Bias Detection Report

Bias Detection Report: Education and Gender Correlation Analysis

1. Introduction

This report aims to analyze the correlation between education levels and gender in the provided dataset. The analysis focuses on detecting any significant bias using a variety of statistical methods.

2. Methods Used:

- Cramér's V

- Elift

- Statistical Parity and Z-scores

- Lipschitz Function

- Total Variation Distance

- Chi-Square Test

- Hilbert-Schmidt Independence Criterion (HSIC)

3. Results:

- Cramér's V: 0.0956 (Level 1 - No Bias)

- Elift: 1.2556 (Level 2 - Minimal Bias)

- Statistical Parity (Z-value): 0.3636 (Level 3 - Moderate Bias)

- Lipschitz Function (Delta): 0.3636 (Level 3 - Moderate Bias)

- Total Variation Distance: 0.1711 (Level 2 - Minimal Bias)

- Chi-Square Test: No significant association

- HSIC: 2.85e-17 (No significant correlation bias)

4. Summary and Conclusion:

The analysis indicates a primarily minimal bias between education levels and gender, with methods showing varying results. The overall bias level is categorized as Level 2 (Minimal Bias). This suggests that while some differences exist, they are not significant enough to impact decision-making processes based on this data.

5. Recommendations:

Given the minimal bias detected, the dataset can be used with confidence for further analysis and decision-making. However, it is advisable to remain aware of the moderate biases indicated by some methods in specific contexts.