2 and Round 3 shopper interviews were also completed. These are referred to as the Round 3 "person-shopper dyad" weights, or simply "shopper weights" for short. The construction of these weights essentially followed the same steps described in the previous section for constructing "person weights." The main difference was in the manner in which the response status groups were defined.

First-Phase Adjustment of Shopper Weights

The first step in the weighting process was to adjust the final person-level shopper weights from Round 2 to compensate for nonresponse in the Round 3 shopper survey. Note that the Round 2 shopper weights applied to persons for whom both the intake and shopper interviews were completed in Round 2 (see Exhibit 45). Similar to the procedures described in the previous section for the "person weights", the adjustments were made separately for the two treatment groups.

We defined the five response status groups specified in Exhibit 57. This table differs from Exhibit 50 in that the set of respondents (response status group 1) includes persons for which both the intake and shopper interviews were completed at both Rounds 2 and 3. Since nonresponse could have occurred either (1) prior to determining eligibility (e.g., the sampled person could not be contacted or located); or (2) after determining eligibility (e.g., the person was located and eligibility was determined), the nonresponse adjustment was done in two phases as described below.

Exhibit 57: Distribution of the Evaluation Sample for Derivation of the Shopper Weights, by Treatment Group, Wave, and Response Status

Round 3 intake-shopper dyad response status group*	Total	HIP				Non HIP			
		Wave 1	Wave 2	Wave 3	Total	Wave 1	Wave 2	Wave 3	Total
1. Respondent**	1,425	255	265	193	713	256	284	172	712
2. Eligible non-respondent	285	44	58	42	144	40	54	47	141
3. Ineligible—not released	145	20	30	27	77	21	19	28	68
4. Ineligible—other	25	5	5	3	13	4	6	2	12
5. Eligibility unknown	53	5	8	11	24	8	9	12	29
TOTAL	1,933	329	366	276	971	329	372	261	962

*See Appendix A for cross-walk of final result codes to response-status groups.
**Persons completing the intake and shopper interviews in both Rounds 2 and 3.

Initially, we distributed a portion of the weighted count of persons in response status group 5 (unknown eligibility) to three of the remaining groups (response-status groups 1, 2 and 4) defined in Exhibit 57. We conducted a CHAID analysis (Chi Square Automatic Interaction Detector) for each treatment group to identify cells within which the predicted probabilities of ascertaining eligibility were similar.

The person-level "dependent" variable was defined by the zero-one variable:

$$Y = \begin{cases} 1, \text{if the sampled person belonged to response status group } 1, 2, \text{or } 4 \\ 0, \text{if the sampled person belonged to response status group } 5 \end{cases}$$

In addition to blocking group, the variables listed in Appendix C were specified as potential independent (predictor) variables in the CHAID analysis.

The output from the CHAID analysis was a tree diagram that defined the final cells (labeled $r = 1, 2, ..., R$) used in the first-phase nonresponse adjustment. Exhibits 58 and 59 summarize the first-phase nonresponse adjustment cells determined by the CHAID analysis for the HIP and non-HIP treatment groups, respectively. It can be seen that for both HIP and non-HIP samples, the weighted (conditional) response rates varied from around 78 percent to 100 percent across the adjustment cells.

Exhibit 58: Definition of First-Phase Nonresponse Adjustment Cells For the HIP Treatment Group

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	1<=edlv<=8 or edlv=99	100.0%
2	edlv=9,10,11, dsbl_h=1, race_h=1	92.8%
3	edlv=9,10,11, dsbl_h=1, race_h=2,3,4	100.0%
4	edlv=9,10,11, dsbl_h=0	100.0%
5	edlv=12,13,14, tryfd2r=1,2,3 or 99	100.0%
6	edlv=12,13,14, tryfd2r=4,5, age_h=1,2, block=1,2,3,4,12	96.5%
7	edlv=12,13,14, tryfd2r=4,5, age_h=1,2, 5<=block<=11	77.5%
8	edlv=12,13,14, tryfd2r=4,5, age_h=3,4, ssi_h=1	100.0%
9	edlv=12,13,14, tryfd2r=4,5, age_h=3,4, ssi_h=0	96.8%
10	edlv=15	100.0%
11	edlv=16,17	94.5%
12	18<=edlv<=22	100.0%

*See Appendix C for definitions of the variables used to construct cells.
**Conditional response rates using the final Round 2 person-shopper dyad weights.

Exhibit 59: Definition of First-Phase Nonresponse Adjustment Cells for the non-HIP Treatment Group

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	vegs=1,99	100.0%
2	vegs=2,3,4, vegc2r=1,2, frth2r=1,2,3,99	94.7%
3	vegs=2,3,4, vegc2r=1,2, frth2r=4	94.3%
4	vegs=2,3,4, vegc2r=1,2, frth2r=5	100.0%
5	vegs=2,3,4, vegc2r=3,4,99, tryfd2r=1,2,3,99	100.0%
6	vegs=2,3,4, vegc2r=3,4,99, tryfd2r=4,5, fmlk=1,2,99	95.1%
7	vegs=2,3,4, vegc2r=3,4,99, tryfd2r=4,5, fmlk=3,4,5	100.0%
8	vegs=2,3,4, vegc2r=5	100.0%
9	vegs=5	100.0%

*See Appendix C for definitions of the variables used to construct cells.
**Conditional response rates using the final Round 2 person-shopper dyad weights.

The first-phase nonresponse adjustment factor, A_r , was computed as the inverse of the weighted first-phase response rate in final cell r:

$$A_r = \sum_{i=1}^{n_{1245}^{(r)}} w_{ri}^{R2\ Shopper} / \sum_{i=1}^{n_{124}^{(r)}} w_{ri}^{R2\ Shopper} \quad (8)$$

where the sum of the final Round 2 shopper weights in the numerator extends over the $n_{1245}^{(r)}$ sampled persons in response-status groups 1, 2, 4, and 5 in final cell *r*, while the sum of weights in the denominator extends over the $n_{124}^{(r)}$ sampled persons in response-status groups 1, 2, and 4 in final cell *r*.

The first-phase adjusted weight for the i^{th} sampled person in cell *r* for which eligibility was determined (i.e., cases in response status groups 1, 2, and 4) was computed as:

$$w_{ri}^{SNR1} = A_r \; w_{ri}^{R2\ Shopper} \tag{9}$$

Exhibit 60 summarizes the (first-phase nonresponse-adjusted) weighted counts of the sampled persons in response-status groups 1, 2, and 4 and the CV of the weights by treatment status and blocking group.

Exhibit 60: Sum of First-Phase Nonresponse-Adjusted Weights and CV of Weights by Treatment Status and Blocking Group

Blocking group	HIP			Non-HIP		
	Frame count*	Wtd. count**	CV of weights (%)	Frame count*	Wtd. count**	CV of weights (%)
1. Springfield, HH Size 1, Female Head	1,032	877	18.1	6,548	5,446	17.0
2. Springfield, HH Size 1, Male Head	1,177	808	19.0	7,472	5,201	20.7
3. Springfield, HH Size 2+, Female Head	2,332	1,855	29.7	15,173	11,781	21.8
4. Springfield, HH Size 2+, Male Head	284	183	20.8	1,888	1,566	25.3
5. Chicopee/Holyoke HH Size 1, Female Head	504	445	16.3	3,198	2,861	15.7
6. Chicopee/Holyoke HH Size 1, Male Head	512	357	20.7	3,250	1,879	27.1
7. Chicopee/Holyoke HH Size 2+, Female Head	1,100	871	30.5	7,236	5,825	18.6
8. Chicopee/Holyoke HH Size 2+, Male Head	148	118	24.1	982	418	13.6
9. Hampden Balance, HH Size 1, Female Head	513	410	13.7	3,260	2,568	13.8
10. Hampden Balance, HH Size 1, Male Head	454	241	25.4	2,879	2,112	25.9
11. Hampden Balance, HH Size 2+, Female Head	958	676	25.1	6,016	4,195	23.1
12. Hampden Balance, HH Size 2+, Male Head	272	126	25.2	1,744	916	14.7
TOTAL	9,286	6,966	26.3	59,646	44,777	22.0

*Population counts in original sampling frame.
**Weighted counts using w_{ri}^{SNR1}.

For the second-phase adjustment, we restricted the sample to person-shopper dyads with response status codes of 1 (respondents) or 2 (eligible non-respondents). We conducted separate CHAID analyses for each treatment group to identify cells with similar (conditional) response propensities.

The "dependent" variable for the second-phase adjustment was defined by the zero-one variable:

$$Z = \begin{cases} 1, \text{if the sampled person belonged to response status group 1} \\ 0, \text{if the sampled person belonged to response status group 2} \end{cases}$$

We specified the same variables used previously for the first-phase adjustment as potential independent variables in the second-phase CHAID analyses. The output from the CHAID analysis was used to define the second-phase nonresponse-adjustment weighting cells (denoted by the subscript s = 1, 2, ..., S). Exhibits 61 and 62 summarize the second-phase nonresponse adjustment cells determined by the CHAID analysis for the HIP and non-HIP treatment groups, respectively.

Exhibit 61: Definition of Second-Phase Nonresponse Adjustment Cells for the HIP Treatment Group

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	rsdi_h=1, reeva_h=1	92.4%
2	rsdi_h=1, reeva_h=2,3	80.3%
3	rsdi_h=0	80.9%

*See Appendix C for definitions of the variables used to construct cells.
**Weighted using first-phase nonresponse-adjusted shopper weights, w_{ri}^{SNR1}.

Exhibit 62: Definition of Second-Phase Nonresponse Adjustment Cells For the non-HIP Treatment Group

Nonresponse adjustment cell	Definition of cell based on CHAID analysis*	Weighted response rate**
1	citzn_h=1	84.5%
2	citzn_h=0	61.6%

*See Appendix C for definitions of the variables used to construct cells.
**Weighted using first-phase nonresponse-adjusted shopper weights, w_{ri}^{SNR1}.

Second-Phase Adjustment of Shopper Weights

The second-phase nonresponse adjustment factor, B_s , was computed as the inverse of the weighted second-phase response rate in final cell *s*:

$$\mathrm{B}_s = \sum_{i=1}^{n_{12}^{(s)}} w_{ri}^{SNR1} / \sum_{i=1}^{n_1^{(s)}} w_{ri}^{SNR1} \quad (10)$$

where the sum of the first-phase nonresponse-adjusted weights in the numerator extends over the $n_{12}^{(s)}$ eligible sampled persons in final cell *s*, while the sum of first-phase nonresponse-adjusted weights in the denominator extends over the $n_1^{(s)}$ responding persons in final cell *s*.

The final nonresponse-adjusted weight for the i^{th} responding person-shopper dyad in cell *s* (i.e., cases in response status group 1) was then computed as:

$$w_{si}^{R3\ Shopper} = B_s\ w_{si}^{SNR1} \quad (11)$$

Exhibit 63 summarizes the (second-phase nonresponse-adjusted) weighted counts of the sampled persons in response-status group 1 (the survey respondents) and the CV of the weights by treatment status and blocking group.

Exhibit 63: Sum of Final Round 3 Shopper Weights and CV of Weights by Treatment and Blocking Group

Blocking group	HIP			Non-HIP		
	Frame count*	Wtd. count**	CV of weights (%)	Frame count*	Wtd. count**	CV of weights (%)
1. Springfield, HH Size 1, Female Head	1,032	898	21.9	6,548	5,241	15.5
2. Springfield, HH Size 1, Male Head	1,177	702	22.0	7,472	5,307	22.1
3. Springfield, HH Size 2+, Female Head	2,332	1,775	32.2	15,173	11,736	20.5
4. Springfield, HH Size 2+, Male Head	284	217	24.5	1,888	1,463	28.9
5. Chicopee/Holyoke HH Size 1, Female Head	504	434	19.8	3,198	3,038	15.6
6. Chicopee/Holyoke HH Size 1, Male Head	512	366	23.0	3,250	2,182	26.9
7. Chicopee/Holyoke HH Size 2+, Female Head	1,100	943	32.4	7,236	5,303	17.4
8. Chicopee/Holyoke HH Size 2+, Male Head	148	126	27.3	982	340	15.3
9. Hampden Balance, HH Size 1, Female Head	513	406	16.7	3,260	2,578	15.0
10. Hampden Balance, HH Size 1, Male Head	454	249	29.1	2,879	1,911	27.9
11. Hampden Balance, HH Size 2+, Female Head	958	638	24.4	6,016	4,134	28.3
12. Hampden Balance, HH Size 2+, Male Head	272	105	27.8	1,744	9.34	18.8
TOTAL	9,286	6,859	28.8	59,646	44,168	23.1

*Population counts in original sampling frame.

**Weighted counts using the final Round 3 shopper weights, $w_{ri}^{R3\ Shopper}$. The weighted counts represent the portion of the persons in the original frame who remained eligible through the end of Round 3.

Replicate Shopper Weights for Variance Estimation

Corresponding to the full-sample weights described above, 100 jackknife replicates were created for variance estimation from the full sample, where each jackknife replicate reflects the stratification of the full sample. The entire weighting process described in an earlier section and detailed in Chapter 2 was applied to each replicate, resulting in a set of 100 replicate-specific weights for each respondent. Together with the full-sample weight, the replicate weights can be used to generate sampling errors of the survey-based estimates.

4.3 Second-Day Intake Weights

Approximately 10 percent of the respondents completing the first intake interview at Round 3 also completed a second intake interview at Round 3. Weights for analysis of the second intake were constructed in a similar manner to second-day intake weights in Round 2, by applying appropriate inflation factors to the final weights previously created for the first intake interview. Note that the second-day intake weights apply to those respondents that completed both the first and second intake interviews. In Round 3, one case that completed the second intake does not have the corresponding Day 1 intake data. This case was excluded from the weighting process described below.

Two sets of second-day weights were created for each of the HIP and non-HIP treatment groups: Round 3 person weight; and Round 3 person/shopper dyad weight.

Due to the small numbers of respondents completing the second intake, all of the second-day weights specified above were derived within four weighting cells defined by location of residence and composition of household (at the time of Round 1 sampling):

- Cell 1: Single-person (adult 16 or older) households in Springfield
- Cell 2: Multi-person (adults 16 or older) households in Springfield
- Cell 3: All households in Chicopee
- Cell 4: All households in Balance of Hampden County

Let *i* denote a second-day intake respondent corresponding to one of the four sets of weights listed above, and let *c* denote a particular weighting cell. In general, the second-day intake weight, $\boldsymbol{w}^{*}_{\boldsymbol{c,i}}$, for the i^{th} respondent in weighting cell *c* was computed as follows:

$$\boldsymbol{w}^{*}_{\boldsymbol{c,i}} = \boldsymbol{w}_{\boldsymbol{c,i}} \times \frac{\sum_{\boldsymbol{k}\in \boldsymbol{S_c}} \boldsymbol{w}_{\boldsymbol{c,k}}}{\sum_{\boldsymbol{k}\in \boldsymbol{S_{cr}}} \boldsymbol{w}_{\boldsymbol{c,k}}}$$

where $\boldsymbol{w}_{\boldsymbol{c,i}}$ denotes the final first-day intake weight previously derived for respondent *i* in weighting cell *c*, $\boldsymbol{S_c}$ denotes the set of respondents completing the first-intake in weighting cell *c*, and $\boldsymbol{S_{cr}}$ denotes set of respondents completing the second-intake in weighting cell *c*.

Exhibit 64 summarizes the numbers of cases with a second-day intake weight and corresponding weighted counts, by treatment status, round, and type of weight.

Exhibit 64: Unweighted and Weighted Counts of Cases with Second Intake Weight by Treatment Group and Type of Weight

Treatment Group		Round 3	
		Person weight	Person-shopper dyad weight
HIP	Respondents	94	94
	Weighted Count	6,861	6,859
NON-HIP	Respondents	110	109
	Weighted Count	44,103	44,168
Total	Respondents	204	203
	Weighted Count	50,964	51,028

5. Non-Response Bias Analysis

As specified in the Standards and Guidelines for Statistical Surveys published by the Office and Management and Budget (September 2006)[2], a non-response bias analysis is required if the overall unit response rate for a survey is less than 80 percent (Guideline 3.2.9). For each of the three rounds of the survey of SNAP participants conducted for the HIP evaluation study, non-response could occur either (1) prior to determining eligibility (e.g., the sampled person could not be contacted or located); or (2) after determining eligibility (e.g., the sampled person was located and eligibility was determined, but the person did not complete in the survey). Thus, the overall response rate for each round of the SNAP participant surveys is simply the product of the response rates associated with the two phases of data collection described above. For the baseline survey conducted in Round 1, the round-specific response rate is also the overall unconditional response rate. For Rounds 2 and 3, however, the round-specific response rates are conditional response rates because they apply to the subset of respondents that completed the survey in the previous round. To obtain the overall (unconditional) response rates for Rounds 2 and 3, the round-specific conditional response rates must be multiplied by the corresponding overall (unconditional) response rates from the prior round. The relevant components of the response rates achieved in the HIP evaluation study are summarized in Exhibit 65 by round and treatment status.

Exhibit 65: Response Rates by Round and Treatment Status

Round	Component	Unweighted		Weighted[a]	
		HIP	Non-HIP	HIP	Non-HIP
1	Phase 1 (prior to eligibility determination)	85.2%	85.8%	84.8%	85.4%
	Phase 2 (after eligibility determination)	74.0%	74.5%	73.1%	73.5%
	Round 1 response rate (unconditional)	63.0%	64.0%	62.0%	62.8%
2	Phase 1 (prior to eligibility determination)	97.6%	97.5%	97.4%	97.2%
	Phase 2 (after eligibility determination)	86.2%	84.6%	86.1%	84.5%
	Round 2 response rate (conditional on completing Round 1)	84.1%	82.5%	83.8%	82.1%
	Unconditional Round 2 response rate (Round 1*Round 2 conditional)	53.0%	52.8%	51.9%	51.5%
3	Phase 1 (prior to eligibility determination)	96.9%	96.3%	96.7%	96.3%
	Phase 2 (after eligibility determination)	84.3%	83.4%	84.3%	83.2%
	Round 3 response rate (conditional on completing Rounds 1 & 2)	81.7%	80.3%	81.5%	80.2%
	Unconditional Round 3 response rate (Round 2 unconditional*Round 3 conditional)	43.3%	42.4%	42.3%	41.3%

[a]For Round 1, weights are the (poststratified) base weights. For Round 2, weights are the non-response-adjusted Round 1 weights. For Round 3, weights are the non-response-adjusted Round 2 weights.

For Round 1 of the SNAP participant survey (i.e., the baseline survey), the weighted[3] first-phase response rates for the HIP and non-HIP treatment groups were 84.8 percent and 85.4 percent,

[2] http://www.whitehouse.gov/sites/default/files/omb/inforeg/statpolicy/standards_stat_surveys.pdf

[3] OMB guideline 3.2.1 states that response rates should computed on both an unweighted and weighted basis, using weights that reflect probabilities of selection under the sample design. Weighted response rates are relevant because they provide an estimate of the response rates that would have been achieved if attempts were made to survey the entire (rather than a sample of the) population of SNAP participants.

respectively, where the weights are the post-stratified base weights described in Section 5.1 below. The corresponding weighted second-phase response rates were 73.1 percent and 73.5 percent, respectively, where the weights are the first-phase non-response adjusted weights described below. The second-phase response rates are "conditional" response rates because they apply to the subset of sampled persons for whom eligibility for the study was ascertained in the first phase of data collection. The overall weighted Round 1 response rates for the HIP and non-HIP groups are therefore 62.0 percent (= 84.8% x 73.1%) and 62.8 percent (= 85.4% x 73.5%), respectively.

For Round 2 of the participant surveys, the weighted conditional first-phase response rates were 97.4 percent for the HIP group and 97.2 percent for the non-HIP group. The corresponding second-phase response rates were 86.1 percent and 84.5 percent for the HIP and non-HIP groups, respectively. Thus, the overall conditional response rates for Round 2 are 83.8 percent (= 97.4% x 86.1%) for the HIP group and 82.1 percent (= 97.2% x 84.5%) for the non-HIP group. These response rates are conditional response rates because they apply to the set of respondents that completed the baseline survey at Round 1. The weights used in the calculation of the Round 2 response rates are the final (non-response-adjusted) weights from Round 1. The overall (unconditional) weighted response rate for Round 2 is the product of the Round 1 response rate and the corresponding Round 2 conditional response rate. For the HIP treatment group, the overall (unconditional) weighted response rate for Round 2 is 51.9 percent. For the non-HIP group, the overall weighted response rate for Round 2 is 51.5 percent.

For Round 3 of the participant surveys, the weighted conditional first-phase response rates were 96.7 percent for the HIP group and 96.3 percent for the non-HIP group. The corresponding second-phase response rates were 84.3 percent and 83.2 percent for the HIP and non-HIP groups, respectively. Thus, the overall conditional response rates for Round 3 were 81.5 percent (= 96.7% x 84.3%) for the HIP group and 80.2 percent (= 96.3% x 83.2%) for the non-HIP group. The weights used in the calculation of the Round 3 response rates are the final (non-response-adjusted) weights from Round 2. The overall (unconditional) weighted response rate for Round 3 is the product of the Round 2 unconditional response rate and the corresponding Round 3 conditional response rate. For the HIP treatment group, the overall (unconditional) weighted response rate for Round 3 is 42.3 percent. For the non-HIP group, the overall (unconditional) weighted response rate for Round 3 is 41.3 percent.

In the remainder of this chapter, we present the findings of an analysis of non-response in each of the three rounds of the participant surveys. The main goals of the analysis are to: (1) document the variation in response rates for selected subsets of the sample; (2) evaluate the extent to which the final (non-response adjusted) sampling weights developed for analysis may be effective in countering the effects of the differential response rates on weighted distributions of the sample; and (3) assess the impact the differential response rates may have on estimates derived from the survey. A key component of the analysis is the specification of weighting classes within which adjustments for non-response are applied. To the extent that the adjustment classes formed for weighting purposes are correlated with both response propensity and survey responses, we can expect reductions in the non-response bias of survey estimates that are derived using the non-response-adjusted weights (Kalton, 1963).

This chapter is divided into four sections. The first section provides details of a non-response bias analysis for Round 1 of the participant surveys. The corresponding results for Rounds 2 and 3 are

presented in the second and third, respectively. The final section provides a brief summary and conclusions.

5.1 Non-Response Bias Analysis for Round 1

This section discusses non-response at Round 1 or baseline, prior to HIP implementation.

Response Rates by Selected Characteristics (Round 1)

To examine the extent to which missing data resulting from non-response were "missing at random," we calculated response rates for subsets of the sample based on selected characteristics available in the sampling frame. These included household-level characteristics (e.g., size of household, presence of children or elderly, housing type, amount of SNAP benefit, income category, and others), and selected person-level characteristics (e.g., age, sex, race/ethnicity, disability status, and others).

First-Phase Response Rates (Round 1)

The first-phase response rates for Round 1 are summarized in Exhibits 66 and 67, for the HIP and non-HIP samples, respectively. These response rates apply to the initial phase of survey operations in which attempts were made to locate and determine the eligibility status of the sampled persons. It can be seen in the first row of Exhibit 66 that of the 2,395 persons selected for the HIP sample, 139 were determined to be out-of-scope (no longer in SNAP), and of the remaining 2,256 persons, eligibility status was ascertained for 1,921 persons, for an unweighted first-phase response rate of 85.2 percent. The corresponding weighted response rate (using the post-stratified base weight) is 84.8 percent. The weighted response rate is relevant because it is used to derive the required non-response weight adjustments. Similarly, from Exhibit 67, it can be seen that of the 2,385 persons selected for the non-HIP sample, 127 were determined to be out-of-scope (no longer in SNAP), and of the remaining 2,258 persons, eligibility status was ascertained for 1,938 persons, for an unweighted first-phase response rate of 85.8 percent and a weighted response rate of 85.4 percent.

It can also be seen in Exhibit 66 and Exhibit 67 that the first-phase response rates vary by many of the characteristics listed in the tables. The last column of the tables shows the p-value of a test of association between response status and each of the characteristics. A p-value less than 0.05 indicates that the (weighted) response rates vary significantly across the various levels of the given characteristic.[4] For example, within the HIP sample (Exhibit 66), the first-phase response rates were found to vary significantly by location, wave, monthly SNAP benefit, monthly income, homeless status, housing type, age of household head, race/ethnicity of household head, citizenship status of household head and of sampled respondent, household type, gender, age of sampled person, race/ethnicity of sampled person, and household size. Many of these variables were also significantly associated with response status for the non-HIP sample (Exhibit 67) with some exceptions (e.g., unlike the HIP sample, response rates for the non-HIP sample did not vary significantly by location or citizenship status of household head).

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[4] The p-values presented in this and related tables correspond to individual tests for each of the 26 specified characteristics (many of which are correlated). Given the somewhat exploratory nature of the analysis, we did not conduct a "global" test to examine all 26 characteristics simultaneously. To account for the multiple simultaneous comparisons, a conservative adjustment such as the Bonferroni adjustment can be applied to the results in the table (e.g., see Neter, Wasserman, Kutner, 1985).

Second-Phase Response Rates (Round 1)

As summarized in Exhibit 68 (HIP) and Exhibit 69 (non-HIP), the second-phase (conditional) response rates apply to those cases in the sample for which eligibility for the study was ascertained in the initial phase of survey operations. As indicated earlier, eligibility was ascertained for 1,921 persons in the HIP sample, and for 1,938 persons in the non-HIP sample. Of the 1,921 cases in the HIP sample, 46 were found to be ineligible (institutionalized, no longer in area, not in SNAP, etc.), 1,388 completed the baseline survey and 487 were eligible but did not complete the survey, for an unweighted second-phase response rate of 74.0 percent and a weighted response rate (using the first-phase non-response-adjusted weights constructed for Round 1) of 73.1 percent (column 7 of Exhibit 68). Of the 1,938 cases in the non-HIP sample, 65 were found to be ineligible, 1,396 completed the baseline survey and 477 were eligible but did not complete the survey, for an unweighted second-phase response rate of 74.5 percent and a weighted response rate (using the first-phase non-response-adjusted weights constructed for Round 1) of 73.5 percent (column 7 of Exhibit 69).

For the HIP sample (Exhibit 68), the second phase response rates varied significantly (p-value < 0.05) for nine of the characteristics listed in the table, compared with 15 characteristics for the corresponding first-phase response rates. Similarly, for the non-HIP sample (Exhibit 69), the second phase response rates varied significantly (p-value < 0.05) for eight of the characteristics, compared with 12 characteristics for the corresponding first-phase response rates.

Exhibits 66 and 68 and 67 and 69 present the two components of the response rate separately. The overall response rate is the product of the first- and second-phase response rates given in these tables. For example, for the HIP sample, the overall weighted response rate for Round 1 is 62.0 percent (= 84.8% x 73.1%). For the non-HIP sample, the overall weighted response rate for Round 1 is 62.8 percent (= 85.4% x 73.5%). The overall weighted response rates for selected subgroups are shown in column 8 of Exhibits 68 and 69. The impact of the overall response rates on the weighted distributions of the sample is discussed in the next section.

Comparison of Respondents and Non-Respondents by Selected Characteristics (Round 1)

To examine the combined effect of the first- and second-phase non-response on weighted distributions of the sample, we compared the (post-stratified) base-weighted distributions of the respondents and non-respondents for the same set of characteristics listed in Exhibits 66 and 67. The base-weighted distributions of *responding* households (respondent sample) were compared with the corresponding base-weighted distributions of the *total* sample to obtain a measure of the potential impact of non-response on the survey-based estimates. These comparisons, which are presented in Exhibit 70 for the HIP sample and Exhibit 71 for the non-HIP sample, provide an alternative way of documenting the variation in response rates across various subgroups of the sample. The p-value shown in the *sixth* column of these tables corresponds to an overall test of the hypothesis that the base-weighted distribution of the respondent sample is the same as the distribution of the total sample for the given characteristic. We applied a two-way contingency table test, using adjusted Rao-Scott statistic to account for the complex sample design. A p-value of 0.05 or less indicates that the two distributions are significantly different, which implies that the distribution of respondents is significantly different from that of the non-respondents. Shown in the fifth column of the tables is an estimate of the relative bias of the estimated percentage of a particular level of a characteristic if no adjustment is made to the base weights to compensate for non-response. (The tests associated with the p-values shown in the *last* column of this table are discussed below.)

Overall, there are significant differences between the distributions of the respondents and non-respondents for nine of the characteristics for the HIP sample (Exhibit 70), and nine of the characteristics for the non-HIP sample (Exhibit 71), with only wave, citizenship status, and gender common to both groups. For both the HIP and non-HIP samples, relatively more persons in the respondent sample (column 3) are in waves 2 and 3 than in the total sample (column 2), and relatively fewer persons in the respondent sample are in wave 1 than in the total sample, reflecting the generally lower response rates achieved in wave 1. Similarly, the percentage of females in the respondent sample is higher than the percentage in the total sample for both HIP and non-HIP samples, indicating the generally higher response rates achieved for females. For those characteristics for which there are appreciable distributional differences between the respondents and the total sample, estimates for survey items that are correlated with these characteristics can potentially be biased unless steps are taken to compensate for these differences.

Comparisons Before and After Non-Response Adjustment for Selected Distributions (Round 1)

As described in Chapter 2, adjustments were made to the (poststratified) base weights to compensate for any distributional differences resulting from differential response rates. These non-response-adjusted weights are the final weights used to derive the survey-based estimates from Round 1. The last three columns of Exhibit 70 (HIP) and Exhibit 71 (non-HIP) summarize results related to weighted distributions of the respondent sample using the non-response-adjusted weights described above. Column 7 of these tables shows the (non-response-adjusted) weighted distributions for the specified characteristics. Column 8 shows the corresponding relative bias. Column 9 shows the p-value for a test comparing the non-response-adjusted weighted distribution in column 7 with the corresponding base-weighted distribution of the total sample in column 2. While significant differences were observed for many characteristics prior to non-response adjustment (see column 6), after non-response adjustment, the differences for all of these characteristics have essentially disappeared as can be seen by the small relative biases in column 8 and the non-significant p-values in column 9. In other words, for both HIP and non-HIP samples, the non-response adjustments used to develop the final weights for analysis were effective in realigning the weighted distributions of the respondent sample to the corresponding distributions of the total (selected) sample prior to losses resulting from non-response.

Comparisons Before and After Non-Response Adjustments for Selected Survey Results (Round 1)

The final set of comparisons conducted in the non-response bias analysis for Round 1 involved a comparison of weighted estimates of a limited number of survey items using the base weights and non-response-adjusted weights. The results are summarized in Exhibit 72 and Exhibit 73 for the HIP and non-HIP samples, respectively. The items chosen from the baseline survey included a few categorical variables related to opinions about enjoyment and accessibility of fruits and vegetables, and a few numeric variables related to the number of times certain fruits or vegetables were reported to have been consumed. In these tables, the statistics related to the categorical variables are presented as percentages and those related to the numeric variables are presented as means (averages). In view of the discussion in the preceding sections, weighted estimates derived from the survey using the non-response-adjusted weights are expected to be less biased than those using the corresponding unadjusted base weights. Hence the relative bias—shown in column 4 of the tables—treats the non-response-adjusted estimates as "unbiased" estimates against which the unadjusted (base-weighted)

estimates can be compared. The *p*-value shown in the last column of these tables corresponds to a test of the hypothesis that there is no difference between the unadjusted estimate in column 2 and the corresponding non-response-adjusted estimate in column 3.

The technique we used to reflect the dependence of the observations when comparing the different weighted estimates was to make separate weighted data files corresponding to the weighted estimates being compared, and then to concatenate (i.e., "stack") them for input into appropriate SAS procedures for analysis. For example, suppose we are interested in comparing estimates derived from the set of respondents using the nonresponse-adjusted weights (call this Method 1) versus estimates derived from the total (original) sample using the base weights (call this Method 2). The first data file (corresponding to Method 1) would then contain relevant data elements and the full-sample *nonresponse-adjusted* weights and replicate weights for the respondent sample. The second data file (corresponding to Method 2) would contain the same data elements as the first file, but with the full-sample *base* weights and replicate weights for the total sample. The two files are then stacked together, resulting in a file that contains approximately twice as many records as either of the individual files. The same variable names for the full-sample weight (WT0) and replicate weights (WT1, WT2, ..., WT100) are used in the stacked data file, but are populated with the values of the weights corresponding to the respective method. (This is because the available SAS procedures cannot simultaneously analyze data sets with two different sets of survey weights under different names.) The stacked data set can then be used to compare a weighted estimate from Method 1, $y_{FS}^{meth\ 1}$, with the corresponding weighted estimate from Method 2, $y_{FS}^{meth\ 2}$, using the jackknife option in SAS PROCs such as SURVEYFREQ or SURVEYMEANS.

Among the 18 statistics considered in these tables, the difference between the unadjusted and non-response-adjusted estimates is generally small and differed significantly (p-value < 0.05) for only two of the items reported by the HIP sample and for only one item reported by the non-HIP sample. Despite the similarity of the estimates for both HIP and non-HIP samples, the potential for bias exists, and use of the non-response-adjusted weights to analyze the survey data may help reduce biases that may occur for statistics not considered in this analysis.

5.2 Non-Response Bias Analysis for Round 2

This section discusses non-response at Round 2.

Response Rates by Selected Characteristics (Round 2)

To examine the extent to which missing data resulting from non-response were "missing at random" in Round 2, we repeated the analyses described earlier in Section 5.1. As in Round 1, non-response could occur either before contact is made with the sampled person (phase 1) or after contact is made with the sampled person or knowledgeable household member (phase 2). The response rates for Round 2 are conditional response rates because they apply to the set of respondents from Round 1.

First-Phase Response Rates (Round 2)

The first-phase (conditional) response rates for Round 2 are summarized in Exhibits 74 and 75 for the HIP and non-HIP samples, respectively. These response rates apply to the initial phase of survey operations in which attempts were made to locate and determine the eligibility status of those respondents from Round 1 who were carried over into Round 2. It can be seen in the first row of Exhibit 74 that of the 1,388 persons selected for the HIP sample in Round 2, 160 were determined to

be out-of-scope (no longer in SNAP), and of the remaining 1,228 persons, eligibility status was ascertained for 1,199 persons, for an unweighted first-phase (conditional) response rate of 97.6 percent. The corresponding weighted response rate (using the final Round 1 non-response-adjusted weight) is 97.4 percent. The weighted response rate is relevant because it is used to derive the required non-response weight adjustments for Round 2. Similarly, from Exhibit 75, it can be seen that of the 1,396 persons selected for the non-HIP sample, 151 were determined to be out-of-scope (no longer in SNAP), and of the remaining 1,245 persons, eligibility status was ascertained for 1,214 persons, for an unweighted first-phase response rate of 97.5 percent and a weighted response rate of 97.2 percent.

It can also be seen in Exhibit 74 and Exhibit 75 that the first-phase response rates vary by many of the characteristics listed in the tables. The last column of the tables shows the p-value of a test of association between response status and each of the characteristics. A p-value less than 0.05 indicates that the (weighted) response rates vary significantly across the various levels of the given characteristic. For example, within the HIP sample (Exhibit 74), the first-phase response rates were found to vary significantly by age and race/ethnicity of the household head, and by gender, age, and race/ethnicity of the sampled person. Within the non-HIP sample (Exhibit 75), the first-phase response rates were found to vary significantly by wave, monthly income, homeless status, housing type, age of head of household, Social Security status, and age of the sampled person.

Second-Phase Response Rates (Round 2)

As summarized in Exhibit 76 (HIP) and Exhibit 77 (non-HIP), the second-phase response rates apply to those cases in the sample for which eligibility for the study was ascertained in the initial phase of survey operations. As indicated earlier, eligibility was ascertained for 1,199 persons in the HIP sample, and for 1,214 persons in the non-HIP sample. Of the 1,199 cases in the HIP sample, 28 were found to be ineligible (institutionalized, no longer in area, not in SNAP, etc.), 1,009 completed the Round 2 survey and 162 were eligible but did not complete the survey, for an unweighted second-phase response rate of 86.2 percent and a weighted response rate (using the first-phase non-response-adjusted weights constructed for Round 2 of 86.1 percent (column 7 of Exhibit 76). Of the 1,214 cases in the non-HIP sample, 36 were found to be ineligible, 997 completed the Round 2 survey and 181 were eligible but did not complete the survey, for an unweighted second-phase response rate of 84.6 percent and a weighted response rate (using the first-phase non-response-adjusted weights constructed for Round 2) of 84.5 percent (column 7 of Exhibit 77).

For the HIP sample (Exhibit 76), the second phase response rates varied significantly (p-value < 0.05) for four of the characteristics listed in the table, compared with five characteristics for the corresponding first-phase response rates. Similarly, for the non-HIP sample (Exhibit 77), the second phase response rates varied significantly (p-value < 0.05) for only two of the characteristics, compared with seven characteristics for the corresponding first-phase response rates.

Exhibits 74 and 76 and 75 and 77 present the two components of the response rate separately. The overall conditional response rate is the product of the first- and second-phase response rates given in these tables. For example, for the HIP sample, the overall weighted conditional response rate for Round 2 is 83.8 percent (= 97.4% x 86.1%). For the non-HIP sample, the overall weighted conditional response rate for Round 2 is 82.1 percent (= 97.2% x 84.5). The corresponding weighted response rates for selected subgroups are shown in column 8 of Exhibits 76 and 77. The impact of the response rates on the weighted distributions of the sample is discussed in the next section.

Comparison of Respondents and Non-Respondents by Selected Characteristics (Round 2)

To examine the combined effect of the first- and second phase non-response on weighted distributions of the sample, we compared the weighted distributions of the respondents and non-respondents for the same set of characteristics listed in Exhibits 74 and 75. The weights used here are the final non-response-adjusted weights from Round 1 which act as "base weights" in this analysis. The base-weighted distributions of *responding* households (respondent sample) were compared with the corresponding base-weighted distributions of the *total* sample to obtain a measure of the potential impact of non-response on the survey-based estimates. These comparisons, which are presented in Exhibit 78 for the HIP sample and Exhibit 79 for the non-HIP sample, provide an alternative way of documenting the variation in response rates across various subgroups of the sample. The p-value shown in the *sixth* column of these tables corresponds to an overall test of the hypothesis that the base-weighted distribution of the respondent sample is the same as the distribution of the total sample for the given characteristic. A p-value of 0.05 or less indicates that the two distributions are significantly different, which implies that the distribution of respondents is significantly different from that of the non-respondents. Shown in the fifth column of the tables is an estimate of the relative bias of the estimated percentage of a particular level of a characteristic if no adjustment is made to the base weights to compensate for non-response. (The tests associated with the p-values shown in the *last* column of this table are discussed below.)

Overall, there are significant differences between the distributions of the respondents and non-respondents for four of the characteristics (two of which relate to citizenship status and are highly correlated) for the HIP sample (column 6 of Exhibit 78), and only one of the characteristics for the non-HIP sample (column 6 of Exhibit 79). For the HIP sample, relatively fewer persons in the respondent sample (column 3) were semiannual reporters, non US citizens, and non RSDI compared with the total sample (column 2). For the non-HIP sample, relatively more persons in the respondent sample (column 3) were in wave 2 and were disabled than in the total sample (column 2). The small number of significant differences in column 6 of Exhibits 78 and 79 suggests that much of the variation in response rates in Round 2 had been accounted for in the weighting adjustments from Round 1.

Comparisons Before and After Non-Response Adjustment for Selected Distributions (Round 2)

As described in detail in Chapter 3, adjustments were made to the non-response-adjusted weights from Round 1 to compensate for any distributional differences resulting from differential response rates in Round 2. These non-response-adjusted weights (referred to as the final Round 2 weights) are the weights used to derive the survey-based estimates from Round 2. The last three columns of Exhibit 78 (HIP) and Exhibit 79 (non-HIP) summarize results related to weighted distributions of the respondent sample using the final Round 2 weights. Column 7 of these tables shows the weighted distributions for the specified characteristics. Column 8 shows the corresponding relative bias. Column 9 shows the p-value for a test comparing the weighted distribution in column 7 (using the final Round 2 weights) with the corresponding weighted distribution of the total sample in column 2 (using the final weights from Round 1).

For the HIP sample, RSDI status and the two citizenship variables remained significant after non-response adjustment; however, there seems to be little practical difference between the post-adjustment and unadjusted distributions despite the statistical significance. Recertification type,

which was highly significant prior to adjustment, was no longer significant after non-response adjustment. For the non-HIP sample, none of the variables considered were significant after non-response adjustment.

Comparisons Before and After Non-Response Adjustments for Selected Survey Results (Round 2)

The final set of comparisons conducted in the non-response bias analysis for Round 2 involved a comparison of weighted estimates of a limited number of survey items using the final weights from the Round 1 and the corresponding non-response-adjusted weights developed for Round 2. The results are summarized in Exhibit 80 and Exhibit 81 for the HIP and non-HIP samples, respectively. The items chosen from the Round 2 surveys included the same items chosen from Round 1 (i.e., a few categorical variables related to opinions about enjoyment and accessibility of fruits and vegetables and a few numeric variables related to the number of times certain fruits or vegetables were reported to have been consumed) as well as selected intake variables from the AMPM. In these tables, as in the Round 1 tables, the statistics related to the categorical variables are presented as percentages and those related to the numeric variables are presented as means (averages). In view of the discussion in the preceding sections, weighted estimates derived from the survey using the non-response-adjusted weights are expected to be less biased than those using the corresponding unadjusted weights. Hence the relative bias shown in column 4 of the tables treats the non-response-adjusted estimates from Round 2 as "unbiased" estimates against which the unadjusted estimates can be compared. The *p*-value shown in the last column of these tables corresponds to a test of the hypothesis that there is no difference between the unadjusted estimate in column 2 and the corresponding non-response-adjusted estimate in column 3.

Among the 28 statistics considered in these tables, the difference between the unadjusted and non-response-adjusted estimates is generally small and differed significantly (p-value < 0.05) for only four of the items reported by the HIP sample (Exhibit 80) and for none of the items reported by the non-HIP sample (Exhibit 81). The similarity of the estimates suggests that for many of the variables collected in the Round 2 survey, including many of the nutrient items derived from the AMPM, estimates may not be affected appreciably by the level of non-response experienced in Round 2 of the study. However, the potential for bias exists, and use of the non-response-adjusted weights to analyze the survey/AMPM data may help reduce biases that may occur for statistics not considered in this analysis.

5.3 Non-Response Bias Analysis for Round 3

This section discusses non-response at Round 3.

Response Rates by Selected Characteristics (Round 3)

To examine the extent to which missing data resulting from non-response were "missing at random" in Round 3, we repeated the analyses described earlier in Sections 5.1 and 5.2. As in the two previous rounds, non-response could occur either before contact is made with the sampled person (phase 1) or after contact is made with the sampled person or knowledgeable household member (phase 2). The response rates for Round 3 are conditional response rates because they apply to the set of respondents from Round 2.

First-Phase Response Rates (Round 3)

The first-phase (conditional) response rates for Round 3 are summarized in Exhibits 82 and 83, for the HIP and non-HIP samples, respectively. These response rates apply to the initial phase of survey operations in which attempts were made to locate and determine the eligibility status of those respondents from Round 2 who were carried over into Round 3. It can be seen in the first row of Exhibit 82 that of the 1,009 persons selected for the HIP sample in Round 3, 82 were determined to be out-of-scope (no longer in SNAP), and of the remaining 927 persons, eligibility status was ascertained for 898 persons, for an unweighted first-phase (conditional) response rate of 96.9 percent. The corresponding weighted response rate (using the final Round 2 non-response-adjusted weight) is 96.7 percent. The weighted response rate is relevant because it is used to derive the required non-response weight adjustments for Round 3. Similarly, from Exhibit 83, it can be seen that of the 997 persons selected for the non-HIP sample, 72 were determined to be out-of-scope (no longer in SNAP), and of the remaining 925 persons, eligibility status was ascertained for 891 persons, for an unweighted first-phase response rate of 96.3 percent and a weighted response rate of 96.3 percent.

It can also be seen in Exhibit 82 and Exhibit 83 that the first-phase response rates vary by some of the characteristics listed in the tables. The last column of the tables shows the p-value of a test of association between response status and each of the characteristics. A p-value less than 0.05 indicates that the (weighted) response rates vary significantly across the various levels of the given characteristic. For example, within the HIP sample (Exhibit 82), the first-phase response rates were found to vary significantly by location, wave, RSDI status, and age of the sampled person. For non-HIP sample (Exhibit 83), the first-phase response rates were found to vary significantly only by SSI status.

Second-Phase Response Rates (Round 3)

As summarized in Exhibit 84 (HIP) and Exhibit 85 (non-HIP), the second-phase response rates apply to those cases in the sample for which eligibility for the study was ascertained in the initial phase of survey operations. As indicated earlier, eligibility was ascertained for 898 persons in the HIP sample, and for 891 persons in the non-HIP sample. Of the 898 cases in the HIP sample, 11 were found to be ineligible (institutionalized, no longer in area, not in SNAP, etc.), 748 completed the Round 3 survey and 139 were eligible but did not complete the survey, for an unweighted second-phase response rate of 84.3 percent and a weighted response rate (using the first-phase non-response-adjusted weights constructed for Round 3) of 84.3 percent (column 7 of Exhibit 84). Of the 891 cases in the non-HIP sample, 13 were found to be ineligible, 732 completed the Round 3 survey and 146 were eligible but did not complete the survey, for an unweighted second-phase response rate of 83.3 percent and a weighted response rate (using the first-phase non-response-adjusted weights constructed for Round 3) of 83.2 percent (column 7 of Exhibit 85).

For the HIP sample (Exhibit 84), the second-phase response rates varied significantly (p-value < 0.05) for four of the characteristics listed in the table. For the non-HIP sample (Exhibit 85), the second phase response rates varied significantly (p-value < 0.05) only for the two (highly correlated) citizenship variables.

Exhibits 82 and 84 and 83 and 85 present the two components of the response rate separately. The overall conditional response rate is the product of the first- and second-phase response rates given in these tables. For example, for the HIP sample, the overall weighted response rate for Round 3 is 81.5 percent (= 96.7% x 84.3%). For the non-HIP sample, the overall weighted response rate for Round 3

is 80.2 percent (= 96.3% x 83.2%). The overall weighted response rates for selected subgroups are shown in column 8 of Tables 84 and 85. The impact of the response rates on the weighted distributions of the sample is discussed in the next section.

Comparison of Respondents and Non-Respondents by Selected Characteristics (Round 3)

To examine the combined effect of the first- and second phase non-response on weighted distributions of the sample, we compared the weighted distributions of the respondents and non-respondents for the same set of characteristics listed in Exhibits 82 and 83. The weights used here are the final non-response-adjusted weights from Round 2 which act as "base weights" in this analysis. The base-weighted distributions of *responding* households (respondent sample) were compared with the corresponding base-weighted distributions of the *total* sample to obtain a measure of the potential impact of non-response on the survey-based estimates from Round 3. These comparisons, which are presented in Exhibit 86 for the HIP sample and Exhibit 87 for the non-HIP sample, provide an alternative way of documenting the variation in response rates across various subgroups of the sample. The p-value shown in the *sixth* column of these tables corresponds to an overall test of the hypothesis that the base-weighted distribution of the respondent sample is the same as the distribution of the total sample for the given characteristic. A p-value of 0.05 or less indicates that the two distributions are significantly different, which implies that the distribution of respondents is significantly different from that of the non-respondents. Shown in the fifth column of the tables is an estimate of the relative bias of the estimated percentage of a particular level of a characteristic if no adjustment is made to the base weights to compensate for non-response. (The tests associated with the p-values shown in the *last* column of this table are discussed below.)

Overall, there are significant differences between the distributions of the respondents and non-respondents for only four of the characteristics for the HIP sample (Exhibit 86), and the citizenship status variable(s) for the non-HIP sample (Exhibit 87). For the HIP sample, relatively more persons in the respondent sample (column 3) resided in Chicopee/Holyoke, were homeless, received RSDI, or received unemployment compensation than in the total sample (column 2). For the non-HIP sample, relatively more persons in the respondent sample (column 3) were US citizens than in the total sample (column 2). The small number of significant differences in column 6 of Exhibits 86 and 87 suggests that much of the variation in response rates in Round 3 may have been accounted for in the weighting adjustments from Rounds 1 and 2.

Comparisons Before and After Non-Response Adjustment for Selected Distributions (Round 3)

As described in detail in Chapter 4, adjustments were made to the non-response-adjusted weights from Round 2 to compensate for any distributional differences resulting from differential response rates in Round 3. These non-response-adjusted weights (referred to as the final Round 3 weights) are the weights used to derive the survey-based estimates from Round 3. The last three columns of Exhibit 86 (HIP) and Exhibit 87 (non-HIP) summarize results related to weighted distributions of the respondent sample using the final Round 3 weights. Column 7 of these tables shows the weighted distributions for the specified characteristics. Column 8 shows the corresponding relative bias. Column 9 shows the p-value for a test comparing the weighted distribution in column 7 (using the final Round 3 weights) with the corresponding weighted distribution of the total sample in column 2 (using the final weights from Round 2). Although a small number of differences remained statistically significant after non-response adjustment (column 9 of Exhibits 86 and 87), there was little practical

difference between the unadjusted and post-adjustment estimates for the vast majority of characteristics given in the tables.

Comparisons Before and After Non-Response Adjustments for Selected Survey Results (Round 3)

The final set of comparisons conducted in the non-response bias analysis for Round 3 involved a comparison of weighted estimates of a limited number of survey items using the final weights from Round 2 and the corresponding non-response-adjusted weights developed for Round 3. The results are summarized in Exhibit 88 and Exhibit 89 for the HIP and non-HIP samples, respectively. The items chosen from the Round 3 surveys included the same items from Round 2 (i.e., a few categorical variables related to opinions about enjoyment and accessibility of fruits and vegetables, a few numeric variables related to the number of times certain fruits or vegetables were reported to have been consumed, and selected intake variables from the AMPM). In these tables, as with the Round 1 and Round 2 tables, the statistics related to the categorical variables are presented as percentages and those related to the numeric variables are presented as means (averages). In view of the discussion in the preceding sections, weighted estimates derived from the survey using the non-response-adjusted weights are expected to be less biased than those using the corresponding unadjusted weights. Hence the relative bias shown in column 4 of the tables treats the non-response-adjusted estimates from Round 3 as "unbiased" estimates against which the unadjusted estimates can be compared. The *p*-value shown in the last column of these tables corresponds to a test of the hypothesis that there is no difference between the unadjusted estimate in column 2 and the corresponding non-response-adjusted estimate in column 3.

Among the 28 statistics considered in these tables, the difference between the unadjusted and non-response-adjusted estimates is generally small and differed significantly (p-value < 0.05) for four of the items reported by the HIP sample and for two items reported by the non-HIP sample. All of the statistically significant results were for items derived from the Round 3 interview. None of the differences between the unadjusted and adjusted estimates of the mean nutrient intakes from the AMPM were significantly different. While this could indicate that estimates may not be affected appreciably by the level of non-response experienced in Round 3 of the study, the potential for bias exists, and use of the non-response-adjusted weights to analyze the survey/AMPM data may help reduce biases that may occur for statistics not considered in this analysis.

5.4 Summary and Conclusions

The overall weighted response rates for the HIP evaluation samples in Round 1 were 62.0 percent for the HIP treatment group and 62.8 percent for the non-HIP group. For Round 2, the overall weighted (conditional) response rates were 83.8 percent for the HIP treatment group and 82.1 percent for the non-HIP group. For Round 3, the overall weighted (conditional) response rates were 81.5 percent for the HIP treatment group and 80.2 percent for the non-HIP group. For the HIP sample, response rates varied significantly by wave, disability status of household head, citizenship status of household head, unearned income status, and others (see column 6 of Exhibits 70, 78, and 86 for a complete list of the significant characteristics). For the non-HIP sample, response rates varied significantly by location, wave, race/ethnicity of household head, citizenship status of household head, TANF/AFDC status, and others (see column 6 of Exhibit 71, 79, and 87 for a complete list of the significant characteristics). To compensate for the differential survey response rates in each round, weight adjustments were developed and used to derive final round-specific weights using a CHAID analysis

to identify appropriate weight adjustment classes. In general, such weight adjustments will reduce non-response bias if the variables used in forming the weight adjustment classes are correlated with response propensity (the probability that a sampled person will respond to the survey) and with the characteristics obtained from the survey.

There are reasons to believe that the non-response-adjusted weights developed for the HIP evaluation surveys are reasonably effective in reducing potential biases. First, the weight adjustments removed virtually all of the disparities between the weighted distributions of the respondents and the corresponding distributions of the total sample. Second, we compared unadjusted and adjusted estimates for a limited number of items collected in all three surveys, and found significant differences in a small number of instances, suggesting a potential for bias reductions when the non-response-adjusted weights are used in analysis. Short of conducting a comprehensive follow-up study of the non-respondents, there is no direct way of assessing the potential biases arising from survey non-response. The types of indirect analyses conducted in this evaluation do suggest, however, that non-response biases can be reduced to some extent through the use of the non-response-adjusted weights developed for this study.

Exhibit 66: Comparison of First-Phase Response Rates by Selected Characteristics of the HIP Sample in Round 1

Characteristic[a]	Round 1 sample sizes by Phase 1 response status				First-phase response rate		P-value[e]
	Total	Eligibility status determined	Eligibility status unknown	Out of scope[b]	Unweighted[c]	Weighted[d]	
1	2	3	4	5	6	7	8
Total sample	2,395	1,921	335	139	85.15	84.76	
Location							0.0047
Springfield	1,250	976	199	75	83.06	82.26	
Chicopee/Holyoke	589	476	80	33	85.61	85.30	
Balance of Hampden	556	469	56	31	89.33	89.70	
Wave of sample release							0.0123
Wave 1	846	730	116	0	86.29	85.55	
Wave 2	846	658	143	45	82.15	81.73	
Wave 3	703	533	76	94	87.52	87.60	
Monthly SNAP benefit							0.0000
$1-$161	550	461	59	30	88.65	88.62	
$162 - $200	795	595	157	43	79.12	78.40	
$201 - $349	327	280	28	19	90.91	91.24	
$350 +	723	585	91	47	86.54	85.97	
Spanish language							0.1396
Yes	521	408	84	29	82.93	82.43	
No	1,874	1,513	251	110	85.77	85.41	
Recertification type							0.1718
Recertification	1,258	1,016	192	50	84.11	83.59	
Semiannual reporting	848	663	98	87	87.12	86.74	
Other reevaluation	289	242	45	2	84.32	84.16	
Monthly income							0.0000
$0	524	386	101	37	79.26	78.07	
$1 - $787	578	462	94	22	83.09	83.19	
$788 - $1,088	526	438	68	20	86.56	86.33	
$1,089 +	767	635	72	60	89.82	89.55	
Baystate cap							0.6503
Yes	162	138	22	2	86.25	86.27	
No	2,233	1,783	313	137	85.07	84.65	
Homeless							0.0000
Yes	135	72	48	15	60.00	57.54	
No	2,260	1,849	287	124	86.56	86.43	

Characteristic[a]	Round 1 sample sizes by Phase 1 response status				First-phase response rate		P-value[e]
	Total	Eligibility status determined	Eligibility status unknown	Out of scope[b]	Unweighted[c]	Weighted[d]	
1	2	3	4	5	6	7	8
Housing type							0.0000
Private	1,933	1,565	255	113	85.99	85.83	
Public	343	294	36	13	89.09	89.25	
Other	119	62	44	13	58.49	55.41	
Household head age							0.0000
16–30	617	450	130	37	77.59	76.94	
31–40	588	474	65	49	87.94	87.23	
41–54	654	528	91	35	85.30	85.24	
55+	536	469	49	18	90.54	90.66	
Household head race/ethnicity							0.0036
Hispanic	1,039	813	164	62	83.21	82.18	
White	888	734	102	52	87.80	88.03	
Black	311	240	51	20	82.47	82.42	
Other	157	134	18	5	88.16	87.87	
Disabled household head							0.7899
Yes	1,137	936	167	34	84.86	84.56	
No	1,258	985	168	105	85.43	84.95	
US citizenship of household head							0.0015
Yes	2,280	1,819	328	133	84.72	84.31	
No	115	102	7	6	93.58	93.55	
TANF/AFDC							0.5077
Yes	367	301	48	18	86.25	85.99	
No	2,028	1,620	287	121	84.95	84.54	
Unearned income							0.1330
Yes	1,417	1,172	190	55	86.05	85.71	
No	978	749	145	84	83.78	83.38	
SSI							0.9556
Yes	734	609	108	17	84.94	84.83	
No	1,661	1,312	227	122	85.25	84.73	
RSDI							0.0692
Yes	599	506	75	18	87.09	86.96	
No	1,796	1,415	260	121	84.48	84.02	

Characteristic[a]	Round 1 sample sizes by Phase 1 response status				First-phase response rate		P-value[e]
	Total	Eligibility status determined	Eligibility status unknown	Out of scope[b]	Unweighted[c]	Weighted[d]	
1	2	3	4	5	6	7	8
Unemployment compensation							0.6849
Yes	123	95	16	12	85.59	86.26	
No	2,272	1,826	319	127	85.13	84.69	
Household type							0.0000
Household with elderly	265	235	21	9	91.80	91.79	
Household with children	1,003	822	112	69	88.01	87.67	
Other household	1,127	864	202	61	81.05	80.56	
Female							0.0002
Yes	1,499	1,260	170	69	88.11	87.81	
No	896	661	165	70	80.02	79.60	
Age of person							0.0000
16–30	851	635	158	58	80.08	79.38	
31–40	475	383	53	39	87.84	87.59	
41–54	553	447	80	26	84.82	84.80	
55+	516	456	44	16	91.20	91.20	
Race/ethnicity							0.0037
Hispanic	1,044	819	163	62	83.40	82.40	
White	882	731	101	50	87.86	88.11	
Black	307	236	52	19	81.94	81.72	
Other	162	135	19	8	87.66	87.38	
US citizenship of sampled person							0.0002
Yes	2,282	1,817	330	135	84.63	84.23	
No	113	104	5	4	95.41	95.22	
Disabled sampled person							0.9552
Yes	1,072	885	156	31	85.01	84.72	
No	1,323	1,036	179	108	85.27	84.80	
Unemployment compensation							0.1123
Yes	118	93	11	14	89.42	89.96	
No	2,277	1,828	324	125	84.94	84.51	
Household size (no. adults 16+)							0.0111
1	1,578	1,254	251	73	83.32	82.79	
2	599	489	62	48	88.75	88.57	
3	172	142	19	11	88.20	88.13	
4 +	46	36	3	7	92.31	91.28	

[a] Household and person characteristics reported in SNAP sampling frame.
[b] Households no longer active in SNAP per DTA updates.
[c] Calculated as R/(R+N), where R = the number of cases for which eligibility status was determined (column 3) and N = the number of cases for which eligibility status was not determined (column 4).
[d] Weighted response rates are calculated using the first-phase nonresponse-adjusted weights.
[e] Test of association between weighted first-phase response rates and selected characteristic using Rao-Scott chi-square test (e.g., see Rao and Scott, 1984).

Exhibit 67: Comparison of First-Phase Response Rates by Selected Characteristics of the non-HIP Sample in Round 1

Characteristic[a]	Round 1 sample sizes by Phase 1 response status				First-phase response rate		P-value[e]
	Total	Eligibility status determined	Eligibility status unknown	Out of scope[b]	Unweighted[c]	Weighted[d]	
1	2	3	4	5	6	7	8
Total sample	2,385	1,938	320	127	85.83	85.35	
Location							0.0747
Springfield	1,242	989	186	67	84.17	83.59	
Chicopee/Holyoke	589	490	73	26	87.03	86.68	
Balance of Hampden	554	459	61	34	88.27	87.86	
Wave of sample release							0.0007
Wave 1	846	695	151	0	82.15	81.31	
Wave 2	846	696	103	47	87.11	86.95	
Wave 3	693	547	66	80	89.23	89.32	
Monthly SNAP benefit							0.0000
$1-$161	557	473	51	33	90.27	90.08	
$162 - $200	781	586	159	36	78.66	77.96	
$201 - $349	317	267	31	19	89.60	89.05	
$350 +	730	612	79	39	88.57	87.98	
Spanish language							0.0602
Yes	556	444	87	25	83.62	82.48	
No	1,829	1,494	233	102	86.51	86.22	
Recertification type							0.0930
Recertification	1,211	986	177	48	84.78	84.20	
Semiannual reporting	854	691	89	74	88.59	87.88	
Other reevaluation	320	261	54	5	82.86	82.93	
Monthly income							0.0000
$0	511	380	98	33	79.50	79.11	
$1 - $787	563	441	96	26	82.12	80.93	
$788 - $1,088	539	462	62	15	88.17	87.32	
$1,089 +	772	655	64	53	91.10	91.35	
Baystate cap							0.5916
Yes	182	149	30	3	83.24	83.48	
No	2,203	1,789	290	124	86.05	85.50	
Homeless							0.0000
Yes	155	91	53	11	63.19	60.21	
No	2,230	1,847	267	116	87.37	87.09	

Characteristic[a]	Round 1 sample sizes by Phase 1 response status				First-phase response rate		P-value[e]
	Total	Eligibility status determined	Eligibility status unknown	Out of scope[b]	Unweighted[c]	Weighted[d]	
1	2	3	4	5	6	7	8
Housing type							0.0000
Private	1,912	1,560	246	106	86.38	86.04	
Public	339	298	28	13	91.41	91.52	
Other	134	80	46	8	63.49	60.69	
Household head age							0.0023
16–30	609	465	107	37	81.29	80.18	
31–40	578	456	77	45	85.55	85.10	
41–54	664	558	72	34	88.57	88.53	
55+	534	459	64	11	87.76	87.38	
Household head race/ethnicity							0.0319
Hispanic	1,073	844	167	62	83.48	82.95	
White	872	732	95	45	88.51	87.98	
Black	271	227	29	15	88.67	88.07	
Other	169	135	29	5	82.32	82.42	
Disabled household head							0.1468
Yes	1,132	925	172	35	84.32	84.04	
No	1,253	1,013	148	92	87.25	86.52	
US citizenship of household head							0.0703
Yes	2,271	1,835	314	122	85.39	84.98	
No	114	103	6	5	94.50	92.44	
TANF/AFDC							0.4049
Yes	390	327	47	16	87.43	86.98	
No	1,995	1,611	273	111	85.51	85.02	
Unearned income							0.5132
Yes	1,394	1,155	184	55	86.26	85.80	
No	991	783	136	72	85.20	84.70	
SSI							0.1283
Yes	736	601	115	20	83.94	83.61	
No	1,649	1,337	205	107	86.71	86.13	
RSDI							0.0270
Yes	597	514	67	16	88.47	88.24	
No	1,788	1,424	253	111	84.91	84.37	

Characteristic[a]	Round 1 sample sizes by Phase 1 response status				First-phase response rate		P-value[e]
	Total	Eligibility status determined	Eligibility status unknown	Out of scope[b]	Unweighted[c]	Weighted[d]	
1	2	3	4	5	6	7	8
Unemployment compensation							0.5644
Yes	114	87	11	16	88.78	87.76	
No	2,271	1,851	309	111	85.69	85.23	
Household type							0.0000
Household with elderly	273	241	27	5	89.93	89.96	
Household with children	992	838	92	62	90.11	89.88	
Other household	1,120	859	201	60	81.04	80.29	
Female							0.0000
Yes	1,472	1,246	160	66	88.62	88.16	
No	913	692	160	61	81.22	80.68	
Age of person							0.0226
16–30	890	687	140	63	83.07	82.37	
31–40	456	367	61	28	85.75	84.87	
41–54	531	444	60	27	88.10	87.90	
55+	508	440	59	9	88.18	88.27	
Race/ethnicity							0.0217
Hispanic	1,076	845	170	61	83.25	82.75	
White	870	732	93	45	88.73	88.17	
Black	275	231	30	14	88.51	87.91	
Other	164	130	27	7	82.80	82.91	
US citizenship of sampled person							0.0609
Yes	2,270	1,834	314	122	85.38	84.97	
No	115	104	6	5	94.55	92.51	
Disabled sampled person							0.2218
Yes	1,049	862	161	26	84.26	84.27	
No	1,336	1,076	159	101	87.13	86.19	
Unemployment compensation							0.8409
Yes	93	71	11	11	86.59	84.29	
No	2,292	1,867	309	116	85.80	85.38	
Household size (no. adults 16+)							0.0033
1	1,533	1,236	233	64	84.14	83.53	
2	595	493	68	34	87.88	87.05	
3	206	164	16	26	91.11	91.01	
4 +	51	45	3	3	93.75	94.46	

[a] Household and person characteristics reported in SNAP sampling frame.
[b] Households no longer active in SNAP per DTA updates.
[c] Calculated as R/(R+N), where R = the number of cases for which eligibility status was determined (column 3) and N = the number of cases for which eligibility status was not determined (column 4).
[d] Weighted response rates are calculated using the first-phase nonresponse-adjusted weights.
[e] Test of association between weighted first-phase response rates and selected characteristic using Rao-Scott chi-square test (e.g., see Rao and Scott, 1984).

Exhibit 68: Comparison of Second-Phase Conditional Response Rates by Selected Characteristics of the HIP Sample in Round 1

Characteristic[a]	Round 1 sample sizes by phase 2 response status				Second-phase response rate		Overall response rate	P-value[f]
	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	
1	2	3	4	5	6	7	8	9
Total sample	1,921	1,388	487	46	74.03	73.09	61.95	
Location								0.2674
Springfield	976	712	239	25	74.87	74.11	60.96	
Chicopee/Holyoke	476	350	114	12	75.43	74.25	63.34	
Balance of Hampden	469	326	134	9	70.87	69.68	62.50	
Wave of sample release								0.0000
Wave 1	730	447	271	12	62.26	60.86	52.07	
Wave 2	658	511	133	14	79.35	79.26	64.78	
Wave 3	533	430	83	20	83.82	83.45	73.10	
Monthly SNAP benefit								0.1811
$1-$161	461	346	101	14	77.40	76.93	68.18	
$162 - $200	595	427	148	20	74.26	73.54	57.66	
$201 - $349	280	197	81	2	70.86	68.94	62.90	
$350 +	585	418	157	10	72.70	71.64	61.59	
Spanish language								0.3536
Yes	408	303	96	9	75.94	75.27	62.05	
No	1,513	1,085	391	37	73.51	72.50	61.92	
Recertification type								0.1296
Recertification	1,016	737	253	26	74.44	74.16	61.95	
Semiannual reporting	663	468	181	14	72.11	70.00	64.28	
Other reevaluation	242	183	53	6	77.54	77.59	62.37	
Monthly income								0.3373
$0	386	264	111	11	70.40	69.35	54.14	
$1 - $787	462	335	111	16	75.11	75.07	62.45	
$788 - $1,088	438	321	108	9	74.83	75.07	64.81	
$1,089 +	635	468	157	10	74.88	72.78	65.17	
Baystate cap								0.5576
Yes	138	101	32	5	75.94	75.97	65.54	
No	1,783	1,287	455	41	73.88	72.87	61.68	
Homeless								0.1536
Yes	72	46	25	1	64.79	63.80	36.71	
No	1,849	1,342	462	45	74.39	73.67	63.67	

Characteristic[a]	Round 1 sample sizes by phase 2 response status				Second-phase response rate		Overall response rate	P-value[f]
	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	
1	2	3	4	5	6	7	8	9
Housing type								0.1125
Private	1,565	1,145	381	39	75.03	74.22	63.61	
Public	294	208	82	4	71.72	70.95	66.14	
Other	62	35	24	3	59.32	60.19	41.06	
Household head age								0.1263
16–30	450	310	131	9	70.29	68.88	53.00	
31–40	474	341	120	13	73.97	73.55	64.16	
41–54	528	394	118	16	76.95	76.24	64.99	
55+	469	343	118	8	74.40	73.52	66.65	
Household head race/ethnicity								0.1134
Hispanic	813	588	208	17	73.87	73.06	60.04	
White	734	526	188	20	73.67	72.63	63.94	
Black	240	187	46	7	80.26	78.79	64.94	
Other	134	87	45	2	65.91	65.11	57.21	
Disabled household head								0.0041
Yes	936	707	209	20	77.18	76.92	65.04	
No	985	681	278	26	71.01	69.58	59.11	
US citizenship of household head								0.0007
Yes	1,819	1,332	442	45	75.08	74.13	62.50	
No	102	56	45	1	55.45	54.56	51.04	
TANF/AFDC								0.2560
Yes	301	226	70	5	76.35	76.33	65.64	
No	1,620	1,162	417	41	73.59	72.49	61.28	
Unearned income								0.0158
Yes	1,172	868	274	30	76.01	75.69	64.87	
No	749	520	213	16	70.94	69.30	57.78	
SSI								0.1979
Yes	609	449	145	15	75.59	75.43	63.99	
No	1,312	939	342	31	73.30	72.04	61.04	
RSDI								0.0014
Yes	506	393	103	10	79.23	79.01	68.71	
No	1,415	995	384	36	72.15	71.06	59.70	
Unemployment compensation								0.4893

Characteristic[a]	Round 1 sample sizes by phase 2 response status				Second-phase response rate		Overall response rate	
	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	P-value[f]
1	2	3	4	5	6	7	8	9
Yes	95	65	26	4	71.43	69.64	60.07	
No	1,826	1,323	461	42	74.16	73.26	62.04	
Household type								0.0799
Household with elderly	235	164	67	4	71.00	70.80	64.99	
Household with children	822	583	225	14	72.15	70.53	61.83	
Other household	864	641	195	28	76.67	76.05	61.27	
Female								0.0436
Yes	1,260	936	303	21	75.54	74.83	65.71	
No	661	452	184	25	71.07	70.01	55.73	
Age of person								0.0075
16–30	635	438	183	14	70.53	68.86	54.66	
31–40	383	270	101	12	72.78	72.40	63.42	
41–54	447	345	90	12	79.31	78.64	66.69	
55+	456	335	113	8	74.78	74.50	67.94	
Race/ethnicity								0.0526
Hispanic	819	592	210	17	73.82	72.91	60.08	
White	731	521	189	21	73.38	72.19	63.61	
Black	236	186	43	7	81.22	80.53	65.81	
Other	135	89	45	1	66.42	65.64	57.36	
US citizenship of sampled person								0.0037
Yes	1,817	1,328	444	45	74.94	73.94	62.28	
No	104	60	43	1	58.25	57.90	55.13	
Disabled sampled person								0.0007
Yes	885	674	191	20	77.92	77.51	65.67	
No	1,036	714	296	26	70.69	69.47	58.91	
Unemployment compensation								0.3317
Yes	93	64	26	3	71.11	68.24	61.39	
No	1,828	1,324	461	43	74.17	73.33	61.97	
Household size (no. adults 16+)								0.4790
1	1,254	908	313	33	74.37	73.75	61.06	
2	489	345	133	11	72.18	70.69	62.61	
3	142	104	36	2	74.29	72.29	63.71	
4 +	36	31	5	0	86.11	82.80	75.58	

[a] Household and person characteristics reported in SNAP sampling frame.
[b] Ineligible for Round 1 per survey (e.g., no longer in SNAP, institutionalized, not a resident of Hampden County, deceased, etc.)
[c] Calculated as R/(R+N), where R = the number of eligible respondents (column 3) and N = the number of eligible non-respondents (column 4).
[d] Weighted response rates are calculated using the first-phase nonresponse-adjusted weights.
[e] Product of weighted first- and second-phase response rates.
[f] Test of association between weighted second-phase response rates and characteristic using Rao-Scott chi-square test (e.g., see Rao and Scott, 1984).

Exhibit 69: Comparison of Second-Phase Conditional Response Rates by Selected Characteristics of the non-HIP Sample in Round 1

	Unadjusted weights					Non-response-adjusted weights		
	Percent distributions			Relative bias		Percent distributions	Relative bias	
Characteristic[a]	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	P-value[f]
1	2	3	4	5	6	7	8	9
Total sample	1,938	1,396	477	65	74.53	73.53	62.76	
Location								0.0014
Springfield	989	733	225	31	76.51	75.21	62.87	
Chicopee/Holyoke	490	363	108	19	77.07	76.74	66.52	
Balance of Hampden	459	300	144	15	67.57	66.48	58.41	
Wave of sample release								0.0000
Wave 1	695	464	217	14	68.14	66.13	53.77	
Wave 2	696	521	145	30	78.23	78.22	68.01	
Wave 3	547	411	115	21	78.14	77.84	69.53	
Monthly SNAP benefit								0.2905
$1-$161	473	342	116	15	74.67	75.02	67.58	
$162 - $200	586	397	160	29	71.27	70.48	54.95	
$201 - $349	267	207	57	3	78.41	76.65	68.26	
$350 +	612	450	144	18	75.76	74.16	65.25	
Spanish language								0.5306
Yes	444	320	117	7	73.23	72.25	59.59	
No	1,494	1,076	360	58	74.93	73.93	63.74	
Recertification type								0.9887
Recertification	986	703	244	39	74.23	73.44	63.33	
Semiannual reporting	691	507	167	17	75.22	73.51	66.09	
Other reevaluation	261	186	66	9	73.81	73.92	62.37	
Monthly income								0.6999
$0	380	265	89	26	74.86	72.83	57.62	
$1 - $787	441	310	116	15	72.77	71.31	57.71	
$788 - $1,088	462	337	114	11	74.72	74.77	65.29	
$1,089 +	655	484	158	13	75.39	74.64	68.18	
Baystate cap								0.9995
Yes	149	106	38	5	73.61	73.53	61.38	
No	1,789	1,290	439	60	74.61	73.53	62.87	
Homeless								0.5023
Yes	91	63	24	4	72.41	69.93	42.10	
No	1,847	1,333	453	61	74.64	73.77	64.25	

Characteristic[a]	Unadjusted weights					Non-response-adjusted weights		
	Percent distributions			Relative bias		Percent distributions	Relative bias	
	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	P-value[f]
1	2	3	4	5	6	7	8	9
Housing type								0.2427
Private	1,560	1,108	400	52	73.47	72.49	64.71	
Public	298	232	58	8	80.00	79.39	68.83	
Other	80	56	19	5	74.67	72.51	45.64	
Household head age								0.9497
16–30	465	338	108	19	75.78	73.79	59.16	
31–40	456	333	111	12	75.00	73.98	62.96	
41–54	558	405	135	18	75.00	73.99	65.50	
55+	459	320	123	16	72.23	72.22	63.11	
Household head race/ethnicity								0.0068
Hispanic	844	631	187	26	77.14	76.13	63.15	
White	732	495	209	28	70.31	69.38	61.04	
Black	227	182	41	4	81.61	79.62	70.12	
Other	135	88	40	7	68.75	68.19	56.20	
Disabled household head								0.4286
Yes	925	668	227	30	74.64	74.52	62.63	
No	1,013	728	250	35	74.44	72.66	62.87	
US citizenship of household head								0.0439
Yes	1,835	1,332	440	63	75.17	74.10	62.97	
No	103	64	37	2	63.37	63.11	58.34	
TANF/AFDC								0.0033
Yes	327	262	57	8	82.13	81.02	70.47	
No	1,611	1,134	420	57	72.97	71.97	61.19	
Unearned income								0.3651
Yes	1,155	818	304	33	72.91	72.58	62.27	
No	783	578	173	32	76.96	74.88	63.42	
SSI								0.9503
Yes	601	430	153	18	73.76	73.41	61.38	
No	1,337	966	324	47	74.88	73.58	63.37	
RSDI								0.4756
Yes	514	364	137	13	72.65	72.03	63.56	
No	1,424	1,032	340	52	75.22	74.06	62.48	

Characteristic[a]	Unadjusted weights					Non-response-adjusted weights		
	Percent distributions			Relative bias		Percent distributions	Relative bias	
	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	P-value[f]
1	2	3	4	5	6	7	8	9
Unemployment compensation								0.8456
Yes	87	62	23	2	72.94	72.46	63.59	
No	1,851	1,334	454	63	74.61	73.58	62.71	
Household type								0.0503
Household with elderly	241	153	79	9	65.95	65.86	59.25	
Household with children	838	632	188	18	77.07	75.46	67.82	
Other household	859	611	210	38	74.42	73.74	59.21	
Female								0.0006
Yes	1,246	946	273	27	77.60	76.53	67.47	
No	692	450	204	38	68.81	68.20	55.02	
Age of person								0.6163
16–30	687	494	169	24	74.51	72.77	59.94	
31–40	367	273	83	11	76.69	76.19	64.66	
41–54	444	324	105	15	75.52	74.43	65.42	
55+	440	305	120	15	71.76	71.70	63.29	
Race/ethnicity								0.0081
Hispanic	845	631	188	26	77.05	75.99	62.88	
White	732	495	208	29	70.41	69.51	61.29	
Black	231	184	42	5	81.42	79.43	69.83	
Other	130	86	39	5	68.80	68.38	56.69	
US citizenship of sampled person								0.0177
Yes	1,834	1,332	438	64	75.25	74.18	63.03	
No	104	64	39	1	62.14	61.95	57.31	
Disabled sampled person								0.6155
Yes	862	620	213	29	74.43	74.26	62.58	
No	1,076	776	264	36	74.62	72.97	62.89	
Unemployment compensation								0.9196
Yes	71	52	19	0	73.24	73.00	61.53	
No	1,867	1,344	458	65	74.58	73.55	62.80	

	Unadjusted weights					Non-response-adjusted weights		
	Percent distributions			Relative bias		Percent distributions	Relative bias	
Characteristic[a]	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	P-value[f]
1	2	3	4	5	6	7	8	9
Household size (no. adults 16+)								0.3622
1	1,236	881	311	44	73.91	72.78	60.79	
2	493	352	122	19	74.26	72.87	63.43	
3	164	129	33	2	79.63	80.09	72.89	
4 +	45	34	11	0	75.56	76.51	72.27	

[a] Household and person characteristics reported in SNAP sampling frame.
[b] Ineligible for Round 1 per survey (e.g., no longer in SNAP, institutionalized, not a resident of Hampden County, deceased, etc.)
[c] Calculated as R/(R+N), where R = the number of eligible respondents (column 3) and N = the number of eligible non-respondents (column 4).
[d] Weighted response rates are calculated using the first-phase nonresponse-adjusted weights.
[e] Product of weighted first- and second-phase response rates.
[f] Test of association between weighted second-phase response rates and characteristic using Rao-Scott chi-square test (e.g., see Rao and Scott, 1984).

Exhibit 70: Comparison of Weighted Distributions of the HIP Sample Before and After Nonresponse Adjustment in Round 1

Characteristic[a]	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Total sample	100.00	100.00	100.00			100.00		
Location					0.3429			0.0926
Springfield	52.00	50.80	48.80	-2.31		52.00	0.00	
Chicopee/Holyoke	24.40	25.00	23.30	2.46		25.00	2.46	
Balance of Hampden	23.70	24.20	27.90	2.11		23.10	-2.53	
Wave of sample release					0.0000			0.7971
Wave 1	39.40	33.30	57.80	-15.48		39.50	0.25	
Wave 2	34.60	36.30	26.10	4.91		34.60	0.00	
Wave 3	26.00	30.40	16.10	16.92		25.90	-0.38	
Monthly SNAP benefit					0.1827			0.8849
$1-$161	22.90	24.80	20.50	8.30		24.10	5.24	
$162 - $200	33.40	30.90	29.70	-7.49		30.80	-7.78	
$201 - $349	13.60	14.00	17.40	2.94		14.10	3.68	
$350 +	30.10	30.20	32.40	0.33		31.00	2.99	
Spanish language					0.4081			0.8732
Yes	21.60	21.70	19.60	0.46		20.80	-3.70	
No	78.40	78.30	80.40	-0.13		79.20	1.02	
Recertification type					0.1720			0.8880
Recertification	52.60	52.50	50.10	-0.19		51.10	-2.85	
Semiannual reporting	34.90	34.50	39.60	-1.15		36.80	5.44	
Other reevaluation	12.50	13.00	10.30	4.00		12.20	-2.40	
Monthly income					0.4354			0.9369
$0	22.10	19.30	22.90	-12.67		21.00	-4.98	
$1 - $787	24.10	23.90	22.00	-0.83		23.30	-3.32	
$788 - $1,088	22.10	23.10	21.20	4.52		21.80	-1.36	
$1,089 +	31.60	33.70	33.90	6.65		33.90	7.28	
Baystate cap					0.5872			0.8819
Yes	6.90	7.20	6.20	4.35		6.80	-1.45	
No	93.10	92.80	93.80	-0.32		93.20	0.11	
Homeless					0.1612			0.1919
Yes	5.80	3.50	5.40	-39.66		5.10	-12.07	
No	94.20	96.50	94.60	2.44		94.90	0.74	

Characteristic[a]	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Housing type					0.0819			0.8378
Private	80.50	82.60	78.30	2.61		81.30	0.99	
Public	14.40	14.80	16.60	2.78		15.00	4.17	
Other	5.10	2.60	5.10	-49.02		3.70	-27.45	
Household head age					0.0754			0.6996
16–30	26.20	22.50	28.20	-14.12		24.60	-6.11	
31–40	24.00	24.60	24.30	2.50		25.30	5.42	
41–54	27.30	28.60	23.70	4.76		27.70	1.47	
55+	22.50	24.30	23.90	8.00		22.40	-0.44	
Household head race/ethnicity					0.0991			0.6306
Hispanic	43.10	41.90	42.40	-2.78		41.90	-2.78	
White	37.20	38.20	38.80	2.69		37.60	1.08	
Black	13.10	13.70	9.80	4.58		14.20	8.40	
Other	6.60	6.20	9.10	-6.06		6.30	-4.55	
Disabled household head					0.0047			0.7959
Yes	48.10	50.50	41.50	4.99		47.70	-0.83	
No	51.90	49.50	58.50	-4.62		52.30	0.77	
US citizenship of household head					0.0004			0.3906
Yes	95.10	95.90	90.60	0.84		95.40	0.32	
No	4.90	4.10	9.40	-16.33		4.60	-6.12	
TANF/AFDC					0.3240			0.5673
Yes	15.20	16.20	14.00	6.58		16.40	7.89	
No	84.80	83.80	86.00	-1.18		83.60	-1.42	
Unearned income					0.0176			0.8610
Yes	59.20	61.90	54.40	4.56		59.60	0.68	
No	40.80	38.10	45.60	-6.62		40.40	-0.98	
SSI					0.2397			0.6000
Yes	31.20	32.00	28.70	2.56		30.20	-3.21	
No	68.80	68.00	71.30	-1.16		69.80	1.45	
RSDI					0.0013			0.9524
Yes	25.20	28.00	20.20	11.11		25.80	2.38	
No	74.80	72.00	79.80	-3.74		74.20	-0.80	

Characteristic[a]	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Unemployment compensation					0.4904			0.9898
Yes	4.80	4.60	5.50	-4.17		4.80	0.00	
No	95.20	95.40	94.50	0.21		95.20	0.00	
Household type					0.0730			0.3502
Household with elderly	11.10	11.60	13.20	4.50		10.50	-5.41	
Household with children	41.60	42.00	47.50	0.96		43.60	4.81	
Other household	47.30	46.40	39.30	-1.90		45.90	-2.96	
Female					0.0497			0.3921
Yes	62.90	67.30	61.80	7.00		64.50	2.54	
No	37.10	32.70	38.20	-11.86		35.50	-4.31	
Age of person					0.0051			0.7480
16–30	36.00	31.90	39.40	-11.39		34.00	-5.56	
31–40	19.00	19.20	20.20	1.05		19.50	2.63	
41–54	23.40	25.10	18.30	7.26		24.60	5.13	
55+	21.60	23.80	22.10	10.19		21.90	1.39	
Race/ethnicity					0.0504			0.5284
Hispanic	43.40	42.30	43.00	-2.53		42.10	-3.00	
White	37.00	37.80	39.30	2.16		37.30	0.81	
Black	12.80	13.60	8.60	6.25		14.20	10.94	
Other	6.70	6.30	9.10	-5.97		6.40	-4.48	
US citizenship of sampled person					0.0020			0.6150
Yes	95.10	95.70	91.10	0.63		95.00	-0.11	
No	4.90	4.30	8.90	-12.24		5.00	2.04	
Disabled sampled person					0.0006			0.8520
Yes	45.20	47.90	37.80	5.97		44.90	-0.66	
No	54.80	52.10	62.20	-4.93		55.10	0.55	
Unemployment compensation					0.3062			0.9439
Yes	4.60	4.50	5.80	-2.17		4.80	4.35	
No	95.40	95.50	94.20	0.10		95.20	-0.21	

Characteristic[a]	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Household size (no. adults 16+)					0.3337			0.9094
1	66.40	65.20	62.90	-1.81		65.20	-1.81	
2	24.40	24.60	28.00	0.82		24.70	1.23	
3	7.20	7.60	7.80	5.56		7.50	4.17	
4 +	2.10	2.60	1.30	23.81		2.60	0.00	

[a] Household and person characteristics reported in SNAP sampling frame.
[b] Relative bias defined to be 100*(B-A)/A where A = unadjusted estimate for total sample and B = unadjusted estimate for respondent sample.
[c] Test comparing distribution of total sample versus respondent sample using unadjusted weights.
[d] Relative bias defined to be 100*(C-A)/A where A = unadjusted estimate for total sample and C = nonresponse-adjusted estimate for respondent sample. [e] Rao-Scott chi-square test comparing distribution of respondent sample using nonresponse-adjusted weights with distribution of total sample using unadjusted weights (e.g., see Rao and Scott, 1984).

Exhibit 71: Comparison of Weighted Distributions of the non-HIP Sample Before and After Nonresponse Adjustment in Round 1

	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
Characteristic[a]	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Total sample	100.00	100.00	100.00			100.00		
Location					0.0019			0.8555
Springfield	52.10	52.50	47.40	0.77		50.80	-2.50	
Chicopee/Holyoke	24.60	25.80	22.20	4.88		25.40	3.25	
Balance of Hampden	23.30	21.70	30.40	-6.87		23.80	2.15	
Wave of sample release					0.0000			0.9741
Wave 1	39.50	34.30	48.60	-13.16		38.00	-3.80	
Wave 2	34.30	36.70	28.50	7.00		35.00	2.04	
Wave 3	26.30	29.00	22.90	10.27		27.10	3.04	
Monthly SNAP benefit					0.4052			0.6418
$1-$161	23.10	24.80	23.30	7.36		23.70	2.60	
$162 - $200	32.60	28.10	32.30	-13.80		31.40	-3.68	
$201 - $349	13.50	15.00	12.90	11.11		14.30	5.93	
$350 +	30.90	32.10	31.50	3.88		30.50	-1.29	
Spanish language					0.6119			0.6911
Yes	23.40	22.80	24.00	-2.56		22.40	-4.27	
No	76.60	77.20	76.00	0.78		77.60	1.31	
Recertification type					0.9618			0.9988
Recertification	50.60	49.40	50.10	-2.37		49.60	-1.98	
Semiannual reporting	35.80	37.50	36.90	4.75		37.30	4.19	
Other reevaluation	13.60	13.10	13.00	-3.68		13.10	-3.68	
Monthly income					0.6911			0.6942
$0	21.10	18.70	18.90	-11.37		20.60	-2.37	
$1 - $787	24.00	22.00	24.80	-8.33		22.20	-7.50	
$788 - $1,088	22.80	23.90	22.90	4.82		23.10	1.32	
$1,089 +	32.00	35.40	33.40	10.63		34.00	6.25	
Baystate cap					0.9893			0.9928
Yes	7.80	7.50	7.50	-3.85		7.50	-3.85	
No	92.20	92.50	92.50	0.33		92.50	0.33	
Homeless					0.7007			0.0732
Yes	6.50	4.40	4.90	-32.31		6.10	-6.15	
No	93.50	95.60	95.10	2.25		93.90	0.43	

Characteristic[a]	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Housing type					0.2401			0.3051
Private	80.00	79.70	83.40	-0.37		79.70	-0.37	
Public	14.20	16.40	12.30	15.49		14.90	4.93	
Other	5.80	3.90	4.30	-32.76		5.30	-8.62	
Household head age					0.8868			0.5961
16–30	25.30	23.80	23.20	-5.93		25.60	1.19	
31–40	23.60	23.90	22.90	1.27		22.50	-4.66	
41–54	28.20	29.50	28.90	4.61		29.30	3.90	
55+	23.00	22.90	25.00	-0.43		22.60	-1.74	
Household head race/ethnicity					0.0076			0.7320
Hispanic	44.70	45.30	39.40	1.34		44.90	0.45	
White	36.80	35.60	43.50	-3.26		36.10	-1.90	
Black	11.30	13.00	9.00	15.04		12.70	12.39	
Other	7.10	6.10	8.00	-14.08		6.20	-12.68	
Disabled household head					0.4894			0.9361
Yes	47.50	47.30	45.20	-0.42		46.90	-1.26	
No	52.50	52.70	54.80	0.38		53.10	1.14	
US citizenship of household head					0.0341			0.4154
Yes	95.10	95.40	92.40	0.32		95.30	0.21	
No	4.90	4.60	7.60	-6.12		4.70	-4.08	
TANF/AFDC					0.0036			0.5179
Yes	16.40	18.60	12.20	13.41		17.90	9.15	
No	83.60	81.40	87.80	-2.63		82.10	-1.79	
Unearned income					0.2925			0.2792
Yes	58.80	58.60	61.90	-0.34		57.40	-2.38	
No	41.20	41.40	38.10	0.49		42.60	3.40	
SSI					0.9009			0.6268
Yes	31.00	30.40	30.70	-1.94		29.60	-4.52	
No	69.00	69.60	69.30	0.87		70.40	2.03	
RSDI					0.4433			0.6123
Yes	25.30	25.90	28.00	2.37		25.60	1.19	
No	74.70	74.10	72.00	-0.80		74.40	-0.40	

Characteristic[a]	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Unemployment compensation					0.8279			0.9034
Yes	4.70	4.80	5.10	2.13		4.80	2.13	
No	95.30	95.20	94.90	-0.10		95.20	-0.10	
Household type					0.0354			0.1478
Household with elderly	11.80	10.90	16.10	-7.63		10.70	-9.32	
Household with children	40.80	44.70	40.80	9.56		42.40	3.92	
Other household	47.40	44.40	43.10	-6.33		46.90	-1.05	
Female					0.0015			0.5341
Yes	62.40	67.70	58.70	8.49		64.40	3.21	
No	37.60	32.30	41.30	-14.10		35.60	-5.32	
Age of person					0.5224			0.6949
16–30	37.50	35.90	37.20	-4.27		38.10	1.60	
31–40	18.50	19.30	16.40	4.32		17.80	-3.78	
41–54	22.20	23.00	22.20	3.60		22.50	1.35	
55+	21.80	21.80	24.30	0.00		21.60	-0.92	
Race/ethnicity					0.0078			0.7464
Hispanic	44.90	45.30	39.60	0.89		45.00	0.22	
White	36.70	35.60	43.30	-3.00		36.10	-1.63	
Black	11.50	13.10	9.20	13.91		12.90	12.17	
Other	6.80	6.00	7.80	-11.76		6.10	-10.29	
US citizenship of sampled person					0.0124			0.2950
Yes	95.10	95.40	92.00	0.32		95.30	0.21	
No	4.90	4.60	8.00	-6.12		4.70	-4.08	
Disabled sampled person					0.6832			0.9690
Yes	44.10	43.90	42.50	-0.45		43.60	-1.13	
No	55.90	56.10	57.50	0.36		56.40	0.89	
Unemployment compensation					0.8706			0.8048
Yes	3.60	3.70	3.80	2.78		3.50	-2.78	
No	96.40	96.30	96.20	-0.10		96.50	0.10	

Characteristic[a]	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Household size (no. adults 16+)					0.3713			0.9465
1	64.10	61.90	64.50	-3.43		63.20	-1.40	
2	24.80	24.80	25.70	0.00		24.10	-2.82	
3	7.80	9.30	6.40	19.23		8.90	14.10	
4 +	3.30	3.90	3.40	18.18		3.80	-2.56	

[a] Household and person characteristics reported in SNAP sampling frame.
[b] Relative bias defined to be 100*(B-A)/A where A = unadjusted estimate for total sample and B = unadjusted estimate for respondent sample.
[c] Test comparing distribution of total sample versus respondent sample using unadjusted weights.
[d] Relative bias defined to be 100*(C-A)/A where A = unadjusted estimate for total sample and C = nonresponse-adjusted estimate for respondent sample.
[e] Rao-Scott chi-square test comparing distribution of respondent sample using nonresponse-adjusted weights with distribution of total sample using unadjusted weights (e.g., see Rao and Scott1984).

Exhibit 72: Comparison of Estimates of Selected Survey Items for the HIP Sample Before and After Nonresponse Adjustment in Round 1

Survey item (Round 1)	Base-weighted estimate	Nonresponse-adjusted estimate	Relative bias[a]	P-value of test[b]
1	2	3	4	5
Percentage who enjoy new foods (agree or strongly agree)	83.86	84.18	-0.38	0.22
Percentage who enjoy new fruits (agree or strongly agree)	86.68	87.02	-0.39	0.17
Percentage who enjoy new vegetables (agree or strongly agree)	78.28	78.10	0.23	0.56
Percentage who don't know how to prepare (agree or strongly agree)	27.18	27.21	-0.11	0.94
Percentage who have hard time finding vegetables (agree or strongly agree)	19.35	18.80	2.93	0.05
Percentage who say vegetables/fruits cost too much (agree or strongly agree)	49.31	48.16	2.39	0.00
Average number of times juice consumed per day (among those with JUCEUNIT = 1)	2.18	2.19	-0.46	0.37
Average number of times juice consumed per week (among those with JUCEUNIT = 2)	3.35	3.33	0.60	0.37
Average number of times juice consumed per month (among those with JUCEUNIT = 3)	7.87	8.07	-2.48	0.20
Percentage consuming less than 3/4 cup per occasion (code 1)	11.80	11.49	2.70	0.25
Average number of times fruit consumed per day (among those with FRUTUNIT = 1)	1.90	1.89	0.53	0.53
Average number of times fruit consumed per week (among those with FRUTUNIT = 2)	3.32	3.31	0.30	0.76
Average number of times fruit consumed per month (among those with FRUTUNIT = 3)	9.71	9.88	-1.72	0.36
Percentage consuming less than 1 med. Fruit per occasion (code 1)	5.81	5.77	0.69	0.81
Average number of times leafy veg. consumed per day (among those with LEAFUNIT = 1)	1.40	1.42	-1.41	0.13
Average number of times leafy veg. consumed per week (among those with LEAFUNIT = 2)	2.72	2.72	0.00	0.95
Average number of times leafy veg. consumed per month (among those with LEAFUNIT = 3)	6.56	6.44	1.86	0.17
Percentage consuming less than 1/2 cup per occasion (code 1)	18.40	18.23	0.93	0.53

[a]Relative bias defined to be 100*(A-B)/B where A = base-weighted estimate for respondents and B = nonresponse adjusted estimate for respondents. [b]Test of difference between base-weighted and nonresponse adjusted estimates using Rao-Scott chi-square test for categorical variables and tests reflecting the complex sample design for numeric variables.

Exhibit 73: Comparison of Estimates of Selected Survey Items for the non-HIP Sample Before and After Nonresponse Adjustment in Round 1

Survey item (Round 1)	Base-weighted estimate	Nonresponse-adjusted estimate	Relative bias[a]	P-value of test[b]
1	2	3	4	5
Percentage who enjoy new foods (agree or strongly agree)	85.39	85.12	0.32	0.31
Percentage who enjoy new fruits (agree or strongly agree)	87.49	87.44	0.06	0.83
Percentage who enjoy new vegetables (agree or strongly agree)	76.20	75.59	0.81	0.08
Percentage who don't know how to prepare (agree or strongly agree)	15.73	15.57	1.03	0.62
Percentage who have hard time finding vegetables (agree or strongly agree)	46.77	46.47	0.65	0.49
Percentage who say vegetables/fruits cost too much (agree or strongly agree)	27.80	27.65	0.54	0.35
Average number of times juice consumed per day (among those with JUCEUNIT = 1)	2.22	2.24	-0.89	0.45
Average number of times juice consumed per week (among those with JUCEUNIT = 2)	3.15	3.19	-1.25	0.17
Average number of times juice consumed per month (among those with JUCEUNIT = 3)	7.63	7.61	0.26	0.85
Percentage consuming less than 3/4 cup per occasion (code 1)	11.22	10.62	5.65	0.00
Average number of times fruit consumed per day (among those with FRUTUNIT = 1)	1.85	1.85	0.00	0.82
Average number of times fruit consumed per week (among those with FRUTUNIT = 2)	3.18	3.17	0.32	0.50
Average number of times fruit consumed per month (among those with FRUTUNIT = 3)	9.10	8.94	1.79	0.11
Percentage consuming less than 1 med. Fruit per occasion (code 1)	6.31	6.31	0.00	1.00
Average number of times leafy veg. consumed per day (among those with LEAFUNIT = 1)	1.41	1.41	0.00	0.98
Average number of times leafy veg. consumed per week (among those with LEAFUNIT = 2)	2.64	2.65	-0.38	0.32
Average number of times leafy veg. consumed per month (among those with LEAFUNIT = 3)	6.19	6.17	0.32	0.78
Percentage consuming less than 1/2 cup per occasion (code 1)	20.44	19.98	2.30	0.09

[a]Relative bias defined to be 100*(A-B)/B where A = base-weighted estimate for respondents and B = nonresponse adjusted estimate for respondents.
[b]Test of difference between base-weighted and nonresponse adjusted estimates using Rao-Scott chi-square test for categorical variables and tests reflecting the complex sample design for numeric variables.

Exhibit 74: Comparison of First-Phase Response Rates by Selected Characteristics of the HIP Sample in Round 2

Characteristic[a]	Round 2 sample sizes by Phase 1 response status				First-phase response rate		P-value[e]
	Total	Eligibility status determined	Eligibility status unknown	Out of scope[b]	Unweighted[c]	Weighted[d]	
1	2	3	4	5	6	7	8
Total sample	1,388	1,199	29	160	97.64	97.38	
Location							0.9364
Springfield	712	617	16	79	97.47	97.33	
Chicopee/Holyoke	350	311	7	32	97.80	97.64	
Balance of Hampden	326	271	6	49	97.83	97.18	
Wave of sample release							0.0550
Wave 1	447	387	12	48	96.99	96.55	
Wave 2	511	446	4	61	99.11	99.00	
Wave 3	430	366	13	51	96.57	96.43	
Monthly SNAP benefit							0.0742
$1-$161	346	305	11	30	96.52	96.28	
$162 - $200	427	365	5	57	98.65	98.49	
$201 - $349	197	167	1	29	99.40	99.31	
$350 +	418	362	12	44	96.79	96.35	
Spanish language							0.1758
Yes	303	271	5	27	98.19	98.39	
No	1,085	928	24	133	97.48	97.09	
Recertification type							0.2566
Recertification	737	658	16	63	97.63	97.17	
Semiannual reporting	468	368	12	88	96.84	96.94	
Other reevaluation	183	173	1	9	99.43	99.24	
Monthly income							0.3025
$0	264	221	7	36	96.93	96.15	
$1 - $787	335	293	9	33	97.02	96.44	
$788 - $1,088	321	296	3	22	99.00	98.87	
$1,089 +	468	389	10	69	97.49	97.74	
Baystate cap							0.3695
Yes	101	96	1	4	98.97	98.65	
No	1,287	1,103	28	156	97.52	97.27	
Homeless							0.0569
Yes	46	28	5	13	84.85	84.29	
No	1,342	1,171	24	147	97.99	97.92	

Characteristic[a]	Round 2 sample sizes by Phase 1 response status				First-phase response rate		P-value[e]
	Total	Eligibility status determined	Eligibility status unknown	Out of scope[b]	Unweighted[c]	Weighted[d]	
1	2	3	4	5	6	7	8
Housing type							0.1699
Private	1,145	992	23	130	97.73	97.66	
Public	208	184	3	21	98.40	98.06	
Other	35	23	3	9	88.46	85.97	
Household head age							0.0110
16–30	310	247	11	52	95.74	94.37	
31–40	341	287	7	47	97.62	97.67	
41–54	394	345	10	39	97.18	97.54	
55+	343	320	1	22	99.69	99.69	
Household head race/ethnicity							0.0350
Hispanic	588	508	19	61	96.39	95.94	
White	526	458	7	61	98.49	98.35	
Black	187	157	1	29	99.37	99.24	
Other	87	76	2	9	97.44	97.56	
Disabled household head							0.4665
Yes	707	648	14	45	97.89	97.73	
No	681	551	15	115	97.35	97.01	
US citizenship of household head							n/a
Yes	1,332	1,149	29	154	97.54	97.25	
No	56	50	0	6	100.00	100.00	
TANF/AFDC							0.3900
Yes	226	202	6	18	97.12	96.13	
No	1,162	997	23	142	97.75	97.63	
Unearned income							0.4711
Yes	868	776	17	75	97.86	97.68	
No	520	423	12	85	97.24	96.87	
SSI							0.5643
Yes	449	406	11	32	97.36	96.95	
No	939	793	18	128	97.78	97.58	
RSDI							0.2141
Yes	393	362	6	25	98.37	98.24	
No	995	837	23	135	97.33	97.04	

Characteristic[a]	Round 2 sample sizes by Phase 1 response status				First-phase response rate		P-value[e]
	Total	Eligibility status determined	Eligibility status unknown	Out of scope[b]	Unweighted[c]	Weighted[d]	
1	2	3	4	5	6	7	8
Unemployment compensation							n/a
Yes	65	60	0	5	100.00	100.00	
No	1,323	1,139	29	155	97.52	97.23	
Household type							n/a
Household with elderly	164	154	0	10	100.00	100.00	
Household with children	583	495	12	76	97.63	97.27	
Other household	641	550	17	74	97.00	96.82	
Female							0.0437
Yes	936	818	15	103	98.20	98.13	
No	452	381	14	57	96.46	95.96	
Age of person							0.0215
16–30	438	349	13	76	96.41	95.45	
31–40	270	232	6	32	97.48	97.53	
41–54	345	304	9	32	97.12	97.47	
55+	335	314	1	20	99.68	99.69	
Race/ethnicity							0.0261
Hispanic	592	513	19	60	96.43	95.97	
White	521	455	5	61	98.91	98.70	
Black	186	157	1	28	99.37	99.24	
Other	89	74	4	11	94.87	95.41	
US citizenship of sampled person							n/a
Yes	1,328	1,147	29	152	97.53	97.24	
No	60	52	0	8	100.00	100.00	
Disabled sampled person							0.3120
Yes	674	627	12	35	98.12	97.91	
No	714	572	17	125	97.11	96.86	
Unemployment compensation							n/a
Yes	64	57	0	7	100.00	100.00	
No	1,324	1,142	29	153	97.52	97.24	
Household size (no. adults 16+)							n/a
1	908	803	18	87	97.81	97.42	
2	345	286	10	49	96.62	96.57	
3	104	87	0	17	100.00	100.00	
4 +	31	23	1	7	95.83	96.42	

[a] Household and person characteristics reported in SNAP sampling frame.
[b] Households no longer active in SNAP per DTA updates.
[c] Calculated as R/(R+N), where R = the number of cases for which eligibility status was determined (column 3) and N = the number of cases for which eligibility status was not determined (column 4).
[d] Weighted response rates are calculated using the first-phase nonresponse-adjusted weights.
[e] Test of association between weighted first-phase response rates and selected characteristic using Rao-Scott chi-square test (e.g., see Rao and Scott, 1984).

Exhibit 75: Comparison of First-Phase Response Rates by Selected Characteristics of the non-HIP Sample In Round 2

Characteristic[a]	Round 2 sample sizes by Phase 1 response status				First-phase response rate		P-value[e]
	Total	Eligibility status determined	Eligibility status unknown	Out of scope[b]	Unweighted[c]	Weighted[d]	
1	2	3	4	5	6	7	8
Total sample	1,396	1,214	31	151	97.51	97.19	
Location							0.8771
Springfield	733	650	16	67	97.60	97.41	
Chicopee/Holyoke	363	309	8	46	97.48	96.81	
Balance of Hampden	300	255	7	38	97.33	97.09	
Wave of sample release							0.0452
Wave 1	464	403	12	49	97.11	96.71	
Wave 2	521	463	5	53	98.93	98.87	
Wave 3	411	348	14	49	96.13	95.63	
Monthly SNAP benefit							0.1504
$1-$161	342	300	5	37	98.36	98.31	
$162 - $200	397	348	13	36	96.40	95.96	
$201 - $349	207	175	2	30	98.87	98.86	
$350 +	450	391	11	48	97.26	96.86	
Spanish language							0.5698
Yes	320	278	9	33	96.86	96.58	
No	1,076	936	22	118	97.70	97.37	
Recertification type							0.8455
Recertification	703	621	15	67	97.64	97.36	
Semiannual reporting	507	418	10	79	97.66	97.23	
Other reevaluation	186	175	6	5	96.69	96.47	
Monthly income							0.0073
$0	265	220	13	32	94.42	93.53	
$1 - $787	310	276	7	27	97.53	97.43	
$788 - $1,088	337	311	7	19	97.80	97.56	
$1,089 +	484	407	4	73	99.03	99.05	
Baystate cap							0.6429
Yes	106	102	2	2	98.08	97.86	
No	1,290	1,112	29	149	97.46	97.13	
Homeless							0.0032
Yes	63	42	10	11	80.77	82.33	
No	1,333	1,172	21	140	98.24	98.09	

Characteristic[a]	Round 2 sample sizes by Phase 1 response status				First-phase response rate		P-value[e]
	Total	Eligibility status determined	Eligibility status unknown	Out of scope[b]	Unweighted[c]	Weighted[d]	
1	2	3	4	5	6	7	8
Housing type							0.0060
Private	1,108	967	19	122	98.07	97.87	
Public	232	210	3	19	98.59	98.48	
Other	56	37	9	10	80.43	82.19	
Household head age							0.0069
16–30	338	275	15	48	94.83	94.02	
31–40	333	296	5	32	98.34	98.22	
41–54	405	351	9	45	97.50	97.38	
55+	320	292	2	26	99.32	99.22	
Household head race/ethnicity							0.7153
Hispanic	631	542	15	74	97.31	96.86	
White	495	430	10	55	97.73	97.46	
Black	182	161	5	16	96.99	96.72	
Other	88	81	1	6	98.78	98.82	
Disabled household head							0.0503
Yes	668	614	11	43	98.24	98.15	
No	728	600	20	108	96.77	96.22	
US citizenship of household head							0.5426
Yes	1,332	1,160	28	144	97.64	97.26	
No	64	54	3	7	94.74	95.81	
TANF/AFDC							0.2046
Yes	262	227	9	26	96.19	95.70	
No	1,134	987	22	125	97.82	97.52	
Unearned income							0.0957
Yes	818	734	15	69	98.00	97.93	
No	578	480	16	82	96.77	96.11	
SSI							0.5204
Yes	430	396	9	25	97.78	97.62	
No	966	818	22	126	97.38	96.99	
RSDI							0.0085
Yes	364	335	4	25	98.82	98.80	
No	1,032	879	27	126	97.02	96.59	

Characteristic[a]	Round 2 sample sizes by Phase 1 response status				First-phase response rate		P-value[e]
	Total	Eligibility status determined	Eligibility status unknown	Out of scope[b]	Unweighted[c]	Weighted[d]	
1	2	3	4	5	6	7	8
Unemployment compensation							0.5109
Yes	62	50	1	11	98.04	98.30	
No	1,334	1,164	30	140	97.49	97.14	
Household type							0.2535
Household with elderly	153	140	1	12	99.29	99.10	
Household with children	632	542	15	75	97.31	97.04	
Other household	611	532	15	64	97.26	96.86	
Female							0.6967
Yes	946	829	21	96	97.53	97.34	
No	450	385	10	55	97.47	96.89	
Age of person							0.0190
16–30	494	397	17	80	95.89	95.33	
31–40	273	244	4	25	98.39	98.32	
41–54	324	291	8	25	97.32	97.10	
55+	305	282	2	21	99.30	99.19	
Race/ethnicity							0.7199
Hispanic	631	543	15	73	97.31	96.87	
White	495	428	10	57	97.72	97.45	
Black	184	162	5	17	97.01	96.74	
Other	86	81	1	4	98.78	98.82	
US citizenship of sampled person							0.5424
Yes	1,332	1,160	28	144	97.64	97.26	
No	64	54	3	7	94.74	95.79	
Disabled sampled person							0.0973
Yes	620	579	11	30	98.14	98.04	
No	776	635	20	121	96.95	96.42	
Unemployment compensation							0.6303
Yes	52	44	1	7	97.78	98.09	
No	1,344	1,170	30	144	97.50	97.16	
Household size (no. adults 16+)							n/a
1	881	786	23	72	97.16	96.75	
2	352	290	7	55	97.64	97.31	
3	129	109	1	19	99.09	99.20	
4 +	34	29	0	5	100.00	100.00	

[a] Household and person characteristics reported in SNAP sampling frame.
[b] Households no longer active in SNAP per DTA updates.
[c] Calculated as R/(R+N), where R = the number of cases for which eligibility status was determined (column 3) and N = the number of cases for which eligibility status was not determined (column 4).
[d] Weighted response rates are calculated using the first-phase nonresponse-adjusted weights.
[e] Test of association between weighted first-phase response rates and selected characteristic using Rao-Scott chi-square test (e.g., see Rao and Scott, 1984).

Exhibit 76: Comparison of Second-Phase Conditional Response Rates by Selected Characteristics of the HIP Sample in Round 2

Characteristic[a]	Round 2 sample sizes by phase 2 response status				Second-phase response rate		Overall response rate	P-value[f]
	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	
1	2	3	4	5	6	7	8	9
Total sample	1,199	1,009	162	28	86.17	86.09	83.83	
Location								0.5949
Springfield	617	520	78	19	86.96	86.85	84.53	
Chicopee/Holyoke	311	266	41	4	86.64	86.41	84.37	
Balance of Hampden	271	223	43	5	83.83	83.85	81.49	
Wave of sample release								0.0585
Wave 1	387	337	40	10	89.39	88.94	85.87	
Wave 2	446	378	60	8	86.30	85.98	85.12	
Wave 3	366	294	62	10	82.58	81.97	79.04	
Monthly SNAP benefit								0.0940
$1-$161	305	265	35	5	88.33	88.20	84.92	
$162 - $200	365	317	40	8	88.80	88.82	87.48	
$201 - $349	167	137	25	5	84.57	85.14	84.55	
$350 +	362	290	62	10	82.39	82.22	79.22	
Spanish language								0.7783
Yes	271	226	38	7	85.61	85.48	84.10	
No	928	783	124	21	86.33	86.27	83.76	
Recertification type								0.0092
Recertification	658	567	78	13	87.91	88.49	84.39	
Semiannual reporting	368	294	63	11	82.35	81.51	84.19	
Other reevaluation	173	148	21	4	87.57	87.76	86.19	
Monthly income								0.4260
$0	221	183	32	6	85.12	85.30	82.02	
$1 - $787	293	251	37	5	87.15	87.11	84.01	
$788 - $1,088	296	255	34	7	88.24	88.35	87.35	
$1,089 +	389	320	59	10	84.43	84.16	82.26	
Baystate cap								0.9061
Yes	96	81	14	1	85.26	85.62	84.46	
No	1,103	928	148	27	86.25	86.13	83.78	
Homeless								0.8942
Yes	28	23	4	1	85.19	86.94	73.28	
No	1,171	986	158	27	86.19	86.06	84.27	

Characteristic[a]	Round 2 sample sizes by phase 2 response status				Second-phase response rate		Overall response rate	P-value[f]
	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	
1	2	3	4	5	6	7	8	9
Housing type								0.5303
Private	992	832	138	22	85.77	85.65	84.82	
Public	184	156	22	6	87.64	87.56	85.17	
Other	23	21	2	0	91.30	91.41	74.66	
Household head age								0.0729
16–30	247	201	43	3	82.38	82.64	77.99	
31–40	287	233	43	11	84.42	83.65	81.70	
41–54	345	298	41	6	87.91	88.36	86.19	
55+	320	277	35	8	88.78	89.03	88.75	
Household head race/ethnicity								0.2437
Hispanic	508	421	75	12	84.88	84.42	80.99	
White	458	386	61	11	86.35	86.33	84.91	
Black	157	138	14	5	90.79	91.03	90.34	
Other	76	64	12	0	84.21	85.28	83.20	
Disabled household head								0.0776
Yes	648	556	81	11	87.28	87.78	85.79	
No	551	453	81	17	84.83	84.27	81.75	
US citizenship of household head								0.0359
Yes	1,149	972	150	27	86.63	86.64	84.26	
No	50	37	12	1	75.51	75.07	75.07	
TANF/AFDC								0.7213
Yes	202	168	30	4	84.85	85.21	81.91	
No	997	841	132	24	86.43	86.27	84.23	
Unearned income								0.0947
Yes	776	663	96	17	87.35	87.49	85.46	
No	423	346	66	11	83.98	83.73	81.11	
SSI								0.2411
Yes	406	350	50	6	87.50	87.79	85.11	
No	793	659	112	22	85.47	85.28	83.22	
RSDI								0.0003
Yes	362	319	34	9	90.37	90.68	89.08	
No	837	690	128	19	84.35	84.29	81.80	
Unemployment compensation								0.5711

Characteristic[a]	Round 2 sample sizes by phase 2 response status				Second-phase response rate		Overall response rate	P-value[f]
	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	
1	2	3	4	5	6	7	8	9
Yes	60	54	5	1	91.53	88.96	88.96	
No	1,139	955	157	27	85.88	85.93	83.55	
Household type								0.0973
Household with elderly	154	135	15	4	90.00	90.89	90.89	
Household with children	495	409	77	9	84.16	83.82	81.53	
Other household	550	465	70	15	86.92	87.04	84.27	
Female								0.7127
Yes	818	689	107	22	86.56	86.43	84.81	
No	381	320	55	6	85.33	85.44	81.99	
Age of person								0.1124
16–30	349	283	58	8	82.99	83.62	79.82	
31–40	232	191	35	6	84.51	83.35	81.29	
41–54	304	262	36	6	87.92	87.96	85.73	
55+	314	273	33	8	89.22	89.56	89.28	
Race/ethnicity								0.2506
Hispanic	513	426	75	12	85.03	84.55	81.14	
White	455	383	61	11	86.26	86.23	85.11	
Black	157	138	14	5	90.79	91.07	90.38	
Other	74	62	12	0	83.78	84.92	81.02	
US citizenship of sampled person								0.0426
Yes	1,147	970	150	27	86.61	86.61	84.22	
No	52	39	12	1	76.47	76.06	76.06	
Disabled sampled person								0.1124
Yes	627	539	79	9	87.22	87.77	85.94	
No	572	470	83	19	84.99	84.41	81.76	
Unemployment compensation								0.8651
Yes	57	50	6	1	89.29	87.00	87.00	
No	1,142	959	156	27	86.01	86.04	83.67	
Household size (no. adults 16+)								0.1248
1	803	695	95	13	87.97	88.13	85.86	
2	286	230	46	10	83.33	83.24	80.38	
3	87	68	16	3	80.95	80.03	80.03	
4 +	23	16	5	2	76.19	73.60	70.97	

[a] Household and person characteristics reported in SNAP sampling frame.
[b] Ineligible for Round 1 per survey (e.g., no longer in SNAP, institutionalized, not a resident of Hampden County, deceased, etc.)
[c] Calculated as R/(R+N), where R = the number of eligible respondents (column 3) and N = the number of eligible non-respondents (column 4).
[d] Weighted response rates are calculated using the first-phase nonresponse-adjusted weights.
[e] Product of weighted first- and second-phase response rates.
[f] Test of association between weighted second-phase response rates and characteristic using Rao-Scott chi-square test (e.g., see Rao and Scott, 1984).

Exhibit 77: Comparison of Second-Phase Conditional Response Rates by Selected Characteristics of the non-HIP Sample in Round 2

Characteristic[a]	Round 2 sample sizes by phase 2 response status				Second-phase response rate		Overall response rate	P-value[f]
	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	
1	2	3	4	5	6	7	8	9
Total sample	1,214	997	181	36	84.63	84.45	82.08	
Location								0.3833
Springfield	650	542	94	14	85.22	84.94	82.74	
Chicopee/Holyoke	309	253	42	14	85.76	85.67	82.94	
Balance of Hampden	255	202	45	8	81.78	82.02	79.63	
Wave of sample release								0.0368
Wave 1	403	335	59	9	85.03	85.30	82.49	
Wave 2	463	389	56	18	87.42	87.17	86.18	
Wave 3	348	273	66	9	80.53	79.71	76.23	
Monthly SNAP benefit								0.5671
$1-$161	300	248	44	8	84.93	85.08	83.64	
$162 - $200	348	288	45	15	86.49	86.18	82.70	
$201 - $349	175	141	29	5	82.94	83.59	82.64	
$350 +	391	320	63	8	83.55	82.67	80.07	
Spanish language								0.7550
Yes	278	222	42	14	84.09	83.82	80.95	
No	936	775	139	22	84.79	84.63	82.40	
Recertification type								0.7060
Recertification	621	513	88	20	85.36	85.22	82.70	
Semiannual reporting	418	338	67	13	83.46	83.31	82.59	
Other reevaluation	175	146	26	3	84.88	84.43	81.94	
Monthly income								0.6762
$0	220	168	37	15	81.95	81.65	76.37	
$1 - $787	276	235	39	2	85.77	85.29	83.10	
$788 - $1,088	311	258	46	7	84.87	84.52	82.46	
$1,089 +	407	336	59	12	85.06	85.40	84.59	
Baystate cap								0.7757
Yes	102	85	16	1	84.16	83.26	81.48	
No	1,112	912	165	35	84.68	84.56	82.13	
Homeless								0.8154
Yes	42	34	4	4	89.47	85.91	70.73	
No	1,172	963	177	32	84.47	84.38	82.77	

Characteristic[a]	Round 2 sample sizes by phase 2 response status				Second-phase response rate		Overall response rate	P-value[f]
	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	
1	2	3	4	5	6	7	8	9
Housing type								0.8457
Private	967	796	145	26	84.59	84.38	83.13	
Public	210	169	33	8	83.66	83.94	83.65	
Other	37	32	3	2	91.43	87.87	69.81	
Household head age								0.3381
16–30	275	217	49	9	81.58	81.61	76.73	
31–40	296	242	43	11	84.91	84.20	82.70	
41–54	351	300	44	7	87.21	87.25	84.96	
55+	292	238	45	9	84.10	84.16	83.50	
Household head race/ethnicity								0.0907
Hispanic	542	429	91	22	82.50	82.50	79.91	
White	430	357	65	8	84.60	84.61	82.46	
Black	161	145	13	3	91.77	90.29	87.33	
Other	81	66	12	3	84.62	84.62	83.62	
Disabled household head								0.1051
Yes	614	516	83	15	86.14	86.15	84.56	
No	600	481	98	21	83.07	82.69	79.56	
US citizenship of household head								0.9462
Yes	1,160	952	173	35	84.62	84.43	82.12	
No	54	45	8	1	84.91	84.82	81.27	
TANF/AFDC								0.6747
Yes	227	190	32	5	85.59	85.32	81.65	
No	987	807	149	31	84.41	84.26	82.17	
Unearned income								0.6145
Yes	734	611	108	15	84.98	84.98	83.22	
No	480	386	73	21	84.10	83.66	80.41	
SSI								0.8140
Yes	396	329	58	9	85.01	84.83	82.81	
No	818	668	123	27	84.45	84.27	81.73	
RSDI								0.0571
Yes	335	287	41	7	87.50	87.82	86.77	
No	879	710	140	29	83.53	83.16	80.32	

Characteristic[a]	Round 2 sample sizes by phase 2 response status				Second-phase response rate		Overall response rate	P-value[f]
	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	
1	2	3	4	5	6	7	8	9
Unemployment compensation								0.7011
Yes	50	41	8	1	83.67	82.28	80.88	
No	1,164	956	173	35	84.68	84.54	82.12	
Household type								0.0527
Household with elderly	140	111	25	4	81.62	81.23	80.50	
Household with children	542	439	92	11	82.67	82.26	79.83	
Other household	532	447	64	21	87.48	87.36	84.62	
Female								0.3572
Yes	829	681	131	17	83.87	83.78	81.55	
No	385	316	50	19	86.34	85.79	83.12	
Age of person								0.3149
16–30	397	317	67	13	82.55	82.66	78.80	
31–40	244	197	37	10	84.19	83.71	82.30	
41–54	291	252	33	6	88.42	87.93	85.38	
55+	282	231	44	7	84.00	84.14	83.46	
Race/ethnicity								0.1208
Hispanic	543	430	90	23	82.69	82.74	80.15	
White	428	354	67	7	84.09	84.08	81.94	
Black	162	146	13	3	91.82	90.34	87.39	
Other	81	67	11	3	85.90	85.80	84.79	
US citizenship of sampled person								0.9537
Yes	1,160	952	173	35	84.62	84.44	82.13	
No	54	45	8	1	84.91	84.77	81.20	
Disabled sampled person								0.0323
Yes	579	490	75	14	86.73	86.50	84.80	
No	635	507	106	22	82.71	82.56	79.60	
Unemployment compensation								0.4897
Yes	44	35	8	1	81.40	80.07	78.54	
No	1,170	962	173	35	84.76	84.61	82.21	

Characteristic[a]	Round 2 sample sizes by phase 2 response status				Second-phase response rate		Overall response rate	P-value[f]
	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	
1	2	3	4	5	6	7	8	9
Household size (no. adults 16+)								0.4527
1	786	642	121	23	84.14	84.03	81.30	
2	290	236	45	9	83.99	83.96	81.70	
3	109	96	10	3	90.57	89.97	89.25	
4 +	29	23	5	1	79.31	82.41	82.41	

[a] Household and person characteristics reported in SNAP sampling frame.
[b] Ineligible for Round 1 per survey (e.g., no longer in SNAP, institutionalized, not a resident of Hampden County, deceased, etc.)
[c] Calculated as R/(R+N), where R = the number of eligible respondents (column 3) and N = the number of eligible non-respondents (column 4).
[d] Weighted response rates are calculated using the first-phase nonresponse-adjusted weights.
[e] Product of weighted first- and second-phase response rates.
[f] Test of association between weighted second-phase response rates and characteristic using Rao-Scott chi-square test (e.g., see Rao and Scott, 1984).

Exhibit 78: Comparison of Weighted Distributions of the HIP Sample Before and After Nonresponse Adjustment in Round 2

	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
Characteristic[a]	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Total sample	100.00	100.00	100.00			100.00		
Location					0.5981			0.2696
Springfield	52.20	52.70	49.50	0.96		52.70	0.96	
Chicopee/Holyoke	26.20	26.30	25.50	0.38		26.70	1.91	
Balance of Hampden	21.50	21.00	25.00	-2.33		20.60	-4.19	
Wave of sample release					0.0635			0.3165
Wave 1	38.40	39.60	30.50	3.13		39.20	2.08	
Wave 2	36.00	35.90	36.50	-0.28		35.90	-0.28	
Wave 3	25.60	24.50	33.00	-4.30		24.90	-2.73	
Monthly SNAP benefit					0.0874			0.6574
$1-$161	24.90	25.50	21.20	2.41		25.30	1.61	
$162 - $200	30.30	31.30	24.20	3.30		30.80	1.65	
$201 - $349	13.90	13.70	14.90	-1.44		13.70	-1.44	
$350 +	30.90	29.50	39.70	-4.53		30.30	-1.94	
Spanish language					0.7683			0.0865
Yes	22.40	22.20	23.40	-0.89		23.00	2.68	
No	77.60	77.80	76.60	0.26		77.00	-0.77	
Recertification type					0.0088			0.5112
Recertification	53.30	54.70	44.20	2.63		53.40	0.19	
Semiannual reporting	32.90	31.10	43.70	-5.47		32.40	-1.52	
Other reevaluation	13.80	14.10	12.10	2.17		14.20	2.90	
Monthly income					0.4171			0.8118
$0	19.40	19.20	20.40	-1.03		19.40	0.00	
$1 - $787	24.20	24.50	22.30	1.24		24.40	0.83	
$788 - $1,088	23.90	24.50	20.00	2.51		24.20	1.26	
$1,089 +	32.60	31.80	37.20	-2.45		32.10	-1.53	
Baystate cap					0.9245			0.9332
Yes	7.80	7.80	8.00	0.00		7.80	0.00	
No	92.20	92.20	92.00	0.00		92.20	0.00	
Homeless					0.9256			0.4162
Yes	3.40	3.40	3.20	0.00		3.60	5.88	
No	96.60	96.60	96.80	0.00		96.40	-0.21	

Characteristic[a]	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Housing type					0.5740			0.2760
Private	82.10	81.70	84.60	-0.49		81.50	-0.73	
Public	15.20	15.50	13.70	1.97		15.60	2.63	
Other	2.70	2.80	1.70	3.70		3.00	11.11	
Household head age					0.0720			0.5512
16–30	22.20	21.30	27.80	-4.05		21.60	-2.70	
31–40	24.40	23.70	28.60	-2.87		24.30	-0.41	
41–54	28.50	29.20	24.00	2.46		29.20	2.46	
55+	24.90	25.80	19.60	3.61		24.90	0.00	
Household head race/ethnicity					0.2764			0.5139
Hispanic	42.40	41.70	47.40	-1.65		42.50	0.24	
White	37.50	37.60	36.80	0.27		37.00	-1.33	
Black	13.60	14.40	8.90	5.88		14.20	4.41	
Other	6.50	6.40	6.90	-1.54		6.30	-3.08	
Disabled household head					0.0794			0.8621
Yes	51.90	52.90	45.60	1.93		51.80	-0.19	
No	48.10	47.10	54.40	-2.08		48.20	0.21	
US citizenship of household head					0.0373			0.0254
Yes	95.20	95.80	91.40	0.63		95.90	0.74	
No	4.80	4.20	8.60	-12.50		4.10	-14.58	
TANF/AFDC					0.6834			0.7261
Yes	16.80	16.60	18.00	-1.19		16.60	-1.19	
No	83.20	83.40	82.00	0.24		83.40	0.24	
Unearned income					0.1020			0.6802
Yes	63.10	64.10	56.90	1.58		63.40	0.48	
No	36.90	35.90	43.10	-2.71		36.60	-0.81	
SSI					0.2441			0.5621
Yes	32.60	33.20	28.60	1.84		32.90	0.92	
No	67.40	66.80	71.40	-0.89		67.10	-0.45	
RSDI					0.0003			0.0340
Yes	28.40	29.80	19.10	4.93		28.20	-0.70	
No	71.60	70.20	80.90	-1.96		71.80	0.28	

Characteristic[a]	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Unemployment compensation					0.5794			0.3967
Yes	5.40	5.60	4.30	3.70		5.70	5.56	
No	94.60	94.40	95.70	-0.21		94.30	-0.32	
Household type					0.0870			0.7726
Household with elderly	11.80	12.40	7.70	5.08		11.60	-1.69	
Household with children	42.80	41.60	50.20	-2.80		42.50	-0.70	
Other household	45.40	46.00	42.10	1.32		45.80	0.88	
Female					0.7173			0.7522
Yes	65.70	65.90	64.10	0.30		65.90	0.30	
No	34.30	34.10	35.90	-0.58		34.10	-0.58	
Age of person					0.1084			0.8258
16–30	30.70	29.80	36.20	-2.93		30.40	-0.98	
31–40	19.70	19.00	23.70	-3.55		19.50	-1.02	
41–54	25.20	25.70	21.90	1.98		25.60	1.59	
55+	24.50	25.50	18.30	4.08		24.60	0.41	
Race/ethnicity					0.2838			0.4183
Hispanic	42.80	42.10	47.40	-1.64		42.90	0.23	
White	37.20	37.30	36.80	0.27		36.70	-1.34	
Black	13.70	14.40	8.90	5.11		14.20	3.65	
Other	6.30	6.20	6.90	-1.59		6.10	-3.17	
US citizenship of sampled person					0.0441			0.0309
Yes	95.00	95.60	91.40	0.63		95.60	0.63	
No	5.00	4.40	8.60	-12.00		4.40	-12.00	
Disabled sampled person					0.1119			0.8691
Yes	50.20	51.20	44.20	1.99		50.10	-0.20	
No	49.80	48.80	55.80	-2.01		49.90	0.20	
Unemployment compensation					0.8568			0.6637
Yes	5.20	5.20	4.80	0.00		5.30	1.92	
No	94.80	94.80	95.20	0.00		94.70	-0.11	

Characteristic[a]	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Household size (no. adults 16+)					0.1275			0.4355
1	67.20	68.80	57.40	2.38		68.30	1.64	
2	23.60	22.80	28.50	-3.39		23.10	-2.12	
3	7.10	6.60	10.20	-7.04		6.80	-4.23	
4 +	2.00	1.70	3.90	-15.00		1.80	5.88	

[a] Household and person characteristics reported in SNAP sampling frame.
[b] Relative bias defined to be 100*(B-A)/A where A = unadjusted estimate for total sample and B = unadjusted estimate for respondent sample.
[c] Test comparing distribution of total sample versus respondent sample using unadjusted weights.
[d] Relative bias defined to be 100*(C-A)/A where A = unadjusted estimate for total sample and C = nonresponse-adjusted estimate for respondent sample.
[e] Rao-Scott chi-square test comparing distribution of respondent sample using nonresponse-adjusted weights with distribution of total sample using unadjusted weights (e.g., see Rao and Scott1984).

Exhibit 79: Comparison of Weighted Distributions of the non-HIP Sample Before and After Nonresponse Adjustment in Round 2

	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
Characteristic[a]	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Total sample	100.00	100.00	100.00			100.00		
Location					0.3536			0.5402
Springfield	53.00	53.20	51.40	0.38		53.00	0.00	
Chicopee/Holyoke	24.30	24.70	22.20	1.65		24.80	2.06	
Balance of Hampden	22.80	22.10	26.40	-3.07		22.20	-2.63	
Wave of sample release					0.0412			0.4550
Wave 1	37.20	37.60	35.30	1.08		36.70	-1.34	
Wave 2	35.80	37.00	29.70	3.35		36.20	1.12	
Wave 3	26.90	25.50	35.00	-5.20		27.10	0.74	
Monthly SNAP benefit					0.5823			0.8884
$1-$161	24.10	24.30	23.20	0.83		24.30	0.83	
$162 - $200	30.90	31.50	27.50	1.94		31.20	0.97	
$201 - $349	13.70	13.60	14.50	-0.73		13.50	-1.46	
$350 +	31.30	30.70	34.80	-1.92		31.10	-0.64	
Spanish language					0.7579			0.7850
Yes	22.20	22.10	23.10	-0.45		22.40	0.90	
No	77.80	77.90	76.90	0.13		77.60	-0.26	
Recertification type					0.7078			0.6348
Recertification	51.20	51.70	48.70	0.98		51.80	1.17	
Semiannual reporting	34.20	33.70	36.70	-1.46		33.90	-0.88	
Other reevaluation	14.60	14.60	14.60	0.00		14.30	-2.05	
Monthly income					0.6925			0.8571
$0	18.50	17.90	21.70	-3.24		18.10	-2.16	
$1 - $787	23.80	24.00	22.50	0.84		23.70	-0.42	
$788 - $1,088	25.20	25.20	25.10	0.00		25.20	0.00	
$1,089 +	32.60	32.90	30.70	0.92		33.00	1.23	
Baystate cap					0.7737			0.5177
Yes	8.60	8.50	9.30	-1.16		8.30	-3.49	
No	91.40	91.50	90.70	0.11		91.70	0.33	
Homeless					0.7906			0.6595
Yes	4.50	4.60	4.00	2.22		4.60	2.22	
No	95.50	95.40	96.00	-0.10		95.40	-0.10	

Characteristic[a]	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Housing type					0.8241			0.7078
Private	80.40	80.30	80.80	-0.12		80.10	-0.37	
Public	15.60	15.50	16.10	-0.64		15.60	0.00	
Other	4.10	4.20	3.10	2.44		4.30	4.88	
Household head age					0.3673			0.8486
16–30	23.50	22.70	27.60	-3.40		23.60	0.43	
31–40	23.10	23.00	23.40	-0.43		22.60	-2.16	
41–54	29.10	30.00	24.00	3.09		29.40	1.03	
55+	24.40	24.30	24.90	-0.41		24.50	0.41	
Household head race/ethnicity					0.1045			0.6572
Hispanic	43.60	42.60	49.00	-2.29		43.20	-0.92	
White	36.30	36.40	35.90	0.28		36.80	1.38	
Black	13.40	14.30	8.40	6.72		13.40	0.00	
Other	6.70	6.70	6.70	0.00		6.50	-2.99	
Disabled household head					0.1119			0.2621
Yes	51.10	52.10	45.60	1.96		51.80	1.37	
No	48.90	47.90	54.40	-2.04		48.20	-1.43	
US citizenship of household head					0.9865			0.9307
Yes	95.20	95.20	95.20	0.00		95.20	0.00	
No	4.80	4.80	4.80	0.00		4.80	0.00	
TANF/AFDC					0.6279			0.3580
Yes	18.30	18.60	17.20	1.64		18.80	2.73	
No	81.70	81.40	82.80	-0.37		81.20	-0.61	
Unearned income					0.6078			0.8690
Yes	60.30	60.70	58.20	0.66		60.40	0.17	
No	39.70	39.30	41.80	-1.01		39.60	-0.25	
SSI					0.7997			0.6936
Yes	32.30	32.50	31.50	0.62		32.10	-0.62	
No	67.70	67.50	68.50	-0.30		67.90	0.30	
RSDI					0.0674			0.0777
Yes	27.90	29.00	22.00	3.94		29.00	3.94	
No	72.10	71.00	78.00	-1.53		71.00	-1.53	

Characteristic[a]	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Unemployment compensation					0.6870			0.7654
Yes	3.90	3.80	4.50	-2.56		3.90	0.00	
No	96.10	96.20	95.50	0.10		96.10	0.00	
Household type					0.0547			0.2319
Household with elderly	11.50	11.10	14.00	-3.48		11.20	-2.61	
Household with children	43.00	41.80	49.00	-2.79		42.20	-1.86	
Other household	45.50	47.10	37.00	3.52		46.60	2.42	
Female					0.3517			0.6319
Yes	66.40	65.80	69.20	-0.90		66.10	-0.45	
No	33.60	34.20	30.80	1.79		33.90	0.89	
Age of person					0.3526			0.6629
16–30	34.00	33.30	37.80	-2.06		34.30	0.88	
31–40	18.40	18.20	19.20	-1.09		17.80	-3.26	
41–54	23.90	24.90	18.70	4.18		24.10	0.84	
55+	23.70	23.60	24.20	-0.42		23.80	0.42	
Race/ethnicity					0.1415			0.8792
Hispanic	43.70	42.80	48.30	-2.06		43.30	-0.92	
White	36.20	36.00	37.10	-0.55		36.50	0.83	
Black	13.50	14.40	8.40	6.67		13.50	0.00	
Other	6.70	6.80	6.20	1.49		6.60	-1.49	
US citizenship of sampled person					0.9944			0.9305
Yes	95.20	95.20	95.20	0.00		95.20	0.00	
No	4.80	4.80	4.80	0.00		4.80	0.00	
Disabled sampled person					0.0423			0.1236
Yes	48.20	49.30	42.10	2.28		49.10	1.87	
No	51.80	50.70	57.90	-2.12		50.90	-1.74	
Unemployment compensation					0.4746			0.4701
Yes	3.50	3.30	4.50	-5.71		3.30	-5.71	
No	96.50	96.70	95.50	0.21		96.70	0.21	

Characteristic[a]	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Household size (no. adults 16+)					0.4530			0.5513
1	65.10	64.80	66.90	-0.46		64.80	-0.46	
2	22.90	22.80	23.70	-0.44		22.90	0.00	
3	8.40	9.00	5.40	7.14		8.90	5.95	
4 +	3.50	3.40	4.00	-2.86		3.50	2.94	

[a] Household and person characteristics reported in SNAP sampling frame.
[b] Relative bias defined to be 100*(B-A)/A where A = unadjusted estimate for total sample and B = unadjusted estimate for respondent sample.
[c] Test comparing distribution of total sample versus respondent sample using unadjusted weights.
[d] Relative bias defined to be 100*(C-A)/A where A = unadjusted estimate for total sample and C = nonresponse-adjusted estimate for respondent sample.
[e] Rao-Scott chi-square test comparing distribution of respondent sample using nonresponse-adjusted weights with distribution of total sample using unadjusted weights (e.g., see Rao and Scott1984).

Exhibit 80: Comparison of Estimates of Selected Survey Items for the HIP Sample Before and After Nonresponse Adjustment in Round 2

Survey item (Round 2)	Base-weighted estimate	Nonresponse-adjusted estimate	Relative bias[a]	P-value of test[b]
1	2	3	4	5
Round 2 interview				
Percentage who enjoy new foods (agree or strongly agree)	83.54	83.13	-0.49	0.05
Percentage who enjoy new fruits (agree or strongly agree)	86.86	86.47	-0.45	0.04
Percentage who enjoy new vegetables (agree or strongly agree)	79.10	76.93	-2.74	0.00
Percentage who don't know how to prepare (agree or strongly agree)	27.62	28.00	1.38	0.09
Percentage who have hard time finding vegetables (agree or strongly agree)	21.04	20.95	-0.43	0.61
Percentage who say vegetables/fruits cost too much (agree or strongly agree)	48.55	48.26	-0.60	0.08
Average number of times juice consumed per day (among those with JUCEUNIT = 1)	2.19	2.24	2.28	0.04
Average number of times juice consumed per week (among those with JUCEUNIT = 2)	3.44	3.19	-7.27	0.40
Average number of times juice consumed per month (among those with JUCEUNIT = 3)	7.74	7.61	-1.68	0.19
Percentage consuming less than 3/4 cup per occasion (code 1)	11.86	11.64	-1.85	0.04
Average number of times fruit consumed per day (among those with FRUTUNIT = 1)	1.94	1.85	-4.64	0.15
Average number of times fruit consumed per week (among those with FRUTUNIT = 2)	3.21	3.17	-1.25	0.96
Average number of times fruit consumed per month (among those with FRUTUNIT = 3)	9.55	8.94	-6.39	0.71
Percentage consuming less than 1 med. Fruit per occasion (code 1)	6.02	6.03	0.17	0.85
Average number of times leafy veg. consumed per day (among those with LEAFUNIT = 1)	1.38	1.41	2.17	0.43
Average number of times leafy veg. consumed per week (among those with LEAFUNIT = 2)	2.75	2.65	-3.64	0.24
Average number of times leafy veg. consumed per month (among those with LEAFUNIT = 3)	6.36	6.17	-2.99	0.33
Percentage consuming less than 1/2 cup per occasion (code 1)	20.50	20.73	1.12	0.11
Round 2 AMPM (Day 1)				
Energy (kcal)	1,825.98	1,825.95	0.00	1.00
Protein (g)	72.51	72.36	-0.21	0.35
Carbohydrate (g)	233.73	233.92	0.08	0.73
Sugars (g)	113.06	113.33	0.24	0.42
Total Fat (g)	66.86	66.76	-0.15	0.64
Cholesterol (mg)	263.84	263.47	-0.14	0.69
Vitamin D (mcg)	4.70	4.68	-0.43	0.31
Calcium (mg)	933.49	931.60	-0.20	0.41
Iron (mg)	13.53	13.50	-0.22	0.54
Sodium (mg)	2,845.44	2,845.79	0.01	0.96

[a]Relative bias defined to be 100*(A-B)/B where A = base-weighted estimate for respondents and B = nonresponse adjusted estimate for respondents.
[b]Test of difference between base-weighted and nonresponse adjusted estimates using Rao-Scott chi-square test for categorical variables and tests reflecting the complex sample design for numeric variables.

Exhibit 81: Comparison of Estimates of Selected Survey Items for the non-HIP Sample Before and After Nonresponse Adjustment in Round 2

Survey item (Round 2)	Base-weighted estimate	Nonresponse-adjusted estimate	Relative bias[a]	P-value of test[b]
1	2	3	4	5
Round 2 interview				
Percentage who enjoy new foods (agree or strongly agree)	84.89	85.02	0.15	0.11
Percentage who enjoy new fruits (agree or strongly agree)	86.86	86.97	0.13	0.21
Percentage who enjoy new vegetables (agree or strongly agree)	77.27	77.19	-0.10	0.53
Percentage who don't know how to prepare (agree or strongly agree)	27.92	27.92	0.00	0.99
Percentage who have hard time finding vegetables (agree or strongly agree)	16.75	16.61	-0.84	0.30
Percentage who say vegetables/fruits cost too much (agree or strongly agree)	48.72	48.52	-0.41	0.19
Average number of times juice consumed per day (among those with JUCEUNIT = 1)	2.22	2.22	0.00	0.70
Average number of times juice consumed per week (among those with JUCEUNIT = 2)	3.20	3.20	0.00	0.89
Average number of times juice consumed per month (among those with JUCEUNIT = 3)	8.08	8.05	-0.37	0.72
Percentage consuming less than 3/4 cup per occasion (code 1)	10.95	11.00	0.46	0.54
Average number of times fruit consumed per day (among those with FRUTUNIT = 1)	1.90	1.89	-0.53	0.23
Average number of times fruit consumed per week (among those with FRUTUNIT = 2)	3.31	3.31	0.00	0.87
Average number of times fruit consumed per month (among those with FRUTUNIT = 3)	9.04	9.08	0.44	0.44
Percentage consuming less than 1 med. Fruit per occasion (code 1)	6.71	6.68	-0.45	0.76
Average number of times leafy veg. consumed per day (among those with LEAFUNIT = 1)	1.43	1.43	0.00	0.34
Average number of times leafy veg. consumed per week (among those with LEAFUNIT = 2)	2.68	2.68	0.00	0.24
Average number of times leafy veg. consumed per month (among those with LEAFUNIT = 3)	6.14	6.18	0.65	0.15
Percentage consuming less than 1/2 cup per occasion (code 1)	18.96	19.13	0.90	0.21
Round 2 AMPM (Day 1)				
Energy (kcal)	1,834.23	1,831.40	-0.15	0.40
Protein (g)	72.28	72.25	-0.04	0.81
Carbohydrate (g)	234.75	234.47	-0.12	0.53
Sugars (g)	108.74	108.65	-0.08	0.73
Total Fat (g)	68.23	68.07	-0.24	0.29
Cholesterol (mg)	273.44	272.83	-0.22	0.32
Vitamin D (mcg)	4.46	4.46	0.00	0.95
Calcium (mg)	908.63	907.53	-0.12	0.59
Iron (mg)	14.07	14.06	-0.07	0.67
Sodium (mg)	2,926.01	2,922.39	-0.12	0.54

[a]Relative bias defined to be 100*(A-B)/B where A = base-weighted estimate for respondents and B = nonresponse adjusted estimate for respondents.
[b]Test of difference between base-weighted and nonresponse adjusted estimates using Rao-Scott chi-square test for categorical variables and tests reflecting the complex sample design for numeric variables.

Exhibit 82: Comparison of First-Phase Response Rates by Selected Characteristics of the HIP Sample in Round 3

Characteristic[a]	Round 3 sample sizes by Phase 1 response status				First-phase response rate		P-value[e]
	Total	Eligibility status determined	Eligibility status unknown	Out of scope[b]	Unweighted[c]	Weighted[d]	
1	2	3	4	5	6	7	8
Total sample	1,009	898	29	82	96.87	96.73	
Location							0.0141
Springfield	520	472	12	36	97.52	97.66	
Chicopee/Holyoke	266	232	14	20	94.31	93.52	
Balance of Hampden	223	194	3	26	98.48	98.56	
Wave of sample release							0.0332
Wave 1	337	310	6	21	98.10	97.92	
Wave 2	378	339	8	31	97.69	97.59	
Wave 3	294	249	15	30	94.32	93.53	
Monthly SNAP benefit							0.5627
$1-$161	265	241	4	20	98.37	98.16	
$162 - $200	317	280	10	27	96.55	96.47	
$201 - $349	137	122	4	11	96.83	96.76	
$350 +	290	255	11	24	95.86	95.77	
Spanish language							0.2007
Yes	226	203	10	13	95.31	95.04	
No	783	695	19	69	97.34	97.25	
Recertification type							0.9438
Recertification	567	502	15	50	97.10	96.73	
Semiannual reporting	294	255	10	29	96.23	96.54	
Other reevaluation	148	141	4	3	97.24	97.13	
Monthly income							0.1373
$0	183	148	8	27	94.87	93.70	
$1 - $787	251	227	9	15	96.19	96.11	
$788 - $1,088	255	242	5	8	97.98	97.99	
$1,089 +	320	281	7	32	97.57	97.94	
Baystate cap							0.3878
Yes	81	75	4	2	94.94	94.77	
No	928	823	25	80	97.05	96.91	
Homeless							0.1443
Yes	23	18	3	2	85.71	86.92	
No	986	880	26	80	97.13	97.09	

Characteristic[a]	Round 3 sample sizes by Phase 1 response status				First-phase response rate		P-value[e]
	Total	Eligibility status determined	Eligibility status unknown	Out of scope[b]	Unweighted[c]	Weighted[d]	
1	2	3	4	5	6	7	8
Housing type							0.2931
Private	832	742	23	67	96.99	96.79	
Public	156	140	4	12	97.22	97.83	
Other	21	16	2	3	88.89	88.84	
Household head age							0.0055
16–30	201	161	12	28	93.06	93.06	
31–40	233	207	10	16	95.39	95.56	
41–54	298	268	4	26	98.53	98.64	
55+	277	262	3	12	98.87	98.56	
Household head race/ethnicity							0.5848
Hispanic	421	372	16	33	95.88	95.87	
White	386	348	7	31	98.03	97.62	
Black	138	121	4	13	96.80	96.80	
Other	64	57	2	5	96.61	97.10	
Disabled household head							0.3355
Yes	556	512	14	30	97.34	97.23	
No	453	386	15	52	96.26	96.15	
US citizenship of household head							n/a
Yes	972	864	29	79	96.75	96.59	
No	37	34	0	3	100.00	100.00	
TANF/AFDC							0.1346
Yes	168	153	9	6	94.44	93.94	
No	841	745	20	76	97.39	97.32	
Unearned income							0.1502
Yes	663	605	16	42	97.42	97.34	
No	346	293	13	40	95.75	95.61	
SSI							0.0514
Yes	350	328	7	15	97.91	98.05	
No	659	570	22	67	96.28	96.04	
RSDI							0.0398
Yes	319	298	4	17	98.68	98.51	
No	690	600	25	65	96.00	96.00	

Characteristic[a]	Round 3 sample sizes by Phase 1 response status				First-phase response rate		P-value[e]
	Total	Eligibility status determined	Eligibility status unknown	Out of scope[b]	Unweighted[c]	Weighted[d]	
1	2	3	4	5	6	7	8
Unemployment compensation							n/a
Yes	54	49	0	5	100.00	100.00	
No	955	849	29	77	96.70	96.53	
Household type							n/a
Household with elderly	135	129	0	6	100.00	100.00	
Household with children	409	358	18	33	95.21	95.29	
Other household	465	411	11	43	97.39	97.21	
Female							0.2231
Yes	689	629	16	44	97.52	97.25	
No	320	269	13	38	95.39	95.66	
Age of person							0.0241
16–30	283	232	14	37	94.31	94.48	
31–40	191	171	8	12	95.53	95.60	
41–54	262	237	4	21	98.34	98.32	
55+	273	258	3	12	98.85	98.54	
Race/ethnicity							0.6225
Hispanic	426	377	16	33	95.93	95.92	
White	383	345	7	31	98.01	97.60	
Black	138	121	4	13	96.80	96.82	
Other	62	55	2	5	96.49	96.99	
US citizenship of sampled person							n/a
Yes	970	862	29	79	96.75	96.58	
No	39	36	0	3	100.00	100.00	
Disabled sampled person							0.1179
Yes	539	496	11	32	97.83	97.69	
No	470	402	18	50	95.71	95.71	
Unemployment compensation							n/a
Yes	50	46	0	4	100.00	100.00	
No	959	852	29	78	96.71	96.54	
Household size (no. adults 16+)							0.4133
1	695	621	22	52	96.58	96.20	
2	230	201	4	25	98.05	98.25	
3	68	61	2	5	96.83	97.69	
4 +	16	15	1	0	93.75	94.76	

[a] Household and person characteristics reported in SNAP sampling frame.
[b] Households no longer active in SNAP per DTA updates.
[c] Calculated as R/(R+N), where R = the number of cases for which eligibility status was determined (column 3) and N = the number of cases for which eligibility status was not determined (column 4).
[d] Weighted response rates are calculated using the first-phase nonresponse-adjusted weights.
[e] Test of association between weighted first-phase response rates and selected characteristic using Rao-Scott chi-square test (e.g., see Rao and Scott, 1984).

Exhibit 83: Comparison of First-Phase Response Rates by Selected Characteristics of the non-HIP Sample in Round 3

Characteristic[a]	Round 3 sample sizes by Phase 1 response status				First-phase response rate		P-value[e]
	Total	Eligibility status determined	Eligibility status unknown	Out of scope[b]	Unweighted[c]	Weighted[d]	
1	2	3	4	5	6	7	8
Total sample	997	891	34	72	96.32	96.29	
Location							0.9483
Springfield	542	492	18	32	96.47	96.48	
Chicopee/Holyoke	253	225	9	19	96.15	96.04	
Balance of Hampden	202	174	7	21	96.13	96.11	
Wave of sample release							0.2759
Wave 1	335	305	9	21	97.13	97.00	
Wave 2	389	355	12	22	96.73	96.84	
Wave 3	273	231	13	29	94.67	94.53	
Monthly SNAP benefit							0.6114
$1-$161	248	225	7	16	96.98	96.93	
$162 - $200	288	257	8	23	96.98	96.96	
$201 - $349	141	123	5	13	96.09	96.36	
$350 +	320	286	14	20	95.33	95.11	
Spanish language							0.7566
Yes	222	198	9	15	95.65	95.88	
No	775	693	25	57	96.52	96.41	
Recertification type							0.0934
Recertification	513	467	11	35	97.70	97.51	
Semiannual reporting	338	296	13	29	95.79	96.06	
Other reevaluation	146	128	10	8	92.75	92.50	
Monthly income							0.6914
$0	168	149	3	16	98.03	97.45	
$1 - $787	235	214	8	13	96.40	96.64	
$788 - $1,088	258	236	11	11	95.55	95.06	
$1,089 +	336	292	12	32	96.05	96.40	
Baystate cap							0.3901
Yes	85	76	5	4	93.83	93.57	
No	912	815	29	68	96.56	96.55	
Homeless							0.2610
Yes	34	25	3	6	89.29	89.53	
No	963	866	31	66	96.54	96.58	

Characteristic[a]	Round 3 sample sizes by Phase 1 response status				First-phase response rate		P-value[e]
	Total	Eligibility status determined	Eligibility status unknown	Out of scope[b]	Unweighted[c]	Weighted[d]	
1	2	3	4	5	6	7	8
Housing type							0.2955
Private	796	714	24	58	96.75	96.77	
Public	169	154	7	8	95.65	95.67	
Other	32	23	3	6	88.46	88.79	
Household head age							0.7949
16–30	217	185	8	24	95.85	95.82	
31–40	242	215	8	19	96.41	96.36	
41–54	300	267	12	21	95.70	95.66	
55+	238	224	6	8	97.39	97.38	
Household head race/ethnicity							0.0784
Hispanic	429	382	21	26	94.79	94.64	
White	357	316	8	33	97.53	97.71	
Black	145	131	3	11	97.76	97.70	
Other	66	62	2	2	96.88	96.65	
Disabled household head							0.9014
Yes	516	467	18	31	96.29	96.22	
No	481	424	16	41	96.36	96.37	
US citizenship of household head							n/a
Yes	952	849	34	69	96.15	96.10	
No	45	42	0	3	100.00	100.00	
TANF/AFDC							0.7092
Yes	190	172	6	12	96.63	95.70	
No	807	719	28	60	96.25	96.43	
Unearned income							0.7715
Yes	611	555	21	35	96.35	96.15	
No	386	336	13	37	96.28	96.51	
SSI							0.0474
Yes	329	292	17	20	94.50	94.25	
No	668	599	17	52	97.24	97.28	
RSDI							0.2563
Yes	287	261	8	18	97.03	97.21	
No	710	630	26	54	96.04	95.91	

Characteristic[a]	Round 3 sample sizes by Phase 1 response status				First-phase response rate		P-value[e]
	Total	Eligibility status determined	Eligibility status unknown	Out of scope[b]	Unweighted[c]	Weighted[d]	
1	2	3	4	5	6	7	8
Unemployment compensation							0.6830
Yes	41	37	2	2	94.87	94.94	
No	956	854	32	70	96.39	96.35	
Household type							0.6908
Household with elderly	111	104	4	3	96.30	96.37	
Household with children	439	387	17	35	95.79	95.69	
Other household	447	400	13	34	96.85	96.81	
Female							0.2841
Yes	681	608	26	47	95.90	95.80	
No	316	283	8	25	97.25	97.25	
Age of person							0.6337
16–30	317	272	11	34	96.11	96.00	
31–40	197	173	7	17	96.11	95.96	
41–54	252	229	11	12	95.42	95.42	
55+	231	217	5	9	97.75	97.80	
Race/ethnicity							0.0880
Hispanic	430	385	21	24	94.83	94.69	
White	354	311	8	35	97.49	97.68	
Black	146	132	3	11	97.78	97.71	
Other	67	63	2	2	96.92	96.70	
US citizenship of sampled person							n/a
Yes	952	849	34	69	96.15	96.10	
No	45	42	0	3	100.00	100.00	
Disabled sampled person							0.9968
Yes	490	447	17	26	96.34	96.29	
No	507	444	17	46	96.31	96.29	
Unemployment compensation							0.2798
Yes	35	31	3	1	91.18	91.28	
No	962	860	31	71	96.52	96.47	
Household size (no. adults 16+)							0.7413
1	642	576	21	45	96.48	96.47	
2	236	210	10	16	95.45	95.56	
3	96	88	2	6	97.78	97.79	
4 +	23	17	1	5	94.44	93.37	

[a] Household and person characteristics reported in SNAP sampling frame.
[b] Households no longer active in SNAP per DTA updates.
[c] Calculated as R/(R+N), where R = the number of cases for which eligibility status was determined (column 3) and N = the number of cases for which eligibility status was not determined (column 4).
[d] Weighted response rates are calculated using the first-phase nonresponse-adjusted weights.
[e] Test of association between weighted first-phase response rates and selected characteristic using Rao-Scott chi-square test (e.g., see Rao and Scott, 1984).

Exhibit 84: Comparison of Second-Phase Conditional Response Rates by Selected Characteristics of the HIP Sample in Round 3

Characteristic[a]	Round 3 sample sizes by phase 2 response status				Second-phase response rate		Overall response rate	P-value[f]
	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	
1	2	3	4	5	6	7	8	9
Total sample	898	748	139	11	84.33	84.29	81.53	
Location								0.0346
Springfield	472	385	80	7	82.80	82.84	80.90	
Chicopee/Holyoke	232	205	25	2	89.13	89.33	83.54	
Balance of Hampden	194	158	34	2	82.29	81.52	80.35	
Wave of sample release								0.0825
Wave 1	310	267	39	4	87.25	87.49	85.67	
Wave 2	339	278	56	5	83.23	82.64	80.65	
Wave 3	249	203	44	2	82.19	81.38	76.11	
Monthly SNAP benefit								0.4675
$1-$161	241	206	30	5	87.29	87.43	85.82	
$162 - $200	280	233	43	4	84.42	84.49	81.51	
$201 - $349	122	100	22	0	81.97	80.61	78.00	
$350 +	255	209	44	2	82.61	83.15	79.63	
Spanish language								0.1065
Yes	203	174	23	6	88.32	87.98	83.62	
No	695	574	116	5	83.19	83.22	80.93	
Recertification type								0.0602
Recertification	502	431	65	6	86.90	87.18	84.33	
Semiannual reporting	255	201	51	3	79.76	80.08	77.31	
Other reevaluation	141	116	23	2	83.45	83.05	80.67	
Monthly income								0.9635
$0	148	123	23	2	84.25	84.78	79.44	
$1 - $787	227	188	38	1	83.19	83.57	80.32	
$788 - $1,088	242	203	34	5	85.65	85.14	83.43	
$1,089 +	281	234	44	3	84.17	83.91	82.18	
Baystate cap								0.8032
Yes	75	62	11	2	84.93	83.14	78.79	
No	823	686	128	9	84.28	84.39	81.78	
Homeless								0.0264
Yes	18	17	1	0	94.44	95.30	82.83	
No	880	731	138	11	84.12	83.92	81.48	

Characteristic[a]	Round 3 sample sizes by phase 2 response status				Second-phase response rate		Overall response rate	P-value[f]
	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	
1	2	3	4	5	6	7	8	9
Housing type								n/a
Private	742	616	115	11	84.27	83.96	81.26	
Public	140	116	24	0	82.86	83.36	81.55	
Other	16	16	0	0	100.00	100.00	88.84	
Household head age								0.2828
16–30	161	134	26	1	83.75	83.47	77.68	
31–40	207	162	41	4	79.80	80.85	77.26	
41–54	268	226	41	1	84.64	84.49	83.34	
55+	262	226	31	5	87.94	88.01	86.74	
Household head race/ethnicity								0.5008
Hispanic	372	301	67	4	81.79	82.30	78.90	
White	348	298	45	5	86.88	86.12	84.07	
Black	121	102	18	1	85.00	86.13	83.37	
Other	57	47	9	1	83.93	82.60	80.20	
Disabled household head								0.1263
Yes	512	436	70	6	86.17	86.02	83.64	
No	386	312	69	5	81.89	82.28	79.11	
US citizenship of household head								0.2801
Yes	864	722	131	11	84.64	84.66	81.77	
No	34	26	8	0	76.47	76.31	76.31	
TANF/AFDC								0.5194
Yes	153	131	22	0	85.62	86.08	80.86	
No	745	617	117	11	84.06	83.92	81.67	
Unearned income								0.3085
Yes	605	509	87	9	85.40	85.19	82.92	
No	293	239	52	2	82.13	82.65	79.02	
SSI								0.6398
Yes	328	277	48	3	85.23	85.09	83.43	
No	570	471	91	8	83.81	83.86	80.54	
RSDI								0.0034
Yes	298	262	31	5	89.42	88.95	87.62	
No	600	486	108	6	81.82	82.35	79.06	

Characteristic[a]	Round 3 sample sizes by phase 2 response status				Second-phase response rate		Overall response rate	P-value[f]
	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	
1	2	3	4	5	6	7	8	9
Unemployment compensation								0.0436
Yes	49	45	4	0	91.84	91.68	91.68	
No	849	703	135	11	83.89	83.83	80.92	
Household type								0.3341
Household with elderly	129	109	15	5	87.90	87.59	87.59	
Household with children	358	292	63	3	82.25	82.36	78.48	
Other household	411	347	61	3	85.05	85.23	82.85	
Female								0.0707
Yes	629	531	91	7	85.37	85.81	83.45	
No	269	217	48	4	81.89	81.10	77.58	
Age of person								0.2908
16–30	232	186	43	3	81.22	81.08	76.60	
31–40	171	139	30	2	82.25	83.46	79.79	
41–54	237	201	35	1	85.17	84.96	83.53	
55+	258	222	31	5	87.75	87.84	86.56	
Race/ethnicity								0.3979
Hispanic	377	305	68	4	81.77	82.06	78.71	
White	345	296	44	5	87.06	86.41	84.34	
Black	121	102	18	1	85.00	86.23	83.49	
Other	55	45	9	1	83.33	82.54	80.06	
US citizenship of sampled person								0.3532
Yes	862	720	131	11	84.61	84.62	81.73	
No	36	28	8	0	77.78	77.62	77.62	
Disabled sampled person								0.0587
Yes	496	425	66	5	86.56	86.65	84.65	
No	402	323	73	6	81.57	81.75	78.24	
Unemployment compensation								0.7956
Yes	46	41	5	0	89.13	85.71	85.71	
No	852	707	134	11	84.07	84.21	81.30	

Characteristic[a]	Round 3 sample sizes by phase 2 response status				Second-phase response rate		Overall response rate	P-value[f]
	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	
1	2	3	4	5	6	7	8	9
Household size (no. adults 16+)								0.4900
1	621	525	87	9	85.78	86.10	82.83	
2	201	162	37	2	81.41	80.74	79.33	
3	61	49	12	0	80.33	80.65	78.79	
4 +	15	12	3	0	80.00	75.58	71.62	

[a] Household and person characteristics reported in SNAP sampling frame.
[b] Ineligible for Round 1 per survey (e.g., no longer in SNAP, institutionalized, not a resident of Hampden County, deceased, etc.)
[c] Calculated as R/(R+N), where R = the number of eligible respondents (column 3) and N = the number of eligible non-respondents (column 4).
[d] Weighted response rates are calculated using the first-phase nonresponse-adjusted weights.
[e] Product of weighted first- and second-phase response rates.
[f] Test of association between weighted second-phase response rates and characteristic using Rao-Scott chi-square test (e.g., see Rao and Scott, 1984).

Exhibit 85: Comparison of Second-Phase Conditional Response Rates by Selected Characteristics of the non-HIP Sample in Round 3

Characteristic[a]	Round 3 sample sizes by phase 2 response status				Second-phase response rate		Overall response rate	P-value[f]
	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	
1	2	3	4	5	6	7	8	9
Total sample	891	732	146	13	83.37	83.24	80.15	
Location								0.8968
Springfield	492	404	81	7	83.30	82.68	79.77	
Chicopee/Holyoke	225	187	37	1	83.48	83.81	80.49	
Balance of Hampden	174	141	28	5	83.43	84.03	80.76	
Wave of sample release								0.0782
Wave 1	305	261	39	5	87.00	86.64	84.04	
Wave 2	355	292	57	6	83.67	83.28	80.65	
Wave 3	231	179	50	2	78.17	78.46	74.17	
Monthly SNAP benefit								0.1724
$1-$161	225	187	34	4	84.62	84.33	81.74	
$162 - $200	257	217	35	5	86.11	86.30	83.68	
$201 - $349	123	100	22	1	81.97	81.81	78.83	
$350 +	286	228	55	3	80.57	80.01	76.10	
Spanish language								0.5480
Yes	198	167	31	0	84.34	84.67	81.18	
No	693	565	115	13	83.09	82.82	79.85	
Recertification type								0.6081
Recertification	467	388	70	9	84.72	84.40	82.30	
Semiannual reporting	296	239	53	4	81.85	81.87	78.64	
Other reevaluation	128	105	23	0	82.03	82.18	76.02	
Monthly income								0.3079
$0	149	126	23	0	84.56	84.04	81.90	
$1 - $787	214	184	27	3	87.20	86.82	83.90	
$788 - $1,088	236	185	43	8	81.14	80.46	76.49	
$1,089 +	292	237	53	2	81.72	82.28	79.32	
Baystate cap								0.7880
Yes	76	62	14	0	81.58	82.16	76.88	
No	815	670	132	13	83.54	83.34	80.46	
Homeless								0.8565
Yes	25	21	4	0	84.00	84.49	75.64	
No	866	711	142	13	83.35	83.19	80.34	

Characteristic[a]	Round 3 sample sizes by phase 2 response status				Second-phase response rate		Overall response rate	P-value[f]
	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	
1	2	3	4	5	6	7	8	9
Housing type								0.7303
Private	714	581	121	12	82.76	82.79	80.12	
Public	154	132	22	0	85.71	84.79	81.12	
Other	23	19	3	1	86.36	86.50	76.80	
Household head age								0.2020
16–30	185	157	27	1	85.33	84.36	80.83	
31–40	215	165	45	5	78.57	78.49	75.63	
41–54	267	221	44	2	83.40	83.55	79.92	
55+	224	189	30	5	86.30	86.12	83.86	
Household head race/ethnicity								0.8773
Hispanic	382	316	65	1	82.94	82.68	78.25	
White	316	252	54	10	82.35	82.84	80.94	
Black	131	112	17	2	86.82	85.59	83.62	
Other	62	52	10	0	83.87	84.35	81.52	
Disabled household head								0.5656
Yes	467	387	72	8	84.31	84.03	80.85	
No	424	345	74	5	82.34	82.38	79.39	
US citizenship of household head								0.0033
Yes	849	705	131	13	84.33	84.32	81.03	
No	42	27	15	0	64.29	62.93	62.93	
TANF/AFDC								0.2637
Yes	172	139	31	2	81.76	80.01	76.57	
No	719	593	115	11	83.76	84.01	81.01	
Unearned income								0.1799
Yes	555	459	83	13	84.69	84.71	81.45	
No	336	273	63	0	81.25	80.99	78.16	
SSI								0.4441
Yes	292	246	44	2	84.83	84.67	79.80	
No	599	486	102	11	82.65	82.57	80.32	
RSDI								0.1776
Yes	261	218	37	6	85.49	85.95	83.55	
No	630	514	109	7	82.50	82.14	78.78	

Characteristic[a]	Round 3 sample sizes by phase 2 response status				Second-phase response rate		Overall response rate	P-value[f]
	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	
1	2	3	4	5	6	7	8	9
Unemployment compensation								0.5828
Yes	37	28	7	2	80.00	79.88	75.84	
No	854	704	139	11	83.51	83.37	80.33	
Household type								0.3556
Household with elderly	104	84	18	2	82.35	82.15	79.17	
Household with children	387	312	71	4	81.46	81.44	77.93	
Other household	400	336	57	7	85.50	85.17	82.45	
Female								0.8132
Yes	608	507	96	5	84.08	83.45	79.95	
No	283	225	50	8	81.82	82.83	80.55	
Age of person								0.0745
16–30	272	221	49	2	81.85	81.22	77.97	
31–40	173	131	37	5	77.98	77.95	74.80	
41–54	229	195	32	2	85.90	86.02	82.08	
55+	217	185	28	4	86.85	86.86	84.95	
Race/ethnicity								0.8561
Hispanic	385	318	66	1	82.81	82.51	78.13	
White	311	248	53	10	82.39	82.95	81.03	
Black	132	113	17	2	86.92	85.67	83.71	
Other	63	53	10	0	84.13	84.60	81.81	
US citizenship of sampled person								0.0079
Yes	849	704	132	13	84.21	84.17	80.89	
No	42	28	14	0	66.67	65.74	65.74	
Disabled sampled person								0.4741
Yes	447	370	69	8	84.28	84.17	81.05	
No	444	362	77	5	82.46	82.32	79.27	
Unemployment compensation								0.6120
Yes	31	23	6	2	79.31	79.74	72.79	
No	860	709	140	11	83.51	83.36	80.42	

Characteristic[a]	Round 3 sample sizes by phase 2 response status				Second-phase response rate		Overall response rate	P-value[f]
	Total	Eligible respondent	Eligible non-respondent	Ineligible[b]	Unweighted[c]	Weighted[d]	Weighted[e]	
1	2	3	4	5	6	7	8	9
Household size (no. adults 16+)								0.1550
1	576	483	82	11	85.49	85.44	82.42	
2	210	169	40	1	80.86	80.86	77.27	
3	88	69	18	1	79.31	79.28	77.53	
4 +	17	11	6	0	64.71	65.86	61.49	

[a] Household and person characteristics reported in SNAP sampling frame.
[b] Ineligible for Round 1 per survey (e.g., no longer in SNAP, institutionalized, not a resident of Hampden County, deceased, etc.)
[c] Calculated as R/(R+N), where R = the number of eligible respondents (column 3) and N = the number of eligible non-respondents (column 4).
[d] Weighted response rates are calculated using the first-phase nonresponse-adjusted weights.
[e] Product of weighted first- and second-phase response rates.
[f] Test of association between weighted second-phase response rates and characteristic using Rao-Scott chi-square test (e.g., see Rao and Scott, 1984).

Exhibit 86: Comparison of Weighted Distributions of the HIP Sample Before and After Nonresponse Adjustment in Round 3

	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
Characteristic[a]	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Total sample	100.00	100.00	100.00			100.00		
Location					0.0242			0.0170
Springfield	53.50	52.60	58.80	-1.68		51.80	-3.18	
Chicopee/Holyoke	26.10	27.70	17.30	6.13		27.90	6.90	
Balance of Hampden	20.40	19.70	23.90	-3.43		20.30	-0.49	
Wave of sample release					0.0926			0.7724
Wave 1	40.30	41.70	32.30	3.47		40.40	0.25	
Wave 2	36.10	35.40	39.90	-1.94		36.30	0.55	
Wave 3	23.70	22.90	27.80	-3.38		23.30	-1.69	
Monthly SNAP benefit					0.4562			0.6564
$1-$161	25.60	26.60	20.40	3.91		25.90	1.17	
$162 - $200	30.40	30.40	30.40	0.00		30.60	0.66	
$201 - $349	13.90	13.30	17.00	-4.32		13.20	-5.04	
$350 +	30.10	29.70	32.20	-1.33		30.40	1.00	
Spanish language					0.1072			0.8281
Yes	22.80	23.80	17.40	4.39		22.70	-0.44	
No	77.20	76.20	82.60	-1.30		77.30	0.13	
Recertification type					0.0720			0.6808
Recertification	53.20	54.90	43.70	3.20		53.70	0.94	
Semiannual reporting	31.60	30.10	39.70	-4.75		31.00	-1.90	
Other reevaluation	15.20	15.00	16.60	-1.32		15.30	0.66	
Monthly income					0.9596			0.7126
$0	17.40	17.50	16.80	0.57		18.00	3.45	
$1 - $787	25.20	24.90	26.60	-1.19		25.00	-0.79	
$788 - $1,088	25.70	25.90	24.50	0.78		25.60	-0.39	
$1,089 +	31.70	31.60	32.10	-0.32		31.40	-0.95	
Baystate cap					0.7882			0.9234
Yes	8.00	7.90	8.70	-1.25		8.00	0.00	
No	92.00	92.10	91.30	0.11		92.00	0.00	
Homeless					0.0223			0.0458
Yes	3.20	3.70	0.90	15.63		3.70	15.63	
No	96.80	96.30	99.10	-0.52		96.30	-0.52	

Characteristic[a]	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Housing type					0.0519			0.0385
Private	81.40	81.10	83.00	-0.37		81.30	-0.12	
Public	16.00	15.80	17.00	-1.25		15.60	-2.50	
Other	2.60	3.10	.	19.23		3.20	23.08	
Household head age					0.2655			0.9328
16–30	19.60	19.50	20.10	-0.51		19.90	1.53	
31–40	24.20	23.20	30.00	-4.13		24.20	0.00	
41–54	29.70	29.80	29.60	0.34		29.40	-1.01	
55+	26.40	27.60	20.30	4.55		26.50	0.38	
Household head race/ethnicity					0.4615			0.2694
Hispanic	42.20	41.20	47.70	-2.37		40.90	-3.08	
White	37.40	38.30	32.60	2.41		38.80	3.74	
Black	14.10	14.40	12.70	2.13		14.10	0.00	
Other	6.20	6.10	7.00	-1.61		6.20	0.00	
Disabled household head					0.1353			0.7988
Yes	54.00	55.00	48.20	1.85		54.20	0.37	
No	46.00	45.00	51.80	-2.17		45.80	-0.43	
US citizenship of household head					0.2799			0.6259
Yes	95.60	96.00	93.40	0.42		95.80	0.21	
No	4.40	4.00	6.60	-9.09		4.20	-4.55	
TANF/AFDC					0.4764			0.3988
Yes	17.20	17.60	15.10	2.33		17.70	2.91	
No	82.80	82.40	84.90	-0.48		82.30	-0.60	
Unearned income					0.3172			0.4101
Yes	65.00	65.70	61.40	1.08		64.50	-0.77	
No	35.00	34.30	38.60	-2.00		35.50	1.43	
SSI					0.6996			0.8100
Yes	35.00	35.30	33.50	0.86		35.20	0.57	
No	65.00	64.70	66.50	-0.46		64.80	-0.31	
RSDI					0.0025			0.6129
Yes	29.60	31.30	20.80	5.74		29.80	0.68	
No	70.40	68.70	79.20	-2.41		70.20	-0.28	

Characteristic[a]	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Unemployment compensation					0.0429			0.0487
Yes	5.90	6.40	3.10	8.47		6.50	10.17	
No	94.10	93.60	96.90	-0.53		93.50	-0.64	
Household type					0.3551			0.8740
Household with elderly	12.20	12.70	9.70	4.10		11.90	-2.46	
Household with children	42.00	41.10	47.10	-2.14		42.20	0.48	
Other household	45.80	46.20	43.20	0.87		45.80	0.00	
Female					0.0906			0.0463
Yes	67.80	68.90	61.70	1.62		69.20	2.06	
No	32.20	31.10	38.30	-3.42		30.80	-4.35	
Age of person					0.3250			0.6148
16–30	28.00	27.00	33.30	-3.57		27.40	-2.14	
31–40	19.80	19.50	21.30	-1.52		20.60	4.04	
41–54	26.10	26.30	25.10	0.77		25.90	-0.77	
55+	26.00	27.10	20.30	4.23		26.10	0.38	
Race/ethnicity					0.3867			0.2160
Hispanic	42.70	41.60	48.80	-2.58		41.30	-3.28	
White	37.00	38.00	31.80	2.70		38.50	4.05	
Black	14.20	14.50	12.70	2.11		14.20	0.00	
Other	6.00	5.90	6.80	-1.67		6.00	0.00	
US citizenship of sampled person					0.3571			0.6782
Yes	95.40	95.70	93.40	0.31		95.50	0.10	
No	4.60	4.30	6.60	-6.52		4.50	-2.17	
Disabled sampled person					0.0711			0.5531
Yes	52.10	53.50	44.70	2.69		52.60	0.96	
No	47.90	46.50	55.30	-2.92		47.40	-1.04	
Unemployment compensation					0.6291			0.6419
Yes	5.60	5.80	4.80	3.57		5.80	3.57	
No	94.40	94.20	95.20	-0.21		94.20	-0.21	

Characteristic[a]	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Household size (no. adults 16+)					0.5239			0.3994
1	68.40	69.70	60.90	1.90		70.00	2.34	
2	22.60	21.70	27.30	-3.98		21.40	-5.31	
3	7.10	6.80	8.80	-4.23		6.80	-4.23	
4 +	1.90	1.80	3.00	-5.26		1.80	0.00	

[a] Household and person characteristics reported in SNAP sampling frame.
[b] Relative bias defined to be 100*(B-A)/A where A = unadjusted estimate for total sample and B = unadjusted estimate for respondent sample.
[c] Test comparing distribution of total sample versus respondent sample using unadjusted weights.
[d] Relative bias defined to be 100*(C-A)/A where A = unadjusted estimate for total sample and C = nonresponse-adjusted estimate for respondent sample.
[e] Rao-Scott chi-square test comparing distribution of respondent sample using nonresponse-adjusted weights with distribution of total sample using unadjusted weights (e.g., see Rao and Scott1984).

Exhibit 87: Comparison of Weighted Distributions of the non-HIP Sample Before and After Nonresponse Adjustment in Round 3

	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
Characteristic[a]	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Total sample	100.00	100.00	100.00			100.00		
Location					0.9290			0.9679
Springfield	54.10	53.80	55.60	-0.55		54.00	-0.18	
Chicopee/Holyoke	24.60	24.80	24.00	0.81		24.80	0.81	
Balance of Hampden	21.30	21.40	20.40	0.47		21.20	-0.47	
Wave of sample release					0.0760			0.5324
Wave 1	37.20	38.70	29.70	4.03		38.00	2.15	
Wave 2	36.90	36.90	36.80	0.00		36.20	-1.90	
Wave 3	25.90	24.40	33.50	-5.79		25.90	0.00	
Monthly SNAP benefit					0.1413			0.7207
$1-$161	24.50	24.80	22.80	1.22		24.60	0.41	
$162 - $200	30.90	32.10	25.10	3.88		31.50	1.94	
$201 - $349	13.30	13.10	14.50	-1.50		13.30	0.00	
$350 +	31.30	30.00	37.60	-4.15		30.60	-2.24	
Spanish language					0.5556			0.7416
Yes	22.90	23.30	21.00	1.75		22.70	-0.87	
No	77.10	76.70	79.00	-0.52		77.30	0.26	
Recertification type					0.5985			0.5026
Recertification	52.60	53.40	49.00	1.52		53.40	1.52	
Semiannual reporting	33.10	32.50	36.00	-1.81		32.60	-1.51	
Other reevaluation	14.30	14.20	15.00	-0.70		13.90	-2.80	
Monthly income					0.2998			0.2800
$0	18.00	18.20	17.00	1.11		18.40	2.22	
$1 - $787	24.40	25.40	19.10	4.10		25.30	3.69	
$788 - $1,088	25.30	24.40	29.30	-3.56		24.30	-3.95	
$1,089 +	32.40	31.90	34.50	-1.54		32.00	-1.23	
Baystate cap					0.8139			0.8220
Yes	8.50	8.40	9.00	-1.18		8.40	-1.18	
No	91.50	91.60	91.00	0.11		91.60	0.11	
Homeless					0.8548			0.9035
Yes	3.80	3.90	3.50	2.63		3.90	2.63	
No	96.20	96.10	96.50	-0.10		96.10	-0.10	

Characteristic[a]	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Housing type					0.7363			0.6004
Private	80.30	79.90	82.40	-0.50		79.70	-0.75	
Public	16.20	16.50	14.80	1.85		16.70	3.09	
Other	3.40	3.60	2.70	5.88		3.50	2.94	
Household head age					0.1652			0.2915
16–30	22.50	22.80	20.70	1.33		23.00	2.22	
31–40	22.40	21.10	29.00	-5.80		21.60	-3.57	
41–54	29.70	29.70	29.20	0.00		29.00	-2.36	
55+	25.50	26.40	21.10	3.53		26.40	3.53	
Household head race/ethnicity					0.9007			0.8711
Hispanic	43.70	43.40	45.30	-0.69		43.60	-0.23	
White	35.70	35.60	36.30	-0.28		35.30	-1.12	
Black	13.50	13.90	11.80	2.96		13.90	2.96	
Other	7.00	7.10	6.60	1.43		7.20	2.86	
Disabled household head					0.5034			0.9851
Yes	52.50	53.10	49.60	1.14		52.50	0.00	
No	47.50	46.90	50.40	-1.26		47.50	0.00	
US citizenship of household head					0.0034			0.0059
Yes	94.90	96.20	88.80	1.37		96.10	1.26	
No	5.10	3.80	11.20	-25.49		3.90	-23.53	
TANF/AFDC					0.2546			0.6165
Yes	19.00	18.20	22.70	-4.21		18.60	-2.11	
No	81.00	81.80	77.30	0.99		81.40	0.49	
Unearned income					0.1612			0.3833
Yes	60.90	62.00	55.30	1.81		61.60	1.15	
No	39.10	38.00	44.70	-2.81		38.40	-1.79	
SSI					0.4100			0.6464
Yes	32.20	32.80	29.30	1.86		32.50	0.93	
No	67.80	67.20	70.70	-0.88		67.50	-0.44	
RSDI					0.1660			0.8745
Yes	29.30	30.30	24.40	3.41		29.40	0.34	
No	70.70	69.70	75.60	-1.41		70.60	-0.14	

Characteristic[a]	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Unemployment compensation					0.5946			0.6818
Yes	3.70	3.60	4.40	-2.70		3.60	-2.70	
No	96.30	96.40	95.60	0.10		96.40	0.10	
Household type					0.3256			0.8079
Household with elderly	11.80	11.70	12.50	-0.85		11.60	-1.69	
Household with children	41.90	40.90	46.70	-2.39		41.60	-0.72	
Other household	46.30	47.40	40.80	2.38		46.80	1.08	
Female					0.8163			0.2305
Yes	66.40	66.60	65.60	0.30		67.30	1.36	
No	33.60	33.40	34.40	-0.60		32.70	-2.68	
Age of person					0.0705			0.3369
16–30	32.70	32.00	36.40	-2.14		32.20	-1.53	
31–40	17.40	16.20	23.10	-6.90		16.70	-4.02	
41–54	25.00	25.80	21.00	3.20		25.10	0.40	
55+	24.90	26.00	19.50	4.42		26.00	4.42	
Race/ethnicity					0.8788			0.8533
Hispanic	44.10	43.70	46.20	-0.91		43.90	-0.45	
White	35.10	35.10	35.40	0.00		34.80	-0.85	
Black	13.60	14.00	11.80	2.94		14.00	2.94	
Other	7.10	7.30	6.60	2.82		7.30	2.82	
US citizenship of sampled person					0.0076			0.0154
Yes	95.00	96.00	89.60	1.05		95.90	0.95	
No	5.00	4.00	10.40	-20.00		4.10	-18.00	
Disabled sampled person					0.4315			0.8879
Yes	50.20	50.80	47.20	1.20		50.30	0.20	
No	49.80	49.20	52.80	-1.20		49.70	-0.20	
Unemployment compensation					0.6261			0.5744
Yes	3.10	3.00	3.70	-3.23		3.00	-3.23	
No	96.90	97.00	96.30	0.10		97.00	0.10	

Characteristic[a]	Unadjusted weights					Non-response-adjusted weights		
	Percent distribution			Relative bias		Percent distribution	Relative bias	
	Total	Eligible respondents	Eligible non-respondents	Percent[b]	P-value[c]	Eligible respondents	Weighted[d]	P-value[e]
1	2	3	4	5	6	7	8	9
Household size (no. adults 16+)					0.1375			0.1386
1	64.90	66.70	56.00	2.77		66.60	2.62	
2	23.00	22.20	26.60	-3.48		22.50	-2.17	
3	9.20	8.70	11.40	-5.43		8.60	-6.52	
4 +	2.90	2.30	6.00	-20.69		2.30	0.00	

[a] Household and person characteristics reported in SNAP sampling frame.
[b] Relative bias defined to be 100*(B-A)/A where A = unadjusted estimate for total sample and B = unadjusted estimate for respondent sample.
[c] Test comparing distribution of total sample versus respondent sample using unadjusted weights.
[d] Relative bias defined to be 100*(C-A)/A where A = unadjusted estimate for total sample and C = nonresponse-adjusted estimate for respondent sample.
[e] Rao-Scott chi-square test comparing distribution of respondent sample using nonresponse-adjusted weights with distribution of total sample using unadjusted weights (e.g., see Rao and Scott1984).

Exhibit 88: Comparison of Estimates of Selected Survey Items for the HIP Sample Before and After Nonresponse Adjustment in Round 3

Survey item (Round 3)	Base-weighted estimate	Nonresponse-adjusted estimate	Relative bias[a]	P-value of test[b]
1	2	3	4	5
Round 3 interview				
Percentage who enjoy new foods (agree or strongly agree)	82.97	83.11	0.17	0.44
Percentage who enjoy new fruits (agree or strongly agree)	86.75	87.17	0.48	0.01
Percentage who enjoy new vegetables (agree or strongly agree)	77.49	77.50	0.01	0.94
Percentage who don't know how to prepare (agree or strongly agree)	27.46	26.94	-1.89	0.05
Percentage who have hard time finding vegetables (agree or strongly agree)	22.00	21.35	-2.95	0.01
Percentage who say vegetables/fruits cost too much (agree or strongly agree)	48.47	48.14	-0.68	0.15
Average number of times juice consumed per day (among those with JUCEUNIT = 1)	2.14	2.14	0.00	0.81
Average number of times juice consumed per week (among those with JUCEUNIT = 2)	3.48	3.48	0.00	0.90
Average number of times juice consumed per month (among those with JUCEUNIT = 3)	7.29	7.17	-1.65	0.05
Percentage consuming less than 3/4 cup per occasion (code 1)	12.06	11.70	-2.99	0.05
Average number of times fruit consumed per day (among those with FRUTUNIT = 1)	1.92	1.93	0.52	0.39
Average number of times fruit consumed per week (among those with FRUTUNIT = 2)	3.23	3.24	0.31	0.55
Average number of times fruit consumed per month (among those with FRUTUNIT = 3)	9.29	9.28	-0.11	0.92
Percentage consuming less than 1 med. Fruit per occasion (code 1)	5.86	5.92	1.02	0.67
Average number of times leafy veg. consumed per day (among those with LEAFUNIT = 1)	1.35	1.35	0.00	0.97
Average number of times leafy veg. consumed per week (among those with LEAFUNIT = 2)	2.73	2.74	0.37	0.65
Average number of times leafy veg. consumed per month (among those with LEAFUNIT = 3)	6.29	6.31	0.32	0.70
Percentage consuming less than 1/2 cup per occasion (code 1)	21.41	21.39	-0.09	0.94
Round 3 AMPM (Day 1)				
Energy (kcal)	1,651.33	1,650.74	-0.04	0.90
Protein (g)	66.44	66.36	-0.12	0.70
Carbohydrate (g)	210.72	210.72	0.00	1.00
Sugars (g)	96.64	96.71	0.07	0.85
Total Fat (g)	61.04	61.06	0.03	0.94
Cholesterol (mg)	250.03	250.49	0.18	0.66
Vitamin D (mcg)	4.46	4.47	0.22	0.65
Calcium (mg)	834.41	837.01	0.31	0.46
Iron (mg)	12.88	12.93	0.39	0.34
Sodium (mg)	2,596.45	2,601.01	0.18	0.59

[a]Relative bias defined to be 100*(A-B)/B where A = base-weighted estimate for respondents and B = nonresponse adjusted estimate for respondents.
[b]Test of difference between base-weighted and nonresponse adjusted estimates using Rao-Scott chi-square test for categorical variables and tests reflecting the complex sample design for numeric variables.

Exhibit 89: Comparison of Estimates of Selected Survey Items for the non-HIP Sample Before and After Nonresponse Adjustment in Round 3

Survey item (Round 3)	Base-weighted estimate	Nonresponse-adjusted estimate	Relative bias[a]	P-value of test[b]
1	2	3	4	5
Round 3 interview				
Percentage who enjoy new foods (agree or strongly agree)	84.87	84.57	-0.35	0.28
Percentage who enjoy new fruits (agree or strongly agree)	86.47	86.21	-0.30	0.26
Percentage who enjoy new vegetables (agree or strongly agree)	77.71	77.36	-0.45	0.19
Percentage who don't know how to prepare (agree or strongly agree)	29.45	29.43	-0.07	0.91
Percentage who have hard time finding vegetables (agree or strongly agree)	18.06	17.85	-1.16	0.32
Percentage who say vegetables/fruits cost too much (agree or strongly agree)	49.82	49.58	-0.48	0.44
Average number of times juice consumed per day (among those with JUCEUNIT = 1)	2.23	2.22	-0.45	0.36
Average number of times juice consumed per week (among those with JUCEUNIT = 2)	3.27	3.22	-1.53	0.02
Average number of times juice consumed per month (among those with JUCEUNIT = 3)	7.63	7.47	-2.10	0.04
Percentage consuming less than 3/4 cup per occasion (code 1)	11.59	11.76	1.47	0.35
Average number of times fruit consumed per day (among those with FRUTUNIT = 1)	1.95	1.95	0.00	0.99
Average number of times fruit consumed per week (among those with FRUTUNIT = 2)	3.36	3.35	-0.30	0.46
Average number of times fruit consumed per month (among those with FRUTUNIT = 3)	8.82	8.79	-0.34	0.56
Percentage consuming less than 1 med. Fruit per occasion (code 1)	6.41	6.36	-0.78	0.61
Average number of times leafy veg. consumed per day (among those with LEAFUNIT = 1)	1.37	1.36	-0.73	0.65
Average number of times leafy veg. consumed per week (among those with LEAFUNIT = 2)	2.75	2.73	-0.73	0.18
Average number of times leafy veg. consumed per month (among those with LEAFUNIT = 3)	6.22	6.18	-0.64	0.53
Percentage consuming less than 1/2 cup per occasion (code 1)	19.49	19.54	0.26	0.83
Round 3 AMPM (Day 1)				
Energy (kcal)	1,753.04	1,748.32	-0.27	0.30
Protein (g)	69.11	68.95	-0.23	0.44
Carbohydrate (g)	224.19	223.70	-0.22	0.41
Sugars (g)	101.77	101.48	-0.29	0.43
Total Fat (g)	64.92	64.75	-0.26	0.40
Cholesterol (mg)	260.94	260.00	-0.36	0.39
Vitamin D (mcg)	4.20	4.15	-1.20	0.01
Calcium (mg)	850.68	847.38	-0.39	0.20
Iron (mg)	13.73	13.67	-0.44	0.28
Sodium (mg)	2,824.71	2,817.74	-0.25	0.38

[a]Relative bias defined to be 100*(A-B)/B where A = base-weighted estimate for respondents and B = nonresponse adjusted estimate for respondents.
[b]Test of difference between base-weighted and nonresponse adjusted estimates using Rao-Scott chi-square test for categorical variables and tests reflecting the complex sample design for numeric variables.

Appendix A: Definition of Response Status Groups

Response status group *	Code	Description
1	C1	Complete interview in English with selected respondent.
1	C2	Complete interview in English with shopper.
1	C3	Complete interview in Spanish with selected respondent.
1	C4	Complete interview in Spanish with shopper.
4	I2	The only person in the HH who shops is not 18+.
3	I3	The household identified by the study area as not participating in SNAP.
7	I4	Case was not released
2	LH	Two calls to this respondent resulted in a hearing or speech communication problem.
2	LM	Questionnaire had an additional language problem and has reached the maximum calling algorithm.
2	LP	Two calls to this respondent resulted in a non-English communication problem.
2	MC	The calling algorithm has been fulfilled. At least one "human" contact has been made at the number and there are no refusals or language problems in the call history for the household.
2	ML	The calling algorithm has been fulfilled. An attempt to contact someone else in the HH resulted in an interim language problem, but this particular questionnaire has had no interim language problem in its call history.
2	MR	Max call refusal
4	ND	Nonresponse: subject deceased
5	NL	The sampled person was not located. If the project is tracing, this code is assigned after the use of tracing resources.
2	NO	Nonresponse: other. Questionnaire for which no other final result code is applicable.
2	NM	No answer - Answering machine
2	NP	Nonresponse: subject not available in field period
2	NS	Nonresponse: subject physically or mentally incapable of completing interview and no proxy available.
2	RB	Refusal - On at least two calls, the respondent refused to be interviewed or broke off during the interview and refused to continue.
2	RG	Guardian or parent refused to grant consent for minor to participate in the study.
2	R3	A Re-Released Final Refusal (RB) has received an additional refusal.
4	OA	Subject never lived in Hampden County, MA.
4	OJ	Subject is in an institution (Nursing Home, jail, half-way house).
4	OO	Other out of scope - The questionnaire is out of scope and no other final code applies.
4	OP	On two separate attempts, the respondent enumerated in the screener is 'never heard of' at the respondent interview level and the correct phone # has been dialed.
4	OS	After the case is loaded, study area pulls case from TRC because Subject no longer participates in SNAP project.

*Applies to respondent and primary shopper surveys and to all rounds of data collection.

Appendix B: Round 1 Variables Used in CHAID Analyses and Calculated Response Rates

Exhibit B-1: Household-Level Variables Included in CHAID Analyses and Corresponding Sample Sizes by Treatment Status and Wave

Household Variable	HIP			Non-HIP		
	Wave 1	Wave 2	Wave 3*	Wave 1	Wave 2	Wave 3*
Total sample size	846	846	703	846	846	693
Monthly SNAP benefit						
$1-$161	184	203	163	187	192	178
$162 - $200	278	276	241	286	287	208
$201 - $349	117	120	90	103	120	94
$350 +	267	247	209	270	247	213
Spanish language	188	176	157	201	204	151
Recertification type						
Recertification	454	439	365	429	449	333
Semiannual reporting	291	300	257	302	297	255
Other reevaluation	101	107	81	115	100	105
Monthly Income						
$0	176	183	165	176	194	141
$1 - $787	213	209	156	211	191	161
$788 - $1,088	200	181	145	197	182	160
$1,089 +	257	273	237	262	279	231
Baystate CAP	57	59	46	65	64	53
Homeless	44	44	47	56	56	43
Housing type						
Private	678	679	576	698	677	537
Public	132	128	83	97	125	117
Other	36	39	44	51	44	39
Household head age						
16 - 30	214	228	175	214	217	178
31 - 40	202	202	184	204	220	154
41 - 54	235	229	190	241	220	203
55 +	195	187	154	187	189	158
Household head race/ethnicity						
Hispanic	363	369	307	371	383	319
White	311	308	269	317	297	258
Black	107	115	89	105	97	69
Other	65	54	38	53	69	47
Disabled	412	392	333	398	397	337
US Citizen	809	803	668	806	809	656
TANF/AFDC	126	141	100	136	147	107
Unearned income	513	497	407	494	485	415
SSI	259	266	209	256	249	231
RSDI	225	206	168	206	212	179
Unemployment compensation	41	45	37	40	42	32
Household type						
Household with elderly	93	90	82	94	96	83
Household with children	348	351	304	351	351	290
Other household	405	405	317	401	399	320

Household Variable	HIP			Non-HIP		
	Wave 1	Wave 2	Wave 3*	Wave 1	Wave 2	Wave 3*
Size of household (no. adults 16+)						
1	829	830	690	825	829	680
2	17	16	13	21	17	13

*Counts for wave 3 correspond to the subsample that was released for data collection.

Exhibit B-2: Person-level Variables Included in CHAID Analyses and corresponding Sample Sizes by Treatment Status and Wave

Household Characteristic	HIP			Non-HIP		
	Wave 1	Wave 2	Wave 3*	Wave 1	Wave 2	Wave 3*
Total sample size	846	846	703	846	846	693
Female	519	536	444	517	518	437
Age of person						
16 - 30	310	308	233	316	318	256
31 - 40	152	165	158	159	176	121
41 - 54	195	195	163	188	175	168
55 +	189	178	149	183	177	148
Race/ethnicity						
Hispanic	364	371	309	375	379	322
White	310	307	265	313	300	257
Black	106	113	88	106	101	68
Other	66	55	41	52	66	46
US citizen	808	805	669	805	810	655
Disabled	384	372	316	377	361	311
Unemployment compensation	43	37	38	33	35	25

*Counts for wave 3 correspond to the subsample that was released for data collection.

Exhibit B-3: Weighted Response Rates for the Round 1 Baseline Survey by Selected Characteristics

Characteristic (variable name)	HIP			Non-HIP		
	Phase 1*	Phase 2**	Overall	Phase 1*	Phase 2**	Overall
Household level						
Data collection wave (wave)						
1	85.6	60.9	52.1	81.3	66.1	53.7
2	81.7	79.3	64.8	87.0	78.2	68.0
3	87.6	83.5	73.1	89.3	77.8	69.5
Monthly SNAP benefit (ben_H)						
$1-$161	88.6	76.9	68.1	90.1	75.0	67.6
$162 - $200	78.4	73.5	57.6	78.0	70.5	55.0
$201 - $349	91.2	68.9	62.8	89.1	76.7	68.3
$350 +	86.0	71.6	61.6	88.0	74.2	65.3
Spanish language (lang_H)						
No	85.4	72.5	61.9	86.2	73.9	63.7
Yes	82.4	75.3	62.0	82.5	72.2	59.6
Recertification type (reeva_H)						
Recertification	83.6	74.2	62.0	84.2	73.4	61.8
Semiannual reporting	86.7	70.0	60.7	87.9	73.5	64.6
Other reevaluation	84.2	77.6	65.3	82.9	73.9	61.3
Monthly income (in_H)						
$0	78.1	69.3	54.1	79.1	72.8	57.6
$1 - $787	83.2	75.1	62.5	80.9	71.3	57.7
$788 - $1,088	86.3	75.1	64.8	87.3	74.8	65.3
$1,089 +	89.6	72.8	65.2	91.4	74.6	68.2
Baystate CAP (cap_H)						
No	84.7	72.9	61.7	85.5	73.5	62.8
Yes	86.3	76.0	65.6	83.5	73.5	61.4
Homeless (hmls_H)						
No	86.4	73.7	63.7	87.1	73.8	64.3
Yes	57.5	63.8	36.7	60.2	69.9	42.1
Housing type (res_H)						
Private	85.8	74.2	63.7	86.0	72.5	62.4
Public	89.2	70.9	63.2	91.5	79.4	72.7
Other	55.4	60.2	33.4	60.7	72.5	44.0
Household head age (age_H)						
16 - 30	76.9	68.9	53.0	80.2	73.8	59.2
31 - 40	87.2	73.6	64.2	85.1	74.0	63.0
41 - 54	85.2	76.2	64.9	88.5	74.0	65.5
55 +	90.7	73.5	66.7	87.4	72.2	63.1
Household head race/ethnicity (race_H)						
Hispanic	82.2	73.1	60.1	83.0	76.1	63.2
White	88.0	72.6	63.9	88.0	69.4	61.1
Black	82.4	78.8	64.9	88.1	79.6	70.1
Other	87.9	65.1	57.2	82.4	68.2	56.2
Disabled (dsbl_H)						
No	85.0	69.6	59.2	86.5	72.7	62.9
Yes	84.6	76.9	65.1	84.0	74.5	62.6
US citizen (citzn_H)						
No	93.5	54.6	51.1	92.4	63.1	58.3
Yes	84.3	74.1	62.5	85.0	74.1	63.0

Characteristic (variable name)	HIP			Non-HIP		
	Phase 1*	Phase 2**	Overall	Phase 1*	Phase 2**	Overall
TANF/AFDC (tafdc_H)						
No	84.5	72.5	61.3	85.0	72.0	61.2
Yes	86.0	76.3	65.6	87.0	81.0	70.5
Unearned income (ui_H)						
No	83.4	69.3	57.8	84.7	74.9	63.4
Yes	85.7	75.7	64.9	85.8	72.6	62.3
SSI (ssi_H)						
No	84.7	72.0	61.0	86.1	73.6	63.4
Yes	84.8	75.4	63.9	83.6	73.4	61.4
RSDI (rsdi_H)						
No	84.0	71.1	59.7	84.4	74.1	62.5
Yes	87.0	79.0	68.7	88.2	72.0	63.5
Unemployment compensation (uc_H)						
No	84.7	73.3	62.1	85.2	73.6	62.7
Yes	86.3	69.6	60.1	87.8	72.5	63.7
Household type (HH_TYP)						
Household with elderly	91.8	70.8	65.0	90.0	65.9	59.3
Household with children	87.7	70.5	61.8	89.9	75.5	67.9
Other household	80.6	76.1	61.3	80.3	73.7	59.2
Household with 4+ adults (nadl34)						
No	84.6	72.9	61.7	85.0	73.4	62.4
Yes	91.3	82.8	75.6	94.5	76.5	72.3
Person level						
Female (gende_P)						
No	79.6	70.0	55.7	80.7	68.2	55.0
Yes	87.8	74.8	65.7	88.2	76.5	67.5
Age of person (age_P)						
16 - 30	79.4	68.9	54.7	82.4	72.8	60.0
31 - 40	87.6	72.4	63.4	84.9	76.2	64.7
41 - 54	84.8	78.6	66.7	87.9	74.4	65.4
55 +	91.2	74.5	67.9	88.3	71.7	63.3
Race/ethnicity (race_P)						
Hispanic	82.4	72.9	60.1	82.7	76.0	62.9
White	88.1	72.2	63.6	88.2	69.5	61.3
Black	81.7	80.5	65.8	87.9	79.4	69.8
Other	87.4	65.6	57.3	82.9	68.4	56.7
US citizen (citzn_P)						
No	95.2	57.9	55.1	92.5	61.9	57.3
Yes	84.2	73.9	62.2	85.0	74.2	63.1
Disabled (dsbl_P)						
No	84.8	69.5	58.9	86.2	73.0	62.9
Yes	84.7	77.5	65.6	84.3	74.3	62.6
Unemployment compensation (uc_flg_P)						
No	84.5	73.3	61.9	85.4	73.5	62.8
Yes	90.0	68.2	61.4	84.3	73.0	61.5

*Weights are the poststratified pooled weights.
**Weights are the phase 1 nonresponse-adjusted weights.

Exhibit B-4: Weighted Response Rates for the Round 1 Shopper Survey by Selected Characteristics

Characteristic (variable name)	HIP			Non-HIP		
	Phase 1*	Phase 2**	Overall	Phase 1*	Phase 2**	Overall
Household-level						
Data collection wave (wave)						
1	84.6	58.2	49.2	81.0	62.8	50.9
2	80.4	76.7	61.7	86.1	74.8	64.4
3	87.3	79.7	69.6	88.7	75.4	66.9
Monthly SNAP benefit (ben_H)						
$1-$161	87.5	74.1	64.8	89.2	72.0	64.2
$162 - $200	77.8	69.8	54.3	77.8	67.8	52.7
$201 - $349	89.6	67.6	60.6	87.5	72.0	63.0
$350 +	85.3	68.7	58.6	87.6	71.1	62.3
Spanish language (lang_H)						
No	84.8	70.0	59.4	85.7	71.2	61.0
Yes	80.6	70.6	56.9	81.6	67.9	55.4
Recertification type (reeva_H)						
Recertification	82.6	70.4	58.2	83.5	69.4	57.9
Semiannual reporting	85.9	68.7	59.0	87.5	71.3	62.4
Other reevaluation	83.1	73.5	61.1	82.0	71.7	58.8
Monthly income (in_H)						
$0	77.5	66.7	51.7	78.9	70.9	55.9
$1 - $787	82.5	70.6	58.2	80.4	67.8	54.5
$788 - $1,088	85.4	72.7	62.1	86.8	71.5	62.1
$1,089 +	88.3	70.4	62.2	90.5	71.1	64.3
Baystate CAP (cap_H)						
No	83.8	70.1	58.7	85.0	70.3	59.8
Yes	84.4	70.9	59.8	82.4	71.1	58.6
Homeless (hmls_H)						
No	85.5	70.6	60.4	86.5	70.5	61.0
Yes	57.5	62.6	36.0	60.2	69.0	41.5
Housing type (res_H)						
Private	85.0	71.3	60.6	85.4	69.5	59.4
Public	87.6	67.5	59.1	90.9	74.3	67.5
Other	55.4	58.6	32.5	60.7	72.5	44.0
Household head age (age_H)						
16 - 30	76.5	67.1	51.3	80.0	72.1	57.7
31 - 40	85.6	69.4	59.4	84.9	71.3	60.5
41 - 54	85.1	73.8	62.8	88.1	70.4	62.0
55 +	89.1	70.0	62.4	85.8	67.6	58.0
Household head race/ethnicity (race_H)						
Hispanic	80.9	69.1	55.9	82.5	72.4	59.7
White	87.3	70.7	61.7	87.3	67.0	58.5
Black	81.8	76.8	62.8	87.7	76.2	66.8
Other	87.9	61.3	53.9	81.3	65.3	53.1
Disabled (dsbl_H)						
No	84.2	67.7	57.0	86.4	70.2	60.7
Yes	83.5	72.9	60.9	83.0	70.7	58.7

Characteristic (variable name)	HIP			Non-HIP		
	Phase 1*	Phase 2**	Overall	Phase 1*	Phase 2**	Overall
US citizen (citzn_H)						
No	92.7	53.2	49.3	90.8	58.7	53.3
Yes	83.4	71.1	59.3	84.5	71.0	60.0
TANF/AFDC (tafdc_H)						
No	83.8	69.8	58.5	84.4	68.9	58.2
Yes	84.4	72.4	61.1	86.7	77.5	67.2
Unearned income (ui_H)						
No	82.2	66.8	54.9	84.5	71.9	60.8
Yes	85.0	72.4	61.5	85.0	69.3	58.9
SSI (ssi_H)						
No	83.8	69.7	58.4	85.8	70.6	60.6
Yes	84.0	71.3	59.9	82.4	69.9	57.6
RSDI (rsdi_H)						
No	83.1	68.3	56.8	84.0	71.1	59.7
Yes	86.1	75.5	65.0	86.9	68.4	59.4
Unemployment compensation (uc_H)						
No	83.7	70.2	58.8	84.6	70.5	59.6
Yes	86.3	68.6	59.2	87.8	69.1	60.7
Household type (HH_TYP)						
Household with elderly	90.2	67.8	61.2	88.2	61.3	54.1
Household with children	86.7	68.8	59.6	89.5	72.3	64.7
Other household	79.8	72.0	57.5	79.8	71.0	56.7
Household with 4+ adults (nadl34)						
No	83.8	70.0	58.7	84.4	70.3	59.3
Yes	85.6	78.7	67.4	94.5	73.4	69.4
Person-level						
Female (gende_P)						
No	78.2	65.2	51.0	80.1	64.8	51.9
Yes	87.2	73.0	63.7	87.6	73.5	64.4
Age of person (age_P)						
16 - 30	78.5	65.2	51.2	81.9	69.4	56.8
31 - 40	86.7	70.1	60.8	84.6	74.9	63.4
41 - 54	84.1	77.0	64.8	87.7	71.8	63.0
55 +	90.0	71.0	63.9	86.8	66.9	58.1
Race/ethnicity (race_P)						
Hispanic	81.1	69.0	56.0	82.3	72.4	59.6
White	87.4	70.2	61.4	87.5	67.0	58.6
Black	81.1	78.5	63.7	87.5	76.1	66.6
Other	87.4	61.9	54.1	81.7	65.5	53.5
US citizen (citzn_P)						
No	94.3	56.6	53.4	90.8	57.6	52.3
Yes	83.3	70.9	59.1	84.5	71.1	60.1
Disabled (dsbl_P)						
No	83.8	67.0	56.1	85.8	70.0	60.1
Yes	84.0	74.1	62.2	83.4	71.0	59.2

Characteristic (variable name)	HIP			Non-HIP		
	Phase 1*	Phase 2**	Overall	Phase 1*	Phase 2**	Overall
Unemployment compensation (uc_flg_P)						
No	83.6	70.3	58.8	84.8	70.3	59.6
Yes	90.0	68.2	61.4	84.3	73.0	61.5

*Weights are the poststratified pooled weights.
**Weights are the phase 1 nonresponse-adjusted weights.

Appendix C: Variables Included in CHAID Analyses for Round 2 and Round 3 Weights

Source of variable	Variable name	Description	Values
ROUNDS 2 AND 3			
Sampling Frame	wave	Data Collection Wave	1, 2 ,3
	block	Blocking group defined for sampling	1 = Springfield, HH Size 1, Female Head 2 = Springfield, HH Size 1, Male Head 3 = Springfield, HH Size 2+, Female Head 4 = Springfield, HH Size 2+, Male Head 5 = Chicopee/Holyoke HH Size 1, Female Head 6 = Chicopee/Holyoke HH Size 1, Male Head 7 = Chicopee/Holyoke HH Size 2+, Female Head 8 = Chicopee/Holyoke HH Size 2+, Male Head 9 = Hampden Balance, HH Size 1, Female Head 10 = Hampden Balance, HH Size 1, Male Head 11 = Hampden Balance, HH Size 2+, Female Head 12 = Hampden Balance, HH Size 2+, Male Head
DTA Case Files	ben_H	Monthly SNAP Benefit	1 = $1-$161
			2 = $162 - $200
			3 = $201 - $349
			4 = $350 +
	lang_H	Spanish Language	0 = NO
			1 = YES
	reeva_H	Recertification Type	1 = Recertification 2 = Semiannual Reporting 3 = Other Reevaluation
	in_H	Monthly Income	1 = 0 2 = $1 - $787 3 = $788 - $1,088 4 = $1,089 +
	cap_H	Baystate CAP	0 = NO 1 = YES
	hmls_H	Homeless	0 = NO 1 = YES

Source of variable	Variable name	Description	Values
	res_H	Housing Type	1 = Private 2 = Public 3 = Other
	age_H	Household Head Age	1 = 16 - 30 2 = 31 - 40 3 = 41 - 54 4 = 55 +
	race_H	Household Head Race/Ethnicity	1 = Hispanic 2 = White
	dsbl_H	Disabled	0 = NO 1 = YES
	citzn_H	US Citizen	0 = NO 1 = YES
	tafdc_H	TANF/AFDC	0 = NO
	ui_H	Unearned Income	0 = NO 1 = YES
	ssi_H	SSI	0 = NO 1 = YES
	rsdi_H	RSDI	0 = NO 1 = YES
	uc_H	Unemployment Compensation	0 = NO 1 = YES
	HH_TYP	Household Type	1 = Household with Elderly 2 =Household with Children 3 = Other Household
	nadl34	Household with 4+ adults	0 = NO 1 = YES
	gende_P	Beneficiary is female	0 = NO 1 = YES
	age_P	Age of beneficiary	1 = 16 - 30 2 = 31 - 40 3 = 41 - 54 4 = 55 +

Source of variable	Variable name	Description	Values
	race_P	Race/ethnicity of beneficiary	1 = Hispanic 2 = White 3 = Black 4 = Other
	citzn_P	Beneficiary is US Citizen	0 = NO 1 = YES
	dsbl_P	Beneficiary is disabled	0 = NO 1 = YES
	uc_flg_P	Unemployment Compensation	0 = NO
ROUND 1			
Round 1 interview	ENSP	Whether interview conducted in English or Spanish	1 = ENGLISH 2 = SPANISH
	TRYFD	Enjoy trying new foods	1 = strongly disagree 2 = disagree 3 = neither disagree nor agree 4 = agree 5 = strongly agree 99 = does not apply, refused or don't know
	TRYFR	Enjoy trying new fruits	1 = strongly disagree 2 = disagree 3 = neither disagree nor agree 4 = agree 5 = strongly agree 99 = does not apply, refused or don't know
	TRYVG	Enjoy trying new vegetables	1 = strongly disagree 2 = disagree 3 = neither disagree nor agree 4 = agree 5 = strongly agree 99 = does not apply, refused or don't know
	FRTH	Eat enough fruits to keep me healthy	1 = strongly disagree 2 = disagree 3 = neither disagree nor agree 4 = agree 5 = strongly agree 99 = does not apply, refused or don't know

Source of variable	Variable name	Description	Values
	VEGH	Eat enough vegetables to keep me healthy	1 = strongly disagree 2 = disagree 3 = neither disagree nor agree 4 = agree 5 = strongly agree 99 = does not apply, refused or don't know
	FAMV	Encourage my family and friends to eat fruits and vegetables	1 = strongly disagree 2 = disagree 3 = neither disagree nor agree 4 = agree 5 = strongly agree 99 = does not apply, refused or don't know
	RLKE	I don't eat fruits and vegetables because I don't like them	1 = strongly disagree 2 = disagree 3 = neither disagree nor agree 4 = agree 5 = strongly agree 99 = does not apply, refused or don't know
	HISP	Do you consider yourself to be Hispanic or Latino	1 = Yes 2 = No 99 = REFUSED OR DON'T KNOW
	WHIT	Do you consider yourself to be White	1 = Yes 2 = No 99 = REFUSED OR DON'T KNOW
	BLK	Do you consider yourself to be Black	1 = Yes 2 = No 99 = REFUSED OR DON'T KNOW
	ASN	Do you consider yourself to be Asian	1 = Yes 2 = No 99 = REFUSED OR DON'T KNOW

Source of variable	Variable name	Description	Values
	EDLV	What is the highest grade or level of school you have completed or the highest degree you have received	1 = 1ST GRADE 2 = 2ND GRADE 3 = 3RD GRADE 4 = 4TH GRADE 5 = 5TH GRADE 6 = 6TH GRADE 7 = 7TH GRADE 8 = 8TH GRADE 9 = 9TH GRADE 10 = 10TH GRADE 11 = 11TH GRADE 12 = 12TH GRADE, NO DIPLOMA 13 = HIGH SCHOOL GRADUATE 14 = GED OR EQUIVALENT 15 = SOME COLLEGE, NO DEGREE 16 = ASSOCIATE DEGREE: OCCUPATIONAL, ETC. 17 = ASSOCIATE DEGREE: ACADEMIC PROGRAM 18 = BACHELOR'S DEGREE (BA, AB, BS, BBA) 19 = MASTER'S DEGREE (MA, MS, MENG, MED, MBA) 20 = PROFESSIONAL DEGREE (MD, DDS, DVM, JD) 21 = DOCTORAL DEGREE (EXAMPLE: PHD, EDD) 22 = NEVER ATTENDED/KINDERGARTEN ONLY 99 = REFUSED OR DON'T KNOW
VARIABLES USED FOR ROUND 3 WEIGHTS ONLY			
Round 2 Interview	TRYFD2R	Enjoy trying new foods	1 = strongly disagree 2 = disagree 3 = neither disagree nor agree 4 = agree 5 = strongly agree 99 = does not apply, refused or don't know
	TRYFR2R	Enjoy trying new fruits	1 = strongly disagree 2 = disagree 3 = neither disagree nor agree 4 = agree 5 = strongly agree 99 = does not apply, refused or don't know

Source of variable	Variable name	Description	Values
	TRYVG2R	Enjoy trying new vegetables	1 = strongly disagree 2 = disagree 3 = neither disagree nor agree 4 = agree 5 = strongly agree 99 = does not apply, refused or don't know
	FRTH2R	Eat enough fruits to keep me healthy	1 = strongly disagree 2 = disagree 3 = neither disagree nor agree 4 = agree 5 = strongly agree 99 = does not apply, refused or don't know
	VEGH2R	Eat enough vegetables to keep me healthy	1 = strongly disagree 2 = disagree 3 = neither disagree nor agree 4 = agree 5 = strongly agree 99 = does not apply, refused or don't know
	FAMV2R	Encourage my family and friends to eat fruits and vegetables	1 = strongly disagree 2 = disagree 3 = neither disagree nor agree 4 = agree 5 = strongly agree 99 = does not apply, refused or don't know
	RLKE2R	I don't eat fruits and vegetables because I don't like them	1 = strongly disagree 2 = disagree 3 = neither disagree nor agree 4 = agree 5 = strongly agree 99 = does not apply, refused or don't know

References

Susan Bartlett, S., Klerman, J., Olsho, O., Logan, C., Blocklin, M., Beauregard, M., Enver, A., Wilde, P., Owens, C., and Melhem, M. (2014). *Healthy Incentives Pilot (HIP) final report.* Cambridge, MA: Abt Associates.

Kalton, G. (1963). *Compensating for missing survey data.* Ann Arbor: Survey Research Center, Institute for Social Research, University of Michigan..

Neter, J., Wasserman, W., and Kutner, M. (1985). *Applied linear statistical methods.* Homewood, IL: Richard Irwin, Inc.

Rao, J., and Scott, A. (1984). On chi-squared tests for multiway contingency tables with cell proportions estimated from survey data. *Annals of Statistics, 12,* 46-60.