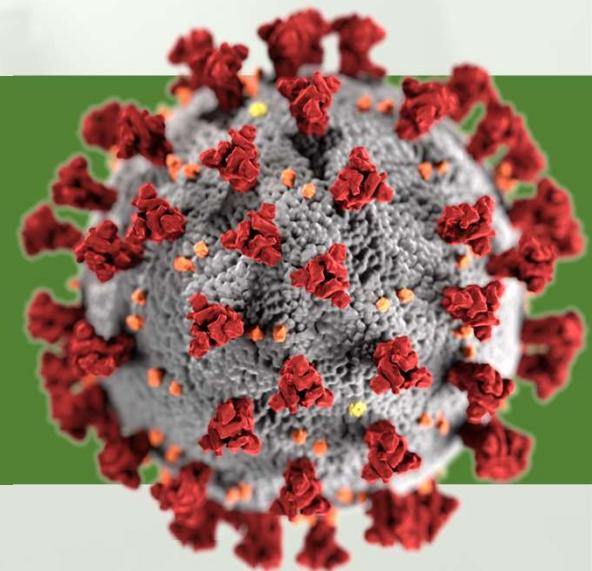


# Predictions of Covid 19 in Saudi Arabia



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# VISION 2030



- Global efforts have focused heavily on social distancing and, in many cases, completely shutting down cities
- Use of technology to preserve jobs
- Health transformation, which is e-health through the creation of applications that serve the community
- KSA planning to decrees the diseases

# Objectives:

- Aims to identified cases in different Regions in Saudi Arabia
- Comparative analysis and identification of relations between the spread of COVID-19 pandemic, population characteristics .

# Project Idea

Used machine learning techniques to analyze and visualize the spreading of the COVID - 19 in the Saudi Arabia .

1. Use effective models
2. How can decrease their chances of getting the virus.

# Dataset

**Data Source**

KAPSARC

**Data Shape**

522,894 rows & 7  
columns

**Date Coverage**

18 / 4 / 2020  
to  
3 / 2 / 2022



# Data Cleaning

01

Missing values

02

New Columns

03

Split Data Frame

04

Filter Dataset

# Data Cleaning - Cont

01

```
df = df.drop("Event", axis=1)  
df
```

02

```
dfYear = df  
dfYear["Date"] = pd.to_datetime(df['Date'])  
dfYear["Year"], dfYear["Month"] = dfYear['Date'].dt.year, dfYear['Date'].dt.month  
dfYear
```

03

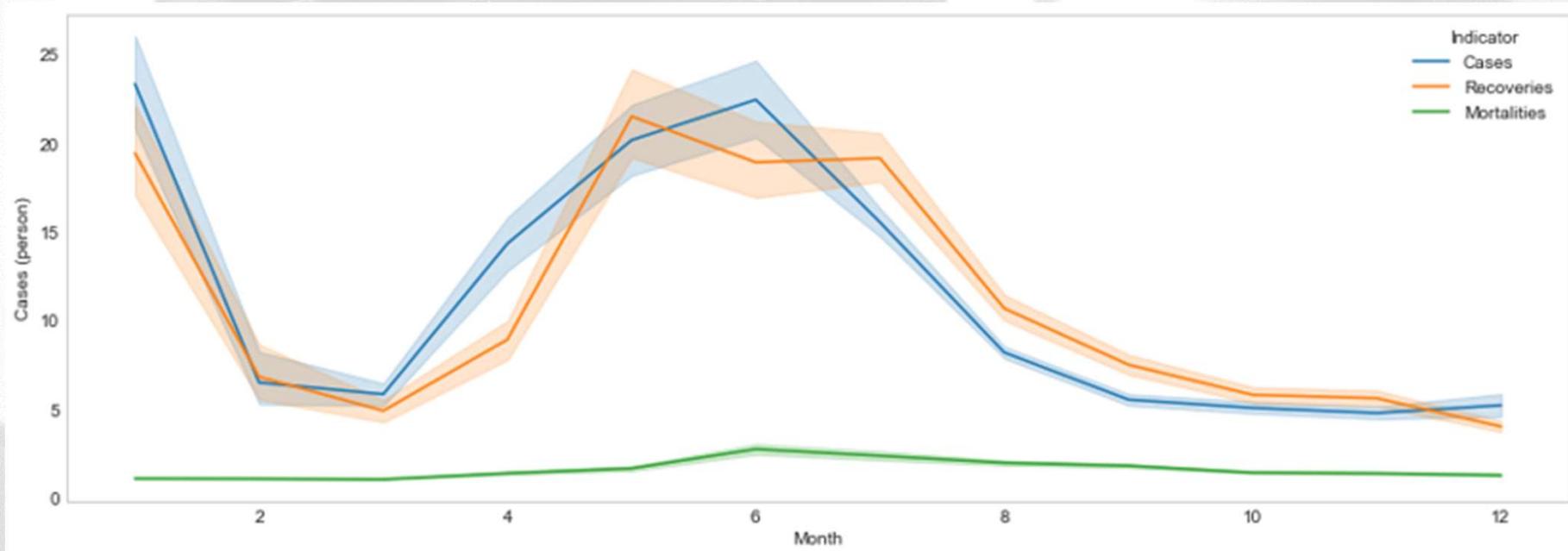
```
df_Cumulative = dfYear.query("Daily_Cumulative == "Cumulative")  
df_Cumulative
```

04

```
df_Daily = dfYear.query("Daily_Cumulative == "Daily")  
df_Daily
```

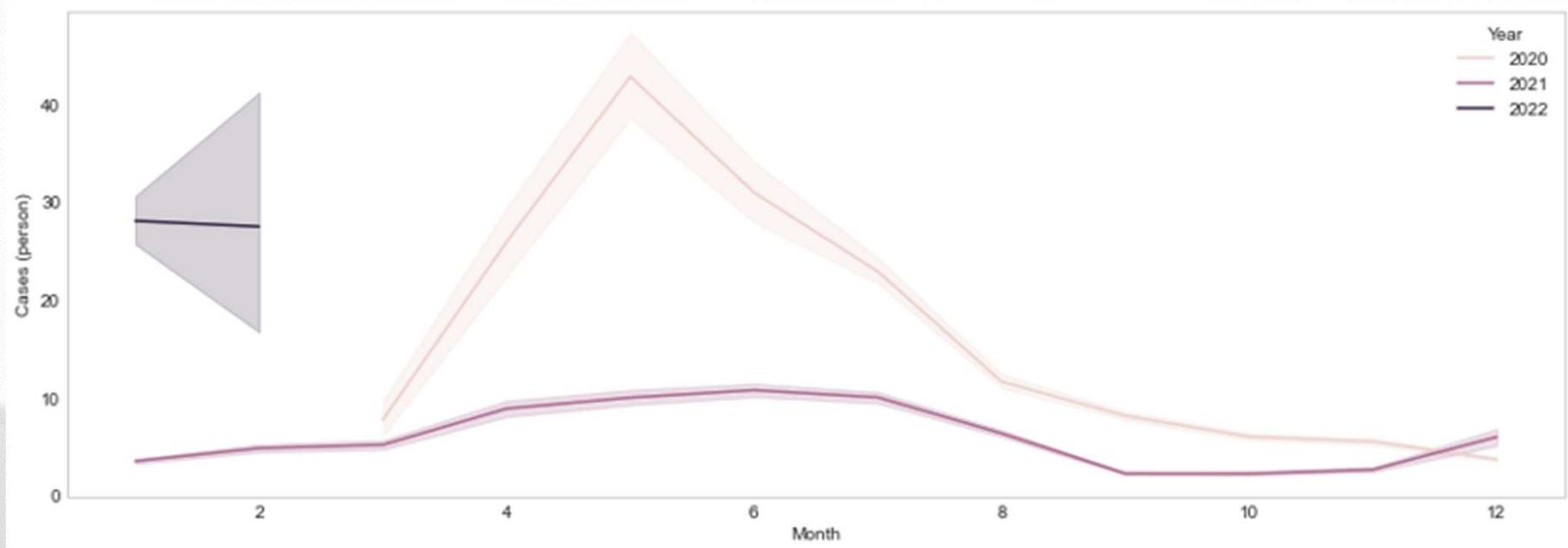
# EDA

## The Situation for Cases Types



# EDA - Cont

The Total Cases for last 3 years



# Data Preprocessing

## 1. Rolling

```
df_r_sun_cases['7 ma'] = df_r_sun_cases['y'].rolling(7).mean()  
df_r_sun_cases
```

## 2. Split the Data

```
train = df_r_sun_cases[(df_r_sun_cases['ds'] >= pd.to_datetime('2020-03-09')) & (df_r_sun_cases['ds'] <= pd.to_datetime('2021-12-31'))]  
test = df_r_sun_cases[(df_r_sun_cases['ds'] >= pd.to_datetime('2021-12-31'))]
```

## 3. Change Names of Columns

```
re_df_final = df_ruh.reset_index()[['Date', 'Cases', 'Indicator']].rename({'Date': 'ds', 'Cases': 'y', 'Indicator': 'Indicator'}, axis='columns')  
re_df_final
```

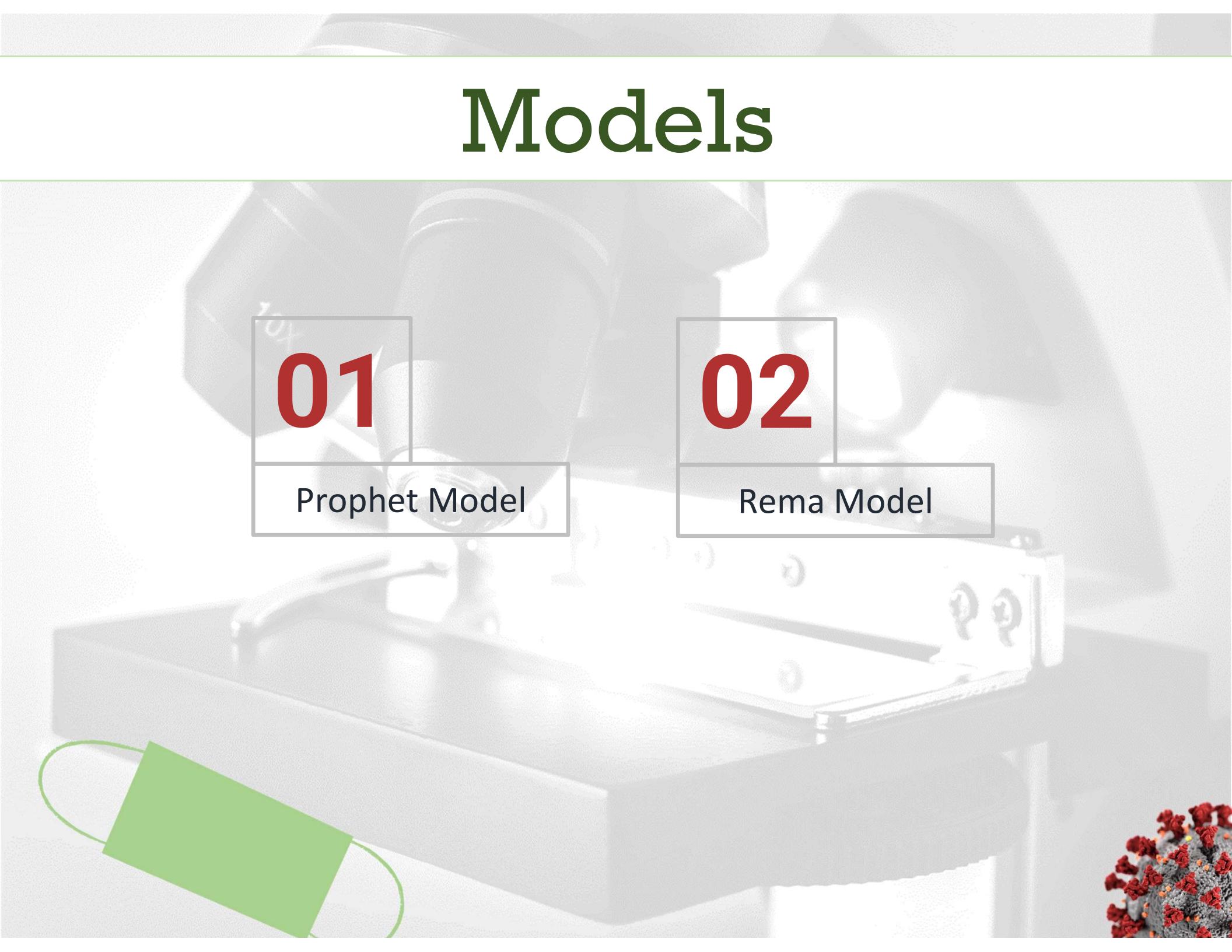
# Models

01

Prophet Model

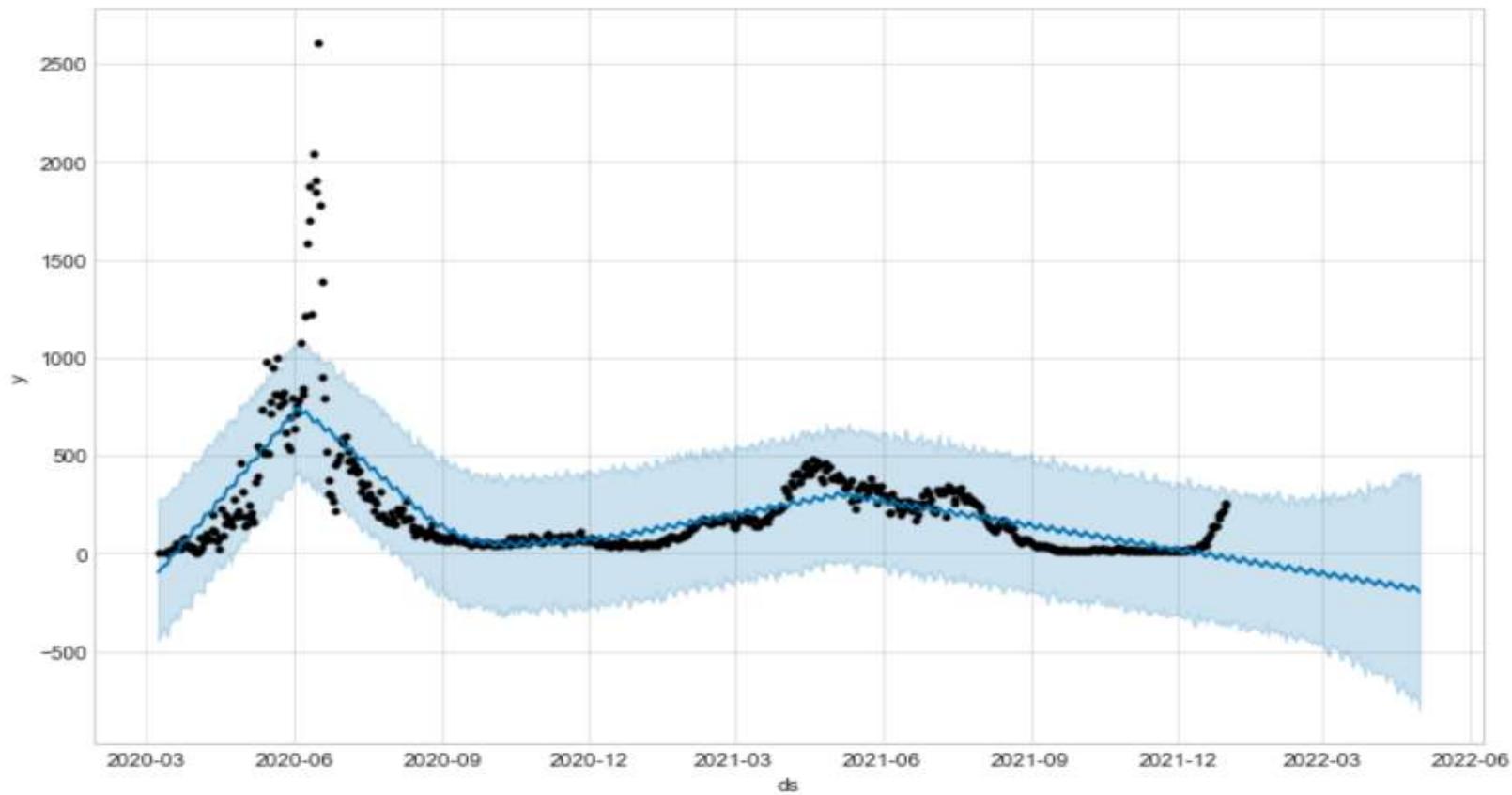
02

Rema Model



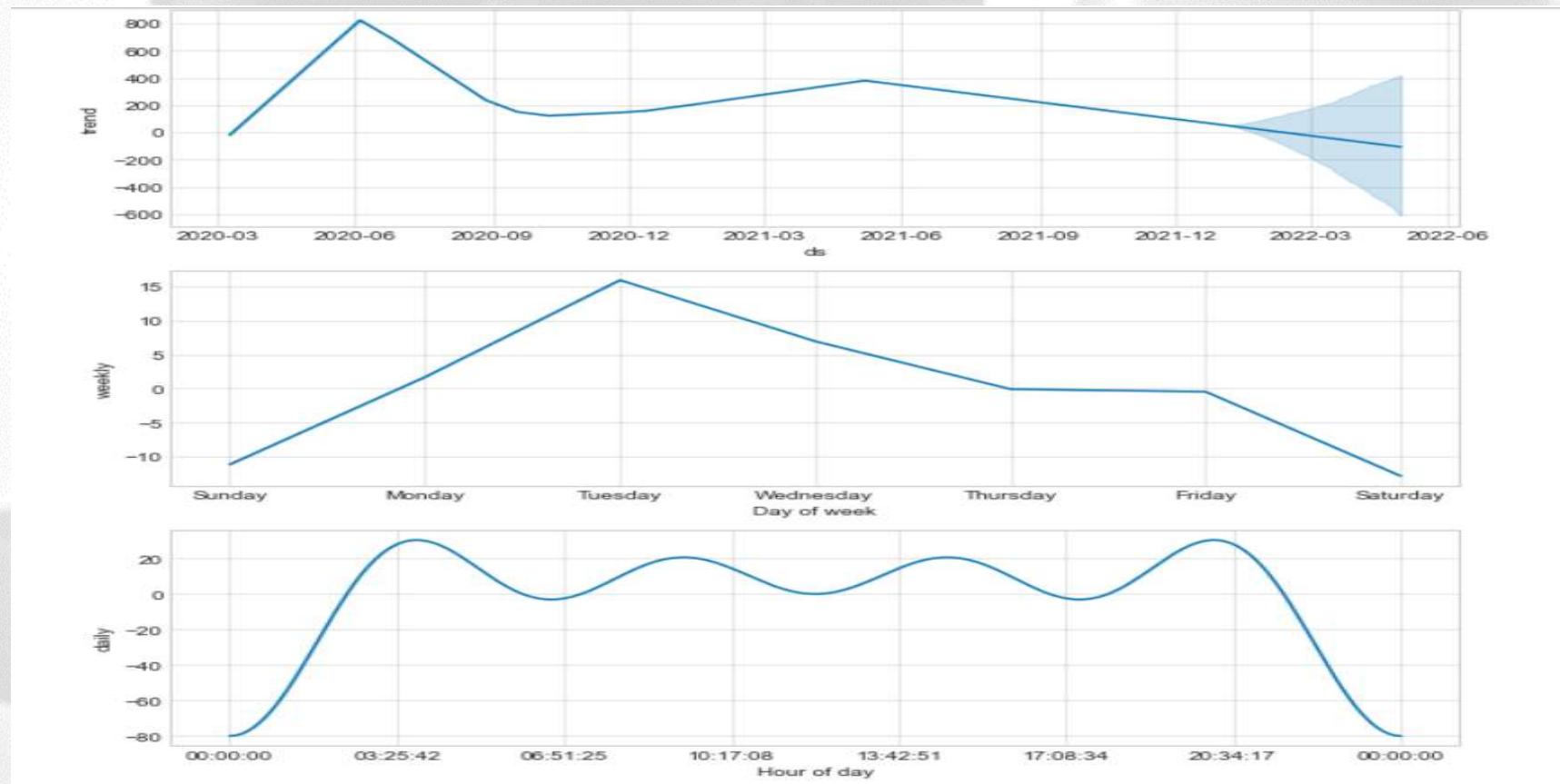
# Models - Cont

## Riyadh Model Forecast



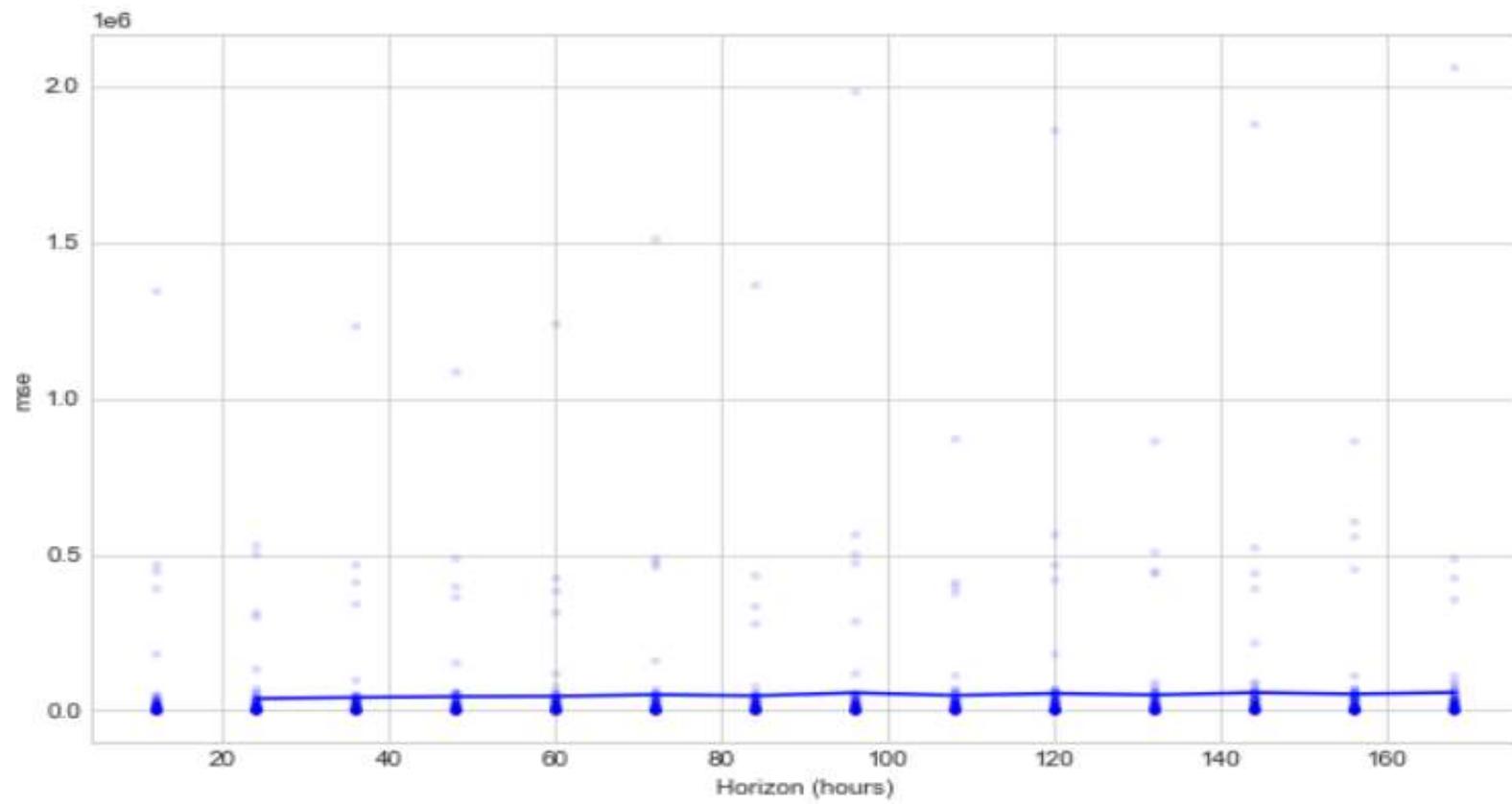
# Models - Cont

## Riyadh Model Components Forecast



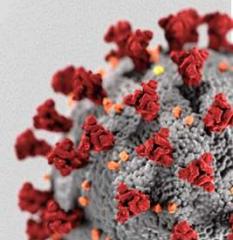
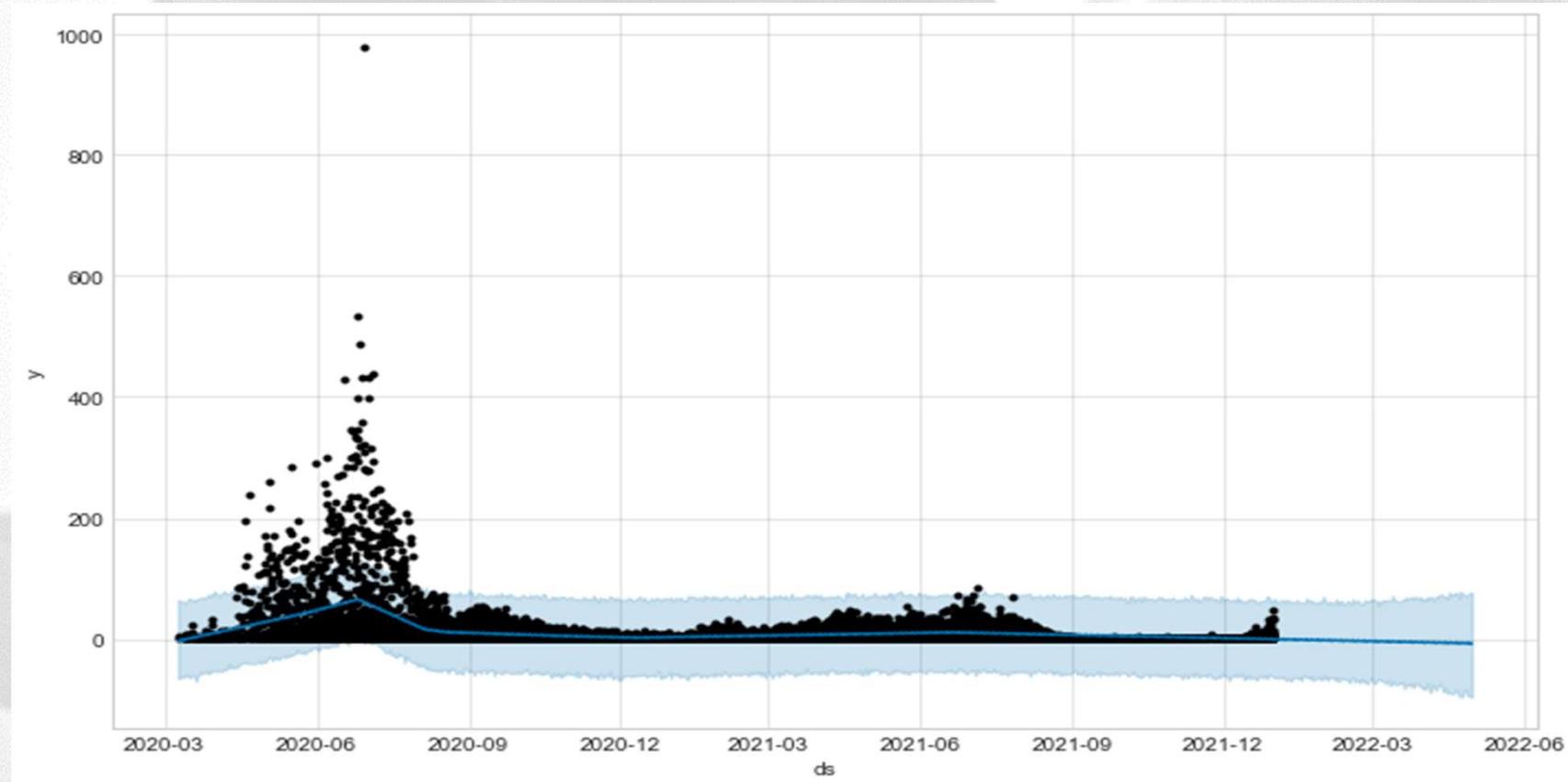
# Models - Cont

## Model Evaluation Result



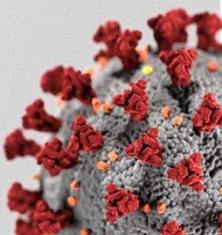
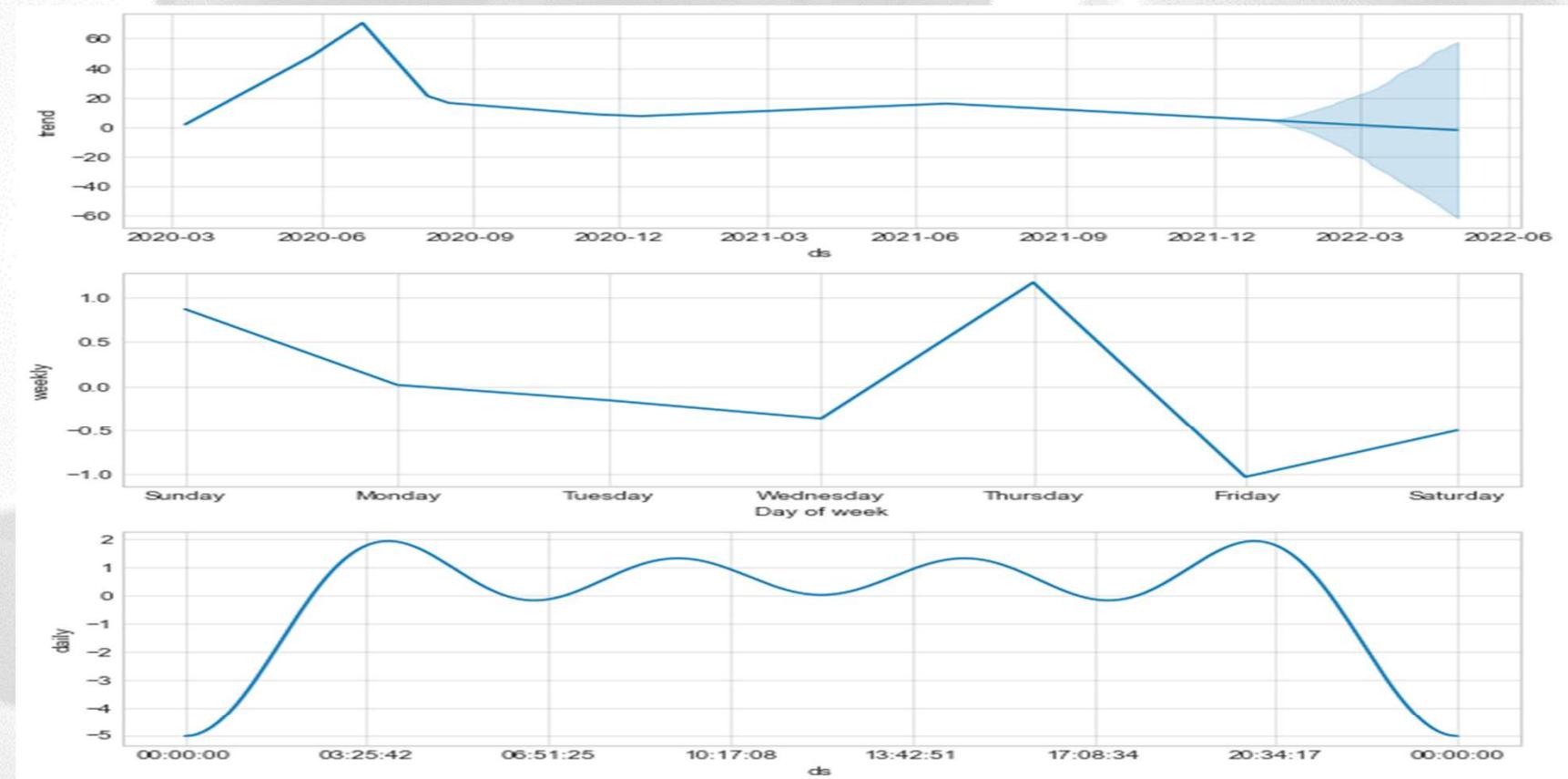
# Models - Cont

## **Eastern Model Forecast**



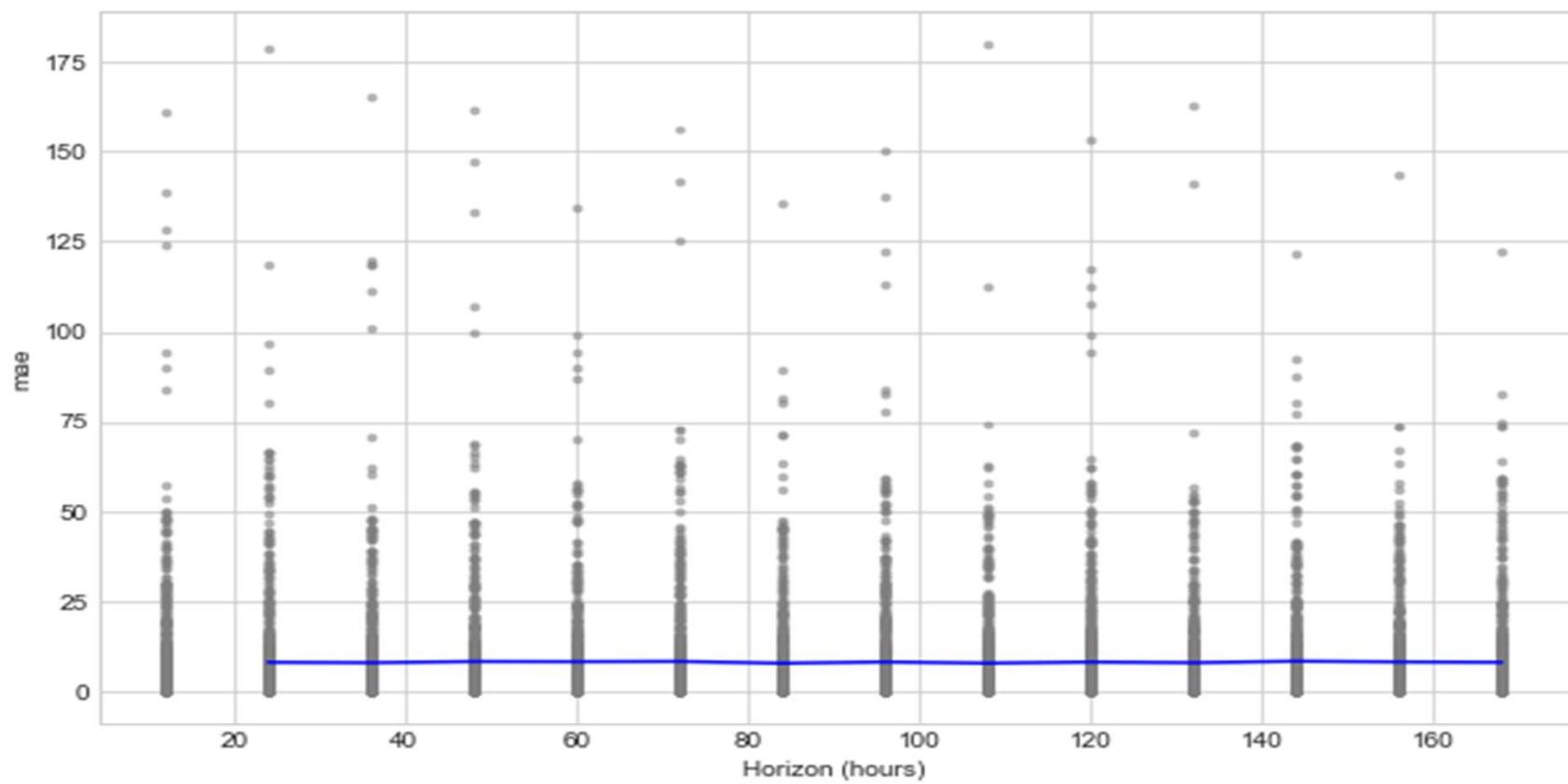
# Models - Cont

## Eastern Model Components Forecast



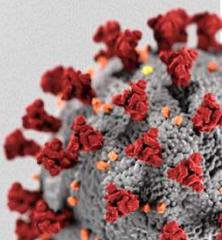
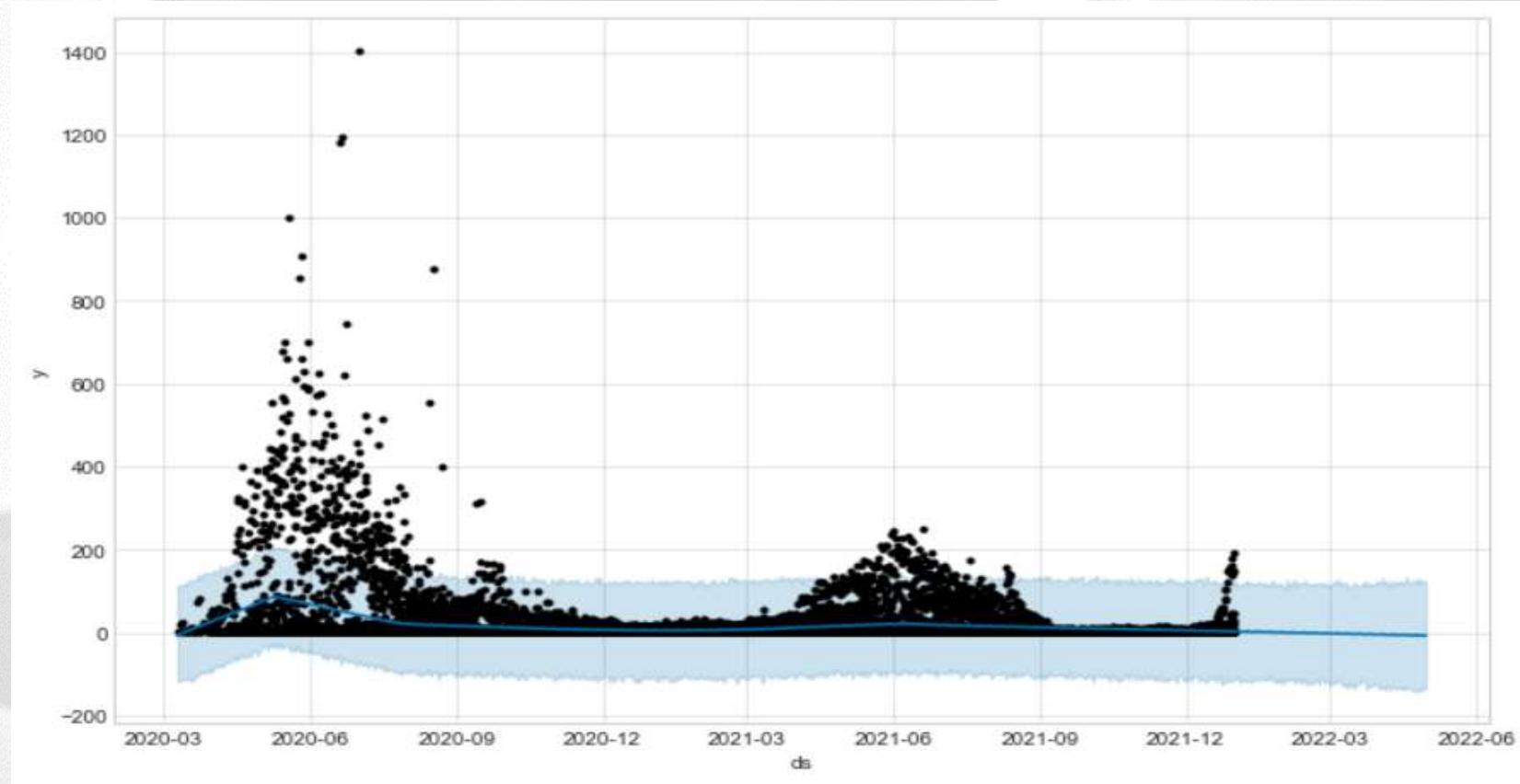
# Models - Cont

## Model Evaluation Result



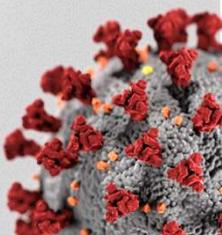
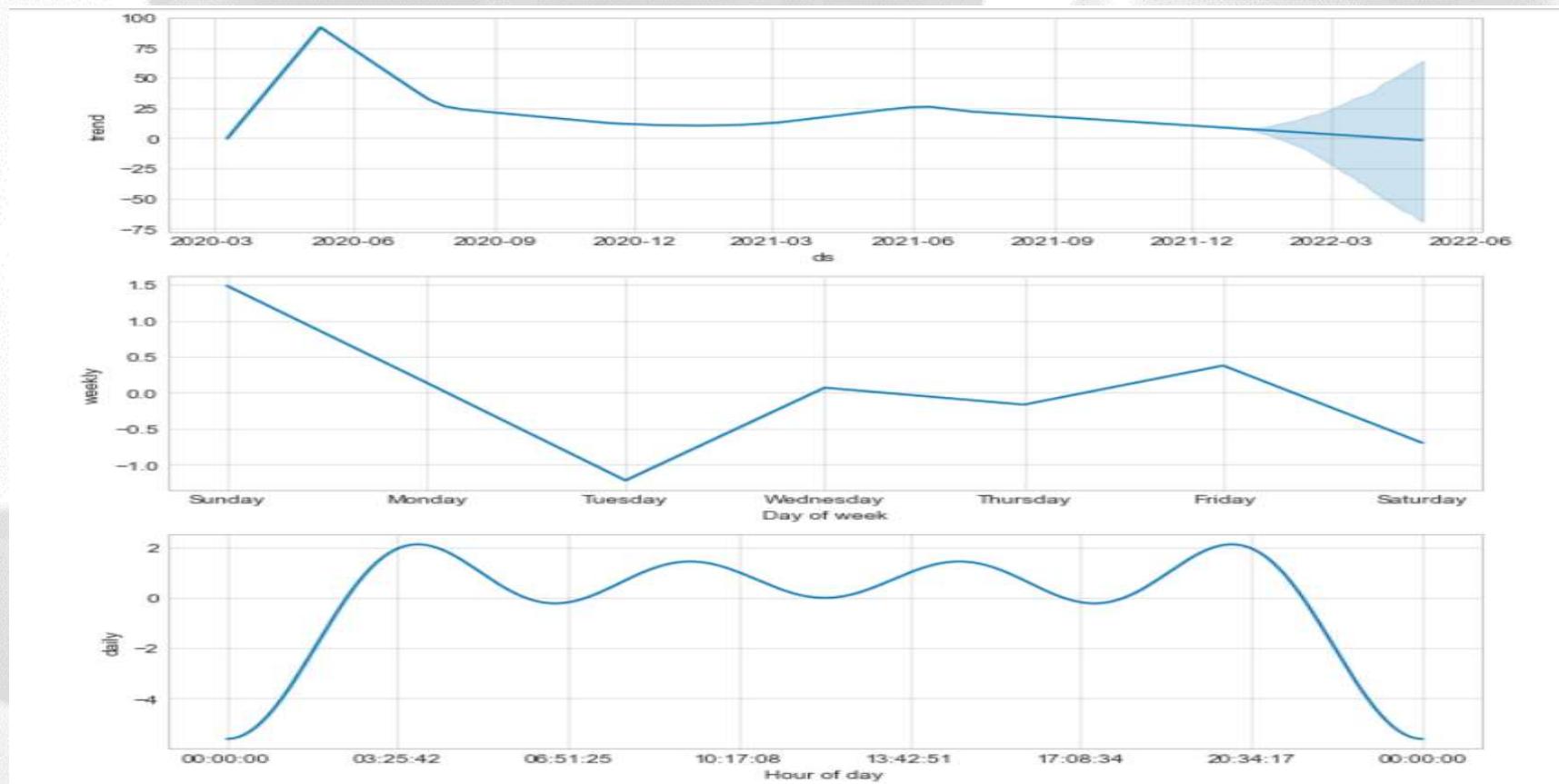
# Models - Cont

## Makkah Model Forecast



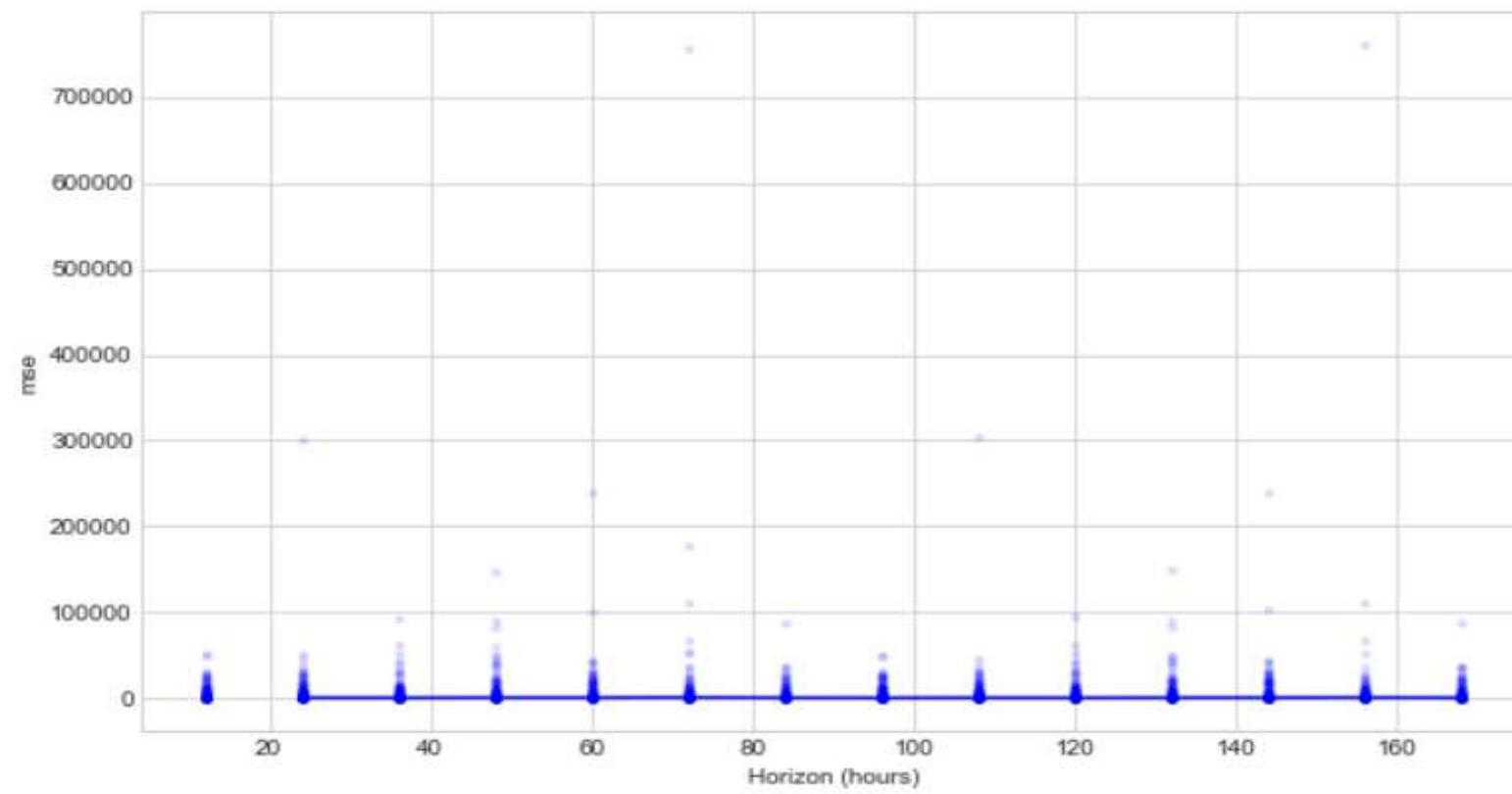
# Models - Cont

## Makkah Model Components Forecast



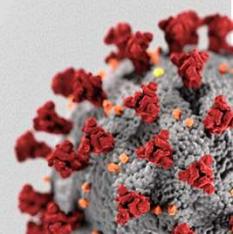
# Models - Cont

## Model Evaluation Result



# Dashboard

## Covid-19 Tracker for KSA



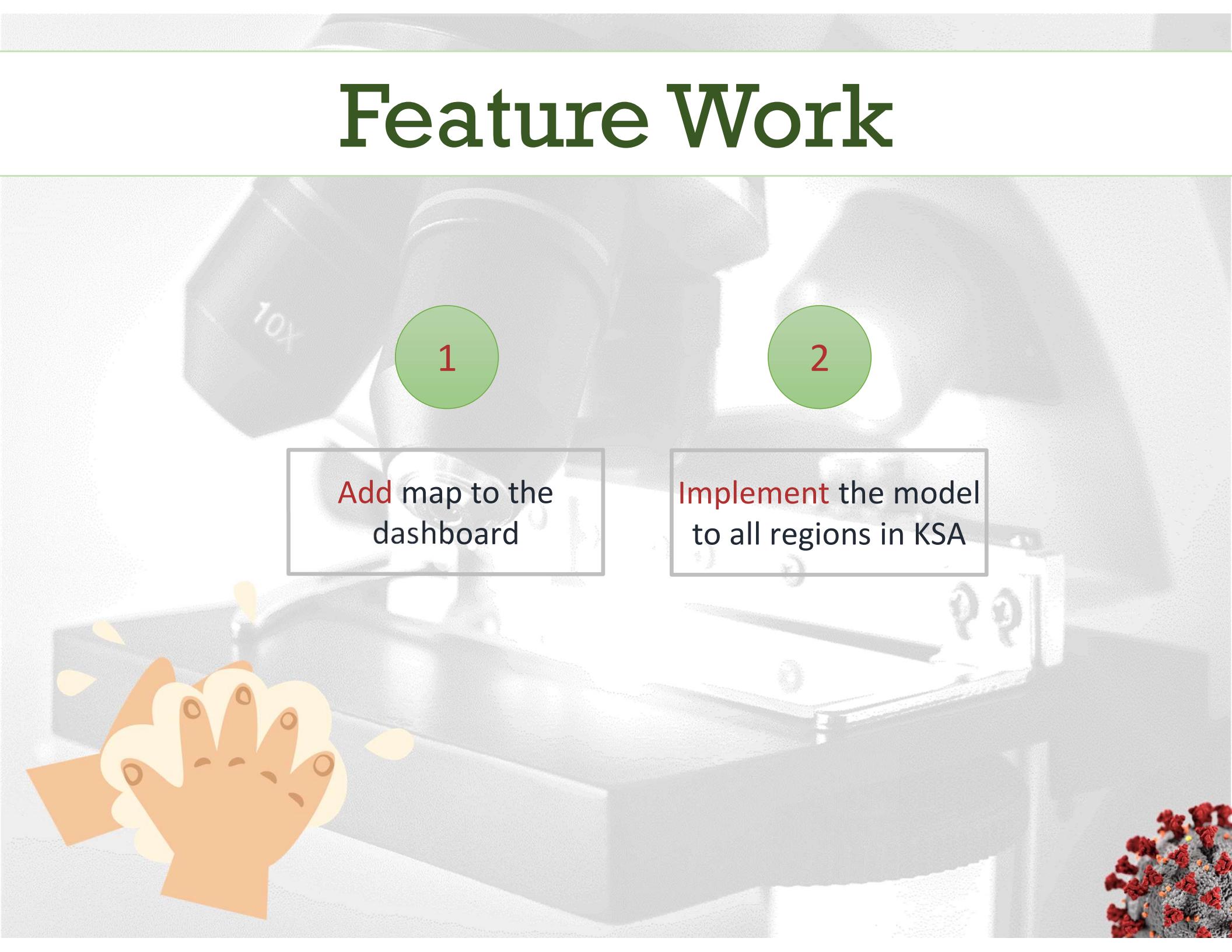
# Feature Work

1

Add map to the dashboard

2

Implement the model to all regions in KSA



THE END

Thank you

Does anyone have any questions?

