Method card 9

In this card, we explain how to fill in an answer sheet for a hypothesis test.

The situation is the following: we want to know whether some hypothesis on a statistical model, which is supposed to describe some behaviour of a population, is true or not. For this, we have a sample of some variable(s) and we use it, by making a **hypothesis test**, in order to decide to keep or reject the hypothesis at a given significance level (the (small) admissible probability to reject wrongly the hypothesis).

Step 1. Determining the type of test. The possible tests are displayed Appendix B that we summarize here:

B.1	**Parametric statistical tests for one sample**
B.1.1	Tests on the mean and variance of a Gaussian variable
B.1.2	Test on a proportion of aBernoullivariable
B.1.3	Test on a mean for orther square integrable variables
B.2	**Parametric statistical tests for comparing two independent samples**
B.2.1	Gaussian samples (comparison of the means and the variances)
B.2.2	Tests on the parameters of Bernoulli samples
B.2.3	Tests on mean for square integrable parent variables
B.3	**Non parametric chi-squared tests**
B.3.1	Chi-squared goodness of fit test (comparing the sample 's distribution to a given one)
B.3.2	Comparaison of the distribution of samples of two or more groups
B.3.3	Chi-squared independence test (of two variables measured on the same sample)

Step 2. Context. Identify

(a) the population,
(b) the sample(s),
(c) the variable(s) concerned by the test,
(d) the parameter (for parmetric test only).

Step 3. Mathematical setting. We identify the hypothesis H_0 that we want to test and its counterpart H_1 (possibly the contrary of H_0). For parametric tests, we express the hypotheses on the parameter(s). Appendix B identifies, for each test, a decision variable D and a reject region for H_0 defined in terms of D.