



A Logistic Regression Analysis to Assist Welfare Recipients Attaining Employment

Jorge N. Zumaeta Ph.D.

Florida International University, USA

Email: jzumaeta@fiu.edu

Article History

Received: 2 April, 2021

Revised: 21 May, 2021

Accepted: 18 June, 2021

Published: 25 June, 2021

Copyright © 2021 ARPG
& Author

This work is licensed
under the Creative
Commons Attribution
International



**BY: Creative Commons
Attribution License 4.0**

Abstract

This study reports on an experiment using a logistic regression to uncover the preponderant factors influencing the likelihood of attaining employment by a welfare recipient in Broward County, Florida. Our study considers whether profiling the participants and tailoring the workforce development services based on their respective profiles can increase their likelihood of finding employment (Black *et al.*, 2003). The study finds that our econometric model predicted the probability of employment with reasonably strong reliability. This finding is in alignment with the Welfare Profiling Model of Michigan's (Barnow *et al.*, 2012; Eberts, 1997;2002) and the Factors Influencing AFDC Duration and Labor Market Outcomes Research Study of Texas (Schexnayder *et al.*, 1991). More specifically, the results indicate that education and prior employment history are significant factors increasing the likelihood of departing from welfare and achieving employment. Furthermore, the study concludes that the number of children, participant's age, and the ethnicity of the welfare recipient also play a role in breaking away from welfare. The results from the experiment show that using the econometric model to assign services to individuals increases the likelihood of finding employment from 11% to 24% on average. This is a very encouraging finding since it motivates researchers to perform further research in this area of study.

Keywords: Demographics; Labor economics; Labor policy; Workforce development; Welfare policy.

1. Introduction

Over the last three decades, social scientists and policymakers have become increasingly interested in developing a better understanding of the populations receiving social benefits and the possible pathways for achieving economic self-sufficiency (Wefler, 2018). Some explorations included econometric analyses to gauge several factors like demographic characteristics and participants' professional profiles and the impact of these on participants' employability and achieving employment. This study replicated the W. E. Upjohn Institute for Employment Research (Kalamazoo, Michigan) profiling project in Broward County, Florida. The goal of this study is to uncover the preponderant factors influencing the likelihood of attaining employment and to test the statistical profiling model in terms of increasing participants' opportunities to become employed. A Logit statistical model was used to prescribe the best major service track for welfare recipients based on statistical success probabilities. Immediately after demonstrating program eligibility, 50 percent of the participants were randomly assigned to be part of the experimental group and the other 50 percent to be part of the control group.

2. Context

In recent years, the US Federal government has sought to increase the effectiveness of federally funded programs by providing states more direct control over the allocation of resources. One such case involves the federally funded block grant entitled Temporary Assistance for Needy Families (TANF)¹ that has replaced Aid to

¹ The TANF program, which is time limited, assists families with children when the parents or other responsible relatives cannot provide for the family's basic needs. The Federal government provides grants to States to run the TANF program. These State TANF programs are designed to accomplish four goals: to provide assistance to needy families so that children may be cared for in their own homes or in the homes of relatives; to end the dependency of needy parents on government benefits by promoting job preparation, work, and marriage; to prevent and reduce the incidence of out-of-wedlock pregnancies and establish annual numerical goals for preventing and reducing the incidence of these pregnancies; and to encourage the formation and maintenance of two-parent families.

Families with Dependent Children (AFDC)². However, even with the transfer of direct authority, the stringent, federally mandated requirements have not changed, and “*each adult receiving welfare support financed by federal block grant must participate in work activities after receiving benefits for 24 months, and each recipient is entitled to a cumulative lifetime maximum of five years of benefit.*”³

For the State of Florida, its transition from a retirement state to one in which younger families now come to reside and work has increased the percentage of residents who are poor. It is, therefore, becoming increasingly important for the government to develop policies dealing with the poor in the most cost-effective manner (Bloom and Michalopoulos, 2001; Fieldhouse *et al.*, 2011; Wunsch, 2013). Broward County is the second-most populous county in the State of Florida, right after Miami-Dade County. In 2017, Broward County, FL had a population of 1.94M people with a median age of 40.2 and a median household income of \$56,842. Between 2016 and 2017, the population of Broward County, FL grew from 1.91M to 1.94M, a 1.37% increase, and its median household income grew from \$54,212 to \$56,842, a 4.85% increase.

The population of Broward County, FL is 36.2% White Alone, 29.7% Hispanic or Latino, and 27.7% Black or African American Alone. 40.7% of the people in Broward County, FL speak a non-English language, and 85.9% are U.S. citizens. The median household income in Broward County, FL is \$56,842. Males in Broward County, FL have an average income that is 1.33 times higher than the average income of females, which is \$45,343. In 2017, the income inequality in Florida was 0.473 according to the GINI calculation of the wage distribution. Income inequality had a 0.211% decline from 2016 to 2017, which means that wage distribution grew somewhat more even.

In 2017, the GINI for Florida was lower than the national average of 0.479. In other words, wages are distributed more evenly in Florida in comparison to the national average. 14% of the population for whom poverty status is determined in Broward County, FL (262k out of 1.87M people) live below the poverty line, a number that is higher than the national average of 13.4%. The largest demographic living in poverty are Females aged 25 - 34, followed by Females aged 35 - 44, and then Females aged 45 - 54.

2.1. Literature Review

As stated earlier, our Broward study followed the same research design for testing the efficacy of profiling and referring welfare-to-work participants as Eberts' studies⁴. Eberts' profiling management tool statistically estimated the probability of obtaining employment by participants in a welfare-to-work program in Kalamazoo, Michigan. Both the Kalamazoo and our study derived the probabilities of returning to employment from a statistical logit model using information commonly collected at enrollment interviews. Eberts' earlier works, dating back to 1997, when he developed an econometric model that estimates the relationship between an individual's propensity to find and hold a job and that person's characteristics, his/her work and welfare histories (Weil, 2017) and the local labor market conditions. Prior to embarking on his research, Eberts ran a preliminary analysis based on national data from the Survey of Income and Program Participation (SIPP), which shows that variables similar to the ones collected at intake into the Work First program explain the propensity to find a job with reasonable precision. In our study, I used data from the local workforce delivery system.

In all his works, Eberts went further by taking the model to the One-Stop Career Centers and used the model as part of a new participant referral tool for services. His model defined success as the participant remaining employed over 90 consecutive days. The model specified here defines success as the participant keeping employment for more than two consecutive quarters (180 days). I believe participants needed a longer period of employment to experience a minimum level of self-sufficiency. Eberts' studies described the new assessment and referral system that was designed to assist local welfare-to-work program staff in targeting employment services more effectively in order to help welfare recipients find jobs. The motivation for the development of this system was the potential effects of targeting services to meet the specific needs of customers (Grossman *et al.*, 1985). The system is based on statistical methods and uses administrative data typically collected by welfare-to-work agencies. The Kalamazoo-St. Joseph Workforce Development Board piloted the new system by integrating it within the existing Work First program that it administers for the local workforce development area. (Eberts, 1997;2002; Eberts and O'Leary, 2003) reports on an experiment that was conducted from January 1998 through March 2000, during which time more than 6,000 welfare recipients participated in the program and used the assessment and referral tools. At the time of enrollment in the Work First program, staff used the statistical tool to make an initial assessment, referred to as an employability score, of each participant's ability to find and retain a job. The staff then used the individual employability scores to

²AFDC was a federal assistance program in effect from 1935 to 1996, created by the Social Security Act (SSA), and administered by the United States Department of Health and Human Services that provided financial assistance to children whose families had low or no income. This program grew from a minor part of the social security system to a significant system of welfare administered by the states with federal funding. However, it was criticized for offering incentives for women to have children, and for providing disincentives for women to join the workforce. In 1996, AFDC was replaced by the more restrictive Temporary Assistance for Needy Families (TANF) program.

⁴ Randall W. Eberts is an American economist who specializes in the public workforce system, public finance, urban economics, labor economics, infrastructure and productivity, and policies promoting student achievement. He is president of the W.E. Upjohn Institute for Employment Research in Kalamazoo, Michigan. Prior to joining the Upjohn Institute in 1993 as its executive director, Eberts was associate professor of economics at the University of Oregon (1983–1987), senior staff economist on the President's Council of Economic Advisors (1991–1992), and assistant vice president and economist at the Federal Reserve Bank of Cleveland (1986–1993).

refer customers to service providers that offered the set of services and pursued an approach to delivering services that best met their needs.

An evaluation of the Kalamazoo pilot, based on a random assignment design, found that referring participants to service providers according to their employability assessment increased the overall effectiveness of the program. Using a job retention rate of 90 consecutive days as the employment outcome, the optimal referral pattern based on the statistical assessment tool yielded retention rates that were 25 percent higher than if participants were randomly assigned to providers. The analysis also found that the difference in retention rates between the best and worst referral combinations was 56 percent. Using earnings as a measure of the additional benefits to participants of the new system, the benefit-to-cost ratio ranged between 3.25 and 5.8, depending upon assumptions regarding the length of time the earnings differential between the treatment and control groups persisted. The system was designed to be integrated into most existing welfare-to-work programs, and once operational, to require minimal (if any) additional staff. The W. E. Upjohn Institute developed the system, with funding from the Employment and Training Administration of the U.S. Department of Labor (Bartik, 2001).

This study describes the development, implementation, and evaluation of a new assessment and referral system, designed to assist the staff of local welfare-to-work programs in targeting employment services more effectively to welfare recipients. The motivation for the development of this system is the potential benefit to program participants in addressing their specific needs rather than providing all customers with the same set of services, which has been the approach of most welfare-to-work programs. The assessment and referral system includes administrative tools that provide staff with a quick and efficient means to assess the needs of participants as they enroll in welfare-to-work programs and then to use the assessment to refer participants to service providers that are best suited to meet their needs. The assessment tool is based on a statistical method that uses administrative data to estimate a participant's level of employability. The employability estimate is then used to refer participants to appropriate service providers. The assessment and referral system is designed to be integrated into an existing intake process, to require minimal (if any) additional operations staff, and to comply with the procedures and practices of the various welfare-to-work programs administered by the states.

The Kalamazoo-St. Joseph (Michigan) Workforce Development Board (WDB) piloted the system by incorporating it into a welfare-to-work program, referred to as Work First, that it administers for the two-county area in southwestern Michigan. The Work First program administered by the Kalamazoo-St. Joseph WDB had been in operation for several years before the pilot was initiated. The major difference in the operation of the Work First program during the pilot from its operation before was the use of the statistical assessment tool and the targeted referral. Before the pilot, all participants were treated the same way. They attended the same orientation and were randomly assigned to one of three service providers. Random assignment was used because staff had insufficient information at the time of enrollment to identify the barriers to employment that participants faced or the type of services that would best meet their needs. During the pilot, participants continued to attend the same orientation as before but were referred to service providers according to an assessment of their employability based on statistical methods and a determination of the comparative advantage of each provider in serving participants with different employment capabilities. Although each provider offered the same basic set of services as required under Michigan's Work First program, they varied in their approach in providing these services, which were seen as more effective for some participants than for others.

The evaluation found that referring participants to service providers according to their employability score increased the overall effectiveness of the program. Using a job retention rate of 90 consecutive days as the employment outcome, the results showed that:

- The statistical assessment tool was successful in distinguishing among participants with respect to their likelihood of employment and retention. The optimal referral pattern based on the statistical assessment tool yielded retention rates that were 25 percent higher than retention rates of participants who were randomly assigned to providers.
- The difference in retention rates between the best and worst referral combinations was 56 percent.

The average weekly earnings of those who retained their jobs for 90 consecutive days were used to account for the benefits of the pilot system. The net present value of the difference in earnings between the treatment group (generated from the optimal assignment rule) and the control group was used to estimate the net impact of the program (Freedman *et al.*, 1996). The net present value, assuming that the earnings differentials persisted for 8 quarters, ranged from \$471,000 to \$841,000. Combining these estimates with the total cost of designing, implementing, and operating the program of \$145,000 yielded a benefit-to-cost ratio that ranged from 3.25 to 5.8.

After clients complete the core services, they are required to search intensively for work and to accept offers that provide at least 20 hours of work per week at or above the minimum wage. More extensive assessment and skill training are available through the local WIA program, but only for those who have extreme difficulty finding a job. Participants are expected to obtain a job within 90 days or risk a reduction in benefits. Ellwood (1986), explored the possibility of using statistical means to identify individuals who are most likely to be long-term welfare recipients. He estimated recidivism rates and exit rates using the characteristics of individuals and their previous employment and welfare histories as predictors. Additionally, Gueron and Edward (1991) reviewed the evaluations of a host of programs, both broad-coverage and small and selective voluntary programs, in order to discern whether the effectiveness of the service components within these programs vary among participants. They concluded that the impacts do vary among participants and that they are larger for more disadvantaged recipients.

One of the main differences between the Broward and Kalamazoo studies is the demographic composition and socio-economic characteristics of the general population. In contrast to Broward County, in 2017, Kalamazoo

County, MI had a population of 263,000 people with a median age of 34.4 and a median household income of \$56,025. Between 2016 and 2017 the population of Kalamazoo County, MI grew from 261,654 to 262,985, a 0.509% increase and its median household income grew from \$53,138 to \$56,025, a 5.43% increase. The population of Kalamazoo County is 77.4% White Alone, 10.2% Black or African American Alone, and 4.94% Hispanic or Latino. 96.8% are U.S. citizens. 16.7% of the population for whom poverty status is determined in Kalamazoo County (42,000 out of 251,000 people) live below the poverty line, a number that is higher than the national average of 13.4%. The largest demographic living in poverty are Females 18 - 24, followed by Males 18 - 24, and then Females 25 - 34. This indicates that the population in Kalamazoo is more homogeneous and not as diverse as Fort Lauderdale, Broward County, Florida. One of the similar findings between Eberts' and our study is that in both locations participants are more likely to achieve employment if they had completed 12th grade. Also, in both cases the sooner participants are placed in a job, the greater the likelihood of maintaining the jobs over the 90 days.

These results are consistent with previous studies that examine the employment prospects of welfare recipients and determine that education and prior employment history were important determinants of the likelihood of leaving welfare for employment. A study for the State of Texas also found these factors to be important (Schexnayder *et al.*, 1991). The Texas study also found that the number of children, the age of the welfare recipient, the duration on welfare, and the use of the employment service, and participation in job training programs also affected the likelihood of employment in the expected direction. The employment and training-related results from Texas are consistent with our results from Work First that prior employment and compliance with previous Work First enrollment positively affect the likelihood of qualified employment.

More specifically, our study estimated a model of the determinants of the likelihood that participants in the program find work after participating in the program. The model is then used to design an experiment in which individuals are assigned to different services based on their estimated probability of finding work. New participants are assigned to either a treatment group, in which the statistical model assigns them to service tracks, or to a control group, in which they are assigned to services based on the discretionary decisions of caseworkers.

This study is organized in the following manner. Section 2 describes the economic and social characteristics, or profile⁵, of welfare to work recipients. Section 3 describes the model estimated to determine the *probability of employment* for welfare to work recipients (Sandoval *et al.*, 2011). Section 4 describes the experiment. Section four compares the results of this model with that of another methodology that seeks to address the same problem (Eberts and O'Leary, 2002;2003). Although some of the variables are different, this research is based on the seminal research by Eberts (1997) of the W. E. Upjohn Institute for Employment Research⁶.

The results of the estimation in Kalamazoo, Michigan, and Broward, Florida are similar in terms of identifying "prior employment and education" as the two main factors contributing to achieving and maintaining employment. The study conducted by Schexnayder, King, and Olson in the State of Texas in 1991 found a similar strong significance of prior employment and education and also concluded that other factors were very significant as well. The Texas study found that the number of children, the age of the welfare recipient, the duration on welfare, and the use of the employment service, and participation in job training programs also affected the likelihood of employment in the expected direction. The employment and educational attainment levels from these two previous studies are consistent with our results.

We then report on an experiment that attempts to tailor the services that the participants receive based on their estimated probability of employment. Subjects, WAGES/TANF clients, are placed into one of three "service tracks". These were considered as no/little service (Track 1), moderate service (Track 2), or high service (Track 3). An experimental versus control group process was established with random assignment to the group. In the experimental group, clients were assigned to service tracks based on their estimated probability of success under our econometric model. Clients were randomly assigned to the control group and received all services that they actually needed.

Random assignment, where participants are randomly assigned to different treatments or where a subgroup of applicants selected randomly is denied access to the program, is generally quite unpopular with social service programs. However, random assignment is often the fairest way to deal with excess demand for a program. In the context of this project, the Broward Workforce Development Board used a sequential approach to providing services prior to the profiling experiment. Under this approach, welfare recipients only received training and more intensive services after they failed to find a job with only job search services. Some believed, however, that if the welfare recipients most likely not to find a job without more intensive services could be identified, then such individuals would gain by the immediate provision of more intensive services. An experiment, where the control group received the traditional sequential services, and the treatment group received the services suggested by the profiling model offered an opportunity to settle this issue scientifically so that a better strategy could be identified (Black *et al.*, 2003).

3. Demographic Characteristics of Welfare Recipients in Broward County

We begin by describing the general characteristics of the group of welfare clients studied. The time frame for analysis of the first set of data was one (1) year, beginning October 1, 1997, through September 30, 1998. Data were

⁶ The W.E. Upjohn Institute is a private, nonprofit, nonpartisan, independent research organization devoted to investigating the causes and effects of unemployment. <https://upjohn.org/about-us/what-we-do/history-mission>

obtained from the Florida WAGES (Work and Gain Economic Self Sufficiency⁷) Management Information System. The population of AFDC/TANF recipients examined consisted of 7,564 individuals (N = 7564) who had transitioned⁸ out of the WAGES program.

The Institute was uncertain of the marital status of the population because 95.7% of the data was missing in this category. (See Figure 1). However, where status was entered, “single” was the predominant classification. This is consistent with the national data reported in other studies (Joseph, et al, 2018). Eighty-nine percent (89%) of the population examined was female. (See Figure 2) The average age of the subjects was 31, with a range from 16 to 68 years.

Figure-1. Marital Status

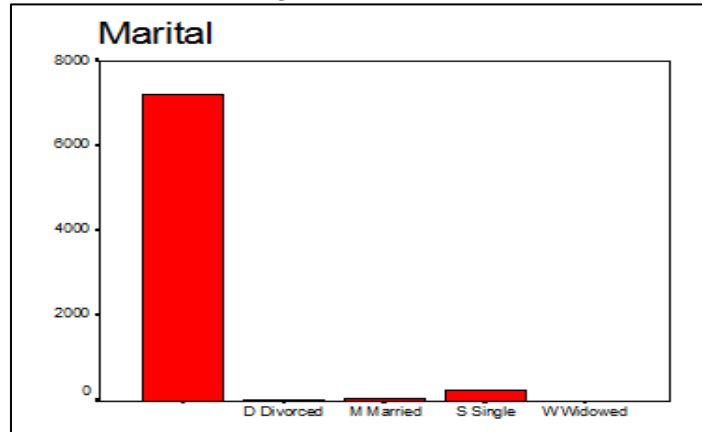
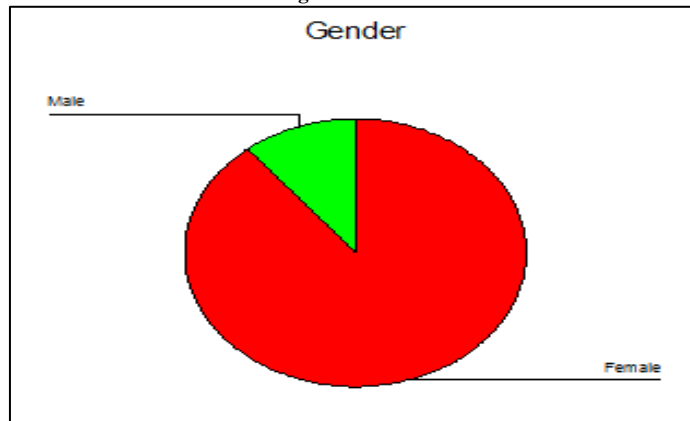
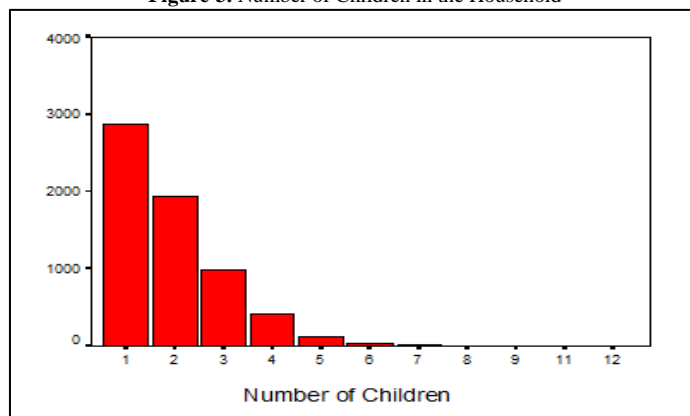


Figure-2. Gender



As shown in Figure 3, Forty-four percent (44%) of the women in this study had only one child compared to the general population, where only 11% of mothers had only one child (Livingston, 2015). The range of children’s ages was from less than one year to thirty years of age. The Institute deleted children whose ages were above eighteen.

Figure-3. Number of Children in the Household



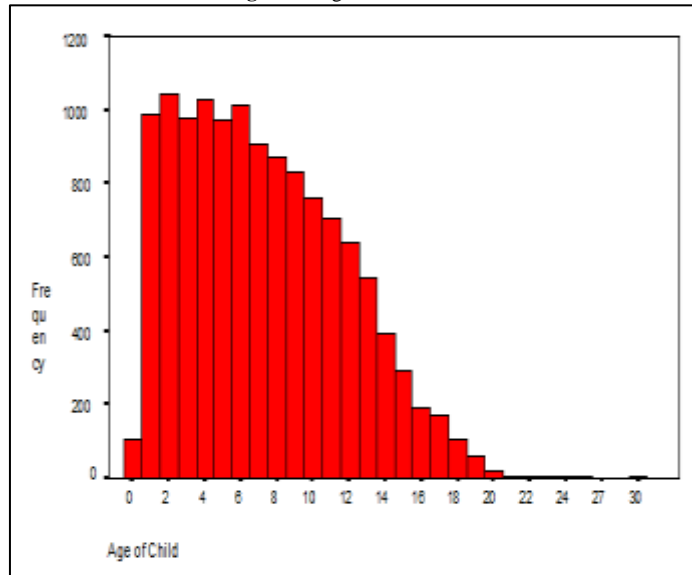
⁷ Under Florida’s Work and Gain Economic Self-Sufficiency (WAGES) Program, cash benefits can be paid to eligible families and individuals within specified time limits. The amount of cash benefit available depends upon eligible family size and reductions for earned income and resources.

http://help.workworldapp.com/wwwbhelp/florida_work_and_gain_economic_self_sufficiency_wages_program_overview.htm

⁸ Left either voluntarily or involuntarily from cash assistance.

The average age of children was seven years old (See Figure 4), but was fairly uniformly distributed at two years, four years, and six years of age, with fewer children at older ages. The mode was two years of age.

Figure-4. Age of the Children



The range of education for this sample population of single mothers was 0 years (no formal schooling) to a master’s degree (see Figure 5). Thirty-one percent (31%) of the population had completed the 12th grade. However, a combined 17% of the population had an educational status that ranged from “No Formal Schooling” to no more than “9th Grade Completed”. Over fourteen percent (14.5%) had completed 10th grade, followed by 15% who had completed the 11th Grade.

Figure-5. Highest Grade Completed

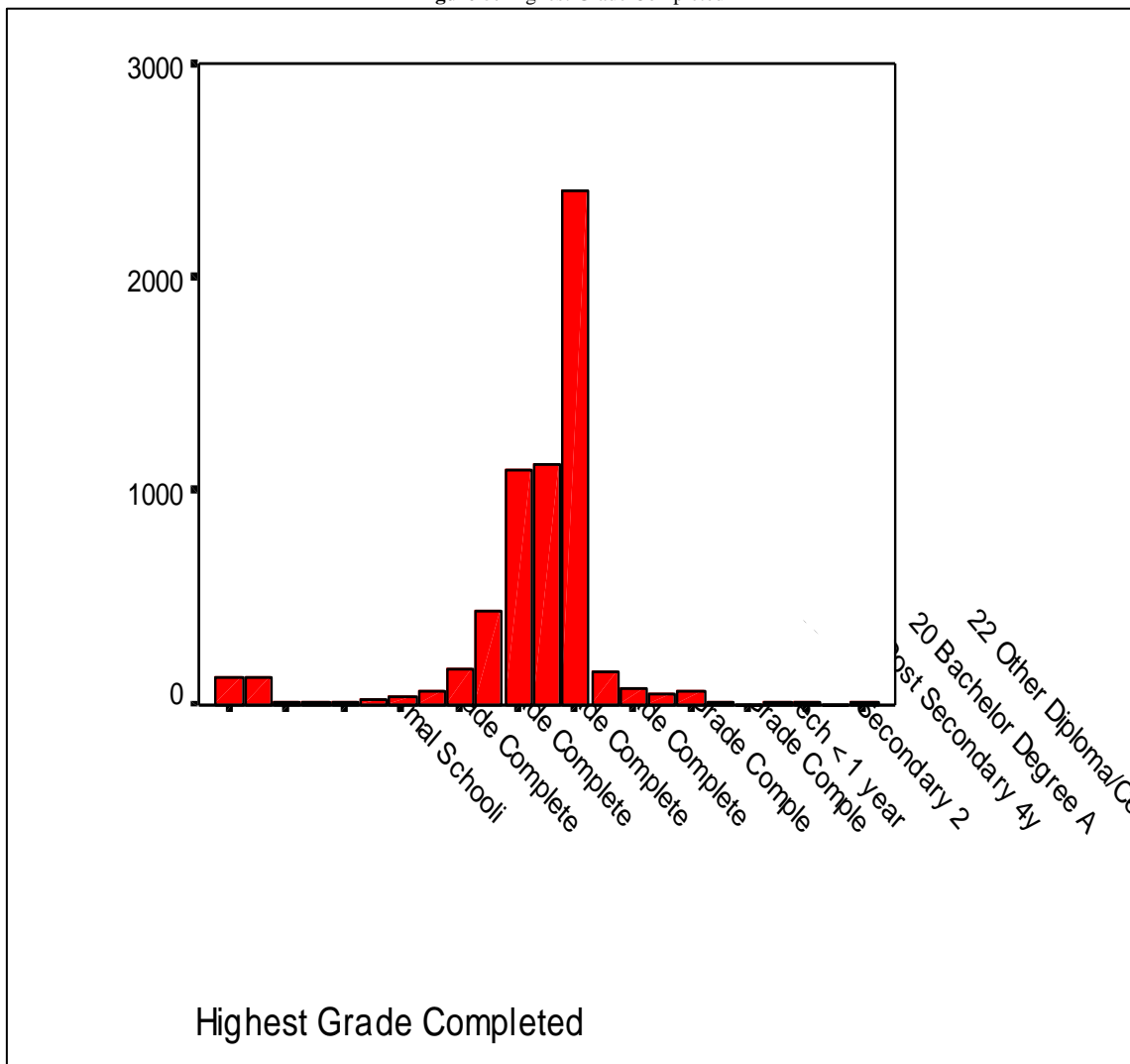
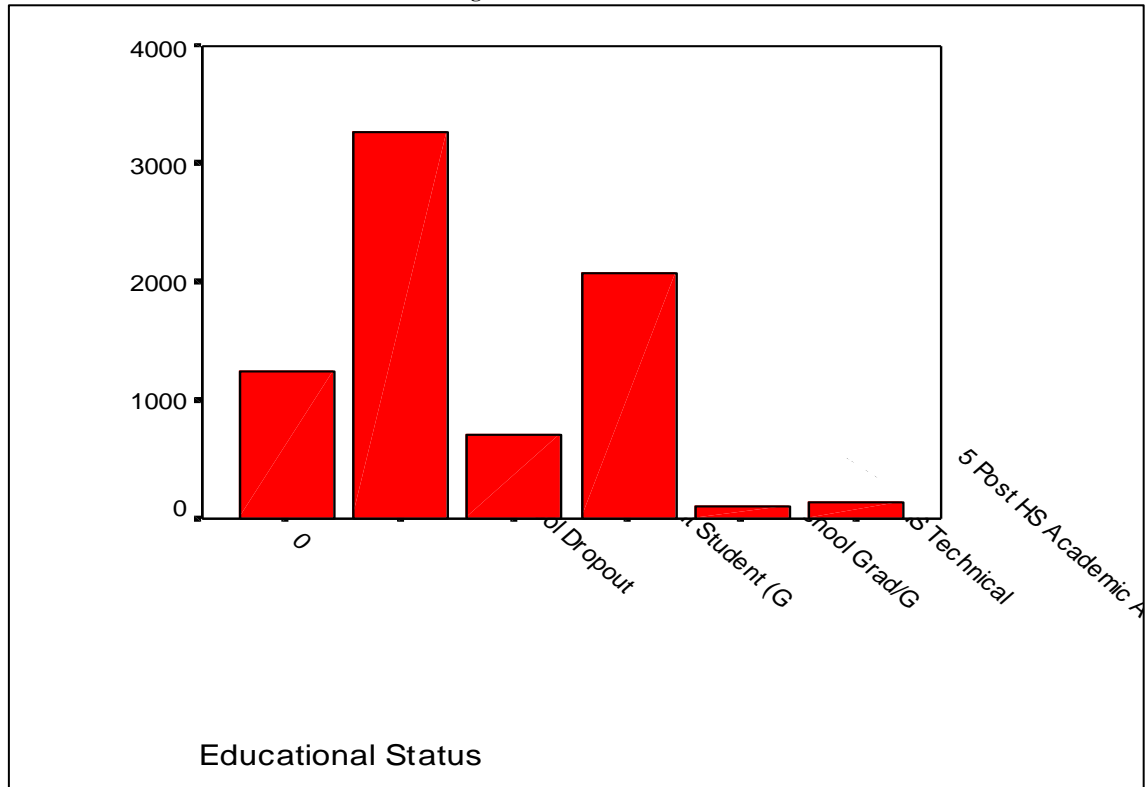


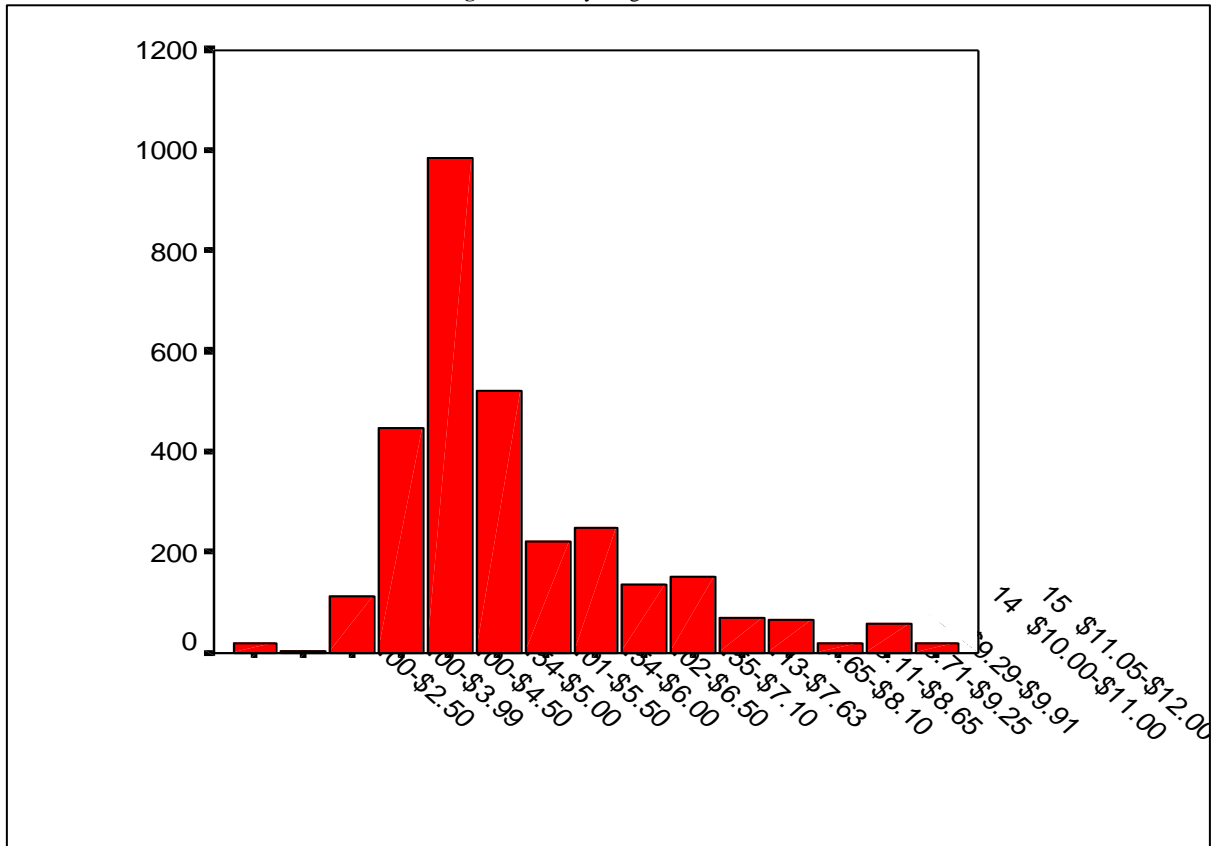
Figure-6. Educational Status



Educational Status, a service variable, had 43.4% of the population classified as a “School Drop Out” (See Figure 6). Twenty-seven percent (27%) were High School Graduates or had earned a GED (high school equivalency) certificate. The percentage of individuals with “0” Status was 16.5%, reflecting less than the School Dropout rank. If we compare this figure to that of individuals who ranged in education from “no formal schooling” to “9th grade completed” we see an agreement between the variables.

Twenty-eight percent (28%) of the population had not worked at any job in the past two years. Of the women who had worked in the past 24 months, 14% had worked for twelve months, and almost 10% had worked for a total of twenty-four months. Out of a total of 7,564 participants that were examined for working status ($N = 7,564$), there was incomplete data for 4,447 (59%). The resulting 3,117 individuals were examined by Institute staff with the following results. Seventeen percent (17.3%) reported that they had worked a 20-hour week, followed by 9% who had worked a 25-hour week. Those completing a 30-hour week consisted of 15.6% of the clients with complete data. Exactly 33% of those clients with complete data reported that they had worked a 40-hour week. A total of 1,705 individuals worked at part-time status (up to 32 hours per week), with the balance of 1,412 individuals working full-time. The next variable to be considered in the model was earnings. Once again, the missing data constituted 4,447 persons from the total number of 7,564 ($N = 7,564$). Thus, the staff studied the remaining 3,117 ($N = 3,117$). Salaries were entered into the WAGES MIS system as a “Per hour Wage”. This was then re-coded into an *interval level variable* (See Figure 7). Earnings ranged from a low of \$0.85 per hour to a high of \$60.00 per hour. These extremes were deleted from the analysis. The remaining sample examined consisted of 3,086 individuals ($N = 3,086$) of whom 32% earned between \$5.01 and \$5.50 per hour, and 17% of the population earning between \$5.54 and \$6.00 per hour. Almost 15 percent earned between \$4.54 and \$5.00. The combined earnings range, which constitutes over 60 percent of the total working population of single mothers, is between \$4.54 and \$6.00 per hour.

Figure-7. Hourly Wage of the Clients



From the sample of 3,117 (N = 3,117), over 1,000 women worked a 40-hour week. This portion of the population constituted 33% of all the working women, followed by 17% who reported that they worked part-time at 20 hours per week. Almost 20% worked between 25 and 30 hours a week. The reasons provided for termination of WAGES services range from “Completion” of the program to becoming “Employed”, to “Cancellation of Temporary Cash Assistance” to a “Closure due to Non-compliance”. The most frequent reason for termination of services was Temporary Cash Assistance canceled. This was in direct correlation with a “Level 1 Penalty” that is defined as the first non-compliance action. Over 47 percent (47.2%) of the sample population terminated due to “Cancellation of Temporary Cash Assistance”, followed by 35% for Level 1 Penalty. Only 4.2% terminated from services due to becoming employed.⁹

The ethnicity of this population was the most difficult to discern due to the grouping of respondents to a major ethnic category. The data system is set up by racial category as opposed to ethnicity following U.S. Census Bureau’s guidelines. Therefore, despite the varied skin tones of the population that consists of Hispanic (Afro-Latinos), Haitian, and Caribbean origin, all those with “dark skin” were entered into the system as “Black”. This may become problematic in terms of targeting those who do not speak English or have limited schooling and/or reading and writing skills. The modal profile of the welfare recipient who has transitioned out of the WAGES system is a single black female, between the ages of 21 and 38 (Weil, 2017). She has one child and is a high school dropout. She has not worked at all over the past two years and when she obtained work she earned between \$5.01 and \$5.50 per hour. The majority of women are working a 40-hour workweek. If the study can calculate an annual salary based on the hourly earnings and average of forty hours work a week; then, it can “project” an annual salary to be \$10,500.00 for a single mother in the Broward County area. The U.S. Census Bureau reports the level of poverty for a family of two as \$10,610¹⁰ for 2002. Based on this information, it is possible to determine that while the average former welfare mother is indeed working, but she remains at or below the level of poverty (McGregor, 1978; Mollie Orshansky, 1988).

⁹ It should be noted that clients are often terminated by sanctions when in reality they have found a job and have not reported that job to their case manager.

¹⁰ U.S. Federal Poverty Guidelines Used to Determine Financial Eligibility for Certain Federal Programs. 2002. The federal poverty level is a measure of income used by the U.S. government to determine who is eligible for subsidies, programs, and benefits. The poverty level measures a family’s annual cash income. Each agency administering an assistance program determines whether to use the family’s before-tax or after-tax income in computing eligibility. Other poverty indicators measure total wealth, annual consumption, or a subjective assessment of well-being. These indicators point to one’s standard of living, which takes into account only the amount of material goods and services available to the individual or family.

4. A Model of the Determinants of Finding Employment

4.1. The Data Available

Existing data of successful participants was used to estimate a model of the determinants of finding employment after participation in the program. Then, participants were assigned to a treatment or a control group. For those in the treatment group, the statistical model was used to assign individuals to different bundles of services proven to be successful in terms of the desired outcome. Those in the control group are assigned to services in the traditional manner, at the discretion of caseworkers.

The variables pertaining to demographic data that we have available are Gender, Age, Race, Number of Children, Education (Highest Grade Completed and Educational Status), Previous Work Experience (number of months worked in past 2 years), and Reason for Termination from the WAGES program/system. Some variables pertain to the *current work status* of these transitioned individuals. The variables examined were: Job (Occupational Title), Hours of work per week, and Wages per hour. Additionally, we have data regarding the *services delivered* and *service outcomes* for the period in question, October 1, 1997, through September 30, 1998. These services are Employment Preparation, GED Preparation or High School > 20 hrs, Vocational Education Training, Unsubsidized Employment, Assessment, ESOL¹¹, and Other Counseling. The possible outcomes are Completed, Employed, Loss of Child Care, Loss of Transportation, Temporary Cash Cancelled, Transfer to another unit, Became Exempt, Employment Terminated, Level 1, 2 or 3 Sanction, and Other.¹²

Specifically, the data available are:

Age: Age of the Client.

Highest Grade Completed: This is a “mixed” variable consisting of several “levels.” Zero (0) = No Schooling; 1st grade through 12th grade completed are coded as 1 through 12. Code 13, however, represents a GED Diploma, and code 14 indicates Vocational Technology education less than one year. Codes 15 through 18 represent the completion of years of college. Code 19 means that an Associate Degree was awarded, and code 20 that a bachelor’s degree was awarded. A master’s degree was coded as 21, and any other Diploma or Certificate was coded as a 22. This explanation is important to keep in mind while reviewing the data because it is easy to jump to the conclusion that a code “13” represents the number of years of education.

Educational Status: The range of this variable consisted of No Education, School Dropout, Current Student (GED), High School Grad/GED recipient, Post High School Technical Attendee, and finally Post High School Academic Attendee.

The number of Months Client has Worked in the Past Two Years: This variable captured how many months the client worked in the two years *prior* to entry into the WAGES program.

Wages per Hour/Wages Interval Level: This was self-reported. Wages per Hour is a nearly continuous variable and accounts for differences in wage per hour to the penny. The variable *Wages Interval Level* to reflect the range of wages earned per hour by participants. The ranges began with \$2.00 per hour and consisted of incremental \$0.50 intervals up to \$12.00 per hour.

Reason for Termination: This categorical variable captured the reason a client was terminated from the WAGES program and could take on the values Completed, Employed, Became Exempt, to Case Transferred, Level 1, 2, 3, Penalties, or Temporary Cash Cancelled.

Hours Worked per Week: This is a scale variable ranging from 0 (no hours worked) to a maximum of 53 hours per week.

Number of Children: This is the number of children a client has, with a minimum of one child and a maximum of 12 children.

Age of Children: This is the age range from “0” which reflects that the child is less than one year old, to 31 years of age. Only children under the age of 13 years, school-aged, dependent, and non-working, were included in the analysis.

Services Delivered: This consisted of six variables, selected from a total of 12 Countable Services, and 40 Non-Countable Services. The services were: (1) Employment Preparation; (2) GED Preparation or High School greater

¹¹ English for Speakers of Other Languages (ESOL) is an English language development program for Kindergarten to Grade 12 students whose home/native/primary language is a language other than English. The program focuses on developing their proficiency in processing and producing academic English language.

¹² Research assumptions were developed for this data. These assumptions reflect the need to eliminate extraneous information, outliers, and/or control for missing data, which might otherwise impact a comprehensive analysis. The assumptions regarding the demographic data are as follows:

1. Earned hourly wages below \$2.13 and above \$12.00 are eliminated from the data in order to work with average cases.
2. Children 13 years old or younger are included in the analysis. To keep it consistent with the WAGES system. The WAGES system collects information for the same range.
3. Ethnicity (Race) is included in the analysis. It was carefully integrated into the model in an attempt to measure the dynamic relationship between this data element and the dependent variable.
4. The variable “Marital Status” was not included in the analysis because it was not inputted into the system consistently.
5. Only those services that apply or are appropriate for the population will be included in the analysis. Therefore, all countable services will be included, but only selected non-countable services will be included.
6. WAGES staff record program activities into the state WAGES database in an accurate and timely manner.
7. The transfer of data from the FLORIDA MIS system to the WAGES database is accurate and timely.
8. The queries formulated by FICET are validly constructed to perform the desired analyses.

than 20 hours; (3) Vocational Education Training; (4) Unsubsidized Employment; (5) Assessment; and (6) Other Counseling. ESOL was eliminated due to the low percentage of delivery of this service to the clients (0.2%).

Service Outcomes: This variable consisted of the following service outcome codes:

1 - Completed; 2 - Employed; 3 - Loss of Child Care; 4 - Loss of Transportation; 12 - Temporary Cash Cancelled; 14 - Transferred to Another Unit; 19 - Became Exempt; 31 - Employment terminated; 81 - Level 1 Sanction; 82 - Level 2 Sanction; 83 - Level 3 Sanction; and 9 - Other.

There were also six variables describing the services provided. They are as follows:

1. Employment Preparation, according to the Wagner Payser Act of 1935¹³, employment preparation includes job search and placement services, counseling, testing, occupational and labor market information, assessment, and referral to employers.
2. GED Preparation, the General Education Development (GED) test is also referred to as the High School equivalency test. Students take the GED test to demonstrate mastery of Math, Science, Social Studies, Reading, and Writing. Upon successful completion of the GED test, a candidate is awarded a State of Florida high school diploma and is considered a high school graduate.
3. Vocational Education, vocational education is education that prepares people to work as a technician or in various jobs such as a trade or a craft. Ex: auto mechanic, carpenter, etc.
4. Unsubsidized Employment is work with earnings provided by an employer who does not receive a subsidy for the creation and maintenance of the employment position. Self-employment activities include individuals who have earned income. For example, On-the-Job Training is a subsidized job because the government is paying for the employees.
5. Assessment pertains to educational or career or a vocational assessment.
6. Other Counseling, refers to career counseling, not psychological counseling.

The service data used for the analysis consisted of 9,552 cases, processed between October 1, 1997, through September 30, 1998. The number of cases does not equal the number of clients' data in the demographic data described above, because a client may have several cases as part of their record. The most frequent service delivered was Unsubsidized Employment¹⁴. 46% of the population received this service, and 33% received Employment Preparation. 13% percent received Assessment, followed by 2% receiving GED or High School Completion services, and 2.5% receiving Vocational Education. Despite a large Spanish and Creole population in Broward County, the review of the data found that only 0.2% received English as a Second Language referral service.

Outcome codes reflected the varying levels of termination of cases, from "Completed" to the various levels of sanctions given to the clients by the case managers. The most frequent outcome was "Employment Termination"¹⁵ at 31%, followed by "Completion"¹⁶ at 25%. Level 1 Sanction comprised 17% of outcomes, followed by transfers to another unit at 8.7%. The outcome status of "Employed" only comprised 4.5% of the cases.

4.2. Description of the Model Used in Estimation of Success

This study employs a logit specification to estimate the effects of selected Welfare to Work services on the attainment of employment (Eberts, 1997; Eberts *et al.*, 2002). The Logit model is widely used when the dependent variable is truncated at zero and one, such as when a probability of an event or the percentage of instances it occurs is being modeled.

The Logit model is based on the cumulative logistic density function given by equation (1), in which D_i is a truncated dependent variable, and X_i is a set of explanatory variables:

$$P(D_i = 1) = F(\alpha + \sum \beta_i X_i) = 1 / [1 + e^{-(\alpha + \sum \beta_i X_i + u_i)}] \quad (1)$$

Where P is the probability of event D_i occurring. In this case, the relationship between a dichotomous dependent variable such as obtaining employment, and independent variables such as age, number of children, and education can be determined. The model is transformed so that the dependent variable is not the actual variable, but the "log odds" of the variable, and it is assumed that the independent variables exhibit a linear relationship to the log of the odds of the dependent variable.

We estimate the determinants of the two following outcome measures:

- A) The probability that a participant succeeds in getting placement after he or she receives services and factors that affect the attainment of obtained employment.
- B) The probability that a participant achieves self-sufficiency, and the factors that affect the achievement of economic sufficiency (Achia *et al.*, 2010).

To examine the factors that affect the probability of obtaining employment, we estimated the following model.

$$\ln [P(\text{EMPL}=1) / (1 - P(\text{EMPL}=1))] = \alpha + \beta_1 \text{AGE} + \beta_2 \text{RACE} + \beta_3 \text{HIGHGRAD} + \beta_4 \text{WORKEXP} + \beta_5 \text{CHILDREN} + \beta_6 \text{EDUCSTAT} + \varepsilon$$

In the experiment, described later in this chapter, welfare case managers allocated participants to services by entering participants' data into a database and pushed a button to get participants' probability ratios.

Figure 8 illustrates the pathway for welfare recipients from eligibility to services provided. After eligibility has been determined, welfare recipients are randomly assigned to either the experimental or the control group by a computer program after their information has been inputted. All the studies conducted in Kalamazoo, Atlanta, and

¹³ https://www.edd.ca.gov/Jobs_and_Training/Wagner-Peyser_Act.htm

¹⁴ In this case the service is being referred to an employer for non-governmentally subsidized employment.

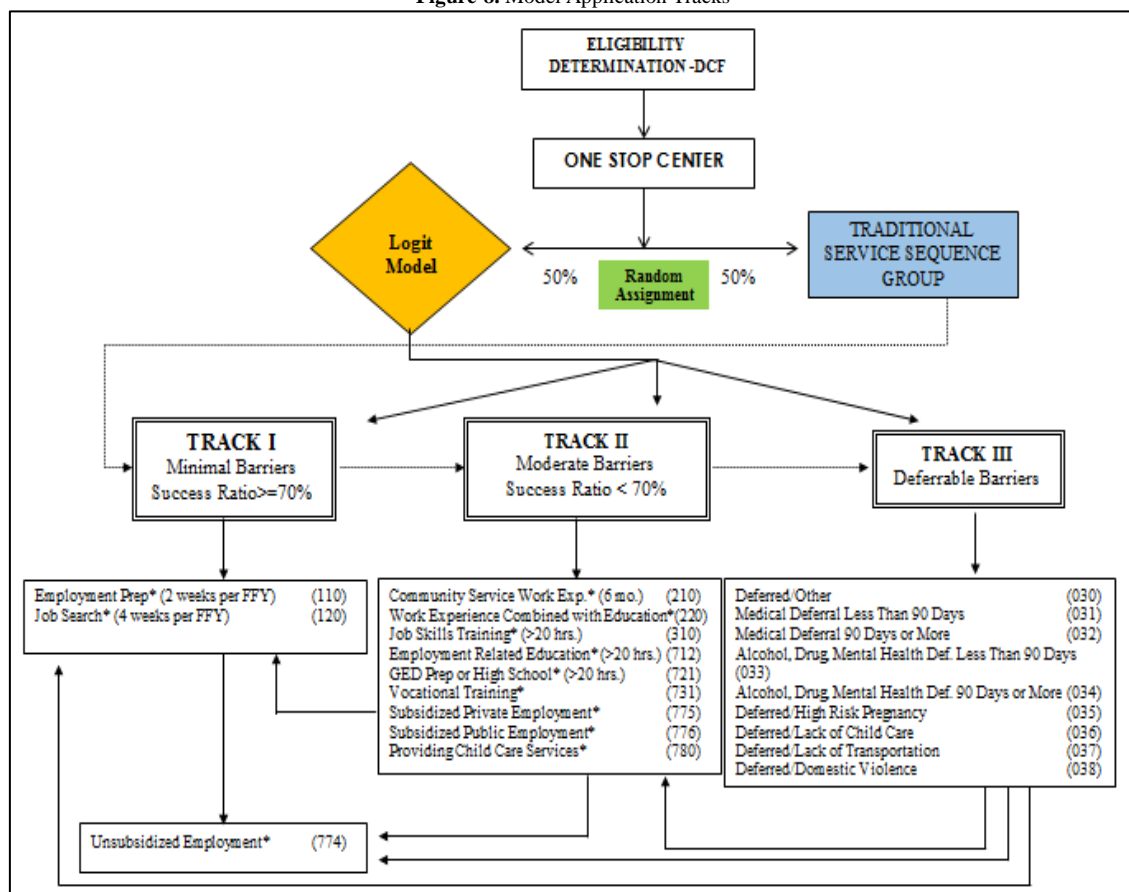
¹⁵ This indicates that the client had found a job and was not eligible for WAGES cash assistance.

¹⁶ Completion of training/education

Texas randomly assign individuals to treatments like our study did in Broward County (Eberts, 1997; Eberts *et al.*, 2002; Eberts and O'Leary, 2003; Schexnayder *et al.*, 1991). Ebert's studies of 1997 and 2002 took place in Kalamazoo, while 2002 was conducted in Atlanta. Schexnayder's research took place in Austin. Fifty percent of the eligible welfare participants were assigned to be part of the experimental group that utilized the Rapid Service Attachment to assist them with determining which services will be provided for them. The other fifty percent were referred by the computer system to the traditional services route where they were assisted by social workers and career counselors. The process will be said to be successful in cases where the participant has found and maintained employment for two consecutive quarters Herbst and Stevens (2010) and Cañón and Cano (2017).

The grouping of services was developed from focus groups conducted with the case managers and career advisors from the local workforce centers and associates from the Florida Department of Children and Families (DCF). In Florida, the DCF determines the eligibility of the participants and then refers them to the one-stop career centers. Figure 8 on the next page illustrates the process flow from eligibility determination to the referral of services and interventions to assist the participants in achieving and retaining employment and achieving self-sufficiency (Wefler, 2018). The recommended tracks (Track I, II, and III) are based on the intensity of services the participant needs to remove barriers to employment. The success ratios were based on the correlational analysis of past cases that have gone through the services listed on the following page. We looked at the successful participants' profiles and the respective services they received. This was part of the process for identifying and grouping by tracks the services the future participants will receive. The success ratio cutoff point 70%-30% followed the same analytical process: first conducting a correlational analysis of successful cases in terms of achieving employment and the cocktail of services provided (Liu *et al.*, 2014), and also conducting focus groups with the case managers and career services. The ultimate goal was for participants to find and retain employment for two consecutive quarters (6 months). The hope was to place the participant in a job with a wage rate that would move them out of poverty and onto a path toward self-sufficiency (Neumark, 2016; Wefler, 2018).

Figure-8. Model Application Tracks



The variables used in the estimation are defined as follows:

1. EMPL (EMPLOYMENT) = 1, if the customer gets a placement after training, otherwise = 0
2. AGE is the age in number at the time of enrollment
3. CHILDREN Number of Children in the family less than 13 years old.
4. WORKEXP is the number of months of work experience
5. HIGHGRAD is The Grade Level at which the individual stopped attending school
6. EDUCSTAT is a number indicating the Post Secondary School Status
7. RACE 1 = Hispanic, 2 = Black, 3 = White, 4 = others; the race data element were coded as one or zero when the participant claims to be part of the ethnic/racial group.

From the population of 7,564, the Institute obtained a sample of 685, because these were the only observations with complete records¹⁷. The variable for gender was removed from the model because more than the proportionate amount of females caused the variable to appear as a constant in the estimation process. There was co-linearity among some of the independent variables, as confirmed by Pearson correlation coefficients, and thus GRADELVL and other sub-categories of educational levels from the original set of variables were omitted. Instead, the model used HIGHGRAD, which indicated the grade level at which individuals stopped attending school, and EDUCSTAT to show the post-secondary school status of participants in the program.

The variable ESOL was omitted from the analysis due to the fact that it represented such a low percentage of service deliveries (.02). Furthermore, it is not possible at this time to determine the numbers of individuals who may benefit from the ESOL service. We employed the *Maximum Likelihood Method* to estimate the model.

Table-1. Determinants of Obtaining Employment

Variable	B	Std. Error	Wald	Df	Sig.	Exp(B)
AGE	0.030	0.016	3.447	1	0.063	1.031
RACE	-0.210	0.189	1.234	1	0.267	0.810
HIGHGRAD	0.094	0.080	1.379	1	0.240	1.098
WORKEXP	0.032	0.015	4.329	1	0.037	1.033
EDUCSTAT	0.311	0.166	3.521	1	0.061	0.733
CHILDREN	0.886	0.411	4.645	1	0.031	2.425
Constant	-4.126	1.088	14.380	1	0.000	0.016

The results are given in [Table 1](#). Some of the significant factors that influence obtaining employment (EMPL) are age (AGE), work experience (WORKEXP), number of children (CHILDREN), and education (EDUCSTAT). Staff expected race to be an insignificant factor as Federal and State laws prohibit the hiring of individuals according to race. Post-high school education (EDUCSTAT) is more important than high school education (HIGHGRAD) in obtaining employment. These findings are consistent with [Eberts \(1997\)](#), [Eberts \(2002\)](#), [Eberts and O'Leary \(2003\)](#), and [Schexnayder et al. \(1991\)](#), who show that work experience and education are strong determinants of attaining and maintaining employment.

An unexpected result from [Table 1](#) is a positive sign for children. According to the results in [Table 1](#), the "number of children" has a coefficient of 0.886. The data shows that the greater the number of children, the greater the probability of the parent has to obtain employment ([Eberts and O'Leary, 2003](#)). It could be theorized that the motivation for obtaining employment sooner becomes greater when there are more children at home ([Brady and Cook, 2015](#)). Fewer children may mean less of a demand on the parents to achieve or obtain employment. This finding is consistent with ([Schexnayder et al., 1991](#)).

4.3. Various Probability Measures

From the estimates, the probability of achieving employment can be calculated for persons with various attributes. For example:

1. White male community college graduate, aged 30, with two children under the ages of 13, leaving high school after 12th grade, with two years of college, and 10 months of work experience. Based on the estimation results, the probability (P_i) of obtaining employment is 0.375.
2. African-American female college graduate aged 40, with one child under the age of 13, and 36 months working experience. Based on the estimation results, the probability (P_i) of obtaining employment is 0.588.

5. The Experiment

5.1. Description of the Different Service Tracks

In the treated groups, a score of 70% probability of success from the model meant that the client was placed into the initial employment preparation (job club) and job search track. For scores under 70%, the client was placed on track 2 for "moderate services." In track 3, the client would receive a significant amount of assistance before they could become job-ready. In the control group, the assignment was random. The experiment implemented in Broward County followed a similar approach to the one implemented in Kalamazoo, Michigan ([Eberts, 1997](#)) and Atlanta, Georgia ([Eberts, 2002](#)). In both cases, there was a treated group and a control group with three tracks. In both Kalamazoo and Atlanta, participants were randomly assigned to be part of the control group or the treated group. The Welfare program nationwide follows the same Federal Guidelines to determine participants' eligibility for the program and to recommend services. The three studies (Broward, Kalamazoo, and Atlanta), although implemented at different times, follow the same methodology.

¹⁷Since many of the participants registered for services more than once, staff selected the last observation for each participant to reflect final services received, deleting previous activities, in order to then merge single observations with the original database.

5.1.1. Regular Job Search – Track 1

Under **Track 1**, the Jobs and Benefits staff determined, based on their review of the clients’ records, which have the best “chance” of immediate job entry. These individuals were then referred to the job club (2 weeks)¹⁸ and immediate job search (maximum of 4 weeks). If unsuccessful, they would be referred back to the case manager for reassignment to other appropriate services.

5.1.2. Moderate Service – Track 2

Under **Track 2**, the model indicated that these individuals had the potential to successfully find a job if they received a moderate degree of training and support. The types of training and support that were provided included success seminars¹⁹, the STRIVE program²⁰, on-the-job training²¹, etc. If the client failed to find a job after these interventions, then they would be referred for more intensive services and eventual job placement.

5.1.3. Intensive Services – Track 3

Track 3 would be used for all those clients who need extensive interventions before being employed as determined by the model. These services include comprehensive personal assessment, training and education, additional counseling for such problems as domestic violence or substance abuse, and other similar services with the goal of eventual placement into a job.

Table-2. Service Track Components

Track 1 – Minimum Intensity
Job Search /Job Club
Employment Prep (6 Weeks)
Track 2 – Moderate Intensity
Community Service Work Exp
Work Experience Combined with Education
Job Skills Training
Employment Related Education
GED Prep or High School
Vocational Training
Subsidized Private Employment
Subsidized Public Employment
Providing Child Care Services
Track 3 – Most Intensity
Deferred/Other ²²
Medical Deferral Less Than 90 Days
Medical Deferral 90 Days or More
Alcohol, Drug, Mental Health Def. Less Than 90 Days
Alcohol, Drug, Mental Health Def. 90 Days or More
Deferred/High-Risk Pregnancy
Deferred/Lack of Child Care
Deferred/Lack of Transportation
Deferred/Domestic Violence

It should be noted that a hold harmless provision was in effect. This constraint required that at no time would a client be harmed by the track assignment. If a client failed to get a job after being placed in Track 1, then they were “reenrolled” and additional services were provided to them.

Before selecting the services that constituted the service tracks, the Institute conducted an impact analysis on the federally required TANF Participation Rate to determine if the Broward Profiling Model could negatively affect this rate. The findings of this analysis were used to develop the menu of service options presented above to promote a higher TANF Participation Rate. The Participation Rate is a standard indicator used by the Federal and State governments to estimate the performance of the local workforce development administrations. It focuses on the number of participants that are assigned to a countable work activity as defined by the Federal government (Barnow *et al.*, 2012; Barnow and Smith, 2016; Friedlander, 1988).

¹⁸ A job club, also known as a job search club or a networking club, is a group of job seekers organized by the career center and government run. The club's purpose is to assist with a job hunt. Participants give and get job search support and advice.

¹⁹ A series of seminars to assist job seekers on how to write a winning resume, interviewing skills, how to dress for an interview, how to request letters of recommendation, etc.

²⁰ The STRIVE’ program is the CORE workshop, an intensive four-week “soft skills” training in workplace readiness, responsibility and professionalism. After graduating from the workshop, participants progress to vocational training in one of several career pathways aligned with local labor market demand and employer needs. Training results in the acquisition of one or more industry-recognized credentials. <https://strive.org/>

²¹ The On the Job Training (OJT) is a program that provides hands on training before getting a full-time job,” the OJT program will pay the employer up to 50% of the individual’s wages. The training can last no longer than is required for the trainee to acquire the requisite skills.

²² Deferred refers to postponing the requirements of employment search and training.

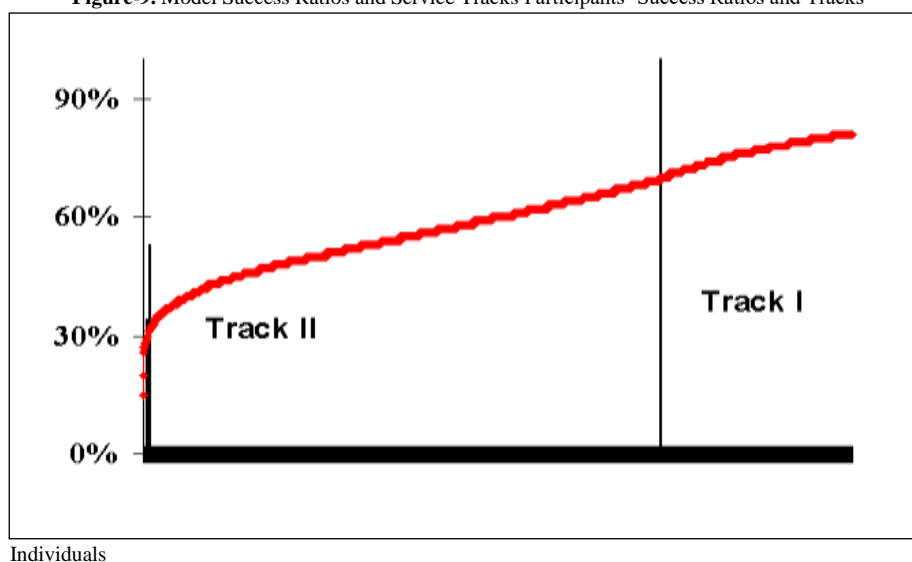
5.2. The Strategy behind the Assigning of Clients to Service Tracks

Out of the first set of 3,117 records studied and used to generate the Broward Rapid Attachment (a.k.a. the Profiling Model), 30 percent of the clients went to work within the first six weeks. Six weeks is the maximum federally allowable time for a participant to spend on core services (“Job Search” and “Job Preparation”). After this period ended, clients were referred to intensive services. Out of this 30 percent, the average success rate of participants was approximately seventy percent. Thus, seventy percent (70%) was used as a critical point for referral purposes in the model.

Any participant who was predicted to have a success probability of 70% or higher was considered to be a participant with “Minimal Barriers” and thus was referred to Core Services (Track 1). Participants who obtained a lower score were considered to have “Moderate Barriers” and were referred to Intensives Services (Track 2). Participants that experienced great difficulties as substance abuse or drug dependency problems were placed under the “Deferrable Barriers” (Track 3) and referred to specialized services until counselors considered them to be ready for Job Search or Training Services.

It is important to note that neither participants nor case managers were forced to take the recommendation of the model. The implementation process designed in this project allowed great flexibility by ensuring that counselors’ judgment could prevail over the model’s recommendation. At any point in time during this process, the case manager and the client could decide on a different alternative from what the model had chosen²³. The following figure illustrates the distribution of participants’ prior success predictions and their assignment to tracks. 80 percent of the participants that achieved a 70 or higher success ratio was able to obtain employment within six weeks. The chart below illustrates the distribution of participants and their respective tracks. The “Y” axis displays the ratios of success and the “X” axis shows the cumulative number of participants with each success probability.

Figure-9. Model Success Ratios and Service Tracks Participants’ Success Ratios and Tracks



5.3. Procedures

After the Florida Department of Children and Families (DCF) determines the eligibility of participants for the WAGES program. TANF participants are referred to the “One-Stop Center” to receive service. Case management staff collects additional information needed for the Profiling Model at the orientation session at the One-Stop Center. It is at this time that the computer software randomly selects 50 percent of the participants to be part of the experimental group and 50 percent to be part of the control group.

Participants considered as part of the control group follow the traditional service sequence. Under the traditional sequence, participants are exposed to all levels of services in a systematic sequence until they become employed (as shown in the flow chart in Figure 8)²⁴. On the other hand, the Experimental group gets their success ratio calculated, and based on the results the counselors assign the participant to specific tracks. The flow chart shown in Figure 8 depicts the Traditional and Non-traditional participants' flow.

5.4. Results of the Experiment

The percentage of WAGES/TANF participants achieving rapid employment is the “performance” criteria of the model whereby the treatments are compared. The performance of the treated group and the control group, are compared. During the period of the study, December 22, 1999, to June 30, 2000, there were 3,599 participants in the

²³ Participants are required to meet regularly with their respective case manager or career adviser. At these meeting, participants are asked if the recommending training or intervention is fulfilling their expectations. If the participant is dissatisfied, the case manager or career adviser can overwrite the logit model’s recommendation. In Florida, the workforce delivery system has been designed to give priority to participant’s choice.

²⁴ Services are provided following a specifically designed sequence of services from eligibility, orientation session, to tracks under level 1, 2 or 3, until employment is achieved.

WAGES program. Of this group, counselors referred 2,070 for services (58%), and 1,529 had services selected for them by the Broward Rapid Services Attachment, or the “Profiling Model.” From the latter group, 1,260 were assigned for service with 28% obtaining employment. The experimental group was divided into three groups and assigned either to Core services (Track 1); Intensive services (Track 2) or Deferred (Track 3). Out of this group referred by the econometric model, 121 clients went to Track 1; 1,139 customers were referred to Track 2; and 269 to Track 3.

Table-3. Comparison of the Profiling Results

Profiling Report – Comparison				
Group/Track	# of Records	Employed	Success Ratio	Avg. Hourly \$
Total	3,599	587	16%	\$6.87
Experimental Group				
Track 1	121	42	35%	\$7.47
Track 2	1,139	312	27%	\$6.83
Track 3	269	14	5%	\$6.70
Total Referred by Model (1)	1,529	368	24%	\$6.94
Total Referred by Model w/o Track 3	1,260	354	28%	\$6.92
Control Group				
Referred by Counselors (2)	2,070	219	11%	\$7.02

5.5. Placement on the Job

As Table 2 shows, three hundred sixty-eight (368) or twenty-four percent (24%) of the customers considered in the experimental group achieved employment during the studied period. This compares with two hundred nineteen (219), or eleven percent (11%), of customers who were part of the control group and achieved employment during the same period of time. After running a t-test for the two cohorts, we determined that the difference between the averages is significant at the 95 percent confidence level favoring the experimental group. This result indicates that the experimental group gets placed at higher rates.

5.5.1. Average Hourly Wages

The average hourly wages for those clients that were referred to Track 1 and achieving employment was \$7.47 versus \$6.83 for the clients that were referred to Track 2. This result is expected due to participants being more job-ready and needing fewer services. The hourly rate for those clients who achieved employment and were part of the Control Group was \$7.02 per hour compared to the treatment group average of \$6.94. After running a t-test for the two cohorts, we determined that the difference is significant at the 95 percent confidence level favoring the control group. For more information, please refer to Table 3.

Those who did get jobs had a similar profile in the two conditions. Most of the statistics in Table 3 indicate similarities between the two groups. This level of homogeneity further indicates the consistency of the two groups and thus that the randomization into treatments was effective. For Example, the average age for these two groups was 30 for the experimental group and 29 for the control group. With respect to employment preparedness, 56% of the experimental group and 55% of the Control Group had less than a high school diploma or a GED certificate. Ethnically speaking, 78% of the Experimental Group and 77% of the Control Group were classified as “Minority.” The average number of children is nearly the same for both groups. As of June 30, 2000, the model indicated a relatively positive performance from the control group in terms of the client’s placement.

Table-4. Control versus Experimental Clients Rapid Services Attachment Report – Comparison of Control vs. Experimental Clients

Group	Experimental	Control
N = 3,599	1,529	2,070
Demographics		
Age (Avg.)	30	29
Percentage of Minority	78%	77%
Educational Level (less than HS/GED Equivalent)	56%	55%
Number of Children (Avg.)	2.19	2.18
Results		
Achieved Employment	368 (28%)	219 (11%)
Wages an hour		
Average	\$6.94	\$7.02
Range	\$3.75 – \$13.50	\$3.33 – \$13.50

5.5.2. Placement

There were 1,504 participants added to the e-One Stop system between July 1, 2000, and November 30, 2000. Out of this total, 395 participants achieved employment, indicating a success ratio of 26%. This analysis indicates a 10 percentage point differential when comparing these results to the overall percentages obtained during Part I of the study. Out of the 395 participants who were placed, 337 or 84% of the total placed obtained employment within the

first six weeks after being added to the system. Only 61 participants, or 16% of the total, placed obtained employment after the 6 weeks period.

5.5.3. Average Hourly Wages

The average hourly wage for those clients that were placed in a job or achieved employment was \$7.10 (July through October 2000) versus \$6.87 for clients that were served during December 22, 1999, and June 30, 2000.

6. Conclusion

There are several findings from our analysis. Our econometric model predicts the probability of employment with reasonably strong reliability. In other words, the model's predictive power is relatively strong, and it is in accordance with the Welfare Profiling Model of Michigan's (Barnow *et al.*, 2012; Eberts, 1997; Eberts *et al.*, 2002) and the paper on the factors Influencing AFDC Duration and Labor Market Outcomes Research Study of Texas (Schexnayder *et al.*, 1991). The results indicate that education and prior employment history are significant factors increasing the likelihood of departing from welfare and achieving employment. Furthermore, the study concludes that the number of children, the age, and ethnicity of the welfare recipient also play a role in breaking away from welfare (Barnow and Smith, 2016). The results from the experiment show that using the model to assign individuals to services increases the likelihood of finding employment from 11% to 24%. Lastly, when testing for significance, our study concludes that the econometric model placed more participants from the treated group in a more efficient manner, while the traditional practices for job placement placed fewer participants from the control groups. Then, when analyzing the wage at placement, we conclude that traditional job placement practices do much better in placing participants in a job with sustainable wages compared to the experimental group guided by the econometric model.

The Study indicated that 3,599 WAGES /TANF participants were part of the study group during the specific study period. Out of this total, project counselors referred 2,070 customers for services and the Broward Profile model referred 1,529 customers. The experimental group was divided into three groups and assigned either to Core services (Track 1); Intensive services (Track 2); or Deferred (Track 3). Out of this group referred to by the econometric model, 121 clients went to Track 1; 1,139 participants were referred to Track 2; and 269 to Track 3. Three hundred sixty-eight (368); or twenty-eight percent (28%), of the customers considered in the experimental group achieved employment during the studied period. This compares with two hundred nineteen (219), or eleven percent (11%), of customers who were part of the control group and achieved employment during the same period. The average hourly wages for those clients that were referred to Track 1 and achieved employment was \$7.47, versus \$6.83 for the clients that were referred to Track 2. The hourly rate for those clients who achieved employment and were part of the Control Group was \$7.02 per hour.

The results of the study show a higher level of homogeneity indicating consistency between the two groups. For example, the average age was 30 for the experimental group and 29 for the control group. With respect to employment preparedness, 56% of the experimental group and 55% of the Control Group had less than a high school diploma or a GED certificate. Ethnically speaking, 78% of the Experimental Group and 77% of the Control Group were classified as "Minorities." The average number of children (under thirteen) for both groups is nearly the same in both cases. There were 1,504 participants added to the E-One Stop system between July 1, 2000, and November 30, 2000. Out of this total, 395 participants were placed in a job or achieve employment, indicating a success ratio of 26%. This analysis illustrates a 10 percentage-point differential when comparing these results to the overall percentages obtained during Part I of the study.

Out of the 395 participants who were placed, 337 or 84% of the total placed obtained employment within the first six weeks after being added to the system. Only 61 participants or 16% of the total placed, obtained employment after the 6 weeks. The average hourly wage for those clients that were placed in a job or achieved employment was \$7.10 (July through October 2000) versus \$6.87 for clients that were served during December 22, 1999, and June 30, 2000.

There is a need for further research and analysis of determinants of job placement, the wage at placement, and participants' self-sufficiency. Nevertheless, a modest contribution of our paper is the suggestion that traditional job placement practices could be assisted by econometric modeling to increase the probability of achieving employment at a higher rate. This finding is refreshing because it is not that one practice will replace the other one, but on the contrary, both counselors and econometricians could collaborate to assist participants in achieving better outcomes.

References

- Achia, T. N., Wangombe, A. and Khadioli, N. (2010). A logistic regression model to identify key determinants of poverty using demographic and health survey data. *European Journal of Social Sciences*, 13(1): 38-45.
- Barnow, B. S. and Smith, J. (2016). *Employment and Training Programs*. University of Chicago Press. 127-234.
- Barnow, B. S., Cai, J., Chocolaad, Y., Eberts, R. W., Hobbie, R., Kaiser, J., Smith, T., Trutko, J., Vroman, W. and Wandner, S. A. (2012). Implementation of the American recovery and reinvestment act: Workforce development and unemployment insurance provisions. Available: <https://research.upjohn.org/cgi/viewcontent.cgi?article=1066&context=externalpapers>
- Bartik, T. J. (2001). *Jobs for the poor: Can labor demand policies help?*: Russell Sage Foundation and Kalamazoo, MI: W.E. Upjohn Institute for Employment Research: New York, NY.

- Black, D. A., Smith, J. A., Plesca, M. and Shannon, S. (2003). Profiling UI claimants to allocate reemployment services: evidence and recommendations for States. Final Report to the United States Department of Labour.
- Bloom, D. and Michalopoulos, C. (2001). How welfare and work policies affect employment and income: A synthesis of research.
- Brady, M. and Cook, K. (2015). The impact of welfare to work on parents and their children. Evidence Base. *A Journal of Evidence Reviews in Key Policy Areas*, 3: 1. Available: <https://search.informit.org/doi/10.3316/INFORMIT.209583679338686>
- Cañón, L. A. and Cano, Á. T. (2017). Economic downturns, endogenous government policy and welfare caseloads. *Hacienda Pública Española*, 220(1): 107-36.
- Eberts (1997). *The use of profiling to target services in state welfare-to-work programs: An example of process and implementation, employment research*. W.E. Upjohn Institute for Employment Research: Kalamazoo, MI.
- Eberts (2002). Design, implementation, and evaluation of the work first profiling pilot project. Available: <https://research.upjohn.org/externalpapers/26/>
- Eberts and O'Leary, C. J. (2002). A Frontline Decision Support System for Georgia Career Centers. WE Upjohn Institute Staff Working Paper. 02-84.
- Eberts and O'Leary, C. J. (2003). A New WPRS Profiling Model for Michigan. Available: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=583062
- Eberts, Rajachar, R., Kracker, K., Straits, R., Schreuder, C., Molhoek, P. and Black, C. (2002). Design, implementation, and evaluation of the work-first profiling project. Available: <https://research.upjohn.org/externalpapers/26/>
- Ellwood, D. (1986). Targeting 'Would-Be', 1986, Long-Term Recipients of AFDC, report submitted to the U.S. Dept. of Health and Human Services.
- Fieldhouse, A., Mishel, L., Eisenbrey, R. and Bivens, J. (2011). Putting America back to work: Policies for job creation and stronger economic growth.
- Freedman, S., Friedlander, D., Lin, W. and Schweder, A. (1996). *The GAIN Evaluation: Five Year Impacts of Employment, Earnings, and AFDC Receipt*. Manpower Demonstration Research Corporation: New York, NY.
- Friedlander, D. (1988). *Subgroup impacts and performance indicators for selected welfare employment programs*. Manpower Demonstration and Research Corporation: New York, NY.
- Grossman, J., Rebecca, M. and Judith, R. (1985). *Reanalysis of the effects of selected employment and training programs for welfare recipients*. Mathematic Policy Research, Inc: Princeton, NJ.
- Gueron, J. and Edward, P. (1991). *From welfare to work*. Russel Sage Foundation: New York.
- Herbst, C. M. and Stevens, D. W. (2010). The impact of local labor market conditions on work and welfare decisions: Revisiting an old question using new data. *Population Research and Policy Review*, 29(4): 453-79.
- Liu, S., Huang, J. L. and Wang, M. (2014). Effectiveness of job search interventions: A meta-analytic review. *Psychological Bulletin*, 140(4): 1009.
- Livingston, G. (2015). Family size among mothers, pew research center - social and demographic trends. Available: <https://www.pewsocialtrends.org/2015/05/07/family-size-among-mothers/>
<https://www.pewresearch.org/social-trends/2015/05/07/family-size-among-mothers/>
- McGregor, A. (1978). Family size and unemployment in a multiply deprived urban area. *Regional Studies*, 12(3): 323-30.
- Mollie Orshansky (1988). Commentary: The poverty measure. *Social Security Bulletin*, 51(10): 22-24.
- Neumark, D. (2016). *Inventory of research on economic self-sufficiency*. Economic Self-Sufficiency Policy Research Institute, UCI <https://www.esspri.uci.edu/researchinventory.php>
- Sandoval, J. S., Onésimo, R. C. and John, L. (2011). The transition from welfare-to-work: How cars and human capital facilitate employment for welfare recipients. *Applied Geography*, 31(1): 352-62.
- Schexnayder, D., Christopher, K. and Jerome, O. (1991). A Baseline Analysis of the Factors Influencing AFDC Duration and Labor Market Outcomes, report to Center for the Study of Human Resources and the Bureau of Business Research, The University of Texas at Austin.
- Wefler, J. (2018). The journey from public assistance to economic self-sufficiency. Available: <https://minds.wisconsin.edu/bitstream/handle/1793/78090/WeflerJanet.pdf?sequence=3>
- Weil, A. (2017). *Assessing welfare reform in the united states. In welfare reform*. Routledge. 145-66.
- Wunsch, C. (2013). Optimal use of labor market policies: The role of job search assistance. *Review of Economics and Statistics*, 95(3): 1030-45. Available: <https://youthbuild.org/>