Nonresponse Bias for the Relationships Between Activities in the American Time Use Survey October 2006

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Abstract

The American Time Use Survey (ATUS) is the first continuous, Federally-funded survey designed to measure how people spend their time. The ATUS sample is drawn from households completing their final month of interviews for the Current Population Survey (CPS). Because the CPS records contain a wealth of demographic information about respondents, this design enables us to look directly at nonresponse without having to rely on techniques such as data matching or the use of reluctant respondents to model nonrespondents. Our paper focuses on nonresponse rates and nonresponse bias. First, we describe nonresponse rates by demographic characteristics, and then we use logistic analysis to examine correlates of nonresponse, including demographic and interviewer characteristics. A propensity score model is utilized to examine differences in time-use patterns and to assess the extent of nonresponse bias.

Introduction

The American Time Use Survey (ATUS) is the first continuous, Federally-funded survey designed to measure people's daily activities, including where they spend their time, what they spend their time doing, and with whom they spend their time. The ATUS is a one-time telephone interview with three main components: (1) questions updating the designated person's (DP)[1] employment status, industry and occupation, and earnings information from the CPS, (2) a 24-hour time diary, and (3) additional information on secondary childcare, paid work, volunteering, and travel away from home. The ATUS sample is drawn from households that have completed the entire CPS interview rotation of eight interviews over a 16-month period. Once a CPS household is selected, one household member is randomly selected to participate in the ATUS interview. Substitution or proxy response is not allowed. The selected DP must be 15 years old or older and may or may not have been the CPS reference person. Each DP is also required to report on a pre-assigned reporting day of the week—such as Tuesday, reporting about Monday. The specific day of the week assigned to each DP does not change, and there is no substitution of this day. The interviewing period for a case is up to eight weeks on the assigned day to secure an ATUS interview.

Design

The ATUS is a computer assisted telephone survey conducted by the U.S. Census Bureau for the U.S. Bureau of Labor Statistics. Production began in January 2003. In 2004, approximately 3,000 participants were selected each month, and the average ATUS response rate was 57 percent.[2]

Key estimates of interest are the time-use patterns of the general population. All activities are classified into a three-tiered, hierarchical system, with 17 major, or first-tier, categories, each having two additional sub-levels of detail. The 17 first-tier categories include: personal care; household activities; caring for and helping household members; caring for and helping non-household members; work and work-related activities; education; consumer purchases; professional and personal car services; household services; government services and civic obligations; eating and drinking; socializing, relaxing, and leisure; sports, exercise, and recreation; religious activities; volunteering; telephone calls; and travel.

Analysis

The difference between respondents and nonrespondents on key estimates of interest is usually unknown. Therefore, nonresponse bias typically must be examined using indirect measures that assume certain types of respondents can serve as accurate proxies for nonrespondents. In this study, the call history variables were used to substitute responders who were reluctant for refusers, and those who were difficult to contact for non-contacts. This paper focuses on nonresponse rates and nonresponse bias in the relationship between time use categories. First, we investigate the differences in means for the different time categories for those who responded, those who serve as nonresponders, and the overall survey estimates. The sample was weighted for probability of selection and to make the nonresponse groups comparable in size to those found in the 2004 sample.

Many of the time use categories have different distributions. Socializing has inflated zeros and a skewed distribution. Sleeping is symetric. One way of modeling the distributions is with semiparametric regression. For the purposes of this paper, linear links will be used for ease of interpretation. Log

[1] A designated person is the household member selected for ATUS.

[2] The response rates was calculated using the AAPOR Response Rate #2.

links for the zeros and poisson distribution assumption for the continuous part worked well for many of the measures, but other links were optimal for others.

Because the categories must add up to the total time, the data is compositional. More of one category would be expected to relate to less of other categories. Aitchison suggested transforms to adjust for these artifacts, but the transformations didn't make a difference in the tests, so the untransformed data will be presented here for ease of interpretation.

Linear models were used to examine the relationships between the different time-use categories and nonresponse, where nonresponse was considered a moderating variable. The models adjusted for a complex sampling design using Taylor linearization.

Results

The results for bias estimates of refusal and noncontact are presented in figures 2 and 3. The comparisons between response and nonresponse indicates the potential for bias. If the nonresponse rate increased this comparison would be the estimated potential bias with extreme nonresponse assuming the reluctant responders were similar to the refusers. The comparison of the response group with the survey group indicates the estimated bias for this survey. None of the differences between response and survey were statistically significant.

Many of the differences between response and refusal were significant. Eating, food preparation, child care, household tasks, travel, and work all had lower reported times by refusers. Sleep was the only estimate that was significantly higher for refusers, although socializing was close. Activities (sports, religious, volunteer, etc.) and personal care were also in the higher direction.

Noncontact bias was statistically significant only between the response and nonresponse groups for food and barely significant for household tasks. None of the differences between the response and survey comparisons were significant. The largest difference was for Socializing, but it also had a high variance. Non-household adult and child care showed some potential patterns of bias in probability of reporting, possibly due to the rarity of reporting and the differences in time use which is also likely to be related to the probability of refusing.

As an example of a model for potential bias "Personal care" was the dependent variable, independent variabes were; an indicator of refusal, an indicator for reporting personal care (the zeros), and "sleep" were used as predictors (Figure 4). Those who were like refusers spent less time on personal care (-4.68, non-significantly). More sleep was associated with less personal care (-0.038, which is typical of compostional data). Reported personal care is just an indicator for the zeros, it is the interaction with other variables which is of interest. The sleep*refusal interaction is the measure of potential bias in the relationship between personal care and sleep (0.0095, non-significant). The Sleep(report*refusal) effect is the measure for the potential bias in the probability of reporting personal care (-0.02, significant).

Similar to the comparisons of means seen before, the comparisons in these and subsequent models are indicators of potential bias, the comparisons contrasting the survey with the respondent group found no differences.

A graphical comparison of bias estimates can be seen in Figures 5 and 6. "Household Child care" was the dependent variable. "Non-household adult care" was the only probability of reporting that was significant for potential bias. Refusers were less likely than responders to report child care if they were spending time caring for a non-household adult. Household Adult care and work were the only significant bias coefficients, where refusers reported more time spent on work and adult care relative to child care than responders.

The only other independent variable which showed potential for child care bias was "household adult care", where refusers reported more time spent on adult care relative to child care than responders. Tables showing all the coefficients for the probablities of reporting and the inter-relationships are available in the full paper from the author.

Refusal bias in probability of use.

None of the estimates of bias comparing the total survey estimates with the likely respondents were significantly significant. The estimates comparing the likely respondents with those most like the non-respondents produced some potential bias (if nonresponse rates became much higher, or if the differences are larger than estimated by the call history refusal).

The probability of using the "Buys professional services" category had potential biases with "Household tasks" (.116) and "Non-household child care" (.85). "Eating" had potential bias with "Socializing" (-.05). "Food preparation" had potential biases with "Non-household child care" (.21) and "Socializing" (-.03). "Household adult care" had potential biases with "Buys" (.23) and "Non-household child care" (.29). "Household child care" had potential bias with "Non-household adult care" (-.37). "Non-household adult care" had potential biases with "Food" (-.28), "Household adult care" (.99), "Household tasks" (-.16), "Activities" (-

.10), and "Work" (-27.8). "Non-household child care" had potential biases with "Household adult care" (1.53), "Non-household adult care" (1.31), "Activities" (-.09), "Personal activities" (-.51), "Socializing" (-.11), and "Travel" (-.19). "Sleep" had potential bias with "Eating" (8.15), although not reporting sleep was so rare it shouldn't be considered a reliable indicator. "Socializing" had potential biases with "Buys" (1.72), "Food" (2.38), and "Non-household child care" (-.95). "Traveling" had potential biases with "Buys" (1.75), "Socializing" (-.04), and "Activities" (.23). "Work" had potential bias with "Traveling" (.002).

Refusal bias estimates for interrelationships.

"Food" had potential bias with "Non-household child care" (-.15), "Socializing" (.02), and "Work" (8.52). "Household child care" had potential bias with "Household adult care" (.07). "Non-household adult care" had potential bias with "Personal activities" (.04). "Socializing" had potential biases with "Buys" (-2.0), "Food" (-2.5), and "Non-household child care" (.48). "Traveling" had potential biases with "Buys" (-1.76) and "Activities" (-.21). "Work" had potential biases with "Socializing" (.0003) and "Activities" (.0003).

Noncontact

Noncontact bias in the probability of responding showed potantial bias for "Activity" and "Eating" (.37), "Non-household adult care" (-.31), "Sleep" (.05). "Buys" showed potental bias with "Activity" (-.05). "Eating" had potential bias with "Household tasks" (-.12), "Non-household child care" (-1.05), and "Work" (-5.27). "Household child care" had potential bias with "Non-household child care" (1.62). "Household tasks" had potential bias with "Activities" (0.08). "Non-household adult care" had potential bias with "Household adult care" (3.10). "Personal activities" had potential bias with "Activities" (-.04). Sleep had so few non-reports that the potential biases won't be reported here. "Socialize" had potential bias with "Household tasks" (-.41), "Sleep" (-.06), and "Work" (-16.7). "Travel" had potential biases with "Buys" (.26), "Eating" (.22), "Household adult care" (1.62), and "Non-household child care" (.45). "Work" had potential biases with "Sleep" (-.000056) and "Activities" (-.0009).

Noncontact Bias in the relationship between measures indicates how noncontacted persons might differ in their tradeoffs between time use categories. There was no statistically significant bias between the total survey estimates and easy to contact respondents. The potential for bias was tested comparing the easy to contact respondents with the hard to contact respondents. "Activities" had potential bias with "Work" (-26.3). "Buys" had potential biases with "Activities" (.02) and "Household tasks" (.02). "Eating" had potential biases with "Household child care" (.15), "Household tasks" (.12), "Non-household child care" (1.05) and "Work" (8.06). "Food preparation" had potential biases with "Buys" (.05), "Activities" (.026), "Household tasks" (.035), "Sleep" (.02), "Socializing" (.017), "Travelling" (.08), and "Work" (7.82). "Household adult care" had potential bias with "Household child care" (.006). "Household child care" had potential bias with "Food" (-.104). "Household tasks" had potential bias with "Activities" (.06). "Personal activities" had potential bias with "Activities" (.04). "Sleep" had potental biases with "Eating" (10.1), "Household tasks" (6.04), "Personal activities" (-.17), "Activities" (-9.6), "Socializing" (-1.04), and "Travel" (1.86). "Socializing" had potential biases with "Household tasks" (.50) and "Work" (35.42). "Travel" had potential biases with "Buys" (-.27), "Eating" (-.21), "Household adult care" (-1.77), "Non-household child care" (-.42), and "Work" (-14.1). "Work" had potential biases with "Buys professional services" (-.0009), "Food" (-.001), "Sleep" (-.0002), and "Socializing" (-.0002).

Discussion

There were no nonresponse biases in the time use estimates, probablity of use of time categories, or the relationship between the categories. The potential biases found were small for the most part. The potential biases were usually in opposite directions for refusal and noncontact, which should mitigate the overall effect.

Some estimates for "sleep" reporting were too rare to provide good models for the probability of use, but the estimates of the interrelationships with other categories would be uneffected. The current models didn't attempt to determine whether the effects might be due to differences in the characteristics of non-respondents or might be a part of the measurement process. For example; child care and adult care rarely occure together, but it is unclear whether the potential biases detected are due to the differences in the ages of those doing the care, or if the different care processes relate to nonresponse in different ways.

Surrogate nonresponse is always a leap of faith. Without a "gold standard" some respondents must be used to represent the nonrespondents. The current study used call history variables, but other studies have used propensity models (O'Neill and Dixon, 2005). Examining the differences in estimates of bias would be helpful in assessing the usefulness of the different surrogates.

Even though the models seemed robust (in examining residual plots), more link functions need to be explored to better match the distributions.

The current study examined bivariate relationships between time use estimates moderated by nonresponse indicators. Multivariate methods (such as seamingly unrelated regressions or structural equation models) may help describe the bias in relationships more clearly.

Sensitivity analysis of nonresponse estimation would be useful to investigate how the estimates of bias might be affected by different methods.

Some groups may be of special interest; families with children, the elderly, and workers for example. Adding those interactions to all the models would be simple, but there are very many potential groups which might be of interest.

References:

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- Groves, R. and Couper, M., Nonresponse in Household Interview Surveys, 1998, New York: Wiley.
- O'Neill, G. and Dixon, J., Nonresponse Bias in the American Time Use Survey, A paper presented at the Joint Statistical Meetings, Minneapolis, Minnesota, 2005.

Figure 1:Response rates for ATUS 2004

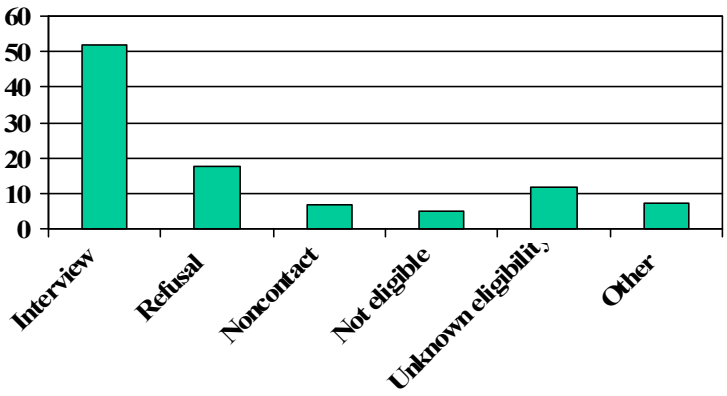

Figure 2: Refusal and Survey Estimates

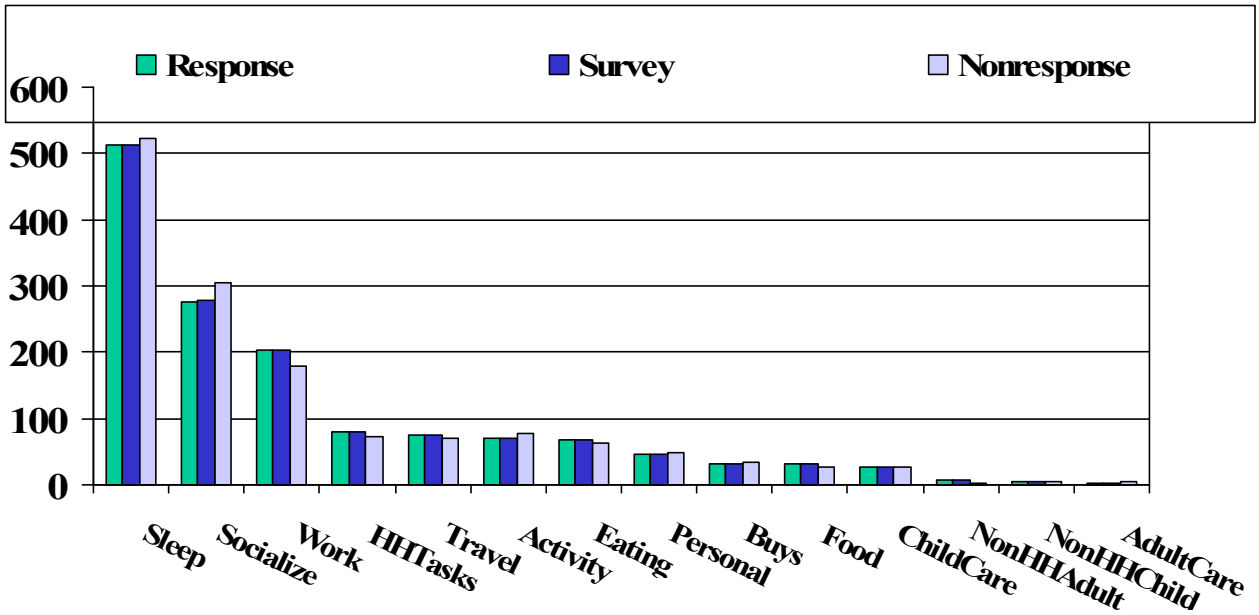

Figure 3: Noncontact and Survey Estimates

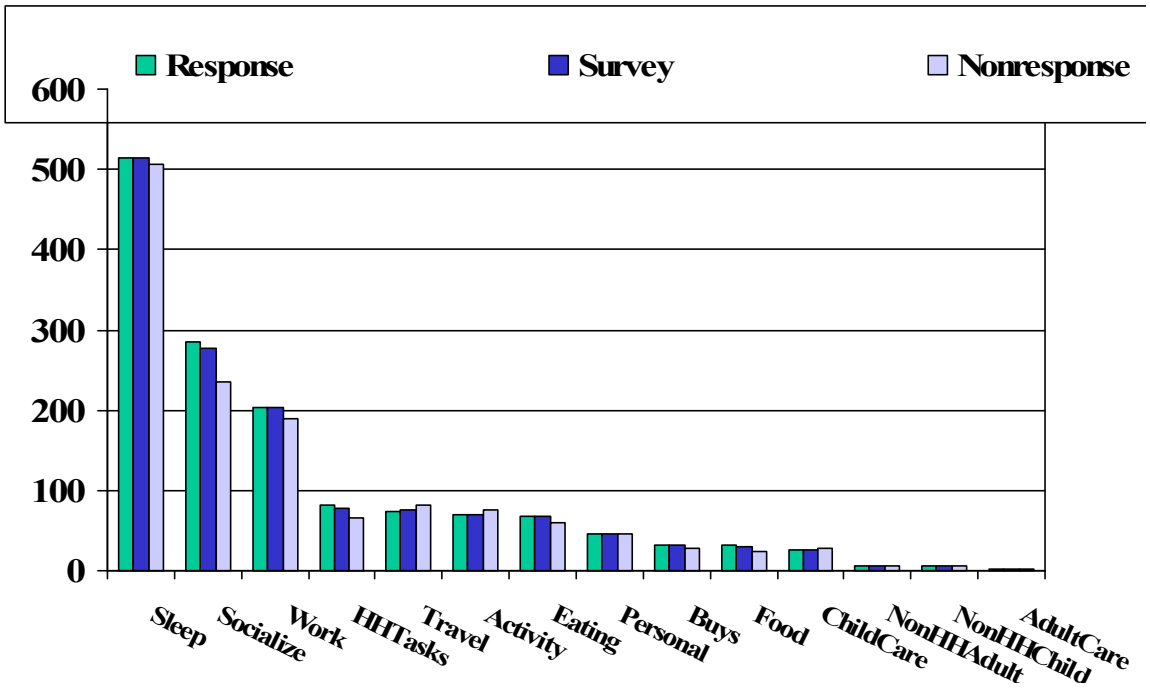

Figure 4: Bias model for the relationship between "Personal Care" and "Sleep"

Parameter Estimate		Error	t_Value	Pr>|t|
Intercept	21.23809949	2.01515262 10.54		.0001
Refusal	-4.68227437	4.68527894	-1.00	0.3176
Sleep -	0.03820906	0.00378105	-10.11	.0001
Reported Personal Care	0.22242033	0.00240151	92.62	.0001
Sleep*Refusal 0	.00954210	0.00857006	1.11	0.2655
Sleep(report*refusal) -	0.02047057	0.00620712	-3.30	0.0010

Figure 5: Refusal Bias and Childcare Relationships for probability of reporting

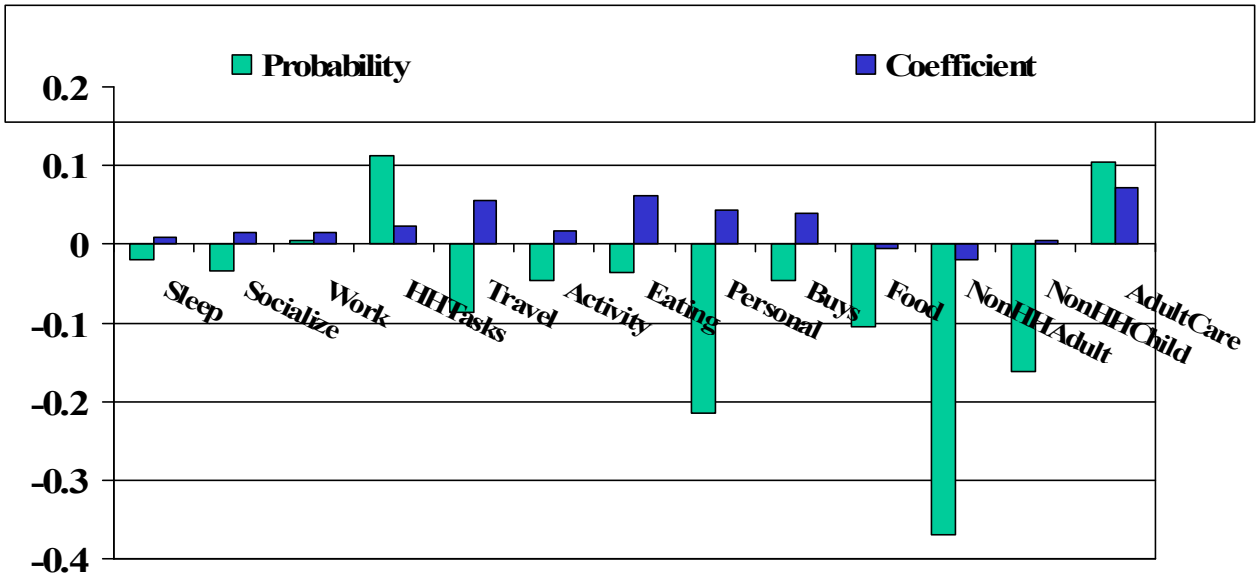

Figure 6: Nonresponse Bias and Childcare relationships

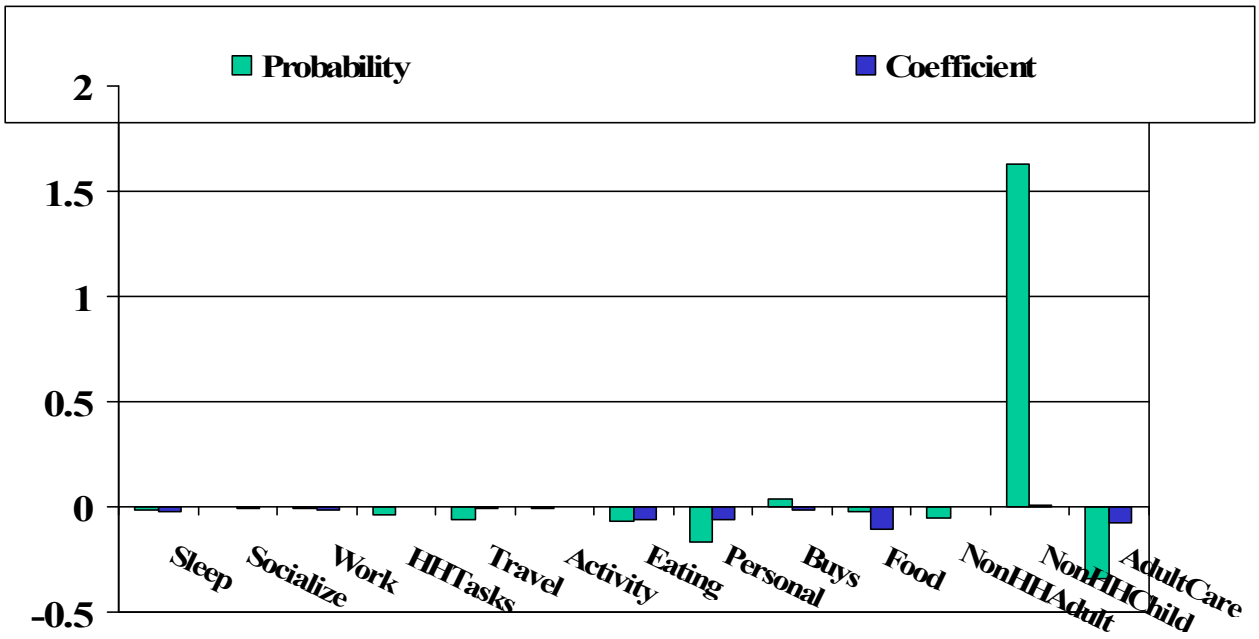

Table 1a: ATUS Refusal Call History Bias in Probability of Time Use Categories

parm1	acti	buys	eati	food	hhad	hhch	hhta
Acti	0.07052	0.13674	0.21642	0.14274	-0.06106	0.21953	0.12249
Buys	-0.01738	0.06446	0.09878	0.06744	0.55104	0.05799	0.11560
Eati	0.03876	0.10441	0.03841	0.22703	0.00000	0.10450	-0.01359
Food	0.01767	0.01377	0.02710	0.01374	-0.19793	0.00173	-0.01346
Hhad	-0.00371	-0.01214	-0.01829	-0.02079	0.19464	-0.07968	-0.01144
Hhch	0.01726	0.03939	0.06164	-0.00537	0.07256	0.01119	0.11176
Hhta	0.00956	0.04464	0.07043	0.03413	-0.06027	-0.11730	0.02809
Nhha	0.00885	0.02116	0.03052	0.02394	0.01873	0.01251	0.00801
Nhhc	0.00146	0.00628	0.02159	0.01395	0.01261	0.00028	0.00599
Per	0.02026	0.05868	-0.09292	0.01654	-0.09665	-0.05381	-0.02103
Slee	-0.08121	-0.09368	-8.04585	0.07842	-0.09511	-0.08642	-0.06719
Soci	-0.03990	-1.95872	-1.56566	-2.47331	0.19422	-0.26526	-0.14261
Trav	-0.21393	-1.75589	-0.03121	0.07436	0.12724	-0.00681	0.04134
Work	0.14465	0.01300	-0.09801	0.13798	0.34128	0.05593	0.10236

Table 1a ATUS refusal (continued)

parm1	nhha	nhhc	per	slee	soci	trav	work
Acti	0.04743	0.65696	0.52131	0.01682	0.00162	0.23796	0.014424
Buys	0.22834	0.84777	-0.04323	0.00644	0.00597	0.08918	0.018263
Eati	8.05179	0.00000	-0.10761	0.00540	-0.04768	0.08056	0.027193
food	0.04069	0.21064	-0.14538	-0.01415	-0.02819	-0.04369	-0.006220
Hhad	-0.20007	0.28955	1.04444	0.05782	0.10392	0.26454	-0.011230
Hhch	-0.36951	-0.16228	-0.21501	-0.02047	-0.03398	-0.08585	0.004815
Hhta	-0.19284	0.51830	0.04376	0.00137	-0.02305	0.04131	0.049853
Nhha	-0.05519	-0.06799	0.22716	-0.03732	-0.04325	-0.04294	-0.061846
Nhhc	0.00501	0.02353	-0.51070	-0.05611	-0.11021	-0.18835	0.018610
Per	-0.25007	0.02869	0.05617	0.00044	-0.01971	0.00651	0.033644
Slee	0.04417	0.11736	-0.08733	0.05144	-0.33980	0.00000	0.000000
Soci	0.00141	0.47703	-0.48076	0.12497	0.06751	1.30261	-0.067408
Trav	-0.07194	-0.12068	-0.08498	0.03347	0.02988	0.03052	-0.048532
Work	0.19862	-0.14999	-0.19023	0.15623	0.13259	0.34772	0.024086

Table 1b: ATUS Refusal Call History Bias in Relationship Between Time Use Categories

parm1	acti	buys	eati	food	hhad	hhch	hhta
acti	0.07052	-0.06469	-0.05886	-0.03658	-0.15477	-0.13402	-0.01627
buys	-0.01738	0.06446	-0.01032	-0.03279	0.06136	-0.01737	0.01328
eati	0.03876	0.10441	0.03841	-0.20217	-0.01460	-0.06288	0.01471
food	0.01767	0.01377	0.02710	0.01374	0.05686	-0.00321	0.00587
hhad	-0.00371	-0.01214	-0.01829	-0.02079	0.19464	-0.01639	-0.01029
hhch	0.01726	0.03939	0.06164	-0.00537	0.07256	0.01119	0.02213
hhta	0.00956	0.04464	0.07043	0.03413	-0.06027	-0.11730	0.02809
nhha	0.00885	0.02116	0.03052	0.02394	0.01873	0.01251	0.00801
nhhc	0.00146	0.00628	0.02159	0.01395	0.01261	0.00028	0.00599
per	0.02026	0.05868	-0.09292	0.01654	-0.09665	-0.05381	-0.02103
slee	-0.08121	-0.09368	-8.04585	0.07842	-0.09511	-0.08642	-0.06719
soci	-0.03990	-1.95872	-1.56566	-2.47331	0.19422	-0.26526	-0.14261
trav	-0.21393	-1.75589	-0.03121	0.07436	0.12724	-0.00681	0.04134
work	0.14465	0.01300	-0.09801	0.13798	0.34128	0.05593	0.10236

Table 1b (continued)

parm1	nhha	nhhc	per	slee	soci	trav	work
acti	-0.02324	-0.08939	0.11158	-0.03590	0.02174	0.09009	-0.012108
buys	0.00597	-0.01705	-0.03825	-0.00903	0.00596	0.04932	-0.000022
eati	-8.07367	-0.03586	0.08751	0.00874	0.04301	-0.08728	-0.011568
food	0.04101	-0.14800	-0.04728	0.01412	0.02185	0.04684	0.011345
hhad	-0.00706	-0.01236	0.00077	-0.01685	-0.00577	-0.00623	-0.007418
hhch	-0.01922	0.00418	0.04437	0.00954	0.01517	0.05480	0.015377
hhta	0.03840	0.13735	0.04362	-0.01307	0.03436	0.21137	0.016502
nhha	-0.05519	0.00941	0.04060	0.01039	0.01068	0.02610	0.007256
nhhc	0.00501	0.02353	0.00331	0.00584	-0.00140	0.00616	0.003224
per	-0.25007	0.02869	0.05617	-0.01451	0.00688	0.07046	-0.016123
slee	0.04417	0.11736	-0.08733	0.05144	0.34034	0.01226	-0.032505
soci	0.00141	0.47703	-0.48076	0.12497	0.06751	-1.50269	-0.006249
trav	-0.07194	-0.12068	-0.08498	0.03347	0.02988	0.03052	0.044441
work	0.19862	-0.14999	-0.19023	0.15623	0.13259	0.34772	0.024086

Table 2a: ATUS Noncontact Bias in Probability of Time Use Categories

parm1	acti	buys	eati	food	hhad	hhch	hhta
Acti	0.21401	-0.00726	0.37346	0.13704	0.8020	-0.04495	-0.02977
Buys	-0.05580	0.08030	-0.01546	0.13051	0.2902	0.02605	0.00016
Eati	-0.02523	-0.12419	0.09712	-0.01736	0.0469	-0.13335	-0.12224
Food	-0.05010	0.00105	-0.01651	0.00548	0.3317	-0.06224	-0.01267
Hhad	-0.03967	-0.11371	0.03206	0.02636	0.0880	0.50082	-0.09205
Hhch	-0.00783	0.03878	-0.06445	-0.02722	-0.3420	0.21893	-0.03604
Hhta	-0.07948	0.05410	-0.04677	0.23416	-0.0180	-0.02070	0.05381
Nhha	-0.08369	-0.05144	-0.02557	0.03132	3.0992	0.03529	0.25722
Nhhc	-0.00365	0.03287	0.22975	-0.20759	14.5862	-0.06233	-0.00211
Per	-0.04187	0.00765	-0.00787	0.05833	-0.1053	-0.00871	0.01295
Slee	9.62084	.	-9.96156	.	.	.	-6.08207
Soci	-0.04619	-0.39627	0.04631	1.06951	0.2183	-0.06274	-0.40970
Trav	-0.04212	0.25852	0.22060	-0.01630	1.6240	-0.05940	-0.01833
Work	-0.27433	-0.00452	0.35375	1.12726	1.6778	-0.03043	-0.07416

Table 2a: ATUS noncontact bias (continued)

parm1	nhha	nhhc	per	slee	soci	trav	work
acti	-0.31617	0.29260	0.24960	0.05087	0.24960	0.13207	0.00965
buys	-0.12255	-0.07489	-0.00615	-0.01061	0.00319	-0.06753	-0.00455
eati	-0.03809	-1.05278	-0.14129	-0.00572	-0.00929	0.02532	-0.01897
food	-0.06264	-0.11214	-0.04257	-0.01272	0.00060	-0.00239	-0.00602
hhad	-0.07721	-0.22238	-0.28754	0.00523	-0.01202	0.04744	-0.01262
hhch	-0.05501	1.62510	-0.16351	-0.01159	0.00175	-0.05935	-0.00704
hhta	-0.00359	-0.12794	0.12010	-0.01512	0.02096	-0.05777	0.00681
nhha	0.14169	0.12598	-0.05087	-0.00471	0.01449	0.02907	0.00556
nhhc	1.06197	0.21781	0.16677	0.00550	0.04302	0.11144	-0.03946
per	-0.00670	0.10979	0.16307	-0.00912	0.01480	-0.03168	-0.01431
slee	.	.	0.02224	0.15161	1.02873	-1.77488	-0.13321
soci	0.67037	-0.32498	0.57352	-0.06515	0.05978	0.22882	0.00983
trav	.	0.47055	-0.08318	0.00423	0.01389	0.21754	-0.01143
work	-0.41215	-0.27440	-0.57718	0.05019	0.06767	-0.22594	0.3433

Table 2b. ATUS Noncontact Bias in Relationship Between Time Use Categories

parm1	acti	buys	eati	food	hhad	hhch	hhta
acti	0.21401	-0.06560	-0.0272	-0.24204	0.12124	-0.04497	-0.01903
buys	0.01849	0.08030	0.0071	0.00199	0.04764	0.03405	0.02425
eati	0.03402	0.14727	0.0971	0.00808	-0.05193	0.14510	0.11641
food	0.02567	0.05355	0.0673	0.00548	0.05001	0.04092	0.03462
hhad	0.00218	-0.00041	0.0023	-0.00318	0.08795	0.00642	-0.00008
hhch	0.00284	-0.01272	-0.0590	-0.10413	-0.07207	0.21893	-0.00209
hhta	0.05630	0.11877	0.0623	-0.09769	0.16577	0.10122	0.05381
nhha	0.00143	-0.00020	-0.0064	-0.01353	0.00995	0.00234	0.00871
nhhc	0.00143	-0.00232	-0.0069	-0.02296	0.00562	-0.00136	-0.00303
per	0.04202	0.05243	0.0456	-0.02012	0.06868	-0.00018	-0.00941
slee	-9.56756	0.05861	10.0769	0.15980	0.08944	-0.04067	6.04416
soci	0.11500	0.53670	-0.0076	-0.98679	0.13690	0.27939	0.50464
trav	0.02303	-0.27104	-0.2140	-0.08923	-1.77499	0.02052	0.01643
work	-0.13538	-0.49664	-0.8151	-0.62052	0.02319	-0.20762	-0.18022

Table 2b(continued). ATUS Noncontact Bias in Relationship Between Time Use Categories

parm1	nhha	nhhc	per	slee	soci	trav	work
acti	-0.01744	0.02827	-0.10108	-0.00198	-0.10108	0.03208	-0.04232
buys	0.00794	0.02728	0.01315	0.00419	0.00958	0.03434	0.00252
eati	0.04086	1.05215	0.17269	0.02465	0.01539	-0.00607	0.02031
food	0.03123	0.00251	0.02564	0.02051	0.01746	0.08064	0.01785
hhad	0.00241	0.00248	-0.00886	0.00437	-0.00038	0.00666	-0.00060
hhch	0.00284	0.00440	-0.05706	-0.02074	-0.00480	-0.00669	-0.01381
hhta	0.05995	0.15843	0.03722	0.00589	0.03385	0.14563	0.02028
nhha	0.14169	0.00348	-0.00254	-0.00697	0.00032	0.01039	-0.00072
nhhc	0.00048	0.21781	0.00798	0.00231	-0.00185	0.01144	-0.00443
per	0.04905	-0.07587	0.16307	-0.01115	0.00127	0.02633	0.01170
slee	-0.07450	0.16167	-0.17424	0.15161	-1.03925	1.86563	0.15344
soci	-0.61388	0.31844	-0.28312	0.03990	0.05978	0.04719	0.04888
trav	-0.04283	-0.41963	-0.05563	-0.00902	-0.01438	0.21754	-0.01915
work	-0.20154	-0.11188	-0.65629	-0.04518	-0.14578	-0.26451	0.34338