

# The impact of COVID-19 in Uberlândia: a district analysis.

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**Abstract:** This article evaluates the SARS-CoV-2 pandemic impacts in a sectorial area level, specifically at Uberlândia, Minas Gerais, Brazil city. The collected data presented several difficulties to be gathered together, due to mistakes that were made by the local health management; besides that, statistics relied on the epidemiological bulletin daily updated by the city hall. The collected data from the local city website shows that marginalised districts suffered more infections and hospitalizations from the start of 2020 to April 2022, demonstrating the social inequalities during the global pandemic reflected into the observed city and its citizens.

**Keywords:** COVID-19, Uberlândia, districts, hospitalisation, infection, inequalities, social

## 1. Introduction

In January 2020, a virus with pandemic potential would be identified in Wuhan City, China [1]. Soon, countries that relied on fragile healthcare systems or were going through a recession would also begin to have issues handling the new coronavirus disease (COVID-19) situation.

Therefore, the vulnerable part of society, those who would not have resources to spend on medicaments or protective equipment, would suffer the most if the government did not manage to assist those in need.

Brazil had its own challenges related to public health even before facing the Covid-19 pandemic, which made the fight against the virus tougher than it could be. Social disparities between the northern and southern regions of the country, as it can be seen in [2], were initially reflected in the inability of some regions to deal with the hospitalisation of serious cases, and later, in a collapse of its healthcare system.

But these social disparities are established not just between regions; they are also established between the cities that make up a region and the districts that make up a city. Based on that, there is a city, located in the state of Minas Gerais, named Uberlândia, where the financial conditions of the inhabitants of the districts had influence on the number of cases of contagion by Covid-19, what is demonstrated in [3]. The proposal here is to expand the research program initiated by this article, and settle it on new bases.

To summarise, this article intends to analyse the impacts of COVID-19 on districts among different social classes of the Brazilian city Uberlândia, based

in the state of Minas Gerais.

## 2. Research Methods

To cover the impacts over the Uberlândia city, coronavirus hospitalisation data were obtained through the Uberlândia's Epidemiological Report [5], where 160.583 COVID-19 total cases were recorded between 01/04/2020 and 13/04/2022. However, 0,16% of the total cases were invalid since the district was not informed on hospitalisation. It was also used Uberlândia's district population data [4] and district per capita income [3] to establish a ratio.

In order to manipulate, edit and search through data, R programming language and RStudio were used, as well as Microsoft Excel to get the data. Six districts were selected and placed into the table, relating its number of habitants, hospitalizations per inhabitant (Tab. 1), absolute number of hospitalizations (Tab. 2) and per capita income of these areas (Tab. 3).

**Tab. 1** - Uberlândia districts hospitalisation data.

Districts	Absolute number of inhabitants	Hospitalizations/inhabitants
Centro	7.262	27%
Canaã	14.860	16%
Santa Mônica	35.737	27%

Jardim Europa	4.675	42%
Taiaman	8.318	19%
Morumbi	18.004	28%

**Tab. 2** - Uberlândia districts absolute number of hospitalizations data.

Districts	Absolute number of hospitalizations
Centro	1932
Canaã	2437
Santa Mônica	9817
Jardim Europa	2113
Taiaman	1641
Morumbi	5064

**Tab. 3** - Uberlândia inhabitants income data

Districts	Per capita income	Minimum wage
Centro	R\$2.691	>2
Canaã	R\$768,75	<1
Santa Mônica	R\$1.920,79	>1
Jardim Europa	R\$1.001,45	<1
Taiaman	R\$965,01	<1
Morumbi	R\$791,76	<1

### 3. Results

During the research, many difficulties were found to gather specific data over Uberlândia districts. For example, the minimum wage data was found in the references [3] of a journal and the absolute number of inhabitants are from 2010 at IBGE. The gathered data at the tables demonstrates that peripheral areas with difficult access to medical care, such as in Jardim Europa, expressed higher relative hospitalisation numbers compared to much more populous districts such as those of Santa Mônica. However, regardless of per capita income, what really seems to raise the number of COVID-19 hospitalisations is the concentration of people in an area combined with the localisation of these districts.

### 4. Conclusion

The inquiry led to the following conclusion: on absolute number of hospitalizations, the most affected district of Uberlândia was Santa Mônica, although on relative numbers, the most affected district was Jardim Europa. Nevertheless, that's only

what the static correlations are expressing by itself. Using the capacity of data interpretation, it is possible to add the population of districts whose inhabitants' income represents less than 1 minimum wage.

Doing so will result in an absolute number of hospitalizations in poorer districts larger than Santa Monica and Centro combined. This result shows that the poorest classes of society suffered the most from the Covid-19 pandemic in Uberlândia.

## 5. References

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