Answer on Question #80522 – Math – Statistics and Probability

Question

The staff car park at the hospital has 330 spaces, and parking is restricted to permit holders. Data collected earlier indicate that only 85% of the permit holders will be at the hospital on a given day. As a result, the hospital has decided to issue 380 permits. Calculate the probability that, on a given day, at least one of the permit holders will not obtain a parking space in this car park.

Solution

Let *Y* have the binomial distribution with

$$p = 0.85, n = 380, \text{ then } \mu = np = 323,\ \sigma = \sqrt{np(1-p)} = 6.96.$$

Let *X* be the normal approximation of *Y*.

So, $P(Y \geq 331) = P(X > 330.5) = P\left(X > \frac{330.5-323}{6.96}\right) = P(X > 1.078) =$

$= 0.1405.$

Answer: 0.1405.