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*AN ECONOMETRIC COST-BENEFIT ANALYSIS OF  
ARGENTINA'S YOUTH TRAINING PROGRAM*

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## Abstract\*

The Youth Training Program (YTP) was an important component of Argentina's active labor policy of the 1990s. The program offered courses of three months' duration, divided equally between lectures and practical experience, and targeted young people, most of whom were not employed and had a low level of education. The program was offered by different institutions chosen through a bidding process and included courses in the fields of agriculture, manufacture, construction and services. This paper conducts an econometric cost-benefit analysis of the fifth round of the YTP. Benefits (wage increases, increase in likelihood of employment, increase in earnings) are estimated using non-matching (Before and After, Cross Section and Difference in Difference) and matching techniques based on propensity score estimate (Nearest Neighbor, Kernel, Local Linear Regression) in order to avoid selection bias. Estimates of the ATE and TT effects are also provided. A sample consisting of 1,670 beneficiaries and a similarly-sized comparison group provided the information necessary to apply the methodology. Benefit estimates are made for the aggregate, by gender and for both youth and adults. Regional differences are also provided. The cost includes direct and indirect components and the alternative cost of beneficiaries reducing their contributions to output during the program. Estimates of rate of return are provided based on the previous benefit and cost estimation. In general, the results support an estimate of 10 percent of return. This looks reasonable if it is compared with the very low rate of return of education estimated separately for the participants group. Finally, the management of the program is evaluated.

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## INDEX

<b>Section</b>	<b>Title</b>	<b>Page</b>
1	Introduction	10
2	The Fifth Round of the YTP	13
3	The Beneficiaries and Comparison Group Samples	18
4	Econometric Methodology	20
4.1	Non-Matching Estimators	20
4.2	Matching Estimators	26
5	Estimates of the YTP's Benefits	27
5.1	Non-Matching Techniques	28
5.2	Matching Techniques	30
5.3	Regional Effect	38
6	The Cost of the Program	41
7	Cost-Benefit Analysis	45
8	Characteristics of the Argentine Labor Market	46
9	Program Management	47
10	Conclusions	51
	References	52
	Appendix A: Estimation by Gender-Age Groups	55
	Appendix B: Matching Estimators with Region of Support Reduced	64
	Appendix C: YTP Course Subjects	65
	Appendix D: Regressions Estimated	67
	Appendix E: Program Costs	85

## LIST OF TABLES

<b>Tables</b>	<b>Title</b>	<b>Page</b>
1	Distribution of Beneficiaries by Age and Gender (%)	14
2	Distribution of Beneficiaries by Gender and Family (%)	14
3	Distribution of Beneficiaries by Gender and Education Level (%)	15
4	Distribution of Beneficiaries by Gender and Family Income per Capita (%)	15
5	Distribution of Male Beneficiaries by Family and Marital Status (%)	16
6	Distribution of Female Beneficiaries by Family and Marital Status (%)	16
7	Distribution of Beneficiaries by Gender and Region (%)	17
8	Mean and Standard Deviation of the Main Characteristics of Beneficiaries and Comparison Groups (35-Years Old or Younger)	18
9	ATE and TT on Monthly Wages (Pesos) using Different Methods	28
10	ATE and TT on Monthly Earning (Pesos) using Different Methods	28
11	ATE and TT on Probability of Finding Employment using Different Methods	29
12	Balancing Score of the Beneficiaries and Comparison Groups	31
13	Mean and Standard Deviation of the Main Characteristics of the Beneficiaries and Comparison Groups (35-Years Old or Younger)	33
14	ATE and TT on Monthly Wages (Pesos) using Different Matching Estimators	34
15	ATE and TT on Monthly Earnings (Pesos) using Different Matching Estimators	35
16	ATE and TT on Probability of Finding Employment using Different Matching Estimators	35
17	Regression on Wages in the Post-Training Period for Beneficiaries with Dummy Variables for each Province	39
18	TT on Monthly Wages (Pesos) using Different Matching Estimators	40
19	Costs of Courses for Whole Country Classified by Sector (Pesos)	41
20	Average Costs of Course per Beneficiary by Sector and Province (Pesos)	42
21	Alternative Estimates of YTP's Rate of Return (Benefits based on wage outcomes)	45
22	Trends in Earnings and Employment	46
23	Percentage of Beneficiaries in Each Sector Classified by Province	47

24	Regression on Beneficiaries' Post-Program Wages using Dummy Variables for Each Sector	48
25	Grantee and Penalized Institutions for the Fifth Round of the YTP	49
26	ATE and TT on Monthly Wages (Pesos) for Females and Males	54
27	ATE and TT on Monthly Wages (Pesos) for Females and Males Under 25-Years Old	54
28	ATE and TT on Monthly Wages (Pesos) for Females and Males Over 25-years Old	55
29	ATE and TT on Monthly Wages (Pesos) using Different Matching Estimators for Males and Females	55
30	ATE and TT on Monthly Wages (Pesos) using Different Matching Estimators Classified by Gender and Age	56
31	ATE and TT on Monthly Earnings (Pesos) for Females and Males	57
32	ATE and TT on Monthly Earnings (Pesos) for Females and Males Under 25-Years Old	57
33	ATE and TT on Monthly Earnings (Pesos) for Females and Males Over 25-Years Old	57
34	ATE and TT on Monthly Earnings (Pesos) using Different Matching Estimators for Females and Males	58
35	ATE and TT on Monthly Earnings (Pesos) using Different Matching Estimators Classified by Gender and Age	59
36	ATE and TT on Probability of Finding Employment for Females and Males	60
37	ATE and TT on Probability of Finding Employment for Females and Males Under 25-Years Old	60
38	ATE and TT on Probability of Finding Employment for Females and Males Over 25-Years Old	61
39	ATE and TT on Probability of Finding Employment using Different Matching Estimators for Males and Females	62
40	ATE and TT on Probability of Finding Employment using Different Matching Estimators Classified by Gender and Age	62

41	TT on Monthly Wage (Pesos)	63
42	Courses Offered in The Fifth Round of the YTP	64
43	Regression on Monthly Earnings in the Post-Program Period using Dummy Variables for Region	66
44	Regression on Difference between Pre-Program and Post-Program Monthly Earnings using Dummy Variables for Region	67
45	Regression on Difference between Pre-Program and Post-Program Monthly Wages using Dummy Variables for Region	68
46	Regression on Probability of Finding Employment in the Post-Program Period using Dummy Variables for Region	69
47	Regression on Post-Program Monthly Earnings for Beneficiaries using Dummy Variables for Economic Sector	70
48	Regression on Difference between Pre-Program and Post-Program Monthly Earnings for Beneficiaries using Dummy Variables for Economic Sector	71
49	Regression on Difference between Pre-Program and Post-Program Monthly Wages for Beneficiaries using Dummy Variables for Economic Sector	72
50	Regression on Probability of Finding Employment in the Post-Program Period for Beneficiaries using Dummy Variables for Economic Sector	73
51	Probit on Probability of Finding Employment in the Post-Program Period	74
52	Biprobit on Probability of Finding Employment in the Post-Program Period	75
53	Regression on Post-Program Monthly Earnings	76
54	Regression on Difference between Pre-Program and Post-Program Monthly Earnings	77
55	Regression on Post-Program Monthly Wages	78
56	Regression on Difference between Pre-Program and Post-Program Monthly Wages	79
57	Regression on Post-Program Monthly Wages using Heckman Two-Step	80
58	Regression on Difference between Pre-Program and Post-Program Monthly Wages using Heckman Two-Step	82
59	Costs by Province	84

## LIST OF FIGURES

<b>Figure</b>	<b>Title</b>	<b>Page</b>
e		
1	Balancing Score of the Beneficiaries and Comparison Groups	30
2	Histogram of the Balancing Scores of the Beneficiaries and Comparison Groups	31



## **1. Introduction**

The Youth Training Program (YTP) was the most important training program undertaken by Argentina's Ministry of Labor between 1993 and 1999. The other training programs were "Programa de Capacitación Profesional," "Capacitación para el Empleo," "Programa Aprender." This program was implemented throughout Argentina and was offered almost every year. Central and local governments shared in program administration. The program was targeted primarily at people less than 30 years old, not employed and with only primary or secondary education levels.

This study will focus on the Fifth Round of the YTP, which took place in 1997. The first objective is to evaluate three types of benefits received from this training program: the increase in wages; the increase in the likelihood of finding employment; and the increase in earnings, which represents the combined effect of employment and increase in wages. Second, the paper will analyze the program's costs and compare them to the benefits in order to estimate the rate of return of the YTP. The third objective is to evaluate the quality of the program's management.

Following methodologies developed by Professor James Heckman and his colleagues, program benefits will be estimated using econometric techniques that account for selection bias problems in order to obtain unbiased estimates of treatment effects. The basic idea is to analyze the program's effects on its beneficiaries (i.e., those who participated in and completed the program) against a comparison group that has characteristics very similar to those of the beneficiaries. In the first stage, we apply well-known non-matching techniques. In the second stage, we apply matching techniques, for which we use the propensity score methodology to estimate the probability of participation in the program for each individual in both groups (beneficiaries and comparison). To estimate the propensity score, a logit procedure is used. Then, a matching technique is applied to match each beneficiary with a corresponding member of the comparison group, taking the log-odds ratio in order to do this matching. Different matching techniques are used: simple average nearest neighbor, kernel regression, and local linear regression (LLR).

Next, two types of estimates of the program's effects on wages, employment probability, and earnings are made: the "average treatment effects" (ATE) and the "effect of the treatment on the treated" (TT). These effects will be estimated by alternative models: unconditional mean differences, with and without unobservable heterogeneity, assuming normal distributions for the

unobservable and semi-parametric methods. Since there are several measurements of the effects during the year after the program, estimates with panel data considering the effects after one month, three months, six months, and a year will be used. The “difference in difference” method will be applied to the three kinds of effects in the different models.

The total cost of this program includes the direct and indirect costs financed by the Ministry of Labor, and the opportunity cost of the program participants. Direct costs include payments made to the institutions that offered the training and practice at the firm, and payments made to beneficiaries to cover transportation, health and other costs. Indirect costs include administrative costs at the federal and local level corresponding to the fifth round of the YTP. The direct cost will be analyzed at the aggregate and at the course level. The average total cost per trainee is around \$2,000 for the approximately 90-day program.

Management quality will be analyzed by examining the type of training and regional composition. The program’s effects vary according to the type of course and the provinces in which it is offered. The average cost per type of course varies across provinces, as does the indirect cost per trainee. The quality of the firm where work experience was acquired also plays a role. Beneficiaries’ opinions and government control of the quality of the program also will be taken into account. The distribution of the number of program sites across provinces will be compared to the YTP’s potential target population. Taking the same individuals from the EPH (household surveys currently taken three times per year), one could measure how many people employed in one survey continue to be employed in the next, and the same could be done for those who are not employed. Also, one can measure how many people registered an increase or decrease in their wages, and the magnitude of those changes. To analyze both the employed and not employed, one could describe the labor market conditions, and, comparing them with the results of the training program, one could judge whether the outcome was accurate or not according to the regular trend shown in labor market conditions.

The information on the potential and real participants in the fifth round of the YTP is the basic data on which all econometric estimation was calculated. Other sources of information, like the SIEMPRO Survey and the biannual unemployment sampling (EPH, Encuesta Permanente de Hogares), did not provide data on potential participants suitable to build an additional comparison group. There are 23,258 people in the so-called beneficiaries group, with information for the pre-program period. From this, a sample of 1,670 was taken for which post-

program outcome information is available. Both pieces of information were used to estimate the propensity score, and the latter was used for the study of the program's outcome. The comparison group of 1,670 people was taken from a population originally admitted to the program but who later decided not to participate (non-participants). Also, pre-program and post-program information on the comparison group will be compared.

Most of the beneficiaries and comparison group were not employed at the time they were admitted to the training program. One year after the YTP finished, most of the people from both groups were employed. Simple regression analysis, without taking into account selection bias problems, indicates YTP had a positive effect on increasing wages and the probability of obtaining employment. The effect on wage increases seems to be around 20 dollars per month, which represents almost 10 percent of the average wage. The treatment for selection bias allows for a more confident estimate of this differential.

Previous evaluation of the outcome of similar programs on earnings and employment were made for Argentina, Chile, Costa Rica and Mexico. Evaluation of other kinds of labor programs were also made. The basic information for the outcome evaluation was also similar, and all of them have the problem of relying on a choice-based and stratified sample. The comparison group was based on the non-participant group.

The outcomes differ across countries. In general, we have outcomes on either earning or employment but not both together. Most of the estimated outcomes on earning were less than 10 percent of wages. In general, the outcomes were bigger for women and the younger group.

These studies did not use matching techniques and could have bias problems that were not analyzed in details. Most of these studies were made by the same institutions that financed the program, and the outcome evaluations were a part of the whole program.

Even though the cost of this kind of program differed for each country, one could assume that most of them spent approximately the same per person. They differed on the kind of training given, and most of them offered training and practice.

In the case of Argentina, we already have some estimates of other kinds of program, like the "Plan Trabajar" program. This is a very different program. The average gains were estimated on half the gross wage, nearly \$100 (See Jalan and Ravallion, 1999). For Mexico, there were estimates for the retraining outcome on employment and wages, giving a reduction of two months in the direction of unemployment (See Revenga, Riboud and Tan, 1992).

As reported by Heckman, Lochner, Smith and Taber (1997), many studies of the United States also show that a 10 percent outcome on earnings was the most common result observed. Bigger outcomes were not often found.

It is interesting also to compare our results with those stemming from additional searching for employment with better wages. This exercise was done following Stigler's (1962) model for searches in the labor market. For example, the marginal gain from searching a month for a better job is equal to  $\frac{0.24\sigma_w}{n^{0.63}}$ , where  $\sigma_w$  is the standard deviation of wages and  $n$  is the number of days spent searching. In our case,  $\sigma_w$  is equal to \$20, therefore the marginal gain for  $n=30$  days is equal to 16 dollars, a quantity less than that produced by training.

## **2. The Fifth Round Of The YTP**

The Youth Training Program is a federal government initiative that began in 1994. The program's main objective is to increase the beneficiaries' prospects in the labor market. The project uses targeting mechanisms to serve particularly disadvantaged segments of the labor force, especially those unemployed because of a discrepancy between their training and skills and the demands of the productive sector.

This program is managed by a specific division of the YTP that is part of the federal Ministry of Labor. In each province, a local office was established to manage the program. In many cases, the local offices were staffed with new personnel, and in others, the personnel came from the local government in order to work specifically for this program. The main decisions about the program are taken at the federal level. The local office participates as an intermediary between the institutions offering the training and the Federal Government. It helps involve institutions in the program and enrolls potential candidates. While all payments are managed directly at the federal level, the local office also helps with the program's quality control.

The federal government finances the courses. This includes educational materials, tools, health and safety equipment, honoraria of the institutions and firms offering courses and internships, and other aspects necessary to the program. The project offers participants a daily stipend to cover transportation costs (\$4 per day during training and \$8 per day during the internship). In order to promote women's participation in training activities, women with

children less than five years old receive an additional subsidy. Payment to institutions and stipends for participants make up almost 95 per cent of program costs.

There are two stages in the program: the training phase and the internship phase. During the first, participants acquire the knowledge and technical skills of an occupation. The activities stress the development of work habits and strengthen the necessary skills on a day-to-day basis, e.g.: reading and writing, mathematical operations, problem resolution, logical reasoning, team work, interaction with peers and superiors, understanding instructions, and so on. In this stage, employment search preparation is also considered. The training phase lasts between 6 to 12 weeks and takes place at a site proposed by the chosen institution.

During the internship phase, the beneficiaries apply what they learned in the first phase and acquire experience in a real labor environment, where they engage in the main tasks of the occupation for which they have been trained. During the internship, there is periodic feedback between the educational institution and the course participants in order to increase the educational character of the internship and to facilitate the acquisition of skills. This phase lasts around 8 weeks.

Most of the training offered in the fifth round of this program was concentrated in the following economic sectors: agriculture, industry, services, and construction. The specific names of each course are listed in Appendix C. No course had more than 20 participants.

This program periodically uses a competitive bidding mechanism to select the providers who will offer appropriate and efficient courses. These institutions must, among other things, be legal entities, have experience in job training, and a deep commitment to work on issues concerning highly disadvantaged people. It is fundamental that providers respond to the concrete demands of the productive sector. The Ministry of Labor evaluates the relevance of the training provided, the form of temporary jobs offered for trainees, and whether demand exists for the proposed courses. During the first five rounds of YTP, 1,393 training institutions were hired to provide 6,185 courses, and 21,928 institutions were hired as internship providers.

A total of 23,500 beneficiaries participated in the fifth round of the YTP. These were mainly young people (the minimum age is 16) characterized by a low socioeconomic and educational level (completed no more than secondary), difficulties in integrating into the labor market, and little labor experience.

Their main social features are the following:

a) DEMOGRAPHICS: GENDER: the participants were 37 percent women and 63 percent males. AGE: 66 percent were between 16 and 24, 15 percent between 25 and 29, and 19 percent were 30 years old or more.

**Table 1. Distribution of Beneficiaries by Age and Gender (%)**

<i>Age</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
16 to 19	32.1	16.8	26.4
20 to 24	40.8	37.4	39.6
25 to 29	13.2	18.6	15.2
30 or more	13.9	27.2	18.8
Total	100.0	100.0	100.0

*Source:* Statistic Unit. Ministry of Labor of Argentina.

b) MARITAL STATUS: 74 percent of males were single, and the rest were either married or lived in consensual union (a distinction not specified in this paper), of which 21 percent had children. The proportion of single women was 50 percent, the proportion of married women was 41.4 percent, and 8.6 percent of female beneficiaries were separated or divorced. 60 percent of women had children. In total (men and women), 24 percent of beneficiaries had children but no partner, and 16 percent of the women who took at least one course were single mothers. FAMILY SIZE: On average, the beneficiary's family consisted of five or six people and for each working person in the household there were three people who did not work.

**Table 2. Distribution of Beneficiaries by Gender and Family (%)**

<i>Family Status</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
With couple, with children	18.7	35.5	25.0
Without couple, with children	2.4	24.3	10.5
With couple, without children	6.1	5.9	6.0
Without couple, without children	72.8	34.3	58.8
Total	100.0	100.0	100.0

*Source:* Statistic Unit. Ministry of Labor of Argentina.

c) EDUCATION: 29 percent had only elementary education, 51 percent had incomplete high school education, and 20 percent had completed high school.

**Table 3. Distribution of Beneficiaries by Gender and Education Level (%)**

	<i>Men</i>	<i>Women</i>	<i>Total</i>
Education Level			
Elementary	29.2	27.6	28.5

Did Not Complete High School	53.8	46.7	51.2
Completed High School or More	17.0	25.7	20.3
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

*Source:* Statistic Unit. Ministry of Labor of Argentina.

d) INCOME: The average monthly income per capita of the beneficiaries' households was \$122 for women and \$155 for males. 20 percent of female beneficiaries and 11 percent of male beneficiaries lived in homes where income per capita did not exceed \$50, and 50 percent and 40 percent, respectively, lived in homes with income per capita less than \$100.

**Table 4. Distribution of Beneficiaries by Gender and Family Income per Capita (%)**

<i>Income</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
\$0 to \$50	10.6	20.4	14.3
\$51 to \$100	29.8	32.5	30.8
\$101 to \$150	22.0	21.5	21.8
\$151 to \$200	16.4	11.4	14.5
\$201 to \$250	8.0	6.3	7.4
\$251 to \$300	4.0	3.3	3.7
\$301 to \$350	2.2	2.2	2.2
\$351 or more	6.9	2.4	5.2
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

*Source:* Statistic Unit. Ministry of Labor of Argentina.

Among male YTP beneficiaries, 32 percent were head of family, and 40 percent of those were the primary economic support. If we relate marital status to income, we observe that 37 percent of the heads of family and 53 percent of the primary economic supports were single.

The average monthly wages reported by pension firms for the entire labor force with pension plans is around \$850. This demonstrates that the program was addressed to a group of persons with very low wages.

**Table 5. Distribution of Male Beneficiaries by Family and Marital Status (%)**

<i>Marital Status</i>	<i>Head of Family</i>		<i>Primary Economic Support</i>	
	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
<b>Total</b>	<b>32.0%</b>	<b>68.0%</b>	<b>40.0%</b>	<b>60.0%</b>

Married	60.4	7.9	45.6	12.1
Separated/Divorced	2.1	0.3	1.8	0.4
Widower	0.4	0.5	0.0	0.8
Single	37.1	91.3	52.6	86.8
Total	100.0	100.0	100.0	100.0

Source: Statistic Unit. Ministry of Labor of Argentina.

Among female beneficiaries, 18 percent were head of family and 23 percent were primary economic supports. We observe that among those that are single and without children, 14.5 percent were head of family and 37 percent were the primary economic support.

**Table 6. Distribution of Female Beneficiaries by Family and Marital Status (%)**

<i>Marital Status</i>	<i>Head of Family</i>		<i>Primary Economic Support</i>	
	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Total	18.0%	82.0%	23.3%	76.7%
With couple, with children	12.0	27.8	10.5	29.0
Without couple, with children	56.4	18.3	49.2	18.3
With couple, without children	11.0	28.0	8.9	29.4
Without couple, without children	20.7	25.9	31.4	23.2
Total	100.0	100.0	100.0	100.0

Source: Statistic Unit. Ministry of Labor of Argentina.

e) GEOGRAPHIC: If we analyze the geographic distribution of the beneficiaries, we observe that 13.5 percent come from rural areas (populations with less than 2,000 inhabitants), 6.7 percent live in towns with populations between 2,000 and 10,000, and 14 percent live in towns ranging from 10,000 to 50,000 people. The rest live in medium and large urban areas (50,000 or more inhabitants). The regional distribution is shown in Table 7.

**Table 7. Distribution of Beneficiaries By Gender and Region (%)**

<i>Región</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
GBA	18.8	22.1	20.2



Centro	17.8	17.7	17.0
Mendoza	10.3	13.2	11.2
Noa	10.4	9.6	10.2
Córdoba	8.5	8.6	8.9
Litoral	7.0	7.7	7.6
Tucumán	6.7	6.4	7.1
Santa Fe	6.7	3.9	5.7
Cuyo	6.1	4.3	5.4
Sur	5.1	4.0	4.7
Nea	2.2	2.3	2.2
<b>TOTAL</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

*Source:* Statistic Unit. Ministry of Labor of Argentina.

*Note:* The regional division of the provinces is as follows: CENTRO: Buenos Aires and La Pampa; NOA: Jujuy, Catamarca, Salta and Santiago del Estero; NEA: Chaco and Formosa; LITORAL: Entre Ríos Misiones and Corrientes; CUYO: Mendoza, San Juan, La Rioja and San Luis; y SUR: Chubut, Neuquén, Rio Negro and Santa Cruz.

The institutions that offered the courses for all the rounds of the program were classified as follows: Individuals (55 percent), Foundations and Cooperatives (22 percent), and Enterprises and Entrepreneurs (10 percent). Universities represented only 2 percent. The number of institutions for the fifth round was approximately 555 (many of them offered two or more courses).

### **3. The Beneficiaries And Comparison Group Samples**

The Statistics Unit of the Employment and Training Division of the Ministry of Labor made an evaluation of the outcome of the fifth round of the YTP. It followed the approach of comparing participants' results with those of a control group consisting of persons who were admitted to the program but did not take it. For this, two samples were taken, one consisting of 1,670 participants and another of 1,670 non-participants. Both samples were surveyed at two different times: a) the "base line," which is the time prior to the beginning of the courses, and b) the "second line," which refers to the period of January-March, 1998, approximately twelve months after courses ended.

The sample of beneficiaries was designed to map their population composition according to region and gender (a kind of stratified sampling). The number of beneficiaries for the fifth round was 23,500. The comparison group was not an independent sample taken from those admitted to YTP during the five rounds of the program. Instead, it was constructed conditional to the sample of beneficiaries and was selected from non-participants who registered between March-September, 1996, but did not ultimately receive training. The method (non-experimental)

for selecting each member of the comparison group consisted of finding a member of the non-participant population with characteristics similar to that of a member of the beneficiaries group (a kind of twin). The variables taken into consideration to determine the counterparts were, first, gender and age, and second, education level, economic situation, marital status, and children. The distribution of the sample of beneficiaries and comparison group according to gender and region are identical; however, there are some significant differences in the composition according to the other variables.

The main characteristics of these two groups in the periods before and after the program are described in the following table.

**Table 8. Mean and Standard Deviation of the Main Characteristics of Beneficiaries and Comparison Group (35-Years Old or Younger)**

	<b>Participants</b>	<b>Non-Participants</b>
Employment Rate (Before Training) (percentages)	<b>0.14</b> (0.34)	<b>0.11</b> (0.32)
Employment Rate (After Training) (percentages)	<b>0.63</b> (0.48)	<b>0.62</b> (0.49)
Income (Before Training) (Pesos per month)	<b>24.96</b> (78.22)	<b>22.17</b> (76.07)
Income (After Training) (Pesos per month)	<b>150.01</b> (169.54)	<b>146.37</b> (168.61)
Wages (Before Training) (Pesos per month)	<b>198.47</b> (119.44)	<b>214.25</b> (121.81)
Wages (After Training) (Pesos per month)	<b>245.00</b> (153.83)	<b>244.21</b> (153.41)
Age (Years)	<b>22.71</b> (4.35)	<b>23.18</b> (4.04)
Male* (percentages)	<b>0.53</b> (0.49)	<b>0.53</b> (0.49)
Education (Years)	<b>9.66</b> (2.35)	<b>9.61</b> (2.44)
Actual Months of Work Experience	<b>59.75</b> (53.31)	<b>62.72</b> (50.25)
One or More Children* (percentages)	<b>0.37</b> (0.48)	<b>0.38</b> (0.49)
Child Older than 5 Years* (percentages)	<b>0.32</b> (0.47)	<b>0.32</b> (0.47)
<b>Number of Persons Younger than 35-Years Old</b>	<b>1,514</b>	<b>1,505</b>

*Source:* "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

*Notes:* (1) Before refers to the period October 96 / March 97. (2) After refers to the period January 98/ March 98. (3) Numbers in parentheses are standard deviation. (\*) Dummy variables.

## 4. Econometric Methodology

### 4.1. Non-Matching Estimator

The effects of the YTP were estimated by using the comparison group provided by the Ministry of Labor's sample and by redefining this comparison group through the use of matching techniques. In the first case, we did not know the exact comparison group twin for each member of the beneficiary's group. In the second case, we built the "neighbor" for each beneficiary so that each beneficiary is compared to a created "twin" from the original comparison group.

We used different economic evaluation parameters in order to estimate the outcome of YTP: the effect of "treatment on the treated" (TT), the "average treatment effect" (ATE), and the "marginal treatment effect" (MTE). The Roy model will be used to define each of these parameters and to see what economic questions they answer.

In order to estimate the effects of the YTP, we used three kinds of estimators: (a) "Before and After," which compares the mean outcome of participants at the beginning and end of the program, (b) "Cross-Section," which compares mean outcome of participants and non-participants after the program, and (c) "Difference in Difference," which compares the change in the outcome variable before and after the program and between beneficiaries and the comparison group.

The outcomes of interest for our evaluation are monthly wages ( $w$ ), monthly income ( $I$ ), and the probability of being employed ( $E$ ). Each person "i" can occupy one of two mutually exclusive states, but not both at the same time. The states are denoted "1" for the treated states (beneficiaries) and "0" for the untreated state (no-show or comparison group).

#### 4.1.1 Outcome: Monthly Wages and Earnings

We begin with the outcome on wages. For each person "i," assume two potential outcomes ( $w_{0i}$  and  $w_{1i}$ ) corresponding, respectively, to the potential outcome in the untreated and treated states. Let  $D_i = 1$  denote the receipt of treatment, and  $D_i = 0$  denote non-treatment. Then the outcome variable  $w_i$  could be expressed as:

$$1) \quad w_i = D_i w_{1i} + (1 - D_i) w_{0i}$$

The decision rule for the indicator variable "D" is generated by a latent variable "D\*" defined by:

$$2) \quad D^* = Z \gamma + \zeta$$

where  $Z$  is a vector of observed random variables, and  $\zeta$  is an unobserved random variable.

We observe  $D = 1$  if the individual is a beneficiary of the program, so

$$D = 1 \text{ if } D^* > 0,$$

and  $D = 0$  if the person is a non-participant, so

$$D = 0 \text{ if } D^* < 0.$$

The salaries in stages 1 and 0 are determined by the following equations:

$$3) \quad w_{1i} = X_i\beta_1 + U_{1i}$$

$$4) \quad w_{0i} = X_i\beta_0 + U_{0i}$$

so equation (1), the linear regression representation, can be written as:

$$5) \quad w_i = X_i\beta_0 + D_i [ X_i (\beta_1 - \beta_0) + (U_{1i} - U_{0i}) ] + U_{0i}$$

The coefficient on  $D_i$  in the switching equation (1) indicates the change in monthly wages when a person with characteristics  $X$  is randomly picked and moved from the untreated state to the treated state. If we assume that the only difference between “ $\beta_1$ ” and “ $\beta_0$ ” is reduced to a constant “ $\alpha$ ,” then the regression model for this particular case could be written as:

$$6) \quad w_i = X_i\beta_0 + D_i \alpha + D_i (U_{1i} - U_{0i}) + U_{0i}$$

The ATE and TT effects are represented by the following expected values:

$$7) \quad ATE = E[w_{1i} - w_{0i} | X]$$

$$8) \quad TT = E[w_{1i} - w_{0i} | X, D = 1]$$

Both effects will be measured under different assumptions and models. We will have the following cases:

Assumption (a): Homogeneous responses:  $U_{1i}=U_{0i}=U$ , the unobservable are common across the two states, so potential outcomes differ by a constant “ $\alpha$ .” Everyone gains or loses the same by moving from “0” to “1,” then  $ATE = TT$ .

Assumption (b): Heterogeneous responses across persons ( $\alpha_i$ ) conditional on  $X$ , but persons do not participate in the program based on those different responses. This condition arises if agents who select the state “1” or “0” either do not know or do not act on  $[U_{1i} - U_{0i}]$  in making their decision to participate in the program. “ $\alpha_i$ ” is variable (given  $X$ ) but does not help to determine program participation. In this case, we can demonstrate that  $ATE = TT$ .

Assumption (c): Heterogeneous responses across persons ( $\alpha_i$ ) conditional on X. Agents act on this information in deciding whether or not to participate in a program. The coefficient on D is variable (given X) and does help determine program participation. The assumption  $E(U_1 - U_0|X, D = 1) = 0$  no longer holds so  $ATE \neq TT$ .

In order to estimate the YTP's effects on monthly wages and employment probability, we used a cross-section estimator that compares mean outcomes of participants and non-participants at time "t" (after the training). We applied the following models:

Unconditional means differences:

$$ATE = TT = E(W_1|D=1) - E(W_0|D=0)$$

$$(9) \hat{ATE} = \hat{TT} = \sum_{D=1} w_{1i} - \sum_{D=0} w_{0i}$$

Model without unobserved heterogeneity based on switching regression: (Case "a" and equal case "b" because unobserved heterogeneity is ex-post, but ex-ante it is not acted upon in determining program participation).

$$TT = E(w_1|X, D=1) - E(w_0|X, D=1)$$

$$ATE = E(w_1|X) - E(w_0|X)$$

$$(10) w_i = X\beta + D\alpha + \varepsilon_i$$

$$(11) \hat{TT} = \sum_{D=1} X\beta + \alpha - \sum_{D=1} X\beta = \alpha$$

$$(12) \hat{ATE} = \sum_{D=1 \& D=0} X\beta + \alpha - \sum_{D=1 \& D=0} X\beta = \alpha$$

Model with normally distributed unobserved heterogeneity is based on switching regression with a joint normal assumption: (Case c). Taking Heckman's two-step method as the procedure to follow, we estimated the probability of participating in the program:

$$(13) \Pr(D = 1) = \Pr(Z\gamma + \zeta > 0) = \Phi(Z\gamma)$$

then we calculate the inverse Mills ratio for each observation and we include it in the following regression:

$$(14) \quad w_i = X\beta + D\alpha + \frac{\sigma_{\varepsilon\zeta}}{\sigma_{\zeta\zeta}} \lambda[(-Z\gamma) * (2D - 1)] + v_i$$

where  $E(v_i|x)=0$ .

In the case  $\mu_1 \neq \mu_0$ , we compute the ATE and TT outcomes following the results presented in Björklund and Moffit (1987). The Calculation Full Information of the Heckman model is available now in the STATA package.

In the case of the model without unobservable heterogeneity (see Equation (10)), for the ATE outcome we compute the wages with the estimate of the parameters  $\alpha$  and  $\beta$  for  $D=1$  and for  $D=0$ , and then the difference in the mean is obtained. For the TT outcome, we substituted the  $D=0$  with  $D=1$  and estimated the wages with  $D=1$  for everyone. Then, we separated course participants from non-participants (that now have  $D=1$ ) and computed the differences in mean.

For the difference in difference method, we changed the dependent variable using the difference in wages or incomes.

#### 4.1.2 Outcome: Probability of Finding Employment

Let  $E_i$  be the outcome measure variable (probability of finding employment) so that:

$$(15) \quad E_i = D_i E_{1i} + (1-D_i) E_{0i}$$

The potential outcome equation for the participation state and the potential outcome for the non-participation state are:

$$E_{1i} = \mu_1(x_i, \varepsilon_{1i})$$

$$E_{0i} = \mu_0(x_i, \varepsilon_{0i})$$

where  $X$  is a vector of observed random variables and  $(\varepsilon_i; \varepsilon_{0i})$  are unobserved random variables. It is assumed that  $E_{1i}$  and  $E_{0i}$  are defined for everyone and these outcomes are independent across persons so that there is no interaction among agents. We will assume access to an i.i.d. sample, and will henceforth suppress the  $i$  subscripts.

The probability of finding employment is a dichotomous variable, so we assume that a latent index generates the outcome:

$$(16) \quad E_i^* = x\beta + \alpha D + \varepsilon$$

$E_i = 1$  denotes a person who is employed if he would take the program:

$$E_i = 1 \quad \text{if} \quad E_i^* > 0, \quad x\beta + \alpha D + \varepsilon > 0, \quad x\beta + \alpha + \varepsilon > 0$$

$E_1=0$  denotes a person who is not employed if he would take the program:

$$E_1 = 0 \text{ if } E_1^* < 0, \quad x\beta + \alpha D + \varepsilon < 0, \quad x\beta + \alpha + \varepsilon < 0$$

$$(17) \quad E_0^* = x\beta + \varepsilon$$

$E_0=1$  denotes a person who is employed if he would not take the program:

$$E_0 = 1 \text{ if } E_0^* > 0, \quad x\beta + \varepsilon > 0$$

$E_0=0$  denotes a person who is not employed if he would not take the program:

$$E_0 = 0 \text{ if } E_0^* < 0, \quad x\beta + \varepsilon < 0$$

We can observe:

$\Pr(E_1=1 | D=1)$  is the probability that a person is employed, given he took the training.

$\Pr(E_1=0 | D=1)$  is the probability that a person is not employed, given he took the training.

$\Pr(E_0=1 | D=0)$  is the probability that a person is employed, given he did not take the training.

$\Pr(E_0=0 | D=0)$  is the probability that a person is not employed, given he did not take the training.

So we can construct the following likelihood function:

$$(18) \quad L = \prod_{i=1}^n \Pr(E_{1i}=1 | D=1)^{P^*D} \Pr(E_{1i}=0 | D=1)^{(1-P^*)D} \Pr(E_{0i}=1 | D=0)^{P^*(1-D)} \Pr(E_{0i}=0 | D=0)^{(1-P^*)(1-D)}$$

If we assume that  $\varepsilon$  and  $\xi$  follow a joint normal distribution then:

$$(19) \quad L = \prod_{i=1}^n \Phi[(X\beta + \alpha D)^* (2P - 1); Z\gamma^* (2D - 1); \rho^* (2P - 1)^* (2D - 1)]$$

$$(20) \quad \ln L = \sum_{i=1}^n \ln \Phi[(X\beta + \alpha D)^* (2P - 1); Z\gamma^* (2D - 1); \rho^* (2P - 1)^* (2D - 1)]$$

From the log likelihood, we can obtain the estimation of  $\alpha\beta\gamma$  and  $\rho$  so it is possible to calculate the ATE and the TT.

The bivariate normal model is obtained with a biprobit, then the correspondence probability is computed in order to calculate the ratios, as explained in this section.

Average Treatment Effect:

$$(21). \quad \text{ATE} = E(E_1=1 - E_0=1 | x) =$$

$$ATE = E(E_1=1|D=1,x)Pr(D=1) + E(E_1=1|D=0,x)Pr(D=0) - E(E_0=1|D=1,x)Pr(D=1) - E(E_0=1|D=0,x)Pr(D=0)$$

where:

$$(22) \quad E(P_1 = 1 | D = 1, x) = \frac{\Phi[(X\beta + \alpha); Z\gamma; \rho]}{\Phi[Z\gamma]}$$

$$(23) \quad E(P_1 = 1 | D = 0, x) = \frac{\Phi[(X\beta + \alpha); -(Z\gamma); (-\rho)]}{\Phi[-Z\gamma]}$$

$$(24) \quad E(P_0 = 1 | D = 0, x) = \frac{\Phi[(X\beta); -(Z\gamma); (-\rho)]}{\Phi[-Z\gamma]}$$

$$(25) \quad E(P_0 = 1 | D = 1, x) = \frac{\Phi[X\beta; Z\gamma; \rho]}{\Phi[Z\gamma]}$$

$Pr(D=1)$  is the proportion of people that take the training.

$Pr(D=0)$  is the proportion of non-participants.

Treatment on the Treated:

$$(26) \quad TT = E(E_1=1 - E_0=1 | D=1, x) = E(E_1=1 | D=1, x) - E(E_0=1 | D=1, x)$$

In order to estimate the effects of the YTP on the probability of finding employment, we used (a) the “Before and After” estimator and (b) the “Cross-Section” estimator that compares mean outcome of participants and non-participants at time “t” (after the training). We applied the three models described above: a) Unconditional mean difference; b) Model without unobserved heterogeneity based on switching regression (case “a” and equal case “b” because unobserved heterogeneity is ex-post, but ex-ante it is not acted upon to determine program participation in the program); c) Model with normally distributed unobserved heterogeneity is based on switching regression with a joint normally assumption (case c).

Instead of the Inverse Mill’s Ratio assuming normality, we also used a model that incorporates a polynomial of the propensity score as an independence variable. The variables that determine the propensity score have the corresponding exclusion restriction. A polynomial of the 10<sup>th</sup> order was used. This method is very flexible with respect to the underline distributions of the unobserved.



## 4.2. Matching Estimator

Following Heckman, LaLonde and Smith (1999) and Todd (1999), we can briefly describe the matching method.

Matching estimators evaluate the effects of a treatment intervention by comparing outcomes for treated persons to those of similar persons in a comparison group. Matches are deemed suitable if there are similar characteristics, as measured by some distance metric.

The method of matching assumes that analysts have access to a set of conditioning variables,  $Z$ , such that, within each “strata” defined by  $Z$ , the counterfactual outcome distribution of the participants is the same as the observed outcome distribution of the non-participants:

$$A). Y_0, Y_1 \perp D \mid Z$$

$$B). 0 < \Pr(D = 1 \mid Z) < 1$$

As a consequence of (A), the distribution of outcome is:

$$F(Y_0 \mid Z, D=1) = F(Y_0 \mid Z, D=0) = F(Y_0 \mid Z) \text{ and}$$

$$F(Y_1 \mid Z, D=1) = F(Y_1 \mid Z, D=0) = F(Y_1 \mid Z)$$

The method appeals to the intuitive principle that non-participants provide an accurate measure of what participants would have earned had they not participated, conditioned on the variables  $Z$ . It also is necessary to assume that there are participants and non-participants for each  $Z$  for which we seek to make a comparison.

The conditional probability of participating in the program  $P(Z)$  is called the propensity score. We used the logit parametric procedure to estimate the probability of participating in the program, so the problem of matching is reduced to a one-dimensional non-parametric estimation problem—that of estimating  $E(Y_0 \mid D=0, P(Z))$ —instead of the  $k$ -dimensional problem: estimating  $E(Y_0 \mid D=0, Z)$ .

Constructing matched outcome required estimating  $E(Y_0 \mid P(Z), D=0)$  for the cross-sectional matching estimator. Heckman, Ichimura and Todd (1997) describes different estimators of the conditional mean by a weighted average of outcomes observed for  $D=0$  observations.

$$\hat{E}(Y_{0i} \mid P(Z_i), D_i = 0) = \sum_{\substack{j=1 \\ \{D_j=0\}}}^{n_0} W_j(P(Z_i)) Y_{0j}$$

i: participants  
j: non-participants

The estimators are (a) Simple average nearest neighbor estimators, (b) Kernel regression matching estimator and (c) Local Linear Regression (LLR) estimator, which differ only in the choice of weighting function  $W_j(P(Z))$

## 5. Estimates of the YTP's Benefits

The benefits of the training program could be classified in two ways: net increase in GNP and transfers. The first consists of an increase in wages; an increase in the probability of finding employment; finding “better” employment, e.g. a permanent rather than temporary position; trainees’ production during the internship phase; and some possible social benefit if benefits are concentrated among people with more disadvantages. The second classification consists of a reduction in government social expenses on the beneficiary if he or she finds regular employment (this could reduce the deadweight cost of taxation and increase GNP); and indirect benefits captured by the firms if they have to pay lower wages due to the increase in the availability of more trained persons (supply shift).

We could start with the effect on wages by applying the “Before and After” methodology to the group of beneficiaries. Considering only the beneficiaries employed in both periods, the difference in the wage mean between period 1 and 0 is equal to 27.25 pesos per month, with a standard error of 11.85. This represents an important benefit that should be corroborated by the other econometric approaches that will take into account error selection bias.

We can also estimate a “Before and After” Mincer equation for the wages of the beneficiaries, considering the same individuals in both periods. The rate of return to education estimated was 2.91 percent ( $t = 1.350$ ) for the “Before” period and 3.66 percent ( $t = 1.620$ ) for the “After” period.<sup>2</sup>

Taking into account all the beneficiaries with wages before and after, and making a joint Mincer regression with a dummy interaction with education to test the equality before and after of the rate of return to education, we found a statistically significant difference between both rates. There is an increase of around 0.5 percent (from 3.1 to 3.6). It is interesting to note that such change does not occur in the same test for the comparison group, and also the rate of return is much lower.

Two observations arise from these results: (1) the rate of return to education of this group is very low compared to the usual estimates; (2) the training program has two effects: (a) an increase in the rate of return to formal education of 0.75 percent, and (b) a half-year increase in education brings a return of 3.66 percent. From this, we can estimate a relative increase of 9.33

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<sup>2</sup> The independent variables were gender, age, age squared, before experience, square before experience, and regional dummies.

percent (derived from multiplying 3.66 percent by 0.5 years of education due to training, and adding 0.75 percent multiplied by an average of 10 years of education) in wages. This produces a change of 22.39 pesos.

In the following tables, we present the econometric results of the outcome of the program on wages, income and probability of finding employment. The first part uses non-matching techniques and the second one applies matching techniques. The standard error was calculated using the Delta method or the bootstrap estimates of standard error with 100 replications.

### ***5.1. Non-Matching Technique***

In order to estimate the model without unobservable heterogeneity, we included predetermined control variables such as gender, age, schooling, experience marital status, head of family, number of children, number of children younger than 5 years old and dummies for geographic region.

For the model with normal distribution of unobservable, we estimated the model with the full-information maximum likelihood method. For the control variables, we included the same set as described above. We used, as exclusion restriction, the following variables: father's education, mother's education, and one dummy variable which indicates if the person is enrolled in school before the beginning of the program. These variables are highly correlated with the decision to participate in the program but not with the wages earned after the program.

In the model incorporating a polynomial into the propensity score, we used the same set of control variables as the model without unobservable heterogeneity, but we added a tenth-degree polynomial in the propensity score as an independent variable.

**Table 9. ATE and TT on Monthly Wages (Pesos) using Different Methods**

Methods		TOTAL				
		ATE		TT		
		Mean	S.E	Mean	S.E	
			Bootstrap		Bootstrap	
Unconditional Mean Differences	Before-After	X	X	<b>27.25</b>	11.85	
	Cross-Section	X	X	<b>0.79</b>	7.18	
	Diff-in-diff	X	X	<b>6.01</b>	17.24	
Model without Unobservable Heterogeneity	Cross-Section	7.77	9.85	<b>9.10</b>	2.43	
	Diff-in-diff	<b>8.62</b>	22.36	<b>8.25</b>	1.66	
Model with Normal Dist. Unobservables	Cross-Section		X	<b>9.85</b>	2.40	
		Inv. Mill's Ratio	X	X	37.82	26.89
	Diff-in-diff		X	X	<b>18.60</b>	2.69
		Inv. Mill's Ratio	X	X	44.78	39.70
Model Incorporating a Polynomial of the Propensity Score	Cross-Section	<b>3.59</b>	9.90	<b>3.62</b>	2.80	
	Diff-in-diff	<b>2.77</b>	25.05	<b>0.34</b>	2.35	

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 10. ATE and TT on Monthly Earning (Pesos) using Different Methods**

Methods		TOTAL				
		ATE		TT		
		Mean	S.E	Mean	S.E	
			Bootstrap		Bootstrap	
Unconditional Mean Differences	Before-After	X	X	<b>125.06</b>	4.58	
	Cross-Section	X	X	<b>3.64</b>	6.15	
	Diff-in-diff	X	X	<b>1.05</b>	6.39	
Model without Unobservable Heterogeneity	Cross-Section	<b>8.55</b>	8.27	<b>7.86</b>	6.83	
	Diff-in-diff	<b>3.16</b>	6.86	<b>4.38</b>	3.86	
Model with Normal Dist. Unobservables	Cross-Section		X	<b>10.05</b>	2.71	
		Inv. Mill's Ratio	X	X	28.81	22.10
	Diff-in-diff		X	X	<b>6.78</b>	2.14
		Inv. Mill's Ratio	X	X	43.93	7.66
Model Incorporating a Polynomial of the Propensity Score	Cross Section	<b>4.47</b>	7.00	<b>4.28</b>	3.71	
	Diff-in-diff	<b>2.39</b>	8.40	<b>-1.14</b>	2.69	

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 11. ATE and TT on Probability of Finding Employment using Different Methods**

Methods		TOTAL			
		ATE		TT	
		Mean	S.E	Mean	S.E
			Bootstrap		Bootstrap
Unconditional Mean Differences	Before-After	<b>X</b>	X	<b>0.49</b>	0.01
	Cross-Section	<b>X</b>	X	<b>0.00</b>	0.02
	Diff-in-diff	<b>X</b>	X	<b>-0.02</b>	0.01
Model without Unobservable Heterogeneity	Cross-Section	<b>0.00</b>	0.01	<b>0.01</b>	0.01
Model with Normal Dist. Unobservables	Cross-Section	<b>0.27</b>	0.26	<b>0.00</b>	0.00

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

## 5.2. Matching Technique

### 5.2.1 Balancing Score Matching (BSM)

The conditional probability of participating in the program  $P(Z)$  is called the propensity score. We used a logit parametric procedure to estimate the probability of participating in the program and made the matching using the odds-ratio  $P(Z) / [1-P(Z)]$ . Since we use a choice-based and partially stratified sampling scheme to generate the comparison group, we are able to estimate what are called balancing scores instead of genuine propensity scores. Some adjustments could be made in order to find the propensity score. One adjustment that we made is to use the log-odds ratio instead of the direct estimate of BS.

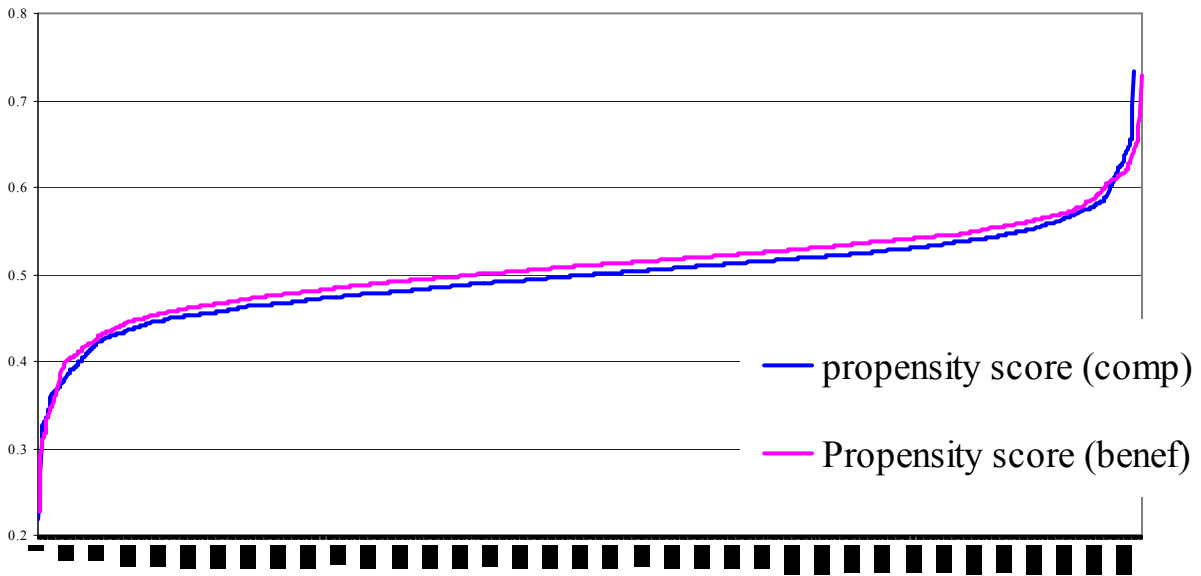
The set of  $Z$  variables used in order to estimate the propensity score were: gender, age, head of family, number of children, number of children younger than 5 years old, marital status, years of formal education, mother's educational level, father's educational level, months of work experience and school attendance. Some non-linearity forms in these variables were explored also, such as the square of experience, and some interaction with gender and age. All these variables refer to the moment before the beginning of the courses.<sup>3</sup> The variables chosen to estimate the balancing score were the most relevant available in our data set and the ones most generally used in the propensity score estimations. It is reasonable to think that these variables satisfy the conditional independence assumption required for matching as they are measured previous to the program and are characteristics that were not influenced by the program. Only

<sup>3</sup> We replaced these variables with those for which we have information about the candidates' registration, but the coefficients of the propensity score regression did not change significantly.

the regional effect could have been affected by the program, but they were not statistically significant in the estimation.

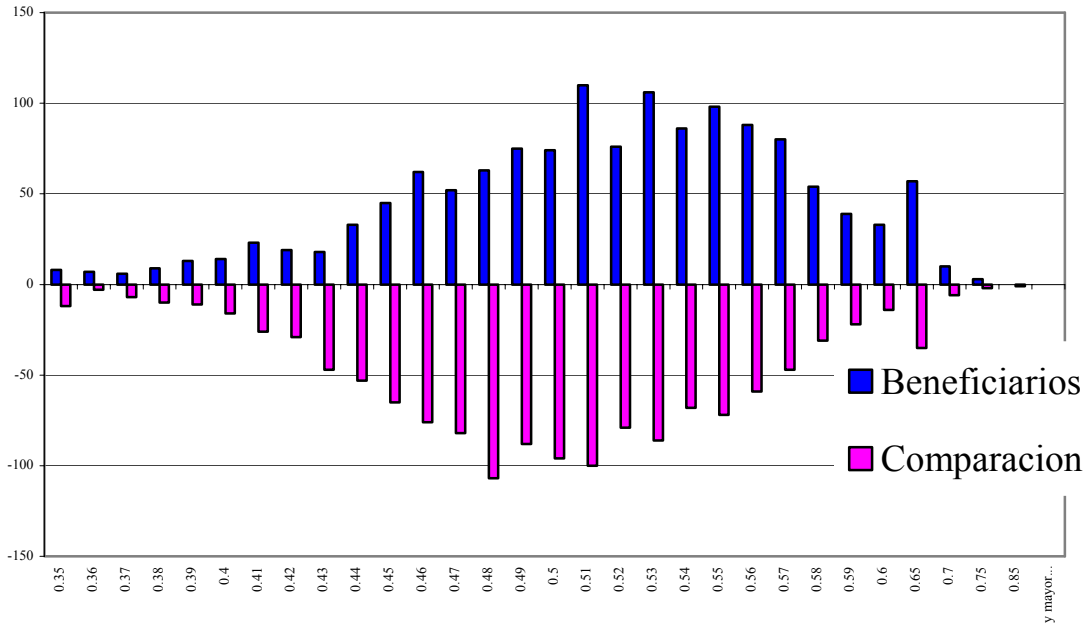
In the following graph, we can observe the support region for the beneficiaries group and comparison group as determined by the balancing score.

**Figure 1. Balancing Score of the Beneficiaries and Comparison Groups**



Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Figure 2. Histogram of the Balancing Scores of the Beneficiaries and Comparison Groups**



Source: “Encuesta de Medición de Impacto Proyecto Joven” Ministry of Labor of Argentina.

**Table 12. Balancing Score of the Beneficiaries and Comparison Groups**

	Observations	Mean	S.D	Minimun	Maximun
<b>Participants</b>	1361	0.51	0.06	0.15	0.73
<b>Non-Participants</b>	1350	0.50	0.06	0.27	0.83

Source: "Encuesta de Medicion de Impacto Proyecto Joven" Ministry of Labor of Argentina.

From the table above, the boundaries for the support region of the propensity score are 0.27 and 0.73.

In order to evaluate the sensitivity of the Balancing Score equation, we also estimated for different gender-age groups: Males, Females, Males less than 35 years old, and Females less than 35 years old. The relevant variables were always the same: age, age squared, children, children less than 5 years old, education, school enrollment, experience, and experience-squared. The age effect changes, and the children younger than 5 years category turn out to be positive for males and negative for females, but negative in the aggregate. The education effect is greater for males.

The boundaries of the supporting region of the balancing score do not change significantly for different demographic groups. The lower and upper bounds do increase slightly.



The predictive power of how well participants are distinguished from non-participants is around 59 percent. It is very similar for the different gender-age groups.

### *5.2.2 Simple Average Nearest Neighbor Estimators, Kernel Regression Matching Estimator, and Local Linear Regression*

In this paper, we used the Simple Average Nearest Neighbor Estimators using one, ten, twenty, and fifty neighbors, the Kernel Regression Matching Estimator using the entire sample and a bandwidth of 0.2, 0.3 and 0.4, and the Local Linear Regression (LLR) estimator using ten, twenty, and fifty neighbors and a variable bandwidth.

In Table 13, we present the characteristics of the matching group for different amounts of neighbors. It is possible to observe that the mean and the standard deviation are very similar across different amounts of neighbors for all of the variables, but the outcome distribution is not very similar between beneficiaries and matching groups.

**Table 13. Mean and Standard Deviation of the Main Characteristics of the Beneficiaries and Comparison Groups (35-Years Old or Younger)**

	Participant s	Original 1 Neighbor	10 Neighbors	20 Neighbors	50 Neighbors	
Employment Rate (Before Training)	<b>0.14</b> (0.34)	<b>0.11</b> (0.32)	nd nd	nd nd	nd nd	
Employment Rate (After Training)	<b>0.63</b> (0.48)	<b>0.62</b> (0.49)	<b>0.63</b> (0.48)	<b>0.63</b> (0.48)	<b>0.63</b> (0.48)	
Income (Before Training) (pesos)	<b>24.96</b> (78.22)	<b>22.17</b> (76.07)	<b>25.85</b> (82.42)	<b>23.92</b> (77.41)	<b>23.44</b> (76.49)	<b>22.95</b> (75.67)
Income (After Training) (pesos)	<b>150.01</b> (169.54)	<b>146.37</b> (168.61)	<b>150.00</b> (174.30)	<b>151.13</b> (173.35)	<b>152.49</b> (173.76)	<b>151.62</b> (173.56)
Wages (Before Training) (pesos)	<b>198.47</b> (119.44)	<b>214.25</b> (121.81)	<b>178.78</b> (158.64)	<b>199.95</b> (167.89)	<b>197.17</b> (169.26)	<b>197.87</b> (169.65)
Wages (After Training) (pesos)	<b>245.00</b> (153.83)	<b>244.21</b> (153.41)	<b>247.44</b> (161.25)	<b>249.74</b> (158.20)	<b>250.78</b> (158.13)	<b>250.96</b> (157.88)
Age (years)	<b>22.71</b> (4.35)	<b>23.18</b> (4.04)	<b>22.79</b> (4.03)	<b>22.63</b> (4.01)	<b>22.66</b> (4.02)	<b>22.60</b> (3.95)
Male* (percentage)	<b>0.53</b> (0.49)	<b>0.53</b> (0.49)	<b>0.54</b> (0.50)	<b>0.54</b> (0.50)	<b>0.53</b> (0.50)	<b>0.53</b> (0.50)
Education (years)	<b>9.66</b> (2.35)	<b>9.61</b> (2.44)	<b>9.72</b> (2.45)	<b>9.61</b> (2.41)	<b>9.63</b> (2.40)	<b>9.65</b> (2.38)
Actual Months of Work Experience	<b>59.75</b> (53.31)	<b>62.72</b> (50.25)	<b>65.10</b> (53.21)	<b>62.91</b> (49.68)	<b>62.98</b> (49.36)	<b>62.68</b> (49.10)
One or More Children*	<b>0.37</b> (0.48)	<b>0.38</b> (0.49)	<b>0.39</b> (0.49)	<b>0.38</b> (0.49)	<b>0.38</b> (0.49)	<b>0.38</b> (0.49)
Child Older than 5 Years*	<b>0.32</b> (0.47)	<b>0.32</b> (0.47)	<b>0.32</b> (0.47)	<b>0.32</b> (0.47)	<b>0.32</b> (0.47)	<b>0.32</b> (0.47)
Number of Persons Younger than 35-Years Old	1,514	1,505	1,356	13,560	27,120	67,800

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

Notes: (1) Before refers to the October 1996-March 1997 period. (2) After refers to the January-March 1998 period. (3) Numbers in parentheses are standard deviation. (\*)Dummy variables.

**Table 14. ATE and TT on Monthly Wages (Pesos) using Different Matching Estimators**

Methods			TOTAL	
			Mean	S.E
			Bootstrap	
Simple Average Nearest Neighbor Estimators.	1 Neighbor	Cross-Section	<b>-0.88</b>	7.79
		Diff-in-diff	<b>33.54</b>	17.76
	10 Neighbors	Cross-Section	<b>-3.18</b>	5.67
		Diff-in-diff	<b>8.49</b>	13.65
	20 Neighbors	Cross-Section	<b>-4.22</b>	5.53
		Diff-in-diff	<b>5.16</b>	13.36
	50 Neighbors	Cross-Section	<b>-4.41</b>	5.45
		Diff-in-diff	<b>2.65</b>	13.18
Kernel Regression Matching Estimator (All comparison group)	Bandwidth 0.2	Cross-Section	<b>-0.71</b>	5.81
		Diff-in-diff	<b>11.09</b>	13.66
	Bandwidth 0.3	Cross-Section	<b>-3.30</b>	5.60
		Diff-in-diff	<b>6.32</b>	13.36
	Bandwidth 0.4	Cross-Section	<b>-3.22</b>	5.48
		Diff-in-diff	<b>3.81</b>	13.17
Local Linear Regression Estimator	10 Neighbors	Cross-Section	<b>0.58</b>	5.81
		Diff-in-diff	<b>9.34</b>	14.78
	20 Neighbors	Cross-Section	<b>-0.65</b>	5.63
		Diff-in-diff	<b>11.34</b>	13.77
	50 Neighbors	Cross-Section	<b>-0.85</b>	5.54
		Diff-in-diff	<b>14.63</b>	13.95

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 15. ATE and TT on Monthly Earnings (Pesos) using Different Matching Estimators**

Methods			TOTAL	
			Mean	S.E
			Bootstrap	
Simple Average Nearest Neighbor Estimators.	1 Neighbor	Cross-Section	<b>1.10</b>	6.63
		Diff-in-diff	<b>3.73</b>	6.94
	10 Neighbors	Cross-Section	<b>-0.04</b>	4.88
		Diff-in-diff	<b>0.67</b>	5.09
	20 Neighbors	Cross-Section	<b>-1.40</b>	4.76
		Diff-in-diff	<b>-1.17</b>	4.98
	50 Neighbors	Cross-Section	<b>-0.52</b>	4.69
		Diff-in-diff	<b>-0.78</b>	4.90
Kernel Regression Matching Estimator (All comparison group)	Bandwidth 0.2	Cross-Section	<b>1.00</b>	4.63
		Diff-in-diff	<b>-0.33</b>	4.84
	Bandwidth 0.3	Cross-Section	<b>1.42</b>	4.63
		Diff-in-diff	<b>-0.39</b>	4.84
	Bandwidth 0.4	Cross-Section	<b>2.15</b>	4.63
		Diff-in-diff	<b>0.05</b>	4.83
Local Linear Regression Estimator	10 Neighbors	Cross-Section	<b>2.68</b>	4.99
		Diff-in-diff	<b>2.38</b>	5.27
	20 Neighbors	Cross-Section	<b>1.53</b>	4.87
		Diff-in-diff	<b>1.58</b>	5.12
	50 Neighbors	Cross-Section	<b>0.69</b>	4.74
		Diff-in-diff	<b>0.38</b>	4.98

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 16. ATE and TT on Probability of Finding Employment using Different Matching Estimators**

Methods		TOTAL	
		Mean	S.E
		Bootstrap	
Simple Average Nearest Neighbor Estimators (Cross-Section)	1 Neighbor	<b>0.00</b>	0.02
	10 Neighbors	<b>0.00</b>	0.01
	20 Neighbors	<b>0.00</b>	0.01
	50 Neighbors	<b>0.00</b>	0.01
Kernel Regression Matching Estimator (All comparison group) (Cross-Section)	Bandwidth 0.2	<b>0.01</b>	0.01
	Bandwidth 0.3	<b>0.01</b>	0.01
	Bandwidth 0.4	<b>0.01</b>	0.01
Local Linear Regression Estimator (Cross-Section)	10 Neighbors	<b>0.01</b>	0.01
	20 Neighbors	<b>0.01</b>	0.01
	50 Neighbors	<b>0.01</b>	0.01

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

In Tables 14-16 and 26-40 (see Appendix A), we present ATE and TT outcomes on wages, earning and employment. To determine the outcomes, we use different methods under different models, apply non-matching and matching techniques, and estimate for the aggregate and by gender-age groups. These estimates could give us a broader picture and confidence in the estimation of outcomes of this kind of program. As this is a non-experimental case, we do not have the control necessary to make an estimate free of many assumptions.

The Before and After method in the unconditional mean difference model produces the biggest TT outcomes on wages, earning and employment. The outcome on wages is around 27 pesos per month and doubles the probability of the aggregate group's probability of finding employment. The outcome on wages is larger for the young-female group (see Tables 9-11, 26-28 and 36-38).

The Cross-Section method gives us much lower estimates for the TT outcomes on wages, earning and employment. The models that differ on the treatment of heterogeneity and selection bias give a range of outcomes, from 30 to 10 percent using the Before and After method. The ATE outcome looks very similar to the TT, and the statistical significance of the estimates decreases. The outcome by gender-age groups varies a great deal with respect to the previous method (see tables cited above).

The Difference-in-Difference method gives a lower TT outcome but larger ATE outcomes with respect to the Cross-Section method across different models. The TT outcomes appear to be estimated more clearly and with more confidence. The gender-age groups also present more volatility (see tables cited above).

The different models allow for the treatment of heterogeneity, better control of the selection bias, and also the possibility of estimating ATE outcomes. The outcomes for wages become much stronger than those for employment.

It appears there is a difference in the distribution of outcomes for wages between the beneficiaries group and comparison group. Larger outcomes for the beneficiaries are observed around average wages, which is not the case for the comparison group.

The matching techniques estimations, presented in Tables 14-16, 29-30, 34-35, and 39-40, allow for another treatment of the selection bias and heterogeneity problems. This applies for the Cross-Section and Difference-in-Difference methods. Three matching techniques are presented.

The Simple Average Nearest Estimators method gives a greater outcome on wages for the Difference-in-Difference method than for the Cross-Section method. The outcome on wages declines with the increase in the number of neighbors but is not statistically significant (Table 14). The Kernel Matching Estimator offers lower outcome on wages and is not statistically significant for either method or for any bandwidth. The Difference-in-Difference method under the Local Linear Regression estimator offers half the estimates of the Before and After method and is not statistically significant.

When we analyze the outcomes by gender-age groups, the strongest outcome on wages is observed for the female group (Table 29).

As in the case of non-matching techniques, the outcome on employment is very low.

In the case of outcome on wages, we found a range from 8 to 30 pesos per month. Statistically, the results look very strong in few cases. Even though the comparison group has many problems, the matching techniques give some support to our estimates.

Some heterogeneity is noted in the beneficiaries group and comparison group. The outcomes could be different for each initial wage level. The ATE and TT effects are not very different, so the results could be considered reliable in order to obtain average rates of return to investment in training. In Table 41 (see Appendix B), we present the results when the region of support is reduced from 0.15-0.83 to 0.35-0.63. The outcomes are much lower, which could imply that we are not homogeneous across different kinds of beneficiaries.

The volatility of the outcomes estimates is very common in other studies that rely on similar kind of information. The use of different methods, models and techniques helps to arrive at an average estimate of the outcomes that could have statistical support.

### ***5.3 Regional Effect***

The program was offered in the different provinces of Argentina according to their importance in the labor market. The wage premium for education and employment rate differs across provinces; therefore, it would be interesting to know if the training program's outcomes differed in each province. The results of this analysis could prove useful in evaluating the quality of the program's management.

We studied differences in regional outcomes through two approaches. The first was the traditional linear selection on observable. The second used matching techniques by regions. This

matching was possible because geographic distribution was a component of comparison group selection.

In order to capture the regional effect, we used interaction variables that captured the training's effect on wages according to region. From Table 17, we can conclude that the largest positive effect occurred in the SUR region (52 pesos more than the Buenos Aires Region). Effects were also positive and strong for the Santa Fe, Cuyo and Nea regions. There was no effect on the Litoral and Centro regions, and the effect for the rest of the regions was negative. Computing a joint test F that all of the coefficients of the interaction variables in the model are zeros, we found  $F(10, 721) = 1.02$  (  $\text{Prob} > F = 0.4257$  ), so we cannot reject the hypothesis.

**Table 17. Regression on Wages in the Post-Training Period for Beneficiaries with Dummy Variables for Each Province**

aft_wag1	Coef.	Robust Std. Err.	Bootstrap Std. Err.	t	P> t	[95% Conf. Interval]	
dtrained	-57.74	53.31		-1.08	0.28	-162.30	46.81
sexo	62.85	7.74		8.12	0.00	47.67	78.03
edad	11.51	8.45		1.36	0.17	-5.07	28.09
edad2	-0.20	0.17		-1.18	0.24	-0.53	0.13
aft_exp	0.16	0.12		1.28	0.20	-0.08	0.40
aft_exp2	0.00	0.00		-0.11	0.91	0.00	0.00
eduyrs	9.44	1.59		5.92	0.00	6.31	12.57
jefe_enc	20.64	8.38		2.46	0.01	4.21	37.07
hijos	-11.13	4.68		-2.38	0.02	-20.31	-1.94
hijos5	3.89	6.72		0.58	0.56	-9.29	17.07
soltero	-25.16	10.43		-2.41	0.02	-45.62	-4.69
aft_icny	-0.03	0.04		-0.67	0.50	-0.10	0.05
aft_asis	-28.02	11.53		-2.43	0.02	-50.64	-5.41
meses_t	2.24	1.72		1.30	0.20	-1.14	5.61
centro	-94.56	38.35		-2.47	0.01	-169.78	-19.34
mendoza	23.12	21.80		1.06	0.29	-19.63	65.87
noa	-199.56	37.74		-5.29	0.00	-273.58	-125.55
cordoba	-102.77	40.10		-2.56	0.01	-181.42	-24.12
litoral	-181.45	38.80		-4.68	0.00	-257.54	-105.36
tucuman	-196.62	39.10		-5.03	0.00	-273.32	-119.92
santafe	-160.28	38.73		-4.14	0.00	-236.25	-84.31
cuyo	-182.14	39.20		-4.65	0.00	-259.03	-105.25
sur	-133.77	40.70		-3.29	0.00	-213.60	-53.93
nea	-206.17	38.14		-5.41	0.00	-280.98	-131.36
d_centro	63.70	55.65	29.57	1.15	0.25	-45.44	172.84
d_mendoza	-11.94	31.27	31.03	-0.38	0.70	-73.27	49.38
d_noa	53.44	55.61	27.74	0.96	0.34	-55.62	162.50
d_cordob	33.67	58.30	33.58	0.58	0.56	-80.68	148.02
d_litora	60.00	57.71	33.35	1.04	0.30	-53.19	173.19
d_tucuma	40.46	56.18	29.62	0.72	0.47	-69.74	150.65
d_santaf	85.45	56.01	30.28	1.53	0.13	-24.41	195.31
d_cuyo	85.61	57.20	35.48	1.50	0.14	-26.58	197.79
d_sur	109.40	59.44	39.81	1.84	0.07	-7.18	225.99
d_nea	75.68	55.25	27.24	1.37	0.17	-32.68	184.04
_cons	73.88	114.82		0.64	0.52	-151.31	299.07
<hr/>							
Number of obs	1,756						
F( 34, 1721)	11.37						
Prob > F	0.00						
R-squared	0.18						
Root MSE	140.04						

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.



To have enough data in each region, we applied matching techniques and divided the country into two regions: Buenos Aires and the other provinces. The results are presented in Table 18. There are no differences in the outcomes on wages across regions, confirming the joint test conducted previously using regression techniques but, as Table 17 indicated, different outcomes for smaller regions could occur.

**Table 18. TT on Monthly Wages (Pesos) using Different Matching Estimators**

Methods			Buenos Aires		Rest of the Regions		
			Mean	S.E	Mean	S.E	
				Bootstrap		Bootstrap	
Simple Average Nearest Neighbor Estimators.	1 Neighbor	Cross Section	<b>-3.96</b>	17.14	<b>-4.11</b>	7.45	
		Diff-in-diff	<b>24.33</b>	49.58	<b>13.29</b>	18.25	
	10 Neighbors	Cross Section	<b>-15.47</b>	12.97	<b>-0.23</b>	5.99	
		Diff-in-diff	<b>10.72</b>	39.16	<b>3.98</b>	14.27	
	20 Neighbors	Cross Section	<b>-14.86</b>	12.71	<b>-2.95</b>	5.92	
		Diff-in-diff	<b>4.51</b>	38.71	<b>-2.04</b>	14.07	
	50 Neighbors	Cross Section	<b>-25.27</b>	12.53	<b>-0.54</b>	5.87	
		Diff-in-diff	<b>5.82</b>	38.41	<b>-2.13</b>	13.94	
	Kernel Regression Matching Estimator	Bandwidth 0.2	Cross Section	<b>-16.24</b>	13.87	<b>0.05</b>	6.26
			Diff-in-diff	<b>3.73</b>	39.89	<b>6.87</b>	14.48
Bandwidth 0.3		Cross Section	<b>-14.85</b>	13.23	<b>-0.91</b>	6.04	
		Diff-in-diff	<b>6.25</b>	38.90	<b>1.64</b>	14.16	
Bandwidth 0.4		Cross Section	<b>-17.45</b>	12.75	<b>-0.57</b>	5.92	
		Diff-in-diff	<b>7.34</b>	38.45	<b>-0.62</b>	13.97	
Local Linear Regression Estimator	10 Neighbors	Cross Section	<b>-11.03</b>	12.94	<b>1.40</b>	6.23	
		Diff-in-diff					
	20 Neighbors	Cross Section	<b>-14.21</b>	12.50	<b>2.48</b>	6.05	
		Diff-in-diff					
	50 Neighbors	Cross Section	<b>-11.71</b>	12.30	<b>0.88</b>	5.97	
		Diff-in-diff					

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

## 6. The Cost of the Program

The total cost of the training program could be measured by considering the following classifications: a) Direct Costs, which include the cost of offering the courses (such as payments made to the institutions that offered the course, training and practice), the subsidies given to participants, and other costs like insurance and medical check-ups; b) Indirect Costs, which include the federal and local government administrative costs that could be charged to the YTP and cover the design, implementation, and control of the program; c) Alternative Costs, which are the wages forgone by the participants in order to take the course; and d) Deadweight cost of taxation.

The direct cost is distributed in nearly equal parts between payments made to the instructing institutions and participant subsidies. In general, each course lasts for around 3 months (half in training and half in internship). We classified the courses in four groups according to the economic sector to which each was most related: Construction, Industry, Agriculture and Mining, and Services. Tables 19 and 20 show the cost per participant.

The share of total costs represented by payments to program providers varies from 45 percent in Formosa to 67 percent in Neuquen (See Appendix E, Table 59). On the whole, we found that providers' cost was larger where the cost per participant was less, but there is no clear association between the two variables. The variation in cost per participant is due more to course composition.

**Table 19. Costs of Courses for Whole Country Classified by Sector (Pesos)**

Sector	Number of Courses	Average Number of Participants	Total Number of Participants	% of Total	Ave. Cost/ Course	Average Duration (days)	Average Cost/ Participant	Average Cost per Participant & per Day
<b>Construction</b>	325	17	5,914	0.25	15,800	94	1,513.19	16
<b>Industrial</b>	181	18	3,232	0.14	14,884	86	1,397.09	16
<b>Agriculture/Mining/Forest</b>	300	19	5,572	0.24	14,733	89	1,353.80	15
<b>Tertiary</b>	481	18	8,925	0.38	13,681	89	1,288.84	15
<b>TOTAL</b>	1,287	18	23,643	1.00	14,774	89	1,388.23	16

*Source:* "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 20. Average Cost of Course per Beneficiary by Sector and Province (Pesos)**

Sector	Bs As	Capita Federal	Catamarca	Chaco	Chubut	Cordoba	Corrientes	Entre Rios
<b>Construction</b>	1432.87	1375.09	1455.59	1615.07	1348.25	1585.41	-	1601.93
<b>Industrial</b>	1297.31	1420.16	-	1064.00	1368.91	1615.13	1497.53	1406.66
<b>Agriculture/Mining/Forestry</b>	1354.85	-	1326.65	1218.32	1376.38	1487.37	1412.41	1232.03
<b>Tertiary</b>	1239.63	1276.59	1218.50	1310.25	1268.38	1298.86	1298.95	1393.05
<b>TOTAL</b>	1331.17	1357.28	1333.58	1301.91	1340.48	1496.69	1402.96	1408.42
Sector	Formosa	Jujuy	La Pampa	La rioja	Mendoza	Misiones	Neuquen	Rio Negro
<b>Construction</b>	1289.69	1522.00	1567.08	1177.00	1516.70	1517.21	1683.56	1307.00
<b>Industrial</b>	-	1448.63	1509.50	1404.09	1469.39	1325.60	1918.25	1401.50
<b>Agriculture/Mining/Forestry</b>	1505.13	1365.43	1289.49	1106.00	1402.67	1206.71	1148.08	1125.30
<b>Tertiary</b>	914.50	1391.96	1038.25	1014.25	1381.75	1210.43	1351.63	1298.81
<b>TOTAL</b>	1236.44	1432.01	1351.08	1175.33	1442.63	1314.99	1525.38	1283.15
Sector	Salta	San Juan	San Luis	Santa Cruz	Santa Fe	Sgo del Estero	Tierra del Fuego	Tucuman
<b>Construction</b>	1568.60	1622.41	1264.57	-	1501.39	1569.94	1509.00	1280.33
<b>Industrial</b>	1451.18	1450.62	-	-	1394.01	1539.00	-	1527.34
<b>Agriculture/Mining/Forestry</b>	1494.51	1369.50	1529.83	1177.00	1393.46	1224.35	-	1208.68
<b>Tertiary</b>	1332.11	1335.11	1307.89	-	1311.14	1474.43	1669.00	1288.40
<b>TOTAL</b>	1461.60	1444.41	1367.43	1177.00	1400.00	1451.93	1589.00	1326.19

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

As shown in Table 20, the direct cost per participant varies by province and by course. It runs from 1,014 pesos per course in Services in La Rioja, to 1,918 pesos for a course in Industry in Neuquen. The average cost per participant for the whole country was around 1,360 pesos.

The share of administrative costs in the total cost for a set of employment programs that covered the YTP varied from 49 percent in 1993 to 16 percent in 1998. In 1997, the administrative cost for the Secretary of Employment and Labor Training was around 23 percent. Looking only at the YTP, administrative costs represented around 15 percent. In 1996, the YTP represented almost 30 percent of expenditures on active labor policies.

Taking into account all these alternatives, we can estimate that indirect costs ranged from 15 percent to 30 percent of the total cost for the program. This represents between 18 to 43 percent in terms of direct cost. The indirect costs related to the YTP's fifth round last for almost two years, so the percentages should be doubled to between 36 and 86 percent since direct costs only last one year. The following estimates of indirect costs could then be considered:

- a) Lower estimate 245 pesos
- b) Intermediate estimate 490 pesos

c) Upper estimate

1,170 pesos.

The alternative cost per month can be estimated by looking at participants' wages before the beginning of the program. The average monthly wage was around 220 pesos. The number of participants employed at the beginning of the program was very low, less than 25 percent. The reservation wage could be approximated using 50 percent of the average wage, i.e. 110 pesos. Consequently, the alternative cost can be estimated as 330 pesos for the 3-month program. From this figure, we have to subtract the contribution to production made by the participants during the internship phase. While 60 percent of the firms said the program participants made a positive contribution to production, the other 40 percent said they had to utilize the services of other workers, hence decreasing the firm's productivity. Thus, we can consider that the participants contributed 20 percent of their wages to firm production. This represents almost 35 pesos (derived from 20 percent of 110 pesos multiplied by 1.5 months). So, the alternative cost could be estimated as 295 pesos.

The deadweight costs of taxation can be estimated using related studies for other countries. The total cost of this training program (around 45 million pesos) represents an increase in taxation of around 0.15 percent in Argentina. The total deadweight cost of taxation could be estimated at one percent of GDP, which would be around 3 billion pesos in Argentina. So the additional deadweight cost of this program is 0.15 percent multiplied by 3 billion pesos, equal to 4.5 million pesos.<sup>4</sup> This represents a cost per participant of around 185 pesos.

The total cost per participant of the YTP's fifth round can then be estimated as:

Lower estimate	Direct cost	1,360 pesos
	Indirect cost	245 pesos
	Alternative cost	295 pesos
	Deadweight cost	185 pesos
	Total Cost	2,085 pesos
Intermediate estimate	Direct cost	1,360 pesos
	Indirect cost	490 pesos
	Alternative cost	295 pesos

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<sup>4</sup> This exercise assumes a demand elasticity of -1.

	Deadweight cost	185 pesos
	Total Cost	2,330 pesos
Upper estimate	Direct cost	1,360 pesos
	Indirect cost	1,170 pesos
	Alternative cost	295 pesos
	Deadweight cost	185 pesos
	Total Cost	3,010 pesos

Thus, the total cost estimates run from 695 pesos per month to 1,003 pesos per month.

## 7. Cost-Benefit Analysis

The program's annual rate of return was estimated by the ratio of the value of the annual benefits to the total cost of the program. Benefits can be measured in terms of wage and earnings increases. The latter also includes an increase in the likelihood of finding employment. Since we estimated benefits using only the first post-program year, we can make different assumptions. One extreme assumption could be that the effects last forever. Another, more conservative assumption could be that the full effects last only five years and then decrease. Since we have different estimates of the program's benefits, we have a range of estimates for the rate of return.

The Cost-Benefit Analysis will be pursued in terms of wage increase outcomes only, as the results in terms of impact on employment probability were not very clear from our estimates. In Table 21, we present rates of return on the program based on different estimates obtained by the methods, models and techniques presented above.

**Table 21. Alternative Estimates of YTP’s Rate of Return  
(Benefits based on wage outcomes)**

Method and Group	Annual Outcome in pesos (TT)	Annual Outcome discounted one year at 10%	Rate of Return (percentage)			
			Cost: 2085\$		Cost: 3010\$	
			5 Years	Lifetime	5 Years	Lifetime
<b>Aggregate</b>						
<b>Non- Matching</b>						
Before and After (TT)	324	295	5.6	14.1	3.9	9.8
Cross-Section	96	87	1.7	4.2	1.2	2.9
Difference-in-difference	240	218	4.2	10.5	2.9	7.3
<b>Matching</b>						
Simple Nearest Neighbors.	96	87	1.7	4.2	1.2	2.9
Kernel	360	327	6.3	15.7	4.4	10.9
Local Linear Regression	162	147	2.8	7.1	2.0	4.9
<b>By Sex</b>						
Female	400	364	7.0	17.5	4.8	12.1
Male	200	182	3.5	8.7	2.4	6.0

*Sources: Tables 9, 14, 26, 29.*

As observed in Table 21, the program’s rates of return using only wage outcomes varies from 1.2 to 17.5 percent. This variation depends on the method used, the outcome estimated (TT or ATE), the gender group, the cost used (minimum or maximum), and the duration of future impact (5 years or lifetime).

## **8. Characteristics of the Argentine Labor Market**

In order to better evaluate the effects of this training program, it is important to understand how the Argentine labor market functioned during the period when YTP took place. In Table 22, we present earnings and employment trends for workers previously employed or not employed.

We observed a high probability that those employed before the program remain employed. For those not employed, however, there was only a 35 percent probability of finding employment after six months. In addition, we observed a 30 percent probability that those employed received a wage increase after six months.

The very low probability of receiving a wage increase in six months, as reflected by the Argentine labor market (see Table 22), gives some support to the program’s outcome on wages. Most of the beneficiaries’ sample received a wage increase, which reinforces the result produced by the econometric methodology in this paper.

**Table 22. Trends in Earnings and Employment**

Income and Employment	1994		1995		1996		1997		1998	
	May	Oct	May	Oct	May	Oct	May	Oct	May	Oct
Equal income	16.7	17.8	15.4	19.3	18.4	19.4	19.8	22.6	17.8	21
Lower income	36.4	38.1	43.4	40.1	41.6	40	36.6	37.3	37.2	38.5
Greater income	47	44.2	41.3	40.6	40	40.7	43.6	40.1	45	40.6
Total	100	100	100	100	100	100	100	100	100	100
<b>Already employed</b>										
Continue employed	86	85.8	85.1	87.3	86.1	87.7	85.9			
Become unemployed	5.1	6	9.3	6.7	7	7	7.1			
Out of the labor force	8.9	8.2	5.6	6	6.9	5.3	7			
Total	100	100	100	100	100	100	100			
<b>Already unemployed</b>										
Become employed	40	38.5	35.5	33	32.3	33.6	39			
Continue unemployed	32.8	33.8	47.4	39.4	41.1	45	38			
Out of the labor force	27.2	27.7	17.1	27.6	26.6	21.4	23			
Total	100	100	100	100	100	100	100			
<b>Out of the labor force</b>										
Pass to become employment	6.4	4.1	5.1	3.5	3.9	4.7	5.1			
Pass to become unemployment	2.5	3.1	5.6	3	3.2	4.4	3.6			

*Source:* "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

## 9. Program Management

Program management could be evaluated using many different criteria. In this paper, we study the effectiveness of management in terms of the composition of courses offered and the selection of participating institutions.

In Table 24, we present the regression that attempts to identify different training effects among different courses. There we can observe lower outcomes in agriculture and industry courses. According to the distribution of courses presented in Table 23, we notice a larger number of courses in agriculture and industry. Thus, the least effective courses occurred in the sectors in which the greatest number of courses were offered.

The comparison group was not chosen in terms of type of course taken, so we can not apply matching techniques to evaluate differential outcomes across course types, although a regression technique using only the beneficiaries group could be applied as a preliminary

analysis to see if there are differential outcomes on wages across course types. Even though we have variables that could control for selection into the program, they could fail to control for selection into alternative training types within the program, so this result should be taken as a way to bring attention to the analysis of the program.

**Table 23. Percentage of Beneficiaries in Each Sector Classified by Province**

Sector	Bs As	Capita Federal	Catamarca	Chaco	Chubut	Cordoba	Corrientes	Entre Rios
<b>Construction</b>	0.18	0.10	0.07	0.41	0.33	0.22	0.00	0.33
<b>Industrial</b>	0.19	0.12	0.00	0.08	0.15	0.21	0.08	0.15
<b>Agriculture/Mining/Forestry</b>	0.17	0.00	0.82	0.31	0.26	0.16	0.65	0.12
<b>Tertiary</b>	0.46	0.78	0.11	0.20	0.26	0.40	0.26	0.40
<b>TOTAL</b>	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Sector	Formosa	Jujuy	La Pampa	La Rioja	Mendoza	Misiones	Neuquen	Rio Negro
<b>Construction</b>	0.24	0.12	0.17	0.13	0.28	0.25	0.26	0.06
<b>Industrial</b>	0.00	0.29	0.11	0.16	0.12	0.16	0.08	0.12
<b>Agriculture/Mining/Forestry</b>	0.59	0.20	0.66	0.25	0.30	0.27	0.50	0.59
<b>Tertiary</b>	0.18	0.39	0.06	0.46	0.30	0.33	0.16	0.23
<b>TOTAL</b>	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Sector	Salta	San Juan	San Luis	Santa Cruz	Santa Fe	Sgo del Estero	Tierra del Fuego	Tucuman
<b>Construction</b>	0.39	0.34	0.68	0.00	0.38	0.15	0.56	0.27
<b>Industrial</b>	0.05	0.14	0.00	0.00	0.18	0.17	0.00	0.13
<b>Agriculture/Mining/Forestry</b>	0.34	0.36	0.15	1.00	0.11	0.35	0.00	0.28
<b>Tertiary</b>	0.22	0.16	0.18	0.00	0.33	0.34	0.44	0.32
<b>TOTAL</b>	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.



**Table 24. Regression on Beneficiaries' Post-Program Wages using Dummy Variables for Each Sector**

aft-wag1	Coef.	Robust Err.	Std. Bootstrap Std. Err.	t	P> t	[95% Conf. Interval]	
sect_agr	-20.71	12.18	13.60	-1.70	0.09	-44.62	3.20
sect_ind	-4.63	11.68	11.88	-0.40	0.69	-27.55	18.28
sexo	61.62	11.40		5.41	0.00	39.25	84.00
edad	20.80	11.48		1.81	0.07	-1.72	43.33
edad2	-0.39	0.23		-1.71	0.09	-0.84	0.06
aft_exp	-0.12	0.16		-0.73	0.46	-0.43	0.19
aft_exp2	0.00	0.00		2.23	0.03	0.00	0.00
edyrs	8.39	2.25		3.74	0.00	3.98	12.80
jefe_enc	29.32	12.56		2.34	0.02	4.67	53.97
hijos	-9.53	6.77		-1.41	0.16	-22.82	3.76
hijos5	-1.52	9.16		-0.17	0.87	-19.49	16.44
soltero	-25.60	14.78		-1.73	0.08	-54.61	3.41
aft_icny	-0.01	0.05		-0.15	0.88	-0.11	0.09
aft_asis	-14.28	17.32		-0.83	0.41	-48.28	19.71
meses_t	2.17	2.47		0.88	0.38	-2.67	7.02
centro	-25.42	43.48		-0.59	0.56	-110.76	59.92
mendoza	7.72	22.82		0.34	0.74	-37.06	52.51
noa	-132.43	44.54		-2.97	0.00	-219.85	-45.01
cordoba	-60.19	45.77		-1.32	0.19	-150.03	29.65
litoral	-112.77	46.01		-2.45	0.01	-203.09	-22.46
tucuman	-148.11	44.01		-3.37	0.00	-234.49	-61.72
santafe	-67.51	44.67		-1.51	0.13	-155.19	20.18
cuyo	-82.92	45.73		-1.81	0.07	-172.67	6.83
sur	-11.89	47.32		-0.25	0.80	-104.77	80.98
nea	-117.12	44.15		-2.65	0.01	-203.79	-30.46
_cons	-72.86	148.98		-0.49	0.63	-365.27	219.56

Number of obs	869
F( 25, 843)	7.95
Prob > F	0.00
R-squared	0.17
Root MSE	140.94

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

Many institutions are selected to offer courses for each round of the program. Part of our data is the number of institutions offering courses in each province for each round. These institutions were supervised during the coursework phase and the internship phase. The government penalized an institution if it was not providing courses in accordance with the conditions stipulated during the selection process. Some institutions were penalized more than once. Accordingly, we can use the ratio of institutions penalized to total institutions as one

measure of the quality of program management. Because some institutions offered more than one course, we distinguished between total “institutions” (one institution is equal to one course) and the total number of different institutions offering courses (as one institution could offer more than one course).

In Table 25, we analyzed the quality of the institutions granted courses. We observe a large difference across provinces regarding the percentage of penalized institutions. This either implies a good control or a bad selection.

**Table 25. Grantee and Penalized Institutions for the Fifth Round of the YTP**

	Grantee Institutions		Penalized Institutions		Penalized Inst. over Grantee Inst. (%)	
	Total	Different	Total	Different	Total	Different
Capital Federal	186	52	74	38	39.78	73.08
Buenos Aires	213	103	94	43	44.13	41.75
Catamarca	25	2	1	1	4.00	50.00
Cordoba	109	44	23	15	21.10	34.09
Corrientes	14	9	7	3	50.00	33.33
Chaco	15	10	2	1	13.33	10.00
Chubut	14	7	1	1	7.14	14.29
Entre Rios	53	29	44	17	83.02	58.62
Formosa	18	6	9	4	50.00	66.67
Jujuy	18	11	1	1	5.56	9.09
La Pampa	15	10	1	1	6.67	10.00
La Rioja	10	6	4	2	40.00	33.33
Mendoza	151	60	35	18	23.18	30.00
Misiones	39	19	12	6	30.77	31.58
Neuquen	30	8	6	4	20.00	50.00
Rio Negro	15	8	6	4	40.00	50.00
Salta	76	23	34	18	44.74	78.26
San Juan	34	14	18	5	52.94	35.71
San Luis	18	8	6	3	33.33	37.50
Santa Cruz	1	1	0	0	0.00	0.00
Santa Fe	146	63	54	20	36.99	31.75
Sgo. Del Estero	18	13	8	4	44.44	30.77
Tierra del Fuego	4	3	0	0	0.00	0.00
Tucuman	90	46	56	22	62.22	47.83
<b>Total</b>	<b>1312</b>	<b>555</b>	<b>496</b>	<b>231</b>	<b>37.80</b>	<b>41.62</b>

Source: “Encuesta de Medición de Impacto Proyecto Joven” Ministry of Labor of Argentina.

Comparing the results presented in Table 25 with our previous regional analysis, we notice that the outcome on wages was larger in regions with a lower ratio of penalized institutions.

## **10. Conclusions**

There are several principal findings resulting from the evaluation of YTP. First, the primary outcome was on wages, not the possibility of finding employment. Second, the outcome on wages was an increase of around 10 percent over the previous wages. Third, the total cost of the program per participant was around 2,500 pesos (including direct and indirect costs, alternative costs and deadweight cost of taxation); direct cost accounted for approximately 52 percent of the total cost. Fourth, YTP's rate of return, taking into account only the wages outcome, is around 10 percent, and is larger for females. Fifth, there were some regional and course-type differentials in the wages outcomes. These differentials could be attributed in part to the quality differentials of program management. Sixth, in comparison to similar programs in other countries or the marginal value of searching in the labor market, the YTP could be considered reasonably effective. Finally, econometric methodology proved useful in analyzing the available information. Although the control group used in our regression may not be the best to control for selection error, it could be considered a reasonable alternative for dealing with this kind of error.

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## Appendix A. Estimation by Gender-Age Groups

**Table 26. ATE and TT on Monthly Wages (Pesos) for Females and Males**

Methods		FEMALE				MALE				
		ATE		TT		ATE		TT		
		Mean	S.E	Mean	S.E	Mean	S.E	Mean	S.E	
			Bootstrap		Bootstrap		Bootstrap		Bootstrap	
Unconditional mean Differences	Before-After	<b>21.68</b>	15.76	X	X	<b>29.35</b>	15.23	X	X	
	Cross-Section	<b>3.56</b>	11.15	X	X	<b>2.10</b>	9.02	X	X	
	Diff-in-diff	<b>-5.48</b>	26.70	X	X	<b>10.49</b>	21.61	X	X	
Model without Unobservable heterogeneity	Cross-Section	<b>1.27</b>	2.99	<b>-6.50</b>	2.99	<b>-3.50</b>	2.81	<b>-11.27</b>	2.81	
	Diff-in-diff	<b>2.21</b>	2.31	<b>-6.41</b>	2.31	<b>-1.27</b>	2.05	<b>-9.88</b>	2.05	
Model with normal dist. Unobservables	Cross-Section		<b>-1.25</b>	3.01	<b>-6.51</b>	3.01	<b>-4.76</b>	2.76	<b>-10.02</b>	2.76
		Inv. Mill's Ratio	X	X	X	X	X	X	X	X
	Diff-in-diff		<b>3.67</b>	2.89	<b>-6.66</b>	2.89	<b>-1.42</b>	2.46	<b>-11.75</b>	2.46
		Inv. Mill's Ratio	X	X	X	X	X	X	X	X
Model incorporating a polynomial of the propensity score	Cross-Section	<b>-0.76</b>	3.45	<b>-4.35</b>	3.45	<b>-5.86</b>	3.21	<b>-9.45</b>	3.21	
	Diff-in-diff	<b>1.40</b>	3.19	<b>-1.37</b>	3.19	<b>-1.87</b>	2.86	<b>-4.64</b>	2.86	

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 27. ATE and TT on Monthly Wages (Pesos) for Females and Males Under 25-Years Old**

Methods		FEMALE				MALE				
		ATE		TT		ATE		TT		
		Mean	S.E	Mean	S.E	Mean	S.E	Mean	S.E	
			Bootstrap		Bootstrap		Bootstrap		Bootstrap	
Unconditional mean Differences	Before-After	<b>-43.12</b>	26.51	X	X	<b>-29.28</b>	20.87	X	X	
	Cross-Section	<b>6.36</b>	14.72	X	X	<b>14.73</b>	10.65	X	X	
	Diff-in-diff	<b>35.62</b>	33.12	X	X	<b>20.95</b>	29.90	X	X	
Model without Unobservable Heterogeneity	Cross-Section	<b>2.45</b>	3.61	<b>-5.31</b>	3.61	<b>-1.10</b>	2.48	<b>-8.87</b>	2.98	
	Diff-in-diff	<b>4.14</b>	2.62	<b>-4.47</b>	2.62	<b>0.46</b>	2.23	<b>-8.15</b>	2.23	
Model with normal dist. Unobservables	Cross-Section		<b>0.64</b>	3.65	<b>-4.62</b>	3.65	<b>-2.49</b>	3.04	<b>-7.75</b>	3.03
		Inv. Mill's Ratio	X	X	X	X	X	X	X	X
	Diff-in-diff		<b>4.94</b>	3.25	<b>-5.38</b>	3.25	<b>0.42</b>	2.69	<b>-9.91</b>	2.69
		Inv. Mill's Ratio	X	X	X	X	X	X	X	X
Model incorporating a polynomial of the propensity score	Cross-Section	<b>0.78</b>	4.02	<b>-2.80</b>	4.02	<b>-4.85</b>	3.36	<b>-8.44</b>	3.36	
	Diff-in-diff	<b>-0.38</b>	3.54	<b>-3.14</b>	3.54	<b>-3.00</b>	2.76	<b>-5.77</b>	2.76	

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 28. ATE and TT on Monthly Wages (Pesos) for Females and Males Over 25-Years Old**

Methods		FEMALE				MALE				
		ATE		TT		ATE		TT		
		Mean	S.E	Mean	S.E	Mean	S.E	Mean	S.E	
			Bootstrap		Bootstrap		Bootstrap		Bootstrap	
Unconditional mean Differences	Before-After	<b>-6.50</b>	19.16	X	X	<b>29.47</b>	20.05	X	X	
	Cross-Section	<b>-0.92</b>	17.05	X	X	<b>-25.79</b>	16.76	X	X	
	Diff-in-diff	<b>-40.33</b>	42.88	X	X	<b>-9.07</b>	27.07	X	X	
Model without Unobservable Heterogeneity	Cross-Section	<b>-0.25</b>	5.03	<b>-8.03</b>	5.03	<b>-0.81</b>	6.05	<b>-8.58</b>	6.05	
	Diff-in-diff	<b>-0.98</b>	4.33	<b>-9.60</b>	4.33	<b>-1.93</b>	4.60	<b>-10.55</b>	4.60	
Model with normal dist. Unobservables	Cross-Section		<b>-4.12</b>	5.17	<b>-9.38</b>	5.16	<b>-5.14</b>	5.88	<b>-10.40</b>	5.88
		Inv. Mill's Ratio	X	X	X	X	X	X	X	X
	Diff-in-diff		<b>1.61</b>	5.48	<b>-8.72</b>	5.48	<b>-4.65</b>	5.70	<b>-14.97</b>	5.70
		Inv. Mill's Ratio	X	X	X	X	X	X	X	X
Model incorporating a polynomial of the propensity score	Cross-Section	<b>-3.24</b>	6.13	<b>-6.83</b>	6.13	<b>-0.33</b>	7.49	<b>-3.92</b>	7.49	
	Diff-in-diff	<b>4.38</b>	6.17	<b>1.61</b>	6.17	<b>-1.47</b>	8.18	<b>-4.24</b>	8.18	

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 29. ATE and TT on Monthly Wages (Pesos) using Different Matching Estimators for Males and Females**

Methods			FEMALE		MALE	
			Mean	S.E	Mean	S.E
				Bootstrap		Bootstrap
Simple Average Nearest Neighbour Estimators.	1 Neighbor	Cross-Section	<b>-0.09</b>	11.81	<b>3.81</b>	9.90
		Diff-in-diff	<b>78.81</b>	23.21	<b>17.46</b>	22.74
	10 Neighbors	Cross-Section	<b>-6.97</b>	8.38	<b>4.27</b>	7.32
		Diff-in-diff	<b>8.35</b>	17.42	<b>8.77</b>	17.85
	20 Neighbors	Cross-Section	<b>-4.77</b>	8.07	<b>0.71</b>	7.17
		Diff-in-diff	<b>12.80</b>	16.60	<b>3.22</b>	17.56
	50 Neighbors	Cross-Section	<b>-4.96</b>	7.90	<b>0.56</b>	7.09
		Diff-in-diff	<b>14.10</b>	15.46	<b>-0.52</b>	17.38
Kernel Regression Matching Estimator (All comparison group)	Bandwidth 0.2	Cross-Section	<b>-1.37</b>	8.52	<b>3.98</b>	7.54
		Diff-in-diff	<b>11.91</b>	17.35	<b>11.03</b>	17.88
	Bandwidth 0.3	Cross-Section	<b>-4.07</b>	8.16	<b>1.56</b>	7.28
		Diff-in-diff	<b>10.58</b>	16.39	<b>5.14</b>	17.57
	Bandwidth 04	Cross-Section	<b>-1.54</b>	7.94	<b>0.20</b>	7.13
		Diff-in-diff	<b>10.80</b>	15.92	<b>1.83</b>	17.37
Local Linear Regression Estimator	10 Neighbors	Cross-Section	<b>26.34</b>	7.63	<b>-42.53</b>	8.29
		Diff-in-diff	<b>2.89</b>	19.58	<b>25.41</b>	16.99
	20 Neighbors	Cross-Section	<b>24.99</b>	7.38	<b>-43.54</b>	8.06
		Diff-in-diff	<b>6.64</b>	18.11	<b>23.02</b>	16.9
	50 Neighbors	Cross-Section	<b>25.21</b>	7.23	<b>-44.42</b>	7.96
		Diff-in-diff	<b>12.46</b>	18.38	<b>20.02</b>	16.89

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.



**Table 30. ATE and TT on Monthly Wages (Pesos) using Different Matching Estimators Classified by Gender and Age**

Methods			FEMALE (< 25 years old)		MALE (< 25 years old)		FEMALE (>=25 years old)		MALE (>=25 years old)	
			Mean	S.E	Mean	S.E	Mean	S.E	Mean	S.E
				Bootstrap		Bootstrap		Bootstrap		Bootstrap
Simple Average Nearest Neighbor Estimators.	1 Neighbor	Cross-Section	<b>-1.04</b>	14.57	<b>10.40</b>	11.83	<b>1.66</b>	20.31	<b>11.48</b>	17.89
		Diff-in-diff	<b>89.30</b>	27.16	<b>21.54</b>	31.19	<b>76.08</b>	36.76	<b>7.13</b>	27.24
	10 Neighbors	Cross-Section	<b>-3.74</b>	10.80	<b>13.33</b>	8.55	<b>-14.10</b>	13.31	<b>-21.86</b>	13.97
		Diff-in-diff	<b>36.29</b>	24.42	<b>14.13</b>	24.50	<b>-11.03</b>	24.74	<b>-4.35</b>	23.05
	20 Neighbors	Cross-Section	<b>-1.12</b>	10.42	<b>10.55</b>	8.38	<b>-12.67</b>	12.81	<b>-27.37</b>	13.71
		Diff-in-diff	<b>41.07</b>	23.58	<b>6.30</b>	24.12	<b>-6.41</b>	23.01	<b>-4.97</b>	22.74
	50 Neighbors	Cross-Section	<b>-1.92</b>	10.22	<b>11.06</b>	8.27	<b>-11.77</b>	12.52	<b>-29.94</b>	13.55
		Diff-in-diff	<b>37.22</b>	23.16	<b>0.74</b>	23.89	<b>0.54</b>	21.44	<b>-4.88</b>	22.54
Kernel Regression Matching Estimator (All comparison group)	Bandwidth 0.2	Cross-Section	<b>1.11</b>	10.93	<b>15.76</b>	8.77	<b>-6.60</b>	13.69	<b>-30.00</b>	14.56
		Diff-in-diff	<b>41.73</b>	23.98	<b>16.09</b>	24.51	<b>-9.69</b>	25.05	<b>-1.39</b>	23.25
	Bandwidth 0.3	Cross-Section	<b>-1.88</b>	10.50	<b>12.59</b>	8.48	<b>-8.65</b>	13.04	<b>-29.61</b>	14.01
		Diff-in-diff	<b>38.33</b>	23.48	<b>7.79</b>	24.14	<b>-8.57</b>	22.55	<b>-1.78</b>	22.79
	Bandwidth 04	Cross-Section	<b>3.82</b>	10.25	<b>12.60</b>	8.31	<b>-13.98</b>	12.63	<b>-36.47</b>	13.67
		Diff-in-diff	<b>36.53</b>	23.09	<b>3.23</b>	23.88	<b>-5.73</b>	21.50	<b>-2.65</b>	22.53
Local Linear Regression Estimator	10 Neighbors	Cross-Section	<b>23.40</b>	8.72	<b>-43.10</b>	10.51	<b>36.38</b>	15.82	<b>-41.69</b>	13.52
		Diff-in-diff	<b>4.22</b>	26.29	<b>52.58</b>	23.19	<b>0.39</b>	27.72	<b>6.88</b>	23.41
	20 Neighbors	Cross-Section	<b>21.42</b>	8.46	<b>-45.12</b>	10.22	<b>37.04</b>	15.13	<b>-41.17</b>	13.13
		Diff-in-diff	<b>-3.09</b>	25.25	<b>52.68</b>	21.44	<b>24.90</b>	21.79	<b>2.79</b>	23.79
	50 Neighbors	Cross-Section	<b>21.73</b>	8.29	<b>-46.16</b>	10.21	<b>36.92</b>	14.75	<b>-41.83</b>	12.73
		Diff-in-diff	<b>-0.28</b>	24.95	<b>49.25</b>	22.46	<b>36.35</b>	24.56	<b>0.09</b>	23.38

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 31. ATE and TT on Monthly Earnings (Pesos) for Females and Males**

Methods		FEMALE				MALE			
		ATE		TT		ATE		TT	
		Mean	S.E	Mean	S.E	Mean	S.E	Mean	S.E
			Bootstrap		Bootstrap		Bootstrap		Bootstrap
Unconditional mean Differences	Before-After	<b>83.54</b>	5.38	<b>X</b>	<b>X</b>	<b>161.94</b>	6.95	<b>X</b>	<b>X</b>
	Cross-Section	<b>10.43</b>	7.35	<b>X</b>	<b>X</b>	<b>-1.93</b>	8.88	<b>X</b>	<b>X</b>
	Diff-in-diff	<b>8.99</b>	7.53	<b>X</b>	<b>X</b>	<b>-5.45</b>	9.59	<b>X</b>	<b>X</b>
Model without Unobservable Heterogeneity	Cross-Section	<b>4.28</b>	2.90	<b>-4.27</b>	2.90	<b>-2.30</b>	2.81	<b>-10.85</b>	2.81
	Diff-in-diff	<b>1.80</b>	2.62	<b>-1.37</b>	2.62	<b>-3.72</b>	2.47	<b>-6.88</b>	2.47
Model incorporating a polynomial of the propensity score	Cross-Section	<b>3.91</b>	3.25	<b>-0.56</b>	3.25	<b>-2.61</b>	3.11	<b>-7.08</b>	3.11
	Diff-in-diff	<b>1.85</b>	3.01	<b>-0.54</b>	3.01	<b>-3.38</b>	2.85	<b>-5.78</b>	2.85

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 32. ATE and TT on Monthly Earnings (Pesos) for Females and Males Under 25-Years Old**

Methods		FEMALE (<25 Years old)				MALE (<25 Years old)			
		ATE		TT		ATE		TT	
		Mean	S.E	Mean	S.E	Mean	S.E	Mean	S.E
			Bootstrap		Bootstrap		Bootstrap		Bootstrap
Unconditional mean Differences	Before-After	<b>-83.71</b>	6.68	<b>X</b>	<b>X</b>	<b>-161.61</b>	7.90	<b>X</b>	<b>X</b>
	Cross-Section	<b>8.98</b>	9.26	<b>X</b>	<b>X</b>	<b>10.11</b>	10.20	<b>X</b>	<b>X</b>
	Diff-in-diff	<b>8.71</b>	9.43	<b>X</b>	<b>X</b>	<b>5.93</b>	11.10	<b>X</b>	<b>X</b>
Model without Unobservable Heterogeneity	Cross-Section	<b>4.11</b>	3.36	<b>-4.45</b>	3.36	<b>0.46</b>	2.79	<b>-8.09</b>	2.79
	Diff-in-diff	<b>1.92</b>	3.15	<b>-1.24</b>	3.15	<b>-0.61</b>	2.56	<b>-3.77</b>	2.56
Model incorporating a polynomial of the propensity score	Cross-Section	<b>4.04</b>	3.70	<b>-0.43</b>	3.70	<b>-1.17</b>	3.13	<b>-5.64</b>	3.13
	Diff-in-diff	<b>2.34</b>	3.62	<b>2.34</b>	3.62	<b>-1.63</b>	3.04	<b>-4.02</b>	3.04

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 33. ATE and TT on Monthly Earnings (Pesos) for Females and Males Over 25-Years Old**

Methods		FEMALE (>=25 Years old)				MALE (>=25 Years old)			
		ATE		TT		ATE		TT	
		Mean	S.E	Mean	S.E	Mean	S.E	Mean	S.E
			Bootstrap		Bootstrap		Bootstrap		Bootstrap
Unconditional mean Differences	Before-After	<b>-83.25</b>	9.07	<b>X</b>	<b>X</b>	<b>163.14</b>	14.59	<b>X</b>	<b>X</b>
	Cross-Section	<b>12.82</b>	12.07	<b>X</b>	<b>X</b>	<b>-28.02</b>	17.60	<b>X</b>	<b>X</b>
	Diff-in-diff	<b>9.48</b>	12.52	<b>X</b>	<b>X</b>	<b>-34.27</b>	19.10	<b>X</b>	<b>X</b>
Model without Unobservable Heterogeneity	Cross-Section	<b>5.11</b>	5.07	<b>-3.44</b>	5.07	<b>3.66</b>	6.02	<b>-4.89</b>	6.01
	Diff-in-diff	<b>1.92</b>	4.50	<b>-1.24</b>	4.49	<b>-3.52</b>	5.48	<b>-6.68</b>	5.48

Model incorporating a polynomial of the propensity score	Cross-Section	<b>3.86</b>	5.83	<b>-0.61</b>	5.83	<b>6.14</b>	6.95	<b>1.67</b>	6.95
	Diff-in-diff	<b>1.12</b>	5.21	<b>-1.27</b>	5.21	<b>-0.14</b>	6.31	<b>-2.53</b>	6.30

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 34. ATE and TT on Monthly Earnings (Pesos) using Different Matching Estimators for Females and Males**

Methods			FEMALE		MALE	
			Mean	S.E	Mean	S.E
				Bootstrap		Bootstrap
Simple Average Nearest Neighbor Estimators.	1 Neighbor	Cross-Section	<b>12.09</b>	7.80	<b>-6.17</b>	9.64
		Diff-in-diff	<b>13.04</b>	8.08	<b>-2.54</b>	10.48
	10 Neighbors	Cross-Section	<b>10.71</b>	5.81	<b>-6.55</b>	7.14
		Diff-in-diff	<b>9.00</b>	5.95	<b>-4.32</b>	7.76
	20 Neighbors	Cross-Section	<b>9.55</b>	5.66	<b>-9.89</b>	6.99
		Diff-in-diff	<b>7.89</b>	5.79	<b>-8.16</b>	7.61
	50 Neighbors	Cross-Section	<b>10.15</b>	5.57	<b>-8.54</b>	6.90
		Diff-in-diff	<b>8.43</b>	5.70	<b>-7.82</b>	7.50
Kernel Regression Matching Estimator (All comparison group)	Bandwidth 0.2	Cross-Section	<b>11.15</b>	5.46	<b>-4.72</b>	6.82
		Diff-in-diff	<b>9.40</b>	5.62	<b>-4.43</b>	7.40
	Bandwidth 0.3	Cross-Section	<b>11.42</b>	5.49	<b>-6.02</b>	6.83
		Diff-in-diff	<b>9.62</b>	5.60	<b>-7.03</b>	7.41
	Bandwidth 04	Cross-Section	<b>11.80</b>	5.49	<b>-6.04</b>	6.83
		Diff-in-diff	<b>9.96</b>	5.62	<b>-7.74</b>	7.42
Local Linear Regression Estimator	10 Neighbors	Cross-Section	<b>52.13</b>	7.33	<b>-52.16</b>	6.00
		Diff-in-diff	<b>42.53</b>	8.02	<b>-42.13</b>	6.23
	20 Neighbors	Cross-Section	<b>50.16</b>	7.14	<b>-52.38</b>	5.85
		Diff-in-diff	<b>40.7</b>	7.79	<b>-41.8</b>	6.04
	50 Neighbors	Cross-Section	<b>48.9</b>	6.97	<b>-52.76</b>	5.65
		Diff-in-diff	<b>39.11</b>	7.60	<b>-42.57</b>	5.81

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 35. ATE and TT on Monthly Earnings (Pesos) using Different Matching Estimators Classified by Gender and Age**

Methods			FEMALE (< 25 years old)		MALE (< 25 years old)		FEMALE (>=25 years old)		MALE (>= 25 years old)	
			Mean	S.E	Mean	S.E	Mean	S.E	Mean	S.E
			Bootstrap		Bootstrap		Bootstrap		Bootstrap	
Simple Average Nearest Neighbor Estimators.	1 Neighbor	Cross-Section	<b>9.68</b>	9.48	<b>6.27</b>	11.10	<b>15.52</b>	13.70	<b>-42.24</b>	18.77
		Diff-in-diff	<b>10.21</b>	9.69	<b>9.20</b>	12.11	<b>18.59</b>	14.50	<b>-38.85</b>	20.68
	10 Neighbors	Cross-Section	<b>6.09</b>	7.21	<b>2.05</b>	8.15	<b>18.41</b>	9.80	<b>-33.26</b>	14.64
		Diff-in-diff	<b>5.72</b>	7.29	<b>3.26</b>	8.83	<b>16.11</b>	10.24	<b>-29.26</b>	16.29
	20 Neighbors	Cross-Section	<b>5.40</b>	7.02	<b>-0.80</b>	7.98	<b>16.54</b>	9.54	<b>-37.45</b>	14.35
		Diff-in-diff	<b>4.47</b>	7.11	<b>0.18</b>	8.64	<b>15.21</b>	9.98	<b>-35.11</b>	15.99
50 Neighbors	Cross-Section	<b>5.55</b>	6.92	<b>0.63</b>	7.87	<b>17.75</b>	9.38	<b>-36.86</b>	14.16	
	Diff-in-diff	<b>4.45</b>	6.99	<b>0.86</b>	8.53	<b>17.30</b>	9.81	<b>-36.19</b>	15.81	
Kernel Regression Matching Estimator (All comparison group)	Bandwidth 0.2	Cross-Section	<b>6.77</b>	6.85	<b>6.49</b>	7.80	<b>22.08</b>	9.33	<b>-40.88</b>	14.15
		Diff-in-diff	<b>4.99</b>	6.92	<b>5.02</b>	8.44	<b>23.00</b>	9.72	<b>-38.16</b>	15.79
	Bandwidth 0.3	Cross-Section	<b>7.16</b>	6.85	<b>4.45</b>	7.80	<b>22.20</b>	9.31	<b>-40.80</b>	14.15
		Diff-in-diff	<b>5.86</b>	6.92	<b>2.14</b>	8.45	<b>21.06</b>	9.72	<b>-40.64</b>	15.84
	Bandwidth 04	Cross-Section	<b>7.44</b>	6.85	<b>3.94</b>	7.79	<b>21.85</b>	9.31	<b>-38.59</b>	14.15
		Diff-in-diff	<b>6.54</b>	6.93	<b>0.86</b>	8.46	<b>19.27</b>	9.72	<b>-40.28</b>	15.86
Local Linear Regression Estimator	10 Neighbors	Cross-Section	<b>44.78</b>	8.34	<b>-57.81</b>	7.49	<b>79.5</b>	15.09	<b>-42.49</b>	10.03
		Diff-in-diff	<b>41.60</b>	9.08	<b>-41.43</b>	7.68	<b>46.0</b>	17.07	<b>-43.35</b>	10.65
	20 Neighbors	Cross-Section	<b>42.51</b>	8.15	<b>-59.70</b>	7.31	<b>78.6</b>	14.57	<b>-39.83</b>	9.71
		Diff-in-diff	<b>39.02</b>	8.84	<b>-42.58</b>	7.51	<b>46.9</b>	16.44	<b>-40.46</b>	10.16
	50 Neighbors	Cross-Section	<b>41.40</b>	7.96	<b>-60.29</b>	7.03	<b>76.8</b>	14.2	<b>-39.87</b>	9.47
		Diff-in-diff	<b>37.46</b>	8.62	<b>-43.86</b>	7.19	<b>45.3</b>	16.1	<b>-40.36</b>	9.86

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 36. ATE and TT on Probability of Finding Employment for Females and Males**

Methods		FEMALE				MALE			
		ATE		TT		ATE		TT	
		Mean	S.E	Mean	S.E	Mean	S.E	Mean	S.E
			Bootstrap		Bootstrap		Bootstrap		Bootstrap
Unconditional mean Differences	Before-After	<b>0.39</b>	0.02	X	X	<b>0.58</b>	0.02	X	X
	Cross-Section	<b>0.04</b>	0.03	X	X	<b>0.01</b>	0.02	X	X
	Diff-in-diff	<b>0.02</b>	0.01	X	X	<b>-0.02</b>	0.01	X	X
Model without Unobservable Heterogeneity	Cross-Section	<b>0.01</b>	0.01	<b>0.01</b>	0.01	<b>0.00</b>	0.01	<b>0.00</b>	0.01
Model with normal dist. Unobservables	Cross-Section	<b>0.04</b>	0.01	<b>0.00</b>	0.00	<b>0.52</b>	0.49	<b>0.00</b>	0.00

Source: “Encuesta de Medición de Impacto Proyecto Joven” Ministry of Labor of Argentina.

**Table 37. ATE and TT on Probability of Finding Employment for Females and Males Under 25-Years Old**

Methods		FEMALE(<25 Years old)				MALE(<25 Years old)			
		ATE		TT		ATE		TT	
		Mean	S.E	Mean	S.E	Mean	S.E	Mean	S.E
			Bootstrap		Bootstrap		Bootstrap		Bootstrap
Unconditional mean Differences	Before-After	<b>0.38</b>	0.03	X	X	<b>0.59</b>	0.02	X	X
	Cross-Section	<b>0.01</b>	0.03	X	X	<b>0.00</b>	0.02	X	X
	Diff-in-diff	<b>0.01</b>	0.03	X	X	<b>-0.02</b>	0.02	X	X
Model without Unobservable Heterogeneity	Cross-Section	<b>0.01</b>	0.01	<b>0.01</b>	0.01	<b>0.00</b>	0.01	<b>0.00</b>	0.01
Model with normal dist. Unobservables	Cross-Section	<b>0.03</b>	0.00	<b>0.00</b>	0.00	<b>0.18</b>	0.07	<b>0.00</b>	0.00

Source: “Encuesta de Medición de Impacto Proyecto Joven” Ministry of Labor of Argentina.

**Table 38. ATE and TT on Probability of Finding Employment for Females and Males Over 25-Years Old**

Methods		FEMALE (>=25 Years old)				MALE (>=25 Years old)			
		ATE		TT		ATE		TT	
		Mean	S.E	Mean	S.E	Mean	S.E	Mean	S.E
			Bootstrap		Bootstrap		Bootstrap		Bootstrap
Unconditional mean Differences	Before-After	<b>0.40</b>	0.03	<b>X</b>	X	<b>0.55</b>	0.04	<b>X</b>	X
	Cross-Section	<b>0.07</b>	0.04	<b>X</b>	X	<b>-0.03</b>	0.03	<b>X</b>	X
	Diff-in-diff	<b>0.05</b>	0.03	<b>X</b>	X	<b>-0.01</b>	0.09	<b>X</b>	X
Model without Unobservable Heterogeneity	Cross-Section	<b>0.02</b>	0.02	<b>0.02</b>	0.02	<b>0.02</b>	0.01	<b>0.02</b>	0.01
	Diff-in-diff	<b>X</b>	X	<b>X</b>	X	<b>X</b>	X	<b>X</b>	X
Model with normal dist. Unobservables	Cross-Section	<b>0.05</b>	0.00	<b>0.00</b>	0.00	<b>0.21</b>	0.20	<b>0.00</b>	0.00

Source: “Encuesta de Medición de Impacto Proyecto Joven” Ministry of Labor of Argentina.

**Table 39. ATE and TT on Probability of Finding Employment using Different Matching Estimators for Males and Females**

Methods		FEMALE		MALE	
		Mean	S.E	Mean	S.E
			Bootstrap		Bootstrap
Simple Average Nearest Neighbor Estimators (Cross Section)	1 Neighbor	<b>0.04</b>	0.03	<b>-0.03</b>	0.02
	10 Neighbors	<b>0.06</b>	0.02	<b>-0.04</b>	0.02
	20 Neighbors	<b>0.05</b>	0.02	<b>-0.04</b>	0.02
	50 Neighbors	<b>0.05</b>	0.02	<b>-0.03</b>	0.02
Kernel Regression Matching Estimator (All comparison group) (Cross Section)	Bandwidth 0.2	<b>0.05</b>	0.02	<b>-0.02</b>	0.02
	Bandwidth 0.3	<b>0.05</b>	0.02	<b>-0.02</b>	0.04
	Bandwidth 0.4	<b>0.05</b>	0.02	<b>-0.02</b>	0.02
Local Linear Regression Estimator (Cross Section)	10 Neighbors	<b>0.13</b>	0.02	<b>-0.13</b>	0.02
	20 Neighbors	<b>0.13</b>	0.02	<b>-0.13</b>	0.02
	50 Neighbors	<b>0.12</b>	0.02	<b>-0.12</b>	0.02

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 40. ATE and TT on Probability of Finding Employment using Different Matching Estimators Classified by Gender and Age**

Methods		FEMALE (< 25 years old)		MALE (< 25 years old)		FEMALE (>=25 years old)		MALE (>=25 years old)	
		Mean	S.E	Mean	S.E	Mean	S.E	Mean	S.E
			Bootstrap		Bootstrap		Bootstrap		Bootstrap
Simple Average Nearest Neighbor Estimators (Cross-Section)	1 Neighbor	<b>0.01</b>	0.03	<b>-0.01</b>	0.03	<b>0.09</b>	0.05	<b>-0.11</b>	0.04
	10 Neighbors	<b>-0.02</b>	0.03	<b>-0.03</b>	0.02	<b>0.12</b>	0.03	<b>-0.06</b>	0.03
	20 Neighbors	<b>0.01</b>	0.03	<b>-0.03</b>	0.02	<b>0.12</b>	0.03	<b>-0.06</b>	0.03
	50 Neighbors	<b>0.01</b>	0.03	<b>-0.03</b>	0.02	<b>0.12</b>	0.03	<b>-0.05</b>	0.03
Kernel Regression Matching Estimator (All comparison group) (Cross-Section)	Bandwidth 0.2	<b>0.02</b>	0.02	<b>-0.01</b>	0.02	<b>0.12</b>	0.03	<b>-0.05</b>	0.03
	Bandwidth 0.3	<b>0.01</b>	0.02	<b>0.012</b>	0.02	<b>0.12</b>	0.03	<b>-0.05</b>	0.03
	Bandwidth 0.4	<b>0.01</b>	0.02	<b>-0.01</b>	0.02	<b>0.12</b>	0.03	<b>-0.05</b>	0.03
Local Linear Regression Estimator (Cross-Section)	10 Neighbors	<b>0.10</b>	0.02	<b>-0.16</b>	0.03	<b>0.22</b>	0.04	<b>-0.08</b>	0.03
	20 Neighbors	<b>0.10</b>	0.01	<b>-0.16</b>	0.03	<b>0.21</b>	0.04	<b>-0.06</b>	0.03
	50 Neighbors	<b>0.10</b>	0.02	<b>-0.16</b>	0.02	<b>0.20</b>	0.03	<b>-0.06</b>	0.03

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

## Appendix B. Matching Estimators with Region of Support Reduced

Table 41. TT on Monthly Wage (Pesos)

Methods			Buenos Aires		Rest of the Regions	
			Mean	S.E	Mean	S.E
				Bootstrap		Bootstrap
Simple Average Nearest Neighbor Estimators.	1 Neighbor	Cross-Section	<b>-6.93</b>	17.72	<b>-6.40</b>	7.52
		Diff-in-diff	<b>-0.62</b>	66.34	<b>7.30</b>	18.36
	10 Neighbors	Cross-Section	<b>-16.01</b>	13.51	<b>-2.03</b>	6.05
		Diff-in-diff	<b>-9.59</b>	46.84	<b>-2.13</b>	14.38
	20 Neighbors	Cross-Section	<b>-13.06</b>	13.23	<b>-4.43</b>	5.96
		Diff-in-diff	<b>-15.18</b>	46.34	<b>-8.73</b>	14.17
	50 Neighbors	Cross-Section	<b>-24.46</b>	13.06	<b>-1.77</b>	5.91
		Diff-in-diff	<b>-9.11</b>	46.04	<b>-8.79</b>	14.04
Kernel Regression Matching Estimator	Bandwidth 0.2	Cross-Section	<b>-16.79</b>	14.42	<b>-1.77</b>	6.31
		Diff-in-diff	<b>-17.44</b>	47.59	<b>0.93</b>	14.59
	Bandwidth 0.3	Cross-Section	<b>-15.16</b>	13.76	<b>-2.72</b>	6.09
		Diff-in-diff	<b>-13.29</b>	46.56	<b>-5.05</b>	14.27
	Bandwidth 0.4	Cross-Section	<b>-17.38</b>	13.27	<b>-2.03</b>	5.97
		Diff-in-diff	<b>-9.80</b>	46.08	<b>-7.77</b>	14.08
Local Linear Regression Estimator	10 Neighbors	Cross-Section	<b>-15.34</b>	13.34	<b>-1.14</b>	6.2
		Diff-in-diff				
	20 Neighbors	Cross-Section	<b>-18.79</b>	12.88	<b>0.24</b>	6.04
		Diff-in-diff				
	50 Neighbors	Cross-Section	<b>-15.36</b>	12.76	<b>-1.52</b>	5.94
		Diff-in-diff				

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.



## Appendix C. YTP Course Subjects

**Table 42. Courses Offered in the Fifth Round of the YTP**

Course Subject	Bids for Courses		Courses Granted		Places Available	
	Quantity (number)	share (percentage )	Quantity (number)	Share (percentage )	Quantity (number)	share (percentage )
<b>Total tertiary sector</b>	<b>13,747</b>	<b>51.3</b>	<b>2,776</b>	<b>44.9</b>	<b>51,717</b>	<b>45.9</b>
Education services	785	2.9	141	2.3	2,746	2.4
Administration and accounting	1,682	6.3	112	1.8	2,138	1.9
Assistant for Service firm	135	0.5	144	2.3	2,670	2.4
Dental Assistant	597	2.2	58	0.9	1,054	0.9
Elderly care	595	2.2	122	2.0	2,367	2.1
Computation	798	3.0	128	2.1	2,197	1.9
Computer specialty Courses	1,061	4.0	189	3.1	3,372	3.0
Gastronomy	825	3.1	601	9.7	10,753	9.5
Hotel and Tourism	1,283	4.8	159	2.6	3,022	2.7
Janitor	226	0.8	185	3.0	3,592	3.2
Maintenance	110	0.4	46	0.7	837	0.7
Media and Publicity	321	1.2	7	0.1	112	0.1
Optics and Photographs	680	2.5	18	0.3	343	0.3
Hairdresser and Beauty Assistant	757	2.8	37	0.6	690	0.6
Plumbing and Gas	114	0.4	160	2.6	2,952	2.6
Promotion and Sales	887	3.3	75	1.2	1,432	1.3
Health	335	1.2	171	2.8	3,253	2.9
Security, Hygiene and Environment	1,286	4.8	9	0.1	157	0.1
Supermarket	222	0.8	213	3.4	4,130	3.7
Telephony	219	0.8	136	2.2	2,600	2.3
Surveillance	829	3.1	65	1.1	1,300	1.2
<b>Total industrial sector</b>	<b>8,852</b>	<b>33.0</b>	<b>2,316</b>	<b>37.5</b>	<b>41,036</b>	<b>1.4</b>
Air conditioning	56	0.2	7	0.1	103	0.1
Manual production	118	0.4	12	0.2	198	0.2
Metallic carpentry and Metal furniture	163	0.6	37	0.6	655	0.6
Construction	2,738	10.2	744	12.0	13,790	12.2
Quality Control	119	0.4	29	0.5	540	0.5
Technical drawing	37	0.1	14	0.2	196	0.2
Technical drawing with P.C.	72	0.3	18	0.3	312	0.3
Electricity and Winding	892	3.3	239	3.9	4,279	3.8
Electronic	224	0.8	30	0.5	542	0.5
Sawmills and Good Furniture activities	591	2.2	97	1.6	1,585	1.4
Leather and Footwear	124	0.5	36	0.6	647	0.6
Meat and Fish Processing	475	1.8	154	2.5	2,628	2.3
Graphics	158	0.6	29	0.5	532	0.5
Textiles	480	1.8	92	1.5	1,587	1.4
Chemical Laboratories	99	0.4	11	0.2	208	0.2
General Mechanics	422	1.6	116	1.9	1,906	1.7

Railcars and Agricultural Equipment Maintenance	507	1.9	138	2.2	2,457	2.2
Blue-Collar workers	977	3.6	343	5.6	6,019	5.3
Industrial painting	61	0.2	17	0.3	325	0.3
Industrial plastic	67	0.2	13	0.2	220	0.2
Refrigeration	9	0.0	5	0.1	89	2.0
Welding and forge	463	1.7	135	2.2	2,218	36.4
<b>Total Agricultural, Forest and Mining sector</b>	<b>4,224</b>	<b>15.7</b>	<b>1,085</b>	<b>17.6</b>	<b>20,026</b>	<b>17.8</b>
Gardening, pruning and forestation	505	1.9	88	1.4	1,610	1.4
Vegetable garden, cultivations and watering	1,092	4.1	298	4.8	5,399	4.8
Wholesale cattle production	389	1.5	131	2.1	2,390	2.1
Fruit-bearing, fertilizer and quality control	565	2.1	123	2.0	2,198	1.9
Rural work	906	3.4	208	3.4	3,921	3.5
Mining exploitation	732	2.7	220	3.6	4,187	3.7
explotación minera	35	0.1	17	0.3	321	0.3
<b>Total</b>	<b>26,823</b>	<b>100</b>		<b>100</b>	<b>112,779</b>	<b>100</b>

*Source:* Ministry of Labor of Argentina.

## Appendix D. Regressions Estimated

**Table 43. Regression on Monthly Earnings in the Post-Program Period using Dummy Variables for Region**

aft_ing1	Coef.	Robust Std. Err.	Bootstrap Std. Err.	T	P> t	[95% Conf. Interval]	
dtrained	-122.56	55.68		-2.20	0.03	-231.73	-13.39
sexo	79.17	6.58		12.03	0.00	66.27	92.07
edad	13.67	7.51		1.82	0.07	-1.05	28.40
edad2	-0.28	0.15		-1.82	0.07	-0.58	0.02
aft_exp	0.68	0.13		5.03	0.00	0.41	0.94
aft_exp2	0.00	0.00		-1.55	0.12	0.00	0.00
eduyrs	7.22	1.34		5.38	0.00	4.59	9.84
jefe_enc	38.70	7.87		4.91	0.00	23.26	54.14
hijos	-4.74	3.92		-1.21	0.23	-12.43	2.94
hijos5	-7.10	5.39		-1.32	0.19	-17.66	3.46
soltero	-25.20	8.58		-2.94	0.00	-42.02	-8.38
aft_icny	-0.14	0.03		-5.38	0.00	-0.19	-0.09
aft_asis	-46.38	8.46		-5.48	0.00	-62.98	-29.78
meses_t	1.27	1.46		0.87	0.38	-1.58	4.13
centro	-124.35	40.33		-3.08	0.00	-203.42	-45.28
mendoza	21.01	17.77		1.18	0.24	-13.82	55.85
noa	-195.21	39.95		-4.89	0.00	-273.54	-116.88
cordoba	-120.91	41.60		-2.91	0.00	-202.47	-39.35
litoral	-193.03	40.22		-4.80	0.00	-271.90	-114.16
tucuman	-204.67	40.03		-5.11	0.00	-283.17	-126.17
santafe	-171.79	40.31		-4.26	0.00	-250.83	-92.75
cuyo	-172.85	40.39		-4.28	0.00	-252.06	-93.65
sur	-142.10	41.77		-3.40	0.00	-224.00	-60.19
nea	-192.19	40.15		-4.79	0.00	-270.92	-113.47
d_centro	134.98	57.74	24.31	2.34	0.02	21.76	248.20
d_mendoz	-8.70	26.09	25.81	-0.33	0.74	-59.86	42.46
d_noa	116.70	57.33	22.48	2.04	0.04	4.30	229.11
d_cordob	109.69	59.58	27.22	1.84	0.07	-7.14	226.53
d_litora	127.76	58.18	22.33	2.20	0.03	13.68	241.84
d_tucuma	126.71	57.19	19.75	2.22	0.03	14.58	238.85
d_santaf	158.99	57.92	26.18	2.75	0.01	45.42	272.57
d_cuyo	138.92	58.44	25.83	2.38	0.02	24.34	253.50
d_sur	159.49	60.36	26.41	2.64	0.01	41.14	277.83
d_nea	138.40	57.52	21.13	2.41	0.02	25.61	251.19
_cons	0.56	104.13		0.01	1.00	-203.61	204.73

Number of obs	2,883
F( 34, 2848)	22.80
Prob > F	0.00
R-squared	0.20
Root MSE	151.06

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 44. Regression on Difference between Pre-Program and Post-Program Monthly Earnings using Dummy Variables for Region**

difi	Coef.	Robust Std. Err.	Bootstrap Std. Err.	t	P> t	[95% Conf. Interval]	
dtrained	-114.26	56.31		-2.03	0.04	-224.67	-3.85
sexo	67.48	7.06		9.56	0.00	53.63	81.33
edad	9.13	8.20		1.11	0.27	-6.96	25.21
edad2	-0.19	0.17		-1.11	0.27	-0.51	0.14
aft_exp	0.42	0.16		2.55	0.01	0.10	0.74
aft_exp2	0.00	0.00		-1.09	0.28	0.00	0.00
eduyrs	8.24	1.44		5.72	0.00	5.41	11.07
jefe_enc	36.91	8.72		4.24	0.00	19.82	54.00
hijos	-1.44	4.24		-0.34	0.74	-9.75	6.88
hijos5	-4.85	5.83		-0.83	0.41	-16.29	6.59
soltero	-19.60	9.40		-2.09	0.04	-38.04	-1.16
aft_icny	-0.12	0.03		-4.58	0.00	-0.18	-0.07
aft_asis	-40.62	8.85		-4.59	0.00	-57.98	-23.27
meses_t	0.44	1.57		0.28	0.78	-2.63	3.51
centro	-115.51	40.14		-2.88	0.00	-194.21	-36.80
mendoza	25.54	19.02		1.34	0.18	-11.77	62.84
noa	-194.48	39.88		-4.88	0.00	-272.67	-116.29
cordoba	-110.15	41.75		-2.64	0.01	-192.01	-28.29
litoral	-198.70	40.48		-4.91	0.00	-278.07	-119.34
tucuman	-187.75	39.85		-4.71	0.00	-265.89	-109.61
santafe	-154.30	40.05		-3.85	0.00	-232.83	-75.77
cuyo	-161.93	40.47		-4.00	0.00	-241.28	-82.58
sur	-139.67	41.84		-3.34	0.00	-221.72	-57.62
nea	-191.32	40.17		-4.76	0.00	-270.08	-112.56
d_centro	115.43	58.59	57.69	1.97	0.05	0.54	230.32
d_mendoz	-20.34	27.50	27.96	-0.74	0.46	-74.27	33.58
d_noa	110.58	58.08	59.56	1.90	0.06	-3.29	224.46
d_cordob	108.29	60.65	59.62	1.79	0.07	-10.64	227.21
d_litora	124.94	59.44	54.77	2.10	0.04	8.39	241.48
d_tucuma	109.74	57.83	60.91	1.90	0.06	-3.66	223.13
d_santaf	131.74	58.84	57.38	2.24	0.03	16.36	247.11
d_cuyo	128.45	59.31	58.95	2.17	0.03	12.15	244.74
d_sur	144.50	62.48	63.59	2.31	0.02	21.99	267.01
d_nea	119.55	58.59	59.57	2.04	0.04	4.65	234.44
cons	46.41	111.88		0.42	0.68	-172.96	265.78

Number of obs	2,867
F( 34, 2832)	13.56
Prob > F	0.00
R-squared	0.14
Root MSE	163.79

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 45. Regression on Difference between Pre-Program and Post-Program Monthly Wages using Dummy Variables for Region**

difw	Coef.	Robust Std. Err.	Bootstrap Std. Err.	t	P> t	[95% Conf. Interval]	
dtrained	-95.70	214.48		-0.45	0.66	-518.36	326.97
sexo	-3.64	20.66		-0.18	0.86	-44.36	37.07
edad	1.87	19.42		0.10	0.92	-36.39	40.14
edad2	0.04	0.39		0.10	0.92	-0.73	0.80
aft_exp	-0.53	0.41		-1.28	0.20	-1.33	0.28
aft_exp2	0.00	0.00		1.01	0.31	0.00	0.00
eduyrs	1.76	4.01		0.44	0.66	-6.15	9.67
jefe_enc	16.82	21.94		0.77	0.44	-26.42	60.05
hijos	-9.73	16.10		-0.61	0.55	-41.46	21.99
hijos5	25.29	18.46		1.37	0.17	-11.08	61.67
soltero	-38.75	26.09		-1.49	0.14	-90.17	12.67
aft_icny	-0.15	0.08		-1.83	0.07	-0.32	0.01
aft_asis	32.64	30.71		1.06	0.29	-27.88	93.15
meses_t	1.48	4.10		0.36	0.72	-6.60	9.55
centro	-131.45	104.64		-1.26	0.21	-337.66	74.76
mendoza	86.43	78.64		1.10	0.27	-68.53	241.40
noa	-69.86	105.82		-0.66	0.51	-278.41	138.68
cordoba	-76.61	113.44		-0.68	0.50	-300.17	146.95
litoral	-81.53	104.71		-0.78	0.44	-287.88	124.81
tucuman	-143.75	107.16		-1.34	0.18	-354.92	67.43
santafe	-65.63	106.04		-0.62	0.54	-274.61	143.35
cuyo	-166.31	108.18		-1.54	0.13	-379.50	46.87
sur	-123.44	112.22		-1.10	0.27	-344.59	97.71
nea	-151.83	106.97		-1.42	0.16	-362.63	58.97
d_centro	125.89	218.76	235.94	0.58	0.57	-305.22	557.00
d_mendoz	-89.85	92.85	94.80	-0.97	0.33	-272.83	93.13
d_noa	64.96	219.88	247.45	0.30	0.77	-368.35	498.28
d_cordob	93.05	224.49	240.41	0.41	0.68	-349.37	535.46
d_litora	52.88	217.41	237.67	0.24	0.81	-375.57	481.34
d_tucuma	208.68	219.92	239.11	0.95	0.34	-224.72	642.08
d_santaf	95.73	221.68	237.64	0.43	0.67	-341.13	532.60
d_cuyo	185.23	219.62	235.47	0.84	0.40	-247.57	618.03
d_sur	6.38	232.66	243.18	0.03	0.98	-452.11	464.88
d_nea	134.91	217.15	235.37	0.62	0.54	-293.04	562.86
_cons	72.26	276.95		0.26	0.79	-473.53	618.04

Number of obs	257
F( 34, 222)	0.85
Prob > F	0.71
R-squared	0.12
Root MSE	141.60

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 46. Regression on Probability of Finding Employment in the Post-Program Period using Dummy Variables for Region**

aft_emp1	Coef.	Robust Std. Err.	Bootstrap Std. Err.	z	P> z	[95% Conf. Interval]	
dtrained	-0.92	0.45		-2.05	0.04	-1.80	-0.04
sexo	0.46	0.06		8.05	0.00	0.35	0.58
edad	-0.01	0.01		-1.42	0.16	-0.03	0.00
jefe_enc	0.38	0.07		5.09	0.00	0.23	0.52
hijos	0.02	0.04		0.40	0.69	-0.07	0.10
hijos5	-0.17	0.06		-2.88	0.00	-0.28	-0.05
soltero	-0.13	0.08		-1.55	0.12	-0.28	0.03
aft_asis	-0.38	0.07		-5.25	0.00	-0.52	-0.24
eduyrs	0.02	0.01		1.64	0.10	0.00	0.04
aft_exp	0.01	0.00		7.48	0.00	0.00	0.01
aft_icny	0.00	0.00		-6.12	0.00	0.00	0.00
meses_t	-0.01	0.01		-1.00	0.32	-0.04	0.01
centro	-0.65	0.32		-2.02	0.04	-1.29	-0.02
mendoza	0.12	0.16		0.74	0.46	-0.20	0.44
noa	-0.63	0.33		-1.87	0.06	-1.28	0.03
cordoba	-0.57	0.33		-1.72	0.09	-1.23	0.08
litoral	-0.74	0.34		-2.22	0.03	-1.40	-0.09
tucuman	-0.86	0.33		-2.59	0.01	-1.51	-0.21
santafe	-0.73	0.33		-2.21	0.03	-1.38	-0.08
cuyo	-0.56	0.33		-1.67	0.09	-1.21	0.10
sur	-0.54	0.34		-1.60	0.11	-1.20	0.12
nea	-0.61	0.34		-1.81	0.07	-1.27	0.05
d_centro	1.00	0.46	0.75	2.18	0.03	0.10	1.91
d_mendoza	-0.12	0.23	0.24	-0.51	0.61	-0.58	0.34
d_noa	0.65	0.47	0.76	1.37	0.17	-0.28	1.58
d_cordob	0.96	0.48	0.75	2.01	0.05	0.02	1.90
d_litora	0.81	0.48	0.77	1.69	0.09	-0.13	1.74
d_tucuma	1.08	0.47	0.76	2.29	0.02	0.16	2.00
d_santaf	1.11	0.47	0.77	2.34	0.02	0.18	2.04
d_cuyo	0.93	0.47	0.74	1.97	0.05	0.00	1.86
d_sur	0.85	0.48	0.79	1.78	0.08	-0.09	1.80
d_nea	0.90	0.48	0.80	1.87	0.06	-0.05	1.84
cons	0.99	0.48		2.07	0.04	0.05	1.93

Iteration 0:	Log likelihood =	-1899.71	Number of obs	2,878
Iteration 1:	Log likelihood =	-1661.46	Wald Chi2(32)	396.03
Iteration 2:	Log likelihood =	-1655.88	Prob > Chi2	0.00
Iteration 3:	Log likelihood =	-1655.87	Pseudo R2	0.13
Iteration 4:	Log likelihood =	-1655.87	Log likelihood	-1655.87

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 47. Regression on Post-Program Monthly Earnings for Beneficiaries using Dummy Variables for Economic Sector**

aft_ing1	Coef.	Robust Std. Err.	Bootstrap Std. Err.	t	P> t	[95% Conf. Interval]	
sect_agr	-27.24	9.77	10.29	-2.79	0.01	-46.40	-8.08
sect_ind	-4.45	10.22	10.60	-0.44	0.66	-24.50	15.61
sexo	75.33	9.94		7.58	0.00	55.84	94.82
edad	15.15	10.05		1.51	0.13	-4.58	34.87
edad2	-0.30	0.20		-1.49	0.14	-0.70	0.10
aft_exp	0.44	0.15		2.93	0.00	0.14	0.73
aft_exp2	0.00	0.00		-0.78	0.44	0.00	0.00
eduyrs	6.61	1.93		3.43	0.00	2.83	10.39
jefe_enc	41.23	11.84		3.48	0.00	18.01	64.45
hijos	-2.46	5.71		-0.43	0.67	-13.66	8.73
hijos5	-12.25	7.53		-1.63	0.10	-27.01	2.52
soltero	-29.61	12.46		-2.38	0.02	-54.05	-5.16
aft_icny	-0.13	0.04		-3.33	0.00	-0.21	-0.05
aft_asis	-34.21	12.64		-2.71	0.01	-59.00	-9.42
meses_t	2.23	2.08		1.07	0.28	-1.85	6.31
centro	14.46	41.36		0.35	0.73	-66.67	95.59
mendoza	11.14	19.30		0.58	0.56	-26.71	49.00
noa	-63.97	41.56		-1.54	0.12	-145.50	17.55
cordoba	-6.38	42.72		-0.15	0.88	-90.18	77.43
litoral	-57.01	42.20		-1.35	0.18	-139.79	25.77
tucuman	-70.95	41.13		-1.73	0.09	-151.63	9.74
santafe	-6.92	41.85		-0.17	0.87	-89.02	75.18
cuyo	-23.34	42.50		-0.55	0.58	-106.71	60.04
sur	27.79	43.74		0.64	0.53	-58.01	113.59
nea	-40.03	41.68		-0.96	0.34	-121.79	41.73
_cons	-139.07	134.32		-1.04	0.30	-402.57	124.42

Number of obs	1,414
F( 25, 1388)	13.24
Prob > F	0.00
R-squared	0.18
Root MSE	153.16

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 48. Regression on Difference between Pre-Program and Post-Program Monthly Earnings for Beneficiaries using Dummy Variables for Economic Sector**

difi	Coef.	Robust Std. Err.	Bootstrap Std. Err.	t	P> t	[95% Conf. Interval]	
sect_agr	-37.56	10.72	10.14	-3.50	0.00	-58.59	-16.54
sect_ind	-11.99	11.15	10.98	-1.08	0.28	-33.87	9.89
sexo	61.33	10.64		5.76	0.00	40.45	82.21
edad	5.53	10.96		0.50	0.61	-15.97	27.03
edad2	-0.10	0.22		-0.47	0.64	-0.53	0.33
aft_exp	0.16	0.17		0.96	0.34	-0.17	0.49
aft_exp2	0.00	0.00		-0.17	0.87	0.00	0.00
eduyrs	7.98	2.14		3.73	0.00	3.79	12.18
jefe_enc	37.46	13.27		2.82	0.01	11.42	63.49
hijos	-2.18	5.89		-0.37	0.71	-13.74	9.37
hijos5	-6.93	8.19		-0.85	0.40	-22.99	9.13
soltero	-24.00	13.87		-1.73	0.08	-51.21	3.22
aft_icny	-0.13	0.04		-3.07	0.00	-0.21	-0.05
aft_asis	-26.75	13.35		-2.00	0.05	-52.94	-0.55
meses_t	1.41	2.23		0.63	0.53	-2.97	5.79
centro	7.64	43.26		0.18	0.86	-77.22	92.49
mendoza	3.50	20.09		0.17	0.86	-35.90	42.91
noa	-64.78	43.26		-1.50	0.13	-149.64	20.08
cordoba	5.88	44.56		0.13	0.90	-81.53	93.30
litoral	-60.95	44.16		-1.38	0.17	-147.57	25.67
tucuman	-67.84	42.69		-1.59	0.11	-151.57	15.90
santafe	-12.55	43.85		-0.29	0.78	-98.57	73.47
cuyo	-17.80	44.11		-0.40	0.69	-104.33	68.73
sur	20.90	47.30		0.44	0.66	-71.89	113.69
nea	-53.28	43.72		-1.22	0.22	-139.04	32.48
cons	-26.02	145.46		-0.18	0.86	-311.36	259.33

Number of obs	1,404
F( 25, 1378)	7.89
Prob > F	0.00
R-squared	0.12
Root MSE	167.57

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.



**Table 49. Regression on Difference between Pre-Program and Post-Program Monthly Wages for Beneficiaries using Dummy Variables for Economic Sector**

difw	Coef.	Robust Std. Err.	Bootstrap Std. Err.	t	P> t	[95% Conf. Interval]	
sect_agr	-23.87	29.23	34.11	-0.82	0.42	-81.79	34.05
sect_ind	-25.30	32.26	33.16	-0.78	0.44	-89.23	38.63
sexo	2.41	33.37		0.07	0.94	-63.72	68.53
edad	-6.32	29.92		-0.21	0.83	-65.62	52.98
edad2	0.09	0.59		0.16	0.87	-1.07	1.26
aft_exp	-0.36	0.50		-0.73	0.47	-1.36	0.63
aft_exp2	0.00	0.00		1.29	0.20	0.00	0.00
eduyrs	4.56	5.83		0.78	0.44	-7.00	16.12
jefe_enc	5.16	33.01		0.16	0.88	-60.26	70.57
hijos	4.84	23.82		0.20	0.84	-42.37	52.05
hijos5	18.31	23.99		0.76	0.45	-29.23	65.84
soltero	-33.27	37.42		-0.89	0.38	-107.44	40.90
aft_icny	-0.15	0.12		-1.25	0.21	-0.40	0.09
aft_asis	11.54	44.03		0.26	0.79	-75.72	98.79
meses_t	1.80	6.00		0.30	0.76	-10.08	13.69
centro	14.30	198.11		0.07	0.94	-378.31	406.91
mendoza	-6.78	49.63		-0.14	0.89	-105.15	91.58
noa	23.87	198.38		0.12	0.90	-369.28	417.02
cordoba	54.30	201.61		0.27	0.79	-345.24	453.85
litoral	-7.13	198.31		-0.04	0.97	-400.13	385.88
tucuman	67.64	199.90		0.34	0.74	-328.53	463.80
santafe	62.19	202.62		0.31	0.76	-339.35	463.73
cuyo	38.83	198.39		0.20	0.85	-354.33	432.00
sur	-96.53	206.81		-0.47	0.64	-506.38	313.32
nea	6.66	196.57		0.03	0.97	-382.91	396.22
_cons	76.64	445.26		0.17	0.86	-805.75	959.04

Number of obs	136
F( 25, 110)	13.41
Prob > F	0.00
R-squared	0.15
Root MSE	143.43

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 50. Regression on Probability of Finding Employment in the Post-Program Period for Beneficiaries using Dummy Variables for Economic Sector**

aft_emp1	Coef.	Robust Std. Err.	Bootstrap Std. Err.	z	P> z	[95% Conf. Interval]	
sect_agr	-0.14	0.09	0.09	-1.57	0.12	-0.32	0.04
sect_ind	0.02	0.09	0.09	0.24	0.81	-0.15	0.19
sexo	0.42	0.08		5.01	0.00	0.26	0.58
edad	-0.01	0.01		-0.53	0.59	-0.03	0.02
jefe_enc	0.31	0.10		2.96	0.00	0.10	0.51
hijos	0.05	0.06		0.83	0.40	-0.07	0.18
hijos5	-0.21	0.08		-2.51	0.01	-0.37	-0.05
soltero	-0.14	0.12		-1.20	0.23	-0.37	0.09
aft_asis	-0.31	0.10		-3.08	0.00	-0.51	-0.11
eduyrs	0.02	0.02		0.95	0.34	-0.02	0.05
aft_exp	0.01	0.00		5.06	0.00	0.00	0.01
aft_icny	0.00	0.00		-4.08	0.00	0.00	0.00
meses_t	-0.01	0.02		-0.58	0.56	-0.04	0.02
centro	0.37	0.33		1.13	0.26	-0.27	1.00
mendoza	0.01	0.16		0.07	0.95	-0.31	0.33
noa	0.10	0.34		0.29	0.77	-0.56	0.76
cordoba	0.40	0.34		1.18	0.24	-0.26	1.06
litoral	0.09	0.34		0.27	0.79	-0.57	0.75
tucuman	0.26	0.33		0.78	0.44	-0.40	0.92
santafe	0.41	0.34		1.23	0.22	-0.25	1.07
cuyo	0.41	0.34		1.23	0.22	-0.24	1.07
sur	0.38	0.34		1.11	0.27	-0.29	1.05
nea	0.36	0.34		1.05	0.29	-0.31	1.03
cons	-0.05	0.54		-0.09	0.93	-1.11	1.01

Iteration 0:	Log likelihood =	-929.68	Number of obs	1,412
Iteration 1:	Log likelihood =	-825.39	Wald Chi2(23)	169.34
Iteration 2:	Log likelihood =	-823.03	Prob > Chi2	0.00
Iteration 3:	Log likelihood =	-823.03	Pseudo R2	0.11
			Log likelihood	-823.03

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 51. Probit on Probability of Finding Employment in the Post-Program Period**

aft_emp1	Coef.	Std. Err.	z	P> z	[95% Conf.Interval]	
aux1	0.00	0.07	-0.05	0.96	-0.13	0.12
sexo	0.46	0.06	8.03	0.00	0.35	0.58
edad	-0.01	0.01	-1.51	0.13	-0.03	0.00
jefe_enc	0.38	0.07	5.22	0.00	0.23	0.52
hijos	0.02	0.04	0.41	0.68	-0.07	0.10
hijos5	-0.17	0.06	-2.81	0.01	-0.28	-0.05
soltero	-0.14	0.08	-1.68	0.09	-0.30	0.02
aft_asis	-0.39	0.07	-5.45	0.00	-0.54	-0.25
eduyrs	0.02	0.01	1.83	0.07	0.00	0.04
aft_exp	0.01	0.00	7.93	0.00	0.00	0.01
aft_icny	0.00	0.00	-6.64	0.00	0.00	0.00
meses_t	-0.01	0.01	-0.91	0.36	-0.04	0.01
centro	0.09	0.21	-0.41	0.69	-0.50	0.33
mendoza	0.06	0.12	0.54	0.59	-0.17	0.30
noa	-0.23	0.22	-1.08	0.28	-0.66	0.19
cordoba	-0.03	0.22	-0.12	0.90	-0.46	0.40
litoral	-0.27	0.22	-1.25	0.21	-0.70	0.15
tucuman	-0.25	0.22	-1.17	0.24	-0.68	0.17
santafe	-0.12	0.22	-0.53	0.59	-0.54	0.31
cuyo	-0.02	0.22	-0.11	0.91	-0.45	0.40
sur	-0.04	0.22	-0.20	0.84	-0.48	0.39
nea	-0.10	0.22	-0.44	0.66	-0.53	0.34
_cons	0.44	0.40	1.12	0.26	-0.33	1.22

Iteration 0: log likelihood = -1899.7142	Number of obs	2,878
Iteration 1: log likelihood = -1666.5841	Wald Chi2(23)	476.34
Iteration 2: log likelihood = -1661.5578	Prob > Chi2	0
Iteration 3: log likelihood = -1661.5466	Pseudo R2	0.1254
Iteration 4: log likelihood = -1661.5466	Log likelihood	-1661

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 52. Biprobit on Probability of Finding Employment in the Post-Program Period**

aft_emp1	robust Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
aux1	-0.08	0.68	-0.12	0.91	-1.42	1.26
sexo	0.47	0.06	7.48	0.00	0.35	0.59
edad	-0.01	0.02	-0.79	0.43	-0.05	0.02
jefe_enc	0.43	0.08	5.24	0.00	0.27	0.59
hijos	0.02	0.06	0.30	0.77	-0.10	0.13
hijos5	-0.18	0.07	-2.75	0.01	-0.31	-0.05
soltero	-0.09	0.09	-1.06	0.29	-0.26	0.08
aft_asis	-0.39	0.08	-5.18	0.00	-0.54	-0.24
eduyrs	0.02	0.01	1.28	0.20	-0.01	0.04
aft_exp	0.01	0.00	6.14	0.00	0.00	0.01
aft_icny	0.00	0.00	-5.66	0.00	0.00	0.00
meses_t	-0.02	0.01	-1.16	0.25	-0.04	0.01
centro	0.01	0.24	0.06	0.96	-0.46	0.49
mendoza	0.12	0.12	1.00	0.32	-0.12	0.35
noa	-0.10	0.25	-0.38	0.71	-0.59	0.40
cordoba	0.06	0.25	0.22	0.82	-0.44	0.56
litoral	-0.16	0.25	-0.65	0.52	-0.66	0.33
tucuman	-0.22	0.25	-0.89	0.37	-0.71	0.27
santafe	0.02	0.25	0.09	0.93	-0.47	0.52
cuyo	0.05	0.25	0.22	0.83	-0.43	0.54
sur	0.01	0.25	0.03	0.98	-0.49	0.50
nea	-0.02	0.25	-0.09	0.93	-0.52	0.47
_cons	0.45	0.69	0.65	0.52	-0.91	1.81
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dtrained						
sexo	-0.03	0.06	-0.61	0.54	-0.15	0.08
edad	-0.46	0.07	-6.27	0.00	-0.60	-0.32
edad2	0.01	0.00	5.56	0.00	0.01	0.01
jefe_enc	0.06	0.07	0.84	0.40	-0.08	0.19
hijos	0.08	0.04	1.84	0.07	-0.01	0.17
hijos5	-0.01	0.06	-0.20	0.84	-0.13	0.10
soltero	0.04	0.07	0.52	0.60	-0.10	0.17
bef_asis	-0.21	0.07	-2.77	0.01	-0.35	-0.06
eduyrs	0.04	0.01	3.24	0.00	0.02	0.06
momeduyr	0.00	0.01	0.02	0.98	-0.02	0.02
dadeduyr	-0.01	0.01	-1.05	0.29	-0.03	0.01
bef_exp	0.00	0.00	2.08	0.04	0.00	0.00
bef_exp2	0.00	0.00	-0.59	0.55	0.00	0.00
bef_igxh	0.03	0.04	0.74	0.46	-0.04	0.10
centro	-0.02	0.20	-0.08	0.93	-0.42	0.38
mendoza	0.00	0.11	0.02	0.98	-0.22	0.22
noa	0.02	0.21	0.07	0.94	-0.40	0.43
cordoba	0.08	0.21	0.39	0.70	-0.33	0.50
litoral	0.05	0.21	0.23	0.82	-0.37	0.47
tucuman	0.00	0.21	0.00	1.00	-0.41	0.41

santafe	0.02	0.21	0.12	0.91	-0.39	0.44
cuyo	0.00	0.21	0.02	0.99	-0.41	0.42
sur	-0.02	0.22	-0.08	0.94	-0.44	0.41
nea	-0.08	0.22	-0.35	0.73	-0.50	0.35
_cons	5.60	0.91	6.14	0.00	3.82	7.39
/athrho	0.04	0.43	0.10	0.92	-0.80	0.88
rho	0.04	0.43	-0.66	0.71		

Number of obs	2,610
Wald Chi2(23)	442.8
Prob > Chi2	0.0
Log likelihood	-3274.2

Source: “Encuesta de Medición de Impacto Proyecto Joven” Ministry of Labor of Argentina.

**Table 53. Regression on Post-Program Monthly Earnings**

aft_ing1	Robust Coef.	Std.Err	t	P> t	[95% Conf. Interval]	
dtrained	8.55	7.39	1.16	0.25	-5.93	23.04
sexo	79.16	6.57	12.05	0.00	66.28	92.05
edad	14.20	7.54	1.88	0.06	-0.58	28.98
edad2	-0.29	0.15	-1.89	0.06	-0.59	0.01
aft_exp	0.69	0.14	5.07	0.00	0.42	0.95
aft_exp2	0.00	0.00	-1.57	0.12	0.00	0.00
eduyrs	7.41	1.35	5.49	0.00	4.76	10.05
jefe_enc	39.22	7.92	4.95	0.00	23.69	54.76
hijos	-4.41	3.95	-1.12	0.27	-12.15	3.34
hijos5	-8.10	5.41	-1.50	0.14	-18.71	2.52
soltero	-27.28	8.61	-3.17	0.00	-44.15	-10.40
aft_icny	-0.14	0.03	-5.52	0.00	-0.19	-0.09
aft_asis	-48.55	8.45	-5.74	0.00	-65.12	-31.97
meses_t	1.03	1.42	0.72	0.47	-1.76	3.82
centro	-63.40	30.13	-2.10	0.04	-122.47	-4.33
mendoza	16.86	13.00	1.30	0.20	-8.63	42.35
noa	-143.64	30.03	-4.78	0.00	-202.53	-84.75
cordoba	-72.82	31.10	-2.34	0.02	-133.80	-11.84
litoral	-135.82	30.41	-4.47	0.00	-195.44	-76.19
tucuman	-147.92	29.89	-4.95	0.00	-206.53	-89.31
santafe	-99.09	30.16	-3.29	0.00	-158.23	-39.94
cuyo	-109.92	30.43	-3.61	0.00	-169.59	-50.26
sur	-69.29	31.31	-2.21	0.03	-130.68	-7.90
nea	-129.89	30.04	-4.32	0.00	-188.79	-70.99
_cons	-59.19	100.12	-0.59	0.55	-255.51	137.13

Number of obs	2,883
Pseudo R2	0.2001

Source: “Encuesta de Medición de Impacto Proyecto Joven” Ministry of Labor of Argentina.

**Table 54. Regression on Difference between Pre-Program and Post-Program Monthly Earnings**

difi	Robust Coef.	Std.err.	t	P> t	[95% Conf. Interval]	
dtrained	3.16	7.98	0.40	0.69	-12.49	18.82
sexo	67.51	7.04	9.58	0.00	53.70	81.32
edad	9.91	8.21	1.21	0.23	-6.19	26.00
edad2	-0.20	0.17	-1.21	0.23	-0.53	0.13
aft_exp	0.43	0.17	2.57	0.01	0.10	0.75
aft_exp2	0.00	0.00	-1.11	0.27	0.00	0.00
eduyrs	8.34	1.44	5.81	0.00	5.52	11.15
jefe_enc	37.23	8.77	4.25	0.00	20.04	54.43
hijos	-1.26	4.25	-0.30	0.77	-9.59	7.07
hijos5	-5.64	5.83	-0.97	0.33	-17.07	5.79
soltero	-21.18	9.39	-2.26	0.02	-39.59	-2.76
aft_icny	-0.13	0.03	-4.68	0.00	-0.18	-0.07
aft_asis	-42.24	8.86	-4.77	0.00	-59.61	-24.87
meses_t	0.43	1.52	0.28	0.78	-2.56	3.42
centro	-63.40	30.34	-2.09	0.04	-122.90	-3.91
mendoza	15.52	13.72	1.13	0.26	-11.37	42.41
noa	-144.84	30.20	-4.80	0.00	-204.05	-85.64
cordoba	-61.71	31.36	-1.97	0.05	-123.19	-0.22
litoral	-141.76	30.82	-4.60	0.00	-202.19	-81.33
tucuman	-138.45	29.95	-4.62	0.00	-197.18	-79.73
santafe	-94.26	30.37	-3.10	0.00	-153.82	-34.71
cuyo	-103.52	30.62	-3.38	0.00	-163.57	-43.47
sur	-73.59	32.14	-2.29	0.02	-136.61	-10.57
nea	-137.35	30.38	-4.52	0.00	-196.93	-77.78
_cons	-14.95	108.41	-0.14	0.89	-227.53	197.62

Number of obs	2,867
Pseudo R2	0.1345

Source: “Encuesta de Medicion de Impacto Proyecto Joven” Ministry of Labor of Argentina.

**Table 55. Regression on Post-Program Monthly Wages**

aft_wag1	Robust Coef.	Std.Err	t	P> t	[95% Conf. Interval]	
aux1	7.77	9.03	0.86	0.39	-9.93	25.47
sexo	62.78	7.75	8.10	0.00	47.58	77.97
edad	12.79	8.48	1.51	0.13	-3.84	29.43
edad2	-0.23	0.17	-1.33	0.18	-0.56	0.11
aft_exp	0.18	0.12	1.47	0.14	-0.06	0.42
aft_exp2	0.00	0.00	-0.26	0.80	0.00	0.00
eduyrs	9.49	1.59	5.96	0.00	6.37	12.61
jefe_enc	21.30	8.42	2.53	0.01	4.79	37.81
hijos	-10.61	4.71	-2.25	0.02	-19.85	-1.37
hijos5	2.62	6.71	0.39	0.70	-10.54	15.78
soltero	-26.56	10.33	-2.57	0.01	-46.82	-6.30
aft_icny	-0.03	0.04	-0.83	0.41	-0.10	0.04
aft_asis	-29.17	11.51	-2.53	0.01	-51.75	-6.58
meses_t	1.79	1.70	1.05	0.29	-1.55	5.13
centro	-71.71	28.50	-2.52	0.01	-127.62	-15.80
mendoza	17.35	15.73	1.10	0.27	-13.50	48.19
noa	-182.08	28.51	-6.39	0.00	-238.00	-126.16
cordoba	-95.41	29.91	-3.19	0.00	-154.08	-36.75
litoral	-160.94	29.64	-5.43	0.00	-219.08	-102.80
tucuman	-185.92	28.91	-6.43	0.00	-242.62	-129.22
santafe	-126.21	28.84	-4.38	0.00	-182.77	-69.65
cuyo	-148.39	29.54	-5.02	0.00	-206.33	-90.45
sur	-88.37	30.50	-2.90	0.00	-148.19	-28.55
nea	-178.03	28.47	-6.25	0.00	-233.87	-122.18
cons	43.75	111.15	0.39	0.69	-174.24	261.75

Number of obs	1,756
Pseudo R2	0.1717

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 56. Regression on Difference between Pre-Program and Post-Program Monthly Wages**

difw	Robust Coef.	Std.Err	t	P> t	[95% Conf. Interval]	
aux1	8.62	22.08	0.39	0.70	-34.89	52.12
sexo	-5.91	20.01	-0.30	0.77	-45.34	33.52
edad	-1.72	18.36	-0.09	0.93	-37.89	34.46
edad2	0.12	0.37	0.33	0.74	-0.60	0.84
aft_exp	-0.58	0.40	-1.45	0.15	-1.36	0.21
aft_exp2	0.00	0.00	1.30	0.20	0.00	0.00
eduyrs	-0.29	3.95	-0.07	0.94	-8.06	7.49
jefe_enc	13.91	23.32	0.60	0.55	-32.04	59.86
hijos	-13.98	15.12	-0.93	0.36	-43.76	15.81
hijos5	22.92	17.55	1.31	0.19	-11.66	57.49
soltero	-41.14	25.54	-1.61	0.11	-91.46	9.17
aft_icny	-0.15	0.08	-1.92	0.06	-0.30	0.00
aft_asis	28.77	30.44	0.95	0.35	-31.21	88.74
meses_t	2.31	4.00	0.58	0.57	-5.58	10.20
centro	-59.79	107.40	-0.56	0.58	-271.40	151.82
mendoza	32.67	40.67	0.80	0.42	-47.47	112.80
noa	-26.93	105.52	-0.26	0.80	-234.83	180.97
cordoba	-20.13	111.10	-0.18	0.86	-239.01	198.76
litoral	-47.03	106.20	-0.44	0.66	-256.27	162.22
tucuman	-26.81	108.89	-0.25	0.81	-241.35	187.73
santafe	-16.04	107.30	-0.15	0.88	-227.46	195.37
cuyo	-61.07	108.39	-0.56	0.57	-274.63	152.48
sur	-117.03	111.40	-1.05	0.30	-336.52	102.46
nea	-73.22	107.46	-0.68	0.50	-284.93	138.49
_cons	65.47	271.79	0.24	0.81	-470.01	600.96

Number of obs	257
Pseudo R2	0.0868

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.



**Table 57. Regression on Post-Program Monthly Wages using Heckman Two-Step**

aft_wag1	Coef.	Std.Err	z	P> z	[95% Conf. Interval]	
dtrained	5.26	11.89	0.44	0.66	-18.04	28.56
sexo	34.91	24.49	1.43	0.15	-13.09	82.91
edad	9.37	13.92	0.67	0.50	-17.90	36.65
edad2	-0.15	0.28	-0.53	0.59	-0.69	0.40
aft_exp	-0.15	0.31	-0.48	0.63	-0.75	0.46
aft_exp2	0.00	0.00	0.66	0.51	0.00	0.00
eduyrs	10.73	2.40	4.47	0.00	6.02	15.44
jefe_enc	6.03	19.39	0.31	0.76	-31.97	44.03
hijos	-11.66	8.82	-1.32	0.19	-28.95	5.62
hijos5	4.92	12.92	0.38	0.70	-20.39	30.24
soltero	-37.98	17.39	-2.18	0.03	-72.05	-3.90
aft_icny	-0.05	0.06	-0.78	0.44	-0.17	0.07
aft_asis	-34.21	15.72	-2.18	0.03	-65.02	-3.40
meses_t	1.85	2.20	0.84	0.40	-2.47	6.17
centro	-60.32	36.75	-1.64	0.10	-132.35	11.71
mendoza	15.43	21.77	0.71	0.48	-27.23	58.09
noa	-169.31	38.65	-4.38	0.00	-245.05	-93.56
cordoba	-83.13	38.56	-2.16	0.03	-158.71	-7.56
litoral	-138.49	40.46	-3.42	0.00	-217.78	-59.20
tucuman	-166.61	40.25	-4.14	0.00	-245.50	-87.72
santafe	-115.34	38.40	-3.00	0.00	-190.60	-40.08
cuyo	-142.79	38.44	-3.72	0.00	-218.13	-67.45
sur	-68.43	39.12	-1.75	0.08	-145.10	8.23
nea	-172.47	39.02	-4.42	0.00	-248.94	-96.00
_cons	157.38	207.37	0.76	0.45	-249.06	563.82
select						
sexo	0.57	0.06	9.84	0.00	0.46	0.69
edad	0.10	0.07	1.44	0.15	-0.04	0.24
edad2	0.00	0.00	-1.60	0.11	0.00	0.00
jefe_enc	0.48	0.08	6.33	0.00	0.33	0.63
hijos	0.03	0.04	0.59	0.55	-0.06	0.11
hijos5	-0.15	0.06	-2.44	0.02	-0.27	-0.03
soltero	0.21	0.07	2.88	0.00	0.07	0.35
bef_asis	-0.14	0.07	-2.02	0.04	-0.28	0.00
eduyrs	0.00	0.01	-0.22	0.83	-0.03	0.02
momeduyr	-0.01	0.01	-0.64	0.52	-0.03	0.01
dadeduyr	0.00	0.01	0.31	0.76	-0.02	0.02
bef_exp	0.01	0.00	6.88	0.00	0.00	0.01
bef_exp2	0.00	0.00	-3.21	0.00	0.00	0.00
bef_igxh	0.10	0.03	3.02	0.00	0.03	0.16
centro	0.03	0.21	0.16	0.87	-0.38	0.45
mendoza	0.13	0.12	1.12	0.27	-0.10	0.37
noa	-0.02	0.22	-0.10	0.92	-0.45	0.41
cordoba	0.13	0.22	0.60	0.55	-0.30	0.56

litoral	-0.18	0.22	-0.81	0.42	-0.61	0.25
tucuman	-0.20	0.22	-0.94	0.35	-0.63	0.22
santafe	0.10	0.22	0.47	0.64	-0.33	0.53
cuyo	0.11	0.22	0.50	0.62	-0.32	0.54
sur	0.02	0.22	0.08	0.94	-0.42	0.45
nea	0.08	0.22	0.37	0.71	-0.36	0.52
cons	-1.50	0.87	-1.73	0.08	-3.20	0.20
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mills						
lambda	-87.16	72.15	-1.21	0.23	-228.57	54.26
rho	-0.56					
sigma	154.29					
lambda	-87.16	72.15				
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Number of obs	2,656
Censored obs	1,580
Uncensored obs	1,076

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

**Table 58. Regression on Difference between Pre-Program and Post-Program Monthly Wages using Heckman Two-Step**

difw	Coef.	Std.Err	z	P> z	[95% Conf. Interval]	
dtrained	10.33	82.52	0.13	0.90	-151.42	172.07
sexo	-3.13	108.83	-0.03	0.98	-216.44	210.18
edad	9.02	93.68	0.10	0.92	-174.58	192.63
edad2	-0.08	1.80	-0.05	0.96	-3.62	3.45
aft_exp	-0.86	1.47	-0.58	0.56	-3.74	2.03
aft_exp2	0.00	0.00	0.52	0.60	0.00	0.01
eduyrs	2.07	19.81	0.11	0.92	-36.75	40.90
jefe_enc	4.67	92.78	0.05	0.96	-177.17	186.52
hijos	-2.75	89.56	-0.03	0.98	-178.29	172.80
hijos5	15.28	92.15	0.17	0.87	-165.33	195.89
soltero	-46.61	113.40	-0.41	0.68	-268.87	175.64
aft_icny	-0.21	0.77	-0.27	0.79	-1.72	1.31
aft_asis	32.29	145.81	0.22	0.83	-253.48	318.06
meses_t	2.60	17.34	0.15	0.88	-31.38	36.59
centro	-2.22	369.27	-0.01	1.00	-725.97	721.53
mendoza	47.93	189.51	0.25	0.80	-323.50	419.35
noa	38.29	364.85	0.11	0.92	-676.80	753.38
cordoba	53.54	392.02	0.14	0.89	-714.79	821.88
litoral	10.97	369.97	0.03	0.98	-714.16	736.11
tucuman	41.03	410.12	0.10	0.92	-762.79	844.86
santafe	48.52	398.30	0.12	0.90	-732.13	829.17
cuyo	-6.35	368.32	-0.02	0.99	-728.25	715.55
sur	-54.70	386.02	-0.14	0.89	-811.29	701.89
nea	-14.68	366.79	-0.04	0.97	-733.58	704.22
cons	-103.00	1215.36	-0.09	0.93	-2485.07	2279.07
select						
sexo	0.35	0.11	3.12	0.00	0.13	0.58
edad	0.07	0.12	0.56	0.57	-0.17	0.31
edad2	0.00	0.00	-0.75	0.46	-0.01	0.00
jefe_enc	0.03	0.12	0.27	0.79	-0.21	0.27
hijos	-0.01	0.08	-0.13	0.89	-0.16	0.14
hijos5	-0.04	0.10	-0.42	0.68	-0.25	0.16
soltero	0.11	0.14	0.83	0.41	-0.15	0.38
bef_asis	0.07	0.12	0.54	0.59	-0.18	0.31
eduyrs	-0.01	0.02	-0.37	0.72	-0.06	0.04
momeduyr	-0.01	0.02	-0.68	0.50	-0.05	0.03
dadeduyr	-0.02	0.02	-1.01	0.32	-0.06	0.02
bef_exp	0.01	0.00	5.45	0.00	0.01	0.01
bef_exp2	0.00	0.00	-2.97	0.00	0.00	0.00
bef_igxh	0.83	0.04	20.40	0.00	0.75	0.91
centro	-0.10	0.40	-0.24	0.81	-0.89	0.70
mendoza	-0.31	0.21	-1.44	0.15	-0.72	0.11
noa	0.43	0.40	1.06	0.29	-0.37	1.22

cordoba	0.03	0.42	0.06	0.95	-0.80	0.85
litoral	0.29	0.41	0.71	0.48	-0.51	1.09
tucuman	0.03	0.42	0.08	0.94	-0.79	0.85
santafe	-0.06	0.42	-0.15	0.88	-0.88	0.76
cuyo	0.39	0.41	0.96	0.34	-0.41	1.19
sur	0.24	0.41	0.58	0.56	-0.57	1.05
nea	0.50	0.41	1.24	0.22	-0.29	1.30
cons	-3.03	1.55	-1.96	0.05	-6.07	0.00
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mills						
lambda	-31.88	170.65	-0.19	0.85	-366.35	302.60
rho	-0.23					
sigma	136.59					
lambda	-31.88	170.65				
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Number of obs	2,701
Censored obs	224
Uncensored obs	2,477

Source: "Encuesta de Medición de Impacto Proyecto Joven" Ministry of Labor of Argentina.

## Appendix E. Program Costs

**Table 59. Costs by Province**

Codes	Provinces	Quota	Student Distribution per Province (%)	Cost of Courses	Scholarship: \$4/Day for Lectures; \$8/day for Practice	Subsidy for Children	Insurance	Medical Cost	Total Cost	Number of Lecture Days	Number of Practice Days	Amount Paid to Providers As % of Total Cost
PRO_COD I	PRO_DESC	CUR_CUP O	%ALUMNOS	CUR_VAL O	BECAS	SUBSIDIO S	SEGUR O	MEDIC A	ESTIMAD A	Cur_dia l	Cur_dia p	Share
6	BUENOS AIRES	4333	18.33	3203662	2136892	108325	12999	38997	5500875	9887	9719	0.58
2	CAPITAL FEDERAL	2719	11.50	2011291	1336380	67975	8157	24471	3448274	5957	5540	0.58
10	CATAMARCA	540	2.28	382770	333044	13500	1620	4860	735794	1501	1503	0.52
22	CHACO	245	1.04	196700	138960	6125	735	2205	344725	675	672	0.57
26	CHUBUT	306	1.29	229858	143032	7650	918	2754	384212	659	615	0.60
14	CORDOBA	1951	8.25	1749706	1031280	48775	5853	17559	2853173	4679	4749	0.61
18	CORRIENTES	299	1.26	236894	181992	7475	897	2691	429949	962	980	0.55
30	ENTRE RIOS	815	3.45	676380	453748	20375	2445	7335	1160283	1984	2001	0.58
34	FORMOSA	340	1.44	207121	237600	8500	1020	3060	457301	930	1020	0.45
38	JUJUY	345	1.46	274402	197056	8625	1035	3105	484223	826	870	0.57
42	LA PAMPA	349	1.48	316945	153756	8725	1047	3141	483614	685	652	0.66
46	LA RIOJA	158	0.67	95589	73364	3950	474	1422	174799	351	366	0.55
50	MENDOZA	2656	11.23	2229603	1512072	66400	7968	23904	3839947	6751	6536	0.58
54	MISIONES	670	2.83	478654	391748	16750	2010	6030	895192	1898	1887	0.53
58	NEUQUEN	507	2.14	471403	209100	12675	1521	4563	699262	968	855	0.67
62	RIO NEGRO	333	1.41	256397	125488	8325	999	2997	394206	606	500	0.65
66	SALTA	1248	5.28	1011579	659748	31200	3744	11232	1717503	3359	3381	0.59
70	SAN JUAN	691	2.92	581059	419828	17275	2073	6219	1026454	1817	1828	0.57
74	SAN LUIS	409	1.73	331658	190720	10225	1227	3681	537511	922	872	0.62
78	SANTA CRUZ	10	0.04	7800.0	3600	250	30	90	11,770.00	30	30	0.66
82	SANTA FE	2717	11.49	2228514	1451380	67925	8151	24453	3780423	6847	6751	0.59
86	SGO. DEL ESTERO	298	1.26	261131	161560	7450	894	2682	433717	836		0.60
94	TIERRA DEL FUEGO	68	0.29	58800	45440	1700	204	612	106756	220	228	0.55
90	TUCUMAN	1636	6.92	1331334	853472	40900	4908	14724	2245338	3889	3838	0.59
	<b>TOTAL</b>	<b>23643</b>	<b>100.00</b>	<b>18829248</b>	<b>12441260</b>	<b>591075</b>	<b>70929</b>	<b>212787</b>	<b>32145299</b>	<b>57239</b>	<b>55393</b>	<b>0.58</b>

*Source:* “Encuesta de Medición de Impacto Proyecto Joven” Ministry of Labor of Argentina.