Bias Detection Report

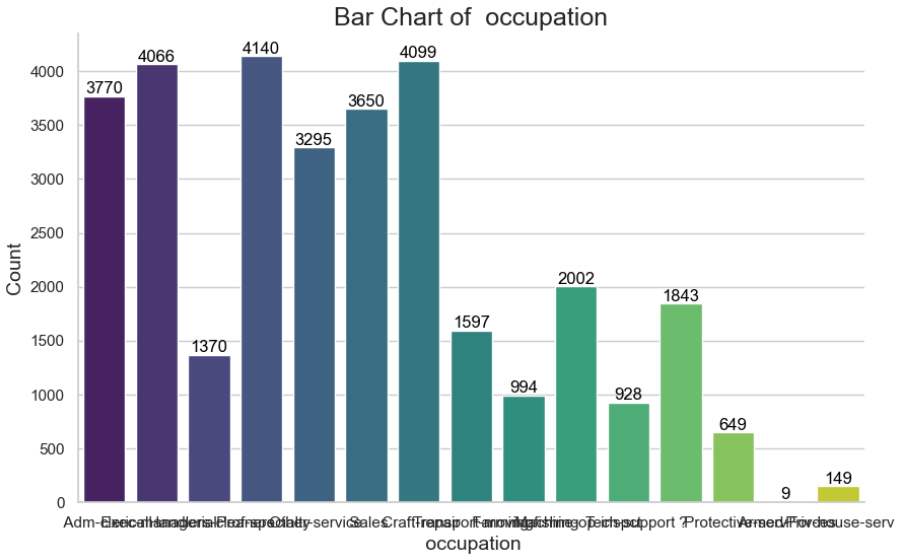
Bias Detection Report: Occupation Feature

Dataset Analyzed: source_files/Adult.csv

Feature Examined: `occupation`

Type of Bias Detected: Distribution Bias

Analysis Overview: The analysis focused on determining the distribution bias within the `occupation` feature of the dataset. Various methods were utilized to assess the extent of bias, and visualizations were created to depict the distribution of occupations.



Tools and Methods Used:

1. **Shannon Entropy and Balance Metric**

   - **Balance**: 0.9002

   - Conclusion: Moderate bias

2. **Max/Min Ratio**

   - **Value**: 460.0

   - Conclusion: Extreme bias

3. **Gini Index**

   - **Adjusted Gini Index**: 0.9673

   - Conclusion: Minimal bias

4. **Relative Risk**

   - **Normalized Bias Score**: 460.0

   - Conclusion: Extreme bias

5. **Chi-Square Test**

   - **Statistic**: 8786.32

   - **P-Value**: 0.0

   - Conclusion: Extreme bias

6. **Kolmogorov-Smirnov Test**

   - **K-S Statistic**: 0.6

   - **P-Value**: 0.0077

   - Conclusion: Significant bias

7. **Jensen-Shannon Divergence**

   - **Value**: 0.2772

   - Conclusion: Moderate bias

Conclusion:

The analysis indicates a significant to extreme bias in the distribution of the `occupation` feature. This bias is primarily due to the unequal representation of certain occupations. Stakeholders should consider these findings when using the dataset to ensure fair representation and avoid potential bias in decision-making processes.