Employment Trends: Desirable Applicant Skills of Physics Degree Holders
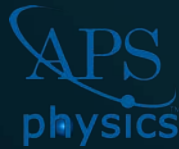
Kirk Kleinsasser, APS Careers Intern

Internship Goals

Perform a quantitative analysis of keywords common to job descriptions

Create and catalogue a database of job postings from the APS Job Board

Examine correlations between skills and factors such as employment sector and job permanence

Project Approach

- Existing Tools Could Analyze Our Data
- A Custom Solution is Better
- Identifing job sector and job permanance with Excel
- Preprocessing Improvements

Technical Choices

Simple, high level language that acts as a base for the program

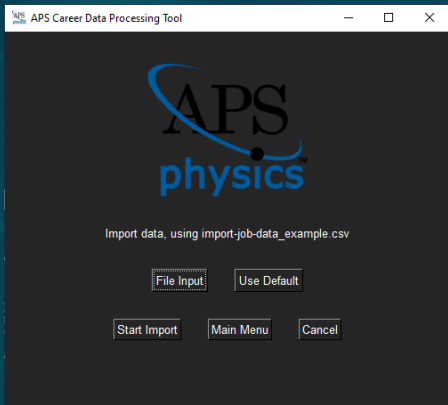Fast, locally stored database system to store and query job data

Efficient data processing module to import and export job data

Python

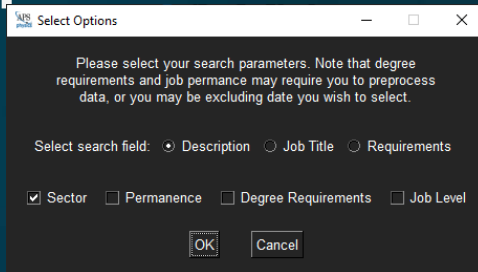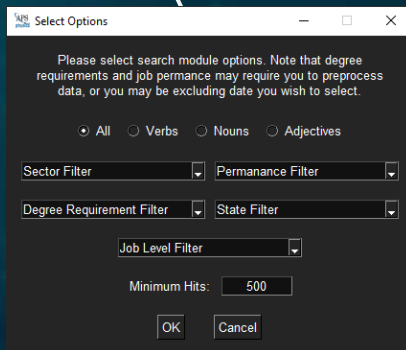SQLite3

Pandas

Data Processing GUI

Import Menu

Find Keywords
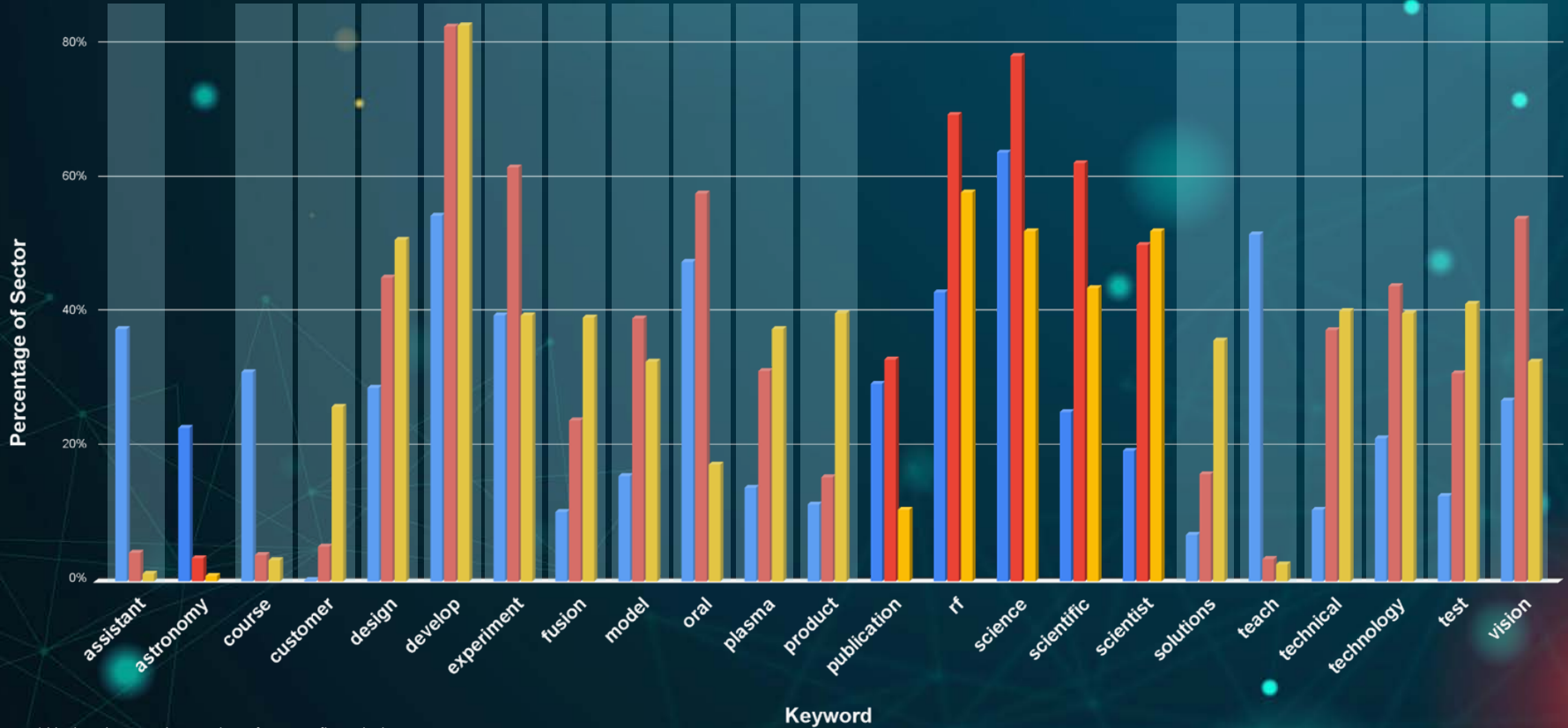
Analyze Data

Results

RESULTS

Job permanence by sector for all APS Job Board Postings since 2018 (2463 jobs)
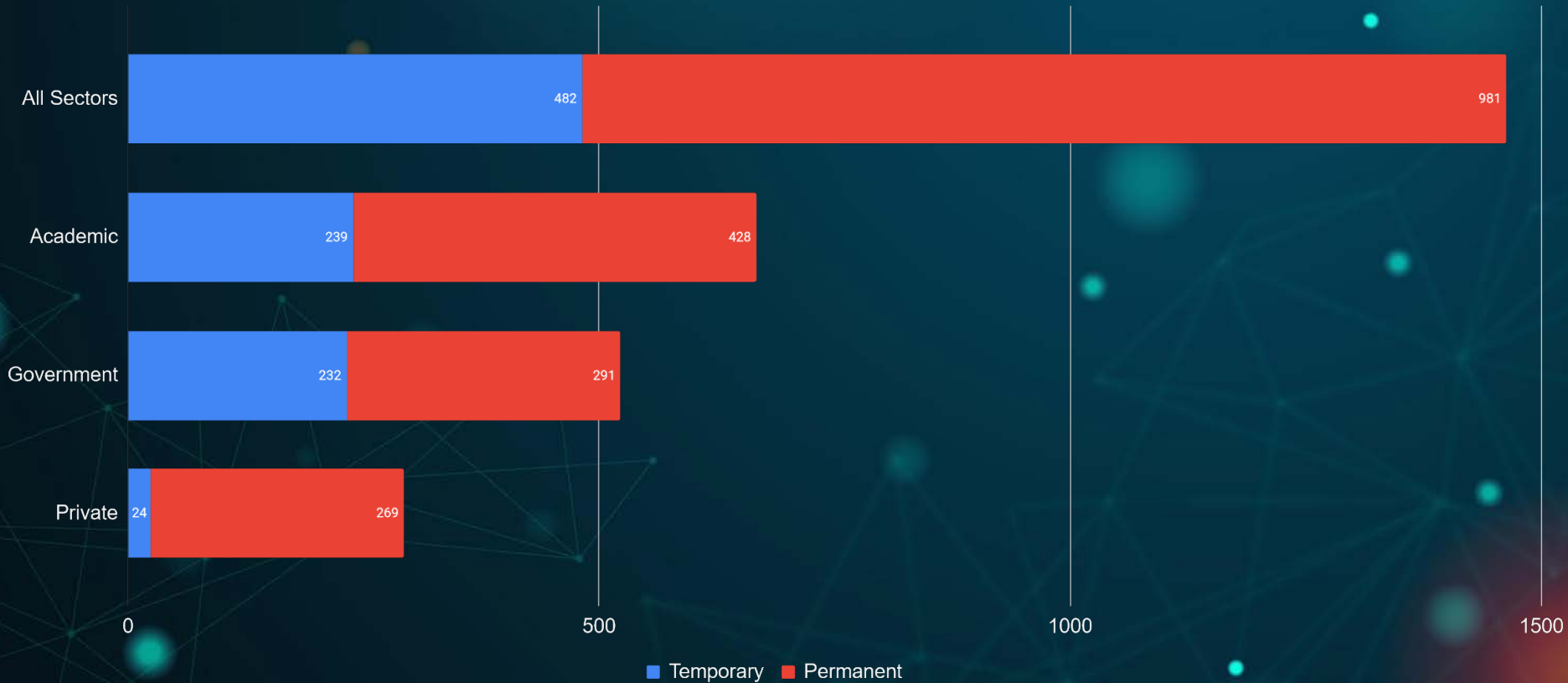
Comparisons of Keywords by Sector*
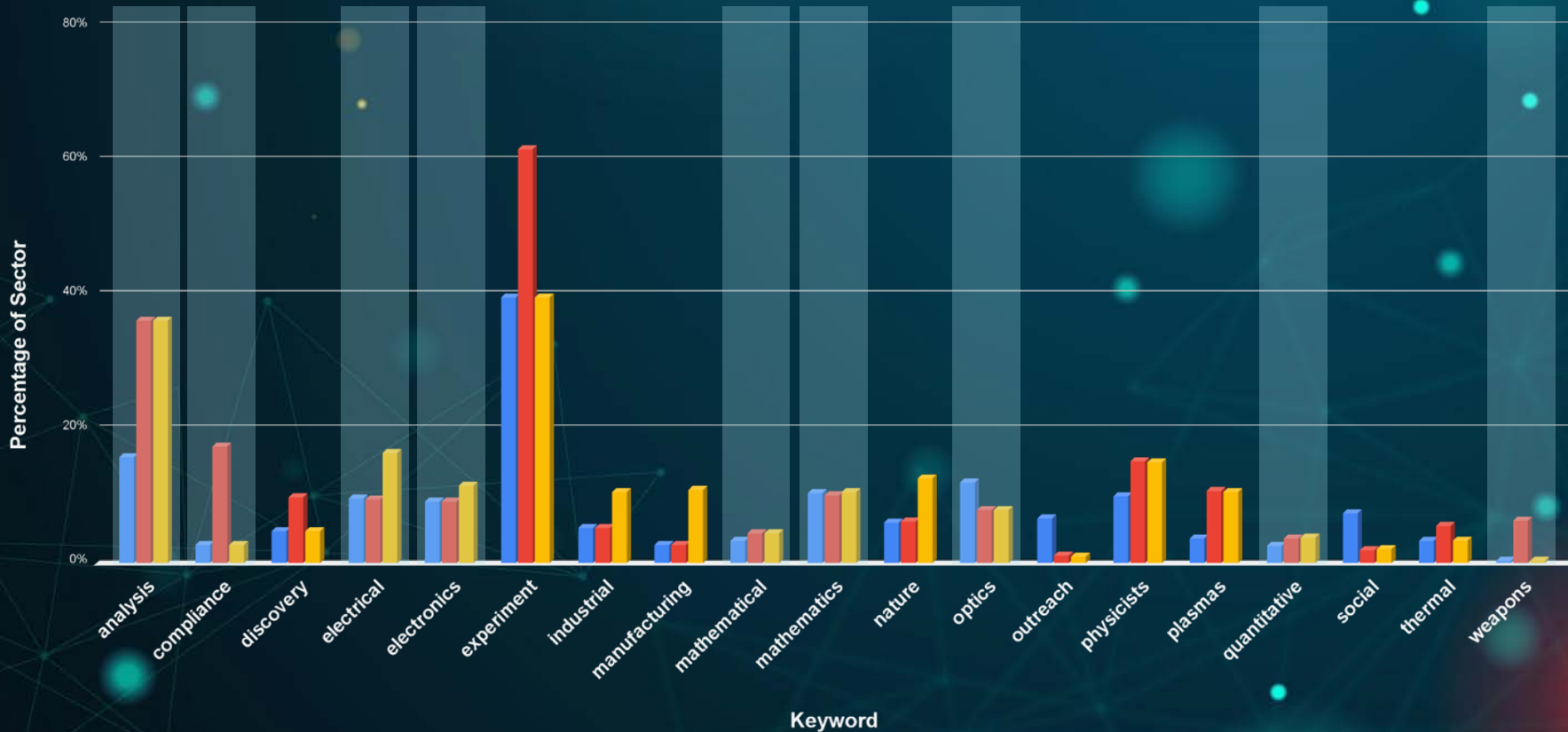[Selected Terms with Standard Deviation > 15%]

*this data does not show analyses for nonprofits and other sectors

Comparisons of Keywords by Sector*
[Selected Terms with Standard Deviation < 0.1%]

*this data does not show analyses for nonprofits and other sectors

Comparisons of Diversity Keywords by Sector*
[Selected Terms]

*this data does not show analyses for nonprofits and other sectors

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Comparisons of Keywords by Job Permanence
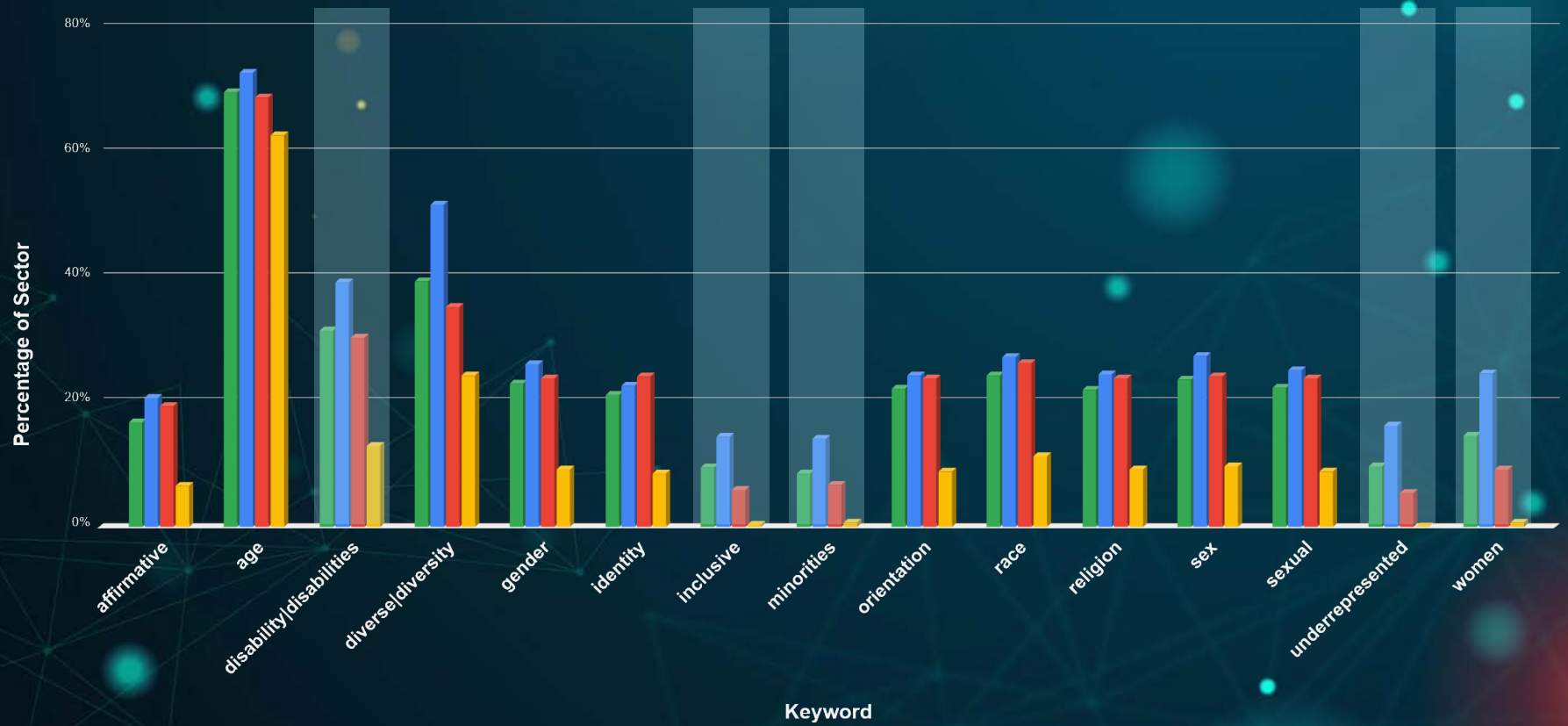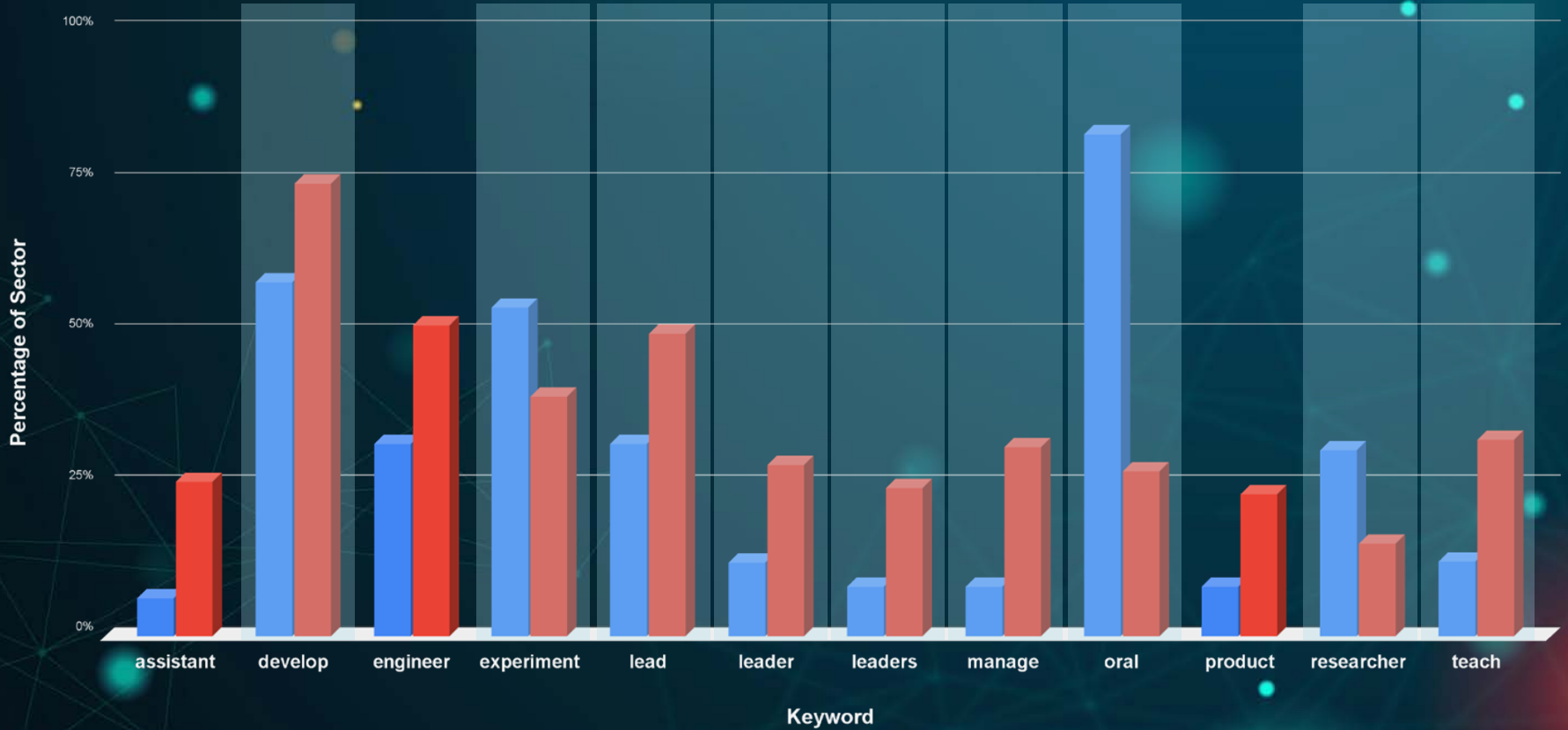[Selected Terms with Standard Deviation > 10%]

Conclusions

01

Job Permanace

Private sectors have far fewer temporary jobs

02

Sector Terms

Academic and R&D terms appear as expected

03

Government Terms

Experiment appears more in government jobs, and about equally in other sectors

04

Diversity

Trends in diversity terms by sector vs job permanence

Next Steps

Further Analyses

Analyze job data based on degree requirements, job level, and/ or location

Development

Integrate pre-processing into the job data tool and add ability to intelligently identify imported columns.

Any Questions?

Many thanks to my project supervisor, Midhat Farooq, for her mentorship and support throughout this summer. Additionally, thanks to the amazing folks at SPS National and AIP for their work making our summer awesome!