

In-class exercise week 3

Topic: model choice, confidence interval

Model choice:

Assign appropriate probability distributions or models to the described random variable.

a) In a 24-hour medical practice at each full hour the number of patient during the last hour is counted. Measurement of interest: number of patient per hour.

☐ Binomial ☒ Poisson ☐ Bernoulli ☐ Other

b) The success rate of a penalty kick is 75%.

Measurement of interest: The number of scored penalties within 10 tries (there was a goal):

☒ Binomial ☐ Poisson ☐ Bernoulli ☐ Other

c) A company reports for the last 10 years 122 sick leaves with durations of >2months due to bore-outs.

Measurement of interest: Number of bore-outs-leaves >2months in the next year.

☐ Binomial ☒ Poisson ☐ Bernoulli ☐ Other

d) In a package with 100 screws 10 are defect.

Measurement of interest: Number of defect screws in a sample of 20 randomly picked screws.

☒ Binomial ☐ Poisson ☐ Bernoulli ☐ Other

e) The publisher knows that on average 20 pages of a book contains 1 typo.

Measurement of interest: Number of typos in a book of 250 pages.

☐ Binomial ☒ Poisson ☐ Bernoulli ☐ Other

f) A paternity test may conclude if a potential child's father is the biological father.

On average 60% of all conducted tests turn out positive.

Measurement of interest: Does a randomly picked test turn out positive?

☐ Binomial ☐ Poisson ☒ Bernoulli ☐ Other

g) The sources of X-rays of a X-ray apparatus are controlled each 2 years.

Measurement of interest: Number of control until a source is fails the test.

☐ Binomial ☐ Poisson ☐ Bernoulli ☒ Other

Confidence Interval:

With a confidence interval we can decide:

Is there a significant difference to a postulated value θ_0 ?

Is the difference relevant ($>\Delta$)?

