Analyzing the Accuracy of Pre-lockdown Daily Covid-19 Reports Using Benford's law

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Covid-19 reports have a substantial impact on the decisions that are made in making sure people are able to continue living their lives. Yet there have been multiple controversies on the accuracy of case reporting. Using Benford's law and testing the conformity of daily case reports' distribution to Benford's law, the accuracy of case reports can be more comprehensive. Here python with the panda and scipy.stats modules was used to create code to conduct the experiment. Furthermore the chi-squared and Kolmogorov Smirnov's tests were used to test for conformity of the countries' daily case reports first digit distribution to Benford's law distribution. If the p-values of either tests was less than 0.05, that hinted at inaccurate case reporting. Of the 15 countries that were tested, China, Italy, India, Chile, and the U.K had a p-value less than 0.05 in at least one of the tests, meaning that they did not conform to Benford's law distribution. These findings help narrow down the pool when looking for inaccurate reports, and should lead to more specific investigations into the causes in order to make reporting more accurate.

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