Adolescents in Latin America and Caribbean: Examining Time Allocation Decisions with Cross-Country Micro Data

Naercio Aquino Menezes-Filho
Reynaldo Fernandes
Renata Narita
Paulo Picchetti

University of São Paulo
1) Introduction

Latin American and Caribbean (LAC) countries generally face unsatisfactory outcomes in terms of income distribution and poverty, as compared to more developed areas of the world (see Ravallion and Chen, 1997, for example). Many recent studies relate these problems to factors like education, dualism, growth, demography, demand (Kuznets hypothesis) and policy effects (see Higgins and Williamson, 1999, Agénéor, 1998, Bourguignon and Morrison, 1998, Deininger and Squire, 1998, among others). The literature on the importance of human capital for economic development is particularly big (see Behrman et al., 1999 and the references therein).

In order to better understand the differences in human capital accumulation across LAC countries it is essential to look at the framework surrounding the household decisions related to youth labor supply and education, that is, their time allocation decisions. These decisions are fundamental to the future of poverty and inequality outcomes in LAC. Moreover, the diversity of situations faced by the youth and adolescents in this region does make a comparison among its different countries very fruitful, perhaps providing the identification conditions needed for a careful empirical work to be carried out.

Most of previous analysis related to schooling decisions focused on a single country or used aggregate data for several countries. An exception is Behrman et al (1999) that uses the same data set to be explored here, but their focus is on the macro conditions and their permanent effects on schooling attainment. The main importance of this study is to compare the process determining the time allocation decisions in many LAC countries using comparable micro data, for different age groups, with the same methodology and incorporating both household level and the aggregate level variables in the analysis.

In a recent survey on the subject, Psacharopoulos (1997) highlights the child labor contributes significantly to household income, although it is associated with a reduction in
school attainment. Psacharopoulos and Arriagada (1989) find that school participation is positively related to household resources and negatively to demand for household labor. Jenen and Nielsen (1997) find for Zambia that poverty forces the households to keep their children away from school, whereas Patrinos and Psacharopoulos (1997) emphasize for Peru that the number and age structure of siblings have important effects on schooling decisions. All those studies find that parental education is also very important.

Filmer and Prichett (1998) provide a comprehensive study on the effects of household wealth on education attainment in 35 countries (using DHS) and find that while the poor have lower attainment rates all around the world, the gap between the education levels of the rich and poor varies substantially among countries. It ranges from 10 grade levels in India to 2 in Zimbabwe and Philippines. In the LAC countries studied, the authors find that the gap is around 4 years of education and although poor people do have basic education, they drop out much more frequently than the rich. However the authors include on 5 LAC in their analysis and do not control for other background variables that maybe very important determinants of school attendance, given the brief review of the literature above.

A careful analysis of the differences in the rates of child and teen labor across different LAC countries, together with their determinants (parental education, income, household composition, etc...) can shed light on important issues related to the expected level of education of the labor force in the near future, together with all the consequences associated with low and unequally distributed levels of education. Moreover, it would highlight policy recommendations aiming at improving the education levels and quality in Latin America.

2) Specific Objectives and Description of Procedures

The main aim of this study is to examine and compare the microeconomic and macroeconomic determinants of the time allocation decisions across 18 Latin American and Caribbean countries using household level data. We first intend the describe in detail the
current situation of the different countries in terms of percentage of kids who are attending schools, offering labor in the market, doing both or none, using the micro data available from the household surveys for each country. This to assess the quality of the data and compare the results with those of other studies on the subject.

The next step will be to describe the basic correlations between the main micro and macro economic indicators and the youth time allocation decisions. This is done both within and across countries, that is, by comparing the rates of school attendance of different groups of each economy and by relating differences in aggregate measures of the relevant variables to differences in average school attendance across countries.

We then intend to pool the data across countries, and investigate the conditional effect of various micro and macro variables on the decision to attend schools, go to the labor market, do both or none. This is done through a multinomial logit regression. As we will be focusing on one cross-section for each country, we can identify macroeconomic effects, as long as we do not include country-specific effects, which is our strategy at this stage. The fourth step will be to examine the particularities of the process generating the education and labor supply decisions in each LAC country, by running separate regressions for each of them. This is because the pooled regression results could reflect either a uniform process across the region or be the result of aggregating various process that are different across countries.

Finally in the last section we focus on time series evidence about Brazil, the country for which we have got information from 1981 to 1998. The aim here will be to analyze to the evolution of rates of school attendance and labor supply, together with its determinants, in a representative country of the region over a relatively long period of time.

3) Data and Variable Definitions

The main data we intend to use in this research come from the household surveys for 18 Latin American countries, put together and “cleaned” by the Inter-American
Development Bank - IDB. Behrman et al (1999) discuss this data set at length, comparing it with more widely used ones (such as Unesco sources), but we point out here the main advantages and problems with it. The countries studied here (survey year) are Honduras (98), Nicaragua (93), El Salvador (95), Brazil (96), Mexico (96), Dominican Republic (96), Venezuela (97), Bolivia (97), Paraguay (95), Ecuador (95), Colombia (97), Costa Rica (97), Chile (96), Panama (97), Peru (97), Uruguay (97), Jamaica (96) and Argentina (96). The surveys for Argentina e Uruguay cover only Urban areas, and for Venezuela do not have a urban/rural identifier. The main problem of this data set is time series variation in the conduction of the survey, so that we have to assume that the relationships we observe are equilibrium relationships not affected by cyclical variations. In the econometric exercise below we include cyclical variables to try and control for business cycles effects on the time allocation decisions.

The sample was split into 4 age groups: 12/13, 14/15, 16/17 and 18/19. The dependent variable is always defined as a categorical variable than can assume 4 values:

0 : if the adolescent is not studying and is not in the labor market
1 : if the adolescent is studying and not in the labor market
2 : if the adolescent is not studying and is in the labor market
3 : if the adolescent is studying and is in the labor market

The basic variables used in the analysis below can be divided in two groups: micro variables (vary across households) and macro variables (do not vary). The main micro variables are:

- fincome: total family labor income converted into dollars using PPP (excluding the own adolescent’s income).
- age: a dummy defining the specific age within an age group
- educapar: maximum parental education
- gender: gender of the kid
- occup: head occupation (employee or “independent” worker)
- **urban**: living in Urban areas
- **nchild**: number of persons in the household younger than 8 (in need of household care).
- **nadults**: number of persons in the household older than 7 (excluding the own adolescent).
- **composition**: household composition (extended, nuclear, etc)

The macro variables were taken from the World Bank Developing Indicators (1998). The main *macro variables* are:

- **gdp** - per-capita gdp (converted into dollars using PPP)
- **depend** - dependency ratio
- **fertility** - fertility ratio
- **mortality** - infant mortality
- **population** – log (population size)
- **urban** - urbanization rate

For the Brazilian (time series) exercise we also use:

- real minimum wage
- unemployment rate
- expenditures on education

4) Econometric Methodology

4.1- The Multinomial Logit Framework

The problem of time allocation decisions can be modeled within the following structure:

*Choices*: $j = 0,1,2,3$
Households: \( i = 1, 2, \ldots, N \)

Regressors: \( p = 1, 2, \ldots, P \)

Linear predictor for household \( i \): \( X_i \beta_j \)

Probability of household \( i \) choosing \( j \):

\[
Pr(Y_i = j) = P_{ij} = \frac{\exp(X_i \beta_j)}{1 + \sum_{k=0}^{j} \exp(X_i \beta_k)}
\]

Vector of Probabilities (for all households in the sample):

\[
Pr(Y = j) = P_j = \frac{\exp(X \beta_j)}{1 + \sum_{k=0}^{j} \exp(X \beta_k)}
\]

Estimation of this model through maximum likelihood is fairly straightforward (see Greene, 1993, p.667). To compute the mean predicted probabilities, instead of computing the probability at the average values of the regressors, we calculate the average of individual probabilities:

\[
\bar{P}_j = \frac{1}{N} \sum_{i=1}^{N} \hat{P}_j
\]

where the \( \hat{P}_j \) is computed for each household, using the observed values of the regressors.

To compute the marginal effects of a regressor \( X_p \), we fix the other variables for each household at their actual values and then impute various values for \( X_p \) over the sample range:

\[
\{ \bar{P}_j \mid x_p = x_{p,\min}, \bar{P}_j \mid x_p = x_{p,z}, \ldots, \bar{P}_j \mid x_p = x_{p,\max} \}
\]

\(^1\) We used the Stata software to perform all the procedures described in this section.
We then graph $\overline{P}_j$ as a function of $x_{p,z}$.

5) Results

5.1 - Descriptive Statistics

5.1.1 - Time Allocation

Figures 1.1 to 1.10 present a clear description of the time allocation decision of adolescents at two different stages of their life cycle. Firstly, it is clear that the countries differ with respect to the percentage of adolescents in each of the four possible states defined in this study. It is important to emphasize that “work” here also encompasses the cases where the individual is looking for job and that the Argentinean data refer to greater Buenos Aires and the Uruguayan to urban areas only, which means that in the national figures we are probably overestimating the percentage of individuals studying and not working in these two countries.

Keeping in mind the restrictions above, the countries are ordered in terms of the percentage of individuals in each age group that only studies. In the first age group (10 to 14 years of age, Fig 1.1), if one considers only the percentage of individuals studying independently of working status, Chile, Argentina, Uruguay, Dominican Rep., Panama, Venezuela, Brazil, Bolivia and Peru have more than 90% of adolescents only studying, whereas Colombia, Costa Rica, Mexico, El Salvador, Bolivia, Paraguay and Ecuador have between 80% and 90% whereas Nicaragua and Honduras have less than 60%. It is important to note however, that some countries have above than average levels of adolescents both studying and working, like Ecuador (about 30%), Peru, Paraguay, Bolivia and Brazil.

2 The figures are all located at the end of the paper
3 We decided to group the four age groups into two wider ones for the sake of brevity.
4 For a thorough study on the rapid improvement in school retention rates in El Salvador, see (Cox-Edwards and Ureta (1999).
In the 15/19 age group (Fig 1.4), according to this criteria (studying, independently of working status) the countries with over 60% of individuals studying are Chile, Argentina, Brazil, Dominican Rep., Bolivia and Peru. The countries with less than 50% of students are Costa Rica, Mexico, El Salvador, Honduras, Paraguay, Nicaragua, and Ecuador with the other countries having between 50% and 60% (Uruguay, Panama, Venezuela and Colombia). Comparing the two age groups, one can tentatively conclude that the countries with higher than average drop-out ratios are Uruguay, Panama, Venezuela, Costa Rica, Mexico, El Salvador, Paraguay and Ecuador.

The differences between males and females (Figs 1.2, 1.3, 1.5 and 1.6) is also clear, specially in among the older group. In the 10/14 age group the proportion of males that study and go to work is slightly higher than among females (though perhaps this difference is lower than expected), whereas in the 15/19 group the big difference is between the proportion of adolescents only working (predominantly a male phenomena). On the other hand, the proportion that does not study neither work is higher among the females adolescents, presumably because household work is not traditionally defined as work.

The difference in time allocation between rural and urban areas (Figs 1.7 to 1.10) is also very crystalline and anticipated. There is much more work and study in the rural areas among the young males and more work only among older males. There is also a great deal of variation among the countries studied, as for example, in Honduras and Ecuador about 70% of older boys living in the fields are only working, whereas in the Dominican Rep., Chile and Peru this number is closer to 30%. As for females, the percentage of adolescents neither working (as defined in the surveys) nor studying is higher in the rural areas and much more so among the older girls. The disparity of behavior among countries is also evident here, as in Nicaragua, Honduras and El Salvador about 50% of young women are in this situation, but Dominican Rep., Chile, Colombia, Brazil and Bolivia have only about 30% of girls at home.

The overall picture that emerges from the analysis above is one of cautious optimism. Latin America does seem to be doing relatively well in terms of the education of
young adolescents (10/14), since more than 90% of the individuals in this age group are studying in every country analyzed in this study. The problem remains with the education of the older group (15/19), where on average only 50% of individuals go to school. Sadder than this, the differences among countries and between regions within countries is very markedly, ranging from about 20% of students in the rural areas of Honduras, Nicaragua and for females in Mexico to 80% in urban Bolivia and Dominican Republic (for both males and females). In what follows we look at the possible determinants of this state of affairs.

5.1.2 – Raw Correlations

We now concentrate on the effects of the other variables that we think could be important in describing the time allocation decision. To spare the careful reader (probably already exhausted at this stage) of an unmanageable number of graphics, we concentrate here on between-country comparisons, observing that the pattern the emerges here tends to persist in a even higher scale within countries, as will be seen below in the econometric exercises. Figures 3.1 and 3.2 relate the percentage of adolescents studying to the average parental education in two age groups, 10/14 and 15/19. It is clear that a positive and strong correlation emerges, especially in the older group, meaning that if this unconditional correlation turns out to be conditional on other country specific effects, a boost in education at a point in time can have dramatic long term effects. Older generations in Mexico, Panama and Honduras have both a very low relative level of education and tend to keep their children out of school. The counterpart of this effect is seen in figures 3.3 and 3.4, where a negative raw correlation is uncovered between parental education and the percentage of adolescents if the labor market (either studying or not).

5 The comparison between within and between country correlations among different variables depend, among other things, on the relative importance of household vis-a-vis country fixed effects.
6 Parental education is defined here as the maximum number of years of schooling between the head and spouse in the household, in order to avoid the usual problems related to single headed households.
Figures 3.5 and 3.6 reveal that in the younger group the time allocation decision seems to be basically uncorrelated to different rates of returns to education among the countries examined here[7]. In the older group the results seems less clear, but we do not think we would be forcing the argument too much if we say that there seems to be a positive association between the variables that is clouded by the Argentinean and Dominican Republican cases, where a very low rate of return coexists with a high percentage of adolescents attending school. This can be due to institutional aspects not taken into account here[8]. It is worth emphasizing that we are not interpreting these results as causal effects, since it is obviously true that a higher percentage of students tend to have a negative effect on the price of education in the long run.

A variable that does seem to be strongly positively associated in the raw data with working is the occupation of the head of the household. Figs 3.7 and 3.8 point out that adolescents whose fathers are self-employed or employees have a higher probability of being working, in both age groups. Whether this is a spurious correlation driven, for example, by the fact that Uruguay, Chile and Argentine have both a lower percentage of self-employed workers and a higher level of parental education, is a question that will be examined in detail below.

Finally, figs 3.9 to 3.11 relate the percentage of adolescents studying to the average number of sibling younger than 8 years old. We think that the children below this age are still in need of household care, not being in a schooling age. Once again the negative correlation is evident and seems strong. Nicaragua, Honduras, Paraguay and El Salvador tend to have households with many young kids as opposed to countries like Uruguay, Chile and Dominican Republic. Are all these correlations driven by country effects? We now try to answer this question.

[7] The returns to education were obtained from an OLS regression of labor income on years of schooling, controlling for age, age squared, race and gender.
5.2 ) Regression Results

We now report and comment the results of the multinomial logit regression described in section 4. We are basically explaining the time allocation decisions in terms of variables that vary across individuals (age and gender), households (parental education, family income, father’s occupation, urban area, number of younger siblings, number of adults, composition) and countries (gdp per capita, dependency ratio, infant mortality, fertility, rate of urbanization, and population size). All the results below are presented in the form of graphs, since these are easier to interpret than the regression coefficients, given that the marginal effects can be very different from estimated parameters in this non-linear setting.

Before setting out to describe the results it is necessary to emphasize the limitations of our present approach. We preferred to include the maximum number of available country variables in order to try and capture the effects of the micro effects more precisely, and understand the impact of the macro effects themselves. However, another possible route would be to use the household level variation to include country fixed effects and control for all possible time-invariant country-specific determinants of the time allocation decisions. We will do this in the next step of this research. Moreover, when including variables like infant mortality and fertility ratios, we are not aiming at capturing casual effects, since these are “catch-all” variables, whose estimated parameters are difficult to interpret.

5.2.1 Fit of the Model

Figures 4.1 to 4.12 describe the fit of our estimated model, that is, it compares observed frequencies with average predicted probabilities for each outcome in each country. While doing this we intend to emphasize not only the ability of the model in helping us understand the situation in different countries, but to also the situations where

---

8 Remember that the Argentinean survey covers only urban areas.
the difference between predicted and observed outcomes are significant, meaning that there are unobserved, perhaps institutional effects that make a country deviate from an expected outcome.

In general the model is able to predict quite all the observed frequencies for all age groups and possible outcomes. This is perhaps not totally unexpected since we are including a bunch of macro variables that can help a lot with prediction but do not have a clear causal effect ⁹. Therefore, before turning to the part of specific variables, we now concentrate on the deviations from the predicted outcomes. Figs 4.1 to 4.4 refer to the 12/13 age group. The countries with a higher than anticipated percentage of adolescents studying full-time are the Dominican Republic and El Salvador. These same countries have lower than expected percentage of working kids. This means that El Salvador, despite having high levels of working adolescents, is actually doing relatively well given its observables.

On the other hand, Peru and Ecuador have a much higher than expected rate individuals working and studying ¹⁰, which, in the case of Ecuador, carries over to individuals only working. It is important to note however, that this could be due to methodological differences in the way that the household surveys consider to be in the labor market. Finally, Costa Rica, Honduras and Nicaragua have higher than expected frequencies related to the outcome “not working and not studying”.

Does this picture change for the other age groups? It does, but not dramatically so. In the 15/16 group, the primary change is the inclusion of Paraguay among those countries with higher than predicted percentage of adolescents both working and studying, as opposed only working and doing none. In the 16/17 group the broad conclusions also remain the same. We point out however, that Brazil has about 25% of its youth both working and studying, whereas this same percentage is neither working nor studying in Nicaragua, and that both outcomes are anticipated by the model! In sum, once again the Dominican Republic is doing quite well in terms of its percentage of students,

---

⁹ The next step in this research will compare the fit of the model with and without the macro variables.
¹⁰ We repeat here that those looking for a job are being classified as working.
whereas Ecuador, Peru, Costa Rica, Honduras and Mexico could be doing better given their household and macroeconomic characteristics.

5.2.2) Main Effects

Figures 5.2 and 5.3 describe the effects of each of the variables included in the multinomial logit regression for two age groups: 14/15 and 16/17. Considering first the impact of age, it is always the case in every age group that older adolescents are more inclined to be working & studying, only working or doing none of the two than the younger ones. This is to be expected since at this stage the rate new entrants in school is low and problems like evasion and repetition are very important in LAC countries.

Parental education is one of the most important determinants of the time allocation decisions of adolescents in Latin American and the Caribbean, even after controlling for household and country confounding effects. Moreover, its effect is more intense among the 14/15 old. An increase in parental education tends to increase the probability of the “only studying” outcome at the expense of all the other possibilities. The estimated probability of “study and not work” ranges from about 40% for those whose parents are illiterates, to about 90% for children of college graduates. Therefore, the policy conclusion is that a boost in education levels can have dramatic effects for future generations in terms of productivity and growth.

The gender issue is also important in this context, and the results are as expected. Females have a higher probability of being “studying” or “not working nor studying” than males, which are closer associated with the “working” status. Moreover, these effects become increasingly important at older stages of the life-cycle, when males tend to be working only and females are studying or on household duties.

Interestingly enough, gross family income effects do not have such an important role to play in terms of the allocation of time, at least not after controlling for the
countries per-capita gdp and for the number of younger and older people in the household. This is not to say that it does not have any effect, but its magnitude in the 16/17 age group (strongest effect) is to increase the probability of the outcome “study only” from 50% to about 75%, when family income rises from U$ 0 to U$10,000. As with parental education, it also reduces the probability of all other outcomes. Perhaps the primary force behind those results were differences in the number of persons in the household (number of capitás). This interpretation certainly needs more investigation, but see the results below.

As to father’s occupation, the effects are in the route pointed out in the raw correlation exercises, but the magnitudes are not nearly as big, suggesting that these results were indeed being driven by spurious correlations, particularly household effects. On the hand, those living in Urban areas have a significantly higher probability of attending school, as opposed to work only. Interestingly, the effects are of the same magnitude, regardless of the age group considered.

One very important determinant of the schooling/working decision is the number of younger children in the household, especially for those between 14 and 17 years of age. The figures suggest that the probability of “studying only” for an adolescent in the 14/15 age group, declines from 70% to about 40% in a typical household that goes from 1 to 10 young kids. For 16/17 year olds figures are 60% and 20% respectively. All other outcomes are more likely in this case, especially “working & not studying” one. On the other hand, the number of more than 8 years old individuals (conditional on the number of younger kids) does not have an important effect in our exercises. Its only tangible impact is to increase slightly the probability of “working only” for those between 16 and 17 years old.

Turning now to the country specific macro variables, one of the most important in the process of time allocation decisions is, as expected, gdp per capita. The larger is the country gdp per capita the higher is the percentage of youngsters that study and do not work. Interestingly, its effect is reasonably the same across the different age groups. For 16/17 year olds, for example, each additional U$1,000 of gdp per capita would increase

---

11 We included a dummy identifying the higher age in each age group.
the probability of studying only in about 5%. Its only other tangible impact is of decreasing the probability of studying and working outcome, going from 40% to about 5% when gpd goes from U$ 1,000 to U$ 10,000.

The dependency ratio also has an important impact on schooling, since the outcome “studying only” declines very sharply in terms of probability, from about 60% in countries with dependency ratio of about 0.55 to around 20% when the dependency is 0.9 in the 16/17 group, where the effect is strongest. Its other significant effect is on the probability of the outcome “not working and not studying”, that rises sharply, by about 50 percentage points when dependency rises from 0.55 to 0.9. Infant Mortality also has a strong negative effect on the probability of “studying only”, mainly in the younger groups of adolescent. As discussed above, we do not intend to interpret these results as causal in any sense, they are just saying that full-time schooling and poverty (or quality of public health system) are negatively correlated, conditional on gdp and dependency ratio. The next step in this research will be to substitute country fixed effects for all the macro variables. In any rate, it is interesting to check that infant mortality is also strongly positively associated with the “working and studying” outcome, a fact that would deserve future attention. Finally, we included the size of the population to try and capture scale effects, but the results were rather unsatisfactory.

5  – Conclusions

After this thorough examination of the time allocation decisions for several countries in Latin America and Caribbean (LAC), we briefly present now some final considerations. It seems that the LAC countries are not doing too badly in terms of school attendance for young adolescents (10/14 years old). The situation deteriorates quite rapidly when we focus is on the older groups (15/19). The best situation overall can be encountered in countries like Chile and the Dominican Republic, whereas the picture can get dramatic in Ecuador, Nicaragua and Honduras, especially in rural areas. Most of the countries are in an intermediate relative position.
As established in the literature, parental education is one of the most important determinants of the time allocation decisions, even conditionally on a series of household and country level characteristics. For youngsters between 16 and 17 years old, having illiterate parents results in a probability of only 25% for the “study and not work” outcome, as compared to about 80% for the children of college graduates. This effect is relatively homogenous throughout Latin America and the Caribbean.

BIBLIOGRAPHY


Fig. 1.1 - Time Allocation - 10/14 - National

Fig. 1.2 - Time Allocation - 10/14 - Females

Fig. 1.3 - Time Allocation - 10/14 - Males
Fig. 3.9 - Percentage Studying and average number of Young Siblings - 10:14

Fig. 3.10 - Percentage Studying and average number of Young Siblings - 10:14 - Males

Fig. 3.11 - Percentage Studying and average number of Young Siblings - 10:14 - Females

average number of siblings younger than 7
Fig 5.2 - Regression Results – Pooled Sample
14\15 Years of Age

Proportions Related to age

Proportions Related to educpar
Probabilities Related to gender

- not working, not studying

Estimated Probability
- gender: 1=males, 0=females

- working, not studying

Estimated Probability
- gender: 1=males, 0=females

Probabilities Related to fincome

- not working, not studying

Estimated Probability
- fincome

- working, not studying

Estimated Probability
- fincome
Probabilities Related to father’s occupation

Probabilities Related to urban areas
Probabilities Related to nchild

Probabilities Related to nadults
Probabilities Related to composition

Probabilities Related to GDP per capita
Probabilities Related to infant mortality, per 1,000 live births.
Probabilities Related to fertility, births per woman

Probabilities Related to share of urban population
Probabilities Related to population

not working, not studying

not working, studying

working, not studying

working, studying
Probabilities Related to population
Fig 5.3- Regression Results – Pooled Sample
16\17 Years of Age

Probabilities Related to age

Probabilities Related to gender
Probabilities Related to fincome

Probabilities Related to educpar
Probabilities Related to father's occupation

<table>
<thead>
<tr>
<th></th>
<th>not working, not studying</th>
<th>working, not studying</th>
<th>not working, studying</th>
<th>working, studying</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Probabilities Related to urban areas

<table>
<thead>
<tr>
<th></th>
<th>not working, not studying</th>
<th>working, not studying</th>
<th>not working, studying</th>
<th>working, studying</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Probabilities Related to \( n_{child} \)

Probabilities Related to \( n_{adults} \)
Probabilities Related to infant mortality, per 1,000 live births:

- Not working, not studying
- Working, not studying
- Working, studying
- Not working, studying
Probabilities Related to fertility, births per woman

Probabilities Related to share of urban population
Proportions Related to population

Estimated Probability

not working, not studying

Estimated Probability

working, not studying

Estimated Probability

not working, studying

Estimated Probability

working, studying

Probabilities Related to population