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WHO SUFFERS DURING RECESSIONS?

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ABSTRACT

In this paper we examine how business cycles affect labor market outcomes in the United States. We conduct a detailed analysis of how cycles affect outcomes differentially across persons of differing age, education, race, and gender, and we compare the cyclical sensitivity during the Great Recession to that in the early 1980s recession. We present raw tabulations and estimate a state panel data model that leverages variation across US states in the timing and severity of business cycles. We find that the impacts of the Great Recession are not uniform across demographic groups and have been felt most strongly for men, black and Hispanic workers, youth, and low education workers. These dramatic differences in the cyclicality across demographic groups are remarkably stable across three decades of time and throughout recessionary periods and expansionary periods. For the 2007 recession, these differences are largely explained by differences in exposure to cycles across industry-occupation employment.

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The Great Recession generated large reductions in employment, earnings and income for workers and families in the United States. The seasonally adjusted unemployment rate increased from 5 percent in December 2007 to 9.5 percent in June 2009, the start and end of the recession according to the National Bureau of Economic Research (at <http://www.nber.org/cycles.html>). From 2007 to 2010, median real family income fell by 6 percent and the poverty rate increased to from 12.5 percent to 15.1 percent (DeNavas-Walt et al. 2011). The recovery since June 2009 has been slow relative to historical averages. In the more than two and a half years since the official start of the recovery, the unemployment rate has fallen by just over a percentage point - reaching 8.3 percent in February 2012. The effects of the Great Recession, however, are not experienced equally by all workers. National statistics can obscure dramatic differences in the severity of the cyclical impacts for different groups. For example, a recent analysis of labor market data shows that men experienced significantly larger job loss in the Great Recession compared to women while in the recovery, male employment is picking up more rapidly (Kochhar 2011).

We begin this paper with an overview of cyclical fluctuations in unemployment rates and employment from 1979 through 2011. Using national time series data, we compare the Great Recession to earlier recessions in terms of its severity, duration, and subsequent recovery. We then go on to use individual level data from January 1979 through December 2011 from the Current Population Survey Merged Outgoing Rotation Group (CPS-MORG) to measure and illustrate how unemployment and employment have changed in the Great Recession for persons of different ages, educational attainment, race, and gender. After establishing the basic descriptive findings, we estimate a state-panel data model to measure

the responsiveness of different groups to the state-month unemployment rate. The labor market outcomes we analyze are the groups' employment and unemployment.

Our findings are summarized as follows. First, the labor market decline in the Great Recession is both deeper and longer than the early 1980s recession. Second, the impacts of the Great Recession have been felt most strongly for men, black and Hispanic workers, youth, and low-education workers. Third, these dramatic differences in the cyclicality across demographic groups are remarkably stable across three decades of time and across recessionary periods versus expansionary periods. Fourth, the differences across demographic groups during the 2007 recession to a large extent are explained by variation in the groups' exposure to cycles across industry-occupation.

Our study builds on a large existing literature in labor economics and macroeconomics on how business cycles affect outcomes for workers and families, including our own prior work (Bitler and Hoynes 2010; Hoynes 2000; Hoynes, Hines and Krueger 2001; Stevens et al. 2011). Our study makes several contributions to this existing literature. First, our primary focus is identifying differences in the cyclicality across demographic groups. Second, we present the results of statistical tests for differences in the cyclicality both across groups (for a given time period) and over time (for a given group). Third, by using data through the end of 2011 we highlight the results for the Great Recession, and compare them to the early 1980s recession. Finally, we compare the recovery periods following the two most severe recessions in our time frame: the recessions of the earlier 1980s and the 2007-09 recession.

Overview of Labor Market Fluctuations Since 1979

The U.S. economy from 1979 to 2011 has seen five recessions: six months from January 1980 to July 1980; 16 months from July 1981 to November 1982; eight months from July 1990 to March 1991; eight months from March 2001 to November 2001; and 19 months from December 2007 to June 2009. We follow a common practice of combining the back-to-back 1980 and 1981 recessions and the graphs therefore compare four cycles: 1980, 1990, 2001, and 2007. To put the labor market dimension of these recessions in context, consider Figures 1 and 2. Following the standard definitions, the percent unemployed is among those in the labor force, while the percent employed is among the entire population. We analyze both to capture different margins of behavior.

When discussing the monthly unemployment rate for this and all subsequent analyses in the paper we present seasonally adjusted measures, which remove the typical variation that takes place within calendar year. In Figure 1, we plot the percentage point increase in the unemployment rate for these four business cycles by the number of months since the official start of the recession. The paths of the unemployment rate after the 1991 and 2001 recessions were quite similar. After the 1980-1982 recessions, unemployment was slower to rise (which may be the result of combining two back-to-back recessions), but after about 48 months, the unemployment rate had dropped sharply. In contrast, the 2007 recession exhibits the steepest and largest increase in the unemployment rate among the four recessions. The unemployment rate rose from 5 percent in December 2007 to a high of 10.1 in October 2009. While the recession officially ended in July 2009, the unemployment rate has remained high, at 9.1 percent in August 2011. As of December 2011 (the last data point), unemployment rates are

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slightly higher than at a similar point of the 1980 recession; however a comparison to the 1981

recession separately would show much higher unemployment for the current recession at this

point in the recovery.

Figure 2 highlights the relatively weak recovery of 2010-2011 by looking at aggregate

monthly employment (seasonally adjusted). This figure shows the percent change in

employment compared with the employment level of the first month of each of the four

recessions. The magnitude of the fall in the employment level is comparable in the 1980, 1991,

and 2001 recessions; and employment falls much more severely in the 2007 recession. In the

timing of the recovery of job growth, by 48 months since the beginning of the 2007 recession

(where our data end), employment had returned to its pre-recession level in the three previous

cycles. We are far from that in the Great Recession.

Many earlier studies have examined the effect of business cycles on labor market

outcomes. Research on the Great Recession has confirmed that, across demographic groups,

the decline in labor market outcomes since 2007 has been worse than any recession in the

postwar period (Goodman and Mance, 2011). As in previous recessions, evidence suggests that

the effects of the recent downturn have been born disproportionately by racial and ethnic

minorities and by male, younger, and less-educated workers (Elsby et al. 2010; Farber 2011;

Kochhar et al. 2011; Sierminska and Takhtamanova 2011; Verick 2009). However, by contrast

with previous recoveries, employment growth patterns have favored men since the official end

of the recession in June 2009 (Kochhar 2011). Since the recent recovery has been sluggish

relative to previous recoveries, much attention has been paid to the possibility of increased

structural unemployment due to job mismatch and the unprecedented extension of

unemployment insurance benefits to 99 weeks (as discussed in this symposium by Daly et al.;

see also Howell and Azizoglu 2011; Reich 2010; Rothstein 2011).

In this paper, we investigate the differential impacts of these factors across

demographic groups. The approach we take is most similar to that of Hines, Hoynes and

Krueger (2001) who use annual data from the March Current Population Survey for 1976-1996

to examine the impact of cycles on employment, hours, earnings, and income. They adopt a

state panel approach where the effects of the business cycle are identified by variation in the

timing and severity of cycles across states. They explore differences across education groups

(finding greater sensitivity for less educated) and test for a structural break in sensitivity in 1990

(finding none), as well as examining effects of business cycles on wage growth, health and work

injuries, and government finances. As described below, we also use a state panel model in our

analysis. We expand on their work by examining monthly data through December 2011, which

enables a detailed analysis of the Great Recession and the start of the current recovery.

Further, we examine differences across race, gender, age, and education groups and richly test

for differences across groups and over time.

Raw Changes by Group and Comparisons across 1980 and 2007 Recessions

We begin with a snapshot of the labor market outcomes by demographic group in May

2007, on the eve of the Great Recession. Table 1 shows the employment, unemployment, hours

and earnings of individuals by age, race, sex, and education. Employment, hours and earnings

are higher for men, whites, prime age workers and those with higher education levels. The

opposite pattern is found for unemployment. These differences can be substantial. For

example, less than half of individuals with no high school degree are working at the peak of the

business cycle in 2007, compared to 86 percent of college graduates. Fifty-nine percent of

black women are working, compared to 71 percent of white women.

For this comparison, and for much of what follows, we utilize individual-level data from

the Current Population Survey (CPS) Merged Outgoing Rotation Group (MORG) covering the

period from January 1979 to December 2011.[1] The CPS is a representative monthly household

survey conducted by the U.S. Bureau of Labor Statistics that collects information on

unemployment, labor force participation, and demographic characteristics of the population.

The MORG is a subset of the full CPS sample, with detailed information for 25,000 or more

individuals per month, including their employment status, weekly work hours and usual weekly

earnings, as well as the age, education, race, ethnicity, and gender of each recipient. We

collapse the MORG into cells based on state, year-month, and demographic group. Our

demographic groups are defined by single year of age, gender, race/ethnicity (white, black,

Hispanic, other)[2] and education (less than high school, high school, some college, college

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[1] We obtain the CPS-MORG extracts from the National Bureau of Economic Research:
http://www.nber.org/morg/annual/. Our sample includes individuals aged 16 to 60. We drop those over age 60 to
abstract from retirement decisions; we also drop the small number of observations missing ethnicity, which are all
pre-2002.

[2] White, black and other races are all non-Hispanic. Because of small population shares, we do not present results
for the "other" race group. For the remainder of the paper we will refer to these are "race" groups even though
they are more accurately race/ethnicity groups. By "single year of age" we mean, for example, that 18 year olds
are a separate group from 19 year olds.

graduate or more).[3] For each cell, we calculate the percent employed and the percent

unemployed using the CPS-provided weights.

Next we turn to exploring the "raw" changes in labor market outcomes for these groups

during the 2007 recession and comparing them to the changes in the recessionary episodes of

the early 1980s. Here, we define the recessions by identifying the low and high points of the

seasonally adjusted national unemployment rate; the subsequent high to low points of the

unemployment rate identifies the recovery. Our qualitative conclusions are unchanged if we

use the National Bureau of Economic Research dating. However, for present purposes we

prefer using the unemployment rates to date the cycles because the NBER dating depends in

substantial part on GDP growth and labor market measures tend to lag changes in GDP. Thus

for 2007, we have the recession of May 2007 to October 2009 and the recovery of October

2009 to December 2011 (the last month in our data). For the 1980 cycle, we have the recession

of May 1979 to November 1982 and the recovery of November 1982 to January 1985 (we use

27 months of recovery to match the data availability for the current recovery).

In the first two columns of Table 2, we show peak-to-trough changes in the

unemployment rate for the race/sex, age and education subgroups over the 1980 and 2007

recessions. To construct this table (and all subsequent calculations using the Current Population

Survey) we first compute monthly unemployment rates for each demographic group from the

Current Population Survey Merged Outgoing Rotation Group data. We then carry out a seasonal

adjustment to this data, regressing each time series on a set of month dummies (with

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[3] Beginning in January 1992, the Bureau of Labor Statistics and the Census Bureau changed the focus of the Current Population Survey educational-attainment question from years of attainment to degree-receipt. We follow the matching procedure outlined in Jaeger (1997) to create categories that are comparable over time. However, the redesign of the education question creates a discontinuity in the categorization of educational attainment for which we cannot fully correct.

December omitted), and using the constant and residuals from this regression to create the adjusted series. Bold typeface in the table indicates groups for which the difference between peak-to-trough changes in labor market outcomes in the two recessions is statistically significant at the 5% level.

In the 2007 recession, the demographic groups who have high baseline unemployment rates (Table 1) also had the greatest increase in unemployment (Table 2) over the recession. Men had larger increases than women; blacks and Hispanics had larger increases than whites; youth had larger increases than the middle aged; and low education groups were also hit the hardest.

Comparing the 2007-2009 recession to the 1980s recession, several patterns emerge. First, for most groups, the increase in unemployment is greater in the more recent recession (although only statistically significantly different for high school graduates and college graduates). The largest increases (relative to the 1980s recession) are for Hispanic women and those with a high school degree. The exceptions include black men, Hispanic men, and those with less than a high school degree, all groups that experienced a smaller increase in unemployment rates compared to the 1980s recession. However, over time the educational distribution has shifted toward the higher educational categories– so although all but the least-educated did worse, on average people have moved into the better-faring groups.

The final two columns of Table 2 show results focusing on changes (in percentage point terms) in the employment rate. The patterns across groups are fairly similar to those of the unemployment rate: men, black and young workers, and low education groups all experienced greater reductions in employment in the current recession. However, comparing the two

recessions presents a noticeably different pattern than the one for the unemployment rate.

For all groups except Hispanic men, the employment rate fell more during the recent recession than during 1980s (and statistically significantly so for whites, those ages 25-44, high school graduates and those with some college). One possible reason for this difference is that the 1980s recession occurred while women's labor force participation rates were undergoing a secular increase; that increase leveled out (and even slightly reversed) at the start of the twenty-first century (as discussed in this journal by Juhn and Potter 2006). For example, white women experienced *increases* in employment rates during the 1980s recession, but decreases during the current recession. The 1980s increases were likely driven by the secular increase in women's labor force participation rates, thus masking any business cycle sensitivity.

A Regression Approach for Potentially Confounding Factors

The crude changes over time across recessions are informative about the cross-group and cross-recession patterns, but they are also limited. Cross-group comparisons may be confounded by changes in other determinants of labor market success. For example, if the composition of low education groups is shifting over time to racial, ethnic, or age groups that fare worse in the labor market, then the measured change over time for low education groups will be confounded with those changes. If there are non-recession based changes in labor market patterns over time—like the increase in women's labor market participation—then these will also be wrapped up in the measured changes. To address these issues, we turn to a regression-adjusted measure of sensitivity to business cycles. We seek to use differences in the

timing and intensity of state-level movement in unemployment rates to estimate how different

demographic groups are affected by business cycle swings.

Again, we use the Current Population Survey (CPS) Merged Outgoing Rotation Group

(MORG) data from January 1979 to December 2011. As noted already, we collapse the MORG

into cells based on state, year-month, and the demographic groups (race/sex x age x education)

described earlier. Also, we supplement this data with national and state unemployment

statistics compiled from the Current Population Survey by the Bureau of Labor Statistics (2011a,

2011b).

As a starting point, we estimate a regression in which the dependent variable y is the

unemployment rate for a particular group, defined by the demographic cell *g* for that group,

(race/sex x age x education), state *s*, and time (year-month) *t*. Our regression equation takes

the form:

(1) $$y_{gst} = \beta_{major-group}UN_{st} + RaceSex_g + Age_g + Educ_g + \alpha_s + \delta_t + year_t\gamma_s + \varepsilon_{gst}$$

We estimate this equation for each *major* [demographic] *group*, such as black men, white

women, those without a high school degree, those with a college degree or more, those 18

years of age, 19 years of age, and so on. On the right-hand side of each equation, UN_{st} is the

state unemployment rate in month-year t, $RaceSex_g$, Age_g, and $Educ_g$ are group-specific

intercepts, and we include state (α_s) and year-month (δ_t) fixed effects and state-specific time

trends (γ_s). The coefficient of interest is $\beta_{major-group}$, which gives the sensitivity of the group

(e.g. white men) to the to the state unemployment rate[4]. We use the Current Population

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[4] We estimate this model separately by major demographic group, with the unit of observation being subgroup by
state by year-month cells. For example, when we estimate the model for white men, there are 180 observations

Survey population weights for each cell, and we conduct statistical inference clustering on U.S. states.[5]

This regression analysis embodies several changes to our analysis, compared to the raw differences presented in the previous section. First, it changes the source of variation used to estimate the sensitivity to the business cycle. The raw changes in the previous section were driven by national changes over time; specifically, comparing labor market outcomes by group between the peak and trough of a recession. Instead, here our coefficients are based on panel fixed effect estimates. We include state fixed effects, which remove variation that is purely driven by cross-state difference. We also include time fixed effects, which remove variation common to a point in time and control for flexible national time trends. Doing so protects our estimates from being driven by secular changes in demographic patterns such as changes in women's attachment to the labor market. After controlling for the fixed effects, we are left with variation that is driven by how the timing and severity of the business cycle affects states differently. When a state enters a recession (or recovery) earlier than the national average, or when a state's change in overall unemployment is greater than the national average, that variation is used to identify the coefficients in our regression.

Another feature of the regression analysis, compared to the raw changes above, is that we can control for demographic characteristics, thereby statistically adjusting for any

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(45 age categories by 4 education categories) for each state-year-month. In this example, the $RaceSex_g$ dummies are dropped from the regression; the Age_g and $Educ_g$ dummies control for compositional shifts within white men.
[5] Our approach is similar in spirit to equation 7 and Table 2 in (Blanchard et. al., 1992), who examine US states' responsiveness to the overall US business cycle. We differ from their approach in that we use state-year-demographic group variation, and we examine responsiveness by specific demographic groups to overall state-year variation. By regressing state-specific labor market outcomes on the overall unemployment rate, Blanchard et. al. note, "Here, obviously, the proper weighted average of coefficients [across states] is equal to one; of interest is the distribution of [group-specific coefficients] across [groups]." Here, we too are interested in the descriptive findings for the differences in effects of cycles across demographic groups.

differences in the composition of groups. For example, the group of workers with less than a high school degree is becoming more Hispanic over time. The raw differences for education groups, shown above, may in part reflect such changes in composition. A final important difference between the two approaches is that the regression results are not only estimated over the recession periods, but instead are estimated using data from both contractions and expansions.

To begin, we estimate this regression separately for each of our major demographic groups. For example, we estimate it for all 16 year olds, and preserve the coefficient β_{16} (for this regression the age dummies are excluded from the estimation). We then estimate the regression for 17 year-olds, and so on. After estimating for each age, we re-estimate the equation separately for each of our six main race/sex groups, and for our four education categories. The results are presented in Figures 3 and 4.

Figure 3 shows the results of the series of regression estimates for each single year of age. Each point on the graph represents estimates from a separate regression: the x-axis gives the person's age and on the y-axis we plot the estimated coefficient and the 95 percent confidence interval. For example, the first point on the graph is interpreted as "when a state year experiences a percentage point higher unemployment rate, 16 year-olds in that state experience a 2.8 percentage point higher unemployment rate." Figure 3 shows that the labor market cycle hits especially hard for youth, with responsiveness for 16-19 year olds more than twice that of those in their mid-20s. The coefficients continue to decline, at a more modest rate, until ages in the mid-50s.

In Figure 4 we present results from stratifying on race-sex demographic groups and on education. The results here suggest that the unemployment rate of men is more responsive to business cycle movements than the unemployment rate for women; that the response for blacks is greater than for Hispanics, for whom in turn the labor market response is higher than for whites; and that low-education groups are more responsive than high-education groups. The differences are large: an increase of one percentage point in the state unemployment rate leads to almost a two percentage point increase in unemployment for workers with less than a high school degree compared to less than a half a percentage point increase for those with a college degree. The unemployment rate of black men has almost double the responsiveness to the business cycle of white men's unemployment rate, and the unemployment rate of black women almost triples the responsiveness of that of white women.

These results are qualitatively similar to the raw changes presented earlier. This correspondence is remarkable, for three reasons. First, the two models are estimated using fundamentally different sources of variation: that is, state versus national cycles. Second, the model controls for time trends for each subgroup. Third, the regression model is estimated over the full 1979-2011 time period, rather than just during the 2007 or 1980s recessions.

We then carry out a parallel regression exercise, but this time using the employment rate, rather than the unemployment rate, as our left-hand-side dependent variable. In Figure 5 we consider the sensitivities of the age-specific employment rate to the overall state-month unemployment rate. The interpretation of the coefficients is similar to that discussed above; for example, a one percentage point increase in the state unemployment rate leads to a 1.7 percentage point reduction in the employment rate for 16 year olds. The patterns here are

similar to Figure 3: the youngest are the most responsive, and by-age cyclicality declines with age.

Figure 6 shows estimates of the impact of the overall state-month unemployment rate on the employment rate by race-sex and education groups. The patterns for the race/sex groups are somewhat different for employment compared to the unemployment rate in Figure 4. It is still the case that white individuals are less responsive than their black counterparts, women are less responsive than are men, and higher education groups less responsive than lower education groups. (In reading the graph, note that as one moves <u>up</u> the y-axis the sensitivity gets closer to 0 and is therefore <u>less</u> sensitive). However, in contrast to Figure 4, here the gender differences in responsiveness are much greater. The gender differences are large enough to dominate the race differences, so that the three least responsive groups (among the 6 race/sex groups) are the women. For this measure Hispanic women are the least responsive of all the demographic groups. It can be shown that the cyclical responsiveness of the employment rate, the unemployment rate, and the labor force participation rate are related through an adding-up identity. The larger gender differences for cyclical responsiveness of the employment rate is consistent with women being more likely to act as added workers (labor force increasing in recessions) and men being more likely to act as discouraged workers (labor force decreasing in recessions). Hispanic women, with their high rates of marriage (compared to the other groups) may be most likely to behave as added workers; hence the very large widening for Hispanics.

One potential limitation of our specification is that the time dummies throw away a large portion of the national macro cycle. We have re-estimated equation (1) without the year-

month dummies, and present results from this in figures in an on-line appendix available with this paper at http://e-jep.org. The results are very similar to those in Figures 3-6. The exception to this is that women's employment appears to be more responsive when the year-month dummies are omitted. This is exactly the demographic group and the outcome variable that reflects the concerns discussed above about bias due to long-run demographic trends. As such we present the models with year-month dummies in this paper.

Taken as a whole, these regression results largely reinforce the simple over-time patterns: men, nonwhites, youth, and those with lower education levels are the most responsive to cycles. Given the important differences in these two methodological approaches discussed above, we are impressed by the similarity of the findings. We interpret this as evidence of the robustness of the patterns that we document.

Did Cyclical Responses Differ in the Great Recession?

We can use a variation of our regression model to explore whether the Great Recession is different from earlier business cycle patterns. In particular, as above in our analysis of raw changes, we compare the Great Recession to the early-1980s recession. In so doing, we focus on two additional questions. First, for each demographic group, is the pattern of business cycle responsiveness in the Great Recession similar to what it was in the back-to-back recessionary episodes of the early 1980s? Second, how do the responses to the recoveries compare across the demographic groups?

To ask these questions, we again implement a regression model. We start with equation (1) but instead of estimating one equation for each major demographic group, we pool groups continuing to identify different demographic responses across major demographic group ($\beta_{major-group}UR_{st}$). In this pooled model we also allow for each major demographic groups' responsiveness to vary depending on the time period. Specifically, we expand $\beta_{major-group}UR_{st}$ and include the unemployment rate impacts for three periods (the 1980s cycle, the 2007 cycle, and the middle period). For each major demographic group, we then test for equality of coefficients across the two recessions, and equality of coefficients across the two recoveries (testing whether $\beta_{major-group}^{1980} = \beta_{major-group}^{2007}$).

To implement this regression, the periods are from May 1979 to November 1982 for the recessionary period of the early 1980s and from May 2007 to October 2009 for the 2007 recession, based on the minimum to maximum of the national (seasonally adjusted) unemployment rate. We pool all race/sex demographic groups—that is, we looked separately at the 14 categories of white men and women, black men and women, Hispanic men and women, four age groups (16-19, 20-24, 25-44, and 45-60), and four education groups (less than high school, high school grad only, some college, and college graduate).[6] The detailed findings of these regressions, along with some additional statistical tests, are presented in an on-line appendix available with this paper at http://e-jep.org. Here, we summarize the main qualitative conclusions.

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[6] This pooled regression is more restrictive than the stratified regressions behind Figures 3-6, because it imposes identical time dummies and state fixed effects for all demographic groups. In order to preserve the flexibility of the pooled regressions, we include as control variables group-specific quadratic time trends and group-specific state fixed effects. These controls allow us to recover similar coefficients to the stratified models.

First comparing the responsiveness of unemployment rates for different demographic subgroups in the recession of the 1980s and the Great Recession, the across-group patterns are similar to those of the stratified regression (Figures 3 and 4). The responsiveness of the unemployment rates of men, Hispanics, youth and those with lower education levels are higher in both recessions, while the unemployment rates of women, prime-aged workers, and higher education groups are less responsive. For each of the race/sex groups, the cyclical responsiveness is very similar across recession periods, and we cannot reject the hypothesis of equality across the 1980 and 2007 recessions for any of these groups.[7] We do find that the Great Recession has statistically significantly larger impacts for older workers, and for each education category. The magnitude of the change is small, however: for example, the coefficient for those aged 45-60 the increases from 0.70 in the 1980s recession to 0.85 in the 2007 recession. Our main punch line is thus reinforced: the Great Recession is deeper than previous recessions, but otherwise is affecting groups more or less similarly.

The story is somewhat different when we consider the responsiveness of the unemployment rate for different demographic groups in the recoveries following the 1980s and the 2007-2009 recessions. The cyclicality for the race/sex groups is significantly lower for the Great Recession, suggesting a weaker responsiveness to the recovery. For example, for black women the coefficient is 1.58 in the 1980s recovery and 1.34 in the 2007 recovery. For the age

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[7] In an alternative specification in which we pooled together all men as a group, we did find that the cyclicality in the Great Recession for men is statistically significantly higher than in the 1980s recession, although the magnitude of the over-time differences is fairly small.

and education comparisons, the patterns for the 1980s recovery and the current recovery are

relatively comparable.[8]

What Explains the Differences Across Demographic Groups?

One likely explanation for these persistent differences in the impacts of cycles across

demographic groups derives from the variation in cyclicality across industries. Construction and

manufacturing are more cyclical industries while services and government are less cyclical.

Furthermore, many of the demographic groups that exhibit larger cyclical variation (men, those

with lower education levels, minorities) are more likely to be employed in the industries with

greater exposure to cycles. As an illustration of the importance of industry in the context of

demographic comparisons, Figure 7 presents a scatterplot of the percent decline in industry

employment between the peak and trough of the current recession (for 52 industry groups).

We show the difference in the severity of the labor market shock on the y-axis and on the x-axis

is the share male in the industry (measured at the peak). We have added a bivariate regression

line for guidance.[9] As the figure shows, the higher the share male in the industry, the larger the

employment decline in the current recession. This appears to be an industry effect (as opposed

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[8] Given that we are regressing group specific unemployment rates on the state aggregate unemployment rate, one might expect that the average across demographic subgroups (appropriately weighted by population shares) should average to 1. This is not necessarily the case because our group outcome measures come from our MORG sample where we limit the sample to those 16-60. The cycle measure, the state unemployment rate, is the aggregate unemployment rate published by BLS (Bureau of Labor Statistics 2011).
[9] The percent change in employment is calculated between May 2007 and October 2009 and we collapse the data to industry using the "2-digit" NAICS industry codes. The regression line is calculated using a weighted regression, with industry employment at the peak as the weights. There are a total of 52 industries and while we include all observations to calculate the regression line, in the figure we drop the few observations outside the -50%, +50% range on the y-axis to improve the scaling.

to a "male" effect), because the employment pattern persists if we decompose the

employment loss into the loss for women and the loss for men.

To explore this further, we create a "predicted" peak-to-trough change in the

employment rate (May 2007 to October 2009) for each demographic group. Specifically, we

follow Bartik (1991) and create predicted changes in the employment level for each

demographic group by multiplying the group's share of total employment in 10 industry-by-3

occupation cells at the peak (May 2007) by the U.S.-wide peak-to-trough change in total

industry-occupation employment and summing across industry-occupations. The difference

between the actual and predicted changes can be interpreted as the demographic group-

specific component of employment loss that operates above (or below) the direct effect of

being in cyclical industry-occupations.[10]

We present the results in Table 3, where we present the predicted change in the

employment rate (column 2), the actual change in the employment rate (column 3), and the

employment rate at the peak (column 1, repeated from Table 1).

The results in Table 3 show that the difference in the cyclicality between men and

women is explained almost completely by the gender differences in the industry-occupation of

employment. The male employment rate is predicted to decrease by 7.4 percentage points

slightly larger than the observed decline of 7.1 percentage points. The female employment rate

is predicted to drop by 3.0 percentage points just below the observed 3.4 percentage point

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[10]Using detailed industry codes in the CPS-MORG, we group observations into 10 major industries: (1) Agriculture, Forestry and Fishing (2) Mining (3) Construction (4) Manufacturing (5) Transportation Warehousing, and Utilities (6) Wholesale Trade (7) Retail Trade (8) Finance, Insurance, Real Estate and Information (9) Services and (10) Public Administration. Within each industry, observations are grouped into three occupational categories: managerial, clerical/services, and blue collar. We create regression-based seasonally adjusted data series for each group-industry-occupation prior to performing this analysis.

decline. Interestingly, the Great Recession has larger impacts than predicted for blacks, young

workers, and more educated workers. On the other hand, whites, older workers, and less

educated workers experienced smaller declines than predicted. For example, older workers (45-

60) experienced a 3.3 percentage point reduction in their employment rate, two percentage

points lower than their predicted decline. College educated workers experienced a 4.6

percentage point decline in their employment rate compared to the predicted decline of 3.2

percentage points. The largest discrepancies between predicted and actual change are for

youth, especially for teens. For this group, their industry/occupation mix predicts a loss of 1.6

percentage points of employment; the actual loss was 7.3 points. We speculate that this may

reflect the dynamics of hiring and separations during the recession. Workers with job tenure

were able to lower their rate of quits, but those starting without jobs (such as youth) may have

been hit hardest by the large drop in hiring rates (Davis et al 2012).

Conclusion

The labor market decline during Great Recession and its aftermath has been both

deeper and longer than the early 1980s recession—indeed, the longest and deepest since the

Great Depression. The labor market effects of the Great Recession have not been not uniform

across demographic groups. Men, blacks, Hispanics, youth, and those with lower education

levels experience more employment declines and unemployment increases compared to

women, whites, prime aged workers, and those with high education levels. However, these

dramatic differences in the cyclicality across demographic groups have been remarkably stable

since at least the late 1970s and across recessionary periods versus expansionary periods. These gradients persist despite the dramatic changes in the labor market over the past 30 years, including the increase in labor force attachment for women, Hispanic immigration, the decline of manufacturing, and so on.

The general tone of these findings might be surprising given much emphasis in the press on the "man-cession"—that is, the greater effect that the Great Recession has had on men (see, for example "As Layoffs Surge, Women May Pass Men in Job Force", *New York Times*, Feb. 6, 2009, "Jobs Market: Men, Hit Hardest in Recession, are Getting Work Faster Than Women", *Washington Post,* July 6, 2011). Our analysis shows that men, across recessions and recoveries, experience more cyclical labor market outcomes. This is largely the result of their higher propensity to be employed in highly cyclical industries such as construction and manufacturing. On the other hand, women are more likely to be employed in less cyclical industries such as services and public administration. More generally, much of the difference in the effect of cycles across groups during the 2007 recession is explained by being at greater exposure to the fluctuations due to the industries and occupations that they are employed in.

Although overall the 2007-2009 recession appears similar to the 1980s recession, it did have somewhat greater responsiveness for women's employment, and for the youngest and oldest workers. Further, we do find evidence of a "he-covery;" and the extent to which the current recovery is being experienced more by men than women (compared to the 1980s recovery) is largely due to a drop in women's cyclicality during the current recovery.

Despite these various distinctions, the overarching picture is one of stability in the demographic patterns of response to the business cycle over time. Who loses in the Great

Recession? The same groups who lost in the recessions of the 1980s, and who experience

weaker labor market outcomes even in the good times. Viewed through the lens of these

demographic patterns across labor markets, the Great Recession is different from business

cycles over the three decades earlier in size and length, but not in type.

Acknowledgements

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Figure 1: US Seasonally Adjusted Unemployment Rate, Months Since Peak
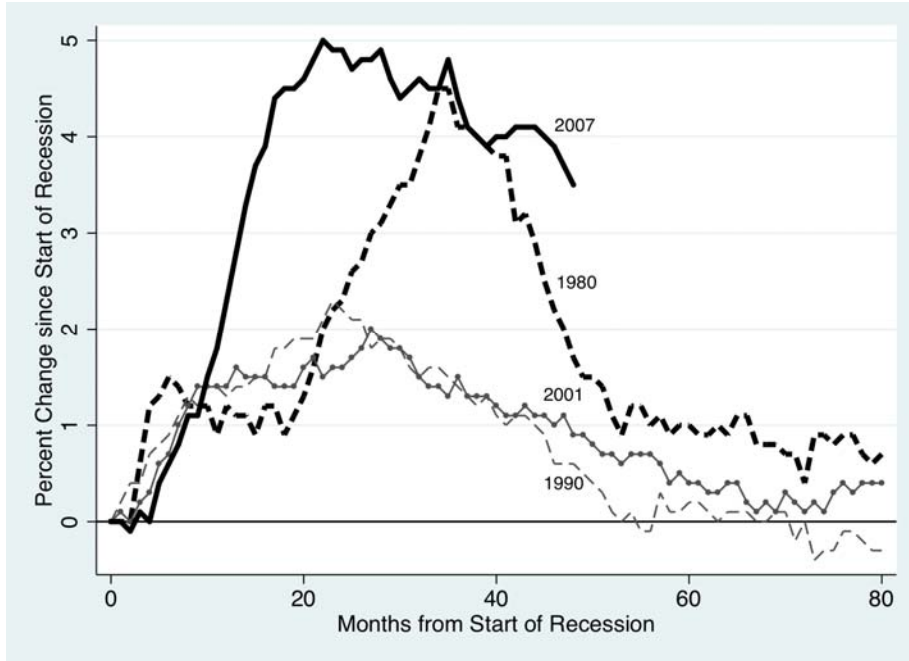
Source: Current Population Survey (Bureau of Labor Statistics (2012a)). Labor market peaks come from NBER (2011). 1980 recession combines the recessions beginning in 1/80 and 7/81 into one cycle.

Figure 2: US Seasonally Adjusted Employment, Months Since Peak
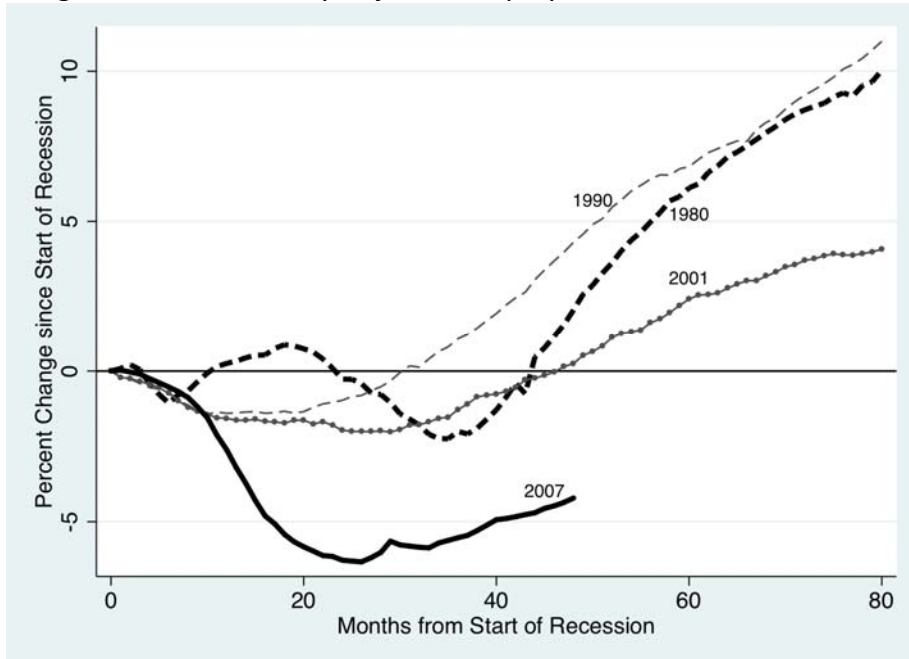
Source: Current Employment Statistics (Bureau of Labor Statistics (2012b)). Labor market peaks come from NBER (2011). 1980 recession combines the recessions beginning in 1/80 and 7/81 into one cycle.

Figure 3: Impact of State Unemployment Rate on Group Unemployment Rate, by Single Year of Age
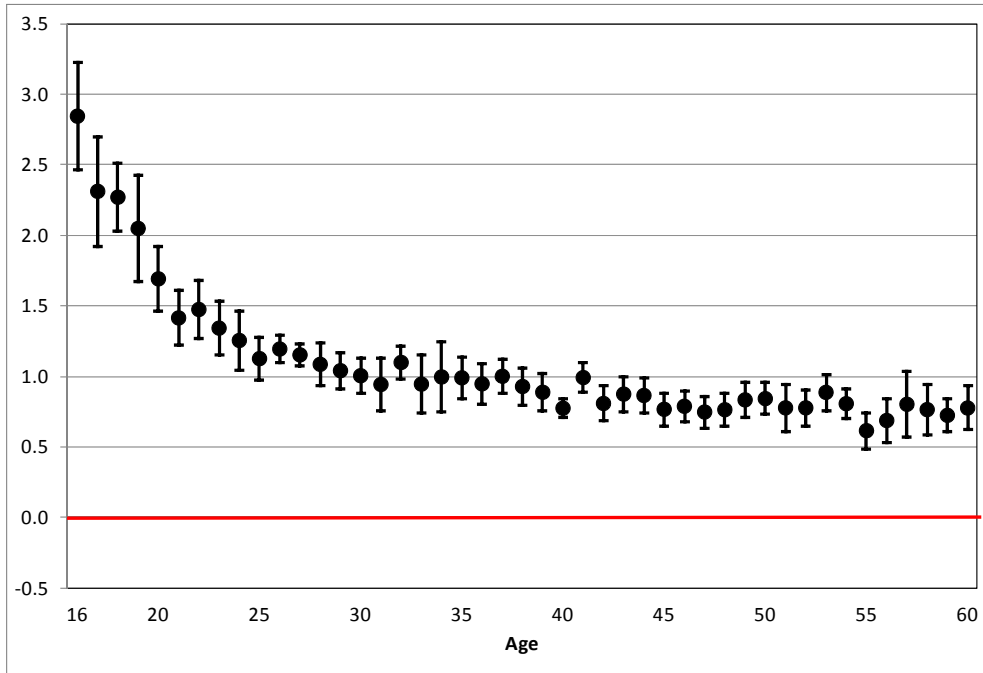
Figure 4: Impact of State Unemployment Rate on Group Unemployment Rate, by Race/Sex, and Education
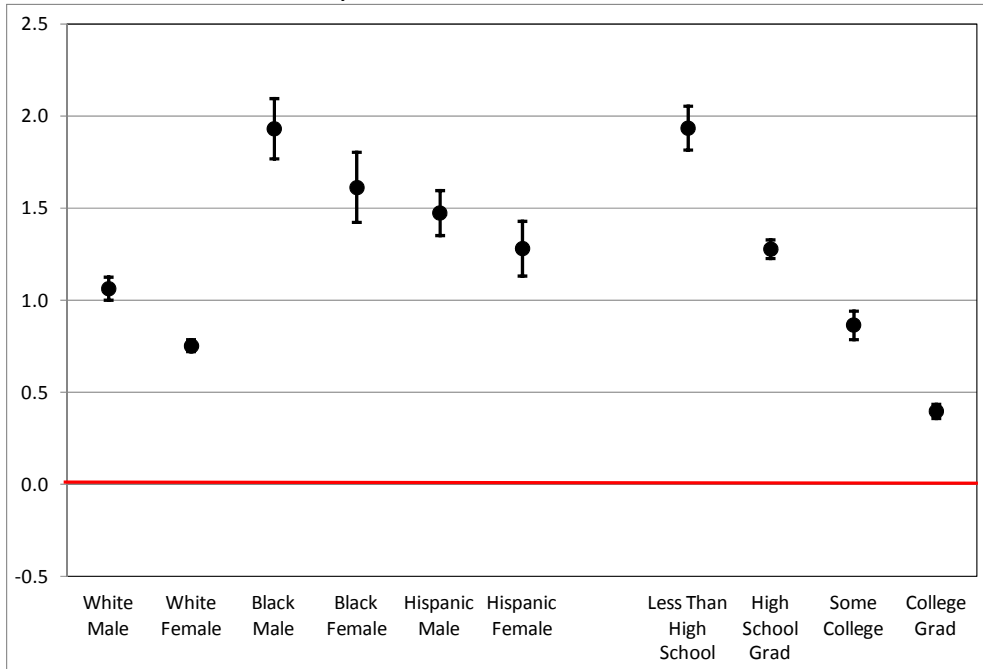
Source: Authors' tabulations of the MORG for 1/1979-12/2011. Each point is the estimate on state unemployment rate from a separate regression (along with the 95% confidence interval) for a given demographic group. The model also includes fixed effects for demographic group, state, and year-month, as well as state linear time trends. See text for details.

Figure 5: Impact of State Unemployment Rate on Group Employment Rate, by Single Year of Age
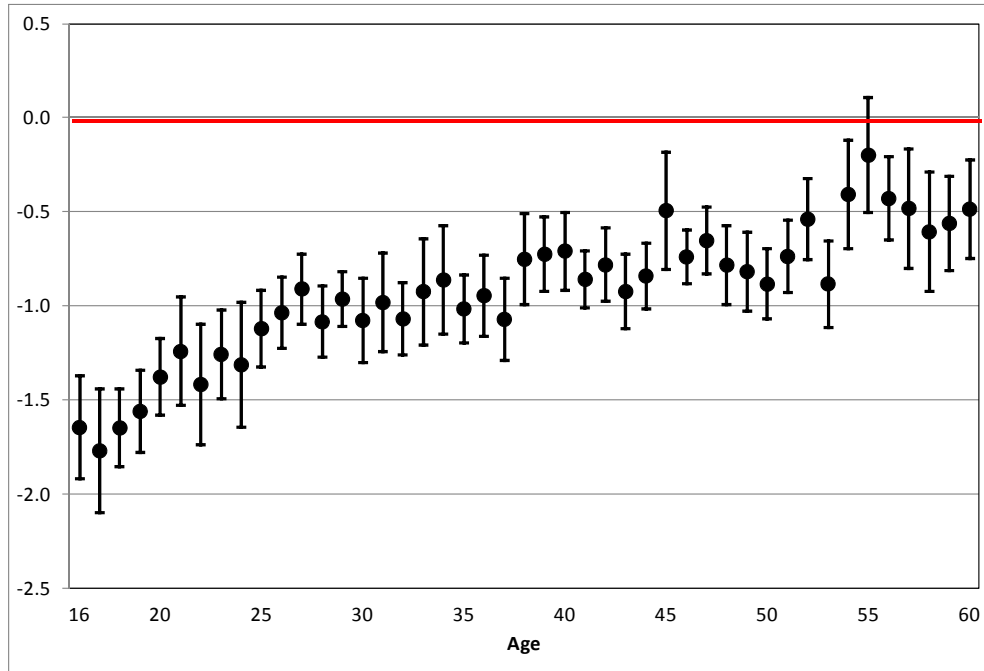
Figure 6: Impact of State Unemployment Rate on Group Employment Rate, By Race/Sex and Education
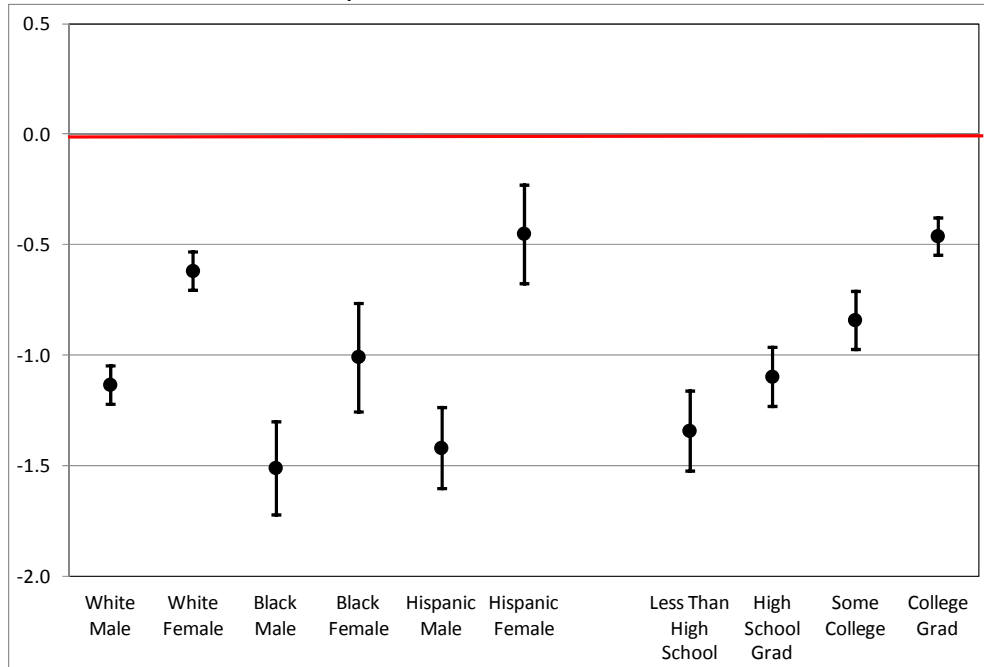
Source: Authors' tabulations of the MORG for 1/1979-12/2011. Each point is the estimate on state unemployment rate from a separate regression (along with the 95% confidence interval) for a given demographic group. The model also includes fixed effects for demographic group, state, and year-month, as well as state linear time trends. See text for details.

Figure 7: Percent Change in Employment over 2007 Recession Versus Share Male, by Industry
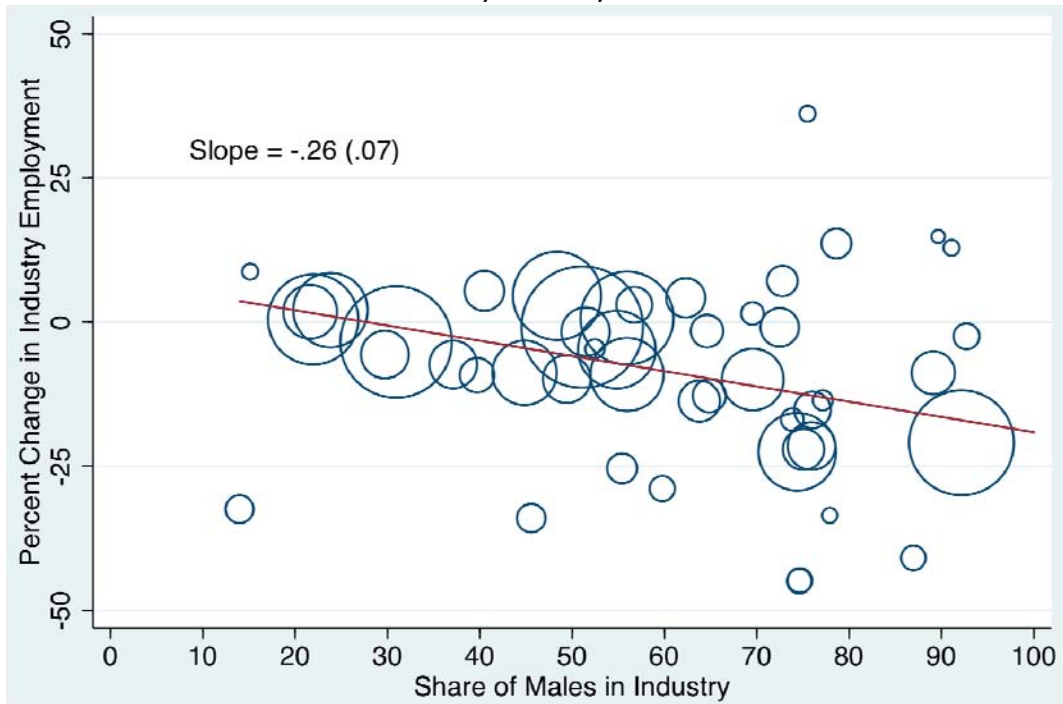
Source: Authors' tabulations of CPS-MORG. Observations are weighted by total industry employment in May 2007 (the start of the recession). Industry classification is based on 2-digit sectors from the 2002 North American Industry Classification System (NAICS).

Table 1: Labor Market Outcomes by Race, Gender, Education, and Age, May 2007

	Employment Rate	Unemployment Rate	Usual Weekly Earnings (2010$)	Hours Last Week
White Men	81	3.6	$830	34
White Women	71	3.2	499	25
Black Men	66	9.1	448	26
Black Women	59	6.5	401	24
Hispanic Men	79	6.2	524	32
Hispanic Women	58	4.9	298	20
Age 16 to 19	33	14.4	69	8
Age 20 to 24	68	6.4	306	23
Age 25 to 44	81	3.7	679	32
Age 45 to 60	75	3.3	707	30
Less than HS	48	10.1	187	16
HS Grad	72	5.4	306	28
Some College	76	3.6	545	29
College Grad	86	1.6	1,039	35

Source: Authors' tabulations of CPS-MORG.

Table 2: Peak to Trough Changes in Unemployment and Employment Rates by Group, 1980 and 2007 Recessions

	Peak-to-Trough Changes in Unemployment Rate		Peak-to-Trough Changes in Employment Rate	
	May 1979 to Nov 1982	May 2007 to Oct 2009	May 1979 to Nov 1982	May 2007 to Oct 2009
White Men	5.79	6.47	**-4.79**	**-7.34**
White Women	3.73	3.59	**1.92**	**-2.81**
Black Men	11.91	9.50	-8.41	-9.02
Black Women	4.79	5.73	-0.85	-6.14
Hispanic Men	10.23	6.09	-10.94	-6.25
Hispanic Women	3.63	6.46	-0.56	-4.97
Age 16 to 19	10.55	10.86	-6.99	-7.79
Age 20 to 24	8.05	8.76	-5.39	-8.69
Age 25 to 44	5.29	5.78	**-2.05**	**-5.90**
Age 45 to 60	3.57	3.89	-0.82	-2.93
Less than HS	10.83	8.12	-5.95	-8.72
HS Grad	**5.96**	**8.28**	**-3.37**	**-7.99**
Some College	3.64	5.17	**-0.02**	**-4.72**
College Grad	**1.75**	**2.84**	-1.35	-2.15

Source: Authors' tabulations of CPS-MORG. Peak-to-trough dated using minimum and maximum seasonally adjusted US unemployment rates. Bold typeface indicates groups for which the difference between peak-to-trough changes in labor market outcomes in the two recessions is statistically significant at the 5% level. This significance test was implemented by a simple difference-in-differences regression as follows: using data for the four time periods 5/79, 11/82, 5/07 and 10/09, we regressed group-specific employment for each major demographic group on indicator variables for (1) 2007 recession (5/07 *or* 10/09), (2) trough periods (11/82 or 10/09), and (3) 2007 trough (10/09). The test is based on the statistical significance (at the 5% level) of indicator (3) for the 2007 trough.

Table 3: Actual and Predicted Percentage Point Change in Employment Rate, by group

	Employment Rate May 2007	May 2007 to October 2009	
		Predicted Change	Actual Change
Men	81	-7.4	-7.1
Women	71	-3.0	-3.4
White	66	-5.1	-4.7
Black	59	-4.8	-6.9
Hispanic	58	-6.4	-6.3
Age 16 to 19	33	-1.6	-7.3
Age 20 to 24	68	-5.0	-8.3
Age 25 to 44	81	-6.0	-5.5
Age 45 to 60	85	-5.3	-3.3
Less than HS	48	-5.7	-4.8
HS Grad	**72**	-7.1	-6.7
Some College	76	-4.9	-6.6
College Grad	86	-3.2	-4.6

Source: Authors' tabulations of CPS-MORG. We create predicted changes in the employment level for each demographic group by multiplying the group's share of total employment in 30 industry-occupation cells at the peak (May 2007) by the U.S.-wide peak-to-trough change in total industry-occupation employment and summing across industry-occupation. The difference between the actual and predicted changes can be interpreted as the group-specific component of employment loss that operates above (or below) the direct effect of being in cyclical industry-occupations. The cells are defined by 10 industries by three occupations (managerial, clerical/services, and "blue collar").

Table A1: Impact of State Unemployment Rate on Group Unemployment Rate

	Estimates Across Recessions			Estimates Across Recoveries		
	1980s	2007	p-value for equality	1980s	2007	p-value for equality
White Men	1.09 (0.03)	1.14 (0.07)	0.47	1.13 (0.04)	0.98 (0.03)	0.00***
White Women	0.76 (0.03)	0.76 (0.05)	0.99	0.76 (0.03)	0.62 (0.03)	0.00***
Black Men	2.00 (0.09)	2.00 (0.14)	0.99	2.14 (0.09)	1.90 (0.10)	0.01***
Black Women	1.45 (0.07)	1.39 (0.09)	0.54	1.57 (0.07)	1.38 (0.06)	0.00***
Hispanic Men	1.59 (0.06)	1.72 (0.08)	0.22	1.69 (0.06)	1.45 (0.05)	0.00***
Hispanic Women	1.40 (0.05)	1.33 (0.05)	0.38	1.31 (0.05)	1.19 (0.05)	0.10*
Age 16 to 19	2.11 (0.11)	2.24 (0.11)	0.17	2.04 (0.09)	2.19 (0.12)	0.08*
Age 20 to 24	1.51 (0.04)	1.54 (0.05)	0.41	1.47 (0.04)	1.42 (0.04)	0.28
Age 25 to 44	0.97 (0.03)	1.10 (0.05)	0.01**	1.02 (0.03)	0.99 (0.03)	0.20
Age 45 to 60	0.70 (0.02)	0.85 (0.04)	0.01***	0.78 (0.03)	0.80 (0.03)	0.93
Less than HS	1.74 (0.06)	2.01 (0.09)	0.00***	1.83 (0.04)	1.86 (0.09)	0.76
HS Grad	1.21 (0.03)	1.40 (0.04)	0.00***	1.23 (0.02)	1.31 (0.03)	0.04**
Some College	0.80 (0.04)	0.97 (0.04)	0.01***	0.83 (0.03)	0.90 (0.06)	0.44
College Grad	0.37 (0.03)	0.53 (0.04)	0.01***	0.39 (0.02)	0.42 (0.03)	0.58

Source: Authors' tabulations of CPS-MORG for 1/1979-12/2011. Each panel presents estimates from pooled regression across demographic groups (e.g. the 4 age groups) and three periods (1980s recession, 2007 recession, rest of period). The regression includes the state unemployment rate, and the impact of the state unemployment rate is allowed to vary across the three periods and the demographic groups (e.g. 4 age groups). The model also includes fixed effects for demographic group, state and year-month and state linear time trends, as well as quadratic time trends and state fixed effects for each demographic subgroup.

Table A2: Impact of State Unemployment Rate on Group Employment Rate

	Estimates Across Recessions			Estimates Across Recoveries		
	1980s	2007	p-value for equality	1980s	2007	p-value for equality
White Men	-0.88 (0.08)	-1.03 (0.14)	0.21	-1.00 (0.06)	-0.87 (0.07)	0.29
White Women	-0.48 (0.07)	-0.50 (0.11)	0.81	-0.59 (0.05)	-0.33 (0.06)	0.01***
Black Men	-1.56 (0.10)	-1.53 (0.18)	0.80	-1.58 (0.09)	-1.42 (0.11)	0.19
Black Women	-1.07 (0.10)	-1.24 (0.15)	0.19	-1.21 (0.08)	-1.15 (0.10)	0.60
Hispanic Men	-1.52 (0.09)	-1.68 (0.13)	0.16	-1.59 (0.08)	-1.46 (0.08)	0.40
Hispanic Women	-0.67 (0.11)	-0.90 (0.13)	0.12	-0.90 (0.10)	-0.70 (0.09)	0.02**
Age 16 to 19	-1.44 (0.08)	-1.69 (0.14)	0.05**	-1.64 (0.08)	-1.55 (0.07)	0.45
Age 20 to 24	-1.29 (0.11)	-1.32 (0.14)	0.74	-1.25 (0.07)	-1.26 (0.06)	0.63
Age 25 to 44	-0.80 (0.06)	-0.88 (0.12)	0.48	-0.84 (0.04)	-0.73 (0.07)	0.33
Age 45 to 60	-0.34 (0.06)	-0.61 (0.13)	0.02**	-0.60 (0.04)	-0.48 (0.07)	0.29
Less than HS	-1.14 (0.10)	-1.48 (0.17)	0.01***	-1.32 (0.08)	-1.31 (0.15)	0.93
HS Grad	-0.94 (0.08)	-1.13 (0.12)	0.10*	-1.01 (0.05)	-0.98 (0.06)	0.81
Some College	-0.61 (0.09)	-0.74 (0.11)	0.26	-0.70 (0.06)	-0.68 (0.05)	0.86
College Grad	-0.25 (0.07)	-0.32 (0.12)	0.56	-0.28 (0.04)	-0.15 (0.05)	0.14

Source: Authors' tabulations of CPS-MORG for 1/1979-12/2011. Each panel presents estimates from pooled regression across demographic groups (e.g. the 4 age groups) and three periods (1980s recession, 2007 recession, rest of period). The regression includes the state unemployment rate, and the impact of the state unemployment rate is allowed to vary across the three periods and the demographic groups (e.g. 4 age groups). The model also includes fixed effects for demographic group, state, and year-month, state linear time trends, as well as quadratic time trends and state fixed effects for each demographic subgroup.

Figure A1: Impact of State Unemployment Rate on Group Unemployment Rate,
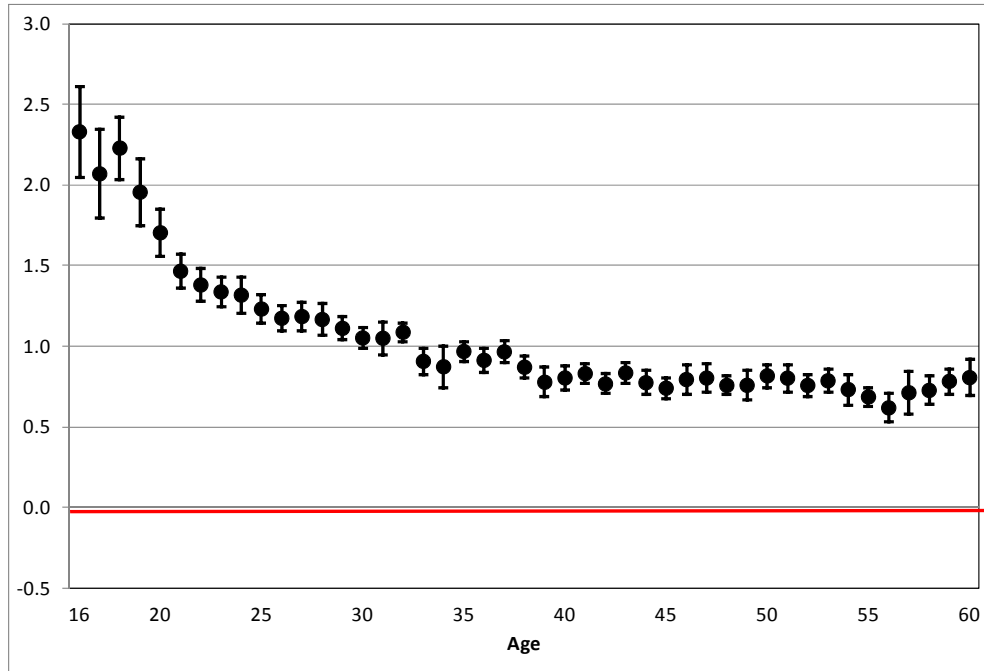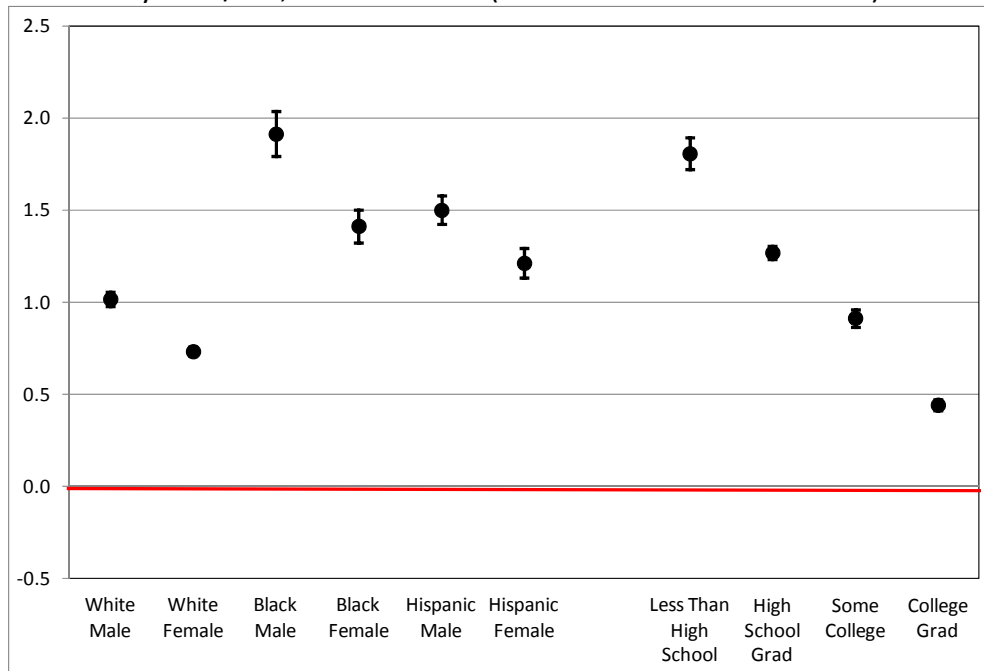by Single Year of Age (No Year-Month Fixed Effects)

Figure A2: Impact of State Unemployment Rate on Group Unemployment Rate,
by Race/Sex, and Education (No Year-Month Fixed Effects)

Source: Authors' tabulations of CPS-MORG for 1/1979-12/2011. Each point is the estimate on state unemployment rate from a separate regression (along with the 95% confidence interval) for a given demographic group. The model also includes fixed effects for demographic group, and state, as well as state linear time trends.

Figure A3: Impact of State Unemployment Rate on Group Employment Rate,
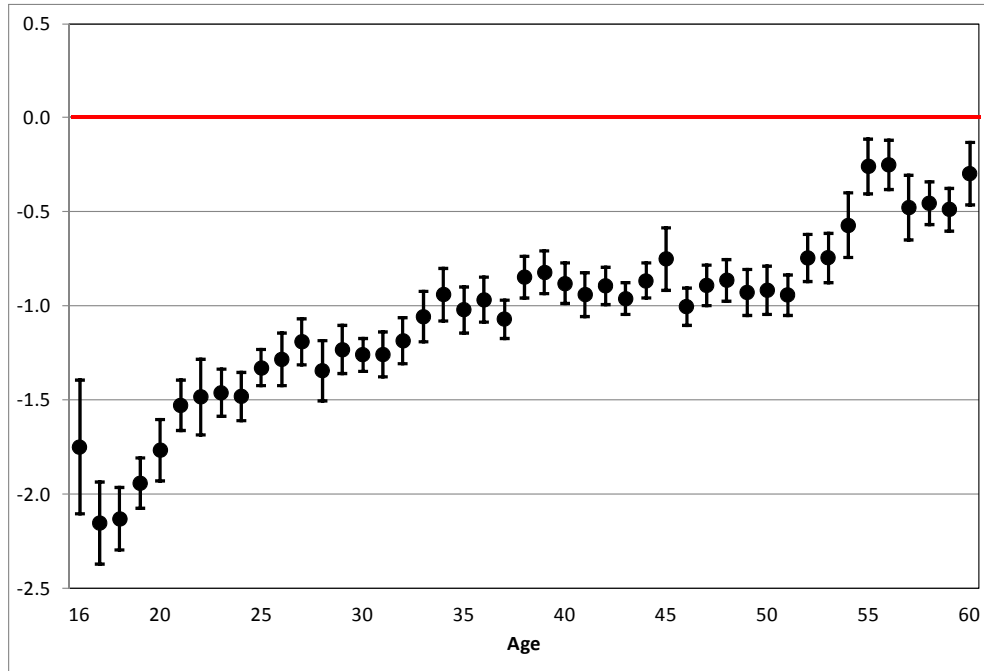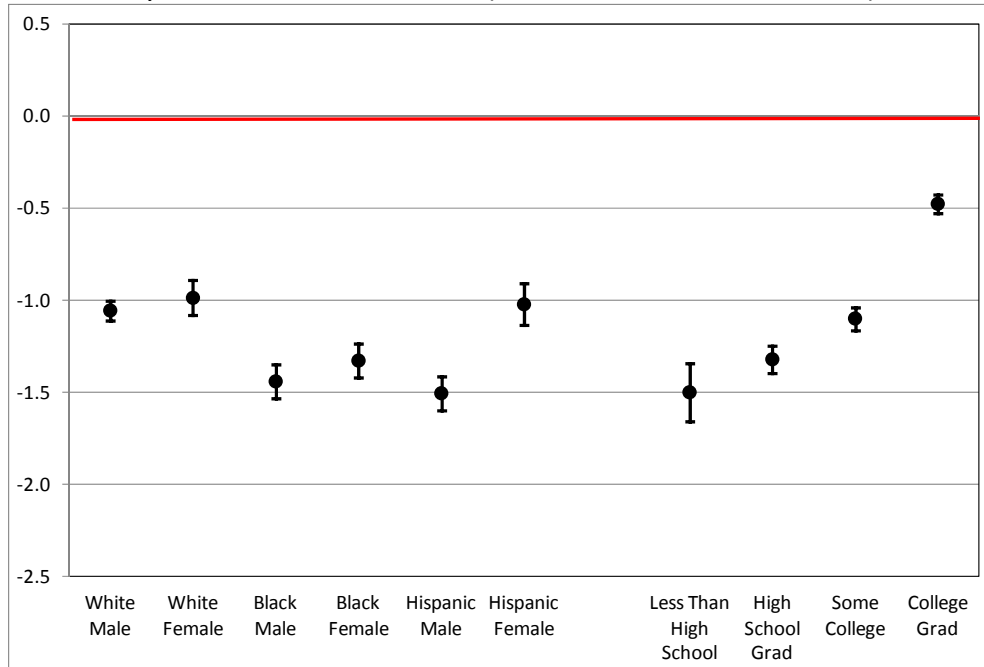by Single Year of Age (No Year-Month Fixed Effects)

Figure A4: Impact of State Unemployment Rate on Group Employment Rate,
By Race/Sex and Education (No Year-Month Fixed Effects)

Source: Authors' tabulations of CPS-MORG for 1/1979-12/2011. Each point is the estimate on state unemployment rate from a separate regression (along with the 95% confidence interval) for a given demographic group. The model also includes fixed effects for demographic group, and state, as well as state linear time trends.