

Revisions in the Current Population Survey Effective January 1994

Note: This article contains initial estimates of the impact of the survey redesign, some of which were later found to be inaccurate. Further research, including the most up-to-date estimates of the impact of the redesign on major labor force measures is contained in "The CPS After the Redesign: Refocusing the Economic Lens" online at <http://www.bls.gov/ore/abstract/ec/ec950090.htm>.

Sharon R. Cohany, Anne E. Polivka, and Jennifer M. Rothgeb

A major redesign of the Current Population Survey (CPS) was implemented in January 1994. The primary aim of the redesign was to improve the quality of the data derived from the survey by introducing a new questionnaire and modernized data collection methods. This article discusses the major features of the new questionnaire and collection methods and compares the estimates derived under the former and new procedures.¹ The article also describes the introduction of new population controls based on the 1990 census adjusted for the estimated population undercount. (The effects of the redesign and other survey changes on the publication of data are discussed in the companion article, "Revisions in the Presentation of Data in Employment and Earnings," in this issue.)

Redesign of the Current Population Survey

Background

A monthly survey of some 60,000 households, the CPS is conducted by the Bureau of the Census for the Bureau of Labor Statistics. Since its inception in 1940, the CPS has been the primary source of information on the employed, the unemployed, and persons not in the labor force.

Prior to the recent redesign, the survey questionnaire had been virtually unchanged for nearly three decades. The last major revisions were made in 1967.² Since that time, problems with the questionnaire in measuring certain labor market concepts were identified. Also, the Nation's economy and society underwent major shifts. For instance, there has been tremendous growth in the number of service-sector jobs, while the number of factory jobs has declined sharply as a share of overall employment. Other changes include the more prominent role of women in the work force and the growing popularity of alternative

work schedules. These changes raised issues which were not being fully addressed with the old questionnaire. In addition, there had been major advances in survey research methods and data collection technology. Spurred by all of these developments, work by BLS and the Bureau of the Census began in the mid-1980's to redesign the CPS to better capture the dynamics of the contemporary labor market, while incorporating recent advances in data collection technology.

The redesign of the questionnaire had four main objectives: 1) To measure the official labor force concepts more precisely, 2) to expand the amount of data available, 3) to implement several definitional changes, and 4) to adopt a computer-assisted interviewing environment.

Beginning in 1988, BLS and the Bureau of the Census conducted a number of research projects to guide the development of a new CPS questionnaire. Alternative versions of the questionnaire were developed, based on both this research and recommendations made in 1979 by the National Commission on Employment and Unemployment Statistics, also known as the Levitan Commission.³ The various questionnaire alternatives were tested in 1990 and 1991 in two phases, using centralized computer-assisted telephone interviewing (CATI) with a sample of households selected through random digit dialing (RDD) techniques. The results of both of these experimental phases were used in the development of the final revised questionnaire.

The new version was then tested extensively in a national sample survey, which ran parallel to the CPS from July 1992 to December 1993. This article compares data from this "parallel survey" with results from the official CPS using 1993 annual averages, in order to gauge the effects of the new questionnaire and computer-assisted data collection on the estimates.

Sharon R. Cohany is an economist in the Division of Labor Force Statistics and Anne E. Polivka is an economist in the Office of Research and Evaluation, Bureau of Labor Statistics. Jennifer M. Rothgeb is a social science statistician in the Center for Survey Methods Research, Bureau of the Census. The sections relating to the 1990 census-based population controls were co-authored by Shail J. Butani, Janice Lent, Edwin L. Robison, and Michael E. Welch of the Statistical Methods Division, Bureau of Labor Statistics, and Frederick W. Hollman of the Population Division, Bureau of the Census.

¹ For additional information on the background of the CPS redesign, see "Questions and Answers on the Redesign of the Current Population Survey," available from BLS, and three articles published in the September 1993 *Monthly Labor Review* under the heading "Overhauling the Current Population Survey." A comprehensive bibliography is available from BLS upon request.

² See Robert L. Stein, "New Definitions for Employment and Unemployment," *Employment and Earnings*, February 1967.

³ National Commission on Employment and Unemployment Statistics, *Counting the Labor Force*, 1979.

Computerization

The new questionnaire was designed for a computer-assisted interview. In most cases, interviewers conduct the survey either in person at the respondent's home or by telephone from the interviewer's home, using laptop computers on which the questionnaire has been programmed. This mode of data collection is known as computer-assisted personal interviewing (CAPI). Interviewers ask the survey questions as they appear automatically on the screen of the laptop, and then type the responses directly into the computer. At the end of each day, interviewers transmit the data via modem to the computer at the Bureau of the Census headquarters. A portion of sample households (expected to reach about 20 percent later this year) is interviewed via CATI, from two centralized telephone centers (located in Hagerstown, Maryland and Tucson, Arizona) by interviewers who also use a computerized questionnaire.

Computer-assisted interviewing has important benefits, most notably:

Consistency. In a survey such as the CPS, consistency from interview to interview is essential for data quality. Automation facilitates the use of a relatively complex questionnaire, incorporating complicated skip patterns and standardized followup questions. Yet, certain questions are automatically tailored to the individual's situation to make them more understandable to the respondent.

Editing. The computerized questionnaire has several built-in editing features, including automatic checks for internal consistency and unlikely responses. In this way, some potential errors can be caught and corrected during the interview itself.

Dependent interviewing. An automated interview also permits dependent interviewing, that is, the use of information in the current interview that was obtained in a previous month's interview. Dependent interviewing reduces respondent and interviewer burden, while improving consistency of the data from one month to the next. The technique is being used to confirm the previously reported occupation and industry of a person's job and, for many people not in the labor force, to confirm their status as retired or disabled. If it is determined that there has been no change in the information which was supplied in the earlier interview, no further questions on the topic are asked. If, however, the information which was previously supplied has changed, the respondents are asked to provide the updated information. In a somewhat different form of dependent interviewing, persons' duration of unemployment is asked in the first month they are reported as unemployed, and this information is automatically updated by either 4 or 5 weeks if they remain unemployed in the subsequent month.

It should be noted that the new questionnaire was designed for computer-assisted interviewing. Given the

complexity of the skip patterns and the use of dependent interviewing, it would be nearly impossible to administer the new survey using a paper-and-pencil questionnaire. In fact, there is no operational paper version of the new questionnaire.

Major Questionnaire Changes

Enhanced accuracy

Unlike the 1967 revision, whose major purpose was to sharpen the definition of unemployment, the emphasis of the 1994 redesign was to improve the overall quality of labor market information through extensive question changes and the introduction of computers into the collection procedures. The redesign was also undertaken to obtain data on topics not previously or adequately covered.

While the labor force status of most people is straightforward, some are more difficult to classify correctly, especially if they are engaged in activities that are relatively informal or intermittent. Many of the changes to the questionnaire were made to deal with such cases. This was accomplished by rewording and adding questions to conform more precisely with the official definitions, making the questions easier to understand and answer, minimizing reliance on volunteered responses, revising response categories, and taking advantage of the benefits of an automated interview. Areas affected by these improvements include:

Reference week. Many questions refer to activities "last week," but in the former questionnaire the time period was never defined. Research found that fewer than 20 percent of respondents defined the reference week as it is meant in the survey, that is, from Sunday to Saturday of the week including the 12th day of the month. The new questionnaire provides respondents with the specific dates of the reference week.

On layoff. Persons on layoff are defined as those who are separated from a job to which they are awaiting recall. The old questionnaire, however, was not structured to consistently obtain information on the expectation of recall. This was a particular problem since, in common parlance, the term "layoff" has come to refer to a permanent termination rather than the temporary situation that BLS and the Census Bureau are trying to measure.

In order to measure layoffs more accurately, questions were added to determine if people reported to be on layoff did in fact have an expectation of recall—that is, had they been given a specific date to return to work or, at least, had they been given an indication that they would be recalled within the next 6 months. Also, a direct question about layoff replaced a long and cumbersome question about both layoff and absence from work.

Jobsearch methods. To be counted as unemployed, a person must have engaged in an active jobsearch during the 4

weeks prior to the survey, that is, must have taken some action that could result in a job offer. In addition to contacting employers directly, active jobsearch methods include answering want ads, sending out resumes, and contacting private or public employment agencies. On the other hand, passive methods, such as taking a class or simply reading the want ads, do not qualify as a jobsearch. To allow interviewers to better distinguish between active and passive methods, the response categories for jobsearch methods were expanded and reformatted. Also, the basic question on jobsearch methods was reworded and followup questions were added to encourage respondents to report all types of jobsearch activity.

Hours at work. Research showed that, when asked about their actual hours at work, some respondents provided their scheduled or usual hours instead. To improve the accuracy of these data, the series of questions on hours worked was reordered to incorporate a recall strategy, which asks for usual hours first, then about possible time taken off or extra hours worked during the reference week, and finally about hours actually worked.

Reasons for working part time. Persons who work part time (fewer than 35 hours a week) do so either voluntarily (that is, because of personal constraints or preferences) or involuntarily (that is, because of business-related reasons such as slack work or the lack of full-time opportunities). Because respondents typically are not familiar with this distinction, the question asking why those working part time were doing so was reworded to provide examples of the two types of reasons. More importantly, the measurement of working part time involuntarily (or for economic reasons) was modified to better reflect the concept. Starting in 1994, workers who are part time for economic reasons must want and be available for full-time work. Individuals who usually work part time for an economic reason are asked direct questions to determine if they meet these criteria; those usually working full time are assumed to meet them.

Occupation and industry. Research has shown that the former system of asking questions on occupation, industry, and class of worker independently each month led to an overreporting of month-to-month change. The accuracy of these data will benefit significantly from the use of dependent interviewing, with most respondents being asked to supply this information only in the initial interview. In subsequent months, they are asked merely to verify the information that had been reported earlier regarding their employer, occupation, and usual activities on the job. If no changes have taken place, no further questions are asked and the information is simply carried forward. If changes in the job situation have occurred, the series of questions that was asked in the previous month is asked again.

Unpaid family workers. The definition of employment includes persons who work without pay for at least 15 hours a week in a business or farm owned by a member of their immediate family. To better measure the extent of work in such businesses, the new questionnaire has a direct question on the presence of a business in the household. Persons in households with a business who are not otherwise employed are specifically asked if they worked in the business.

Earnings. With the former questionnaire, respondents were asked to report their earnings as a weekly amount, even though that may not have been the easiest way to recall or report their earnings. In the new version, respondents are asked to report earnings in the time frame which they find easiest, for example, hourly, weekly, biweekly, monthly, or annual. Weekly earnings are automatically calculated for persons who respond on a basis other than weekly. Also, individuals are asked a specific question to determine if they usually receive overtime pay, tips, or commissions. For minimum wage studies, all earners are asked if they are, in fact, paid at hourly rates.

New data

The questionnaire redesign also makes it possible to collect several types of data regularly for the first time, namely:

Multiple jobholding. Employed persons are now asked each month whether they had more than one job. This allows BLS to produce estimates of multiple jobholding on a monthly basis, rather than having to derive them through special, periodic supplements. The inclusion of the multiple jobholding question also enhances the accuracy of answers to the questions on hours worked, and it may help to reconcile employment estimates from the CPS with those from the Current Employment Statistics program, BLS' survey of nonfarm business establishments.

Usual hours. All employed persons are asked each month about the hours they usually work. Previously, information on usual hours was collected from just one-quarter of wage and salary workers each month.

Definitional changes

As part of the redesign, several labor force definitions were modified, specifically:

Discouraged workers. This was the most important definitional change implemented. The Levitan Commission had criticized the former definition, because it was based on a subjective desire for work and on somewhat arbitrary assumptions about an individual's availability to take a job. As a result of the redesign, two requirements were added: For persons to qualify as discouraged, they must have engaged in some jobsearch within the past year (or since they last worked if they worked within the past year), and they must be currently available to take a job. (Formerly, avail-

ability was inferred from responses to other questions; now there is a direct question.) Discouraged workers are now defined as *persons who want a job, are available to take a job, and who had looked for work within the past year but not within the prior 4 weeks because they believed their search would be futile.* Specifically, their main reason for not recently looking for work was one of the following: *Believes no work available in line of work or area; couldn't find any work; lacks necessary schooling, training, skills or experience; employers think too young or too old; or other types of discrimination.* Also, beginning in January 1994, questions on this subject are asked of the full CPS sample rather than being limited to a quarter of the sample, permitting estimates of the number of discouraged workers to be published monthly (rather than quarterly).

Unemployment. A relatively minor change was incorporated into the definition of unemployment. Under the former definition, persons who volunteered that they were waiting to start a job within 30 days (a very small group numerically) were classified as unemployed, whether or not they were actively looking for work. Under the new definition, people waiting to start a new job are no longer automatically counted as unemployed. Rather, they must have actively looked for a job within the last 4 weeks in order to be counted as unemployed. Otherwise, they will be classified as not in the labor force. Thus, beginning in January 1994, the unemployed are defined as persons 1) without jobs; 2) actively seeking work, or on layoff from a job and expecting recall (who need not be seeking work to qualify); and 3) currently available to take a job (including temporary illness).

New entrants and reentrants. Unemployed persons who were not working just before their jobsearch commenced are classified as either new entrants or reentrants (to the labor force). Prior to 1994, new entrants were defined as jobseekers who had never worked at a full-time job lasting 2 weeks or longer; reentrants were defined as jobseekers who had held a full-time job for at least 2 weeks and had then spent some time out of the labor force prior to their most recent period of jobsearch. These definitions have been modified to encompass any type of job, not just a full-time job of at least 2 weeks duration. Thus, new entrants are now defined as jobseekers who have never worked at all, and reentrants are jobseekers who have worked before, but not immediately prior to their jobsearch.

Full-time and part-time workers. The classification of full- and part-time workers is now based completely on their usual weekly hours worked. In the past, due to limitations in the questionnaire, persons who worked full time in the reference week were not asked about their usual hours. Rather, they were assumed to work full time on a usual

basis and classified as full-time workers. In the revised questionnaire, *all* workers are asked the number of hours they usually work, and are classified accordingly.

The Parallel Survey

As mentioned above, the new computerized questionnaire was tested in a parallel survey, also known as the "CATI/CAPi Overlap." The parallel survey was administered to approximately 12,000 households per month for 18 months, from July 1992 to December 1993. The survey had several objectives, including testing the complex programming of the questionnaire, breaking in computerized data collection and transmission operations, and measuring differences in major labor force estimates between the old and new surveys. Since a lack of funding prevented the administration of the former questionnaire in a CAPI environment and since the new questionnaire's complexity prevented its administration on paper, the effects of computer-assisted data collection on the labor force estimates cannot be completely isolated from the effects of changes in question wording and sequence.

The parallel survey was a nationally representative survey, in which all of the largest metropolitan areas were included and the remaining areas were sampled on a probability basis.⁴ The parallel survey had the same rotation schedule as the CPS, that is, households were interviewed for 4 months, left the sample for the next 8 months, and then were interviewed for another 4 months.

When comparing estimates derived from the parallel survey with official CPS estimates, it should be recognized that the parallel survey was based on a national sample, in contrast with the State-based sample design of the CPS. Moreover, the sample of the parallel survey was just one-fifth the size of the CPS sample. This means that its estimates have greater variance, particularly those for small groups, which are based on relatively few sample members.

The data compared in this article are 1993 annual averages. There were, of course, month-to-month fluctuations, especially in the parallel survey, which are minimized using averages of 12 months of data. For example, the overall unemployment rate from the parallel survey for the 12-month period under study (January-December 1993) averaged 0.5 percentage point higher than the rate from the CPS, compared with monthly differences ranging from 0.1 to 0.7 percentage point.

Comparisons Between CPS and Parallel Survey Estimates

The following analysis describes differences in labor market estimates between the official CPS and the parallel survey for 1993. This includes highlights of the major

⁴ The sample design of the parallel survey was based on that used by the National Crime Victimization Survey (NCVS), which is conducted by the Bureau of the Census for the Bureau of Justice Statistics.

differences as well as sections on the employed, unemployed, persons in the labor force, and persons not in the labor force.

Explanations for observed differences in the estimates are suggested whenever possible. It is important to note, however, that given the sweeping changes to the survey, it is impossible to completely disentangle the underlying causes behind the differences. In general, only differences that are statistically significant at the 90-percent confidence level are discussed. Confidence intervals for major estimates are shown in table 1. Standard errors for estimates in all other tables are available from BLS upon request. In order to maintain comparability with parallel survey results, the CPS estimates used in this article were not subjected to the compositing procedure, and as a result may not always agree with published estimates.⁵

Highlights of findings

The following are highlights of the study comparing data from the parallel survey (using the revised questionnaire and automated collection) with the CPS (using the former questionnaire and procedures) for 1993.

- The national unemployment rate as estimated by the parallel survey was higher than the rate obtained by the CPS. This difference averaged 0.5 percentage point (table 1). As shown in table 2, the measured effect was relatively larger for women than for men. The parallel survey also measured more unemployment among teenagers and older workers (65 years and over).

- The overall proportion of the population that was working—the employment–population ratio—was essentially the same in the parallel survey and the CPS. However, there were marked differences by gender. For men, the ratio was lower in the parallel survey than in the CPS; for women the ratio based on the parallel survey was higher.

- The labor force participation rate was estimated to be higher in the parallel survey than in the CPS. Again, there were significant differences by gender: The percentage for men was lower in the parallel survey while the rate for women was higher.

Employment

As stated above, overall estimates of employment differed little between the parallel survey and the CPS. The employment–population ratio was 61.8 percent in the parallel survey, statistically indistinguishable from the 61.7 percent using the CPS. This similarity in the aggregate ratio, however, masks significant differences by gender. The ratio for women was higher in the parallel survey than in the CPS—54.9 versus 54.2 percent—while for men the measure from the parallel survey was lower—69.3 versus

69.9 percent. (See table 2.)

There are several questionnaire changes which may have contributed to higher estimates of employment among women. Many of the revisions to the new questionnaire were made to capture labor force activity more completely, especially that of a more irregular or informal nature. To this end, key questions on work activity were reworded. (See exhibit A.) For example, the question asking about work was changed from “Did you do any work at all LAST WEEK, not counting work around the house?” to “LAST WEEK, did you do ANY work for pay?” Some respondents to the former questionnaire may have failed to report work activities if their activities were part time, intermittent, or perhaps even if they were home-based. The revised question communicates more clearly to the respondent that the survey uses an inclusive definition of work, to encompass any work for pay.

Indeed, the entire context of the interview must be considered. The labor force portion of the former CPS interview began with the following question: “What were you doing most of LAST WEEK (Working, keeping house, going to school, or something else)?” This question, originally introduced as an “icebreaker,” has been criticized on several grounds. For one, we really don’t want to know what a person was doing most of last week (the answer to that might be something unrelated to labor force activity), but rather whether a person worked at all last week. The phrase “most of last week,” moreover, may have been indicating to some respondents that the interest of the survey was in full-time, “regular” employment and not in part-time or intermittent work.

Another difficulty with the former opening question was that interviewers were instructed to tailor it depending on the person’s apparent situation. For a person (typically a woman) who appeared to be a homemaker, the question could be phrased, “What were you doing most of last week—working, keeping house, or something else?” For a young person, the question could be tailored to read, “What were you doing most of last week—working, going to school, or something else?” The “working” option was not always offered. Everyone else was asked, “What were you doing most of last week—working or something else?” It is not known to what extent these procedures were followed; however, the instructions for tailoring provided the potential for bias and may have cast doubt on the intent of the survey to capture all labor force activity.

In the new questionnaire, none of the questions is customized on the basis of the appearance of respondents. Thus, for example, after an opening question (asked once for the entire household) on the presence of a business or farm, *everyone* is asked whether he or she did *any* work for pay, clearly setting the tone that this is a survey in which labor force activity is the sole interest. Also, the new version systematically asks about employment in family busi-

⁵ Compositing is an estimation procedure which reduces variability in estimates, especially of month-to-month change. For a detailed explanation, see “Estimating Methods” under the Household Data section of the Explanatory Notes and Estimates of Error in this publication.

Table 1. Employment status of the population for selected labor force groups using 1980 census-based population estimates from the CPS and the parallel survey, 1993 annual averages

(Numbers in thousands)

Employment status and group	CPS ¹	Parallel survey	Difference	
			Level	Error at 1.6 sigma ²
TOTAL				
Civilian noninstitutional population	193,550	193,550	0	0
Civilian labor force	128,103	128,965	862	642
Percent of population	66.2	66.6	.4	.3
Employed	119,389	119,606	217	696
Employment-population ratio	61.7	61.8	.1	.4
Unemployed	8,714	9,359	645	278
Unemployment rate	6.8	7.3	.5	.2
Men, 20 years and over				
Civilian noninstitutional population	85,906	85,850	-56	0
Civilian labor force	66,077	65,599	-478	354
Percent of population	76.9	76.4	-.5	.4
Employed	61,884	61,283	-601	381
Employment-population ratio	72.0	71.4	-.6	.4
Unemployed	4,193	4,316	123	189
Unemployment rate	6.4	6.6	.2	.3
Women, 20 years and over				
Civilian noninstitutional population	94,389	94,361	-28	0
Civilian labor force	55,184	56,162	978	486
Percent of population	58.5	59.5	1.0	.5
Employed	51,966	52,604	638	503
Employment-population ratio	55.1	55.8	.7	.5
Unemployed	3,219	3,559	340	159
Unemployment rate	5.8	6.3	.5	.3
Both sexes, 16 to 19 years				
Civilian noninstitutional population	13,254	13,338	84	0
Civilian labor force	6,842	7,203	361	178
Percent of population	51.6	54.0	2.4	1.3
Employed	5,540	5,719	179	174
Employment-population ratio	41.8	42.9	1.1	1.3
Unemployed	1,303	1,485	182	100
Unemployment rate	19.0	20.6	1.6	1.3
White				
Civilian noninstitutional population	163,921	163,921	0	0
Civilian labor force	109,407	110,209	802	607
Percent of population	66.7	67.2	.5	.4
Employed	102,891	103,267	376	648
Employment-population ratio	62.8	63.0	.2	.4
Unemployed	6,516	6,942	426	223
Unemployment rate	6.0	6.3	.3	.2
Black				
Civilian noninstitutional population	22,329	22,329	0	0
Civilian labor force	13,957	13,908	-49	325
Percent of population	62.5	62.3	-.2	1.5
Employed	12,148	11,923	-225	321
Employment-population ratio	54.4	53.4	-1.0	1.4
Unemployed	1,809	1,985	176	129
Unemployment rate	13.0	14.3	1.3	.9

See footnote at end of table.

Table 1. Employment status of the population for selected labor force groups using 1980 census-based population estimates from the CPS and the parallel survey, 1993 annual averages—Continued

(Numbers in thousands)

Employment status and group	CPS ¹	Parallel survey	Difference	
			Level	Error at 1.6 sigma ²
Hispanic origin				
Civilian noninstitutional population	15,753	15,753	0	0
Civilian labor force	10,385	10,666	281	241
Percent of population	65.9	67.7	1.8	1.5
Employed	9,285	9,412	127	268
Employment-population ratio	58.9	59.7	.8	1.7
Unemployed	1,100	1,254	154	97
Unemployment rate	10.6	11.8	1.2	.9

¹ These estimates differ slightly from previously published 1993 averages because of the estimation procedure used.

² Sampling error at the 90-percent confidence level.

NOTE: Population estimates obtained from the two surveys will not

always agree due to slight differences in estimating procedures. Detail for the above race and Hispanic-origin groups will not sum to totals because data for the "other races" group are not presented and Hispanics are included in both the white and black population groups.

Table 2. Employment status of the population by age, sex, race, and Hispanic origin using 1980 census-based estimates from the CPS and the parallel survey, 1993 annual averages

(Numbers in thousands)

Employment status and age	Total			Men			Women		
	CPS ¹	Parallel survey	Difference ²	CPS ¹	Parallel survey	Difference ²	CPS ¹	Parallel survey	Difference ²
Civilian noninstitutional population									
Total, 16 years and over	193,550	193,550	0	92,620	92,620	0	100,930	100,930	0
16 to 19 years	13,254	13,338	84	6,714	6,769	55	6,540	6,569	29
20 to 24 years	17,583	17,641	58	8,613	8,677	64	8,970	8,964	-6
25 to 34 years	41,314	41,375	61	20,382	20,374	-8	20,933	21,002	69
35 to 44 years	40,341	40,238	-103	19,831	19,785	-46	20,510	20,453	-57
45 to 54 years	28,863	28,943	80	14,027	14,016	-11	14,836	14,927	91
55 to 64 years	21,029	21,006	-23	9,976	9,990	14	11,053	11,016	-37
65 years and over	31,164	31,008	-156	13,078	13,009	-69	18,086	17,999	-87
Civilian labor force									
Total, 16 years and over	128,103	128,965	862	69,656	69,300	-356	58,447	59,664	1,217
16 to 19 years	6,842	7,203	361	3,579	3,702	123	3,263	3,502	239
20 to 24 years	13,555	13,705	150	7,159	7,186	27	6,396	6,519	123
25 to 34 years	34,473	34,609	136	19,049	18,828	-221	15,424	15,782	358
35 to 44 years	34,274	34,287	13	18,544	18,457	-87	15,730	15,830	100
45 to 54 years	23,556	23,622	66	12,642	12,482	-160	10,914	11,139	225
55 to 64 years	11,863	11,736	-127	6,632	6,473	-159	5,231	5,262	31
65 years and over	3,540	3,802	262	2,051	2,173	122	1,489	1,629	140
Participation rate									
Total, 16 years and over	66.2	66.6	.4	75.2	74.8	-.4	57.9	59.1	1.2
16 to 19 years	51.6	54.0	2.4	53.3	54.7	1.4	49.9	53.3	3.4
20 to 24 years	77.1	77.7	.6	83.1	82.8	-.3	71.3	72.7	1.4
25 to 34 years	83.4	83.6	.2	93.5	92.4	-1.1	73.7	75.1	1.4
35 to 44 years	85.0	85.2	.2	93.5	93.3	-.2	76.7	77.4	.7
45 to 54 years	81.6	81.6	.0	90.1	89.1	-1.0	73.6	74.6	1.0
55 to 64 years	56.4	55.9	-.5	66.5	64.8	-1.7	47.3	47.8	.5
65 years and over	11.4	12.3	.9	15.7	16.7	1.0	8.2	9.1	.9

See footnote at end of table.

Table 2. Employment status of the population by age, sex, race, and Hispanic origin using 1980 census-based estimates from the CPS and the parallel survey, 1993 annual averages - Continued

(Numbers in thousands)

Employment status and age	Total			Men			Women		
	CPS ¹	Parallel survey	Difference ²	CPS ¹	Parallel survey	Difference ²	CPS ¹	Parallel survey	Difference ²
Employed									
Total, 16 years and over	119,389	119,606	217	64,727	64,200	-527	54,662	55,406	744
16 to 19 years	5,540	5,719	179	2,844	2,918	74	2,696	2,802	106
20 to 24 years	12,137	12,233	96	6,354	6,386	32	5,783	5,846	63
25 to 34 years	32,119	32,099	-20	17,729	17,527	-202	14,390	14,573	183
35 to 44 years	32,406	32,347	-59	17,512	17,400	-112	14,894	14,947	53
45 to 54 years	22,444	22,431	-13	12,011	11,808	-203	10,433	10,623	190
55 to 64 years	11,313	11,154	-159	6,292	6,106	-186	5,022	5,048	26
65 years and over	3,430	3,623	193	1,986	2,057	71	1,444	1,566	122
Employment-population ratio									
Total, 16 years and over	61.7	61.8	.1	69.9	69.3	-.6	54.2	54.9	.7
16 to 19 years	41.8	42.9	1.1	42.4	43.1	.7	41.2	42.7	1.5
20 to 24 years	69.0	69.3	.3	73.8	73.6	-.2	64.5	65.2	.7
25 to 34 years	77.7	77.6	-.1	87.0	86.0	-1.0	68.7	69.4	.7
35 to 44 years	80.3	80.4	.1	88.3	88.0	-.3	72.6	73.1	.5
45 to 54 years	77.8	77.5	-.3	85.6	84.3	-1.3	70.3	71.2	.9
55 to 64 years	53.8	53.1	-.7	63.1	61.1	-2.0	45.4	45.8	.4
65 years and over	11.0	11.7	.7	15.2	15.8	.6	8.0	8.7	.7
Unemployed									
Total, 16 years and over	8,714	9,359	645	4,928	5,100	172	3,785	4,259	474
16 to 19 years	1,302	1,485	183	735	784	49	567	700	133
20 to 24 years	1,417	1,472	55	805	800	-5	613	673	60
25 to 34 years	2,354	2,511	157	1,320	1,301	-19	1,034	1,210	176
35 to 44 years	1,868	1,940	72	1,033	1,057	24	835	883	48
45 to 54 years	1,112	1,190	78	631	675	44	482	516	34
55 to 64 years	550	581	31	341	367	26	209	214	5
65 years and over	110	180	70	65	116	51	45	63	18
Unemployment rate									
Total, 16 years and over	6.8	7.3	.5	7.1	7.4	.3	6.5	7.1	.6
16 to 19 years	19.0	20.6	1.6	20.5	21.2	.7	17.4	20.0	2.6
20 to 24 years	10.5	10.7	.2	11.2	11.1	-.1	9.6	10.3	.7
25 to 34 years	6.8	7.3	.5	6.9	6.9	.0	6.7	7.7	1.0
35 to 44 years	5.5	5.7	.2	5.6	5.7	.1	5.3	5.6	.3
45 to 54 years	4.7	5.0	.3	5.0	5.4	.4	4.4	4.6	.2
55 to 64 years	4.6	5.0	.4	5.1	5.7	.6	4.0	4.1	.1
65 years and over	3.1	4.7	1.6	3.2	5.4	2.2	3.0	3.9	.9

¹ These estimates differ slightly from previously published 1993 averages because of the estimation procedure used.

² These differences may not equal the results obtained from comparing the values shown in the table because of independent rounding.

NOTE: Population estimates obtained from the two surveys will not always agree due to slight differences in estimating procedures.

EXHIBIT A. COMPARISON OF KEY EMPLOYMENT AND UNEMPLOYMENT QUESTIONS

CPS

1. What were you doing most of LAST WEEK -

(working or something else?)

(keeping house or something else?)

(going to school or something else?)

If answer indicates "with a job, but not at work" (either temporarily or on layoff), ask 2, and if 2 is "no" ask 4. If answer indicates "working," skip 2. All others, ask 2.

2. Did you do any work at all LAST WEEK, not counting work around the house? (Note: If farm or business operator in household, ask about unpaid work.)

3. Did you have a job or business from which you were temporarily absent or on layoff LAST WEEK?

If "no," ask 5. If "yes," ask 4.

4. Why were you absent from work LAST WEEK?

5. Have you been looking for work during the past 4 weeks?

If "yes," ask 6.

6. What have you been doing in the last 4 weeks to find work?

PARALLEL SURVEY

1. Does anyone in this household have a business or a farm?

2. LAST WEEK, did you do ANY work for (either pay (or profit)?)

Parentheticals in question filled in if anyone in the household has a business or farm.

If 1 is "yes" and 2 is "no," ask 3.

3. LAST WEEK, did you do any unpaid work in the family business or farm?

If 2 and 3 are both "no," ask 4.

4. LAST WEEK, (in addition to the business,) did you have a job, either full or part time? Include any job from which you were temporarily absent.

Parenthetical in question filled in if anyone in the household has a business or farm.

If 4 is "no," ask 5.

5. LAST WEEK, were you on layoff from a job?

If 5 is "yes," ask 6. If 5 is "no," ask 8.

6. Has your employer given you a date to return to work?

If "no," ask 7.

7. Have you been given any indication that you will be recalled to work within the next 6 months?

If "no," ask 8.

8. Have you been doing anything to find work during the last 4 weeks?

If "yes," ask 9.

9. What are all of the things you have done to find work during the last 4 weeks?

nesses and farms, where much of the previously "missing employment" seems to have taken place.

The series of questions on work in the former questionnaire may have also led to an overstatement of men's labor market activity, which was concentrated among men who were reported as having a job but absent from work. This is discussed in the section on characteristics of the employed.

Unemployment

The new questionnaire (including the new collection procedures) yielded an overall unemployment rate half a percentage point higher than the CPS, 7.3 percent compared with 6.8 percent for the period January to December 1993. But, as with the employment-population ratio, this statistic hides variations among worker groups. Namely, the higher incidence of unemployment was statistically significant only for women, workers 65 years and over, and teenagers. The difference for men (0.3 percentage point higher in the parallel survey) was close to being statistically significant.

The new questionnaire had a relatively large effect on women's unemployment rate, which was 7.1 percent in the parallel survey compared with 6.5 percent based on the CPS. Unemployment in the parallel survey increased for both white women and black women. Among age groups, teenagers and workers 65 years and over had higher jobless rates in the parallel survey. The difference for the 25-to-34-year-old category was also statistically significant.

There are several differences between the old paper questionnaire and the revised automated questionnaire which could help to explain the higher unemployment rates obtained by the parallel survey. Part of the explanation is consistent with that given in the section on the employed. That is, the new questionnaire has a broader approach to both work and jobsearch activities, due at least in part to different messages communicated at the beginning of the survey. This could help to explain the higher unemployment rates among women, teenagers, and older workers, who are more likely to be looking for informal employment.

Also, older people in the new questionnaire who initially report that they are retired are asked, "Do you want a job either full or part time?" If they answer yes, they are asked the questions on jobsearch for potential classification as unemployed. The "part-time" reference may prompt some older workers to recall that they have looked for such a job.

Another part of the explanation for the differences relates to persons initially reported to be temporarily absent from jobs. It appears that a larger proportion of persons are reported as temporarily absent with the new questionnaire but are *not* classified as such because, when asked to provide a reason for their absence, they report they were "on layoff" or they cite "slack work/business conditions."

Such responses disqualify persons from being classified as employed and move them into the layoff/jobseeking question series.

A third part of the explanation is the direct question on layoff. Research has indicated that the former question on layoff was frequently misunderstood. The new direct question on layoff and a revised question on the reasons for absence produce a larger proportion of persons reported (but not classified) as on layoff in the parallel survey than in the CPS. When the criterion of expectation of recall is applied, nearly 60 percent of those initially reported to be on layoff are eliminated from this category. They are then routed to the series of questions on jobseeking, and, if they have an active jobsearch (which about half do), and are available to work, they will be counted among the unemployed.

It appears that, with the revised questions, a number of women are initially reported to be on layoff, although they had no expectation of recall. They do, however, meet the requirement of active jobsearch and thus were counted as unemployed. It is unknown how such persons would have responded to the previous questionnaire. The new questions, however, communicate a different message at the start of the interview which may be prompting more women to report a layoff status and an active jobsearch, resulting in a higher unemployment rate.

Characteristics of the employed

Multiple jobholding. About 6.2 percent of all employed people held two or more jobs during the fourth quarter of 1993, according to findings from the parallel survey.⁶

As a result of the redesign, information on multiple jobholding is available each month; previously, this information had been obtained only in periodic supplements to the CPS. While truly comparable data are not available from the regular CPS, the most recent supplement, conducted in May 1991, also showed a multiple jobholding rate of 6.2 percent.

Hours of work. Hours actually worked were somewhat lower as estimated in the parallel survey compared with the CPS. Mean (average) hours for workers in nonagricultural industries were 38.9 per week with the new questionnaire, compared with 39.4 using the former questionnaire. The pattern held for both adult men and adult women. (See table 3.)

These findings reflect several changes to the questionnaire which were made to obtain more accurate information on hours worked per week. A recall strategy was embedded in the series of questions, asking first about

⁶ Due to processing problems, data on multiple jobholding are not available for the first 9 months of 1993. The data presented here are October-December 1993 averages.

Table 3. Persons at work in nonagricultural industries by actual hours of work, sex, and age using 1980 census-based population estimates from the CPS and the parallel survey, 1993 annual averages

Hours of work, sex, and age	Thousands of persons			Percent distribution		
	CPS ¹	Parallel survey	Differ- ence ²	CPS ¹	Parallel survey	Differ- ence ²
TOTAL						
Total at work	110,488	111,225	737	100.0	100.0	-
1 to 34 hours	26,954	29,563	2,609	24.4	26.6	2.2
1 to 14 hours	5,130	6,066	936	4.6	5.5	.8
15 to 29 hours	13,410	14,475	1,065	12.1	13.0	.9
30 to 34 hours	8,414	9,021	608	7.6	8.1	.5
35 hours and over	83,535	81,663	-1,872	75.6	73.4	-2.2
35 to 39 hours	7,176	8,534	1,357	6.5	7.7	1.2
40 hours	42,523	38,717	-3,806	38.5	34.8	-3.7
41 to 48 hours	11,528	13,684	2,157	10.4	12.3	1.9
49 to 59 hours	13,004	12,158	-845	11.8	10.9	-.8
60 hours and over	9,304	8,570	-735	8.4	7.7	-.7
Average hours, total at work	39.4	38.9	-.6	-	-	-
Men, 20 years and over						
Total at work	57,032	57,014	-18	100.0	100.0	-
1 to 34 hours	8,531	9,422	891	15.0	16.5	1.6
1 to 14 hours	1,396	1,564	168	2.4	2.7	.3
15 to 29 hours	3,946	4,251	305	6.9	7.5	.5
30 to 34 hours	3,190	3,607	418	5.6	6.3	.7
35 hours and over	48,501	47,592	-909	85.0	83.5	-1.6
35 to 39 hours	2,488	3,104	616	4.4	5.4	1.1
40 hours	22,777	21,033	-1,743	39.9	36.9	-3.0
41 to 48 hours	6,980	8,387	1,408	12.2	14.7	2.5
49 to 59 hours	9,161	8,513	-648	16.1	14.9	-1.1
60 hours and over	7,096	6,554	-542	12.4	11.5	-.9
Average hours, total at work	43.1	42.7	-.4	-	-	-
Women, 20 years and over						
Total at work	48,308	48,956	648	100.0	100.0	-
1 to 34 hours	14,681	16,311	1,630	30.4	33.3	2.9
1 to 14 hours	2,537	3,259	722	5.3	6.7	1.4
15 to 29 hours	7,416	8,106	690	15.4	16.6	1.2
30 to 34 hours	4,728	4,945	217	9.8	10.1	.3
35 hours and over	33,627	32,645	-983	69.6	66.7	-2.9
35 to 39 hours	4,390	5,119	729	9.1	10.5	1.4
40 hours	18,977	16,959	-2,017	39.3	34.6	-4.6
41 to 48 hours	4,383	5,080	697	9.1	10.4	1.3
49 to 59 hours	3,731	3,540	-191	7.7	7.2	-.5
60 hours and over	2,146	1,947	-200	4.4	4.0	-.5
Average hours, total at work	36.8	36.0	-.8	-	-	-
Both sexes, 16 to 19 years						
Total at work	5,148	5,256	108	100.0	100.0	-
1 to 34 hours	3,741	3,829	88	72.7	72.9	.2
1 to 14 hours	1,197	1,243	46	23.3	23.7	.4
15 to 29 hours	2,048	2,117	69	39.8	40.3	.5
30 to 34 hours	496	469	-27	9.6	8.9	-.7
35 hours and over	1,407	1,426	20	27.3	27.1	-.2
35 to 39 hours	298	311	12	5.8	5.9	.1
40 hours	770	725	-45	15.0	13.8	-1.2
41 to 48 hours	165	217	52	3.2	4.1	.9
49 to 59 hours	112	105	-6	2.2	2.0	-.2
60 hours and over	62	69	7	1.2	1.3	.1
Average hours, total at work	24.3	24.3	.0	-	-	-

¹ These estimates differ slightly from previously published 1993 averages because of the estimation procedure used.

² These differences may not equal the results obtained from comparing the values shown in the table because of independent rounding.

usual hours, then about any time taken off and extra hours worked in the reference week, and finally about total hours actually worked. And, as described earlier, the questions related to employment were reworded to capture work activities more fully, especially informal, intermittent, and part-time work. The more complete measurement of this type of work could help to lower the average number of hours worked.

The parallel survey found a higher proportion of workers at the lower end of the hours spectrum. For example, nonagricultural workers who actually worked less than 15 hours in the reference week accounted for 5.5 percent of persons at work in the parallel survey, compared with 4.6 percent in the CPS. Those working between 15 and 29 hours in the reference week comprised 13.0 percent of persons at work in the parallel survey, compared with 12.1 percent in the CPS.

The proportion of workers reporting a workweek of exactly 40 hours was lower in the parallel survey than in the CPS. With the memory aids embedded into the new questions, workers are better able to recall exceptions to their usual schedule, resulting in less clustering at precisely 40 hours.

Part-time employment. Some of the most closely watched measures derived from the CPS pertain to part-time employment. The proportion of employed people who usually work part time (less than 35 hours per week) was larger in the parallel survey (17.0 percent) than in the CPS (16.3 percent). The difference in part-time employment was relatively largest for adult women. (See table 4.)

Part time for economic reasons. The proportion of employed persons working part time for economic reasons was substantially lower in the parallel survey. The differences were observed for all major demographic groups but were relatively larger for teenagers. Overall, the parallel survey found that 4.2 percent of employed persons were working part time for economic reasons, compared with an estimate of 5.3 percent from the CPS. In terms of numbers of people, this translates into 5.0 million people as measured by the parallel survey, compared with 6.3 million as measured by the CPS, a difference of 21 percent.

The smaller number and proportion of workers classified as part time for economic reasons in the parallel survey were observed among both those who usually work part time and those who usually work full time. Among those who usually work part time, the difference was more pronounced for adult women and teenagers. The decline among those who usually work full time did not differ significantly by demographic group.

The relatively large drop in the proportion of workers who usually work part time for economic reasons stems from two new criteria, formerly inferred, that are now explicit in the new questionnaire: Persons usually working part time are asked if they want to work full time and also

if they were available to accept a full-time job during the reference week. (For persons who usually work full time, these criteria are assumed to be met.) The first criterion — desire for full-time work — had a particularly large impact in reducing the estimate of economic part-time workers, while the second — availability — disqualified relatively few people. To provide a context for respondents, the question asking why those who want to work full time were working part time was reworded to provide examples of both economic and noneconomic reasons for working part time.

The difference in the proportion of full-time workers (as defined by their usual status) who were part time for economic reasons in the reference week can be at least partially traced to several changes in the questionnaire. For example, the parallel survey contains separate questions for people who usually and actually worked part time, reducing the incidence of coding errors. Also to obtain more accurate coding, the labels of some of the noneconomic response categories were expanded. For example, “own illness” was changed to “own illness/injury/medical appointment,” and “on vacation” was changed to “vacation/personal day.”

Part time for noneconomic reasons. The proportion of employed persons who worked part time for noneconomic reasons was markedly higher in the parallel survey (21.4 percent) compared with the CPS (18.0 percent). All major demographic groups showed a similar pattern.

These workers can be divided into two types — either they usually work full time or usually work part time. It is not uncommon for workers who are usually full time to have worked part time in the reference week, having taken time off for reasons such as vacation, holiday, or illness. The higher proportion of these workers in the parallel survey — 7.3 percent of all employed people, compared with 5.3 percent in the CPS — reflects the more precise information regarding hours at work obtained from the recall strategy embedded in the new questions. It appears that the new questionnaire is indeed effective in prompting workers to remember exceptions to their usual schedule.

Most of the people who were part time for noneconomic reasons in the reference week usually work part time, often to give them more time for school, family, or other activities. The parallel survey also obtained a higher estimate of these workers — 14.1 versus 12.7 percent. This differential reflects in part the new questionnaire's more stringent requirements to be classified as economic part time.

Temporary absences. While most employed people are actually at work in the reference week, some are found to be temporarily absent from their jobs for the full week. The proportion of employed persons classified as temporarily absent in the parallel survey (4.5 percent) was lower than the proportion found in the CPS (5.0 percent). This pattern held true for all major demographic groups except teenagers.

Table 4. Employed persons by usual full- or part-time status, sex, and age using 1980 census-based population estimates from the CPS and the parallel survey, 1993 annual averages

Sex, age, and full- or part-time status	Thousands of persons			Percent distribution		
	CPS ¹	Parallel survey	Difference ²	CPS ¹	Parallel survey	Difference ²
TOTAL						
Total employed	119,389	119,606	217	100.0	100.0	-
At work	113,438	114,201	763	95.0	95.5	.5
35 hours or more	85,617	83,610	-2,007	71.7	69.9	-1.8
1 to 34 hours	27,821	30,591	2,770	23.3	25.6	2.3
Part time for economic reasons	6,325	5,028	-1,297	5.3	4.2	-1.1
Usually work full time	1,988	1,501	-487	1.7	1.3	-.4
Usually work part time	4,337	3,527	-810	3.6	2.9	-.7
Part time for noneconomic reasons ..	21,496	25,563	4,067	18.0	21.4	3.4
Usually work full time	6,325	8,674	2,349	5.3	7.3	2.0
Usually work part time	15,171	16,889	1,718	12.7	14.1	1.4
With a job but not at work	5,951	5,405	-546	5.0	4.5	-.5
Men, 20 years and over						
Total employed	61,884	61,284	-600	100.0	100.0	-
At work	59,198	59,065	-133	95.7	96.3	.6
35 hours or more	50,162	49,168	-994	81.1	80.2	-.8
1 to 34 hours	9,036	9,897	861	14.6	16.1	1.5
Part time for economic reasons	2,720	2,225	-495	4.4	3.6	-.8
Usually work full time	1,140	849	-291	1.8	1.4	-.5
Usually work part time	1,580	1,376	-204	2.6	2.2	-.3
Part time for noneconomic reasons ..	6,316	7,672	1,356	10.2	12.5	2.3
Usually work full time	3,006	4,187	1,181	4.9	6.8	2.0
Usually work part time	3,310	3,485	175	5.3	5.7	.3
With a job but not at work	2,686	2,218	-468	4.3	3.6	-.7
Women, 20 years and over						
Total employed	51,966	52,603	637	100.0	100.0	-
At work	48,885	49,643	758	94.1	94.4	.3
35 hours or more	33,967	32,957	-1,010	65.4	62.7	-2.7
1 to 34 hours	14,918	16,686	1,768	28.7	31.7	3.0
Part time for economic reasons	2,983	2,371	-612	5.7	4.5	-1.2
Usually work full time	744	574	-170	1.4	1.1	-.3
Usually work part time	2,239	1,797	-442	4.3	3.4	-.9
Part time for noneconomic reasons ..	11,935	14,315	2,380	23.0	27.2	4.2
Usually work full time	3,169	4,292	1,123	6.1	8.2	2.1
Usually work part time	8,766	10,023	1,257	16.9	19.1	2.2
With a job but not at work	3,082	2,960	-122	5.9	5.6	-.3
Both sexes, 16 to 19 years						
Total employed	5,540	5,719	179	100.0	100.0	-
At work	5,357	5,492	135	96.7	96.0	-.7
35 hours or more	1,488	1,485	-3	26.9	26.0	-.9
1 to 34 hours	3,869	4,007	138	69.8	70.0	.2
Part time for economic reasons	623	430	-193	11.2	7.5	-3.7
Usually work full time	104	77	-27	1.9	1.3	-.5
Usually work part time	519	353	-166	9.4	6.2	-3.2
Part time for noneconomic reasons ..	3,246	3,577	331	58.6	62.5	3.9
Usually work full time	150	195	45	2.7	3.4	.7
Usually work part time	3,096	3,382	286	55.9	59.1	3.2
With a job but not at work	183	227	44	3.3	4.0	.7

¹ These estimates differ slightly from previously published 1993 averages because of the estimation procedure used.

² These differences may not equal the results obtained from comparing the values shown in the table because of independent rounding.

The new questionnaire appears to result in more accurate classification of workers who are temporarily absent. This may reflect several changes—the elimination of the major-activity question, the inclusion of separate direct questions on temporary absence and on layoff, and the re-vamping of the question on the reason for absences. Regarding the major-activity question in the former questionnaire, some responses may have given interviewers the impression that those respondents had a job from which they were absent, when in fact they did not have a job at all. Also, the direct questions on layoff in the new questionnaire allow some people to be properly classified as unemployed or not in the labor force, rather than being erroneously counted as absent from a job.

To emphasize the important role played by the series of questions on temporary absence, it is estimated that most of the drop in men's employment level in the parallel survey was attributed to a lower estimate for persons temporarily absent. The other category of employed persons, those at work, was essentially the same for men on both surveys.

Class of worker. In the aggregate, the distribution of employed persons by their "class-of-worker" status differed little between the two surveys. Wage and salary workers comprised about 88 percent of all workers in both the CPS and the parallel survey. This classification is further broken down into private and government workers. Again, there were no significant differences between the surveys, with the private sector accounting for about 73 percent and the government sector accounting for about 15 percent of all employed persons. Nearly all of the remaining 12 percent were classified as self-employed on both surveys. (See table 5.)

Only a small fraction of all workers were classified as unpaid family workers in the CPS, and the proportion was even smaller in the parallel survey. This may seem surprising, given the changes to the questionnaire designed to identify workers in family businesses. In fact, the new questions were successful; however, many persons reported as working in family businesses were also found to have received pay or profit from the business and thus were classified as wage and salary workers. Even in agriculture, where unpaid family workers are far more prevalent than in most other industries, the new questions resulted in a smaller proportion of such workers. In sum, the redesign's efforts to more accurately identify workers in family businesses resulted in more wage and salary workers compared with the former procedures.

Looking at the class-of-worker data by gender, the new series of questions obtained quite different results for men and women. For men, the parallel survey had a higher proportion in wage and salary work and a smaller proportion in self-employment. For women, the findings were just the reverse—a higher proportion of self-employed and a lower

proportion of wage and salary workers in the parallel survey. The level of self-employment among women was 4.8 million in the parallel survey, compared with 4.1 million in the CPS, which was equal to most of the increase in female employment in the parallel survey. Thus, the improved questions on work activity and the addition of questions on work in a family business resulted in more women being properly classified as self-employed.

Occupation and industry. The distribution of employed persons according to the occupation and industry of their job shifted somewhat under the new questionnaire. (See table 6.) For men, the parallel survey had a larger proportion employed in the managerial, professional, and technical categories, and a smaller proportion in sales occupations. The data suggest that the large decrease in the number of men who were employed but absent from their jobs in the parallel survey may have reduced their representation in occupations (such as sales) in which employment arrangements may be more tenuous.

Looking at the industry distributions for men, the parallel survey had a higher proportion in manufacturing and educational services and a smaller proportion in retail trade, mining, public administration, and private households. As a partial explanation of these differences, it is hypothesized that the classification of fewer men as temporarily absent from work as a result of the revised questionnaire reduces their representation in industries with more informal or irregular employment, such as trade and private households.

Among women, a higher proportion in the parallel survey were working in managerial and farming occupations. This is consistent with evidence presented earlier that the new questionnaire is measuring more women working in family businesses or farms and in their own businesses. A smaller proportion were in administrative support and private household positions.

The distribution by industry for women showed that only one industry, agriculture, had a higher proportion of workers in the parallel survey than in the CPS. (Evidence suggests that the former survey may have underestimated employment of women in agriculture by 25 percent.) Proportions as measured by the parallel survey were lower in public administration and private households.

Earnings. Median weekly earnings of full-time wage and salary workers were somewhat higher under the revised questionnaire (\$462) than under the CPS (\$450). The parallel survey found higher median earnings for men but no difference in earnings for women. Among part-time workers, total earnings and those for men were also slightly higher in the parallel survey. (See table 7.)

Both in the parallel survey and in the full CPS, estimates of earnings are based on data collected from one-quarter of the sample each month. It should be noted that due to the

Table 5. Employed persons by class of worker and sex using 1980 census-based population estimates from the CPS and the parallel survey, 1993 annual averages

Class of worker and sex	Thousands of persons			Percent distribution		
	CPS ¹	Parallel survey	Difference ²	CPS ¹	Parallel survey	Difference ²
TOTAL						
Total employed	119,389	119,606	217	100.0	100.0	-
Agriculture	3,080	3,175	95	2.6	2.7	.1
Wage and salary workers	1,488	1,487	-1	1.2	1.2	.0
Private industries	1,476	1,439	-37	1.2	1.2	.0
Government	12	48	36	(³)	(³)	-
Self-employed workers	1,488	1,632	144	1.2	1.4	.1
Incorporated	159	172	13	.1	.1	.0
Other	1,328	1,460	132	1.1	1.2	.1
Unpaid family workers	105	56	-49	.1	(³)	-
Nonagricultural industries	116,309	116,432	123	97.4	97.3	-.1
Wage and salary workers	103,703	103,897	194	86.9	86.9	.0
Private industries	85,194	85,835	641	71.4	71.8	.4
Government	18,509	18,062	-447	15.5	15.1	-.4
Self-employed workers	12,397	12,369	-28	10.4	10.3	.0
Incorporated	3,413	3,759	346	2.9	3.1	.3
Other	8,984	8,611	-373	7.5	7.2	-.3
Unpaid family workers	208	166	-42	.2	.1	-.0
Men						
Total employed	64,727	64,200	-527	100.0	100.0	-
Agriculture	2,444	2,366	-78	3.8	3.7	-.1
Wage and salary workers	1,149	1,184	35	1.8	1.8	.1
Private industries	1,142	1,165	23	1.8	1.8	.1
Government	8	18	10	(³)	(³)	-
Self-employed workers	1,257	1,158	-99	1.9	1.8	-.1
Incorporated	132	113	-19	.2	.2	-
Other	1,125	1,045	-80	1.7	1.6	-.1
Unpaid family workers	37	24	-13	.1	(³)	-
Nonagricultural industries	62,284	61,835	-449	96.2	96.3	.1
Wage and salary workers	53,685	53,758	73	82.9	83.7	.8
Private industries	45,297	45,480	183	70.0	70.8	.9
Government	8,387	8,278	-109	13.0	12.9	-.1
Self-employed workers	8,554	8,022	-532	13.2	12.5	-.7
Incorporated	2,656	2,703	47	4.1	4.2	.1
Other	5,898	5,319	-579	9.1	8.3	-.8
Unpaid family workers	45	54	9	.1	.1	.0
Women						
Total employed	54,662	55,406	744	100.0	100.0	-
Agriculture	636	808	172	1.2	1.5	.3
Wage and salary workers	338	303	-35	.6	.5	-.1
Private industries	334	274	-60	.6	.5	-.1
Government	4	29	25	(³)	.1	-
Self-employed workers	231	474	243	.4	.9	.4
Incorporated	28	59	31	.1	.1	-.1
Other	203	415	212	.4	.7	.4
Unpaid family workers	67	31	-36	.1	.1	-.1
Nonagricultural industries	54,025	54,597	572	98.8	98.5	-.3
Wage and salary workers	50,019	50,139	120	91.5	90.5	-1.0
Private industries	39,897	40,355	458	73.0	72.8	-.2
Government	10,122	9,784	-338	18.5	17.7	-.9
Self-employed workers	3,844	4,347	503	7.0	7.8	.8
Incorporated	757	1,056	299	1.4	1.9	.5
Other	3,087	3,291	204	5.6	5.9	.3
Unpaid family workers	163	111	-52	.3	.2	-.1

¹ These estimates differ slightly from previously published 1993 averages because of the estimation procedure used.

² These differences may not equal the results obtained from compar-

ing the values shown in the table because of independent rounding.
³ Less than 0.05 percent.

Table 6. Employed persons by occupation, industry, and sex using 1980 census-based population estimates from the CPS and the parallel survey, 1993 annual averages

(Percent distribution)

Occupation and industry	Total			Men			Women		
	CPS ¹	Parallel survey	Difference ²	CPS ²	Parallel survey	Difference ²	CPS ¹	Parallel survey	Difference ²
OCCUPATION									
Managerial and professional specialty	27.1	28.2	1.1	26.1	27.3	1.2	28.4	29.2	0.8
Executive, administrative, and managerial ...	12.9	13.6	.7	13.8	14.3	.5	11.9	12.8	.9
Professional specialty	14.2	14.6	.4	12.3	13.0	.7	16.5	16.4	.0
Technical, sales, and administrative support ...	30.8	30.5	-.3	20.5	20.3	.2	42.9	42.3	-.7
Technicians and related support	3.4	3.6	.2	3.1	3.5	.4	3.7	3.8	.1
Sales occupations	11.9	11.8	-.1	11.4	11.0	-.4	12.6	12.7	.2
Administrative support, including clerical	15.5	15.1	-.4	6.0	5.9	-.1	26.7	25.8	-.9
Service occupations	13.9	13.5	-.4	10.3	9.9	-.5	18.0	17.7	-.3
Private households .....	.8	.7	-.1	.1	.1	.0	1.6	1.4	-.2
Protective service	1.8	1.7	-.1	2.8	2.6	-.1	.7	.6	-.1
Service, except private households and protective service	11.3	11.2	-.1	7.5	7.2	-.3	15.8	15.7	.0
Precision production, craft, and repair	11.2	10.9	-.3	18.9	18.6	-.3	2.1	2.0	-.1
Operators, fabricators, and laborers	14.3	14.1	-.2	19.9	19.7	-.2	7.7	7.7	.0
Machine operators, assemblers, and inspectors	6.2	6.3	.1	7.0	7.1	.1	5.2	5.4	.2
Transportation and material moving occupations	4.2	4.0	-.2	7.0	6.8	-.2	.9	.7	-.1
Handlers, equipment cleaners, helpers, and laborers	3.9	3.8	-.1	5.8	5.7	-.1	1.5	1.5	-.1
Farming, forestry, and fishing	2.8	2.8	.0	4.4	4.3	-.1	.9	1.2	.2
INDUSTRY									
Agriculture	2.6	2.7	.1	3.8	3.7	-.1	1.2	1.5	.3
Mining .....	.6	.4	-.2	.9	.6	-.2	.2	.1	-.1
Construction	6.1	5.9	-.2	10.3	9.9	-.4	1.1	1.2	.1
Manufacturing	16.4	17.3	.9	20.5	21.9	1.4	11.6	12.0	.4
Durable goods	9.5	10.1	.6	12.8	13.9	1.1	5.5	5.7	.2
Nondurable goods	6.9	7.2	.3	7.6	8.0	.4	6.0	6.2	.2
Transportation and public utilities	7.1	6.9	-.2	9.4	9.2	-.2	4.4	4.2	-.3
Wholesale and retail trade	20.7	20.5	-.2	20.4	19.8	-.5	21.2	21.3	.1
Wholesale trade	3.9	4.0	.1	5.1	5.2	.1	2.4	2.6	.2
Retail trade	16.9	16.5	-.3	15.3	14.7	-.6	18.8	18.7	-.1
Finance, insurance, and real estate	6.7	6.6	-.1	5.1	5.1	.0	8.5	8.4	-.1
Services	35.0	35.3	.3	24.7	25.0	.3	47.3	47.2	-.1
Private households .....	.9	.8	-.1	.2	.1	-.1	1.8	1.6	-.2
Other service industries	34.1	34.5	.4	24.5	24.9	.4	45.5	45.7	.2
Educational services	7.9	8.3	.3	4.7	5.2	.5	11.8	11.8	.0
Public administration	4.8	4.5	-.4	5.1	4.8	-.3	4.5	4.1	-.4

¹ These distributions differ slightly from previously published 1993 averages because of the estimation procedure used.

² These differences may not equal the results obtained from comparing the values shown in the table because of independent rounding.

extremely small sample on which earnings data from the parallel survey are based, these data are subject to even greater variability than other data from the parallel survey.

In the new questionnaire, respondents are asked to report their earnings in the time frame that is easiest for them, rather than forcing them to report a weekly amount as had been the case. Results from the parallel survey indicate that, when given a choice, only a relatively small proportion of respondents chose to report on a weekly basis.

The breakdown of respondents' preferences in reporting earnings was:

Hourly	38.4 percent
Annually	21.8
Weekly	21.3
Biweekly	7.4
Monthly	6.4
Twice a month	2.4
Other	2.3

For minimum wage studies, information is also collected on the number and wage rate of persons who are paid at hourly rates. In the revised questionnaire, individuals who choose to report their earnings on a basis other than hourly are asked directly whether they were paid at an hourly rate. If so, they are asked what their hourly rate of pay is. In the parallel survey, 61 percent of workers reported being paid by the hour, somewhat higher than the 59 percent reported in the CPS.⁷

Characteristics of the unemployed

The new questionnaire had a greater incidence of unemployment overall, with significantly higher rates for certain worker groups. This section explores the effect of the new procedures on selected characteristics of the unemployed, including persons on layoff, and reasons for and duration of unemployment.

On layoff. As described earlier, the series on workers on layoff was revamped to obtain more accurate information, particularly relating to the expectation of recall. As measured in the parallel survey, the percentage of the unemployed accounted for by persons on layoff was 12.8 percent, essentially the same as the 12.5 percent obtained from the CPS. (See table 8.)

The proportion of unemployed men who were on layoff was not statistically significant between surveys. On the other hand, the proportion of unemployed women who were on layoff was higher in the parallel survey compared with the CPS. For men, there appeared to have been several offsetting effects. In the parallel survey, people were asked a direct question — “LAST WEEK, were you on layoff from a job?” — and more were initially reported to be on layoff. But when the questions on expectations of recall were posed, some did not meet these criteria. As a result, the number of men on layoff ended up to be about the same under the old and new questionnaires.

For women, these offsetting effects are also present, but in addition it is suspected that other changes to the questionnaire, such as the elimination of the initial labor force question, the specificity of the work for pay question and the direct layoff question, prompted more women to report labor market activities. Greater reporting of such activities by women could contribute to the higher proportion of unemployed women on layoff in the parallel survey.

Those who are initially reported to be on layoff, but do not meet the expectation of recall, are asked the series of questions on jobsearch, and most are found to have looked for work within the prior 4-week period. If so, they are still counted as unemployed, but as “jobseekers,” rather than persons on layoff.

Duration of unemployment. Measures of both mean and median duration were little different between the old and

new procedures. The mean duration in the parallel survey was 19.7 weeks, compared with 18.1 weeks in the CPS, and the median duration was 9 weeks, compared with 8 weeks.

Several changes were made to the unemployment duration measure, including one which allowed respondents to report duration in weeks, months, or years, as they prefer, rather than only in weeks, as in the former questionnaire. This change was designed to make it easier for the longer-term unemployed to report their length of jobsearch, and, in fact, the parallel survey obtained relatively more reports of longer-term joblessness.

Another change involved dependent interviewing. As mentioned in the section on computerization, duration of unemployment is automatically updated by either 4 or 5 weeks each month (depending on the number of weeks between surveys) as long as a person continues to be unemployed.

Reasons for unemployment. The unemployed are classified by their activity immediately prior to becoming unemployed. These “reasons for unemployment” include having lost a job (including persons on layoff), having left a job to seek a new one, or being either new entrants or reentrants to the labor force. Several changes to the questionnaire — both definitional and operational — resulted in differences in the way the unemployed are distributed among these categories.

There was a higher proportion of the unemployed counted as reentrants in the parallel survey (32.7 percent) compared with the CPS (24.6 percent) and a smaller proportion of new entrants (6.7 versus 10.2 percent). These estimates were affected by the increase in the overall number of unemployed, some of whom were coming from outside the labor force and increasing the ranks of reentrants. Also, the seemingly minor modification to the definition of entrants, which was broadened to take into account any type of job, and not just a full-time job of at least 2 weeks duration, affected the estimates of new entrants and reentrants.

Table 7. Median weekly earnings of full- and part-time wage and salary workers by sex using 1980 census-based population estimates from the CPS and the parallel survey, 1993 annual averages

(In current dollars)

Category	CPS ¹	Parallel survey	Difference
Full-time workers			
Total	\$450	\$462	\$12
Men	509	529	20
Women	400	400	-
Part-time workers			
Total	130	133	3
Men	120	127	7
Women	136	135	-1

⁷ These estimates pertaining to hourly paid workers are based on the average of the 6 months from September 1992 to February 1993.

¹ These estimates differ slightly from previously published 1993 averages because of the estimation procedures used.

Table 8. Unemployed persons by reason for and duration of unemployment using 1980 census-based population estimates from the CPS and the parallel survey, 1993 annual averages

Reason and duration	Thousands of persons			Percent distribution		
	CPS ¹	Parallel survey	Difference ²	CPS ¹	Parallel survey	Difference ²
REASON						
Total unemployed	8,714	9,358	644	100.0	100.0	-
Job losers	4,731	3,820	-911	54.3	40.8	-13.5
On layoff	1,091	1,202	111	12.5	12.8	.3
Other job losers	3,640	2,618	-1,022	41.8	28.0	-13.8
Persons who completed temporary jobs	(³)	985	(³)	(³)	10.5	(³)
Job leavers	949	861	-88	10.9	9.2	-1.7
Reentrants	2,143	3,064	921	24.6	32.7	8.1
New entrants	890	629	-261	10.2	6.7	-3.5
DURATION						
Less than 5 weeks	3,138	2,801	-337	36.0	29.9	-6.1
5 to 14 weeks	2,562	2,968	406	29.4	31.7	2.3
15 weeks and over	3,015	3,590	575	34.6	38.4	3.8
15 to 26 weeks	1,250	1,476	226	14.3	15.8	1.5
27 weeks and over	1,765	2,114	349	20.3	22.6	2.3
27 to 51 weeks	747	899	152	8.6	9.6	1.0
52 weeks and over	1,018	1,215	197	11.7	13.0	1.3
Average (mean) duration, in weeks	18.1	19.7	1.6	-	-	-
Median duration, in weeks	8.0	9.0	1.0	-	-	-

¹ These estimates differ slightly from previously published 1993 averages because of the estimation procedure used.

² These differences may not equal the results obtained from compar-

ing the values shown in the table because of independent rounding.
³ Not available.

“Completed temporary job” was added as a major reason for unemployment category, based on a revised question posed to jobseekers who were working before they started looking for work: “Did you lose or quit that job, or was it a temporary job that ended?” Under the old questionnaire, most people who became unemployed when their temporary job ended were classified as “job losers.” Under the new procedures, persons who completed temporary jobs accounted for about 11 percent of all unemployed. The job loser proportion was lowered by close to this magnitude.

Other changes. As discussed in the section on major questionnaire changes, the distinction between active and passive jobsearch methods is a crucial one, and, in the new questionnaire, response categories were reordered and expanded for greater accuracy in classifying responses. Two passive methods—“looked at ads” and “attended job training programs/courses”—were added to the list, as was a category called “other passive.” In the past, interviewers were instructed to code passive jobsearch methods as “nothing” and other active methods as “other,” but there was evidence that some passive methods were being miscoded as “other.” Also, it is quite possible that some active jobsearches were miscoded as “nothing.”

The question on whether a person looked for a job during the last 4 weeks was reworded to convey a broader concept of jobsearch activity (see exhibit A), and followup questions were added to obtain a full accounting of the jobsearch methods used. The parallel survey yielded a somewhat higher proportion of individuals who gave passive reasons only—4.4 versus 3.2 percent of everyone receiving the jobsearch question.

Labor force

The labor force participation rate, that is, the percentage of the population that is either employed or unemployed, was higher in the parallel survey than in the CPS. For all workers, the labor force participation rate using the new questions was 66.6 percent, compared with 66.2 percent in the CPS. (See tables 1 and 2.)

Women’s participation rate was 59.1 percent in the parallel survey, compared with 57.9 percent in the CPS. Teenagers and older workers also had higher participation rates in the parallel survey than in the CPS. The labor force participation rate for men, however, was somewhat lower in the parallel survey—74.8 versus 75.2 percent.

To explain the differences in participation rates among certain demographic groups, the arguments used to explain variations in employment and unemployment apply.

That is, the new questionnaire generally obtains more labor force activity, especially for those worker groups which have traditionally had more part-time or irregular participation.

Not in the labor force

Given the greater proportion of labor force participants in the parallel survey compared with the CPS, it follows that the percentage of the population that was out of the labor force was lower in the parallel survey, 33.4 percent compared with 33.8 percent. The "not in the labor force" group is large and diverse, including retirees, homemakers, students, the ill and disabled, and all others who are neither working nor looking for work.

Discouraged workers. Within the "all others" category is a group of particular interest—discouraged workers. These are people who want jobs but have not searched for work in the prior month because they believe there are no jobs to be found or none for which they could qualify.

As discussed in the section on definitional changes, the definition of discouraged workers was made more restrictive by requiring some search activity within the prior year and availability to work. These two new criteria, especially the former, contributed to a substantially reduced number of discouraged workers in the parallel survey compared with the CPS. (See table 9.)

Most, but not all, of the reduction in discouragement is due to the change in definition, but other changes in the questionnaire played a role also. Even when estimates based on the former definition were compared, the parallel survey estimates remained lower than those from the CPS.

Data on a larger group of persons outside the labor force, one that includes discouraged workers as well as persons who desire work but give other reasons for not searching (such as child-care problems, family responsibilities, school, or transportation problems) may also be relevant for analysis. This group is made up of persons who want a job, are available to work, and have looked for work within the past year. They constitute 2.1 percent of the not-in-the-labor-force group in the parallel survey. There is no comparable figure for the CPS, since the old questionnaire did not ask about recency of jobsearch for those not in the labor force.

Retired and disabled persons. One of the most frequent complaints from respondents and interviewers about the former questionnaire was the burden it placed on retired and disabled people, who every month were asked a series of questions on labor force activity which had no relevance to their situation. In the new questionnaire, several changes were made to address this problem. In the case of retirees 50 years and over, the first month they volunteer that they are retired they are skipped to a question asking whether they currently want a job (either full or part time). If they do not want a job, the interview is ended. In subse-

quent months, through dependent interviewing, they are asked if they did any work in the last week. If not, it is verified that they are still retired and do not want a job. Nearly all of the people who were identified as retired in previous months verify that they are still retired in the subsequent month.

Similar changes were made to reduce the burden for those who volunteer that they are disabled or unable to work. (The latter category is intended to cover people with a temporary illness or injury who might not perceive themselves as disabled, a term which may have a more permanent connotation.) Individuals who are reported as disabled or unable to work are asked a followup question to determine if they will be able to do any gainful work in the next 6 months. If they won't, the interview is ended. In subsequent months, they are asked if they worked in the prior week. If not, they are asked to simply verify their previous month's status as disabled or unable to work.

It is important to be aware of the fact that the "shortcut" offered to older survey participants did not reduce the count of older persons who are active in the labor market. On the contrary, the parallel survey obtained a larger labor force among the older population than did the CPS. As explained in the sections on employment and unemployment, the new questions appeared to capture more part-time and irregular work, as well as more jobsearch for these types of work, resulting in higher estimates of labor force activity for several groups, including older workers.

It should also be noted that the response categories of retired and disabled were intended merely to reduce the burden of participating in the survey, not to provide a complete count of retired or disabled persons. Such classi-

Table 9. Discouraged workers by sex and age using 1980 census-based population estimates from the CPS and the parallel survey, 1993 annual averages

(In thousands)

Category	CPS ¹	Parallel survey	Difference ²
Not in labor force, total ..	65,447	64,585	-862
Discouraged workers:			
Total	1,127	424	-703
Men	523	221	-302
Women	604	204	-400
16 to 24 years	222	114	-108
Men	120	67	-53
Women	102	47	-55
25 years and over	905	311	-594
Men	404	154	-250
Women	502	157	-345

¹ These estimates differ slightly from previously published 1993 averages because of the estimation procedure used.

² These differences may not equal the results obtained from comparing the values shown in the table because of independent rounding.

fications in the survey depend strictly on individuals' volunteering the information. No attempt is made to determine if those who say they are retired ever worked at a paying job or met any other specific criteria. Moreover, persons active in the labor force market who are also retired from previous careers or disabled are classified as employed or unemployed rather than as not in the labor force (retired or disabled).

Historical Comparability

The new questionnaire and mode of data collection will result in changes for most estimates. Examination of the parallel survey data has helped quantify the magnitude of these differences and identify their possible causes. BLS will not, however, use the parallel survey data to reissue official estimates. Instead, BLS will provide estimates and suggestions in the form of research series and publications, in order to aid individuals who examine CPS data historically.

Some of the techniques being investigated for use in the construction of historical research series include the imposition of old definitions on the data collected beginning in January 1994, construction of new definitions with data collected prior to January 1994, the use of measurement error models to explore the structural relationship between the CPS and the parallel survey data in order to predict what the CPS estimates would have been had the new procedures been used prior to January 1994, the exploration of geographic variation to gain insight into the effects of the new questionnaire and procedures at different levels of unemployment, and the tracking of the CPS and parallel survey data with other concurrent measures of economic activity.

Considerable analysis of the aggregate unemployment rate has already been completed and is available from BLS upon request. Work on other labor market series will be coming out over the next 12 to 18 months.⁸

Also for comparability, BLS and the Bureau of the Census will, for a period, continue to conduct the "old CPS"—that is, with the old questionnaire and paper and pencil procedure, using the 12,000 household sample in the 1992-93 parallel survey. Current plans call for data from this second parallel survey to be made available in July 1994 after the effects of switching respondents and interviewers from the automated survey to the paper survey have been investigated. It is important for data users and the public to know that data from the second parallel survey are being collected for the purposes of historical com-

parisons only. The official unemployment rate estimates will continue to be derived from the 60,000 household sample that, as of January 1994, is administered with the new automated questionnaire. Given its small sample size, estimates from the second parallel survey will have a great deal of variability and thus reduced reliability. Specifically, the standard error on a 3-month national unemployment rate from the 12,000 household second parallel survey will be more than twice as large as the standard error from the 60,000 household sample. To put this in perspective, data from the second parallel survey would have to be aggregated together for more than a year to obtain a level of variability as small as that obtained for 1 month of CPS data collected from the 60,000 household sample.

Introduction of 1990 Census-Based Population Controls

Derivation of 1990 census-based population controls, with adjustment for net census undercoverage

Beginning with the CPS estimates for January 1994, the independent national population controls used for the age-sex-race groups in the second-stage estimation procedure are being prepared by projecting forward the resident population as enumerated on April 1, 1990. Also, for the first time, estimates of the decennial census undercount, obtained from the Post Enumeration Survey (PES), are being added to the population controls.

Current month CPS estimates of the population are adjusted to agree with independent population controls. These controls are developed from a variety of sources, as described below. In the second-stage estimation procedure, the CPS sample weights are adjusted to ensure that sample-based estimates of population match the independent controls. The CPS population estimates are consistent with three sets of controls for:

- 1) 50 States and the District of Columbia
- 2) 14 Hispanic and 5 non-Hispanic age-sex groups
- 3) 66 white, 42 black, and 10 other race-age-sex groups

The first set of controls is restricted to the civilian noninstitutional population (16 years and over) and the remaining controls are developed for the civilian noninstitutional population plus noninstitutionalized children 15 years and under.

Since the population controls are derived primarily from non-survey data, they are assumed to contain no sampling error and thus do not contribute to the variance of the survey estimates. The second-stage ratio adjustment reduces the variability of those CPS estimates which are

⁸ For preliminary findings from this research, see two BLS Technical Reports: "What Would the Unemployment Rate Have Been Had the Redesignated Current Population Survey Been in Place From September 1992 to December 1993?: A Measurement Error Analysis," by Stephen M. Miller (Telephone 202-606-7379); and "Predicting the National Unemployment Rate That the 'Old' CPS Would Have Produced," by Richard Tiller (Telephone 202-606-6370).

correlated with the population — particularly estimates of employment and civilian labor force. At the same time, the adjustment partially corrects for CPS undercoverage of certain demographic groups, most notably Hispanics.

The 1990-based independent population controls are aggregates of more detailed population projections and are developed in a manner similar to earlier controls. Decennial census data and a variety of administrative and survey information are used to “age forward” estimates of the population to the current month, adjust for births and deaths, account for net migration, and then subtract the counts of Armed Forces and institutionalized persons. The population figures derived in this manner are projections based on administrative estimates, in contrast to the survey-based estimates of population obtained from the CPS. A description of the method used to make the 1990-based projections is given here.

The base figures for the resident population are derived from the 1990 decennial census, which has an official reference date of April 1, 1990. (The resident population includes all persons living in the United States, regardless of age, institutional status, or Armed Forces membership.) The age distribution is modified to correct for lags between the census date and the actual date of interview. The race distribution is modified to be consistent with OMB Directive 15, which stipulates that persons of unspecified race, mostly persons of Hispanic origin, are allocated to one of four race categories (white; black; American Indian, Eskimo, and Aleut; Asian and Pacific Islander). As a result of these changes, the base figures differ in age and race distribution from figures published by the Bureau of the Census in decennial census reports. For details, see *U.S. Bureau of the Census, Publication CPH-L-74, Age, Sex, Race, and Hispanic Origin Information from the 1990 Census: a Comparison of Census Results with Results where Age and Race have been Modified*. The Bureau of the Census also develops estimates of the April 1, 1990 population, independent of the 1990 census, using methods of demographic analysis. These estimates are also used in developing the population controls for CPS.

A myriad of data sources are tapped to measure post-censal change in the resident population due to births, deaths, and net migration. The National Center for Health Statistics (NCHS) provides the Census Bureau with data on births by sex, race, and Hispanic origin, although data for the latest month must be projected. Deaths by age, sex, and race are also obtained from NCHS, although the latest 6 months must be projected from a life table based on NCHS and Social Security Administration data. (The entire series of deaths for the Hispanic-origin population is projected.) Data on legal international immigration are obtained from the Immigration and Naturalization Service, the Office of Refugee Resettlement, and the Puerto Rican Planning Board (mostly projected between the latest July 1 to the current month, although preliminary data

are used to track refugee movements). Estimates of net undocumented immigration and permanent emigration of legal United States residents are modeled using the 1980 census and data from surveys and earlier censuses. The net movement of United States citizens from overseas to the United States is estimated based on data provided by the Department of Defense and the Office of Personnel Management (for military and civilian Federal Government personnel and their dependents). Other net migration is assumed to be zero (e.g., movement of foreign students and civilians not affiliated with the Federal Government). Most of the data are characterized as administrative, although some data for recent months must be projected. Thus, while the data are not subject to sampling error, they may contain nonsampling errors and bias.

The “inflation-deflation” method uses data from all these sources to generate the current month’s national (not State) projections of the resident population by age, sex, race, and ethnicity. The inflation-deflation method is a variant of the standard cohort-component method in which a population is aged forward a number of years taking into account births, deaths, and net migration by age. The cohort-component method is improved by factoring in estimates of the decennial census undercount, using the method of inflation-deflation.

The basic procedure may be described as follows. For each age-race-sex cell, the 1990 census population count is divided by the corresponding estimate of the resident population made by demographic analysis. The resulting inflation-deflation factors are estimates of census coverage rates. The factors are assumed to be time-invariant and associated with a specific age range. At the April 1 census date, the reciprocals of the factors are viewed as inflating the census figures up to the demographic analysis figures (although these are not always larger). The demographic analysis population estimate is aged forward to the current time. Estimates of births and net migration are added to each aged demographic analysis cell value, and estimates of deaths are subtracted. Each cell value is then multiplied by the inflation-deflation factor of its new age to deflate the value. While not correcting for net census undercount (which is both added and subtracted), the inflation-deflation procedure preserves the age pattern of the undercount. For more information on data sources and methods, see *Current Population Reports, Series P-25, Reports 1045 and 1095*, U.S. Bureau of the Census.

Let us consider an example. The 1990 factor of approximately 0.98 for white male 13-year-olds represents a 2-percent undercount in the census; the factor of 1.02 for white male 17-year-olds represents an overcount of 2 percent. The demographic analysis population estimate is aged forward to the current time. Each aged demographic analysis cell value is adjusted for births, deaths, and migration. Each cell value is then multiplied by the inflation-deflation factor for its new age to deflate the cell value to corre-

spond to the decennial census base. If the current reference date is April 1994, the 13-year-old white male cell value for the census is inflated by dividing by 0.98 and aged forward to 17 years of age. Deaths are subtracted, and net migration figures are added. The cell value is then multiplied by the 1.02 factor for the 17-year-old group, effectively giving the new cell estimate a census overcount of 2 percent.

To obtain the civilian noninstitutional population, which is the universe for the CPS, the resident population estimates for those 16 years of age and over are reduced by subtracting both Armed Forces personnel residing in the United States and civilians living in institutions. The number of resident Armed Forces personnel is estimated using data from the Department of Defense. The 1990 demographic census data on the institutional population are updated annually through a canvass of group quarters facilities. The estimates of the resident population for those under 16 years of age are also reduced by subtracting the institutional population.

As a last step, corrections for net census undercount are applied. The level of the 1990 decennial census undercount is calculated from the PES by sex-race-ethnicity for each year of age. The level of undercount is assumed to be invariant over time, and a matrix of undercounts is added to the population projections. The overall level of the projections is raised by the addition of this constant matrix, but month-to-month changes in the population are unaffected. See U.S. Bureau of the Census, *Assessment of Accuracy of Adjusted versus Unadjusted 1990 Census Base for use in Intercensal Estimates: Report of the Committee on Adjustment of Postcensal Estimates*. The undercount adjusted projections are aggregated to obtain the national age-sex-ethnicity and age-sex-race population controls used in second-stage ratio adjustment.

State projections of the civilian noninstitutional population age 16 and over are developed using similar procedures. Population estimates for States are produced by age and sex only (not race or Hispanic origin), and only the 16 and over totals are used in computing independent controls. Information from tax returns is used to estimate migration between States. For each State, the population 16 years and over is calculated for each July. The two most recent July figures give the latest estimate of year-to-year change. For the current month, a straight-line extrapolation of the change is made, with a new base series for the projection instituted each January. Counts of resident Armed Forces and the institutional population 16 years and older are subtracted to yield the civilian noninstitutional population. A pro rata adjustment ensures the additivity of the State projections to the projection for the national civilian noninstitutional population. For more information, see *Current Population Reports, Series P-25, Reports 957 and 1010*, Bureau of the Census.

Effect of 1990 census-based population controls on national estimates

CPS estimates of major labor force characteristics for the annual average of 1993, using both the 1980 census-based and adjusted 1990 census-based population controls, are presented in table 10. An undercount adjustment, based on results from the Census Bureau's Post Enumeration Survey (PES), is applied to the 1990-based controls. These averages are based on monthly CPS estimates using the final weights computed after second-stage estimation, which are neither composited nor seasonally adjusted. Under the new controls, the annual average estimate of the civilian noninstitutional population 16 years of age and over increased by about 1.3 million or 0.7 percent; the civilian labor force increased by about 1.1 million or 0.9 percent; and the level of unemployed increased by 0.2 million or 2.3 percent. The estimated totals using the 1990 population controls are considered to be more accurate, since these controls are projected from the April 1990 decennial census estimates and adjusted for undercount, whereas the 1980-based controls are projected from the 1980 decennial census estimates.

Under the new controls, the estimate of the annual average unemployment rate increased by 0.1 percentage point, primarily because of the large upward population adjustment for Hispanics (see below), who have an unemployment rate higher than the overall labor force. The labor force participation rate increased by 0.2 percentage point; and the employment-population ratio increased by 0.1 percentage point.

Levels increased for the civilian noninstitutional population and all labor force categories in all demographic groups shown in table 10. The most notable increases occurred for Hispanics. The change from the 1980- to 1990-based estimates of the population for this group was approximately 11 percent, with similar percentage increases in employed and unemployed levels. The difference between the 1980- and 1990-based estimates of the unemployment rate for all groups, except teenagers, was near the national average of 0.1 percentage point; for teenagers, there was negligible change in the unemployment rate.

Differences in labor force participation rates for adult men, blacks, and Hispanics were above the national average of 0.2 percentage point, while the differences for adult women, teenagers, and whites were below the national average. Differences in employment-population ratios also exceeded the national average of 0.1 percentage point for adult men, blacks, and Hispanics, while there were virtually no differences for adult women, teenagers, and whites.

Total effects due to changes in methods and population controls

Differences in labor force estimates using the old and

new questionnaires and data collection procedures were presented in the section on the redesign. These differences were calculated from 1993 annual average CPS and parallel survey estimates based on 1980 population controls and represent changes that can be attributed to the redesign. Changes in 1993 CPS estimates attributed to the new population controls were discussed in the previous section. This section presents a brief discussion of the combined effects of the new questionnaire and controls by comparing labor force estimates from the 1993 CPS, adjusted to 1980-based controls, with estimates from the parallel survey, adjusted to 1990-based controls.

Table 10 shows annual average estimates of major labor force characteristics for the 1993 CPS (1980-based) and the parallel survey (1990-based) and the differences between these estimates. The effects from the new methods and population controls are essentially additive. For example, the estimate of civilian labor force increased by 2 million; an increase of 1.1 million is due to the new population controls as reported in the previous section, and the remainder (0.9 million) is attributed to the survey redesign. Similarly, estimated total employment increased by 1.1 million under the new methods and population controls. Of this amount, about 0.9 million is due to the new controls and 0.2 million is contributed by the new questionnaire. Total unemployment increased by 0.9 million, of which 0.7 million is attributed to the redesign and 0.2 million is due to the new population controls.

The sum due to the population controls and the redesign may not equal the total effect in table 10, primarily because the new population controls affect CPS and parallel survey estimates differently. For example, the parallel survey yields a larger estimate of the number of unemployed; consequently, the effect due to the population controls would be slightly larger for that survey estimate. In addition, there are minor differences in the CPS and parallel survey second-stage estimation algorithms.

The breakdown of the total effect on various rates and ratios is given in table 11. The increase in the annual average unemployment rate is 0.6 percentage point; since the difference due to population controls is 0.1 percentage point, the contribution from the redesign is 0.5 percentage point. The labor force participation rate increased by a total of 0.6 percentage point, with 0.2 percentage point due to population controls. The total change in the employment-population ratio is 0.2 percentage point. The change attributed to the redesign is about half this amount, or 0.1 percentage point. Note that the total effect is not always the sum of two positive effects. For example, the total effect for adult men's employment-population ratio is -0.4 percentage point. The effect from population controls is 0.3 percentage point, and the questionnaire effect is -0.7 percentage point.

Table 11 also shows that for the unemployment rate the effects from new population controls are about 0.1 percentage point for all demographic groups except teenagers. The total effects vary from 0.3 percentage point for adult men to 1.6 percentage points for teenagers. The effects from population controls are fairly stable over time so the annual average is similar to the population control effect for a given month; however, as the redesign effects vary from month to month, especially for Hispanics and teenagers, the annual average redesign effect may not be a good indicator of difference for a single month.

The total change for labor force participation rates in table 11 varies from -0.2 percentage point for adult men to 2.3 percentage points for teenagers and Hispanics. The effect due to population controls is largest for blacks. For the employment-population ratio, the total changes are larger for teenagers (about 1 percentage point, all attributed to the redesign) and Hispanics (0.8 percentage point from the redesign and 0.3 percentage point due to population controls). Again, the estimates of the redesign effects for teenagers and Hispanics have a high degree of month-to-month variability, primarily due to small sample sizes. For adult men and blacks, the total effect on the employment-population ratio is a decline of about one-half of one percentage point.

Effect on State and Area Estimates

Beginning with estimates for January 1994, State and area labor market statistics produced by BLS in cooperation with State Employment Security Agencies also reflect a number of important changes. Consistent with changes affecting the national data, these include:

- implementation of the CPS redesign, and
- introduction of 1990 census-based population controls (adjusted for the estimated population undercount).

In addition, the State and area labor market estimates are affected by:

- improved time-series models for the smaller States, and
- incorporation of selected 1990 census data in the geographic definition of labor market areas and in local area labor force estimation.

Each of these topics will be explained in a detailed article which will appear in the March 1994 issue of this publication.

Further Information

Additional information is available on all of the subjects covered in this article. Requests should be sent to: U.S. Bureau of Labor Statistics, Room 4675, 2 Massachusetts Avenue NE., Washington, DC 20212-0001. The telephone number is (202) 606-6378; Fax (202) 606-6426.

Table 10. Total effect of the adjusted 1990 census-based population controls and the redesign on selected labor force groups, 1993 annual averages

(Numbers in thousands)

Employment status and group	CPS		Parallel survey		Effect ²		
	1980 census-based ¹	Adjusted 1990 census-based	1980 census-based	Adjusted 1990 census-based	Total (4-1)	Population controls (2-1)	Redesign (3-1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
TOTAL							
Civilian noninstitutional population	193,550	194,805	193,550	194,805	1,255	1,255	0
Civilian labor force	128,103	129,240	128,965	130,103	2,000	1,137	862
Percent of population	66.2	66.3	66.6	66.8	.6	.2	.4
Employed	119,389	120,323	119,606	120,511	1,112	934	217
Employment-population ratio	61.7	61.8	61.8	61.9	.2	.1	.1
Unemployed	8,714	8,917	9,359	9,592	878	203	645
Unemployment rate	6.8	6.9	7.3	7.4	.6	.1	.5
Men, 20 years and over							
Civilian noninstitutional population	85,906	86,290	85,850	86,236	329	384	-56
Civilian labor force	66,077	66,680	65,599	66,197	120	604	-478
Percent of population	76.9	77.3	76.4	76.8	-2	.4	-5
Employed	61,884	62,402	61,283	61,786	-97	519	-601
Employment-population ratio	72.0	72.3	71.4	71.7	-4	.3	-6
Unemployed	4,193	4,278	4,316	4,410	218	85	123
Unemployment rate	6.4	6.4	6.6	6.7	.3	.1	.2
Women, 20 years and over							
Civilian noninstitutional population	94,389	94,598	94,361	94,590	201	209	-28
Civilian labor force	55,184	55,379	56,162	56,363	1,178	195	978
Percent of population	58.5	58.5	59.5	59.6	1.1	.1	1.0
Employed	51,966	52,110	52,604	52,735	769	144	638
Employment-population ratio	55.1	55.1	55.8	55.8	.7	.0	.7
Unemployed	3,218	3,270	3,559	3,627	409	51	340
Unemployment rate	5.8	5.9	6.3	6.4	.6	.1	.5
Both sexes, 16 to 19 years							
Civilian noninstitutional population	13,254	13,916	13,338	13,979	725	662	84
Civilian labor force	6,842	7,180	7,203	7,543	701	338	361
Percent of population	51.6	51.6	54.0	54.0	2.3	.0	2.4
Employed	5,540	5,812	5,719	5,989	449	272	179
Employment-population ratio	41.8	41.8	42.9	42.8	1.1	.0	1.1
Unemployed	1,302	1,369	1,485	1,554	252	66	182
Unemployment rate	19.0	19.1	20.6	20.6	1.6	.0	1.6
White							
Civilian noninstitutional population	163,921	164,268	163,921	164,268	347	347	0
Civilian labor force	109,407	109,736	110,209	110,550	1,143	329	802
Percent of population	66.7	66.8	67.2	67.3	.6	.1	.5
Employed	102,891	103,114	103,267	103,482	592	223	376
Employment-population ratio	62.8	62.8	63.0	63.0	.2	.0	.2
Unemployed	6,516	6,622	6,942	7,067	551	106	426
Unemployment rate	6.0	6.0	6.3	6.4	.4	.1	.3
Black							
Civilian noninstitutional population	22,329	22,505	22,329	22,505	176	176	0
Civilian labor force	13,957	14,224	13,908	14,171	214	267	-49
Percent of population	62.5	63.2	62.3	63.0	.5	.7	-2
Employed	12,148	12,370	11,923	12,133	-14	222	-225
Employment-population ratio	54.4	55.0	53.4	53.9	-5	.6	-1.0
Unemployed	1,809	1,855	1,985	2,038	229	45	176
Unemployment rate	13.0	13.0	14.3	14.4	1.4	.1	1.3

Table 10. Total effect of the adjusted 1990 census-based population controls and the redesign on selected labor force groups, 1993 annual averages—Continued

(Numbers in thousands)

Employment status and group	CPS		Parallel survey		Effect ²		
	1980 census-based ¹	Adjusted 1990 census-based	1980 census-based	Adjusted 1990 census-based	Total (4-1)	Population controls (2-1)	Redesign (3-1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Hispanic origin							
Civilian noninstitutional population	15,753	17,505	15,753	17,505	1,752	1,752	0
Civilian labor force	10,385	11,611	10,666	11,933	1,548	1,226	281
Percent of population	65.9	66.3	67.7	68.2	2.3	.4	1.8
Employed	9,285	10,370	9,412	10,528	1,243	1,085	127
Employment-population ratio	58.9	59.2	59.7	60.1	1.2	.3	.8
Unemployed	1,100	1,241	1,254	1,405	305	141	155
Unemployment rate	10.6	10.7	11.8	11.8	1.2	.1	1.2

¹ These estimates differ slightly from previously published 1993 averages because of the estimation procedure used.

² Changes in column 5 minus those in column 6 do not necessarily equal those in column 7 primarily because the population controls affected the CPS and the parallel survey estimates differently. Moreover, population estimates obtained from the two surveys do not always

agree due to slight differences in estimating procedures.

NOTE: Detail for the above race and Hispanic-origin groups will not sum to totals because data for the "other races" group are not presented and Hispanics are included in both the white and black population groups.

Table 11. Total effect of adjusted 1990 census-based population controls and the redesign on selected labor force ratios and rates, 1993 annual averages.

(Percent)

Category	CPS 1980 census-based ¹	Parallel survey, adjusted 1990 census-based	Effect ²		
			Total	Population controls	Redesign
Labor force participation rates					
Total, 16 years and over	66.2	66.8	0.6	0.2	0.4
Men, 20 years and over	76.9	76.8	-.2	.4	-.5
Women, 20 years and over	58.5	59.6	1.1	.1	1.1
Both sexes, 16 to 19 years	51.6	54.0	2.3	.0	2.4
White	66.7	67.3	.6	.1	.5
Black	62.5	63.0	.5	.7	-.2
Hispanic origin	65.9	68.2	2.3	.4	1.8
Employment-population ratios					
Total, 16 years and over	61.7	61.9	.2	.1	.1
Men, 20 years and over	72.0	71.7	-.4	.3	-.7
Women, 20 years and over	55.1	55.8	.7	.0	.7
Both sexes, 16 to 19 years	41.8	42.8	1.1	.0	1.1
White	62.8	63.0	.2	.0	.2
Black	54.4	53.9	-.5	.6	-1.0
Hispanic origin	58.9	60.1	1.2	.3	.8
Unemployment rates					
Total, 16 years and over	6.8	7.4	.6	.1	.5
Men, 20 years and over	6.4	6.7	.3	.1	.2
Women, 20 years and over	5.8	6.4	.6	.1	.5
Both sexes, 16 to 19 years	19.0	20.6	1.6	.0	1.6
White	6.0	6.4	.4	.1	.3
Black	13.0	14.4	1.4	.1	1.3
Hispanic origin	10.6	11.8	1.2	.1	1.2

¹ These estimates differ slightly from previously published 1993 averages because of the estimation procedure used.

² The sum of the difference due to population controls and the redesign may not equal the total difference primarily due to rounding.