HR - Analytics - Insights.

Transforming Atliq's 2022 attendance data into actionable insights using Power BI .

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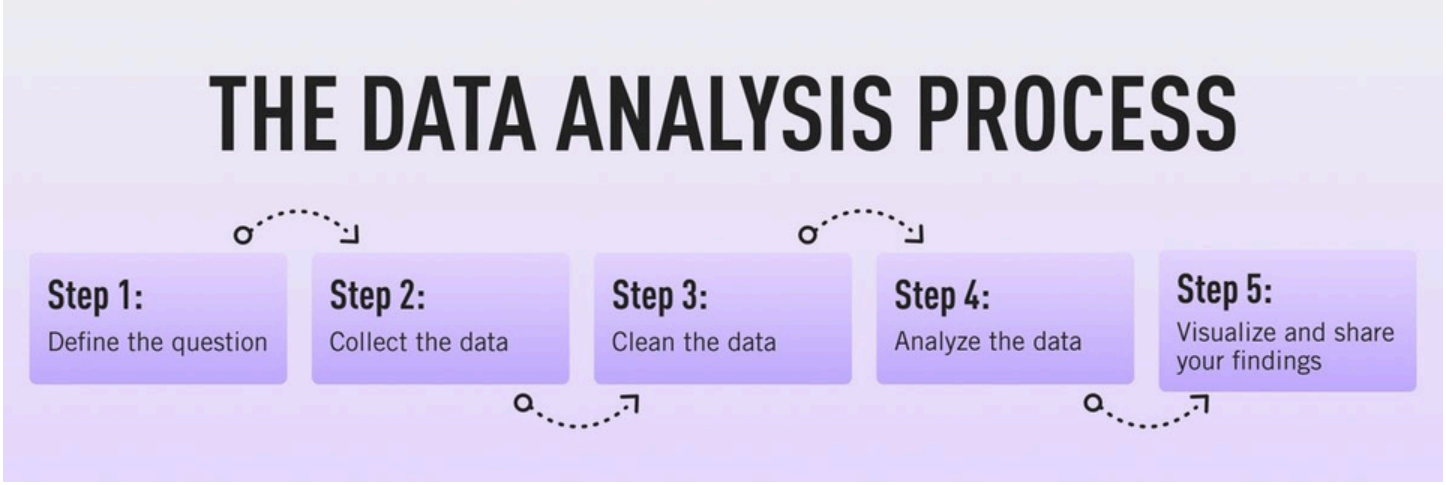
1 . Introduction :

Hi, I'm Maria Monisha, a data analyst. This document provides a detailed overview of my project, which highlights my expertise in data analytics. It begins with identifying the problem, followed by a description of the tools and methodologies I employed throughout the process. Finally, it explains the solution I devised to address the challenges effectively and achieve the desired outcomes.

In this project, I used **Microsoft Power BI to transform raw Excel data into actionable insights**. Through **Power Query and DAX**, I created a dynamic dashboard with visuals like graphs, bar charts, and tables, delivering meaningful insights. **This work highlights my skill in simplifying complex data for effective business decisions.**

2 . What is Data Analysis ?

Data analysis is about understanding data by organizing, interpreting, and visualizing it. **It transforms raw datasets into meaningful insights through structured methods.** This helps answer critical questions and support decisions effectively.



3 . The Root of the Issue: A Data Story Begins !

Atliq Company's HR, Pinali, found herself in a challenging situation. She was struggling to track attendance trends, which led to frequent disruptions in her work schedule. Meetings with clients often went off track because most employees were unexpectedly on leave, causing work to halt and leaving Pinali's carefully planned days in chaos. This ongoing issue left her frustrated and determined to find a solution.

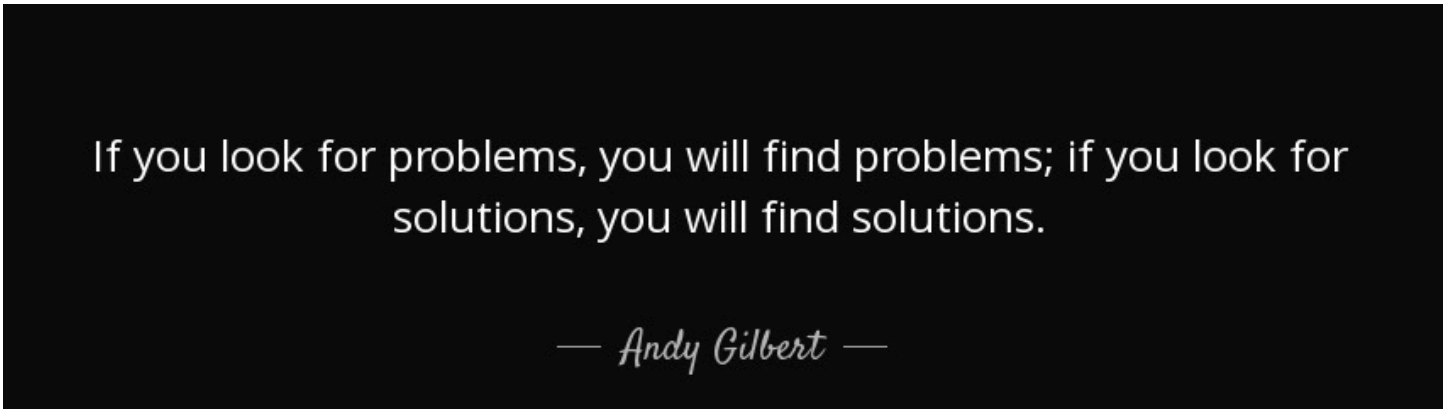
Pinali realized she needed deeper insights into the company's attendance patterns. She wanted to know attendance percentages, identify months with the highest and lowest attendance, track individual employee behavior, and uncover patterns like frequent WFH days or sick leave trends. She also needed to know who was consistently present, who frequently called in sick, and who preferred remote work over the office.

Recognizing the gravity of the issue, Pinali turned to me, a data analyst, to help solve this problem. She entrusted me with the task of uncovering these attendance trends and providing actionable insights. **My goal is not just to help her regain control over scheduling but also to support Atliq Company in improving its operations through data-driven solutions.** Together, we aim to bring clarity and efficiency to her work.

4 . Problem Statement .

Pinali, the HR of Atliq Company, is struggling to manage employee attendance effectively, leading to frequent scheduling errors and disrupted client meetings due to unplanned leaves and inconsistent attendance trends. **The lack of visibility into critical patterns like presence**

and absence percentages, frequent WFH days, and high sick leave periods has made it difficult for her to make informed decisions. To resolve this, I will analyze the attendance data, uncover key trends, and provide actionable insights to streamline her scheduling process and improve business efficiency.



5 . Goals for Resolving Attendance Challenges .

1. To calculate the overall percentage of employee presence , WFH and SL.
2. To identify the month with the highest and lowest attendance percentages.
3. To analyze individual attendance records for consistency.
4. To determine the days when employees most often choose to work from home.
5. To analyze data and find the months and days with the most sick leaves.
6. To identify employees with a 100% attendance record.
7. To track employees who frequently take sick leaves.
8. To determine which employee prefer working from home over working from the office.

6 . Tools Utilized for Problem Resolution .

- **Excel**: Used to open and understand the dataset, ensuring initial data exploration.
- **Power BI**:
  - **Power Query**: Performed data transformations to clean and prepare the dataset.
  - **Custom DAX Formulae**: Created customized measures for precise calculations and insights.

    - **Dashboard Creation**: Designed an interactive dashboard with visuals like graphs, pie charts, and tables to present insights effectively.
  - **Integration**: Imported the dataset seamlessly from Excel to Power BI for advanced analysis.

7 . Methodologies .

1. Data Understanding and Exploration.
2. Data Importation and Integration.
3. ETL Process Using Power Query.
4. Creating Measures with DAX Formulas.
5. Dashboard Creation and Visualization.

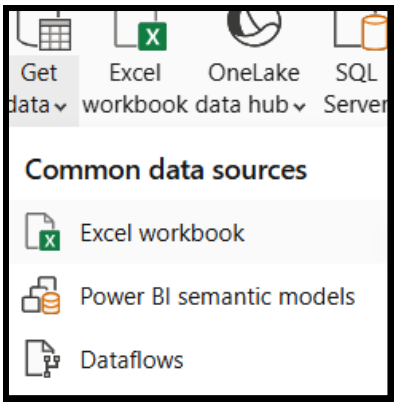
7 . 1 . Data Understanding and Exploration .

The dataset is spread across **three Excel sheets—April, May, and June of 2022—and includes employee details such as employee code, name, and attendance status for each day of the month.** However, the dataset has some issues: attendance data for each day is placed in separate columns, making it difficult to analyze, and there are missing values in the June sheet.

ATTENDANCE KEYS.	
P	Present
PL	Paid Leave
SL	Sick Leave
HPL	Half day PL
HSL	Half day SL
WFH	Work from home
FFL	Floting festival leave
HFFL	Half Day Floting festival leave
BL	Birthday Leave
LWP	Leave without pay
HLWP	Half day Leave without pay
BRL	Bereavement Leave
HBRL	Half Bereavement Leave
HWFH	Half Work From Home
WO	Weekly Off
HO	Holiday Off
ML	Menstrual Leave
HML	Half Day ML

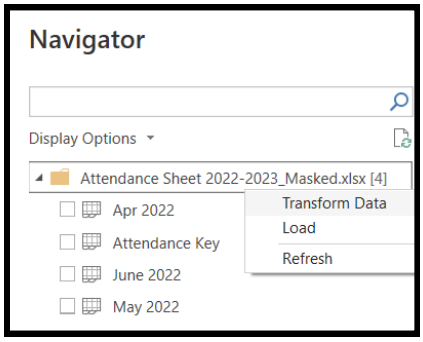
7 . 2 . Data Importation and Integration .

To import data into Power BI, I used the **"Get Data"** option available in the tool. I selected **Excel as the data source**, navigated to the desired file, and **loaded it into Power BI.** Once the data was imported, I reviewed it to ensure accuracy and completeness, making it ready for further analysis and visualization. The process was straightforward and user-friendly.



7 . 3 . ETL Process Using Power Query .

After importing the data into Power BI, I right-clicked on the dataset and accessed various options such as **Extract, Transform, and Load. I selected the "Transform" option, which opened the Power Query Editor.** This tool is essential for the data engineering process, allowing me to clean, shape, and transform the data as needed to ensure it is ready for analysis. It provides a user-friendly interface for making precise modifications to the dataset.



7 . 3 . 1 . Step-by-Step Process in Power Query :

1. Create a Duplicate Query :

Duplicate the original query table and rename it as "Template." This duplicate will serve as a base for transformations applicable to multiple worksheets.

2. Remove Unnecessary Columns :

In the "Template" query, remove the "Attendance Key" column as it is not required for the analysis.

3. Filter a Single Worksheet :

Select one worksheet (e.g., June 2022) to perform transformations that can later apply to other sheets.

4. Modify Column Names :

Use "First Row as Headers," remove the top row (enter 1), and rename columns: "Atliq" to "Employee Code" and "Column2" to "Name."

5. Unpivot Data :

To consolidate dates into a single column, go to "Transform" and choose "Unpivot Columns." Then, select "Employee Code" and "Name" columns and "Unpivot Other Columns."

6. Adjust Data Types :

Rename the "Attribute" column to "Date" and the "Value" column to "Text." Change the "Date" column's data type to "Date."

7. Think Dynamically :

Ensure transformations are dynamic to handle new data. Create a parameter for the worksheet using "Home > Manage Parameter > New Parameter."

8. Apply Parameter :

Set the parameter in "Filtered Rows" by choosing the type as "Parameter" and clicking OK. Revise transformation steps as needed.

9. Create a Function :

Right-click the "Template" query and create a function named "GetData." Use this function to replicate transformations across all worksheets.

10. Invoke Custom Function :

Open the original sheet, remove the "Attendance Key" column, and use "Add Column > Invoke Custom Function" to apply the "GetData" function.

11. Finalize Data :

Ensure columns are renamed and data types are consistent. Verify the transformed data with Excel, disable load for "Template," and rename the final transformed data as "Final Data."

12. Load the Data :

Load the "Final Data" into Power BI, ready for analysis.

After completing all the transformations, the data is organized with columns named "Employee Code," "Name," "Date," and "Value." The "Date" column consolidates all dates into a single column, while the data types are properly formatted for accurate analysis. This clean and structured dataset is now ready for further processing and insights.

	Sheet Name	Employee Code	Name	Date	Value
1	Apr 2022	Atq -405	Sofia Solis	01-04-2022	P
2	Apr 2022	Atq -423	Rodrigo Price	01-04-2022	P
3	Apr 2022	Atq -437	Dallas Weeks	01-04-2022	P
4	Apr 2022	Atq -441	Loki Lal	01-04-2022	P
5	Apr 2022	Atq -382	Gustavo Ritter	01-04-2022	WFH
6	Apr 2022	Atq -446	April Ayers	01-04-2022	P
7	Apr 2022	Atq -335	Madelynn Gray	01-04-2022	P
8	Apr 2022	Atq -436	Phoenix Brady	01-04-2022	P
9	Apr 2022	Atq -475	Rey Novak	01-04-2022	P
10	Apr 2022	Atq -485	Gregory Carr	01-04-2022	WFH
11	Apr 2022	Atq -403	Will Mahoney	01-04-2022	P
12	Apr 2022	Atq -418	Marquis Wyatt	01-04-2022	P
13	Apr 2022	Atq -459	Iris Woodard	01-04-2022	P
14	Apr 2022	Atq -456	Adriel Pace	01-04-2022	P
15	Apr 2022	Atq -438	Mekhi Singleton	01-04-2022	P
16	Apr 2022	Atq -450	Miya Hampton	01-04-2022	P
17	Apr 2022	Atq -453	Nehemiah Diaz	01-04-2022	P
18	Apr 2022	Atq -408	Nick Orozco	01-04-2022	LWP
19	Apr 2022	Atq -348	Weston Horton	01-04-2022	P
20	Apr 2022	Atq -411	Nevaeh Waller	01-04-2022	P
21	Apr 2022	Atq -455	Caylee Meadows	01-04-2022	P
22	Apr 2022	Atq -443	Andrew Cummings	01-04-2022	P
23	Apr 2022	Atq -374	Kaley Fitzpatrick	01-04-2022	P
24	Apr 2022	Atq -393	Emma Freeman	01-04-2022	P
25	Apr 2022	Atq -406	Thanos Thakur	01-04-2022	P
26	Apr 2022	Atq -475	London Kim	01-04-2022	P
27	Apr 2022	Atq -414	Titus Andersen	01-04-2022	P
28	Apr 2022	Atq -452	Ayanna Atkins	01-04-2022	WFH

7 . 4 . Creating Measures with DAX Formulas .

7 . 4 . 1 . Measures in Power BI :

Measures are dynamic calculations that compute results on demand, depending on the user interactions such as filters or slicers in a Power BI report. They are used to analyze and summarize data, providing insights like total sales, average profit, or percentage growth. Measures do not occupy storage space in the data model as they are computed in real-time, making them efficient and versatile for interactive reporting.

7 . 4 . 2 . DAX Formulas in Power BI :

DAX (Data Analysis Expressions) is a formula language used to create measures, calculated columns, and tables in Power BI. It provides a wide range of functions, such as **SUM**, **AVERAGE**, **CALCULATE**, and **FILTER**, to perform advanced calculations and data manipulation. DAX enables users to define custom logic and context-sensitive analytics, making it a powerful tool for building meaningful insights in Power BI.

Tip: To avoid confusion, create a separate table named **"Measure Table"** to organize all your measures. This improves clarity and makes your Power BI model easier to manage.

Total Working Days

This formula calculates the total working days by excluding weekends and holidays, ensuring accurate percentage calculations like attendance or productivity.

Explanation of the formula:

- **Totaldays** counts all entries in the 'Value' column.
- **nonworkingdays** uses CALCULATE to count entries labeled "WO" (weekend) or "HO" (holiday).
- The final result subtracts non-working days from total days, returning only the working days.

```
Total Working Days =
var Totaldays = count('Final Data'[Value])
var nonworkingdays = CALCULATE(count('Final Data'[Value]),'Final Data'[Value] in {"WO","HO"})
RETURN
Totaldays - nonworkingdays
```

Total Present Days

To calculate the total present days accurately, we need to account for different work types such as "P" (Present), "WFH" (Work From Home), and "HWFH" (Half Work From Home). While a DAX calculation can achieve this, it would be unnecessarily complex. Instead, a simpler approach is to create a calculated column in the Final Data table for work-from-home (WFH) counts.

Explanation of the Formula

1. A logical function evaluates multiple conditions:
   - If the 'Value' column equals "WFH," it assigns a value of 1 to represent a full day of work from home.
   - If the 'Value' column equals "HWFH," it assigns a value of 0.5 to represent a half-day of work from home.
   - For any other values, the result defaults to 0.

By adding this calculated column, further analysis becomes simpler, as you can directly sum the WFH Count to calculate total present days without additional complex formulas.

```
WFH Count = SWITCH(TRUE(),
'Final Data'[Value] = "WFH",1,
'Final Data'[Value] = "HWFH",0.5,
0)
```

To calculate the total present days, including work-from-home and half work-from-home days, a new measure called Present Days is created. This measure combines the count of "Present" days with the sum of the work-from-home counts from the calculated column.

Explanation of the Formula

1. Presentdays: This variable calculates the count of rows in the 'Final Data' table where the value equals "P" (Present).
2. SUM('Final Data'[WFH Count]): This adds up the values in the WFH Count column, accounting for both full and half work-from-home days.
3. Final Calculation: The result combines Presentdays and the sum of WFH counts to return the total present days.

This approach ensures an accurate total by including both physical presence and remote work contributions.

```
Present Days =
var Presentdays = CALCULATE(count('Final Data'[Value]),'Final Data'[Value]="P")
RETURN
Presentdays + SUM('Final Data'[WFH Count])
```

Presence Percentage

To calculate the percentage of days present relative to total working days, we create a new measure named **Presence %**. This measure divides the total number of present days by the total number of working days.

Explanation of the Formula:

1. **Numerator:** The measure **Present Days** represents the total count of days an individual was present, including full and partial work-from-home days.
2. **Denominator:** The measure **Total Working Days** represents the total number of working days, excluding non-working days such as weekends and holidays.
3. **DIVIDE Function:** The DIVIDE function performs the division of the numerator by the denominator. It includes an optional third parameter, which specifies the value to return if the denominator is zero. In this case, if **Total Working Days** is zero, the function returns 0 to prevent division errors. □cite□turn0search0□

By using the DIVIDE function, we ensure that the calculation handles potential division-by-zero scenarios gracefully, providing a reliable measure of presence percentage.

```
Presence % =
DIVIDE([Present Days],[Total Working Days],0)
```

Slicer For Months

To enable month-based filtering in your Power BI report:

1. **Create a Calculated Column:**
   - In the **'Final Data'** table, add a new column named **Month**.
   - Use the FORMAT function to extract and format the month and year from the **'Date'** column as "MMMM yyyy" (e.g., "January 2025").
2. **Add a Slicer:**

- Insert a slicer visual into your report.
- Drag the newly created **Month** column into the slicer.

This setup allows for intuitive month-wise data filtering, enhancing the report's interactivity.

```
Month = STARTOFMONTH('Final Data'[Date])
```

Work From Home Percentage

To calculate the percentage of work-from-home days relative to total present days, create a new measure named **WFH %**. This measure divides the sum of the **WFH Count** column by the **Present Days** measure.

Explanation of the Formula:

1. **Numerator:** The formula calculates the sum of the **WFH Count** column, which includes both full and half work-from-home days.
2. **Denominator:** It uses the **Present Days** measure, representing the total number of days an individual was present, including work-from-home days.
3. **DIVIDE Function:** The DIVIDE function performs the division of the numerator by the denominator. It includes an optional third parameter, which specifies the value to return if the denominator is zero. In this case, if **Present Days** is zero, the function returns 0 to prevent division errors.

By implementing this measure, you can accurately assess the proportion of work-from-home days within the total present days.

```
WFH % = DIVIDE(SUM('Final Data'[WFH Count]),[Present Days],0)
```

Sick Leave Percentage

To calculate the sick leave percentage in Power BI, follow these steps:

1. **Create a Calculated Column for Sick Leave Count:**
   - In the **'Final Data'** table, add a new column named **SL Count**.
   - Use the SWITCHfunction to assign values based on the type of sick leave:
     - Assign 1 for "SL" (full sick leave).
     - Assign 0.5 for "HSL" (half sick leave).

- Assign 0 for all other values.

Explanation of the Formulas:

1. **SL Count Column:**
   - The SWITCH function evaluates the **'Value'**column:
     - If the value is "SL", it returns 1.
     - If the value is "HSL", it returns 0.5.
     - For any other value, it returns 0.

```
SL Count = SWITCH(TRUE(),
'Final Data'[Value] = "SL",1,
'Final Data'[Value] = "HSL",0.5,
0)
```

Create a Measure for Sick Leave Percentage:

- Define a measure named **SL %**.
- Use the DIVIDE function to calculate the ratio of the total sick leave count to the total working days, specifying 0 as the alternative result if the denominator is zero.

1. **SL % Measure:**
   - The DIVIDEfunction calculates the ratio:
     - **Numerator:** The sum of the **SL Count** column, representing the total sick leave days (full and half).
     - **Denominator:** The **Total Working Days** measure, representing the total number of working days.
     - The third parameter, 0, ensures that if the denominator is zero, the function returns 0 to prevent division errors.

```
SL % = DIVIDE(SUM('Final Data'[SL Count]),[Total Working Days],0)
```

By implementing these steps, you can accurately calculate the sick leave percentage, reflecting the proportion of sick leave days relative to the total working days.

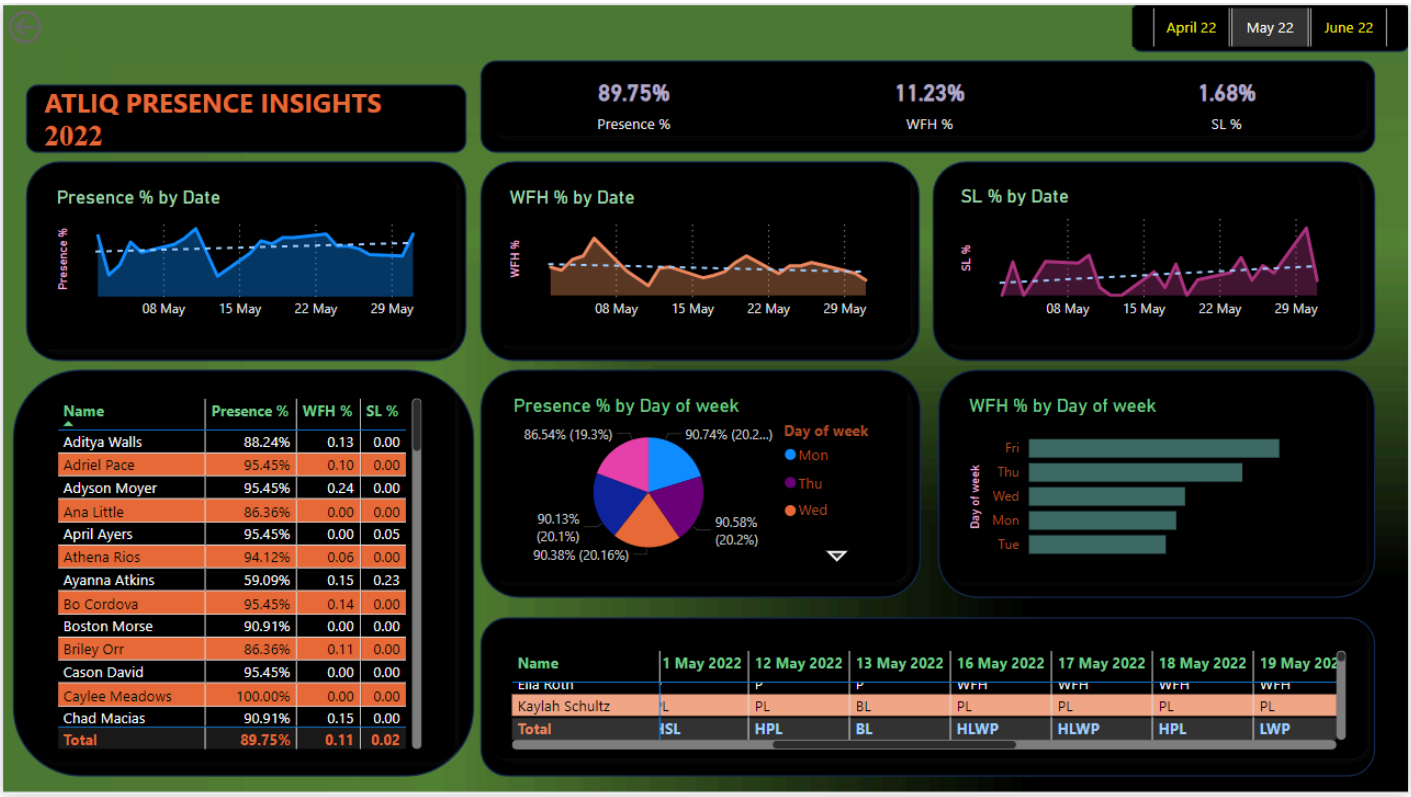
7 . 5 . Dashboard Creation and Visualization .

After performing the data transformations and calculations, I developed an interactive Power BI dashboard to provide Pinali with clear insights into attendance metrics. The dashboard features visualizations such as bar charts, line graphs, and slicers, enabling dynamic exploration of data. This interactive approach allows Pinali to easily identify trends and areas for improvement in attendance management.

Overall Dashboard

Dashboard For April Month

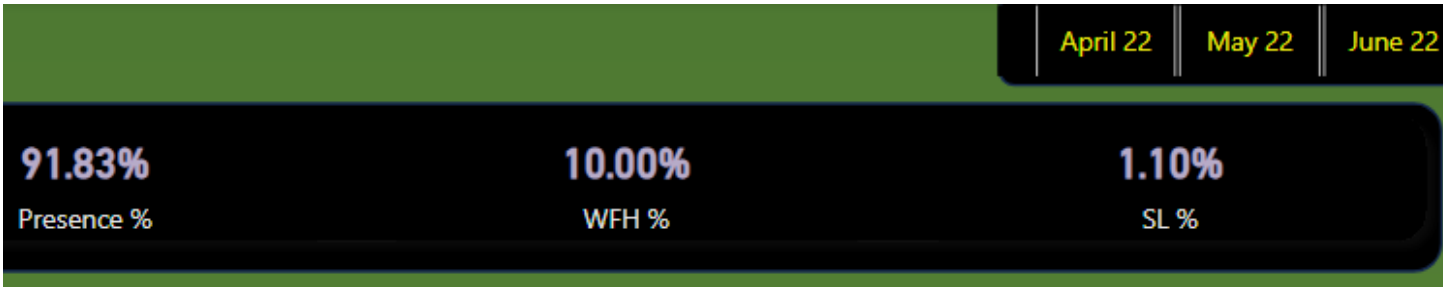
Dashboard For May Month



Dashboard for June Month

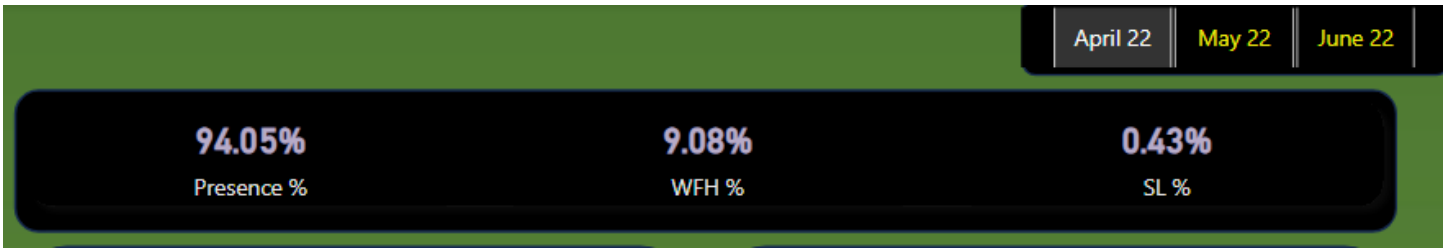
8 . Addressing Key Questions .

1.To calculate the overall percentage of employee presence , WFH and SL.

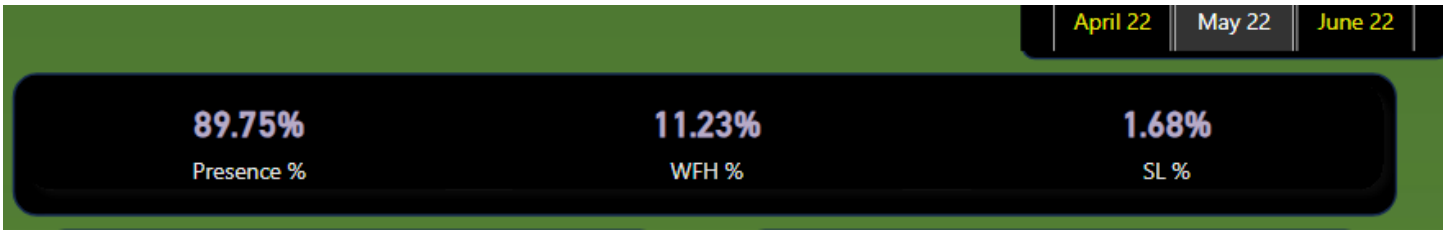


2.To identify the month with the highest and lowest attendance percentages.

April month has highest presence percentage among all the three months.

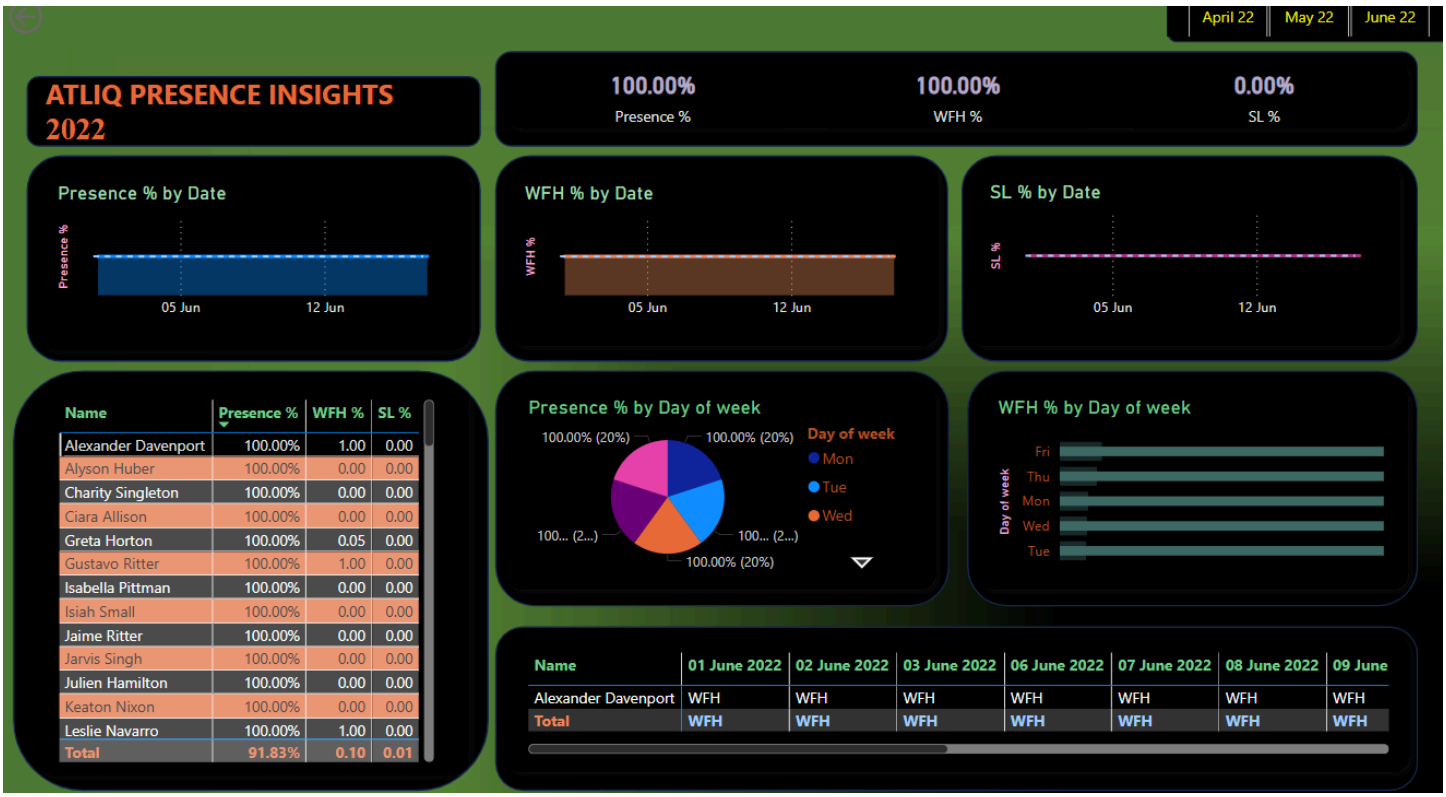


May month has lowest presence percentage among all the three months.



3.To analyze individual attendance records for consistency.

To closely observe individual attendance records, I created a **table** that contains the percentages of presence, work-from-home (WFH), and sick leave (SL) for each employee. When I click on an employee's name in the table, the other trends also change to display insights about the selected person.

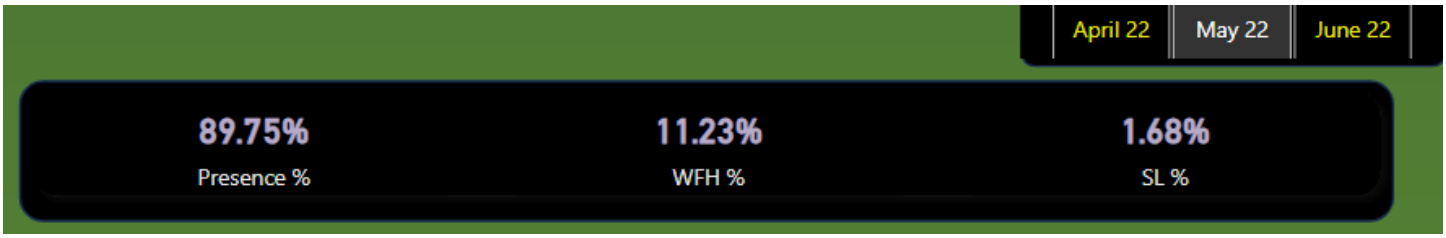


4.To determine the days when employees most often choose to work from home.

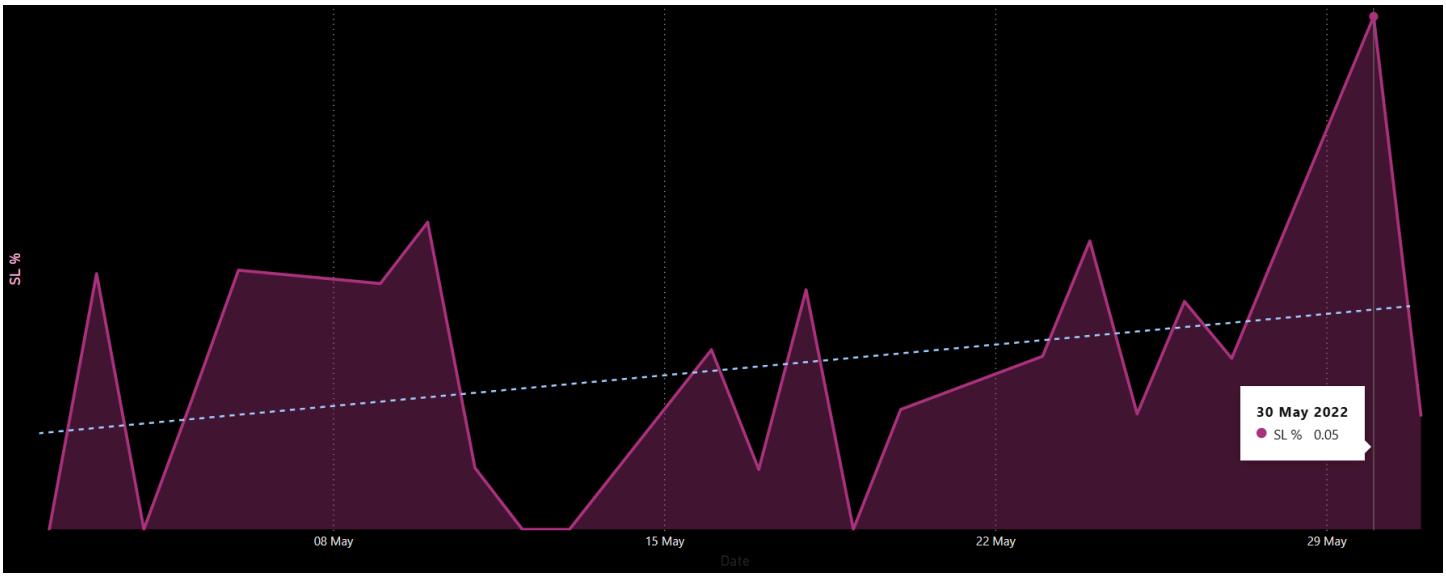
We can see that employees mostly prefer to work from home on **Fridays and Thursdays** compared to working from the office.

5.To analyze data and find the month and day with the most sick leaves.

It clearly shows that employees took **more sick leave in May** compared to the other two months.



When we closely examine May to determine the day with the most sick leaves, it clearly shows that **May 30, 2022, had the highest number of sick leaves.**



6.To identify employees with a 100% attendance record.

By clicking on the presence percentage in the table, we can view the percentages ordered from highest to lowest. This allows us to identify employees with 100% presence.

Name	Presence %	WFH %	SL %
Alexander Davenport	100.00%	1.00	0.00
Alyson Huber	100.00%	0.00	0.00
Charity Singleton	100.00%	0.00	0.00
Ciara Allison	100.00%	0.00	0.00
Greta Horton	100.00%	0.05	0.00
Gustavo Ritter	100.00%	1.00	0.00
Isabella Pittman	100.00%	0.00	0.00
Isiah Small	100.00%	0.00	0.00
Jaime Ritter	100.00%	0.00	0.00
Jarvis Singh	100.00%	0.00	0.00
Julien Hamilton	100.00%	0.00	0.00
Keaton Nixon	100.00%	0.00	0.00
Leslie Navarro	100.00%	1.00	0.00
Loki Lal	100.00%	0.02	0.00
Lyric Bartlett	100.00%	0.02	0.00
Makai Hardy	100.00%	1.00	0.00
Maximus Mckenzie	100.00%	1.00	0.00
Mckayla Miles	100.00%	0.00	0.00
Nevaeh Waller	100.00%	0.02	0.00
Piper Carroll	100.00%	0.00	0.00
Shea Zuniga	100.00%	0.00	0.00
Thanos Thakur	100.00%	0.00	0.00

7. To track employee who frequently take sick leaves.

According to the table, **Ayanna Atkins** frequently takes sick leave.

Name	Presence %	WFH %	SL %
Ayanna Atkins	58.93%	0.09	0.11

8. To determine which employees prefer working from home over working from the office.

The names listed in the table are considered to be those who prefer working from home (WFH) more than working from the office (WFO).

Name	Presence %	WFH %	SL %
Alexander Davenport	100.00%	1.00	0.00
Gregory Carr	52.38%	1.00	0.00
Gustavo Ritter	100.00%	1.00	0.00
Leslie Navarro	100.00%	1.00	0.00
Makai Hardy	100.00%	1.00	0.00
Maximus Mckenzie	100.00%	1.00	0.00
Zaiden Wheeler	80.00%	1.00	0.00

9 . Conclusion :

As a data analyst**,** I effectively supported Pinali in overcoming her struggles by leveraging my analytical skills to provide actionable insights. Through this project, I analyzed attendance records, identified trends in sick leave, and highlighted work-from-home preferences. I designed an interactive dashboard that allowed detailed employee insights with features such as percentage sorting and trend visualization. My work not only streamlined attendance tracking but also empowered decision-making by identifying patterns and areas of improvement. This project demonstrates my expertise in data analysis, problem-solving, and delivering impactful solutions tailored to real-world challenges.

THANK YOU

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Reference : 🌐 Data Analyst Project For Beginners | HR Analytics