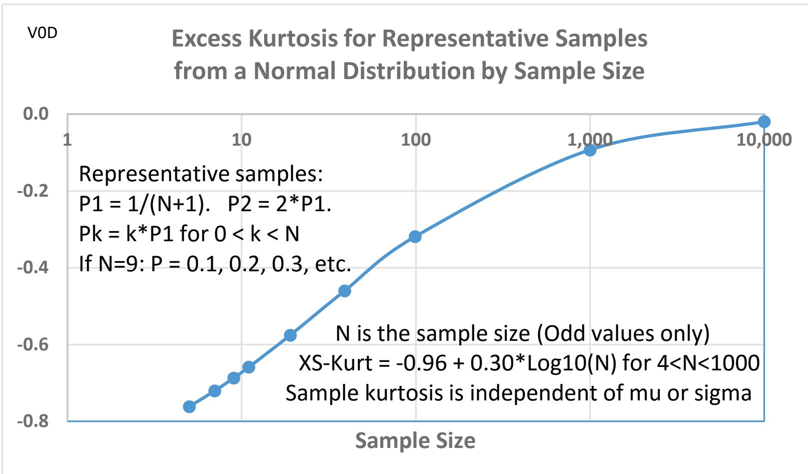
Skewness and kurtosis measure the shape of a distribution.

- Skewness measures asymmetry: comparing the right tail with the left tail.
- Kurtosis measures the heaviness of the tails compared to the distribution.

Excess kurtosis is the kurtosis in excess of that for a Normal distribution.
Excess kurtosis is zero for the Normal distribution as a continuous function.
Claim: Excess kurtosis is less than zero for equal-probability samples from a Normal distribution.

This graph shows the relationship between excess kurtosis and sample size for representative samples from a Normal distribution with a given mean and standard deviation. Underlying Excel file at:
> www.StatLit.org/Excel/2016-Schield-Kurtosis-in-Representative-Samples-from-Normal-Distributions.xlsx



In this approach, a "representative sample" is one involving N data points that correspond to the k/(N+1) probabilities where k ranges from 1 to N. As sample size decreases, excess Kurtosis decreases.

Why is this happening? Consider the plot of excess kurtosis versus the maximum value of Z. The smaller the sample size, the less the tails are clearly identified so it is harder to distinguish the shape from a uniform distribution. Excess kurtosis is $-(6/5)*[(n^2+1)/(n^2-1)]$ for a discrete uniform; -6/5 for a continuous uniform. http://mathworld.wolfram.com/Kurtosis.html