JOB MARKET ANALYSIS

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1. INTRODUCTION

This report presents an analysis of job market trends based on open-source data, focusing on Canada. The dataset includes job listings, salaries, work types, industries, and employer details. Our goal is to extract meaningful insights into salary distribution, job availability by city, and industry-specific hiring trends using Power BI. This study helps identify which industries offer the highest salaries, which cities have the most job opportunities, and how work types (Remote, In-Person, Hybrid) impact employment trends. Additionally, the report examines the influence of seniority on salary variations and highlights the top employers providing competitive compensation. By leveraging visual analytics, this analysis aims to assist job seekers, employers, and policymakers in understanding the evolving job market landscape in Canada.

2. OBJECTIVES & PURPOSE

The primary objective of this report is to provide a comprehensive analysis of the job market, focusing on salary trends, job distribution, and employer demand. By leveraging data visualization techniques, this report aims to highlight key employment patterns and insights to aid decision-making for job seekers and employers. Additionally, this study seeks to identify salary variations across industries, work types, and seniority levels, helping individuals understand the best career opportunities available. The report also examines job availability by city, enabling policymakers to assess regional employment trends. Furthermore, by analyzing employer salary offerings, the study provides insights into companies that offer competitive compensation. Ultimately, the goal is to create an interactive and insightful Power BI dashboard that makes job market data more accessible and actionable for stakeholders.

3.DATASET DESCRIPTION

The dataset used in this analysis contains **job market information** from various employers, locations, and industries. It includes details on **job roles, salaries, work types, skill requirements, and seniority levels**. Each job listing is uniquely identified with a **Job_ID**, ensuring accurate tracking and analysis.

Key attributes of the dataset include:

- **Employer & Job Info:** Identifies the hiring company and job position.

- **Location Details:** Includes city and province to analyze job distribution across regions.

- **Industry Type:** Helps categorize jobs into relevant sectors.

- **Salary Data (Min, Max, and Avg Salary):** Provides insights into compensation variations.

- **Skills & Work Type:** Highlights required technical expertise and whether the job is Remote, In-Person, or Hybrid.

3.1 DATA CLEANING & PREPARATION

- ID Assignment: A unique Job_ID was assigned to each job listing for accurate reference.

- Duplicate Removal: Job postings with identical Job Info & Employer were eliminated to prevent overrepresentation.

- Handling Missing Values: Undefined fields like Skills, Province, and Work Type were either replaced with relevant data or categorized as "Undefined."

- Standardization: Salary figures were cleaned to ensure consistency, and industry names were corrected for uniformity.

4. KPI Metrics for Job Market Analysis

The following **Key Performance Indicators (KPIs)** were defined to measure and track job market trends effectively:

1. **Total Job Listings** – The total number of unique job postings in the dataset.

2. **Total Number of Cities with Jobs** – The number of unique cities where job opportunities are available.

3. **Job Distribution by Industry Type** – Percentage of jobs available in each industry.

4. **Job Distribution by Work Type** – Percentage of jobs that are **Remote, In-Person, or Hybrid**.

5. **Highest Salary Offered** – The maximum salary listed in the dataset.

6. **Lowest Salary Offered** – The minimum salary listed in the dataset.

7. **Average Salary Across All Jobs** – The mean salary across all job postings.

8. **Top 5 Highest-Paying Employers** – Employers offering the highest average salaries.

9. **Top 5 Cities with Most Job Listings** – Cities with the highest number of job postings.

10. **Salary Distribution by Seniority** – Salary variations based on seniority levels (Junior, Mid, Senior).

5. QUESTIONS FOR EACH CHART IN THE DASHBOARD

The dashboard visualizations provide insights into job distribution, salaries, and employer trends. Each chart helps answer a key question about the job market landscape.

- How many total job listings are available, and what are the highest, lowest, and average salaries?
- Which industries offer the highest average salaries?
- Which cities have the most job opportunities?

- Which employers offer the highest salaries?

- How does salary vary based on seniority level?

- What percentage of jobs are Remote, In-Person, or Hybrid?

- Which industry has the highest number of job listings?

6. STRATEGY FOR JOB MARKET ANALYSIS

1. **Data Cleaning & Preparation**

   Ensure data accuracy by removing duplicates and assigning unique Job_IDs. Standardize salary data and correct inconsistencies in industry and employer names. Handle missing values in Skills, Work Type, and Province for better analysis.

2. **Data Visualization**

   Use KPI cards for quick insights into total jobs, salaries, and city distribution. Apply bar charts, pie charts, and treemaps for job trends and industry analysis. Enable interactive slicers to filter data by location, industry, and work type.

3. **Job Market Trends**

   Analyze job distribution across industries to identify high-demand sectors. Compare work type trends (Remote vs. In-Person) for shifting employment patterns. Track city-wise job availability to find employment hotspots.

4. **Salary Analysis**

   Identify the highest and lowest-paying industries and employers. Analyze salary variations by seniority level (Junior, Mid, Senior roles). Compare salaries across different locations to spot regional differences.

5. **Skill Demand Forecast**

   Identify top in-demand skills based on job listings. Analyze skills linked to high-paying jobs across industries. Forecast emerging skill trends based on recent job postings.

7.DATA MODEL

The data model consists of multiple **related tables** to organize and analyze job market data efficiently. The **central table** is cleaned_emp1, which contains key job details, salaries, and skills. It is linked to **three lookup tables**:

- **emp_lookup** – Stores employer details, mapped by Emp_ID.

- **job_lookup** – Contains job information like Job Info, Position, and Seniority, mapped by Job_ID.

- **location_lookup** – Stores City and Province, mapped by Location_ID.
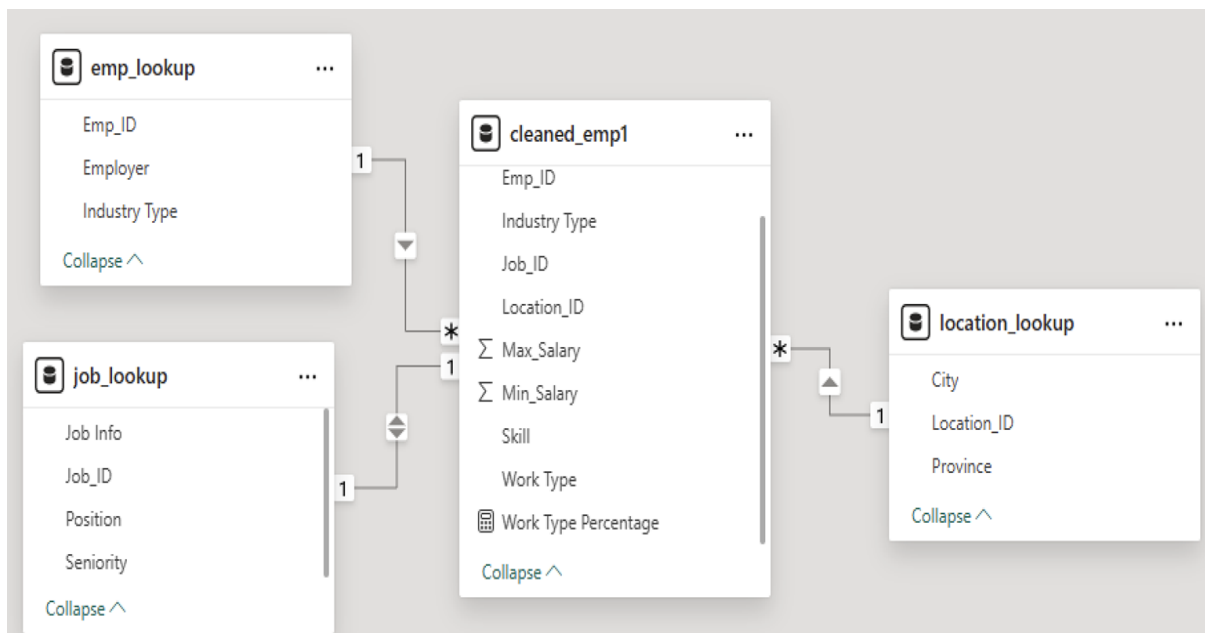

7.1 DASHBOARD DESCRIPTION :

The PowerBI dashboard is designed to provide insights into job market trends, salaries, and industry distribution using interactive visualizations. It includes KPI cards, bar charts, pie charts, and treemaps to help users analyze salary variations, job availability by city, and skill demand across industries.

The data model consists of cleaned job data connected to lookup tables for employers, job details, and locations. This relational structure ensures efficient data querying and

accurate visual representation. Users can explore work type distribution (Remote, In-Person, Hybrid) and identify top-paying employers using filters and slicers.
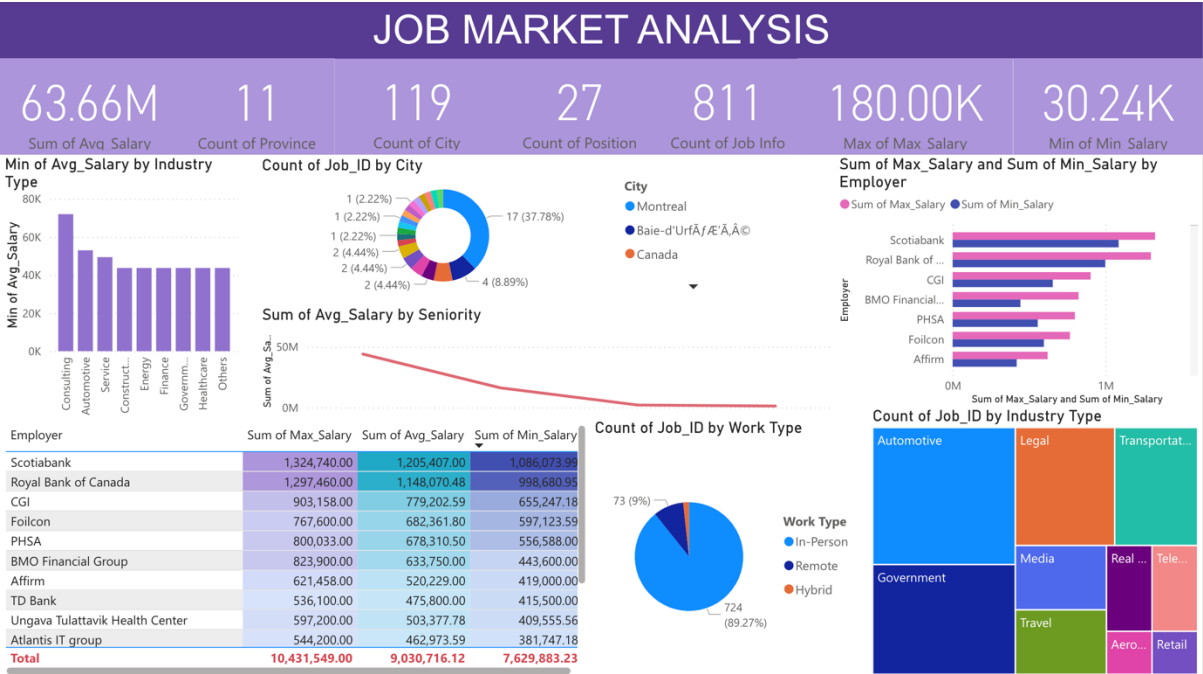
# 8. DASHBOARD VISUALIZATIONS & INSIGHTS

8.1 KPI Cards

These KPI cards provide a quick overview of job market metrics. They show total job listings (811), job availability across 119 cities, and the salary range (Max: $180K, Min: $30.24K), helping users understand the market size and compensation trends.

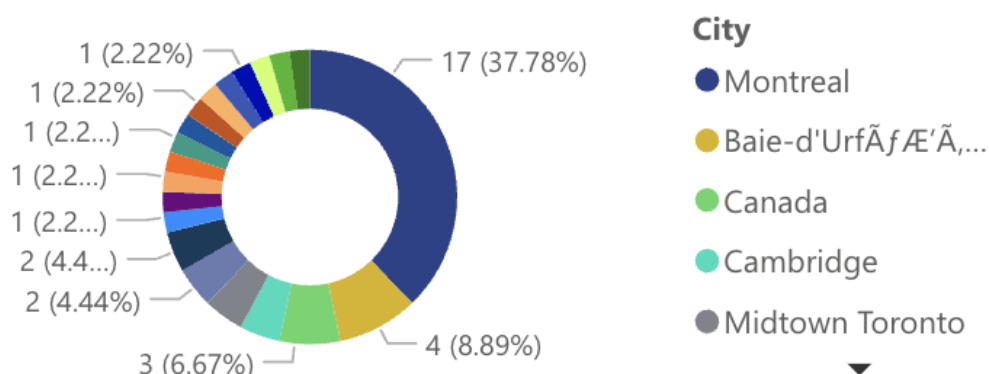## 8.2 Sum of Avg_Salary by Industry Type (Bar Chart):

This bar chart shows the average salary distribution across different industries. Technology & Finance sectors offer the highest salaries, while Automotive & Energy industries have lower salary averages. It helps users identify high-paying sectors and compare compensation trends across industries

Min of Avg_Salary by Industry Type
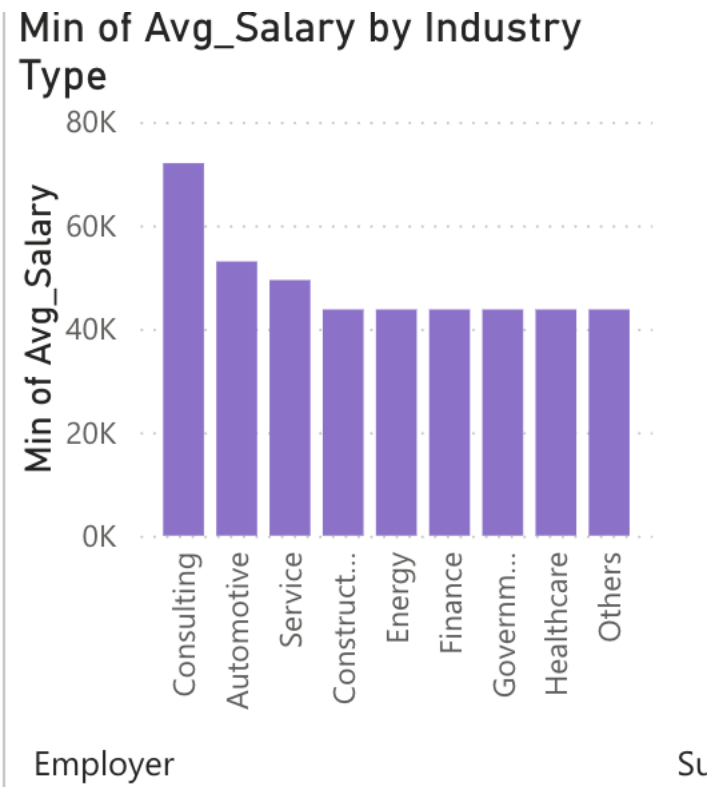
8.3 Count of Job_ID by City (Donut Chart)

The donut chart shows job distribution across cities, where Montreal has the highest job count (37.78%), while other cities have significantly fewer opportunities. It helps job seekers target cities with more openings.

Count of Job_ID by City

1 (2.22%)
1 (2.22%)
1 (2.2...)
1 (2.2...)
1 (2.2...)
2 (4.4...)
2 (4.44%)
3 (6.67%)
17 (37.78%)
4 (8.89%)

City
- Montreal
- Baie-d'UrfÃƒÆ'Ã‚...
- Canada
- Cambridge
- Midtown Toronto

8.4 Salary Distribution by Employer (Bar Chart)

This chart analyzes salary variations among employers, showing that Scotiabank & Royal Bank of Canada offer the highest salaries, while BMO Financial Group & Affirm have lower averages. It helps job seekers identify top-paying employers

Sum of Max_Salary and Sum of Min_Salary by Employer

● Sum of Max_Salary ● Sum of Min_Salary

Employer: Scotiabank, Royal Bank of ..., CGI, BMO Financial..., PHSA, Foilcon, Affirm

0M ... 1M

Sum of Max_Salary and Sum of Min_Salary
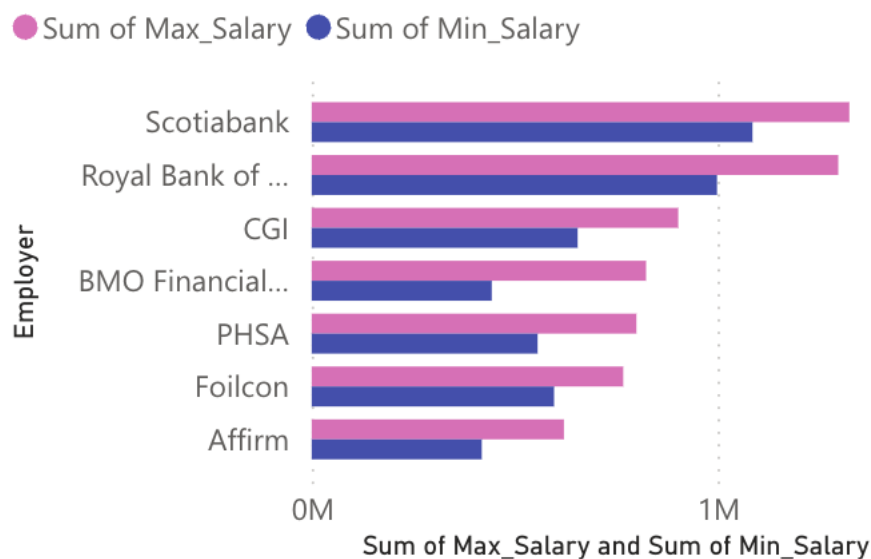
8.5 Sum of Avg_Salary by Seniority (Line Chart)

The line chart depicts how salary varies by seniority, showing that senior roles command significantly higher salaries, while entry-level positions have lower compensation. It helps users understand career progression in terms of earnings.
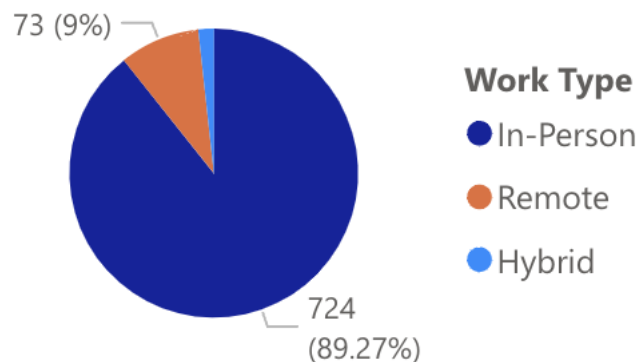
Sum of Avg_Salary by Seniority
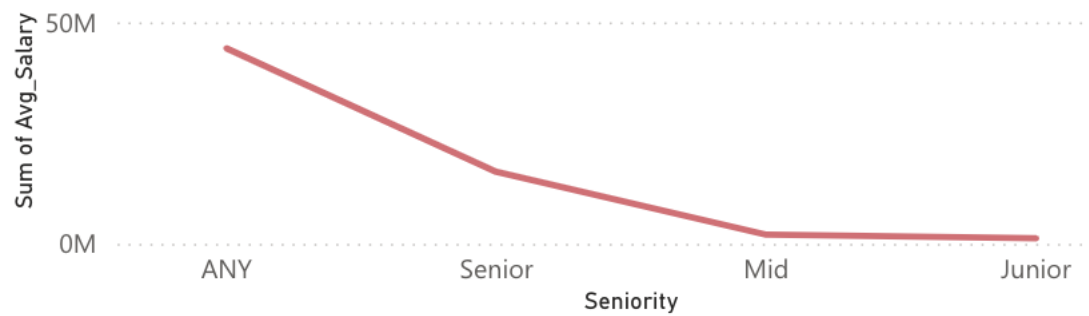
8.6 Job Count by Work Type (Pie Chart)

This pie chart illustrates the distribution of job types, revealing that 89.27% of jobs are In-Person, while only 9% are Remote, indicating limited flexible work opportunities.
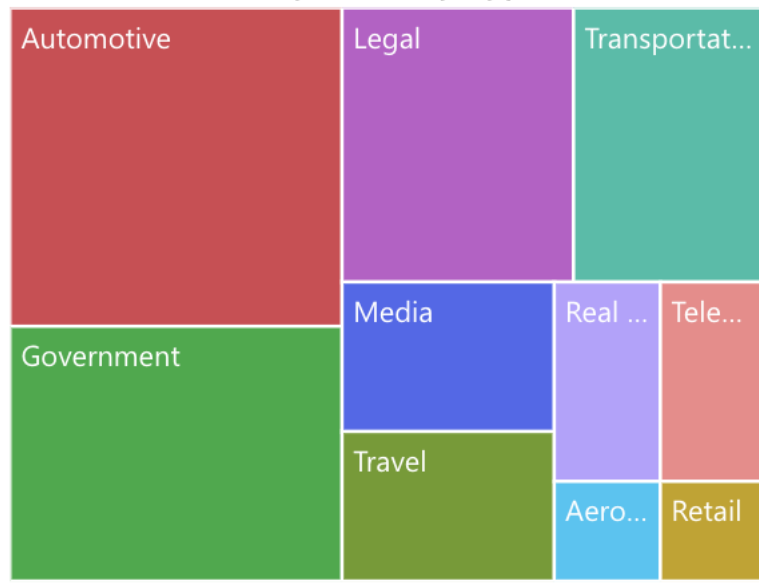
Count of Job_ID by Work Type

8.7 Job Distribution by Industry (Treemap)

The treemap visualizes job availability across industries, showing that Government, Legal, and Automotive sectors have the most listings, while Retail & Telecommunications have fewer job opportunities.

Count of Job_ID by Industry Type

8.8 Salary Distribution by Employer (Table Description)

Purpose: This table provides a detailed breakdown of salaries offered by different employers, including maximum, average, and minimum salary values.

Key Insights:

- Scotiabank and Royal Bank of Canada offer the highest salaries, with max salaries exceeding $1.3M and $1.29M, respectively.

- CGI, Foilcon, and PHSA offer competitive salaries, but with slightly lower average salary figures.

- Companies like Loblaw and Canadian Institute for Health Information have lower salary ranges, making them less competitive in salary offerings.

- The total sum of all salaries highlights the overall compensation distribution across industries.

- Impact: This table helps job seekers identify top-paying employers, enables employers to benchmark their salaries, and supports data-driven salary negotiations

Industry Type

Employer	Sum of Max_Salary	Sum of Avg_Salary	Sum of Min_Salary
Scotiabank	1,324,740.00	1,205,407.00	1,086,073.99
Royal Bank of Canada	1,297,460.00	1,148,070.48	998,680.95
CGI	903,158.00	779,202.59	655,247.18
Foilcon	767,600.00	682,361.80	597,123.59
PHSA	800,033.00	678,310.50	556,588.00
BMO Financial Group	823,900.00	633,750.00	443,600.00
Affirm	621,458.00	520,229.00	419,000.00
TD Bank	536,100.00	475,800.00	415,500.00
Ungava Tulattavik Health Center	597,200.00	503,377.78	409,555.56
Atlantis IT group	544,200.00	462,973.59	381,747.18
Canadian Institute for Health Information	439,980.00	396,990.00	354,000.00
Loblaw Companies Limited	432,100.00	383,861.80	335,623.59
Intact	414,500.00	373,250.00	332,000.00
Total	**10,431,549.00**	**9,030,716.12**	**7,629,883.23**

9. RESULTS & INSIGHTS

The analysis highlights that job opportunities are concentrated in major financial hubs like Montreal, which has the highest number of job postings. Cities with strong economic activity tend to offer more employment opportunities, making them ideal locations for job seekers.

The Banking and Technology sectors provide the highest salaries, indicating that finance and IT professionals are in high demand. Employers in these industries offer competitive compensation to attract top talent.

The job market is dominated by In-Person roles, with Remote jobs making up only a small percentage. This suggests that many industries still prioritize on-site work, though remote opportunities exist in select fields.

Salaries increase with seniority, as expected, but senior-level roles are fewer in number. This means that while experienced professionals earn significantly higher wages, opportunities for such roles are limited

10.CONCLUSION

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Effective data cleaning and preparation ensures the accuracy of job market analysis. By identifying emerging job trends, businesses can target growing sectors, while salary analysis provides valuable benchmarks for both employers and candidates. Skill demand forecasting helps predict future industry needs, guiding upskilling efforts. Visualization enhances understanding, making complex patterns accessible to all stakeholders. Overall, a thorough analysis empowers data-driven decisions, optimizing job market strategies for both employers and job seekers.

11.REFERENCE

https://www.kaggle.com/datasets/amanbhattarai695/data-analyst-job-roles-in-canada?resource=download