



Problem Statement:

The objective is to identify any **gender-based bias** influencing the company's decisions regarding **hiring, promotion, compensation, and employee turnover**.

Project Goal:

To assess if gender impacts decisions related to:

- Hiring patterns
- Compensation (salary, hikes)
- Attrition (voluntary/involuntary exits)

KPIs:

- Promotion Rate by Gender
- Salary Distribution by Gender (adjusted for job role/level)
- Attrition Rate by Gender
- Performance Ratings by Gender
- Time to Promotion / Years in Role by Gender

Hypotheses:

- H1: Males and females are **not promoted at the same rate**.
- H2: There is a **statistically significant difference in salary** between genders after controlling for role and education.
- H3: Females have a **higher attrition rate** due to work-life imbalance.

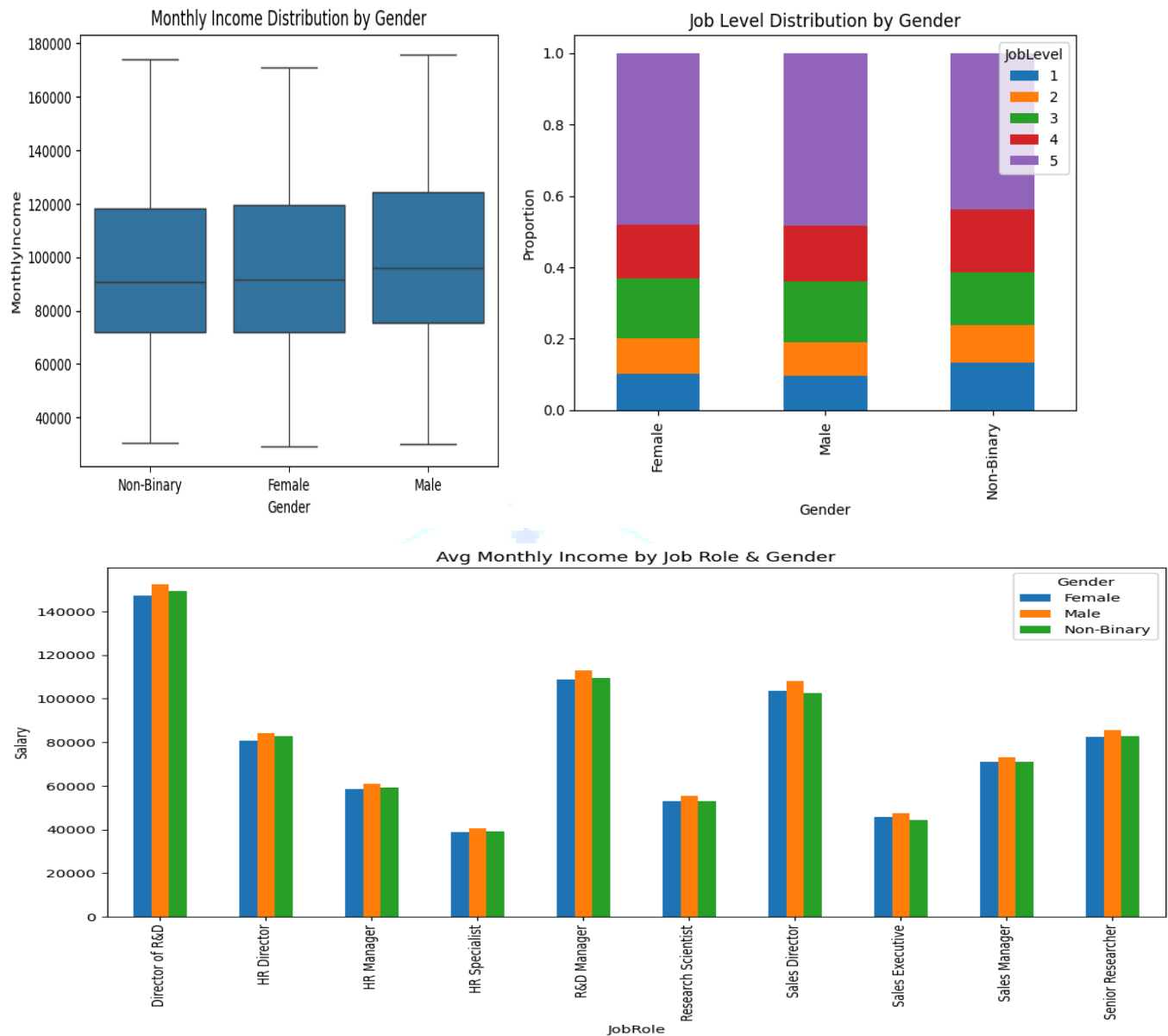
Dataset Overview:

This dataset is a synthetic HR dataset with ~89+ attributes, designed to simulate real-world employee records. It includes:

- **Demographics:** Gender, Age, MaritalStatus, Education, EducationField
- **Job Info:** Department, JobRole, JobLevel, YearsAtCompany, Manager Info
- **Compensation:** MonthlyIncome, HourlyRate, SalaryHike, Incentives
- **Performance:** PerformanceRating, Promotions, Attrition
- **Work Patterns:** OverTime, ExtraHours, WorkLifeBalance, Holidays
- **Engagement:** JobSatisfaction, EnvironmentSatisfaction, Training



Key Distributions and Trends:



Diagnostic Analysis:

- Hiring rate by job_role by gender:
 - Males dominate initial hiring for technical and managerial roles.
 - Females are more represented in support roles like HR, Admin
- Average salary hike by job_role by gender:
 - Males consistently receive higher average hikes in roles like Sales Executive, Research Director.
- Average years since promotion by gender:
 - Females have a longer average promotion gap in almost every department.



4. Average years with current Manager gender:
 - No major differences in manager continuity by gender.
5. Turnover rate by gender:
 - Turnover rate is higher for females, especially in roles with fewer advancement opportunities.

Predictive Analysis:

Independent T-Test:

- Compares monthly income of males and females across job roles.

Findings

- Roles like Manager, Senior Developer, and Project Lead showed $p < 0.05$, indicating significant gender-based salary gaps.
- Confirms bias exists at a role level, not just department-wide.

Logistic Regression Key Insights:

- Gender coefficient > 0 - Being male increases the chance of recent promotion.
- Model score = 0.7 - Acceptable performance for balanced class modeling.

Recommendations:

1. Standardize Compensation Bands
 - Action: Define fixed salary ranges for each JobRole and JobLevel, regardless of gender.
2. Transparent Promotion Criteria
 - Action: Create a scorecard with measurable criteria:
3. Run Bias-Aware Performance Reviews
 - Action: Train managers on unconscious bias, include 360° reviews.
4. Audit Salary Hike Process
 - Action: Automate hikes based on objective formula (e.g., performance * involvement * job level).

Storytelling & Delivery:

Deliver actionable insights through visuals for diverse stakeholders using a tool - **Power BI**.