Trends in Mathematical Language Used in Political Speeches

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From immigration statistics to the latest pandemic updates, math is often utilized in modern American political speeches, but there is a deficiency of data to explain the history of the relationship between math and politics. This study aims to analyze trends in the mathematical language used in American political speeches over time, concentrating on the 1940s to the present, while also comparing this data to trends in mathematics education. To gather this data, presidential speeches on three topics, State of the Union, immigration, and tax reform, were analyzed with an original Javascript code that highlighted all of the math used in the text, both statistics like "45 million" and math vocabulary such as the term "average." The number of these math words in a speech was then divided by the word count to generate three proportions: the number of statistics, math vocabulary, and total math-related words as compared to the total number of words. Other data were also recorded for each speech, such as political affiliation, method of delivery, intended audience, etc. Contrary to an initial hypothesis, data showed that from the 1960s to the present, the proportion of math used in political speeches has stayed approximately constant without any statistically significant relationship. This is true across all speech types and political affiliations, with total math-related words typically varying from 0.01% to 0.03% of the word count. However, further analysis of previous speeches revealed that the proportion of math words was approximately 50% lower in the early 1940s and only rose to modern levels in the late 1950's. Similarly, popular STEM education increased in the 1950s at the beginning of the Space Race, reflecting the rise in math usage during this period. Recent American PISA test results, an international standardized test for fifteen-year-old students, also show that the average American math score has shown little improvement since 2003. Additionally, test results suggest that American students particularly struggle applying math to real-world problems, an issue that directly relates to the interpretation of math in political speeches. Thus, the degree of quantitative literacy in political discourse seems to mirror educational trends in America.