Power BI Data Analytics Project Documentation

Project Title:

HR Analytics Dashboard for Employee Attendance Insights

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Summary:

The HR Analytics Dashboard, built in Power BI, consolidates complex multi-sheet attendance data into a centralized, interactive dashboard for real-time HR insights and strategic workforce planning.

Executive Summary / Abstract

The HR Analytics Dashboard allows HR managers to monitor employee working preferences (office vs. work-from-home), track sick leave patterns, and visualize attendance trends across different time periods. By automating the data transformation and centralizing attendance information, it empowers faster, more informed decision-making and supports strategic workforce planning.

Organizations often capture employee attendance in Excel files with complex structures, making analysis slow and error-prone. To address this, a systematic Power BI workflow was created for:

- Consolidating monthly sheets into a unified "long format" database.
- Standardizing attendance codes and handling fractional leaves (half-day, WFH).
- Developing effective DAX measures for key HR metrics.
- Visualizing working preferences, sick leave trends, and overall presence.
- Empowering HR with faster, filterable insights to reduce manual reporting.
- Supporting employee wellness monitoring and strategic decision-making.

This solution provides HR and leadership with instant, filterable insights—maximizing value from attendance data, reducing manual reporting, and improving employee wellness monitoring.

Business Problem / Background

Key Challenges

- Fragmented Data: Monthly attendance captured in separate sheets with columns for each date; hard to analyze as a whole.
- Manual Processing: Combining, cleaning, and reporting required hours of manual effort.
- Limited Insights: No easy way to spot patterns in working preference or sick leave across time.
- Actionability: Without real attendance analytics, it was difficult to plan for hybrid work environments or proactively address health concerns.

Solution Goals

- Working Preference Analysis: Discover whether employees prefer WFH or office days, and on which days (e.g., Monday/Friday).
- Sick Leave Monitoring: Track and surface spikes in sick leaves for wellness vigilance.
- Attendance Trends: Give clear visual cues for planning team events, office utilization, and HR interventions.

Data Overview

Data Sources:

- Primary : Excel File Attendance Data with sheets for April, May, and June 2022.
- Secondary: Employee demographic data (Department, Joining Date, Gender, Role).

Records:

~1,000+ attendance records spanning multiple departments and months.

Main Data Fields:

Column	Description
Employee Code	Unique identifier per employee.
Employee Name	Employee's full name.
Date	Individual date (transformed into a single column during processing).
Value	Attendance code for each day (P, WFH, PL, SL, etc.).

Features

- Full coverage of various attendance types including present, WFH, half-days, various leaves.
- Attendance code legend directly mapped for clear interpretation.
- Supports time-based, per-employee, and per-attendance type analytics.

Methodology

The project followed a systematic data analytics process tailored to HR attendance data:

Data Loading

- Imported monthly attendance sheets (April, May, June 2022) from the Excel file into Power BI Desktop.

Data Profiling & Cleaning

- Examined column distributions and verified data quality across sheets.
- Corrected data types for dates, text fields (Employee Code, Name), and attendance values.
- Standardized attendance codes using the provided Attendance Key.
- Removed non-attendance columns and summary rows to focus on daily employee data.

Data Transformation

- Unpivoted date columns within each sheet to convert wide-format dates into a single “Date” column with corresponding attendance values.
- Created a parameter template set to “Apr 2022” sheet to build a reusable transformation function.
- Developed the GetData function to apply the standardized data transformation logic dynamically across all monthly sheets.
- Invoked the GetData function for April, May, and June sheets and appended the results into a combined dataset for analysis.

DAX Calculations

- Created measures to calculate:
- Total Working Days (excluding weekly and holiday offs)
- Present Days (including full and half-day attendance)
- Work From Home (WFH) Count and Percentage
- Sick Leave (SL) Count and Percentage
- Overall Presence Percentage
- Applied robust logic for handling half-day codes like HWFH and HSL in measures.
- Enabled time intelligence by supporting slicers and filtering by month or custom date ranges.

Build Dashboards

- Designed an interactive Power BI dashboard featuring card visuals for Overall Attendance %, WFH %, and SL %, along with tables, matrices, and area charts to display employee-wise metrics and attendance trends

Dashboard Design & Features

Main Visuals Created In PowerBI desktop:

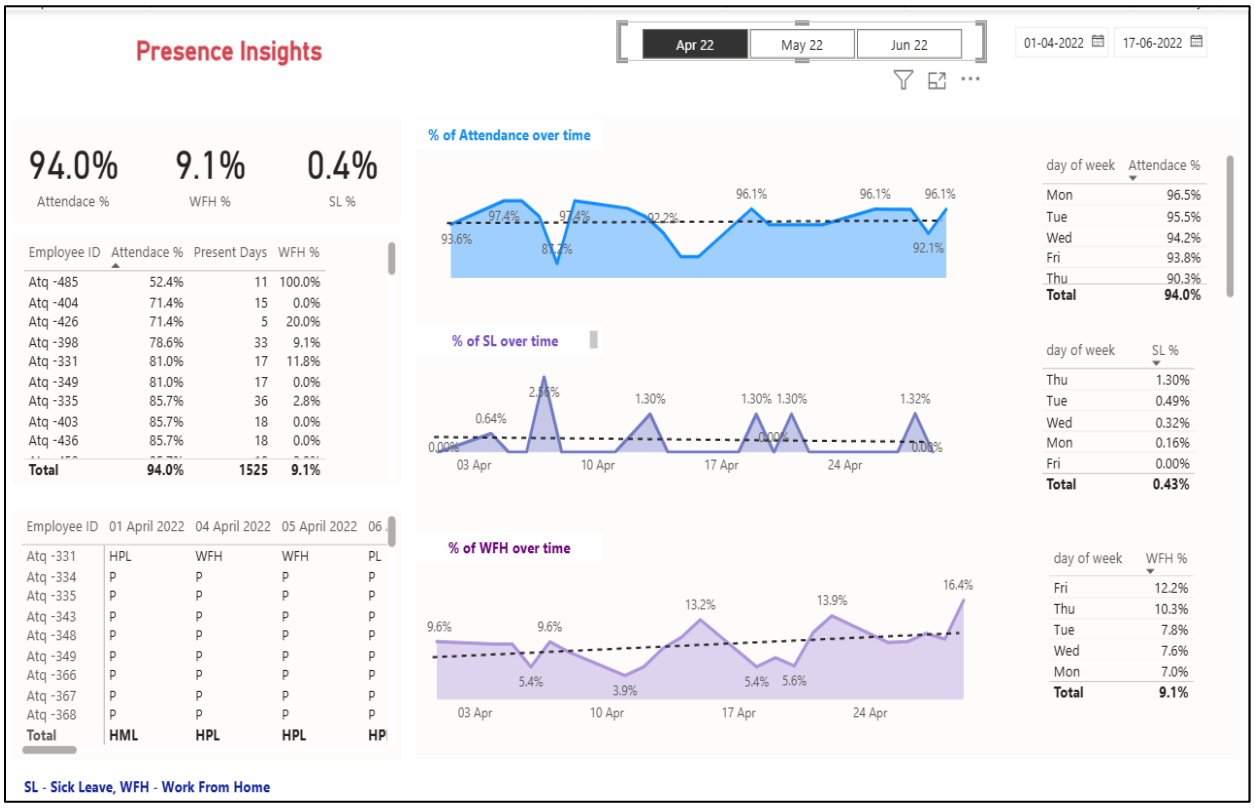
- Card Visuals: Display SL %, Presence %, and WFH % at a glance for the selected time period.
- Employee Table: Employee name, SL %, Presence %, and WFH % for benchmarking and comparison.
- Attendance Matrix: Employee name, date, and daily attendance code for granular review.
- Date Slicer: Allows users to filter all visuals by month or custom date range.
- Area Charts:
    - Presence % by date (trends over time).
    - WFH % by date (observing peak remote work days).
    - SL % by date (spotting sick leave spikes).
- Day-of-Week Matrix Visual:

- Matrix for each day of the week, showing presence %, WFH %, and SL %—helping detect patterns (e.g., tendency to take WFH on Mondays/Fridays).

Interactivity

- All visuals and KPIs update instantly based on the slicer for selected dates/months.
- Matrix allows direct lookup of historical attendance for any employee/date.

Dashboard:



Employee ID	Attendace %	Present Days	WFH %
Atq -485	52.4%	11	100.0%
Atq -404	71.4%	15	0.0%
Atq -426	71.4%	5	20.0%
Atq -398	78.6%	33	9.1%
Atq -331	81.0%	17	11.8%
Atq -349	81.0%	17	0.0%
Atq -335	85.7%	36	2.8%
Atq -403	85.7%	18	0.0%
Atq -436	85.7%	18	0.0%
Total	**94.0%**	**1525**	**9.1%**

day of week	Attendace %
Mon	96.5%
Tue	95.5%
Wed	94.2%
Fri	93.8%
Thu	90.3%
Total	**94.0%**

day of week	SL %
Thu	1.30%
Tue	0.49%
Wed	0.32%
Mon	0.16%
Fri	0.00%
Total	**0.43%**

day of week	WFH %
Fri	12.2%
Thu	10.3%
Tue	7.8%
Wed	7.6%
Mon	7.0%
Total	**9.1%**

Employee ID	01 April 2022	04 April 2022	05 April 2022	06
Atq -331	HPL	WFH	WFH	PL
Atq -334	P	P	P	P
Atq -335	P	P	P	P
Atq -343	P	P	P	P
Atq -348	P	P	P	P
Atq -349	P	P	P	P
Atq -366	P	P	P	P
Atq -367	P	P	P	P
Atq -368	P	P	P	P
Total	**HML**	**HPL**	**HPL**	**HP**

Insights and Analysis

During the analysis, the following insights emerged:

- Working Preference Trends:
  Employees often choose WFH on specific days, with visible spikes on Fridays and Mondays. This insight can guide hybrid office planning and space optimization.
  April recorded the highest overall employee presence percentage, indicating better attendance that month, while June had the lowest presence percentage.
- Sick Leave Patterns:
  Sick leave spikes are quickly visible via the area chart and summary KPIs, allowing HR to investigate potential health issues early.
  June showed the highest rate of sick leave, suggesting a rise in employee absences due to illness during that period. April had the lowest sick leave percentage.
- Attendance Stability:
  Most employees show consistent presence above 90%, with clear visualization of outlier weeks/days in the dashboard.
  April recorded the highest overall employee presence percentage, indicating better attendance that month, while June had the lowest presence percentage.
- Day-of-Week Analysis:
  Attendance is generally highest mid-week (Tuesday/Wednesday), supporting better scheduling for team events or in-person meetings.

These insights help highlight monthly variations in attendance behavior and can guide targeted HR actions for each period.

Outcomes & Impact

If adopted in a corporate environment, this solution can deliver the following impacts:

- Faster HR Reporting: Automated ETL and dashboard updates save significant time in monthly HR analysis.
- Better Space & Resource Planning: Understanding WFH and attendance patterns enables more effective office resource allocation and hybrid policy design.
- Proactive Employee Wellness: Early detection of sick leave clusters allows timely action for health interventions.
- Strategic Workforce Management: Managers can plan team events and organizational activities on days of highest attendance, improving engagement and productivity.

Conclusion

This Power BI HR analytics project transforms complex, multi-sheet attendance logs into simple, actionable business intelligence. The dashboard delivers not only presence and leave analysis but also strategic insights for planning and wellness. The process is fully automated and scalable for future months—HR can focus on actions, not manual reporting.

Appendix: Attendance Key Reference

- P (Present)
- SL (Sick Leave)
- WFH (Work From Home)
- PL (Paid Leave)

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