

Efforts to understand and improve response to the American Time Use Survey

Rachel Krantz-Kent

United States Bureau of Labor Statistics, Washington, United States

Author's e-mail: Krantz-Kent.Rachel@BLS.gov

Abstract

Response to the American Time Use Survey (ATUS) has averaged 56 percent since the survey began in 2003. This is lower than the 80 percent rate that is recommended by the United States Office of Federal Statistical Policy and Standards. Low survey response to the ATUS has generated concern that the data may not be representative of the population they are supposed to represent and has spurred numerous efforts to understand and improve response to the survey. This paper summarizes some of the efforts that have been undertaken to improve and understand response to the ATUS in its first decade.

Key Words: survey response, response rates

1. Introduction

Sponsored by the U.S. Bureau of Labor Statistics (BLS) and conducted by the U.S. Census Bureau, the American Time Use Survey (ATUS) is a federal survey focusing on how Americans spend their time and factors related to their use of time. It has been fielded continuously, with interviews occurring nearly every day since the survey began in 2003. Since its inception, response to the survey consistently has been lower than desired. Response to the ATUS averaged 56 percent in 2003-12, while the United States Office of Federal Statistical Policy and Standards recommends that federal surveys obtain minimum response rates of 80 percent.

Response to the ATUS is calculated using a formula provided by the American Association for Public Opinion Research (2011):

$$\text{Response Rate} = \frac{\text{Completes}}{\text{Completes} + \text{Refusals} + \text{Noncontacts} + \text{Other} + \text{Unknown Eligibility}}$$

Each term in the formula represents a count of the number of individuals sampled for the ATUS who had a particular survey outcome. The ATUS is administered via Computer-Assisted Telephone Interviewing (CATI) and the outcome categories reflect this. *Completes* refers to completed interviews, including sufficient partials; *refusals* refers to individuals who refused to participate in the survey; *noncontacts* refers to individuals the interviewers were unable to contact even though the interviewers were using valid phone numbers; *other* includes individuals who were unable to participate in the ATUS because of a language barrier, illness, or for another reason; and *unknown eligibility* refers to individuals who did not participate in the ATUS and for whom the interviewers did not have valid phone numbers. On average in 2003-12, of all persons in the ATUS sample except those who were identified as not eligible for the survey, 17 percent were refusals, 13 percent were of unknown eligibility, and 8 percent were noncontacts; these were the main contributors to nonresponse in the ATUS. Five percent of eligible persons in the

sample were classified as *other* and the remaining 56 percent completed interviews. These rates were calculated using pre-processed, unweighted data.

Low response rates are of concern when the individuals who respond to a survey are different from those who do not respond. If the two groups are different in the characteristic of interest, then analyses of that characteristic may be subject to nonresponse bias. This paper summarizes some of the efforts that have been undertaken by the BLS and the U.S. Census Bureau to improve and understand response to the ATUS in its first decade. Before discussing these efforts, I first will describe key aspects of the ATUS survey design.

2. Design of the American Time Use Survey

The sample frame for the ATUS consists of households that have completed the eighth month of the Current Population Survey (CPS), the monthly labor force survey in the United States. Using information collected in the CPS, a stratified random sample of approximately 2,100 households is selected monthly for the ATUS. A designated person (DP) within each household is then randomly chosen and this person is assigned a day of the week for an interview. The interview day is assigned because the core part of the survey involves the collection of a time diary detailing how the DP spent her time on the day before the interview and it is important that all days of the week are represented in the data. Additionally, one-half of the individuals in the sample are interviewed about how they spent a weekday and one-half are interviewed about their time use on a weekend day to facilitate analyses of time use on weekdays and weekend days.

The survey design allows interviewers to call each DP for up to 8 weeks to secure a one-time interview. For example, if an interviewer is unable to reach the DP on the Tuesday he was assigned as his initial interview day then an interviewer would call the following Tuesday; this pattern will be repeated for up to eight Tuesdays or until an interview is secured. ATUS is a CATI-only survey and phone numbers are available for about 95 percent of households in the sampling frame. If a phone number is not available for a DP, then this person is sent information about the survey, an appeal to call an interviewer and complete the survey, and a \$40 debit card as an incentive to call. Upon completion of the interview, the interviewer provides the Personal Identification Number (PIN) that is needed to cash the debit card. For more information about the design of the ATUS, see chapters 3-4 of the ATUS User's Guide: www.bls.gov/tus/atususersguide.pdf.

3. Efforts to improve informational resources

Improving the information provided to DPs about the ATUS, both in printed form and by the interviewers, has been a focus of several efforts to improve survey response. The informational materials that all DPs are sent in advance of the survey include a letter containing an appeal to participate in the survey and a brochure providing general information about the survey and interview; some DPs also receive a debit card incentive and instructions on how to cash the card. These materials were revised twice in the first decade of the ATUS, in 2005 and again in 2012.

Before any revisions were made, ATUS staff first sought feedback on the materials from expert reviewers, via focus groups with the interviewers and, for the 2005 revision, from DPs who had participated in a follow-up survey about their ATUS experience. In 2005, the brochure was redesigned in an attractive, easy-to-reference format showing several Frequently Asked Questions (FAQs) and their answers. Photos of a diverse group of

individuals were added to the brochure to convey the message that individuals of all demographics are important participants in the ATUS. Initial survey results also were added to the brochure, as some time-use estimates had been published by the time of the revision. Finally, while the brochure always had been published in English, with the 2005 revision it was translated into Spanish; the Spanish version was an important addition because the ATUS is conducted in both English and Spanish. The 2005 revisions to the letters focused on shortening them with the goal of attracting more readers.

By 2012, the photos and information in the brochure were somewhat dated. Feedback from reviewers also suggested the brochure needed to do a better job of conveying the survey's importance and that because of its size the brochure was difficult to read. The second round of revisions addressed these concerns. The revised brochure conveys the survey's importance, presents key information first where it is more likely to be read, includes more-current results, and shows modern-day photos of individuals doing a wide variety of everyday activities. The photos were carefully selected to portray a diverse population and convey an interest in all the activities people do, and not just those activities the DPs might consider interesting. Further, the brochure is of a size that is easily held for comfortable reading. The letters and the instructions that accompany the debit card incentive also were revised in 2012, mainly for clarity. A thank you message was added to the letters, to show appreciation for the time that members of ATUS sample households already had spent responding to the CPS.

In addition to revising the mailed materials, ATUS staff created a website that DPs can reference for the latest survey information. (See: www.bls.gov/respondents/tus/.) Similar to the brochure, this website provides information in an FAQ format. It also includes links to numerous charts and other publications with survey results, and links to important legal information about how survey participants' confidentiality is protected. Creating an online resource tailored to the concerns and questions of DPs was a logical way to convey information and promote the legitimacy and importance of the survey to these individuals.

Improving outreach to ATUS DPs also involved training the interviewers and to ensure they have the necessary information to convince DPs to participate. Training sessions focused on gaining the trust and cooperation of DPs and included discussions about how to effectively address their concerns. For easy reference, responses for commonly expressed concerns were added to the software that is used to conduct ATUS interviews.

4. Efforts to contact sampled individuals

Another focus of efforts to increase survey response has been measures designed to improve contact with DPs. Interviewers call ATUS DPs during 6 previously-defined time intervals that divide each interview day. These time intervals have been examined and revised to optimize and increase the probability of completing an interview. For example, the time intervals were revised to add more call attempts during the evening hours when interviewers are more likely to reach DPs who work regular daytime schedules. Analysis of the call time data also revealed that interviewers were more likely to reach DPs if they were contacted within 1 hour of the time of final CPS contact with their household; this was true even when the ATUS DP was not the same household member who had replied to the CPS (Meekins, 2013). Interviewers now time their call attempts such that one is made within this time interval.

In addition to examining the timing of calls, an analysis of call outcomes was done. A call outcome code is assigned each time an interviewer attempts to contact an ATUS DP. An examination of call outcome data for the first week interviewers attempted contact shows that interviewers were using nonworking phone numbers for about 4 percent of the DPs. Calls to these DPs are assigned call outcome codes of: "number not in service," "number could not be completed as dialed," "number changed, no new number given," or "temporarily not in service." The DPs associated with these nonworking phone numbers were often members of difficult-to-reach populations. They were more likely to be racial and ethnic minorities; and they were more likely to be less-educated and to have lower household incomes than other members of the ATUS sample.

To improve response among these populations, procedures were implemented to identify cases associated with nonworking phone numbers and to convert them to incentive cases. Thus, the DPs for whom only a nonworking phone number is available are sent a letter containing an appeal to call an ATUS interviewer and complete the survey, along with a \$40 debit card as an incentive to do so. As of 2013, these procedures have been partially implemented; after full implementation, they are expected to generate approximately 200 completed interviews per year more than otherwise would be obtained, amounting to about a 1.5 percent increase in the number of annual interviews and an approximately 0.8 percent increase in ATUS response rates (Krantz-Kent, 2013).

Another effort to improve contact involved an analysis of returned mail. All ATUS DPs are sent materials about the survey in advance of the interview. It is important that all DPs receive the mailed materials, but it is especially crucial that DPs who are sent debit card incentives receive the materials as it is the only way these DPs become aware they have been chosen for the survey. In 2005-07—the period of analysis for this study—the mailed materials were undeliverable to incentive cases about 9 percent of the time and to all other cases about 4 percent of the time. Undeliverable mail was returned for many different reasons; for example, the address was problematic, there was no mailbox, or the home was vacant. Receipt of the mailed materials was positively correlated with response; among non-incentive cases, DPs who received the materials were about three times more likely to complete the ATUS than DPs whose materials were undeliverable (Montcalm, 2009). This result seemed to indicate that receipt of the materials was a positive factor in survey response, although other factors may have been involved. Based on findings from the study, ATUS address review procedures were adjusted such that addresses associated with incentive cases now receive additional review to identify and correct problematic addresses before the survey materials are sent.

5. Efforts to understand survey response and nonresponse

Since the survey's inception, BLS and the U.S. Census Bureau have undertaken several efforts to understand response and nonresponse to the ATUS. An early effort involved conducting a follow-up Response Analysis Survey (RAS) to the ATUS that collected information from participants and nonparticipants in the ATUS about why they did and did not respond to the survey. Of those DPs who did not participate in the ATUS but who responded to the RAS, 33 percent said they did not reply to the ATUS because they were tired of surveys after having already participated in the CPS; this was the reason most frequently provided for nonparticipation. An additional 16 percent said they were too busy to participate in the ATUS (O'Neill and Sincavage, 2004). The RAS also collected information about whether the DPs had read the materials sent via mail, visited the ATUS website, or requested additional information about the survey via e-mail and, if so, additional feedback about these resources was collected. Based on findings from the

RAS, the materials sent to DPs in advance of the survey were modified to include an explanation about why CPS participants are asked to respond to the ATUS, and to more prominently feature a web address for accessing online resources.

The returned mail study mentioned earlier also included an analysis related to survey nonresponse. The author examined information the U.S. Postal Service had stamped on undeliverable mail before returning it to the U.S. Census Bureau. The stamped information included messages such as "moved, left no address" and "vacant." A goal of this analysis was to determine whether DPs who had moved could be accurately identified using the stamped information and, if so, whether to use this information in assigning case outcome codes. This is relevant to ATUS response rates because DPs who move become ineligible for the survey and thus can be excluded from the response rate calculation. The evidence suggested that some DPs who had moved were assigned case outcome codes of *noncontacts*, *other*, or *unknown eligibility* when they really were ineligible for the survey. If the case outcome codes for DPs who had moved were correctly classified, then the ATUS response rates in 2005-07 would have been between 0.1 percent and 1.2 percent higher. It was concluded that accurately identifying DPs who had moved would require significant staff resources and more effort than was warranted. While the ATUS response rate metric might improve slightly from this exercise, the published data would not benefit (Montcalm, 2009).

Another effort to understand response and nonresponse to the ATUS focused on questions about cell phones. Were ATUS interviewers calling cell phones? If so, was this a factor affecting survey response? ATUS DPs are contacted using phone numbers voluntarily provided by respondents to the CPS. However, CPS is a survey of households, and ATUS is a survey of individuals chosen from these households. This means ATUS interviewers might sometimes be calling the cell phone number of a household member other than the ATUS DP. It also is possible that DPs refuse to participate in the ATUS because they are concerned about being interviewed while in a public place where their responses might be overheard, or they might be concerned about using their purchased cell minutes for the interview.

A BLS study examined questions related to cell phones and the ATUS using 2009-10 data. The authors determined that interviewers were calling cell phones for about 36 percent of the ATUS telephone sample. Cell phones are tied to specific individuals and ATUS DPs are the same as the CPS respondents only about 40 percent of the time. Even so, this did not appear to be an important factor affecting survey response. DPs called on cell phones required slightly more effort to reach—measured in terms of call attempts—than DPs called on landlines; however, cases in which the ATUS DP was the same as the CPS reference person and those in which the DP was different required about the same level of effort to contact. The authors found that DPs called on cell phones were less likely to complete the ATUS than DPs called on landline phones due to noncontact, and that the refusal rates between the two groups were similar; however, after controlling for various demographic and survey operations variables, the direct effect of phone type was significantly reduced and did not appear to be an important factor in response (Meekins and Denton, 2012).

6. Conclusions and next steps

In the first decade of the ATUS, numerous efforts were undertaken in an attempt to improve survey response. These efforts have focused on improving the information provided to DPs, increasing contact with DPs, and conducting studies to learn more about

who does and does not respond to the survey and why. With the exception of efforts to reach DPs for whom the U.S. Census Bureau does not have a working phone number, it is not clear whether these efforts to improve response have been fruitful. From 2003 to 2012, annual response rates for the survey ranged between 53 percent and 58 percent with no clear upward or downward trend.

As the ATUS moves into its next decade, the BLS and the U.S. Census Bureau continue to explore ways to improve survey response. The rigid survey design—in which a specific individual is selected and then assigned a day of the week for an interview—is thought to be one reason for low survey response and is a focus of current analyses. The data show that, on average, 8 percent of ATUS sample cases are classified as noncontacts. Additionally, results from the RAS indicated that being "too busy" was a reason frequently provided by DPs who refuse the survey. Might a more flexible survey design help reduce the noncontact and refusal rates? How about augmenting the CATI-only design to include additional modes of collection? If changes to the survey design were implemented, how might they impact the ATUS data and its comparability over time? These are some of the questions that currently are being examined.

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