

# Glossary

## Data Analytics

### Terms and Definitions

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## A

**A/B testing:** The process of testing two variations of the same web page to determine which page is more successful at attracting user traffic and generating revenue

**Access control:** Features such as password protection, user permissions, and encryption that are used to protect a spreadsheet

**Accuracy:** The degree to which data conforms to the actual entity being measured or described

**Action-oriented question:** A question whose answers lead to change

**Administrative metadata:** Metadata that indicates the technical source of a digital asset

**Agenda:** A list of scheduled appointments

**Algorithm:** A process or set of rules followed for a specific task

**Analytical skills:** Qualities and characteristics associated with using facts to solve problems

**Analytical thinking:** Identifying and defining a problem, then solving it by using data in an organized, step-by-step manner

**Attribute:** A characteristic or quality of data used to label a column in a table

**Audio file:** Digitized audio storage usually in an MP3, AAC, or other compressed format

**AVERAGE:** A spreadsheet function that returns an average of the values from a selected range

## B

**Bad data source:** A data source that is not reliable, original, comprehensive, current, and cited (ROCCC)

**Bias:** A conscious or subconscious preference in favor of or against a person, group of people, or thing

**Big data:** Large, complex datasets typically involving long periods of time, which enable data analysts to address far-reaching business problems

**Boolean data:** A data type with only two possible values, usually true or false

**Borders:** Lines that can be added around two or more cells on a spreadsheet

**Business task:** The question or problem data analysis resolves for a business

## C

**CASE:** A SQL statement that returns records that meet conditions by including an if/then statement in a query

**CAST:** A SQL function that converts data from one datatype to another

**Cell reference:** A cell or a range of cells in a worksheet typically used in formulas and functions

**Changelog:** A file containing a chronologically ordered list of modifications made to a project

**Clean data:** Data that is complete, correct, and relevant to the problem being solved

**Cloud:** A place to keep data online, rather than a computer hard drive

**COALESCE:** A SQL function that returns non-null values in a list

**Compatibility:** How well two or more datasets are able to work together

**Completeness:** The degree to which data contains all desired components or measures

**CONCAT:** A SQL function that adds strings together to create new text strings that can be used as unique keys

**CONCATENATE:** A spreadsheet function that joins together two or more text strings

**Conditional formatting:** A spreadsheet tool that changes how cells appear when values meet specific conditions

**Confidence interval:** A range of values that conveys how likely a statistical estimate reflects the population

**Confidence level:** The probability that a sample size accurately reflects the greater population

**Confirmation bias:** The tendency to search for or interpret information in a way that confirms pre-existing beliefs

**Consent:** The aspect of data ethics that presumes an individual's right to know how and why their personal data will be used before agreeing to provide it

**Consistency:** The degree to which data is repeatable from different points of entry or collection

**Context:** The condition in which something exists or happens

**Continuous data:** Data that is measured and can have almost any numeric value

**Cookie:** A small file stored on a computer that contains information about its users

**COUNT:** A spreadsheet function that counts the number of cells in a range meet a specified criteria

**COUNTA:** A spreadsheet function that counts the total number of values within a specified range

**COUNTIF:** A spreadsheet function that returns the number of cells in a range that match a specified value

**Cross-field validation:** A process that ensures certain conditions for multiple data fields are satisfied

**CSV (comma-separated values) file:** A delimited text file that uses a comma to separate values

**Currency:** The aspect of data ethics that presumes individuals should be aware of financial transactions resulting from the use of their personal data and the scale of those transactions

## D

**Dashboard:** A tool that monitors live, incoming data

**Data:** A collection of facts

**Data analysis:** The collection, transformation, and organization of data in order to draw conclusions, make predictions, and drive informed decision-making

**Data analysis process:** The six phases of ask, prepare, process, analyze, share, and act whose purpose is to gain insights that drive informed decision-making

**Data analyst:** Someone who collects, transforms, and organizes data in order to draw conclusions, make predictions, and drive informed decision-making

**Data analytics:** The science of data

**Data anonymization:** The process of protecting people's private or sensitive data by eliminating identifying information

**Data bias:** When a preference in favor of or against a person, group of people, or thing systematically skews data analysis results in a certain direction

**Data constraints:** The criteria that determine whether a piece of a data is clean and valid

**Data design:** How information is organized

**Data-driven decision-making:** Using facts to guide business strategy

**Data ecosystem:** The various elements that interact with one another in order to produce, manage, store, organize, analyze, and share data

**Data element:** A piece of information in a dataset

**Data engineer:** A professional who transforms data into a useful format for analysis and gives it a reliable infrastructure

**Data ethics:** Well-founded standards of right and wrong that dictate how data is collected, shared, and used

**Data governance:** A process for ensuring the formal management of a company's data assets

**Data-inspired decision-making:** Exploring different data sources to find out what they have in common

**Data integrity:** The accuracy, completeness, consistency, and trustworthiness of data throughout its life cycle

**Data interoperability:** The ability to integrate data from multiple sources and a key factor leading to the successful use of open data among companies and governments

**Data life cycle:** The sequence of stages that data experiences, which include plan, capture,

manage, analyze, archive, and destroy

**Data manipulation:** The process of changing data to make it more organized and easier to read

**Data mapping:** The process of matching fields from one data source to another

**Data merging:** The process of combining two or more datasets into a single dataset

**Data model:** A tool for organizing data elements and how they relate to one another

**Data privacy:** Preserving a data subject's information any time a data transaction occurs

**Data range:** Numerical values that fall between predefined maximum and minimum values

**Data replication:** The process of storing data in multiple locations

**Data science:** A field of study that uses raw data to create new ways of modeling and understanding the unknown

**Data security:** Protecting data from unauthorized access or corruption by adopting safety measures

**Data strategy:** The management of the people, processes, and tools used in data analysis

**Data transfer:** The process of copying data from a storage device to computer memory or from one computer to another

**Data type:** An attribute that describes a piece of data based on its values, its programming language, or the operations it can perform

**Data validation:** A tool for checking the accuracy and quality of data

**Data visualization:** The graphical representation of data

**Data warehousing specialist:** A professional who develops processes and procedures to effectively store and organize data

**Database:** A collection of data stored in a computer system

**Dataset:** A collection of data that can be manipulated or analyzed as one unit

**DATEDIF:** A spreadsheet function that calculates the number of days, months, or years between two dates

**Delimiter:** A character that indicates the beginning or end of a data item

**Descriptive metadata:** Metadata that describes a piece of data and can be used to identify it

at a later point in time

**Digital photo:** An electronic or computer-based image usually in BMP or JPG format

**Dirty data:** Data that is incomplete, incorrect, or irrelevant to the problem to be solved

**Discrete data:** Data that is counted and has a limited number of values

**DISTINCT:** A keyword that is added to a SQL SELECT statement to retrieve only non-duplicate entries

**Duplicate data:** Any record that inadvertently shares data with another record

## E

**Equation:** A calculation that involves addition, subtraction, multiplication, or division (also called a math expression)

**Estimated response rate:** The average number of people who typically complete a survey

**Ethics:** Well-founded standards of right and wrong that prescribe what humans ought to do, usually in terms of rights, obligations, benefits to society, fairness, or specific virtues

**Experimenter bias:** The tendency for different people to observe things differently (Refer to Observer bias)

**External data:** Data that lives, and is generated, outside of an organization

## F

**Fairness:** A quality of data analysis that does not create or reinforce bias

**Field:** A single piece of information from a row or column of a spreadsheet; in a data table, typically a column in the table

**Field length:** A tool for determining how many characters can be keyed into a spreadsheet field

**Fill handle:** A box in the lower-right-hand corner of a selected spreadsheet cell that can be dragged through neighboring cells in order to continue an instruction

**Filtering:** The process of showing only the data that meets a specified criteria while hiding the rest

**Find and replace:** A tool that finds a specified search term and replaces it with something else

**First-party data:** Data collected by an individual or group using their own resources

**Float:** A number that contains a decimal

**Foreign key:** A field within a database table that is a primary key in another table (Refer to primary key)

**Formula:** A set of instructions used to perform a calculation using the data in a spreadsheet

**FROM:** The section of a query that indicates from which table(s) to extract the data

**Function:** A preset command that automatically performs a specified process or task using the data in a spreadsheet

## G

**Gap analysis:** A method for examining and evaluating the current state of a process in order to identify opportunities for improvement in the future

**General Data Protection Regulation of the European Union (GDPR):** Policy-making body in the European Union created to help protect people and their data

**Geolocation:** The geographical location of a person or device by means of digital information

**Good data source:** A data source that is reliable, original, comprehensive, current, and cited (ROCCC)

## H

**Header:** The first row in a spreadsheet that labels the type of data in each column

**Hypothesis testing:** A process to determine if a survey or experiment has meaningful results

## I

**Incomplete data:** Data that is missing important fields

**Inconsistent data:** Data that uses different formats to represent the same thing

**Incorrect/inaccurate data:** Data that is complete but inaccurate

**Internal data:** Data that lives within a company's own systems

**Interpretation bias:** The tendency to interpret ambiguous situations in a positive or negative way

J

K

L

**Leading question:** A question that steers people toward a certain response

**LEFT:** A function that returns a set number of characters from the left side of a text string

**LEN:** A function that returns the length of a text string by counting the number of characters it contains

**Length:** The number of characters in a text string

**LIMIT:** A SQL clause that specifies the maximum number of records returned in a query

**Long data:** A dataset in which each row is one time point per subject, so each subject has data in multiple rows

M

**Mandatory:** A data value that cannot be left blank or empty

**Margin of error:** The maximum amount that sample results are expected to differ from those of the actual population

**Math expression:** A calculation that involves addition, subtraction, multiplication, or division (also called an equation)

**Math function:** A function that is used as part of a mathematical formula

**MAX:** A function that returns the largest numeric value from a range of cells



**Measurable question:** A question whose answers can be quantified and assessed

**Mentor:** Someone who shares knowledge, skills, and experience to help another grow both professionally and personally

**Merger:** An agreement that unites two organizations into a single new one

**Metadata:** Data about data

**Metadata repository:** A database created to store metadata

**Metric:** A single, quantifiable type of data that is used for measurement

**Metric goal:** A measurable goal set by a company and evaluated using metrics

**MID:** A function that returns a segment from the middle of a text string

**MIN:** A spreadsheet function that returns the smallest numeric value from a range of cells

## N

**Naming conventions:** Consistent guidelines that describe the content, creation date, and version of a file in its name

**Networking:** Building relationships by meeting people both in person and online

**Nominal data:** A type of qualitative data that is categorized without a set order

**Normalized database:** A database in which only related data is stored in each table

**Notebook:** An interactive, editable programming environment for creating data reports and showcasing data skills

**Null:** An indication that a value does not exist in a dataset

## O

**Observation:** The attributes that describe a piece of data contained in a row of a table

**Observer bias:** The tendency for different people to observe things differently (also called experimenter bias)

**Open data:** Data that is available to the public

**Openness:** The aspect of data ethics that promotes the free access, usage, and sharing of data

**Operator:** A symbol that names the operation or calculation to be performed

**ORDER BY:** A SQL clause that sorts results returned in a query

**Order of operations:** Using parentheses to group together spreadsheet values in order to clarify the order in which operations should be performed

**Ordinal data:** Qualitative data with a set order or scale

**Outdated data:** Any data that has been superseded by newer and more accurate information

**Ownership:** The aspect of data ethics that presumes individuals own the raw data they provide and have primary control over its usage, processing, and sharing

## P

**Pivot chart:** A chart created from the fields in a pivot table

**Pivot table:** A data summarization tool used to sort, reorganize, group, count, total, or average data

**Pixel:** In digital imaging, a small area of illumination on a display screen that, when combined with other adjacent areas, forms a digital image

**Population:** In data analytics, all possible data values in a dataset

**Primary key:** An identifier in a database that references a column in which each value is unique (Refer to foreign key)

**Problem domain:** The area of analysis that encompasses every activity affecting or affected by a problem

**Problem types:** The various problems that data analysts encounter, including categorizing things, discovering connections, finding patterns, identifying themes, making predictions, and spotting something unusual

## Q

**Qualitative data:** A subjective and explanatory measure of a quality or characteristic

**Quantitative data:** A specific and objective measure, such as a number, quantity, or range

**Query:** A request for data or information from a database

**Query language:** A computer programming language used to communicate with a database

## R

**Random sampling:** A way of selecting a sample from a population so that every possible type of the sample has an equal chance of being chosen

**Range:** A collection of two or more cells in a spreadsheet

**Record:** A collection of related data in a data table, usually synonymous with row

**Redundancy:** When the same piece of data is stored in two or more places

**Reframing:** The process of restating a problem or challenge, then redirecting it toward a potential resolution

**Regular expression (RegEx):** A rule that says the values in a table must match a prescribed pattern

**Relational database:** A database that contains a series of tables that can be connected to form relationships

**Relevant question:** A question that has significance to the problem to be solved

**Remove duplicates:** A spreadsheet tool that automatically searches for and eliminates duplicate entries from a spreadsheet

**Report:** A static collection of data periodically given to stakeholders

**Return on investment (ROI):** A formula that uses the metrics of investment and profit to evaluate the success of an investment

**Revenue:** The total amount of income generated by the sale of goods or services

**RIGHT:** A function that returns a set number of characters from the right side of a text string

**Root cause:** The reason why a problem occurs

**ROUND:** A SQL function that returns a number rounded to a certain number of decimal places.

# S

**Sample:** In data analytics, a segment of a population that is representative of the entire population

**Sampling bias:** Overrepresenting or underrepresenting certain members of a population as a result of working with a sample that is not representative of the population as a whole

**Schema:** A way of describing how something, such as data, is organized

**Scope of work (SOW):** An agreed-upon outline of the tasks to be performed during a project

**Second-party data:** Data collected by a group directly from its audience and then sold

**SELECT:** The section of a query that indicates from which column(s) to extract the data

**Small data:** Small, specific data points typically involving a short period of time, which are useful for making day-to-day decisions

**SMART methodology:** A tool for determining a question's effectiveness based on whether it is specific, measurable, action-oriented, relevant, and time-bound

**Social media:** Websites and applications through which users create and share content or participate in social networking

**Soft skills:** Nontechnical traits and behaviors that relate to how people work

**Sorting:** The process of arranging data into a meaningful order to make it easier to understand, analyze, and visualize

**Specific question:** A question that is simple, significant, and focused on a single topic or a few closely related ideas

**Split:** A spreadsheet function that divides text around a specified character and puts each fragment into a new, separate cell

**Sponsor:** A professional advocate who is committed to moving forward the career of another

**Spreadsheet:** A digital worksheet

**SQL:** (Refer to Structured Query Language)

**Stakeholders:** People who invest time and resources into a project and are interested in its outcome

**Statistical power:** The probability that a test of significance will recognize an effect that is present

**Statistical significance:** The probability that sample results are not due to random chance

**String data type:** A sequence of characters and punctuation that contains textual information (also called text data type)

**Structural metadata:** Metadata that indicates how a piece of data is organized and whether it is part of one or more than one data collection

**Structured data:** Data organized in a certain format such as rows and columns

**Structured Query Language:** A computer programming language used to communicate with a database

**Structured thinking:** The process of recognizing the current problem or situation, organizing available information, revealing gaps and opportunities, and identifying options

**SUBSTR:** A SQL function that extracts a substring from a string variable

**Substring:** A subset of a text string

**SUM:** A spreadsheet function that adds the values of a selected range of cells

**Syntax:** The predetermined structure of a language that includes all required words, symbols, and punctuation, as well as their proper placement

## T

**Technical mindset:** The ability to break things down into smaller steps or pieces and work with them in an orderly and logical way

**Text data type:** A sequence of characters and punctuation that contains textual information (also called string data type)

**Text string:** A group of characters within a cell, most often composed of letters

**Third-party data:** Data provided from outside sources who didn't collect it directly

**Time-bound question:** A question that specifies a timeframe to be studied

**Transaction transparency:** The aspect of data ethics that presumes all data-processing activities and algorithms should be explainable and understood by the individual who provides the data

**Transferable skills:** Skills and qualities that can transfer from one job or industry to another

**TRIM:** A function that removes leading, trailing, and repeated spaces in data

**Turnover rate:** The rate at which employees voluntarily leave a company

**Typecasting:** Converting data from one type to another

## U

**Unbiased sampling:** When the sample of the population being measured is representative of the population as a whole

**Unfair question:** A question that makes assumptions or is difficult to answer honestly

**Unique:** A value that can't have a duplicate

**United States Census Bureau:** An agency in the U.S. Department of Commerce that serves as the nation's leading provider of quality data about its people and economy

**Unstructured data:** Data that is not organized in any easily identifiable manner

## V

**Validity:** The degree to which data conforms to constraints when it is input, collected, or created

**Verification:** A process to confirm that a data-cleaning effort was well executed and the resulting data is accurate and reliable

**Video file:** A collection of images, audio files, and other data usually encoded in a compressed format such as MP4, MV4, MOV, AVI, or FLV

**Visualization:** (Refer to Data visualization)

**VLOOKUP:** A spreadsheet function that vertically searches for a certain value in a column to return a corresponding piece of information

## W

**WHERE:** The section of a query that specifies criteria that the requested data must meet

**Wide data:** A dataset in which every data subject has a single row with multiple columns to hold the values of various attributes of the subject

**World Health Organization:** An organization whose primary role is to direct and coordinate international health within the United Nations system

X

Y

Z