**Assignment 1 – [COVID-19 DATA ANALYSIS]**

**Problem Statement**

Coronavirus disease 2019 (COVID‑19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It was first identified in December 2019 in Wuhan, Hubei, China, and has resulted in an ongoing pandemic. As of 17 September 2020, more than 29.8 million cases have been reported across 188 countries and territories with more than 940,000 deaths; more than 20.3 million people have recovered. As the number of cases were increasing day by day, Indian Government has taken multiple measures to handle the situation which includes the lockdown for the entire nation. However, the primary purpose of the lockdown was to slow down the spread of the disease and give time to governments, both Centre and states, to be better prepared on all fronts to deal with the fallout of rising infections and a drastically slowing economy. Assuming the trajectory of new cases starts showing a flattening curve, the costs of extending the lockdown will far exceed the benefits. Now there are discussions about partial reopening of Colleges /Schools as well.

With the Government planning to reopen colleges, the principal of the Engineering Collegewhere you studied wanted to give an awareness webinar to **the students** before they start attending classes. Knowing that you are a Data Science Consultant, he thought that you would be the best candidate for the purpose.

With the given context, you need to create a dashboard using TABLEAU. (Use the concepts learned in the class).

[Datasets](https://api.covid19india.org/documentation/csv/)



1. **KNOW YOUR AUDIENCE**
2. List the primary groups or individuals to whom you’ll be communicating.

**The Students of Engineering College**

1. If you had to narrow that to a single person, who would that be?

If I had to narrow the communication to a single person, it would be the **Student Representative** who can effectively relay the information and importance of responsible behaviour to their peers.

1. What does your audience care about?

Students are likely to care about their health and safety first, If the colleges are partially opened, corona virus affected student needs to be identified/track. The quality of their education they receive, their academic progress, having opportunities for social interaction and personal growth, and being able to adapt to the changing circumstances of the pandemic while still pursuing their academic and personal goals., and a sense of normalcy returning to their lives and ensuring a successful academic journey despite the challenges posed by the ongoing pandemic.

d. What action does your audience need to take?

The audience(Students) needs to understand the importance of following health guidelines, maintaining personal hygiene, actively adhering to **COVID-19 safety measures**, including wearing masks, practicing social distancing, maintaining proper hygiene, following college guidelines, and participating in vaccination efforts. They should also be attentive to their own health and the well-being of their fellow students and staff, reporting any symptoms and following quarantine protocols if necessary. Adhering to safety protocols and being responsible in their behaviour both on and off-campus. If any of the student is affected by Corona Virus, then they should isolate and not entering the college or public places.

e. What is at stake? What is the benefit if the audience acts in the way you want them to? What are the risks if they don’t?

**At Stake:**

* At stake is the collective health and safety of the college community, Health and well-being of students, faculty, and staff.
* The continuity of quality education,
* Smooth functioning of academic activities.
* Preventing potential outbreaks and transmission of COVID-19 within the college community.
* The ability to establish a resilient and secure learning environment.

**Benefit:**

* They can prevent the virus affection if they have vaccinated and maintaining social distances.
* If the audience acts in the desired manner by adhering to COVID-19 safety protocols and responsible behaviour, the benefit will be a reduced risk of COVID-19 transmission within the college community. This would lead to the continuation of uninterrupted **learning and quality education**, a **safe and supportive campus environment**, the well-being of students, faculty, and staff, and a positive contribution to the broader efforts to control the pandemic.
* Avoiding disruptions in the academic calendar.
* Contributing to the overall community effort to control the pandemic.

**Risks**

* If the students do not follow the recommended COVID-19 safety protocols and behave irresponsibly, the risks include an increased likelihood of COVID-19 outbreaks within the college, potential disruptions to academic activities or schedules due to outbreaks, compromised **health of vulnerable individuals**, strained healthcare resources
* Negative impact on the **college's reputation** and credibility.
* Possibility of local health authorities imposing stricter measures, leading to further inconvenience.
* They may have a chance of getting affected by corona virus and their life is risky if they don’t follow the guidelines.

## WHAT?

**What we are trying to communicate through the visualizations is a comprehensive understanding of the COVID-19 situation in India, the impact of the lockdown on the economy, and the college's reopening plan. The primary questions to be answered/displayed in the visualizations are as follows:**

**Question 1: How have COVID-19 cases evolved in India over time?**

**This question aims to show the trend of COVID-19 cases in India and provide insights into the overall trajectory of the pandemic. It helps students understand the severity of the situation and the importance of following safety measures.**

**Question 2: What is the current distribution of COVID-19 cases across states in India?**

**By visualizing the distribution of cases across states, students can identify states with higher infection rates and be aware of potential hotspots. This question is meant for the total confirmed COVID-19 cases across the states of India. The visualization shows the distribution of confirmed, deceased, tested and recovered.**

**Question 3: How have the positivity, death, and recovery rates changed over time in specific states?**

**This question seeks to compare positivity, death, and recovery rates. Examine trends to see if rates have increased, decreased, or remained relatively stable over weeks. This could reveal the effectiveness of containment measures. Students with essential information to make informed decisions about their health, safety, and education during the ongoing pandemic.**

1. **Present the BIG IDEA**.

**Big Idea: "Empowering Students for Informed Choices: Understanding the COVID-19 Situation, Navigating Economic Impact, and Embracing Safe College Reopening to safeguard health, education, the well-being of the entire college community and economy."**

## HOW?

* 1. Chart 1: What type of viz did you create? Why did you select the viz that you did?

**Visualization: Horizontal Bar Chart**

**Reasoning:** A horizontal bar chart allows easy comparison of confirmed, deceased, recovered, and tested cases in each state.

* 1. Chart 2: What type of viz did you create? Why did you select the viz that you did?

**Visualization: Area Chart**

**Reasoning:** It effectively showcases average of the daily increase in new cases across states, enabling easy comparison of trends.

* 1. Chart 3: What type of viz did you create? Why did you select the viz that you did?

**Visualization: Multi Line Chart**

**Reasoning**: A Multi line chart is suitable for showing the trend of COVID-19 cases based on positivity rate, Recovery rate, Testing rate and death rate over time for each state, providing a clear view of the progression.

* 1. For each of the Visualisation, identify at least 3 Gestalt principles employed.
* Chart 1: Horizontal Bar Chart

**Gestalt Principles:**

Law of Similarity (using consistent colours for components),

Law of Proximity (grouping related components),

Law of Closure (forming complete bars).

* Chart 2: Area Chart

**Gestalt Principles:**

Law of Continuity (connecting cases count over time),

Law of Proximity (grouping lines for all states and individual states),

Law of Closure (completing lines).

* Chart 3: Multiline Chart

**Gestalt Principles**:

Law of Continuity (connecting data points over time),

Law of Proximity (grouping lines for different rates calculation),

Law of Figure-Ground (increase in rates stand out clearly)

* 1. For each of the Visualisation, mention how you strategically used pre-attentive attributes to draw the audience's attention.
* Chart 1: Horizontal Bar Chart

**Pre-Attentive Attributes:**

**Colour** (different colours for each state) and

**length** (height of bars) to highlight the distribution.

* Chart 2: Area Chart

**Pre-Attentive Attributes:**

**Size** - Adjust the thickness of the area curves to indicate the magnitude of new cases visually.

* Chart 3: Multiline Chart

**Pre-Attentive Attributes:**

**Colour**- distinct colours for each rate, making it easy for viewers to differentiate between them.

**Position**- Position data points along the x-axis (over time) and y-axis (trend of rates) to show relationships and trends clearly.