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STATISTICAL MODEL OF DELIVERY PRODUCTS AT HOME IN THE CONTEXT OF THE PANDEMIC CRISIS

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Abstract: *Studies for the realization of this work were carried out during a crisis situation degenerated by a pandemic period. Throughout this process, two applications were observed for the delivery of culinary products at home, namely Glovo and FoodPanda. The purpose of this paper is to highlight the most convenient way through which you can order food at home on the days when home-state is indicated and also little contact with other people.*

• Introduction

In order to carry out this paper, the situation of home food deliveries was studied through two applications, but also the delivery through own couriers. It was observed that from a mathematical point of view a function of two real variables can be identified. Two of the most used home delivery applications were taken as a standard, namely Glovo application and the Food Panda application. After the applications were established, the next step was to study with which restaurant each one collaborates. The domain of definition and the codomain of the function was identified, so that after the introduction and processing of statistical data, the function describing the evolutionary model may be identified by polynomial interpolation. In addition, with the two applications, we also studied several restaurants that have their own delivery.

• Material and method

This method is the branch of mathematics that deals with the collection, grouping, analysis and interpretation of data on certain phenomena, as well as some predictions on the development of these phenomena in the future. It also deals with the interpretation of the data provided by descriptive statistics and using them to draw conclusions and make decisions. Without these interpretations, statistics would make little sense, with many calculations but without knowing practically what was calculated and what that number resulting from the calculation means. The "T test" is any statistical hypothesis test in which the student's "t" distribution takes place under the hypothesis which is followed by the test statistics of the student's data.

• Results and discussions

For each of the two applications, it was studied which restaurant they collaborate with, what menus the restaurants offer and what their price is. After which the data were statistically processed and the mathematical model was identified that reflects the concrete study of demand and supply on the market during the state of emergency, the following resulted:

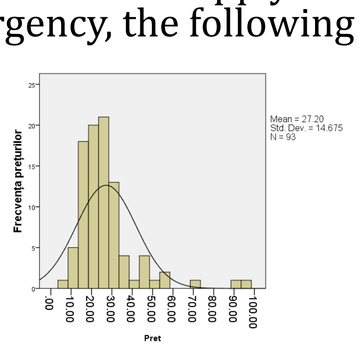

Figure 1. Frequency histogram on the prices of products distributed by application Glovo

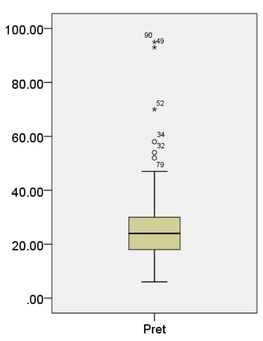

Figure 2. Boxplot diagram regarding the price frequency of the products distributed through the Glovo application

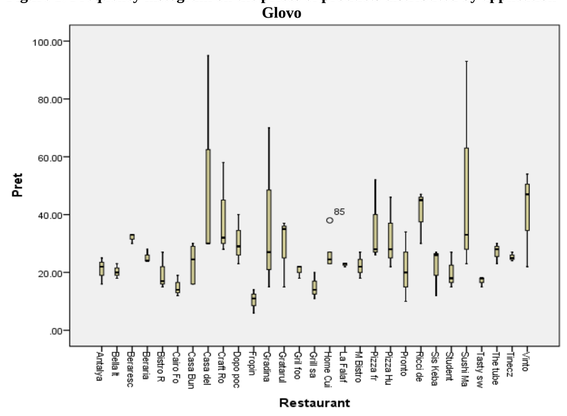

Figure 3. Boxplot diagram regarding product prices, at restaurant level, distributed through the Glovo application

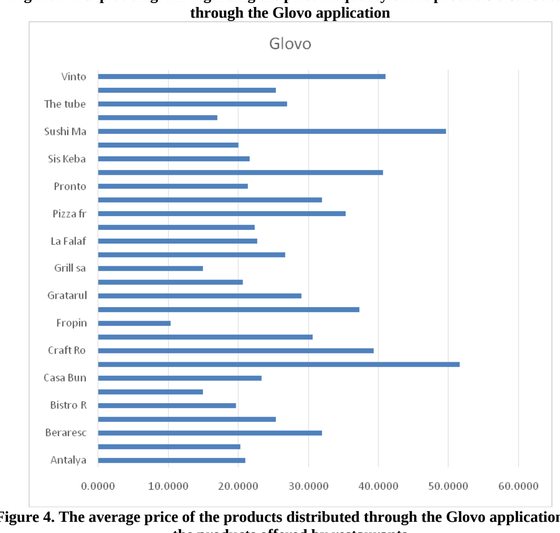

Figure 4. The average price of the products distributed through the Glovo application, of the products offered by restaurants

• Conclusions

The average price of the products distributed through the Glovo application is approximately 27 lei with a median value of 24 lei.
50% of the distributed products have a price less than 24 lei.
The food product prices distributed through the Food Panda application have an average value of approximately 26 lei and a median value of 23 lei.
The two applications are not very far as the price but for3 a constant customer it is more advantageous to order from the restaurants offered by the Food Panda application.
We can conclude that the statistical model function that shows in the closest way the evolution of the market in a pandemic context, although is a function of two real variables, can be optimized and modeled according to the requirements and is the basis of the concrete offer provided.