Voter Turnout and the Margin of U.S. Presidential Victories by County

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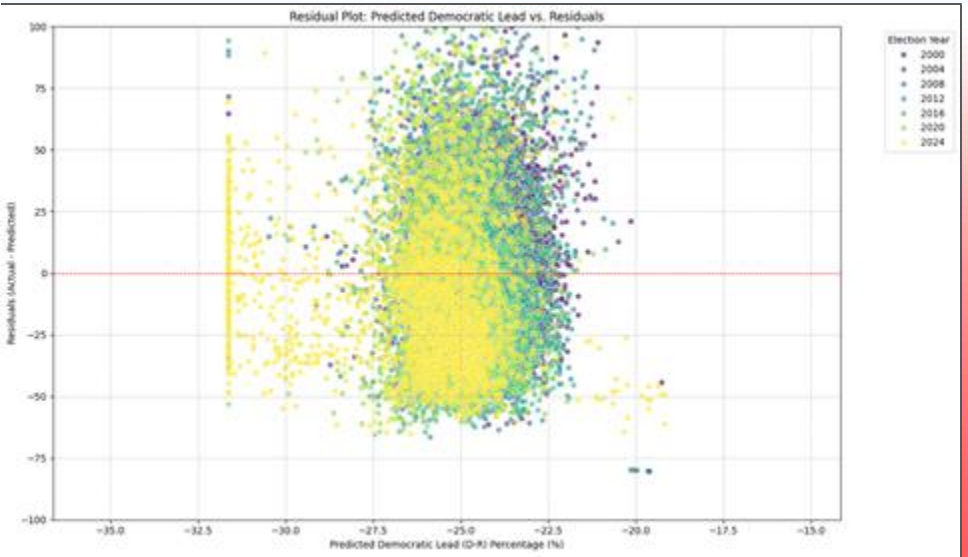
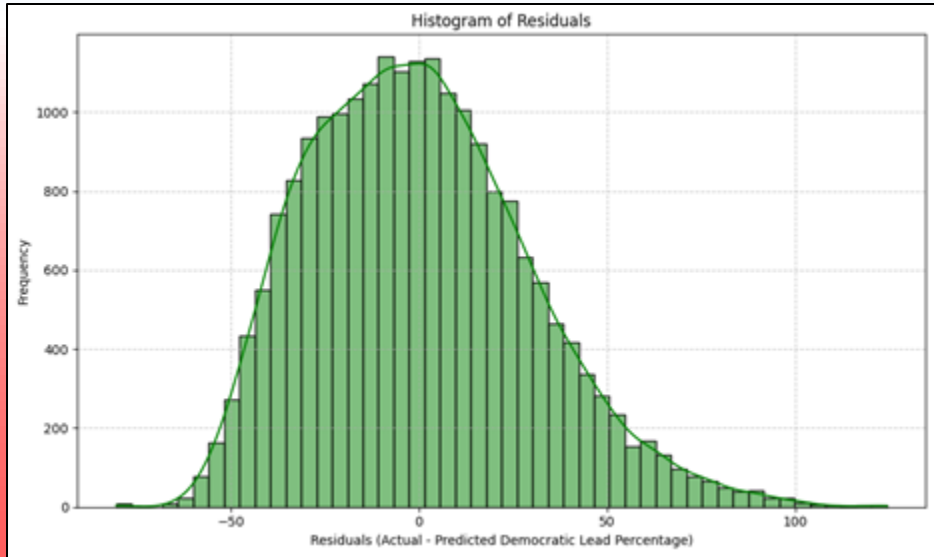
Datasets

- MIT Election Data and Science Lab. (2025). *Voter Turnout Data*. https://electionlab.mit.edu/data
- StatsAmerica. (2025). *Population Data*. https://www.statsamerica.org/

GLM Assumptions

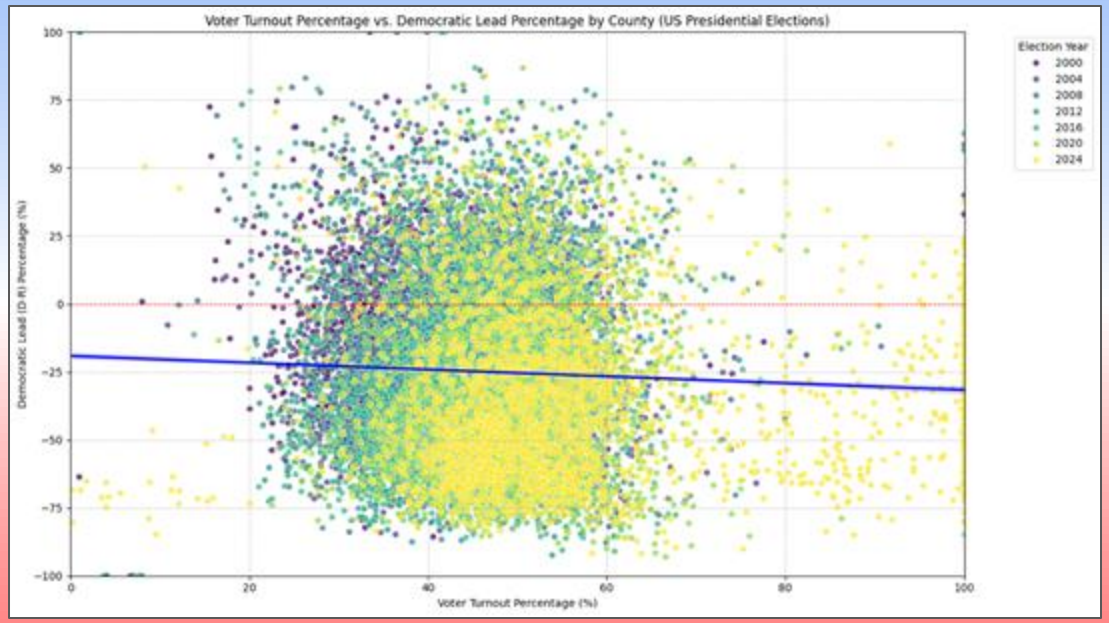
- **Linearity** → Relationship between X and Y is linear (the error term is unrelated to the fitted value).
- **Homoscedasticity** → Residuals are spread out the same everywhere.
- **Normality** → Errors are normally distributed (see histogram).
- **Independence** → Observations are independent from each other.





Democratic Lead Percentage = -18.9652 - 0.1288 * Voter Turnout Percentage

- P-value for β_0 (Intercept) = 0.000 → Significant!
- P-value for β_1 (Slope) = 0.000 → Significant!
- R^2 = 0.003 → Variability NOT explained by model.



Conclusion:

While voter turnout percentage is significant in predicting democratic lead percentage, our GLM only explains 3% of the variability in democratic lead percentage. This suggests that more predictors are necessary to generate a better fitting model for the data.