

## Who's There? Comparing Respondents from a Telephone Survey to a Mail Survey

Andrew Zukerberg<sup>1</sup> and Stacey Bielick<sup>2</sup>

<sup>1</sup>National Center for Education Statistics, Institute of Education Sciences, 1990 K St. NW  
room 9036 Washington, DC 20006 [andrew.zukerberg@ed.gov](mailto:andrew.zukerberg@ed.gov)

<sup>2</sup>American Institutes for Research, 1990 K St. NW Washington, DC 20006

*This discussion is intended to promote the exchange of ideas among researchers and policy makers. The views expressed in this handout are part of ongoing research and analysis and do not necessarily reflect the position of the U.S. Department of Education.*

### **Abstract**

The increasing accuracy and availability of address sampling frames have led researchers in the public and private sector to reconsider mail self-administered surveys as a viable alternative to telephone Random Digit Dial (RDD) studies. Mode effects in surveys have been well documented. One aspect of the effect that is worthy of exploration in the transition of a survey from telephone to mail is whether or not the change in mode draws in a different respondent from the household. The National Household Education Survey (NHES) was conducted by telephone approximately every two years beginning in 1991. As a result of falling response rates and concerns about coverage in the list assisted RDD sample, the survey began a redesign in 2009. The first step in this redesign was a feasibility test of a two-phase mail survey. The NHES consists of a series of rotating modules, most of which are focused on a reference child. Past research has shown that the household informant plays a role in the quality of data collected. As a result of this, telephone interviewers were instructed to ask that the adult in the household who is most knowledgeable about the selected child serve as the respondent. To facilitate response in the household, the mail self-administered questionnaire requested that someone knowledgeable about the child respond; however, the request is likely to be less salient to the respondent in a self-administered survey compared to an interviewer-administered survey. This paper will examine the characteristics of respondents in the phone and mail surveys. Changes in the household respondent could have profound effects on measurement. Understanding differences in who is likely to respond by phone compared to mail can also lead to the development of better contact approaches for mail surveys.

**Key Words:** Mode, respondent characteristics, education

### **1. Background**

The National Household Education Survey (NHES) was last conducted as a RDD telephone survey in 2007. The surveys collected data from households on a variety of education related topics through a series of rotating topical modules. Past topical modules have covered areas including adult education, civic involvement, participation in after-school activities, parent and family involvement in education, early childhood education activities, and school readiness. Some modules have been repeated multiple times, allowing for the analysis of trends. Although the NHES modules rotate, the design of the survey system has stayed relatively stable since its inception. Households are

screened to determine if there are eligible household members for the modules being conducted (e.g., children enrolled in K-12<sup>th</sup> grade). If there is more than one eligible household member, the Computer Assisted Telephone Interviewing (CATI) system would select household members following a sampling algorithm. Depending on the modules being conducted, the interviewer would ask to speak directly with the reference adult (for the adult education module) or with the person most knowledgeable about a reference child (child surveys). Multiple modules could be conducted with the same household and the same module could be conducted multiple times with the household if it had more than one eligible person. Table 1 below shows that despite a variety of interventions to maintain high response rates, the 2007 NHES achieved a screener response rate that was nearly 29 percentage points lower than that of the 1991 data collection.

**Table 1. Weighted unit response rates and percentage distribution of type of unit nonresponse for the NHES screener: 1991–2007**

| Year of survey | Number of completed screeners | Unit response rate (percent) | Type of unit nonresponse (percentage distribution) |               |                   |
|----------------|-------------------------------|------------------------------|--|---------------|-------------------|
|                |                               |                              | Refusals   | Maximum calls | Other nonresponse |
| 1991           | 60,322                        | 81.0                         | 84   | 7             | 9                 |
| 1993           | 63,844                        | 82.1                         | 68   | 15            | 18 <sup>1</sup>   |
| 1995           | 45,465                        | 73.3                         | 84   | 9             | 7                 |
| 1996           | 55,838                        | 69.9                         | 83   | 10            | 7                 |
| 1999           | 55,929                        | 74.1                         | 76   | 17            | 7                 |
| 2001           | 48,385                        | 67.5                         | 74   | 18            | 8                 |
| 2003           | 32,049                        | 61.7                         | 76   | 16            | 8                 |
| 2005           | 58,140                        | 64.2                         | 77   | 15            | 8                 |
| 2007           | 54,034                        | 52.5                         | 86   | 10            | 4                 |

<sup>1</sup> The NHES:1993 percentage of other nonresponse cases is higher than that in other survey years. The lower percentage of refusals and the generally higher response rate in NHES:1993 are indicative of the fact that less refielding of other nonresponse cases was needed prior to ending data collection with an acceptable screener response rate.

NOTE: To avoid any differences in rates that might be attributable to the calculation method, all unit response rates given here were calculated using the business office method. Therefore, some response rates given here are somewhat different than the official response rates cited in survey reports and documentation. See chapter 5 of the National Household Education Surveys Program of 2007: Methodology Report (Hagedorn et al. 2009; [http://nces.ed.gov/pubs2009/2009047\\_1.pdf](http://nces.ed.gov/pubs2009/2009047_1.pdf)) for details on the methods for computing response rates. The number of household members enumerated in each data collection differed according to the sample requirements of the topical surveys conducted in the specific year. Maximum call cases are those that received at least eight call attempts during which contact was made with a person on at least one occasion, yet the screener was not completed. Other nonresponse includes cases with language problems, no-answer and answering machine calls (adjusted to reflect the appropriate proportion assumed to be residential), and other forms of nonresponse. Detail may not sum to totals because of rounding.

SOURCE: Kerckhove et al. (2008).

In addition to the falling response rates, increasing rates of cell phone only households raised potential coverage concerns with the list assisted RDD methodology NHES was using. The percentage of children in cell phone only households was about 12 percent in 2007 compared to less than 5 percent in 2003. In 2010, the percentage of children living in cell phone only households had increased to about 29 percent (Blumberg and Luke 2010). NCES conducted a bias study in 2007 that indicated the potential for at least limited coverage bias in the NHES:2007 data (see Kerckhove et al. 2008).

To address the response rate and coverage issues of the RDD NHES design, NCES began a redesign of the NHES in 2008. The approach pursued an Address Based Sample (ABS) utilizing primarily a two-phase mail self-administered approach to data collection. This paper will examine the characteristics of respondents by mail and telephone to two NHES modules, the Parent Family Involvement in Education (PFI) module on school age children and the Early Childhood Program Participation (ECPP) survey on young children not yet enrolled in school.

## **2. Literature**

Mode effects have long been a concern of survey researchers. Early mode effect studies looked at changing from face to face interviews to telephone interviewing. While many of the published mode effects studies have looked at response differences between modes, few have looked at the characteristics of respondents. Dillman and Tarnai (1991) noted that a greater proportion of males responded to a mail survey than to a telephone survey. They attribute the difference to telephone registry practices at the time. Similarly, De Leeuw (1992) noted more male and married respondents in a survey conducted by mail. However, in a study conducted in Texas, Farnworth et al. (1996) compared mail respondents sampled from a driver's license database to phone respondents selected using list assisted RDD methods. They found that the mail respondents were more likely to be female, living in households with income over \$30,000, married, and unemployed when compared to the phone respondents. In comparing results from an ABS based design to an RDD one, Link et al. (2009) found that the ABS respondents included more younger respondents. Many other published mode effect studies do not provide a demographic breakdown of respondents by mode of response. To the extent that respondents with different characteristics respond differently to items of interest, it can impact the outcome of the study. Often non response weighting and adjustment are used to overcome these differences. However, understanding the differences can better enable researchers to design adjustments and interventions.

## **3. Methodology**

For this study, we compare respondents from the 2005 ECPP and 2007 PFI surveys that were conducted entirely by phone using an RDD sample to mail PFI and ECPP respondents from the 2009 ABS sample pilot test.

NCES conducted a pilot test of the new NHES design in the fall of 2009. A nationally representative sample of 10,000 addresses was drawn from an augmented USPS Delivery Sequence File (DSF). Selected households were contacted by mail and/or telephone to determine if eligible children (birth through age 20) were currently living in the household. For the majority of addresses, up to three mailing attempts were made to households that did not respond to the questionnaire mailing. A \$2 cash incentive was included with the first mailing. Some households were selected to receive telephone non response follow-up after the first or second mailing.

In households with eligible children, one of three possible topical follow-up surveys was sent to the household, Early Childhood Program Participation (ECPP) or the Parent Family Involvement in Education (PFI) Enrolled or Homeschooled version.

In houses with eligible children, one child was randomly sampled to be the reference child for the survey. The self-administered questionnaire asked that a “parent or guardian who knows about” the reference child complete the form.

In prior NHES data collections, the studies were conducted by using list-assisted sampling to identify residential phone banks with working numbers. A prenotice letter was sent to all households where the frame vendor could match an address. All interviews were conducted by phone. When an interviewer reached the households, the interviewer attempted to screen the household for eligible respondents. The CATI instrument performed sampling and selected reference children for the study. The interviewer then asked to speak with the person most knowledgeable about the selected child. If the person was available, the interviewer proceeded with the topical interview. If the person was not available, a call back was scheduled. The PFI module was last conducted by phone in winter/spring 2007 and the ECPP module was last conducted by phone in winter/spring 2005.

The target population for the ECPP surveys is children ages 0-6 and not yet enrolled in kindergarten. We refer to the ECPP surveys as the early childhood surveys in this paper. The target population for the PFI surveys is school-age children ages 3-20 enrolled in kindergarten to grade 12. We refer to the PFI surveys as the school-age surveys in this paper.

The unit of analysis in typical NHES data analyses is the child; however, the unit of analysis in this paper is the topical survey respondent. The 2005 and 2007 data are weighted to account for oversampling of households in a >20 percent Black or Hispanic stratum and differential within-household sampling of children by age or grade.

Telephone respondents have been excluded from the analysis for the pilot data.

Results of the analysis are presented below. All specific statements of comparison have been tested for statistical significance using Student’s *t* statistic to ensure that the differences are larger than those that might be expected due to sampling variation. Because of the small sample sizes in the 2009 pilot study, we conducted two-tailed tests

at both the .05 and .10 alpha levels to identify potential differences. Reported differences are significant at the .05 level unless otherwise noted. Adjustments for multiple comparisons were not included. Many of the variables examined are related to one another, and complex interactions and relationships have not been explored.

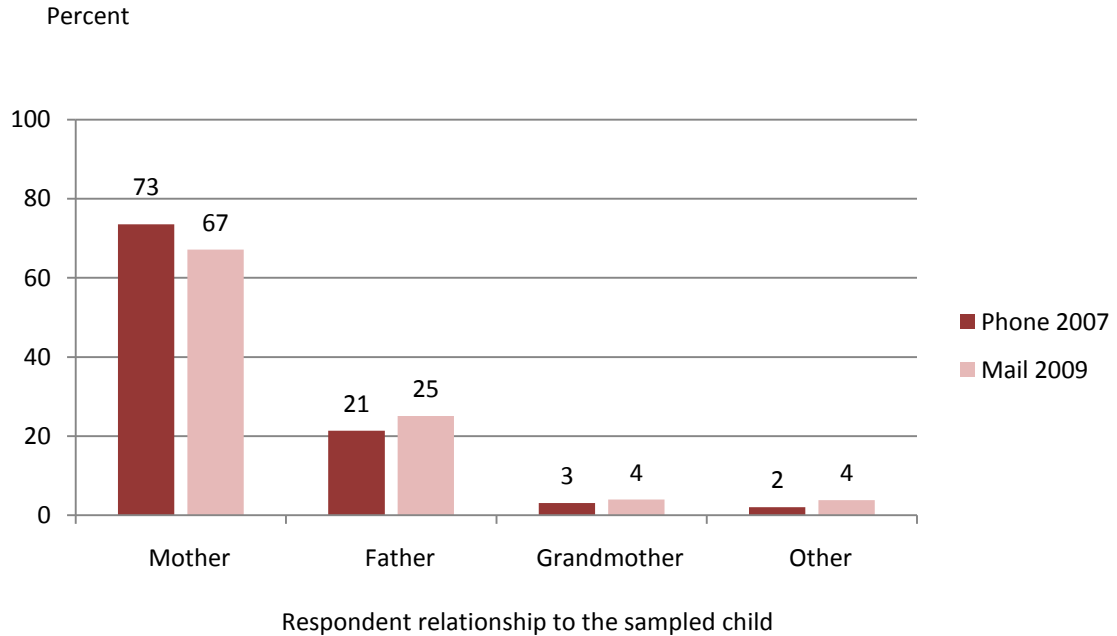
Differences by mode are examined across several household and respondent characteristics for the early childhood and school-age surveys separately. The examined characteristics include: respondent relationship to the child, age, labor-force participation, education attainment, marital status, home language, household poverty, and race/ethnicity. Table 2 at the end of the paper shows the reported estimates and Table S2 shows the standard errors.

## **4. Results**

### **4.1 Relationship to the child**

Most respondents to the NHES surveys across survey and mode were mothers—about 70 to 80 percent, although the percentage of fathers responding to the school-age surveys was higher than the percentage who responded to the early childhood surveys, for both phone and mail (21 and 25 percent vs. 19 and 16 percent). A higher percentage of fathers responded in the 2009 school-age mail survey (25 percent) compared to the 2007 school-age telephone survey (21 percent) (figure 1). At the .10 level, a higher percentage of respondents to the school-age mail survey were other female respondents not identified as a mother or grandmother compared to phone. There were no differences between mother and father respondents for mail and phone for the early childhood survey, although at the .10 level, there was a higher percentage of grandfather respondents in the mail survey compared to phone.

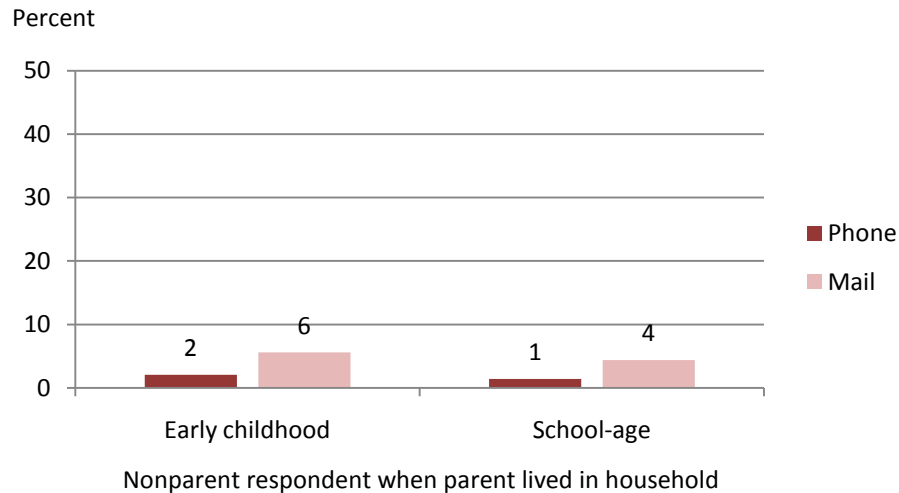
**Figure 1. Percentage of respondents to the NHES school-age surveys by respondent relationship to the sampled child: 2007 phone and 2009 mail**



Source: U.S. Department of Education, National Center for Education Statistics, National Household Education Surveys (NHES) Program, 2007 and 2009.

The mail survey also had a higher percentage of nonparent respondents when a parent lived in the household compared to the telephone survey, for both the early childhood and school-age surveys (6 vs. 2 and 4 vs. 1 respectively) (figure 2).

**Figure 2. Percentage of nonparent respondents to the NHES surveys when a parent lived in the household, by survey mode**

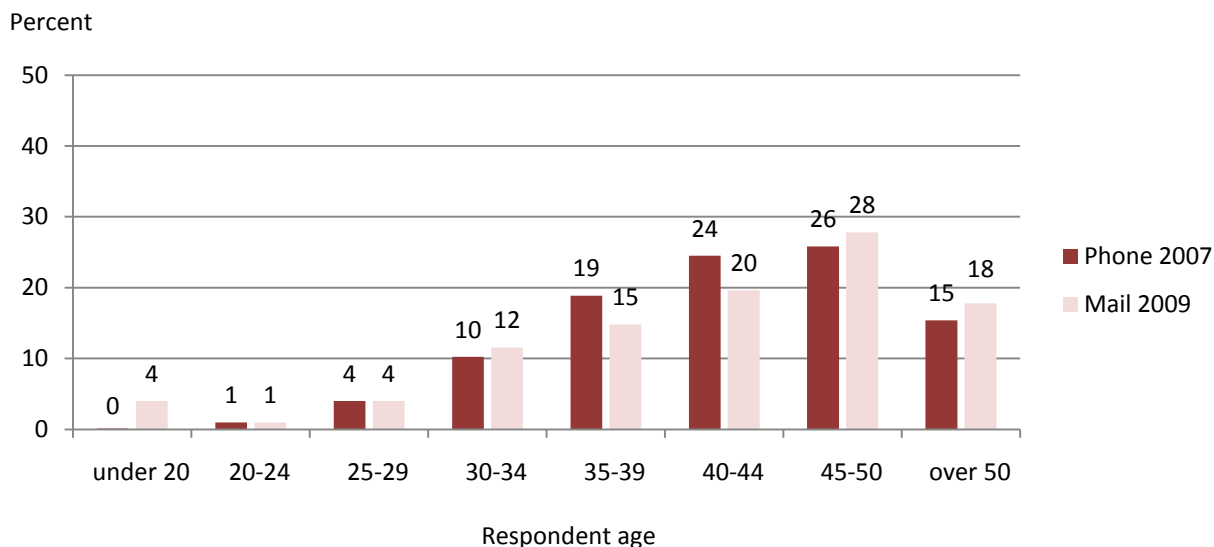


Source: U.S. Department of Education, National Center for Education Statistics, National Household Education Surveys (NHES) Program, 2005, 2007 and 2009.

#### 4.2 Respondent age

Generally, the school-age surveys have a wider distribution of respondent age than the early childhood surveys due to the larger age range of the target population. Age was distributed as expected in each survey and mode for the child population sampled (figure 3). One difference of note is the percentage of respondents under age 20 in the school-age mail survey—4 percent of respondents were under age 20 in the 2009 school-age mail survey compared to less than 1 percent in the 2007 school-age telephone survey. The mean respondent age for the both the school-age phone and mail surveys was 43. The mean respondent age for the early childhood surveys was 34 for mail in 2009 and 33 for phone in 2005.

**Figure 3. Percentage of respondents to the NHES school-age surveys by respondent age: 2007 phone and 2009 mail**



Source: U.S. Department of Education, National Center for Education Statistics, National Household Education Surveys (NHES) Program, 2007 and 2009.

#### 4.3 Labor-force participation

There were no measurable mode differences in labor-force participation for the early childhood survey at the .05 level. At the .10 level, a smaller percentage of respondents to the early childhood survey mail survey were employed part-time (less than 35 hours per week) compared to the 2005 phone survey. For the school-age survey, a lower percentage of 2009 mail respondents worked part-time (less than 35 hours per week) and, at the .10 level a higher percentage of 2009 mail respondents were unemployed compared to the 2007 phone survey. However, it should be noted that the national unemployment rate was higher in 2009 at 9.3 percent compared to 4.6 percent in 2007, which could explain this mode difference.<sup>1</sup>

#### 4.4 Educational attainment

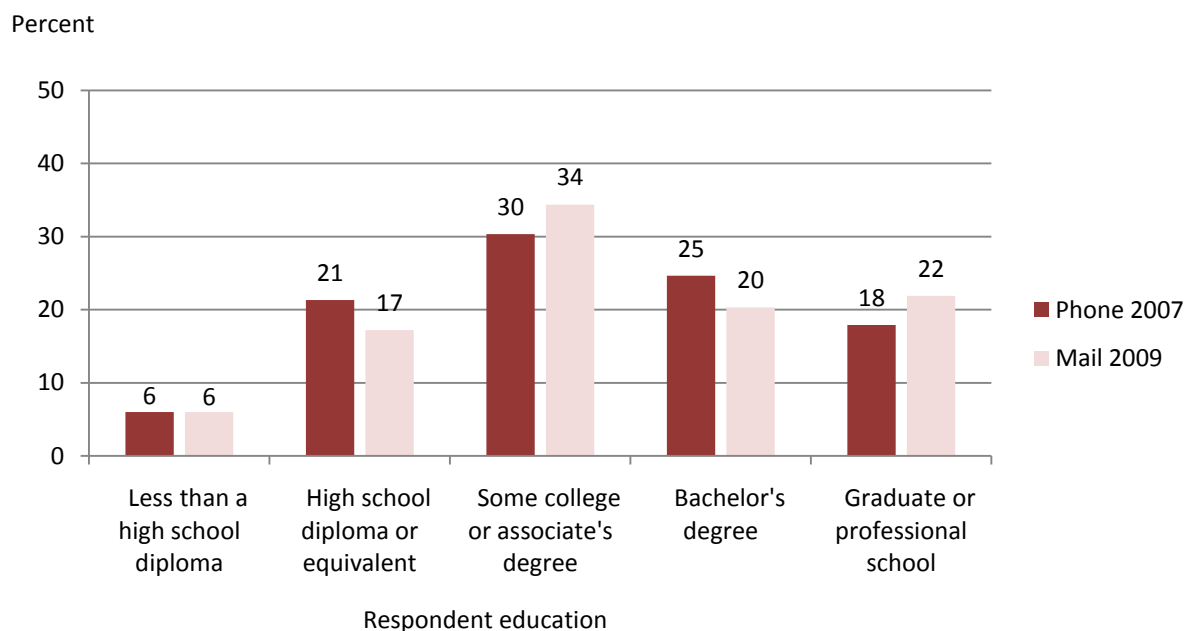
A higher percentage of 2009 mail respondents in both the early childhood and school-age surveys compared to telephone respondents were highly educated, that is, they had a graduate or professional degree (25 versus 16 percent and 22 versus 18 percent) (figure 4). Correspondingly, a lower percentage of mail respondents had a high school diploma as their highest educational attainment (17 versus 24 percent and 21 versus 17 percent). Measurable in the school-age survey only, a lower percentage of mail respondents had a

<sup>1</sup> Bureau of Labor Statistics, Historical Data for the "A" Tables of the Employment Situation Release (Household/CPS data), Table A-1, retrieved online at <http://www.bls.gov/cps/cpsatabs.htm>, February 24, 2011.



bachelor's degree (20 percent) compared to phone respondents (25 percent) and a higher percentage had an associate's degree or some college (34 percent) compared to phone respondents (30 percent).

**Figure 4. Percentage of respondents to the NHES school-age surveys by respondent highest educational attainment: 2007 phone and 2009 mail**



Source: U.S. Department of Education, National Center for Education Statistics, National Household Education Surveys (NHES) Program, 2005 and 2009.

#### 4.5 Marital status

There were no mode differences by marital status for the early childhood survey, but a lower percentage of respondents to the school-age mail survey were married (75 percent) and a higher percentage had never been married (6 percent), compared to phone (78 percent married and 4 percent never married).

#### 4.6 Primary home language

The school-age survey was offered in Spanish in the 2009 pilot. The early childhood survey was not. Although not enough mail topical surveys were completed in Spanish to analyze survey language, we can examine primary home language. A smaller percentage of respondents to the school-age mail survey spoke Spanish as their primary home language (2 percent) compared to the phone survey (7 percent). It is possible that literacy rates are lower among sampled households where Spanish is the primary home language. This could be a potential bias in a mail only approach. See Zuckerberg and Han (2010) for a complete discussion of Spanish language issues in the 2009 pilot.

#### 4.7 Household poverty

In the early childhood survey, the percentage of respondents who live in nearpoor households was lower in the 2009 mail survey (15 percent) than in the 2005 phone survey (21 percent). Also for the early childhood survey, at the .10 level, the percentage of respondents who live in nonpoor households is larger by 5 percentage points in the 2009 mail survey compared to the 2005 phone. In the school age survey, the percentage of 2009 mail respondents who live in nonpoor households is lower by 4 percentage points compared to 2007 phone respondents and the percentage living in poor households is higher by 6 percentage points. The percentage of families living *below* the poverty threshold for households with children under age 18 was 17 percent in 2009, 16 percent in 2007, and 14.5 percent in 2005.<sup>2</sup>

#### 4.8 Race and ethnicity

Not all NHES phone surveys asked parent or respondent race and ethnicity, but all asked child race and ethnicity. To facilitate comparison, child's race/ethnicity is used as the measure of race/ethnicity in this paper. In the early childhood survey, a smaller percentage of mail respondents than 2005 phone respondents came from households with Hispanic children (14 versus 21 percent); however, it is important to note that the early childhood mail survey was not offered in Spanish. In comparison to the 2007 phone survey, the 2009 school-age mail survey had a higher percentage of respondents from households with Asian children (7 versus 3 percent), and a lower percentage from households with White children (76 versus 83 percent).

#### 4.9 Other findings

Because of the sharp changes in coverage patterns for household surveys in past decade, survey researchers are increasingly using other measures of survey reach beyond the response rate that include both response and coverage rates. For NHES, Brick et. al. (in press) report that 19.4 percent of households in the NHES:2009 were cell phone only and .9 percent had no phone in the household. These numbers suggest that the NHES:2009 reached households that would not have been included under the RDD design, thus improving overall coverage.

### 5. Conclusions

Past research has found mixed differences in respondent characteristics by mode. In some studies, mail respondents were more likely to be male and married. Past experience in the NHES has shown that these characteristics can be correlated with response. As NHES transitions from an entirely interviewer administered telephone survey to a primarily mail self-administered survey, it was important to explore potential differences in respondent characteristics. We found a pattern of differences by mode for

---

<sup>2</sup> U.S. Census Bureau, Table 4. Poverty Status of Families, by Type of Family, Presence of Related Children, Race, and Hispanic Origin: 1959 to 2009, retrieved online at <http://www.census.gov/hhes/www/poverty/data/historical/families.html>, April 5, 2011. Note that the Census definition of poverty is "below poverty" and the NHES is "at or below poverty."

the school-age surveys, but few differences for the early childhood surveys. In some part, this distinction between the survey populations could be due to the characteristics of the target populations. In particular, the age-range of the children in the early childhood survey target population (and therefore the age-range of their parents) is narrower than the age-range in the school-age survey. We might expect the narrower age-range of respondents in the early childhood survey to lead to more homogeneity in many of the characteristics examined and therefore, less room for variation.

The differences in age, relationship to child, and marital status of the respondent by mode in the school-age survey suggest that respondents to the school-age mail survey may have been more likely than respondents to the phone survey to be someone other than a parent or grandparent, although mothers are by far the most common respondent in both modes.

In the early childhood survey 2009 mail respondents were less likely than the 2005 phone respondents to come from households in or near poverty and from households with Hispanic children. This occurred at the same time that poverty rates were rising and the Hispanic population grew in the United States. The NHES 2011 Field Test contains significant design methods and experiments aimed at increasing mail survey response from these traditionally hard-to-reach populations. In the school-age survey, there were a greater percentage of respondents from households with Asian children in the 2009 mail survey compared to 2007 phone survey.

The 2009 mail respondents also appear to be more highly educated than telephone respondents in 2005 or 2007. We did not explore complex relationships, such as the link between education and income in this paper. However, the difference found for education suggests that there could potentially be other aspects of the mail survey that appeal to this very highly educated population in ways that the phone survey does not.

**Table 2. Percentage of respondents to NHES surveys, by mode and respondent characteristics**

| Respondent characteristic              | Early childhood surveys |              | School-age surveys |              |
|--|-------------------------|--------------|--------------------|--------------|
|  | Phone<br>2005           | Mail<br>2009 | Phone<br>2007      | Mail<br>2009 |
| Total                                  |                         |              |                    |              |
| Sex                                    |                         |              |                    |              |
| Male                                   | 19.1                    | 18.8         | 22.2               | 26.6         |
| Female                                 | 80.9                    | 81.3         | 77.8               | 73.4         |
| Relationship to child                  |                         |              |                    |              |
| Mother                                 | 77.5                    | 76.7         | 73.5               | 67.1         |
| Father                                 | 18.7                    | 16.4         | 21.4               | 25.1         |
| Grandmother                            | 2.7                     | 3.8          | 3.1                | 4.0          |
| Grandfather                            | 0.3                     | 1.7          | 0.4                | 0.7          |
| Other female respondent                | 0.7                     | 1.0          | 1.2                | 2.3          |
| Other male respondent                  | 0.1                     | 0.3          | 0.4                | 0.9          |
| Parent in household, other respondent  | 2.1                     | 5.6          | 1.4                | 4.4          |
| Mean age                               | 33.5                    | 34.1         | 42.7               | 43.3         |
| Age                                    |                         |              |                    |              |
| under 20                               | 1.0                     | 1.4          | 0.1                | 3.6          |
| 20-24                                  | 8.5                     | 7.3          | 0.8                | 1.0          |
| 25-29                                  | 19.9                    | 22.5         | 4.2                | 3.8          |
| 30-34                                  | 29.1                    | 25.6         | 10.2               | 11.6         |
| 35-39                                  | 23.5                    | 23.9         | 18.9               | 14.8         |
| 40-44                                  | 12.2                    | 12.5         | 24.5               | 19.6         |
| 45-50                                  | 3.7                     | 3.1          | 25.8               | 27.8         |
| over 50                                | 2.2                     | 3.8          | 15.4               | 17.8         |
| Labor force participation <sup>1</sup> |                         |              |                    |              |
| 35 hours or more per week              | 43.8                    | 43.7         | 55.5               | 57.3         |
| Less than 35 hours per week            | 19.9                    | 16.0         | 19.9               | 16.5         |
| Looking for work                       | 5.3                     | 6.1          | 3.6                | 5.1          |
| Not in labor force                     | 31.1                    | 34.2         | 21.0               | 21.1         |
| Educational attainment <sup>1</sup>    |                         |              |                    |              |
| Less than a high school diploma        | 8.1                     | 5.7          | 5.8                | 6.3          |
| High school diploma or equivalent      | 24.0                    | 16.7         | 21.3               | 17.2         |
| Some college or associate's degree     | 27.8                    | 27.4         | 30.3               | 34.4         |
| Bachelor's degree                      | 24.3                    | 25.1         | 24.6               | 20.3         |
| Graduate or professional school        | 15.9                    | 25.1         | 17.9               | 21.9         |

See notes at end of table.

**Table 2. Percentage of respondents to NHES surveys, by mode and respondent characteristics—continued**

| Respondent characteristic            | Early childhood surveys |              | School-age surveys |              |
|--------------------------------------|-------------------------|--------------|--------------------|--------------|
|                                      | Phone<br>2005           | Mail<br>2009 | Phone<br>2007      | Mail<br>2009 |
| Marital status <sup>1</sup>          | 80.1                    | 78.2         | 78.2               | 76           |
| Married                              | 6.6                     | 8.0          | 3.7                | 4.0          |
| Partnered                            | 2.4                     | 3.4          | 2.6                | 2.3          |
| Separated                            | 3.0                     | 2.7          | 9.5                | 11.3         |
| Divorced                             | 0.4                     | 0.0          | 1.8                | 1.4          |
| Widowed                              | 7.4                     | 7.6          | 4.2                | 6.4          |
| Never been married                   |                         |              |                    |              |
| Primary home language <sup>1,4</sup> |                         |              |                    |              |
| English                              | †                       | †            | 89.2               | 91.1         |
| Spanish                              | †                       | †            | 6.7                | 2.4          |
| English/Spanish                      | †                       | †            | 1.2                | 1.7          |
| Household poverty level <sup>2</sup> |                         |              |                    |              |
| Poor                                 | 17.3                    | 18.1         | 10.3               | 15.5         |
| Near-poor                            | 20.8                    | 14.9         | 15.4               | 14.7         |
| Nonpoor                              | 61.9                    | 66.9         | 74.3               | 69.8         |
| Child's race/ethnicity <sup>3</sup>  |                         |              |                    |              |
| Asian                                | 5.6                     | 5.7          | 3.3                | 6.9          |
| Black                                | 10.9                    | 7.2          | 9.1                | 9.9          |
| Hispanic                             | 20.7                    | 14.2         | 12.9               | 10.8         |
| White                                | 82.8                    | 80.6         | 83.0               | 76.5         |

† Not applicable. There was no Spanish early childhood mail survey, which could affect reporting of language.

<sup>1</sup> Labor force participation, educational attainment, and marital status were not reported for respondents in cases where the respondent was not the parent if a parent resided in the household.

<sup>2</sup> Poor is within the income category closest to the poverty threshold; Near-poor is between 100 percent and 200 percent poverty; and Nonpoor is at or above 200 percent poverty.

<sup>3</sup> Sum is greater than 100 percent because more than one race or ethnicity could be reported. Child's race/ethnicity is reported because respondent or parent race/ethnicity was not collected in every year.

<sup>4</sup> In the mail surveys, primary home language was not reported for respondents in cases where the respondent was not the parent if a parent resided in the household.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Household Education Surveys Program (NHES), selected years.

**Table S2. Standard errors for percentage of respondents to NHES surveys, by mode and respondent characteristics**

| Respondent characteristic          | Early childhood surveys |              | School-age surveys |              |
|------------------------------------|-------------------------|--------------|--------------------|--------------|
|                                    | Phone<br>2005           | Mail<br>2009 | Phone<br>2007      | Mail<br>2009 |
| Total                              |                         |              |                    |              |
| Sex                                |                         |              |                    |              |
| Male                               | 0.53                    | 2.30         | 0.43               | 1.61         |
| Female                             | 0.53                    | 2.30         | 0.43               | 1.61         |
| Relationship to child              |                         |              |                    |              |
| Mother                             | 0.56                    | 2.50         | 0.46               | 1.71         |
| Father                             | 0.52                    | 2.19         | 0.43               | 1.58         |
| Grandmother                        | 0.21                    | 1.13         | 0.17               | 0.71         |
| Grandfather                        | 0.07                    | 0.77         | 0.06               | 0.30         |
| Other female respondent            | 0.11                    | 0.60         | 0.10               | 0.54         |
| Other male respondent              | 0.04                    | 0.35         | 0.06               | 0.35         |
| Age                                |                         |              |                    |              |
| under 20                           | 0.13                    | 0.69         | 0.03               | 0.67         |
| 20-24                              | 0.36                    | 1.53         | 0.09               | 0.37         |
| 25-29                              | 0.53                    | 2.46         | 0.20               | 0.69         |
| 30-34                              | 0.61                    | 2.57         | 0.31               | 1.15         |
| 35-39                              | 0.58                    | 2.51         | 0.40               | 1.28         |
| 40-44                              | 0.44                    | 1.94         | 0.45               | 1.43         |
| 45-50                              | 0.25                    | 1.02         | 0.46               | 1.62         |
| over 50                            | 0.19                    | 1.13         | 0.37               | 1.38         |
| Labor force participation          |                         |              |                    |              |
| 35 hours or more per week          | 0.67                    | 3.06         | 0.52               | 1.87         |
| Less than 35 hours per week        | 0.55                    | 2.26         | 0.42               | 1.40         |
| Looking for work                   | 0.29                    | 1.47         | 0.19               | 0.83         |
| Not in labor force                 | 0.63                    | 2.93         | 0.42               | 1.54         |
| Educational attainment             |                         |              |                    |              |
| Less than a high school diploma    | 0.34                    | 1.43         | 0.22               | 0.91         |
| High school diploma or equivalent  | 0.57                    | 2.30         | 0.42               | 1.42         |
| Some college or associate's degree | 0.61                    | 2.75         | 0.48               | 1.79         |
| Bachelor's degree                  | 0.59                    | 2.67         | 0.46               | 1.52         |
| Graduate or professional school    | 0.50                    | 2.67         | 0.40               | 1.56         |

See notes at end of table.

**Table S2. Standard errors for percentage of respondents to NHES surveys, by mode and respondent characteristics—continued**

| Respondent characteristic | Early childhood surveys |              | School-age surveys |              |
|---------------------------|-------------------------|--------------|--------------------|--------------|
|                           | Phone<br>2005           | Mail<br>2009 | Phone<br>2007      | Mail<br>2009 |
| Marital status            | 0.52                    | 2.55         | 0.42               | 1.64         |
| Married                   | 0.33                    | 1.68         | 0.19               | 0.73         |
| Partnered                 | 0.19                    | 1.13         | 0.16               | 0.56         |
| Separated                 | 0.23                    | 1.00         | 0.31               | 1.19         |
| Divorced                  | 0.08                    | 0.00         | 0.13               | 0.44         |
| Widowed                   | 0.34                    | 1.64         | 0.19               | 0.92         |
| Never been married        |                         |              |                    |              |
| Survey language           |                         |              |                    |              |
| English                   | †                       | †            | 0.29               | 1.1          |
| Spanish                   | †                       | †            | 0.22               | 0.6          |
| English/Spanish           | †                       | †            | 0.10               | 0.5          |
| Household poverty level   |                         |              |                    |              |
| Poor                      | 0.49                    | 2.30         | 0.29               | 1.35         |
| Near-poor                 | 0.54                    | 2.13         | 0.36               | 1.32         |
| Nonpoor                   | 0.64                    | 2.81         | 0.44               | 1.71         |
| Race/Ethnicity            |                         |              |                    |              |
| Asian                     | 0.31                    | 1.42         | 0.18               | 0.99         |
| Black                     | 0.38                    | 1.87         | 0.26               | 1.17         |
| Hispanic                  | 0.51                    | 2.38         | 0.31               | 1.28         |
| White                     | 0.47                    | 2.34         | 0.36               | 1.54         |

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Household Education Surveys Program (NHES), selected years.

### References

- Blumberg SJ and Luke JV. (2010). Wireless substitution: Early release of estimates from the National Health Interview Survey, January–June 2010. National Center for Health Statistics. December 2010. Available from: <http://www.cdc.gov/nchs/nhis.htm>.
- Bishop, G., Hippler, H., Schwarz, N., & Strack, F. (1988). A comparison of response effects in self-administered and telephone surveys. In R. M. Groves, et al. (Eds.), *Telephone survey methodology* (pp. 321–340): New York: Wiley.
- Brick, J.M., Williams, D. and Montaquila, J.M (in press). Address-based Sampling for Subpopulation Surveys. *Public Opinion Quarterly*.
- De Leeuw, E.D. (1992). Data quality in mail, telephone, and face to face surveys. Amsterdam:

TT-publikaties. Electronic edition available from:  
<http://www.xs4all.nl/~edithl/pubs/disseddl.pdf>.

Dillman, D. and J. Tarnai (1991). Mode effects of cognitively designed recall questions: a comparison of answers to telephone and mail surveys. In Biemer, et al. (Eds.), *Measurement Errors in Surveys* (73-93): New York: John Wiley and Sons.

Farnworth, M., Bennett, K., and West, V. M. (1996). Mail vs. Telephone Surveys of Criminal Justice Attitudes: A Comparative Analysis. *Journal of Quantitative Criminology*. Vol 12, No 1: 113-132.

Link, M., Daily, K., Shuttles, C., Yancey, L.T., Burks, A. and Bourquin, H.C. (2009). Building a New Foundation: Transitioning to Address Based Sampling after nearly 30 years of RDD. Paper presented at the 64th Annual Meeting of the American Association for Public Opinion Research, Hollywood, FL.

Van de Kerckhove, W., Montaquila, J.M., Carver, P.R., and Brick, J.M. (2008). *An Evaluation of Bias in the 2007 National Household Education Surveys Program: Results From a Special Data Collection Effort* (NCES 2009-029). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC. Electronic edition available from:  
<http://nces.ed.gov/pubs2009/2009029.pdf>.

Zukerberg, Andrew, and Daifeng Han. 2010. Impact of offering a bilingual option in a mail survey of linguistically isolated areas: Results from the 2009 National Household Education Survey pilot. Paper presented at the 65th Annual Meeting of the American Association for Public Opinion Research, Chicago, IL.