

MA4413 Statistics for Computing

Tutorial Sheet for week 3

September 17, 2013

(Time constraints may require continuation in Week 3.)

Question 1

A doctor treating a patient issues a prescription for antibiotics and provides for two repeat prescriptions. The probability that the infection will be cleared by the first prescription is $p_1 = 0.6$.

The probability that successive treatments are successful, given that previous prescriptions were not successful are $p_2 = 0.5$, $p_3 = 0.4$. Calculate the probability that

- (a.) the patient is still infected after the third prescription,
- (b.) the patient is cured by the second prescription,
- (c.) the patient does not require a third prescription,
- (d.) the patient is cured by the second prescription, given that the patient is eventually cured.

Question 2

A driver passes through 3 traffic lights. The chance he/she will stop at the first is $1/2$, at the second $1/3$ and at the third independently of what happens at any of the other lights.

What is the probability that

- (a) . the driver makes the whole journey without being stopped at any of the lights
- (b) . the driver is only stopped at the first and third lights
- (c) . the driver is stopped at just one set of lights.
- (d) . the driver stopped at the second set of lights, given he/she stopped at one set of lights.

Question 3

The masses of 30 human males and 30 arabian stallions were observed. Their masses (in lbs) are given below

Humans

106, 120, 130, 138, 145, 151, 156, 161, 166, 171
176, 180, 185, 189, 194, 198, 203, 208, 212, 217
223, 228, 234, 240, 247, 255, 264, 276, 290, 313

Stallions

808, 824, 835, 843, 851, 857, 862, 868, 872, 877
881, 886, 890, 894, 898, 902, 906, 910, 914, 919
923, 928, 932, 938, 943, 949, 957, 965, 976, 992

- a) Draw histograms for these samples and compare them with respect to shape, centrality and relative dispersion.
- b) Calculate the medians of these samples (from the raw data).