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

Technical User Guide for Power BI Dashboard
[Professor's Version]
Some Blurred Images for Data Privacy Purposes

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Table of Contents

1.0   Brief Overview

This technical user guide document entails a full step-by-step guide on replicating the dashboard building process for IHH.

For all references made in this document, do refer to the Teams Folder section.

2.0   Overview of Data Files

An overview of the data files used to build the dashboard.

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*	

3.0   Overview of Power BI files

An overview of the Power BI files that are the final result from our dashboard building process.

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

4.0   How-To Replicate the Exact Dashboard that we've created

In this section, we will detail the steps we took to create each individual visualisation in the respective dashboard.

4.1   Call Centre Department Dashboard

Kindly do refer to the following steps and types of visualisations on how we derive it to our final outlook of the Call Centre Department Dashboard.

Before proceeding further, create a new dashboard and upload the following files into it.

1. *Call_Centre_CLEANED_Final.csv*
2. *Calls_Offered_Groupby_Week_for_Forecast.csv*
3. *Calls_Offered_Predicted_Values_for_2022.csv*

4.1.1 Columns Created

To start, first create the following columns needed for all the various visualisations.

S/N	Column Name	Steps to create	Remarks
1	Wait_Time_Secs	In the Data view, right click on any field and click "New Column". Type in the code "Wait_Time_Secs = SECOND(Call_Centre_CLEANED_Final[Wait Time])".	Returns the wait time in seconds.
2	Talk_Time_Secs	In the Data view, right click on any field and click "New Column". Type in the code "Talk_Time_Secs = SECOND(Call_Centre_CLEANED_Final[Talk Time])".	Returns the talk time in seconds.
3	Avg No. of Calls	In the Data view, right click on any field and click "New Column". Type in the code "Avg No. of Calls = [Total_Calls]". Right click on the field "Avg No. of Calls" and click Average under Summarization.	Returns the average number of inbound and outbound calls.
4	Avg Wait Time (secs)	In the Data view, right click on any field and click "New Column". Type in the code "Avg Wait Time (secs) = Second(Call_Centre_CLEANED_Final[Wait Time])".	Returns the average waiting time
4	DayOrder	In the Data view, right click on any field and click "Edit Query". Right click on "Date" Column and click the duplicate column. Rename column to "DayOrder". Right click on the "DayOrder" column,	This is to retrieve the day from Date from day computation and order arrangement.

S/N		
	click on "Transform" and choose "Day", "Day of the week".	
5	HourTime	In the Data view, right click on any field and click "Edit Query". Right click on "Date" Column and click the duplicate column. Rename the column to "HourTime". Right click on the "HourTime" column, click on "Transform" and choose "Hour","Hour".	This is to retrieve the hours from Date from hourly computation
6	15Floor	In the Data view, right click on any field and click "New Column". Type in the code "15Floor = FLOOR([Date],"0:15"). On the top panel, change the data type to "Date/Time" follow by changing the format to " 1:30 pm (h:nn AM/PM)".	This is to change the timing into a 15 minutes interval for further calculation.

4.1.2 Measures Created

After creating the respective columns in the previous section, create the following measures.

S/N	Measure Name	DAX Formula	Remarks
1	% calls within 30secs	% calls within 30secs = SUM('Call_Centre_CLEANED_Final'[Wait_Time_<=30s])/SUM('Call_Centre_CLEANED_Final'[Calls_Answered]) * 100	Total waiting time lesser than 30s / total calls answered Returns the % of calls within 30secs
2	% calls_abandoned	% calls_abandoned = (Call_Centre_CLEANED_Final[Calls_Abandoned]/Call_Centre_CLEANED_Final[Total Calls])	Calls abandoned/Totals Calls Returns the % of calls abandoned
3	ASA (secs)	ASA (secs) = DIVIDE(SUM('Call_Centre_CLEANED_Final'[Wait_Time_Secs]), SUM('Call_Centre_CLEANED_Final'[Calls_Answered]))	Total waiting time / total calls answered Returns the average speed answered in seconds
4	ATT	ATT = DIVIDE(SUM('Call_Centre_CLEANED_Final'[Talk_Time_Secs]),	Total Talk Time / Total number of calls answered. Returns average time taken

4

		SUM('Call_Centre_CLEANED_Final'[Calls_Answered]))	
5	Avg Res Time	Avg Res Time = CALCULATE(SUM(Call_Centre_CLEANED_Final[Calls_Answered])/Call_Centre_CLEANED_Final[Total Calls])	Total calls answered/ total calls Returns the average response time
6	BusyHourDay	BusyHourDay = TIME(TOPN(1, ALL(Call_Centre_CLEANED_Final[HourTime]), CALCULATE(COUNT(Call_Centre_CLEANED_Final[HourTime]))),0,0)	Top 1 (HourTime with the most count) in Time format (e.g 10:00 AM) Returns the top 1 number of counts in the hour in time format
7	Calls_Abandoned	Calls_Abandoned = SUM('Call_Centre_CLEANED_Final'[Calls_Offered]) - SUM('Call_Centre_CLEANED_Final'[Calls_Answered])	Total Calls offered - Total Calls answered Returns the amount of calls abandoned
8	Calls_Answered max per Month	Calls_Answered max per Month = MAXX(KEEPFILTERS(VALUES('Call_Centre_CLEANED_Final'[Date].[Month])), CALCULATE(SUM('Call_Centre_CLEANED_Final'[Calls_Answered])))	Return the max amount of Total number of calls answered filtered based on months Returns the max amount of calls for the month
9	Calls_Answered_By_Agent	Calls_Answered_By_Agent = SUM(Call_Centre_CLEANED_Final[Calls_Answered])	Returns total amount of calls answered
10	Count_DateHour	Count_DateHour = Count(Call_Centre_CLEANED_Final[Date_hour])	Returns total amount of hours
11	Inbound	Inbound = DIVIDE(SUM('Call_Centre_CLEANED_Final'[Calls_Offered]) - SUM('Call_Centre_CLEANED_Final'[Calls_Answered]),SUM(Call_Centre_CLEANED_Final[Calls_Offered]))	(Total amount of calls offered - total numbers of calls answered) / total number of calls offered Returns the amount of inbound calls
12	Max_Day	Max_Day = TOPN(1, ALL(Call_Centre_CLEANED_Final[Weekday]),	Top 1 (count of average calls answered on weekday) e.g, Monday

		CALCULATE(AVERAGE(Call_Centre_CLE ANED_Final[Calls_Answered])))	Returns the top 1 day with the most count
13	Outbound	Outbound = DIVIDE(SUM('Call_Centre_CLEANED_Fina l'[Calls_Offered]) - SUM('Call_Centre_CLEANED_Final'[Calls_ Answered]),SUM(Call_Centre_CLEANED_Fi nal[Calls_Answered]))	(Total amount of calls offered - total amount of calls answered)/ total amount of calls answered Returns the amount of outbound calls
14	SLA_20s	SLA_20s = DIVIDE(SUM('Call_Centre_CLEANED_Final'[Wait_T ime_<=20s]), SUM('Call_Centre_CLEANED_Final'[Calls_ Offered]))	Total Waiting time lesser than 20s/ total calls offered Returns the amount of calls under 20s.
15	SLA_30s	SLA_30s = DIVIDE(SUM('Call_Centre_CLEANED_Final'[Wait_T ime_<=30s]), SUM('Call_Centre_CLEANED_Final'[Calls_ Offered]))	Total Waiting time lesser than 30s/ total calls offered Returns the amount of calls under 30s.
16	Total Calls	Total Calls = COUNT(Call_Centre_CLEANED_Final[Inbo und_Outbound])	Returns the Total number of inbound and outbound calls

4.1.3 Visualisations

There are various types of visualisations that were created in our dashboard. Here's an overview of the types of visualisations that were used for the Call Centre Department Dashboard.

1. Slicer
2. Card
3. Line Graph
4. Bar Graph
5. Table
6. Python Visual

In the following sections, we will look at an overview of the types of data that were utilising these visualisations, and an example of how they were created.

4.1.3.1Slicer

Slicers are another way of filtering. They narrow the portion of the dataset that is shown in the other report visualisations.

Page	Visualisation Name	Dataset	Values	Remarks
Summary	Year / Quarter / Month / Day		*Field*: Date [Date Hierarchy - Year, Quarter, Month, Day] - Select as per appropriate field	
	Country		*Field*: Country	
	Team		*Field*: Team	
Inbound & Outbound Calls	Year / Quarter / Month / Day	*Dataset*: Call_Centre_CLEANED_Final	*Field*: Date [Date Hierarchy - Year, Quarter, Month, Day] - Select as per appropriate field	
	Inbound/Outbound		*Field*: Inbound/Outbound	
	Country		*Field*: Country	
	Team		*Field*: Team	
Average Calls Answered	Year / Quarter / Month / Day		*Field*: Date [Date Hierarchy - Year, Quarter, Month, Day] - Select as per appropriate field	
	Team		*Field*: Team	
Staff Productivity	Year / Quarter / Month / Day		*Field*: Date [Date Hierarchy - Year, Quarter, Month, Day] - Select as per appropriate field	

	Inbound/Outbound		*Field*: Inbound/Outbound	
	Country		*Field*: Country	

An example of how the slicers should look like:
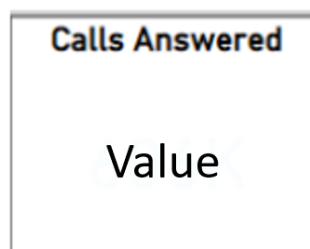

4.1.3.2 Card

Sometimes a single number is the most important thing you want to track in your Power BI dashboard or report, such as total sales, market share year over year, or total opportunities. This type of visualisation is called a Card.

Page	**Visualisation Name**	**Dataset**	**Values**	**Remarks**
Summary	Calls_Offered	*Dataset*: Call_Centre_CLEANED_Final	*Field*: Calls_Offered	
	Calls_Answered		*Field*: Calls_Answered	
	Calls Abandoned		*Field*: Calls_Abandoned	
	Inbound Abandoned		*Field*: Inbound	
	Outbound Abandoned		*Field*: Outbound	
	SLA 20 secs		*Field*: SLA_20s	
	SLA 30 secs		*Field*: SLA_30s	
	Avg Speed Answered (ASA)		*Field*: ASA (secs)	
	Avg Talk Time (ATT)		*Field*: ATT	
Inbound & Outbound Calls	Total Calls		*Field*: Count of Inbound_Outbound	
	Calls Offered		*Field*: Calls_Offered	
	Calls Answered		*Field*: Calls_Answered	
	Calls Abandoned		*Field*: Calls_Abandoned	

	SLA within 20secs		*Field*: SLA_20s	
	SLA within 30secs		*Field*: SLA_30s	
	% Calls abandoned		*Field*: % calls abandoned	
Average Calls Answered	Avg Wait Time (secs)		*Field*: Avg Wait Time (secs)	
	Avg No. of Calls		*Field*: Avg No. of Calls	
	Average Speed Answered (secs)		*Field*: ASA (secs)	
	Total No. of Calls of selected month:		*Field*: Calls_Answered max per Month	
	Avg Busiest Day		*Field*: Max_Day	
	Avg Busiest Hour		*Field*: BusyHourDay	
Staff Productivity	Staff Name - Bound:		*Field*: First Agent	
	Calls Answered		*Field*: Calls_Answered	Filter Inbound
	Average Talk Time		*Field*: ATT	
	Calls Answered		*Field*: Calls_Answered	Filter Outbound
	Average Talk Time		*Field*: ATT	

An example of how a card should look like:
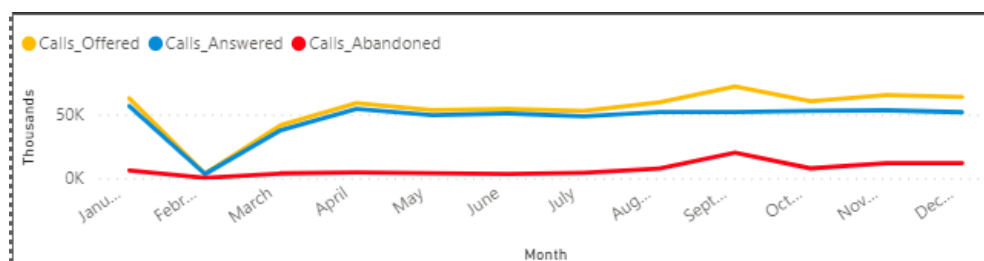

Calls Answered

Value

4.1.3.3 Line Graph

A line chart is a series of data points that are represented by dots and connected by straight lines. A line chart may have one or many lines. Line charts have an X and a Y axis.

Page	Visualisation Name	Dataset	Values	Remarks

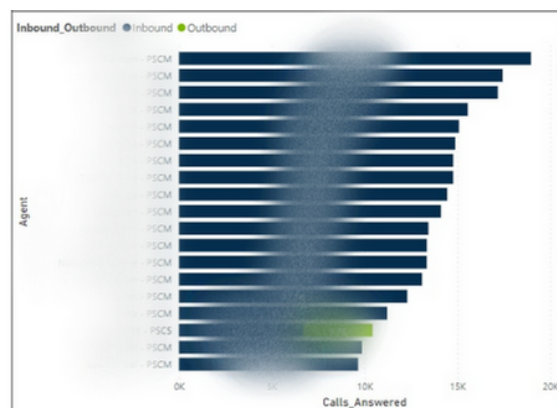|				
Summary	Inbound Calls (Offered, Answered, Abandoned)	*Dataset*: Call_Centre_CLEANED_Final	*Field*: Calls_Offered, Calls_Answered,Calls_Abandoned	*Axis* : Date[Month, Day]
	Outbound Calls (Offered, Answered)		*Field*: Count of Calls_Answered, Count of Calls_Offered	
	No. of calls (Offered, Answered, Abandoned) by 15min		*Field*: Calls_Offered, Calls_Answered,Calls_Abandoned	*Axis* : 15Floor
Inbound & Outbound Calls	Inbound / Outbound Call Volumes		*Field*: Calls_Offered, Calls_Answered,Calls_Abandoned	*Axis* :Date[Month]
	Call Statistics		*Field*: Wait_Time_<=30s, Calls_Abandoned	
Average Calls Answered	Average Calls Answered per Month		*Field*: Average of Calls_Answered	*Axis* :Date[Month]
	Average Calls Answered per Week			*Axis* :Weekday
Forecast (Calls_Offered)	Predicted Value of No. Calls Offered	*Dataset*: Call_Offered_Predicted_Values_for_2022	*Field*: Predicted_Mean,Lower Bound, Upper Bound	*Axis* :Date

An example of how a line graph should look like:

4.1.3.4Bar Graph

Bar and column charts are some of the most widely used visualisation charts in Power BI. They can be used for one or multiple categories. Both these chart types represent data with rectangular bars, where the size of the bar is proportional to the magnitude of data values.

Page	Visualisation Name	Dataset	Values	Remarks
Staff Productivity	Calls Answered By Agent	*Dataset*: Call_Centre_CL EANED_Final	*Field*: Calls_Answered	*Axis* :Agent *Legend*: Inbound_Outbound

An example of how a bar graph should look like:

4.1.3.5Table

A table is a grid that contains related data in a logical series of rows and columns. It may also contain headers and a row for totals. Tables work well with quantitative comparisons where you're looking at many values for a single category. For example, this table displays five different measures for Category.

Page	Visualisation Name	Dataset	Values	Remarks
Forecast (Calls_Offered)	Forecast of No. Calls Offered (Jan 2022-Jan 2023)	*Dataset*: Calls_Offered_pre dicted_Values_for _2022	*Field*: Date[Year, Quarter, Month], Predicted_Mean, Lower Bound, Upper Bound	

An example of how a table should look like:

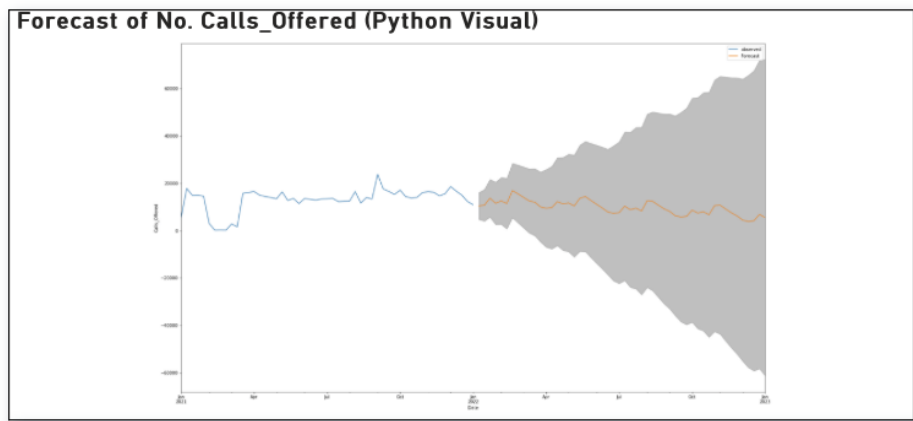| Year	Quarter	Month	Predicted_Mean	Lower Bound	Upper Bound
2022	Qtr 1	January			
2022	Qtr 1	February			
2022	Qtr 1	March			
2022	Qtr 2	April			
2022	Qtr 2	May			
2022	Qtr 2	June			
2022	Qtr 3	July			
2022	Qtr 3	August			
2022	Qtr 3	September			

4.1.3.6 Python Visual

In our dashboard, we've only affixed one Python Visual for the forecasting feature of understanding the forecast for the Calls Offered in Year 2022. Do refer to the details as below.

Page	Visualisation Name	Dataset	Values	Python Code
Forecast (Calls_Offered)	Forecast of No. Calls_Offered (Python Visual)	*Dataset*: Forecast: Calls_Offered_Groupby_Week	*Values*: Date, Calls_Offered [Don't Summarize]	Do refer to the bottom section of the Coding file name [*Call_Centre_Forecast_Analysis_BI.ipynb*]

Kindly do take note that in order to create a Python Visual, you have to make sure that you have Python installed on your local desktop and that it is connected to your PowerBI application. Python Visual is not able to be created on Power BI online, and only on Power BI Desktop Application.

An example of how the output should look like after fixing the code:

Forecast of No. Calls_Offered (Python Visual)

4.2 Pharmacy Department Dashboard

Kindly do refer to the following steps and types of visualisations on how we derive it to our final outlook of the Pharmacy Department Dashboard.

Before proceeding further, create a new dashboard and upload the following files into it.

1. *Merged_Pharmacy_Dept_CLEANED.csv*
2. *TTO_Groupby_Week_for_Forecast.csv*
3. *TTO_Predicted_Values_for_2022.csv*
4. *Why_KPI_Not_Met.csv*

4.2.1 Columns Created

To start, first create the following columns needed for all the various visualisations.

S/N	Column Name	Steps to create	Remarks
1	Year-Month	In the Data view, right click on any field and click "New Column". Type in the code "Year-Month = YEAR(Merged_Pharmacy_Dept_CLEANED[Date]) & "-" &MONTH(Merged_Pharmacy_Dept_CLEANED[Date])".	Returns the wait time in seconds.
2	PPT_Bins	In the Data view, right click on any field and click "Edit Query". At the top bar, click on Add Column then click on Conditional Formatting. Enter in the measures to create the bins, set name of Measure as "PPT_Bins" = if [Time Taken to Pack] >= 780 then "780 and above" else if [Time Taken to Pack] >= 720 then "720-780" else if [Time Taken to Pack] >= 660 then "660-720" else if [Time Taken to Pack] >= 600 then "600-660" else if [Time Taken to Pack] >= 540 then "540-600" else if [Time Taken to Pack] >= 480 then "480-540" else if [Time Taken to Pack] >= 420 then "420-480" else if [Time Taken to Pack] >= 360 then "360-420" else if [Time Taken to Pack] >= 300 then "300-360" else if [Time Taken to Pack] >= 240 then "240-300" else if [Time Taken to Pack] >= 210 then "210-240" else if [Time Taken to Pack] >= 180 then "180-210"	Returns the bins for Time Taken to Pack in minutes.

S/N		DAX Formula	
		else if [Time Taken to Pack] >= 150 then "150-180" else if [Time Taken to Pack] >= 120 then "120-150" else if [Time Taken to Pack] >= 90 then "90-120" else if [Time Taken to Pack] >= 60 then "60-90" else if [Time Taken to Pack] >= 45 then "45-60" else if [Time Taken to Pack] >= 15 then "15-45" else "15 or below")".	
3	HourTime_Dispensed	In the Data view, right click on any field and click "Edit Query". Right click on "DateTime TTO Dispensed" Column and click the duplicate column. Rename the column to "HourTime_Dispensed". Right click on the "HourTime_Dispensed" column, click on "Transform" and choose "Hour","Hour". This is to retrieve the hours from Date from hourly computation.	Returns DateTime TTO Dispensed in hourly format for further computation.
4	HourTime	In the Data view, right click on any field and click "Edit Query". Right click on "Date" Column and click the duplicate column. Rename the column to "HourTime". Right click on the "HourTime" column, click on "Transform" and choose "Hour","Hour".	This is to retrieve the hours from Date from hourly computation

4.2.2 Measures Created

After creating the respective columns in the previous section, create the following measures.

S/N	Measure Name	DAX Formula	Remarks
1	Average Cases Per Month	Average Cases Per Month = DIVIDE([Total Cases],[Number of Months])	Total Cases / Number of Months Returns the average cases per month
2	BedsideCounselling_Yes	BedsideCounselling_Yes = CALCULATE(COUNT(Merged_Pharmacy_Dept_CLEANED [Bedside Counselling Candidate]),FILTER(ALL(Merged_Pharmacy_Dept_CLEANED [Bedside Counselling Candidate]), Merged_Pharmacy_Dept_CLEANED [Bedside Counselling Candidate]= "Yes"))/ CALCULATE(COUNTROWS(ALL(Merged_Pharmacy_Dept_CLEANED [Bedside	Filter and count if Bedside Counselling Candidate = "Yes" Returns the count of BesideCounselling is "Yes"

		Counselling Candidate])))	
3	Busiest_Day	Busiest_Day = TOPN(1, ALL('Merged_Pharmacy_Dept_CLEANED'[Weekday]),CALCULATE(COUNT('Merged_Pharmacy_Dept_CLEANED'[Case Number])))	Top 1 (HourTime with the most count) in Time format (e.g 10:00 AM) Returns the top 1 number of counts in the hour in time format
4	BusyHourDispensed	BusyHourDispensed = TIME(TOPN(1, ALL('Merged_Pharmacy_Dept_CLEANED'[HourTime_Dispensed]),CALCULATE(COUNT('Merged_Pharmacy_Dept_CLEANED'[HourTime_Dispensed]))),0,0)	Returns the busiest hour of HourTime_Dispensed
5	BusyHourReceived	BusyHourReceived = TIME(TOPN(1, ALL(Merged_Pharmacy_Dept_CLEANED[HourTime]),CALCULATE(COUNT(Merged_Pharmacy_Dept_CLEANED[HourTime]))),0,0)	Returns the busiest hour of HourTime_Received
6	Non-PBH	Non-PBH = 1 - Merged_Pharmacy_Dept_CLEANED[PBH]	Returns the percentage of TTO NOT Pack Before Hand (PBH)
7	Number of Months	Number of Months = DISTINCTCOUNT(Merged_Pharmacy_Dept_CLEANED[Year-Month])	Returns the unique count of the Year-Month
8	PBH	PBH = CALCULATE(COUNT(Merged_Pharmacy_Dept_CLEANED[Time Taken To Pack (mins)]),FILTER(ALL(Merged_Pharmacy_Dept_CLEANED[Time Taken To Pack (mins)]),Merged_Pharmacy_Dept_CLEANED[Time Taken To Pack (mins)]= "PBH"))/ CALCULATE(COUNT(Merged_Pharmacy_Dept_CLEANED[Time Taken To Pack (mins)]))	Returns the percentage of TTO Pack Before Hand (PBH)
9	PBH_No. of TTO	PBH_No. of TTO = CALCULATE(COUNT(Merged_Pharmacy_Dept_CLEANED[Time Taken To Pack (mins)]),FILTER(ALL(Merged_Pharmacy_Dept_CLEANED[Time Taken To Pack (mins)]),Merged_Pharmacy_Dept_CLEANED[Time Taken To Pack (mins)]= "PBH"))	Returns the count of TTO Packed Before Hand
10	Percentage_SCM	Percentage_SCM = DIVIDE(COUNT(Merged_Pharmacy_Dept_CLEANED [TTO	Returns the percentage of SCM

		Type]),CALCULATE(COUNT(Merged_Pharmacy_Dept_CLEANED [TTO Type]),ALL(Merged_Pharmacy_Dept_CLEANED)))	
11	PML_Yes	PML_Yes = CALCULATE(COUNT(Merged_Pharmacy_Dept_CLEANED[PML]),FILTER(ALL(Merged_Pharmacy_Dept_CLEANED[PML]),Merged_Pharmacy_Dept_CLEANED [PML]= "Yes"))/ CALCULATE(COUNTROWS(ALL(Merged_Pharmacy_Dept_CLEANED [PML])))	Filter and count if PML = "Yes" Returns the count of PML is "Yes"
12	Sum KPI	SUM KPI = CALCULATE(COUNT(Merged_Pharmacy_Dept_CLEANED[Meet KPI]),FILTER(ALL(Merged_Pharmacy_Dept_CLEANED[Meet KPI]),Merged_Pharmacy_Dept_CLEANED[Meet KPI]= "Yes"))/ CALCULATE(COUNT(Merged_Pharmacy_Dept_CLEANED[Meet KPI]))	Filter and count if Meet KPI = "Yes" Returns the count of Meet KPI is "Yes"
13	Sum Office Hours	Sum Office Hours = CALCULATE(COUNT(Merged_Pharmacy_Dept_CLEANED[Office Hours]),FILTER(ALL(Merged_Pharmacy_Dept_CLEANED[Office Hours]),Merged_Pharmacy_Dept_CLEANED[Office Hours]= "Yes"))/ CALCULATE(COUNT(Merged_Pharmacy_Dept_CLEANED[Office Hours]))	Filter and count if Office Hours = "Yes" Returns the count of Office Hours is "Yes"
14	Total Cases	Total Cases = COUNT(Merged_Pharmacy_Dept_CLEANED [Case Number])	Returns the total number of Case Numbers

4.2.3 Visualisations

There are various types of visualisations that were created in our dashboard. Here's an overview of the types of visualisations that were used for the Call Centre Department Dashboard.

1. Slicer
2. Card
3. Line Graph

4. Bar Graph

5. Pie Chart

6. Table

7. Python Visual

In the following sections, we will look at an overview of the types of data that were utilising these visualisations, and an example of how they were created.

4.2.3.1 Slicer

Slicers are another way of filtering. They narrow the portion of the dataset that is shown in the other report visualisations.

Page	Visualisation Name	Dataset	Values	Remarks
Summary	Year / Quarter / Month	*Dataset*: Merged_Pharmacy_Dept _CLEANED	*Field*: Date [Date Hierarchy - Year, Quarter, Month] - Select as per appropriate field	
	Hospital		*Field*: Hospital	
Why KPI not Met?	Year / Quarter / Month	*Dataset*: Why_KPI_Not_Met	*Field*: Date [Date Hierarchy - Year, Quarter, Month] - Select as per appropriate field	
	Hospital		*Field*: Hospital	
	Ward		*Field*: Ward	
Staff Productivity Dashboard	Year / Quarter / Month		*Field*: Date [Date Hierarchy - Year, Quarter, Month] - Select as per appropriate field	
	Hospital		*Field*: Hospital	
Specific Time Dashboard	Year / Quarter / Month	*Dataset*: Merged_Pharmacy_Dept _CLEANED	*Field*: Date [Date Hierarchy - Year, Quarter, Month] - Select as per appropriate field	
	Hospital		*Field*: Hospital	
	Ward		*Field*: Ward	
PEH Dashboard	Year / Quarter / Month		*Field*: Date [Date Hierarchy - Year, Quarter, Month] - Select as per appropriate field	

	Ward		*Field*: Ward	
	Room/Bed		*Field*: Room/Bed	
GEH Dashboard	Year / Quarter / Month		*Field*: Date [Date Hierarchy - Year, Quarter, Month] - Select as per appropriate field	
	Ward		*Field*: Ward	
	Room		*Field*: Room/Bed	
MEH Dashboard	Year / Quarter / Month		*Field*: Date [Date Hierarchy - Year, Quarter, Month] - Select as per appropriate field	
	Ward		*Field*: Ward	
MNH Dashboard	Year / Quarter / Month		*Field*: Date [Date Hierarchy - Year, Quarter, Month] - Select as per appropriate field	
	Ward		*Field*: Ward	

An example of how the slicers should look like:

4.2.3.2 Card

Sometimes a single number is the most important thing you want to track in your Power BI dashboard or report, such as total sales, market share year over year, or total opportunities. This type of visualisation is called a Card.

Page	Visualisation Name	Dataset	Values	Remarks
Summary	Avg No. Drugs/day	*Dataset*: Merged_Pharmacy_Dept_CLEANED	*Field*: No. of Drugs	
	Avg Busiest Day		*Field*: Busiest_Day	
	Dispensing Hour		*Field*: Sum Office Hours	
	TTO Received Busiest Hr		*Field*: BusyHourReceived	

	TTo Dispensed Busiest Hr		*Field*: BusyHourDispensed	
	Total TTO		*Field*: Case Number	
	Meet KPI		*Field*: SUM KPI	
Why KPI not Met?	No. of Cases KPI not Met	*Dataset*: Why_KPI_Not_Met	*Field*: Meet KPI	
	Average TAT per Case		*Field*: TAT	
	Most Frequent Day KPI not Met		*Field*: DAY - KPI not Met	
	Average %KPI Per Day		*Field*: Average of %KPI / Day	
	Average of %KPI / Mth		*Field*: Average of %KPI / Mth	
	Average of No. of Drugs		*Field*: Average of No. of Drugs	
	No. Cases that have a Process Time Issue		*Field*: Process Time Issue = YES	
Staff Productivity Dashboard	Avg No. of Cases/month	*Dataset*: Merged_Pharmacy_Dept_CLEANED	*Field*: Average Cases Per Month	
	Avg No. Drugs/day		*Field*: No. of Drugs	
	Avg Time Taken (mins)		*Field*: TAT	
PEH Dashboard	Avg No. of Cases/month		*Field*: Average Cases Per Month	
	Dispensing Hours		*Field*: Sum Office Hours	
	KPI Met (%)		*Field*: SUM KPI	
	Avg No. Drugs/day		*Field*: No. of Drugs	
GEH	Avg No. of		*Field*: Average Cases Per Month	

Dashboard	Cases/month			21
	Dispensing Hours		*Field*: Sum Office Hours	
	KPI Met (%)		*Field*: SUM KPI	
	Avg No. Drugs/day		*Field*: No. of Drugs	
MEH Dashboard	Avg No. of Cases/month		*Field*: Average Cases Per Month	
	Avg Time Taken (mins)		*Field*: TAT	
	KPI Met (%)		*Field*: SUM KPI	
	Dispensing Hours		*Field*: Sum Office Hours	
	TTO Dispensed		*Field*: DateTime TTO Dispensed	
	Dispensed by Nurse		*Field*: DateTime (Dispensed by Nurses)	
	In Pigeon		*Field*: Case in Pigeon?	
MNH Dashboard	Avg No. of Cases/month		*Field*: Average Cases Per Month	
	Avg Time Taken (mins)		*Field*: TAT	
	Dispensing Hours		*Field*: Sum Office Hours	
	KPI Met (%)		*Field*: SUM KPI	
	Avg No. Drugs/day		*Field*: No. of Drugs	
	PBH (No. of TTO)		*Field:* PBH_No.of TTO	

An example of how a card should look like:

```
┌────────────────────────────────────────────────────┐
│              Avg Busiest Day                        │
│                                                     │
│                  Value                              │
│                                                     │
└────────────────────────────────────────────────────┘
```
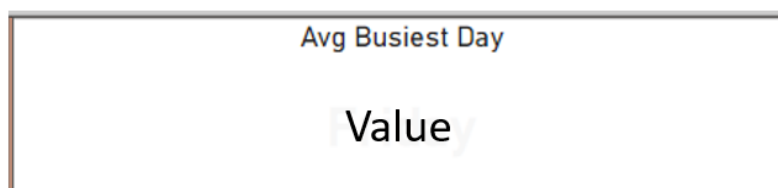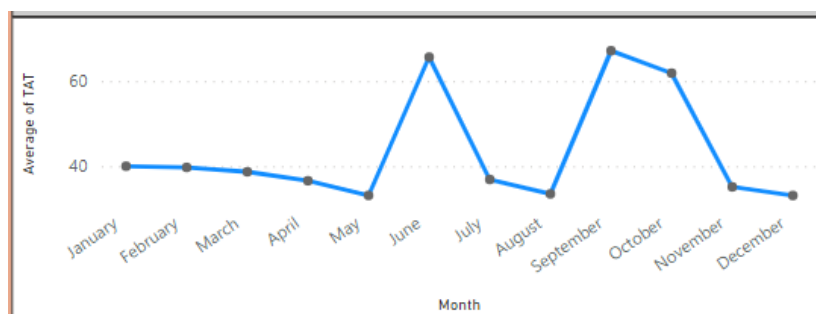
4.2.3.3Line Graph

A line chart is a series of data points that are represented by dots and connected by straight lines. A line chart may have one or many lines. Line charts have an X and a Y axis.

Page	Visualisation Name	Dataset	Values	Remarks
Summary	Average Overall Time Taken by Month	*Dataset:* Merged_Pharmacy_Dept_CLEANED	*Field*: Average of TAT	*Axis*: Date[Month]
	TTO of hospitals in months		*Field*: Count of Case Numbers	*Axis*: Date[Month] *Legend:* Hospital
Specific Time Dashboard	Average Overall Time Taken (mins) by Month		*Field*: Average of TAT	*Axis*: Date[Month]
Staff Productivity Dashboard	Avg No. of Cases by Pharmacy		*Field*: Count (Distinct) of Case Numbers	*Axis*: Date[Month] *Legend:* Hospital
PEH Dashboard	Avg No. of Cases by Month		*Field*: Count (Distinct) of Case Numbers	*Axis*: Date[Month]
	No. of PML cases by Month		*Field*: BedsideCounselling_Yes, PML_Yes	*Axis*: Date[Month]
GEH Dashboard	Avg No. of Cases by Month		*Field*: Count (Distinct) of Case Numbers	*Axis*: Date[Month]
MEH Dashboard	% of TTO that met KPI by month		*Field*: %GT Count of Case Number	*Axis*: Date[Month] *Legend*: Meet KPI

MNH Dashboard	Avg No. of Cases by Month		*Field*: Count (Distinct) of Case Numbers	*Axis*: Date[Month]
Forecast of No. TTOs	Predicted Values of No. TTOs	*Dataset*: TTO_Predicted_Values_for_2022	*Field*: Predicted_Mean,Lower Bound, Upper Bound	*Axis:* Date

An example of how a line graph should look like:

4.2.3.4 Bar Graph

Bar and column charts are some of the most widely used visualisation charts in Power BI. They can be used for one or multiple categories. Both these chart types represent data with rectangular bars, where the size of the bar is proportional to the magnitude of data values.

Page	Visualisation Name	Dataset	Values	Remarks
Summary	AVG TTO (24 HRS)	*Dataset:* Merged_Pharmacy_Dept_CLEANED	*Field*: Count of DateTime TTO Received, Count of DateTime TTO Dispensed	*Axis*: HourTime
Specific Time Dashboard	No. TTO Received vs No. TTO Dispensed in 24 Hours		*Field*: Count of DateTime TTO Received, Count of DateTime TTO Dispensed	*Axis*: HourTime
Why KPI not Met?	No.Cases (85% Meet KPI /Day) Not Met by Ward	*Dataset:* Why_KPI_Not_Met	*Field*: 85% Meet KPI / Day = NO	*Axis*: Ward *Legend*: Hospital
Staff Productivity Dashboard	No. of Case Numbers -- Checked By	*Dataset:* Merged_Pharmacy_Dept_CLEANED	*Field*: Count of Case Number	*Axis*: Checked By (Pharmacist)

	Pharmacist			
GEH Dashboard	No. of TTO vs TTO Dispensed		*Field*: Count of TAT, Count of DateTime TTO Dispensed	*Axis*: Date[Month]
MEH Dashboard	Count of (in Pharmacy, in Pigeon, Dispensed by Nurses) by Weekday		*Field*: Count of DateTime TTO Dispensed, Count of DateTime (Dispensed by Nurses), Count of Cases in Pigeon	*Axis*: Weekday
MNH Dashboard	Distribution of Time Taken to Pack		*Field*: Time Taken to Pack	*Axis*: PPT_Bins

An example of how a bar graph should look like:

Count of DateTime TTO Dispensed and Count of DateTime TTO Received by HourTime
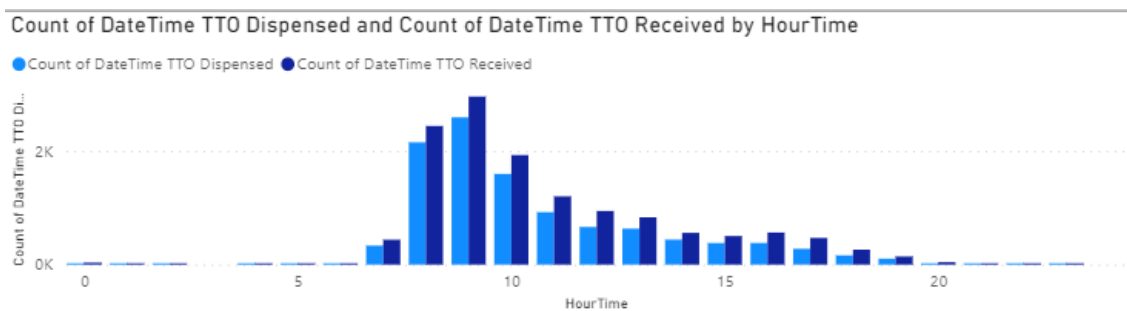
4.1.3.5 Pie Chart

Illustrate the contribution of different values to a total. For example, to see the total sales split by product category. You can then see the percentage contribution of each product category to the total revenue. The Pie chart is not the only chart type that can produce this visual.

Page	Visualisation Name	Dataset	Values	Remarks
GEH Dashboard	% SCM by TTO Type	*Dataset:* Merged_Pharmacy_Dept_CLEANED	*Field*: Percentage_SCM	*Legend*: TTO Type
MNH Dashboard	Ratio of Cases PBH vs Non-PBH		*Field*: Non-PBH, PBH	

An example of how a pie chart should look like:

4.2.3.6 Table

A table is a grid that contains related data in a logical series of rows and columns. It may also contain headers and a row for totals. Tables work well with quantitative comparisons where you're looking at many values for a single category. For example, this table displays five different measures for Category.

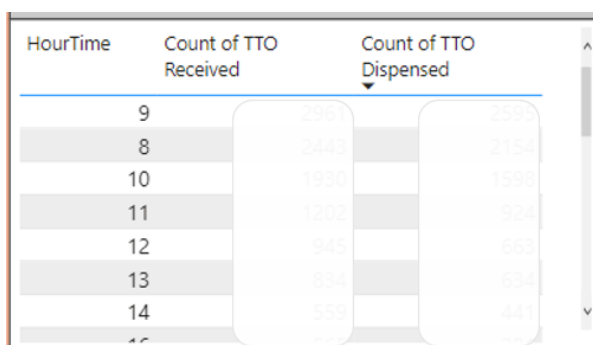| Page	Visualisation Name	Dataset	Values	Remarks
Specific Time Dashboard	No. TTO Received vs No. TTO Dispensed in 24 Hours	*Dataset:* Merged_Pharmacy_Dept_CLEANED	*Field*: HourTime, Count of DateTime TTO Received, Count of DateTime TTO Dispensed	
	Average Overall Time Taken (mins) by Month		*Field*: Date, Average of TAT	
Why KPI not Met?	To dive deeper, why KPI not met.	*Dataset*: Why_KPI_Not_Met	*Field*: Date, Case Number, Hospital, Ward, Room/Bed, TAT, No.of Drugs, Office Hours, Process Time Issue, %KPI / Day, 85% Meet KPI / Day, %KPI / Mth, 85% Meet KPI / Mth, Time Taken (Received to Checked), Time Taken (Checked to Dispensed), Avg Time Taken / Day (Received to Checked), Avg Time Taken / Day (Checked to Dispensed), Avg Time Taken / Month (Checked to Dispensed), Avg Time Taken / Month (Received to Checked)	
PEH Dashboard	No PML Remarks	*Dataset:* Merged_Pharmacy_De	*Field*: No PML Remarks, Count of PML	

		pt_CLEANED		
Forecast of No. TTOs	Forecast of No. TTOs (Jan 2022 - Jan 2023)	*Dataset*: TTO_Predicted_Values _for_2022	*Field*: Date[Year, Quarter, Month], Predicted_Mean, Lower Bound, Upper Bound	

An example of how a table should look like:

4.2.3.7Python Visual

In our dashboard, we've only affixed one Python Visual for the forecasting feature of understanding the forecast for the No. TTOs in Year 2022. Do refer to the details as below.

Page	Visualisation Name	Dataset\Values	Values	Python Code
Forecast (No. TTOs)	Forecast of No. TTOs (Python Visual)	*Dataset*: TTO_Groupby_Wee k_for_Forecast	*Values*: Date, TTO Count [Don't Summarize]	Do refer to the bottom section of the Coding file name [*Pharmacy_Forecast_Analy sis_BI.ipynb*]

Kindly do take note that in order to create a Python Visual, you have to make sure that you have Python installed on your local desktop and that it is connected to your PowerBI application. Python Visual is not able to be created on Power BI online, and only on Power BI Desktop Application.

An example of how the output should look like after fixing the code:

Forecast of No. TTOs
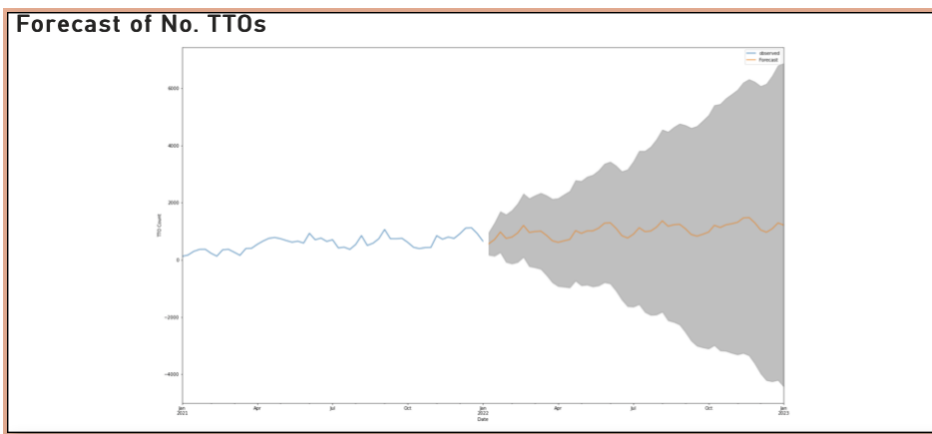
Appendix A: Overall Visualisations by Page (Call Centre Department Dashboard)

S/N	Visualisation Type	Visualisation Name	Dataset	Values	Remarks
Summary Page				
1	Card	Year	Dataset: Call_Centre_CLEANED_Final	*Values*: Date [Date Hierarchy - Year, Quarter, Month]	
2		Quarter			
3		Month			
4		Country		*Field*: Country	
5		Team		*Field*: Team	
6		Month, Day		*Field*: Date [Date Hierarchy - Month, Day]	
7		Calls_Offered		*Field*: Calls_Offered	
8		Calls_Answered		*Field*: Calls_Answered	
9		Calls_Abandoned		*Field*: Calls_Abandoned	
10		Inbound Abandoned		*Field*: Inbound	
11		Outbound Abandoned		*Field*: Outbound	
12		Avg Speed Answered (ASA)		*Field*: ASA (secs)	
13		Avg Talk Time (ATT)		*Field*: ATT	
14		SLA 20 secs		*Field*: SLA_20s	
15		SLA 30 secs		*Field*: SLA_30s	
16	Line Graph	Inbound Calls (Offered, Answered, Abandoned)		*Field*: Calls_Offered, Calls_Answered,Calls_Abandoned	
17		Outbound Calls (Offered, Answered)		*Field*: Count of Calls_Answered, Count of Calls_Offered	
18		No. of calls (Offered, Answered, Abandoned) by 15min		*Field*: Calls_Offered, Calls_Answered,Calls_Abandoned	*Axis*: 15Floor
Inbound/Outbound Calls Page				
19	Card	Year	*Dataset*:	*Field*: Date [Date Hierarchy	

20		Quarter	Call_Centre_CLEANED_Final	- Year, Quarter, Month, Day] - Select as per appropriate field	
21		Month			
22		Day			
23		Inbound/Outbound		*Field*: Inbound_Outbound	
24		Country		*Field*: Country	
25		Team		*Field*: Team	
26		Total Calls		*Field*: Count of Inbound_Outbound	
27		Calls_Offered		*Field*: Calls_Offered	
28		Calls_Answered		*Field*: Calls_Answered	
29		Calls_Abandoned		*Field*: Calls_Abandoned	
30		SLA within 20 secs		*Field*: SLA_20s	
31		SLA within 30 secs		*Field*: SLA_30s	
32		% Calls abandoned		*Field*: % calls abandoned	
33	Line Graph	Inbound/Outbound Call Volumes		*Field*: Calls_Offered, Calls_Answered,Calls_Abandoned	*Axis*: Date[Month]
34		Call Statistics		*Field*: Wait_Time_<=30s, Calls_Abandoned	
			Average Calls Answered Page		
35	Card	Year		*Field*: Date [Date Hierarchy - Year, Quarter, Month, Day] - Select as per appropriate field	
36		Quarter			
37		Month			
38		Day			
39		Team	*Dataset*: Call_Centre_CLEANED_Final	*Field*: Team	
40		Avg Wait Time (secs)		*Field*: Avg Wait Time (secs)	
41		Avg No. of Calls		*Field*: Avg No. of Calls	
42		Average Speed Answered (secs)		*Field*: ASA (secs)	
43		Total No. of Calls of selected month:		*Field*: Calls_Answered max per Month	

				Field: Max_Day	
44		Avg Busiest Day		Field: Max_Day	
45		Avg Busiest Hour		Field: BusyHourDay	
46	Line Graph	Average Calls Answered per Month		Field: Average of Calls_Answered	Axis: Date[Month]
47		Average Calls Answered per Week			Axis: Weekday
			Staff Productivity		
48	Card	Year	Dataset: Call_Centre_CLEANED_Final	Field: Date [Date Hierarchy - Year, Quarter, Month, Day] - Select as per appropriate field	
49		Quarter			
50		Month			
51		Day			
52		Team		Field: Team	
53		Inbound/Outbound		Field: Inbound_Outbound	
54		Country		Field: Country	
55		Staff Name - Bound:		Field: First Agent	
56		Calls Answered		Field: Calls_Answered	Filter Inbound
57		Average Talk Time		Field: ATT	
58		Calls Answered		Field: Calls_Answered	Filter Outbound
59		Average Talk Time		Field: ATT	
60	Bar Graph	Calls Answered By Agent		Field: Calls_Answered	Axis: Agent Legend: Inbound_Outbound
			Forecast (Calls_Offered) Page		
61	Python Visual	Forecast of No. Calls_Offered (Python Visual)	Dataset: Forecast: Calls_Offered_Group by_Week	Values: Date, Calls_Offered [Don't Summarise]	Do refer to the bottom section of the Coding file name [Call_Centre_Forecast_Analysis_BI.ipynb]
62	Table	'Predicted Values'	Dataset: Calls_Offered_Predicted_Values_for_2022	Values: Date [Date Hierarchy - Year, Quarter, Month], Predicted Mean, Lower Bound, Upper Bound	
63	Line Graph	Predicted Value of No.		Values: Predicted_Mean,	Axis: Date

		Calls Offered		Lower Bound, Upper Bound	

Appendix B: Overall Visualisations by Page (Pharmacy Department Dashboard)

S/N	Visualisation Type	Visualisation Name	Dataset	Values	Remarks
		Summary Page			
1	Card	Avg No. Drugs/day	*Dataset*: Merged_Pharmacy_Dept_CLEANED	*Field*: No. of Drugs	
2		Avg Busiest Day		*Field*: Busiest_Day	
3		Dispensing Hour		*Field*: Sum Office Hours	
4		TTO Received Busiest Hr		*Field*: BusyHourReceived	
5		TTo Dispensed Busiest Hr		*Field*: BusyHourDispensed	
6		Total TTO		*Field*: Case Number	
7		Meet KPI		*Field*: SUM KPI	
8	Line	Average Overall Time Taken by Month		*Field*: Average of TAT	*Axis*: Date[Month]
9		TTO of hospitals in months		*Field*: Count of Case Numbers	*Axis*: Date[Month] *Legend:* Hospital
10	Bar	AVG TTO (24 HRS)		*Field*: Count of DateTime TTO Received, Count of DateTime TTO Dispensed	*Axis*: HourTime
		Specific Time Dashboard			
11	Line	Average Overall Time Taken (mins) by Month	*Dataset*: Merged_Pharmacy_Dept_CLEANED	*Field*: Average of TAT	*Axis*: Date[Month]
12	Bar	No. TTO Received vs No. TTO Dispensed in 24 Hours		*Field*: Count of DateTime TTO Received, Count of DateTime TTO Dispensed	*Axis*: HourTime
13	Table	No. TTO Received vs No. TTO Dispensed in 24 Hours		*Field*: HourTime, Count of DateTime TTO Received, Count of DateTime TTO Dispensed	
14		Average Overall Time Taken (mins) by Month		*Field*: Date, Average of TAT	

Why KPI not Met?					
15	Card	No. of Cases KPI not Met	*Dataset*: Why_KPI_Not_Met	*Field*: Meet KPI	
16		Average TAT per Case		*Field*: TAT	
17		Most Frequent Day KPI not Met		*Field*: DAY - KPI not Met	
18		Average %KPI Per Day		*Field*: Average of %KPI / Day	
19		Average of %KPI / Mth		*Field*: Average of %KPI / Mth	
20		Average of No. of Drugs		*Field*: Average of No. of Drugs	
21		No. Cases that have a Process Time Issue		*Field*: Process Time Issue = YES	
22	Bar	No.Cases (85% Meet KPI /Day) Not Met by Ward		*Field*: 85% Meet KPI / Day = NO	*Axis*: Ward *Legend*: Hospital
23	Table	To dive deeper, why KPI not met.		*Field*: Date, Case Number, Hospital, Ward, Room/Bed, TAT, No.of Drugs, Office Hours, Process Time Issue, %KPI / Day, 85% Meet KPI / Day, %KPI / Mth, 85% Meet KPI / Mth, Time Taken (Received to Checked), Time Taken (Checked to Dispensed), Avg Time Taken / Day (Received to Checked), Avg Time Taken / Day (Checked to Dispensed), Avg Time Taken / Month (Checked to Dispensed), Avg Time Taken / Month (Received to Checked)	
Staff Productivity Dashboard					
24	Card	Avg No. of Cases/month	*Dataset*: Merged_Pharmacy_Dept_CLEANED	*Field*: Average Cases Per Month	
25		Avg No. Drugs/day		*Field*: No. of Drugs	
26		Avg Time Taken (mins)		*Field*: TAT	

27	Line	Avg No. of Cases by Pharmacy		*Field*: Count (Distinct) of Case Numbers	*Axis*: Date[Month] *Legend:* Hospital
28	Bar	No. of Case Numbers -- Checked By Pharmacist		*Field*: Count of Case Number	*Axis*: Checked By (Pharmacist)
PEH Dashboard					
29	Card	Avg No. of Cases/month		*Field*: Average Cases Per Month	
30		Dispensing Hours		*Field*: Sum Office Hours	
31		KPI Met (%)		*Field*: SUM KPI	
32		Avg No. Drugs/day	*Dataset*: Merged_Pharmacy_Dept_CLEANED	*Field*: No. of Drugs	
33	Line	Avg No. of Cases by Month		*Field*: Count (Distinct) of Case Numbers	*Axis*: Date[Month]
34		No. of PML cases by Month		*Field*: BedsideCounselling_Yes, PML_Yes	*Axis*: Date[Month]
35	Table	No PML Remarks		*Field*: No PML Remarks, Count of PML	
GEH Dashboard					
36	Card	Avg No. of Cases/month		*Field*: Average Cases Per Month	
37		Dispensing Hours		*Field*: Sum Office Hours	
38		KPI Met (%)		*Field*: SUM KPI	
39		Avg No. Drugs/day	*Dataset*: Merged_Pharmacy_Dept_CLEANED	*Field*: No. of Drugs	
40	Line	Avg No. of Cases by Month		*Field*: Count (Distinct) of Case Numbers	*Axis*: Date[Month]
41	Bar	No. of TTO vs TTO Dispensed		*Field*: Count of TAT, Count of DateTime TTO Dispensed	*Axis*: Date[Month]
42	Pie	% SCM by TTO Type		*Field*: Percentage_SCM	*Legend*: TTO Type
MEH Dashboard					
43	Card	Avg No. of Cases/month	*Dataset*: Merged_Pharmacy_Dept_CLEANED	*Field*: Average Cases Per Month	
44		Avg Time Taken (mins)		*Field*: TAT	

45		KPI Met (%)		*Field*: SUM KPI	
46		Dispensing Hours		*Field*: Sum Office Hours	
47		TTO Dispensed		*Field*: DateTime TTO Dispensed	
48		Dispensed by Nurse		*Field*: DateTime (Dispensed by Nurses)	
49		In Pigeon		*Field*: Case in Pigeon?	
50	Line	% of TTO that met KPI by month		*Field*: %GT Count of Case Number	*Axis*: Date[Month] *Legend*: Meet KPI
51	Bar	Count of (in Pharmacy, in Pigeon, Dispensed by Nurses) by Weekday		*Field*: Count of DateTime TTO Dispensed, Count of DateTime (Dispensed by Nurses), Count of Cases in Pigeon	*Axis*: Weekday

			MNH Dashboard		
52		Avg No. of Cases/month		*Field*: Average Cases Per Month	
53		Avg Time Taken (mins)		*Field*: TAT	
54	Card	Dispensing Hours	*Dataset*: Merged_Pharmacy_Dept_CLEANED	*Field*: Sum Office Hours	
55		KPI Met (%)		*Field*: SUM KPI	
56		Avg No. Drugs/day		*Field*: No. of Drugs	
57		PBH (No. of TTO)		*Field:* PBH_No.of TTO	
58	Line	Avg No. of Cases by Month		*Field*: Count (Distinct) of Case Numbers	*Axis*: Date[Month]
60	Bar	Distribution of Time Taken to Pack		*Field*: Time Taken to Pack	*Axis*: PPT_Bins
61	Pie	Ratio of Cases PBH vs Non-PBH		*Field*: Non-PBH, PBH	

			Forecast (No. TTOs)		
62	Python Visual	Forecast of No. TTOs (Python Visual)	*Dataset*: TTO_Groupby_Week_for_Forecast	*Values*: Date, TTO Count [Don't Summarise]	Do refer to the bottom section of the Coding file name [*Pharmacy_Forecast_Analysis_BI.ipynb*]
63	Table	Forecast of No. TTOs	*Dataset*:	*Field*: Date[Year, Quarter,	

				Month], Predicted_Mean, Lower Bound, Upper Bound	
		(Jan 2022 - Jan 2023)	TTO_Predicted_V alues_for_2022		
64	Line	Predicted Values of No. TTOs		*Field*: Predicted_Mean,Lower Bound, Upper Bound	*Axis:* Date