

Bias Detection Report

Bias Detection Report: Personal Status and Credit Risk

- **Dataset Analyzed:** Statlog (German Credit Data)
- **Features Examined:** Personal status and sex, Credit risk (Good/Bad)
- **Type of Bias Detected:** Correlation

Analysis Results

- **Hilbert-Schmidt Independence Criterion (HSIC):**
 - HSIC Value: 2.416e-07
 - Interpretation: Very low correlation bias detected.
- **Wasserstein-2 Distance:**
 - Result: NaN
 - Interpretation: Insufficient data for certain category comparisons.
- **Chi-Square Test:**

- Chi-Square Statistic: 9.605

- p-value: 0.022

- Degrees of Freedom: 3

- Expected Frequencies:

- [[93. 217.]

[15. 35.]

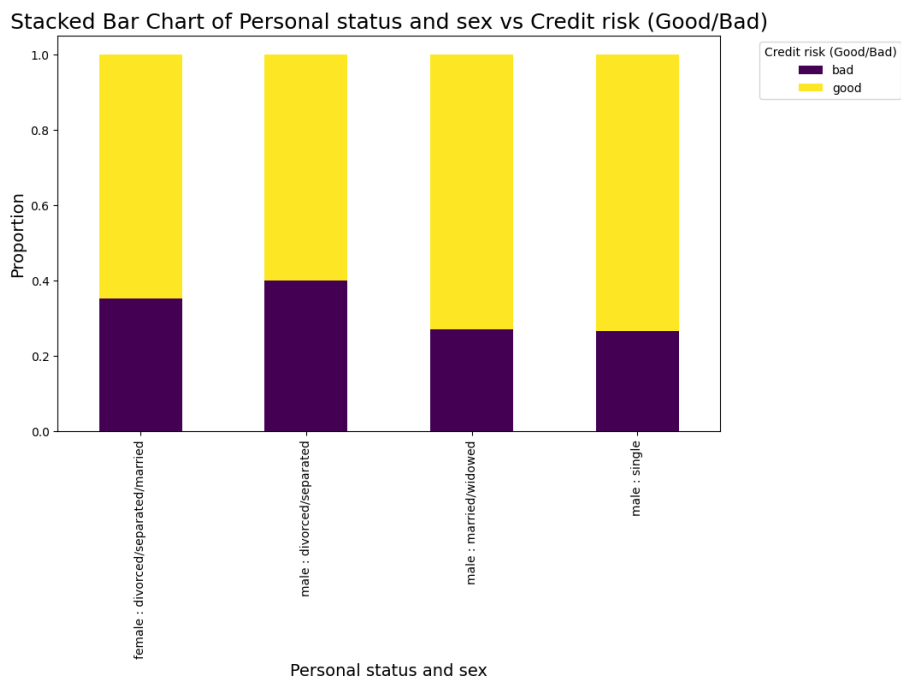
[27.6 64.4]

[164.4 383.6]]

- Interpretation: Statistically significant association detected, indicating potential bias.

Visualization

- A stacked bar chart representing the distribution of credit risk outcomes across different personal status and sex categories has been generated.



Recommendations

- The Chi-Square test suggests a significant association between personal status and sex with credit risk outcomes. Further investigation and consideration should be given to these findings.
- The HSIC method indicates low overall bias, but attention should be paid to Chi-Square results.
- Consider checking the data completeness or variability for Wasserstein-2 analysis.

Conclusion

- Based on the evidence, the dataset shows a significant association between personal status and sex and credit risk outcomes. This should be further analyzed to ensure fairness and unbiased decision-making.