

Homework 2 – Solution

Problem 2_2

$$P(V) = 2 * P(A) = 2/3$$

Sample space of this experiment is
{AV, VA, VVV, AAA, AAV, VVA}, with the probability of

$$\begin{aligned} P(AV) &= 2/9; P(VA) = 2/9; \\ P(VVV) &= 8/27; P(AAA) = 1/27; \\ P(AAV) &= 2/27; P(VVA) = 4/27. \end{aligned}$$

$X = \{\text{Number of accidents recorded}\}$.

<u>X</u>	<u>P(X)</u>
0	8/27
1	16/27
2	2/27
3	1/27

The expected value is $E(X) = 16/27 + 2 * 2/27 + 3 * 1/27 = 23/27$

Problem 2_2

Stratified random sample should be drawn from the 4 divisions, with the number of surveyed employees proportionally to their department size.

3 from Anatomy; 1 from Computational; 5 from Modeling and 1 from Visualization

(Note that numbers are rounded to integers)

Problem 2_3

A resistant measure is the measure that does not change much when extreme values in the data change.

Median = 1;

Mean = 6;

2-times trimmed mean = 2/3;

Windsorized 2-times mean = 10/13;

Other possible estimates: (5-percentile + 95-percentile)/2, etc. You can always come up with your own estimates.