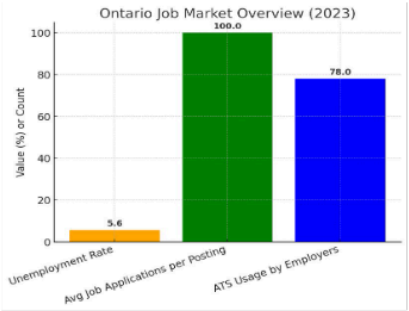
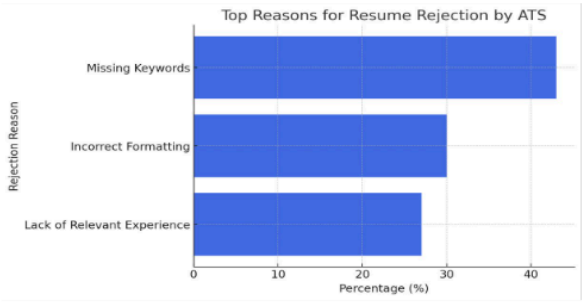
Problem Addressing

Problem	Cause	Impact	Solution
Difficulty identifying job fits •Job Search Time: Job seekers spend an average of 11 hours per week applying for jobs. (Staffing, 2023)	Lack of good job matching systems	Time-consuming manual job search	AI-powered recommendation engine
Inefficient Resume Customization and ATS rejections	Missing keywords in resumes	Lower interview chances	Automated NLP-based resume tailoring
Manual Application Processes •Application Process is Manual: Most applicants manually tailor resumes for each job, consuming additional time.	Lack of good automation tools	Time-intensive application process	Integrated auto-apply functionality





Target Users

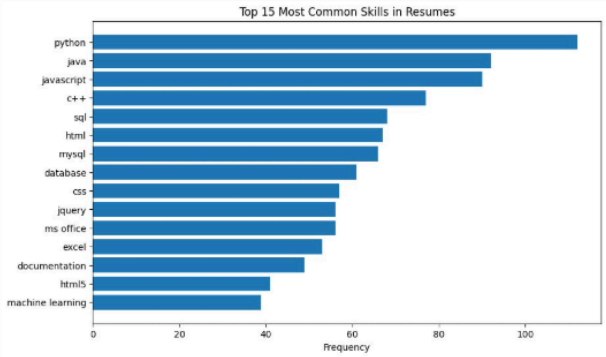
Job seekers in Ontario applying for data-related roles who face challenges in getting interviews, optimizing resumes for ATS, and navigating a competitive job market

Why Data-Related Roles?

- **Ontario's Tech Growth:** AI & data-driven industries expanding rapidly
- **High Demand:** Data Scientist roles have grown 3,500% since 2023 (ImmigCanada, 2024)
- **Competitive Market:** More graduates & specialized skill requirements (TerraTern, 2024)

Role	Why This Role?	Challenges Faced
Data Analyst	Essential in finance, healthcare, and tech	High competition; domain expertise needed
Business Analytics Specialist	Critical for data-driven decision-making	Hybrid skills (business + tech) required
Machine Learning Engineer	AI-driven industries need ML expertise	Real-world deployment experience required
Data Engineer	Growing need for data infrastructure	Strong cloud & data pipeline skills needed
Data Scientist	High demand; real-world impact expected	Overlapping roles & intense competition
LLM Engineer	AI firms investing in NLP & chatbots	Specialized frameworks (Hugging Face, LangChain)

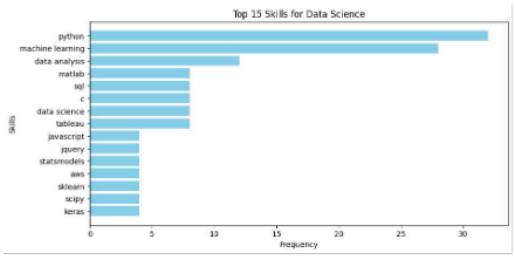
Data Insights – Skills Analysis from Resume Dataset



Top 15 most common skills mentioned in data related professions (i.e. Data Science, Hadoop, Python Developer, Database, Business Analyst)

- Python and Java are the most common skills, indicating their wide applicability across industries.
- JavaScript and C++ follow closely, highlighting the importance of web development and software engineering.
- SQL and Database skills are frequently mentioned, emphasizing the need for expertise in backend development and data management.
- Machine Learning appears in the top 15, suggesting its growing importance, though it's not as widespread as core programming skills.
- Excel, MS Office, and Documentation reflect the importance of business-oriented skills in technical roles.

Data Insights – Skills Analysis from Resume Dataset

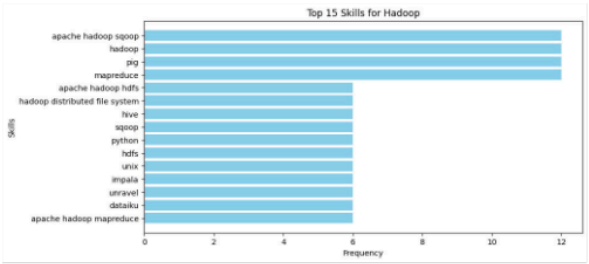


For Data Science role,

- Python and Machine Learning are the most essential skills.
- Data Analysis, C, Data Science, Matlab, SQL, and Tableau are frequently mentioned.
- AWS and Algorithms are key supporting skills.
- JavaScript and JQuery suggest the importance of web technologies.
- Statsmodels, Sklearn, Scipy, and Keras reflect the need for expertise in statistical modeling, machine learning, and deep learning.
- Data Science is also frequently listed, highlighting its core role in the field.

For Hadoop role,

- Apache Hadoop Sqoop, Hadoop, and Pig are the most essential skills.
- MapReduce, Apache Hadoop HDFS, and HDFS are key components for big data processing.
- Hive and Sqoop are important for data querying and transfer.
- Python and Unix are also frequently mentioned.
- Impala, Unravel, Dataiku, and Apache Hadoop MapReduce are additional valuable tools.



3. Target Users

Introduction

Ontario's technology sector is growing fast, particularly in data and artificial intelligence (AI) roles. However, professionals seeking positions such as Data Scientists, Machine Learning Engineers, and Data Analysts face challenges in aligning their applications with employer expectations and navigating a competitive job market (TerraTern, 2024).

Ontario's Data and AI Job Market: Key Insights

- Rising Demand: The number of job openings for data-related roles in Ontario is increasing. Data Scientist jobs alone have grown by 3,500% compared to 2023, with an average hourly wage of $49.15 (ImmigCanada, 2024).
- Employment Trends: In March 2024, Ontario's employment increased by 26,100 jobs, reaching a total of 7,970,500 employed individuals (Ontario.ca, 2024).

Target Customers and Why They Were Selected

We have chosen the following professionals in the data and AI domains as our target users based on their strong presence in Ontario's job market and the specific challenges they face:

1. Data Analyst
   - Why This Role?
     Ontario has a strong demand for Data Analysts, particularly in finance, healthcare, and tech sectors. The role requires proficiency in SQL, Excel, Python, and data visualization tools (TerraTern, 2024).
   - Challenges Faced in Ontario:
     - High competition due to the large number of new graduates from universities and colleges entering the job market each year.
     - Employers prioritize domain-specific experience (e.g., fintech, healthcare), making it difficult for generalists to stand out.
     - Many job postings require customized resumes that highlight key metrics and business impact (Jobscan, 2024).
2. Business Analytics Specialist
   - Why This Role?

Business analytics roles are critical in helping companies make data-driven decisions, and Ontario companies actively seek professionals skilled in bridging data and business strategy (TerraTern, 2024).

- Challenges Faced in Ontario:
    - Many postings have hybrid business and data requirements, making it difficult for candidates with only technical or business backgrounds to qualify.
    - Resumes need to emphasize both technical (SQL, Python) and business impact, requiring significant customization (DataCamp, 2024).

3. Machine Learning Engineer
    - Why This Role?

With AI-driven industries growing in Ontario, Machine Learning Engineers are in demand. Companies in fintech, healthcare, and automation seek expertise in model development, deployment, and optimization (Job Bank, 2024c).

- Challenges Faced in Ontario:
    - Many job descriptions emphasize real-world deployment experience, which is difficult for academic or research-focused candidates.
    - Employers use ATS filters that prioritize cloud-based ML experience (AWS, GCP), making some resumes get automatically rejected.
    - Highly technical resumes often fail to highlight business value, reducing the chance of getting hired.

4. Data Engineer
    - Why This Role?

The demand for Data Engineers is increasing as Ontario companies invest in data infrastructure and cloud-based solutions (Job Bank, 2024b).

- Challenges Faced in Ontario:
    - Many postings require domain-specific tools (Spark, Snowflake, AWS, etc.), making it difficult for candidates with broad experience to pass ATS screening (DataCamp, 2024).
    - Resumes need to clearly differentiate between data engineering, software engineering, and DevOps, which often overlap in job descriptions.
    - Employers prefer candidates with cloud experience, which makes it harder for those with only on-premises experience to get interviews.

5. Data Scientist
    - Why This Role?

Data Science is a high-demand role in Ontario, but companies increasingly expect candidates to demonstrate applied, real-world business impact rather than just technical expertise (Job Bank, 2024b).

- Challenges Faced in Ontario:

- Many job postings mix Data Scientist, Machine Learning Engineer, and Data Analyst roles, making it unclear which skills to highlight (DataCamp, 2024).
- Many positions require strong domain expertise, forcing applicants to frequently customize resumes for each industry.
- Competition is strong, with both local and international applicants applying for the same positions.

6. LLM Engineer
   - Why This Role?

   Large Language Model (LLM) development is a growing field, with Ontario tech firms investing in generative AI, NLP applications, and chatbot development (Ziprecruiter, 2024).

   - Challenges Faced in Ontario:
     - Many LLM job postings are highly specialized, requiring expertise in frameworks like Hugging Face, LangChain, or fine-tuning proprietary models (Ziprecruiter, 2024).
     - Resumes must highlight applied LLM experience rather than theoretical knowledge.
     - ATS filters prioritize candidates with demonstrable project experience, making it essential to align resumes with job-specific keywords.

SKILL ANALYSIS INSIGHTS FROM UpdatedResumeDataset.csv:

To gain insights into the skill trends among data professionals, we analyzed resumes from the Updated Resume Dataset (Dutt, 2024). The objective of this analysis was to identify the most in-demand skills, understand specialization patterns, and highlight potential skill gaps in the job market.

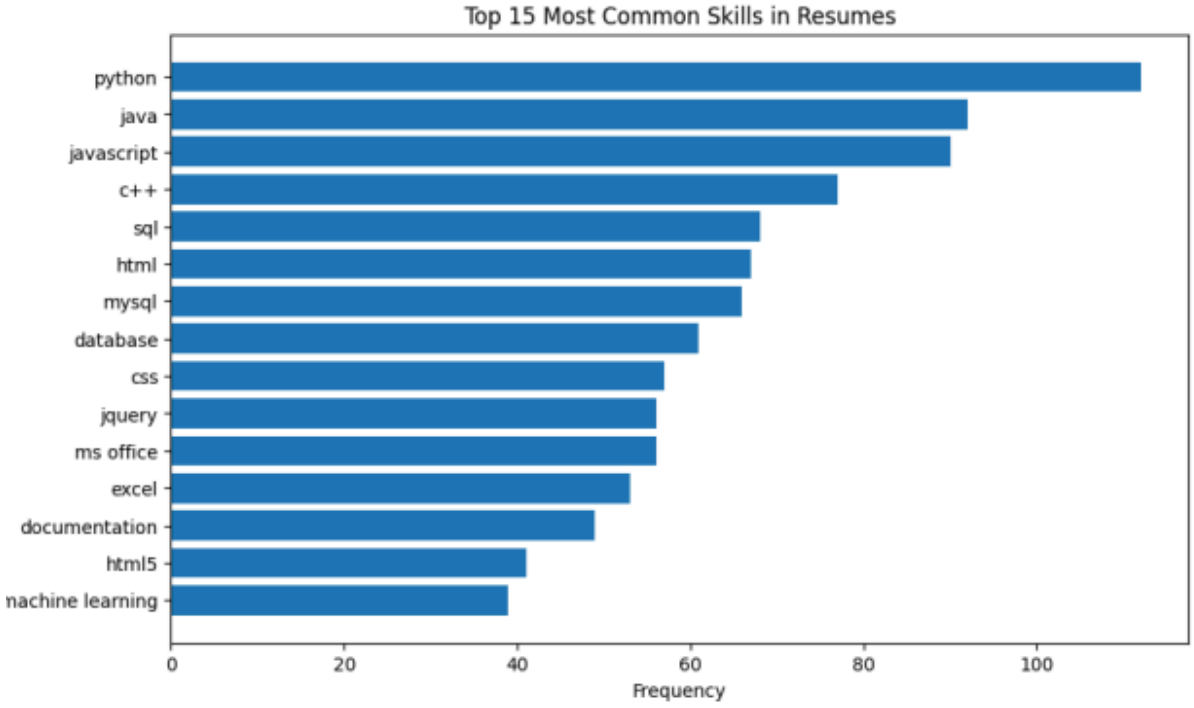


Fig: Top 15 Most Common Skills in Data Professionals' Resumes

- The analysis of the top 15 most common skills mentioned in data related professions (i.e. Data Science, Hadoop, Python Developer, Database, Business Analyst)
    - Python and Java are the most common skills, indicating their wide applicability across industries.
    - JavaScript and C++ follow closely, highlighting the importance of web development and software engineering.
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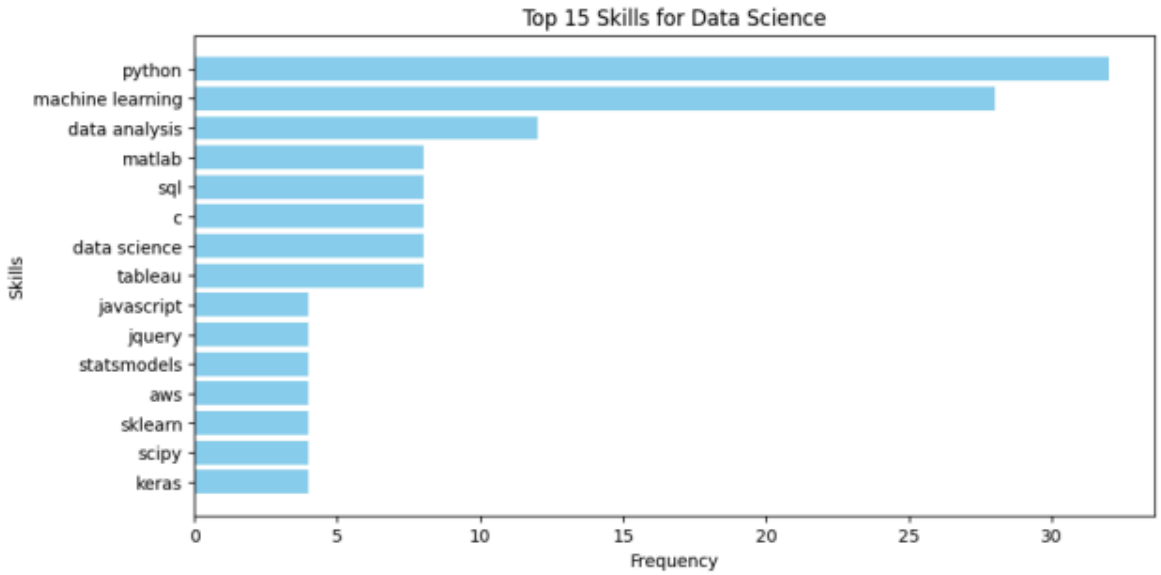

Fig: Top 15 Skills for Data Science

For Data Science role,

- Python and Machine Learning are the most essential skills.
- Data Analysis, C, Data Science, Matlab, SQL, and Tableau are frequently mentioned.
- AWS and Algorithms are key supporting skills.
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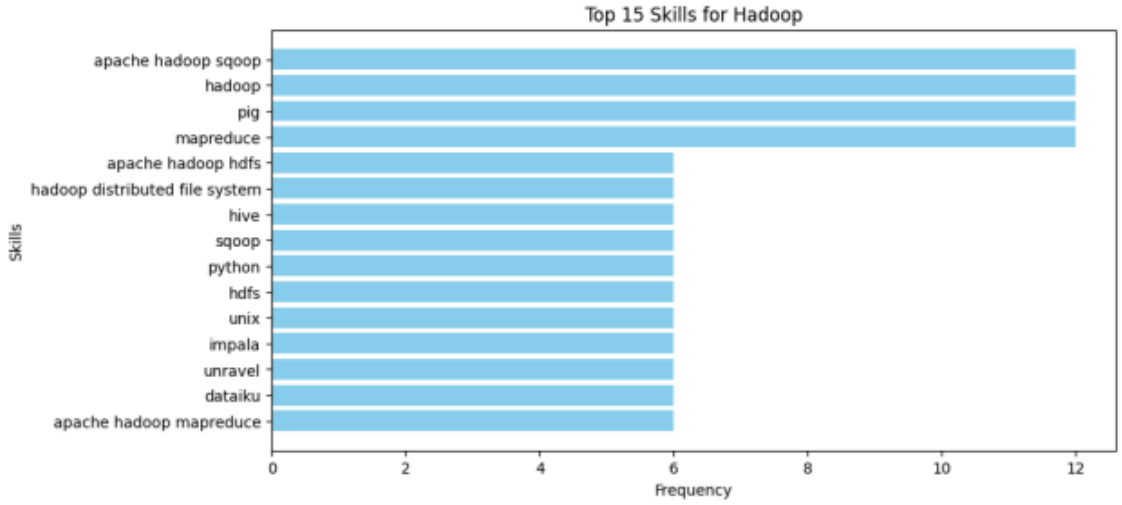

Fig: Top 15 Skills for Hadoop

For Hadoop role,

- Apache Hadoop Sqoop, Hadoop, and Pig are the most essential skills.
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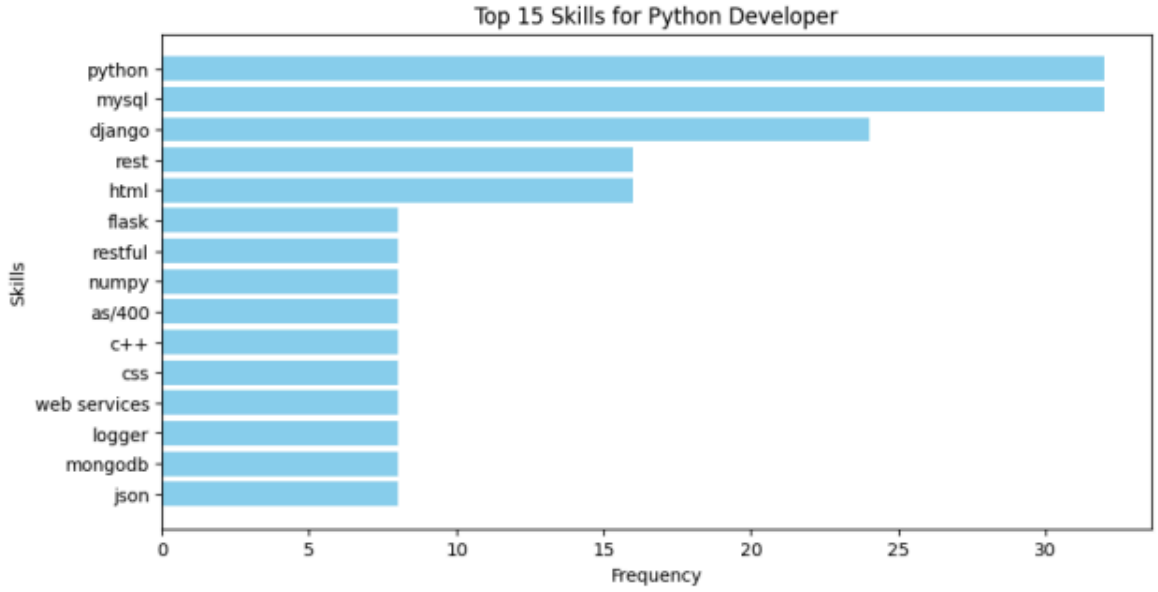

Fig: Top 15 Skills for Python Developer

For Python Developer role,

- MySQL, Python, and Django are the most essential skills.
- Followed by HTML and REST.
- AS/400, Flask, C++, CSS, and Database are also important skills.
- Numpy, Logger, MongoDB, and JSON suggest the importance of data manipulation, logging, and NoSQL databases in development.

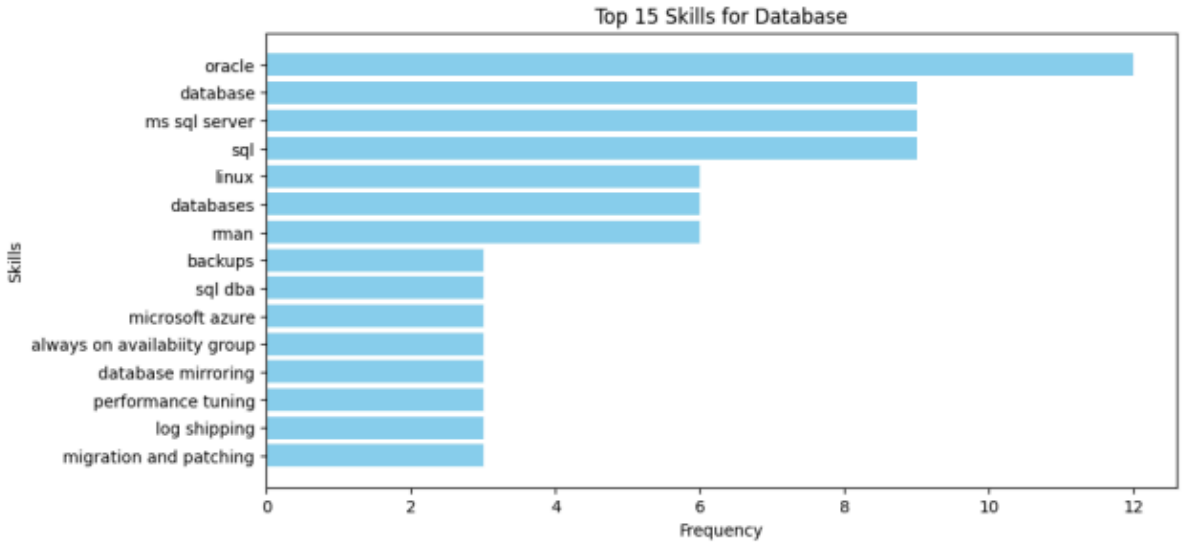

Fig: Top 15 Skills for Database

For Database role,

- Oracle, Database, and MS SQL Server are the most essential skills.
- Followed by SQL, Linux, and Databases.
- SQL DBA, Microsoft Azure, and Backups are also frequently mentioned.
- Skills like Performance Tuning, Log Shipping, Database Mirroring, and Always On Availability Group suggest a focus on database management and high availability.
- Migration and Patching reflect the operational tasks involved in maintaining and upgrading database systems.

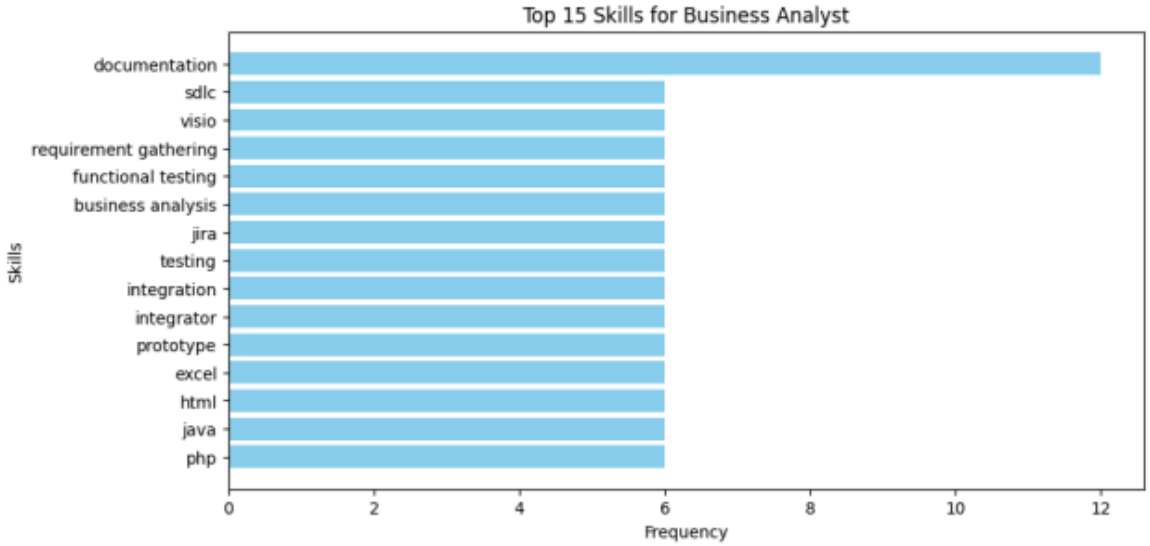

Fig: Top 15 Skills for Business Analyst

For Business Analyst role,

- Documentation, Business Analysis, and Excel are the most essential skills.
- Followed by Functional Testing, HTML, and Integration.
- Integrator, Java, Jira, and PHP are also important skills.
- Visio and SDLC are essential for process modeling and understanding the development lifecycle.
- Requirement Gathering is a crucial skill for understanding client needs and project scope.

Fig: Estimated Experience vs. Skills Count

- There is no strong correlation between Estimated Total Experience and the number of Total Skills Mentioned in data-related professions.
- Professionals with both low and high experience levels mention a similar number of skills, indicating that experience does not necessarily influence skill count.
- The distribution suggests that skills mentioned are more likely to be influenced by role-specific requirements rather than experience alone.