Business Analytics, Data Science and Machine Learning Trends

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| Project Overview |
| This project explores how **Business Analytics**, **Data Science**, and **Machine Learning** skills influence employability and salary outcomes in the 2024–2025 job market. Using real-world data from **Lightcast**, our team analyzed over one million job postings to uncover patterns in salary, experience, and skill demand across industries. Through data cleaning, exploratory visualization, and predictive modeling, we identified which technical and analytical skills — such as **Python**, **SQL**, **Machine Learning**, and **Cloud Computing** — drive higher compensation and career opportunities. The results provide actionable insights for students and professionals aiming to align their skills with the rapidly evolving data economy. |

# Data-Driven Career Analysis: Evaluating Personal Job Market Prospects in 2024

## Rationale

The field of data science, business analytics and machine learning has been growing very rapidly in the past few years due to increase in use of artificial intelligence and automation across sectors. With this emergence of new tools and platforms, companies are constantly updating their hiring criteria. Now more than before, job roles are asking for specific skillsets including both technical and analytical abilities. Therefore, it is important to understand what skills are most in-demand at present, how job descriptions have changed in recent times and which job industries are offering the most opportunities in these domain.

## Literature Review

Recent studies are showing that employers are now giving more importance to skill-based hiring especially in data-related roles. (Bone, Ehlinger, and Stephany (2025)) found that in AI-related job postings, the need for formal degrees is slowly reducing while practical skills like machine learning and NLP are becoming more valued. (Mäkelä and Stephany (2024)) also pointed out that roles demanding AI expertise now also look for soft skills like adaptability and teamwork showing that a balance of technical and human skills is becoming necessary. These findings suggest that job descriptions are evolving to reflect this shift in priorities.

Further, our study reveals that hiring is strong in technology, healthcare and financial sectors where the use of data is becoming highly critical. These trends clearly indicates that both education and job markets must keep evolving to stay aligned with real-world demands.

## Team Contributions

This project was collaboratively completed by **Group 13** as part of Boston University’s *Applied Business Analytics* program.  
Each member contributed to specific modules that collectively formed the foundation of this website and analysis:

* **Anu Sharma** – Led **Module 1 (Setup)** and **Module 4 (EDA and Dashboarding)**, handling initial data preparation, model setup, and exploratory analysis design. Contributed heavily to the **Machine Learning Methods** and **Data Cleaning** sections.
* **Cindy Guzman** – Owned **Module 3 (Datalake and Warehouses)**, focusing on structured data pipelines and storage logic. Led the **Exploratory Data Analysis (EDA)** narrative, correlation heatmaps, and dashboard development.
* **Gavin Boss** – Completed **Module 2 (SQL and Data Modelling)**, designing relational data models and integrating cleaned data for analysis. Also authored the **Skill Gap Analysis** section and supported website publishing.
* **All Members** – Collaboratively completed **Module 5 (Export and Submission)** and **Module 6 (PPT and Report)**, including final integration, presentation design, and site documentation.

Together, the team ensured analytical rigor, visual clarity, and cohesive storytelling across all pages: *Introduction, Data Cleaning, EDA, Machine Learning Methods, Skill Gap Analysis,* and *Personal Career Strategy Plan*.

## References

Bone, M., E. G. Ehlinger, and F. Stephany. (2025): “Skills or degree? The rise of skill-based hiring for AI and green jobs,” *Technological Forecasting and Social Change*, 214, 124042.

Mäkelä, E., and F. Stephany. (2024): “Complement or substitute? How AI increases the demand for human skills,” *arXiv preprint arXiv:2412.19754*,.