KFUPM | Term 182 | Date: 9/4/2019

Mathematics & Statistics | AS 483 | Duration: 45 minutes

Quiz# 5

Name: ID #: Section:

Q1: Members of three classes of insureds can have 0, 1 or 2 claims, with the following probabilities:

	Number of Claims		
Class	0	1	2
I	0.9	0.0	0.1
II	0.8	0.1	0.1
III	0.7	0.2	0.1

A class is chosen at random, and varying numbers of insureds from that class are observed over 2 years, as shown below:

Year	Number of Insureds	Number of Claims
1	20	7
2	30	10

Determine the Bühlmann-Straub credibility estimate of the number of claims in Year 3 for 35 insureds from the same class.

Q2: An insurance company is revising rates based on old data. The expected number of claims for full credibility is selected so that the observed total claims will be within 5% of the true value 90% of the time. Individual claim amounts have pdf 1/200,000, $0<x<200,000$, and the number of claims has the poison distribution. The recent experience consists of 1,082 claims. Determine the credibility, Z, to be assigned to the recent experience. Use the normal approximation.

Q3: An insurer writes a large book of home warranty policies. You are given the following information regarding claims filed by insureds against these policies:

(i) A maximum of one claim may be filed per year.
(ii) The probability of a claim varies by insured, and the claims experience for each insured is independent of every other insured.
(iii) The probability of a claim for each insured remains constant over time.
(iv) The overall probability of a claim being filed by a randomly selected insured in a year is 0.10.
(v) The variance of the individual insured claim probabilities is 0.01.

An insured selected at random is found to have filed 0 claims over the past 10 years.

Determine the Bühlmann credibility estimate for the expected number of claims the selected insured will file over the next 5 years.