

New estimates of working time for elementary school teachers

Data from a time diary survey suggest that the average elementary school teacher works almost 2 hours more than the time required by contract, however, findings show that the choice of measurement substantially affects time estimates

Robert Drago,
Robert Caplan,
David Costanza,
Tanya Brubaker,
Darnell Cloud,
Naomi Harris,
Russell Kashian,
and
T. Lynn Riggs

How much time do schoolteachers devote to work? Although a variety of answers to this question exist, our expectations are that teachers would experience time pressures that would lead to a spillover of schoolwork into family life. Motivated by an interest in time pressures and how workers deal with such pressures, we draw upon the Time, Work and Family project. This project collected data using surveys, time diaries, and telephone interviews which were administered by the Institute for Survey and Policy Research at the University of Wisconsin-Milwaukee, during the 1997–98 school year. In the analysis presented below, we use time diary data for a sample of full-time, elementary school teachers in four, urban, public school districts in the United States.

The first and most important task in determining time pressures placed on teachers is to generate an accurate estimate of how teachers spend their time. The accuracy of such estimates is critical to understanding how policies and practices both at work and at home function to alleviate or exacerbate such pressures.

This article sheds light on the working time of teachers by comparing six estimates of working time, mainly focusing on work for the employer, but also considering work performed for the household because such tasks also require time and effort:

- Contractual working time (in our sample all teachers are covered by collective bargaining

agreements)

- Standard time diary measure of working time
- “Face time” or physical presence at the workplace
- “Work invasiveness” or the amount of time work invades an individual’s time
- Housework time
- Total hours of housework and teaching-related activities

The article also explores the relationships between the measures of working time. For example, we find a systematic relationship between standard diary time and face time, such that as diary time increased, so does face time, but by a much smaller amount. (See the appendix.)

Background

Recent interest in working time stems from the assertion that, due to a variety of structural changes in the nature of employment and its relationship to the family, the American workforce has become increasingly overworked. This argument has sparked intense debate.¹ Two arguments are offered for why American society is overworked and time pressured. One is that families are increasingly characterized by having dual earners—a phenomenon currently applying to 78 percent of all married employees.² Dual-earner families are largely the result of married women entering the workforce. For those women in particular, this shift has likely created pressures to

See authors’ identification on page 38.

manage work responsibilities as well as household tasks. Public, elementary school teachers in urban schools fit this mold quite well. Eighty-seven percent of such teachers are women, 71.5 percent are members of dual-earner couples, and 57 percent are parents of dependent children.³

A second argument explaining the overworked society is that time pressures have resulted from attempts by American industry to become more competitive in the global economy. In response to a variety of economic pressures, many firms have introduced high commitment work systems. High commitment work systems involve increased levels of teamwork, training, meetings, and involvement in the job and decisions around the job, all of which increases demands on employees.⁴ Similar initiatives and related demands on employees have been mirrored in teachers' jobs. For instance, poverty and accompanying decreases in tax bases in urban centers have motivated school administrators to introduce their own versions of high commitment work systems. There is some evidence that recent initiatives in the field of education, such as Accelerated Schooling and site-based management, which are intended to produce high commitment work systems in schools, may be adding to the demands already placed on teachers.⁵ Increasing levels of urban poverty also function as an additional source of workload and stress on teachers, carrying increased behavioral and performance problems among students. In the average school in our sample, 58.2 percent of the children are from families who are financially near or below the poverty line. The higher the proportion of students in poverty, the more the teacher is called upon to deal with difficult discipline problems and other conditions antithetical to a good learning environment. For all of these reasons, our expectations are that the Time, Work and Family sample has experienced substantial pressures on their time.

Of course, there are elements of teaching that may offset such pressures. Public school teachers are not typically in the classroom with students for 8 hours per day. Further, summer holidays are far longer in the teaching field than those in other occupations—a job characteristic that motivates a sizable minority to enter the teaching profession.⁶ In examining the time allocation of teachers, however, we focus on periods when school is in session.

Rationale and development

Previous surveys of working time for teachers used broad questions to obtain estimates of time allocation. For example, a yearly survey administered by the National Education Association asked teachers about 1) the “exact length of your required school day,” 2) the amount of time per week spent “after the required work day—evenings and weekends—on instruction-related activities,” and 3) any additional time per week on “compensated noninstructional activities” and

“noncompensating noninstructional activities” related to school. Summing the resulting figures suggests that public, elementary school teachers averaged 46.6 hours of work per week in the 1996–97 school year.⁷ Roughly comparable items, included in a survey undertaken by the National Center for Education Statistics provide a figure of 44.4 hours per week for full-time, public, elementary school teachers during the 1993–94 school year.⁸

Such estimates may be biased upwards for two reasons. First, leisure time at school may be counted as part of the required school day. If, for example, teachers received 1 hour per day of nonprep, duty-free time, then the workweek figures could be overestimated by a full 5 hours.⁹ Second, there is evidence that broad survey questions about usual or typical hours of work tend to produce biased estimates. Particularly for individuals working long hours, researchers have suggested that overestimation in response to such survey questions is the norm.¹⁰ However, there is at least one plausible reason to believe that the results from teacher surveys underestimate working time. If a teacher is worried about spending too much time at home performing work related tasks and ignoring family matters, then he or she might underestimate this type of working time in response.

In contrast to previous surveys, time diaries have the potential to overcome underestimates, as well as overestimates. In a time diary study, respondents provide detailed information regarding primary and secondary activities for a 24-hour period. Robinson and Godbey's review of objective checks of time diary data support a superior validity to the standard written annual surveys and show that different methods of administering the diaries (for example, written or oral entries) tend to yield similar, reliable data.¹¹

For the Time, Work and Family project, respondents completed a written diary at the end of a day. The diary covered the period from the previous midnight to just before the respondent goes to sleep. For each activity, respondents described the primary activity (“What were you doing?”) and indicated when they began and ended the activity. In addition, respondents were requested to describe secondary activities (“Were you doing anything else?”) that may have occurred along with the primary activity. The respondent indicated if the activity was “at school” or not during the period covered. Respondents also were asked whether their youngest child was present during each activity and separately, whether their spouse or partner was present for the activity.

Although time diaries have the potential to capture detailed events of respondents' activities, the major drawback is the respondents' time commitment required to complete the diary. As a result, response rates for diaries covering an entire week are typically low (around 40 percent).¹² To avoid such low response rates, the majority of diary studies sample each respondent for only one 24-hour period. To make inferences

about the workweek, then, requires that individual responses be grouped according to measured characteristics (for example, age and gender) so that a synthetic workweek can be constructed for each group by using information drawn from diaries for *similar* respondents across *different* days of the week. The synthetic workweek approach poses problems of measurement error, because the accuracy of within-group estimates varies across groups.¹³ Further, because individual observations on the working week are not statistically independent within a particular group, comparisons of working time across small groups are not meaningful.

To avoid these problems, respondents to the Time, Work and Family project completed all diaries at the end of a Tuesday, which was also a working day. The Tuesday diary strategy has the disadvantage of selecting an arbitrary, though standardized, day. To address this issue, we obtained ratings for whether the respondent performed “less than usual,” “about the usual,” or “more than usual” teaching-related work that day. The latter item permits us to control for unusual days.¹⁴

Methodology

The sample. The sample was constructed to provide three levels of information: district, school, and individual teacher/family. We selected four urban school districts with high within-district variance in working time from a list of the 30 largest cities in the United States. High within-district variance was desired because the data were being collected as part of a larger study on the impact of work/family policy and practices on time use. The National Center for Education Statistics provided estimated within-district workweek variance figures for selected school districts with data from 1993–94. Using this information as a guide resulted in a sample of districts with a reasonable amount of variation in working time.¹⁵ The methodology resulted in a sample with two cities along the Eastern seaboard, and two in the Midwest. The smallest city had a population of slightly less than one-half million, while the largest ranked in the top five of all U.S. cities.

The second level of sampling was at the elementary school level. Within each district, we, again, sought to maximize variance in working pressures on teachers, this time, across schools. One type of relevant information that is standardized across districts and collected regularly at the school level is the percentage of students qualifying for free or reduced lunch programs as a result of low family income levels. The measure is set by the National School Lunch Program, such that children from families with incomes at or below 185 percent of the poverty level are eligible for free or reduced price meals.

Assuming that work pressures on teachers are greater in schools with a higher percentage of students from low income

families, all schools in each district were ranked according to the relevant statistics for 1995. The middle 20 percent of schools in each district were eliminated from consideration, six schools in each district were selected randomly from the resulting list of high poverty schools, and another six schools in each district were selected from the list of low poverty schools.

Principals of 48 schools on the resulting list were invited to participate in the study. Participation at this level required that the principal take a survey and provide access to teachers in the school. Random resampling (within the relevant district/group) due to refusals resulted in a total of 57 schools being contacted and 46 schools participating in the study for a school-level response rate of 80.7 percent. Attempts to achieve the projected sample of 48 schools fell short by two due to time constraints, as the survey was targeted for completion during the 1997–98 school year.

The third level of sampling was at the teacher level. To prevent a small number of schools with large numbers of teachers from dominating the data set, a maximum of 17 teachers was asked to participate at each school. Criteria for inclusion in the sample included participants who had full-time teaching status, and who taught a “regular” class of students from grades kindergarten through fifth.¹⁶ Given the small percentage of male teachers in such schools, we attempted to maximize variance on gender. All teachers who were identified as male from the school faculty roster were included in the study. Female teachers were then randomly selected from rosters to achieve a maximum list of 17 eligible teachers per school. Of 627 eligible teachers contacted, 324 time diaries were completed and codable for a 24-hour work day (on a Tuesday), for a response rate of 51.7 percent.¹⁷

Demographic information for the Time, Work and Family sample of teachers, and for a larger sample of teachers from urban, elementary, public schools produced by the National Center for Education Statistics for the 1993–94 school year, are provided in table 1. Most of the matches are reasonably close, although a z-test for differences of proportions reveals some significant divergence.¹⁸ Even with an attempt to oversample males, the data from the Time, Work and Family project yielded a lower proportion of males than did the national sample ($p < .05$). The national sample, however, includes specialty teachers, such as those in physical education, who are excluded from this study. The Time, Work and Family sample includes a significantly lower proportion of teachers with education specialist degrees ($p < .01$), which may be due to the exclusion of special education teachers. The sample also exhibits a smaller proportion of respondents in the race and ethnic origin category, “other” (that is, not one of the three main groups) relative to national figures ($p < .05$). This disparity may reflect the Midwestern and Eastern seaboard composition of the Time, Work and Family sample.

Table 1. Demographic characteristics among teachers, based on the Time, Work and Family Project and the National Center for Education Statistics, 1993-94

[In percent]

Variable	Time, work and family time diaries	National Center for Education Statistics
Age	42.8	43.0
Gender:		
Female	87.0	82.2
Male	13.0	17.8
Race and ethnic origin:		
White	76.4	80.7
Black	12.1	12.1
Hispanic	7.1	—
Other	4.3	7.2
Marital status:		
Married	71.6	68.1
Single	11.7	16.4
Separated	1.6	15.5
Divorced	8.8	—
Widowed	1.9	—
Living with a partner	4.4	—
Highest education level ⁴ :		
Bachelors degree	61.0	55.8
Masters degree	36.5	39.6
Education specialist	1.9	.8
Doctorate6	—
Parent of dependent child	44.1	56.7

¹ Interpolated from frequency data, standard deviation for Time, Work and Family data 9.59, but not available for National Center for Education Statistics on variable.

² Includes first and subsequent marriages.

³ Includes separated, widowed, and divorced.

⁴ May not add to 100 percent due to rounding and multiple terminal degrees.

NOTE: For Time, Work and Family data, there were 324 observations, except 322 observations on race, and 323 observations on gender and age. For National Center for Education Statistics, there were 4,210 observations.

Dash indicates data not available.

SOURCES: Time, Work and Family Project, and National Center for Education Statistics.

Note also that the wording of the race question in the Time, Work and Family survey diverges from that in the National Center for Education Statistics (and U.S. census), because we employed an open-ended style, asking the respondent, “How would you describe your ethnicity or racial background?” As a result, Hispanics are classified separately, rather than classified as white or black, as in the National Center for Education Statistics or standard census data. Regarding marital status, the Time, Work and Family data yield a lower proportion of single respondents ($p < .05$), a result we attribute to the way we separately classified respondents who had lived with a partner in a “committed relationship for at least 6 months.” If those individuals are reclassified as single, there are no significant differences in marital status. Note also that the percentage of parents in the Time, Work and Family data is more than 12 percentage points below the national average ($p < .01$). We suspect this

low figure is due to response bias, with relatively fewer parents willing to add to their already demanding schedules by committing to participate in the project.¹⁹ The Time, Work and Family project required that respondents fill out a written survey, participate in an extended telephone interview, and maintain a time diary, while the National Center for Education Statistics administered only a short written survey to teachers and achieved a response rate of 88.2 percent.²⁰ Given these differences, we urge caution in treating the precise figures (in the results section) as representative.²¹ It is more important to focus on the patterns of findings across groups and methods of time estimation.

Administration of time diaries. After selection of potential respondents, the research team mailed letters to teachers informing them of the purpose of the project and notifying them to expect a telephone call at the school. During the telephone call, surveyors asked for a home telephone number and a convenient time to call. During the home telephone call, teachers were given more details regarding the scope and purpose of the project, and were requested to formally agree to participate in it. Teachers who agreed were scheduled for a telephone interview. Eventually, they received a packet which included the time diary; a short written survey; a \$10 subject payment; and a self-addressed, pre-stamped return envelope. Teachers were instructed to complete the time diary at the end of the next Tuesday which was also a working day. As a follow-up, an attempt was made to schedule the telephone interview at least 1 full day after the diary should have been completed. If the diary had not been completed at the time scheduled for the telephone interview, respondents were requested to reschedule the telephone interview for 1 week later, and to complete the time diary on the following Tuesday.²²

To ensure that the diary and diary coding were standardized against extensively tested procedures, the diary was largely a replication of one from the Child Development Supplement of the Panel Study of Income Dynamics study at the Survey Research Center at the University of Michigan. Coders for the Time, Work and Family project received training at the Survey Research Center, and the code book for the project was a slightly modified version of the Center’s code book, with categories specific to teachers added, and no categories deleted. The SAS program employed by the Survey Research Center was used for diary data entry.

Estimation methods. From the Time, Work and Family data, we can develop six distinct measures of working time for teachers: contractual, standard diary, face time, work invasiveness, housework, and total working time. These measures can be compared to determine whether different measurement approaches yield similar or distinct estimates of working time. Additionally, the measures can be used to compare working

time estimates across demographic categories to determine whether different measures of working time might mask or highlight demographic divergence.

Contractual working time is a potentially important estimate of working time because it may influence public perceptions of teachers' working time and help to determine expectations held by teachers and administrators regarding the appropriate length of the working day. A majority of respondents (76.1 percent), are union members, but all respondents are covered by collective bargaining agreements. Such agreements specify the minimum amount of time the teacher is required to work each day. To ensure uniformity, contractual working time is measured to include all required time, whether in the classroom or in preparation, while excluding any duty-free lunch period.

The *standard diary approach* captures working time both at the workplace and in the home, while excluding leisure time at work.²³ Commuting to work is also included as working time. Conceptually, the standard approach is intended to represent time when the respondent's efforts are devoted to work for the employer.

Face time refers to the amount of time the respondent is physically present in the workplace on the day in question. At a general conceptual level, face time is important because pressures to perform may be higher when customers, coworkers, and supervisors are present. Moreover, organizational cultures that emphasize face time may deny the flexibility necessary for employees to meet family commitments and emergencies. Regarding teachers specifically, face time is important because it may have a closer relationship to public perceptions of teacher working time than does either the standard diary measure or contractual working time. Note that, because the Time, Work and Family diaries include a check box for whether an activity is performed at the school of employment, face time is measured directly.

Theoretically, *work invasiveness* can occur at any time for persons in professional occupations. A telephone call or e-mail could arrive at home, problems at work might be discussed at the family dinner table, work issues could emerge as topics of discussion among fellow employees during their leisure time, or parents might attend events for their children and end up conversing about work. Particularly, as the Internet and telecommuting have become more pervasive, the interface between work and family time has become more porous, and the possibilities that work will invade time at home have expanded.

The *standard diary measure* of working time goes part of the way towards capturing work invasiveness, because it includes commuting and working for the employer while off the job site. Nonetheless, the standard measure can understate invasiveness for two reasons. First, arguably, work can invade an employee's time whenever he or she is physically

present at work, even while engaging in leisure activities. Having a lunch break in a quiet classroom is not the same as a picnic in the park or dinner with the family, because the workplace constrains the set of activities that an employee may engage in, even during nominally "free" time. We include such free time in our measure of work invasiveness.

Second, the performance of multiple activities leads to the understatement of work invasiveness in the standard diary measure. This problem stems from the 24-hour day constraint applied in diary coding. For example, if a teacher spends 1 hour simultaneously grading papers and helping a child with homework, coders are instructed to "divide the time evenly between the activities listed."²⁴ As a result, only ½ hour would be attributed to work, and the other ½ hour would be attributed to helping one's child with homework. While this rule may be reasonable for many purposes, it also can lead to a systematic understatement of the time that work invades family.

To recover a portion of the information lost in the standard process, the research team created a "work multiplier" variable, which allows us to capture work invasiveness while maintaining a 24-hour day. The structure of the variable is such that when all time variables are multiplied by the term, we recover all working time regardless of whether another activity was performed at the same time.

To preserve a 24-hour day, activities performed along with work were given multiplier values of zero. For the example mentioned earlier, the half hour attributed to grading papers in the standard diary measure would be given a value of "2," such that we capture the full hour of work invasion, while the half hour of helping a child with homework would be given a multiplier value of "0," and the latter would drop out of the data set. All time at work, along with the standard diary count of commuting and working time at home, as modified by the work multiplier, yields the measure of work invasiveness.

In addition to time devoted to employment, most adults spend time on housework. This suggests our fifth measure of working hours—*housework time*. Housework is fundamentally different from the work conceptualized in the measures discussed earlier, because neither an employer nor wages are typically involved. This difference provides a reason for measuring housework separately. Nonetheless, as Gary Becker argues, tasks typically performed in the home, such as cleaning, cooking, and child care, are similar to duties performed for wages in that they require time and effort.²⁵

Time diaries permit straightforward calculation of housework as broadly defined. Child care and care for others (including partners, elders, or neighbors) receive specific categories, as does travel related to these activities. In addition, housework such as cooking and cleaning receive separate codes. Adding time spent on errands yields housework figures for the Time, Work and Family sample.

We are interested in housework *per se* for two reasons. First, Becker's work is built on an assumed trade-off between time devoted to household work and time provided to an employer. If this assumption is correct, then we would expect to see an identifiable trade-off between time devoted to the two sets of activities. Second, a gender division of labor in households might exist, in which women disproportionately bear the burden of housework.²⁶ If so, then the other five measures of working time may understate the total working time contributions of women to the economy.

To the extent both housework and work for an employer involve time and effort, a global measure of *total working time* should include both sets of activities. The latter argument leads to our final measure of working time, labeled "total working time," which is obtained by summing housework and the standard diary measure of working time. By adding housework and the standard diary measure of working time, we avoid double-counting. If, instead we added housework and face time, the time spent at school on a phone call to a sick partner or a child would be double-counted. If we added housework to work invasiveness, the same problem would exist.

Results

We apply the measures of working time to the Time, Work and Family data to ascertain how the different indicators alter measured working time.

Contractual working time. Analysis of the collective bargaining agreements covering our sample indicates that the average teacher in the sample was under contract to work 6.5 hours per day or 32.5 hours per week. Demographic comparisons of contractual working time exhibited minimal differences, except with respect to race and ethnic origin. White respondents were contracted to work an average of around 10 minutes longer than nonwhite respondents, a difference which is significant ($p < .01$, $\eta^2 = .24$).²⁷ Because contractual working time only takes on four distinct values (one for each district), racial differences can be attributed to divergence in the racial composition of teachers across the four districts. White respondents were concentrated in school districts with the longest working time requirements.

Standard diary time. Estimates of the standard diary measure of working time are provided in the first column of table 2. As shown, the average teacher in the sample worked slightly less than 10 hours per day, or 9.69 hours. Analysis of variance reveals only two significant disparities: age exhibited a U-shaped relationship with working time ($p < .01$, $\eta^2 = .22$), where the youngest and oldest teachers reported the highest working time and those in the middle, reporting the highest/lowest number of hours. Additionally, parents worked significantly fewer hours

than nonparents ($p < .01$, $\eta^2 = .21$). The quantitative difference is such that respondents older than 50 years of age worked 1 hour longer than those in their 30's, while nonparents worked slightly more than 45 minutes per day longer than parents. In sum, standard diary time produces age and family status differences, but no racial or ethnic differences. In contrast, contracted time yields only racial and ethnic differences.

Face time. The second column of table 2 provides measures of face time. The average amount of face time for the Time, Work and Family sample is 8.26 hours. Relative to contractual time (6.5 hours), the average teacher was present in the school a full hour and three-quarters longer than was required. Relative to the standard diary indicator, face time understated the working day by slightly less than 1-1/2 hours per day. Although the standard diary time varied substantially by demographic category, face time did not. This finding is sensible, given that the contractual working day for teachers in these four school districts only ranges from a minimum of 6 to a maximum of 6.83 hours per day, and face time should be linked fairly closely to contractual time.

Analysis of variance reveals one significant difference in face time between groups. Teachers with partners exhibited face time around 1/3 of an hour longer than single respondents ($p < .05$, $\eta^2 = .12$). One possible explanation for this difference is that teachers with partners may often use school as a place to escape from the pressures of home.²⁸ If this were the case, we would expect teachers with partners to work longer hours overall. In fact, standard diary working time for teachers with partners is actually shorter by 6 minutes. It may be more plausible to suggest that these teachers are increasing the amount of face

Table 2. Working hours of teachers by demographic characteristics, from time-use diary measures, 1998

Characteristic	Standard diary time	Face time	Work invasiveness
Average hours for entire sample	9.69	8.26	10.28
Men	10.12	8.22	10.70
Women	9.63	8.26	10.22
White	9.72	8.33	10.33
Black	9.60	8.00	10.16
Hispanic	9.42	7.92	9.89
Other	10.12	8.40	10.57
Age			
23-30	9.63	8.32	10.13
31-40	9.30	8.18	9.80
41-50	9.48	8.17	10.21
51 and older	10.32	8.40	10.89
No partner	9.76	8.06	10.42
With partner	9.66	8.34	10.22
Nonparent	10.03	8.34	10.55
Parent of dependent child	9.25	8.16	9.93

NOTE: There were 324 observations, except 322 observations on race, and 323 observations on gender and age.

SOURCE: Time, Work and Family Project.

time in an effort to erect a barrier between work and home, thereby improving the quality of time spent with their partner.

Work invasiveness. The third column of table 2 presents work invasiveness figures. The average work invasiveness figure of 10.28 hours per day is a full 1/2 hour longer than working time, as measured by standard diary procedures, and it is 2 hours beyond average face time.²⁹ Analysis of variance reveals that significant differences exist here, according to the age of the respondent. Those older than age 50 appear to permit work to invade over 1 hour more of their time, relative to teachers in the 31 to 40 age group ($p < .01$, $\eta^2 = .22$). Parents appeared to allow work to invade their time significantly less than nonparents ($p < .01$, $\eta^2 = .17$), with a difference of slightly less than 40 minutes. Perhaps the most striking aspect of the work invasiveness figures, however, is that for every demographic group, the work invasiveness figures were at least a full hour and a half above the face time figures. To the extent that individual perceptions of teacher working time are based on face time or contractual time, a substantial underestimation of workload may exist.

Housework. An average of 2.23 hours is spent on housework activities across the sample. (See table 3.) As expected, women spent an average of over 1/2 hour more than did men on household tasks; a difference which is significant in an analysis of variance ($p < .05$, $\eta^2 = .13$). This large difference for a single day is notable, given that all of the respondents taught full-time the same day. Other significant differences are found according to age ($p < .01$, $\eta^2 = .29$). Teachers in the child-rearing years of their 30's added more than 2.6 hours to their employment time; those in their 20's added only 1.5 hours; and those older than 50 added 1.89 hours. Teachers with children spent well over an hour longer on household work than did nonparents ($p < .01$, $\eta^2 = .41$).

These findings support Becker's theory that there is a trade-off between paid employment and housework. Parents devoted less time to work as a teacher and more time to their families. The findings also suggest that teachers who are parents spent an additional 73 minutes per day on their families, but in turn, reduced employment time by between only 17 and 47 minutes, depending upon the measure used. (See table 2.)

Total working time. The second column of table 3 provides total working time figures for the sample, in which total working time is the sum of housework and the standard diary measure of working time. For the entire sample, average total working time was slightly less than 12 hours for the day. Gender differences were no longer significant, suggesting in connection with our other results that men may still be expected to devote more time than women do to paid employment, and less time than women do to housework. Racial and ethnic differences in total working time were significant ($p < .05$, $\eta^2 = .16$), with blacks and Hispanics showing shorter hours than the "other" category. This result

Table 3. Housework and total working hours of teachers, by demographic characteristics, from time-use diary measures, 1998

Characteristic	Housework time	Total working hours
Average for entire sample	2.23	11.92
Men	1.74	11.86
Women	2.31	11.93
White	2.35	12.07
Black	1.84	11.44
Hispanic	1.74	11.16
Other	2.06	12.18
Age		
23-30	1.50	11.13
31-40	2.63	11.94
41-50	2.55	12.02
51 and older	1.89	12.22
No partner	2.04	11.08
With partner	2.31	11.96
Nonparent	1.69	11.72
Parent of dependent		
Child	2.91	12.16

NOTE: There were 324 observations, except for 322 observations on race, and 323 observations on gender and age.
SOURCE: Time, Work and Family Project.

achieves significance when insignificant differences in standard diary and housework measures are added together.³⁰ Differences in total working time were directly linked to age ($p < .05$, $\eta^2 = .19$). Due to longer standard diary working time, respondents over 50 years of age put in over 1 hour more on work of various sorts, compared with respondents in their 20's.

As suggested by the finding that the extra housework of parents is not totally offset by reductions in time devoted to employment, we find that the total working time of parents was higher by almost 30 minutes per day than that for nonparents ($p < .05$, $\eta^2 = .16$).

Conclusions

Initial results from the time diary study indicate that the demographics are similar to those from larger samples of teachers in some ways, but with enough divergence so that caution is urged in generalizing the demographic results to teachers as a whole. Despite such cautions, the differences in work hours produced by these different estimation methods are so substantial that they deserve exploration in other occupational groups.

By developing and applying six indicators of working time to the data, we can ascertain whether the method chosen to measure working time changes the results. Our major conclusion is that the choice of method exerts an important influence over measured working time. Specifically, the average teacher in the sample was under contract to work 6-1/2 hours per day. The amount of time teachers spent at school, or face time, averaged 8-1/4 hours per day, or over 1-3/4 hours longer than required by the contract. Standard time diary methodology suggests the

working day was even longer, around 20 minutes shy of a 10-hour day. Considering all time either at school or performing work-related tasks, even if performed simultaneously with others, yielded an average of approximately 10–1/4 hours per day of work invasiveness. Work invaded these teachers' lives for almost 4 hours beyond that which is explicitly required. If perceptions of teacher working time are based upon contract stipulations or upon the amount of time teachers spend at school, such perceptions may substantially underestimate the actual time teachers devote to their jobs.

In addition to teaching-related work, respondents reported spending around 2–1/4 hours per day on housework. Adding housework to the standard diary measure of working time yielded an average total working day of slightly less than 12 hours.

Demographic analyses reinforce our conclusion that the choice of measurement method exerts a strong influence over the results found. For example, contractual and total working times were significantly linked to race, while other measures were not. By way of contrast, standard diary time, work invasiveness, housework, and total working time were significantly associated with differences in age and parental status. Gender differences were only significant for housework, while teachers with partners or spouses only significantly diverged from others according to the face time measure.

Cutting across most measures of working time is the parental status of respondents. Parents worked less according to either the standard diary or work invasiveness measure. Parents de-

voted all of this time, and more, to their families and housework in general. The net result of parents performing more housework and less teaching-related work is that parents spent almost 1/2 hour more per day on teaching and housework. These results, again, highlight the value of employing an assortment of working time measures: without the measure of housework, our results could have led us to conclude that parents work less than nonparents. The housework and total working time figures point to the opposite conclusion.

To the extent that these findings are shown to generalize, they may have important implications. The results might suggest that teaching is already an occupation involving long hours of work. Initiatives which involve lengthening the school day might therefore lead to a reduction in teaching-related work performed at home (for example, class preparation). Alternatively, lengthening the school day might increase teacher-working time and possibly increase the stress associated with the job. In either case, problems of teacher retention could intensify if the long hours of teachers in this sample are typical for the profession.

For researchers interested in time use, the analysis suggests that they should consider using time diaries to capture the complexities of working time, rather than focus on generating a single "working time" figure for each individual. One of the advantages of such a multi-faceted approach is that it might better prepare us to understand and study the ways in which different aspects of working time affect job satisfaction, job performance, and family life. □

Notes

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¹ On the possibility of overwork, see Juliet B. Schor, *The Overworked American: The Unexpected Decline of Leisure* (New York, Basic Books, 1992), or "Civic Engagement and Working Hours: Do Americans Really Have More Free Time Than Ever Before?" Paper presented at the Conference on Civic Engagement in American Democracy, Portland ME, September 1997. For contrary evidence, see John P. Robinson and Ann Bostrom, "The overestimated workweek? What time diary measures suggest," *Monthly Labor Review*, August 1994, or John P. Robinson and Geoffrey Godbey, *Time for Life: The Surprising Ways Americans Use Their Time* (University Park, Pennsylvania State Press, 1997).

² See James T. Bond, Ellen Galinsky and Jennifer Swanberg, *The 1997 National Study of the Changing Workforce* (New York, Families and Work Institute, 1998), p. 36.

³ Gender and parenting figures for the 1993–94 school year are from the *Schools and Staffing Survey and Teacher Follow-up Survey* (U.S. Department of Education, National Center for Education Statistics, 1998), CD-Rom version. Dual-earner figures are estimated from the *Census of Population and Housing, 1990: Public Use Microdata Samples* (U.S. Department of Commerce, Bureau of the Census, 1992), machine-readable files.

⁴ Evidence on high commitment work systems appears in Eileen Appelbaum and Rosemary Batt, *The New American Workplace* (Ithaca, New York, ILR Press, 1994). Evidence on the linkage between such systems and family pressures appears in Eileen Appelbaum and Peter Berg, "Balancing Work and Family: Evidence from Surveys of Manufacturing Workers," *Proceedings of the Forty-Ninth Annual Meeting, Industrial Relations Research Association* (Madison, Wisconsin, IRRRA, 1997), pp. 115–22.

⁵ On high commitment work systems in schools, see *Schools and Workplaces. An Overview of Successful and Unsuccessful Practices*, No. GAO/PEMD-95-28 (U.S. Government Accounting Office, 1995). On the effects of such initiatives on teachers, see Robert Drago, Robert Caplan, Andrea Markowitz, Rebecca Spiros, and Tammy Riggs, "Is Participatory Decision Making Family-Friendly?" *Journal for Quality and Participation*, September 1996, pp. 90–93.

⁶ Although multiple answers were permitted, a 1996 survey of teachers revealed that slightly more than 20 percent of respondents entered the profession at least in part due to the long summer vacation. See, *Status of the American Public School Teacher, 1995–1996* (Washington, National Education Association, 1997), p. 59.

⁷ *Status of the American Public School Teacher*, p. 164.

⁸ National Center for Education Statistics, *Schools and Staffing in the United States: A Statistical Profile, 1993–94* (U.S. Department of Education, 1996), p. 74.

⁹ The issue is unambiguous in the National Center for Education Statistics survey, in which respondents are asked about time "required to be at school," which clearly includes break time (*Schools and Staffing in the United States*, p. 74), but is ambiguous in the National Education Association survey, which asks about the "length of your required school day" (*Status of the*

American Public School Teacher, p. 150).

¹⁰ See Robinson and Bostrom, "The overestimated workweek?" pp. 11–23.

¹¹ See Robinson and Godbey, *Time for Life*, pp. 74–77.

¹² Robinson and Godbey, *Time for Life*, p. 62.

¹³ See Thomas F. Juster and Frank P. Stafford, "The Allocation of Time: Empirical Findings, Behavioral Models, and Problems of Measurement," *Journal of Economic Literature*, 1991, vol. 29, No. 2, pp. 471–522.

¹⁴ Comparing the subsamples of respondents who reported usual as opposed to an unusual workload revealed no significant ($p < .10$) differences according to any of the demographic variables employed here or in any of the five measures of working time. However, regressions for the relationship between measures of working time are affected by the variable. (See appendix, chart A-1.)

¹⁵ The standard deviation of daily working time using the standard diary measure (described later within that section of the text), by district, ranges from a minimum of 1.58 hours to a maximum of 2.21 hours.

¹⁶ Teachers with at least one half of their students defined as "special needs" were also excluded from the study. Our supposition was that the number of special needs teachers that would naturally emerge without the restriction would be too small for statistical analysis.

¹⁷ An overlapping set of 438 teachers completed a telephone interview, for a response rate of 69.9 percent. Telephone interview survey data are used for the demographic information employed here.

¹⁸ See R. L. Ott and W. Mendenhall, *Understanding Statistics* (Belmont, CA, Duxbury Press, 1995), p. 409.

¹⁹ This possibility was first suggested by Arlie Hochschild in *The Second Shift* (New York, Avon Books, 1989), p. 279.

²⁰ National Center for Education Statistics, *Schools and Staffing in the United States*, pp. 197–98.

²¹ Even though the 12.6 percent difference in parental status is

large, calculations suggest the effects of such response bias are small. Applying the National Center for Education Statistics proportion of parents (from table 1) to the working time figures for parents and nonparents (reported in tables 2 and 3), we find the standard diary time estimate falling from 9.69 to 9.58 hours per day, housework time rising hours per day, from 2.23 to 2.38 hours, with a net increase in the total working time estimate of .04 hours.

²² Given the difficulty of scheduling some telephone interviews, re-scheduling was only requested and not required of those who had not completed the time diary. Additionally, for respondents who requested an immediate telephone interview, the interview was performed prior to completion of the time diary.

²³ See, for example Robinson and Godbey, *Time for Life*.

²⁴ *Time Diary Coding Manual*, 1997 Child Development Supplement of the Panel Study of Income Dynamics, Project 721 (University of Michigan, Survey Research Center, March 1997–November 1997), p. 6.

²⁵ See Gary Becker, "A Theory of the Allocation of Time," *Economic Journal* (September 1965), pp. 493–517.

²⁶ See Nancy Folbre, *Who Pays for the Kids? Gender and the Structures of Constraint* (New York, Routledge, 1994).

²⁷ The specific figures for contractual working time by race are: whites 6.55 hours, blacks 6.36 hours, Hispanics 6.39 hours, and other respondents 6.34 hours.

²⁸ This argument is suggested by Arlie Hochschild, *The Time Bind: When Work Becomes Home and Home Becomes Work* (New York, Metropolitan Books, 1997).

²⁹ Recall that work invasiveness differs from the standard diary measure only by the inclusion of leisure at work and the application of the work multiplier to recover working time which was shared with other activities. Most of the difference between the standard diary measure and work invasiveness is due to leisure time at work, with an average of only 0.1 hour difference accounted for by the work multiplier.

³⁰ Note that we make no causal arguments regarding race, because race is closely linked to other demographic variables and to contractual working time.

APPENDIX: Relationships between the working time measures

The divergence in working time figures according to the various measures employed may derive from systematic relationships between the measures. Several findings point toward such connections, including the inverse relationship between work for the employer and housework found for parents and across age groups. To identify these links, we analyzed the relationships among the different measures.

Relationship among diary measures of time for the employer. To consider the relationships among the diary measures of working time, we regressed face time (*FT*) and work invasiveness (*IT*) against the standard measure (*ST*). In each case, a quadratic significantly improved the fit of the equation.¹ The regressions for face time and work invasiveness, respectively were: $FT = 2.871 + .781(ST) - .022(ST)^2$, with an adjusted R^2 of .340, and $IT = 3.952 + .408(ST) + .024(ST)^2$, with an adjusted R^2 of .851.

A plot of the regressions is provided in Chart A-1, with standard diary hours along the horizontal axis, and the three measures of working time plotted along the vertical axis. Note that 90 percent of respondents are captured by the range of standard diary hours from 7.82 to 11.56, so we focus on the range from 7 to 12 hours.²

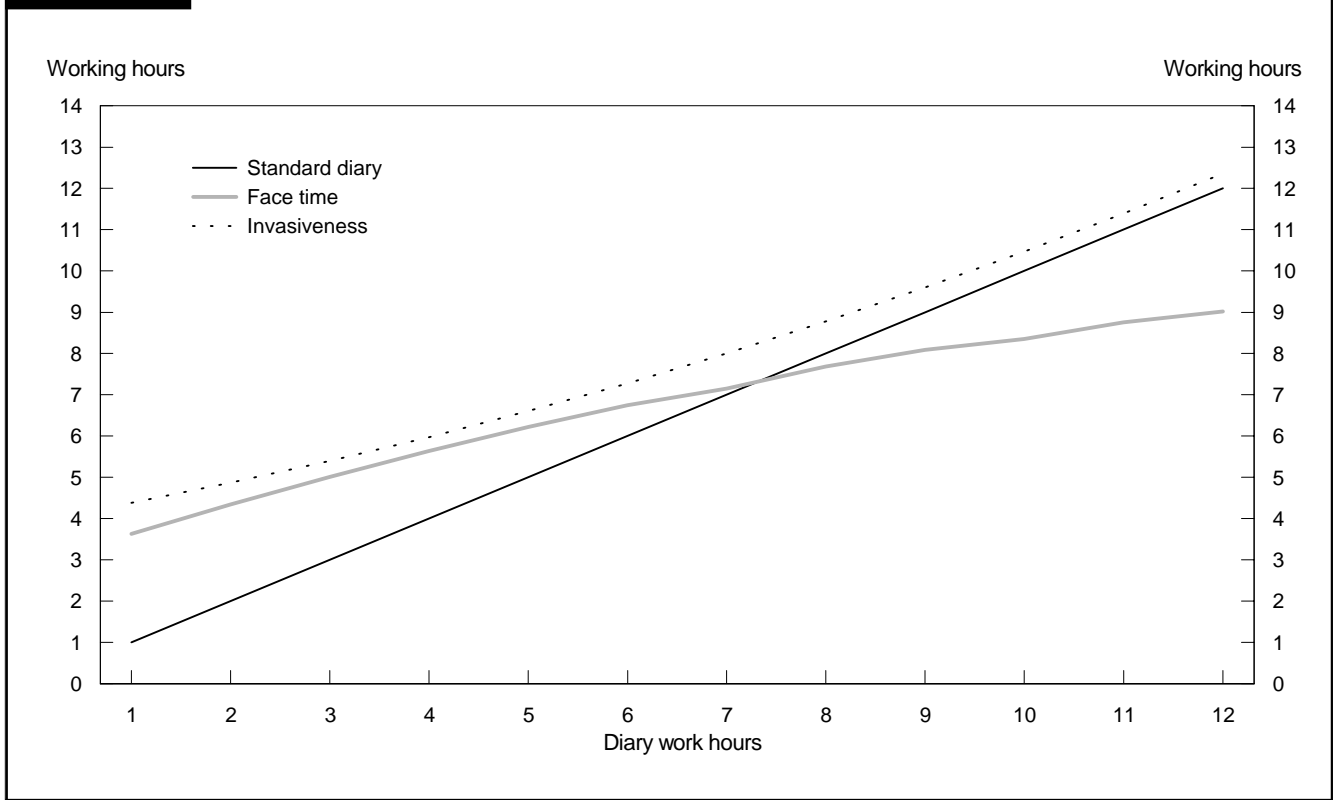
Recall that face time is relatively constant, and does not vary as

much as standard diary time. Graphically, we expect to see this in a relatively flat face time curve, which is indeed found. The numerical relationship is such that predicted face time rises by only 2 hours as standard time rises by 5 hours (from 7 to 12).

Work invasiveness includes all standard diary time along with other time when work invades the teachers' lives. As a result, the curve for work invasiveness should lie above that for standard diary time, as shown in chart A-1. Less expected is the way in which invasiveness and the standard diary measure are related, because the two measures are far apart at relatively low hours (far more invasiveness time), but are very similar for high levels of working time. Numerically, the two indicators come close to convergence at 12 hours, while there is a full 1-hour difference in the indicators at 7 hours of standard time. For this sample, if we are interested in the extent to which work invades an employee's time, a standard diary indicator understates the degree of work invasiveness for respondents who work relatively few hours.³

The role of contractual working time. It is possible that contractual working time influences work as measured by other indicators. Certainly, those involved in negotiating contracts for teachers would expect such a result. As a check on this possibility, we examined the correlations between contractual and other working time measures.

Chart A-1. Relationship between diary measures of working time, 1998



Contractual working time was correlated with the other five measures as follows: standard diary time, .098 ($p=.077$); face time, .310 ($p=.000$); work invasiveness, .150 ($p=.007$); housework, .044 ($p=.432$); and total working time, .132 ($p=.017$). These results are sensible, because we expect contractual time to be positively linked to time spent on teaching, while there is no statistical connection to housework time. Further, the largest coefficient is for face time, which measures time at work, while contractual also concerns time at work.

More surprising is the small size of the other coefficients for time spent on teaching. Interpreting the coefficients as capturing the percentage of variance in one variable explained by the other, contrac-

tual differences only explained around 10 to 15 percent of the variation in standard diary time, work invasiveness, and total working time. By implication, contractual working time is a crude method for gauging the working time of teachers, again highlighting the importance of using multiple measurement methods.

Thus, the differences between the various measures of working time appear to be systematic. As standard diary time increased, so did face time, although by a much smaller amount. Similarly, as standard diary time increased, so did work invasiveness, but again by a smaller amount. For this sample, standard diary time understates invasiveness for respondents who worked relatively few hours.

Notes to the appendix

¹ The *F*-statistic for the addition of the quadratic term in the face time regression is 7.11, significant at the 1-percent level (1, 321 d.f.), and the relevant statistic for the invasiveness regression is 13.00, also significant at the 1-percent level (1, 321 d.f.).

² The mean of standard hours is 9.69, and the standard deviation is 1.87.

³ The quadratic terms are no longer significant, and the relevant re-

gressions are: $FT = 5.043 + .334(ST)$, with an adjusted R^2 of .342, and $IT = 1.355 + .919(ST)$, with an adjusted R^2 of .858. Face time is again relatively constant, while work invasiveness is consistently above the standard diary measure of working time. However, the pattern of large differences between invasiveness and standard hours for low levels of standard hours and the near convergence of the figures at around 12 standard hours is less pronounced. As standard hours rise from 7 to 12, work invasiveness now is projected to rise from 7.79 to 12.38 hours.