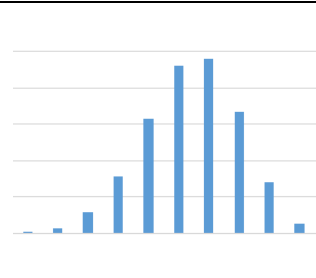
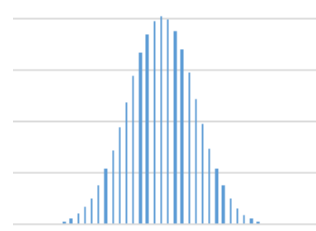
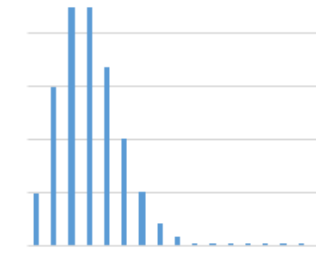
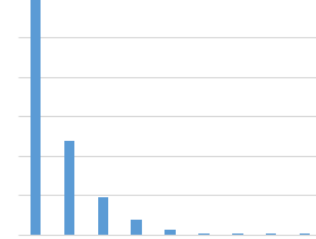
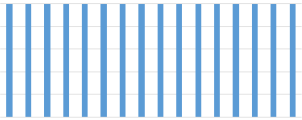


## Some Common Statistics Distributions

Name of Distribution	Conditions	Parameters	Equation	Graph	Typical Example
Binomial	<ul style="list-style-type: none"> <li>Discrete data</li> <li>Stated (or fixed) number of trials</li> <li>Only two outcomes; pass or fail</li> <li>Probability constant throughout</li> <li>Independence</li> </ul>	$X \sim B(n, p)$	$P(X = x) = \binom{n}{x} p^x q^{n-x}$		Find probability of obtaining at least 4 sixes when throwing a die 6 times.
Normal	<ul style="list-style-type: none"> <li>Continuous data</li> <li>Symmetrical distribution</li> </ul>	$X \sim N(\mu, \sigma^2)$	$P(X = x) = \frac{1}{\sqrt{2\pi}\sigma} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$		If mean height is 1.8m with variance of 0.04m, find probability that someone is less than 1.7m tall.
Poisson	<ul style="list-style-type: none"> <li>Probability constant throughout</li> <li>Independence</li> <li>Two events can't occur at once</li> </ul>	$X \sim Po(\lambda)$	$P(X = x) = e^{-\lambda} \frac{\lambda^x}{x!}$		If average number of lions seen on a 1-day safari is 5, find probabilities of seeing exactly 6 lions and less than 4 lions on the next safari.
Geometric	<ul style="list-style-type: none"> <li>Probability constant throughout</li> <li>Independence</li> <li>Only two outcomes; pass or fail</li> </ul>	$X \sim G(p)$	$P(X = x) = pq^{n-1}$		Find probability of passing driving test on 3 <sup>rd</sup> attempt, assuming probability of passing is 1/3 each time. How about $P(X \geq 3)$ ?

Uniform (Rectangular)	<ul style="list-style-type: none"> <li>• Discrete data</li> <li>• Probability constant throughout</li> <li>• Independence</li> </ul>	[a, b]	$P(X = x) = \frac{1}{b - a}$		<p>Prove that</p> $E(X) = \frac{1}{2}(a+b) \text{ and that}$ $Var(X) = \frac{1}{12}(b - a)^2$
Student's T-Squared	<ul style="list-style-type: none"> <li>• Continuous data</li> <li>• Non-Symmetrical distribution</li> </ul>				