How has AI development influenced the job market for recent graduates?

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EXECUTIVE SUMMARY

This reports analyses employment trends under the context of rapid AI development to understand patterns of job postings, career progression in terms of salaries and required skills for data-related roles.

The analysis found that AI development has increased the demand for jobs in data infrastructure, data analysis, data science and data management and security. Other **entry-level** jobs are also directly disrupted by AI, or require augmentation and skill shift. For better career progression, AI-resistant skills such as communication, problem-solving, analytical thinking, and adaptability are high valued by employers.

For students who want to enter a data-related career, they should develop proficiencies in mostly used programming languages, cloud platforms, and databases.

INTRODUCTION

- With the rapid development of AI and increasing investment in data centres, the AI technology has influenced the job market. While AI technology leads to the creation of data-related jobs, it can also replace the work, such as customer services, underwriters, junior lawyers and so on.
- Hence, it is essential for job-seekers, especially university students or recent graduates to understand the potential opportunities in recent job markets and career progression.
- This analysis uses job postings scraped from various platforms such as LinkedIn, Indeed and etc. for 2024 and 2025 (April to June).
- The main findings:
- AI development has led to growing demand in date-related jobs.
- Developing AI-resistant skills offer sustainable career opportunities, such as communication, problem-solving, analytical thinking, and adaptability.
- For data-related jobs, students should prioritise in developing technical proficiencies in SQL and Python (the most in-demand programming languages), cloud platforms like Azure and AWS, and a mix of relational (MySQL, PostgreSQL, Oracle) and non-relational (MongoDB) databases.

METHODOLOGY

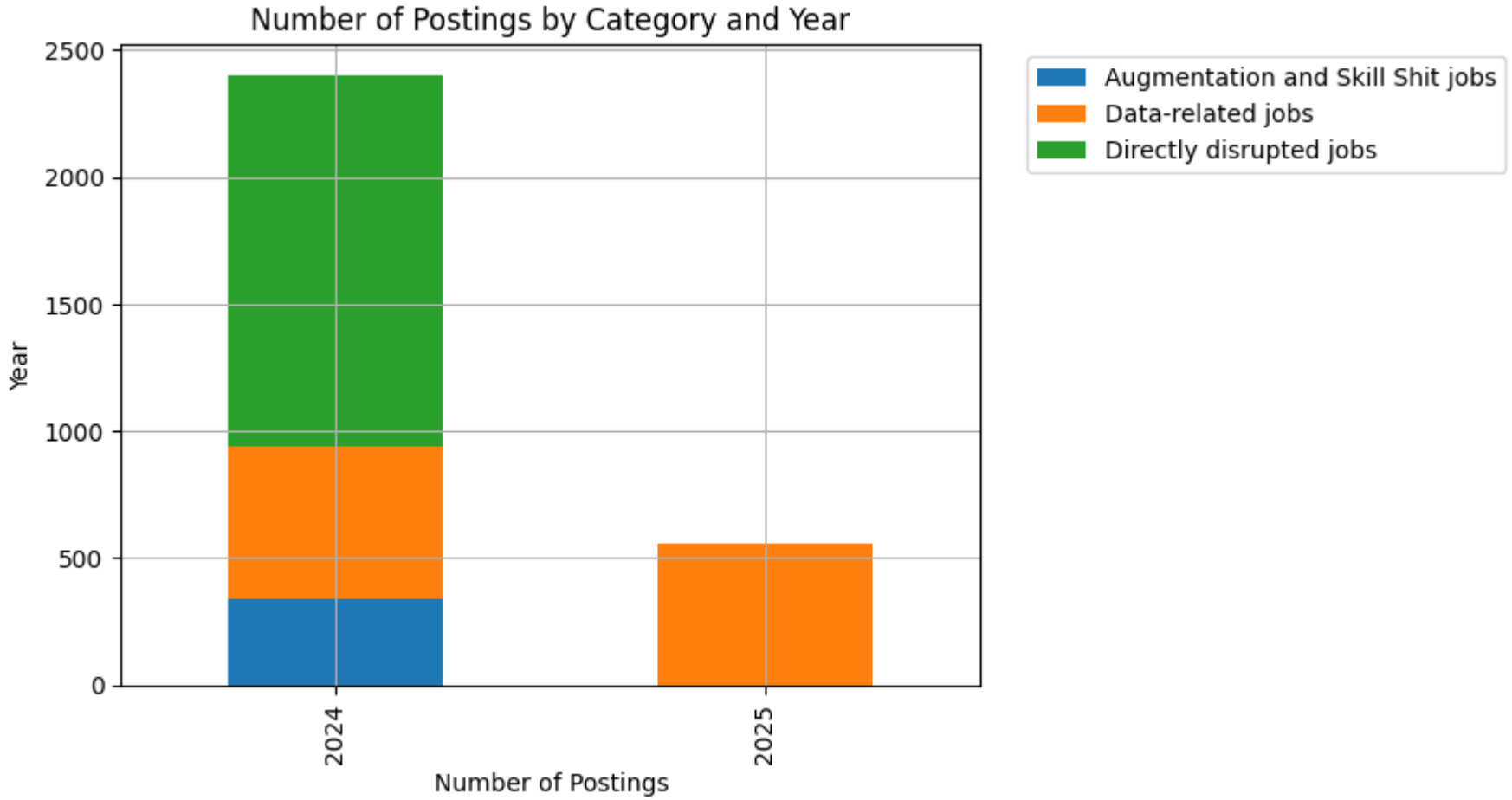
Data sources: Job postings data from Kaggle and Hugging Face.

Collection method: The postings data are already web-scraped and saved in the Hugging Face and Kaggle. Job recruitment websites include LinkedIn, Indeed, Glassdoor and etc.

Data wrangling for this datasets includes importing into Databricks, running SQL to clean the jobs descriptions, posting date and grouping jobs into four main categories: data-related, augmentation and skill shit, directly disrupted and other.

Data visualisation includes a stacked bar chart showing the number of posting by category, pie charts showing the specific postings within the categories, annual average salaries for jobs postings, and the mostly required skills from data-related job descriptions.

AN OVERVIEW OF JOB POSTINGS

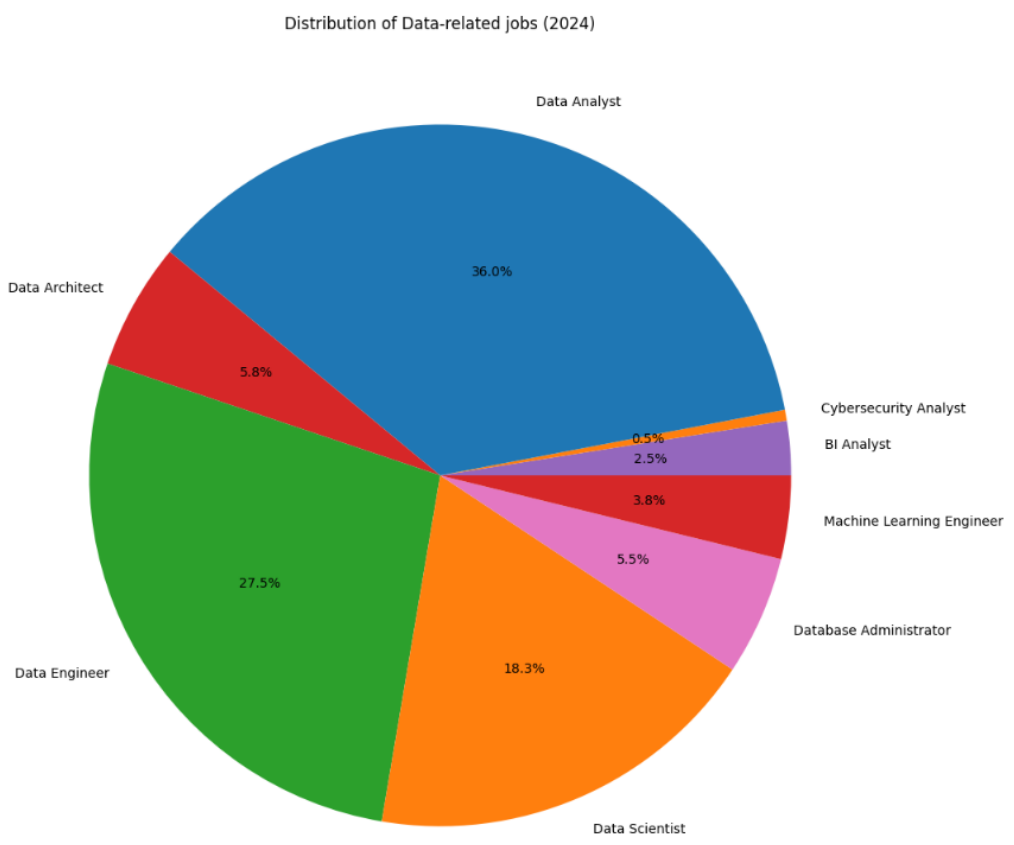


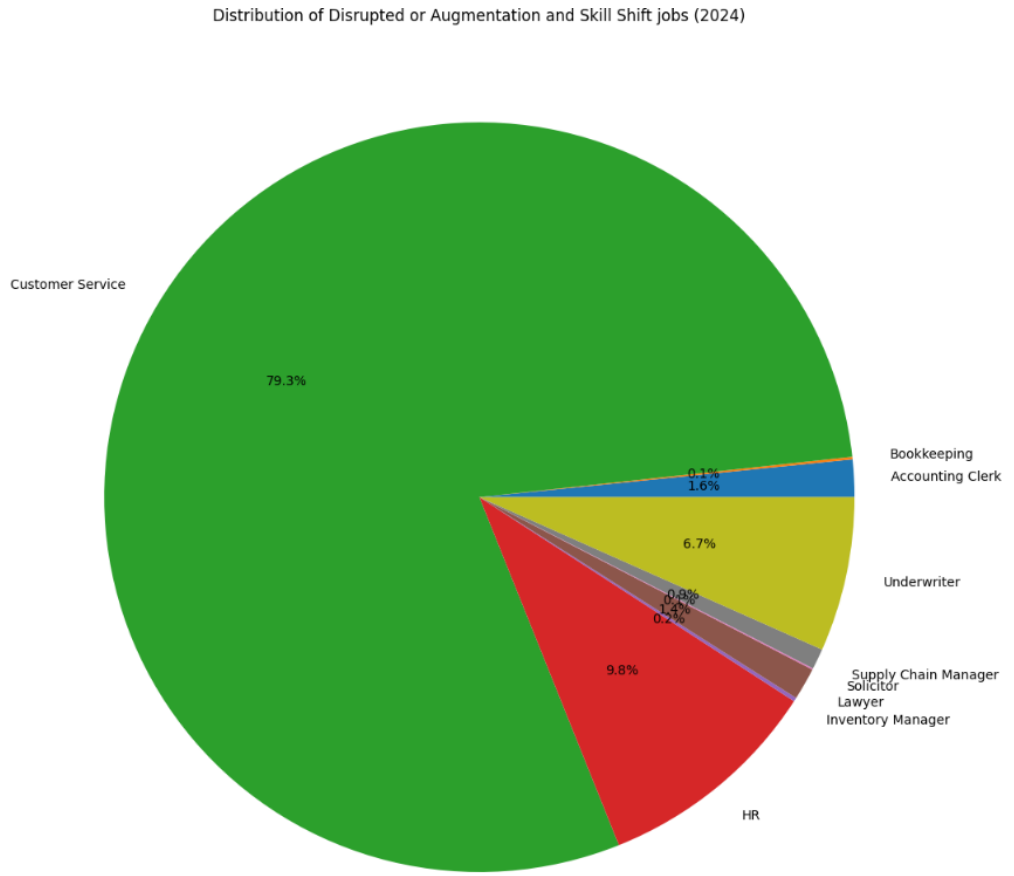
AI IS RESHAPING THE JOB MARKET, DEVELOPING REQUIRED SKILLS OR UPSKILLING AND TRANSITIONING IS IMPORTANT.

- The job categories are defined based on how jobs are affected by AI.
  - Data-related: AI leads to the creation and rise in demand for jobs in data infrastructure, data analysis, data science and data management and security.
  - Directly-disrupted: these jobs can be replaced by AI – data entry, bookkeeping and accounting clerk and basic customer service.
  - Augmentation and skill shift: tasks in these job can be done by AI – financial and insurance underwriter, entry-level lawyers, solicitors and HR recruiters.
- Since the 2025 dataset only covers job postings from April to June and excludes roles negatively affected by AI, a full year-on-year comparison cannot be made for all categories. Therefore, only **data-related jobs**, which appear in both years, allow for meaningful comparison.
- In 2024, the majority of job postings fell under the **directly disrupted** category, followed by **data-related** and **augmentation and skill-shift** roles.
- In 2025, **data-related jobs** might actually increased. Only within two months, the number of postings is similar to the whole year in 2024.

- Implications:
- AI is both reshaping and redefining employment.
  - Jobs which are directly disrupted were still in demand despite being risk of automation.
  - The smaller share of augmentation and skill-shift indicated the transformation of professional roles.
  - Data-related roles has been continuously growing, indicating the increasing dependence of organisations on data expertise, even as automation reduces opportunities in other job categories.
- For university students and recent graduates, **developing skills in data analysis, programming, and AI integration** will provide stronger career prospects. In contrast, workers in routine or administrative roles may need to **upskill or transition toward data- and technology-related fields** to remain competitive in the evolving job market.

POSTINGS IN DATA-RELATED AND AI-DISRUPTED JOBS (2024)





AI IS RESHAPING THE JOB MARKET, DEVELOPING REQUIRED SKILLS OR UPSKILLING AND TRANSITIONING IS IMPORTANT.

- The two charts illustrate the distribution of job postings in 2024, divided into **data-related jobs** and **disrupted or augmentation/skill-shift jobs**, based on how they are affected by AI.

- Most postings were for **Data Analysts (36%)** and **Data Engineers (27.5%)**. **Data Scientists (18.3%)** also made up a notable share, indicating growing reliance on advanced analytics. Other roles, such as **Database Administrators**, **Data Architects**, and **Machine Learning Engineers**, appeared less frequently but signal steady expansion in technical data infrastructure and AI development.

- Among roles most influenced by AI, **Customer Service (79.3%)** dominated, highlighting the high potential for automation. Smaller shares of **HR (9.8%)** and **Underwriters (6.7%)** suggest partial automation rather than full replacement, while roles like **Bookkeeping** and **Legal** positions appeared minimally, indicating that automation and AI-assisted tools may already be reducing recruitment needs in these areas.

- Implications:

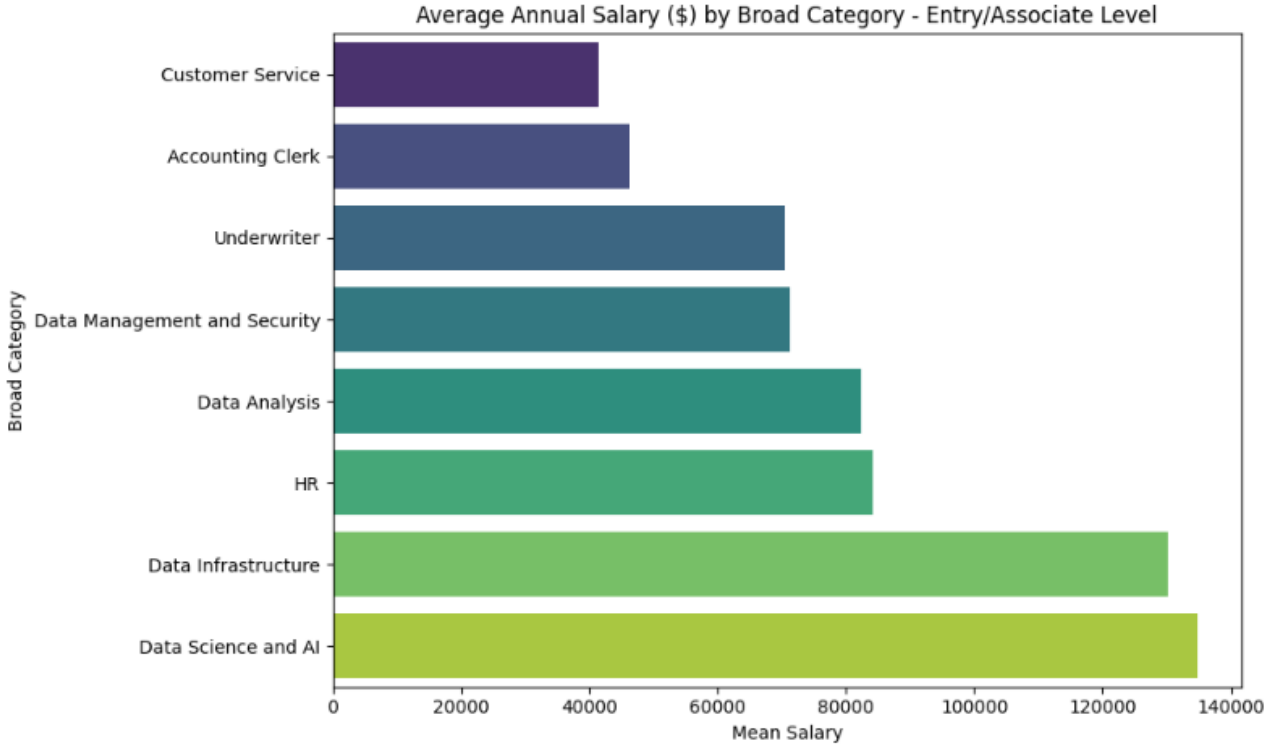
- There is strong and growing need for roles that manage, process, and interpret large datasets. Companies had also increased reliance on advanced analytics and predictive modelling.

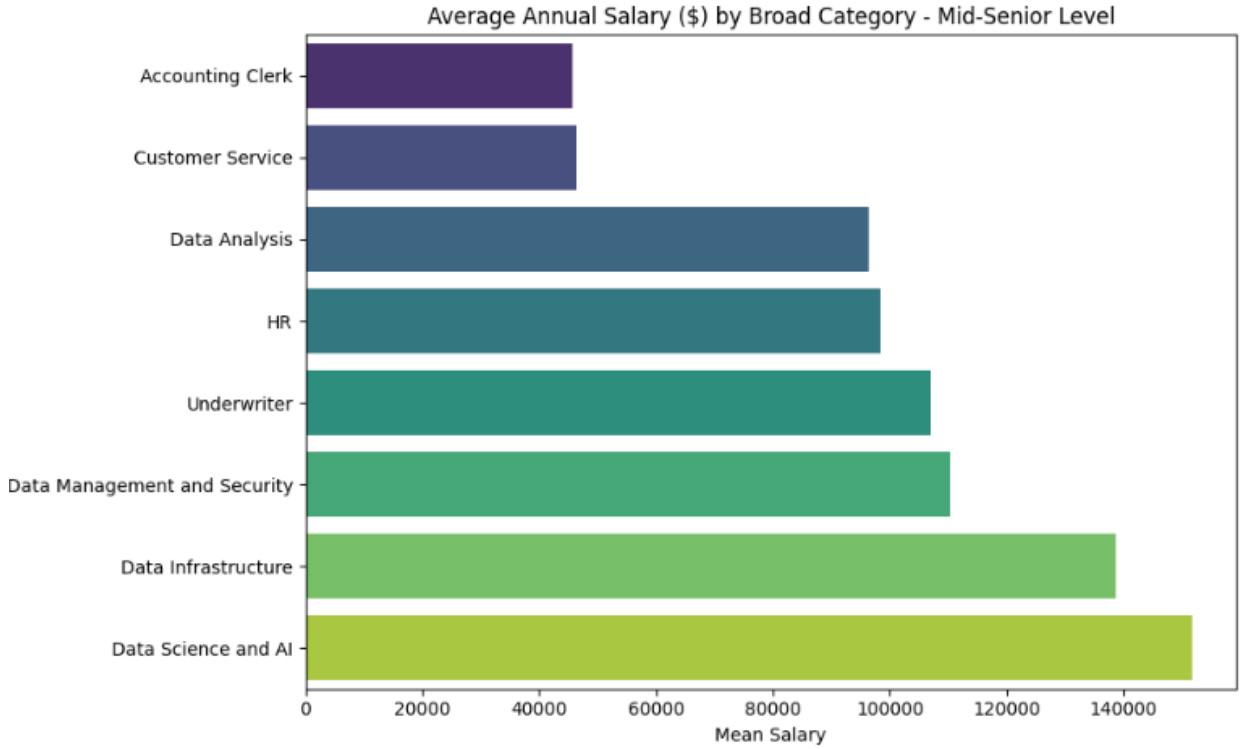
- There were also ongoing but smaller-scale needs for data infrastructure management and highly technical or AI-specialist positions.

- AI chatbots and virtual assistants has been widely adopted, and AI has been increasing supporting decision-making and repetitive tasks. However, human expertise remains essential in **HR roles** and **Underwriters.**

- For university students and graduates, this indicates that students with STEM-related degrees can consider data-related jobs. For other degrees such as humanities and social sciences, students should be aware of the AI adoption in the career they are interested in, and prepare for upskilling or transitioning their skills.

ANNUAL SALARIES FOR DATA-RELATED AND AI-DISRUPTED JOBS BY EXPERIECE LEVEL.





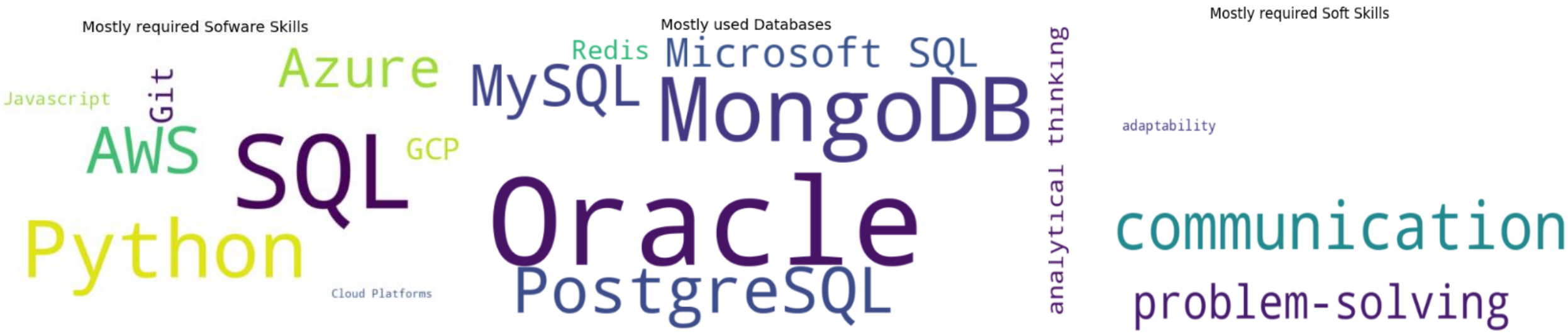
SALARY TRENDS SHOW STRONG GROWTH IN AI-RESISTANT CAREERS

The bar charts illustrates the mean annual salaries for entry and mid-senior level for data-related and AI-disrupted jobs.

- Overall, data-related positions experience the strongest salary growth, reflecting the high value of technical expertise. Salaries in data-focused roles rise notably from Entry/Associate to Mid-Senior levels. Data Management and Security shows the largest gain, climbing from **$75K** to around **$110K**. Data Analysis sees pay jump from **$80K** to **$95K**. Data Science and AI increase from about **$130K** to over $140K, while Data Infrastructure grows from **$125K** to nearly **$130K**.
- AI-disrupted roles also see upward movement. Underwriters' pay grows from **$70K** to **$105K**, and HR salaries rise from **$85K** to **$110K**. In contrast, Accounting Clerks and Customer Service roles show smaller increases—from **$50K** to **$55K** and **$40K** to **$55K**, respectively.

- Implications:
- For university students and recent graduates, they should choose career based on the entry-level salaries and further career progression, especially those with skills which cannot by replaced by AI.
- **Data Science, AI, and Data Management**: not only start with high entry-level salaries but also show the steepest growth as professionals gain experience.
- **HR and Underwriting**: solid career progression, although tasks at entry-level can be disrupted by AI.
- **Accounting and Customer Service**: slower salary growth, suggesting more limited financial returns over time.

MOST REQUIRED SKILLS IN DATA-RELATED JOBS



MOST REQUIRED SKILLS IN DATA-RELATED JOBS

- For data-related jobs, the most frequently required programming languages are **SQL** and **Python**, while the most commonly requested cloud platforms are **Azure**, **AWS**, and **Git**. **JavaScript** is also required, particularly for certain data analysis or data engineering positions.
- The most commonly used databases include **Oracle**, **MongoDB**, and other SQL-based systems such as **MySQL**, **PostgreSQL**, and **Microsoft SQL Server**.
- In terms of soft skills, **communication** and **problem-solving** are universally important. **Analytical and critical thinking** are especially emphasized in data analysis and data science roles. **Adaptability** reflects the expectation for professionals to continuously learn new technologies and skills within the industry.

- Implications:
- With the requirement in cloud platforms, this implies that data field has been shifting towards s**calable, collaborative, and agile workflows**.
- For university students and graduates considering a data career path, this suggests that prioritising in developing **technical proficiencies** in SQL and Python (the most in-demand programming languages), cloud platforms like Azure and AWS, and a mix of relational (MySQL, PostgreSQL, Oracle) and non-relational (MongoDB) databases.
- Additionally, investing in **soft skills** such as communication, problem-solving, analytical thinking, and adaptability are critical for translating data insights to stakeholders and thriving in a rapidly evolving industry.

CONCLUSION

Overall, the analysis reveals that, while AI has increased the demand for analytical and technical expertise, many entry-level jobs might be replaced.

There is a clear divide in salary progression between AI-resistant and AI –replacement jobs.

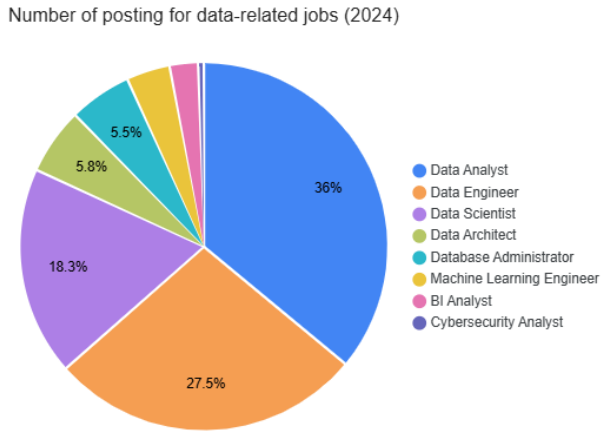
- Positions in Data Science, AI, and Data Management not only begin with higher starting salaries but also demonstrate stronger growth into senior levels.
- HR and Underwriting start with lower entry level salaries and with pay rise in mid-senior level with AI-resistant skills.
- Accounting and Customer Service show more modest salary development, indicating slower financial advancement over time.

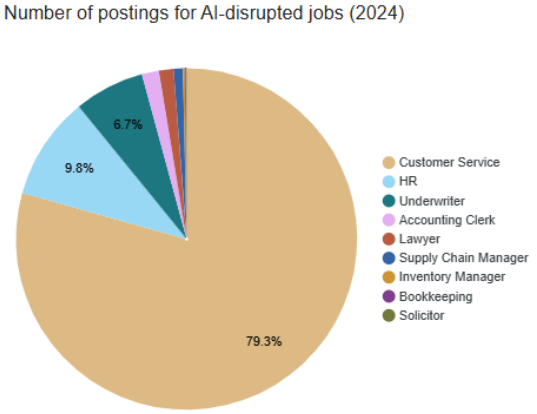
These patterns suggest that as technology continues to shape the job market, investing in data-driven skills offers graduates the better short- and long-term career growth and competitive earnings.

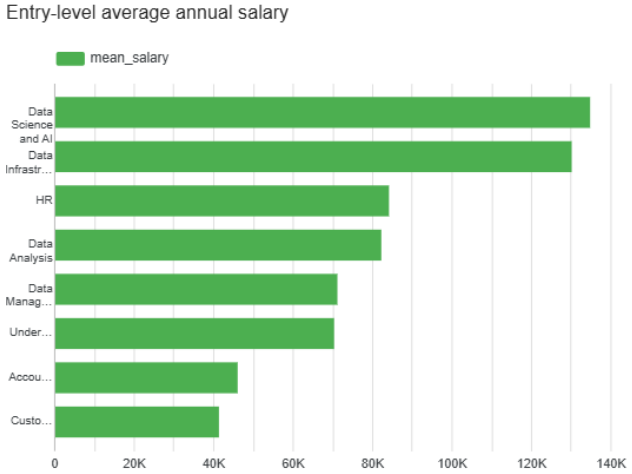
APPENDIX

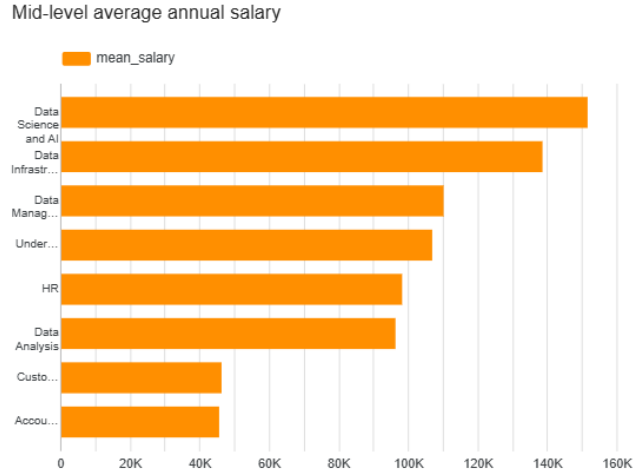
- The first one is a dashboard, including the pie charts for job categories and the annual salaries.
- The second one shows the correlation between jobs postings and the number of views or applies made to each posting, by experience level.

APPENDIX

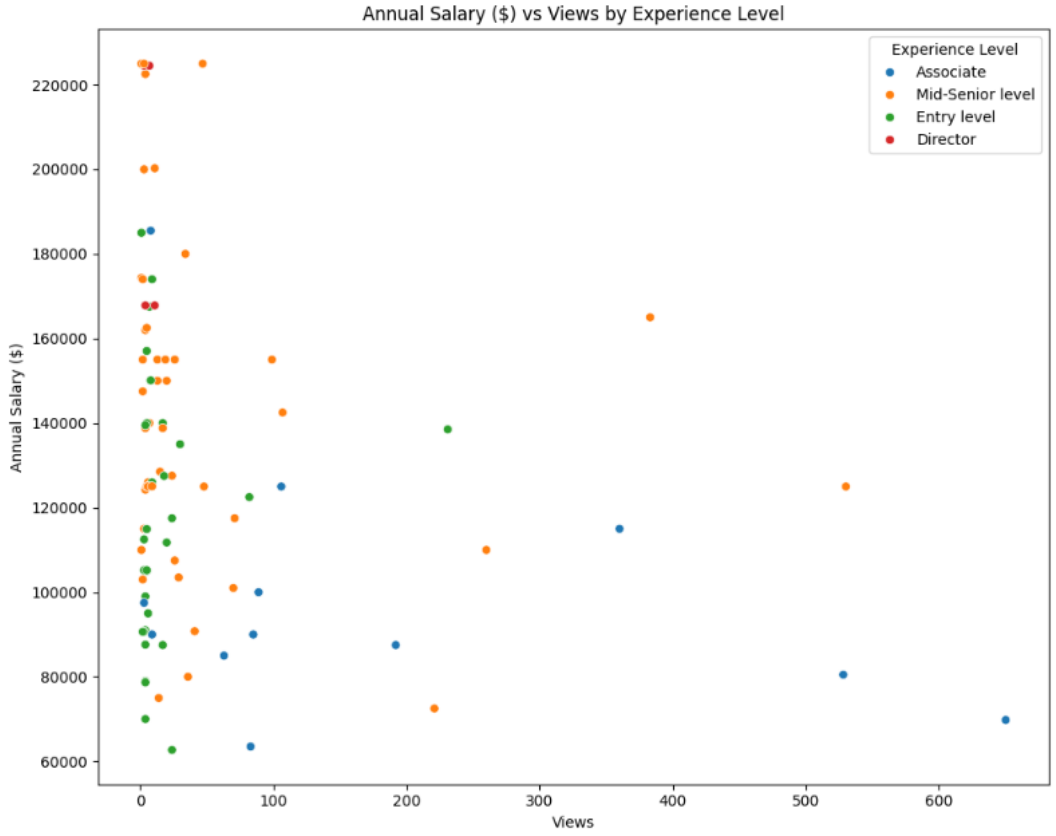

Number of posting for data-related jobs (2024)
36%
27.5%
18.3%
5.8%
5.5%
Data Analyst
Data Engineer
Data Scientist
Data Architect
Database Administrator
Machine Learning Engineer
BI Analyst
Cybersecurity Analyst

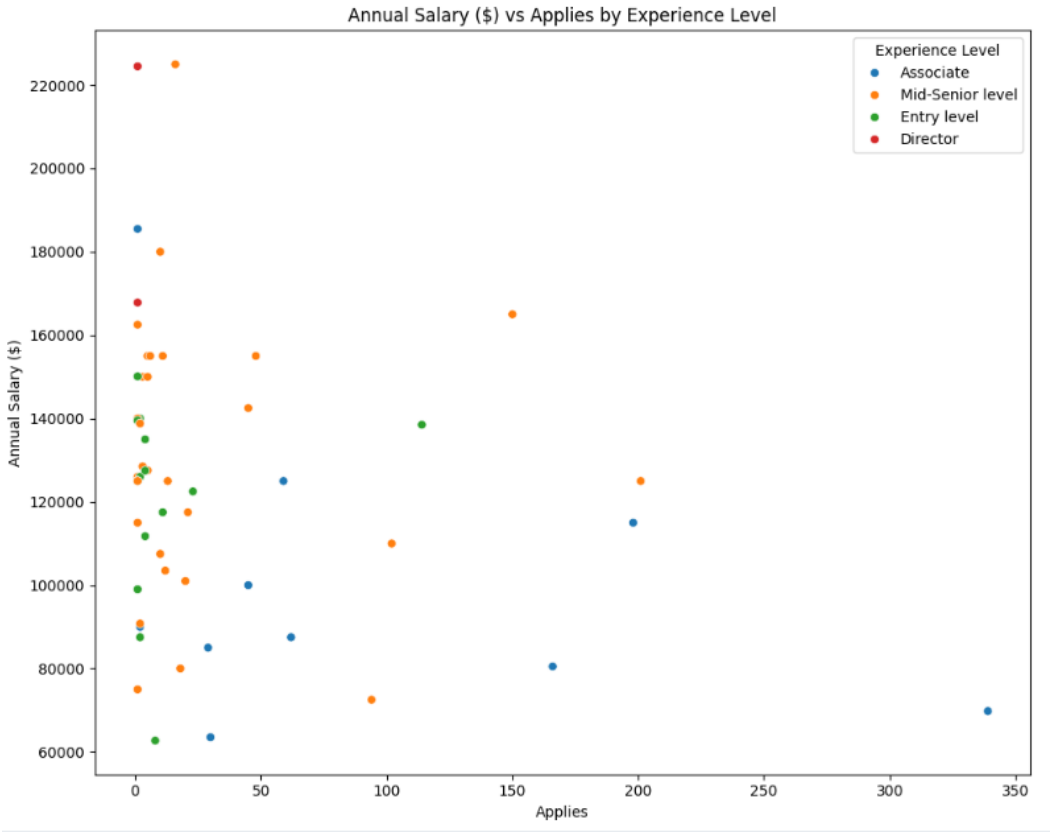

Number of postings for AI-disrupted jobs (2024)
79.3%
9.8%
6.7%
Customer Service
HR
Underwriter
Accounting Clerk
Lawyer
Supply Chain Manager
Inventory Manager
Bookkeeping
Solicitor


Entry-level average annual salary
mean_salary
Data Science and AI
Data Infrastr…
HR
Data Analysis
Data Manag…
Under…
Accou…
Custo…
0
20K
40K
60K
80K
100K
120K
140K


Mid-level average annual salary
mean_salary
Data Science and AI
Data Infrastr…
Data Manag…
Under…
HR
Data Analysis
Custo…
Accou…
0
20K
40K
60K
80K
100K
120K
140K
160K

APPENDIX


Annual Salary ($) vs Views by Experience Level
Experience Level
Associate
Mid-Senior level
Entry level
Director
Annual Salary ($)
220000
200000
180000
160000
140000
120000
100000
80000
60000
0
100
200
300
400
500
600
Views


Annual Salary ($) vs Applies by Experience Level
Experience Level
Associate
Mid-Senior level
Entry level
Director
Annual Salary ($)
220000
200000
180000
160000
140000
120000
100000
80000
60000
0
50
100
150
200
250
300
350
Applies