Introduction

In contemporary society, understanding mental health trends is imperative for crafting effective policies and interventions. This report presents a comprehensive analysis of mental health trends among adults residing in Indian metro cities, focusing on data collected in 2020. With a dataset encompassing 1275 individuals, this analysis delves into various dimensions of mental health, demographic factors, socio-economic variables, and the impact of external Apologies for the oversight. Let's tailor the text accordingly.

- Dataset Overview: The dataset includes crucial demographic variables such as Age Group, Age, Family Size, Members Count, Households with Senior(s), Total Aged Member(s), Income Range, and Income per month (rupees). Additionally, it captures mental health indicators including Anxiety No, Anxiety Level, Stress No, Stress Level, Depression, and Depression Level. These variables provide insights into participants' backgrounds and mental well-being status, enabling a focused analysis of mental health trends among adults in Indian metro cities.
- Analytical Tools: Descriptive statistics and correlation analysis are employed to explore relationships within the dataset. Descriptive statistics offer insights into the distribution and frequency of variables, providing a holistic overview. Correlation analysis delves deeper, identifying potential associations between demographic factors and mental health indicators. Such analyses facilitate a nuanced understanding of the factors influencing mental well-being in Indian metro cities.
- Software Utilized: The analysis employs Microsoft Excel for data preprocessing and initial exploration, ensuring data integrity and organization. Python is leveraged for advanced statistical analysis, including correlation calculations, enabling robust insights into mental health trends among urban adults.

This report contributes to understanding mental health trends among adults in Indian metro cities by leveraging a dataset rich in demographic and mental health variables. Through rigorous analysis and interpretation, this report aims to inform targeted interventions to promote mental well-being in urban populations, particularly in the face of challenges like the COVID-19 pandemic.

Overview of Mental health in India

- Mental health in India is a multifaceted issue influenced by a myriad of sociocultural, economic, and environmental factors. With a population exceeding 1.3 billion, India grapples with significant mental health challenges, exacerbated by rapid urbanization, socio-economic disparities, and cultural stigmas surrounding mental illness.
- In recent years, there has been a growing recognition of the importance of mental health, accompanied by efforts to address the stigma and expand access to care. However, despite these advancements, significant gaps persist in mental health services, particularly in rural areas where resources are scarce.
- Urban centres, such as metro cities, present unique challenges and opportunities concerning mental health. On one hand, they offer access to specialized services and resources, yet they also harbour stressors associated with densely populated environments, competitive work cultures, and social isolation. The fast-paced lifestyle, coupled with the pressure to succeed, often contributes to heightened levels of stress, anxiety, and depression among urban dwellers.
- The COVID-19 pandemic further compounded mental health issues, amplifying feelings of anxiety, stress, and depression across the population. Lockdown measures, economic uncertainty, and disruptions to daily routines have taken a toll on mental well-being, underscoring the need for proactive interventions and support systems.
- Understanding mental health trends in Indian metro cities is critical for informing targeted interventions and policies aimed at promoting mental well-being and resilience. By analysing demographic, socio-economic, and mental health indicators, we gain valuable insights into the factors influencing mental health outcomes and can develop evidence-based strategies to address the evolving needs of urban populations.
- Through comprehensive data analysis and exploration of key variables, this report endeavours to contribute to a deeper understanding of mental health in Indian metro cities, guiding efforts to foster supportive environments, enhance access to mental health care, and promote holistic well-being for all individuals.

Methodology

The methodology employed in this analysis is designed to systematically explore and interpret mental health trends among adults in Indian metro cities using Microsoft Excel as the primary statistical analysis tool. The process is delineated as follows:

- Data Collection: The dataset is sourced from Mendeley Data, accessible at https://data.mendeley.com/datasets/jtzpkhw3mk/1
- Data Preprocessing and Cleaning: Initial data preprocessing involves cleaning procedures within Microsoft Excel to ensure data integrity and reliability.
- Descriptive Statistics: Microsoft Excel is utilized to compute descriptive statistics, offering insights into various facets of the dataset. Measures such as mean, standard error, median, mode, standard deviation, sample variance, kurtosis, skewness, range, minimum, maximum, sum, and count are calculated to provide a comprehensive understanding of the dataset's central tendencies, dispersions, and distributions.
- Correlation Analysis: Within Microsoft Excel and python , correlation analysis is conducted to uncover potential relationships between different variables present in the dataset. Pearson correlation coefficients are computed to assess the strength and direction of linear associations between pairs of variables. This analysis aids in elucidating potential correlations among mental health indicators and demographic or socio-economic factors.
- Data Visualization: Microsoft Excel's visualization capabilities are harnessed to create visually engaging representations of the data. Various chart types, including bar charts, pie charts, scatter plots, histograms, and others, are employed to effectively communicate key findings and trends within the dataset. Visualization enhances the interpretability of the analysis results, enabling stakeholders to grasp insights at a glance.

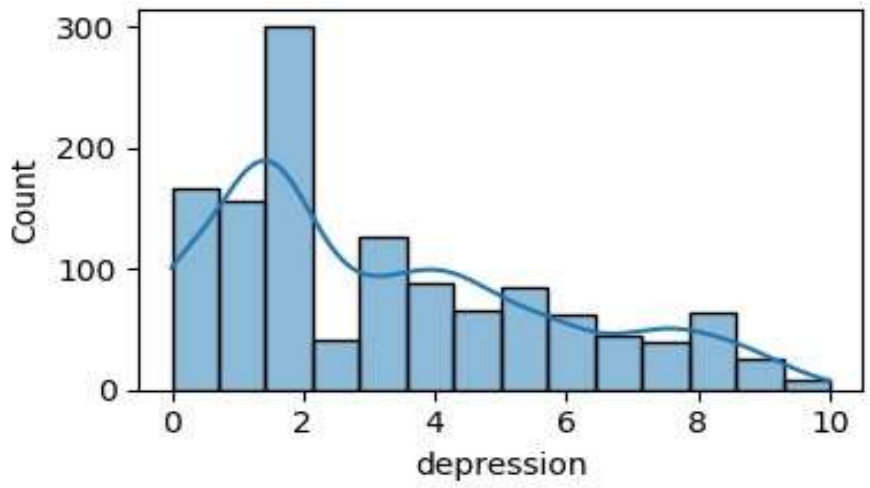
Through this methodological framework, the study endeavours to provide a robust analysis of mental health trends among adults in Indian metro cities, leveraging the analytical power of Microsoft Excel to derive actionable insights for stakeholders, policymakers, and mental health advocates.

Data Analysis

Data analysis for this report used Microsoft Excel and Python. Methodology included dataset preprocessing, computing descriptive statistics, correlation analysis, and data visualization to reveal mental health trends among adults in Indian metro cities.

DEPRESSION

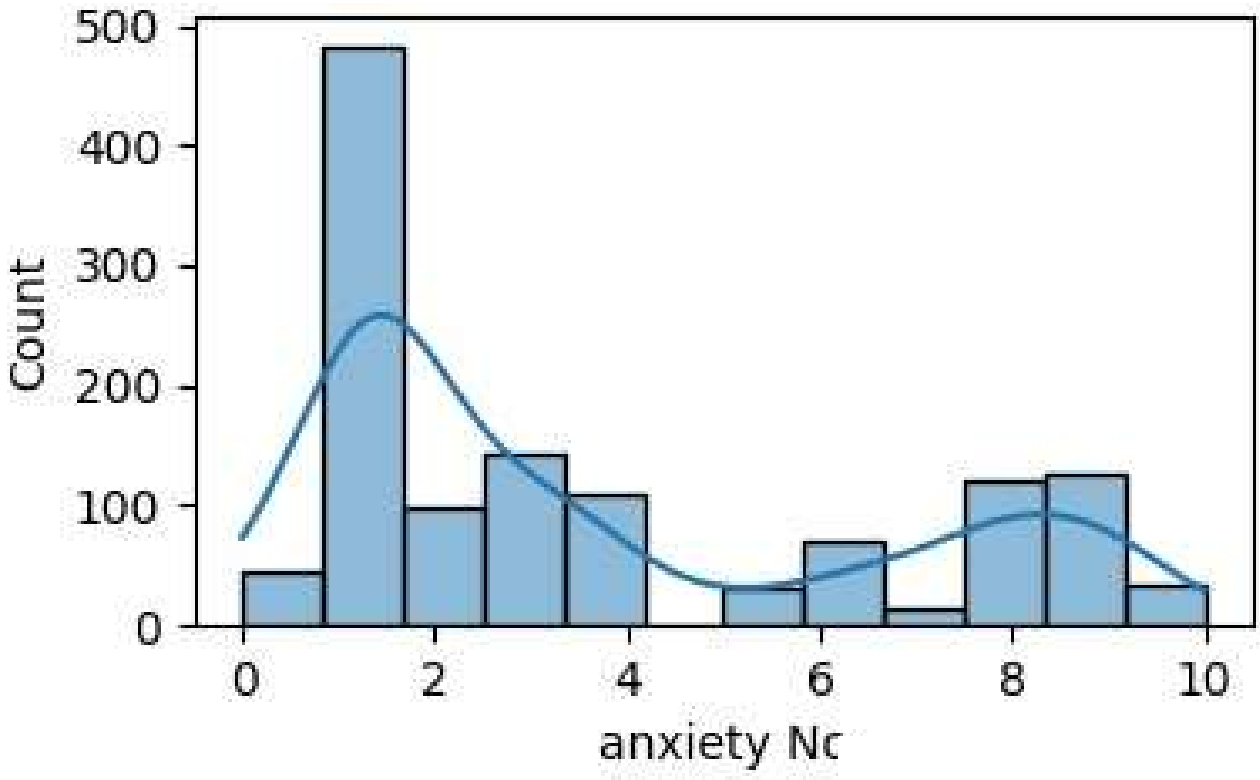
Statistical measure	Values	Remark
Mean	3.209411765	The median depression score of 2.5 reflects the middle value in the dataset.
Standard Error	0.072147159	The mode of 1.5 indicates the most common depression score among participants.
Median	2.5	The median depression score was 2.5, suggesting that half of the participants reported depression levels below this value.
Mode	1.5	The mode of 1.5 indicates that this depression score occurred most frequently among participants.
Standard Deviation	2.576168869	The mode of 1.5 indicates that this depression score occurred most frequently among participants.
Sample Variance	6.636646043	The variance in depression scores was 6.64, highlighting the dispersion of data points around the mean.
Kurtosis	-0.54125553	The negative kurtosis value (-0.54) indicates a relatively flat distribution of depression scores compared to a normal distribution.
Skewness	0.692974469	A skewness value of 0.69 suggests a slight right skew in the distribution of depression scores
Range	10	The range of depression scores spanned from 0 to 10, indicating the extent of variability in reported depressive symptoms.
Minimum	0	The minimum depression score of 0 represents the lowest reported level of depressive symptoms among participants.
Maximum	10	The maximum depression score of 10 reflects the highest reported level of depressive symptoms within the sample.
Sum	4092	The total sum of depression scores across all participants was 4092.
Count	1275	A total of 1275 participants contributed to the analysis of depression levels in the dataset.



"Count of depression" graph shows a prevalence for category "4" with a decreasing count in other categories.

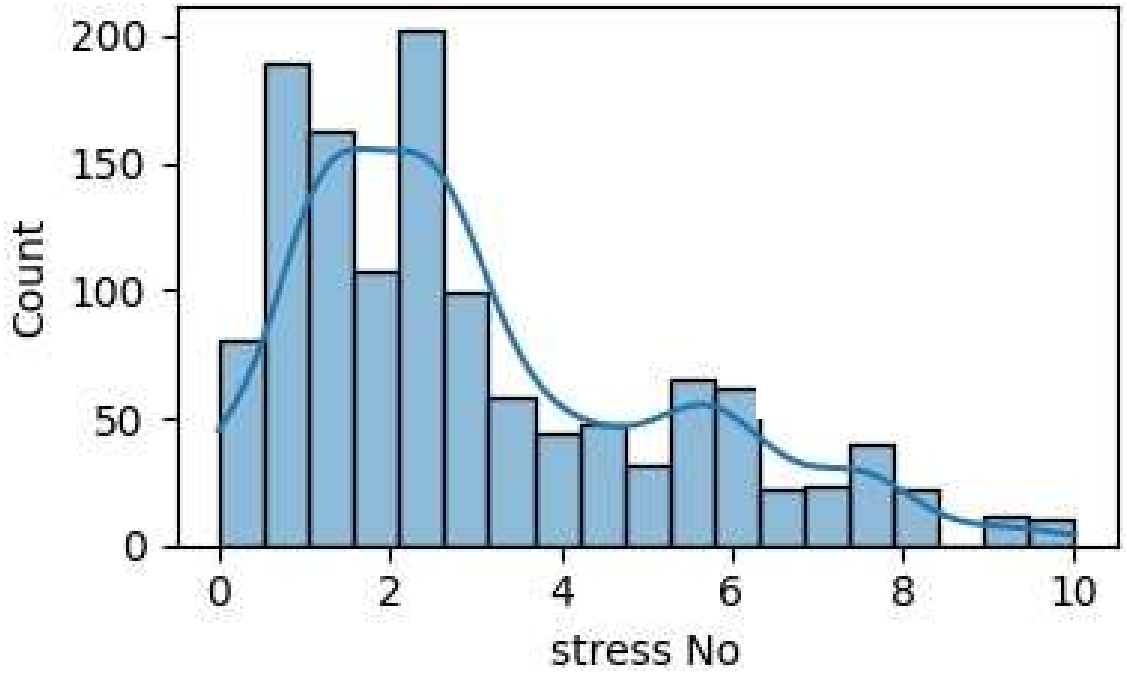
ANXIETY

Statistical Measures	*Values*	*Remark*
Mean	3.66627451	The average anxiety level among participants was 3.67, suggesting a moderate level of reported anxiety symptoms.
Standard Error	0.082501931	The standard error of the mean anxiety score was 0.08, indicating the precision of the sample mean estimate
Median	2.5	The median anxiety score of 2.5 reflects the middle value in the dataset.
Mode	1.5	The mode of 1.5 indicates the most common anxiety score reported by participants.
Standard Deviation	2.945908186	With a standard deviation of 2.95, there was notable variability in anxiety scores within the sample.
Sample Variance	8.678375042	The variance in anxiety scores was 8.68, showing dispersion around the mean.
Kurtosis	-0.949178028	Negative kurtosis (-0.95) suggests a flatter distribution of anxiety scores compared to normal.
Skewness	0.761548944	Skewness of 0.76 indicates a slight right skew in anxiety scores.
Range	10	Anxiety scores ranged from 0 to 10, indicating the breadth of reported symptoms.
Minimum	0	The lowest reported anxiety score was 0.
Maximum	10	The highest reported anxiety score was 10.
Sum	4674.5	Anxiety scores total 4674.5 across all participants.
Count	1275	A total of 1275 participants contributed to the analysis of anxiety levels.



STRESS

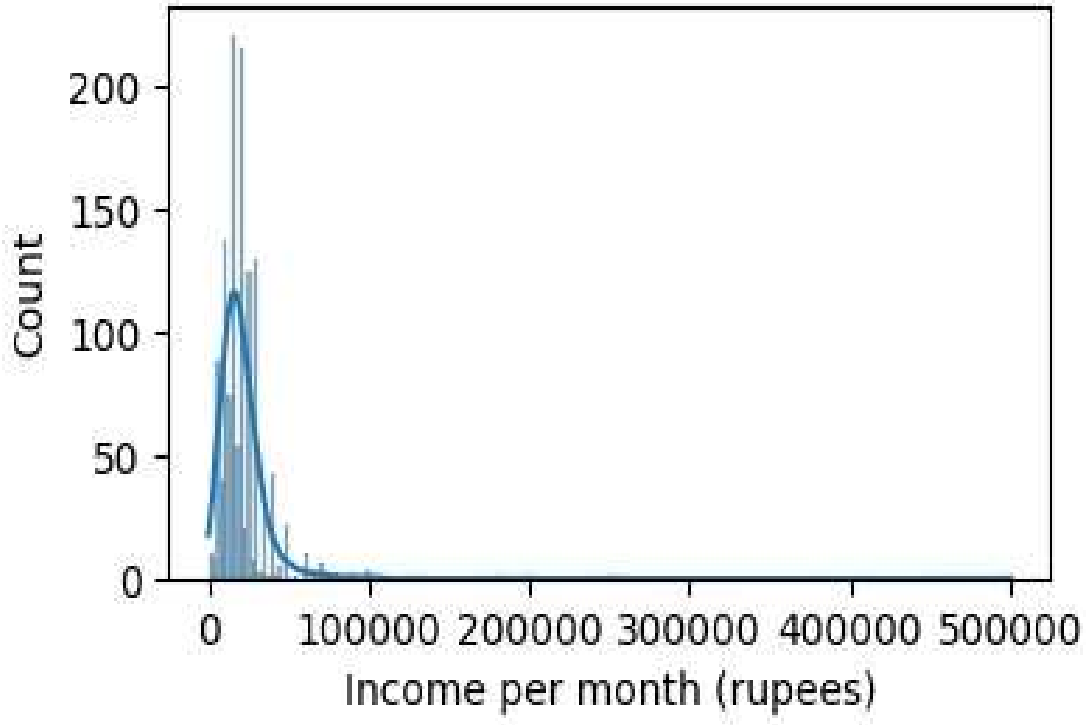
Statistical Measure	*Value*	*Remark*
Mean	3.057254902	The average stress level among participants was 3.06, indicating a moderate level of reported stress symptoms.
Standard Error	0.061141703	The standard error of the mean stress score was 0.06, reflecting the precision of the sample mean estimate.
Median	2.5	stress score 2.5 suggests that half of the participants reported stress levels below this value. Which is mild level
Mode	2.5	The mode of 2.5 indicates that this stress score occurred most frequently among participants.
Standard Deviation	2.183195488	With a standard deviation of 2.18, there was notable variability in stress scores within the sample.
Sample Variance	4.766342537	The variance in stress scores was 4.77, demonstrating dispersion around the mean.
Kurtosis	0.098324468	The kurtosis value of 0.10 suggests a distribution of stress scores close to a normal distribution.
Skewness	0.896816322	Skewness of 0.90 indicates a slight right skew in stress scores.
Range	10	Stress scores ranged from 0 to 10, indicating the breadth of reported symptoms.
Minimum	0	The lowest reported stress score was 0.
Maximum	10	The highest reported stress score was 10.
Sum	3898	Stress scores totalled 3898 across all participants.
Count	1275	A total of 1275 participants contributed to the analysis of stress levels



"Count of stress" graph shows a fairly even distribution with a peak around stress levels 4 and 5.

MONTHLY INCOME(IN ₹)

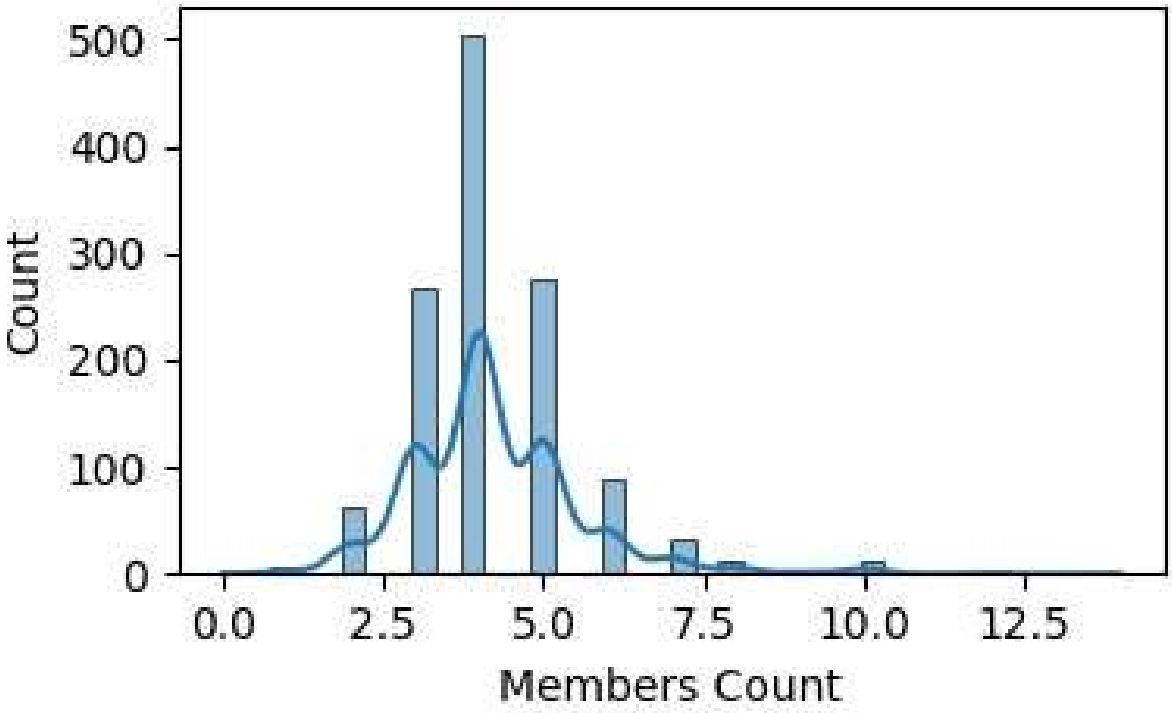
Statistical Measure	Values	Remark
Mean	21363.67296	The average monthly income in rupees among participants was 21363.67.
Standard Error	585.7160407	The standard error of the mean monthly income was 585.72.
Median	20000	The median monthly income was 20000 rupees.
Mode	20000	The most common monthly income reported by participants was 20000 rupees.
Standard Deviation	20889.62643	The monthly income varied considerably with a standard deviation of 20889.63.
Sample Variance	436376492.6	Variance in monthly income was 436376492.6 rupees squared.
Kurtosis	235.2357375	The distribution of monthly income was highly leptokurtic with a kurtosis of 235.24.
Skewness	11.90154579	monthly income distribution was heavily right-skewed with a skewness of 11.90.
Range	500091	Monthly income ranged from 0 to 500091 rupees.
Minimum	0	The lowest reported monthly income was 0 rupees
Maximum	500091	The highest reported monthly income was 500091 rupees.
Sum	27174592	Total monthly income across all participants amounted to 27174592 rupees.
Count	1272	A total of 1272 participants contributed to the analysis of monthly income.



"Income per month (rupees)" histogram shows a right skew with a peak around 50 rupees, indicating most earners fall in lower income brackets.

TOTAL MEMBERS IN FAMILY

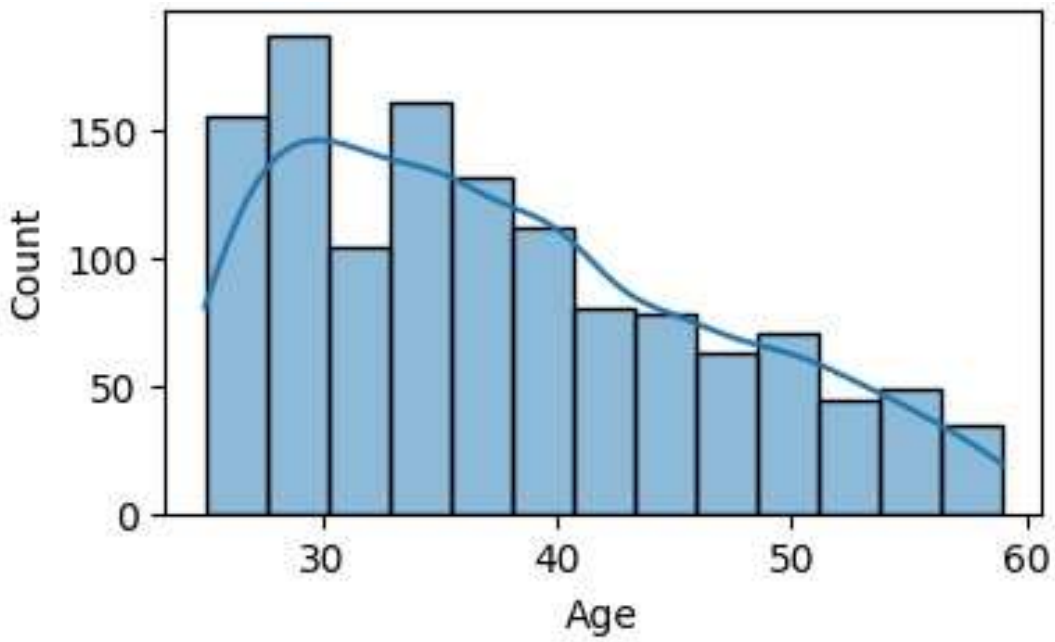
Statistical Measures	*Values*	*Remarks*
Mean	4.24627451	The average number of members per group is approximately 4.25.
Standard Error	0.038810378	The standard error of the mean member count is approximately 0.04.
Median	4	The middle value of the member count distribution is 4.
Mode	4	The most common member count is 4.
Standard Deviation	1.38580769	The spread of the member count data around the mean is approximately 1.39.
Sample Variance	1.920462954	The variability in member count among the groups is approximately 1.92.
Kurtosis	5.653220663	The distribution of member count is relatively peaked compared to a normal distribution, with a kurtosis value of 5.65.
Skewness	1.499218826	The distribution of member count is positively skewed, with a skewness value of 1.50.
Range	14	The difference between the highest and lowest member count is
		14.
Minimum	0	The smallest member count observed is 0.
Maximum	14	The largest member count observed is 14
Sum	5414	The total number of members across all groups is 5414.
Count	1275	There are 1275 data points in the member count dataset.



Line graph tracks membership growth, starting from near zero and reaching around 500 members."

AGE

Statistical Measures	*Values*	*Remarks*
Mean	37.82196	The average age of the sample population is approximately 37.82 years.
Standard Error	0.2513	The average error in estimating the population mean age is about 0.25 years.
Median	36	
Mode	40	The most common age in the sample population is 40 years.
Standard Deviation	8.973211	The average deviation of ages from the mean is approximately 8.97 years.
Sample Variance	80.51851	The variation in ages within the sample population is around 80.52 square years.
Kurtosis	-0.69076	The distribution of ages is slightly less peaked than a normal distribution.
Skewness	0.525024	The distribution of ages is moderately skewed to the right.
Range	34	The difference between the oldest and youngest age in the sample population is 34 years.
Minimum	25	The youngest age observed in the sample population is 25 years.
Maximum	59	The oldest age observed in the sample population is 59 years.
Sum	48223	The sum of all ages in the sample population is 48223 years.
Count	1275	The total number of individuals in the sample population is 1275.



Age distribution" graph shows a peak around 40-50 years old.

CORRELATION

Correlation analysis is a statistical technique used to measure the strength and direction of the linear relationship between two or more variables. It provides valuable insights into how changes in one variable are associated with changes in another.

- Correlation Basics: Correlation analysis measures the strength and direction of the linear relationship between two or more variables.
- Interpretation: Correlation coefficients range from -1 to +1. Values close to +1 indicate a strong positive relationship, close to -1 indicate a strong negative relationship, and near 0 suggest little to no linear relationship.
- Cautions: Correlation does not imply causation. Outliers can significantly affect correlation results.
- Scope: Correlation analysis provides insights into associations between variables but does not establish causation.
- Practical Use: Used in fields like finance, economics, and social sciences to understand relationships between variables.

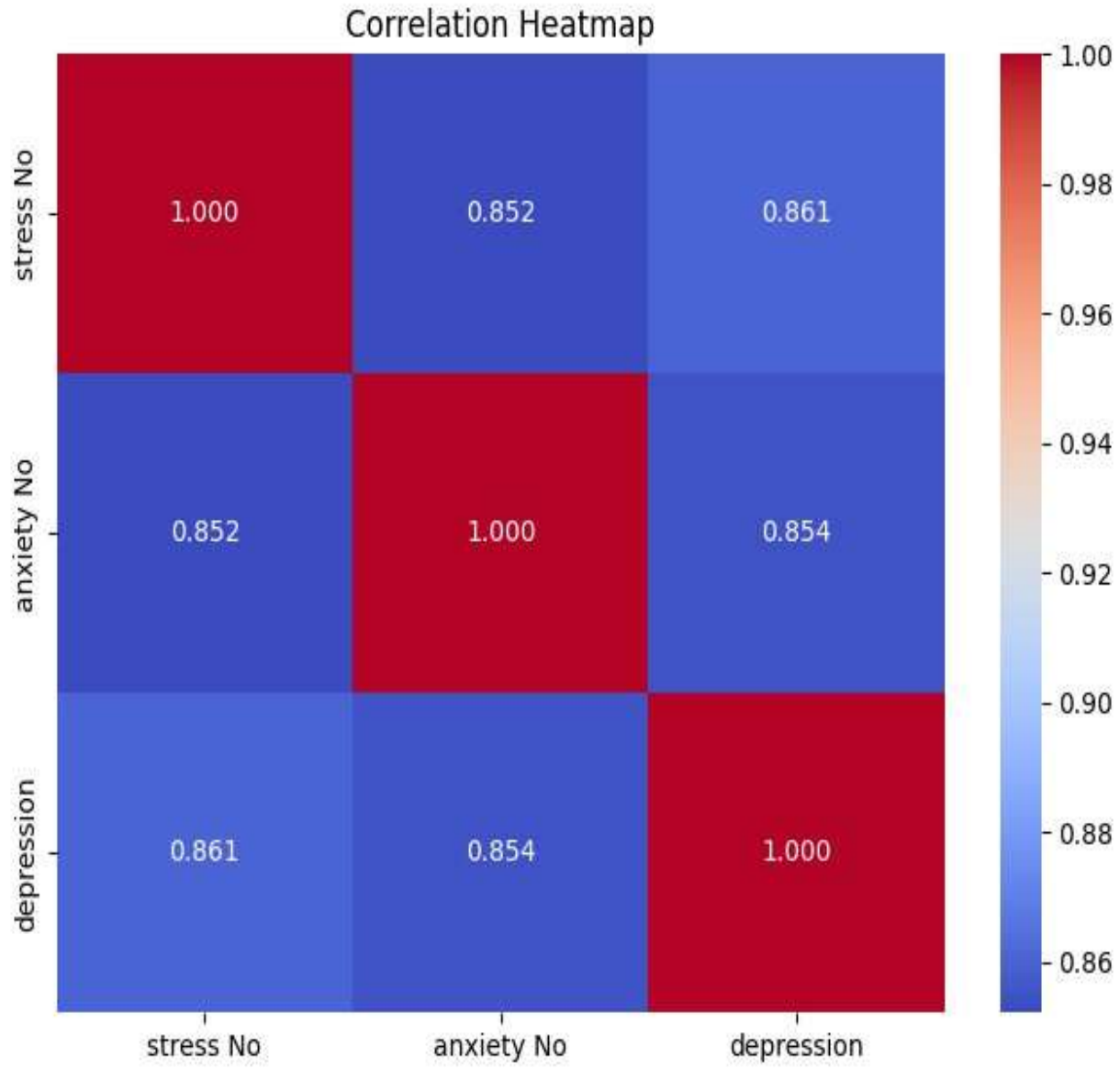
In conclusion, correlation analysis is a powerful tool for exploring relationships between variables, but it should be used judiciously and in conjunction with other analytical methods to derive meaningful insights and make informed decisions.

CO-RELATION MATRIX OF STRESS, ANXIETY & DEPRESSION

	Stress Number	**Anxiety Number**	**Depression**
Stress Number	1.000000	0.852129	0.860527
Anxiety Number	0.852129	1.000000	0.854453
Depression	0.860527	0.854453	1.000000

- Stress Number vs. Anxiety Number: The correlation coefficient is approximately 0.852. This indicates a strong positive correlation between "stress" and "anxiety" suggesting that as one variable increases, the other tends to increase as well.
- Stress Number vs. Depression: The correlation coefficient is approximately 0.861. This indicates a strong positive correlation between "stress" and "depression," suggesting that as one variable increases, the other tends to increase as well.
- Anxiety Number vs. Depression: The correlation coefficient is approximately 0.854. This indicates a strong positive correlation between "anxiety" and "depression," suggesting that as one variable increases, the other tends to increase as well.

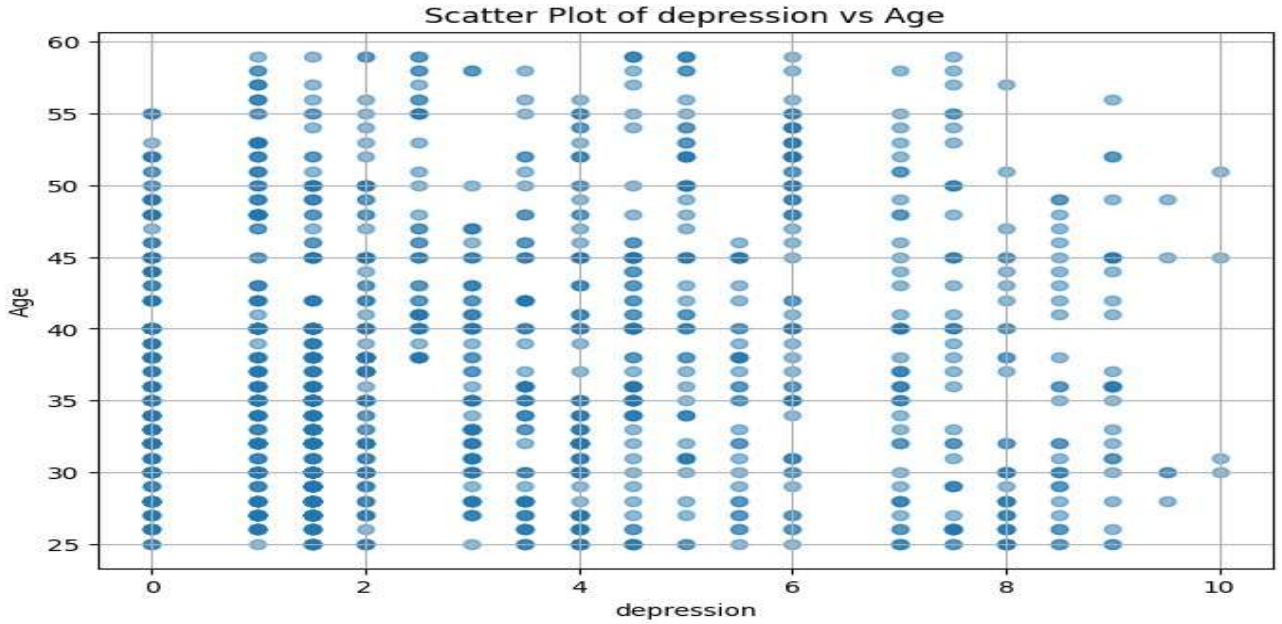
In summary, the correlation matrix shows that all three variables stress, anxiety and depression are strongly positively correlated with each other. This suggests that higher levels of one variable tend to be associated with higher levels of the other variables.



This heatmap shows a strong positive correlation between stress, anxiety, and depression, indicating they often occur together

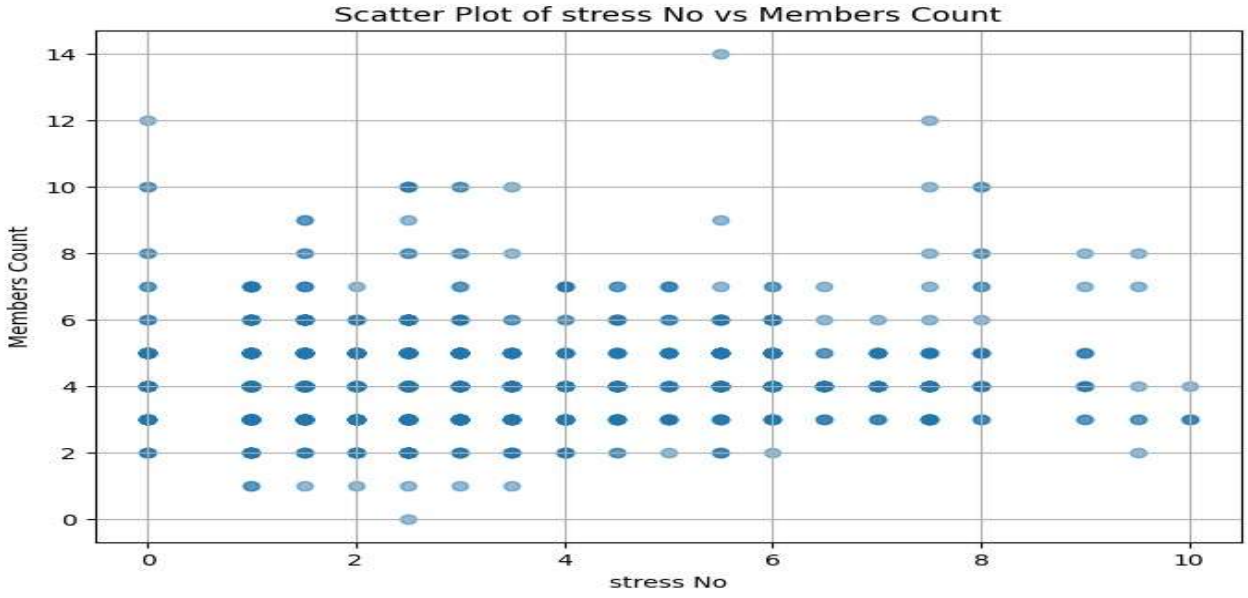
CORELATION BETWEEN AGE AND DEPRESSION

The correlation coefficient of approximately 0.059 suggests a very weak positive correlation between "depression" and "Age," implying that as age increases, there's a slight tendency for depression levels to rise. However, the correlation is so weak that age alone is not a reliable predictor of depression levels, indicating the involvement of various other factors influencing mental health across different age groups.



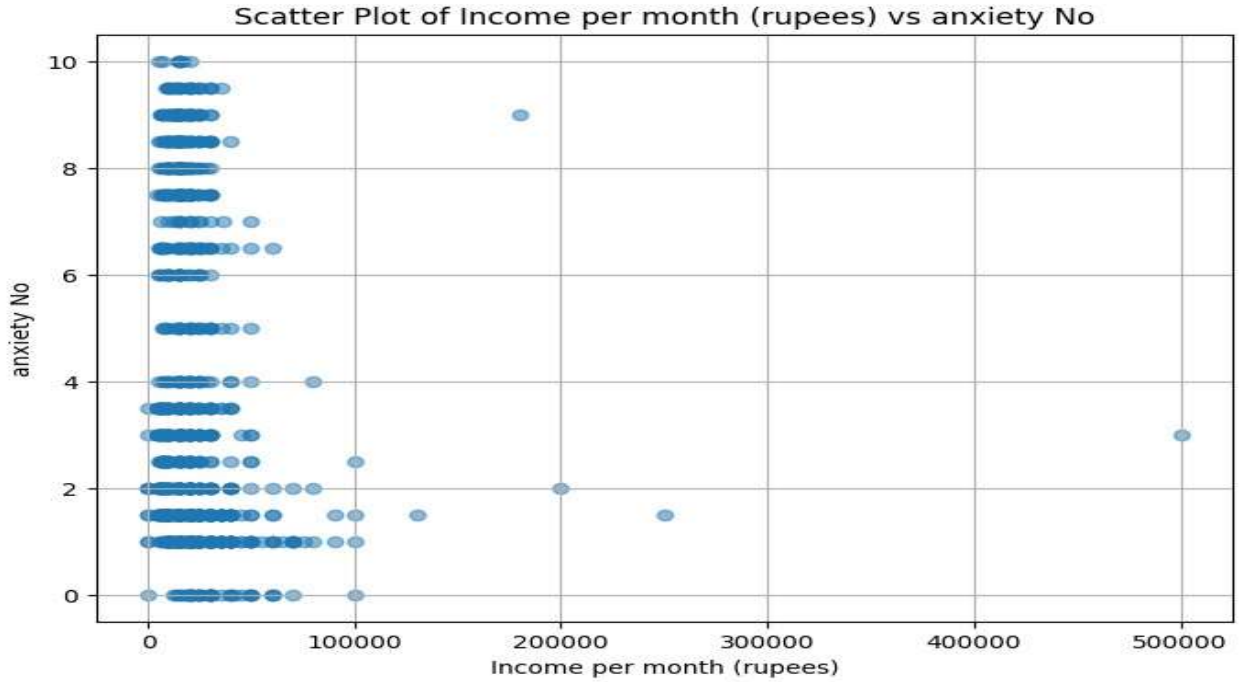
CORELATION BETWEEN STRESS AND MEMBER COUNT

The correlation coefficient of approximately 0.088 between "stress" and "Members Count" indicates a very weak positive correlation. This suggests a slight tendency for higher stress levels to be associated with a slightly higher count of members, but the correlation is not strong. Other factors likely play a more significant role in determining the number of members and stress levels within a group.



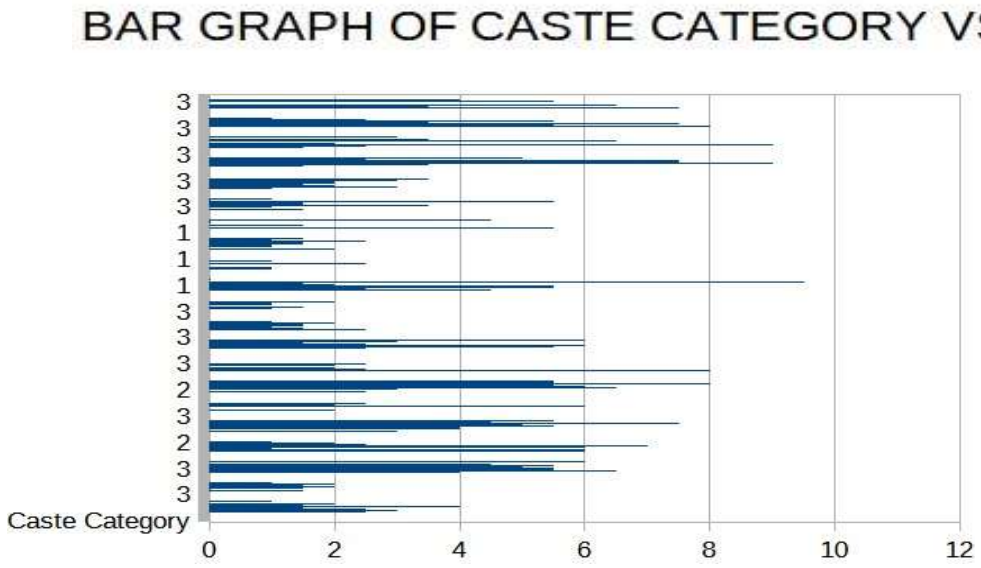
CORELATION BETWEEN INCOME AND ANXIETY

The correlation coefficient of approximately -0.146 indicates a weak negative correlation between "Income per month (rupees)" and "anxiety", suggesting a slight tendency for higher income to be associated with lower levels of anxiety, and vice versa.



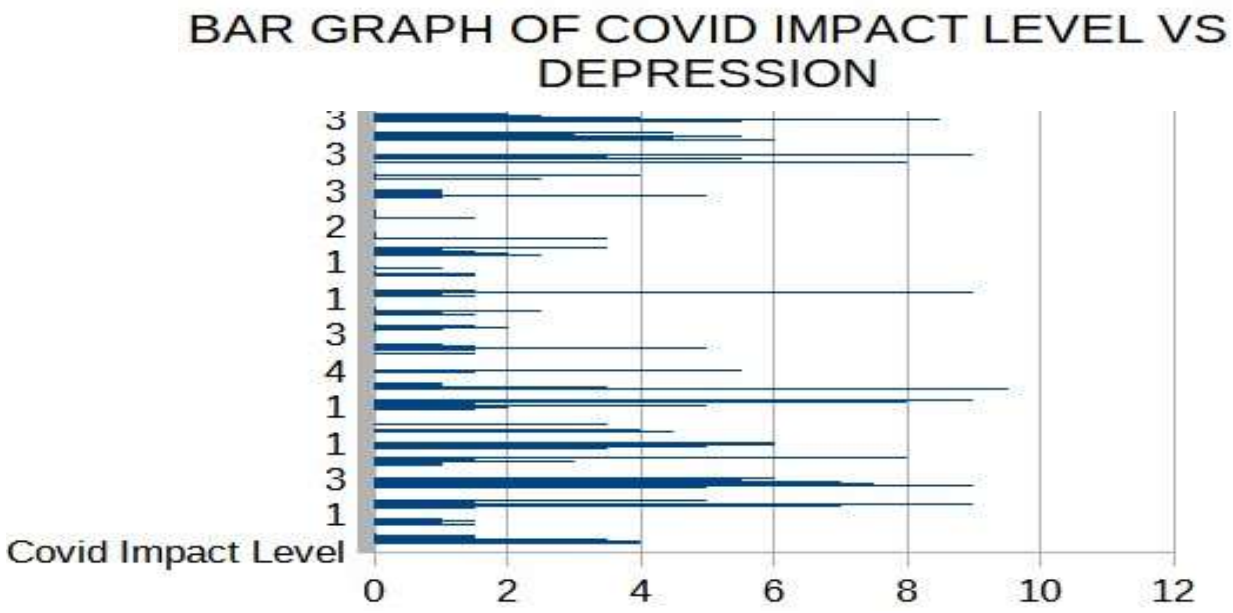
CORELATION BETWEEN CASTE CATEGORY AND STRESS

The correlation coefficient of approximately 0.0045 between "Caste Category" and "Stress" indicates a very weak positive correlation. The correlation is not strong. Other factors likely play a more significant role in determining the number of members and stress levels within a group.



CORELATION BETWEEN COVID IMPACT LEVEL AND DEPRESSION

The correlation coefficient of approximately -0.04027 indicates a weak negative correlation between "Covid impact level" and "Depression", suggesting a slight tendency for higher Covid impact to be associated with lower levels of depression, and vice versa.



CONCLUSION

In conclusion, this report offers a comprehensive analysis of mental health trends among adults in Indian metro cities, drawing insights from a dataset sourced from Mendeley Data. Through meticulous data cleaning and robust statistical techniques, including descriptive statistics, correlation analysis, and data visualization using Microsoft Excel, we have gleaned valuable insights.

The analysis sheds light on significant patterns and correlations among various demographic, socio-economic, and mental health indicators present in the dataset. It underscores the profound impact of urbanization, socio-economic disparities, and the COVID-19 pandemic on mental well-being within metropolitan areas.

By delving into variables such as Age Group, Age, Family Size, Members Count, Household with Senior(s), Total Aged Member(s), Income Range, Income per month (rupees), Anxiety No, Anxiety Level, Stress No, Stress Level, Depression, and Depression Level, we uncover nuanced relationships that inform our understanding of mental health dynamics in Indian metro cities.

These findings serve as a vital resource for stakeholders across sectors, including policymakers, mental health practitioners, researchers, and advocates. They offer actionable insights to guide policy-making, intervention strategies, and resource allocation aimed at bolstering mental health and resilience in urban populations.

In essence, this report contributes to evidence-based decision-making and advocates for a holistic approach to address mental health challenges in Indian metro cities, thereby promoting the well-being of individuals and communities alike.

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These references provide valuable insights and evidence for understanding mental health trends and implications for policy and practice in Indian metro cities.

Appendix

To compute the statistical measures for columns 2 to 1276 in Microsoft Excel, the following formulas can be utilized:

- Mean: `=AVERAGE(Data Range)`
- Standard Error: `=STDEVP(Data range)/SQRT(COUNT(Data range))`
- Median: `=MEDIAN(Data Range)`
- Mode: `=MODE.SNGL(Data Range)`
- Standard Deviation: `=STDEV.P(Data Range)`
- Sample Variance: `=VAR.S(Data Range)`
- Kurtosis: `=KURT(Data range)`
- Skewness: `=SKEW(Data Range)`
- Range: `=MAX(B:BK)-MIN(Data Range)`
- Minimum: `=MIN(Data Range)`
- Maximum: `=MAX(Data Range)`
- Sum: `=SUM(Data Range)`
- Count: `=COUNT(Data Range)`