Bias Detection Report

Bias Detection Report for Student Performance Dataset

1. Bias Type: Distribution

2. Relevant Feature: address (Urban vs. Rural)

3. Bias Level: Level 3 (Moderate Bias)

4. Analysis Summary:

- Shannon Entropy and Balance Method: Balance Metric = 0.7652, Level 3 Bias.

- Max/Min Ratio Method: Ratio = 3.4886, Level 3 Bias.

- Gini Index Method: Adjusted Gini Index = 0.6939, Level 3 Bias.

- Relative Risk Method: Normalized Bias Score = 3.4886, Level 3 Bias.

- Chi-Square Test: Chi-Square Statistic = 121.42, p-value = 3.09e-28, Significant Deviation.

5. Additional Explanation: The imbalance in the distribution of urban and rural addresses suggests a moderate level of representation bias. While this bias does not fully compromise the dataset's usability, it may need consideration in certain applications where representation is crucial.

Bar Chart of address