

## Measurement of Food Insecurity in Selected Districts of Kabul City

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### ABSTRACT

Food Insecurity has significantly increased in both developed and developing countries, causing suffering for people due to lack of food. Food Insecurity has been mostly observed during major crises, such as the global economic crisis in 2008 and the Covid-19 outbreak in 2019. Despite fundamental efforts in fighting poverty, Afghanistan continues to struggle with food insecurity with a large proportion of its population living below the poverty line. Four districts of Kabul city were measured for Food Insecurity in which people were unable to obtain the necessary calories within 24 hours. At the present time, the social problem of Food Insecurity in Afghanistan is becoming more serious as people's lives depend on humanitarian aid and donations. The Foster Greer Thorbecke method of measuring Food Insecurity was utilized in this paper to measure Food Insecurity in four selected districts of Kabul city. Household opinions have been collected via questionnaires and in-person interviewing. The results of this research show that District 13 has the highest level of Food Insecurity, with 70% of residents unable to have sufficient food. Subsequently, district 1 has 65% of people unable to have sufficient calories, district 16 has 62 %and district 8 has 61 %. This paper aims to highlight the efforts of Afghanistan in alleviating food insecurity with a focus on the impact of COVID-19, unfair government policies, bad security, weak infrastructure, low literacy level, medical services shortage, high unemployment rate and lack of modern technology that hinder Afghanistan from accessing enough food. We conclude that Afghanistan would need to develop update policies to mitigate food insecurity.

**Keywords-** Food Insecurity, Foster Greer Thorbecke (FGT), Kabul City.

## I. INTRODUCTION

Food insecurity is a major challenge facing the world. Food Insecurity means having a lack of required food for a person of different age and gender. If a person is not able to obtain the required calories within 24 hours, there may be serious consequences. Food Insecurity has had an upward trend since 1999 in Asian and African countries. For instance, 43% of people in Tanzania have experienced Food Insecurity. At the same time, Yemen was one of the most insecure food countries in the world (O. Connor et al.,2016). This Food Insecurity has been controlled by a sustainable development goal plan. To know who is in Food Insecurity or not, there are limitations which consider

food consuming basket of the Households. If households are unable to obtain the necessary calories, they may experience poverty. However, if they can afford them, they will not be in poverty. (Pish Bahar and et al, 2015).

Generally, in Afghanistan, people are not consuming healthy food whether they are rich or poor. Also, some people have experienced severe hunger after spending a night without food. According to the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA), about 35% of its total population required urgent food and agricultural aid in 2020. This deteriorating situation of food security is not the result of a single cause but numerous challenges and factors including conflict, natural disasters and climate changes, economic downturn, and now COVID-19 (SVU-Int J Agric Sci. 2020;2(2):356–77). The south and southwest

zones of the country have the highest levels of Food Insecurity in the country. The south has 17.2 % and the southwest has 15.7 %. Similarly, the central zone has 11.9 % and, in the northeast, has 11.2% (CSO<sup>1</sup>, 2016-17). Moreover, in the last years due to some factors such as unfair government policies, bad security, weak infrastructure, low literacy level, medical services shortage, high unemployment rate and lack of modern technology have hindered Afghans from accessing good food. In addition, for urban families, the increase in food prices, and for rural people, natural disasters have added to the problems. For example, the Covid 19 outbreak had an impact on food consumption. This has resulted in price increase by 10-20 % in 2020 and perhaps 60-72 % of people will go under the poverty line (Samim<sup>2</sup> and Hu, 2020).

In conclusion, Food Insecurity in Kabul city will cause human catastrophe unless we find a good policy to control it. Therefore, in this topic, Food Insecurity will be measured in Districts 1, 8, 13, and 16 of Kabul city. It is estimated that all four districts of this study will be under the Food Insecurity line and will not be able to provide the required calories. The second aspect we will examine is the impact of the amount of money that households allocate to food -. Thirdly, the roles of variables such as household income, family size and family overloads will also be considered.

## II. CONCEPTUAL FRAMEWORK

Food Insecurity is being unable to receive enough and good quality food (Dowler, 2011). Food Insecurity has appeared and existed from very early times in human society and in 2008 when the global economic crisis was under the rule of the world Food Insecurity reappeared.

Human needs are numerous in this world. Among these needs, one of the necessities for the continuation of life is healthy nutrition. Failure to address this issue will cause social, cultural, and finally problems in society (Abo Noori and Sharazi, 2016). Similarly, Food Insecurity is suffering through not having minimum expenses for the continuance of life and good health conditions (Noori and Shirazi, 2017). At the same time, according to Dowlar (2011), Food Insecurity is an inability to have a good and healthy diet.

In 2008, when the global economic crisis was under rule in the United States of America and other countries, Food Insecurity strongly emerged and highly impressed people's lives. According to Arcuri (2019), there were concerns about social inequality and food inaccessibility. In addition, Food Insecurity is one of the health determinant factors and it causes people to allocate less money for their food. The elimination of Food Insecurity will be very costly when it is developed.

Children who have experienced Food Insecurity mostly they passed obesity, face drugs, weak tooth health, weak growth, Asthma, learning and memory problems, and fail emotion management as well having physical problems (Health and Hunger, 2017). For example, according to the World Bank Report 2013 the under 5 years children who have not had healthy Nutrition in Afghanistan 60.5% of them had weak growth and 33.7% had low weight than the required weight. Similarly, Puram (2016) stated that those who have experienced Food Insecurity have also faced some other difficulties of lower incomes. Also, he added that they first purchase their necessities and if they have enough money then they will buy their luxuries. In addition, the expenses of these people are flexible which affects food costs.

Food Poverty is the Synonymous of food insecurity which means food inaccessibility, unavailability, and instability (Francis et al, 2021). Accessibility to food means to have food in a region or country that can be provided from domestic production, imports, food storage, or humanitarian aid (WFP<sup>3</sup>, 2009. Page 170). Food availability is food from components of homemade food and production, hunting, animal husbandry, fishing, and desert food. It could be also reached from barter trade-offs or aid from governments and Agencies (WFP, 2009). Factors such as storage time, component content, and packing type determine the sustainability of food. Likewise, good management, selling time, and keeping away from sunlight, are all very important to have sustainable food (Rahman, 2009).

According to Ahmadzai (2014), in Afghanistan, one-third of the population lives under the national poverty line and another third lives with food insecurity maternal and children's malnutrition is one of the biggest challenges facing this country. Also, the author added that 70 % of children, 40 % of women, and 70 % of pregnant women suffer from malnutrition in this country. Accordingly, food poverty and food security management in a country are affected by certain essential factors. First, taxation is one of these factors which impact on Food Insecurity. Therefore, controlling food poverty can be achieved by decreasing the tax-paying rate on imported foods and supporting domestic food production, or by reducing tax on agriculture production. (Atkinson, 1970). Second, the education of the head of household, and family size are the other factors that impact household Food Insecurity. An educated person has a great occupation with high life utilities. Income level has a negative correlation to Food Insecurity and the family size has a positive correlation to Food Insecurity. If a family's income is high, they may avoid experiencing food poverty, but if they have a large family, food poverty may still occur. (Kyereme and Thorebeck, 2007). In East Afghanistan, households have many members and only the head of the family has a

<sup>1</sup> Central Statistic Organization of Afghanistan

<sup>2</sup> Sayed Alim Samim and Zhiquan Hu

<sup>3</sup> World Food Program (WFP)

job, leading to food poverty and insecurity and the inability to meet their needs.

### III. RESEARCH BACKGROUND

There has been done some research about Food Insecurity in different parts of the world that indicate the condition of Food Insecurity in some regions and countries.

Ahmadzai and Akbay (The Factors Affecting Food Security in the Eastern Region of Afghanistan, 2020) have studied/examined around 9774 households in 49 districts within Kunar Laghman, Nangarhar, and Nuristan provinces using 99310 as their sample size. The research revealed that 49.9% of these individuals are experiencing food insecurity and 49.6% are experiencing hunger.

Linh et al in the topic (Non-farm employment, Food Insecurity and vulnerability in rural Vietnam, 2020), surveyed 9399 households in 3129 communities, and they identified 61.88% of rural people cannot receive the required calories in one day.

Bukari. et.al in research in Ghana (Effect of COVID-19 on Household Food Insecurity and Poverty: Evidence from Ghana, 2021) have a randomized study about 4015 households, have shown that 35.9 % of the population are under the poverty line and 52.05 % of people are in the poverty line also 33.64% of people have severe poverty and lost employment due to the Covid 19 outbreak.

Bidisha et al. in (Assessing Food Insecurity, Vulnerability and Food Consumption Inequality in the Context of COVID-19: A Case of Bangladesh, 2021), did their research population consisted of 2304 households of which with 18646 people the FGT method was used. Their result shows that the majority of households and individuals are at risk of not having good food, and 34.49% of households are unable to consume the minimum daily calories. Furthermore, they predict that 24.42 % of people escape from poverty .

Akhlaqi et.al has measured (multi-dimensional poverty in Kabul city, 2020). They found out that 27 % of adults are illiterate. For 2.3 % of children, one of them died and for 4.3% one of them is disabled more than 90% of people have access to Health services in the city. In the Life Standards dimension, 90% of people have enough drinking water, 76% of people have electricity. 87% of families have electrical equipment and 76% of people have access to a modern sewage system. So, according to this research, people are not poor in Kabul city.

Mohammad Haider Hakim and Summit Kumar conducted research on the state of poverty in 32 provinces of Afghanistan. Their research on the effects of poverty on employment, health, and education pertains to 2011 and 2012. According to their findings, a

larger percentage of people in these 32 provinces are unemployed and unable to meet their basic necessities.

In the education field, girls attend school at a lesser rate than boys do and some families choose not to send their daughters to school. In the field of health, just 27.6% of kids between the ages of 6 - 23 are able to consume the recommended amount of calories for good health. Nutrient shortages affect pregnant women, and most of them give birth abnormally.

In 2013, ANNA D'SOUZA AND DEAN JOLLIFFE conducted a study on food insecurity against the price fluctuation among vulnerable populations in 34 provinces of Afghanistan, encompassing 150,000 households in the country. They used the ordinary least squares (OLS) approach in their entire study. According to the findings of this study, 80% of households spend half of their money on food, with 44% going toward wheat and 66% going toward other foods. Very few homes are able to give their members the calories that their bodies require, and most are unable to buy nutritious food for a balanced diet because of fluctuations in wheat prices.

To sum it up, research background shows that people faced Food Insecurity in different parts of the world, and they were not able to have a healthy diet and enough food. Therefore, it is necessary to control and investigate food poverty and food security, and this major issue must be resolved forever.

### IV. METHODOLOGY

This research is descriptive and analytical, describing food poverty and food insecurity in four districts of Kabul City. The population includes households who live in Districts 1<sup>st</sup>, 8<sup>th</sup>, 13<sup>th</sup>, and 16<sup>th</sup>. The population count in the statistical society during the research period is as follows: - 1<sup>st</sup> District 130, 000, 8<sup>th</sup> district 500 000. 13<sup>th</sup> district 750 000 and 16<sup>th</sup> district 185, 000 (Kabul Municipality, 2017). These four districts have been chosen because of their cultural, geographical, and income diversity. Also, they have varied utilities in their lives. Stratified randomization for sampling has been used and that sample size is 384 households. Data collection was done by in-person interviews with one household member who received data on the household's income, expenses, and costs for their food. The questionnaire which has been used as a tool for data collection includes demographic and main inquiries. For narrative, professors and experts have been asked and for reliability, Cronbach's alpha has gotten, and the result is 0.876 which is good for every research. The procedure way is that the calories of people according to their sex and age are considered (which is specified in Table 1) then the food calories for a person are calculated (table 2 shows the calories exist in 100 grams). The calculation approach uses consideration of sex and the average monetary value of required calories of foods will count for households, In the second step

price of required calories would be divided by households' needed calories if the result is smaller than zero households have Food Insecurity and if its Greater zero then the household do not have Food Insecurity.

**Table 1: Outlines calories required for the population**

Group	Ages (years)	Average calories
Children	0-5	120.67
Girls	5-12	1966.67
Boys	5-12	2050
Girls	12-18	2133.34
Boys	12-18	2633.34
women	18-30	2100
	30-60	2100
	Over 60	1950
Men	18-30	3000
	30-60	2950
	Over 60	2150

Resource (Nasrat Abadi.et.al,2014).

By using Foster Greer and Thorbeck's Method, food poverty, food headcount, food security headcount, gap, and food poverty, food severity, and insecurity severity will be assigned for the districts, which is specific in relation to 1.

**Table 2: Outlines the calories present in foods**

Foods	Calories amount in 100 grams.
Bread	250
Potato	75
Beans	350
Rice	360
Milk	100
Eggs	100
Beef	320
Tuna	150
Vegetable	75
Apple	75

Resources (Eftekhari,2010)

$$FGT=P(a)\frac{1}{n}\sum_{i=1}^q\left(\frac{z-x_i}{z}\right)^a \dots(1)$$

In this equation, (n) is the total number of the household sample in this study which is 384 households. (q) is the number of poor households, (z) is the Food Insecurity line (people who do not have Food Insecurity according to the criteria). Xi is the benefit amount of the households. a is the parameter that could adopt price (zero, one, and two). These prices are going to set the Food Insecurity headcount, Food Insecurity gap, and

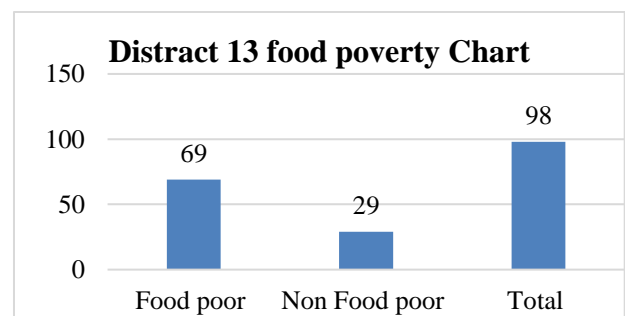
Food Insecurity severity. When parameter (a) value is zero it shows headcount for Food Insecurity (food-poor households divided to all society). If a's value is 1 it means that it appears as the Food Insecurity gap from income deviation and when it is 2, then it offers households-related relative deprivation which can be calculated from the square of the Food Insecurity gap. Food poor headcount and Food Insecurity gap complete each other as headcount shows the poverty frequently of households in the community and cannot say about the depth of Food Insecurity furthermore Food Insecurity gap oppositely shows the depth of poverty and it is not focus on frequently in society (foster Greer and Thorebecke,2010). The Food Insecurity line for Afghanistan is 1.90 USD daily income, a person who lives in Afghanistan and has a lower income than 1.90 USD a day – s/he will be under the Food Insecurity line (United Nations, 2021). This topic seeks people who are in Food Insecurity (identified through FGT Method which counts average calories from the household's income and the purchasing power for food). to calculate, SPSS 22 and Excel 2016 have been used in this topic.

## V. FINDINGS

Table's charts and pie charts show the data for four districts. According to (Table 3) Results, District 13 is the poorest. From 98 households, 69 households cannot provide food in their lives in 24 hours. The Food Insecurity head count is 69 which mean 69 households are not able to get calories and 29 households can receive complete calories. Accordingly, the Food Insecurity gap is 0.41 which means 41% of the population is below the Food Insecurity line and the Food Insecurity severity is 0.16 which indicates the force of Food Insecurity in this district.

**Table 3: Distract 13: Outlines the status of food poverty and insecurity.**

Distract 13	Poor household	69	Q/n	0.70 70%
	non-poor Household	29	P (1)	0.41
	Total of Households	98	P (2)	0.16



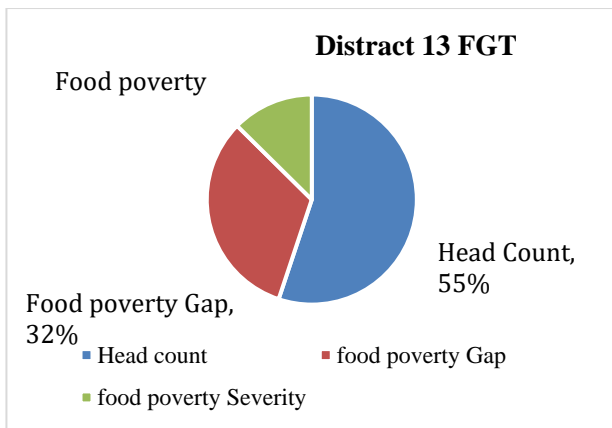


Figure 1

District 1 is the second poorest district for Food Insecurity among the four research districts. 63 families are unable to provide the necessary calories, while only 33 households are capable of providing enough food. The total number of households in this district is 96 households. Specifically, Table 4 and Figure 2 show the statistical data and FGT results, Food Insecurity headcount is 65% the Food Insecurity gap is 0.55% and the poverty severity is 0.30.

Table 4: Outlines Food insecurity status in District

District 1	Poor household	63	Q/n	0.65
	non-poor Household	33	P (1)	0.55
	Total	96	P <sup>(2)</sup>	0.30

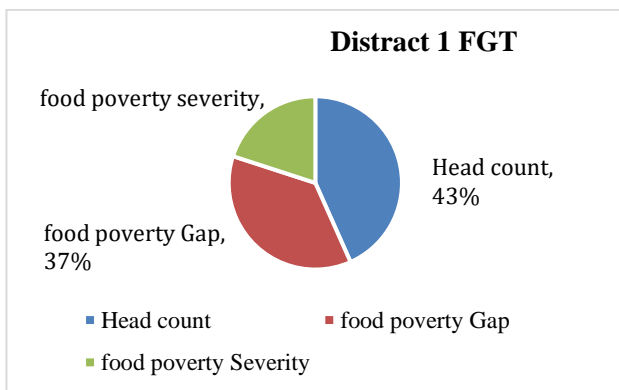
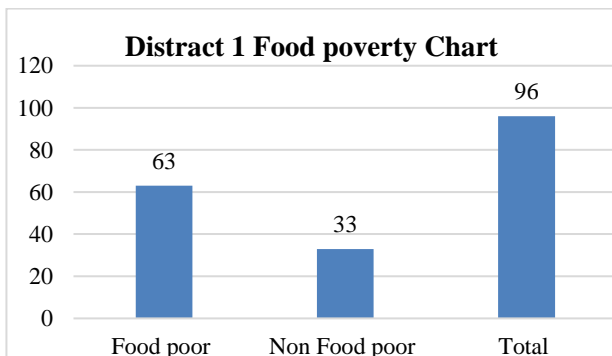


Figure2

After districts 13 and 1, the third poorest food district is 16. In this district, the total number of households is 96. 36 of them have the necessary calories and 60 of them do not. The Food Insecurity overall statistic in the district is 65%, the Food Insecurity gap is 0.46, and the Food Insecurity severity is 0.92. All the statistical Data is seen in Table 5 and Figure3

Table 5: Outlines Food Poverty status in District 16

Distract 16	Food household	60	Q/n	0.62
	Non-poor household	36	P(1)	0.46
	Total	96	P(2)	0.92

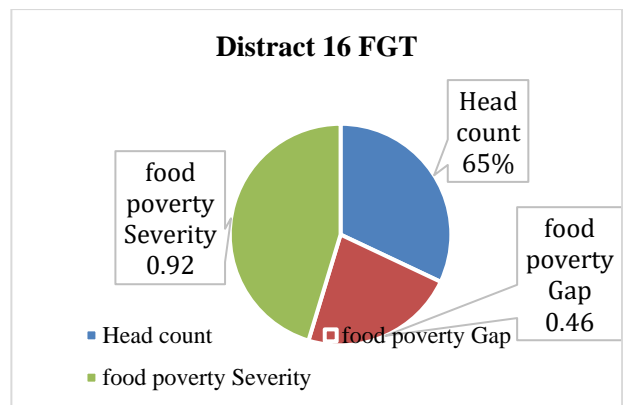
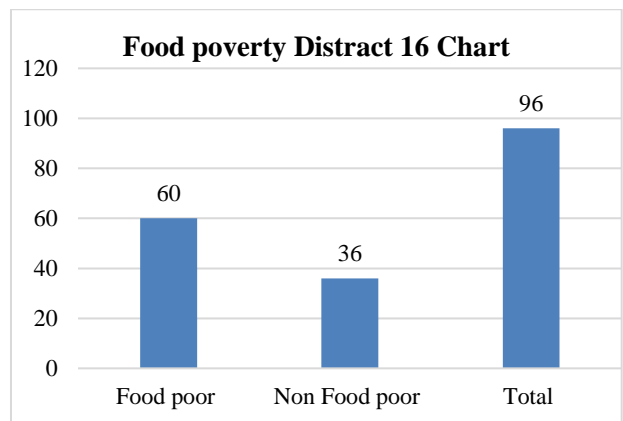


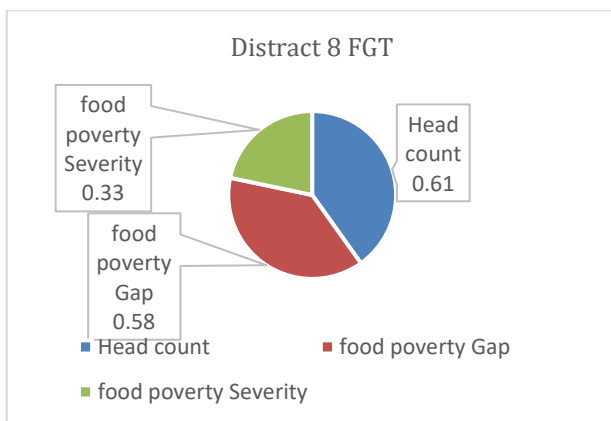
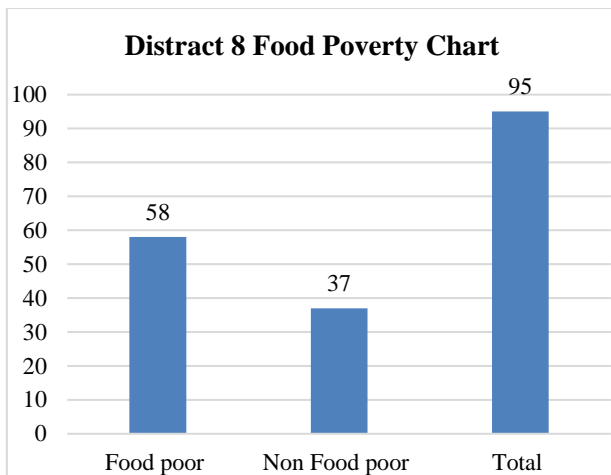
Figure 3

The last district of this study is District 8. Table 6 Figure 4 shows that only 37 of 95 households are capable of providing the required food and 58 are unable to obtain sufficient calories. The headcount of Food Insecurity is 061, the Food Insecurity gap is 0.58 and the Food Insecurity severity is 0.33.

Table 6: Outlines Food poverty status District 8

Distract 8	Poor household	58	Q/n	0.61
	Non-poor household	37	P (1)	0.58
	Total	95	P <sup>(2)</sup>	0.33





## VI. CONCLUSION

To sum it up, food is an essential element of our daily lives, and food insecurity is a major global issue. It is a significant issue among the global populace, and it is a major challenge in both developed and developing nations. The existence of food poverty and insecurity is a catastrophic consequence, so governments and humanitarian agencies must address it.

The purpose of this study is to evaluate food insecurity in four chosen districts (districts 1, 8, 13, and 16) of Kabul City, Afghanistan, by utilizing the FGT method and questionnaires, SPSS 22. The study's results indicate that all districts have food poverty and food insecurity with levels exceeding 50%. Among them, District 13 is characterized by the highest level of food poverty and food insecurity, with 70% of the population unable to meet their needs for food and water, causing a bad situation. District 8 has a low percentage of poor individuals who are not eating well, which is 61 percent, despite the fact that this is more than half of the sample. District 1 is the second food poor district, with 65 percent of the population being food-poor, while District 16 has 62 percent of the population being food-poor. According to the findings of this study, one-half of the population in all four districts is unable to provide enough food to obtain sufficient calories. If this is not

addressed, it will spread throughout the country. Some essential recommendations are suggested for sound solutions. First, humanitarian aid should be donated to the residents of the four districts as this might reduce the problem in the short term. Secondly, food subsidies should be offered to Kabul city, especially to the districts which are aforementioned. Lastly, the Afghan government must offer employment opportunities to the population in districts 13, 1, 16 and 8 through which the purchasing power increases, leading to the sound solution of the said problem. In this study, there were some limitations such as a lack of time and funds that could not allow for wider measurement to all 22 districts of Kabul city and at same time the data is from 2021 and might not be an accurate reflection of other years. Other researchers have the opportunity to measure food poverty and food insecurity in other districts of Kabul city and other provinces of the country.

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