

Google Data Analytics

① Foundations (Week 1) → Introducing data analytics

[1] Foundations: Data, Data, Everywhere
Week 1: Introducing data analytics

+ 6 phases of data analysis

- (Assisting managers, define problems and confirm stakeholder expectations)
- ① Ask → to define issues to be solved and what would equal a successful result.
(collect and store data for analysis)
 - ② Prepare → building timeline and collecting data (+ permission access → view/edit)
(data cleaning &)
 - ③ Process → cleaning the data (correct, relevant, free of errors and outliers)
(find patterns, relationships)
 - ④ Analyze → processed data
(with your audience to make data-driven decisions)
 - ⑤ Share → the report of the findings, managers communicate the results
(use the analysis results)
 - ⑥ Act → implement changes & take actions



Data Science
Machine Learning
Statistics
Analytics

creating insight from raw data

DS
(Data Scientist)

DA
(Data Analyst)

collect transform organize data that drive informed decision-making

|| Data ecosystems → The various elements that interact with one another

in order to produce, manage, store, organize, analyze, and share data

using facts to guide business strategy

e.g. cloud storage

people who are familiar with the business problem

Data-Driven decision making

"subject matter experts"

1) Figure Business's needs (e.g. Customer Retention, Unhappy Employees)

2) Find data & Analyze it

(e.g. Movie / Music Streaming company)

SAS's iterative life cycle

1. Ask
2. Prepare
3. Explore
4. Model
5. Implement
6. Act
7. Evaluate

potentially returned to

There are many processes guiding you to the analysis.

It can be called .. "Data Analysis Life Cycle"

but all processes highlights the similar purpose.

EMC's data analysis life cycle

SAS's iterative life cycle

Big data analytics life cycle

Data and Gut Instinct

- Sometimes data analyst is more than data.
It includes data, business knowledge, and touch of gut instinct



① Foundations (Week 2) → All about analytical thinking

Analytical skills

curiosity → want to learn sth.



→ identifying problems
→ adding descriptive headers

Understanding context → e.g. group similar grocery list together

Having a technical mindset → break down into smaller steps



→ 1: 2nd work in an orderly
2: 3

Data design → organize information

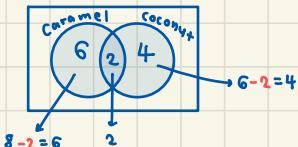


Data & Strategy → management of processes, peoples, and tools

Example of Analytical Problem

- There are 12 chocolates in box: 8 have caramel, 6 have coconut, 2 have both caramel and coconut.

Choose the best image.



→ Start from the center and minus each side with the intersected number
" "

Vocab

Analytical skills → The qualities and characteristics associated with solving problems using facts.

4 9 9 2

Analytical Thinking

< 5 aspects >



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Root cause

- Visualization → graph, map (explain it more effectively)
- Strategy → improve quality
- Problem-Orientation → keeps "problem" on mind
- Correlation → describe the relationships between 2 data
- Big picture and detail-oriented thinking → see big picture, all aspects to fix pieces (e.g. puzzle)

∴

correlation ≠ causation
data might goes in the same direction, but they might not related

Why problem occur? ⇒ 5WHY

甘蔗皮 → 甘蔗 blueberry → blueberry 甘蔗皮

Malberry 甘蔗皮

TOP ⑤ 甘 late frost

① 甘蔗皮
② 甘蔗 blue
③ 甘蔗皮 mal
④ 甘蔗皮 blue
⑤ 甘蔗皮 late frost

Root Cause



now VS. want to be

Gap Analysis → Method for examining & evaluating how a process works currently to get where you want to be in the future.

① Foundations (Week 3) → Follow the data life cycle

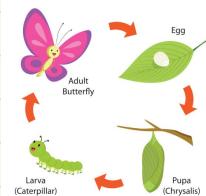
More focused on the "Data" > "Data" Analysts



Stages of Data Life cycle (6 Stages)

- ① Planning → what kind of data is needed, how it will be managed, who will be responsible
- ② Capture → collect or bring data from variety sources
- ③ Manage → How and Where it stores + tool used
- ④ Analyze → Solving to reach the business goal
↳ Important for data cleaning * *
aggregate data using spreadsheet
- ⑤ Archive → Storing for long-term and future reference
- ⑥ Destroy → Delete data from storage & copies of data

[1] Foundations: Data, Data, Everywhere
Week 3: The wonderful world of data



→ Apart from these 6 stages, there are further example of models that might differ in some steps but it contains the main key concepts :)

e.g. Harvard Business School (HBS) → Planning, Capture, Analyze, Archive, Manage, Analysis, Visualization, Interpretation

what's the prob we trying to solve?
what's the purpose of the analysis?

6 processes in data analysis



"Data" Analysts > Data

- ① Ask → communicate with the stakeholders using 5 WHYS
- ② Prepare → Types of data (Quali / Quantit)
- ③ Process → How to collect that data?
- ④ Analyze → cleaning and transform data
"Hello" to your data lot. Spend a lot of time
- ⑤ Share → visualization Based on the questions easier to understand
- ⑥ Act → want them to see Landscape View
Want them to see Slideshow Ans questions

can use R language

Data Analysis Toolbox

* Further: Programming Languages such as Python & R

Spreadsheets	Databases
Software applications	DB
Structure data in a row and column format	Data stores - accessed using a query language (e.g. SQL)
Organize information in cells	Structure data using rules and relationships
Provide access to a limited amount of data	Organize information in complex collections
Manual data entry	Provide access to huge amounts of data
Generally one user at a time	Strict and consistent data entry
Controlled by the user	Multiple users
	Controlled by a database management system

Google Sheets
Microsoft Excel

Query Languages ⇒ "SQL", communicate with the database



DB

Data Visualizations ⇒ e.g. Graph, Map, Table



Types of chart and the usages

- Line Chart (what changes over the time)
- Pie Chart (Distribution)
- Column Chart (Difference between several items in a specific range of values)
- Area Chart (Data that depicts a time-series relationship)



Summation of Quantitative Data

Individual data values

① Foundations (Week 4) → The ins and outs of core data tools

① Spreadsheets

→ Cells, Rows, Columns

② SQL (Structured Query Language)

→ SELECT * FROM movies WHERE _____;

→ Query ⇒ request for data or information from a database.

→ Syntax ⇒ predetermined structure of a language

→ WHERE fieldz LIKE 'Ch%';

↳ Wildcard

→ to match one / more characters

→ Aliases (AS clause)

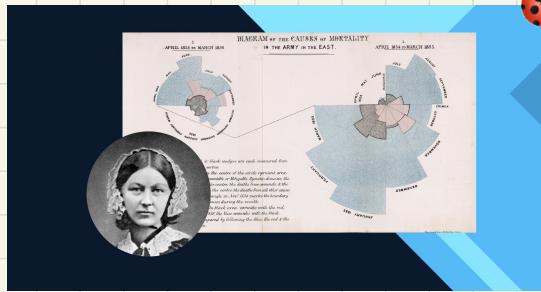
* Aliases doesn't change the actual name of a column or table in a database.

③ Visualizations → "Reinforce data analysis"

Florence

③ → Nightingale is also an data analysts

↳ she created visualizations



Business Use of data

e.g. Technology, Marketing, Finance, Healthcare

Problem: Waiting Time at Hospitals

Collect: Date and Time (Appointment), Type of Diseases (e.g. Eyes, Heart ⚪),

Building, Average Duration taken for each patient (e.g. 5 mins)

12 Sep 2022 | Heart | A Building | 5 min

↳ We can help reducing the congestion, patients don't have to come early, they can come when it's their time ☺

The importance of fair business decisions

Issue

↳ topic / subject to investigate

Question

↳ to discover information

Problem

↳ Obstacle / complication needs to be worked out

* Business task → what data analyst solve for a business

↳ inclusive to everyone ☺

Fair

→ Ensuring that your analysis doesn't create or reinforce bias (e.g. not consider big picture) ☺

[1] Foundations: Data, Data, Everywhere
Week 4: The ins and outs of core data tools



[1] Foundations: Data, Data, Everywhere
Week 5: The power of data in business

3. Case Study #3

An amusement park plans to add new rides to their property. First, they need to determine what kinds of new rides visitors want the park to build. In order to understand their visitors' interests, the park develops a survey.

They decide to distribute the survey near the roller coasters because the lines are long enough that visitors will have time to answer all of the questions. After collecting this survey data, they find that most of the respondents want more roller coasters at the park. They conclude that they should add more roller coasters, as most of their visitors prefer them.

Reflection

Consider this scenario:

- What are the examples of fair or unfair practices?
- How could a data analyst correct the unfair practices?

Now, write 2-3 sentences (40-60 words) in response to each of these questions. Type your response in the text box below.

ME

Corresponding to case study #3, the unfair practice is the survey location. It is good to use the roller coasters as the lines are long; however, it could lead to bias data observation. Thinking realistic, people who are getting in line with roller coasters might be interested in roller coasters, as of this reason it appears that roller coasters get top votes, truly it could be further rides too.

To correct the problem, they could collect data from various places both online and offline. For instance, in the offline case, they can attach the questionnaire to the entry and exit as every people who comes to the park has to see it. Online case, they can put the link on the main website, so it would be explicitly seen by the viewers.

Correct ✓

Great work reinforcing your learning with a thoughtful self-reflection! This case study contains an unfair practice. While the decision to distribute surveys in places where visitors would have time to respond makes sense, it accidentally introduces sampling bias.

The only respondents to the survey are people waiting in line for the roller coasters. This may unfairly bias survey results, because respondents might prefer roller coasters. A data analyst could reduce sampling bias by distributing the survey at the entrance and exit of the amusement park. This would avoid targeting roller coaster fans and provide results from the park's general audience.



FINDING SUITABLE JOB

1. Industry

- Financial
 - Telecom
 - Tech
- } different analysis

2. Tools Travel

3. Location same place

4. Travel

5. Culture → company culture

- Your values match company values?

Examples of Analyst Jobs

1. Business Analyst → analyzes data to help business improve processes, products, or services.
2. Data Analytics consultant → analyzes the systems and models for using data.
3. Data Engineer → prepares and integrates data from different sources for analytical use.
4. Data Scientist → uses expert skills in technology and social science to find trends through data analysis.



Certificate
of
Completion
[118]