THE BRIDGE DIGITAL TALENT ACCELERATOR

Exploratory Data Analysis

EDA

Analysis of labour market supply and demand in the data environment:

Global wages and conditions

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Madrid, July, 2024

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CONTENT OF THE MEMORY

1. INTRODUCTION

This document analyses the data and machine learning sector, looking at labour demand, salaries and the geographical distribution of vacancies, among other parameters.

The **aim** is to identify the best regions and countries to work in this field, based on a comparison of data obtained from various sources.

HYPOTHESIS

'The United States of America is the best country to work in the data environment'.

OBJECTIVES OF THE ANALYSIS

- Identify the **profiles most in demand** in the data sector.
- Analyse the **geographical distribution** of job vacancies and associated salaries.
- Compare the working environment and **wage conditions** in different countries and regions.
- Assess the **evolution** of the sector from 2020 to the present day.
- Provide **recommendations** for professionals and employers in the sector.

METHODOLOGY

The data analysis has been carried out following a **structured methodology** that includes **data loading, cleaning, exploratory analysis, visualisation and drawing conclusions.**

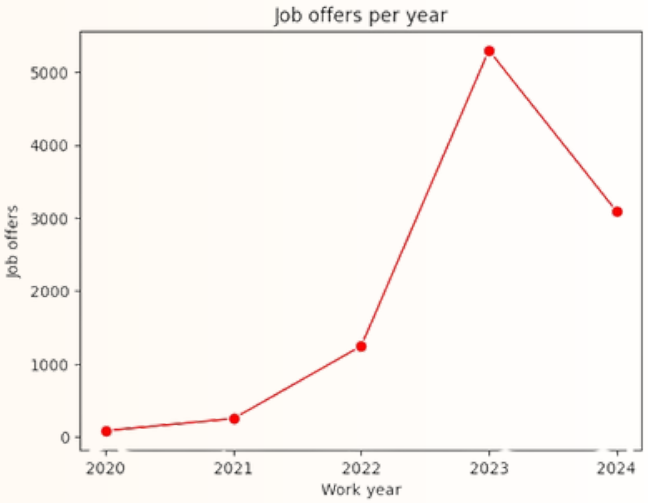
Two separate studies are carried out: first a **global one**, and secondly one focused exclusively on the **United States of America**.

Finally, **conclusions** are drawn from both studies, pooled and comparisons and conclusions are drawn from a much broader perspective, but at the same time focused on the purpose of this study.

2. DEVELOPMENTS IN THE DATA SECTOR

GROWTH IN LABOUR DEMAND

Since 2020, the demand for data science and machine learning professionals has grown exponentially. Factors such as the **Covid-19 pandemic** and the **increasing digitisation of companies** have driven this trend. The **collapse of Silicon Valley Bank in 2023** also had a significant impact, accelerating hiring in some markets while slowing in others.

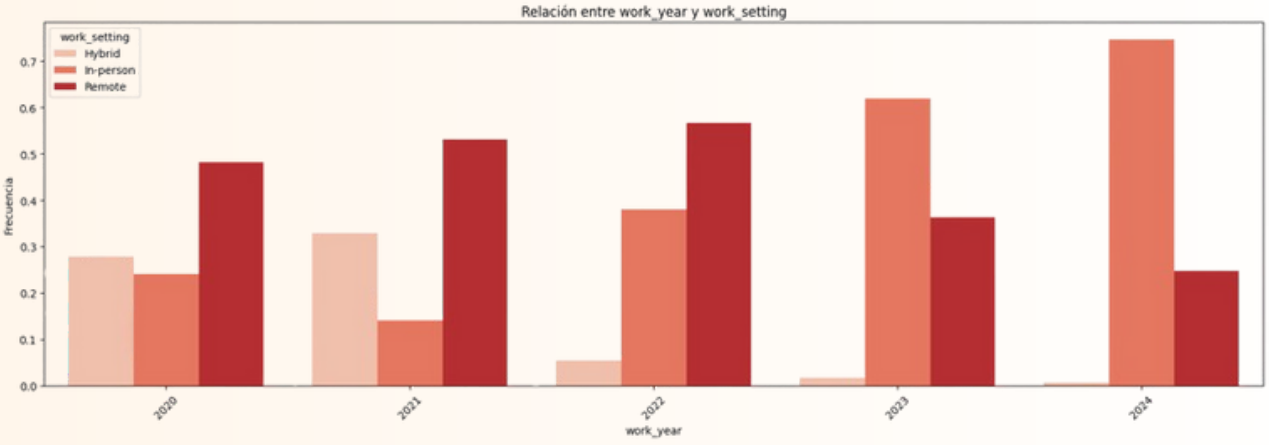


* It should be borne in mind that we are still in the middle of the year 2024, so by the end of the year the labour supply should be higher than in 2023.

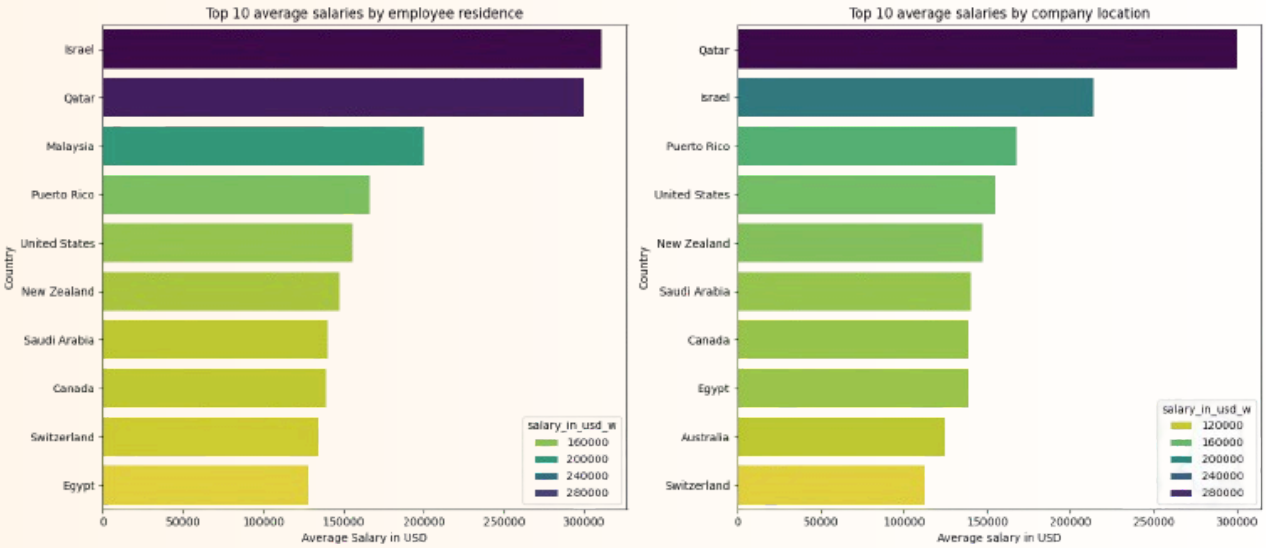
CHANGES IN WORK PATTERNS

Most jobs in the sector are still **full-time** and **face-to-face**. During the **pandemic** there was an **increase in remote job offers**, which has disappeared with the end of the pandemic. **Hybrid work** flourished during the pandemic, but has now virtually **disappeared**.

Companies that have maintained remote working seek to balance productivity with flexibility for employees.



Over time, there has been a discrepancy between the countries with the highest number of companies demanding data jobs and the countries with the highest number of data workers. This may be due to a strategy by companies **to hire employees in countries with a lower cost of living** -and thus be content to offer a lower salary- or to the **mobility of employees to countries with a lower cost of living** -so that their salary appears to be higher-.



IMPACT OF RECENT EVENTS

In the last few years, several significant events have influenced the data sector, affecting both the demand for professionals and working conditions.

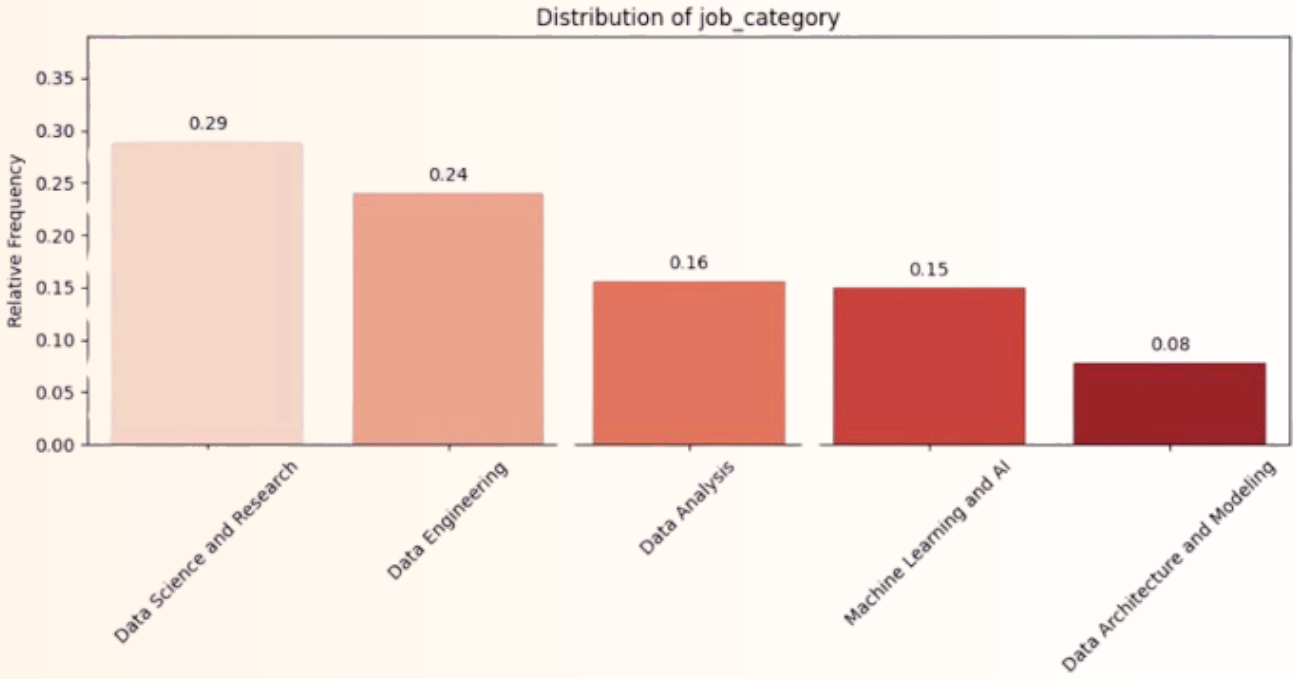
- **Covid-19 pandemic**: It has had a transformative impact on the global labour market, and the data science sector has been no exception. Some of the main effects have been the acceleration of digitisation, increased demand for predictive analytics and the adoption of remote working.

- **Bankruptcy of Silicon Valley Bank in 2023:** The failure of Silicon Valley Bank (SVB) in 2023 was another crucial event that significantly impacted the data science and machine learning sector. SVB was a key financial institution for many startups and technology companies. Its collapse had several repercussions such as a reduction in startup funding, corporate restructuring and geographical displacement of opportunities.

3. DATA ANALYSIS

MOST IN-DEMAND PROFILES

The most in-demand roles in the sector are **Data Scientist** and **Data Engineer**, especially those with more than 5 years' experience. Roles in '**Data Science and Research**' and '**Machine Learning and AI**' are particularly valued due to their ability to drive innovation and improve data-driven decision making.



GEOGRAPHICAL DISTRIBUTION OF JOB OFFERS

The United States, and specifically **California**, emerges as the leader in the supply of jobs in this sector. Cities such as **New York** and **San Francisco** (the latter thanks to its proximity to **Silicon Valley**) stand out for their high concentration of job opportunities.

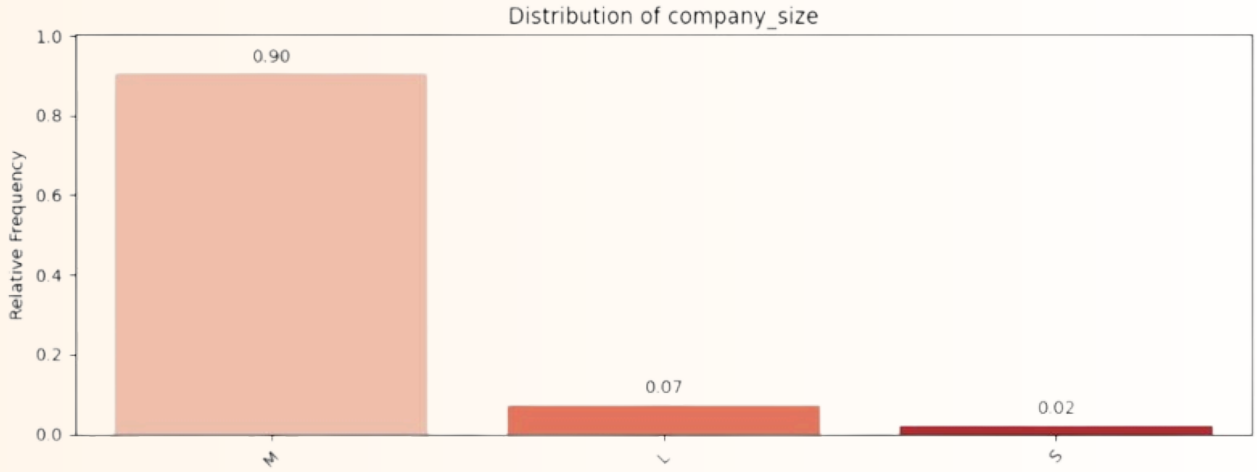
Internationally, countries such as **Israel** and **Qatar** offer the highest salaries, although **the supply of jobs is more limited** compared to the United States.

SALARIES AND JOB EVALUATION

Most positions in the sector in the **US** pay between **$80,000** and **$120,000** per year, with higher salaries for roles specialising in 'Machine Learning and AI'. While **Israel** and **Qatar** offer average salaries above **$300,000**, the US offers an attractive combination of good salaries and a well-valued work environment.

SIZE OF THE COMPANIES IN DEMAND

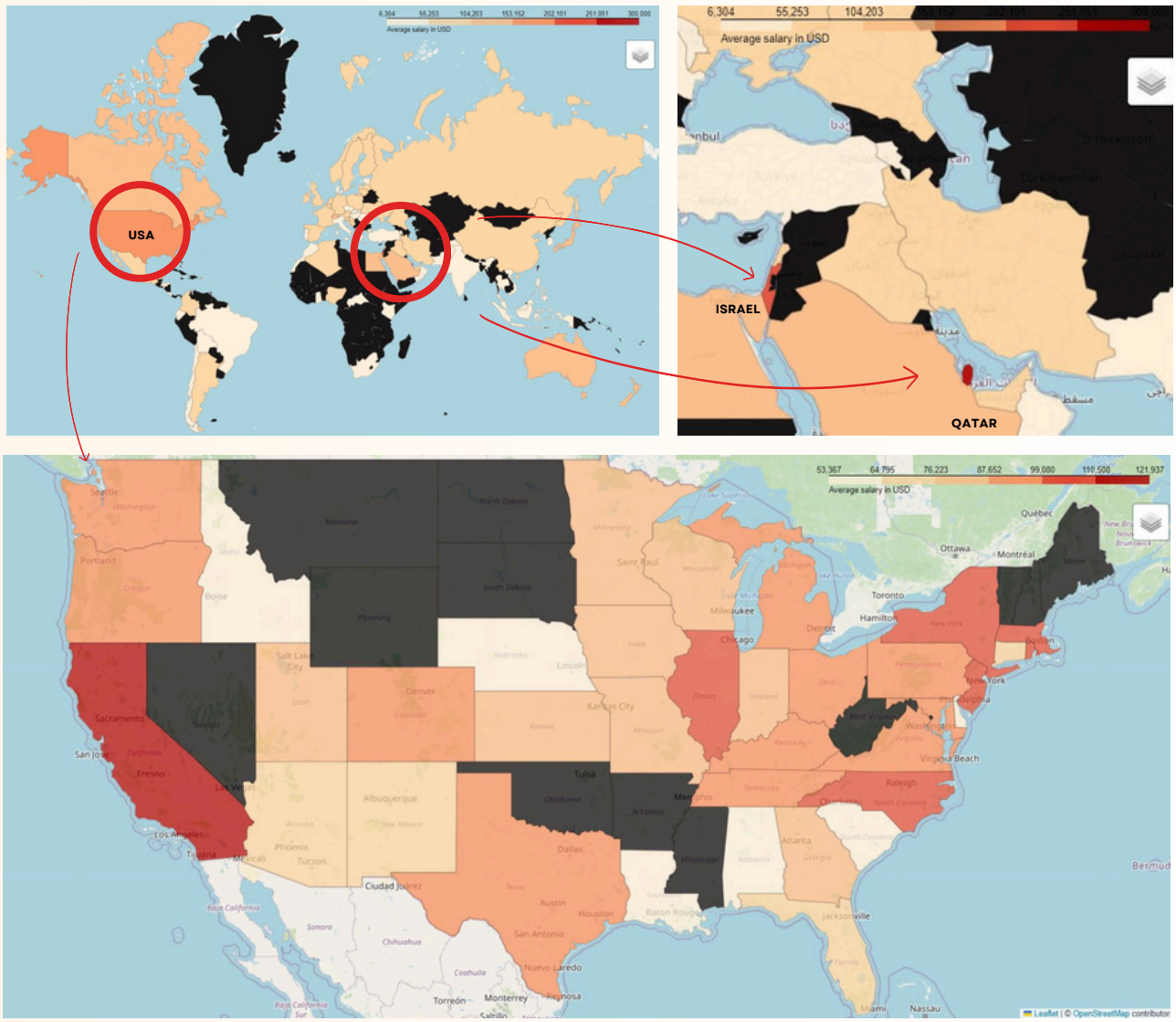
Medium-sized companies (between 50 and 250 employees) have the highest demand for data science and machine learning professionals. These companies value the flexibility and ability of these professionals to adapt quickly to the changing needs of the market and get benefits focused on the growth of the company, in order to grow within the market.



4. INTERNATIONAL COMPARISON

WAGES BY COUNTRY

The United States, with an **average salary of approximately $100,000**, ranks well in international comparison. However, countries such as **Israel** and **Qatar** stand out as offering significantly higher salaries (**$300,000 average annual salary**). Other countries with competitive salaries include Australia, New Zealand and Saudi Arabia.

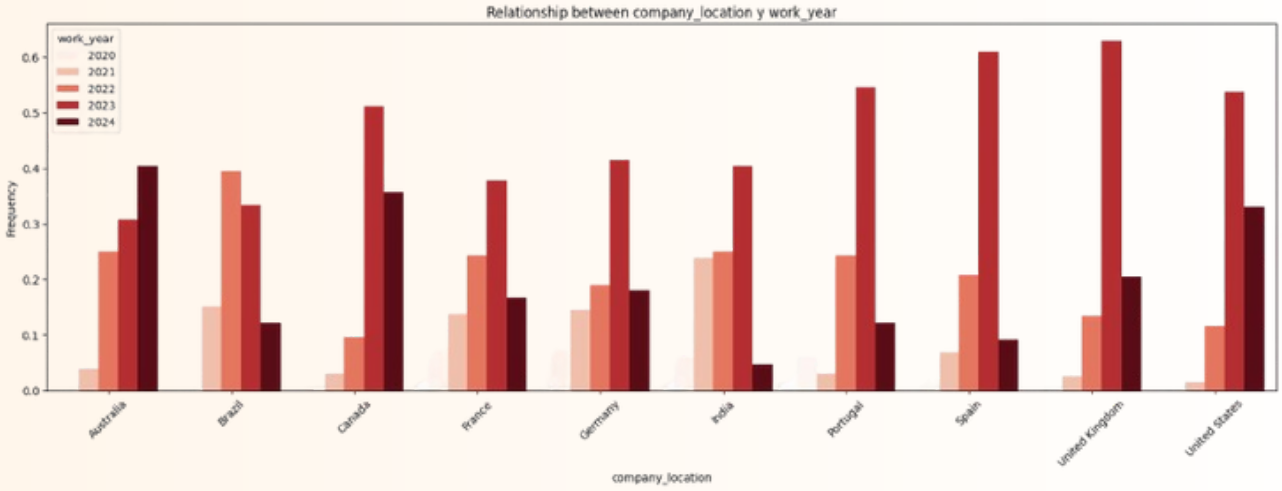


WORK PATTERNS

The mode of work varies significantly between countries. While **the United States favours face-to-face work**, other countries offer greater flexibility with telecommuting options. This difference may influence professionals' decisions when considering international opportunities.

GLOBAL GROWTH AND DEMAND

The growth in demand for data science professionals is a global phenomenon. Countries such as **Australia**, **Canada** and **the United States** have seen a significant increase in the supply of jobs in recent years. However, **demand has not grown evenly across the world**, with some countries experiencing a slowdown or more limited supply.



5. FINAL CONCLUSIONS

BEST REGIONS AND COUNTRIES TO WORK IN

California, and in particular the cities of **San Francisco** and **Los Angeles**, stand out as the best regions to work in data science and machine learning. The combination of high salaries, a high concentration of technology companies and an abundant supply of jobs make this region the ideal destination for professionals in the sector.

DETERMINING FACTORS

Key factors that determine the preference for California include:

- **Competitive salaries**: Especially in areas close to Silicon Valley.
- **Number of vacancies**: Greater number of job opportunities.
- **Concentration of companies**: Presence of numerous technology and research companies.

RECOMMENDATIONS FOR PROFESSIONALS AND ENTREPRENEURS

For professionals:

- **Consider relocation** with high demand and competitive salaries.
- **Specialise** in high-demand areas such as 'Machine learning and AI' and 'Data science and research'.
- **Value not only salary**, but also working conditions and growth opportunities.

For entrepreneurs:

- Offer **flexible** working arrangements to **attract global talent**.
- **Invest in employee training** and development to remain competitive in the marketplace.
- Evaluate total compensation, including benefits and **growth opportunities**, to improve employee satisfaction and retention.

In summary, while the **United States**, and specifically **California**, stand out as the **best places to work in the data science and machine learning sector**, international comparison reveals **attractive opportunities in other countries**. Professionals should consider a combination of salary, work mode and growth opportunities when making career decisions.