1. Introduction and question
   - Do urban areas have higher general election turnouts than other typologies in Virginia? To answer this question, we looked at 3 groups: urban, suburban, and rural typologies.

2. Data description and sources

The dataset we used is titled Virginia 2025 General Election Turnout from the Virginia Department of Elections website. The data set lists every Virginia locality and includes mailed absentee, in-person, and total voter turnout. This is the official site for Virginia election data, confirming the credibility of our findings. Data cleaning included coding Virginia's localities into Urban, Suburban, and Rural categories.

3. Methodology

We created a GLM to examine how each typology (Urban, Suburban, Rural) relates to total voter turnout. The model presents voter turnout as the outcome variable and the typology as the primary predictor variable. To visualize this data, we used a Multiple Box Plot graph displaying the mean turnout across the three groups. Our GLM does not account for outside factors like population size election type, allowing for potential limitations. Without calculating what proportion of the population voted in each locality, our model may not account for all elements of the total voter turnout.

4. Results and analysis

Our model demonstrates that suburban areas have the highest voter turnout in Virginia, followed by urban then rural counties. To evaluate the model validity, we looked at a residual plot, which indicates that counties classified as suburban are associated with a statistically significant increase in total voter turnout compared to the other categories. The data is heteroscedastic, meaning that the variance of error is not constant across all levels of the independent variables. This aligns with the patterns identified in our Multiple Box Plot graph, where suburban areas display a higher median of turnout values.

5. Conclusions

In this project, we analyzed how county typology (urban, suburban, rural), relates to total voter turnout across Virginia. Using a linear model to visualize our data, we found that suburban counties consistently demonstrate the highest turnout, suggesting that they have characteristics that encourage political participation. Urban counties also show high turnout, where rural counties tend to be less participatory. These results help answer our research question by showing that voter turnout is not evenly distributed across typologies. Our model model supports the claim that voter engagement varies

across different environments, demonstrating that it is important to consider geographic factors when evaluating electoral behavior.