

# Bias Detection Report

Bias Detection Report for Educational Attainment in Dataset

Dataset Analyzed: source\_files/Adult.csv

Features Examined: education, race, income

Bias Type: Distribution and Correlation

Tools Used: Chi-Square Test, Jensen-Shannon Divergence, Statistical Fairness Analysis

Results Obtained:

- Chi-Square Test Statistic (Distribution): 20513.37, p-value: 0.0
- Jensen-Shannon Divergence: 0.1734
- Chi-Square Test for Correlation Bias Statistic: 730.67, p-value: 5.55e-116
- Protected Group Probability (Bachelors): 0.415
- Non-Protected Group Probability (Others): 0.207
- Risk Difference: 0.208

Bias Extent and Related Findings:

- Distribution Bias: Notable bias in educational distribution, suggesting inequality in representation.
- Correlation Bias: Significant bias in income and race correlation with education, indicating disparities in treatment based on educational attainment.

Recommendations:

- Consider the implications of these biases before using the dataset for sensitive applications.
- Potentially re-evaluate and adjust the dataset to mitigate the effects of detected biases.