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5-33. A large insurance company has discovered that 0.2% of the U.S. population is injured as a result of a particular type of accident. This company has 15,000 policyholders carrying coverage against such an accident. What is the probability that three or fewer claims will be filed against those policies next year? Five or more claims?

The company has no idea how many of its 15,000 policy holders actually have been injured, but if they went by the averages, they would expect $15000 \cdot 0.002 = 30$ people to file claims. We will use the Poisson Dist.

$$P(0 \leq X \leq 3) = \sum_{x=0}^3 e^{-30} \frac{30^x}{x!} = 4.7 \times 10^{-10}$$

$$P(5 \leq X) = 1 - \sum_{x=0}^4 e^{-30} \frac{30^x}{x!} \approx 1 - 3.62 \times 10^{-9} \approx 1$$