The Economic Contribution of

WORKFORCE DEVELOPMENT COUNCIL OF SEATTLE-KING COUNTY

Impact of WIB Operations and WIA-funded Programs—Program Year 2009

OCTOBER
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WORKFORCE DEVELOPMENT COUNCIL OF SEATTLE – KING COUNTY

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PREFACE

Economic Modeling Specialists Inc. (EMSI) is pleased to present this report on the economic contribution of Workforce Development Council of Seattle-King County (WDC-SKC), serving King County in the state of Washington.

This report examines the operations effect of WDC-SKC in Program Year 2009 (July 1, 2009 to June 30, 2010), then focuses specifically on the economic benefits generated by the WIB's adult, dislocated worker, and youth programs, which are largely supported by Workforce Investment Act (WIA) Title I funds. Benefits are weighed against the cost of running the programs to determine the effectiveness of government investment.

The report includes the following measures:

1. Economic impact of WDC-SKC operations;
2. Direct and indirect regional income effect of people placed through WDC-SKC's adult, dislocated worker, and youth programs;
3. Benefit/cost ratios assessing investment effectiveness.

Special thanks go to Marlena Sessions, CEO, who approved the study, and to Lori Schmidt, CFO, Kay Neill, Data Analyst, and Dot Fallihee, Chief Program Support Officer, who collected and organized much of the data and information requested. Any errors in the report are the responsibility of the authors and not of any of the above-mentioned institutions or individuals.

EXECUTIVE SUMMARY

This study measures the economic benefits generated by the operations of WDC-SKC and by its WIA-funded adult, dislocated worker, and youth programs. The study also weighs the benefits and costs of WIA programs to assess the effectiveness of the investment. The time period reflected in the study is Program Year 2009 (July 1, 2009 to June 30, 2010).

Key findings of the study are as follows:

OPERATIONS EFFECT

- WDC-SKC employed 20 FTE staff with a combined payroll of $1.8 million (excluding benefits) in PY 2009. The WIB spent another $1.1 million for supplies and services. Furthermore, WDC-SKC administered $17.7 million in funds to third-party contractors and service providers to implement WIA-sponsored programs.
- WDC-SKC's payroll and expenditures directly and indirectly generated $3.3 million in income and supported 36 jobs in the regional economy. The activities of the program service providers funded by the WIB generated an additional $19.2 million in income and supported 391 jobs.

BENEFITS OF WIA PROGRAMS

- The adult, dislocated worker, and youth programs at WDC-SKC served 2,547 people in PY 2009. Of these, 247 adults, 328 dislocated workers, and 123 youth were placed into jobs during the same program year.
- Job placements facilitated by the WIB through its adult program in PY 2009 are projected to generate a present value of $80.1 million in additional income in the regional economy over the course of the individuals' working careers. The corresponding income effect of the dislocated worker program is $52 million, and the income effect of the youth program is $13.8 million.

BENEFIT/COST ASSESSMENT

- By the end of the working careers of the individuals placed in jobs, the adult program at WDC-SKC is projected to yield a cumulative added value of $26.18 in income for every dollar spent by the WIB to fund the program. Similarly, the dislocated worker program will yield $8.69 for every dollar spent, and the youth program will generate $2.80.[1]
- Overall, the combined adult, dislocated worker, and youth programs at WDC-SKC will generate a cumulative added value of $10.45 for every WIA dollar spent.[2]

1 Variances in results across programs are largely informed by the number of placements credited to the program, the associated change in earnings as a result of those placements, and the amount spent by the WIB to run the program.

2 As discussed later in this report, the benefit/cost ratios presented in this report should not be viewed as an investment analysis *per se* but rather as indicators of investment effectiveness. This is because the benefits of the investments facilitated by the WIB extend beyond those that accrue to the original investors.

STUDY OVERVIEW

WDC-SKC investments generate a wide array of benefits. Individuals benefit from workshops, career planning services, and job training programs. Employers benefit from a readily accessible pool of potential job candidates. Finally, as more job seekers find in-demand jobs, the public as a whole benefits from higher regional earnings, increased business productivity, and lower unemployment rates.

As a Workforce Investment Board (WIB), one of the primary roles of WDC-SKC is to implement the Workforce Investment Act (WIA) of 1998, one of the main pieces of federal legislation that seeks to promote workforce development in the United States. The largest funding stream under this legislation is WIA Title I, which authorizes state and local WIBs to deliver services to job seekers and establishes the funding formula for the adult, dislocated worker, and youth programs.

The purpose of this study is to measure the economic benefits generated by the operations of WDC-SKC and by its WIA-funded programs in Program Year 2009. The study also weighs the benefits and costs of the WIB's WIA programs to assess the effectiveness of the investment. The following analyses are presented:

1. Operations effect of the payroll and spending of WDC-SKC;
2. Direct and indirect regional income effect of the adult, dislocated worker, and youth programs;
3. Benefit/cost ratios assessing investment effectiveness.

This report has six sections and four appendices. Section 1 supplies a profile of the regional economy. Section 2 presents an economic impact analysis of the WIB's annual operations. Section 3 provides an overview of the WIB's adult, dislocated worker, and youth programs. Section 4 examines the economic benefits generated by the WIB's WIA-funded programs. Section 5 weighs these benefits against the associated costs of the programs. Finally, Section 6 concludes the study and provides suggestions for further research.

SECTION 1. REGIONAL PROFILE

WDC-SKC serves a one-county region comprising King County in the state of Washington. Table 1 summarizes the major industrial sectors of the region, with details on jobs, labor income, and non-labor income. Labor income refers to wages, salaries, and proprietors' income; non-labor income refers to profits, rents, and other income. Together, labor and non-labor income comprise the region's total gross regional product (or GRP), equal to $149.4 billion. The region also supports approximately 1.5 million jobs.

Table 1. Jobs and Gross Regional Product by Major Industrial Sector in Region, 2011 ('000)

INDUSTRY SECTOR	LABOR INCOME	NON-LABOR INCOME	TOTAL GRP	JOBS
Agriculture, forestry, fishing and hunting	$464,938	$118,672	$583,610	6
Mining	$82,503	$87,277	$169,780	1
Utilities	$161,121	$451,303	$612,423	1
Construction	$5,027,696	$574,184	$5,601,880	67
Manufacturing	$9,532,032	$4,238,591	$13,770,623	102
Wholesale trade	$5,762,475	$4,320,225	$10,082,700	66
Retail trade	$5,188,562	$2,886,218	$8,074,780	124
Transportation and warehousing	$3,741,308	$1,591,404	$5,332,712	56
Information	$12,578,005	$12,387,869	$24,965,874	85
Finance and insurance	$6,089,469	$5,031,323	$11,120,792	69
Real estate and rental and leasing	$2,865,221	$10,551,350	$13,416,572	78
Professional and technical services	$13,195,554	$2,561,731	$15,757,285	162
Management of companies and enterprises	$3,069,115	$490,013	$3,559,129	24
Administrative and waste services	$3,774,751	$731,074	$4,505,825	82
Educational services	$1,126,794	$130,661	$1,257,455	33
Health care and social assistance	$8,476,695	$799,755	$9,276,450	138
Arts, entertainment, and recreation	$1,095,337	$272,688	$1,368,025	40
Accommodation and food services	$2,375,504	$1,219,658	$3,595,162	95
Other services, except public administration	$2,681,795	$290,520	$2,972,315	77
Federal government	$2,276,184	$529,425	$2,805,610	23
State and local government	$9,660,243	$958,112	$10,618,355	147
Total	**$99,225,304**	**$50,222,052**	**$149,447,356**	**1,476**

** Data reflect the most recent year for which data are available. EMSI data are updated quarterly.*

† Numbers may not add due to rounding.

Source: EMSI.

SECTION 2. WIB OPERATIONS

WDC-SKC generates economic benefits in the region and state in a variety of ways. The WIB is an employer and a buyer of goods and services. It attracts federal dollars to the region and the state, monies that would not have otherwise entered the economy.[3] The WIB also administers funds to third-party contractors and service providers to deliver programs.

REVENUES AND EXPENDITURES

Table 2 and Figure 1 show the annual revenues of WDC-SKC by program and by source—a total of $20.5 million in PY 2009. As indicated, WIA Title I comprised 44% of total revenue, while other sources comprised the remaining 56%, including funds from ARRA and other government and non-government sources.

earnings, while the spending of employees for groceries, apparel, and other household expenditures help support local businesses. This creates a ripple effect that generates more jobs, earnings, and sales throughout the economy.

In addition to being an employer, WDC-SKC purchases supplies and services from vendors and contractors, many of whom are located in the region. Expenditures for supporting activities made up a total of $1.1 million, including

Figure 1. Revenues by Source

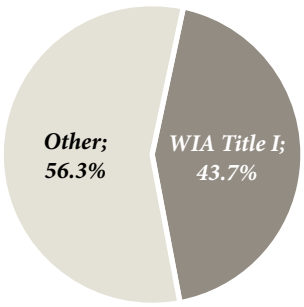


Table 2. Revenues by Program and by Source, PY 2009 ($'000)

SOURCE	ADULT	DISLOCATED WORKER	YOUTH	OTHER	TOTAL	%
WIA Title I	$2,026	$2,896	$2,389	$1,657	$8,967	44%
ARRA	$1,033	$3,083	$2,522	$530	$7,169	35%
Other gov't funding	$0	$0	$0	$3,921	$3,921	19%
Non-gov't funding	$0	$0	$0	$460	$460	2%
Total	**$3,059**	**$5,979**	**$4,911**	**$6,569**	**$20,518**	**100%**

** Numbers may not add due to rounding.*

Source: Data supplied by WDC-SKC.

WDC-SKC also employed 20 FTE staff in PY 2009, with a combined payroll of $1.8 million (excluding benefits). This information appears in Table 3. Staff wages and salaries at WDC-SKC become part of the region's overall travel, professional services, office expenses, telephone and communications, and facilities expenses. The WIB also paid $17.7 million to third-party contractors and service providers to operate WIB-sponsored programs (see the bottom row of Table 3).

3 Some might argue that, if the WIB did not exist, the federal funds used to support WIB activities would have been injected into the economy anyway through some other workforce development mechanism. However, it would require additional research outside the scope of the current analysis to determine the extent to which this might be the case.

OPERATIONS EFFECT

Each dollar that WDC-SKC and its employees spend in the region generates a ripple effect in the economy. We measure the impacts of the WIB's operations in terms of income[4] and jobs, as shown in Table 4. Each category is subdivided into the following two effects: the direct effect and the indirect effect. The *direct effect* comprises the changes in economic activity due to the first round of spending by the WIB and its employees. The *indirect effect* refers to the additional jobs and income created in the economy as the businesses patronized by the WIB and its employees spend money in the region to purchase even more supplies and services.

Estimating the indirect effect requires use of a specialized input-output (IO) model that shows the interconnection of industries, government, and households in the region (see Appendix 2). The factor of change that occurs in a region's industries as a result of economic activity in another industry is most commonly known as the "multiplier." To calculate multiplier effects we apply the following steps:

1. Map the WIB's payroll and purchases listed in Table 3 to the 21 top-level industry sectors of the IO model listed in Table 1. For example, the WIB's expenditures for telephone and communications affect vendors in the "information" industry, so we allocate those expenditures to that industry. Similarly, we allocate the WIB's expenditures for professional services to the "professional and technical services" industry. All of the WIB's other expenditures (with the exception of pass-through funds paid to program operators) are allocated to the different industry sectors in a similar fashion, depending on which industries the WIB's expenditures are most likely to affect.[5]

Table 3. Total Expenditures, PY 2009 ($'000)

SOURCE	TOTAL	%
Wages and salaries	$1,773	9%
Benefits	$490	2%
Travel	$56	0%
Professional services	$60	0%
Office expense and supplies	$108	1%
Telephone and communications	$24	0%
Facilities expenses	$236	1%
Other supporting activities	$95	0%
Contractors and service providers	$17,677	86%
Total	**$20,518**	**100%**

** Numbers may not add due to rounding.*
Source: Data supplied by WDC-SKC.

2. Apply regional purchase coefficients (RPCs) to estimate what portion of the WIB's expenditures occurs in the region and what portion leaks outside the region.[6] This generates the *direct* sales effect of the WIB.

3. Run the local spending data through the IO model's multiplier matrix to estimate how the spending of WDC-SKC affects the inputs and outputs of other industries in the region. This yields the *indirect* sales effect.

4. Convert the direct sales effect from step 2 and the indirect sales effect from step 3 to income and jobs by means of income-to-sales and jobs-to-sales ratios, also provided by the IO model.

Table 4 presents the direct and indirect income and jobs effects of WDC-SKC. The direct income effect—equal to $1.8 million—comprises the total salaries and wages (excluding benefits) paid to WDC-SKC employees during the reporting year. The indirect effect, or $1.5 million, comprises the additional rounds of income created in the region as the WIB and its employees spend money for supplies and services. The associated multiplier is

4 As noted in Section 1, income refers to the sum of labor income (i.e., wages and salaries) and non-labor income (i.e., profits, rents, and other). Together labor and non-labor income comprise a region's total gross regional product, or GRP.

5 Pass-through funds paid to contractors and service providers for worker training and other WIB-related services only affect the economy when the contractors and vendors spend them. As such, they are not directly attributable to the operations of the WIB itself. We capture the impacts of program operators later in this section.

6 Regional purchase coefficients are a measure of the proportion of the total demand for a good or service that is supplied by vendors in the region. An RPC of 0.6, for example, means that 60% of the demand for that commodity is met by local vendors, while the remaining 40% of the demand is met by imports.

1.84, i.e., every dollar of payroll at the WIB yields $0.84 in income in the economy.

The corresponding jobs effect of WDC-SKC is 20 direct jobs, equal to the number of FTE employees who work at the WIB. The WIB also accounted for 17 indirect jobs. Altogether the WIB directly and indirectly supported 36 jobs in the regional economy, for an overall jobs multiplier of 1.86 (i.e., every FTE employee at the WIB yields an additional 0.86 jobs in the economy).

In addition to the impacts generated by the WIB, the funds that the WIB administers to third-party contractors to operate WIA-related programs also have an impact on the economy. Following a methodology similar to that described earlier this section, we calculate the direct and indirect income and jobs effects of program service providers. These results appear in Table 5. As shown, the monies paid to program service providers directly and indirectly generated a total of $19.2 million in income and supported 391 jobs in the regional economy.

Table 4. Operations Effect, PY 2009 ($'000)

EFFECT	INCOME	JOBS
Direct effect	$1,773	20
Indirect effect	$1,492	17
Total	**$3,264**	**36**
Multiplier	1.84	1.86

** Numbers may not add due to rounding.*

Source: Based on data supplied by WDC-SKC and outputs of the EMSI IO model.

Table 5. Effect of Program Service Providers, PY 2009 ($'000)

EFFECT	INCOME	JOBS
Direct effect	$15,089	309
Indirect effect	$4,071	82
Total	**$19,160**	**391**
Multiplier	1.27	1.26

** Numbers may not add due to rounding.*

Source: Based on data supplied by WDC-SKC and outputs of the EMSI IO model.

SECTION 3. OVERVIEW OF WIA PROGRAMS

WIA authorizes services for three specific populations—adults, dislocated workers, and youth—all of which are an integral part of the nation's labor force.

The *adult* program provides employment and training services to individuals who are 18 years of age or older, with a priority of service favoring people who are unemployed, receiving public assistance, or are from low-income households. The *dislocated worker* program targets individuals who have lost their jobs due to permanent closure, downsizing, or other reasons outside of the individuals' control. The *youth* program aims to increase the long-term employability of young people between the ages of 14 and 21 by means of education and training programs.

ADULT/DISLOCATED WORKER

The WIA adult and dislocated worker programs offer the following three levels of service to participants.

1. *Core services* include outreach, workshops, and access to job search tools and labor market information.
2. *Intensive services* include more comprehensive assessments, one-on-one counseling and career planning development, and other staff-assisted help.
3. *Training services* include occupational and basic skills training through qualified training providers.

In addition to the three levels of service described above, WIBs may also provide "supportive" services such as transportation, childcare, dependent care, and other forms of assistance designed to address the specific circumstances of individuals and give them the means to participate in the program.

Table 6 displays the number of people who participated in the adult and dislocated worker programs at WDC-SKC in PY 2009, along with the number of people who were placed into jobs in the same year. As shown, WDC-SKC served 795 people in the adult program and

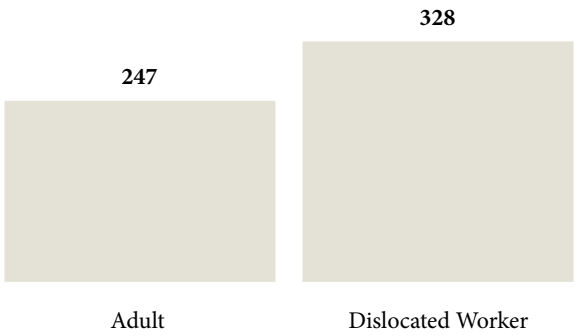
Table 6. Adult/Dislocated Worker Participants, Placements, and Common Measures, PY 2009

	ADULT	DISLOCATED WORKER
PEOPLE SERVED		
No. of participants, non-training related	274	199
No. of participants, training-related	521	923
Total participants	**795**	**1,122**
PLACEMENTS		
No. of placements, non-training related	90	97
No. of placements, training related	157	231
Total placements	**247**	**328**
Six-month average pre-program earnings	$4,165	$19,370
COMMON MEASURES		
Entered employment rate (%)	92%	84%
Six-month retention rate (%)	79%	78%
Six-month average post-program earnings*	$12,039	$18,248

** In some cases it is difficult for participants to recover their pre-program earnings, even with training, due to local economic conditions and other factors outside the individuals' control. Because of this, it is not uncommon for their post-program earnings to be less than what they were earning before they enrolled.*

Source: Data supplied by WDC-SKC.

Figure 2. Adult and Dislocated Worker Placements



1,122 people in the dislocated worker program. Of these, 521 adults and 923 dislocated workers received training-related services, while the remaining people received non-training related (i.e., core and intensive) services. By the end of the program year, 247 adults and 328 dislocated workers had been placed into jobs (see also Figure 2).[7] Although others may have found employment after PY 2009, those numbers were not tracked for the purpose of this study.

Also displayed in Table 6 are the common measures of the adult and dislocated worker programs. Common measures are nationally defined accountability measures used to assess the performance of WIA-funded programs. They include the entered employment rate, the six-month retention rate, and average earnings, which are key variables in determining the benefits generated by the adult and dislocated worker programs. The US Department of Labor (DOL) defines these measures as follows:

1. *Entered employment rate:* Of those who are unemployed at the date of participation, the number of participants who are employed in the first quarter after the exit quarter divided by the number of participants who exit during the quarter;

2. *Retention rate:* Of those who are employed in the first quarter after the exit quarter, the number of participants who are employed in both the second and third quarters after the exit quarter divided by the number of participants who exit during the quarter;

3. *Average earnings:* Of those who are employed in the first, second, and third quarters after the exit quarter, total earnings in the second and third quarters after the exit quarter divided by the number of participants who exit during the quarter.

Table 7 presents the number of job placements in PY

Table 7. Job Placements by Top-Level Occupation, PY 2009

SOC CODE	ADULT	%	DISLOCATED WORKER	%
(11) Management	3	1%	47	14%
(13) Business and financial operations	4	2%	18	5%
(15) Computer and mathematical science	2	1%	29	9%
(17) Architecture and engineering	0	0%	9	3%
(19) Life, physical, and social science	0	0%	2	1%
(21) Community and social services	3	1%	2	1%
(23) Legal	1	0%	8	2%
(25) Education, training, and library	5	2%	6	2%
(27) Arts, design, entertainment, sports, and media	1	0%	11	3%
(29) Healthcare practitioners and technical	40	16%	18	5%
(31) Healthcare support	32	13%	11	3%
(33) Protective service	4	2%	3	1%
(35) Food preparation and serving	15	6%	5	2%
(37) Building and grounds cleaning and maintenance	33	13%	2	1%
(39) Personal care and service	24	10%	4	1%
(41) Sales and related	23	9%	15	5%
(43) Office and administrative support	27	11%	84	26%
(45) Farming, fishing, and forestry	0	0%	0	0%
(47) Construction and extraction	2	1%	3	1%
(49) Installation, maintenance, and repair	8	3%	11	3%
(51) Production	10	4%	23	7%
(53) Transportation and material moving	9	4%	17	5%
(55) Military	1	0%	0	0%
(00) Unknown	0	0%	0	0%
Total	**247**	**100%**	**328**	**100%**

Source: Data supplied by WDC-SKC.

7 Note that the common measures typically used to assess WIB performance apply different denominators than the number of people served to calculate such measures as the entered into employment rate and the retention rate. As such, it is not appropriate to divide placements by the number of people served to determine a placement rate. Please read further in this section for more information on common measures.

2009 by program and by top-level occupation. The two-digit codes shown in the table come from the Standard Occupational Classification (SOC) system used by the Bureau of Labor Statistics to classify workers in occupational categories. As indicated in the table, the highest percentage of adults (16%) went into healthcare practitioners and technical occupations (SOC 29-0000), while the highest percentage of dislocated workers (26%) were placed in office and administrative support occupations (SOC 43-0000).[8]

YOUTH

Unlike the adult and dislocated worker programs, the youth program focuses less on job placements and more on the developmental needs and long-term employability of participants. Positive outcomes for the youth program may be one or more of the following:

1. Placed into a job;
2. Enrolled in postsecondary education or training;
3. Attained a high school diploma, GED, or certificate;
4. Gained one or more educational functional levels (i.e., literacy and numeracy).

WIA authorizes youth services to the following two age populations: older youth between the ages of 19 and 21, and younger youth between the ages of 14 and 18. As shown in Figure 3, WDC-SKC served 496 younger youth and 134 older youth in the 2009 program year. Note that under the American Recovery and Reinvestment Act of 2009 (ARRA), the age eligibility for youth participants was increased to a maximum of 24 years old.

In addition to the age eligibility requirements, youth participants must also be a low-income individual (with limited exceptions) and meet one or more of the following barrier categories:

1. Deficient in basic literary skills;
2. School dropout;
3. Homeless, runaway, or foster child;
4. Pregnant or parenting;
5. Offender;
6. Requires special assistance to complete an educational program or hold employment;
7. One or more grade level below the grade level appropriate to the individual's age.

Figure 3. Youth Participants by Age Group

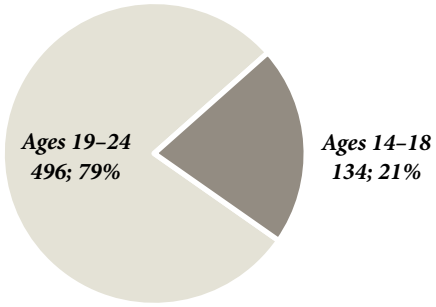
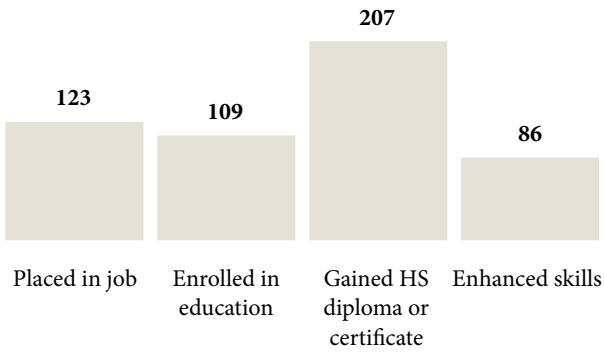


Table 8. Number of Youth Participants by Barrier, PY 2009

BARRIER	TOTAL
Deficient in basic literary skills	437
School dropout	342
Homeless, runaway, or foster child	57
Pregnant or parenting	58
Offender	109
Special assistance	453
Below grade level	130

Source: WDC-SKC.

Figure 4. Youth Participant Outcomes



8 These figures exclude individuals allocated to the "unknown" category.

The breakdown of youth participants by barrier appears in Table 8. The reader should note that, because youth may have more than one barrier, the sum does not match the total number of youth who participated in the program.

Youth outcome data for PY 2009 appear in Table 9 and Figure 4. As indicated, 123 youth found jobs, while 109 youth enrolled in education. Another 207 youth participants earned their high school diploma or equivalent, and 86 youth gained one or more educational functioning levels. As with Table 8, the figures in Table 9 may be duplicated since youth may achieve more than one positive outcome.

The bottom half of Table 9 displays other youth measures, including their pre-program earnings, their associated earnings change, the entered into employment rate, and the six-month retention rate. Please see earlier in this section for a definition of these measures. A high percentage of youth were unemployed or came from extremely low income households when they enrolled in the program, so their pre-program earnings are significantly lower than what is typically the case for the adult and dislocated worker programs.

Table 9. Youth Outcomes and Other Measures, PY 2009

	TOTAL/ AVERAGE
OUTCOMES	
Number placed in a job	123
Number enrolled in postsecondary education or training	109
Number who attained a high school diploma, GED, or certificate	207
Number who gained one or more educational functioning levels	86
OTHER MEASURES	
Average six-month pre-program earnings	$1,158
Average earnings change*	$2,482
Entered into employment rate (%)	94%
Six-month retention rate (%)	79%

** Average earnings change refers to the difference between the post-program earnings and the pre-program earnings of youth who are placed.*

Source: WDC-SKC.

SECTION 4. ECONOMIC IMPACTS OF WIA PROGRAMS

Each person who is placed into a job generates benefits through his or her increased earnings and through related multiplier effects as those earnings are spent in the region. In this study we calculate the benefits of WIA programs based on the earnings change of individuals who are placed by the WIB. We then project this earnings change out into the future, discount it back to the present, and convert it to income[9] to determine the present value of the benefits that occur over the course of the individuals' working careers. The following pages more fully describe the methodology for these calculations.

BENEFITS OF ADULT PROGRAM

The adult program is particularly geared towards a high level of benefits, since the vast majority of participants are either unemployed, coming from low income households, or otherwise economically disadvantaged. As such, the WIB's primary role in serving adults is to move people from a position of earning either very little or nothing at all to a position where they are gainfully employed and receiving a steady income.

To calculate the benefits of the adult program, we apply the steps described in detail in Appendix 3. Table 10 presents the results of the analysis. As indicated, the 247 placements facilitated by the WIB in PY 2009 generated a direct income effect of $48.8 million and an indirect income effect of $31.3 million, for an overall multiplier of 1.64. These figures represent the present value of the income benefits that will occur in the regional economy over the working careers of the individuals who are placed by the WIB in PY 2009. Keep in mind that these results have been discounted to reflect only those benefits that can be fully credited to the WIB.

Table 10. Present Value of Projected Benefits of Adult Program ($'000)

EFFECT	INCOME
Direct effect	$48,767
Indirect effect	$31,307
Total	**$80,074**
Multiplier	1.64

** Numbers may not add due to rounding.*

Source: EMSI IO model.

BENEFITS OF DISLOCATED WORKER PROGRAM

The dislocated worker program functions in a manner similar to that of the adult program, although it serves a different cohort of people. Participants do not necessarily come from low income backgrounds (as is generally the case for the adult program); in fact, some participants may come from relatively high-paying jobs that they lost due to company closures, downsizing, or other factors outside of their control. In some cases it is difficult for participants in the dislocated worker program to get those wages back, even with training. As a result, it is not uncommon for the post-program earnings of participants to be less than what they were earning before they enrolled.

There is another factor to consider, however. WIBs provide dislocated workers with intensive help searching for jobs and acquiring training vouchers, which puts participants in a much better position to find meaningful employment. As such, participants are more likely to find a job that pays as well or higher than what he or she would have otherwise have been able to find without the WIB's help. Given this phenomenon, the model calculates the average earnings change of dislocated workers, not based on the difference between their post-program earnings and their pre-program earnings (as is the case with adults), but based on the difference between their post-program earnings and what they would have earned

9 Recall from Section 1 that income refers to the sum of labor income (i.e., wages and salaries) and non-labor income (i.e., profits, rents, and other).

had they *not* registered at the WIB. The following steps outline how we arrive at this variable:

1. Use EMSI's web-based Analyst tool to gather the percentile earnings for all two-digit occupation sectors listed in Table 7.

2. Determine how the 328 placements align with the earnings percentile for their respective two-digit SOC code. We assume that the lower end of the percentile is the *minimum* earnings level that participants would have received had they chosen not to register at the WIB for services.

3. Adjust the minimum earnings level upward to account for the ability of dislocated workers to find employment without outside help. This adjustment is made to account for the workforce experience and stronger labor market attachments of dislocated workers. Prior employment and age allow us to assume these individuals have a steeper learning curve than individuals served under the adult program. Dislocated workers are also more likely to have continuity in their employment history, and they often have more resources at their disposal that they can leverage to find alternative employment opportunities. As such, a portion of the earnings differential between what participants earn after exiting the dislocated worker program and what they would have earned absent the program is attributable to the participants themselves, not necessarily to the WIB.[10]

4. Calculate the difference between the adjusted earnings level from Step 3 and the average post program earnings of dislocated workers from Table 6 ($18,248). This yields the average six-month earnings change used to calculate the associated benefits of the program, a total of $4,399 per placement.

10 The adjustment is based on the estimated probability that an individual will benefit from the WIB's services, under the assumption that those in the lowest earnings percentiles will benefit the most (i.e., they are the least likely to find meaningful employment without the WIB) and those in the highest earnings percentile will benefit the least (i.e., they are the most likely to find meaningful employment without the WIB).

Table 11. Present Value of Projected Benefits of Dislocated Worker Program ($'000)

EFFECT	INCOME
Direct effect	$31,986
Indirect effect	$19,996
Total	**$51,982**
Multiplier	1.63

** Numbers may not add due to rounding.*
Source: EMSI 10 model.

Table 12. Present Value of Projected Benefits of Youth Program ($'000)

EFFECT	INCOME
Direct effect	$9,110
Indirect effect	$4,660
Total	**$13,769**
Multiplier	1.51

** Numbers may not add due to rounding.*
Source: EMSI 10 model.

The calculated value of the average earnings change for dislocated workers replaces step 2 in the methodology described in Appendix 3. Otherwise we follow the same steps as for adults to determine the associated income effect of dislocated workers. Results of the analysis appear in Table 11. As shown, the present value of the projected income benefits of the dislocated worker program amount to $52 million, with an overall multiplier of 1.63.

BENEFITS OF YOUTH PROGRAM

In this study we base the benefits of the youth program on the total earnings change received by participants who are placed into jobs after exiting the program. Calculating the direct and indirect effects of the earnings change that accrues to youth follows a methodology similar to that of the adult program, with one major difference, i.e., we do not know the occupations or the industries where youth are placed. Because of this, we assume that all of the increased earnings enjoyed by youth are spent in the economy in the form of household expenditures.[11]

11 This means that the direct sales and income effects are essentially the same.

This value we funnel through the IO model following the same steps described in Appendix 3.

Results of the analysis appear in Table 12. The total regional income effect is $13.8 million, equal to the present value of the projected benefits that can legitimately be credited to the WIB over the working careers of youth who were placed in PY 2009.

It is important to keep in mind that, given the unique nature of the program, job placements are not the primary measure of success for youth. In addition to providing a wide variety of education, training, and employment opportunities, another strong component of the youth program is assisting participants attain the soft skills they need for long-term employability. As such, there are a number of economic and social benefits that the youth program generates but that are not quantified in Table 12. For example, attaining higher levels of education is statistically correlated with improved social behaviors, such as reduced crime, increased volunteerism, reduced tobacco and alcohol abuse, etc. These are incidental benefits of the youth program that are difficult to quantify but still worth mentioning.

SECTION 5. BENEFIT/COST ASSESSMENT

Benefit/cost analysis is the process of evaluating total benefits and measuring these against total costs to determine whether or not an investment is effective. If benefits outweigh costs (i.e., if the benefit/cost ratio is greater than 1.0), that indicates that the investment is feasible.

It is important to keep in mind that, due to the nature of workforce development programs, far more people stand to benefit from the investment than just the original investors (in this case, the taxpayers). Job seekers are beneficiaries of higher incomes, employers are beneficiaries of increased worker productivity, the community as a whole is a beneficiary of reduced unemployment costs, increased tax collections, and so on. These are widely dispersed benefits that do not necessarily return to taxpayers, who pay costs at full measure. In an investment analysis where investors and beneficiaries are not the same, measures such as the rate of return, payback period, and net present value do not apply. In this analysis, therefore, the benefit/cost ratio should be viewed simply as an indicator of investment effectiveness and not as an investment analysis in the strictest sense of the term.

Table 13 presents the benefit/cost ratios for the adult program, the dislocated worker program, the youth program, and all three programs combined. Benefits comprise the income effects from Tables 10, 11, and 12, while costs comprise the total funding received by WDC-SKC to run the programs (see Table 2).

Table 13. Benefit/Cost Assessment of WIA-funded Programs, PY 2009 ($'000)

	BENEFITS	COSTS	RATIO
Adult	$80,074	$3,059	26.2
Dislocated Worker	$51,982	$5,979	8.7
Youth	$13,769	$4,911	2.8
Overall	**$145,826**	**$13,949**	**10.5**

** Numbers may not add due to rounding.*

Dividing net benefits by total costs yields a 26.2 benefit/cost ratio for adults, a 8.7 benefit/cost ratio for dislocated workers, and a 2.8 benefit/cost ratio for youth. Overall, the combined adult, dislocated worker, and youth programs at WDC-SKC generated a 10.5 benefit/cost ratio, i.e., every dollar in WIA funding will generate a cumulative added value of $10.45 over the working careers of the individuals placed.

SECTION 6. CONCLUSION

The results of this study demonstrate the positive economic contribution of WDC-SKC to the regional economy through its own operations and through the benefits generated by its WIA-funded programs. The WIB directly and indirectly generated $3.3 million in income and supported 36 jobs in the region, while the WIB's program service providers generated an additional $19.2 million in income and supported 391 jobs. Furthermore, the WIB benefits the local business community by assisting with hiring needs, enhancing worker productivity through training, and stimulating consumer spending. Job placements facilitated by the WIB through its WIA programs in PY 2009 are projected to generate a present value of $145.8 million in additional income in the region over the course of the individuals' working careers. Finally, society as a whole benefits from reduced unemployment rates, increased regional income, and a positive return on government funding. Overall, the combined adult, dislocated worker, and youth programs at WDC-SKC will generate a cumulative added value of $10.45 to the public as a whole for every WIA dollar spent.

It is anticipated that the results of this study and subsequent studies can be used as a performance benchmark for WDC-SKC, as well as for other WIBs that participate in the same research. Additional benefits of WDC-SKC that are not reflected in this study but that are worth mentioning include the following:

1. Increase in income, property, and sales tax revenues as a result of employment outcomes;
2. Avoided welfare and unemployment costs to government;
3. Social benefits related to job placements, such as reduced crime, increased volunteerism, and improved quality of life;
4. Increased regional competitiveness due to worker training.

Further research and data collection will be required in order to fully capture the impact of these benefits.

APPENDIX 1: EMSI DATA SOURCES

U.S. DEPARTMENT OF COMMERCE

Bureau of Economic Analysis

- State Personal Income and Employment
- Local Area Personal Income and Employment
- Industry Economic Accounts, Benchmark and Annual Input-Output (I-O) Accounts

U.S. Census Bureau

- American Community Survey
- County Business Patterns
- ZIP Code Business Patterns
- Nonemployer Statistics
- Local Employment Dynamics (LED)
- TIGER/Line File (with additions by DM Solutions Group)

Population Estimates

- U.S. National and State Population Projections
- Census 2000 Summary Files 1 and 3 (SF 1, SF 3)

U.S. DEPARTMENT OF LABOR

Bureau of Labor Statistics

- Quarterly Census of Employment and Wages (QCEW)
- Current Employment Statistics (CES)
- Current Population Survey (CPS)
- Local Area Unemployment Statistics (LAUS)
- National Compensation Survey
- National Industry-Occupation Employment Matrix (10-year, current/projected)
- Occupational Employment Statistics (OES)
- Occupational Education and Training Projections

EMPLOYMENT AND TRAINING ADMINISTRATION (ETA)

- Characteristics of the Insured Unemployed
- National O*NET Consortium, O*NET Production Database

U.S. DEPARTMENT OF EDUCATION, NATIONAL CENTER FOR EDUCATION STATISTICS

- Integrated Postsecondary Education Data System (IPEDS)
- Office of Educational Research and Improvement for the CIP, 2000 Standard Occupational Classification Crosswalk to 2000 Classification of Instructional Programs

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NATIONAL CENTER FOR HEALTH STATISTICS

- Health, United States

U.S. POSTAL SERVICE

- Address Information Systems (AIS) Products, Delivery Statistics
- AIS Products, 5-Digit ZIP Product
- AIS Products, City State Product

INTERNAL REVENUE SERVICE

- Statistics of Income Division, County-to-County Migration Data

U.S. RAILROAD RETIREMENT BOARD

- Annual Railroad Retirement Act and Railroad Unemployment Insurance Act Statistical Tables

PRIVATE SOURCES

- Indeed.com job-posting search engine
- Nielsen Claritas Business-Facts® (in conjunction with infoUSA™)

Note: In addition to our federal sources, we use state and (where available) sub-state industry projections produced by all 50 individual states.

APPENDIX 2: EMSI INPUT-OUTPUT MODEL

EMSI's input-output model represents the economic relationships among a region's industries, with particular reference to how much each industry purchases from other industries. Using a complex, automated process, EMSI can create regionalized models for geographic areas comprised by counties or ZIP codes in the United States.

Primary data sources are the following:

1. The Industry Economic Accounts from the Bureau of Economic Analysis (BEA); specifically the "make" and "use" tables from the annual and benchmark input-output accounts.
2. Regional and national jobs-by-industry totals, and national sales-to-jobs ratios (from EMSI's industry employment and earnings data process).
3. Proprietor earnings from State and Local Personal Income Reports (BEA).

Creation of the national Z matrix

The BEA "make" and "use" tables (MUTS) show which industries make or use which commodity types. These two tables are combined to replace the industry-commodity-industry relationships with simple industry-industry relationships in dollar terms. This is called the national "Z" matrix, which shows the total amount ($) each industry purchases from others. Industry purchases run down the columns, while industry sales run across the rows.

The value 1,532.5 in this table means that Industry 2 purchases $1,532,500,000 worth of commodities and/or services from Industry 1.

Table A1: Sample "Z" matrix ($ millions)

	INDUSTRY 1	INDUSTRY 2	. . .	INDUSTRY N
Industry 1	3.3	1,532.5	. . .	232.1
Industry 2	9.2	23.0	. . .	1,982.7
. . .	. . .	. . .	. . .	. . .
Industry N	819.3	2,395.6	. . .	0

The whole table is basically an economic double-entry accounting system, configured so that all money inflows have corresponding outflows elsewhere.

In addition to regular industries (such as "oil and gas extraction," "machinery manufacturing," "food and beverage stores," "hospitals," and so on), there are three additional rows representing labor earnings, profits, and business taxes, which together represent industry "value added" and account for the fact that industries do not spend all of their income on inputs from other industries. There are also three rows and columns representing federal, state, and local government (we later separate federal government into civilian and military sectors).

We create two separate Z matrices since there are two sets of MUTS—annual and benchmark. The benchmark data are produced every five years with a five-year lag and specify up to 500 industry sectors; annual data have a one-year lag but specify only 80 industrial sectors.

The basic equation is as follows:

$$Z = VQ\hat{}-1U$$

where V is the industry "make" table, $Q\hat{}-1$ is a vector of total gross commodity output, and U is the industry "use" table.

In reality, this equation is more complex because we also need to "domesticate" the Z matrix by removing all imports. This is needed because we are creating a "closed" type of national model.

In addition, there are a number of modifications that need to be made to the BEA data before the calculations can begin. These are almost all related to the conversion of certain data in BEA categories to new categories that are more compatible with other data sets we use in the process, and describing them in detail is beyond the scope of this document.

Disaggregation of the national Z matrix

The previous step resulted in two national Z matrices—one based on the benchmark BEA data (five years old,

approximately 500 industries) and the other based on the annual BEA data (one year old, but only about 80 industries). These initial national Z matrices are then combined and disaggregated to 1,125 industry sectors. Combining them allows us to capitalize on both the recency of the annual data and the detail of the benchmark data. The disaggregation is performed for each initial Z matrix using probability matrices that allow us to estimate industry transactions for the more detailed sectors based on the known transactions of their parent sectors. The probability matrix is created from detailed EMSI industry earnings data, which are available for all 1,125 sectors and are created using a separate process.

Creation of the national A matrix

The national disaggregated Z matrix is then "normalized" to show purchases as percentages of each industry's output rather than total dollar amounts. This is called the national "A" matrix.

Each cell value represents the percentage of a row industry's output that goes toward purchasing inputs from each column industry. Thus, the cell containing .112 in Table A2 means that Industry 1 spends 11.2% of its total output to obtain inputs from Industry 2.

At this point, our additional rows representing earnings, profits, and business taxes are removed. However, we will use them in a different form later.

Regionalization of the A matrix

To create a regional input-output model, we regionalize the national A matrix using that region's industry mix.

The major step in the process is the calculation of per-industry out-of-region exports. This is performed using a combination of the following standard techniques that are present in the academic literature:

1. Stevens regional purchase coefficients (RPCs);
2. Simple location quotient of value added sales, &;
3. Supply/demand pools derived from the national A matrix.

We try to maximize exports in order to account as fully as possible for "cross-hauling," which is the simultaneous export and import of the same good or service to/from a region, since it is quite common in most industries.

Table A2: Sample "A" matrix

	INDUSTRY 1	INDUSTRY 2	. . .	INDUSTRY 1125
Industry 1	.001	.112	. . .	.035
Industry 2	.097	0	. . .	.065
. . .	. . .	. . .	. . .	. . .
Industry 1125	.002	.076	. . .	0

Another major part of the process is the regionalization of consumption, investment, and local government "row industries" (rows referring to the rows of the A matrix). These represent the percentage of each industry's sales that end up going toward consumption, capital purchases, and taxes to local government, respectively. They are created from the "value added" rows that we removed earlier. Consumption is calculated using each industry's earnings and profits, as well as a constant called "the average propensity to consume," which describes the approximate percentage of earnings and profits that are spent on consumption. Investment and local government rows are calculated by distributing the known total investment and endogenous local government for the entire region to individual industries proportionally to their value added.

The A-matrix regionalization process is automated for any given region for which industry data are available. Although partially derived from national figures, the regional A matrix offers a best possible estimate of regional values without resorting to costly and time-consuming survey techniques, which in most cases are completely infeasible.

Creating multipliers and using the A matrix

Finally, we convert the regional "A" matrix to a "B" matrix using the standard Leontief inverse $B = (I - A) - 1$. The "B" matrix consists of inter-industry sales multipliers, which can be converted to jobs or earnings multipliers using per-industry jobs-to-sales or earnings-to-sales ratios.

The resulting tables and vectors from this process are then used in the actual end-user software to calculate regional requirements, calculate the regional economic base, estimate sales multipliers, and run impact scenarios.

APPENDIX 3: METHODOLOGY FOR CALCULATING PROJECTED BENEFITS OF THE ADULT PROGRAM

The projected benefits of the adult program were calculated using the following methodology. A similar methodology was used to determine the benefits of the dislocated worker and youth programs, with a few unique modifications described in greater detail in the report.

To calculate the benefits of the adult program, we apply the following steps:

1. Determine how many people would have been able to avail themselves of services anyway absent WIA funding. This is because, when a person registers at the WIB, there are other non-WIA-funded services available to them that will facilitate their placement into a job. As such, the WIB can only take credit for the estimated number of placements that would *not* have occurred had there been no WIA funding present. To estimate this portion, we apply a sub-model that reduces WIA funding to zero and progressively reduces the number of people served. If the model calculates that there are placements that the WIB could still potentially generate at the zero WIA-funding level, it discounts the number of actual placements accordingly.

2. Calculate the average per-person six-month earnings change based on the difference between the pre-program earnings and post-program earnings of the people placed during the program year. This amounts to a $7,875 earnings change per placement, equal to post-program earnings of $12,039 less pre-program earnings of $4,165 (see Table 6).[12]

3. Multiply the six-month earnings change from step 1 by a factor of 2 to convert it to an annual figure.

4. Project the annual earnings change from step 2 into the future. The time horizon for this step (i.e., the number of years for which we make the projection) is assumed to be equal to retirement age (65) less the average age of individuals who are placed during the program year (37). Earnings are projected based on increases in the Consumer Price Index to determine the average annual cost-of-living adjustment for wage earners.

5. Adjust the projected earnings stream to account for individuals who would have been able to find a job of equal pay on their own without the help of the WIB. This step is necessary because any earnings that individuals are able to accrue on their own cannot be credited to the WIB. To do this, we apply a cumulative normal distribution curve under the assumption that relatively few individuals would have been able to find a job of equal pay without the WIB's help in the first few years of the time horizon. Over time, however, more and more individuals would have been able to find a job of equal pay, such that, by the end of the time horizon, we claim zero of the projected benefits as attributable to the WIB.[13]

6. Further adjust the projected earnings stream to account for individuals who leave the workforce over time. We use a sigmoidal decay function to approximate this attrition rate, assuming that people are more likely to lose their jobs in the

12 We use this wage differential under the assumption that, without the WIB's help, participants would probably stay in their current earnings track. With the WIB's help, however, participants are more likely to get a higher-paying job.

13 It should be stressed that we apply this adjustment to account for individuals who would have been able to find a job that paid *equally* well as the job they found through the WIB. We assume that, on average, it takes individuals more time to find a job of equal pay than a job of lesser pay.

years closer to the time of their initial placement. The longer individuals retain their jobs, the likelihood that they will lose it reduces.

7. Convert the projected stream of earnings to current year dollars using an assumed discount rate of 3.0%.[14] This yields the present value of the average lifetime earnings change per individual that we can directly attribute to the WIB's activities.

8. Apply national staffing patterns to map the adult program's placements by SOC code from Table 7 to the 21 top-level NAICS industries in the IO model listed in Table 1.

9. Calculate the average lifetime earnings change by industry based on an index derived from the average earnings per worker in those industries. This step is necessary because the lifetime earnings change of individuals is dependent in large part upon the industries where they are placed.

10. Multiply the adjusted lifetime earnings change in each industry times the number of placements in those industries to determine the overall direct earnings effect by industry.

11. Convert the direct earnings effect to sales using sales-to-earnings ratios provided by EMSI's IO model.

12. Run the sales figure through the IO multiplier matrix to determine the direct and indirect sales effect.

13. Convert the direct and indirect sales figures to income using income-to-sales ratios supplied by the IO model.

14 Derived from data supplied by the US Office of Management and Budget.

APPENDIX 4: GLOSSARY OF TERMS

Adult/Dislocated Worker programs: Programs offered under the Workforce Investment Act (WIA) designed to increase the employment, retention, earnings, and occupational skill attainment of unemployed adults or dislocated workers who have lost their jobs due to plant closure, layoff, or other reasons outside of the individuals' control

Average earnings: Of those who are employed in the first, second, and third quarters after the exit quarter, total earnings in the second and third quarters after the exit quarter divided by the number of participants who exit during the quarter; a common measure

Common measures: Performance measures used to evaluate program effectiveness; includes the entered employment rate (EER), retention, and average earnings

Direct effect: Changes in economic activity due to the first round of spending by the WIB and its employees

Entered employment rate (EER): Of those who are unemployed at the date of participation, the number of participants who are employed in the first quarter after the exit quarter divided by the number of participants who exit during the quarter; a common measure

Multiplier: Factor of change that occurs in a region's industries as a result of economic activity in another industry

Income: Sum of labor income (i.e., wages and salaries) and non-labor income (i.e., profits, rents, and other)

Indirect effect: Additional jobs and income created in the economy as the businesses patronized by the WIB spend money in the region to purchase even more supplies and services

Retention rate: Of those who are employed in the first quarter after the exit quarter, the number of participants who are employed in both the second and third quarters after the exit quarter divided by the number of participants who exit during the quarter; a common measure

SOC: Standard Occupational Classification

Youth: Program offered under the Workforce Investment Act serving eligible low income youth, ages 14 to 21 (14 to 24 under ARRA), who face barriers to employment