Group's Number: _____          Names: _____
                                                 _____
                                                 _____

# Let's Talk with Data!

Invent a name of your team: _____

Define the role of each team's member:

| Role | Description | Name |
|------|-------------|------|
| Statistician | analyse and interpret data using statistical methods | |
| Researcher | identify the research questions, analyse the meaning of the results | |
| Developer | select and handle technological tools | |

## Preliminary Step: Observe before Doing!

You receive an email from a costumer with the file *dataset.xlsx* attached. Open the file on Excel.

a. Describe what is a dataset for you.

b. Observe and try to hypothesize where this dataset came from.

c. Observe and describe what each column in the dataset represents. Complete the following table.

| Column name | Description | Possible values |
|-------------|-------------|-----------------|
| ID | unique identifier for each row representing a person | 1-480 |
| Gender | | Male-Female |
| Married | | |
| | | |
| | | |
| | | |
| | | |
| | | |

# Let's Start: Customer's Requests

**Customer Description:** Miss Finicky is the director of a large bank called *ILoveStatistic*, which operates in the Italian territory. She sends you a dataset regarding to loan applications received in September.

**Data Description:**The dataset contains personal information of the bank's customers such as gender, whether the customer is married, dependents, age, whether the customer is self-employed, and the customer's income. It also contains information of the loan granted to the customer by the bank.

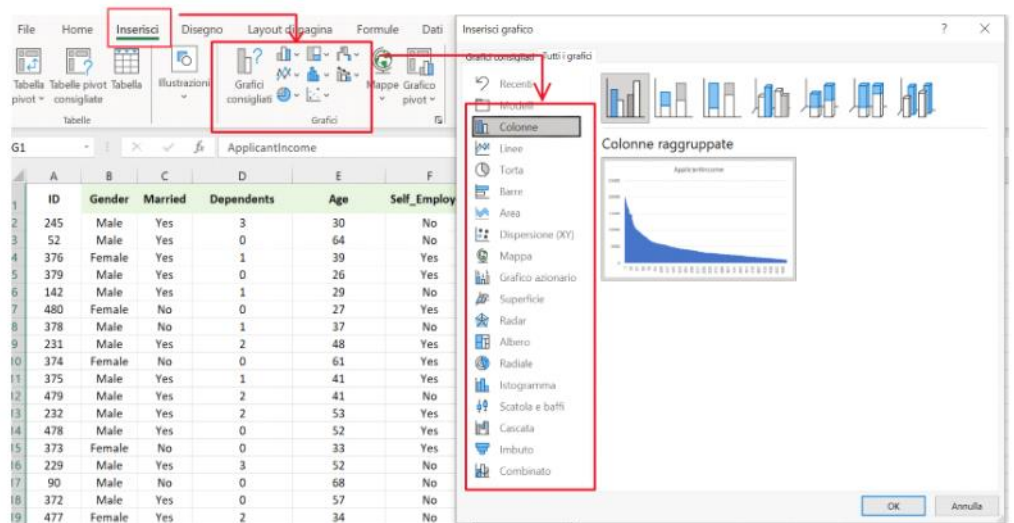| | CUSTOMER'S REQUESTS | OUTCOME | DEADLINE |
|---|---|---|---|
| **1st Step:** **Create your Dashboard!** | **Customer's first request:** "...I would like a *dashboard* describing the main characteristics of the bank's customers who have requested a loan from the bank in September." | Dashboard and Presentation | Within 30 days |
| **2nd Step:** **Data doesn't Lie!** | **Customer's second request:** "...I would also know if there is a quick method to figure out globally, if any of my employees have falsified my data regarding clients' income. I would need to know if the data was randomly generated or if it can reflect reality. I need a *report* with the evidence. Then, if it turns out from this first general analysis that there are anomalies, I would personally check it." | Report | Within 20 days |
| **3rd Step:** **Let's Make Ends Meet!** | **Customer's third request:** "… I would like to understand the relation between the applicant income and the loan amount allowed. " | Report | Within 30 days |

# Project Planning Sheet

| | **Description** | **Hint** |
|---|---|---|
| **1° Step: Comprehention** | Understand customer's requests and identify research project questions. | *What is a dashboard?*<br><br>*Definition: a dashboard is a form of data visualization which provides at-a-glance views of data information relevant to a particular objective.*<br><br>*The dashboard can contain one or more of the following representations:*<br>- *visual-graph representations, e.g. pie chart, histograms, etc.;*<br>- *numerical-statistical representation, e.g. mean, variance, percentage;*<br>- *verbal representations: e.g. text description;*<br>- *or other representations of your choice.*<br><br>Use your creativity and select the best way to describe the main characteristics of the dataset for your customer! |
| **2° Step: Brainstorming: Generate Ideas!** | For each research questions make or search for ideas, including statistical methods and technological tools that you want to try. | *If you need some ideas you can read this insight.*<br><br>*Benford Law*<br>*Matematica azzurro 5, capitolo 23, Zanichelli*<br><br>*Bravias-Pearson coefficient*<br>*Matematica azzurro 5, capitolo 7, Zanichelli* |
| **3° Step: Planning** | Identify the steps to achieve the results.<br><br>Organize the time schedule.<br><br>Division of roles. | *If you need you can make a gantt chart.*<br><br>*Definition: a gantt chart is s chart in which a series of horizontal lines shows the amount of work to do in certain periods.*<br><br>*Example of gantt chart:*<br> |

| | | |
|---|---|---|
| **4° Step: Develop and test your ideas** | Design, develop and store the results as you prefere. | Use Excel to make graphs, tables, calculations, formulas and so on.<br><br>*To create a graph in Excel go to "Inserisci" dropdown and click on your prefered graph.*<br><br><br><br>*If needed you can use these functions:*<br><br>STRINGA.ESTRAI(testo;inizio;numero_caratteri)<br>CASUALE.TRA(minore;maggiore)<br>CORRELAZIONE(variabile1;variabile2)<br>COVARIANZA.C(variabile1;variabile2)<br>DEV.ST.C(variabile) |
| **5° Step: Prepare outcome and presentation** | Prepare outcome and presentation as you prefere. | *For example:*<br>*The dashboard can be digital (for example in Excel) or physical (for example you can print the graphs made in Excel and make a poster). Again use your creativity!*<br><br>*Example of dashboard:*<br><br> |
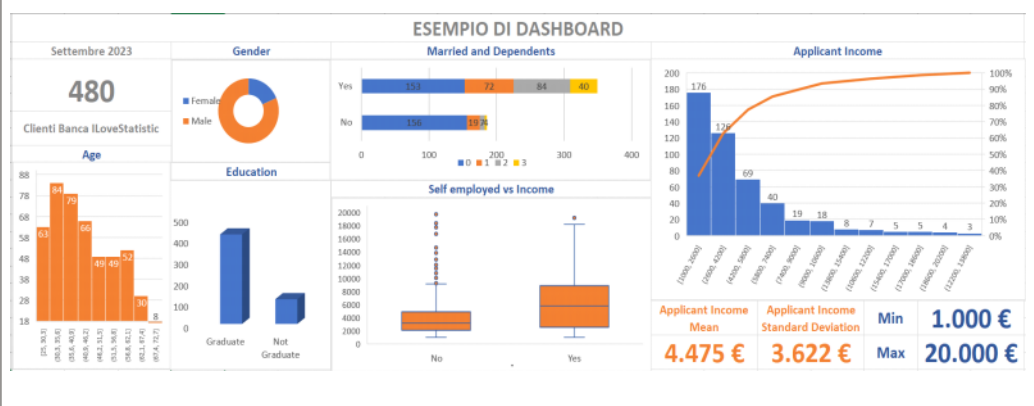
# Assessment's Sheet: Self and Peers Assessments

For each item the minimum score is 0 and the maximum is 3 (0, missing; 1, inadequate; 2, needs some improvements; and 3, adequate).

| 1st Step: **Create your Dashboard!** | Group 1 | Group 2 | Group 3 | Group 4 | Group 5 | Group 6 |
|---|---|---|---|---|---|---|
| is able to select data to represent for the customer's request | | | | | | |
| is able to represent data in a meaningful way | | | | | | |
| is able to analyse the results appropriately | | | | | | |
| is able to describe and compare the results | | | | | | |
| is able to analyse the meaning of the results | | | | | | |
| is able to organize the project work | | | | | | |
| is able to present results in a understandable way | | | | | | |

| 2nd Step: **Data doesn't Lie!** | Group 1 | Group 2 | Group 3 | Group 4 | Group 5 | Group 6 |
|---|---|---|---|---|---|---|
| is able to select data to represent for the customer's request | | | | | | |
| is able to represent data in a meaningful way | | | | | | |
| is able to analyse the results appropriately | | | | | | |
| is able to describe and compare the results | | | | | | |
| is able to analyse the meaning of the results | | | | | | |
| is able to organize the project work | | | | | | |
| is able to present results in a understandable way | | | | | | |

| 3rd Step: **Let's Make Ends Meet!** | Group 1 | Group 2 | Group 3 | Group 4 | Group 5 | Group 6 |
|---|---|---|---|---|---|---|
| is able to select data to represent for the customer's request | | | | | | |
| is able to represent data in a meaningful way | | | | | | |
| is able to analyse the results appropriately | | | | | | |
| is able to describe and compare the results | | | | | | |
| is able to analyse the meaning of the results | | | | | | |
| is able to organize the project work | | | | | | |
| is able to present results in a understandable way | | | | | | |

**After the presentations and the related assessments**: Revise, if necessary, your work based on other groups' feedbacks.