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Net Impact Evaluation of Michigan's JET (Jobs, Education, and Training) Program

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Final Report

Submitted to the Joyce Foundation

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Net Impact Evaluation of Michigan's JET (Jobs, Education, and Training) Program

I. INTRODUCTION

The purpose of this study is to estimate the net impact of Michigan's JET (Jobs, Education, and Training) program. JET marks a change in the way the State of Michigan provides services to increase the economic opportunities of its low-income residents. In 2004, directors of the Department of Human Services (DHS) and the Department of Labor and Economic Growth (DLEG) created the Workforce Action Network (WAN), a group representing workforce development professionals, educators, advocacy organizations, human services agencies, and state and local government staff. The directors charged WAN with developing a set of comprehensive recommendations to strengthen the state's Work First Program, which for nearly a decade was the state's program to assist welfare recipients to find work. More specifically, they asked WAN to design a workforce development program that connects Michigan's families with the kinds of jobs, education and training opportunities that will help them obtain and retain employment to achieve self sufficiency.

JET Program

WAN set forth the following components that differentiate JET from its predecessor Work First Program:

- Joint planning and service delivery coordination
- Comprehensive intake process and orientation
- Family automated screening tool (FAST)
- Family self-sufficiency plan (FSSP)
- Family, employment and training service delivery
- Post-employment services and support
- New and creative ways for making "Work Pay" and for increasing the financial stability of the family including extended FIP benefits and short-term family support
- Enhanced good cause determination and sanction process.

Unlike under Work First, JET participants:

- Do not have to test the labor market prior to placement into activities
- Utilize more rigorous assessments and shared electronic screening tools
- Receive expanded education and training opportunities
- Have access to follow-up and supportive services for 180 days
- Are eligible to receive cash assistance for six months after finding employment
- Face stricter penalties for non-compliance
- Have an option for Short Term Family Support that provides a one-time lump sum payment equal to three months instead of opening an ongoing FIP case.

JET includes all TANF Core and non-Core work activities. Core activities count toward the first 20 hours of participation requirements and non-core activities count only after the initial 20 hours have been completed. Core activities include:

- Unsubsidized employment
- Subsidized work experience
- On-the-job training
- Job search and job readiness
- Community service
- Vocational/educational training
- Allowable child care activity.

Non-core activities include:

- Job skills/educational training
- Secondary education.

JET participants also have access to support services, which help remove barriers to employment. These include services auto purchases, auto-related expenses, public transportation for work-related activities, relocation costs and clothing.

The JET program is funded by TANF and through the State General Fund. DLEG distributes funding by formula to Michigan's Workforce Development Boards for administration by the Michigan Workforce Areas (MWAs).

Implementation

Four MWAs were chosen to pilot the program: Kent County, Oakland County-Madison Heights District, Sanilac County, and Wayne County-Glendale/Trumbull District. The four pilots were initiated in April 2006. By November 2006, 20 additional pilot sites were started, and by October 1, 2007, JET was implemented statewide.

This evaluation considers only the net impact of the JET program implemented at the first four pilot sites. Furthermore, the time frame for the evaluation spans only a few months, between June 1, 2006 and October 31, 2006. We tracked participants who attended orientation after June 1, 2006 and who exited the program before October 31, 2007. The time span for the evaluation is shorter than originally intended because of the accelerated implementation of additional pilot sites. As discussed in more detail, a net impact analysis requires the construction of a credible comparison group of individuals who do not receive JET services. The rapid expansion of JET in November 2006 eliminated many viable options for comparison groups.

Goals

At the outset, JET established the following goals for the program, which they expected to achieve a year and a half after the first four pilots were initiated. These goals included:

- Short-term family support will be provided to 10 percent of applicants, reducing the total active cases by 20 percent after 18 months
- Thirty-four percent of the cases will be closed or reduced after 18 months
- Seventy-five percent of the cases that close will not return to the Family Independence Program (FIP) for one year after case closure
- Ten percent of the participants will raise reading and math skills to the eighth grade level or above, will obtain a high school diploma, or obtain a General Educational Development (GED) certificate
- Fifty percent of those participants obtaining employment will show at least a 20 percent gain in wages compared to their starting employment wage
- By 2008 the State expects to see an increase in earnings for at least 20 percent of participants such that their incomes will be at 150 percent of poverty or higher.

II. EVALUATION

To help the State of Michigan staff better implement the program and to better understand the effectiveness of the program, the Joyce Foundation funded an evaluation of the early phase of JET. The evaluation is comprised of two parts. The first is an implementation evaluation. Its purpose is to document the planning, execution, and evolution of the pilots to identify systemic change, identify barriers to implementation, understand resource streams and needs, ascertain the quality of integration of services, and monitor client employer, and key stakeholder satisfaction/experience with the pilot project. This evaluation is conducted by Dr. Sandra Danziger and is separate from the net impact evaluation.

The second component is the net impact evaluation, which focuses on the contribution of the JET program to the economic outcomes of JET participates. Three outcomes are considered: newly acquired employment after exiting the program, job retention, and earnings levels and gains. Net impact estimates compare the outcomes of JET participants with similar individuals who have not participated in JET programs. The difference in outcomes between the two groups provides an estimate of the contribution of JET to the outcomes of the individuals who participated in the program. This approach sorts out the contribution of the program from the contribution of non-program factors. Without following appropriate evaluation methodologies, the success of a program may be confused with factors not associated with the program, such as the innate abilities of participants in the program, favorable or unfavorable economic conditions, and the effect of other services. Constructing the proper counterfactual is a critical component of net impact analysis.

Methodology

Net impact evaluations seek to estimate the *average effect of a treatment on the treated* (ATT). That is, a net impact of the JET program is the effect of JET on JET participants (the treated) had they not participated in the JET program. Obviously, it is not possible to directly observe net impacts, since it is impossible to observe the outcomes of the same person receiving JET services and not receiving JET services during the same given time period. We do, however, observe gross outcomes, such as a person's employment status or earnings. Therefore, we need to construct a comparison group in which we find individuals who are not in the JET program but who are similar to those in the program. The difference in the gross outcomes of individuals in these two groups is the net outcome of those in the JET program. Consequently, constructing the appropriate comparison group is a critical component in conducting a net impact analysis.

Gross outcomes—such as employment or earnings—are the result of many factors. To evaluate the JET program, we need to isolate the effect of the program from all other factors that may influence employment and earnings outcomes. In addition to the possible effects of the components of the program, a participant's outcome may also be influenced by the person's level of human capital (education, skills obtained from prior employment, innate abilities) prior to entering the program, which cannot be attributed to the program under evaluation. In addition, a person's motivation, experience in writing resumes and searching for jobs, interviewing skills, the social and professional network through which information about job openings is obtained, and the local labor market conditions all influence the ability to find and retain employment. In addition, design effects, which are artifacts of the evaluation process and design, may also affect the outcome of employment. These effects can include such factors as errors in measurement, sampling variations, and competence in data collection. They may also include biases introduced by simply participating in a program in which certain expectations have been publicly stated, which may change the way participants and staff would normally behave.

Net outcomes are those outcomes that can be attributed only to the intervention, such as the unique services offered by the JET program, purged of the effects from all extraneous factors and design effects. The following two equations show the relationship between gross outcomes and net outcomes.

Gross outcome = Net outcome + extraneous effects + design effects. (eq. 1)

Or conversely,

Net outcome = Gross outcome – extraneous effects – design effects. (eq. 2)

Obviously, net outcomes are equal to gross outcomes if there are no extraneous or design effects. So, the task of net impact evaluations is to find ways to subtract the extraneous effects and design effects from the gross outcomes. It may be possible to identify, observe, and measure some extraneous factors, such as a person's schooling or

prior work history, but many factors that can affect gross outcomes are not observable and thus cannot be easily purged from gross outcome measures. The primary way of purging gross outcomes of extraneous factors and design effects is first to find a group of individuals who are not participating in the program but are as close as possible in characteristics and motivation as those participating in the program. Then subtracting the outcome of the group of non-participants from the same outcome of the group of participants yields the net impact estimate, since all the other factors inherent to the individual and the program design have been differenced away.

Several methodologies are typically employed to construct the comparison groups. These include randomized assignment design, in which individuals are randomly assigned to the treatment group (program participants) and the comparison group (non-participants); matched constructed comparison groups in which non-participants are selected according to observed characteristics that closely match those in the treatment group; regression-adjusted comparisons between program participant and non-participant groups, and difference-in-differences techniques.[1]

Random assignment to treatment and control groups is considered the "gold standard" of net impact evaluation. Individuals who would otherwise have received the treatment are randomly excluded from receiving it. If each group is of sufficient size (and no design effects have biased behavior among the two groups), then observable and unobservable characteristics of the treatment and control groups should not differ on average. Differences in outcomes between the two groups are attributed to the treatment, and program impacts can be measured as the simple difference between the means of the outcomes of the two groups.[2]

Unfortunately, the selection of the JET pilot sites and the assignment of participants to the sites precluded us from using this methodology. For this methodology to have been pursued, the pilot sites would have had to randomly select from their pool of applicants those who would receive the JET services and those who would not. Instead, all eligible individuals from a geographical area covered by each MWA that piloted JET were referred to the JET program.

We turned instead to accepted non-experimental evaluation approaches to estimate net impacts. Rather than randomly assigning individuals to a treatment and control group, non-experimental methods use other means to construct a comparison

[1] Some of the evaluation literature has adopted the convention of reserving the term "control" group for classical random assignment experiments and "comparison" groups for other non-experimental methodologies. For the most part, I use the term control group to describe the counterfactual for all methodologies but may substitute comparison group at times.

[2] It is important to distinguish between randomization and random sampling. Randomization, or random assignment, means taking a set of individuals and assigning each to a treatment or control group by means of some randomizing procedure. Random sampling means selecting individuals in an unbiased way to form a representative sample from a population. Most random assignment experiments have not attempted to form a representative group for the entire population of a country, because of the prohibitive expense of doing so. Rather, they have focused on specific regions within a country, and have perhaps included samples from four or five regions.

group. A commonly used approach is propensity score matching, which assigns participants into the two groups based on observable characteristics. Another approach is difference-in-differences in which the same or similar individuals in both the treatment and the control groups are observed before and after the intervention. Both approaches are typically adjusted for additional differences in characteristics among the treatment and control groups by using statistical techniques. These three approaches are used in this analysis.

Propensity Score Matching

Propensity score matching constructs a comparison group by matching the characteristics of individuals who are not receiving services with those who are. Individuals differ on many dimensions and even the richest data sets will fall short of capturing all salient features that could influence the outcomes of the participants and non-participants, and thus bias the net impact estimates. At the same time, even though a large number of observable characteristics (denoted by Xs) to match treated with non-treated individuals is desirable, finding the closest match on all Xs becomes problematic when the number of characteristics becomes large. To mitigate this problem, the propensity score matching technique matches participants and non-participants on a scalar rather than a vector of attributes. The scalar is the estimated probability of participation in the program, referred to as P(X), where P is the propensity of participating in the program and X are the factors that influence that propensity. The advantage of matching on P(X) rather than X is that P(X) is a scalar and matching on one dimension is much more efficient than matching on multiple dimensions. Therefore, much effort is made to understand and model the selection process. The better the model can mimic the process by which participants are actually screened for eligibility and selected into the program the better it can select individuals who would have be eligible and selected but were not because of some reason unrelated to the selection process and presumably the outcome. Since location was a dominant factor in selection into the Pilot groups, we divide the evaluation into three locations: Wayne County, Oakland County, and the other two counties along with bordering counties as the pool of non-participants. Since only one office in Wayne County and in Oakland County is a JET Pilot site, we use the remainder of each respective county to draw the comparison groups.

Figure 1: Diagram of Propensity Score Matching Process

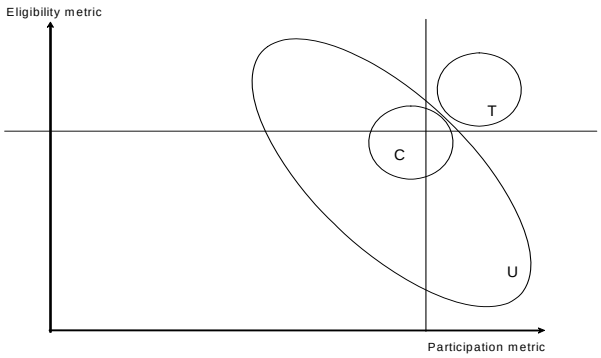


Figure 1 illustrates the general matching process. It includes two dimensions of the selection process: eligibility and participation. Moving out along each axis from the origin indicates a higher value of the metric describing either eligibility or participation. The vertical axis in the figure suggests that there are eligibility conditions to meet in order to gain access to the treatment. Individuals may be more or less eligible depending on their employment situation or their location or other characteristics such as age or family income. The x-axis measures the likelihood of participation. Individuals who are "highly" eligible (observations that would be arrayed near the top of the graph) may or may not participate. On the other hand, individuals who are not eligible (near the bottom of the graph) may or may not have the desire to participate. *T* represents the group with treatment observations, and *U* represents the pool of non-participants from which the comparison set of observations may be chosen.

The objective of matching is to find a set *C* (comparison group) comprised of the observations in *U* that are most "like" the individuals comprising *T* (treatment group). Fortunately, there is substantial overlap in the variables that are in most of the data sets, such as age, race/ethnicity, education at program entry, disability status, gender, region of state, veteran status, and prior employment and earnings history. There is a substantial and growing literature on how to sample individuals to construct the comparison sample.

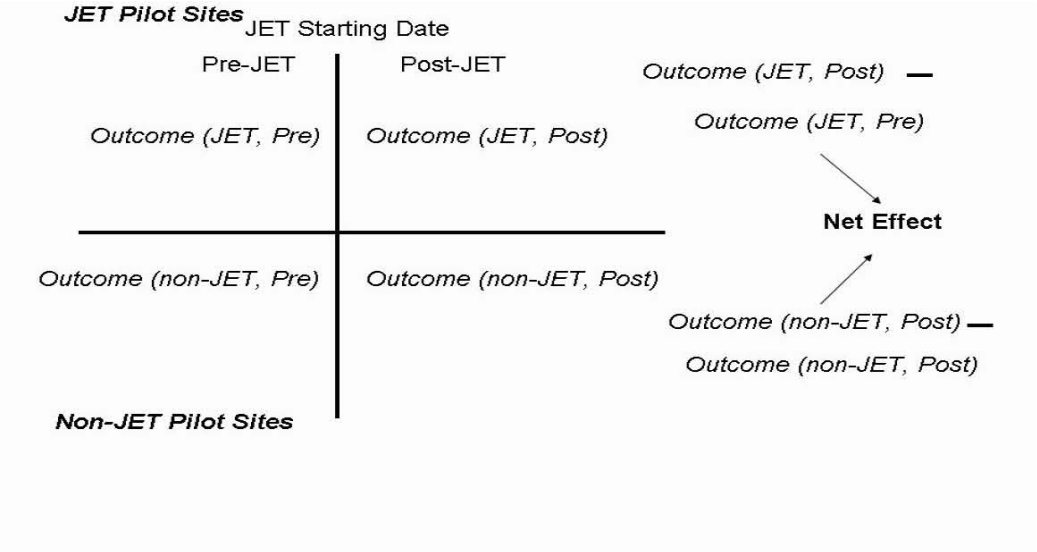
Several methods are commonly used to find the closest matches. We find that the "nearest neighbor" approach selects a group of individuals with observable characteristics that are closest to those of the treatment group. This approach selects for each individual in the treatment group an individual from the pool of potential comparison participants that has a propensity score closest to that individual. Once selected the outcomes of those in the treatment group are compared with the outcomes of those in the control group by a simple difference in means. However, net impact estimates based on propensity score matching are typically sensitive to the selection of variables used to describe the selection process. Therefore, it is general practice to adjust the estimates by controlling for further differences in the characteristics of the two groups through statistical means.

Difference-in-Differences

Another approach is referred to as difference-in-differences. Unlike propensity score matching in which a rich data set of observed attributes is required, difference-in-differences requires less information about individuals in the treatment and control groups. This approach builds on a model that divides the unobservables in the outcome equation into two components. One component is time-invariant, or a fixed effect, and the other varies over time. The motivating assumption is that participation in the program depends upon the fixed effect and not on the transitory component. The usual story, as conveyed by Smith (2000, p.10), is that participants are more able or more motivated than non-participants, or vice versa, and that these differences in ability or motivation affect their outcomes in every period. Because the fixed effect does not vary over time, it can be differenced out.

To estimate net impacts using difference-in-differences, outcome data of participants and non-participants are needed before and after the intervention. The estimator consists of the difference in the outcome before and after the intervention, one difference for the participants and another difference for the non-participants. The net impact is measured as the difference between the two differences in outcomes between the two groups. This approached is illustrated in figure 2.

Figure 2 Net Impact Analysis Framework Difference-in-Differences



If the same individual is observed before and after the start of the program, then taking the difference in outcomes before and after the intervention would net out observed and unobserved factors that could affect the outcome so long as those factors did not change over time. Since factors, such as labor market conditions, may change over time, taking the difference of the outcomes before and after the intervention of those not affected by the intervention and then differencing the first difference (of the treatment group) and the second difference of the comparison group would leave the net effect of the program. Since we do not observe the same individual before and after the pilot sites were implemented and other factors could influence the outcomes, the difference-in-differences approach has been extended by using a regression analysis to include explanatory variables that help to represent the selection process and intervening factors.

Regression-adjusted Methods

The two methods described above often use regression analysis to adjust their estimates for differences in characteristics of the treatment and comparison groups. Evaluations based on propensity scoring will use ordinary least squares (OLS) regression as a benchmark by which to measure the robustness of the results. Referring to figure 1, the purpose of propensity scoring is to reduce the universe of people who are candidates for a comparison group to a set of individuals who are statistically similar to those in the treatment group. Another approach is to use the entire universe but adjust it for

characteristics by using OLS regression. The obvious difference in the two approaches is that the universe of possible candidates may include individuals who are far different in characteristics from those in the treatment group. This is likely to introduce a significant bias in the estimates. However, adjusting for the characteristics by including a regression with variables describing such characteristics may reduce the bias. An advantage is that the comparison group is larger in size sample and thus offers more precision in the estimated coefficients.

Evaluations based on difference-in-differences techniques also adjust for observable characteristics. The difference-in-differences framework is embedded in a regression equation that includes binary variables indicating the treatment group (treatment), the time period before the intervention (before), the time period after the intervention (after), a list of variables reflecting the characteristics of individuals in both the treatment and comparison groups (X), and an error term (ε):

$$Y = \alpha + \beta_1(\text{treatment}) + \beta_2(\text{after}) + \beta_3(\text{treatment*after}) + \gamma(X) + \varepsilon, \quad \text{(eq. 3)}$$

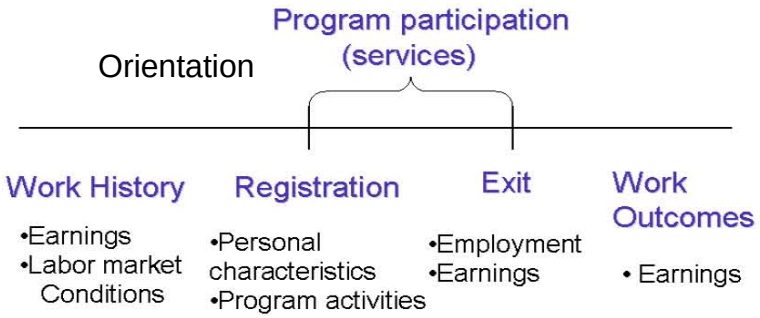
where Y is the outcome, and (treatment*after) is the interaction between the two binary variables. The difference-in-differences effect is estimated by β_3. If the Xs were not included in the equation, the results would be the same as if one performed the simple difference-in-differences operation. By including the Xs, the equation embodies the difference-in-differences approach while accounting for different personal characteristics and perhaps local labor market conditions, if included.

III. OUTCOME MEASURES

This evaluation focuses on employment outcomes of JET participants. Specifically, the gross employment outcomes are selected to capture various steps taken by an individual to become more closely attached to the workforce and to gain economic self-sufficiency. The steps include obtaining a job, retaining a job, improving earnings, and maintaining earnings levels. The variables are defined with respect to an individual's participation in the JET program (for JET participants) and neighboring Work First programs (for members of the comparison groups).

Figure 3 displays a stylized time line followed typically followed by program participants. Prior to being referred to JET or a Work First program, an individual has a history of work, which may include episodes of no work. We record the earnings and thus the employment of individuals during the quarter before they register for a program. During their participation in the program, we record the services received and the length of time they receive the services. After exit we record whether or not participants were employed at the time of exit, and then we record their employment in three subsequent quarters after exit.

Figure 3: Time Line of Work History and Services



Employment Gain

Two variables are used to measure the gain in employment. The first variable, referred to as "newly acquired employment," is obtained from DHS administrative records and indicates unsubsidized employment (activity code=1) at the time a person exits the program. The second variable, "employment gain," is derived from UI wage records, which records the quarterly earnings of individuals employed in jobs covered by the Unemployment Insurance system, which includes nearly all workers. The variable "employment gain" takes on a value of 1 if an individual who did not have recorded earnings in the quarter before they registered for the program had recorded earnings the quarter after exiting from the program.[3] Otherwise, the indicator variable takes a value of zero. The two variables differ and their correlation is 0.075. The difference between the two variables is that the first, obtained from administrative records, records employment status in the quarter the individual exits the program. The second, from UI wage records, records employment the next quarter. Therefore, an individual may have been employed when exiting but may not have a job the following quarter. In addition, an individual's employment prior to registering may also differ for similar reasons. A person may be employed the quarter before registering but not the quarter of registration. However, both are used to capture the event of obtaining a job after participating in JET or Work First programs (see appendix for more details).

Job Retention

Job retention is measured as two consecutive quarters of positive earnings starting the quarter after exiting the program. The indicator variable takes on a value of one if a participant was employed the first and second quarter after exit and 0 otherwise.

[3] For the UI wage records, a person is considered employed in a quarter if they have any earnings that quarter. This is the definition used by the U.S. Department of Labor, ETA in defining employment for the employment measures used to record the performance of the WIA workforce programs.

Earnings Gain

Earnings gain is measured as the change in earnings from the quarter before registration to the third quarter after exiting the program. If the gain is greater than 20 percent, then the indicator variable takes on a value of 1, zero otherwise. A gain of 20 percent is used because it reflects one of the goals specified at the outset of the JET program. In addition to the earnings gain, the earnings during the first, second, and third quarters after exit are also examined.

IV. ORGANIZATION OF THE DATA

The data are divided into two groups and two time periods. Participants in the four JET sites during the phase I JET period are the JET participants (treatments). Individuals in the comparison groups are drawn from Work First Program in surrounding MWAs.

- For Glendale/Trumbull in Wayne County, Work First participants in MWAs in the rest of Wayne County comprise the pool of potential comparison group individuals.
- For Madison Heights in Oakland County, Work First participants in the remainder of Oakland County comprise the potential pool for selection into the comparison group.
- The Kent County and Sanilac County Pilot sites are considered together, and their potential pool of individuals for the comparison group is drawn from Work First participants in Kalamazoo, Huron, Lapeer and Tuscola Counties.

As mentioned previously, JET participants in the treatment group include those participants in the four pilot sites who attended orientation on or after June 1, 2006 and exited from the program before October 31, 2006 (Post-JET Period). For the difference-in-difference net impact estimates, these JET participants are compared with non-JET participants from the same counties who exited before June 1, 2006 (Pre-Jet Period).

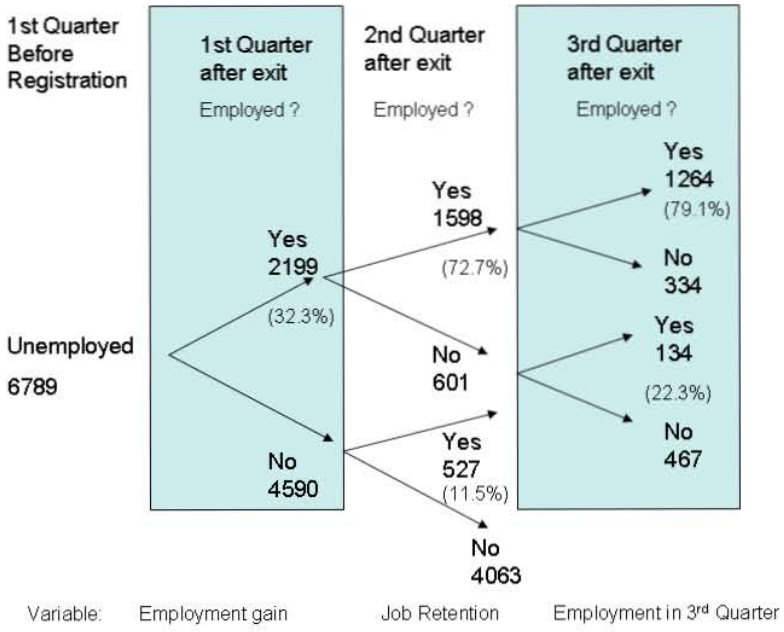
V. OUTCOMES

As previously mentioned, the gross outcomes capture various steps toward better attachment to the workforce and economic self-sufficiency. The transition path displayed in figure 4 shows the various employment paths that an individual can take after exiting the program. We relate three of the outcome variables to the various phases of the transition path.

The path begins with a person who is unemployed in the quarter prior to registering for the JET program or Work First program. The person has two options after exiting the program: they can find a job or remain unemployed during that quarter. With respect to the outcome variables used in this study, “employment gain” captures the event that a previously unemployed person secures a job during the first quarter after exit. We see from the transition path that of the 6,789 individuals in our sample (both from the

JET sites and non-JET sites after June 1, 2006), 2,199 found employment the first quarter after exit. More than double that number (4,590) did not find a job that quarter. Moving to the next quarter, of those 2,199 individuals who held a job during the first quarter, 1,598 (or 72.2 percent) held a job the second quarter. For those 4,590 individuals who did not hold a job the first quarter, only 11.5% found employment the second quarter. The "job retention" variable records whether or not an individual is employed in both the first and second quarters after exit. It is obvious from the transition path that holding a job greatly improves the likelihood that a person will hold a job in subsequent periods. Conversely, individuals without jobs have a much harder time finding a job in subsequent quarters.

Figure 4 Paths of Employment Transition for all Participants who were Unemployed The First Quarter before Registration



The gross employment outcomes of JET participants and non-Jet participants are displayed in the following figures. The outcomes of the JET participants for each of the three areas are first displayed in figures 5 and 6. Outcomes vary by area. The Kent and Sanilac County Pilot sites, shown together as "Rest" display the highest rates of employment for all measures. The Glendale/Trumbull Pilot site in Wayne County exhibits the lowest employment rates, except for "newly acquired employment," the first measure. It is also interesting to note that employment rates for each of the three quarters after exit are nearly the same for each quarter for each site, although they differ across sites. Job retention—employed both of the first two quarters after exit—is about 10 percentage points lower than employment rates for each quarter separately.

Whereas Kent and Sanilac JET (Rest) sites had the highest employment rates, they did not exhibit the highest earnings levels for each of the three quarters after exit.

Rather, the Madison Heights site in Oakland County exhibited the highest earnings levels with the "rest" closely following the levels in Wayne County.

Figure 5

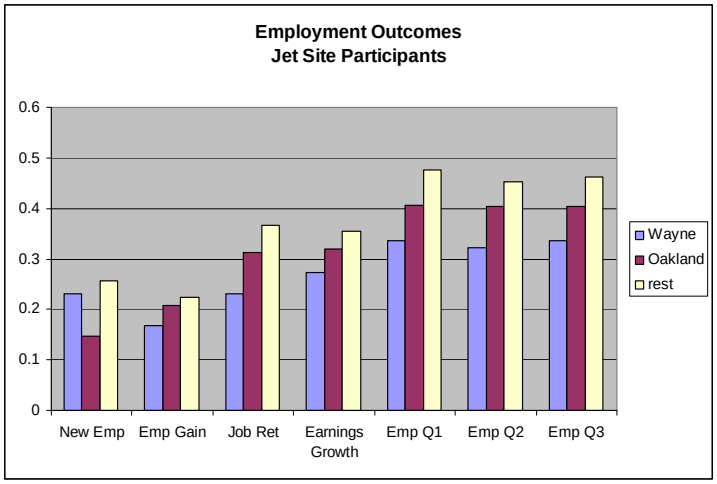
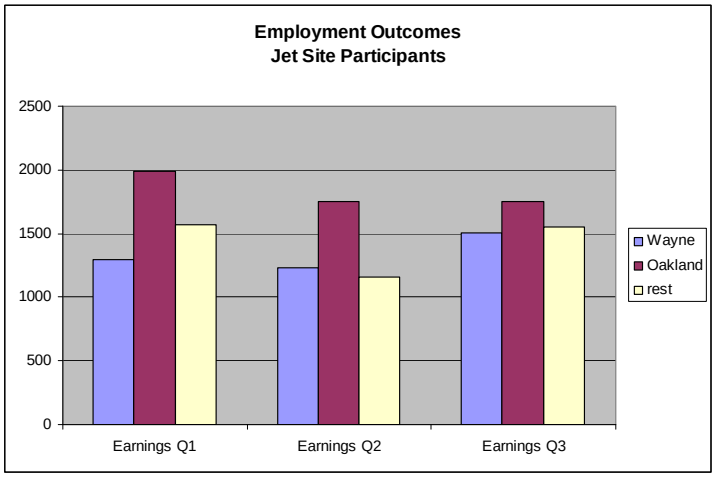


Figure 6



Figures 7-12 display gross employment outcomes of the JET site participants along side those of the non-JET participants. This is the same comparison group that is used in the difference-in-differences analysis. For the propensity score estimates, this comparison group will be reduced to those individuals who are closest in propensity scores to the treatment group. It is apparent from the figures that the employment outcomes of the JET site participants in Wayne County are considerably lower than those in the comparison group. For the other pilot sites, the employment outcomes of the JET site participants are slightly higher than the non-JET participants for about half the outcome measures. Earnings of JET site participants are for the most part higher than those of the non-JET participants. We will determine in the next section whether these differences are statistically significant using the several methods discussed earlier.

Figure 7

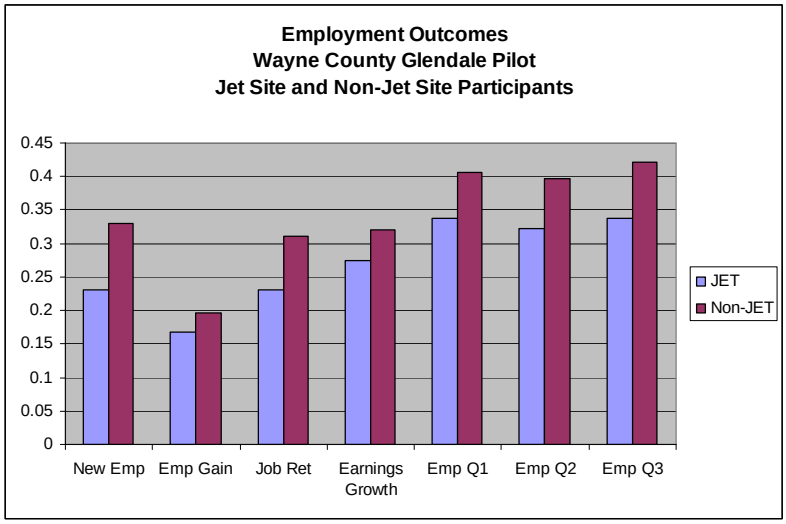


Figure 8

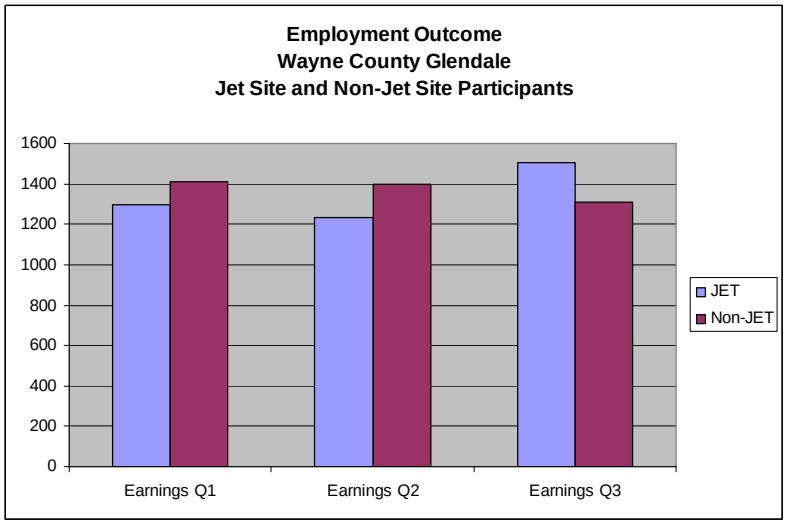


Figure 9

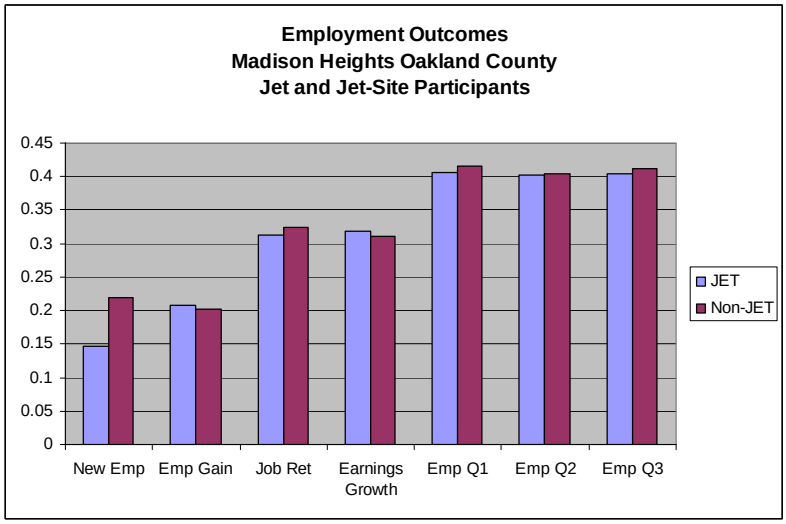


Figure 10

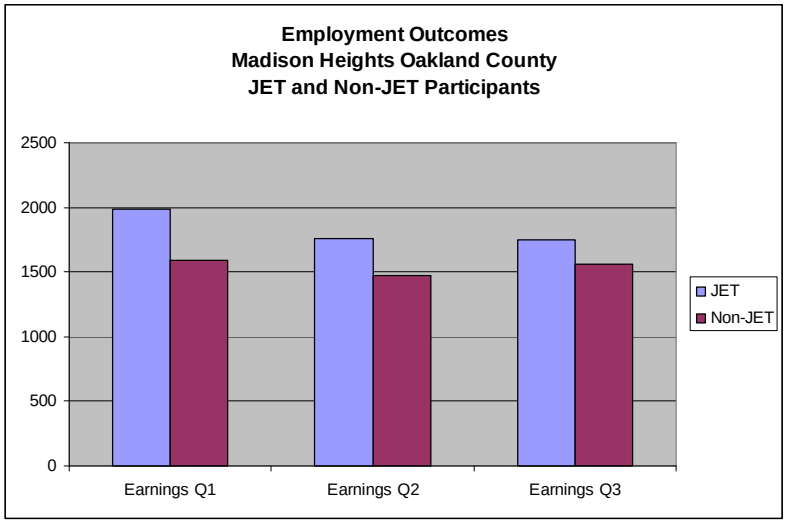


Figure 11

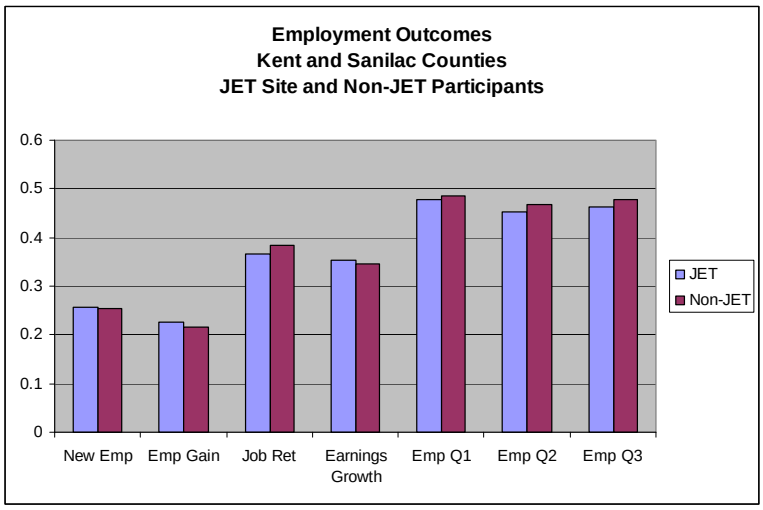
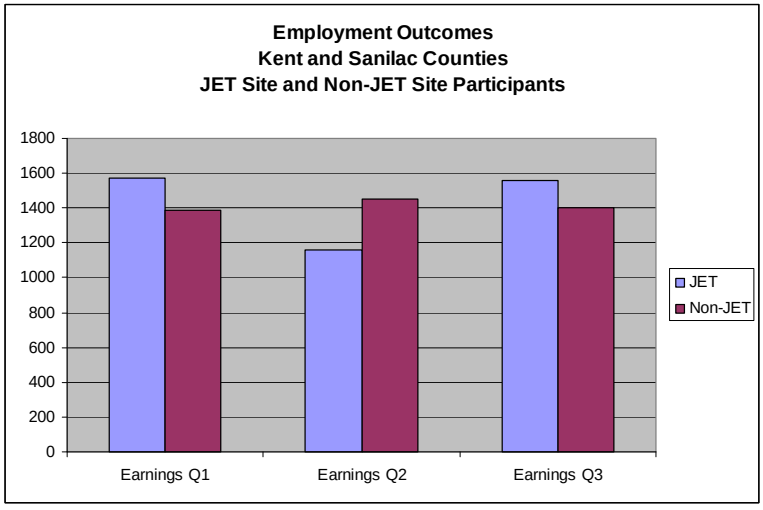


Figure 12



Various personal characteristics are related to the probability that a person will find a job and to their level of earnings once they have found work. To gain perspective on the relationship between personal characteristics on employment and earnings, we regressed the attributes recorded in the DHS management information system on the gross employment outcomes. The results are displayed in table 1. The results show that several variables significant affect employment and earnings. Considering the employment gain variables (columns 1-2), we see that age, ethnicity, health status, and

education are important factors in gaining employment.[4] Older workers have a more difficult time than younger workers finding a job and blacks are less likely to find work if they did not work before registered (column 2). Those with poor health and without a high school diploma are less likely to find work.

Job retention (column 3) and continued employment (columns 4-6) are influenced by similar factors. African Americans are less likely to retain employment and poor health and lack of a high school education are barriers to job retention. Women, on the other hand, exhibit greater success in retaining employment.

Earnings levels are influenced by the same factors, except that older workers, once employed, command higher earnings than younger workers. Women earn less than men, and African Americans earn less than whites. Health and education are impediments to earnings, as well.[5]

The importance of accounting for differences in personal characteristics between members of the treatment group and members of the comparison group is obvious from the results in table 1. If these factors are not taken into consideration and one group has a greater predominance of one factor than another, estimates of the net impact of the JET program could be biased.

[4] Estimates for column 1 and 2 are based on individuals who were not employed the quarter prior to registration.

[5] The earnings equations (columns 8-10) include only those who were employed in the respective quarter.

Table 1 The Effect of Personal Characteristics on Employment Outcomes

	(1) New employment	(2) Employment gain	(3) Job Retention
age	-0.00234***	-0.00312***	-0.000620
	(-3.46)	(-4.37)	(-1.11)
female	0.00937	-0.00134	0.0305*
	(0.54)	(-0.07)	(2.18)
black	0.0737***	-0.0688***	-0.0523***
	(5.46)	(-4.84)	(-4.80)
asian	-0.0763	-0.184	-0.105
	(-0.82)	(-1.88)	(-1.41)
Multirace	0.0309	-0.0359	-0.0329
	(0.96)	(-1.06)	(-1.24)
veteran	-0.00758	0.0409	-0.0426
	(-0.08)	(0.41)	(-0.57)
Health status	0.0162	-0.0741***	-0.0660***
	(0.99)	(-4.30)	(-4.97)
Transportation problem	-0.0178	0.0197	-0.00387
	(-1.37)	(1.44)	(-0.37)
High school dropout	-0.00970	-0.0931***	-0.0794***
	(-0.82)	(-7.43)	(-8.12)
Associate & accreditation	-0.0141	0.0356	0.0211
	(-0.57)	(1.37)	(1.08)
Bachelor degree	-0.0271	-0.00545	0.00563
	(-0.85)	(-0.16)	(0.23)
Earnings 1 qtr before registration			0.0000616***
			(20.82)
Constant	0.284***	0.517***	0.354***
	(9.46)	(16.33)	(14.50)
N	6231	6231	9990

Table 1 (cont'd)

	(4) Employment Q1	(5) Employment Q2	(6) Employment Q3
age	-0.00180**	-0.00175**	-0.00315***
	(-3.04)	(-2.98)	(-5.32)
female	0.0230	0.0325*	0.0308*
	(1.55)	(2.20)	(2.07)
black	-0.0406***	-0.0524***	-0.0302**
	(-3.52)	(-4.59)	(-2.62)
asian	-0.139	-0.106	-0.0729
	(-1.76)	(-1.35)	(-0.92)
Multirace	-0.0186	-0.0395	-0.00611
	(-0.66)	(-1.41)	(-0.22)
veteran	0.0843	-0.0111	0.0971
	(1.06)	(-0.14)	(1.22)
Health status	-0.0714***	-0.0470***	-0.0264
	(-5.08)	(-3.37)	(-1.88)
Transportation problem	-0.000303	-0.00464	-0.00517
	(-0.03)	(-0.42)	(-0.46)
High school dropout	-0.0763***	-0.0851***	-0.0798***
	(-7.38)	(-8.30)	(-7.71)
Associate & accreditation	0.0224	0.0286	0.0561**
	(1.08)	(1.40)	(2.72)
Bachelor degree	0.00158	0.00515	0.0405
	(0.06)	(0.20)	(1.57)
Earnings 1 qtr before registration	0.0000609***	0.0000657***	0.0000616***
	(19.44)	(21.16)	(19.65)
Constant	0.484***	0.468***	0.505***
	(18.71)	(18.27)	(19.54)
N	9990	9990	9990

Table 1 (cont'd)

	(7) Earnings gain	(8) Earnings Q1	(9) Earnings Q2	(10) Earnings Q3
age	-0.00212***	32.93***	36.46***	33.92***
	(-3.73)	(7.99)	(6.62)	(7.55)
female	-0.00309	-541.8***	-683.3***	-449.9***
	(-0.22)	(-5.42)	(-5.11)	(-4.06)
black	-0.0311**	-301.1***	-314.8**	-324.6***
	(-2.81)	(-4.00)	(-3.16)	(-3.92)
asian	-0.0930	67.31	-796.4	-1057.0
	(-1.23)	(0.11)	(-1.00)	(-1.65)
Multirace	-0.00152	-300.3	-489.0	-112.5
	(-0.06)	(-1.58)	(-1.90)	(-0.54)
veteran	0.0771	991.5*	403.5	276.1
	(1.01)	(2.04)	(0.56)	(0.52)
Health status	-0.0160	-285.4**	2.820	-148.5
	(-1.19)	(-2.89)	(0.02)	(-1.42)
Transportation problem	-0.00316	-64.21	-212.8*	-241.4**
	(-0.30)	(-0.85)	(-2.12)	(-2.94)
High school dropout	-0.0758***	-401.5***	-491.5***	-481.6***
	(-7.64)	(-5.68)	(-5.20)	(-6.22)
Associate & accreditation	0.0699***	421.7**	300.2	390.8**
	(3.53)	(3.27)	(1.77)	(2.84)
Bachelor degree	0.0605*	399.6*	400.9	531.8**
	(2.45)	(2.47)	(1.88)	(3.09)
Earnings 1 qtr before registration	-0.0000395***	0.276***	0.269***	0.308***
	(-13.14)	(15.57)	(11.75)	(15.94)
Constant	0.467***	1876.5***	2138.6***	2101.9***
	(18.85)	(10.87)	(9.19)	(11.00)
N	9990	4222	4099	4260

VI. JET PROGRAM ELEMENTS: THE INTERVENTION

The JET program includes various service components that set it apart from the Work First Program, in both scope and intensity. For the JET program to have a significant effect on its participants, relative to the participants of neighboring Work First Programs, several conditions must be met. First, the program components must have a statistically significant effect on the employment outcomes. Second, a sufficient number of participants need to receive the services, and third, the JET sites must provide more of the services that have a positive impact on participants than the non-JET sites.

We examine whether the first requirement is met by regressing employment outcomes on variables that indicate whether or not a participant received specific services. Seven services are included in the analysis. All are intended to have a positive influence on a participant's ability to find a job. Services include on-the-job training, work experience, community service, vocational education, job skill training, high school completion assistance, and triage. Triage may be considered a remedial service, however, since it includes those who have been out of compliance or have had other difficulties within the program. Since individuals receiving the service may have employment barriers, such as attitude and motivational issues, which are not reflected in personal characteristics, this variable may by negatively related to employment.[6]

Estimates, shown in table 2, include not only the service variables but also the personal characteristic variables as presented in table 1. Including personal characteristics helps to control for differences in participants' characteristics that may affect employment outcomes and which could bias the estimates of the service variables. With respect to employment, the first observation is the small number of services that has a positive and statistically significant effect on employment outcomes. For the employment gain variable (column 2), only high school graduation and GED assistance exhibits a positive and statistically significant coefficient. The community service program exhibits a negative and statistically significant coefficient with respect to both employment gain and job retention (columns 2 and 3), which suggests that spending time in this activity lowers the chance of finding and retaining a job. Triage, as expected, has a negative sign, which suggests that those receiving this service have employment barriers not captured by the personal characteristic variables. The credibility of this explanation is supported by the fact that it is negative across all employment outcomes.

With respect to earnings levels, triage again has a negative and statistically significant relationship with the earnings gain variable (column 7), more than likely for the reasons cited earlier. The only other coefficient that comes close to being statistically significant is on-the-job training, but one must ask why it affects only the earnings gain and not the earnings levels for the three quarters after exit.

[6] Other services may also be negatively related with employment outcomes, more because of the abilities of those referred to the services than the effect of the services. This possible adverse selection can bias the net impact estimates if a proper comparison group is not constructed.

Therefore, the estimates presented here provide little support for the first requirement, that is, the effect of services on employment outcomes.

Table 2 Effect of Services on Employment Outcomes

	(1) New employment	(2) Employment gain	(3) Job Retention
On-the-job Training	0.379	0.249	-0.195
	(1.49)	(0.92)	(-1.13)
Work Experience program	0.0619	0.0149	-0.0445
	(1.66)	(0.38)	(-1.43)
Community Service Program	0.118	-0.114	-0.148**
	(1.83)	(-1.66)	(-2.84)
Vocational Education Training	0.205***	0.0267	0.0207
	(6.74)	(0.83)	(0.86)
Job search Training	0.283***	0.0171	-0.0190
	(4.09)	(0.23)	(-0.35)
Education Related to Employment	0.00350	0.0111	-0.00285
	(0.07)	(0.20)	(-0.06)
High school Graduation And GED	0.0668	0.118**	0.0140
	(1.61)	(2.66)	(0.42)
Triage	0.0967***	-0.0860***	-0.113***
	(6.59)	(-5.52)	(-9.17)
Constant	0.254***	0.518***	0.368***
	(8.52)	(16.35)	(15.06)
N	6231	6231	9990

Table 2 (con't)

	(1) Employment Q1	(2) Employment Q2	(3) Employment Q3
On-the-job Training	0.118	-0.00352	0.297
	(0.65)	(-0.02)	(1.63)
Work Experience program	0.0112	-0.0217	0.00437
	(0.34)	(-0.66)	(0.13)
Community Service Program	-0.0930	-0.117*	-0.0804
	(-1.68)	(-2.14)	(-1.45)
Vocational Education Training	-0.00460	0.0427	0.0229
	(-0.18)	(1.69)	(0.90)
Job search Training	-0.0596	0.0351	0.0371
	(-1.03)	(0.61)	(0.64)
Education Related to Employment	-0.0255	-0.0239	-0.00205
	(-0.54)	(-0.51)	(-0.04)
High school Graduation And GED	0.0660	0.0378	0.00558
	(1.86)	(1.07)	(0.16)
Triage	-0.104***	-0.106***	-0.125***
	(-8.00)	(-8.24)	(-9.61)
Constant	0.495***	0.478***	0.516***
	(19.12)	(18.60)	(19.95)
N	9990	9990	9990

Table 2 (cont'd)

	(7) Earnings gain	(8) Earnings Q1	(9) Earnings Q2	(10) Earnings Q3
On-the-job Training	0.296	-1293.3	0.954	1.139
	(1.70)	(-1.24)	(0.00)	(0.00)
Work Experience program	0.0268	-652.5**	-495.3	-418.7
	(0.85)	(-2.90)	(-1.61)	(-1.69)
Community Service Program	-0.0490	-305.7	-912.3	-428.0
	(-0.92)	(-0.70)	(-1.56)	(-0.92)
Vocational Education Training	0.0246	-208.1	-371.3	-227.3
	(1.01)	(-1.23)	(-1.74)	(-1.28)
Job search Training	0.0551	-536.9	-592.5	-546.7
	(0.99)	(-1.29)	(-1.21)	(-1.34)
Education Related to Employment	0.00642	-533.7	-712.8	-140.1
	(0.14)	(-1.56)	(-1.55)	(-0.38)
High school Graduation And GED	0.0142	-172.1	-153.9	-254.6
	(0.42)	(-0.73)	(-0.47)	(-0.93)
Triage	-0.122***	-759.2***	-1154.9***	-1094.6***
	(-9.79)	(-7.77)	(-8.87)	(-10.13)
Constant	0.476***	2011.3***	2356.1***	2275.8***
	(19.18)	(11.70)	(10.17)	(11.99)
	9990	4222	4099	4260

The second and third requirements relate to the extent to which services are available to program participants and the difference in provision between the JET sites and the non-JET sites. Table 3 provides information on the proportion of participants receiving services at the JET and non-JET sites in the three areas delineated for the evaluation. The first result is the low incidence of service provision. For example, the DHS management information system records showed no one receiving on-the-job training in Wayne and Oakland Counties and only a handful of participants received OJT in the JET sites in Kent and Sanilac Counties. It could be the case that these services were provided but they were not recorded on the Department's database. The most widely used service is triage, with 21.5 percent receiving that service in the Glendale/Trumbull Pilot site in Wayne County and 28.8 percent receiving the service in the Pilot sites in Kent and Sanilac. However, the difference in the use of triage in the three areas is not statistically significant.

Therefore, the relatively few participants receiving services, many of which are intended to distinguish JET programs from Work First programs, and the little difference in the incidence of services between JET Pilot sites and non-JET sites, reduces the likelihood that the net impact analysis will detect a positive effect of the JET program on JET participants.

However, there is the possibility that JET provides advantages to its participants that are not reflected in the services that are provided. It could be the case that JET site staff provides better and more comprehensive assistance to participants outside of the services reflected in the eight service components. It is also possible that other services are provided that are not included in this list of seven. By including all possible effects of the JET program by designating the intervention by a categorical variable that indicates whether or not an individual participated in a JET Pilot can capture these other factors. To account for such a possibility, the net impact analysis will include an analysis of the effect of the Pilots after controlling for the effects of the seven services.

Table 3 Provision of Services by Sites

JET Sites and Comparison Sites	Wayne County			Oakland County			Kent and Sanilac		
Total Sample /matched	JET	Non-JET		JET	Non-JET		JET	Non-JET	
Service Incidence									
On-the-job training	0.000	0.000		0.000	0.000		0.009	0.000	*
Work experience program	0.005	0.015		0.008	0.000		0.037	0.124	*
Community service program	0.007	0.002		0.010	0.034	*	0.009	0.015	
Vocational educational training	0.022	0.039		0.019	0.034		0.040	0.077	*
Job skills training	0.002	0.007		0.000	0.000		0.031	0.015	
Education related to employment	0.014	0.010		0.000	0.010		0.028	0.025	
High school graduate and GED	0.065	0.007	*	0.000	0.005		0.133	0.015	*
Triage	0.215	0.196		0.116	0.116		0.288	0.245	
observations	414	414		207	207		323	323	

Note: (*) denotes that the difference between the JET and non-JET sites are statistically significant.

VII. NET IMPACT ESTIMATES

Two approaches are pursued to estimate the net impact of the four pilot sites included in Phase I of JET implementation. The first is difference-in-differences; the second is propensity score matching. Results of both approaches are presented as unadjusted and adjusted estimates.

Difference-in-differences

The difference-in-differences results are presented for each of the four pilot sites in tables 1-3. The unadjusted results are presented in the same format as displayed in figure 2. The four quadrants are represented in the tables as four cells, with the upper left cell the JET-site, pre-JET outcome, the upper right the JET-site, post-JET outcome, the lower left, the non-JET-site, pre-JET outcome and the lower right the non-JET-site, post-JET outcome. Differencing the top two (post-JET minus pre-JET outcome values) yields the before-and-after difference in outcomes for the JET-site participants. Doing the same for the lower two numbers yields the before-and-after difference in outcomes for the non-JET-site participants. Differencing the two differences yields the net impact, or difference-in-difference results.

Using newly acquired employment for the Glendale site as an example, we see that the post-JET, JET-site rate is 0.231 (23.1 percent of the treatment group experienced newly acquired employment, as defined by activity code 1). Prior to JET, participants in the same sites experienced a 0.251 rate of newly acquired employment. The difference between the two rates is -0.020, which indicates that the rate of newly acquired employment fell between the two time periods. This result alone does not necessarily suggest that JET had a negative impact on employment rate of participants. It could be the case that factors outside of the JET program influenced the drop in employment rate among participants. We net out those factors by taking the same difference for non-JET participants, assuming that factors affecting non-JET participants in the same area also affect JET participants. Following the same procedure for the non-JET sites, we find that the pre-JET rate is 0.203 and the post-Jet rate is 0.330. Differencing the two differences yields 0.127. The difference between the two differences is then -0.147, which has a t-statistic of -4.13 indicating that the difference is highly statistically significant. Thus, the impact of JET, according to the difference-in-differences estimate, is to reduce the rate of newly acquired employment among those in the treatment group (JET-site participants in the post-JET period).

Adjusted difference-in-differences estimates

It may also be the case that individuals in the treatment and comparison groups are not that similar so the estimates may be biased by factors related to the ability of participants to find and retain jobs, which are not associated with the services offered through the JET program. As described previously, we adjust for demographic factors by including participants' characteristics that are included in the DHS management information system. These characteristics include age, gender, race, employment

barriers, education, and earnings prior to registering for the program (which is derived from the UI wage records). Each outcome measure is regressed against these characteristics and categorical variables indicating the post-JET period and JET-site participants, as modeled in equation 3. In addition, as another set of estimates, we include categorical variables indicating the services that each participant (both treatment and comparison group individuals) receives. If services significantly affect the outcomes, and the JET-site offers considerably more services, then the value of the difference-in-differences estimates should be reduced.

The last two columns of table 4 display the adjusted estimates for the two models. When demographic variables are entered, the results are not appreciably different from the unadjusted estimates (-0.147 v. -0.142) and both differences are statistically significant. The little difference between the two results suggests that to a large extent the difference-in-differences approach nets out the effects of demographic factors on acquired employment. Going down the second-to-last column in table 1 shows that this is true for most of the employment outcomes.

Adding the service variables to the demographic variables increases the difference-in-differences results, suggesting that services to JET participants mitigated the effect of other factors on outcomes.

Results (shown in table 4) for the Glendale/Trumbull Pilot site in Wayne County reveal few positive differences, and none of the positive results is statistically significant. Several differences are negative and statistically significant, such as newly acquired employment, job retention and the employment rate in the third quarter after exit. Adjusting the difference-in-differences estimates by including demographic variables and JET service variables leads to little change in the estimates. In some cases, the negative results derived from the unadjusted approach are no longer statistically significant. But none of the estimates turns positive and becomes statistically significant.

The Madison Heights Pilot site in Oakland displays similar results (table 5). None of the positive estimates is statistically significant, and all of the statistically significant estimates are negative. Adjusting the estimates does little to change the results. Pilot sites in Kent and Sanilac Counties display similar results (table 6).

Table 4 Glendale/Trumbull -Wayne County Difference-in-Differences Results

Glendale Pilot Site in Wayne County		Difference-in-Differences							
					Unadjusted			Adjusted	
Outcome Measures		Pre-JET	Post-JET	Difference	Difference-in-Differences	t-statistic		w/ Demo-graphics	w/ Demo and services
New Employment	JET sites	0.251	0.231	-0.02	-0.147	-4.13	D-in-D	-0.142	-0.158
	Non-JET Sites	0.203	0.33	0.127			t-statistic	-3.84	-4.29
Employment Gain	JET sites	0.127	0.168	0.041	0.006	0.18	D-in-D	-0.019	-0.016
	Non-JET Sites	0.162	0.197	0.035			t-statistic	-0.61	-0.5
Employment Retention	JET sites	0.255	0.231	-0.024	-0.066	-1.83	D-in-D	-0.045	-0.038
	Non-JET Sites	0.269	0.311	0.042			t-statistic	-1.23	-1.02
Earnings Growth	JET sites	0.277	0.274	-0.003	-0.048	-1.29	D-in-D	-0.054	-0.045
	Non-JET Sites	0.275	0.32	0.045			t-statistic	-1.43	-1.2
Employment rate Q1	JET sites	0.322	0.337	0.015	-0.044	-1.14	D-in-D	-0.03	-0.023
	Non-JET Sites	0.348	0.407	0.059			t-statistic	-0.76	-0.59
Employment rate Q2	JET sites	0.386	0.322	-0.064	-0.082	-2.1	D-in-D	-0.055	-0.048
	Non-JET Sites	0.379	0.397	0.018			t-statistic	-1.41	-1.23
Employment rate Q3	JET sites	0.382	0.337	-0.045	-0.095	-2.45	D-in-D	-0.071	-0.06
	Non-JET Sites	0.371	0.421	0.05			t-statistic	-1.79	-1.52
Earnings Q1	JET sites	1262	1299	37	-234	-0.83	D-in-D	115	201
(for those employed)	Non-JET Sites	1142	1413	271			t-statistic	0.38	0.67
Earnings Q2	JET sites	1080	1234	154	15	0.02	D-in-D	334	464
(for those employed)	Non-JET Sites	1258	1397	139			t-statistic	0.87	1.21
Earnings Q3	JET sites	0	1502	1502	193	0.48	D-in-D	456	547
(for those employed)	Non-JET Sites	0	1309	1309			t-statistic	1.18	1.42

Table 5 Madison Heights/Oakland County Difference-in-Differences Results

Madison Heights Pilot Site in Oakland County		Pre-JET	Post-JET	Difference	Difference-in-Differences (Unadjusted)	t-statistic (Unadjusted)		Adjusted w/ Demo-graphics	Adjusted w/ Demo and services
New Employment	JET sites	0.148	0.147	-0.001	-0.11	-2.91	D-in-D	-0.103	-0.099
	Non-JET Sites	0.11	0.219	0.109			t-statistic	-2.76	-2.68
Employment Gain	JET sites	0.138	0.208	0.07	0.01	0.24	D-in-D	0.012	0.014
	Non-JET Sites	0.142	0.202	0.06			t-statistic	0.31	0.38
Employment Retention	JET sites	0.262	0.312	0.05	-0.018	-0.41	D-in-D	-0.014	-0.009
	Non-JET Sites	0.257	0.325	0.068			t-statistic	-0.31	0.19
Earnings Growth	JET sites	0.286	0.319	0.033	0.015	0.35	D-in-D	0.02	0.019
	Non-JET Sites	0.292	0.31	0.018			t-statistic	0.44	0.42
Employment rate Q1	JET sites	0.328	0.406	0.078	0.023	0.48	D-in-D	0.025	0.029
	Non-JET Sites	0.361	0.416	0.055			t-statistic	0.54	0.63
Employment rate Q2	JET sites	0.352	0.403	0.051	0.03	0.63	D-in-D	0.033	0.037
	Non-JET Sites	0.383	0.404	0.021			t-statistic	0.7	0.79
Employment rate Q3	JET sites	0.395	0.405	0.01	-0.007	-0.14	D-in-D	-0.004	-0.004
	Non-JET Sites	0.394	0.411	0.017			t-statistic	-0.07	-0.09
Earnings Q1 (for those employed)	JET sites	1088	1991	903	388	1.05	D-in-D	-293	-299
	Non-JET Sites	1075	1590	515			t-statistic	-0.78	-0.79
Earnings Q2 (for those employed)	JET sites	875	1754	879	759	0.91	D-in-D	171	221
	Non-JET Sites	1353	1473	120			t-statistic	0.44	0.57
Earnings Q3 (for those employed)	JET sites	0	1753	1753	191	0.65	D-in-D	89	97
	Non-JET Sites	0	1562	1562			t-statistic	0.23	0.25

Table 6 Kent and Sanilac Counties Difference-in-Differences Results

Kent County and Sanilac County Pilot Sites		Difference-in-Differences							
					Unadjusted			Adjusted	
		Pre-JET	Post-JET	Difference	Difference-in-Differences	t-statistic		w/ Demo-graphics	w/ Demo and services
New Employment	JET sites	0.138	0.257	0.119	-0.01	-0.41	D-in-D	0.006	-0.002
	Non-JET Sites	0.124	0.253	0.129			t-statistic	0.24	-0.07
Employment Gain	JET sites	0.193	0.225	0.032	0.004	0.22	D-in-D	0.007	0.004
	Non-JET Sites	0.189	0.217	0.028			t-statistic	0.26	0.16
Employment Retention	JET sites	0.373	0.366	-0.007	-0.049	-1.6	D-in-D	-0.051	-0.045
	Non-JET Sites	0.342	0.384	0.042			t-statistic	-1.61	-1.41
Earnings Growth	JET sites	0.346	0.354	0.008	-0.025	0.82	D-in-D	-0.029	-0.024
	Non-JET Sites	0.314	0.347	0.033			t-statistic	-0.94	-0.77
		0.468	0.477	0.009	-0.053	-1.68		-0.04	-0.036
Employment rate Q1	JET sites	0.423	0.485	0.062			D-in-D	-1.23	-1.11
	Non-JET Sites						t-statistic		
		0.495	0.453	-0.042	-0.053	-1.69		-0.058	-0.055
Employment rate Q2	JET sites	0.457	0.468	0.011			D-in-D	-1.79	-1.69
	Non-JET Sites						t-statistic		
		0.476	0.463	-0.013	-0.06	-1.91		-0.058	-0.051
Employment rate Q3	JET sites	0.431	0.478	0.047			D-in-D	-1.78	-1.56
	Non-JET Sites						t-statistic		
		1113	1570	457	161	0.8		86.3	139.7
Earnings Q1	JET sites	1089	1385	296			D-in-D	0.49	0.79
(for those employed)	Non-JET Sites						t-statistic		
		1424	1163	-261	-527	-1.47		-130.3	-83.2
Earnings Q2	JET sites	1186	1452	266			D-in-D	-0.68	-0.43
(for those employed)	Non-JET Sites						t-statistic		
		0	1555	1555	155	0.61		-53.3	-8.86
Earnings Q3	JET sites	0	1400	1400			D-in-D	-0.26	-0.04
(for those employed)	Non-JET Sites						t-statistic		

Propensity Score Matching

The propensity score matching technique uses demographic variables from the administrative data base to estimate the likelihood of an individual participating in the JET program. We adopted the method without replacement, after finding that the method with replacement created comparison groups with a low number of distinct individuals and the without replace method created comparison groups with characteristics that were not statistically significantly different from the treatment groups. Estimates of the model for each of the three pilot site areas are displayed in table 7.

Table 7 Propensity Score Estimates for the Three Sites

Propensity Scores (Dependent variable JET site=1)	Wayne County		Oakland County		Kent and Sanilac	
	Coefficient	z-stat	Coefficient	z-stat	Coefficient	z-stat
Age	0.008	2.61	0.004	1.01	0.006	1.61
Female	0.045	0.49	0.537	4.94	0.052	0.71
Black	0.455	4.42	-0.154	-2.13	0.402	6.72
Asian			0.295	0.65	0.519	0.79
Multirace	-0.079	-0.28	-1.62	-4.19	1.2	9.12
Veteran			-0.196	-0.41	-0.129	-0.26
Health Status	0.062	0.80	0.204	1.69	-0.466	-7.24
Transportation Problem	0.413	7.77	0.704	6.65	-0.628	-10.67
High school drop out	0.189	3.62	-0.162	-2.08	0.095	1.52
Accreditation & Associate Degree	-0.169	-1.38	0.235	1.82	0.056	0.45
BA degree	-0.328	-1.98	0.502	3.07	-0.125	-0.8
Earnings quarter before registration (/100000)	-73.7	-3.31	-6.62	-0.34	-7.7	-0.39
constant	-2.32	-13.60	-1.3	-7.26	-0.255	-1.79
Number	6076		1738		2134	
Pseudo R squared	0.044		0.078		0.098	

Note: JET participants who exited after June 1, 2006

From the estimates, it is apparent that for each of the three regions the variables age, gender, race, education, and certain barriers to employment differentiate those participating in the JET sites from those participating in the non-JET sites. Matching the propensity scores of the treatment group with those in the pool of potential members of the comparison group and selecting those with the closest match leads to a comparison group whose members have characteristics that are similar to those in the treatment group. Performing t-tests of the demographic variables that underlie the propensity score model shows that there is no statistically significant difference between the treatment and comparison group for each of the demographic variables. These results are shown in table 8.

Table 8 Demographic Characteristics by Site

Demographic Characteristics	Wayne County		Oakland County		Kent and Sanilac	
	JET	Non-JET	JET	Non-JET	JET	Non-JET
Age	30.5	30.5	28.6	28.7	27.9	27.3
Female	0.925	0.925	0.908	0.918	0.836	0.833
Black	0.942	0.920	0.589	0.555	0.387	0.409
Multirace	0.007	0.012	0.000	0.000	0.034	0.031
Veteran	0.000	0.000	0.000	0.005	0.003	0.000
Health	0.126	0.133	0.029	0.048	0.229	0.238
Transportation Problem	0.399	0.396	0.082	0.063	0.393	0.394
High school drop out	0.541	0.553	0.352	0.357	0.350	0.356
High school graduate	0.400	0.403	0.594	0.589	0.576	0.579
Accreditation & Associate degree	0.038	0.029	0.029	0.029	0.046	0.049
BA degree	0.019	0.014	0.024	0.024	0.028	0.015
Number	414		207		323	

As shown in tables 9-11, the propensity score matching approach yields estimates that are similar to those derived from difference-in-differences. The only difference is with the earnings levels for selected quarters. For the Glendale/Trumbull Pilot site and the Madison Heights Pilot site, the earnings of the JET participants are higher than those of their respective comparison groups for various quarters. For the Glendale/Trumbull site, JET participants exhibit higher earnings in the second quarter after exit than their comparison group members. For Madison Heights, the positive earnings are observed in the first and third quarters after exit.

Table 9: Propensity Score Matching Results for the Glendale Site

Glendale/Trumbull Pilot Site in Wayne County		Propensity Score Matching		
		Unadjusted	Adjusted	
		T-test	w/ Demo-graphics	w/ Demo and services
Outcome Measures				
New employment	Difference	-0.116	-0.118	-0.129
	t-statistic	-3.7	-3.84	-4.18
Employment Gain	Difference	-0.053	-0.056	-0.042
(quarter of registration to Q1 after exit)	t-statistic	-1.52	-1.48	-1.10
Employment Retention	Difference	-0.012	-0.018	-0.009
(employed in Q1 and Q2 after exit)	t-statistic	-0.41	0.6	-0.3
Earnings Growth	Difference	-0.041	-0.041	-0.035
	t-statistic	-1.29	1.29	-1.08
Employment rate Q1	Difference	-0.027	-0.036	-0.027
	t-statistic	-0.8	-1.12	-0.83
Employment rate Q2	Difference	-0.029	-0.035	-0.028
	t-statistic	-0.88	-1.07	-0.86
Employment rate Q3	Difference	-0.043	-0.053	-0.044
	t-statistic	-1.31	-1.63	-1.33
Earnings Q1	Difference	292	241	249
(for those employed)	t-statistic	1.24	1.02	1.05
Earnings Q2	Difference	540	591	650
(for those employed)	t-statistic	2.23	2.45	2.73
Earnings Q3	Difference	413	428	453
(for those employed)	t-statistic	1.57	1.61	1.71

Table 10 Propensity Score Matching Results for the Madison Heights Site

Madison Heights Pilot Site in Oakland County		Propensity Score Matching		
		Unadjusted	Adjusted	
Outcome Measures		T-test	w/ Demo-graphics	w/ Demo and services
New Employment	Difference	-0.097	-0.1	-0.083
	t-statistic	-2.74	-2.82	-2.38
Employment Gain	Difference	-0.005	0.003	0.003
(quarter of registration to Q1 after exit)	t-statistic	0.113	0.08	0.08
Employment Retention	Difference	-0.034	-0.042	-0.044
(employed in Q1 and Q2 after exit)	t-statistic	-0.75	0.95	-0.99
Earnings Growth	Difference	0.039	0.038	0.038
	t-statistic	0.84	0.84	0.83
Employment rate Q1	Difference	-0.015	-0.02	-0.025
	t-statistic	0.3	-0.44	-0.53
Employment rate Q2	Difference	-0.005	-0.013	-0.008
	t-statistic	0.102	-0.29	-0.17
Employment rate Q3	Difference	0	-0.01	-0.006
	t-statistic	0	-0.22	-0.13
Earnings Q1	Difference	764	692	673
(for those employed)	t-statistic	2.13	1.97	1.92
Earnings Q2	Difference	748	637	501
(for those employed)	t-statistic	1.69	1.54	1.21
Earnings Q3	Difference	1146	1088	1068
(for those employed)	t-statistic	2.69	2.69	2.58

Table 11 Propensity Score Matching Results for Kent and Sanilac County Sites

Kent County and Sanilac County Pilot Sites		Propensity Score Matching		
		Unadjusted	Adjusted	
		T-test	w/ Demo-graphics	w/ Demo and services
Outcome Measures				
New Employment	Difference	0.003	0.004	-0.015
	t-statistic	0.08	0.1	-0.43
Employment Gain	Difference	-0.043	-0.042	-0.056
(quarter of registration to Q1 after exit)	t-statistic	-1.24	-1.26	-1.59
Employment Retention	Difference	-0.049	-0.054	-0.044
(employed in Q1 and Q2 after exit)	t-statistic	1.31	-1.44	-1.13
Earnings Growth	Difference	0.006	0.008	0.007
	t-statistic	0.16	0.22	0.19
Employment rate Q1	Difference	-0.04	-0.043	-0.054
	t-statistic	-1.02	-1.11	-1.34
Employment rate Q2	Difference	-0.028	-0.032	-0.035
	t-statistic	0.72	0.86	0.87
Employment rate Q3	Difference	0.012	0.009	-0.002
	t-statistic	0.32	0.23	0.05
Earnings Q1	Difference	-182	-310	-245
(for those employed)	t-statistic	-0.83	-1.55	-1.12
Earnings Q2	Difference	-335	-344	-246
(for those employed)	t-statistic	-1.43	-1.54	-1.06
Earnings Q3	Difference	-142	-157	-24
(for those employed)	t-statistic	-0.55	-0.67	0.1

VII. DISCUSSION

Results from several methods of estimating net impacts exhibit few positive and statistically significant effects of the JET program on employment outcomes of JET participants relative to those not in the JET program. A few employment outcome variables are negative and statistically significant and a few earnings levels variables are positive and statistically significant. The rest are mostly negative but not statistically significant. The results are consistent across the three pilot site areas (with Kent County and Sanilac County combined into one sample because of the small number of participants and potential comparison group members). The results are also consistent across the different methodologies: unadjusted and adjusted difference-in-differences results and unadjusted and adjusted propensity score matching results.

It is not surprising that the evaluation shows little positive effect of Phase I of the JET program implementation on JET participants. The analysis took place during the first months of implementation. Although we waited two months after the initial starting period for JET before starting the evaluation, the additional two months were more than likely too short for the program to be fully implemented. This is apparent in the level of services offered. According to the administrative data shown in table 3, few JET participants received training and educational services, which are the hallmark of the JET program. Furthermore, for some services, administrative records recorded a greater percentage of non-Pilot site participants receiving services than pilot-site participants. While estimates show that some of these services have a positive effect on various outcomes, it appears that not enough JET participants received those services relative to the comparison group members to make a difference in employment outcomes.

VIII. CONCLUSION

In 2006, the State of Michigan initiated the JET program, which was designed to provide more intensive and effective services to help economically disadvantaged residents become economically self sufficient. It emphasized training and education over "work first" so that participants would be better prepared for the work place. The program was implemented in four pilot sites in the spring of 2006. This study estimates the net impact of the JET program of participants at the four pilot sites: Glendale/Trumbull in Wayne County, Madison Heights in Oakland County, and Kent and Sanilac Counties. A net impact analysis requires the construction of comparison groups in order to net out the effect of the JET program on participants' employment outcomes from other factors that may influence employment and earnings. Two methodologies were used: difference-in-differences and propensity score matching. The results of each were adjusted for additional extraneous factors, using regression analysis.

The results show that the JET program has no statistically significant positive effects on JET participants, as compared with the comparison groups. The results were robust across methodologies and sites, with a few exceptions. Estimates reveal a negative effect of JET on newly acquired employment but this is not found in any of the

other employment variables, so little weight is placed on that result. Estimates also show a positive effect and statistically significant effect of the JET program on earnings in selected quarters and for two of the three site samples. However, it is not clear why the program should affect earnings in some quarters and not in others, particularly in the second quarter and not the first and third quarters, so it is difficult to give these results much weight as well.

The lack of net impact of the JET program on JET participants is attributable in part to the small percentage of individuals receiving services associated with the JET program and to the fact that non-JET participants were more likely to receive certain services than JET participants. However, estimates of the effect of services on employment outcomes revealed that a few services had a positive and statistically significant effect on employment outcomes when the pilot and non-pilot sites were pooled together and no distinction was made between those in either group. These results, along with favorable findings of more rigorous evaluations of training and education programs, point to the possibility that providing more intensive training and educational programs to the economically disadvantaged could improve their employment outcomes.

Furthermore, the evaluation took place when the program was just getting started and the pilot sites were dealing with implementing new programs and with few additional resources. Unfortunately, since JET is now implemented throughout the state, it is not possible to follow up on the effects of JET using the same methodologies, since there is no possibility of constructing comparison groups in Michigan.

APPENDIX
Highlighting the Differences in the "Employment Gain" Variables

Since the two employment gain variables are not closely related and yield different results in the estimation, it is helpful to look more closely at the differences. The variable we refer to as "newly acquired employment" is derived from administrative data. The variable is the same as activity code 1, which designates whether or not a participant ever acquired unsubsidized employment during the analysis period.

The other variable, referred to as "employment gain" is derived from UI wage records and is based on whether a person was not employed during the quarter before they registered for the program (JET or Work First) but acquired employed during the quarter after exiting the program. The definition of employment is whether or not a person received any earnings (greater than 0) during the quarter in question. Therefore, this variable records the ability to find a job after participating in the program for those who were unemployed the quarter before entering the program. This variable corresponds to the entered employment performance measurement for programs under the Workforce Investment Act.

As previously mentioned, the correlation between the two variables is 0.075. Examining the cross-tabulations between the two variables may be more enlightening as to the reason for the low correlation.

		Employment Gain		
		0	1	Row total
Newly acquired employment	0	4703	3031	7734
	1	1586	1547	3133
	Column total	6289	4578	10867

We see from the table that there is nearly a 50 percent chance that a person who is considered employed by the "newly acquired employment" is employed under the definition of the "employment gain" variable. Furthermore, if a person is unemployed under the first variable definition, there is a 40 percent chance that the person is employed under the second variable definition. Therefore, the variables exhibit little correlation.

Since the second variable—employment—stipulates that a person is not employed in the first quarter before registering for a program, it is also instructive to examine the same relationship as depicted in the previous but conditional on not being employed in the first quarter before registration. In this case, only 745 out of the 6,789 cases

		Employment Gain		
		0	1	Row total
Newly acquired employment	0	3519	1454	4973
	1	1071	745	1816
	Column total	4590	2199	6789

(or 11 percent) are defined as employed under both definitions. Therefore, even when starting from the position of unemployed in the pre-registration period, the two variables are not correlated.