SMU
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School of
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IS447: Smart Healthcare in Asia

AY 2021/2022 Semester 2

IHH x SMU Patient Experience Dashboard
(Call Centre & Pharmacy Department)

User Guide for Dashboard (*Business Users*)
[Professor's Version]
Some Blurred Images for Data Privacy Purposes

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Table of Contents

1.0   Brief Overview

This document entails a full guide on using and understanding the dashboard for the respective departments involved. Do take the following document as reference.

2.0   Data Sources

An overview of the data files used in the dashboard for both Call Centre Department and Pharmacy Department.

| S/N	File Name	Remarks
1	*Call_Centre_CLEANED_Final.csv*	**Output** Files from Backend Coding Analyses.
2	*Calls_Offered_Groupby_Week_for_Forecast.csv*	
3	*Calls_Offered_Predicted_Values_for_2022.csv*	
4	*Merged_Pharmacy_Dept_CLEANED.csv*	
5	*TTO_Groupby_Week_for_Forecast.csv*	
6	*TTO_Predicted_Values_for_2022.csv*	
7	*Why_KPI_Not_Met.csv*	

To start, open a file from either of the following *.pbix* files below to use the dashboard on Power BI.

S/N	File Name	Remarks
1	*Call_Centre_Dashboard.pbix*	Call Centre Department Dashboard
2	*Pharmacy_Dashboard.pbix*	Pharmacy Department Dashboard

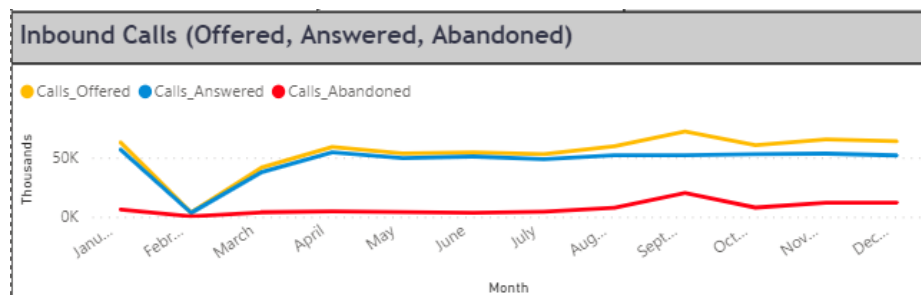# 3.0   Call Centre Department Dashboard

3.1   Summary Tab

The user could view the overall number of calls offered, answered and abandoned, segmented by Inbound and Outbound calls. By filtering by year, quarter, month or day, users will be able to see the analysis of the number of calls in each visualisations.
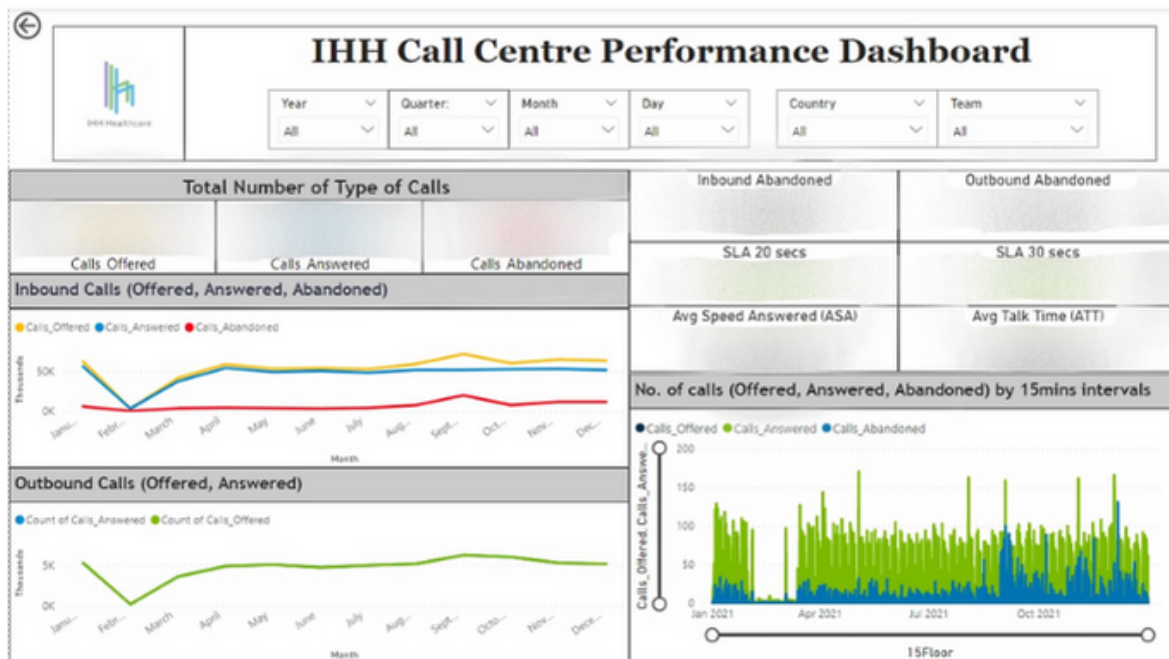
3.1.1 Inbound Calls (Offered, Answered, Abandoned)

This chart shows the Inbound calls offered, answered and abandoned by month.

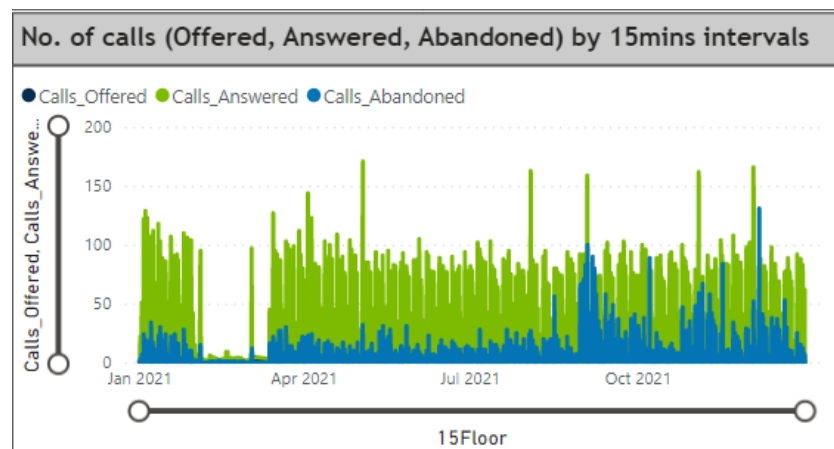### 3.1.2 Outbound Calls (Offered, Answered, Abandoned)

This chart shows the Outbound calls answered and abandoned by month.

### 3.1.3 No. of calls (Offered, Answered, Abandoned) by 15 mins intervals

This chart shows the number of calls offered, answered and abandoned by a 15 minutes

interval. This chart is best visualised by selecting both a month and a day (e.g. Month: Jan and Day 2).


3.2 Inbound & Outbound Calls Tab

The user could view the overall number of calls, number of calls offered, answered and abandoned in deciding to view calls by Inbound or Outbound. By filtering by year, quarter, month, day, country or team. Users will be able to see the analysis of the number of calls in each visualisations.
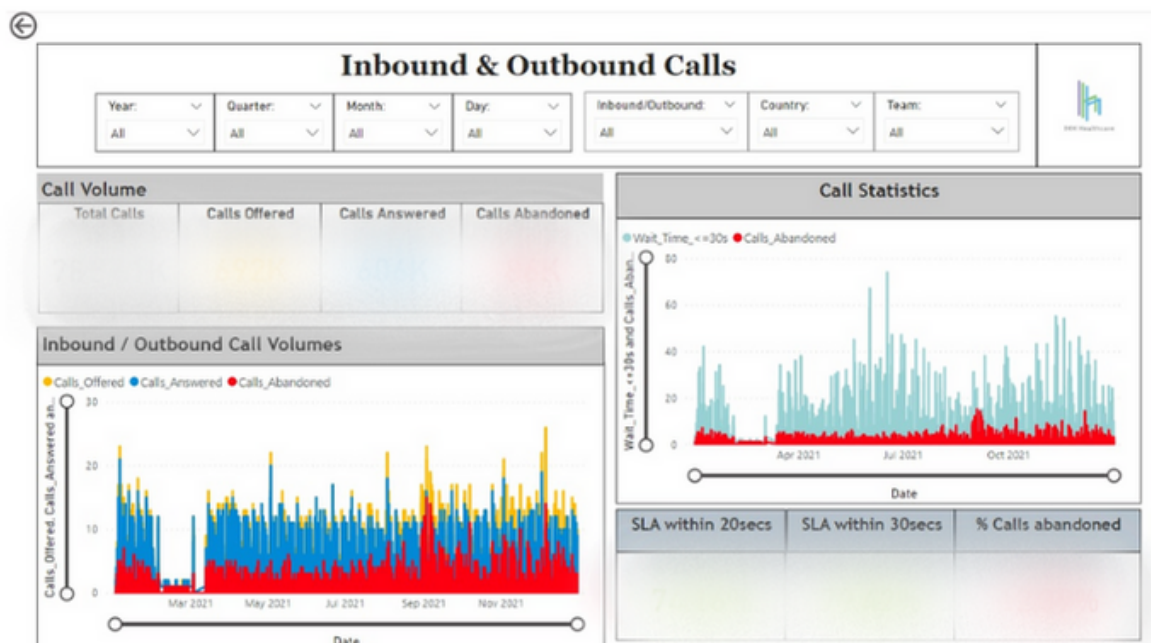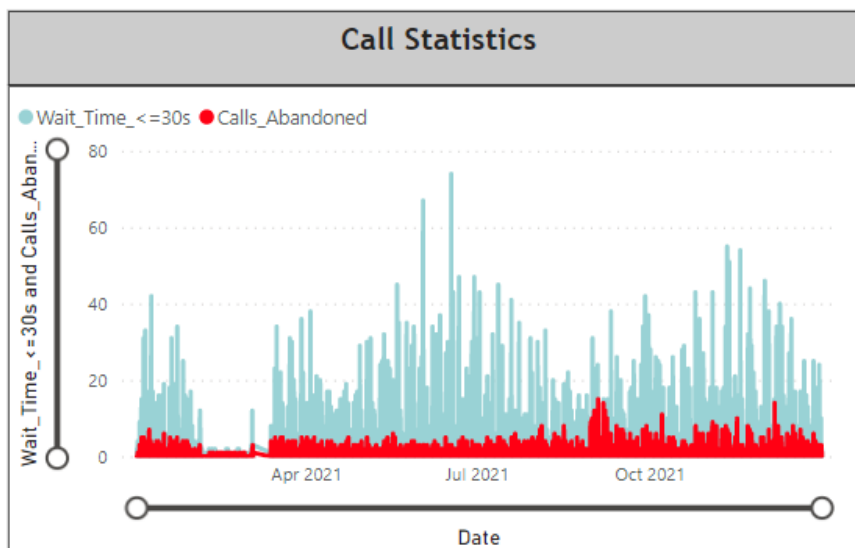

3.2.1 Inbound / Outbound Call Volumes

This chart shows the call volumes of both inbound and outbound combined. If users filter using the slicers, the call columns will change accordingly.
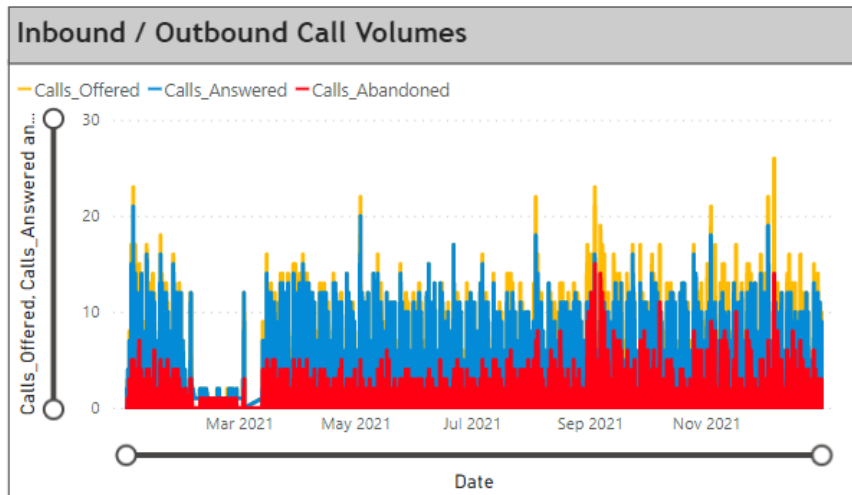
3.2.2 Call Statistics

This chart shows the call statistics of both the number of calls abandoned and number of calls with a wait time within 30 seconds.
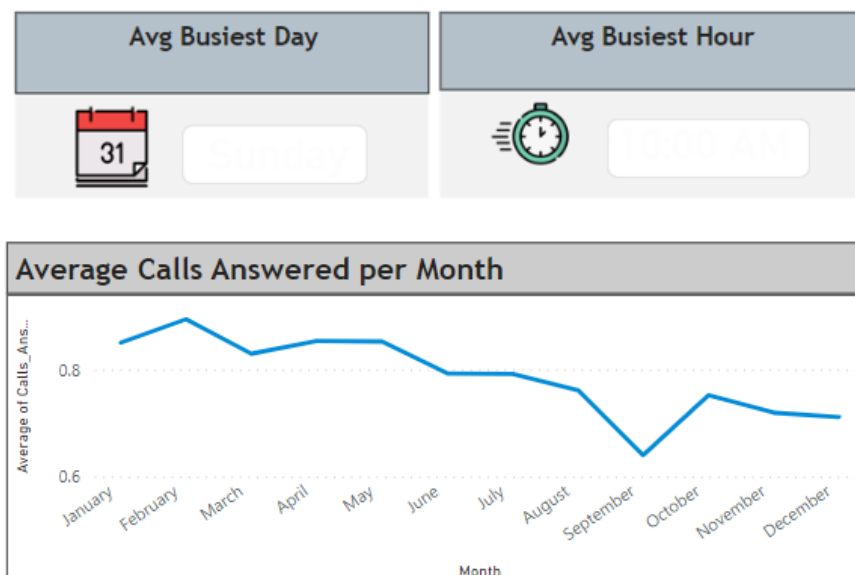

3.3 Average Calls Answered Tab

The user could view the average number of calls answered in deciding to view calls filtered by Team. By filtering by year, quarter, month, day or team, users will be able to see the analysis of the number of average calls in each visualisations.
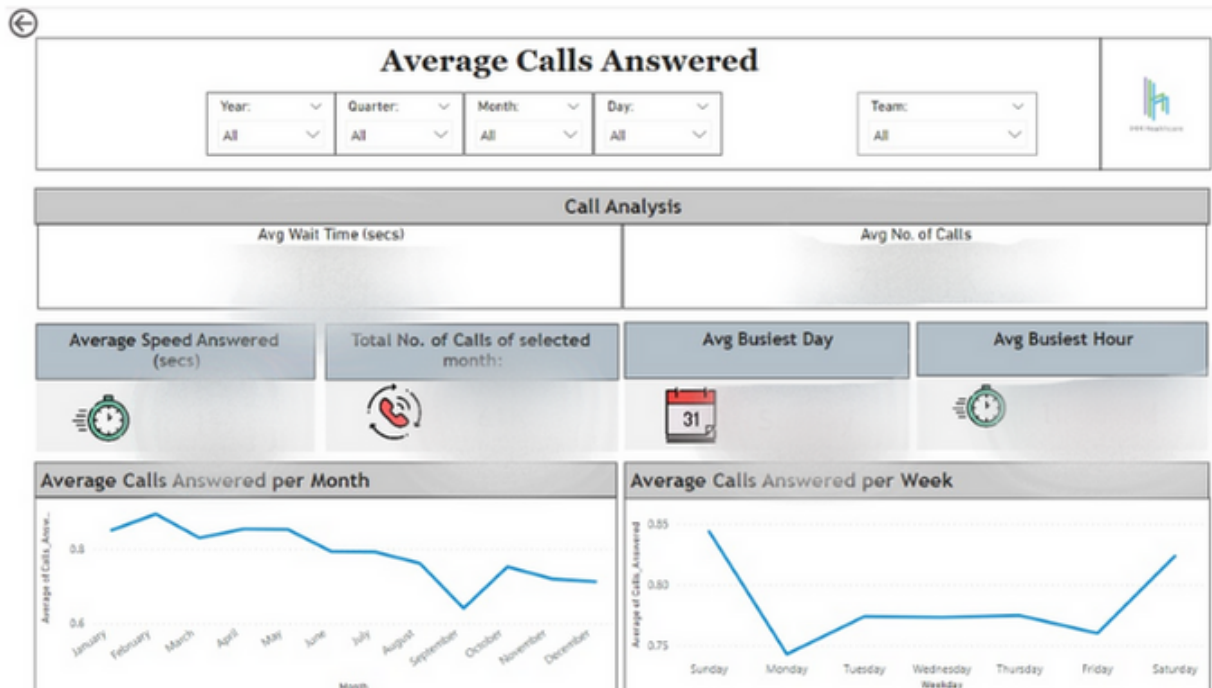
3.3.1 Average Calls Answered per Month

This chart shows the average number of calls per month, as well as the average busiest day and average busiest hour. With these indicators, the user could possibly evaluate and identify the gaps in their current manpower management.

### 3.3.2 Average Calls Answered per Day

This chart shows the average number of calls per day, as well as the average busiest day and

average busiest hour. With these indicators, the user could possibly evaluate and identify the gaps in their current manpower management.
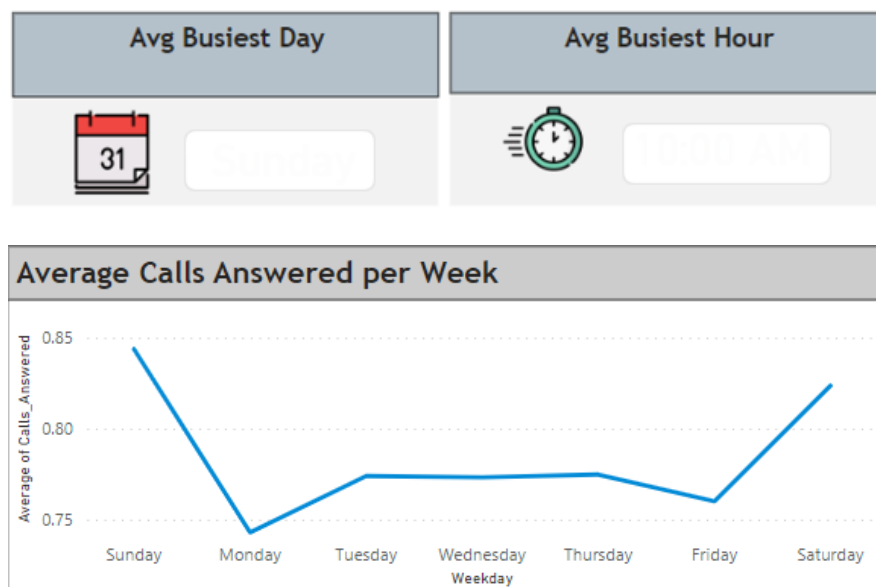

3.4   Staff Productivity Tab

The user could view the staff productivity of each agent. By filtering by year, quarter, month, day, inbound/outbound, country or team, users will be able to see the agent name and the analysis of the number of calls each agent answered and the average talk time.
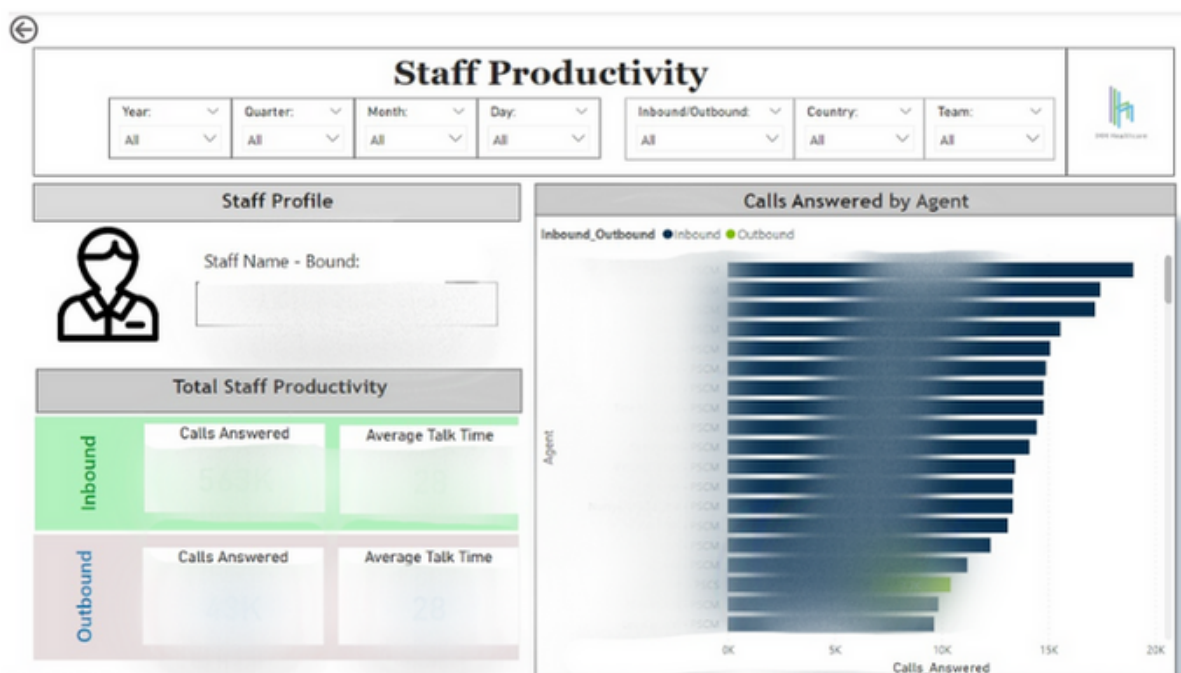
3.4.1 Calls Answered by Agent

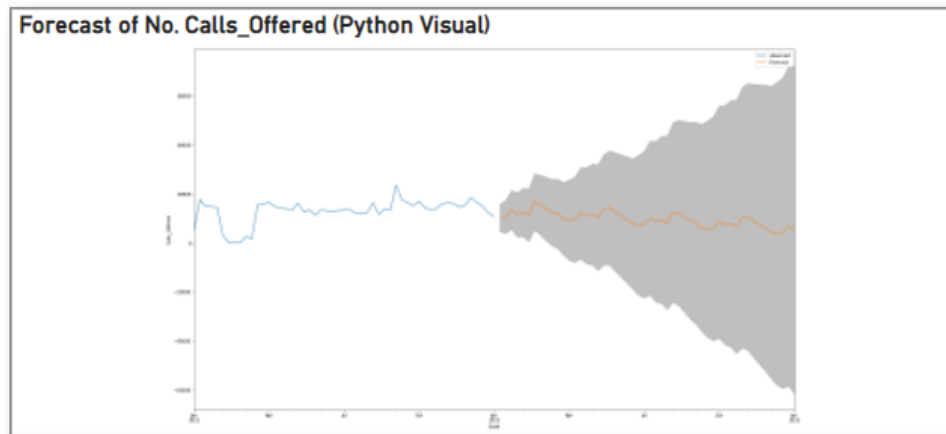The user will be able to identify the inbound and outbound calls each agent answered by country.
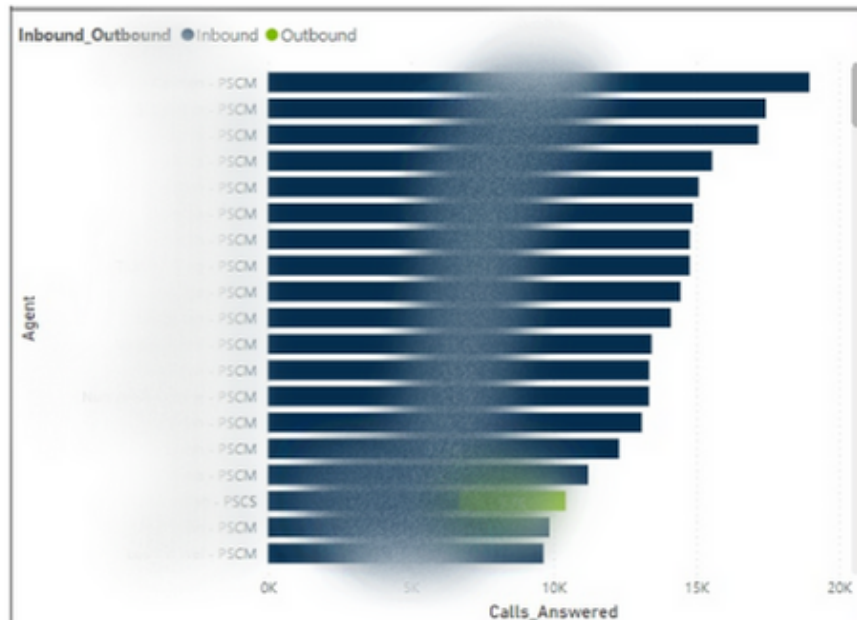
3.5 Forecast (Calls_Offered) Tab

In this tab, the visuals signify the forecasted values of the No. of Calls in the coming year (Year 2022, in this case of the dataset we received). The user would be able to understand and identify the predicted values based on the python visualisation, table and line graph.
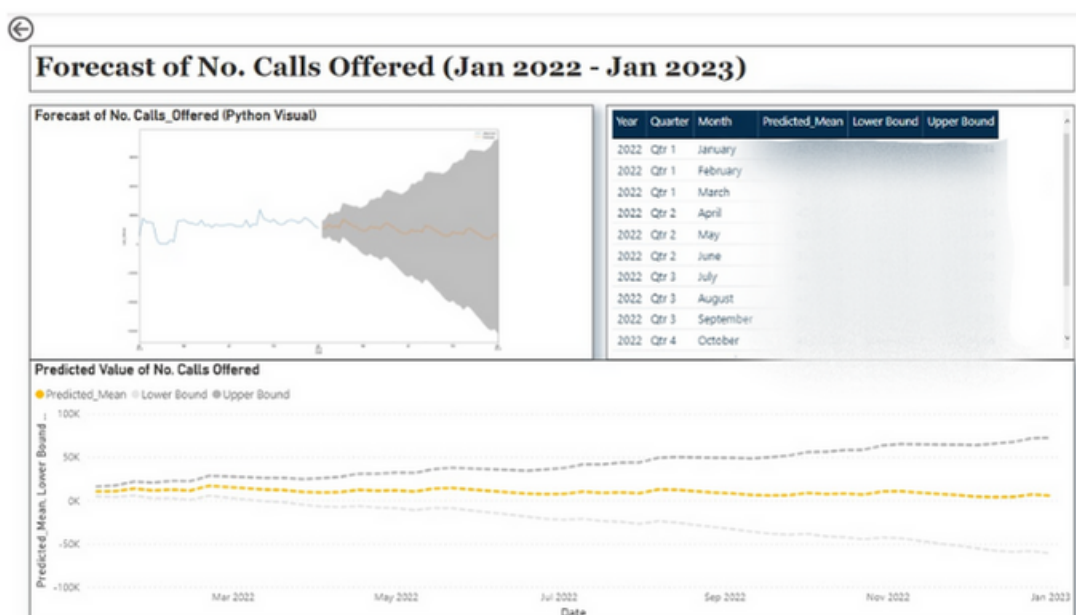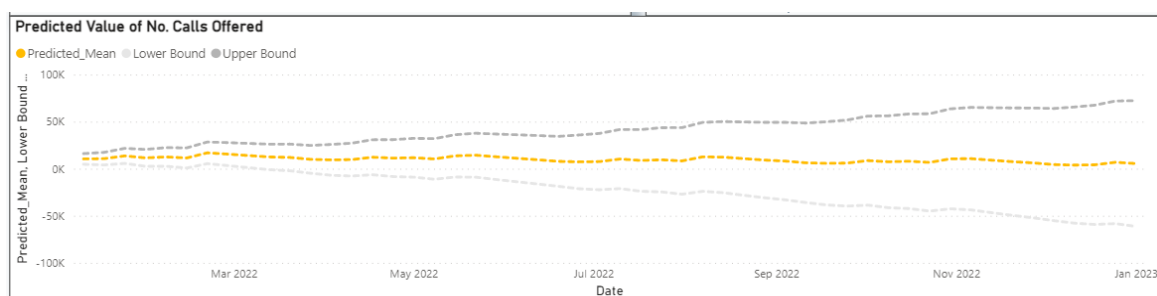
3.5.1 *Forecast of No. Calls_Offered (Python Visual)*

The python visual shows the predicted values of No. of Calls Offered with a 95% confidence level based on the SARIMA forecasting model. Values on the left shows the data that was trained with the existing raw dataset, and values on the right shows the forecasted values.

3.5.2 *Predicted Value of No. Calls_Offered*

The user will be able to get an in-depth understanding of the predicted mean values with an overview of the forecast model's 95% confidence level indicated as 'Lower Bound' and 'Upper Bound' respectively. When interacting with the line graph or the table, the values will be shown automatically.
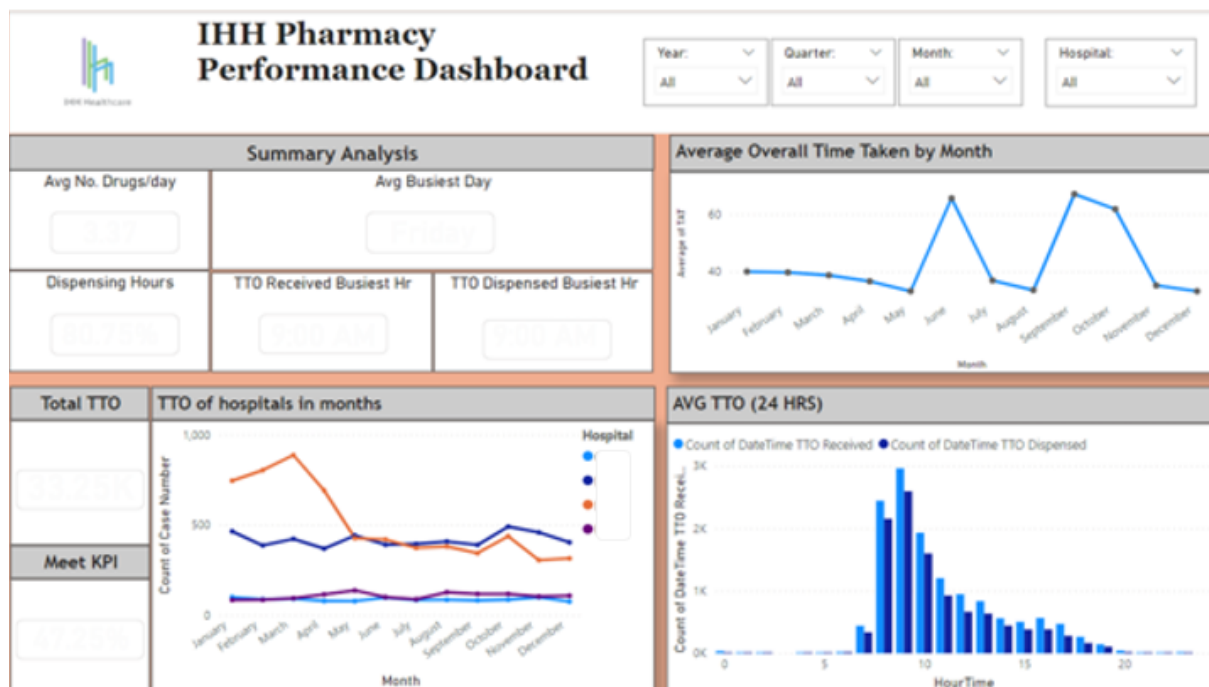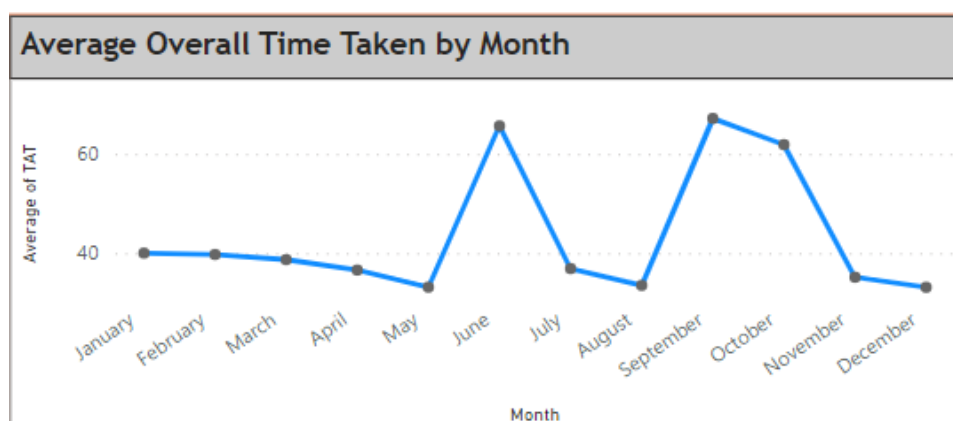
4.0 Pharmacy Department Dashboard

4.1 Summary Tab

In this page, the user can view the overall performance summary for all the hospitals. The user can explore each of the main KPI indicated in this page and filter accordingly.
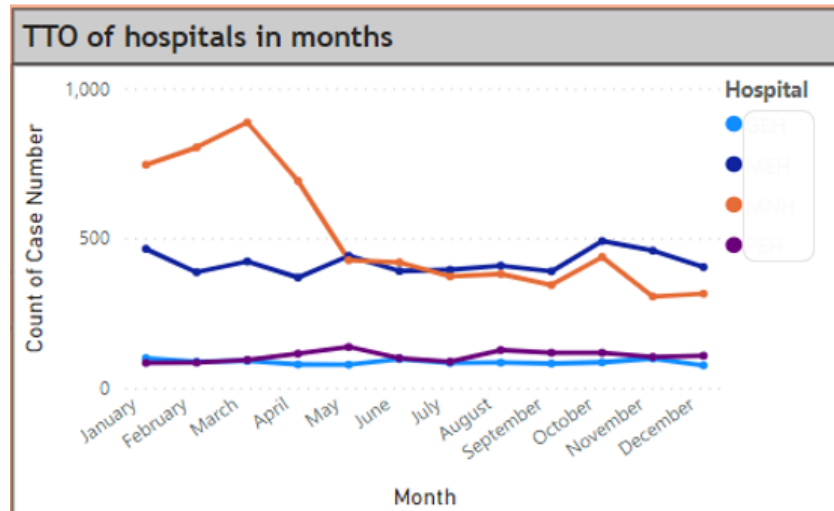

4.1.1 Average Overall Time Taken by Month

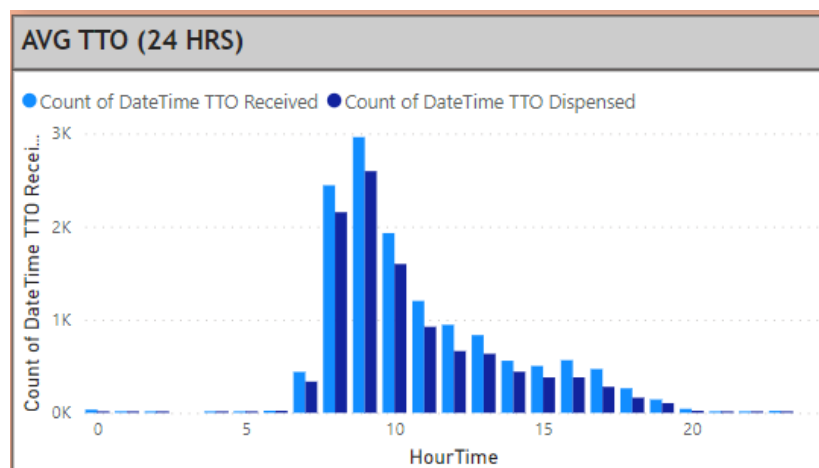This chart shows average overall time taken by month.

4.1.2   TTO of hospitals in months

This chart shows the total number of time taken to order (TTO) in months, segmented by all 4 hospitals.


4.1.3   AVG TTO (24 HRS)

This chart shows the average number of TTO received and dispensed across the 24 hour time period.


4.2   Specific Time Tab

The user could see the overview on specific time analysis for each hospital. By filtering by year, quarter, month, hospital or ward, users will be able to see the number of TTO Received with number of TTO Dispensed by a 24 hour time period and the average TAT by specific dates.
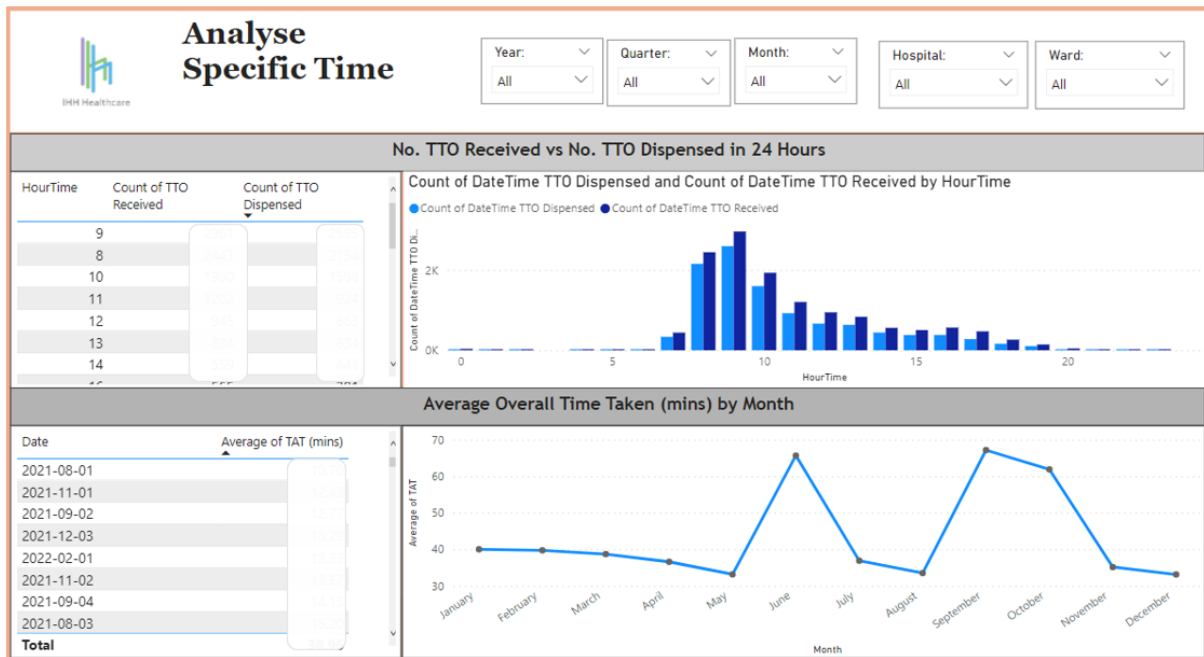
4.2.1 No. TTO Received vs No. TTO Dispensed in 24 Hours

This chart shows the number of TTO received versus the number of TTO dispensed in a 24 hour time period. With the table on the left, the user can view the total number of TTO received and total number of TTO dispensed in a clearer view by the 24 hour time period.
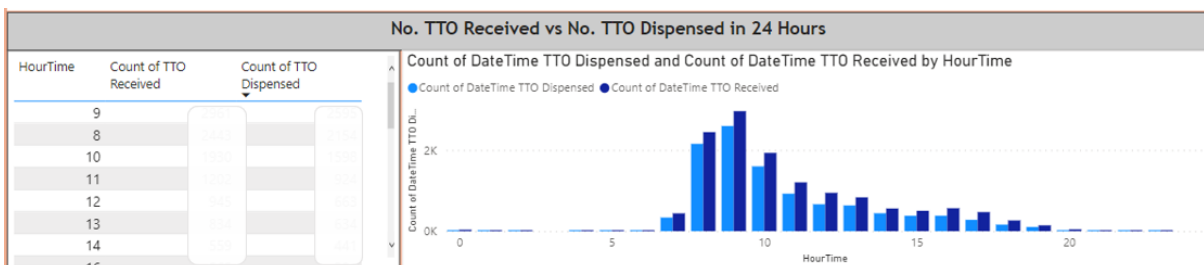
### 4.2.2 Average Overall Time Taken (mins) by Month

This chart shows the average overall time taken of the turnaround time (TAT) in minutes and segmented by months. With the table on the left, the user can view the average number of TAT in a clearer view by date.

Average Overall Time Taken (mins) by Month
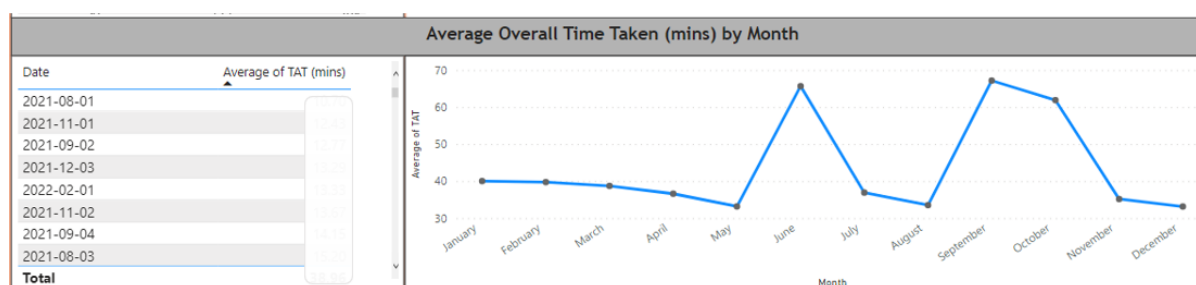
4.3 Why KPI not met? Tab

The user could view the overall summary of why KPI are not met for each individual case. By filtering year, quarter, month, hospital or ward, the user could possibly understand why certain cases did not meet KPI with indicators such as average time taken and percentage of cases per day and per month. Kindly do take note that all the cases listed in this page have been filtered to only cases that did not meet the KPI.

KPI refers to the time taken from received to dispensed (TAT) of each case within 25 minutes for MNH, and 45 minutes for all the other respective hospitals.
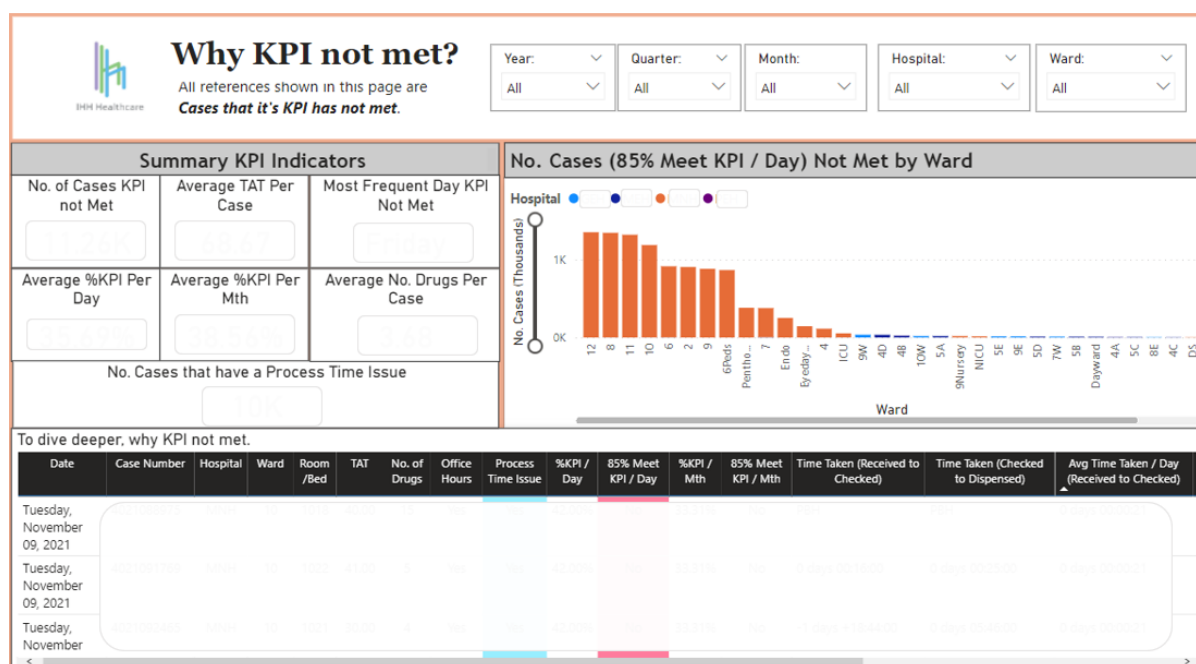
4.3.1 No. Cases (85% Meet KPI / Day) Not Met by Ward

This chart shows the proportion of cases that did not meet the 85% benchmark for KPI in a day by the respective ward and hospital. 85% Meet KPI / Day is referring to if the total number of cases in the particular day meets the 85% benchmark for KPI. In this case, the user

will be looking at the case that did not meet the KPI and is categorised as "No" for the metric named 85% Meet KPI / Day.
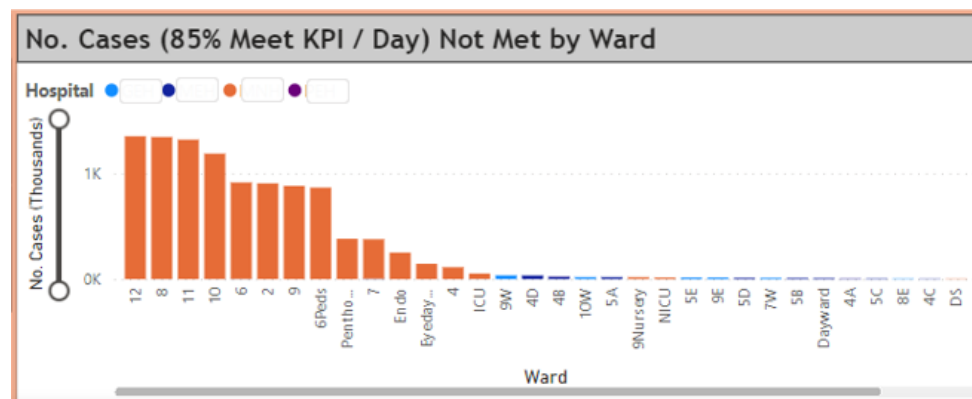

4.3.2 To dive deeper, why KPI not met.

In this chart, the user can understand deeper by looking at other metrics such as number of drugs, type of ward that might influence the TAT and analyse each process time taken for each case that did not meet the KPI. The process time issue is an indicator of whether the time taken of each point in the workflow process for each case took a longer time than the average time taken in a day in the respective process points.


4.4 Staff Productivity Tab

The user could view the pharmacists' productivity by two hospitals, mainlyPEH or GEH. By filtering by year, quarter, month or hospital, users will be able to see the pharmacist name and the analysis of the average number of cases each pharmacist managed in a month.
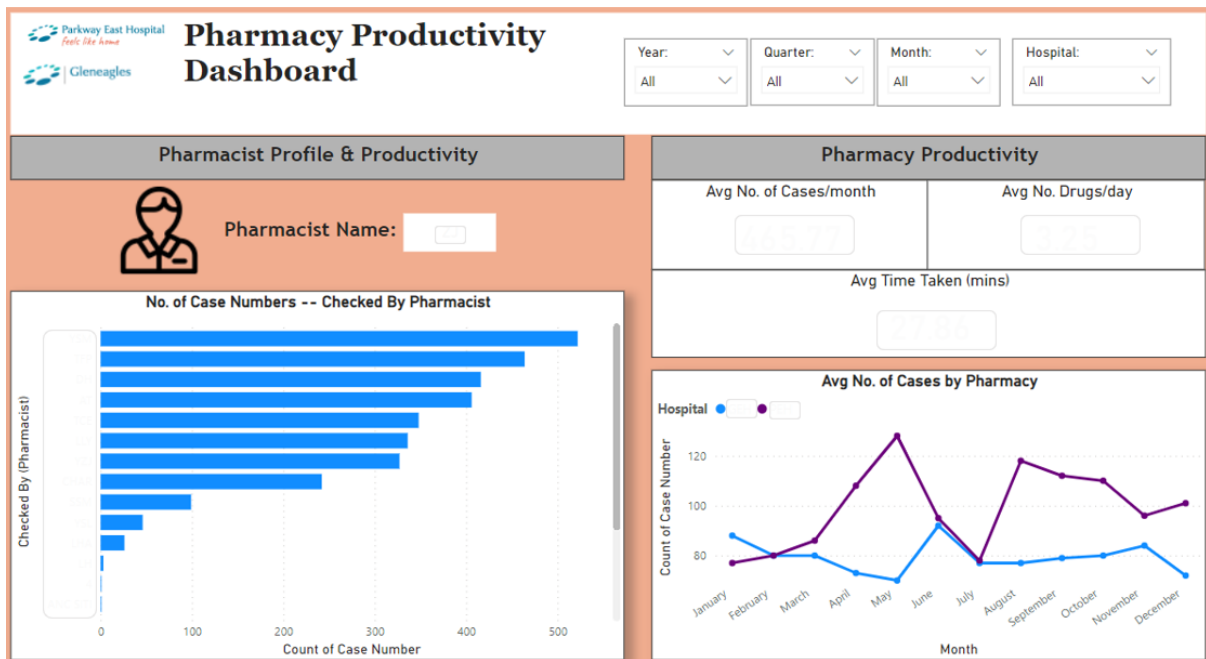
4.4.1 No. of Case Numbers – Checked by Pharmacist

This chart shows the number of cases each pharmacist has dealt with, in deciding which hospitals.
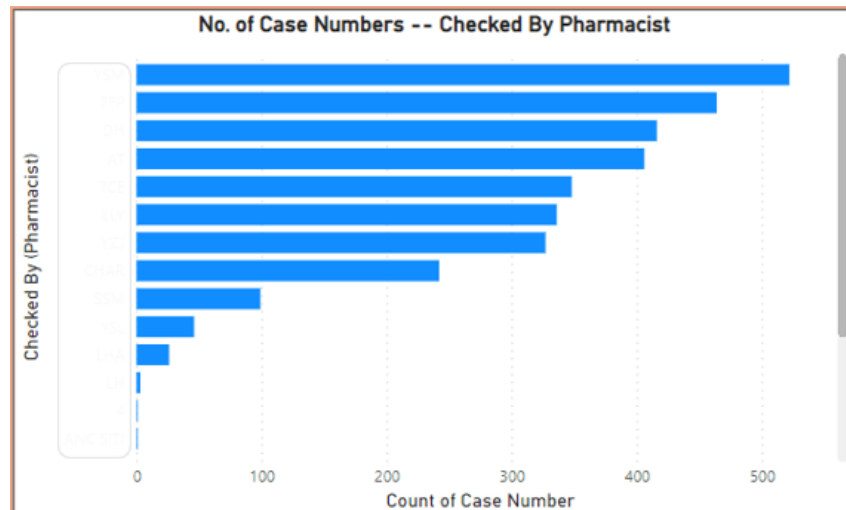

4.4.2 Avg No. of Cases by Pharmacy

This chart shows the average number of cases by both GEH Pharmacy and PEH Pharmacy by month. The user will be able to identify which pharmacy is doing better or dealing with more cases on average.
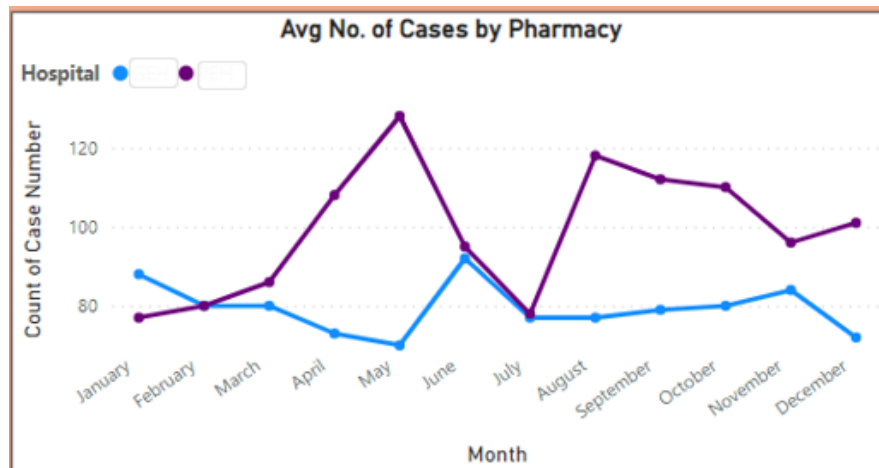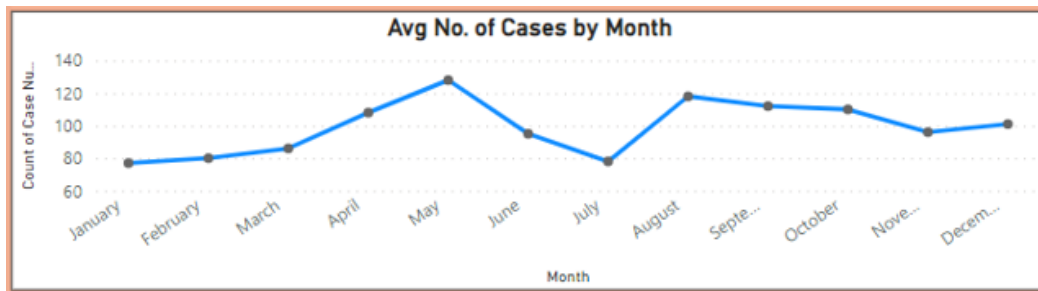
4.5   PEH Pharmacy Tab

The user could view the workflow summary of PEH pharmacy. By filtering by year, quarter, month, ward or room/bed. Users will be able to see the different indicators and charts to better understand the workflow of PEH.
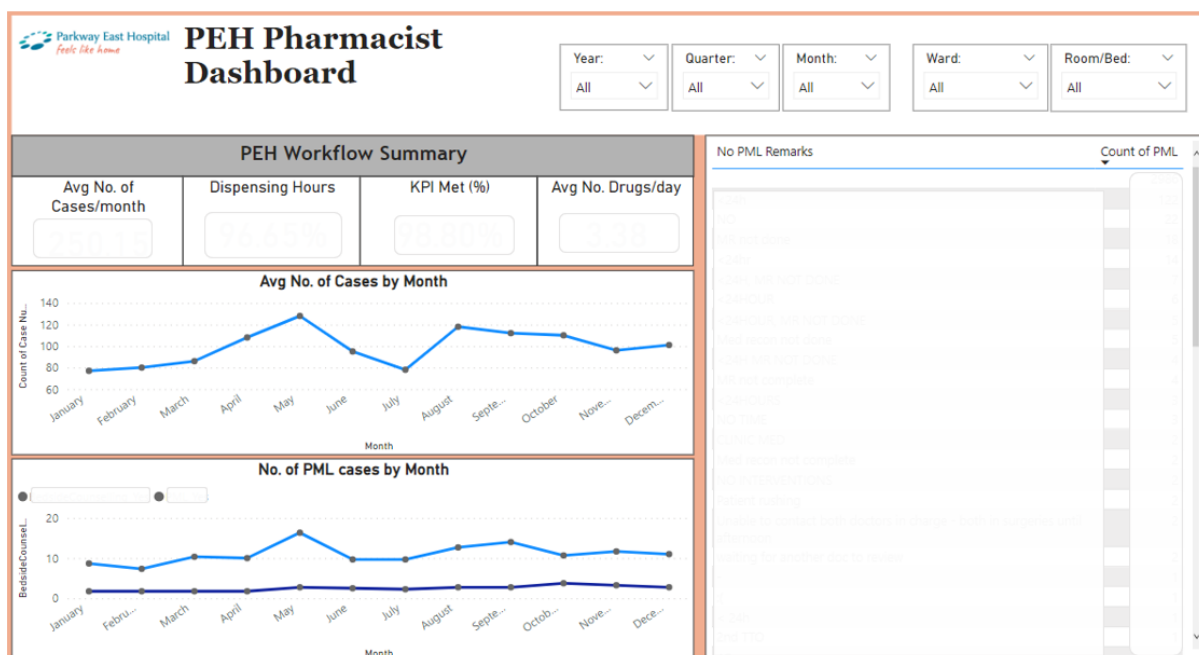

4.5.1   Avg No. of Cases by Month

This chart shows the average number of cases made in PEH Hospital by month.

4.5.2 No. of PML cases by Month

This chart shows the number of patients' medication list (PML) cases made by month. With the analysis of the count of bedside counselling and count of PML is Yes. The user will be able to understand the number of cases that need bedside counselling when PML is Yes.
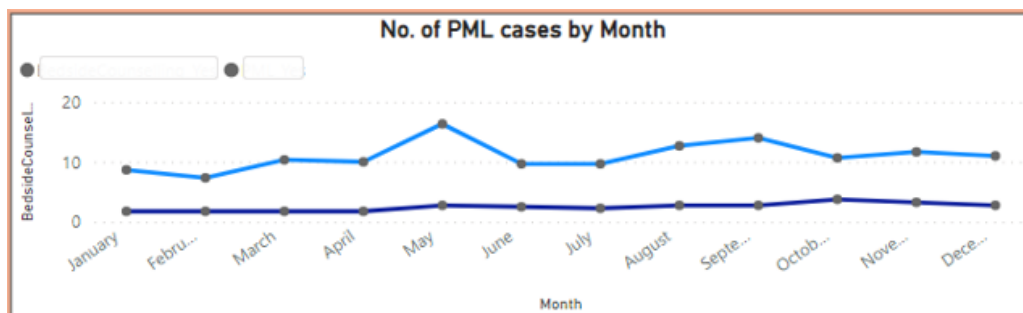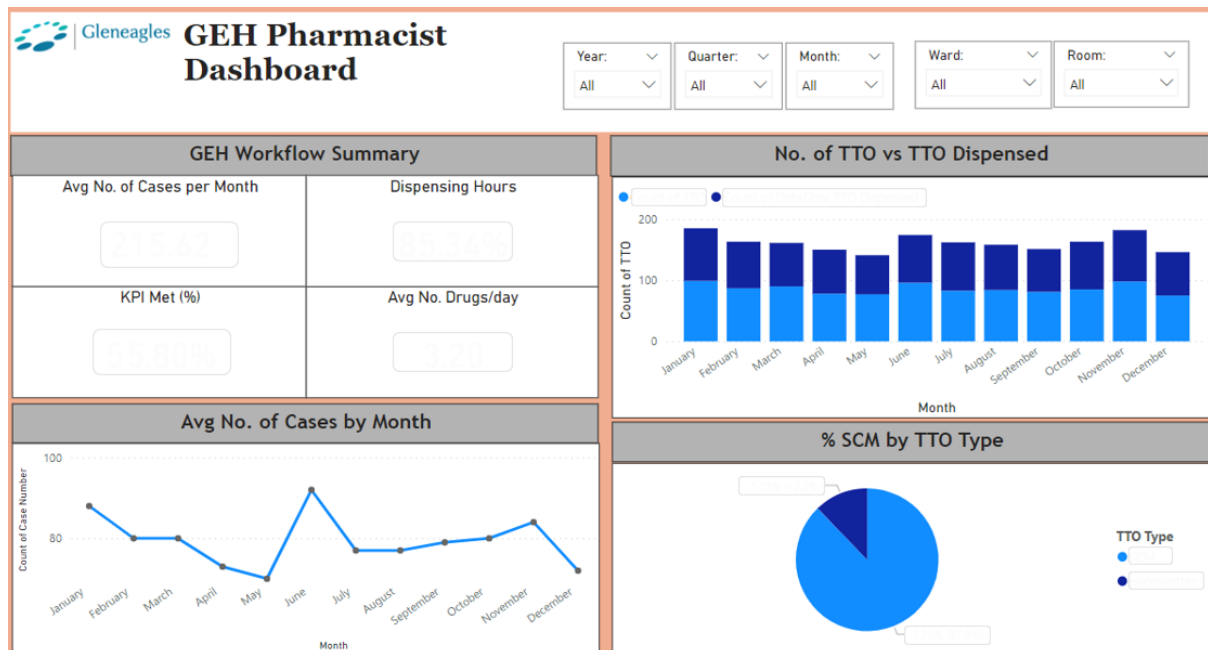

4.5.2 No. of PML Remarks

This table shows the most commonly used patients' medication list (PML) remarks when PML is No.
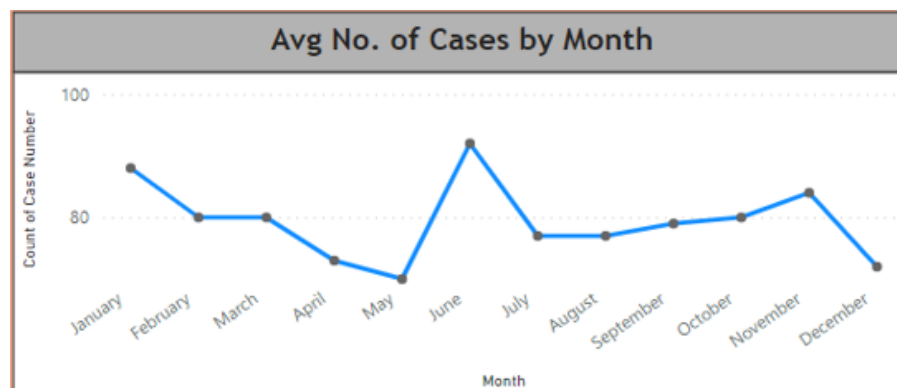
4.6 GEH Pharmacy Tab

The user could view the workflow summary of GEH pharmacy. By filtering by year, quarter, month, ward or room, users will be able to see the different indicators and charts to better understand the workflow of GEH.
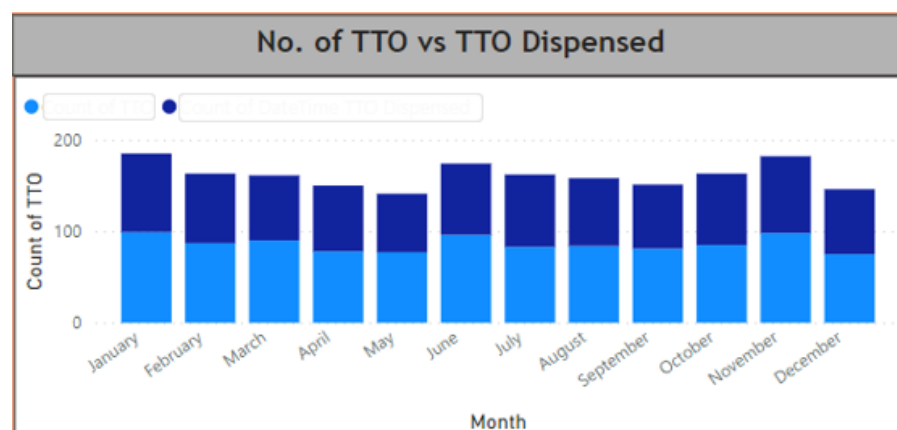
4.6.1 Avg No. of Cases by Month

This chart shows the average number of cases made in GEH Hospital by month.


4.6.2 No. of TTO vs TTO Dispensed

This chart shows the number of TTO versus the number of TTO dispensed in months. The user can see the number of cases in the month compared with the number of cases being dispensed.


4.6.3 % SCM by TTO Type

This chart shows the percentage of the 2 different TTO types, namely SCM and Handwritten. The user can see that doctors in GEH prefer using SCM (computerised system) as compared to handwritten to record the cases.
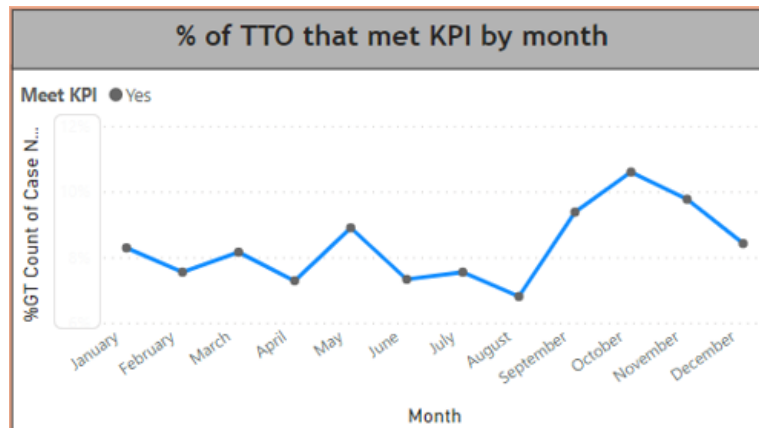
% SCM by TTO Type
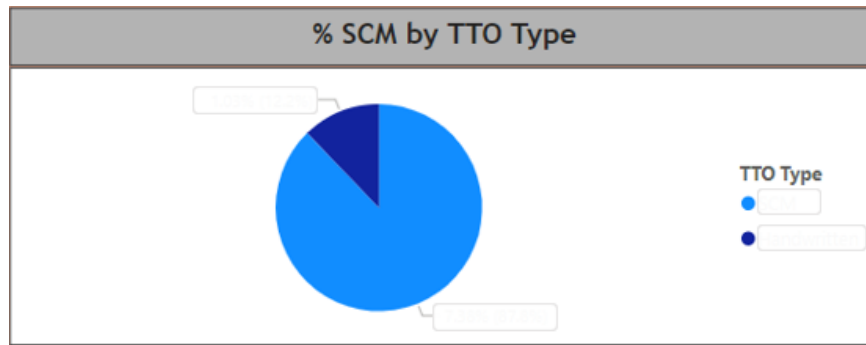
4.7   MEH Pharmacy Tab

The user could view the workflow summary of MEH pharmacy. By filtering by year, quarter, month or ward, users will be able to see the different indicators and charts to better understand the workflow of MEH.
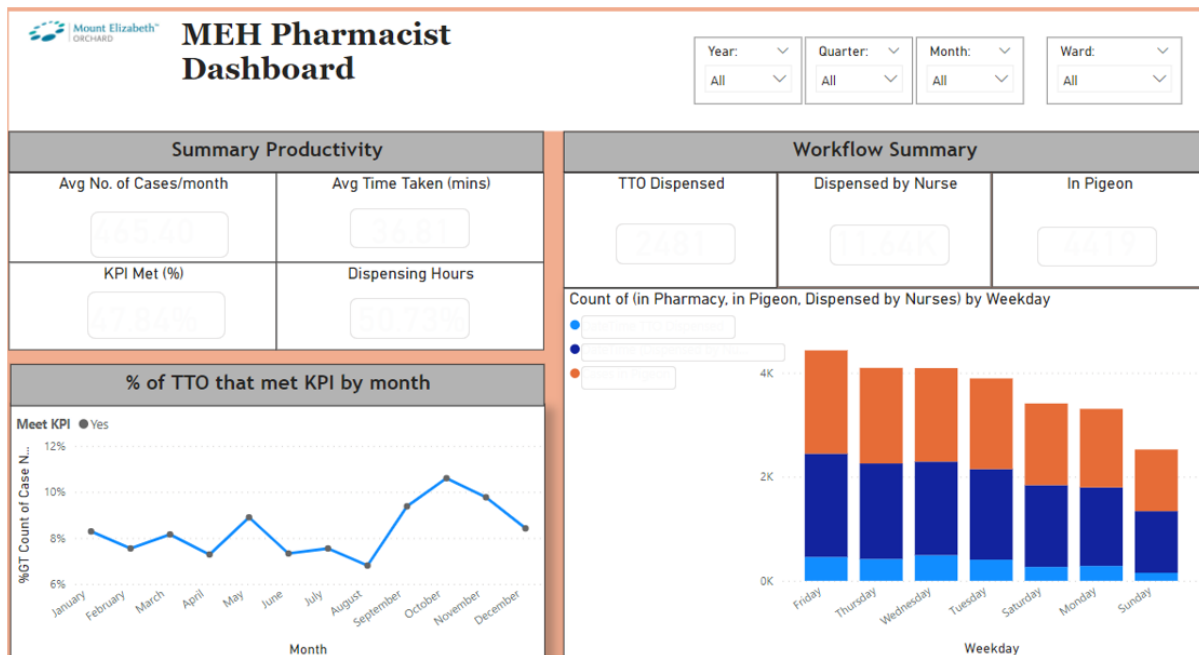
4.7.1   % of TTO that met KPI by month

This chart shows the percentage of TTO that have met the KPI by month.

4.7.2 Workflow Summary of MEH

This chart shows the comparison of the number of TTO dispensed, number of datetime dispensed by nurse and the number of cases in pigeon per day.

4.8 MNH Pharmacy Tab

The user could view the workflow summary of MNH pharmacy. By filtering by year, quarter, month or ward, users will be able to see the different indicators and charts to better understand the workflow of MNH.
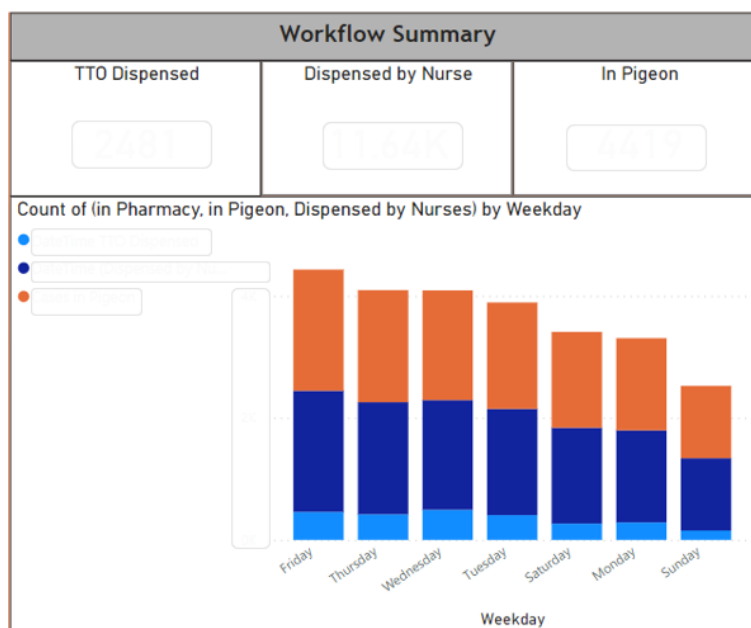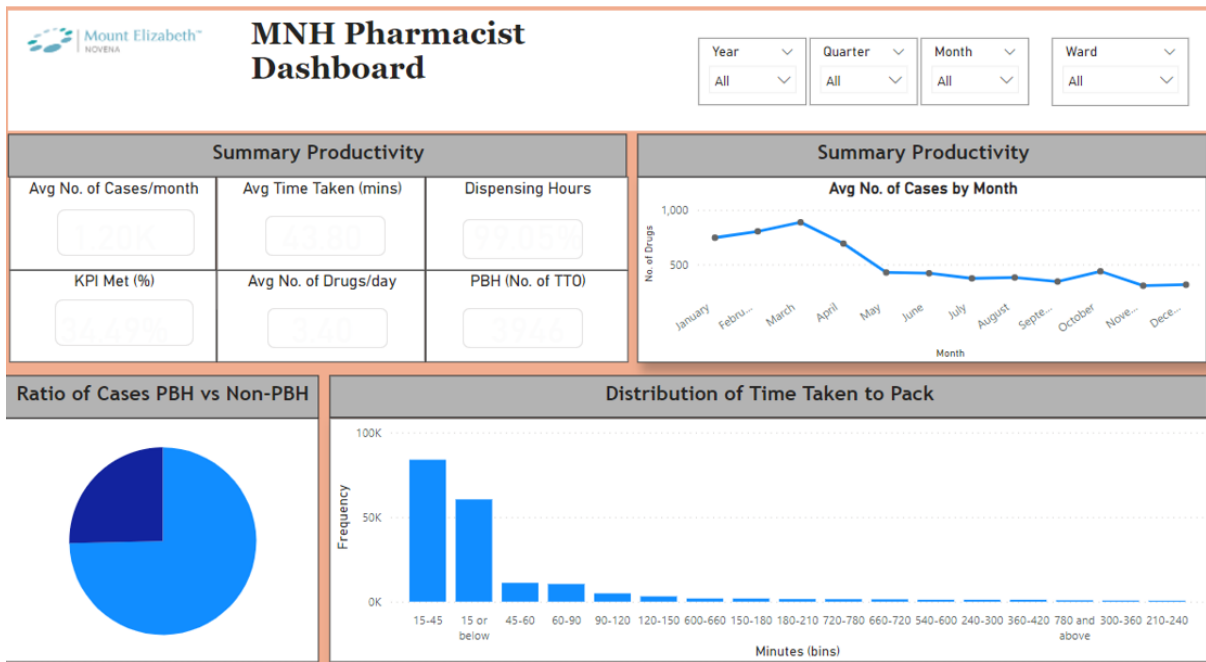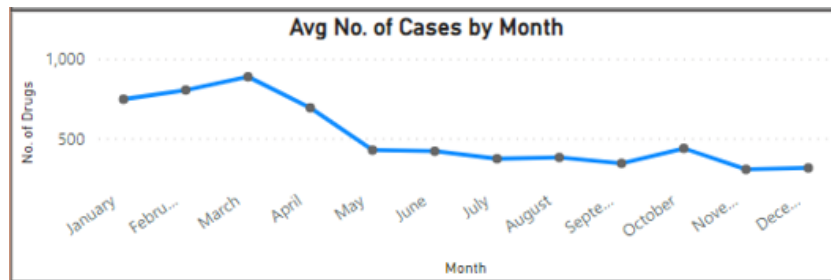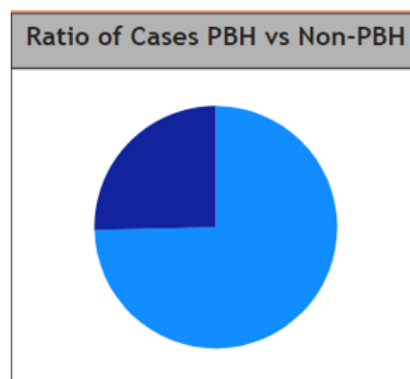
4.8.1 Avg No. of Cases by Month

This chart shows the average number of cases made in MNH Hospital by month.


4.8.2 Ratio of Cases PBH vs Non-PBH

This chart shows the ratio in percentage of the cases that are packed before hand (PBH) and not packed before hand.

4.8.3   Distribution of Time Taken to Pack

This chart shows the distribution of the time taken to pack in 15 minutes and 30 minutes. From bin 210-240 onwards, the time intervals are in 60 minutes (1 hour). The user will be able to see how long it takes to pack a case.
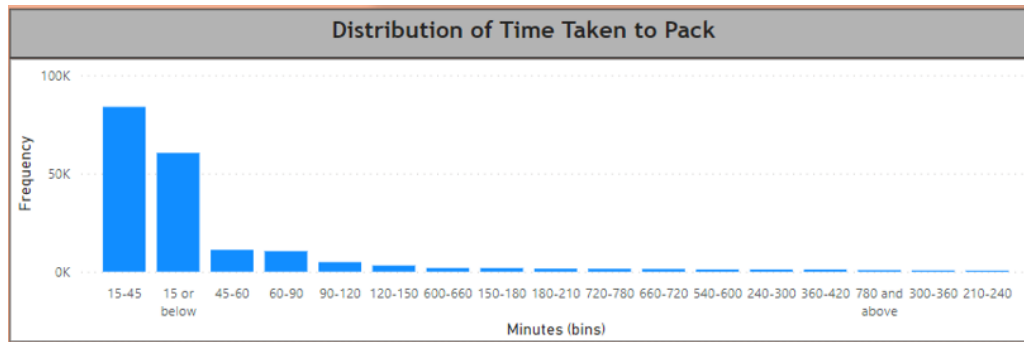

4.9   Forecast (No. TTOs) Tab

In this tab, the visuals signifies the forecasted values of the No. of TTOs in the coming year (Year 2022, in this case of the dataset we received). The user would be able to understand and identify the predicted values based on the python visualisation, table and line graph.
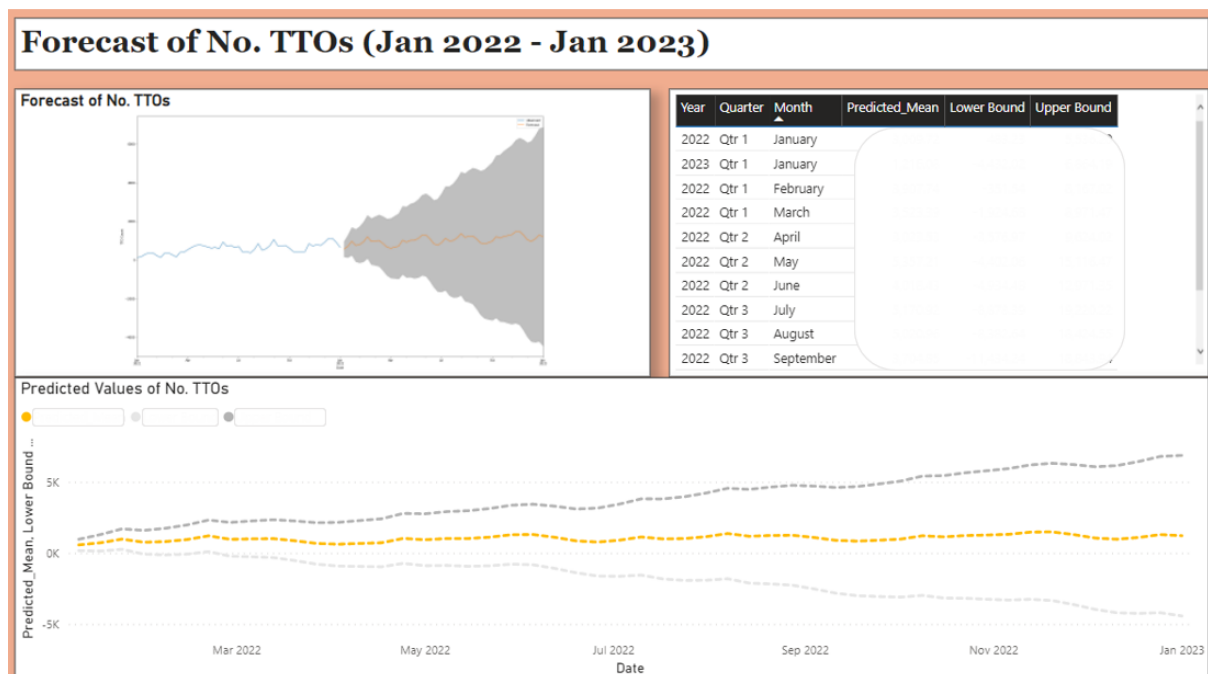
4.9.1 Forecast of No. TTOs (Python Visual)

The python visual shows the predicted values of No. of TTOs with a 95% confidence level based on the SARIMA forecasting model. Values on the left shows the data that was trained with the existing raw dataset, and values on the right shows the forecasted values.
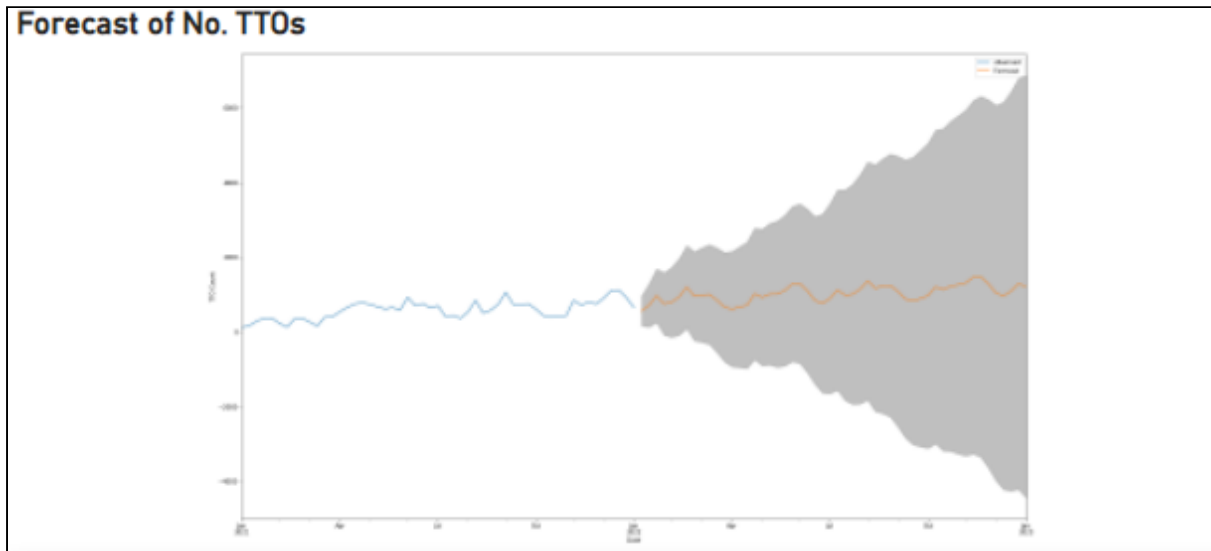
4.9.2 Predicted Value of No. TTOs

The user will be able to get an in-depth understanding of the predicted mean values with an overview of the forecast model's 95% confidence level indicated as 'Lower Bound' and 'Upper Bound' respectively. When interacting with the line graph or the table, the values will be shown automatically.

Predicted Values of No. TTOs
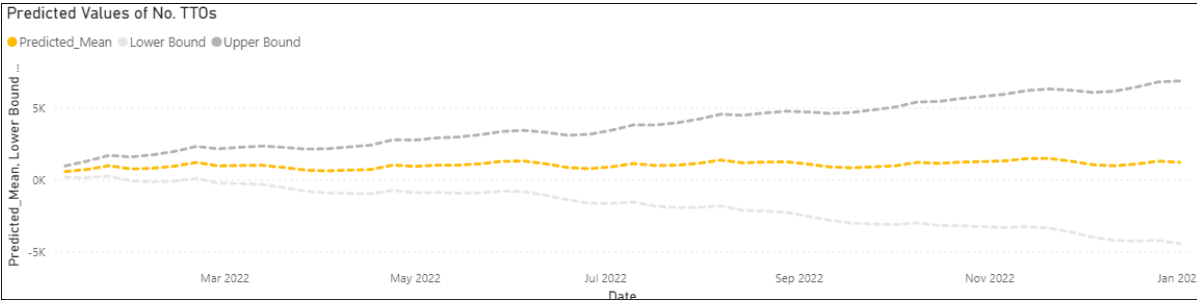
Year	Quarter	Month	Predicted_Mean	Lower Bound	Upper Bound
2022	Qtr 1	January			
2023	Qtr 1	January			
2022	Qtr 1	February			
2022	Qtr 1	March			
2022	Qtr 2	April			
2022	Qtr 2	May			
2022	Qtr 2	June			
2022	Qtr 3	July			
2022	Qtr 3	August			
2022	Qtr 3	September			