Extremely Preliminary and Incomplete

Shift Work and Participation in Social, Recreational or Exercise Activities

Anne E. Polivka
Bureau of Labor Statistics

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1.Introduction

Shift work has been an established employment practice for decades. Initially shift work arose to meet the demands of the continuous manufacturing production process in the early 1900's. Shift work's prevalence and acceptance was enhanced during 1940's when shift workers were needed to meet war-time production requirements (Dunham, 1977). And more recently, the transition of the U.S. economy towards a 24-7 service economy, combined with the increase in women's labor force participation, has maintained the demand for shift workers (Beers, 2000).

In the 1960's and 1970's workers' response to shift schedules was the subject of considerable research. Much of this case study research focused on the physical effects of working a non-day shift. Extensive research was conducted on the effects of shift work on sleeping and eating problems. (Kleitman, 1963; Bryden and Holdstock, 1973; Dunham, 1977; Zedeck, Jackson and Summers; 1983) To a lesser extent, these 1960's studies also examined the effect of shift work on individuals' social interactions (Mott, Mann, McLoughlin, and Warwick; 1965). In the 1980's studies of shift workers concentrated on the effect of shift work on family dynamics (Staines and Pleck,1984; and Staines and Pleck, 1986) and the division of labor within families (Presser, 1994). Several of these studies examined the effect of shift work on the probability of divorce (White and Keith, 1990), the effect of shift work on amount of household work done by various family members (Presser, 1994), and the use of shift work to meet the child care needs of families with young children (Presser, 1988 and Presser 1989). Recently, however, there has been relatively little analysis of the effects of working a non-day schedule on the activities of workers. What studies do exist have concentrated on the demographic characteristics of shift workers, comparisons of the incidence of shift work across countries, and indirect assumptions about how shift workers are spending their time (Hamermesh, 1996; Hamermesh, 1999; Presser 1995, and Presser, 2005).

The American Time Use Survey provides a unique opportunity to examine, across a wide array of activities, how individuals on different types of shifts spend their time on the days they worked. Using American Time Use data in combination with data from a 2004 supplement to the Current Population Survey on workers schedules, it also is possible to examine how workers on different types of shifts use their time on days that they do not work, and to explore whether the type and duration of activities of spouses married to evening and night workers differ from those married to day workers.

Using this data it will be possible to analyze whether night and evening workers spend less time sleeping than do day workers, to estimate whether non-day workers spend less time eating than day workers, to examine the effect of being an evening or night worker

on the amount of time spent watching television, and to estimate whether being a non-day worker affects the amount of time individuals spend participating in sports or exercising. Differences in the incidence and amount of time spent in these activities could provide insights into the effect of being a non-day worker on individuals' physical health.

The complete enumeration of individuals' activities throughout the day in the American Time Use Survey (ATUS) also makes it possible to examine whether non-day workers spend more time in community activities such as attending a social, artistic, or sporting event; or volunteering. The inclusion of information in the ATUS about who an individual was with when engaged in an activity, in combination with the extensive recording of various types of activities, also permits analysis of whether being a shift worker affects the amount of time an individual interacts with others. For instance, a comparison of the amount of time day workers versus non-day workers spent e-mailing or on the phone can be constructed from the ATUS. In addition, using the information about who an individual was with allows estimates across the various types of shift workers of the amount of time individuals spent alone, compared with the amount of time individuals spent with friends, or family members. Finally, the information about who an individual was with also permits an examination of the amount of time parents and married non-day workers spent with their children or spouse compared to day workers.

Differences in the amount of time spent in community type activities and interacting with others can shed light on the unattractiveness and costs of being a non-day worker – the disamenity of being an evening or night shift worker. In turn, the documentation of the existence and extent of the costs of being a non-day worker has implications for the economic consequences of being a shift worker, and the social policies that might be adopted to accommodate these workers. For instance, it has long been assumed based on standard economic modeling that non-day workers should receive a premium for working hours that are outside of the standard social norm (Alexander and Spraos, 1956; and Kostiuk; 1990). It also has been documented that at least recently low-skilled workers are more likely to work non-day shifts than are higher skilled workers (Beers, 2000; and Hamermesh, 1996). If, however, the disamenity of working a non-day shift is small, either because working a non-day shift does not affect individuals' ability to conduct daily activities (i.e. 24-hour stores permit individuals to shop any time of the day) or because non-day workers are able to interact with others in a similar way as day workers, then the premium for working non-standard hours might be minimal. In addition, if modern technology such as the internet or VCR recording has decreased the fixed, temporal aspects of various activities, while at the same time there has been a rise in the provision of services in non-standard hours; then the premium for working a non-day shift may have fallen over time. Given that since the early 1970's non-day workers have tended to be low skill, a decrease in the disamenity of working a non-day shift could have contributed to the rise in earnings inequality (as the premium low skilled evening and night workers might otherwise have received would have declined). If on the other hand, the activities of non-day workers and the time they interact with others differ substantially from day workers, then to the extent that night and evening workers are disproportionately low skilled, the cost of being a shift worker and the difficulty of coordinating activities is disproportionately being born by low income households.

Consequently, if the cost of being a non-day worker is established to exist and to be relatively large, then for equity reasons, consideration of proposals to extend the penalties in the U.S. over time legislation to cover when in the day individuals work (Hamermesh, 2002) and proposals for the more extensive support of the provision of affordable formal childcare (Presser, 1994) may be warranted.

2. Data

The ATUS interviews selected individuals from a subset of households that have completed their participation in the CPS. The CPS is a nationally representative survey of approximately 60,000 households collected by the U.S. Census Bureau under the auspices of the Bureau of Labor Statistics. Every month the CPS collects labor market information on approximately 110,000 individuals age 16 and older along with a wide variety of demographic and job related information. Households that are selected for the CPS are eligible to be interviewed for a total of 8 months with the first four months that a household is eligible to be interviewed separated from the second four months that a household is eligible to be interviewed by an 8 month "rest period" (household are scheduled to be interviewed for four consecutive months, are not scheduled for the next 8 months and then are scheduled to be interviewed for four more consecutive months). Each month a new group of households start their schedule of interviews and the group that received their eighth interview the previous month is retired. Given this rotation pattern, in each month one eighth of the households will be receiving their first interviews; one eighth will be receiving their second interviews and so on. The CPS uses a multi-stage stratified sample design that usually requires the use of weights when conducting analysis. In order to obtain more reliable estimates of state unemployment, individuals residing in states with smaller populations have a higher probability of being selected for the CPS than do individuals residing in larger states.

Since the ATUS sample is drawn from the CPS, it has the same universe as the CPS. However, several modifications to the CPS sample design were made to address the needs of the ATUS. Specifically, in the first stage of selection for the ATUS the CPS over sample in the less populated States was reduced. This over sample was reduced because the goal of the ATUS was only to obtain nationally representative estimates. In the second stage of ATUS selection, to improve the precision of ATUS estimates for Black and Hispanics and the measures of time spent in child care, based on the characteristics of CPS respondents, households with Hispanic or non-Hispanic black members were over sampled, as were households with children. Since the ATUS only interviews one person per household, in the third stage of selection, an eligible person from each household was randomly selected from the list of household members age 15 and older. All adults within a household have the same probability of being selected for the ATUS. In 2003, approximately 3,245 households per month that had completed eighth and final interview CPS interview 2 months earlier were selected for the ATUS. The actual ATUS interviews occurred 2 to 5 months after the CPS interview. Starting in 2004, approximately 2,250 households per month were designated as eligible to receive the ATUS. To increase the precisions of the measure of time spent on activities on

weekends, the sample was evenly split between weekends and weekdays. This means that 10 percent of the sample was allocated to be interviewed about each week day, and 25 percent was allocated to each weekend day. During 2003, ATUS collected information from approximately 1,730 people per month, while in 2004 ATUS information was collected from approximately 1,160 individuals. The stratified sample design in combination with the differential allocation of individuals across days of the weeks means that to obtain nationally representative estimates from ATUS, it is necessary to use the sample weights.

ATUS respondents are interviewed only once, about how they spent their time on the previous day, where they were, and who they were with. The respondent is asked to take the interviewer through his or her day from 4 AM the previous day through 4 AM of the day of the interview day. The respondent describes each activity that was engaged in, which the interviewer either records verbatim or, for a limited set of common activities, records using a precoded entry. Activities are subsequently coded into over 400 detailed activity categories. For each episode of an activity the interviewer collects either the ending time of the activity or the duration of the activity. Only an individual's primary activities are recorded, information about what else a respondent was doing during an activity (secondary activities) is not recorded[1]. ATUS collects information on who was in the room or accompanying individuals during each activity, unless the activity was sleeping, grooming or working at a job. Interviewers also record where the respondent was during each activity, except for sleeping, grooming and personal activities.

The ATUS also collects labor force information that is similar to that collected in the CPS, including information about individuals' employment status in the most recent 7 day period, the industry and occupation in which individuals worked, and individuals' usual hours of work per week if they were employed. For the respondent's spouse or unmarried partner, the ATUS collects more rudimentary information than the CPS. The ATUS only collects information about whether an individual's spouse or partner was employed or not, and the total number of hours usually worked per week by the spouse or unmarried partner. Since the ATUS is collected from households that have completed the CPS, demographic information and job characteristics for the respondent and household members are available. Much of this information is carried forward from the earlier CPS interview, although some of it is updated during the ATUS interview. (For more information about the ATUS survey design and data collection refer to the American Time Use Survey User's Guide). ATUS's use of households that have completed the CPS also means that a subset of ATUS interviews can be matched to a subset of interviews from a specific monthly CPS and to data collected in supplements to the monthly CPS. On average ATUS interviews occurred 2 months after the household had completed its last CPS interview.

One of the CPS supplements that a sub-sample of ATUS interviewers can be linked to is the May 2004 CPS supplement. In this supplement individuals age 16 and older, who were employed were asked questions about their work schedules and whether they

[1] The only exception is child care. If someone was involved in child care as a secondary activity this is recorded.

worked at home. Questions about individuals work schedules have been asked as a supplement to the CPS on a periodic bases since the 1970's. Recently the supplement has been administered every 3 to 4 years, with the most recent supplement prior to the May 2004 supplement being conducted in May 2001. Included in the May 2004 supplement were questions about what time of day individuals began working at their main jobs most days, and what time of day individuals stopped working at their main job on most days. Individuals were also asked to report whether they or the person they were reporting for usually worked a day time schedule or some other schedule such as an evening shift, a night shift, a rotating shift, a split shift, an irregular schedule or some other shift. Information about how individuals classified their shift is more extensive than individuals start and stop times because specific start and stop times were not recorded for individuals who said that these times varied. Using either individuals' start and stop times of work or respondents' own classification of individuals' work shifts, national estimates of the prevalence of various types of shift workers can be constructed.

3. Comparison of CPS and ATUS Estimates of Shift Workers

3.1 Aggregate Estimates

3.1.1 Categorization of Individuals' Work Shifts

Within the ATUS, only individuals who worked on the day about which they were interviewed can be classified into various work shifts. Using the ATUS information about when throughout the day individuals worked and the duration of their work spells individuals can be classified as day, evening or night shift worker in a variety of ways. For instance, individuals could be classified as day workers if all of their work hours were between 6 in the morning and 6 at night. Alternatively, individuals could be classified based on when their longest spell of work occurred or individuals could be classified based on when they worked the majority of their hours. Consistent with previous research, (Presser, 1994) when using just ATUS information, for this research, individuals are classified based on when they worked the majority of their hours. Specifically, individuals for whom one half or more of their work hours were between 8 AM and 4 PM were classified as day workers, individuals for whom one half or more of their work hours were between 4 PM and midnight were classified as evening workers, and individuals for whom one half or more of their work hours were between midnight and 8 AM were classified as night workers.[2] Future research will explore alternative classification schemes based on starting and stopping times of work...

[2] In the rare instance when individuals did not work at least half of their hours in one of these time intervals, these individual were classified based on the interval that included most of the workers' hours. In the even rarer instance that a worker's hours were evenly split between two of these three intervals (e.g. one half of an individual's work hours were between 8 AM and 4 PM, and one half were between 4 PM and midnight) individuals were classified based on their starting or stopping time. Specifically for individuals who worked half of their hours between 8 AM and 4 PM and half between 4 PM and Midnight, if their stop time was after 9 PM –more than half way into the evening shift--, they were classified as evening workers. Individuals who worked exactly half of their hours between Midnight and 8 AM and 8 AM and 4 PM who were recorded as working at 4 AM were classified as night workers based on the argument that if they had been observed working at 3:59 they would have been classified as night workers. In the even rarer instance that a worker's hours were evenly split between the three time intervals, the

In the May 2004 CPS supplement, individuals could also be classified into shifts based on their starting and stopping times on most days and what time interval the majority of these work hours occurred. To be most consistent with the classification schemed used for ATUS one may want to just use information on workers' starting and stopping times. However, approximately 22 percent of people in the CPS supplement are missing these times because it was reported that their starting time, their stopping time or both varied. To avoid potential bias that could be introduced by the exclusion of those who said that their starting or stopping times varied, but to be as consistent with the ATUS classification as possible, a combination of information was used to classify individuals into work shifts based on the CPS supplement information. Specifically, similar to the ATUS classification, if both a starting and a stopping time were reported for an individual, then this individual was classified based on the time interval in which the majority of the individual's work hours fell. If an individual's starting or stopping time were reported to vary or were missing, the individual was classified based on the respondent's report of whether the individual usually worked a day time shift, an evening shift, a night shift, a rotating shift, a split shift or an irregular shift. As a point of comparison, using the CPS supplement data the proportion of workers classified in a day, evening, or night shift based on when the majority of hours are worked for just those who had starting and stopping times recorded, and the proportion of workers classified into the various work shifts based solely on respondents classification of their shifts are also estimated.

For both the ATUS and the CPS supplement, analysis was restricted to wage and salary workers; self employed workers were excluded. Self-employed workers were excluded since it is assumed that at least a proportion of these workers have control over and flexibility about when in the day they work. The ATUS and CPS supplement analysis also was restricted to those who are 16 years old or older and single job holders. Individuals who had more than one job during the CPS reference week for the CPS data or worked at more than one job on the day about which they were interviewed in the ATUS were excluded because it was thought that the activities of those who worked at more than one job on the diary day in the ATUS might exhibit significantly different behavior than did those who only worked at one job. Consequently, the inclusion of those who worked at more than one job might distort the analysis of shift workers' activities.

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worker was classified by visual inspection of the worker's start and stop times and the duration of episodes of work. The ATUS collects the ending time of the last event beyond 4 AM the morning of the interview. To have a consistent time frame for individuals, the analysis of individuals' use of time in the ATUS usually is restricted to the 24 hour period between 4 AM and 4 PM. However, in classify individuals as day, evening or night workers to avoid issues of potential asymmetry in work duration, for individuals whose last activity was recorded as working, the work event was allowed to extend beyond 4 AM of the interview day for classification as a day, evening or night worker. The truncation of individuals work hours at 4 AM of the interview day did not substantially alter the proportion of workers classified as day, evening or night workers. In this paper it was decided to classify workers based on when they worked the majority of their hours as opposed to their start and stop times due to issues with regard to classify individuals who first record activity at 4 AM on the diary day was work. As noted in the text, alternative classification schemes will be explored in future research.

In the ATUS to avoid classifying individuals based on additional activities that they engaged in related to work, only the hours that individuals worked at their place of employment were included in the determination of whether an individual was a day, night or evening worker. Individuals' work activities that were not conducted at their place of employment (such as high school teachers grading papers at home) were excluded because it was felt that individuals had more control over when these hours were worked, and the inclusion of these hours might bias the classification of workers into various shifts. To increase the sample size, for the ATUS estimates of the proportion of workers in the various work shifts and the comparison of the activities on the day individuals worked across these various shifts, data from the 2003 and the 2004 were pooled together. Using these criteria there were 8,322 observations used in the ATUS estimates and 49,868 observations used in the May 2004 CPS supplement estimates.

3.1.2 Estimates of the Proportion of Workers in Various Shifts

Table 1 contains estimates of the proportion of workers classified as day, evening or night workers generated using the ATUS data along with proportion of workers in the various shifts generated using the CPS supplement data and the three classification schemes outline above. In addition to verifying the validity of the estimates from the two data sources, comparison of the ATUS estimates to the CPS estimates place the ATUS estimates within a historical context and is important for subsequent analysis presented in this paper that uses ATUS data for days individuals did not work and ATUS data collected for an individual's spouse that is linked to workers shift classification in the May supplement. In addition, ATUS classification of workers based on the hours worked in the interview day is important because the ATUS data collected for an individual may not be typical of any specific individual's normal work day. However, a high concordance in aggregate estimates and verification of the classification of a subset of individuals who worked on their ATUS interview day and received the May supplement provides added assurance of the representativeness of the analysis of how shift workers spent their day based on ATUS data.

Considering differences in the data sources and classification schemes, the estimates of the proportion of workers in various shifts show remarkable consistency between the ATUS and the CPS supplement. Using the combined CPS classification scheme that relied on starting and stopping times when available to determine when the majority of hours were worked, and respondents classification of a worker's shift when times were not available, it is estimated that 82.3 percent of wage and salary workers were day workers, 8.8 percent were evening workers, 3.24 percent were night workers and 5.70 percent worked some other shift such as a split, rotating or irregular shift. In comparison using the ATUS data and a classification schemed based on when the majority of a worker's hours occurred on the day that individuals worked, 83.6 percent of wage and salary workers were classified as day workers, 10.9 percent were classified as evening workers and 5.5 percent were classified as night workers. A comparison within the CPS estimates of the CPS classification scheme using only respondents' report of their shift classification and the CPS classification scheme that only used respondents' report of workers shift classification when starting and stopping times were not available indicates

that using workers starting and stopping times when available had the largest effect in terms of a percentage increase on evening workers. Specifically, in the CPS classification that relied just on respondent's classification of a worker's shift, 7.7 percent were classified as "Other" (split, rotating or irregular) and 6.8 percent were classified as evening workers, while 82.4 percent were classified as day workers, and 3.1 percent were classified as night workers. When workers starting and stopping times were used in combination with respondents' own classification when times were not available, it was estimated that 8.8 percent of wage and salary workers were evening workers, while the proportion classified as day and night workers, 82.3 percent and 3.2 percent respectively were much closer to the estimates based only on respondents' own classification. Some of these differences could be due to the fact that those who were reported to work irregular schedules are much more likely to work during times that would also classify them as evening workers, but some of the difference also could be due to respondents having a different interpretation of what constitutes an evening shift compared to how they would be classified based on when they worked the majority of their hours.[3]

Examination of workers' classification using CPS supplement data based just on individuals for whom starting and starting times are available indicate that there may be some biases introduced if one bases estimates just on these workers. Using just workers for whom starting and stopping times were reported in the CPS it was estimated that 86.7 percent of wage and salary workers were day workers compared to between 82.3 and 83.6 percent of wage and salary workers using the other CPS classification schemes and the ATUS data. It is possible, however, again that some of the differences between the CPS estimates based just on starting and stopping times and the other CPS estimates may be due to differences in interpretation of day, evening and night shift. Additional analysis will be undertaken in the future to more fully investigate the differences in classification within the CPS.

3.1.3Comparison Between the CPS and ATUS of the Characteristics of Workers Classified in Various Shifts

Even though the aggregate distribution of workers across the various shift categories is fairly similar between the ATUS and the CPS, there still could be differences between the ATUS and the CPS in the composition of workers in the various shift categories. Therefore, to further verify the ATUS and CPS estimates, the demographic and job characteristics of workers in the various shift categorizations were estimates for both the ATUS categorization and the CPS categorization that used workers starting and stopping times when available and respondents' own classification otherwise. In addition to verify the estimates, examination of these characteristics will extend our knowledge about shift workers into 2004.

Examination of the characteristics of shift workers in the CPS and the ATUS presented in Table 2 indicates that there is remarkable consistency in the characteristics of shift

[3] Visual inspection of the data revealed that for a few of the incongruent classification, there may have been confusion over AM and PM.

workers from the two data sources. For example, in both the CPS and the ATUS non-day workers are disproportionately male and black, with night workers having the highest representation of these two groups. Evening workers in both the CPS and the ATUS are disproportionately Hispanic, with the estimated proportions being extremely close in both the ATUS and the CPS. The proportion of those classified as night workers who are in Hispanic is less similar between the CPS and the ATUS, however.

Consistent with previous research, non-day workers are less educated than day workers in both the CPS and the ATUS, with evening workers being particularly likely to have less than a high school diploma. The lower education level of evening workers may be related to the less established finding that in both the CPS and the ATUS, evening workers are much more likely to be enrolled in school than are either day or night workers. Restricting school enrollment to those between the ages of 16 and 25, 22 percent of those classified as evening workers in the ATUS were enrolled in school, while 26 percent of evening workers in the CPS said that they were currently attending school. If the CPS restriction that only individuals less than 24 year olds can be classified as enrolled in school (because individuals in this age range are the only ones asked the question in the CPS), is removed then 26 percent of those classified as evening in the ATUS were enrolled in school. The high percentage of evening workers who were attending school is in contrast to the 6 percent of all workers in both the ATUS and the CPS who were estimated to be enrolled in school at the time of their interview under the CPS definition. The high school enrollment rate of evening workers corresponds with the higher than average proportion of evening workers who worked part-time and the higher concentration of evening workers in the younger age categories that was observed in both the ATUS and the CPS.

Perhaps partially related to the lower education level and the higher incidence of working part time amongst evening workers, and to a lesser extent night workers, both evening and night workers were estimated to live in households with lower overall household income. Approximately 56 to 57 percent of day workers in the ATUS and the CPS respectively lived in households whose income was $50,000 or more compared to only 42 to 43 percent of evening workers, and 40 to 43 percent of night workers.

The industry and the occupational distribution of workers across the various shifts also were extremely similar between the ATUS and the CPS. In both the ATUS and the CPS night workers were heavily concentrated in manufacturing and to a less extent the transportation and utilities industry, while evening workers in both the ATUS and the CPS were disproportionately concentrated in retail trade. With regard to the occupational distribution in both the ATUS and the CPS non-day workers were under represented in the skill occupations such as management, business, and financial occupations; and professional and related occupations, and they were over represented in the lower skilled occupations.

The only exception to the strong consistency of the characteristics of shift workers in the ATUS and the CPS was related to some of the family characteristics. In both the CPS and the ATUS non-day workers were less likely to be married than were day workers,

with evening workers being particularly less likely to be married. The proportion of workers in the various shifts who had at least one child in the household was not as strongly consistent between the ATUS and the CPS as were other characteristics. The discrepancies in the proportion of workers in the various shifts who have a child, however, may not be as related to differences in shift classification as much as it is related to differences the overall composition of workers in the ATUS and the CPS with regard to whether there is a child in the household. Specifically, a higher proportion of individuals in the ATUS who worked on their interview day had a child in the household than did individuals in the CPS who worked during the reference week (44.6 percent in the ATUS versus 36.1 percent in the CPS).

Overall the findings about the characteristics of workers in various shifts from the ATUS and the CPS are in accord with previous research. Non-day workers tend be younger, less skilled, poorer and more likely to be black than are day workers. More important for the goals of this paper, the characteristics of workers classified as day, night or evening workers are in the ATUS compared to workers classified in these categories in the May 2004 CPS supplement are very similar. The similarity of the characteristics of workers in these various shift categories adds assurance that workers in the ATUS are correctly classified into these shifts.

3.2 Comparison of Selected Individuals' Shift Classification in the CPS and the ATUS

As an additional verification of the classification of workers in various shifts, it is possible for a select set of individuals who obtain both the ATUS and the CPS to be matched. The interviewing schedule for households in the CPS combined with the fact that a subset of CPS households become eligible for the ATUS after the completion of their last CPS interview, means that those employed individuals who were in their fourth through eighth monthly CPS interview in May 2004 who subsequently answered the ATUS can have their ATUS and CPS shift classification compared. In addition, the ATUS asks individuals who said they worked in the previous seven days if they had the same employer at the time of the ATUS interview as they reported having in their last CPS interview. Restricting the analysis to those who said that they did not change employers, increases the probability that the ATUS shift classification should match the CPS classification. Once the criterion that individual could not have changed an employer was imposed, there were 871 individuals who answered the ATUS that could be matched back to the May 2004 supplement.

Table 3 contains the distribution of how workers in the various CPS shift classifications were classified in the ATUS on the day that they worked. Table 3 contains estimates both for those who were classified in the CPS using workers reported starting and stopping times in May when available, combined with respondents classification of workers' shifts when the starting and stopping times were not available, and estimates for those who were classified just using CPS starting and stopping times. (The size of the sample when the analysis is restricted to just those who provide starting and stopping times in the CPS is 711. All of the distributions generated to examine the consistency of individuals classification are unweighted) The estimates in Table 3 indicates a large

degree of consistency for those classified as day workers or night workers in the CPS compared to how they were classified in the ATUS. Almost 94 percent of those who were classified as day workers in the CPS using the combination of times and respondents own categorization were classified as day workers using the ATUS data and a classification scheme based only on when individuals worked the majority of their hours. Almost 96 percent of those classified as day workers in the CPS when the sample is restricted to just those who provide both starting and stopping times were classified as day workers in the ATUS. Similarly, more than 86 percent of workers classified as night workers in the CPS using the combination of times and respondents own categorization were classified as night workers using the ATUS data, while almost 89 percent of those classified as night workers based only on workers who reported starting and stopping times in the CPS were classified as night workers using ATUS data. The classification of evening workers was less consistent. Only about 56 percent of those classified as evening workers in the CPS using either classification scheme were classified as evening workers in the ATUS using a classification scheme based on when the majority of an individual's hours were worked. Visual inspection of some of the individuals who have discrepant evening day classifications indicate, however, that at least some of this inconsistency is related to different interpretation of what constitutes an evening shift embodied in the classification schemes. For example, individuals who work extremely long hours who started later in the day might be classified as evening workers, because the majority of their hours fell between 4 pm and midnight, but those same individuals might consider themselves day workers. Also individuals who worked part time in an the afternoon might be classified as evening workers depending on when they started and stopped, but these same individuals might classify themselves as day workers. As noted above, additional classification schemes will be utilized in future research, and the discrepancy between individuals' CPS and ATUS classification schemes will be investigated further. In general, however, the similarity in the aggregate estimates of workers in the various shifts in the CPS and the ATUS, combined with the high accord between the CPS estimates and the ATUS estimates of the characteristics of workers in the various shifts, and the relatively high level of agreement between workers classified as day and night workers in the CPS and how these same workers classification in the ATUS, indicates that using ATUS data along with a classification scheme based on when individuals worked the majority of their hours provides a feasible way to distinguish between workers on various shifts.

4. Comparison of Time Spent in Activities on a Work Day of Day, Evening and Night Shift Workers

Table 4 contains the average amount of time within the 24 hour period between 4 AM and 4 PM that day, evening, and night shift workers spent in 21 major activities. In addition, Table 4 contains the average amount of time spent in some of the single activities of particular interest that are bundled together to obtain the time spent on the major activities. For instance, in addition to time spent in personal care; socializing, relaxing, and leisure; and sports, exercise, and recreation, time spent sleeping, (a sub category of personal care), watching television (a sub category of socializing, relaxing and leisure) and participating in sports, exercise or recreation (a sub category of sports,

exercise and recreation) are listed. All times are estimated using a 24 hour day, so that all workers would have their activities based on a consistent time frame.

4.1 Time Spent In Activities That Could Affect Individuals' Physical Health

One of the concerns about individuals who work on evening or night shifts, is that these non standard shifts disrupt their daily schedules and causes them to be less involved in activities that are associated with good health, while at the same time increasing the amount of time they spend in unhealthy activities. The estimates presented in Table 4 indicated that at least with regard to the amount of time spent sleeping these concerns are unfounded. On average, the estimates in Table 4 show that night workers slept a half hour more on the days that they worked than did day workers, while evening workers slept about 18 minutes longer than day workers.[4] Further, to the extent that it is completely reported, the ATUS data indicate that night and evening workers were no more likely to spend large amounts of time trying to sleep when they could not than were day workers.

The estimates in Table 4 also indicate that night workers spent approximately 36 minutes longer socializing, relaxing or in leisure activities, than did day or evening workers. However, all types of shift workers spent a large proportion of their socializing, relaxation or leisure time watching television, with night workers spending a slightly larger fraction of their relaxation time watching television than other types of workers. Night workers, on average, spent 2.1 hours watching television on days that they worked which is approximately 24 minutes more than evening or day workers spent watching television. Given that watching television usually is a very sedentary activity, the larger amount of time night workers spend watching television on the days that they work could indicate that working a night shift does cause these workers to engage in less healthy behavior.

The amount of time workers spend participating in sports or exercising which generally would be considered a healthy activity is quite small for all types of workers. On average, on days that they worked, day, evening and night workers, all spent less than 12 minutes per day participating in sports or exercising.

The effects of working a non-standard shift on workers and the interpretation of differences in the average amount of time these workers spend in various activities could be influenced by differences in the degree to which various types of workers engage in

[4] Comparison of times that day, night and evening workers spent sleeping when individuals activities were not truncated at 4 AM on the interview day, illustrate the importance of imposing a standardize day for estimation. Specifically when the duration of sleep was not truncated at 4 AM, day workers were estimated to spend on average 9.81 hours sleeping, and evening workers were estimated to spend 11.53 hours sleeping, compared to an average of 8.07 hours sleeping for night workers. The longer average times spent sleeping of evening and day workers when the duration of sleeping is not truncated at 4 AM is attributable to the fact that sleeping is very likely to be the last activity recorded for day and evening workers, so extending the duration of this activity into the interviewer day beyond 4 AM lengths the duration of sleep inconsistently for day and evening workers compared to night workers for whom sleeping is less likely to be the last activity recorded.

these activities and not just the amount of average time spent in the activities. For example, if a relatively small number of night workers actually exercised, but those who did spent a large amount of time exercising, while at the same time a relatively large number of day workers exercised for brief periods, the average amount of time day and night workers spent exercising could be equal. One might infer, however, that day workers were healthier because a larger proportion of them exercised. To address this concern, Table 5 contains the proportion of workers in the various shifts who slept, watched television or exercised, along with the amount of time individuals who engaged in these activities spent. These estimates indicate that the difference in the average time that night workers spent sleeping and watching television was primarily due to the larger amount of time nights workers spent doing these activities rather than differences in the incidence. In fact, a slightly higher proportion of day workers (76%) watched television on their work day then did night workers (72%)

Another activity that could be related to individuals' health is the amount of time people spent eating and drinking. Interestingly, on the day that they work, both evening and night workers spent approximately 18 fewer minutes eating than did day workers. Further investigation will be undertaken to determine, whether the smaller amount of time spent eating by evening and night workers is due to fewer meals being eaten in the day (fewer episodes of eating were recorded) or less time being spent eating on the same number of meals. Either eating fewer meals or spending less time per meal could negatively influence individuals' health, however, so the smaller amount of total time spent eating by evening and night workers might indicate that working one of these non standard shifts could be at least slightly detrimental to people's physical health.

4.2 Time Spent in Community Type Activities and Interacting With Others

Part of the concern about evening and night shifts is that they may cause individuals who work these times to be less integrated with the community and to thus have a non-congruent role in society. This lack of integration and incongruity arises, Dunham (1977) and more recently Hamermesh (1999) argue, because there are segments of the day or week that have a fixed social value that cannot be easily changed. Most communities are oriented to some degree to a day schedule, thus businesses, recreational facilities and governmental institutions are more likely to open during day time hours. In addition, social events, organizational meetings, volunteer activities, and school events are more likely to be schedule during periods of time when the majority of workers – day workers – are available. Brown (1975) discusses having "culturally sanctioned time" available for social activities as being critical to ones integration into society. Evening workers may have this "culturally sanctioned time" blocked off by work, while night workers often could have this time blocked off by sleeping. Consequently, working an evening or night shift could cause these workers to be out of sync with society. Similarly these night and evening workers may have fewer hours to spend with their spouses and a smaller number of wakeful hours when their children are at home and awake. Both the inability to be more completely integrated into society and the reduction in wakeful hours to spend with ones spouse and children could increase the cost of being an evening or night worker. To test whether being an evening or a night worker did potentially decrease the degree to

which individuals could be integrated into society, the amount of time day, evening, and night workers spent on average in several community type activities and activities that involved interactions with others were estimated. In addition, since the ATUS records who one was with when engaged in any activity other than sleeping, grooming or working, the amount of wakeful, non-work hours that individuals in various shifts spent alone, with family members, with friends, with ones spouse (if the individual was married), and with ones children (if there was at least one child in the household) were estimated.

The community and interaction type activities that can be examined as a main activity in Table 4 are time spent in volunteer activities, and time spent on the phone. In addition, time spent attending a social, artistic, or sporting event; and time spent e-mailing were constructed by combining several detailed activities from within the various main activities. These estimates are presented in Table 6. Table 6 also contains estimates of the amount of time individuals in various shifts spent alone and with others. The amount of interaction (or lack of interaction) time were constructed from information about whom someone one was with during an activity, consequently these personal interaction can occur along with any type of activity (except working, grooming and personal activities for which the information was not collected).

Examination of the time spent volunteering by day, evening, and night workers presented in Table 4, indicates that on average all of these types of workers spent very little time in volunteer activities on the days that the worked. On average, no type of shift worker spent more than 6 minutes in volunteer activities, although it appears that evening workers spent even less time volunteering (Day workers spent approximately 4 minutes volunteering, while night workers spent 3 minutes and evening workers spent approximately 2 minutes volunteering on their average work day).

Similarly the estimates in Table 4 indicate that workers, regardless of shift, spent relatively little time on the phone, while the estimates in Table 6 indicate that workers on days that they work spent virtually no time on personal e-mails. Evening and night workers do appear on average to spend slightly more time on the phone than did day workers. On work days, day workers spent an average of 4.2 minutes on the phone while, night and evening workers spent an average of 6.6 minutes on the phone.

The estimates in Table 6 indicate that all types of workers spent less then 2 minutes a day on personal e-mails. Evening workers did spend a slightly larger amount of time using the computer for leisure which includes e-mailing along with other activities such as participating in chat rooms and surfing the internet (but excludes playing computer games) than did either day or night workers. On a day that they worked, evening workers on average spent almost 10 minutes using computers for leisure, while day and evening workers spent on average a little more than 7 and almost 8 minutes respectively.

Again, on average, individuals across all of the types of shifts, spent relatively little time attending social events on days that they also worked. Evening workers do appear, however, to spend slightly less time attending these events then did workers on other shift

schedules. Day and night workers on average spent approximately 7 minutes attending social events on their work days, while evening workers spent less than 4 minutes.

With regard to the amount of time spent interacting with others regardless of the activity, the estimates in Table 6 indicate that working an evening or a night shift may increase ones isolation from society. Night workers on average spent almost 40 more minutes a day alone on days that they also worked compared to day workers, while evening workers spent almost an hour more a day alone compared to day workers.

Evening workers did, on average, spend approximately 19 more minutes of their work day with friends than did day workers. However, evening workers were estimated to spend less time with family members (both those residing in the household and those who were not), and their spouses and children (if present in the household) compared to day workers. Interestingly, night workers were estimated to have spent more time on average with their family members, their spouses if married and their children if present in the household than did day workers. Specifically on days that they also worked, night workers were estimated to have spent an average of 16 more minutes with family members, 22 more minutes with their spouses, and 46 more minutes with their children than did day workers.[5] In contrast, evening workers spent approximately 50 fewer minutes with family members, 45 fewer minutes with their spouses, and 15 fewer minutes with their children if present than did day workers.

Overall these estimates suggest that working an evening shift and to a lesser extent working a night shift may reduce an individual's ability to be integrated into society. The estimates also indicate that being an evening worker may put a strain on family dynamics because these workers spend less time with their spouses and children. This reduced time could, however, also be a way for families with two individuals in the labor market to balance employment demands and child care requirements. In contrast, the estimates discussed in this section indicate, contrary to some previous research, that being a night worker may increase family stability. This increased stability could arise because it increases the interaction between these workers and their spouses, and increases the amount of time these individuals spend with their children. Working a night shift, could also, however, be a way for families to balance their need for both parents to be employed in the paid market and child care requirements.

4.3 Other Selected Activities

Three other activities that day, evening, and night workers appear to spend differing amounts of time in are household activities, traveling to work, and educational activities. In accord with night workers spending more time with children and perhaps more time at

[5] Since time spent with children and spouses was only estimated for those who had children or were married, while the time spent with family members was based on all workers within a shift, the average time spent with family members could be smaller than the average time spent with children or a spouse.

home[6], the estimates in Table 4 indicate that on average night workers spent approximately 15 more minutes in household activities on days that they worked than did day workers, and approximately 6 more minutes in household activities than did evening workers.

Consistent with there being more traffic congestion during standard rush hour times, both evening and night workers were estimated to spend less time traveling to work compared to day workers. On average, day workers were estimated to spend 42 minutes commuting to and from work (or in other work related travel), while evening workers on average only spend 35 minutes commuting, and night workers only spent a little more than 32 minutes in work related travel.

Differences in the amount of time evening workers spent in educational activities compared to night and day workers were particularly dramatic. On average on days that they also worked, evening workers spent approximately 49 minutes in educational activities which include attending classes (either for a degree or just for personal interest), participating in extracurricular school activities (except sports), and doing homework. In contrast, day workers on average only spent about 6 minutes of their work days in educational activities, while night workers spent approximately 9 minutes. The dramatically larger amount of time evening workers spent in educational activities could be related to the fact that a significantly larger proportion of evening workers were enrolled in school than were either day or night workers. To help disentangle the effect of other life situations that may be influencing the amount of time day, evening and night workers spend in various activities, estimates of the amount of time shift workers spent in various activities were estimated just for those who were full-time workers, just those who were not currently enrolled in school (using the broader ATUS age range), just those who were married and just those who had children. These estimates are discussed in the next section. To further eliminate potentially confounding factors, OLS regressions using the amount of time spent in various activities and interacting with other as dependent variables were estimated. These results are discussed in section 6.

5. Comparison of the Activities on a Work Day of Day, Evening and Night Shift Workers For Selected Sub groups of Workers

The results for various subgroups of workers by shift presented in Tables 7, 8 and 9 are very consistent with the aggregate estimates. Night workers, uniformly across the sub group of workers, spent more time on average sleeping on days that they worked than did day workers, and except for those with children night workers slept more than evening worker. Evening workers also uniformly across the subgroups slept more than day workers, albeit generally less than night workers.

Night workers also uniformly across the different worker sub categories, spent more time watching television on their work days, while evening workers spent less time. The sub

[6] Using ATUS information about where an activity was conducted (where codes), differences in the amount of time spent at home as opposed to other places by day, evening, and night workers will be examined in the future.

group of workers who spent the most time watching television was night workers not enrolled in school, who on average in days that they worked spent 2.2 hours watching television as their primary activity. The larger total amount of time night workers spent watching television for the majority of worker subgroups is due to them spending larger amounts of time watching television when they do watch rather than a larger proportion of night workers watching television. Across the worker sub groups the incidence of television watching tended to be slightly lower for night workers compared to day workers, with night workers who had children in the household having one of the lowest incidence of television watching. Sixty eight percent of night workers with children watched television on a day that they also worked compared to 74 percent of day workers with children and 75 percent of all workers.

There was little difference across the various shifts and worker sub groups in the amount of time spent exercising on days the individuals worked. On average, all groups of workers spent 12 minutes or less exercising or participating in sports on the days that they also went to work. Also similar to the estimates across the various shifts without further subdivision of workers, both night and evening workers generally tended to spend less time eating and drinking than did day workers.

With regard to community type activities, every sub group of workers across the various types of shifts spent relatively little time in volunteer activities or attending events on days that they also worked. However, evening workers across the sub group of workers tended to spend even less time on average volunteering or attending an event than did day or night workers.

In terms of time spent with others, night and evening workers consistently spent more of their non-work, wakeful hours alone than did day workers, with evening workers, on average across the sub groups, spending more time alone than night workers in similar groups. Interestingly, even evening workers with spouses and children spent more time alone than did day or night workers.

Unlike the more aggregate estimates, evening workers in the various subgroups did not spend more time on average with friends than did day or evening workers. The one exception was evening workers with children. On average, evening workers with children spent a little more than an hour with friends on days that they also worked, compared to night workers with children who spent 48 minutes with friends, and day workers with children who spent 24 minutes.

Similar to the aggregate estimates, compared to day workers, night workers consistently across the sub group of workers spent more of their non-work, wakeful hours with family members, spouses and children, while evening workers on average across the sub group of workers consistently spent less time with their family members, spouses, and children on the days that they worked.

Night and evening workers across the sub group of workers also consistently spent less time traveling to work, and similar to the aggregate estimates more time on household activities than did day workers. Examination of the amount of time the sub group of workers in the various shifts spent on educational activities seem to indicate that the disproportionate amount of time evening workers spent in educational activities, probably was due to evening workers having a higher school enrollment rate than did day or night workers. Among the sub group of workers, it is interesting to note, however that evening workers with children still did spent dramatically more time engaged in educational activities than did day or night workers with children. On average, evening workers with children spent approximately 72 minutes in educational activities on days that they also worked, compared with a little more than 55 minutes by day workers with children, and approximately 11 minutes on average of all individuals on days that they also worked.

Some of the larger amount of time those with children, especially evening workers spend, in educational activities could be related to the activities included in this category. For instance, the ATUS Activity Lexicon includes taking parenting classes, taking prenatal/child care classes (for personal interest), and attending Sunday school in the taking classes for personal interest. It might be, however, that those with children are also more likely to be enrolled in secondary or post secondary school with the intention of obtaining a degree. The OLS multivariate analysis presented in the next section will help control for and disentangle confounding factors that could be influencing the amount of time day, evening and shift workers spend in various activities and interacting with others.

6. Multivariate Analysis of Differences in Time Spent in Selected Activities by Day, Night and Evening Workers.

The differing amounts of time day, evening and night workers spend in various activities may result from the intrinsic time constraints imposed by working in one of these shifts. Alternatively as hinted at in some of the analysis of sub groups of workers, differences also may stem from differences in the average personal characteristics of workers in the various shifts. To control for differences in personal characteristics, OLS regressions were estimated with time spent in various activities or time spent interacting with others as the dependent variable. In each model of time spent in the specified activity, as dependent variables, a zero one indicator variable was included for whether an individual was an evening worker along with a zero one indicator variable for whether an individual was a night worker (the comparison group thus is day workers). In addition, controls were included for the workers' age, gender, race (Black, Asian and other, with White being the excluded category), educational attainment (high school no diploma, some college, associates degree, and college or advance degree, with high school diploma the excluded category), marital status, marital status interact with gender and annual household income ($5,000-9,999, $10,000-19,999,$20,000-29,000, $50,000-74,000, and $75,000 and over with $30,000-49,000 excluded) Whether an individual was of Hispanic origin, or was enrolled in school were also included as controls. The effect of children was control for by including an zero one indicator variable for whether there was a child in the household, the number of children in the household (including 0 for those with no

children), and the age of the youngest child in the household interacted with the variable indicating whether they were any children in the household. These models were estimated for all workers and just for workers who were married. In the models restricted just to married workers, the employment status of individuals' spouses was controlled for by the inclusion of a zero one indicator variable for whether individuals' spouse were employed along with a zero one indicator variable for whether individuals' spouses worked fulltime if they were employed.

In the models for all workers, the amount of time individuals worked at their job was controlled for in two different ways. In one set of specifications a continuous measure of the number of hours an individual worked within the 24 hour variable was included directly as a control variable. Alternatively to address potential issues with additivity constraints, the proportion of time individuals spent in each activity as the proportion of time individuals did not work was specified as the dependent variable. This later specification was not used when the models were restricted just to those who were married due to the similarity in the parameter estimates that were obtained on the evening and night worker variables under these two specifications for all workers. Models were also estimated with controls for workers industry and occupation included in the specification. Controls for individuals industry and occupation were included not because of the belief that workers in various industry and occupations intrinsically would be inclined to spend less time in any of the non work activities, but rather as additional controls for unobserved heterogeneity. The results with these industry and occupational controls are not reported here due to the similarity of the parameter estimates obtained from these models to those obtained when they were not included.

Table 10 and 11 contain the coefficient estimates from these various models. Asterisks indicate coefficient estimates that were significantly different from zero at the 5 percent level. Standard errors are provided in parentheses below the coefficient estimates.[7]

6.1 OLS Estimates of Time Spent in Activities that Could Affect Individuals' Health

Similar to the simpler descriptive statistics the OLS estimates indicate, that even controlling for other factors, night workers sleep more than day workers—approximately 18 minutes longer -- on the days that they worked. Evening workers were not estimated to spend significantly more time sleeping.

Unlike the more aggregate statistics, the OLS estimates did not indicate that night workers spent more time watching television than did day workers. The coefficient estimates also indicate that, when other factors were controlled, for evening workers actually spent significantly less time watching television than did their day worker counterparts. Coefficient estimates for Blacks and those living in households with incomes between $20,000 and $29,999 indicate that these workers spent significantly

[7] These standard errors are not design consistent. Subsequent versions of this paper will use the replicate weights provided with the ATUS public use data sets to obtain standard errors that account for the survey design.

more time watching television. Since Blacks and those with lower income were disproportionately found among the ranks of night workers, the behavior of these groups of workers may explain at least part of the difference between the amount of time night workers spent watching television in the simple descriptive statistics and in the OLS estimates.

Similar to the simpler descriptive statistics neither evening nor night workers were estimated to spend a significantly different amount of time exercising or participating in sports than were day workers on days that they worked. Both night and evening workers were estimated to spend significantly less time eating than were day workers. Specifically, controlling for other factors the point estimates indicate that both night and evening workers spent about 12 minutes less eating in the 24 hour period between 4 AM and 4 PM than did day workers.

6.2 OLS Estimates of Time Spent in Community Type Activities and Interacting With Others

The OLS estimates confirm that evening workers spent significantly less time volunteering and at events on days that they worked then did day workers. The point estimates indicate that the difference in time is quite small, however.

Similar to the aggregate descriptive statistics, the OLS estimates indicate that evening workers even controlling for other factors spent more time alone. The point estimates suggest that on average on their work days evening workers spent about 38 more minutes alone than did day workers (which is approximately half of the estimate when other factors are not controlled for). Unlike the aggregate statistics, the OLS models indicated that night workers did not spend more time alone.

Evening workers were estimated to spend significantly less time with friends, family, their spouses and their children.[8] Although they were not estimated to have spent less time with their children when the analysis was restricted to just those who were married and controls were included for spouses' employment status. Interestingly, for just those who were married, when working a night and evening shift were interacted with whether spouses were employed and whether the spouses' employment was full time; evening workers were not estimated to spend significantly less time with their children (the parameter estimate on the zero one indicator variable for being an evening worker was -0.23 with a standard error 0.28), but the time evening workers with spouses who worked full time was estimated to be significantly less (the parameter estimate on the interaction variable between being an evening work and having a spouse working full time was -0.89 with a standard error of 0.40). The significance of this interaction term suggestions that dual earner households may have one individual in the couple working as a night worker in an attempt to accommodate their child care needs.

[8] The models for time the time individuals spent with their spouses and children were restricted to married individuals and households that had children.

All night workers and only married night workers were estimated to spend significantly more time with their children than were day workers with children. In the model for just married workers that includes both a control for workers' shift status and the employment status of married individuals spouses, neither the night worker indicator variable nor the night worker indicator variable interacted with whether an individual's spouse worked full time were individually significant. However, both of the coefficient estimates were positive and they were jointly significant. This again suggests that working a night shift also may be a means for dual earner households to address their child care needs.

Unlike the simpler descriptive statistics when other factors are controlled for married night workers were not estimated to spend significantly more time with their spouses than were day workers. When the percentage of available of non-work time was used as the dependent variable, married night workers were estimated to spend significantly less time with their spouses. Married workers whose household income was between $10,000 and $19,000 were estimated to spend approximately 15 more minutes in the company of their spouses controlling for other factors. Controlling for household income may account for the difference between the simple descriptive and the OLS results, given that night workers disproportionately come from lower income households.

6.3 OLS Estimates of Time Spent in Other Types of Activities

Even controlling for whether an individual was currently enrolled in school on the days that the worked, evening workers were estimated to spend significantly more time in educational activities than were day workers. Interestingly, although the point estimate is quite small, the OLS estimates also indicate that the younger were workers' youngest child, the more time they spent in educational activities (even controlling for workers age).

The finding related to the comparative amount of time workers in various shift spent time on educational activities persisted even when the analysis was restricted to just those who were not enrolled in school. [9] Evening workers who were not enrolled in school spent significantly more time in educational activities on their work days than did day workers. The point estimate for evening workers not enrolled in school was quite small. however. Specifically, the results when the OLS modeling is restricted to just those who are not enrolled in school, indicates that evening workers on their work days spent on average approximately 2 more minutes more in educational activities than did day workers (the coefficient estimate was 0.032 with a standard error of 0.014). Again even amongst workers who were not enrolled in school the coefficient estimates indicate that the younger an individuals' children, the more time was spent in educational activities such as attending classes.

Even controlling for other factors, evening and night workers were both estimated to spend less time commuting or in other travel related to work than were day workers. The coefficient estimates indicate that on average evening workers spent approximately 6 minutes less a day commuting to work on their work days, and night workers spent

[9] These regression results are not reported in the tables.

approximately 8 minutes less a day commuting to work than did day workers. The magnitude of these differences is only slightly smaller when industry and occupation indicator variables are included in the regression as controls. (Although as might be anticipated those in agriculture, construction and manufacturing industries did spend more time in work related travel.)

The OLS specification using commuting time as the dependent variable include whether an individual lived in an urban area as control variable. The coefficient estimate on the zero one indicator variable indicates that those who live in urban areas did spend significantly more time commuting than did non urban workers. On average workers living in urban areas spent approximately 9 minutes more commuting or in work related travel than did non urban workers. Again the coefficient estimate on this variable was largely unaffected by the inclusion of controls for workers' industry and occupation.

7. Comparison of Time Spent in Activities on a Non- Work Day of Day, Evening and Night Shift Workers

7.1 Aggregate Average Estimates

Examining differences in the amount of time people on various work schedules spend in activities on days that they also work may not provide a complete picture of the effect of working a non-standard shift. The picture may be incomplete because spending time at work may constrain all workers fairly equally with regard to the activities that they can or are willing to engage in other than work. For instance, on days that they work, all individuals may have less time and be less inclined to attend social events or participate in more extended volunteer activities regardless of what type of shift they work. Similarly, individuals may not sleep as long as they desire on work days because they have to go to work. Examining the amount of time spent on different activities only on days that individuals work also provides an incomplete picture of the effect of individuals working different shifts because it does not provide any insight to extent that the effect of working a non standard schedule carries over into non-work days. It is possible that sleep patterns and arrangement of household duties dictated on work days by an evening or night schedule, also influence how individuals on their days off are able or willing to spend their time.

To obtain a more complete picture of the effect on individuals of having a non-standard work schedule, the ability to match a subset of the ATUS data to the May 2004 supplement can be exploited. The interviewing schedule for households in the CPS combined with the fact that a subset of CPS households becomes eligible for the ATUS after the completion of their last CPS interview, means that those employed individuals who completed their last CPS interview in May, June, July or August can have their ATUS data and CPS supplement information matched. Based on this ability to link data, it is possible to match individuals who were classified as working day, evening, night or some other schedules to ATUS respondents who reported that they did no work on the day about which they were interviewed. If in addition, the criterion is imposed that the ATUS respondents reported that were employed in the previous 7 days, and that they had same employer as they did when they were last interviewed, it is possible with some

degree of assurity to observed in the ATUS how workers in various shift schedules spent their time on their non-work days. Using these criteria it was possible to match 843 individuals who did not work on the day about which they were interviewed in the ATUS to the shift classification that they had in May. The estimates for evening and night workers should be viewed with some caution, however because there were only 46 workers classified as evening workers and 15 workers classified as night workers (along with 29 workers classified as other).

Tables 12, 13, and 14 are structured the same way as the tables in section 4 for workers on the day that they were employed. Table 12 provides the amount of time workers on various schedules spent, on average, on their non-work days in various major activities. (Table 15 contains the same estimates with evening and night workers aggregated into a single non-day category). Table 13 highlights some specific activities that may be related to individuals' health, while Table 14 contains information about time spent in community type activities or interacting with others by individuals on day, evening or night schedules on days that they did not work.

Examination of the time spent in the major activities by day, evening, and night workers, indicate that unlike on days that they worked, night workers spent less time sleeping than did day workers on their days off. Further, a comparison of the estimated average amount of time day workers slept on days that they work to the average amount of time they spent sleeping on their non-work days indicates that on average day workers "caught" up on sleep on their non-work days. Day workers spent on average more than 1 and ½ hours longer sleeping on their non-work days than they did on their work days.

Day workers also engaged in exercise at a higher rate, and spent more time when they were exercising on their non work days then did evening workers, and evening workers. Twenty one percent of day workers exercised or participated in sports on their non-work day compared to 17 percent of evening workers and only 12 percent of night workers. On average, day workers spent more than 36 minutes exercising or participating in a sporting activity on their non-work day. Evening workers and night workers in comparison only spent about 19 and 7 minutes in physical exercise or a sporting activity on days that they did not work.

Similar to what was observed on days that individuals in various schedules worked, both evening and night workers spent less time eating on their non-work days than did day workers on their non-work days. Individuals on night and evening schedules also spent more time watching television on their non-work days compared to day workers. Night and evening workers spent approximately three hours watching television on their non work days compared to the 2.6 hours that day workers on average spent watching television on their non-work days. However, as was observed for these individuals on the days that they worked, it is possible these differences could be due to personal characteristics rather than the shift schedule. Multivariate analysis that is presented in the next section will help clarify the observed differences in the amount of time individuals on night or evening schedules spent watching television on their non-work days compared to individuals on day schedules on days that the did not work.. It is interesting

to note that on average individuals within each shift category spent approximately one hour more watching television on their non-work days than they did on the work days.

With regard to the amount of time individuals on various work schedules spent on community type activities on their non-work days the results are a bit mixed. Both night and day workers spent more time in volunteer activities than did workers with evening schedules on their non-work days, with night workers spending more time in volunteer activities than did day workers. No group of workers, however spent much time in volunteer activities on their non-work days, although more time was spent in volunteer activities on non-work days than on work days.

In contrast, on average, individuals on day schedules spent more time attending events on their non-work days then did individuals with evening schedules. Individuals on evening schedules in turn spent more time attending events than did night workers. Although this could be function of household income, the presence of small children or individual's choice, these estimates at least suggest that working a night schedule continues to disrupt people's ability to socialize even on days that they do not work.

In line with this supposition, is the finding that individuals on night schedules spent considerably more time alone on their non-work days than did either evening or day workers. On average night workers spend 6.2 of their wakeful hours alone on their non work days compared to an average of approximately 5 hours for evening workers, and 4.7 hours for day workers.

Consistent with the estimates obtain on days that they worked, evening workers on their non-work days were estimated, on average, to spend less time with family members, less time with their spouses if they were married, and somewhat less time with their children. Night workers, similar to what occurred on their work days were estimated on average to spend more time with family members than were day or evening workers on the days that they did not work. The differences in the amount of time spent with the children and individuals spouses both were quite dramatic. Night workers who had children were estimated to spend an average of almost 10 hours together with their children on their non-work days, compared to the approximately 7 hours that day and evening workers spent in activities with their children present on non-work days. Night workers, also spent 9.2 wakeful hours in activities where their spouses were present on their non work days compared to married evening workers who on average spent less than 5 hours of their non-work day hours in the company of their spouses, and married day workers who spent 6.4 of their wakeful hours on non-work days in activities where their spouses were also present. The estimates for married evening and night workers and evening and night workers with children should be viewed with caution, however, because the samples are quite small.

Night workers spent considerably more time in household activities than did day or evening workers, with evening workers spending the least amount of time on household activities. On average, night workers spent about 4 and ½ hours in household activities on their non-work days, compared to a little less than the 2 and ½ hours spent in household

activities by all workers on their non-work days. Compared to their work days, all individuals spent approximately 1 and ½ hour more in household activities on there non-work days than they did on days that they also worked in the paid market.

Similar to what was observed on their work days, individuals with evening work schedules spent more time in educational activities than did day or night workers. Evening workers, however, spent more time in educational activities on days that they also worked than they did on their non-work days. This difference could be due to when classes are scheduled and the higher probability that all individuals non-work days will be on the weekend rather than other times during the week.[10]

7.2 OLS Estimates

To control for differences in average personal characteristics that may be confounding the effect of being a day, evening or night worker, OLS regressions with of the amount of time individuals spent in various activities on their non-work days were estimated. The control variables were the same as those used in the regressions for the amount of time spent in activities on individuals' work days, except whether someone worked a schedule classified as "other" was included as a control and the hours individuals spent at work on their in the interview day was not included as a control. Instead to differentiate between the amount of time individuals worked whether an individual usually worked part-time-- defined as usually work less than 35 hours a week-- was included as a control.

The coefficient estimates from the OLS regression indicate that once other variables were controlled for the amount of time day, evening and night workers spent sleeping on their non-work days were not significantly different. This suggests that the larger amount of time night workers were estimated to sleep on the days that they worked reported in section 6 may be a direct function of when they are scheduled to work. Lower income workers were estimated to spend more time sleeping on their days off than were workers in households whose income was between $30,000 and $50,000. (The estimated household income effects remained even when industry and occupational controls were included in the specification). Younger workers were estimated to spend significantly less time sleeping on their non-work days, with a one year increase in age estimated to decrease the amount of time individuals sleep on their days off by almost 4 minutes.

The coefficient estimates were negative, but perhaps because of the small sample size, neither night nor evening workers were estimated to spend less time in exercise or other physical activities than were day workers on their days off. When night and evening workers were combined into a single non-standard work category, the significance of the negative coefficient estimate increased, but the estimate still was not significant at standard levels. Workers with at least a bachelor's degree were estimated to spend more time exercising on their non-work days than were less educated workers, even when household income was controlled for.

[10] Since there is information the CPS supplement about the days of the week individuals usually work, comparisons of the activities of weekend workers with weekday workers, along with the time within the day that individuals work can be made.

Similar to the OLS regression for the days individuals worked, once other factors were controlled for, night workers were not estimated to spend significantly more time on their days off watching television than were comparable day workers. Again as with the estimates for individuals work days, part of the difference between the descriptive statistics comparing the amount of time individuals in various shift spend watching television on their days off and the OLS estimates may be due differences in the personal characteristics of workers on various shifts. Both on their non-work days and on their work days, Blacks and individuals living in lower income households were estimated to spend significantly more time watching television. To the extent that these type of workers are over represented among the ranks of night workers, the larger amount of time night workers spent watching television both on their work days and on their non-work days that was observed in the simple descriptive statistics may be attributable to differences in taste or other life circumstances rather than working a night schedule itself.

The coefficient estimate for the amount of time individuals spent eating on their days off was significant at the 10 percent level in the OLS regression for night workers. Night workers were estimated to spend approximately 25 minutes less time eating than were day workers. This implies that the eating pattern that was observed for night workers on the days that they worked persisted on their non-work days. The coefficient estimate for evening workers on their non-work days was consistent with the coefficient estimate for evening workers on their work day in that it was negative, but the non-work day coefficient was not statistically for evening workers.

With regard to community type activities, neither the amount of time workers spent in volunteer activities nor the amount of time they spent at social, sporting or artistic events differed significantly across the types of shift workers. The amount of time evening and night workers spent alone on their non-work days also did not differ significantly from the amount of time day workers spent alone when other factors were controlled for.

Evening workers were estimated to spend almost 1.4 less hours with family members on their off day, but 0.87 more hours with friends than comparable day workers. The coefficient estimates indicate that married evening workers and evening workers with children spent less time on their days off with their spouses and children respectively, but these coefficient estimates were not significant at standard statistical levels.

In contrast, despite the small sample size and the inclusion of controls to account for differences in personal characteristics, night workers were estimated to spend significantly more time with their spouses on their days off. The coefficient estimates indicate that night workers on average spent 4.2 more hours in the company of their spouses than did comparable day workers.

The pattern of interaction time of night and evening workers on their day offs is very consistent with what was observed on the days that they worked. In general evening workers spent less time with their families, spouses and children, while night workers spent more time with their families, including their spouses and children.

The coefficient estimate on the amount of time evening workers spend in educational activities on their days off compared to day workers when other factors are controlled for suggest that the difference that were seen in the simple descriptive statistics probably was due to a disproportionate number of evening workers being enrolled in school. Controlling for other factors evening workers were actually estimated to have significantly spent less time school activities on their non-work days than were day workers. The coefficient estimate from the OLS regression does indicates, however, that those who were enrolled in school, were estimated to spend 1 hour and 45 minutes longer in educational activities on days that they did not work than did those who were not enrolled in school. The smaller amount of time evening workers were estimated to have spent in personal educational activities on their days off when other factors were controlled for is not in accord to what they were estimated to do on the days that the worked. Although this could be due to the fact that evening workers are trying to accomplish other activities on days that they do not work or attend school.

In accord with what they did on the days that they worked, night workers were estimated to have spent significantly more time in household activities than did individuals with day schedules on days that they were not engaged in paid employment. On days that they worked, controlling for other factors, both evening and night workers were estimated to spend approximately 15 minutes more in household activities than did day workers. On their non-work days, the coefficient estimate for evening workers was not significantly different than zero, but night workers were estimated to spend an hour more in household activities than did day workers.

8. The Activities of Individuals Married to Shift Workers

To be completed.

9. Conclusion

In general, the results presented in this paper on the cost of being a non-day worker are mixed. Evening and night workers do not appear to spend significantly less time sleeping than do day workers. If anything on their work days, night workers appear to sleep longer than do comparable day workers. Evening and night workers also generally did not seem to spend less time exercising or participating in sports activities than did day workers.

Night workers were estimated to spend more time watching television than day or evening workers, but this appears to be attributable to differing personal characteristics of night and day workers. Blacks and individuals living in lower income households were estimated to spend significantly more time watching television than were other workers. Since night workers were disproportionately Black and from lower income households, when these characteristics were controlled for in multivariate analysis, night workers were not estimated to spend more time watching television than were workers on other shifts.

Both evening and night workers were estimated to spend less time eating than day workers. This pattern was found to exist on their work days and on their non-work days, suggesting that working an evening or night shift may be slightly detrimental to ones physical health.

With regard to the amount of time individuals spent in community type activities and interacting with others, the results presented in this paper suggest that working an evening shift may be particularly costly. Evening workers were estimated to spend more time alone both on days that they worked and on days that they did not. In addition, evening workers were estimated to spend less time with their family, their spouses and their children both on the days that they worked and the days that they did not. Night workers in contrast were estimated to spend more time with their children on their work days, and more time in the company of their spouses on their days off. These differences in the amount of time spent with family members, and children may be a direct function of working a non-standard shift, but it also could be reflective of couples balancing their time to accommodate their child care needs.

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Table 1. Percentage of Workers Classified as Day, Evening, Night and Other

Worker Classification	CPS Classification Using Times and Respondent Reports Combined	CPS Classification Using Starting and Stopping Times Only	CPS Classification Using Respondent Reports Only	ATUS data
Day Workers	82.29%	86.72%	82.42%	83.59%
Evening Workers	8.76%	9.54%	6.82%	10.89%
Night Workers	3.24%	3.74%	3.07%	5.52%
Others	5.70%	-	7.70%	-

Table 2. Characteristics of Workers in Various Shifts in the ATUS and CPS

Variables	ATUS data			CPS Data			
	Day Workers	Evening Workers	Night Workers	Day Workers	Evening Workers	Night Workers	Other
Sex							
Men	53.26	57.73	64.89	51.18	54.14	58.12	56.69
Women	46.74	42.27	35.11	48.82	45.86	41.88	43.31
Race							
White	84.39	80.69	77.15	82.41	74.47	74.62	79.44
Black	10.05	14.67	17.79	11.05	17.07	18.10	14.76
Asian	3.54	3.49	2.12	4.11	4.47	4.56	2.99
Other	2.02	1.14	2.93	2.43	3.99	2.72	2.81
Ethnicity							
Non-Hispanic	86.99	83.34	88.40	86.32	83.28	84.74	89.32
HIspanic	13.01	16.66	11.60	13.68	16.72	15.26	10.68
Age							
16 to 19 years	2.80	17.94	4.46	2.32	21.14	2.78	11.94
20 to 24 years	8.77	16.31	9.28	9.18	19.14	11.52	17.48
25 to 29 years	10.95	12.84	10.94	11.36	11.54	11.40	10.28
30 to 54 years	62.26	42.12	60.90	61.95	39.12	62.98	48.21
55 to 60 years	8.41	4.46	8.07	7.11	4.09	5.80	5.07
60 to 64 years	4.04	2.79	3.24	5.07	2.76	3.72	4.71
65 years and over	2.77	3.53	3.12	3.01	2.22	1.81	2.32
Education							
Less than High School	10.72	24.48	14.63	10.82	27.47	16.18	14.72
High School Diploma	31.00	32.24	38.78	29.71	30.31	34.96	32.64
Some College	26.56	29.00	34.11	27.50	31.41	33.82	33.45
College Degree	20.61	11.11	10.46	21.15	9.07	13.42	13.91
Advance Degree	11.11	3.17	2.02	10.82	1.73	1.62	5.28
Marital Status							
Single	40.40	63.22	49.16	41.68	67.20	48.91	57.55
Married	59.60	36.78	50.84	58.32	32.80	51.09	42.45
Full- or Part-Time Status							
Full-time Workers	85.76	62.02	85.14	85.02	57.19	84.19	69.90
Part-time Workers	14.24	37.98	14.86	14.98	42.81	15.81	30.10
Child Present in Household							
No Child	55.49	52.97	58.30	62.16	74.89	61.48	72.16
Child Present	44.51	47.03	41.70	37.84	25.11	38.52	27.84
Number of Children in the Household							
None	55.49	52.97	58.30	62.16	74.89	61.48	72.16
One	19.26	22.21	17.23	16.05	10.81	14.97	12.15
Two	16.49	16.09	15.49	15.01	9.18	14.52	10.92
Three	6.37	6.28	6.12	5.15	3.76	6.35	3.57
Four	1.82	1.74	2.60	1.20	0.94	1.85	1.03
Five	0.42	0.35	0.26	0.30	0.24	0.64	0.04
Six	0.10	0.37	0.00	0.09	0.14	0.13	0.11
Seven	0.04	0.00	0.00	0.02	0.00	0.07	0.01
Eight	0.00	0.00	0.00	0.00	0.03	0.00	0.00

Table 2. Characteristics of Workers in Various Shifts in the ATUS and CPS -- Continued

Variables	ATUS data			CPS Data			
	Day Workers	Evening Workers	Night Workers	Day Workers	Evening Workers	Night Workers	Other
At School							
Yes	8.43	26.22	9.51	3.25	26.06	3.73	16.73
No	91.57	73.78	90.49	96.75	73.94	96.27	83.27
At School (CPS definition)							
Yes	4.00	22.38	4.14	3.25	26.06	3.73	16.73
No	96.00	77.62	95.86	96.75	73.94	96.27	83.27
Household Income							
$5000 - $9,999	3.09	7.18	4.17	2.96	5.91	4.52	4.11
$10,000 - $19,999	7.23	13.03	12.57	7.30	12.27	10.35	9.52
$20,000 - $29,999	10.31	13.70	19.33	10.16	14.33	16.05	10.96
$30,000 - $49,999	23.38	23.79	24.34	22.23	23.89	25.62	24.11
$50,000 - $74,999	24.47	19.21	25.20	23.35	21.60	24.19	23.22
$75,000 and over	31.52	23.09	14.40	34.00	22.01	19.28	28.08
Industry							
Agriculture, forestry, fishing, and hunting	1.12	0.35	0.74	0.96	0.41	0.77	0.68
Mining	0.49	0.00	0.41	0.33	0.33	0.76	1.00
Construction	7.49	1.08	2.53	7.46	0.66	1.42	1.39
Manufacturing	14.68	12.58	24.71	13.15	13.27	20.50	8.16
Retail trade	11.34	16.93	12.68	10.67	16.72	12.23	21.57
Wholesale	3.52	2.29	2.63	3.73	1.37	2.81	1.18
Transportation and utilities	5.13	4.85	12.16	4.53	5.15	9.35	11.37
Information	2.79	2.43	3.22	2.69	2.36	2.64	2.50
Financial activities	8.26	3.78	2.45	7.97	2.67	1.55	3.56
Professional and business services	8.55	6.04	6.48	9.88	5.60	6.47	3.06
Educational and health services	21.03	15.60	18.79	23.25	16.32	23.17	12.33
Leisure and hospitality	5.41	26.61	6.67	5.88	29.26	10.56	21.93
Other services	5.18	3.86	0.72	4.86	2.84	1.27	5.30
Public administration	5.01	3.60	5.81	4.65	3.06	6.50	5.97
Occupation							
Management, business, and financial occupations	16.25	3.94	4.20	14.75	2.66	2.67	5.42
Professional and related occupations	22.48	11.29	12.10	22.90	10.05	16.73	13.17
Service occupations	11.96	36.88	21.64	12.83	39.56	27.59	31.44
Sales and related occupations	8.99	14.76	8.93	10.08	14.49	5.80	18.52
Office and administrative support occupations	15.38	9.45	13.35	16.21	10.64	13.69	7.51
Farming, fishing, and forestry occupations	0.91	0.11	0.40	0.77	0.40	0.50	0.53
Construction and extraction occupations	6.18	1.24	1.46	5.95	0.74	1.81	2.00
Installation, manintenance, and repair occupations	4.74	1.23	5.51	3.98	2.29	4.02	2.02
Production occupations	7.49	10.46	19.88	6.75	10.77	14.40	6.00
Transportation and material moving occupations	5.61	10.63	12.52	5.77	8.40	12.78	13.40

Table 3. How CPS Shift Workers Were Classified in the ATUS

	ATUS data		
	Day Workers	**Evening Workers**	**Night Workers**
CPS Combined Classification			
Day Workers	93.76	3.32	2.92
Evening Workers	40.68	55.93	3.39
Night Workers	6.90	6.90	86.21
Other	66.67	20.00	13.33
CPS Classification Just Using Times			
Day Workers	95.58	1.89	2.52
Evening Workers	40.00	56.00	4.00
Night Workers	7.41	3.70	88.89

Table 4. Hours per Day Spent in Specified Activity By Worker's Shift Categorization
(2003 and 2004 combined, Based on a 24 hour day, Wage and Salary Workers with Only One Job)

Variables	All	Day Shift	Evening Shift	Night Shift
Personal Care	8.45	8.38	8.78	8.80
Sleeping	7.63	7.57	7.90	8.08
Asleep	7.61	7.55	7.89	8.05
Sleepless	0.02	0.02	0.02	0.03
Household Activities	0.96	0.93	1.03	1.18
Caring for and Helping Household Members	0.35	0.35	0.28	0.34
Caring for and Helping Non-Household Members	0.08	0.08	0.07	0.14
Education	0.18	0.10	0.82	0.15
Consumer Purchases	0.21	0.20	0.23	0.30
Professional and Personal Care Services Purchases	0.05	0.04	0.07	0.07
Household Services Purchases	0.01	0.01	0.01	0.01
Government Services Use and Civic Obligations	0.00	0.00	0.01	0.01
Eating and Drinking	1.03	1.07	0.81	0.88
Socializing, Relaxing and Leisure	2.83	2.79	2.80	3.37
Watching Television	1.69	1.68	1.56	2.07
Sports, Exercise and Recreation	0.19	0.19	0.19	0.17
Participating in Sports, or Exercise	0.16	0.16	0.18	0.16
Religious and Spiritual Activities	0.04	0.04	0.05	0.11
Volunteer Activities	0.07	0.07	0.03	0.05
Telephone Calls	0.08	0.07	0.11	0.11
Traveling	1.34	1.35	1.31	1.24
Traveling to Work and Travel Related to Work	0.68	0.70	0.58	0.54
Working at Job (at place of work)	7.85	8.03	7.11	6.70
Other Income Generating Activities	0.01	0.01	0.02	0.07
Job Search	0.00	0.00	0.01	0.00
Work Activities Direct Part of Job	0.00	0.00	0.00	0.00
Work Related Activities (except exercising as part of job)	0.01	0.01	0.02	0.01
Uncodeable	0.07	0.07	0.10	0.06

Table 5. Percentage of Workers Who Engaged in Specified Activity and Time Spent by Those Who Did Engage in the Activity

Variables	All	Day Shift	Evening Shift	Night Shift
Did Sleep	100%	100%	100%	99%
Time Sleeping	7.64	7.57	7.90	8.12
Watched TV	75%	76%	71%	72%
Time Spent Watching TV	2.25	2.22	2.21	2.86
Participated in Sports or Exercise Time Spent in Sports	15%	15%	12%	12%
Time Spent Participating in Sports, or Exercise	1.11	1.07	1.47	1.37

Table 6. Time Spent Interacting with Others By Worker's Shift

Variables	All	Day Shift	Evening Shift	Night Shift
Time Alone	3.46	3.33	4.23	3.95
Time with Friends	0.51	0.46	0.77	0.66
Time with Family Members	2.76	2.84	2.02	3.11
Time with Spouse (if spouse in Household)	2.75	2.79	2.04	3.16
Time with Children	2.86	2.87	2.44	3.64
Attending an event (social, artistic or sporting)	0.11	0.12	0.06	0.11
Computer use for leisure or e-mail	0.13	0.12	0.16	0.13
Time spent on e-mail	0.03	0.03	0.03	0.01

Table 7. Hours per Day Spent in Specified Activity By Worker's Shift Categorization
(2003 and 2004 combined, Based on a 24 hour day, Wage and Salary Workers with Only One Job)

	Full-time workers			Not Enrolled in School			Married			Children present		
Variables	**Day Shift**	**Evening Shift**	**Night Shift**	**Day Shift**	**Evening Shift**	**Night Shift**	**Day Shift**	**Evening Shift**	**Night Shift**	**Day Shift**	**Evening Shift**	**Night Shift**
Personal Care	8.31	8.66	8.76	8.36	8.80	8.77	8.28	8.43	8.63	8.35	8.84	8.65
Sleeping	7.49	7.85	8.03	7.55	7.94	8.07	7.48	7.58	8.02	7.56	7.99	7.83
Asleep	7.48	7.83	8.00	7.53	7.92	8.04	7.47	7.57	8.00	7.54	7.98	7.83
Sleepless	0.01	0.02	0.03	0.02	0.02	0.03	0.02	0.02	0.02	0.01	0.01	0.00
Household Activities	0.89	1.14	1.09	0.95	1.24	1.25	1.01	1.47	1.43	0.92	1.11	1.26
Caring for and Helping Household Members	0.33	0.28	0.36	0.36	0.35	0.34	0.46	0.52	0.50	0.77	0.55	0.76
Caring for and Helping Non-Household Members	0.07	0.05	0.11	0.08	0.07	0.15	0.07	0.07	0.13	0.05	0.08	0.11
Education	0.06	0.14	0.09	0.02	0.06	0.03	0.06	0.13	0.08	0.11	1.19	0.06
Consumer Purchases	0.19	0.24	0.29	0.20	0.25	0.32	0.19	0.27	0.34	0.23	0.28	0.31
Professional and Personal Care Serices Purchases	0.04	0.06	0.08	0.05	0.07	0.08	0.05	0.10	0.07	0.04	0.05	0.07
Household Services Purchases	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.00	0.01
Government Services Use and Civic Obligations	0.00	0.01	0.02	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.01	0.00
Eating and Drinking	1.08	0.92	0.90	1.07	0.89	0.89	1.11	0.91	1.00	1.00	0.70	0.92
Socializing, Relaxing and Leisure	2.72	2.53	3.26	2.80	2.79	3.46	2.64	2.53	3.16	2.48	2.60	3.20
Watching Television	1.66	1.47	1.98	1.71	1.62	2.18	1.62	1.39	1.95	1.48	1.43	1.98
Sports, Exercise and Recreation	0.19	0.17	0.18	0.19	0.15	0.17	0.18	0.14	0.14	0.18	0.16	0.19
Participating in Sports, or Exercise	0.16	0.17	0.17	0.16	0.15	0.16	0.15	0.14	0.13	0.15	0.14	0.17
Religious and Spiritual Activities	0.04	0.04	0.11	0.04	0.05	0.12	0.04	0.05	0.14	0.05	0.06	0.14
Volunteer Activities	0.06	0.04	0.06	0.07	0.04	0.06	0.08	0.05	0.08	0.10	0.03	0.10
Telephone Calls	0.06	0.07	0.13	0.07	0.09	0.11	0.04	0.04	0.02	0.05	0.10	0.06
Traveling	1.35	1.30	1.20	1.35	1.28	1.24	1.35	1.31	1.28	1.44	1.29	1.23
Traveling to Work and Travel Related to Work	0.72	0.62	0.55	0.72	0.62	0.53	0.72	0.65	0.56	0.71	0.53	0.51
Working at Job (at place of work)	8.31	7.98	6.97	8.10	7.54	6.63	8.15	7.54	6.67	7.97	6.71	6.82
Other Income Generating Activities	0.01	0.02	0.08	0.01	0.00	0.07	0.01	0.01	0.00	0.01	0.00	0.00
Job Search	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Work Activities Direct Part of Job	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Work Related Activities (except exercising as part of job)	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.02	0.01	0.01	0.02	0.00
Uncodeable	0.06	0.09	0.05	0.06	0.09	0.06	0.06	0.12	0.04	0.07	0.06	0.06

Table 8. Percentage of Workers Who Engaged in Specified Activity and Time Spent by Those Who Did Engage in the Activity By Worker's Shift

Variables	Full-time workers			Not Enrolled in School			Married			Children present		
	Day Shift	Evening Shift	Night Shift	Day Shift	Evening Shift	Night Shift	Day Shift	Evening Shift	Night Shift	Day Shift	Evening Shift	Night Shift
Did Sleep	100%	100%	99%	100%	100%	99%	100%	100%	100%	100%	100%	99%
Time Sleeping	7.50	7.85	8.08	7.55	7.94	8.12	7.49	7.58	8.02	7.56	7.99	7.90
Watched TV	76%	70%	72%	76%	72%	75%	76%	69%	71%	74%	67%	68%
Time Spent Watching TV	2.19	2.10	2.75	2.24	2.24	2.90	2.14	2.02	2.73	2.00	2.14	2.93
Participated in Sports or Exercise Time Spent in Sports	15%	11%	12%	15%	12%	12%	15%	11%	9%	14%	12%	12%
Time Spent Participating in Sports, or Exercise	1.03	1.44	1.40	1.04	1.31	1.41	0.98	1.21	1.37	1.08	1.23	1.35

Table 9. Time Spent Interacting with Others By Worker's Shift

Variables	Full-time workers			Not Enrolled in School			Married			Children present		
	Day Shift	Evening Shift	Night Shift	Day Shift	Evening Shift	Night Shift	Day Shift	Evening Shift	Night Shift	Day Shift	Evening Shift	Night Shift
Time Alone	3.26	3.89	3.87	3.34	4.07	3.98	2.93	3.73	3.46	2.73	3.44	2.92
Time with Friends	0.40	0.39	0.43	0.39	0.33	0.62	0.24	0.17	0.30	0.38	1.02	0.80
Time with Family Members	2.75	2.04	3.20	2.89	2.34	3.28	3.74	3.50	4.39	3.78	2.98	4.46
Time with Spouse (if spouse in Household)	2.77	1.98	3.24	2.80	2.05	3.18	2.79	2.04	3.16	2.60	1.78	3.13
Time with Children	2.76	2.33	3.70	2.90	2.81	3.80	2.98	2.96	3.84	2.87	2.44	3.64
Attending an event (social, artistic or sporting)	0.12	0.04	0.10	0.12	0.03	0.11	0.11	0.05	0.11	0.12	0.07	0.18
Computer use for leisure or e-mail	0.12	0.12	0.15	0.12	0.14	0.14	0.11	0.11	0.07	0.10	0.11	0.07
Time spent on e-mail	0.03	0.03	0.01	0.03	0.03	0.01	0.02	0.02	0.00	0.02	0.03	0.01

Table 10. OLS Parameter Estimates From Regressions with Time Spent in the Specified Activity as the Dependent Variable

	Sleeping			Watching Television			Sports and Exercise		
	All Workers		Married Workers Only	All Workers		Married Workers Only	All Workers		Married Workers Only
	Hours	Percentage of Non-Work Time	Hours	Hours	Percentage of Non-Work Time	Hours	Hours	Percentage of Non-Work Time	Hours
Evening Worker	0.038	-0.010 **	-0.145	-0.321 **	-0.018 **	-0.504 **	-0.007	0.000	0.012
	(0.065)	(0.004)	(0.093)	(0.062)	(0.004)	(0.092)	(0.020)	(0.001)	(0.028)
Night Worker	0.298 **	-0.007	0.268 **	-0.051	-0.002	-0.142	-0.015	0.002	-0.039
	(0.087)	(0.006)	(0.109)	(0.083)	(0.005)	(0.109)	(0.027)	(0.002)	(0.033)
Age	-0.011 **	-0.001 **	-0.008 **	0.002	0.000	0.000	-0.002 **	0.000 **	-0.001
	(0.002)	(0.000)	(0.003)	(0.002)	(0.000)	(0.003)	(0.001)	(0.000)	(0.001)
Female	-0.089	-0.016 **	0.108 **	-0.286 **	-0.017 **	-0.505 **	-0.067 **	-0.004 **	-0.033 **
	(0.060)	(0.004)	(0.051)	(0.058)	(0.004)	(0.050)	(0.019)	(0.001)	(0.015)
Black	-0.030	-0.001	0.004	0.259 **	0.015 **	0.390 **	-0.048 **	-0.002 *	-0.036
	(0.066)	(0.004)	(0.095)	(0.063)	(0.004)	(0.094)	(0.020)	(0.001)	(0.028)
Asian	0.205 *	0.010	0.190	-0.073	-0.004	0.116	-0.032	-0.002	-0.046
	(0.106)	(0.007)	(0.129)	(0.101)	(0.006)	(0.129)	(0.033)	(0.002)	(0.039)
Other Race	0.052	0.003	0.144	-0.299 **	-0.017 **	-0.148	0.004	0.000	-0.051
	(0.136)	(0.009)	(0.168)	(0.130)	(0.008)	(0.167)	(0.042)	(0.003)	(0.051)
Hispanic	0.163 **	0.013 **	0.227 **	0.069	0.005	-0.023	-0.010	-0.001	-0.008
	(0.061)	(0.004)	(0.079)	(0.059)	(0.004)	(0.079)	(0.019)	(0.001)	(0.024)
Less than High School	0.382 **	0.018 **	0.219 **	0.017	0.002	0.258 **	-0.019	-0.001	0.018
	(0.070)	(0.005)	(0.098)	(0.067)	(0.004)	(0.098)	(0.022)	(0.001)	(0.030)
Some College	0.066	0.007 **	0.104 *	-0.216 **	-0.014 **	-0.191 **	0.031 *	0.002 *	0.023
	(0.052)	(0.003)	(0.063)	(0.049)	(0.003)	(0.063)	(0.016)	(0.001)	(0.019)
College Degree	0.017	0.004	0.056	-0.437 **	-0.027 **	-0.470 **	0.079 **	0.005	0.088 **
	(0.059)	(0.004)	(0.070)	(0.056)	(0.003)	(0.070)	(0.018)	(0.001)	(0.021)
Advance Degree	0.005	0.001	0.060	-0.816 **	-0.050 **	-0.872 **	0.113 **	0.008	0.130 **
	(0.074)	(0.005)	(0.085)	(0.071)	(0.004)	(0.084)	(0.023)	(0.001)	(0.026)
Child in the Household	-0.156	-0.012 *	-0.106	-0.322 **	-0.021 **	-0.302 **	-0.096 **	-0.006 **	-0.053
	(0.097)	(0.007)	(0.113)	(0.092)	(0.006)	(0.112)	(0.030)	(0.002)	(0.034)
Age of Youngest Child (if child in household)	0.012 **	0.001	0.008	0.011 **	0.001 **	0.006	0.005 **	0.000 **	0.005 **
	(0.006)	(0.000)	(0.007)	(0.006)	(0.000)	(0.007)	(0.002)	(0.000)	(0.002)
Number of Children in the Household	-0.045	-0.002	-0.050	-0.078 **	-0.004 **	-0.086 **	0.021 **	0.001 **	0.002
	(0.033)	(0.002)	(0.037)	(0.031)	(0.002)	(0.036)	(0.010)	(0.001)	(0.011)
Married	-0.094	0.002	0.000 **	0.074	0.003	-	-0.055 **	-0.004 **	-
	(0.061)	(0.004)	(0.000)	(0.058)	(0.004)	-	(0.019)	(0.001)	-
Married Females	0.165 **	0.002	0.000 **	-0.204 **	-0.009 **	-	0.031	0.002	-
	(0.080)	(0.005)	(0.000)	(0.076)	(0.005)	-	(0.025)	(0.002)	-
Enrolled in School	-0.234 **	-0.027 **	-0.237 **	-0.357 **	-0.017 **	-0.245 **	0.021	0.002 *	0.020
	(0.071)	(0.005)	(0.114)	(0.067)	(0.004)	(0.114)	(0.022)	(0.001)	(0.034)
Household Income									
5,000 - 9,999	0.400 0	0.017 **	0.828 **	-0.204 *	-0.012 *	-0.216	0.020	0.001	0.052
	(0.110)	(0.007)	(0.190)	(0.105)	(0.006)	(0.189)	(0.034)	(0.002)	(0.057)
10,000 - 19,999	0.020	-0.001	-0.038	0.053	0.003	0.045	-0.012	0.000	-0.008
	(0.040)	(0.003)	(0.063)	(0.038)	(0.002)	(0.062)	(0.012)	(0.001)	(0.019)
20,000 - 29,999	0.087 **	0.004 **	0.087 **	0.047 **	0.003 **	0.015	0.006	0.001	0.005
	(0.023)	(0.002)	(0.033)	(0.022)	(0.001)	(0.033)	(0.007)	(0.000)	(0.010)
50,000 - 74,999	0.000	-0.001	-0.029 **	-0.016	-0.001	-0.014	0.008 **	0.000 **	0.005
	(0.011)	(0.001)	(0.014)	(0.011)	(0.001)	(0.014)	(0.004)	(0.000)	(0.004)
75,000 and over	-0.021 **	-0.002 **	-0.038 **	-0.008	0.000	-0.008	0.011 **	0.001 **	0.011 **
	(0.010)	(0.001)	(0.012)	(0.009)	(0.001)	(0.012)	(0.003)	(0.000)	(0.004)
Time at Work	-0.171 **	-	-0.164 **	-0.150 **	-	-0.147 **	-0.022 **	-	-0.026 **
	(0.009)	-	(0.011)	(0.008)	-	(0.011)	(0.003)	-	(0.003)
Urban	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-
Spouse Employed	-	-	-0.083	-	-	0.001	-	-	0.041
	-	-	(0.078)	-	-	(0.078)	-	-	(0.024)
Spouse Employed Full Time	-	-	-0.042	-	-	0.054	-	-	-0.045 **
	-	-	(0.071)	-	-	(0.071)	-	-	(0.022)

Table 10. OLS Parameter Estimates From Regressions with Time Spent in the Specified Activity as the Dependent Variable -- Continued

	Educational Activities			Eating			Volunteering		
	All Workers		Married Workers Only	All Workers		Married Workers Only	All Workers		Married Workers Only
	Hours	Percentage of Non-Work Time	Hours	Hours	Percentage of Non-Work Time	Hours	Hours	Percentage of Non-Work Time	Hours
Evening Worker	0.379 **	0.021 **	0.043	-0.189 **	-0.012 **	-0.194 **	-0.033 **	-0.001	-0.030
	(0.031)	(0.002)	(0.029)	(0.028)	(0.002)	(0.043)	(0.017)	(0.001)	(0.029)
Night Worker	-0.006	0.003	0.057 *	-0.174 **	-0.012 **	-0.167 **	-0.025	0.000	-0.019
	(0.042)	(0.002)	(0.034)	(0.038)	(0.002)	(0.050)	(0.022)	(0.001)	(0.034)
Age	-0.003 **	0.000 **	-0.001	0.003 **	0.000 **	0.002 *	0.001	0.000	0.000
	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)
Female	-0.009	0.001	0.006	-0.070 **	-0.005 **	-0.138 **	0.000	0.000	-0.012
	(0.029)	(0.002)	(0.016)	(0.026)	(0.002)	(0.023)	(0.016)	(0.001)	(0.016)
Black	0.004	0.001	0.020	-0.216 **	-0.014 **	-0.263 **	0.014	0.001	0.020
	(0.031)	(0.002)	(0.030)	(0.029)	(0.002)	(0.044)	(0.017)	(0.001)	(0.030)
Asian	-0.018	0.000	-0.042	0.195 **	0.011 **	0.216 **	-0.073 **	-0.004 **	-0.100 **
	(0.051)	(0.003)	(0.040)	(0.046)	(0.003)	(0.060)	(0.027)	(0.002)	(0.040)
Other Race	-0.067	-0.003	-0.070	0.070	0.004	0.102	-0.043	-0.002	-0.043
	(0.065)	(0.004)	(0.052)	(0.060)	(0.004)	(0.078)	(0.035)	(0.002)	(0.052)
Hispanic	-0.059 **	-0.003	-0.019	0.037	0.003	0.041	-0.035 **	-0.002 **	-0.051 **
	(0.029)	(0.002)	(0.025)	(0.027)	(0.002)	(0.037)	(0.016)	(0.001)	(0.025)
Less than High School	0.231 **	0.012 **	-0.024	-0.072 **	-0.004 **	-0.016	-0.031 *	-0.001	-0.026
	(0.033)	(0.002)	(0.031)	(0.031)	(0.002)	(0.045)	(0.018)	(0.001)	(0.031)
Some College	0.010	0.000	0.006	-0.003	0.000	-0.020	0.029 **	0.002 **	0.038 *
	(0.025)	(0.001)	(0.020)	(0.023)	(0.001)	(0.029)	(0.013)	(0.001)	(0.020)
College Degree	0.039	0.002	0.062 *	0.047 *	0.003 *	0.048	0.051 **	0.003 **	0.039 *
	(0.028)	(0.002)	(0.022)	(0.026)	(0.002)	(0.032)	(0.015)	(0.001)	(0.022)
Advance Degree	0.023	0.002	0.039	0.127 **	0.008 **	0.094 **	0.084 **	0.005 **	0.089 **
	(0.036)	(0.002)	(0.026)	(0.032)	(0.002)	(0.039)	(0.019)	(0.001)	(0.026)
Child in the Household	-0.068	-0.003	0.009	-0.123 **	-0.007 **	-0.137 **	-0.053 **	-0.003 **	-0.052
	(0.046)	(0.003)	(0.035)	(0.042)	(0.003)	(0.052)	(0.025)	(0.001)	(0.035)
Age of Youngest Child (if child in household)	0.012 **	0.001 **	0.001	0.002	0.000	0.004	0.008 **	0.000 **	0.009 **
	(0.003)	(0.000)	(0.002)	(0.003)	(0.000)	(0.003)	(0.002)	(0.000)	(0.002)
Number of Children in the Household	-0.010	-0.001	-0.019 *	-0.004	0.000	-0.012	0.024 **	0.001 **	0.026 **
	(0.016)	(0.001)	(0.011)	(0.014)	(0.001)	(0.017)	(0.008)	(0.000)	(0.011)
Married	0.011	0.000	-	0.099 **	0.007 **	0.000 **	0.028 *	0.001	0.000 **
	(0.029)	(0.002)	-	(0.027)	(0.002)	(0.000)	(0.016)	(0.001)	(0.000)
Married Females	-0.029	0.000	-	-0.070 **	-0.006 **	0.000 **	-0.023	-0.001	0.000 **
	(0.038)	(0.002)	-	(0.035)	(0.002)	(0.000)	(0.021)	(0.001)	(0.000)
Enrolled in School	1.222 **	0.069 **	0.718 *	-0.053 *	-0.004 **	-0.086	-0.008	0.000	0.016
	(0.034)	(0.002)	(0.036)	(0.031)	(0.002)	(0.053)	(0.018)	(0.001)	(0.036)
Household Income									
5,000 - 9,999	0.032	0.002 0	0.204 *	-0.050	-0.003	0.055	-0.016	-0.001	0.040
	(0.053)	(0.003)	(0.059)	(0.048)	(0.003)	(0.088)	(0.028)	(0.002)	(0.059)
10,000 - 19,999	-0.024	-0.001	-0.002	-0.001	0.000	0.002	-0.009	0.000	-0.005
	(0.019)	(0.001)	(0.020)	(0.017)	(0.001)	(0.029)	(0.010)	(0.001)	(0.020)
20,000 - 29,999	0.012	0.001	0.035 *	0.002	0.000	-0.003	0.002	0.000	-0.004
	(0.011)	(0.001)	(0.010)	(0.010)	(0.001)	(0.015)	(0.006)	(0.000)	(0.010)
50,000 - 74,999	-0.004	0.000	0.004	0.002	0.000	0.002	-0.001	0.000	-0.002
	(0.005)	(0.000)	(0.004)	(0.005)	(0.000)	(0.006)	(0.003)	(0.000)	(0.004)
75,000 and over	0.001	0.000	-0.003	0.005	0.000	-0.003	-0.002	0.000	0.000
	(0.005)	(0.000)	(0.004)	(0.004)	(0.000)	(0.005)	(0.002)	(0.000)	(0.004)
Time at Work	-0.053 **	-	-0.014 *	-0.030 **	-	-0.032 **	-0.015 **	-	-0.020 **
	(0.004)	-	(0.003)	(0.004)	-	(0.005)	(0.002)	-	(0.003)
Urban	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-
Spouse Employed	-	-	-0.020	-	-	-0.028	-	-	0.044 *
	-	-	(0.024)	-	-	(0.036)	-	-	(0.024)
Spouse Employed Full Time	-	-	0.012	-	-	0.004	-	-	-0.083 **
	-	-	(0.022)	-	-	(0.033)	-	-	(0.022)

Table 10. OLS Parameter Estimates From Regressions with Time Spent in the Specified Activity as the Dependent Variable -- Continued

	Traveling to Work		
	All Workers		Married Workers Only
	Hours	Percentage of Non-Work Time	Hours
Evening Worker	-0.097 **	-0.007 **	-0.058
	(0.024)	(0.002)	(0.040)
Night Worker	-0.127 **	-0.010 **	-0.169 **
	(0.033)	(0.002)	(0.047)
Age	-0.001 *	0.000	-0.002 *
	(0.001)	(0.000)	(0.001)
Female	-0.080 **	-0.006 **	-0.161
	(0.023)	(0.001)	(0.022)
Black	0.121 **	0.007 **	0.075 *
	(0.025)	(0.002)	(0.040)
Asian	0.016	0.000	0.028
	(0.040)	(0.003)	(0.055)
Other Race	-0.044	-0.003	0.052
	(0.051)	(0.003)	(0.071)
Hispanic	0.134 **	0.009 **	0.090 **
	(0.023)	(0.002)	(0.034)
Less than High School	0.049 *	0.003	0.095 **
	(0.026)	(0.002)	(0.042)
Some College	0.023	0.002	0.071 **
	(0.019)	(0.001)	(0.027)
College Degree	0.088 **	0.006 **	0.083 **
	(0.022)	(0.001)	(0.030)
Advance Degree	0.053 *	0.003	0.060 *
	(0.028)	(0.002)	(0.036)
Child in the Household	-0.053	-0.004	-0.061
	(0.036)	(0.002)	(0.048)
Age of Youngest Child (if child in household)	0.000	0.000	0.000
	(0.002)	(0.000)	(0.003)
Number of Children in the Household	0.014	0.001	0.013
	(0.012)	(0.001)	(0.016)
Married	0.073 **	0.007 **	0.000 **
	(0.023)	(0.001)	(0.000)
Married Females	-0.103 **	-0.009 **	0.000 **
	(0.030)	(0.002)	(0.000)
Enrolled in School	-0.156 **	-0.011 **	-0.050
	(0.027)	(0.002)	(0.049)
Household Income			
5,000 - 9,999	-0.010	-0.002	0.017
	(0.042)	(0.003)	(0.081)
10,000 - 19,999	0.030 **	0.002	0.074 **
	(0.015)	(0.001)	(0.027)
20,000 - 29,999	-0.006	0.000	0.005
	(0.009)	(0.001)	(0.014)
50,000 - 74,999	0.012 **	0.001 **	0.014 **
	(0.004)	(0.000)	(0.006)
75,000 and over	0.023 **	0.001 **	0.028
	(0.004)	(0.000)	(0.005)
Time at Work	0.007 **	0.000 0	0.014 **
	(0.003)	(0.000)	(0.005)
Urban	0.145 **	0.008 **	0.118
	(0.019)	(0.001)	(0.026)
Spouse Employed	-		-0.031
	-		(0.033)
Spouse Employed Full Time	-		-0.053 *
	-		(0.030)

Table 11. OLS Parameter Estimates From Regressions with Time Spent Interacting With Others as the Dependent Variable

	Time Alone			Time with Family			Time with Friends		
	All Workers		Married Workers Only	All Workers		Married Workers Only	All Workers		Married Workers Only
	Hours	Percentage of Non-Work Time	Hours	Hours	Percentage of Non-Work Time	Hours	Hours	Percentage of Non-Work Time	Hours
Evening Worker	0.631 **	0.042 **	0.655 **	-0.540 **	-0.027 **	-0.455 **	-0.121 **	-0.005	-0.077
	(0.083)	(0.005)	(0.122)	(0.080)	(0.005)	(0.130)	(0.052)	(0.003)	(0.057)
Night Worker	0.025	0.011 *	-0.076	0.046	0.011 *	0.074	0.012	0.005	0.043
	(0.112)	(0.007)	(0.144)	(0.107)	(0.006)	(0.153)	(0.070)	(0.004)	(0.066)
Age	0.040 **	0.002 **	0.027 **	-0.005 **	0.000 **	-0.010 **	-0.019 **	-0.001 **	-0.011 **
	(0.002)	(0.000)	(0.003)	(0.002)	(0.000)	(0.004)	(0.001)	(0.000)	(0.002)
Female	-0.484 **	-0.027 **	-0.184 **	0.405 **	0.032 **	0.089	-0.071	-0.003	-0.012
	(0.078)	(0.005)	(0.066)	(0.074)	(0.005)	(0.071)	(0.048)	(0.003)	(0.031)
Black	0.482 **	0.028 **	0.677 **	-0.464 **	-0.027 **	-0.845 **	-0.038	-0.002	0.100 *
	(0.085)	(0.005)	(0.124)	(0.081)	(0.005)	(0.132)	(0.052)	(0.003)	(0.058)
Asian	-0.236 *	-0.015 *	-0.011	0.068	0.008	-0.120	-0.013	-0.001	-0.025
	(0.136)	(0.008)	(0.170)	(0.130)	(0.008)	(0.180)	(0.085)	(0.005)	(0.079)
Other Race	0.027	0.005	0.269	0.274	0.014	-0.150	-0.101	-0.006	-0.134
	(0.176)	(0.011)	(0.221)	(0.168)	(0.010)	(0.234)	(0.109)	(0.006)	(0.102)
Hispanic	-0.097	-0.007	-0.291 **	-0.026	-0.003	-0.208 *	-0.115 **	-0.007 **	-0.027
	(0.079)	(0.005)	(0.104)	(0.076)	(0.005)	(0.110)	(0.049)	(0.003)	(0.048)
Less than High School	-0.242 **	-0.015 **	-0.147	-0.196 **	-0.005	-0.125	0.163 **	0.009 **	0.044
	(0.090)	(0.005)	(0.129)	(0.086)	(0.005)	(0.137)	(0.056)	(0.003)	(0.060)
Some College	0.064	0.002	-0.024	-0.009	-0.002	-0.051	0.048	0.003	-0.016
	(0.067)	(0.004)	(0.083)	(0.064)	(0.004)	(0.088)	(0.041)	(0.002)	(0.038)
College Degree	0.090	0.005	-0.086	-0.237 **	-0.017 **	-0.143	-0.010	-0.001	-0.019
	(0.076)	(0.005)	(0.092)	(0.072)	(0.004)	(0.098)	(0.047)	(0.003)	(0.043)
Advance Degree	-0.014	-0.002	-0.150	-0.253 **	-0.015 **	-0.183	-0.061	-0.003	-0.062
	(0.096)	(0.006)	(0.112)	(0.091)	(0.006)	(0.118)	(0.059)	(0.003)	(0.052)
Child in the Household	-0.742 **	-0.047 **	-0.535 **	1.657 **	0.102 **	1.145 **	-0.367 **	-0.021 **	-0.257 **
	(0.125)	(0.008)	(0.148)	(0.119)	(0.007)	(0.157)	(0.077)	(0.005)	(0.068)
Age of Youngest Child (if child in household)	0.031 **	0.002 **	0.031 **	-0.076 **	-0.004 **	-0.064 **	0.027 **	0.002 **	0.017 **
	(0.008)	(0.000)	(0.009)	(0.007)	(0.000)	(0.009)	(0.005)	(0.000)	(0.004)
Number of Children in the Household	-0.100 **	-0.005 **	-0.086	0.104 **	0.005 **	0.121 **	-0.001	0.000	-0.004
	(0.042)	(0.003)	(0.048)	(0.040)	(0.002)	(0.051)	(0.026)	(0.002)	(0.022)
Married	-1.101 **	-0.070 **	-	2.044 **	0.124 **	0.000	-0.317 **	-0.022 **	-
	(0.079)	(0.005)	-	(0.076)	(0.005)	(0.000)	(0.049)	(0.003)	-
Married Females	0.307 **	0.021 **	-	-0.147	-0.009	0.000	-0.012	0.003	-
	(0.103)	(0.006)	-	(0.098)	(0.006)	(0.000)	(0.064)	(0.004)	-
Enrolled in School	0.065	0.006	0.280	-0.519 **	-0.018 **	-0.203	0.434 **	0.025 **	0.045
	(0.091)	(0.006)	(0.150)	(0.087)	(0.005)	(0.160)	(0.056)	(0.003)	(0.069)
Household Income									
5,000 - 9,999	-0.003	-0.003	0.085	-0.102	0.001	-0.666 **	-0.033	0.001	0.098
	(0.142)	(0.009)	(0.249)	(0.136)	(0.008)	(0.265)	(0.088)	(0.005)	(0.115)
10,000 - 19,999	-0.047	-0.003	-0.052	0.051	0.005 *	0.145 *	-0.044	-0.003	-0.047
	(0.051)	(0.003)	(0.082)	(0.049)	(0.003)	(0.087)	(0.032)	(0.002)	(0.038)
20,000 - 29,999	0.007	0.000	-0.024	-0.012	0.000	-0.037	-0.006	0.000	0.005
	(0.030)	(0.002)	(0.044)	(0.029)	(0.002)	(0.046)	(0.019)	(0.001)	(0.020)
50,000 - 74,999	-0.029 **	-0.002 *	0.002	0.010	0.001	-0.017	0.002	0.000	0.005
	(0.015)	(0.001)	(0.018)	(0.014)	(0.001)	(0.020)	(0.009)	(0.001)	(0.009)
75,000 and over	-0.002	0.000	0.018	-0.017	0.000	-0.032 **	0.028 **	0.002 **	0.025 **
	(0.012)	(0.001)	(0.015)	(0.012)	(0.001)	(0.016)	(0.008)	(0.000)	(0.007)
Time at Work	-0.278 **	-	-0.246 **	-0.334 **	-	-0.449 **	-0.099 **	-	-0.048 **
	(0.011)	-	(0.014)	(0.011)	-	(0.015)	(0.007)	-	(0.006)
Spouse Employed	-	-	0.139	-	-	0.054	-	-	0.010
	-	-	(0.103)	-	-	(0.109)	-	-	(0.048)
Spouse Employed Full Time	-	-	0.054	-	-	0.022	-	-	-0.014
	-	-	(0.094)	-	-	(0.100)	-	-	(0.043)

Table 11. OLS Parameter Estimates From Regressions with Time Spent Interacting With Others as the Dependent Variable -- Continued

	Time with Children			Time with Spouse		Time with Spouse Alone	
	All Workers		Married Workers Only	Married Workers Only		Married Workers Only	
	Hours	Percentage of Non-Work Time	Hours	Hours	Percentage of Non-Work Time	Hours	Percentage of Non-Work Time
Evening Worker	-0.392 **	-0.015 **	-0.216	-0.867 **	-0.053 **	-0.330 **	-0.021 **
	(0.111)	(0.007)	(0.147)	(0.128)	(0.008)	(0.103)	(0.006)
Night Worker	0.354 **	0.028 **	0.537 **	-0.163	-0.003	-0.185	-0.010
	(0.149)	(0.009)	(0.178)	(0.151)	(0.009)	(0.121)	(0.007)
Age	0.001	0.000	-0.021 **	-0.014 **	-0.001 **	-0.002	0.000
	(0.004)	(0.000)	(0.006)	(0.004)	(0.000)	(0.003)	(0.000)
Female	0.713 **	0.047 **	0.572 **	-0.481 **	-0.019 **	-0.201 **	-0.008 **
	(0.124)	(0.008)	(0.090)	(0.070)	(0.004)	(0.056)	(0.003)
Black	-0.535 **	-0.032 **	-0.713 **	-0.701 **	-0.044 **	-0.226 **	-0.014 **
	(0.109)	(0.007)	(0.148)	(0.131)	(0.008)	(0.105)	(0.006)
Asian	-0.074	-0.004	-0.179	-0.119	-0.007	0.045	0.001
	(0.187)	(0.011)	(0.210)	(0.178)	(0.011)	(0.143)	(0.009)
Other Race	0.479 **	0.030 **	0.205	-0.317	-0.025 *	-0.356 *	-0.026 **
	(0.211)	(0.013)	(0.270)	(0.231)	(0.014)	(0.185)	(0.011)
Hispanic	-0.101	-0.008	-0.176	-0.151	-0.011	-0.101	-0.008
	(0.098)	(0.006)	(0.121)	(0.109)	(0.007)	(0.087)	(0.005)
Less than High School	-0.382 **	-0.018 **	-0.204	-0.138	-0.011	0.077	0.005
	(0.112)	(0.007)	(0.153)	(0.136)	(0.008)	(0.109)	(0.007)
Some College	0.056	0.002	0.084	-0.090	-0.007	0.031	0.002
	(0.090)	(0.005)	(0.107)	(0.087)	(0.005)	(0.070)	(0.004)
College Degree	0.172	0.010	0.234 *	-0.180 *	-0.011 *	-0.104	-0.006
	(0.109)	(0.007)	(0.120)	(0.097)	(0.006)	(0.078)	(0.005)
Advance Degree	0.169	0.013	0.211	-0.227 *	-0.011	-0.102	-0.004
	(0.135)	(0.008)	(0.146)	(0.117)	(0.007)	(0.094)	(0.006)
Child in the Household	-	-	-	-0.515 **	-0.028 **	-1.782 **	-0.111 **
	-	-	-	(0.155)	(0.010)	(0.125)	(0.008)
Age of Youngest Child (if child in household)	-0.113 **	-0.007 **	-0.098 **	0.005	0.000	0.042 **	0.002 **
	(0.007)	(0.000)	(0.010)	(0.009)	(0.001)	(0.008)	(0.000)
Number of Children in the Household	0.149 **	0.008 **	0.171 **	-0.031	-0.002	-0.019	0.000
	(0.038)	(0.002)	(0.045)	(0.050)	(0.003)	(0.041)	(0.002)
Married	0.451 **	0.021 **	-	-	-	-	-
	(0.122)	(0.007)	-	-	-	-	-
Married Females	-0.001	0.005	-	-	-	-	-
	(0.149)	(0.009)	-	-	-	-	-
Enrolled in School	-0.499 **	-0.018 **	-0.061	-0.180	-0.010	-0.124	-0.007
	(0.121)	(0.007)	(0.186)	(0.158)	(0.010)	(0.126)	(0.008)
Household Income							
5,000 - 9,999	0.172	0.013	-0.095	-0.543 **	-0.025	-0.478 **	-0.025 *
	(0.201)	(0.012)	(0.328)	(0.261)	(0.016)	(0.209)	(0.013)
10,000 - 19,999	0.167 **	0.010 **	0.160	0.236 **	0.014 **	0.073	0.004
	(0.070)	(0.004)	(0.099)	(0.087)	(0.005)	(0.070)	(0.004)
20,000 - 29,999	-0.025	-0.001	-0.061	-0.068	-0.003	0.017	0.002
	(0.042)	(0.003)	(0.054)	(0.046)	(0.003)	(0.037)	(0.002)
50,000 - 74,999	-0.012	-0.001	-0.025	-0.025	-0.002	-0.014	-0.001
	(0.020)	(0.001)	(0.024)	(0.019)	(0.001)	(0.015)	(0.001)
75,000 and over	-0.040 **	-0.002 **	-0.038 *	-0.024	-0.002	-0.016	-0.001
	(0.017)	(0.001)	(0.020)	(0.016)	(0.001)	(0.013)	(0.001)
Time at Work	-0.334 **	-	-0.371 **	-0.318 **	-	-0.161 **	-
	(0.015)	-	(0.017)	(0.015)	-	(0.012)	-
Spouse Employed	-	-	0.216 *	-0.429 **	-0.026 **	-0.149 *	-0.009
	-	-	(0.127)	(0.108)	(0.007)	(0.087)	(0.005)
Spouse Employed Full Time	-	-	0.007	-0.043	0.000	-0.088	-0.004
	-	-	(0.119)	(0.098)	(0.006)	(0.079)	(0.005)

Table 12. Hours per Day Spent in Specified Activity On Days Workers Did Not Work (2004, Based on a 24 hour day, Wage and Salary Workers with Only One Job)

Variables	All	Day Workers	Evening Workers	Night Workers	Other
Personal Care	9.85	9.88	9.91	9.36	9.45
Sleeping	9.13	9.15	9.42	8.38	8.68
Asleep	9.10	9.13	9.36	8.38	8.59
Sleepless	0.03	0.03	0.07	0.00	0.08
Household Activities	2.40	2.43	1.64	4.44	2.36
Caring for and Helping Household Members	0.72	0.75	0.68	0.87	0.38
Caring for and Helping Non-Household Members	0.38	0.38	0.59	0.35	0.15
Education	0.32	0.23	0.34	0.00	1.67
Consumer Purchases	0.72	0.73	0.75	0.47	0.64
Professional and Personal Care Services Purchases	0.09	0.10	0.08	0.00	0.06
Household Services Purchases	0.03	0.03	0.00	0.25	0.01
Government Services Use and Civic Obligations	0.00	0.00	0.00	0.00	0.00
Eating and Drinking	1.19	1.20	1.13	0.73	1.32
Socializing, Relaxing and Leisure	5.08	4.96	5.73	5.69	5.56
Watching Television	2.68	2.63	2.99	3.02	2.84
Sports, Exercise and Recreation	0.55	0.61	0.35	0.13	0.23
Participating in Sports, or Exercise	0.51	0.56	0.31	0.13	0.23
Religious and Spiritual Activities	0.19	0.20	0.14	0.23	0.24
Volunteer Activities	0.16	0.16	0.06	0.28	0.13
Telephone Calls	0.09	0.09	0.15	0.00	0.03
Traveling	1.59	1.62	1.66	1.18	1.18
Traveling to Work and Travel Related to Work	0.06	0.06	0.09	0.00	0.00
Working at Job (at place of work)	0.00	0.00	0.00	0.00	0.00
Other Income Generating Activities	0.00	0.00	0.00	0.00	0.00
Job Search	0.00	0.00	0.04	0.00	0.00
Work Activities Direct Part of Job	0.00	0.00	0.00	0.00	0.00
Work Related Activities (except exercising as part of job)	0.00	0.00	0.00	0.00	0.00
Uncodeable	0.09	0.10	0.02	0.00	0.18

Table 13. Time Spent Interacting with Others On Days Workers Did Not Work

Variables	All	Day Workers	Evening Workers	Night Workers	Other
Did Sleep	100%	100%	100%	100%	100%
Time Sleeping	9.15	9.17	9.42	8.38	8.68
Watched TV	79%	78%	77%	77%	84%
Time Spent Watching TV	3.41	3.35	3.89	3.93	3.38
Participated in Sports or Exercise Time Spent in Sports	20%	21%	17%	12%	12%
Time Spent Participating in Sports, or Exercise	2.59	2.70	1.82	1.10	1.90

Table 14. Time Spent Interacting with Others On Days Workers Did Not Work

Variables	All	Day Workers	Evening Workers	Night Workers	Other
Time Alone	4.65	4.66	4.99	6.24	3.56
Time with Friends	1.27	1.08	2.60	0.74	2.18
Time with Family Members	6.87	7.23	3.63	7.61	6.37
Time with Spouse (if spouse in Household)	6.36	6.37	4.95	9.21	6.14
Time with Children	7.33	7.38	7.16	9.98	5.67
Attending an event (social, artistic or sporting)	0.47	0.48	0.32	0.26	0.63
Computer use for leisure or e-mail	0.19	0.20	0.12	0.00	0.09
Time spent on e-mail	0.03	0.03	0.07	0.00	0.00

Table 15. Hours per Day Spent in Specified Activity On Days Workers Did Not Work (2004, Based on a 24 hour day, Wage and Salary Workers with Only One Job)

Variables	Day Workers	Non-Day Workers
Personal Care	9.88	9.68
Sleeping	9.15	9.03
Asleep	9.13	8.96
Sleepless	0.03	0.06
Household Activities	2.43	2.25
Caring for and Helping Household Members	0.75	0.60
Caring for and Helping Non-Household Members	0.38	0.40
Education	0.23	0.77
Consumer Purchases	0.73	0.68
Professional and Personal Care Services Purchases	0.10	0.06
Household Services Purchases	0.03	0.04
Government Services Use and Civic Obligations	0.00	0.00
Eating and Drinking	1.20	1.15
Socializing, Relaxing and Leisure	4.96	5.66
Watching Television	2.63	2.94
Sports, Exercise and Recreation	0.61	0.28
Participating in Sports, or Exercise	0.56	0.26
Religious and Spiritual Activities	0.20	0.19
Volunteer Activities	0.16	0.11
Telephone Calls	0.09	0.09
Traveling	1.62	1.43
Traveling to Work and Travel Related to Work	0.06	0.05
Working at Job (at place of work)	0.00	0.00
Other Income Generating Activities	0.00	0.00
Job Search	0.00	0.02
Work Activities Direct Part of Job	0.00	0.00
Work Related Activities (except exercising as part of job)	0.00	0.00
Uncodeable	0.10	0.08