PERFORMANCE DASHBOARD Build, utilize, and maintain all reports in Metabase Andy N., Anthony P., Dawn D., Divyanshu F., Huan L.

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1 Introduction and Purpose

This document outlines the Metabase dashboard project developed for the Clinics. The dashboard is designed to monitor and evaluate employee performance, providing actionable insights to support data-driven decision-making. It serves as a centralized tool for managers and administrators to track performance metrics, streamline reporting, and enhance overall clinic efficiency. This document aims to guide the handover process, ensuring the system is maintained and enhanced effectively.

2 Accessing the Dashboard

To access the Performance Dashboard (Metabase), follow these steps:

1. Open the Dashboard Link:

a. Please use the link provided below or access it through Docker Metabase.

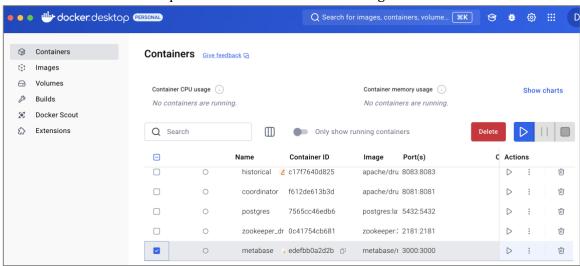


Figure 1: Docker Containers

- b. **Dashboard Link**: http://40.233.83.194:3000/auth/login
- 2. **Login Details**: Use the following credentials to log in:
 - a. **Username**: thachha.nguyen92@gmail.com
 - b. **Password**: metabase1
- 3. Navigate to Dashboards: After logging in:
 - a. Click on the side bar in Metabase.
 - b. Locate and select the desired **dashboard** from the options listed.

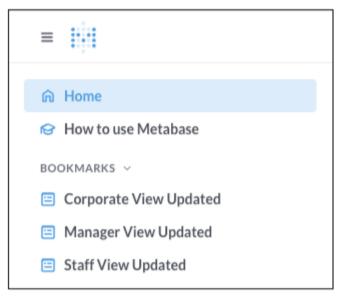


Figure 2: Metabase website navigation side bar

If you are using Docker, ensure that the Metabase container is running. Click on the **Metabase container** in Docker, and it will provide the link to access the dashboard.

Ensure that you keep the login credentials confidential to maintain data security.

3 Using Dashboards

The key metric that Client use to define their staff performance is through **Performance Percentage**. It was calculated based on the formula:

$$Performance\ Percentage = \frac{Total\ Actual\ Hours}{Total\ Target\ Hours}$$

For example, if a practitioner worked **160 hours** in a month against a target of **220 hours**, their performance is:

$$\frac{160}{220}\approx73\%$$

The performance is categorized as follows:

Above Expectations: 85%–110%
Meets Expectations: 75%–84%

• **Below Expectations:** Below 75%

Hence based on client's usage, we built 3-level dashboards as below:

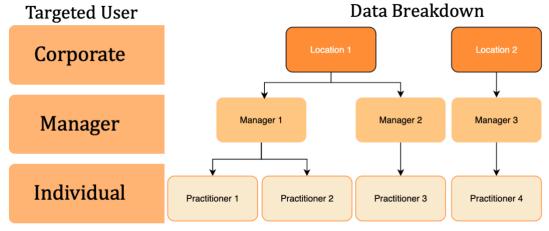


Figure 3: Dashboard and Organization structure

- **Corporate dashboard**: Provides an overview of performance metrics at the organizational level, available for CEO or CFO (higher management).
- Manager dashboard: Enables managers to track and analyze team performance.
- **Staff dashboard**: Offers detailed performance insights for individual practitioners.

3.1 Corporate Dashboard

3.1.1 Switch Quarterly and Monthly View

At the top of the **Corporate Dashboard**, you'll find two tabs: **Quarter** and **Month**. These tabs allow users to toggle between two distinct views of performance data—quarterly and monthly. This flexibility provides stakeholders with tailored insights based on their preferred reporting cadence.

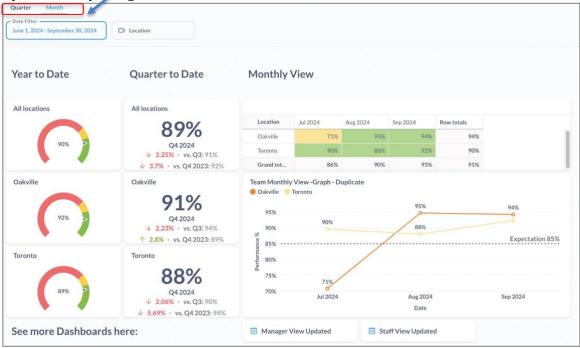


Figure 4: Corporate Dashboard overview

3.1.2 Filter

Under that are two primary filters: **Date Filter** and **Location Filter**. These interactive tools allow users to tailor the dashboard's data view based on specific needs.

Date Filter:

- Use this to adjust the date range for analysis. You can toggle between a predefined range (e.g., quarterly or yearly) or select a custom range.
- The dashboard dynamically updates key performance metrics to reflect the specified time frame.

Location Filter:

- Narrow your analysis to specific locations, such as **Oakville** or **Toronto**, by selecting them individually. If no location is specified, the dashboard will default to display data for **All Locations**.
- This allows stakeholders to compare or focus on the performance of branches as needed.

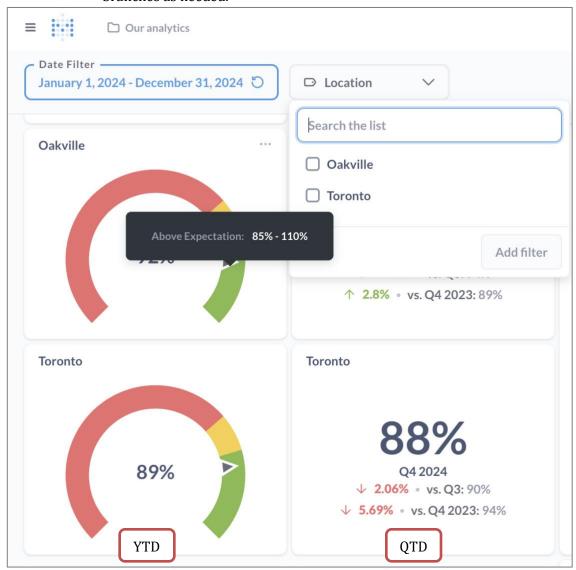


Figure 5: Corporate Dashboard – closer look on filters, QTD and YTD

3.1.3 Key Visuals and Insights:

YTD (Year-to-Date) Gauge:

- Located on the left side, this round bar chart provides a quick snapshot of whether the location(s) are currently meeting expectations.
- A green segment indicates performance above or meeting expectations, while red and yellow signal areas for improvement.

QTD (Quarter-to-Date) Column:

- o Displays the performance percentage for the current quarter.
- o Provides comparisons to:
 - Last quarter's performance (indicated with a percentage change).
 - The same quarter as the previous year (highlighting year-over-year trends).

Monthly View Chart (Table):

- Key Insight: Provides a clear breakdown of performance metrics at the team, location, and overall levels.
- o Highlights:
 - Performance percentages are color-coded for quick identification:
 - **Green**: Above expectation (Performance % >=85).
 - **Yellow**: Meeting expectation (75% <= Performance % < 85%).
 - **Red**: Below expectation (Performance % < 75%).
 - The row totals column offers a summarized performance percentage for each location and overall.
 - Filters adjust the table dynamically, offering tailored insights for specific teams, locations, or date ranges.

Team Monthly View Graph:

Key Insight: Visualizes performance trends over time, offering a **quick comparison** between locations (e.g., Oakville vs. Toronto).

Highlights:

- The dashed line represents the expectation threshold (85%), making it easy to identify whether performance is on target.
- Performance fluctuations can be observed month-by-month (or quarter-by-quarter if in the "Quarter" tab), highlighting seasonal or operational trends.
- Hovering over data points provides precise details for each month/quarter, location, and performance percentage.

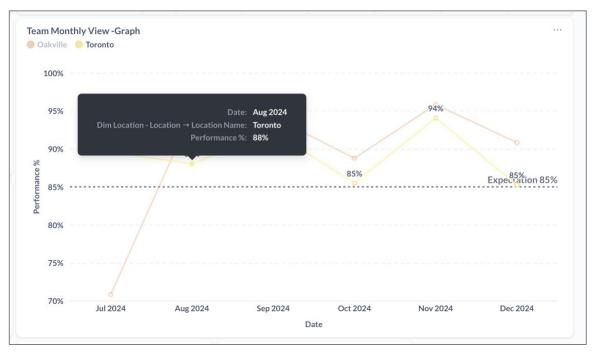


Figure 7: Corporate Dashboard - Monthly performance graph for teams by location

How to Use These Visuals:

• Drill Down:

- Combine the **location filter** with the **date filter** to focus on specific teams or locations.
- Use the graph to analyze patterns, such as periods of improvement or decline.

Actionable Insights:

- Identify locations consistently below the threshold to prioritize support or resources.
- Track improvements in performance over time, ensuring the implementation of strategies is effective.

3.2 Manager Dashboard

3.2.1 Switch Quarterly and Daily Board

At the top of the **Manager Dashboard**, there are two tabs: **Quarterly** and **Daily**. These allow users to toggle between two distinct views of performance data. The **Quarterly** tab aggregates team and individual practitioner performance over a quarter, while the **Daily** tab provides a granular day-to-day view.

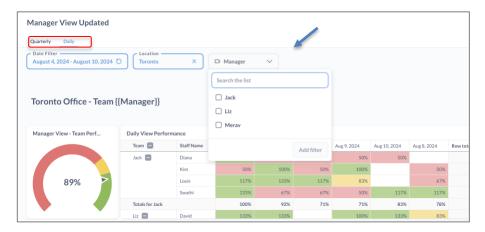


Figure 8: Manager Dashboard - Tabs and Filters

3.2.2 Filters:

In addition to the **Date** and **Location** filters like the Corporate Dashboard, this dashboard includes a **Manager** filter. Users can select a specific manager to view the performance of the team members under their supervision. For example, in this image, **Jack** is selected as the manager, showing data specific to Jack's team. If no manager or location is selected, the dashboard defaults to showing performance across all locations and teams.

3.2.3 Key Visuals and Insights

Left Panel:

• The **Team Performance Gauge** shows the overall performance percentage for the selected manager's team. In this example, **Jack's team** performance is 83%, represented with color-coded ranges to indicate whether they are above, at, or below expectations.

Central Table (Daily View Performance):

- The table displays the **daily performance percentages** for each team member under the selected manager. Performance values are color-coded:
 - o **Green**: Above expectation (Performance % >= 85%).
 - **Yellow**: Meeting expectation (75% <= Performance % < 85%).
 - **Red**: Below expectation (Performance % < 75%).
- **Row Totals** at the far right provide an average performance percentage for each team member over the selected date range.
- A **totals row** aggregates performance data across all team members for quick analysis.

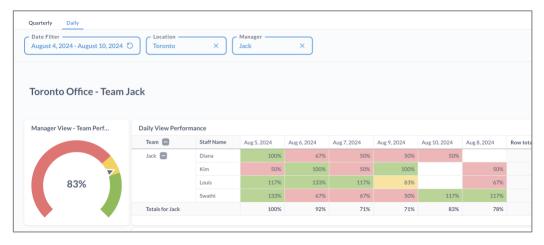


Figure 9: Manager Dashboard – Daily View Performance table

Right Graph:

- The **Daily View Performance Graph** provides a visual representation of team performance trends over time, helping managers identify patterns or anomalies.
- The dotted line represents the **expected performance threshold** (85% in this case). The graph shows how the team compares to the benchmark daily.



Figure 10: Manager Dashboard – Other data and Daily View Performance graph

3.4 Individual Dashboard

3.4.1 Tabs and Filters

- Unlike other dashboards, the Individual Dashboard has a single tab since the primary goal is for employees to view their **weekly performance**.
- Filters:
 - The **date filter** allows users to select a **two-week range**: the current week and the previous week to monitor their recent performance.

 Currently, there is an **employee filter**, but in the future, this will be replaced by a personalized view. When employees log in with their credentials, they will only see **their own performance data**.



Figure 11: Individual Dashboard – Filters

3.4.2 Key Visuals and Insights

1. Performance Metrics:

- The top row showcases Weekly, QTD, and YTD performance metrics, along with comparisons to the previous week, quarter, or year, giving employees an overview of their progress.
- Weekly Performance Trend: Displays current week progress (e.g., 83%),
 with insights into any percentage change from the previous week.
- QTD and YTD Trends: Reflect performance over broader periods, allowing employees to track how their efforts contribute to quarterly and yearly goals.



Figure 12: Individual Dashboard - Performance metrics

2. Daily Performance Table:

- The table highlights daily performance percentages for each day in the two-week period.
- The row totals at the end summarize overall performance for the week.



Figure 13: Individual Dashboard - Daily Performance table

3. Appointment Type Contribution:

- A donut chart breaks down appointment types, showing the proportion of various session types of the employee has contributed to during the selected timeframe.
- Employees can hover over each section for detailed insights into the number of sessions completed and their contribution percentage.

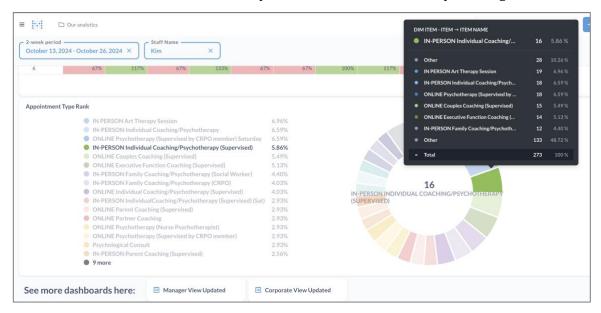


Figure 14: Individual Dashboard - Appointment Type Contribution

3.5 Exporting Data

3.5.1 Exporting the Entire Dashboard

- Navigate to the desired dashboard and click on the three-dot menu in the top-right corner of the screen.
- Select "Export as PDF" to download the entire dashboard in PDF format.

3.5.2 Exporting Individual Questions

Step 1: Hover over the question or chart you want to download and click on the **three-dot menu** next to the question.



Figure 16: Exporting dashboard 1

- From the dropdown, select **"Download full results"** and choose your preferred file format:
 - o .csv
 - o .xlsx
 - o .json
 - o .png



Figure 17: Exporting dashboard 2

3.6 Tips

- Use filters at the top of each dashboard to adjust the time frame or location for tailored insights.
- Explore interactive elements like graphs and charts for deeper drilldowns into the data.
- Refer to the sidebar for quick switching between dashboard views.

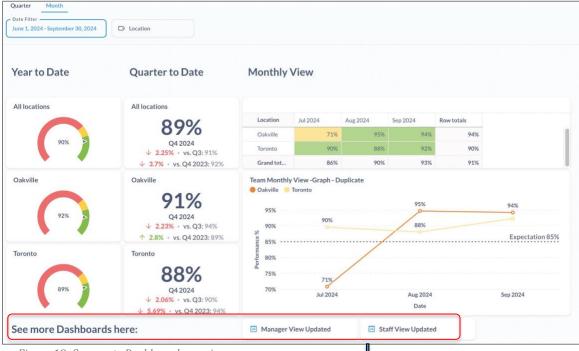


Figure 18: Corporate Dashboard overview

Additionally, we've seamlessly integrated all dashboards. At the bottom of the Corporate Dashboard, you'll see direct links to the **Manager View** and **Staff View**, enabling effortless navigation between different levels of analysis.

4 Data Sources

4.1 Mock Data Creation

The performance dashboard leverages mock data created based on the client's requirements, stored in the **Model schema**. Practitioner hierarchy and billing rates are also incorporated as per client requirements. These allow for flexibility and manual adjustments in response to dynamic business needs. In the future, this data will be connected directly from **Jane system** to **Model schema** through **Apache Airflow**.

Dim_Date Dim_Localtion Fact_Performance PK date FK date location id day_of_week location id location name week_of_year address practitioner dim id month target hours quarter actual_hours total_bill Dim_Practitioner practitioner_dim_id practitioner id Dim_Item item_id Fact_Appointments item_name date contract type department practitioner_dim_id manager category location id FK location id location name item id effective start date number_appointments actual_hours is_current total_bill

4.2 Data Model and Connection with Metabase

Figure 19: Data model

The dashboard uses the **postgres_online** instance, specifically the schema **model**, which integrates six interconnected tables: **Dim_Date**, **Dim_Item**, **Dim_Location**, **Dim_Practitioner**, **Fact_Performance**, and **Fact_Appointments**. These tables are shown in the schema diagram provided.

A key feature of this integration is the addition of the **practitioner_dim_id**, which serves as a unique identifier linking practitioner data across tables. This ensures efficient management of practitioners, accommodating changes such as new hires or departures without affecting historical performance data.

Key Highlights:

• The **Fact tables** (Fact_Performance, Fact_Appointments) store quantitative data such as actual hours worked, target hours, total bill amounts, and appointment numbers.

- The **Dimension tables** (Dim_Date, Dim_Location, Dim_Practitioner, Dim_Item) provide descriptive context, such as practitioner details, item types, location information, and time attributes.
- Relationships between the tables are visually represented in the diagram, showing
 how foreign keys link the fact and dimension tables to ensure efficient querying
 and accurate results.

The model schema forms the foundation of the dashboard, allowing for seamless data integration, filtering, and visualization of key metrics. All data transformations and dashboard visualizations rely on these pre-defined relationships.

The diagram illustrates the database structure, including the primary and foreign key relationships, without needing further repetition of table columns in the text. It serves as a roadmap for understanding data flow and dependencies within the database.

5 Maintenance Guide

5.1. Question

5.1.1. Add question with Query builder or SQL query

On the top right corner, click > New Question, pick your data source, in this case we use Postgres so go to **Tables > Postgres online > Model**, then select the Dim tables that you want to build the question on. Below is example to create a question to **Calculate the Performance % of all the staff in Toronto office** with 2 different methods:

Using Query builder

- Join Dim Performance with Dim Location because we need to filter location name later. Click
 Select Dim Location to join 2 tables on Location ID
- Add the Custom filters from , select Location Name, under table Dim Location.
 - This filter will be combined with <u>Dashboard filter</u> if you link this question with the Dashboard filter.
- Add the calculation from Summarize section > Custom Expression.
- Select the column or type in the equation: Sum([Actual Hour])/sum([Target Hour])
- Name the calculation and click **Done**
- Click **Visualize** > Select appropriate chart type for visualization. Adjust the Settings in and **Save** your question.

Using SQL query

■ View the SQL by click on —

- Select Convert this question to SQL in the bottom corner.
- Now just write your queries depends on your question, and click Run query to see the result



Figure 20: Write your own SQL

■ Then visualize it and adjust the setting in store your question. Visualization to before clicking **Save** to

5.1.2. Edit question

If you wish to edit any question that you see in the dashboard, simply hover the mouse over the 3 dots and select **Edit Question.** After editing, remember to save it.



Figure 21: Edit your question

5.1.3. Field Filter

When you create your question using SQL query, you can create basic **Filter Widget** with 3 types: Text, Number, and Date, or advance your code with "smart filter" called **Field Filter**. You just need to create a WHERE clause (without a column or operator) and the Field Filter will manage the condition for you. Let take example in Dashboard **Manager**

View - Number of staff above expectation

- 1. Write your query and create variables {{Date}}, {{Location}}, and {{Manager}} (remember leave no space in variable)
- 2. Set up Variable by click on {x}
- 3. Choose Variable type = Field Filter
- 4. Choose Field to map to = column **Date** from table **Fact Performance**
- 5. Choose Widget type = **Date Range** or depends on how you wish user to select Date
- 6. Scroll down and set up for variable Location and Manager

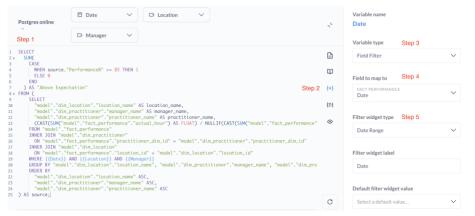


Figure 22: Set up Field Filter to count how many staff has Performance % above expectation 85%

Limitations:

- Field filters are optional by default. If no value given, Metabase run as if there is no condition at all
- It will not work with table aliases (CTE), so you need to use full path in the From clause. See query in Figure XX.
- See more about field filter here.

5.2. Dashboard

5.2.1. Add new Dashboards

In the top right corner, click the Some short description, then choose which collections to create the dashboard in.

5.2.2. Edit Dashboards

Click Edit button oto go to edit mode, there are multiple thing we can do here.

a) Tabs inside dashboard

Dashboard can contain many tabs; each tab can store the same or different questions. You can rename, or duplicate the tab based on your purpose.

b) Add question to dashboard

To add the questions into the new dashboard, there are 2 ways:

- After clicking Edit button to go to edit mode, then add questions by [+] button.
- Or we can click the [+ New] > New Question, then save your question. A message pop up to ask whether you want to add this question to the Dashboard > Click [Yes please!] > Choose the dashboard to save to.

c) Add and Link dashboard filter

There are multiple types, but our dashboards focus on 2 filter types: **Time** and **Text or Category.** For each widget you add, you'll need to connect it with the column in the questions. See 2 examples below:

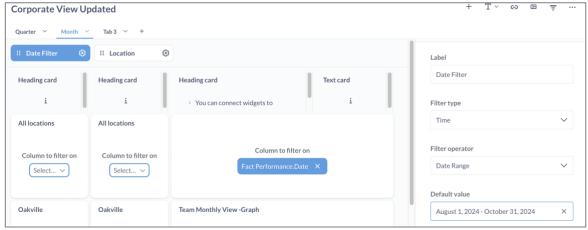


Figure 23: Connect Date filter, Type "Time", to column "Date" from table "Fact Performance".

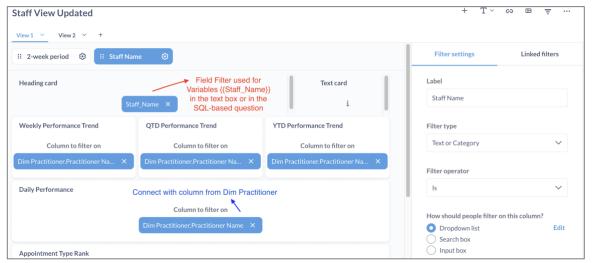


Figure 24: Connect Staff Name Filter, Type "Text or Category", to column "Practitioner Name" from table "Dim Practitioner" in the question. Additionally, I had "Field Filter" set up in <u>Heading card</u> so I can connect with the variable name 'Staff_Name"

The filters that related to each other can be linked by going to Linked Filters Tab, then toggle the filter that link with it. Example:

 In Manager, linked with Location → If Location = Toronto, the dropdown in Manager will only show who works in Toronto office.

Notes:

 The filter will be applied across all tabs. Example: Filter Location Toronto only then the data in both Tab Quarter and Tab Month will display only data belong to Toronto office. In Metabase, filters can be applied both at the Question level (inside the query) and the Dashboard level (outside the query). When both types of filters are used, they are combined, meaning that both conditions must be met simultaneously. This can impact the results shown, especially if the conditions are mutually exclusive. Example from Corporate dashboard – Oakville, we do not connect the Field Filter Location to this question because when you change to Toronto, Metabase understand that Question level = Oakville, but Dashboard level = Toronto, which will return the result to be none. This is because it is impossible for the same data to satisfy both conditions (Location = Toronto and Location = Oakville) simultaneously.

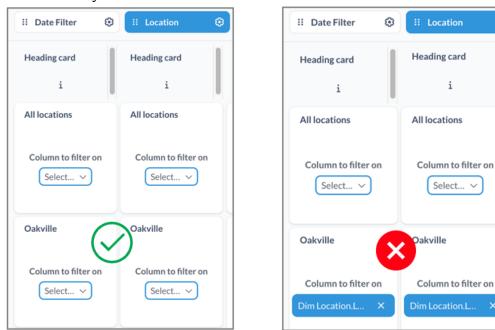


Figure 25: To not link Dashboard filter to question that already has separate condition.

d) Add a heading or text box

Click on button $^{\mathbf{T}}$ $^{\vee}$ to add the heading or text box.

Create variables to connect with the dashboard filter (Field Filter) by type inside "". **Note: leave no space otherwise field filter will not work**.

Example:



Figure 26: After connected Staff name to the variable "Staff_Name". The value will display when we change the filter value in the dashboard

Insert pictures or video by using this code in the textbox:

![Product Image](Insert_your_URL_of_your_pictures_or_videos_here)

e) Add Link Card

Click add link card , then select the other dashboard that you would like to give hyperlink it with this dashboard

f) Resize question or text box

Inside dashboard, each question, each text will be store in 1 separate box and you can adjust its size easily by hover the mouse to the bottom right corner of the box, drag and drop to your preferred size.



Figure 27: Drag and drop from the corner to resize the box

5.3. Update Database

If there are some updates from the data sources, for example we changed data schema on Postgres, then we need to synchronize the database for it to reflect on the dashboards.

- 1. Go to Settings > Admin Settings
- 2. Select Menu Databases > Choose the database we want to sync
- 3. Click on Sync database schema now

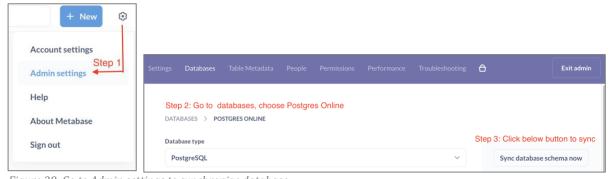


Figure 28: Go to Admin settings to synchronize database

6 Troubleshooting Tips

6.1. After editing, questions do not reflect on Dashboard

In case the dashboard still displays the old question even you already edited and saved the new one. A walkaround is to remove that question from the dashboard and add it to the dashboard again.

6.2. Missing question when reload dashboard

Potential issue could be the queries taking longer time than usual to load and when it over time limit, error will show as "**There was a problem displaying this chart**". You can fix it by refresh the page or optimize your queries to speed up the loading.

Another reason can be the Metabase connection is dropped, you need to reconnect Metabase in docker.

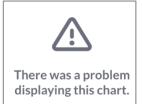


Figure 29: Question shows errors

6.3. Field Filter missing hierarchy

For example, selecting **Location = Toronto**, then open dropdown of **Team manager**, it should only have manager names that belong to Toronto office. If it does not, the potential issue could be because you are pulling from different data table (location from Dim Location, and manager from Dim Practitioner) so Metabase cannot understand these two columns are linked to each other. You can fix it by adjusting your schema, include both variables on a same table, like in this case we saved both in Dim Practitioner.

7 Backup and Restore Procedures

In local environment, dashboards can be shared between devices by utilizing the file **metabase.db.mv.db**

Backup by copy/download this file from Docker/ Metabase / Files. Right click on the file and click Save to download it.



Figure 30: Backup or Restore dashboards

Restore to other devices by load the latest file into the same folder on the new device. Right click on the folder and click Import. Then access the local link and log in with the login details of the dashboard creator.

Restart docker, access to Metabase link and login again.

8 Glossary of Terms

General Terms

- Dashboard A user interface that organizes and presents data in a graphical form for easy visualization and analysis.
- Filter A tool used to narrow down or customize the data displayed on a dashboard based on specified criteria, such as date or location.
- Interactive Features Elements in a dashboard, such as charts or graphs, that allow users to interact with data for deeper insights.

Metabase-Specific Terms

- Metabase An open-source business intelligence tool used for querying and visualizing data.
- Question A query or set of data displayed on a Metabase dashboard.
- Field Filter A dynamic filter in Metabase that allows users to adjust queries without modifying SQL code directly.
- Widget A graphical element in Metabase used to display data or filters, such as a date picker or dropdown menu.
- Tab A section within a dashboard that groups related data or questions for easier navigation.
- Link Card A navigation tool in Metabase dashboards that provides hyperlinks to other dashboards.

• Collection - A grouping of dashboards or questions in Metabase for organizational purposes.

Data Metrics and Analysis

- Performance percentage (%) A calculated metric that represents the percentage of actual working hours achieved versus target hours.
- Target Hour The predefined number of hours expected for everyone per day. Varies from 4-7 hours base on client's setup.
- Actual Hour The recorded actual hours spent on specific tasks or appointments by an individual practitioner.
- Year-to-Date (YTD) A cumulative performance metric calculated from the beginning of the year to the current date.
- Quarter-to-Date (QTD) A performance metric summarizing data from the start of the current quarter to the current date.
- Comparative Analysis A method of comparing data across different periods, locations, or groups to identify trends and insights.
- Appointment Type Distribution A metric showing the number of different types of appointment, visualized as a pie chart.

Technical Concepts

- Docker A platform that we pack all our platform into one, for easy set up and transferable.
- PostgreSQL A powerful open-source relational database system used for managing structured data.
- Sync Database Schema The process of updating a database connection in Metabase to reflect recent changes to the database structure.
- SQL Query A structured query language command used to retrieve or manipulate data from a database.
- Calculated Field A custom data field created by applying a formula or expression to existing data.

Navigation and User Interaction

- Sidebar A navigation panel in Metabase where users can access different dashboards or features.
- Drill-Down The ability to click on a data point in a chart or table to view more detailed, granular data.
- Hover Feature An interactive feature where hovering the mouse over a data point provides additional details.

Maintenance and Troubleshooting

- Backup The process of saving a copy of a database or dashboard to prevent data loss.
- Restore Re-uploading a previously saved version of a database or dashboard to recover data.

• Error Message - A notification displayed when a problem occurs, such as a query taking too long to execute.

Limitations and Considerations

- Optional Filter A filter that does not require input and allows the query to run without conditions.
- Mutually Exclusive Conditions A scenario where two conditions cannot simultaneously be true, leading to no results being displayed.