



METVALUE DOCUMENTATION

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I. New/Updated Activity Codes (2004+)

Tudor-Locke et al. (2009) employ the compendium estimates of physical activity intensity (METs, metabolic equivalents) with all activities reported in the 2003 ATUS. Currently there are 14 new 6-digit activity codes in the ATUS which were not available in 2003. These are listed below. Please note that ATUS-X uses the same methodology as Tudor-Locke et al to obtain METVALUE related to each new activity code.

* Table 1: New/Updated Activity Codes and Assigned Met Values (2004+)

	Activity Codes	Description	Assigned Met Value	*2000 Compendium Code/Notes
1	020602	Care for animals and pets (not veterinary care) (2008+)	2.56	<i>See Excel Table 3</i>
2	020603	Walking, exercising, playing with animals (2008+)	3.80	<i>See Excel Table 3</i>
3	050104	Waiting associated with working (2004+)	1.80	09050
4	050205	Waiting associated with work-related activities (2004+)	1.80	09050
5	050305	Waiting associated with other income-generating activities (2004+)	1.80	09050
6	060204	Waiting associated with extracurricular activities (2004+)	1.80	09050
7	140105	Religious education activities (2007+)	1.89	<i>See Excel Table 4</i>
8	150701	Waiting associated with volunteer activities (2004+)	1.80	09050
9	150799	Waiting associated with volunteer activities, n.e.c. (2004+)	1.80	09050
10	150801	Security procedures related to volunteer activities (2007+)	2.33	<i>See Excel Table 1</i>
11	150899	Security procedures related to volunteer activities, n.e.c. (2007+)	2.33	<i>See Excel Table 1</i>
12	160201	Waiting associated with telephone calls (2004+)	1.50	09055
13	160299	Waiting associated with telephone calls, n.e.c. (2004+)	1.50	09055
14	169999	Telephone calls, n.e.c.	1.50	09055

**Excel tables referenced in here are under "metvalue new activities" in the description*

II. Occupation Values

Tudor-Locke et al. (2009) derive the METVALUE associated with Work (050001 and 050002) from an extensive and iterative process of averaging MET values for 22 broad occupational

categories based on the [2002 Census Occupation codes](#). For more information on the assignment of METVALUE for activities in the 2002 census occupational classification system, see the [National Cancer Institute's Applied Research web page](#). ATUS-X automatically links the WORK activity codes (050101 and 050102) to occupation codes to generate the related METVALUE (see Table 2 below). The default crude value is set at 1.52 as per the original research. Other work and work-related activities are derived from the general algorithm employed to obtain METVALUE for activity codes.

Table 2 shows ATUS/CPS occupation codes and the corresponding METVALUE based on the respondent's main occupation at the time of the ATUS interview and second job at the time of the CPS interview ([OCC2](#) and [OCC2 OJ CPS8](#) respectively). Data on the occupation of the respondent's other job was not collected at the time of the ATUS interview, only information on the main job was. Please note that this table has been adapted from the original tables provided by Tudor-Locke et al. The changes reflect the harmonized occupation codes in the ATUS-X system.

Table 2: Met Values for Working and Work Related Activity Codes (050001 and 050002)

ATUS-X Codes	ATUS-X Descriptions	METVALUE
110	Management occupations	1.73
111	Business and financial operations occupations	1.67
120	Computer and mathematical science occupations	1.58
121	Architecture and engineering occupations	1.64
122	Life, physical, and social science occupations	2.00
123	Community and social service occupations	2.08
124	Legal occupations	1.50
125	Education, training, and library occupations	2.50
126	Arts, design, entertainment, sports, and media occupations	2.13
127	Healthcare practitioner and technical occupations	2.22
130	Healthcare support occupations	2.83
131	Protective service occupations	2.56
132	Food preparation and serving related occupations	2.58
133	Building and grounds cleaning and maintenance occupations	3.58
134	Personal care and service occupations	2.53
140	Sales and related occupations	2.00
150	Office and administrative support occupations	1.83
160	Farming, fishing, and forestry occupations	3.67
170	Construction and extraction occupations	4.29
180	Installation, maintenance, and repair occupations	3.19
190	Production occupations	2.69
200	Transportation and material moving occupations	2.67

Analyses indicate that in each year starting in 2003, on average, about 9.5% of ATUS respondents with available occupation data, report an occupation that is different from the occupation at the time of the final CPS interview, conducted 2-5 months prior to the ATUS

interview. At the aggregate level, METVALUES are affected by a maximum of +0.02 when using the CPS occupation codes instead of the ATUS occupation codes. For most years, METVALUE remains unchanged at the 2 significant figures when comparing results from the two different occupations information. Please note that ATUS-X has provided codes in SAS, STATA, and SPSS syntax that users can use to obtain MET values relating to 050101 activity code using the CPS occupation data – [OCC2 CPS8](#). Users should add this variable to their extracts and run the syntax below to overwrite current MET values for 050101 activity codes obtained by using main occupation at the time of the ATUS interview. Please note that METVALUES associated with 050102 (other job) will remain unchanged.

III. Travel Times

The METVALUE associated with traveling activities (major category 180000) are obtained in conjunction with the [WHERE](#) variable.

Table 3: Met Values for ATUS-X WHERE Codes

ATUS-X "WHERE" Codes	Compendium Code	Compendium Description	METVALUE
101 Respondent's home or yard	17150	walking, household walking	2.00
102 Respondent's workplace	11792	walking on job, 3.0 mph, in office, moderate	3.30
103 Someone else's home	17150	walking, household walking	2.00
104 Restaurant or bar	17152	walking, 2.0 mph, level, slow pace, firm surface	2.50
105 Place of worship	17152	walking, 2.0 mph, level, slow pace, firm surface	2.50
106 Grocery store	05060	food shopping with or without a grocery cart	2.30
107 Other store, mall	05065	non-food shopping, standing or walking	2.30
108 School	17270	walking to class	4.00
109 Outdoors away from home	17161	walking from house to car or bus	2.50
110 Library	17152	walking, 2.0 mph, level, slow pace, firm surface	2.50
* 111 Bank (2004+)	17152	walking, 2.0 mph, level, slow pace, firm surface	2.50
* 112 Gym/health club (2004+)	17152	walking, 2.0 mph, level, slow pace, firm surface	2.50
* 113 Post Office (2004+)	17152	walking, 2.0 mph, level, slow pace, firm surface	2.50
114 Other place	N/A	average MET values derived	2.59
230 Car, truck or motorcycle (driver)	16010	automobile or light truck (not a semi) driving	2.00
231 Car, truck or motorcycle	16015	riding in a car or truck	1.00
232 Walking	17161	walking from house to car or bus	2.50
233 Bus	16015	riding in a car or truck	1.00
234 Subway, train	16015	riding in a car or truck	1.00
235 Bicycle	01015	bicycling, general	8.00
236 Boat, ferry	16015	riding in a car or truck	1.00
237 Taxi, limousine service	16015	riding in a car or truck	1.00
238 Airplane	16015	riding in a car or truck	1.00
239 Other mode of transportation	N/A	average MET values derived	2.06
115 Unspecified place	N/A	average MET values derived	2.59
234 Unspecified mode	N/A	average MET values derived	2.06

* There were 3 new possible locations for "WHERE" as of 2004. They are: 111 (Bank), 112 (Gym) and 113 (Post Office). Those have been linked to the Physical Compendium codes 17152.

Above is a table with the travel codes and the corresponding METVALUE related to each location/mode of transportation. Please note that this table has been adapted from the original tables provided by Tudor-Locke et al. The changes reflect the harmonized WHERE codes in the ATUS-X system.

IV. General Comments

There have been changes in lexicon examples which are important to the process of linking ATUS primary activities and the corresponding compendium MET values. [Tudor-Locke et al. \(2009\)](#) find that MET values should be minimally affected by these changes ($< \pm 0.74$ METs for 2003-2005 changes).

V. References

Comprehensive Cancer Information (National Cancer Institute. <http://www.cancer.gov/>
Metabolic Equivalent (MET) Values for Activities in American Time Use Survey (ATUS). <http://appliedresearch.cancer.gov/atus-met/>

Metabolic Equivalent (MET) Values for Activities in the 2002 Census Occupational Classification System (OCS). <http://appliedresearch.cancer.gov/ocs-met/>

Tudor-Locke, C., Washington, T. L., Ainsworth, B. E., & Troiano, R. P. (2009). Linking the American Time Use Survey (ATUS) and the compendium of physical activities: methods and rationale. *Journal of Physical Activity and Health*, 6(3), 347-353.

VI. Syntax

* SAS, Stata, and SPSS syntax for re-coding for activity 050101 (Work – Main Job) using CPS based 2002 Census Occupation Code ([OCC2 CPS8](#)).

SAS

```
if occ2_cps8=110 and activity=050101 then metvalue=1.73
if occ2_cps8=111 and activity=050101 then metvalue=1.67
if occ2_cps8=120 and activity=050101 then metvalue=1.58
if occ2_cps8=121 and activity=050101 then metvalue=1.64
if occ2_cps8=122 and activity=050101 then metvalue=2.00
if occ2_cps8=123 and activity=050101 then metvalue=2.08
if occ2_cps8=124 and activity=050101 then metvalue=1.50
if occ2_cps8=125 and activity=050101 then metvalue=2.50
if occ2_cps8=126 and activity=050101 then metvalue=2.13
if occ2_cps8=127 and activity=050101 then metvalue=2.22
if occ2_cps8=130 and activity=050101 then metvalue=2.83
if occ2_cps8=131 and activity=050101 then metvalue=2.56
```

if occ2_cps8=132 and activity=050101 then metvalue=2.58
if occ2_cps8=133 and activity=050101 then metvalue=3.58
if occ2_cps8=134 and activity=050101 then metvalue=2.53
if occ2_cps8=140 and activity=050101 then metvalue=2.00
if occ2_cps8=150 and activity=050101 then metvalue=1.83
if occ2_cps8=160 and activity=050101 then metvalue=3.67
if occ2_cps8=170 and activity=050101 then metvalue=4.29
if occ2_cps8=180 and activity=050101 then metvalue=3.19
if occ2_cps8=190 and activity=050101 then metvalue=2.69
if occ2_cps8=200 and activity=050101 then metvalue=2.67

Stata

```
replace metvalue=1.73 if occ2_cps8==110 & activity==050101  
replace metvalue=1.67 if occ2_cps8==111 & activity==050101  
replace metvalue=1.58 if occ2_cps8==120 & activity==050101  
replace metvalue=1.64 if occ2_cps8==121 & activity==050101  
replace metvalue=2.00 if occ2_cps8==122 & activity==050101  
replace metvalue=2.08 if occ2_cps8==123 & activity==050101  
replace metvalue=1.50 if occ2_cps8==124 & activity==050101  
replace metvalue=2.50 if occ2_cps8==125 & activity==050101  
replace metvalue=2.13 if occ2_cps8==126 & activity==050101  
replace metvalue=2.22 if occ2_cps8==127 & activity==050101  
replace metvalue=2.83 if occ2_cps8==130 & activity==050101  
replace metvalue=2.56 if occ2_cps8==131 & activity==050101  
replace metvalue=2.58 if occ2_cps8==132 & activity==050101  
replace metvalue=3.58 if occ2_cps8==133 & activity==050101  
replace metvalue=2.53 if occ2_cps8==134 & activity==050101  
replace metvalue=2.00 if occ2_cps8==140 & activity==050101  
replace metvalue=1.83 if occ2_cps8==150 & activity==050101  
replace metvalue=3.67 if occ2_cps8==160 & activity==050101  
replace metvalue=4.29 if occ2_cps8==170 & activity==050101  
replace metvalue=3.19 if occ2_cps8==180 & activity==050101  
replace metvalue=2.69 if occ2_cps8==190 & activity==050101  
replace metvalue=2.67 if occ2_cps8==200 & activity==050101
```

SPSS

if (occ2_cps8=110 and activity=050101) metvalue=1.73.
if (occ2_cps8=111 and activity=050101) metvalue=1.67.
if (occ2_cps8=120 and activity=050101) metvalue=1.58.
if (occ2_cps8=121 and activity=050101) metvalue=1.64.
if (occ2_cps8=122 and activity=050101) metvalue=2.00.
if (occ2_cps8=123 and activity=050101) metvalue=2.08.
if (occ2_cps8=124 and activity=050101) metvalue=1.50.
if (occ2_cps8=125 and activity=050101) metvalue=2.50.
if (occ2_cps8=126 and activity=050101) metvalue=2.13.
if (occ2_cps8=127 and activity=050101) metvalue=2.22.
if (occ2_cps8=130 and activity=050101) metvalue=2.83.
if (occ2_cps8=131 and activity=050101) metvalue=2.56.
if (occ2_cps8=132 and activity=050101) metvalue=2.58.
if (occ2_cps8=133 and activity=050101) metvalue=3.58.
if (occ2_cps8=134 and activity=050101) metvalue=2.53.
if (occ2_cps8=140 and activity=050101) metvalue=2.00.
if (occ2_cps8=150 and activity=050101) metvalue=1.83.
if (occ2_cps8=160 and activity=050101) metvalue=3.67.
if (occ2_cps8=170 and activity=050101) metvalue=4.29.
if (occ2_cps8=180 and activity=050101) metvalue=3.19.
if (occ2_cps8=190 and activity=050101) metvalue=2.69.
if (occ2_cps8=200 and activity=050101) metvalue=2.67.

** Note: [OCC2_CPS8](#) is a person level variable and [ACTIVITY](#) is an activity-level variable. Using [CASEID](#), users should apply the person level occupation codes to all the related activity codes in order for this syntax to properly work.*