Bias Detection Report

Distribution Bias Analysis Report

Dataset Analyzed:

- **File**: MIMIC-IV.csv

- **Column**: patient_marital

Analysis Summary:

The analysis aimed to detect distribution bias within the 'patient_marital' feature of the MIMIC-IV dataset. Various methods from the toolset and literature were employed to provide a comprehensive assessment.

Bias Type:

- **Type**: Distribution

Relevant Feature(s):

- **Feature**: patient_marital

Tools and Methods Used:

- Kolmogorov-Smirnov Test

- Jensen-Shannon Divergence

- Shannon Entropy and Balance

- Max/Min Ratio

- Gini Index

- Relative Risk

Findings:

The analysis shows that the 'patient_marital' feature exhibits a moderate level of distribution bias. The Kolmogorov-Smirnov Statistic and Max/Min Ratio suggest some imbalance in the distribution, while the Jensen-Shannon Divergence indicates minimal divergence from a uniform distribution. The Gini Index also supports a moderate level of inequality among categories.

Bias Levels:

1. **Kolmogorov-Smirnov Statistic**: 0.5749

2. **Jensen-Shannon Divergence**: 0.0615

3. **Balance Metric**: 0.8324

4. **Max/Min Ratio**: 5.39

5. **Adjusted Gini Index**: 0.8564

6. **Relative Risk Normalized Bias Score**: 5.3908

Conclusion:

The feature 'patient_marital' shows a moderate level of bias. While these results do not fully compromise the dataset's usability, you may need to consider this bias in certain applications. I recommend giving these results additional thought before proceeding.