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Learning for Life

A COMPLETE GUIDE TO
DATA SCIENCE CAREER PATH

By AIM & Great Learning

Contents

Introduction

India is rising and shining bright when it comes to adopting new and emerging technologies. Enterprises from almost all major industry verticals are hiring data science experts to help them garner actionable insights from big data. The analytics sector has witnessed a sharp increase in demand for highly-skilled professionals who understand both the business world as well as the tech world. Organisations today are on a constant lookout for such professionals who can fill this ever-growing dearth in talent.

The stark reality, however, is that there is a lot of confusion regarding this profession among aspiring professionals. Discussion forums, articles and blogs are full of queries where these aspirants and job seekers want to actually know what it takes to become a data science professional.

Foreword

HARI KRISHNAN NAIR
Co-Founder, Great Learning

“India today is in a prime position to not only join the global data science elite but lead it.

While the global population is ageing rapidly, India, with one of the youngest populations in the world, is at a strategic advantage with regards to the demographic dividend. However, the challenge is that there is a wide gap between the skills required in industry and those provided by the formal education system.

When it comes to the tech skilling landscape, data science is taking centre stage in India’s growth story. With nearly 100,000 vacancies, India is the second-biggest data science and machine learning jobs hub after the US. The figure is poised to more than double to two lakh in 2020. India now also accounts for one in 10 advanced analytics job openings in the world. If ever there was a gold rush for data scientist jobs, India would be at the heart of it.

At such a juncture in a nascent field, professionals looking to break into data science are currently lacking the necessary guidance to build a foundation for their careers, due to a dearth of publicly available and credible information from industry experts. This report, A Complete Guide to a Data Science Career Path, seeks to demystify the data science career landscape so that professionals can leverage the current demand for data scientists and build rewarding careers. The rise of this new class of skilled professionals who would be able to converse in the language of the future - data, will take India on the path to become an innovation hotbed and a Data Science superpower.”

The Goal Of This Guide

The idea behind preparing this guide is to inform and educate data science aspirants as to how their career trajectory would look like in the future. From what kind of skills they need to equip themselves with, to kind work experience-level they need to achieve to apply for specific jobs — this Guide will cover this entire expanse. This is a one-stop-guide meant to give a hawk-eye view of a potential career trajectory in the emerging tech sector — specifically for the roles of Data Scientist, Data Analyst, Data Engineer and Business Intelligence Developer.

Here, the aspirant will also get an idea of the kind of tools, skills and capabilities he/she should equip himself/herself with before entering the workforce.

Research Methodology

The Complete Guide To Data Science Career Path includes responses from data science aspirants as well as professionals. These niche professionals are the ones who are actually leveraging advanced analytics and building product capabilities.

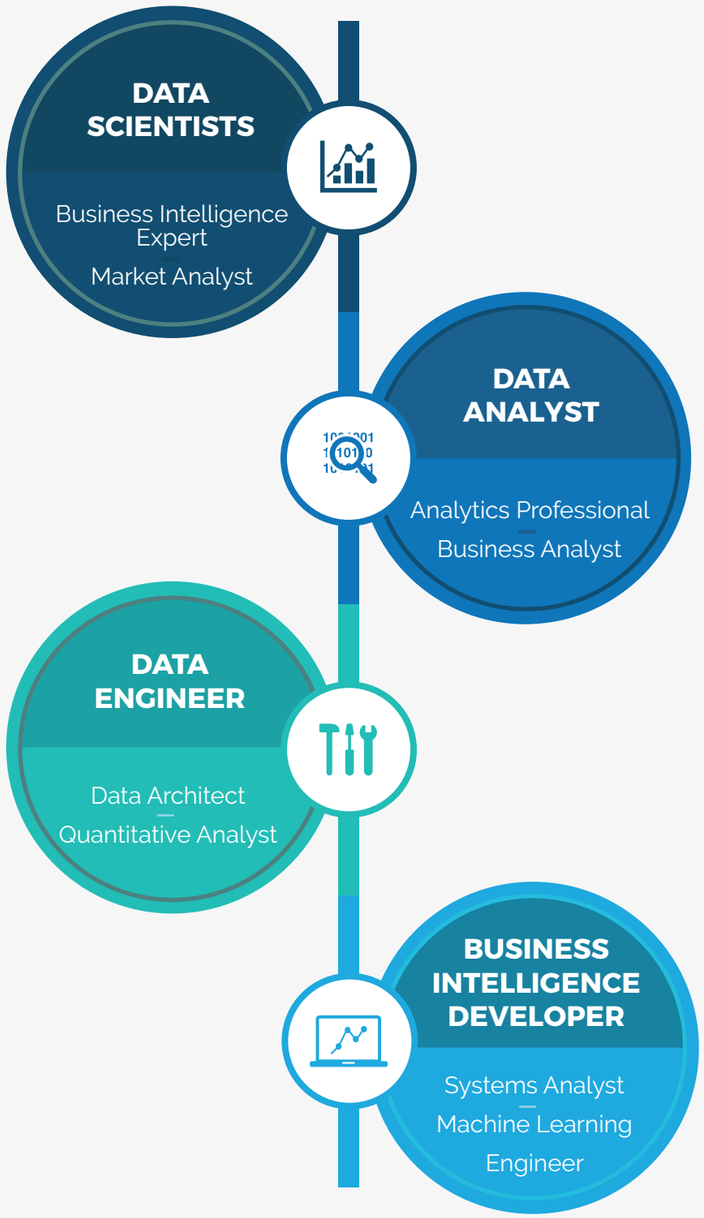
- A majority of our respondents were from the executive (46%), manager (17%) and senior manager (8%) positions related to data science.
- Over 36% of the respondents for this survey hold a degree higher than PG/Masters.
- More than 24% of the persons who participated in this survey earn an annual salary of INR12 lakh/year and above
- Over 40% of our respondents are from the IT sector, 17% from BFSI, 7% from manufacturing, over 6% from e-commerce, and 5% from medicine and healthcare, among others.

The samples were collected by asking respondents to fill in a survey created by AIM and GL about what are the crucial ingredients required in a journey towards data science. This included various sub-topics such as tools, techniques, education, background and work experience, among others.

Who Is A Data Science Professional

The term data scientist is being used rather loosely — from analysts to data visualisers and business intelligence experts — all are being termed as data scientists. While this loose net of a definition is not entirely erroneous, a data scientist can basically be defined as a person who is part mathematician, part Computer Scientist and part business trend spotter and is able to straddle both the IT and the business worlds.

Data Science is now being integrated with industries across all sectors. That's why not only are the data scientists expected to have a broader set of skills, but the employers also expect more cohesive specialisation and collaboration.



DESIGNATIONS FOR ENTRY-LEVEL DATA SCIENCE PROFESSIONAL

Career Trajectory Of A Data Science Professional

Numerous data science aspirants are having trouble in identifying data science profiles and analysing if their talents suit the job description. Due to the fact that this is a relatively nascent sector, most organisations are rather fluid and creative when it comes to designations and career paths. This is also due to the fact that there is no clear precedence regarding these titles.

In this section, we are going to unravel some of the key titles that broadly encompass the roles and duties of a 'data science professional'.

Designations For Entry-Level Data Science Professional

1. Data Scientist
   a. Business Intelligence expert
   b. Market Analyst
2. Data Analyst
   c. Analytics professional
   d. Business analyst
3. Data Engineer
   e. Data Architect
   f. Quantitative Analyst
4. Business Intelligence Developer
   g. Systems analyst
   h. Machine Learning Engineer

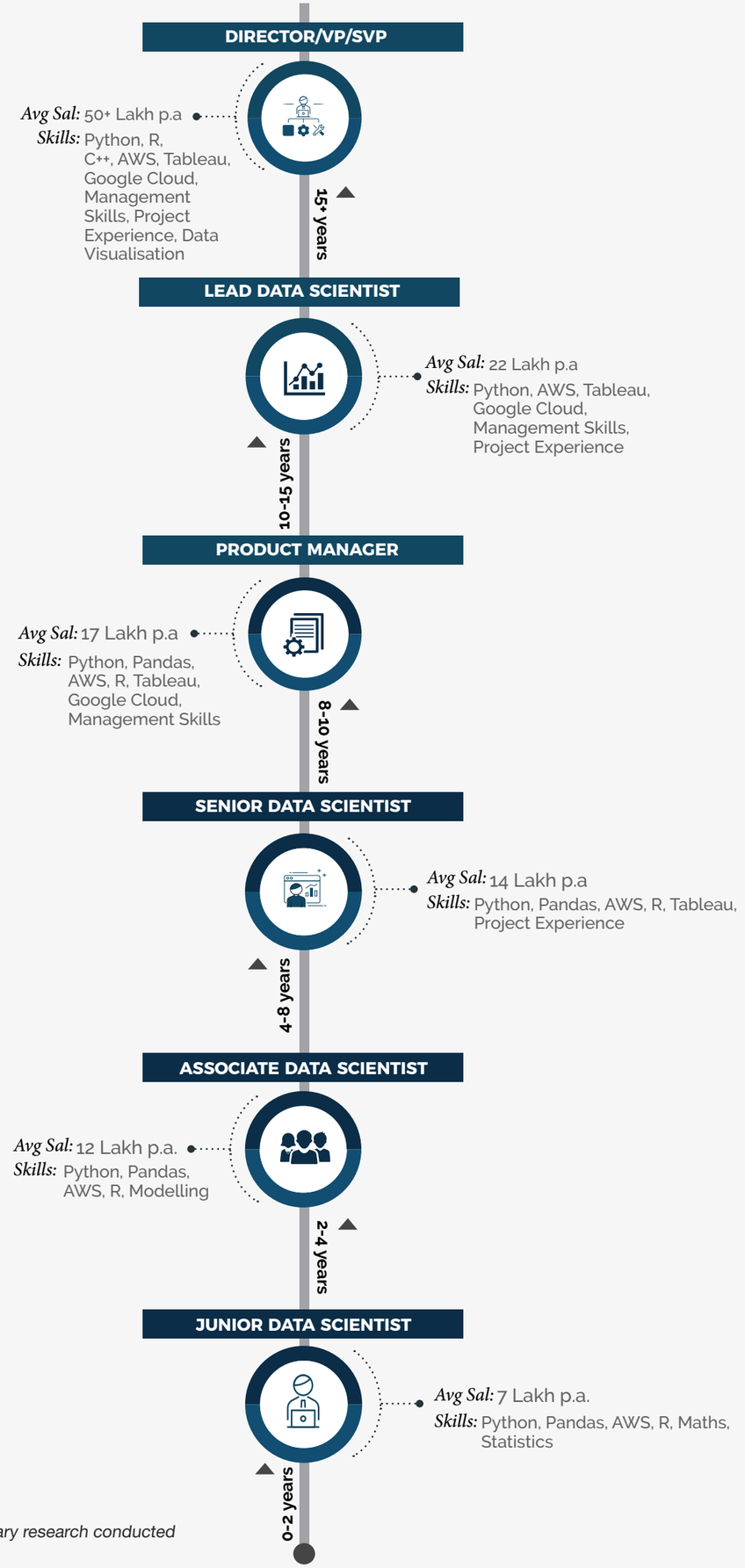
Career Prospects

Data Science is considered one of the most lucrative jobs in the industry right now. With numerous openings spanning across all sectors, data science jobs are showing only the signs of growth. As more and more companies are adopting data science, companies are hiring data scientists by hordes. However, despite India being a frontrunner in technical education and research, the demand-supply gap for data science jobs vs applicants is only widening.

At this point of time in the analytics ecosystem, 70% of the job postings in this sector are for data scientists with less than five years of work experience.

The career trajectory for a data scientist is slightly complicated to trace for different reasons. Most of the middle and senior-level management, with 10-15+ years of work experience, started off from software or coding designations since the sector wasn't evolved enough to encompass the designation of a data scientist. However, things are changing now, and the succeeding generations of data scientists will have a more clear idea of their career paths.

Here, we will address the 'big four' designations and their synonyms for data scientists (mentioned above) and trace their professional career path.



*This data is based on primary research conducted by GL and AIM in Nov 2019

Roles For Data Science Professionals

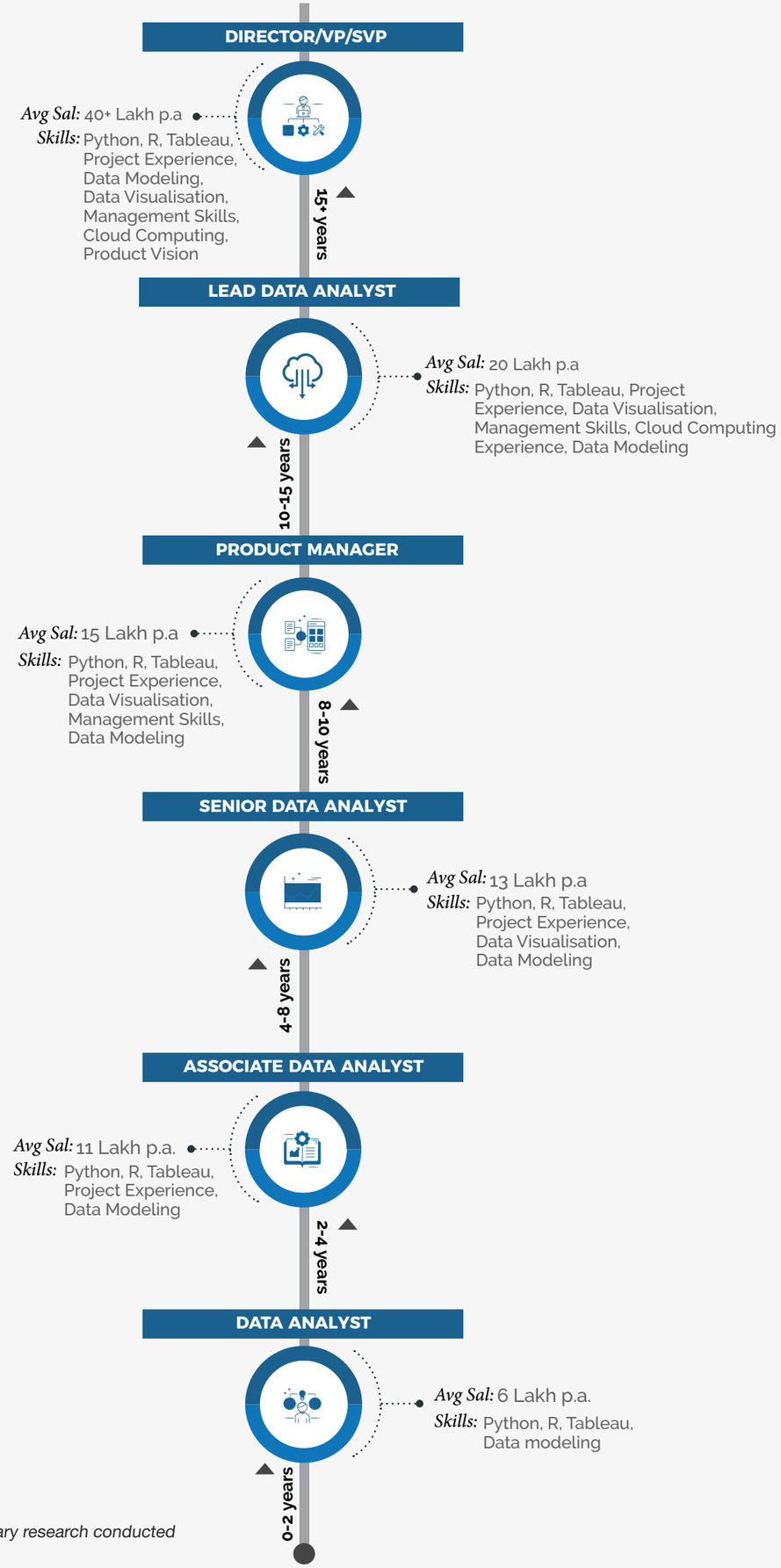
1. Data Scientist

A 'Data Scientist' is the crème de la crème in any company. That is why this designation is most sought-after by professionals these days. Many organisations use this designation as it's easy for aspirants to search for and apply. Other companies use designations like "Business intelligence expert" or "market analyst" for the same.

Role: American mathematician and computer scientist DJ Patil defined the role of a data scientist as, "A unique blend of skills that can both unlock the insights of data and tell a fantastic story via the data." In the modern workplace, data scientists also have to build machine learning models for prediction, find patterns and trends in data, visualise data, and even pitch in with marketing strategies.

Skillset: Statistics, Mathematics, Data Modelling, Python or R programming,
Other skills: Database skills, Business acumen, Visualisation/BI, Presentation skills

Corporate ladder: The corporate ladder for a data scientist/BI expert/ Market analyst would look something like the following. However, it is to be noted that organisations may rename some designations according to their convenience or in keeping with their corporate ladder structure. For example, a "lead data scientist" may be called "principal data scientist" in some organisations.



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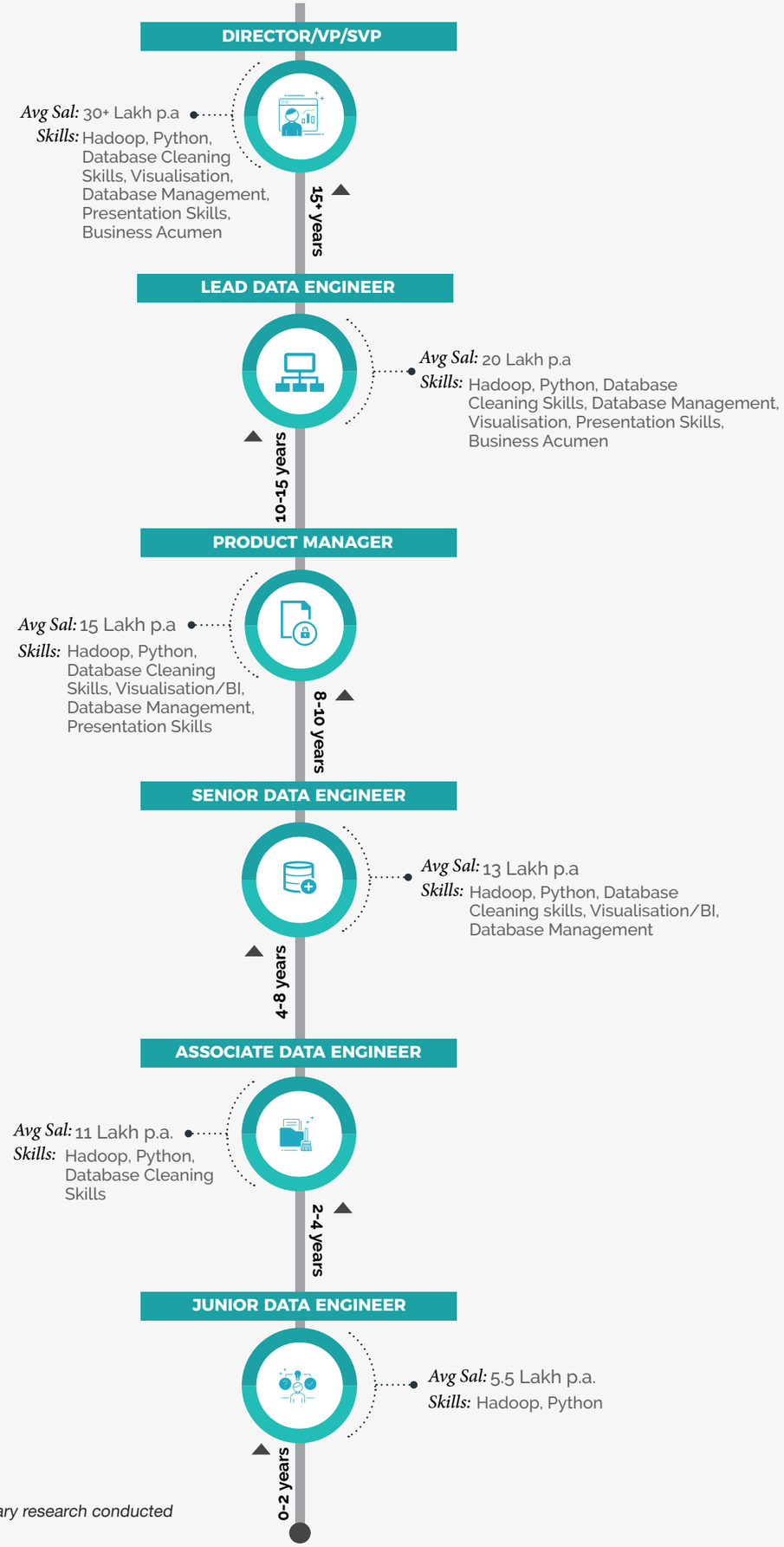
2. Data Analyst

Organisations usually use this designation to communicate that this role involves more technical knowledge. Some of its synonyms are “Analytics Professional” or “Business Analyst”.

Role: The role of a Data Analyst revolves around using the company data to generate actionable insights which then the C-suite can take action upon. Another interesting fact about data analysts is that their projects usually change from time to time. So for 3 months, a data analyst may be working with the marketing department, and the next, may be shifted to production.

Skillset: Data Modelling, Python or R programming, Tableau
Other skills: Business acumen, Database cleaning skills, Visualisation/BI, Presentation skills

Corporate Ladder: The corporate ladder for a Data Analyst/Analytics Professional/Business Analyst would look something like the following. However, it is to be noted that this designation also has the flexibility for lateral movement towards more specific and niche roles.



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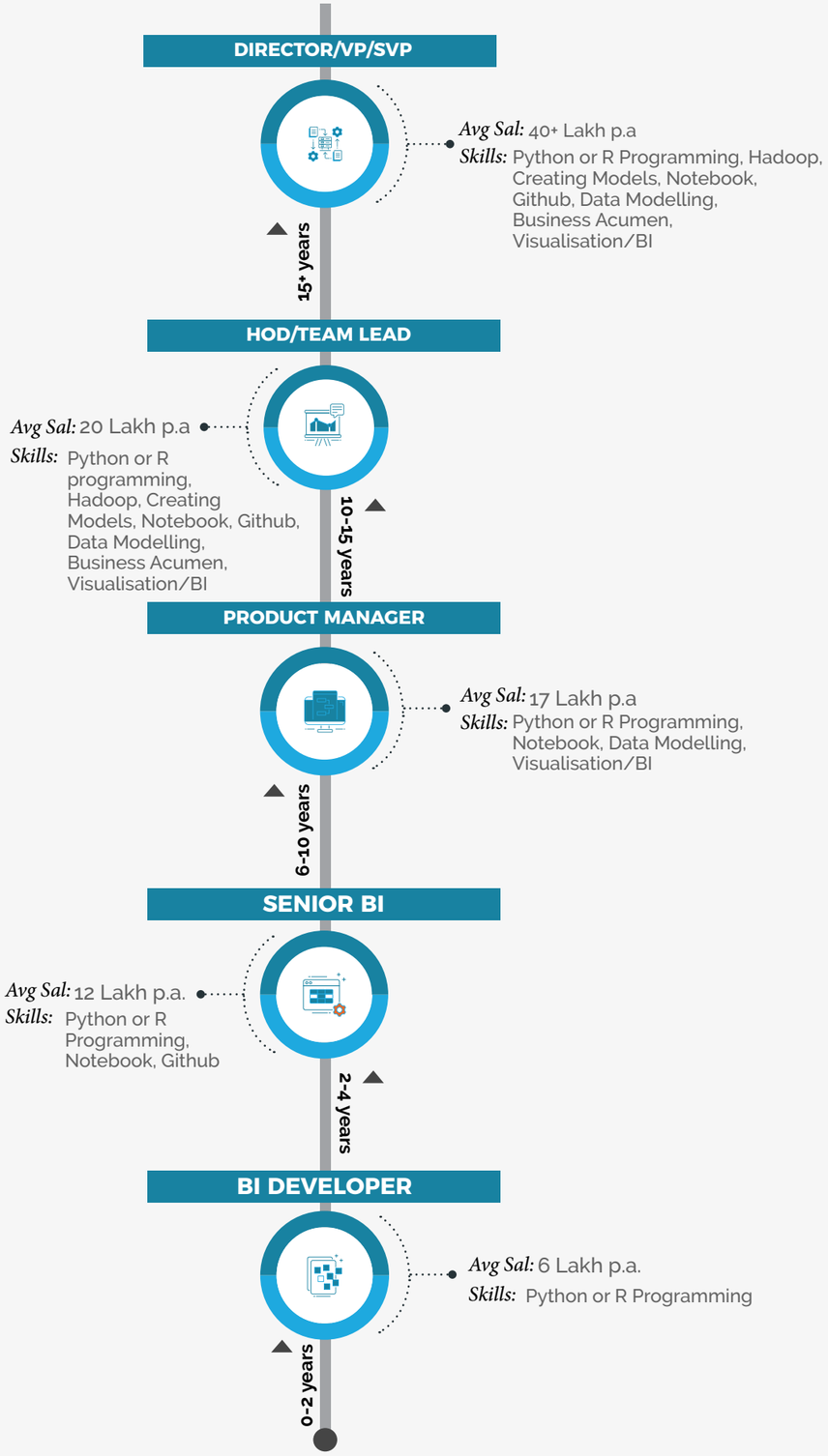
3. Data Engineer

A Data Engineer is considered as the backbone of any big organisation. Companies usually hire data engineers to channel their talents towards software development. Some of its synonymous roles are, “Data Architect” and “Quantitative Analyst”.

Role: As a data engineer works with the organisation’s core data infrastructure, this role requires a deep knowledge of programming skills. In most organisations, a data engineer is responsible for building data pipelines and correcting the data flow to make sure the information reaches the relevant departments.

Skillset: Database management, data cleaning, Python or R programming, Hadoop
Other skills: Business acumen, Database cleaning skills, Visualisation/BI, Presentation skills

Corporate Ladder: The corporate ladder for a Data Engineer/Data Architect/Quantitative Analyst would look something like the following. As this role is more niche and central to the organisation, lateral movement is uncommon. However, for the same reason, this job is the most impervious to layoffs.



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4. Business Intelligence Developer

A Business Intelligence Developer in any organisation is considered as a sort of jack of all trades who basically has to have a firm grasp on the fundamentals of analytics as well as the IT department as a whole. Some of its synonymous roles include, “Systems Analyst” and “Machine Learning Engineer”.

Role: A Computer Scientist’s role has a lot of overlaps with key functions including data science, programming and data architecture, among others. This role has greater impetus on technical, rather than analytical skills and requires advanced knowledge of all popular machine learning techniques.

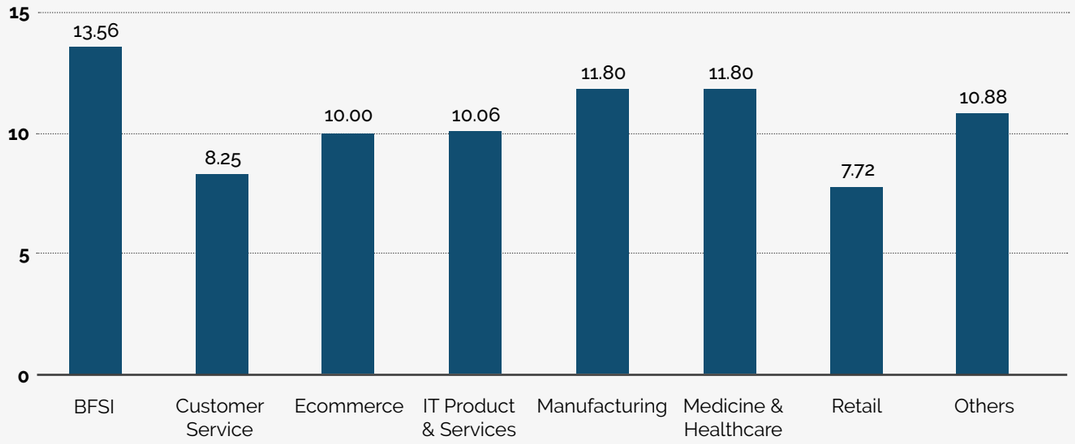
Skillset: Python or R programming, Hadoop, creating models, Notebook, Github, data modelling
Other skills: Business acumen, Visualisation/BI

Career Ladder: The corporate ladder for a Computer Engineer/Systems Analyst/Machine Learning Engineer would look something like the following. As this role has purview over almost all of the other departments, especially digital and emerging tech, there is also a great chance for lateral movement in the organisation.

Data Science Skills Matrix

	DATA SCIENTIST	DATA ANALYST	DATA ENGINEER	BI DEVELOPER
Mathematics	★★★★★	★★★★	★★	★★★
Statistics	★★★★★	★★★★★	★★	★★★
Python	★★★★★	★★	★★★★★	★
R	★★★★★	★★	★★	★
Hadoop	★★★	★	★★★★★	★
Tableau	★★★★	★★★★★	★	★★★★
Data Cleaning	★★★★★	★★★★★	★★	★★
Data Wrangling	★★★★★	★★★★★	★★	★★
Machine Learning	★★★★★	★★★★★	★★	★★
Algorithms	★★★★★	★★★	★★★	★
Business Acumen	★★★★★	★★★★★	★★	★★★★
Cloud Computing	★★★★	★★★	★★★★★	★
Database Management	★★★★	★★★	★★	★
Data Modelling	★★★★★	★★★★	★★★	★★
Notebook	★★	★★	★★	★
Familiarity with GPUs	★★★★	★★★★	★★★	★★

**this data is based on primary research conducted by GL and AIM in Nov 2019*



AVERAGE SALARY IN INR LAKH ACROSS INDUTRIES

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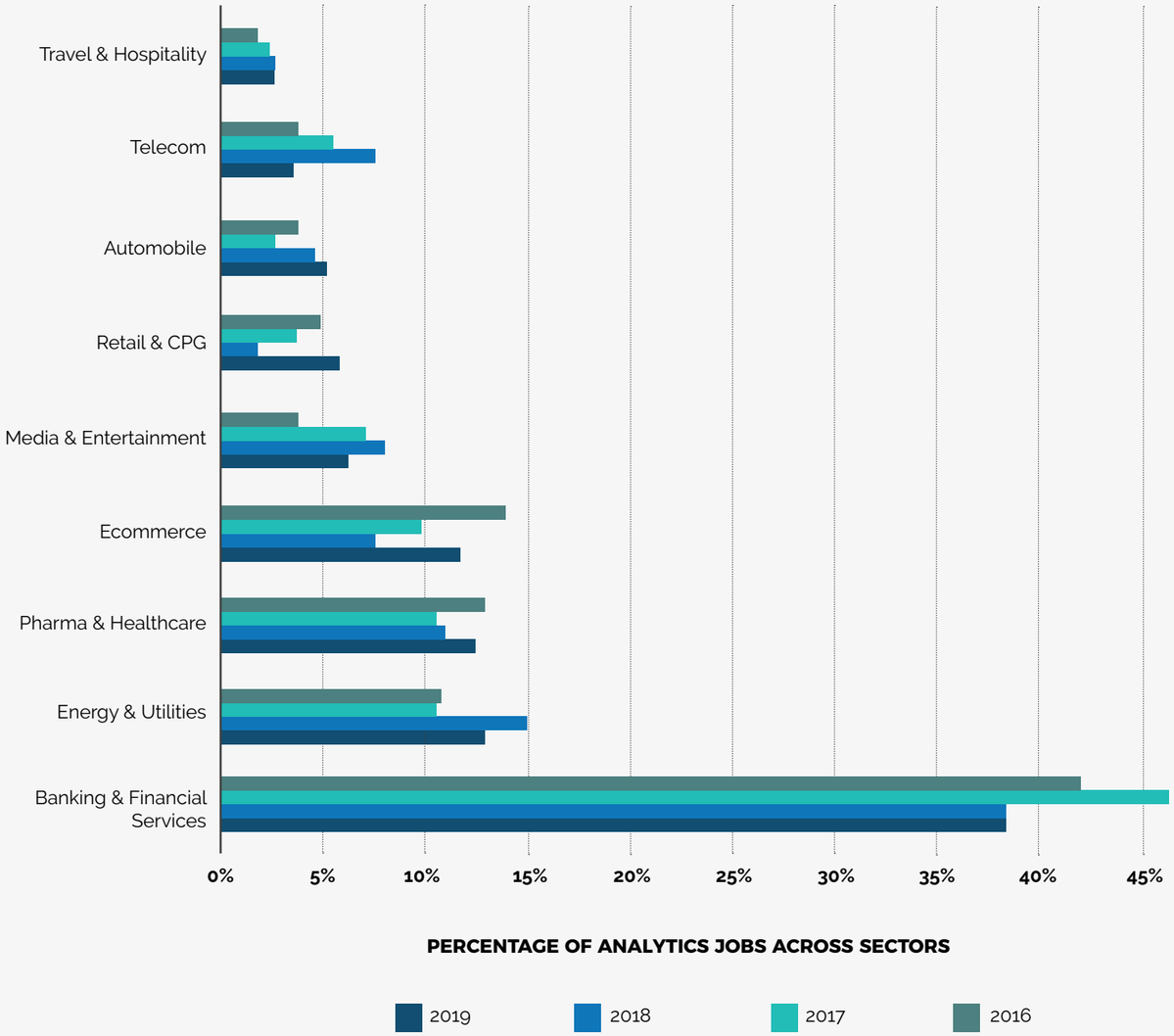
10 BEST FIRMS IN INDIA FOR DATA SCIENTISTS TO WORK FOR

Data Science Jobs Scenario In India

Creating a healthy and functional data science team is one of the most important initiatives of any organisation. However, there's no one "perfect" way to do it. As discussed earlier, there are many designations, roles and responsibilities that come under this umbrella and it depends on the need of the organisation to decide on structuring the data science teams.

With a large volume of data being generated across the world, enterprises are now looking at the minute aspects of these data to provide a nuanced experience for scores of its users. Companies are now looking for two types of professionals — specialists and generalists. Over the next few years, with data literacy becoming core to organisations, recruiters will be on the lookout for a digitally-savvy workforce who are passionate about constant learning and upskilling.

Numbers suggest that the year 2019-20 will see a healthy rise of about 62% in jobs in the data science and analytics sector. Therefore, optimistically, India should see over 1.5 lakh new job openings in this sector in the coming year.



PERCENTAGE OF ANALYTICS JOBS ACROSS SECTORS

According to reports compiled from numerous employment portals, the top job profiles posted on social media and jobs website were:

- Data Analyst
- Quantitative Analyst
- Senior Data Scientist
- Big Data Specialist
- Business Intelligence Expert

As the emerging tech industry, especially analytics, is growing at a whirlwind speed, more and more professionals are expected to segue into this sector. Consequently, the number of jobs in the data science sector is also mushrooming.

Next Step For Aspiring Data Scientists

With data science and analytics becoming an important part of most organisations, the subject has attracted wide attention among IT professionals and engineering graduates.

They are clearly keen to build a strong base in this upcoming field. The interdisciplinary application of data science, analytics, programming and coding has led to a surge in interest among students from the STEM background, who are looking to improve skills and gain a deep understanding of big data and its business applications.

> *In fact, according to research conducted by AIM and Great Learning, 71.6% of the respondents said that they want to study data science via online mode of education.*

The following four programs by Great Learning are widely regarded as one of the best programmes in offering a combination of mentorship-based and rigorous technical learning in data science:

- **PGP - Data Science and Engineering**

The Post-Graduate Program in Data Science and Engineering is offered by Great Learning in collaboration with Great Lakes Executive Learning. It is a full-time 5-month classroom program designed for fresh college graduates and early-career professionals. The program is taught by India's leading data science academicians in an immersive bootcamp format, through a learn-by-doing methodology that imparts industry-relevant and practical skills. The program also includes dedicated placement assistance to help learners kickstart their careers.

Features:
Full-time 5-month classroom program
Project-driven learning
Certificate from Great Lakes Executive Learning
Dedicated placement assistance

Pre-requisite:
Applicants should have 60% or above in Xth, XIIth and Bachelor's degree. The program is also open for candidates in their final semester and recent graduates with 0-3 years of experience. The program is ideal for graduates of a quantitative discipline like engineering, mathematics, commerce, sciences, statistics, economics, etc.

- **PGP - Data Science and Business Analytics**

The Post-Graduate Program in Data Science and Business Analytics, offered in collaboration with The McCombs School of Business at The University of Texas at Austin and Great Lakes Executive Learning, has been ranked as India's #1 Program for 5 consecutive years (2015-2019). The program is offered in convenient weekend classroom and fully online formats to enable professionals to upskill without quitting their jobs. With project-driven learning and mentorship from industry experts, the program imparts industry-relevant skills to enable learners to prepare for data science and analytics roles. Upon completion, learners get a certificate from The University of Texas at Austin and Great Lakes Executive Learning.

Features:
India's #1 Program
12-month classroom or 11-month online formats
Project-driven learning
Career Guidance
Certificate from UT Austin and Great Lakes

Pre-requisite:
Bachelor's degree with a minimum of 50% aggregate marks or equivalent.

- **M.Tech in Data Science and Machine Learning**

The M.Tech Program in Data Science and Machine Learning is offered in collaboration with Great Learning and PES University. The program is offered in full-time and weekend classroom formats with classes in PES University's Electronic City campus. It offers a comprehensive curriculum taught by leading faculty, and also features an internship or capstone project (depending on the format) and culminates in an M.Tech Thesis. Learners also get dedicated placement assistance to kickstart their careers, along with a certificate from PES University.

Features:
M.Tech Degree program
21-month course
Dedicated placement assistance
Certificate from PES University

Pre-requisite:
Candidates should have a B.Tech, B.E or an M.C.A degree, and should have a minimum of 60% in X, XII and Bachelor's degree.

- **Business Analytics Certificate Program**

The Business Analytics Certificate Program offered by Great Learning is India's first mentorship-driven online analytics program. The 6-month program is offered in a fully online format and features weekend mentorship sessions from industry experts to build practical expertise. With a learning methodology that's driven by projects, learners build job-relevant skills through the course of the program. Upon completion, learners get a certificate from Great Lakes Executive Learning.

Features:
Fully online 6-month program
Personalised mentorship
Project-driven learning
Certificate from Great Lakes Executive Learning

Pre-requisite:
Graduation in a quantitative discipline like engineering, mathematics, sciences, statistics, economics, etc, would help participants get the most out of the Business Analytics Certificate Course.

- **PGP Data Science and Analytics**

The Post Graduate Program in Data Science and Analytics is a classroom program offered in Hyderabad and Pune. The 7-month program is delivered in weekend classroom sessions and also offers online learning. Through project-driven learning, the program imparts practical and industry-relevant skills and also offers a certificate from Great Lakes Executive Learning. The capstone project at the end of the program helps learners showcase their expertise, and the career assistance offered helps them to kickstart their careers.

Features:
7-month classroom program with online learning
Personalised career mentorship
Project-driven learning
Certificate from Great Lakes Executive Learning

Pre-requisite:
At least 2 years of full-time post qualification work experience.

These comprehensive programs, led by stellar faculty, introduce learners to the fundamentals of data science and analytics concepts that underlie real-world application areas like data visualisation, model-building, targeted advertising, fraud and risk detection, etc.

As data science and data analytics are gaining prominence in the modern-day workplace, more and more aspirants are looking towards choosing a learning path that is an amalgamation of all the future skills they will need. From a strong base in technical knowledge, to more interactive and mentor-based learning, aspirants are now looking towards wholesome programmes that will make them job-ready.

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