Geometric (a) – values cluster around the positive side of 0; mean and standard deviation have little meaning when the lower standard dev line is literally on top of the smallest member of the distribution, and the mean is significantly distorted by the outliers outside of the majority lying near zero. QQ plot is understandably distorted in a shallow U shape towards the lower right corner, due to the sheer quantity of lower-than-normal values in the first two thirds of the distribution.

Laplace (b) – Flatter QQ plot on average than a “proper” normal distribution, due to the dense clustering of points near the mean. Mean and standard deviation can say a lot about this distribution, as they contain the values of a larger percentage of point than they do in a normal distribution.

Rayleigh (c) – Mean, median, and distribution of data points can shift drastically between randomizations. While the general curve tends to observe a vague bell-curve distribution, as demonstrated by the tendency of the QQ plot to remain relatively straight for most iterations, the shape of the histogram is so mutable between randomizations that I would hesitate to use the mean and standard deviation as anything other than *very* rough ways to describe the distribution.

Logistic (d) – Like the laplace distribution, the logistic distribution is clustered tightly around the mean, though unlike the laplace it does not cluster so tightly as to have a distinctly flatter QQ plot than the normal distribution in each randomization; the outliers are large enough and occur often enough that the QQ plot can easily be mistaken for that of a normal distribution. Mean and standard deviation are reliable ways to describe the distribution.

Gumbel (e) – The mean and standard deviation do a decent, though not perfect, job of capturing the majority of the distribution, but the outliers are significantly off-set compare to a normal distribution, extending higher above the standard deviation line on the high end and more densely but closer to the standard deviation line on the low end. The QQ plot shows this as well, though not as clearly, with only a few outliers in the lower left, a dense and straight line similar to a normal curve, and then a notably larger trail of outliers leading into the upper right.

Weibull (f) – Seemingly the opposite of the gumbel distribution, the weibull’s mean and stadard deviation are shifted to the higher end of the spectrum, with a “tail” trailing off towards 0. However, the weibull histogram’s peak can shift significantly further away from its mean than the gumbel’s, and the QQ plot illustrates just how dramatic that difference can be, bendingupwards slightly towards the upper left in many randomizations, rather than forming a relatively straight line. While the mean and standard deviation tend to stay the same between randomizations, the outliers change dramatically, sometimes forming an almost-normal bell curve, while other times making a big-head/long-tail shape. Mean and standard deviation are iffy to describe the whole distribution, but (barely) acceptable if all you’re looking for is center of the curve.

Normal + Normal (x/y/z) – Histogram and QQ plots demonstrate the usual traits of a normal distribution, just blending the two randomizations of x & y. If one of those deviates from the “expected” distribution due to random chance, the other has good odds of being extreme in the opposite direction or simply closer to the average. Thus, adding the two together produce z tends gives a curve that is less “swingy” between randomizations than either x or y on their own, and closer to the “ideal” normal distribution.