Evaluating Classifiers

What have we done so far?

- General introduction into Machine Learning
- We have seen our first machine learning model: Logistic Regression
- Loosely Speaking: Logistic Regression will create a prediction for each specific data point given the input data that you define (through feature engineering and fitting the model) (input data X --> Logistic Regression --> prediction)
- We saw yesterday that not all features can be fed into the model as they are --> Feature Engineering
- With these skills we can build a model that can make predictions as to whether a person survived or not
- **Main Goal**: Come up with a model that is able to make predictions; come up with a model that is making good predictions (main goal for the whole week)

How do we know if our model is any good?

- This is the question we are trying to answer this afternoon.
- **First of all, we actually have to decide on what we really want to achive!!**
- Do we value finding every patient more than alarming healthy people or not?
- Usually in the context of medical diseases you try to find everyone who is at risk to be able to treat them
- There is a tradeoff between a model that finds all "positive" cases and a model that does not classify "negatices" as "positives" ()

In the second step, after trading off the two types of models, we can calculate some metrics that allow us to inspect model performance further

- Accuracy (Ratio of correctly classified data points)
- Precision (How certain are we that our positive predictions are true?)
- Recall (How certain are we that we classified all true cancer cases as positive?)
- F1-Score