Analysis & Display of Data Science Job Posting Data

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Motivation and Objective

Motivation:

Uncertainty in preparation to reach career goals

Objective:

Provide Insight to University Students

Identify Trends in:

- Skill Preferences in Hiring
- Compensation by Industry & Company
- Job Availability by Position w/in Field

Motivation and Objective

- **Analyze** data for:
  - Most Common Skill/Attribute terms
  - Most Common Positions
  - Salary by Industry & Company
  - Is Salary ~ Job Satisfaction (Rating)?
  - Is Salary ~ Hiring Frequency?

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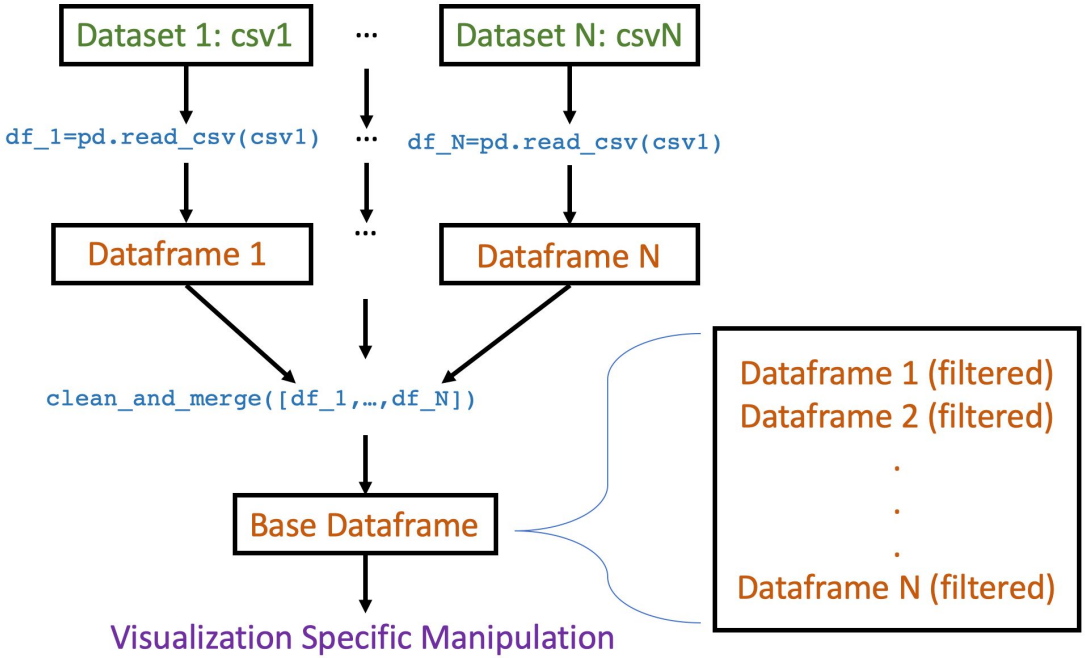
Methodology

- **Clean Data**
- **Format Data** with Pandas Dataframes:
- **Analyze** as framed by questions.
- **Visualize** with appropriate plots

Methodology Workflow: Data formatting

- **Import:** CSV to Dataframe
- **Clean:** Removed spurious entries
- **Format:**
  - Concatenated cleaned dataframes
  - Used concatenated dataframe as ‘base’



Methodology Workflow: Visualizations

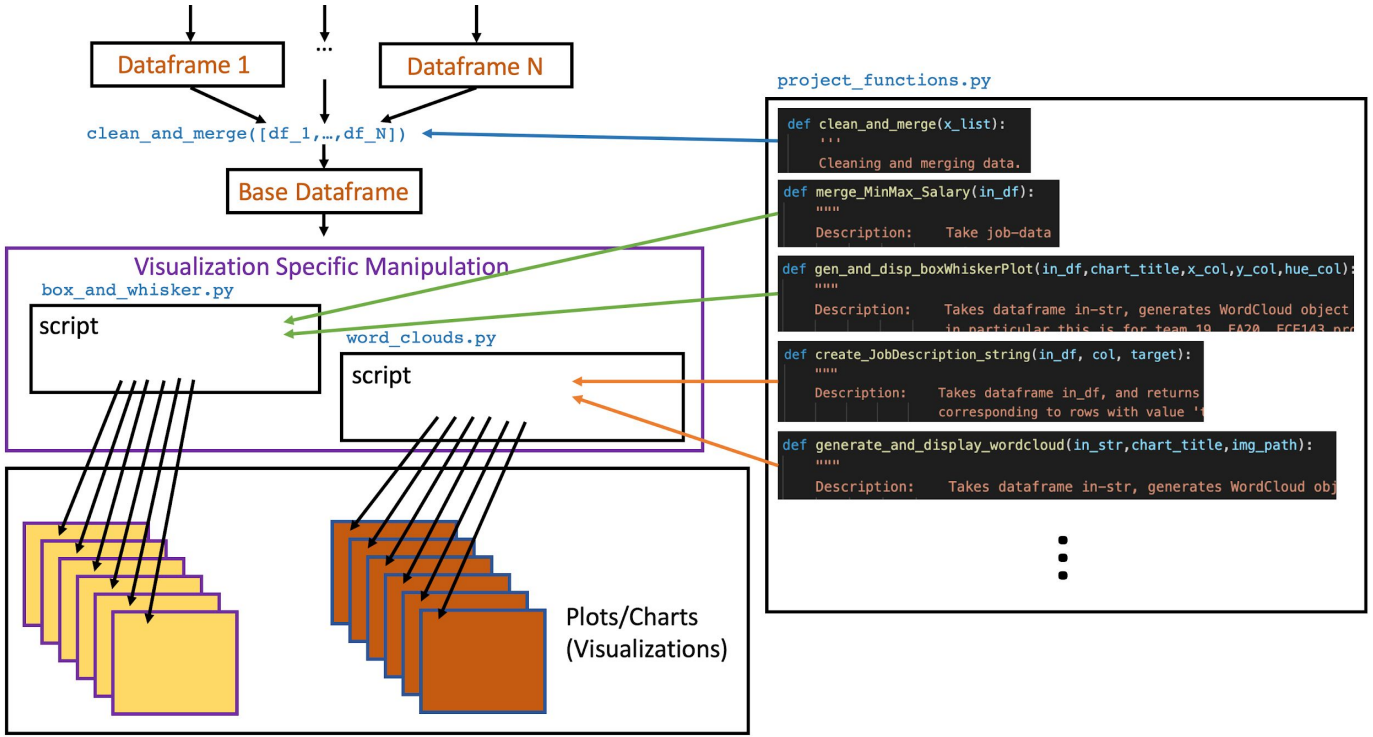
Did our best to stay **modular:**

All functionality used more than once?

Imported from file with common functions.

Propagates features/fixes across all instances of use.

Makes code more readable.



Dataset

- Data Science job listings scraped from glassdoor June 2020

- **4 Sets** as .csv files
  - Texas, New York, Washington, & SF Bay Area

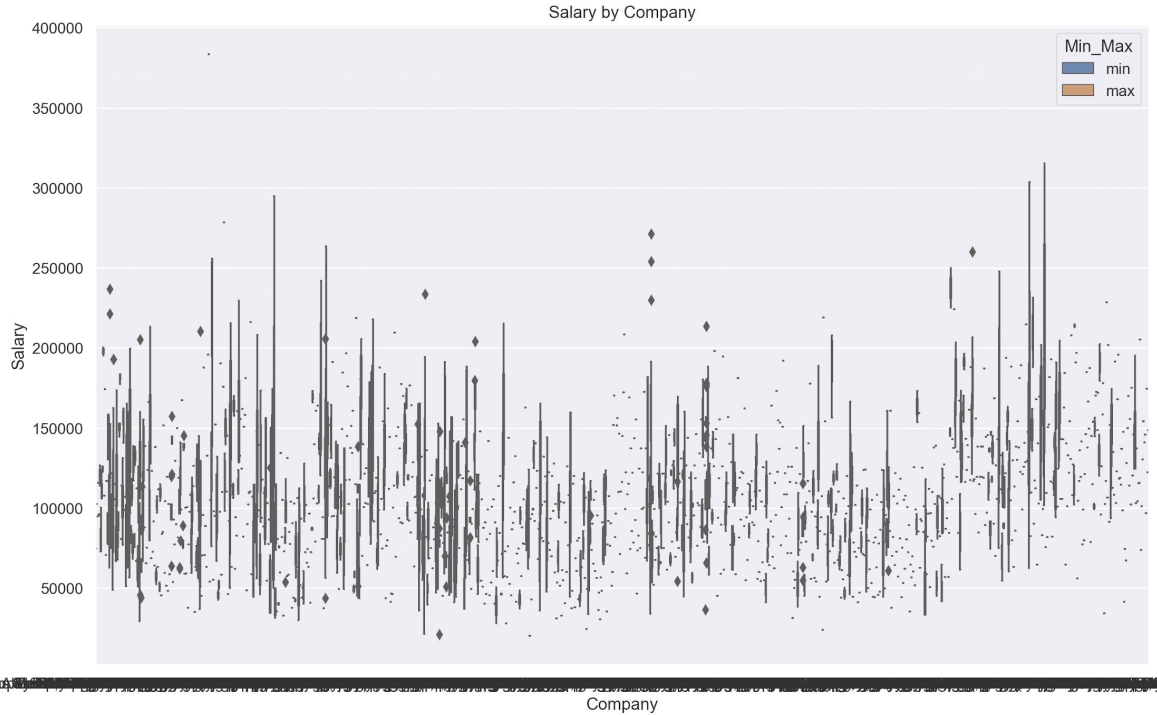
- **12 Useful Fields**
  - e.g. Job Description, Job Title, Salary

https://www.kaggle.com/atharvap329/glassdoor-data-science-job-data

Dataset: Issues

State	City	Min_Salary	Max_Salary
NY	New York	-1	-1

ABA Therapist	Kids Learning Loft Applied Behavic
Construction Project Manager	The LiRo Group
Diesel Mechanic	Kingdom Associates
Plumber	Plumbing for life Inc.
OT/ICS Systems Engineer	Forescout Technologies Inc.



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Odd Salary

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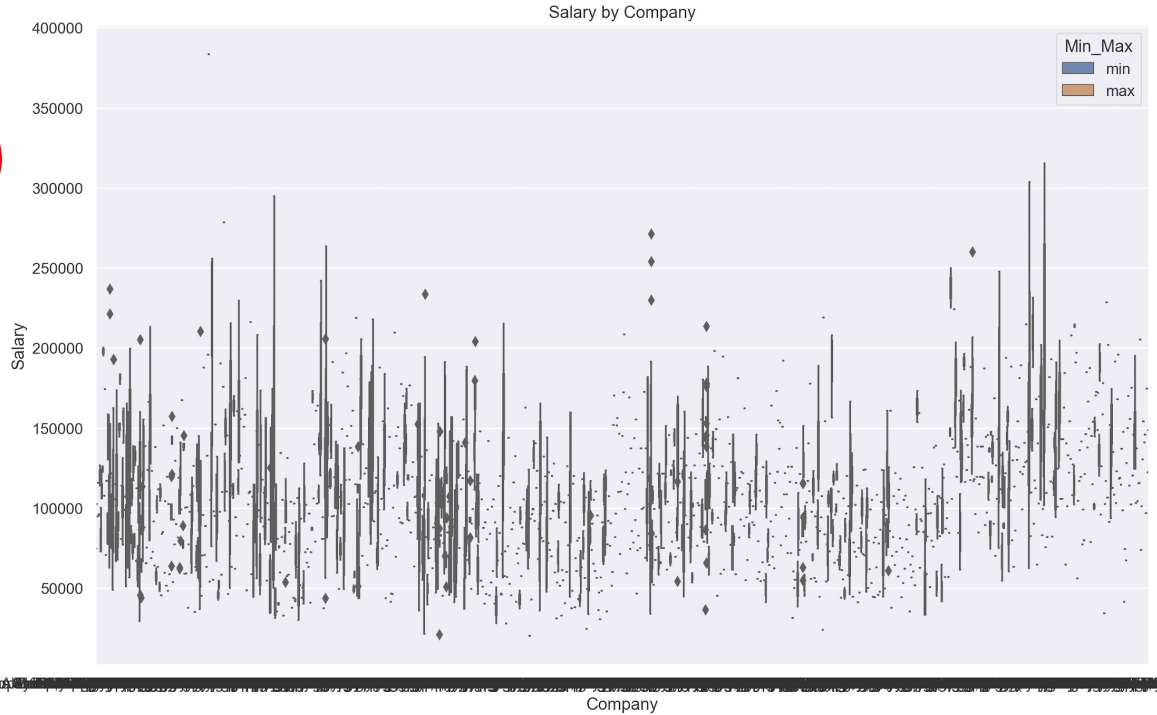

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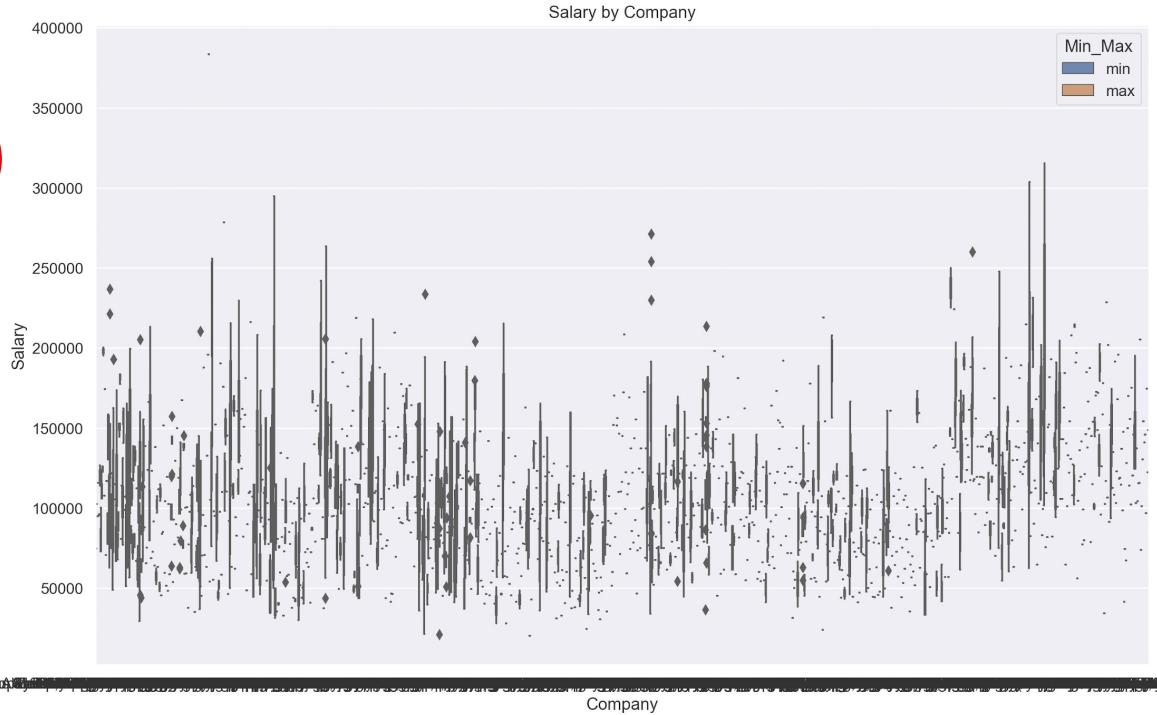

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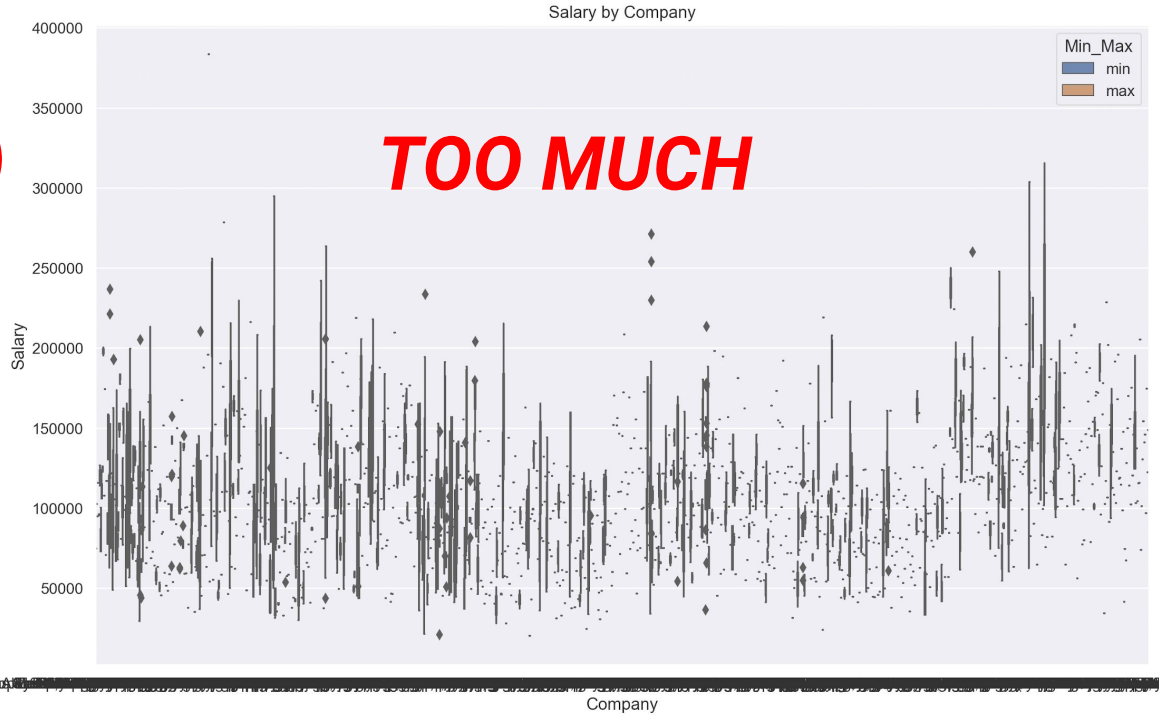
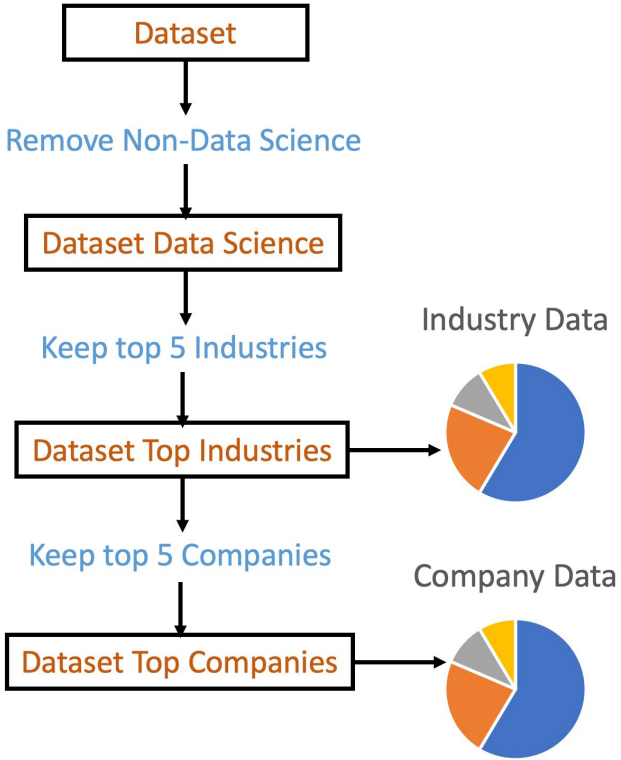


Dataset: Issues

- **Filtered** by number of posts
- More intuitive plots



Findings

Job Descriptions by Industry

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Word Clouds (Job Descriptions by Industry)

In General:

Experience is huge:

Skills, degree

Data Analysis is prevalent

Various coding languages:

Python, js, matlab

Word Clouds (Job Descriptions by Company)

In General:
Experience is huge:
Skills, degree
Data analysis is prevalent
Various coding languages:
Python, js, matlab

Interesting
Interpersonal / ‘soft skills’ (i.e. communication, team, presentation) seem to be very desirable.

Job Profiles by Industry

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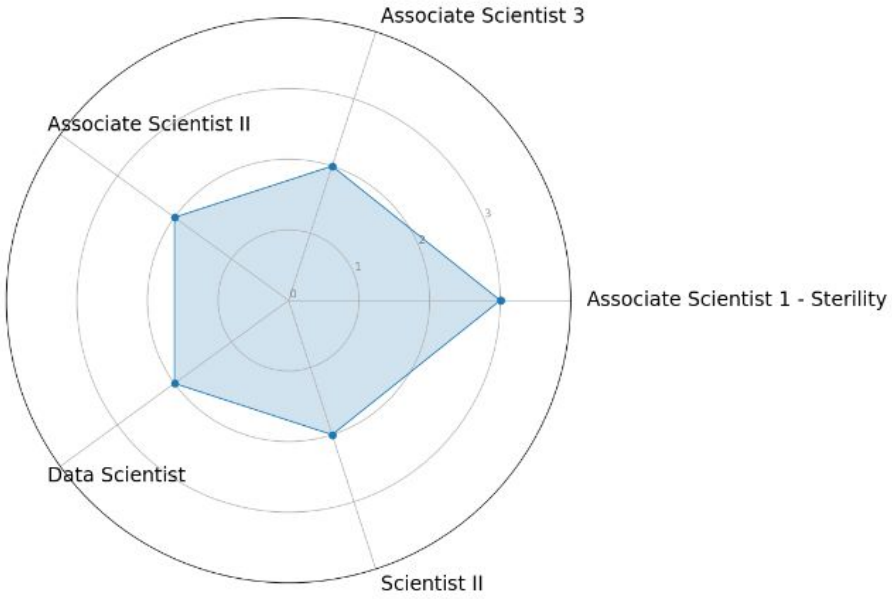
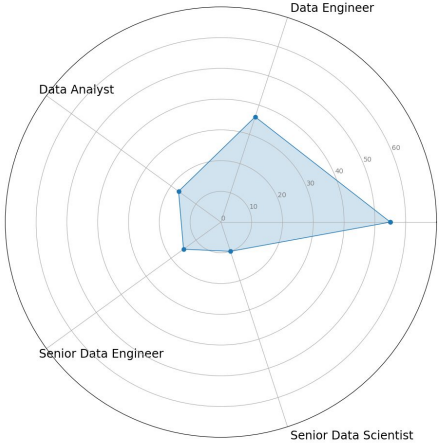
Job Titles by Industry

Job profiles for Biotech industry were unique w.r.t others.

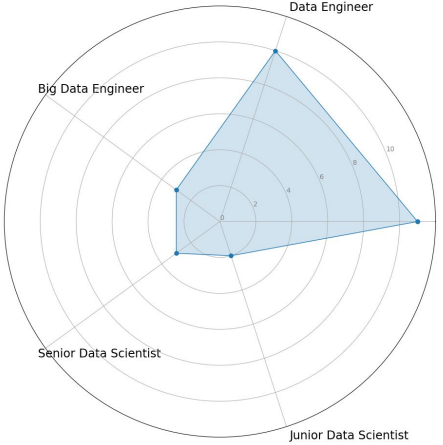
Most were scientists: performing analysis on lab data (for drug development, disease analysis etc.)



Most demanded job profiles in Biotech & Pharmaceuticals



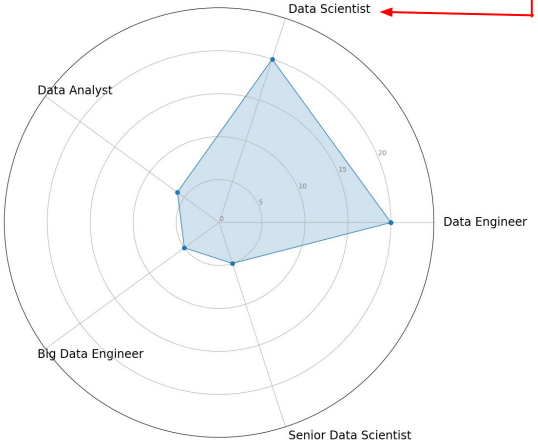
Most demanded job profiles in Information Technology



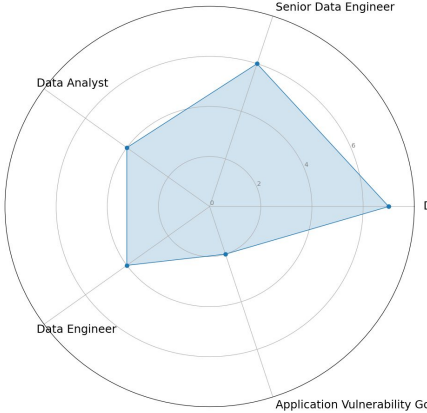
Most demanded job profiles in Aerospace & Defense

Most common position??

Data Scientist



Most demanded job profiles in Business Services



Most demanded job profiles in Finance

Max & Min Salary by Industry

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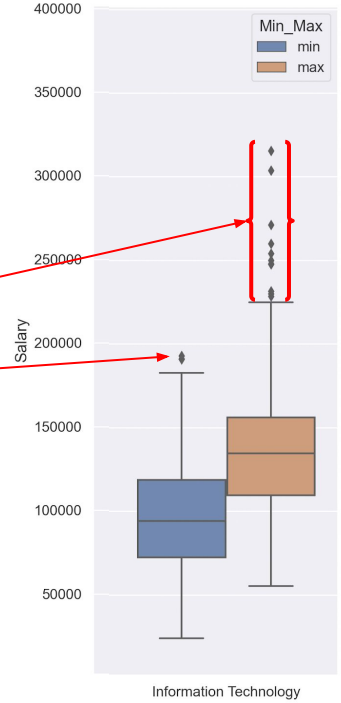
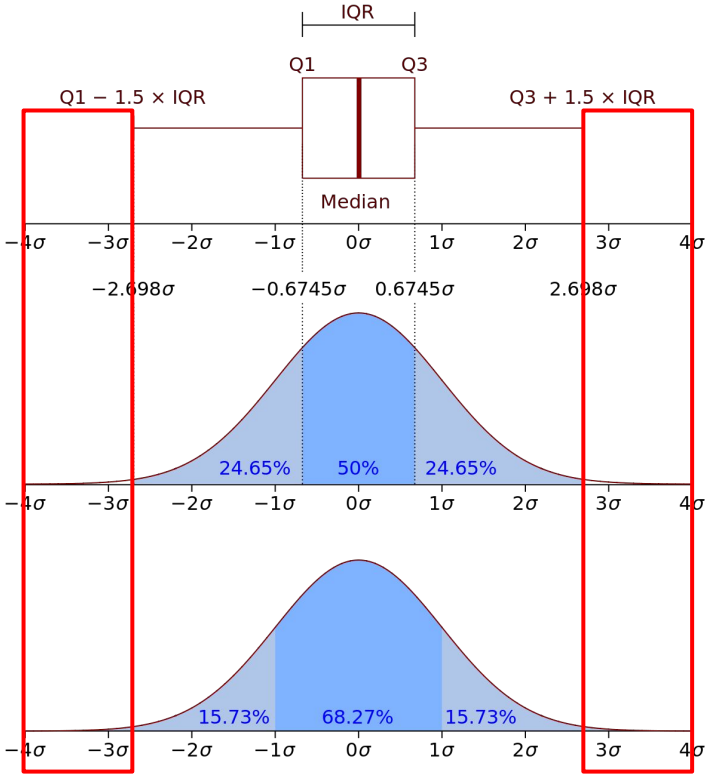
Quick Explanation: Box and Whisker Plots

- **Diamonds** are outliers
- **Whiskers** show Max and Min non-outliers
- **Box** represents mean
- **Centerline** of box represents median

Outliers





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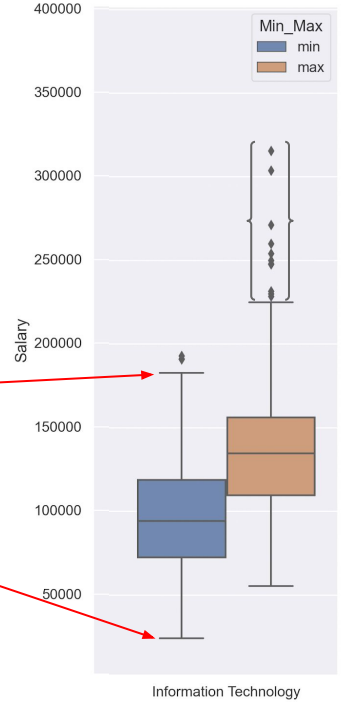
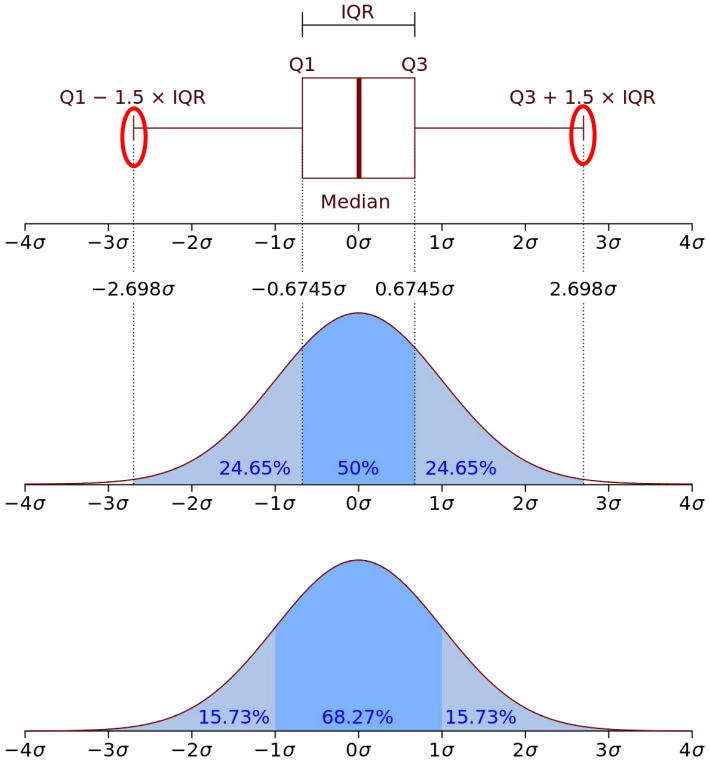
High & Lows





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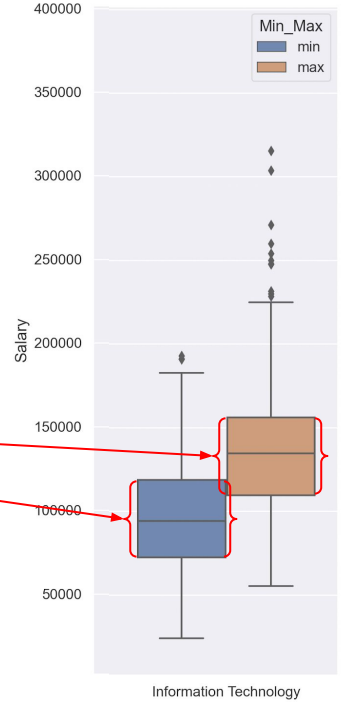

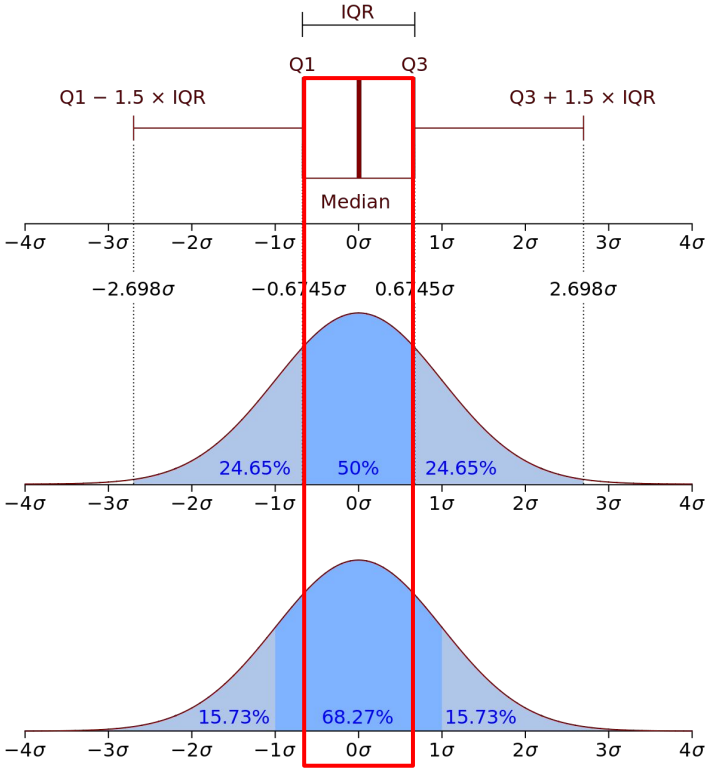

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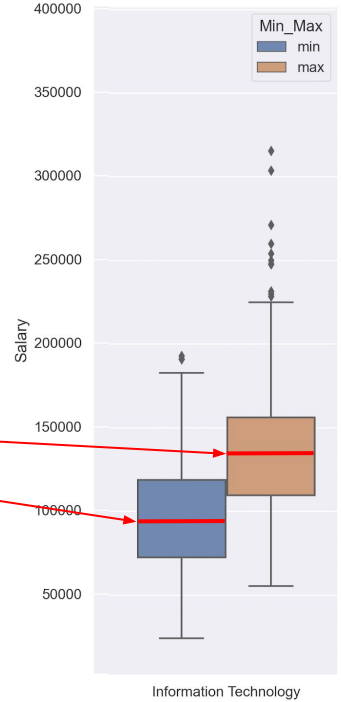
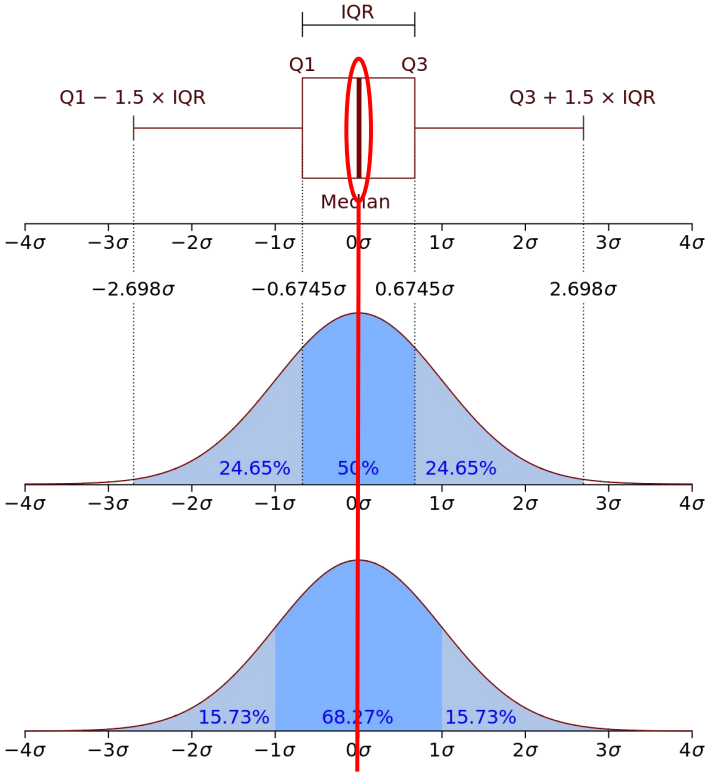




Max & Min Salary by Industry

Min/Max Salary **by industry**

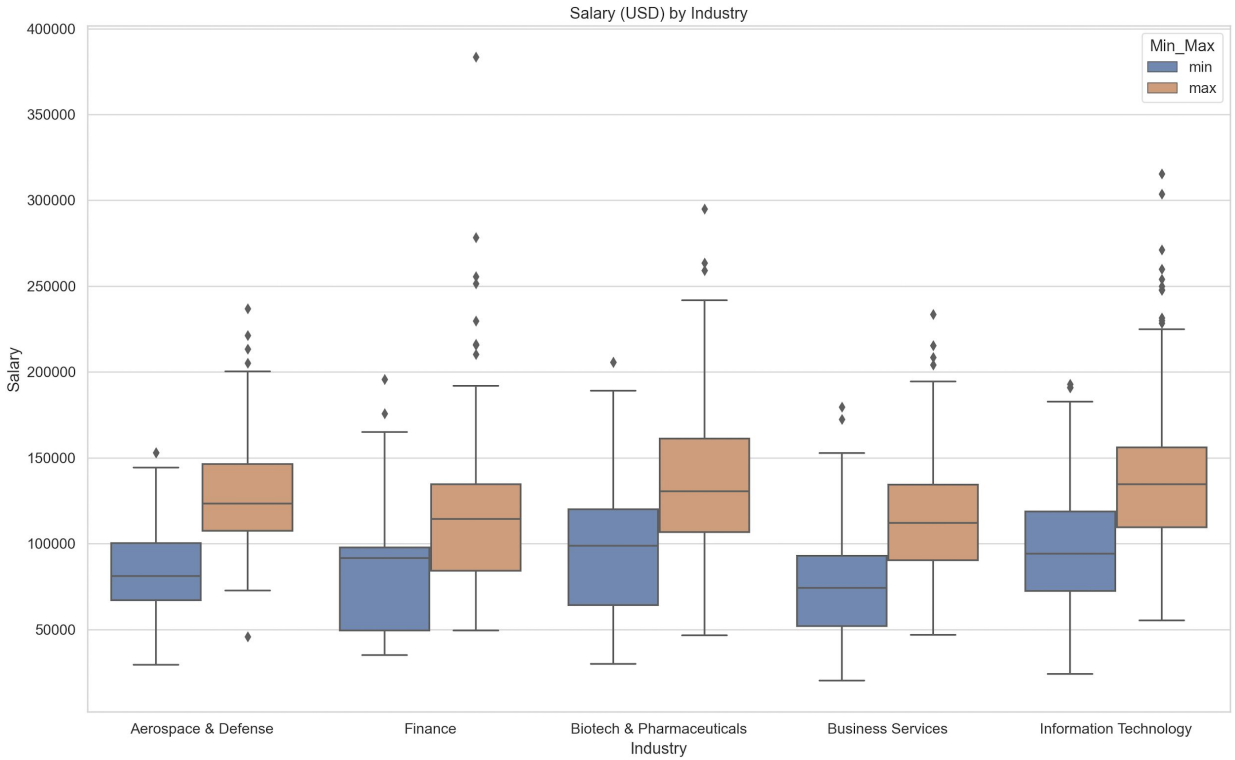
Essentially flat

High Salary:

Biotech & Pharmaceuticals

Low Salary:

Business & Finance



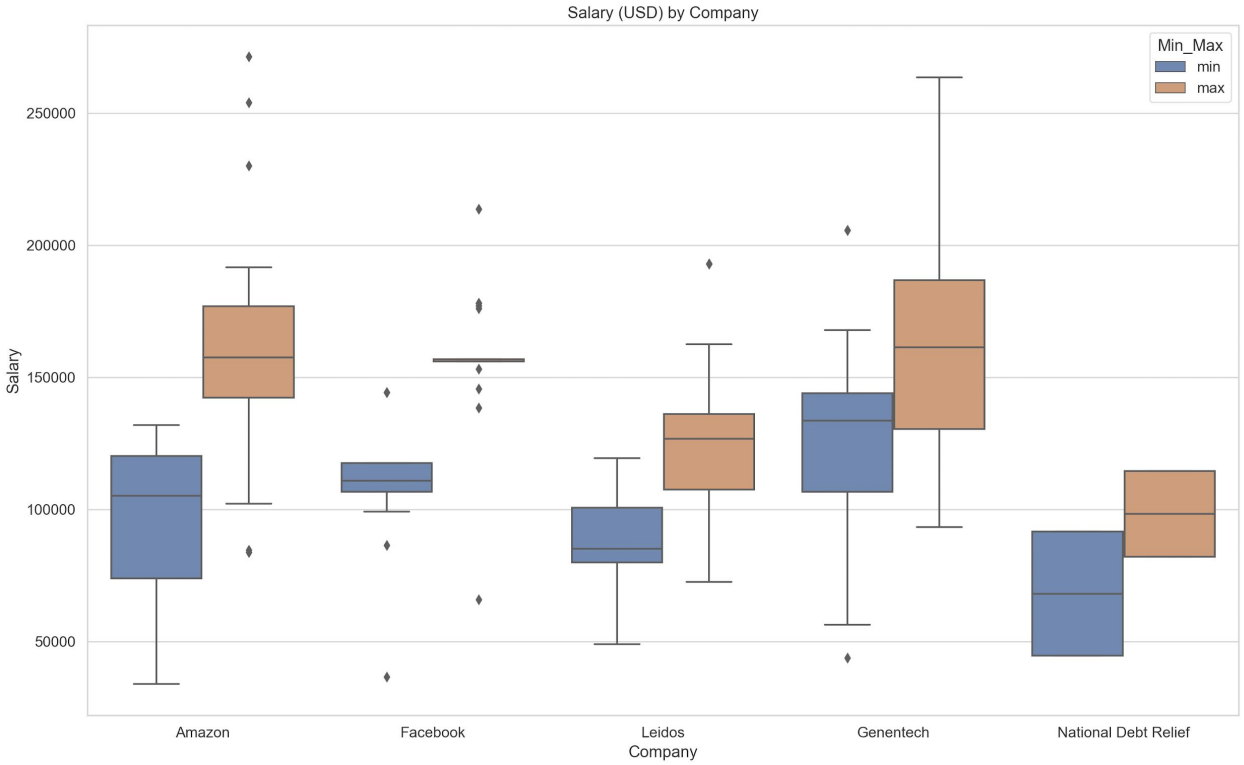
Max & Min Salary by Company

Min/Max Salary **by company**

High Salary:

Genentech
(Biotech & Pharmaceuticals)

Highest median minimum and maximum pay.



Average Salary: Top 3 Companies by Industry

Average Salaries:
Top Companies by Industry:

High Salary:
Biotech & Pharmaceuticals

Low Salary:
Business & Finance

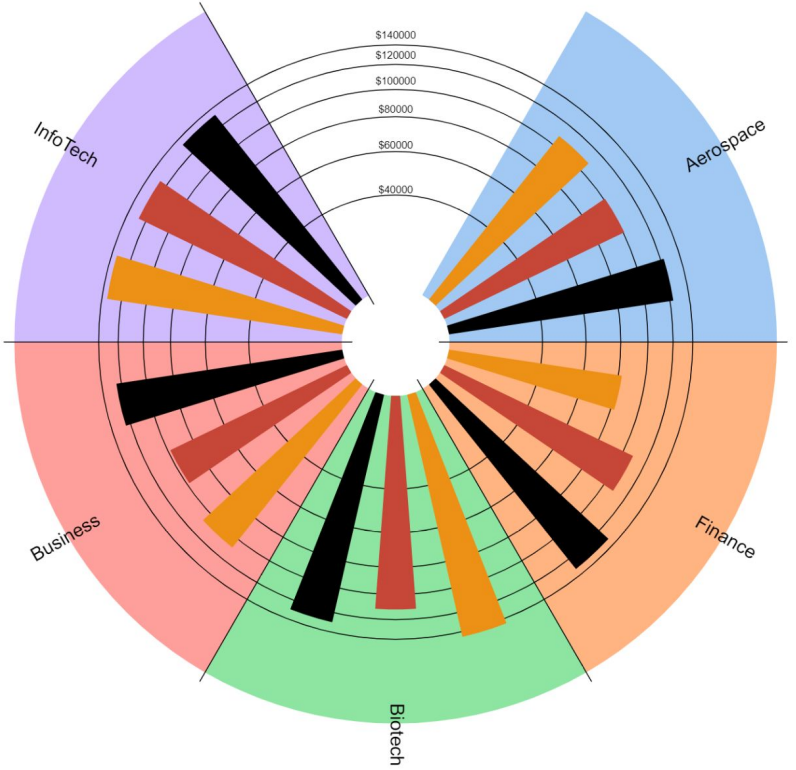
Industry-Aerospace
Leidos: $108342
BAE Systems USA: $100770
The Aerospace Corporation: $124323

Industry-Finance
National Debt Relief: $83201
Capital One: $108667
Chime: $133391

Industry-Biotech
Genentech: $146911
AstraZeneca: $112065
Amgen: $130681

Industry-Business
LMI: $107879
Booz Allen Hamilton: $97921
Guidehouse: $125944

Industry-InfoTech
Forescout Technologies Inc.: $1355
Amazon: $128606
Facebook: $133789



of Job Listings vs Salary

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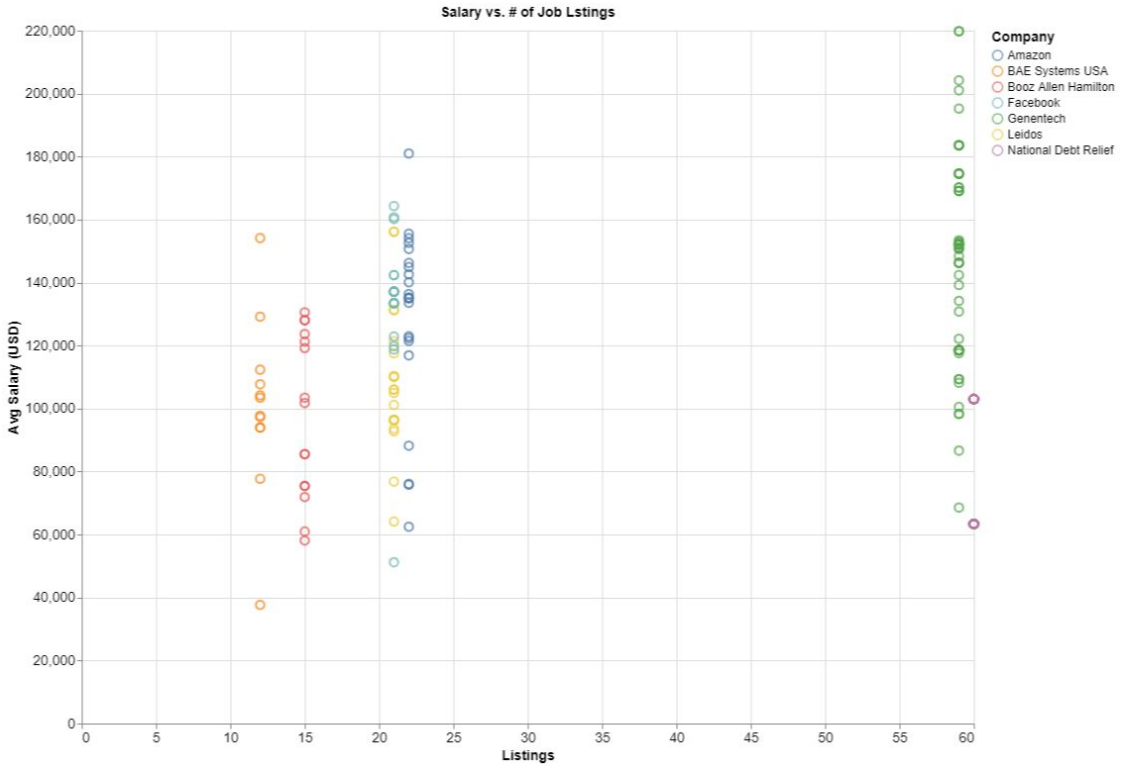
Salary vs Job Listings

Job Listings vs Salary:

Salary flat as listings rise



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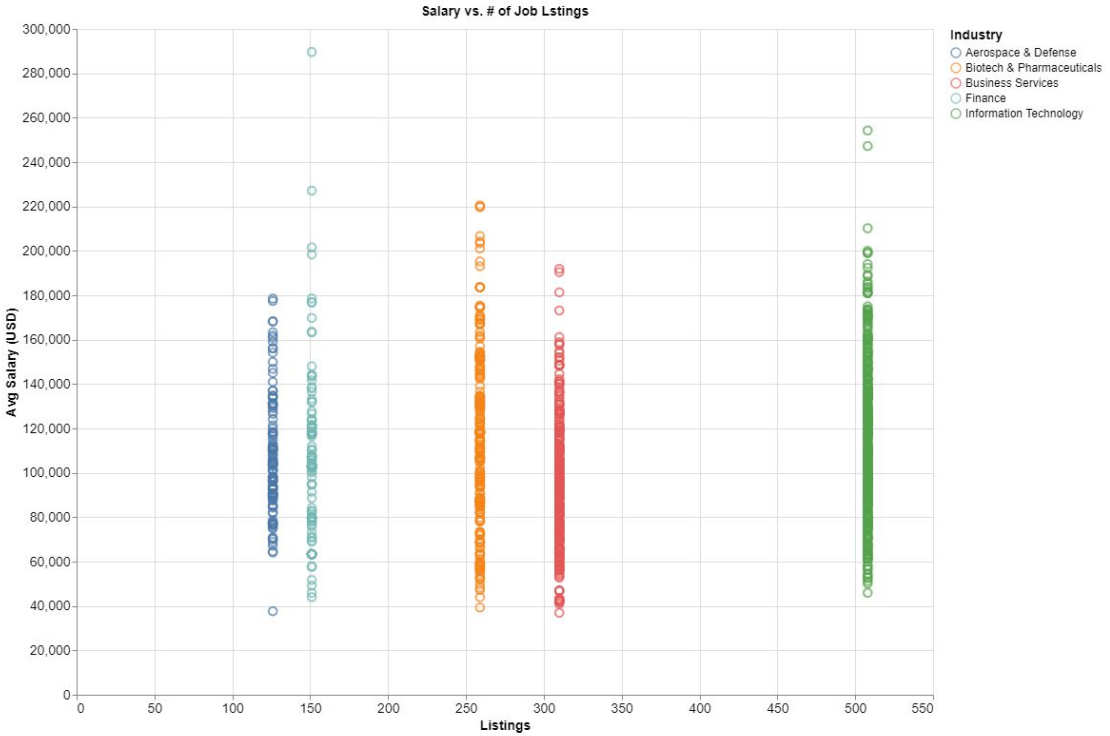

Salary ~ Rating

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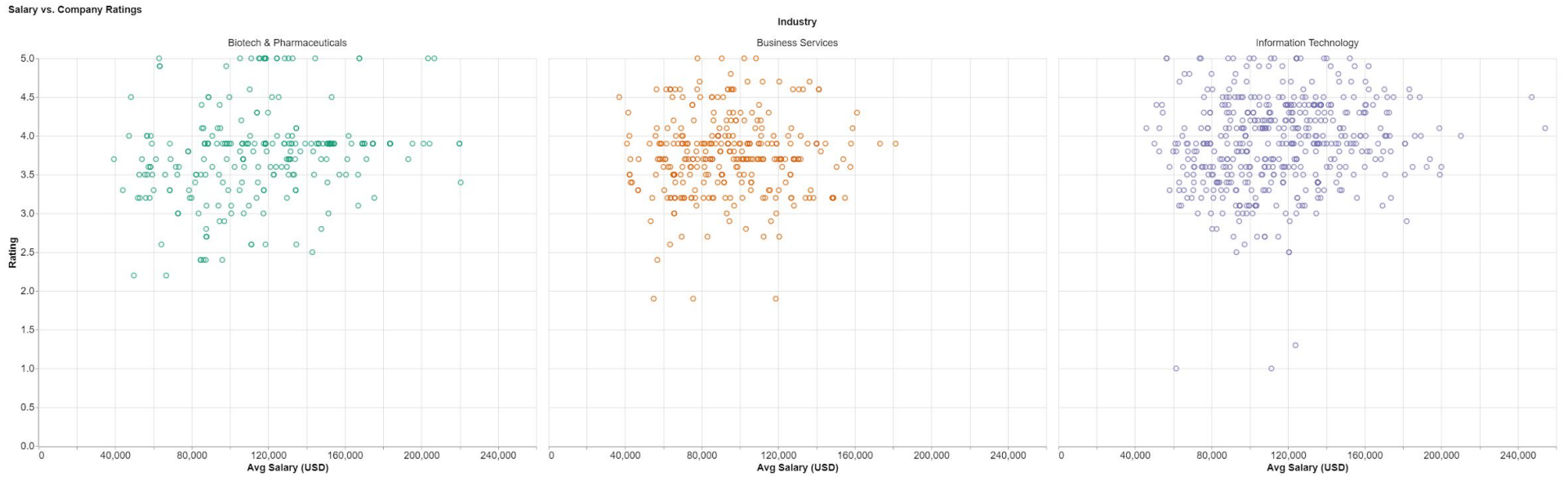
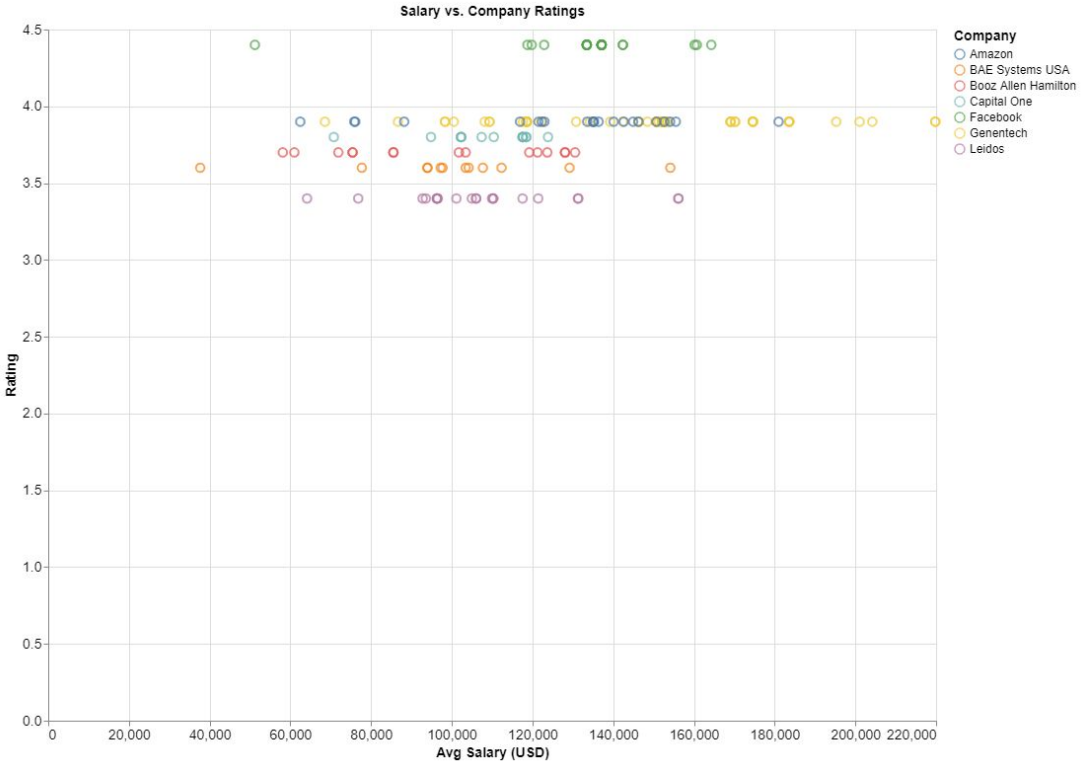


Salary ~ Rating

Hypothesized that there would be **strong correlation** between salary and rating

In reality there was **little to no correlation**

Might indicate that company value and environment is a much better measure of company



Conclusions

Conclusions: 3 Takeaways

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- Experience & Teamwork
- Title > Industry
- Don’t Sweat Salary!

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