

# Time Use During the Great Recession

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## Online Appendix

### A Definitions of Time Use Categories

In this online Appendix we describe in detail how we classify the different activities into the time use categories used in the paper. To describe the categories we use the classifications in the American Time Use Survey (ATUS) Activity Lexicon. The Lexicon classifies activities into three tiers. The first tier includes broad categories of activities. The second tier includes sub-categories of the first tier and the third tier includes sub-categories of the second tier.

We use the following notation. When we say that some time use category includes all activities in “x-y-z,” we mean that the time category includes all activities classified under the first tier “x,” the second tier “y” and the third tier “z.” When we say that some time category includes all activities in “x-y,” we mean that the time category includes all activities classified under the first tier “x” and the second tier “y” (i.e. all third tier sub-categories of “y” are included). For example, our time use category “Other Income-Generating Activities” includes all activities in 05-03. This means that the user can find this time use under the first tier 05 (“Working and Work-Related Activities”) and the second tier 03 (“Other Income-Generating Activities”). Since, for this particular time use category, we don’t specify the third tier, this means that all third tier categories are included. In this specific example there are 5 third tier classifications. These are: 01: “Income-generating hobbies, crafts, and food”; 02: “Income-generating performances”; 03: “Income-generating services”; 04: “Income-generating rental property activities”; 99: “Other income-generating activities, n.e.c..”

There are some minor changes in the classification of the activities across the yearly surveys. With the exception of traveling time, these changes concern some additions or eliminations of activities classified in the third tier. These changes do not affect the codes reported below. Here we report the codes for the various time use categories using the 2010 Lexicon. For the 2003-2004 Lexicons, the user can find the travel categories under the first tier 17.

1. **Market Work:** Includes the codes 05-01, 05-02, 05-99, 18-05-01, 18-05-02, and 18-05-99.
2. **Other Income-Generating Activities:** Includes the codes 05-03, and 18-05-03.
3. **Job Search:** Includes the codes 05-04, and 18-05-04.

4. **Child Care:** Includes the codes 03-01, 03-02, 03-03, 04-01, 04-02, 04-03, 18-03-01, 18-03-02, 18-03-03, 18-04-01, 18-04-02, and 18-04-03.
5. **Non-Market Work:** This is the sum of the following sub-categories:
  - (a) **Core Home Production:** Includes the codes 02-01, 02-02, 02-03 excluding 02-03-01, 02-07, 02-08, 02-09 excluding 02-09-03 and 02-09-04, 02-99, 18-02-01, 18-02-02, 18-02-03, 18-02-07, 18-02-08, 18-02-09, and 18-02-99.
  - (b) **Home Ownership Activities:** Includes the codes 02-03-01, 02-04, 02-05, 18-02-04, and 18-02-05.
  - (c) **Obtaining Goods and Services:** Includes the codes 07, 08 excluding 08-04, 09, 10, 18-07, 18-08 excluding 18-08-04, 18-09, and 18-10.
  - (d) **Others Care:** Includes the codes 03-04, 03-05, 03-99, 04-04, 04-05, 04-99, 18-03-04, 18-03-05, 18-03-99, 18-04-04, 18-04-05, and 18-04-99.
6. **Leisure:** This is the sum of the following sub-categories:
  - (a) **TV Watching:** Includes the codes 12-03-03, and 12-03-04.
  - (b) **Socializing:** Includes the codes 12-01, 12-02, 12-03-07, 12-05-01, 12-05-02, 16, 18-12-01, 18-12-02, and 18-16.
  - (c) **Sleep:** Includes the code 01-01.
  - (d) **Eating and Personal Care:** Includes the codes 01-02, 01-04, 01-05, 01-99, 11, 18-01, and 18-11.
  - (e) **Other Leisure:** Includes the codes 02-06, 02-09-03, 02-09-04, 12-03 excluding 12-03-03 and 12-03-04 and 12-03-07, 12-04, 12-05 excluding 12-05-01 and 12-05-02, 12-99, 13, 18-02-06, 18-12 excluding 18-12-01 and 18-12-02, and 18-13.
7. **Other:** This is the sum of the following sub-categories:
  - (a) **Education:** Includes the codes 06, and 18-06.
  - (b) **Civic:** Includes the codes 14, 15, 18-14, and 18-15.
  - (c) **Own Medical:** Includes the codes 01-03, 08-04, and 18-08-04
  - (d) **Unclassified:** Includes the codes 50, 18-18, and 18-19.

For our base results, the sample includes only respondents between ages 18 and 65 with non-positive recorded time in the category “Unclassified.” In Table 7 we show that our results do not change meaningfully when we include all respondents in the sample.

## B Additional Results

In this online Appendix we present some additional results. Table B.1 presents summary statistics from the ATUS sample (18-65, excluding those whose answers could not be classified by the ATUS staff) for all periods and by gender. Table B.2 shows the  $p$ -values associated with the unconditional and conditional differences in the time use categories between 2006-2008 and 2009-2010 for the full sample and for the sample of men. Table B.3 presents descriptive statistics for  $\Delta\tau_{st}^{\text{market}}$ . Table B.4 presents descriptive statistics for the change in the state level unemployment rate. Table B.5 presents summary statistics of the distribution of changes in leisure and non-market work between 2003/04 and 2007/08. Table B.6 presents the standard errors of our estimates when we allow for various intratemporal and intertemporal correlation structures. Table B.7 presents a series of robustness exercises discussed in the text and explained in more detail in the table's notes. Finally, Table B.8 presents results under the alternative methodology for adjusting for demographics.

Table B.1: Summary Statistics of Time Use by Gender, 2003 - 2010

Time Use Category	All (1)	Men (2)	Women (3)
Market Work	31.62	37.12	26.10
Other Income-Generating Activities	0.18	0.17	0.19
Job Search	0.28	0.38	0.19
Child Care	4.65	2.89	6.42
Non-Market Work	18.12	14.13	22.12
- Core Home Production	9.45	5.69	13.22
- Home Ownership Activities	2.24	3.05	1.44
- Obtaining Goods and Services	5.05	4.04	6.06
- Others Care	1.36	1.34	1.39
Leisure	108.05	108.90	107.21
- TV Watching	17.60	19.28	15.91
- Socializing	7.68	7.33	8.03
- Sleeping	59.60	58.86	60.34
- Eating and Personal Care	13.32	12.87	13.77
- Other Leisure	9.84	10.54	9.14
Other	5.06	4.38	5.75
- Education	2.08	1.81	2.35
- Civic and Religious Activities	2.00	1.75	2.25
- Own Medical Care	0.97	0.81	1.14

Notes: The table presents estimates of the average hours per week spent on each time use category by gender. The sample consists of all respondents between 18 and 65 who completed the interview and whose activities could be classified by the ATUS staff.

Table B.2:  $p$ -Values for Unconditional and Conditional Differences in Table 1 and Table 2

Time Use Category	Unconditional (All) (1)	Conditional (All) (2)	Unconditional (Men) (3)	Conditional (Men) (4)
Market Work	0.000	0.000	0.000	0.000
Other Income-Generating Activities	0.045	0.043	0.080	0.086
Job Search	0.002	0.002	0.019	0.019
Child Care	0.427	0.901	0.242	0.107
Non-Market Work	0.435	0.702	0.437	0.446
- Core Home Production	0.972	0.528	0.685	0.763
- Home Ownership Activities	0.596	0.657	0.918	0.969
- Obtaining Goods and Services	0.096	0.084	0.439	0.454
- Others Care	0.544	0.529	0.426	0.397
Leisure	0.000	0.000	0.004	0.010
- TV Watching	0.000	0.000	0.007	0.010
- Socializing	0.987	0.911	0.968	0.900
- Sleeping	0.003	0.001	0.115	0.129
- Eating and Personal Care	0.621	0.818	0.617	0.649
- Other Leisure	0.554	0.999	0.703	0.959
Other	0.115	0.147	0.038	0.042
- Education	0.315	0.389	0.061	0.057
- Civic and Religious Activities	0.077	0.095	0.291	0.289
- Own Medical Care	0.919	0.957	0.742	0.785

Notes: The table presents the  $p$ -values for the unconditional and conditional differences in the time use categories between the 2006-2008 average and the 2009-2010 average for the full sample and for the sample of men. Specifically, column 1 shows the  $p$ -value associated with the difference presented in column 4 of Table 1, column 2 shows the  $p$ -value associated with the difference presented in column 5 of Table 1, column 3 shows the  $p$ -value associated with the difference presented in column 4 of Table 2, and column 4 shows the  $p$ -value associated with the difference presented in column 5 of Table 2. All  $p$ -values are based on robust standard errors.

Table B.3: Summary Statistics of State-Level Changes in Market Work

Statistic	Pooled Sample (1)	2006/05 vs. 2004/03 (2)	2008/07 vs. 2006/05 (3)	2010/09 vs 2008/07 (4)
Mean	-0.32	0.56	0.59	-2.13
Standard Deviation	3.45	2.92	3.42	3.32
10th percentile	-3.91	-2.98	-2.99	-6.31
25th percentile	-2.86	-0.70	-1.41	-3.68
50th percentile	0.00	0.88	0.42	-2.66
75th percentile	1.47	2.42	1.23	0.18
90th percentile	2.91	2.51	6.60	2.46
Percent Negative Changes	54.24	39.21	49.01	74.50

Notes: The table presents summary statistics of the change in market work hours per week at the state level. Observations are weighted with each state's population.

Table B.4: Summary Statistics of State-Level Changes in Unemployment Rate

Statistic	Pooled Sample (1)	2006/05 vs. 2004/03 (2)	2008/07 vs. 2006/05 (3)	2010/09 vs 2008/07 (4)
Mean	1.23	-0.89	0.34	4.28
Standard Deviation	2.32	0.53	0.61	1.08
10th percentile	-1.26	-1.39	-0.48	3.20
25th percentile	-0.57	-1.27	0.06	3.50
50th percentile	0.32	-0.96	0.32	4.31
75th percentile	3.50	-0.54	0.61	5.12
90th percentile	5.02	-0.18	1.12	5.60
Percent Positive Changes	57.51	5.88	66.66	100.00

Notes: The table presents summary statistics of the change in the (percentage point) unemployment rate at the state level. Observations are weighted with each state's population.

Table B.5: Summary Statistics of State-Level Changes in Leisure and Non-Market Work: 2003/2004 vs. 2007/2008

Statistic	Change in Leisure Time (1)	Change in Non-Market Work (2)
Mean	0.46	-1.31
Standard Deviation	2.34	1.29
10th percentile	-2.89	-2.62
25th percentile	-0.36	-2.10
50th percentile	0.45	-1.01
75th percentile	1.80	-0.28
90th percentile	2.75	0.18
Percent Negative Changes	41.17	82.35

Notes: The table presents summary statistics of the change in leisure and non-market work hours per week at the state level between 2003/2004 and 2007/2008. Observations are weighted with each state's population.

Table B.6: State Sample: Standard Errors

Time Use Category	Coeff. (1)	SE Clustered (2)	SE Hetero. (3)	SE Hetero./Corr. (4)	Coeff. AR(1) (5)	SE AR(1) + Hetero./Corr. (6)
Other Income-Generating Activities	0.99	0.70	0.54	0.54	0.85	0.48
Job Search	1.26	0.71	0.60	0.62	1.82	0.48
Child Care	4.06	1.81	1.52	0.96	4.40	1.22
Non-Market Work	28.38	3.97	3.47	3.21	28.25	4.22
- Core Home Production	10.79	2.19	2.41	2.39	10.34	2.45
- Home Ownership Activities	6.78	3.01	2.12	1.66	7.62	1.73
- Obtaining Goods and Services	5.84	2.08	2.16	2.66	4.23	1.87
- Others Care	4.95	1.97	1.48	1.79	4.34	1.70
Leisure	52.16	4.67	3.74	3.40	49.08	3.15
- TV Watching	12.60	3.57	3.58	4.51	16.95	3.58
- Socializing	3.88	2.68	2.53	3.46	7.28	1.96
- Sleeping	20.82	4.83	3.98	5.79	16.61	4.52
- Eating and Personal Care	-1.23	2.33	2.02	1.08	-1.46	0.98
- Other Leisure	16.08	3.75	3.18	3.95	13.45	2.78
Other	13.12	2.77	2.68	2.58	15.87	2.23
- Education	7.19	2.77	2.26	1.58	8.86	1.72
- Civic and Religious Activities	2.10	1.48	1.35	1.31	3.53	1.01
- Own Medical Care	3.81	1.61	1.38	0.97	2.70	1.17

Notes: The table presents the robustness of our results to the assumed error process. All coefficients are multiplied by 100. Column 1 presents the estimated coefficients  $\hat{\beta}^j$  from regression (2) using weighted least squares and including the vector of demographic controls. Column 2 presents the standard errors associated with the estimated coefficients of column 1, when errors are clustered at the state level. Column 3 shows standard errors under the assumption that errors are panel heteroscedastic but not contemporaneously correlated across panels. Column 4 shows standard errors under the assumption that errors are both panel heteroscedastic and correlated across panels. Columns 5 and 6 allow for panel heteroscedasticity and correlation, and also fit a panel-specific AR(1) process. Column 5 shows the estimated coefficients and column 6 the associated standard errors.

Table B.7: State Sample: Robustness Results

Time Use Category	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Other Income-Generating Activities	-0.26	0.27	0.17	0.57	0.21	-0.03	0.15	0.20	0.75	0.39
Job Search	0.59	1.50	1.45	1.35	0.89	0.76	1.28	1.21	1.33	0.67
Child Care	6.34	3.43	3.25	4.67	5.03	5.91	3.84	4.40	3.78	4.06
Non-Market Work	27.23	29.77	28.00	29.79	29.97	25.47	32.35	30.24	27.72	27.36
- Core Home Production	13.92	11.08	11.33	10.74	11.32	11.87	11.89	12.61	9.95	10.44
- Home Ownership Activities	5.29	7.54	6.66	6.03	6.76	5.67	8.03	7.05	6.99	7.64
- Obtaining Goods and Services	6.32	5.09	4.31	8.21	9.03	6.26	6.03	4.30	6.10	6.67
- Others Care	1.68	6.04	5.68	4.79	2.84	1.65	6.38	6.27	4.65	2.59
Leisure	54.24	50.44	49.05	50.84	51.77	56.54	44.65	39.69	52.36	53.87
- TV Watching	15.39	14.14	16.86	12.67	11.09	16.77	14.62	15.69	14.05	12.09
- Socializing	8.84	2.94	4.65	4.38	3.06	8.02	2.07	4.41	2.74	1.40
- Sleeping	19.65	24.30	21.97	20.75	22.75	18.81	21.52	17.26	20.69	22.70
- Eating and Personal Care	-0.42	-3.66	-3.03	-0.95	-0.62	-0.27	-3.94	-2.59	-0.27	-0.05
- Other Leisure	10.77	12.72	8.60	13.98	15.48	13.20	10.37	4.90	15.14	17.73
Other	11.84	14.57	18.05	12.75	12.11	11.33	17.70	24.22	14.03	13.62
- Education	7.09	8.05	6.64	6.59	5.71	6.45	10.92	10.77	8.44	7.79
- Civic and Religious Activities	1.93	1.07	1.47	1.99	1.56	2.15	0.89	0.77	2.14	1.60
- Own Medical Care	2.81	5.44	3.55	4.16	4.83	2.72	5.88	3.59	3.44	4.22

Notes: The table presents the estimated coefficients  $\hat{\beta}^j$  from regression (2). All coefficients are multiplied by 100. Columns 1-5 are robustness exercises repeating the specification of column 4 of Table 3 (without demographic controls) and columns 6-10 are robustness exercises repeating the specification of column 6 of Table 3 (with demographic controls). Column 1 uses one-year periods instead of two-year periods. Column 2 uses the full ATUS sample (i.e. including those aged 15-17 and 66-85), excluding respondents with unclassified answers. Column 3 uses the full ATUS sample, including respondents with unclassified answers. Column 4 adds state-specific fixed effects. Column 5 adds state-specific time trends. Columns 6-10 are the corresponding exercises when we also include demographic controls. In columns 3 and 8, the sub-categories in “Other” do not sum to the “Other” category. The difference is absorbed by the time allocated to unclassified answers.

Table B.8: State Sample: Demographic Adjustments

Time Use Category	$\hat{\beta}$ Baseline (1)	$\hat{\beta}$ S.E. (2)	$\hat{\beta}$ Demographics I (3)	$\hat{\beta}$ S.E. (4)	$\hat{\beta}$ Demographics II (5)	$\hat{\beta}$ S.E. (6)
Other Income-Generating Activities	0.78	0.70	0.99	0.70	1.27	0.69
Job Search	1.29	0.70	1.26	0.72	2.00	0.84
Child Care	4.67	2.33	4.06	1.81	4.09	2.08
Non-Market Work	30.11	3.58	28.38	3.97	29.25	4.52
- Core Home Production	11.67	2.04	10.79	2.19	10.97	2.29
- Home Ownership Activities	6.05	2.96	6.78	3.01	7.30	2.97
- Obtaining Goods and Services	7.47	2.56	5.84	2.08	6.82	3.18
- Others Care	4.90	1.98	4.95	1.97	4.13	2.18
Leisure	50.89	4.79	52.16	4.67	51.90	4.80
- TV Watching	11.62	3.57	12.60	3.57	9.57	3.28
- Socializing	5.14	2.82	3.88	2.68	5.66	2.91
- Sleeping	21.42	3.64	20.82	4.83	21.05	3.97
- Eating and Personal Care	-1.77	2.83	-1.23	2.33	-0.34	2.90
- Other Leisure	14.47	3.92	16.08	3.75	15.96	3.96
Other	12.24	3.48	13.12	2.77	11.46	3.33
- Education	5.86	3.47	7.19	2.77	6.36	3.27
- Civic and Religious Activities	1.94	1.39	2.10	1.48	2.20	1.53
- Own Medical Care	4.43	1.74	3.81	1.61	2.88	1.83

Notes: All coefficients are multiplied by 100. Column 1 shows weighted least squares estimated coefficients  $\hat{\beta}^j$  from regression (2). Column 2 presents the standard errors associated with the estimated coefficients of column 1. Standard errors are clustered at the state level. Column 3 presents weighted least squares estimates when demographic controls are included in the regression. Column 4 presents the standard errors associated with the estimated coefficients of column 3 (clustered at the state level). Column 5 presents weighted least squares estimates when the underlying sample has been first adjusted for demographics and then aggregated at the state level. Column 6 presents the standard errors associated with the estimated coefficients of column 5 (clustered at the state level).