



SUMMER TRAINING REPORT

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Part 1: Summer Training Report



**Comparative analysis of
mental health of
Millennials before and
after lockdown amid
COVID-19**

NETNOGRAPHIC

STUDY

Introduction

- Coronavirus disease (COVID-19) is a **communicable disease** caused by newly discovered corona virus.
 - Most people infected with the COVID-19 virus can experience **mild to moderate respiratory illness and recover without requiring special treatment. Older** individuals with underlying medical issues like **cardiac disease, diabetes, chronic disease, and cancer** are more likely to **develop serious illness** (WHO).
 - The **government's sudden social control** of the lockdown to the **unprepared population** created everybody **panic anxious and stressed**.
 - One threat to the COVID-19 response in India is that the **spread of misinformation driven by fear, stigma, and blame**. There are rising **levels of violence** against **health-care employees** and stigmatisation of people with or **suspected of getting COVID-19**, that may impede reporting of illness.
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- **WHO have voluntarily formed Indian Scientists' Respond** to COVID-19 to fight **myths** and **misinformation** regarding the disease.
 - We hear several news relating to COVID 19 from all over the world, through television, social media, newspaper, family and friends and different sources.
 - The **biggest issues** for people's mental wellbeing are typically the **shortage of testing** and **lack of diagnosis of the disease**.
 - **70 % of individuals would rather opt to be vaccinated**, or have their children vaccinated against corona virus if one is developed.
 - Everyone is following **recommendation provided by government** to prevent the virus's spread.
 - This study is done to **understand the psychological state of the millennials** under the lockdown amid COVID 19 circumstances in India. This study aims to find the **prevalence of anxiety, Stress, and Depression** within the millennials
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Methodology



QUANTITATIVE
SECONDARY
DATA
ANALYSIS



QUALITATIVE
NETNOGRAPHIC
ANALYSIS

Methodology



QUANTITATIVE DATA ANALYSIS

Data before lockdown from **Nation Mental Health Survey of India 2016** using Depression Anxiety and Stress Scale (DASS- 21) in the year 2016 and **Online survey on 1000 people** to assess Depression , Anxiety and Stress after lockdown implemented in the year 2020 is taken, compared and evaluated.



QUALITATIVE NETNOGRAPHIC ANALYSIS

The paper picked **tele-communications, online blogs and online news feeds**. Postings associated with “depression, anxiety, stress, tension, effects on personal and career” are selected. In line with the previous definition, ten reviews associated with mental state condition and effects area unit announce from March 2020 to June month 2020 were selected.

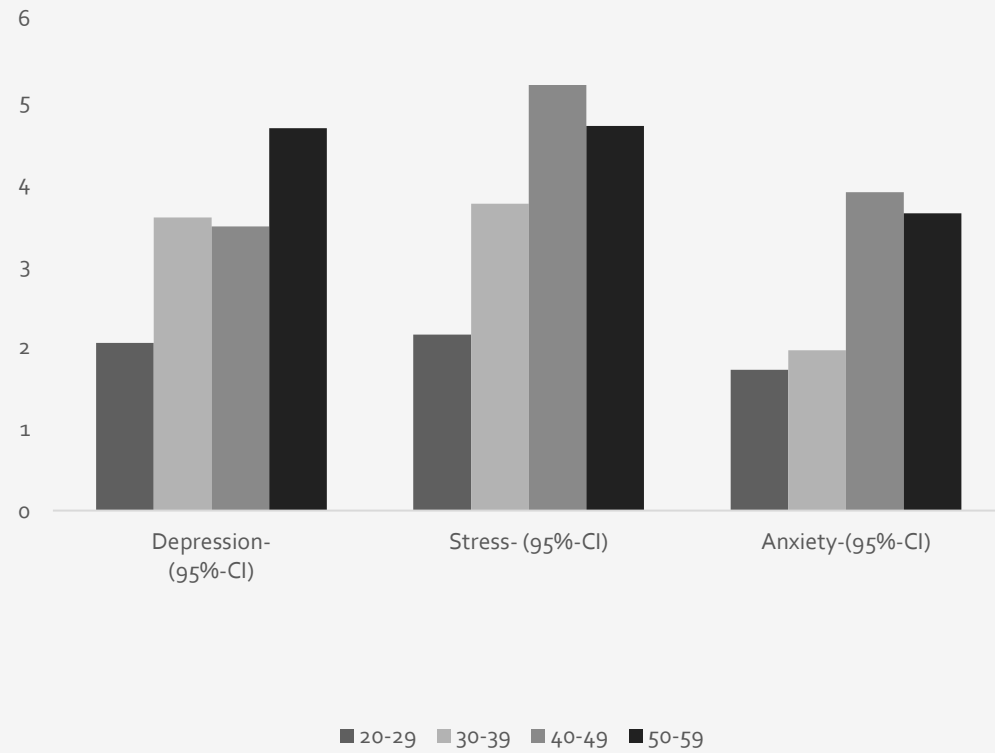
Result from quantative approach the data shows.

Age- National Mental Health Survey of India 2016, Depression, Stress and Anxiety was highest in the individuals belonging to age range 40-49 years whereas it is highest in the individual belonging to age 20-29years after COVID 19 lockdown.

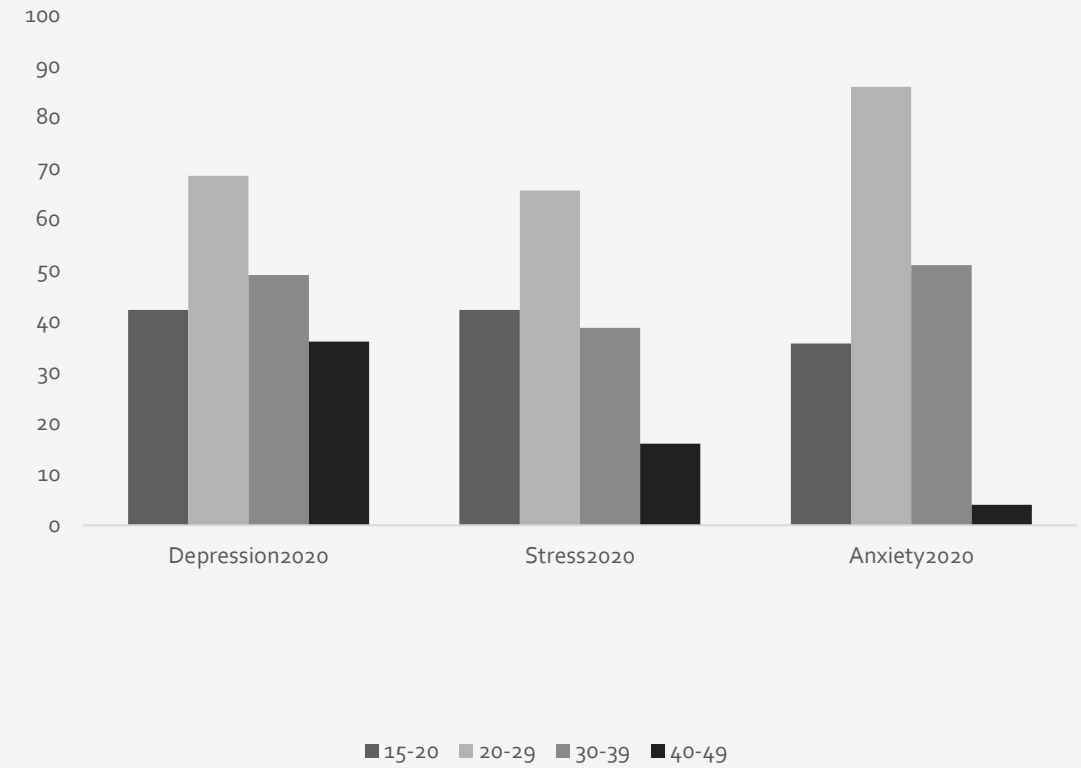
Age	Depression 2016	Stress 2016	Anxiety 2016
20-29	2.05	2.15	1.72
30-39	3.58	3.75	1.96
40-49	3.47	5.2	3.89
50-59	4.67	4.7	3.63

Age	Depression 2020	Stress 2020	Anxiety 2020
15-20	42.2	42.2	35.6
20-29	68.5	65.6	85.9
30-39	49.0	38.7	51.0
40-49	36.0	16.0	4.0

2016



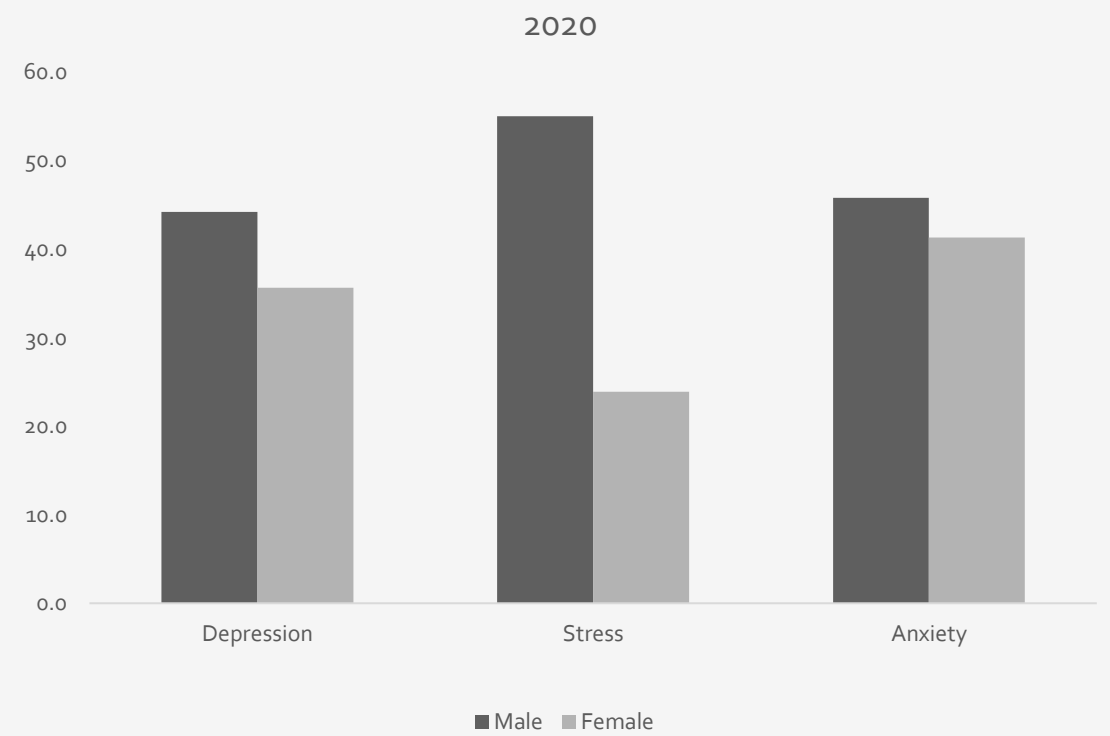
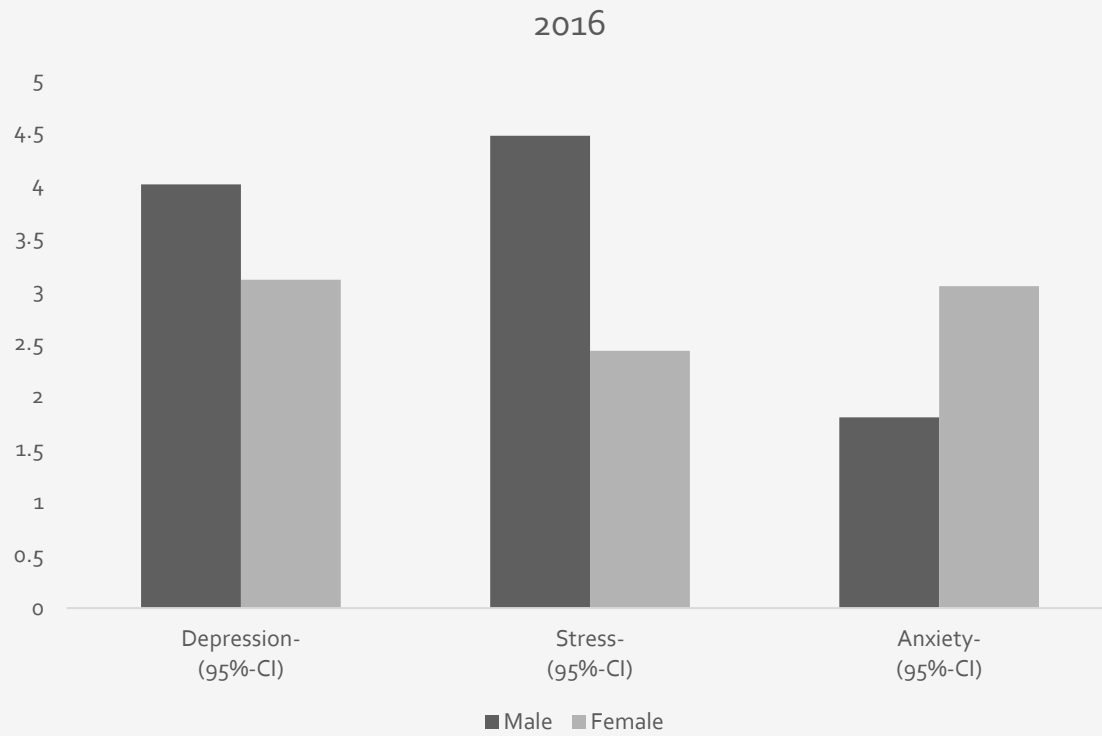
2020



Gender- The study of National Mental Health Survey of India 2016 suggested that Anxiety is higher in females whereas males are depressed and stressed as compared to females. Anxiety increased in male after COVID 19 lockdown.

	Depression	Stress	Anxiety
Gender	2016	2016	2016
Male	4	4.46	1.8
Female	3.1	2.43	3.04

	Depression	Stress	Anxiety
Gender	2020	2020	2020
Male	44.2	55.0	45.8
Female	35.6	23.9	41.3



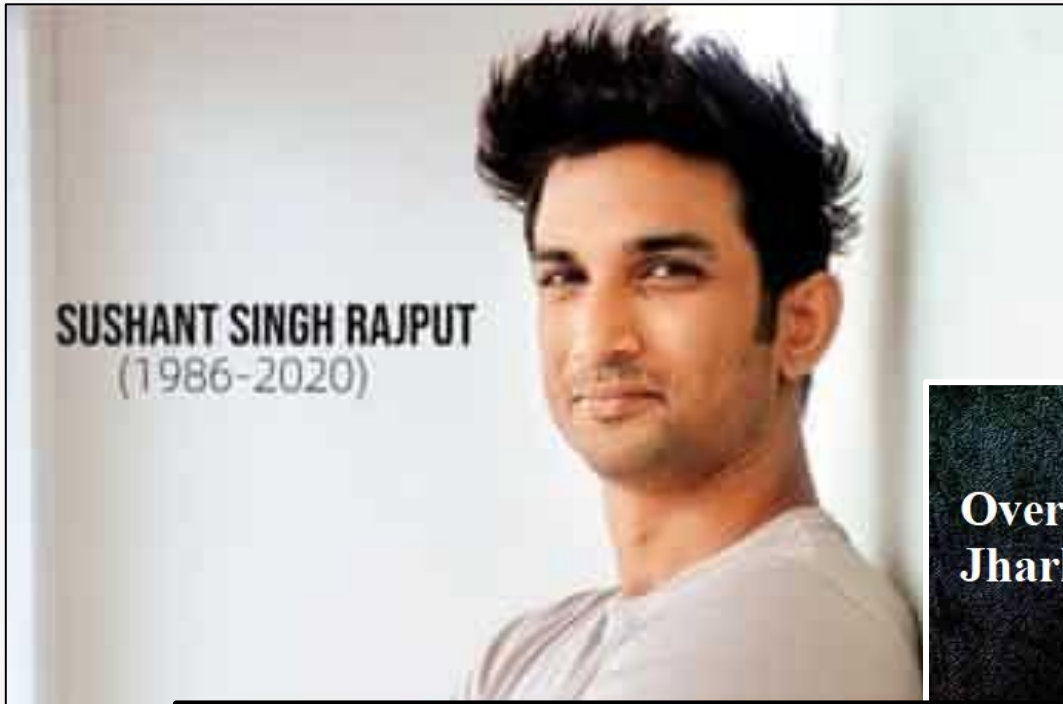
Result from qualitative approach of Netnographic study based on semi structured and WHO interviews And online websites and blogs.

The study revealed that COVID 19 is **creating psychological distress among the individual** as there are **restrictions due to lockdown**. Individuals are going through a **crisis and feeling lack of control on their lives** due to lockdown restrictions imposed upon them. Millennials and youngsters are facing **uncertainty for career and profession**. Clearly, millennials were expressing their feelings and looking for support from other's experiences via online modes.

The findings yielded several themes that contribute to existing knowledge on the experiences of millennials and highlight emerging themes that may be explored in future research. The outcome based on the themes created are-

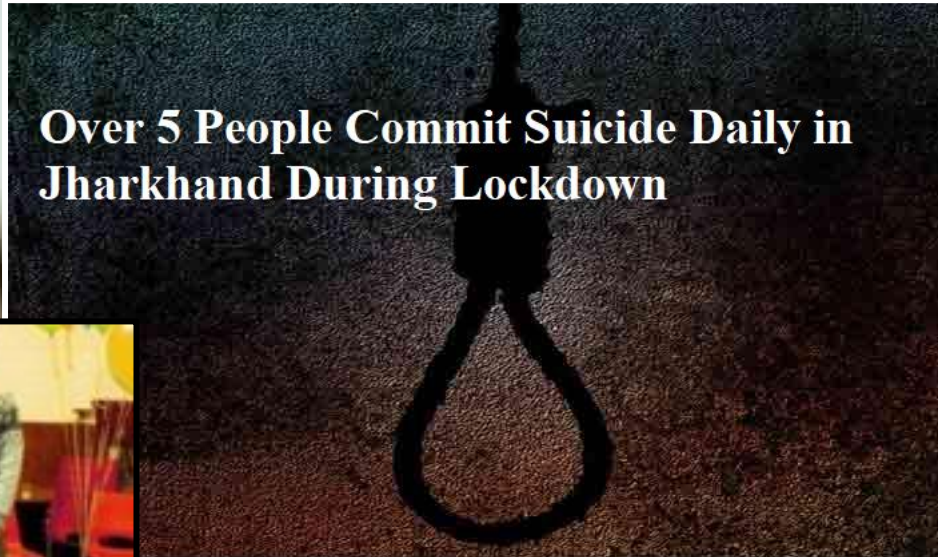
1. Stress or tension regarding this pandemic condition
 2. Sleeping or eating issue
 3. Reaction of family towards their child's mental health
 4. Internet, or media impact
 5. Effect on studies, Stress related to Career
 6. Previous experience which helped in coping in this situation
 7. Effect personally or professionally
 8. Smoke or drink issue
 9. Health professional's feeling on stress or tension or difficulty.
-

Followed by the thematic analysis which gave a gist about the reason of mental illness of people during lockdown, there were also some online reviews which lead to the conclusion of this study.



Isolation and mental health: the psychological impact of lockdown

[Azera Parveen Rahman](#)



Over 5 People Commit Suicide Daily in Jharkhand During Lockdown



**THE LOCKDOWN HAS TRIGGERED
A RISE IN VIOLENCE AGAINST WOMEN**



**Coronavirus: Young people 'more
anxious during lockdown'**

Conclusion

Studies suggest that **this lockdown will cause psychological effects on millennials**, which is expressed as anxiety, stress, and depression.

The study revealed that covid-19 is creating **psychological distress** among the individuals, as there are **restrictions due to lockdown people which forced people to stay home**

Individuals are feeling a **lack of control over their lives** due to **lockdown and restrictions imposed** upon them. Millennials are facing **uncertainty** concerning their **career and professional life** (jobs are at stake).

Fear of infection is creating a panic situation among them.

The results indicate that millennials' anxiety regarding the pandemic was associated with their **area of living and source of earning**.

If we expect people to keep **following the recommendations of the government's further extension** (as may be necessary to curb the spread of COVID-19) and remain inside, it is necessary to find ways to reduce the negative effects of lockdown.

Possibilities on **social interaction activities, safe ways for people to get fresh air outside, online collective work**, classes will cause some differences in people's mental health.

The novel ways of bridging social capital between young and old, or even giving out inexpensive tablets Or laptops or any handsets to ensure the whole population has connectivity virtually.

Communications from the government should be such that it **explain to the citizens the ill effect and consequences of the disease.**

Interventions that make people staying at home by **online social reading activities, virtual social interactions, exercise routines, classes**, etc. — All planned to decrease the worries of long-term social isolation.

Evaluating, preventing, and controlling mental health and helping in psychosocial rehabilitation of the affected individuals would lower the mental health crisis.

Part 2: Online Course Report



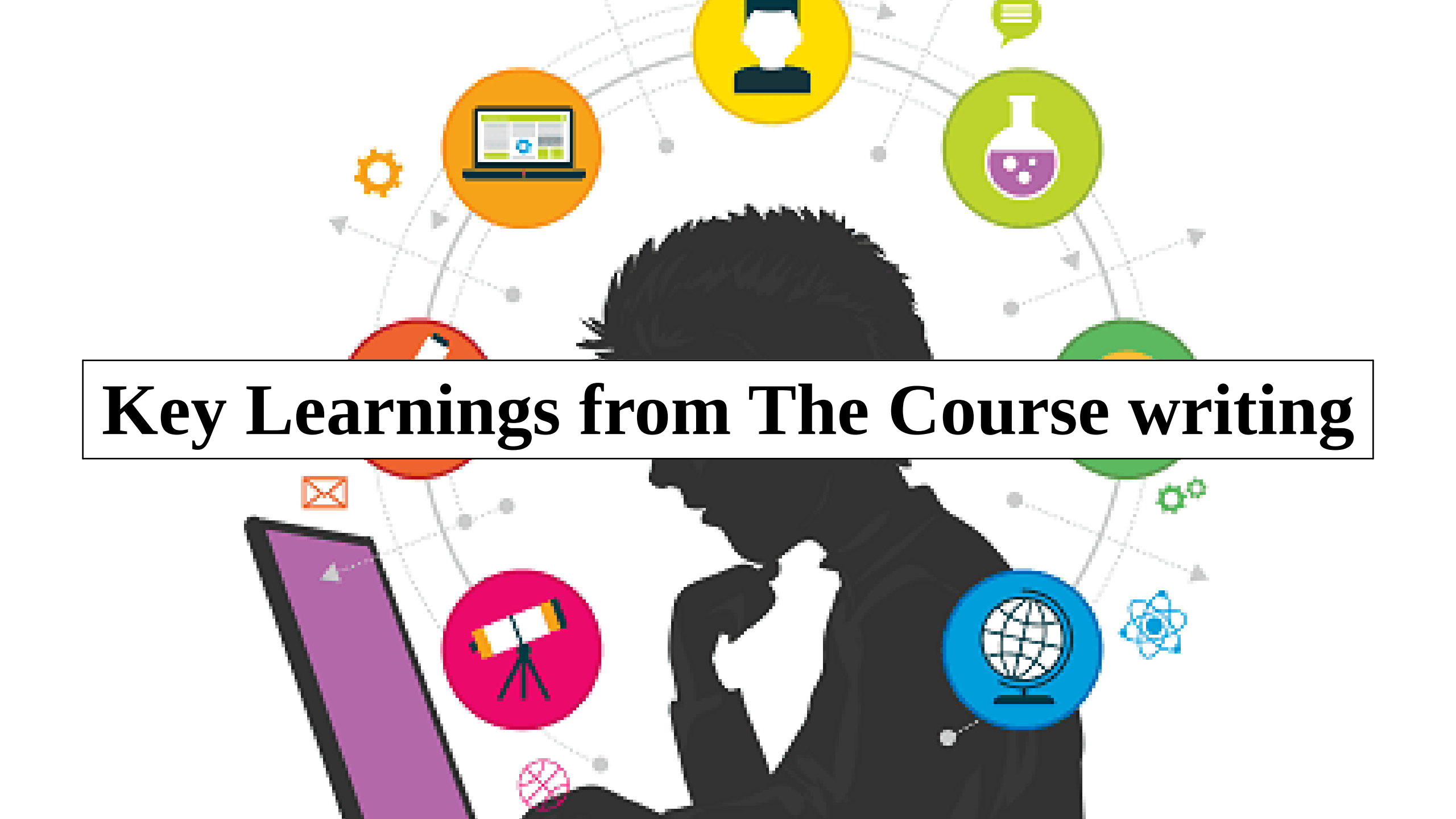
DATA ANALYTICS FOR LEAN SIX SIGMA

Course Description-

This course thought **data analytics techniques that will help** in Lean Six Sigma improvement projects. **Analysing and interpreting** data under a project will be learned. A **statistical data tool** i.e. Minitab is also added for further use. A brief outcome is also explained. Many different examples are used to illustrate from lean six sigma projects. The technique that can be used in a broader setting is used through data analytic tools.

Objectives of The Course-

- Lean Six Sigma improves to analyze, interpret, and to use data for solving the problem.
 - The question that can be analysed are-
 - ✓ What is the important issue an organization should focus on?
 - ✓ How can a phenomenon have quantified?
 - ✓ Which department shows the best performance?
 - ✓ How to decrease no. of defects?
 - ✓ Is there a difference in quality before and after my project?
-

A stylized illustration of a person's head in silhouette, with their hand resting on their chin in a thinking pose. The background is white and features a network of grey dashed lines with small grey dots at the intersections. Various colorful circular icons are scattered around the person's head, each containing a different symbol: a yellow circle with a person icon, a green circle with a beaker, a blue circle with a globe, a pink circle with a telescope, a red circle with a microscope, an orange circle with a laptop, a green circle with a speech bubble, a blue circle with a flower-like atom, and a red circle with a gear. A purple rectangular shape is visible in the bottom left corner.

Key Learnings from The Course writing

A popular method to improve a process like withstand competition, Higher customer expectation adaption, innovating technology.

5 phases- DMAIC:

D. Define- select project and establish objective

M. Measure- Measurable and quantifying the problem

A. Analyze- Current situation analysing and diagnosing

I. Improve- Improvement actions to be developed and implemented.

C. Control- Improved process performance controlling and project closing

CTQ-Critical To Quality-also known as
Y- Variable
Dependent Variable
Outcome Variable

Unit- People, Objects, Phenomena
(Experimental unit, Observational unit, Unit of analysis, Case, Subject)

Measurement Unit-Unit of Measurement

Sampling- Selecting is known as sampling

Organized Data- Unit (People, Objects, Phenomena) and Variable (Properties that are measured)

Organizing Database- Units in **rows** and Variables in **columns**.

Numerical Data and Categorical Data-

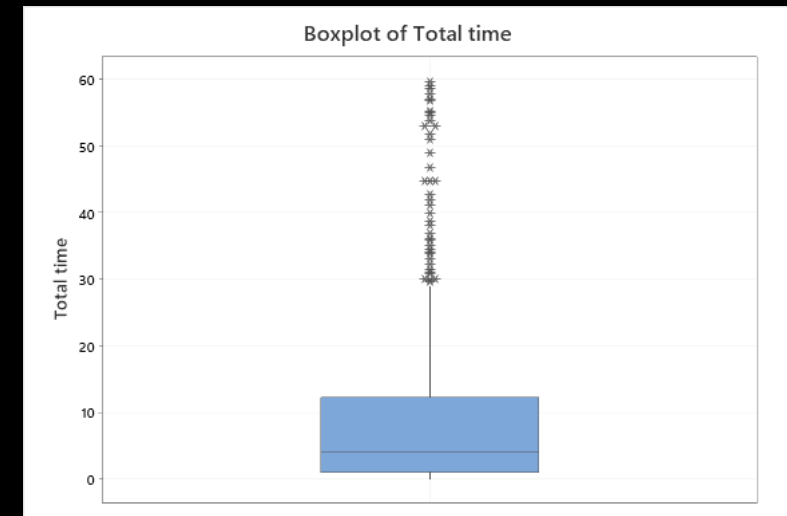
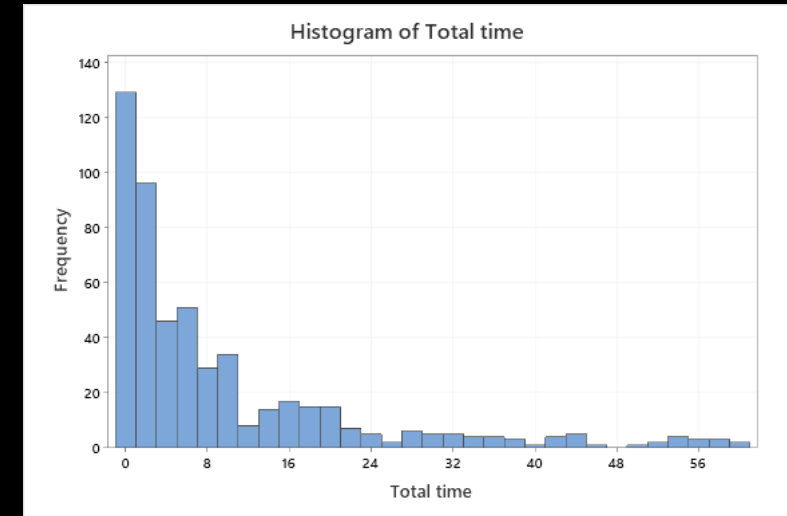
	Numerical	Categorical
About	Discrete and Continuous	Ordinal, Nominal and Binary
Type	Quantitative	Qualitative
Sample Size	N=30	N=300
CTQ	Histogram, Boxplot	Pie Chart, Bar Chart, Pareto Chart

Descriptive statistics(for numerical data)- No. of values, Mean, Variance, Standard Deviation, Minimum and Maximum from the data, Median, Quartile, and Interquartile range (IQR).

Graph-

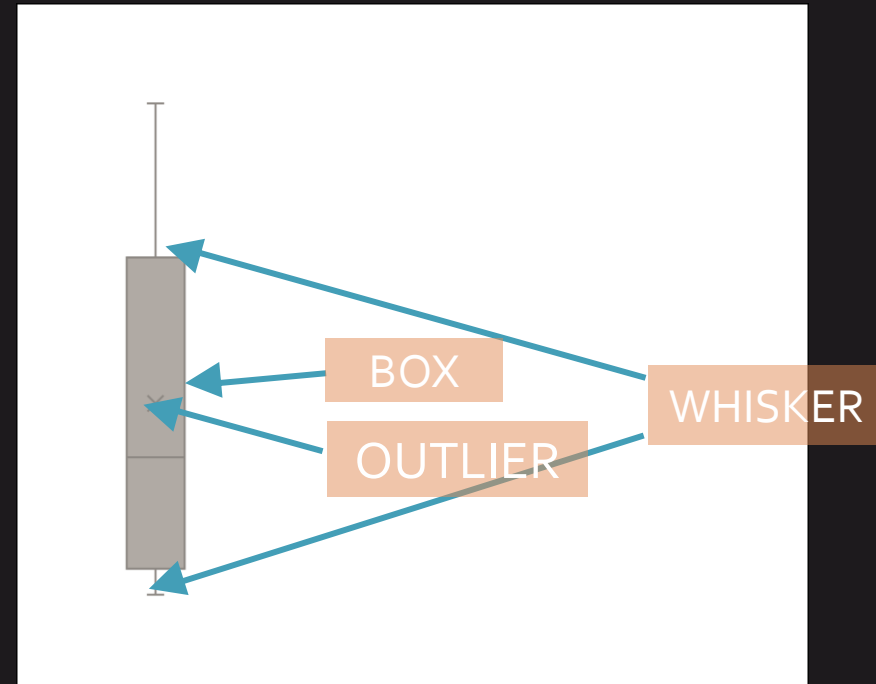
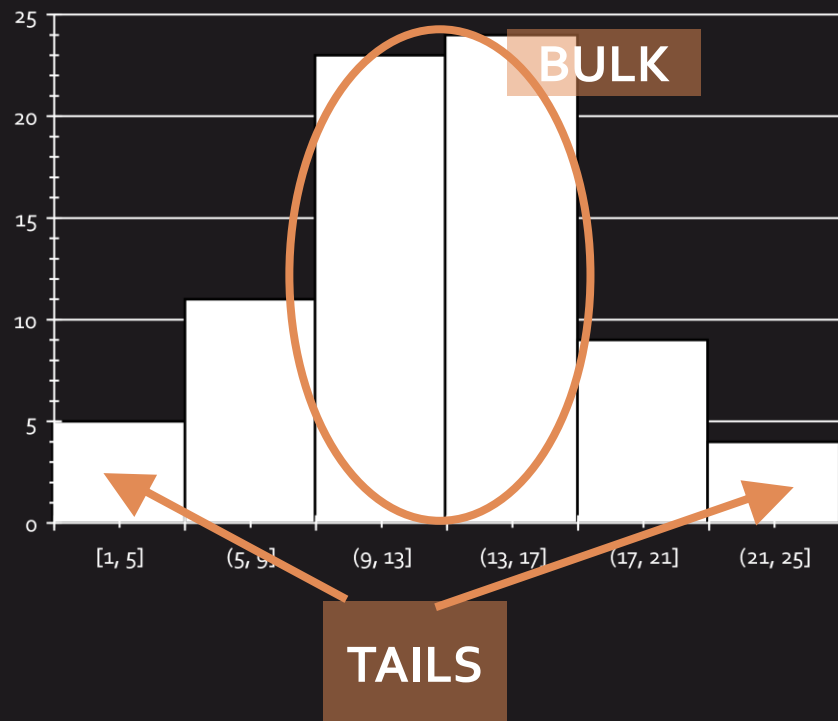
Numerical data- Histogram and Boxplot for a numerical variable

Types: Symmetrical distribution, Skewed or Mixture of distribution



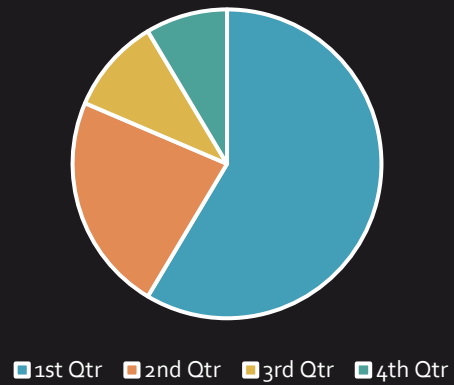
Numerical data

Histogram

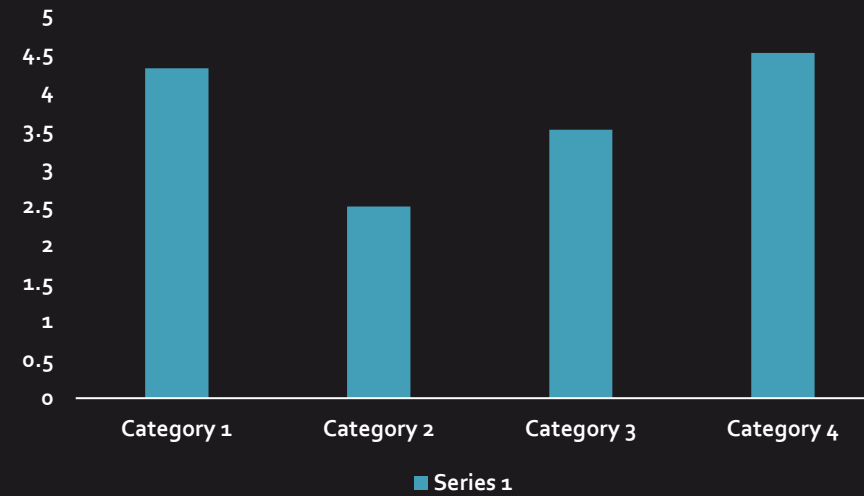


Categorical data

Pai Chart
How often it occurs



Bar Chart
Spot Most occuring category



Tally Table
Show exact numbers

Sample and population-

$\bar{X}$, μ - Mean

S , σ - Standard deviation

Population- the collection of all unit of interest (μ , σ)

μ -population location:

- Mean -precise
- Median- take the out liars

σ - population spread:

- Standard Deviation(S)
- Interquartile range(Q_3-Q_1)
- Range (Max-Min)

Sample-a subset of the population ($\bar{X}$, S)

Estimation-Generalise the sample distribution to population distribution.

Confidence Interval -Gives boundaries, where the population mean, will be in between with a certain level of confidence.

Probability Distribution-

$\bar{X}$, μ - Mean

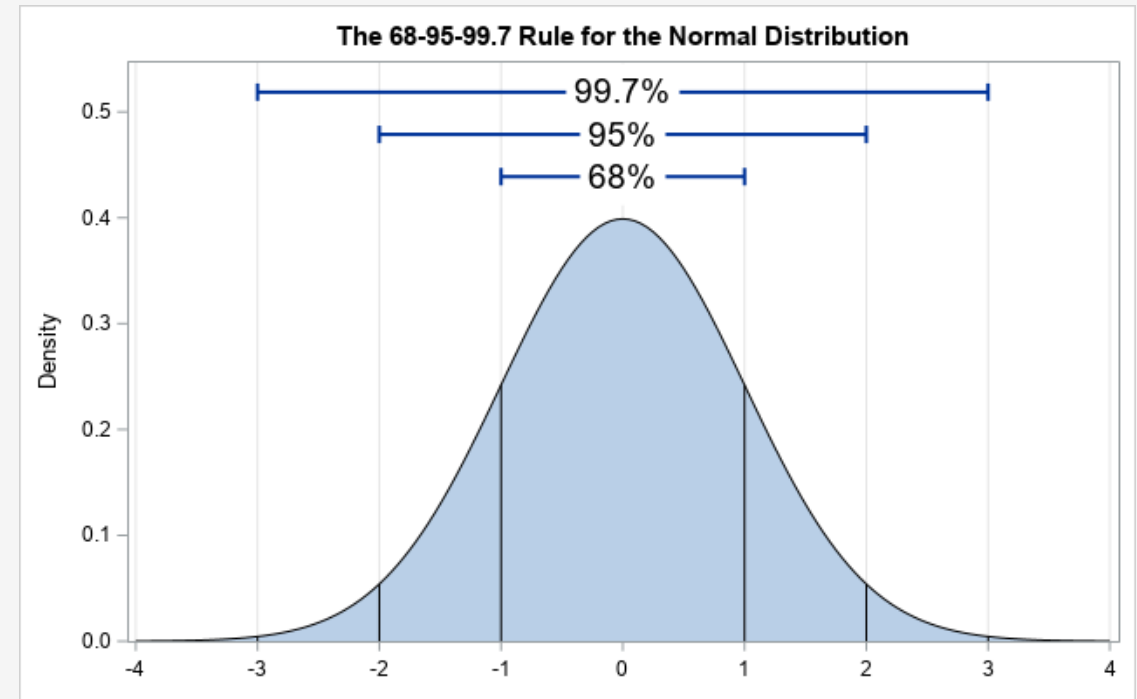
S , σ - Standard deviation

- **Normal**-symmetrical and bell-shaped
 - 68%-between σ
 - 95%- between 2σ
 - 99%-between 2.5σ
 - 99.7%-between 3σ

Weibull-skewed

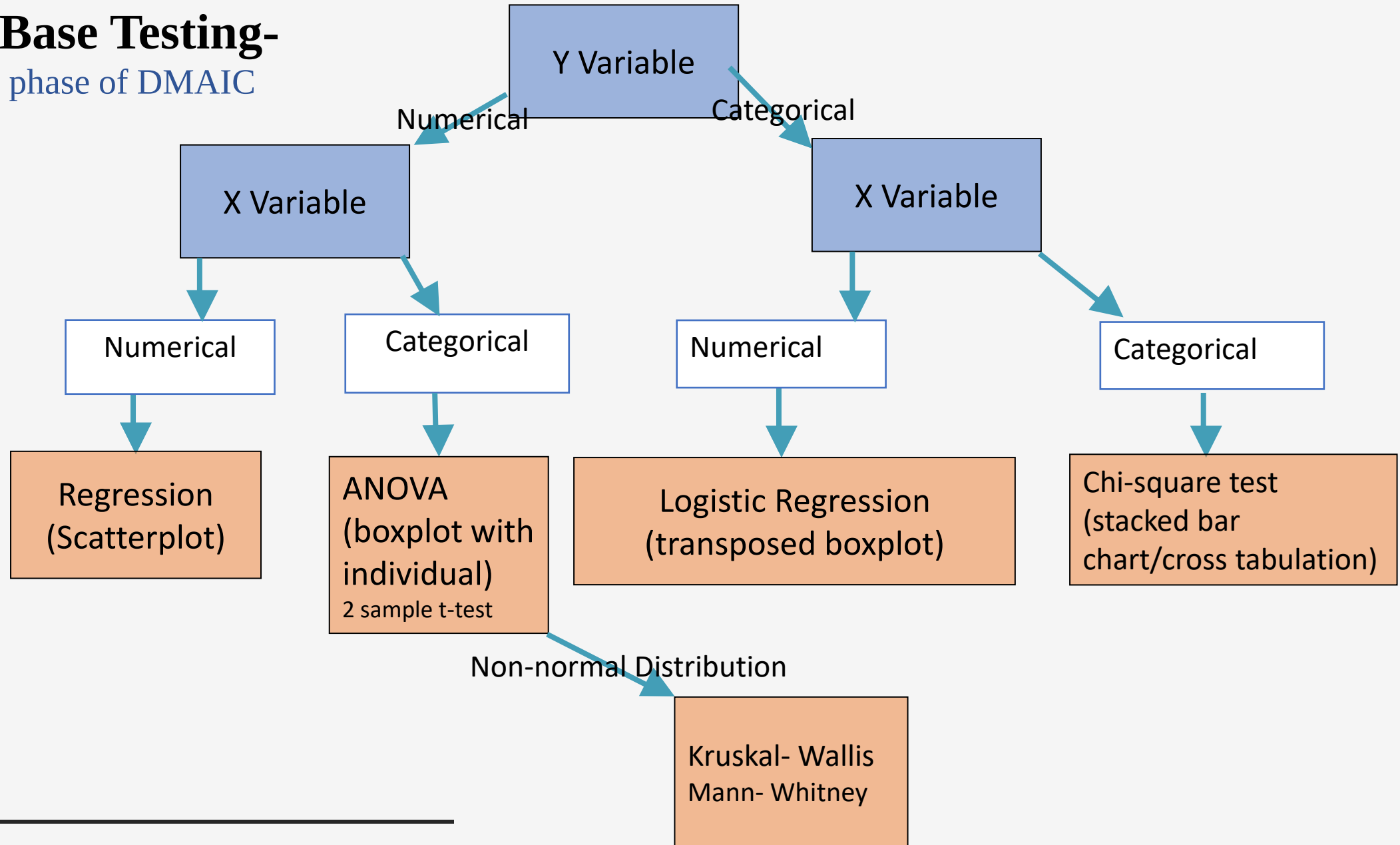
Lognormal-skewed

The probability plot is the visual tool to fit a distribution to the data and can be used data anomalies.

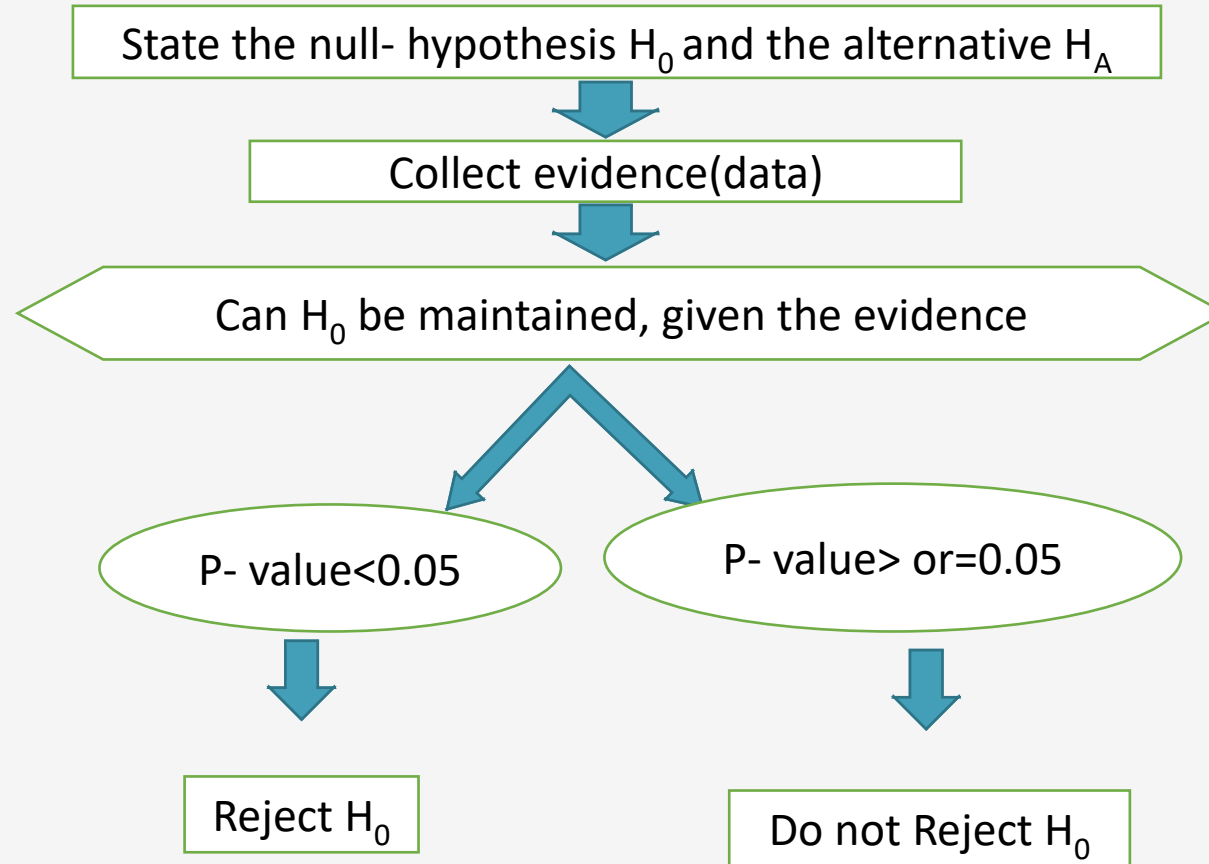


Data-Base Testing-

Improve phase of DMAIC



Hypothesis Testing-



ANOVA-Analysis of Variance analysis –

Used to study the relation between **numerical Y** and **categorical X** variables

It is performed in three steps:

1. **Organize data**- Y and X variables are in separate columns.
2. ***ANOVA**- Group means identical for each of the levels of the X variable.
3. **Residuals**-Random scatters, outliers, and irregularities.

ANOVA -Hypothesis Test

Analysis procedure often results in a p-value

Null hypothesis $H_0: \mu_1 = \mu_2 = \mu_3 = \mu_4$

Alternative Hypothesis $H_a: \mu_i \neq \mu_j$ for some i and j

p- values determine the significance

- Below 0.5: X has a significant effect
 - 0.05 or higher: X is not significant
-

Residual-Calculated by subtracting the mean of the relevant machine from each observation.
(Residual = measurement – group mean)

Kruskal-Wallis Test-Non-parametric test does not make assumptions

It is an alternative to the ANOVA if assumptions are not met.

To interpret the output, you must look at:

- Median for each group
- P-value to determine if the results are significant

Two sample t test-

It is a simple test comparing the means of two different groups.

p- values can be used to calculate whether the difference between two means is coincidental or truly significant.

Test for equal variance- it compares variance across groups with the test for equal variance. It is also used in ANOVA analysis to determine if the 'assume equal variance' mode be used (p-value will be more precise).

Correlation and Causation-

- Correlation- two things move in the same direction
- Causation-one thing causes the other to change

Correlation $\neq$ Causation

Correlation-

it is an index that expresses how strong a relationship between two numerical variables is.

- The index is between -1 to +1
- 0 means no relation

Rule of thumb-

- 0 to 0.4: No or weak positive correlation
 - 0.4 to 0.8: Moderate positive correlation
 - 0.8 to 1: Strong positive correlation

 - 0 to -0.4: No or weak negative correlation
 - -0.4 to -0.8: Moderate negative correlation
 - -0.8 to -1: Strong negative correlation
-

Regression Analysis-

it is a statistical method to test if two numerical variables are related to each other.

Steps: Study the relation between **numerical Y** and **numerical X** variable

1. Fitted line plot:

- Fit a line $Y = a + bX$ that describe the relationship

$a = \text{constant}(X=0)$

$b = \text{slop of the graph}$

2. Regression:

- Is the evidence for the relationship significant?
- Is the relationship strong?

Hypothesis test-

Null Hypothesis H_0 : there is no significant relationship($b=0$)

Alternative Hypothesis H_A : there is a significant relationship($b \neq 0$)

$p < 0.05$: found significant relation, H_A can be supported

$p > 0.05$: found no significant relation, H_0 cannot be rejected

3. Residuals:

- Are the residuals normal?
- Are there outliers or irregularities?

Residual = observed value(data) – fitted value (estimated regression line)

- Outliers: Remove outliers
- Non-linearity: Quadratic regression
- Other problems: Many possible solutions

4. Prediction interval:

- Bounds for 95% of data points

The prediction interval can be used to determine the level of the influence factor, which ensures a certain CTQ performance.

A crosshair or the formula can be used to determine the required value of the influence factor.

Quadratic Regression- $Y = a + bX + cX^2$

If the assumptions of regression analysis are not met, an alternative technique is performed i.e. Quadratic regression
It fits a Curved Line

After the main analysis, residual analysis is performed.

Chi-square analysis-

It is a suitable method if **categorical Y** and **categorical X** are present.

1. Cross Tabulation:
 - Copy cross-tabulation data into the worksheet
2. Chi-square analysis and p-value:
 - Chi-square analysis gives a p-value
 - The p-value shows whether the evidence for the relationship between X and Y is significant.

H_0 : there is no relation between X and Y

H_A : there is a relation between X and Y

Logistic Regression-

Steps: Study the relation between **categorical Y** and **numerical X** variables

1. Enter data in trial/ event format
 - Convert the database
2. Make Fitted line plot
 - Evaluate the quality of the fit
3. P-value
 - Is the evidence for the relationship significant?

THANK YOU