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

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CLMS Project: The Labor Market Impacts of the Great Recession of 2007-2009

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Introduction

In December 2007, the U.S. economy entered a national recession that lasted all through 2008 and for a major part of 2009.[1] The impacts of the Great Recession of 2007-2009 have taken a severe toll on the economic well-being of many U.S. workers over the past two years, and those conditions continued to deteriorate through the end of calendar year 2009.[2] Labor market problems of U.S. workers have increased steeply and nearly continuously over the course of the Great Recession from December 2007 through the end of 2009. Both household and payroll based surveys of employment have indicated very substantial job losses over the past two years. The seasonally adjusted number of employed civilians (16+) in the U.S. in December 2009 was more than 8 million below its estimated level in November 2007, the month immediately prior to the official start of the recession.[3] Over this time period, unemployment levels have more than doubled, and the nation's unemployment rate (seasonally adjusted) rose to slightly above 10.0% in the fourth quarter of 2009. The character of unemployment has also changed markedly over this period, with a substantial rise in the number of unemployed who are permanent job losers, especially blue collar workers, and the mean durations of on-going unemployment spells have risen very sharply, reaching 30 weeks at the end of 2009.[4]

The labor market problems of U.S. workers are not confined to those of the open unemployed. There also has been a very steep rise in underemployment problems (persons working part-time for economic reasons), in hidden unemployment (persons wanting work but not actively looking for jobs), and in mal-employment (persons working in jobs that do not utilize their formal education or occupational skills; e.g., a humanities major working in a call center or a carpenter working as a bartender).

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[1] The National Bureau of Economic Research, the official arbiter of business cycle dating in the U.S., declared December 2007 as the official start date of the recession but has not yet identified the official ending date.

[2] For a review of previous research findings by the Center for Labor Market Studies on the labor market impacts of the 2007-2009 recession,
See; (i) Andrew Sum, Ishwar Khatiwada, with Sheila Palma, The Nation's Underemployed in the Great Recession of 2007-2009: Growth in their Numbers, the Rising Incidence of Underemployment Problems Across Demographic, Socioeconomic and Occupational Groups of Workers and their Lost Hours of Work and Earnings, Center for Labor Market Studies, Northeastern University, Boston January 2010; (ii) Andrew Sum and Ishwar Khatiwada, Labor Underutilization Problems of U.S. Workers Across Household Income Groups at the End of the Great Recession, Report Prepared for C.S. Mott Foundation, Flint, Michigan 2010.

[3] These estimates of employment change are based on the findings of the national CPS household survey,
See: www.bls.gov for time series data on civilian employment trends in the nation.

[4] See: Andrew Sum, Paul Harrington, Ishwar Khatiwada, and Mykhaylo Trubskyy, The Deep Depression in Blue Collar Labor Markets in the United States: Implications for Future Stimulus and Workforce Development Policies, Center for Labor Market Studies, Northeastern University, Boston, December 2009.

The number of underemployed persons in the U.S. has jumped considerably over the past two years. The estimated number of persons working part-time for economic reasons also more than doubled between the fourth quarters of 2007 and 2009, reaching just under 9 million, the highest absolute and relative number of underemployed persons in our post-World War II history.[5] The average underemployed person experiences steep losses in weekly hours of work and in weekly earnings. Well educated, underemployed workers (recent BA graduates) often are mal-employed working in jobs that do not require college degrees. Only 1 of every 2 bachelor degree holders under age 25 in 2009 was working in a college labor market job. The mal-employed receive very low returns to their investment in a college education.[6]

The deep deterioration in labor market conditions also has reduced the growth of the nation's official civilian labor force, i.e., the aggregate number of persons (16+) identified as employed or unemployed. The nation's civilian labor force in January 2010 was nearly one million below its seasonally adjusted level in January 2009. Yet, the U.S. Bureau of Labor Statistics earlier had projected that the labor force would grow by nearly 1.5 million in calendar year 2009. Labor force withdrawals and delays in labor force entry have increased the number of hidden unemployed or the so-called labor force reserve over the past two years. This group also contributes to the growth of the pool of unutilized labor, holding down the level of real output, employment, and real incomes and earnings.

A number of the nation's political leaders and economic policymakers have called attention to the need to address the labor market plight of U.S. workers. President Obama called for actions to stimulate job creation for U.S. workers in his recent State of the Union message. In recent testimony before the U.S. House of Representatives Financial Services Committee, Ben Bernanke, the Federal Reserve Board Chairman, expressed his concerns about the state of the labor market, especially the high ratio of unemployed persons to job openings, the rising rate of long-term unemployment, and the potential for workers' skills to atrophy when left jobless for long periods of time.[7] The economic costs of labor underutilization will include future losses in earnings, employment and productivity as well as lost output and incomes today.

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[5] For further details on the numbers and characteristics of the underemployed,
See; Andrew Sum, Ishwar Khatiwada, with Sheila Palma, The Nation's Underemployed in the Great Recession…

[6] See: Andrew Sum, Ishwar Khatiwada, and Joseph McLaughlin, Educational, Labor Market, and Social Indicators for Teens and Young Adults in Massachusetts, Report Prepared for the Commonwealth Corporation, Boston, 2009.

[7] See: Jennifer Liberto, "Bernanke Concerned about Weak Job Market," CCNMonday.com, February 24, 2010.

This research paper is primarily designed to identify and assess the impacts of the 2007-2009 recession on the size, demographic/socioeconomic characteristics and occupational characteristics of the nation's unutilized and underutilized workers. The growth of the combined pool of the unemployed, underemployed, and labor reserve over the 2007 IV – 2009 IV period will be estimated together with changes in the overall labor underutilization rate over this two year period. We then will examine variations in labor underutilization rates across gender, race-ethnic, age, educational attainment, and family income groups of workers and for combinations of workers by age/education and education/income. To identify the influence of demographic traits, educational attainment, family income backgrounds and state labor market conditions on the probability that a worker with a given set of demographic and socioeconomic traits would have been underutilized in the fourth quarter of 2009, we have estimated a linear probability model of labor underutilization. We will use the results of that model to predict underutilization probabilities for a number of hypothetical workers. We will begin with a review of the definitions of the individual elements of the underutilized labor pool and the data sources used to estimate the size and demographic/socioeconomic composition of the nation's underutilized workers.

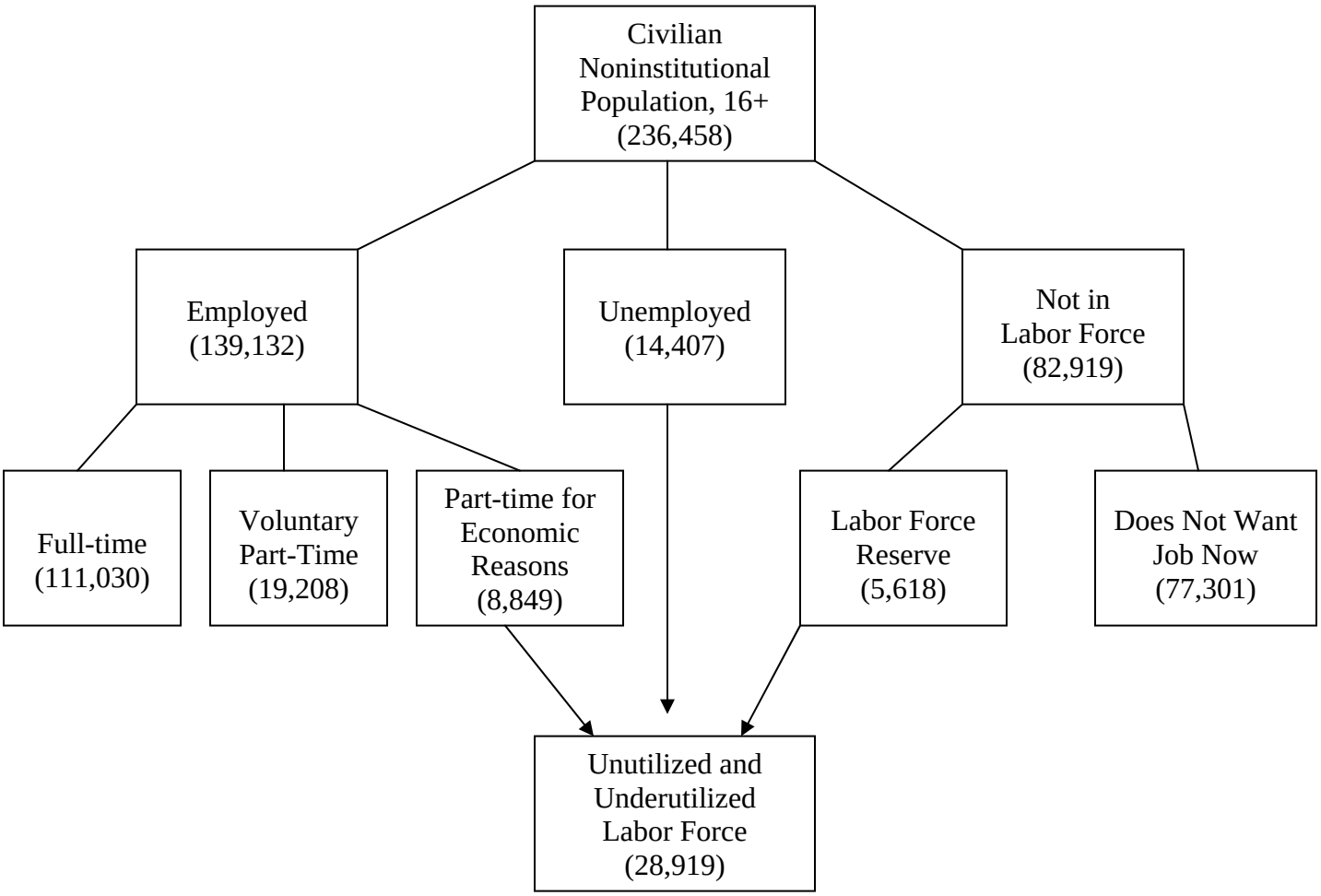
Defining and Measuring the Nation's Underutilized Workforce

Knowledge of the size, demographic and socioeconomic characteristics, occupations, and geographic locations of those workers who are experiencing various types of labor market problems is indispensable for assessing the labor market impacts of the Great Recession and for informing economic policymakers and workforce development program administrators of who is in need of assistance in becoming re-employed. In the U.S., the monthly Current Population Survey (CPS), a national survey of some 60,000 households, is used to provide estimates of the size of the nation's civilian labor force and its employed and unemployed populations (Chart 1). Labor force information is collected from all household members of working-age (16 and older) in the civilian, non-institutional population.[8] On the basis of their answers to the set of labor force activity questions, respondents are assigned into one of the following three labor force activity categories: employed, unemployed, and not in the labor force. In November 2009, of the 236.5 million persons in the civilian, non-institutional population, approximately 153.5 million

[8] The CPS survey does interview members of some group quarters, such as college dormitories and boarding schools, but does not interview persons residing in institutions (jails, prisons, nursing homes), the armed forces, or the homeless.

or just under 65% were active members of the civilian labor force (employed and unemployed). Of these labor force participants, 14.4 million or 9.4% were unemployed in November.[9] (See Chart 1). The remaining 82.9 million individuals were classified as not active in the labor force even though a fairly high number (nearly 6 million) expressed a desire for immediate employment.

Chart 1:
Using the Monthly National CPS Data to Identify the Number of Unemployed and Underemployed Workers and Members of the Labor Force Reserve in November 2009
(Not Seasonally Adjusted, in 1000s)



The CPS labor force questionnaire is also used to collect detailed information on the characteristics of the jobs held by the employed, including their weekly hours of work, hourly and weekly earnings, occupations, and industries of their employers as well as their reasons for

[9] The seasonally adjusted unemployment rate was 10.0% in November 2009.
See: U.S. Bureau of Labor Statistics, The Employment Situation: November 2009, Washington, D.C., December 4, 2009.

working part-time (under 35 hours per week). The employed are classified into three groups based on 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 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 want full-time jobs and are available for full-time work but are working less than 35 hours per week will be classified as the underemployed in this report.[10] In November 2009, there were nearly 8.9 million workers who were categorized as underemployed (Chart 1). In the fourth quarter of 2009, the average monthly number of underemployed workers was greater in both absolute and relative terms (percent of the employed) than in any previous quarter in the past 61 years.

Those persons not active in the labor force also are asked an additional set of questions about their current desires for employment, their reasons for not looking for work, their recent job search activities, and their availability for work. Those persons not active in the labor force who report to the CPS interviewer that they want a job now are classified as members of the labor force reserve. In November 2009, there were 5.618 million individuals who were members of the labor force reserve. This group should not be confused with the so-called marginally attached to the labor force. This latter group is a subset of the labor force reserve who have looked for a job at sometime in the past 12 months and were available to take a job.[11] In November 2009, there were 2.323 million individuals who would have met the criteria for the marginally attached.[12] They represented about 41% of the members of the labor force reserve in November. In a prior analysis of the likelihood of members of the labor force reserve and the marginally attached looking for work in the following year, we found only very small differences in their future job seeking behavior. Thus, we prefer to count all members of the labor force

[10] The definition of the underemployed was changed by the U.S. Bureau of Labor Statistics in 1994 with the implementation of a new labor force questionnaire. For a review of changes in the basic CPS labor force questions in 1994 including a revision in the procedures for estimating those persons employed part-time for economic reasons,
See: (i) John E. Bregger and Cathryn S. Dippo, "Why Is It Necessary to Change?," Monthly Labor Review, September 1993, pp. 3-9; (ii) Ann E. Polivka and Jennifer M. Rothgeb, "Redesigning the CPS Questionnaires," Monthly Labor Review, September 1993, pp. 10-19.

[11] See: U.S. Bureau of Labor Statistics, The Employment Situation: November 2009, "Table A-13." In a recent Economist article, the marginally attached are described as those "who have simply given looking" for work. This is not necessarily true of all such individuals. They simply have not actively looked for work in the past four weeks.
See: "The Man Who Fell to Earth," The Economist, January 23-29, 2010, p. 17.

[12] The CPS survey 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, then reinterviewed in January – April 2010. We can thus track the job search behavior of the labor force reserve in the following year.

reserve in our pool of the underutilized labor force, which includes the unemployed, underemployed, and the labor force reserve.

The findings of the monthly Current Population Survey 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 survey are displayed in Chart 1. All of the estimates in this chart are not seasonally adjusted since we want to know the actual total number of individual workers experiencing one of these three labor market problems in a given month. In November 2009, there were 14.407 million workers who were estimated to be unemployed, yielding a seasonally unadjusted unemployment rate of 9.4%. There were an additional 8.894 million underemployed persons in this month. They were working part-time for economic reasons but desiring full-time jobs. They represented approximately 6.4% of the total number of employed in the nation in November. Finally, there were 5.618 million individuals who were members of the labor force reserve, wanting a job at the time of the survey but not actively looking. The total pool of completely unutilized or underutilized workers was 28.919 million, yielding a labor underutilization rate of 18.2%, the highest such rate in our nation since the first quarter of 1983 shortly following the bottom of the deep recession of 1981-82.

Tracking Changes in the Number of Underutilized Workers in the U.S. From 2007 IV to 2009 IV

To track changes in the numbers of U.S. workers who were completely unutilized (unemployed or labor force reserve) or underutilized (the underemployed) over the past two years, we analyzed the findings of the October-December CPS surveys for both 2007 and 2009. We will refer to these two time periods as the fourth quarter of each calendar year. For each of these two time periods, we generated estimates of the number of workers who were unemployed, underemployed, or a member of the labor force reserve and their combined total.

Table 1:
Trends in the Number of Unutilized or Underutilized Workers (16+) in the U.S. by Type of Labor Market Problem from 2007 IV to 2009 IV
(in Millions, not Seasonally Adjusted)

Labor Market Problem	(A) 2007 IV	(B) 2009 IV	(C) Absolute Change
Unemployed	7.158	14.699	+7.541
Underemployed	4.393	8.915	+4.522
Labor force reserve (hidden unemployed)	3.932	5.360	+1.428
Total pool of underutilized labor	15.484	28.974	+13.490

In the fourth quarter of 2007, the average monthly number of unemployed (not seasonally adjusted) was 7.158 million (Table 1). By the fourth quarter of 2009, the total number of unemployed had risen to 14.7 million, an increase of 7.341 million, which represented a more than doubling of the pool of official unemployed. The number of underemployed also rose very rapidly over this same two year period, more than doubling from 4.393 million to 8.915 million, an increase of 4.522 million. Deteriorating labor market conditions also increased the size of the labor force reserve or the hidden unemployed. Their ranks increased by 1.428 million or more than one-third over this two year period, with younger workers (<30) and older workers (65+) accounting for the bulk of their growth. In the aggregate, the combined pool of unutilized and underutilized labor rose from 15.484 million to 28.974 million, an increase of nearly 13.5 million individuals over this two year period.

The findings on these underutilization problems can be combined with data on the adjusted civilian labor force to calculate an underutilization rate. The value of the labor underutilization rate is obtained by dividing the combined pool of unutilized labor by the adjusted civilian labor force, which is simply the sum of the civilian labor force and the labor force reserve. In the fourth quarter of calendar year 2007, the underutilization rate was 9.8% (Table 2). Two years later, the substantial rise in the pool of unemployed and underemployed helped drive the labor underutilization rate to 18.2%. This rate of labor underutilization was the highest in the past 27 years and came very close to tying the previous post-WW II high of nearly 19% in the first quarter of 1983 shortly following the bottom of the 1981-82 national recession.[13]

[13] The unemployment rate (seasonally adjusted) in the fourth quarter of 1982 was 10.7%.

Table 2:
Trends in the Labor Underutilization Rate of U.S. Workers (16+) Between 2007 IV and 2009 IV
(Numbers in millions)

Variable	(A) 2007 IV	(B) 2009 IV
Pool of underutilized labor	15.484	28.974
Adjusted civilian labor force	158.000	158.788
Underutilization rate	9.8%	18.2%

How did the severe labor market downturn from 2007-2009 affect the labor underutilization problems of key demographic, socioeconomic, and occupational groups of U.S. workers? To answer this question, we will analyze the labor underutilization rates of key groups of U.S. workers in the last two years from the fourth quarter of 2007 to the fourth quarter of 2009. Estimates of labor underutilization rates will be provided by gender, race-ethnic, age, educational attainment, occupation, and household income groups and for selected combinations of such traits; e.g., age and educational attainment.

Underutilization Rates of U.S. Workers by Gender, Race-Ethnic Group, Age and Educational Attainment, 2009 IV

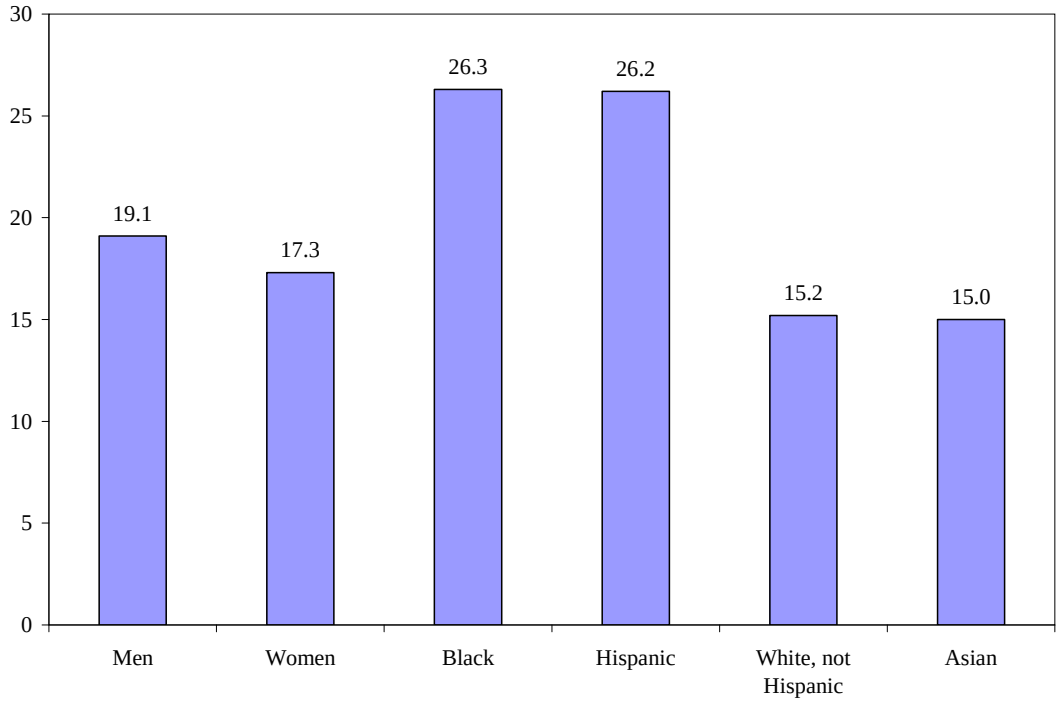
The labor force underutilization rates of U.S. workers in the fourth quarter of 2009 were estimated for an array of demographic (gender, race-ethnic, age), educational attainment, household income, and occupational groups as well as for combinations of age/educational attainment and household income/educational attainment groups. Chart 1 presents the findings for gender and four major race-ethnic groups.

Over the past two years, male workers experienced above average job losses and higher increases in their unemployment rates than women. Male employment declined by 5.918 million or 7.6% between November 2007 and January 2010 versus a decline of 2.232 million or 3.2% among women.[14] The male unemployment rate (not seasonally adjusted) rose by 6.0 percentage points between the fourth quarters of 2007 and 2009 versus only 3.8 percentage points among women. The 2.4 percentage point gap between the male and female unemployment rate in the fourth quarter of 2009 was the highest absolute difference between their quarterly unemployment

[14] These employment estimates are seasonally adjusted for all persons (16+).

rates since 1948, the beginning of the CPS time series. Underemployment rates of men and women in the fourth quarter of 2009 were basically identical. As a consequence of their higher open unemployment rate, males in the U.S. experienced a higher rate of labor underutilization than women in the fourth quarter of 2009 (19.1% vs. 17.3%). In the last quarter of 2007, women were slightly more likely to be underutilized than men (10.0% vs. 9.6%).

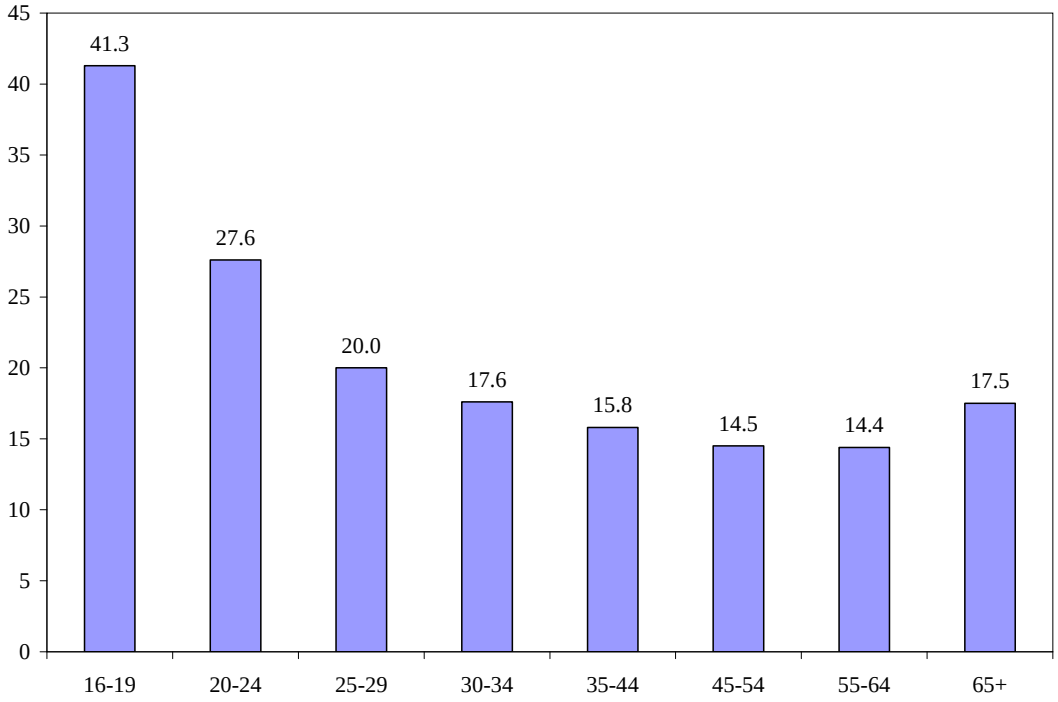
Chart 1:
Labor Force Underutilization Rates of U.S. Adults 16 and Older by Selected Gender and Race-Ethnic Groups, 2009 IV (in %)



Labor underutilization rates of U.S. workers differed far more widely by race-ethnic group in the fourth quarter of 2009. Both Black and Hispanic workers, especially males, encountered sharply higher rates of job loss during the recession that drove up their unemployment rates, and they also experienced much higher rates of underemployment and hidden unemployment. The labor underutilization rates of Black and Hispanic workers were slightly above 26 percentage points in the fourth quarter of 2009 versus underutilization rates of only 15.2% and 15.0% for White, non-Hispanic and Asian workers, respectively. Members of all four race-ethnic groups experienced a strong increase in their underutilization rates over the course of the recession.

Labor underutilization rates also vary quite substantially across age groups. The nation's younger workers (16-29, 20-24, and 25-29) were characterized by very steep job losses, high rates of unemployment and underemployment and declining rates of labor force attachment. The labor underutilization rates were highest among the nation's teens (41.3%) and 20-24 year olds (27.6%) then fell steadily with age through age 45-54. Both 45-54 and 55-64 year olds tied for the lowest underutilization rates at 14.4% to 14.5% while older workers (65+) faced an underutilization rate of 17.5%. The relative difference in underutilization rates between teens and 45-64 year olds was nearly three to one. Teens and young adults with limited formal schooling and from low income families faced extraordinarily high rates of labor underutilization (over 60%).

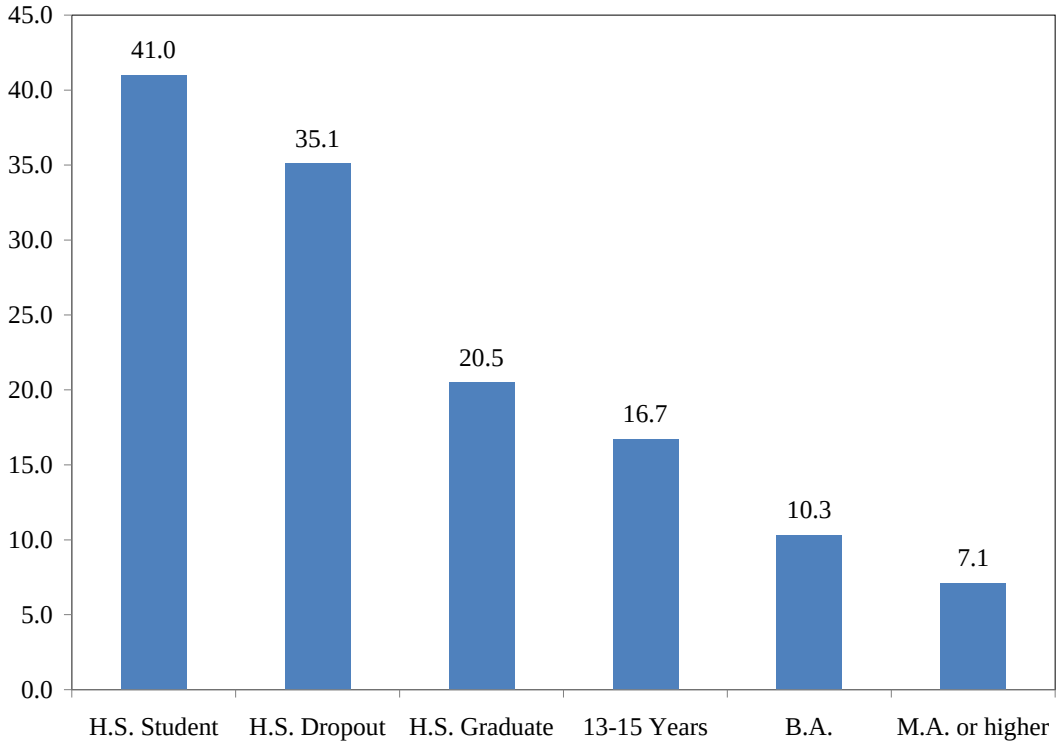
Chart 2:
Labor Force Underutilization Rates of U.S. Adults 16 and Older
By Selected Age Groups, 2009 IV (in %)



Job losses among the nation's adults over the recession varied markedly across educational groups, especially among men. Between November 2007 and January 2009, employment of male high school dropouts (25+) fell by one-sixth versus nearly 10% for male high school graduates and only 1% for those men holding a bachelor's or more advanced

academic degree. Among adult women, job changes ranged from a decline of nearly 9% for high school graduates to a gain of slightly over 1% for women with a bachelor's or higher academic degree. Underemployment rates among both men and women also ranged widely across educational groups, being highest for high school dropouts and lowest among those with a Master's or higher degree. As a consequence of these developments, labor underutilization rates varied considerably across educational attainment groups of workers (Chart 3). High school students faced the highest overall rate of underutilization (41%). Among non-enrolled adults, these underutilization rates varied from a high of 35% among high school dropouts, falling to 20.5% for high school graduates, 10% for bachelor degree holders, and to a low of 7% for those with a Master's or higher degree (professional degree or Ph.D.). The labor underutilization rate of high school dropouts was five times as high as that of adults with a Master's or higher degree (35% vs. 7%).

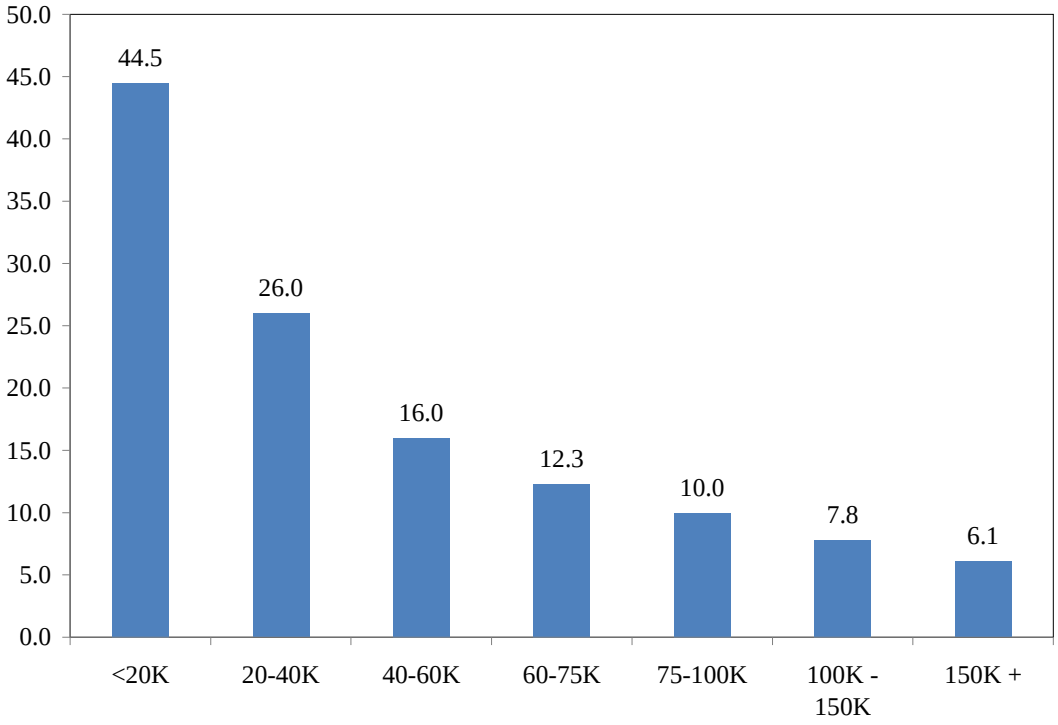
Chart 3:
Labor Force Underutilization Rates of U.S. Adults 16 and Older
By Selected Educational Attainment Groups, 2009 IV (in %)



Given the recession's more adverse impacts on job loss and underemployment among the young, the less well educated, and on many lower paying service, sales, and laborer type

positions, one would expect that workers in lower income families would face higher rates of labor underutilization than their more affluent peers. The monthly CPS household surveys collected information from each sample household on their gross annual income in the twelve months preceding the interview.[15] We classified the responses of each household into seven income categories, ranging from under $20,000 to a high of $150,000 or more. For workers in each household income group, estimates of their labor underutilization rates were made.

Chart 4:
Labor Force Underutilization Rates of U.S. Adults 16 and Older By Selected Household Income Groups, 2009 IV (in %)



The underutilization rates of U.S. workers in the fourth quarter of 2009 were highest by far (44.5%) for those in the lowest income group and then fell steadily with the size of the household's income, declining to 26% for those in the $20-40,000 income category, to 12% for those in the $60-75,000 income category, and to a low of 6% for those in the highest income category ($150,000 or more). Workers in the lowest income category were 4.5 times more likely to be underutilized than their peers in the $75-100,000 category and more than 7 times more

[15] Slightly under 20 percent of households in recent years do not provide any household income information to the CPS interviews.

likely to be underutilized than workers in the highest income category. The nation's lowest income workers were in the midst of a true labor market depression.

Combined Unemployment and Underemployment Problems of U.S. Workers by Major Occupational Group

The impacts of the Great Recession on job loss and underemployment among workers in different occupational groups have varied quite considerably.[16] In the fourth quarter of 2009, the number of employed professional workers was higher than it was two years earlier while the number of employed blue collar workers, especially in production and construction occupations, had declined by nearly one-sixth. Underemployment rates also varied quite considerably across occupational groups with many service occupations (building and grounds cleaners, food preparation and service, personal care) and construction crafts being most adversely affected.[17]

While the number of unemployed and underemployed workers in each occupational group can be measured with the monthly CPS data, the occupational characteristics of those in the labor force reserve are not identified on the CPS public use files. We have estimated combined unemployment and underemployment rates for U.S. workers in each of 23 major occupational groups during the fourth quarter of 2009 (Table 3).[18] For all workers, the rate was 15.4%. We have identified three groups of occupations to illustrate the range of these unemployment/underemployment rates. The low incidence group contains occupations with rates ranging from 4.5 to 7.4 percentage points, the medium incidence group covers occupations with rates (13.1-15.5%) slightly below average to the average incidence, and the high incidence group covers those occupations with an incidence of 20% or higher. Construction and extraction occupations topped the list with a combined unemployment/underemployment rate of nearly 33%.

[16] See: Andrew Sum, Paul Harrington, Ishwar Khatiwada, Mykhaylo Trubskyy, The Deep Depression in Blue Collar Labor Markets in the U.S…

[17] See: Andrew Sum, Ishwar Khatiwada, Sheila Palma, Underemployment Problems in U.S. Labor Markets in 2009 Predicting the Probabilities of Underemployment: for Key Age, Gender, Race-Ethnic, Nativity, Educational Attainment, and Occupational Subgroups of U.S. Workers, Center for Labor Market Studies, Northeastern University, Boston, February 2010.

[18] The rate is calculated by dividing the number of unemployed and underemployed workers in an occupational group by the number of civilian labor force participants.

Table 3:
Estimates of the Combined Unemployment and Underemployment Rates of U.S. Workers in Selected Occupational Groups, 2009 IV (in %)

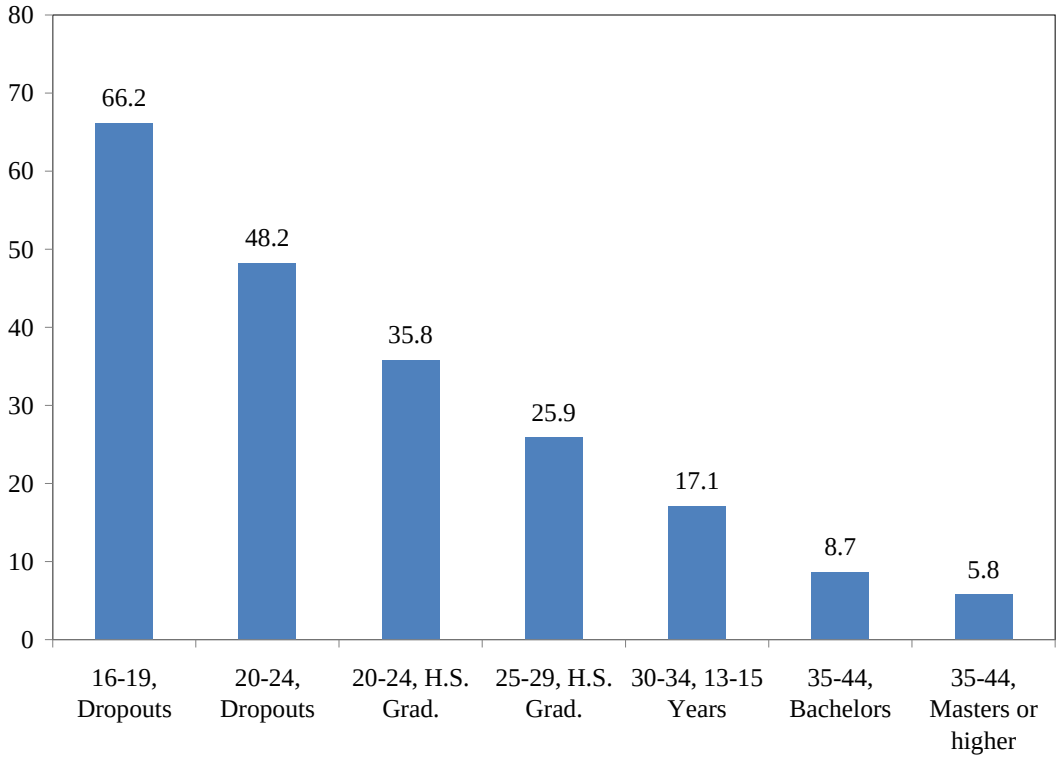
Occupational Group	Combined Unemployment and Underemployment Rate (in %)
All	15.4
Low Incidence	
Legal	4.5
Protective Service	4.6
Healthcare professionals/technical	4.8
Computer/mathematical occupations	5.9
Community and Social Service	6.6
Management	7.8
Medium Incidence	
Office and administrative support	13.1
Installation, maintenance	13.8
Health care support	15.2
Arts, design, entertainment	15.5
High Incidence	
Production occupations	20.2
Farming, forestry, fishing	23.0
Building and grounds cleaning	24.6
Food prep and serving	24.7
Construction and extraction	32.7

At the low end of the scale, the occupations with one exception (protective service) were dominated by professional and managerial jobs. Three major occupational groups, including legal and health professionals, had unemployment/underemployment rates below five percent. The occupational groups in the middle were quite diverse, including office support, health care support, and installation/maintenance mechanics. The five major occupational groups with the highest incidence of such problems included three blue collar groups (production, construction, farm/forestry) and two service occupational clusters (food service and preparation, building and grounds cleaning). The top three occupations had a combined average unemployment/ underemployment incidence of 27.3% versus an average 4.6% rate for the lowest three occupational groups, representing a relative difference of six to one .

The Underutilization Rates of Workers in Selected Age/Educational and Household Income/Educational Groups in the Fourth Quarter of 2009

The labor underutilization rates of U.S. workers were found to be strongly associated with both their age and educational attainment. To identify how these two characteristics interacted with one another in influencing labor underutilization rates, we estimated underutilization rates for workers in each age group by their educational attainment. In every age group, underutilization rates fell as the level of educational attainment improved. Findings for selected high, middle, and low underutilization groups are displayed in Chart 5.

Chart 5:
Labor Force Underutilization Rates of U.S. Adults 16 and Older
By Selected Age/Educational Attainment Groups, 2009 IV (in %)

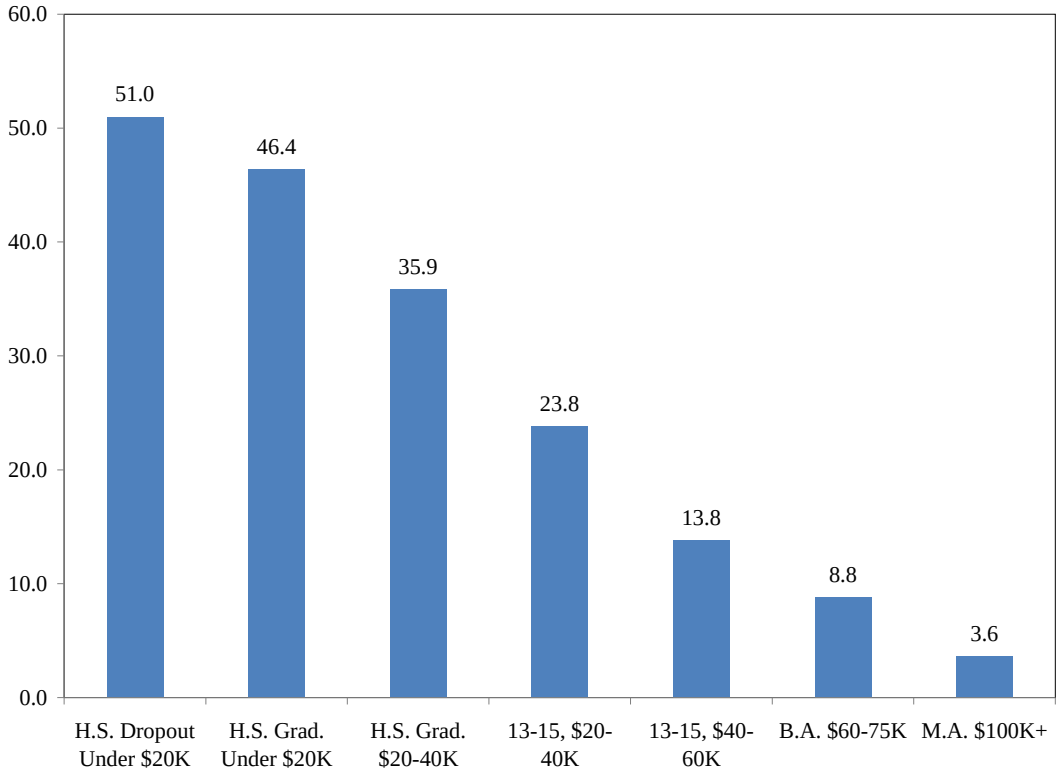


The highest rate of labor underutilization was found among teenaged high school dropouts. Two thirds of all teenaged dropouts were underutilized as were nearly half of all 20-24 year old dropouts. These underutilization rates tended to decline sharply as the age and educational attainment of the respondent improved up to college graduates in the 35-44 age group. Only 8.7% of 35-44 year old bachelor degree recipients were underutilized as were only

5.8% of 35-44 year olds with a Master's or higher degree. The relative size of the gap in the labor underutilization rates of teenaged high school dropouts and 35-44 year olds with graduate degrees was nearly 12 times. These two groups of workers occupy labor markets on different planets.

The labor underutilization rates of workers in the fourth quarter of 2009 also were found to be strongly influenced by their educational attainment and their annual household income. To identify whether these relationships between labor underutilization and household income held true across educational groups, we calculated a matrix of underutilization rates of 30 educational attainment/income groups of workers. Selected findings of our analysis are displayed in Chart 6.

Chart 6
Labor Force Underutilization Rates of U.S. Adults 16 and Older By
Selected Educational Attainment/ Family Income Groups, 2009 IV (in %)



As expected, the highest rates of labor underutilization prevailed among workers with limited formal schooling in the lowest income group (under $20,000). The underutilization rate of high school dropouts in low income households was an astounding 51% closely followed by high school graduates in such low income families (46%). These labor underutilization rates

declined as educational attainment and household income improved. Among those adults with 13-15 years of school and a household income between $20 and $40 thousand, the underutilization rate dropped to 24%. It fell steeply to slightly under 9% for bachelor degree holders in households with incomes between $60-75,000, and to a low of 3.6% for workers with a Master's or higher degree in households with an income over $100,000. The relative size of the gap between the underutilization rates of the highest and lowest groups of workers was 14 times.

Predicting the Probability of Underutilization Among U.S. Workers in the Fourth Quarter of 2009

The incidence of underutilization problems among U.S. workers increased substantially during the course of the recession of 2007-2009. The above findings on the incidence of such problems in the fourth quarter of 2009 revealed substantial variations across age, race-ethnic, educational attainment, occupational, and family income groups and especially across combinations of educational/income groups. To identify how the probability of a worker being underutilized over this three month period was influenced by this demographic traits, educational attainment, family income, and the unemployment rate of the state in which he resided, we estimated a linear probability model based on ordinary least squares regression techniques.[19] The underutilization status of a civilian labor force participant (including members of the labor force reserve) was regressed against the gender, age group, race-ethnic group, the immigrant status, and educational group of the respondent, his/her household's income in the twelve month period prior to the survey, and the unemployment rate of the state in which he lived in 2009. A listing and definition of all of the dependent and independent variables appearing in this model are presented in Appendix A. Logit regression results appear in Appendix B.

Findings of the linear probability model of labor underutilization are presented in Table 4. The estimated sign, size, and statistical significance of each of the independent variables are displayed. The base group for the analysis is a White, non-Hispanic, female, who was native born, 35-44 years old, a high school graduate, lived in a family with an income between $20 and $40 thousand dollars, and resided in a state with an unemployment rate equal to the national

[19] A binary logit regression model of the probability of underutilization also was estimated. Its findings are very similar to those of the linear probability model with respect to the estimated marginal impacts of the independent variables when evaluated at the mean values of the right-hand side variables. The predicted probabilities of underutilization from the logit model for the six individuals in Table 5 ranged from 4.2% at the bottom to 88% at the top.

average rate of unemployment in 2009. The constant term in the model (.215) represents the expected probability of such an individual being underutilized in the fourth quarter of 2009.

Table 4:
Estimated Independent Effects of Demographic and Educational Traits. Family Income Background, and State Labor Market Conditions on the Probability that a Member of the Labor Force (16+) Would Be Underutilized in the Fourth Quarter of 2009

	(A)	(B)	(C)
Variable	Coefficient	t-statistic	Sig. Level
Constant	.215	75.03	**
Male	.016	10.37	**
Race-Ethnic			
Asian	.009	2.16	*
Black	.052	18.68	**
Hispanic	.022	7.49	**
Other Race	.061	12.15	**
Immigration Status			
Before 2006	-.001	-.38	--
2006 or later	.039	5.43	**
Age			
16-19	.272	48.00	**
20-24	.111	31.90	**
25-34	.012	5.22	**
45-54	-.007	-3.08	**
55-64	.000	.14	--
65+	.009	2.24	*
Educational Attainment			
High school student	-.058	-7.43	**
College student	-.165	-32.63	**
H.S. dropout	.065	20.42	**
13-15 years	-.025	-11.78	**
BA degree	-.054	-23.20	**
MA or higher degree	-.063	-21.62	**
Family Income			
<20k	.165	53.56	**
40-60k	-.074	-27.15	**
60-75k	-.098	-31.72	**
75-99k	-.116	-37.35	**
100-149k	-.121	-38.98	**
150+ k	-.127	-.4.94	**
State U.R.	.014	34.74	**

Notes: ** Sig. 01 * Sig. 05 -- Not sig.

A review of the findings reveals that nearly all of the 26 independent variables had a statistically significant impact on the probability of a worker being underutilized. Only the two variables representing an immigrant worker who arrived in the U.S. before 2006 and being 55-64 years old had no significant impact. Males, ceteris paribus, were modestly more likely (+1.6 percentage points) than women to be underutilized, and members of each minority race-ethnic group were somewhat more likely to be underutilized than their white, non-Hispanic counterparts. Black workers (+5.2 percentage points) and American Indians/mixed race (+6.1 percentage points) were considerably more likely than whites with otherwise similar characteristics to be underutilized. Recent immigrants (those arriving in the U.S. from 2006 onward) were significantly more likely (+3.9) percentage points) to be underutilized than their native born peers. More established immigrants (those arriving before 2006) faced the same probabilities as the native born with similar characteristics. Younger workers, especially teens (+27 percentage points) and younger adults 20-24 years old (+11 percentage points), were considerably more likely to be underutilized than those adults 35-44 while those 25-34 years old (+1.2 percentage points) and 65+ (+.9 percentage points) were only modestly more likely to be underutilized.

Both educational attainment and family income had strong independent effects on the probabilities of a worker being underutilized. High school dropouts (+6.5 percentage points) were significantly more likely to be underutilized than their peers with a high school diploma or a GED. Those adults with formal education beyond high school were significantly less likely to be underutilized with BA holders being 5.4 percentage points less likely to be underutilized than high school graduates and those with a Master's or higher degree being 6 percentage points less likely to be underutilized. Family income also played a strong role in influencing labor underutilization problems. Being a member of a low income family (annual income under $20,000) significantly raised the likelihood of being underutilized (+16.5 percentage points) relative to a similar peer with an income between $20 and 40,000. Coming from a family with an income above $40,000 significantly reduced the probability of being under-utilized with the size of these effects rising as family income increased. Persons in families with incomes over $100,000 were 12 to 13 percentage points less likely to be underutilized than their peers in low middle income families. The labor market conditions of the state in which one lived also had a significant impact on the expected probability of being underutilized. Each one percentage point

increase in the state's unemployment rate above the national average would independently raise the probability of being underutilized by 1.4 percentage points.

To illustrate the combined effects of demographic traits, educational attainment, family income, and state unemployment rates on the probability of being underutilized in the 4th quarter of 2009, we estimated the probability of being underutilized for seven hypothetical individuals. The demographic/socioeconomic backgrounds of these seven persons are displayed in Table 5 together with their estimated probabilities of being underutilized. The first individuals are older, native born, White non-Hispanics, who are college educated, come from more affluent families, and lived in states with unemployment rates below the national average. The latter three respondents are Black, younger, less well educated individuals, who come from lower income families, and live in states with above average unemployment (i.e. one to two percentage points above the national average).

Table 5:
The Predicted Probability of Being Underutilized For Workers in Selected Demographic/ Educational Attainment/ Family Income Groups, 2009 IV

	Characteristics of Workers	Predicted Probability of Underutilization
Person A	Female, 55-64, White, native born, B.A., Family Income 100-149K, U.R. is 2 points below U.S. average	1.2
Person B	Female, 45-54, Asian, native born, M.A.+, Family Income 100-149K, U.R. is 1 point below U.S. average	1.9
Person C	Male, 35-44, White, not Hispanic, native born, B.A., Family income 75-99K, U.R. is 1 point below U.S. average	5.1
Person D	Male, 25-34, Hispanic, native born, 13-15 Years, Family Income 60-75K, U.R. is at U.S. Average	14.2
Person E	Female, 20-24, Black, native born, H.S. graduate, Family Income, 20-40K, U.R. is 1 point above U.S. average	39.2
Person F	Male, 20-24, Black, native born, H.S. dropout, family income under 20K, U.R. is 2 points above U.S. average	68.8
Person G	Male, 16-19, Black, native born, H.S. dropout, family income under 20K, U.R. is 2 points above U.S. average	85.0

Note: U.R. = unemployment rate

The estimated probabilities of being underutilized varied enormously across these seven hypothetical individuals. They ranged in size from slightly over one in a hundred to as high as 85 out of 100. The first hypothetical person is an older 45-54 year old white, non-Hispanic woman, who was native born, had a bachelor's degree, lived in an upper middle class family ($100,000-150,000) and in a state with an unemployment rate two percentage points below the U.S. average.[20] Her predicted probability of being underutilized was only 1.2%. Our second person is a slightly younger 45-54 year old woman, who was Asian but native born, held a Master's or professional degree, also lived in an affluent family, and resided in a state with an unemployment one percentage point below the U.S. average. Her predicted probability of being underutilized also was a low 1.9 percentage points.

Our third individual is a younger, 35-44 year old, white non-Hispanic male, who was native born, held a bachelor's degree, lived in a family with an income above the median for the nation, and worked in a state with an unemployment rate 1 percentage point below the U.S. average. His predicted probability of being underutilized was 5.1 percentage points, far below the U.S. average of 18.4%. Our fourth person is a 25-34 year old, Hispanic male, born in the US, completed some college but does not have a bachelor's degree, and lived in a state with an unemployment rate equal to the U.S. average. His predicted probability of being underutilized was 14.2 percent, or 4 percentage points below the average for all workers (16+).

Our last three individuals were assigned combinations of traits (being younger, black, no post-secondary schooling, lower family incomes, states with higher unemployment rates) that would place them at a considerably greater risk of underutilization. Person E is a young 20-24 black woman, who held a high school diploma, lived in a family with an income between $20-40,000, and in a state with an unemployment rate one percentage point above the U.S. average. Her predicted probability of being underutilized was slightly under 40 percent, or more than double the national average. Person F is also a young (20-24) Black adult, but is male, a high school dropout, lives in a low income family (under $20,000) and resides in a state with an unemployment rate two percentage points above the U.S. average.[21] This young man's predicted probability of being underutilized in the 4th quarter of 2009 was an astounding 64%. Our last

[20] In the 4th quarter of 2009, states such as Colorado, Iowa, Kansas, Nebraska, Hawaii, and North and South Dakota had unemployment rates two or more percentage points below the U.S. average.

[21] In the fourth quarter of 2009, the following states had an unemployment rate two or more percentage points above the U.S. average: California, Michigan, Nevada, and Rhode Island.

individual (Person G) is nearly identical to Person F except that he is only a teenager. This young, Black, male high school dropout had an 85% predicted probability of being underutilized.[22]

The above findings on the differences in the probability of U.S. workers facing an underutilization problem at the end of calendar year 2009 reveal an extraordinarily large degree of diversity in the predicted likelihood of encountering such problems. These probabilities ranged from a low of 1.2 to 1.9% for older, well-educated adults in high income families to highs of 69 to 85% for young, Black workers with limited schooling and from low income families. The relative size of the gap in predicted underutilization rates between Person G and Person A was an astounding 71 times.

Clearly, the economic burdens of the Great Recession of 2007-2009 were far from evenly shared among U.S. workers. Labor underutilization rates varied enormously across key demographic, socioeconomic, and occupational subgroups of workers and across individual states. Younger, minority, less well educated, and lower income workers were the most adversely affected as were many blue collar workers (especially in construction and production workers in manufacturing) and service workers (food prep and serving, building and grounds cleaning, personal services). Older, more highly educated workers in many management and professional occupations from affluent families were much more able to avoid these labor underutilization problems. While most of these latter highly educated and professional/managerial workers were only marginally impacted by the recession, the nation's less educated, blue collar, and lower income workers faced the economic equivalent of a true Great Depression. These labor market outcomes clearly have intensified economic and social inequality in the U.S., but very little media or political attention has been paid to this labor market calamity for the most adversely affected subgroups of the workforce.

[22] Our logit regression model actually predicted an 88% probability of being underutilized for this individual.

Appendix A:
A Listing and Definitions of the Dependent and Independent Variables Appearing in the Linear Probability Model of the Underutilization Status of U.S. Workers in the 4th Quarter of 2009

The main body of the report contains findings of a multivariate statistical analysis of the probability that a member of the adjusted civilian labor force in the 4th quarter of 2009 would have been unutilized or underutilized: unemployed, underemployed, or a member of the labor force reserve. A listing of each of the variables appearing in the model and the definitions are presented below.

Appendix Table A:
Definitions of the Dependent and Independent Variables Appearing in the Linear Probability and Logit Regression Models Designed to Explain the Underutilized Status of Employed Persons 16 Years and Older in the U.S., Fourth Quarter of 2009

Variable Name	Definition
Underutilized Status	A dichotomous variable representing the underutilized status of the person = 1 if unemployed, under-employed, or member of labor force reserve = 0 if else
Male	A dichotomous gender variable = 1 if male = 0 if else
Black	A dichotomous race/ethnic variable = 1 if Black, not Hispanic = 0 if else
Asian	A dichotomous race variable = 1 if Asian = 0 if else
Hispanic	A dichotomous race/ethnic variable = 1 if Hispanic = 0 if else
OtherR	A dichotomous race/ethnic variable = 1 if "Other" race, not Hispanic = 0 if else
Immgrbefore2006	A dichotomous variable representing time of the arrival of a foreign-born person in the U.S. = 1 if arrived before 2006 = 0 if else
Immgrsince2006	A dichotomous variable representing time of the arrival of a foreign-born person in the U.S. = 1 if arrived since 2006 = 0 if else
Age16_19	A dichotomous age variable = 1 if 16-19 years old = 0 if else

Age20_24	A dichotomous age variable = 1 if 20-24 years old = 0 if else
Age25_34	A dichotomous age variable = 1 if 25-34 years old = 0 if else
Age45_54	A dichotomous age variable = 1 if 45-54 years old = 0 if else
Age55_64	A dichotomous age variable = 1 if 55-64 years old = 0 if else
Age65plus	A dichotomous age variable = 1 if 65 years or older = 0 if else
Hs_student	A dichotomous variable representing the educational attainment level of the respondent = 1 if the person is a high school student = 0 if else
Hs_dropout	A dichotomous variable representing the educational attainment level of the respondent = 1 if the person is a high school dropout = 0 if else
College_student	A dichotomous variable representing the educational attainment level of the respondent = 1 if the person is a college student = 0 if else
Some_college	A dichotomous variable representing the educational attainment level of the respondent = 1 if the person has 13-15 years of college including Associate degree = 0 if else
Bachelor_degree	A dichotomous variable representing the educational attainment level of the respondent = 1 if the person has a B.A. degree = 0 if else

MastersP_degree	A dichotomous variable representing the educational attainment level of the respondent = 1 if the person has a masters or a higher degree = 0 if else
MissingInc	A dichotomous variable representing missing family income = 1 if family income is missing = 0 if else
Faminc_lt_20	A dichotomous variable representing the family income of the person = 1 if family income is less than $20,000 = 0 if else
Faminc_40_59	A dichotomous variable representing the family income of the person = 1 if family income is between $40,000-$60,000 = 0 if else
Faminc_60_74	A dichotomous variable representing the family income of the person = 1 if family income is between $60,000-$74,000 = 0 if else
Faminc_75_99	A dichotomous variable representing the family income of the person = 1 if family income is between $75,000-$99,000 = 0 if else
Faminc_100_149	A dichotomous variable representing the family income of the person = 1 if family income is between $100,000-$149,000 = 0 if else
Faminc_150Plus	A dichotomous variable representing the family income of the person = 1 if family income is $150,000 or more = 0 if else
Ur	The unemployment rate for the state in which the person lived in 2009 minus the average U.S. unemployment rate for the year (9.2%)

Appendix B:
Data Sources for the Logit Regression of Labor Underutilization and the Full Results of the Logit Analysis

The source of data used in the logit regression analyses appearing in this appendix is the monthly Current Population Survey (CPS) public use files for the October-December period of 2009. The survey was conducted by the U.S. Census Bureau for the U.S. Bureau of Labor Statistics. The CPS survey involves interviews with a nationally representative sample of approximately 60,000 households across the nation each month. Labor force data are collected for all household members 16 and older. Our analysis of the labor force underutilization status of persons 16 and older in the U.S. is based on findings for the fourth quarter of 2009. There were 212,563 persons who were members of labor force and the labor force reserve in the CPS sample during the fourth quarter of 2009. The logit regression analysis was conducted for all persons 16 years and older who were members of labor force and labor force reserve (Table B1). Table B1 provides data on the estimated regression coefficients, their standard errors, and their significance levels. Table B2 provides descriptive statistics for the variables used in the logistic regression analysis.

Table B1:
Findings of the Logit Regression Analysis of the Labor Force Underutilization Status of Persons 16 Years and Older in the U.S., Fourth Quarter of 2009

Variable	Logit Coefficient	Standard Error	Marginal Probability
Constant	-1.327***	0.022	
male	0.128***	0.012	0.019
Black	0.334***	0.020	0.050
Asian	0.099***	0.035	0.015
Hispanic	0.127***	0.022	0.019
OtherR	0.442***	0.035	0.066
immgrbefore2006	0.008	0.022	0.001
immgrsince2006	0.234***	0.049	0.035
age16_19	1.479***	0.037	0.221
age20_24	0.654***	0.024	0.098
age25_34	0.107***	0.019	0.016
age45_54	-0.065***	0.019	-0.010
age55_64	0.002	0.022	0.000
age65Plus	0.093***	0.030	0.014
hs_students	-0.249***	0.048	-0.037
hs_dropouts	0.314***	0.021	0.047
college_students	-0.923***	0.036	-0.138
some_college	-0.174***	0.016	-0.026
bachelor_degree	-0.491***	0.020	-0.073
masters_degree	-0.686***	0.030	-0.102
MissingInc	-0.429***	0.019	-0.064
Faminc_lt_20	0.773***	0.019	0.115
Faminc_40_59	-0.489***	0.020	-0.073
Faminc_60_74	-0.718***	0.025	-0.107
Faminc_75_99	-0.888***	0.026	-0.132
Faminc_100_149	-1.058***	0.029	-0.158
Faminc_150_Plus	-1.205***	0.038	-0.180
ur	0.115***	0.003	0.017
Model Summary			
-2 Log likelihood	172000		
Cox & Snell R Square	0.098		
Nagelkerke R Square	0.164		
Chi-Square	21190***		
Degrees of Freedom; N	27; 212535		

Note: *** implies significant at the .01 level
** implies significant at the .05 level
* implies significant at the .10 level

Table B2:
Descriptive Statistics of the Dependent and Independent Variables in the Logit Regression Analysis of the Labor Force Underutilization Status of Persons 16 Years and Older in the U.S., Fourth Quarter of 2009

Variable	Mean	Standard Deviation	N
underutilized	0.170	0.376	212,563
male	0.520	0.500	212,563
Black	0.091	0.287	212,563
Asian	0.044	0.205	212,563
Hispanic	0.119	0.324	212,563
OtherR	0.024	0.154	212,563
immgrbefore2006	0.127	0.333	212,563
immgrsince2006	0.013	0.112	212,563
age16_19	0.043	0.204	212,563
age20_24	0.086	0.280	212,563
age25_34	0.204	0.403	212,563
age45_54	0.239	0.427	212,563
age55_64	0.161	0.368	212,563
age65Plus	0.051	0.220	212,563
hs_students	0.019	0.136	212,563
hs_dropouts	0.083	0.276	212,563
college_students	0.038	0.191	212,563
some_college	0.264	0.441	212,563
bachelor_degree	0.205	0.403	212,563
masters_degree	0.108	0.310	212,563
MissingInc	0.179	0.384	212,563
Faminc_lt_20	0.100	0.300	212,563
Faminc_40_59	0.152	0.359	212,563
Faminc_60_74	0.102	0.302	212,563
Faminc_75_99	0.117	0.321	212,563
Faminc_100_149	0.109	0.311	212,563
Faminc_150_Plus	0.071	0.258	212,563
ur	-0.514	1.928	212,563