

The Impact of Public Provided Job Training in Colombia^{*}

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Abstract

This paper presents various matching estimators of the impact of job training programs in Colombia on the trainees, that is, to evaluate this impact we estimate the impact of the “treatment on the treated”. The matching estimates we obtain suggest that training does not have a significant impact for female youth. For male youth and adult females, only among those who ever took training more than one year ago there is a significant positive impact. Finally for adult males, only private training seems to have a significant positive impact.

When we repeat the exercise for the sample of people who worked for the last 12 months, the result for adult males is reversed, and in this case, only those who ever had training before the last year have a significant positive impact. Finally, the same exercise for the sample of people who earn less than 2 minimum wages shows that across most demographic groups the impact is negligible.

Keywords: Program evaluation, selection bias, job training programs

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1 Introduction

Even though many authors have analyzed and made policy recommendations concerning the performance of public provided training programs in Colombia, no precise measures of the impact of those programs with techniques such as those surveyed by Heckman, LaLonde and Smith (1999) has been done to date. This despite the large amount of resources devoted for the government to this purpose.

In this paper we evaluate publicly provided training in Colombia, focussing our analysis in the program provided by the Servicio Nacional de Aprendizaje (SENA), which is the most representative and the one with the largest coverage of the programs of the Colombian government. For the 1999-2000 period, the SENA's budget is proposed to be near U\$200 Mill, 5% of the total budget for education and 0.2% of the GDP. From that budget, 75% is dedicated to training programs.

In the next section we review some background literature about training and training evaluation in Colombia before proceeding in section three to describe the main programs provided by the SENA, with emphasis in its program of training.

In section 4 we describe the evaluation problem and define the parameter of interest. The evaluation is focussed on mean impacts, in particular, we propose an evaluation of the "treatment on the treated", maybe the most popular parameter in the evaluation literature. We define the parameter, along with the estimators we will use, the matching estimators. The section provides conditions for identification of the missing counterfactual. We proceed in section 5 to describe the data that can be used to perform the evaluation.

Section six presents the results of the estimation of the propensity scores, a key step to get the matching estimators. We find that along with standard socio economic background variables, recent labor force status transitions around the moment of enrollment in training play an important role in the estimation of the propensity scores. This variables are particularly important for women, and in our sample, for private institutions than for the public ones. When estimating impacts over samples of people who took training more than one year ago, we find that tenure, and in general, the number of months in current labor force status are also useful variables to include. In section eight we present the how it is necessary in our data to impose limits in the support of evaluation, thus, estimates presented in this paper are conditional on the support described in this section for the different demographic groups and institutions.

Finally, in sections nine and ten, we present the impact estimates of the treatment on the treated and their main differences across institutions respectively. The matching estimates we obtain suggest that training in all institutions analyzed, namely SENA, public aggregate (including SENA) and private, job training increases the income of the youth who take it. The increment is larger for male youth than female youth, and is larger in the aggregate of the public institutions than it is in SENA.

The impact on the adults treated from SENA and public aggregate are negative according to the three estimators. Furthermore, the mean difference is negative, although the N, K and LLR estimators are even more negative. Training decreases the income of the adult male in 21% and 7% in the SENA and P respectively, and increases it in 24% in the Pr.

The results for adult females is similar in the case of SENA and private institutions, and worse in that of the aggregate of the public institutions. In this case, training decreases the income of the adult female in 23% and 9% in the SENA and the aggregate of public institutions respectively, and increases it in 24% in the private institutions.

2. Previous Work

Even though there has been many papers analyzing training in Colombia, their emphasis in evaluation of its impact has not accounted for many sources of biases, relying in poor estimators of it based on which policy has been designed. Maybe the most elaborated work of our knowledge is that of Jimenez and Kugler (1987). They estimate earnings equations and correct them for self-selection using a polychotomous choice model. Rather than estimating mean impacts, they evaluate differences in returns to education and experience among the population with no training, with training in short courses and with training in long courses. They find that on average, individuals who self-select into training, would increase average earnings of those with no training if they were moved to that group and vice versa.

Other kind of work has emphasized the importance of the SENA and made policy recommendations for its improvement. Among these we find those of Lopez (1994a,b), Velez (1994) and Ramirez and Reyes (1989) among others. Some of their recommendations suggest the need to invest more in the physical and human capital endowment of the SENA to better satisfy the needs of the economy, and to look for schemes in which the private and public sector can work together in the provision of training.

3 Program to Evaluate

The program to be analyzed is that of courses for job training provided by the Servicio Nacional de Aprendizaje (SENA). Since this program comprehends a large part of the job training programs provided by the public sector in Colombia, the aggregate provision of these courses by the public sector will also be evaluated when data do not allow us to directly identify SENA from other public providers. This will permit us to get an indirect assessment of the SENA's program.

SENA is an agency of the Colombian Government funded in 1957. It is aimed to promote efficiency in the labor market through a variety of services. Services are provided through programs for firms and workers. A brief enumeration of them includes:

(i) Advise to Employers: Informs trends of the labor market, advises in the search for personnel, analyses the labor market, etc.

(ii) Job Search: Offers workshops in different topics to facilitate job search.

(iii) Job Training: Helps job searchers in the identification of their specific needs for job training and provides them with the respective training. Some of the programs included in this services are:

. Training for Youths with Secondary Education: Trains them to help them make their transition to the labor market in key occupations according to their profile and market needs.

. Labor Adaptation for Change: Advises and trains workers to assimilate innovations and reforms. Is directed to workers of the public sector who are laid off in processes of restructuring.

. Aid to displaced population: Offers programs to help the displaced population for the violence. Programs include training, advise for employers, job promotion.

We are going to analyze the Job Training Program. As already mentioned, it trains people for work through courses which differ in their length, being either short or long. In 1997 SENA had 82 thousand students enrolled in long courses and 918 thousand in short courses, adding to one million students enrolled in either program. Even though the main purpose of the program is to prepare people for the labor force, many enroll in it partly expecting to improve their possibilities of getting a job by both their investment

in human capital and the network available to the SENA and at disposal of trainees.

The program covers all the country. SENA has 20 Regional Directions in the main cities, each offering the courses in Centers of Vocational Training (CVT), which added to 111 by 1997. CVTs are all part of the SENA. They provide training in four areas or sectors: Agriculture, Industry, Commerce and Services, and other sectors.

Individuals might use the services of the SENA to get advise about which courses would be their best matches. Though all the population is in theory eligible for the courses, the target are the poorest, thus, individuals applying are asked for information in order to asses their socioeconomic status.

4 The Evaluation Problem and the Matching Estimator

Following Heckman, Ichimura, Smith and Todd (1998) and Heckman, LaLonde, and Smith (1999), and borrowing their notation, we assume that each person has two possible outcomes, Y_0 and Y_1 , in the untreated and treated states, respectively. Let $D=1$ signify receipt of treatment and $D=0$ its absence. Let \mathbf{j} be a vector of policy variables that operate on all persons. General equilibrium effects are ignored so that the outcomes for any person do not depend on the overall level of participation in the program, that is,

$$E(Y_0 | D=0, \mathbf{j} = \mathbf{v}) = E(Y_0 | D=0, \mathbf{j} = 0) \tag{1}$$

Thus, the no program state for non-participants is the same as the non-participation state regardless of the existence of the program. This assumption will enable us to generalize from partial to general equilibrium.

4.1 The parameter of Interest and the Required Counterfactual

We are going to focus on the evaluation of mean impacts. In particular, the parameter in which we are interested is the effect of the "treatment on the treated", defined as

$$\Delta(X) = E(\Delta | X, D = 1) = E(Y_1 | X, D = 1) - E(Y_0 | X, D = 1) \quad (2)$$

This term tells us how much did people who took training benefit compared to what they would have gotten without participating. That is, the gross gain to participants from the program. The first term can be constructed from the data while the second one is the required counterfactual, for which we are going to use some convenient identifying assumptions in order to be able to calculate it from the data by matching methods.

4.2 The Matching Estimators

An averaged "treatment on the treated" may be defined over a subset of the support of X, S_x :

$$M(S_x) = \frac{\int_{S_x} E(Y_1 - Y_0 | X, D = 1) f_x(X | D = 1) dX}{\int_{S_x} f_x(X | D = 1) dX}$$

where $f_x(X|D=1)$ is the density of X. This is the parameters we will estimate by the matching methods.

To implement the method empirically, let there be N_c persons in the comparison group and N_t in the treatment group. The method matches "comparable" members of the comparison group with each of the treated persons. These members of the comparison group are members j for whom X_j belongs to $C(X_i)$, the neighborhood of persons in the comparison group with characteristics similar to those of i , X_i , i.e., the set of persons

$$A_i = \{j | X_j \in C(X_i)\}$$

4.3 Identifying Assumptions

We now describe the identifying assumptions for the cross-sectional and Difference-in-Difference matching estimators, $M(S_x)$, defined over a subset of the support of X , S_x

4.3.1 Cross-sectional Matching Estimator

To estimate the missing counterfactual, $E(Y_1|X, D=0)$, analysts make use of $E(Y_0|X, D=0)$. Since participation in the program is voluntary, there is a risk of selection bias when using this approximation. The bias in estimating $E(Y_1 - Y_0|X, D=1)$ is given by

$$B(X) = E(Y_0|X, D=1) - E(Y_0|X, D=0)$$

This method assumes that individuals select into the program based only on observable variables. Thus, the analyst must have access to a set of conditioning variables, X , such that, the distribution of individuals who did not take training is similar to that which the individuals who took training would have had they not taken training, given that they have similar characteristics X . The estimator assumes that conditional on X , (Y_0, Y_1) is independent of D , that is

$$(Y_0, Y_1) \perp\!\!\!\perp D \mid X \tag{A-1}$$

Where $\perp\!\!\!\perp$ " denotes independence and X denotes variables on which conditioning is conducted. It follows from the assumption that $F(Y_0|D=1, X) = F(Y_0|D=0, X)$ and $F(Y_1|D=1, X) = F(Y_1|D=0, X) = F(Y_1|X)$, that is, we can recover the missing counterfactual from the outcome of non-participants. This assumption would be defined for all X that satisfy

$$0 < \Pr(D=1|X) < 1 \tag{A-2}$$

that is, there must be both participants and non-participants for each X over which we want to calculate $E(Y_1 - Y_0|X, D=1)$. Clearly, to estimate this parameter we only need the weaker assumption

$$Y_0 \perp D \mid X \tag{A-3}$$

In order to avoid having to match on multidimensional X , we can use Rosenbaum and Rubin (1983) result, which shows that (4) and (4) together imply that (Y_0, Y_1) thus matching can be performed on $P(X)$ alone. Thus, we only require a weaker mean independence version:

$$E(Y_0 \mid D=1, P(X)) = E(Y_0 \mid D=0, p(X)) \tag{A-4}$$

Under these assumptions, the matching estimator can be estimated as

$$M(X_s)^{CS} = n_1^{-1} \sum_{\substack{i=1 \\ \{D_i=1\}}}^{n_1} \left[Y_{1i} - E(Y_{1i} \mid D_i^{\hat{}} = 0, (x)) \right] \tag{4}$$

where $E(Y_{0i} \mid D_i=0, (X))$ is defined as

$$\hat{E}(Y_{0i} \mid D_i = 0, F(X)) = \overline{W_j(p(X_i)) Y_{0j}}_{j \in I_{0i}}$$

where the weights are

$$W_j(p(x_i)) = \frac{K\left(\frac{P(X_i) - P(X_j)}{h_n}\right)}{\sum_{j \in I_{0i}} K\left(\frac{P(X_i) - P(X_k)}{h_n}\right)}$$

$$\forall j \in I_{0i}, i = 1, \dots, n_1,$$

and for a specified kernel function $K(\cdot)$, and bandwidth, h_n .

4.3.2 Difference-in-Differences (DID) Matching Estimator

When using series of cross-section data or longitudinal data on program participants and nonparticipants we can calculate the DID estimator. Let t and t' be a time periods before and after the program start date respectively. Let Y_{ot} be the outcome observed at t . The assumptions needed in this case are

$$E(Y_{ot} - Y_{ot'} | D=1, P(X)) = E(Y_{ot} - Y_{ot'} | D=0, P(X)) \quad (\text{A-4})$$

along with (4). The matching estimator can then be estimated by

$$M(X_s)^{DID} = n_{1t}^{-1} \sum_{\substack{j=1 \\ \{D_i=1\}}}^{n1} \left[Y_{1ti} - E(Y_{oti} | D_i = 0, P(X_i)) \right] - n_{1t'}^{-1} \sum_{\substack{j=1 \\ \{D_i=1\}}}^{n_{1t'}-1} \left[Y_{1t'j} - E(Y_{ot'j} | D_i = 0, P(X_i)) \right] \quad (6)$$

4.4 Matching Estimators Used

The matching estimator we will evaluate are the simple average nearest neighbor, the kernel regression, and the local linear regression matching estimators. We proceed to give a detailed description of each of them.

4.4.1 Simple Average Nearest Neighbor Matching Estimator

This estimator is built by matching using the $n=1, \dots$ neighbors with the closest propensity scores. Thus,

$$\hat{E}(Y_{oi} | D_i = 0, F(X_i)) = \frac{1}{n} \sum_{\substack{j=1 \\ j \in loi}}^n Y_{oj}$$

4.4.2 Kernel Regression Matching Estimator

This estimator is as well built by matching using the $n=1, \dots$ neighbors with the closest propensity scores. Additionally, in this case, the comparison members closest to the treated person receive greater weight. The kernel we use in our calculations to weight the comparison members is given by

$$K\left(\frac{P(X_i) - P(X_k)}{h_{ni}}\right) = \begin{cases} \frac{15}{16} \left[\left(\frac{P(x_i) - P(X_k)}{h_{ni}} \right)^2 - 1 \right]^2 & \text{for } |s| < 1 \\ 0 & \text{otherwise} \end{cases}$$

otherwise

where

$$h_{ni} = \frac{\max_{k \in I_{oi}} |P(X_i) - P(X_k)|}{n}$$

Thus

$$\hat{E}(Y_{oi} | D_i = 0, P(X_i)) = \frac{1}{\sum_{\substack{j=1 \\ j \in I_{oi}}}^n K\left(\frac{P(x_i) - P(X_j)}{h_{ni}}\right)} \sum_{\substack{j=1 \\ j \in I_{oi}}}^n K\left(\frac{P(X_i) - P(X_j)}{h_{ni}}\right) Y_{oj}$$

4.4.3 Local Linear Regression (LLR) Matching Estimator

In this case the weights of (5) are given by

$$W_j(P(X_i)) = \frac{K_{ij} \left\{ \sum_{k \in I_{oi}} K_{ik} (P_k - P_i)^2 - [K_{ij} (P_j - P_i)] \sum_{k \in I_{io}} K_{ik} (P_k - P_i) \right\}}{\sum_{j \in I_{io}} K_{ij} \sum_{k \in I_{io}} K_{ik} (P_k - P_i)^2 - \left[\sum_{k \in I_{io}} K_{ik} (P_k - P_i) \right]^2}$$

Where

$$K_{ij} = K \left(\frac{P(X_i) - P(X_j)}{h_{ni}} \right)$$

5 Data

This report contains the cross-section matching estimators based on general survey data. Seeking to improve the living conditions of Colombians, the government designed the Encuesta Nacional de Calidad de Vida (ECV) to find out about the living standards of the population, with special emphasis in housing, health, education, employment and poverty. The survey took place in 1993. The sample comprehends 10,000 households located in 75 municipalities.

The ECV constitutes an excellent source of information since it contains a special section dedicated to job training (Section I). A description of that section form is presented in Appendix B. On the other hand, the survey contains 14 chapters related to characteristics of the individuals, their household and housing.

As illustrated in Figure 1, the survey first asks individuals whether they took training during the last year, if they did, then proceeds to ask where did they take it and whether they had taken training before last year. On the other hand, if they did not take training during the last year, they are as well asked whether they ever did before last year, in which case we can not know where they did it. This sequence of questions allows us to identify four different sources of training in Colombia which depend on the provider: (i) Training provided by SENA, (ii) training provided by other public institution, (iii) training provided by the private sector, and (iv) training taken more than a year ago regardless of the provider, options (1) + (2) in the figure. The section of the survey related to training is presented in Appendix A.

Data are going to be split in order to analyze four demographic groups: male and female youth and adult men and women¹

Figure 1: Information provide by the *Encuesta de Calidad de Vida*

Table 1. Number of Individuals (observations) who Take Training by Institution and Demographic Group*

	SENA**	Public**	Private**	Ever Had
Male Youth	71,081 (62)	89,675 (79)	123,859 (93)	284,615 (234)
Female Youth	50,558 (43)	86,313 (77)	190,917 (151)	327,788 (271)
Adult Male	192,191 (187)	309,306 (302)	815,756 (655)	1'317,253 (1,144)
Adult Female	187,245 204	364,166 374	1'019,125 759	1'570,536 1,337
Total	501,075	849,460	2'149,657	3'500,192

* Source: *Encuesta de Calidad de Vida* 1997

** Individuals who took training in the last 12 months.

Table 2.1 to 2.3 present summary statistics of the main variables from the ECV for males 14 to 60 years old.

Table 2.1 presents means and standard errors of men according to their having ever taken any training or not. This classification does not distinguishes whether they took a long or short course, neither whether it was taken at a private or public institution, and if public, it includes both SENA and other public institutes. Individuals with some training have higher mean and dispersion of income, more years of education and less children. They are slightly older and come from families which are on average more educated. Most of them live and were born in urban areas, have lower mobility and are less likely to be single. They have a larger participation in industry, financial services and other sectors, while those with no training have a larger participation in agriculture. Finally, they are more likely to be employees and less likely to be unskilled laborer or farm laborer self-employed.

¹ Youths are 14-22 and adults are 22-55.

6 Determinants of Program Participation

To determine the probability of participation in training programs we follow the main recommendations of the literature summarized in Heckman, LaLonde and Smith (1999) concerning the importance of background characteristics and recent labor force status.

To determine what variables can contribute to the prediction of the propensity score ($P(X)$), it is important to take into account the eligibility criteria of the institutions providing training. In the case of the SENA, individuals who get training belong to a group which has a large variety of characteristics. Even though its aim is to provide training to the disadvantaged, many people in acceptable economic situation attend its courses. This is due to the fact that SENA's earnings come mostly from mandatory contributions from employers, who must pay 2% of their payroll to SENA. Other than this, SENA has some additional earnings from providing technological services to firms. To the extent that firms have to contribute to the SENA, they get as well the right to establish programs of training for their employees. Thus, the SENA ends up training both, the disadvantaged which might not even be employed, and the employees of firms which just seek to update their technic skills. To this extent, we would expect that labor force status transitions might have serious limitations to predict program participation to the SENA. Finally, most programs offered by SENA require candidates to have completed at least nine years of high school.

When we analyze the training provision of the aggregate public sector, its is important to consider two points. First, individuals who attend training at SENA are about 60% of them, thus, we can expect their behavior to be strongly associated to that described for SENA trainees. Second, their objective population is not in general limited to the disadvantaged. Therefore, in this case the previously mentioned limitations apply.

Finally, in the study of training provided by private institutions, clearly it is the market which decides to a large extent who takes training and where, thus standard economic incentives are the ones which will determine program participation. As it should be expected, these programs are in general attended by better prepared people who are willing to pay for training of better quality than the one subsidized which is mostly offered by the public sector.

Tables 1.1 to 1.4 present means and standard errors of the variables of the four demographic groups studied. Each demographic group has two tables, each with two panels. Thus for example, for male youth, Table 1.1.1 presents in the first panel descriptive statistics calculated splitting the sample into individuals who took training in SENA or did not take training in SENA and

the second does the same for the aggregate of the public sector, including SENA. Table 1.2.1 presents the respective statistics for the private sector and the aggregate of individuals who ever had training, for whom we can not distinguish where did they take it, that is, $\left(1 \right) + \left(2 \right)$ in Figure 1. A more detailed description of the variables used in the analysis and they way they were constructed can be found in Appendix B.

The pattern emerged from Tables 1.1 to 1.4 is clear. For all demographic groups we find that:

(i) individuals who took training in SENA have the lowest mean income, followed by those who took training in any public institution (P) and finally, those who were trained in a private institution (Pr) have the largest mean income.

(ii) Though mean education, and father's and mother's education of those who went to SENA or P are very similar, they are lower than that of those who went to Pr.

(iii) Mean age is about the same regardless of where they took training

(iv) In general, living in urban area, having moved in the last five years and being single do not present important variations among those who went to training in different type of institutions. Single adult women tend to be more likely to go to training at any Pr.

(v) The regional dummies show some variations. In general, it is more likely that individuals who take training in the poorest regions go to any public (SENA or P), i.e. Orinoquia and San Andrés, while the opposite happens in Bogotá. This aspect reflects a shortage in private training supply in the poorest regions.

(vi) Individuals who took training in Pr are more likely to have a longer tenure, shorter unemployment and OLF spells than those who took it at SENA or P.

Some differences exist between men and women: while men who went to Pr are less likely to have less than 10 years of education than those who went to any public institution, this probability is similar among women who took training in different institutions.

Maybe the labor force status transitions calculated are the ones which show a larger variability among institutions and demographic groups. In all demographic groups but the male youths, there is a decreasing proportion of individuals who have remained unemployed or OLF for most of the last 12 months when we move from those who went to SENA, through those in P and finally to Pr. A similar observation takes place for those who became unemployed within the last six months, while the contrary happens with those who have remained employed.

7 Estimates of the Propensity Scores

To get the propensity scores we estimate logit models of program participation. Since the institutions analyzed offer their programs for a population of a wide variety of characteristics, for each demographic group we included all persons in the survey. Thus, for the nonparticipating comparison group we consider all of those who did not take training regardless of their eligibility.

To get the estimates, we include in the model variables according to their ability to correctly predict participation and nonparticipation, as well as based on their statistical significance. Coefficient estimates and z values from participation logit are presented in Tables 2.1 to 2.4.

Education is a key variable in all demographic groups (DG) and institutions (I). For youths, estimates suggest that those who have at least completed high school are more likely to have taken training within the last 12 months (TT12) at any I. For adults we could say that attendance who have 11-15 years of education are more likely to TT12 at SENA or P. For Pr I this is also true for adults with 16 years of education. P (X) is also larger for those older, although at a decreasing rate.

Individuals with father or mother with 1-5 years of education are more likely to TT12 in SENA or P. For Pr, this variable is not as informative for youths as it is for adults. For the later, there is a slight difference between males and females, namely, males with father or mother with 1-11 years of education are more likely to take Pr training, while for females all positive education levels of them make them more likely. That is, a male with a father highly educated is not more likely to take Pr training than one with an uneducated father, on the other hand, females would be more likely.

Living in urban area is only important for predicting training in Pr, although not much for adult females. Adult individuals who moved in the last five years are less likely to take training, while no signal is given for those youth. Adult males who are single are more likely to take training at SENA or P.

To reduce the potential bias due to geographical mismatch we include regional variables for all the regions over which the survey has statistical representativity. People who live in Orinoquia or San Andrés regions are more likely to TT12 at SENA or P. For adult males, this also happen for those living in the Eastern region.

Female youth with more tenure are less likely to have ever taken training, while the opposite happens for adult males and females. Not surprisingly, the number of months looking for a job does not seem to be

related with higher probabilities of taking training. This is due to the fact that this variable is only used for the group who ever had training, which includes those who had it more than a year ago, possibly way before they became unemployed.

Finally, let us analyze the variables related to labor force status transitions. We should remember that such transitions are proxies to the actual ones since they were constructed with partial information under specific assumptions². The first thing to notice is that these variables are more important for females than they are for males. For male youth these variables have a poor performance predicting participation in either SENA or P, while they suggest that individuals who became unemployed within the last five months are less likely to TT12 in Pr. Female youth who are currently unemployed, regardless of whether they have been unemployed for more than six months or moved from other status to unemployment, are more likely to TT12, as well as those who have stayed more than six months OLF. Something similar seems to be the case for the Pr I, although results are not so reliable. The reliability of these results is highly limited by the small size of the samples for youth. For adult males results suggest the same as for female youth but not as reliable. In their case, the variables are very informative of their probability to TT12 in any Pr I. In general, individuals in any labor status transitions other than employed_employed are less likely to TT12 in any Pr I, mostly if they became unemployed. Lastly, adult females who currently are unemployed or have remained OLF for more than six months are more likely to TT12 in either SENA or P, while in all the cases but OLF_OLF they are less likely to in any Pr I. In this case the importance of these variables is remarkable.

8 Determining a Common Support

To assess how serious could be the bias due to failing to compare "comparable people", we study the densities of $P(X)$ for participants and nonparticipants in training for all demographic groups and in all type of institutions analyzed. Figures 1.1 to 1.4 presents the distributions of the estimated $P(X)$. It can be clearly observed how the densities are defined over different supports. In particular, in the sample of controls, the support of $P(X)$ is contained in the interval which varies from about $[0,0.20]$ to $[0,0.50]$ while for nonparticipants these intervals fluctuate between $[0,0.25]$ and $[0,0.50]$ It follows that matching

² See Appendix B for further details about the generation of the labor force status transition variables.

controls with high $P(X)$ are likely to yield not only biased estimates, but also an estimator which does not compare "comparable people".

9 Impact Estimates

In this section we present the *simple average nearest neighbor (N)*, *kernel regression (K)*, and *local linear regression (LLR)* matching estimators obtained. The N and K are calculated for the first 40 neighbors. Let us remember though, that with the particular kernel we are using, the nearest neighbor N, is comparable with the two nearest neighbors in the K estimator since the kernel would not give any weight to the second neighbor. Thus, when N takes n individuals to compare, the comparable K estimator is that which takes $n+1$ individuals. On the other hand, the LLR estimator is estimated with different bandwidths, ranging from 0.001 to 0.01. We choose these small bandwidth because the comparison group from which we are drawing the matches is very large.

Tables 3.1 to 3.3 present the estimates of the three matching estimators over ranges of number of neighbors for the N and K estimators and different bandwidths for the LLR estimator. The result are also presented by demographic group in Figures 2.1 to 2.4.

N and K estimators behave similarly, mostly for larger samples such as those of adults. The effect of the small samples of the youths becomes evident when we compare the result of them with those of adults. N and K are much more related in the results found for adults than for youths and are as well more consistent with the results found with the LLR. The range of variability of the LLR is smaller than those of N or K in general, and in particular for adults where again, we have more trainees. These aspect seems to reflect the gains in efficiency obtained with the LLR over the other two estimator pointed at by Fan (1992).

Since individuals who are classified as ever have had training had it more than 12 months ago, to a large extent we would expect their impact estimates to be bounded by the others in some way. Although that is what is found for all demographic groups for the N and LLR estimators, it is intriguing that does not seem to be the case for the K estimator in the case of youths, where it is the largest of the estimates for most of the interval of neighbors analyzed. Here again the size of the data might be driving the result.

On the other hand, the estimated impacts are consistently smaller than the simple mean differences of incomes in each demographic group and for each institution, as can be appreciated from Tables 3.1 to 3.3.

Finally, training in the aggregate of all institutions, and for all demographic groups, seems to have a positive effect in the long run. This fact can be better appreciated in Table 3.4, where we can see that the impact on the treated is on average positive, ranging between 14% and almost 100%!

10 Differences Across Institutions

A clear pattern emerges from Figures 2.1 to 2.4 which shows that over all demographic groups and estimators, SENA has a smaller or equal impact on the treated than the P, which in turn has a strictly smaller than impact on the treated than the Pr.

For male youth all estimators of the impact on the treated from all institutions are positive. Pr I have impact which are between two to almost five times larger than SENA, while its differences with respect of P are not as large, being actually larger according to the K estimator. As can be appreciated from Table 3.4, on average over the three estimators, training increases the income of the male youth in 13%, 27% and 29% in the SENA, P and Pr respectively. For female youth all estimators of the impact on the treated from SENA are slightly negative, while those on the treated from Pr are slightly positive. Caution in the interpretation of these results is necessary due to the small size of the samples. Table 3.4 shows that training increase the income of the female youth in 4%, 7% and 3% in the SENA, P and Pr respectively, thus not showing on average a significant difference.

The impact on the adults treated from SENA are clearly negative according to the three estimators. Furthermore, the mean difference is negative, although the N, K and LLR estimators are even more negative. Although P I present a positive mean difference, all three estimators are negative as they are for the SENA, but they are not as negative. From Table 3.4 we see that training decreases the income of the adult male in 21% and 7% in the SENA and P respectively, and increases it in 24% in the Pr.

The results for adult females is similar to that for males in the case of SENA and Pr and worse in that of P. In this case, training decreases the income of the adult female in 23% and 9% in the SENA and P respectively, and increases it in 24% in the Pr.

11 Conclusions

This paper presents various matching estimators of the impact of job training programs in Colombia on the trainees, that is, to evaluate this impact we estimate the impact of the "treatment on the treated". We follow the methodology presented by Heckman, LaLonde and Smith (1999) concerning the way to get accurate estimates of propensity scores, a key step toward the impact estimates, and the matching estimators.

We find that along with standard socio economic background variables, recent labor force status transitions around the moment of enrollment in training play an important role in the estimation of the propensity scores. These variables are particularly important for women, and in our sample, for private institutions than for the public ones. When estimating impacts over samples of people who took training more than one year ago, we find that tenure, and in general, the number of months in current labor force status are also useful variables to include.

The matching estimates we obtain suggest that training in all institutions analyzed, namely SENA, public aggregate (including SENA) and private, job training increases the income of the youth who take it. The increment is larger for male youth than female youth, and is larger in the aggregate of the public institutions than it is in SENA.

The impact on the adults treated from SENA and public aggregate are negative according to the three estimators. Furthermore, the mean difference is negative, although the N, K and LLR estimators are even more negative. Training decreases the income of the adult male in 21% and 7% in the SENA and P respectively, and increases it in 24% in the Pr.

The results for adult females is similar in the case of SENA and private institutions, and worse in that of the aggregate of the public institutions. In this case, training decreases the income of the adult female in 23% and 9% in the SENA and the aggregate of public institutions respectively, and increases it in 24% in the private institutions.

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Table 1. Descriptive Statistics. Male Youth. All Data.

Variable	SENA **		Public **		Private **		Ever **	
	Coefficient	z	Coefficient	z	Coefficient	z	Coefficient	z
0 to 5 years of education	0,789	0,408	0,787	0,409	0,788	0,409	0,772	0,420
6 to 10 years of education	0,129	0,335	0,129	0,335	0,126	0,332	0,133	0,339
12 to 15 years of education	0,010	0,102	0,011	0,105	0,010	0,099	0,009	0,097
Age	17,5	2,5	17,5	2,5	17,5	2,5	17,6	2,5
Age2	311,3	87,7	311,4	87,7	312,1	88,0	316,2	89,6
Father´s education (1-5 years)	0,438	0,496	0,438	0,496	0,437	0,496	0,436	0,496
Father´s education (6-11 years)	0,240	0,427	0,241	0,428	0,238	0,426	0,242	0,428
Father´s education (more than 12 years)	0,090	0,286	0,090	0,286	0,094	0,292	0,096	0,294
Mother´s education (1-5 years)	0,509	0,500	0,509	0,500	0,502	0,500	0,507	0,500
Mother´s education (6-11 years)	0,253	0,435	0,254	0,435	0,260	0,439	0,254	0,435
Mother´s education (more than 12 years)	0,068	0,251	0,067	0,251	0,069	0,253	0,072	0,259
Regional unemployment rate	6,951	2,368	6,948	2,368	6,960	2,356	6,957	2,341
Living in urban area	0,693	0,461	0,693	0,461	0,697	0,459	0,705	0,456
Moved in last 5 years	0,846	0,361	0,845	0,362	0,848	0,359	0,847	0,360
Single	0,933	0,250	0,933	0,251	0,934	0,248	0,930	0,256
Caribbean*	0,262	0,440	0,261	0,439	0,263	0,440	0,249	0,433
Eastern*	0,147	0,354	0,148	0,355	0,147	0,354	0,149	0,357
Pacific*	0,174	0,380	0,174	0,379	0,173	0,378	0,174	0,379
Central*	0,130	0,336	0,130	0,336	0,128	0,334	0,131	0,337
Antioquia*	0,122	0,327	0,122	0,328	0,121	0,326	0,122	0,328
Orinoquia*	0,010	0,097	0,009	0,097	0,010	0,098	0,011	0,103
San Andrés*	0,001	0,038	0,001	0,038	0,001	0,038	0,001	0,039
Number of children under age 6	0,228	0,551	0,228	0,552	0,226	0,551	0,226	0,545
Number of people in household	5,629	2,343	5,625	2,342	5,610	2,344	5,573	2,326
Age at which worked for payment for first time	8,924	9,176	8,926	9,167	8,999	9,488	0,253	0,435

Source: Encuesta Nacional de Calidad de Vida 1997 (DANE)

*Regions over which the survey has statistical significance

** Institution to which attended relative to not Having Training. Ever: Attended to any institution before the last year.

1. Education dummy excluded : 11 years (completed high school)

2. Father education dummy excluded : No education

3. Mother education dummy excluded: No education

4. Regional dummy excluded: Bogota

Table 2. Descriptive Statistics. Adult Male. All Data.

Variable	SENA **		Public **		Private **		Ever **	
	Coefficient	z	Coefficient	z	Coefficient	z	Coefficient	z
0 to 5 years of education	0,621	0,485	0,618	0,486	0,609	0,488	0,532	0,499
6 to 10 years of education	0,231	0,421	0,231	0,422	0,231	0,421	0,240	0,427
12 to 15 years of education	0,024	0,154	0,025	0,156	0,028	0,166	0,046	0,209
More than 15 years of education	0,018	0,134	0,018	0,134	0,025	0,156	0,047	0,211
Age	36,3	9,2	36,2	9,2	36,2	9,1	36,8	9,1
Age2	1398,5	697,3	1396,4	696,5	1390,6	695,5	1436,1	700,3
Father's education (1-5 years)	0,486	0,500	0,487	0,500	0,489	0,500	0,493	0,500
Father's education (6-11 years)	0,080	0,272	0,082	0,274	0,083	0,276	0,101	0,302
Father's education (more than 12 years)	0,015	0,123	0,015	0,122	0,018	0,135	0,033	0,178
Mother's education (1-5 years)	0,535	0,499	0,536	0,499	0,536	0,499	0,547	0,498
Mother's education (6-11 years)	0,079	0,270	0,079	0,270	0,085	0,279	0,108	0,311
Mother's education (more than 12 years)	0,006	0,080	0,007	0,081	0,007	0,085	0,015	0,120
Regional unemployment rate	6,698	2,480	6,696	2,480	6,738	2,460	6,834	2,328
Living in urban area	0,646	0,478	0,646	0,478	0,655	0,475	0,703	0,457
Moved in last 5 years	0,603	0,489	0,603	0,489	0,603	0,489	0,588	0,492
Single	0,242	0,429	0,243	0,429	0,239	0,427	0,232	0,422
Caribbean*	0,242	0,428	0,241	0,428	0,243	0,429	0,218	0,413
Eastern*	0,169	0,374	0,170	0,376	0,165	0,371	0,165	0,371
Pacific*	0,190	0,393	0,191	0,393	0,187	0,390	0,192	0,394
Central*	0,133	0,340	0,133	0,340	0,130	0,336	0,128	0,335
Antioquia*	0,132	0,339	0,131	0,338	0,134	0,341	0,130	0,336
Orinoquia*	0,008	0,091	0,008	0,091	0,008	0,089	0,010	0,100
San Andrés*	0,002	0,047	0,002	0,046	0,002	0,046	0,002	0,047
Number of children under age 6	0,500	0,806	0,500	0,805	0,497	0,801	0,470	0,774
Number of people in household	4,955	2,323	4,955	2,319	4,924	2,317	4,840	2,258
Age at which worked for payment for first tim	14,576	6,993	14,577	6,968	14,691	6,950	0,671	0,470

Source: Encuesta Nacional de Calidad de Vida 1997 (DANE)

*Regions over which the survey has statistical significance

** Institution to which attended relative to not Having Training. Ever: Attended to any institution before the last year.

1. Education dummy escluded : 11 years (completed high school)

2. Father education dummy escluded : No education

3. Mother education dummy escluded: No education

4. Regional dummy escluded: Bogota

Table 3. Descriptive Statistics. Female Youth. All Data.

Variable	SENA **		Public **		Private **		Ever **	
	Coefficient	z	Coefficient	z	Coefficient	z	Coefficient	z
0 to 5 years of education	0,782	0,413	0,783	0,412	0,775	0,418	0,765	0,424
6 to 10 years of education	0,130	0,336	0,129	0,335	0,130	0,336	0,134	0,340
12 to 15 years of education	0,005	0,071	0,005	0,071	0,006	0,079	0,008	0,090
Age	17,4	2,5	17,4	2,5	17,5	2,5	17,6	2,6
Age2	310,5	90,0	310,8	90,2	311,3	90,2	315,6	91,6
Father's education (1-5 years)	0,447	0,497	0,447	0,497	0,444	0,497	0,444	0,497
Father's education (6-11 years)	0,239	0,427	0,239	0,426	0,239	0,427	0,241	0,428
Father's education (more than 12 years)	0,090	0,287	0,090	0,286	0,093	0,290	0,093	0,290
Mother's education (1-5 years)	0,526	0,499	0,526	0,499	0,525	0,499	0,527	0,499
Mother's education (6-11 years)	0,234	0,424	0,234	0,423	0,238	0,426	0,238	0,426
Mother's education (more than 12 years)	0,066	0,249	0,066	0,248	0,065	0,247	0,066	0,248
Regional unemployment rate	7,003	2,231	7,002	2,234	7,024	2,214	7,013	2,213
Living in urban area	0,740	0,439	0,740	0,439	0,747	0,435	0,746	0,435
Moved in last 5 years	0,809	0,393	0,808	0,394	0,813	0,390	0,809	0,393
Single	0,802	0,399	0,801	0,399	0,802	0,398	0,794	0,405
Caribbean*	0,225	0,418	0,225	0,418	0,228	0,420	0,220	0,414
Eastern*	0,171	0,376	0,170	0,376	0,168	0,374	0,173	0,378
Pacific*	0,176	0,381	0,176	0,381	0,174	0,379	0,177	0,382
Central*	0,121	0,326	0,121	0,327	0,120	0,325	0,126	0,331
Antioquia*	0,125	0,331	0,124	0,330	0,125	0,331	0,122	0,327
Orinoquia*	0,008	0,089	0,008	0,091	0,008	0,092	0,009	0,094
San Andrés*	0,002	0,044	0,002	0,044	0,002	0,042	0,002	0,044
Number of children under age 6	0,335	0,649	0,335	0,649	0,326	0,641	0,340	0,652
Number of people in household	5,402	2,352	5,404	2,361	5,380	2,351	5,376	2,346
Age at which worked for payment for first time	6,860	8,696	6,876	8,690	6,976	8,718	0,108	0,310

Source: Encuesta Nacional de Calidad de Vida 1997 (DANE)

*Regions over which the survey has statistical significance

** Institution to which attended relative to not Having Training. Ever: Attended to any institution before the last year.

1. Education dummy excluded : 11 years (completed high school)

2. Father education dummy excluded : No education

3. Mother education dummy excluded: No education

4. Regional dummy excluded: Bogota

Table 4. Descriptive Statistics. Adult Female. All Data.

Variable	SENA **		Public **		Private **		Ever **	
	Coefficient	z	Coefficient	z	Coefficient	z	Coefficient	z
0 to 5 years of education	0,620	0,486	0,618	0,486	0,602	0,490	0,548	0,498
6 to 10 years of education	0,215	0,411	0,215	0,411	0,213	0,409	0,226	0,418
12 to 15 years of education	0,034	0,182	0,034	0,182	0,041	0,198	0,048	0,215
More than 15 years of education	0,017	0,128	0,017	0,128	0,023	0,150	0,034	0,181
Age	36,7	9,4	36,7	9,4	36,6	9,4	36,9	9,2
Age2	1437,3	723,2	1435,1	722,7	1425,6	717,8	1444,4	708,0
Father´s education (1-5 years)	0,468	0,499	0,469	0,499	0,471	0,499	0,486	0,500
Father´s education (6-11 years)	0,082	0,275	0,083	0,275	0,091	0,287	0,102	0,303
Father´s education (more than 12 years)	0,024	0,154	0,024	0,154	0,024	0,154	0,027	0,162
Mother´s education (1-5 years)	0,542	0,498	0,543	0,498	0,542	0,498	0,556	0,497
Mother´s education (6-11 years)	0,097	0,296	0,097	0,296	0,107	0,309	0,121	0,326
Mother´s education (more than 12 years)	0,008	0,088	0,008	0,088	0,009	0,093	0,010	0,101
Regional unemployment rate	6,919	2,290	6,913	2,291	6,952	2,265	7,011	2,173
Living in urban area	0,722	0,448	0,722	0,448	0,729	0,445	0,758	0,428
Moved in last 5 years	0,543	0,498	0,543	0,498	0,549	0,498	0,533	0,499
Single	0,170	0,376	0,171	0,376	0,175	0,380	0,178	0,382
Caribbean*	0,215	0,411	0,214	0,410	0,216	0,412	0,202	0,402
Eastern*	0,155	0,362	0,157	0,364	0,152	0,359	0,157	0,364
Pacific*	0,189	0,391	0,188	0,391	0,186	0,389	0,188	0,391
Central*	0,135	0,342	0,136	0,343	0,134	0,340	0,134	0,341
Antioquia*	0,142	0,349	0,142	0,349	0,143	0,350	0,142	0,349
Orinoquia*	0,010	0,098	0,010	0,098	0,009	0,097	0,010	0,102
San Andrés*	0,002	0,045	0,002	0,046	0,002	0,042	0,002	0,046
Number of children under age 6	0,436	0,761	0,436	0,761	0,436	0,759	0,417	0,732
Number of people in household	4,948	2,202	4,946	2,198	4,948	2,195	4,843	2,153
Age at which worked for payment for first time	14,531	12,912	14,549	12,892	14,699	12,790	0,317	0,465

Source: Encuesta Nacional de Calidad de Vida 1997 (DANE)

*Regions over which the survey has statistical significance

** Institution to which attended relative to not Having Training. Ever: Attended to any institution before the last year.

1. Education dummy escluded : 11 years (completed high school)

2. Father education dummy escluded : No education

3. Mother education dummy escluded: No education

4. Regional dummy escluded: Bogota

Table 5. Coefficient Estimates and z Values from Participation Logit. Male Youth. All Data

Variable	SENA **		Public **		Private **		Ever **	
	Coefficient	z	Coefficient	z	Coefficient	z	Coefficient	z
0 to 5 years of education	-0,910	-1,644	-0,915	-1,779	-1,205	-2,889	-0,929	-3,512
6 to 10 years of education	-0,149	-0,274	-0,239	-0,478	-1,588	-2,772	-0,469	-1,550
12 to 15 years of education	1,200	1,234	1,645	1,966	-1,613	-1,416	-2,346	-2,712
Age	3,141	2,505	2,438	2,296	0,759	0,619	0,006	0,008
Age2	-0,081	-2,428	-0,063	-2,238	-0,014	-0,435	0,007	0,370
Father's education (1-5 years)	1,827	2,554	1,805	2,825	0,577	1,277	0,484	1,699
Father's education (6-11 years)	1,299	1,639	1,410	2,054	-1,123	-1,864	0,483	1,330
Father's education (more than 12 years)	0,000	0,000	0,047	0,036	-0,015	-0,023	0,744	1,552
Mother's education (1-5 years)	0,972	1,379	0,956	1,516	0,724	1,048	0,010	0,032
Mother's education (6-11 years)	1,002	1,296	1,051	1,565	2,250	3,257	-0,024	-0,060
Mother's education (more than 12 years)	-1,831	-1,448	-2,648	-2,096	1,307	1,465	0,264	0,480
Regional unemployment rate	0,097	1,183	0,040	0,514	-0,065	-0,554	0,039	0,384
Living in urban area	-0,014	-0,031	-0,054	-0,130	0,814	1,677	0,641	1,494
Moved in last 5 years	-0,189	-0,393	-0,612	-1,641	0,441	1,183	0,170	0,677
Single	-0,286	-0,411	-0,401	-0,675	0,523	0,805	0,082	0,241
Caribbean*	0,807	0,997	0,635	0,976	0,609	0,976	-0,944	-2,563
Eastern*	0,875	1,025	0,569	0,820	-0,106	-0,156	0,263	0,602
Pacific*	0,552	0,610	0,337	0,464	-0,348	-0,552	-0,188	-0,534
Central*	0,784	1,000	0,602	0,963	-0,471	-0,762	-0,002	-0,004
Antioquia*	0,081	0,087	0,273	0,374	-0,956	-1,476	-0,220	-0,646
Orinoquia*	0,000	0,000	0,000	0,000	-0,281	-0,323	0,806	1,793
San Andrés*	1,245	0,957	0,579	0,471	-0,950	-0,812	0,294	0,377
Number of children under age 6	-0,439	-1,078	-0,281	-0,836	-0,626	-1,166	0,030	0,164
Number of people in household	0,020	0,303	-0,001	-0,019	-0,136	-1,587	-0,105	-2,275
Worked at least for the last 12 months	-0,051	-1,281	0,000	0,000	0,000	0,000	0,181	0,793
Age at which worked for payment for first time	0,000	0,000	-0,045	-1,303	0,007	0,486	0,018	2,711
Constant	-36,038	-3,042	-27,995	-2,748	-13,205	-1,159	-5,245	-0,827

Source: Encuesta Nacional de Calidad de Vida 1997 (DANE)

*Regions over which the survey has statistical significance

** Institution to which attended relative to not Having Training. Ever: Attended to any institution before the last year.

1. Education dummy excluded : 11 years (completed high school)
2. Father education dummy excluded : No education
3. Mother education dummy excluded: No education
4. Regional dummy excluded: Bogota

Table 6. Coefficient Estimates and z Values from Participation Logit. Adult Male

Variable	SENA **		Public **		Private **		Ever **	
	Coefficient	z	Coefficient	z	Coefficient	z	Coefficient	z
0 to 5 years of education	-1,275	-3,005	-1,442	-3,932	-0,760	-2,567	-1,291	-9,927
6 to 10 years of education	-0,997	-2,499	-0,950	-2,875	-0,591	-2,087	-0,580	-4,486
12 to 15 years of education	0,684	1,288	0,501	1,128	1,058	2,937	0,543	2,594
More than 15 years of education	-0,687	-0,803	-0,918	-1,236	1,481	3,647	0,529	2,252
Age	0,355	2,628	0,259	2,347	0,057	0,635	0,111	2,565
Age2	-0,005	-2,615	-0,004	-2,417	-0,001	-1,056	-0,001	-1,794
Father's education (1-5 years)	-0,595	-1,534	-0,232	-0,656	0,059	0,267	0,058	0,557
Father's education (6-11 years)	0,111	0,194	0,474	1,034	-0,108	-0,326	0,258	1,473
Father's education (more than 12 years)	-0,323	-0,387	-0,325	-0,401	0,284	0,588	0,680	2,170
Mother's education (1-5 years)	0,625	1,597	0,488	1,278	0,565	2,310	0,384	3,617
Mother's education (6-11 years)	0,598	1,023	0,405	0,804	0,841	2,551	0,535	2,994
Mother's education (more than 12 years)	1,100	0,987	1,029	1,006	1,136	1,521	1,477	3,006
Regional unemployment rate	0,080	1,046	0,062	1,059	0,091	1,403	0,024	0,969
Living in urban area	-0,020	-0,064	-0,173	-0,613	0,501	1,989	0,408	3,591
Moved in last 5 years	-0,453	-1,752	-0,396	-1,803	-0,030	-0,159	-0,043	-0,501
Single	0,232	0,788	0,045	0,175	-0,821	-3,303	-0,134	-1,180
Caribbean*	0,576	0,768	0,472	0,790	-0,145	-0,458	-0,552	-3,507
Eastern*	0,269	0,315	0,963	1,465	-0,900	-1,983	0,087	0,488
Pacific*	0,593	0,803	0,715	1,225	-0,592	-1,970	-0,074	-0,491
Central*	0,889	1,112	0,895	1,446	-0,642	-1,946	0,001	0,005
Antioquia*	0,630	0,777	0,440	0,693	0,123	0,405	-0,084	-0,567
Orinoquia*	1,593	1,782	1,405	1,968	0,004	0,008	0,517	2,624
San Andrés*	1,220	1,442	0,882	1,278	-0,488	-0,863	-0,235	-0,945
Number of children under age 6	-0,022	-0,123	-0,029	-0,185	-0,212	-1,505	-0,039	-0,604
Number of people in household	-0,082	-1,129	-0,027	-0,487	-0,154	-2,952	-0,026	-1,323
Worked at least for the last 12 months	0,000	0,000	0,000	0,000	0,000	0,000	0,142	1,573
Age at which worked for payment for first time	-0,013	-0,525	-0,016	-0,805	0,018	2,948	0,012	2,457
Constant	-9,916	-3,926	-7,627	-3,741	-3,522	-2,026	-3,725	-4,308

Source: Encuesta Nacional de Calidad de Vida 1997 (DANE)

*Regions over which the survey has statistical significance

** Institution to which attended relative to not Having Training. Ever: Attended to any institution before the last year.

1. Education dummy excluded : 11 years (completed high school)

2. Father education dummy excluded : No education

3. Mother education dummy excluded: No education

4. Regional dummy excluded: Bogota

Table 7. Coefficient Estimates and z Values from Participation Logit. Female Youth. All Data

Variable	SENA **		Public **		Private **		Ever **	
	Coefficient	z	Coefficient	z	Coefficient	z	Coefficient	z
0 to 5 years of education	-1,566	-2,786	-1,069	-2,290	-1,546	-4,462	-0,717	-2,992
6 to 10 years of education	-1,378	-1,892	-1,636	-2,445	-1,303	-2,963	-0,559	-1,996
12 to 15 years of education	1,840	2,050	1,297	1,230	0,721	0,987	1,143	2,423
Age	2,347	1,601	0,973	0,900	0,254	0,325	0,938	1,416
Age2	-0,060	-1,496	-0,022	-0,746	-0,006	-0,282	-0,018	-1,035
Father's education (1-5 years)	1,306	1,704	0,467	1,130	-0,062	-0,157	0,057	0,254
Father's education (6-11 years)	0,714	0,907	0,170	0,346	-0,211	-0,439	0,195	0,665
Father's education (more than 12 years)	0,015	0,016	-0,999	-1,246	0,723	1,128	0,692	1,556
Mother's education (1-5 years)	0,215	0,292	-0,360	-0,812	0,207	0,385	0,546	2,091
Mother's education (6-11 years)	0,723	1,007	-0,214	-0,416	0,359	0,585	0,670	2,089
Mother's education (more than 12 years)	0,596	0,631	-0,486	-0,527	-0,975	-1,033	0,447	0,812
Regional unemployment rate	0,120	0,853	0,025	0,266	-0,039	-0,367	0,096	1,440
Living in urban area	-0,016	-0,026	-0,279	-0,579	1,085	2,551	0,000	0,000
Moved in last 5 years	-0,364	-0,658	-0,752	-1,961	0,675	1,748	0,121	0,540
Single	0,554	0,739	0,317	0,682	-0,002	-0,005	-0,058	-0,240
Caribbean*	0,675	0,613	-0,667	-0,929	0,483	0,937	0,064	0,181
Eastern*	1,671	1,378	-0,420	-0,603	-0,196	-0,343	0,991	2,537
Pacific*	1,056	0,850	-0,679	-0,892	-0,242	-0,501	0,593	1,614
Central*	0,654	0,563	-0,184	-0,289	0,096	0,187	1,062	3,189
Antioquia*	1,285	1,090	-0,524	-0,743	0,126	0,247	0,177	0,517
Orinoquia*	0,000	0,000	0,438	0,515	0,526	0,882	1,464	3,496
San Andrés*	2,944	1,963	0,976	1,142	-1,443	-1,215	1,331	2,451
Number of children under age 6	-0,066	-0,080	-0,144	-0,360	-1,310	-2,922	0,042	0,274
Number of people in household	-0,248	-2,645	-0,096	-0,695	-0,172	-2,588	-0,037	-0,935
Worked at least for the last 12 months	0,000	0,000	0,000	0,000	0,000	0,000	0,307	1,229
Age at which worked for payment for first time	-0,055	-1,788	-0,030	-1,132	0,016	1,176	0,020	2,770
Constant	-27,407	-2,103	-11,649	-1,186	-5,138	-0,735	-14,877	-2,409

Source: Encuesta Nacional de Calidad de Vida 1997 (DANE)

*Regions over which the survey has statistical significance

** Institution to which attended relative to not Having Training. Ever: Attended to any institution before the last year.

1. Education dummy excluded : 11 years (completed high school)

2. Father education dummy excluded : No education

3. Mother education dummy excluded: No education

4. Regional dummy excluded: Bogota

Table 8. Coefficient Estimates and z Values from Participation Logit. Adult Female. All Data

Variable	SENA **		Public **		Private **		Ever **	
	Coefficient	z	Coefficient	z	Coefficient	z	Coefficient	z
0 to 5 years of education	-2,031	-4,312	-1,630	-4,514	-1,390	-4,989	-1,179	-9,271
6 to 10 years of education	-1,219	-3,016	-1,134	-3,323	-0,949	-3,723	-0,529	-4,524
12 to 15 years of education	0,479	0,988	0,313	0,731	0,709	2,444	0,199	1,081
More than 15 years of education	-4,460	-3,985	-2,669	-2,718	1,037	3,017	0,609	2,866
Age	-0,165	-1,012	-0,096	-0,752	0,143	1,578	0,204	4,963
Age2	0,001	0,558	0,000	0,229	-0,002	-1,930	-0,002	-4,616
Father's education (1-5 years)	-0,226	-0,615	-0,040	-0,144	0,155	0,666	0,149	1,485
Father's education (6-11 years)	-0,072	-0,128	0,183	0,422	0,458	1,426	0,360	2,331
Father's education (more than 12 years)	1,529	1,635	1,518	1,891	-0,556	-1,086	-0,232	-0,792
Mother's education (1-5 years)	0,373	0,851	0,357	1,138	0,254	0,996	0,313	2,936
Mother's education (6-11 years)	-0,660	-1,045	-0,761	-1,503	0,478	1,444	0,371	2,429
Mother's education (more than 12 years)	0,411	0,256	0,109	0,085	1,587	2,461	1,273	2,631
Regional unemployment rate	0,066	0,430	0,001	0,007	0,082	1,578	0,062	2,442
Living in urban area	0,998	1,801	0,318	0,892	0,035	0,153	0,232	2,100
Moved in last 5 years	-0,588	-1,797	-0,433	-1,720	0,255	1,396	-0,060	-0,726
Single	-0,119	-0,328	-0,090	-0,312	0,036	0,174	0,046	0,431
Caribbean*	-0,635	-1,089	-0,564	-1,115	-0,473	-1,579	-0,296	-1,905
Eastern*	1,062	1,587	1,118	2,297	0,130	0,360	0,508	3,155
Pacific*	-0,196	-0,328	-0,249	-0,507	-0,560	-2,019	0,095	0,666
Central*	-0,473	-0,783	0,213	0,459	-0,484	-1,526	0,138	0,964
Antioquia*	0,210	0,404	0,098	0,214	-0,074	-0,252	0,078	0,577
Orinoquia*	0,805	0,969	0,856	1,396	0,074	0,170	0,585	2,963
San Andrés*	3,164	3,982	2,427	4,488	-0,394	-0,750	0,467	2,118
Number of children under age 6	-0,346	-1,478	-0,294	-1,669	-0,016	-0,130	0,018	0,293
Number of people in household	0,053	1,026	0,023	0,533	0,030	0,869	-0,043	-2,239
Worked at least for the last 12 months	0,000	0,000	0,000	0,000	0,000	0,000	0,182	2,118
Age at which worked for payment for first ti	0,003	0,329	0,009	1,363	0,012	2,308	0,013	4,679
Constant	-0,579	-0,181	-0,653	-0,266	-5,323	-3,106	-5,499	-6,804

Source: Encuesta Nacional de Calidad de Vida 1997 (DANE)

*Regions over which the survey has statistical significance

** Institution to which attended relative to not Having Training. Ever: Attended to any institution before the last year.

1. Education dummy excluded : 11 years (completed high school)

2. Father education dummy excluded : No education

3. Mother education dummy excluded: No education

4. Regional dummy excluded: Bogota

Table 9. Coefficient Estimates and z Values from Participation Logit. Male Youth. People Who Worked for the Last 12 Months

Variable	SENA **		Public **		Private **		Ever **	
	Coefficient	z	Coefficient	z	Coefficient	z	Coefficient	z
0 to 5 years of education	-0,810	-0,579	-1,311	-1,061	-1,277	-1,740	-1,515	-3,231
6 to 10 years of education	0,991	0,724	-0,142	-0,107	-1,336	-1,411	-1,595	-2,677
12 to 15 years of education	3,490	1,644	3,084	1,704	-2,308	-1,305	0,000	0,000
Age	0,344	0,173	-0,250	-0,120	-2,719	-1,375	-2,048	-1,906
Age2	-0,007	-0,132	0,009	0,151	0,083	1,594	0,062	2,143
Father's education (1-5 years)	-0,244	-0,265	0,083	0,075	0,356	0,459	-0,508	-1,236
Father's education (6-11 years)	-1,012	-0,716	-0,418	-0,356	-0,959	-0,937	-0,172	-0,274
Father's education (more than 12 years)	0,000	0,000	0,000	0,000	-0,265	-0,178	-0,090	-0,088
Mother's education (1-5 years)	16,957	0,937	17,415	18,524	0,957	0,787	1,213	2,149
Mother's education (6-11 years)	18,515	1,039	18,676	.	2,772	2,179	1,498	2,239
Mother's education (more than 12 years)	0,000	0,000	0,000	0,000	4,228	2,287	3,261	2,429
Regional unemployment rate	0,134	0,629	-0,119	-0,366	-0,476	-2,300	-0,373	-1,698
Living in urban area	1,000	0,869	1,384	0,832	2,757	2,748	2,099	2,206
Moved in last 5 years	0,540	0,410	-1,177	-1,401	-0,271	-0,330	0,291	0,653
Single	1,711	1,096	-0,128	-0,132	1,501	1,558	0,691	1,390
Caribbean*	18,690	.	1,833	1,516	0,491	0,455	-0,720	-1,011
Eastern*	19,926	12,417	0,949	0,589	-0,467	-0,378	-0,710	-0,861
Pacific*	0,000	0,000	0,000	0,000	-0,425	-0,442	0,009	0,014
Central*	19,621	17,179	2,010	1,364	-0,376	-0,325	-0,689	-0,949
Antioquia*	18,895	16,038	1,141	0,714	-0,964	-0,922	-0,421	-0,576
Orinoquia*	0,000	0,000	0,000	0,000	0,000	0,000	-0,838	-0,770
San Andrés*	0,000	0,000	0,000	0,000	-0,348	-0,194	0,000	0,000
Number of children under age 6	0,472	0,820	0,034	0,055	-0,004	-0,006	0,208	0,835
Number of people in household	0,083	0,946	0,058	0,547	-0,034	-0,368	-0,098	-1,254
Age at which worked for payment for first time	0,010	0,862	-0,005	-0,233	-0,011	-0,443	0,007	0,680
Constant	-48,281	.	-20,107	-1,008	17,758	0,973	15,241	1,560

Source: Encuesta Nacional de Calidad de Vida 1997 (DANE)

*Regions over which the survey has statistical significance

** Institution to which attended relative to not Having Training. Ever: Attended to any institution before the last year.

1. Education dummy excluded : 11 years (completed high school)

2. Father education dummy excluded : No education

3. Mother education dummy excluded: No education

4. Regional dummy excluded: Bogota

Table 10. Coefficient Estimates and z Values from Participation Logit. Adult Male. People Who Worked for the Last 12 Months

Variable	SENA **		Public **		Private **		Ever **	
	Coefficient	z	Coefficient	z	Coefficient	z	Coefficient	z
0 to 5 years of education	-1,048	-1,808	-1,243	-2,574	-0,729	-1,974	-1,259	-7,812
6 to 10 years of education	-0,626	-1,105	-0,644	-1,442	-0,589	-1,691	-0,584	-3,602
12 to 15 years of education	0,962	1,437	0,751	1,232	0,990	2,300	0,322	1,287
More than 15 years of education	-0,166	-0,131	-0,456	-0,448	1,544	3,298	0,555	1,918
Age	0,399	2,281	0,339	2,364	-0,008	-0,084	0,093	1,718
Age2	-0,005	-2,349	-0,005	-2,468	0,000	-0,214	-0,001	-1,093
Father's education (1-5 years)	-0,705	-1,478	-0,687	-1,722	0,199	0,711	0,073	0,595
Father's education (6-11 years)	-0,216	-0,228	0,197	0,301	0,003	0,008	0,248	1,138
Father's education (more than 12 years)	0,116	0,088	-0,109	-0,092	0,831	1,383	0,634	1,782
Mother's education (1-5 years)	0,511	1,058	0,729	1,784	0,468	1,582	0,416	3,330
Mother's education (6-11 years)	-0,087	-0,098	0,174	0,250	0,563	1,445	0,635	2,971
Mother's education (more than 12 years)	0,000	0,000	0,000	0,000	0,000	0,000	1,397	2,076
Regional unemployment rate	0,069	0,714	0,044	0,607	0,073	1,023	0,002	0,068
Living in urban area	0,198	0,511	-0,175	-0,522	0,760	2,399	0,501	3,718
Moved in last 5 years	-0,608	-2,043	-0,664	-2,552	-0,084	-0,377	-0,075	-0,724
Single	-0,217	-0,451	-0,202	-0,514	-0,480	-1,641	-0,126	-0,859
Caribbean*	0,391	0,447	-0,021	-0,031	0,148	0,395	-0,310	-1,606
Eastern*	0,287	0,289	0,543	0,751	-0,980	-1,713	0,100	0,473
Pacific*	0,250	0,290	0,185	0,278	-0,308	-0,863	0,098	0,526
Central*	0,763	0,853	0,636	0,929	-0,704	-1,681	0,098	0,516
Antioquia*	0,421	0,456	0,106	0,145	0,313	0,870	0,110	0,596
Orinoquia*	0,852	0,769	0,479	0,517	-0,291	-0,401	0,296	1,174
San Andrés*	1,118	1,170	0,579	0,753	-0,084	-0,131	-0,121	-0,404
Number of children under age 6	-0,014	-0,069	-0,087	-0,531	-0,194	-1,137	-0,070	-0,897
Number of people in household	-0,122	-1,128	-0,068	-0,837	-0,147	-2,305	-0,036	-1,457
Age at which worked for payment for first time	-0,057	-1,582	-0,024	-0,962	0,020	2,881	0,014	2,690
Constant	-9,685544	-2,887	-8,234084	-2,974	-2,878142	-1,512	-3,302057	-3,019

Source: Encuesta Nacional de Calidad de Vida 1997 (DANE)

*Regions over which the survey has statistical significance

** Institution to which attended relative to not Having Training. Ever: Attended to any institution before the last year.

1. Education dummy excluded : 11 years (completed high school)

2. Father education dummy excluded : No education

3. Mother education dummy excluded: No education

4. Regional dummy excluded: Bogota

Table 11. Coefficient Estimates and z Values from Participation Logit. Female Youth. People Who Worked for the Last 12 Months

Variable	SENA **		Public **		Private **		Ever **	
	Coefficient	z	Coefficient	z	Coefficient	z	Coefficient	z
0 to 5 years of education	-3,364	-3,814	120,020	30,307	-0,863	-0,730	-0,541	-0,846
6 to 10 years of education	-1,575	-2,056	83,366	27,567	0,000	0,000	-2,547	-2,450
12 to 15 years of education	0,663	0,972	15,207	5,526	1,032	0,685	1,105	1,297
Age	-0,388	-1,371	887,692	34,301	26,377	2,283	5,555	1,659
Age2	0,004	1,196	-21,742	-33,981	-0,648	-2,264	-0,133	-1,557
Father's education (1-5 years)	0,195	0,299	-114,470	-27,148	0,734	0,450	0,263	0,424
Father's education (6-11 years)	-1,243	-1,183	0,000	0,000	0,421	0,197	0,078	0,091
Father's education (more than 12 years)	0,000	0,000	0,000	0,000	0,000	0,000	3,384	2,090
Mother's education (1-5 years)	-0,080	-0,104	-25,558	-19,335	-1,455	-0,864	1,877	2,675
Mother's education (6-11 years)	-1,799	-1,745	0,000	0,000	-0,698	-0,396	2,266	2,544
Mother's education (more than 12 years)	2,400	1,202	0,000	0,000	0,000	0,000	0,000	0,000
Regional unemployment rate	-0,208	-0,507	-15,899	-14,627	0,576	1,456	0,182	0,855
Living in urban area	1,181	1,107	0,000	0,000	0,000	0,000	0,891	1,162
Moved in last 5 years	-0,615	-1,171	24,367	7,797	-0,251	-0,217	-0,205	-0,381
Single	-0,470	-0,895	-42,178	-18,070	-2,007	-2,165	-0,469	-0,678
Caribbean*	0,936	0,779	0,000	0,000	0,000	0,000	-0,307	-0,296
Eastern*	0,643	0,401	0,000	0,000	0,000	0,000	0,587	0,562
Pacific*	1,244	1,077	0,000	0,000	-0,248	-0,217	1,424	1,629
Central*	0,000	0,000	0,000	0,000	0,365	0,296	0,931	0,892
Antioquia*	1,111	0,884	108,115	22,934	-1,130	-0,527	0,164	0,190
Orinoquia*	1,672	1,133	0,000	0,000	1,666	1,025	2,618	2,341
San Andrés*	2,414	1,271	0,000	0,000	0,000	0,000	2,917	2,012
Number of children under age 6	0,505	1,186	0,000	0,000	-1,168	-1,453	0,407	1,141
Number of people in household	0,008	0,074	-10,621	-15,398	-0,554	-2,650	0,080	0,725
Age at which worked for payment for first time	-0,038	-0,907	0,466	14,109	0,011	0,487	0,021	1,516
Constant	5,535	0,843	-8916,058	-34,508	-268,326	-2,326	-63,475	-1,941

Source: Encuesta Nacional de Calidad de Vida 1997 (DANE)

*Regions over which the survey has statistical significance

** Institution to which attended relative to not Having Training. Ever: Attended to any institution before the last year.

1. Education dummy excluded : 11 years (completed high school)

2. Father education dummy excluded : No education

3. Mother education dummy excluded: No education

4. Regional dummy excluded: Bogota

Table 12. Coefficient Estimates and z Values from Participation Logit. Adult Female. People Who Worked for the Last 12 Months

Variable	SENA **		Public **		Private **		Ever **	
	Coefficient	z	Coefficient	z	Coefficient	z	Coefficient	z
0 to 5 years of education	0,000	0,000	-1,614	-2,433	-1,179	-2,897	-1,149	-5,420
6 to 10 years of education	0,000	0,000	-0,882	-1,538	-1,394	-3,111	-0,686	-3,439
12 to 15 years of education	0,000	0,000	0,312	0,508	0,970	2,322	-0,011	-0,038
More than 15 years of education	0,000	0,000	0,000	0,000	1,281	2,745	0,288	0,935
Age	0,000	0,000	-0,105	-0,455	0,234	1,667	0,286	4,010
Age2	0,000	0,000	0,001	0,173	-0,003	-1,799	-0,004	-3,894
Father's education (1-5 years)	0,000	0,000	0,317	0,708	0,161	0,480	0,164	1,013
Father's education (6-11 years)	0,000	0,000	-0,393	-0,491	0,229	0,501	0,539	2,244
Father's education (more than 12 years)	0,000	0,000	0,389	0,267	-0,695	-0,988	0,305	0,717
Mother's education (1-5 years)	0,000	0,000	0,283	0,570	0,173	0,458	0,366	2,186
Mother's education (6-11 years)	0,000	0,000	-1,035	-1,292	0,622	1,280	0,568	2,265
Mother's education (more than 12 years)	0,000	0,000	1,715	1,370	1,381	1,198	1,879	2,066
Regional unemployment rate	0,000	0,000	-0,149	-0,846	0,068	0,677	-0,005	-0,097
Living in urban area	0,000	0,000	0,255	0,393	-0,318	-0,947	0,158	0,791
Moved in last 5 years	0,000	0,000	-0,049	-0,116	0,294	1,093	0,170	1,207
Single	0,000	0,000	-0,399	-0,872	-0,162	-0,519	-0,033	-0,199
Caribbean*	0,000	0,000	1,212	1,281	-0,272	-0,666	0,045	0,177
Eastern*	0,000	0,000	1,447	1,329	-0,467	-0,801	0,671	2,478
Pacific*	0,000	0,000	0,697	0,681	-1,087	-2,661	0,378	1,647
Central*	0,000	0,000	0,431	0,391	-0,952	-1,905	0,453	1,877
Antioquia*	0,000	0,000	0,950	0,957	-0,691	-1,493	0,421	1,807
Orinoquia*	0,000	0,000	1,552	1,490	0,106	0,156	0,384	1,111
San Andrés*	0,000	0,000	2,030	1,840	-0,608	-0,753	0,362	0,990
Number of children under age 6	0,000	0,000	0,009	0,027	-0,120	-0,557	-0,097	-0,802
Number of people in household	0,000	0,000	-0,094	-1,082	0,157	3,271	-0,035	-1,052
Age at which worked for payment for first time	0,000	0,000	0,001	0,115	-0,004	-0,465	0,001	0,139
Constant	0	0	0,3562662	0,075	-6,552763	-2,422	-6,251051	-4,363

Source: Encuesta Nacional de Calidad de Vida 1997 (DANE)

*Regions over which the survey has statistical significance

** Institution to which attended relative to not Having Training. Ever: Attended to any institution before the last year.

1. Education dummy excluded : 11 years (completed high school)

2. Father education dummy excluded : No education

3. Mother education dummy excluded: No education

4. Regional dummy excluded: Bogota

Table 13. Coefficient Estimates and z Values from Participation Logit. Male Youth. People Earning less than 2 Minimum Wages.

Variable	SENA **		Public **		Private **		Ever **	
	Coefficient	z	Coefficient	z	Coefficient	z	Coefficient	z
0 to 5 years of education	-0,875	-1,556	-0,883	-1,692	-1,286	-3,021	-0,817	-2,987
6 to 10 years of education	-0,098	-0,174	-0,196	-0,380	-2,014	-3,247	-0,390	-1,251
12 to 15 years of education	0,567	0,499	1,404	1,505	-1,388	-1,161	-2,059	-2,318
Age	3,393	2,634	2,545	2,377	1,063	0,843	-0,257	-0,360
Age2	-0,088	-2,556	-0,066	-2,314	-0,023	-0,698	0,014	0,738
Father's education (1-5 years)	1,771	2,428	1,730	2,645	0,495	1,079	0,739	2,626
Father's education (6-11 years)	1,271	1,606	1,366	1,992	-1,158	-1,913	0,672	1,807
Father's education (more than 12 years)	0,975	1,382	0,006	0,004	-0,288	-0,419	1,054	2,172
Mother's education (1-5 years)	1,028	1,330	0,962	1,520	0,652	0,918	-0,038	-0,117
Mother's education (6-11 years)	-1,804	-1,422	1,074	1,601	2,290	3,272	-0,096	-0,231
Mother's education (more than 12 years)	0,117	1,422	-2,615	-2,077	1,500	1,688	0,204	0,358
Regional unemployment rate	-0,062	-0,137	0,054	0,691	-0,087	-0,736	0,041	0,412
Living in urban area	-0,191	-0,394	-0,090	-0,212	0,777	1,543	0,551	1,291
Moved in last 5 years	-0,341	-0,497	-0,617	-1,640	0,716	1,802	0,130	0,516
Single	0,639	0,775	-0,451	-0,767	0,258	0,390	-0,054	-0,152
Caribbean*	0,887	1,055	0,449	0,677	0,726	1,088	-0,879	-2,295
Eastern*	0,494	0,544	0,538	0,778	-0,237	-0,329	0,198	0,436
Pacific*	0,650	0,817	0,262	0,361	-0,231	-0,344	-0,076	-0,206
Central*	0,020	0,022	0,457	0,722	-0,345	-0,514	0,135	0,366
Antioquia*	1,294	0,989	0,185	0,253	-1,206	-1,623	-0,143	-0,398
Orinoquia*	-0,411	-1,014	0,571	0,464	-0,161	-0,179	0,965	2,073
San Andrés*	0,008	0,121	-0,257	-0,764	-0,986	-0,822	0,528	0,677
Number of children under age 6	-0,051	-1,280	-0,011	-0,175	-0,594	-1,086	-0,074	-0,370
Number of people in household	-38,239	-3,123	-0,045	-1,292	-0,153	-1,750	-0,112	-2,296
Age at which worked for payment for first time	0,000	0,000	-28,844	-2,785	0,009	0,604	0,134	0,569
Constant	0,000	0,000	0,000	0,000	-15,267	-1,296	0,017	2,622

Source: Encuesta Nacional de Calidad de Vida 1997 (DANE)

*Regions over which the survey has statistical significance

** Institution to which attended relative to not Having Training. Ever: Attended to any institution before the last year.

*** Dummy takes value of 1 if individual did not answer the number of months in his current labor force status

(Employed, Unemployed or OLF)

1. Education dummy excluded : 11 years (completed high school)

2. Father education dummy excluded : No education

3. Mother education dummy excluded: No education

4. Regional dummy excluded: Bogota

5. Labor Status Transition dummy excluded: Employed_Employed

Table 14. Coefficient Estimates and z Values from Participation Logit. Adult Male. People Earning less than 2 Minimum W

Variable	SENA **		Public **		Private **		Ever **	
	Coefficient	z	Coefficient	z	Coefficient	z	Coefficient	z
0 to 5 years of education	-1,272	-2,770	-1,584	-3,905	-0,529	-1,266	-1,435	-9,153
6 to 10 years of education	-1,281	-2,912	-1,251	-3,138	-0,430	-1,023	-0,606	-3,901
12 to 15 years of education	0,968	1,656	0,645	1,223	1,277	2,332	0,647	2,420
More than 15 years of education	-0,864	-0,749	-1,318	-1,154	2,576	3,948	-0,065	-0,168
Age	0,403	2,432	0,291	2,177	0,180	1,509	0,117	2,316
Age2	-0,006	-2,500	-0,004	-2,272	-0,003	-1,794	-0,001	-1,602
Father's education (1-5 years)	-0,651	-1,488	-0,298	-0,776	0,204	0,753	0,012	0,106
Father's education (6-11 years)	0,006	0,010	-0,048	-0,093	-0,405	-0,901	0,297	1,442
Father's education (more than 12 years)	-0,386	-0,434	-0,382	-0,441	0,512	0,756	0,959	2,249
Mother's education (1-5 years)	0,492	1,125	0,537	1,238	0,963	3,154	0,411	3,400
Mother's education (6-11 years)	0,916	1,470	0,753	1,322	1,059	2,245	0,338	1,569
Mother's education (more than 12 years)	1,286	1,056	1,224	1,049	1,882	2,121	1,112	1,584
Regional unemployment rate	0,076	0,967	0,041	0,643	0,071	0,987	0,014	0,503
Living in urban area	-0,083	-0,244	-0,163	-0,517	0,348	1,111	0,306	2,341
Moved in last 5 years	-0,237	-0,807	-0,319	-1,273	0,427	1,643	0,016	0,155
Single	0,011	0,035	-0,156	-0,533	-0,715	-2,268	-0,184	-1,449
Caribbean*	0,232	0,262	0,096	0,147	-0,264	-0,586	-0,811	-4,252
Eastern*	-0,479	-0,457	0,317	0,408	-1,747	-2,702	-0,115	-0,568
Pacific*	0,329	0,370	0,344	0,529	-1,145	-2,561	-0,308	-1,647
Central*	0,607	0,634	0,509	0,743	-0,570	-1,286	-0,151	-0,823
Antioquia*	0,027	0,027	-0,260	-0,357	-0,220	-0,499	-0,338	-1,906
Orinoquia*	1,090	0,926	0,904	1,045	-2,210	-1,943	0,251	1,096
San Andrés*	0,759	0,732	0,477	0,598	-0,229	-1,214	-0,699	-2,284
Number of children under age 6	-0,198	-0,849	-0,087	-0,465	-0,157	-2,367	-0,067	-0,894
Number of people in household	-0,079	-1,011	-0,016	-0,274	0,016	2,267	-0,017	-0,791
Age at which worked for payment for first time	-0,003	-0,171	-0,011	-0,524	-6,184	-2,748	0,022	0,217
Constant	-10,060	-3,497	-7,462	-3,183	0,000	0,000	0,007	1,213

Source: Encuesta Nacional de Calidad de Vida 1997 (DANE)

*Regions over which the survey has statistical significance

** Institution to which attended relative to not Having Training. Ever: Attended to any institution before the last year.

*** Dummy takes value of 1 if individual did not answer the number of months in his current labor force status

(Employed, Unemployed or OLF)

1. Education dummy excluded : 11 years (completed high school)
2. Father education dummy excluded : No education
3. Mother education dummy excluded: No education
4. Regional dummy excluded: Bogota
5. Labor Status Transition dummy excluded: Employed_Employed

Table 15. Coefficient Estimates and z Values from Participation Logit. Female Youth. People Earning less than 2 Minimum Wages.

Variable	SENA **		Public **		Private **		Ever **	
	Coefficient	z	Coefficient	z	Coefficient	z	Coefficient	z
0 to 5 years of education	-1,590	-2,783	-1,066	-2,264	-1,631	-4,672	-0,717	-2,904
6 to 10 years of education	-1,364	-1,883	-1,611	-2,408	-1,305	-2,967	-0,540	-1,879
12 to 15 years of education	1,573	1,544	1,203	1,017	-0,211	-0,191	1,162	2,290
Age	2,518	1,657	0,999	0,916	0,339	0,423	0,984	1,464
Age2	-0,065	-1,551	-0,023	-0,757	-0,009	-0,395	-0,020	-1,095
Father's education (1-5 years)	1,563	1,743	0,536	1,256	-0,182	-0,458	0,091	0,401
Father's education (6-11 years)	0,992	1,085	0,255	0,510	-0,300	-0,623	0,184	0,609
Father's education (more than 12 years)	0,291	0,285	-0,974	-1,215	0,755	1,160	0,700	1,523
Mother's education (1-5 years)	0,155	0,210	-0,406	-0,917	0,332	0,592	0,518	1,975
Mother's education (6-11 years)	0,681	0,953	-0,224	-0,439	0,395	0,609	0,579	1,778
Mother's education (more than 12 years)	0,544	0,567	-0,541	-0,577	-0,918	-0,953	0,420	0,756
Regional unemployment rate	0,121	0,851	0,021	0,224	-0,034	-0,316	0,101	1,516
Living in urban area	-0,071	-0,114	-0,308	-0,635	1,059	2,481	0,011	0,044
Moved in last 5 years	-0,399	-0,696	-0,792	-2,062	0,606	1,562	0,156	0,677
Single	0,742	0,955	0,423	0,891	0,052	0,133	-0,050	-0,203
Caribbean*	0,611	0,549	-0,733	-1,037	0,527	0,981	0,012	0,034
Eastern*	1,609	1,276	-0,509	-0,719	-0,134	-0,220	0,977	2,440
Pacific*	0,946	0,747	-0,778	-1,030	-0,188	-0,373	0,533	1,386
Central*	0,573	0,488	-0,261	-0,414	0,166	0,310	1,052	3,082
Antioquia*	1,082	0,888	-0,715	-0,982	0,194	0,366	0,169	0,484
Orinoquia*	2,817	1,832	0,372	0,433	0,626	1,008	1,405	3,248
San Andrés*	0,012	0,014	0,842	0,984	-1,404	-1,166	1,336	2,403
Number of children under age 6	-0,284	-3,115	-0,110	-0,278	-1,445	-3,051	0,070	0,458
Number of people in household	-0,055	-1,758	-0,108	-0,754	-0,171	-2,533	-0,037	-0,921
Age at which worked for payment for first time	-28,996	-2,153	-0,028	-1,067	0,017	1,183	0,291	1,092
Constant	0,000	0,000	-11,839	-1,196	-5,792	-0,815	0,007	0,009

Source: Encuesta Nacional de Calidad de Vida 1997 (DANE)

*Regions over which the survey has statistical significance

** Institution to which attended relative to not Having Training. Ever: Attended to any institution before the last year.

*** Dummy takes value of 1 if individual did not answer the number of months in his current labor force status

(Employed, Unemployed or OLF)

1. Education dummy excluded : 11 years (completed high school)

2. Father education dummy excluded : No education

3. Mother education dummy excluded: No education

4. Regional dummy excluded: Bogota

5. Labor Status Transition dummy excluded: Employed_Employed

Table 16. Coefficient Estimates and z Values from Participation Logit. Adult Female. People Earning less than 2 Minimum Wages.

Variable	SENA **		Public **		Private **		Ever **	
	Coefficient	z	Coefficient	z	Coefficient	z	Coefficient	z
0 to 5 years of education	-1,573	-2,928	-1,260	-3,096	0,000	0,000	-1,212	-9,052
6 to 10 years of education	-0,721	-1,637	-0,709	-1,873	-1,360	-4,343	-0,447	-3,654
12 to 15 years of education	0,947	1,641	0,796	1,604	-0,883	-3,249	0,192	0,910
More than 15 years of education	-3,406	-2,718	-1,546	-1,372	0,095	0,262	1,156	3,829
Age	-0,131	-0,757	-0,078	-0,582	1,043	1,989	0,196	4,510
Age2	0,001	0,301	0,000	0,086	0,123	1,185	-0,002	-4,143
Father's education (1-5 years)	-0,280	-0,685	-0,042	-0,142	-0,002	-1,627	0,115	1,090
Father's education (6-11 years)	-0,002	-0,003	-0,045	-0,090	0,170	0,706	0,368	2,168
Father's education (more than 12 years)	1,731	1,749	1,689	2,051	0,574	1,655	-0,411	-1,180
Mother's education (1-5 years)	0,440	0,901	0,369	1,109	-0,159	-0,236	0,268	2,410
Mother's education (6-11 years)	-0,300	-0,456	-0,467	-0,897	0,084	0,331	0,253	1,532
Mother's education (more than 12 years)	0,436	0,225	0,001	0,001	0,322	0,905	1,081	1,906
Regional unemployment rate	0,088	0,600	0,010	0,132	1,212	1,262	0,064	2,512
Living in urban area	0,815	1,415	0,173	0,474	0,077	1,457	0,175	1,536
Moved in last 5 years	-0,160	-0,466	-0,247	-0,933	-0,019	-0,080	-0,063	-0,718
Single	0,107	0,289	0,076	0,260	0,225	1,082	0,063	0,558
Caribbean*	-0,479	-0,729	-0,458	-0,832	-0,020	-0,086	-0,318	-1,894
Eastern*	1,039	1,457	0,970	1,863	-0,360	-1,029	0,509	2,968
Pacific*	-0,291	-0,405	-0,342	-0,616	0,089	0,216	0,079	0,510
Central*	-0,139	-0,219	0,302	0,607	-0,394	-1,219	0,257	1,695
Antioquia*	0,204	0,344	0,052	0,103	-0,227	-0,618	-0,009	-0,057
Orinoquia*	0,625	0,667	0,477	0,675	0,045	0,132	0,573	2,779
San Andrés*	3,250	4,012	2,404	4,298	0,174	0,366	0,425	1,791
Number of children under age 6	-0,319	-1,238	-0,300	-1,590	-0,803	-1,149	0,041	0,633
Number of people in household	0,030	0,473	0,016	0,330	0,081	0,630	-0,036	-1,807
Age at which worked for payment for first time	0,004	0,363	0,008	1,180	0,002	0,052	0,051	0,543
Constant	-1,896	-0,592	-1,391	-0,560	0,014	2,454	0,014	5,120

Source: Encuesta Nacional de Calidad de Vida 1997 (DANE)

*Regions over which the survey has statistical significance

** Institution to which attended relative to not Having Training. Ever: Attended to any institution before the last year.

*** Dummy takes value of 1 if individual did not answer the number of months in his current labor force status

(Employed, Unemployed or OLF)

1. Education dummy excluded : 11 years (completed high school)

2. Father education dummy excluded : No education

3. Mother education dummy excluded: No education

4. Regional dummy excluded: Bogota

5. Labor Status Transition dummy excluded: Employed_Employed

**Table 17. Simple Average Nearest Neighbor and Kernel Estimators
All Data**

Demographic Group	Institution	Nearest Neighbor		Kernel										
		5	10	5	10									
Adult Male	SENA													
	Public	594 (56.978)	-4.834 (46.699)	3.986 (76.185)	7.007 (74.826)	-0,01	0,10	-0,05	-0,09					
	Private	203.538 (51.441)	201.231 (52.909)	201.881 (48.704)	202.731 (52.315)	-3,96	-3,80	-4,15	-3,88					
	Ever	201.061 (131.833)	196.105 (137.718)	210.796 (122.206)	204.807 (127.206)	-1,53	-1,42	-1,72	-1,61					
Adult Female	SENA	79.987 (165.014)	69.235 (174.552)	75.210 (198.854)	50.909 (250.948)	-0,48	-0,40	-0,38	-0,20					
	Public	30.107 (58.899)	23.825 (53.861)	37.225 (56.222)	33.366 (59.382)	-0,51	-0,44	-0,66	-0,56					
	Private	-100.630 (79.425)	-103.963 (89.118)	-85.177 (87.105)	-100.773 (82.139)	1,27	1,17	0,98	1,23					
	Ever	81.094 (26.745)	74.932 (27.855)	86.090 (28.279)	84.458 (30.515)	-3,03	-2,69	-3,04	-2,77					
Male Youth	SENA	-9.739 (26.362)	768 (29.501)	-8.741 (23.324)	-7.627 (22.626)	0,37	-0,03	0,37	0,34					
	Public	19.521 (50.085)	17.404 (51.784)	25.256 (69.882)	26.306 (68.240)	-0,39	-0,34	-0,36	-0,39					
	Private	56.363 (47.067)	52.375 (49.966)	59.395 (44.050)	57.751 (44.765)	-1,20	-1,05	-1,35	-1,29					
	Ever	141.269 (79.410)	142.832 (77.462)	144.229 (83.223)	141.301 (81.644)	-1,78	-1,84	-1,73	-1,73					
Female Youth	SENA	-18.068 (15.189)	-23.490 (17.245)	-15.192 (13.405)	-17.182 (15.193)	1,19	1,36	1,13	1,13					
	Public	4.012 (48.834)	-31.506 (74.647)	16.265 (43.587)	3.420 (59.747)	-0,08	0,42	-0,37	-0,06					
	Private	13.295 (20.059)	11.152 (15.697)	13.679 (26.767)	10.868 (25.166)	-0,66	-0,71	-0,51	-0,43					
	Ever	3.826 (27.121)	4.300 (26.194)	6.921 (28.289)	4.067 (27.555)	-0,14	-0,16	-0,24	-0,15					

Source: Encuesta Nacional de Calidad de Vida 1997 (DANE)

Bootstrapped standard errors appear in parentheses.

They are based on 50 replications of the data with 100% sampling.

**Table 18. Simple Average Nearest Neighbor and Kernel Estimators
People Who Worked for the Last 12 Months**

Demographic Group	Institution	Nearest Neighbor		Kernel															
		5	10	5	10														
Adult Male	SENA																		
	Public	192.698 (122.322)	163.430 (117.991)	195.185 (121.457)	192.167 (124.198)	-1,58	-1,39	-1,61	-1,55										
	Private	48.188 (146.982)	51.327 (137.356)	49.870 (172.148)	60.850 (138.078)	-0,33	-0,37	-0,29	-0,44										
	Ever	206.360 (66.813)	166.458 (67.565)	229.756 (59.795)	227.135 (61.555)	-3,09	-2,46	-3,84	-3,69										
Adult Female	SENA	48.510 (54.721)	37.913 (61.864)	49.057 (56.062)	52.100 (57.739)	-0,89	-0,61	-0,88	-0,90										
	Public	43.770 (39.732)	45.881 (54.796)	31.521 (37.372)	35.225 (38.323)	-1,10	-0,84	-0,84	-0,92										
	Private	3.276 (55.183)	-5.109 (65.735)	8.830 (66.219)	3.516 (67.405)	-0,06	0,08	-0,13	-0,05										
	Ever	27.689 (35.219)	24.290 (36.247)	33.302 (34.427)	30.274 (30.633)	-0,79	-0,67	-0,97	-0,99										
Male Youth	SENA																		
	Public																		
	Private																		
Ever	175.965 (65.785)	162.564 (64.496)	183.400 (71.003)	180.386 (74.144)	-2,67	-2,52	-2,58	-2,43											
Female Youth	SENA																		
	Public																		
	Private																		
Ever	38.391 (60.829)	35.123 (57.820)	39.350 (70.519)	38.102 (67.948)	-0,63	-0,61	-0,56	-0,56											

Source: Encuesta Nacional de Calidad de Vida 1997 (DANE)

Bootstrapped standard errors appear in parentheses.

They are based on 50 replications of the data with 100% sampling.

**Table 19. Simple Average Nearest Neighbor and Kernel Estimators
People Earning Less than 2 Minimum Wages.**

Demographic Group	Institución	Nearest Neighbor		Kernel					
		5	10	5	10				
Adult Male	SENA								
	Public	-32.564 (57.698)	-19.732 (65.734)	-41.417 (49.030)	-30.595 (59.851)	0,56	0,30	0,84	0,51
	Private	38.083 (55.949)	82.392 (62.070)	11.831 (26.575)	13.874 (24.801)	-0,68	-1,33	-0,45	-0,56
	Ever	34.223 (21.465)	34.199 (21.957)	36.054 (20.372)	35.308 (21.733)	-1,59	-1,56	-1,77	-1,62
Adult Female	SENA								
	Public	-53.016 (72.909)	-57.726 (72.048)	-50.154 (67.019)	-47.641 (68.343)	0,73	0,80	0,75	0,70
	Private	41.575 (40.635)	43.593 (42.034)	40.775 (40.800)	42.667 (40.128)	-1,02	-1,04	-1,00	-1,06
	Ever	50.721 (26.366)	50.264 (26.336)	49.534 (26.045)	50.165 (26.509)	-1,92	-1,91	-1,90	-1,89
Male Youth	SENA								
	Public	-61.093 (36.996)	-55.516 (38.030)	-71.084 (31.188)	-65.460 (34.060)	1,65	1,46	2,28	1,92
	Private	-5.718 (20.518)	-2.122 (18.233)	-9.639 (23.597)	-7.471 (20.299)	0,28	0,12	0,41	0,37
	Ever	73.066 (41.370)	83.821 (34.472)	68.086 (48.926)	72.450 (49.167)	-1,77	-2,43	-1,39	-1,47
Female Youth	SENA								
	Public	-17.262 (20.963)	-19.052 (19.883)	-15.309 (22.478)	-15.124 (22.277)	0,82	0,96	0,68	0,68
	Private	-15.592 (32.997)	-23.571 (34.177)	-3.176 (19.103)	-3.557 (18.951)	0,47	0,69	0,17	0,19
	Ever	2.979 (8.044)	3.273 (8.952)	3.290 (9.738)	3.099 (8.742)	-0,37	-0,37	-0,34	-0,35
Female Youth	SENA								
	Public	9.796 (28.536)	10.680 (26.301)	7.580 (33.903)	8.437 (30.912)	-0,34	-0,41	-0,22	-0,27
	Private	20.972 (16.694)	21.315 (13.143)	20.390 (17.934)	20.789 (17.753)	-1,26	-1,62	-1,14	-1,17
	Ever								

Source: Encuesta Nacional de Calidad de Vida 1997 (DANE)
 Bootstrapped standard errors appear in parentheses.
 They are based on 50 replications of the data with 100% sampling.