THE UNIVERSITY of EDINBURGH

Postgraduate Virtual
Open Days

Data Science MSc

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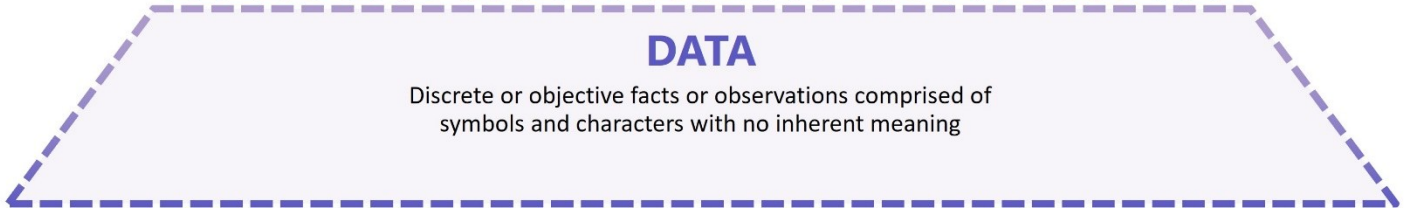
EDINBURGH
Extraordinary futures await

DIKW Pyramid



https://www.jeffwinterinsights.com/insights/dikw-pyramid

Data

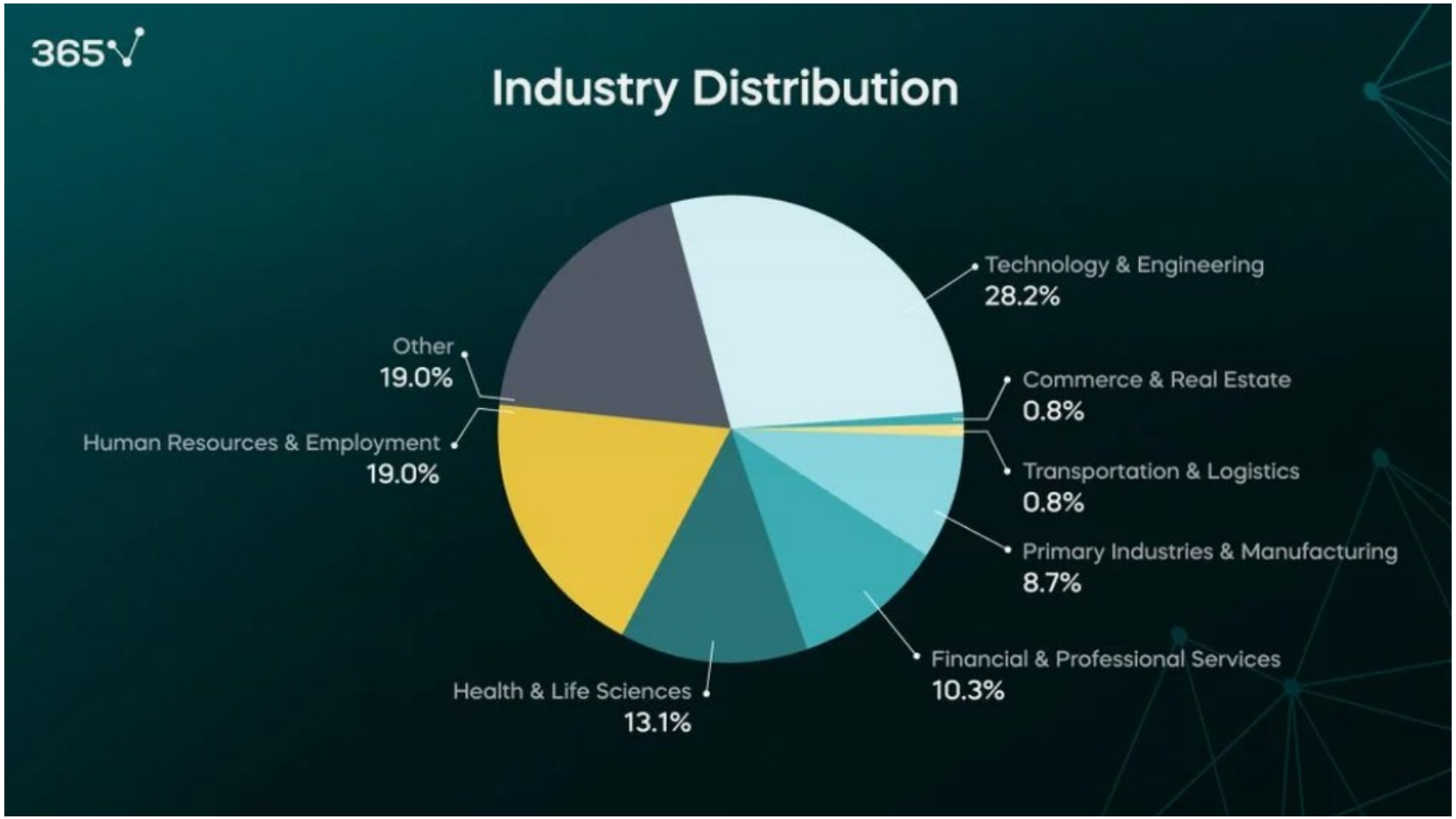
The **most important asset** of any enterprise

Must be effectively, efficiently, and reliably:

- collected and stored
- maintained and updated
- processed and analysed

to be turned into **meaningful information** supporting decision making

Where can we find data scientists?



https://365datascience.com/career-advice/data-scientist-job-outlook/

Data sources

Human

e.g., medical, voting, polls, ...

Physical Machinery

e.g., car telemetry, industrial robots, …

Digital

e.g., stock market, server traffic, …

Kinds of data

Relational databases

Data organised in tables (relations) with typed attributes

Document stores

Text documents structured using tags (or other markers)

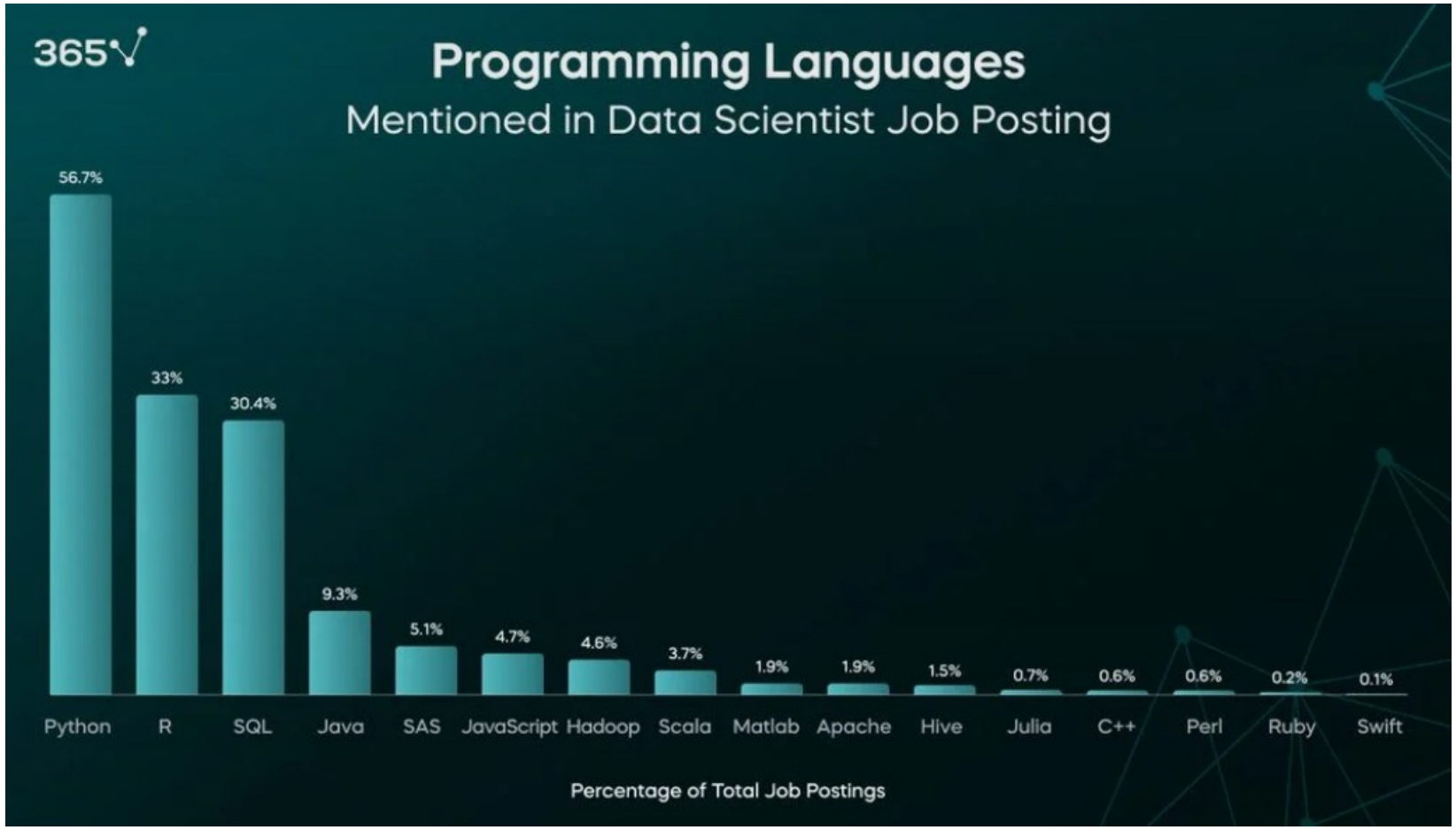
Graph databases

Data organised in graph structures with nodes and edges

Key-value stores

Data organised in associative arrays (a.k.a. dictionaries or maps)

What skills are needed?



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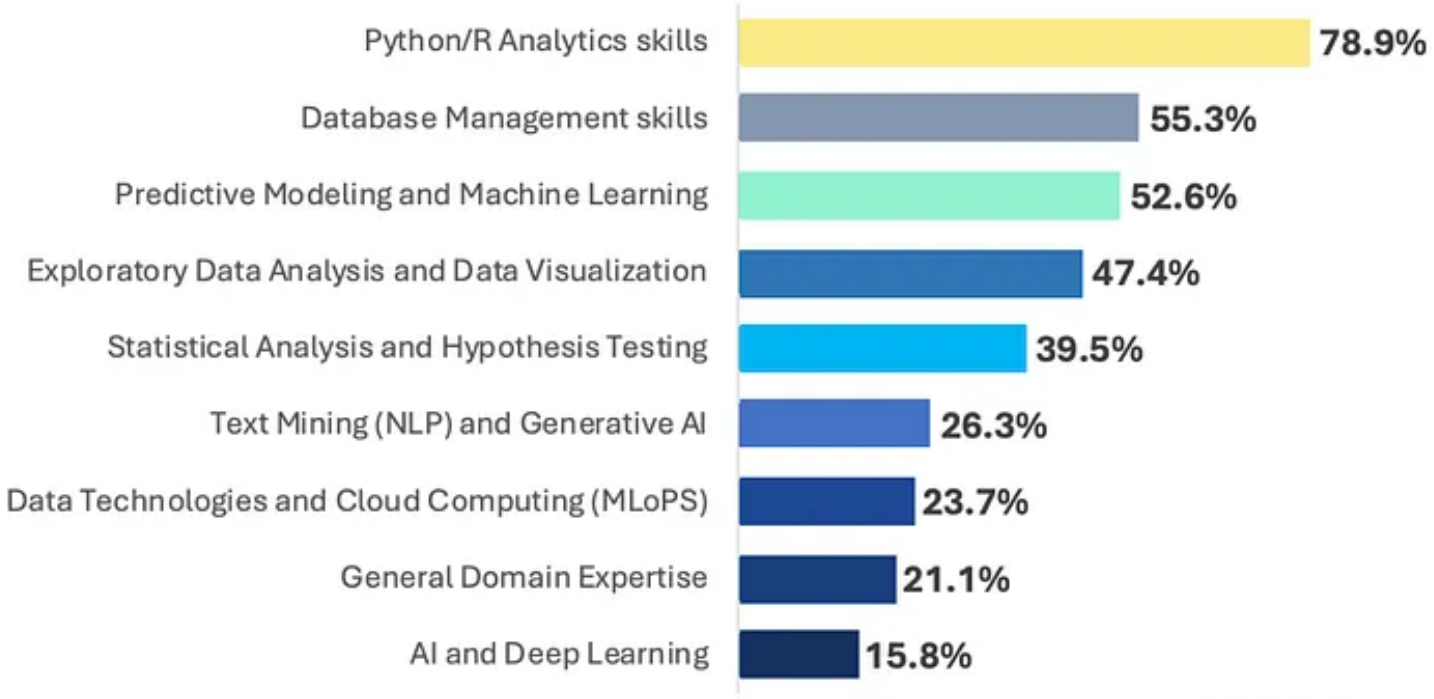
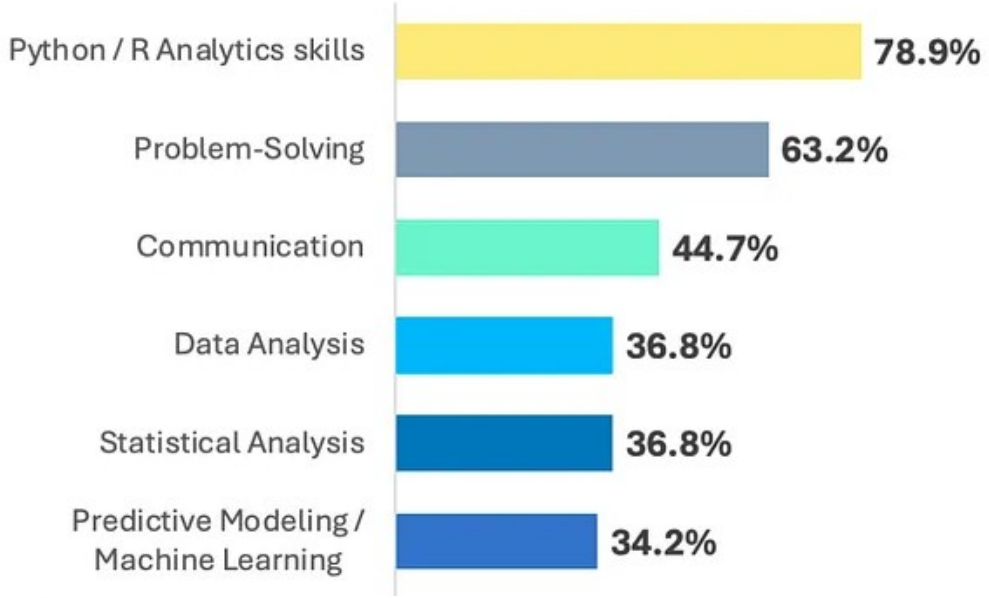
What skills are needed?

"Top tools and programming languages?"



"Top data science skills for freshers?"



https://medium.com/@byanalytixlabs/data-science-skills-survey-report-2024-a-comprehensive-market-study-of-most-in-demand-skills-3d9baf772272

Technology stack

Python + cloud platform (such as AWS or Azure)
+ ML framework (such as PyTorch or TensorFlow)

Data experience

Analysis of datasets with

- numerical frameworks such as MATLAB or R
- Python libraries such as NumPy, SciKit, Pandas, etc.

Environment

Unix/Linux, familiarity with shell scripting (e.g., Bash)

Data Science MSc: skills overview

Hard skills

- Training and evaluating machine learning models
- Proficiency querying data with SQL
- A strong understanding of probability + statistical and systematic uncertainty

Soft skills

- Confidence in communication with both technical and non-technical audiences
- Self-motivation in the face of challenges

Data Science MSc: Programme Structure

https://informatics.ed.ac.uk/taught-students/msc-students/taught-msc-handbook-202526

Semester 1 [60 credits]	Semester 2 [60 credits]		MSc Dissertation [60 credits]
Elective courses [60]	IPP [20]	Elective courses [40]	MSc Dissertation [60]

80 credits of mandatory courses:

- Informatics Project Proposal (IPP) [20 credits]
- MSc Dissertation [60 credits]

100 credits of elective courses:

- Machine Learning, Statistics, and Optimization [10-60 credits]
- Databases and Data Management [10-60 credits]
- Applications [10-60 credits]
- Level 10/11 courses [0-20 credits]

} *at least one course per area*

} *incl. courses outside Informatics, excl. College of Medicine & Veterinary Medicine, and Futures Institute*

Programming Courses

For students who have <2 semesters of programming experience, or never written a large application or optimised code

Programming Skills

Language C, Python, Fortran 90, Java

School EPCC (within Informatics)

Requirements previous programming experience

Focus high quality code for High-Performance Computing

Quota yes (priority to EPCC students)

Computer Programming for Speech and Language Processing

Language Python

School Philosophy, Psychology, and Language Sciences (PPLS)

Requirements no previous experience

Focus Natural Language Processing (NLP)

Quota yes (priority to PPLS students)

Did you get the info you were looking for?

- Programme-specific info: https://postgraduate.degrees.ed.ac.uk/
- Chat to our Students: https://edin.ac/student-chat-pg
- Any other questions (including, Fees & Admissions) email: futurestudents@ed.ac.uk
- Read our students' blogs at https://blogs.ed.ac.uk/studentstories/

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Thank you

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