1 Is Data Analytics Right for Me?

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What does it even mean to be a data analyst? Before you can dive into data, you probably have a lot of questions about what it would really look like to be a data analyst. If you are in a completely different career (like I was before I transitioned into data), you may want to know about the day-to-day and what would make you a good analyst.

Once you understand what it looks like to be a data analyst, you can make a more informed decision about whether it will be the right fit for you. At the start of my journey, I was unsure if I would enjoy the work of data analytics, but I knew that the idea of remote, flexible work was appealing. Fortunately, I ended up loving everything about being a data analyst once I dove in. It turned out it is the right fit for me!

Since data analytics is a broad and diverse career path, there are many different options for what this career path can look like. In this chapter

I will share with you the basics of what it's like to be an entry-level data analyst, as well as career progression options.

What Does a Data Analyst Do Every Day?

Later in this book, I will talk about what my day-to-day looks like, and share some stories from other data analysts I know whose jobs are vastly different from mine. For now, let's just talk generally about what data analysts do day to day.

Something that I love about the field of data analytics is that it is incredibly diverse. I don't know two people in data who do the same thing. The thing is, unlike other career paths, there is no one "area" that data analytics belongs to. If you're a nurse then it's fairly predictable that you are going to be working with the human body. Real estate agents pretty predictably sell houses and properties. But every industry out there has data, doesn't it?

That means if you become a data analyst you might need to know about

- Banking
- Healthcare
- Stocks
- Insurance
- Auctions
- Manufacturing
- Research
- Sales
- Marketing
- Human resources (HR)
- Construction

The list goes on and on. Although there is a core set of tools and skills that most data analysts will need, the day-to-day of the job is going to be heavily influenced by the demands and culture of the industry and company that the role exists within.

I have found that generally there are two primary divisions to "data analytics," but almost all roles mix and match from both. Data analytics tends to represent the technical aspects of the job—which means utilizing

things like Microsoft Excel and SQL to analyze data and draw conclusions. However, almost all analyst roles also incorporate "business analytics," which involves taking what you learn from your technical data explorations and applying it to the real problems and challenges facing the business.

A common phrase in the data sphere is "heads-down work." That refers to when you are doing a deep dive into the data/project. Heads-down work tends to be pure analysis/building, so it doesn't involve emails, meetings, or presentations. A role that leans more heavily toward the "data" side of analytics tends to have more heads-down work. When there are meetings, they are often an internal review of the work that has been done and planning for future work.

Roles that lean more toward the "business" side of analytics, on the other hand, will involve a lot more face-to-face time—internally and externally. This might mean spending some time doing heads-down analyses but then presenting that information to internal executives or external stakeholders or people this analysis affects. It may also involve observing and taking part in processes within a business—I find this to be especially common in small businesses/start-ups that are still defining how they will collect and organize their data.

As I have gotten deeper into the data space, I have realized that oftentimes the most valuable part of an entire data project is the meetings that happen at the beginning—before anyone has even looked at any of the data. These meetings are more than just requirement-gathering sessions; it is the time when knowing how to ask the *right* questions will determine not only how successful a project is, but also how long it takes. As a data analyst, it's your job to have a clear understanding of what the business problem is that you are trying to solve (using data), and how what you are doing is going to directly impact the mission/bottom line of the business.

As a note, I'm not sure why, but I don't know if I have ever actually heard someone use the counterpart "heads-up work." I think I used it in one of my interviews and now I look back and wonder if they thought it was a weird thing for me to say!

Although I think it is possible to get a role that is strictly a "business analyst" role where you hardly even touch any of the technical tools, or conversely to get a purely "data analyst" role where you do not have to go to any meetings or gather any business requirements, that is incredibly rare.

Additionally, it is short-sighted. That could work for someone who is entry-level, but even a mid-level analyst generally needs to know how to do both.

Most analyst roles are going to end up being a mix of gathering requirements, heads-down work, meetings, the occasional presentation, and more generally, spending time thinking about a project plan. For example, in my role as a consultant I spend about 5–10 hours a week meeting with clients to plan, validate my work, and show them what I have been working on. Another fiveish hours a week go to internal meetings, many of which are with my boss to check in about my projects and get support where I need it. The remaining hours I spend getting connected to data, analyzing it, and visualizing it.

Hours / Time

One of the biggest selling points for me when it came to switching careers into data analytics was that I could work remotely. Not every data analyst role is remote; I think about one-third of the entry-level analysts I know work in person (in an office) or hybrid (a mixture of both). Lucky for me, my role is 100 percent remote. In fact, my company doesn't even *have* an office. We do have a subscription to coworking spaces, though, should I need that option.

The day-to-day of someone who works from home is naturally going to look different to someone who works in an office. All of the analysts I know who work in an office have told me that it is the standard schedule of commuting to work, packing their lunches, and working fairly normal office hours. Everyone I have talked with who works in the office has said that instead of tracking their time, their progress is monitored based on their progress toward their projects/goals and that they are generally expected to just be there during normal hours.

When I changed careers and got this (fully remote) job, I was so curious about what that was going to look like. Would I still be expected to work a normal 9 to 5? How would they track my time? Although I am technically a "consultant," I do work for my company full time, I get benefits, and so forth. So I'm not a "freelancer."

I cannot stress enough how much I have loved working remotely. My company has a good culture, which is part of the equation. I am generally expected to be available during standard working hours. I have multiple clients at a time, so I'm also expected to be scheduling meetings with my

clients during normal working hours and attending internal meetings during the workweek. Which is normal and completely reasonable.

However, is my boss tracking if I am in my seat by a certain time? Or if I am working my hours at a certain time of the day/day of the week? Absolutely not. On a normal day I will wake up (without an alarm!) and start working by about 9 a.m. Sometimes during the day I will step out to go grocery shopping, do some laundry, or go for a walk. If I am not feeling well I will sleep in, or I will log off early (if I don't have meetings to attend).

I do have to bill a certain number of client-facing hours (working on a client's project or meeting with them) as well as internal hours (working on internal projects or participating in learning, research, and skill development). Since I generally prefer to be flexible in my daily routines, I will often work a few hours on the weekends to make up for time during the week when I was busy with other things (like grocery shopping).

This works for me, but it isn't expected! My coworkers tend to work their full workweeks during standard weekday hours, and then they log off for the entire weekend. The point here is that since we work remotely, we are allowed more control over our schedules and flexibility with them than we would if we worked in an office.

As someone who was about to go into healthcare, this kind of flexibility is mind-blowing to me. I have friends from graduate school who have told me that they needed to use some of their (very limited) paid time-off (PTO) time just for doctor appointments. And, when they did use their PTO to go to the doctor, their boss made them feel guilty about it the entire time because things could not run as smoothly without them there.

I have talked with many other data analysts who work remotely, and not everyone has had the same experience as I have. A handful of people have told me that although they work remotely, they are expected to be at their desks from 9 to 5 as they would at an office job. If their boss were to call them on Microsoft Teams (a common app that businesses use for communications) and they did not pick up, that could lead to them getting in trouble if it happened a few times. Coincidentally, those are also the people who tell me they are actively upskilling so they can look for a new job.

A middle point between their experience and mine is what I see as the most common set of expectations for a remote data analyst role. Most people I talk to who work remotely generally are expected to work a normal 9 to 5. However, if they had a doctor's appointment during the day or needed

to take a short break to go for a walk, they would just have to talk to their managers about it, and it would be fine.

I have talked to several transitioned teachers/healthcare workers who have remote jobs that are like the third option I talked about. We marvel together at how much of a relief it is to be able to take care of things like doctor appointments during the day without spending every minute of it worrying about work—and having to use PTO to do it. This is especially relevant to my friends who have children, pets, and more responsibilities than just a few cacti (like me).

This may be unique to me, but another perk of working from home is that I am working from . . . home! This means that I never have to change out of sweatpants, I completely control the temperature, I can play whatever weird music I want to (or have it be completely silent when I am feeling overstimulated!), and I have access to my full kitchen and refrigerator.

I don't know about you, but one of the hardest things about being an adult is having to feed myself every day. Now that I work from home I can stick some food in the oven mid-morning, and it's ready by lunch time. When I need a movement break in between meetings in the afternoon, I can get up and do the dishes left over from my lunch. Not having to pack my lunch every day saves me a lot of headache and a lot of money. I almost never eat out anymore because it's so much easier to just make something in my own kitchen.

One final point on the general workday of a data analyst—especially one who works remotely—is the topic of the workspace setup. Many people take a lot of joy in setting up a workspace that they love, whether it be plants, a cool second monitor, or funky lighting. A hot topic on LinkedIn right now is standing desks + under-desk treadmills.

When I worked as a nanny and later in occupational therapy clinics, I had a pretty physical job. I was walking around a lot! Many people tell me, "Oh, I could never get a computer job, I couldn't stand sitting all day!" Enter the under-desk treadmill—or just walks. I live in New England, so it gets pretty cold here in the winter time. So, I invested in an under-desk treadmill. Once I got used to it, I can pretty much do any kind of work while walking, although I don't take client meetings from the treadmill.

In a standard week, I walk 10–20 miles on my little treadmill while I am working. It is pretty common in the data space to hear people talking about

getting out to take walks during the day when the weather is nice. Yes, as data analysts we do have desk jobs. But to think of it as completely sedentary is a big misunderstanding! I also have found that working at a job that I genuinely enjoy, where my boundaries are respected and I am not having to deal with unhappy people all day, leaves me feeling energized. At the end of the day I am perfectly happy to go to the gym, get chores done around the house, or meet up with friends to socialize because I am not completely wiped out from whatever I did at work.

In-Person Data Jobs

To add some context to the conversation of what it is like to work remotely, I talked to some of my data friends who work hybrid/in-person jobs. All of them still do enjoy their jobs! They all said in their own way that in-person data jobs have a similar structure to a lot of the other (non-data) jobs they have had.

They follow a fairly normal 9–5 schedule for in-office work, and then fit in going to the gym or the grocery store after they leave work. Each of them told me that they do have good flexibility to leave work to go to the doctor if they need to but that it is an unusual occurrence to cut time out of their workday.

Some people I talked to feel like they need to be in the office for 8–9 hours a day, 5 days a week. Others told me that they feel comfortable leaving once they finish their work, and possibly shifting their work schedule to be earlier or later if needed.

I have only one friend whose job is fully in-person (with occasional days from home); the other five I talked to all have a hybrid schedule of a few days in the office and a few days out each week.

I asked my friends who have a hybrid job if their days looked different on the days they work from home from the days they come into the office—and they all said yes. In fact, they all said that they still have meetings over Zoom when they go into the office, and they would prefer to have even more days from home each week if it were up to them.

On the days that they work from home they feel that their time is more flexible. They are more likely to take a walk or go to the gym in the middle of the day. Since they do not have to commute, they are very aware and appreciative of the additional time they get back in their day on the days where they work from home.

My friends with hybrid jobs said that a lot of their job could be done remotely. On the days that they are in the office, their employers make sure to schedule team meetings and planning sessions—meetings that benefit from being able to get people in a room together. Two of my six friends who have in-person/hybrid jobs expressed to me that they enjoy getting to go into the office and socialize with their peers and prefer that option.

The other four people I talked with said that, although in-person co-working can be nice sometimes, they prefer the days when they work from home, and that when they search for their next job they will be looking for a fully remote role.

I may have some self-selection bias going on with the people I picked—I am a huge advocate of remote work, so the people who make friends with me may be more likely to also be lovers of the freedom that remote work brings. This means that I am likely not representing the portion of data analysts who prefer in-person work very well!

Many of the employers who embraced remote work during the pandemic are now requiring employees to return to the office at least some days of the week. That means people who are okay with hybrid jobs will likely have an easier time finding a job than people who are committed to remote work (like me).

I can say from experience that for every one job that recruiters reach out to me about on LinkedIn that is fully remote, there are four to five that are at least hybrid. It seems like fully in-person jobs are rare—and from what I have seen they are more common in industries that are not "techy"—and all of their other employees are in-person full time as well.

I wonder if employers are finding it significantly harder to fill fully in-person data jobs with good candidates than roles that are at least hybrid, because the dominant sentiment I see from my many connections on LinkedIn is that most people prefer to work at least hybrid.

Once you are introduced to the benefits of eliminating your commute and being able to spend more time at home, with family, and on other activities besides driving (for at least a few days a week), it is hard to go back.

What Makes a Good Analyst?

If you're still reading, then it means you have decided that maybe data analytics is the right choice for you! Congratulations! When I made that decision

it changed my entire life. So let's talk about what makes a good data analyst and what it looks like to be in the career. I find the following information to be exciting; I love that I have found a career where these things are valuable!

When I started learning about data analysts, all I had available to reference to understand what makes a good data analyst was a Google search. The results were mixed. Lucky for you, I have leveraged my 50k+ network and over a year of being in the data space to ask the question, "What makes a good data analyst?"

I talked to senior data analysts, random people on LinkedIn and TikTok, data scientists, data engineers, a few heads of operations, vice presidents, chief data officers (CDOs), chief operating officers (COOs), recruiters, and many random people with unknown titles on LinkedIn and TikTok about what makes a good data analyst. Oftentimes these people are the ones responsible for hiring, mentoring, and promoting data analysts. Here is what I learned from them, plus some of my own thoughts thrown into the mix.

So what makes a good data analyst? Critical thinking. This was the number one response that I got. When you are an entry-level data analyst, you might be able to get away with just clocking in, clocking out, and doing what is asked of you. But in the majority of data analyst roles the most valuable thing you can bring to the table is your ability to engage with problems and business needs and draw your own conclusions.

Think about it this way. Do you need to know how to swing a hammer and use a saw to be a good carpenter? Absolutely. But is it the ability to use a specific tool that makes a good carpenter? Definitely not! Data analytics is the same way. SQL, Excel, Tableau . . . At the end of the day they're all just tools. A good data analyst needs to know how to think like an analyst.

I've put together a list of the nontechnical skills that have been critical to my success in my role lately, and they are planning, organization, critical thinking/strategy, and communication/collaboration. I will explain each of them in the paragraphs to come. Before I elaborate on the list, though, I do want to mention one thing. Since I am a consultant, my role seems to be different from the roles of the other entry-level data analysts I know.

If you encounter terms in this chapter you are not entirely familiar with yet, do not worry about it! Any terms you need to use as a data analyst will be introduced to you later on in the book, but I am going to give some examples in this chapter to make a point.

It seems to me that many entry-level data analyst roles exist within just one company. Usually, these roles report to a senior-level data analyst/analytics manager. Their manager is in charge of planning, cross-department collaboration, and overseeing and assigning project tasks, whereas the entry-level data analysts are the ones who are assigned specific analytical tasks and report their work back to their manager. From what I have seen, entry-level analysts gradually take on more collaboration, planning, and strategy as they gain more experience in their roles.

Planning

Data does not exist on an island in any business. You are never going to find a data project that is *just* "crunching the numbers." Data analysts (especially in more senior positions) have to plan carefully with all of the parties involved. At the beginning of every data project, the analyst in charge needs to meet with stakeholders—which could be managers, executives, or clients. They need to gather requirements for the project and set the scope, which often involves a series of meetings, emails, and the creation of planning documents.

While scoping and planning the project, the analyst in charge also needs to take a look at the data and determine if they have the access they need, and if the data that they have available to them is what they need for the project. Connecting to and digging around in the data often has different technical requirements than what you would see in the actual project.

Once the planning stages are over, the project begins. For any data project that takes more than a few hours, the analyst working on the project may need to be sending emails back and forth, hosting meetings, or even working in collaborative documents to ask questions and check in with the stakeholders.

Once a project is finished, the analyst in charge often needs to do some kind of a presentation. Junior-level analysts may just send their work off to their boss, but senior analysts will often be presenting the insights of their work to managers, executives, or clients.

For example, I recently worked on a project with a fairly small company. When we got together to gather requirements at the beginning, we met with the chief financial officer (CFO), as well as two people heavily involved with marketing.

In that meeting, as we discussed how this project was going to benefit their organization and simplify each of their roles individually, it became

clear that the work I would be doing would benefit each of them differently. We needed to have separate follow-up meetings with the CFO and people in marketing, because their roles in the project were different.

In the meeting with the CFO, I got connected with their database and existing Excel spreadsheets, and we went through and defined different columns in their data and how their reporting is built. When I met with marketing, we did not talk about individual fields in the data at all and instead did a whiteboard session to plan out the different dashboards I would be building, We also reviewed which metrics they send out in their newsletter every month to make sure those metrics would be front and center and easily accessible to them.

After those meetings, I got connected to the data and started re-creating fields from their Excel spreadsheet in Tableau (to automate their reporting). But I had to check in regularly with both marketing and the CFO, because the names of columns in the database did not match the names of columns in the Excel spreadsheet, which also did not match the language that they were using for those fields in the newsletter.

Organization

Have I experienced data analysts who are not very organized? Yes. But do I think it is a critical part of my success? Also yes. As a data analyst, I am usually an intermediary, or interpreter. I am receiving information that has been put into the system by other people, and I am analyzing and visualizing it so that other people can take that information and use it to make business decisions.

This opens up a huge need for organization. Here are some of the things I need to have a system of organization for every day:

Files At the start of the project I usually get a lot of files, and they all need to be well labeled and stored together so anyone can easily access them later.
Documentation For every project I do, I need to keep track of all kinds of things. For example, what does the column "Gains" mean? Is this profit after the cost of goods is taken out? Or before? Additionally, I have to document what I am building and how it is all interrelated. The goal is that once I finish a project, anyone can use that work without having to refer back to me to explain how things are built.

Workload It is rare for analysts to have just one project that they are working on at a time, that has only one stream of work related to it. Each person has to learn how to organize their own day so that they are making all the meetings they are required to go to and still completing all their tasks and projects on time.

Communication If you have worked an office-type job before (or really, most jobs), you have already encountered the phenomenon of the never-ending emails. You start your day with a list of things you need to get done, and throughout the day you're likely going to get a steady trickle of emails adding to that list. It may sound trivial, but on top of making sure everything else about a project is well organized and documented, adding on the need to keep track of emails and perform ad hoc organization of whatever comes your way in an email will rely on you already having good organization systems in place.

Critical Thinking / Strategy

It's hard for me to say enough about this skill—it's the most valuable skill I bring to every project. The thing about working with data is that there is never just one way to do something. Even if there is one "right" answer (which there rarely is), there are many different ways to get there. This is where critical thinking comes in.

Let's take a SQL query, for example. Many times there are at least 10 different ways you could write a query and get the exact same table as an output. But, five of those ways are going to take the database three times as long to run the query, two of those ways are going to be long and difficult for anyone else to read and understand, and of the other three, two of them will be better aligned with the way your boss writes their queries.

It is up to you to understand not only how to use SQL, but how to piece together different tables, columns, and functions to achieve the end result you want. The next day you might come back to write a similar query, but just a few things about the data have changed and you have to think through the best way to do it all over again.

Not only is critical thinking necessary for individual tasks, but it also relates back to what I was saying in the "Planning" section. Working on a project is like completing a puzzle. You are taking all the business requirements for the project, combining them with the needs and preferences of the person you are delivering the work to, nesting that within your knowledge

of the way the business is organized and its priorities, and needing to fit your individual analyses and uses of the analytical tools within that—like one big puzzle.

At the end you either get something that is messy, over budget, and not quite usable by the intended audience, or you get a piece of work that your intended end user will rely on to make business decisions. For example, let's go back to the marketing dashboard. If you take 60 hours to build a marketing dashboard that doesn't quite do what your client needs it to do, in business terms that means that they just paid you for 60 hours of work and, in the end, they still have to go back to their original Excel spreadsheet every month to pull all the numbers they need to include in their newsletter.

Although that picture is quite grim, let me cast this in a different light. This skill of applying my critical thinking skills and solving puzzles every day is my favorite part of my job! I am the type of person who loves to always have their brain engaged. My brain rarely "shuts off." In the past I have had a hard time staying with jobs long term, because I have had jobs that, although they required a lot of physical effort, were not intellectually stimulating. After a few months I would get bored, and then every Sunday I would dread going into work the next day.

Now, I get my Sundays back. I do not have to dread Monday rolling around, because I genuinely enjoy my job. Of course, every job has its stressors. However, I would say that for at least 75 percent of my day every day I am using my "puzzle-solving" brain. Every project I work on brings new challenges, new things to learn, and a new way to analyze data. Most of the data analysts I know also express how critical thinking is not only the most important part of their role, but also the reason that they love being a data analyst.

Collaboration/Communication

Data analysts are not the ones who create the data, nor are they the ones who use the data. Data is created by salespeople, skilled workers, electric bills, property taxes, online reviews . . . you get the point. Data is used by executives and managers—people who pay bills, hire and fire new employees, change their businesses' marketing strategies to run more ads on a well-performing platform, and meet with investors to make more money. So who is the data analyst in all of this? The intermediary.

This means that data analysts are rarely ever going to be working in isolation. For every project, data analysts will likely have to work with people in multiple areas and at multiple levels of the business. For example, when I worked on that marketing dashboard, I was communicating with executives. However, I found the CFO to be a very easy-going guy and we worked best with a less "formal" communication style. I did not need to include a formal introduction to every email, and he was comfortable with us getting right to the point of the task at hand.

I wanted to maintain a friendly yet effective tone in my emails, and I remember that at the beginning of the project we ended up needing to send some emails back and forth that were quite dense, as I tried to understand how different columns from different tables and data sources related to each other. At one point I believe we ended up tacking smiley faces onto the ends of these particularly tricky emails to communicate something along the lines of "I know this material is quite dense and I do not want you to think I am judging you or that I am lecturing you."

On the other hand, when I was emailing the marketing department at around the same time it was usually just me clarifying things like, "I took 'Sold Amount' and added 'Shipping Cost' to it; does that accurately capture that 'Price' field you referenced in the newsletter?" To which I would get a response like "Yes, that is correct. Thank you. [Insert standard signature here]."

At the same time, I was checking in with my boss several times a day via Slack messages to ask him things like, "Hey, can you look at this calculated field for me? Here is the formula I used. Does this look right to you?" or "I could not fit all six of these charts on the top line of the dashboard, so I did it this way instead. What do you think of the grid format?"

This is just one example of a day when I had several very different lines of communication open. I couldn't just plug into a data source and start analyzing. Even after we did our initial planning sessions, I still had to be touching base often with the people involved in the project.

Every data analyst's job looks different, but everyone I have talked to agrees that they are communicating and collaborating with other people daily. When I speak to people who came out of teaching and healthcare they often express how they are glad to have developed their "soft skills" so much in their previous profession, because they feel it makes them a better

data analyst to be able to effectively change their communication style to match the collaboration needs of the project they are on.

What Tools Should I Learn?

If you were to poll 50 data analysts on what tools they need to use at their jobs and how, each of them would have a slightly different answer. If you go on LinkedIn and scroll through entry-level data analyst roles, you might feel overwhelmed at the number of tools and skills you see listed. I sure did!

I am glad that I found data analytics with the sole intention of analyzing spreadsheets, and then signing up for the first course that came up online. If I had decided "Okay, I want to try to change careers to become a data analyst; what are all of the things I need to do and learn?" I imagine that I may have been so overwhelmed with what I found that I might have given up altogether.

Luckily, I stumbled my way into it, fell in love, and then decided to try to make the switch. Then, I did it the hard way and spent hours and hours online researching and scrolling through job descriptions. Now, I have taken all of that research and hard-earned experience and compiled it into this book so that you don't have to feel overwhelmed!

There are a few core tools that pretty much anyone who is getting into data analytics will need to get familiar with. As I mentioned before, the most important thing that a data analyst brings to the table is their ability to think. Many entry-level roles are looking to hire someone who is a good fit at their company and shows the right interpersonal and critical thinking skills—the technical tools are often just a complement to that.

That is why I can tell you about the core tools that anyone trying to get into data analytics will need to learn, without having to compile a list of exactly which tools you might see on a given job application or a list of the specific levels of mastery you must achieve with each of these tools. That being said, this section explores the tools with a brief overview of what they do.

Excel/Google Sheets

There is a joke in the analytics world that all of corporate America is built on Excel, and there is a lot of truth to that. It is very likely that as a data analyst you will be handed an organization's spreadsheets and asked to perform analyses on them in either Excel or another tool. The easiest way to

understand how to analyze data is by starting in Excel. This is because all the data is right there for you to see!

When you perform a function in a spreadsheet, all the cells of data that are being operated on are highlighted. This means that you can visualize what different functions look like. Being able to actually see what is happening to data as you perform different analyses on it is a great foundation and will help you to learn the basics of the other tools more easily.

Did you know you can do some pretty complex things in an Excel document? Before I got into data analytics, all I knew how to do was understand a table and perform simple calculations, like adding up all values in a column (SUM) or subtracting one cell from another. As it turns out, there is a whole lot more you can do in a spreadsheet!

As more organizations develop more complicated data systems with huge amounts of data, they are moving their data into databases. But as a data analyst it will not be uncommon for you to be handed a spreadsheet with all kinds of complicated things in it, like pivot tables and the VLOOKUP function, and be asked to either help bring all that data into a database for the first time and perform the calculations in there, or automate pulling data from a database and into a visualization software and perform all those calculations there.

Although Excel is the foundational skill of data analytics, I only know a couple of people who actually use Excel or Google Sheets regularly at their jobs. When I was job searching, I was asked a lot of questions about my ability to use the tools that are to follow on this list. I had Excel/Spreadsheets listed as a skill on my résumé, but out of the 30+ companies that I spoke with about a job, only one asked me about my skill level in Excel. It is for this reason that a good number of data influencers on social media will advise people not to waste their time taking any courses that go over using Excel or doing projects that incorporate steps in a spreadsheet.

I disagree with that advice. In my opinion, everyone should start their data analytics journey in Excel. Even if you decide to exclude jobs from your search that primarily use spreadsheets as the tool in which you do your analyses, being able to understand the structure of an Excel document and perform all the basic functions and calculations will be a solid foundation on which you can build all your analytical skills.

SQL

SQL can be pronounced "S-Q-L" or "sequel." One of my first semi-viral TikToks was one where I said, "Today I learned it's actually pronounced 'sequel' and not 'S-Q-L,'" because I had just heard someone say it out loud for the first time and felt like an idiot for pronouncing it "S-Q-L" in my head. In just a few hours I had gotten over 100s comments from people voicing their opinions and support. Sometimes I see people debate how you should pronounce it, but for the most part nobody in the industry really cares which way you say it.

While Excel is data analytics' most foundational tool, I would argue that SQL is the core tool of data analytics. Trying to picture what SQL is for the first time is a little tricky. It is easy to understand how Excel relates to data—all you have to do is open up your spreadsheet, and there is all your data.

Now, imagine you own a large department store that has 10,000 locations across the country. Where do you store your data? It would be ridiculous to store all of your data in spreadsheets—what's more, it would be incredibly inefficient. What if the VP in Washington needs to access the records from a store in New York? How would they even know which one of the 10,000 spreadsheets to open up?

Instead of keeping it all in spreadsheets, companies turn to using a database. The database contains all the tables and information for every store and every department, all combined into their own tables and structure of organization. For example, you are likely going to have just one Orders table, and that is going to contain information on the orders from all 10,000 stores.

The thing about using a database like this is that it is not structured the same way it would be if it was just spreadsheets on your computer. There is not one common file folder that everyone in an organization can access and just search around folder by folder and then double-click to open the spreadsheet they want. Not to mention how impractical it would be to try to open a spreadsheet with 5 billion rows! Your computer would crash.

This is where SQL comes in. SQL is the language that we humans use to chat with databases in order to get the information that we want.

SQL is not a tool itself, like Excel. You can open an Excel file. With SQL, however, there is no "SQL file" on your computer. You do not need

to worry yet about the specifics of what programs you need to use to communicate with a database or what that looks like—it is just important to know that SQL is the language you use to talk to the database.

When you want to go into a database and get some information, you need to write something called a *query*. SQL queries look a little bit like code, but SQL is not a full-on coding language like Python, Java, or other programming language that developers use. I refer to SQL as "pseudocode." It isn't quite English, because it follows a specific structure. An example of a simple SQL query looks like this:

```
SELECT
    order_id,
    store_location,
    price,
    date
FROM orders
WHERE date > 01-01-2023
```

After you "run" this query, it is going to give you back a table that might look like this:

order_id	store_location	price	date
1	Montana Central	5.99	01-01-2023
2	New York City	4.52	01-01-2023
3	Southern Idaho	100.45	01-01-2023
4	Las Vegas	50.55	02-01-2023
5	Florida North	513.45	02-01-2023

In this query, the `SELECT` statement told the database which columns we wanted. The `FROM` statement told us which table we are pulling from (we want to look in Orders, and not Returns). Finally, the `WHERE` statement filters the data based on the condition that we do not want any orders older than 2023.

This may look quite simple, but there are hundreds of different functions in SQL! `SELECT` and `WHERE` are just two functions. Now imagine that in these queries we are potentially doing all kinds of analyses, like more filtering or joining information from one table to another and then subtracting columns from each other, and more. It can take years of working in SQL regularly to "master" it.

Entry-level data analysts are not expected to be SQL masters (thank goodness!). Usually, entry-level positions that require SQL skills are only looking for people to have the basics down.

When I took that course so I could try to get a data analytics side hustle, I didn't even know what SQL was. I was just taking the course for the Excel portion, but then I was enjoying it so much that I stuck around. After the Excel part of the course, it dove right into SQL. I probably would not have independently sought out learning SQL, because it looked intimidating and at that point in time I did not think I was ever going to need it (I still just wanted to analyze spreadsheets for some extra cash).

So color me surprised when I started the SQL portion of the course and realized "hey . . . this is actually pretty fun!" I realized that learning to write SQL queries was intellectually stimulating but not too hard. It gave me just the right balance of structure combined with a more normal "English" way of writing, so learning how to write queries felt like a game. Each time I ran a query successfully it gave my brain a hit of feel-good chemicals (specifically one called dopamine, which is the chemical that is released in your brain when you do something interesting or rewarding).

Before I knew it I was coming home from work every day just obsessed with getting back on my computer so I could learn more SQL.

I have talked to a lot of data analysts in the last year and looked through a lot of job postings. SQL is the skill that I see come up the most. Not only that, but SQL is a skill that is worth paying for. I noticed (and this is just my own personal observation) that most of the jobs I applied for that ended up being mostly Excel-focused jobs tended to have a starting salary about 10k–15k less than jobs that listed SQL as the primary tool. You can get by as an entry-level data analyst without using SQL, but pretty much any mid-level role and above is going to require a good knowledge of working in SQL.

Tableau/Power BI

The third and final tool that you need to have in your entry-level data analyst tool kit is some kind of visualization tool. Tableau and Microsoft Power BI are the two most commonly listed tools, and it seems to come down to a company's individual preference which one they use. They are both tools with which you can connect to a database or a spreadsheet, and then perform analyses and create visuals of the data.

People ask me often if they should learn Tableau or Power BI, and honestly, I do not have an answer to this. It seems like the tools can both do roughly the same thing. I am a Tableau consultant, so I only know how to use Tableau. However, the real skill that I have developed in my role is the ability to create effective visualizations and use this tool to do complex analyses. So, if I needed to switch over and learn to use Power BI someday I would just have to learn the differences in the user interface, and then I would be able to make an easy transition into Power BI.

When data analysts are using Tableau, they are typically using it to create something called a *dashboard*. A dashboard is typically a set of visualizations that have all been brought together with a specific purpose in mind.

For example, Figure 1.1 shows a sample dashboard that I made using publicly available data a few months into my job as a Tableau consultant.

This dashboard is designed for an executive at a superstore called Basic. Someone like a CEO or a CFO could look at this dashboard and get a quick understanding of how their business is performing this quarter as

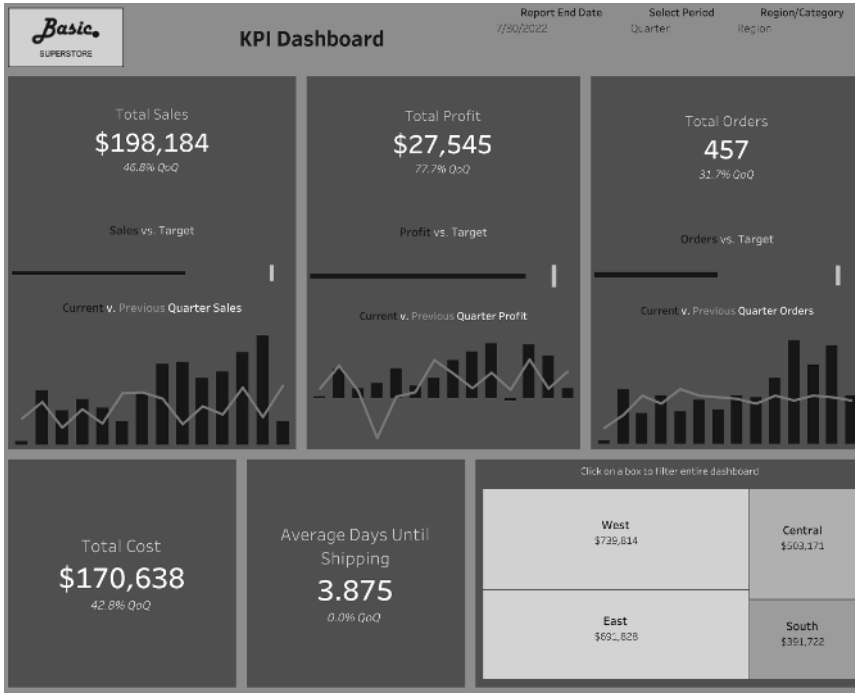

Figure 1.1 A sample dashboard that I created after a few months as a Tableau consultant to show off my skills.

compared to last quarter. When we look at the bar charts with the line charts overlaid on them, it gives us a week-by-week breakdown of the quarters.

Whether you are using Tableau or Power BI, dashboards are always interactive. The labels you see in the top-right corner are actually filters, and changing them will affect every number and chart on the dashboard. Additionally, if you click any of the regions in the bottom right (for example, West), then the entire dashboard will filter to only show you data from the West region.

If you hover your cursor over any of the visualizations on this dashboard, a small box will pop up with more information. For example, if you hover over one of the bars, the little box might say "Week 3, Sales: $8,644." This is how you can get a lot of information into a dashboard without overwhelming the end user with too much ink on the screen.

That is just one example of an overview dashboard, but there are thousands of ways that a dashboard could go. When developing a Tableau dashboard, you have to get a clear understanding of the following:

- What problem is this dashboard trying to solve?
- How will the end user use this dashboard? In other words, how is the person I'm making this for going to use it? Will they use it in Tableau? Export to PowerPoint? Do they have a good understanding of data terms?
- How does this fit into the workflow of the people who are using it? If I am designing a dashboard for a marketing department so they can use it to make their newsletter, am I using the same terms they use in the newsletter? Am I reporting on everything they want to put in the newsletter so they do not have to look elsewhere? Could we make this dashboard exportable so they can put it right in the newsletter?

This means that creating a dashboard is both an art and a science. You need to pull elements from many skills to create dashboards, including design, psychology, basic statistics, business, and actual analytics.

When I design a dashboard, I spend no more than 50 percent of the time writing calculations and designing the technical and analytical components. The other 50 percent of the time is spent in the beginning and end

of the project—whiteboarding design ideas, discussing with the end user how each piece of the dashboard is going to solve their business problems, and then once the dashboard is made, actually going in and formatting and designing it.

I think that some people see the design portion of the work as trivial, and I have gotten some comments from people who think that Tableau is "easy." I don't take offense at this, but it does make it clear to me they do not have much experience with the tool. Creating an analytically rigorous yet also simple, clean, and well-designed dashboard is a labor of love. And a skill people will pay quite nicely for.

Python

Knowing Python is *not* one of the core skills you will need as an entry-level data analyst. So why am I including it in this list? Well, a few things. First of all, when I decided to go for it and learn data analytics so that I could switch careers, I saw Python in a lot of places. So I thought I had to learn it. I spent a month taking a Python course. It was a fun course, and I don't necessarily regret it! But it turned out to be no more than a fun detour.

I listed "introductory Python" on my résumé. I talked to over 30 companies when I was applying for jobs (those are just the ones I got a call back from), and not a *single one of them* even asked about Python. You can find an exception to everything I say in this book, but for the most part, entry-level data analysts do not need to know how to use Python.

Whenever I say "The core tools you need to know to get an entry-level data analyst job are Excel, SQL, and a visualization tool," there will inevitably be at least one person who brings up how knowing Python is a great nice-to-have skill as a data analyst. In addition, if you do get into data analytics, you will likely need to learn at least basic Python to progress higher than an entry/mid-level data analyst role.

I have talked to hundreds of entry-level data analysts, and I only know one who told me they use Python in their role—and it's just because they like it, not because it is required.

So what is Python? Python is a coding language. Fun fact, it is apparently not named after the snake but after the British comedy troupe Monty Python! You can do all kinds of things using Python, like "web-scraping," which is getting a bunch of information from the Internet in an automated way, or designing apps and games that people can use on their computers.

You can also use it to program little devices. Something I am working on right now as a personal project is a little sensor with just a bit of code that I can hook up to my stove, which is linked to the Wi-Fi in my house so that no matter where I am I can check my phone and see whether I remembered to turn off my electric stove when I left the house.

However, none of this is relevant to data analytics. So what would you use Python for as a data analyst? The simple answer is analyzing data. You could take a bunch of data, put it into Python, and ask Python to delete any completely blank rows, delete duplicate data, and replace every 0 with Null. Then you could pick specific columns or rows in the data and find out how they are correlated, and ask it to also visualize the data on a simple scatter plot.

In summary, there are a lot of things that you could use Python for. As a data analyst, most of them have to do with analyzing or changing data. However, if you do decide to get into data analytics, you do not have to worry about any of that now. You should know what Python is, and if you would like to learn the basics, go ahead! It is a nice-to-have skill. But if just learning Excel, SQL, and a visualization tool is enough for you and you just want to go and get your hands on data in your first entry-level role, you likely will not need to dive into Python.

R R is a coding language that is very similar to Python, but you see Python much more often in data analyst job descriptions. Everything I said earlier about Python applies to R. I find that R is more commonly used in research-related positions.

My mom is a scientist; she has a PhD in biology and she works in a lab doing research on stem cells. In her lab, they use R to do in-depth statistical analyses on their data. If you wanted to go into analytics with a biology focus, you would likely need to learn R!

Which Entry-Level Tech Job Is Right for Me?

Before I decided on data analytics, I needed to know what other options I had for entry-level jobs in technology. Data analytics is not the only path into entry-level tech jobs! This section will guide you through the options I found while researching my options.

If you Google **no-coding tech jobs**, you may be frustrated that a lot of the articles will include roles like "System Administrator." For jobs like

that, you have to have already been *in* tech for a few years to even be considered for interviews. What I wanted to find when I was deciding if data analytics was right for me was jobs that *anyone* could get into.

As I did my research on different possible tech paths that were code free, here are some of the options I found, along with my perception of what would make someone a good fit for them. As you read through the list, think about your strengths, passions, and what kind of work environment would suit you best.

Graphic Designer Graphic designers craft eye-catching visuals for items like products, promotional content, websites, and beyond. If you have a flair for design and enjoy working together with others, this role might be the perfect match for you.

Business Analyst Business analysts improve business processes by aligning technology with company goals. If you're a strategic thinker with strong analytical skills, this role might be for you.

UI Specialist User interface (UI) specialists design visually appealing and intuitive interfaces for digital platforms. If you're creative and enjoy problem-solving, consider this path.

UX Specialist User experience (UX) specialists focus on how users feel when interacting with digital platforms. If you're interested in psychology, marketing, and technology, this could be a great choice.

Technical Writer Technical writers create user manuals, design specifications, and other documentation. If you're skilled in writing and enjoy learning about technology, this role might suit you.

Marketing and Sales Non-coding tech jobs in marketing and sales revolve around promoting products and managing the ways they reach customers, such as through online stores, physical retail locations, or direct sales. If you have strong communication skills and enjoy business administration, this career path might be a good fit for you.

Project Manager IT project managers oversee the development, launch, and improvement of software, systems, and devices. If you're organized, detail-oriented, and enjoy managing resources, this role might be a good fit. (As a caveat, it seems like getting into project management from zero experience can be really hard, but I have seen it done by people who have relevant experience in the same industry that the product serves.)

Game, Website, and App Testing Testers ensure the quality and functionality of games, websites, and apps. If you enjoy exploring digital platforms and have a keen eye for detail, this could be a great fit. (This requires having a strong background in one of these domains already, but it could be personal, not professional, from what I can tell.)

Digital Marketing Digital marketing encompasses search engine optimization, search engine marketing, and other fields aimed at enhancing a brand's online visibility. If you enjoy planning strategies and engaging with web technologies, this career path could be a great choice for you.

Cybersecurity Some cybersecurity jobs don't entail coding and instead concentrate on overseeing systems, addressing breaches, and handling user permissions. If you're keen on safeguarding digital assets and have a penchant for problem-solving, critical thinking, or a curiosity for understanding human behavior, this career path could be an excellent choice for you.

Data Analyst Data analysts collect, analyze, and interpret data to help businesses make informed decisions. If you have a strong analytical mind and enjoy working with data, this role could be a great fit.

Tech Recruiter Technical recruiters help companies find and hire skilled tech professionals. If you enjoy connecting people with job opportunities and have strong communication skills, consider this path.

Tech Journalist/Blogger Tech journalists and bloggers cover technology news and trends. If you enjoy researching, interviewing, and writing about the latest advancements, this could be the perfect role for you.

Skills/interests that relate to each of the above careers:

- Creativity and collaboration
  - Graphic designer
  - UI specialist
  - UX specialist
  - Tech journalist/blogger
  - Visualization-focused data analyst roles
- Strategic thinking and analytical skills
  - Business analyst
  - Data analyst
  - Digital marketing
  - Project manager

- Problem-solving
  - UI specialist
  - UX specialist
  - Cybersecurity
  - Data analyst
  - Game, website, and app testing
  - Project manager
- Design
  - Graphic designer
  - UI specialist
  - Visualization-focused data analyst
- Psychology and human behavior
  - UX specialist
  - Cybersecurity
  - Tech recruiter
  - Data analyst consultant
- Marketing and promotion
  - UX specialist
  - Digital marketing
  - Marketing and sales
- Technology
  - Technical writer
  - Digital marketing
  - Cybersecurity
  - Tech journalist/blogger
- Communication skills
  - Business analyst
  - Technical writer
  - Marketing and sales
  - Project manager
  - Tech recruiter
  - Tech journalist/blogger
- Business administration and management
  - Marketing and sales
  - Project manager
- Organization and planning
  - Project manager
  - Cybersecurity

- Keen eye for detail and exploration
  - Game, website, and app testing
  - Data analyst
- Helping people be their best selves
  - Tech recruiter
- Research, interviewing, and writing
  - Tech journalist/blogger
  - Technical writer

What's Next

In this chapter we covered all the big questions that I had when I was thinking about becoming a data analyst. Now that you know the basics, it is time to learn how you might go about becoming a data analyst and what my experience was like. The rest of Part I will be dedicated to learning data analytics.

Learning how to become a data analyst was the most fun and exciting part of my journey. I enjoyed the courses and learning about all the different ways I could get my hands on data and work with it. I did not expect to enjoy all the data tools as much as I did!

The goal of Part I is to help guide you to make the best choices about what to learn and when, from where. There are so many options on the Internet for free, cheap, and expensive paths to learning data analytics. It is my hope that hearing about how I did it (for less than $100!), you can make the best choices for you, your learning style, and your bank account.