Trends in Data Science Job Postings on Stack Overflow

Benjamin Ackerman

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Introduction

- Increased demand for data scientists, hot new field, Stack Overflow's popularity

Research Aim

The purpose of this paper is to examine trends in job postings for "data scientists" on the Stack Overflow job board. This involves determining the most common computing skills that employers look for, along with their preferences of degree types and areas of study. This paper will also locate geographic regions where data science jobs are in highest demand, and if there are substantial differences in job characteristics by location.

Data

Data were made privately available upon request from David Robinson, a Data Scientist at Stack Overflow. The provided data consist of information from jobs posted on the Stack Overflow job board that either have "data scientist" or "data analyst" in their title, and were posted between August 25, 2010 and September 25, 2017. While company names were censored from the data, the following attributes of each posting were provided in a data frame: job title, original posting date, associated tags indicating relevant skills, job location (City, State, Country), salary (when included), and the full text of job descriptions and requirements.

- Extracted the following for each posting in the data provided:
    - Month and year when the job was posted
    - Degree requirement for the job (Bachelors, Masters, PhD)
    - Preferred majors/departments for the job
    - Latitude and longitude of the job location using the `geocode` function in the `ggmap` package
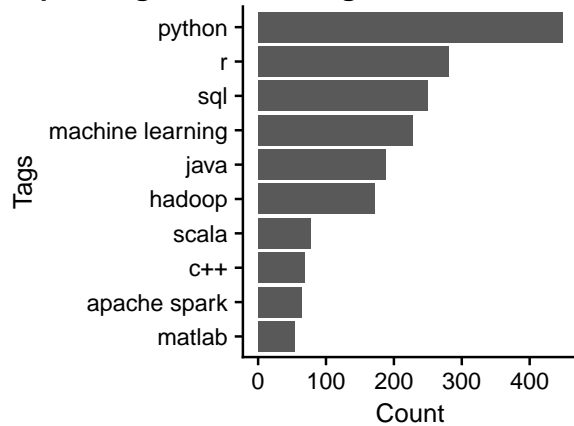
Methods

- Exploratory data analysis
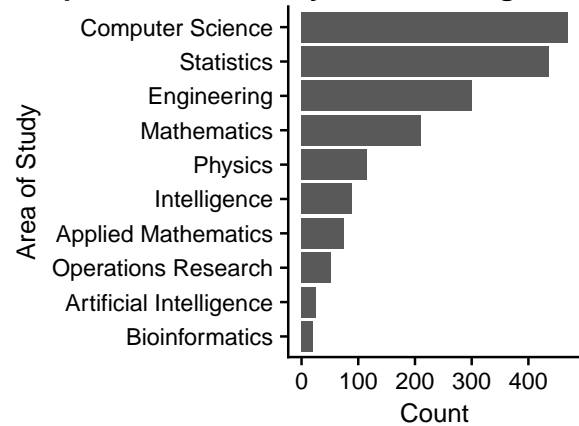   - Counted number of times each major/department was listed

- Counted number of times each degree type was listed
- Tabulated number of job postings by month and year
- Tabulated city locations
- Generated hex maps of US and Europe to view where most jobs are located
- Comparison of US and Europe jobs: what characteristics are more likely to land a person a job in Europe vs US?
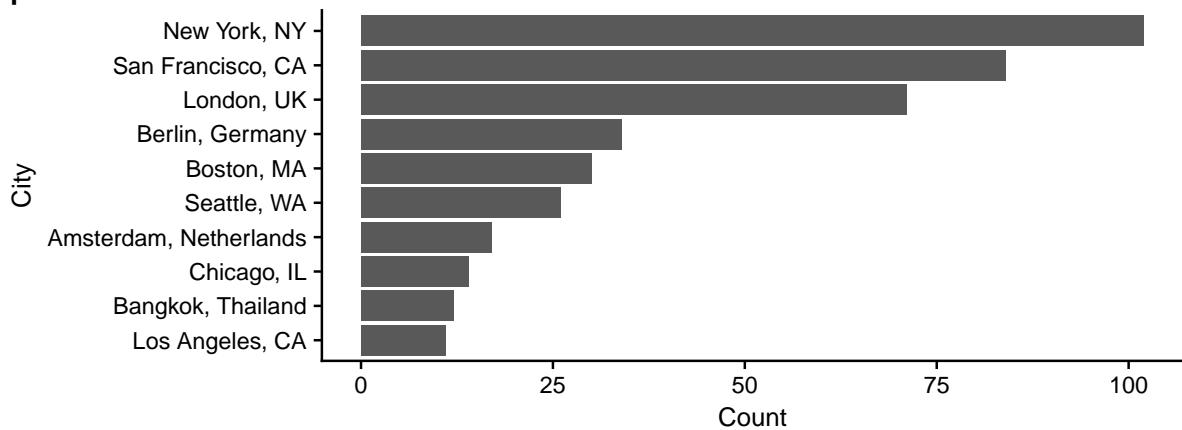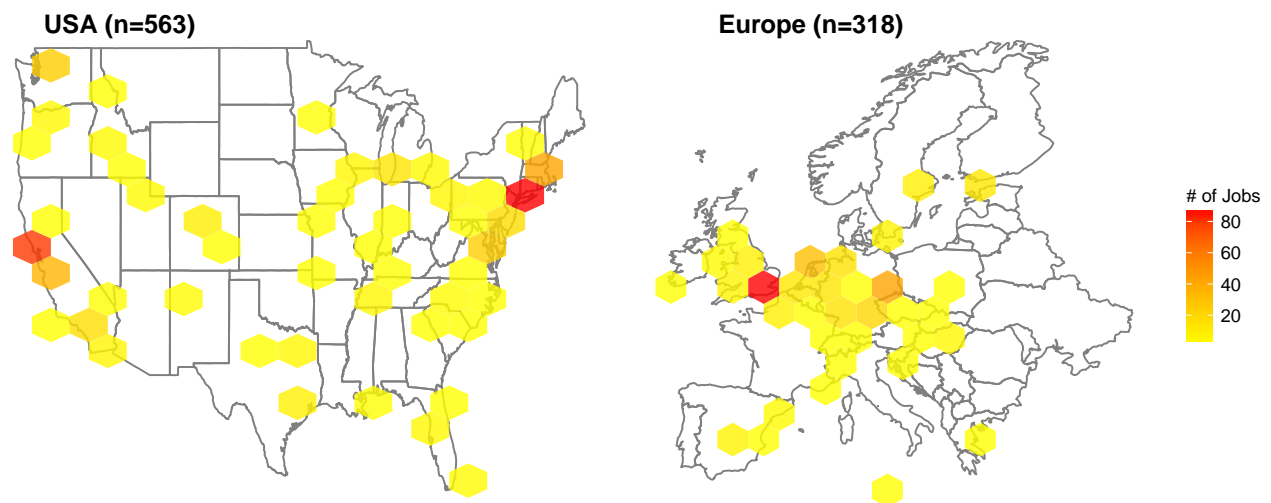
Results

Top 10 Tags in Job Listings

Top 10 Areas of Study in Job Listings

Top 10 Cities

USA (n=563)　　　　**Europe (n=318)**

# of Jobs

run t-tests and anova to look at differences in the table below

	USA (n=563)	Europe (n=318)
Visa Sponsorship	33 (5.9%)	66 (20.8%)
Allows Remote Work	52 (9.2%)	9 (2.8%)
Offers Relocation	150 (26.6%)	113 (35.5%)
Highest Degree Required:		
Bachelors	122 (21.7%)	26 (8.2%)
Masters	79 (14%)	34 (10.7%)
PhD	148 (26.3%)	74 (23.3%)

Discussion/Limitations

Conclusion