



Workforce 360 HR ANALYTICS

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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()

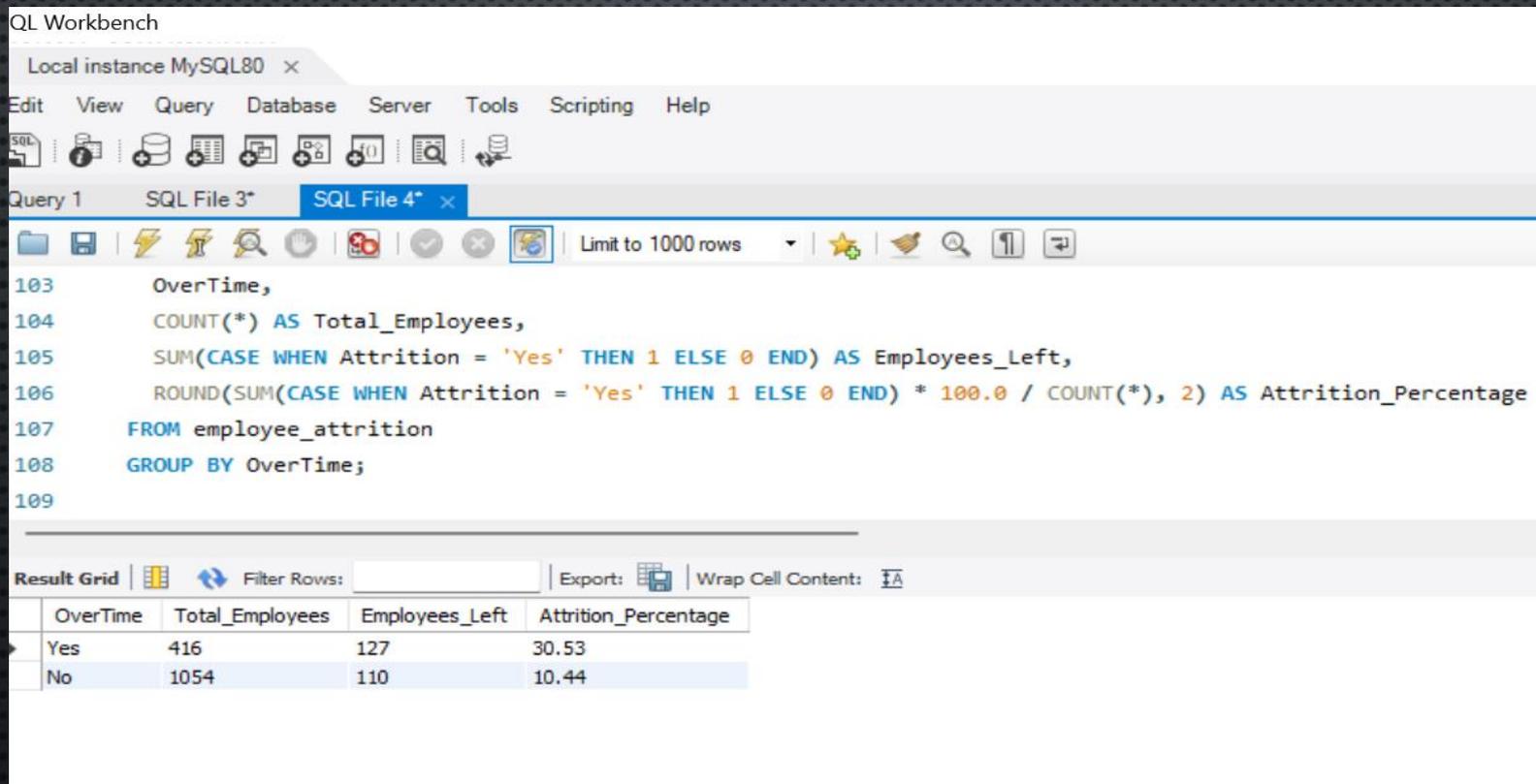
df.isnull().sum()

df.duplicated().sum()
```

4. METHODOLOGY

STEP 2: DATA MODELING (SQL)

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



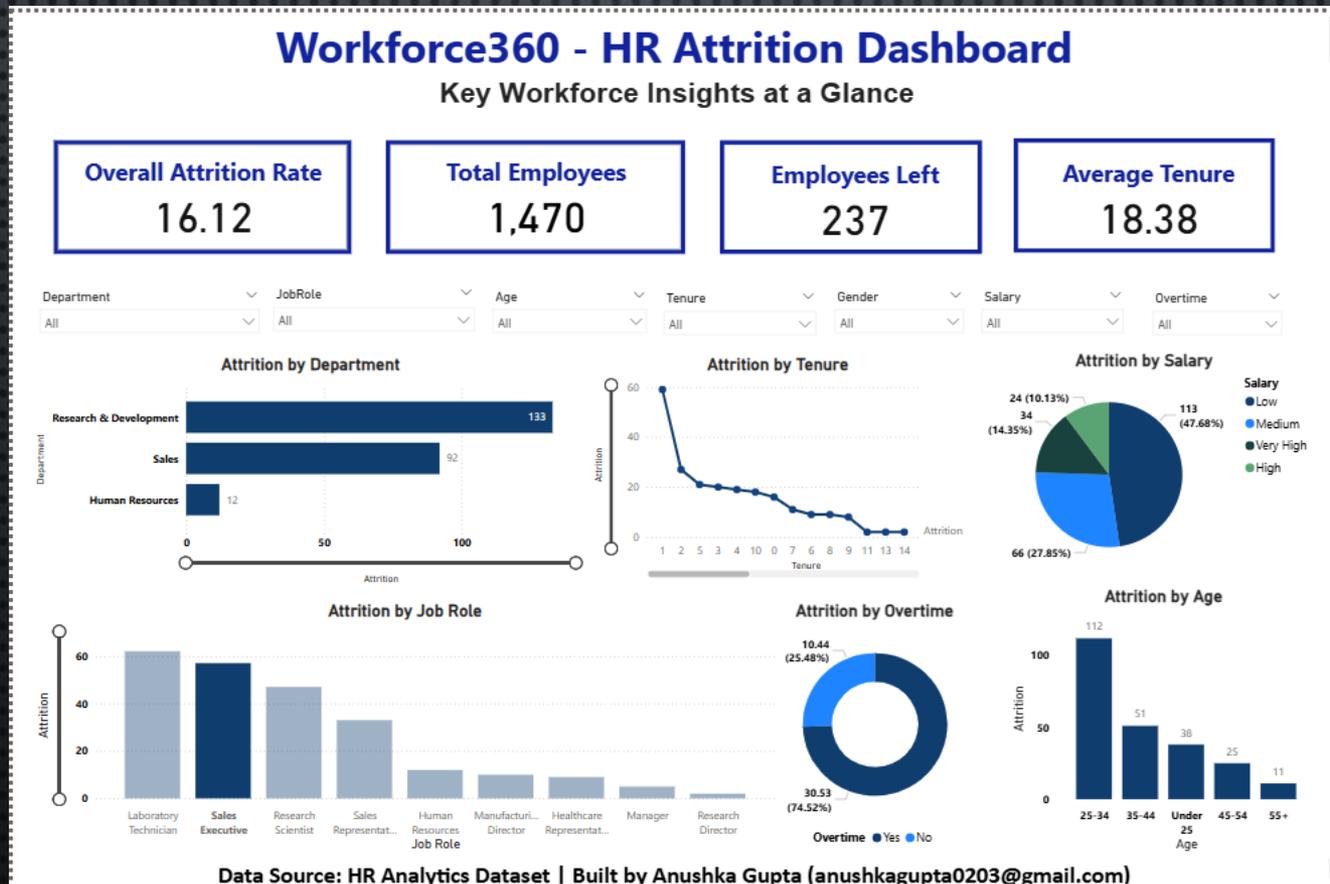
The screenshot displays the SQL Workbench interface for a local MySQL80 instance. The main window shows a SQL query being executed in 'SQL File 4*'. The query calculates attrition statistics grouped by overtime status. Below the query editor, the 'Result Grid' shows the output of the query, which includes columns for OverTime, Total_Employees, Employees_Left, and Attrition_Percentage. The results are as follows:

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