



Workforce 360 HR ANALYTICS

ANUSHKA GUPTA

DATA ANALYST

TOOLS: PYTHON | MySQL | POWER BI

1. INTRODUCTION

- EMPLOYEE ATTRITION DIRECTLY AFFECTS AN ORGANIZATION'S PRODUCTIVITY, MORALE, AND LONG-TERM STABILITY.
- THIS PROJECT, **WORKFORCE360**, PROVIDES A 360-DEGREE ANALYTICAL VIEW OF EMPLOYEE ATTRITION; COMBINING DATA FROM DEMOGRAPHICS, JOB ROLES, COMPENSATION, AND ENGAGEMENT METRICS TO IDENTIFY KEY DRIVERS BEHIND TURNOVER.
- BY INTEGRATING PYTHON, SQL, AND POWER BI, **WORKFORCE360** TRANSFORMS RAW HR DATA INTO ACTIONABLE INSIGHTS THROUGH AN **INTERACTIVE DASHBOARD** THAT EMPOWERS HR LEADERS TO MAKE INFORMED, DATA-DRIVEN RETENTION DECISIONS.

2. OBJECTIVES

- ANALYZE WORKFORCE DEMOGRAPHICS AND JOB-RELATED ATTRIBUTES CONTRIBUTING TO ATTRITION
- IDENTIFY DEPARTMENTS AND ROLES WITH HIGH ATTRITION RATES
- ASSESS THE IMPACT OF SALARY, AGE, GENDER, AND OVERTIME ON RETENTION
- BUILD AN INTERACTIVE DASHBOARD FOR HR DECISION-MAKING

3. TOOLS & DATASET OVERVIEW

- TOOLS & TECHNOLOGIES:
 - PYTHON (PANDAS, NUMPY) – DATA CLEANING
 - MYSQL – DATA MODELING & ANALYSIS
 - POWER BI – VISUALIZATION & DASHBOARD
- DATASET:
 - 1,470 RECORDS | 35 COLUMNS
 - HR DATA INCLUDING AGE, GENDER, DEPARTMENT, SALARY, OVERTIME, ATTRITION, ETC.

4. METHODOLOGY

STEP 1: DATA CLEANING (PYTHON)

HANDLED MISSING VALUES, STANDARDIZED DATA, EXPORTED CLEANED CSV

```
▶ import pandas as pd

# Load dataset
df = pd.read_csv("Workforce360.csv")

# Quick overview
df.head()

df.info() #structure and dtypes

df.describe() #summary statistics

df['Attrition'].value_counts()

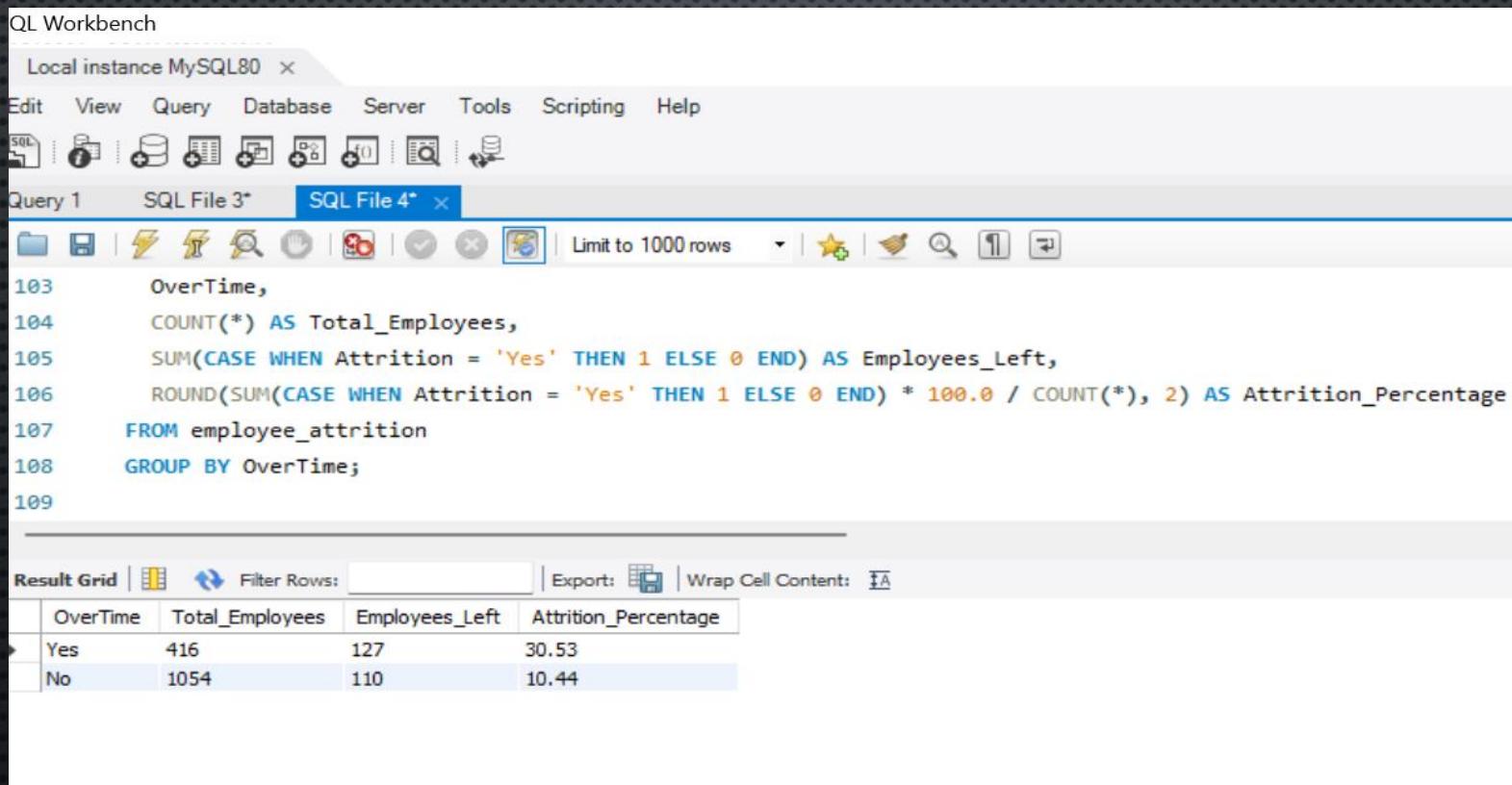
df.isnull().sum()

▶ df.duplicated().sum()
```

4. METHODOLOGY

STEP 2: DATA MODELING (SQL)

CREATED TABLES FOR ATTRITION BY DEPARTMENT, JOB ROLE, SALARY, OVERTIME ETC.



The screenshot shows the MySQL Workbench interface. The title bar says "MySQL Workbench" and "Local instance MySQL80". The menu bar includes "Edit", "View", "Query", "Database", "Server", "Tools", "Scripting", and "Help". Below the menu is a toolbar with various icons. The main area has three tabs: "Query 1", "SQL File 3*", and "SQL File 4*" (which is active). The query editor contains the following SQL code:

```
103     OverTime,
104     COUNT(*) AS Total_Employees,
105     SUM(CASE WHEN Attrition = 'Yes' THEN 1 ELSE 0 END) AS Employees_Left,
106     ROUND(SUM(CASE WHEN Attrition = 'Yes' THEN 1 ELSE 0 END) * 100.0 / COUNT(*), 2) AS Attrition_Percentage
107   FROM employee_attrition
108   GROUP BY OverTime;
109
```

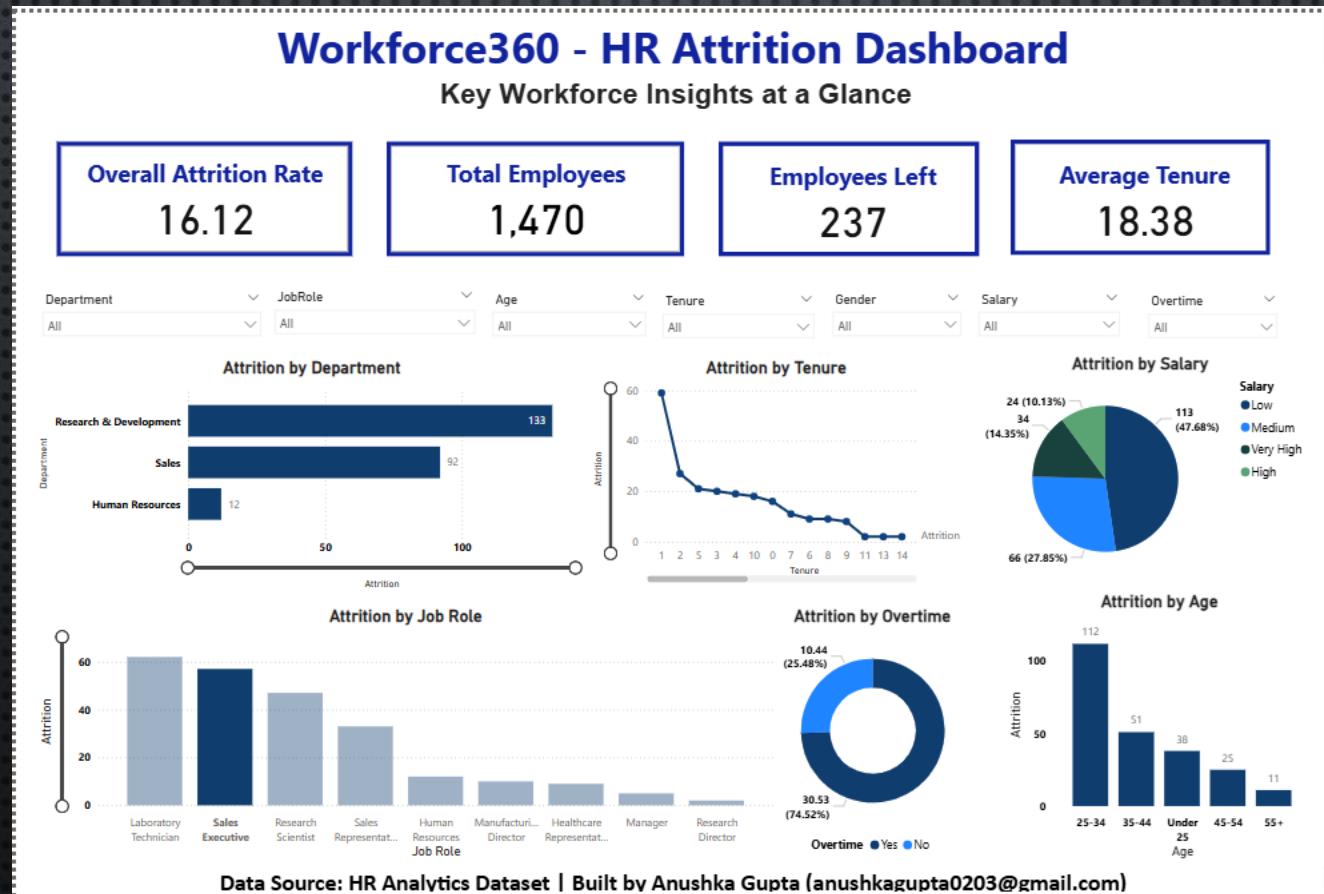
Below the code is a "Result Grid" table with the following data:

OverTime	Total_Employees	Employees_Left	Attrition_Percentage
Yes	416	127	30.53
No	1054	110	10.44

4. METHODOLOGY

STEP 3: VISUALIZATION (POWER BI)

BUILT KPIs AND INTERACTIVE CHARTS FOR ATTRITION INSIGHTS



5. KEY INSIGHTS

- SALES DEPARTMENT SHOWS THE HIGHEST ATTRITION
- EMPLOYEES AGED 25–34 HAVE THE HIGHEST TURNOVER
- OVERTIME WORKERS SHOW ~70% HIGHER ATTRITION RATE
- LOW-INCOME EMPLOYEES MORE LIKELY TO LEAVE
- EMPLOYEES WITH <3 YEARS TENURE ARE AT HIGHER RISK

6. BUSINESS RECOMMENDATIONS

- LAUNCH RETENTION PROGRAMS FOR EARLY-TENURE EMPLOYEES
- OFFER INCENTIVES OR REDUCED WORKLOADS FOR OVERTIME STAFF
- REVIEW PAY STRUCTURES FOR LOW-SALARY BANDS
- IMPLEMENT MENTORSHIP AND CAREER DEVELOPMENT PLANS
- CONDUCT EXIT INTERVIEWS TO IDENTIFY ROLE-SPECIFIC CHALLENGES