# Announcement for the 3rd Edition of the ACTEX Manual for Exam ASTAM

(Last updated 09/21/2024) sorted by page

Page 778 **Problem 1. Firt Table.**

Cumulative claim payments should be Cumulative reported claims.

Page 838 **Formula 35.15.**

Change the formula to:

$$\hat{\alpha}_j^H = \left( \frac{\sum_{i=j}^{n} \log(x_{(i)}/x_{(j)})}{n-j+1} \right)^{-1}$$

Page 844 **Solution to Problem 8.**

Change the solution to:

The sorted claims (in incresing order) are given in the following table.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.14 | 0.17 | 0.19 | 0.23 | 0.24 | 0.28 | 0.30 | 0.31 | 0.33 | 0.35 |
| 0.40 | 0.46 | 0.50 | 0.85 | 0.94 | 1.02 | 1.05 | 1.51 | 2.43 | 2.73 |

Now selecting $x_{(15)} = 0.94$ as the threshold value in the Hill estimator, we have

$$\hat{\alpha}_{15}^H = \left( \frac{\log 1.02 + \log 1.05 + \log 1.51 + \log 2.43 + \log 2.73}{6} - \log 0.94 \right)^{-1}$$
$$\approx 2.19.$$

Based on the Hill estimator, the estimated probability is

$$\mathbb{P}(X > 2.5) = \frac{5}{20} \times \left( \frac{2.5}{0.94} \right)^{-2.19} \approx 0.029.$$

Page 849 **Solution to Problem 2.**

The updated Workbook Solution can be downloaded here.

Change (b) to:

(b) Since $N$ has a geometric distribution with mean 0.5, we have $r = 1$ and $\beta = 0.5$. Also, $N$ has an $(a, b, 0)$ distribution with $a = \frac{\beta}{1+\beta} = \frac{.5}{1.5} = \frac{1}{3}$ and $b = 0$. The geometric distribution is a special case of the negative binomial with $r = 1$, and in this case, since $E[N] = 0.5$, we have $\beta = 0.5$.

Again, since $P(X = 0) = 0$ we have $P(S = 0) = P(N = 0) = \frac{1}{1+\beta} = \frac{2}{3}$. Also, for the severity distribution, the recursive formula becomes

$$P(S = x) = f_S(x) = \sum_{j=1}^{x} \frac{1}{3} \times f_X(j) \times f_S(x - j).$$

Again, since $f_X(j) = 0$ for $j \geq 5$ the formula becomes

$$P(S = x) = f_S(x) = \sum_{j=1}^{4} \frac{1}{3} \times f_X(j) \times f_S(x - j).$$

In the workbook we see that $P(S = 36) < 10^{-8}$, so $|F_S(x) - 1| < 10^{-8}$ for $x \geq 36$.

Column G in the Geometric workbook shows that the $\sum_{j=1}^{x} x \times f_S(x)$ approaches the mean of $S$ which is $E[S] = E[N] \times E[X] = \frac{1}{2} \times 2 = 1$.