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One Year after the COVID-19 Pandemic in the city of Guayaquil: Evidence of Municipal Response and the Socio-economic Impact

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ABSTRACT

The objective of this article is to monitor the socio-economic impact of COVID-19 on the most vulnerable areas of Guayaquil one year after the start of the pandemic and to point out areas that remain vulnerable for future social linkage projects. The survey was used for the" EPICO-ECOTEC" Project, validated by expert judgment and the average score using Cronbach's alpha. Additionally, a description of the questions and contingency tables were made for better proactive decisions. In this way, this article recommends developing a System of Public Policies from the local level to face the consequences of inequity and the problems of sustainable human development due to COVID-19.

KEYWORDS: socio-economic status; pandemic; vulnerable areas; Guayaquil; COVID-19.

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A un año de la pandemia del COVID-19 en la ciudad de Guayaquil: Evidencia de la respuesta municipal y el impacto socioeconómico.

RESUMEN

El artículo tiene como objetivo monitorear el impacto socioeconómico que ha causado la COVID-19 en las zonas más vulnerables del cantón Guayaquil, a un año del inicio de la pandemia, y proponer zonas que continúan en vulnerabilidad para los futuros proyectos de vinculación social. Se utilizó la encuesta para el Proyecto "EPICO-ECOTEC", el cual fue validado por juicio de experto y el promedio de puntuación mediante el alfa de Cronbach; adicional se realizó descripción de las preguntas y tablas de contingencia para mejores decisiones asertivas. De esta forma, este artículo recomienda desarrollar un Sistema de Políticas Públicas desde lo local para enfrentar las consecuencias de las inequidades y problemas de desarrollo humano sostenible a causa de la COVID-19.

KEYWORDS: Estatus socioeconómico, pandemia, áreas vulnerables, Guayaquil, COVID-19.

Introduction

The COVID-19 pandemic officially began in December 2019, after the first cases of pneumonia of unknown origin were registered in Wuhan City. On March 11, 2020, the World Health Organization announced that the disease had become a pandemic, and governments began to take more restrictive measures to combat it (Coelho et al., 2021; Dang & Nguyen, 2021).

The emergence of COVID-19 and its different variants worldwide has urged global, national, and local authorities to seek emergency aid alternatives immediately (Jawad et al., 2021; Oreffice & Quintana-Domeque, 2021). It is imperative to highlight that emergency actions are oriented towards preserving the health of the inhabitants and mitigating the economic impact of the measures taken, whose purpose is to stop the spread of the virus and the saturation of Intensive Care Units (Duarte et al., 2021; Fang et al., 2021).

The governments of several countries began to take measures to counteract the spread of the disease, including a strict quarantine (Pan & Yue, 2021), which consisted of mobility restrictions of citizens, a ban on massive events, a halt of national and international transport (James et al., 2021; Su et al., 2021), among others. This significantly affected the operations of

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many social institutions and triggered consequences of economic depression, especially in developing countries (Michl, 2021; Mugaloglu et al., 2021).

In Ecuador, the implemented policies include health measures to contain the spread of COVID-19 and the reinforcement of the saturated health system. A second policy implemented included economic measures to support the inhabitants and productive activity (Dai et al., 2021), as the pandemic undermined society's level of income and liquidity (Grasselli, 2021; Ortega-Santos et al., 2021), especially in Guayaquil.

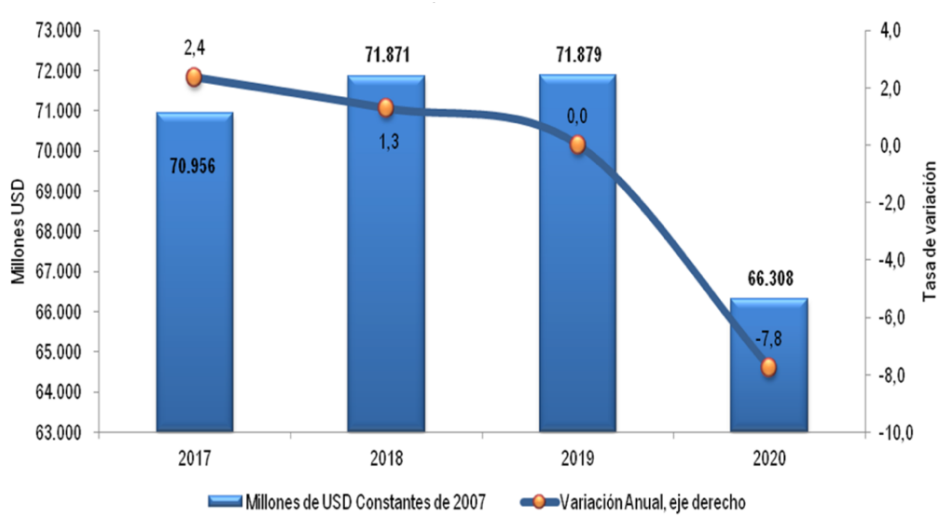

Figure 1. Gross Domestic Product (2007=100, variation rates). Source: BCE.

Despite the efforts put into these measures by the Ecuadorian government, the country's economic performance was severely impacted by COVID-19. This impact represents a 7.8% drop for the year 2020 (see figure 1).

The analysis of the figure is explained mainly by the 11.9% reduction in gross fixed capital formation and a 7% contraction in household final consumption expenditure (BCE, 2021; Sed'a et al., 2021).

The economic performance figures are marked by unemployment since this is a common social and economic phenomenon in countries with falls in their Real Gross Domestic Product (Gupta et al., 2021; Mehlum & Torvik, 2021). The national unemployment rate is 5.8%, and this rate increases to 7.3% when evaluated in the urban area; it falls to 9.1% in women who live in this same area (INEC, 2021).

DOI: http://dx.doi.org/10.46925//rdluz.37.21

Working-age Population	**2.025.617**
Economically Active Population	1.242.733
Employed Population	1.195.992
Adequate Employment	553.647
Underemployment	304.619
Unpaid Employment	53.948
Other non-full Employment	252.091
Unclassified Employment	31.687
Unemployment	46.741
Economically Inactive Population	782.884

Figure 2. Composition of the Population of Guayaquil. Source: INEC-ENEMDU, 2021.

According to the National Survey of Employment, Unemployment and Underemployment 2021 (ENEMDU), Guayaquil concentrates 15% of the Economically Active Population of Ecuador and 9.8% of the unemployed inhabitants at the national level. A particularity in the statistics is that the city of Guayaquil has the lowest unemployment rate of the five main cities of the Ecuadorian territory (see figure 3), with 24.5% underemployment (see figure 2).

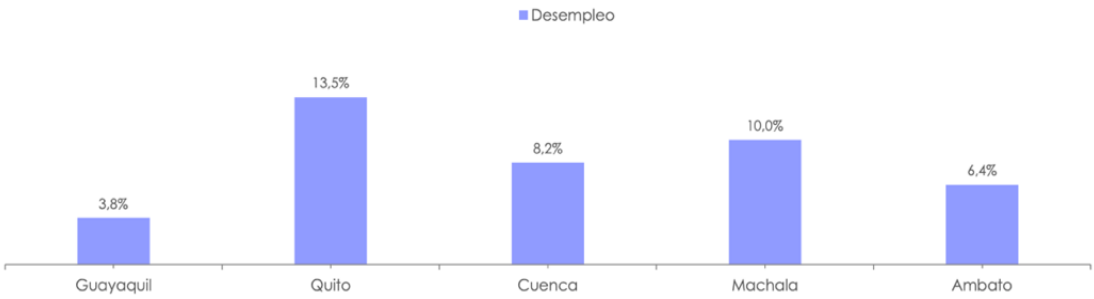

Figure 3. The Unemployement rate of 5 cities (%). Source: INEC-ENEMDU, 2021.

The intervention of local governments was of great help to its inhabitants (Al-Thaqeb et al., 2020; Vergara-Romero et al., 2020). In the case of Guayaquil, the policies aimed to improve the most vulnerable areas and maintain the quality of life of households, the objective of an effective recovery of economic performance being essential (Kaplan et al., 2020; Sorhegui-Ortega et al., 2021) for Guayaquil and its society.

The council's decision continues with the humanitarian mobilization in areas with high population density and an easy spread of the virus. Humanitarian aid went from

DOI: http://dx.doi.org/10.46925//rdluz.37.21

deliveries of food kits (Neha & Kumar, 2021; Orden, 2021) as relief for the economy of the inhabitants, and they can al-locate said savings to other expenses to free medical benefits that continue to save the burden of the item of health (Ho & Gan, 2021; Langley, 2021).

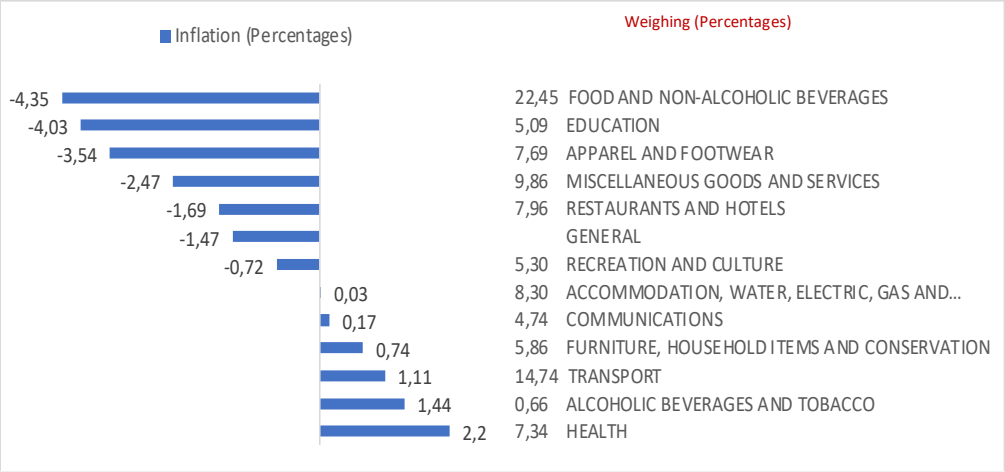

Figure 4. Monthly inflation of the IPC and by divisions of goods and services (%). Source: BCE.

The Mayor's approach responds to the reality experienced by the Ecuadorian population. Figure 4 shows that inflation had a negative variation of 1.47, reflecting inflation of -4.35 for food and non-alcoholic beverages. In addition to this, as a trigger, health services have an inflation rate of 2.2%, which connects with the projection of medical costs in the Latin American region (Willis Towers Watson, 2021).

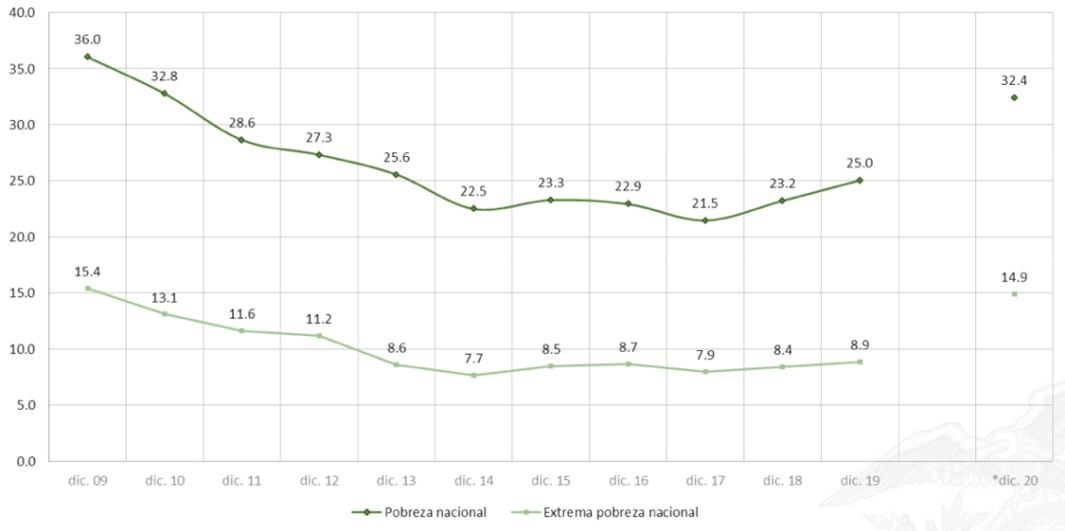

Figure 5. Poverty and Extreme Poverty (%). Source: INEC-ENEMDU, 2021.

DOI: http://dx.doi.org/10.46925//rdluz.37.21

This approach also recognizes that the poverty rate stood at 32.4%, considering a substantial increase. Similarly, the extreme poverty rate increased by 6%. The poverty line complements these figures for December 2020, which was US$84.05 per month for family income per capita and US$47.37 for extreme poverty (see figure 5).

In this context, it is laudable that the local government allocated significant financial resources that are deducted from its sectional budget (Noboa-Salazar et al., 2021). Its authorities are convinced that these specific expenses are necessary since the cost of inaction will be greater.

Guayaquil is the most populous city with 3,453,631 inhabitants in its metropolitan area. It is home to the nation's main port, where 70% of foreign trade cargo is operated, and it is also the top business destination in the Pacific. Ecuadorian and contributes 28.78% of the tax revenues of the National Treasury (SRI, 2022).

This article's objective is to monitor the socio-economic impact of COVID-19 in the most vulnerable areas of Guayaquil one year into the pandemic.

1. Materials and Methods

The report is the result of the events that occurred in the social and economic sphere of Guayaquil society one year into the COVID-19 pandemic, as well as the identification of trends that can form a sustainable vector of long-term development for society.

To achieve the objective of the following report, the following stages were evaluated (Souto-Anido et al., 2020):

Information collection: The EP-02 survey was applied (see Appendix A). This survey was subjected to validation and reliability using the expert judgment technique, concluding with an excellent internal consistency using Cronbach's alpha statistic (Hernández-Rojas et al., 2021).

The validation was applied on the survey designed by Arnaldo Vergara for the "ÉPICO-ECOTEC" project in the search for relevant information for the evaluation of public policies that help the development of the canton.

The procedure is that each expert must judge nine indicators on the 16 questions of the survey. The indicators to qualify are clarity, objectivity, timeliness, organization, sufficiency, consistency, coherence, methodology and relevance. Finally, there will be a

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general average and average for each expert, where the category of acceptance is described from poor to excellent (see Vergara-Romero et al., 2020).

The technological tools to collect the data were "cellular offline mode", through the KoBoToolbox application, an open-source tool that Harvard University developed as a humanitarian initiative.

The research was carried out in the field. The surveyed areas are found in Appendix B, where the Guayaquil area is divided into five areas, in order to group and focus the study. This information was extracted from the spatial polygons to study a significant sample, using '.shp' and '.kmz' files provided by EPICO.

Data processing: The statistical tool used is RStudio, with specialized spmap, shp2dta, and mif2dta software packages. Additionally, the information was contrasted with the Google Earth application.

The entire process of implementation and verification of the methodology was compared in the field, being supervised by the Surrogate Director of the project.

2. Results

The report is organized in five zones, described in the methodological design as Northeast, Northwest, Southeast, Southwest, and Rural parishes.

Table 1. Female gender and age of the beneficiaries.

	Female						
Zoner	Working Parents	From 19 to 25 years old	From 26 to 35 years old	From 36 to 45 years old	From 46 to 60 years old	Over 61 years old	Total
NE	8	48	91	106	106	58	417
NW	6	63	114	137	102	43	465
R	0	1	15	14	19	18	67
SE	3	22	57	80	98	81	341
SW	1	33	90	88	100	85	397
	18	**167**	**367**	**425**	**425**	**285**	**1687**

Source: Own elaboration.

This report consists of data from 2,197 households that were surveyed and that reside in the Guayaquil area. The first result responds to the gender of the household head, 1,687

DOI: http://dx.doi.org/10.46925//rdluz.37.21

were women (76.8%), and 510 were men (23.2%). The average age of the participants is 46 years, and the range goes from 19 to 91 years. Next, the age and gender of the participants are detailed by zones (see tables 1 and 2).

Table 2. Male gender and age of the beneficiaries.

Male							
Zone	Working Parents	From 19 to 25 years old	From 26 to 35 years old	From 36 to 45 years old	From 46 to 60 years old	Over 61 years old	Total
NE	2	9	19	35	40	40	145
NW	2	15	28	28	43	24	140
R	0	0	2	3	4	7	16
SE	2	14	16	29	25	33	119
SW	2	2	17	15	19	35	90
	8	**40**	**82**	**110**	**131**	**139**	**510**

Source: Own elaboration.

In Tables 1 and 2, it can be seen that approximately 39% of female household heads range between 36 and 60 years old, compared to 11% for males. Likewise, it can be seen that 24% of household heads are young women, and 6% are male. 19% of the participants who received the food kit are elderly.

Table 3. Overcrowding

Number of people living in the household														
Zone	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
NE	26	70	111	137	113	48	26	14	5	6	2	1	2	0	1
NW	18	51	130	198	100	59	25	11	7	1	1	3	0	1	0
R	9	12	21	24	9	5	2	0	0	0	0	1	0	0	0
SE	14	38	111	124	74	61	24	6	2	3	0	1	1	0	1
SW	22	59	120	150	77	34	15	7	0	1	1	0	1	0	0
	89	**230**	**493**	**633**	**373**	**207**	**92**	**38**	**14**	**11**	**4**	**6**	**4**	**1**	**2**

Source: Own elaboration.

Table 3 integrates the number of people who live in the same dwelling as the surveyed participants, distinguishing that 33% of the beneficiaries live in overcrowding and 1% live in

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extreme overcrowding. It can also be seen that overcrowding occurs more in the city's northern area.

Table 4. Employment and Unemployment

	Used to work		Did not use towork	
Zone	Works at present	Does not work at present	Works at present	Does not work at present
NE	80	29	96	357
NW	37	31	76	461
R	1	2	13	67
SE	15	20	79	346
SW	14	17	56	400
	147	**99**	**320**	**1631**

Source: Own elaboration.

Table 4 includes the employment situation of the beneficiaries of the food kit, where their employment situation during the health crisis and one year later is represented. 74% of those surveyed did not work during the second delivery of the food kits and today. Likewise, it is shown that 14% of those surveyed were left unemployed, discriminating whether it is an adequate or informal job.

Similarly, 7% of those who received the food kit worked, and 5% became unemployed. The unification of these figures leads to an exploratory analysis of a moderate targeting of the unemployed in vulnerable areas of the city (see table 4).

Table 5. Employment Relationship

Zone	Own Business	Salaried work
NE	72	104
NW	49	64
R	3	11
SE	29	65
SW	22	48
	175	**292**

Source: Own elaboration.

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The total number of employed respondents represents 21%, of which 13% respond to salaried work, and 8% indicate that they have a business. This shows that the targeting of the food kit helped not only the unemployed but also entrepreneurs and employees who live in vulnerable areas of the Guayaquil area (see table 5).

Table 6. People with disabilities

Zone	No	Yes
NE	421	141
NW	532	73
R	65	18
SE	368	92
SW	376	111
	1762	**435**

Source: Own elaboration.

20% of the beneficiaries have a disability and/or a disabled family member; the areas with the most significant number of people with special abilities are in the northeast and southwest of the city (see table 6).

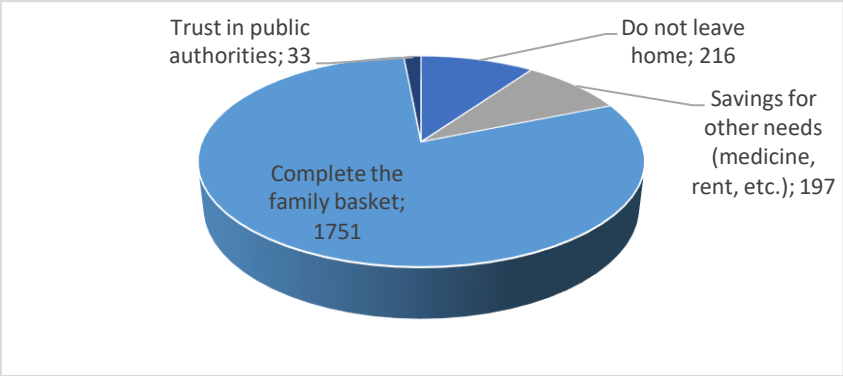

Figure 6. How did the food kit help you? Source: EPICO-ECOTEC SURVEY EP-02.

80% of those surveyed maintain that the food kit helped complete the basic food basket, 10% mention that it helped them to stay home, and 9% claim it helped them use the resources saved to meet other basic needs (see figure 6).

The food kit helped prevent contagion in 72% of the beneficiaries; this figure refers to a family without COVID-19 and where no family member died with said virus.

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Table 7. Disease situation

Zone	Family with COVID		Family without COVID	
	Some family members passed away.	No family members have passed away.	Some family members passed away.	No family members have passed away.
NE	63	92	35	372
NW	29	91	17	468
R	7	12	6	58
SE	15	92	24	329
SW	25	81	23	358
	139	**368**	**105**	**1585**

Source: Own elaboration.

Similarly, 17% of those who received humanitarian aid suffered from COVID-19, but no family member died. It can be inferred that the kit prevented them from becoming infected and, in turn, prevented family members from becoming infected (see Table 7).

Table 8. Perception of humanitarian aid

Zone	under	medium-low	medium	medium-high	high
NE	0	10	125	21	406
NW	0	10	129	67	399
R	0	0	6	14	63
SE	0	0	36	31	393
SW	0	0	58	3	426
	0	**20**	**354**	**136**	**1687**

Source: Own elaboration.

The scope of humanitarian aid is expressed through the perception of the beneficiaries, where it is observed that 77% of the beneficiaries have high perception and 22% have a medium perception of the delivery of the food kit (see table 8).

The perception concerning the improvement of the benefited area shows that 54% of the beneficiaries have high perception and 45% have medium perception (see table 9).

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The survey reveals that 85% of the beneficiaries of humanitarian aid consider the delivery of the kit was timely; this reveals that it did help mitigate employment problems, inflation in medical costs, and economic impact on the Ecuadorian economy (see figure 7).

Table 9. Perception of aid to the area

Zone	Under	Medium-low	Medium	Medium-high	High
NE	1	10	122	209	220
NO	0	15	173	207	210
R	0	2	17	18	46
SE	0	1	64	44	351
SO	0	0	59	66	362
	1	**28**	**435**	**544**	**1189**

Source: Own elaboration.

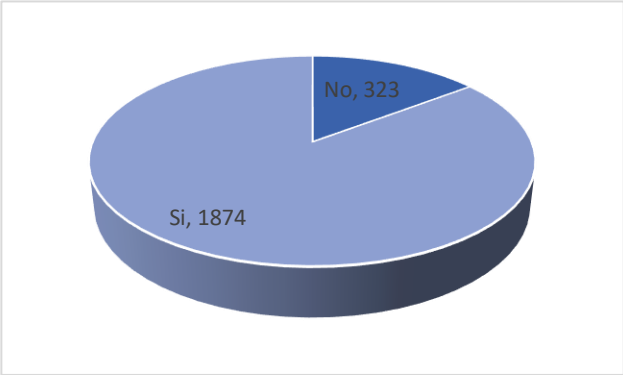

Figure 7. Was the humanitarian aid timely? Source: EPICO-ECOTEC SURVEY EP-02.

Within table 10, 66% of the total number of beneficiaries consider that they need a job as a priority, and 24% consider it an average need (see table 10). When inferring these figures with the gender variable, 52% of the total beneficiaries are women, and 15% are men. Likewise, relating it to the variable "if currently working", we found that 9% aspire to a job change and 4% have a business, although they prefer to have a salaried job.

This study's Unsatisfied Basic Needs (UBN) include food, health, education, drinking water, electricity, and internet access. For 71% of the respondents, they mention food as a high need, while 61% indicate that they have a high health need, 57% have a high need for

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education, 67% consider drinking water a high need, 60% of those surveyed cannot afford their electric bills and 59% cannot afford internet bills (see figure 8).

Table 10. Employment Need

	Employment				
Zone	Under	Medium-low	Medium	Medium-high	High
NE	87	44	132	65	234
NO	37	26	141	50	351
R	2	0	6	7	68
SE	1	0	37	21	401
SO	9	6	62	5	405
	136	**76**	**378**	**148**	**1459**

Source: Own elaboration.

	Feeding					Health					Education				
Sector	under	medium low	medium	medium high	high	under	medium low	medium	medium high	high	under	medium low	medium	medium high	high
NE	0	1	77	35	589	0	5	95	115	487	3	13	104	111	471
NW	4	31	482	190	1977	8	51	506	463	1656	78	73	527	431	1575
R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	**32**	**559**	**225**	**2566**	**8**	**56**	**601**	**578**	**2143**	**81**	**86**	**631**	**542**	**2046**

	Water					Electric Power					Internet				
Sector	under	medium low	medium	medium high	high	under	medium low	medium	medium high	high	under	medium low	medium	medium high	high
NE	0	30	100	41	531	0	39	104	82	477	14	31	121	30	506
NW	11	116	484	199	1874	11	126	504	388	1655	169	121	501	209	1684
R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11	**146**	**584**	**240**	**2405**	**11**	**165**	**608**	**470**	**2132**	**183**	**152**	**622**	**239**	**2190**

Figure 8. Unsatisfied Basic Needs. Source: EPICO-ECOTEC SURVEY EP-02.

In the perception of the beneficiaries about the products that were delivered in the food kit, it is observed that around 84% of the beneficiaries have a high perception about the variety, access, and expiration of the kit products. Similarly, approximately 65% of the beneficiaries have a high perception of the quality and quantity of the kit products (see figure 9).

The survey has a psychological evaluation component. These questions project that 64% of those surveyed perceive that the time dedicated to housework or childcare has increased a little. In the same way, 27% of the beneficiaries consider that they spend much time on housework and/or childcare (see table 11).

We should point out that 53% of the beneficiaries feel significantly affected emotionally, and 38% feel somewhat affected. The arguments of the field visit denoted that this feeling, in most cases, does not respond to a family member but to close friends, distant relatives, or neighbors (see table 12).

	Variety					Quality					Quantity				
Sector	under	medium low	medium	medium high	high	under	medium low	medium	medium high	high	under	medium low	medium	medium high	high
NE	14	145	67	336	0	7	98	38	418	0	10	101	31	418	0
NW	2	158	77	368	0	1	129	10	465	0	2	125	8	470	0
R	0	0	15	68	0	0	0	1	82	0	0	0	2	81	0
SE	0	15	97	348	0	0	13	9	438	0	0	16	3	441	0
SW	0	42	123	322	0	0	37	5	445	0	0	37	4	446	0
	16	**360**	**379**	**1442**	**0**	**8**	**277**	**63**	**1848**	**0**	**12**	**279**	**48**	**1856**	**0**

	Access					Expiration				
Sector	under	medium low	medium	medium high	high	under	medium low	medium	medium high	high
NE	28	576	118	3670	2	2812	0	32	720	758
NW	16	554	126	3696	4	3712	0	0	0	0
R	0	0	0	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0	0	0	0
	44	**1130**	**244**	**7366**	**6**	**6524**	**0**	**32**	**720**	**758**

Figure 9. Perception of the food kit products. Source: EPICO-ECOTEC SURVEY EP-02.

Table 11. Housework or childcare

Zone	No	Yes, a lot	Yes, a little
NE	59	220	283
NO	26	182	397
R	2	20	61
SE	37	97	326
SO	65	78	344
	189	597	1411

Source: Own elaboration.

40% of the beneficiaries expressed that their children helped with the housework, while 28% mentioned that their partners gave the necessary help, and 19% were helped by a family member (see table 13).

Table 16 shows whether the respondents had difficulties obtaining contraceptive methods or pregnancy control caused by the mobility restrictions. 3% of those surveyed had difficulties obtaining contraceptive methods, 17% had no difficulties, and 80% did not use contraceptives, either due to age or sterilization (see table 14).

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Table 12. The pandemic affected him emotionally

Zone	No	Yes, a lot	Yes, a little
NE	82	259	221
NO	37	300	268
R	5	54	24
SE	35	268	157
SO	46	281	160
	205	1162	830

Source: Own elaboration.

Table 13. Household chore responsible

Zone	Relatives	Children	Partner/Spouse	Nobody
NE	128	147	196	91
NW	91	248	203	63
R	9	41	23	10
SE	95	215	105	45
SW	90	226	99	72
	413	**877**	**626**	**281**

Source: Own elaboration.

The data allows us to evaluate the effort of the Mayor's Office of Guayaquil and the delivery of food kits during the various confinements during this pandemic. The information obtained allows us to arrive at findings that can be used to make proactive decisions in various socio-economic areas.

Table 14. Difficulty obtaining contraceptive methods.

Sector	I do not use contraceptive methods	I had no difficulties	I had difficulties
NE	493	46	23
NW	474	114	17
R	71	10	2
SE	344	105	11
SW	370	105	12
	1752	**380**	**65**

Source: Own elaboration.

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Conclusions

The COVID-19 pandemic had socio-economic repercussions in 2020 reflected in a sharp drop in real GDP of 7.8%, falling from 71.789 million dollars in 2019 to 66.308 million in 2020. In comparison, the rate of National unemployment is 5.8%; this rate increases to 7.3% in urban areas, and in female unemployment, reaching 9.1%.

Guayaquil is home to 15% of the country's Economically Active Population and 9.8% of the unemployed nationwide. This means that close to 50 thousand inhabitants of the city do not have a job and if the underemployed, the unpaid, other non-full jobs and the un-classified are added, we have a figure close to 700 thousand people with problems of employment and income in the city. That is why the intervention of the local government was of great help to its inhabitants.

In the case of the Guayaquil area, the policies aimed to improve the most vulnerable areas and maintain the quality of life of households, an effective recovery of economic performance for the area and society being essential.

We found that the Mayor's approach responded to the needs of the population, although it is true that inflation experienced a negative variation of 1.47 percentage points, health services, and the consumer price index increased by 2.2%.

Of the 2,197 households surveyed in the vulnerable areas of the Guayaquil area, 76.78% of them were headed by women and 23.21% by men. It is also observed that approximately 39% of female households' heads range between 36 and 60 years old, while 11% for men. Likewise, 24% of the heads of households are young women, and 6% are male; 19% of the respondents who received the food kit are elderly.

The total number of employed respondents represents 21%, of which 13% respond to salaried work, and 8% indicate that they have a business. This shows that the targeting of the food kit helped not only the unemployed but also entrepreneurs and employees who live in vulnerable areas of the Guayaquil area.

80% of those surveyed maintain that the food kit helped complete the basic food basket, 10% mention that it helped them not to leave the house and 9%n claim it helped them use the resources saved to satisfy other basic needs. It can also be inferred that this contributed to preventing contagion in 72% of the beneficiaries. Similarly, 17% of those who intervened with humanitarian aid suffered from COVID-19, but no family member died. It

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can be inferred that the kit helped them not get infected and, in turn, prevented the members of the family from becoming infected.

The scope of humanitarian aid is expressed through the perception of the beneficiaries, where it is observed that 77% of the beneficiaries have high perception and 22% have medium perception of the delivery of food kits. The survey revealed that 85% of the beneficiaries of humanitarian aid consider that the delivery of the kit was timely; this indicates that it mitigated employment problems, inflation in medical costs and economic impact suffered by families.

Regarding Unsatisfied Basic Needs (UBN), 71% of the respondents mention food as a high need, while 61% indicate that they have a high health need, 57% have a high need for education, 67% % weigh a high need for drinking water, 60% of those surveyed cannot afford their electric bills and 59% cannot afford internet access.

84% of the beneficiaries have a high perception of the variety, access and expiration of the food kit products. Similarly, approximately 65% of the beneficiaries have a high perception of the quality and quantity of the kit's products.

64% have the perception that the time dedicated to housework or childcare has increased a little. In the same way, 27% of the beneficiaries consider that they spent much time on housework and/or childcare. 40% expressed that the children helped with the housework, 28% mentioned that their partners provided help, while 19% received help from a family member.

On the other hand, the survey revealed that 3% of those surveyed had difficulties obtaining contraceptive methods, 17% had no difficulties, and 80% did not use them, either due to age or sterilization.

In conclusion, according to the data evaluated, it can be seen that the effort of the Mayor's Office of Guayaquil and the delivery of food kits during the various confinements of this pandemic arrived at the right time and is very well received by the beneficiaries. In addition, the information obtained will allow making proactive decisions in various socio-economic areas.

After the disastrous initial months of the pandemic in the country and the coming to power of President Guillermo Lasso, with the proposal to vaccinate 9 million people in 100 days, through a campaign that involved titanic planning and logistics effort, this included

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meticulous coordination between the central government and local governments, especially that of Guayaquil, which was the initial epicentre of infections and deaths in the country, whose axis was the private sector, universities and other organizations, with particular emphasis on the fundamental role of private companies in providing their advice and logistical resources.

An example of the above was the Inter-institutional Framework Agreement between the Cabildo de Guayaquil and the Ministry of Public Health to inoculate the population of the city of Buenos Aires against COVID-19, which began with the delivery of 1.8 million vaccines to Guayaquil and, after in turn, the council provided infrastructure and logistics for an effective and timely vaccination process.

This effort resulted in a well-structured campaign with segmented "vaccination days" for private and state sector workers, students, and the general public. Additionally, there have been special days to vaccinate hard-to-reach groups, such as indigenous, rural and migrant populations. Innovation also played a role: voter registration and voting precincts were used to reach Ecuadorians and vaccinate them. This campaign allowed that today the country has 86.51% of the population with at least one dose and 80.71% with two doses.

Recommendations

It is recommended to develop a System of Public Policies from the local level to face the consequences of inequities and sustainable human development problems. It is necessary to identify the situation of the Sustainable Development Goals (SDG). There is a need to land them at the level of locality or territory, put them into monitorable indicators that can be visualized, and prepare plans and projects within a System of Territorial Public Policies that form a systemic scheme of a solution to the socio-economic problems of the territory.

In addition, it is recommended to continue with humanitarian aid but within the Integrated System of Public Policies. Prioritize the zones through data on overcrowding, the concentration of the elderly, and whose need for food is currently a high priority (see table 15).

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Table 15. Difficulty obtaining contraceptive methods

NORTHEAST AREA		
CODE	**ZONE NAME**	**PRIORITY**
01.01.01	SAN FRANCISCO	URGENT
01.01.02	PASCUALES	HIGH
01.01.03	BASTIÓN POPULAR BLOQUE 11	MEDIUM
01.01.04	KM 8,5 VÍA A DAULE	HIGH
01.01.05	MAPASINGUE ESTE	HIGH
01.01.06	MAPASINGUE OESTE	HIGH
01.01.07	PROSPERINA	MEDIUM
01.01.08	BASTIÓN POPULAR BLOQUE 1	MEDIUM
01.01.09	JUAN MONTALVO	MEDIUM
01.01.10	VERGELES	MEDIUM
NORTHWEST AREA		
CODE	**ZONE NAME**	**PRIORITY**
01.02.01	VOLUNTAD DE DIOS	MEDIUM
01.02.02	FLOR DE BASTIÓN BLOQUE 22 / LAS DELICIAS	MEDIUM
01.02.03	REINALDO QUIÑONEZ, SAN IGNACIO DE LOYOLA, NUEVA PROPERINA	URGENT
01.02.04	SERGIO TORAL 2: SECTOR CAROLINA	MEDIUM
01.02.05	FLOR DE BASTIÓN BLQ 16-17, BALERIO ESTACIO Y JANETH TORAL	HIGH
01.02.06	TRINIDAD DE DIOS/MONTE SINAHÍ	MEDIUM
01.02.07	FLOR DE BASTIÓN BLQ 1... 6; 15 Y 16 CASA DEL TIGRE / BALERIO ESTACIO 4 Y 6	HIGH
01.02.08	FLOR DE BASTIÓN BLQ 8, 20, 6 Y 21 / MARIA AUXILIADORA / VALLE DE LA FLOR	HIGH
01.02.09	CIUDAD DE DIOS	MEDIUM
01.02.10	SERGIO TORAL 1	HIGH
01.02.11	PARAISO DE LA FLOR	MEDIUM
01.02.12	FORTIN	HIGH
01.02.13	LOMAS DE LA FLORIDA	MEDIUM
SOUTHEAST AREA		
CODE	**ZONE NAME**	**PRIORITY**
02.01.01	GUASMO SUR 1	URGENT
02.01.02	FERTISA	URGENT
02.01.03	ISLA TRINITARIA SUR 1	HIGH
02.01.04	GUASMO SUR 2	URGENT
02.01.05	GUASMO SUR 3	URGENT
SOUTHWEST AREA		
CODE	**ZONE NAME**	**PRIORITY**
02.02.01	SUBURBIO 1	URGENT

02.02.02	EL CISNE Y BARRIO CHICAGO	URGENT
02.02.03	SUBURBIO 2	HIGH
02.02.04	LAS MALVINAS/ESMERALDA CHIQUITA	URGENT
02.02.05	ISLA TRINITARIA NORTE 1	URGENT
	RURAL AREA	
CODE	**ZONE NAME**	**PRIORITY**
03.01.01	TENGUEL	URGENT

Source: Own elaboration.

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Appendix A

EPICO-ECOTEC SURVEY EP-02

Project: Impact of humanitarian aid in health crisis by COVID-19.

Objective: To collect information regarding the impact of the humanitarian aid given by the Guayaquil Mayor's Office to vulnerable areas of the city as a strategy to face the COVID-19 health emergency.

Instructions: Complete the required information and mark with an "X" in the option that you consider pertinent.

1. Gender: _____ 2. Age: ___

3. Number of people living with you: ___

4. Currently working: Yes (_) No (_)

5. If the previous answer is “yes”, choose an option.

Own Business (_) Dependency Relationship (_)

6. During the health crisis, did you have a job? Yes (_) No (_)

7. Do you have a family member with a disability? Yes (_) No (_)

8. As a beneficiary, you consider that the delivery of the food kit helped your family to:

Complete the basic food basket ___

Do not leave home ___

Save for other needs (medicine, rent, etc.) ___

Build trust in public authorities (Mayor’s Office) ___

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9. During 2021, will you or any family member who lives with you suffer from COVID-19? Yes (_) No (_)

10. During the health crisis, did you or a family member die from COVID-19? Yes (_) No (_)

11. Select from 1 to 5, where 1 is "low perception" and 5 is "high perception".

Characteristic	1	2	3	4	5
Degree of kit support					
Improvements in the area					

12. Do you consider that the humanitarian aid was opportune? Yes (_) No (_)

13. Please select from 1 to 5, where 1 is "low need" and 5 is "priority need".

UBN	1	2	3	4	5
Feeding					
Health					
Job					
Education					
Water					
Electric Power					
Internet					

14. Please select from 1 to 5, where 1 is "totally dissatisfied", and 5 is "totally satisfied".

Characteristic	1	2	3	4	5
Variety of products					
Quality of the products					
Quantity of products					
Access to the food kit					
Product expiration					

15. During the pandemic, do you feel that the time for housework or child care has increased?

No (_)

Yes, a little (_)

Yes, a lot (_)

16. Do you feel that the pandemic has affected you emotionally?

No (_)

DOI: http://dx.doi.org/10.46925//rdluz.37.21

Yes, a little (_)

Yes, a lot (_)

17. Who participated in the household chores?

Patner/Spouse (_)

Children (_)

Relatives (parents, siblings, cousins) (_)

Nobody (_)

18. Did you have difficulties obtaining contraceptive methods or pregnancy control?

I do not use contraceptive methods (_)

I had no difficulties (_)

I had difficulties (_)

Appendix B

Table 16. Area Division

NORTHEAST AREA	
CODE	**ZONE NAME**
01.01.01	SAN FRANCISCO
01.01.02	PASCUALES
01.01.03	BASTIÓN POPULAR BLOQUE 11
01.01.04	KM 8,5 VÍA A DAULE
01.01.05	MAPASINGUE ESTE
01.01.06	MAPASINGUE OESTE
01.01.07	PROSPERINA
01.01.08	BASTIÓN POPULAR BLOQUE 1
01.01.09	JUAN MONTALVO
01.01.10	VERGELES
NORTHWEST AREA	
CODE	**ZONE NAME**
01.02.01	VOLUNTAD DE DIOS
01.02.02	FLOR DE BASTIÓN BLOQUE 22 / LAS DELICIAS
01.02.03	REINALDO QUIÑONEZ, SAN IGNACIO DE LOYOLA, NUEVA PROPERINA

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01.02.04	SERGIO TORAL 2: SECTOR CAROLINA
01.02.05	FLOR DE BASTIÓN BLQ 16-17, BALERIO ESTACIO Y JANETH TORAL
01.02.06	TRINIDAD DE DIOS/MONTE SINAHÍ
01.02.07	FLOR DE BASTIÓN BLQ 1... 6; 15 Y 16 CASA DEL TIGRE / BALERIO ESTACIO 4 Y 6
01.02.08	FLOR DE BASTIÓN BLQ 8, 20, 6 Y 21 / MARIA AUXILIADORA / VALLE DE LA FLOR
01.02.09	CIUDAD DE DIOS
01.02.10	SERGIO TORAL 1
01.02.11	PARISO DE LA FLOR
01.02.12	FORTIN
01.02.13	LOMAS DE LA FLORIDA

SOUTHEAST AREA

CODE	ZONE NAME
02.01.01	GUASMO SUR 1
02.01.02	FERTISA
02.01.03	ISLA TRINITARIA SUR 1
02.01.04	GUASMO SUR 2
02.01.05	GUASMO SUR 3

SOUTHWEST AREA

CODE	ZONE NAME
02.02.01	SUBURBIO 1
02.02.02	EL CISNE Y BARRIO CHICAGO
02.02.03	SUBURBIO 2
02.02.04	LAS MALVINAS/ESMERALDA CHIQUITA
02.02.05	ISLA TRINITARIA NORTE 1

RURAL AREA

CODE	ZONE NAME
03.01.01	TENGUEL