IJW Song, Y. (2017). A cross-state comparison of measures of subjective wellbeing. *International Journal of Wellbeing*, 7(1), 65-83. doi:10.5502/ijw.v7i1.561

ARTICLE

A cross-state comparison of measures of subjective wellbeing

Younghwan Song

Abstract: Using data drawn from the 2010 American Time Use Survey Well-Being Module, this study examines the relationship between three measures of subjective wellbeing based on time-use data and an objective measure of wellbeing. Whereas the measures of affect—net affect and the U-index—are uncorrelated with the objective quality-of-life ranking of the 50 states in the United States, the measure of meaningfulness shows a significant correlation with objective ranking. The reason for the significant correlation between the measure of meaningfulness and the objective measure of wellbeing is because, when engaged in similar activities, people living in states with better quality of life felt, after controlling for their individual characteristics, their lives to be more meaningful than those living in states with poor amenities, not because time use varies substantially by state.

Keywords: time use, subjective wellbeing, U-index, net affect, meaningfulness

1. Introduction

Recently, economists and policy makers have increased their interest in measures of subjective wellbeing (Di Tella & MacCulloch, 2006; Dolan & Metcalfe, 2012; Frey & Stutzer, 2002; Stiglitz, Sen, & Fitoussi, 2009). For example, Stiglitz et al. (2009) pointed out that quality of life depends on multi-dimensions—material living standards, health, education, personal activities, political voice and governance, social connections and relationships, environment, and personal/economic security—but many of these dimensions are not included in conventional income measures, and hence they suggested employing both objective and subjective measures to get information about people's wellbeing. Recently, in addition to the often-used measure of global life satisfaction, various other measures of subjective wellbeing, such as net affect and the U-index, have been developed. Because one of the main reasons economists and policy makers are interested in measures of subjective wellbeing is to better monitor progress in quality of life beyond simple measures of income and to better guide public policy, it is important to examine how well various measures of subjective wellbeing reflect the objective differences in quality of life, so that policy makers can develop better and more appropriate policies to improve wellbeing in society.

Using the 2010 American Time Use Survey Well-Being Module, this paper contributes to the literature by examining the relationship between the three measures of subjective wellbeing based on time-use data—net affect, the U-index, and meaningfulness—and the objective quality-of-life ranking of the 50 states in the United States. Specifically, by employing these measures of subjective wellbeing based on time diary data, this paper expands and also improves on the analysis of Oswald and Wu (2010) that first provided evidence for a significant association

Younghwan Song
Union College
songy@union.edu

between global life satisfaction and the quality-of-life rankings at the state level in the US. First of all, in addition to global life satisfaction, these new measures of subjective wellbeing potentially offer more and different ways to examine various dimensions of quality of life. Second, because these measures of subjective wellbeing are based on moment-to-moment feelings, they can overcome the limitations of the measure of global life satisfaction, which is based on a single survey question and thus likely to be affected by contexts and moods at the time of the survey. Third, because these measures of subjective wellbeing are based on time diary data, they allow us to disentangle the sources of their variation: differences in time use and/or differences in feelings for the same activity.

The results show that whereas the measures of affect—net affect and the U-index—are uncorrelated with the objective measure of wellbeing, the measure of meaningfulness has a significant correlation with the objective ranking. The reason for the significant correlation between the measure of meaningfulness and the objective measure of wellbeing is because, when engaged in similar activities, people living in states with better quality of life felt their lives to be more meaningful than those living in states with poor amenities, not because time use varies substantially by state. Interestingly, the differences in meaningfulness by state-level of quality of life are found for just three groups of activities: work, shopping, and leisure.

The remainder of the paper is organized as follows. In Section 2, I summarize the literature on various measures of subjective wellbeing. Section 3 describes the data and methodology. In Section 4, I present the empirical results and discuss the findings. Finally Section 5 provides concluding remarks.

2. Literature review

An often-used measure of subjective wellbeing is based on a single survey question regarding global life satisfaction, such as, "In general, how satisfied are you with your life?" in the Behavioral Risk Factor Surveillance System (BRFSS). The four valid responses to the question—very satisfied, satisfied, dissatisfied, and very dissatisfied—are ordinal but can be treated in a cardinal way by assigning 1 to 4, where "very satisfied" is assigned 4 (Oswald & Wu, 2010). However, it is well known that reports of subjective wellbeing based on a single question on global life satisfaction do not reflect stable inner states of wellbeing: they are, rather, judgments that individuals form on the spot and thus are influenced by contexts and moods, and neglect the duration of the life episode (Schwarz & Strack, 1999). As a way to overcome these problems, Kahneman, Krueger, Schkade, Schwarz, and Stone (2004a) suggested collecting moment-to-moment feelings by using the Day Reconstruction Method (DRM). In the DRM, respondents first fill out a detailed time diary of the previous day and then provide numerical responses. For example, the DRM uses a scale from 0 to 6 about how they felt during each episode on selected affect dimensions, such as happy, warm/friendly, enjoying myself, frustrated/annoyed, depressed/blue, hassled/pushed around, angry/hostile, worried/anxious, and criticized/put down. Though the DRM involves a retrospective report on an emotional state, Kahneman, Krueger, Schkade, Schwarz, and Stone (2004b) showed that the DRM achieves accurate recall: the diurnal patterns of affect and tiredness from the DRM match those from the more expensive Experience Sampling Method, which collects information on respondents' experiences in real time through an electronic diary. Kahneman et al. (2004a) defined net affect as the average of positive emotion less the negative ones for each episode, and suggested the population average of duration-weighted net affect as a new measure of national wellbeing.

One common problem with both global life satisfaction and net affect is that respondents may interpret and use the response categories differently, making interpersonal comparison

difficult. As an alternative measure of subjective wellbeing, Kahneman and Krueger (2006) and Krueger, Kahneman, Schkade, Schwarz, and Stone (2009) proposed the U-index, which is based on an individual's time-use data and measures the percentage of time the respondent spends in an unpleasant situation. An episode is classified as unpleasant if the highest rating on any negative affect dimension is strictly greater than the ratings of positive affect dimensions. Therefore, even if different respondents interpret and use the response categories differently, the U-index still allows for interpersonal comparison, as long as each individual uses the same response categories for both negative and positive affect dimensions.

While global life satisfaction represents a respondent's assessment of how well one's life desires and goals are satisfied, both the U-index and net affect represent a respondent's assessment of moment-to-moment positive and negative affect dimensions and the use of time in activities with various affect dimensions during a short period, usually a day. Because of these differences, global life satisfaction is moderately correlated (0.38) with daily net affect at the individual level (Kahneman et al., 2004b, p. 1779). Similarly, Knabe, Rätzel, Schöb, and Weimann (2010) found that, at the individual level, the correlation of the self-reported general life satisfaction with the two measures of experienced utility—net affect, and the U-index—are weaker (around 0.36 in absolute values) than that between the U-index and net affect (around 0.73 in absolute values).

Furthermore, the measure of global life satisfaction and the U-index may even portray different pictures regarding the wellbeing of the same people. For example, in an international comparison of 810 women in Columbus, USA and 820 women in Rennes, France, Krueger, Kahneman, Schkade, et al. (2009) and Krueger, Kahneman, Fischler, et al. (2009) showed that whereas American women are more satisfied with their lives than French women, the U-index is lower among French women than among American women, which means that French women spend less of their time engaged in unpleasant activities than American women. Knabe et al. (2010) found that although the employed are more satisfied with their lives than the unemployed, the two measures of experienced utility—net affect and the U-index—do not differ between the two groups because the unemployed can compensate for having more negative affect for similar activities by using the time the employed are at work on more enjoyable activities.

Based on the idea of the U-index, Krueger, Kahneman, Schkade, et al. (2009) suggested the development of National Time Accounting (NTA) as a complement to the National Income and Product Accounts, and NTA can be used to compare the wellbeing of groups of individuals, countries, and eras. To facilitate NTA, they have recommended adding a module on affective experience to the American Time Use Survey (ATUS). Loewenstein (2009), however, argued that the U-index, by categorizing an activity simply as either pleasant or unpleasant, discards useful information to allow for interpersonal comparability. He suggested that the module should also ask if a particular activity was a "valuable use of time," because the U-index measures the quality of a person's life in terms of happiness only, but individuals might have different criteria for what makes their own life worthwhile. Similarly, White and Dolan (2009) showed that, in addition to affect, thoughts—measured as responses to the statements "I feel the activities in this episode were worthwhile and meaningful/were useful to other people/helped me achieve important goals"—also influence subjective wellbeing. For example, some activities with relatively low scores of positive feelings, such as work and time with children, are nonetheless rewarding and contribute to overall subjective satisfaction. As a result, the module added to the 2010 ATUS includes affect questions as well as a question on the meaningfulness of the activity.

Oswald and Wu (2010) are the first to provide evidence that the measure of global life satisfaction from the BRFSS contains objective information about the quality of lives across the

50 states in the United States. Using a sample of 1.2 million individuals drawn from the 2005-2008 BRFSS, they first estimated the state dummies in a subjective wellbeing regression analysis, where the cardinal coding of the responses to the question on global life satisfaction is the dependent variable, and various respondents' characteristics are the independent variables. They then showed that these state dummies are substantially correlated (-0.598) with the state-by-state quality-of-life rankings in the United States from Gabriel, Mattey, and Wascher (2003), generated by the compensating-differentials approach based on objective state-level indicators, such as precipitation; humidity; heating degree days; cooling degree days; wind speed; sunshine; coast; inland water; federal land; visitors to national parks; visitors to state parks; number of hazardous waste sites; environmental regulation leniency; commuting time; violent crime rate; air quality-ozone; air quality-carbon monoxide; student-teacher ratio; state and local taxes on property, income and sales and other; and state and local expenditures on higher education, public welfare, highways, and corrections. Relying on the concept of a compensating differential, that is, pecuniary differences across geographic locations for wages, housing, and other costs of living should compensate for the differences in non-pecuniary characteristics that affect quality of life, Gabriel et al. (2003) estimated the weights for these indicators in three price equations (wages, housing, and non-housing cost of living). Then the weighted average of these indicators determined their quality-of-life rankings. Table A1 in the appendix shows the state-by-state quality-of-life rankings from Gabriel et al. (2003).

Applying the same approach as Oswald and Wu (2010) to data drawn from the 2010 American Time Use Survey Well-Being (ATUS WB) Module, the first data source based on a large, nationally representative sample of the US population that links self-reported wellbeing information to individuals' activities and time-use patterns, this paper examines the relationship between the three measures of subjective wellbeing based on time-use data—net affect, the U-index, and meaningfulness—and the objective quality-of-life ranking of the 50 states in the United States from Gabriel et al. (2003).[1] By doing so, one can observe how well these measures of experienced utility reflect the objective differences in the quality of human lives across states. This paper also analyzes whether the variations across states in the three measures of subjective wellbeing based on time use come from the variations in activities and time-use patterns and/or from the variations in self-reported wellbeing for the same activity.

3. Data and methodology

The ATUS is a time-use survey based on a nationally representative sample of the US population and has been conducted continuously since 2003 by the US Census Bureau. The ATUS sample is drawn from households that have completed their final interview with the Current Population Survey (CPS), a monthly survey of almost 60,000 households that is the primary source of information on the labor force characteristics of the US population. Two to five months after the last CPS interview, one individual aged 15 or older from each selected household was randomly chosen to participate in the ATUS. Respondents were asked to sequentially report their own activities on a 24-hour, pre-assigned day of the week (the diary day), starting at 4:00 a.m. on the day before the interview and ending at 4:00 a.m. on the day of the interview. The diary days of the ATUS are inclusive of all days in a year: weekdays, weekends, and holidays, except

[1] Although the state-by-state quality-of-life ranking from Gabriel et al. (2003) is computed using data for the year 1990, this paper still uses this ranking because it seems to be the most recent estimate in the literature. Though the ranking is likely to have changed since 1990, it seems to be relatively stable over time. For example, according to the author's calculation, the Spearman's rank correlation of the state-by-state quality-of-rankings reported in Gabriel et al. (2003, pp. 635-636) between 1981 and 1990 is 0.88 and is statistically significant at 1% level.

Thanksgiving Day and Christmas Day. All ATUS data were collected using computer-assisted telephone interviewing.

In the 2010 ATUS, a Well-Being (WB) Module was added to capture how people felt during three randomly selected activities reported by each respondent. The selected activity must be at least 5 minutes in duration and the following activities and responses were not selected: sleeping (0101xx), grooming (0102xx), personal activities (0103xx), don't know/can't remember (500106), and refusal/none of your business (500105).[2] For each selected activity, respondents were asked seven questions: five affect questions (pain, sadness, stress, happiness and tiredness)[3], one question about how meaningful the activity was, and one question about whether the respondent was interacting with anyone during the activity. For the five affect questions and the one question about how meaningful the activity was, the respondent was asked to use a scale from 0 to 6, where a 0 means he/she did not experience the feeling at all and a 6 means the feeling was very strong.[4] After excluding the episodes with missing responses or activity codes, and respondents below the age of 18 and those from DC, this paper used 35,356 episodes of activities from 12,164 respondents in the 2010 ATUS WB Module.[5]

3.1 U-index

Using the responses available in the ATUS WB Module, I have constructed three measures of wellbeing: the U-index, net affect, and meaningfulness. Following Kahneman and Krueger (2006), and Krueger, Kahneman, Schkade et al. (2009), an episode is classified as unpleasant if the highest rating on any of the three negative affect dimensions (pain, sadness, and stress) is strictly greater than the rating of the positive affect dimension (happiness). Then the U-index for state j, U_j, can be constructed as the weighted average of these classifications over the episodes from the respondents in the state. Specifically,

$$U_j = \frac{\sum_i \sum_k w_{ikj} U_{ikj}}{\sum_i \sum_k w_{ikj}} \qquad (1)$$

where i denotes the respondent, k denotes the sampled activity, U_{ikj} denotes an indicator variable for an episode k being unpleasant for respondent i in state j, and w_{ikj}denotes the WB Module activity weight (WUFNACTWTC) attached to activity k for respondent i in state j. The weights account for both i) differences between activities in the fraction of time spent in eligible activities and ii) differences between persons in the probability of having a specific eligible activity selected due to variation in the number of eligible activities. In the end, this U-index is an estimate for the fraction of time the individuals in the state spend in an unpleasant situation.

[2] In parentheses are the ATUS activity codes.

[3] The order of the five affect questions was randomly determined for each respondent.

[4] The ATUS WB Module data files also contain four general health questions: general health status (excellent, very good, good, fair, and poor); whether the respondent was told he/she has hypertension by a doctor in the last five years; whether the respondent took any pain medication on the diary day; and how well rested the respondent felt on the diary day. A small number of ATUS respondents (431 out of 13,260) who do not meet the following criteria are not counted in the WB Module: i) Answer at least four of the seven questions about the activity for at least one of the three activities selected, and ii) Answer at least one of the final four general health questions.

[5] The number of episodes per state, excluding DC, is 707.1 on average, with the maximum of 3,650 for California and the minimum of 54 for Alaska. In addition to Alaska, the following four states have fewer than 100 episodes: Delaware (92), North Dakota (89), Vermont (81), and Wyoming (60).

Even though the U-index is based on cardinal responses, it relies only on an ordinal ranking of the feelings in each activity.[6]

3.2 Net affect and meaningfulness

Net affect for each episode (Kahneman et al., 2004a) is defined as the difference between the positive emotion (happiness) and the average of the negative ones (pain, sadness, and stress) for the episode. Similar to Equation 1, net affect for each state is defined as the weighted average of net affect over the activities from the respondents in the state. In a similar fashion, meaningfulness has been constructed for each state as the weighted average of the responses to the question about how meaningful the episode was over the episodes from the respondents in the state.

3.3 Regression residuals

The focus here is not on the simple differences in these wellbeing measures across various people from different states, but, rather, on the differences due to socio-economic, institutional and geographic characteristics of states, after excluding other differences among the respondents. Hence, using each of these three *unweighted* measures of wellbeing for each episode (for example, U_{ikj} for the U-index) as the dependent variable, I first estimated episode regression controlling for the following respondents' characteristics: age and its square; a female dummy; five dummies for respondents' race/ethnicity (black, Hispanic, Asian, native American, and other; the reference group being white); four education dummies (some high school, high school, some college, and college or more; the reference group is less than some high school education); two marital-status dummies (married and partnered; the reference group being single); three employment-status dummies (self-employed, unemployed, and not in the labor force; the reference group being employed); a dummy for interacting with anyone; eight dummies for family income during the last 12 months ($10,000-$19,999, $20,000-$34,999, $35,000-$49,999, $50,000-$74,999, $75,000-$99,999, $100,000-$149,999, $150,000 and over, and family income missing; the reference group being less than $10,000); a holiday dummy; six dummies for the days of the week (the reference group is Sunday); and eleven month dummies. Table A2 in the appendix shows the unweighted descriptive statistics of most of these variables. Then, similar to Equation 1, the residuals from these regressions are weighted to produce state-level average residuals. Because I need to get comparable residuals for all three measures of subjective wellbeing, I have used ordinary least squares for all regressions, instead of using different estimation methods, such as Logit or Ordered Logit, depending on whether the dependent variable is a dummy variable (unpleasantness) or an ordered category between 0 and 6 (meaningfulness).

3.4 Global life satisfaction

Similar to Oswald and Wu (2010), I have also calculated the state-level average life satisfaction from the 2010 BRFSS so that I can compare the magnitude of the correlations between various measures of subjective wellbeing and the qualify-of-life rankings. The BRFSS is a large health-related telephone survey that collects data from more than 400,000 US residents 18 years and

[6] This assumes that an individual uses that same scale for both negative and positive affect dimensions. However, Layard (2009) pointed out that it is difficult to compare the reported numbers for negative and positive feelings, and, as a result, the process increases measurement errors and loses much of the information, compared to other cardinal measures. For example, even if two people have the same true value of unobserved feelings, a more optimistic person may over-report positive feelings and underreport negative feelings compared to the other person. Then the U-index may not be the same for the two people.

older each year regarding their health-related risk behaviors, chronic health conditions, and use of preventive services. Since 2005, the question on global life satisfaction has been included in the BRFSS. Using a sample of 409,583 individuals drawn from the 2010 BRFSS, I regressed the individual level global life satisfaction, treating it a cardinal way, to the same set of individual control variables as Oswald and Wu (2010), except the state dummies.[7] Then I have calculated the state-level average life satisfaction from the regression residuals. Obtaining state-level life satisfaction by including state dummies, as Oswald and Wu (2010) did, is more or less the same as obtaining them by averaging the individual-level residuals by state.[8] I have adopted this method of averaging the residuals because, as described in the prior section, I have already used the same method for all measures of subjective wellbeing from the ATUS WB Module. For the measures of subjective wellbeing from the ATUS WB Module, the unit of analysis in the regression is an episode, not an individual, and the episode-level residuals from the regressions have to be weighted to produce state-level average residuals, which is not possible when state-level dummies are used instead.

4. Results

To control for the differences in individual characteristics, as described in the prior section, I first estimated the episode-level regressions using each of the *unweighted* measures of subjective wellbeing for each episode as the dependent variables (unpleasantness, net affect, and meaningfulness).

Table 1 below shows the coefficients from these ordinary least squares regressions. Because three episodes of activities have been selected for each respondent, the error terms of these episode-level regressions are unlikely to be independent at the respondent level. Therefore, the standard errors have been adjusted for clustering by respondent.[9]

Because the dependent variables in this paper are the *unweighted* measures of subjective wellbeing for each *episode*, while those in the related literature are the *weighted* measures of subjective wellbeing by *individual*, it is not easy to directly compare the regression results in Table 1 below to those in the literature. Nevertheless, the findings that unpleasantness increases with age at a decreasing rate and net affect decreases with age at an increasing rate in columns 1 and 2 of Table 1 below are similar to those found in Krueger (2007, p. 207) with the U-index, and Knabe et al. (2010, p. 882) for net affect. In column 3, meaningfulness of an episode also increases with age but at a decreasing rate. Different from the result in Krueger (2007) with the U-index, women have higher unpleasantness per episode than men, shown in column 1. However, women feel more meaningfulness than men, as shown in column 3. While unpleasantness and net affect do not significantly vary by education (see columns 1 and 2), more educated people have lower meaningfulness (see column 3).

[7] A few minor differences between Oswald and Wu (2010) and my BRFSS sample are i) they have excluded those above the age of 85; and ii) they have excluded those with income missing. The results are weighted by using the final weight (_FINALWT) from the BRFSS.

[8] The Pearson product-moment correlation coefficient between the state-level life satisfaction based on state dummies and the state-level average life satisfaction from the regression residuals is 0.9988. When there are no controls in the regression, the Pearson product-moment correlation coefficient between the two is 1.

[9] Alternatively, I have also employed multilevel modeling (Demidenko 2004; Robson & Pavelin 2016) to address the issue of clustering at the individual level. In this paper, however, only the results based on OLS regressions with clustered standard errors are reported because i) for some cases, multilevel models have failed to converge in maximum likelihood estimation, and ii) when the results are available for both OLS regressions with clustered standard errors and multilevel models, they are very similar.

Table 1a. Coefficients of episode regressions

Coefficient	(1) Unpleasantness	(2) Net affect	(3) Meaningfulness
Age	0.010***	-0.083***	0.029***
	(0.001)	(0.007)	(0.005)
Age squared (/100)	-0.010***	0.088***	-0.017***
	(0.001)	(0.007)	(0.005)
Female	0.019***	0.019	0.188***
	(0.005)	(0.038)	(0.028)
Black	-0.022***	0.367***	0.530***
	(0.008)	(0.060)	(0.042)
Asian	0.003	0.053	0.283***
	(0.014)	(0.106)	(0.080)
Hispanic	0.004	0.180***	0.408***
	(0.009)	(0.062)	(0.044)
Native American	-0.043	0.432*	0.527***
	(0.030)	(0.230)	(0.159)
Other	0.062**	-0.140	0.215*
	(0.028)	(0.199)	(0.122)
Some high school	-0.006	0.115	-0.040
	(0.018)	(0.144)	(0.091)
High school	-0.012	0.192	-0.067
	(0.017)	(0.131)	(0.081)
Some college	-0.000	0.096	-0.159*
	(0.017)	(0.131)	(0.082)
College or more	-0.014	0.115	-0.361***
	(0.017)	(0.132)	(0.083)
Married	-0.044***	0.445***	0.276***
	(0.006)	(0.043)	(0.031)
Partner	-0.012	0.107	0.112
	(0.014)	(0.102)	(0.079)
Self-employed	0.008	-0.091	0.120**
	(0.010)	(0.071)	(0.050)
Unemployed	0.043***	-0.360***	-0.125**
	(0.012)	(0.085)	(0.060)
Not in labor force	0.037***	-0.293***	-0.124***
	(0.007)	(0.053)	(0.038)
Interacting with anyone	-0.026***	0.411***	0.667***
	(0.004)	(0.030)	(0.024)
Family income missing	-0.069***	0.348***	-0.148
	(0.018)	(0.132)	(0.091)
Family income $10,000-$19,999	-0.026*	0.111	-0.072
	(0.015)	(0.107)	(0.071)
Family income $20,000-$34,999	-0.051***	0.243**	-0.110
	(0.014)	(0.099)	(0.067)
Family income $35,000-$49,999	-0.073***	0.426***	-0.193***
	(0.014)	(0.102)	(0.070)

Table 1b. Coefficients of episode regressions

Coefficient	(1) Unpleasantness	(2) Net affect	(3) Meaningfulness
Family income $50,000-$74,999	-0.077***	0.402***	-0.162**
	(0.014)	(0.099)	(0.069)
Family income $75,000-$99,999	-0.069***	0.374***	-0.174**
	(0.015)	(0.105)	(0.073)
Family income $100,000-$149,999	-0.077***	0.453***	-0.249***
	(0.015)	(0.105)	(0.075)
Family income $150,000 and over	-0.082***	0.429***	-0.356***
	(0.016)	(0.110)	(0.080)
Holiday	-0.067***	0.512***	0.361***
	(0.015)	(0.126)	(0.095)
Monday	0.049***	-0.403***	-0.030
	(0.010)	(0.071)	(0.050)
Tuesday	0.035***	-0.309***	0.022
	(0.010)	(0.068)	(0.050)
Wednesday	0.049***	-0.430***	0.059
	(0.010)	(0.068)	(0.049)
Thursday	0.042***	-0.320***	-0.013
	(0.010)	(0.068)	(0.051)
Friday	0.027***	-0.285***	-0.048
	(0.009)	(0.069)	(0.050)
Saturday	0.010	-0.060	-0.001
	(0.007)	(0.052)	(0.038)
Constant	0.014	4.390***	2.899***
	(0.030)	(0.224)	(0.160)
Number of observations	35,356	35,356	35,356
R-squared	0.023	0.038	0.060

Note: Robust standard errors are in parentheses. The regressions also include 11 month dummies. * Statistically significant at the .10 level; ** Statistically significant at the .05 level; *** Statistically significant at the .01 level.

Consistent with Knabe et al. (2010, p. 878), the coefficients on those who were unemployed (in columns 1 through 3) show that the unemployed experienced more unpleasantness, had lower net affect and felt less meaningfulness per episode than the employed. Finally, an episode in which respondents interacted with someone usually felt less unpleasant, had more net affect and felt more meaningful.

Kahneman, Krueger, Schkade, Schwarz, and Stone (2006) found a weak relationship between income and experienced affect. They explained that such a weak relationship could be because of hedonic adaptation—as people make more money, their aspirations quickly rise at the same time, resulting in no permanent gain in experienced affect—or because as income increases, although people experience more positive affect per episode by increasing consumption of material goods, people shift their time use toward activities that are associated with higher tension and stress, such as work and commuting. In Table 1 above, on the contrary, higher income, relative to the reference group of family income less than $10,000, decreases unpleasantness per episode in column 1 and increases net affect in column 2. The main reason

for this difference between Table 1 and the findings of Kahneman et al. (2006) could be because the dependent variables in Table 1 above are unweighted measures of subjective wellbeing for each episode, and the amount of time spent on each episode is not yet considered. Nevertheless, the findings in Table 1 above are still consistent with the second explanation by Kahneman et al. (2006), that, as income increases, people at least experience more positive affect per episode. However, the fact that higher income is associated with feelings of less meaningfulness for each episode in column 3 seems to be at odds with both explanations and merits further research.[10] Finally, the coefficients on the days of the week shown in columns 1 and 2 indicate that measures of positive affect decrease during weekdays compared with the weekend. However, column 3 shows that there is no change in meaningfulness between weekdays and weekends.

Table 2 shows the correlations among the state-level measures of subjective wellbeing obtained from the residuals of the above regressions.

Table 2. Spearman's Rank Correlation among state-level measures of wellbeing, controlling for individual characteristics

	U-index	Net affect	Meaningfulness	Life satisfaction	Ranking
U-index	1				
Net affect	-0.775***	1			
Meaningfulness	-0.340**	0.357**	1		
Life satisfaction	-0.183	0.120	0.125	1	
Ranking	0.066	-0.144	-0.424***	-0.486***	1

Note: Only 50 states, excluding DC, are included because the quality-of-life ranking does not include DC. * Statistically significant at the .10 level; ** Statistically significant at the .05 level; *** Statistically significant at the .01 level.

Because the quality-of-life rankings are an ordinal measure, I have reported the Spearman's rank correlation coefficients.[11] Table 2 above illustrates that while the U-index and net affect are negatively and significantly correlated between the two, neither of them is significantly correlated with the quality-of-life rankings, although the signs of the correlation coefficients are in the right direction: positive for the U-index and negative for net affect. This is because in the quality-of-life rankings, the number 1 corresponds to the highest ranking of quality of life and the number 50 corresponds to the lowest ranking of quality of life. Meaningfulness is significantly and negatively correlated with the U-index, -.340, but significantly and positively correlated with net affect, 0.357 at the state level, suggesting that those states with higher values of meaningfulness also tend to report, if anything, higher values for positive affect dimensions. More importantly, meaningfulness has a significant and negative correlation with the objective quality-of-life rankings. In the last row of Table 2 above, the absolute value of the Spearman's rank correlation coefficient between the two is 0.424, which in behavioral science is between a medium association, 0.3, and a large association, 0.5, according to Cohen's rule of thumb (Cohen, 1988). This supports the notion that the measure of meaningfulness reflects state-level differences in quality of life, and those states with higher quality of life tend to also have, if anything, higher values of meaningfulness. In Table 2 above, the small value of correlation between

[10] Using country-level data, Oishi and Diener (2014) also found that meaning in life was higher in poor nations than wealthy nations. But they attributed this to the fact that people in poor nations were more religious than those in wealthy nations.

[11] Though unreported, the Pearson product-moment correlation coefficients show more or less the same pattern as the Spearman's rank correlation coefficients in all tables.

meaningfulness and life satisfaction, 0.125, indicates that these two are substantially different measures of subjective wellbeing. Finally, life satisfaction, obtained from the residuals of the regression described in section 3.4, has a correlation coefficient of around -0.486 with the quality-of-life rankings, which is smaller than the value of -0.598 found in Oswald and Wu (2010).[12] Overall, the results in Table 2 above show that only meaningfulness and life satisfaction are significantly correlated with the quality-of-life rankings.

As shown in Equation 1, the three measures of state-level subjective wellbeing based on time use are averages of regression residual measures of affect or meaningfulness, using the weight based on activities and episode duration. Therefore, the variations across states in the three measures of subjective wellbeing based on time use could come from two sources: i) variations in activities and the duration of the activities, and ii) variations in affect and meaningfulness for the same episode, controlling for respondents' characteristics.[13] In an effort to discover the main source of the correlation between meaningfulness and the quality-of-life rankings found in Table 2 above, I have created two counterfactuals. First, to control for the differences in the activities, I have included 305 detailed activity dummies to the regressions. Also, to remove the effect of episode duration, I have divided the activity weight by the duration, because the activity weight variable in the ATUS WB Module, WUFNACTWTC, already contains the duration of the selected episode. Second, to control for variations in affect and meaningfulness residuals for the same episode among individuals, I assigned the overall average regression residuals of affect and meaningfulness to the same activity, while keeping the activities and duration unchanged.

Table 3 shows that when only the differences in time use are controlled for, while keeping the variations in affect and meaningfulness unchanged, the correlation coefficient between meaningfulness and the objective rankings becomes -0.363, somewhat smaller than the value in Table 2 above, but still statistically significant.[14]

Table 3. Spearman's Rank Correlation among state-level measures of wellbeing, controlling for individual characteristics, activities, and duration

	U-index	Net affect	Meaningfulness	Life satisfaction	Ranking
U-index	1				
Net affect	-0.739***	1			
Meaningfulness	-0.310**	0.290**	1		
Life satisfaction	-0.196	0.047	0.195	1	
Ranking	0.032	-0.087	-0.363***	-0.486***	1

Note: Only 50 states, excluding DC, are included because the quality-of-life ranking does not include DC.
* Statistically significant at the .10 level; ** Statistically significant at the .05 level; *** Statistically significant at the .01 level.

In Table 4 below, however, when only the variations in affect and meaningfulness residuals across individuals are removed, by using the overall average value of regression residuals of affect and meaningfulness, while keeping the activities and duration unchanged, the correlation

[12] When the state-level life satisfaction based on state dummies is used instead of the state-level average life satisfaction from the regression residuals, the correlation coefficient with the quality-of-of life rankings is -0.484.

[13] This is similar to the analysis of Knabe et al. (2010), who decomposed the difference in the experienced utility between unemployed and employed persons into two components: a saddening effect (differences in affect) and a time-composition effect (differences in time use).

[14] Because no such counterfactuals are possible, the state-level measures of average life satisfaction in Tables 3 and 4 above are the same as in Table 2 above.

coefficient between meaningfulness and the objective rankings, -0.202, decreases by about half of that in Table 2 above, and becomes insignificant.

Table 4. Spearman's Rank Correlation among state-level measures of wellbeing, controlling for individual characteristics, with the same affect and meaningfulness residuals for the same episode

	U-index	Net affect	Meaningfulness	Life satisfaction	Ranking
U-index	1				
Net affect	-0.961***	1			
Meaningfulness	0.153	-0.089	1		
Life satisfaction	-0.161	0.227	0.142	1	
Ranking	-0.102	0.053	-0.202	-0.486***	1

Note: Only 50 states, excluding DC, are included because the quality-of-life ranking does not include DC. * Statistically significant at the .10 level; ** Statistically significant at the .05 level; *** Statistically significant at the .01 level.

These results in Tables 3 and 4 above indicate that controlling for respondents' characteristics, those people living in states with better amenities tend to provide higher values for meaningfulness for similar activities than those living in states with poor amenities, but there is not much variation in time use across states.[15]

Given these findings, it would be interesting to examine whether better amenities tend to be associated with higher levels of subjective wellbeing, in particular, meaningfulness, for all activities across the board or for a few select activities only.[16] Based on the 17 first-tier major activity codes available in the ATUS, Table 5 below shows how various measures of subjective wellbeing by activity are correlated with the quality-of-life rankings, after controlling for individual characteristics. In Table 5 below, furthermore, I have also examined the Spearman's rank correlation coefficients between each of the direct responses to the four affect questions (pain, sadness, stress, and happiness) and the quality-of-life rankings. This is to investigate if the lack of correlation between the U-index/net affect and the quality-of-life rankings is because the U-index and net affect are transformations of the direct responses, and, as a result, may have measurement errors or lose valuable information available in the direct responses (Layard, 2009; Loewenstein, 2009).

In column 1 of Table 5 below, the number of observed episodes for each tier 1 activity category varies from 15 for "10 Government services & civic obligations" to 8,432 for "18 Traveling." Due to the small number of observed episodes, the regression and correlation analysis results are not available in Table 5 below for "09 Household services" and "10 Government services & civic obligations."

[15] Considering the findings in the literature that net state in-migration is an increasing function of positive quality-of-life factors (Cebula and Alexander, 2006), it is possible that the reason why people living in states with better quality of life tend to provide higher values for meaningfulness for similar activities is because of selective migration: those people who value meaningfulness are more likely to live in or move to those states with better quality of life.

[16] I am very grateful to one of the reviewers for suggesting this analysis.

Table 5. Spearman's Rank Correlation between state ranking and state-level measures of wellbeing, by activity, controlling for individual characteristics

Tier 1 time-use code & activities	(1) No. of episodes	(2) No. of states	(3) U-index	(4) Net affect	(5) Meaning -fulness	(6) Pain	(7) Sadness	(8) Stress	(9) Happiness
01 Personal care activities	205	41	-0.005	-0.155	-0.233	0.107	-0.100	0.044	-0.143
02 Household activities	6,534	50	0.051	0.100	0.010	0.079	0.003	0.089	0.243*
03 Caring for household members	1,969	50	0.491***	-0.282**	0.112	0.140	0.184	0.102	-0.277*
04 Caring for non-household members	362	47	-0.114	-0.058	-0.027	-0.030	-0.031	0.081	-0.037
05 Work & work-related activities	2,511	50	0.153	-0.223	-0.347**	-0.055	0.073	0.053	-0.367***
06 Education	175	39	0.006	0.192	-0.081	-0.069	0.151	-0.211	0.164
07 Consumer purchase	1,424	50	0.103	-0.250*	-0.410***	-0.006	0.063	0.038	-0.372***
08 Professional & personal care services	210	39	0.173	-0.081	0.118	0.088	0.004	0.015	-0.056
09 Household services	29	NA	NA	NA	NA	NA	NA	NA	NA
10 Government services & civic obligations	15	NA	NA	NA	NA	NA	NA	NA	NA
11 Eating & drinking	5,468	50	0.158	0.095	-0.118	0.136	0.194	0.038	0.144
12 Socializing, relaxing, and leisure	6,389	50	0.209	-0.177	-0.346**	0.343**	0.252*	0.163	-0.167
13 Sports, exercise, & recreation	571	49	0.160	-0.130	-0.042	0.022	0.325**	0.136	-0.063
14 Religious and spiritual activities	427	46	-0.133	0.118	-0.226	0.138	-0.142	-0.124	0.105
15 Volunteer activities	272	44	-0.041	0.161	0.104	0.109	0.246	-0.167	0.179
16 Telephone calls	363	47	0.080	0.001	-0.233	0.051	-0.076	0.036	0.010
18 Traveling	8,432	50	0.148	-0.081	-0.184	0.254*	0.011	0.119	-0.121
All activities	35,356	50	0.066	-0.144	-0.424***	0.146	0.095	0.047	-0.188

Note: Results are not available for 09 Household services and 10 Government services & civic obligations due to the small number of observed activities. * Statistically significant at the .10 level; ** Statistically significant at the .05 level; *** Statistically significant at the .01 level.

Even among the 15 remaining categories of activities for which the regression and correlation analysis results are available in Table 5 above, column 2 shows that only seven of them with the number of episodes greater than 1,000 cover all 50 states.[17] Except for sadness for "13 Sports, exercise, & recreation" in column 7, none of the remaining eight categories of activities with the number of episodes fewer than 1,000 are statistically significant, perhaps due to the small number of observed episodes.

There are a few interesting things to note in Table 5 above. First, the last row of Table 5 above shows that the correlation coefficients with the quality-of-life rankings are 0.146 for pain, 0.095 for sadness, 0.047 for stress, and -0.188 for happiness, and none of them are statistically significant. These results indicate that, in addition to the U-index and net affect, even the direct responses to the affect questions are not significantly correlated with the quality-of-life rankings. Second, it seems that better amenities tend to improve the meaningfulness of a few select activities only. In column 5 for meaningfulness, out of the seven categories of activities with the number of episodes greater than 1,000, only three of them are significantly correlated with the quality-of-life rankings: -0.347 for "05 Work & work-related activities," -0.410 for "07 Consumer purchase," and -0.346 for "12 Socializing, relaxing, and leisure."[18] Since the major activities with the two largest numbers of observed episodes—"18 Traveling" with 8,432 episodes and "02 Household activities" with 6,534—are not statistically significant, it is not the number of episodes that is behind the significant results. Third, even among other measures of subjective wellbeing that failed to show significant associations, when all activities are considered with the quality-of-life rankings, some of them display significant associations at the major activity level. For example, both the U-index and net affect based on "03 Caring for household members" are significantly correlated with the quality-of-life rankings, and so is the measure of pain based on "12 Socializing, relaxing, and leisure" in column 6. Interestingly, similar to the results in column 5 for meaningfulness, two measures of happiness based on "05 Work & work-related activities" and "07 Consumer purchase" are also significantly correlated with the quality-of-life rankings. These results suggest that although some of the measures of subjective wellbeing might not be informative indicators of the overall quality of life in all activities, they could still serve as useful gauges of the quality of life for some specific major activities. For example, the U-index and net affect could be used to measure the quality of life when caring for household members, and happiness could be used to measure the quality of life for work and shopping.

5. Discussion

In an effort to examine how well various measures of subjective wellbeing reflect the objective differences in quality of life, this paper has analyzed the relationship between the three measures of subjective wellbeing based on the 2010 ATUS WB Module—net affect, the U-index and meaningfulness—and the objective quality-of-life ranking of the 50 states in the United States. The results show that whereas the U-index and net affect are uncorrelated with the objective quality-of-life ranking of the 50 states in the United States, the measure of meaningfulness shows a significant correlation with the objective ranking. The reason for such a correlation between meaningfulness and the objective ranking is because people living in states with better quality of

[17] These seven activities—"02 Household activities," "03 Caring for household members," "05 Work & work-related activities," "07 Consumer purchase," "11 Eating & drinking," "12 Socializing, relaxing, and leisure," and "18 Traveling"—account for 93% (32,727 episodes) of the total number of episodes of 35,356.

[18] "12 Socializing, relaxing, and leisure" includes socializing and communicating with others; attending or hosting social events; relaxing and leisure, such as watching television, playing games, and reading for personal interest; and arts and entertainment other than sports.

life felt, controlling for their characteristics, more meaningfulness when engaged in similar activities than those living in states with poor amenities, not because time use varies substantially across states. Further analysis discovers that better amenities are associated with higher levels of meaningfulness for three select activities only: work, shopping, and leisure.

These empirical results certainly raise a few interesting questions. The first is whether the absence of significant correlation between the U-index and the quality-of-life ranking and between net affect and the quality-of-life ranking is because the U-index and net affect are relying on three randomly selected activities from a single day, which might be insufficient to provide enough information on respondents' subjective wellbeing. However, the fact that meaningfulness, another measure based on the same three randomly selected activities from a single day, is well correlated with the quality-of-life ranking, shows that those activities in the ATUS WB Module provide enough information on respondents' subjective wellbeing.

The U-index and net affect both measure the presence of pleasure and the absence of displeasure, which corresponds to affective (or hedonistic) views of subjective wellbeing, while meaningfulness and life satisfaction measure a cognitive state or a positive attitude towards one's life, which corresponds to cognitive (or attitudinal) views of subjective wellbeing (Angner, 2010; Brülde, 2007). Then the difference in correlations found in this paper might be because of the fact that both the U-index and net affect are rather affective (or hedonistic) measures of subjective wellbeing, while both meaningfulness and life satisfaction are rather cognitive (or attitudinal) measures. However, further research is needed to understand why there are such differences, depending on the nature of subjective wellbeing measured.

Krueger, Kahneman, Schkade, et al. (2009) suggested development of NTA based on the U-index to compare the wellbeing of groups of individuals, countries, and eras. However, the finding in this paper that, except for caring for household members, the U-index is not correlated with the objective differences in the quality of human lives across states, raises concerns about using it to monitor progress in overall quality of life beyond simple measures of income.

Between the two cognitive measures of subjective wellbeing found to be correlated with the objective quality-of-life ranking, meaningfulness, unlike the measure of global life satisfaction, is not likely to be influenced by contexts and moods, and also takes the duration of the life episode into account. In this sense, meaningfulness seems to be a better and reliable indicator of subjective wellbeing.

This is the first study that has used the newly available 2010 ATUS WB Module to examine the external validity of the measures of subjective wellbeing in the United States. Because the findings in this paper are based only on US data, they might not generalize to other countries. As more and more countries collect data on time use and subjective wellbeing, it would be fruitful to examine whether the same pattern of correlation is observed between the measures of subjective wellbeing and objective differences in quality of life.

Authors

Younghwan Song
Union College
songy@union.edu

Publishing Timeline

Received 2 September 2016
Accepted 21 April 2017
Published 9 June 2017

References

Angner, E. (2010). Subjective well-being. *Journal of Socio-Economics, 39*(3), 361-368. http://dx.doi.org/10.1016/j.socec.2009.12.001

Brülde, B. (2007). Happiness theories of the good life. *Journal of Happiness Studies, 8*(1), 15-49. http://dx.doi.org/10.1007/s10902-006-9003-8

Cebula, R. J., & Alexander, G. M. (2006). Determinants of net interstate migration, 2000-2004. *Journal of Regional Analysis and Policy*, *36*(2), 116-123.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Demidenko, E. (2004). *Mixed models: Theory and applications.* Hoboken, NJ: Wiley. https://doi.org/10.1002/0471728438

Di Tella, R., & MacCulloch, R. (2006). Some uses of happiness data in economics. *Journal of Economic Perspectives, 20*(1), 25-46. http://dx.doi.org/10.1257/089533006776526111

Dolan, P., & Metcalfe, R. (2012). Measuring subjective wellbeing: Recommendations on measure for use by national governments. *Journal of Social Policy, 41*(2), 409-427. http://dx.doi.org/10.1017/S0047279411000833

Frey, B. S., & Stutzer, A. (2002). What can economists learn from happiness research? *Journal of Economic Literature, 40*(2), 402-435. http://dx.doi.org/10.1257/002205102320161320

Gabriel, S. A., Mattey, J. P., & Wascher, W. L. (2003). Compensating differentials and evolution in the quality-of-life among U.S. states. *Regional Science and Urban Economics, 33*(5), 619-649. http://dx.doi.org/10.1016/S0166-0462(02)00007-8

Kahneman, D., & Krueger, A. B. (2006). Developments in the measurement of subjective well-being. *Journal of Economic Perspectives, 20*(1), 3-24. http://dx.doi.org/10.1257/089533006776526030

Kahneman, D., Krueger, A. B., Schkade, D. A., Schwarz, N., & Stone, A. A. (2004a). Toward national well-being accounts. *American Economic Review, 94*(2), 429-434. http://dx.doi.org/10.1257/0002828041301713

Kahneman, D., Krueger, A. B., Schkade, D. A., Schwarz, N., & Stone, A. A. (2004b). A survey method for characterizing daily life experience: The day reconstruction method. *Science, 306*(5702), 1776-1780. http://dx.doi.org/10.1126/science.1103572

Kahneman, D., Krueger, A. B., Schkade, D. A., Schwarz, N., & Stone, A. A. (2006). Would you be happier if you were richer? A focusing illusion. *Science, 312*(5782), 1908-1910. http://dx.doi.org/10.1126/science.1129688

Knabe, A., Rätzel, S., Schöb, R., & Weimann, J. (2010). Dissatisfied with life but having a good day: Time-use and well-being of the unemployed. *Economic Journal, 120*(547), 867-889. http://dx.doi.org/10.1111/j.1468-0297.2009.02347.x

Krueger, A. B. (2007). Are we having more fun yet? Categorizing and evaluating changes in time allocation. *Brookings Papers on Economic Activity, 2,* 193-218. https://www.brookings.edu/wp-content/uploads/2007/09/2007b_bpea_krueger.pdf

Krueger, A. B., Kahneman, D., Fischler, C., Schkade, D. A., Schwarz, N., & Stone, A. A. (2009). Time use and subjective well-being in France and the U.S. *Social Indicators Research, 93*(1), 7-18. http://dx.doi.org/10.1007/s11205-008-9415-4

Krueger, A. B., Kahneman, D., Schkade, D. A., Schwarz, N., & Stone, A. A. (2009). National time accounting: The currency of life. In A. B. Krueger (Ed.), *Measuring the subjective well-being of nations: National accounts of time use and well-being* (pp. 9-86). Chicago: University of Chicago Press. http://www.nber.org/chapters/c5053.pdf

Layard, R. (2009). Well-being measurement & public policy. In A. B. Krueger (Ed.), *Measuring the subjective well-being of nations: National accounts of time use and well-being* (pp. 145-154). Chicago: University of Chicago Press. http://www.nber.org/chapters/c5058.pdf

Loewenstein, G. (2009). That which makes life worthwhile. In A. B. Krueger (Ed.), *Measuring the subjective well-being of nations: National accounts of time use and well-being* (pp. 87-106). Chicago: University of Chicago Press. http://www.nber.org/chapters/c5054.pdf

Oishi, S. & Diener, E. (2014). Residents of poor nations have a greater sense of meaning in life than residents of wealthy nations. *Psychological Science*, *25*(2), 422-430. http://dx.doi.org/10.1177/0956797613507286

Oswald, A. J., & Wu, S. (2010). Objective confirmation of subjective measures of human well-being: Evidence from the U.S.A. *Science, 327*(5965), 576-579. http://dx.doi.org/10.1126/science.1180606

Robson, K., & Pevalin, D. (2016). *Multilevel modeling in plain language.* London: Sage.

Schwarz, N., & Strack, F. (1999). Reports of subjective well-being: Judgmental process and their methodological implications. In D. Kahneman, E. Diener, & N. Schwarz (Eds.). *Well-being: The foundations of hedonic psychology* (pp. 61-84). New York, NY: Russell Sage.

Stiglitz, J. E., Sen, A., & Fitoussi, J. (2009). *Report by the Commission on the Measurement of Economic Performance and Social Progress*. http://graphics8.nytimes.com/packages/pdf/business/Stiglitzreport.pdf

White, M. P., & Dolan, P. (2009). Accounting for the richness of daily activities. *Psychological Science, 20*(8), 1000-1008. http://dx.doi.org/10.1111/j.1467-9280.2009.02392.x

Appendix

Table A1. Quality-of-life ranks by state, 1990

State	Quality-of-life rank	State	Quality-of-life rank
Alabama	26	Montana	4
Alaska	23	Nebraska	16
Arizona	20	Nevada	29
Arkansas	3	New Hampshire	43
California	42	New Jersey	47
Colorado	34	New Mexico	14
Connecticut	32	New York	50
Delaware	30	North Carolina	17
Florida	10	North Dakota	6
Georgia	36	Ohio	33
Hawaii	38	Oklahoma	21
Idaho	5	Oregon	22
Illinois	48	Pennsylvania	35
Indiana	44	Rhode Island	12
Iowa	15	South Carolina	18
Kansas	19	South Dakota	2
Kentucky	24	Tennessee	28
Louisiana	8	Texas	25
Maine	9	Utah	39
Maryland	45	Vermont	13
Massachusetts	27	Virginia	31
Michigan	49	Washington	41
Minnesota	46	West Virginia	11
Mississippi	7	Wisconsin	37
Missouri	40	Wyoming	1

Source: Table 3 of Gabriel, Mattey, and Wascher (2003, pp. 635-636).

Table A2. Descriptive statistics of individuals, unweighted

Variables	Mean	Minimum	Maximum
Unpleasant	0.157	0	1
Net affect	3.340	-6	6
Meaningful	4.280	0	6
Age	48.020	18	85
Female	0.564	0	1
White	0.666	0	1
Black	0.142	0	1
Asian	0.033	0	1
Hispanic	0.141	0	1
Native American	0.007	0	1
Other	0.012	0	1
Less than some high school	0.037	0	1
Some high school	0.082	0	1
High school	0.267	0	1
Some college	0.285	0	1
College or more	0.328	0	1
Married	0.509	0	1
Partner	0.034	0	1
Single	0.458	0	1
Self-employed	0.073	0	1
Unemployed	0.064	0	1
Not in labor force	0.309	0	1
Employed	0.553	0	1
Interacting with anyone	0.555	0	1
Family income missing	0.042	0	1
Family income less than $10,000	0.068	0	1
Family income $10,000-$19,999	0.117	0	1
Family income $20,000-$34,999	0.174	0	1
Family income $35,000-$49,999	0.134	0	1
Family income $50,000-$74,999	0.180	0	1
Family income $75,000-$99,999	0.111	0	1
Family income $100,000-$149,999	0.101	0	1
Family income $150,000 and over	0.071	0	1
Holiday	0.016	0	1
Sunday	0.259	0	1
Monday	0.097	0	1
Tuesday	0.103	0	1
Wednesday	0.102	0	1
Thursday	0.098	0	1
Friday	0.098	0	1
Saturday	0.242	0	1
Number of observations		12,164	