

Bias Detection Report

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Dataset Analyzed: `source_files/Statlog.csv`

Feature of Interest: Personal status and sex

Bias Detection Type: Distribution

Tools and Methods Used

1. Shannon Entropy and Balance Metric
2. Max/Min Ratio
3. Entropy and Normalized Entropy
4. Gini Index
5. Relative Risk
6. Chi-Square Test

Detection Results

1. ****Shannon Entropy and Balance****:

- Shannon Entropy: 1.5321
- Balance Metric: 0.7661
- Bias Level: Moderate

2. ****Max/Min Ratio****:

- Max/Min Ratio: 10.96
- Bias Level: Significant

3. ****Entropy and Normalized Entropy****:

- Normalized Entropy: 0.7661
- Bias Level: Moderate

4. ****Gini Index****:

- Adjusted Gini Index: 0.7911
- Bias Level: Moderate

5. ****Relative Risk****:

- Normalized Bias Score: 10.96
- Bias Level: Significant

6. ****Chi-Square Test****:

- Chi-Square Value: 324.039
- P-Value: 6.2279e-70
- Bias Level: Extreme

Conclusion

The analysis reveals significant to extreme distribution bias in the "Personal status and sex" feature. Consider potential rebalancing or bias correction if this feature is critical for decision-making.

