



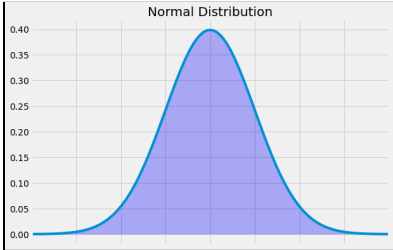
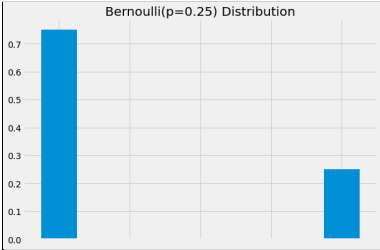
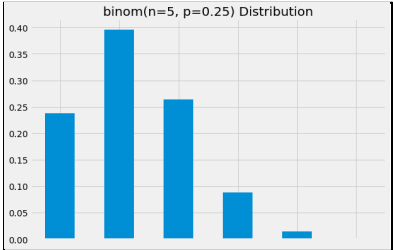
M5-03: Probability Point Function (PPF)

Part of the "Polling, Confidence Intervals, and the Normal Distribution" Learning Badge

Video Walkthrough: <https://discovery.cs.illinois.edu/m5-03/>

.ppf(), the Probability Point Function (PPF)

The .ppf() function is the inverse of the CDF. Specifically, the PPF is the point where the function $P(X \leq x)$ is equal to the value provided. Using the same distributions:

Distribution, Real-World Example, and Visualization:		
D = norm()	D = bernoulli(p=0.25)	D = binom(p=0.25, n=5)
<i>Ex:</i> The distribution of anything normally distributed (ex: height of men/women, etc).	<i>Ex:</i> The distribution of success in picking a red marble from a bag of 1 red and 3 blue marbles.	<i>Ex:</i> The distribution of the number of questions correct on a MCQ exam with 5 questions and each question has 4 choices.
 <p>Normal Distribution</p> <p>norm()</p>	 <p>Bernoulli(p=0.25) Distribution</p> <p>bernoulli(p=0.25)</p>	 <p>binom(n=5, p=0.25) Distribution</p> <p>binom(p=0.25, n=5)</p>
Probability Point Function (PPFs) in Python:		
<i>What is the Z-score when the CDF is 97.72%?</i>	<i>What is the 40th-percentile result of drawing marbles for a red marble?</i>	<i>What is the expected range of scores of the lowest 30% of students?</i>
Python Code: D.ppf(0.9772) Result:	Python Code: D.ppf(0.4) Result:	Python Code: D.ppf(0.3) Result:
<i>What is the Z-score when exactly half of the distribution is to the left?</i>	<i>What is the 80th-percentile result of drawing marbles for a red marble?</i>	<i>What is the expected range of scores of the top 80% of students?</i>
Python Code: Result:	Python Code: Result:	Python Code: Result: