Poll of Massachusetts Registered Voters

October 2014

Methodology Report

I. SUMMARY

The Poll of Massachusetts Registered Voters, fielded by Abt SRBI, obtained telephone interviews with a representative sample of 1,265 adults living in Massachusetts, including 1,001 residents who were registered to vote. The survey featured an overlapping dual frame landline and cell phone random digit dial (RDD) design. In total, 650 respondents were interviewed on a landline telephone and 351 were interviewed on a cell phone. Interviewing was conducted from October 21 to 25, 2014 in English and Spanish. Details on the sample design, data collection protocol, weighting, and response rates are discussed below.

II. SAMPLE DESIGN

The target population for the study is registered voters age 18 and over living in Massachusetts. Samples were drawn from both the landline and cellular random digit dial (RDD) frames to represent people with access to either a landline or cell phone. Both samples were provided by Survey Sampling International, LLC according to Abt SRBI specifications.

Numbers for the landline sample were drawn with equal probabilities from active blocks (area code + exchange + two-digit block number) that contained one or more residential directory listings. The cellular sample was drawn by Survey Sampling International through a systematic sampling from 1000-blocks dedicated to cellular service according to the Telcordia database. In order to more efficiently reach cell phone respondents, the cell sample was then appended with activity code information provided by Marketing Systems Group's Cell-WINS service. The activity code information indicates the likelihood that the cell phone number is "active" or working. In the cell RDD sample purchased, 58.5% of numbers were flagged as "Active," 38.7% were flagged as "Inactive," and 2.7% of numbers were flagged as "Unknown." Cell numbers flagged as "inactive" were then excluded from the sample. Limiting the final released cell sample to only "active" and "unknown" numbers helped to control survey costs by increasing the amount of interviewer time spent dialing eligible numbers.

III. CALLING PROTOCOL

Landline and cell phone numbers were called as many as 5 times. Refusal conversion was attempted on approximately 50% of soft refusal cases in the landline sample only. Interviews were conducted from October 21-25, 2014. Calls were staggered over times of day and days of the week to maximize the chance of making contact with potential respondents. Each number received at least one daytime call. When dialing the sample, the state of Massachusetts was first divided into five geographic strata and interviews were completed within each stratum proportionate to the adult population distribution.

The sample was released for interviewing in replicates, which are representative subsamples of the larger sample. Using replicates to control the release of sample ensures that complete call procedures are followed for the entire sample.

For the landline sample, interviewers asked to speak with either the youngest adult male or youngest adult female at home right now.   For the cell sample, interviews were conducted with the person who answered the phone. Interviewers verified that the person was an adult and in a safe place before administering the survey.

IV. WEIGHTING

The final weights produced for this survey compensated for the dual-frame sample design and aligned the full sample (n=1,265) to match the population parameters of the adult population in Massachusetts. The weighting is based on the combined sample of 1,001 registered voters as well as Massachusetts residents who were not registered to vote (n=264).

First Stage Weighting

The first stage of weighting corrected for different probabilities of selection associated with the number of adults in the household and the respondent's telephone usage (landline only, cell phone only or has both kinds of phones). This weighting also adjusts for the overlapping landline and cell sample frames, the relative sizes of each frame and each sample, and the exclusion of "inactive" numbers from the cell RDD frame.

Second Stage Weighting

The post-stratification adjustment of the first stage weights was done through a process known as raking ratio estimation, or "raking." The raking procedure uses an iterative technique that simultaneously calibrates the sample to population distributions defined by socio-demographic parameters. The second stage weights aligned the full sample to known population benchmarks for the state of Massachusetts on the following dimensions:

- Age By Gender
- Education Level By Gender
- Race/Ethnicity
- Region of State
- Household Telephone Service (cell phone only, landline only, or dual service)

The population parameters for sex, age, education, race, and Hispanic ethnicity were computed from the 2013 American Community Survey (ACS), filtered on adults aged 18 and older residing

in Massachusetts. The population parameter for region of state was obtained from the 2013 Census Population Estimates, filtered on adults aged 18 and older residing in Massachusetts. The telephone usage population estimates were constructed from the model-based estimates for Massachusetts that were released by the National Center for Health Statistics for the year 2012[1]. Since the cell phone-only adult population has increased every year since 2012, these state-level estimates were updated to reflect national trends according to the 2014 NCHS report[2].

After the raked weights were generated, we examined the distribution of values. Weights were trimmed at 0.242 and 3.475 to prevent individual interviews (i.e., those with large weights) from having too much influence on the final results. This trimming process also served to reduce the variance of the weight values, and, in turn, reduce the design effect from weighting. The use of these weights in statistical analysis ensures that the demographic characteristics of the full sample closely approximate the demographic characteristics of the adult population in Massachusetts. In the survey dataset, this full sample weight is labeled WEIGHT. Table 1 compares weighted and unweighted total sample distributions to population parameters in Massachusetts.

1 Blumberg SJ, Ganesh N, Luke JV, Gonzales G. Wireless substitution: State-level estimates from the National Health Interview Survey, 2012. National health statistics reports; no 70. Hyattsville, MD: National Center for Health Statistics. 2013.

2 Blumberg SJ, Luke JV. Wireless substitution: Early release of estimates from the National Health Interview Survey, July–December 2013. National Center for Health Statistics. July 2014. Available from: http://www.cdc.gov/nchs/nhis.htm.

Table 1. Weighted and Unweighted Full Sample Estimates Along with Benchmarks

	Benchmark	Weighted By WEIGHT	Unweighted
18-29	22.0%	21.8%	14.2%
30-39	15.8%	15.6%	9.5%
40-49	17.6%	17.7%	15.0%
50-64	25.9%	26.1%	32.1%
65+	18.7%	18.8%	29.2%
Male	47.8%	48.1%	48.5%
Female	52.2%	51.9%	51.5%
Less than HS Graduate	10.2%	9.7%	5.4%
High School Graduate	26.2%	26.2%	20.5%
Some college/Associate	26.5%	26.7%	27.3%
College Graduate	21.5%	21.6%	28.3%
Post-Graduate	15.6%	15.7%	18.6%
White Non-Hispanic	77.1%	77.2%	79.8%
Black Non-Hispanic	6.1%	6.1%	6.4%
Hispanic	9.0%	9.1%	8.2%
Other race/multi-race Non-Hispanic	7.8%	7.6%	5.5%
Middlesex	23.2%	22.9%	22.7%
Suffolk	11.8%	11.9%	11.2%
West	24.3%	24.4%	24.9%
Essex	11.2%	11.3%	11.7%
East	29.5%	29.5%	29.6%
Landline Only	8.1%	7.9%	7.0%
Dual	63.5%	63.6%	75.4%
Cell Phone Only	28.4%	28.5%	17.6%

V. DESIGN EFFECT AND MARGIN OF ERROR

Weighting and survey design features that depart from simple random sampling tend to result in an increase in the variance of survey estimates. This increase, known as the design effect or *deff*, should be incorporated into the margin of error, standard errors, and tests of statistical significance. The design effect is the ratio of the variance derived from a survey sample design

to the variance that would be obtained from a simple random sample, assuming the same sample size. In this survey, the design effect for the full sample (n=1,265) is 1.41. The margin of error incorporating the design effect for the full-sample is ± 3.3 percentage points. This means that in 95 out of every 100 samples drawn using the same methodology, estimated proportions based on the full sample will be no more than 3.3 percentage points away from their true values in the population (assumes a proportion of 50% and confidence level of 95%). Estimates based on subgroups will have larger margins of error. For Massachusetts registered voters in this survey, a similarly calculated margin of error (also incorporating the design effect) is ± 3.6 percentage points.   It is important to remember that random sampling error is only one possible source of error in a survey estimate. Other sources, such as question wording and reporting inaccuracy, may contribute additional error. A summary of the weights and their associated design effect is reported in Table 2 below.

Table 2. Design Effect and Effective Sample Size of Full Sample Weight

Weight Variable	Number of cases (n)	Minimum weight	Maximum weight	Standard Deviation	Design effect	Effective n
WEIGHT	1,265	0.242	3.475	0.640	1.41	897

VI. DISPOSITIONS

Table 3 reports the disposition of all sampled telephone numbers dialed for the survey. Abt SRBI calculates three component rates: Response rate, Cooperation rate, and Contact rate[3]:

- o Response rate – the number of complete interviews with reporting units divided by the number of eligible reporting units in the sample.
- o Cooperation rate – the proportion of all cases interviewed of all eligible units ever contacted.
- o Contact rate – measures the proportion of all cases in which some responsible member of a housing unit was reached by the survey

The response rate for the landline sample ranged from 6.7 to 18.5%. The response rate for the cellular sample ranged from 7.8 to 9.6%.

---

[3] Abt SRBI's disposition codes and reporting are consistent with the American Association for Public Opinion Research standards.

Table 3. Sample Dispositions

		Landline	Cell
Interview (Category 1)			
Complete	1.000	760	505
Screen-outs	1.100	20	249
Partial	1.200	27	25
Eligible, non-interview (Category 2)			
Refusal and breakoff	2.100	41	38
Refusal	2.110	1946	1664
Respondent never available	2.210	9	12
Answering machine household-no message left	2.221	209	0
Physically or mentally unable/incompetent	2.320	66	18
Household-level language problem	2.331	98	114
Unknown eligibility, non-interview (Category 3)			
Always busy	3.120	174	91
No answer	3.130	3813	381
Answering Machine/Voicemail – unknown if household	3.140	3519	5,435
Call blocking	3.150	2	17
No screener completed	3.210	922	1,117
Other	3.900	0	0
Not eligible (Category 4)			
Fax/data line	4.200	978	13
Non-working/disconnect	4.300	16,899	390
Temporarily out of service	4.330	250	127
Cell phone	4.420	3	0
Business, government office, other organizations	4.510	1,223	259
Other	4.900	10	0
Total phone numbers used		30,969	10.509
Completes and Screen-Outs (1.0/1.1)	I	780	754
Partial Interviews (1.2)	P	27	25
Refusal and break off (2.1)	R	1,987	1702
Non Contact (2.2)	NC	218	12
Other (2.3)	O	164	132

Unknown household (3.1)	UH	7,508	5,924
Unknown other (3.2, 3.9)	UO	922	1,171
Not Eligible (4.0)	NE	19,363	789

e = Estimated proportion of cases of unknown eligibility that are eligible.

	(I+P+R+NC+O)/((I+P+R+NC+O)+NE)	0.141	0.769
Response Rate 1	I/(I+P) + (R+NC+O) + (UH+UO)	0.067	0.078
Response Rate 2	(I+P)/(I+P) + (R+NC+O) + (UH+UO)	0.070	0.080
Response Rate 3	I/((I+P) + (R+NC+O) + e(UH+UO))	0.179	0.093
Response Rate 4	(I+P)/((I+P) + (R+NC+O) + e(UH+UO))	0.185	0.096
Cooperation Rate 1	I/(I+P)+R+O)	0.264	0.289
Cooperation Rate 2	(I+P)/((I+P)+R+O))	0.273	0.298
Cooperation Rate 3	I/((I+P)+R))	0.279	0.304
Cooperation Rate 4	(I+P)/((I+P)+R))	0.289	0.314
Contact Rate 1	(I+P)+R+O / (I+P)+R+O+NC+ (UH + UO)	0.255	0.269
Contact Rate 2	(I+P)+R+O / (I+P)+R+O+NC + e(UH+UO)	0.678	0.323
Contact Rate 3	(I+P)+R+O / (I+P)+R+O+NC	0.931	0.995