The Employment and Distributional Effects of Minimum Wage Increases: A Case Study of the State of New York[*]

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Abstract

Using data drawn from the Current Population Survey outgoing rotation groups, we estimate the employment effects of the 2004-2006 New York State minimum wage increase, and use these estimates to simulate the employment and distributional consequences of a newly proposed state minimum wage hike. Difference-in-difference-in-difference estimates show that the last state minimum wage hike from $5.15 to $6.75 per hour reduced employment among 16-to-29 year-olds without a high school degree by approximately 26 percent, an implied elasticity of -0.8. This result is robust to a wide set of cross-state and within-state control groups and is further bolstered by results from falsification tests in the periods just before and after the minimum wage was increased. When we use our estimated employment elasticities to simulate the distributional consequences of the proposed state minimum wage hike from $7.15 to $8.25, we find that just 20 percent of the benefits will be received by workers in poor households.

JEL Codes: J23; J38; I32
Keywords: minimum wage, employment, natural experiment

I. Introduction

In June 2007, New York State Assembly Speaker Sheldon Silver proposed legislation to raise the state minimum wage from $7.15 to $8.25 per hour, and to index it to inflation thereafter. Proponents argue that such minimum wage increases have no negative employment effects (Card and Krueger, 1995; Dube et al., 2008) and will be effective in aiding poor workers,[1] while opponents emphasize the minimum wage's poor target efficiency (Burkhauser and Sabia, 2007) and non-trivial adverse employment and hours effects for low-skilled workers (Neumark and Wascher, 2007). While forecasting the behavioral and distributional consequences of a proposed state minimum wage hike can prove difficult, the case of New York provides a unique opportunity to do so. This is because Speaker Silver's new proposal comes on the heels of New York's recent experience with an increase in the state minimum wage. We seek to simulate the employment and distributional effects of the newly proposed state minimum wage hike by using estimates obtained from the last increase.

The timing of the last minimum wage hike in New York provides the key to identifying its effect on low-skilled workers. In 2004, the New York State legislature overrode Governor George Pataki's veto and raised the state minimum wage from $5.15 to $7.15 per hour. The wage hike was implemented in three phases: from $5.15 to $6.00 per hour on January 1, 2005; from $6.00 to $6.75 on January 1, 2006; and finally from $6.75 to $7.15 on January 1, 2007.[2] In a window between 2004 and 2006, three border or near-border states—Pennsylvania, Ohio, and New Hampshire—did not change their minimum wages from $5.15 per hour. Thus, focusing on New York's minimum wage

[1] See, for example, Economic Policy Institute (2006), Fiscal Policies Institute (2004).
[2] During this period, New York State also raised the wages of food service workers who received tips from $3.30 to $4.60 per hour.

increase from $5.15 in 2004 to $6.75 in 2006 permits the construction of a comparison group of low-skilled individuals in Pennsylvania, Ohio, and New Hampshire that were not directly affected by minimum wage increase. Moreover, we rely on more highly-educated or experienced workers to serve as a within-state comparison group. The use of both cross-state and within-state comparison groups permits a difference-in-difference-in-difference (DDD) identification strategy, which will compare relative employment trends between low- and high-skilled individuals in New York with such trends in comparison States. We then use our estimates of the labor demand effects of the 2004-2006 New York minimum wage increase to simulate the employment and distributional consequences of the proposed hike to $8.25 per hour.

Using data from the 2004 and 2006 Current Population Survey (CPS) outgoing rotation groups, we first estimate the effects of New York's minimum wage hike from $5.15 to $6.75 per hour on 16-to-29 year-olds without a high school degree. We find that the increase in the minimum wage reduced the share of these low-skilled workers who earned between $5.15 and $6.74 per hour and increased the share earning $6.75 per hour. Our results also show consistent evidence of large adverse employment effects. We find that the 31.1 percent increase in the New York minimum wage was associated with a 12.2 to 36.5 percent decline in employment of less-educated 16-to-29 year olds. These effects imply an employment elasticity of –0.4 to -1.2, with a median elasticity estimate of approximately -0.8. We find less consistent evidence that raising the minimum wage affected work hours among retained workers.

Our employment estimates are robust to the choice of comparison States, the choice of within-state comparison groups, and to the inclusion of a number of control

variables. Moreover, the credibility of our identification strategy is bolstered by the results of falsification tests, which show that relative employment trends between low-skilled and high-skilled individuals in New York did not fall faster than comparison States in the period prior to the passage of the minimum wage increase (2002-2004) or when comparison States also raised their minimum wage (2006-2007).

Finally, we use our employment and hours estimates from the last minimum wage increase, along with more conservative estimates from the existing literature, to simulate the employment and distributional effects of the proposed New York minimum wage hike from $7.15 to $8.25 per hour. Using conservative employment elasticities, we estimate that over 16,000 jobs will be lost. When we simulate the distribution of monthly benefits from this minimum wage hike, we find that just 20 percent of the benefits will go to workers in poor households. At average employment elasticities greater than -0.89—which are not implausible given the range of estimates we obtain—poor working households will suffer, on net, monthly labor earnings *losses* from the proposed minimum wage hike. We conclude that other policy tools, such as expansions in the New York State Earned Income Tax Credit (EITC) program, are likely to be more effective at promoting employment and increasing incomes of low-skilled poor workers.

II. Literature on Employment and Distributional Effects

Employment Effects. Standard neoclassical economic theory suggests that minimum wage increases reduce the demand for low-skilled labor, thus reducing employment and hours worked (see Stigler, 1946, for the first modern discussion of the employment and distributional effects of minimum wage increases.) Much of the

literature examining the employment effects of minimum wage hikes have focused on low-skilled workers, usually teenagers and high school dropouts, because these populations are the most likely to be affected by them.

Neumark and Wascher (2007) review over 90 studies published since the Card and Krueger (1994; 1995) studies of the mid-1990s and conclude that the evidence is "overwhelming" that the least-skilled workers most likely to be adversely affected by minimum wage increases experience the strongest disemployment effects (see, for example, Campolieti et al., 2006; Campolieti et al., 2005; Burkhauser, Couch, and Wittenburg, 2000a,b; Deere, Murphy, and Welch, 1995; Neumark, 2001; Neumark and Wascher, 1992, 2002; Neumark et al., 2004; Partridge and Partridge, 1999; Currie and Fallick, 1996; Williams, 1993; Couch and Wittenburg, 2001; Sabia, 2008a,b,c). In this context, the Card and Krueger (1994; 1995) results appear to be outliers.

Recently, however, the debate in the literature has been stirred anew by studies that have questioned the credibility of the estimation strategy used in many national panel studies (see, for example, Dube, Lester, and Reich, 2008; Addison et al., 2008). These authors argue that the usual panel data techniques of controlling for state and year effects, and identifying minimum wage effects from within-state variation in the minimum wages may be flawed due to unobserved state-specific trends in low-skilled employment. To better control for differences in trends that could exist across heterogeneous states, these studies have instead relied on variation in minimum wages in contiguous counties across state borders, which they argue should have similar employment trends. With this approach, they found little evidence of adverse employment effects in the low-skilled retail and restaurant sectors (see, for example, Dube, Lester, and Reich, 2008; Addison et

al., 2008). However, there is evidence that minimum wage effects are robust to the inclusion of state-specific linear and quadratic time trends, particularly when examining low-skilled workers across sectors (Page et al., 2005; Sabia, 2008a).

In addition to larger-scale national panel studies of minimum wage effects, other studies have focused on specific case studies of minimum wages in particular states or cities, generally using a difference-in-difference identification strategy (see, for example, Card, 1992; Card and Krueger, 1994; Dube et al., 2007; Kim and Taylor, 1995).[3] Card and Krueger (1994) examine the effect of the 1992 minimum wage increase in New Jersey from $4.25 to $5.05 per hour on fast food restaurant employment using Pennsylvania as their control state, and find no evidence of adverse employment effects. However, the findings of this study have been criticized over both choice of research design (Hamermesh, 1995) and phone survey methodology (Welch, 1995).

Using similar methodology, Card (1992) uses establishment data from the Bureau of Labor Statistics' unemployment insurance system to estimate the effect of the 1988 California minimum wage hike from $3.35 to $4.25 on retail employment. He compares retail employment growth in California (from 1984 to 1990) to retail employment growth in a set of control states that did not increase their minimum wage: Arizona, Florida, Georgia, New Mexico, and Texas. Using a difference-in-difference strategy, he finds no adverse affects of California's minimum wage increase on state retail employment growth.

Again, the key criticism of the identification strategy employed by Card (1992) and Card and Krueger (1994) is that their control states could have had different

[3] Note that larger national panel studies can often be interpreted as pooling these particular state "experiments."

employment growth trends than their "treatment" state for reasons that are unrelated to the minimum wage (Deere et al., 1995; Welch, 1995; Hamermesh, 1995; Neumark and Wascher, 1995; Kim and Taylor, 1995). Kim and Taylor (1995) find some evidence in County Business Pattern (CBP) data that California's retail sales growth in the late 1980s was much stronger than in the rest of the country. This could suggest that Card's estimates were subject to omitted variable bias.[4]

In summary, the critiques of the above case studies and national panel studies, highlight the importance of controlling for non-minimum wage-related differences in employment trends between treatment and comparison States, and the need to test the sensitivity of estimated employment elasticities to assumptions about the nature of unmeasured employment trends.

Distributional Consequences. A second vein of literature pursued by Burkhauser and colleagues (Burkhauser and Sabia, 2007; Burkhauser and Harrison, 1999; Burkhauser, Couch, and Glenn, 1996; Burkhauser and Finegan, 1989) has avoided the debate about employment effects and instead focused on the distribution of benefits of proposed minimum wage increases. In a series of studies, these authors show that beneficiaries of minimum wage hikes are, in the main, not poor and that the majority of poor workers already earn wages greater than state or federal minimums. For example, Burkhauser and Sabia (2007) show that the Federal minimum wage increase from $5.15 to $7.25 per hour would yield $18 million in benefits, of which only $2.3 million (12.8 percent) would be received by workers living in poor households. However, an important limitation to these simulations is that they fail to account for the behavioral

[4] Card and Krueger (1995), however, do note that employment trends looked similar in the period prior to the minimum wage hike.

effects of the minimum wage. As the authors note, because they assume zero employment elasticities, their simulations are likely upper-bound estimates of the benefits to workers (Burkhauser and Sabia, 2007).

One strategy of accounting for behavioral effects of the minimum wage in determining the distribution of benefits is to directly estimate the distributional effects of past minimum wage increases from the data, as Neumark and Wascher (2002) and Neumark et al. (2004, 2005) have done. Using matched CPS data, these authors found that minimum wage hikes have been ineffective in reducing poverty not only because of poor target efficiency, but also because of adverse employment or hours effects. They found that while minimum wage increases lift some low-skilled workers out of poverty, these hikes push other non-poor workers into poverty, leaving low-skilled workers, on net, worse off. Sabia (2008c) finds a similar result for less-educated single mothers.

The approach of estimating distributional consequences of past minimum wages from the data is informative, but can prove difficult with case studies of particular states due to data constraints. Only information from the March CPS can be used for distributional estimates because this is the only survey that contains information on household income and poverty status. Obtaining estimates of employment, hours, wage, and income effects for households of each income-to-needs category can prove difficult due to small numbers of observations per cell.

A second approach is to use a blunter set of employment and hours worked elasticity estimates for low-skilled workers to predict an individual-specific probability of job loss, and then to use this estimated probability to simulate aggregate job losses and net benefits that each minimum wage worker will receive from a proposed hike. Baicker

and Levy (2008), Yelowitz (2003), and Burkhauser and Simon (2008) use this approach to estimate the effect of state pay-or-play insurance reforms. However, it has not yet been employed in the minimum wage literature.

The current study contributes to the minimum wage literature in several ways. First, our study is the first to link the employment and hours effects of a recently enacted state minimum wage hike to simulations of distribution of benefits from a proposed state minimum wage hike. Second, while previous case studies of the minimum wage have generally studied industry-wide employment, none have focused on employment among low-skilled workers more broadly across sectors as we do. Third, given the controversies surrounding unmeasured state-specific employment trends in control states, we are careful to test the sensitivity of the results to different comparison States and to a variety of more highly-educated within-state control groups. And finally, to further bolster the credibility of our identification strategy, we conduct a set of falsification tests to show that the employment effects we attribute to the minimum wage are likely not attributable to unmeasured state employment trends that pre-dated or post-dated the minimum state wage hike under study.

III. Data

Our primary analysis uses data drawn from pooled monthly cross-sections of the 2004 and 2006 Current Population Survey (CPS). We use information from the outgoing rotation groups to generate a sample of workers from our treatment state, New York, and three comparison States that are border or near-border states: Pennsylvania, Ohio, and New Hampshire. In 2004, each of the four states had a minimum wage of $5.15 per hour.

In 2006, New York's minimum wage had been raised by 31.1 percent to $6.75 per hour, while Pennsylvania, Ohio, and New Hampshire all retained a minimum wage of $5.15 per hour. The selection criteria for the control states were states in closest proximity to a New York border with a state minimum wage of $5.15 in both 2004 and 2006. Thus, for example, we do not include Connecticut, Massachusetts, or New Jersey as control states because each had a state minimum wage greater than $5.15 in 2004 and raised their minimum wage between 2004 and 2006.

Our primary sample of interest is a group of low-skilled workers that we expect to be affected by minimum wage policy: less-experienced, less-educated workers. Specifically, we draw a sample of individuals aged 16-to-29 without a high school diploma or GED. We also examine age-specific subsets of this low-skilled population that may be affected by minimum wage policy: teenagers aged 16-to-19, high school dropouts aged 20-to-24, and high school dropouts aged 25-to-29.

Our four main outcomes of interest are: (1) the share of 16-to-29 year-old workers without a high school degree earning hourly wages between $5.15 and $6.74 per hour; (2) the share earning $6.75 per hour; (3) whether the respondent was employed in the previous week, and (4) the natural log of hours worked among employed workers. Our key independent variable of interest is a minimum wage indicator equal to one if the respondent lived in New York in 2006, and equal to zero if the respondent lived in a comparison State or if the year was 2004. In a number of specifications, we also include a set of individual-level controls: age, age-squared, marital status, race, sex, number of own children under age 18 in the family, whether the respondent lives in an SMSA, month dummies, and years of schooling completed.

Table 1 shows the means of the key wage and employment variables, pooled over the years 2004 and 2006, by treatment or comparison States. We present means for the full set of comparison States (column 2) as well as each comparison State individually (columns 3-5). The mean ratio of employment to population for 16-to-29 year-olds without a high school degree in New York (over 2004 and 2006) was 0.33.

IV. Identification Strategies

Our first identification strategy is a difference-in-difference approach, similar to that used in existing case studies (Card, 1992; Card and Krueger, 1994). We restrict the sample to individuals aged 16-to-29 without a high school degree in the years 2004 and 2006 and estimate:

$$E_{ist} = \alpha + \beta_1 MW_{st} + \theta_s + \tau_t + \varepsilon_{ist} \quad (1)$$

where E_{ist} is an indicator for whether respondent *i* residing in state *s* at time *t* was employed in the last week, MW_{st} is an indicator equal to one if the individual lives in New York in 2006 and zero otherwise, θ_s is a time-invariant state effect that captures any unmeasured differences in states that are fixed across time, and τ_t is a year effect that captures a time trend common to all states.[5] The key parameter of interest in the above models is β_1, the difference-in-difference (DD) estimate.

However, as noted by previous authors (Deere et al., 1995; Welch, 1995; Hamermesh, 1995; Neumark and Wascher, 1995; Kim and Taylor, 1995) the estimate of β_1 will only be unbiased if unmeasured employment trends are similar in the treatment

[5] We also augment equation (1) with a vector of socio-demographic controls (**X**), $E_{ist} = \alpha + \beta_1 MW_{st} + \beta_2 '\mathbf{X}_{ist} + \theta_s + \tau_t + \varepsilon_{ist}$. Estimating this model via a probit produces results that are qualitatively similar to those reported in the paper.

and comparison States. Thus, our choice of comparison States is important. Pennsylvania and Ohio are the most natural controls because each shares a common border with New York, and is expected to have similar markets for high and low-skilled labor. New Hampshire is also included because of its close geographic proximity to New York and its constant $5.15 minimum wage level over the period of observation.

Our first approach to explore whether unmeasured trends differ between treatment and comparison States is to examine the robustness of the estimate of β_1 to our choice of comparison States. Thus, we present results for the full set of comparison States as well as results using each individual comparison State.

Our second approach is to identify within-state comparison groups that are not expected to be affected by New York's minimum wage hike—more highly-educated or experienced individuals—and to estimate a difference-in-difference-in-difference model using a sample that includes less-educated 16-to-29 year-olds as well as members of the within-state comparison group:

$$E_{ist} = \alpha + \beta_1 AFFECTED_{ist} * MW_{st} + \beta_2 AFFECTED_{ist} + \beta_3 MW_{st} + \theta_s + \tau_t + \beta_4 \theta_s * AFFECTED_{ist} + \beta_5 \tau_t * AFFECTED_{ist} + \beta_6' \mathbf{X}_{ist} + \varepsilon_{ist} \quad (2)$$

where: $AFFECTED_{st}$ is an indicator variable coded equal to one if the respondent is a 16-to-29 year-old without a high school degree and equal to zero if the respondent is a member of the more highly skilled within-state comparison group.

We identify three higher-skilled within-state comparison groups that are used in different specifications: (1) individuals aged 25-to-29 with a Bachelor's degree or more, (2) individuals aged 20-to-29 who received a high school degree or more, and (3) older individuals aged 30-to-54. The key parameter of interest, the DDD estimate β_1, is the coefficient on the interaction between *AFFECTED* and *MW*. Intuitively, the DDD estimate

can be interpreted as:

$$\beta_1 = \left[\left(\overline{E}_{LE,NY,06} - \overline{E}_{LE,NY,04}\right) - \left(\overline{E}_{HE,NY,06} - \overline{E}_{HE,NY,04}\right)\right] - \left[\left(\overline{E}_{LE,CS,06} - \overline{E}_{LE,CS,04}\right) - \left(\overline{E}_{HE,CS,06} - \overline{E}_{HE,CS,04}\right)\right] \quad (3)$$

where $\overline{E}$ denotes the mean employment rate, the subscript "LE" denotes those aged 16-to-29 without a high school degree, "HE" denotes more highly educated or experienced respondents, and "CS" denotes living in a comparison State. In contrast to the simple DD estimator, the triple difference estimator controls for differences in employment trends common to workers across treatment and control states.

One concern with using more highly-educated or experienced individuals as a control group is the possibility that these workers are indirectly affected by the minimum wage. If the minimum wage increases, the demand for higher-skilled workers may be affected if low- and high-skilled workers are gross substitutes or complements. If the substitution effect dominates the scale effect, then DDD estimates could overstate the effect of the minimum wage on low-skilled workers, because the estimate will reflect both the rising demand for high-skilled workers and the falling demand for low-skilled workers. If the scale effect dominates, the opposite is true. Thus, the DDD estimate will provide an unbiased estimate of the effect of the minimum wage to the extent that the minimum wage does not affect the demand for higher-skilled workers. In the existing literature, there is little evidence that minimum wage increases affect the wages of higher-skilled workers (Neumark et al., 2004; Sabia, 2004a), and we will present evidence showing that the New York minimum wage has no effect on wages or employment of more highly-educated or experienced individuals.

Finally, we test the credibility of the identifying assumptions of the DDD models by conducting a set of falsification tests in which we examine employment trends just

prior to and just after the 2005-2006 New York minimum wage hike. To carry out our first anti-test, we draw a sample of less-educated and more highly-educated respondents from New York and the comparison States in 2002 and 2004. We create a "phantom" minimum wage indicator and code it equal to one if the respondent resides in New York in 2004 and equal to zero otherwise. Then we estimate equation (2) using our "phantom" minimum wage indicator. If relative employment trends between low- and high-skilled workers are different in New York than in comparison States, this would suggest that our natural experiment is contaminated. On the other hand, the absence of employment effects would tend to lend support to our identifying assumptions.

For our second falsification test, we focus on the 2006-2007 period when New York and each comparison State raised its minimum wage. On January 1, 2007, Pennsylvania raised its minimum wage from $5.15 per hour to $6.15, Ohio raised its minimum wage from $5.15 per hour to $6.85, and New York raised its minimum wage from $6.75 per hour to $7.15. And on September 24, 2007, the Federal minimum wage increased from $5.15 to $5.85 per hour, affecting workers in New Hampshire. Given that minimum wages are rising in both treatment and control states, we expect the relative employment trend between low- and high-skilled workers to not be declining faster in New York than the comparison States.

V. Wage, Employment, and Hours Effects

All estimates presented in the tables below are weighted by state population, with heteroskedasticity-adjusted standard errors in parentheses and sample sizes in brackets.

Coefficient estimates on the control variables (**X**) are not presented in the tables, but are available upon request.

Wage Effects. If the 2004-2006 New York minimum wage increase is to affect the employment of low-skilled New Yorkers, it should be the case that the hike effectively increases the wages of low-skilled workers. Thus, in Table 2 we examine the effect of the minimum wage hike on the distribution of wages of employed 16-to-29 year-olds without a high school degree. For workers who report being paid hourly, their wage rate is directly reported from their current job. For those who are not paid hourly, wage rates are calculated as the ratio of weekly earnings to weekly hours in the past week.

Table 2 shows the wage distribution of these low-skilled workers in New York and the comparison States (Pennsylvania, Ohio, and New Hampshire) in 2004 and 2006. The first row of Panel I shows that approximately one-third (33.6 percent) of less-educated 16-to-29 year-old workers in New York earned hourly wages between $5.15 and $6.74 per hour in 2004. These workers stood to be directly affected by the minimum wage hike.[6] By 2006 (row 2 of Panel I), the share of less-educated 16-to-29 year-old workers earning between $5.15 and $6.74 per hour declined substantially. The share who earned wages between $5.15 and $5.99 per hour fell from 0.127 in 2004 to 0.044 in 2006, and the share who earned between $6.00 and $6.49 per hour fell from 0.161 to 0.097.[7] We also find evidence that the share of low-skilled New Yorkers earning $6.75 per hour

[6] Workers earning less than $5.15 per hour are assumed to be employed in jobs that are not covered by the state or federal minimum wage, such as tipped employees. However, our estimated wage effects may understate the full wage effect of the change in the state minimum wage law as we do not estimate the effect of the minimum wage change on tipped workers (from $3.30 to $4.60 per hour).

[7] However, the share of workers earning between $6.50 and $6.74 per hour remained fairly steady between 2004 and 2006. In fact, in 2006, just over 20 percent earned wages less than $6.75, which could suggest (i) lagged enforcement effects, (ii) a shift in employment toward the "uncovered" sector not covered by state minimum wages, or (iii) reporting error in hourly wages. For example, it may be the 6.5 percent of wage earners reporting wages between $6.50 and $6.74 are actually earning the minimum wage.

rose from 0.017 in 2004 to 0.068 in 2006. These results provide descriptive evidence that the passage of the minimum wage reduced the number of workers earning lower hourly wages.

In Panel II, we examine the wage distribution for 16-to-29 year-olds without a high school degree in comparison States. In contrast to the trends observed in Panel I, there was a much smaller change in the share of less-educated workers earning low wages in comparison States between 2004 and 2006. The share of workers earning between $5.15 and $5.99 per hour fell only slightly from 0.167 to 0.150, and the share of workers earning between $6.00 and $6.49 per hour did not change. Moreover, the share earning $6.75 per hour did not change appreciably. These findings suggest that the decline in share of workers in New York that fell in these wage categories did not simply reflect a regional wage trend.

In the final panel (Panel III), we show difference-in-difference estimates of the share of low-skilled workers that fell in each wage category. We find that the 2004-2006 New York minimum wage increase is associated with a 6.6 percentage-point decline in the share of low-skilled workers that earned hourly wages between $5.15 and $5.99 and a 6.7 percentage-point decline in the share of workers that earned hourly wages between $6.00 and $6.49 per hour. There was also a statistically significant 4.3 percentage-point increase in the share of low-skilled workers earning $6.75 per hour. We find no evidence of "spillover effects," whereby workers earning above the minimum wage (e.g. those earning hourly wages between $6.76 and $7.99) receive a wage boost as a result of the minimum wage hike. There was no significant difference in wage trends in any other wage category.

In Table 3A, we test the robustness of estimated wage effects across choice of comparison States. Panel I effectively replicates the results of Table 2 using the full set of comparison States, and shows that the minimum wage reduces the share of low-skilled workers earning between $5.15 and $6.74 per hour, and increases the share earning $6.75. The remaining panels show results when Pennsylvania (Panel II), Ohio (Panel III), and New Hampshire (Panel IV) are used as the sole control state. The results using Pennsylvania alone and Ohio alone (Panels II and III) are nearly identical to the main model (Panel I), while using New Hampshire alone (Panel IV) produces less consistent results. Thus, the results in Table 3A generally suggest that our findings are robust to choice of comparison States. But do these wage effects simply reflect differing wage trends unrelated to the minimum wage between New York and the comparison States?

In Table 3B, we estimate the effect of the minimum wage increase on the natural log of the average wage rate of (i) 16-to-29 year-olds without a high school degree, and (ii) more highly-skilled workers. The first row shows that the minimum wage increased average wages of low-skilled workers by 9.5 percent, an implied elasticity of approximately 0.31. However, there is no evidence that the minimum wage increased the wages of more highly-skilled workers: 25-to-29 year-old college graduates (row 2), 20-to-29 year-old high school graduates (row 3) or 30-to-54 year-olds (row 4). These findings suggest that the wage effects we attribute to the minimum wage are not explained by differing unmeasured wage trends across treatment and control states.

The results in Tables 2, 3A, and 3B suggest that the New York minimum wage hike did, in fact, raise wages of less-educated workers. This finding is consistent with a number of prior case studies of state minimum wage hikes (Card, 1992; Card and

Krueger, 1994), as well as national studies of minimum wage hikes (Burkhauser, Couch, and Wittenberg, 2000a; Sabia, 2008a). Given that these low-skilled workers were affected, we next turn to the question of whether the 2005-2006 NY minimum wage hike affected employment.

Employment Effects. Figure 1 shows employment trends of 16-to-29 year-olds without a high school degree from 1996-2007, by treatment and comparison States. While employment ratios are about 0.05 to 0.10 points lower in New York than the comparison States, the pre-2004 employment trends look similar across the states. From 1996 to 2000, employment generally rises; there is a noticeable decline from 2000 to 2002, and then a leveling off or slight increase from 2002 to 2003. Between 2004 and 2006, the period during which we estimate the effects of the minimum wage, there is a sharp divergence in employment trends. In New York, the low-skilled employment ratio declined substantially, while the comparison States saw steady or increasing employment. This descriptive evidence is consistent with the hypothesis that minimum wages reduced employment of low-skilled workers. Moreover, in the 2006-2007 period when all states under study experienced minimum wage increases, we see a decline in low-skilled employment across all states.

Table 4 presents difference-in-difference and regression-adjusted difference-in-difference estimates of the effect of the New York minimum wage increase on employment. Three rows of estimates are presented using the four cross-state comparison groups: Pennsylvania, Ohio, and New Hampshire (row 1), Pennsylvania alone (row 2), Ohio alone (row 3), and New Hampshire alone (row 4).

The first four columns of Table 4 show mean employment rates of less-educated 16-to-29 year-olds in 2004 and 2006, by treatment or control state. The first two columns of row (1) show that the employment rates of low-skilled New Yorkers fell from 0.362 to 0.291, a decline of 7.1 percentage-points (19.6 percent) from 2004. In the comparison group, the employment rate of comparably aged and educated individuals actually *rose* slightly. The implied difference-in-difference estimates suggests that the minimum wage increase from $5.15 to $6.75 per hour led to a 7.6 percentage-point decline in employment rates. When observable controls are added to the model, this effect declines to 7.3 percentage-points (final column, row 1).

What does the magnitude of this effect imply? Using the mean employment rate of low-skilled 16-to-29 year-old New Yorkers in 2004 (0.362), this implies that the 31.1 percent minimum wage hike was associated with an 20.2 percent decline (-0.073/0.362) in employment. This represents an employment elasticity of -0.648.[8] When other comparison groups are used, the estimated employment effect remains consistently negative and significant. The largest employment estimates are found using Pennsylvania and New Hampshire as control states, with elasticities ranging from -0.76 to -0.98. Smaller estimates are obtained using Ohio as the control state (-0.47 to -0.52).

In summary, the DD estimates in Table 4 provide consistent evidence that the 2004-2006 New York State minimum wage increase was associated with a large, significant decline in employment for low-skilled New Yorkers.[9,10] The range of DD

[8] Estimation results using a probit model produce estimates that are similar in magnitude. For instance, a probit model using the full set of comparison states as controls produces an estimated employment effect of -0.077 with a standard error of 0.028 (p-value = 0.00), which implies an employment elasticity of -0.684.
[9] We also find that our results are robust to the choice of baseline year. In difference-in-difference specifications using 2003 as the pre-minimum wage year, we find an estimated employment elasticity of 0.597, comparable to the estimate we obtained using 2004 (see Appendix Table 1).

estimates from -0.47 to -0.98 are large relative to national estimates of the effect of minimum wage hikes on teen employment, which tend to range from -0.1 to -0.3 (Neumark and Wascher, 2007), but are more comparable to those obtained by Sabia (2008b) for single mother high school dropouts and by Burkhauser et al. (2001) for 16-to-24 year-old African Americans and non-high school graduates aged 20-24.

However, given a concern that these estimated effects may reflect unobserved state employment trends (Deere et al., 1995; Welch, 1995; Hamermesh, 1995; Neumark and Wascher, 1995; Kim and Taylor, 1995) we next introduce a within-state control group of more highly-skilled workers and use a triple-difference identification strategy.

The descriptive evidence in Figures 2-4 suggests that the reduction in low-skilled employment in New York between 2004 and 2006 relative to comparison States did not simply reflect a difference in overall state employment trends. In these figures, we show that employment trends among more highly-skilled individuals did not diverge between New York and the comparison States during the 2004-2006 period. Those aged 25-to-29 with college degrees (Figure 2), 20-to-29 year-old high school graduates (Figure 3), and 30-to-54 year-olds (Figure 4) all had similar employment trends in New York and in the comparison States. And, in fact, the results in Appendix Table 2 show that high-skilled employment trends in New York were not significantly different than those in comparison States between 2004 and 2006. These results suggest no evidence that the minimum wage increase affected the demand for more highly-educated or experienced workers in New York.

[10] Schiller (1994a, b) argues that the full adverse employment effects of minimum wages may be understated if the minimum wage induces previously employed workers in covered jobs to move into covered jobs. However, in New York, we find little evidence that the minimum wage affects the share of workers earning under $5.15 per hour, presumably in uncovered jobs.

In Figures 5-7, we combine the trends shown in Figure 1 and Figures 2-4 to compare relative trends in employment between low- and more highly-skilled individuals in New York with such trends in comparison States. The "employment gap" in each year is defined as the difference between the employment rate of more highly-skilled individuals and 16-to-29 year-olds without a high school degree. Figure 5 shows that while the employment gap between 25-to-29 year-old college graduates and 16-to-29 year-old high school dropouts rose in New York between 2004 and 2006, it remained fairly steady or even fell in the comparison States. This trend also persists when the more highly-skilled group is comprised of 20-to-29 year-old high school graduates (Figure 6) or 30-to-54 year-olds (Figure 7). These descriptive findings suggest that the employment effects estimated in the difference-in-difference models are not explained by trends common to other workers in New York.

Table 5 shows difference-in-difference-in-difference estimates and regression-adjusted DDD estimates using the three more highly-skilled within-State control groups depicted in Figures 2-4: college educated individuals aged 25 to 29 (columns 1 and 2), those aged 20-29 with at least a high school education (columns 3 and 4), and those aged 30 to 54 (columns 5 and 6). Across within-state control groups and across comparison States (rows 1, 2, and 3), the evidence is generally consistent: the 2004-2006 New York minimum wage hike reduced employment among low-skilled New Yorkers. The magnitudes of the DDD estimates are comparable in magnitude to the DD estimates.

Using the full set of comparison States (row 1), triple-difference estimates suggest that the last New York minimum wage hike led to a 21.0 (0.076/0.362) to 27.9 (0.101/0.362) percent decline in the employment of less-educated 16-to-29 year-olds.

More conservative estimates are obtained when the within-state comparison group is comprised of those aged 20-29 who have completed high school or older individuals aged 30 to 54. When we look across comparison States, the largest employment elasticities are obtained when Pennsylvania is used as the control state (-0.88 to -1.25) and are smallest and only marginally significant when the control state is Ohio (-0.42 to -0.60).[11] Triple-difference estimates are robust to the choice of baseline year. In alternative models that used 2003 as the "before" year, employment elasticities are comparable in magnitude to those reported in Table 5 (see Appendix Table 1).

Baseline Employment. While the DD and DDD identification strategies control for fixed baseline characteristics of treatment and comparison States, one might be concerned with baseline differences in employment levels of low-skilled workers between treatment and control states. As Figure 1 and Table 3 show, low-skilled employment ratios in 2004 are 13 to 21 percent higher in comparison States than in New York. This baseline difference could suggest systematic underlying differences between treatment and control States that are also be related to employment trends, thus contaminating our experiment. We explore whether baseline differences in low-skilled employment could be related to demographic differences in low-skilled populations across states. When we restrict the sample to whites aged 16-to-29 without a high school degree, we find that employment ratios are quite similar at baseline (see Figure 8). This is especially true for Pennsylvania. Its white low-skilled employment ratios were nearly

[11] In Appendix Table 3, we estimate the effects of the first and second phases of the New York State minimum wage increase separately. The first phase, in January 2005, raised the state minimum wage from $5.15 to $6.00 and the second phase, in January 2006, raised the state minimum wage from $6.00 to $6.75. Across each separate specification, DD and DDD estimates generally show a negative relationship between the minimum wage and employment. The results show that the magnitude of the total effect of the 2004-2006 minimum wage hike is shared fairly evenly across years, with slightly stronger effects in the second phase.

identical (0.42) to New York. As Figure 7 shows, between 2004 and 2006, white low-skilled employment fell substantially in New York, while employment remained steady in the comparison States.

Table 6 shows formal DD and DDD estimates of the effect of the minimum wage on low-skilled employment. DD estimates using the full set of State controls show that the minimum wage increase reduced white low-skilled employment, with elasticities ranging from -0.56 to -0.60. White 25-to-29 year-old college graduates also had similar employment ratios at baseline, and when we use this more highly-skilled group as a within-state control, DDD models produce larger estimates ranging from -0.83 to -0.88. When Pennsylvania alone is used as a comparison State, DD and DDD estimates are even larger, with employment elasticities of -0.70 to -1.2. Taken together, these results for a demographic group with common baseline employment levels strengthen the credibility of our natural experiment design.

Heterogeneous Effects by Age. Among low-skilled 16-to-29 year-olds, there may be heterogeneous effects of the minimum wage across the age distribution. For example, younger workers with less experience are among the lower-skilled of this age group; 52.3 percent of New York's employed teenagers earned between $5.15 and $6.74 per hour in 2004 compared to 19.6 percent of 20-to-24 year-old dropouts, and 9.8 percent of 25-to-29 year-old dropouts. This could suggest larger employment effects for the least-skilled workers. Alternatively, it might be that firms respond to a minimum wage hike by substituting away from older dropouts and toward younger teenagers, who may be less heterogeneously low-productivity workers (Lang and Kahn, 1998).

In row (1), we repeat our results from Table 5 (row 3, columns 2, 4, and 6) for the full sample of 16-to-29 year-olds without a high school diploma, showing estimated employment elasticities of -0.68 to -0.84. In the next three rows, we provide new results disaggregating our sample by age. Consistent with the hypothesis that the least experienced workers experience the largest disemployment effects, we find that employment elasticities decline with age. Teenagers experience the largest adverse employment effects (elasticities of -0.87 to -1.1), followed by those aged 20-to-24 (elasticities of -0.73 to -0.89), and 25-to-29 year-olds (elasticities of -0.25 to -0.38).

Falsification Tests. The findings in Table 7 provide consistent evidence of a negative relationship between the minimum wage and low-skilled employment in New York. In Tables 8 and 9, we present results from falsification tests designed to further bolster a causal interpretation of these estimates. Table 8 presents DDD estimates of the effect of a "phantom" New York minimum wage hike between 2002 and 2004 on relative employment trends between low- and more highly-skilled individuals. The findings show no evidence that employment trends differed among the states in the period just prior to the enactment of the New York minimum wage hike.

Finally, in Table 9, we examine the period just after the 2005-2006 minimum wage hike (2006-2007) when each of the comparison States as well as New York raised its minimum wage. The percentage change in the minimum wage was greater in the comparison States (33.0 percent in Ohio, 19.4 percent in Pennsylvania, and 13.6 percent in New Hampshire) than in New York (5.9 percent). In Table 9, we find that the relative employment trends between low- and high-skilled individuals did not fall faster in New York than in the comparison States during 2006-2007. And, in fact, the signs are positive

in 9 of 12 specifications, which is consistent with larger minimum wage increases in the comparison States. These results add further credibility to our identification strategy for the 2005-2006 increase.

In sum, the pattern of results in Tables 2-9 suggests consistent evidence of large negative employment effects for low skilled workers from the New York minimum wage hike. Employment elasticities range from -0.4 to -1.3, with a median elasticity of -0.8. However, focusing on employment effects alone may mask other labor demand effects, such as effects on hours of work. Firms may reduce both employment and hours worked by retained workers in response to higher labor costs or may increase hours of retained workers to compensate for reduced employment (Couch and Wittenburg, 2001; Sabia, 2008a,b,c).

Conditional Hours Effects. Table 10 shows estimates of the effect of the minimum wage on log hours worked among retained workers. The findings suggest that for 16-to-19 year olds and 20-to-24 year-old dropouts, the minimum wage has no effect on conditional hours worked. However, for 25-to-29 year-old dropouts, there is some weak evidence of an adverse hours worked effect. Estimates suggest that the minimum wage reduced hours worked by 14 to 16 percent (elasticity of -0.44 to -0.51), but the effects are only significant at the 10 percent level. Given the lack of consistently signed results in Table 10, we are cautious in concluding that the minimum wage had a substantial conditional hours worked effect.

VI. Simulating Employment and Distributional Effects of a New Minimum Wage

Given that there is evidence of significant adverse employment effects from the last minimum wage increase, we next turn to estimating job losses from the proposed state minimum wage hike from $7.15 to $8.25 per hour. Moreover, given that proponents of minimum wage increases often discuss the effects of the minimum wage on poor workers (see, for example, Kennedy, 2005; Kerry, 2004; Economic Policy Institute, 2006), we also examine the distribution of benefits by the relative poverty status of the household.

Our analysis in Table 11 uses data from the March 2005 to March 2007 Current Population Survey (CPS) outgoing rotation groups. As in Burkhauser and Sabia (2004a, b; 2007) and Burkhauser, Couch, and Glenn (1996), we restrict our sample to the March CPS because it contains information on household income in the previous year, which allows us to construct the income-to-needs ratio of households. The income-to-needs ratio for each worker is the ratio of that worker's total household income to the official poverty line for a household of that size.[12] We pool three years of March CPS data rather than relying solely on the most recent CPS in order to generate a sufficient sample of workers in New York in each income-to-needs cell, and restrict our sample to workers who reported hourly wage rates between $6.90 and $8.24 per hour.[13] We assume that

[12] For example, in 2006, the federal poverty line for a three person household was $16,600. Therefore, a worker living in a three person household with total household income of $33,200 would have a household income-to-needs ratio of 2.0.

[13] We define workers who earn between $6.90 and $8.24 as minimum wage workers. We assume workers who report earning between $6.90 and $7.15 are "covered" workers who have underreported their wage rates. We repeated the analysis excluding these workers and the results are quantitatively similar. Moreover, because the minimum wage in New York was $6.00 per hour in March 2005 and $6.75 per hour in March 2006, minimum wage workers also include those earning between $5.75 and $6.89 in March 2005 and $6.50 and $6.89 in March 2006. We assume workers earning between $5.75 and $6.89 in March 2005 and $6.50 and $6.89 in March 2006 earn wages of $7.15 per hour for the purposes of the simulations described below. Note that when we match wage rates of workers to household income-to-needs ratios, we are using information on current job (in the last week) to calculate wage rates, but using the previous year's household income to calculate income-to-needs ratio of the household. See Burkhauser, Couch, and Glenn (1996) and Burkhauser and Sabia (2007) for a discussion.

those workers earning less than $6.90 per hour are in uncovered jobs and those earning greater than $8.25 per hour are not directly affected by the increase.[14]

Column (2) of Table 11 shows that approximately 818,000 New Yorkers earn hourly wages between $6.90 and $8.24 and will be directly affected by the proposed state minimum wage hike to $8.25 per hour.[15] However, the majority are not poor. As column (1) indicates, 21.4 percent of workers who stand to benefit from the proposed minimum wage hike live in poor families, while 61.6 percent live in households with income over twice the poverty line and over 46.5 percent live in households with income three times the poverty line.

In columns (3)-(8), we estimate the number and share of workers in each income-to-needs category that are expected to become unemployed as a result of the proposed increase in the New York minimum wage. Note that an increase in the minimum wage from $7.15 to $8.25 represents a 15.4 percent increase.

We estimate the number of workers who will become unemployed in each cell by summing the individual probabilities that each worker will lose his or her job, and aggregating over state population weights from the CPS. The probability of job loss is calculated following Burkhauser and Simon (2008):

$$p_i = \frac{(8.25 - w_i)}{w_i} |e_i| \qquad (4)$$

where w_i is worker i's current hourly wage rate and e is the estimated employment elasticity that applies to worker i. The "true" employment elasticity that should be applied to each minimum wage worker is unknown. Different employment elasticities

[14] One limitation of this approach is that we exclude tipped workers from the restaurant industry who may have been affected by a state minimum wage increase from $3.30 per hour to $4.60 per hour.
[15] Because we pool three years of March CPS data, the population weighting variable is divided by three to approximate a single year's state population.

may apply to workers with different demographic, family, or job characteristics. As noted above, the prior literature simulating the distribution of benefits from a future minimum wage hike has assumed an employment elasticity of zero (Burkhauser et al., 1996; Burkhauser and Sabia, 2007). We seek to improve upon these estimates by including behavioral responses to the minimum wage.

We take a conservative approach and apply employment elasticities to 16-to-29 year-olds without a high school degree, the population for which we have estimated elasticities from the last minimum wage hike. This population comprises approximately 20.2 percent of New Yorkers earning hourly wages between $6.90 and $8.25. For all other workers, we assume a zero employment elasticity. In column (3), we use our lower-bound employment elasticity for low-skilled workers (-0.4) and estimate that over 8,400 jobs will be lost due to the proposed minimum wage hike. Our median employment elasticity, -0.8, yields expected job losses of 16,844 (column 4), and our upper-bound estimate (-1.2) yields job losses of 28,900 (column 5). Finally, in column (6)—our preferred estimates—we assume that minimum wage workers who are not 16-to-29 year-old dropouts face an employment elasticity of -0.2, the median estimate reported in the literature (Neumark and Wascher, 2007), while 16-to-29 year-old dropouts face our median elasticity, -0.8. Under these assumptions, we find that job losses are nearly 29,000 with 24.3 percent of job losses occurring to workers in poor households.[16]

Note that the share of jobs lost by poor workers (24.3 percent) is less than the share of minimum wage workers who are poor (21.4 percent). This is because (i) poor minimum wage workers are more likely to earn wages that are further from $8.25 than

[16] Appendix Table 4 shows job losses if we apply our estimated elasticities to all minimum wage workers.

non-poor workers and hence face a higher probability of job loss, and (ii) poor minimum wage workers are more likely to be 16-to-29 year-olds without a high school degree than non-poor workers. In sum, we estimate that 4.0 percent of poor workers will lose their jobs as a result of the proposed minimum wage hike.

Next in Table 12, we use the range of minimum wage elasticities discussed above to simulate the distribution of monthly net benefits from the proposed New York minimum wage hike. As in Table 11, we restrict the sample to those workers earning hourly wages between $6.90 and $8.24 per hour. We calculate the expected net benefit for each worker as follows:

$$EB_i = \left(1 - \frac{(8.25 - w_i)}{w_i}|e_i|\right)(8.25 - w_i)H_i \; - \left(\frac{(8.25 - w_i)}{w_i}|e_i|\right)w_i H_i \qquad (5)$$

where H_i is the usual monthly hours worked by worker *i*. The first term is the expected monthly earnings gains from a minimum wage hike from a retained job and the second term is the expected earnings losses from a job loss due to the minimum wage hike. Total net benefits for each income-to-needs category are calculated by aggregating using earnings weights.

There are a number of simplifying assumptions needed to interpret the expression in equation (5) as the expected net benefit to minimum wage earners. First, we assume that there are no wage spillovers to workers earning more than $8.24 per hour. This assumption appears reasonable given that our results in Table 2 suggest no evidence of wage spillovers from the last minimum wage hike. Second, as in the prior simulation, we only apply our estimated employment elasticities to less-educated 16-to-29 year-olds; for others we make conservative assumptions about employment elasticities. Third, given the weak results in Table 9, we assume that minimum wages have no effect on

conditional hours. And fourth, we assume that if a worker is laid off, his monthly earnings are zero.

If consumers face higher prices as a result of higher costs of producing goods and services (Aaronson and French 2006, 2007) or if our employment estimates are underestimated due to a failure to capture lagged effects of minimum wage increases (Neumark et al. 2004; Burkhauser et al., 2000a; Page et al., 2005; Baker et al., 1999; Campolieti et al. 2006), our estimates will overstate the benefits of the minimum wage. Moreover, if there are heterogeneous effects of the minimum wage by poverty status, our simulations may mask distributional effects.

In column (1) of Table 12, we assume e = 0 as in Burkhauser and Finegan (1989), Burkhauser, Couch, and Glenn (1996), and Burkhauser and Sabia (2007). Under this assumption, we find that the minimum wage increase will yield $67.3 million in benefits to New York's minimum wage workers, of which just $14.3 million (21.2 percent) will be received by workers in poor households.

In columns (3)-(6), we re-simulate the distribution of net benefits assuming employment elasticities of -0.4, -0.8, and -1.2 for our less-educated 16-to-29 year-olds only. Relative to the assumption of no adverse employment effects, a conservative employment elasticity of -0.4 is predicted to reduce the total benefits from a proposed minimum wage hike to $8.25 by 9.4 percent (from $67.3M to $61.0M). When we assume an employment elasticity of -0.8, net benefits to workers fall by 18.1 percent to $55.1M, and when an elasticity of -1.2 is assumed, net benefits fall by 26.9 percent to $49.2M. In our preferred estimates that uses our median employment estimate (-0.8) for less-educated 16-to-29 year-olds and an elasticity of -0.2 for other minimum wage

workers, simulated benefits are $43.1M. In this scenario, just 20.0 percent of the benefits are received by poor workers, compared to 49.9 percent that are received by workers in households with incomes over 300 percent of the poverty line. Thus, raising the minimum wage does not appear to be a particularly target-efficient anti-poverty tool for New York's low-skilled workers.[17]

Moreover, if employment elasticities are sufficiently large, the proposed minimum wage hike could actually *reduce* average monthly earnings among poor workers, causing the losers to lose more than the gainers gain. We estimate that at average employment elasticities greater (in absolute value) than -0.89 for all affected workers, net benefits for poor workers become negative. Given the magnitude of our estimated employment elasticities, this is a nontrivial possibility.

Taken together, the results of this study suggest that the proposed increase in the New York minimum wage is likely to be an ineffective anti-poverty tool both because of its poor target efficiency and because of substantial adverse employment effects. We conclude that prior simulations of the benefits of minimum wage hikes that failed to account for behavioral effects substantially overstated the gains to poor workers.

VII. Conclusions

Using difference-in-difference and triple difference identification strategies, we find robust evidence that raising the New York minimum wage from $5.15 to $6.75 per

[17] In unreported simulations, we use the age-specific elasticities reported in Table 7 to simulate the distribution of benefits. The results are qualitatively similar. For instance, if we apply the age-specific elasticities in column (1) of Table 7 to those minimum wage workers aged 16-to-29 without a high school degree and a zero elasticity to other minimum wage workers, the total benefits of the minimum wage are simulated to be $54.6 million, of which $11.4 million (20.9 percent) would be received by workers in poor households.

hour significantly reduced employment rates of less-skilled, less-educated New Yorkers. Our estimates show that employment among less-educated 16-to-29 year-olds fell by 12.2 to 36.5 percent, implying elasticities ranging from -0.4 to -1.2.

Using these employment elasticities, as well as more conservative estimates from the existing minimum wage literature, we simulate the distributional consequences for the proposed New York minimum wage hike from $7.15 to $8.25. Using a minimum wage elasticity of -0.8 for less-educated 16-to-29 year-olds and -0.2 for other minimum wage workers, we find that 28,990 New Yorkers will lose their jobs, including 7,031 poor workers. At average employment elasticities greater than -0.89 for all affected workers—which may be plausible given our range of estimates from the last New York minimum wage increase—net benefits to poor workers are negative.

Another increase in the minimum wage is unlikely to benefit poor New York workers because (1) most minimum wage workers who will benefit are not poor, (2) most workers who are poor earn wages greater than state or federal minimum wages (Burkhauser and Sabia, 2007), and (3) there are substantial adverse employment effects, which fall quite heavily on low-skilled workers in poor households.

In contrast to the minimum wage, the Earned Income Tax Credit (EITC) program may be a more target-efficient anti-poverty tool that can help many of New York's working households without causing adverse employment effects (Congressional Budget Office, 2007; Neumark and Wascher, 2001; Burkhauser, Couch, and Glenn, 1996; Schmeiser and Falco, 2006). Substantial evidence shows that unlike minimum wage increases, expansions in the EITC attract low-skilled workers into the labor market, particularly single mothers (Hotz and Scholz, 2003; Eissa et al., 2005; Meyer and

Rosenbaum, 2001; Ellwood, 2000; Grogger, 2003; Meyer and Rosenbaum, 2000; Hotz et al., 2002; Eissa and Liebman, 1996). Recent estimates by Schmeiser (2008) show that an increase in the New York EITC supplement from 30 to 45 percent would increase employment by an additional 14,244 persons, increase family income by $320 million, and decrease poverty by 86,532 persons, all at a cost of approximately $265 million.

While policymakers may wish to ensure that those who work hard and play by the rules do not fall into poverty, there is scant evidence that minimum wage increases will achieve this social goal, and some evidence that such a hike may hurt many of New York's most vulnerable workers. Expanding the New York supplement to the federal EITC appears to be a more effective mechanism to both make work pay and reduce poverty.

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Table 1. Weighted Means of Dependent and Minimum Wage Variables, by Treatment and Comparison Groups

	Treatment Group: NY	*Comparison Group 1*: PA, NH, OH	*Comparison Group 2*: PA	*Comparison Group 3*: OH	*Comparison Group 4*: NH
Share of Working 16-to-29 Year-Olds without HS Degree Earning between $5.15 and $6.74 per hr	0.277 (0.448) [592]	0.398 (0.490) [1,306]	0.410 (0.492) [473]	0.405 (0.491) [504]	0.239 (0.427) [329]
Employment of 16-to-29 Year-Olds without HS Degree	0.327 (0.469) [1,905]	0.412 (0.492) [3,264]	0.401 (0.490) [1,257]	0.417 (0.493) [1,271]	0.457 (0.498) [736]
Employment of 16-to-19 Year-Olds without HS Degree	0.228 (0.419) [1,344]	0.356 (0.479) [2,581]	0.342 (0.474) [989]	0.365 (0.482) [974]	0.406 (0.491) [618]
Employment of 20-to-24 Year-Olds without a HS Degree	0.487 (0.501) [324]	0.550 (0.498) [394]	0.569 (0.497) [149]	0.522 (0.501) [169]	0.701 (0.461) [76]
Employment of 25-to-29 Year-Olds without a HS Degree	0.612 (0.488) [237]	0.635 (0.482) [289]	0.634 (0.484) [119]	0.632 (0.484) [128]	0.706 (0.461) [42]
Minimum Wage Hike (= 0 if $5.15/hr; = 1 if $6.75/hr)	0.495 (0.500) [1,905]	0.0 (0.00) [3,264]	0.0 (0.00) [1,257]	0.0 (0.00) [1,271]	0.0 (0.00) [736]

Notes: All means are weighted. Standard deviations are in parentheses and sample sizes are in brackets. Estimates are obtained using data pooled from the 2004 and 2006 Current Population Survey outgoing rotation groups.

Table 2. Wage Distribution of Workers Aged 16-to-29 without a High School Degree

	Hourly Wage Rate								
	< $5.15	$5.15-$5.99	$6.00-$6.49	$6.50-$6.74	$6.75	$6.76-$7.25	$7.26-$7.99	$8.00-$9.99	$10.00+
	Panel I: New York								
2004	0.082	0.127	0.165	0.044	0.017	0.139	0.068	0.161	0.197
	(0.275)	(0.334)	(0.372)	(0.205)	(0.128)	(0.347)	(0.253)	(0.368)	(0.398)
2006	0.033	0.044	0.097	0.065	0.068	0.144	0.079	0.182	0.290
	(0.179)	(0.205)	(0.296)	(0.247)	(0.252)	(0.352)	(0.270)	(0.386)	(0.455)
	Panel II: Comparison States (PA, OH, NH)								
2004	0.085	0.167	0.171	0.069	0.014	0.107	0.068	0.163	0.155
	(0.279)	(0.373)	(0.377)	(0.253)	(0.120)	(0.309)	(0.252)	(0.370)	(0.363)
2006	0.053	0.150	0.171	0.068	0.022	0.124	0.072	0.163	0.176
	(0.225)	(0.358)	(0.377)	(0.251)	(0.146)	(0.330)	(0.259)	(0.370)	(0.381)
	Panel III: Difference-in-Difference Estimates								
Diff-in-Diff Estimates	-0.018	-0.066**	-0.067*	0.021	0.043**	-0.012	0.005	0.022	0.072
for Each Wage Category	(0.024)	(0.032)	(0.036)	(0.024)	(0.019)	(0.035)	(0.028)	(0.039)	(0.044)
	[1,898]	[1,898]	[1,898]	[1,898]	[1,898]	[1,898]	[1,898]	[1,898]	[1,898]

*** Significant at the 1% level ** Significant at the 5% level * Significant at the 10% level

Notes: Estimates are obtained using data from the 2004 and 2006 Current Population Survey Outgoing Rotation Groups from respondents aged 16-to-29 without a high school degree who were employed in the last week. All estimates are weighted. For workers paid hourly, hourly wages are coded as reported; for workers not paid hourly, hourly wage rates are calculated as the ratio of weekly earnings to weekly hours. The final row shows difference-in-difference estimates; heteroskedasticity-corrected standard errors are in parentheses and sample sizes are in brackets.

Table 3A. Difference-in-Difference Estimates of the Effect of the New York State Minimum Wage Hike on the Share of Less-Educated 16-to-29 Year-Olds Earning Between $5.15 and $6.74 Per Hour and on the Share Earning $6.75 per Hour

	New York State		Comparison States		Diff-in-diff
	2004	2006	2004	2006	
	(1)	(2)	(3)	(4)	(5)
			I: PA, OH, NH		
Share of Workers Earning Between $5.15 and $6.74	0.336	0.205	0.407	0.389	-0.112**
	(0.473)	(0.405)	(0.492)	(0.488)	(0.048)
	[332]	[260]	[695]	[611]	[1,898]
Share of Workers Earning $6.75	0.017	0.068	0.014	0.022	0.043**
	(0.128)	(0.252)	(0.120)	(0.146)	(0.019)
	[332]	[260]	[695]	[611]	[1,898]
			II: PA		
Share of Workers Earning Between $5.15 and $6.74	0.336	0.205	0.425	0.397	-0.103*
	(0.473)	(0.405)	(0.498)	(0.490)	(0.059)
	[332]	[260]	[254]	[219]	[1,065]
Share of Workers Earning $6.75	0.017	0.068	0.010	0.016	0.045**
	(0.128)	(0.252)	(0.099)	(0.125)	(0.020)
	[332]	[260]	[254]	[219]	[1,065]

Table 3A, Continued.

	New York State		Comparison States		Diff-in-diff
	2004	2006	2004	2006	
	(1)	(2)	(3)	(4)	(5)
			III: OH		
Share of Workers Earning Between $5.15 and $6.74	0.336	0.205	0.403	0.407	-0.135**
	(0.473)	(0.405)	(0.491)	(0.492)	(0.058)
	[332]	[260]	[277]	[227]	[1,096]
Share of Workers Earning $6.75	0.017	0.068	0.020	0.026	0.045**
	(0.128)	(0.252)	(0.140)	(0.159)	(0.022)
	[332]	[260]	[277]	[227]	[1,096]
			IV: NH		
Share of Workers Earning Between $5.15 and $6.74	0.336	0.205	0.312	0.160	0.022
	(0.473)	(0.405)	(0.465)	(0.367)	(0.059)
	[332]	[260]	[164]	[165]	[921]
Share of Workers Earning $6.75	0.017	0.068	0.008	0.036	0.015
	(0.128)	(0.252)	(0.194)	(0.188)	(0.022)
	[332]	[260]	[164]	[165]	[921]

*** Significant at the 1% level ** Significant at the 5% level * Significant at the 10% level
Notes: Estimates obtained using data from the 2004 and 2006 Current Population Survey Outgoing Rotation Groups. All estimates are weighted. Columns (1)-(4) present means with standard deviations in parentheses and sample sizes are in brackets. Column (5) shows difference-in-difference estimates with heteroskedasticity-corrected standard errors in parentheses.

Table 3B. Difference-in-Difference Estimates of the Effect of the New York State Minimum Wage Hike on Log Wages on Low-Skilled and Higher-Skilled Workers

	New York State		Comparison States (PA, OH, NH)		Diff-in-diff
	2004	2006	2004	2006	
	(1)	(2)	(3)	(4)	(5)
16-to-29 Year-Olds w/out HS Degree	1.99	2.11	1.93	1.96	0.095**
	(0.391)	(0.362)	(0.401)	(0.423)	(0.041)
	[332]	[260]	[695]	[611]	[1,898]
Elasticity					*0.305*
25-to-29 Year-Old College Grads	2.88	2.99	2.77	2.85	0.041
	(0.622)	(0.514)	(0.597)	(0.472)	(0.060)
	[325]	[350]	[299]	[519]	[1,656]
Elasticity					*0.132*
20-to-29 Year-Old HS Grads	2.48	2.57	2.37	2.44	0.026
	(0.578)	(0.548)	(0.522)	(0.514)	(0.028)
	[1,352]	[1,212]	[2,478]	[2,552]	[7.594]
Elasticity					*0.084*
30-to-54 Year-Olds	2.82	2.86	2.75	2.81	-0.031*
	(0.608)	(0.660)	(0.583)	(0.580)	(0.017)
	[4,729]	[4,433]	[9,181]	[8,387]	[26,730]
Elasticity					*-0.099*

*** Significant at the 1% level ** Significant at the 5% level * Significant at the 10% level
Notes: Estimates obtained using data from the 2004 and 2006 Current Population Survey Outgoing Rotation Groups. All estimates are weighted. Columns (1)-(4) present means with standard deviations in parentheses and sample sizes are in brackets. Column (5) shows difference-in-difference estimates with heteroskedasticity-corrected standard errors in parentheses.

Table 4. Difference-in-Difference Estimates of the Effect of the New York State Minimum Wage Hike from $5.15 in 2004 to $6.75 in 2006 on Employment of 16 to 29 year-olds without High School Degree

	New York State		Comparison States		Diff-in-diff	Adjusted Diff-in-diff
	2004	2006	2004	2006		
	(1)	(2)	(3)	(4)	(5)	(6)
	Mean Employment		*Mean Employment*			
I: *Comparison States*: PA, OH, NH	0.362	0.291	0.409	0.414	-0.076***	-0.073***
	(0.481)	(0.454)	(0.482)	(0.483)	(0.029)	(0.028)
	[989]	[916]	[1,765]	[1,499]	[5,169]	[5,169]
Elasticity					*-0.675*	*-0.648*
II: *Comparison State*: PA	0.362	0.291	0.392	0.411	-0.089**	-0.091**
	(0.481)	(0.454)	(0.489)	(0.492)	(0.036)	(0.034)
	[989]	[916]	[697]	[560]	[3,162]	[3,162]
Elasticity					*-0.791*	*-0.808*
III: *Comparison States*: OH	0.362	0.291	0.422	0.411	-0.059*	-0.053
	(0.481)	(0.454)	(0.494)	(0.492)	(0.036)	(0.035)
	[989]	[916]	[683]	[588]	[3,176]	[3,176]
Elasticity					*-0.524*	*-0.471*
IV: *Comparison State*: NH	0.362	0.291	0.439	0.479	-0.110**	-0.086**
	(0.481)	(0.454)	(0.497)	(0.500)	(0.043)	(0.043)
	[989]	[916]	[385]	[351]	[2,641]	[2,641]
Elasticity					*-0.977*	*-0.764*

*** Significant at the 1% level ** Significant at the 5% level * Significant at the 10% level

Notes: Estimates obtained using data from the 2004 and 2006 Current Population Survey Outgoing Rotation Groups. All estimates are weighted. Columns (1)-(4) show mean employment rates by year and treatment/control group. Standard deviations are in parentheses and sample sizes are in brackets. Column (5) shows difference-in-difference estimates with heteroskedasticity-corrected standard errors in parentheses. Adjusted difference- in-difference estimates in column (6) include controls for age, age-squared, marital status, race, sex, number of own children under 18 in the family, whether residing in an SMSA, and month dummies.

Table 5. Difference-in-Difference-in-Difference Estimates of Effect of Minimum Wage on Employment of 16 to 29 year-olds without High School Degree

	Within-state comparison group: Aged 25-29 with Bachelor's Degree		*Within-state comparison group*: Aged 20-29 with ≥ HS		*Within-state comparison group*: Aged 30-54	
	DDD (1)	Adj. DDD (2)	DDD (3)	Adj. DDD (4)	DDD (5)	Adj. DDD (6)
I: *Comparison States*: PA, OH, NH	-0.101***	-0.094**	-0.086***	-0.076**	-0.086***	-0.080***
	(0.045)	(0.044)	(0.035)	(0.033)	(0.031)	(0.029)
	[7,226]	[7,226]	[16,020]	[16,020]	[43,667]	[43,667]
Elasticity	*-0.897*	*-0.835*	*-0.764*	*-0.675*	*-0.764*	*-0.711*
II: *Comparison State*: PA	-0.141***	-0.132**	-0.104***	-0.099**	-0.104***	-0.105***
	(0.055)	(0.054)	(0.037)	(0.040)	(0.037)	(0.036)
	[4,516]	[4,516]	[9,893]	[9,983]	[24,497]	[24,497]
Elasticity	*-1.25*	*-1.17*	*-0.924*	*-0.879*	*-0.924*	*-0.933*
III: *Comparison State*: OH	-0.062	-0.058	-0.068	-0.047	-0.067*	-0.052
	(0.055)	(0.054)	(0.043)	(0.040)	(0.038)	(0.036)
	[4,430]	[4,430]	[9,665]	[9,665]	[25,376]	[25,376]
Elasticity	*-0.551*	*-0.515*	*-0.604*	*-0.417*	*-0.595*	*-0.462*
IV: *Comparison State*: NH	-0.069	-0.044	-0.107**	-0.091*	-0.117***	-0.105**
	(0.064)	(0.063)	(0.050)	(0.048)	(0.045)	(0.043)
	[3,808]	[3,808]	[8,124]	[8,124]	[22,674]	[22,674]
Elasticity	*-0.613*	*-0.390*	*-0.950*	*-0.808*	*-1.04*	*-0.933*

*** Significant at the 1% level ** Significant at the 5% level * Significant at the 10% level

Notes: Estimates obtained using data from the 2004 and 2006 Current Population Survey Outgoing Rotation Rotation Groups. All estimates are weighted. Heteroskedasticity-corrected standard errors are in parentheses and sample sizes are in brackets. Adjusted difference-in-difference-in-difference models include controls for age, age-squared, marital status, race, sex, number of own children under 18 in the family, whether residing in an SMSA, education, and month dummies.

Table 6. Difference-in-Difference and Triple-Difference Estimates of Employment Effects for White 16-to-29 Year-Olds without a High School Degree

	New York State		Comparison States		Diff-in-diff	Adjusted Diff-in-diff	DDD	Adjusted DDD
	2004	2006	2004	2006				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Mean Employment		*Mean Employment*					
				I: PA, OH, NH				
16-to-29 Year-Olds w/out HS Degree	0.416	0.341	0.433	0.434	-0.077**	-0.073***	--	--
	(0.493)	(0.475)	(0.496)	(0.496)	(0.034)	(0.033)		
	[697]	[632]	[1,516]	[1,303]	[4,148]	[4,148]		
Elasticity					*-0.595*	*-0.564*		
25-to-29 Year-Old College Grads	0.856	0.893	0.880	0.879	0.037	0.034	-0.114**	-0.107**
	(0.352)	(0.309)	(0.325)	(0.327)	(0.034)	(0.034)	(0.048)	(0.047)
	[327]	[332]	[539]	[511]	[1,709]	[1,709]	[5,857]	[5,857]
Elasticity					*0.139*	*0.128*	*-0.881*	*-0.827*
				II: PA				
16-to-29 Year-Olds w/out HS Degree	0.416	0.341	0.417	0.432	-0.090**	-0.095***	--	--
	(0.493)	(0.475)	(0.493)	(0.496)	(0.041)	(0.040)		
	[697]	[632]	[595]	[484]	[2,408]	[2,408]		
Elasticity					*-0.696*	*-0.734*		
25-to-29 Year-Old College Grads	0.856	0.893	0.879	0.852	0.065	0.051	-0.155***	-0.148**
	(0.352)	(0.309)	(0.326)	(0.356)	(0.043)	(0.042)	(0.059)	(0.058)

	[327]	[332]	[218]	[209]	[1,086]	[1,086]	[3,494]	[3,494]
Elasticity					*0.244*	*0.192*	*-1.20*	*-1.14*

Notes: Estimates obtained using data from the 2004 and 2006 Current Population Survey Outgoing Rotation Groups. All estimates are weighted. Columns (1)-(4) show mean employment rates by year and treatment/comparison group. Standard deviations are in in parentheses and sample sizes are in brackets. Column (5) shows difference-in-difference estimates with heteroskedasticity-corrected standard errors in parentheses. Adjusted difference-in-difference estimates in column (6) include controls for age, age-squared, marital status, race, sex, number of own children under 18 in the family, whether residing in an SMSA, and month dummies. Column (7) presents triple-difference estimates and column (8) shows adjusted triple-difference estimates.

Table 7. Difference-in-Difference-in-Difference Estimates of Effect of the NYS Minimum Wage on Employment of Low-Skilled Individuals, by Age

	Within-state comparison group: Aged 25-29 with Bachelor's Degree	*Within-state comparison group*: Aged 20-29 with ≥ HS	*Within-state comparison group*: Aged 30-54
	Adj. DDD (1)	Adj. DDD (2)	Adj. DDD (3)
(1) *Treatment Group:* Aged 16-29 Without a HS Degree	-0.094**	-0.076**	-0.080**
	(0.044)	(0.033)	(0.029)
	[7,226]	[16,020]	[43,667]
Elasticity	*-0.835*	*-0.675*	*-0.711*
(2) *Treatment Group:* Aged 16-to-19 Without a HS Degree	-0.089**	-0.070**	-0.073**
	(0.045)	(0.035)	(0.032)
	[5,982]	[14,776]	[42,433]
Elasticity	*-1.10*	*-0.866*	*-0.903*
(3) *Treatment Group:* Aged 20-to-24 Without a HS Degree	-0.148*	-0.121	-0.135*
	(0.085)	(0.080)	(0.078)
	[2,775]	[11,569]	[39,226]
Elasticity	*-0.886*	*-0.725*	*-0.808*
(4) *Treatment Group:* Aged 25-to-29 Without a HS Degree	-0.071	-0.049	-0.046
	(0.094)	(0.089)	(0.086)
	[2,583]	[11,377]	[39,034]
Elasticity	*-0.378*	*-0.261*	*-0.245*

*** Significant at the 1% level ** Significant at the 5% level * Significant at the 10% level

Notes: Estimates obtained using data from the 2004 and 2006 Current Population Survey Outgoing Rotation Groups. All estimates are weighted. Heteroskedasticity-corrected standard errors are in parentheses and sample sizes are in brackets. Adjusted difference-in-difference-in-difference models include controls for age, age-squared, marital status, race, sex, number of own children under 18 in the family, whether residing in an SMSA, education, and month dummies. The comparison States in each specification are Pennsylvania, Ohio, and New Hampshire.

Table 8. Falsification Tests Using Years 2002 and 2004

	Within-state comparison group: Aged 25-29 with Bachelor's Degree	*Within-state comparison group*: Aged 20-29 w/ ≥ HS	*Within-state comparison group*: Aged 30-54
	Adj. DDD (1)	Adj. DDD (2)	Adj. DDD (3)
(1) *Treatment Group:* Aged 16-to-29 without HS Diploma	0.031 (0.050) [4,938]	0.038 (0.039) [10,840]	0.027 (0.035) [30,157]
(2) *Treatment Group:* Aged 16-to-19 Without a HS Degree	0.008 (0.052) [4,350]	0.025 (0.041) [10.252]	0.016 (0.037) [29,569]
(3) *Treatment Group:* Aged 20-to-24 Without a HS Degree	-0.074 (0.089) [2,134]	-0.076 (0.083) [8,036]	-0.074 (0.081) [27,353]
(4) *Treatment Group:* Aged 25-to-29 Without a HS Degree	0.125 (0.110) [1,834]	0.141 (0.106) [7,736]	0.113 (0.103) [27,053]

*** Significant at the 1% level ** Significant at the 5% level * Significant at the 10% level

Notes: Estimates obtained using data from the 2002 and 2004 Current Population Survey Outgoing Rotation Groups. All estimates are weighted. Heteroskedasticity-corrected standard errors are in parentheses and sample sizes are in brackets. The "phantom" minimum wage variable is set equal to one in 2004 for affected workers (treatment group) in New York in 2004. Adjusted difference-in-difference-in-difference models include controls for age, age-squared, marital status, race, sex, number of own children under 18 in the family, whether residing in an SMSA, education, and month dummies. The comparison States in each specification are Pennsylvania, Ohio, and New Hampshire.

Table 9. Falsification Tests Using Years 2006 and 2007

	Within-state comparison group: Aged 25-29 with Bachelor's Degree	*Within-state comparison group*: Aged 20-29 w/ ≥ HS	*Within-state comparison group*: Aged 30-54
	Adj. DDD (1)	Adj. DDD (2)	Adj. DDD (3)
(1) *Treatment Group:* Aged 16-to-29 without HS Diploma	0.002 (0.043) [6,815]	0.009 (0.033) [15,315]	0.013 (0.029) [40,646]
(2) *Treatment Group:* Aged 16-to-19 Without a HS Degree	-0.021 (0.044) [5,733]	-0.013 (0.035) [14,233]	-0.010 (0.031) [39,564]
(3) *Treatment Group:* Aged 20-to-24 Without a HS Degree	0.073 (0.090) [2,628]	0.080 (0.085) [11,128]	0.090 (0.084) [36,459]
(4) *Treatment Group:* Aged 25-to-29 Without a HS Degree	0.096 (0.100) [2,488]	0.088 (0.097) [10,988]	0.085 (0.094) [36,319]

*** Significant at the 1% level ** Significant at the 5% level * Significant at the 10% level

Notes: Estimates obtained using data from the 2006 and 2007 Current Population Survey Outgoing Rotation Groups. All estimates are weighted. Heteroskedasticity-corrected standard errors are in parentheses and sample sizes are in brackets. The minimum wage variable is set equal to one in 2007 for affected workers (treatment group) in New York in 2007. Adjusted difference-in-difference-in-difference models include controls for age, age-squared, marital status, race, sex, number of own children under 18 in the family, whether residing in an SMSA, education, and month dummies. The comparison States in each specification are Pennsylvania, Ohio, and New Hampshire.

Table 10. Difference-in-Difference Estimates of Effect of Minimum Wage on Conditional Log Hours Worked among Low-Skilled Workers

	Within-state comparison group: Aged 25-29 with Bachelor's Degree	*Within-state comparison group*: Aged 20-29 w/ ≥ HS	*Within-state comparison group*: Aged 30-54
	Adj. DDD (1)	Adj. DDD (2)	Adj. DDD (3)
(1) *Treatment Group:* Aged 16-to-29 without HS Diploma	0.050	0.048	0.071
	(0.072)	(0.059)	(0.060)
	[3,621]	[9,709]	[31,583]
(2) *Treatment Group:* Aged 16-to-19 Without a HS Degree	0.084	0.082	0.138
	(0.096)	(0.087)	(0.090)
	[2,930]	[9,018]	[30,892]
(3) *Treatment Group:* Aged 20-to-24 Without a HS Degree	0.077	0.076	0.060
	(0.112)	(0.105)	(0.101)
	[2,057]	[8,145]	[30,019]
(4) *Treatment Group:* Aged 25-to-29 Without a HS Degree	-0.158*	-0.136	-0.144*
	(0.096)	(0.085)	(0.082)
	[2,000]	[8,088]	[29,962]

*** Significant at 1% level ** Significant at 5% level * Significant at the 10% level

Notes: Estimates obtained using data from the 2006 and 2007 Current Population Survey Outgoing Rotation Groups. All estimates are weighted. Heteroskedasticity-corrected standard errors are in parentheses and sample sizes are in brackets. The minimum wage variable is set equal to one in 2007 for affected workers (treatment group) in New York in 2007. Adjusted difference-in-difference-in-difference models include controls for age, age-squared, marital status, race, sex, number of own children under 18 in the family, whether residing in an SMSA, education, and month dummies. The comparison States in each specification are Pennsylvania, Ohio, and New Hampshire.

Table 11. Simulated Employment Losses of Proposed NYS Minimum Wage Increase from $7.15 per hour to $8.25, by Household Income-to-Needs Ratio, assuming Smaller Elasticities for Workers not Aged 16-to-29 without a High School Degree

	Percent of Workers Earning Between $6.90 per hour and $8.24 per hour[a,b]	Number of Workers	Employment Losses (e = -0.4 for Less-educated aged 16-29; e = 0 for others)	Employment Losses (e = -0.8 for Less-educated aged 16-29; e = 0 for others)	Employment Losses (e = -1.2 for Less-educated aged 16-29; e = 0 for others)	Employment Losses (e = -0.8 for Less-educated aged 16-29; e = -0.2 for others)	Percent of Job Losses under assumptions in column (6)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Income-to-Needs Ratio							
Less than 1.00	21.4	174,887	2,168	4,336	6,504	7,031	24.3
1.00 to 1.24	3.7	30,181	512	1,024	1,536	1,383	4.8
1.25 to 1.49	2.7	22,439	268	5,36	8,04	720	2.5
1.50 to 1.99	10.6	86,640	1,076	2,152	3,228	3,249	11.2
2.00 to 2.99	15.1	123,824	1,072	2,144	3,216	3,758	13.0
3.00 or above	46.5	380,380	3,326	6,652	9,978	12,848	44.3
Total	100	818,351	8,422	16,844	25,266	28,990	100

Notes:
[a]Hourly wage rates are based on a direct question concerning earnings per hour on their current primary job. All income data used to calculate income-to-needs ratios come from retrospective information from the previous year because that is the period for which it is reported. Wages are in nominal dollars. Sample restricted to 16-64 year-olds who report positive weeks and weekly hours worked in previous year.
[b]This wage category corresponds to March 2007. For March 2006, when the NYS minimum wage was $6.75 per hour, this wage category also includes those earning wages of $6.50-$6.89 per hour. In March 2005, when the NYS minimum wage was $6.00 per hour, this wage category also includes those earning wages of $5.75-$6.89 per hour.

Table 12. Simulated Monthly Net Benefits from Proposed NYS Minimum Wage Increase from $7.15 per hour to $8.25, by Household Income-to-Needs Ratio, assuming Smaller Elasticities for Workers not Aged 16-to-29 without a High School Degree[b]

	Net Benefits in Millions $ (e = 0)	% Net Benefits (e = 0)	Net Benefits in Millions $ (e = -0.4 for Less-educated aged 16-29; e = 0 for others)	Net Benefits in Millions $ (e = -0.8 for Less-educated aged 16-29; e = 0 for others)	Net Benefits in Millions $ (e = -1.2 for Less-educated aged 16-29; e = 0 for others)	Net Benefits in Millions $ (e = -0.8 for Less-educated aged 16-29; e = -0.2 for others)	% Net Benefits Under assumptions of column (6)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Income-to-Needs Ratio							
Less than 1.00	14.3	21.2	12.7	11.1	9.43	11.1	9.43
1.00 to 1.24	2.82	4.2	2.27	1.72	1.17	1.72	1.17
1.25 to 1.49	1.21	2.4	1.04	0.86	0.69	0.86	0.69
1.50 to 1.99	7.97	11.8	7.05	6.14	5.24	6.14	5.24
2.00 to 2.99	10.1	15.0	8.86	7.59	6.33	7.59	6.33
3.00 or above	30.6	45.4	29.1	27.7	26.3	27.7	26.3
Total	67.3	100	61.0	55.1	49.2	55.1	49.2

Notes:
[a]Expected benefits are calculated as the weighted sum of (1-p)($8.25-w)H - pwH for each minimum wage worker, where p is the probability of job loss from the minimum wage hike, [($8.25-w)/w]e, w is the worker's hourly wage rate, H is monthly hours worked, and e is the employment elasticity.
[b]The analysis uses data from the outgoing rotation groups of the March 2005, March 2006, and March 2007 CPS. A minimum wage worker is defined as earning between $6.90 and $8.24 per hour in March 2007. It also includes those earning between $6.50 and $6.89 per hour in March 2006, and those earning $6.00 to $8.24 in March 2005. Minimum wage workers earning between $6.50 and $6.89 in March 2006 or between $5.75 and $6.89 in March 2005 are assumed to earn the $7.15 minimum wage in March 2007.

Appendix Table 1. Robustness of DD and DDD Estimates to Choice of Baseline Year

	Baseline Year = 2003		Baseline Year = 2002	
	DD (1)	DDD[1] (2)	DD (3)	DDD[1] (4)
Effect of Minimum Wage on	-0.081**	-0.167***	-0.050	-0.114**
Employment of 16-to-29 Year-Olds	(0.035)	(0.054)	(0.035)	(0.052)
without HS Degree	[3,288]	[4,674]	[3,308]	[4,722]

*** Significant at the 1% level ** Significant at the 5% level * Significant at the 10% level

Notes: Estimates in columns (1) and (2) are obtained using data from the 2003 and 2006 Current Population Survey Outgoing Rotation Groups. Estimates in columns (3) and (4) are obtained using data from the 2002 and 2006 Current Population Survey. All estimates are weighted. Robust standard errors are in parentheses and sample sizes are in brackets. For all models, Pennsylvania is the control state.

[1]In each case, the within-state control group is comprised of respondents aged 25-to-29 with a Bachelor's degree.

Appendix Table 2. DD Estimates of the Effect of the 2005-2006 NYS Minimum Wage Increase on More Highly Educated or Experienced Workers

	Comparison States: PA, OH, NH	*Comparison State*: PA	*Comparison State*: OH	*Comparison State*: NH
	(1)	(2)	(3)	(3)
(1) Employment of 25-to-29 Year-Olds with Bachelor's Degree	0.026	0.052	0.003	-0.041
	(0.034)	(0.042)	(0.042)	(0.047)
	[2,057]	[1,354]	[1,254]	[1,167]
(2) Employment of 20-to-29 Year-Olds with High School Diploma	0.010	0.014	0.008	-0.002
	(0.019)	(0.023)	(0.023)	(0.026)
	[10,851]	[6,731]	[6,489]	[5,483]
(3) Employment of 30-to-54 Year-Olds	0.011	0.015	0.008	0.007
	(0.009)	(0.011)	(0.012)	(0.012)
	[38,508]	[23,335]	[22,200]	[20,033]

*** Significant at the 1% level ** Significant at the 5% level * Significant at the 10% level + Significant at 15% level

Notes: Estimates in columns (1) and (2) are obtained using data from the 2004 and 2005 Current Population Survey Outgoing Rotation Groups. Estimates in columns (3) and (4) are obtained using data from the 2005 and 2006 Current Population Survey. All estimates are weighted. Robust standard errors are in parentheses and sample sizes are in brackets.

Appendix Table 3. DD and DDD Estimates of First (2005) and Second (2006) Phases of New York State Minimum Wage Hike on Less-Educated 16-to-29 Year-Olds

	First Phase from $5.15 in 2004 to $6.00 in 2005		Second Phase from $6.00 in 2005 to $6.75 in 2006[1]	
	DD (1)	DDD[2] (2)	DD (3)	DDD[2] (4)
Effect of Minimum Wage Increase on Employment of 16-to-29 Year-Olds without HS Degree	-0.045[+]	-0.042	-0.032	-0.074*
	(0.029)	(0.034)	(0.030)	(0.045)
	[5,345]	[7,380]	[4,291]	[7,016]

*** Significant at the 1% level ** Significant at the 5% level * Significant at the 10% level [+] Significant at 15% level

Notes: Estimates in columns (1) and (2) are obtained using data from the 2004 and 2005 Current Population Survey Outgoing Rotation Groups. Estimates in columns (3) and (4) are obtained using data from the 2005 and 2006 Current Population Survey. All estimates are weighted. Robust standard errors are in parentheses and sample sizes are in brackets. All models use PA, NH, and OH as control states.

[1]Note that these estimates are not "true" DD or DDD estimates in the sense that at baseline (2005), the treatment and control states have different initial minimum wage levels. In 2005, the NYS minimum wage was $6.00 per hour, while in the control states it was $5.15.

[2]In all cases, the within-state control group is comprised of respondents aged 25-to-29 with a Bachelor's degree.

Appendix Table 4. Simulated Employment Losses of Proposed NYS Minimum Wage Increase from $7.15 per hour to $8.25, by Household Income-to-Needs Ratio, assuming uniform employment elasticities[a,b]

	Percent of Workers Earning Between $6.90 per hour and $8.24 per hour[a,b]	Number of Workers	Employment Losses (e = -0.2)	Employment Losses (e = -0.4)	Employment Losses (e = -0.8)	Employment Losses (e = -1.2)
	(1)	(2)	(3)	(4)	(5)	(6)
Income-to-Needs Ratio						
Less than 1.00	21.4	174,887	3,780	7,559	15,120	22,860
1.00 to 1.24	3.7	30,181	615	1,230	2,460	3,690
1.25 to 1.49	2.7	22,439	319	637	1,276	1,914
1.50 to 1.99	10.6	86,640	1,658	3,317	6,632	9,948
2.00 to 2.99	15.1	123,824	2,151	4,302	8,604	12,906
3.00 or above	46.5	380,380	7,858	15,717	31,432	47,148
Total	100	818,351	16,439	32,776	65,756	98,634

Notes:
[a]Hourly wage rates are based on a direct question concerning earnings per hour on their current primary job. All income data used to calculate income-to-needs ratios come from retrospective information from the previous year because that is the period for which it is reported. Wages are in nominal dollars. Sample restricted to 16-64 year-olds who report positive weeks and weekly hours worked in previous year.
[b]This wage category corresponds to March 2007. For March 2006, when the NYS minimum wage was $6.75 per hour, this wage category also includes those earning wages of $6.50-$6.89 per hour. In March 2005, when the NYS minimum wage was $6.00 per hour, this wage category also includes those earning wages of $5.75-$6.89 per hour.

Appendix Table 5. Simulated Monthly Net Benefits from Proposed NYS Minimum Wage Increase from $7.15 per hour to $8.25, by Household Income-to-Needs Ratio, assuming uniform employment elasticities[a,b]

	Net Benefits in Millions $ (e = 0)	% Net Benefits (e = 0)	Net Benefits in Millions $ (e = -0.2)	% Net Benefits (e = -0.2)	Net Benefits in Millions $ (e = -0.6)	% Net Benefits (e = -0.6)	Net Benefits in Millions $ (e = -0.9)	% Net Benefits (e = -0.9)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Income-to-Needs Ratio								
Less than 1.00	14.3	21.2	11.1	21.3	4.64	21.2	-0.20	23.2
1.00 to 1.24	2.82	4.2	2.17	4.2	0.88	4.0	-0.08	9.3
1.25 to 1.49	1.21	2.4	0.94	1.8	0.40	1.8	-0.01	1.2
1.50 to 1.99	7.97	11.8	6.18	11.9	2.60	11.9	-0.08	9.3
2.00 to 2.99	10.1	15.0	7.87	15.1	3.33	15.3	-0.07	8.1
3.00 or above	30.6	45.4	23.7	45.5	9.91	45.5	-.0.43	50.0
Total	67.3	100	52.1	100	21.8	100	-0.86	100

Notes:
[a]Expected benefits are calculated as the weighted sum of (1-p)($8.25-w)H - pwH for each minimum wage worker, where p is the probability of job loss from the minimum wage hike, [($8.25-w)/w]e, w is the worker's hourly wage rate, H is monthly hours worked, and e is the employment elasticity.
[b]The analysis uses data from the outgoing rotation groups of the March 2005, March 2006, and March 2007 CPS. A minimum wage worker is defined as earning between $6.90 and $8.24 per hour in March 2007. It also includes those earning between $6.50 and $6.89 per hour in March 2006, and those earning $6.00 to $8.24 in March 2005. Minimum wage workers earning between $6.50 and $6.89 in March 2006 or between $5.75 and $6.89 in March 2005 are assumed to earn the $7.15 minimum wage in March 2007.

Figure 1. Employment Trends of 16-to-29 Year-Olds without High School Diploma, 1996-2007

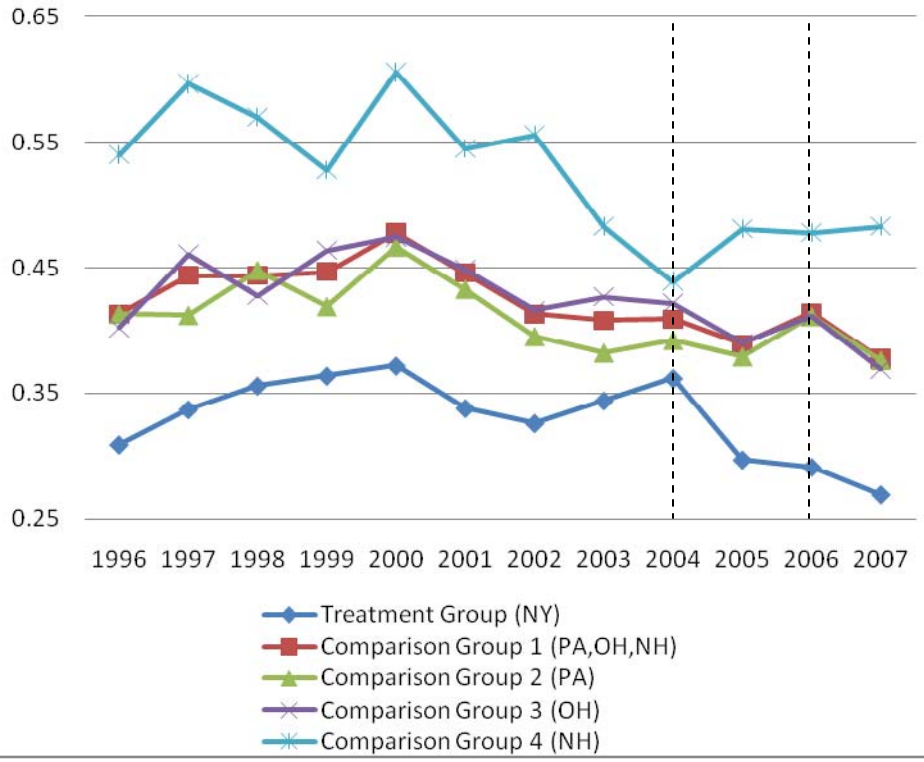

Figure 2. Employment Trends of 25-to-29 Year-Old College Graduates, 1996-2007

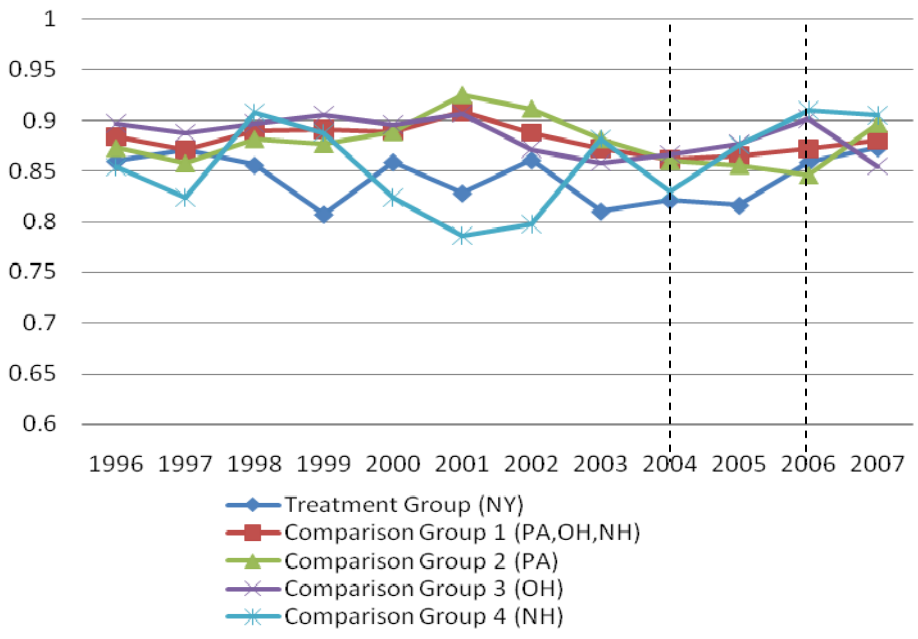

Figure 3. Employment Trends of 20-to-29 Year-Old High School Graduates, 1996-2007

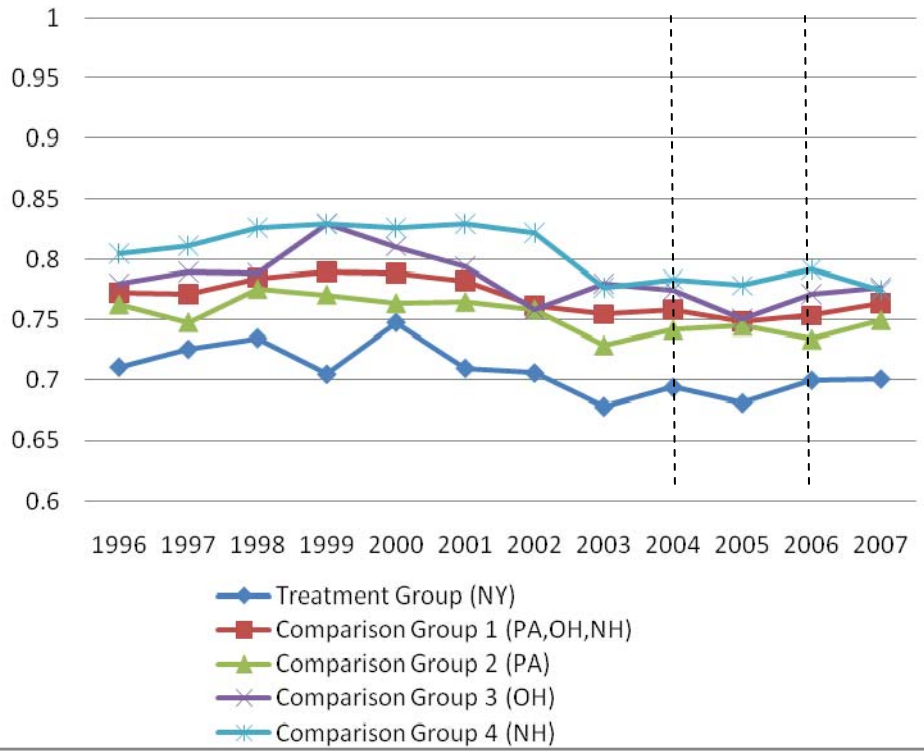

Figure 4. Employment Trends of 30-to-54 Year-Olds, 1996-2007

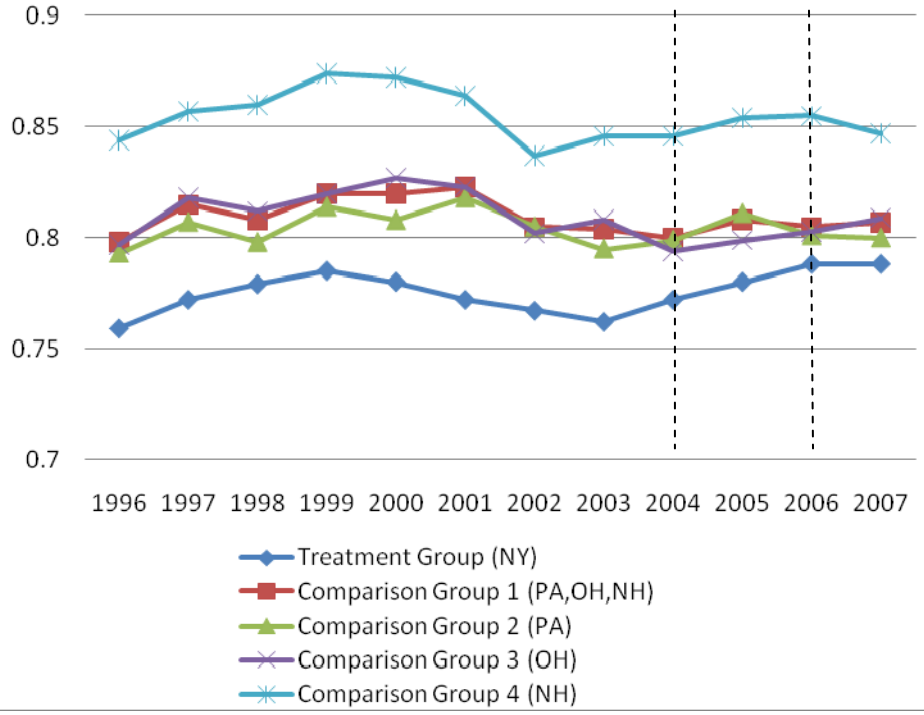

Figure 5. Employment Gap between 25-to-29 Year-Old College Graduates and 16-to-29 Year-Olds without High School Diploma, 1996-2007

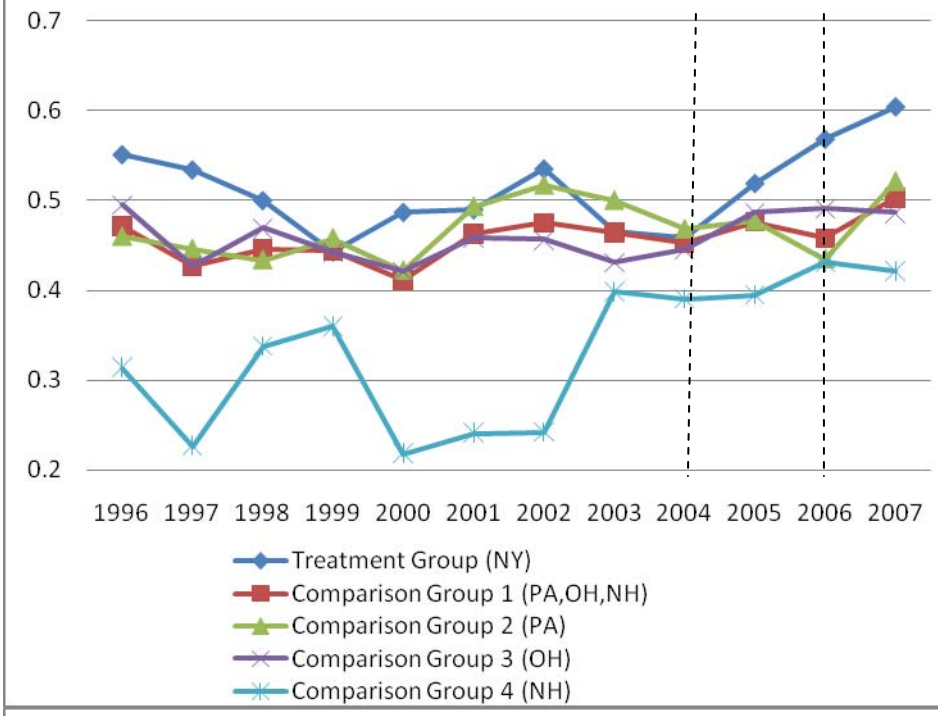

Figure 6. Employment Gap between 20-to-29 Year-Old High School Graduates and 16-to-29 Year-Olds without High School Diploma, 1996-2007

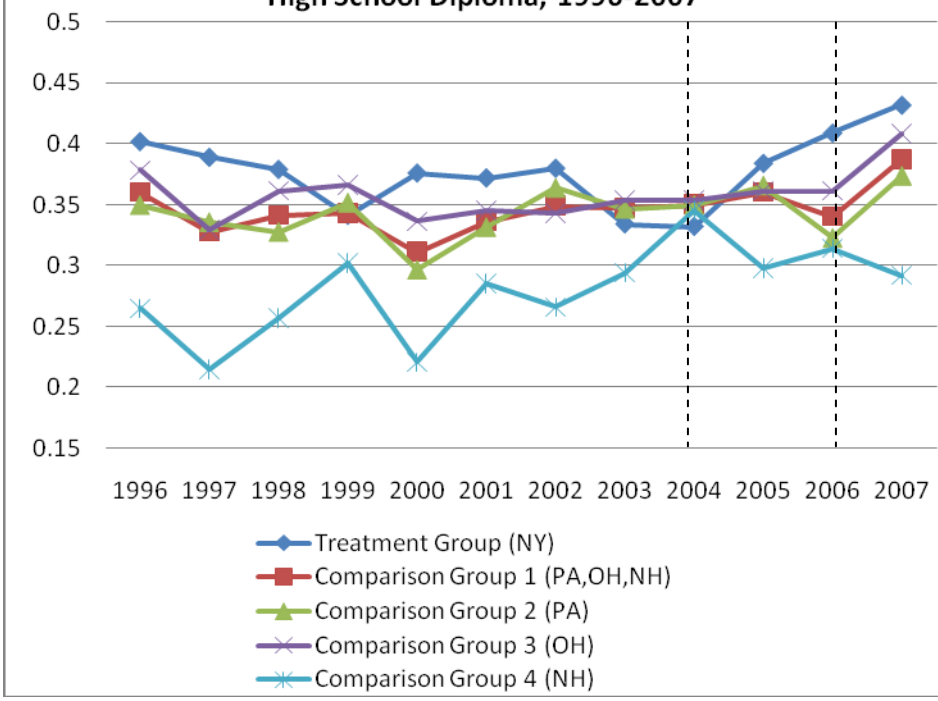

Figure 7. Employment Gap between 30-to-54 Year-Olds and 16-to-29 Year-Olds without High School Diploma, 1996-2007

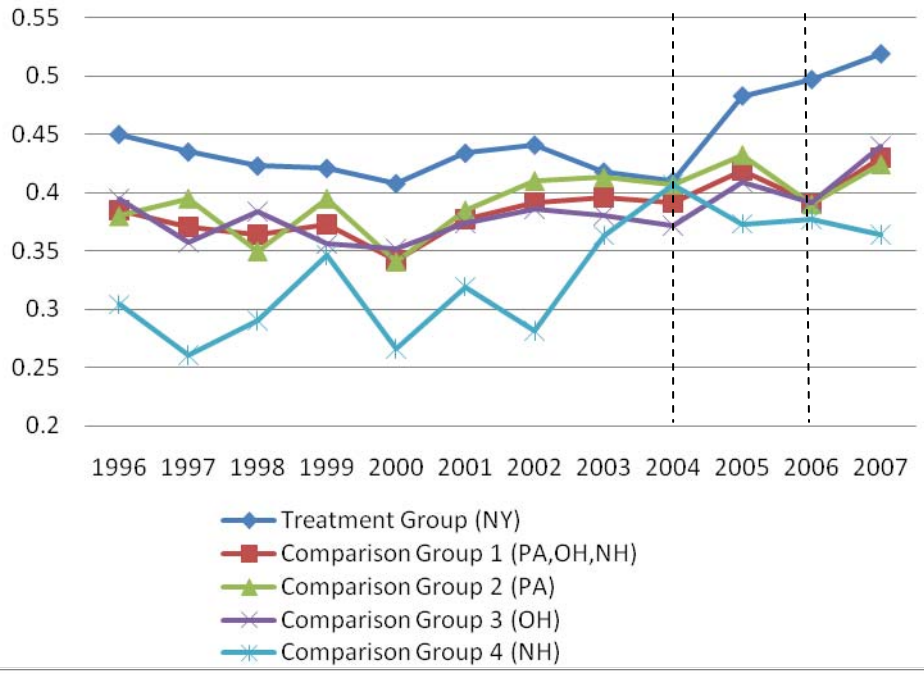

Figure 8. Employment Trends for White 16-to-29 Year-Olds without High School Diploma, 2003-2007