



# 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.

QL Workbench

Local instance MySQL80 x

Edit View Query Database Server Tools Scripting Help

Query 1 SQL File 3\* SQL File 4\* x

Limit to 1000 rows

```
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
```

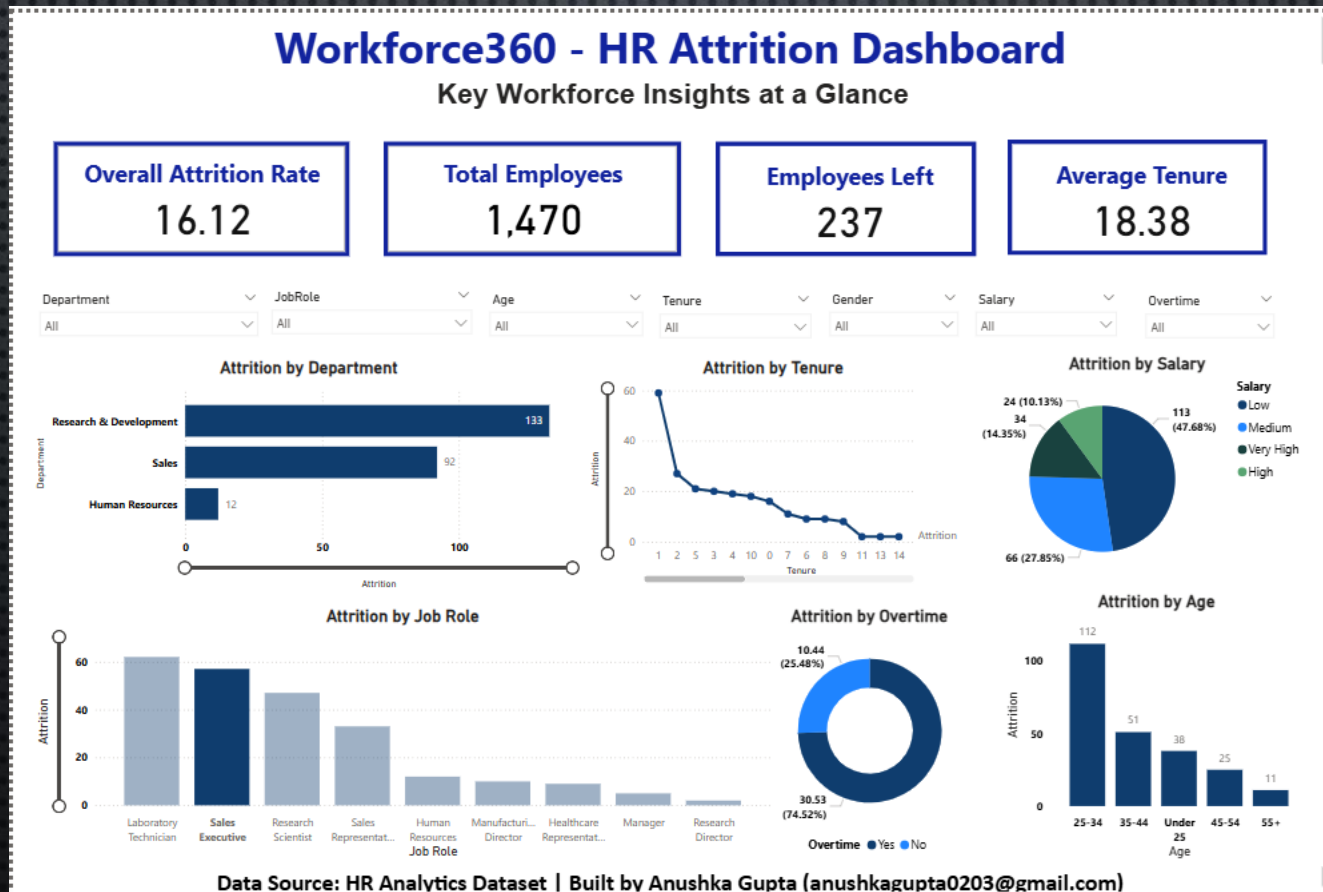
Result Grid | Filter Rows: | Export: | Wrap Cell Content: |

	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