Politics and Science: Examining the Role of Politics on Federal R&D Funding Allocations

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As the political situation across the country changes with every election cycle, so do the federal appropriations for scientific R&D funding. Elected government officials have to show to their constituency that they deserve to be reelected, and one potential way to show this is by bringing in more federal funding for the research institutions in their district. As a result, we want to investigate to what degree do politics affect federal research appropriations, if funding follows political party lines, and if there are any specific areas in the country being left behind in scientific funding. The importance of understanding how politics impacts scientific funding lies in the fact that although less than 50% of scientific funding comes from the federal government [1][5], private funding cannot close the gap left behind when federal funds retract [2]. Hence, politics has the potential to directly impact what gets researched, which research institutions prosper or struggle, and which science subjects is prioritized in the country.

Our literature review found previous attempts to analyze the effects of politics on scientific funding. A study analyzing funding for the National Institute of Health (NIH) found that political influence can serve as a type of "public input … concerning health-research needs," but concluded that political influence on funding is more complex than who are the sitting members of the appropriation subcommittees [3]. A paper in the American Political Science Review found that local governments have greater influence on the allocation of federal grants but that their "distribution patterns and their determinants vary over time [6]." Finally, another paper investigated the biases for R&D research along political party lines and found the presidential administration followed by the House of Representatives to have an outsized influence on funding but found differences in funding along party lines appear to be weaker [4]. Given all the previous work done in this topic, we hope to either reconfirm previous observations with more recent data or to find a new trend on where we are seeing growth or stagnation in funding and how it may reflect off our current divisive political climate.

For our research we plan to primarily use data from the Federal RePORTER tool as this contains information on federal funding award amounts, state location, and congressional district where this award was given. Additionally, for the necessary demographical and political data we will use the Census along with Congressional –and other government sources—data to get information, like party affiliation, on congressional district politicians and their constituents. Once the data has been gathered, cleaned, and joined we will first apply simple data analytics to find any simple relationships between politics and funding. Slowly we will introduce more complex analysis using machine learning (ML) algorithms such as multivariate linear regression and feature selection to determine the important factors that most affect funding. As with any other ML algorithm, we will point out any potential biases that may exist in our data.

We wish that the results from this paper could be used not to identify which party or individuals are better or worse for scientific progress, but to paint a clearer picture of how our current political atmosphere has affected our country's research institutions. We hope that this research can help

policymakers understand which areas of the country are falling behind in scientific output due to political biases in funding and help them craft policy that revitalize stagnant research institutions in less dynamic areas in the United States.

References

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