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## Cell Phone-Only Households: A Good Target for Internet Surveys?

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The expanding growth of cell phone-only households has fueled debate over how best to include such households in telephone surveys. The latest cell phone-only estimate places the percentage at 20.2 percent (Blumberg and Luke, 2009). Pew Internet and American Life Project predict that mobile phones will become the primary connection to the Internet for most people in the world by 2020 (Pew, 2008). Another Pew report suggests serious attention is now turning back to mail either as a mode for surveying cell-only households or as a contact strategy for recruiting such households to Internet surveys (Pew, 2007).

Finding an alternative response mode is critical for this population — cell phone numbers are often excluded in reverse address-to-telephone matches and many survey research organizations, including the Census Bureau, do not routinely include cell-phone numbers when conducting random-digit-dial surveys. And while it's possible to obtain cell phone number samples to conduct interviews over cell phones, costs are typically much higher than landline interviews. Given the continued growth of cell-only households, what are the alternatives to ensure coverage among this population?

We consider whether cell-only households may be good candidates for Internet surveys. We do so by exploring Internet use and stated preference for the Internet as a data collection method among cell-only households.

At face value, the Internet would seem a reasonable alternative since cell-only households skew younger and younger households report higher Internet access and use (Blumberg and Luke, 2008; Pew, 2009). Keeter et al. (2008) documented some differences in reported technology usage between a landline telephone sample and a cell only sample, for example, use of Facebook, MySpace, sending or receiving e-mails and text messages was higher among the cell-only sample. Additionally, Martin (2003) reported that stated preference to complete a Census form via Internet was higher among younger respondents and Zajac et al. (2007) reported that respondents choosing the Internet mode in a Census test also skewed younger. However, there is little literature on the direct relationship between cell phone-only households and Internet usage or preference of the Internet as a data collection mode.

### Methodology

We use data from a survey conducted to inform the 2010 Census communications

campaign. The Census Barriers, Attitudes, and Motivators Survey (or CBAMS) was a multi-mode survey of households conducted in 2008 to ascertain motivators and barriers to 2010 Census participation, level of Census knowledge and attitudes toward the Census, and media consumption and usage patterns. DraftFCB-NY, the advertising contractor for the 2010 Census, sponsored the survey and Macro International conducted it. The survey was conducted among the general population with oversampling in known hard-to-count populations. Interviews were conducted on cell phones (N=300), landline phones (N=2,701) and by personal visit (N=1,063). The CBAMS achieved a final combined response rate of 38 percent. (2)

The interview determined if households were cell-only, cell and landline (cell-mostly) (3), cell and landline (not cell mostly), landline only, or had no phone. The survey also ascertained if the respondent had access to the Internet at work or home, and if yes, how many hours per day were spent online. Finally, the survey asked respondents to agree or disagree along a 5-point Likert scale to the following statement:

*"I don't like to fill out paper forms or use the mail because I prefer to do everything online".*

Using these data, two research questions are considered:

- 1) Do cell-only households report greater Internet usage compared to other telephone situation households?
- 2) Do cell-only households state a greater preference for completing forms online compared to other telephone situation households?

**Results**

Table 1 contains several measures of reported Internet usage by household telephone situation.

**Table 1. Internet use and household telephone status (standard errors in parentheses)**

Internet Usage	Cell only	Cell & Landline: Cell mostly	Cell & Landline: Not cell mostly	Landline only
Percent online 1+ hours per day	76.5% (4.4)	85.6% (2.6)	77.6% (1.5)	42.4% (3.4)
Median hours online per day	3	2	2	2
Mean Internet "Activity" Score	16.4 (.54)	16.5 (.32)	14.2 (.16)	13.8 (.41)

Cell-mostly households had a significantly higher percent reporting online access for at least one hour per day (85.6 percent). Over 75 percent of the cell-only and cell & landline (not cell mostly) households were online at least 1 hour per day. Landline-only households were far behind at around 42.4 percent. Of those who reported spending at least one hour online per day, cell-only households spent a median of 3 hours while the other phone categories spent 2. Cell-only and

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cell-mostly households indicated using the Internet for a greater variety of applications as measured by an Internet "activity" score (an index measuring frequency of visits to five different website categories including: information gathering, social networking, financial transactions, communication, and entertainment).

From these measures, we conclude that cell phone-only households do not necessarily represent the heaviest Internet user category (cell-mostly do), but that a very sizeable proportion of the cell-only population is online daily and for a variety of applications.

Table 2 indicates a clear continuum between the household cell phone situation and stated preference for completing forms online. Close to half of cell-only households stated a preference for completing forms online compared to mail. This preference declines across the other three telephone situations.

**Table 2. Stated preference for completing forms online by household telephone status (standard errors in parentheses)**

	Cell only	Cell & Landline: Cell mostly	Cell & Landline: Not cell mostly	Landline only
% who prefer Internet to mail for completing forms	47.8% (5.8)	36.5% (3.6)	22.8% (1.6)	13.3% (2.3)

This preference becomes more evident when delineating among cell-only households with low versus high daily Internet use (see Table 3). Fifty-five percent of cell-only households with higher daily use preferred completing forms online compared to only fifteen percent with low daily use.

**Table 3. Cell-only households: percent preferring Internet to mail to complete forms by degree of daily Internet use (standard errors in parentheses)**

	Cell only: 1+ hour/day Internet use	Cell only: <1 hour/day Internet use
% who prefer Internet over mail to complete forms	55.4% (6.1)	14.6% (8.8)

When comparing demographic distributions for cell-only households by level of daily Internet use and preference to complete forms online, two distinct subpopulations of cell-only households begin to emerge (**Table 4**).

Stark differences are evident in almost every demographic category between cell-only respondents with high versus low daily Internet use. For example, low Internet usage cell-only households skew much more male, Hispanic and black, and lower education compared with cell-only households spending one or more hours online per day. Conversely, cell phone-only respondents spending more time online were skewed

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young (18–34), White non-Hispanic and Asian, and high mobility. Some of the differences are quite striking, for example, close to one-half of the low Internet usage population reported less than high school education compared to less than 5 percent in the high usage group. Additionally, well over half (58 percent) of the low Internet cell-only group were either Hispanic or black compared to only 19 percent in the higher Internet usage group.

When comparing cell-only households with a stated preference to complete forms online compared to those who did not, the differences were less apparent and none were statistically significant.

### **Future Implications**

Previous studies indicate that cell phone-only households tend to be more male skewed, younger, living in poverty, minority skewed (urban Hispanics, blacks), less educated, and single/never married (Link et al, 2007; Blumberg and Luke, 2008; Blumberg, Lake, Cynamon and Frankel, 2008). But data from the CBAMS suggests that cell phone-only households reflect at least two rather distinct subpopulations that can be distinguished by level of Internet usage. According to our measures, two-thirds of cell-only respondents report being online one hour or more per day and of these, over half express a preference for completing forms online. Could this be good news for survey researchers hoping to cover the cell-only population by Internet surveys as opposed to traditional telephone methods? We use the American Community Survey (ACS) to hypothetically address this question.

The ACS is a large demographic survey conducted monthly by the Census Bureau. The multi-mode design begins by mailing paper questionnaires, then follows up nonrespondents with Computer Assisted Telephone Interviewing (CATI) for cases that can be reverse address-matched to a telephone number (known cell phone numbers are purposefully excluded from the matching operation). Finally, sample cases not responding by mail or phone are subsampled for a personal visit follow-up. An examination of response mode by demographic characteristics suggests that younger respondents who tend to be single, mobile, and renting are underrepresented by CATI (Jackson, 2007; Joshipura, 2008; Jacobsen and Bates, 2009). The lower CATI prevalence among this population could be due, in part, to a higher cell phone-only prevalence. But regardless of why, fewer CATI interviews means higher costs due to personal visit follow-ups.

To reduce costs, it may be prudent to try to move some of the households currently responding by personal visit to the Internet. Specifically, the cell-only subpopulation that is high Internet users and state a preference for completing forms online. How do we find such households? Research from the 2010 Census communication campaign lends useful clues. One of the audience segmentation clusters for the 2010 Census campaign is the “single unattached mobiles”. This cluster represents Census tracts characterized by young non-spousal households with above-average educations who tend to move frequently, rent, and reside in multi-unit structures (Bates and Mulry, 2008). An overlay of consumer survey data on top of the clusters further suggests that the single unattached mobiles also have the highest Internet subscription at home and highest usage at both home and work (Bates and Mulry,

2008; DFCB-NY, 2008). Since every single tract in the U.S. has been assigned to an audience segmentation cluster, targeting these areas is straightforward.

Currently, the ACS does not offer an Internet option but plans to test one in 2010. As of writing, the ACS staff is exploring a targeted test panel that would offer Internet to areas thought to have higher Internet connectivity. The current ACS questionnaire does not ask if households are cell phone-only, but for purposes of the test, such a question could help understand if the Internet is indeed a promising alternative we should explore for the cell phone-only population.

#### Notes

(1) This report is released to inform interested parties of ongoing research and to encourage discussion of work in progress. The views expressed are those of the author and not necessarily of the U.S. Census Bureau.

(2) Response rate calculated according to AAPOR RR3 ( AAPOR, 2008). For details on the CBAMS methodology see Macro International, 2009.

(3) Cell-mostly households are defined as households that have both a cell phone and landline but who report placing and receiving most of their calls on a cell phone.

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