

Software Engineering Related Jobs Analysis in New York City

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Motivation and Goal

Motivation:

- Job seeking has been a very concerned topic for students.
- Software-related positions have been increasing dramatically these years.
- Pre-knowledge about relationship between job salary, required skills, education and location is very important when finding suitable jobs.

Goal:

- Potentially help people in their job search by giving them a better understanding of **required skills, potential salary range, and location of software-related job positions.**

Methodology

- ❑ U.S. Government's open data <https://www.data.gov/>
- ❑ Pre-process Data
 - ❑ Remove irrelevant columns

Column names

```
1 df.head()
```

| Job ID | Agency | Posting Type | # Of Positions | Business Title | Civil Service Title | Title Code No | Level | Job Category | Full-Time/Part-Time indicator | Salary Range From | Salary Range To | Salary Frequency | Work Location |
|--------|--------|--------------|----------------|----------------|---------------------|---------------|-------|--------------|-------------------------------|-------------------|-----------------|------------------|---------------|
|--------|--------|--------------|----------------|----------------|---------------------|---------------|-------|--------------|-------------------------------|-------------------|-----------------|------------------|---------------|

Methodology

- U.S. Government's open data <https://www.data.gov/>
- Pre-process Data
 - Delete irrelevant columns
 - Keyword filter in 'Job Category' and 'Business Title'
 - Keywords: Information, software, data, etc.
 - 373 positions related to software jobs

| | Posting Type | # Of Positions | Business Title | Job Category | Full-Time/Part-Time Indicator | Salary Range From | Salary Range To | Salary Frequency | Work Location |
|---|--------------|----------------|---|---|-------------------------------|-------------------|-----------------|------------------|----------------------|
| 0 | Internal | 1 | Secretary to Division Chief | Legal Affairs | F | 50000.0 | 50000.0 | Annual | 100 Church St., N.Y. |
| 1 | External | 1 | Legislative Representative, Mayoratâ€™s Office o... | Health | F | 56990.0 | 91800.0 | Annual | 42-09 28th Street |
| 2 | Internal | 2 | Community Coordinator â€“ DSE/TAHU | Public Safety, Inspections, & Enforcement | F | 52524.0 | 60403.0 | Annual | 100 Gold Street |
| 3 | External | 2 | Community Coordinator â€“ DSE/TAHU | Public Safety, Inspections, & Enforcement | F | 52524.0 | 60403.0 | Annual | 100 Gold Street |

Methodology

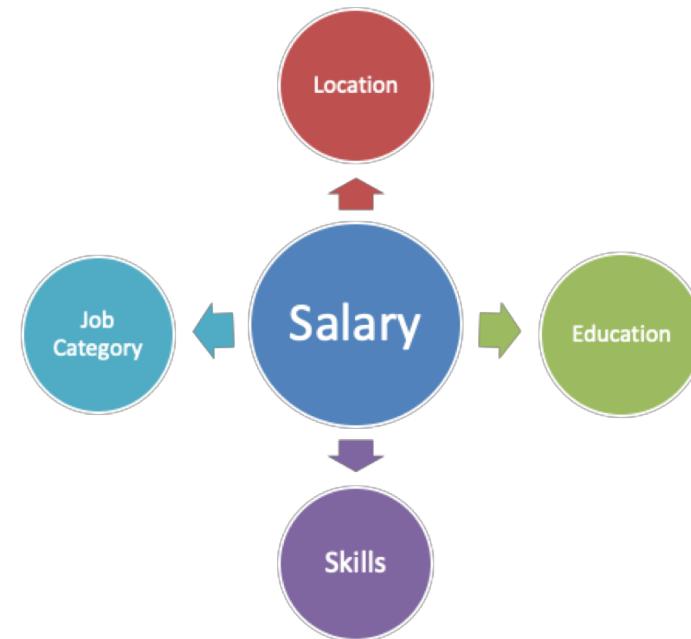
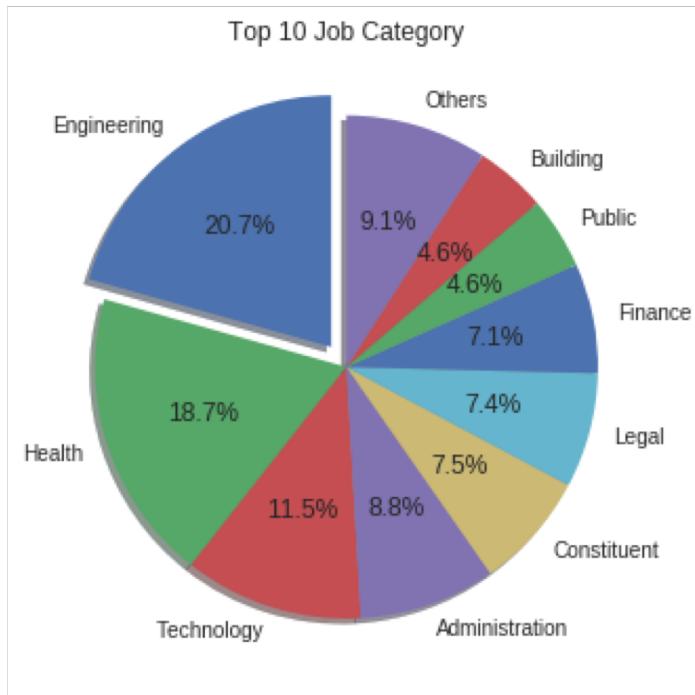
- ❑ Scrape keyword from ‘requirement’ and ‘skill’ columns
 - ❑ First, apply ‘split_count’ function in each column
 - ❑ Choose the frequent keyword in each column

| Work Location | Division/Work Unit | Job Description | Minimum Qual Requirements | Preferred Skills |
|----------------------|---------------------------|--|---|---|
| 100 Church St., N.Y. | Comm Lit | The Division Chief Secretary for the Commercial... | 1. An associate degree from an accredited col... | Candidates must have knowledge of Outlook, Wor... |
| 42-09 28th Street | Intergovernmental Affairs | The Mayorâ€™s Office of City Legislative Affai... | 1. A baccalaureate degree from an accredited c... | Excellent written, oral and interpersonal skil... |
| 100 Gold Street | Administration | The Office of Enforcement and Neighborhood Ser... | 1. A baccalaureate degree from an accredited c... | â€¢ Candidates who possess strong verbal and ... |

- ❑ Visualize data using pie chart, bar chart, Altair, Plotly, Geopy, Bokeh, etc.

Dataset Overview

- Time ranges from 2011 to 2019, with 3885 jobs in total in New York City.



Position Available

- Number of positions available in each month



- Better shot for applicant from Oct. to Jan.

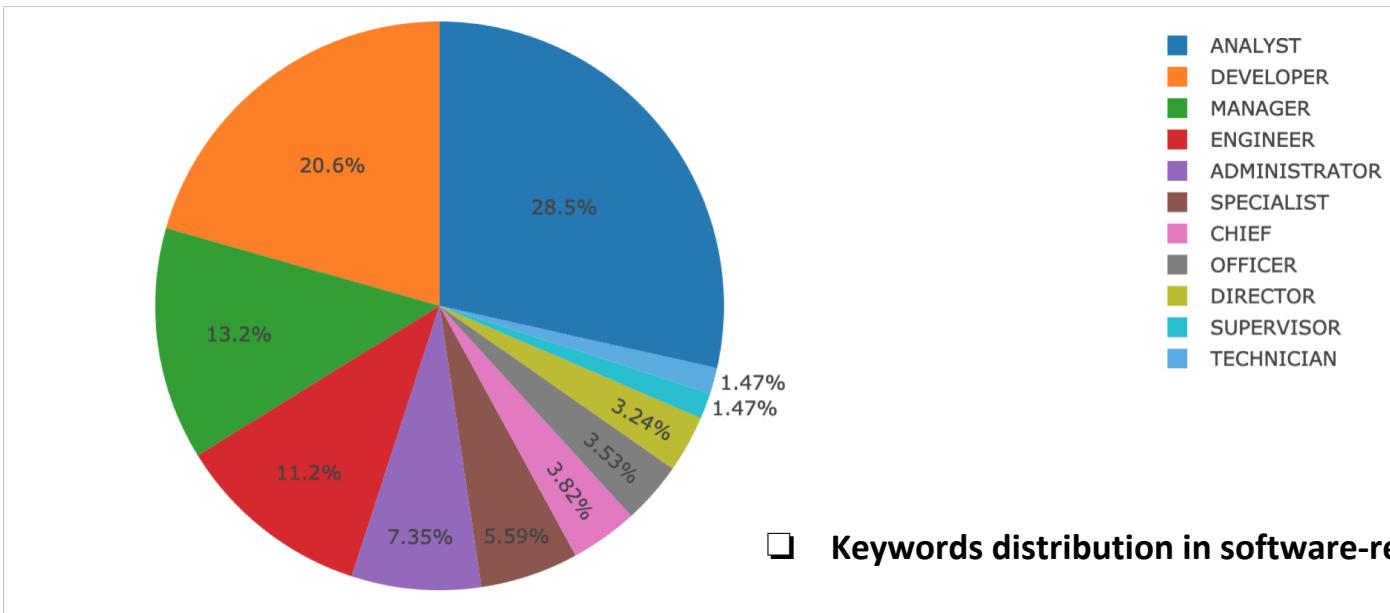
Job - Salary Distribution



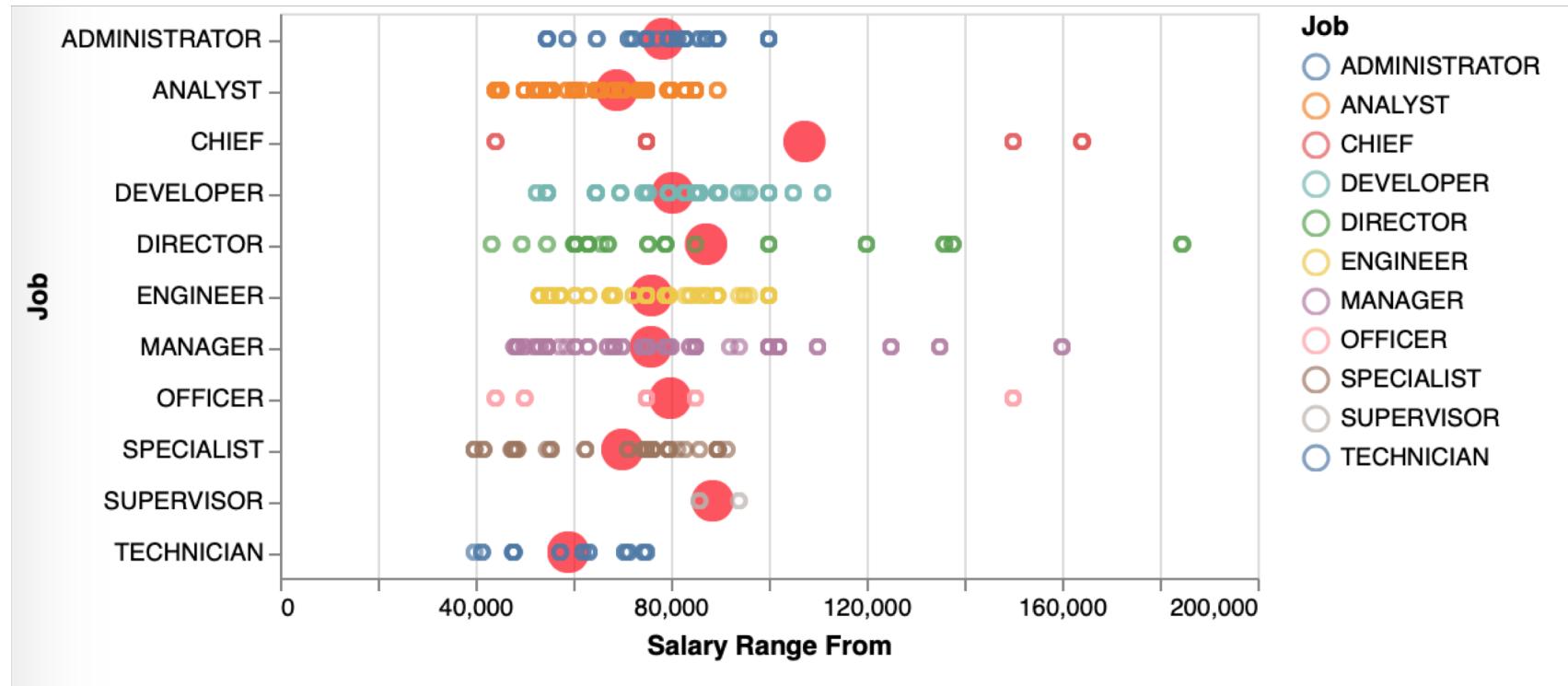
Rank: Technology > Legal > Engineering > ... > Public

Software-Related Jobs

- ❑ How to define **software-related**?
 - ❑ Using keyword search in ‘job category’, then search in ‘business title’.
- ❑ After filtering, there’re 373 job positions relating to software.



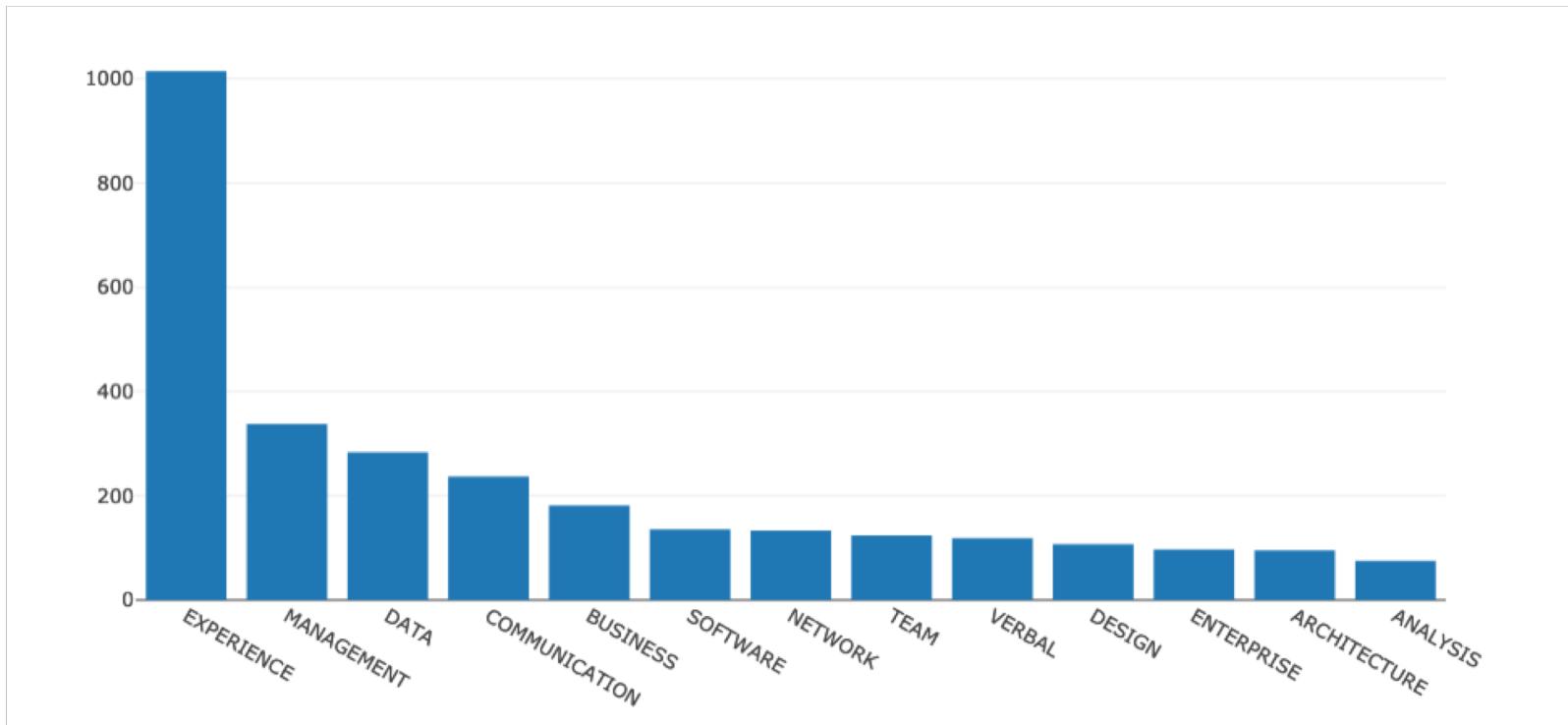
Software Job - Salary distribution



Rank: Chief > Supervisor > Director > Developer > ... > Technician

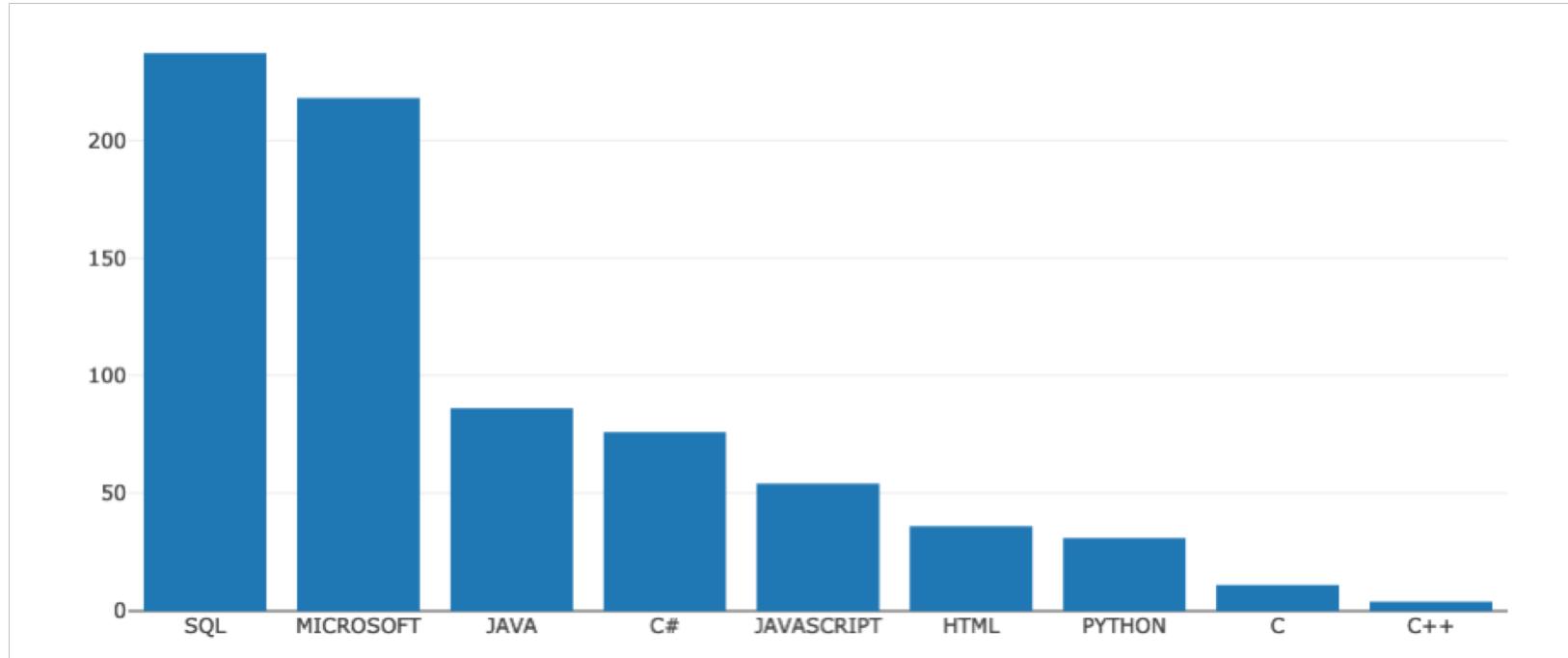
General Skill Overview

Keyword count in 'Requirement' column

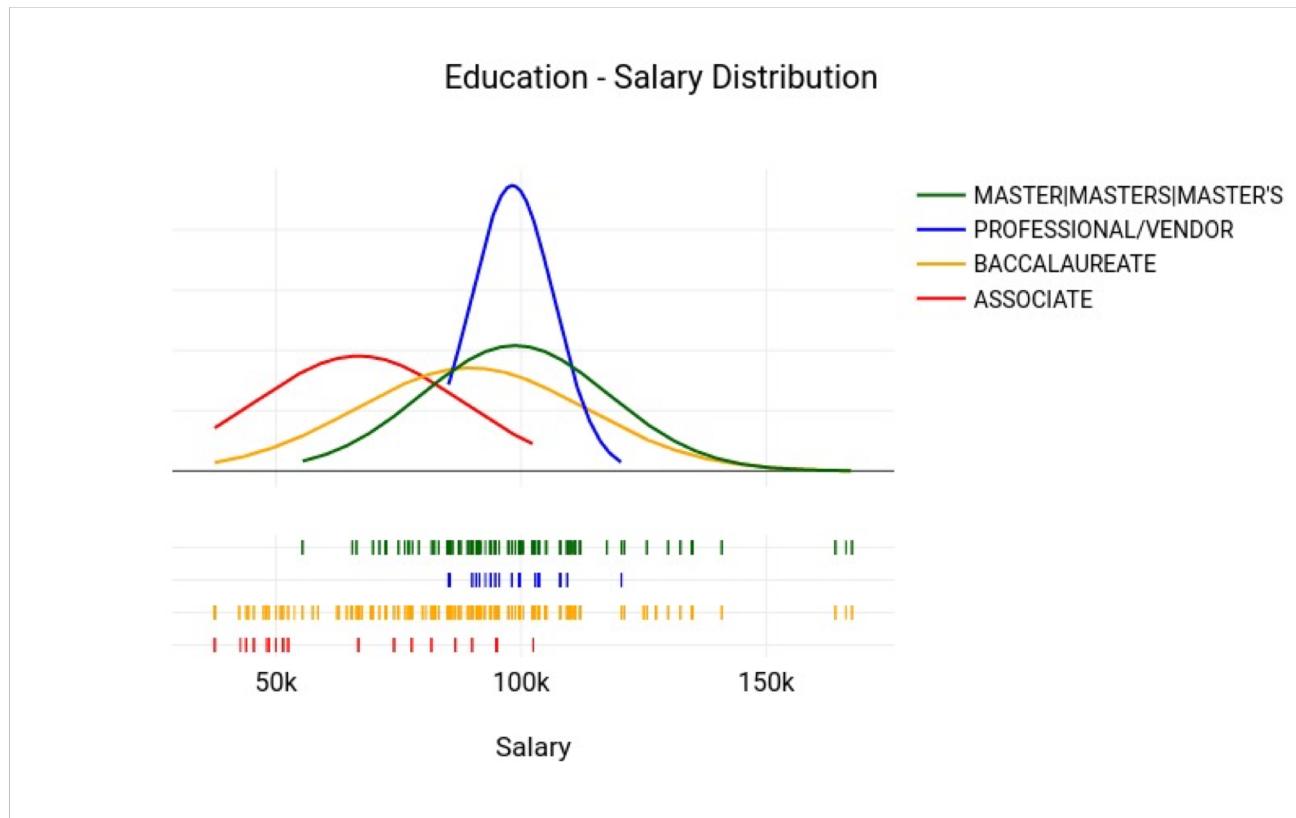


Software Skill Overview

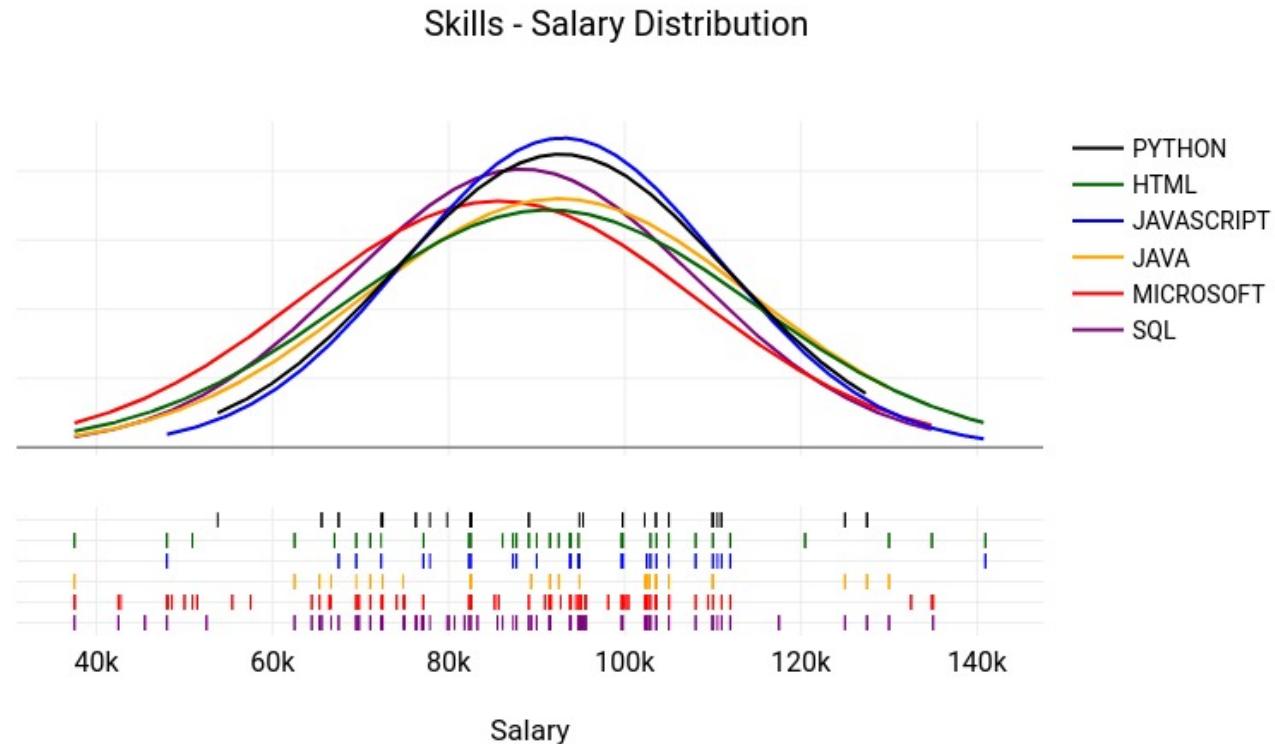
- ❑ Keyword count in ‘Preferred Skill’ column
- ❑ A lot of job requirements do not mention the specific software language.

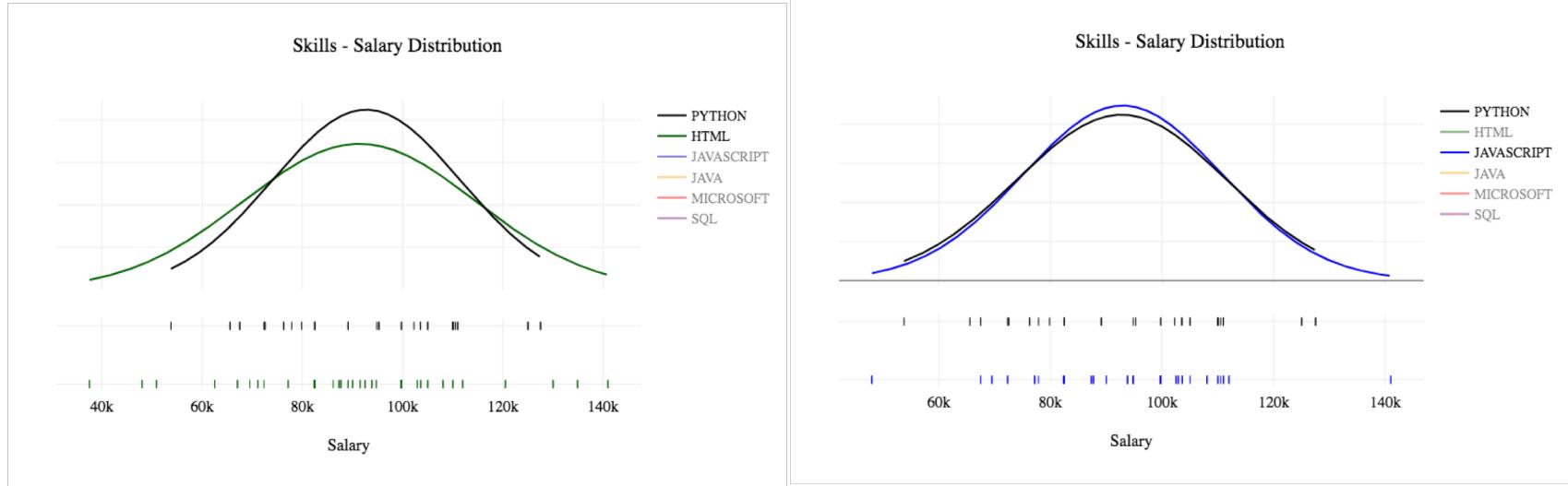


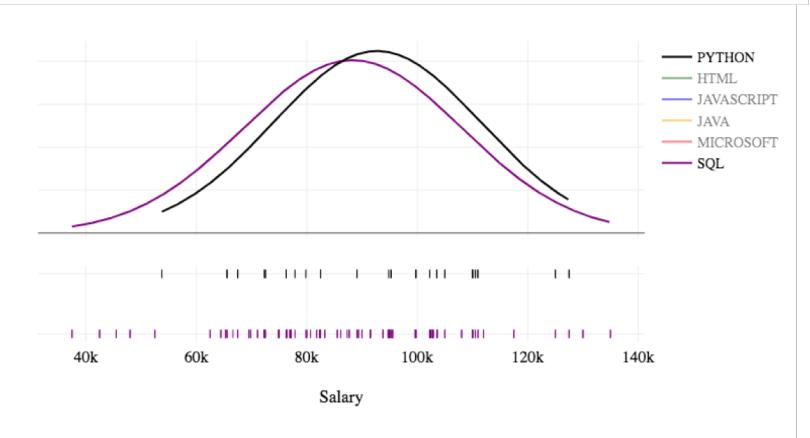
Education - Salary Distribution



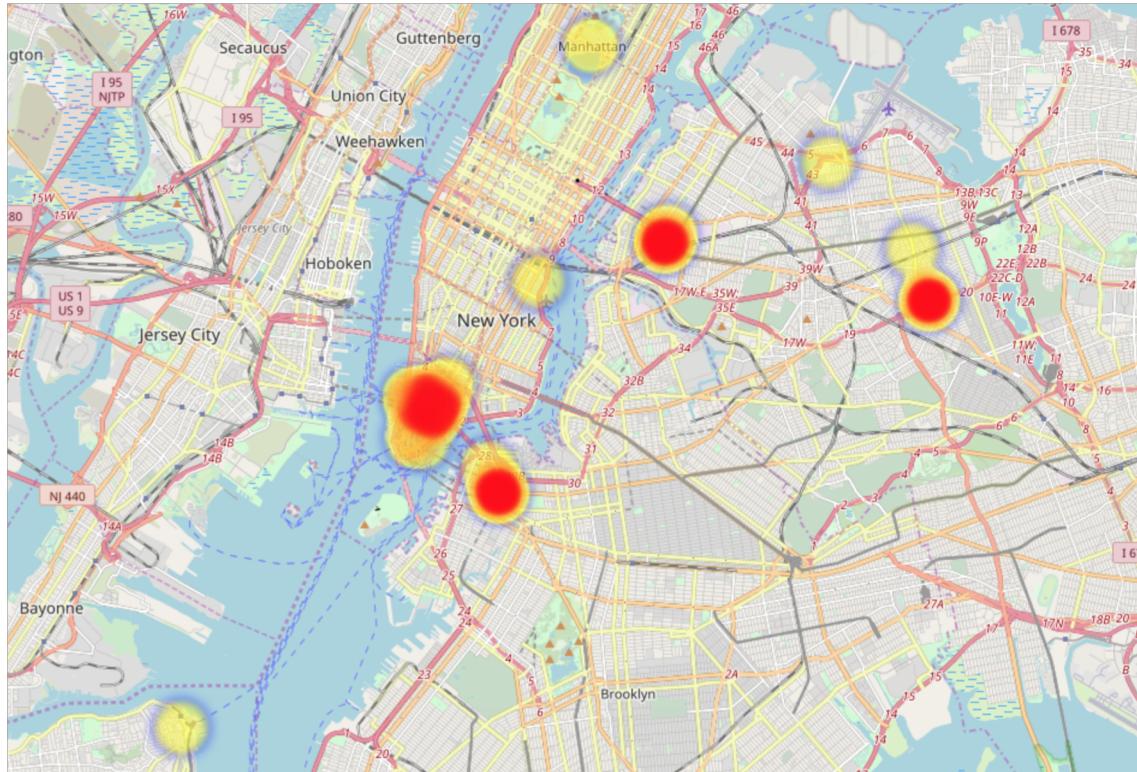
Skills - Salary Distribution



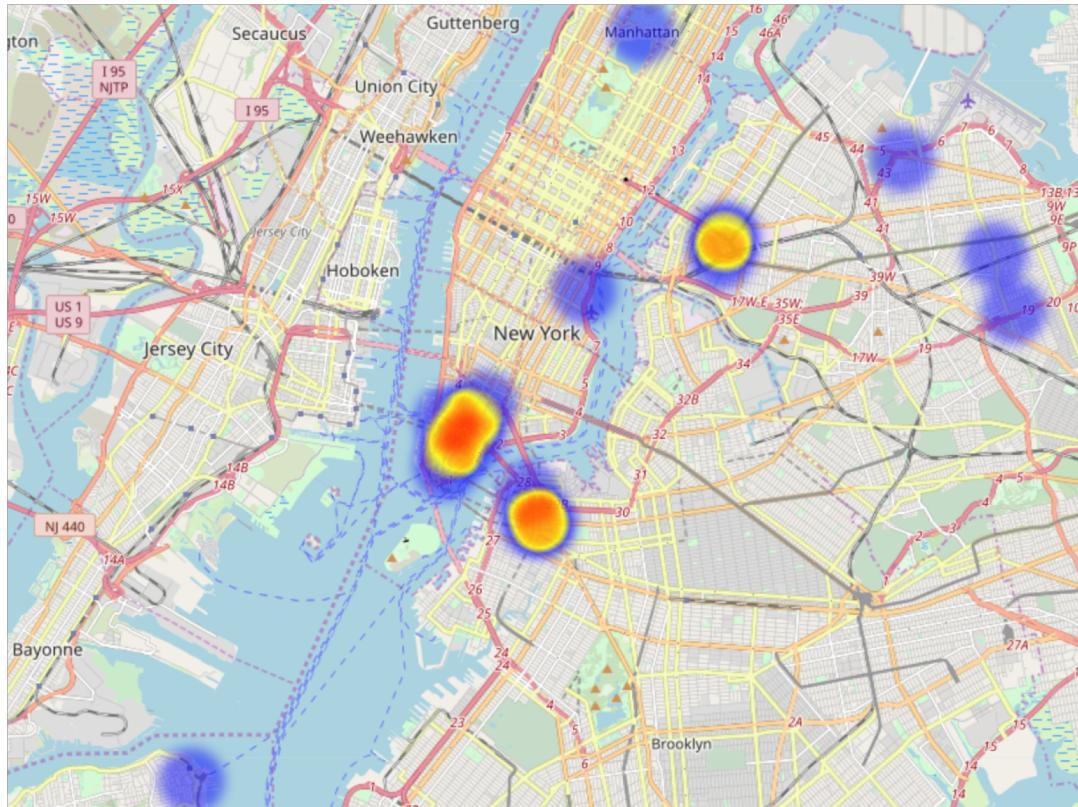




Job Location Distribution



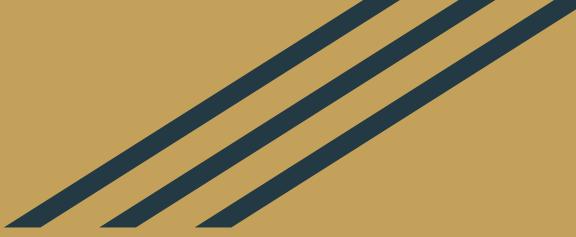
Salary Location Distribution



Conclusion

- Suggestion for seeking software-related jobs
 - Best time to apply for job is **fall and winter**
 - For new graduate, Software developer will have a high possibility of having a salary **higher than average**.
 - **Master** degree is **not** a must
 - Try to have more **work experience**
 - The area with **more jobs** always has **higher salary**.
 - **Learn more**, earn more
 - **Learn PYTHON !**

Github: <https://github.com/Xiaoyin96/ECE143>



Thank you

