TECHNICAL REPORT

Methodology for Adjusting GPRA Workforce Development Program Performance Targets for the Effects of Business Cycles

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I. Purpose of the Technical Report

The U.S. Department of Labor's Employment and Training Administration issued Training and Employment Guidance Letter (TEGL) Number 09-08, Change 1 in June, 2009. This guidance letter revises the Government Performance and Results Act (GPRA) performance measures for federal workforce development programs to take into account the effect of the recession on participants' labor market and educational outcomes. As described in the TEGL, the performance targets of the various workforce development programs have been developed for use for the years PY2008 through PY2010. They are intended to be used for PY2009 performance target negotiations and will appear in the President's Budget Request for FY2010. The performance targets for future program years, adjusted for unemployment rates, are driven by the economic assumptions of the President's Budget Request for FY2010.

The revised performance targets are based on analysis carried out as part of a study conducted for the U.S. Department of Labor (USDOL) by the W. E. Upjohn Institute for Employment Research. This technical report has two purposes. The first is to describe the methodology used to estimate the relationship between unemployment rates and workforce program performance targets. The second is to describe the procedures used to adjust the GPRA performance targets for changes in unemployment rates during the current recession and over the business cycle. The study described in this technical report is the initial phase of an ongoing analysis of the effect of economic conditions on workforce development program outcomes. Because of the short amount of time provided to carry out this initial analysis, a few decisions regarding data collection were made to expedite the completion of the initial phase. These decisions included choosing a set of states that would provide a data set that maximizes geographic and participant representation, while using a reasonable number of states within a time period in which the necessary data are readily available. The next phase of the analysis, which is underway, expands the coverage.

The goal of the federal workforce programs is to provide effective services that enhance the employment opportunities and careers of participants. These services include reemployment services and remedial and skill training, among others. While such services are important in helping people obtain and retain jobs, the condition of the local labor market is also a critical factor. Areas that experience high unemployment have fewer job prospects, and the likelihood of an individual, even a highly qualified and motivated person, finding a job is diminished. Consequently, the performance of Workforce Investment Act (WIA) programs is affected by economic conditions, particularly in this current severe economic downturn.

Despite this obvious relationship between local labor market conditions and the ability to find and retain employment, little empirical research has been conducted to estimate the relationship between them. A strong empirical basis is necessary to understand how the current economic situation affects the performance of workforce programs and thus how to set goals for these programs in the near term. The study conducted by the Upjohn Institute provides estimates of the relationship between

unemployment rates and performance measures included in the GPRA targets. The estimates are based on the outcomes of individual participants of the workforce programs as they search for employment within their local labor markets.

II. Overview of the Methodology and Results

The study derives direct estimates of the effects of unemployment rates on performance measures for various programs using detailed data of participants of the Workforce Investment Act (WIA), Wagner-Peyser Employment Service (ES), and Trade Adjustment Assistance (TAA) programs. As a result, the estimates capture actual relationships between changes in unemployment rates and performance. These estimates are then applied to the President's FY2010 Budget Request assumptions of national unemployment rates through 2014 to adjust the GPRA performance targets for expected changes in unemployment rates.[1]

A. Data

Estimates are based on the experience of individual participants in the local labor markets in which they are searching for employment. Using data at the local level provides a much stronger correspondence between the labor market outcomes of program participants and the economic conditions they are facing. As data becomes more aggregated, such as at the state or national levels, the alignment weakens, since the economic conditions of local labor markets vary widely from the state and national averages. The conditions faced by an individual looking for work in Detroit, Michigan, are much different from one seeking employment in Grand Rapids, Michigan, just as the conditions are much different, on average, for individuals in Illinois versus those in Texas. Using individual participant data also provides the ability to control for differences in the demographic characteristics of individuals. To isolate the effects of unemployment rates on performance, it would be ideal to place an identical person in each of the labor markets to observe his or her outcomes. Controlling for differences in educational attainment, prior employment history, and perceived barriers to employment through statistical means moves the analysis closer to that ideal situation. The data used to estimate these relationships are obtained from the WIA Standardized Record Data (WIASRD), TAA administrative records, and ES administrative records for selected states. Data are obtained quarterly from the years 2000–2008. The exact length of time depends upon the program and performance measure.

B. Estimation

Direct estimates are obtained for the following programs: WIA Adult, WIA Dislocated Worker, WIA Youth, Wagner-Peyser Employment Service (ES), and Trade

[1] The U.S. Department of Labor, as part of the Executive Branch, is required to use these assumptions that are developed by the Executive Office of the President. Each year, the Executive Branch puts out two sets of official assumptions—the initial assumptions included in the budget and the assumptions accompanying the Mid-Session Review of the budget. Therefore, over time, the assumptions may be revised for future years.

Adjustment Assistance (TAA). The estimates of the effect of unemployment rates on performance measures are robust across the various programs and appear reasonable in the magnitude of their impact. Results reveal a negative relationship between unemployment rates and both entered employment rate and retention rate, which are statistically significant. For these two performance measures, estimates range from a reduction of 1.0 percentage point to a reduction of 1.8 percentage points for an increase of a one-percentage-point change in unemployment rates. This can be interpreted in the following way: an estimate of –1.8 means that a one-percentage-point change in the unemployment rate, say from 6 percent to 7 percent, is expected to reduce the entered employment rate by 1.8 percentage points. If the entered employment rate was 70 percent at an unemployment rate of 6 percent, then an increase in the unemployment rate from 6 to 7 percent would lower the expected entered employment rate from 70.0 percent to 68.2 percent.[2]

C. Performance Adjustment

These estimates are used to adjust the performance measures of their respective programs: WIA, ES, and TAA. For all other workforce programs for which detailed participant data are not readily available for direct estimation, estimates for the WIA Adult program are used to adjust their performance measures, with a few exceptions. WIA Adult estimates are used for the following: Senior Community Service Employment Program (SCSEP), Migrant and Seasonal Farm Worker (MSFW), Immigration and Nationality Act (INA), Work Incentive Grants (WIG), Prisoner Re-Entry Initiative, and National Emergency Grant (NEG). WIA Dislocated Worker estimates are used to adjust the retention measure for the Apprenticeship program. The justification for using WIA Adult estimates is the similarity in the characteristics of the participants of the WIA Adult program and the other programs. This analysis does not include the Unemployment Insurance program, since it is being developed under a separate study.

Using these estimates, performance targets for each program are adjusted by the estimated effects of the change in unemployment rate from year to year. Budget 2010 unemployment rate assumptions were used in the calculations. The calculations start in PY2007 (FY2007 for TAA) and extend through PY2014. The actual performance rate was used as the base in PY2007. The adjusted target for the following year was calculated by multiplying the previous year's performance target by the change in unemployment rates times the appropriate estimate of the effect of the unemployment rate change on the performance measure. This adjustment factor is then added to previous target.

[2] For the analysis, the performance measures are expressed as rates, not percentages. That means that instead of entered employment being expressed as 70 percent, for example, we express it as 0.70. The explanatory variables are also expressed as rates. However, for the performance adjustment calculations, we follow the standard approach of USDOL and describe the performance targets in percentage terms.

III. Estimation Methodology

Estimates of the relationship between program outcomes and business cycles were conducted at the local labor market level, as defined by either the Workforce Investment Board (WIB) service area or the county, depending upon the program. A separate model is estimated for each performance measure in each program. The estimation equation is written generally as

(1) $Y_{isq} = B_o + B_1 * X_{isq} + B_2 * D_{sq}$ + error term,

where Y is the outcome variable for individual *i* in WIB's (counties) in year-quarter *q*, X denotes the individual attributes for person, and D is the local unemployment rate in WIB's (counties) during year-quarter *q*. The B's represent the estimated coefficients.

Of specific interest is the estimated coefficient B_2, which shows the statistical relationship between unemployment rates (D) and the performance-related outcomes (Y). In order to account for the possibility that the effects are not contemporaneous, we tested several lag structures. We settled on a lag structure that enters the unemployment rates in the quarter in which the performance target is recorded. For example, retention rate is measured the second and third quarter after exit. Therefore, for the estimation of the effect of unemployment rates on retention rates, we entered the unemployment rates that corresponded with the second and third quarter after exit for each individual. In addition, since retention represents a change in status from holding a job to not holding one, we used the change in unemployment rates from quarter to quarter to reflect the changing labor market conditions on keeping a job. For the average earnings measure, which is defined as the earnings in the second and third quarters after exit, the unemployment rates are entered for those two quarters plus the first quarter after exit, since the participant had to be employed the first quarter to be counted in this measure.[3] For the "credentials and employment" performance measure, the effects over four quarters, from the quarter of exit through the third quarter after exit, are used to estimate the effect of unemployment rates. Therefore, for performance measures that span more than one quarter, the full effect of unemployment rates on the measure is computed by adding up the coefficients on the unemployment rates for each relevant quarter. The statistical significance is estimated using a *t*-test for the combined effects of the relevant coefficients.[4]

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[3] Retention rate is also contingent on being employed the first quarter after exit, but since it is capturing the ability to retain a job, we looked at the change from quarter to quarter, encompassing the first three quarters after exit.

[4] We also explored whether or not the unemployment rate exerts different effects on performance measures depending upon the magnitude of the unemployment rate. That is, we addressed the possibility that unemployment rates might have a nonlinear effect on performance measures. We introduced this possibility by specifying unemployment rates in two different ways. First, we entered unemployment rates as a quadratic, and second, we entered unemployment rates as a set of categorical variables each capturing different ranges of unemployment rates. In both cases, we could not reject the fact that unemployment rates have a linear effect on performance measures. Therefore, a one-percentage-point change in unemployment rates produces the same point change in performance measures (or dollar change in earnings) no matter the level of unemployment rates.

The dependent variable is a dichotomous variable that takes on the value of 1 if the outcome is achieved and 0 if not. For example, entered employment is defined as having positive earnings in the first quarter after exit. The dependent variable takes a value of 1 for individuals for whom positive earnings are observed in their wage record for that quarter, and 0 otherwise. Thus, the samples include two types of outcomes—1 or 0—and not a continuous range of percentages. Therefore, the effect of unemployment rates on entered employment is estimated as the effect of unemployment rates on the probability of finding employment (e.g., achieving a 1). Aggregating the effects across the sample of individuals included in the analysis translates the results from the effect on the probability of getting a job to the effect on the percentage of people entering employment, which is the performance measure for the WIA system.

In addition to the unemployment rate as an explanatory variable in the estimation equation, individual characteristics of participants, as denoted by the X's, are also included in the equation. These variables include measures of education, age, race/ethnicity, disability, gender, and employment history prior to registration. Most of these variables are entered as categorical variables. Since characteristics affect the performance measures and these characteristics may change over a business cycle, it is important to control for these variables in order to isolate the net effect of business cycles on performance.

For simplicity and speed and because of the large number of models estimated, the models are estimated using linear probability models, even when the dependent variable is a zero-one variable.[5] Logit and probit estimation techniques are generally recommended for estimating equations with zero-one dependent variables. However, using logit or probit makes it more difficult to interpret results and creates some complexities in calculating adjustments. For example, because logit and probit are non-linear models, the adjustment factor cannot be calculated using sample means of local areas but rather requires calculating probabilities for all observations using the full set of data. Econometricians have shown that the drawbacks of linear probability models, compared with logit and probit techniques, may be minimal.[6] A fixed-effects model is

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[5] Two problems associated with the linear probability model are heteroscedasticity and the predicted values extending beyond the limits of 0 and 1.

[6] Wooldridge (2002) states in his textbook that the linear probability model "often seems to give good estimates of the partial effects on the response probability near the center of the distribution of x" (p. 455). He adds that "if the main purpose is to estimate the partial effect of x on the response probability, averaged across the distribution of x, then the fact that some predicted values are outside the unit interval may not be very important" (p. 455). See Jeffrey M. Wooldridge, *Econometric Analysis of Cross Section and Panel Data*, Cambridge, MA: MIT Press, 2002.

In order to test the sensitivity in the estimates when using a linear probability model instead of the preferred logit estimation technique, we ran both techniques for entered employment and retention performance measures for the WIA Adult program. Our particular focus was on the coefficient estimates related to unemployment rates. We found that the two techniques yielded virtually identical estimates. Using the linear probability model, the estimated coefficient on the unemployment rate for entered employment was –0.018 with a *t*-statistic of –5.75; using the logit technique, the estimated coefficient was –0.0178 with a *z*-statistic of –5.66. For the retention rate, the combined estimated coefficient on the unemployment rates was –0.0076 using the linear probability technique and –0.0075 using the logit

estimated by including zero-one variables for each of the WIBs (in the case of WIA programs) and for each state (in the case of ES and TAA programs). The fixed-effects model controls for idiosyncratic differences between each of the units (e.g., WIBs or states). By including these zero-one variables, the estimation captures the response of program participants to changes in unemployment rates over time and not the long-run differences across local labor markets (as represented by WIB service areas or states). This response to short-run changes in unemployment rates over time is the response we are trying to predict during the next few years, as the economy moves through this business cycle.

Zero-one variables indicating the year and quarter are also included to control for national time trends. Zero-one variables indicating the quarter (regardless of year) are entered to capture seasonal variation in the performance measures that may be due to regular occurrences throughout the year, such as shopping patterns and plant closings to retool for new products. [7]

The primary interest in this analysis is the effect of unemployment rates on participant outcomes. Although the database includes tens of thousands of participants (generating variation in the dependent variable), the unemployment rate varies only at the WIB or county level. Therefore, in all cases, more than one individual participant experiences the same unemployment rate at the same time in the same local labor market. In addition, because these individuals are within one labor market (one grouping of individuals), there may be intragroup correlation. With the possible presence of intra-group correlation and fewer relevant observations (than the total), the typical computation of standard errors of the coefficients may be biased. To correct for this we use cluster sandwich estimators, a standard procedure in the statistical analysis package that we employ.[8] We, however, do not take into consideration the possibility of spatial correlation between the geographical units, which could arise from interregional linkages of industries (supply chains) and household commuting patterns.

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technique. Therefore, these results help to assuage concerns about the linear probability approach yielding biased estimates, and they are consistent with the position expressed by Wooldridge and others.

[7] A reviewer of the draft suggested that we consider the possibility of spatial dependence in the estimation. This could arise for several reasons and as a consequence may bias the estimate or affect the statistical significance of the coefficient estimates. Spatial dependence basically recognizes that some local labor markets may be interdependent because of linkages among regions. These linkages could be due to commuting patterns, commodity flows, or similarity in industrial or occupational mix in that they compete regionally or nationally for workers with similar qualifications. Spatial dependence is a complex issue with no straightforward approach, since different regions across the country may be related in different ways. Therefore, we do not attempt to address this issue in the analysis and have no clear intuition whether it may bias the estimates or by how much.

[8] We use STATA to estimate the model. The procedure to calculate standard errors is found in W.H. Rogers, "Regression standard errors in clustered samples." *Stata Technical Bulletin* 13: 19–23, 1993, reprinted in *Stata Technical Bulletin Reprints*, vol. 3, 88–94.

IV. Data Sources and Variable Definitions

The program outcome data come from administrative records for the various workforce programs analyzed by this project.

A. Data Sources

1. WIA Programs

For the WIA programs, participant outcomes and attributes are derived from the WIASRD data. This allows us to consider the program outcomes from the third quarter of 2000 (which is the beginning of PY2001) to the most recent data available, third quarter 2007. Because of the short time period allowed to complete the study, a sub-sample was created. It included 11 states, which comprised roughly 60 percent of the participants in the WIA programs. The states consisted of California, Florida, Georgia, Illinois, Michigan, North Carolina, New Jersey, New York, Ohio, Pennsylvania, and Texas. For each of the 11 states, unemployment rates were collected from Bureau of Labor Statistics sources at the WIB or county level for each quarter from 2000 to 2008.

2. Trade Adjustment Assistance (TAA)

Data for the Trade Adjustment Assistance (TAA) program are also available at the individual participant level. The data are derived from the program's administrative records, and the analysis includes all participants nationwide during the period from the third quarter of 2000 through the second quarter of 2007. Since TAA, unlike WIA, is on a fiscal year, this time period includes FY2001 through FY2007. Unemployment rates are collected quarterly at the county level for all states during this period.

3. Wagner-Peyser Employment Service (ES)

The Wagner-Peyser Employment Service does not compile information on individual participants for the nation. Each state collects and manages its own administrative data. Therefore, there is no one source to go to for these data, as there is for the WIA and TAA programs. The analysis uses data from two large states to estimate the effect of unemployment rates on ES participants. These data include the same detailed information about program participants. Individual participants are also linked to Unemployment Insurance (UI) wage records so that the outcomes can be computed the same way that they are for the WIA and TAA programs.[9] The data for one state cover the quarters 2004 Quarter 3 through 2005 Quarter 2, and data for the other state include 2005 Quarter 3 through 2006 Quarter 2.

[9] Unlike the WIA and TAA programs, we are not able to include federal employment records and UI wage records from other states. Therefore, we may be missing a small group of individuals who live in a state but work outside the state, as well as those on certain federal payrolls. The purpose of using the data is to estimate the response of individuals who participated in the ES program to unemployment rates, not to obtain a full accounting of all those who participated. Having a representative sample for the two states, which we believe we have, ensures that the estimates are representative.

B. Variable Definitions

The variable definitions were taken from the administrative records of the various programs. For the most part, the variables are comparable across programs. Obviously, some programs do not include participants with certain characteristics; for example, the WIA Youth program obviously does not include middle-aged individuals. Personal characteristics are self-reported by the participant; outcome variables are determined through UI wage records, which are reported to the state unemployment agency by the participant's employer.[10]

Table 1 indicates the performance measures from the various programs that are directly estimated in the analysis. Table 2 provides the definitions of these performance measures.[11] The dependent variables (e.g., the performance measures) follow the definitions put forth by the U.S. Department of Labor, which are followed by all workforce agencies for reporting their aggregate performance. Table 3 displays the definitions of the factors used in the regression analysis to explain performance outcomes across the various workforce development programs.

Table 1 Performance Measures Directly Estimated in the Analysis

	Program					
	WIA				TAA	ES
Performance measure	**Adult**	**Dislocated worker**	**Older youth**	**Youth**		
Entered employment	✓	✓	✓		✓	✓
Retention	✓	✓	✓		✓	✓
Average earnings	✓	✓	✓		✓	✓
Credential and employment (adult)	✓	✓	✓			
Credential or employment (youth)				✓		
Attainment of degree or certificate				✓		
Literacy and numeracy gain (youth)				✓		

SOURCE: Authors' calculations.

[10] See "WIASRD Data File Public Use, Including Data Quality Revision, Record Layout, Selected Years," prepared by Social Policy Research Associates for the Office of Performance and Technology, Employment and Training Administration, U.S. Department of Labor.

[11] More precise coding instructions are found in "WIASRD Data File Public Use, Including Data Quality Revision, Record Layout, Selected Years," prepared by Social Policy Research Associates for the Office of Performance and Technology, Employment and Training Administration, U.S. Department of Labor.

Table 2 Dependent Variable Description

Dependent variable	Description of coding
Entered employment	= 1 if participant is employed (positive earnings) in the first quarter after exit and was not employed at registration
Retention	= 1 if participant is employed (positive earnings) in the first quarter after exit and in both the second and third quarters after exit
Average earnings	Summation of earnings in the second and third quarter after exit for those employed in those quarters plus the first quarter
Credential and employment (Adult)	= 1 if attained a credential after exit and employment in the first quarter after exit
Credential or employment (youth)	= 1 if participant entered postsecondary education, advanced training, military service, or a qualified apprenticeship or entered employment the first quarter after exit
Attainment of degree or certificate	= 1 if participant entered postsecondary education, advanced training, or military service on or before the third quarter after exit
Literacy and numeracy gain (youth)	= 1 if there is at least one post-test with a functioning level greater than the corresponding pre-test function level and the pre-test function level was between 0 and 6

SOURCE: Definition of variables as described in WIASRD public use document, selected years.

Table 3 Explanatory Variable Definitions

Explanatory variables	Description of coding
female	= 1 if participant is female, 0 otherwise
black_female	= 1 if participant is female and black
age26_35	= 1 if participant is between the ages of 26 and 35
age36_45	= 1 if participant is between the ages of 36 and 45
age46_55	= 1 if participant is between the ages of 46 and 55
age56_65	= 1 if participant is between the ages of 56 and 65
agegt65	= 1 if participant is over the age of 65
hispanic	= 1 if participant indicates that he/she is a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture in origin, regardless of race
asian	= 1 if participant's origin is any of the original peoples of the Far East, Southeast Asia, India, etc.
black	= 1 if participant indicates that he/she is a person having origins in any of the black racial groups of Africa
hi_pacific	=1 if participant indicates that he/she is a person having origins in any of the original peoples of Hawaii or other Pacific Islands
indian	=1 if participant indicates that he/she is a person having origins in any of the original peoples of North and South America and who maintains cultural identification through tribal affiliation or community recognition
multi-racial	= 1 if participant indicates more than one ethnic/race category, except Hispanic
white	= 1 if participant indicates that he/she is a person having origins in any of the original peoples of Europe, the Middle East, or North Africa
lths	= 1 if participants completed no or some elementary/secondary school grades and did not receive a high school diploma or GED
highschool	= 1 if participant indicates that he/she attained a high school diploma

Table 3 (continued)

Explanatory variables	Description of coding
ba	= 1 if participate indicates that he/she received a bachelor's degree or equivalent
beyondba	= 1 if participant indicates that he/she received a degree beyond a bachelor's degree, such as a master's, PhD or professional degree
somecoll	= 1 if participant indicates the he/she attained completed some college but did not receive a degree
ged	= 1 if participant indicates that he/she attained a GED or equivalent
cert	= 1 if participant indicates that he/she attained a certificate of completion or attendance
otherpostdegcert	= 1 if participant indicates that he/she attained other post-secondary degree or certification
assoc	= 1 if participate indicates that he/she attained associate's diploma or degree
disabled	= 1 if participant indicates that he/she has any disability, such as a physical or mental impairment that substantially limits one or more of the person's life activities, as defined in the Americans the Disability Act of 1990
veteran	= 1 if participant served in the active U.S. military and was released with other than a dishonorable discharge, or if participant was a spouse of any U.S. military personnel who died or is missing in action, was forcibly detained, or has a total permanent disability
empreg11	= 1 if participant is employed (positive wage record quarterly earnings) in both the second and third quarters before registration
wp	= 1 if participant is coenrolled in ES (for those in WIA programs)
empreg10	= 1 if participant is employed (positive wage record quarterly earnings) in second quarter but not third quarter before registration
empreg01	= 1 if participant is employed (positive wage record quarterly earnings) in the third but not the second quarter before registration
unemp	The unemployment rate by WIB or county by quarter entered as a percentage (e.g., 6.5)

SOURCE: Definition of variables as described in WIASRD public use document, selected years, and as defined and derived by the authors using the WIASRD variables .

V. Unemployment rates

The purpose of the analysis is to estimate the effect of local labor market conditions on the labor market (and educational) outcomes of workforce participants. In keeping with this goal, we focus on the conditions of the local labor markets within which participants seek employment. For WIA and ES programs, we use the workforce investment area as the geographical definition of local labor markets. For TAA, we use the county.[12]

[12] Many economists contend that metropolitan areas more aptly represent local labor markets, and we agree. However, since we seek to include all program participants, regardless of whether they live in a metropolitan area, we chose to use the WIB or the county as the more inclusive definition.

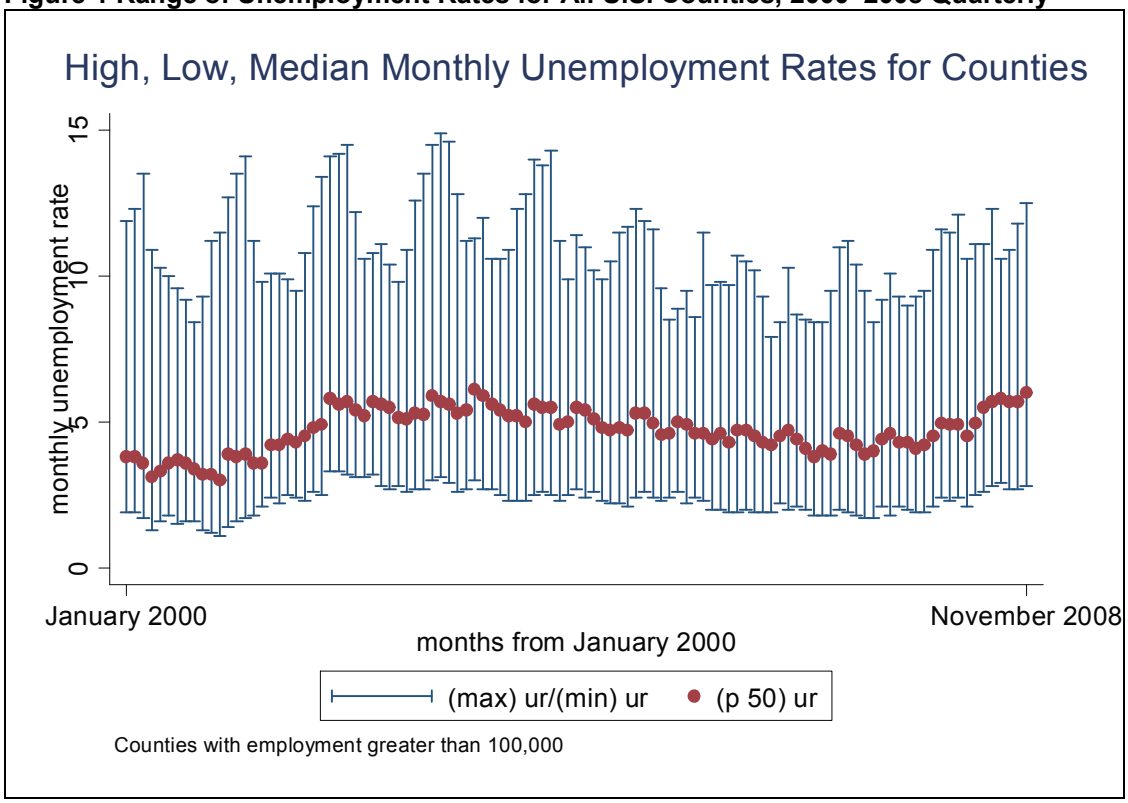
The purpose of this section is twofold. The first is to describe the variation in unemployment rates at the county level—and consequently the WIB level—over time. The reason for this discussion is to show that even though our time period for the analysis spans roughly eight years and includes only one national business cycle, unemployment rates are much more variable at the county level and provide a much richer experience in terms of frequency and depth of business cycles than is apparent when one is focused only on the national average. The second objective of this section is to estimate the effect of unemployment rates on broader labor market outcomes. Specifically, we examine the effect of unemployment rates on new hire rates and new hire earnings. These estimates provide a useful perspective on how workforce performance measures, which are related to the labor market outcomes of new hires, may also be related to unemployment rates.

A. County-Level Unemployment Rates

Unemployment rates were collected monthly at either the WIB level or the county level from the first quarter of 2000 to the first quarter of 2008. During that time, the national unemployment rates varied from 4.0 (2000) to 6.0 (2003) on an annual basis and from 3.6 (October 2000) to 6.5 (January and June 2003) on a seasonally unadjusted monthly basis. It was not until December 2008 that the monthly seasonally unadjusted unemployment rate exceeded the rates posted during 2003. However, this variation at the national level does not reflect the breadth of experience in local labor conditions across the thousands of counties and the hundreds of WIB's. During that time, unemployment rates among counties with total employment of more than 100,000 ranged from 1.1 to 14.9 percent.[13] Including all counties regardless of employment size, the range of unemployment rates expands to a low of 0.7 percent and a high of 28.9 percent, as shown in Figure 1. Therefore, despite the relatively tight band of unemployment rates at the national level, the estimates of the effect of unemployment rates on labor market outcomes of program participants are based on a broad range of unemployment rates and occur at levels that are more than double what we are currently experiencing in this deep recession.

[13] In our sample, 102 counties had total employment that surpassed 100,000 at any time during the time period considered in the analysis.

Figure 1 Range of Unemployment Rates for All U.S. Counties, 2000–2008 Quarterly



NOTE: The bold dot is the median unemployment rate for all counties for each quarter.
SOURCE: Bureau of Labor Statistics.

B. The Effect of Unemployment Rates on New Hires

The primary focus of this study is to estimate the effect of unemployment rates on performance measures of various workforce programs. However, the outcomes of program participants should reflect the outcomes of the general labor force in local labor markets. Therefore, to offer perspective on local labor market dynamics that may affect workforce programs, we consider the effect of unemployment rates on the rate of new hires in local labor markets in Michigan. In Michigan, the local labor markets are defined by the geographical jurisdiction of WIB's.[14] Using a model similar to that which was specified for workforce programs, as described in Section III (except not including personal characteristics since these are not available), we find that the unemployment rate at the WIB level is negatively and statistically significantly related to the rate of new hires. More precisely, a one-percentage-point increase in the local unemployment rate reduces the rate of new hires by 0.028 points or 2.8 percent (–0.0044/0.146). Since the performance measure of entered employed requires the participant to be one of the new

[14] The data are obtained from the census's Quarterly Workforce Indicators (QWI), which are based on the Longitudinal Employer-Household Dynamics database (LEHD). The LEHD merges UI wage records with demographic information from the census in order to construct measures of the dynamics of local labor markets. "New Hires" is defined as employment in a specific quarter for those who had not been employed by that establishment in several previous quarters.

hires in the local labor market, the two outcomes should be related, with the additional factor of the difference in qualifications of program participants versus the general workforce. There appears to be no statistically significant effect between local unemployment rates and the average earnings of new hires, however. The results are only for Michigan, and these results may change as more states are added to the analysis.

VI. Estimation

Each performance measure for each program listed in Table 1 is estimated in separate equations. The equations are similar with respect to the explanatory variables included, except for the way in which the unemployment variables are entered. The full results are reported by major program, and the effects of unemployment rates on the performance measures are summarized in Table 16.

A. WIA

1. Adult

Four performance measures are included in the analysis for the WIA Adult worker program. The means and standard deviations of the variables are displayed in Table 4 for each of the performance measures. The reason for the slight difference in sample statistics is that the performance measure definitions do not include the same participants. This is due to the number of quarters of earnings required to construct the performance measure, and to the definitions themselves. For example, entered employment and retention are computed from different groups of individuals, for several reasons. Entered employment requires that the participant not have worked at the time of registration; retention includes both those who worked and those who did not work. Retention requires wage record information for two quarters after exit; entered employment requires such information for only one quarter after exit. Thus, retention cannot be computed at the same time as entered employment for the same set of individuals, since the second-quarter earnings have not yet been determined.

Table 4 Means and Standard Deviations of Variables Used in WIA Adult Estimation

	WIA Adult							
	Entered employment		Retention		Average earnings		Credential and employment	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Dependent variable	0.762	0.426	0.838	0.369	11643	8306	0.534	0.499
female	0.554	0.497	0.573	0.495	0.586	0.493	0.571	0.495
black_female	0.191	0.393	0.188	0.391	0.190	0.392	0.193	0.394
age20								
age21								
age26_35	0.288	0.453	0.300	0.458	0.303	0.459	0.300	0.458
age36_45	0.249	0.432	0.245	0.430	0.245	0.430	0.244	0.430
age46_55	0.158	0.365	0.147	0.354	0.148	0.355	0.143	0.350

Table 4 (continued)

	WIA Adult							
	Entered employment		Retention		Average earnings		Credential and employment	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
age56_65	0.049	0.217	0.043	0.202	0.041	0.199	0.043	0.202
agegt65	0.007	0.083	0.005	0.068	0.004	0.063	0.005	0.073
hispanic	0.229	0.420	0.224	0.417	0.226	0.418	0.215	0.411
asian	0.036	0.186	0.035	0.184	0.037	0.188	0.037	0.188
black	0.342	0.475	0.317	0.465	0.308	0.462	0.326	0.469
hi_pacific	0.003	0.052	0.003	0.054	0.003	0.055	0.003	0.056
indian	0.006	0.080	0.007	0.081	0.006	0.079	0.008	0.088
multi	0.015	0.123	0.013	0.114	0.013	0.113	0.008	0.088
lths	0.178	0.382	0.150	0.357	0.137	0.343	0.159	0.366
ba	0.067	0.250	0.070	0.254	0.073	0.260	0.063	0.243
beyondba	0.016	0.126	0.016	0.125	0.016	0.126	0.015	0.120
somecoll	0.176	0.381	0.193	0.395	0.200	0.400	0.180	0.384
ged	0.064	0.245	0.061	0.240	0.057	0.232	0.065	0.247
cert	0.000	0.019	0.000	0.016	0.000	0.015	0.000	0.014
otherpostdegcert	0.008	0.088	0.007	0.081	0.007	0.083	0.003	0.053
assoc	0.013	0.115	0.011	0.103	0.012	0.107	0.006	0.075
disabled	0.118	0.323	0.118	0.323	0.115	0.319	0.095	0.294
veteran	0.071	0.256	0.064	0.245	0.062	0.241	0.062	0.242
empreg11	0.452	0.498	0.550	0.498	0.586	0.493	0.513	0.500
empreg10	0.076	0.264	0.074	0.261	0.070	0.256	0.073	0.260
empreg01	0.091	0.288	0.081	0.273	0.078	0.268	0.082	0.274
wp	0.363	0.481	0.343	0.475	0.349	0.477	0.261	0.439
exit_wib_ur							6.294	2.096
f1_wib_ur	6.182	1.989			6.052	1.951	6.360	2.085
f2_wib_ur					6.045	1.974		
f3_wib_ur					6.009	1.985		
diff12			0.000	0.819				
diff23			–0.034	0.794				
N	429,329		400,523		310,066		395,240	

SOURCE: WIASRD and Bureau of Labor Statistics.

Table 5 Estimates of the Effect of Unemployment Rates and other Factors on the WIA Adult Program Performance Measures

	(1) Entered employment	(2) Retention	(3) Average earnings	(4) Credential and employment
female	0.000542	0.0167***	–2653.4***	–0.0218***
	(0.25)	(9.22)	(–23.27)	(–6.95)
black_female	0.0157***	0.0252***	1484.3***	0.0184***
	(4.65)	(7.29)	(19.04)	(3.95)
age26_35	–0.00345	0.00948***	1456.8***	0.0116***
	(–1.53)	(5.53)	(34.75)	(4.29)
age36_45	0.0137***	0.00743***	1744.9***	0.00128
	(–5.13)	(3.60)	(26.52)	(0.33)

Table 5 (continued)

	(1) Entered employment	(2) Retention	(3) Average earnings	(4) Credential and employment
age46_55	–0.0330***	0.00619*	1605.6***	–0.0140**
	(–10.54)	(2.20)	(13.53)	(–3.00)
age56_65	–0.0854***	–0.0194***	513.9**	–0.0447***
	(–19.55)	(–4.95)	(2.86)	(–6.29)
agegt65	–0.202***	–0.0806***	–3229.4***	–0.0832***
	(–18.28)	(–7.45)	(–13.43)	(–5.59)
hispanic	0.0205***	0.0136***	–1312.7***	–0.0289***
	(8.22)	(6.05)	(–15.44)	(–4.62)
asian	0.0193**	0.0388***	–608.7***	0.0266*
	(3.24)	(10.33)	(–4.47)	(2.27)
black	–0.0283***	–0.0394***	–3344.9***	–0.0657***
	(–9.15)	(–12.81)	(–33.34)	(–10.47)
hi_pacific	0.0267*	0.0263*	–401.6	0.0120
	(2.03)	(2.39)	(–1.42)	(0.85)
indian	–0.0491***	–0.0274***	–712.7***	–0.0350***
	(–5.67)	(–3.62)	(–3.84)	(–3.71)
multi	–0.0130*	–0.0167**	–1942.5***	–0.00650
	(–2.04)	(–2.65)	(–10.42)	(–0.56)
lths	–0.0488***	–0.0505***	–1483.8***	–0.0436***
	(–12.09)	(–21.96)	(–26.86)	(–13.40)
ba	0.0218***	0.0258***	4164.5***	–0.0153
	(6.37)	(10.19)	(34.74)	(–1.63)
beyondba	0.0123*	0.0113*	6665.3***	–0.0348***
	(2.06)	(2.29)	(18.76)	(–4.31)
somecoll	0.0130***	0.0139***	1675.5***	0.00334
	(5.55)	(8.53)	(29.57)	(1.05)
ged	–0.0195***	–0.0398***	–877.9***	–0.0153**
	(–6.41)	(–14.97)	(–11.47)	(–2.94)
cert	–0.0239	–0.0436	–1412.7	0.000824
	(–0.62)	(–0.90)	(–1.86)	(0.02)
otherpostdegcert	–0.0282*	0.0174*	3159.2***	0.0428
	(–2.10)	(2.55)	(10.03)	(0.85)
assoc	0.00414	0.0191**	1516.7***	–0.0699***
	(0.62)	(3.23)	(8.06)	(-5.29)
disabled	–0.0960***	–0.0291***	–1918.2***	–0.0351***
	(–17.39)	(–8.24)	(–20.71)	(–5.99)
veteran	–0.00735	–0.0139***	155.6	0.00302
	(–1.80)	(–4.15)	(1.06)	(0.60)
empreg11	0.140***	0.0868***	1563.6***	0.0322***
	(44.64)	(46.36)	(31.33)	(11.04)
empreg10	0.0740***	0.0226***	–160.2**	–0.00419
	(23.43)	(8.57)	(–3.02)	(–1.34)
empreg01	0.0690***	0.0260***	263.2***	0.00622*
	(23.42)	(10.26)	(4.19)	(1.96)
wp	0.00671	0.00510	–72.24	–0.0232***
	(1.57)	(1.66)	(–0.71)	(–3.52)
exit_wib_ur				–0.000246

Table 5 (continued)

	(1) Entered employment	(2) Retention	(3) Average earnings	(4) Credential and employment
				(–0.05)
f1_wib_ur	–0.0180***		–111.0	–0.0114
	(–5.75)		(–1.71)	(–1.90)
f2_wib_ur			–104.2	–0.00645
			(–1.63)	(–1.11)
f3_wib_ur			–50.41	–0.0170**
			(–0.83)	(–2.81)
diff12		–0.00417**		
		(–3.22)		
diff23		–0.00347**		
		(–2.81)		
_cons	0.860***	0.760***	11108.5***	0.687***
	(31.43)	(30.88)	(19.99)	(10.83)
N	429,329	400,523	310,066	395,240
adj. *R*-sq	0.073	0.035	0.198	0.275
Combined UR Effect	–0.0180***	–0.008**	–265.7**	–0.352***
	(–5.75)	(–3.98)	(3.16)	(–4.51)

NOTE: Asterisks indicate statistical significance in which $p < 0.05$ (*), $p < 0.01$ (**), and $p < 0.001$ (***). Year-quarter time dummy variables, quarter time dummy variables, and WIB dummy variables are also included in the estimation, but, to conserve space, the coefficient estimates are not shown.
SOURCE: Authors' analysis of WIASRD data and BLS unemployment rates.

Estimates of the factors that are expected to affect the four performance measures are displayed in Table 5. Most of the coefficients are statistically significant and have the expected sign, including the unemployment rates. For example, the estimated relationship between entered employment and unemployment rates is –0.018. An estimate of –0.018 means that a one-percentage-point change in the unemployment rate—say from 6 percent to 7 percent.—is expected to reduce the entered employment rate by 0.018 percentage points. If the entered employment rate was 0.70 (the dependent variable is measured as a rate [0.70], not as a percentage [70.0%]) at an unemployment rate of 6 percent, then an increase of the unemployment rate from 6 to 7 percent would lower the expected entered employment rate from 0.70 to 0.682. If the unemployment rate doubled, then the entered employment rate would fall by –0.036 points (2 times –0.018).

A similar relationship is found for retention. In this case the unemployment rate is entered as a change from one quarter to the next, as indicated by the variables **diff12,** the change in unemployment rates from the first quarter after exit to the second quarter after exit**,** and **diff23**, the change in unemployment rates from the second quarter after exit to the third quarter after exit. Since the performance measure for retention spans two quarters, the full effect of unemployment rates is estimated by adding together the two coefficients. The sum of the two coefficients is shown at the bottom of the table along with *t*-test result that the combined estimate is different from zero. For retention,

unemployment rates have a negative and statistically significant effect, reducing the retention rate by nearly one point.

For average earnings, the effect of unemployment rates is derived by adding the coefficients associated with the three quarters of unemployment rates, **f1_wib_ur, f2_wib_ur,** and **f3_wib_ur.** The total effect is a reduction of $266 on an average base of $11,643. The estimate is statistically significant.

The credentials and employment performance measure follows a similar pattern but exhibits a larger effect from an increase in unemployment rates than was found for the other performance measures. In this case, a one-percentage-point increase in unemployment rates reduces the rate of attaining credentials and employment by 0.036 points. The estimate is obtained by summing the coefficients over four quarters: **exit_wib_ur** (the quarter of exit) through **f3_wib_ur** (the third quarter after exit). The estimate of the combined effect is statistically significant. With the mean rate of credentialing and employment at 0.53, this effect results in a 6.6 percent reduction in that performance measure.

The estimated relationships between participant characteristics and performance measures offer a broad perspective on the ability of participants with different backgrounds and employment barriers to achieve the outcomes defined by the performance measures. For example, the results suggest that participants who are black, older, disabled, have less than a high school education, and have an inconsistent work history are less likely to find and retain employment. For those who do find work, they earn less and find it more difficult to attain credentials and employment. The single largest positive effect on all four performance measures is a person's past employment history. Individuals who have positive earnings for both quarters before registration are much more successful in finding and retaining a job and in obtaining higher earnings than those with no prior employment during that period. For example, a person with prior employment in those two quarters experienced an entered employment rate that was 0.14 points higher than someone without employment during that same period, holding all other characteristics constant. If the entered employment rate is 0.70 for those without prior employment, the rate for those with prior employment is 0.84—a sizeable difference. Furthermore, we find that 45 percent of the participants in the entered employment group have two quarters of prior employment.

The largest negative effect relates to older workers. Participants older than 65 are far less likely to find a job than those in the 18-to-25 age range. However, very few participants fall into the over-65 age range.

2. Dislocated Worker Program

The results for the WIA Dislocated Worker program, shown in Table 7, yield patterns of effects similar to those found for the Adult WIA program, shown in Table 5. Unemployment rates have a negative and statistically significant effect on all four performance measures. The magnitude of the effects is slightly smaller than that found

for the WIA Adult program participants but is in the same general range. For example, a one-percentage-point increase in unemployment rates lowers the entered employment rate by 0.008 points, compared with 0.018 points for the Adult WIA program participants. As seen in Table 6, which displays the mean characteristics of the Dislocated Worker participants, dislocated workers are better educated and more strongly attached to the workforce. These traits may explain their ability to weather economic downturns a little better. As with the WIA Adult program, prior employment and age exhibited the largest effects on the performance measures.

Table 6 Means and Standard Deviations of Variables used in the Estimation of WIA Dislocated Worker Program

	WIA Dislocated Worker							
	Entered employment		Retention		Average earnings		Employment and credential	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Dependent variable	0.822	0.383	0.887	0.317	14328	9434	0.563	0.496
female	0.514	0.500	0.513	0.500	0.518	0.500	0.505	0.500
black_female	0.119	0.323	0.117	0.322	0.119	0.323	0.115	0.320
age20								
age21								
age26_35	0.232	0.422	0.240	0.427	0.242	0.428	0.243	0.429
age36_45	0.319	0.466	0.326	0.469	0.329	0.470	0.327	0.469
age46_55	0.277	0.447	0.275	0.446	0.274	0.446	0.267	0.443
age56_65	0.090	0.286	0.077	0.267	0.073	0.261	0.080	0.271
agegt65	0.007	0.085	0.004	0.066	0.004	0.060	0.006	0.076
hispanic	0.207	0.405	0.206	0.404	0.206	0.405	0.196	0.397
asian	0.048	0.213	0.045	0.207	0.045	0.207	0.050	0.219
black	0.205	0.403	0.200	0.400	0.200	0.400	0.201	0.401
hi_pacific	0.002	0.049	0.002	0.049	0.002	0.048	0.003	0.050
indian	0.005	0.070	0.005	0.069	0.005	0.069	0.005	0.072
multi	0.009	0.096	0.009	0.095	0.009	0.094	0.006	0.076
lths	0.109	0.312	0.105	0.306	0.101	0.302	0.102	0.303
ba	0.120	0.325	0.117	0.321	0.116	0.321	0.118	0.323
beyondba	0.033	0.180	0.031	0.172	0.030	0.170	0.033	0.178
somecoll	0.229	0.420	0.231	0.422	0.232	0.422	0.235	0.424
ged	0.043	0.203	0.044	0.204	0.043	0.204	0.044	0.205
cert	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.009
otherpostdegcert	0.005	0.071	0.005	0.071	0.005	0.072	0.002	0.050
assoc	0.015	0.123	0.014	0.116	0.014	0.116	0.007	0.086
disabled	0.101	0.302	0.110	0.313	0.109	0.312	0.083	0.276
veteran	0.086	0.281	0.086	0.281	0.084	0.278	0.088	0.283
empreg11	0.742	0.437	0.755	0.430	0.767	0.423	0.736	0.441
empreg10	0.039	0.193	0.039	0.193	0.037	0.188	0.037	0.190
empreg01	0.067	0.251	0.064	0.244	0.062	0.241	0.068	0.253
wp	0.348	0.476	0.340	0.474	0.342	0.474	0.259	0.438
exit_wib_ur							6.119	1.924
f1_wib_ur	5.970	1.863			5.953	1.816	6.160	1.919
f2_wib_ur					5.969	1.824		

Table 6 (continued)

	WIA Dislocated Worker							
	Entered employment		Retention		Average earnings		Employment and credential	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
f3_wib_ur					5.942	1.835		
diff12			0.021	0.804				
diff23			-0.026	0.802				
N	408,234		322,098		266,915		311,452	

SOURCE: WIASRD and Bureau of Labor Statistics

Table 7 Estimates of the Effect of Unemployment Rates and other Factors on the WIA Dislocated Worker Program Performance Measures

	(1) Entered employment	(2) Retention	(3) Average earnings	(4) Credentials/ employment
female	–0.00392*	0.00634***	–3861.5***	–0.0352***
	(–2.25)	(4.76)	(–65.96)	(–15.05)
black_female	0.0189***	0.0118***	1649.4***	–0.00344
	(5.31)	(4.04)	(19.73)	(–0.78)
age26_35	0.000243	0.0119***	1707.8***	0.0187***
	(0.10)	(4.97)	(30.08)	(4.61)
age36_45	–0.00823**	0.0137***	2154.0***	0.0106*
	(–3.13)	(5.86)	(35.81)	(2.51)
age46_55	–0.0224***	0.00710**	1622.9***	–0.00374
	(–8.12)	(2.91)	(24.73)	(–0.82)
age56_65	–0.108***	–0.0227***	13.06	–0.0311***
	(–28.92)	(–6.86)	(0.14)	(–5.86)
agegt65	–0.277***	–0.110***	–4181.1***	–0.0712***
	(–26.83)	(–9.41)	(–15.90)	(–6.30)
hispanic	0.0213***	0.00549**	–1572.8***	–0.0160***
	(9.60)	(2.66)	(–22.69)	(–4.19)
asian	–0.0258***	0.00709*	–540.2***	0.0164*
	(–7.29)	(2.16)	(–4.30)	(2.15)
black	–0.00603*	–0.0179***	–3526.8***	–0.0253***
	(–1.98)	(–7.09)	(–38.06)	(–5.26)
hi_pacific	–0.00205	0.0146	–671.8	–0.0281
	(–0.18)	(1.20)	(–1.85)	(–1.78)
indian	–0.0341***	–0.0112	–1004.8***	–0.0271*
	(–3.72)	(–1.31)	(–4.38)	(–2.11)
multi	0.00438	–0.0139	–1770.1***	–0.00960
	(0.48)	(–1.87)	(–9.24)	(–0.83)
lths	–0.0323***	–0.0252***	–1618.0***	–0.0381***
	(–13.08)	(–10.52)	(–31.68)	(–9.11)
ba	–0.00127	0.0000558	5115.2***	–0.0222***
	(–0.58)	(0.03)	(58.41)	(–4.83)
beyondba	–0.0261***	–0.0120**	9812.3***	–0.0308***
	(–6.70)	(–3.26)	(41.70)	(–3.93)
somecoll	–0.00249	–0.00144	1440.9***	–0.00821**

Table 7 (continued)

	(1) Entered employment	(2) Retention	(3) Average earnings	(4) Credentials/ employment
	(–1.65)	(–1.02)	(33.68)	(–3.17)
ged	–0.00297	–0.0159***	–517.3***	–0.000521
	(–0.92)	(–5.60)	(–7.39)	(–0.09)
cert	–0.0413	0.0437	–496.2	–0.0369
	(–0.86)	(1.06)	(–0.56)	(–0.34)
otherpostdegcert	–0.0119	0.00390	3429.9***	0.00300
	(–1.40)	(0.45)	(9.35)	(0.11)
assoc	–0.0265***	–0.00393	2086.3***	–0.0357**
	(–4.27)	(–0.73)	(7.96)	(–3.25)
disabled	–0.0532***	–0.0281***	–1332.8***	–0.0412***
	(–11.74)	(–6.93)	(–10.80)	(–4.85)
veteran	-0.0103***	-0.0114***	181.8*	-0.00298
	(–4.42)	(–5.20)	(2.57)	(–0.92)
empreg11	0.0743***	0.0434***	745.4***	0.0145***
	(24.08)	(20.43)	(12.92)	(3.68)
empreg10	0.0560***	0.00356	–107.2	0.00791
	(13.19)	(0.95)	(–0.99)	(1.41)
empreg01	0.0293***	0.0110***	–4.378	–0.00896
	(7.68)	(3.49)	(–0.05)	(–1.79)
wp	0.0142***	–0.000527	–74.17	0.0155**
	(3.86)	(–0.26)	(–0.89)	(2.72)
exit_wib_ur				–0.00169
				(–0.37)
f1_wib_ur	–0.00983***		28.42	–0.00484
	(–3.63)		(0.48)	(–0.89)
f2_wib_ur			–166.7*	–0.00391
			(–2.33)	(–0.76)
f3_wib_ur			14.97	–0.00643
			(0.29)	(–1.13)
diff12		–0.00582***		
		(–4.65)		
diff23		–0.00429***		
		(–3.39)		
_cons	0.876***	0.806***	14682.2***	0.668***
	(27.17)	(34.71)	(25.92)	(9.55)
N	408,234	322,098	266,915	311,452
adj. *R*-sq	0.058	0.019	0.196	0.210
Combined UR Effect	–0.00983***	–0.010***	–123.33**	–0.017**
	(–3.63)	(–5.16)	(–2.34)	(–2.55)

NOTE: Asterisks indicate statistical significance in which $p < 0.05$ (*), $p < 0.01$ (**), and $p < 0.001$ (***). Year-quarter time dummy variables, quarter time dummy variables, and WIB dummy variables are also included in the estimation, but, to conserve space the coefficient estimates are not shown.
SOURCE: Authors' analysis of WIASRD data and BLS unemployment rates.

3. Older Youth

Results for the WIA Older Youth program are in the range of estimates established by the two previously described programs. The means and standard deviations of the variables used in the estimation are displayed in Table 8. Unemployment rates negatively affect the four performance measures. However, only entered employment exhibits a statistically significant relationship. As with the two adult programs, prior employment history has the largest effect on the four performance measures, increasing significantly the likelihood of finding and retaining a job and of holding a job with higher earnings. Unlike the two adult programs, age is not a large factor, but education is important. Those without a high school degree—nearly half the participants—are at a significant disadvantage in their employment prospects.

Table 8 Means and Standard Deviations of Variables used in the Estimation of the WIA Older Youth Program

	Older Youth							
	Entered employment		Retention		Average earnings		Employment and credential	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Dependent variable	0.727	0.445	0.811	0.392	6970	5300	0.582	0.493
female	0.591	0.492	0.603	0.489	0.618	0.486	0.593	0.491
black_female	0.252	0.434	0.247	0.432	0.246	0.431	0.247	0.431
age20	0.320	0.467	0.324	0.468	0.322	0.467	0.320	0.467
age21	0.227	0.419	0.237	0.425	0.243	0.429	0.228	0.420
hispanic	0.306	0.461	0.311	0.463	0.330	0.470	0.298	0.457
asian	0.026	0.159	0.024	0.152	0.023	0.151	0.028	0.164
black	0.416	0.493	0.392	0.488	0.377	0.485	0.405	0.491
hi_pacific	0.003	0.058	0.003	0.057	0.004	0.060	0.004	0.060
indian	0.006	0.080	0.006	0.076	0.005	0.074	0.007	0.081
multi	0.010	0.100	0.010	0.100	0.009	0.096	0.009	0.096
lths	0.472	0.499	0.409	0.492	0.366	0.482	0.457	0.498
ba	0.001	0.037	0.002	0.042	0.002	0.044	0.002	0.041
beyondba	0.000	0.018	0.001	0.024	0.000	0.022	0.001	0.023
somecoll	0.044	0.205	0.058	0.234	0.068	0.251	0.046	0.210
ged	0.037	0.189	0.041	0.197	0.039	0.194	0.036	0.187
cert	0.002	0.041	0.001	0.036	0.001	0.036	0.002	0.041
otherpostdegcert	0.001	0.032	0.002	0.042	0.002	0.048	0.000	0.020
assoc	0.000	0.020	0.001	0.027	0.001	0.028	0.000	0.013
disabled	0.165	0.371	0.160	0.367	0.155	0.362	0.165	0.371
veteran	0.004	0.064	0.005	0.070	0.005	0.073	0.005	0.068
empreg11	0.323	0.467	0.407	0.491	0.454	0.498	0.350	0.477
empreg10	0.104	0.305	0.108	0.310	0.106	0.308	0.104	0.305
empreg01	0.108	0.310	0.104	0.305	0.102	0.303	0.103	0.304
wp	0.292	0.455	0.288	0.453	0.297	0.457	0.260	0.438
exit_wib_ur							6.392	2.195
f1_wib_ur	6.386	2.171			6.306	2.166	6.428	2.200
f2_wib_ur					6.313	2.195		

Table 8 (continued)

	Older Youth							
	Entered employment		Retention		Average earnings		Employment and credential	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
f3_wib_ur					6.293	2.209		
diff12			0.012	0.858				
diff23			-0.019	0.853				
N	73,488		57,610		38,657		80,326	

SOURCE: WIASRD and Bureau of Labor Statistics

Table 9 Estimates of the Effect of Unemployment Rates and Other Factors on WIA Older Youth Program Performance Measures

	(1)	(2)	(3)	(4)
	Entered employment	Retention	Average earnings	Credentials/ employment
female	–0.0269***	–0.00582	–839.3***	0.0268***
	(–6.15)	(–1.40)	(–10.98)	(5.43)
black_female	0.0470***	0.0173*	314.6**	–0.00203
	(6.86)	(2.44)	(2.73)	(–0.27)
age20	–0.000806	–0.00692	330.4***	–0.00224
	(–0.21)	(–1.84)	(5.57)	(–0.59)
age21	0.000126	–0.00230	724.6***	0.00518
	(0.03)	(–0.57)	(10.44)	(1.20)
hispanic	0.0325***	0.0268***	271.8**	–0.00751
	(5.66)	(4.75)	(3.08)	(–1.17)
asian	0.00519	0.0251	–108.6	–0.00640
	(0.35)	(1.94)	(–0.58)	(–0.47)
black	–0.0468***	–0.0327***	–1155.0***	–0.0553***
	(–6.71)	(–4.75)	(–10.52)	(–7.46)
hi_pacific	0.000369	0.0168	–134.6	–0.00589
	(0.01)	(0.56)	(–0.39)	(–0.19)
indian	–0.0239	–0.0139	–281.7	–0.0561*
	(–1.11)	(–0.60)	(–0.62)	(–2.50)
multi	–0.0252	–0.0278	–550.0*	–0.0289
	(–1.64)	(–1.57)	(–2.28)	(–1.66)
lths	–0.100***	–0.0776***	–1138.1***	–0.0203***
	(–24.61)	(–19.38)	(–17.56)	(–4.25)
ba	–0.00655	0.000401	3629.0***	0.0147
	(–0.19)	(0.01)	(4.23)	(0.49)
beyondba	0.0566	0.0215	3530.3*	–0.0000878
	(0.93)	(0.39)	(2.42)	(–0.00)
somecoll	0.0451***	0.0305***	1273.4***	0.0327***
	(6.05)	(4.90)	(9.87)	(3.50)
ged	–0.0393***	–0.0442***	–708.0***	–0.0330***
	(–4.59)	(–5.34)	(–5.54)	(–3.32)
cert	-0.149**	-0.0510	-2384.9***	-0.0908*
	(–3.06)	(–0.93)	(–5.87)	(–2.03)
otherpostdegcert	0.0599	0.0712**	1700.5*	0.0303
	(1.64)	(3.12)	(2.06)	(0.34)

Table 9 (continued)

	(1)	(2)	(3)	(4)
	Entered employment	**Retention**	**Average earnings**	**Credentials/ employment**
assoc	0.0420	–0.0510	6731.1*	–0.0141
	(0.75)	(–0.80)	(2.23)	(–0.13)
disabled	–0.0740***	–0.000386	–1291.5***	0.00578
	(–9.10)	(–0.06)	(–13.86)	(0.74)
veteran	0.0315	0.0356	512.6	–0.0156
	(1.33)	(1.82)	(1.37)	(–0.63)
empreg11	0.146***	0.0791***	833.1***	0.0170***
	(35.31)	(21.78)	(13.57)	(4.39)
empreg10	0.0872***	0.0275***	33.25	–0.00903
	(15.42)	(4.63)	(0.38)	(–1.64)
empreg01	0.0754***	0.0246***	50.53	0.00129
	(13.28)	(4.30)	(0.65)	(0.23)
wp	0.0394***	–0.0103*	–272.4**	0.0346***
	(5.66)	(–1.96)	(–3.04)	(3.67)
exit_wib_ur				–0.0231**
				(–2.85)
f1_wib_ur	–0.0174***		–50.38	0.00893
	(–4.91)		(–1.07)	(1.12)
f2_wib_ur			–43.49	–0.00977
			(–0.84)	(–1.24)
f3_wib_ur			–7.105	0.00902
			(–0.15)	(1.14)
diff12		–0.00400		
		(–1.57)		
diff23		–0.00213		
		(-0.87)		
_cons	0.732***	0.774***	7453.1***	0.398***
	(19.94)	(28.53)	(12.64)	(3.79)
N	73,488	57,610	38,657	80,326
adj. *R*-sq	0.088	0.039	0.092	0.164
Combined UR Effect	–0.0174***	–0.006	-101	–0.0142
	(–4.91)	(-1.64)	(-1.87)	(–1.86)

NOTE: Asterisks indicate statistical significance in which $p < 0.05$ (*), $p < 0.01$ (**), and $p < 0.001$ (***). Year-quarter time dummy variables, quarter time dummy variables, and WIB dummy variables are also included in the estimation, but, to conserve space, the coefficient estimates are not shown.

SOURCE: Authors' analysis of WIASRD data and BLS unemployment rates.

4. Youth

The WIA Youth program uses three performance measures that differ from the two adult programs and the older youth program. For youth, the performance measures include 1) placement in employment or education, 2) attainment of a degree or certificate, and 3) literacy and numeracy gains.[15] The means and standard deviations for the variables used in the estimation are shown in Table 10. The analysis finds negative and statistically significant relationships between unemployment rates and all three performance measures for which OMB assigns targets, as displayed in Table 11. The results show that youths facing depressed labor markets (as measured by unemployment rates) are less successful in finding employment, entering an educational program, attaining a degree or certificate, or achieving gains on literacy and numeracy tests.

For placement in education or employment, a one-percentage-point increase in the unemployment rate is associated with a 0.014-point decline in the percentage of participants placed in education or employment the quarter after exiting the program. For degree or certificate attainment, a one-percentage-point increase in the unemployment rate reduces the percentage of participants attaining a degree or certificate by an estimated 0.021 points. For literacy and numeracy gains, a one-percentage-point increase in the unemployment rate reduces the percentage of participants recording a gain by 0.024 points.

While the results are similar to those found for performance measures of the other WIA programs, understanding the results for WIA Youth requires additional explanation. The major difference between success in achieving the performance measures for WIA Youth and success in achieving those for the adult WIA programs is the greater dependency that youth may have on their family circumstances. Except for placement in employment, which is only one component of the first performance measure, success in achieving the three performance measures depends to a large extent on the family's providing a supportive environment for the youth participant. Similarly, participants' employment prospects are greater when they are members of families with experience in the labor force and skills to find and retain a job.

In particular, research findings from several studies point to the importance of parents' employment status and income on the academic achievement of their children. Income, which is highly correlated with employment, is strongly associated with youths' neighborhood environment, including peers, level of violence, opportunities to engage in learning activities (such as proximity to libraries and after-school programs), and stability of living arrangements. The literature has found that all of these factors significantly affect student achievement. For example, a recent study reviews the large literature on the effects of these various factors on adolescent student achievement and behavior.[16]

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[15] The first performance measure is similar to the employment and credential performance measure adopted for the other three programs, except that for the adult program and older youth the participants must obtain both employment and credentials, not one or the other.

[16] Magnuson, Katherine, Greg Duncan, and Ariel Kalil, "The Contribution of Middle Childhood Contexts to Adolescent Achievement and Behavior," working paper, Northwestern University, June 2, 2003.

This same study also uses a large longitudinal data set, which over-represents low-income and ethnic youth, to estimate the relationship between these factors and the academic achievement of youth between the ages of 14 and 21. The authors conclude that "economic conditions in middle childhood have strong correlations with the math and reading achievement measures" (p. 9).

The New Hope project in Milwaukee offers additional evidence of the influence of parental employment on the achievement and behavior of adolescents. The New Hope project was an innovative program designed to address the problems facing low-wage families. The premise was that people who work full time can not only raise their financial status but also improve the well-being of their families. The demonstration project was evaluated using a random assignment design in which randomly selected families from two inner-city areas in Milwaukee were given benefits, such as wage supplements to raise them out of poverty, health insurance coverage, and child care. For those unable to find work, job search assistance and even subsidized employment were offered. The evaluation covered a wide range of behavioral attributes and family activities, as well as outcomes such as student achievement, as measured both by teachers' and parents' perceptions and by actual test scores.

The findings support the premise that employment that raises families out of poverty is associated with several positive behaviors and activities that lead to higher student achievement. Specifically, the evaluation found that families in the treatment group were more likely to be employed and to receive higher income. Youth in the treatment group exhibited more positive social behavior and a more optimistic attitude. They engaged more fully in school activities and in structured after-school programs, and they possessed a more positive outlook toward work and a career. According to the evaluators, one of the more striking findings from the evaluation was the positive effects the project had on student achievement within a few years after the project began. Teachers and parents rated youth in the treatment group (as compared with the control group) as possessing higher academic skills, and youth in the treatment group scored higher on standardized achievement tests.[17]

The evidence points to the positive effects of parental employment on the academic outcomes of the parents' children. Conversely, for youth whose parents have not found work or have lost their jobs because of a weak labor market, research points to the increased likelihood that their academic success will decline. Therefore, as unemployment increases, one would expect their attainment of degrees and certification and their scores on numeracy and literacy tests to decline, as seen in the regression results for WIA Youth.

However, it should be recognized that family circumstances may not be the only factors that affect the performance of participants in WIA Youth programs. The employment status of youth may also play a role. Results reveal that upwards of 60 percent of participants in WIA Youth programs have had some employment the first two

[17] Miller, Cynthia, et al. *New Hope for the Working Poor: Effects after Eight Years for Families and Children*, MDRC, July 2008.

quarters before registering for the program, with more than 30 percent employed both quarters. Results also show that higher unemployment rates reduce the likelihood of employment by one to two percentage points.

Employment may have a detrimental effect on youths' academic achievement and prospects of entering higher education, since time on the job takes away from time for homework and other out-of-school activities as well as reducing the time for sleep, which are all important factors for academic achievement. However, a recent study shows that there is only a small trade-off between work time and homework time. Estimates based on the American Time Use Surveys show that working 60 additional minutes reduces the amount of time spent on homework by only 5 minutes. An additional hour of work cuts into only 10 minutes of sleep. The largest trade-off is with watching television: TV watching is reduced by 24 minutes for every 60 additional minutes on the job.[18] Therefore, even though higher unemployment rates could lead indirectly to more time for homework, since the likelihood of working is reduced, the positive effects on student achievement would probably be quite small and outweighed by the negative effects of parents' losing their jobs.

Therefore, the literature appears to support the negative relationships found in this study between unemployment rates and the three performance measures for WIA Youth.

Table 10: Means and Standard Deviations of the Variables Used in the Estimation of the WIA Youth Program

	Placement in employment or education		Attainment of a degree or certificate		Literacy and numeracy gains	
	Mean	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**
Independent variable	0.773	0.418	0.451	0.497	0.245	0.429
female	0.589	0.492	0.623	0.484	0.588	0.492
black_female	0.247	0.431	0.269	0.443	0.243	0.428
age20	0.309	0.462	0.299	0.457	0.320	0.466
age21	0.224	0.416	0.216	0.411	0.239	0.426
hispanic	0.305	0.460	0.309	0.462	0.372	0.485
asian	0.025	0.157	0.022	0.149	0.021	0.142
black	0.404	0.490	0.406	0.491	0.400	0.490
hi_pacific	0.003	0.057	0.003	0.056	0.004	0.061
indian	0.007	0.084	0.007	0.081	0.008	0.089
multi	0.014	0.121	0.016	0.124	0.013	0.112
lths	0.453	0.498	0.555	0.496	0.400	0.490
ba	0.001	0.038	0.004	0.063	0.002	0.042
beyondba	0.001	0.023	0.002	0.039	0.000	0.020

[18] Kalenkoski, Charlene, and Sabrina Pabilonia, "Time to Work or Time to Play: The Effect of Student Employment on Homework, Screen Time, and Sleep," working paper, Ohio University and Bureau of Labor Statistics, March 2009.

Table 10 (continued)

	Placement in employment or education		Attainment of a degree or certificate		Literacy and numeracy gains	
	Mean	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**
somecoll	0.033	0.179	0.064	0.245	0.029	0.167
ged	0.039	0.193	0.038	0.191	0.034	0.181
cert	0.001	0.035	0.001	0.034	0.003	0.050
otherpostdegcert	0.002	0.045	0.009	0.096	0.001	0.037
assoc	0.001	0.024	0.002	0.043	0.000	0.014
disabled	0.087	0.282	0.089	0.285	0.070	0.255
veteran	0.003	0.049	0.003	0.051	0.002	0.040
empreg11	0.315	0.464	0.341	0.474	0.388	0.487
empreg10	0.106	0.308	0.098	0.297	0.110	0.313
empreg01	0.101	0.301	0.094	0.291	0.095	0.293
wp	0.658	0.474	0.657	0.474	0.726	0.446
f1_wib_ur	5.590	2.023	5.144	1.521	6.070	2.226
f2_wib_ur			5.225	1.672		
f3_wib_ur			5.329	1.737		
N	17,234		10,729		5,005	

SOURCE: WIASRD and Bureau of Labor Statistics.

Table 11 Estimates of the Effect of Unemployment Rates and Other Factors on the WIA Youth Program Performance Measures

	(1)	(2)	(3)
	Placement in employment or education	**Attainment of a degree or certificate**	**Literacy and numeracy gains**
female	–0.0282***	0.00162	0.0338
	(–3.33)	(0.12)	(1.80)
black_female	0.0641***	–0.00483	–0.0217
	(4.54)	(–0.23)	(–0.87)
age20	–0.00987	–0.0144	–0.0120
	(–1.30)	(–1.32)	(–0.84)
age21	–0.00427	0.0112	–0.000103
	(–0.54)	(0.87)	(–0.01)
hispanic	0.0201	–0.0371*	0.0437
	(1.64)	(–2.27)	(1.17)
asian	0.0477	–0.0453	0.123
	(1.93)	(–1.28)	(1.91)
black	–0.0510***	–0.0788***	–0.0281
	(–3.70)	(–3.93)	(–1.04)
hi_pacific	–0.0618	–0.0516	–0.0338
	(–0.99)	(–0.80)	(–0.37)
indian	–0.0130	0.0111	–0.0412
	(–0.36)	(0.15)	(–0.50)
multi	0.00305	–0.0261	–0.0578
	(0.11)	(–0.68)	(–1.16)
lths	–0.0846***	0.120***	0.00813
	(–11.49)	(6.29)	(0.57)

Table 11 (continued)

	(1)	(2)	(3)
	Placement in employment or education	**Attainment of a degree or certificate**	**Literacy and numeracy gains**
ba	0.0381	–0.0545	–0.186***
	(0.69)	(–0.72)	(–4.12)
beyondba	0.00601	–0.190**	0.321
	(0.06)	(–2.80)	(1.21)
somecoll	0.0648***	0.0128	–0.0436
	(4.40)	(0.61)	(–1.16)
ged	–0.0455**	–0.121***	0.0279
	(–2.85)	(–4.17)	(0.75)
cert	–0.132	–0.139	0.255
	(–1.41)	(–0.90)	(1.57)
otherpostdegcert	0.175***	0.402***	–0.0518
	(3.98)	(7.65)	(–0.37)
assoc	0.111	0.111	–0.202***
	(1.12)	(1.42)	(–3.66)
disabled	–0.0409**	0.0271	–0.0729*
	(–2.63)	(1.20)	(–2.49)
veteran	0.0334	0.142	–0.112
	(0.58)	(1.75)	(–0.84)
empreg11	0.132***	0.0360**	0.0330
	(15.59)	(3.13)	(1.92)
empreg10	0.0660***	0.000644	0.00982
	(6.41)	(0.04)	(0.48)
empreg01	0.0742***	0.0149	0.0128
	(6.85)	(0.93)	(0.60)
wp	0.0558***	0.0232	0.0141
	(3.85)	(1.32)	(0.48)
f1_wib_ur	–0.0141***	–0.00303	–0.0241**
	(–4.27)	(–0.21)	(–3.29)
f2_wib_ur		–0.0247	
		(–1.54)	
f3_wib_ur		0.00820	
		(0.67)	
_cons	0.880***	0.276***	0.397***
	(31.51)	(5.32)	(5.02)
N	17,234	10,729	5,005
adj. *R*-sq	0.064	0.125	0.048
Combined UR Effect	–0.0141***	–0.0241**	–0.0241**
	(–4.27)	(–3.61)	(–3.29)

NOTE: Asterisks indicate statistical significance in which $p < 0.05$ (*), $p < 0.01$ (**), and $p < 0.001$ (***). Year-quarter time dummy variables, quarter time dummy variables, and WIB dummy variables are also included in the estimation, but, to conserve space, the coefficient estimates are not shown.
SOURCE: Authors' analysis of WIASRD data and BLS unemployment rates.

B. Trade Adjustment Assistance

The Trade Adjustment Assistance program provides training and other assistance to dislocated workers whose companies have been impacted adversely by foreign competition. While the participants of TAA and WIA Dislocated Worker programs share the fact that they both have been displaced from employment, they differ in other characteristics, as shown in Table 12. For example, TAA participants appear to have lower educational attainment than WIA Dislocated Worker participants, as evidenced by double the percentage of high school dropouts and half the percentage of those with BA degrees. In addition, TAA participants are older and less diverse.

The effects of unemployment rates on the three performance measures are similar to what was found for the WIA Dislocated Worker program, with one exception related to retention. As shown in Table 13, entered employment is negatively and statistically significantly affected by unemployment rates: a one –percentage-point increase in unemployment rates reduces entered employment by 0.0142 points. Earnings are also negatively affected, as a one-percentage-point increase in unemployment rates reduces earnings by $377 or 2.8 percent from the mean. Retention, on the other hand, shows no statistically significant relationship to unemployment rates. It is not clear why the coefficient is not statistically different from zero, as it is for WIA Dislocated Worker participants. Both programs provide training for workers to find jobs in industries other than the ones from which they were displaced if jobs are not available in those industries. It could be that the training is more intense for TAA participants, since income support is available for TAA participants and not for WIA Dislocated Worker participants, and thus the TAA participants are more qualified for the jobs they find. However, there is no evidence to support this possibility. Therefore, in the performance adjustment calculations, we use the retention estimates from the WIA Dislocated Worker program instead of the estimates obtained directly from the analysis of TAA participants.

Table 12 Means and Standard Deviations of the Variables used in the Estimation of the TAA Program

	Entered employment		Retention		Earnings	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Dependent variable	0.636	0.481	0.626	0.483	13641	9696
female	0.464	0.498	0.464	0.498	0.465	0.498
black_female	0.062	0.241	0.062	0.241	0.065	0.246
age26_35	0.165	0.371	0.166	0.372	0.191	0.392
age36_45	0.276	0.447	0.276	0.447	0.308	0.461
age46_55	0.332	0.470	0.332	0.471	0.343	0.474
age56_65	0.178	0.382	0.176	0.381	0.116	0.320
agegt65	0.012	0.110	0.012	0.109	0.003	0.058
hispanic	0.101	0.301	0.099	0.299	0.103	0.303
indian	0.005	0.068	0.005	0.068	0.004	0.065

Table 12 (continued)

	Entered employment		Retention		Earnings	
	Mean	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**
asian	0.022	0.148	0.022	0.147	0.021	0.142
black	0.110	0.313	0.111	0.313	0.110	0.313
hi_pacific	0.001	0.041	0.002	0.041	0.002	0.041
white	0.754	0.430	0.756	0.429	0.755	0.430
multi	0.005	0.073	0.005	0.073	0.005	0.073
lths	0.212	0.408	0.209	0.406	0.179	0.383
ba	0.047	0.210	0.046	0.209	0.047	0.210
beyondba	0.011	0.107	0.011	0.106	0.011	0.105
somecoll	0.144	0.351	0.144	0.351	0.156	0.362
ged	0.048	0.213	0.049	0.215	0.051	0.220
cert	0.001	0.031	0.001	0.030	0.001	0.032
otherpostdegcert	0.007	0.083	0.007	0.082	0.007	0.083
assoc	0.012	0.107	0.011	0.106	0.013	0.112
disabled	0.032	0.177	0.033	0.179	0.028	0.165
veteran	0.076	0.265	0.077	0.267	0.075	0.264
empreg11	0.837	0.369	0.831	0.374	0.852	0.354
empreg10	0.022	0.147	0.025	0.156	0.024	0.155
empreg01	0.066	0.249	0.067	0.249	0.059	0.235
f1_cnty_ur	5.630	1.757			5.533	1.644
f2_cnty_ur					5.461	1.600
f3_cnty_ur					5.486	1.597
diff12_ur			–0.082	0.768		
diff23_ur			0.021	0.836		
N	74,398		75,955		47,598	

SOURCE: TAA administrative data files and BLS unemployment rates.

Table 13 Estimates of the Effect of Unemployment Rates and Other Factors on the TAA Program Performance Measures

	(1)	(2)	(3)
	Entered employment	**Retention**	**Earnings**
female	0.000714	0.00417	–4296.2***
	(0.16)	(0.94)	(–38.36)
black_female	0.0405***	0.0654***	987.8***
	(3.50)	(5.50)	(3.81)
age26_35	0.0119	0.0150	1701.6***
	(1.11)	(1.37)	(10.42)
age36_45	–0.0132	–0.00743	2336.4***
	(–1.22)	(–0.69)	(11.96)
age46_55	–0.0580***	–0.0549***	1941.8***
	(–4.96)	(–5.04)	(10.16)
age56_65	–0.259***	–0.275***	40.31
	(–20.19)	(–22.72)	(0.16)
agegt65	–0.441***	–0.471***	–3053.0***

Table 13 (continued)

	(1)	(2)	(3)
	Entered employment	**Retention**	**Earnings**
	(–21.85)	(–26.26)	(–5.37)
hispanic	–0.00707	–0.000367	23.68
	(–0.19)	(–0.01)	(0.04)
indian	–0.0636	–0.0486	0
	(–1.43)	(–0.97)	.
asian	–0.0583	–0.0634	1620.4**
	(–1.60)	(–1.42)	(2.94)
black	–0.0132	–0.0292	600.4
	(–0.36)	(–0.65)	(1.06)
hi_pacific	0	0	555.2
	.	.	(0.55)
white	–0.000460	0.0131	1850.1***
	(–0.01)	(0.30)	(3.87)
multi	–0.0252	–0.0188	808.2
	(–0.58)	(–0.38)	(1.03)
lths	–0.0450***	–0.0589***	-831.9***
	(–7.77)	(–9.78)	(–5.58)
ba	–0.0169*	–0.0109	6191.1***
	(–2.01)	(–1.16)	(19.07)
beyondba	–0.0249	0.0000467	10106.0***
	(–1.55)	(0.00)	(9.03)
somecoll	0.00326	0.0156**	1777.8***
	(0.63)	(3.08)	(8.79)
ged	0.0133	–0.00157	–446.6**
	(1.56)	(–0.19)	(–2.73)
cert	–0.0131	0.0346	–277.7
	(–0.26)	(0.69)	(–0.35)
otherpostdegcert	–0.0367	–0.0243	3491.8***
	(–1.73)	(–1.10)	(5.10)
assoc	–0.000124	0.0353	2921.1***
	(–0.01)	(1.89)	(7.90)
disabled	–0.108***	–0.122***	–766.0**
	(–10.23)	(–9.30)	(–2.59)
veteran	0.00409	0.0173*	469.4
	(0.63)	(2.42)	(1.52)
empreg11	0.104***	0.141***	978.7***
	(9.99)	(14.34)	(4.84)
empreg10	0.0633***	0.0814***	–143.0
	(3.53)	(4.72)	(–0.47)
empreg01	0.0559***	0.0685***	–54.30
	(4.92)	(6.19)	(–0.25)
f1_cnty_ur	–0.0142***		–69.81
	(–4.07)		(–0.64)
f2_cnty_ur			–4.401
			(–0.03)
f3_cnty_ur			–302.9**
			(–3.13)

Table 13 (continued)

	(1)	(2)	(3)
	Entered employment	**Retention**	**Earnings**
diff12_ur		0.00139	
		(0.19)	
diff23_ur		0.00738	
		(0.96)	
_cons	0.756***	0.507***	22704.6***
	(9.70)	(5.57)	(8.62)
N	74,398	75,955	47,598
adj. *R*-sq	0.118	0.088	0.134
Combined UR Effect	–0.0142***	0.009	–377.11***
	(–4.07)	(0.67)	(–7.48)

NOTE: Asterisks indicate statistical significance in which $p < 0.05$ (*), $p < 0.01$ (**), and $p < 0.001$ (***). Year-quarter time dummy variables, quarter time dummy variables, and WIB dummy variables are also included in the estimation, but, to conserve space, the coefficient estimates are not shown.
SOURCE: Authors' analysis of TAA administrative files and BLS unemployment rates.

C. Wagner-Peyser Employment Service

Unlike the WIA and TAA programs, the Wagner-Peyser Employment Service does not benefit from a national administrative data set that includes the outcomes and personal characteristics of individual participants. Each state maintains its own information system, and it is not reported to the federal government or compiled in any way. Therefore, in order to estimate the effect of unemployment rates on performance targets for the ES system, we relied on access to the administrative records of two states. The three performance measures—entered employment, retention, and earnings—were computed using the UI wage records for each individual. The wage records were then linked to information regarding personal characteristics obtained through the ES application process. Estimates of the effect of unemployment rates on the performance measures were obtained using the same linear probability method employed for the WIA and TAA programs. However, since the administrative records of two different states were used, we estimated each state separately and combined the estimates by weighting each state's estimates by the number of participants.

The means and standard deviations of factors used to estimate the ES equations are displayed in Table 14. Some of the variables are defined differently from those in other programs, because of inconsistency in the variables available from each state. For instance, the education variables include only less than high school (lths) and post-secondary. The latter variable includes all those who have attained any postsecondary education, as well as those who have completed postsecondary degrees such as BA's and even PhD's. The race and ethnicity variables are also limited, compared with the other programs. Nonetheless, the main purpose of including personal characteristics in the equation is to control for the effect of these attributes on performance measures. Given the statistical significance of the coefficients associated with these variables (shown in

Table 15), they seem to perform that function. The characteristics of ES participants in the two states included in the estimation fall within a range between the two adult WIA programs. For instance, the percentage of those without a high school education is 16.3 percent for the entered employment sample, which is higher than the Dislocated Worker program mean. African American representation in the ES program lies between that of the two programs as well. Since there is no national data set of ES participants, it is not possible to compare the characteristics of participants in the two states with those of participants nationally. However, the Wagner-Peyser performance reports do include two variables that also appear in our data set: 1) veterans and eligible persons and 2) persons with disabilities. For the first variable, the national percentage is 9.2 percent in 2004 and 10.1 percent in 2005, compared with the two-state average of 12.2 percent for those two years. The national percentage of the second variable, persons with disabilities, is 2.6 percent in 2004 and 3.1 percent in 2005, compared with the two-state sample average of 3.7 percent.

Table 14 Means and Standard Deviations of the Factors Used to Estimate the Effect of Unemployment Rates on Wagner-Peyser ES Program Performance Measures

	Entered employment		Retention		Average earnings	
	Mean	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**
Dependent variable	0.578	0.494	0.647	0.478	13791	9965
female	0.453	0.498	0.454	0.498	0.457	0.498
black_female	0.139	0.346	0.138	0.345	0.152	0.359
age26_35	0.263	0.440	0.269	0.443	0.274	0.446
age36_45	0.239	0.427	0.244	0.429	0.253	0.435
age46_55	0.177	0.382	0.173	0.378	0.175	0.380
age56_65	0.070	0.254	0.062	0.242	0.056	0.230
agegt65	0.012	0.109	0.010	0.099	0.006	0.079
hispanic	0.048	0.214	0.043	0.203	0.043	0.203
black	0.286	0.452	0.282	0.450	0.302	0.459
othrace	0.025	0.157	0.023	0.151	0.024	0.154
lths	0.167	0.373	0.153	0.360	0.132	0.338
post secondary	0.188	0.391	0.193	0.395	0.171	0.376
disabled	0.037	0.190	0.033	0.180	0.026	0.160
veteran	0.122	0.327	0.118	0.322	0.119	0.324
empreg11	0.636	0.481	0.680	0.467	0.744	0.437
empreg10	0.072	0.259	0.070	0.255	0.066	0.248
empreg01	0.065	0.247	0.059	0.236	0.050	0.218
f1_wib_ur	4.769	1.263			4.679	1.257
f2_wib_ur					4.555	1.227
f3_wib_ur					4.444	1.209
diff12			-0.135	0.493		
diff23			-0.097	0.562		
N	449,587		431,478		279,190	

SOURCE: State ES administrative records and BLS unemployment rates.

As shown in Table 15, there are many similarities in estimates between the two states, as well as a few differences. As with the other programs, age, gender, and education are important factors in obtaining and retaining a job. These factors also matter in the level of earnings received. And, as with the other programs, prior employment is also the factor with the largest impact on entered employment and retention. However, some differences are evident. For instance, high school dropouts have more difficulty finding a job in State B than in State A, with the coefficient in State A not statistically significantly different from zero.

Unemployment rates follow patterns of influence that are similar to those found for the other programs. For instance, in State A a one-percentage-point increase in unemployment rates reduces entered employment by 0.0194 percentage points, while in State B the reduction is only 0.005 percentage points. The magnitudes of the effects of unemployment are the opposite between the two states for retention: for State A the effect is –0.0026 percentage points (or –0.005 percent, i.e, –0.0026/0.522), and for State B the effect is –0.019 percentage points (or –0.024 percent, i.e., –0.019/0.82). The cumulative effect of unemployment rates on earnings is –$643 for State A and –$921 for State B. Because of the differences between the two states, we computed the participant-weighted average of the estimates, which yielded the results shown in Table 16.

Table 15 Estimates of the Effect of Unemployment Rates and Other Factors on Wagner-Peyser ES Program Performance Measures

	State A			State B		
	(1) Entered employment	(2) Retention	(3) Earnings	(4) Entered employment	(5) Retention	(6) Earnings
female	–0.0230***	–0.0146***	–1922.0***	–0.00576*	–0.00537*	–4115.3***
	(-8.09)	(–4.93)	(–61.38)	(–2.04)	(–2.19)	(–71.85)
black_female	0.00468	0.0513***	1240.1***	0.000846	0.0297***	2444.2***
	(0.86)	(8.43)	(22.70)	(0.20)	(8.23)	(28.77)
age26_35	–0.0243***	–0.00710*	1301.2***	–0.0217***	0.0286***	2756.6***
	(–6.90)	(–2.25)	(51.96)	(–7.30)	(11.27)	(45.70)
age36_45	–0.0427***	–0.0132***	1772.1***	–0.0361***	0.0476***	4131.4***
	(–11.48)	(–4.01)	(61.25)	(–11.88)	(18.36)	(67.37)
age46_55	–0.0600***	–0.0327***	1896.8***	–0.0649***	0.0508***	4136.6***
	(–13.61)	(–8.25)	(47.21)	(–19.60)	(17.53)	(60.65)
age56_65	–0.123***	–0.123***	1307.8***	–0.143***	0.0343***	3321.8***
	(–22.33)	(–24.17)	(25.00)	(–31.78)	(8.01)	(33.02)
agegt65	–0.205***	–0.229***	–393.9**	–0.245***	–0.00393	–899.0***
	(–23.28)	(–24.28)	(–3.13)	(–25.10)	(–0.36)	(–3.38)
hispanic	0.0254***	0.0284***	390.2***	–0.0186***	0.00919*	763.5***
	(3.93)	(4.60)	(5.49)	(–3.93)	(2.06)	(7.19)
black	–0.000340	–0.0441***	–1519.0***	0.0173***	–0.0341***	–3321.1***
	(–0.08)	(–7.24)	(–28.67)	(5.89)	(–13.44)	(–55.38)
multi				0.0128	–0.0349***	–1763.0***
				(1.16)	(–3.68)	(–7.80)
othrace	0.0109	–0.00957	–346.5***			
	(1.51)	(–1.16)	(–5.76)			
hsdrop	–0.00478	–0.0813***	–817.8***	–0.0606***	–0.0681***	–2647.8***

Table 15 (continued)

	State A			State B		
	(1) Entered employment	(2) Retention	(3) Earnings	(4) Entered employment	(5) Retention	(6) Earnings
	(–1.16)	(–26.48)	(–27.74)	(–21.31)	(–25.53)	(–40.81)
somecoll	–0.0124***	0.0189***	599.8***	0.00584	0.00580	–431.5**
	(–4.79)	(7.27)	(24.14)	(0.76)	(0.93)	(–2.94)
assoc deg				–0.0457***	0.00189	10605.4***
				(–6.66)	(0.28)	(68.67)
baplus	–0.0234***	0.0208***	1652.2***			
	(–5.39)	(4.89)	(33.30)			
disabled	–0.0682***	–0.105***	–1094.3***	–0.101***	–0.0452***	–968.3***
	(–13.88)	(–21.12)	(–18.58)	(–18.04)	(–8.00)	(–7.13)
veteran	0.00253	0.00600	336.3***	–0.0118***	0.00586*	1548.6***
	(0.74)	(1.77)	(8.08)	(–3.69)	(2.04)	(23.01)
empreg11	0.133***	0.270***	1287.5***	0.214***	0.116***	1166.1***
	(28.06)	(63.86)	(44.45)	(87.69)	(48.59)	(20.06)
empreg10	0.126***	0.149***	245.3***	0.164***	0.0392***	–332.4***
	(21.52)	(27.93)	(6.18)	(39.53)	(10.11)	(–3.52)
empreg01	0.0932***	0.0879***	130.3**	0.0873***	0.00957*	–192.6
	(17.26)	(16.61)	(3.13)	(20.07)	(2.24)	(–1.82)
f1_cnty_ur	–0.0194**		–140.6*	–0.00517***		–218.8*
	(–2.77)		(–2.20)	(–6.25)		(–2.31)
f2_cnty_ur			–222.0***			–54.10
			(–3.93)			(–0.47)
f3_cnty_ur			–280.4***			–648.6***
			(–4.05)			(–6.05)
diff12		–0.0105*			–0.0180***	
		(–2.10)			(–4.56)	
diff23		0.00788			–0.00132	
		(1.44)			(–0.32)	
_cons	0.569***	0.455***	6893.5***	0.575***	0.730***	13867.1***
	(14.95)	(16.70)	(13.12)	(114.85)	(194.54)	(115.17)
N	252,041	252,041	131,611	198,301	180,197	147,807
adj. *R*-sq	0.030	0.076	0.208	0.057	0.026	0.174

NOTE: Asterisks indicate statistical significance in which $p < 0.05$ (*), $p < 0.01$ (**), and $p < 0.001$ (***). Year-quarter time dummy variables, quarter time dummy variables, and county dummy variables are also included in the estimation for State A but not for State B, but, to conserve space, the coefficient estimates are not shown

SOURCE: Authors' analysis of administrative files and BLS unemployment rates of two states.

Table 16 Combined Estimated Effects of Unemployment Rates on ES Performance Outcomes

	Entered employment	Retention	Earnings
Percentage point	–0.013	–0.010	–790
Percent	–0.025	–0.013	–0.070

NOTE: The effects are computed by weighting the coefficients obtained from estimates from each state by the number of participants. The percent is obtained by dividing the percentage-point change by the mean performance outcome.
SOURCE: Authors' calculations.

D. Summary of the Estimates

Table 17 summarizes the estimates of the effects of unemployment rates on the performance outcomes of the various programs. Both the point change and the percentage change are included. The point change is the estimated effect of a one-percentage-point change in unemployment rates on the performance target level. For example, for entered employment in the WIA Adult program, a one-percentage-point change in the unemployment rate lowers the entered employment rate by 1.8 points. Note that the point changes related to rates (such as entered employment rate or retention rate) displayed in the previous tables have been multiplied by 100 to be consistent with the way in which the USDOL typically lists performance outcomes and targets: as percentages—that is, listed as 76.0 percent instead of as 0.76.

Table 17 Summary of Estimated Effects of Unemployment Rates on Performance Outcomes

		WIA				TAA	ES
Performance target		Adult	Dislocated	Older youth	Youth		
Entered employment	point chg	–1.8	–0.98	–1.74		–1.42	–1.31
	% chg	–2.36%	–1.19%	–2.41%		–2.24%	–2.50%
Retention	point chg	–0.76	–1.01	–0.61		0*	–0.96
	% chg	–0.91%	–1.14%	–0.75%		0.00%	–1.30%
Earnings	point chg	–266	–123	–101		–377	–790
	% chg	–2.28%	–0.86%	–1.45%		–2.76%	–7.00%
Credentials/ employment	point chg	–3.52	–1.69	–1.42			
	% chg	–6.59%	–3.00%	–2.44%			
Placement in education or employment	point chg				–1.42		
	% chg				–1.83%		
Attainment of a degree or certificate	point chg				–2.14		
	% chg				–4.75%		
Literacy and numeracy gains	point chg				–2.41		
	% chg				–9.84%		

NOTE: Asterisk (*) indicates the coefficient was not statistically significantly different from zero.
SOURCE: Compilation of estimates based on authors' calculations reported in previous tables.

VII. Performance Adjustment Procedure

Using the estimates reported in the previous section, performance targets for each of these programs are adjusted by the estimated effects of the change in unemployment rate from year to year. The unemployment rate assumptions of the President's FY2010 Budget Request are used in the calculations. The calculations start in PY2007 (FY2007 for TAA) and extend through PY2014. The actual performance rate was used as the base in PY2007. The adjusted target for the following year was calculated by multiplying the previous year's performance target by the change in unemployment rates times the appropriate estimate of the effect of the unemployment rate change on the performance measure. This adjustment factor is then added to the previous target.

Using the WIA Adult entered employment rate as an example, the calculation for PY2008 is the following:

$$EER_{(PY2008)} = EER_{(PY2007)} + EER_{(PY2007)}*(-1.8/76.2)*(UR_{PY2008}-UR_{PY2007}) .$$

The estimated effects are converted into percentage changes (-1.8/76.2 in this case) so that their effect is proportional to the magnitude of the target, which varies by program. Repeating this procedure each year thereafter yields the entered employment performance targets for the WIA Adult program, as shown in Table 18. Extending this procedure for the other two performance targets yields the adjusted targets for retention and earnings levels.

Table 18 Example of Adjustment Procedure for WIA Adult Program

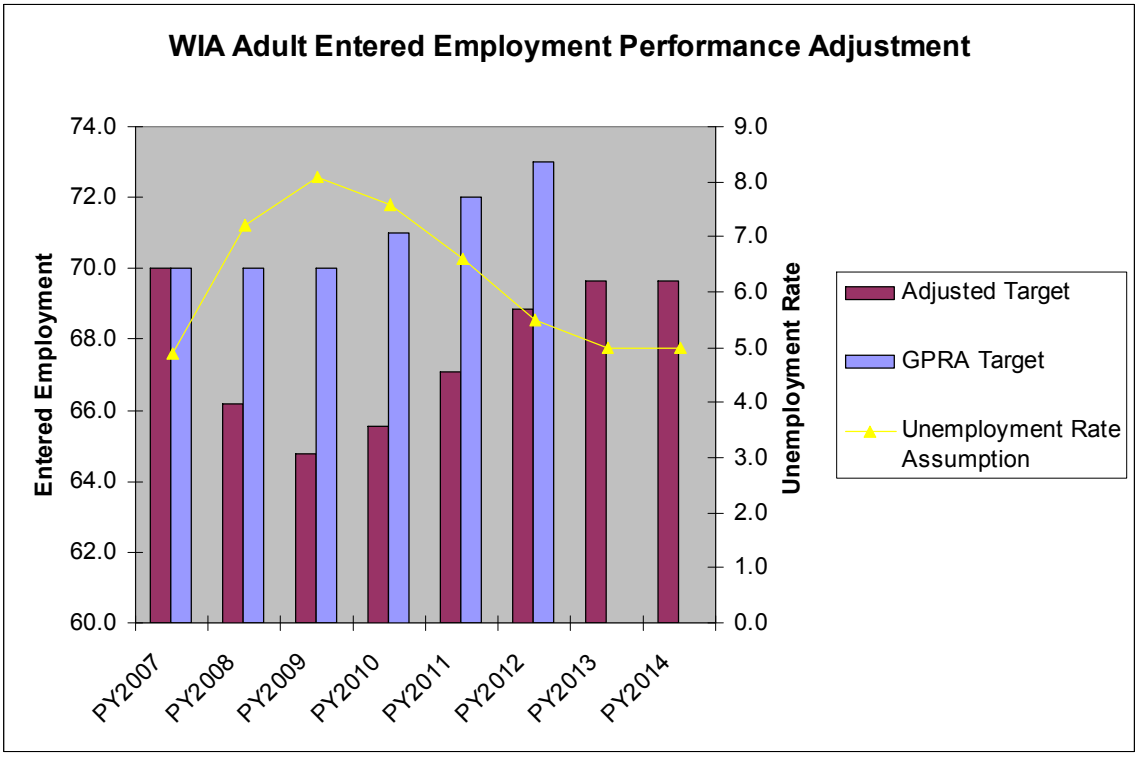
	Program Year							
WIA Adult Program	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
UR assumptions	4.9	7.2	8.1	7.6	6.6	5.5	5.0	5.0
Entered employment								
GPRA target		70	70	70	71	72	73	
UR adjusted target	70.0	66.2	64.8	65.6	67.1	68.8	69.7	69.7
Retention rate								
GPRA target		84.0	84.0	84.0	85.0	86.0	87.0	
UR adjusted target	84.0	81.7	80.8	81.3	82.3	83.3	83.8	83.8
Earnings								
GPRA target ($)		13,575	13,575	13,575	13,914	14,262	14,619	
UR adjusted target ($)	13,575	12,862	12,597	12,741	13,032	13,360	13,512	13,512

SOURCE: Unemployment rate assumptions are from the President's FY2010 Budget Request, GPRA targets are based on published guidance from the Office of Management and Budget (OMB), and unemployment rate–adjusted targets are derived from the analysis.

Displaying the adjusted performance targets along with the unemployment rate assumptions in Figure 2 shows how the targets adjust with changes in the unemployment rates. As the unemployment rate assumptions increase from PY2007 to PY2008, the adjusted target declines, reflecting the experience (as estimated in the analysis) that it is more difficult to find a job in tougher economic times. As the unemployment rate assumptions begin to fall after PY2009, the performance targets gradually increase but do not return to their PY2007 levels because the unemployment rate assumption remains slightly higher in PY2014 than in the base period of PY2007. Notice that the GPRA targets are considerably higher than the adjusted targets throughout this period.

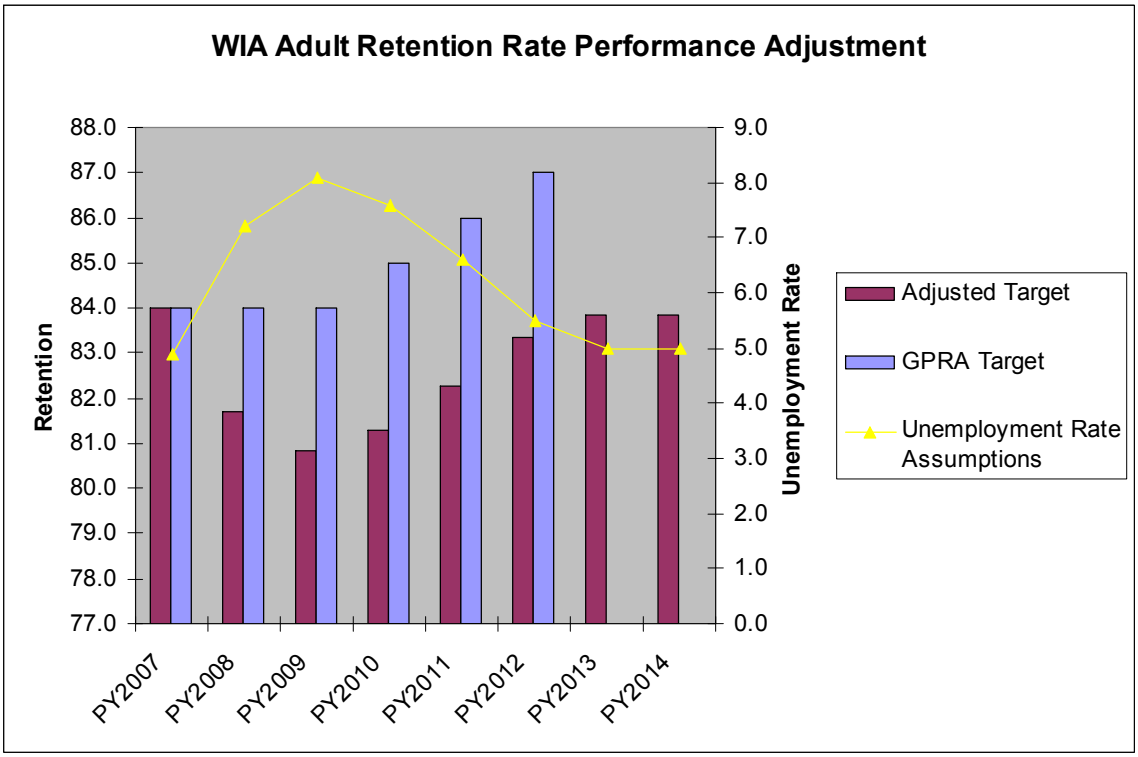
Figures 3 and 4 show similar patterns for the other two adjusted performance measures because they are all driven by the unemployment rate assumptions. The only difference among the three measures in the change from year to year is related to the weights derived from the estimates, which are different for each performance measure.

Figure 2



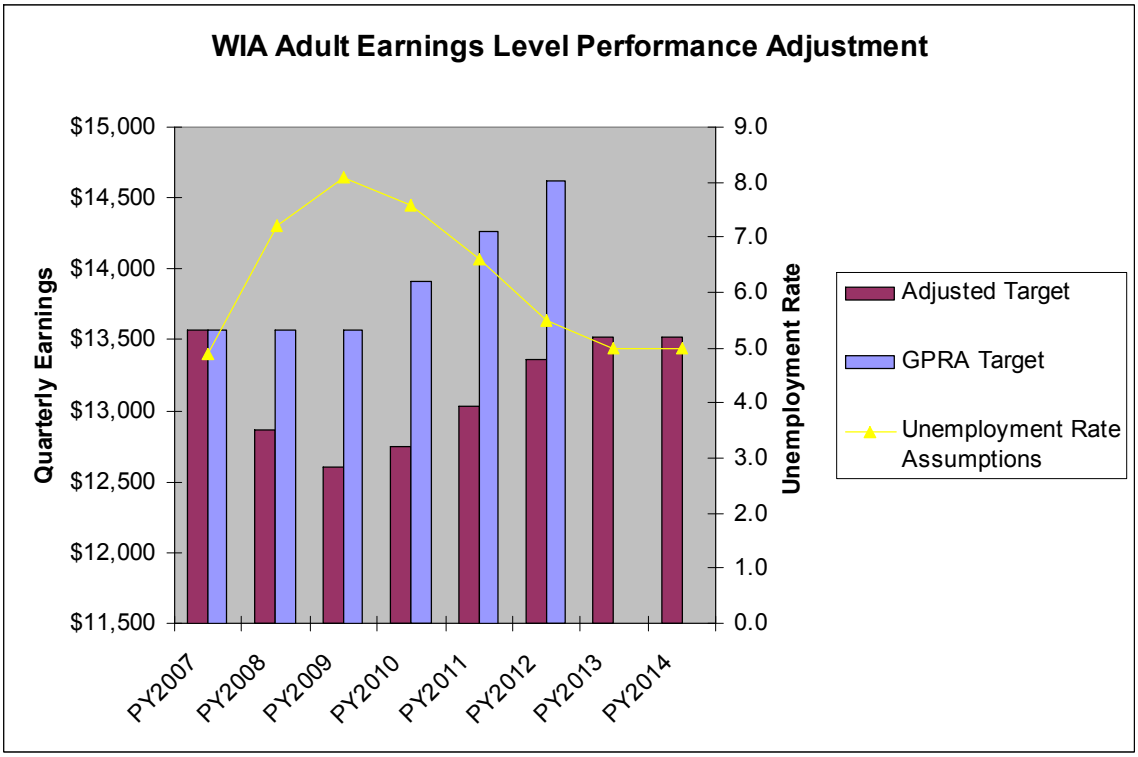
SOURCE: Unemployment rate assumptions are from the President's FY2010 Budget Request, GPRA targets are based on published guidance from the Office of Management and Budget (OMB), and unemployment rate–adjusted targets are derived from the analysis.

Figure 3



SOURCE: SOURCE: Unemployment rate assumptions are from the President's FY2010 Budget Request, GPRA targets are based on published guidance from the Office of Management and Budget (OMB), and unemployment rate–adjusted targets are derived from the analysis.

Figure 4



SOURCE: Unemployment rate assumptions are from the President's FY2010 Budget Request, GPRA targets are based on published guidance from the Office of Management and Budget (OMB), and unemployment rate–adjusted targets are derived from the analysis.

VIII. Conclusion

This study provides empirical estimates of the effect of unemployment rates on workforce development program performance measures for the purpose of using these estimates to adjust the performance targets for changes in economic conditions. Despite the obvious relationship between local labor market conditions and the ability to find and retain employment, prior to this analysis there was little systematic empirical basis upon which to relate workforce development program performance targets to changes in labor market conditions. The study found that performance measures are negatively impacted by unemployment rates. These estimates are then used to adjust future performance targets for changes in unemployment rates.

The next phase of the project expands the analysis of WIA to cover all states, all WIBs and a longer time period; to include the direct estimates of additional programs; to update periodically the estimates as new data become available; and to readjust the performance targets to the new estimates and as the administration updates its unemployment rate assumptions. This second phase of the project extends through the end of 2010.