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**TRENDS IN U.S. WORKING HOURS
SINCE THE 1970S**

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TRENDS IN U.S. WORKING HOURS SINCE THE 1970S

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SUMMARY

As U.S. workers have extended their working hours, their lives have become hurried while the U.S. economy has expanded considerably in the last decade. This paper attempts to examine trends in working hours in the U.S. since the 1970s to understand the actual condition of working people. Some distinguished empirical studies on working hours have been carried out in the 1990s, but there is still some room for discussion. This paper exclusively reviews main findings from recent studies and data on working hours. It also evaluates arguments of measurement issues on working hours based on two prominent studies on the topic. In addition, the analysis of this paper emphasizes characteristics of working hours, especially gender, race, and full-/part-time status, by a descriptive method such as the frequency distribution and the mean of working hours. Taking advantage of CPS and PSID microdata enables this study to break down working hours by various key attributes.

The paper made the following points. 1) From the examination of measurement issues on working hours, some drawbacks are found in the previous studies; therefore, we should keep scrutinizing them. 2) Full-time workers who always tend to work longer hours are white males, followed by black males, white females, and black females. However, gender and race gaps are smaller among part-time workers. 3) Full-time workers who were the most likely to work longer hours were either college graduates, managerial & professional workers, or higher income earners, and those who were less likely to work longer hours were either high school graduates or less, or service workers, or lower income earners. 4) From the analysis by a panel survey (PSID), an inverse U-shaped relation between age and working hours is confirmed. Also, a positive relation between cohort age and working hours is observed, especially for females. 5) A general trend in working hours has been nearly leveling off or even pointing slightly upward since the 1980s, while it had been heading downward before the 1980s. 6) A dispersion of working hours has been widened by educational attainment and income level since 1970; consequently, these tendencies would imply that U.S. workers turn out to be polarized not only by how much they earn and but also by how many hours they work.

INTRODUCTION

Working hours for pay are perhaps the most essential and influential constituent of daily activities of working people's lives in the United States as well as in other countries. Even though the U.S. economy has experienced an extensive expansion in the 1990s, some concerns about the nature in which U.S. workers work have been brought up. Schor's claim, that average full-time workers dedicated annually about one and half additional months (138 hours) to their work between 1969 and 1989, evidently caught the attention of a broad audience (Schor 1991)¹. Since then, empirical studies on working hours in academic fields seem to be facilitated by her appealing proposition. Hochschild recently said that the time of workers, especially dual earner couples, becomes squeezed and intensive (Hochschild 1997). In addition, according to the International Labour Organization report in 1999, U.S. workers now put in the longest working hours among industrialized countries (ILO 1999)².

This paper attempts to examine trends in working hours in the U.S. since the 1970s to understand the actual condition of working people. It also emphasizes descriptive analysis such as the frequency distribution and the mean of working hours broken down by key characteristics³.

Some distinguished empirical studies on working hours have been carried out in the 1990s, but there is still some room for discussion. First, researchers have not necessarily shared common findings and implications, in part because they used different data. In this paper, both main findings from recent studies and data on working hours that are available today are summarized and reviewed, in order to put separate pieces of information on working hours together to get the big picture. Second, accuracy of data on working hours has been an important issue to every researcher who depends on data. There have been two prominent studies on the topic (Robinson and Bostrom 1994, and Jacobs 1998). Thus, the measurement issue of working hours is critically evaluated in the

¹ After her book was published, it was referred to by various media (for example, *Newsweek*, March 16, 1992, p.50, *Business Week*, July 22, 1991, p.12), and was reviewed by various academic journals. However, there has been criticism that her estimation procedure of annual hours for fully employed workers is unclear.

² It showed that annual hours per person in the U.S. are 1966 hours in 1997. The country with the second-highest hours is Japan (1889 hours in 1995). However, Japanese working hours are likely to be underestimated in the ILO report because there is a bulk of unpaid overtime hours that does not show in data ILO used. Mizunoya (1999) discussed the appropriate working time statistics to be used for international comparison among Japan, U.S., and EU countries.

³ The fuller econometrical studies lie outside the scope of this paper. However, this descriptive study hopes to provide foundation to further advanced studies.

paper. Third, studies did not sufficiently discuss characteristics of working hours, especially full-/part-time status. Distinguishing this status is important because the number of part-time workers (largely female) has increased considerably in the last 30 years. There is also a considerable difference of fringe benefits between full- and part-time workers. This study focuses first and foremost on the characteristics of gender, race, and full-/part-time status.

The remainder of the paper is arranged as follows. Section One reviews empirical studies on working hours. Section Two lists and reviews various surveys and their data on working hours. Section Three discusses problems in measuring working hours. Section Four analyzes trends in working hours emphasizing gender, race, and full/part-time status. Lastly, Section Five includes a summary and concluding remarks of this paper.

1. RECENT EMPIRICAL STUDIES ON U.S. WORKING HOURS

Thanks to various surveys and data available on the labor market in the U.S. and the development of information technology, numerous empirical studies on working hours have been completed in the last decade by taking advantage of large statistical datasets. According to a claim by Schor (1991), average full-time workers now work one and a half months more than they used to, annually. This seemed to support the American workers' feeling about a "squeezed" lifestyle to some degree. It also facilitated researchers to verify her argument and do their original studies. In this section, five distinguished studies⁴ are selected and summarized in chronological order of publication year, in order to draw some implications from which we can learn.

Coleman and Pencavel (1993a) and (1993b)

Coleman and Pencavel claimed that previous studies on working hours tended to be distorted by discussion of 'average' hours and manufacturing workers. To combat this, they carefully examined disaggregate working hours and distribution of hours by gender, race, education attainment, work experience, and industry from 1940 to 1980. Using the Census of Population and the Current Population Survey by the Bureau of Census, they showed weekly hours, the number of weeks worked, and multiplication of the two: annual hours of work⁵.

The first part of their study focused specially on male employees between age 16 and 64. They found that the distribution of weekly hours was skewed to the right and this trend was stronger among white workers than among black workers. However, there has been a decline in the upper tail distribution of weekly hours; consequently, arithmetic mean of weekly hours has decreased. When broken down by educational attainment (12 or fewer years of schooling and 16 or more years of schooling), among white workers, the upper end distribution of weekly hours has declined for poorly-educated workers, but increased in well-educated workers. In contrast, among black workers, the average weekly hours have declined in both education groups. By work experience, a familiar inverted U shape between hours and ages became clear. By major industry, weekly hours rose in manufacturing though fell in most other industries, especially within the service sector.

The other pair of studies focused on female employees in the same data setting as the

⁴ Five studies are considered to be more comprehensive than others. Many relevant studies are listed in references.

⁵ Weekly hours are 'usual' hours worked in previous survey year, and the number of weeks worked includes paid leave and holidays. The number of weeks worked are counted if a worker worked at least one day in a week.

first. The researchers found that the second most common observation of work hours had changed from 48 hours in 1940 to 35 hours in 1980 among both races, while the most common one was 40 hours. When compared by levels of schooling, hours declined in poorly-educated workers and increased in well-educated workers. In the regard of employment-population ratios, they rose with schooling in most periods.

Comparing results between females and males, it seems that since 1940 more educated workers tend to work longer weekly as well as annually. Gender differences in hours have become weaker.

Rones, Ilg, and Gardner (1997)

Rones, Ilg, and Gardner, staff at the Department of Labor, Bureau of Labor Statistics (the BLS), provided information on trends in average week hours and annual hours by various demographic aspects. By using CPS data for nonagricultural wage and salary workers since the 1970s, the average work week has changed little over the period even after adjusting the age distribution of the U.S. working population, notably a decline in proportion of younger and older workforce. For prime age workers (ages 25 to 54), there is a growth of share among those in both gender who worked 49 hours or more per week. Among older workers and among younger workers who were enrolled in high school or college, the average work week tended to decrease in part due to an increase in part-time workers. By occupation, the share of those who worked longer hours (49 hours or more) increased in every major occupational group over the period. Understanding a tendency of the positive relationship between the length of hours worked and earnings, Rones et al raised the question whether higher earnings merely reflect longer hours, or if certain jobs demand longer hours than others. Professionals and managers who were more likely to be highly paid were also likely to work more hours within their work week in part because these jobs tend to include considerable responsibilities. On the other hand, sales and transportation workers who are not generally highly paid also have long workweeks. These workers may see a more direct effect of hours on earnings; the more you work, the more you earn. Annual hours⁶ rose steadily for women, but changed little for men.

Bluestone and Rose (1998a) and (1998b)

Bluestone and Rose discussed that there has been a change in the labor supply regime since the 1970s. Under recent low unemployment conditions, inflationary pressure is kept in check due to incumbent workers who have put in longer hours without much rise in

⁶ The way they calculated annual hours is somewhat unique in the sense that the average hours per person are calculated by aggregated hours divided by aggregated workers, instead of conventional calculation: average weekly hours multiplied by the average number of weeks worked in a year.

wages. The Researchers estimated annual hours of work for all prime age workers (age 25-54) from 1967 to 1995 by the Panel Study of Income and Dynamics (the PSID) and CPS data. Two trends were identified: a decline in hours from the late 1960s to 1982, and a growth thereafter. In the first period, hours of work in male workers decreased, while in the second period, hours in both genders increased. Combined working hours of dual-earner families have steadily increased, and the increase rate is larger among white families than that among black families. Well-educated couples tended to have longer combined hours and higher combined earnings. Bluestone and Rose also claimed that there is an expansion of job insecurity and this can cause longer working hours for current workers. Using PSID data and comparing them between the 1970s and the 1980s, they showed that employment continuity and connection between employees and employers have weakened over time, and variance in annual hours of work has grown.

Jacobs and Gerson (1998)

Jacobs and Gerson stated that we need to move beyond the 'average' worker debate to examine the distribution of key aspects for workers, and to recognize that demographic dimensions of social change are crucial, especially the growth in dual-earners and single-parent families as opposed to the decline in the male breadwinner families. Using the CPS for non-farm wage and salary workers from 1970 to 1997, they found that the average work week has been quite stable (from 42 to 43 hours for males, and from 36 to 37 hours for females); however, there has been an increasing divergence of working hours among both genders: the number of those who worked longer hours and those who worked shorter hours has increased. Professionals and managers who are disproportionately represented by well-educated persons tended to work longer than those in other occupations. The divergence of hours, the too-long and too-short work week, can be in part attributed by employers' incentive for labor cost minimization: firms may be inclined to increase hours for full-time workers, or replace them with part-time workers who have few fringe benefits. By using 1992 data of National Survey of the Changing Workplace, Jacobs et al also claimed that there is a considerable gap between hours actually worked and a worker's desired hours. Those who worked few hours on average would prefer to work more, while those worked very long hours would prefer to work less. Thus, those who are at the top of the occupational hierarchy are more likely to feel overworked, while those in less attractive and less rewarded occupations are more likely to desire to work more. Lastly, they pointed out family formation in last 30 years has dramatically changed from the male breadwinner families to dual-earners, and combined paid hours of married couples have increased. They concluded that nowadays workers in both genders have felt squeezed in part because they are less likely to rely on a partner who is dedicated to family

concerns, but not because the workweek has risen.

The U.S. Department of Labor (1999)

It profoundly discussed trends in working hours by showing not only numerous working hour data disaggregated by appealing characteristics but also other data relevant to hours, such as employment arrangement, time-off programs, and worker's time allocation other than paid work time.

First, looking at various demographic subgroups with CPS data from 1976 to 1998, men worked longer than women, but both showed upward trends in the share of those who put in 40 hours or more and 60 hours or more. By age groups, trends in workweek are slightly downward for the age 16-19 group, stable in those age 65 or more, sensitive to the business cycle in the age 20-24 group, and upward in groups for age 25-44 and 45-64. As for students between 1980 and 1997, labor force participation rates for high school students have changed little, while the rate for full-time college students rose. However, there has been little change in the average hours of work among students over the period. By educational attainment, both employment rates and the length of hours are positively related to education. The gap of hours between different educational groups has been widened significantly between 1969 and 1998.

The proportion of those who worked full-time (more than 50 weeks worked per year and more than 35 hours worked per week) has increased in men age 25-54 and in women of all age groups.

Considering earnings distribution in last 20 years among men, lower earnings groups worked fewer hours and higher earnings groups worked longer hours, while among women, every earnings group worked more and earned more, especially lower earnings groups.

There has been a considerable growth from 1969 to 1998 in the labor force participation rate of women and in married couples' combined hours of work. The rates among wives and mothers age 25-54 increased from 43% to 74%, and among women with children age under 3 from 23% to 63%. All married couples increased their combined working hours. Moreover, the proportion of couples in which both the wife and husband work full-time has increased from 24% to 43%. Among couples who both work full time and have children under age 6, The rate has increased from 13% to 31%. Markedly, there is a proliferating trend in the fraction of married couples in which both wife and husband work more than 40 hours per week. Middle-income couples between 1979 and 1997 have increased both their working hours and earnings, but the increase rate of earnings was not as much as that of the hours.

A flexible work schedule, one of the most common employment arrangements, has gradually prevailed, though informal time arrangements are likely to exist but are not

shown in the official statistics. Flexible work is well-utilized by those who have children under 6 or who work in certain occupations, namely nursing, teaching, law enforcement, and firefighting.

Time off from work has also increased. According to the Hours at Work survey by the BLS, a ratio of hours at work to hours paid (hours paid includes time off from work, e.g. paid holidays, paid sick leave, etc.) for production and nonsupervisory workers tends to be close to 100 % (which means hours at work is close to hours paid) in the period of recession and to get deviate from it in the expansion period. Also, those who are in manufacturing or in larger firms are likely to obtain more paid time off and paid leave. Workers in communications have more paid time off days, those in the retail trade fewer, and those in construction the fewest. Based on the BLS Employment Cost Index, the percentage of those who do not have any time off benefit has grown. The BLS Employee Benefits Survey revealed that paid vacations are the most prevalent type of time off benefit, whereas paid sick leave is less common. Also, the amount of paid vacation days increased with tenure.

Finally, trends in non-work time, especially household work time, have changed in a way that the gender role is alleviated. Noticeably, the majority of growth in free time has been TV watching, especially in women.

Recapitulation

Table 1-1 shows summary of main findings on literatures reviewed above. There are some implications can be made. First, it is obvious and widely recognized that among several key characteristics for working hours, gender and race are primary sources that affect the length of working hours. Male workers trend to work longer than females, and white workers tend to work longer than black workers. Thus, in combination, white male workers are likely to work longer while black female workers are less likely to do longer. Second, discussion of whether trend in working hours is upward or downward depends on which period of time we looked at. If relatively longer period is chosen, such as from 1940 to 1989 in Coleman & Pencavel paper, then a trend is likely to be downward because the length of working hours were longer level in the 1940s, the 50s, and the 60s than in last 30 years. However, in the last 30 years, we can say that a trend in male was changed little while female has upward trend, thus, overall trend was changed little. Third, apart from gender and race, findings of key characteristics tell us typical workers who are most likely to work longer: 1) higher educational attainment, 2) middle age, 3) professional, managerial, or transportation workers, 4) manufacturing industry, and 5) higher income earners. These characteristics will be used later in data analysis of this paper.

2. AN OVERVIEW OF SURVEYS AND THEIR DATA ON WORKING HOURS IN THE U.S.

As the previous section illustrated, earlier studies made use of different kinds of data. Whether studies were done by official agencies or by private institutes, rarely mentioned by these studies was how the data was or wasn't related. There are seven surveys we should consider: The Current Population Survey, the Current Employment Statistics Survey, the Panel Study of Income Dynamics, the National Longitudinal Surveys, the Time Use Survey, the Employee Benefits Survey, and the Hour at Work Survey. A recommendation of data used in this study is discussed at the end.

The Current Population Survey (the CPS)⁷

This is a sample survey of the population of those 16 years of age and over, and has been conducted monthly since 1940 by the Bureau of Census for the BLS. It is based on household interviews, with its sample size at about 50,000 households (since 1996). It provides comprehensive data on the labor force, the employed and the unemployed, classified by various demographic aspects such as age, gender, race, family relationship, marital status, occupation, and industry. Households from the sample are asked about activities or status during "the reference week." This reference week is a calendar week, Sunday through Saturday, which includes the 12th day of the month. Actual interviewing is conducted in the following week, called "survey week."

Regarding data on working hours, respondents are asked how many hours they 'usually' worked as well as 'actually' worked in the reference week. "Usual" hours worked are hours respondents normally worked. Therefore, 40 hours should be reported even if they normally work 40 hours a week but took one-day off due to a holiday or sickness (either paid and unpaid). "Actual" hours worked are hours respondents actually worked in the reference week. Therefore, for the above case, 32 hours should be reported (if 8 hours per workday is assumed) even if they normally work 40 hours a week.

It is worthwhile to note that a major change on CPS questionnaires was introduced in January of 1994. The reasons for the redesign were to obtain more accurate information. On the questionnaire after the change, in the area of actual hours worked, respondents were able to recall strategically their actual hours: they were first asked about hours they lost or took off, and then extra hours worked, and finally actual hours worked in the reference

⁷ CPS data and the following CES data are primary sources on the U.S. labor market. The data in printed materials is available largely from BLS' monthly publication, *Employment and Earning*. Recent data and related documentation, etc. are available from BLS web site, <http://www.bls.gov>.

week⁸.

It is also important to mention that supplementary questions are combined to the regular monthly CPS (called “basic monthly survey”) in a particular month to gather in-depth information on specific aspects of the labor force or other topics.⁹ In the compilation of working hour data each March, the Annual Demographic Supplement (details on income and work experience) includes weekly usual hours worked in the last year and the number of weeks worked in the last year. This data is often used to compute estimation of annual hours worked.

The Current Employment Statistics (CES) survey

This is a sample survey of nonfarm establishments (firms), and is conducted monthly since 1915 by state employment security agencies in cooperation with the BLS. It is based on establishment survey and its sample size is over 390,000 reporting units employing 48 million nonfarm wage and salary workers (since 1996). It provides employment, hours and earnings estimates based on payroll records of business establishments. Detailed industrial classifications are much more reliably obtained from this survey than one from a household survey. Establishments from the sample are asked about status on all workers, either full- or part-timers¹⁰, who receive pay during the payroll period that includes the 12th of the month.

Data on hours are derived from employers' reports of gross payrolls and corresponding paid hours for production or nonsupervisory workers (which consist of production workers and related workers in manufacturing and mining, construction workers in construction, and nonsupervisory employees in private service-producing industries). Thus, average weekly hours are computed in a way that aggregate hours of production or nonsupervisory workers are divided by the number of production or nonsupervisory workers. Notice that hours includes hours paid for holidays, vacations, and sick leave. Only in manufacturing are overtime hours surveyed. Overtime work hours are considered when overtime premiums were paid; therefore, weekend and holiday hours without premium pay and hours for which only shift differential, hazard, incentive, or other similar types of premiums were paid are excluded.

The Panel Study of Income Dynamics (PSID)

⁸ For detailed wording and effect on actual hours in annual average between 1993 and 1994, see appendix.

⁹ For a whole list and description of each supplement, see <http://www.bls.census.gov/cps/suppmain.htm>.

¹⁰ Since CES captures counts of all employees on the payroll, part-time employees are part of the total. Full-/part-time employees are not counted separately.

The PSID is a longitudinal survey of a representative sample of individuals and families in the U.S., and has been conducted annually since 1968 by the Survey Research Center, Institute for Social Research, University of Michigan¹¹. The longitudinal survey is a survey method where the same sample (so-called “panel”) is traced over a long period of time. The PSID started with a national sample of 5,000 U.S. households, and has re-interviewed the same households every year until today, regardless of if they are living in the same dwelling or with the same people. The sample size was almost 8,700 households in 1995, and more than 50,000 individuals have been covered for 28 years of their lives. The PSID provides data on the dynamic aspects of economic and demographic behavior, including sociological and psychological measures.

Regarding working hours, data on annual hours actually worked are available. The annual hours are carefully computed from several questions, such as the average weekly hours worked in last year (including overtime work hours), and the number of weeks worked. Weeks worked are asked after questions of the number of days off they took for sickness, vacation, strike, unemployment, etc., so that respondents are able to recall the activity in last year.

The National Longitudinal Surveys (NLS)

The NLS is a longitudinal survey of a representative sample of six cohort groups of men and women, and is conducted by the BLS. The description of each cohort is in Table 2-1. It primarily collects data on the labor force experiences of adults and young adults (work and non-work experiences, training investments, schooling information, etc.) and supplemental data on various topics in selected years and cohorts.

As to data on working hours, in the “NLSY79” cohort, for example, hours worked in a survey week, weeks worked, and hours usually worked per week in a past calendar year are collected. Moreover, in the “NLSY79 Work History Data File”, a week-by-week record of the total number of hours worked at any job is surveyed¹².

Time use surveys (Americans’ Use of Time Project)

Time use surveys collect time allocation in a reference day: 24 hours. It surveys how people spend their time, broken down by activities respondents did and each activity’s duration of time. Historically, Szalai (1972) was the first great achievement in international time use research in the late 1960s. The U.S. time use research group (Americans’ Use of Time Project) led by J. Robinson participated in this international

¹¹ Datasets and associate documentation are available from PSID web site:
<http://www.isr.umich.edu/src/psid/>

¹² For more information on NLS, see U.S. Dept of Labor BLS (2000b), (1999b).

research project. Since its first survey in 1965, it has conducted a national sample time use survey roughly every 5 years in the U.S.¹³ “Americans’ Use of Time Project” by academic research institute is the only national survey in the U.S. at this time¹⁴ even though national time use surveys are conducted by official government agencies in some other countries.

A summary of “Americans’ Use of Time Project” is in Table 2-2. The survey, often called a time-diary survey, collects when and how long respondents spent on detail activities in a survey day, so that data on working hours, time spent at work for pay, can be available. Note that working hours from time use survey are “daily”, not “weekly” as the CPS collects. However, respondents were sampled in such a way that each day of the week was equally represented; therefore, estimated weekly working hours can be obtained from time diary surveys by adding the average working hours of each date (Sunday to Saturday). On the other hand, breakdown of time spent in work for pay, such as hours of main job, hours of second job, eating at work, before/after work, breaks, and travel to/from work, are collected. Such detailed data of working hours are one of the unique features that time use surveys can provide.

The Employee Benefits Survey (EBS)

This is an establishment survey that collects the incidence and characteristics of employee benefit plans and has been conducted annually since 1979 by the BLS. Its sample size is approximately 6,000 private sector and state and local government establishments. It provides data on benefit areas such as paid holidays, paid vacations, and various kinds of paid leave. One may obtain data on how many days off workers took on an annual basis from the EBS.

The Hour at Work Survey (HWS)

This is an establishment survey that collects ratios of hours at work to hours paid for 29 industries. CES data on hours include paid leave or administrative leave which is not devoted to production. The ratios of the HWS exclude such hours so that CES hours data can be compared to measures of hours "at work". The main purpose of HWS is to provide the ratio to measure labor (hourly) productivity. The ratios provide information

¹³ For detail of their surveys and research outcomes, see Robinson and Godbey (1997) and Juster and Stafford eds. (1985).

¹⁴ BLS plans to conduct a national-level time use survey. It already conducted a pilot survey in 1997. For detail, see U.S. Dept of Labor, BLS (1999a), and Web site on the time use conference cosponsored by the Bureau of Labor Statistics and the MacArthur Network on the Family and the Economy in 1997 (www.olin.wustl.edu/macarthur/conference/)

about trends in time off ¹⁵.

Recapitulation

Table 2-3 shows a digest of surveys and their data which are discussed above. Every survey has its own purpose and method, thus each datum on working hours has different characteristics. Particularly, it is important to recognize a difference between a household survey and an establishment survey. Household surveys are based on individual reports, thus their data have strength on containing various individual or household characteristics such as demographics and various socioeconomic topics, while establishment surveys are based on employers' reports, thus their data have strength on capturing various firms' (not individuals') information such as industry classification and employment and earnings based on firms' payroll records. In the present paper, data on working hours actually worked are stressed. Moreover, the previous section on the literature review suggests that individual characteristics overwhelmingly vary the length of working hours. Therefore, data on working hours from household surveys can be suitable to use for further analysis in this paper. Details for data used are explained in Section 4.

¹⁵ For detail, see Jablonski, Kunze and Otto (1990), and Kunze (1985).

3. MEASUREMENT ISSUES ON WORKING HOURS

Quality of data is a crucial issue for every researcher who relies on data. In this sense, Robinson and Bostrom (1994) and Jacobs (1998) are very important studies that shed light on accuracy of measuring working hours. It is essential and will prove beneficial for this empirical study on working hours to discuss this issue. In the following section, two prominent studies are summarized and critically reviewed.

Robinson and Bostrom (1994) and Robinson and Godbey (1997)

These researchers claimed that compared to paid work time reported by time diary surveys conducted since 1965, self-reported work hours by a CPS type tends to be overestimated, especially in the case of those who reported longer hours. They discussed reasons for CPS overestimation of hours: 1) respondents are assumed to recall and answer to the interviewer their weekly working hours of the last week in a short time, 2) they can misunderstand the definition of working hours: hours including breaks but excluding lunch break and commuting time, 3) they may be unwilling to disclose information accurately on hours worked to the interviewer (rather, they may answer desirable hours in terms of social norm, or try to impress or flatter the interviewer), 4) respondents who work longer hours may overestimate hours they worked because their work schedules tend to be more irregular than those who work shorter hours on a regular schedule (e.g. 9-to-5 work). On the other hand, Robinson et al. claimed time-diary surveys can provide alternative and accurate data on hours worked. Their time-diary survey was designed to ask respondents both their hours worked along with a time-diary questionnaire and hours worked based upon a CPS type of self-reported questionnaire; therefore, this survey enables Robinson et al. to compare time-diary hours and CPS type hours. Note, however, that time-diary surveys are conducted for only a single day, not for a week, so that they construct “synthetic weeks” by adding equal proportions of respondents in each date diary (Monday through Sunday) to estimate work hours across the week.

According to their comparison (see Table 3-1), hours in a CPS type questionnaire are longer than hours in a time-diary (except those who reported 19 hours or less in the CPS type questionnaire), and this gap increases with the length of hours reported in the CPS type questionnaire. Among surveys in 1965, 1975, and 1985, they found that the gap had widened, which can suggest that CPS type hours were becoming progressively inaccurate in the 1980s. They suggested values of gap widened in the 1980s due in part to the increase in service occupations, which likely involve irregular work hours. By gender, the gap tends to be larger in women than that in men even though the average weekly

hours for women are shorter than men. They argued that it could be because women have more experience in part-time jobs and they naturally try to fit family relations and responsibilities around their job schedule. According to their recent survey in the 1990s¹⁶, the gap still exists and it became larger in men while smaller for women, comparing with that in the 1980s.

Jacobs (1998)

He examined the accuracy of the CPS, hours of work collected from self-reported measure, by comparing it against some other statistical data. While he first referred to several possible reasons for miscalculations in a CPS type of study, some of which were raised by Robinson and Godbey, he referred later to a study that compared individual self-reports with information from company records in the 1980s. This study interviewed sampled employees (762 total respondents in 1983 and 1987) in a single large manufacturing firm, and at the same time examined the company's records of hours worked for those employees. It found no evidence that workers exaggerated their working hours. However, in order to generalize to the labor force as a whole, Jacobs warned of some of the study's possible disadvantages, one of which was covering only one manufacturing firm where most workers were full-time and unionized workers.

In addition, he examined the accuracy of self-reported hours data in three basic ways. First, by using the National Survey of the Changing Workforce (Workforce Survey, for short), both the calculated workweek and the self-reported workweek figures are obtained. The Workforce Survey asks respondents' travel time from home to work and return time from work to home, duration of their commuting time, and the number of days worked per week. "The calculated workweek" can be computed from this information¹⁷. Respondents are also asked the CPS type self-reported question in the Workforce Survey, so that these two measures are ready to compare¹⁸. Second, with the same survey, he ran regression analysis of various factors on the discrepancy between self-reports and the calculated workweek to find which variables affected the discrepancy. Variables include social psychological orientations (10 items, e.g. job satisfaction, thought of quitting job, enough time to get job done, etc.), job attributes (7 items, e.g. flexible hours, shift type, union membership, etc.), and demographic measures (5 items, e.g. age, marital status, etc.).

¹⁶ See Robinson and Godbey (1999), pp.319-352.

¹⁷ The calculated workweek includes lunch and breaks, but excludes commuting time and work hours at home.

¹⁸ Note that the Workforce Survey collected data on only "main job", so that hours from multiple jobs were excluded. In addition, 5.2% of the sample technically misreported on answering time due to using military time system, e.g. confusion between 600 (6 a.m.) and 1800 (6 p.m.). These factors should be taken into account when Jacobs' result is considered.

Third, by using the March 1997 CPS, hours worked “in last week” and “in last year” are compared. In the March CPS, respondents are asked their hours typically worked in the last week as well as hours usually worked per week “in the last year”, so that comparing the two can tell us whether there are any differences in the responses depending on the reference period specified in the questions.

In the results with respect to the first method (see Table 3-2), Jacobs concluded that self-reported hours fall into patterns of overestimated and underestimated hours because it reflects ‘regression to the mean’. Jacobs found that when self-reported hours are used for grouping the length of hours, self-reported hours are overestimated in groups of longer hours compared with calculated hours, and are underestimated in groups of shorter hours. This finding supports argument by Robinson et al. However, when calculated hours are used for grouping the length of hours, there is an opposite result: calculated hours are overestimated and underestimated in groups of longer and shorter hours compared with self-reported hours. Jacobs interpreted that those who self-reported 60 hours or more have at the same time calculated hours that include some errors, but the errors total tends to be below the total of self-reports because the self-reports are near the ceiling of the hours distribution. This is the regression to the mean phenomenon. It is analogous for explanation of an underestimation in the lower end of the self-reports.

In the next result from the second method, Jacobs stated that there is little evidence from regression analysis that social psychological orientations, job attributes, and demographic measures lead workers to exaggerate their self-reported hours.

In the last result from the third method, when comparing the workweek of last week and last year, a difference of two is statistically insignificant for men, while, for women, the measure of “last week” is slightly longer than the “last year” measure. In the comparison of their variances, variance in the “last week” measure is higher than that of the “last year” measure. Jacobs claimed that hour data referenced over a longer period of time might help to minimize the overestimation problem with self-reports because of the smaller variance of the “last year” measure.

In conclusion, Jacobs argued that a discrepancy between time-diary and self-reported measures of working hours merely reflects a “regression to the mean” and thus, the standard self-reported measure is a reasonably reliable indicator.

A Review of two studies

As Robinson et al. pointed out, few studies have been done to verify the accuracy of

official statistical data on working hours¹⁹, and thus in this sense their research and arguments are important and valuable to consider for every researcher and policy maker who relies profoundly on official statistical data. Therefore, we should look more carefully into Robinson's proposition, that is that hours worked are overestimated in a self-reported survey (e.g. CPS) compared with hours in the time-diary survey.

First of all, we should be cautious about "synthetic workweeks," a crucial measurement all their arguments rely on. The term "synthetic" is used because time-diary surveys are not conducted over a week. Time-diary surveys by Robinson et al. include only single days that are different single dates (i.e. Monday, Tuesday, or Sunday). "Synthetic workweeks" are computed for groups of respondents by adding together equal proportions of each date diary (Monday through Sunday) to estimate work hours across the week. It means that "synthetic workweeks" are not each respondent's weekly hours, but a mixture of hours from different respondents. Moreover, as you see in Table 2-2, the survey period in each time-diary survey was from three months to the entire calendar year. This means that "synthetic workweeks" are not consecutive seven-day weeks, but a mixture of seven days from different periods of time. Such "synthetic workweeks" could be quite different from a real workweek. Thus, we should recognize that "synthetic workweeks" are a crude proxy of real weekly working hours.

Secondly, a statistical phenomenon of regression to the mean can be one possible explanation for overestimation of self-report hours. In time-diary surveys, a self-report type question for weekly hours worked is requested for "in the last week", while time-diary questions request hours for "yesterday". As Robinson et al. mentioned, "people who worked long hours in the previous week are likely to compensate by working fewer hours during the week or day being reported in the diary" (Robinson and Godbey 1999, p.86). If this is the case, the claim of overestimation of self-reports relative to time-diaries is inappropriate.

Jacobs' study is also worthy because it provided various data (other than Robinson's time-diary data) with which to evaluate whether or not self-reported data on hours worked are accurate enough. On the basis of his evaluation by using alternative data sources, he argued with Robinson's proposition, and eventually supported reliance of self-report data on hours in the CPS. However, we need to discuss some regards Jacobs made for his defense on CPS data.

First, the estimation procedure of his measure, the "calculated workweek" should be

¹⁹ Series of examinations on quality of economic data have been undertaken by some researchers through the Survey Research Center, Institute for Social Research, University of Michigan. See Duncan and Hill (1985), Rodgers et al. (1993), and Mellow and Sider (1983).

more closely examined, as “synthetic workweeks” were discussed above. The “calculated workweek” is computed from working hours per day (basically estimated by departure time to work and return time to home) multiplied by the number of days worked in the survey week. This estimation for workweek assumes that the length of working hours per day is constant throughout days worked in the survey week. Thus, this estimation can be inaccurate if daily working hours are fluctuate in the week, which is often the case among most workers.

Secondly, he found a similar discrepancy between two workweek measures (the calculated and the self-reported workweek) to Robinson’s argument between the CPS and time-diaries. He concluded that it can be explained by “the regression to the mean”. The regression to the mean is a statistical phenomenon that occurs when we have a nonrandom sample from a population, and have two measures that are imperfectly correlated. For instance, population of certain variables has some distribution. The mean of the sample drawn (e.g. from upper end of distribution) from the population will not be the same as the population mean, but regresses to the population mean. In our case of working hours, the population would correspond to the self-reported workweek, and the mean of sample drawn from the longer workweek (e.g. 60 hours+) would correspond to the calculated workweek. In the sense of statistical definition, it seems to be a reasonable explanation for over/underestimation of self-reports. However, the regression to the mean happens because the sample of the upper end of distribution is drawn *after* the population is observed. The self-reported workweek and the calculated workweek are surveyed in almost the same period of time. If this is the case, the statistical phenomenon of the regression to the mean should be irrelevant, and thus distribution of both the self-reported and the calculated workweek should be the same and the mean of the upper end or the lower end of distribution should also be the same. This means that measurement errors, i.e. over/underestimation of the self-reported workweek, do actually take place.

Thirdly, a comparison of weekly hours among “last week” vs. “last year” has a disadvantage. He supported data referenced over the longer period of time, i.e. the “last year measure”, because its variance is relatively smaller than that of the “last week” measure. However, the “last year” measure would be too long of a reference period for respondents to be able to recall usual hours worked in a week. Usual hours worked in a week can quite possibly fluctuate over a year. If this is the case, it must be difficult for respondents to recall all fluctuated workweeks, average them out, and finally answer for usual weekly hours in the last year.

Several negative aspects of studies by Robinson et al. and Jacobs were discussed above. Thus, the measurement issue of whether or not CPS data with self-report

workweek are accurate and reliable enough is not yet straightforward. This does not, of course, mean that Robinson's and Jacob's studies are insignificant. Time-diary surveys are obviously imperative for understanding daily time allocation in detailed activities. But it is a fact that these surveys were not originally designed for measuring accuracy of self-reported data. We should continue to be aware of the features of working hour data from either the CPS or time-diaries²⁰. However, it should also be emphasized that CPS questionnaires related to hours worked have been revised since 1994 in order to obtain more accurate data on hours at work (see Appendix).

²⁰ Heckman (1993) suggests a better understanding of limits of the data on hours and wage.

4. DATA ANALYSIS ON TRENDS IN WORKING HOURS IN THE U.S. SINCE 1970

Descriptive data analysis on U.S. working hours is extensively sought in this section. After data used and method of analysis are explained, trends in working hours are examined.

4.1 Data²¹ and method used

The BLS March CPS: Annual demographic files (microdata) are primarily used. As discussed in Section Two, the CPS based on reports from households can provide us data on hours actually worked with various characteristics we are interested in; the March CPS features data on income and work experience. There is a possible measurement issue on working hours in the CPS as discussed in Section Three; however, the CPS is regarded as the primary data source available today as the CPS has a substantially large sample, continuous historical data available, and questionnaire improvement on working hours in 1994.

‘Hours actually worked in a last week’ are used as the primary unit in this section²². The March CPS contains data on the number of weeks worked last year, and it is often used for calculating annual working hours in previous literatures. Annual hours can be a more reliable unit to observe than weekly hours because annual hours are able to reflect annual time-off that weekly hours are not able to reflect, such as paid holidays, vacations, and sick leave days. However, CPS data on the number of weeks worked last year are defined as weeks where a respondent worked at least one hour or more. It does not really take the number of days they did not work into account. Therefore, annual hours are not estimated, but only weekly hours are used in this section. Instead of annual hours, the number of paid days they did not work, or time-off benefits, are discussed by using BLS Employee Benefits Survey data. In addition, PSID microdata and longitudinal survey data is used to observe relations between age and hours.

This paper emphasizes descriptive analysis such as frequency distribution of workers by the length of hours and average weekly hours. It attempts to examine hours by several characteristics that are essential to determine the length of working hours. Since CPS

²¹ For full title of data sources, see “Data sources in Section four” in the reference.

²² Working hours is examined only on a per worker basis in this paper. However, combined family or couple’s hours worked are also an important unit to study since dual-earner couples have considerably increased since 1970 while conventional male-breadwinner couples have declined. For example, see U.S. Department of Labor (1999), Jacobs and Gerson (1998), and Bluestone and Rose (1998a) (1999b).

data are microdata, one can center observation of working hours according to various characteristics. Gender, race (white and black²³), and full-/part-time status are first and foremost in this paper. As previous literatures showed, gender and race are obviously important aspects with which to examine hours. On the other hand, full-/part-time status was not quite focused in the previous studies. In the last 30 years, some of the significant changes in the labor force are perhaps the combination of rapid growth of female labor participation and gradual decline in male labor participation, and the increasing emergence of part-time workers. Moreover, full-time workers obtain more generous fringe benefits than part-time workers do, as time-off benefits data show later. For these reasons, full-/part-time status is imperative for this analysis. Full-/part-time status refers to the BLS definition: full-time workers are those who usually work 35 hours or more in a week, and part-time workers are those who usually work fewer than 35 hours. Based on these characteristics, weekly working hours are examined by educational attainment (four categories), main industry (ten), main occupation (four), and annual income level (five). The period the present study covers is from 1970 to 1999²⁴.

4.2 Trends in working hours: Data analysis

At the outset, employment status in the U.S. is briefly reviewed. The data analysis on hours broken down by full-/part-time status follows. Relations between age and hours is also examined by longitudinal data. Lastly, flexible work schedules, contingent workers, and time-off benefits are discussed as issues closely associated with working hours.

4.2.1 An overview of employment status of population

Before we get into a discussion of working hours, it is a good idea to understand a trend in bigger picture, employment status as a whole. Table 4-1 shows main constituents of employment status by gender and race from 1970 to 1999. The entry of the baby-boom generation is a very important development to bear in mind for our discussion. The baby-boomers, who were born between 1946 and 1964, are the primary group that surged into the labor force (especially the female labor force) of the 1970s. A slower rate of labor force growth followed in the 1980s (Kutscher 1993).

In Table 4-1, the labor force participation rate among males has continued to decline

²³ The categories white and black are chosen just because these are the majorities. It has become more important to recognize recent increasing trend in population of Hispanic origin.

²⁴ The reason of choosing the period since 1970 is that CPS March began in the late 1960s. There are some empirical studies on working hours prior to the period. See Owen (1986), Greis (1984), Costa (2000), and Roediger (1989).

since 1970, whereas the rate among females has continued to increase. However, white males have the highest rate of participation, followed by black males, black females, and white females. Unemployment rates have fluctuated over 30 years, and the rates tended to be higher in the 1980s and lower in the 1990s. White males have had the lowest rate of unemployment, followed by white females, black males, and black females.

Regarding full-time workers, Table 4-2 shows shares of full-time and part-time workers employed from 1973 to 1999. For males, who have always had higher shares of full-time status than females have, shares of full-time workers tended to decline a little. Thus, shares of part-time workers tended to increase over 30 years. The difference of full-/part-time shares between races is small. For females, shares have somewhat fluctuated and thus changed little between 1970 and 1999. The shares of full-time workers among black females are higher than white females.

4.2.2 Full-time workers

Working hours for full-time workers are examined by educational attainment, industry, occupation, and annual income level.

By educational attainment: 1) **AVERAGE HOURS (TABLE 4-3):** In all groups, hours have declined between 1970 and 1980. Also, hour differentials between educational levels widened over time. This finding is consistent with one in the Department of Labor (1999). Among white males, more highly-educated workers tend to work more. Since 1980, hours for every level of education have changed little, except that college graduates have increased their hours. Among black males, college graduates have increased their hours since 1980, while others have changed little. Among white females, hours of college graduates tended to increase by a small amount since 1980, while hours in other groups have changed little. Among black females, hours of colleges graduate have increased a little since 1980 while hours in other groups have remained unchanged. 2) **DISTRIBUTION OF HOURS (TABLE 4-4):** Among white males, the 0-39 hours group and the 48+ hours group have increased shares in every educational level. Among black males, shares of the 0-39 hours group have increased while shares of the 40-47 hours group have declined among everyone except college graduates. Among white and black females, shares of the 0-39 hours group have increased as shares of the 40-47 hours group have declined.

Table 4-4 shows that average hours in every educational group have declined between 1970 and 1999 because shares of 0-39 hours groups have increased. However, shares of long hour groups, 48+ hours, have declined at different rates by educational group. Shares of 48+ hours among lower educational groups have declined more than among higher educational groups.

By major industry: 1) AVERAGE HOURS (TABLE 4-5): Among white males, hours in agriculture and retail trades tend to decrease over 30 years. Longer hours (well above average hours of total industry) are in agriculture, mining, wholesale trade, and service, while shorter hours are in construction and public administrations. Among black males, hours declined in all industries between 1970 and 1980, but hours in agriculture, mining, construction, and manufacturing tended to increase. Hour differences between industries became smaller over time. Among white females, hours in every industry have changed little since 1980. Among black females, hours in most industries have changed little compared with other gender and race groups. 2) DISTRIBUTION OF HOURS (TABLE 4-6): Among males, shares of the 40-47 hours group have decreased and those of the 0-39 hours group have increased. Shares of the 48+ hours group have increased in construction, manufacturing, transportation & public utility, wholesale trade, and public administrations, while the shares in agriculture, retail trade, and the service industry have decreased. Among females, shares of the less than 30 hours group have increased (except in finance), shares of the 40-47 hours group have declined (except in finance), and shares of the 48+ hours group have increased (except in retail trade).

By major occupation: 1) AVERAGE HOURS (TABLE 4-7): Among all races and genders, a decline in hours between 1970 and 1980 is common in every occupational group. Among white males, hours have changed little in every occupation since 1980. Among black males, hours tended to increase in every occupation except technical, sales, and administrative support in the 1990s. Among females, hours in every occupation have fluctuated over 30 years, but the extent of fluctuation is smaller among blacks than whites. 2) DISTRIBUTION OF HOURS (TABLE 4-8): Among all races and genders, an increase in shares of less than 39 hours and a decline in the shares of 40-48 hours are common in every occupational group. Also, managerial and professional workers have the largest share of 48+ hours. Among white males, shares of 48+ hours are larger than black males, and have increased in technical, sales, & administrative support occupations. Among black males, the share is more concentrated in the 40-47 hours range than among white males. The share of 48+ hours has increased in technical, sales, and administrative support workers. Among both white and black females, the shares of 48+ hours have increased in every occupation except the service industry, but the share of 40-48 hours are more concentrated among black females than among white females.

By annual income distribution: 1) AVERAGE HOURS (TABLE 4-9): Among all groups, hours have declined between 1970 and 1980. Roughly speaking, in every period of time, the higher income group a person is in, the longer they tended to work except white and black females in 1970 and 1980. Among males, hours in higher income groups tended to increase since 1980. Among white females, hours in the highest income group

tended to increase since 1980. 2) AVERAGE ANNUAL INCOME (TABLE 4-10): Among males, income distribution has widened, especially among white males, while among females the income distribution has been almost unchanged since 1969.

4.2.3 Part-time workers

How do part-timers differ from full-timers? First, look at share of full-/part-time workers to total employed by four characteristics analyzed above between 1970 and 1999 (Table 4-11). By education, for both genders, the more education a worker has, the higher (the lower) share of full-time (part-time) status they have both in 1970 and 1999. Also, more educated workers tend to increase (lessen) the share of full-time (part-time) status than less educated workers over 30 years. By industry, male shares of full-time workers have increased, especially in agriculture and construction, since 1970. Industries that have relatively lower (higher) shares of full-time (part-time) workers in 1999 are agriculture, retail trade, and service. For females, shares of full-time workers have increased especially in agriculture, wholesale trade, and public administrations since 1970. Industries that have relatively lower (higher) shares of full-time (part-time) workers in 1999 are agriculture, construction, and service. By occupation, for both genders, shares of full-time workers increased especially in service occupation over 30 years. Also, shares of full-time are the highest among managerial and professional workers in 1970 and 1999. By income level, for both genders, workers in the lower income levels tend to increase shares of full-time than those in higher income level do between 1970 and 1999. Shares of full-time (part-time) workers tend to be high in higher (lower) income level groups in 1970 and 1999.

Next, look at the average hours of part-time workers (Table 4-12). Overall, hour gaps between genders are very small. Sometimes female hours are even longer in some characteristics. Averages are around 20 hours. By education and industry, there is no particular trend. By occupation, for both genders, service workers tend to increase their hours. By income level, for both genders, hours have declined at every income level between 1970 and 1980. By and large, the higher income workers tend to work longer hours.

4.2.4 A cohort analysis on annual hours of prime age persons at 1975

Working hours examined above are cross-sectional, which are hours at certain point of time. Sampled workers in each year are different from each other. In addition, age characteristics are not taken into account from previous cross-sectional analyses. In this subsection, longitudinal (panel) hour data (the same sample are surveyed over the period of time), are discussed. Data from the Panel Study of Income Dynamics are used (see detail

explanation in Section Two). The prime ages of 25 to 54 at 1975 are chosen for the sample and their annual working hours are traced and observed over 18 years, i.e. between 1975 and 1992²⁵.

Table 4-13 shows the number of years subjects worked²⁶ over 18 years. For males, about 80% from those age 25 to 39 worked during the entire 18 years, but this percentage decreased after the cohort reached the age of 40. This obviously reflects an approach to practical retirement age around 60-65. About one tenth of workers in each cohort have worked for from 15 to 17 years, which means they have a break year in the course of 18 years. This finding is uniquely observed through such panel data, and provides us additional information on their working life. For females, the number of years worked is much more spread over 18 years. About 40 percent of those age 25-34 worked during the entire 18 years, a much lower percentage than the males. Also, the percentage of those who did not work at all for 18 years increased with age.

Table 4-14 shows distribution of hours by age cohort. For males, in the age 25-29 cohort, shares of longer hours (2501-3000 hours and 3001+ hours) tended to increase, except in 1992. Thus, average hours tended to increase until 1990. In the second-oldest cohort, age 30-34, share of 2501-3000 hours tended to increase except in 1990, but the share of 3001+ hours tended to decline, thus average hours tend to decline. In those age 35-39 and 40-44, a share of 1501+ hours tends to decline and the share of 0 hour tends to increase, thus average hours tend to decline continuously. For females, for those aged 25-29 and 30-34, shares of 1501-2000 hours and 2001-2500 hours have increased while shares of 0 hours and 1-1000 hours have decreased; therefore, average annual hours tend to increase. A trend in the older age cohort is appearing more mixed than younger cohorts because some obviously reached retirement age.

Table 4-15 shows rearrangement of average annual hours by year and by age. For males, if age cohorts are arranged by year, middle-aged cohorts worked the longest hours at the cohort starting time (i.e. in 1975). Younger cohorts became to work most in the later period while older cohorts cut back on their hours. Therefore, we confirm an inverse U-shaped relation between age and the length of hours worked. On the other hand, if age cohorts are arranged by age, we can compare hours between cohorts regardless of which years they worked. We can find some positive relationship between a cohort age and the length of hours, even though the relationship is not so clear in the middle-aged groups. Despite the fact that this data arrangement has some blank cells that cannot be filled (so a

²⁵ Annual hours data in the PSID are available from 1967 to 1992 (data file name is "1968-1993 individual data"). However, data used in this paper are limited from 1975 to 1992 because hour data between 1968 and 1974 contain somehow considerable amount of missing data.

²⁶ The number of years worked are counted in a way that a person worked one hours or more in a year. Therefore, it should be noted that a year worked does not mean they worked all year round.

finding from this table would be incomplete), we can interpret that older cohorts tend to work longer than younger ones. For females, average hours by year tended to increase in younger cohorts (aged 25-29 and 30-34) over 18 years, while hours tended to decrease in older cohorts (aged 35-39 and 40-44). This indicates an inverse U-shaped relationship between age and labor supply as we found for males. However, average hours by age indicate clearly that a younger cohort worked longer hours at any age range. This findings can be readily understood since the female labor force participation rose rapidly the 1970s and the 80s, thus a younger cohort tends to be more likely to have a job more than an older one is.

4.2.5 Flexible work schedule²⁷

The BLS has collected data on flexible work schedules and shift work in the May supplement of the CPS since 1985. Flexible work schedules refer to a schedule where employees can choose the actual time they arrive and leave the workplace, in contrast to the traditional 9-to-5 workday. According to the most recent CPS in 1997, more than 25 million workers (26% of all full-time wage and salary workers) utilized flexible work arrangements. Also, the proportions of the workers increased to about twice in 1997 as that in 1985.

It is important to recognize that the CPS collects such data based on households' reports so that they are different from similar data based on an establishment survey (employers' reports). This may be because households report both formal and informal flexible work practices while employers report only formal ones. According to the Employee Benefit Survey by the BLS (establishment survey), those who have formal flexible work schedules were less than 6% of all employees from 1994 to 1997.

Looking at data by occupation, the most common workers who have flexible work schedules are executive, administrative, managerial occupation, and sales occupation workers, while relatively infrequent counterparts are nurses, teachers, police, firefighters, and certain manufacturing operations workers.

By race, such schedules prevail among whites than either blacks or Hispanics. This mainly stems from the fact that whites are more likely to be in managerial and professional occupations, while blacks and Hispanics are disproportionately represented as operators, fabricators, and laborers.

By industry, workers in the private sector have such schedules more than the public sector, though federal government employees have a relatively higher share. In the private sector, such schedules are more common in service-producing industries than in

²⁷ The discussion is based on Beers (2000) and Mellor (1986).

goods-producing industries.

Shift work schedules, e.g. evening shift, night shift, irregular shift, etc., are other common type of work arrangements that go against the 9-to-5 workday. By occupation, such schedules are common among protective service workers, food operators, and fabricators and laborers. By industry, the schedules are common in eating and drinking, automobiles, and mining. Also, part-time workers have a sizable share of those who have shift work schedules. The incidence of shift work is primarily subject to the nature of job, not to gaining greater monetary compensation or to obtaining a more flexible work schedule. The proportion of shift work has changed very little from 1985 to 1997.

4.2.6 Contingent workers²⁸

It is important to pay attention to the recent trend of sizable amounts of people employed as temporary workers -- so-called contingent workers. A phenomenon of utilizing temporary workers has been widely discussed in conjunction with the recent development of information technology and the pursuit of labor cost flexibility by employers. Under the circumstance of such an employment practice, the BLS started to collect data on contingent workers every other year since 1995 in the CPS February supplement survey. The BLS defines contingent workers as persons who hold jobs that are temporary or not expected to last. According to broadest definition of contingent workers, the number of such workers is 6.0 million in 1995, 5.6 million in 1997, and 5.6 million in 1999, and contingent rate, the number of contingent workers divided by the total number of employed persons, is 4.9%, 4.4%, and 4.3%, respectively ²⁹. In addition, the February supplement surveys collected not only contingent workers but also alternative employment arrangements, such as independent contractors, on-call workers, temporary help agency workers, and workers provided by contract firms. In 1999, about 12 million workers identified themselves as within alternative employment arrangements, and this rate to the total of employed persons was about one tenth. By full-/part-time status, contingent rates in 1999 were 2.9% for full-time workers and 10.4% for part-time workers. Regarding our paper featuring full-/part-time status, we can say that part-timers are more likely than full-timers to be contingent workers, whose jobs are considered to be less secure than non-contingent workers.

4.2.7 Time-off benefits

²⁸ The discussion is based on U.S. Department of Labor BLS (1999c), Hipple (1998), Nardone, Veum, and Yates (1997).

²⁹ BLS estimates contingent workers by three alternative measurements. For example, in 1999, contingent rates comprised 1.9% in Estimate 1 (the narrowest definition), 2.3% in Estimate 2, and 4.3% in Estimate 3 (the broadest). In detail, see U.S. Department of Labor BLS (1999c).

As we discussed above, the length of working hours is a fundamental yardstick for working time research; however, the number of days not worked in a year (except Saturdays and Sundays) is another useful way to investigate working hours³⁰. Time-off benefits include paid holidays, vacations, sick leave, etc. The length of weekly working hours cannot tell how many days off workers took annually³¹. Time-off benefits are one of the important components to get the whole picture of working lives in annual basis.

Table 4-16 shows the percentage of employees who participated in paid time-off programs. In general, paid holidays and vacations are the most prevalent benefits, but these benefits are provided more often by larger private firms than by small firms or state and local governments; moreover, they are provided less frequently to part-time workers than to full-time workers. Percentages of most benefits among full-time employees have tended to decline since the 1980s. Table 4-17 shows average amounts of paid holidays, vacations, and sick leave. Average paid holidays have changed little at medium and large private firms since the 1980s, and have declined at small private firms and state and local governments. Average days of both paid vacation and paid sick leave increase with years of service workers accumulate at their firms. Paid vacation days have changed little over time, while average sick leave days have tended to decrease at private firms.

³⁰ For a more comprehensive investigation on working hours, we should also examine how workers spend their time during a whole day, namely time allocation or time use because paid working hours are interrelated to other daily activities, such as personal care, household work, and leisure activities. To discuss such a motivated examination as a whole is beyond the scope of this paper. However, Mizunoya (2000) attempted to integrate conventional working time and time use study by comparing data among Japan, EU countries, the U.S., and Canada.

³¹ This is often the case where one compares weekly hours in European countries e.g. Germany with those in the U.S. and concludes there is not much gap of hours between Germany and the U.S. However, annual hours in Germany are much shorter than in the U.S. because paid vacation and sick leave days are much longer in Germany than they are in the U.S.

5. SUMMARY AND CONCLUSION

The present paper examined recent trends in working hours approached by descriptive data analysis. It also considered characteristics and quality of working time surveys and data.

In Section One, recent empirical studies on working hours were reviewed. It found that gender and race are most important characteristics to be identified when studying working hours. In the last 30 years, a trend of working hours can be shown as upward for females, but leveling-off for males. Also, characteristics of workers who are the most likely to work longer are: 1) higher educational attainment, 2) middle age, 3) professional, managerial, or transportation occupations, 4) manufacturing industry, and 5) higher income earners.

In Section Two, various surveys and their data on working hours were listed and summarized. This section suggested that data on working hours from household surveys are suitable to use in this paper, as household surveys attempt to clarify trends in hours actually worked.

In Section Three, measurement issues on working hours were discussed based on two important literatures that have different views, Robinson and Bostrom (1994) and Jacobs (1998). Robinson claimed that a CPS type of self-reported hours of work tends to be overestimated compared with data from time-diary reports. On the other hand, Jacobs stated that a discrepancy between time-diaries and CPS measures of working hours reflects a “regression to the mean”, thus the standard self-reported measure is a reasonably reliable indicator. However, several drawbacks on these studies were discussed; therefore, it is suggested that measurement issues should continue to be scrutinized.

In Section Four, by using data on the March CPS, the PSID, and the EBS, a trend in working hours and time-off benefits was descriptively analyzed with emphasis on full-/part-time status. Table 5-1 recaps main findings for full-time workers from data analysis. Characteristics of workers who are likely to be part-time are lower educational attainment and income level. In age cohort analysis, an inverse U shaped relation between age and working hours is confirmed, and also a positive relation between cohort age and working hours is observed, especially for females. A trend of time-off benefits are provided more among larger private firms than by small firms or the public sector; moreover, benefits are provided less commonly to part-time workers than to full-time workers

In this closing section, there are some concluding remarks suggested from data

analysis in Section four.

First of all, gender and race, chosen for the primary characteristics of working hours in this paper, show different pictures of working hours from the averaged hours that are not broken down by gender and race. This is consistent with findings already mentioned in previous studies. In general, white males are always apt to work longer hours than any other groups. Following white males come black males, white females, and black females. However, gender and race gaps are smaller among part-time workers. Even though these results may be no more than knowledge of common sense, it is worthwhile to consider causes of gaps between genders and races so that they can ultimately provide a good background of what determinants are likely to affect labor supply, namely the length of working hours.

Secondly, analysis on characteristics other than gender and race implies that in 1999 those who were the most likely to work longer hours were either college graduates, managerial & professional workers, or higher income earners, and those who were less likely to work longer hours were either high school graduates or less, or were service workers, or lower income earners. Characteristics of higher education, managerial & professional occupation, and higher income earners for longer working hours apparently overlap, though black females do not seem to have this inclination. Also, a positive relation between income level and the length of hours is observed. It is widely recognized that in last 30 years there has been a weak or negative relation between income and hours among male workers (income effect dominated substitution effect) while a strong positive relation among female workers (substitute effect dominated income effect)³². However, in 1999, regardless of their gender, the higher income they earned, the longer they tended to work. This may be also important evidence to help understand how working hours are determined.

Thirdly, we can say that a general trend in working hours has been nearly level or even pointing slightly upward since the 1980s, while it had been downward before the 1980s although these trends differ from the between workers' characteristics mentioned above. Are there some differences between the 1970s and the 1980s? Some relevant facts are worthy to consider here. In conjunction with business cycle, we have three cycles since 1970, i.e. from 1975 to 1980, from 1982 to 1989, and from 1992 to present. Thus, the first business cycle is coincided with a downward trend in hours, and the rest of cycles occurred in the period of leveling-off trends in hours. Also, the 1970s is a period

³² Killingsworth (1983) thoroughly surveyed theoretical (basically income-leisure model) and empirical (econometrical treatment) studies on labor supply, and concluded that male workers decreased their working hours with income (income effect) whereas female workers increased their hours with income (substitution effect).

when oil supply shocks took place as well as a period when many baby-boomers entered the labor force, especially female and highly educated workers such as ones who had completed college³³. Besides, the 1970s was perhaps the last decade when the U.S. had an economical hegemony in international society. The 1980s became a period when other countries, such as Japan and Germany, certainly caught up to the U.S. and thus global competition (for example, emergence of multinational corporations) has become much more intensive. It would be worthwhile to examine a trend of working hours in these periods with considering these factors. The leveling-off or slightly upward trend in hours since the 1980s is also supported by the fact that there has been a growth in utilization of part-time workers and to some extent a decline trend in time-off benefits for employees that were shown in previous sections.

Fourth and lastly, a dispersion of working hours has been widened by educational attainment and income level since 1970. In other words, those who possess higher educational status or higher income levels have extended their hours whereas those who have lower education or income have left unchanged or even slightly decreased their hours. This trend of dispersion from the standard hours of work is also supported by the fact that more workers are involved in flexible work schedules and a sizable proportion of the total employed now identify themselves as a contingent worker or in an alternative employment arrangement. As Jacobs (1998) suggested in a comparison between hours actually worked and worker's desired hours, those who work very long hours are unwilling to do so meanwhile those who work shorter hours are willing to work more. Moreover, this trend is coupled with the fact of rising wage inequality since the 1970s that has been extensively discussed³⁴. These tendencies would imply that U.S. workers tend to be polarized not only by how much they earn but also by how many hours they work.

³³ If we look at college wage premium (the ratio of earnings of college graduates to the earnings of high school graduates), the premium tends to decline in 1970s, but since then has continually increased among male and female workers. This might be a clue when considering a trend in working hours in the 1970s and since then (McConnell et al 1999, p.98).

³⁴ For recent highlights of this discussion, see Gallbraith (1998) and Mishel, Bernstein, and Schmitt (2001). However, we should be aware of the fact that price index plays a crucial role to measure wage inequality. There has been an extensive argument on accuracy and quality of the price index, especially the Consumer Price Index produced by the BLS, which is broadly used to deflate nominal wages to real wages. For detail, see Boskin Commission (1996) and BLS web site www.bls.gov/cpihc00.htm (as of June, 2001).

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Data sources in Section Four

CPS March data in 1970, 1980, 1990, and 1999

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TABLES AND AN APPENDIX

Table 1-1 Main findings from recent empirical studies on trends in working hours in the U.S.

Literature	Data	Period	coverage	Trend in hours by key characteristics		
				average weekly hours	# of weeks annually worked	average annual hours
Schor (1991)	CPS March	1969-1987	fully employed	male (=) female (+)	male (+) female (+)	male (+ by 98) female (+ by 305)
Coleman & Pencavel (1993a)	Census, CPS March	1940-1988	male, wage and salary employees, aged 16-64	white(-) black(-)	white(+) black(-)	White (=) Black(-)
Coleman & Pencavel (1993b)	Census, CPS March	1940-1989	female, wage & salary employees, aged 16-65	white(-) black(-)	white(+) black(-)	white (-) Black(-)
Rones, Ilg, & Gardner (1997)	CPS	1976-1993	wage & salary workers	male (+) female (+)		male (+ by 100) female (+ by 233)
Bluestone & Rose (1998a,b)	PSID and CPS	1967-1995	employed, aged 25-54	all workers (+)	all workers (+)	male (-) female (+) dual-earner combined hours (+)
Jacobs and Gerson (1998)	CPS	1970-1997	non-farm wage and salary workers	male (-), female (=) dual-earner couples (+) Male breadwinner couples (=)		
Department of Labor (1999)	CPS	1976-1998	all employees	male & female (=)		
Robinson et al. (1999)	time-diary survey	1965-1995	employed, aged 18-64	male (-) female (+)		

note: (+) indicates upward trend in hours during study period, (-) downward trend, and (=) little change.

Table 1-1 Main findings from recent empirical studies on trends in working hours in the U.S. (continued)

Literature	Trend in hours by key characteristics (continued)					
	Education	by age (years of experience)	Occupation	Industry	earnings	Vacations and leave
Schor (1991)						(+) in 1980s
Coleman & Pencavel (1993a)	white, higher edu (+), lower edu (-) black (-) regardless of edu	inverse U shape became clear.		manufacturing (+) others (-)		
Coleman & Pencavel (1993b)	higher edu (+), lower edu (-), regardless of race	weak relation				
Rones, Ilg, & Gardner (1997)		aged 25-54 (+) aged 16-24 (-) aged 55- (=)	professionals & managers (+), sales & transportation workers (+)		higher earnings (+)	
Bluestone & Rose (1998a,b)	higher edu (+), lower edu (-), regardless of race					
Jacobs and Gerson (1998)	higher edu (+)		professionals & managers (+) in both gender			
Department of Labor (1999)	positively related to education (gap of hours between edu group widened.)	aged 25-54 (+) aged 16-24 (-) aged 55- (=)			middle income family put longer hours than higher income family did.	pro-cyclical manufacturing (+) larger firms (+)
Robinson et al. (1999)	higher edu (+)	aged 18-24 (-) aged 55-64 (-)				

note: (+) indicates upward trend in hours during study period, (-) downward trend, and (=) little change.

Table 2-1 The NLS: Survey groups, sample sizes, interview years, and survey status

Survey group	Age cohort	Birth year cohort	Original sample	Initial year / latest year	Number of surveys	Number at last interview	Status
Older men	45–59	4/1/06–3/31/21	5,020	1966 / 1990	13	¹ 2,092	Ended
Mature women	30–44	4/1/22–3/31/37	5,083	1967 / 1999	19	2,467	Continuing
Young men	14–24	4/1/41–3/31/52	5,225	1966 / 1981	12	3,398	Ended
Young women	14–24	1943–1953	5,159	1968 / 1999	20	2,900	Continuing
NLSY79	14–21	1957–1964	² 12,686	1979 / 2000	19	³ 8,399	Continuing
NLSY79 children	birth–14	—	⁴ —	1986 / 2000	8	³ 4,924	Continuing
NLSY79 young adults	15 and older ⁵	—	⁴ —	1994 / 2000	4	³ 2,143	Continuing
NLSY97	12–16	1980–1984	8,984	1997 / 2000	4	⁶ 8,209	Continuing

¹Interviews in 1990 were also conducted with 2,206 widows or other family members of deceased respondents.

²After dropping the military (in 1985) and economically disadvantaged nonblack/non-Hispanic oversamples (in 1991), the sample contains 9,964 respondents eligible for interview.

³The latest sample size available is from the 1998 survey.

⁴The sizes of the NLSY79 children and young adult samples

depend on the number of children born to female NLSY79 respondents, which is increasing over time. Information about the number interviewed in each survey is available in chapter 4.

⁵In 1998, the young adults eligible for interview were limited to those aged 15–20.

⁶The latest sample size available is from round 3.

source: BLS (2000), *NLS Handbook, 2000* , p.1

**Table 2-1 Methodological features of the National Time-diary Studies
from the Americans' use of Time Project, 1965-1995**

	1965	1975	1985	1992-94	1995
Funder	NSF	NSF	NSF; ATT	EPA	EPRI
Data collector	University of Michigan	University of Michigan	University of Maryland	University of Maryland	University of Maryland
Sample size	1,244	2,406	5,358	9,386	1,200
Age range	18-65	18 +	12 +	0 +	12 +
Months	Oct.-Nov.	Oct.-Dec.	Jan.-Dec.	Oct.-Sept.	Jan.-Dec.
Model/response	Personal (72%)	Personal (72%)	Mail-back (3,340) (51%) Telephone (1,120) (67%) Personal (808) (60%)	Telephone (63%)	Telephone (65%)
Diary type	Tomorrow (1,244); Yesterday (130)	Yesterday (2,406)	Tomorrow (3,890); Yesterday (1,468)	Yesterday (9,374)	Yesterday (1,200)

SOURCE: Americans' Use of Time Project.

NOTE: This table is an updated version of Exhibit 1 (page 72).

source: Robinson and Godbey (1999), p.321

Table 2-3 A list of surveys and data on working hours in the U.S.

Survey	conductor	year of start	coverage	sample size	survey type	frequency of survey	survey period	characteristics of data on hours
Current Population Survey (CPS)	the Census of Bureau	1940	population aged 16+	50,000 households (since 1996)	household survey	monthly	a week which includes the 12th of the month	(basic monthly survey) usual hours worked in the reference week actual hours worked in the reference week
The March CPS	the Census of Bureau	1948	population aged 16+	50,000 households (since 1996)	household survey	every March	a week which includes the 12th of the month	(income and work experience supplement survey) usual hours worked in the last year # of week worked in the last year
Current Employment Statistics (CES)	the Bureau of Labor Statistics (BLS)	1915	nonfarm establishments	390,000 establishments (since 1996)	establishment survey	monthly	a week which includes the 12th of the month	hours paid in the reference week for production or nonsupervisory workers overtime hours paid in the reference week (only in manufacturing)
Panel Study of Income Dynamics (PSID)	the Survey Research Center, U of Michigan	1968	individuals and families	5,000 households	longitudinal household survey	annually	--	hours worked in the last year (= usual hours worked in the last year multiplied by # of weeks actually worked in the last year)
The National Longitudinal Surveys (NLS)*	BLS	1966	all people (6 survey groups)	5000+ members in each survey group	longitudinal household survey	annually	--	actual hours worked in the last week usual hours worked in the last year # of week worked in the last year
Americans' Use of Time Project**	U of Michigan, and U of Maryland	1965	for example, 1995: age 18+	for example, 1200 individuals	time-diary survey	1965, 1975, 1985, 1992-4, & 1995	for example, 1995: Jan.-Dec.	paid work hours in the reference day (detail classification includes hours of main job, unemployment, second job, eating at work, before/after work, breaks, and travel to/from work)
Employee Benefit Survey (EBS)	BLS	1979	private sector and State and local government establishments	6,000 establishments	establishment survey	annually	--	paid holiday, paid vacations, and various kind of paid leave
Hour at Work Survey (HWS)	BLS	1981	major 29 industries	--	establishment survey	annually	--	ratios of hours at work to hours paid

* For detail features, see Table 2-1 in this paper. "--" indicates unknown.

* For detail features, see Table 2-2 in this paper.

**Table 3-1 Diary workhours per week by estimated workweek hours,
1965, 1975, and 1985 time diary surveys**

Estimated workweek hours	1965-85 average	Diary hours at work			Estimate diary difference (DIFF)	1965-85 diary hour difference
		1965	1975	1985		
0	2.8	0.5	1.7	6.2	-3	5.7
1-19	17.2	20.5	14.6	16.6	-6	-3.9
20-29	24.3	27.1	24.5	21.3	2	-5.8
30-34	30.1	30.9	30.0	29.4	2	-1.5
35-39	30.8	31.6	32.6	28.1	7	-3.5
40-44	38.6	41.3	38.2	36.2	2	-5.3
45-49	44.3	49.8	41.5	41.7	3	-8.1
50-54	44.8	49.9	42.4	41.6	9	-8.3
55-59	47.9	42.5	57.9	43.2	10	0.7
60-64	50.7	55.7	52.1	44.2	14	-11.5
65-74	55.2	57.6	55.1	52.8	15	-4.8
75 or more	54.9	46.2	63.5	54.9	25	8.7
Average estimated workweek (20 hours or more)						
Men .....	...	47.1	48.5	46.4	...	...
Women .....	...	39.9	39.2	40.6	...	...

source: Robinson and Bostrom (1994), p.17

Table 3-2 Distribution of average hours by self-reported workweek versus calculated workweek methods, 1992

Average hours per week range	Self-reported method				
	Self-reported hours (mean)	Calculated hours (mean)	Self-reported plus random factor	Difference (self-reported hours - calculated hours)	Difference (self-reported hours - self-reported plus random factor)
Total (mean)	42.2	44.8	42.2	-2.6	0.5
0-19 hours	13.8	18.0	20.4	-4.2	-6.6
20-29 hours	23.1	24.9	27.0	-1.8	-3.9
30-39 hours	34.3	38.4	35.7	-4.1	-1.4
40-49 hours	41.9	45.3	41.7	-3.4	.2
50-59 hours	51.7	52.6	49.2	-.9	2.5
60 hours or more	64.8	62.2	60.0	2.6	4.8
	Calculated method				
	Calculated hours (mean)	Self-reported hours (mean)	Self-reported plus random factor	Difference (calculated hours - self-reported hours)	Difference (calculated hours - self-reported plus random factor)
0-19 hours	14.1	20.6	25.7	-6.5	-11.6
20-29 hours	25.1	27.0	30.5	-1.9	-5.4
30-39 hours	35.9	37.0	37.8	-1.1	-1.9
40-49 hours	44.6	42.1	42.0	2.5	2.6
50-59 hours	53.4	49.0	46.7	4.4	6.7
60 hours or more	69.8	58.5	54.9	11.3	14.9

source: Jacobs (1998), p.46

Table 4-1 Employment status of US population by gender and race from 1970 to 1999

Year	Civilian	Labor force			Not in LF	LFP rate	U rate
	Population	Total	Em-	Un-			
			ploied	employed			
<i>Male, White</i>							
1970	57,488	46,013	44,157	1,856	11,475	80.0	4.0
1975	63,385	49,881	46,284	3,597	13,504	78.7	7.2
1980	68,495	53,627	50,337	3,289	14,868	78.3	6.1
1985	73,373	56,472	53,046	3,426	16,901	77.0	6.1
1990	77,083	59,298	56,432	2,866	17,785	76.9	4.8
1995	80,733	61,146	58,146	2,999	19,587	75.7	4.9
1999	83,930	63,413	61,139	2,274	20,517	75.6	3.6
<i>Male, Black</i>							
1970	6,773	5,182	4,803	379	1,591	76.5	7.3
1975	8,020	5,737	4,947	787	2,283	71.5	13.7
1980	9,204	6,518	5,651	868	2,686	70.8	13.3
1985	8,790	6,220	5,270	951	2,570	70.8	15.3
1990	9,567	6,708	5,915	793	2,859	70.1	11.8
1995	10,411	7,183	6,422	762	3,228	69.0	10.6
1999	11,143	7,652	7,027	626	3,491	68.7	8.2
<i>Female, White</i>							
1970	64,624	27,505	26,025	1,480	37,119	42.6	5.4
1975	70,115	32,203	29,429	2,774	37,912	45.9	8.6
1980	75,162	38,544	36,043	2,501	36,618	51.4	6.5
1985	80,306	43,455	40,690	2,765	36,852	54.1	6.4
1990	83,332	47,879	45,654	2,225	35,453	57.5	4.6
1995	86,181	50,804	48,344	2,460	35,377	59.0	4.8
1999	89,156	53,096	51,096	1,999	36,060	59.6	3.8
<i>Female, Black</i>							
1970	8,110	4,015	3,642	373	4,095	49.5	9.3
1975	9,751	4,795	4,124	671	4,956	49.2	14.0
1980	11,282	6,029	5,239	790	5,253	53.4	13.1
1985	10,873	6,144	5,231	913	4,729	56.5	14.9
1990	11,733	6,785	6,051	734	4,948	57.8	10.8
1995	12,835	7,634	6,857	777	5,201	59.5	10.2
1999	13,711	8,713	8,029	684	4,999	63.5	7.8

note: figures for black male and black female from 1970 to 1980 include black and other minorities. "LFP rate" is labor force participate. and "U rate" is unemployment rate.
survey source: U.S. Dept. of Commerce, Bureau of the Census, Current Population survey
data source: U.S. Dept of Labor BLS, *Employment and Earnings*, various January issues on Annual average data.

**Table 4-2 The number of employed
by full-/part-time status in US from 1973 to 1999**

Year	Employed (thousand)		% to total employed	
	full-time	part-time	full-time	part-time
<i>Male, White</i>				
1973	44,719	3,929	92%	8%
1975	45,807	4,074	92%	8%
1980	49,211	4,416	92%	8%
1985	51,998	4,474	92%	8%
1990	50,888	5,544	90%	10%
1995	51,768	6,378	89%	11%
1999	54,756	6,383	90%	10%
<i>Male, Black</i>				
1973	5,133	423	92%	8%
1975	5,249	485	92%	8%
1980	5,983	535	92%	8%
1985	5,768	453	93%	7%
1990	5,261	654	89%	11%
1995	5,685	737	89%	11%
1999	6,263	764	89%	11%
<i>Female, White</i>				
1973	22,380	7,661	74%	26%
1975	24,122	8,081	75%	25%
1980	29,076	9,468	75%	25%
1985	33,333	10,121	77%	23%
1990	33,625	12,030	74%	26%
1995	34,422	13,922	71%	29%
1999	37,417	13,679	73%	27%
<i>Female, Black</i>				
1973	3,631	839		
1975	3,918	876	82%	18%
1980	5,075	954	84%	16%
1985	5,323	821	87%	13%
1990	4,967	1,084	82%	18%
1995	5,542	1,315	81%	19%
1999	6,641	1,388	83%	17%

note: figures for black male and black female from 1973 to 1980 include black and other minorities. Full timers are defined as those who usually worked 35 hours or more in a week.

survey source: U.S. Dept. of Commerce, Bureau of the Census. Current Population survey

data source: U.S. Dept of Labor BLS, *Employment and Earnings* , various January issues on Annual average data.

**Table 4-3 Average weekly hours actually worked, full-timers,
by education attainment, from 1970 to 1999**

	1970 (N=41,015)	1980 (N=59,141)	1990 (N=55,846)	1999 (N=47,508)
<i>Male, White</i>				
Less than high school	46.2	43.5	42.6	42.9
High school	46.6	44.8	44.7	44.6
Some college	46.6	45.3	45.6	45.3
College graduates	48.5	46.6	47.1	47.5
total	46.8	45.1	45.3	45.4
<i>Male, Black</i>				
Less than high school	43.7	40.5	41.2	41.1
High school	43.5	41.0	41.5	42.8
Some college	43.3	43.2	43.5	43.2
College graduates	48.4	44.1	43.3	46.4
total	43.9	41.6	42.2	43.3
<i>Female, White</i>				
Less than high school	42.3	40.6	40.2	40.4
High school	41.3	40.1	40.8	40.8
Some college	41.4	40.8	41.4	41.3
College graduates	43.7	42.0	43.1	43.1
total	41.9	40.7	41.5	41.6
<i>Female, Black</i>				
Less than high school	42.1	39.2	39.0	39.9
High school	41.1	39.6	40.6	40.5
Some college	40.8	39.5	40.7	40.2
College graduates	42.3	40.7	41.4	41.6
total	41.6	39.7	40.7	40.6

note: full-timers are defined as those who usually worked 35 hours or more in a week.

data source: U.S. Dept. of Commerce, Bureau of the Census, Current Population Survey: Annual Demographic File, 1970, 1980, 1990, and 1999 [Computer file].

Table 4-4 Percent distribution of weekly hours worked, by education attainment, full-timers, in 1970 and 1999

	1970 (N=41,015)				1999 (N=47,508)			
	0-39 hrs	40-47 hrs	48+ hrs	total	0-39 hrs	40-47 hrs	48+ hrs	total
<i>Male, White</i>								
Less than high school	5.4	61.5	33.1	100.0	13.8	64.4	21.8	100.0
High school	4.4	59.4	36.1	100.0	11.7	58.4	29.9	100.0
Some college	5.9	57.9	36.2	100.0	12.0	53.8	34.2	100.0
College graduates	5.9	49.7	44.4	100.0	10.2	47.8	42.0	100.0
total	5.2	58.2	36.6	100.0	11.7	55.7	32.6	100.0
<i>Male, Black</i>								
Less than high school	4.8	72.4	22.8	100.0	18.5	63.6	17.8	100.0
High school	(5.3)	73.5	21.2	100.0	11.4	67.8	20.8	100.0
Some college	(5.3)	76.3	(18.4)	100.0	13.4	63.2	23.4	100.0
College graduates	(6.3)	53.9	39.8	100.0	7.9	55.7	36.4	100.0
total	5.1	72.0	23.0	100.0	12.6	64.2	23.2	100.0
<i>Female, White</i>								
Less than high school	17.3	67.1	15.6	100.0	23.8	64.8	11.4	100.0
High school	19.5	69.9	10.6	100.0	23.1	63.0	13.9	100.0
Some college	17.6	71.1	11.3	100.0	23.9	58.9	17.2	100.0
College graduates	14.9	60.2	25.0	100.0	20.4	56.8	22.8	100.0
total	18.1	68.1	13.9	100.0	22.8	60.5	16.7	100.0
<i>Female, Black</i>								
Less than high school	15.1	70.8	14.1	100.0	25.2	64.3	10.5	100.0
High school	16.0	74.6	9.4	100.0	23.7	63.3	13.0	100.0
Some college	(18.6)	74.5	6.8	100.0	25.4	61.5	13.0	100.0
College graduates	(13.5)	67.4	(19.1)	100.0	18.0	63.2	18.8	100.0
total	15.7	72.4	12.0	100.0	23.6	62.8	13.6	100.0

note: full-timers are defined as those who usually worked 35 hours or more in a week. Parentheses indicate the number of cases is less than 50.

data source: U.S. Dept. of Commerce, Bureau of the Census, Current Population Survey: Annual Demographic File, 1970 and 1999 [Computer file].

Table 4-5 Average weekly hours actually worked, full-timers, by major industry, from 1970 to 1999

	1970 (N=41,015)	1980 (N=58,436)	1990 (N=55,846)	1999 (N=47,508)		1970 (N=41,015)	1980 (N=58,436)	1990 (N=55,846)	1999 (N=47,508)
Male, White					Female, White				
Agriculture	57.6	52.2	49.6	50.2	Agriculture	49.8	46.6	44.6	44.3
Mining	49.4	47.9	48.2	48.8	Mining	(40.2)	41.3	42.8	(40.2)
Construction	43.8	42.4	41.9	42.7	Construction	41.0	40.8	41.0	40.7
Manufacturing	44.5	43.6	44.3	44.8	Manufacturing	40.8	39.9	41.2	41.6
Transp. & Pub. Util.	45.8	44.8	45.8	46.0	Transp. & Pub. Util.	40.4	40.7	41.8	41.5
Wholesale trade	46.8	45.7	46.4	46.2	Wholesale trade	40.7	40.7	41.5	41.5
Retail trade	50.7	46.9	46.6	45.5	Retail trade	43.3	41.1	41.3	41.6
Fin, ins., & r. est.	46.4	44.3	45.3	45.7	Fin, ins., & r. est.	40.3	40.0	41.2	41.5
Services	48.7	46.0	46.1	46.0	Services	42.3	41.0	41.7	41.7
Pub. Admini.	44.1	43.1	44.2	43.9	Pub. Admini.	40.4	39.7	40.4	41.0
total	46.8	45.1	45.3	45.4	total	41.9	40.7	41.5	41.6
Male, Black					Female, Black				
Agriculture	47.0	39.1	(40.5)	(45.0)	Agriculture	43.9	(43.0)	(37.3)	(40.8)
Mining	(40.4)	(39.1)	(46.5)	(46.7)	Mining	(40.0)	(42.6)	(47.3)	(38.0)
Construction	41.1	36.4	39.4	41.3	Construction	(40.0)	(40.5)	(45.5)	(42.9)
Manufacturing	42.6	40.9	42.4	44.7	Manufacturing	40.5	39.7	40.0	40.5
Transp. & Pub. Util.	42.6	42.2	42.3	43.3	Transp. & Pub. Util.	(40.4)	38.3	41.2	40.5
Wholesale trade	43.2	41.8	43.7	43.1	Wholesale trade	(41.3)	(40.4)	(40.6)	(41.2)
Retail trade	48.0	43.3	42.2	42.4	Retail trade	43.0	40.2	39.9	40.2
Fin, ins., & r. est.	43.9	42.7	42.1	43.4	Fin, ins., & r. est.	39.1	39.5	40.6	40.0
Services	46.4	43.1	42.1	43.5	Services	41.6	39.7	40.7	40.6
Pub. Admini.	42.7	42.5	43.3	42.5	Pub. Admini.	40.5	40.1	40.7	41.4
total	43.9	41.6	42.2	43.3	total	41.6	39.7	40.6	40.6

note: full-timers are defined as those who usually worked 35 hours or more in a week. Parentheses indicate the number of cases is less than 50.

data source: U.S. Dept. of Commerce, Bureau of the Census, Current Population Survey: Annual Demographic File, 1970 and 1999 [Computer file].

Table 4-6 Percent distribution of weekly hours worked, by major industry, full-timers, in 1970 and 1999

	1970 (N=41,015)				1999 (N=47,508)			
	0-39 hrs	40-47 hrs	48+ hrs	total	0-39 hrs	40-47 hrs	48+ hrs	total
<i>Male, White & Black</i>								
Agriculture	7.1	25.5	67.4	100.0	12.0	42.5	45.5	100.0
Mining	(3.3)	50.4	46.3	100.0	(9.5)	43.5	47.0	100.0
Construction	8.3	70.0	21.7	100.0	16.2	59.4	24.4	100.0
Manufacturing	4.5	67.5	28.0	100.0	9.5	58.6	31.9	100.0
Transp. & Pub. Util.	3.7	65.3	31.0	100.0	10.4	54.6	35.0	100.0
Wholesale trade	4.2	57.8	38.0	100.0	7.8	52.0	40.2	100.0
Retail trade	4.2	43.1	52.8	100.0	12.5	53.6	34.0	100.0
Fin, ins., & r. est.	9.7	53.4	36.9	100.0	9.6	54.6	35.8	100.0
Services	5.8	51.4	42.8	100.0	12.6	52.5	34.9	100.0
Pub. Admini.	4.5	73.5	21.9	100.0	15.1	58.1	26.8	100.0
total	5.2	59.3	35.5	100.0	11.8	54.8	33.4	100.0
<i>Female, White & Black</i>								
Agriculture	16.0	47.4	36.6	100.0	(21.0)	56.5	22.5	100.0
Mining	(0.0)	(100.0)	(0.0)	(100.0)	(37.1)	(45.7)	(17.1)	(100.0)
Construction	(17.5)	71.1	(11.4)	100.0	19.2	64.7	(16.2)	100.0
Manufacturing	14.4	78.0	7.6	100.0	17.0	66.1	16.9	100.0
Transp. & Pub. Util.	14.3	80.2	(5.6)	100.0	20.5	62.9	16.6	100.0
Wholesale trade	19.0	74.2	(6.8)	100.0	16.5	68.1	15.3	100.0
Retail trade	19.8	58.8	21.5	100.0	25.3	56.9	17.8	100.0
Fin, ins., & r. est.	34.6	57.8	7.6	100.0	19.9	64.2	15.9	100.0
Services	16.0	68.0	16.1	100.0	24.0	57.3	18.7	100.0
Pub. Admini.	17.4	77.0	(5.6)	100.0	24.0	60.6	15.5	100.0
total	17.8	68.5	13.7	100.0	22.5	59.7	17.8	100.0

note: full-timers are defined as those who usually worked 35 hours or more in a week. Parentheses indicate the number of cases is less than 50.

data source: U.S. Dept. of Commerce, Bureau of the Census, Current Population Survey: Annual Demographic File, 1970 and 1999 [Computer file].

**Table 4-7 Average weekly hours actually worked, full-timers,
by major occupation, from 1970 to 1999**

	1970 (N=41,015)	1980 (N=48,187)	1990 (N=55,846)	1999 (N=47,508)
<i>Male, White</i>				
Managerial & professional	50.0	47.5	47.4	47.4
Technical, sales, & administrative support	45.0	45.8	45.9	45.5
Service	46.7	42.8	43.3	43.5
Operators, fabricators, & laborers	44.8	43.9	44.6	44.9
total	46.8	45.3	45.3	45.4
<i>Male, Black</i>				
Managerial & professional	49.0	44.6	44.3	46.0
Technical, sales, & administrative support	43.0	43.6	43.3	43.2
Service	43.8	40.9	41.6	42.2
Operators, fabricators, & laborers	43.1	41.0	41.3	43.0
total	43.9	41.6	42.2	43.3
<i>Female, White</i>				
Managerial & professional	44.0	42.4	45.6	43.0
Technical, sales, & administrative support	40.5	40.3	42.7	40.6
Service	43.8	40.8	42.7	41.1
Operators, fabricators, & laborers	41.4	40.2	43.8	41.3
total	41.9	41.3	43.8	41.6
<i>Female, Black</i>				
Managerial & professional	42.5	40.3	42.8	41.1
Technical, sales, & administrative support	40.2	39.5	41.4	40.0
Service	42.6	39.7	40.9	40.9
Operators, fabricators, & laborers	40.6	39.5	40.7	40.4
total	41.6	39.8	41.3	40.6

note: full-timers are defined as those who usually worked 35 hours or more in a week.

data source: U.S. Dept. of Commerce, Bureau of the Census, Current Population Survey:
Annual Demographic File, 1970, 1980, 1990, and 1999 [Computer file].

Table 4-8 Percent distribution of weekly hours worked, by major occupation, full-timers, in 1970 and 1999

	1970 (N=41,015)				1999 (N=47,508)			
	0-39 hrs	40-47 hrs	48+ hrs	total	0-39 hrs	40-47 hrs	48+ hrs	total
<i>Male, White</i>								
Managerial & professional	4.9	46.7	48.4	100.0	11.1	45.1	43.8	100.0
Technical, sales, & administrative supp	6.8	63.0	30.2	100.0	10.4	53.9	35.6	100.0
Service	4.4	58.9	36.7	100.0	12.9	61.2	25.9	100.0
Operators, fabricators, & laborers	5.1	65.8	29.1	100.0	12.5	57.3	30.2	100.0
total	5.2	58.2	36.6	100.0	11.8	54.1	34.1	100.0
<i>Male, Black</i>								
Managerial & professional	(7.6)	52.2	40.2	100.0	(10.1)	56.4	33.5	100.0
Technical, sales, & administrative supp	(4.9)	77.4	(17.7)	100.0	(13.2)	62.3	24.5	100.0
Service	(4.8)	69.5	25.7	100.0	13.4	66.3	20.3	100.0
Operators, fabricators, & laborers	4.7	75.0	20.2	100.0	12.2	65.2	22.5	100.0
total	5.1	72.0	23.0	100.0	12.4	63.4	24.2	100.0
<i>Female, White</i>								
Managerial & professional	13.3	62.5	24.2	100.0	19.8	54.6	25.6	100.0
Technical, sales, & administrative supp	23.1	70.0	6.9	100.0	23.6	63.5	12.9	100.0
Service	13.8	62.5	23.7	100.0	27.1	56.7	16.2	100.0
Operators, fabricators, & laborers	14.7	74.1	11.2	100.0	19.3	65.4	15.3	100.0
total	18.1	69.1	13.9	100.0	22.4	59.3	18.3	100.0
<i>Female, Black</i>								
Managerial & professional	(15.9)	65.4	(18.7)	100.0	20.9	61.8	17.3	100.0
Technical, sales, & administrative supp	21.6	72.8	(5.6)	100.0	25.4	63.8	10.8	100.0
Service	12.8	71.2	16.0	100.0	24.6	60.6	14.8	100.0
Operators, fabricators, & laborers	(13.7)	78.9	(7.3)	100.0	(20.5)	65.2	(14.3)	100.0
total	15.7	72.4	12.0	100.0	23.5	62.5	14.0	100.0

note: full-timers are defined as those who usually worked 35 hours or more in a week. Parentheses indicate the number of cases is less than 50.
data source: U.S. Dept. of Commerce, Bureau of the Census, Current Population Survey: Annual Demographic File, 1970 and 1999 [Computer file].

**Table 4-9 Average weekly hours actually worked, full-timers,
by annual income distribution, from 1970 to 1999**

	1970 (N=41,015)	1980 (N=59,141)	1990 (N=55,846)	1999 (N=47,508)
<i>Male, White</i>				
1st 20% (lowest)	47.3	44.3	42.8	43.0
2nd 20%	46.0	44.3	44.2	43.9
3rd 20%	45.6	44.6	45.3	45.1
4th 20%	46.6	44.8	45.9	46.0
5th 20% (highest)	48.6	47.4	48.3	49.0
total	46.8	45.1	45.3	45.4
<i>Male, Black</i>				
1st	44.1	39.7	39.5	40.7
2nd	43.6	41.1	41.2	41.6
3rd	43.3	41.3	42.3	43.2
4th	43.7	42.0	43.6	44.8
5th	44.6	43.7	44.2	46.3
total	43.9	41.6	42.2	43.3
<i>Female, White</i>				
1st	43.3	40.5	40.2	40.3
2nd	41.4	39.9	40.4	40.4
3rd	41.0	40.1	41.2	41.3
4th	41.3	40.7	41.8	41.9
5th	42.5	42.1	43.8	44.1
total	41.9	40.7	41.5	41.6
<i>Female, Black</i>				
1st	42.4	39.0	38.7	38.7
2nd	41.8	39.1	39.6	40.5
3rd	41.4	40.0	40.8	40.7
4th	41.1	39.6	41.4	41.2
5th	41.3	40.8	42.2	41.8
total	41.6	39.7	40.6	40.6

note: full-timers are defined as those who usually worked 35 hours or more in a week.

data source: U.S. Dept. of Commerce, Bureau of the Census,
Current Population Survey: Annual Demographic File, 1970,
1980, 1990, and 1999 [Computer file].

**Table 4-10 Average annual nominal income, full-timers,
by annual income distribution, from 1970 to 1999**

	1969 (N=41,015)	1979 (N=59,141)	1989 (N=55,846)	1998 (N=47,508)
<i>Male, White</i>				
1st 20% (lowest)	3,161	4,563	7,414	9,881
2nd 20%	6,488	11,003	17,496	22,860
3rd 20%	8,440	15,765	25,978	33,363
4th 20%	10,718	20,923	35,744	46,626
5th 20% (highest)	18,489	33,610	61,769	103,167
total	9,455	17,136	29,570	43,063
<i>Male, Black</i>				
1st	1,972	2,904	5,567	7,996
2nd	4,055	7,745	13,301	18,621
3rd	5,554	11,325	19,023	26,440
4th	7,214	15,623	26,288	36,616
5th	10,567	24,070	43,562	64,857
total	5,869	12,305	21,484	30,917
<i>Female, White</i>				
1st	911	1,852	4,257	6,990
2nd	3,056	5,893	11,125	15,878
3rd	4,405	8,376	16,340	23,235
4th	5,774	11,061	22,567	32,219
5th	9,108	17,678	37,723	61,168
total	4,642	9,008	18,374	27,936
<i>Female, Black</i>				
1st	819	1,906	3,869	6,184
2nd	2,346	5,872	10,266	14,341
3rd	3,399	8,225	15,122	20,768
4th	4,656	11,056	20,874	29,534
5th	7,494	17,862	34,093	50,807
total	3,758	8,877	17,067	24,324

note: full-timers are defined as those who usually worked 35 hours or more in a week.

data source: U.S. Dept. of Commerce, Bureau of the Census, Current Population Survey: Annual Demographic File, 1970, 1980, 1990. and 1999 [Computer file].

**Table 4-11 Percent share of full-timers and part-time worker,
by education attainment, industry, occupation, and annual income distribution**

	1970 (N=53,995)				1999 (N=53,572)			
	Male		female		Male		female	
	full-time	part-time	full-time	part-time	full-time	part-time	full-time	part-time
<i>educational attainment</i>								
Less than high school	77	23	56	44	75	25	54	46
High school	88	12	68	32	93	7	76	24
Some college	82	18	63	37	89	11	74	26
College graduates	90	10	74	26	95	5	81	19
<i>industry</i>								
Agriculture	61	39	27	73	85	15	54	46
Mining	89	11	78	22	100	(0)	(88)	(12)
Construction	78	22	70	30	94	6	73	27
Manufacturing	90	10	80	20	97	3	92	8
Transp. & Pub. Util.	90	10	74	26	94	6	79	21
Wholesale trade	90	10	71	29	96	4	83	17
Retail trade	73	27	54	46	76	24	59	41
Fin, ins., & r. est.	88	12	80	20	92	8	85	15
Services	80	20	64	36	87	13	73	27
Pub. Admini.	90	10	80	20	96	4	91	9
<i>occupation</i>								
Managerial & professional	89	11	73	27	94	6	84	16
Tech., sales, & admini.	80	20	69	31	87	13	73	27
Service	69	31	44	56	89	11	61	39
Open, fabric, & laborers	82	18	72	28	88	12	78	22
<i>income distribution</i>								
1st 20% (lowest)	50	50	31	69	61	39	33	67
2nd 20%	87	13	46	54	94	6	65	35
3rd 20%	92	8	71	29	97	3	85	15
4th 20%	93	7	85	15	98	2	93	7
5th 20% (highest)	94	6	88	12	98	2	95	5

note: Full-/part-timers status is defined as those who usually worked more than or less than 35 hours in a week.

Parentheses indicate the number of cases is less than 50. Workers are total of white and black.

data source: U.S. Dept. of Commerce, Bureau of the Census, Current Population Survey: Annual Demographic File, 1970 and 1999 [Computer file].

**Table 4-12 Average weekly hours actually worked, part-time workers,
by educational attainment, industry, occupation, and annual income distribution, from 1970 to 1999**

	<i>Male</i>				<i>Female</i>			
	1970	1980	1990	1999	1970	1980	1990	1999
	(N=5,580)	(N=5,593)	(N=3,923)	(N=3,229)	(N=7,400)	(N=9,637)	(N=8,366)	(N=7,089)
<i>educational attainment</i>								
Less than high school	18.6	16.7	16.7	17.4	17.2	16.8	17.7	17.5
High school	21.3	20.0	19.6	20.1	20.2	19.9	20.6	21.0
Some college	19.0	19.1	19.2	19.9	18.1	18.7	19.8	20.1
College graduates	20.7	19.6	19.5	19.6	18.7	18.5	19.7	19.6
<i>industry</i>								
Agriculture	16.9	17.8	16.2	17.1	13.1	18.7	16.5	16.9
Mining	21.1	(22.1)	(15.0)	(16.0)	18.2	(20.3)	(19.2)	(16.2)
Construction	22.3	20.5	18.9	20.4	19.8	17.8	19.0	19.7
Manufacturing	22.9	20.3	20.4	20.0	24.6	21.3	20.7	20.4
Transp. & Pub. Util.	21.8	19.4	19.6	20.8	21.0	20.4	19.5	21.2
Wholesale trade	20.7	18.7	19.1	19.1	19.6	20.5	20.2	20.0
Retail trade	17.6	18.9	18.9	19.4	18.8	19.3	19.7	19.8
Fin, ins., & r. est.	18.8	20.0	18.7	18.7	21.6	19.9	20.8	21.2
Services	17.7	17.9	18.1	18.2	18.9	18.7	19.1	19.6
Pub. Admini.	22.6	18.5	16.6	17.4	21.5	17.7	19.2	19.7
<i>occupation</i>								
Managerial & professional	19.9	19.0	19.0	18.7	18.3	19.2	20.0	19.7
Tech., sales, & admini.	17.6	17.4	18.4	18.9	19.8	18.1	20.2	19.9
Service	16.0	18.1	18.7	19.1	16.0	18.2	18.9	19.4
Open, fabric, & laborers	20.9	20.3	18.4	19.1	23.2	21.3	19.8	20.2
<i>income distribution</i>								
1st 20% (lowest)	16.8	13.8	15.3	15.8	14.2	14.3	15.3	15.3
2nd 20%	22.2	15.9	16.1	16.6	19.0	15.4	16.7	17.1
3rd 20%	24.3	18.5	18.7	19.2	23.2	18.5	19.9	19.7
4th 20%	24.9	21.4	20.8	21.3	24.1	22.0	22.7	23.2
5th 20% (highest)	24.1	22.5	22.0	22.0	24.6	23.2	24.0	23.2

note: Part-timers are defined as those who usually worked less than 35 hours in a week. Parentheses indicate the number cases is less than 50. Workers are total of white and black.
data source: U.S. Dept. of Commerce, Bureau of the Census, Current Population Survey: Annual Demographic File, 1970 and 1999 [Computer file].

**Table 4-13 The number of years worked between 1975 to 1992,
cohort prime age 25-54 at 1975**

male cohort prime age 25-54 at 1975 (frequency distribution)							
	age range						
# of years worked	25-29	30-34	35-39	40-44	45-49	50-54	total
0 year	4	1	4	6	3	8	26
1 year	3	2	1	1	2	9	18
2 years	0	2	0	0	0	2	4
3 years	1	0	0	2	1	7	11
4 years	0	1	1	0	2	1	5
5 years	0	0	0	0	2	3	5
6 years	0	0	3	3	3	2	11
7 years	0	0	0	1	3	7	11
8 years	0	1	1	2	1	10	15
9 years	2	1	1	2	4	7	17
10 years	0	0	1	2	2	13	18
11 years	2	1	3	3	11	10	30
12 years	3	2	2	7	8	11	33
13 years	3	3	1	7	12	13	39
14 years	6	2	4	4	11	16	43
15 years	7	5	5	6	12	16	51
16 years	13	4	5	13	20	16	71
17 years	36	20	9	17	18	14	114
18 years	420	238	178	127	112	33	1,108
total N	500	283	219	203	227	198	1,630

male cohort prime age 25-54 at 1975 (percent distribution)							
	age range						
# of years worked	25-29	30-34	35-39	40-44	45-49	50-54	total
0 year	0.8%	0.4%	1.8%	3.0%	1.3%	4.0%	1.6%
1 year	0.6%	0.7%	0.5%	0.5%	0.9%	4.5%	1.1%
2 years	0.0%	0.7%	0.0%	0.0%	0.0%	1.0%	0.2%
3 years	0.2%	0.0%	0.0%	1.0%	0.4%	3.5%	0.7%
4 years	0.0%	0.4%	0.5%	0.0%	0.9%	0.5%	0.3%
5 years	0.0%	0.0%	0.0%	0.0%	0.9%	1.5%	0.3%
6 years	0.0%	0.0%	1.4%	1.5%	1.3%	1.0%	0.7%
7 years	0.0%	0.0%	0.0%	0.5%	1.3%	3.5%	0.7%
8 years	0.0%	0.4%	0.5%	1.0%	0.4%	5.1%	0.9%
9 years	0.4%	0.4%	0.5%	1.0%	1.8%	3.5%	1.0%
10 years	0.0%	0.0%	0.5%	1.0%	0.9%	6.6%	1.1%
11 years	0.4%	0.4%	1.4%	1.5%	4.8%	5.1%	1.8%
12 years	0.6%	0.7%	0.9%	3.4%	3.5%	5.6%	2.0%
13 years	0.6%	1.1%	0.5%	3.4%	5.3%	6.6%	2.4%
14 years	1.2%	0.7%	1.8%	2.0%	4.8%	8.1%	2.6%
15 years	1.4%	1.8%	2.3%	3.0%	5.3%	8.1%	3.1%
16 years	2.6%	1.4%	2.3%	6.4%	8.8%	8.1%	4.4%
17 years	7.2%	7.1%	4.1%	8.4%	7.9%	7.1%	7.0%
18 years	84.0%	84.1%	81.3%	62.6%	49.3%	16.7%	68.0%
total N	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

data source: Panel Study of Income Dynamics 1968–1993 (waves I–XXVI) [computer file].

**Table 4-13 The number of years worked between 1975 to 1992,
cohort prime age 25-54 at 1975 (Continued)**

female cohort prime age 25-54 at 1975 (frequency distribution)							
# of years worked	age range						total
	25-29	30-34	35-39	40-44	45-49	50-54	
0 year	12	17	20	21	42	58	170
1 year	3	8	6	7	17	20	61
2 years	8	5	6	7	12	10	48
3 years	13	2	9	10	7	8	49
4 years	5	4	4	4	8	8	33
5 years	13	7	4	7	6	8	45
6 years	14	9	6	11	7	7	54
7 years	8	10	16	10	10	11	65
8 years	10	4	6	9	9	8	46
9 years	22	11	4	8	7	4	56
10 years	17	10	6	8	12	10	63
11 years	18	8	11	10	13	6	66
12 years	23	11	13	13	12	14	86
13 years	26	15	10	13	16	10	90
14 years	32	7	11	10	15	12	87
15 years	29	18	18	16	16	14	111
16 years	47	18	28	16	17	8	134
17 years	53	21	33	27	22	10	166
18 years	230	139	107	94	77	22	669
total N	583	324	318	301	325	248	2,099

female cohort prime age 25-54 at 1975 (percent distribution)							
# of years worked	age range						total
	25-29	30-34	35-39	40-44	45-49	50-54	
0 year	2.1%	5.2%	6.3%	7.0%	12.9%	23.4%	8.1%
1 year	0.5%	2.5%	1.9%	2.3%	5.2%	8.1%	2.9%
2 years	1.4%	1.5%	1.9%	2.3%	3.7%	4.0%	2.3%
3 years	2.2%	0.6%	2.8%	3.3%	2.2%	3.2%	2.3%
4 years	0.9%	1.2%	1.3%	1.3%	2.5%	3.2%	1.6%
5 years	2.2%	2.2%	1.3%	2.3%	1.8%	3.2%	2.1%
6 years	2.4%	2.8%	1.9%	3.7%	2.2%	2.8%	2.6%
7 years	1.4%	3.1%	5.0%	3.3%	3.1%	4.4%	3.1%
8 years	1.7%	1.2%	1.9%	3.0%	2.8%	3.2%	2.2%
9 years	3.8%	3.4%	1.3%	2.7%	2.2%	1.6%	2.7%
10 years	2.9%	3.1%	1.9%	2.7%	3.7%	4.0%	3.0%
11 years	3.1%	2.5%	3.5%	3.3%	4.0%	2.4%	3.1%
12 years	3.9%	3.4%	4.1%	4.3%	3.7%	5.6%	4.1%
13 years	4.5%	4.6%	3.1%	4.3%	4.9%	4.0%	4.3%
14 years	5.5%	2.2%	3.5%	3.3%	4.6%	4.8%	4.1%
15 years	5.0%	5.6%	5.7%	5.3%	4.9%	5.6%	5.3%
16 years	8.1%	5.6%	8.8%	5.3%	5.2%	3.2%	6.4%
17 years	9.1%	6.5%	10.4%	9.0%	6.8%	4.0%	7.9%
18 years	39.5%	42.9%	33.6%	31.2%	23.7%	8.9%	31.9%
total N	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

data source: Panel Study of Income Dynamics 1968–1993 (waves I–XXVI) [computer file].

Table 4-14 Percent distribution of annual hours worked in 1975-1992 , by age cohort group

MALE

Cohort aged 25-29 at 1975 (N=500)					
	cohort	5 years	10 years	15 years	17 years
	start	later	later	later	later
year	(1975)	(1980)	(1985)	(1990)	(1992)
relevant age	25-29	30-34	35-39	40-44	42-46
0 hour	4	3	3	4	5
1-1000 hours	8	4	3	2	5
1001-1500 hours	8	5	6	5	4
1501-2000 hours	27	28	26	28	24
2001-2500 hours	33	39	37	32	38
2501-3000 hours	13	13	16	17	14
3001+ hours	7	8	9	12	10
total	100	100	100	100	100
average annual hours	2076	2109	2158	2185	2096

Cohort aged 30-34 at 1975 (N=283)					
	cohort	5 years	10 years	15 years	17 years
	start	later	later	later	later
year	(1975)	(1980)	(1985)	(1990)	(1992)
relevant age	30-34	35-39	40-44	45-49	47-49
0 hour	2	2	4	6	10
1-1000 hours	4	4	4	5	6
1001-1500 hours	5	5	5	4	5
1501-2000 hours	27	28	27	24	24
2001-2500 hours	36	35	38	33	34
2501-3000 hours	13	14	14	18	12
3001+ hours	12	12	8	10	8
total	100	100	100	100	100
average annual hours	2226	2188	2120	2126	1936

Cohort aged 35-39 at 1975 (N=219)					
	cohort	5 years	10 years	15 years	17 years
	start	later	later	later	later
year	(1975)	(1980)	(1985)	(1990)	(1992)
relevant age	35-39	40-44	45-49	50-54	52-56
0 hour	3	4	7	10	13
1-1000 hours	3	3	5	5	5
1001-1500 hours	6	3	3	6	6
1501-2000 hours	24	31	30	32	31
2001-2500 hours	39	38	32	27	29
2501-3000 hours	15	12	13	11	7
3001+ hours	11	9	10	8	8
total	100	100	100	100	100
average annual hours	2246	2137	2027	1933	1802

Cohort aged 40-44 at 1975 (N=203)					
	cohort	5 years	10 years	15 years	17 years
	start	later	later	later	later
year	(1975)	(1980)	(1985)	(1990)	(1992)
relevant age	40-44	45-49	50-54	55-59	57-59
0 hour	5	6	10	21	30
1-1000 hours	3	2	3	6	8
1001-1500 hours	5	5	4	5	4
1501-2000 hours	31	31	37	27	22
2001-2500 hours	34	33	27	25	23
2501-3000 hours	10	11	8	8	8
3001+ hours	11	11	10	8	4
total	100	100	100	100	100
average annual hours	2194	2108	1954	1661	1383

data source: Panel Study of Income Dynamics 1968-1993 (waves I-XXVI) [computer file].

Table 4-14 Percent distribution of annual hours worked in 1975-1992, by age cohort group (continued)

FEMALE

Cohort aged 25-29 at 1975 (N=583)						Cohort aged 30-34 at 1975 (N=324)					
	cohort	5 years	10 years	15 years	17 years		cohort	5 years	10 years	15 years	17 years
	start	later	later	later	later		start	later	later	later	later
year	(1975)	(1980)	(1985)	(1990)	(1992)	year	(1975)	(1980)	(1985)	(1990)	(1992)
relevant age	25-29	30-34	35-39	40-44	42-46	relevant age	30-34	35-39	40-44	45-49	47-49
0 hour	26	24	20	15	18	0 hour	33	27	20	19	19
1-1000 hours	23	22	17	15	12	1-1000 hours	20	18	14	13	13
1001-1500 hours	11	12	14	11	12	1001-1500 hours	12	11	13	11	10
1501-2000 hours	30	30	31	34	34	1501-2000 hours	25	26	34	31	32
2001-2500 hours	9	10	15	18	18	2001-2500 hours	8	13	13	21	18
2501-3000 hours	1	1	3	4	4	2501-3000 hours	0	3	4	3	5
3001+ hours	1	1	2	2	2	3001+ hours	1	2	2	2	2
total	100	100	100	100	100	total	100	100	100	100	100
ave. hrs for all	1025	1090	1278	1422	1399	ave. hrs for all	932	1141	1330	1383	1396
ave. hrs for those > 0 hrs	1393	1428	1589	1681	1709	ave. hrs for those > 0 hrs	1392	1572	1664	1704	1733

Cohort aged 35-39 at 1975 (N=318)						Cohort aged 40-44 at 1975 (N=301)					
	cohort	5 years	10 years	15 years	17 years		cohort	5 years	10 years	15 years	17 years
	start	later	later	later	later		start	later	later	later	later
year	(1975)	(1980)	(1985)	(1990)	(1992)	year	(1975)	(1980)	(1985)	(1990)	(1992)
relevant age	35-39	40-44	45-49	50-54	52-56	relevant age	40-44	45-49	50-54	55-59	57-59
0 hour	38	27	24	25	32	0 hour	34	25	29	38	44
1-1000 hours	23	15	14	14	11	1-1000 hours	20	18	15	14	11
1001-1500 hours	9	11	12	13	10	1001-1500 hours	9	13	11	8	10
1501-2000 hours	22	33	31	29	28	1501-2000 hours	27	32	29	22	23
2001-2500 hours	8	11	13	15	16	2001-2500 hours	8	9	12	12	8
2501-3000 hours	0	1	4	3	2	2501-3000 hours	2	1	3	3	3
3001+ hours	1	1	2	1	2	3001+ hours	1	2	1	3	1
total	100	100	100	100	100	total	100	100	100	100	100
ave. hrs for all	842	1159	1249	1239	1148	ave. hrs for all	964	1120	1111	1025	895
ave. hrs for those > 0 hrs	1353	1581	1648	1655	1682	ave. hrs for those > 0 hrs	1451	1499	1570	1650	1594

data source: Panel Study of Income Dynamics 1968-1993 (waves I-XXVI) [computer file].

Table 4-15 Average annual hours, cohort aged 25-44 at 1975

<i>Hours by year, male</i>					
	year				
cohort age at 1975	1975	1980	1985	1990	1992
25-29	2076	2109	2158	2185	2096
30-34	2226	2188	2120	2126	1936
35-39	2246	2137	2027	1933	1802
40-44	2194	2108	1954	1661	1383

<i>Hours by age, male</i>								
	age							
cohort age at 1975	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
25-29	2076	2109	2158	2185	2096			
30-34		2226	2188	2120	2126	1936		
35-39			2246	2137	2027	1933	1802	
40-44				2194	2108	1954	1661	1383

<i>Hours by year, female</i>					
	year				
cohort age at 1975	1975	1980	1985	1990	1992
25-29	1025	1090	1278	1422	1399
30-34	932	1141	1330	1383	1396
35-39	842	1159	1249	1239	1148
40-44	964	1120	1111	1025	895

<i>Hours by age, female</i>								
	age							
cohort age at 1975	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
25-29	1025	1090	1278	1422	1399			
30-34		932	1141	1330	1383	1396		
35-39			842	1159	1249	1239	1148	
40-44				964	1120	1111	1025	895

data source: Panel Study of Income Dynamics 1968–1993 (waves I-XXVI) [computer file].

Table 4-16 Percent of employees participating in paid time off benefit program

Year category of firm	1982 M & L	1991 M & L	1990 S	1990 S & LG	1997 M & L	1996 S	1998 S & LG
<i>Full-time employee</i>							
Holidays	99	92	84	74	89	80	73
Vacations	99	96	88	67	95	86	67
Personal leave	24	21	11	39	20	14	38
Funeral leave	-	80	47	63	81	51	65
Jury duty leave	-	86	54	94	87	59	95
Military leave	-	54	21	81	47	18	76
Sick leave	67	67	47	95	56	50	96
Family leave	-	-	-	-	2	2	4
<i>part-time employee</i>							
Holidays	-	47	28	34	40	21	93
Vacations	-	55	29	26	44	30	91
Personal leave	-	10	4	20	9	5	33
Funeral leave	-	39	11	38	34	16	52
Jury duty leave	-	45	13	53	37	23	98
Military leave	-	14	3	39	9	5	97
Sick leave	-	30	10	49	18	10	96
Family leave	-	-	-	-	1	1	10

note: "M & L" is medium and large private establishments, "S" is small private establishments, and "S & LG" is state and local governments. "-" indicates no data available.

survey source: BLS, Employee Benefits Survey

data source:

BLS (1983), *Employee Benefits in Medium and Large Firms, 1982*

BLS (1993), *Employee Benefits in Medium and Large Private Establishments, 1991*

BLS (1991), *Employee Benefits in Small Private Establishments, 1990*

BLS (1992), *Employee Benefits in State and Local Governments, 1990*

BLS (1999), *Employee Benefits in Medium and Large Private Establishments, 1997*

BLS (1999), *Employee Benefits in Small Private Establishments, 1996*

BLS (2000), *Employee Benefits in State and Local Governments, 1998*

Table 4-17 Average paid holidays, days of vacation, and sick leave days, full-time employees

Year	1982	1991	1990	1990	1997	1996	1998
category of firm	M & L	M & L	S	S & LG	M & L	S	S & LG
Paid holidays	10.0	10.2	9.5	13.6	9.3	7.6	11.4
Paid vacation days by years of service							
1 year	8.8	9.3	7.6	12.2	9.6	8.1	12.6
3 years	10.4	11.1	10.0	13.4	11.5	10.2	13.6
5 years	12.4	13.4	11.5	15.3	13.8	11.9	15.6
10 years	15.7	16.5	13.5	18.4	16.9	13.9	18.6
15 years	18.1	18.7	14.5	20.4	18.8	14.8	21.1
20 years	20.5	20.4	15.0	22.1	20.3	15.4	22.3
25 years	22.3	21.5	15.3	22.7	21.5	15.7	23.1
Paid sick leave days by years of service							
1 year	16.3	12.4	8.5	12.6	11.2	8.0	13.3
3 years	20.4	15.5	10.2	12.8	13.0	8.7	13.5
5 years	25.1	18.8	11.5	13.1	15.2	9.5	13.5
10 years	31.1	22.9	13.0	13.5	17.6	10.3	13.6
15 years	36.1	26.0	14.0	13.7	18.8	10.5	13.7
20 years	38.5	28.2	14.6	13.8	20.5	10.8	13.7
25 years	40.3	30.3	14.9	-	21.1	10.9	13.7

note: "M & L" is medium and large private establishments, "S" is small private establishments, and "S & LG" is state and local governments

survey source: BLS, Employee Benefits Survey

data source:

BLS (1983), *Employee Benefits in Medium and Large Firms, 1982*

BLS (1993), *Employee Benefits in Medium and Large Private Establishments, 1991*

BLS (1991), *Employee Benefits in Small Private Establishments, 1990*

BLS (1992), *Employee Benefits in State and Local Governments, 1990*

BLS (1999), *Employee Benefits in Medium and Large Private Establishments, 1997*

BLS (1999), *Employee Benefits in Small Private Establishments, 1996*

BLS (2000), *Employee Benefits in State and Local Governments, 1998*

Table 5-1 Main findings from data analysis in this paper

<i>Trends in working hours in US from 1970 to 1999, full-time workers</i>				
	education	occupation	industry	income
White, male	all edu (-) 1970-80 college grad (+) since 1980	all occu (-) 1970-80 all occu (=) since 1980	all industry (-) 1970-80 agri. and retail trade (-)	all inc (-) 1970-80 higher inc (+) since 1980
Black, male	all edu (-) 1970-80 college grad (+) since 1980	all occu (-) 1970-80 all occu (+) except tech, sales, & admin since 1990	all industry (-) 1970-80 agri, mining, const, and manuf (+) since 1980.	all inc (-) 1970-80 higher inc (+) since 1980
White, female	all edu (-) 1970-80 some college and college grad (+) since 1980	all occu (-) 1970-80 all occu (F)	all industry (=), except pub. admini (+) since 1980	all inc (-) 1970-80 higher inc (+) since 1980
Black, female	all edu (-) 1970-80 college grad (+) since 1980	all occu (-) 1970-80 all occu (F)	all industry (=), except pub. admini (+) since 1980	all inc (-) 1970-80
<i>Characteristics of full-time workers who were most likely to work longer/shorter hours in 1999</i>				
	education	occupation	industry	income
<i>longer hours</i>				
White, male	college grad	mng. & prof	agri, mining, Transp. & pub. Util., wholesale, service	4th, 5th group
Black, male	college grad	mng. & prof	agri, mining, manuf.	4th, 5th group
White, female	college grad	mng. & prof	agri.	5th group
Black, female	-	-	const.	4th, 5th group
<i>shorter hours</i>				
White, male	less than high school	service	const., pub. admini.	1st, 2nd group
Black, male	less than high school	service	const.	1st, 2nd group
White, female	less than high school	tech., sales, & admini.	const.	1st, 2nd group
Black, female	-	-	mining	1st group

note: (+) indicates a upward trend in hours, (-) a downward trend, (=) little change. "-" indicates little difference of hours by this characteristics.
(F) fluctuation

mng. & prof: managerial and professional, agri: agriculture, const; construction, transp.& pub. Util.: transportation and public utility
manuf.: manufacturing, tech, sales,& admini.: technical, sales, & administrative support.

APPENDIX

Changes in the CPS questionnaire concerning hours worked

(source: Rones, Ilg, and Gardner 1997, p.14)

Current Population Survey (CPS) data for January 1994 and forward are not strictly comparable with data for earlier years because of the introduction of a major redesign of the questionnaire and collection methodology. The principal reasons for the redesign were to obtain more accurate information on the labor market in general, and to expand the use of computer technology in the data collection process. Among the questionnaire changes were alterations to the questions on the number of hours actually worked during the reference week. The questions were modified to help respondents recall the exact number of hours they worked on their main job in the prior week. This appendix describes the differences in the questions asked to obtain hours-at-work data in the old and new surveys. In general, the changes emphasized the importance of precision in recalling the prior week's work activity, but do not alter the concept of hours at work.

In an effort to obtain more precise hours-at-work data, respondents to the new CPS have, since January 1994, first been told that the following questions focus on the exact number of hours they worked in the prior week. They then are asked if they lost or took off any hours from their jobs for any reason in the prior week. If yes, they are queried about the number of hours. Respondents also are asked if they worked extra hours at their job that they do not usually work, and if so, how many. It is only after these prompts are completed that respondents are asked how many hours they actually worked at their main jobs, and in addition, for multiple jobholders, how many hours they actually worked at their other jobs.

Prior to 1994, the questions asked to obtain data on actual hours, and their ordering, were slightly different. (See questions, below.)

Data on actual hours were obtained by first asking the number of hours worked at all jobs in the previous week. The respondents then were asked about taking time off and working extra hours. The onus was placed on the interviewer to correct the original answer of hours worked, if necessary, based on responses to these questions. Also, nothing in the interview communicated the importance of precision to the respondent. In the pre-1994 survey, hours data were collected for all jobs combined.

Comparing the new and old CPS data suggests that the recall strategy associated with the new questionnaire does provide more accurate data on actual hours. (See table A-1.) For instance, the proportion of persons who reported working exactly 40 hours per week—a common, almost reflex, response—declined substantially between 1993 and 1994 for both men and women. In fact, this decrease was nearly as great as the cumulative effect of the long-term downward trend between 1976 and 1993. In addition, during the 1976-93 period, the share of survey respondents reporting that they had worked between 35 and 39 hours or 41 and 48 hours was unchanged. In 1994, with the revised questions, the share reporting hours in these two groups rose from the 1993 levels, indicating that respondents now were giving different, and apparently more precise, answers to the questions on hours actually worked.

The following questions were used to obtain data on actual hours worked in the new and old CPS:

Table A-1. Percent distribution of persons at work by sex and hours of work, 1993 and 1994 annual averages

Characteristic	1993	1994	Difference
Men	100.0	100.0	—
1 to 4 hours	.4	.7	0.3
5 to 14 hours	2.6	2.4	-.2
15 to 29 hours	8.1	8.4	.3
30 to 34 hours	5.7	6.3	.6
35 to 39 hours	4.5	5.3	.8
40 hours	41.1	37.1	-3.9
41 to 48 hours	12.1	14.3	2.2
49 hours or more	25.5	25.5	-.1
Women	100.0	100.0	—
1 to 4 hours	.8	1.1	.4
5 to 14 hours	5.1	5.4	.3
15 to 29 hours	16.5	17.3	.9
30 to 34 hours	9.8	10.2	.4
35 to 39 hours	9.2	10.2	1.0
40 hours	39.4	35.1	-4.3
41 to 48 hours	8.8	10.3	1.6
49 hours or more	10.5	10.3	-.3

Note: Detail may not sum to 100.0 due to rounding.

New CPS

Lead-in: Now I have some questions about the exact number of hours you worked last week.

Last week, did you lose or take off any hours from (work/your main job), for any reason such as illness, slack work, vacation, or holiday?

(If yes) How many hours did you take off?

Last week, did you work any overtime or extra hours (at your main job) that you do not usually work?

(If yes) How many additional hours did you work?

So, for last week, how many hours did you actually work at your (main) job?

(For multiple jobholders) Last week, how many hours did you actually work at your other job(s)?

Old CPS

How many hours did you work last week at all jobs?

Did you lose any time or take any time off last week for any reason such as illness, holiday, or slack work?

(If yes) How many hours did you take off?

Did you work any overtime or at more than one job last week?

(If yes) How many extra hours?

(Interviewers are instructed to correct original answer if lost time was not already deducted or if extra hours were not included.)