

Homework problems:

Exercise 2.1 (4 points). Answer all the questions from the Quiz **Intro to data**.

The quiz is available from April 22, 19:00 until April 29, 09:00. You have 45 minutes to answer the questions.

Remark: The points for this problem count for the grade bonus.

Exercise 2.2.

In a study of three nationally representative large-scale data sets from Ireland, the United States, and the United Kingdom ($n = 17,247$), teenagers between 12 and 15 were asked to keep a screen time diary and answer questions about how they felt or acted. The answers were then used to compute a psychological well-being score. Additional data were collected and included in the analysis, such as each child's sex and age, and on the mother's education, ethnicity, psychological distress, and employment. The study concluded that there is little clear-cut evidence that screen time decreases adolescent well-being.

- a) What type of study is this?
- b) Identify the explanatory variables.
- c) Identify the response variable.
- d) Comment on whether and why the study results can be generalized to the population.
- e) Comment on whether the study results can be used to establish causal relationships.

Exercise 2.3.

The following summary table shows the number of space launches in the US by the type of launching agency and the outcome of the launch (success or failure).

	1957 - 1999		2000 - 2018	
	Failure	Success	Failure	Success
Private	13	295	10	562
State	281	3751	33	711
Start up	-	-	5	65

- a) What variables were collected on each launch to create the above summary table?
- b) State whether each variable is numerical or categorical. If categorical, state whether it is ordinal or not.
- c) Suppose we wanted to study how the success rate of launches varies between launching agencies and over time. In this analysis, which variable would be the response variable, and which would be the explanatory variable?

Exercise 2.4.



Complete the IDSST R tutorials

- `tibbles`,
- `exploratory-data-analysis`, and
- `visualization-basics`

until April 29.