

A Data Analysis of Social and Educational Characteristics of Ecuadorians Aged 25–64

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Keywords

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The present study investigates the social and educational characteristics of the Ecuadorians aged 25-64 using data analysis tools. The investigation was realized in the Faculty of Economics of the Pontifical Catholic University of Ecuador during the spring semester of the academic year 2015-2016. The source of the data are the National Survey of Employment, Unemployment and Underemployment and the publication of the OECD "Education at a Glance 2015". The analysis presents the social and educational profile of persons under study and realizes a comparison of their instruction level with other countries of Latin America, USA and European Union. Also a risk analysis investigates the relative risk comparing variables such as activity condition with instruction level, sex, use of smartphone, use of computer and internet.

Introduction

The aim of this study is to investigate the social and educational characteristics of the Ecuadorians aged 25-64. This study was realized by students of the Faculty of Economics of the Pontifical Catholic University of Ecuador under the direction of Professor Efstathios Stefos. The data used in this analysis came from the National Survey of Employment, Unemployment and Underemployment of December 2015 of the National Institute of Statistics and Census of Ecuador (INEC) [1]. In order to

achieve this aim we executed a multidimensional and a risk analysis. Subsequently, the results obtained in this study were compared with data of the Organization for Economic Co-operation and Development (OECD) [2].

The variables investigated were: area, sex, age, marital status, instruction level, language spoken, ethnic self-identification, condition of activity and inactivity, feelings at work, school enrollment, use of smartphone, use of computer during the last 12 months, use of internet during the last 12 months, natural region and occupational group.

Methodology

This research was conducted during the spring semester of the academic year 2015-2016. The sources of the data are the National Survey of Employment, Unemployment and Underemployment (NSEUU) and the publication of the OECD "Education at a Glance 2015". The NSEUU is a national survey that represents the socioeconomic profile of the Ecuadorian population by displaying variables such as sex, age, instruction level, activity status, etc. It aims to provide accurate data and labor market indicators related to employment, unemployment and underemployment. Meanwhile "Education at a Glance" is an annual publication provided by the OECD, which seeks to create indicators that allow international comparisons based on the state of education of the member countries.

The methods that we used are the Multiple Correspondence Analysis, which defined the differentiation criteria and the Hierarchical Clustering that presented the clusters of the persons according to their common characteristics [3].

We also investigated the relative risk comparing variables such as activity condition with instruction level, sex, use of smartphone, use of computer and internet. Relative risk is used to compare the risk in two different groups. A relative risk of one implies there is no difference in risk between the two groups. A relative risk less than one indicates that there is less risk in the exposed group compared to the unexposed group. A relative risk greater than one indicates that there is greater risk in the exposed group compared to the unexposed group [4].

The Results of the Multiple Correspondence Analysis

In the frame of this study, the Multiple Correspondence Analysis was used. This analysis is based on the correlation of all the variables at the same time [5]. The results set the three factorial axes which simultaneously are the differentiation criteria of the social and educational characteristics of Ecuadorians. The criteria that differentiate the Ecuadorians aged 25–64 are:

First differentiation criterion (First factor axis, inertia percentage 25.05%)

The first differentiation criterion is consisted on one hand of persons who were within the economically inactive population in the role of housewife, their level of instruction is primary education, they do not use smartphone, internet and computer, and they are living in rural areas. On the other hand, there are people who have a higher education level, they use smartphone, their activity status is adequate employment, during the last twelve months they used computer and internet, are located in urban areas, and they are considered mestizos.

Second differentiation criterion (Second factor axis, inertia percentage 18.23%)

The second differentiation criterion is consisted on the one hand of housewives who live in urban areas, during the last twelve months they used internet and computer, speak only Spanish, and they are considered mestizos. On the other hand, there are men who live in rural areas, were indigenous, speak Spanish and indigenous language, and their activity status is inadequate employment. The level of instruction of these people is primary education.

Third differentiation criterion (Third factor axis, inertia percentage 9.71%)

The third differentiation criterion is consisted on the one hand of men, singles, who live in urban areas of the coastal region and their level of instruction is Higher Education. On the other hand, there are women who live in rural areas of the Amazon region, their level of instruction is primary education and they are skilled workers.

The Results of the Hierarchical Classification

The hierarchical classification shows the clusters of people under study according to their responses and common characteristics [6].

The Hierarchical Classification led to the formation of the six clusters that are shown in Figure 1.

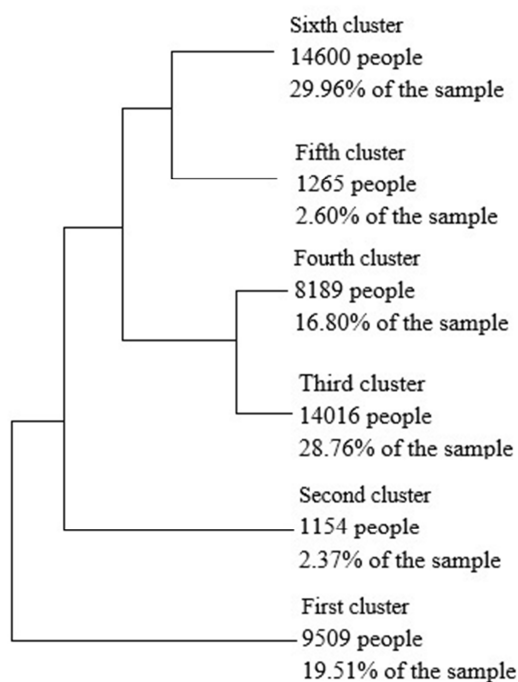


Fig. 1. The Hierarchical Classification.

First cluster (9509 people, 19.51% of the sample)

Ecuadorians of the first cluster are characterized for being an economically inactive population, most of whom are women, housewives, they live in the coastal region, its activity status is open unemployment, during the last 12 months have not used neither computer nor internet, they do not use smartphone and at the moment they are not attending classes.

Second cluster (1154 people, 2.37% of the sample)

Ecuadorians of the second cluster are characterized by living in urban area of the coastal region, they are male, single, do not have any level of instruction, their condition of activity is a suitable employment and belong to the group of occupation of facility operators and machinery.

Third cluster (14016 people, 28.76% of the sample)

Ecuadorians of the third cluster are men, their instruction level is primary education, they speak only Spanish, their condition of activity is inadequate employment, they are workers and artisans, they do not use smartphone, and during the last 12 months they did not use computer and internet.

Fourth cluster (8189 people, 16.80% of the sample)

Ecuadorians of the fourth cluster are indigenous people, who speak indigenous and Spanish language and live in the rural area, they are skilled agricultural and fishery workers, they do not have smartphone and during the last 12 months they did not use neither computer nor internet.

Fifth cluster (1265 people, 2.60% of the sample)

The fifth cluster consists of Ecuadorians who live in urban areas, aged 25-34, single, their level of instruction is Higher Education, they attend classes, they use a smartphone and during the last 12 months they have used both computer and internet.

Sixth cluster (14600 people, 29.96% of the sample)

The sixth group consists of Ecuadorians who live in urban areas, they have a university degree and a suitable employment, they are scientists and intellectual professionals, they feel happy in their work, they use a smartphone and during the last 12 months they have used both computers and internet.

These differentiations are presented in Figure 2 of the Correspondence Analysis where the centroids of the six clusters are presented on the level of the first two axes. The positions of the clusters regarding to the two axes showcase the differences and the similarities of the characteristics demonstrated in each cluster [7].

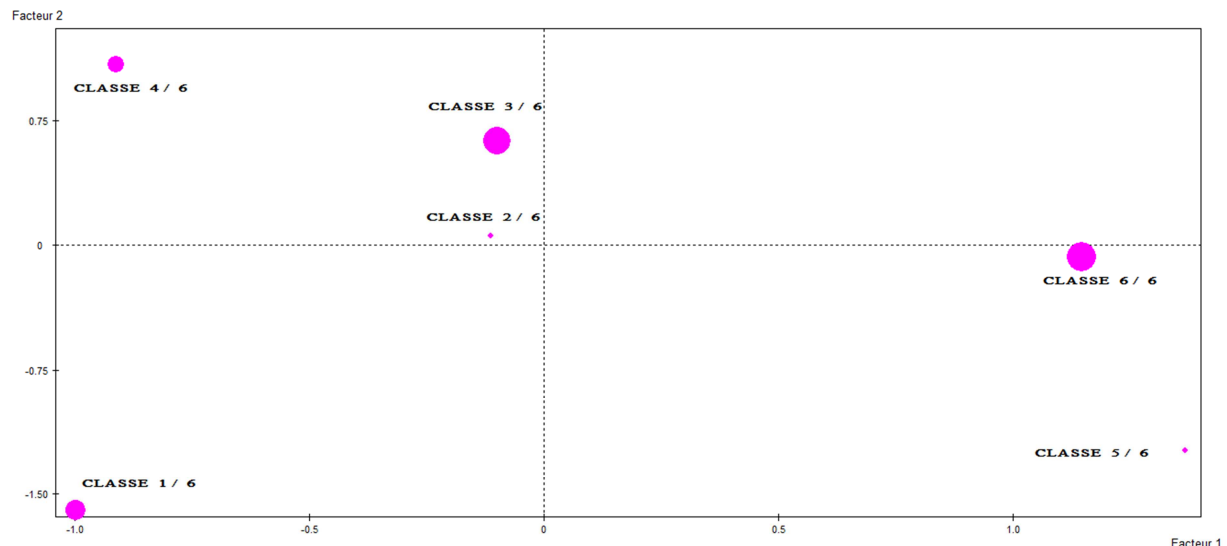


Fig. 2. The Correspondence Analysis.

The Relative Risk

The study of the relationship between the level of instruction and the activity shows a relative risk of 1.201, that means that the adults who have basic education or less, have a 20.1% higher risk of been underemployed or unemployed than adults whose level of instruction is higher than the basic education [8].

The study of the relationship between the sex and the activity shows a relative risk of 1.105 that means that the women have a 10.5% higher risk of been underemployed or unemployed than men.

The study of the relationship between the use of computer during the last 12 months and the activity of the population shows a relative risk of 1.414 which means that people who did not use computer have a 41.4% higher risk of been underemployed or unemployed than people who used computer.

The study of relationship between the use of smartphone and the activity indicates a relative risk of 1.511 which means that the people who do not use smartphone have a 51.1% higher risk of been underemployed or unemployed, compared to the people who use smartphone.

The study of the relationship between the use of internet during the last 12 months and the activity indicates a relative risk of 1.389 which means that the people who did not use internet have a 38.9% higher risk of been underemployed or unemployed, compared to the people who used internet [9].

Conclusion

The aim of this study was to investigate the social and educational characteristics of the Ecuadorians aged 25-64. The results of the Hierarchical Clustering show that 28.76% of the sample are male Ecuadorians under a condition of inadequate employment with an instruction level of Primary Education [10]. 19.51% of the sample is characterized by economic inactivity, mostly housewives, which are in a state of open unemployment. 16.80% of the sample are Ecuadorian indigenous, who speak indigenous and Spanish language and live in rural areas. 2.37% of the sample are characterized by living in the urban area of the coastal region, mostly single men who have no education. 2.60% of the sample are Ecuadorians aged 25-34, their level of instruction is Higher Education and they attend classes. 29.96% of the sample live in urban areas, they are scientific and intellectual professionals and they feel happy in their work [11].

Making a comparison with Latin America, Ecuador has a percentage of adults who have attained at least upper secondary education (65%) better than Brazil (46%), Chile (61%) and Colombia (52%). However, comparing with the rest of the world, European Union (78%) and USA (90%) have better results in this indicator. In addition, we have similar results comparing Educational attainment of 25-64 year-olds and percentage of adults who have attained tertiary education, by type of program and age group. Therefore, it reflects the supremacy of European Union and USA in the level of education, but a great increment of Ecuador in Latin America.

Results of risk analysis show that adults with basic education or less are at greater risk of being underemployed or

unemployed compared to adults who have a higher level of education [12]. Another main feature is the unequal relationship between gender of the population and activity, which means that women are more likely to be underemployed or unemployed compared with men. The study also shows that people who do not use computers, internet and smartphone are at greater risk of being underemployed or unemployed.

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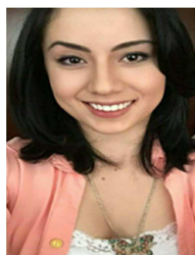
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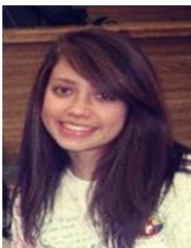
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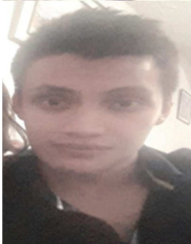
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