Estimating annual hours of labor force activity

Two new measures show wide variations in the amount of labor supplied by population subgroups; patterns relate to the occupation, race, sex, age, and family status of individuals, and to phases of the business cycle.

Shirley J. Smith

Today's labor force is characterized by high turnover, and a diversity of work schedules tailored to the needs and opportunities of employers and available workers. The dynamic composition of the work force makes it difficult to assess the true extent of labor force involvement or job attachment within various groups of the population. An intergroup comparison of labor force participation rates for a given year yields one set of differentials; a comparison of the proportions of persons economically active during the year gives an entirely different perspective; and, analysis of work schedules (as between full year, full time; part year, part time; and so forth) gives a third view of each group's relative contribution. Every statistic addresses a different aspect of the group's labor force involvement, but none successfully summarizes time input on a single, meaningful scale.

We know that different groups make varying portions of their year available for labor force activities. It is also clear that the economy uses some of these potential contributions more fully than it does others. But the diversity of work patterns within and between groups confounds our understanding of their respective work roles. For instance, annual earnings reports summarize the outcome of a group's job market involvement during a full year. But because individual time input varies so widely, it is hard to interpret the meaning of earnings differentials or changes over time, even when we limit our analysis to so-called year-round, full-time workers.

This article reports on experimentation with two new annual estimates, focusing on time in the labor force and time in employment (expressed in hours per year). These estimates are based on data drawn from the "work experience" supplement to the Current Population Survey (CPS), which is administered each March.

Methodology and applications

For each person 16 years of age and over, the CPS March supplement includes a battery of questions on labor force activities during the previous calendar year. Survey respondents are asked about weeks worked, usual hours worked per week, weeks worked part time, time spent in unemployment (including layoff), and a variety of other issues. By assembling the various elements of each person's work profile, this study attempts to estimate average annual hours of labor force involvement, and of job attachment, for various subgroups of the population during 1977, 1979, 1980, and 1981.

The annual hours estimates. The work profile of the individual is translated into an estimate of his or her annual hours of labor force attachment, as follows:

\[ \text{AHLF} = [(W_w - W_v) \times H_v] + (W_v \times H_{v^*}) + (W_i \times H_i) \]

where:

\( \text{AHLF} \) = Annual hours of labor force participation during the previous year;

\( W_w \) = Weeks worked during the year, including both full and part time;
Estimating Annual Hours of Labor Force Activity

Wo = Weeks worked in other status (that is, part time for those who normally worked full time, or full time for those who normally worked part time);

Ho = Usual hours worked per week by the individual when on his or her normal schedule;

Ho = Usual weekly hours in other status, a proxy value drawn from the usual hours of persons of the same age, sex, and race who normally worked on the other schedule (not controlled for voluntary versus involuntary part time); and,

WI = Weeks of unemployment (including layoff) reported by the individual.

There are three terms in this equation. The first identifies the individual’s reported time at work on his or her normal schedule. The second quantifies time spent on an alternate schedule, and the third estimates hours of availability for work while unemployed (including periods of layoff). Explicit in the last term is the assumption that the respondent would have worked his or her usual schedule during the period, if work had been available.

By dropping the last term of the expression, we estimate a second variable, annual hours of employment. This is computed as:

\[ \text{AHE} = [\text{WW} - \text{Wo} \times \text{Ho}] + (\text{Wo} \times \text{Ho}) \]

No attempt has been made to discount this employment figure for time spent with a job but not at work. The resulting AHE estimate is simply based on the assumption that workers are paid for holidays and vacations.1

Because the estimates rest on this assumption, and on broad questions about time allocation—rather than employees’ diaries or employers’ records—they are, of course, approximate. Figures are most likely to be accurate for persons with continuous work patterns. They are least satisfactory for those having variable terms of employment during the year.

Although certain response biases are likely to occur in the CPS data, it will be seen that averages for most groups behave in a plausible and predictable manner. Although still experimental, the new statistics offer several interesting new perspectives on labor force behavior.

Applications for the annual hours data. The estimates presented below have been developed in connection with the BLS worklife project, which attempts to estimate the average duration of labor force involvement and of employment during a typical person’s lifetime.2 There are, however, a number of other equally interesting uses for these data.

Examined in cross-section, average AHLF figures indicate the amount of labor supply normally offered by members of each group during a given year. Average AHE values show the degree to which their supply has actually been used. And, a ratio of total employment hours to civilian noninstitutionalized persons in the group indicates the availability of paid employment for that segment of the population.

The average annual hours data suppress certain details of time allocation which confound group comparisons. At the same time, they emphasize others which are normally overlooked. The reference period for the estimates is a full year. Everyone who works (or looks for work) during that period is identified, and the reported amount of his or her contribution is counted toward aggregate labor time. For instance, equal weights are given to a woman who works 26 weeks at 40 hours per week and to one who works 52 weeks of 20 hours each. But the year-round worker who normally spends 45 hours per week on the job counts more heavily than one who normally averages only 40.

These estimates distill each work pattern into a single scalar variable—time. They permit us to focus more sharply on the distinctions between groups, such as men and women; the young, prime age, and elderly workers; blacks and whites; persons of various educational backgrounds; marital and parental groupings; and persons in different occupations and industries. Temporal comparisons show the extent of convergence or divergence among these groups and illustrate the effects of the business cycle on employment in specific sectors of the economy.

Longitudinal analysis of annual work patterns

The data presented below cover the period 1977 through 1981. The economic recovery following the 1973–75 recession is captured at two points: 1977 (midway through) and 1979 (at its conclusion). Figures for 1979 portray the job market at near peak conditions; the year ended just as the economy was about to head into another downturn (January to July 1980). Both 1980 and 1981 were periods of reversal and decline. A modest recovery following the July 1980 trough ended in a minor peak 1 year later; thereafter, the economic picture darkened once more. Being annual estimates, these figures do not follow all of the ups and downs of these cycles, yet they appear to have been sufficiently sensitive to these developments to tally the extent of impact felt by various demographic groups.

Unless otherwise specified, the estimates which follow
Levels of participation and employment. As a point of reference, a person holding a job for 52 weeks at 40 hours per week, if paid for holidays and vacation time, would spend 2,080 hours in paid employment during the year. In reality, few demographic groups claim to be active in the labor force for an average of 2,080 hours annually. Even fewer are consistently able to maintain such a high level of employment. To do so, nearly all workers in the group must hold full-year full-time jobs; the group rate of labor force entry and exit must be insignificant; and the worktime lost for reasons other than holidays and vacation must be nil. Only white men between the ages of 25 and 59 normally approach such a schedule. (See table 1.)

In 1981, actively employed men averaged 1,850 hours of employment as against 1,445 for active women. Adding in periods of unemployment, their annual hours of labor force participation were 1,974 and 1,524, respectively.

The lower panel of table 1 shows a secular rise in the labor supply of women. Between 1977 and 1981, the annual average period of availability for work increased from 1,471 to 1,524 hours, or about 53 hours per active woman. (The simultaneous increase in numbers of women active had no bearing on this change.) White men showed a marginal decline in availability during the interval, from 2,002 to 1,986 hours per year.4

Estimates of hours of employment are far more sensitive to business conditions than are those for participation as a whole. They reveal the cyclical vulnerability of certain groups, particularly those employed in the goods-producing sector. Production workers bear the brunt of a recession,5 and because men more often than women hold these jobs, their hours reports trace the clearer picture of business cycle impact. The average hours of employment per active man were

<table>
<thead>
<tr>
<th>Age in March of reference year</th>
<th>Total</th>
<th>White</th>
<th>Black and other</th>
</tr>
</thead>
</table>

Table 1. Annual hours of paid employment and of labor force participation by sex, race, and age, selected years, 1977-81

<table>
<thead>
<tr>
<th>Age in March of reference year</th>
<th>Total</th>
<th>White</th>
<th>Black and other</th>
</tr>
</thead>
</table>
1,886 during 1977, an expansionary year, and reached 1,902 in 1979, when demand for labor was even higher. By 1981, however, they had dropped to 1,850 hours. Women also experienced a cyclical boost during 1979. But because of their increased commitment to the labor force and their heavier involvement in the service industries—which are less cyclically sensitive—they were able to maintain, and even to increase, their gains during the slack years which followed.

Racial differentials. During the period 1977–81, white men averaged about 140 more hours of labor force involvement annually than did “black and other” men. Yet, perhaps because of differentials in job opportunities, whites were estimated to have worked about 235 more hours per year than did their minority counterparts.

Active minority women reported more hours of availability than did whites—about 44 more per year. But because of higher rates of unemployment, they averaged about 24 fewer hours of work.

The effects of recession were felt most heavily by minority workers. The total decline in hours worked from 1979 to 1981 was almost identical for white and black men, but the initial impact of recession in 1980 was felt most strongly among blacks and others. Both groups of women registered modest gains during 1980, but by 1981, only whites retained their average net gain over 1979 levels.

Sexual disparity. During the 1977–81 period, the average active white woman worked about three-fourths as many hours as did her male counterpart. (See table 2.) The sex differential was widest between the ages of 25 and 44, when a high proportion of adults were raising families. There is evidence, reported below, that in the life cycle.

Among blacks, the sex differential in hours worked was less pronounced. Although black women’s annual hours of work were very similar to those of white women, the relatively short work year reported by black men brought their hours more in line with those of black women. The ratio of female to male hours for this group was closer to 85 percent. Among minority groups, more so than among whites, there was a tendency for both men and women to increase their workload during the prime ages; thus, the male-female differential in hours worked was more uniform across the life cycle.

Reflecting both secular trends and cyclical swings, the male-female gap in annual hours of work narrowed considerably for both blacks and whites after 1977. The bulk of the convergence noted in 1979 was due to improvements in the employment situation (including, perhaps, occupational shifts) of women. Most of the narrowing registered in 1980 was associated with a deterioration in the job market for men.

Age differentials. Because most are still in school, persons age 16 to 17 report fairly short periods of labor force involvement during the year—an average of 832 hours for men and just 728 for women in 1981. (See table 1.) This availability function increases sharply with age, peaking for men between the ages of 35 and 44, and for women, between the ages of 45 and 54. At their highest levels in 1981, men reported being available for 2,225 hours of work, compared with 1,682 hours for women.

As might be expected, those 16 to 24 registered the greatest employment setbacks during the slack years 1980 and 1981. Persons still working at age 65 registered slight increases in paid employment during this period, a rational response to an uncertain future on fixed income.

Worktime lost through unemployment. Probably the least reliable set of estimates in the annual hours profile is that pertaining to unemployment (the last term in equation 1 above). It has been demonstrated that retrospective reports underestimate the length of bouts of unemployment, particularly if the jobless spells took place several months prior to the CPS interview.6 This “recall bias” is especially detrimental to the unemployment es-

### Table 2. Ratio of women’s to men’s hours of work, total and by race and age, selected years, 1977–81

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tially for white women, 20 to 24, the group average was 1,783 hours of labor per person. Estimates for 1981 show that, during that year, the economy used just 1,783 hours of labor supply per minority woman and only 1,249 per minority woman in the same age range. In the ages of peak activity for white women, 20 to 24, the group average was only 1,170 hours. In terms of a 40-hour week, these figures represent 52, 44, 31, and 29 weeks per capita, respectively. The economy made use of only about 500 hours’ time per capita for white teenagers 16 to 17, and just 200 hours per capita for blacks and others in the same age group—the equivalent of 12.5 and 5 full weeks of work per person during 1981.

Viewed in temporal series, these population averages show the pace of tightening labor demand during an economic recovery, and the outcome of combined hours and employment effects in times of job shortage. They indicate that the contraction of labor demand between 1979 and 1981 resulted in a drop in adult male employment equivalent to about 63 hours of work per capita annually. Substantial gains for some groups of women were offset by losses for others. The net gain for all women over the period was only 2 hours per person.

Educational differentials. The annual hours tables show that—beyond age 24, when most persons have completed their schooling—there is a positive relationship between years of schooling and hours worked per year. Workers with graduate training average substantially longer hours of work than do their less educated peers. (See table 5.) Part of this differential is due to better employment opportunities, part to occupational selection. (Some of the professions made accessible by higher education, such as medicine and law, demand unusually long hours of work.)

It is interesting to note that among persons active in the labor force, men without high school diplomas report somewhat longer hours of work than do women of the same age with graduate training. Part of this difference is due to childbearing, which often entails short

<table>
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<th>Table 3. Estimated proportion of available worktime lost through unemployment by age and sex, selected years, 1977–81</th>
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Table 4. Reported hours of employment per person1 by race, sex, and age, 1979–81

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1 Base consists of all persons in the cohort, regardless of labor force status.
periods of economic inactivity for normally active women. The hours index penalizes labor force entrants (or reentrants) for such periods of inactivity during the year, negatively biasing female estimates. A second important factor, of course, is differences in the occupational mix of these two groups.

Table 6 displays hours of work for all persons age 16 and over by educational attainment, race, and sex. The clear hours progression noted in table 5 is less apparent here, because the data reflect large numbers of persons still in high school or college. However, it is evident that in both racial groups, persons with higher education work more hours per year. The table also shows that persons with higher education suffered less from employment cutbacks during the economic slump following 1979. In addition, it indicates that a disproportionate share of the hours gain for women (cited in table 1) occurred among the better-educated groups.

Participation and family roles. The fact that marital and parental responsibilities affect female labor supply is not news. Yet it is interesting to note the degree to which working women vary their length of labor force activity in accord with marital and parental roles.

Among teenagers, for instance, the propensity to work is strongest for single women. (See table 7.) Yet of those who actually work, the newly married—who are setting up households—report the most hours of labor force involvement. From age 20 onward, women living with their husbands report a lower incidence of labor force involvement, and shorter periods of availability for work per active woman annually than do most other groups. The existence of an additional income in the family apparently enables many of them to divide their time between market and home activities. At the opposite extreme, the participation levels and reported hours of availability for single women resemble those of single men. Divorcees, most of whom have been independent for some time, also report fairly intense average work schedules suggestive of a high degree of self- (and family-) support. The hours of women in the transitional state of separation fall somewhere between those of the currently married and the divorced groups. Widows who choose to work put in longer hours than do women of the same age who are living with husbands.

The most striking feature of table 7 is the clarity with which marital roles of men are evident in their hours reports. At most ages, the never-married report a relatively light schedule. The work year of men separated or divorced—many of whom continue to support children—is somewhat longer. But those living with their wives show the strongest propensity to work overtime or carry additional jobs. Their average availability figure in 1981 was 2,140 hours, or about 41 hours per week yearround.

Parental labor force behavior is affected by both the number and the age of children in the home. (See table 8.) For example, among persons age 25 to 34 in 1981, the average man in a dual-earner household reported 2,176 hours of labor force activity if he was childless, but 2,259 if he had four to five children. The incentives for fathers of large families to work longer are twofold. Not only do additional children entail greater direct expenses, but wives in such families average fewer hours of work (and consequently less income) with each additional child. In households where the wife did not work.

### Table 5. Average hours of work by educational attainment, sex, and age, 1981

<table>
<thead>
<tr>
<th>Sex and age</th>
<th>Total</th>
<th>Not high school graduate</th>
<th>High school graduate only</th>
<th>Attended college</th>
<th>Attended graduate school</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 to 17</td>
<td>715</td>
<td>626</td>
<td>1,105</td>
<td>781</td>
<td>(1)</td>
</tr>
<tr>
<td>18 to 19</td>
<td>1,209</td>
<td>1,257</td>
<td>1,501</td>
<td>916</td>
<td>(1)</td>
</tr>
<tr>
<td>20 to 24</td>
<td>1,654</td>
<td>1,533</td>
<td>1,805</td>
<td>1,531</td>
<td>1,228</td>
</tr>
<tr>
<td>25 to 34</td>
<td>2,016</td>
<td>1,817</td>
<td>1,972</td>
<td>2,075</td>
<td>2,130</td>
</tr>
<tr>
<td>35 to 44</td>
<td>2,126</td>
<td>1,926</td>
<td>2,089</td>
<td>2,172</td>
<td>2,226</td>
</tr>
<tr>
<td>45 to 54</td>
<td>2,106</td>
<td>1,979</td>
<td>2,101</td>
<td>2,178</td>
<td>2,276</td>
</tr>
<tr>
<td>55 to 59</td>
<td>2,037</td>
<td>1,907</td>
<td>2,059</td>
<td>2,105</td>
<td>2,200</td>
</tr>
<tr>
<td>60 to 64</td>
<td>1,839</td>
<td>1,738</td>
<td>1,948</td>
<td>1,828</td>
<td>1,983</td>
</tr>
<tr>
<td>65 and over</td>
<td>1,241</td>
<td>1,099</td>
<td>1,275</td>
<td>1,358</td>
<td>1,509</td>
</tr>
<tr>
<td>Women:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 to 17</td>
<td>644</td>
<td>548</td>
<td>990</td>
<td>716</td>
<td>(1)</td>
</tr>
<tr>
<td>18 to 19</td>
<td>1,075</td>
<td>906</td>
<td>1,349</td>
<td>883</td>
<td>(1)</td>
</tr>
<tr>
<td>20 to 24</td>
<td>1,417</td>
<td>1,106</td>
<td>1,471</td>
<td>1,443</td>
<td>1,323</td>
</tr>
<tr>
<td>25 to 34</td>
<td>1,531</td>
<td>1,237</td>
<td>1,502</td>
<td>1,577</td>
<td>1,759</td>
</tr>
<tr>
<td>35 to 44</td>
<td>1,577</td>
<td>1,471</td>
<td>1,586</td>
<td>1,599</td>
<td>1,741</td>
</tr>
<tr>
<td>45 to 54</td>
<td>1,621</td>
<td>1,530</td>
<td>1,622</td>
<td>1,658</td>
<td>1,818</td>
</tr>
<tr>
<td>55 to 59</td>
<td>1,600</td>
<td>1,465</td>
<td>1,612</td>
<td>1,672</td>
<td>1,791</td>
</tr>
<tr>
<td>60 to 64</td>
<td>1,470</td>
<td>1,366</td>
<td>1,488</td>
<td>1,538</td>
<td>1,650</td>
</tr>
<tr>
<td>65 and over</td>
<td>1,050</td>
<td>952</td>
<td>1,045</td>
<td>1,065</td>
<td>1,174</td>
</tr>
</tbody>
</table>

1 Nongraduates included.
2 Data not published because cell contained fewer than 35,000 observations.

### Table 6. Average annual hours of work for all persons age 16 and over by educational attainment, sex, and race, 1979-81

<table>
<thead>
<tr>
<th>Sex and educational attainment</th>
<th>Total</th>
<th>White</th>
<th>Black and other</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Men</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1,902</td>
<td>1,865</td>
<td>1,850</td>
</tr>
<tr>
<td>Not high school graduate</td>
<td>1,615</td>
<td>1,572</td>
<td>1,549</td>
</tr>
<tr>
<td>High school graduate only</td>
<td>2,013</td>
<td>1,953</td>
<td>1,929</td>
</tr>
<tr>
<td>Attended college</td>
<td>1,946</td>
<td>1,921</td>
<td>1,900</td>
</tr>
<tr>
<td>Attended graduate school</td>
<td>2,181</td>
<td>2,147</td>
<td>2,137</td>
</tr>
<tr>
<td><strong>Women</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1,431</td>
<td>1,443</td>
<td>1,445</td>
</tr>
<tr>
<td>Not high school graduate</td>
<td>1,155</td>
<td>1,154</td>
<td>1,159</td>
</tr>
<tr>
<td>High school graduate only</td>
<td>1,519</td>
<td>1,512</td>
<td>1,514</td>
</tr>
<tr>
<td>Attended college</td>
<td>1,463</td>
<td>1,486</td>
<td>1,475</td>
</tr>
<tr>
<td>Attended graduate school</td>
<td>1,967</td>
<td>1,714</td>
<td>1,716</td>
</tr>
</tbody>
</table>
the husband averaged up to 2,303 hours of labor force activity during the year—the equivalent of 44 hours per week, year-round.

Parents who support and raise their children alone may find both roles compromised. Women maintaining households report having worked longer hours than those living with husbands. Yet within this group, those with the largest families work the fewest hours outside the home. Men in this situation report fewer hours of availability than do those in two-parent homes, and—like their female counterparts—put in still fewer hours if they have large families.

In dual-earner households, a first birth appears to substantially reduce the wife's labor force involvement, while at the same time boosting that of her husband. Both parents' hours remain at altered levels as long as they are pre-school children in the home. Thereafter, working mothers begin to put in more hours on the job, while at the same time boosting that of her husband. In 1981, men so classified averaged 163 more hours of paid employment than did women—the equivalent of 4 additional weeks at 40 hours per week. The expected racial differentials are also evident in these data: blacks working full time, year-round, report fewer hours on average than do their white counterparts.

The estimates in the first section of table 9 identify all year-round workers, whether full or part time. They

### Table 7. Proportions of persons economically active during the year, and annual hours of labor force participation per worker by marital status, sex, and age, 1981

<table>
<thead>
<tr>
<th>Sex and age</th>
<th>Never married</th>
<th>Married, spouse present</th>
<th>Married, spouse absent</th>
<th>Widowed</th>
<th>Never married</th>
<th>Married, spouse present</th>
<th>Married, spouse absent</th>
<th>Widowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men, total</td>
<td>75.2</td>
<td>81.1</td>
<td>81.0</td>
<td>79.9</td>
<td>74.4</td>
<td>31.3</td>
<td>1,559</td>
<td>2,140</td>
</tr>
<tr>
<td>16 to 17</td>
<td>63.7</td>
<td>81.5</td>
<td>81.0</td>
<td>79.9</td>
<td>74.4</td>
<td>31.3</td>
<td>1,559</td>
<td>2,140</td>
</tr>
<tr>
<td>18 to 19</td>
<td>79.0</td>
<td>93.2</td>
<td>81.0</td>
<td>79.9</td>
<td>74.4</td>
<td>31.3</td>
<td>1,559</td>
<td>2,140</td>
</tr>
<tr>
<td>20 to 24</td>
<td>84.9</td>
<td>95.3</td>
<td>93.7</td>
<td>93.7</td>
<td>93.7</td>
<td>23.5</td>
<td>1,559</td>
<td>2,140</td>
</tr>
<tr>
<td>25 to 34</td>
<td>88.4</td>
<td>96.4</td>
<td>96.4</td>
<td>96.4</td>
<td>96.4</td>
<td>23.5</td>
<td>1,559</td>
<td>2,140</td>
</tr>
<tr>
<td>35 to 44</td>
<td>81.0</td>
<td>95.6</td>
<td>95.6</td>
<td>95.6</td>
<td>95.6</td>
<td>23.5</td>
<td>1,559</td>
<td>2,140</td>
</tr>
<tr>
<td>45 to 54</td>
<td>72.7</td>
<td>92.8</td>
<td>81.7</td>
<td>81.7</td>
<td>81.7</td>
<td>23.5</td>
<td>1,559</td>
<td>2,140</td>
</tr>
<tr>
<td>55 to 59</td>
<td>62.1</td>
<td>84.7</td>
<td>68.1</td>
<td>68.1</td>
<td>68.1</td>
<td>23.5</td>
<td>1,559</td>
<td>2,140</td>
</tr>
<tr>
<td>60 to 64</td>
<td>47.5</td>
<td>61.7</td>
<td>46.6</td>
<td>46.6</td>
<td>46.6</td>
<td>23.5</td>
<td>1,559</td>
<td>2,140</td>
</tr>
<tr>
<td>65 and over</td>
<td>20.9</td>
<td>23.9</td>
<td>19.9</td>
<td>19.9</td>
<td>19.9</td>
<td>23.5</td>
<td>1,559</td>
<td>2,140</td>
</tr>
</tbody>
</table>

| Women, total | 66.6       | 56.6                    | 77.0                  | 63.9   | 53.6          | 23.5                    | 1,383                 | 1,520  |
| 16 to 17    | 56.5       | 51.6                    | 68.2                  | 59.7   | 59.7          | 23.5                    | 1,383                 | 1,520  |
| 18 to 19    | 70.7       | 66.3                    | 70.2                  | 81.7   | 81.7          | 23.5                    | 1,383                 | 1,520  |
| 20 to 24    | 70.5       | 71.5                    | 83.2                  | 68.0   | 68.0          | 23.5                    | 1,383                 | 1,520  |
| 25 to 34    | 84.1       | 88.4                    | 84.3                  | 87.9   | 87.9          | 23.5                    | 1,383                 | 1,520  |
| 35 to 44    | 78.1       | 86.8                    | 85.3                  | 84.1   | 84.1          | 23.5                    | 1,383                 | 1,520  |
| 45 to 54    | 73.8       | 60.6                    | 79.8                  | 66.4   | 66.4          | 23.5                    | 1,383                 | 1,520  |
| 55 to 59    | 58.7       | 45.1                    | 79.8                  | 41.3   | 41.3          | 23.5                    | 1,383                 | 1,520  |
| 60 to 64    | 44.2       | 20.2                    | 59.6                  | 47.8   | 47.8          | 23.5                    | 1,383                 | 1,520  |
| 65 and over | 14.3       | 8.7                     | 19.7                  | 18.3   | 18.3          | 23.5                    | 1,383                 | 1,520  |

1 Data refer to persons who were economically active at any time during 1981. 2 Data not published because cell contained fewer than 35,000 observations.

### Table 8. Annual hours of labor force participation for selected groups age 25 to 34 by marital role, number of children, and age of youngest child, 1981

<table>
<thead>
<tr>
<th>Item</th>
<th>Male household heads, spouse present</th>
<th>Female household heads, spouse present</th>
<th>Economically active women</th>
<th>Male household heads, no spouse present</th>
<th>Female household heads, no spouse present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wife not in labor force</td>
<td>Wife in labor force</td>
<td>Wives of household heads</td>
<td>No spouse in household heads</td>
<td>Wife in labor force</td>
<td>Wives of household heads</td>
</tr>
<tr>
<td>Number of children:</td>
<td>2,173</td>
<td>2,176</td>
<td>1,861</td>
<td>1,861</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>1</td>
<td>2,223</td>
<td>2,179</td>
<td>1,865</td>
<td>1,865</td>
</tr>
<tr>
<td>1</td>
<td>2,169</td>
<td>2,175</td>
<td>1,882</td>
<td>1,882</td>
<td></td>
</tr>
<tr>
<td>2 or 3</td>
<td>2,255</td>
<td>2,184</td>
<td>1,926</td>
<td>1,926</td>
<td></td>
</tr>
<tr>
<td>4 or 5</td>
<td>2,203</td>
<td>2,289</td>
<td>1,996</td>
<td>1,996</td>
<td></td>
</tr>
<tr>
<td>Age of youngest child:</td>
<td>2,224</td>
<td>2,205</td>
<td>1,401</td>
<td>1,401</td>
<td></td>
</tr>
<tr>
<td>None present</td>
<td>2,235</td>
<td>2,189</td>
<td>1,203</td>
<td>1,203</td>
<td></td>
</tr>
<tr>
<td>Youngest under age 2</td>
<td>2,243</td>
<td>2,190</td>
<td>1,296</td>
<td>1,296</td>
<td></td>
</tr>
<tr>
<td>Youngest under age 5</td>
<td>2,261</td>
<td>2,184</td>
<td>1,503</td>
<td>1,503</td>
<td></td>
</tr>
</tbody>
</table>

1 Number of own children under age 18 living in the home in March 1982. 2 Data not published because cell contained fewer than 35,000 observations.

### Variations in full-year workloads

Time spent on the job is a continuous variable. Tabulations which force the data into discrete categories—such as full-year, full-time work—give the impression that behavior within these cells is more or less homogeneous. In fact, there are great variations from group to group and year to year. The annual hours estimates enable us to study some of these within-cell variations. (See table 9.)

For instance, full-year, full-time work is defined as 35 or more hours of employment during 50 or more weeks of the year. The minimum time input is therefore 1,750 hours, even though the most frequently reported pattern—52 weeks at 40 hours per week—implies a 2,080-hour year. Annual hours estimates indicate that the full-year, full-time concept has a different operational meaning for men than it does for women. In 1981, men so classified averaged 163 more hours of paid employment than did women—the equivalent of 4 additional weeks at 40 hours per week. The expected racial differentials are also evident in these data: blacks working full time, year-round, report fewer hours on average than do their white counterparts.

The estimates in the first section of table 9 identify all year-round workers, whether full or part time. They
show that, among persons who work continuously, the average man spends nearly 300 more hours per year on the job than does the average woman—the equivalent of 8 additional 40-hour weeks.

**Hours by industry and occupation.** The CPS work experience profiles identify the industry and occupation in which each respondent was employed for the greatest length of time during the year. Given present rates of job and occupational mobility, it would be unrealistic to assume that all worktime reported by an individual was spent on the same job. Nonetheless, because a disproportionate share of all transfers occur between related positions, the data probably convey quite a bit of information about persons normally found in each industrial and occupational cluster.

People who enter and leave the job market repeatedly, or who enter for the first time, are often attracted to jobs with minimal entry requirements. Thus, the most accessible jobs tend to be held by those with the weakest labor force attachments. Because the average hours data penalize entrants and retirees for periods of inactivity, accessible jobs tend to be rated as having the lowest average hours of employment per worker during the year. (See table 10.) For instance, those in private household services report an average of only about 800 hours of paid employment per annum. (Because of the dearth of prime-age men in this industry, it is the only one in which women’s hours exceed those of men.) Workers in entertainment and recreation, which are often seasonal activities, register an average of less than 1,300 hours per year. Those in retail sales average about 1,500 hours. In each of these industries, a higher labor force accession rate of women contributes to their lower average work duration.

Given the cyclical sensitivity of the construction industry, its workers report surprisingly stable hours of employment during the period in question. The normal workload for men appears to have been about 1,690 hours per year, or about 42 “full” weeks of employment—a level consistent with the seasonal nature of these jobs. Men in wholesale trade and in transportation, communications, and utilities also register highly consistent work patterns over time. The longest work year is reported for the mining industry, which in 1977 averaged 2,066 hours per worker. Men in the industry registered a high of 2,130 hours.

Broken out by occupation, the data show that several groups of men spend greater portions of the year in paid employment than are consistent with a 40-hour week, 52-week year. (See table 11.) Medical practitioners, such as doctors and dentists, report an average of more than 2,400 hours per year—the equivalent of a year-round schedule of 46 hours per week. Managers, both farm and nonfarm, normally report well over 2,200 hours of work per year. The most extreme exam-

<table>
<thead>
<tr>
<th>Sex and race</th>
<th>Full-year workers</th>
<th>Full-year, full-time workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men, total</td>
<td>2,231</td>
<td>2,227</td>
</tr>
<tr>
<td>White</td>
<td>2,242</td>
<td>2,238</td>
</tr>
<tr>
<td>Black and other</td>
<td>2,121</td>
<td>2,130</td>
</tr>
<tr>
<td>Women, total</td>
<td>1,899</td>
<td>1,929</td>
</tr>
<tr>
<td>White</td>
<td>1,898</td>
<td>1,927</td>
</tr>
<tr>
<td>Black and other</td>
<td>1,909</td>
<td>1,947</td>
</tr>
</tbody>
</table>

1. Persons working 50 or more weeks during the year.  
2. Persons working 35 or more hours per week during 50 or more weeks of the year.
people is self-employed managers in retail trade. During the period of observation, their shortest recorded work year was 2,564 hours in length (1980), their longest, 2,664 (1977). In year-round equivalents, these figures represent 49 and 51 hours per week.

Women reported their longest average work years in the fields of medicine (about 2,050 hours), management (1,800 to 2,000 hours), and blue-collar crafts supervision (about 1,960 hours). The peak reported workload —2,188 hours for medical practitioners in 1979—was equivalent to a year-round schedule of 42 hours per week.

Apart from private household workers, men registered their shortest average work years in the food service (2,350 hours), and blue-collar crafts supervision (about 1,960 hours). The peak reported workload —2,188 hours for medical practitioners in 1979—was equivalent to a year-round schedule of 42 hours per week.

Table 11. Annual hours of work by occupation of longest employment during the year and sex, selected years, 1977–81

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>1,671</td>
<td>1,693</td>
<td>1,677</td>
<td>1,669</td>
<td>1,883</td>
<td>1,957</td>
<td>1,932</td>
<td>1,882</td>
<td>1,392</td>
<td>1,431</td>
<td>1,443</td>
<td>1,445</td>
</tr>
<tr>
<td>Professional, technical, and kindred workers:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineers</td>
<td>2,101</td>
<td>2,087</td>
<td>2,064</td>
<td>2,064</td>
<td>2,109</td>
<td>2,098</td>
<td>2,071</td>
<td>2,065</td>
<td>1,900</td>
<td>1,752</td>
<td>1,889</td>
<td>1,736</td>
</tr>
<tr>
<td>Physicians, dentists, related practitioners</td>
<td>2,309</td>
<td>2,445</td>
<td>2,329</td>
<td>2,353</td>
<td>2,413</td>
<td>2,481</td>
<td>2,404</td>
<td>2,398</td>
<td>2,121</td>
<td>2,186</td>
<td>1,800</td>
<td>2,081</td>
</tr>
<tr>
<td>Health workers, except practitioners</td>
<td>1,656</td>
<td>1,664</td>
<td>1,693</td>
<td>1,745</td>
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1 Data not published because cell contained fewer than 35,000 observations.

n.c. = not elsewhere classified.
vices (about 1,275 hours) and general nonfarm labor (about 1,360 hours). The lowest average for women was reported in paid farm labor—770 hours, or fewer than 20 "full" weeks of paid employment.

The work schedule of employees in certain occupations, such as farm management, teaching, nonretail sales, typing and other clerical work, and private household and food services, appeared impervious to cyclical pressure. During the 1977–81 period, average annual schedules for these jobs varied by 30 hours or less. Other occupations were highly sensitive to economic change. Managers in nonmanufacturing enterprises, workers in a number of craft occupations, operatives producing and delivering goods, and self-employed managers in businesses other than retail trade (such as consulting) all found 1979 a particularly good year. Physicians and dentists were also unusually busy during 1979, perhaps because the public had more discretionary income to spend for their services at that time.

A few occupations registered consistent declines in annual hours of employment throughout the 1977–81 period. These included engineers (−37 hours), machinists (−90 hours), metal crafts workers (−123 hours), auto mechanics (−78 hours), and operatives producing motor vehicles and equipment. The last group suffered most, realizing an average loss of 279 hours per worker between 1977 and 1980—the equivalent of almost 7 40-hour weeks of work per person. Modest but consistent increases were registered among health and health service workers (89 and 58 hours, respectively), and in retail sales (44 hours). From 1979 onward, gains were also apparent among working teachers (17 hours), engineering and science technicians (50 hours), laborers in manufacturing (81 hours) and in other industries (29 hours), and food service workers (25 hours).

THE ANNUAL HOURS DATA from the March CPS work experience supplement offer an interesting new window on labor force behavior for various groups. They enable us to condense information on work schedules, proportions of persons active, and weeks of paid employment into a single scalar variable, one which can be used directly in multivariate analysis or can be translated into standard units of time for easy comprehension. While the data are still experimental, it is hoped that in time they will become a functional part of our profile of the labor force.

FOOTNOTES

1 This is likely to bias hours estimates more seriously for blacks and women than it does for white males. The March CPS supplement does not contain sufficient information to control for this factor.


3 An example is the difference between persons active during a given month and those active at any time during the calendar year.

4 Declines in stated availability may have been induced by deteriorating employment conditions for men during this period.


7 Horvath estimates that between 1967 and 1979 "the degree of understatement ranged from 9 to 25 percent and averaged 19.1 percent... The understatement appeared to be smaller during periods of increasing unemployment, such as 1974–75." See Horvath, "Forgotten unemployment," p. 42.

8 The base of this ratio is the civilian noninstitutionalized population.

9 Because these figures are not discounted for unpaid vacations or holidays, estimates of compensated time may be overstated for certain occupations.