Child labour and education in Ecuador during the COVID-19 Pandemic

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ABSTRACT

Child labour is a worldwide issue with a major impact on access to education, Latin America being one of the regions heavily affected by this type of illegal activity, the data were not very encouraging and with the COVID19 pandemic the situation worsened. This study uses data, of 117,189 girls and boys between the ages of 5 and 14, obtained from National Survey of Employment, Unemployment and Underemployment (ENEMDU), with the aim to analyse education and child labour situation in Ecuador through pandemic in 2020, a complete descriptive analysis was developed in order to display the main differentiation criteria and the classification into groups of the people investigated, the results are confirmed by factor analysis.

Keywords:

Child labour, factor analysis, risk analysis, contingency tables

RESUMEN

El trabajo infantil es un problema a nivel

mundial con un gran impacto en el acceso a la educación, siendo América Latina una de las regiones más afectadas por este tipo de actividades ilegales, los datos no eran muy alentadores y con la pandemia del COVID19 la situación empeoró. Este estudio utiliza datos, de 117.189 niñas y niños entre 5 y 14 años, obtenidos de la Encuesta Nacional de Empleo, Desempleo y Subempleo (ENEMDU), con el objetivo de analizar la situación de la educación y el trabajo infantil en Ecuador por la pandemia en 2020. Se elaboró un análisis descriptivo completo con el fin de visualizar los principales criterios de diferenciación y la clasificación en grupos de las personas investigadas, los resultados se confirman mediante el análisis factorial.

Palabras clave:

Trabajo infantil, análisis factorial, análisis de riesgos, tablas de contingencia

INTRODUCTION

This study serves to analyse the phenomenon of child labour in the country of Ecuador, involving children whose ages range from 5 upward to 14 years old, during the COVID-19 pandemic of 2020 (Rad & Espinoza, 2021; Espinoza et al., 2021). Basic General Education in Ecuador is offered to students whose ages range from 5 to 14 years old on a compulsory basis. According to article 27 of the General Regulations in regards to the Organic Law of Intercultural Education (2017):

> "the levels of Basic General Education are divided into four sub-levels: 1. Preparatory, which corresponds to the 1st grade of Basic General Education and preferably offered to students aged five (5) years old; 2. Basic Elementary, which corresponds to the 2nd, 3rd and 4th grades of Basic General Education and is preferably offered to students whose ages range from six (6) upward to eight (8) years of age; 3. Basic Medium, which corresponds to the 5th, 6th. and 7th grades of Basic General Education and preferably

offered to students whose ages range from nine (9) upward to eleven (11) years old; and 4. Superior Basic, which corresponds to the 8th, 9th and 10th grades of Basic General Education and is preferably offered to students who ages range from twelve (12) upward to fourteen (14) years of age".

In accordance with article 28 of the Constitution of Ecuador (2008), "Education is to be universally accessible, interminable, with the rights of mobility and graduation to be granted indiscriminately, and is to be considered mandatory at the initial, basic and high school level or their regional equivalents." According to article 82 of the Ecuadorian Code of Childhood and Adolescence (2003) "the minimum age for all types of labour, including domestic service, is set at fifteen years of age." According to article 2 of Convention No. 138 on the minimum age of admission to employment of the International Labour Organization (1973), "the State must establish a minimum age for labour and notify it to the International Labour Organization. Those individuals who have not reached this minimum age will not be allowed to perform this type of labour. Normally, the minimum age should be 15 years, which is the average age at which compulsory schooling ends".

In accordance with article 32.1. of the Convention on the Rights of the Child as determined by UNICEF (1989).

> "States that are parties to this agreement recognize the right of the child to be protected against economic exploitation and against the performance of any type of labour that may be considered dangerous or hindersome to the progress of their education, or that is harmful to their health or to their physical, mental, spiritual, moral or social development".

This study also investigates the relationship between child labour and poverty as well as extreme poverty (Ruiz et al., 2021; Herrera, 2021). According to the

National Survey of Employment, Unemployment and Underemployment (ENEMDU) of December 2020, of the National Institute of Statistics and Censuses (INEC), "individuals are considered poor when their total per capita income is below the poverty line. The poverty line is defined as the minimum disposable income level that an individual is required to meet in order to not be considered poor". According to the December 2020 Poverty Technical Bulletin of the INEC, in December 2020 the poverty line stood at US $ 84.05 per month per capita, while the extreme poverty line at US $ 47.37 per month per capita.

On March 11, 2020, "the Ministry of Public Health of Ecuador declared a State of Sanitary Emergency and ordered preventive actions in order to halt the spread of COVID-19 throughout its national territory." In this context, on March 15, 2020, the Ministry of Education ordered the suspension of classes throughout its national territory and, the continuing of work for the teaching staff of the National Education System under the modality of telework" and the teaching of "virtual and/or distance classes" (Ministry of Education of Ecuador, 2020; Barrionuevo, 2021).

In this context, the provision of the necessary digital tools to children aged 5 upward to 14 years' old who are engaged in labour in order to carry out their daily activities (educational, work, recreation, etc.) is also being studied.

METHODOLOGY

The data utilized by this study was extracted from the National Survey of Employment, Unemployment and Underemployment of December 2020, carried out by the National Institute of Statistics and Censuses (INEC). In order to extract the required results, the following methods were utilized within the framework of this study: a descriptive analysis utilizing frequencies, percentages and contingency tables, a risk analysis and a multidimensional statistical analysis. Contingency tables were utilized in order to analyze the association between the two variables.

The method of multidimensional statistical analysis has been utilized in order to depict the main and most important differential criteria and to carry out the classification of the various groups of people investigated (Benzecri, 1992). The methods utilized by the study include the multiple correspondence factor analysis which serves to depict the differential criteria and the hierarchical analysis that defines the groups of people based on their common response and characteristics.

The multiple correspondence factor analysis method has been utilized in order to highlight the underlying differences between individuals based on the answers they've provided. This method investigates the correlation of the survey variables in a simultaneous manner. The factorial axes depict the differentiation criteria that express the differences in the responses of the addressed individuals.

The method of hierarchical analysis depicts groups of people according to their responses to the survey and their shared characteristics. The methodology utilized by this study also provides a classification chart which serves to highlight the relations between these groups. The task of data analysis was carried out through Spad v.4.5, a piece of software offered by the Faculty of Humanities of the University of the Aegean.

3. The results of the descriptive analysis

In Ecuador in 2020 during the COVID-19 pandemic, 117,189 girls and boys between the ages of 5 and 14 were deemed to be engaged in labour.

Table 1. Area

	Frequency	Percentage
Urban	15,972	13.63%
Rural	101,217	86.37%
Total	117,189	100.00%

86.37% of the children who are engaged in labour reside in rural areas (table 1).

Table 3 (continued):

	Frequency	Percentage
11	17,240	14.71%
12	22,802	19.46%
13	19,711	16.82%
14	38,250	32.64%
Total	117,189	100.00%

11.85% of the children who are engaged in labour are less than 10 years old (table 3).

Table 2. Sex

	Frequency	Percentage
Male	66.945	57,13%
Female	50.244	42,87%
Total	117.189	100,00%

57.13% of children between 5 and 14 years of age who are engaged in labour are male (table 2).

Table 4. Attending classes

	Frequency	Percentage
Yes	113,855	97.15%
No	3,334	2.85%
Total	117,189	100.00%

Table 3. Age

	Frequency	Percentage
6	400	0.34%
7	2,674	2.28%
8	4,077	3.48%
9	6,736	5.75%
10	5,300	4.52%

3,334 children between the ages of 5 and 14 do not attend classes during the pandemic. (table 4).

Table 5. Type of connection for educational activities (of those who attend classes)

	Frequency	Percentage
Broadband / fiber optic	30,150	26.48%
Mobile/cellular Internet	18,580	16.32%
Do not hold possession of either	65,125	57.20%
Total	113,855	100.00%

57.20% of the children who are engaged in labour and attend classes do not have any type of internet connection at home (table 5).

Table 6. Reasons of not attending

	Frequency	Percentage
Lack of financial resources	1,040	31.20%
No interest in pursuing studies	1,136	34.08%
Lack of technological resources (internet connection, computer, cell phone)	607	18.19%
Other	551	16.53%
Total	3,334	100.00%

49.39% of children who do not attend classes do so due to lack of financial resources or lack of technological resources (internet service, computer, cell phone) (table 6).

Table 7. Which ethnic group do you identify as?

	Frequency	Percentage
Indigenous	74,058	63.20%
Afro-Ecuadorian	869	0.74%
African descent	773	0.66%
Montuvian	398	0.34%
Mestizo	41,091	35.06%
Total	117,189	100.00%

63.20% of the children between the ages of 5 and 14 who are engaged in labour are indigenous (table 7).

Table 8. Categories based on occupation

	Frequency	Percentage
Private employee	610	0.52%
Day labourer or general labourer	2,106	1.80%
Unpaid domestic worker	108,656	92.72%
Unpaid non-domestic worker	2,842	2.43%
Unpaid helper / day labourer	2,392	2.04%
Domestic Employee	583	0.50%
Total	117,189	100.00%

92.72% of the children who are engaged in labour are unpaid domestic workers (table 8).

Table 9. Work site

	Frequency	Percentage
Local employer	610	0.52%
Working in shifts	554	0.47%
Street labour	737	0.63%
Street kiosk	639	0.55%
Self-owned or leased premises	5,588	4.77%
Housing other than their own	3,476	2.97%
Their home	7,627	6.51%
Farming sites	93,118	79.46%
Land owned by third parties	4,841	4.13%
Total	117,189	100.00%

83.59% work on their own or someone else's farm or otherwise privately-owned land (table 9).

Table 10. Poverty

	Frequency	Percentage
Poor	80,823	68.97%
Non-poor	36,366	31.03%
Total	117,189	100.00%

68.97% of children between 5 and 14 years of age who are engaged in labour are considered poor (table 10).

Table 11. Extreme poverty

	Frequency	Percentage
Indigent	53,866	45.96%
Not indigent	63,323	54.04%
Total	117,189	100.00%

45.96% of the children who are engaged in labour are indigent (table 11).

Table 12. The addressed subjects possess a laptop or desktop computer to carry out their daily activities (educational, work, recreation, etc.)

	Frequency	Percentage
Yes, exclusive possession	2,376	2.03%
Yes, collectively with another household member	8,477	7.23%
Not available	106,336	90.74%
Total	117,189	100.00%

90.74% of children between 5 and 14 years of age who are engaged in labour do not possess a computer to carry out their daily activities (educational, work, recreation, etc.) (table 12).

Table 13. The addressed subjects possess a tablet to carry out their daily activities (educational, work, recreation, etc.)

	Frequency	Percentage
Yes, exclusive possession	779	0.66%
Yes, collectively with another household member	114	0.10%
Not available	116,296	99.24%
Total	117,189	100.00%

99.24% of the children who are engaged in labour do not possess a tablet (table 13).

Table 14. The addressed subjects possess a smartphone to carry out their daily activities (educational, work, recreation, etc.)

	Frequency	Percentage
Yes, exclusive possession	11,559	9.86%
Yes, collectively with another household member	41,307	35.25%
Not available	64,323	54.89%
Total	117,189	100.00%

45.11% of children between 5 and 14 years of age who are engaged in labour possess a smartphone exclusively or collectively with another member of the household (table 14).

RISK ANALYSIS

Within the framework of risk estimation, two contingency tables were created in order to analyze the association between the variables of the various areas, the condition of being from an indigenous background, and child labour.

4.1 Risks associated with residing in rural areas

Nationwide, 3.14% of children between the ages of 5 and 14 are engaged in labour. In the rural areas of the country the estimate of the equivalent percentage is 7.52% (table 15).

Table 15. Contingency table: Area - Worked last week

		Worked last week		Total
		Yes	No	
Area	Rural	101,217 / 7.52%	1,244,927 / 92,48%	1,346,144 / 100.00%
	Urban	15,972 / 0.67%	2,371,834 / 99.33%	2,387,806 / 100.00%
Total		117,189 / 3.14%	3,616,761 / 96.86%	3,733,950 / 100.00%

The odds ratio is 12.074 that indicates that children aged 5 to 14 years, residing within a rural area, have 12.074 times the risk of being engaged in labour compared to children residing within an urban area (McHugh, 2009). The relative risk is 11.241 that means that children aged 5 to 14 years, residing within a rural area, have a 1,024.1% higher risk of being engaged in labour than children residing within an urban area (table 16).

Table 16. Risk estimation of the contingency table: Area - Worked last week

	Value	95% confidence interval	
		Lower	Upper
Odds Ratio for "Area (Rural / Urban)"	12.074	11.872	12.278
For cohort "Worked last week = Yes"	11.241	11.056	11.429
For cohort "Worked last week = No"	0.931	0.931	0.931
N of valid cases	3,733,950		

4.2. Risks associated with being of indigenous background

At the national level in Ecuador, 3.14% of children between the ages of 5 and 14 are being engaged labour. The estimate of the equivalent percentage in the indigenous population is 11.92% (table 17).

Table 17. Contingency table: Which ethnic group do you identify as - Worked last week

		Worked last week		
		Yes	No	Total
Which ethnic group do you identify as	Is considered indigenous	74,058	547,286	621,344
		11.92%	88.08%	100.00%
	Non-indigenous	43,131	3,069,475	3,112,606
		1.39%	98.61%	100.00%
Total		117,189	3,616,761	3,733,950
		3.14%	96.86%	100.00%

The odds ratio is 9,630 that indicates that children whose age ranges from 5 upward to 14 years of age who are of indigenous background have 9,630 times the risk of being engaged in labour compared to children who are not of indigenous background (Morris & Gardner, 1988). The relative risk is 8,602 that means that children whose age ranges from 5 upward to 14 years of age who are of indigenous background, have a 760.2% higher risk of being engaged in labour than children who are not of indigenous background (table 18).

Table 18. Risk estimate from the contingency table: Which ethnic group do you identify as - Worked last week

	Value	95% confidence interval	
		Lower	Upper
Odds Ratio for "Which ethnic group do you identify as (Indigenous / Non-indigenous)"	9,630	9,513	9,748
For cohort "Worked last week = Yes"	8,602	8,503	8,701
For cohort "Worked last week = No"	0,893	0,892	0,894
N of valid cases	3.733.950		

FACTOR ANALYSIS

The results of the multidimensional

analysis of children whose ages range from 5 upward to 14 who were engaged in labour during the COVID-19 pandemic in Ecuador in 2020 are presented below. The methods utilized include: multiple correspondence factor analysis, and hierarchical analysis (Athanasiadis, 1995).

5.1. Multiple Correspondence Factor Analysis

In order to determine how children engaged in labour between 5 and 14 years of age differ, based on the answers they gave in the survey analyzed in this study, the method of multiple correspondence factor analysis was utilized. As a result, the criteria that differentiate the respondents are the following:

First differentiation criterion (percentage of inertia 18.48%)

In the first axis, on the one hand, there are children who do not attend classes, are engaged in labour as day labourers or general labourers, do not attend classes because they are not interested in pursuing an education, and work on a farm or another individual's land. On the other hand, there are children who attend classes, are unpaid domestic workers, engage in farm work, and consider themselves indigenous (Morineau, 1984).

Second differentiation criterion (percentage of inertia 14.34%)

On the second axis, on the one hand, there are children who have a broadband / fiber optic connection for educational activities, they consider themselves mixed race and, they have a smartphone shared with another member of the household to carry out their daily activities (educational, work, recreation, etc.). On the other hand, there are children who do not possess a smartphone, are destitute, do not possess any type of internet connection for educational activities and reside in rural areas.

Third differentiation criterion (inertia percentage 7.87%)

In the third axis, on the one hand, there are children who are engaged in labour as

unpaid helpers of salaried/day labourers, possess a broadband/fiber optic connection for educational activities and are not poor. On the other hand, there are children who possess a mobile/cellular internet connection, travel to work, live in urban areas and are poor.

5.2. Hierarchical analysis

The hierarchical analysis led to defining three groups of 117,189 children engaged in labour aged 5 to 14, shown in Figure 1.
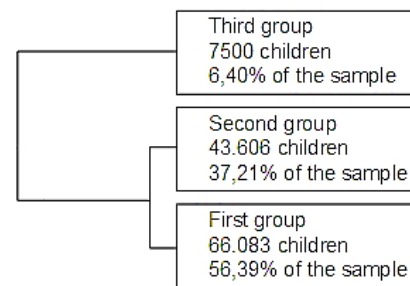

Figure 1: The Classification Chart

First group (66,083 children, 56.39% of the sample)

The children of the first group possess of a broadband/fiber optic or mobile/cell internet connection in order to carry out educational activities, they are not poor, they possess a smartphone or computer collectively with another member of the household in order to carry out their daily activities, and most of them consider themselves mestizos.

Second group (43,606 people, 37.21% of the sample)

The children of the second group do not possess any type of internet connection for the purpose of educational activities, they consider themselves indigenous, they do not possess a smartphone, they are poor, they are engaged in farm work and they reside in rural areas.

Third group (7,500 people, 6.40% of the sample)

The children of the third group do not

attend classes because they do not hold an interest in pursuing an education, they are engaged in labour as day labourers or general labourers, most of them are male and they engage in farm work on someone else's privately owned land.

These group differences were displayed in figure 2 where the graph of the Correspondence Analysis (factorial level 1x2) presents the centroids of the three groups in the two axes. Also, define the differences and similarities between the people in the three groups.
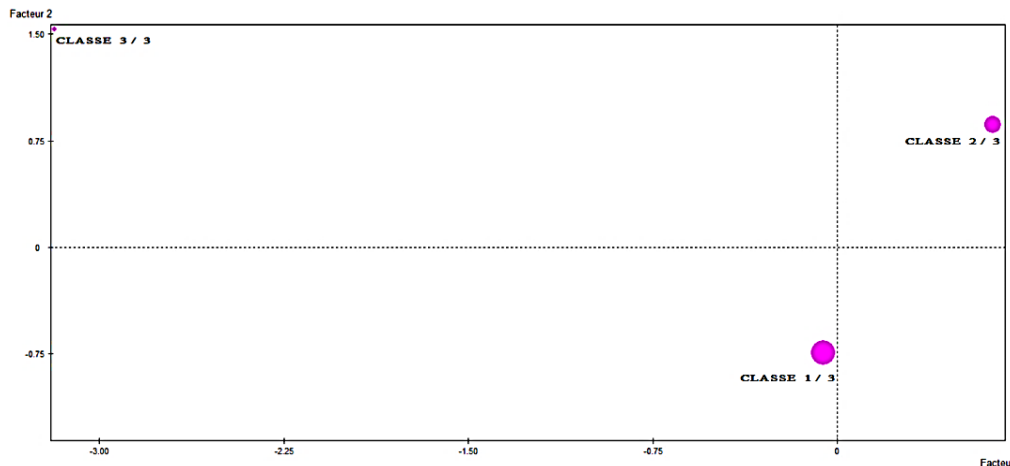

Figure 2: The Correspondence Analysis

CONCLUSIONS

This study investigated the labour of children in Ecuador, whose ages range from 5 upward to 14 during the COVID-19 pandemic of 2020. In the frame of this research, a descriptive analysis was developed utilizing frequencies, percentages and contingency tables; a risk analysis; and a multidimensional statistical analysis, in order to display the main differentiation criteria and the classification into groups of the people investigated (Martin, 2008). The results that stand out in the descriptive study are confirmed by the factor analysis.

In Ecuador in 2020 during the COVID-19 pandemic, 117,189 girls and boys between the ages of 5 and 14 were engaged in labour. 86.37% of them reside in rural areas; 57.13% are male; 11.85% are no older than 10 years old; 3,334 children with ages ranging from 5 upward to 14 do not attend classes; 57.20% of the children who do attend classes do not have any type of internet connection at home; 49.39% of

children who are unable to attend classes do not do so due to lack of financial resources or lack of technological resources; 63.20% of children with ages ranging from 5 upward to 14 years of age who work are of indigenous background; 92.72% of the children who are engaged in labour are unpaid domestic workers; 83.59% are engaged in labour on their own or someone else's farm or land; 68.97% of children with ages ranging from 5 upward to 14 who are engaged in labour are poor and 45.96% are indigent; 90.74% of children whose ages range from 5 upward to 14 years of age who are engaged in labour do not possess a computer to carry out their daily activities; 99.24% of children who are engaged in labour do not possess a tablet; 45.11% of children whose ages range from 5 upward to 14 years of age who are engaged in labour hold possession of a smartphone exclusively or collectively with another member of their household.

Children aged 5 to 14 years, residing within a rural area, have a 1,024.1% higher risk

of being engaged in labour than children residing within an urban area. Also, children whose age ranges from 5 upward to 14 years of age who are of indigenous background, have a 760.2% higher risk of being engaged in labour than children who are not of indigenous background).

Although in Ecuador, according to article 82 of the Ecuadorian Childhood and Adolescence Code (2003) "the minimum age for all types of labour, including domestic service, is set at fifteen years", there are 117,189 girls and boys aged 5 to 14 years of age who were engaged in labour during the COVID-19 pandemic in 2020. Also, even though according to the Constitution of Ecuador Basic General Education is deemed as compulsory, there are 3,334 girls and boys who are engaged in labour and do not attend classes.

The main cause of child labour is the lack of economic or technological resources (due to the lack of a steady internet service, possession of computer or cell phone). The creation and implementation of national policies to eradicate child labour is thus deemed as recommended. Said policies should include measures to offer bonds to the country's poor and indigent families with a special focus on the indigenous population and families living in rural areas. Urgent policies are also required in order to aid children in obtaining the necessary technological tools for children who do not have a connection or a computer, cell phone, etc. to carry out their educational activities.

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CONTRIBUCIÓN DE LOS COAUTORES

Cuadro resumen de la contribución de los coautores

Coautor	Responsabilidad
Jack Iván Vidal Chica	Definición del tema, problema y objetivos del trabajo. Responsable de la coordinación de las actividades. Análisis y resumen de los textos. Redacción del artículo.
Efstathios Stefos Raquel Gilar Corbi	Revisión de la redacción del artículo. Recuperación y selección de los materiales bibliográficos utilizados. Aplicación de la norma APA.
Panagiotis Stefos	Análisis, interpretación, cotejó y resumen de los textos. Participación en la redacción del artículo.