ATTACHMENT VI

MULTIVARIATE ADJUSTMENT FACTORS
(Economic and Demographic Variables)
Relationship between Performance Outcomes and Unemployment Rates and Customer Characteristics

Effects on Performance of a One Percentage Point Increase in:

	Unemployment Rate	Percent female	Percent Age 55 or Older	Percent Not High School Graduate	Percent Low Income	Percent Disabled
Adult						
Entered Employment	-1.25	-0.004	-0.079	-0.062	-0.037	-0.102
Retention	-0.7	0.024	-0.027	-0.051	-0.041	-0.034
Earnings	-288	-21	-4	-22	-23	-14
Credentials	-1.2	-0.015	-0.037	-0.056	-0.013	-0.039
Dislocated Worker						
Entered Employment	-0.7	-0.003	-0.099	-0.035	---	-0.053
Retention	-0.9	0.008	-0.029	-0.023	---	-0.027
Earnings	-226	-40	-11	-28	---	-15
Credentials	0	-0.026	-0.038	-0.043	---	-0.020
Older Youth			**Age 19**		**Basic Skill Deficiency**	
Entered Employment	-0.5	-0.019	-0.005	-0.112	-0.016	-0.089
Retention	-0.7	0	0	-0.074	-0.014	0
Earnings	-122	-9	-6	-13	-6	-13
Credentials	0	0.024	0	-0.010	-0.029	-0.012
Younger Youth			**Age 14 or 15**	**High School Dropout**	**Basic Skill Deficiency**	
Skill Attainment	0	0.008	-0.020	-0.092	-0.058	0.011
Diploma Attainment	-1.72	0.032	-0.082	-0.299	-0.108	0.031
Retention	0	0.009	-0.060	-0.115	-0.031	-0.059
Youth Common Measures			**Age 19-21**	**High School Dropout**	**Basic Skill Deficiency**	
Literacy/Numeracy	-2.4	0	-0.023	0	---	0
			Age 14-15	**Attending high school**		
Placement: employment/education	-1.4	0.012	-0.194	-0.08	-0.047	-0.052
Attained degree or certificate	-2.1	0.028	-0.212	0.097	-0.066	0

Note: All non-zero estimates are statistically significant at the 1% level.

Explanation of the Estimated Effects of Customer Characteristics and Unemployment Rates on WIA Performance Measures

The estimates in Attachment VI show how unemployment rates and selected customer characteristics affect performance outcomes. These estimates can inform negotiation discussions about the impact of changes in the economic environment and customer characteristics on state performance.

Performance measures shown in the table follow the standard definitions for the WIA common measures. These measures were computed using individual participant data obtained from WIASRD. The performance measures shown in the table were defined as follows.

- Adults and dislocated workers
  - Entered employment uses the common measures definition and reflects the use of supplemental data
  - Retention uses the common measures definition and reflects the use of the supplemental data
  - Average earnings uses the common measures definition
  - Credentials measure uses the TEGL 17-05 definition and uses supplemental data to determine employment
- Older and Younger Youth
  - All measures are based on TEGL 17-05 definitions and use supplemental data where appropriate.
- Youth
  - Common measures are based on the current definitions. Literacy and numeracy are based on definition for first year of implementation.

The estimated effects of customer characteristics and unemployment rates on performance outcomes were derived using quarterly WIASRD data. For all programs except younger youth, the estimates are based on data from 2000:Q3-2008:Q1; for younger youth, the estimates are based on data from 2006:Q1-2008:Q1. These relationships are based on the same time period and database that were used to estimate the effects of unemployment rates on the national performance targets incorporated in the President's 2011 budget.

Performance outcomes of each individual exiter were regressed against the five customer characteristics and the local unemployment rates. A separate model was estimated for each performance measure for each program. Including all six factors in the same estimation, referred to as multi-variate estimation, controls for the effects of the other factors on the performance measure.
The estimates can be interpreted as the effect on the performance measure of a one percentage point change in the customer characteristic or the unemployment rate. For instance, if a state were interested in the estimated effect of percent low income on entered employment for the Adult program, it would interpret the coefficient of -0.037 to mean that a one percentage point increase in the percent of low-income customers would be expected to lower the entered employment rate by 0.037 percentage points, holding all the other five factors and the unemployment rate the same. Therefore, even if low-income participants were also highly likely

not to have graduated from high school, the estimate of -0.037 pertains only to the fact that the individual is low-income.

If each factor were regressed in a separate equation, as in bi-variate estimation, the estimated effect of any one factor would include the influence of all the others to the extent they are correlated with the factor included in the equation. However, for multi-variate estimation, if one wanted to compute the effect of an increase in the percentage without a high school education together with an increase in the percentage of low-income customers, one would combine the two estimates (-0.062 plus -0.037 equals -0.099). A bi-variate equation has one response or dependent variable, and one predictor or independent variable, and the relationship between the two is represented by a straight line. Building a bi-variate linear regression model to represent the relationship between two variables by a straight line involves determining the coefficients of that line, a process known as "fitting" the regression line. This type of model presents a limited model because it only accounts for a factor correlated with another factor in the equation.

A change in the unemployment rate generally has a relatively large effect on the performance measures. For example, in the case of the entered employment rate for the WIA Adult program, a one percentage point increase in the unemployment rate lowers the entered employment rate by 1.25 percentage points. That is, if the unemployment rate increased from 8 to 9 percent, say, the entered employment rate is expected to decline from 68 percent to 66.75 percent.

It takes a larger change in the customer characteristics to have a material effect on the performance measures. For example, a one percentage point increase in the percentage without a high school education would lead to a 0.062 percentage point decline in entered employment rate for WIA Adult customers. That is, if the percentage without a high school education increased from 20 percent to 21 percent, the entered employment rate is expected to decline from 68 percent to 67.94. Increasing the change to a 10 percentage point increase in those without a high school education would result in a drop in entered employment from 68 percent to 67.38 percent. The combined effect of a 10 percent increase in each of the two factors (the change in unemployment and percent without a high school education) would reduce entered employment from 68 percent 67 percent (-0.062 plus -0.037 equals -0.099).

Definitions of the customer characteristics are consistent with those in the WIASRD.

- A participant is defined as **disabled** if he or she indicates a 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 with Disability Act of 1990
- A participants is defined as **not a high school graduate** if he or she completed none or some elementary/secondary school grades but did not receive a high school diploma or GED
- A person is defined as **low-income** if he or she receives cash payments under a Federal, state, or local income-based public assistance; or received an income (or part of a family that did) that does not exceed the higher of the poverty line or 70 percent of the lower living standard income level; is a member of a household that receives food stamps; qualifies as a homeless individual; or is a person with a disability whose own income meets the income criteria established by WIA.

- The **unemployment rate** is the rate that a participant faces in his or her local labor market, defined as the local workforce investment area, as provided by each state's LMI agency.