

Local newspaper front headline had a big gory graphic, showing Presidio County virus spread as going "exponential." This statement has several issues:

- 1) You need to plot it semi-log to show it exponential (vertical axis logarithmic, horizontal axis arithmetic). It is the straight line section. See Figure 1 and Figure 2
- 2) In the entire Tri-County COVID 19 history, there is only one clear exponential example, and that was in Brewster County at the very beginning. See Figure 2
- 3) There are only 18,000 people in the entire Tri-County, and only 6,000 in Presidio County, which is too small a population to draw the conclusion that there is some sort of explosive growth (although there certainly could be). What happens with small populations is much higher variability (Presidio County could be considered a biased sample of a larger population, like Texas or the US). Much higher variability is obvious on the daily chart of Presidio County confirmed cases (Figure 3), but still visible on the cumulative chart. It is very noisy, so big changes in any direction on the daily chart can be due simply to variability. This also is visible on the cumulative chart seen as abrupt jumps upwards.

The US cumulative data is also shown (Figure 4), a much larger population (330m people). It is easy to see the exponential part of growth, which, like Brewster County, only happened at the very beginning. The exponential part of the growth curve, found *only* at the beginning of the event, is the part that is used to get the characteristic basic reproduction number ( $R_0$ ). Figure 5 shows the arithmetic progression of the US confirmed case count, which shows a lot less noise than the Tri-County examples. Figures 6 and 7 are Presidio County cumulatives, arithmetic and logarithmic, respectively.

(Data source: Johns Hopkins data on <https://github.com/CSSEGISandData/COVID-19>.)

