

The Nation’s underemployed in the “Great Recession” of 2007–09

Data from the Current Population Survey show that the less educated, those in low-skilled occupations, and those in low-paying occupations had a higher incidence of underemployment during the 2007–09 recession; an examination of the U.S. income distribution reveals that underemployment is more concentrated among workers from lower income households

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The Nation’s labor markets were deeply affected by the deteriorating economic conditions that began in December 2007 and continued for the next 2 years. Some analysts have referred to this period as the “Great Recession” of 2007–09. Despite what appears to have been a technical end to the recession in the summer of 2009,¹ in the second half of that year labor market problems of workers continued to worsen. Both formal payroll and civilian employment levels continued to fall through the end of 2009, and the unemployment rate remained at or slightly above 10 percent in the last 3 months of the year.² Besides the high unemployment rate, underemployment has increased markedly over the past 2 years, driving up the Nation’s overall labor underutilization rate, especially among teens and young adults, the less educated, Black and Hispanic men, and blue-collar workers.³

This article identifies and assesses changes in the size and demographic and socioeconomic composition of the Nation’s underemployed workers during the course of the recession of 2007–09. Comparing recent trends in the numbers of underemployed workers with those in the previous three recessions (2001, 1990–91, and 1981–

82) and over the entire 1994–2009 period, the article goes on to identify the magnitude of the losses in hours worked, weekly earnings, and aggregate annual earnings due to the rise in underemployment during the recession (through the fourth quarter of 2009). Although the growth in the national pool of underemployed workers has received some attention from labor market analysts and from the national and local media, little attention has been paid to who these underemployed workers are, what types of jobs they hold, and the size of their weekly hours and earnings losses. The analysis that follows seeks to overcome this absence of detailed information, because at no time over the past 30 years has underemployment been so big a problem. It begins with a review of the existing monthly measures of underemployment in the United States from the Current Population Survey (CPS), a national household survey conducted by the U.S. Bureau of the Census for the U.S. Bureau of Labor Statistics (BLS).

Underemployment

The CPS, a national survey of some 60,000 households, is used to estimate the size of the U.S. civilian labor force and its employed and unemployed populations. Labor force data are collected from all household members of

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working age (16 years and older) in the civilian non-institutional population.⁴ On the basis of their answers to the labor force activity questions, respondents are assigned to one of the following three mutually exclusive categories: employed, unemployed, and not in the labor force. In November 2009, of the 236.7 million persons in the civilian noninstitutional population, approximately 153.5 million, or just under 65 percent, were active members of the civilian labor force (the employed and the unemployed). Of these labor force participants, 14.4 million, or 9.4 percent, were unemployed in November.⁵

The CPS labor force questionnaire also is used to collect detailed information on the characteristics of the jobs held by the employed, including their weekly hours of work, their hourly and weekly earnings, the occupations and industries in which they are employed, and the reasons they are working part time (less than 35 hours per week). The employed are classified into three groups on the basis of their hours of work and their reasons for working part time: the full-time employed (those working 35 or more hours per week), those working part time voluntarily, and, of prime focus in this article, *those working part time for economic reasons*, such as slack demand for work at their firm, poor business conditions, or an inability to find a full-time job. Members of this last group, who usually work part time but who want full-time jobs and are available for full-time work, will be called *underemployed* in what follows.⁶ In November 2009, there were almost 8.9 million workers⁷ who were categorized as underemployed. (See chart 1.) In the fourth quarter of 2009, the average number of underemployed workers per month was greater in both absolute and relative (percent of the employed) terms than in any previous quarter in the past 61 years.

Those persons *not* active in the labor force are asked an additional set of questions about their current desire for employment, reasons for not looking for work, recent job search activities, and availability for work. Those who then report to the CPS interviewer that they want a job are classified as members of the *labor force reserve*.⁸ In its monthly report *The Employment Situation*, the Bureau of Labor Statistics presents a table showing the size of this group and refers to its members as “persons who currently want a job”.⁹ In November 2009, there were about 5.6 million individuals who were classified as members of the labor force reserve. A subset of the labor force reserve is the group consisting of those who are marginally attached to the labor force: persons who have looked for a job sometime in the past 12 months and who were available to take a job.¹⁰ In November 2009, some 2.3 million individuals would have met the criteria for falling into the margin-

ally attached group.¹¹ The group represented about 41 percent of the members of the labor force reserve in November. In a previous analysis by Sum and Khatiwada of the likelihood that members of the labor force reserve and the marginally attached would be looking for work the next year, only small differences were found in their future jobseeking behavior.¹²

The findings of the monthly CPS can be used to estimate the combined pool of unutilized and underutilized workers (the unemployed, the underemployed, and the labor force reserve) in any given month or calendar quarter of the year. Estimates of the size of each of these three groups from the November 2009 CPS are displayed in chart 1. None of the estimates shown are seasonally adjusted, because what is sought is the actual total number of individual workers experiencing one of these three labor market problems in a given month. In November 2009, there were an estimated 14.4 million workers who were unemployed, yielding a seasonally unadjusted unemployment rate of 9.4 percent. As noted earlier, almost 8.9 million more persons were underemployed, working part time for economic reasons but desiring full-time jobs. These individuals represented approximately 6.4 percent of the employed in the Nation in November. Finally, an estimated 5.6 million individuals were members of the labor force reserve, wanting a job at the time of the survey but not actively looking for one. The total pool of unutilized and underutilized workers was about 28.9 million, yielding a labor underutilization rate of 18.2 percent, the highest since the bottom of the deep recession of 1981–82.

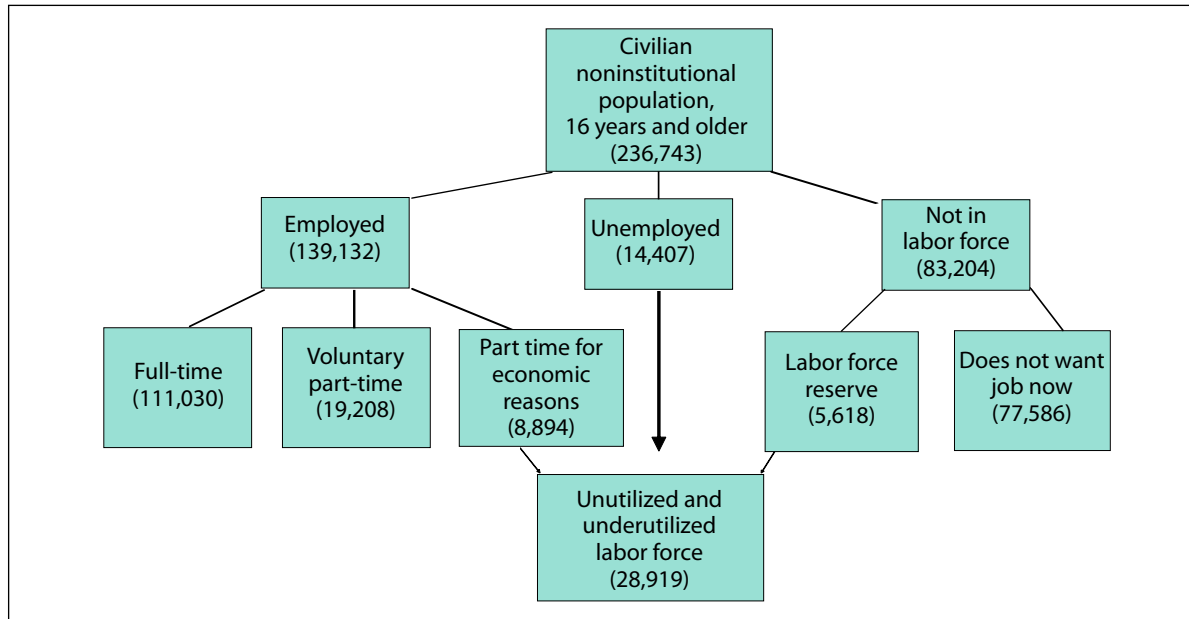
Trends and comparisons

The so-called Great Recession began in December 2007 and ended in June 2009, according to the National Bureau of Economic Research, the official arbiter of business cycle dating in the United States. As the following tabulation shows, during October–November 2007, the 2-month period preceding the onset of the recession, the number of underemployed workers in the United States was estimated to be slightly more than 4.2 million:¹³

<i>Period</i>	<i>Number underemployed</i>
October–November 2007	4,201,000
October–December 2008	7,217,333
October–December 2009	8,907,333
Absolute change, 2007–09	4,706,333
Percent change, 2007–09	112

During the fourth quarter of 2008, the number of underemployed jumped substantially, to 7.2 million, after which it rose further, to 8.9 million, in the fourth quarter of 2009. The absolute increase in the pool of underemployed workers over this 2-year period was 4.7 million, and the percent increase

Chart 1. Using monthly national CPS data to identify the number of unemployed and underemployed workers and members of the labor force reserve in November 2009 (numbers not seasonally adjusted and in thousands)



was 112 percent. Both figures were the largest in the country in any 2-year period since the end of World War II.

The CPS collects information from the underemployed on their reasons for being underemployed. The Bureau of Labor Statistics then combines these reasons into two main categories: slack work or business at their current firm or an inability to find a full-time job. Just prior to the onset of the recession, about 64 percent of the underemployed identified slack work as the primary reason for being underemployed while close to 30 percent cited an inability to find a full-time job. The following tabulation presents the change in the number of underemployed persons in the United States, by reason for underemployment, between October–November 2007 and October–December 2009:¹⁴

Reason for underemployment	October–November 2007	October–December 2009	Absolute change	Percent change
Total underemployed.....	4,201,000	8,907,000	4,706,000	112
Slack work or business at current firm or in current industry.....	2,786,000	6,530,000	3,744,000	134
Could not find full-time work.....	1,163,000	2,158,000	995,000	86

Over the past 2 years, both groups of underemployed workers have increased their numbers substantially, but the absolute growth and the rate of increase were greater among

those citing slack work at their firm or in the industry in which they work. These workers seemingly have jobs at which they usually would have worked full time, whereas those who said that they could not find full-time work appear to be in jobs for which part-time work is the norm. This is an important finding, because past research has shown that part-time workers typically receive far less training, both informal and formal, from their employers and receive a much lower rate of return in future wages from such work experience.¹⁵ Indeed, one study suggests that young women (20–34 years) receive a zero rate of return from part-time work experience.¹⁶

To place the steep increases in the number of underemployed during the recent recession into perspective, the following tabulation compares growth in their numbers (not seasonally adjusted) in comparable 2-year periods over the previous three recessions, in 2001, 1990–91, and 1981–82 (note that the definition of underemployment in the years prior to 1994 was less rigorous than the current definition):

Recession	Two months prior to recession	Two years later	Absolute change	Percent change
2007–09.....	4,201,000	8,684,000	4,483,000	107
2001	3,606,000	5,098,000	1,492,000	41
1990–91.....	4,650,000	6,167,000	1,517,000	33
1981–82.....	4,176,000	5,859,000	1,683,000	40

Although the previous two recessions lasted for a shorter period than the most recent one (9 months in 2001 and 10 months in 1990–91), the tabulation shows that the number of underemployed continued to rise for nearly 2 full years after the official end of the recession in all three cases. In addition, in each of the three previous recessions, the number of underemployed rose by 33 percent to 41 percent over the 2-year period following the recession, compared with an increase of 107 percent in the recession of 2007–09. The latter rate of growth in underemployment is unprecedented.

Another way of identifying the severity of underemployment is to calculate its relative incidence during a given period. An estimate of the incidence of underemployment is given by the ratio of the number of persons underemployed to the number employed in a given period. As the following tabulation indicates, in October–November 2009 the incidence of underemployment (not seasonally adjusted) was 6.3 percent, implying that between 6 and 7 of every 100 employed were underemployed (note that the published underemployment estimates for April–May 1983 and April–May 1992 were adjusted downward by 25 percent¹⁷ in order to make them compatible with the definitions of the underemployed that have been used by the Bureau of Labor Statistics since 1994):

<i>Period</i>	<i>Underemployment</i>	<i>Total Employment</i>	<i>Incidence of underemployment (percent)</i>
October–November 2009.....	8,684,000	139,110,000	6.3
January–February 2003.....	5,098,000	136,170,000	3.7
April–May 1992.....	4,625,000	118,082,000	3.9
April–May 1983.....	4,394,000	99,191,000	4.4

In November–December 2009, the incidence of underemployment rose further, to 6.6 percent. In the previous three recessions, the incidence of underemployment approximately 2 years after the beginning of the recession ranged from a low of 3.7 percent in the 2001 recession to a high of 4.4 percent in the 1981–82 recession. Clearly, the overall incidence of underemployment in the United States in October–November 2009 was substantially above its level in the previous three recessions.

Underemployment in the United States has been found to be cyclically sensitive over the past three decades. Under the BLS definition of underemployment that has been in place since 1994, the incidence of underemployment fell steadily from 3.8 percent in 1994 to 2.3 percent in 2000 as the national unemployment rate declined from 6.1 percent in 1994 to 4.0 percent at the end of the decade. (See chart 2.) During the recession of 2001 and the largely jobless

recovery of 2002–03,¹⁸ the underemployment rate rose to 3.4 percent, after which it fell back to 2.9 percent in 2006 following 3 consecutive years of job growth and declining unemployment. From 2007 on, however, the incidence of underemployment has more than doubled, rising to a new record high of 6.4 percent of the employed in the fourth quarter of 2009.

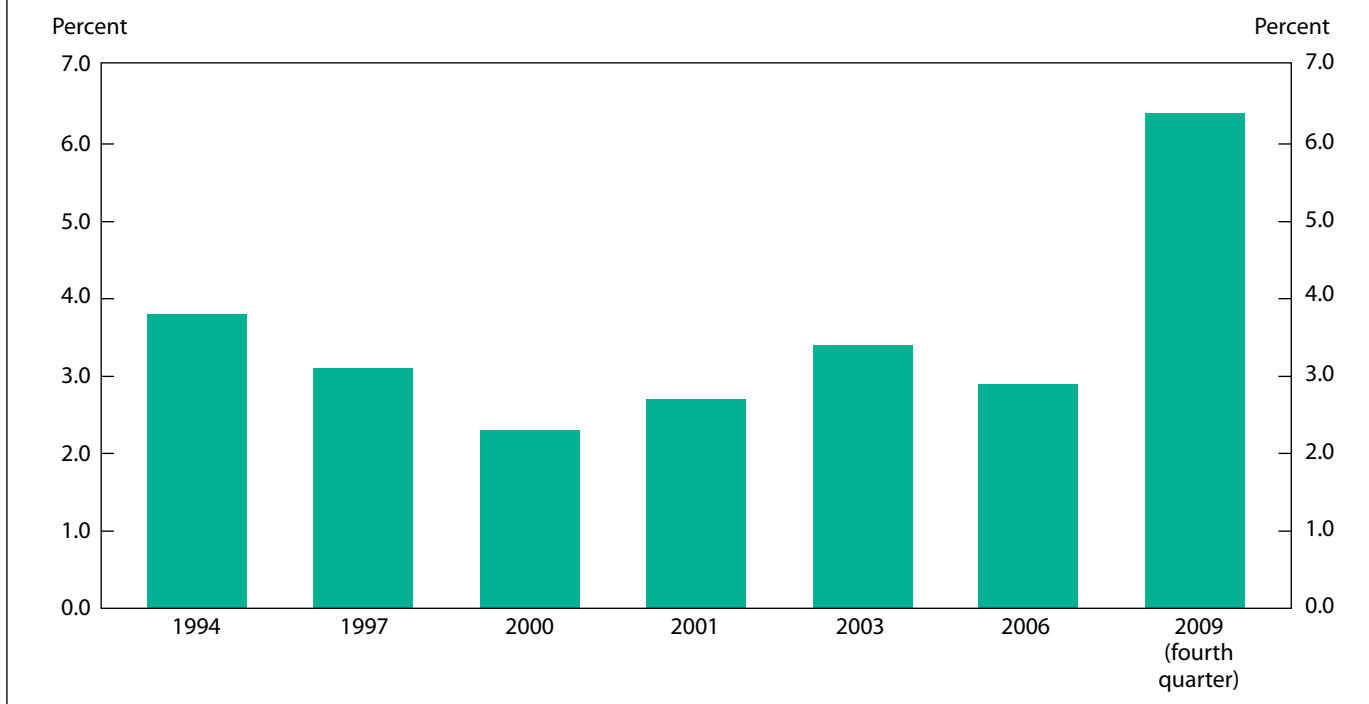
The sharp rise in the number of workers reporting being employed part time for economic reasons is due partly to reemployment difficulties that dislocated workers are having. Unemployed individuals who regain employment in the year after they were separated from their jobs frequently cite a reduction in hours relative to those worked on the job they previously held. A recent survey of the job search behavior and job-finding success of the unemployed found that 15 percent of the newly reemployed were working in a job that provided fewer hours than their former position did.¹⁹ Another analysis of the employment status of reemployed dislocated workers in the United States in January 2008 revealed that 8.5 percent of the reemployed were working part time for economic reasons.²⁰ The underemployment rates of these reemployed dislocated workers varied by age, educational attainment, and race or ethnicity, and were considerably higher for younger workers (20–24 years) and the oldest workers (65 years and older); those without postsecondary college degrees, especially high school dropouts; Blacks and Hispanics; and many service and blue-collar workers, including construction and extraction workers. The underemployment rates of service and construction workers were in the 13.3–percent to 13.6–percent range, compared with 10 percent for production workers and 4 percent for professional and management-related workers.

The underemployed and the Great Recession

Knowledge of which workers have been most adversely affected by the steep rise in underemployment over the past few years is indispensable in gauging the economic impacts of underemployment on U.S. workers. To identify the incidence of underemployment among key demographic, educational attainment, and industrial and occupational groups of workers in the Nation, the findings of the CPS monthly household surveys for the October–December periods of 2007 and 2009 were analyzed. The data were then used to estimate changes in the incidence of underemployment for each of these groups over the preceding 2-year period.

Table 1 displays findings on the incidence of underemployment across sex, age, and racial or ethnic groups

Chart 2. Underemployment as a percent of total civilian employment in the United States, selected years, 1994 to fourth quarter 2009



of employed U.S. workers over the aforesaid 2-year period. For all employed workers combined, the incidence of underemployment more than doubled over the period, rising from 3.0 percent in the fourth quarter of 2007 to 6.4 percent in the fourth quarter of 2009. Although men have experienced above-average rates of job loss and rising unemployment rates during the past 2-year period in question, both men and women encountered nearly identical rates of underemployment in the fourth quarter of 2009, 6.5 percent and 6.4 percent, respectively.

Workers in nearly every major age group and racial or ethnic group saw their underemployment rates more than double over the 2 years examined, but large differences remained across groups at the end of 2009. Young adults (20–24 years) and teenagers (16–19 years) faced the highest rates of underemployment; nearly 11 percent of employed 20- to 24-year-olds were underemployed. (See table 1.) The underemployment rates of workers other than young adults declined steadily with their age, falling to 7.7 percent for 25- to 29-year-olds, to below 6 percent for 35- to 54-year-olds, and to a low of 3.6 percent for those 70 years and older. The Nation's young adults were nearly 3 times as likely to be underemployed in the fourth quarter of 2009 as the oldest group of workers.

Underemployment rates also doubled for employed members of each racial or ethnic group over the 2-year

period shown, but again, large disparities in the incidence of underemployment remained at the end of 2009. (See table 1.) Underemployment rates were lowest among Asians (4.7 percent) and White non-Hispanics (5.2 percent), rose to 7.5 percent for Black non-Hispanic workers, and peaked at 12.0 percent for Hispanics. Thus, Hispanic workers faced underemployment rates that were more than 2½ times as high as those of Asians and Whites. As will be revealed subsequently, the high share of Hispanic workers with no postsecondary schooling and the elevated incidence of underemployment faced by Hispanic workers with limited formal schooling are responsible for these large gaps in overall underemployment rates between Hispanics and their Asian and White non-Hispanic peers.

The incidence of underemployment among U.S. workers by their school enrollment and educational attainment is displayed in table 2. Employed adults 16 to 24 years old and still enrolled in school are identified separately from those in that age group who are employed but not enrolled in school.²¹ Those young adults who are not enrolled in school and all adults 25 years and older were assigned to one of five educational attainment categories, ranging from those lacking a regular high school diploma or a General Education Development (GED) certificate to those holding a master's or higher academic degree.

All seven educational attainment groups of workers

Table 1. Incidence of underemployment among employed workers 16 years and older, by sex, age, and race or ethnicity, October–December 2007 to October–December 2009

[In percent]

Category	October–December 2007	October–December 2009	Percentage-point change
All employed workers	3.0	6.4	3.4
Men.....	3.0	6.5	3.4
Women.....	2.9	6.4	3.5
Age, years			
16–19.....	4.9	9.4	4.5
20–24.....	5.2	10.6	5.4
25–29.....	3.7	7.7	4.0
30–34.....	2.9	6.7	3.8
35–44.....	2.5	5.8	3.3
45–54.....	2.5	5.6	3.1
55–64.....	2.3	5.2	2.9
65–69.....	2.4	4.6	2.2
70 and older.....	1.6	3.6	2.0
Race or ethnicity			
Asian.....	1.8	4.7	2.9
Black non-Hispanic.....	3.8	7.5	3.7
Hispanic.....	5.0	12.0	7.0
White non-Hispanic.....	2.5	5.2	2.7

shown in table 2 saw their underemployment rates more than double over the past 2 years, but the absolute percentage-point increases varied widely across the five educational groups not enrolled in school. In the fourth quarter of 2009, the incidence of underemployment ranged from a high of 16.4 percent among high school dropouts, down to 8.4 percent for high school graduates, and on to a low of 2.2 percent for those employed adults with a graduate school degree. In the fourth quarter of 2009, employed high school dropouts were 7.5 times as likely to be underemployed as their contemporaries with an advanced degree and high school graduates were 2.4 times as likely to be underemployed as their peers with a bachelor's degree. Gaps in underemployment rates across educational groups were greater than those for unemployment rates.

To afford a greater insight into how educational attainment influences underemployment rates for different demographic subgroups, a matrix of underemployment rates by educational attainment was constructed for each racial or ethnic group, for the five groups of workers not enrolled in school.²² (See table 3.) For all four racial or ethnic groups, the incidence of underemployment fell steadily and strongly with their level of educational attainment in the fourth quarter of 2009. High school

dropouts in each racial or ethnic group faced double-digit underemployment rates, with the underemployment rates for Black and Hispanic dropouts falling into the 17- to 19-percentage-point range. At the top of the educational distribution (those with a master's or higher degree), underemployment rates fell into the 1- to 3-percent range.

For each of the four racial or ethnic groups, employed high school dropouts were almost 6 to nearly 10 times more likely to face underemployment problems than their peers with an advanced degree. Across the 20 educational attainment and racial or ethnic groups, the incidence of underemployment ranged from lows of 1.2 percent and 2.2 percent among Asian and White advanced degree holders, respectively, to a high of 19.3 percent among Hispanic high school dropouts. The relative size of the difference between the incidence of underemployment among the top and bottom groups was 16 times.

The monthly CPS also collects information on employers of the workers, their types of businesses, and the occupational titles of the workers' jobs. This information was used by the Bureau of Labor Statistics to assign the workers into 21 industrial sectors and 24 major occupational groups. Table 4 shows the underemployment rates of workers in the fourth quarters of 2007 and 2009 for the 7 industrial sectors with the highest and lowest underemployment rates in the fourth quarter of 2009, as well as for 7 selected other sectors (including both du-

Table 2. Trends in the incidence of underemployment among employed workers 16 years and older, by educational attainment, October–December 2007 to October–December 2009

[In percent]

Education group	October–December 2007	October–December 2009	Percentage-point change
High school students.....	0.6	2.1	1.5
College students.....	1.9	4.3	2.4
High school dropouts.....	7.4	16.4	9.0
High school graduates ¹	4.0	8.4	4.4
1–3 years of college ²	2.7	6.0	3.3
Bachelor degree.....	1.5	3.5	2.0
Master's or higher degree.....	1.0	2.2	1.2
High school dropouts ÷ master's or higher degree....	7.4	7.5	...
High school graduates ÷ bachelor's degree.....	2.7	2.4	...

¹ Including those who received a General Education Development (GED) certificate.
² Including those who received an associate's degree.

Table 3. Incidence of underemployment among employed workers 16 years and older, by educational attainment and race or ethnicity, October–December 2009 averages

[In percent]

Education group	Asian	Black non-Hispanic	Hispanic	White non-Hispanic
High school dropouts.....	11.6	16.9	19.3	12.5
High school graduates ¹ ..	7.7	9.2	12.8	7.2
1–3 years of college ²	5.2	6.9	7.6	5.5
Bachelor's degree.....	4.1	3.6	4.6	3.3
Master's or higher degree.....	1.2	1.8	3.2	2.2
High school dropouts ÷ master's or higher degree.....	9.7	9.4	6.0	5.7

¹ Including those who received a General Education Development (GED) certificate.

² Including those who received an associate's degree.

table and nondurable manufacturing).

Underemployment rates rose in all 21 industrial sectors—indeed, at least doubling in all but 4 of them—over the 2-year period examined. Still, in the fourth quarter of 2009, large differences existed in the magnitude of underemployment across these industries. In the bottom 7 industries, the average (unweighted) underemployment rate was 2.6 percent, while the average underemployment rate at the top was 11.9 percent. The individual underemployment rates for these sectors ranged from lows of 1.1 percent and 1.3 percent for utilities and public administration, respectively, to highs of 13.6 percent in construction and 19.3 percent in private household work. Many of the industries with below-average underemployment rates experienced either below-average declines in employment (utilities, government) or increases in employment (educational services) over the past 2 years, while some of those in the top 7 industries (retail trade, construction) had above-average declines in employment. Yet, some industries, such as accommodation and food services, had much higher underemployment growth than would have been expected on the basis of their employment decline. Deep downsizing in manufacturing industries, in contrast, seems to have been accompanied primarily by layoffs rather than a large shift to underemployment.

The underemployment rates of workers in 24 major occupational groups in the fourth quarters of 2007 and 2009 also were calculated. Findings for the top 7 and bottom 7 occupational groups, as well as for 10 selected other oc-

cupational groups, are displayed in table 5. Workers in all 24 of these occupational groups saw their underemployment rates rise over the 2-year period studied, and the incidence of underemployment at least doubled for about two-thirds of the 24 groups.

At the end of the period, underemployment rates ranged widely across the occupational groups shown. The seven groups with the lowest underemployment rates had a mean (unweighted) rate of only 2 percent, compared with a mean of 11.6 percent for the top seven occupa-

Table 4. Incidence of underemployment among employed workers 16 years and older, by industrial sector of their employer, October–December 2009, seven lowest, seven highest, and selected other sectors

[In percent]

Industries	October–December 2007	October–December 2009	Percentage-point change
Seven lowest sectors			
Utilities.....	0.4	1.1	0.7
Public administration.....	.6	1.3	.7
Finance and insurance.....	.9	1.8	.9
Mining.....	.7	2.9	2.2
Educational services.....	1.7	3.6	1.9
Wholesale trade.....	1.7	3.6	1.9
Professional and technical services.....	1.8	3.8	2.0
Seven highest sectors			
Other services.....	3.3	8.1	4.8
Retail trade.....	3.5	8.5	5.0
Arts, entertainment, and recreation.....	4.8	8.7	3.9
Management, administration, and waste services.....	5.4	11.6	6.2
Accommodation and food services.....	6.6	13.3	6.7
Construction.....	5.9	13.6	7.7
Private households.....	8.0	19.3	11.3
Other sectors			
Durable goods manufacturing.....	1.4	4.0	2.6
Information.....	2.1	4.0	1.9
Health care and social services.....	2.2	4.6	2.4
Nondurable goods manufacturing.....	1.9	4.8	2.9
Real estate and rental.....	3.3	5.6	2.3
Agriculture, forestry, and fishing.....	4.5	5.9	1.4
Transportation and warehousing.....	3.2	6.6	3.4

tional groups. Across individual occupational groups, the underemployment rates ranged from lows of 1.3 percent to 1.5 percent for protective service, computer and mathematical, and legal occupations to 14 percent to 15 percent for building and grounds cleaners, food preparation and serving, and construction and extraction occupations. Workers in the latter three occupations had underemployment rates 10 times as high as those in the bottom three groups. Overall, professional workers dominated the list of occupations at the bottom of the distribution while service and construction workers dominated at the top.

A separate multivariate analysis based on binary logit regression models of the underemployment status of U.S. workers employed in the fourth quarter of 2009 found that the probability of underemployment among men and women was significantly associated with their age, racial or ethnic group, educational attainment, and occupational attachment, as well as with the unemployment rate of the State in which they resided.²³ Younger workers (under 25 years), Blacks and Hispanics, recent immigrants, high school dropouts and high school graduates with no post-secondary schooling, many service workers, and blue-collar workers were significantly more likely to be underemployed, as were those living in States with above-average unemployment rates. The predicted probability of underemployment among four hypothetical women in the fourth quarter of 2009 ranged from a low of 1 percent among older White women with a master's degree in a management occupation and living in a State with a below-average unemployment rate to a high of 50 percent for a young Hispanic immigrant lacking a high school diploma and working in a food preparation occupation in a State with a high unemployment rate.

Weekly hours of work and hourly wages

Earlier, the underemployed were defined as those workers who are working part time (less than 35 hours a week) but who both want and are available for full-time work. The CPS labor force questionnaire collects data on actual weekly hours worked by the employed and their hourly or weekly wages.²⁴ How many hours do the underemployed actually work per week? How do their hours of work compare with those of the full-time employed in similar educational groups? An analysis of the findings of the October–December 2009 CPS addresses these questions.

The weekly hours of work of the underemployed varied considerably in the last quarter of calendar year 2009. The following tabulation, from the October–December 2009 CPS public-use files, shows that slightly under 10 percent of the underemployed worked less than 10 hours per week, another 19 percent worked from 10 to 19 hours,

Table 5. Incidence of underemployment among employed workers 16 years and older, by occupational group, October–December 2009, seven lowest, seven highest, and selected other groups

[In percent]

Occupational group	October–December 2007	October–December 2009	Percentage-point change
Seven lowest groups			
Protective service	0.7	1.3	0.6
Computer and mathematics8	1.5	.7
Legal.....	.5	1.5	1.0
Life, physical, and social science9	2.2	1.3
Architecture and engineering7	2.3	1.6
Management	1.3	2.4	1.1
Business and financial operations	1.3	2.5	1.2
Seven highest groups			
Transportation and material moving	4.3	8.4	4.1
Farm, fishing, and forestry.....	5.3	8.5	3.2
Low-level sales.....	3.9	9.4	5.5
Personal care.....	5.2	11.3	6.1
Building and grounds cleaners	6.1	13.9	7.8
Food preparation and serving	6.8	14.6	7.8
Construction and extraction	6.5	15.1	8.6
Other groups			
Community and social service..	.8	2.6	1.8
Health care practitioners and technicians	1.4	2.6	1.2
Education, training, and library	1.6	3.8	2.2
High-level sales	1.9	4.2	2.3
Installation, maintenance, and repair	2.0	4.6	2.6
Office and administrative support	2.2	4.7	2.5
Production	2.6	6.7	4.1
Security/crossing guard	4.1	6.0	1.8
Health care support.....	4.4	8.1	3.7
Arts, design, and entertainment.....	4.1	8.4	4.3

39 percent worked between 20 and 29 hours, and the remaining one-third worked between 30 and 34 hours:

<i>Weekly hours worked</i>	<i>Percent of underemployed working those hours</i>
1–9	9.1
10–19	18.6
20–24	24.0
25–29	14.9
30–34	33.4
Median	24.0
Mean, underemployed	22.5
Mean, full-time workers.....	44.2

As the tabulation shows, the median number of weekly hours of work was 24 hours, the mean, 22.5 hours. In the fourth quarter of 2007, the mean was a slightly higher 23.3 hours. In contrast, the mean number of weekly hours of work among the full-time employed was 44.2 hours, nearly twice as high as that for the underemployed. Clearly, on average, underemployment generates a substantial loss in weekly hours of work and, hence, in the weekly earnings of those working part time for economic reasons. Their sharply reduced aggregate hours of work also lower the real output of the U.S. economy and increase the size of the gap between potential and actual output (gross domestic product, or GDP).

The mean number of weekly hours of work among the underemployed in the fourth quarter of 2009 varied modestly across educational groups. (See table 6.) Workers in 4 of the 5 education groups listed had between 22 and 23 mean weekly hours of work, while those with a master's or higher degree averaged just under 21 hours. On average, underemployed members of each educational group worked substantially fewer hours per week than their full-time peers. The gaps in mean weekly hours of work tended to rise with educational attainment, increasing from just under 20 hours for high school dropouts to more than 25 hours for those with master's or higher academic degrees.

The mean hourly earnings of the underemployed also were comparatively low, on average, and rose modestly with educational attainment up through the bachelor's degree level. (See table 7.) The mean hourly wages for all underemployed workers was \$12.80. Among those not enrolled in school, mean hourly wages ranged from a low of \$11.23 for high school dropouts, to \$11.78 for high school graduates, to \$14.35 for bachelor's degree holders, to a high of \$21.46 for those with a master's or higher degree. Underemployed workers with a bachelor's degree made \$3.12 more per hour than high school dropouts.

The mean hourly earnings of the underemployed were considerably below those of full-time workers, both overall and in each educational group. The mean hourly earnings for full-time wage and salary workers were \$20.96, exceeding those of the underemployed by \$8.16, or 64 percent. In each of the five education groups whose members were not enrolled in school, mean hourly earnings of the underemployed were anywhere from 88 cents to \$11.82 below those of their full-time employed peers. Although part of these wage differentials are attributable to the higher mean amount of work experience among the full-time employed, a large number of the underemployed, especially bachelor's degree holders, seem to suffer from so-called malemployment, in which their jobs do

Education group	Full-time workers	Underemployed	Difference
All workers.....	44.2	22.5	21.7
High school dropouts	42.6	22.9	19.7
High school graduates ¹	43.6	22.8	20.8
1–3 years of college ²	43.9	22.6	21.3
Bachelor's degree.....	44.7	22.0	22.7
Master's or higher degree.....	46.4	20.9	25.5

¹ Including those who received a General Education Development (GED) certificate.
² Including those who received an associate's degree.

not utilize the education and occupational skills that they possess. The weekly earnings losses from underemployment thus stem from both sharply lower weekly hours of work and lower hourly wages from being employed in less skilled, lower paying occupations.

Underemployment by household income

The preceding findings on the sharply higher incidence of underemployment among less educated workers, especially Black and Hispanic workers,²⁵ those in many lower skilled occupations, and those in lower wage occupations, suggest that underemployment tends to be more highly concentrated among workers from lower income households. To more rigorously assess the incidence of underemployment among workers in different household income groups, the findings about the household income distribution from the March 2009 CPS work experience and income supplement were combined with the findings about the distribution of the underemployed by their position in the household income distribution (classified by deciles) from the October–December 2009 monthly CPS surveys.

The March CPS survey questionnaire contains a work experience and income supplement that collects information on each working-age respondent's employment, annual earnings, and income experiences in the previous calendar year. The annual incomes, including cash transfers and property income, of all household members are combined to estimate the annual pretax money income of the household. Each household was ranked by the size of its annual income, and the cutoff points were calculated for

Table 7. Mean hourly wages of underemployed persons and full-time wage and salary workers, 16 years and older, by educational attainment, October–December 2009 averages

[In current dollars]

Education group	Underemployed	Full-time workers	Difference
All workers	\$12.80	\$20.96	\$8.16
High school students	7.07	8.20	1.13
College students	13.04	12.67	-.37
High school dropouts	11.23	12.11	.88
High school graduates ¹	11.78	16.67	4.89
1–3 years of college ²	13.83	18.96	5.13
Bachelor's degree	14.35	26.17	11.82
Master's or higher degree	21.46	32.07	10.61

¹ Including those who received a General Education Development (GED) certificate.
² Including those who received an associate's degree.

each decile (10 percent) of the income distribution. The bottom decile included all households with annual incomes at or below \$12,160, while the top decile comprised all households with pretax annual incomes above \$133,300.

The monthly CPS labor force questionnaire asks the respondent to provide an estimate of the household's gross money income in the previous 12-month period. For this article, each person who was employed in the October–December 2009 period was assigned to the 2008 household income decile that came closest to matching that person's household income reported in the 2009 CPS interview.²⁶ The following tabulation displays the resulting estimates of the incidence of underemployment in each household income decile during the October–December period of 2009:²⁷

<i>Income decile</i>	<i>Percent underemployed</i>
Lowest	20.6
Second	17.2
Third	12.7
Fourth	8.3
Fifth	6.1
Sixth	5.4
Seventh	4.4
Eighth	3.6
Ninth	2.5
Highest	1.6
Missing income	5.3

As the tabulation shows, the incidence of underemployment among the employed varied widely across the 10 household income deciles, falling steadily and steeply as the income position of the household improved. More than 20 percent of the employed in the bottom decile of the income distribution were underemployed, as were 17 percent of those in the second-lowest decile. The incidence of underemployment fell into the 5-percent to 6-percent range for those in the middle two deciles and declined to lows of 2.5 percent and 1.6 percent for workers living in households in the top two income deciles. The incidence of underemployment in the fourth quarter of 2009 was 13 times higher among those workers in the bottom income decile than among those in the top decile (20.6 percent, as opposed to 1.6 percent). These findings clearly reveal that the economic costs of underemployment are disproportionately borne by workers at the lower end of the income distribution; thus, underemployment contributes in an important way to the high and rising degree of income inequality in the United States.

Costs of underemployment

Empirical research on the size of the Nation's GDP gap since Arthur Okun's early work in the 1960s²⁸ has attempted to estimate the output losses associated with reduced hours of work as the economy moves away from full employment. The foregoing findings on the number of underemployed workers, their reduced mean weekly hours of work, and their hourly earnings can be combined to provide a set of estimates of the aggregate annualized earnings losses associated with the higher (excess) levels of underemployed U.S. workers in the fourth quarter of 2009. During that quarter, there were an estimated 8,907,000 underemployed workers per month in the United States, on average.²⁹ The mean number of actual weekly hours worked by this group of underemployed workers was estimated at 22.5 hours. During the same period, the full-time employed reported working 44.2 hours per week. The gap between the mean weekly hours of these two groups of workers was a sizable 21.7 hours per week. For every hour worked by the underemployed, the mean gross hourly wage was estimated to be \$12.83, well below the average of the full-time employed. Multiplying the lost 21.7 hours of work by the \$12.83 hourly wage yields an estimate of about \$278 per week for the mean lost weekly earnings of the underemployed. This figure is equivalent to an estimated annualized loss in gross earnings of \$14,456. Note that turnover in the ranks of

the underemployed during the year will cause the number of underemployed to substantially exceed 9 million for the year. (The preceding discussion assumes that turnover throughout the year will leave the mean weekly earnings loss unchanged.)

The aggregate annualized loss in gross earnings due to the excess level of underemployment in the fourth quarter can be generated by multiplying the \$14,456 figure by the 4,706,333 excess number of underemployed workers. This excess level of underemployment represents the difference in the number of underemployed workers between the fourth quarters of 2007 and 2009, and yields an aggregate value of slightly more than \$68 billion dollars in lost earnings. In addition to the lost gross earnings of the underemployed themselves, other losses to society include less payroll taxes paid by employers and lower nonwage compensation paid to the underemployed in the form of vacation pay, health insurance benefits, and pension contributions. The Social Security taxes paid by employers alone would account for another 7.6 percent of the lost gross earnings of the underemployed, and lost unemployment insurance taxes, disability contributions, and employee benefits would likely account for another 7.4 percent to 7.5 percent of their earnings. A conservative estimate is that the combined loss of payroll taxes and nonwage employer contributions would amount to about 15 percent of the gross pretax lost earnings of the Nation's underemployed. All told, the combined aggregate annualized earnings, payroll tax, and other nonwage compensation losses associated with higher levels of underemployment are an estimated \$78 billion dollars.

Besides receiving sharply lower hours of work per week and lower weekly earnings, the underemployed are considerably less likely than their full-time employed counterparts to receive key employee benefits from their employers, such as health insurance and pension coverage.³⁰ Findings of the March 2009 CPS work experience and income supplement were used to generate estimates of the health insurance coverage of the underemployed and their receipt of health insurance and pension benefits from their employers. In 2008,³¹ 27 percent of the underemployed reported receiving health insurance coverage from their employer. (See table 8.) The likelihood of such employer-financed coverage rose with the workers' level of formal schooling, up to the level of postsecondary schooling.

Sixty percent of the underemployed had some form of health insurance (not necessarily from the employer), including Medicaid and Medicare. Coverage rose steadily with the level of formal schooling: eighty-two percent of

Table 8. Health insurance coverage and pension plan coverage of the underemployed 16 years and older, by educational attainment, March 2009

[In percent]

Education group	Receives health insurance coverage from employer	Has some type of health insurance coverage	Has pension plan coverage
All workers	26.6	59.8	27.8
High school students or dropouts	17.8	40.2	14.4
High school graduates ¹	26.1	59.5	28.1
1–3 years of college ²	31.3	67.5	32.2
Bachelor's degree ...	32.3	72.0	37.9
Master's or higher degree	33.0	82.4	39.4

¹ Including those who received a General Education Development (GED) certificate.
² Including those who received an associate's degree.
 SOURCE: March 2009 CPS survey, public-use files, tabulated by authors.

those with a master's or higher degree had health insurance, compared with 40 percent of high school dropouts. Twenty-eight percent of the underemployed reported that they were eligible for a pension plan at work. Again, the fraction reporting some pension coverage rose steadily with the level of schooling: thirty-nine percent of those with a postbaccalaureate degree participated in a pension plan, compared with 14 percent of high school dropouts.

Underemployed workers suffer other important losses, including less training provided by employers to part-time workers, a lower return to future wages from part-time employment today, and lower future earnings. Their lost earnings today reduce their consumption of goods and services, thereby holding down spending, output, and employment in other sectors of the economy. Also, their lower incomes and expenditures reduce their tax contributions to the Federal and State government in the forms of Federal and State income taxes, State sales taxes, and lower Social Security payroll taxes, thereby increasing Federal and State budget deficits. Finally, the lower income groups of underemployed workers especially are more likely to depend on in-kind transfers such as food stamps, rental subsidies, and Medicaid to support themselves and their families, thereby imposing fiscal costs on the rest of the taxpaying public. □

Notes

¹ The National Bureau of Economic Research, the Nation’s arbiter of the beginning and ending dates of recessions, has designated the recent recession as having lasted from December 2007 to June 2009.

² For an overview of the labor market impacts of the Great Recession of 2007–09, especially on blue-collar workers and men, see “The Trap,” *The Economist*, Jan. 16, 2010, p. 32; Katherine Klemmer, “Job availability during a recession: an examination of the number of unemployed persons per job opening,” *Issues in Labor Statistics*, Summary 10–03 (U.S. Bureau of Labor Statistics, March 2010); Andrew Sum, Paul Harrington, Ishwar Khatiwada, Joseph McLaughlin, and Sheila Palma, *The Deep Depression in Blue Collar Labor Markets in the U.S.: Their Implications for Future Economic Stimulus and Workforce Development Policies* (Boston, Northeastern University, Center for Labor Market Studies, December 2009); and Andrew Sum, Allison Beard, Joseph McLaughlin, and Ishwar Khatiwada, *The Labor Market Impacts of the Great Recession of 2007–2009: Impacts on Unemployment and Labor Underutilization* (Boston, Northeastern University, Center for Labor Market Studies, 2009).

³ The term “labor underutilization” refers to a combination of problems associated with open unemployment, hidden unemployment, and underemployment. (The open unemployed are those who meet the official BLS definition of unemployment; the hidden unemployed are those persons who, at the time of the CPS, are not active in the labor force and who express a desire for immediate employment.) For a review of labor underutilization problems among teens, young adults, and older adults in the United States in recent years, see Andrew Sum, Ishwar Khatiwada, Joseph McLaughlin, and Sheila Palma, *The Lost Decade for Teen and Young Adult Employment in Illinois: The Current Depression in the Labor Market for 16–24 Year Olds in the Nation and State*, report prepared for the Chicago Alternative Schools Network (Boston, Northeastern University, Center for Labor Market Studies, January 2010); and Sum, Beard, McLaughlin, and Khatiwada, *The Labor Market Impacts*.

⁴ The CPS does interview members of some group quarters, such as college dormitories and boarding schools, but does not interview persons residing in institutions (for example, jails, prisons, or nursing homes), members of the Armed Forces, or the homeless.

⁵ The seasonally adjusted unemployment rate was 10.0 percent in November 2009. (See *The Employment Situation: November 2009*, (U.S. Bureau of Labor Statistics, Dec. 4, 2009).)

⁶ The Bureau of Labor Statistics changed the definition of underemployment in 1994 with the introduction of a new labor force questionnaire. For a review of changes in the basic CPS labor force questions in 1994, including the revision in the procedures for estimating those persons employed part time for economic reasons, see John E. Bregger and Cathryn S. Dippo, “Overhauling the Current Population Survey: Why is it necessary to change?” *Monthly Labor Review*, September 1993, pp. 3–9; and Anne E. Polivka and Jennifer M. Rothgeb, “Overhauling the Current Population Survey: Redesigning the CPS Questionnaire,” *Monthly Labor Review*, September 1993, pp. 10–28.

⁷ Not seasonally adjusted.

⁸ In his 1979 book on the changing quality of jobs in the United States, Eli Ginzberg referred to this group of persons wanting jobs as the labor force overhang. (See Eli Ginzberg, *Good Jobs, Bad Jobs, No Jobs* (Cambridge, MA, Harvard University Press, 1979).)

⁹ The CPS interviews a household eight times over a 16-month period. Those interviewed for the first time, say, in January 2009 will be reinterviewed in February–April 2009, dropped for 8 months, and then reinterviewed in January–April 2010. The job search behavior of

the labor force reserve may then be tracked the next year.

¹⁰ See *The Employment Situation*, table A-13 (U.S. Bureau of Labor Statistics, November 2009). In a recent article, the marginally attached are described as those “who have simply given up looking” for work (“The Man Who Fell to Earth,” *The Economist*, Jan. 23–29, 2010, p. 17.)

¹¹ The 2.3 million figure represents an increase of 1 million over the number of marginally attached in November 2007, right before the onset of the recession.

¹² See Andrew Sum and Ishwar Khatiwada, *Labor Underutilization Impacts of the Great Recession of 2007–2009: Variations in Labor Underutilization Problems Across Age, Gender, Race-Ethnic, Educational Attainment and Occupational Groups in the U.S., 2009 Fourth Quarter*, working paper (Boston, Northeastern University, Center for Labor Market Studies, March 2010).

¹³ The numbers of underemployed shown in the tabulation are not seasonally adjusted and are on the Internet at www.bls.gov/webapps/legacy/cpsatab8.htm (visited Nov. 19, 2010).

¹⁴ The numbers of underemployed shown in the tabulation are not seasonally adjusted and are on the Internet at www.bls.gov/webapps/legacy/cpsatab8.htm (visited Nov. 19, 2010).

¹⁵ For a discussion of this issue, see Andrew Sum, Neeta Fogg, and Garth Mangum, *Confronting the Youth Demographic Challenge* (Baltimore, Johns Hopkins University, Sar Levitan Center for Social Policy Studies, 2000); and Marta Tienda, V. Joseph Hotz, Avner Ahituv, and Michelle Bellessa Frost, “Employment and Wage Prospects of Black, White, and Hispanic Women,” in Charles J. Whalen, ed., *Human Resource Economics and Public Policy* (Kalamazoo, MI, W. E. Upjohn Institute for Employment Research, 2010), pp. 129–60.

¹⁶ Tienda, Hotz, Ahituv, and Bellessa Frost, “Employment and Wage Prospects.”

¹⁷ Based on calculations from CPS questionnaire redesign tests, see Anne E. Polivka and Jennifer M. Rothgeb, “Overhauling the Current Population Survey: Redesigning the CPS Questionnaire,” *Monthly Labor Review*, September 1993, pp. 10–28.

¹⁸ Payroll employment in the United States did not begin to register steady growth until the fall of 2003, nearly 2 years after the official end of the recession in November 2001.

¹⁹ See Debbie Borie-Holtz, Carl Van Horn, and Cliff Zukin, *No End in Sight: The Agony of Prolonged Unemployment* (New Brunswick, NJ, Rutgers University, John N. Heldrich Center for Workforce Development, May 2010).

²⁰ See Andrew Sum, Ishwar Khatiwada, and Mykhaylo Trubskyy, *The Dislocation Experiences and Post-Dislocation Employment and Weekly Earnings Outcomes of U.S. Workers, 2005–2007* (Boston, Northeastern University, Center for Labor Market Studies, 2010). The report’s findings are based on the January 2008 CPS supplement on dislocated workers.

²¹ The monthly CPS questionnaire collects school enrollment information only from persons 16 to 24 years old. The October CPS contains a supplement that collects school enrollment information on all persons 3 years and older.

²² As noted earlier, adult workers 25 years and older who were enrolled in college are included in the table.

²³ See Andrew Sum and Ishwar Khatiwada, with Sheila Palma, *Underemployment Problems in U.S. Labor Markets in 2009: Predicting the Probabilities of Underemployment for Key Age, Gender, Race-Ethnic, Educational, and Occupational Subgroups of U.S. Workers* (Boston, Northeastern University, Center for Labor Market Studies, February

2010).

²⁴ Data on hourly or weekly earnings are collected only for wage and salary workers. One-fourth of the sample is used each month.

²⁵ Among both high school dropouts and high school graduates with no completed years of postsecondary schooling, the incidence of underemployment was considerably greater among Blacks and Hispanics than among Asians or White non-Hispanics in the fourth quarter of 2009. Racial and ethnic gaps in underemployment were much smaller for the most well educated.

²⁶ Monthly CPS data on household income are reported in categorical form by the respondent, rather than calculated by the U.S. Census Bureau by adding all money incomes reported by each household member.

²⁷ Note that the employed are not distributed proportionately across the 10 household income deciles: a below-average number of

employed persons populate the bottom two deciles, an above-average number the higher deciles.

²⁸ See, for example, Arthur M. Okun, *The Political Economy of Prosperity* (New York, W. W. Norton and Company, 1970), in which the author discusses his earlier work on estimating the GDP gap in the 1960s; and Alan L. Sorkin, *Monetary and Fiscal Policy and Business Cycles in the Modern Era* (Lexington, MA, Lexington Books, 1988).

²⁹ The figures that follow in this paragraph and the next are not seasonally adjusted.

³⁰ Similar findings appear to apply to paid sick leave in the United States. (See, for example, James Warren, "Cough if You Need Sick Leave," *Bloomberg Business Week*, June 7–13, 2010, p. 33.)

³¹ In the March 2009 CPS supplement, the questions on health insurance and pension coverage are asked of the longest job held during the past year.