3/26/2019

6.3.15 Airline Fatalities

According to sources, airline fatalities occur at the rate of 0.05 fatal accidents per 100 million miles.

Find the probability that, during the next 200 million miles of flight, there will be

(a) exactly zero fatal accidents.

(b) at least one fatal accident.

(c) more than one fatal accident.

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6.2.35 On-Time Flights

According to sources, American Airlines flights from Dallas to Chicago are on time 80% of the time.

Suppose 15 flights are randomly selected and the number of on-time flights recorded.

(a) Explain why this is a binomial experiment.

(b) Find and interpret the probability that exactly 10 flights are on time.

(c) Find and interpret the probability that fewer than 10 flights are on time.

(d) Find and interpret the probability that at least 10 flights are on time.

(e) Find and interpret the probability that between 8 and 10 flights, inclusive, are on time.

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Mr. Aguirre
Math 1342-13

⑥ Discrete probability - Distribution:

6.2 Binomial probability distribution:

(1) The experiment is performed a fixed number of times. Each repetition is called a trial.

(2) The trials are independent.

(3) There are only two outcomes.

(4) The pro of success is the same for each trial.

Binomial probability distribution function.

$$p(x) = {}_nC_x \, p^x (1-p)^{n-x} \qquad x = 0, 1, 2, \ldots, n$$

where p is the probability of success.

where $(1-p)$ is the probability of failure.

Example. $n = 4$

$p = 0.15$

x	$p(x)$
0	0.5220
1	0.3685
2	0.0975
3	0.0115
4	0.0005

Bell shaped if $p = 0.5$

Skewed right if $p < 0.5$

Skewed left if $p > 0.5$

* poisson distribution formula:

$$P(x; \mu) = (e^{-\mu})(\mu^x)/x!$$

where x is the actual no. of successes that result from the experiment, and e is approximately equal to 2.71828.