The Effects of Minimum Wage Increases in New York State: Evidence from a Natural Experiment*

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Abstract

Using data drawn from the Current Population Survey, 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 a newly 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 living in poor households.

JEL Codes: J21, J31, J38
Keywords: minimum wage, employment, natural experiment

I. Introduction

While a large body of evidence suggests that minimum wage increases cause adverse employment effects among low-skilled workers (Neumark and Wascher, 2007; 2008), most national studies have found that these effects are relatively modest (elasticities of -0.1 to -0.3), and some case studies of state minimum wages have found no negative employment effects (Card, 1992; Card and Krueger, 1994). Our case study of New York State suggests that the adverse employment effects of state minimum wage increases may not always be small for low-skilled workers. In 2004, the New York State legislature voted to raise the state minimum hourly wage from $5.15 to $7.15.[1] In a window between 2004 and 2006, three border or near-border states—Pennsylvania, Ohio, and New Hampshire—maintained their minimum hourly wage at $5.15, providing a natural experiment to determine the labor demand effects of New York's minimum wage increase on its low-skilled workers.

Difference-in-difference-in-difference estimates provide consistent evidence of large adverse employment effects, with a median employment elasticity of -0.8. Our employment estimates are robust to the choice of comparison states and within-state comparison groups. The credibility of our identification strategy is bolstered by the results of falsification tests, which show that relative employment trends between low- and high-skilled individuals in New York did not fall faster than in comparison states in the period just prior to the 2004-2006 minimum wage increase when New York and each comparison state had a minimum wage of $5.15 per hour, or in the period just after the increase when all states raised their minimum wages.

Using these estimates, we then simulate the distributional consequences of proposed legislation to further increase the New York State minimum hourly wage from $7.15 to $8.25

[1] The wage increase 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.

(Silver, 2007). Using conservative employment elasticities, we estimate that over 16,000 jobs will be lost and only 20 percent of the benefits will go to workers living in poor households.

II. Literature on Employment and Distributional Effects

Employment Effects. The iconoclastic work of Card and Krueger (1994; 1995) caused a major reconsideration of the consequences of minimum wage increases in the economics literature and more generally popularized the use of natural experiments as a way of capturing the marginal effect of policy changes. Since 1995, a substantial number of new studies of the effect of state and Federal minimum wage laws have been undertaken using more precise data and often using natural experiment techniques. Neumark and Wascher (2007) review over 90 of these studies and conclude that the evidence is "overwhelming" that the least-skilled workers most likely to be affected by minimum wage increases experience the strongest disemployment effects. They place consensus employment elasticities in this new literature in a range from -0.1 to -0.3.[2]

Recently, however, the debate in the literature has been stirred anew by studies questioning 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 employment trends. 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 find little evidence of adverse employment

[2] See, for example, Burkhauser et al., 2000a.

effects in the low-skilled retail and restaurant sectors (see, for example, Dube, Lester, and Reich, 2008; Addison et al., 2008). But this finding is far from definitive. Other studies that have examined low-skilled workers across sectors have found evidence of adverse employment effects even after controlling for unmeasured state trends (see Sabia, 2008a).

In contrast to these large national panel studies, other papers 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., 2008; Kim and Taylor, 1995). Case studies have the potential advantage of more adequately approximating the conditions of a natural experiment by relying on more "similar" control states, but are less generalizable.

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, and in fact, evidence of positive 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. Difference-in-difference estimates suggest no adverse affects of California's minimum wage increase on state retail employment growth.

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 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). For instance, 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, raising concerns that Card's estimates were subject to omitted variable bias.[3]

In summary, previous case studies of the minimum wage have tended to find small (or no) adverse employment effects, and critiques have highlighted the importance of examining the sensitivity of results to unmeasured employment trends between treatment and control states.

Distributional Consequences. A second vein of minimum wage 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. However, an important limitation to these simulations is that they fail to account for the behavioral 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).

A first step in accounting for behavioral effects in such simulations is to use a 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

[3] However, Card and Krueger (1995), note that employment trends were similar in the period prior to the minimum wage hike. Kim and Taylor (1995) do find substantial retail employment effects in their analysis of California data. But Card and Krueger (1995) showed that measurement error in Kim and Taylor's wage measure led to their negative employment effects. Because of limitations in the CBP data, Kim and Taylor calculate wages as the ratio of annual industry expenditures to total industry employment. But, as Card and Krueger note, this introduces a negative correlation between wages and employment by construction of the wage measure. When these measurement error concerns are addressed, Card and Krueger (1995) find no retail employment effects.

job losses and net benefits that each minimum wage worker will receive from a proposed hike. Baicker and Levy (2008), Yelowitz (2008), 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.[4]

Our case 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 estimated industry-wide employment effects, 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 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.

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

[4] An alternative 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. 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 family or 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 in case studies of states due to small numbers of observations per cell.

comparison states that are border or near-border states: Pennsylvania, Ohio, and New Hampshire. 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, 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 is a group of low-skilled workers that we expect to be affected by minimum wage policy: individuals aged 16-to-29 without a high school diploma or GED.

Our four main outcomes 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 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. We also include a set of individual-level controls in some specifications: age, age-squared, marital status, race, sex, number of own children under age 18 in the family, whether the respondent lives in a standard metropolitan statistical area (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 state.

IV. Identification Strategies

Our first identification strategy is a difference-in-difference approach, similar to that used by Card (1992) and 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) estimator.

However, the estimate of β_1 will only be unbiased if unmeasured employment trends are similar in the treatment and comparison states. Thus, our choice of comparison states is important. Pennsylvania and Ohio are the most natural controls because each are large industrial states that either share a common border (Pennsylvania) or a near border (Ohio) 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 using the full set of comparison states as well as results using each comparison state alone.

Our second approach is to identify within-state comparison groups 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 (DDD) model using a

[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 probit produces results that are qualitatively similar to those reported in the paper.

sample of less-educated 16-to-29 year-olds as well as members of the within-state comparison group:

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

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 comparison groups that are used in different specifications: (1) individuals aged 25-to-29 with a Bachelor's degree or higher, (2) individuals aged 20-to-29 who received a high school degree or higher, and (3) older individuals aged 30-to-54.[6] The key parameter of interest, β_1, is the difference-in-difference-in-difference estimator.

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 2004-2006 New York minimum wage increase. If relative employment trends between low- and high-skilled workers are different in New York than in comparison states during these periods, this would suggest that our natural experiment is contaminated. On the other hand, the absence of employment effects would support our identification strategy.

[6] 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, 2008a), 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.

V. Wage, Employment, and Hours Effects

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.[7] 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 would be directly affected by the minimum wage hike.[8] 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.[9] We also find evidence that the share of low-skilled New Yorkers earning $6.75 per hour rose from 0.017 in 2004 to 0.068 in 2006. In contrast, there was little change in

[7] All means and regressions are weighted by the relevant state population.

[8] 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).

[9] 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.

the share of less-educated workers earning low wages in comparison states between 2004 and 2006 (see Panel II).

In Panel III, we show difference-in-difference (DD) 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.[10]

While the evidence in Table 2 suggests a positive relationship between the minimum wage and low-skilled workers' hourly wages, one might be concerned that this result simply reflects a differing wage trend between New York and the comparison states that is unrelated to the minimum wage. Thus, in Table 3, we estimate the effect of the minimum wage increase on the natural log of the average wage rate of lower- and more highly-skilled workers, the latter who are not expected to be affected by the minimum wage. The first row of Table 2 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),

[10] In Appendix Table 1, provided in a separate document available on request from the authors, 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.

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. Given that low-skilled workers' wages were affected by the 2004-2006 minimum wage increase, we next turn to estimating labor demand effects.

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 consistently 0.05 to 0.10 points lower in New York than the comparison states, the pre-2004 employment trends look similar across the states. But between 2004 and 2006, the low-skilled employment ratio declined substantially in New York, 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 2006-2007, the employment of low-skilled workers fell in all four states, when their minimum wages increased.

Table 4 presents difference-in-difference estimates of the effect of the New York minimum wage increase on employment. Three rows of estimates are presented using four low-skilled 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 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 difference-in-difference estimate 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 (column 6, row 1).

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 employment decline (-0.073/0.362). This represents an employment elasticity of -0.648.[11] 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).[12]

Our range of DD estimates (-0.47 to -0.98) is large relative to consensus estimates, which tend to range from -0.1 to -0.3 (Neumark and Wascher, 2007), but are more comparable to those obtained by Sabia (2008a) for single mother high school dropouts and by Burkhauser et al. (2000b) 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, we now turn to a difference-in-difference-in-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 extend to more highly-skilled workers. 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. College-educated 25-to-29 year-olds (Figure 2), 20-to-29 year-old high

[11] 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.

[12] 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 uncovered 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.

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.[13]

Table 5 shows difference-in-difference-in-difference estimates using the three more highly-skilled within-state control groups depicted in Figures 2-4. Across within-state control groups (columns 1, 2, and 3) 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. More conservative elasticity estimates are obtained when the within-state comparison group is 20-to-29 year-old high school graduates or those aged 30 to 54. Estimated employment elasticities are largest when Pennsylvania is the control state (-0.88 to -1.25) and are smallest and marginally significant when the control state is Ohio (-0.42 to -0.60).[14] However, our employment effects are larger than traditional consensus estimates across all models.

Baseline Employment. While the DD and DDD identification strategies control for fixed characteristics of treatment and comparison states, one might be concerned that the employment levels of low-skilled workers at baseline differ 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

[13] 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.

[14] 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. 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).

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 5).

Table 6 shows formal DD and DDD estimates of the effect of the minimum wage on low-skilled employment among whites. 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. Using Pennsylvania alone, DD and DDD estimates are even larger, with employment elasticities of -0.70 to -1.2. Taken together, these results confirm our main findings.[15]

Baseline Year. Another concern may be that the choice of baseline year (2004) is driving results because of the small (statistically insignificant) uptick in low-skilled employment just prior to 2004 in New York (see Figure 1). In Table 7, we re-estimate DD and DDD models using 2003 and 2002, respectively, as the baseline year. We find the results substantively unchanged.

Falsification Tests. In Table 8, we present results from falsification tests designed to test whether employment trends in New York and the comparison states differed in the periods just before and after the minimum wage increase. The first row of Table 8 replicates the DDD

[15] 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. In Appendix Table 4, we disaggregate our sample by age, and find that employment elasticities decline with age.

estimates from row (1) of Table 5. In row (2), we compare relative employment trends between low- and more highly-skilled New Yorkers and the comparison states between 2002 and 2004, a period during which all states had a $5.15 minimum wage. We find no evidence of different employment trends between states just prior to the New York minimum wage hike.

In the third row of Table 8, we examine the period just after the 2004-2006 minimum wage hike (2006-2007) when each of the comparison states as well as New York 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 July 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 should not be declining faster in New York than in the comparison states. This is confirmed in row (3) of Table 8. In fact, the signs are positive, which is consistent with larger minimum wage increases in the comparison states. Taken together, the results in Table 8 add confidence to our identification strategy.[16]

Conditional Hours Effects. 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). Thus, in Table 9, we present estimates of the effect of the minimum wage on log

[16] In unreported results, difference-in-difference estimates show no significant differences in low-skilled or high-skilled employment trends in the periods before or after the minimum wage increase.

hours worked among retained workers. The findings suggest that the New York state minimum wage hike had no effect on conditional hours worked.[17]

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

Given the evidence of significant adverse employment effects from the last minimum wage increase, we now turn to estimating job losses and simulating distributional effects of the proposed News York State minimum wage hike from $7.15 to $8.25 per hour. Our analysis in Table 10 uses data from the March 2005 to March 2007 Current Population Survey (CPS) outgoing rotation groups. As in Burkhauser and Sabia (2004; 2007), 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.[18] 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 each income-to-needs cell, and restrict our sample to workers who reported hourly wage rates between $6.90 and $8.24 per hour.[19] We assume that workers earning less than $6.90 per hour are in uncovered jobs and those earning greater than $8.25 per hour are not affected by the increase.[20]

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[17] In Appendix Table 5, we present age-specific hours effects. For, 25-to-29 year-old dropouts, there is some weak evidence of an adverse hours worked effect. Estimates suggest that the minimum wage increases 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, we are cautious in concluding that the minimum wage increase had a substantial conditional hours-worked effect among the young dropouts we examine.

[18] 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.

[19] 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

Column (2) of Table 10 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.[21] 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.

We estimate job loss 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):

$$p_i = \frac{(8.25 - w_i)}{w_i} |e_i| \qquad (3)$$

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 may apply to workers with different demographic, family, or job characteristics. As noted above, the prior literature has assumed an employment elasticity of zero (Burkhauser et al., 1996; Burkhauser and Sabia, 2007).

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

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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 their 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.

[20] 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.

[21] 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.

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.[22]

Note that the share of jobs lost by the working poor (24.3 percent) is greater than the share of minimum wage workers who are poor (21.4 percent). This is because (i) minimum wage workers living in poor households are more likely to earn wages that are further from $8.25 than other affected workers and hence face a higher probability of job loss, and (ii) minimum wage workers living in poor households are more likely to be 16-to-29 year-olds without a high school degree than other affected workers.

Next in Table 11, 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 10, 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:

$$EB_i = \left(1 - \frac{(8.25 - w_i)}{w_i}|e_i|\right)(8.25 - w_i)H_i \; - \left(\frac{(8.25 - w_i)}{w_i}|e_i|\right)w_i H_i \qquad (4)$$

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

[22] Appendix Table 6 shows job losses if we apply our estimated elasticities to all minimum wage workers.

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.

We need to make a number of simplifying assumptions to interpret the expression in equation (4) 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 workers who lose their jobs have no monthly earnings.[23]

In column (1) of Table 11, 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 living 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, an 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

[23] 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. For example, the actual difference in benefits between workers living in poor and non-poor households may be understated if the demand for poor workers is more elastic than that of non-poor workers as a group (see, for example, Sabia, 2008a).

$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 using 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 case, 20.0 percent of the benefits are received by the working poor, compared to the 49.9 percent 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.[24] We estimate that at average employment elasticities greater (in absolute value) than -0.89 for all affected workers, expected net benefits for the working poor become negative.

VII. Conclusions

Using a difference-in-difference-in-difference identification strategy, we find robust evidence that raising the New York minimum wage from $5.15 to $6.75 per 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. Our median elasticity is approximately -0.8. Our results show that the employment effects of state minimum wage increases may not always be small for low-skilled workers.

[24] In unreported simulations, we use the age-specific elasticities reported in Appendix Table 4 to simulate the distribution of benefits. The results are qualitatively similar. For instance, if we apply age-specific elasticities 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. Appendix Table 7 shows results when we apply a range of employment elasticities to all minimum wage workers.

Using our estimated employment elasticities from the last New York State minimum wage hike, as well as more conservative estimates from the existing minimum wage literature, we simulate the distributional consequences for the proposed New York minimum wage increase 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—we find that net benefits to the working poor are negative.

We conclude that another increase in the minimum wage is unlikely to benefit New York's working poor because (1) most minimum wage workers who will benefit are not poor (2) many workers who are poor earn wages greater than state or federal minimum wages, and (3) there are substantial adverse employment effects, which fall quite heavily on low-skilled workers living 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, 2000, 2001; Ellwood, 2000; Grogger, 2003; 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, at a cost of approximately $265 million.

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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 3. 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 (1)	2006 (2)	2004 (3)	2006 (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 robust 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. 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]
Elasticity	*-0.757*	*-1.56*	*-0.493*	*-1.12*

*** 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.

Table 8. 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) Minimum Wage Effect: *2004-2006*	-0.094**	-0.076**	-0.080**
	(0.044)	(0.033)	(0.029)
	[7,226]	[16,020]	[43,667]
(2) Falsification Test I: 2002-2004	0.031	0.038	0.027
	(0.050)	(0.039)	(0.035)
	[4,938]	[10,840]	[30,157]
(3) Falsification Test II: 2006-2007	0.002	0.009	0.013
	(0.043)	(0.033)	(0.029)
	[6,815]	[15,315]	[40,646]

*** 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 9. Difference-in-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 with ≥ HS	*Within-state comparison group*: Aged 30-54
	Adj. DDD	Adj. DDD	Adj. DDD
	(1)	(2)	(3)
Effect of Minimum Wage on Conditional Hours of 16-to-29 Year-Olds without HS Degree	0.050	0.048	0.071
	(0.072)	(0.059)	(0.060)
	[3,621]	[9,709]	[31,583]

*** Significant at 1 percent level ** Significant at 5% level * Significant at 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 10. 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 11. 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	8.64	20.0
1.00 to 1.24	2.82	4.2	2.27	1.72	1.17	1.35	3.1
1.25 to 1.49	1.21	2.4	1.04	0.86	0.69	0.68	1.6
1.50 to 1.99	7.97	11.8	7.05	6.14	5.24	4.81	11.2
2.00 to 2.99	10.1	15.0	8.86	7.59	6.33	5.96	13.8
3.00 or above	30.6	45.4	29.1	27.7	26.3	21.5	49.9
Total	67.3	100	61.0	55.1	49.2	43.1	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.

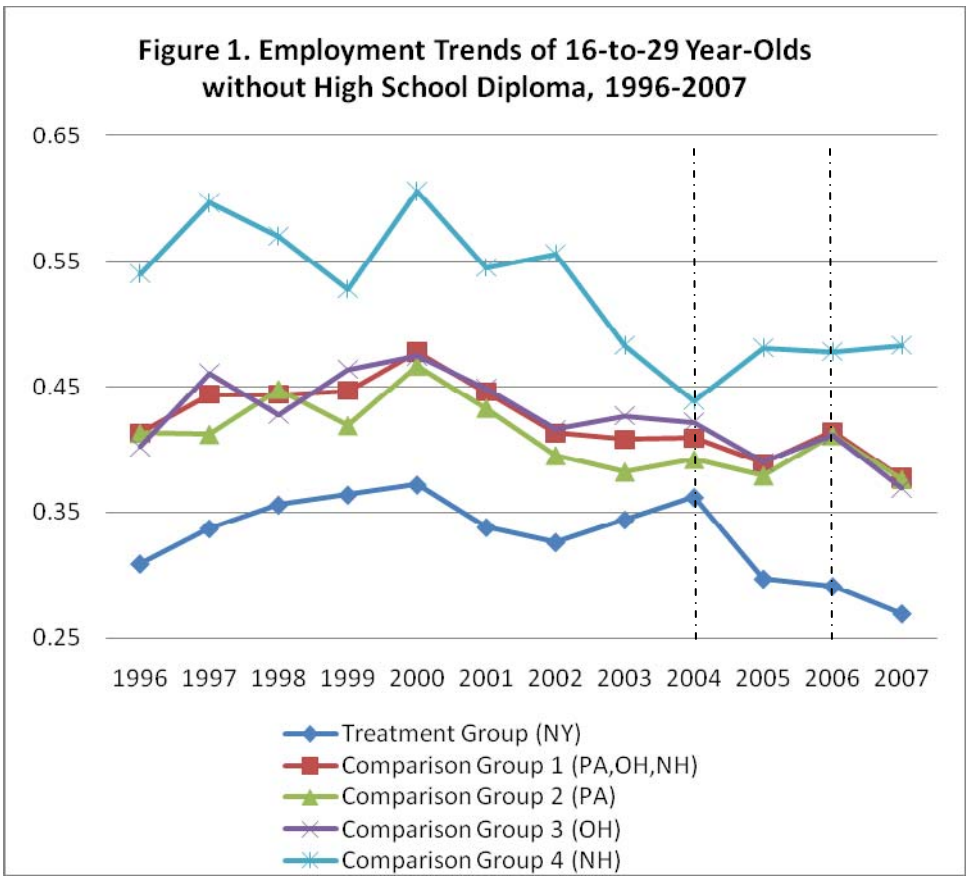
Figure 1. Employment Trends of 16-to-29 Year-Olds without High School Diploma, 1996-2007
0.65
0.55
0.45
0.35
0.25
1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007
Treatment Group (NY)
Comparison Group 1 (PA,OH,NH)
Comparison Group 2 (PA)
Comparison Group 3 (OH)
Comparison Group 4 (NH)

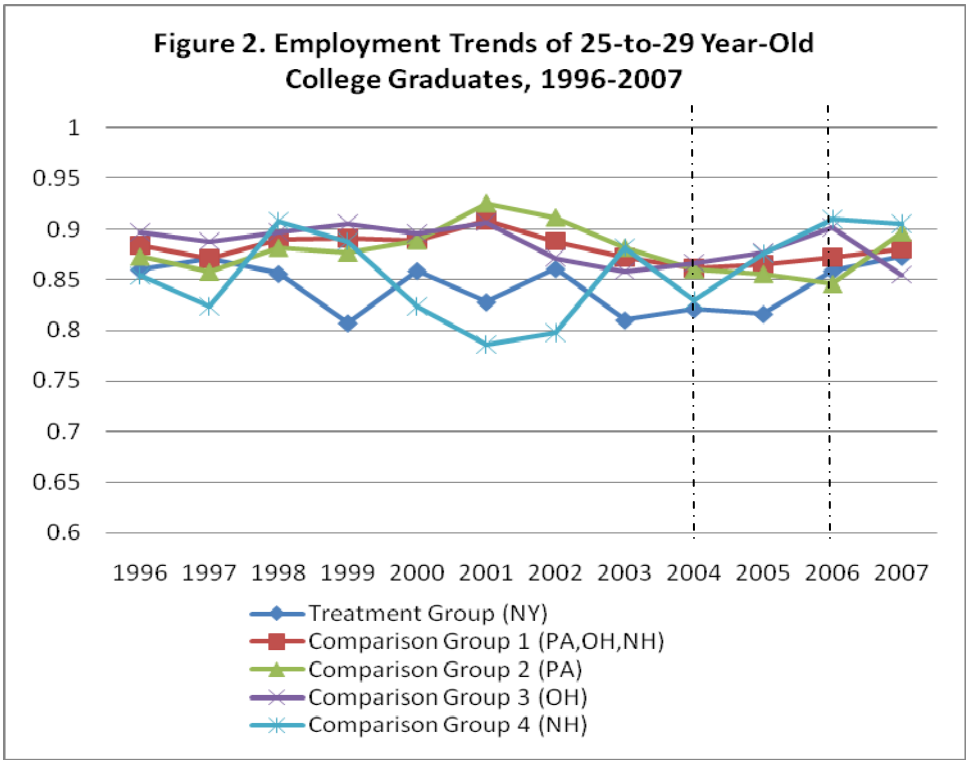
Figure 2. Employment Trends of 25-to-29 Year-Old College Graduates, 1996-2007
1
0.95
0.9
0.85
0.8
0.75
0.7
0.65
0.6
1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007
Treatment Group (NY)
Comparison Group 1 (PA,OH,NH)
Comparison Group 2 (PA)
Comparison Group 3 (OH)
Comparison Group 4 (NH)

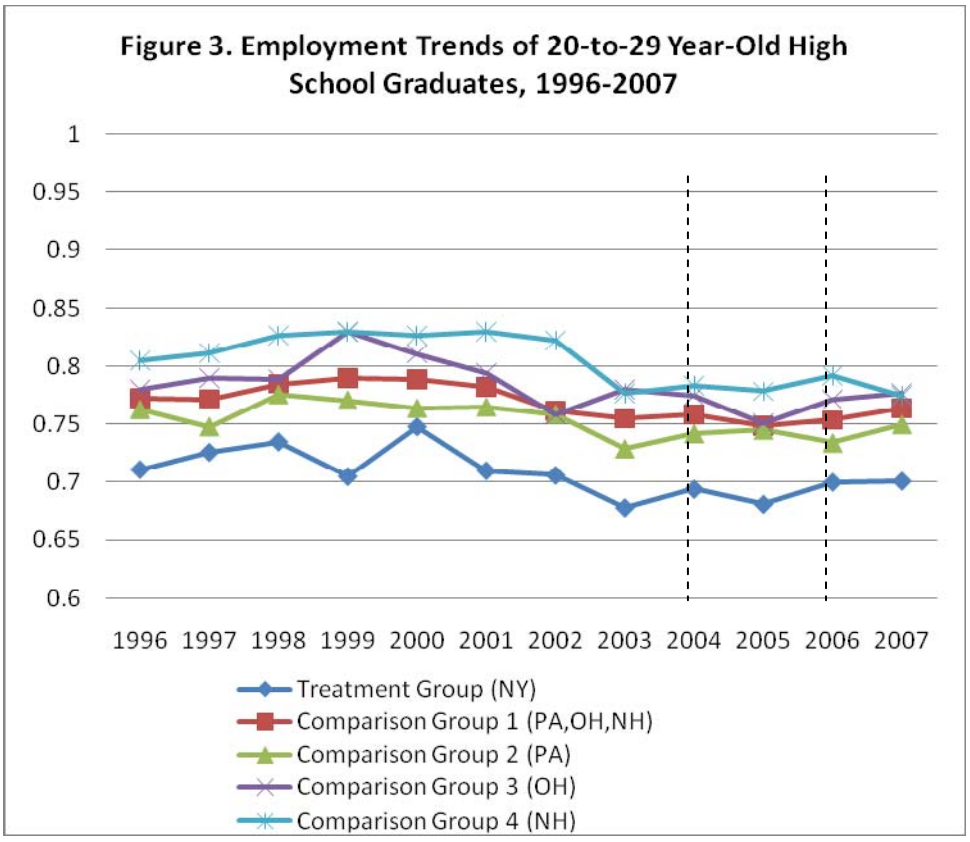
Figure 3. Employment Trends of 20-to-29 Year-Old High School Graduates, 1996-2007
1
0.95
0.9
0.85
0.8
0.75
0.7
0.65
0.6
1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007
Treatment Group (NY)
Comparison Group 1 (PA,OH,NH)
Comparison Group 2 (PA)
Comparison Group 3 (OH)
Comparison Group 4 (NH)

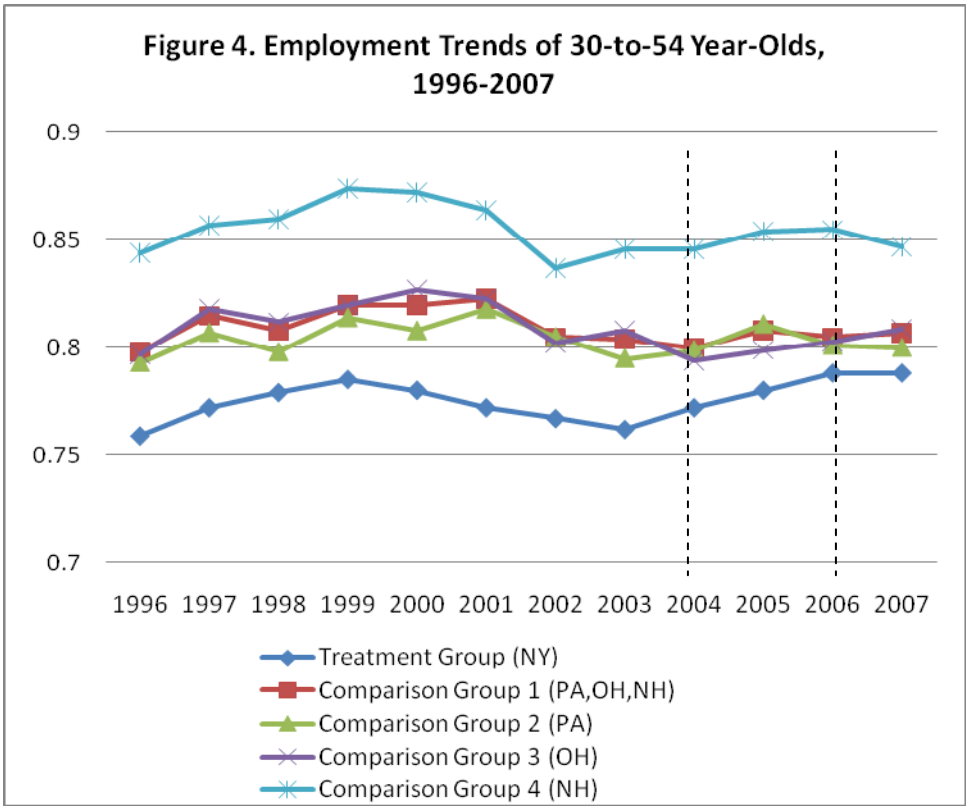
Figure 4. Employment Trends of 30-to-54 Year-Olds, 1996-2007
0.9
0.85
0.8
0.75
0.7
1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007
Treatment Group (NY)
Comparison Group 1 (PA,OH,NH)
Comparison Group 2 (PA)
Comparison Group 3 (OH)
Comparison Group 4 (NH)

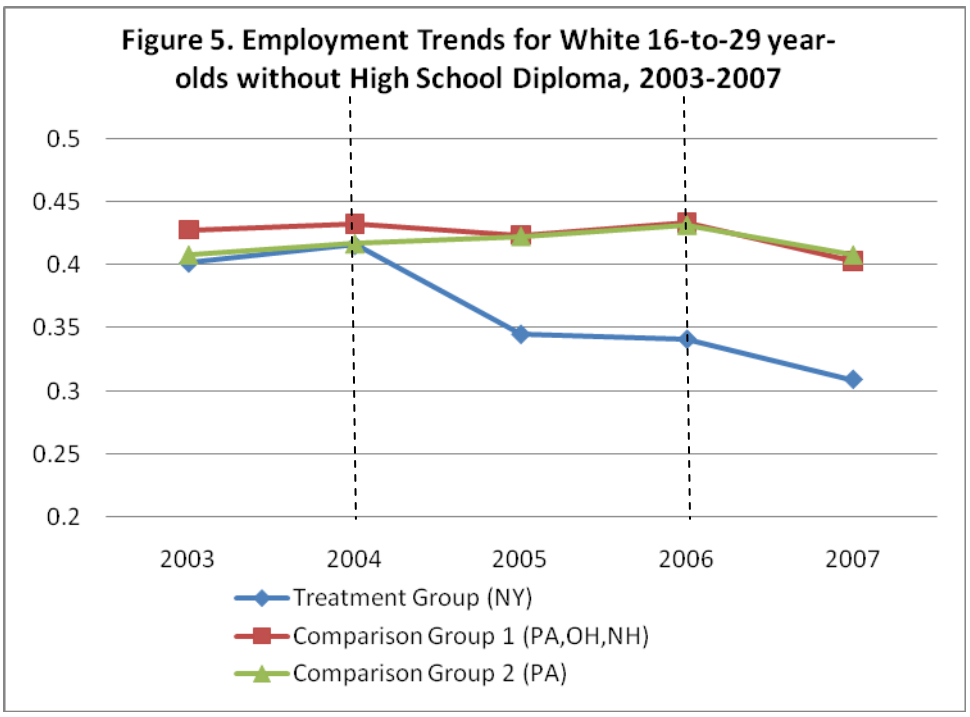
Figure 5. Employment Trends for White 16-to-29 year-olds without High School Diploma, 2003-2007
0.5
0.45
0.4
0.35
0.3
0.25
0.2
2003
2004
2005
2006
2007
Treatment Group (NY)
Comparison Group 1 (PA,OH,NH)
Comparison Group 2 (PA)