CAPSTONE PROJECT
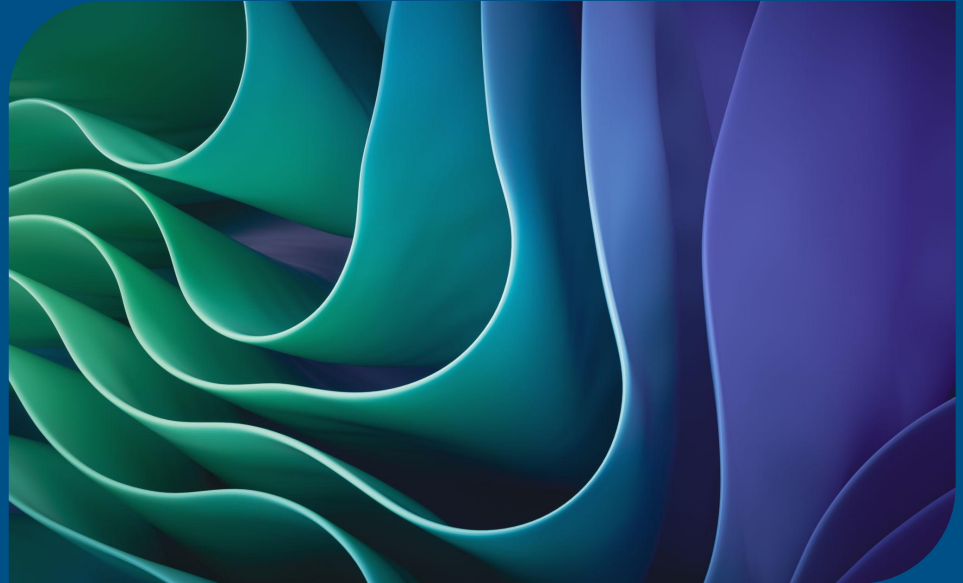
HR ANALYSIS

Descriptive Analysis

1. # Defining the Problem

2. # Exploratory Data Analysis

3. # Descriptive Analysis

4. # Diagnostic Analysis

5. # Conclusion

1. **Defining the Problem**

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Students are asked to analyze the HR dataset and develop dashboard views.

Goal

1. Is there gender equality in the company's employment?
2. Is there diversity in the workplace?
3. What demographics have the highest impact on low pay rate?
4. Identify the trend and pattern in the hiring process of the organization
5. Analyze data across various factors (categories).

Methodology

Data Source

Data Preprocessing

Data Validation

Exploratory Data Analysis(EDA)

Descriptive Analysis

Diagnostic Analysis

1. # Defining the Problem

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Chart Explanation

The pie chart shows there are 57.8% of female working in the company and 42.2% male working in the company. Showing there are more females working in the company than male.

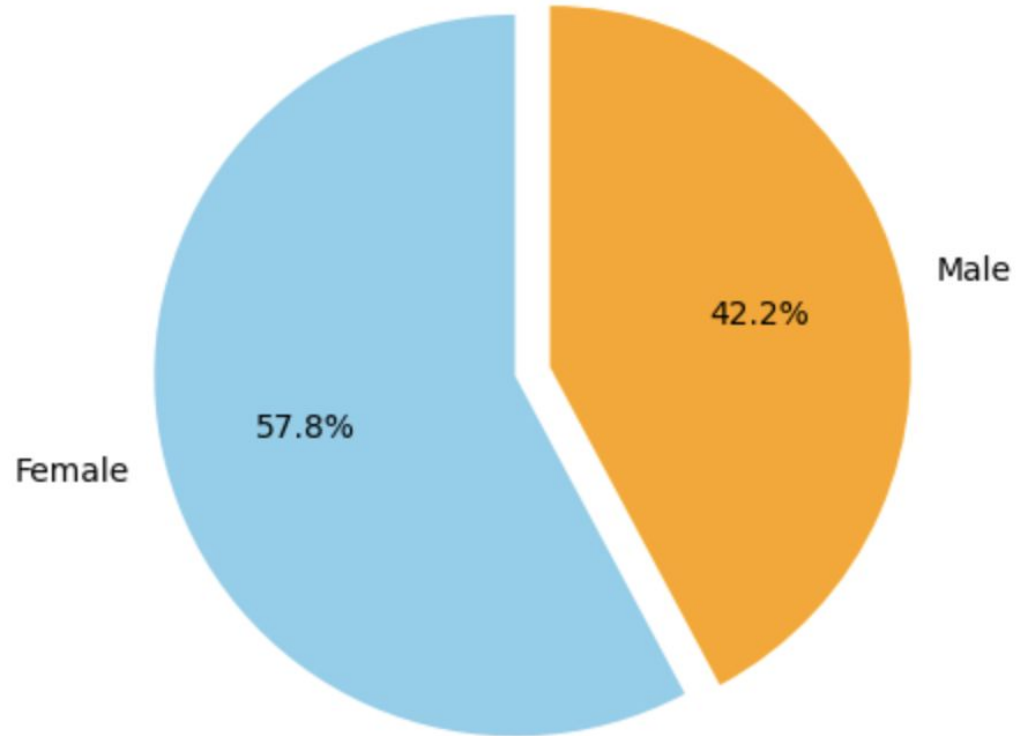Gender Equality in the Company's Employment

Male

42.2%

57.8%

Female

Chart Explanation

The bar chart shows there are more females in the company than males and females are doing the non–senior roles than male in the company.
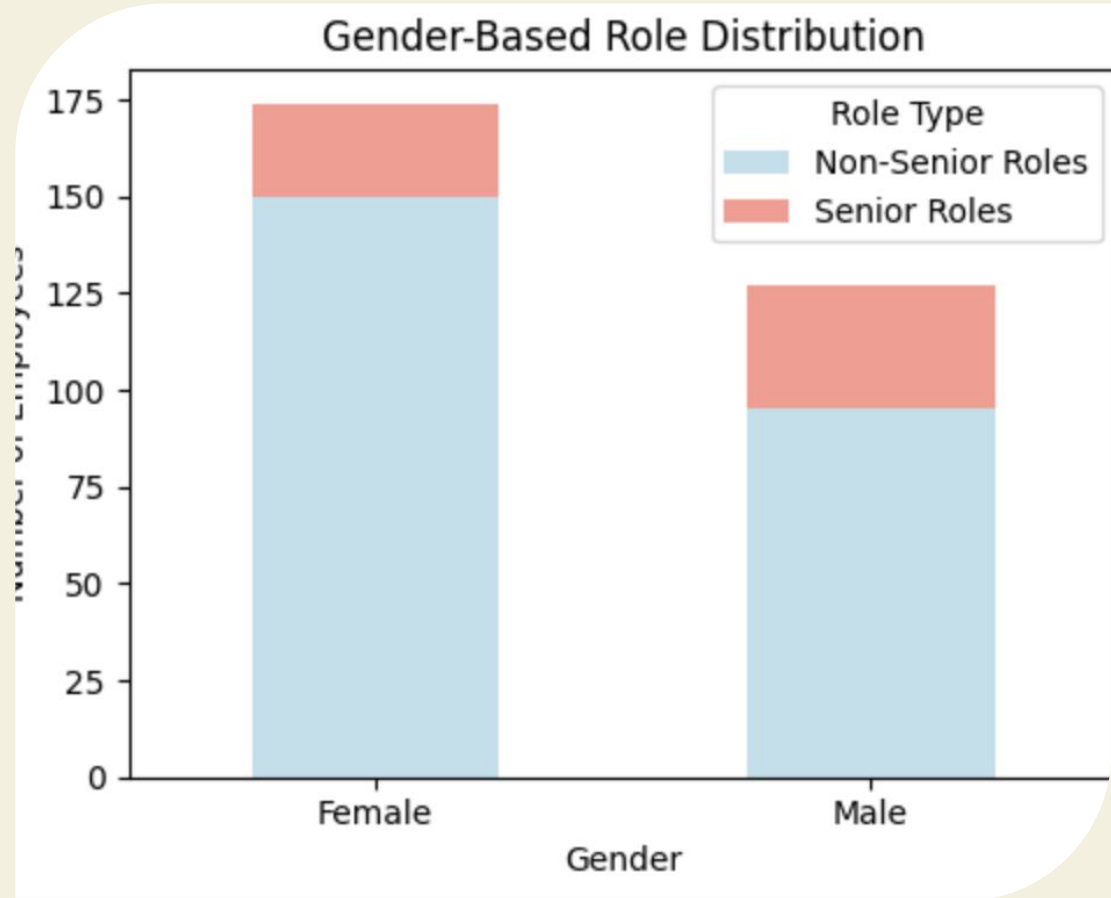

Gender-Based Role Distribution

Chart Explanation

The bar chart percentage of the gender in the senior roles shows there are more males in the senior role than females in the company.
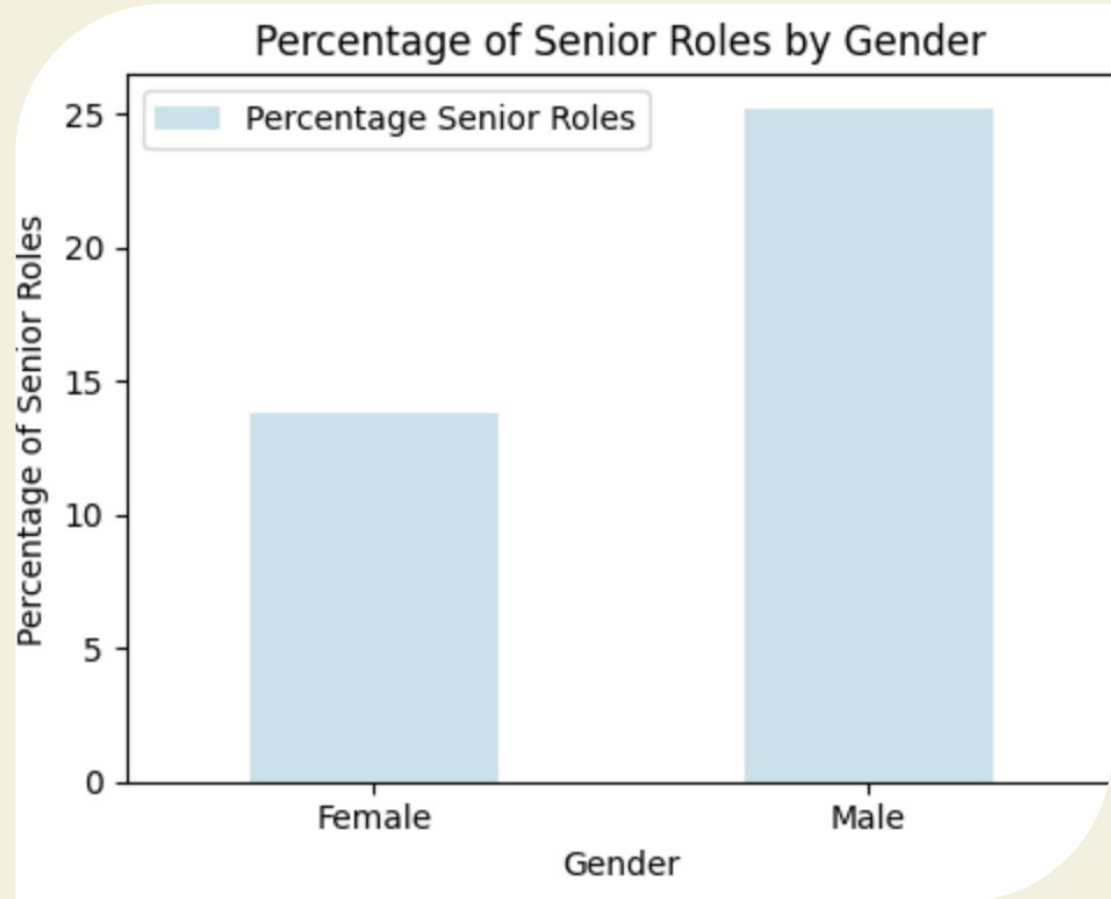

Percentage of Senior Roles by Gender

Chart Explanation

The bar chart shows the average pay rates of the gender in all departments which shows the executive office role to have the highest average pay rates filled with females. Sales, IT/IS, and Software Engineering also exhibit relatively high average pay rates, with males dominating these areas. Production and Admin Offices have the lowest average pay rates.

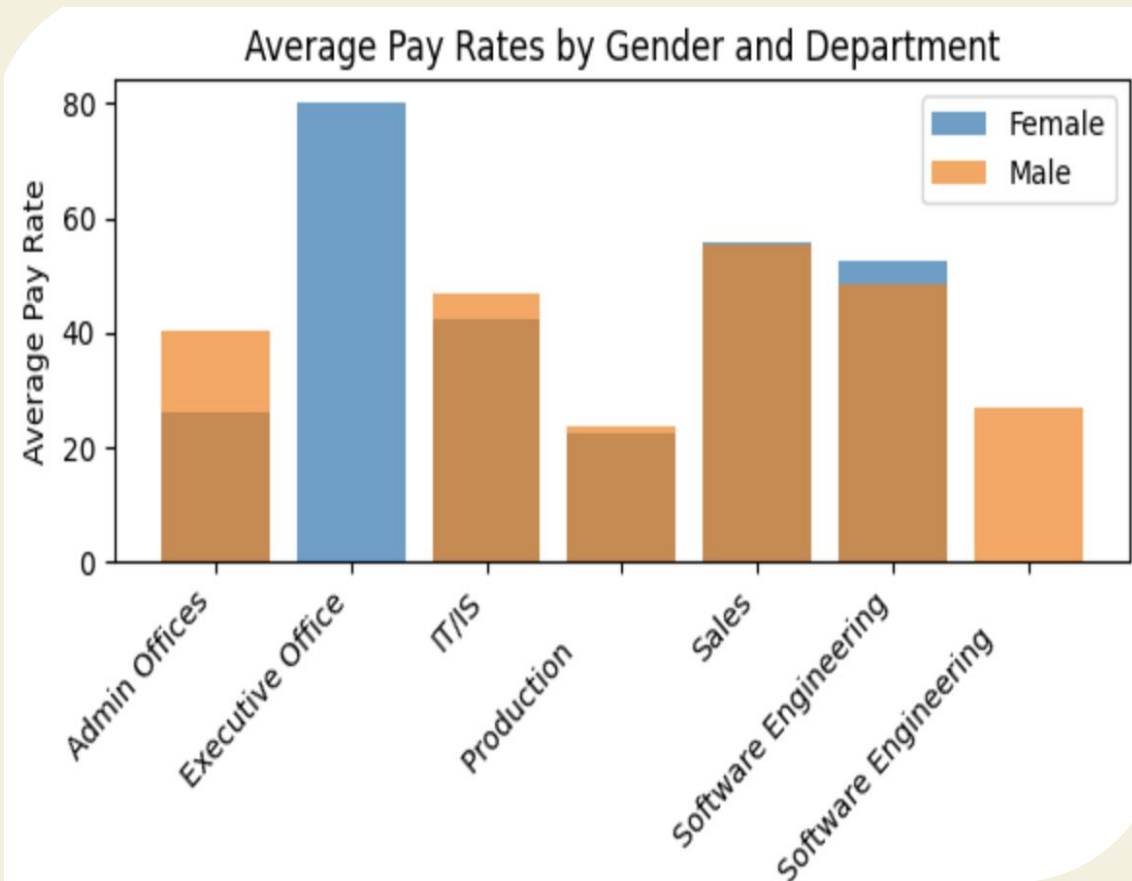
Average Pay Rates by Gender and Department

Chart Explanation

There is a clear gender segregation in job roles, with females being concentrated in production-related roles and males holding more technical and leadership positions.
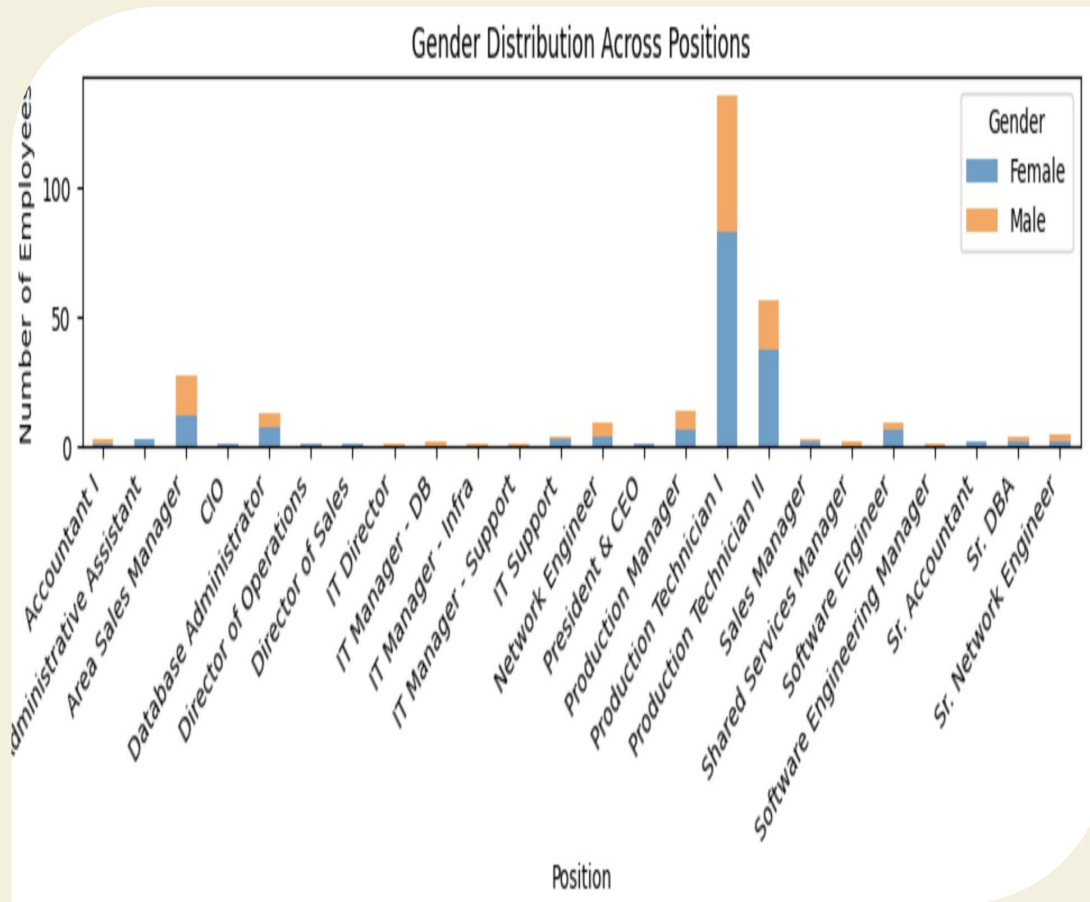
Chart Explanation

The chart highlights a lack of proportional diversity, with a dominant representation of White employees and underrepresentation of other racial or ethnic groups.
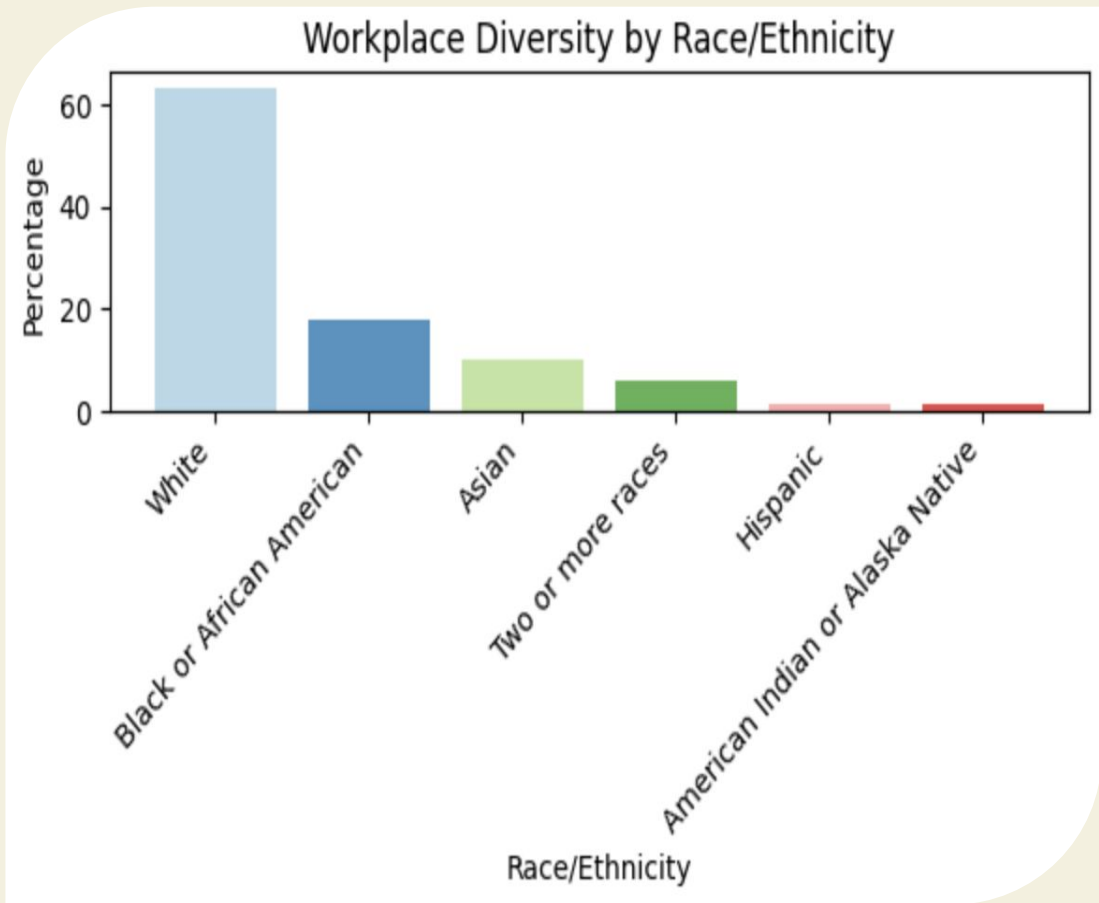

Workplace Diversity by Race/Ethnicity

Chart Explanation

White employees form the majority of employees in low–pay roles for both genders, reflecting their overall higher representation in the workforce. Black or African American employees and Asians are notably present in low–pay categories.
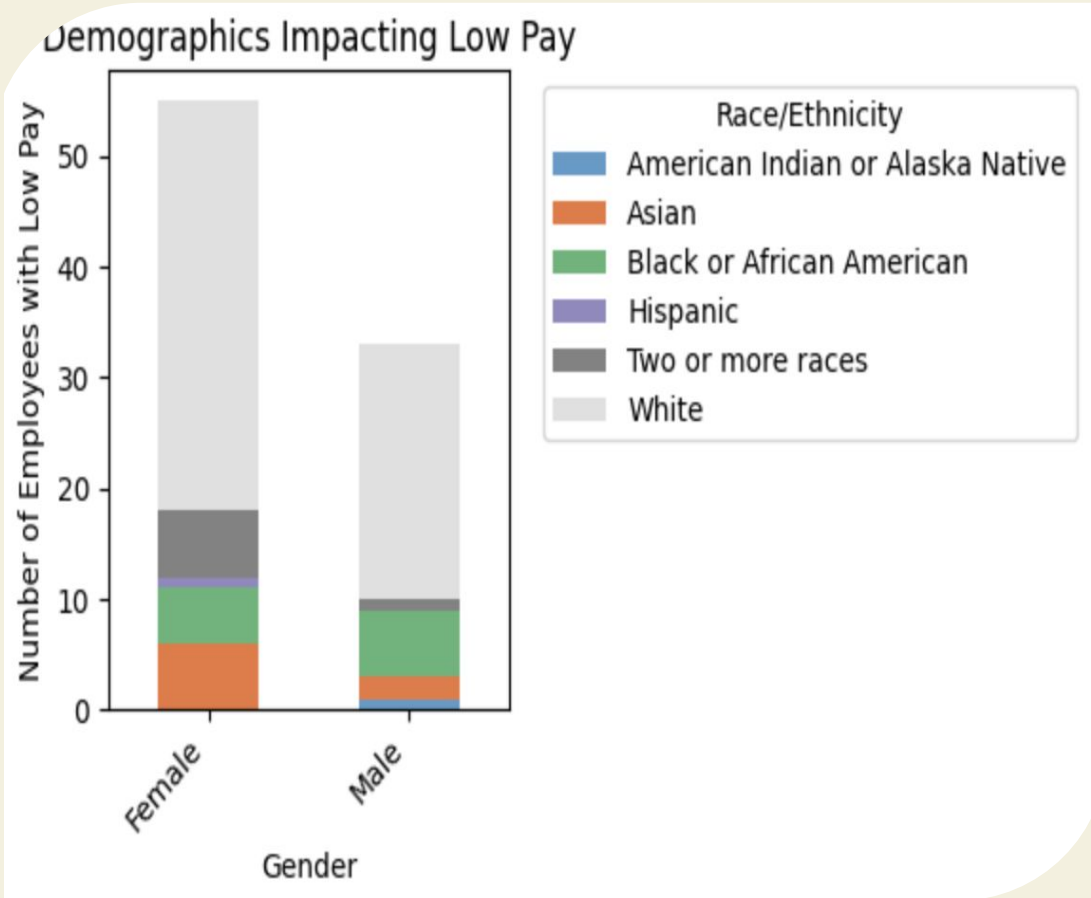

Demographics Impacting Low Pay

Chart Explanation

The chart indicates a strong seasonal pattern in hiring, with the highest recruitment activity at the start of the year (January) and mid-year (July). The low hiring activity in December aligns with end-of-year closures or budget finalizations.
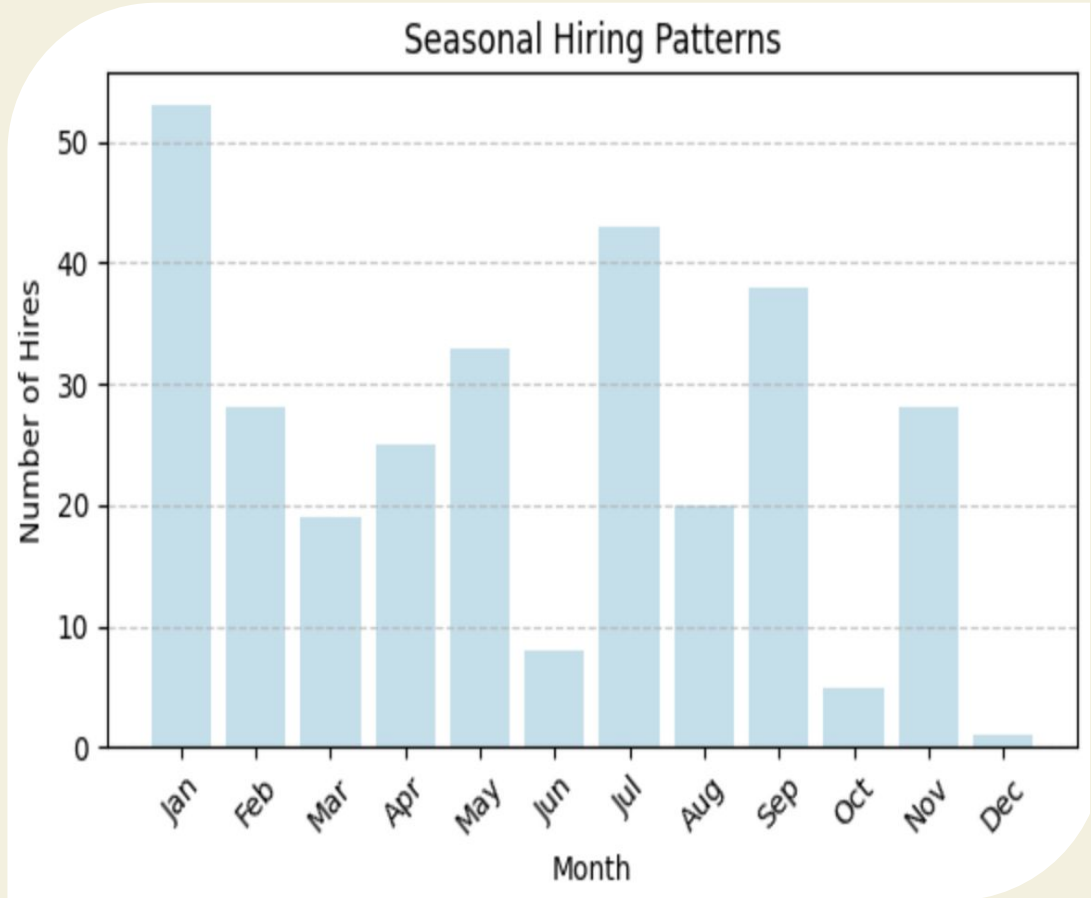

Seasonal Hiring Patterns

Chart Explanation

The focus on hiring in the Production department aligns with the operational needs of the organization, where workforce demand may be high due to production cycles or labor-intensive tasks. Other departments, such as IT/IS and Sales, represent supporting functions with more stable or specialized workforce requirements.
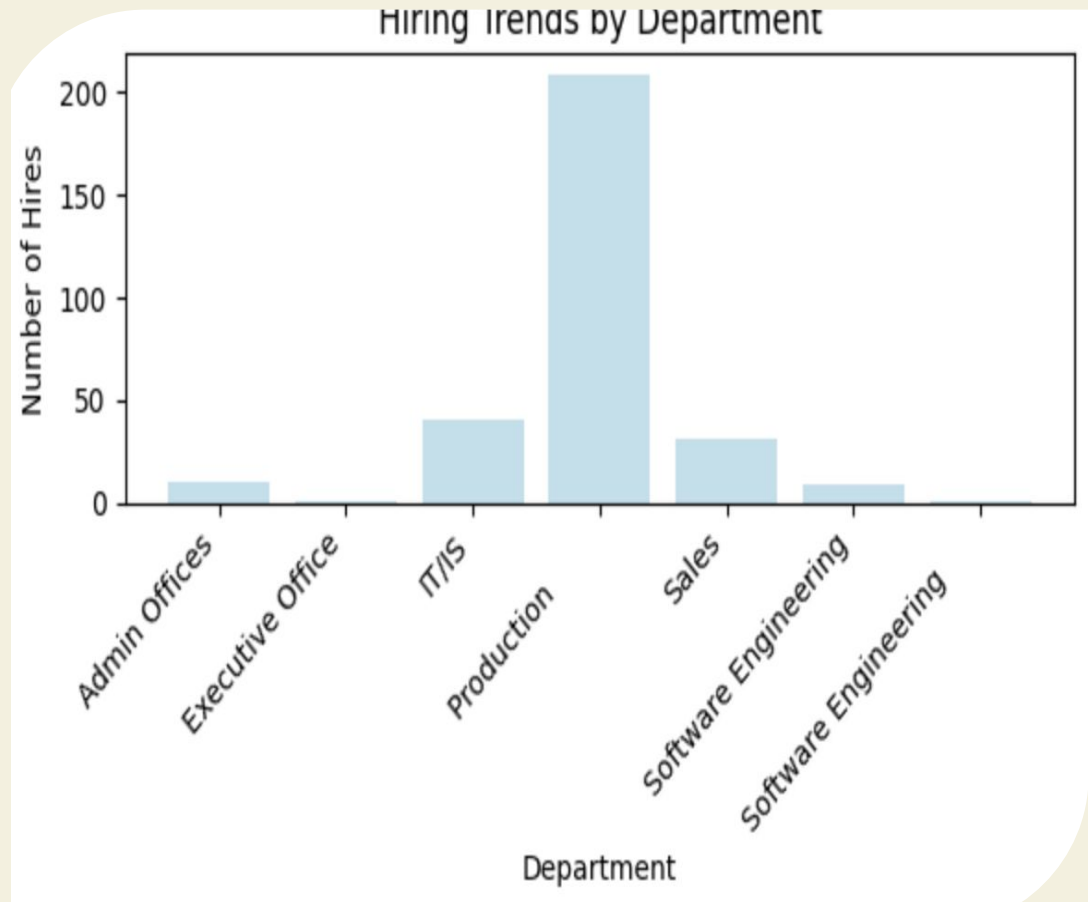
Chart Explanation

The workforce is predominantly US Citizens, with a near–even split between genders in this group. There may be limited hiring or opportunities available for Eligible–Non–Citizens, as reflected in their low representation.
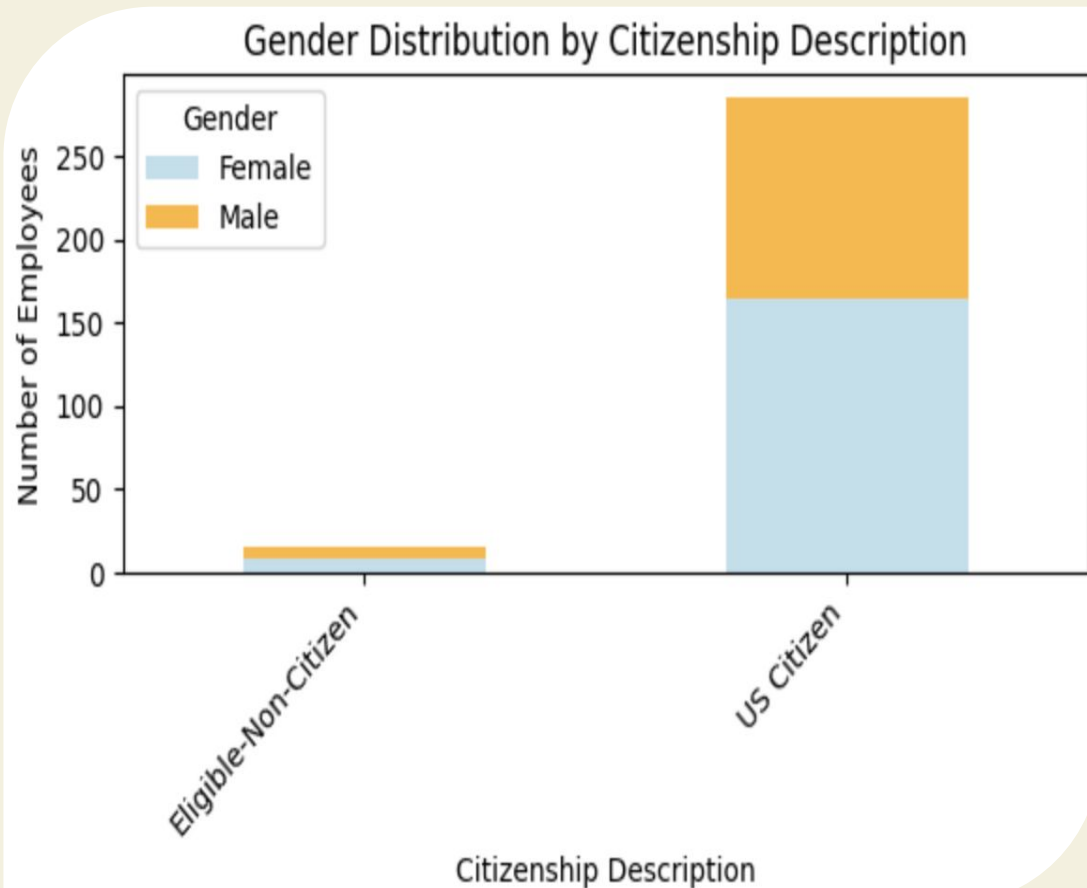
Chart Explanation

Females dominate the largest performance category ("Fully Meets"), indicating strong overall performance representation. The distribution of genders across high and low-performance categories is relatively balanced, with no significant disparities. Most employees fall into the "meets expectations" range, with fewer in high-performance ("Exceeds," "Exceptional") or low-performance ("Needs Improvement," "PIP") categories.
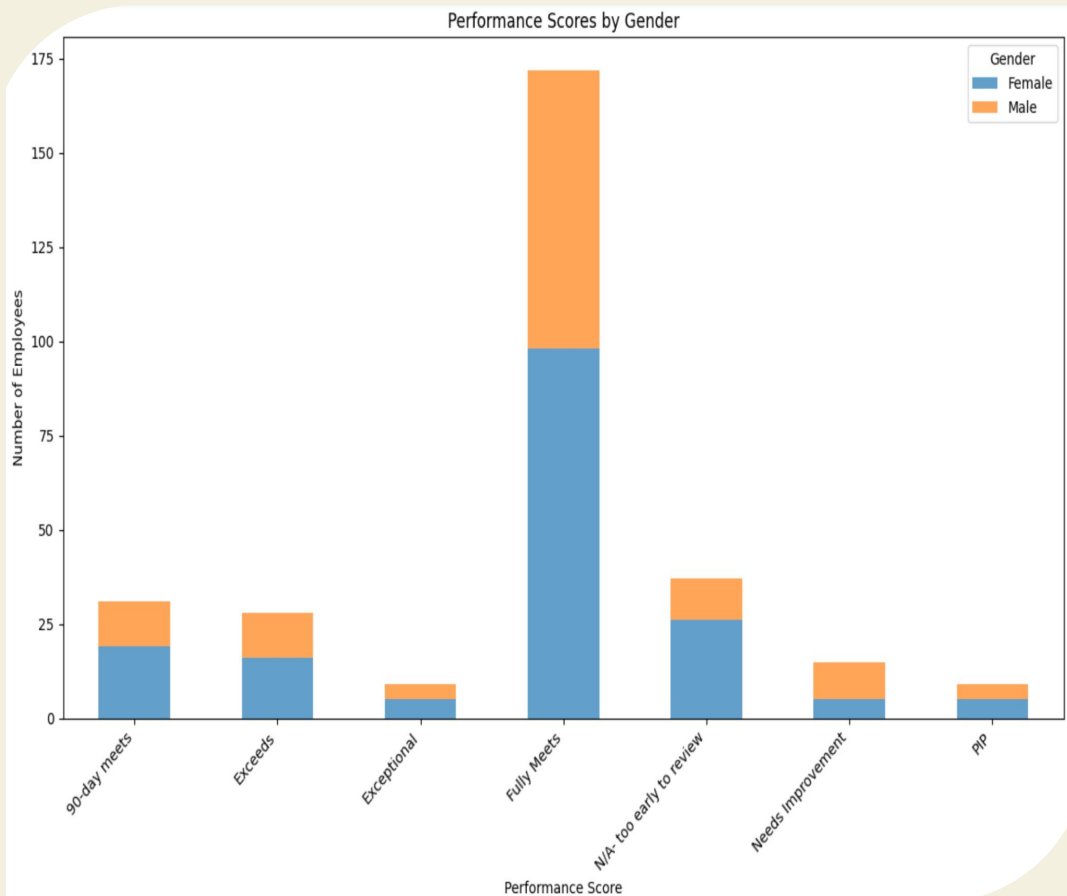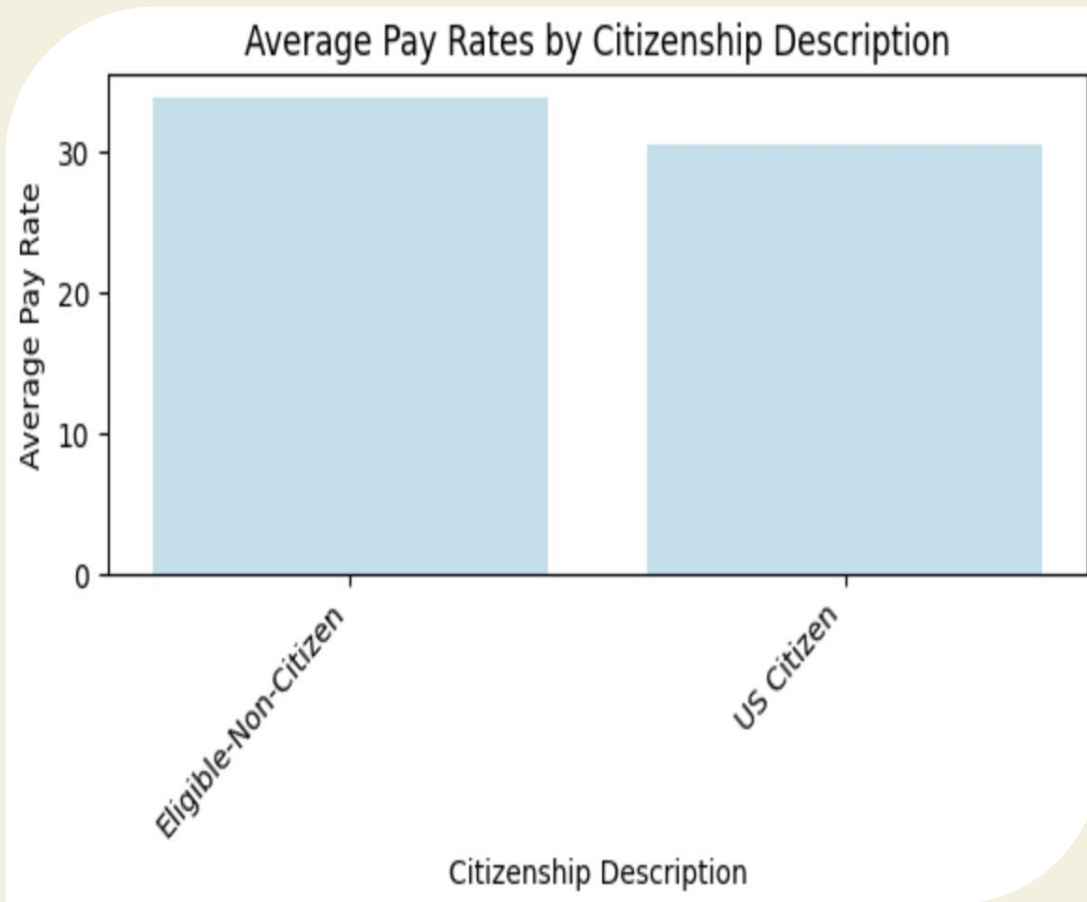

Performance Scores by Gender

Chart Explanation

The organization maintains equitable pay rates for both citizenship groups, which is a positive indicator of pay fairness.

Average Pay Rates by Citizenship Description

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Chart Explanation

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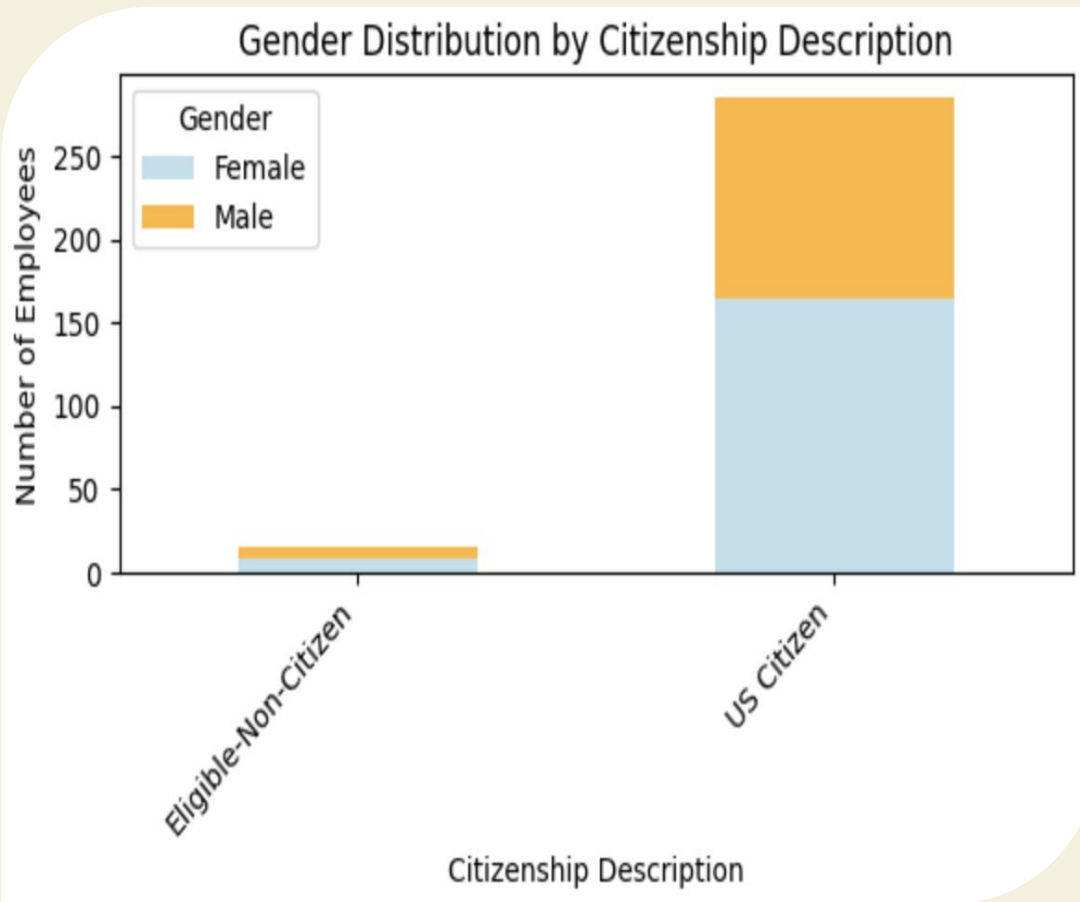Gender Distribution by Citizenship Description

Chart Explanation

Roles with the lowest pay are primarily administrative or entry-level production-related positions. Some technical and specialized roles also appear, potentially pointing to undervaluation in these specific positions within the organization.
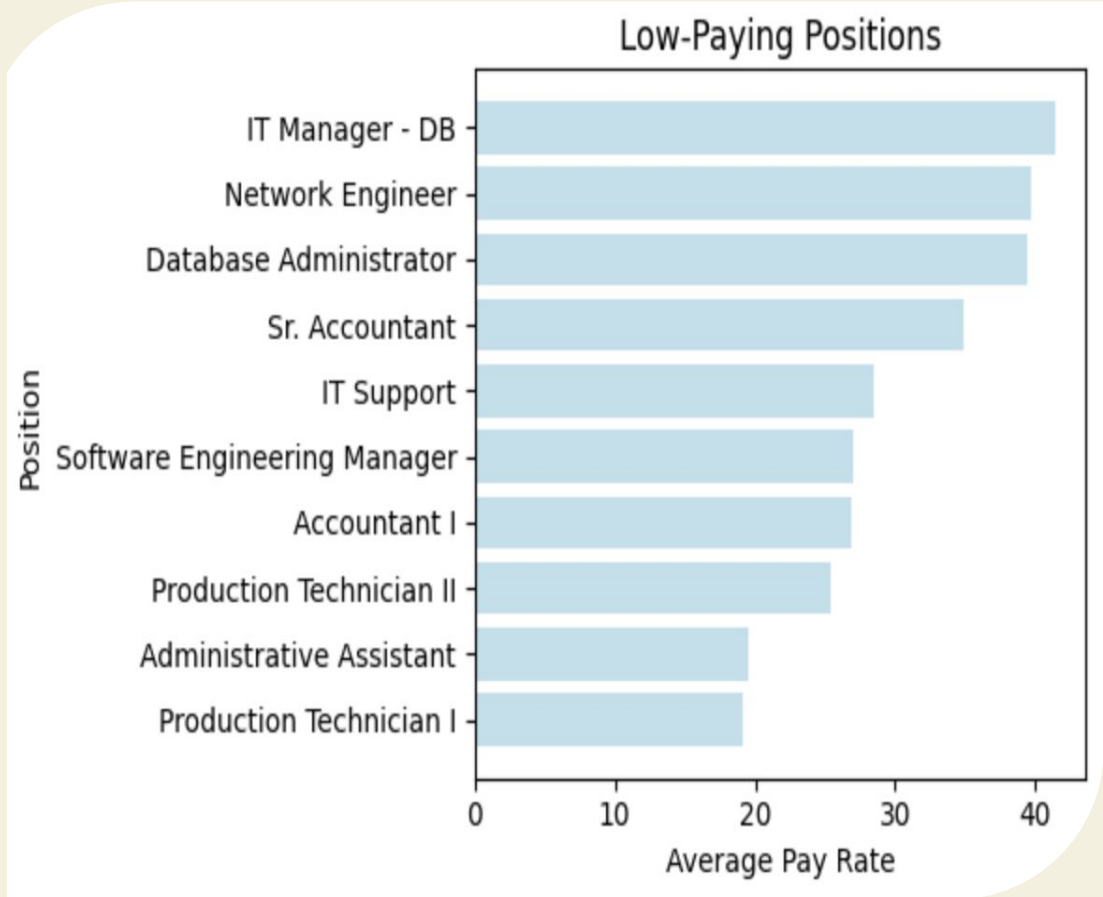

Low-Paying Positions

Chart Explanation

Leadership, technical expertise, and sales management are the most rewarded skill sets in the organization. The high pay for IT roles suggests a focus on technology and infrastructure, likely critical to the organization's operations.

Top-Paying Positions

Chart Explanation

There is a variation in pay rates across racial/ethnic groups, potentially influenced by the types of roles or departments employees from each group occupy. The higher pay for Hispanic employees may suggest more representation in senior or higher-paying roles. The lower pay rates for certain groups could indicate underrepresentation in higher-paying positions.

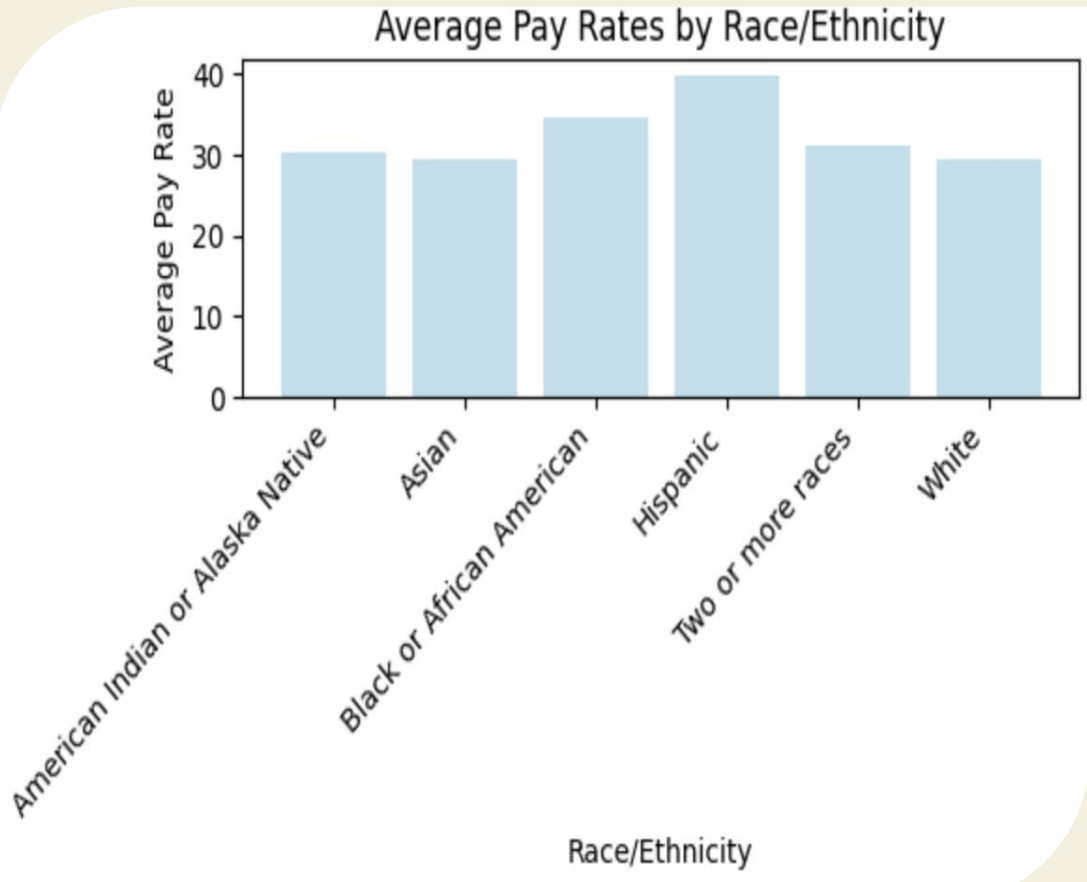

Average Pay Rates by Race/Ethnicity

Chart Explanation

The workforce is predominantly composed of younger to mid-career employees which there age is between 25–45 years, with limited representation from older age groups.
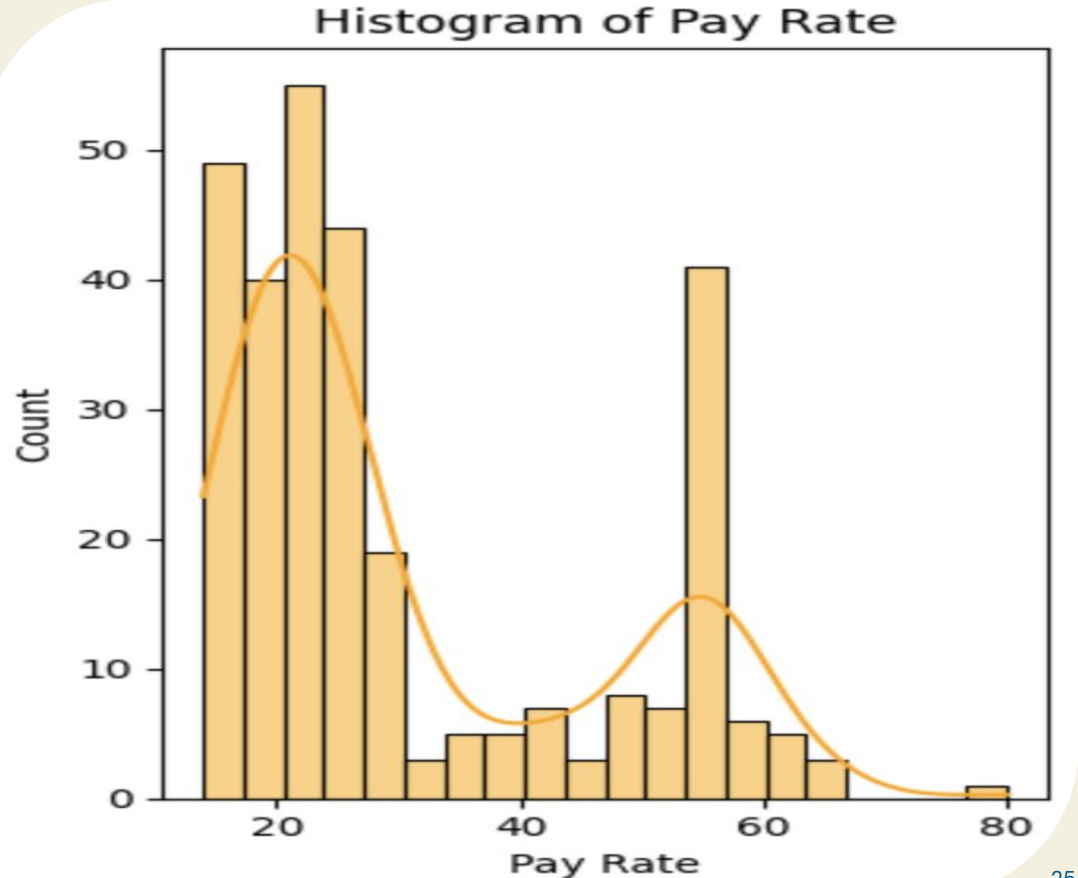

Histogram of Pay Rate

Chart Explanation

The low-pay cluster has the highest count of employees, suggesting a significant proportion of the workforce is in lower-paying roles (e.g., production, administrative, or entry-level positions). A few employees are observed with pay rates approaching the maximum of $80, likely senior executives or specialized technical roles.
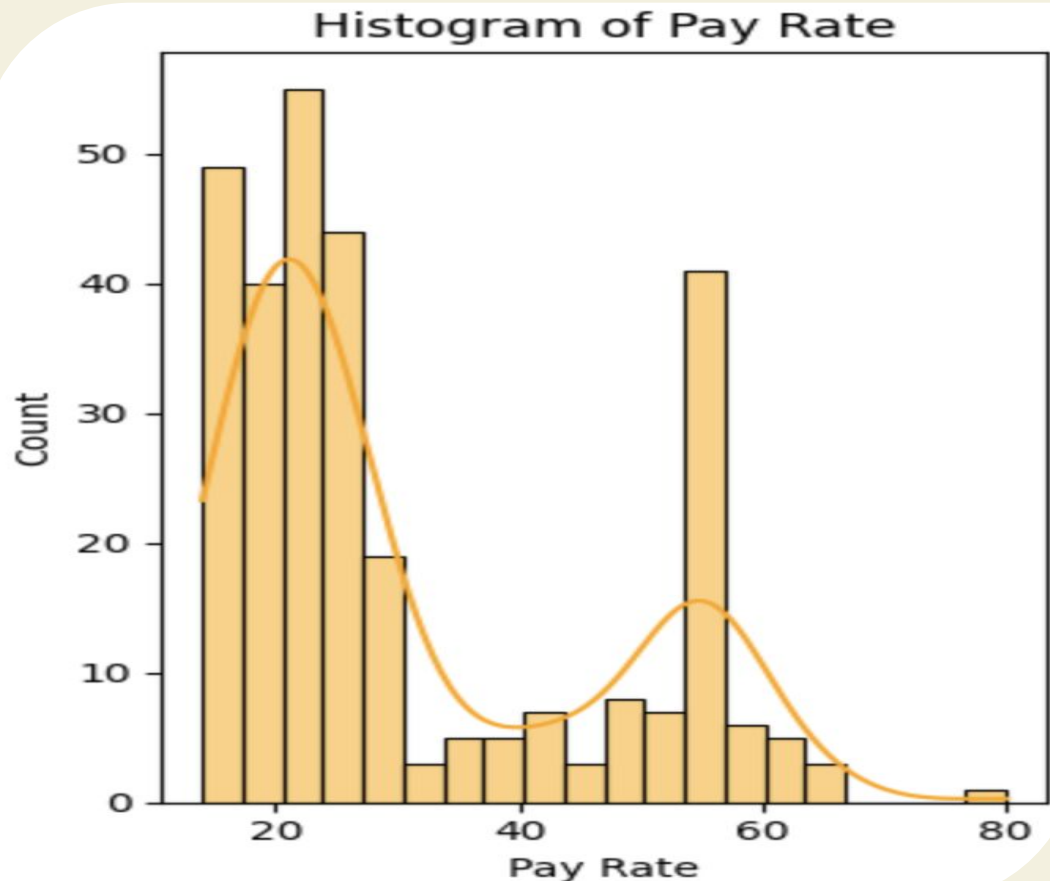
Histogram of Pay Rate

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Chart Explanation

The points are scattered fairly randomly, suggesting there isn't a strong relationship between how old an employee is and how much they're paid. This means that age isn't a major determining factor in pay at this company.
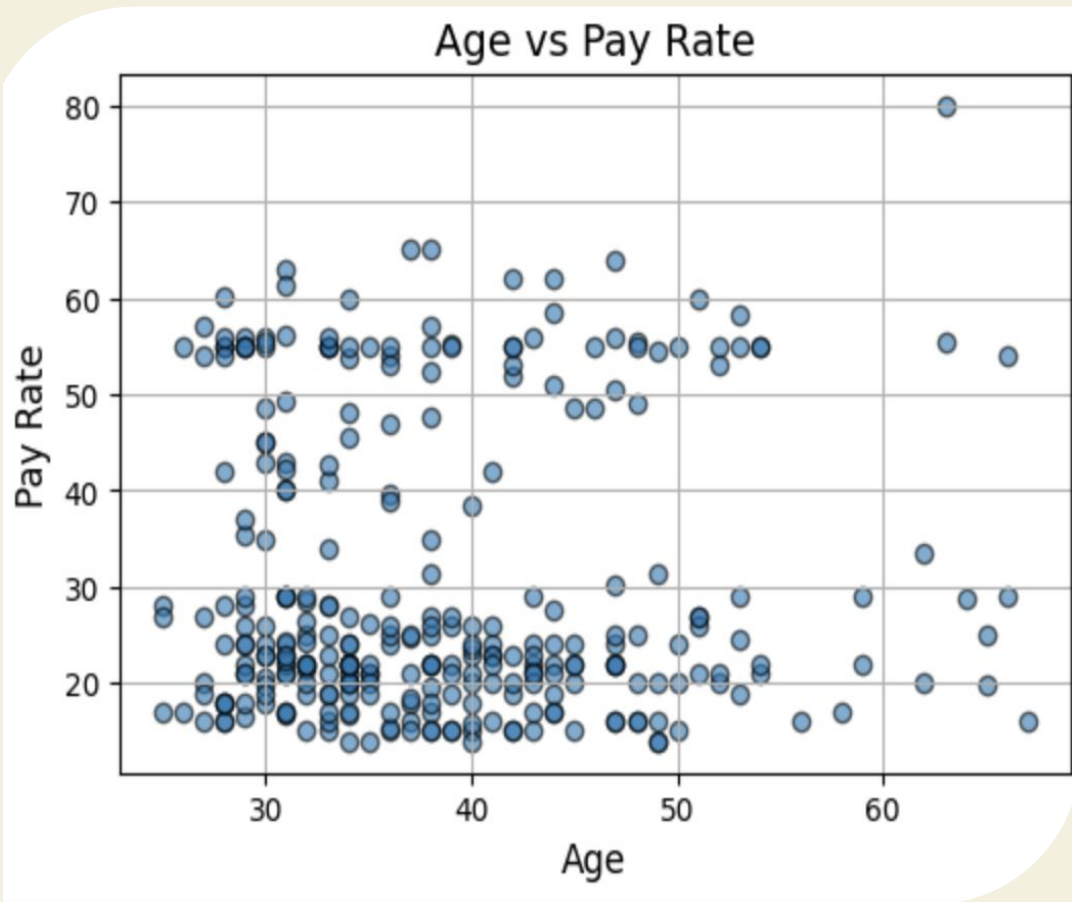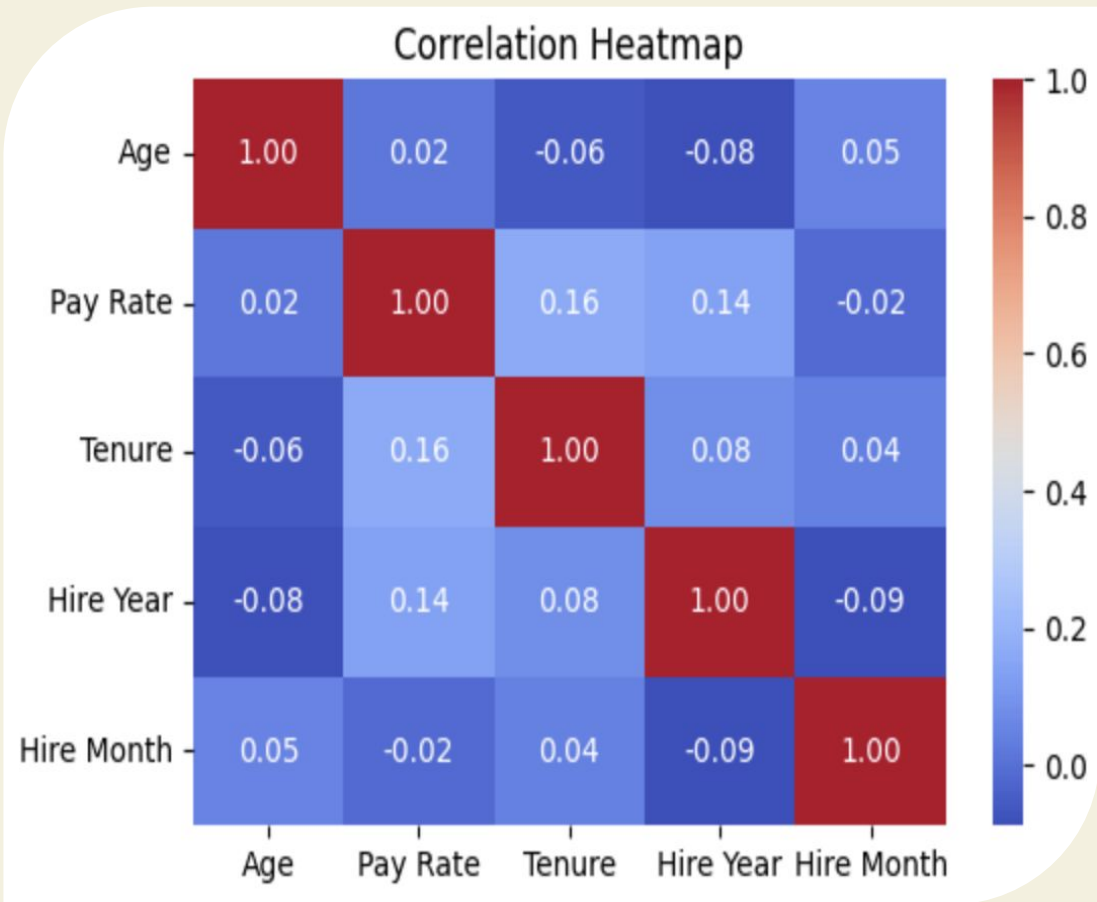

Age vs Pay Rate

Chart Explanation

The heatmap shows generally weak correlations, suggesting that variables like pay rate, age, and tenure are not strongly interdependent. The slight positive relationship between pay rate and tenure reflects a common trend of pay growth with longer service.

Correlation Heatmap

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The analysis provided valuable insights into various aspects of the organization's workforce. Key findings include:
1. Demographics and Diversity: - The workforce demonstrates a higher representation of females compared to males, with a strong concentration in non-senior roles. Racial and ethnic diversity is limited, with a significant majority of employees identifying as White. Other racial groups have lower representation.
2. Pay and Performance: - The pay distribution shows a bimodal pattern, with a significant portion of employees in lower-paying positions and a smaller cluster in high-paying roles. Performance scores are well-distributed across genders, with most employees meeting or exceeding expectations.
3. Hiring Trends: - Hiring peaked in 2010, followed by a gradual decline, suggesting stabilization or a shift in recruitment strategy. - Seasonal hiring patterns show increased recruitment in January and July.
4. Correlations: - Pay rates show a weak positive correlation with tenure and hire year, reflecting slight increases in pay for longer-tenured employees and more recent hires.

Recommendations - Enhance diversity and inclusion initiatives to address underrepresentation of certain racial and ethnic groups. Review pay structures to ensure equitable compensation across roles and demographic groups. Strengthen career progression opportunities for females, particularly in senior roles. Focus on optimizing recruitment strategies based on seasonal patterns and departmental needs. This analysis provides a foundation for informed decision-making to foster a more inclusive, equitable, and efficient workforce.