Impact Evaluation of a Wyoming Employment Assistance Program

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"Your Source for Wyoming Labor Market Information"

Who We Are

Research & Planning (R&P) functions as an exclusively statistical entity within the Wyoming Department of Workforce Services. R&P collects, analyzes, and publishes timely and accurate labor market information (LMI) meeting established statistical standards. We work to make the labor market more efficient by providing the public and the public's representatives with the information needed for evidence-based, informed decision making.

Impact Evaluation of a Wyoming Employment Assistance Program

by: Patrick Harris, Principal Economist

In January 2016, the Research & Planning section of the Wyoming Department of Workforce Services published the results of an impact evaluation study of the Wyoming Workforce Development Training Fund (WDTF). According to that research, the mean quarterly wage of WDTF participants from second quarter 2007 was significantly higher statistically than the mean quarterly wage of non-WDTF participants in a comparison group (Manning, 2016). This paper presents a similar evaluation of Wyoming's JobAssist program conducted in 2013.

This evaluation reports on the effectiveness of the recently discontinued JobAssist Program on increasing wages and decreasing the use of government assistance usage. Over the past decade, the federal government has issued several memos regarding the need to evaluate government funded programs for effectiveness and the necessity of using scientific methods to make conclusions about such programs.

The key to this evaluation was employing matching techniques to form a comparison group of individuals with similar characteristics but who did not participate in the program. The analysis focused on the difference in quarterly wages, number of employers, and unemployment claims pre- and post-enrollment for both groups. Further, analyses were also completed for the use of government assistance after enrollment in the program.

The findings indicate that the JobAssist participants fared no better on either wages or the use of government assistance compared to the comparison group. For example, the second year after enrollment in the program, JobAssist participants and comparison group individuals did not have significantly different quarterly wages or reduced government assistance.

It is important to note that several limitations to the data collection techniques by Department of Workforce Services (DWS) coordinators and the private contractor involved in the JobAssist program have impacted the effectiveness of rigorous program evaluation. Several recommendations are given to help facilitate effective collection of data and the reasons why systematic data collection is necessary.

The results of this evaluation provide useful information and insight into the effectiveness of the JobAssist program. However, it should be noted that an overall conclusion, in terms of policy implementation, may not be completely justified based on the results. The results suggest that those services provided by the JobAssist program did not have the intended effects of reducing government assistance usage and increasing wages compared to those who applied for UI benefits. Before any useful conclusions can be made regarding the effectiveness of the services provided by JobAssist, an in-depth evaluation of the services provided to each client will be needed. Some of the services that JobAssist provided may have had an effect on wages and government assistance outcomes, but since these were not well documented, no conclusions should be drawn on service effectiveness at this time.

Introduction

During the past several decades, federal and state governments have increasingly required program evaluation for any program which is publically funded. Specifically, the federal government has moved toward more accountability and results-oriented performance strategies under the Government Performance and Results Act (GPRA) of 1993. The main purpose of the act is to provide objective information to decision makers on the effectiveness and efficiency of various programs and the associated spending.

The Office of Management and Budget (OMB) released several memorandums between 2009 and 2012 regarding the increased emphasis on program evaluation and the use of these evaluations in establishing budgets. A memorandum released by OMB on October 7, 2009, noted that the "administration is committed to improving a wide range of evaluation and performance measurement activities, this initiative will initially focus on social, educational, economic, and similar programs whose expenditures are aimed at improving life outcomes (such as improving health or increasing productivity) for individuals." This memorandum can be found at http://www.whitehouse.gov/sites/default/files/omb/assets/memoranda_2010/m10-01.pdf.

The goal of this article is to evaluate the effectiveness of the Healthy Families Succeed JobAssist program, which was aimed at improving employment outcomes (and thus improving quality of life), and the above memorandum speaks directly to these outcomes.

OMB also acknowledges that programs have been continuing year after year without being evaluated for evidence of effectiveness and that "evaluation dollars have flowed into studies of insufficient rigor or policy significance." (OMB, July 29th, 2010). This memorandum can be found at http://www.whitehouse.gov/sites/default/files/omb/memoranda/2010/m10-32.pdf. As discussed in the remainder of this article, the methods used for program evaluation vary and selecting the most appropriate way to conduct an evaluation of the JobAssist program will be discussed.

JobAssist Program

In an effort to reduce the cost of public assistance programs and increase resident self-sufficiency, various Wyoming state agencies – including the departments of Health, Corrections, Family Services, Workforces Services, State Insurance Pool, and Administration and Information – began contributing data in 2003 to a data warehouse called the Wyoming Health Information Network (WHIN). The data provided information on certain populations that received services from one or more of the state agencies. Using these data to identify individuals using multiple public assistance programs, the private contractor began the Healthy Families Succeed (HFS) program in 2005, starting with the HealthAssist component. In conjunction with the Department of Workforce Services, the private contractor added the JobAssist component in 2008. In order to be eligible for JobAssist, individuals needed to be able to work, be 18 to 64 years old, and be utilizing at least two state services. Healthy Families Succeed began in Laramie County and with funds from the American Recovery & Reinvestment Act (ARRA); the program expanded to cover Natrona, Sheridan, Park, Sweetwater, and Teton counties. The goal of the HFS program was to link personal and

family health, job skills, and employment in order to move toward self-sufficiency.

The process of enrolling in JobAssist began when the contractor selected potential participants from the WHIN data warehouse who met eligibility criteria using integrated risk analytics. Once a participant was selected by the contractor, his or her contact information was given to DWS coordinators, who contacted the individual to obtain written consent to participate in the program. If consent was given, the participant's confidential information was sent to the contractor. Because consent must be given, the program should be considered voluntary.

In the spring of 2012, DWS program management approached the Research & Planning (R&P) section to evaluate the effectiveness of the JobAssist program using administrative databases currently in place. R&P currently has access to administrative databases from multiple state agencies, including information on public assistance programs.

Administrative Databases

One advantage of using administrative databases is that the cost is comparatively low. R&P uses Unemployment Insurance (UI) wage records, which are quarterly earnings for approximately 92% of the individuals working in Wyoming. These records are collected under tax laws and subjected to audit. Administrative databases are advantageous because they can be combined and analyzed with other databases. A list of databases used in this study is presented in Box 1.

Government Assistance Programs

This section explores the government assistance programs for which R&P had

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Box 1: Administrative Databases Used in this Research

- Wage Records. Wages by social security number for all persons employed in Unemployment Insurance (UI)-covered employment from 1992 to present.

- Unemployment Insurance Claims. Monthly claims filed from 1997 to present by social security number.

- Driver's license data. Wyoming Driver's license activity from 1988 to present including demographics, dates of issuance/ renewal, and change of address.

- Department of Family Services data. These data were provided to R&P and contain information on the use of government assistance programs.

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data from the Department of Family Services during the time of the research. These government assistance programs are administered with the intention of assisting low income families to find work, avoid food shortages, and pay for child care while working. They are complex in nature with varying, yet similar, eligibility criteria.

SNAP. The Supplemental Nutrition Assistance Program (SNAP) is the central program in place to assist families in alleviating poverty and hunger. The U.S. Department of Agriculture's Food and Nutrition Service administers SNAP and is the largest domestic food assistance program. Total national SNAP benefits in fiscal year 2011 were over $70 billion and served nearly

45 million people. The explicit goals of SNAP include increasing access to nutritious foods for low-income families, improving health outcomes of participants, and decreasing the level of food insecurity. To be eligible for SNAP benefits a household's gross monthly income must be no more than 130% of poverty and countable resources (e.g., savings accounts, checking accounts) at $2,000 or less. Specific eligibility criteria for SNAP can be found at http://www.fns.usda.gov/snap/applicant_recipients/eligibility.htm.

POWER. The 1996 Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) welfare reform legislation replaced the federal entitlement program (AFDC) and gave states individual Temporary Assistance for Needy Families (TANF) block grants that required recipients to be employed or involved in work-related activities. The most significant change to the previous welfare legislation was setting a five-year limit on receipt of welfare benefits. The Personal Opportunities with Employment Responsibilities (POWER) is Wyoming's name for the state's TANF block grant. POWER is a cash assistance program designed for families with a dependent child(ren) to become self-sufficient through employment, child support, or employment-related activities. Individuals participating in POWER must complete 30 hours of employment or employment-related activities per week and cooperate with child support requirements in order to receive the cash assistance benefit.

Child care. The Child Care and Development Fund (CCDF), which is authorized by the Child Care and Development Block Grant Act, is designed to assist low-income families and individuals who are transitioning from public assistance to work or attending training/education in providing families with affordable child care. When an individual first enrolls in the program, a household's gross income must be no more than 175% of poverty; however, if income increases due to rising wages or the presence of more than one job, households can continue to be eligible up to 225% of poverty. The statewide monthly maximum benefit amount per child is $675, regardless of household poverty level.

The use of these programs also differs, with SNAP being the most used among Wyoming's citizens and POWER being the least utilized.

Program Evaluation

Program evaluation is the systematic study that assesses the effectiveness of program outcomes and whether the program is operating as intended (Rossi, Freeman, & Lipsey, 1999). A review of the literature reveals that the methods used for program evaluation have not been agreed upon by practitioners. Two main study designs have been proposed to evaluate the effectiveness of programs: experimental and non-experimental designs. In 2009, the Government Accountability Office (GAO) released a report outlining the benefits and drawbacks of both designs and gave recommendations on how to proceed with program evaluation in the future (GAO, 2009). This report can be found at http://www.gao.gov/products/GAO-10-30.

In social science research, experimental design is regarded as the only true way of inferring cause and effect. Experimental designs are those which are highly controlled and participants are randomly assigned to treatment and control groups

thus eliminating any confounding variables that interfere with the treatment outcome. Some programs are well suited to experimental design, especially when the evaluator has complete control over the program, when random assignment is ethical, and resources (e.g., time and funding) are available to conduct them.

Non-experimental designs encompass all other study designs that are not experimental in nature and include a wide range of options. LaLonde (1986) concluded that the use of non-experimental designs in program evaluation can allow biases and specification errors into the results and that experimental designs can control for these issues. However, several authors (Heckman & Smith, 1995; GAO, 2009) argue that using experimental designs in program evaluation also has its drawbacks and will eliminate the evaluation of some programs because of cost or ethical concerns.

Due to concerns regarding the use of non-experimental designs in program evaluation, research in this area has been conducted with various non-experimental methods (Rosenbaum & Rubin, 1983; Heckman & Hotz, 1989; Heckman & Smith, 1999). The research conducted has been successful in producing results similar to experimental designs using non-experimental designs. These authors conclude that there is not a single methodology that eliminates all biases or systematic errors and that the focus should be on the questions and outcomes the evaluator wants addressed in terms of program effectiveness. The authors also propose that using reliable and suitable data for both program participants and the control groups will produce the most reliable estimates of program effectiveness.

There are non-experimental designs that produce results that most resemble those of experimental designs. Quasi-experimental designs are those that try to include as many aspects of experimental designs as possible. The major difference in experimental and quasi-experimental designs is the use of random assignment. Because random assignment is crucial in experimental studies, attempts have been made to replicate random assignment in non-experimental designs. Rosenbaum and Rubin (1983) first proposed the use of matching methods of treatment and control groups through statistical means. Matching methods involve matching a person who has been through the program (a treated case) to a control group member (a non-treated case) that is most similar based on measured characteristics (e.g., age, education, and family background). In the years following Rosenbaum and Rubin's initial paper, several types of matching methods have been tested and used in program evaluation (Mueser, Troske, & Gorislavsky, 2007).

The use of propensity scores in evaluation research has increased over the past decades beginning with Rosenbaum and Rubin (1983) and has become a viable alternative to experimental design. The ultimate goal of using matching methods is to reduce the level of bias introduced by non-random assignment. A propensity score is the statistical probability that an individual with certain characteristics is a participant in a program. The selection of characteristics to control for has been extensively researched (Kelcey, 2011). Kelcey concludes that selecting those characteristics that have an influence on the treatment outcomes is essential for reducing the level of bias. Several researchers have used propensity score matching (Dehejia & Wahba, 1999; Rudner & Peyton, 2006; Meuser, et al, 2007) that

produced results similar to experimental designs when evaluating program effectiveness. Critical to the selection of a control group is documentation of the characteristics used in selecting the experimental group.

In 2011, Utah's Department of Workforce Services released a report detailing the analysis of several of that agency's job training services, which included classroom training, wage and employment subsidies, and a job readiness training service (Krantz & Mayne, 2011). The authors used propensity score matching to match individuals who received one of the services while the control group consisted of individuals who had made contact (e.g., seeking assistance searching for jobs) with the Utah agency during the observation period. The results from this report suggest that occupational training and paid internships increase employment and wages while GED/HS diploma training, unpaid internships, and life skills training have little to no effect.

Methodology

The methodology section

of this report details the ways in which JobAssist participants and comparison group individuals were selected by R&P for analyses, the specific variables used, and their data sources. The process by which individuals were selected for solicitation by DWS coordinators to participate in the JobAssist program is outlined in Figure 1, which shows that the state

agencies contributed client data to the contractor via the WHIN database. These data included demographic information and which, if any, government assistance program support. Through the WHIN system, clients were identified based on the JobAssist program's eligibility criteria and the list of potential participants was given to DWS coordinators.
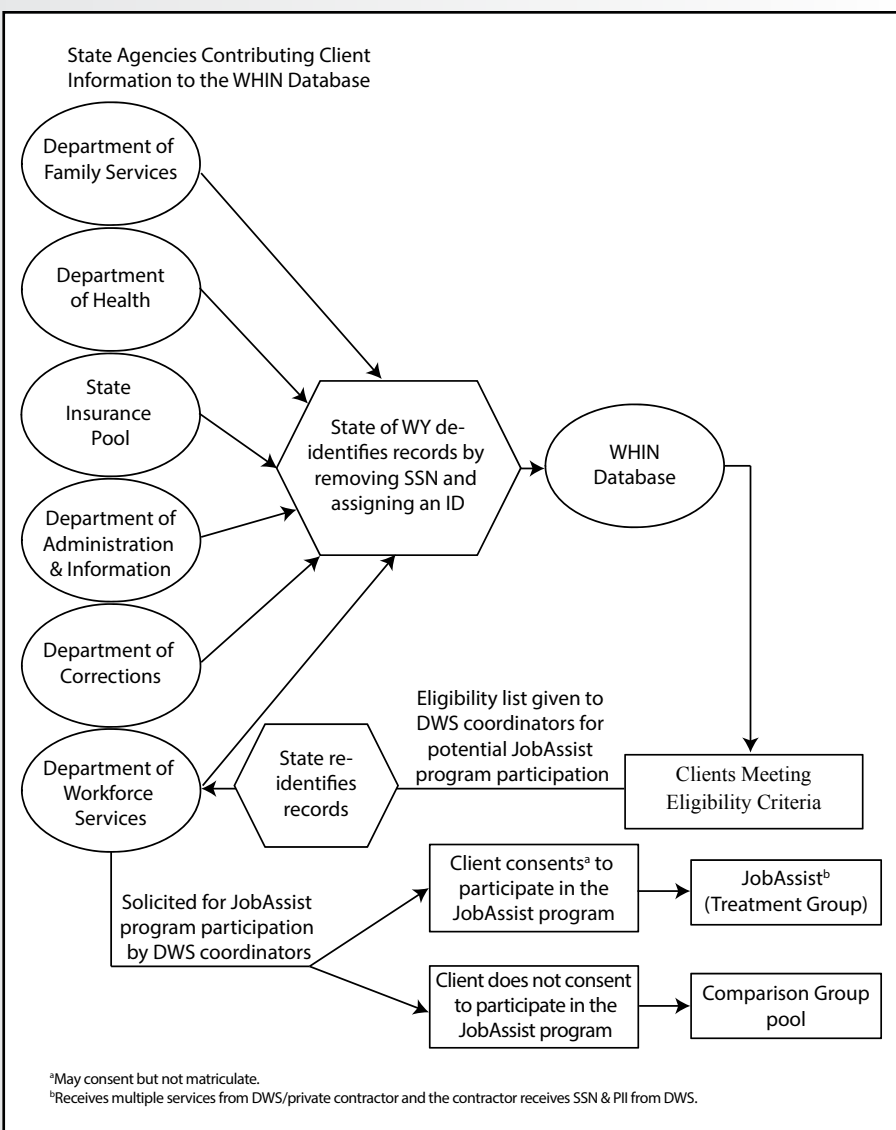

Figure 1: **Process Flow Chart for the Selection of JobAssist Participants**

DWS coordinators then solicited these potential participants for enrollment in the JobAssist program. If the person gave consent, his or her confidential information was given to the contractor for follow-up. In this paper, these individuals were used as the JobAssist program participants. If the person did not give consent to participate in the JobAssist program, R&P placed them in the comparison group pool. The main objective of R&P was to use individuals who were selected by the contractor from the WHIN database to establish pre-program participant equivalence between JobAssist participants and the comparison group individuals. In this way, any subsequent differences on performance measures could be attributed to the JobAssist program.

Subjects

JobAssist Participants (Experimental Group). A total of 417 females were enrolled in the JobAssist program between third quarter 2008 (2008Q3) and second quarter 2010 (2010Q2). The electronic file provided to R&P by the contractor did not contain social security numbers (SSN) for some participants, so a matching method was conducted to search for participant SSN using R&P's driver's license database. Gender, date of birth, first name, and last name were used to match individuals to an SSN in the administrative databases. Of the original 417, 53 could not be verified because one or more of the matching criteria was unavailable, incorrect, or inconclusive and these individuals were excluded from further analyses. The final sample was 364 female JobAssist participants.

Comparison Group. Female individuals who were identified by the WHIN database as being eligible to participate in the program were used to form the comparison group. These individuals were used as the initial comparison group pool because they were eligible for the JobAssist program and thus met the contractor's eligibility criteria. Since these individuals were eligible for the JobAssist program, they represented the most likely source for a theoretically relevant comparison group. It should be noted that R&P had no information regarding the number of times an individual was solicited by DWS for participation in the JobAssist program. Further, R&P also had no information regarding whether these individuals were, in fact, solicited by DWS for participation in the program. If a participant was solicited by DWS, information as to why these participants chose not to participate in the JobAssist program and the date they were solicited to participate was not systematically collected by DWS coordinators. As a consequence of these individuals having no date of solicitation recorded in a systematic manner, there was no enrollment event that could be associated with JobAssist participants. In order to associate the eligible individuals (potential controls) with an enrollment event for the experimental group, several steps had to be taken to build a suitable comparison group. The comparison group was constructed in several stages as follows:

1. An individual may have been solicited by DWS coordinators more than once to participate in the program, thus resulting in duplicates (or an individual appearing more than once in the referral file). All duplicate referrals were removed from the analysis so only unique individuals remained in the referral file. Data on the number of times participants were contacted by DWS coordinators was not collected by the DWS coordinators.

2. The treatment group (those

who enrolled in the JobAssist Program) at any point between 2008Q3 and 2010Q2 were removed from the referral file by R&P to prevent overlap with the comparison group. For example, if an individual enrolled in the JobAssist program in the timeline mentioned above, he or she was removed from the comparison group so those data were not repeated in the comparison group.

3. As mentioned previously, due to lack of information regarding when an individual was contacted (or how many times), there was no event to link participants to a specific timeframe. The JobAssist participants had a date of enrollment, while no date could be established for the comparison group. This step details R&P's method for creating an event so a theoretically relevant comparison group could be formed. The referral file was matched to R&P's UI claims database, with the latest initial UI claim quarter between 2008Q3 and 2010Q2. The UI program was chosen because it required individuals to complete certain job seeking tasks similar to the JobAssist program if benefits were collected. For example, individuals must show that they made at least two employer contacts per week and could receive help finding a job (e.g., resume building, interview techniques) through the local Wyoming Workforce Center. However, it should be noted that these job seeking activities may vary in intensity by individual.

4. The previous step used the date when an individual filed for UI

benefits. An individual could remain unemployed (i.e., having no wages in a given quarter) for an indefinite period of time. The reasons for this are numerous (e.g., collecting UI benefits, moved out of state, death, etc.). In order to ensure that the comparison group individuals were still in Wyoming and had some wages after their initial UI benefit claims, the following step was implemented by R&P. Individuals who did not have any wages two years after filing for UI benefits would not be a theoretically relevant comparison group, as no information was available as to why they no longer had wages (e.g., they could have left the state). Due to these issues, the comparison group pool was further restricted to include those who experienced only one full quarter or less of unemployment. One full quarter of unemployment means that an individual did not have any wages in the Wage Records database for one quarter after filing the claim. For example, if an individual filed for a UI claim in 2009Q3 and had no wages in 2009Q4 and then had wages in 2010Q1, he or she was included in the comparison group.

Of the original individuals in the referral file who were eligible to participate in the JobAssist program, 540 individuals were retained for the comparison group. The total significantly decreased because the number of individuals who filed an unemployment claim was small and then reduced further by using only those individuals with no more than one quarter of unemployment.

Exclusion Criteria. Both the JobAssist participants and the comparison group were subjected to further exclusion criteria. Propensity score matching

requires independent variables that are associated with an individual's probability of enrolling in a program be controlled. A participant must have data on these independent variables in order to control for them. Education, experience in the workforce, previous wages, and age are all factors that have been shown to be predictive of an individual's probability of enrolling in job training programs. Specific exclusion was imposed by R&P to ensure that individuals in both the JobAssist group and the comparison group had data on relevant variables in the propensity score matching method. Individuals who did not have an education level

indicated were excluded (11 JobAssist participants and seven comparison group individuals).

Experience in the labor market is calculated as Age - Years of Education - 6 (see Figure 2, page 11). For example, it can be assumed that an 18-year-old individual who completed high school (12 years) and who didn't start first grade until the age of 6 has zero years of labor market experience. This formula does not account for everyone, but gives a reliable overall estimate of experience. Five JobAssist participants were removed from the analysis due to experience being negative. JobAssist participants and the comparison group individuals must

have had wages in at least one quarter prior to enrollment. This restriction was imposed to ensure that individuals worked in Wyoming at some point in the past two years. Forty-five JobAssist participants and one individual from the comparison group were removed from the sample because they had no wages in any of the eight quarters prior to enrollment. The participants in both samples were between 18 and 64 years of age.

Males constituted a very small proportion of participants (n = 101) and a suitable comparison group could not be formed to allow for propensity score matching. All subsequent propensity score matching and analyses was performed on females only. However, demographic information and within group comparison of males were performed.

Measures

Individuals in both the JobAssist and comparison groups were paired based on their quarter of enrollment in the program (JobAssist participants) or their latest initial unemployment claim (comparison group). The enrollment quarter is zero, with eight quarters prior

Formula
Age – Years of Education – 6 = Experience in the Labor Market
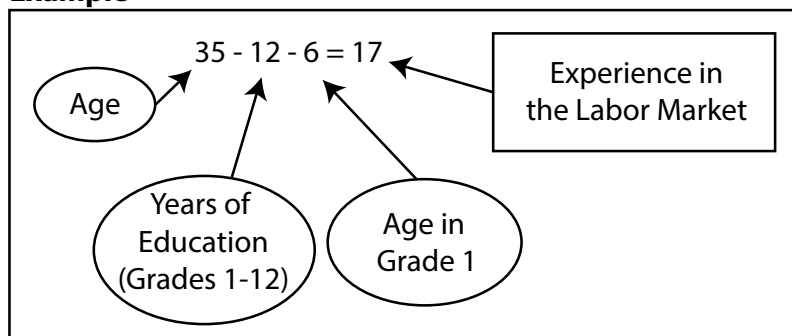
Example

Figure 2: **Calculation of Experience in the Labor Market**

to and eight quarters after enrollment being analyzed. For the remainder of this paper, quarter 0 for both groups will be referred to as the *quarter of enrollment*.

Wages and UI Claims. Wages were obtained from the UI Wage Records database. The number of unique employers was also calculated for each quarter during the evaluation timeframe. Wage records from Alaska, Colorado, Idaho, Montana, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Utah were also available on a quarterly basis. The number of UI claims was calculated during the evaluation period for the JobAssist and comparison groups.

Government Assistance Programs. The government assistance programs used in this analysis were provided by the Wyoming Department of Family Services, and included SNAP, POWER, and Childcare dollars. R&P had data for these three programs from 2010Q3 to 2012Q2. A more complete government assistance dataset was being developed at the time of the evaluation but was not expected to arrive by the time of this paper. The analyses using these

data were restricted to the quarters after enrollment. Further, analysis on pre- and post-enrollment government assistance usage was not performed, as no pre-enrollment data were available.

The final samples consisted of 303 females in the JobAssist group and 532 females in the comparison group. The demographic and wage characteristics of the

JobAssist and comparison group can be found in Table 1. As can be seen in Table 1, the two groups differed significantly in several characteristics. The significant differences in wages prior to enrollment are of particular note. Even though these individuals were also selected by the contractor for participation, in almost all cases the comparison group made at least double the quarterly earnings compared to the

Table 1: Female Demographic Characteristics by Group Before Propensity Score Matching

	JobAssist Participants	Comparison Group	F (1,832)
N	303	532	
Average Age	30.81	29.95	1.93
Average Years of Education[a]	12.31	12.16	2.65
Average Years of Experience[a]	12.49	11.78	1.38
Labor Market Transitions (percent)			
Employed/employed[a]	55.1%	84.9%	N/A
Employed/not employed[a]	44.9%	15.1%	N/A
Percent in Laramie or Natrona Counties[a]	88.1%	53.5%	N/A
Mean post-enrollment earnings (quarters 5 to 8)	$1,795	$2,281	7.74[c]
Mean earnings in quarter of enrollment	$1,228	$2,275	42.02[d]
Mean earnings one quarter prior to enrollment	$1,393	$3,568	161.27[d]
Mean earnings two quarters prior to enrollment	$1,519	$3,598	171.53[d]
Mean earnings three quarters prior to enrollment	$1,556	$3,508	166.33[d]
Mean earnings four quarters prior to enrollment[a]	$1,614	$3,410	149.48[d]
Mean pre-enrollment earnings (quarters -8 to -5)[a]	$2,043	$2,842	22.81[d]
Mean growth in pre-enrollment earnings	$15	$364	3.65[b]
Mean difference between pre- and post-enrollment earnings	$247	$560	2.09

[a]Denotes an independent variable used in the propensity score matching.
[b]p<.05, [c]p<.01, [d]p<.001.

JobAssist participants. Age, education, and experience did not statistically differ between the groups. A higher percentage of JobAssist participants lived in Laramie or Natrona counties (88.1%) compared to the comparison group (53.5%). A higher percentage of individuals in the comparison group had wages in the eight quarters prior to enrollment and had wages during their enrollment quarter (employed/employed) compared to the JobAssist participants. JobAssist participants were more likely to have wages in the eight quarters prior to their enrollment but no wages at the quarter of enrollment (employed/not employed) compared to the comparison group.

The mean growth in pre-enrollment earnings is the difference in wages between the first year before enrollment and the second year. The comparison group experienced a higher pre-enrollment wage growth ($364) compared to the JobAssist participants ($15). Further, the mean difference between pre- and post-enrollment earnings is the difference between the second year after enrollment and the second year before enrollment. The JobAssist participants experienced an average increase of $247, while the comparison group experienced a $560 increase on average. In order to control for these differences, the use of propensity scores to find a suitable comparison group was utilized.

Propensity-Score Matching

Propensity scores were calculated using logistic regression. This quasi-experimental approach to evaluation is sometimes necessary, as true experimental designs can be time consuming, unethical, expensive, or not possible given the expectations of the outcomes. As outlined in the introduction, in order to conduct a true experimental design with the current evaluation, individuals would have to be randomly assigned to either participate in the JobAssist program or not. This randomization would control for any characteristics (e.g., age, wages, family structure, education, and labor market experience) that would contribute to deciding to participate in the program.

Since a true experiment could not be performed for this evaluation, matching each JobAssist participant with a comparison group individual with similar characteristics allowed for comparability. In Logistic Regression, independent variables, also known as covariates, were entered into the regression equation and were used to predict the likelihood that an individual participated in the JobAssist program. The propensity score is represented as a score ranging from 0 to 1. The ultimate goal of propensity score matching is to control for those characteristics that are critically important to the probability of program participation. Age, education, and experience in the labor market are important demographic variables that can have an effect on the individual's probability of participating and should be controlled (LaLonde, 1986, & Mueser, et al., 2007). Wages prior to enrollment are seen as a predictor of joining a program that is designed to increase wages and those with lower wages have a higher probability of enrolling in the program. The independent variables used to predict group participant were as follows: level of education, years of experience in the labor market, whether the individual lived in Natrona or Laramie counties, mean wages four quarters prior to participation, mean wages two years prior to participation, whether the individual was employed during the quarter of enrollment, and dummy variables indicating whether an individual was employed in each of the eight

quarters prior to enrollment. The independent variables chosen for inclusion are found in Table 1.

A nearest neighbor matching technique with a caliper of .5 (or one-half of the standard deviation of the logit) was employed using the "greedy" algorithm so that one JobAssist participant was matched to one person from the comparison group. The "greedy" algorithm does the following: once a comparison group individual was matched to a JobAssist participant they were removed from the comparison group so they could not be matched to another JobAssist participant. After the matching procedure was completed, all those who had a propensity score distance of more than .50 were removed from the analysis. These individuals were removed to avoid any "bad" matches the propensity score procedure allowed.

After matching a total of 231 JobAssist participants and 231 matched comparison group individuals, 462 remained. In Figure 3, the eight quarters prior to enrollment, the quarter of enrollment, and the eight quarters after enrollment

are shown before propensity score matching was conducted. Earnings are plotted separately for JobAssist and comparison groups. Figure 3 is similar to Table 1, which shows that the comparison group earned higher wages prior to enrollment than JobAssist participants. The Ashenfelter dip is a finding that wages decrease prior

to enrollment in a program (Ashenfelter & Card, 1985). The Ashenfelter dip is clearly visible for each group but at different times in Figure 3. For the JobAssist participants, a decrease in earnings can be seen four quarters prior compared to two quarters prior for the comparison group. Further, because individuals with one
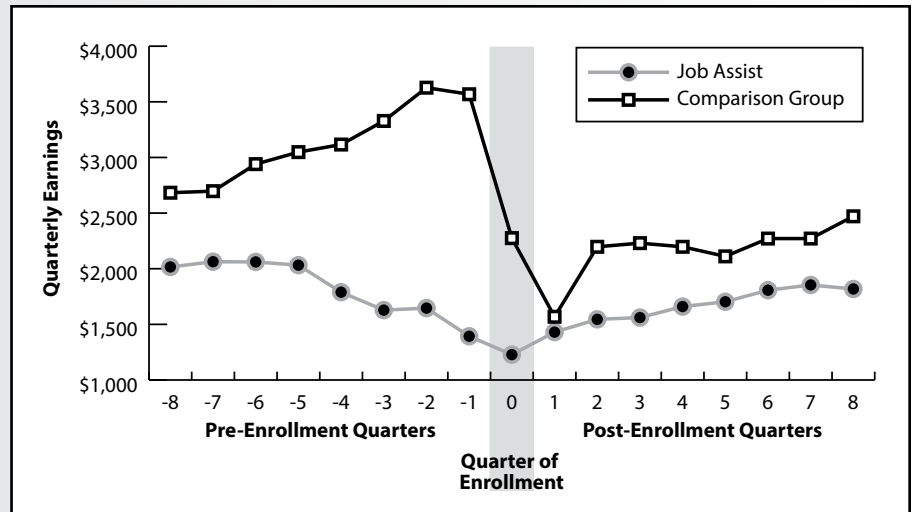

Figure 3: **Quarterly Earnings of JobAssist and Comparison Group Participants Prior to Propensity Score Matching**
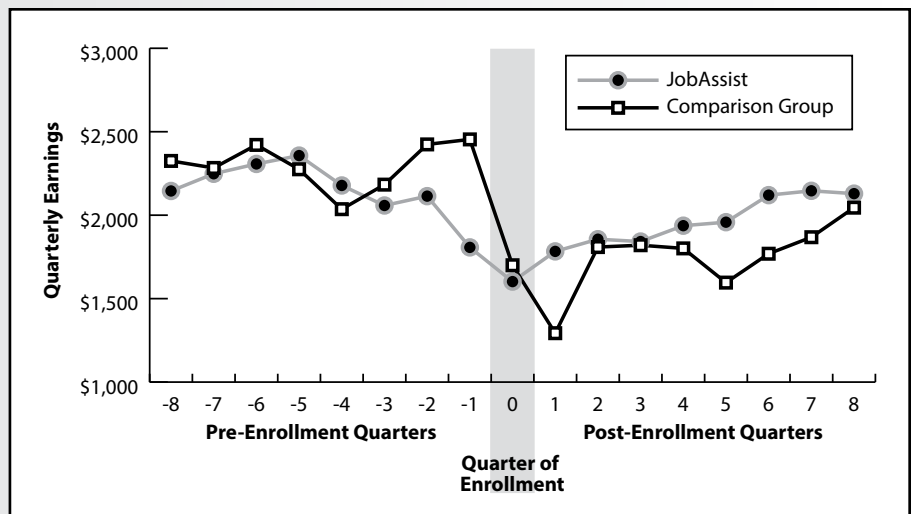

Figure 4: **Quarterly Earnings of JobAssist and Comparison Group Participants After Propensity Score Matching**

quarter of unemployment were retained in the comparison group, a dip occurred one quarter after enrollment. The largest difference in wages was found during the four quarters prior to enrollment, which is why wages prior to enrollment were controlled for in the propensity score.

Figure 4 presents the same information as in Figure 3, but after propensity score matching. The matching method ensured that those in the JobAssist program were matched with a comparison group individual based on similar characteristics of the independent variables listed earlier. As seen in Figure 4, the matching method found individuals with similar wages prior to participation from the comparison group to match with the JobAssist participants. However, the wages for the groups were not identical, particularly in the first and second quarters prior to participation. The subsequent comparison analyses in the results section of this paper focuses on the pre- and post-program earnings, so the

slight differences in earnings just prior to enrollment are less significant. The difference in wages for both groups at the quarter of enrollment ($1,602 for JobAssist participants and $1,700 for the comparison group) was not statistically different.

Results

This section will focus on the effectiveness of the JobAssist program using a variety of statistical approaches. Detailed analyses of the JobAssist participants and the comparison group were performed. Employment, wage, and social program use analyses were conducted using the matched JobAssist participant and comparison groups.

Female JobAssist Participants

JobAssist Enrollment Trends. Table 2 presents the enrollment trends for all

Table 2: **Number of Exits by Quarter Relative to Enrollment Quarter**

Enrollment Quarter	Total Enrollments	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Still Enrolled as of 2012Q3
2008Q3	88	0	0	0	24	0	0	1	5	0	0	1	9	1	2	20	6	19
2008Q4	110	0	0	0	39	0	0	0	36	0	0	0	6	6	6	0		17
2009Q1	52	0	0	0	11	0	0	0	16	0	1	1	15	3	2			3
2009Q2	47	0	0	0	12	0	1	0	18	0	0	0	8	1				7
2009Q3	29	0	0	0	9	0	0	0	12	0	0	2	4					2
2009Q4	31	0	0	1	11	0	0	0	7	0	0	0						12
2010Q1	57	0	1	0	22	0	0	1	19	1	1							12
2010Q2	149	0	0	0	13	8	2	8	25	13								80
2010Q3	148	0	0	0	17	3	4	7	28									89
2010Q4	76	0	0	0	20	0	6	4										46
2011Q1	89	0	1	0	25	2	3											58
2011Q2	73	0	0	0	18	2												53
2011Q3	90	0	1	7	26													56
2011Q4	75	0	1	0														74
2012Q1	72	1	0															71
2012Q2	42	0																42
2012Q3	20																	20
Total	**1,248**	**1**	**4**	**8**	**247**	**15**	**16**	**21**	**166**	**14**	**2**	**4**	**42**	**11**	**10**	**20**	**6**	**661**

JobAssist participants (female and male) who enrolled in the program. For those participants who enrolled in 2008Q3, 24 left the program one year after enrollment (Q4) and another five left two years (Q8) after enrolling in the program. The results in Table 2 produce a clear trend that JobAssist participants leave the program based on the yearly anniversary of their enrollment quarter. Also of note in the table is that 19 individuals who enrolled in 2008Q3 were still enrolled four years later. The reason for these individuals having such a long duration in the program is not clear in documentation from the contractor.

Enrollment trends for the matched sample were similar to the overall JobAssist population and were as follows: 5.6% of participants dropped out of the program, 61.0% had services expire, and 33.3% were still enrolled in 2013. This evaluation was conducted using participants who were still enrolled in the program as of 2012Q3 and participants who exited the program (either by dropping out or by having their services expire). In an effort to ensure that no differences existed between these individuals on the dependent variables based on their enrollment status,

a mean difference test was conducted. The mean difference tests concluded that enrollment status did not have a significant effect on pre- and post-enrollment wages. No statistically significant differences were observed for enrollment status on either pre- or post-enrollment wages. Enrollment status (enrolled, dropped out, services expired) has no effect on the pre- and post-enrollment wages and thus made the participants comparable on wages.

Employment and Wage Characteristics

One of the main objectives of this evaluation was to discover whether the JobAssist program increased employment and wages for participants who enrolled in the program. The number of individuals employed

during a particular quarter has a significant effect on wages earned. As seen in Figure 5, the percentage of JobAssist and comparison group participants employed declined at three quarters prior to enrollment (Ashenfelter dip) and remained at about 60% for the fourth through eighth quarters after enrollment.

To test the difference in JobAssist participants' wages pre- (-8 to -5 quarters) and post- (5 to 8 quarters) enrollment, a paired-sampled t-test was performed with mean quarterly pre- and post- wages. The t-test revealed no significant differences between pre- (M = 2,264, SD = 2,095) and post- (M = 2,088, SD = 2,384) enrollment earnings, t(230) = .958 (two-tailed), p = .40. A statistically significant difference in the means (averages) of the two
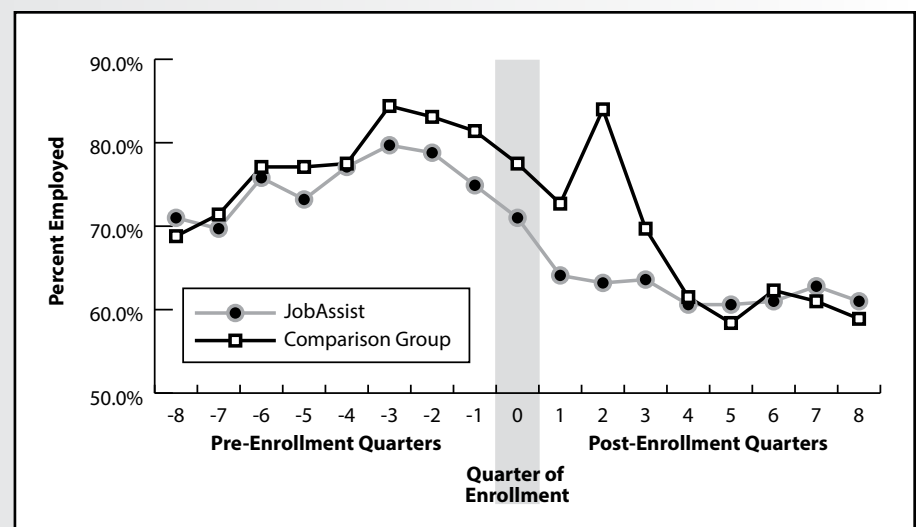

Figure 5: **Percentage of Participants Employed by Quarter**

time periods would have resulted in a p-value of <.05. JobAssist participants saw a decrease in wages of $176, but this decrease was not statistically significant. Figure 4 presents the average wages for JobAssist and comparison group participants by quarter after propensity score matching. After the dip at enrollment, wages increased over the first six quarters post-enrollment then leveled off for the JobAssist participants, while the comparison group's wages showed an increasing trend beginning with the fifth quarter after enrollment.

Comparing the mean wages pre- and post-enrollment between the JobAssist group and the comparison group allowed for a determination of the effectiveness of the JobAssist program on participant wages. If the JobAssist program was effective, R&P expected to find that their post-program wages were significantly higher statistically than those in the comparison group. A one-way Analysis of Variance (ANOVA) was conducted with mean quarterly wages post-enrollment (5 to 8) as the dependent variable with group membership

(JobAssist vs. Comparison) as the independent variable. An ANOVA is a statistical technique used to test for differences in means between groups. The ANOVA revealed that JobAssist participants' wages (M = $2,088, SD = $2,384) were not significantly different from the comparison group wages (M=$1,819, SD=$2,150), $F_{(1, 460)}$ = 1.62, p = .204.

Difference-in-differences is an estimator based on the difference for the JobAssist and comparison groups in the difference between pre- and post-program earnings. An advantage to using the difference-in-differences estimator is it allows for some control of unobserved individual variables that might affect program earnings and participation. Table 3 is a visualization of the calculation of the difference-in-differences estimator. As seen in Table 3, both groups decreased in wages post-enrollment relative to pre-enrollment wages. The comparison group had a $331 greater decrease in wages relative to the JobAssist participants; however, this decrease was not statistically different, $F_{(1,460)}$ = 1.63, p = .20. This greater drop in wages for the comparison group may be explained by the one full quarter of unemployment

Table 3: Difference-in-Differences Estimation of Mean Quarterly Wages for the JobAssist and Comparison Groups

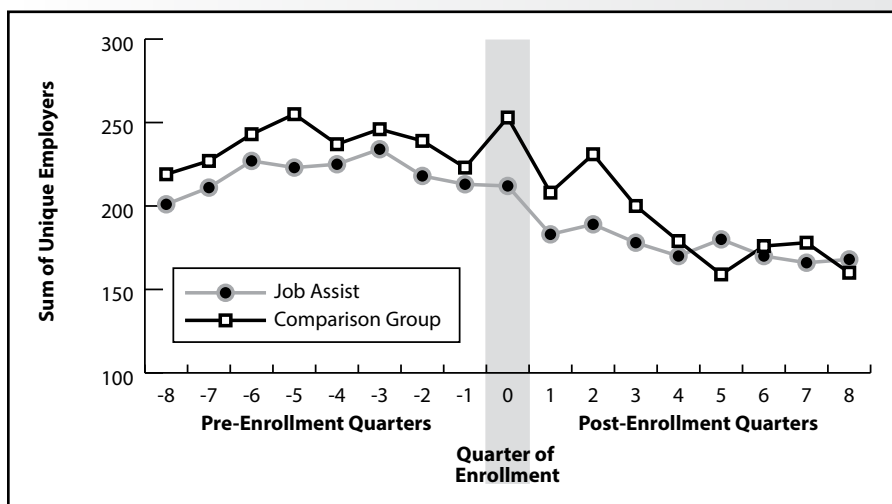|	Pre-Program Mean Quarterly Earnings	Post-Program Mean Quarterly Earnings	Difference
JobAssist Group	$2,264	$2,088	-$176
Comparison Group	$2,326	$1,819	-$507
Difference	-$62	$269	$331

Figure 6: Sum of Unique Quarterly Employers for the JobAssist and Comparison Groups

some may have experienced. This indicates that even though individuals in the comparison group who experienced one full quarter of unemployment did not have significantly lower wages statistically than JobAssist participants.

The number of unique employers an individual has in any given quarter may affect wages earned. Figure 6 displays the sum of unique employers for the JobAssist and comparison groups. For all but two quarters, the number of unique employers for the comparison group was higher than the JobAssist participants. The decreasing trend of the number of unique employers for both groups was evident from the third quarter prior to enrollment onward (with only slight increases throughout). Depending on the wages and hours worked at a given job, the number of unique employers could have a positive effect on wages. However, this may not always be the case. An individual working one job earning the same amount in a quarter compared to those who have two or three separate employers may be better off. For example, a person with one job may be employed full-time and benefits (e.g., health insurance) may be offered, while a person with two or three part-time jobs may not

be offered the same benefits.

The labor market dynamics post-enrollment are important in understanding the experiences of the participants over time. The data were coded for four different experiences after enrollment for Wyoming wages:

- employed first year/ employed second year;

- not employed first year/ employed second year;

- employed first year/not employed second year; and
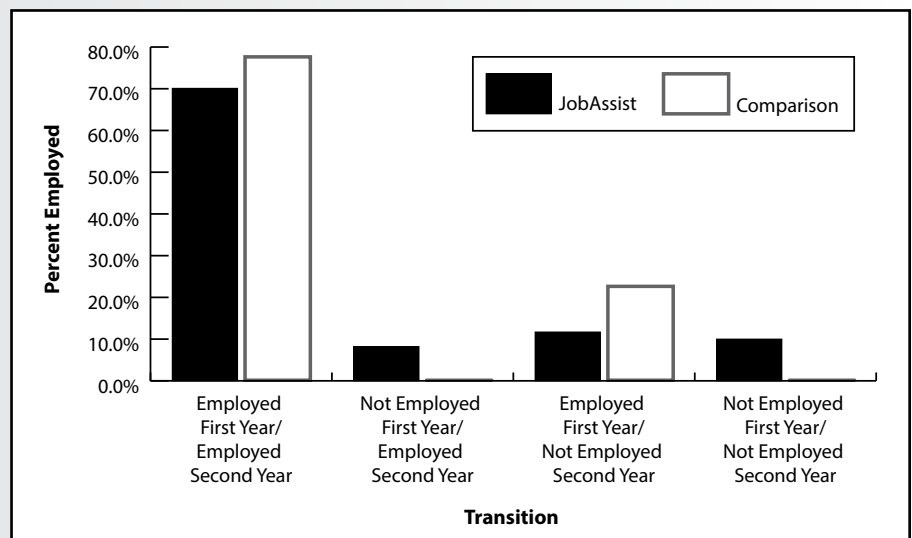
- not employed first year/ not employed second year.

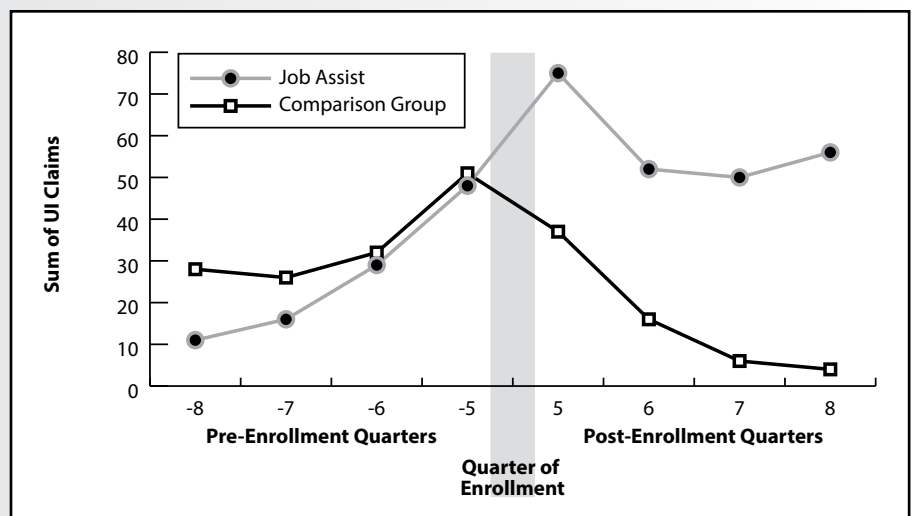Figure 7: **Labor Market Dynamics for the Two Years Post Enrollment (Percent)**

Figure 8: **Sum of Quarterly Unemployment Insurance (UI) Claims filed by JobAssist and Comparison Groups**

A person was considered employed if his or her Wyoming wages did not equal zero in any of the quarters of the year. Figure 7 compares the JobAssist and comparison group in terms of labor market transition: 70.1% of JobAssist participants were employed in both years after program enrollment compared to 77.5% for the comparison group. Additionally, 11.7% of JobAssist participants transitioned from being employed the first year after enrollment to not being employed the second year after enrollment compared to 22.5% of the comparison group. Two transitions were experienced by JobAssist participants only, with 8.2% transitioning from not being employed in the first year to gaining employment in the second and 10% were not employed in either year

after enrollment. The labor market dynamic tends to be more diverse (although not significantly) for JobAssist participants compared to the comparison group individuals.

Further evidence of workforce activity (or inactivity) can be found in the number of UI claims filed. A person is eligible for UI claims if he is separated from his job through no fault of his own. Figure 8 depicts the sum of UI claims for the JobAssist and comparison groups for the pre- and post-enrollment periods. For quarters -8 to -5, the groups were similar in the number of UI claims filed due to the matching method employed. However, beginning in the fifth quarter after enrollment, the JobAssist group showed a higher number of UI claims than the comparison group.

The number of UI claims for the comparison group dropped significantly over the four quarters while the number of claims for the JobAssist group remained relatively stable.

The number of individuals who actually received a UI benefit is presented in Figure 9. Comparing Figures 8 and 9, the number of individuals in both groups who actually were paid a benefit was significantly lower than the number who filed a claim. This finding may be an artifact of means testing for other programs. Means testing is used by certain organizations/ government agencies to test the eligibility of an individual to their programs by ensuring eligibility in another (the UI program). It can be assumed that at least some of the individuals in both groups applied for UI benefits for means testing in another program. This, however, could not be verified, as Wyoming does not currently collect whether an applicant applied for UI benefits for means testing and this finding warrants future research.
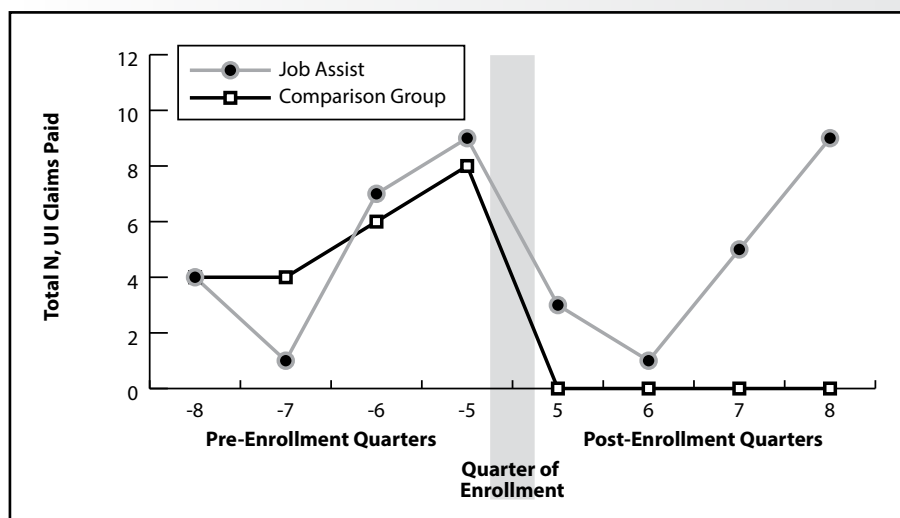
Government Assistance Programs

Figure 9: **Sum of Quarterly Unemployment Insurance (UI) Claims Paid by JobAssist and Comparison Groups**
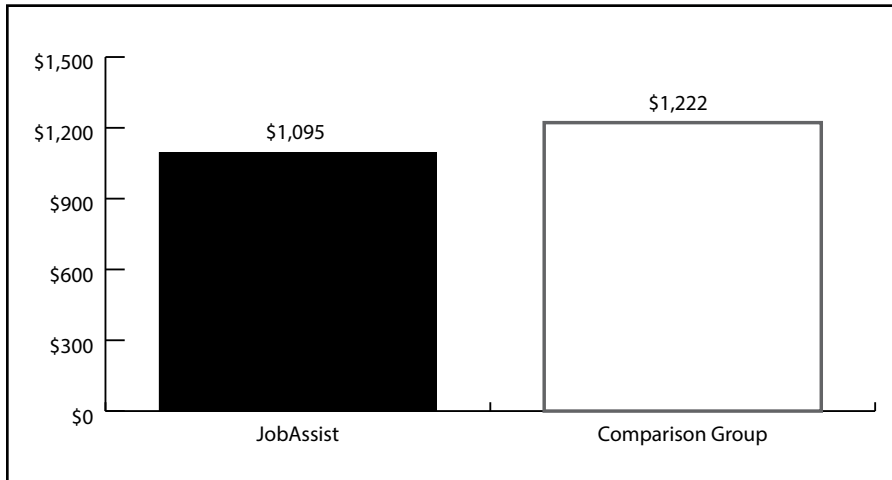
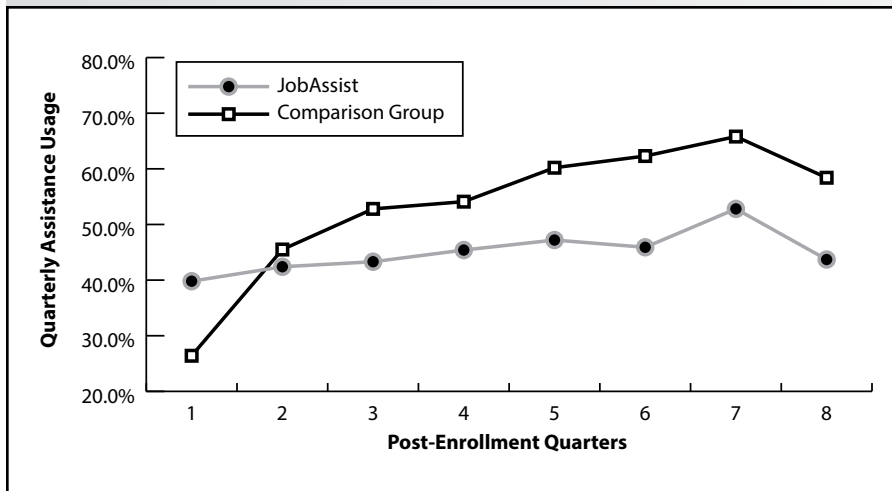**Figure 10: Average Quarterly Amount of Government Assistance Usage for the JobAssist and Comparison Groups**

Figure 11: Percent Quarterly Government Assistance Usage for JobAssist and Comparison Groups After Enrollment
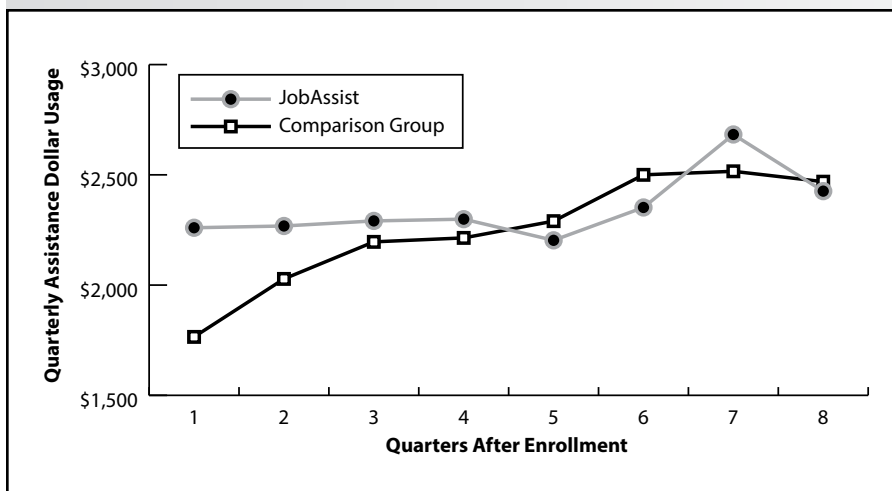

Figure 12: Average Quarterly Government Assistance Dollar Usage for JobAssist and Comparison Groups After Enrollment

R&P data records for government assistance programs were limited, with data encompassing 2010Q3 to 2012Q3; therefore, no pre-post enrollment comparisons were conducted. The three government assistance programs (SNAP, POWER, and Childcare) were averaged together for each JobAssist participant and comparison group individual for the two years after enrollment. To ensure that the person was still in Wyoming during this time period, individuals were excluded if they did not show either wages or government assistance. For example, if an individual had wages sometime during the eight quarters after enrollment but no government assistance, he or she was included. However, if an individual showed no wages or government assistance, he or she was excluded. This exclusion was imposed as the location or activities of these individuals after enrollment cannot be verified.

To test the mean differences between the groups, an ANOVA was conducted and revealed no significant differences between the JobAssist participants (M = $1,095, SD = $1,160) and the

comparison group (M = $1,222, SD = $1,044), F (1, 453) = 1.51, p =.22. The JobAssist participants were lower in the amount of quarterly usage of government assistance compared to the comparison group (see Figure 10), but these differences were not statistically significant.

To understand the trends of government assistance over the course of the two years after enrollment, individuals were selected based on whether they had any government assistance during a given quarter. For example, an individual was included if he had some sort of government assistance (greater than zero) and excluded if the government assistance total was zero. Figure 11 presents the percentage of individuals who used government assistance during a given quarter. Over the course of five quarters after enrollment, both groups showed a steady increase in government assistance usage. In quarter eight, both groups showed a decline in usage. The percentage of individuals in the comparison group who used government assistance was higher compared to the JobAssist participants for all but the first quarter. Figure 12 shows the average amount of government assistance usage during a given quarter for those individuals represented in Figure 10. Comparing the two figures, it can be concluded that even though the number of comparison group participants using government assistance increased (see Figure 11), the actual dollar amount did not differ significantly compared to JobAssist participants. It should be noted that data from the eight quarters prior to enrollment were not available, so pre-post comparisons could not be conducted.

Male JobAssist Participants

The methods used to create a suitable male comparison group were the same as the female sample. The exclusion criteria were applied to both the JobAssist participants and comparison individuals and yielded a sample of 101 JobAssist participants and 105 comparison group individuals. Due to the small pool of comparison group individuals, matching methods could not be performed with confidence and thus the analysis focused on tracking the male JobAssist participants in terms of demographic variables and pre- and post-earnings.

Table 4 shows the demographic characteristics of the male JobAssist participants. The average age and average years of experience were higher

Table 4: **Male JobAssist Participant Demographic Characteristics**	JobAssist Participants
N	101
Average Age	35.5
Average Years of Education	12.1
Average Years of Experience	17.4
Labor Market Transitions (%)	
Not Employed/employed	3.0%
Employed/employed	47.5%
Employed/not employed	37.6%
Not employed/not employed	11.9%
Percent in Laramie or Natrona Counties	89.1%
Mean post-enrollment earnings (quarters 5 to 8)	$2,273
Mean earnings in quarter of enrollment	$1,180
Mean earnings one quarter prior to enrollment	$1,217
Mean earnings two quarters prior to enrollment	$1,445
Mean earnings three quarters prior to enrollment	$1,564
Mean earnings four quarters prior to enrollment	$1,716
Mean pre-enrollment earnings (quarters -8 to -5)	$2,599
Mean growth in pre-enrollment earnings	-$883
Mean difference between pre- and post-enrollment earnings	-$326

for male participants compared to female participants. Male participants experienced mean wage decline in the quarters prior to enrollment (-$883). Males also experienced a decrease in wages between the second year following enrollment compared to the second year prior to enrollment (-$326). The Ashenfelter dip was also evident as the mean earnings for the quarter of enrollment ($1,180) was lower than the average of the four quarters prior ($1,716). Only 3.0% of male participants went from being not employed prior to enrollment to being employed the quarter of enrollment. For males, 11.9% were not employed during any quarter prior to enrollment and were not employed during the enrollment quarter. Further, 47.5% of male participants were employed both before and during the quarter of enrollment while 37.6% went from being employed to not being employed.

As with the female JobAssist participants, a paired-sample t-test was performed to test the difference in JobAssist participants' wages pre- (-8 to -5) and post- (5 to 8) enrollment. The t-test revealed no statistically significant differences between pre- (M = $2,599, SD = $2,814) and post- (M = $2,273, SD = $2,939) enrollment earnings, t(100) = .845 (two-tailed), p = .40. A statistically significant difference in the means (averages) of the two time periods would have resulted in a p-value of <.05. Male JobAssist participants saw a decrease in wages of $326, but this decrease was not statistically significant.

Conclusion

This evaluation examined the effectiveness of the JobAssist program in regards to wages and the use of government assistance for individuals who participated in the program. In this section, the implication of the findings and recommendations for future JobAssist evaluations are discussed. For both females and males, the average wage increase from eight quarters before (pre-enrollment earnings) and eight quarters after (post-enrollment earnings) were not significantly different statistically. Further, when the JobAssist participants were matched to the comparison group individuals, there was no significant difference in post-enrollment wages between the two groups. These findings show that after two years of enrolling in the JobAssist program, participants showed no significant gains in wages from two years prior to enrollment. Further, JobAssist participants fared no better compared to individuals who were also economically disadvantaged who did not participate in the program (comparison group).

JobAssist participants were also less likely to be employed both years after enrollment compared to the comparison group. However, a small percentage did transition from not being employed the first year after to being employed the second year after. The number of employers and the number employed in each group were similar in the post-enrollment quarters (4 to 8). JobAssist participants also had higher unemployment insurance claims filed starting the second year after enrollment compared to the comparison group. This may be explained by the high level of turnover seen at the year anniversary of enrollment when many JobAssist participants exited the program. The number of individuals who were actually paid UI benefits was small for both groups. This decrease may be due to means testing for other programs.

In terms of government assistance usage, there was no significant difference statistically between the JobAssist participants and the comparison group in the post-enrollment period. The number of JobAssist participants who used government assistance was lower than the comparison group; however, the actual dollar usage of government assistance was similar across groups. This finding shows that for those who participated in the JobAssist program, there was no difference in actual dollar usage than the comparison group.

The goal of the JobAssist program was to increase participant wages and employment outcomes while decreasing participants' reliance on government assistance programs. The motivation to conduct this evaluation was to answer the question of whether the JobAssist program did in fact accomplish these goals. Overall, there was no indication that the JobAssist program participants fared any better compared to similar individuals who did not participate in the program. However, several cautions should be recognized. First, no analyses of the various services provided by the JobAssist program were conducted. The data were incomplete for many participants regarding which services they received, the duration, and what the exact purpose was during the service. For example, if a JobAssist coordinator documented one hour of a home/ office visit, there was no indication of what actually occurred during the visit. Second, the amount of time a JobAssist coordinator spent referring a participant to a specific service was also largely unknown. Of the 3,702 hours of time JobAssist coordinators documented, 2,071 were unknown. The amount of time that is unknown makes analysis of the time spent coordinating certain services almost impossible.

The results of this evaluation provide useful information and insight into the effectiveness of the JobAssist program. However, it should be noted that an overall conclusion, in terms of policy implementation, may not be completely justified based on the results. The results suggest that those services provided by the JobAssist program did not have the intended effects of reducing government assistance usage and increasing wages compared to those who applied for UI benefits. Before any useful conclusions can be made regarding the effectiveness of the services provided by JobAssist, an in-depth evaluation of the services provided to each client will be needed. Some of the services that JobAssist provided may have had an effect on wages and government assistance outcomes, but since these were not well documented, no conclusions should be drawn on service effectiveness at this time.

Limitations

Several limitations exist with the data. First, the main purpose of the contractor's WHIN database is to gather information from state agencies and apply integrated risk analytics to identify individuals who were eligible to participate in the JobAssist program. However, individuals who were referred to the program directly (who were not in the WHIN database) also participated in the program. Fundamental differences between individual characteristics of people who were selected using the risk analytics of the database and those who were referred are problematic. There was no systematic way to select individuals to participate in the program if individuals were allowed to participate who were not in the system.

Second, the data on individuals who were solicited to participate did not contain enough information to control

for confounding variables – specifically, the number of times an individual was solicited to participate in the program, demographic variables (i.e., age, education, family size), and whether the individual consented to participate but did not actually matriculate. The necessity of this information is paramount in evaluation research. Propensity score matching requires that an individual be matched based on certain confounding characteristics that could affect whether they entered the program or not. The date of initial contact is crucial in establishing a point in time comparison to those who actually enrolled in the program. This evaluation needed to create such an event (e.g., date entered into UI benefit system) to make meaningful comparisons. The need to create this event excluded many individuals in the comparison pool which otherwise may have been included in the matching procedure had the appropriate data been collected systematically.

Third, the data provided to R&P from the WHIN system lacked the essential program details regarding the participants' services that no analyses could be performed on specific program services. For example, during a participant's time in the program, what did the client do and how did JobAssist coordinators facilitate interventions? Further, data regarding program outcomes and the specific reasons participants ended the program were not clear.

Finally, at the time this research was conducted, R&P did not have access to DFS data prior to 2010Q2. This limited R&P's ability to evaluate pre- and post-enrollment comparisons on government assistance programs. Once these data are made available, a more systematic analysis may be conducted.

Given the multiple limitations in the data provided to R&P, several recommendations are outlined in the next section to improve evaluation research in the future.

Recommendations

As part of the clear message by the Office of Management and Budget and the GPRA of 1993, several recommendations are listed in this section to ensure accurate and scientifically rigorous evaluations are conducted in the future.

Recommendation A. Data regarding the specific way an individual is solicited to participate in certain programs should be collected systematically. For instance, an individual who was actually solicited using the risk analytics and those who were referred by some other source should be identified. Further, the dates in which these events occurred should be documented for evaluation research using non-experimental designs. Demographic characteristics should be collected if at all possible. The use of these variables in evaluation research is necessary to form reliable and valid comparison groups. Wyoming DWS should consider developing and implementing a reliable interview and/or contact questionnaire when soliciting individuals to participate in programs offered.

Recommendation B. Data collection should be systematically specified for those individuals who participate in a program. These variables should include, but are not limited to, the specific program services utilized by participants, specific outcome data (e.g., program exit reasons, goal monitoring), relevant demographic information, and training outcomes. According to the contract between DWS

and the private contractor, money from POWER (TANF block grant funds) is utilized to fund the the private contractor's JobAssist program, and DWS should consider implementing certain guidelines that must be followed in order for funding to be distributed.

Recommendation C. The contract between DWS and the private contractor specifies that the contractor is to provide a monthly report which should include several aspects of program outcomes. The data in these reports include whether the trainee completed the program, gained employment after the program exit, and the specific service dates for the trainee. These monthly reports can be analyzed by R&P more frequently for program effectiveness but the reports have not been made available to R&P. These monthly reports can provide DWS with the capacity to monitor program performance on a regular basis instead of yearly or every two years.

Recommendation D. R&P was not able to evaluate pre-enrollment DFS (government assistance) data due to data not being available at the time of the evaluation. At the time of this research, R&P had a memorandum of understanding with DFS regarding data procurement prior to 2010Q2 and future quarterly data. These data are necessary to form reasonable conclusions regarding program effectiveness with respect to government assistance usage. These data are matched with R&P's administrative datasets to form a reliable and accurate picture of an individual's situation with regard to wages, unemployment, and government usage.

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