

*This handout was compiled using information gathered through online research, and a series of interviews with people working in this field (including LUMS alumni, recruiters, and other experts). **The information presented in this handout is currently exclusively geared towards the Pakistan job market and information on international job markets is under development.** Please note this resource was last updated on **19/06/2025**, and some information may be outdated.*

For a brief overview regarding the field, please check out [here](#). Furthermore, readers are encouraged to reach out to people currently in the field and [online resources](#) for more updated information as needed.

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SECTION 1. WHAT IS DATA SCIENCE?

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A. OVERVIEW

Data Science is a relatively new and expanding professional field that often involves working with datasets for which conventional statistical methods and analytical tools may not be sufficient. Data Scientists employ various mathematical/statistical tools, coding algorithms, and machine learning models to find meaningful patterns in the data, use that to predict future trends, and present their findings to the firm/business that they are employed at. The information is then used to make better business-related decisions (e.g. data scientists working at a fintech firm that lends money can analyse consumer data to predict the probability of new/existing customers defaulting on their loans. This information can be used by the firm to minimise loan losses which would have resulted had the data not been properly analysed.) The data can also be used to make strategic insights and check for causal inference.

B. ESSENTIAL SKILLS, TRAITS, AND EXPERIENCES NEEDED TO SUCCEED IN THIS FIELD

Required Skills:

- **Data Science Fundamentals.** Fundamental knowledge of machine learning, deep learning, Big Data (very large collections of data that continues to grow over time), having an understanding of differences between data science, data analysis, and data engineering,
- **Math and Statistical Skills.** A strong foundation in Math and Statistics is necessary for a successful career in data science.
- **Data Cleaning, Manipulation, Analytics, and Modelling Skills.** Required for working and analysing large datasets. Data/statistical analysis tools such as **Python/R libraries** etc. are often used by data scientists.
- **Programming.** Data Scientists need strong programming skills to analyse huge datasets. Commonly used programming languages in the data science industry are Python, R, SAS, Java, C/C++, etc.
- **Data Visualization.** Data Scientists use graphs, charts, and other visual aids to represent their findings. Data visualisation tools such as Tableau, Microsoft Power BI, and Looker are commonly used by data scientists.

Other Skills, Traits, and Experiences good to have:

- **Machine Learning.** Data Scientists employ machine learning tools to build algorithmic predictive models. For e.g. predicting the next quarter's sales based on the data of the previous quarter's sales.
- **Deep Learning.** These tools are employed by data scientists working in industries such as manufacturing, robotics, and healthcare to create advanced artificial intelligence models. For e.g. creating safer self-driving cars or image recognition (such as for reading uploaded paychecks or tax forms).
- **Communication Skills.** Data Scientists need to be able to effectively communicate their ideas/findings to non-technical employees such as business leaders, business analysts, healthcare workers, public policy workers, etc. Strong communication skills also include having good presentation skills and writing skills.
- **Industry-Specific Skills.** Data Scientists are employed in varying industries therefore industry knowledge/skills could be useful (e.g. data scientists planning on working in the healthcare industry could benefit from the knowledge of healthcare practices).
- **Software Engineering/Development.** It may be useful to have basic knowledge of software development as it can help to write efficient and concise code.

C. SAMPLE ENTRY LEVEL JOB DESCRIPTION

Note: The following information is based on research conducted on online job platforms (e.g. Indeed, LinkedIn, GlassDoor, and Rozee. pk)

A typical entry-level **Data Science** position may include the following keywords:

- **Build data-driven products** by utilising statistical and programming skills.
- **Work in Python language** for training machine/deep learning models.
- **Mine and analyse data from company databases** to drive optimization and improvement of product development, marketing techniques, and business strategies.
- **Develop custom data models and algorithms** to apply to data sets.
- **Translate analytical model results** to business insights for the clients.
- **Work closely to produce the algorithms** that address real-world data.
- **Gain and master a comprehensive understanding of company operations, processes, and business objectives** and utilise that knowledge for data analysis and business insight

SECTION 2. WHAT ACADEMIC CHOICES DO I NEED TO MAKE IN LUMS IF I WANT TO JOIN THIS FIELD?

- A. Majors and Minors
- B. GPA
- C. Useful courses for knowledge and skill development
- D. Study Abroad
- E. Research
- F. Other Tips

A. MAJORS AND MINORS

Note: This information was collected in the summer of 2021 and might be incomplete or outdated. For more updated information, kindly contact [CSO](#) or alumni/professionals currently working in the field and check the [Undergraduate Student Handbook](#) (please download the handbook relevant for your academic year) for information on the requirements of various majors and minors offered at LUMS.

- **There are no major or minor requirements to enter the field of Data Science.** Firms look for applicants who demonstrate having the [required skill set](#) (Mathematics, Statistics, Data Analysis, Programming, Data Visualization, etc.) instead of just the undergraduate degree therefore, it is common for data scientists to come from diverse academic backgrounds.
- **It can be helpful to major in Computer Science, Mathematics, Economics, Economics and Mathematics, Electrical Engineering, or Physics** as they provide the coursework and research project opportunities needed to build the [required technical skills](#).
- **Though there are no minor requirements**, since Data Scientists may be employed in many industries/fields (Consulting, Finance, Psychology, Education, Biology, etc.), it can be useful for students to take minors in their prospective field of interest (e.g. if a student is planning on working as a Data Scientist at a financial services firm, then a minor in Computational Finance or electives in Finance may be useful).
- **Students can also decide to take a minor (or take electives) to support [skill development](#)** by pursuing subjects such as Computer Science, Economics, Psychology, Biology, Chemistry, Mathematics, or Computational Finance, etc. that can help students develop technical skills that may be useful when applying for Data Scientist roles in the respective industries.

B. GPA

- **There are no specific GPA requirements** but a high GPA can make students stand out to employers while a low GPA may indicate a lack of work ethic to hiring firms; students should always aim to do well in their classes.
- **However, companies look for demonstrable skills** (shown via succeeding in key courses, having excellent coding and quantitative skills, internship experience, and other non-academic experiences, etc.).
- **Tech companies focus on entry-level applicants' research projects, coursework, and other non-academic experiences** as they are better indicators of [technical skills](#) developed by students during their time at LUMS.

C. USEFUL COURSES FOR KNOWLEDGE AND SKILL DEVELOPMENT

Note: This is not an exhaustive list. Please refer to the [course memos](#) (courses being offered in a specific semester and their requirements) for a more updated list of courses and the [course outlines](#) (resources to help students understand the course) to know the topics being taught within those courses.

General Requirements:

- **There are no required courses to enter the field of Data Science.** Students should plan on taking courses that will develop the [required general skills](#) (quantitative, data analysis, data visualisation, programming, research, etc.). Below are some of the courses that were recommended by alumni that students should take to be prepared for entry-level jobs in data science.

Key useful courses:

- **Mathematics courses such as Calculus, Linear Algebra, Probability, and Discrete Mathematics** are useful in understanding the fundamentals of Data Science ([data modelling](#), [neural networks](#), [statistical inference](#), and various computing structures) that are covered in other Math-intensive classes.
- **Statistical courses such as Statistics, Econometrics, and Data Mining** are useful for developing data analysis and research skills that require an understanding of required concepts (statistical theory, hypothesis testing, data cleaning, and machine learning).
- **Computer science courses such as Computer Solving Problem, Introduction to Programming, Advanced Programming, Data Structures, Algorithms, Databases, etc.** can help to develop coding and object-oriented programming skills that are required for a career in data science. These courses would also be useful in getting exposure to various programming languages that are used by data scientists.
- **Writing courses that cover English, Writing, and Communication, etc.** will help to improve writing and communication skills which are necessary for data scientists to communicate their complex ideas with non-technical staff.

D. STUDY ABROAD

- **Taking a study abroad semester is not required for entering this field but students may find a study abroad semester helpful** for taking key useful courses that are not offered in LUMS, building up communication/presentation skills, connecting with other aspiring data scientists, and getting exposure to the rapidly evolving data science industry, while also increasing their awareness of how global “Big Data industry” is.
- Students should contact the [Office of International Affairs \(OIA\)](#) for information regarding study abroad opportunities and linkages that LUMS has with universities abroad.

E. Research

- **Research is not required for entering this field but is highly recommended** as it provides an avenue to apply the practical knowledge (e.g. coding skills, data analysis, data visualisation, hypothesis testing, etc.) learned in lectures and build on relevant soft skills e.g communication, writing, and presentation skills.
- **The Computer Science major has a mandatory research-intensive Senior Project (SPROJ)** where students are expected to choose an original topic/idea, conduct research, and apply the concepts learned in previous classes. This is a good opportunity for students to not only build upon their coding skills but also refine their data analysis, data visualisation, and hypothesis testing skills. This project can also be used as a potential project/work to show to employers and add to their professional portfolios.
- **Other majors such as Economics, Electrical Engineering, and Physics also have senior year research project (SPROJ) components** which would also be useful in developing the required technical skills
- **There are other formal and informal avenues for research that students can participate in** (through faculty-sponsored undergraduate research, class projects, building independent projects, Research Assistantship opportunities, etc.) that can also contribute to building the required skill set.

F. OTHER TIPS

- **Students should create a [GitHub](#) profile** where they can upload their class individual projects, senior projects, and projects undertaken outside of the classroom. GitHub is an online repository hosting service where students

can showcase their projects, participate in projects, connect with other industry peers globally, and network with senior Data Scientists.

- **Students should aim at complementing the above academic experiences with non-academic experiences** (e.g internships, competitions, relevant extracurricular activities, etc.) as recruiting firms tend to focus equally if not more, on applicants' non-academic activities when evaluating them entry-level data science positions. Please refer to the section [below](#) for further information on non-academic experiences.
- **Students can get relevant work experience by working in open source projects.** For software engineers, this could be "Data platform" or tool specific things, such as data apis, design and development. Students can practice skills such as finding and fixing bugs and building their own utility tools.
- **Students should also refer to the [OAASS website](#)** for more resources on exploring [majors](#) at LUMS.
- **Students should choose any coding language (R, Python, C++, Julia, Java, etc.) but aim at becoming proficient in it** as the programming logic behind each language is very similar (E.g. someone who is highly proficient in Java would have little difficulty in quickly learning python if their company of interest uses it.).

G. If you are weak in an academic area (useful for entry into this field) you should:

- **You have not taken any of the recommended majors --** While the above-mentioned majors are highly recommended by alumni, students should plan on taking the key coursework while supplementing them with [non-academic experiences](#) or online courses. Otherwise, students may have to go to graduate school or pursue alternative professional development opportunities after graduation to compensate for the lack of academic/non-academic background.
- **You have an extremely low GPA --** It needs to be reiterated that there are no specific GPA requirements. A successful career in Data Science depends a lot more on other factors such as the development of technical/soft skills which can be developed by focusing on key courses, online courses, pursuing internships, networking, and other extracurricular activities. Students can refer to their academic advisors who can support them in improving their GPA.
- **You are graduating without taking some of the key courses --** Explore Online Training Programmes such as [LinkedIn Learning](#), [Coursera](#), [Skillshare](#), [Udemy](#), [Codecademy](#), [StatQuest](#), [Datacamp](#), [DataSchool](#), etc. that can be used to bolster your coding skills, data analysis skills, and other relevant technical skills.
- **You did not do well in the key courses --** In this case, students should plan on taking online courses that cover the required coursework material and couple that with non-academic experiences that provide the relevant skill development (e.g. internships, projects, competitions, etc.)
- **You do not know much about Data Science --** It is important to conduct career research. Read up on tech magazines and Data Science journals such as [CODATA](#) and [Harvard Data Science Review](#) to learn up on the rapidly evolving and growing data science industry. Furthermore, there is plenty of information available online that gives exposure to the field, and also resources that can support skill development. Students should also talk to their professors, alumni, and other junior/senior data scientists.

SECTION 3. WHAT NON-ACADEMIC ACTIVITIES SHOULD I PURSUE IN LUMS IF I WANT TO JOIN THIS FIELD?

- A. Internships
- B. Projects
- C. Research Assistantships/Teaching Assistantships
- D. Competitions
- E. Extracurricular Activities

A. INTERNSHIPS

- **Internships during undergraduate studies are not a requirement to enter the field of Data Science but can be very helpful** in the development of professional and [technical skills](#) (coding, increase in knowledge of fundamentals of data science, corporate communication, presentation, etc.). A successful internship experience may also be converted into a full-time opportunity.
- **Students can choose amongst data science internships** by looking for internship job descriptions that support the relevant skill development.
- **Data Science interns' job responsibilities may consist of** data cleaning/extraction, learning data algorithms and data visualisations, collaborating/assisting senior data scientists with their data models, researching technical issues, learning new programming languages, attending team meetings, and taking notes, while also learning about new developments in data science.

B. PROJECTS

- **Students are not required to pursue Data Science projects but are highly recommended to do so.** Data Science projects are similar to class projects and major Sproj except students can undertake them at their own pace and they are less formal. These projects involve coming up with an idea/problem about something that is of interest and testing/figuring it out on a large dataset using data science tools and the theoretical concepts learned in classes (e.g. constructing a model that predicts the spread of Coronavirus).
- **Data Science Projects support the development of students' programming and research skills** and provide an opportunity to come up with new innovative ideas that can be applied in the Data Science industry. They also help in the development of a student's professional portfolio.
- **Students can pursue data science projects on online sites such as [Kaggle](#), [Drivendata](#), [Github](#), [Gitlab](#), [Hackerrank](#), etc.** which provide an interface where students can not only undertake projects but also collaborate with other developers to code, and get assistance for their own and class projects.

C. RESEARCH ASSISTANTSHIPS/TEACHING ASSISTANTSHIPS

- **Research/Teaching Assistantships are not a requirement to enter the field of Data Science.**
- **Research Assistantship opportunities** with the Computer Science/Math/Economics faculty can enhance data analysis/visualisation skills, increase industry knowledge, and develop research and writing skills.
- **Teaching Assistantship opportunities** with the Computer Science/Math/Economics department faculty can help in applying the technical concepts learned in class and develop the required soft skills e.g. communication skills, presentation skills.
- **These opportunities also allow students to network with relevant faculty members** as they can connect them with Data Science alumni, Tech firms, recruiters, and other non-alumni Data Science professionals. Forming long-term connections by undertaking research with professors or assisting them with their classes may help in getting letters of recommendation that may be required for entry-level jobs and graduate study programmes.

D. COMPETITIONS

- **Coding and other Data Science related competitions are not a requirement but good to pursue** because they provide a platform where students can self-assess their programming skills and also compare their skills with other aspiring data scientists, network with professionals, and develop a habit of delivering results under pressure
- **Students are encouraged to participate in relevant coding competitions such as [Kaggle](#), [International Data Analysis Olympiad \(IDAO\)](#), and [DrivenData](#)** to develop [data modelling](#) skills, machine learning skills, or publish their datasets and network with the global data science community.
- **Hackathons such as the LUMS CodinGuru are also helpful** because students can exhibit their programming skills, data analysis skills, and develop relevant soft skills (problem-solving, communication, and teamwork).

E. EXTRACURRICULAR ACTIVITIES

- **Participating in extracurricular activities is not a requirement but would be good to have** to support technical and soft skill development. Any non-academic activities that demonstrate leadership, organisational, public speaking, and other relevant soft skills needed to be successful as a Data Scientist are good to pursue. Students coming from diverse non-academic backgrounds are more sought after by larger global firms.
- Students should join and take leadership roles in any student society to broaden their experiences but societies such as **SPADES (Society for Promotion and Development of Engineering and Sciences)**, **The Design and Innovation Society of LUMS (iNDEX)**, **LUMS Women in Computing (LWiC)**, **LUMS Students Mathematics Society (LSMS)**, **LUMS Data Science Society (LDSS)**, etc. can be particularly helpful since students can participate in networking opportunities, coding boot camps, and other professional events.
- Students interested in Data Science are encouraged to participate in extracurricular activities that help in the development of communication skills. This could be in the form of **team sports**, **Debates and Recitation Society (DRUMS)**, or **LUMS Model United Nations Society (LUMUN)**.

F. If you are weak in a non-academic area (useful for entry into this field):

- **You did not pursue any non-academic activities during your time at LUMS** -- Non-academic activities such as internships, competitions, and RA/TA-ships can also be pursued after graduation.
- **You were unable to pursue internships** -- Internship opportunities are also open to fresh graduates. Likewise, the skills acquired through internships can also be developed by pursuing other opportunities e.g projects, coding competitions, research assistantships, etc.
- **You did not pursue projects** -- Students are not required to build their projects for entry-level roles in Data Science but are highly recommended to pursue them. However, students can compensate by taking [SPROJs](#) (it is a requirement for computer science majors, and good to take in other relevant majors), and other experiences that promote the development of technical skills (e.g research assistantships, coding competitions, etc).
- **You did not take part in coding competitions** -- Students will get extensive coding experience in the recommended computer science and econometrics courses. Nonetheless, there are alternative online platforms to practise and display your coding skills (e.g. [Codecademy](#), [DataCamp](#), [freecodecamp](#), etc.)
- **You are not familiar with internship opportunities/networking events happening on campus** -- Contact the [Career Services Office](#) to get assistance in areas of career planning and higher education opportunities. Mentoring or outreach to relevant alumni will allow you to better market your skills that may not be visible on your resume. Use online platforms such as [LinkedIn](#), [LUMS Discussion Forum](#), [Glassdoor](#), [GitHub](#), and other **Professional IT websites, etc.** to expand your network to include non-alumni junior and senior Data Scientists/Engineers, recruiters, and other aspiring Data Scientists.

SECTION 4. WHAT CAN I DO TO ENTER OR TRANSITION INTO THIS FIELD AFTER GRADUATING?

- A. Entering this field as a Fresh Graduate
- B. Value of Graduate study for entry
- C. Value of Professional Development/Training for entry
- D. Value of working in related careers to improving chances of entry
- E. Other experiences/tips for improving chances of entry into this field
- F. Transitioning into this field

This section is relevant for i) fresh graduates who have just started exploring this field, ii) alumni who have been applying but have been unable to break into the field and, iii) alumni who want to transition into this field.

A. ENTERING THIS FIELD AS A FRESH GRADUATE

- **Fresh LUMS graduates can enter the field of Data Science** provided they have strong academic and non-academic experiences. There is no requirement of graduate studies or any other form of professional certification for entry-level positions. Securing entry-level positions soon after graduation will also help graduates to apply their technical skills in a professional setting and start developing their professional skills.
- **If fresh graduates are unable to secure a job or do not have a strong enough background**, they can take online courses, build data science projects, take part in competitions, and pursue RA/TA-ships, etc to become more eligible for entry-level positions.
- **Fresh graduates are also eligible for Data Science internships** and should pursue these opportunities if they are struggling to secure full-time positions or would like to bolster their professional skills. It may be possible that a successful Data Science internship is converted into a full-time opportunity.

B. VALUE OF GRADUATE STUDY FOR ENTRY

- **Graduate study is generally not a requirement for entering this field** unless students graduated without having the required technical skills and don't plan on pursuing alternative professional development/training opportunities.
- **Fresh graduates that do not have strong academic/non-academic experiences and are struggling to secure an entry-level position** could find alternative professional development opportunities (coding boot camps, coding platforms, online courses, etc.) and non-academic activities (RA/TA-ships, Projects, Coding competitions, etc.) more useful as they require a lower financial commitment and tend to be less time-consuming than graduate study programmes.
- **Fresh graduates that have relevant academic/non-academic experiences and feel confident in their skillset** are recommended to gain some work experience (ideally 2-3 years) first before pursuing graduate studies in data science or other related fields (e.g. Computer Science, Statistics, Business Analytics, etc.).
- **People with a graduate degree and no relevant work experience could be competing for entry-level positions.** Due to the nature of the data science industry, work and other experiences that demonstrate to employers that applicants have the required technical skills can be more important than educational credentials. However, some alumni have said larger firms do tend to recruit graduate students for higher-level positions only regardless of previous work experience.

Note: Students should contact the graduate study programmes that they are interested in for academic or non-academic requirements and funding opportunities. Aside from tuition costs that graduate Data Science programmes carry, graduate students should also be aware of additional costs such as living expenses, application costs, technology, and textbooks.

Graduate Study is a good option if:	Graduate Study is a bad option if:
• If you don't feel confident in your technical skills then you may pursue graduate studies as a way to strengthen your skillset. • You are planning on moving to a different country. In that case, it can be useful to pursue graduate studies in your country of interest as a way to break into the field. • You do not plan on pursuing alternative opportunities. Some graduates may not feel comfortable pursuing alternative professional development opportunities and for them, it may be better to go to graduate school to gain the required experiences needed to be eligible for entry-level positions. • You want to develop specialised expertise, then a graduate degree could be a great way to build upon specialised technical skills. Subfields include Machine Learning, Deep Learning, Data Engineering, Cloud and Distributed Computing, etc. (Some of these subfield roles may require a Ph.D. degree). If students want to do data science research or grasp statistical concepts, then a graduate degree is preferred.	• You already have the relevant technical and soft skills. In that case, you should concentrate on improving your job application skills (resume, cover letter, etc.), practising coding, and devoting more time to networking to get a foot in the door • You haven't considered alternative options. Alternative options include online courses, freelancing, projects, coding competitions, coding boot camps, etc. which not only are much cheaper but in the case of freelancing, will allow you to earn money while also building up on your technical skills. • You cannot bear the opportunity cost of taking time off for graduate school. Going to graduate school is not only costly but also means foregoing relevant work experience and the resultant financial compensation • You think the graduate study programme will make you eligible for higher positions without relevant work experience. Tech firms generally place a higher value on candidates with work experience rather than candidates having a graduate degree without any work experience. Therefore, you may be competing for the same junior-level entry-level positions with applicants with a bachelor's degree.

C. VALUE OF PROFESSIONAL DEVELOPMENT/TRAINING FOR ENTRY

- **There are no specific professional development or training programmes required for entering the field of Data Science** however, taking relevant online courses, certifications, or coding boot camps can help to strengthen fresh graduates' technical skills and thereby increase their chances of securing entry-level jobs.
- **Fresh graduates can pursue online coding courses (Java, Python, C, etc.) on coding platforms such as Codecademy, DataCamp, etc.** to build/strengthen their coding skills which are required for entry-level data science positions.
- **Other online courses can also be pursued on online platforms such as LinkedIn Learning, Coursera, Skillshare, and Udemy.** These platforms offer various courses on Discrete Mathematics, Programming, Database Management, Software Quality Assurance, etc. at varying skill set levels.
- **Fresh graduates who do not have sufficient academic/non-academic experiences can also pursue certifications such as IBM Data Science Professional Certificate, Microsoft Certified: Azure AI Fundamentals, and SAS Data Science Certification** for gaining the required technical skills and adding credentials to their resume. However, these types of certifications are recommended to be pursued after gaining some relevant work experience as they may help in transitioning into specialised senior roles.
- **Not all professional development opportunities have equal value.** For instance, many companies in Pakistan hesitate from hiring students coming from coding boot camps therefore, students would be better off pursuing online courses and using coding platforms instead.

- If fresh graduates already have the required technical skills and have undertaken sufficient projects, then they should not pursue certifications and focus on securing entry-level roles as quickly as possible.

D. VALUE OF WORKING IN RELATED CAREERS TO IMPROVING CHANCES FOR ENTRY

- It can be valuable to work in related careers like Tech Consulting, FinTech, Software Development, Statistics (through internships, freelancing, work experience, research work) if graduates are unable to find a job in data science as these related fields can support the development of important skills for Data Science, e.g programming, data analysis, project management, time management, and other professional soft skills.

E. OTHER EXPERIENCES/TIPS FOR IMPROVING CHANCES OF ENTRY INTO THIS FIELD

- If fresh graduates are not hearing back from data science positions they have applied to, they should not get discouraged. Competition for data science positions is tough due to limited positions but as the field is applicable in several industries, the demand for data scientists is only expected to rise.
- Before fresh graduates decide which professional development opportunities they should pursue, it is recommended they reach out to alumni and other senior data scientists and get their feedback.
- The recruitment process for full-time/internship data science opportunities in Pakistan is not that formal and highly disorganised (e.g tech firms may not actively recruit for data science positions on-campus or firms may have data science positions but they may advertise them as data engineering, data analytics, data architect, etc.). Therefore, fresh graduates are encouraged to reach out to other fresh graduates, senior LUMS alumni, and their LUMS professors who may be familiar with work experience opportunities. Fresh graduates should directly reach out to HR departments at firms and inquire about junior data science positions.
- Students/Fresh graduates should learn how to better market their skills. For example, they should upload their projects to LinkedIn and Github, so their work is visible to potential employers and recruiters.
- Networking with alumni, recruiters, and other professional contacts is highly recommended. For detailed information on networking, check out the [guide to effective networking](#).

F. TRANSITIONING INTO THIS FIELD

- It is possible to transition from other fields to Data Science, provided people have the required technical skills (Programming, quantitative, data analysis, etc.) needed for entry/mid-level roles. Transferable soft skills such as communication, business development, writing, etc. may be useful. Relevant technical skills can be gained either on the job or by taking online courses, professional certification, graduate studies, etc.
- Industries that people generally transition from are Financial Services, Engineering, Consulting, Entrepreneurship, Academia (Statistics, Mathematics, and other quantitative fields), and Economics.

G. WHERE HAVE LUMS GRADUATES WORKED IN THIS FIELD?

Note: The following is based on alumni data from alumni from the classes of 2021-24, who responded to CSO surveys, and is not an exhaustive list of potential careers or all careers pursued by alumni:

Sector	Organization	Roles	Country
Education	LUMS	• Data analyst	Pakistan
	Namal Education Foundation	• Data analyst	Pakistan
	Beaconhouse School System	• Data analyst	Pakistan
Research	IPSOS	• Data input	Pakistan
	Pakistan Air Quality Initiative	• Data research analyst	Pakistan

Real Estate	Landgate	• Data analyst	Pakistan
	Unison Infrastructure	• Data analyst	Pakistan
Consultancy	Data Pilot	• Data scientist	Pakistan
	Acacus	• Data analyst	Pakistan
Information Technology	OLX Pakistan	• Data analyst	Pakistan
	Infolyze Solutions	• Data engineer	USA
	AutoLeap	• Data analyst	Pakistan
	Nextbridge	• Data scientist	USA
	i2c Pakistan	• Junior data analyst	Pakistan
	Afiniti	• Associate data scientist	Pakistan
	Gigalabs Ltd.	• Data scientist	Pakistan
	Royal Cyber	• Junior data scientist	Pakistan
	Jazz	• Data & strategy associate	Pakistan
	Telenor Pakistan Limited.	• Data scientist	Pakistan
Paints & Chemicals	Weber Saint Gobain	• Data scientist	Turkey
E-commerce	Tajir	• Data scientist	Pakistan
	Dawaai.Pk	• Data analyst	Pakistan
	AimFit Fitness Studios	• Data product manager	Pakistan
	Careem Pakistan	• Data engineer	Pakistan
Food Services	Kitopi	• Data analyst	UAE
Fin-tech	Aion Digital Ltd	• Data analyst	Pakistan
	Finja	• Data engineer	Pakistan
	CreditBook	• Data analyst	Pakistan
FMCG	Pakistan Tobacco Company Limited	• Data analyst	Pakistan
	Breville USA, Inc.	• Data analyst	Remote

APPENDIX: CONTRIBUTORS AND OTHER RESOURCES CONSULTED

- A. Sources you should consult for more information
- B. Online Resources Consulted
- C. Contributors

A. SOURCES YOU SHOULD CONSULT FOR MORE INFORMATION

- [What is Data Science?](#) By LUMS Data Science Society
- [Open Source Guide](#) for open source project contributions
- [Towards data science](#) and [our world in data](#) for keeping up to date with the rapidly evolving industry
- [What is data modelling?](#)
- [Practical Programming for beginners](#)
- [StatQuest](#) for learning probability, statistics, and Machine Learning
- [What is Job Shadowing?](#)
- [Guide to effective job networking](#)
- [Societies at LUMS](#)
- [LUMS OAASS Website](#)

B. ONLINE RESOURCES CONSULTED

- [What is data science?](#)
- [What skills do you need to become a data scientist?](#)
- [5 best undergraduate degrees for getting into Data Science](#)
- [Undergraduate Student Handbook 2024-2025](#)

C. CONTRIBUTORS

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