

DATA ANALYTICS VS DATA ANALYSIS

Data analytics is the collection, transformation, and organization of data in order to draw conclusions, make predictions, and drive informed decision making.

Data analytics is often confused with [data analysis](#). While these are related terms, they aren't exactly the same. In fact, data analysis is a subcategory of data analytics that deals specifically with extracting meaning from data, [Data analysis is the practice of working with data to glean useful information, which can then be used to make informed decisions..](#) Data analytics, as a whole, includes processes beyond analysis, including [data science](#) (using data to theorize and forecast) and [data engineering](#) (building data systems).

THE DATA ANALYTICS SKILLS

There are a lot of aspects to analytical skills, but, we'll focus on five essential points.

They are curiosity, understanding context, having technical mindset, data design, and data strategy.

Now, you may be thinking,

"I don't have these kinds of skills,"

or "I only have a couple of them."

But stay with me, and I bet you'll change your mind.

Let's start with curiosity.

Curiosity is all about wanting to learn something.

Curious people usually seek out new challenges and experiences.

This leads to knowledge.

The very fact that you're here with me right now demonstrates that you have curiosity.

That was an easy one.

Now think about understanding context.

Context is the condition in which something exists or happens.

This can be a structure or an environment.

A simple way of understanding context is by counting to 5.

One, two, three, four, five.

All of those numbers exist in
the context of one through five.
But what if a friend of yours
said to you, one,
two, four, five, three?
Well, the three will be out of context.
Simple, right? But it can be a little tricky.
There's a good chance that you might not even notice
the three being out of context
if you aren't paying close attention.
That's why listening and trying
to understand the full picture is critical.
In your own life, you put
things into context all the time.
For example, let's think about your grocery list.
If you group together items like flour, sugar,
and yeast, that's you adding context to your groceries.
This saves you time
when you're at the baking aisle at the grocery store.
Let's look at another example.
Have you ever shuffled a deck of
cards and noticed the joker?
If you're playing a game that doesn't include jokers,
identifying that card means
you understand it's out of context.
Remove it, and you're much
more likely to play a successful game.
Now we know you have both curiosity
and the ability to understand context.
Let's move on to the third skill, a technical mindset.
A technical mindset involves the ability to
break things down into smaller steps or pieces
and work with them in an orderly and logical way.
For instance, when paying your bills,
you probably already break down
the process into smaller steps.
Maybe you start by sorting them
by the date they're due.
Next, you might add them up and
compare that amount to the balance in your bank account.

This would help you see if you can pay your bills now,
or if you should wait until the next paycheck.
Finally, you'd pay them.
When you take something that seems like a single task,
like paying your bills,
and break it into smaller steps
with an orderly process,
that's using a technical mindset.
Now let's explore the fourth part
of an analytical skill set,
data design. Data design is how you organize information.
As a data analyst, design
typically has to do with an actual database.
But, again,
the same skills can easily be applied to everyday life.
For example, think about
the way you organize the contacts in your phone.
That's actually a type of data design.
Maybe you list them by first name instead of last,
or maybe you use email addresses instead of their names.
What you're really doing is designing a clear,
logical list that lets you call or
text a contact in a quick and simple way.
The last, but definitely not least,
the fifth and final element of
analytical skills is data strategy.
Data strategy is the management of the people,
processes, and tools used in data analysis.
Let's break that down.
You manage people by making sure they
know how to use the right data
to find solutions to the problem you're working on.
For processes, it's about making sure
the path to that solution is clear and accessible.
For tools, you make sure
the right technology is being used for the job.
Now, you may be doubting my ability
to give you an example from
real life that demonstrates data strategy.
But check this out. Imagine mowing a lawn.

Step 1 would be reading the owner's manual for the mower.

That's making sure the people involved, or you, in this example, know how to use the data available.

The manual would instruct you to put on protective eyewear and closed-toe shoes.

Then, it's on to step 2:

making the process, the path, clear and accessible.

This will involve you walking around the lawn, picking up large sticks or rocks that might get in your way.

Finally, for step 3,

you check the lawn mower, your tool, to make sure it has enough gas and oil, and is in working condition, so the lawn can be mowed safely.

There you have it. Now you know the five essential skills of a data analyst.

Curiosity, understanding context, having a technical mindset, data design, and data strategy.

I told you that you are already an analytical thinker.

Four Types of Data Analysis

Descriptive analysis

Descriptive analysis tells us what happened. This type of analysis helps describe or summarize quantitative data by presenting statistics. For example, descriptive statistical analysis could show the distribution of sales across a group of employees and the average sales figure per employee.

Descriptive analysis answers the question, “what happened?”

Diagnostic analysis

If the descriptive analysis determines the “what,” diagnostic analysis determines the “why.” Let’s say a descriptive analysis shows an unusual influx of patients in a hospital. Drilling into the data further might reveal that many of these patients shared symptoms of a particular virus. This diagnostic analysis can help you determine that an infectious agent—the “why”—led to the influx of patients.

Diagnostic analysis answers the question, “why did it happen?”

Predictive analysis

So far, we’ve looked at types of analysis that examine and draw conclusions about the past. Predictive analytics uses data to form projections about the future. Using predictive analysis, you might notice that a given product has had its best sales during the months of September and October each year, leading you to predict a similar high point during the upcoming year.

Predictive analysis answers the question, “what might happen in the future?”

Prescriptive analysis

Prescriptive analysis takes all the insights gathered from the first three types of analysis and uses them to form recommendations for how a company should act. Using our previous example, this type of analysis might suggest a market plan to build on the success of the high sales months and harness new growth opportunities in the slower months.

Prescriptive analysis answers the question, “what should we do about it?”

This last type is where the concept of data-driven decision-making comes into play.

DATA ANALYST TOOLKIT

Data analysis tools help companies draw insights from customer data, and uncover trends and patterns to make better business decisions. There are a wide number of

online data analysis tools you can make use of, whether you want to perform basic or more advanced data analysis.

We will be talking about three tools which are Excel, Python and Power BI

EXCEL :: Excel empowers you to understand your data through natural language queries that allow you to ask questions about your data without having to write complicated formulas. In addition, Analyze Data provides high-level visual summaries, trends, and patterns.

PYTHON:: This helps the company's decision-makers identify the trends and make better business decisions. Python libraries like Matplotlib allow data analysts to convert numbers into pie charts, graphics, histograms, etc. This makes it easier for data analysts to make their driven data visually appealing and comprehensible.

POWER BI:: Microsoft Power BI is an interactive data visualization software product developed by Microsoft with a primary focus on business intelligence.

THE FIVE WHYS IN DATA ANALYSIS

in data analysis, solutions
are almost never right in front of you.
You need to think critically to
find out the right questions to ask.
But you also need to think creatively
to get new and unexpected answers.
Let's talk about some of the questions data
analysts ask when they're on the hunt for a solution.
Here's one that will come up a lot:
What is the root cause of a problem?
A root cause is the reason why a problem occurs.
If we can identify and get rid of a root cause,
we can prevent that problem from happening again.
A simple way to wrap your head around
root causes is with the process called the Five Whys.
In the Five Whys you ask
"why" five times to reveal the root cause.

The fifth and final answer should give you some useful and sometimes surprising insights. Here's an example of the Five Whys in action.

Let's say you wanted to make a blueberry pie but couldn't find any blueberries. You've been trying to solve a problem by asking, why can't I make a blueberry pie?

The answer will be, there are no blueberries at the store.

There's Why Number 1.

You then ask, why were there no blueberries at the store?

Then you discover that the blueberry bushes don't have enough fruit this season.

That's Why Number 2.

Next, you'd ask, why was there not enough fruit?

This would lead to the fact that birds were eating all the berries.

Why Number 3, asked and answered.

Now we get to Why Number 4.

Ask why a fourth time and the answer would be that, although the birds normally prefer mulberries and don't eat blueberries, the mulberry bush didn't produce fruit this season, so the birds are eating blueberries instead.

Finally, we get to Why Number 5, which should reveal the root cause.

A late frost damaged the mulberry bushes, so it didn't produce any fruit.

You can't make a blueberry pie because of the late frost months ago.

See how the Five Whys can reveal some very surprising root causes.

This is a great trick to know, and it can be a very helpful process in data analysis.