Introduction to the Practice of Statistics

List 5

Laboratory

1. From the data set `income.dat`:
   (a) Draw 200-element random sample and construct (using Agresti-Coulli method) 95% confidence intervals for fraction of people with at least bachelor's degree (p_W), fraction of women (p_K) and fraction of people working in private sector (p_P).
   (b) Repeat (a) 200 times, draw histograms of distributions of the above estimators and compute how often confidence interval contained the real value of the estimated parameter and the average length of those intervals.
   (c) Repeat (a) and (b) for classic confidence intervals and compare the results with the result obtained using Agresti-Coulli method.
2. Simulate 100 coin tosses and based on that sample construct a 95% confidence interval for the fraction of heads, first using Agresti-Coulli method, then using the classic method. Compare the results with the theoretical computation for a symmetric coin (based on the approximation of the binomial distribution by the normal distribution).