

HIGHER EDUCATION R&D VISUALIZATION

INTRODUCTION

This poster explores trends in research and development (R&D) expenditures across funding sources, industries, and fields in US higher education.

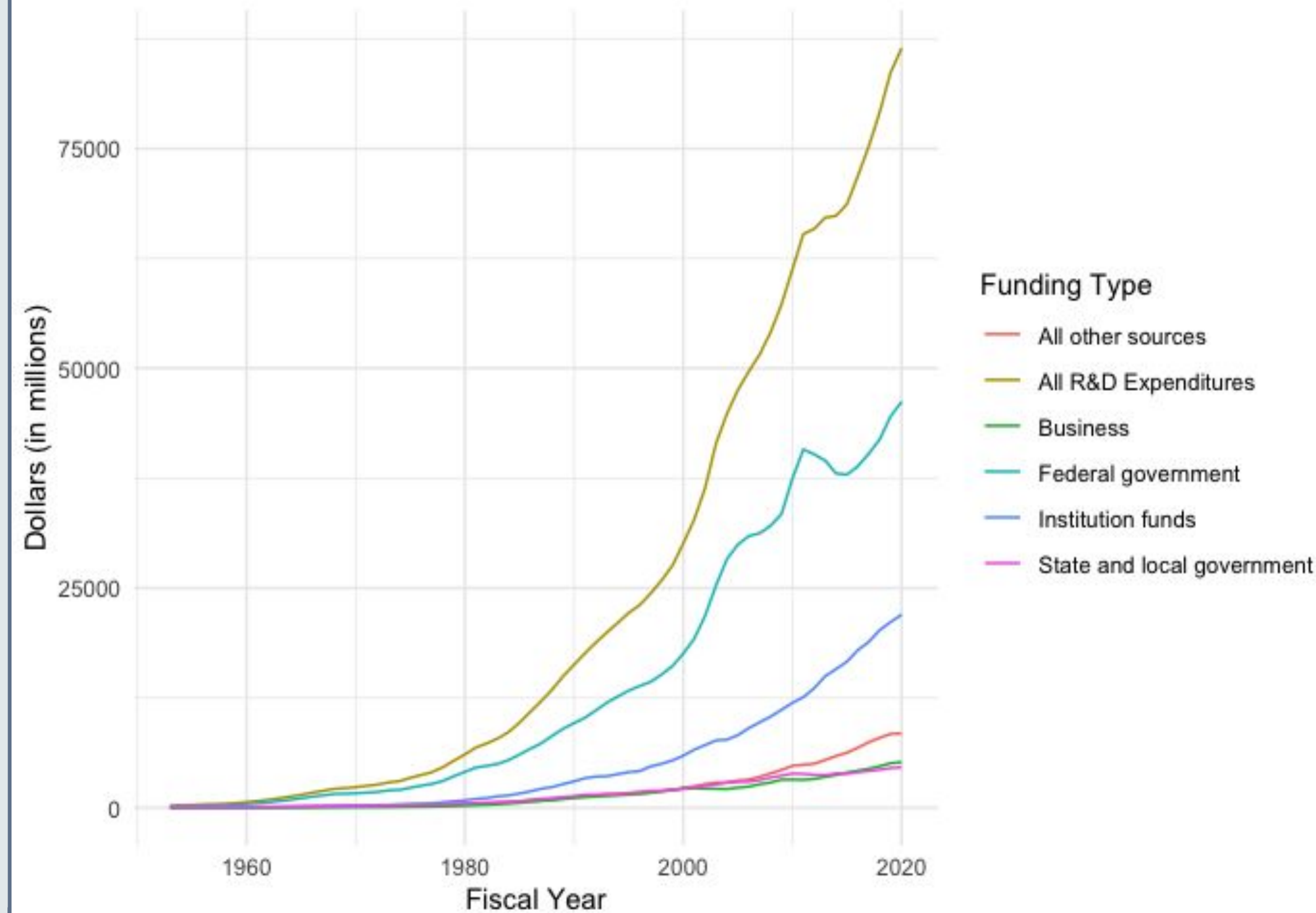
- ❖ How have R&D expenditures evolved over time?
- ❖ What are the impacts of higher education R&D?
- ❖ Distribution of R&D expenditures within and beyond higher education?

DATA

We found higher education R&D expenditure data from the National Science Foundation and National Center for Science and Engineering Statistics, and patent data from the United States Patent and Trademark Office. After importing these data into Google Sheets, we cleaned the data and exported into RStudio for graphing and analysis.

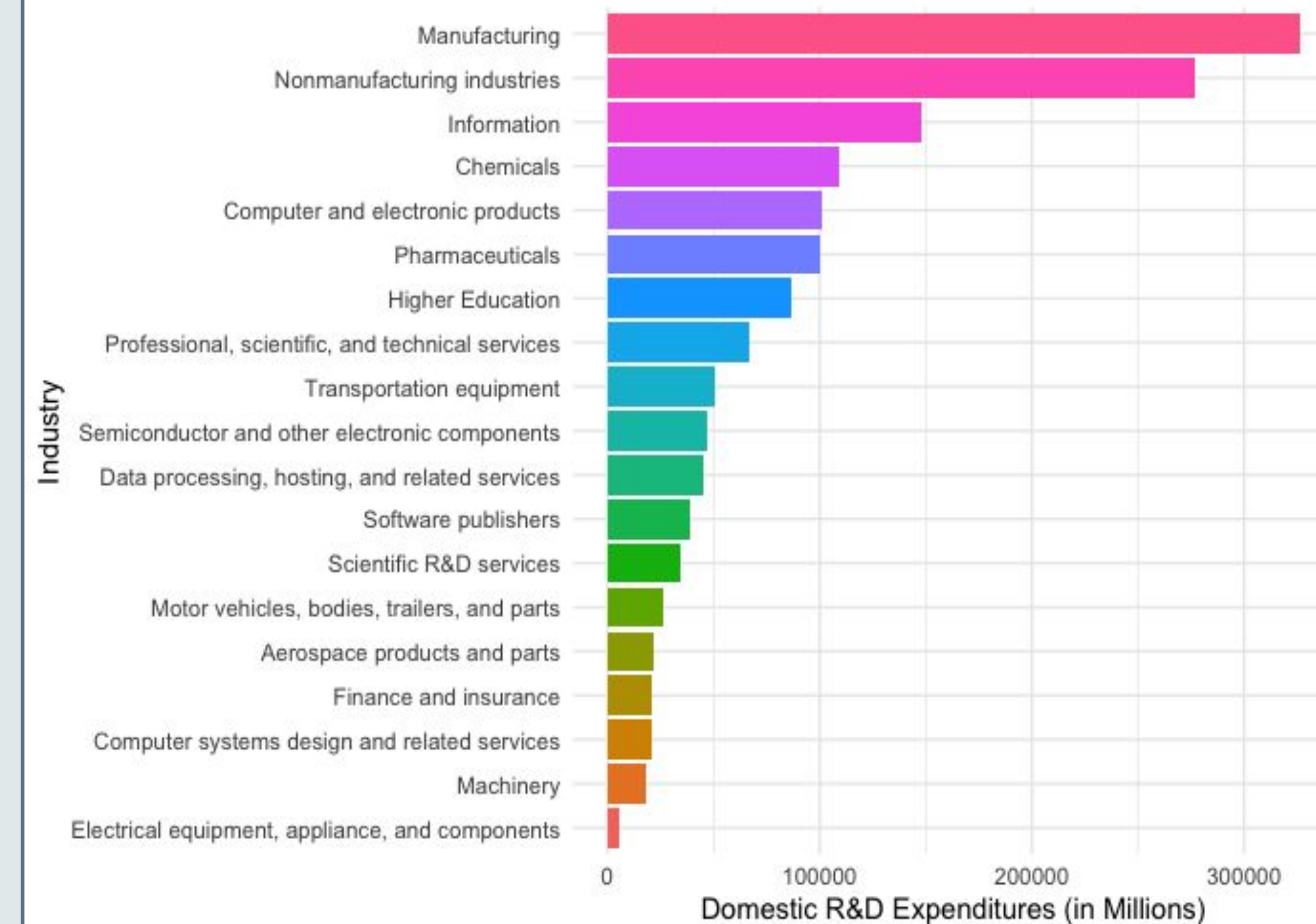
[Google Sheets](#)

Higher Education R&D Expenditures by Funding Type



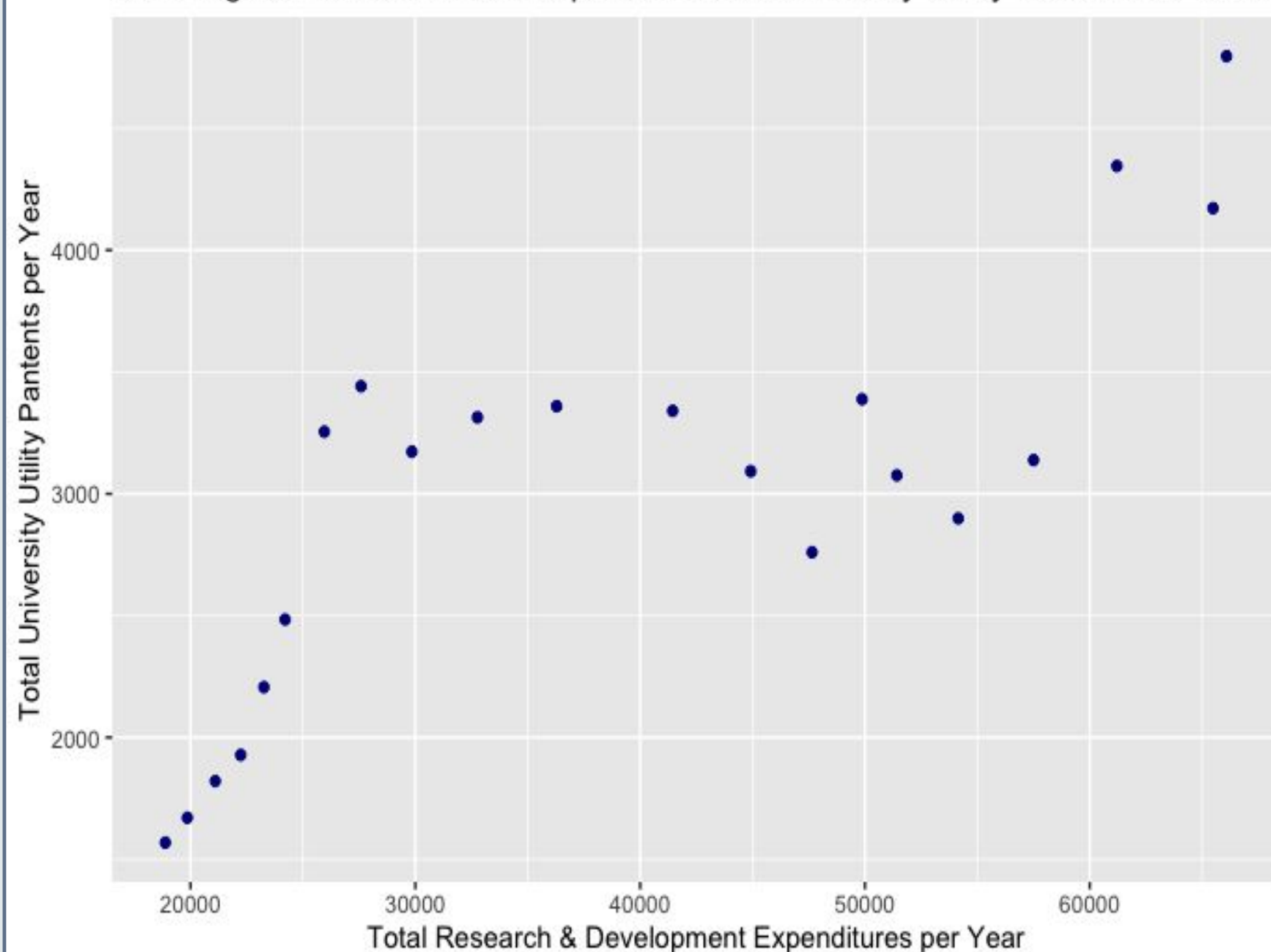
R&D expenditures have seen exponential growth, especially with a sharp increase after 1980. The Federal Government has been the largest contributor.

Domestic R&D Expenditures by Industry



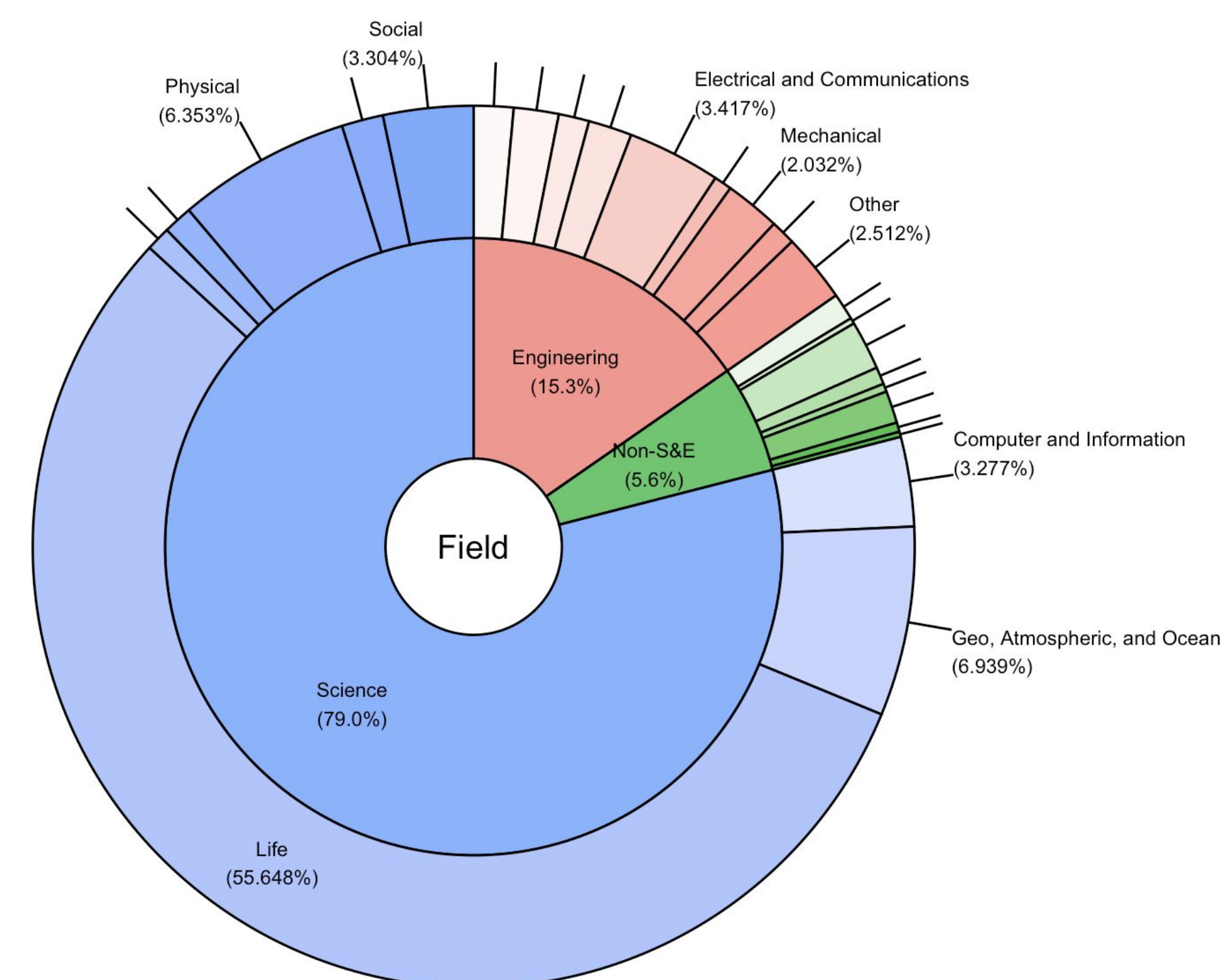
Compared to other industries, US Higher Education ranks 7th in total R&D Expenditures, only below other R&D driven science and engineering fields.

Total Higher Education R&D Expenditures vs University Utility Patents Per Year



There is a strong positive linear relationship between the total R&D expenditures and university utility patents per year, as shown in the Pearson's correlation coefficient of ~0.7879.

Higher Education R&D Expenditures(2020) by Field of Study



Science accounts for the majority of R&D (79.0%), followed by Engineering (15.3%) and Non-Science & Engineering (Non-S&E) (5.6%).
*Shows specific disciplines with highest R&D Expenditures

CONCLUSION

Higher Education is a major beneficiary and contributor to US Research & Development. There has been continuous increase in funding with Federal support remaining the largest source. This is likely influenced by the Bayh-Dole Act(1980), which allowed universities to patent federal funded innovations. Funding has allowed the driving of innovation and university patents across all educational fields, but especially science and life science. Moving forward, analyzing global R&D efforts could provide insights of US competitiveness and funding strategies.

REFERENCES

- ❖ <https://nces.nsf.gov/pubs/nsf24308/table/1>
- ❖ <https://nces.nsf.gov/pubs/nsf24308/table/13>
- ❖ <https://nces.nsf.gov/pubs/nsb20246/table/RD-6>
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