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The Bureau of Labor Statistics has traditionally relied--and, indeed, continues to rely--on establishment surveys as the principal vehicles for the collection of earnings data.

However, establishment-based data generally tell us nothing about such important socioeconomic issues as the differences in earnings between blacks and whites, men and women, the young and the old, the highly educated and the less educated. Such information can simply not be collected from employers without imposing an unreasonable burden of record keeping and reporting upon them. The only practical way to collect such information is through householdtype sample surveys, that is, through interviews with either the workers themselves or with some other member of their families.

The oldest and largest undertaking of this nature--excluding the Decennial Census--is the Current Population Survey (CPS), instituted in 1940 to measure the extent of labor force participation and unemployment among the American population. Over the years, this survey has been expanded several times and has been used more and more as a vehicle for the collection of other wide ranging information, including earnings data which could be linked to the characteristics of individual workers. 1/

Expanded collection efforts

Data on annual earnings (and income from other sources) have long been collected through the CPS. This information, which is obtained each March, refers to aggregate earnings (and other income) for the previous calendar year. These data have been a most important source of information on the historical trends in earnings of specific population groups. However, except where they apply to persons working full time the year round, they cannot be used as a precise tool for the measurement of intergroup differences in earnings, inasmuch as the extent of time worked, in terms of hours per week and weeks per year, is generally reported and recorded only in very broad intervals. In order to overcome these limitations, the Bureau of Labor Statistics has been aiming for the collection of CPS-based earnings data which would be both more current and linked to more precisely defined time periods.

The first step in this direction was taken in 1967, when a single question on "usual weekly earnings" was added to the questionnaire used annually in conjunction with the May survey. In 1973, the May questionnaire was expanded further, the principal addition being a question on "usual weekly hours" and one on the hourly wage rate for workers paid by the hour.

A glance at the findings

The data on "usual weekly earnings" have now been published for several years and they have shed considerable light on the earnings trends of specific group of workers. 2/ These annual data have shown that earnings for most groups of workers have risen somewhat faster over the 1967-1976 period than indicated by the overall average based on establishment data. Over this period, the establishment based average showed hardly any increase in constant dollar terms, as has also been the case for the overall average for all wage and salary workers based on the CPS data. Nevertheless, the disaggregated data from the CPS show that most groups of workers, particularly adult workers with fulltime jobs, enjoyed an increase in real earnings averaging about 10 percent over this period. (See table 1.) This would indicate that the gradual change in the mix of workers, that is, the increase in the proportion accounted for by women and youths, who are generally concentrated in low paid jobs, has been a primary factor in holding down the overall earning average for all workers

In terms of racial comparisons, the data on weekly earnings show that the earnings gap between blacks and whites, though still large, has narrowed considerably since the late 1960's. Specifically, real weekly earnings for blacks working full time showed a 21 percent increase over the 1967-76 period, whereas the average for whites shows only a 4 percent gain.

Going beyond these "macro" findings, BLS economists have turned to the micro data on weekly and hourly earnings--that is the tape entries for individual workers--to examine other questions, such as the earnings differential between unionized and nonunionized workers $\frac{3}{3}$ and the aggregate amount of earnings being lost because of unemployment. 4/

Hourly earnings

The CPS data on hourly earnings, available since 1973, also show considerable potential for the examination of several issues. Aside from their obvious use as a more exact measure of intergroup differences in earnings, they can, for example, provide valuable insights on the impact of changes in minimum wage legislation.

The impact of the 1974 change, for example, is clearly visible when one compares the May 1973 distribution of hourly earnings for workers paid by the hour with the distribution for May 1975 (see table 2). Although the earnings intervals used to tabulate these data are relatively wide, the distributional impact of the increase in minimum wages from \$1.60 to \$2.10 per hour stands out rather well. Moreover, the data for May 1976 appear to give a good indication of the further changes which went into effect last January, when the minimum was raised to \$2.30 for most workers and to \$2.20 for a portion not previously covered. Another interesting trend, which reflects the general upcreep in wages, is the rapid rise from 1973 to 1976 in the number of workers reported as earning from \$6 to \$8 an hour.

A more comprehensive measure of hourly earnings covering all wage and salary workers has also been derived by dividing their "usual weekly earnings" by their "usual weekly hours." The distribution of these earnings data, also based on the May survey is shown in table 3. As might be expected, since these data cover all wage and salary workers including professionals, supervisors, and managers, they yield medians and means which are substantially higher than those for hourly workers shown in table 2.

Accuracy of data

The collection of earnings data through a household survey implies the trading off of a certain amoung of accuracy in order to acquire other specific information on the characteristics of the wage earners. The obvious question is how much accuracy is being sacrificed.

The accuracy lost because of sampling variability can, at least in theory, be readily computed. The problem is that even if we knew what the amount of sampling variability is, we still would not know whether there might be any systematic bias attached to these numbers. What we do know is that, for various reasons, the nonresponse rate for the earnings question in the May survey is relatively high, having ranged from about 16 to 20 percent over the years.

The best way to determine how accurately the data on weekly and hourly earnings are being reported would be through a so-called "records check," that is by comparing these data, at least for a small sample of workers, with the actual payroll records maintained by their employers. The BLS and the Bureau of the Census have long recognized the desirability of conducting such a test and, have tentatively scheduled it for January 1977.

In the meantime, one way to gauge the accuracy of the earnings data derived from the CPS is by comparing them with similar data derived from the BLS survey of establishments. In terms of the largest industry groups where the two surveys cover universes which are at least roughly similar, though never quite the same, the data for May 1975 showed the following patterns of weekly earnings. Except for the construction industry, where the two surveys differ the most in terms of the universe covered (the establishment survey being limited to "contract construction" whereas the CPS covers all construction activity), the averages for the other industry groups shown below are reasonably close.

Another way to compare the data from the two surveys is in terms of hourly earnings. Table 4 shows such comparisons for all "twodigit" manufacturing industries, with the data from the establishment survey having been adjusted to exclude the impact of any overtime premiums. Of course, there remain some differences in coverage. For example, these CPS data apply only to workers who report that they are paid by the hour, while the establishment data apply to all production and nonsupervisory workers. Nevertheless, despite this and other differences, the data from the two surveys are again reasonably close. As shown, mean earnings from the CPS survey fall generally short of those from the establishment survey, but the differences aren't that great and the pattern is not at all erratic. In sum, when the various measurement differences are taken into account, the CPS based data on hourly and weekly earnings compare rather favorably with the data derived from the much larger survey of establishments.

Further tests

Being reasonably satisfied with the reliability of the CPS data on weekly and hourly earnings, the BLS has been exploring the possibility of having it collected more than once a year, that is either monthly or quarterly. Prior to undertaking such a regular collection program--which can not, of course, be started without budget authorization and the necessary clearances--the Bureau wanted to make sure that the pattern of survey questions to be used for this purpose was the best that could be developed.

To this end a special experiment was conducted in conjunction with the CPS survey in November 1975. The principal purposes of this experiment were:

> To test a procedure which would allow workers not paid at an hourly or weekly rate to report their earnings in the most applicable terms--i.e. daily rate, monthly rate, annual rate, piecework basis, etc. 5/

	Actual weekly earnings of production and nonsupervisory workers from Establishment Survey	Usual weekly earnings of all wage and salary workers from Current Population Survey				
	(Mean)	(Median)	(Mean)			
Mining	\$ 248	\$246	\$ 260			
Construction	263	215	229			
Manufacturing	185	186	201			
Transportation and public utilities	226	223	227			
Wholesale and retail trade	125	113	137			
Finance insurance, and real estate	149	155	193			

- 2. To determine what gains in reliability might be achieved by obtaining the earnings information directly from the workers rather than, second hand, from other members of their households.
- 3. To see whether it would be feasible to collect information on the additional earnings obtained by workers in terms of tips, commissions, bonuses, etc.

In terms of how workers are paid, as shown below, a little over one half were reported as paid by the hour. The proportions reporting that they were paid either at weekly, biweekly, monthly, or annual rates were roughly equal and together, accounted for four-tenths of the distribution, with the balance (about 7 percent) being divided up among several other categories (daily rate, piecework rate, commission basis, etc.)

> Percent distribution of workers by how paid, November 1975

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	Total	Male	remate
Total reporting	100.0	100.0	100.0
Hourly rate	54.2	52.3	56.8
Daily rate	1.3	.8	2.0
Weekly rate	10.1	10.7	9.2
Biweekly rate	8.3	8.5	8.0
Monthly rate	11.4	10.9	11.9
Annual rate	9.2	10.2	7.9
Piecework rate	1.2	1.0	1.4
Commission basis	1.9	2.3	1.4
Salary plus			
commission	.8	1.2	.1
Salary plus tips	.1	-	.1
Other way	1.6	2.0	1.1

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A comparison of the data for workers who reported their own earnings (the so-called "designated respondents") with the data for workers whose earnings were reported by other members of the household ("proxy respondents") does not show any clear differences. In order to make these comparisons possible, the November 1975 test panel, consisting of twothirds of the CPS sample, was divided into two equally representative parts. In one of these two parts--the C sample--the interviewers were instructed to make every reasonable effort to interview the actual wage earners, whereas in the other part--one-half of the so-called A sample-they could obtain the data from either the wage earner or any other responsible member of the household. The final outcome was one sample panel where the "designated respondents" accounted for about three-fourths of the interviews and another panel where the "designated respondents" accounted for only 45 percent of the interviews.

The reported median earnings based on the unweighted data for the two sample groups were as follows:

Median earnings by how paid

	"C" sample	"A" sample	
	(73 percent	(45 percent	
	designated	designated	"C" sample
How paid	respondents)	respondents)	"A" sample
Hourly rate	\$ 3.41	\$ 3.41	1.00
Daily rate	24.00	25.00	.96
Weekly rate	178.00	182.00	.98
Biweekly rate	426.00	445.00	.96
Monthly rate	829.00	841.00	.99
Yearly rate	13,182.00	13,567.00	.97
Piece work by			
week	118.00	126.00	.94
Commissions, by	Y		
week	226.00	199.00	1.14
Salary plus			
commission, by	Y		
week	260.00	285.00	.91
Salary plus tip	ps,		
by week	62.00	62.00	1.00
Other way, by			
week	209.00	206.00	1.01

As shown above, for the majority of the workers, those paid by the hour, there was no difference between the median obtained from the "C" sample, where the designated respondents accounted for three-fourths of the responses, and that from the "A" sample, where most of the data was obtained from proxy respondents. For workers paid at other than hourly rate, the "C" sample yielded medians which, for the most part, were slightly lower than those from the "A" sample. The differences, however, were relatively small.

In sum, the two sample panels yielded very similar results. For those groups where the results were slightly different, it cannot be determined, short of a record check, which of two panels yielded the most accurate information. Although we are still inclined to believe that the designated respondents should give us better data, it would appear that the extra effort involved in reaching them does not yield a sufficiently large dividend.

About 7 percent of the workers whose earnings were reported on basis of some specific time unit (hourly, daily, weekly, etc.) responded, in answer to a further screening question, that they did receive some additional remuneration in the form of tips, commissions, bonuses, etc. The distribution of the group in terms of the amount they usually received was as follows:

Periodicity of receipt	Percent distribution by periodicity of receipt	Median receipts <u>reported</u>		
Total	100.0			
per day	13.4	\$8		
per week	20.0	23		
per month	5.2	111		
per year	49.3	458		
other basis	2.1	152		

While we have no idea as to how complete and accurate the above data might be, the test indicated that it is not impossible to collect some information about the additional earnings received by some workers in addition to their wages and salaries.

Future plans

Utilizing the results of this test and building upon the experience gained since 1967, the Bureau of Labor Statistics would like to initiate a more regular collection of data on weekly and hourly earnings through the CPS. One alternative being examined is monthly collection from the two outgoing rotation groups--the fourth and eighth month-in-sample groups. <u>6</u>/ These limited monthly data, which would, in effect, be derived from one-fourth of the sample, could then be aggregated into reasonably reliable quarterly averages.

By using this option, there should be little if any impact on the other data derived from the CPS. But even this limited expansion would require some additional funds, and given the current budgetary situation it is not at all certain that they will be made available.

In any case, before launching any new major collection effort, the BLS, together with the Bureau of the Census, would like to conduct a validation test, where the reported earnings of a certain number of workers would be checked against the payroll records of their employers. Only then would we really know how accurately these earnings are reported.

FOOTNOTES

1/ The present size of the CPS sample, in terms of completed interviews, averages about 45,000 households a month distributed among 461 areas throughout the Nation. About 10,000 other households are being interviewed monthly in order to obtain better data for local areas, but the information from these additional households is not currently taken into account in the compilation of national averages.

2/ See Paul O. Flaim and Nicholas I. Peters, "Usual Weekly Earnings of American Workers," <u>Monthly Labor Review</u>, March 1972, pp. 28-38. and Thomas F. Bradshaw and John F. Stinson, "Trends in Weekly Earnings: An Analysis," Monthly Labor Review, August 1975, pp. 22-32.

<u>3</u>/ See Paul M. Ryscavage, "Measuring Union-Nonunion Earnings Differences," <u>Monthly Labor</u> <u>Review</u>, December 1974, pp. 3-9.

4/ An article on earnings foregone because of unemployment, authored by Paul M. Ryscavage and Curtis L. Gilroy, is scheduled to appear in an upcoming issue of the <u>Monthly Labor Review</u>.

5/ This procedure is similar to the one used in obtaining earnings data through the National Longitudinal Survey.

6/ Household falling in the CPS sample are visited (or called upon by telephone) for 4 consecutive months, are then dropped for 8 months, before being brought back into the sample for a second and final 4-month stint. Thus, oneeighth of the sample in any month consists of households in which interviews are being conducted for the fourth and final time of the initial 4-month stint, and another eighth consists of households who are in the last and final month of the second 4-month stint.

Table 1. Index of median usual weekly earnings of wage and salary workers by selected characteristics, in constant (1967) dollars, May 1967-May 1976

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Characteristics	May 1967	May 1969	Мау 1970	May 1971	Мау 1972	May 1973	May 1974	May 1975	May 1976
ALL WAGE AND SALARY WORKERS									
Total	100.0	101.0	101.0	102.0	103.0	105.0	103.0	100. <u>0</u>	99.0
FULL-TIME WAGE AND SALARY WORKERS									
Total	100.0	101.0	101.8	103.6	104.5	110.0	105.5	105.5	105.5
Household status:						- -			
Male head of household Male relative of head Male nonrelative of head	100.0 100.0 100.0	102.3 104.5 103.8	103.8 102.2 100.0	106.8 100.0 102.9	106.1 100.0 102.9	114.4 104.5 106.7	111.4 101.1 102.9	109.8 95.5 95.2	109.8 95.5 98.1
Female head of household Wife of head Female relative of head Female nonrelative of head	100.0 100.0 100.0 100.0	102.5 101.3 100.0 111.6	106.2 103.8 101.4 111.6	108.6 106.3 102.8 114.5	112.3 110.1 104.2 121.7	116.0 112.7 104.2 121.7	113.6 110.1 100.0 114.5	116.1 110.1 100.0 126.1	113.6 110.1 100.0 123.2
Sex and age:			-						
Male, 16 years and over 16 to 24 years 25 years and over	100.0 100.0 100.0	103.2 101.0 103.0	104.0 99.0 104.5	106.3 95.9 107.6	107.1 96.9 108.3	113.5 105.1 116.7	111.1 102.0 113.6	110.3 95.9 112.1	109.5 95.9 112.1
Female, 16 years and over 16 to 24 years 25 years and over	100.0 100.0 100.0	101.3 101.4 102.5	103.8 102.7 105.1	106.4 101.4 107.6	109.0 104.1 111.4	112.8 105.4 116.5	109.0 102.7 113.9	110.3 98.6 116.5	110.3 100.0 115.2
Color:					-				
White Male Female	100.0 100.0 100.0	100.9 102.3 102.5	101.8 103.8 103.8	103.5 106.1 106.3	104.4 105.3 110.1	107.9 112.2 112.7	104.4 109.9 108.9	104.4 10 7.6 110.1	104.4 107.6 110.1
Negro and other races Male Female	100.0 100.0 100.0	105.1 104.4 106.3	108.9 107.7 111.1	112.7 112.1 114.3	116.5 113.2 125.4	124.1 124.2 128.6	121.5 120.9 127.0	124.1 119.8 130.2	121.5 122.0 130.2
Occupation:									
Professional and technical workers Managers and administrators, except farm Sales workers Clerical workers Craft and kindred workers Operatives, except transport $\frac{1}{2}$ Transport equipment operatives $\frac{1}{2}$ Nonfarm laborers Private household workers Other service workers	100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0	104.8 98.8 99.1 102.2 101.5 103.2 96.9 100.0 105.2	106.8 99.4 100.9 102.2 103.0 101.1 103.1 100.0 105.2	106.8 100.6 102.6 103.3 104.5 103.2 96.9 105.3 105.2	105.5 104.2 106.1 105.4 104.5 100.0 100.0 104.3 100.0 110.7 110.3	110.3 109.7 108.8 107.6 112.1 105.3 105.7 111.7 93.8 112.0 125.9	107.5 104.2 103.5 104.3 109.8 102.1 101.6 108.5 106.3 106.7 125.9	105.5 104.2 104.4 102.2 106.1 104.2 101.6 103.2 106.3 102.7 120.7	103.4 103.6 102.6 101.1 106.8 101.1 103.3 101.1 109.4 105.3 122.4

1/ Separate data for these two groups not available prior to 1972.

Year	Total reporting earnings	Under \$1.60	\$1.60 to \$1.99	\$2.00 to \$2.24	\$2.25 to \$2.49	\$2.50 to \$2.99	\$3.00 to \$3.99	\$4.00 to \$4.99	\$5.00 to \$5.99	\$6.00 to \$7.99	\$8.00 to \$9.99	\$10.00 and over	Median	Mean
Workers in thousands 1973 1974 1975 1976	32,192 32,152 32,046 34,237	1,597 1,108 896 758	4,791 2,284 782 482	3,741 4,982 4,873 2,457	2,290 2,159 2,338 3,995	3,967 3,984 4,125 4,763	6,510 6,656 6,466 7,406	4,505 4,655 4,519 4,564	2,791 3,496 3,837 3,975	1,325 2,032 3,165 4,355	543 610 684 914	131 186 363 569	2.96 3.20 3.39 3.55	3.29 3.54 3.81 4.06
Percent distribution 1973 1974 1975 1976	100.0 100.0 100.0 100.0	5.0 3.4 2.8 2.2	14.9 7.1 2.4 1.4	11.6 15.5 15.2 7.2	7.1 6.7 7.3 11.7	12.3 12.4 12.9 13.9	20.2 20.7 20.2 21.6	14.0 14.5 14.1 13.3	8.7 10.9 12.0 11.6	4.1 6.3 9.9 12.7	1.7 1.9 2.1 2.7	.4 .6 1.1 1.7	 	

Table 2. Distribution of earnings of workers paid at hourly rate, May 1973-May 1976 (Numbers in thousands)

Source: Current Population Survey

Year	Total reporting earnings	Under \$1.60	\$1.60 to \$1.99	\$2.00 to \$2.24	\$2.25 to \$2.49	\$2.50 to \$2.99	\$3.00 to \$3.99	\$4.00 to \$4.99	\$5.00 to \$5.99	\$6.00 to \$7.99	\$8.00 to \$9.99	\$10.00 and over	Median	Mean
Workers in thousands 1973 1974 1975 1976	61,706 61,220 62,000 63,010	4,127 2,805 2,156 1,644	5,420 3,043 1,679 1,183	4,749 5,752 5,444 3,103	3,011 2,867 2,870 3,863	7,226 6,823 6,607 6,835	12,825 12,611 12,060 12,590	8,647 8,796 8,761 8,634	6,843 7,557 8,149 8,212	5,162 6,530 8,404 9,679	1,831 2,163 2,864 3,367	1,863 2,274 3,004 3,901	3.46 3.71 4.02 4.26	4.04 4.34 4.69 4.99
Percent distribution 1973 1974 1975 1976	100.0 100.0 100.0 100.0	6.7 4.6 3.5 2.6	8.8 5.0 2.7 1.9	7.7 9.4 8.8 4.9	4.9 4.7 4.6 6.1	11.7 11.1 10.7 10.8	20.8 20.6 19.5 20.0	14.0 14.4 14.1 13.7	11.1 12.3 13.1 13.0	8.4 10.7 13.6 15.4	3.0 3.5 4.6 5.3	3.0 3.7 4.8 6.2	 	

Table 3. Distribution of usual hourly earnings of all wage and salary workers, May 1973-May 1976 (Numbers in thousands)

Source: Current Population Survey

Table 4. Comparison of CPS earnings for workers paid at hourly rates with average hourly earnings from establishment survey, May 1975

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Industry	CPS mean earnings (1)	Establishment mean earnings (2)	1/2	Establishment mean earnings excluding overtime (4)	1/4
		(2)		(4)	
Manufacturing	\$4.22	\$4.75	.89	\$4.61	.92
Durable goods	4.49	5.06	.89	4.93	.91
Ordnance and accessories	6.20	5.15	1.20	4.99	1.24
Lumber and wood products	3.87	4.17	.93	4.02	.96
Furniture and fixtures	3.37	3.70	.91	3.64	.93
Stone, clay, and glass	4.33	4.83	.90	4.63	.94
Primary metals	4.93	6.04	.82	5.86	.84
Fabricated metal products	4.40	4.98	.88	4.85	.91
Machinery, except electrical	4.57	5.29	.86	5.12	.89
Electrical equipment	4.17	4.53	.92	4.45	.94
Transportation equipment	5.19	5.88	.88	5.73	.91
Instrument and related products	3.98	4.52	.88	4.43	.90
Miscellaneous manufacturing	3.53	3.75	.94	3.68	.96
Nondurable goods	3.80	4.30	.88	4.17	.91
Food and kindred products	3.96	4.52	.88	4.33	.91
Tobacco manufacturers	4.70	4.77	.99	4.69	1.00
Textile mill products	3.07	3.33	.92	3.22	.95
Apparel and other textile products	2.65	3.15	.84	3.11	.85
Paper and allied products	4.37	4.86	.90	4.66	.94
Printing and publishing	4.12	5.32	.77	N.A.	N.A.
Chemicals and allied products	4.61	5.30	.87	5.15	.90
Petroleum and coal products	5.65	6.33	.89	6.10	.93
Rubber and plastic products	3.97	4.30	. 92	4.17	.95
Leather and leather products	2.78	3.20	.87	3.14	.89
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