AN ANALYSIS OF EMPLOYMENT TRENDS IN DATA SCIENCE

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CONTENT

OBJECTIVE

- To analyze and derive actionable insights from a dataset containing job postings and salary information.

- The objective is to explore various aspects of the job market, including salary trends, job demand by category and experience level, work setting preferences, and company size considerations.

- Through SQL data analysis, the project aims to uncover patterns, trends, and correlations that can inform decision-making for job seekers, employers, and industry stakeholders.

DATASET OVERVIEW

- The dataset encompasses a comprehensive collection of job postings specifically for data science positions across various industries and regions from the years 2020 to 2023 comprises 11 columns with over 9000 rows of data specifically focused on the data science field.

- It includes information about work year, job title, job category, salary currency, salary, salary converted to USD, employee residence, experience level, employment type, work setting, and company location.

- These columns collectively offer insights into employment trends, salary structures, geographic distribution of employees, and the diversity of job roles across different categories and settings.
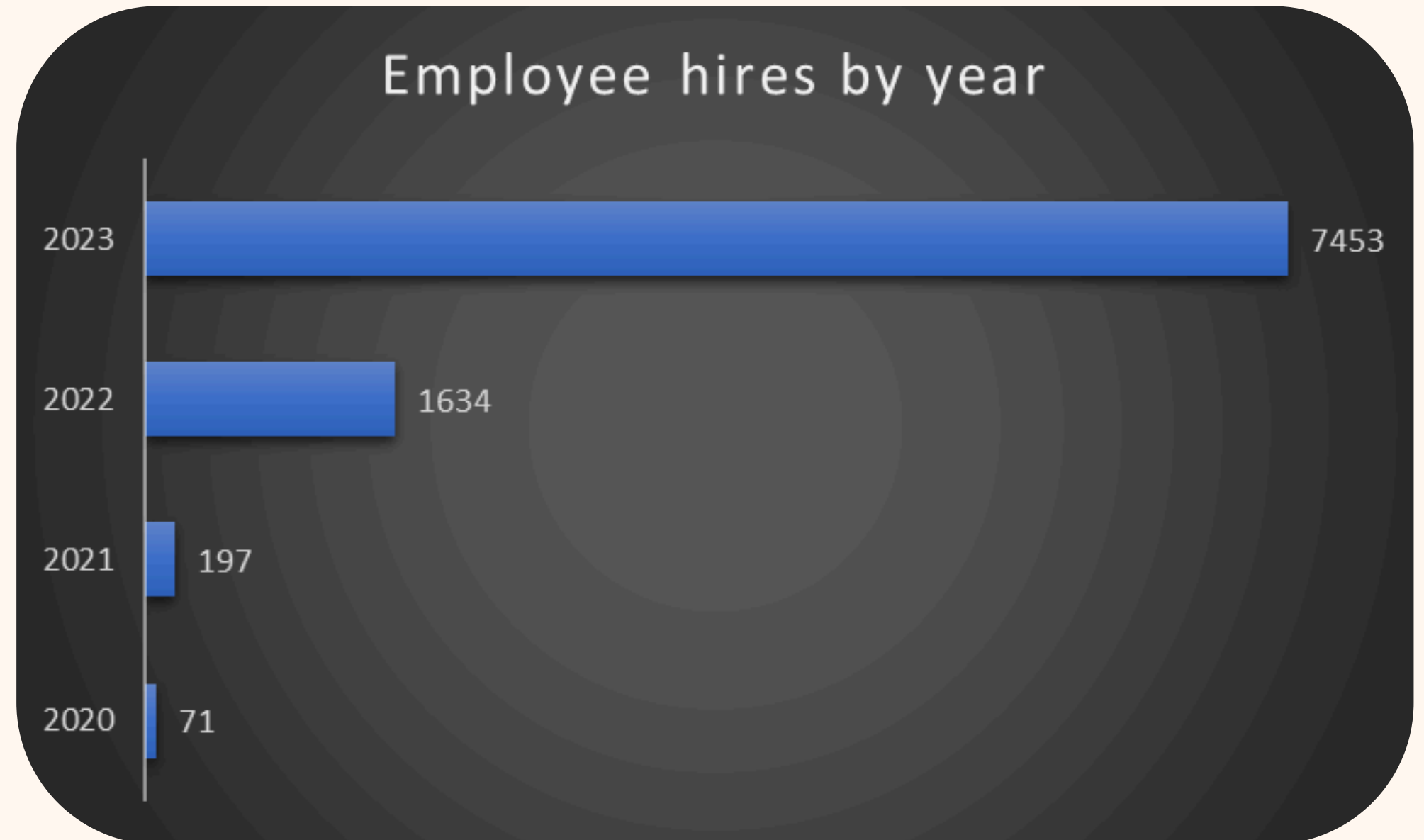
ANALYSIS AND INSIGHTS
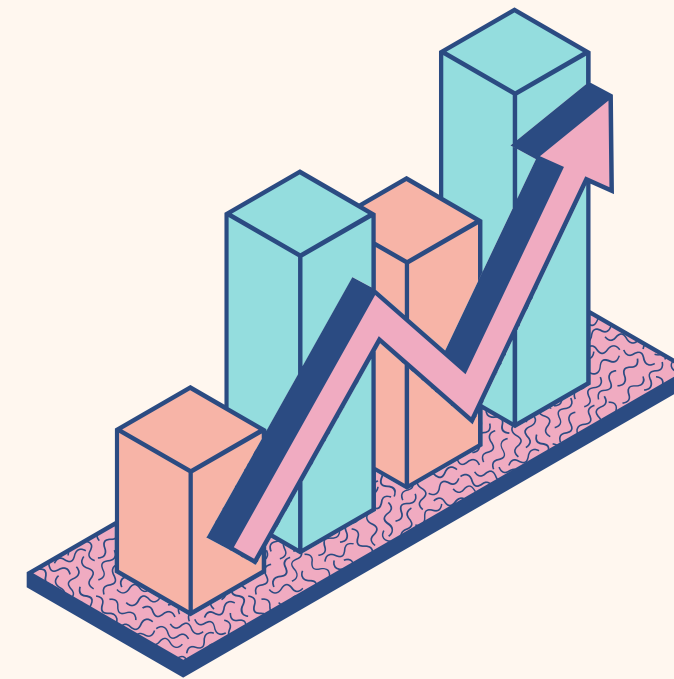
Analysis Question

What is the distribution of employee hiring across different years,

Insights

In 2023, there was a significant increase in employee hires & total number of hires in 2023 was 7453
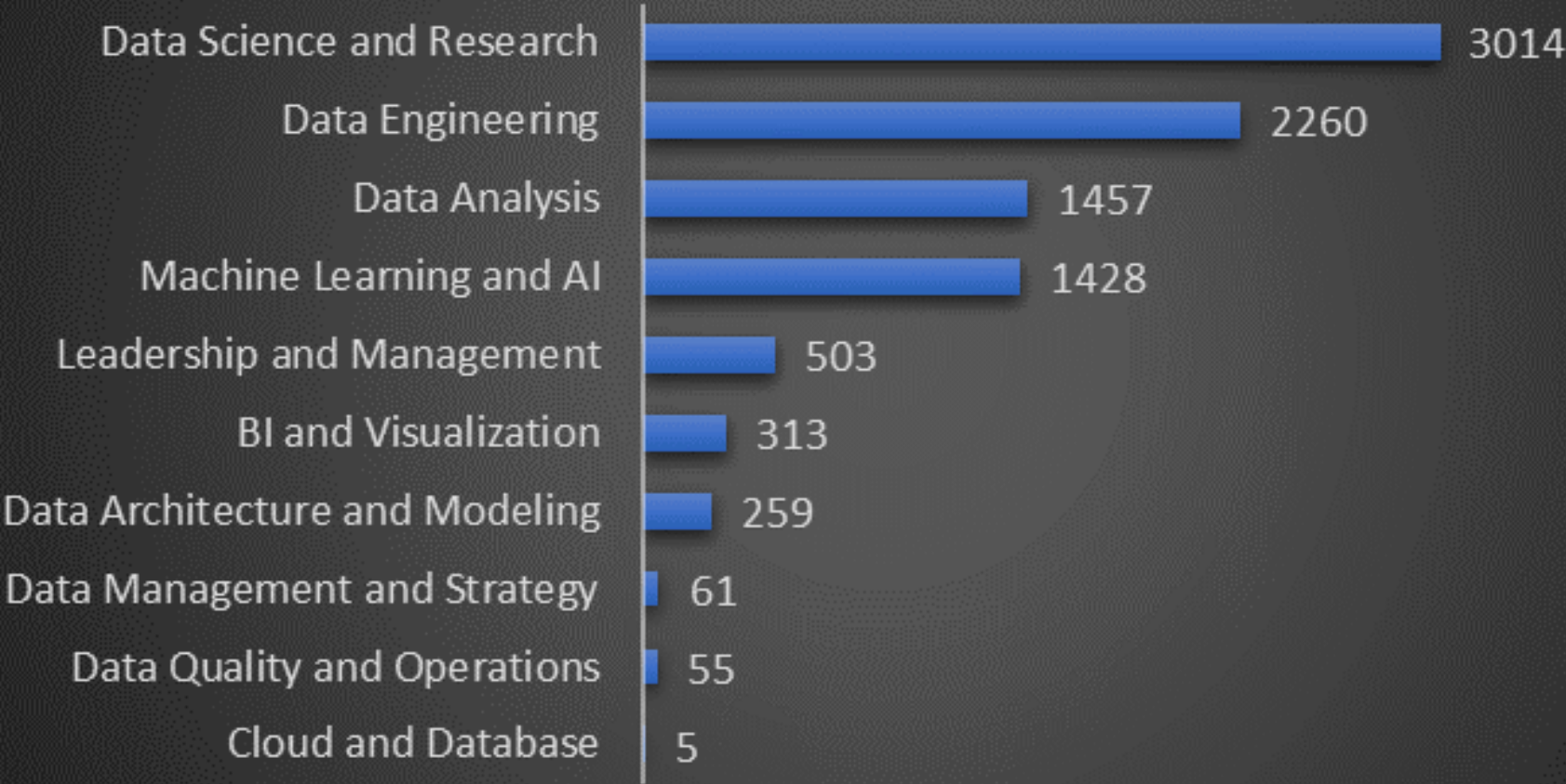

Employee hires by year

Year	Hires
2023	7453
2022	1634
2021	197
2020	71

Analysis Question

Find the total no of job posting based on job category

Insights

The data reveals a substantial concentration of job postings in the 'Data Science and Research' and 'Data Engineering' categories, indicating a heightened demand for professionals in these domains,

No of job posting based on job category

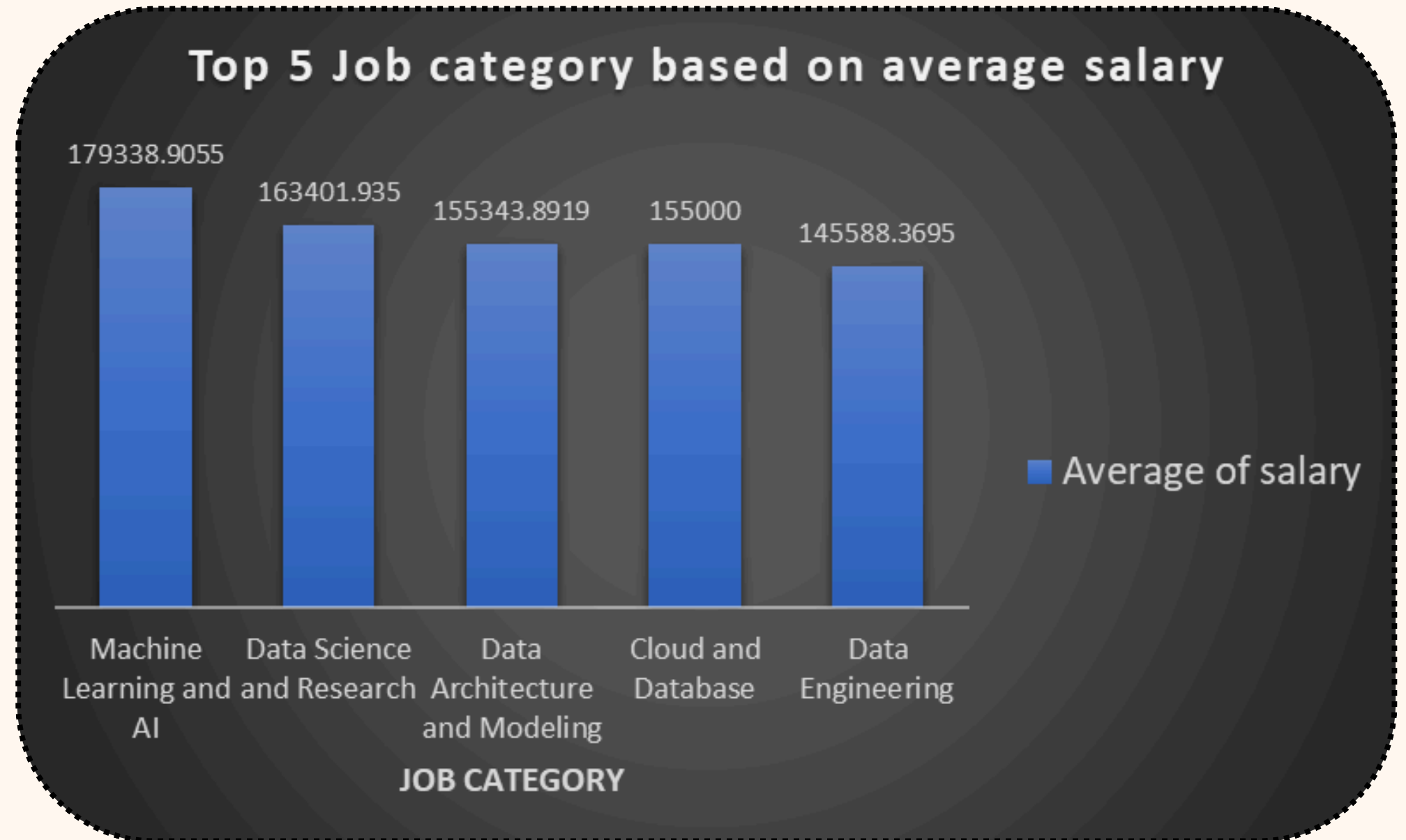| Category	Count
Data Science and Research	3014
Data Engineering	2260
Data Analysis	1457
Machine Learning and AI	1428
Leadership and Management	503
BI and Visualization	313
Data Architecture and Modeling	259
Data Management and Strategy	61
Data Quality and Operations	55
Cloud and Database	5

Analysis Question

Find the top 5 average salaries job based on job category

Insights

Machine Learning and AI professionals earn the highest average salary in the data science and technology field.

Top 5 Job category based on average salary

| Job Category	Average of salary
Machine Learning and AI	179338.9055
Data Science and Research	163401.935
Data Architecture and Modeling	155343.8919
Cloud and Database	155000
Data Engineering	145588.3695

Analysis Question

What is the distribution of job postings across different experience levels

Insights

The data reveals a strong emphasis on senior-level positions, comprising 71.72% of job postings, followed by mid-level roles at 19.98%, with entry-level opportunities at 5.30% and executive positions at 3.00%.

Distribution of job postings across different experience levels

5.30%   3.00%
19.98%
71.72%

- Entry-level
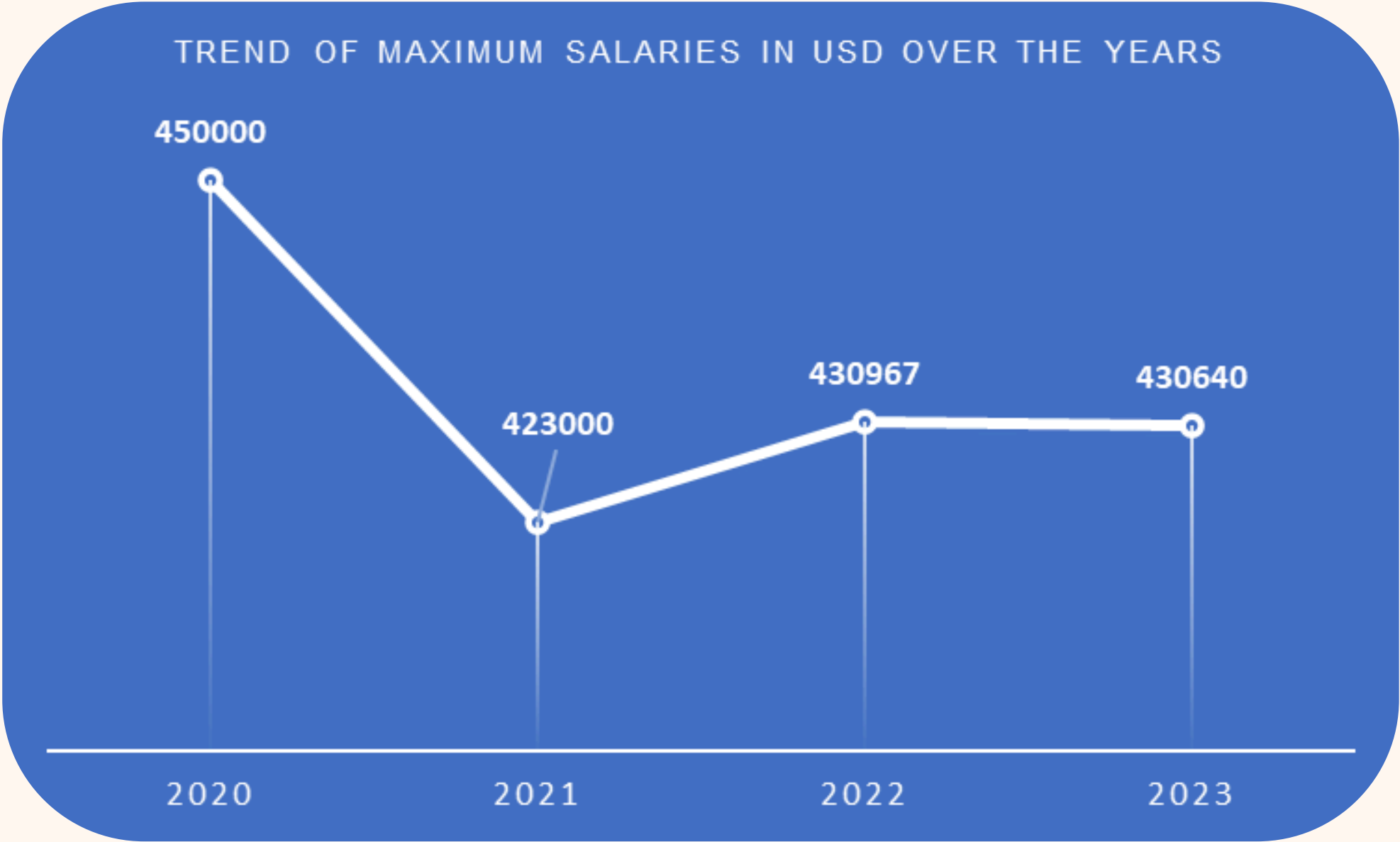- Executive
- Mid-level
- Senior
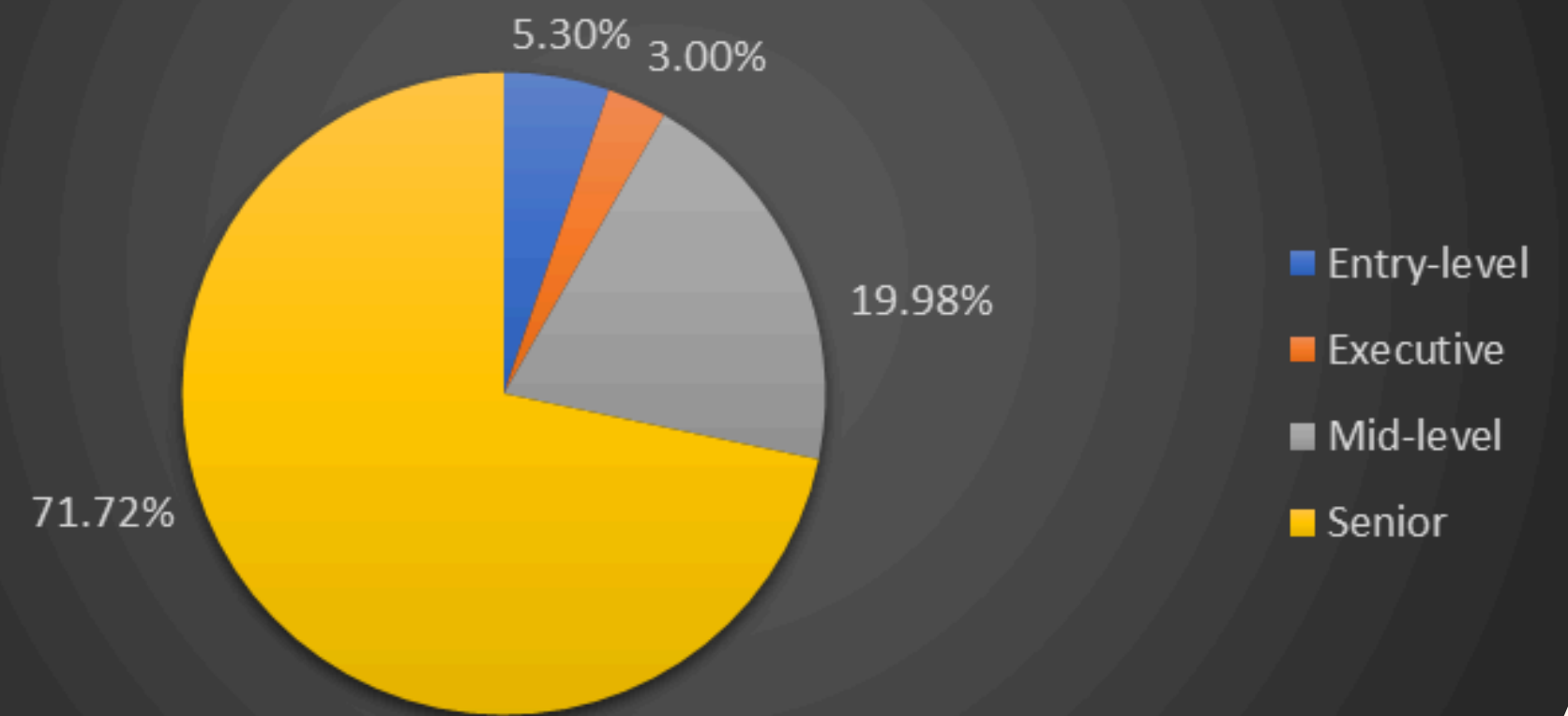
Analysis Question

Trend of maximum salaries in USD over the years

Insights

From 2020 to 2023, maximum salaries fluctuated moderately, peaking at $450,000 USD in 2020 and experiencing slight variations in subsequent years.


TREND OF MAXIMUM SALARIES IN USD OVER THE YEARS

What are the preferred work settings based on the number of job postings

Insights

The dataset indicates a pronounced preference for in-person work environments (5730), coupled with a substantial demand for remote positions (3434), and a discernible interest in hybrid work configurations (191).

Preferred work settings based on the number of job postings

In-person — 5730
Remote — 3434
Hybrid — 191

Total
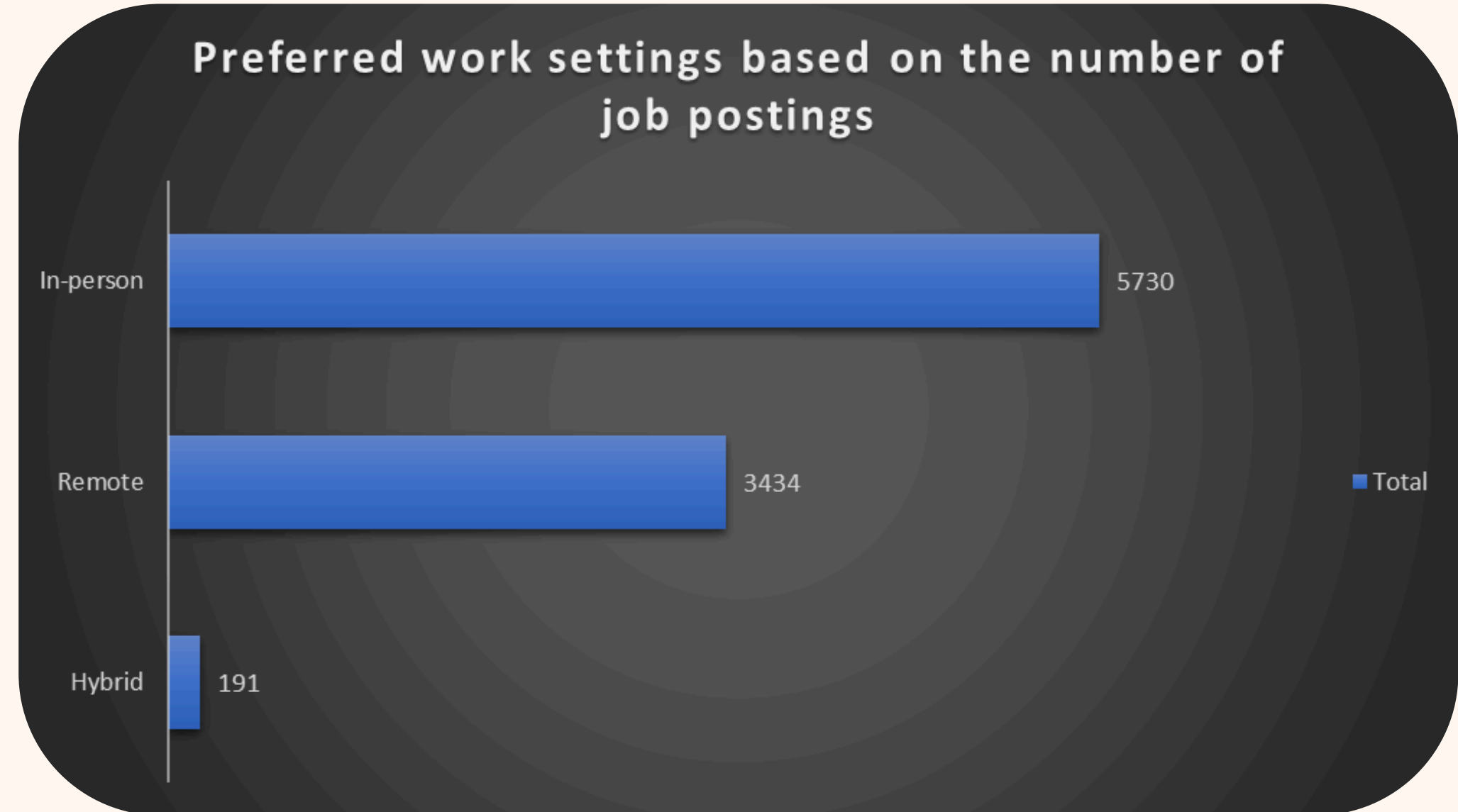
Analysis Question

What is the distribution of job postings based on company size

Insights

The data suggests that medium-sized companies have the highest number of job postings, indicating a robust presence and potentially reflecting their capacity for growth and employment opportunities.

Distribution of job posting by company size

748   159

8448

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S

Analysis Question

Identify the job title with the highest salary in each job category.

Insights

From the result we can see that, Cloud Database Engineers command the highest salary, reflecting the importance of expertise in cloud technologies and database management.

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+-----------------------------------+-------------------------------+----------+
| job_category                      | job_title                     | salary   |
+-----------------------------------+-------------------------------+----------+
| Cloud and Database                | Cloud Database Engineer       | 190000   |
| Data Architecture and Modeling    | Data Architect                | 92000    |
| Data Management and Strategy      | Data Specialist               | 95000    |
| Data Quality and Operations       | Data Quality Analyst          | 95000    |
| Leadership and Management         | Data Manager                  | 98000    |
| Machine Learning and AI           | ML Engineer                   | 98200    |
| BI and Visualization             | Business Intelligence Analyst | 99000    |
| Data Science and Research         | Data Scientist                | 99360    |
| Data Engineering                  | ETL Developer                 | 99500    |
| Data Analysis                     | Data Analyst                  | 99750    |
+-----------------------------------+-------------------------------+----------+
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Analysis Question

Find the top 5 company locations offering the highest average salaries for the position of 'Data Scientist

Insights

The information shows that Data Scientists earn different average salaries in various countries. Canada and the United States offer the highest pay, followed by Israel, Poland, and Australia, suggesting that pay levels vary depending on where professionals work in this role

Top 5 company locations offering the highest average salaries for the position of 'Data Scientist

Canada	United States	Israel	Poland	Australia
167607	165978	160000	150000	120000

KEY FINDINGS

The key findings from the analysis highlight significant insights into the data science and technology job market

- The concentration of job postings in 'Data Science and Research' and 'Data Engineering' categories underscores heightened demand in these domains, reflecting evolving trends and opportunities in the data science and technology field.

- Machine Learning and AI professionals earning the highest average salaries in data science field.

- Senior-level positions dominate the job market,

- A clear preference for in-person work environments is observed, alongside substantial demand for remote positions and interest in hybrid work configurations, reflecting evolving workplace preferences

- Medium-sized companies emerge as prominent contributors to job postings, indicating robust presence and growth potential within this sector.

- Cloud Database Engineers command the highest salaries, underscoring the significance of expertise in cloud technologies and database management.

- Across various countries, a notable disparity in average salaries for Data Scientist positions is evident, with Canada and the United States leading, followed by Israel, Poland, and Australia. Notably,

BUSINESS ASPECT

This project offers useful insights into the global job market using real job posting data. These findings can help companies improve hiring strategies and support job seekers in making informed career choices.

1. Popular Job Roles

   Job titles such as Data Science & Research, Data Engineering are among the most posted.

   This reflects a strong demand for professionals in data-driven technologies.

2. Experience Level Trends

   Most jobs are aimed at mid and senior levels, with fewer opportunities for entry-level candidates. Companies

   may consider building more entry-level programs or internships to train fresh talent.

3. Use for Business Decisions

- Helps companies adjust job offers based on salary benchmarks.
- Guides HR in setting location and remote policies.
- Highlights areas where early-career hiring can be improved.
- Informs business leaders about hiring trends in tech.

Overall, this analysis supports data-driven decisions in recruitment, workforce planning, and policy-making.

CONCLUSION

In conclusion, this project has provided valuable insights into the dynamic landscape of the data science and technology job market from 2020 to 2023. The analysis revealed significant disparities in average salaries across different countries, emphasizing the importance of geographical considerations in job compensation.The prevalence of job postings from medium-sized companies indicates potential growth prospects within this sector, while evolving workplace preferences for in-person, remote, and hybrid environments reflect the dynamic nature of modern work settings. The observed salary fluctuations and emphasis on senior-level positions illuminate the competitive nature of the job market and the demand for seasoned professionals.As organizations and job seekers navigate these trends, the insights gleaned from this project provide valuable guidance for strategic decision-making and future career planning within the data science and technology field.

THANK YOU