

**Right to food in times of COVID-19****El derecho a la alimentación en época de COVID-19**

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**Abstract**

COVID-19 pandemic caused countries to enter quarantine, which caused the total or partial closure of some activities. In Ecuador, the quarantine started on March 17, 2020, this caused the limitation of the manufacturing industry and food production, so the objective of this research is to determine the incidence of the index of food production and manufacturing industry in the malnutrition index of this population. Pearson's statistic was applied to determine if there is correlation between the variables of study, where it was obtained that there is a direct linear correlation between the index of people with malnutrition, Food Production Index and Index of production of the manufacturing industry of 0.41 and 0.61 respectively, Ecuador has an increasing trend of malnutrition rate since 2016, date that obtained 9.7% and currently has reached 12.5%. In addition, the decreasing trend of food is contrary to the trend of the population, a situation that threatens the availability of food.

**Undernutrition, Food, COVID-19, Right to food, Food security**

**Resumen**

La pandémica COVID-19 ocasionó que los países ingresen en cuarentena, lo que causó el cierre total o parcial de algunas actividades. En Ecuador, la cuarentena inició el 17 de marzo de 2020, esto ocasionó la limitación de la industria manufacturera y la producción de alimentos, por eso el objetivo de esta investigación es determinar la incidencia del índice de la producción de alimentos e industria manufacturera en el índice de desnutrición de esta población. Se aplicó el estadístico de Pearson para determinar si existe correlación entre las variables de estudio, donde se obtuvo que existe una correlación lineal directa entre el índice de personas con desnutrición, Índice de Producción de Alimentos e Índice de producción de la industria manufacturera de 0,41 y 0,61 respectivamente, Ecuador tiene una tendencia creciente de la tasa desnutrición desde el año 2016, fecha que obtuvo 9,7% y actualmente ha alcanzado el 12,5%. Además, la tendencia decreciente de los alimentos es contraria a la tendencia de la población, situación que atenta a la disponibilidad de alimentos.

**Desnutrición, Alimentos, COVID-19, Derecho a la alimentación, Seguridad alimentaria**

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## Introduction

The food and nutrition of individuals and populations has been forcibly affected; the distribution, availability and access to food, and possibly even the way it is produced, has changed (Rodríguez Osia & Rodríguez Osia, 2020). The international treaties signed in the field of human rights, there is an obligation contracted by the states to adopt effective measures to make the right to food effective, but to do so it is essential to increase the level of income, guarantee access to productive resources and design agrarian and food systems that allow the established objectives to be met (Carretero García, 2019). Due to the COVID-19, food production and manufacturing production were affected, which threatens food security in Ecuador. In addition, the closure of borders slowed down the import and export of food, which makes it important to rethink the importance of national production in order to slow down the growing rate of malnutrition and guarantee the availability, access and diversity of food.

Food is one of the factors that, with the greatest certainty and importance, condition not only physical development and well-being, but also health, performance, human productivity, the development of communities and their possibilities for improvement in the future. The way of eating and nutritional needs is closely related to the way individuals live in their natural environment (López Plana, 2018).

Global food demand is expected to increase by at least 20% over the next 15 years, with the largest increases expected in sub-Saharan Africa, South Asia and East Asia. However, natural capital is being depleted at unprecedented rates and climate change could lead to a significant decline in food production, especially in the most food insecure regions (Food Security, n.d.).

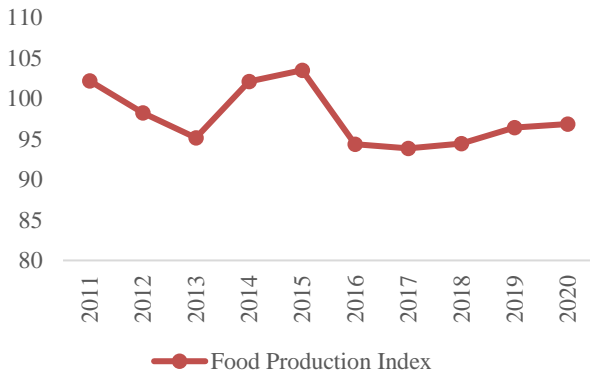
International treaties signed in the field of human rights, there is an obligation on states to take effective measures to realise the right to food, but to do so it is essential to increase the level of income, guarantee access to productive resources and design agrarian and food systems that allow the established objectives to be met. With regard to the need to increase the level of income, it should be stressed that the lack of food availability is mainly attributable to poverty, not to a shortage of stocks, so the best way to combat hunger is to do so by increasing the resources of the poorest people (Carretero García, 2019).

The economic crisis of 2020, stemming in large part from the COVID-19 pandemic, triggered one of the largest increases in global hunger in decades, affecting almost all low- and middle-income countries as discussed in (Global hunger rises during pandemic, 2021). The unprecedented rise in food prices has triggered a global crisis that will push millions more people into extreme poverty, increasing hunger and malnutrition, and threatening to wipe out hard-won development gains (Food Security Update, n.d.).

Article 13 of the Constitution of the Republic of Ecuador states that the Ecuadorian state, in general, must ensure that people have access to healthy and adequate food, in general terms; also, in addition to guaranteeing the right to food for all people, the state must protect priority groups, due to their quality and vulnerability, directly and without delay and receive specialized attention in the public and private spheres, to protect their constitutional right to receive food (RIGHT TO FOOD - Derecho Ecuador, 2018). The lack of access to safe and reliable food has been an ongoing concern during the confinement caused by COVID-19, which has been part of the food insecurity experienced in recent times, and will most likely have negative consequences on the health of the population, especially the most vulnerable (Cali, 2022). Limiting access to food is one of the causes of the affectation of the right to food, the production of sufficient, quality and safe food is necessary to ensure a population with low rates of malnutrition, Ecuador has an increasing trend in the rate of malnutrition since 2016, so it is important to determine the correlation between the rate of food production and the rate of malnutrition.

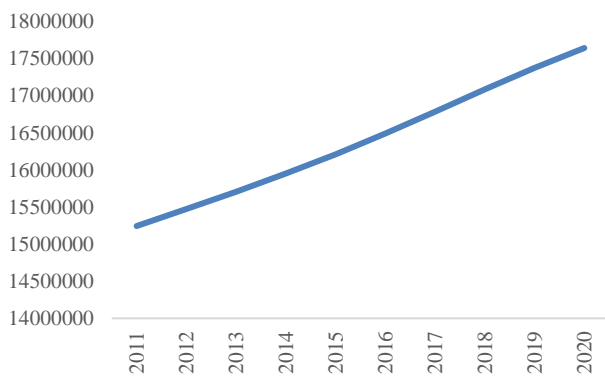
Indicators: Food production and population

Ecuador has a 6% drop in the food production index in 2020 compared to 2019. This situation is worrying because the malnutrition index has been on an upward trend since 2016.



**Graphic 1** Food production index  
Source: (Food Production Index (2004-2006 = 100) - Ecuador | Data, n. d.)

The population index in Ecuador has an increasing trend, which puts the food production index, which has an increasing trend, at a disadvantage, generating concerns about the availability of food to cover the needs of the population.



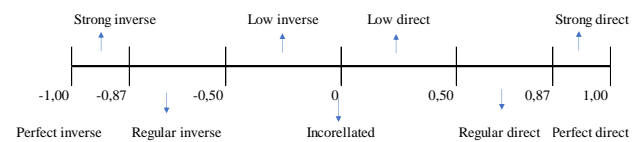
**Graphic 2** Population of Ecuador  
Source: (Population, total - Ecuador | Data, s. f.)

Methodology to be developed

The Pearson correlation statistical method was used, this linear association is applied when the variables are numerical and are crossed in pairs. As the variables are numerical, it is first necessary to see their relationship through a scatter or X-Y graph. Then the covariance (SW) of the variables is calculated and its standardisation is Pearson's correlation coefficient (r or rxy).

The interpretation of the coefficient r involves hypothesis testing and can therefore be considered analysis as well as description. The interpretation of r was accompanied by the scatter plot since the relationship should be considered linear. It indicates or measures the linear association or dispersion of the points with respect to an imaginary line (the linear regression line or the line fitted by ordinary least squares [OLS] (Merchán et al., 2017).

Figure 1 shows the interpretation of the correlation coefficient obtained,  $-1 \leq r \leq 1$ , where the sign indicates whether the relationship is direct or inverse linear and its value in absolute terms to the intensity of the relationship (Merchán & Maldonado, 2017).



**Figure 1** Interpretation of correlation coefficient  
Source: (Merchán & Maldonado, 2017)

Results

Health is a state of complete physical, psychological and social well-being, and not just the absence of disease or infirmity, and which should express the right to a full life without deprivation (Cuesta et al., 2017). Since 2016 Ecuador's malnutrition rate has an increasing trend as shown in Table 1.

Year	Index of undernourished people	Food production index	Manufacturing production index
2016	9.7	93.58	99.40
2017	10.7	93.21	89.74
2018	11.2	93.45	94.61
2019	12.4	98.88	101.28
2020	12.5	92.66	122.11

**Table 1** Malnutrition, food production and manufacturing indices

Table 2 shows the Pearson correlation coefficient between the index of undernourished people and the index of food production, whose value is 0.41, indicating that there is a direct weak linear relationship. A value of 0.61 was obtained, which reveals a regular direct relationship between the rate of undernourished people and the manufacturing production index.

	Index of undernourished people	Food production index	Manufacturing Production Index
Index of undernourished people	1		
Food production index	0.41	1	
Manufacturing production index	0.61	-0.12	1

**Table 2** Pearson's coefficient

## Conclusions

There is a direct linear correlation between the index of undernourished people and the index of food production, whose value is 0.41.

There is also a direct relationship with a value of 0.61 between the index of undernourished people and the manufacturing industry production index.

Ecuador's population has an increasing trend, while its food production index is decreasing, with a 6% drop in 2020, the year in which COVID19 was declared a pandemic by the World Health Organisation, and consequently the quarantine ordered to contain the virus affected trade, especially the availability of foodstuffs.

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