



A survey-based report highlighting various skills considered by industry professionals to be in high demand.

Data Science Skills Survey 2022

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Dear Readers,

The Data Science domain is on track to change the nature of jobs, now and in the future. For professionals looking to thrive in a digital-driven future, setting a foundation for the right data science skills needs to start now to weather the changes that are to come. This domain has impacted the way companies and businesses function and professionals who upskill in this field have a chance to become prime candidates in lucrative industries.

Due to the increasing volume of data and availability of advanced analytics tools and platforms, the Indian analytics and Data Science job market have grown tremendously, giving students and professionals the opportunity to build their skills in an in-demand domain and kickstart a rewarding career. In this report, we walk through the different skills and tools needed in the Data Science industry.

By discussing these latest developments, the Data Science Skills Survey 2022 report aims to help recruiters, industry leaders, policymakers, companies, and data science experts/aspirants gain an in-depth understanding of the most impactful languages, models, tools, skills, upskilling approaches and recruiter perspective that is needed to make structured and informed decisions. With this report, we hope you will better understand Data Science career trends and build the skills to power ahead.

Regards,
Hari Krishnan Nair,
Co-founder, Great Learning





Scope & Methodology

The report has been developed after rigorous primary research through a survey distributed to data scientists and leading AI/ML practitioners. This was complemented by direct discussions with job-seekers to understand and gauge their perspective on the in-demand skills in this domain.

About Great Learning

With more than 5.1 million+ learners in 170+ countries, Great Learning, a part of the BYJU'S group, is a leading global edtech company for professional and higher education offering industry-relevant programs in blended, classroom, and purely online modes across technology, data and business domains. These programs are developed in collaboration with the top institutions like Stanford GSB Executive Education, MIT Professional Education, The University of Texas at Austin, NUS, IIT Madras, IIT Bombay & more.

As India's largest professional learning company and with a global footprint in 170+ countries, Great Learning is on a mission to make professionals around the globe proficient and future-ready.

In the last 9 years, Great Learning has been able to deliver learning to professionals world wide with a large majority of them being able to achieve successful career progression in leading companies such as Microsoft, Amazon, Adobe, American Express, Deloitte, IBM, Accenture, McKinsey and more.



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Key Takeaways

01

Skills demanded by recruiters

84.4% of professionals mentioned that recruiters look for Machine Learning as the most crucial skill at the time of hiring, followed by Statistics at **78.9%**.

02

Time spent in upskilling

More than one in two (**55.7%**) professionals spend their time weekly to upskill.

03

New skills

61.7% of Data Science professionals are learning Cloud Technologies to upskill.

04

Basic skills

Almost nine in ten (**87.8%**) Data Science professionals mentioned that knowledge of programming languages (R, Python, SAS) is one of the most basic skills to kickstart a career in Data Science.

05

Programming language

More than nine in ten (**90.6%**) professionals use Python as a programming language for Statistical Modelling.

06

Data visualisation tools

MS Excel (**63.3%**), Tableau (**56.7%**), and MS Power BI (**43.9%**) are the three most used tools for data visualisation.

07

Data science models

More than three in four (**77.8%**) professionals use Conventional ML Models like Regression, Logistic Regression, Decision Tree, SVM, Naive Bayes, etc.

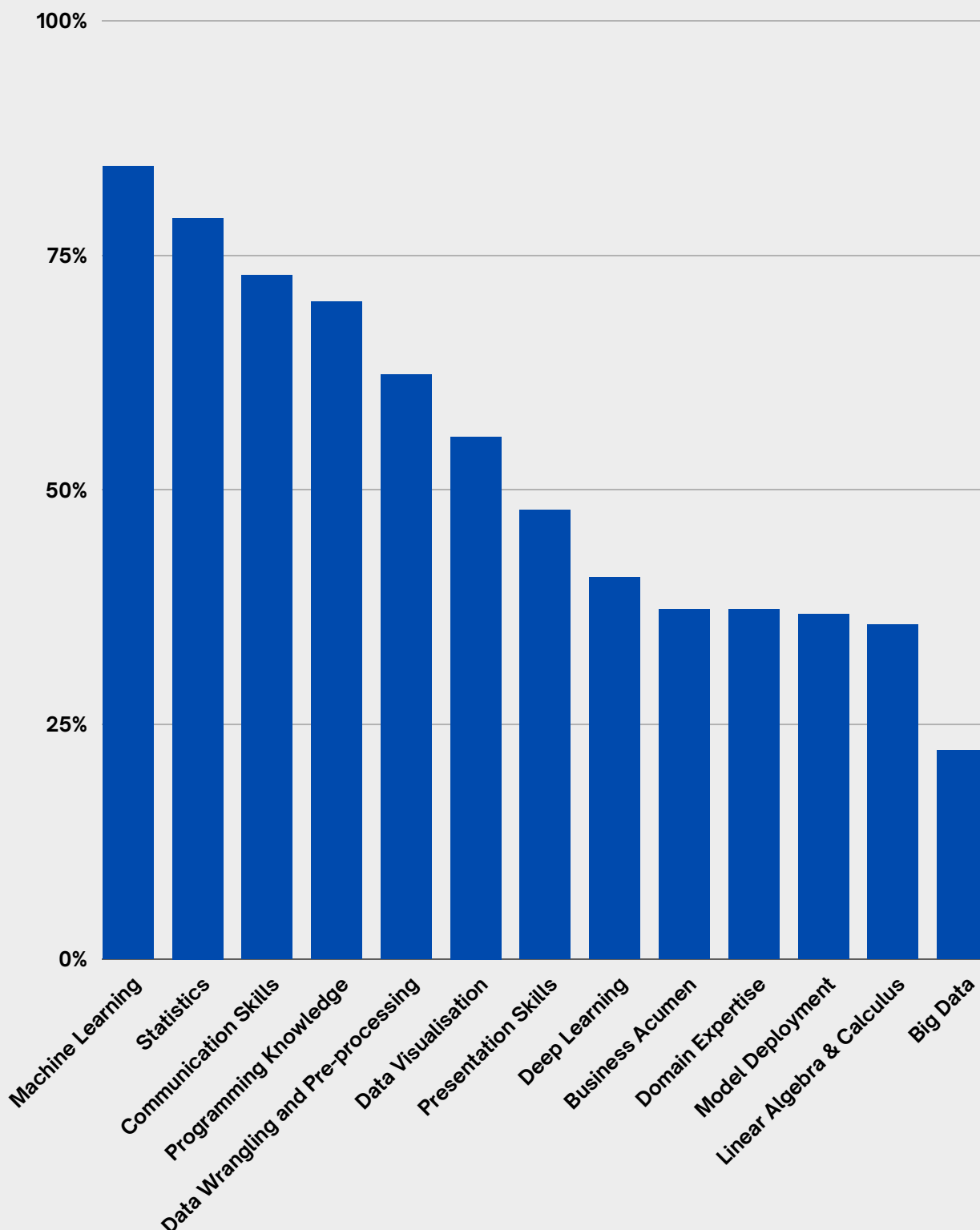
Part 1:

Common skills looked at by recruiters

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Common skills looked at by recruiters



Common skills looked at by recruiters across years of experience

	Less than 3 Years	3-6 Years	6-10 Years	10+ Years
Machine Learning	81.9%	86.8%	79.3%	92.3%
Statistics	79.2%	77.4%	79.3%	80.8%
Communication Skills	68.1%	73.6%	75.9%	80.8%
Programming Knowledge	66.7%	75.5%	69.0%	69.2%
Data Wrangling and Pre-processing	61.1%	66.0%	62.1%	57.7%
Data Visualisation	62.5%	49.1%	51.7%	53.8%
Deep Learning	37.5%	45.3%	41.4%	38.5%
Presentation Skills	50.0%	43.4%	51.7%	46.2%
Business Acumen	34.7%	37.7%	41.4%	38.5%
Linear Algebra & Calculus	38.9%	32.1%	27.6%	42.3%
Domain Expertise	33.3%	37.7%	48.3%	34.6%
Big Data	22.2%	18.9%	20.7%	30.8%
Model deployment	36.1%	35.8%	44.8%	30.8%

Common skills looked at by recruiters across sectors

	BFSI	Education	IT	Pharma & Healthcare	Retail, CPG, & E-commerce	Others
Machine Learning	90.0%	88.9%	84.3%	70.0%	78.9%	84.8%
Statistics	90.0%	66.7%	81.4%	90.0%	68.4%	72.7%
Communication Skills	70.0%	50.0%	81.4%	80.0%	73.7%	66.7%
Programming knowledge	66.7%	66.7%	81.4%	40.0%	68.4%	60.6%
Data Visualisation	56.7%	38.9%	60.0%	60.0%	47.4%	57.6%
Data Wrangling and Pre-processing	53.3%	55.6%	68.6%	60.0%	63.2%	60.6%
Business Acumen	43.3%	11.1%	41.4%	50.0%	42.1%	30.3%
Deep Learning	43.3%	27.8%	42.9%	30.0%	26.3%	51.5%
Presentation Skills	43.3%	27.8%	45.7%	70.0%	73.7%	45.5%
Domain Expertise	36.7%	22.2%	37.1%	60.0%	26.3%	45.5%
Linear Algebra & Calculus	36.7%	27.8%	34.3%	40.0%	21.1%	48.5%
Model Deployment	36.7%	11.1%	38.6%	50.0%	26.3%	48.5%
Big Data	26.7%	22.2%	12.9%	60.0%	15.8%	30.3%

Common skills looked at by recruiters

84.4%

84.4% of professionals mentioned that recruiters look for Machine Learning as the most crucial skill during hiring

2/3

Almost two in three professionals with less than 3 years of experience said recruiters consider Data Visualisation as a must-have skill when hiring—this number reduces for respondents with more years of experience

9/10

Nine in ten professionals from the BFSI and Pharma & Healthcare sector said recruiters look for Statistics as one of the core skills during the hiring



Common skills looked at by recruiters

According to **84.3%** respondents (4 out of 5), Machine Learning is considered as a top skill in candidates by recruiters when hiring data scientists. This is followed by proficiency in Statistics (**78.9%**) and Communication (**72.8%**). Some recruiters consider communication skills to be more important than Programming Knowledge (**70.0%**). **62.2%** respondents (3 in 5) stated that recruiters look for Data Wrangling and Preprocessing skills whereas **55.6%** (1 in 2) recruiters looked for Data Visualisation as a skillset.

92.3% (9 out of 10) professionals with more than 10 years of experience think Machine Learning is a considered a common skill by recruiters, compared to **81.9%** respondents with less than 3 years of experience. The share of professionals with more than 10 years of experience agreed that Communication and Big Data skills are demanded **1.4** and **1.2** times higher than those with less than 3 years of experience.



Common skills looked at by **recruiters**

4 out of 5 IT professionals said that recruiters prioritise critical skills such as Machine Learning (**84.3%**), Statistics (**81.4%**), Communication (**81.4%**) and Programming Knowledge (**81.4%**). Similarly, 9 out of 10 (**90.0%**) BFSI and Pharma & Healthcare professionals said that Statistics is one of the core skills that recruiters seek. The same respondents from the BFSI sector agreed that Machine Learning is one of the most desired skills.

The share of professionals who agreed that domain knowledge was important was the highest (**60.0%**) in Pharma & Healthcare. Presentation skills were considered noticeably more important in Pharma & Healthcare (**70.0%**) and Retail, CPG, & E-commerce (**73.7%**) compared to other industries.



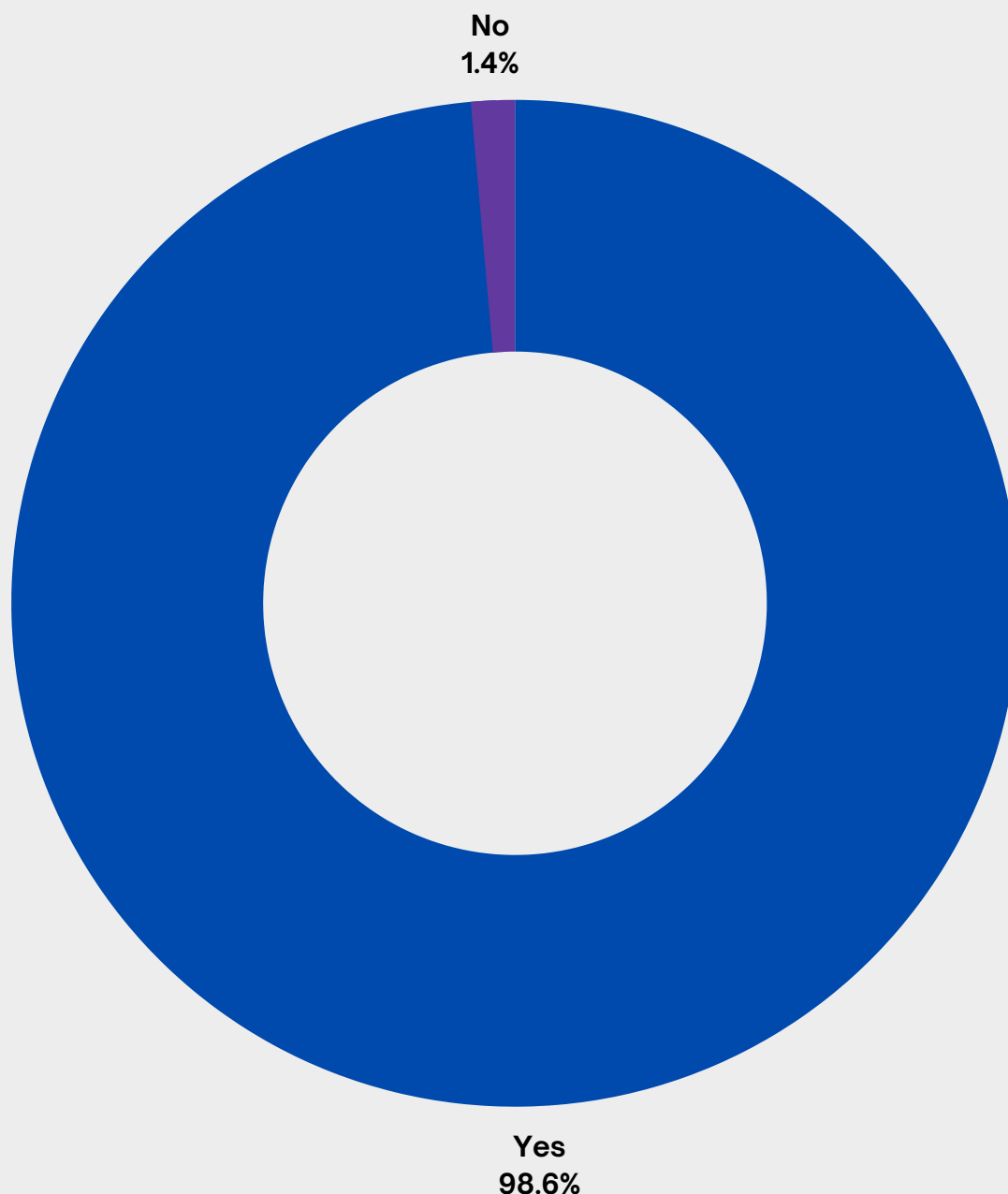
Part 2:

Need for upskilling

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Need for upskilling in Data Science



Data Science professionals are critical to a company's development, innovation, and decision-making processes, and they must be able to adapt to an ever-changing digital world.

Therefore, upskilling helps professionals broaden their abilities and knowledge required for future employment, opportunities and success. This is supported by **98.6%** of respondents who agree with the need for continuous upskilling in the field.

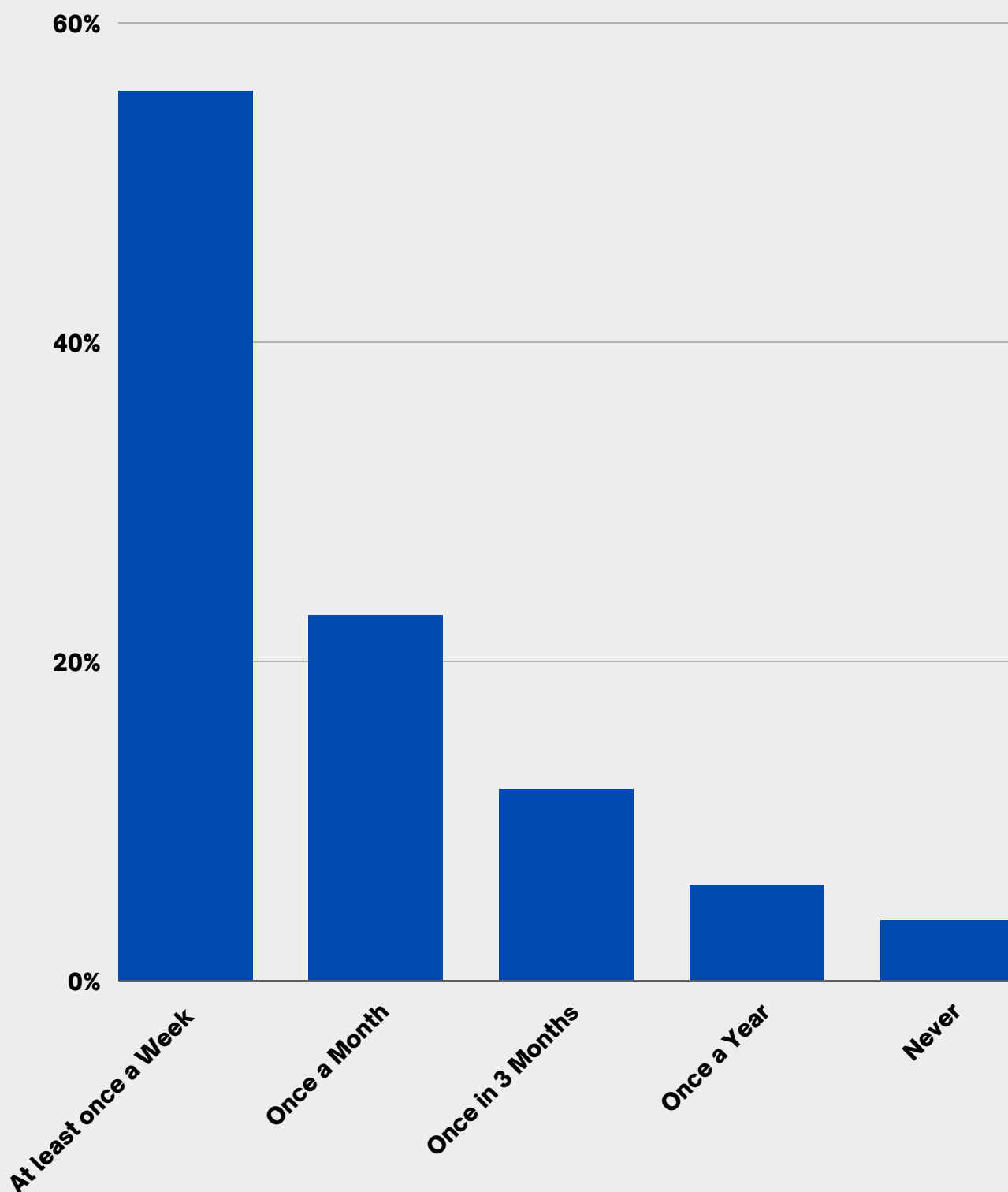
Part 3:

Time invested in upskilling

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How frequently analytics professionals spend time **upskilling**



Time spent by professionals in upskilling by years of experience

	0 Years	Less than 3 Years	3-6 Years	6-10 Years	10+ Years
Weekly	43.6%	72.2%	56.6%	37.9%	46.2%
Monthly	20.5%	19.4%	28.3%	20.7%	26.9%
Quarterly	10.3%	4.2%	9.4%	31.0%	19.2%
Yearly	10.3%	1.4%	5.7%	10.3%	7.7%
Never	15.4%	2.8%	0.0%	0.0%	0.0%

Time spent by professionals in upskilling across sectors

	BFSI	Education	IT	Pharma & Healthcare	Retail, CPG, & E-commerce	Others
Weekly	43.2%	51.9%	55.3%	54.5%	63.6%	67.6%
Monthly	35.1%	25.9%	23.5%	9.1%	18.2%	13.5%
Quarterly	13.5%	14.8%	10.6%	18.2%	13.6%	8.1%
Yearly	2.7%	3.7%	7.1%	18.2%	4.5%	5.4%
Never	5.4%	3.7%	3.5%	0.0%	0.0%	5.4%

Time invested by analytics professionals in **upskilling**

1/2

One in two Data Science professionals spend time upskilling themselves weekly

2/3

Almost two in three Data Science professionals in the Retail, CPG and E-Commerce industry upskill weekly

3/4

3 in 4 Data Science professionals with less than 3 years of work experience engage in upskilling weekly, while more than half of the professionals in the 3-6 year work experience bracket upskill weekly

Professionals with less than 3 years of experience are the most active in upskilling themselves



Time invested by analytics professionals in **upskilling**

According to the survey responses, **55.7%** professionals spend time upskilling weekly. Around **22.8%** spend time every month, while **11.9%** do it quarterly. A meagre **5.9%** do it annually, and **3.7%** never upskill.

Professionals with less than 3 years of experience are the most active in upskilling themselves. **72.2%** (3 out of 4) Data Science professionals with less than 3 years of experience upskill weekly. **56.6%** professionals with 3-6 years of experience also upskill weekly, but a significant share of these professionals (**28.3%**) upskill on a monthly basis. Similarly, **31.0%** (1 out of 3) professionals with 6-10 years of experience prefer to upgrade their skills quarterly.

63.6% professionals from the Retail, CPG and E-Commerce sectors are the most active in updating their skills weekly. On the other hand, **35.1%** Data Science professionals from the BFSI sector upskill monthly.

Part 4:

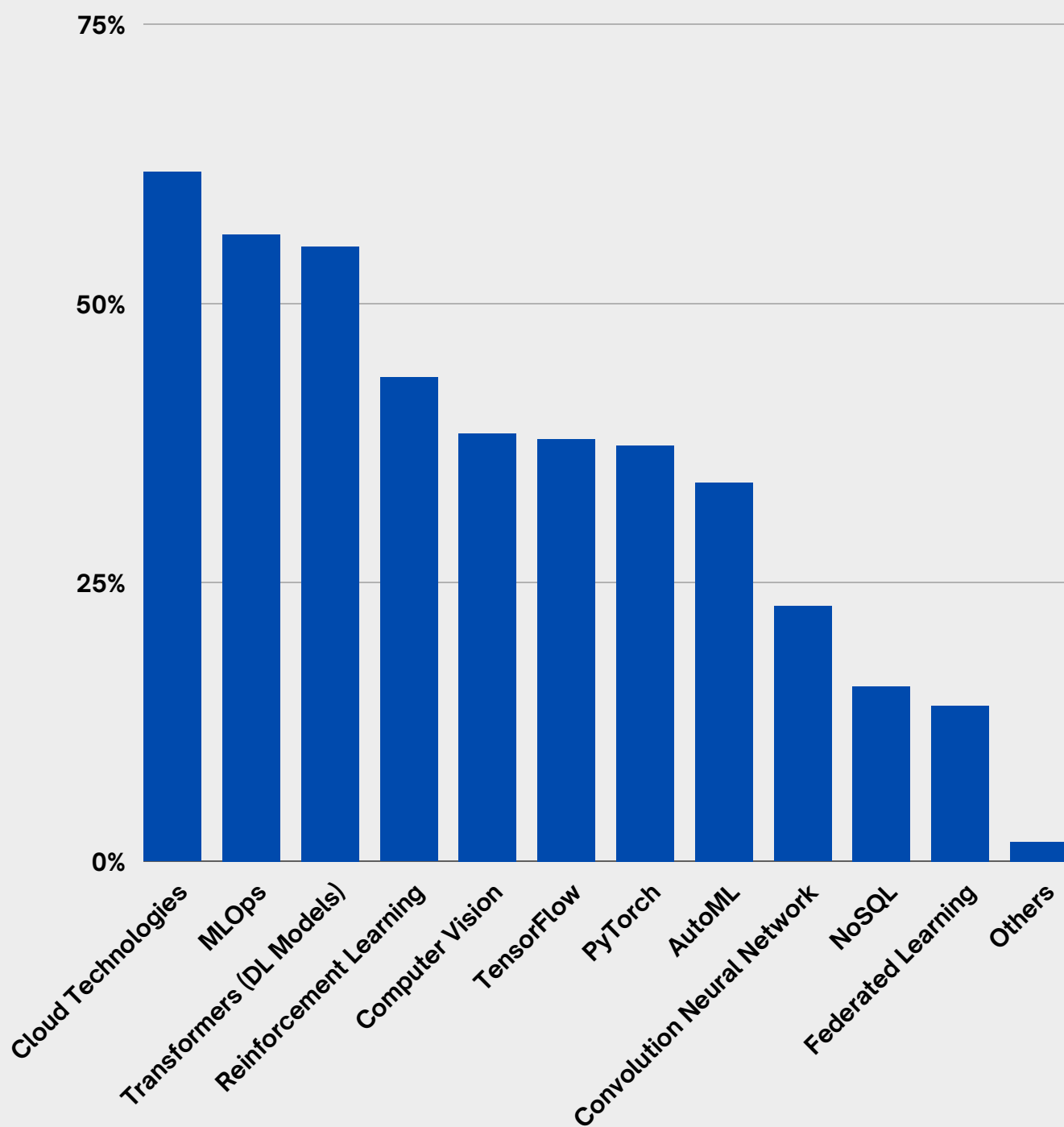
New skills data scientists are learning

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New skills data scientists are learning



New skills data scientists are learning across years of experience

	Less than 3 Years	3-6 Years	6-10 Years	10+ Years
MLOps	48.6%	62.3%	48.3%	73.1%
Reinforcement Learning	36.1%	47.2%	41.4%	57.7%
Cloud Technologies	61.1%	71.7%	48.3%	57.7%
TensorFlow	38.9%	34.0%	31.0%	50.0%
Transformers	51.4%	60.4%	51.7%	57.7%
AutoML	29.2%	37.7%	31.0%	42.3%
PyTorch	33.3%	39.6%	41.4%	38.5%
Computer Vision	36.1%	45.3%	27.6%	42.3%
Convolution Neural Network	20.8%	26.4%	20.7%	23.1%
NoSQL	22.2%	13.2%	10.3%	7.7%
Federated Learning	15.3%	15.1%	20.7%	0.0%
Others	0.0%	1.9%	6.9%	0.0%

New skills data scientists are learning across sectors

	BFSI	Education	IT	Pharma & Healthcare	Retail, CPG, & E-commerce	Others
MLOps	70.0%	38.9%	57.1%	50.0%	63.2%	48.5%
Cloud Technologies (Azure, AWS, GCP)	63.3%	44.4%	67.1%	50.0%	73.7%	54.5%
Transformers (Advanced Deep Learning Models)	50.0%	55.6%	57.1%	70.0%	47.4%	54.5%
Reinforcement Learning	46.7%	55.6%	42.9%	30.0%	47.4%	36.4%
AutoML	40.0%	33.3%	42.9%	30.0%	21.1%	18.2%
TensorFlow	26.7%	50.0%	45.7%	20.0%	31.6%	33.3%
Computer Vision	23.3%	33.3%	41.4%	60.0%	15.8%	54.5%
PyTorch	23.3%	38.9%	42.9%	40.0%	15.8%	48.5%
Convolution Neural Network	20.0%	16.7%	20.0%	20.0%	26.3%	33.3%
Federated Learning	13.3%	22.2%	11.4%	30.0%	10.5%	12.1%
NoSQL	10.0%	16.7%	25.7%	10.0%	0.0%	9.1%
Others	3.3%	0.0%	0.0%	10.0%	5.3%	0.0%

New skills data scientists are learning

3/5

Three out of five Data Science professionals are learning Cloud technologies to upskill

70.0%

70% professionals working in BFSI stated that they have upskilled in MLOps

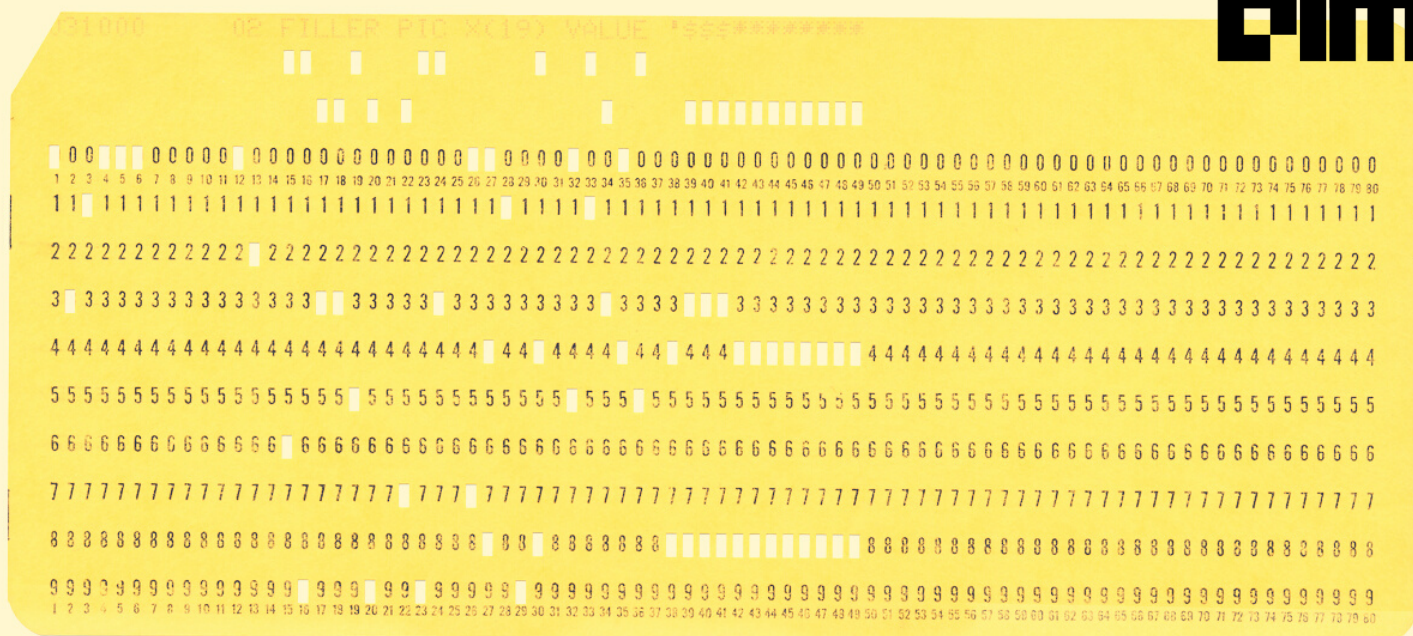
Top 3

Cloud technologies, MLOps, and Advanced Deep Learning Models like Transformers are the top 3 new skills Data Scientists/Analysts are trying to learn or upskill in

3/4

Three in four professionals with 10+ years of experience are learning MLOps to upgrade their skill sets

Cloud for data analysis is in high demand and that is reflected in the high share of professionals choosing to upskill in the technology.



New skills data scientists are learning

To remain relevant to the industry's current needs, Data Science professionals continuously update their skills. As per the conducted survey, more than **61.7%** (3 out of 5) professionals said they are upgrading their skills in Cloud technologies (Azure, AWS, GCP). Following that, **56.1%** professionals are learning MLOps and **55.0%** are learning Transformers.

The most popular skill to acquire among professionals with more than 10 years of experience is MLOps, with almost **73.1%** (3 out of 4) professionals learning techniques to scale ML models-one of the most pressing concerns in the industry. This is followed by Reinforcement Learning (**57.7%**), Cloud Technologies (**57.7%**) Transformers (**57.7%**) and others. Professionals with 3-6 years of experience are more inclined towards acquiring Cloud technologies (**71.7%**) as a core new skill, followed by MLOps (**62.3%**), Transformers (**60.4%**) and others.

Professionals working in the Retail, CPG and E-Commerce sectors are more inclined towards learning Cloud technologies (**73.7%**) as a new skill. On the other hand, professionals in the BFSI sector are more likely to learn MLOps (**70.0%**) as a new skill set. Similarly, professionals in the Pharma & Healthcare sector are interested in learning Transformers (**70.0%**) and Computer Vision (**60.0%**) as core skills.

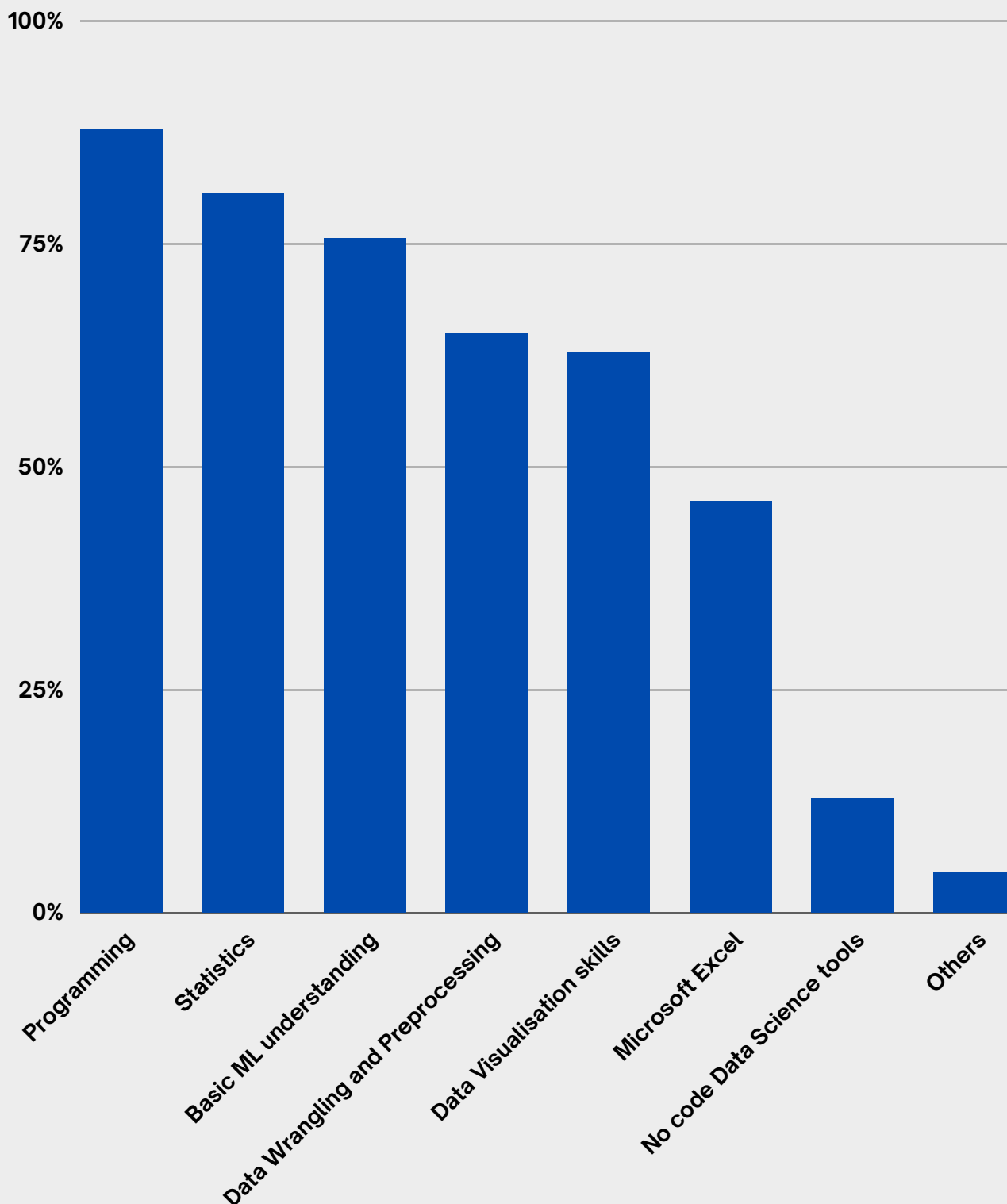
Part 5:

Basic skills needed for a data science career

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Basic skills needed for a **Data Science** career



Basic skills needed for a Data Science career by years of experience

	Less than 3 Years	3-6 Years	6-10 Years	10+ Years
Data Science Programming	84.7%	88.7%	82.8%	100.0%
Statistics	83.3%	79.2%	75.9%	80.8%
Basic ML understanding	75.0%	75.5%	72.4%	80.8%
Data Wrangling and Preprocessing	52.8%	77.4%	69.0%	69.2%
Data Visualisation skills	69.4%	60.4%	69.0%	42.3%
Microsoft Excel	45.8%	41.5%	55.2%	46.2%
No code Data Science tools	16.7%	9.4%	6.9%	15.4%
Others	1.4%	5.7%	10.3%	3.8%

Basic skills needed for a Data Science career across sectors

	BFSI	Education	IT	Pharma & Healthcare	Retail, CPG, & E-commerce	Others
Data Science Programming	93.3%	83.3%	90.0%	90.0%	84.2%	81.8%
Statistics	86.7%	72.2%	81.4%	80.0%	68.4%	84.8%
Basic ML understanding	83.3%	77.8%	71.4%	70.0%	94.7%	66.7%
Data Wrangling and Preprocessing	70.0%	33.3%	71.4%	60.0%	73.7%	60.6%
Data Visualisation skills	63.3%	55.6%	68.6%	70.0%	52.6%	57.6%
Microsoft Excel	46.7%	33.3%	47.1%	70.0%	47.4%	42.4%
No code Data Science tools	10.0%	27.8%	11.4%	20.0%	10.5%	9.1%
Others	6.7%	0.0%	4.3%	10.0%	10.5%	0.0%

Basic skills needed for a **Data Science** career

9/10

Nine out of ten Data Science professionals mentioned that knowledge of programming languages (R, Python, SAS) is the most basic skill to start a career in Data Science

4/5

Four in five professionals said that Statistics is an important basic skill to start a Data Science career

Top 3

Programming (in R, Python, SAS), Statistics, and a basic understanding of Machine Learning are considered to be the top 3 basic skills for a career in Data Science

94.7%

94.7% Data Science professionals in Retail, Consumer Goods or E-Commerce said that a basic understanding of Machine Learning is a must

More than three in four professionals claiming that basic ML understanding is a must-have skill for a career in Data Science is indicative of increasing maturity in the field.

Basic skills needed for a Data Science career

According to the survey, **87.8%** (9 in 10) respondents said that knowledge of programming languages like Python, R, or SQL is the most basic skill to kickstart a career in Data Science/Analytics. This is followed by knowledge of statistics (**80.6%**) and basic ML understanding, as **75.6%** of respondents claimed.

All (**100.0%**) respondents with more than **10 years of experience** said that ability to code in statistical programming languages is a must-have skill to start a career in Data Science. This is followed by knowledge of statistics and basic Machine Learning concepts, both at **80.8%**. Similarly, five in six (**83.3%**) **Data Science** professionals with less than 3 years of experience think that knowledge of statistics is a must. A significantly higher percentage of professionals (**77.4%**) with 3 to 6 years of experience said that Data Wrangling and Preprocessing Skills are important compared to professionals in other experience brackets.

In terms of industries, **94.7%** (9 out of 10) survey respondents in the Retail, CPG, & E-Commerce said that knowledge of ML concepts is the most basic skill to start a career in Data Science. The demand for Statistics (**86.7%**) is the highest among BFSI professionals, and the demand for Data Visualisation skills is highest in Pharma & Healthcare (**70.0%**). By and large, it was agreed among all industries that knowledge of programming language is the most important skill to start a career in Data Science.



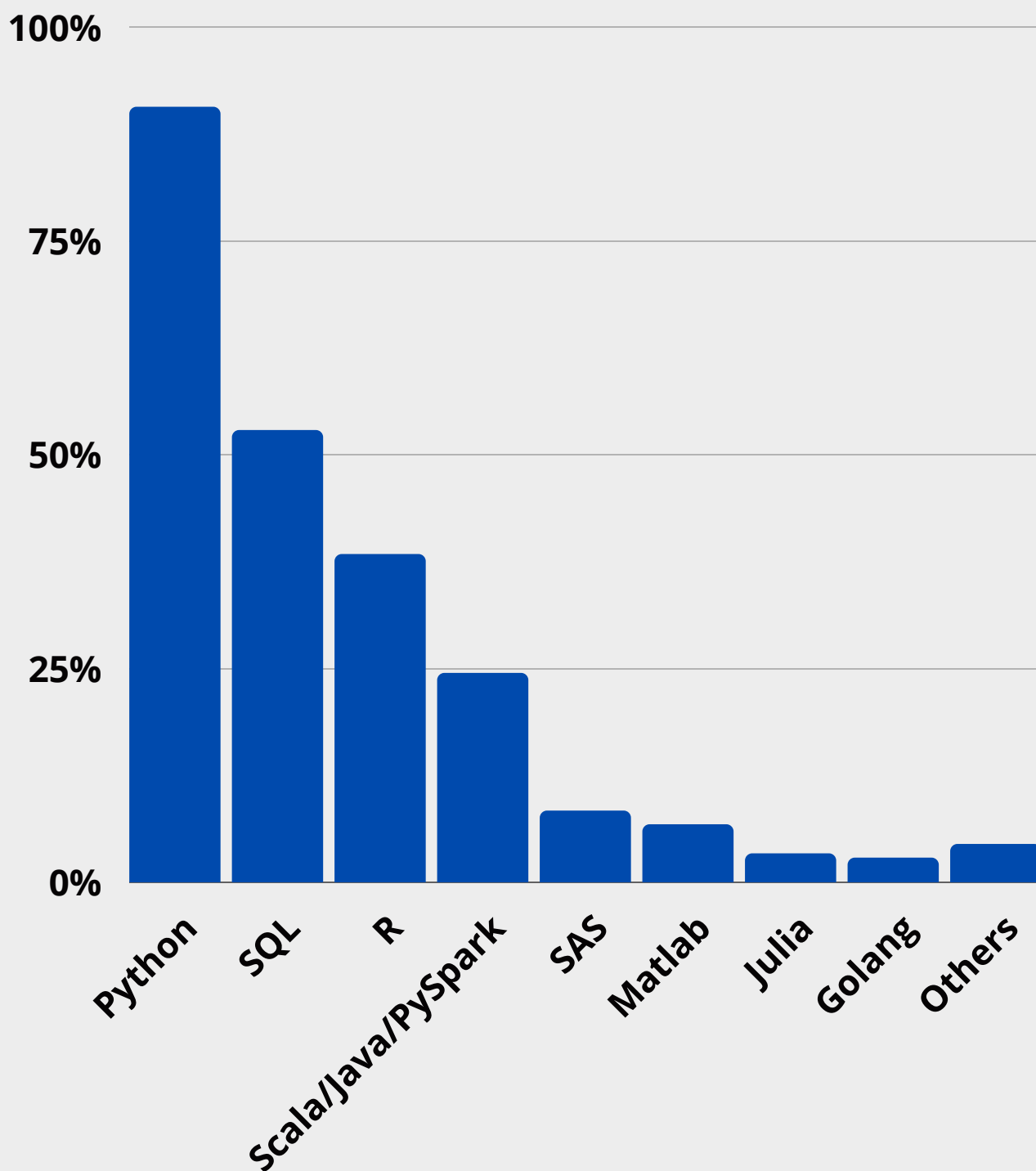
Part 6:

Languages used for statistical modelling

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Languages used for **statistical modelling**



Languages used for statistical modelling by years of experience

	Less than 3 Years	3-6 Years	6-10 Years	10+ Years
Python	88.9%	86.8%	93.1%	100.0%
SQL	48.6%	47.2%	65.5%	61.5%
R	30.6%	37.7%	44.8%	53.8%
Scala/Java/PySpark	22.2%	22.6%	20.7%	38.5%
Matlab	8.3%	7.5%	3.4%	3.8%
SAS	6.9%	1.9%	10.3%	23.1%
Julia	5.6%	0.0%	0.0%	7.7%
Golang	4.2%	1.9%	0.0%	3.8%
Others	2.8%	1.9%	3.4%	15.4%

Languages used for statistical modelling by sectors

	BFSI	Education	IT	Pharma & Healthcare	Retail, CPG & E-commerce	Others
Python	90.0%	83.3%	95.7%	80.0%	89.5%	87.9%
SQL	53.3%	16.7%	62.9%	50.0%	68.4%	42.4%
R	53.3%	44.4%	37.1%	60.0%	26.3%	24.2%
Scala/Java/PySpark	33.3%	22.2%	24.3%	10.0%	36.8%	15.2%
Matlab	3.3%	16.7%	5.7%	0.0%	5.3%	9.1%
Julia	0.0%	5.6%	5.7%	0.0%	0.0%	3.0%
SAS	23.3%	0.0%	5.7%	20.0%	5.3%	3.0%
Golang	0.0%	0.0%	2.9%	10.0%	5.3%	3.0%
Others	3.3%	27.8%	1.4%	10.0%	5.3%	12.1%



Languages used for **statistical modelling**

9/10

Nine in ten professionals use Python for statistical modelling

Top 3

Python, SQL, R are the top three languages preferred by Data Scientists

3.3

Data science professionals with more than 10 years of experience are 3.3 times more likely to use SAS than those with less than 3 years of experience

2/3

Two in three Data Science professionals in the Retail, CPG & E-Commerce sector use SQL

Enterprises prefer languages like Python and R over SAS, not just because of the cost factor but also because technologies are often first released on open source.



Languages used for statistical modelling

Python is the most popular programming language in Data Science, with nine in ten (**90.6%**) Data Science professionals saying they use it for statistical modelling. After that, SQL and R were preferred by **52.8%** and **38.3%** of participants, respectively.

Years of experience plays a prominent role in some of the languages used by Data Science professionals. For instance, data scientists with more than 10 years of experience are **3.3 times** more likely to use SAS than those with less than 3 years of experience. Similarly, the use of R increases by **1.8 times**.

Python remains the most used programming language across all the sectors, with at least eight out of ten professionals in every industry surveyed saying they use it. Apart from that, the use of SQL (**68.4%**) is highest in Retail, CPG and E-commerce, followed by IT at **62.9%**. R is the most commonly used programming language in the Pharma & Healthcare sector, with three in five (**60.0%**) professionals claiming they use it for statistical modelling.

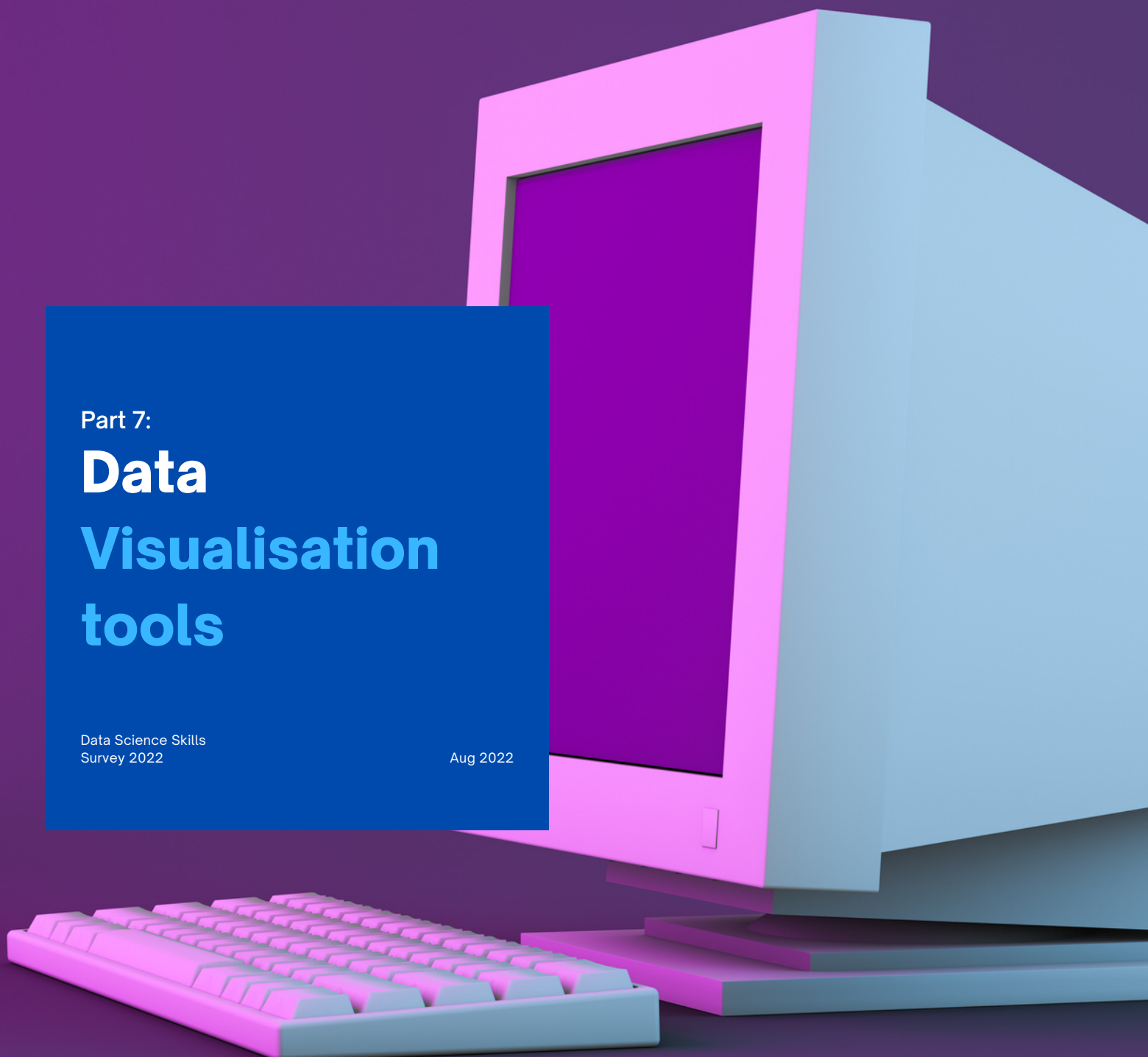
Despite the cost factor, Pharma & Healthcare (**20.0%**) and BFSI (**23.3%**) also widely utilise SAS since it is a preferred choice of tool by most for clinical trial data analysis and also because it offers better security.

Part 7:

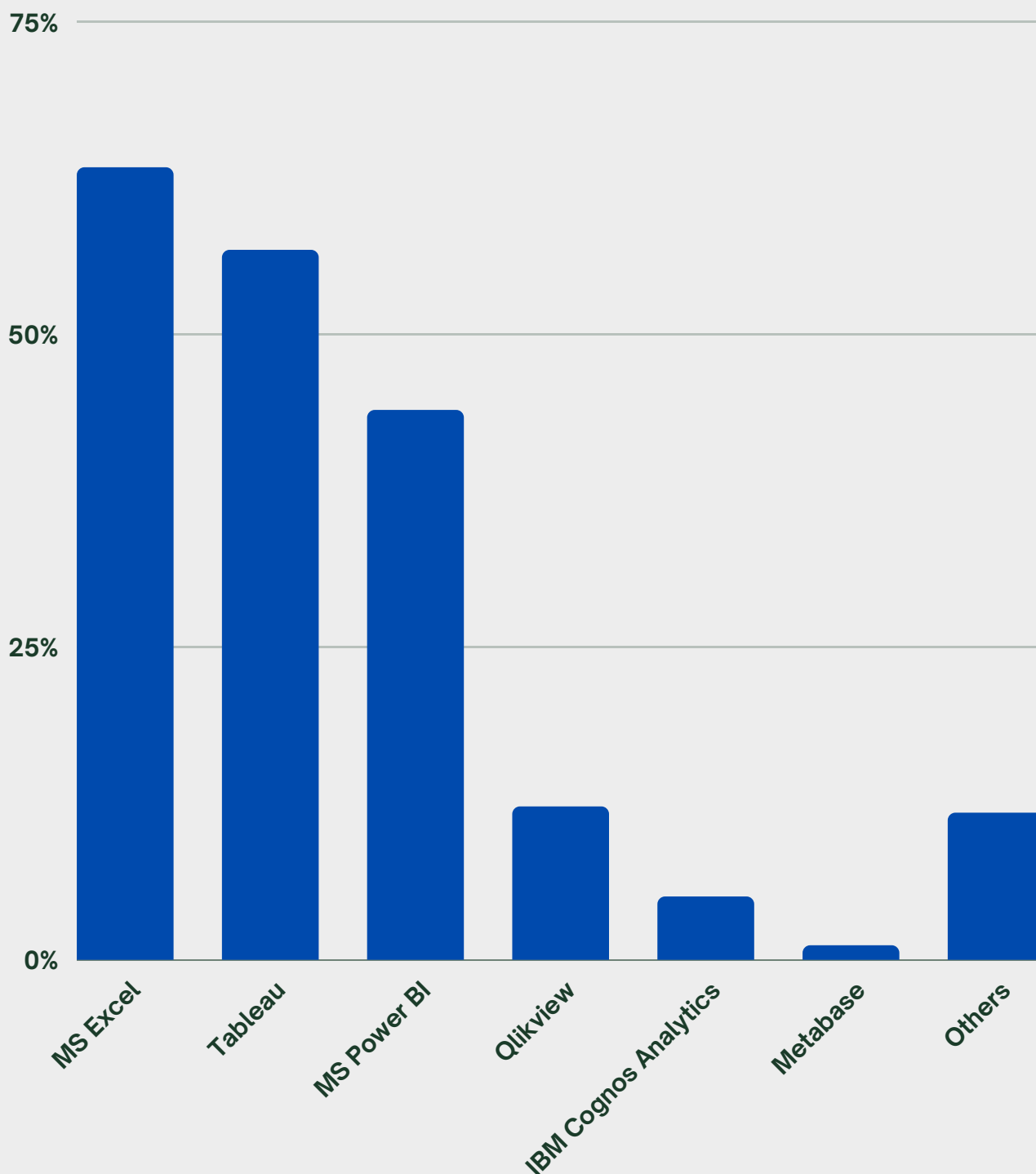
Data Visualisation tools

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Use of Data Visualisation tools



Use of Data Visualisation tools by years of experience

	Less than 3 Years	3-6 Years	6-10 Years	10+ Years
MS Excel	73.6%	45.3%	51.7%	84.6%
Tableau	58.3%	50.9%	51.7%	69.2%
MS Power BI	45.8%	34.0%	44.8%	57.7%
Qlikview	13.9%	5.7%	13.8%	19.2%
IBM Cognos Analytics	8.3%	1.9%	3.4%	3.8%
Others	8.3%	15.1%	13.8%	26.9%

Use of Data Visualisation tools across sectors

	BFSI	Education	IT	Pharma & Healthcare	Retail, CPG, & E-commerce	Others
MS Excel	70.0%	72.2%	58.6%	60.0%	63.2%	63.6%
Tableau	53.3%	44.4%	65.7%	80.0%	47.4%	45.5%
MS Power BI	43.3%	22.2%	61.4%	30.0%	36.8%	27.3%
Qlikview	20.0%	11.1%	14.3%	10.0%	5.3%	6.1%
Metabase	6.7%	0.0%	0.0%	0.0%	0.0%	0.0%
IBM Cognos Analytics	3.3%	16.7%	4.3%	0.0%	0.0%	6.1%
Others	6.7%	16.7%	14.3%	30.0%	15.8%	6.1%



Use of Data Visualisation tools

1st

MS Excel is the most widely used visualisation tool, with two in three analytics professionals using it

84.6%

MS Excel is used by 84.6% professionals with more than 10 years of experience

Top 3

MS Excel, Tableau, and MS Power BI are the three most used tools for Data Visualisation

4/5

Four out of every five professional uses Tableau for Data Visualisation in Pharma & Healthcare

Use of Data Visualisation tools

Despite all the technological advancements in Data Science, the use of MS Excel remains high, especially when building data visualisations. **63.3%** (2 in 3) analytics professionals two in three analytics professionals said that they use MS Excel. This is followed by Tableau (**56.7%**), Power BI (**43.9%**), and QlikView (**12.2%**).

The utilisation of MS Excel (**84.6%**) is especially high among people with more than 10 years of experience. On the other hand, Tableau is the preferred choice for professionals between 3-6 years (**50.9%**), followed by MS Excel (**45.3%**) and Power BI (**34.0%**). Similarly, Data Science professionals with 6-10 years of experience also prefer Tableau.

By sectors, Tableau is the most popular tool in Pharma & Healthcare according to four out of five (**80.0%**) professionals who said they use it for data visualisation. Similarly, **65.7%** of IT respondents said they use Tableau compared to **61.4%** who use Power BI and **58.6%** that use Excel. On the other hand, MS Excel remains the most used tool for Data Visualisation in all the other surveyed sectors.

People with 3-10 years of experience are more hands-on and use comparatively more complex tools like Tableau for dashboards than just MS Excel.





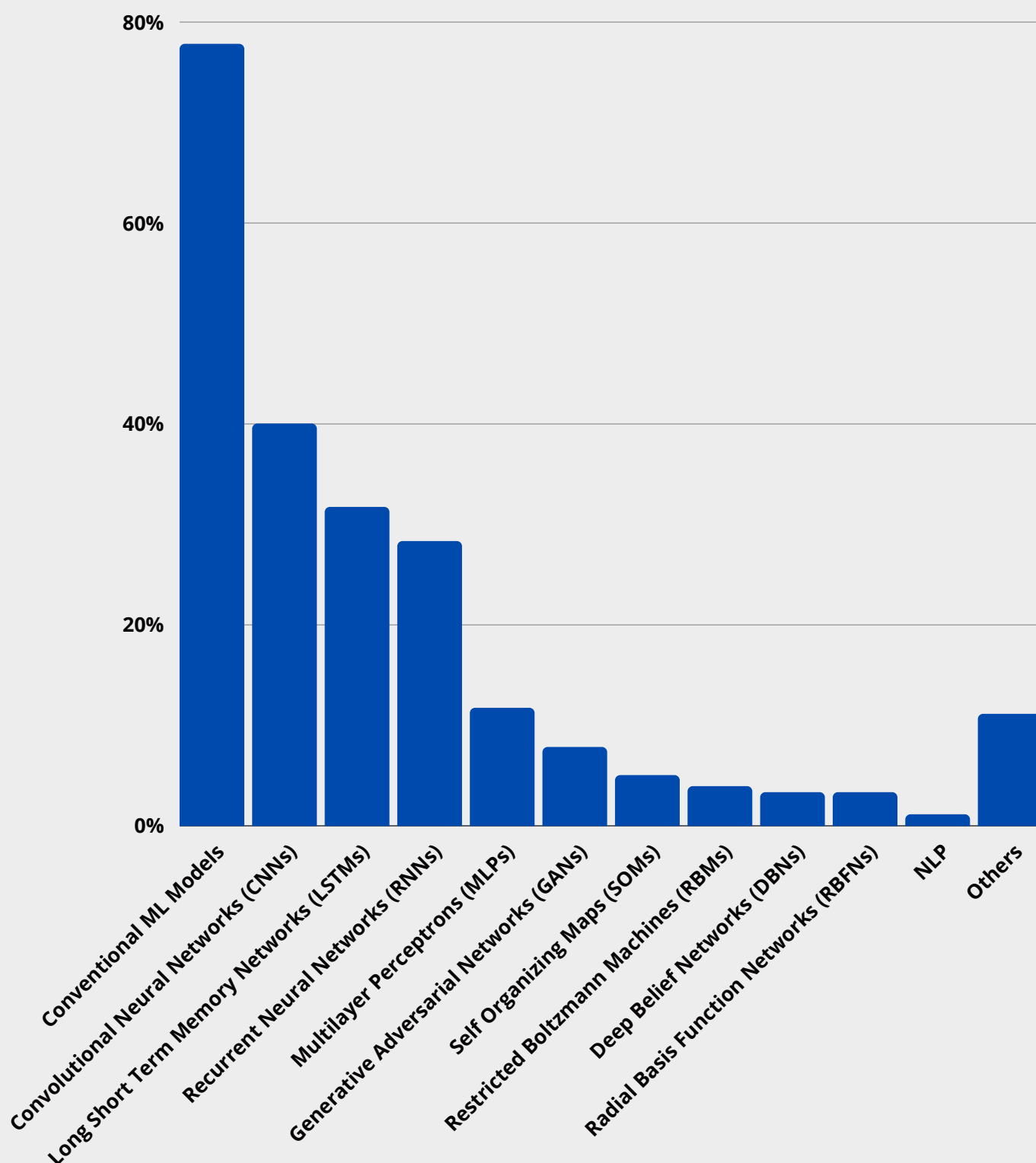
Part 8:

Data Science models

Data Science Skills
Survey 2022

Aug 2022

Use of Data Science models



Use of Data Science models across years of experience

	Less than 3 Years	3-6 Years	6-10 Years	10+ Years
Conventional ML Models	61.1%	92.5%	89.7%	80.8%
Convolutional Neural Networks (CNNs)	9.7%	77.4%	13.8%	76.9%
Recurrent Neural Networks (RNNs)	1.4%	47.2%	10.3%	84.6%
Multilayer Perceptrons (MLPs)	1.4%	9.4%	6.9%	50.0%
Deep Belief Networks (DBNs)	1.4%	1.9%	0.0%	15.4%
Self Organizing Maps (SOMs)	1.4%	0.0%	6.9%	23.1%
Long Short Term Memory Networks (LSTMs)	0.0%	47.2%	34.5%	84.6%
Generative Adversarial Networks (GANs)	0.0%	3.8%	3.4%	42.3%
Restricted Boltzmann Machines (RBMs)	0.0%	1.9%	0.0%	23.1%
Radial Basis Function Networks (RBFNs)	0.0%	0.0%	0.0%	23.1%
Others	0.0%	13.2%	6.9%	50.0%

Use of Data Science models across sectors

	BFSI	Education	IT	Pharma & Healthcare	Retail, CPG, & E-commerce	Others
Conventional ML Models	96.7%	66.7%	75.7%	70.0%	78.9%	72.7%
Convolutional Neural Networks (CNNs)	43.3%	38.9%	44.3%	40.0%	36.8%	30.3%
Long Short Term Memory Networks (LSTMs)	33.3%	27.8%	37.1%	60.0%	31.6%	12.1%
Recurrent Neural Networks (RNNs)	23.3%	38.9%	32.9%	50.0%	26.3%	12.1%
Generative Adversarial Networks (GANs)	13.3%	5.6%	7.1%	10.0%	10.5%	3.0%
Multilayer Perceptrons (MLPs)	10.0%	11.1%	12.9%	10.0%	15.8%	9.1%
Deep Belief Networks (DBNs)	6.7%	11.1%	1.4%	0.0%	5.3%	0.0%
Radial Basis Function Networks (RBFNs)	6.7%	11.1%	0.0%	0.0%	5.3%	3.0%
Restricted Boltzmann Machines (RBMs)	6.7%	11.1%	2.9%	0.0%	0.0%	3.0%
Self Organizing Maps (SOMs)	6.7%	16.7%	2.9%	0.0%	5.3%	3.0%
Others	23.3%	0.0%	15.7%	10.0%	10.5%	3.0%



Use of Data Science models

3/4

Three out of four Data Science professionals use Conventional Machine Learning models on a regular basis

2/5

Two in five data science professionals use Convolution Neural Networks

5/6

Five out of six professionals with 10+ years of experience said they have an RNN

3/5

Three in five professionals working the Pharma & Healthcare sector use LSTM models

Use of Data Science models

Conventional Machine Learning models like Linear Regression, Logistic Regression, Decision Tree, SVM, Naive Bayes, etc. are the most utilised ML techniques among Data Science professionals—more than three out of four (**77.8%**) respondents said they use it on a regular basis. This is followed by CNN at **40.0%**, LSTM at **31.7%**, and RNN at **28.3%**.

Data Science professionals who are in the early stage of their careers prefer using Conventional Machine Learning Models since they are just starting out. **61.1%** (3 out of 5) respondents with less than 3 years of experience use Conventional Machine Learning models. However, with more experience, data scientists venture into complex models. You can observe an increased use of Neural Networks and Deep Learning models among professionals with 3-6 years of experience. Around **77.4%** of them use CNN, **47.2%** use RNN, and **47.2%** use LSTM. In the 6-10 years experience bracket, you see a lesser use of these models. However, the utilisation again goes up for professionals with more than 10 years of experience since they need to keep up to date with the latest technologies and experiment with the state-of-the-art/complex models for research.

Freshers start out with Conventional ML Models but soon experiment with complex Deep Learning Models or Neural Networks as they gain work experience.





Use of Data Science models

Conventional Machine Learning models are the preferred choice of professionals across sectors. Following that, specific industries show a preference for certain models. For instance, CNN is widely used in the IT (**44.3%**) and BFSI sectors (**43.3%**) since both these industries see a wide array of applications in segmentation or classification.

Similarly, LSTM (**60.0%**) or RNN (**50.0%**) models are widely used in Pharma & Healthcare. **15.8%** (1 in 6) data scientists working in Retail, CPG and E-Commerce use Multilayer Perceptrons (MLPs) and **13.3%** (1 in 8) professionals working in the BFSI sector use Generative Adversarial Networks (GANs).

About Analytics India Magazine

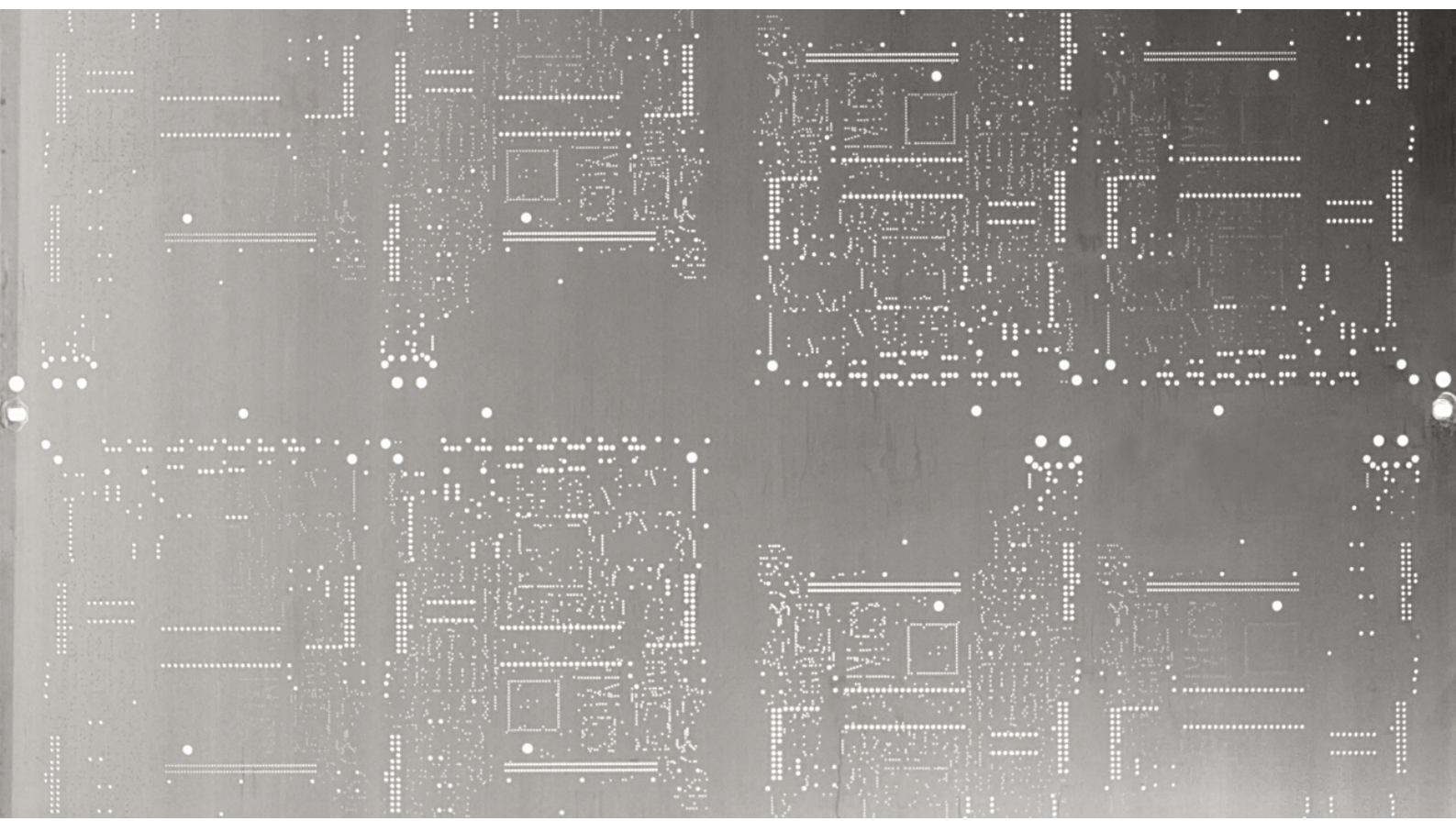
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