IMPACT OF COVID ON EATING OUT BEHAVIOUR AMONG PEOPLE

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ABSTRACT

This study has been undertaken to analyze the impact of COVID'19 on eating out behavior among people, by using advanced statistical methods which include regression, correlation, and descriptive statistics.

OBJECTIVE OF STUDY

- To understand changes in eating out behavior due to COVID'19

- Make meaningful inference using statistical tools, which can be used to forecast people's behavior in this regard.

RESEARCH AND METHODOLOGY

One method of collecting structured data from a specific demographic is through **surveys**. They usually comprise a set of inquiries intended to elicit particular answers, frequently with the goal of comprehending preferences, behaviours, attitudes, or demographics. Surveys can be carried out using a variety of platforms, including paper forms, phone calls, and internet ones. The results are examined to make decisions, gather information, or guide future study. To ensure dependable data collection, an effective survey design must have precise objectives, objective questions, and suitable sample methods.

For our purpose survey is taken in the form of **Google forms** , especially due to the convenience and easy accessibility of survey participants , and to accommodate a wide array of responses.

For this study primary data in the form of survey questions has been collected from respondents , who are from diverse areas , urban , rural , towns , cities etc .

DATA SOURCE

The following is the link to the Google forms, for reference to questions asked in survey;
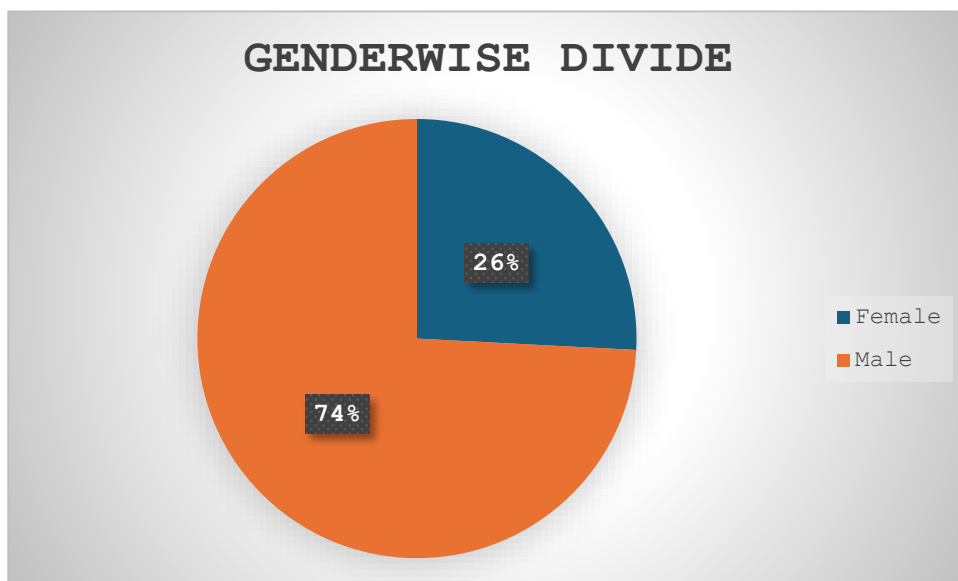
https://docs.google.com/forms/d/e/1FAIpQLSeccilfDbdj1bOoU1orN0gNnUn3G4AnlNqhSrZEuPUsbaWr7Q/viewform?usp=sf_link

The following is the link to the excel file used to derive statistics;

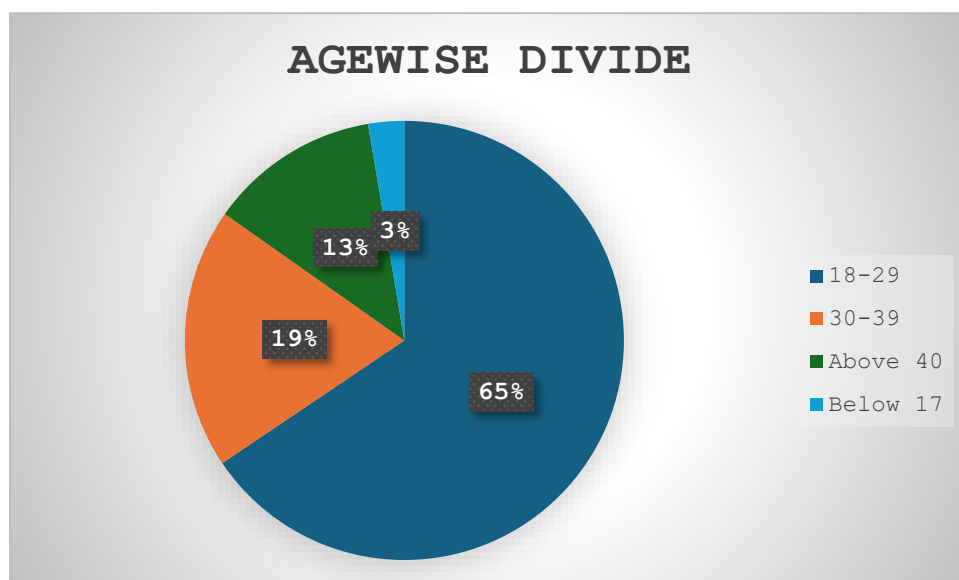https://1drv.ms/x/s!Aht2qGwSpVeQgUvYDYvgIzEiIU7M

DATA SAMPLE ANALYSIS

This section will include the analysis of the demographic characteristics of survey participants,


The survey is filled by male respondents in majority, this could possibly influence the results , since the data is biased

Of those who had filled the form, 65% belong to the age group above 40 , similarly data can be biased by the opinions of that particular age group

AREAWISE DIVIDE

CITY	TOWN	VILLAGE
192	91	19
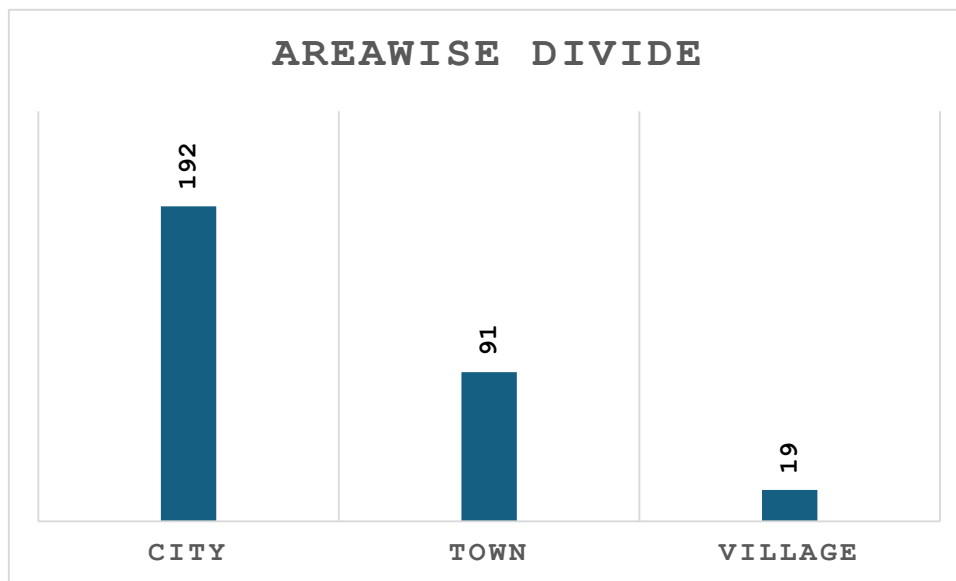
The graph represents area that a survey participant belongs to , we observe that majority are from city , leading to possible bias in the data

OCCUPATIONWISE DIVIDE

9-5 job	Businessman/Businesswoman	Homemaker	Student
68	52	26	156
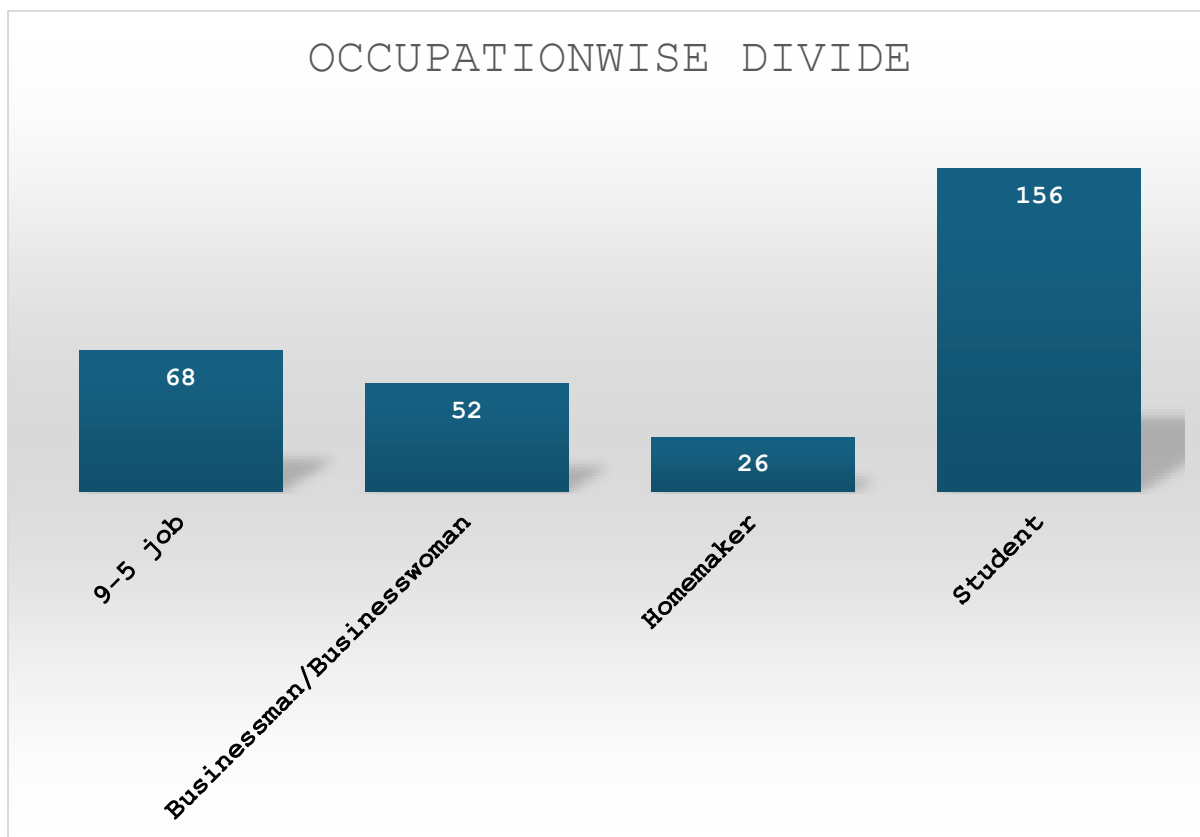
The above graph represents the occupation of survey participants , a majority are students , hence the data maybe biased by the responses of students

ANALYSIS THROUGH STATISTICAL TOOLS

This section of the study includes the analysis of data using various statistical methods ,

REGRESSION

Regression is a statistical method used in finance, investing, and other disciplines that attempts to determine the strength and character of the relationship between one dependent variable (usually denoted by Y) and a series of other variables (known as independent variables).

POST-COVID
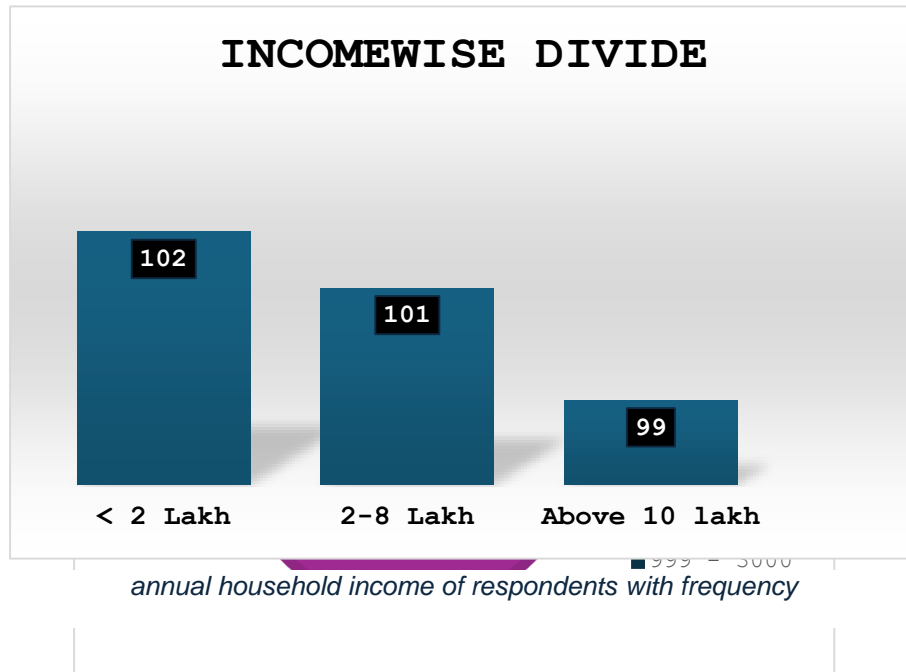
INCOMEWISE DIVIDE

annual household income of respondents with frequency

For computing regression, we have taken household income as independent variable (X) and weekly budget spent on outside food as the dependent variable (Y)

- As income(X) increases budget(Y) also increases therefore we can conclude that with increase in

Regression Equation		
Y = a + bX		
Y = 2300.284658 + 0.000737126X		
X	**Y**	**marginal increase in the budget**
1300000	3258.547852	0
1400000	3332.260406	0.00007371255
1500000	3405.972959	0.00007371291
1600000	3479.685513	0.00007371255

income people started consuming more restaurant, cloud kitchen etc. food although it was the post covid time frame.

- Marginal increase in budget initially increases when income increases from 1400000 to 1500000 marginal budget increases but when income increases from 1500000 to 1600000 marginal budget decreases.

PRE-COVID
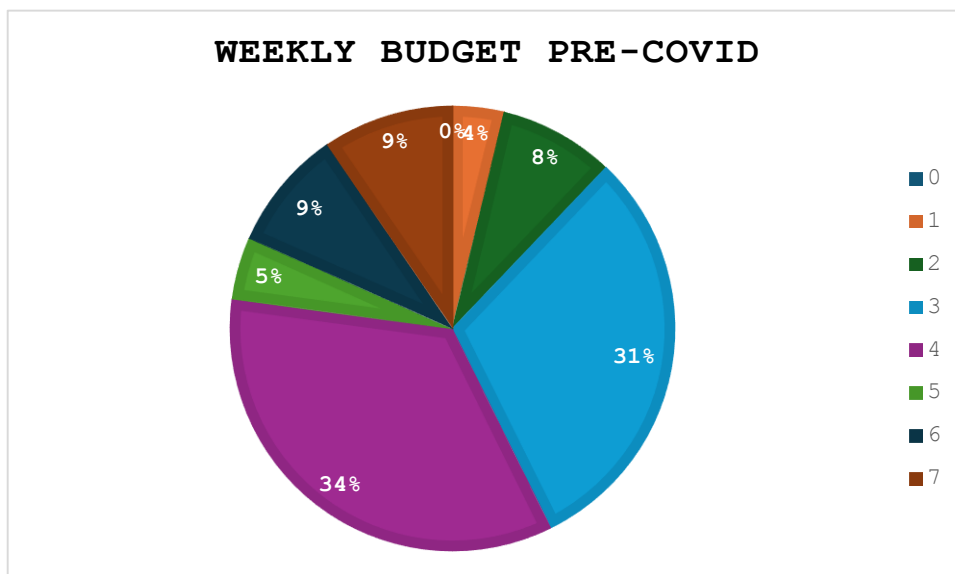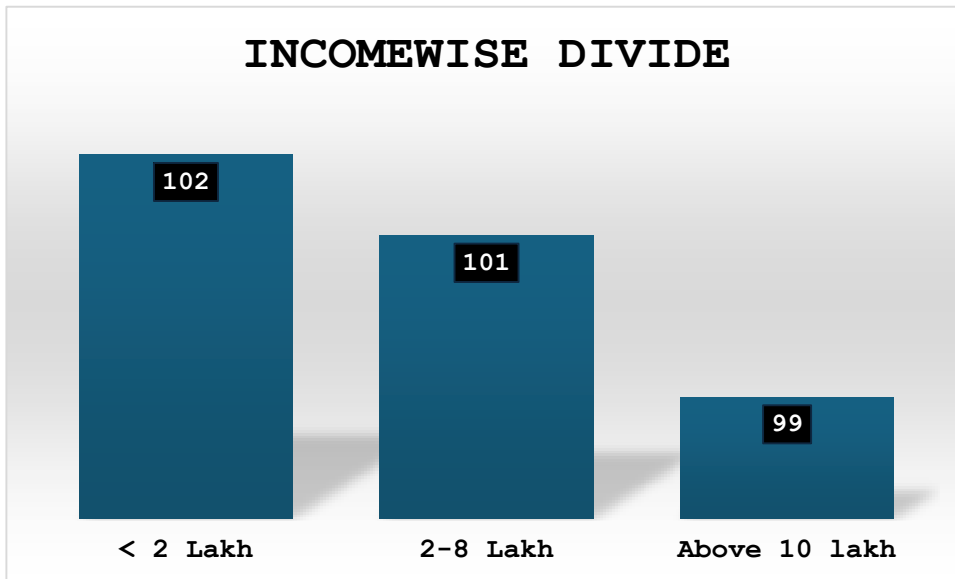
For computing regression, we have taken household income as independent variable (X) and weekly budget spent on outside food as the dependent variable (Y)

Regression Equation		
Y = a + bX		
Y = 2087.070463 + 0.000884149X		
X	Y	marginal increase in the budget
1300000	3236.46398	0
1400000	3324.878866	0.00008841489
1500000	3413.293752	0.00008841488
1600000	3501.708638	0.00008841487

Increase in income leads to increase in the budget but the marginal increase in budget keeps decreasing indicating that magnitude of increase in income is greater than the magnitude of increase in the budget allocated for consumption of outside food.

CORRELATION

Correlation is a statistical measure that expresses the extent to which two variables are linearly related (meaning they change together at a constant rate). It's a common tool for describing simple relationships without making a statement about cause and effect.

POST-COVID

POST-COVID CORRELATION		
	INCOME(X)	BUDGET(Y)
INCOME(X)	1	
BUDGET(Y)	0.136813908	1

- For computing correlation, we have taken household income as independent variable (X) and weekly budget spent on outside food as the dependent variable (Y)

- Weak positive correlation indicating that increase in income leads to increase in budget but at a lesser magnitude.

- Correlation weaker than pre covid signals that increased income in the post covid time brings comparatively lesser increase in budget in contrast to before covid.

PRE-COVID

PRE-COVID CORRELATION

	INCOME(X)	BUDGET(Y)
INCOME(X)	1	
BUDGET(Y)	0.149646136	1

- Assumptions regarding variables X and Y remain same as Post-covid

- Pre-covid correlation between income and weekly budget indicates a weak positive correlation.

HISTOGRAM

A histogram is a graphical representation of the distribution of numerical data. It consists of a series of bars, where each bar represents the frequency of occurrences of data within specific intervals, known as bins. The height of each bar corresponds to the frequency of data falling within that bin. Histograms are commonly used in statistics to visualize the shape, center, and spread of a dataset, making it easier to interpret patterns and trends within the data. They are particularly useful for identifying outliers, understanding the distribution of values, and making comparisons between different datasets.
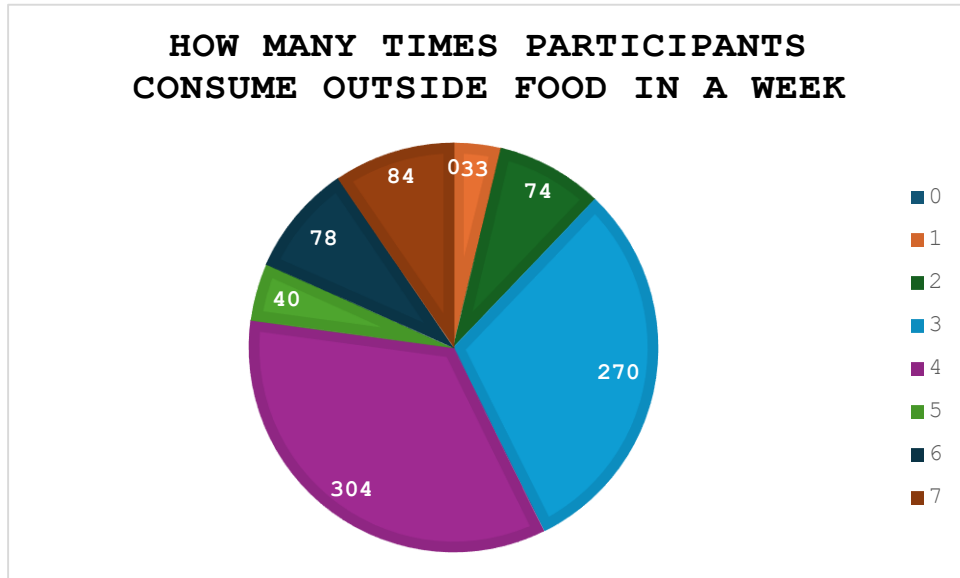
The above table represents the frequency with which outside food is consumed in a week, by respondents.

Histogram for the study have been made using the above data on weekly consumption of outside food. Frequency within weeks have been chosen, since we have observed that consumption of outside food is more consistent with weekly change.
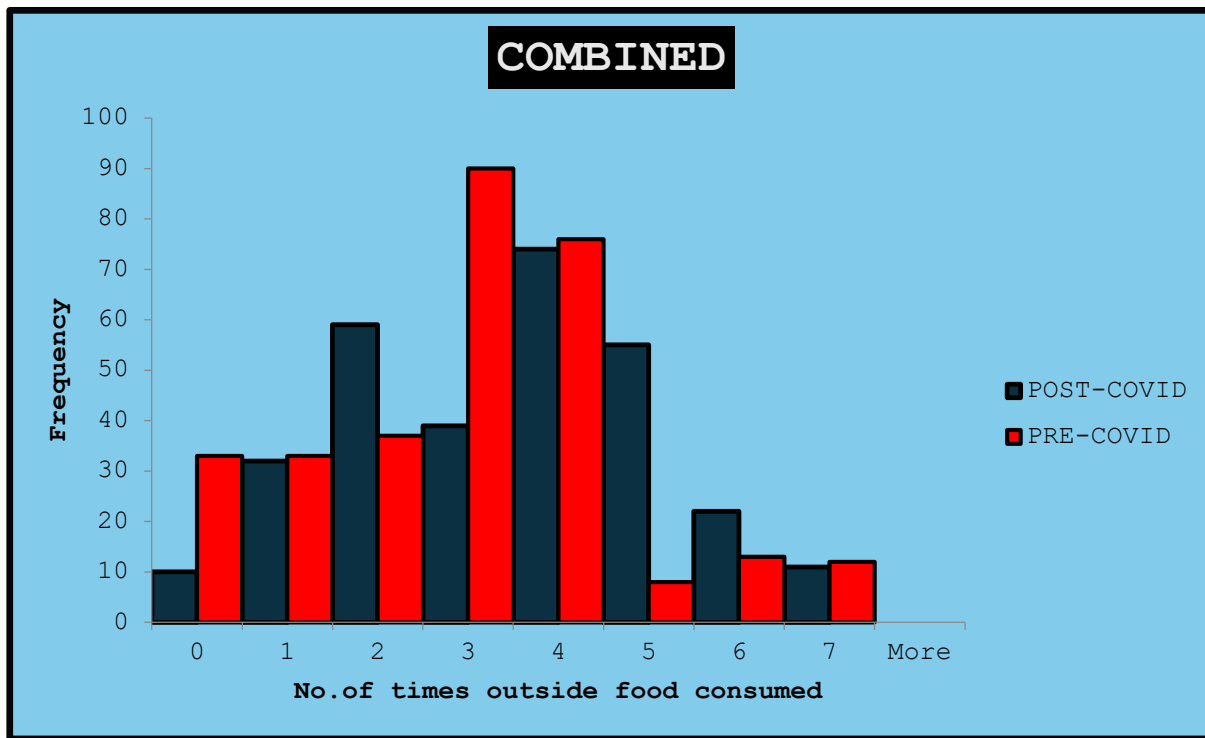
PRE-COVID
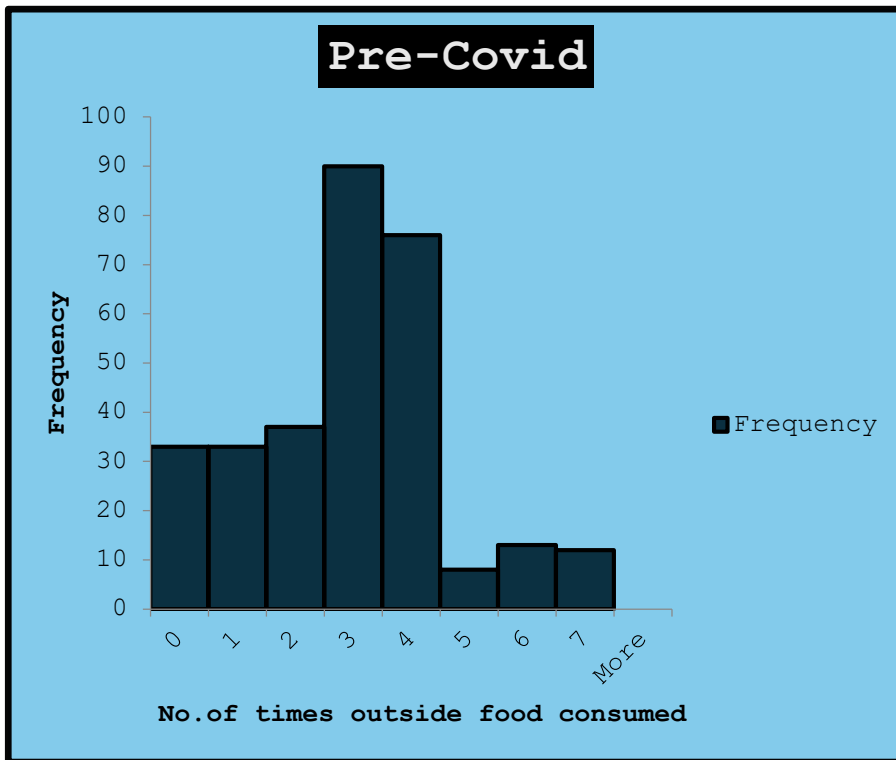
No, of times outside food consumed in a week	Frequency
0	33
1	33
2	37
3	90
4	76
5	8
6	13
7	12

POST-COVID
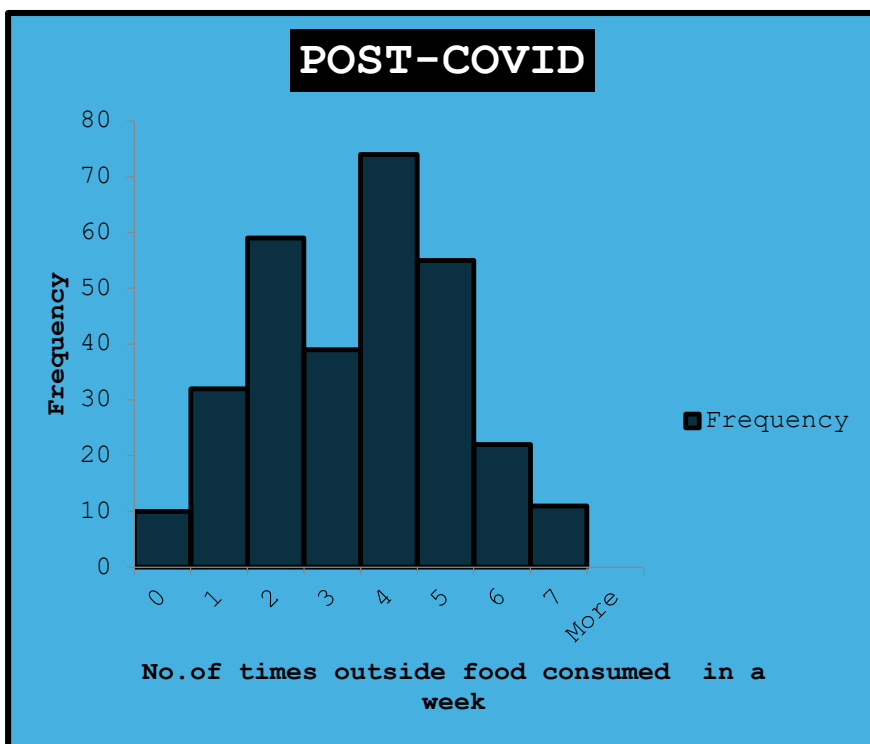
| No, of times outside food consumed in a week	Frequency
0	10
1	32
2	59
3	39
4	74
5	55
6	22
7	11

OBSERVATION

The above graph represents a comparison between pre and post covid levels of weekly outside food consumption.

- Pre covid, "3" was the most frequent reply to the number of times people consumed outside food in a month while post covid "4" was the most frequent reply indicating that frequency of consumption of outside food increased after covid.
- We can also observe that frequency of "1" and "2" as a reply to "No. times outside food is consumed" increased therefore there was also a segment of consumers who started consuming lesser outside food as well.
- Therefore, we can deduce that frequency of consumption is not directly related to pre covid and post covid time frame but also depends on a lot of consumers-based factors.

OGIVE CURVES

An Ogive Chart is a curve of the cumulative frequency distribution or cumulative relative frequency distribution. For drawing such a curve, the frequencies must be expressed as a percentage of the total frequency. Then, such percentages are cumulated and plotted, as in the case of an Ogive.
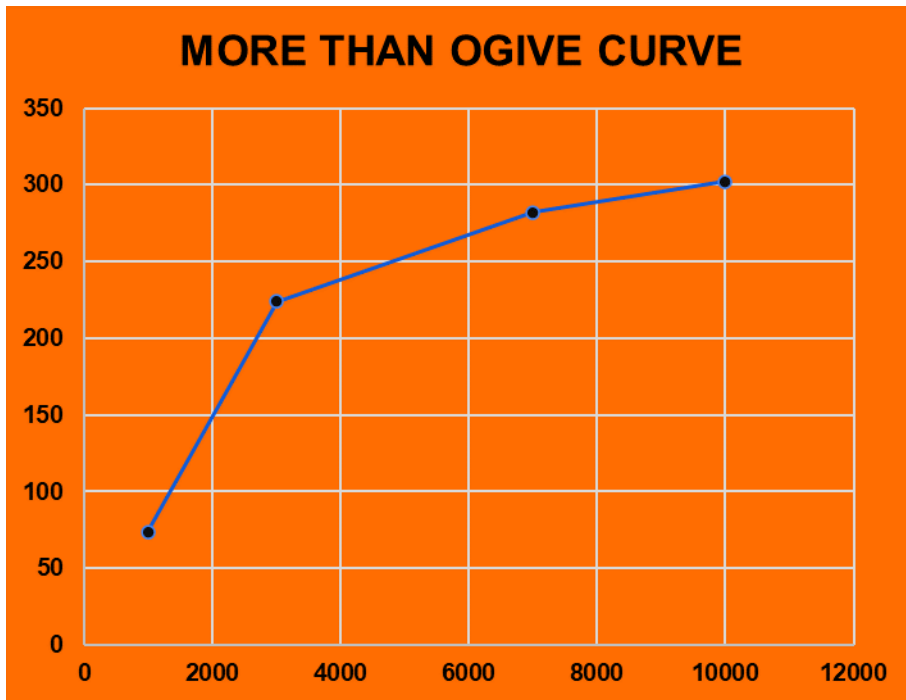
PRE-COVID

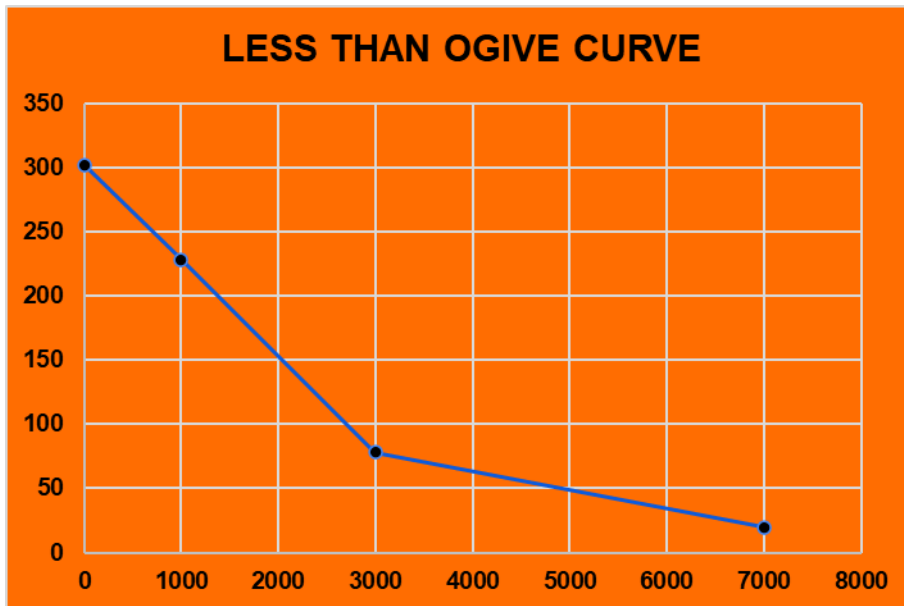**MORE THAN OGIVE CURVE**
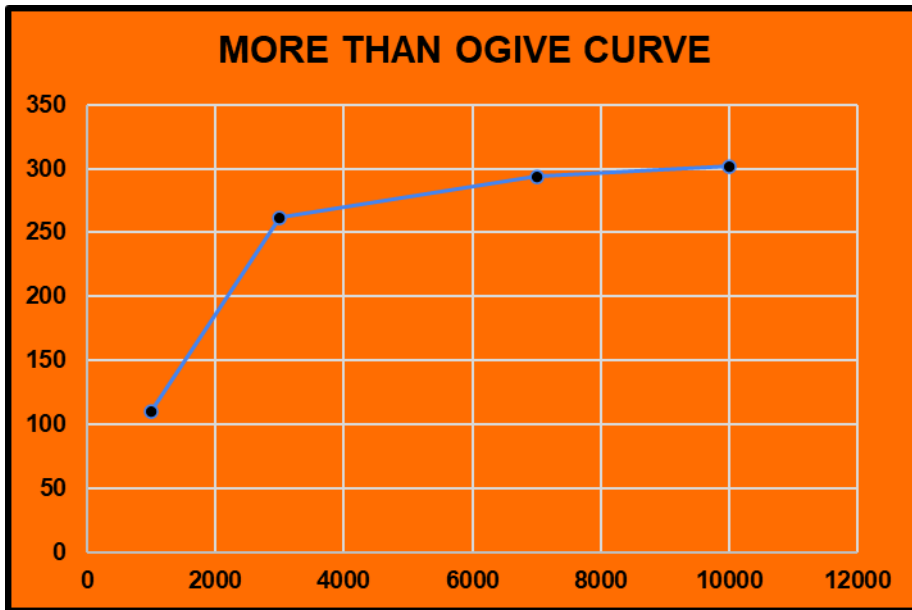
Budget range	Frequency	Upper limit	CF
0-1000	110	1000	110
1000-3000	152	3000	262
3000-7000	32	7000	294
7000-10000	8	10000	302

LESS THAN OGIVE CURVE

POST-COVID

MORE THAN OGIVE CURVE
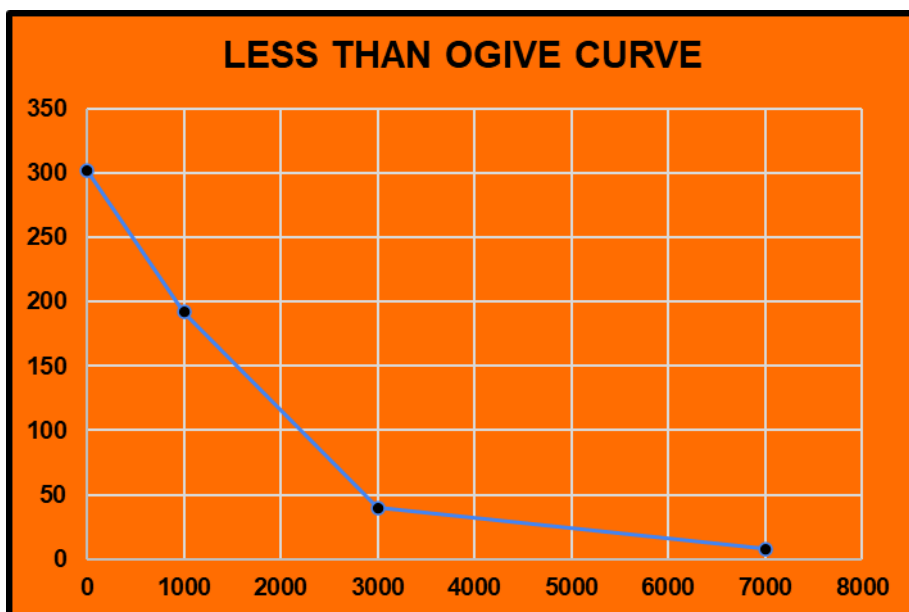
Budget range	Frequency	upper-limit	CF
0-1000	74	1000	74
1000-3000	150	3000	224
3000-7000	58	7000	282
7000-10000	20	10000	302

Budget range	Frequency	Lower limit	CF
0-1000	74	0	302
1000-3000	150	1000	228
3000-7000	58	3000	78
7000-10000	20	7000	20

OBSERVATION

Budget range	Pre-covid freq.	Post-covid freq.
0-1000	110	74
1000-3000	152	150
3000-7000	32	58
7000-10000	8	20

- Comparing the two we can say that in general the budget allocation for outside food increased in the post covid time.

- "0-1000" range saw a decrease of responses (from 110 to 74) while "3000-7000" and "7000-10000" range saw an increase of responses (from 32 to 58 and from 8 to 20 respectively).