

Analyzing H1B Sponsorship Trends in the US Financial Sector (2016-2024)

EPPS 6323 – Knowledge Mining

By Chakrayuddh Kimsovanna

05/06/2025

Overview

- The purpose of the project is to look at how H1B visa approvals and job demand in the US financial sector have changed from 2016 to 2024, by categorizing finance-related job titles into different groups and tracking their trends over time.
 - Data relied heavily on Department of Labor (DOL) and USCIS statistics
 - Used text preprocessing (NLP), K-means clustering, and semantic embeddings using BERT
 - R and Python (via reticulate); some of the packages used include tidyverse, cluster, readxl, janitor, ggplot2, wordcloud, sentence_transformers, and sklearn



H-1B Employer Datahub

Crosstab View

Note: Filters will change
based on selections made.

Fiscal Year2024

Employer (Petitioner) Name(All)

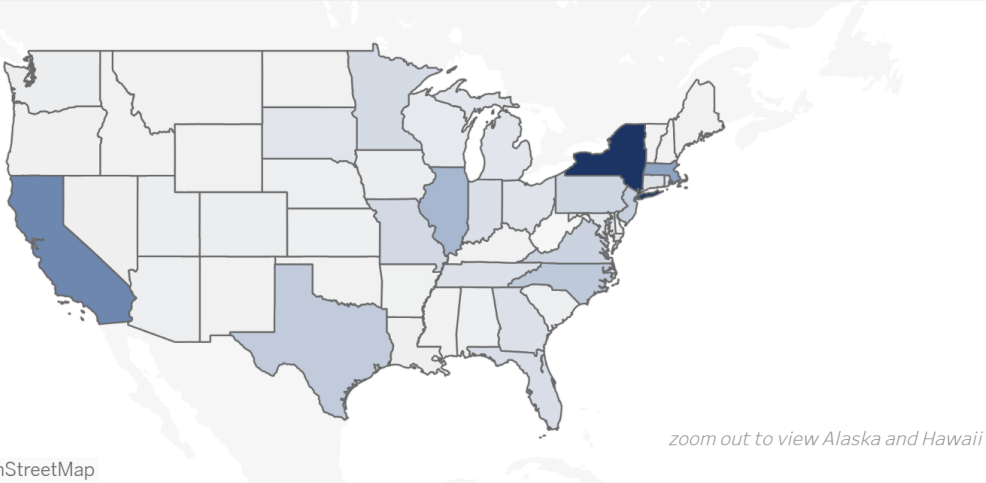
Industry (NAICS) Code52 - Finance and Insurance

Petitioner City(All)

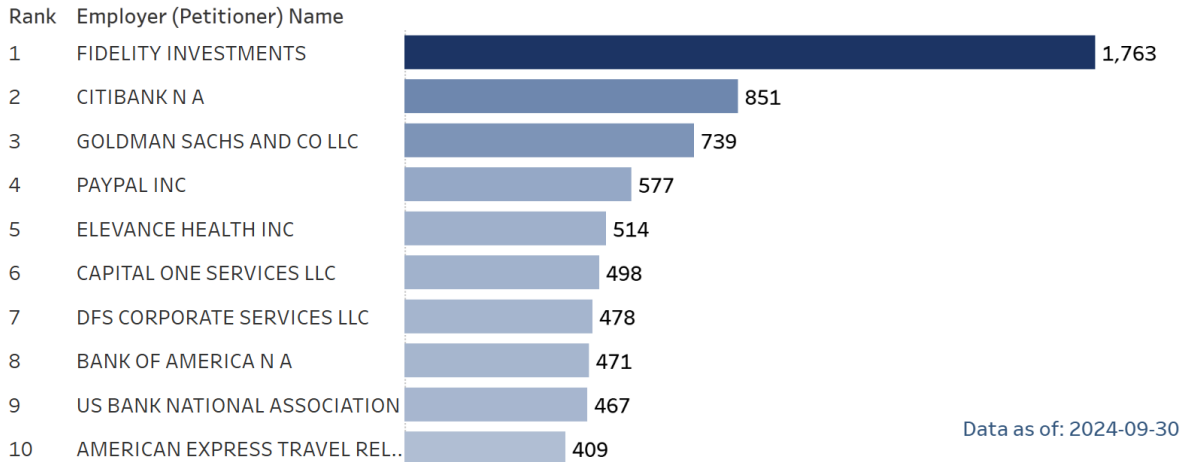
Petitioner State(All)

Petitioner Zip(All)

Reset Filters



Beneficiaries Approved - by Top 100 Employers (see crosstab view for full list)



H-1B Employer Datahub

Return to Dashboard

Note: Filters will change
based on selections made.

Fiscal Year2024

Employer (Petitioner) Name(All)

Industry (NAICS) Code52 - Finance and Insurance

Petitioner State(All)

Petitioner City(All)

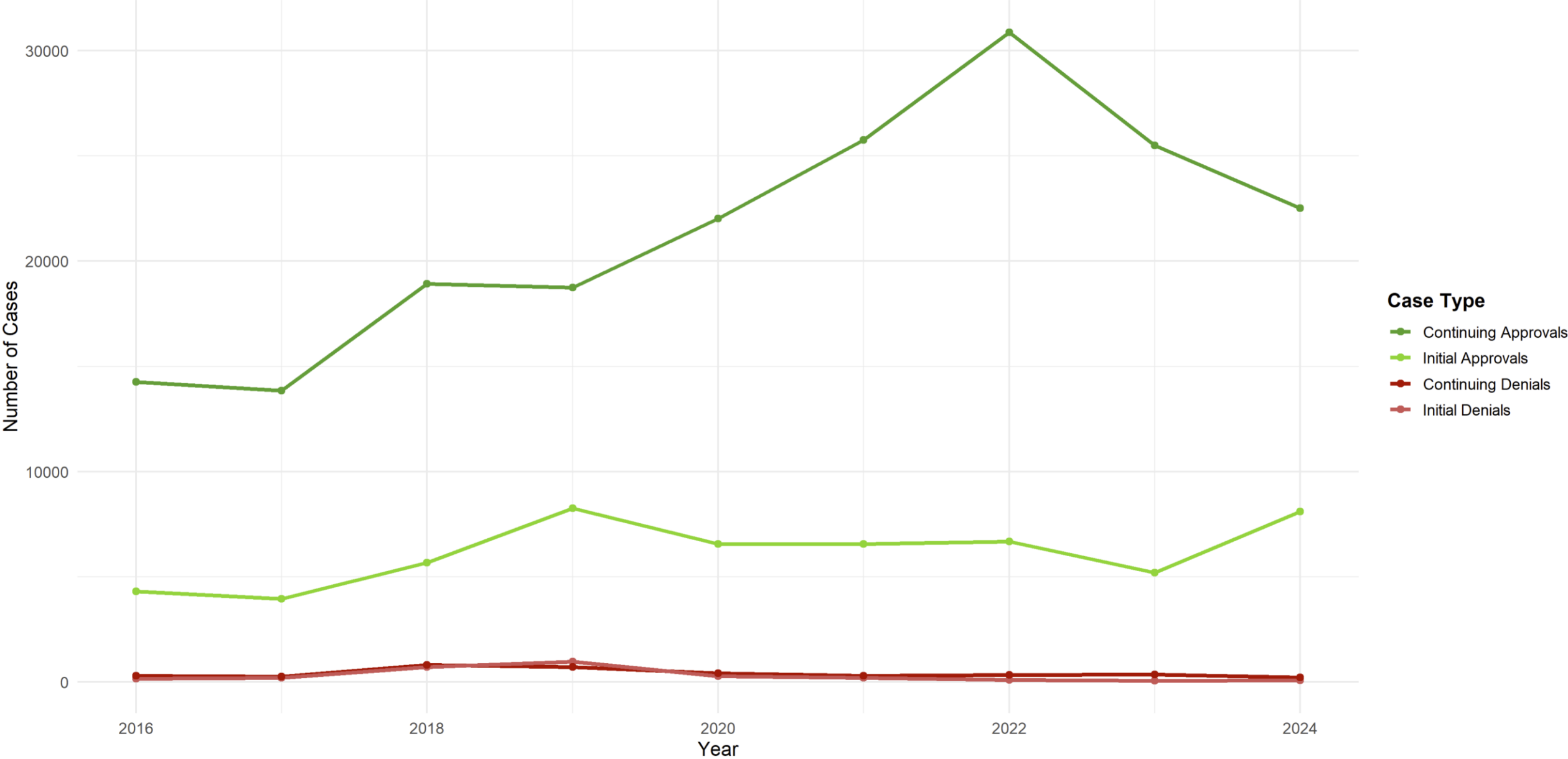
Petitioner Zip(All)

Download
to Excel

Reset Filters

Fiscal Year	Employer (Petitioner) Name	Tax ID	Industry (NAICS) Code	Petitioner City
2024	8 RIVERS SERVICES LLC	2388	52 - Finance and Insurance	DURHAM
2024	9 FORTUNES SERVICES INC	1136	52 - Finance and Insurance	IRVINE
2024	10T HOLDINGS LLC	6555	52 - Finance and Insurance	GREENWICH
2024	11 CAPITAL PARTNERS LP	7163	52 - Finance and Insurance	NEW YORK
2024	12 WEST CAPITAL MANAGEMENT LP	6594	52 - Finance and Insurance	NEW YORK
2024	12TEN ADVISORS LLC	3714	52 - Finance and Insurance	MIAMI
2024	16TH AMENDMENT ADVISORS LLC	4728	52 - Finance and Insurance	NEW YORK
2024	21ST MORTGAGE CORPORATION	8830	52 - Finance and Insurance	KNOXVILLE
2024	22V RESEARCH LLC	4070	52 - Finance and Insurance	NEW YORK
2024	32HEALTH INC	8261	52 - Finance and Insurance	CHESTNUT HI
2024	57 STARS LLC	3783	52 - Finance and Insurance	ARLINGTON
2024	57 STARS LLC	3783	52 - Finance and Insurance	WASHINGTON
2024	213 MANAGEMENT LLC DBA SANDBO..	7655	52 - Finance and Insurance	CHICAGO
2024	360 ONE INC	9442	52 - Finance and Insurance	NEW YORK
2024	776 MANAGEMENT LLC	8310	52 - Finance and Insurance	JUPITER
2024	818 CAPITAL GROUP LLC	8018	52 - Finance and Insurance	LIBERTYVILLE
2024	A & A EVER BROTHERS INC DBA MON..	3209	52 - Finance and Insurance	LAKE FOREST
2024	A FIN MANAGEMENT LLC	4960	52 - Finance and Insurance	SUNNY ISLES
2024	A-MAX INSURANCE SERVICES INC	5276	52 - Finance and Insurance	DALLAS
2024	AAA LIFE INSURANCE COMPANY	1929	52 - Finance and Insurance	LIVONIA
2024	AB CARVAL INVESTORS L P	3520	52 - Finance and Insurance	MINNEAPOLI
2024	ABA INSURANCE SERVICES INC	3563	52 - Finance and Insurance	SHAKER HEIG
2024	ABACUS INSURANCE & FINANCIAL SE..	7372	52 - Finance and Insurance	IRVING
2024	ABARCA HEALTH, LLC	2627	52 - Finance and Insurance	SAN JUAN
2024	ABD INSURANCE AND FINANCIAL SER..	3528	52 - Finance and Insurance	SAN FRANCIS
2024	ABD INSURANCE AND FINANCIAL SER..	3528	52 - Finance and Insurance	SAN FRANCIS
2024	ABN AMRO CLEARING USA LLC	8071	52 - Finance and Insurance	CHICAGO

H1B Visa Approvals According to USCIS (2016–2024)



<https://www.dol.gov/agencies/eta/foreign-labor/performance>



✓ H-1B_Disclosure_Data_FY16.xlsx



✔ H-1B_Disclosure_Data_FY17.xlsx



✓ H-1B_Disclosure_Data_FY2018_EOY.xlsx



✓ H-1B_Disclosure_Data_FY2019.xlsx



✔ LCA_Disclosure
_Data_FY2020_
Q1.xl|x



✔ LCA_Disclosure
_Data_FY2020_
Q2.xlsx



✔ LCA_Disclosure
_Data_FY2020_
Q3.xlsx



✔ LCA_Disclosure
_Data_FY2020_
Q4.xlsx



✔ LCA_Disclosure
_Data_FY2021_
Q1.xlsx



✔ LCA_Disclosure
_Data_FY2021_
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✔ LCA_Disclosure
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Q3.xlsx



✓ LCA_Disclosure
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✔ LCA_Disclosure
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Q3.xlsx



✔ LCA_Disclosure
_Data_FY2024_
Q4.xlsx

JOB_TITLE

Financial and Investment Analysts - KBGFJG72284-11

Model/Analysis/Validation Senior Analyst

Accountants and Auditors - Kbgfjg179876-5

Accountants and Auditors - Kbgfjg140954-6

Director, Sponsor Underwriting, Capital Markets

Treasury Analyst

Accountants and Auditors - KBGFJG102001-7

Associate III

FINANCIAL RISK SPECIALIST

Assistant Vice President

Technical Data Analyst

Accountants and Auditors - KBGFJG265299-1

Tax Senior

Accountants and Auditors - Kbgfjg227420-4

Supervisor, Audit & Attest

Audit Manager

Accountants and Auditors - Kbgfjg159935-6

Accountants and Auditors - Kbgfjg182835-4

Accountants and Auditors - Kbgfjg202575-4

Accountants and Auditors - KBGFJG101848-6

Accountants and Auditors - KBGFJG132073-4

Lead Trade Operations Analyst

Accountants and Auditors - Kbgfjg131909-4

Associate

Accountants and Auditors - Kbgfjg87152-10

ANALYST

Financial Analysts - KBGFJG132968-8

Associate, Banking

Manager, Financial Reporting Valuation Services

Director, Financial Services Disputes

Associate Director – GRM Technology

Credit Portfolio Sr. Analyst

Senior Staff Accountant

Associate, Banking

Analyst

Product Analyst

Data Scientist

Manager

Financial Analyst

Senior Financial Analyst, AVP

Business Analyst

Financial Analysts - KBGFJG132968-8

Audit & Assurance Assistant

Market Analyst

Vice President / Trader II

Audit & Assurance Manager

Associate, Investment Product Specialist

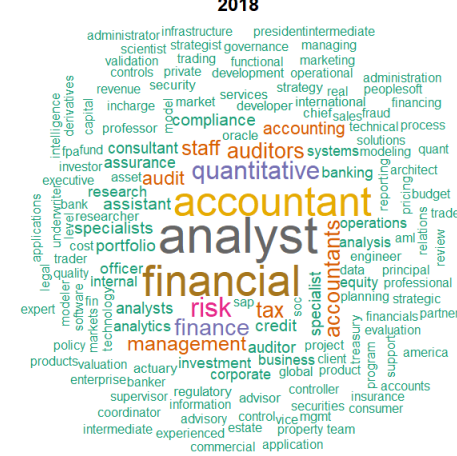
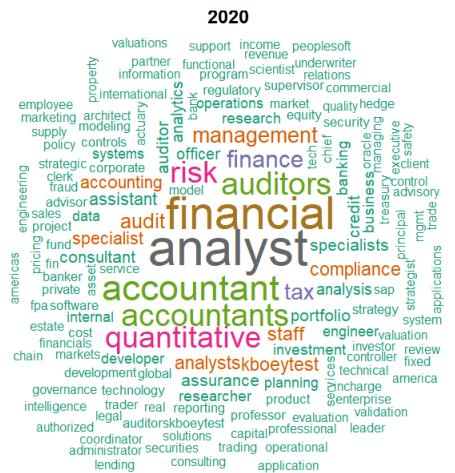
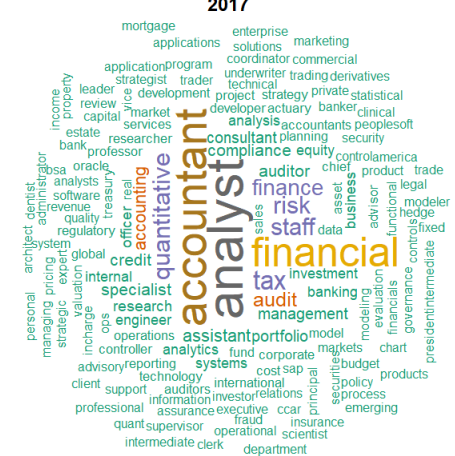
Staff Accountant

Tax Senior

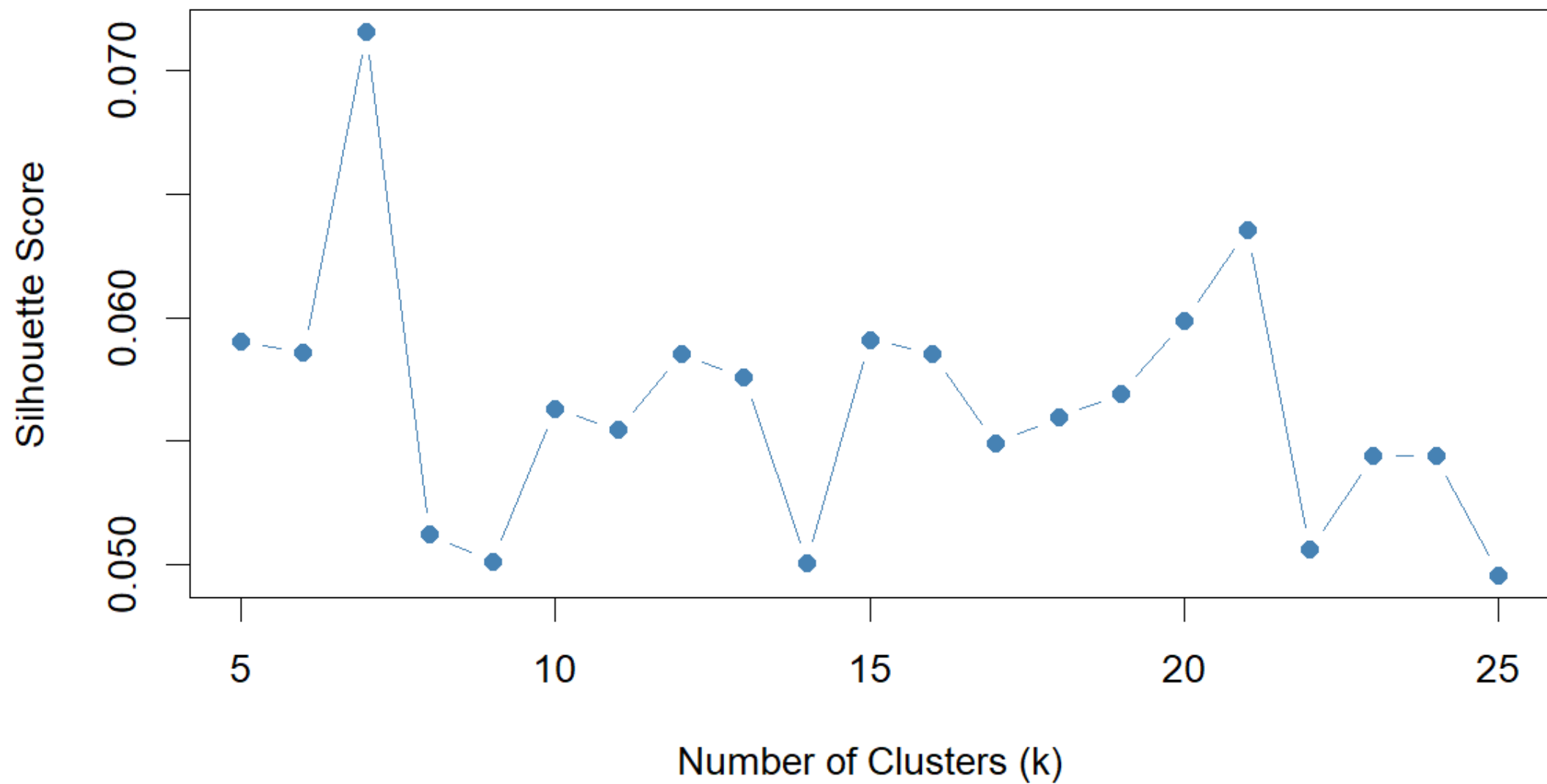
Audit Associate

Data Processing

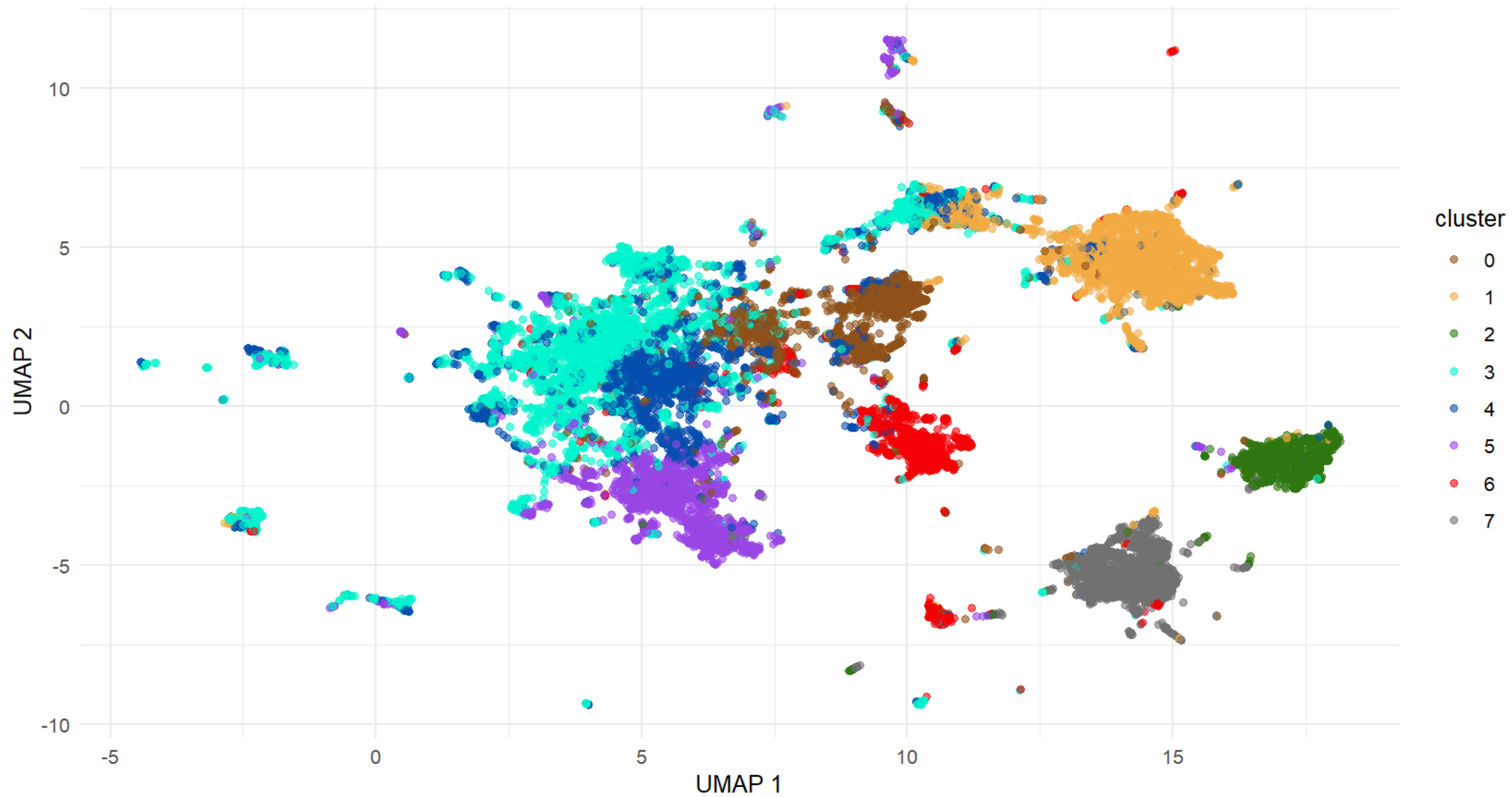
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finance_keywords <- c(  
  "financ", "investor", "investing", "accounting", "accountant",  
  "actuary", "treasury", "risk", "compliance", "quantitative",  
  "portfolio", "equity", "asset", "securities", "hedge", "audit",  
  "valuation", "credit", "bank", "underwriter", "tax"  
)
```

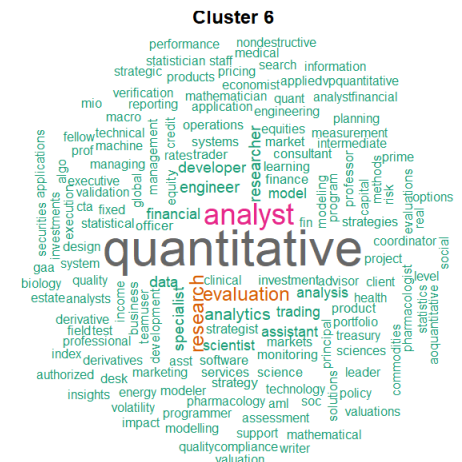
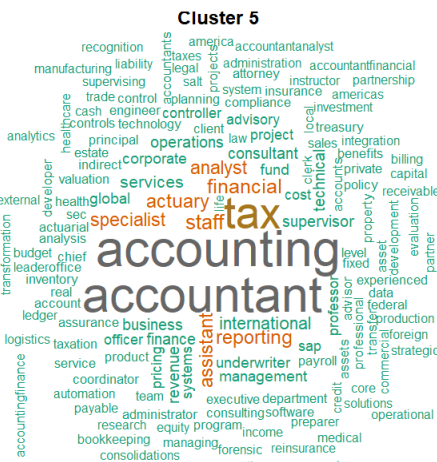
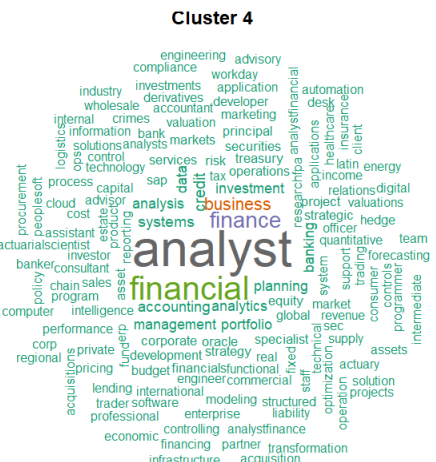
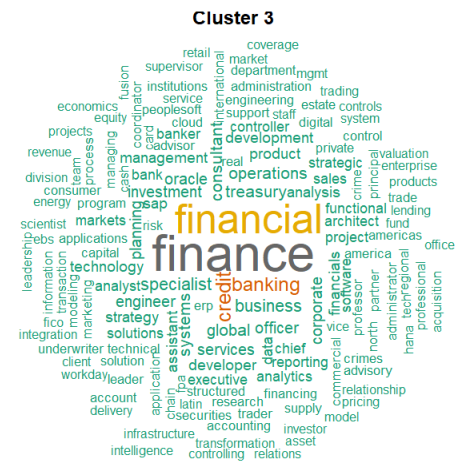
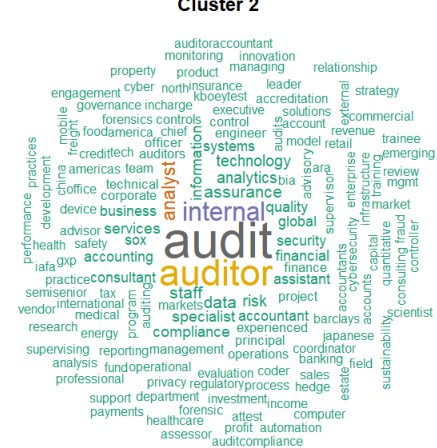
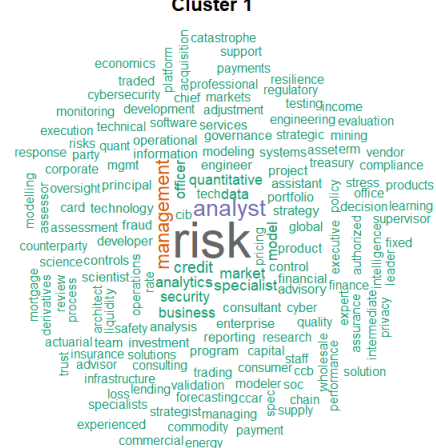
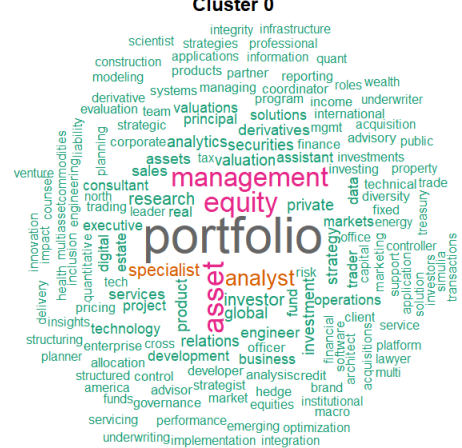



Silhouette Score vs. Number of Clusters



Clusters for Semantically Similar Job Titles (Using BERT)





0 – Portfolio & Asset Management

1 – Risk Management

2 – Audit & Assurance

3 – Banking & Credit Services

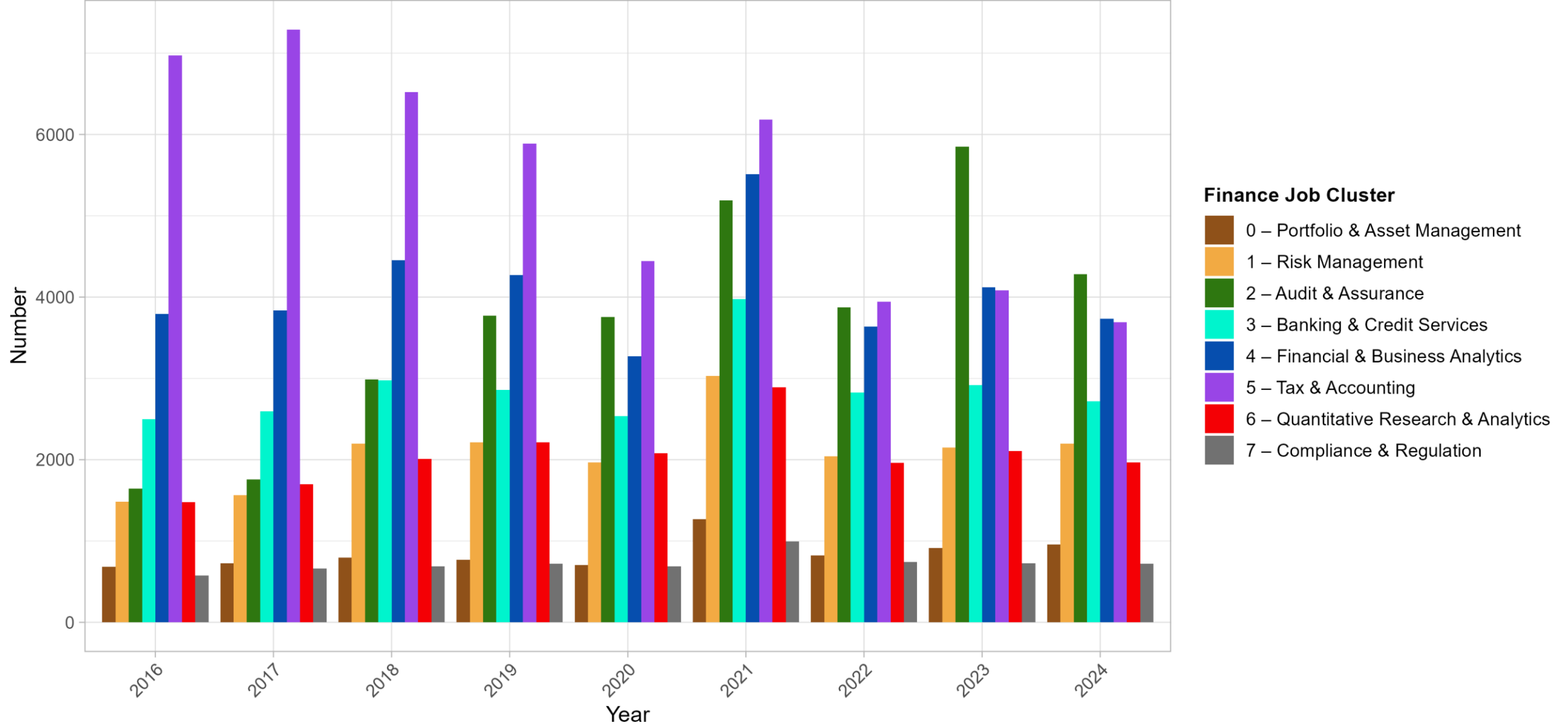
4 – Financial & Business Analytics

5 – Tax & Accounting

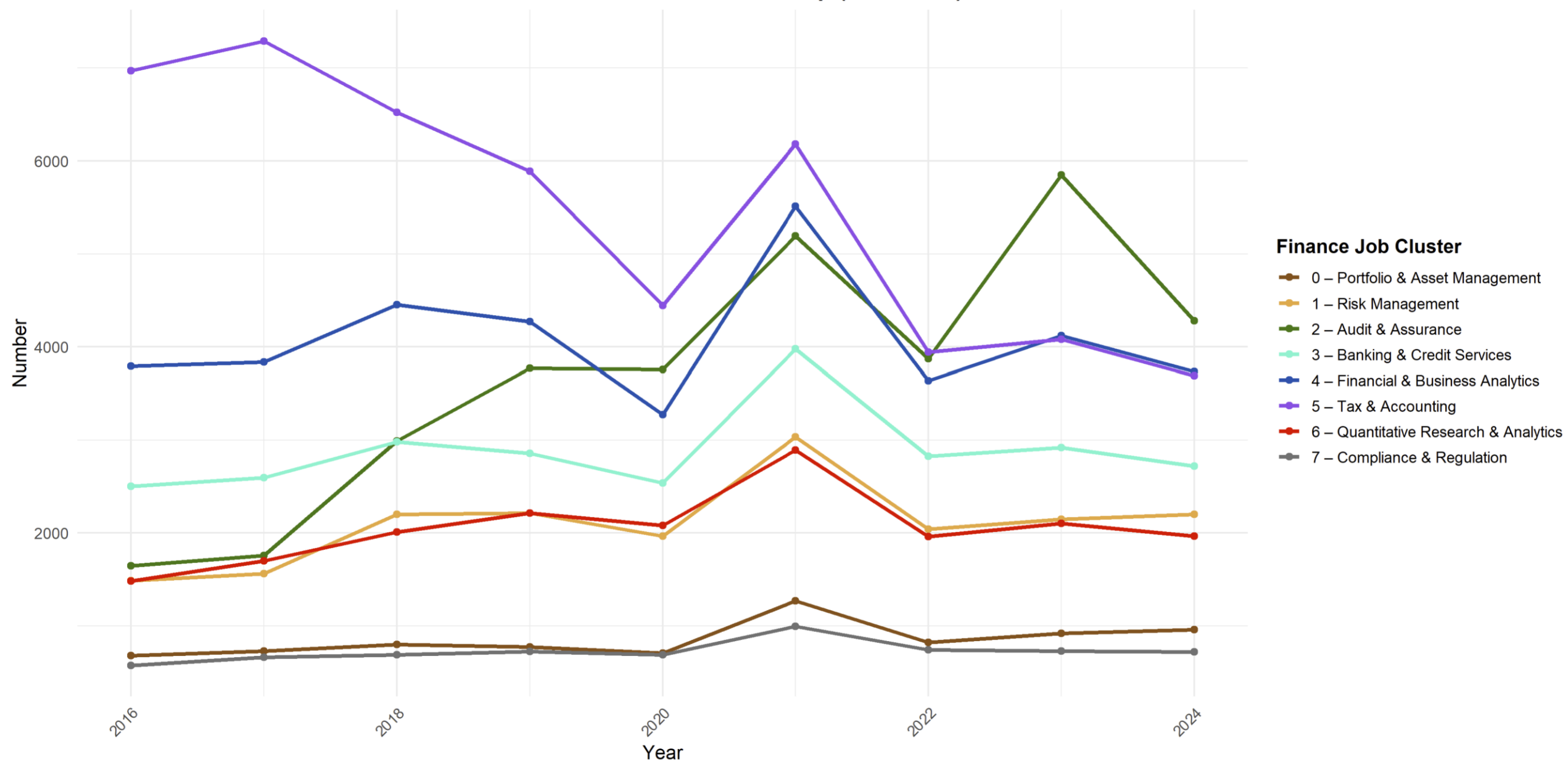
6 – Quantitative Research & Analytics

7 – Compliance & Regulation

Number of Jobs for Each Group (2016-2024)

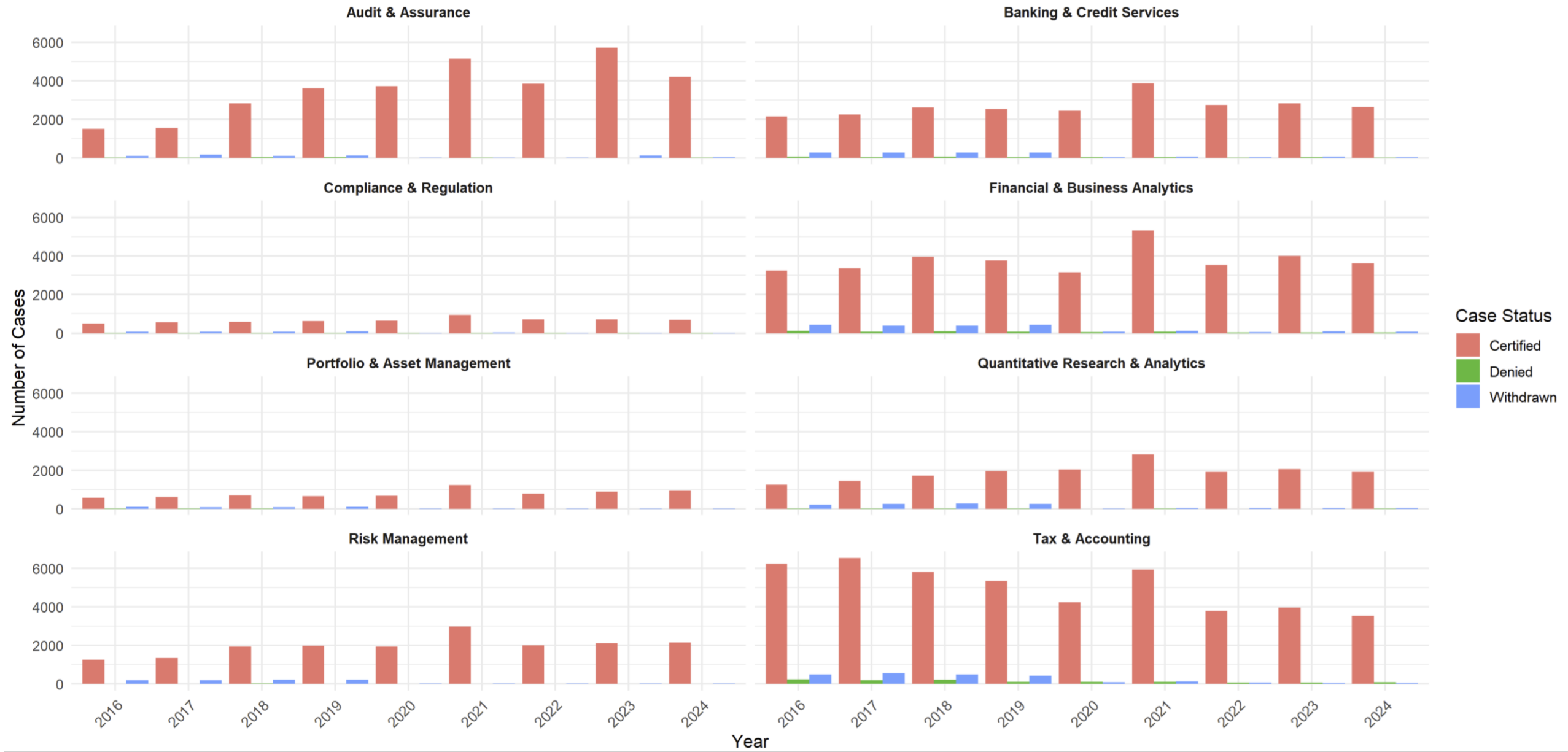


Trends for Number of Jobs for Each Group (2016-2024)



year	total_jobs
<int>	<int>
<u>2016</u>	<u>19132</u>
<u>2017</u>	<u>20124</u>
<u>2018</u>	<u>22640</u>
<u>2019</u>	<u>22715</u>
<u>2020</u>	<u>19452</u>
<u>2021</u>	<u>29049</u>
<u>2022</u>	<u>19843</u>
<u>2023</u>	<u>22865</u>
<u>2024</u>	<u>20268</u>

H1B Case Status



Challenges

- Very big data leading to frequent crashes
 - R session terminated
 - Kernel-Power Event ID 41 Task Category (63)
- Dropping wages due to complexity of data
 - Hourly vs biweekly vs monthly vs yearly



Thank you.