

Statistical Methods for Economists – Week 2

(Questions and Tasks)

The topic: *Hypothesis testing*

- 1.) Explain what is a statistical hypothesis, and what is a null hypothesis.
- 2.) Explain what is a statistical significance and p-value.
- 3.) What 4 main steps are involved when testing a hypothesis?
- 4.) Explain the difference between a parametric and a non-parametric test.
- 5.) (One-sample t-test for the population mean) Test the hypothesis that an average bank loan is 25 000 Euro in a certain bank, if the sample of bank loans (obtained randomly) is: 30 000; 15 000; 22 000; 50 000; 20 000; 18 000; 15 000; 30 000 Euro.
- 6.) (Two-sample t-test of pop. means with equal variances) Test the hypothesis that the consumption of salt and sugar per month in ten randomly chosen households is the same.

<i>household no.</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>
salt (kg)	1.5	2.2	4.0	3.6	2.2	2.8	1.7	2.3	3.5	2.8
sugar (kg)	3.3	4.1	2.7	3.5	3.6	2.8	3.9	2.5	2.4	3.8

- 7.) Use F-test to test the hypothesis about equality of variances (salt vs sugar) in the previous Problem 6.
- 8.) Explain how Chi-test is used for testing hypothesis.
- 9.) (Chi-square test) In the table below there is a statistics of car crashes in a town X. Test the hypothesis that the number of crashes in each month is the same.

Month	January	February	March	April
Car crashes	15	22	17	24

- 10.) (Chi-square test) In the table below there are numbers of men and women visiting (or not) local wellness (based on a random sample). Test the hypothesis that women and men visit the wellness equally.

	visit wellness	do not visit
Men	50	54
Women	68	48

