

# SUMMER TRAINING REPORT

## PART A

Under The Guidance Of

Dr Sheenu Jain

Associate Professor

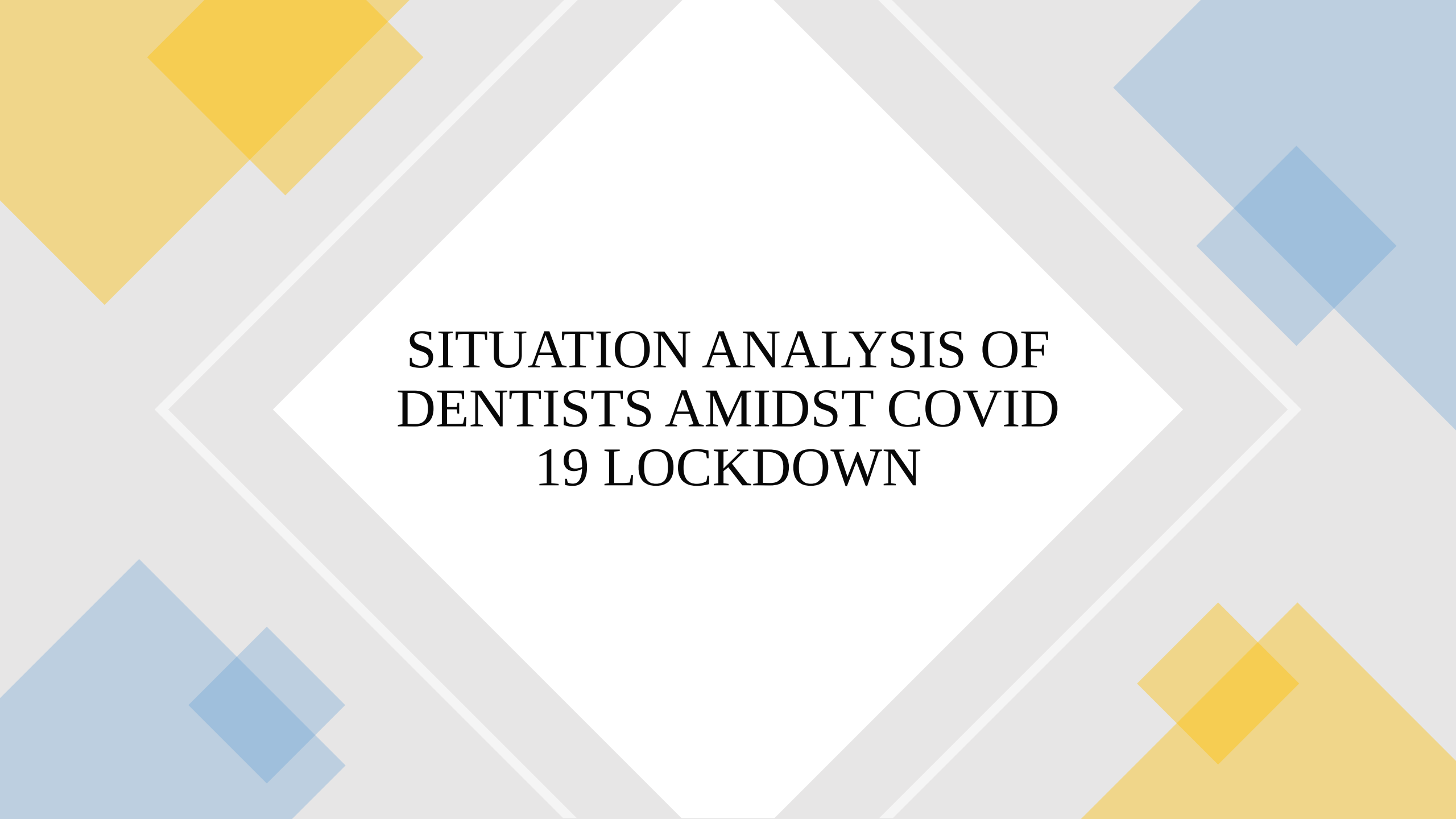
Institute Of Health Management Research,  
Jaipur

Report By

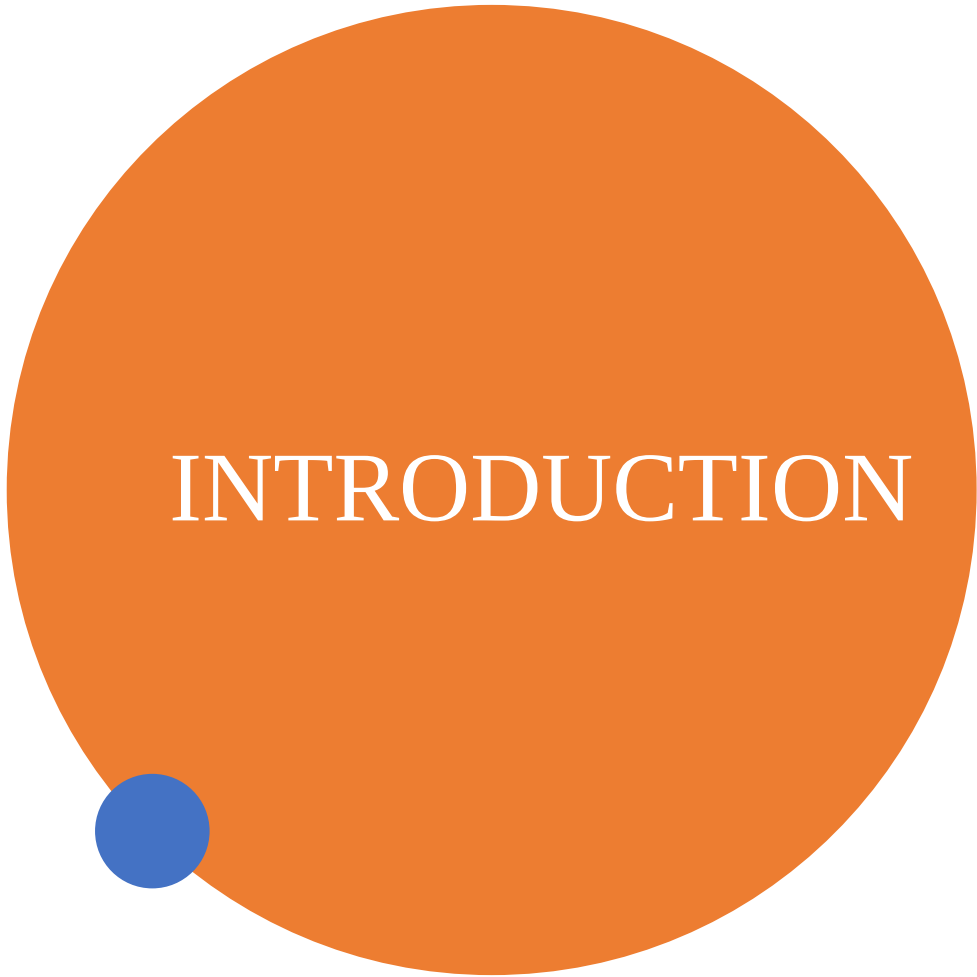
Dr Rishab Budakoti

MBA Hospital And Health Management

2019-2021



# SITUATION ANALYSIS OF DENTISTS AMIDST COVID 19 LOCKDOWN



# INTRODUCTION

- Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus. The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes.
- In the event of an outbreak, the dentist can be the first person to come in contact with an infected person; they can either unknowingly become a carrier and infect others
- Dentists who specialize in the field of public health dentistry are at an increased risk of contacting such an infection due to the nature of their work, which involves promoting oral health among their communities with limited resources.
- Dental surgeons are facing many problems as COVID-19 continues to affect the economy and risks endangering their lives daily
- The four costs which generally account for the vast majority of dental practice expenses are wages (25%-30%), rent (6%-9%), supplies (6%10%) and lab (3% to 8%)
- Many dentists who are running their clinic are facing problems like – Rent of the property, Loan EMI (Equated monthly instalment) ,Very low patient flow –very few people visit dental clinics for treatment and now because of COVID-19 lockdown the number decreases even more, Reduced treatment cost , shortage of PPE (personal protective equipment) kit, mask and other equipment's and their procurement being very expensive.

# MATERIALS AND METHODS

- The mode of data collection was through the link:  
<https://docs.google.com/forms/d/1sW4tPD2oI4xEzYObBt-vyCD3JWO5EH9vM-kSgYOEwh4/edit>
- Study population- Dentist who have completed their studies and practicing as a clinician or an academician.
- Time frame-The duration of the study was from 1<sup>st</sup> June- 30<sup>th</sup> June, 2020.
- The questionnaire was purposefully forwarded to dentists who practiced across the globe
- the required sample size and of 72 which was estimated by  $(Z^2pq/d^2)$ .
- The data analysis included descriptive statistics of the data collected through Ms- Excel and Minitab Statistical Software.

# Results

A total of 80 dentists responded to the questionnaire. Complete responses were given by only 54 dentists that were taken for the analysis with a response rate of 67.5%.



# Characteristics of respondents

- 75.93 % of the dental practitioners accepted the government's regulation of closing dental clinic during COVID 19 Lockdown and 24.07% did not. 83.33% of the dental practitioners have been working during lockdown.

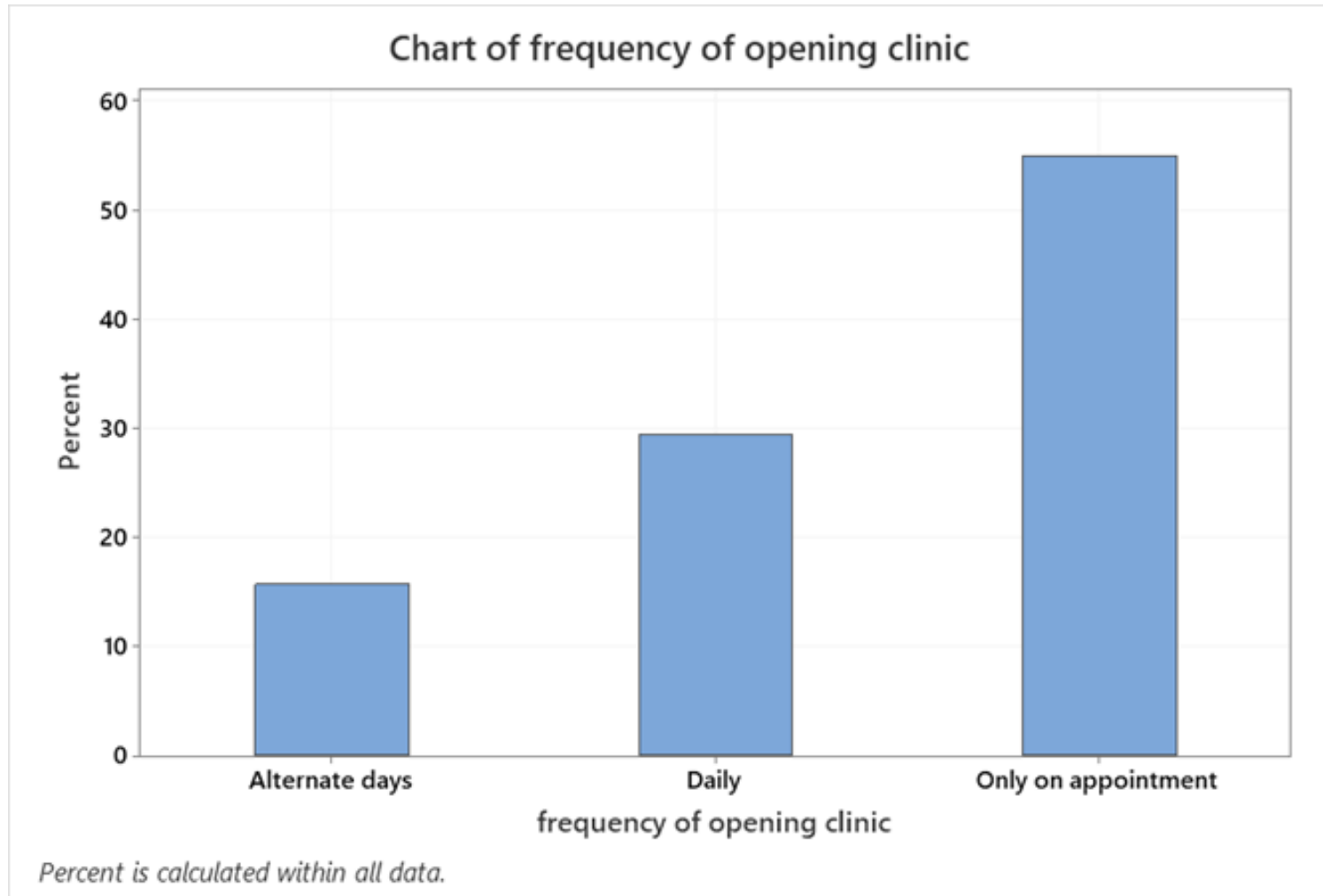
## Tally

| Place of practice |       |         | practicing as |       |         | years of practice |       |         |
|-------------------|-------|---------|---------------|-------|---------|-------------------|-------|---------|
|                   | Count | Percent |               | Count | Percent |                   | Count | Percent |
| Abroad            | 3     | 5.56    | Both          | 17    | 31.48   | >10 years         | 3     | 5.56    |
| India             | 51    | 94.44   | Clinician     | 37    | 68.52   | 0-2 years         | 30    | 55.56   |
| N=                | 54    |         | N=            | 54    |         | 3-5 years         | 15    | 27.78   |
|                   |       |         |               |       |         | 6-9 years         | 6     | 11.11   |
|                   |       |         |               |       |         | N=                | 54    |         |

| accept govn relations |       |         | working during lockdown |       |         |
|-----------------------|-------|---------|-------------------------|-------|---------|
|                       | Count | Percent |                         | Count | Percent |
| No                    | 13    | 24.07   | No                      | 9     | 16.67   |
| Yes                   | 41    | 75.93   | Yes                     | 45    | 83.33   |
| N=                    | 54    |         | N=                      | 54    |         |

# Frequency of opening clinic in the lockdown



## Description of opening clinic in the lockdown V/s years of practice

- It was found that all dentists with more than 10 years of experience and 83.69% of the dentists with an experience of 6-9 years opened their clinic only on appointment during lockdown.
- 35.71% Dentists with less than 2 years of experience opened their clinic daily
- 50% opened it on appointment whereas only 14.29% opened it on alternate days.

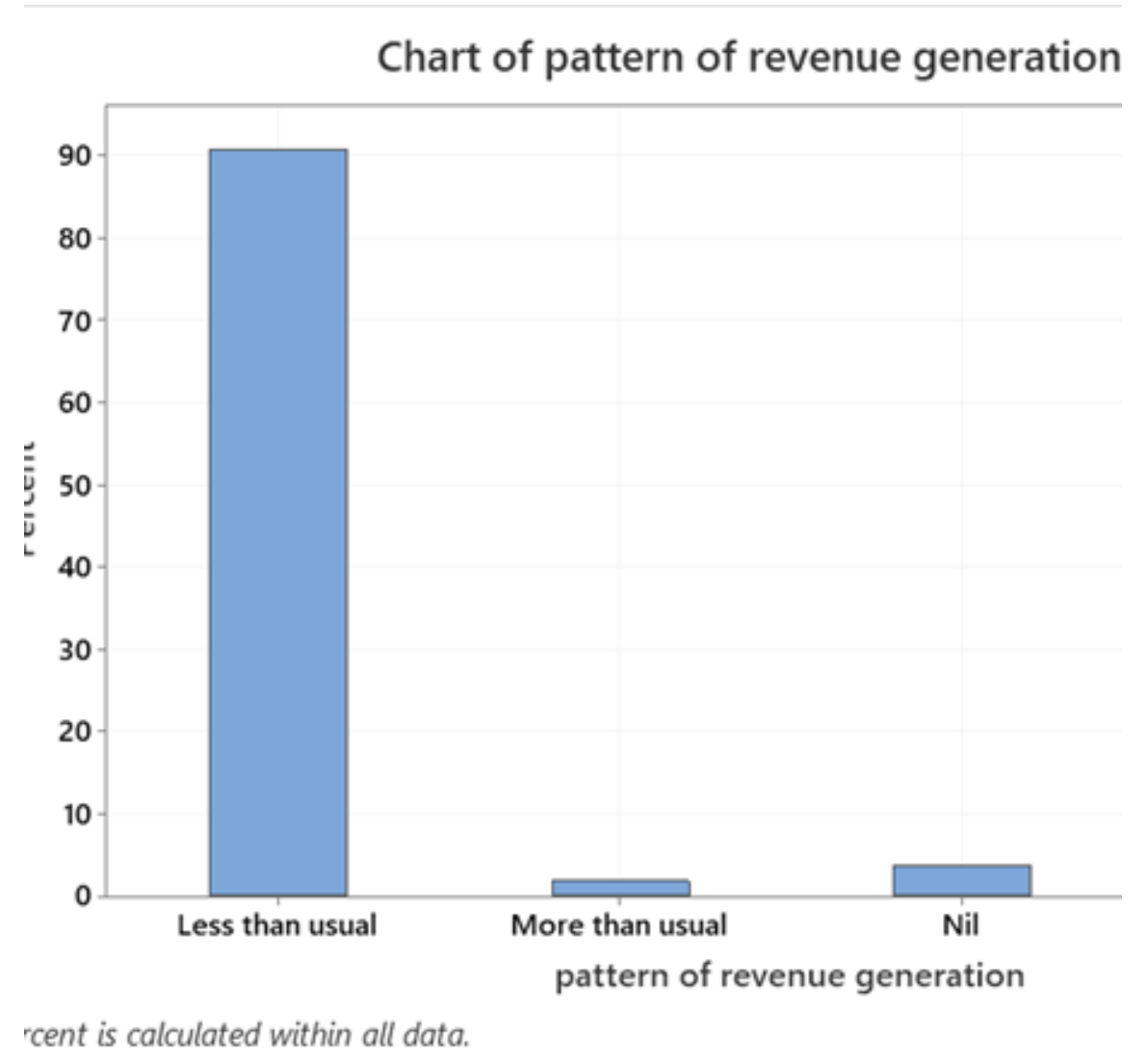
Rows: years of practice Columns: frequency of opening clinic

|           | Alternate days       | Daily appointment     | Only on               | All                    |
|-----------|----------------------|-----------------------|-----------------------|------------------------|
| >10 years | 0<br>0.00<br>0.00    | 0<br>0.00<br>0.00     | 3<br>100.00<br>10.71  | 3<br>100.00<br>5.88    |
| 0-2 years | 4<br>14.29<br>50.00  | 10<br>35.71<br>66.67  | 14<br>50.00<br>50.00  | 28<br>100.00<br>54.90  |
| 3-5 years | 4<br>28.57<br>50.00  | 4<br>28.57<br>26.67   | 6<br>42.86<br>21.43   | 14<br>100.00<br>27.45  |
| 6-9 years | 0<br>0.00<br>0.00    | 1<br>16.67<br>6.67    | 5<br>83.33<br>17.86   | 6<br>100.00<br>11.76   |
| All       | 8<br>15.69<br>100.00 | 15<br>29.41<br>100.00 | 28<br>54.90<br>100.00 | 51<br>100.00<br>100.00 |

Cell Contents  
Count

# Revenue Generation from clinic in the lockdown

- It was found that 66.67% of the dentists had the revenue coming from the clinic as their only source of income.
- 90.74% of the dentists perceived their revenue generation at clinic to be less than usual.
- 1.85 % dentists perceived it to be more than usual.
- 3.70% of dentists perceived it to be same as usual.
- 3.70% who did not have any revenue generation from clinic in the lockdown.



Rows: frequency of opening clinic    Columns: pattern of revenue generation

|                     | Less than usual       | More than usual      | Same as usual       | All                    |
|---------------------|-----------------------|----------------------|---------------------|------------------------|
| Alternate days      | 6<br>75.00<br>12.50   | 1<br>12.50<br>100.00 | 1<br>12.50<br>50.00 | 8<br>100.00<br>15.69   |
| Daily               | 15<br>100.00<br>31.25 | 0<br>0.00<br>0.00    | 0<br>0.00<br>0.00   | 15<br>100.00<br>29.41  |
| Only on appointment | 27<br>96.43<br>56.25  | 0<br>0.00<br>0.00    | 1<br>3.57<br>50.00  | 28<br>100.00<br>54.90  |
| All                 | 48<br>94.12<br>100.00 | 1<br>1.96<br>100.00  | 2<br>3.92<br>100.00 | 51<br>100.00<br>100.00 |

*Cell Contents*

Revenue  
generation  
V/s  
Frequency  
of opening  
clinic

# Revenue generation V/s Years of practice

- It was found that all the dentists with more than 10 years of practice perceived their revenue generation to be less than usual.
- However, 7.14% of the dentists with 3-5 years' experience found their revenue generation to be more than usual

Rows: years of practice Columns: pattern of revenue generation

|           | Less than usual       | More than usual     | Same as usual       | All                    |
|-----------|-----------------------|---------------------|---------------------|------------------------|
| >10 years | 3<br>100.00<br>6.25   | 0<br>0.00<br>0.00   | 0<br>0.00<br>0.00   | 3<br>100.00<br>5.88    |
| 0-2 years | 26<br>92.86<br>54.17  | 0<br>0.00<br>0.00   | 2<br>7.14<br>100.00 | 28<br>100.00<br>54.90  |
| 3-5 years | 13<br>92.86<br>27.08  | 1<br>7.14<br>100.00 | 0<br>0.00<br>0.00   | 14<br>100.00<br>27.45  |
| 6-9 years | 6<br>100.00<br>12.50  | 0<br>0.00<br>0.00   | 0<br>0.00<br>0.00   | 6<br>100.00<br>11.76   |
| All       | 48<br>94.12<br>100.00 | 1<br>1.96<br>100.00 | 2<br>3.92<br>100.00 | 51<br>100.00<br>100.00 |

Cell Contents  
Count  
% of Row

## Problems faced by dentists in the lockdown

### Tally

| clinic rent | Percent | salaries | Percent | emi | Percent | stock | Percent |
|-------------|---------|----------|---------|-----|---------|-------|---------|
| No          | 42.59   | No       | 35.19   | No  | 51.85   | No    | 62.96   |
| Yes         | 57.41   | Yes      | 64.81   | Yes | 48.15   | Yes   | 37.04   |

# Coping up practice in COVID 19

## Tally

| mental stress |         | charge additional fee |         | time taken to function |         | treating covid patients |         |
|---------------|---------|-----------------------|---------|------------------------|---------|-------------------------|---------|
|               | Percent |                       | Percent |                        | Percent |                         | Percent |
| No            | 46.30   | Maybe                 | 27.78   | >12 months             | 11.11   | Maybe                   | 14.81   |
| Yes           | 53.70   | No                    | 46.30   | 1 month                | 1.85    | No                      | 64.81   |
|               |         | Yes                   | 25.93   | 2-5 moths              | 42.59   | Yes                     | 20.37   |
|               |         |                       |         | 6-12 months            | 44.44   |                         |         |



# Strategies taken up for practice in COVID 19

- It was found that 83.33% dental clinicians have implemented the preventive measures in their clinic on COVID 19 based on WHO guidelines.
- whereas , 16.67% of the dentists do not have knowledge on the guidelines
- 75.93% dental clinicians prefer a word of mouth counselling to their patients coming to the clinic.
- 22.22% have printed IEC materials for patient education at their clinic and the rest don't find the necessity on patient education.

# DISCUSSION

- Most of the clinics opened only on appointment and this trend was much evident amongst dental practitioners with more than 4 years of practice.
- Opening clinics only on appointment leads to a reduced patient flow than usual and eventually affects the revenue generation being less than usual.
- The dental practitioners practicing Abroad felt a legit decrease in trend of revenue generation however the trend in India was different.
- There were a few percentages of dentists who felt their practice generated revenue more than usual in the lockdown and around 4% didn't feel any difference in their revenue generation.
- Even if the clinic was opened daily during lockdown, dentists felt their revenue was less than usual.
- This could be attributed to the restrictions imposed by government on carrying out only emergency treatment.
- Travel restrictions imposed in the lockdown would have made transporting laboratory work difficult thereby reducing the revenue generated at clinic through prosthodontic procedures.

The study observed that dentists found it difficult to pay their clinic rent and most importantly salary to their employees. This has made them mentally stressed. The need of the hour for dentists is to look out for business strategies to cope with their lost businesses keeping in mind the regulations put forth by the government with dental practices.

# CONCLUSION

- ❑ In the present study, dentists were found to have been having a struggle to cope up with their practice in the Lockdown imposed due to COVID 19.
- ❑ To combat the situation, dentists must be well versed with the recent developments, especially those related to public health, and by following apt guidelines (i.e., the WHO guidelines at <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance>) make efforts to prevent the transmission of such diseases.
- ❑ Dentists should appropriately use the social media to spread awareness among people, and in their clinical practice, they should screen, isolate and refer the potential cases having the symptoms of COVID-19.
- ❑ They are also advised to follow the CDC and WHO guidelines in their clinics and sensitize their staff so that no stone is left unturned in defeating this pandemic.

# REFERENCES

1. Naming the coronavirus disease (COVID-19) and the virus that causes it. *World Health Organisation*. February 2020.
2. FalkSchwendicke, JoachimKrois,JesusGomezab. Impact of SARS-CoV2 (Covid-19) on dental practices: Economic analysis. *Journal of Dentistry* . 2020.
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4. Dental treatments may have to wait longer. *The hindu* . 2020 .
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6. Can dental clinics open in lockdown 4.0? Here's health ministry's guidelines. *The Financial express*. 2020 .
7. Booth, Jeremy. Be prepared for COVID-19, but don't panic says Indian Dental Association . *The Dental Tribune* . 25 March 2020 .

# SUMMER TRAINING REPORT

## PART B

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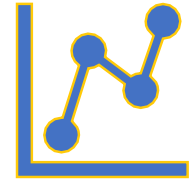
# DATA ANALYTICS IN LEAN SIX SIGMA



## WHY DATA ANALYTICS IN LEAN SIX SIGMA ?

- What is the most significant issue that an association should concentrate on?
- How to evaluate a measurement ?
- Do the workers impact on what amount time it takes to deal with an occupation?
- Which division shows the best performance?
- Which division is the most reliable, or shows the highest calibre?
- How to diminish the quantity of deformities?
- Is there a genuine distinction in quality in a venture?

These kinds of questions are addressed utilising data analytics in a Lean Six Sigma venture. Hence this course would complement in building an acumen in **crafting a career in Operations & Quality Assurance**



# KEY HIGHLIGHTS

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## D-M-A-I-C Framework

**Define** - Select and establish objectives

**Measure** - Make the problem quantifiable and measurable

**Analyse** - Analyse the current situation and make diagnosis

**Improve** - Develop and implement improvement action

**Control** - Control the improved process performance and close the project

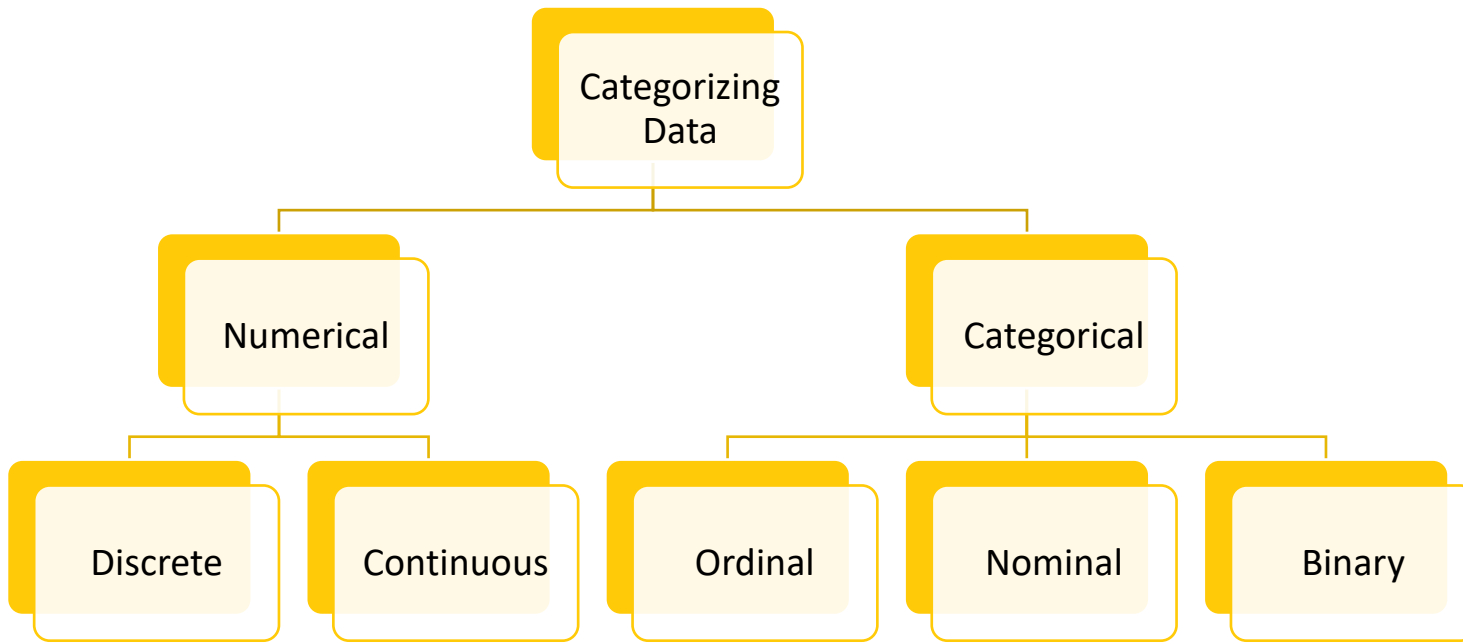
## CTQ (Critical to Quality)

A property of a product, process or service that is typical to the project objective

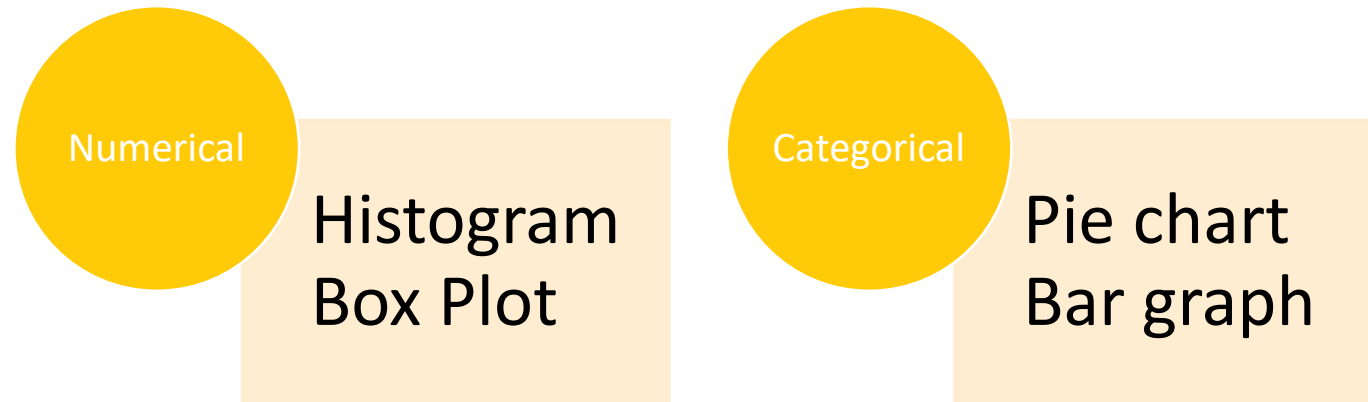
### *How to find CTQ?*

Which metric do I want to change ?

Does it solve the problem ?

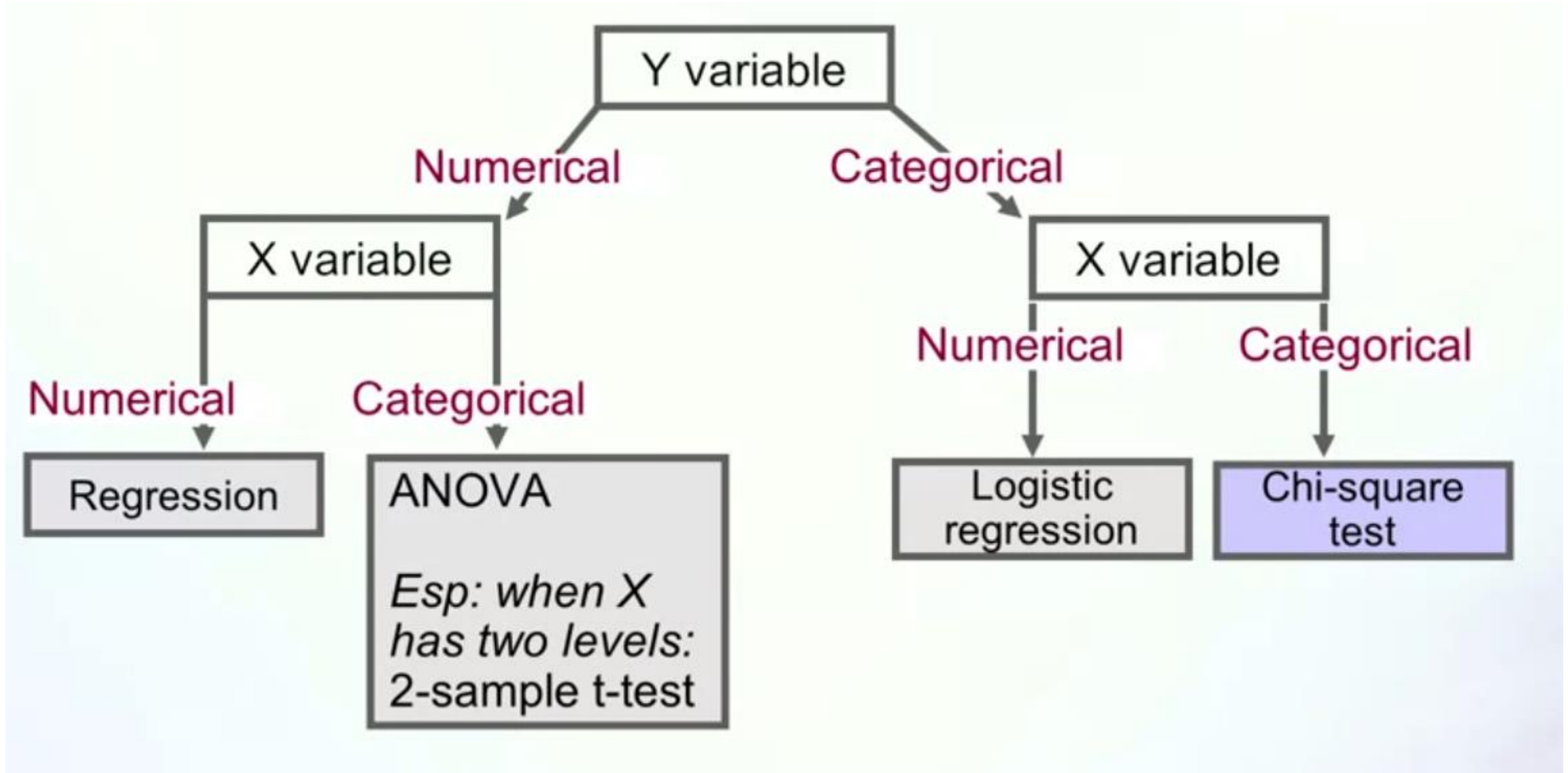


## CATEGORISING DATA



## VISUALISING DATA

## DATA BASED TESTING IN LEAN SIX SIGMA



# DATA BASED TESTING IN LEAN SIX SIGMA

## ANOVA ANALYSIS

1. Organize Data 
  - Study the relationship between the numerical Y and categorical X variable.
  - Organise the data such that Y and X are in columns.
2. ANOVA 
  - Are the group means identical for each of the levels of X variable ?
3. Residuals 
  - Is the random scatter normal?
  - Are there any irregularities ?

## CHI – SQUARE ANALYSIS

1. Cross Tabulation
2. Chi-Square analysis

# ANOVA – Minitab output

Session

One-way ANOVA: Moisture versus Machine

Method

Null hypothesis All means are equal

Alternative hypothesis At least one mean is different

Significance level  $\alpha = 0.05$

Equal variances were not assumed for the analysis.

Model Summary

|         | R-sq   | R-sq(adj) | R-sq(pred) |
|---------|--------|-----------|------------|
| Machine | 26.11% | 19.95%    | 8.77%      |

Factor Information

| Factor  | Levels | Values                          |
|---------|--------|---------------------------------|
| Machine | 4      | Machine 1; Machine 2; Machine 3 |

$R^2$  is the percentage of the variation in the measurements that is explained by the model.

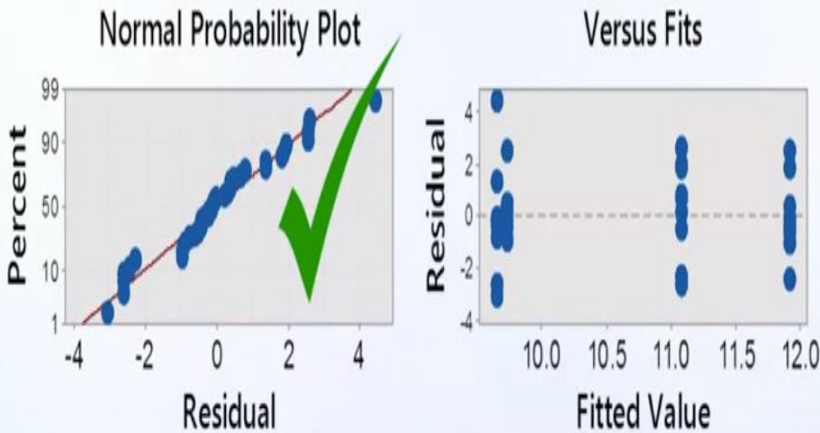
|           | StDev     | 95% CI                 |
|-----------|-----------|------------------------|
| Machine 2 | 10 9.655  | 2.110 ( 8.146; 11.164) |
| Machine 3 | 10 11.075 | 1.948 ( 9.681; 12.469) |
| Machine 4 | 10 9.729  | 1.035 ( 8.989; 10.469) |

R-squared or  $R^2$

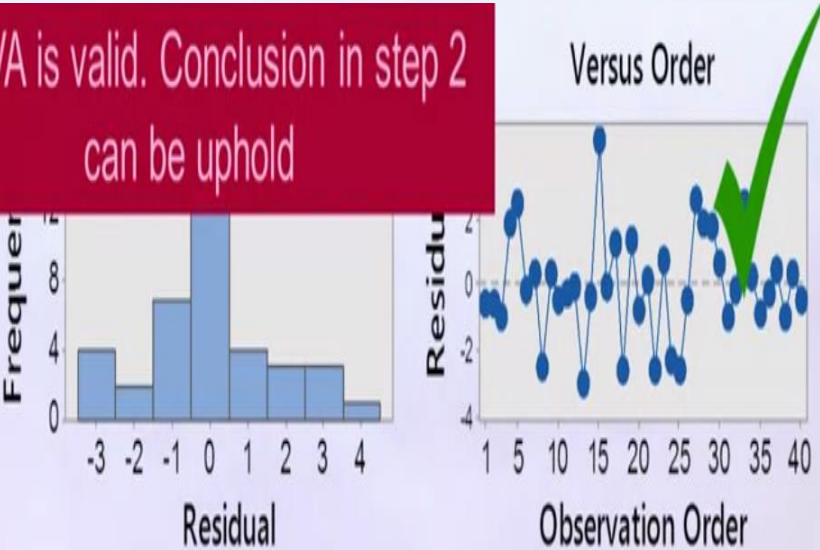
## ANOVA: residuals analysis

### Example 1

#### Residual Plots for Moisture



ANOVA is valid. Conclusion in step 2 can be uphold



# Chi-square analysis

Session

Rows: Department Columns: Specialist

|     | P      | Q      | R      | All    |
|-----|--------|--------|--------|--------|
| A1  | 81     | 52     | 78     | 211    |
|     | 38.39  | 24.64  | 36.97  | 100.00 |
|     | 82.65  | 77.61  | 75.00  | 78.44  |
| A4  | 17     | 15     | 26     | 58     |
|     | 29.31  | 25.86  | 44.83  | 100.00 |
|     | 17.35  | 22.39  | 25.00  | 21.56  |
| All | 98     | 67     | 104    | 269    |
|     | 36.43  | 24.91  | 38.66  | 100.00 |
|     | 100.00 | 100.00 | 100.00 | 100.00 |

Cell Contents:  
Count  
% of Row  
% of Column

Pearson Chi-Square = 1.783, DF = 2, P-Value = 0.410  
Likelihood Ratio Chi-Square = 1.812, DF = 2, P-Value = 0.404

$H_0$ : there is no relation between X and Y  
 $H_A$ : there is a relation between X and Y

No significant effect  
 $H_0$  cannot be rejected



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## CONCLUSION

- At the end of the course, I briefly know about Lean Six Sigma and how data analytic techniques are useful within Lean Six Sigma improvement process.
- I can analyze and interpret data gathered for any improvement project and have developed the efficiency to use Minitab to analyze the data, with various data analytical tools and interpret the outcome



THANK YOU