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Characteristics of Cell Phone Only, Listed, and Unlisted Telephone Households

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Abstract

Cell phone only households have increased from about 4% in 2004 to over 14% in 2007. Since cell phone only households are not included in random digit dialing (RDD) samples, they represent a major source of noncoverage error. To assess the extent of this noncoverage error we compared the results of a CATI telephone survey of three different samples of households: (1) cell phone only households; (2) directory listed households; and (3) unlisted households. The survey results are based on samples of at least 400 respondents per group, and show significant differences in demographics between all three groups, as well as differences in attitudinal measures. The results indicate that including cell phone only households in a telephone samples can lead to substantial improvements in coverage. Cell phone only respondents tend to be younger, single, and male, and tend to rent rather than own their home, and have either less or more education than respondents from listed and unlisted RDD samples. Cell phone only respondents are also more likely to have more than one cell phone, and to have full time employment. A significant difference was also observed for political party affiliation. The cell phone only sample also picked up the highest rate of Asian respondents. We found significant differences in the characteristics of directory listed vs unlisted households as well. Listed households are the least likely to have a computer in the home, have fewer male respondents, have the highest proportion of retired, and elderly respondents, the highest proportion of white and married respondents. The paper discusses the implications of these results for obtaining representative samples for telephone surveys.

Introduction

Telephone remains a dominant survey mode for surveys of the general public since most households have a telephone; only 4.8% of households nationwide do not have a phone (US Census). Some households have only a landline telephone, some have only a cell

phone, some have both a landline and a cell phone, and some have multiple landlines and cell phones. Nationally, about 62% of households have their telephone number listed in a telephone directory (personal communication, Marketing Systems Group).

There are three sample frames that are available for drawing samples of the general public. The random digit dial (RDD) sample frame provides the most complete coverage of landline telephones, since it includes all possible telephone numbers for all telephone exchanges within a geographic area. Only about 10% of all numbers are in actual use, thus RDD is fairly inefficient in obtaining samples of the general public.

As shown in Figure 1 below, the RDD sample frame includes telephone numbers that are unlisted, as well as those that are listed in telephone directories. A method for making telephone samples more efficient is to draw samples only from the directory listed portion of the frame. A major advantage of directory listed samples is the ability of conducting mailings because of the inclusion of name and address along with telephone numbers.

Separately from the RDD sample frame, there is a sample frame of cell-phone numbers. The majority of cell phone numbers are excluded from the RDD sample frame, but because cell phone numbers are portable, some small proportion is included in the RDD frame as well.

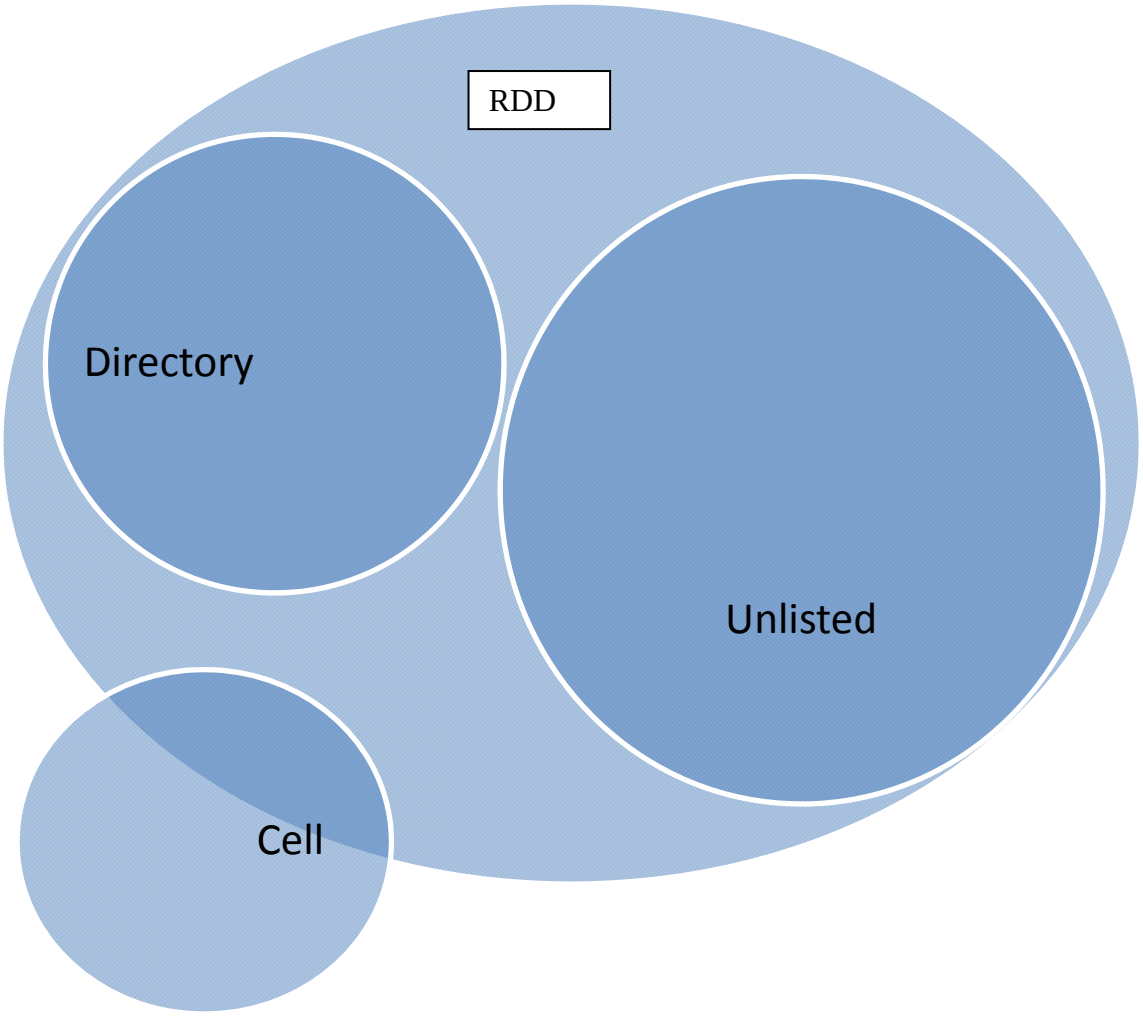
Problem Statement

The issue for those conducting telephone surveys is how to draw a sample of telephone numbers that is representative of the population of a region. Until recently, the RDD sample frame has been the preferred choice because of its high level of coverage, since only non-telephone households are excluded. However, those surveys that need to contact households by mail use the directory listed sample frame, thereby including only a portion of all telephone households.

Current estimates of cell phone only households are that they have increased from about 4% in 2004 to over 14% in 2007. Since these are not included in RDD sample frames, cell phone only households are missed in RDD telephone surveys.

The question that survey researchers want to know the answer to is whether we can continue using the RDD sample frame, without considering the cell phone only sample frame, or whether we are biasing our results by not including cell phone only households. The intent of this research is to examine whether differences exist between survey respondents who come from these three sample frames: the RDD unlisted, the directory listed, and the cell phone only sample frame. If there are differences, we want to know how much of a difference this makes in our estimates of population parameters.

Figure 1. Telephone Survey Sample Frames



Methodology

To assess the extent of the noncoverage error we compared the results of a computer assisted telephone interview (CATI) survey of three different samples of households: (1) cell phone only households; (2) directory listed households; and (3) RDD unlisted households.

The survey was conducted monthly since September 2008, and consisted of approximately 400 completed interviews of Washington State households, per month for five months. Interviews averaged 12 to 15 minutes in length. The survey questionnaire consisted of a core set of demographic questions, with a monthly supplement of additional questions, which changed from month to month.

A dual frame sample for the survey was purchased from Marketing Systems Group (MSG). The dual frame included a random digit dialing (RDD) sample of telephone numbers for telephone exchanges in Washington State, as well as a separate RDD cell-phone only sample of cell-phone exchanges. In addition, the RDD sample was screened by MSG for listed telephone numbers, thereby further subdividing the RDD sample into listed and unlisted numbers. Table 1 below displays the final sample disposition for the three samples, and the total telephone numbers used for each of the three samples.

The sample disposition for the five months of interviews is shown in the table below:

Table 1. Survey Sample Disposition by Sample Frame

	Cell	Listed	RDD	Total
Interview	255	1486	412	2153
Eligible, non-interview	1714	4289	1348	7351
Unknown eligibility, non-interview	150	595	971	1716
Not eligible	1081	843	1284	3208
Total phone numbers used	**3200**	**7213**	**4015**	**14428**
Interview	7.97%	20.60%	10.26%	14.92%
Eligible, non-interview	53.56%	59.46%	33.57%	50.95%
Unknown eligibility, non-interview	4.69%	8.25%	24.18%	11.89%
Not eligible (Category 4)	33.78%	11.69%	31.98%	22.23%
Total phone numbers used	**100.00%**	**100.00%**	**100.00%**	**100.00%**
AAPOR Response Rate 4	12.34%	23.61%	17.75%	19.96%
Cooperation Rate 4	34.60%	51.22%	49.88%	48.23%
Refusal Rate 3	24.48%	24.50%	23.52%	24.32%
Contact Rate 3	41.09%	54.77%	51.53%	51.34%

Results

The survey results show significant differences in demographics between all three groups, as well as differences in attitudinal measures. The results indicate that including cell phone only households in a telephone samples can lead to substantial improvements in coverage. Cell phone only respondents tend to be younger, single, and male, and tend to rent rather than own their home, and have either less or more education than respondents from listed and unlisted RDD samples. Cell phone only respondents are also more likely to have more than one cell phone, and to have full time employment. A significant difference was also observed for political party affiliation. The cell phone only sample also picked up the highest rate of Asian respondents. We found significant differences in the characteristics of directory listed vs unlisted households as well. Listed households are the least likely to have a computer in the home, have fewer male

respondents, have the highest proportion of retired, and elderly respondents, the highest proportion of white and married respondents.

Statistical comparisons of 16 demographic variables by sample resulted in 12 statistically significant differences, indicating that individuals from these three samples differ on many demographic characteristics.

Figures 1 and 2 show the survey results for two demographic variables (age and gender) by sample.

Figure 1 shows that cell phone respondents tend to be younger and RDD respondents tend to be older. Cell phone respondents are twice as likely to be under 30 as listed sample respondents, and almost four times as likely to be under 30 as RDD respondents. On the other hand, RDD respondents are almost five times as likely to be 60 or older than cell phone respondents.

Figure 2 shows that cell phone respondents are more likely to be male than RDD respondents or listed sample respondents. Thus, the cell phone sample picks up the younger males that are often missed in RDD and listed telephone samples.

Interestingly there are no statistically significant differences by income or by education, suggesting that cell phone use cuts across all income and education categories.

Table 2 shows that a greater proportion of Hispanics, Asians, and Native Americans are reached in the cell phone sample than are reached in the RDD or the listed telephone samples. Table 3 shows that the cell phone call also obtains a greater proportion of non-US citizens than the RDD or the listed sample.

Figure 1. Percent Respondents Aged < 30 and 60 or Older by Sample Frame

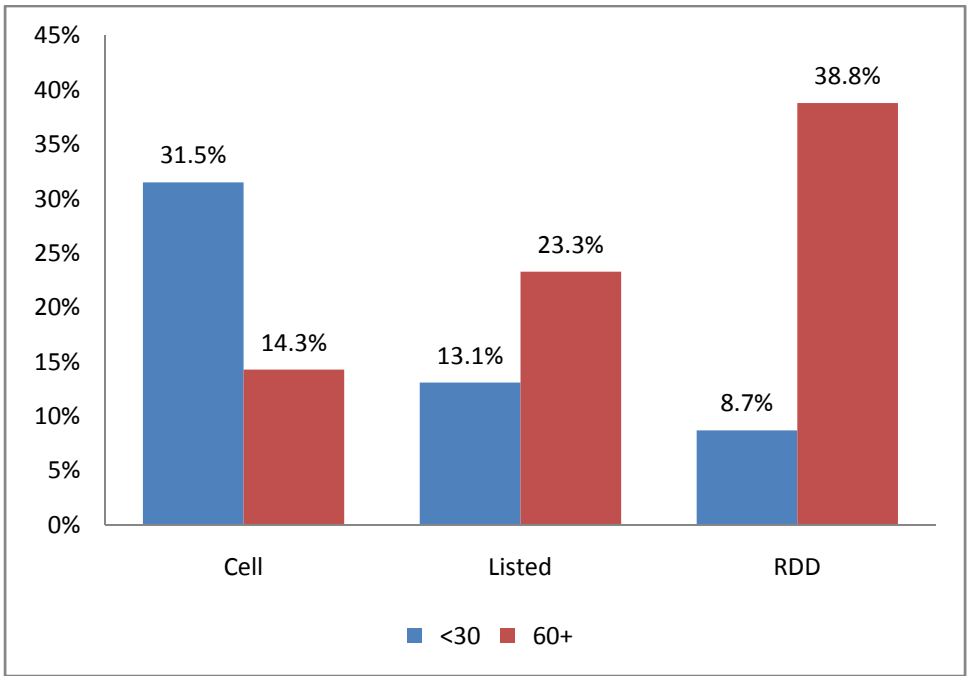


Figure 2. Percent Male and Female Respondents by Sample Frame

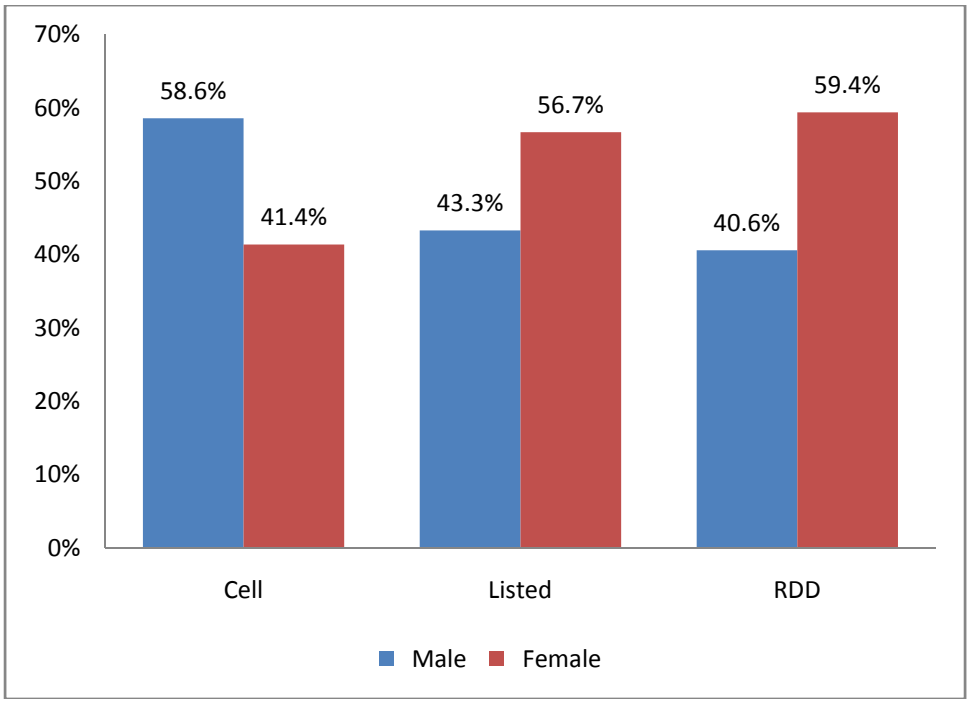


Figure 3. Percent Respondents Optimistic and Pessimistic about the Economic Situation Five Years from Now by Sample Frame

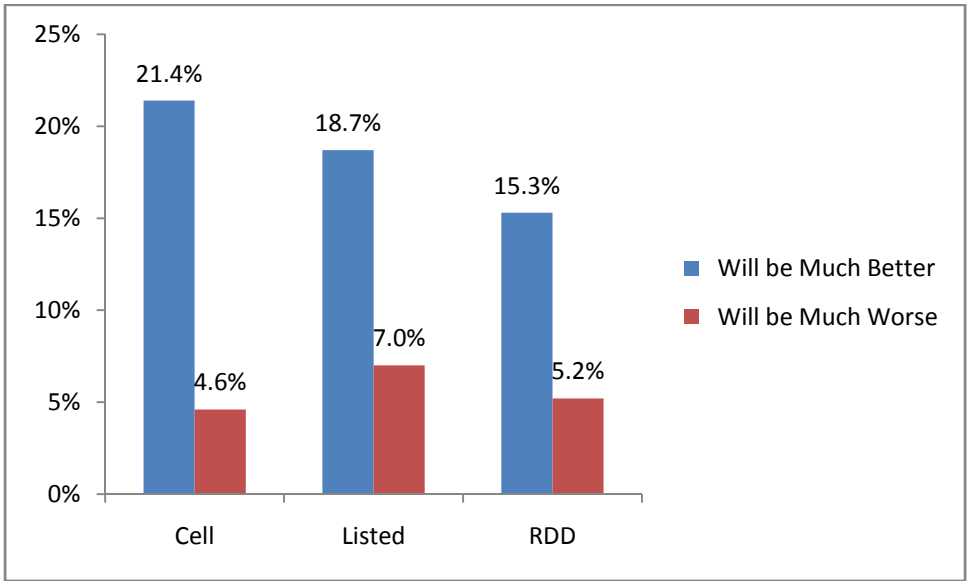


Figure 4. Opinions about Highest Priority for Tax Dollars by Sample Frame

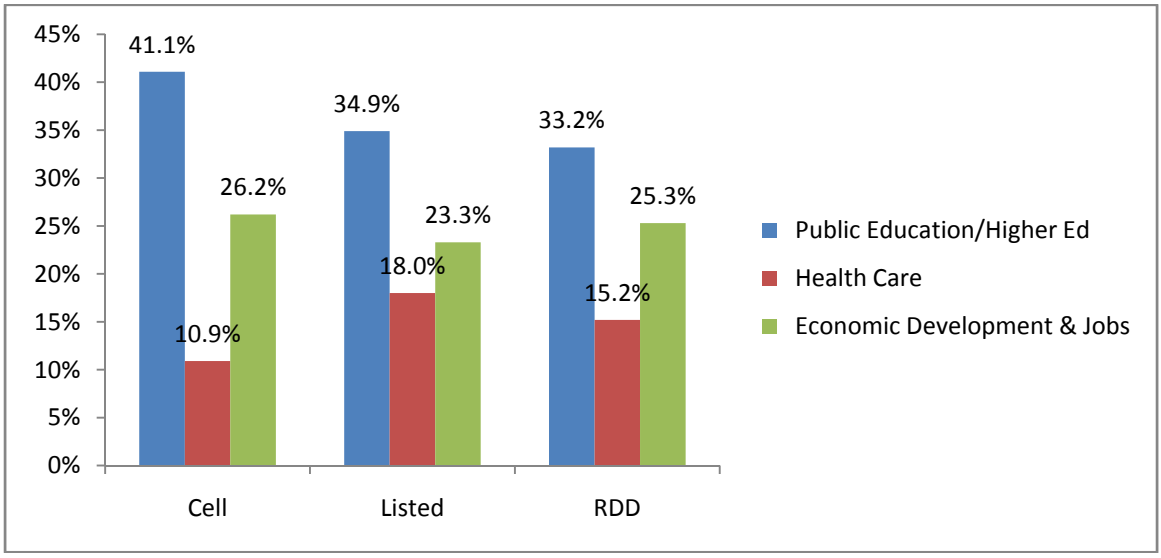


Table 2 and Table 3 on the following pages present the results of comparisons of demographic and other variables among respondents from the three different sample frames.

Table 2. Comparison of Demographic Characteristics by Sample Type

Demographic Characteristic	Cell Phone	RDD Unlisted	RDD Listed	Combined	Chi-Square P value
N	251	1465	404	2120	
Gender					*p<.001*
Male	58.6	43.3	40.6	43.3	
Female	41.4	56.7	59.4	56.7	
Age					*p<.001*
<30	31.5	13.1	8.7	12.2	
30-39	20.7	15.6	11.9	13.7	
40-49	16.7	23.5	16.5	17.8	
50-59	16.7	24.5	24.1	23.3	
60+	14.3	23.3	38.8	33.0	
Ethnicity					*p<.001*
Hispanic	6.5	3.8	1.9	2.8	
Black	2.4	3.3	1.3	1.8	
Asian	6.9	1.8	2.2	2.7	
American Indian	3.3	2.5	1.4	1.8	
White	75.5	81.7	87.8	85.2	
Multiple/Other	5.3	6.9	5.3	5.6	
Education					*n.s.*
High school or less	27.7	26.3	26.8	26.8	
Some college	28.1	34.5	29.9	30.6	
College degree	41.0	38.0	41.4	40.7	
Other	3.2	1.3	1.9	1.9	
Employment status					*p<.001*
Employed	72.4	56.1	52.4	55.5	
Homemaker/student/disabled	12.4	13.2	9.2	10.3	
Retired	9.2	20.2	31.5	26.7	
Unemployed	6.0	10.5	6.9	7.5	
If Unemployed: Looking for work					*n.s.*
Yes	75.0	57.8	60.4	61.1	
No	25.0	42.2	39.6	38.9	
Marital Status					*p<.001*
Married	53.0	58.0	64.8	62.1	
Sep/divorced/widowed	24.3	32.0	26.8	27.5	
Never married	22.7	10.0	8.4	10.4	
Rent or Own Home					*p< .001*
Rent	34.3	23.4	17.0	20.3	
Own	62.5	74.8	81.3	77.9	
Other	3.2	1.8	1.7	1.9	
Adults in HH					*p<.001*
One	13.7	22.5	22.0	21.1	
Two	61.7	60.3	61.9	61.6	
Three+	24.6	17.3	17.3	17.3	
Income					*n.s.*
<=$50,000	39.2	43.1	39.5	40.2	
$50,000 - $100,000	35.3	36.0	38.4	37.5	
➢ $100,000	25.4	20.9	22.1	22.3	

Note: Data are not weighted, and percentages are shown.

Table 3. Comparison of Demographic Characteristics by Sample Type

Respondent Characteristic	Cell Phone	RDD Unlisted	RDD Listed	Combined	Chi-Square P value
N	251	1465	404	2120	
US Citizen					p<.01
Yes	94.4	97.8	97.3	97.3	
No	5.6	2.2	2.7	2.7	
US Veteran					*n.s.*
Yes	18.3	15.1	17.0	16.8	
No	81.7	84.9	83.0	83.2	
Years Lived in Washington State					*p<.001*
<=25	61.0	44.6	37.1	41.3	
26-50	30.3	37.4	36.5	35.9	
51+	8.8	18.1	26.4	22.7	
Have Health Care Coverage					p<.001
Yes	84.4	84.7	91.7	89.5	
No	15.6	15.3	8.3	10.5	
Number of Cell Phones in HH					*p<.001*
None	0	12.5	13.9	12.0	
One	20.3	27.9	29.0	27.8	
Two	47.0	35.7	36.0	37.3	
Three or more	32.7	23.9	21.1	22.9	
Relies Mainly on					*p<.001*
Landline phone	5.6	27.9	34.6	29.4	
Cell phone	30.7	22.8	18.4	20.9	
Both equally	30.3	47.6	46.4	44.4	
Have no landline phone	33.5	1.7	0.6	5.3	

Note: Data are not weighted, and percentages are shown.

Table 4. Comparison of Attitudinal Variables by Sample Type

Survey Question	Cell Phone	RDD Unlisted	RDD Listed	Combined	Chi-Square P value
N	251	1465	404	2120	
Current Economic Situation Compared with 5 Years Ago					*p<.001*
Much Better Now	21.6	19.2	13.6	15.6	
Somewhat Better	23.2	15.4	19.3	19.0	
About the Same	*27.6*	*27.1*	*32.1*	*30.6*	
Somewhat Worse	18.0	23.6	22.5	22.2	
Much Worse Now	9.6	14.7	12.5	12.6	
Economic Situation in 5 Years Compared with Now					*p<.001*
Will be Much Better	21.4	18.7	15.3	16.7	
Somewhat Better	35.3	36.1	31.0	32.5	
About the Same	24.4	26.2	34.3	31.6	
Somewhat Worse	*14.3*	*11.9*	*14.3*	*13.8*	
Will be Much Worse	4.6	7.0	5.2	5.5	
May We Keep Contact Info					*n.s.*
Yes	92.4	88.4	90.6	90.4	
No	7.6	11.6	9.4	9.6	
Most Important Issue Facing State					*p<.01*
Economy & Jobs	40.4	38.7	41.5	40.9	
Education	9.8	7.6	8.1	8.2	
Environment	2.4	3.8	1.7	2.2	
Health Care	6.5	6.8	7.1	7.0	
Roads	9.0	7.8	4.6	5.7	
Taxes	2.0	5.8	3.3	3.6	
Other -Misc	2.4	2.3	3.0	2.8	
Other – Write-in	27.3	27.1	30.7	29.6	
Highest Priority for Tax Dollars					*p<.001*
Public Education/Higher Ed	41.1	34.9	33.2	34.5	
Health Care	10.9	18.0	15.2	15.2	
Economic Development & Jobs	26.2	23.3	25.3	25.0	
Roads	5.2	6.8	5.1	5.5	
Tax Reductions	2.8	6.1	6.9	6.2	
Other - Misc	6.5	6.6	11.0	9.6	
Other – Write-in	7.3	4.3	3.3	3.9	

Note: Data are not weighted, and percentages are shown.

Discussion and Conclusions

33% of cell phone respondents have no landline telephone and thus would not have been included in a typical RDD sample of the public.

Statistical comparisons of 16 demographic variables by sample resulted in 12 statistically significant differences, indicating that individuals from these three samples differ on many demographic characteristics.

The findings of this study indicate that survey researchers can no longer ignore cell-phone only households.

- Such households now represent over 15% of the population.
- Cell-phone only households are quite different demographically from other households.
- Cell-phone only households have different opinions than others on such issues as where tax dollars should be spent, and the outlook for their economic well-being.

Our findings are consistent with the recommendations of an AAPOR Cell Phone Task Force which recommends that "RDD telephone surveys targeting subgroups in the U.S. with substantial percentages of adults who live in cell phone only households (e.g., 18 to 29 year olds; renters; and those below the poverty threshold) should sample cell phone numbers . . ." (January 2008).

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Appendix A – CATI Questions

BEGIN:

PHONE:<PHONE> Access Code: 289-210-691 Hello, my name is $I and I'm calling from Washington State University. The purpose of this call is to gather information about current issues facing residents of Washington State. May I please speak to the person in your household who is eighteen years of age or older and who has had the most recent birthday? (Would that be you or someone else?) (INTRO #2) Hi, this is (name) calling from Washington State University. We are trying to understand how residents feel about current social and economic issues in our state, and I was hoping that you would willing to answering some questions (tonight/today) for me? Are you eighteen years or older and have had the most recent birthday in your household? (INTRO #3) Hi, I'm calling from WSU, and I was hoping that you would help me out (tonight/today) by taking a brief survey regarding social and economic issues that are affecting you and your community? Are you eighteen years or older and have had the most recent birthday in your household? May I have their first name so I know who to ask for when I call back?

Speaking to R	1		=> /CELL
R not available / Set callback (GB, CB, HB)	2		=> /INT01
Non contacts (AM, BC, BZ, ED, NA)	3		=> /INT02
Refusals (R1, R2, R3, RP)	4		=> /F10
Non-working numbers (CC, DS)	5		=> /VERFY
Communication barrier (DF, HC, LG)	6		=> /INT03
Other codes (DD, DP, OT, RN)	7		=> /INT04
Ineligibles, Does not live in WA, Business/Government (IE,BG)	8		=> /INT05
Special project codes ()	9	I	=> /INT99
Web/Mail codes	10	I	=> /INT98

CELL:

Is this a cellular phone? (IWR read only if necessary "By cellular telephone we mean a telephone that is mobile and usable outside of your neighborhood.")

Yes	1	
No	2	=> CONFD
Refuse	R	=> CONFD

CLSAF:

Are you in a place where you can safely and privately talk on the phone and answer my questions? (IWR: If R cannot safely talk which included driving in a car then say "Sorry to have bothered you, we can call you back at another time." Do not take time to set a call back.)

Yes	1	
No	2	=> /INT01
Refuse	R	=> /REFUS

CONFD:

This interview is voluntary and all of the information you provide will be kept strictly confidential. This interview may be monitored by my supervisor to check my work. The questions will take about 10 minutes to complete, and if I ask anything you would prefer not to answer, just let me know and I'll skip over it.

Continue with survey.....1 => /IQ1
No - Try refusal prevention .....2 => /F10
Not a good time - Call back later.....3 => /INT01

IQ2:

In your opinion what is the single MOST important issue facing Washington State today? (Would you say...)

Economy.....01
Jobs and Wages 02
Education.....03
Environment 04
Growth.....05
Agriculture.....06
Crime 07
Family.....08
Health care.....09
Transportation, Traffic congestion, Roads 10
Diversity/race 11
Other (Please specify).....12 O
Taxes 13
Gas Prices 14
Don't know .....D
Refuse.....R

IQ3:

In your opinion, which ONE of these 10 areas do you think should have the HIGHEST priority for tax dollars in Washington State? Should the priority be...

PUBLIC EDUCATION (GRADES K THRU 12) 01
HIGHER EDUCATION.....02
SOCIAL WELFARE.....03
HEALTH.....04
NATURAL RESOURCES.....05
THE ENVIRONMENT.....06
PRISONS 07
ECONOMIC DEVELOPMENT AND JOBS 08
ROADS 09
TAX REDUCTIONS.....10
OR, SOMETHING ELSE (Please specify) .....11 O
Don't know .....D
Refuse.....R

IQ8:

Thinking about your economic situation, would you say that you are much better off now than you were 5 years ago, somewhat better off, about the same, somewhat worse, or much worse off now than you were 5 years ago?

Much better.....1
Somewhat better.....2
About the same.....3
Somewhat worse.....4
Much worse off.....5
Don't know.....D
Refuse.....R

IQ9:

Looking ahead do you expect that your economic situation in five years will be much better, somewhat better, about the same, somewhat worse, or much worse than it is now?

Much better.....1
Somewhat better.....2
About the same.....3
Somewhat worse.....4
Much worse.....5
Don't know.....D

FQ12

Do you currently rent or own your home?

Owns or is buying.....1		
Pays rent.....2		=> FQ15
Neither owns nor rents.....3		=> FQ15
Other (please specify).....4	O	=> FQ15
Don't know.....D		=> FQ15
Refuse.....R		=> FQ15

DEM3:

(IWR read if necessary for survey purposes I need to ask if you are male or female.)

Male.....1
Female.....2
Refuse.....R

DEM4:

What is your current age?

$E 18 99

Don't know.....D
Refuse.....R

DEM7:

How many years have you lived in Washington State? (IWR: If less than 1 year code as 0)
$E 0 99
Don't know .....D
Refuse.....R

DEM8:

What is the highest degree or diploma that you have earned?
None (no degree, diploma or certificate).....1
High School or GED 2
Some college courses, but no degree, diploma or certificate.....3
Technical or vocational degree or certificate.....4
Associate degree.....5
Bachelor degree.....6
Graduate degree (Masters, PhD) 7
Other (Please specify).....8 O
Don't know .....D
Refuse.....R

DEM9:

Are you currently married, widowed, separated, divorced, living in a marriage like relationship or never been married.
Married 1
Widowed 2
Separated 3
Divorced.....4
Living in a marriage like relationship.....5
Never been married 6
Don't know .....D
Refuse.....R

DEM10:

What is your current employment status? (Are you employed...)
Full time 01
Part time 02
Seasonal.....03
Self-employed 04
Unemployed 05
Student.....06
Homemaker 07
Disabled.....08
Retired 09
Other (please specify).....10 O
Semi-retired.....11
Don't know .....D
Refuse.....R

DEM11:

Are you currently looking for work?

=> DEM12
si DEM10<>5

Yes.....1
No.....2
Don't know .....D
Refuse.....R

DEM12:

Do you have health care coverage?

Yes.....1 => DEM13
No.....2
Don't know .....D
Refuse.....R

DEM13:

How many cell phones does your household have?

$E 0 20

Don't know .....D
Refuse.....R

DEM14:

How would you describe your household telephone situation? Would you say that your household...

RELIES MOSTLY ON A LANDLINE PHONE 1
RELIES MOSTLY ON A CELL (OR WIRELESS) PHONE.....2
ABOUT EQUAL.....3
OR YOU DON'T HAVE A LANDLINE 4
Don't know .....D
Refuse.....R

DEM15:

Including yourself, what is the total number of adults, 18 years and older, who are living in your household?

$E 1 25

Don't know .....D
Refuse.....R

DEM16:

How many children under 18 years of age are living in your household?

$E 0 25

Don't know .....D => DEM19
Refuse.....R => DEM19

DEM22:

Please tell me the racial or ethnic background that best describes you. (IWR: Read categories if R gives you a race or ethnicity that does not fit the list.)

American Indian/Native American.....1
Black or African American 2
Hispanic or Latin American 3
Caucasian or White.....4
Asian or Pacific Islander 5
Eskimo or Aleut.....6 n
Multiple ethnicities.....7
Other ethnicities 8
Don't know .....D
Refuse.....R

DEM23:

Please tell me which income category best describes your household income for 2007, before taxes and other deductions. Please stop me when I reach the correct income category.

LESS THAN $25,000.....1
$25,000 UP TO $50,000.....2
OVER $50,000 UP TO $75,000.....3
OVER $75,000 UP TO $100,000.....4
OVER $100,000 UP TO $125,000.....5
OVER $125,000 UP TO $150,000.....6
OVER $150,000 7
Don't know .....D
Refuse.....R

DEM27:

Have you ever served on active duty in the U.S. Armed Forces?

Yes.....1
No.....2
Don't know .....D
Refuse.....R

DEM28:

Are you a U.S. citizen?

Yes.....1
No.....2
Don't know .....D
Refuse.....R

DEM29:

We may want to contact you again next year to see how things have changed. May we keep your name and telephone number so we can possibly contact you next year with similar questions about your economic situation?

Yes.....1
No.....2 => THX

THX:

That's my last question. Thank you for your participation in this study. Do you have any additional thoughts or questions you would like to share?
Yes, comments .....1 O
No comments.....2

Appendix B – Data Tables

DEM3 (Core) Respondent gender * SFRAM (Sample) Sample Frame (Imported) Crosstabulation

			SFRAM (Sample) Sample Frame (Imported)			
			1 Cell	2 Listed	3 RDD	Total
DEM3 (Core) Respondent gender	1 Male	Count	147	595	175	917
		% within SFRAM (Sample) Sample Frame (Imported)	58.6%	40.6%	43.3%	43.3%
	2 Female	Count	104	870	229	1203
		% within SFRAM (Sample) Sample Frame (Imported)	41.4%	59.4%	56.7%	56.7%
Total		Count	251	1465	404	2120
		% within SFRAM (Sample) Sample Frame (Imported)	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	28.135[a]	2	.000
Continuity Correction			
Likelihood Ratio	27.870	2	.000
Linear-by-Linear Association	9.218	1	.002
N of Valid Cases	2120		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 108.57.

FQ12 (Core) Rent or own home * SFRAM (Sample) Sample Frame (Imported) Crosstabulation

			SFRAM (Sample) Sample Frame (Imported)			
			1 Cell	2 Listed	3 RDD	Total
FQ12 (Core) Rent or own home	1 Owns or is buying	Count	155	1177	297	1629
		% within SFRAM (Sample) Sample Frame (Imported)	62.5%	81.3%	74.8%	77.9%
	2 Pays rent	Count	85	246	93	424
		% within SFRAM (Sample) Sample Frame (Imported)	34.3%	17.0%	23.4%	20.3%
	3 Neither owns nor rents	Count	8	24	7	39
		% within SFRAM (Sample) Sample Frame (Imported)	3.2%	1.7%	1.8%	1.9%
Total		Count	248	1447	397	2092
		% within SFRAM (Sample) Sample Frame (Imported)	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	46.634[a]	4	.000
Continuity Correction			
Likelihood Ratio	42.912	4	.000
Linear-by-Linear Association	6.350	1	.012
N of Valid Cases	2092		

a. 1 cells (11.1%) have expected count less than 5. The minimum expected count is 4.62.

Respondent Age * SFRAM (Sample) Sample Frame (Imported) Crosstabulation

			SFRAM (Sample) Sample Frame (Imported)			
			1 Cell	2 Listed	3 RDD	Total
Age Respondent Age	1 <30	Count	79	127	53	259
			31.5%	8.7%	13.1%	12.2%
	2 30's	Count	52	175	63	290
			20.7%	11.9%	15.6%	13.7%
	3 40's	Count	42	241	95	378
			16.7%	16.5%	23.5%	17.8%
	4 50's	Count	42	353	99	494
			16.7%	24.1%	24.5%	23.3%
	5 60+	Count	36	569	94	699
			14.3%	38.8%	23.3%	33.0%
Total		Count	251	1465	404	2120
			100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	172.552[a]	8	.000
Continuity Correction			
Likelihood Ratio	157.315	8	.000
Linear-by-Linear Association	14.933	1	.000
N of Valid Cases	2120		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 30.66.

WAYears Years Lived in Washington State * SFRAM (Sample) Sample Frame (Imported) Crosstabulation

			SFRAM (Sample) Sample Frame (Imported)			
			1 Cell	2 Listed	3 RDD	Total
WAYears Years Lived in Washington State	1 <=25	Count	153	543	180	876
		% within SFRAM (Sample) Sample Frame (Imported)	61.0%	37.1%	44.6%	41.3%
	2 26-50	Count	76	535	151	762
		% within SFRAM (Sample) Sample Frame (Imported)	30.3%	36.5%	37.4%	35.9%
	3 51+	Count	22	387	73	482
		% within SFRAM (Sample) Sample Frame (Imported)	8.8%	26.4%	18.1%	22.7%
Total		Count	251	1465	404	2120
		% within SFRAM (Sample) Sample Frame (Imported)	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	67.617[a]	4	.000
Continuity Correction			
Likelihood Ratio	71.433	4	.000
Linear-by-Linear Association	7.042	1	.008
N of Valid Cases	2120		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 57.07.

Education Respondent Education * SFRAM (Sample) Sample Frame (Imported) Crosstabulation

			SFRAM (Sample) Sample Frame (Imported)			
			1 Cell	2 Listed	3 RDD	Total
Education Respondent Education	1 <=HS	Count	69	390	105	564
		% within SFRAM (Sample) Sample Frame (Imported)	27.7%	26.8%	26.3%	26.8%
	2 < BA	Count	70	436	138	644
		% within SFRAM (Sample) Sample Frame (Imported)	28.1%	29.9%	34.5%	30.6%
	3 BA+	Count	102	603	152	857
		% within SFRAM (Sample) Sample Frame (Imported)	41.0%	41.4%	38.0%	40.7%
	4 Other	Count	8	27	5	40
		% within SFRAM (Sample) Sample Frame (Imported)	3.2%	1.9%	1.3%	1.9%
Total		Count	249	1456	400	2105
		% within SFRAM (Sample) Sample Frame (Imported)	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.886[a]	6	.332
Continuity Correction			
Likelihood Ratio	6.568	6	.363
Linear-by-Linear Association	.766	1	.382
N of Valid Cases	2105		

a. 1 cells (8.3%) have expected count less than 5. The minimum expected count is 4.73.

MART Marital Status * SFRAM (Sample) Sample Frame (Imported) Crosstabulation

			SFRAM (Sample) Sample Frame (Imported)			
			1 Cell	2 Listed	3 RDD	Total
MART Marital Status	1 Married	Count	131	939	232	1302
		% within SFRAM (Sample) Sample Frame (Imported)	53.0%	64.8%	58.0%	62.1%
	2 Single	Count	60	389	128	577
		% within SFRAM (Sample) Sample Frame (Imported)	24.3%	26.8%	32.0%	27.5%
	3 Never Married	Count	56	122	40	218
		% within SFRAM (Sample) Sample Frame (Imported)	22.7%	8.4%	10.0%	10.4%
Total		Count	247	1450	400	2097
		% within SFRAM (Sample) Sample Frame (Imported)	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	51.454[a]	4	.000
Continuity Correction			
Likelihood Ratio	42.785	4	.000
Linear-by-Linear Association	4.937	1	.026
N of Valid Cases	2097		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 25.68.

EMPLOY Employment Status * SFRAM (Sample) Sample Frame (Imported) Crosstabulation

			SFRAM (Sample) Sample Frame (Imported)			
			1 Cell	2 Listed	3 RDD	Total
EMPLOY Employment Status	1 Employed	Count	181	763	225	1169
		% within SFRAM (Sample) Sample Frame (Imported)	72.4%	52.4%	56.1%	55.5%
	2 Unemployed	Count	15	100	42	157
		% within SFRAM (Sample) Sample Frame (Imported)	6.0%	6.9%	10.5%	7.5%
	3 Student/Homemaker/Other	Count	31	134	53	218
		% within SFRAM (Sample) Sample Frame (Imported)	12.4%	9.2%	13.2%	10.3%
	4 Retired	Count	23	459	81	563
		% within SFRAM (Sample) Sample Frame (Imported)	9.2%	31.5%	20.2%	26.7%
Total		Count	250	1456	401	2107
		% within SFRAM (Sample) Sample Frame (Imported)	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	75.430[a]	6	.000
Continuity Correction			
Likelihood Ratio	83.335	6	.000
Linear-by-Linear Association	6.023	1	.014
N of Valid Cases	2107		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 18.63.

Looking For Work * SFRAM (Sample) Sample Frame (Imported) Crosstabulation

			SFRAM (Sample) Sample Frame (Imported)			
			1 Cell	2 Listed	3 RDD	Total
Looking For Work	1 Yes	Count	12	64	26	102
		% within SFRAM (Sample) Sample Frame (Imported)	75.0%	60.4%	57.8%	61.1%
	2 No	Count	4	42	19	65
		% within SFRAM (Sample) Sample Frame (Imported)	25.0%	39.6%	42.2%	38.9%
Total		Count	16	106	45	167
		% within SFRAM (Sample) Sample Frame (Imported)	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.533[a]	2	.465
Continuity Correction			
Likelihood Ratio	1.613	2	.446
Linear-by-Linear Association	1.030	1	.310
N of Valid Cases	167		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.23.

Health Care Coverage * SFRAM (Sample) Sample Frame (Imported) Crosstabulation

			SFRAM (Sample) Sample Frame (Imported)			
			1 Cell	2 Listed	3 RDD	Total
Health Care Coverage	1 Yes	Count	211	1341	342	1894
		% within SFRAM (Sample) Sample Frame (Imported)	84.4%	91.7%	84.7%	89.5%
	2 No	Count	39	121	62	222
		% within SFRAM (Sample) Sample Frame (Imported)	15.6%	8.3%	15.3%	10.5%
Total		Count	250	1462	404	2116
		% within SFRAM (Sample) Sample Frame (Imported)	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	24.727[a]	2	.000
Continuity Correction			
Likelihood Ratio	23.331	2	.000
Linear-by-Linear Association	.775	1	.379
N of Valid Cases	2116		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 26.23.

HHCell Number of Cell Phones * SFRAM (Sample) Sample Frame (Imported) Crosstabulation

			SFRAM (Sample) Sample Frame (Imported)			
			1 Cell	2 Listed	3 RDD	Total
HHCell Number of Cell Phones	0 None	Count	0	202	50	252
		% within SFRAM (Sample) Sample Frame (Imported)	.0%	13.9%	12.5%	12.0%
	1 One	Count	51	422	112	585
		% within SFRAM (Sample) Sample Frame (Imported)	20.3%	29.0%	27.9%	27.8%
	2 Two	Count	118	524	143	785
		% within SFRAM (Sample) Sample Frame (Imported)	47.0%	36.0%	35.7%	37.3%
	3 Three	Count	37	177	51	265
		% within SFRAM (Sample) Sample Frame (Imported)	14.7%	12.2%	12.7%	12.6%
	4 Four	Count	30	90	33	153
		% within SFRAM (Sample) Sample Frame (Imported)	12.0%	6.2%	8.2%	7.3%
	5 Five+	Count	15	40	12	67
		% within SFRAM (Sample) Sample Frame (Imported)	6.0%	2.7%	3.0%	3.2%
Total		Count	251	1455	401	2107
		% within SFRAM (Sample) Sample Frame (Imported)	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	66.359[a]	10	.000
Continuity Correction			
Likelihood Ratio	93.741	10	.000
Linear-by-Linear Association	17.627	1	.000
N of Valid Cases	2107		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.98.

DEM14 (Core) HH reliance cell vs land line * SFRAM (Sample) Sample Frame (Imported) Crosstabulation

			SFRAM (Sample) Sample Frame (Imported)			
			1 Cell	2 Listed	3 RDD	Total
DEM14 (Core) HH reliance cell vs land line	1 Relies mostly on a landline phone	Count	14	433	98	545
		% within SFRAM (Sample) Sample Frame (Imported)	5.6%	34.6%	27.9%	29.4%
	2 Relies mostly on a cell (or wireless) phone	Count	77	231	80	388
		% within SFRAM (Sample) Sample Frame (Imported)	30.7%	18.4%	22.8%	20.9%
	3 About equal	Count	76	581	167	824
		% within SFRAM (Sample) Sample Frame (Imported)	30.3%	46.4%	47.6%	44.4%
	4 Or you don't have a landline	Count	84	8	6	98
		% within SFRAM (Sample) Sample Frame (Imported)	33.5%	.6%	1.7%	5.3%
Total		Count	251	1253	351	1855
		% within SFRAM (Sample) Sample Frame (Imported)	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	525.975[a]	6	.000
Continuity Correction			
Likelihood Ratio	375.777	6	.000
Linear-by-Linear Association	57.791	1	.000
N of Valid Cases	1855		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 13.26.

HHAdults Number of Adults in HH * SFRAM (Sample) Sample Frame (Imported) Crosstabulation

			SFRAM (Sample) Sample Frame (Imported)			
			1 Cell	2 Listed	3 RDD	Total
HHAdults Number of Adults in HH	1 One	Count	34	319	90	443
		% within SFRAM (Sample) Sample Frame (Imported)	13.7%	22.0%	22.5%	21.1%
	2 Two	Count	153	897	241	1291
		% within SFRAM (Sample) Sample Frame (Imported)	61.7%	61.9%	60.3%	61.6%
	3 Three+	Count	61	233	69	363
		% within SFRAM (Sample) Sample Frame (Imported)	24.6%	16.1%	17.3%	17.3%
Total		Count	248	1449	400	2097
		% within SFRAM (Sample) Sample Frame (Imported)	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.371[a]	4	.003
Continuity Correction			
Likelihood Ratio	16.426	4	.002
Linear-by-Linear Association	7.298	1	.007
N of Valid Cases	2097		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 42.93.

Income Categories * SFRAM (Sample) Sample Frame (Imported) Crosstabulation

			SFRAM (Sample) Sample Frame (Imported)			
			1 Cell	2 Listed	3 RDD	Total
Income Categories	1 <=$50K	Count	91	484	151	726
		% within SFRAM (Sample) Sample Frame (Imported)	39.2%	39.5%	43.1%	40.2%
	2 $50-100K	Count	82	470	126	678
		% within SFRAM (Sample) Sample Frame (Imported)	35.3%	38.4%	36.0%	37.5%
	3 >$100K	Count	59	271	73	403
		% within SFRAM (Sample) Sample Frame (Imported)	25.4%	22.1%	20.9%	22.3%
Total		Count	232	1225	350	1807
		% within SFRAM (Sample) Sample Frame (Imported)	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.061[a]	4	.548
Continuity Correction			
Likelihood Ratio	3.013	4	.556
Linear-by-Linear Association	1.821	1	.177
N of Valid Cases	1807		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 51.74.

DEM27 (Core) Respondent served on active duty in U.S. armed forces * SFRAM (Sample) Sample Frame (Imported) Crosstabulation

			SFRAM (Sample) Sample Frame (Imported)			
			1 Cell	2 Listed	3 RDD	Total
DEM27 (Core) Respondent served on active duty in U. S. armed forces	1 Yes	Count	46	248	61	355
		% within SFRAM (Sample) Sample Frame (Imported)	18.3%	17.0%	15.1%	16.8%
	2 No	Count	205	1214	343	1762
		% within SFRAM (Sample) Sample Frame (Imported)	81.7%	83.0%	84.9%	83.2%
Total		Count	251	1462	404	2117
		% within SFRAM (Sample) Sample Frame (Imported)	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.283[a]	2	.526
Continuity Correction			
Likelihood Ratio	1.295	2	.523
Linear-by-Linear Association	1.263	1	.261
N of Valid Cases	2117		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 42.09.

DEM28 (Core) Respondent is US citizen * SFRAM (Sample) Sample Frame (Imported) Crosstabulation

			SFRAM (Sample) Sample Frame (Imported)			
			1 Cell	2 Listed	3 RDD	Total
DEM28 (Core) Respondent is US citizen	1 Yes	Count	236	1432	393	2061
		% within SFRAM (Sample) Sample Frame (Imported)	94.4%	97.8%	97.3%	97.3%
	2 No	Count	14	32	11	57
		% within SFRAM (Sample) Sample Frame (Imported)	5.6%	2.2%	2.7%	2.7%
Total		Count	250	1464	404	2118
		% within SFRAM (Sample) Sample Frame (Imported)	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.507[a]	2	.009
Continuity Correction			
Likelihood Ratio	7.719	2	.021
Linear-by-Linear Association	3.031	1	.082
N of Valid Cases	2118		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.73.

DEM22M1 (Core) Race and/or ethnicity * SFRAM (Sample) Sample Frame (Imported) Crosstabulation

			SFRAM (Sample) Sample Frame (Imported)			
			1 Cell	2 Listed	3 RDD	Total
DEM22M1 (Core) Race and/or ethnicity	1 American Indian/Native American	Count	8	20	10	38
		% within SFRAM (Sample) Sample Frame (Imported)	3.3%	1.4%	2.5%	1.8%
	2 Black or African American	Count	6	19	13	38
		% within SFRAM (Sample) Sample Frame (Imported)	2.4%	1.3%	3.3%	1.8%
	3 Hispanic or Latin American	Count	16	27	15	58
		% within SFRAM (Sample) Sample Frame (Imported)	6.5%	1.9%	3.8%	2.8%
	4 Caucasian or White	Count	185	1246	322	1753
		% within SFRAM (Sample) Sample Frame (Imported)	75.5%	87.8%	81.7%	85.2%
	5 Asian or Pacific Islander	Count	17	31	7	55
		% within SFRAM (Sample) Sample Frame (Imported)	6.9%	2.2%	1.8%	2.7%
	7 Multiple ethnicities	Count	3	26	11	40
		% within SFRAM (Sample) Sample Frame (Imported)	1.2%	1.8%	2.8%	1.9%
	8 Other ethnicities	Count	10	50	16	76
		% within SFRAM (Sample) Sample Frame (Imported)	4.1%	3.5%	4.1%	3.7%
Total		Count	245	1419	394	2058
		% within SFRAM (Sample) Sample Frame (Imported)	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	55.774[a]	12	.000
Continuity Correction			
Likelihood Ratio	46.852	12	.000
Linear-by-Linear Association	.008	1	.929
N of Valid Cases	2058		

a. 3 cells (14.3%) have expected count less than 5. The minimum expected count is 4.52.

IQ8 (Core) Current economic situation * SFRAM (Sample) Sample Frame (Imported) Crosstabulation

			SFRAM (Sample) Sample Frame (Imported)			
			1 Cell	2 Listed	3 RDD	Total
IQ8 (Core) Current economic situation	1 Much better	Count	54	199	77	330
		% within SFRAM (Sample) Sample Frame (Imported)	21.6%	13.6%	19.2%	15.6%
	2 Somewhat better	Count	58	282	62	402
		% within SFRAM (Sample) Sample Frame (Imported)	23.2%	19.3%	15.4%	19.0%
	3 About the same	Count	69	468	109	646
		% within SFRAM (Sample) Sample Frame (Imported)	27.6%	32.1%	27.1%	30.6%
	4 Somewhat worse	Count	45	328	95	468
		% within SFRAM (Sample) Sample Frame (Imported)	18.0%	22.5%	23.6%	22.2%
	5 Much worse off	Count	24	182	59	265
		% within SFRAM (Sample) Sample Frame (Imported)	9.6%	12.5%	14.7%	12.6%
Total		Count	250	1459	402	2111
		% within SFRAM (Sample) Sample Frame (Imported)	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	26.660[a]	8	.001
Continuity Correction			
Likelihood Ratio	26.327	8	.001
Linear-by-Linear Association	5.641	1	.018
N of Valid Cases	2111		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 31.38.

IQ9 (Core) Economic situation in 5 years * SFRAM (Sample) Sample Frame (Imported) Crosstabulation

			SFRAM (Sample) Sample Frame (Imported)			
			1 Cell	2 Listed	3 RDD	Total
IQ9 (Core) Economic situation in 5 years	1 Much better	Count	51	213	72	336
		% within SFRAM (Sample) Sample Frame (Imported)	21.4%	15.3%	18.7%	16.7%
	2 Somewhat better	Count	84	432	139	655
		% within SFRAM (Sample) Sample Frame (Imported)	35.3%	31.0%	36.1%	32.5%
	3 About the same	Count	58	479	101	638
		% within SFRAM (Sample) Sample Frame (Imported)	24.4%	34.3%	26.2%	31.6%
	4 Somewhat worse	Count	34	199	46	279
		% within SFRAM (Sample) Sample Frame (Imported)	14.3%	14.3%	11.9%	13.8%
	5 Much worse	Count	11	72	27	110
		% within SFRAM (Sample) Sample Frame (Imported)	4.6%	5.2%	7.0%	5.5%
Total		Count	238	1395	385	2018
		% within SFRAM (Sample) Sample Frame (Imported)	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	23.155[a]	8	.003
Continuity Correction			
Likelihood Ratio	23.224	8	.003
Linear-by-Linear Association	.074	1	.785
N of Valid Cases	2018		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.97.

DEM29 (CATI) May we keep your name and telephone number so we can possibly contact you next year with similar questions about your economic situation? * SFRAM (Sample) Sample Frame (Imported) Crosstabulation

			SFRAM (Sample) Sample Frame (Imported)			
			1 Cell	2 Listed	3 RDD	Total
DEM29 (CATI) May we keep your name and telephone number so we can possibly contact you next year with similar questions about your economic situation?	1 Yes	Count	232	1327	357	1916
		% within SFRAM (Sample) Sample Frame (Imported)	92.4%	90.6%	88.4%	90.4%
	2 No	Count	19	138	47	204
		% within SFRAM (Sample) Sample Frame (Imported)	7.6%	9.4%	11.6%	9.6%
Total		Count	251	1465	404	2120
		% within SFRAM (Sample) Sample Frame (Imported)	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.164[a]	2	.206
Continuity Correction			
Likelihood Ratio	3.146	2	.207
Linear-by-Linear Association	3.146	1	.076
N of Valid Cases	2120		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 24.15.