

PRASC



**Project for the Regional
Advancement of Statistics
in the Caribbean**

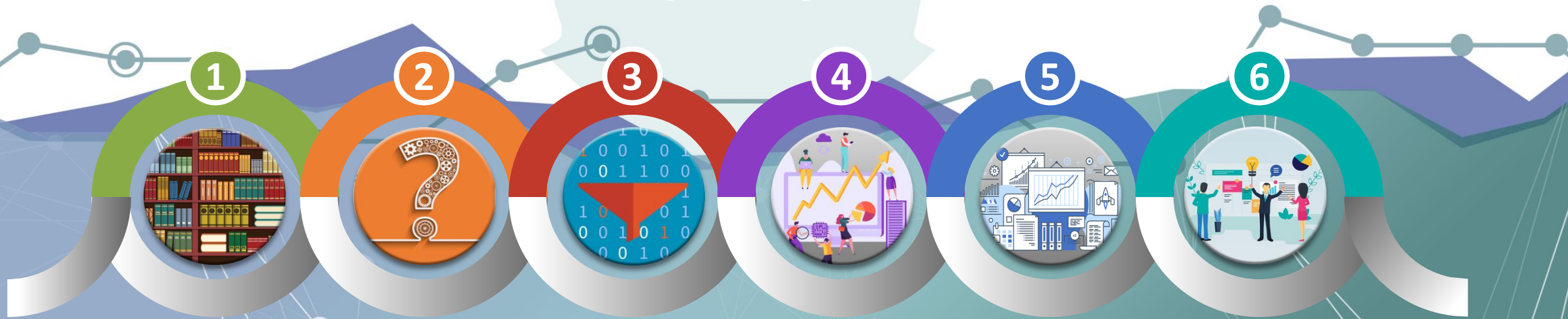
**Projet régional pour
l'avancement de la statistique
dans les Caraïbes**



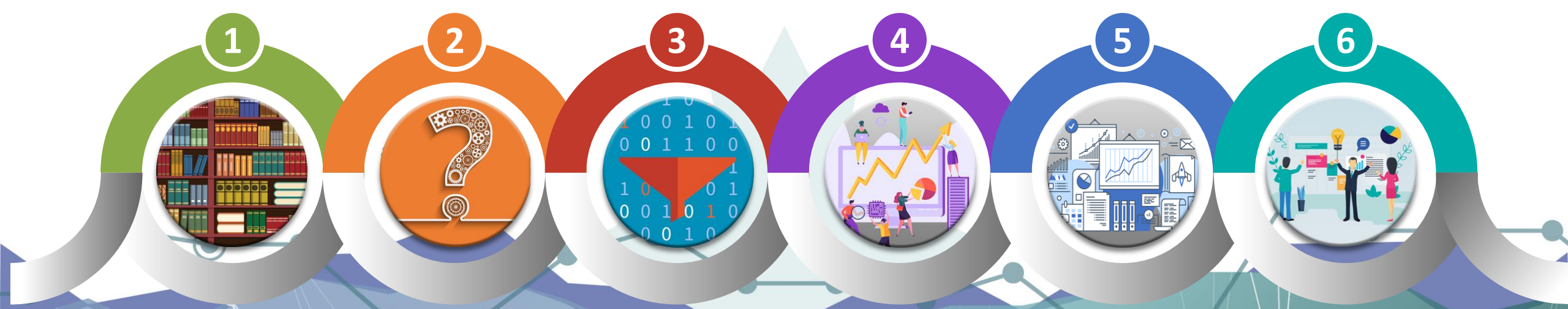
In partnership with

Canada

Steps of the analytical process



Regional Census Analysis and Dissemination Workshop
Statistics Canada
December 1-7, 2022



Module 2: Implementing your Plan

- The preparation and verification of your data
- Best practises for carrying out your analysis
- Documentation of decisions relating to your analysis

Steps of the analytical process



Implementing your plan

How to best prepare, organize, verify, and analyze your data

1



2



3



4



5

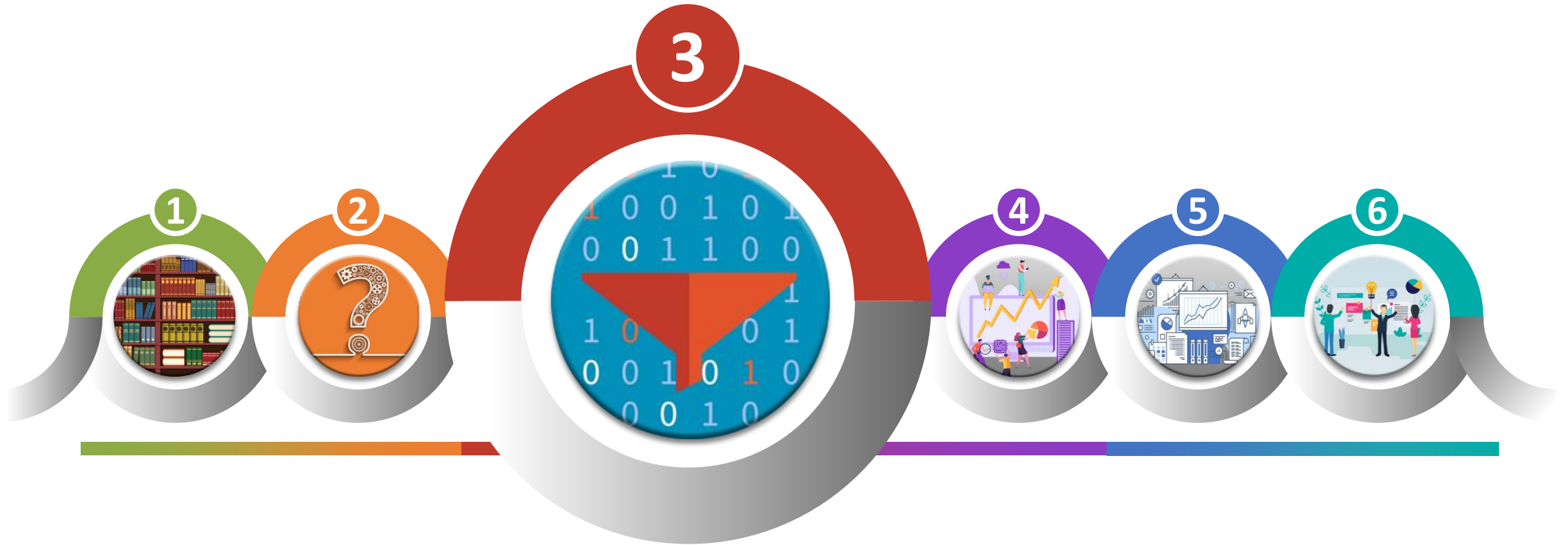


6



**IMPLEMENT
YOUR PLAN
(PREPARE AND ANALYZE YOUR
DATA)**

Step 3: Prepare and check your data



Prepare and check your data

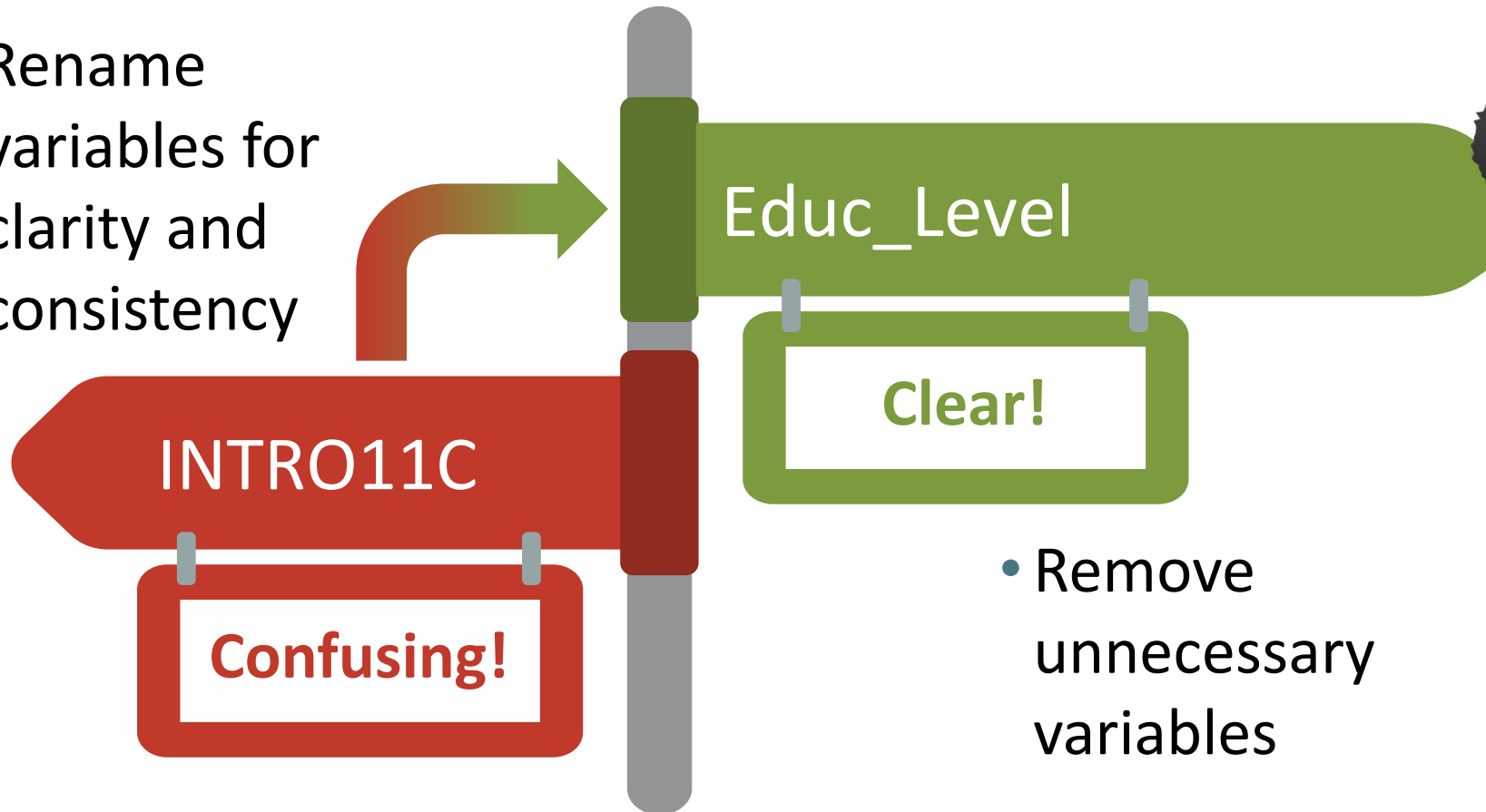
Put the data in a format suitable for analysis

- Select variables you need for your analysis
- If needed, restrict your sample to your population of interest
- Double-check how variables were coded
- If needed, create and derive new variables and recode existing ones



Clean up the variables and the dataset

- Rename variables for clarity and consistency



- Remove unnecessary variables



Prepare and check your data

Put the data in a format suitable for analysis

- Run basic frequency tables, compute means and medians, to detect any errors/inconsistencies early on
- Check for sample size (i.e., minimum cell counts)
 - Is your planned disaggregation supported by the sample size?



Check your data

	Age in years	Place of birth	Sex
Person 1	16	Canada	Male
Person 2	.	Australia	Female
Person 3	56	Yes	Female
Person 4	999	Belize	
Person 5	110	Germany	Male



Check your data

	Age in years	Place of birth	Sex
Person 1	16	Canada	Male
Person 2	.	Australia	Female
Person 3	56	Yes	Female
Person 4	999	Belize	
Person 5	110	Germany	Male

Valid data

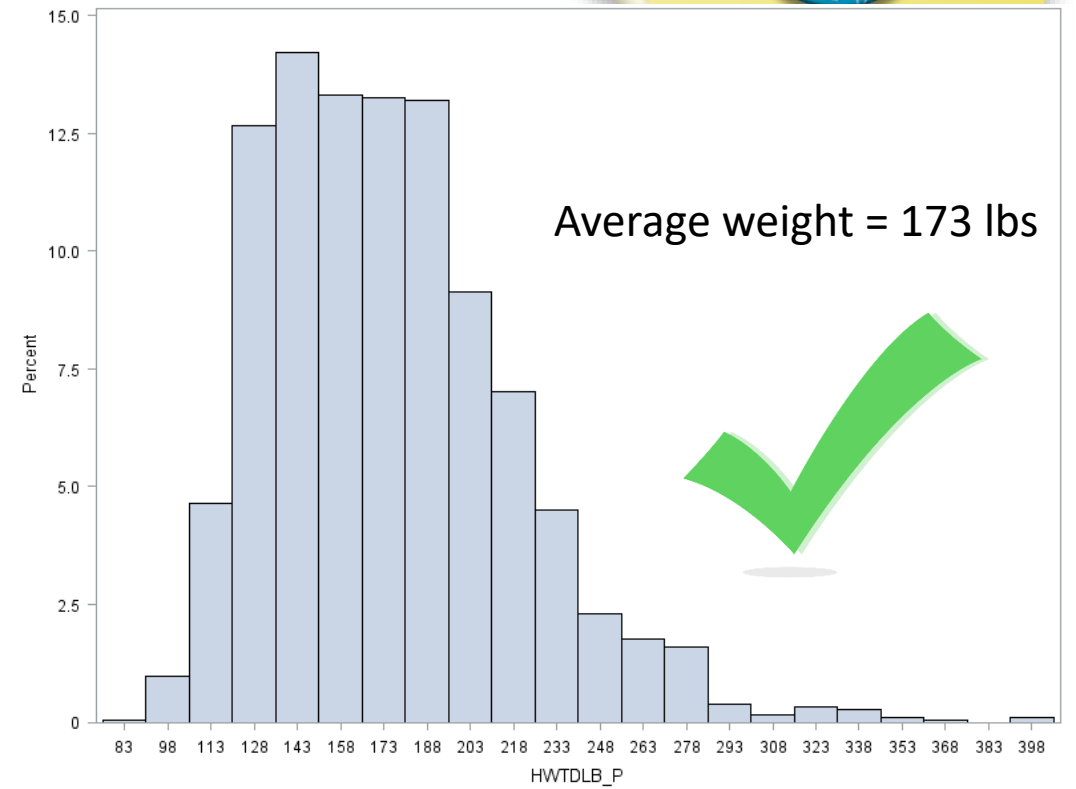
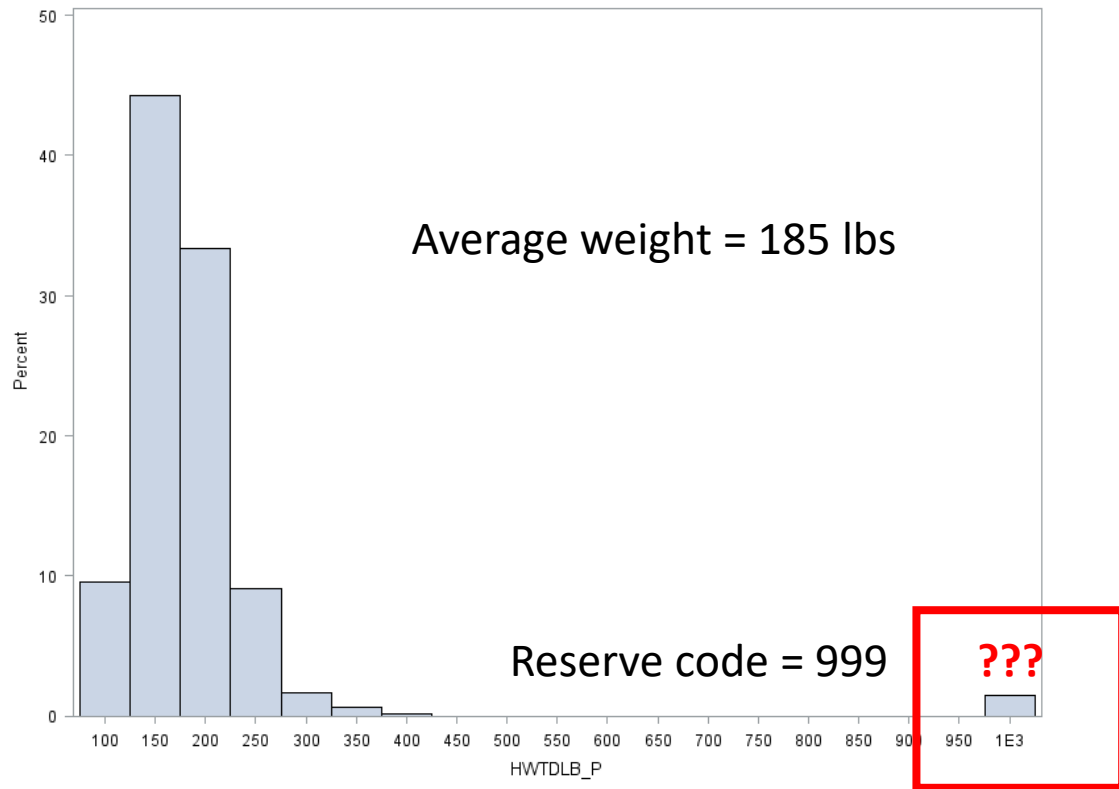
Invalid data

Missing data

Outlier



Visualize your data



Define your concepts



Is a hot-dog a sandwich?

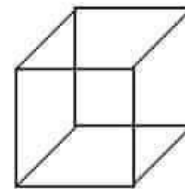
slido



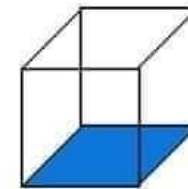
Define your concepts

Is a hot-dog a sandwich?

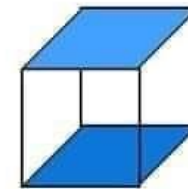
Based on the Cube Rule of Food Identification, a hot-dog is... a **taco**



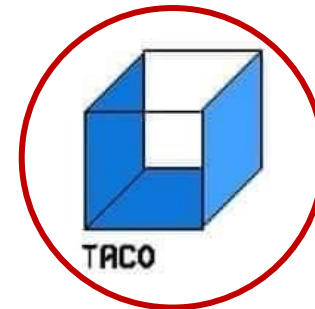
SALAD



TOAST

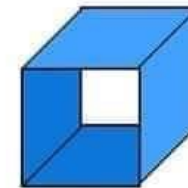


SANDWICH

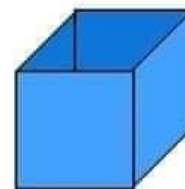


TACO

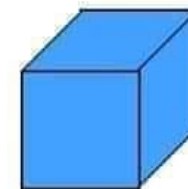
THE CUBE RULE
OF FOOD
IDENTIFICATION



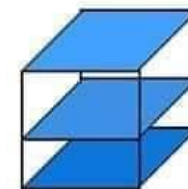
SUSHI



QUICHE



CALZONE



CAKE

Define your concepts

Best practice:

- Use your organization's **norms and standards**;
- Make sure you are **consistent** over time and over products.



Know your data source

Highest level of education attained, **2001** Census

1= Not applicable

2= Less than high school

3= High school

4= Bachelor's degree

5= University above Bachelor's degree

Highest level of education attained, **2021** Census

1= University above Bachelor's degree

2= Bachelor's degree

3= High school

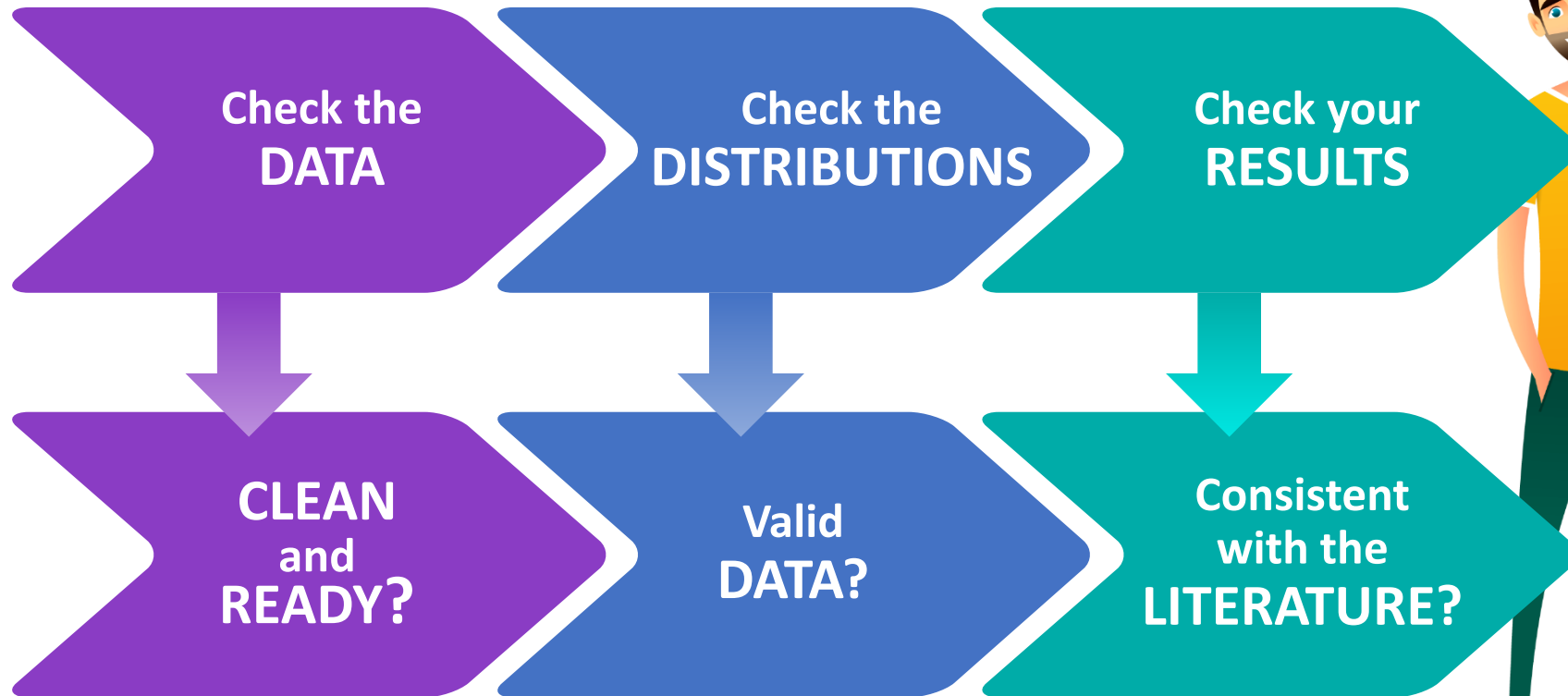
4= Less than high school

5= Not applicable

1. Check if the questions were asked in the same way

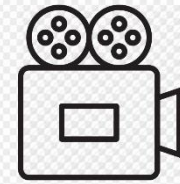
2. Check if the responses categories are the same

Data checks throughout your analysis

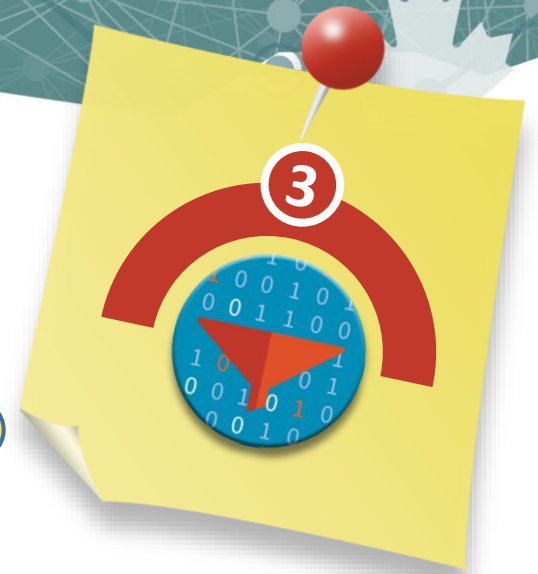


Steps prior to data analysis

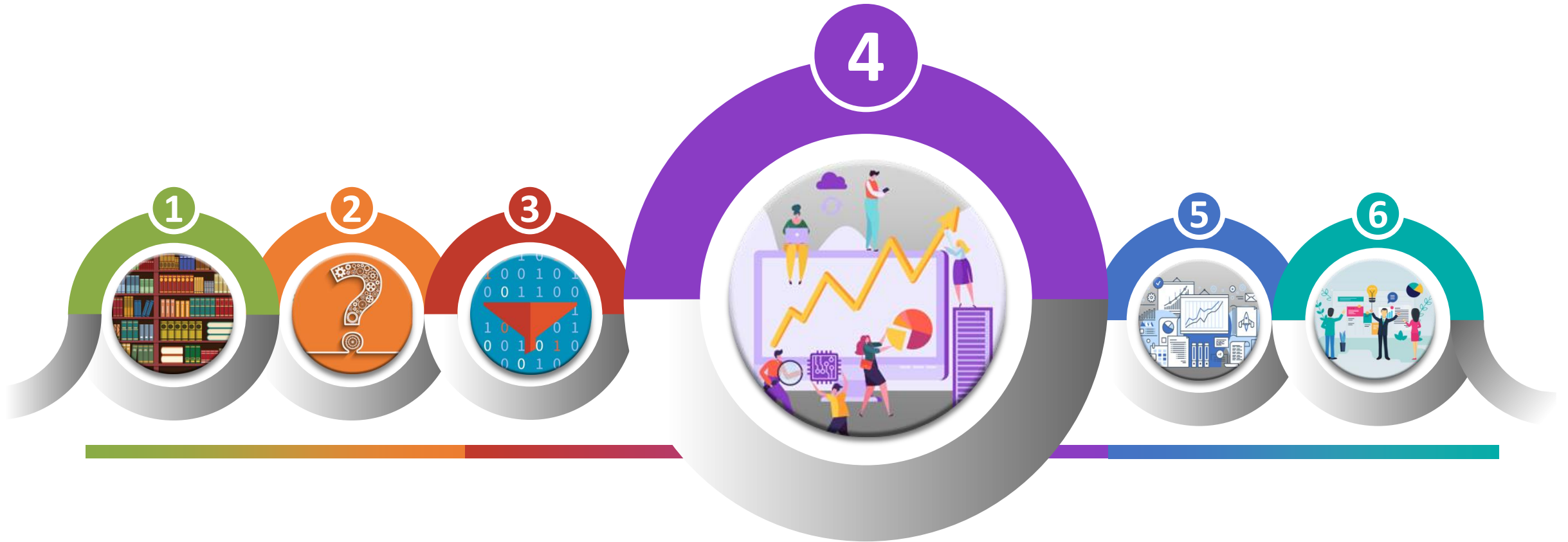
- Get familiar with the data
- Clean the data
 - VIMO (Valid, Invalid, Missing, Outlier)
- Play with the data
- Document every decision and every step!



Self-study:
Data Accuracy
and Validation



Step 4: Perform the analysis



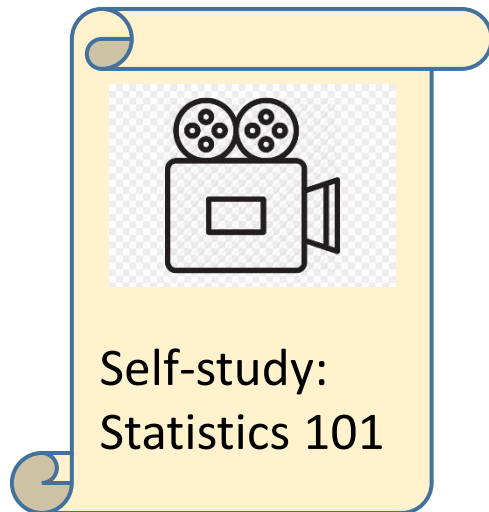
Perform the analysis

Look for answers to your analytical questions

- Proceed following your plan
- Populate your table templates
- Check your results as you go:
 - Are they **consistent**? (other releases)
 - Are they **robust**? (quality indicators)
- Summarize your results as you go



Perform the analysis



Statistics 101 series:

Exploring measures of central tendency

Exploring measures of dispersion

Proportions, ratios and rates

Correlation and causality

Confidence intervals



Be flexible

- Unexpected results: error in data or true novel finding?
- Be flexible and adjust your plan to investigate
- Consult! Obtain feedback on your change of plan



Perform the analysis: Best practises

Comparison

Feedback

Validation

Certification



Implementing your plan: Key points

- ✓ Prepare and check your data: **it's important and it takes time!**
- ✓ Perform the analysis: **address your analytical objectives**



Document
your
decisions!

Self-study suggestions for Module 2

Check out
this free
resource!

Self-study
suggestions

Statistics Canada Statistique Canada

Search website

Subjects Data Analysis Reference Geography Census Surveys and statistical programs About StatCan Canada.ca

Home > Workshops, training and conferences

Data literacy training

As Canada's national statistical organization, Statistics Canada is committed to sharing our knowledge and expertise to help all Canadians develop their data literacy skills. The goal is to provide learners with information on the basic concepts and skills with regard to a range of data literacy topics.

The training is aimed at those who are new to data or those who have some experience with data but may need a refresher or want to expand their knowledge. We invite you to check out our [Learning catalogue](#) to learn more about our offerings including a great collection of short videos. Be sure to check back regularly as we will be continuing to release new training.

What is data literacy?

Data literacy is the ability to derive meaningful information from data. It focuses on the competencies involved in working with data including the knowledge and skills to read, analyze, interpret, visualize and communicate data as well as understand the use of data in decision-making.

Data literacy also means having the knowledge and skills to be a good data steward including the ability to assess the quality of data, protect and secure data, and their responsible and ethical use.

[Data literacy competencies](#)
Data literacy competencies are the knowledge and skills you need to effectively work with data.

[Data journey](#)
The data journey represents the key stages of the data process starting with finding and exploring data through to telling the data story.

[Learning catalogue](#)
Check out the data literacy training available from Statistics Canada.

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Analysis 101, part 2: Implementing the analytical plan

<https://www.statcan.gc.ca/en/wtc/data-literacy/catalogue/892000062020010>

Data Accuracy and Validation: Methods to ensure the quality of data

<https://www.statcan.gc.ca/en/wtc/data-literacy/catalogue/892000062020008>

Statistics 101 series