

Choosing whether to use binompdf or binomcdf

The following tables are binomial probability distributions for which $n = 6$ and $p = 0.65$. The desired probabilities are highlighted.

PDF

Find the probability of *exactly 2* favorable outcomes.

$$P(x = 2) = \text{binompdf}(6, 0.65, 2) = 0.0951021094$$

x	0	1	2	3	4	5	6
P(x)	.0018	.0205	.0951	.2355	.3280	.2437	.0754

CDF

Find the probability of *less than 3* favorable outcomes.

Find the probability of *at most 2* favorable outcomes.

Both of these mean *two or less*.

$$P(x < 3) = P(x \leq 2) = P(x=0) + P(x=1) + P(x=2) = \text{binomcdf}(6, 0.65, 2) = 0.1174239063$$

x	0	1	2	3	4	5	6
P(x)	.0018	.0205	.0951	.2355	.3280	.2437	.0754

CDF

Find the probability of *more than 2* favorable outcomes.

Find the probability of *at least 3* favorable outcomes.

Both of these are the *complement of two or less*.

$$P(x > 2) = P(x \geq 3) = 1 - P(x \leq 2) = 1 - \text{binomcdf}(6, 0.65, 2) = 0.8825760937$$

x	0	1	2	3	4	5	6
P(x)	.0018	.0205	.0951	.2355	.3280	.2437	.0754

* Remember that the cumulative sum of ALL probabilities is ONE :

$$P(x=0) + P(x=1) + P(x=2) + P(x=3) + P(x=4) + P(x=5) + P(x=6) = 1$$