Assignment 7 USGS Earthquake Data Analysis Metadata File
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3/4/20

3.1. Include provenance of earthquake data

Time downloaded: 3/2/20 @ 1400

Detail: This USGS-sourced CSV file encompasses the time, lat/lon, depth, magnitude, magnitude type, nst, gap, dmin, rms (root mean square error), net, identifier, time since last updste, location of quake, type (all being earthquake), horizontal error, depth error, magnitude error, magnitude nst, status, location source, and magnitude source.

3.2. Discuss why genfromtxt() will not work with this data file

genfromtxt() will not work with this data file because there are multiple different data types within that need to be changed, for genfromtxt to work. Even though genfromtxt can handle CSV files, the shear volume of data and different data types inhibit this command from working properly.

3.3. Includes all figures generated by the program
3.4 Each figure includes a numbered caption that describes the figure and addresses the hints provided for each figure

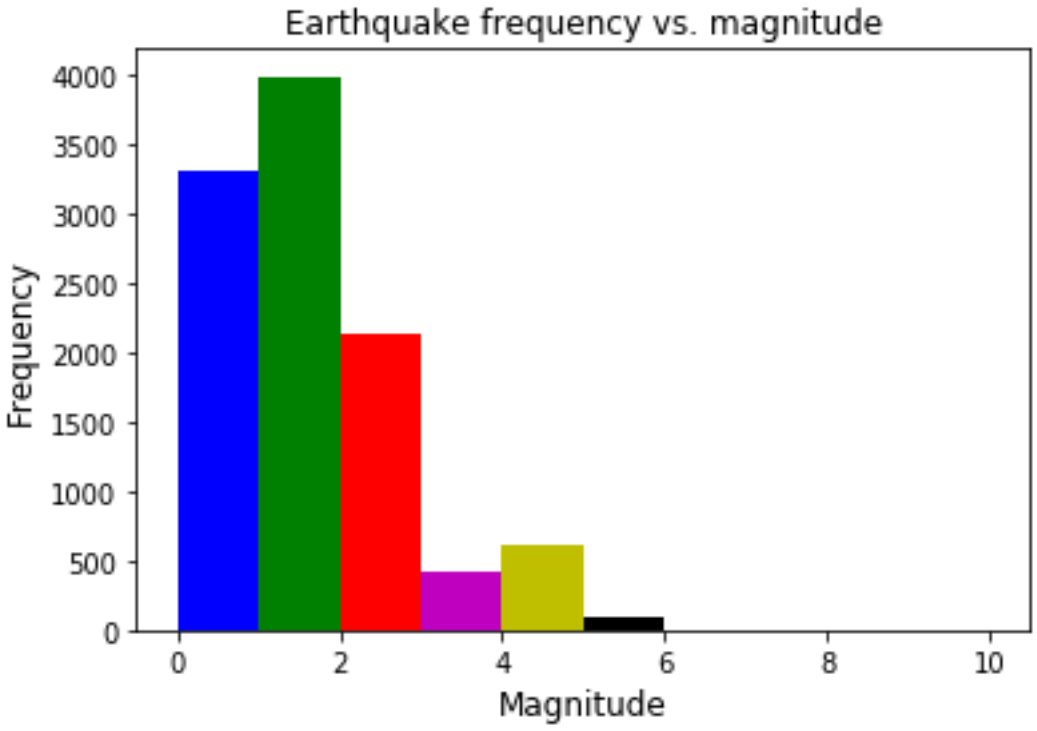

Figure 1: Earthquake Frequency vs. Magnitude Histogram. This histogram suggests that the bulk of earthquakes that occurred in the 30 day span from February 2nd to March 2nd 2020 had a magnitude less than 4.0 (a total of ~9400/~10,600).

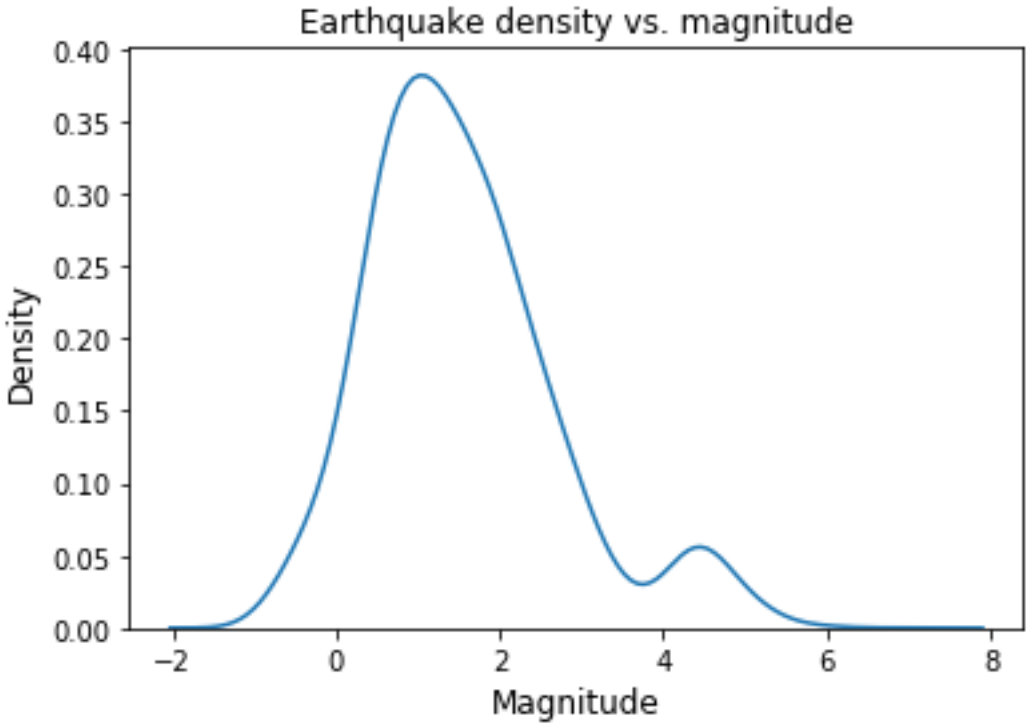

Figure 2: Earthquake Density vs. Magnitude KDE Plot with Kernel Type set to Gaussian and width set to 0.3. The distribution of earthquake magnitudes tend to follow the same pattern for both the histogram and KDE plots. However, the KDE plot starts at a magnitude of -2, while the histogram plot starts at 0. Density is simply frequency divided by 10000.

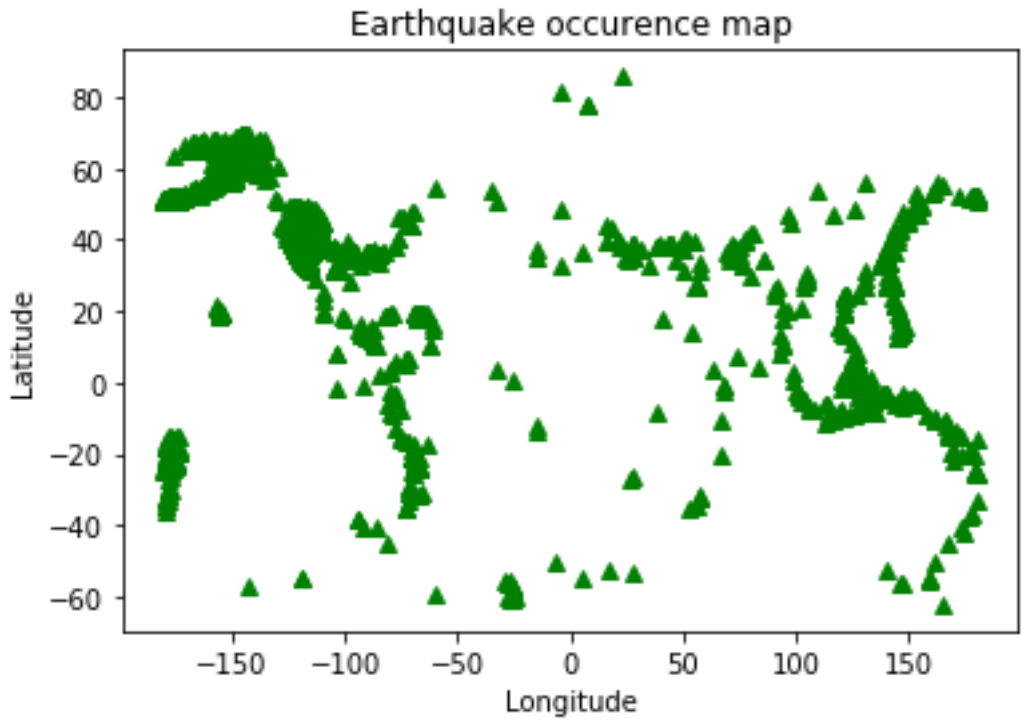

Figure 3: Latitude vs. Longitude Map of Earthquake Occurrence. These points appear to be distributed along the Earth's major fault lines. Latitude should always be on the X-axis and Longitude on the Y-axis to properly display the world map.

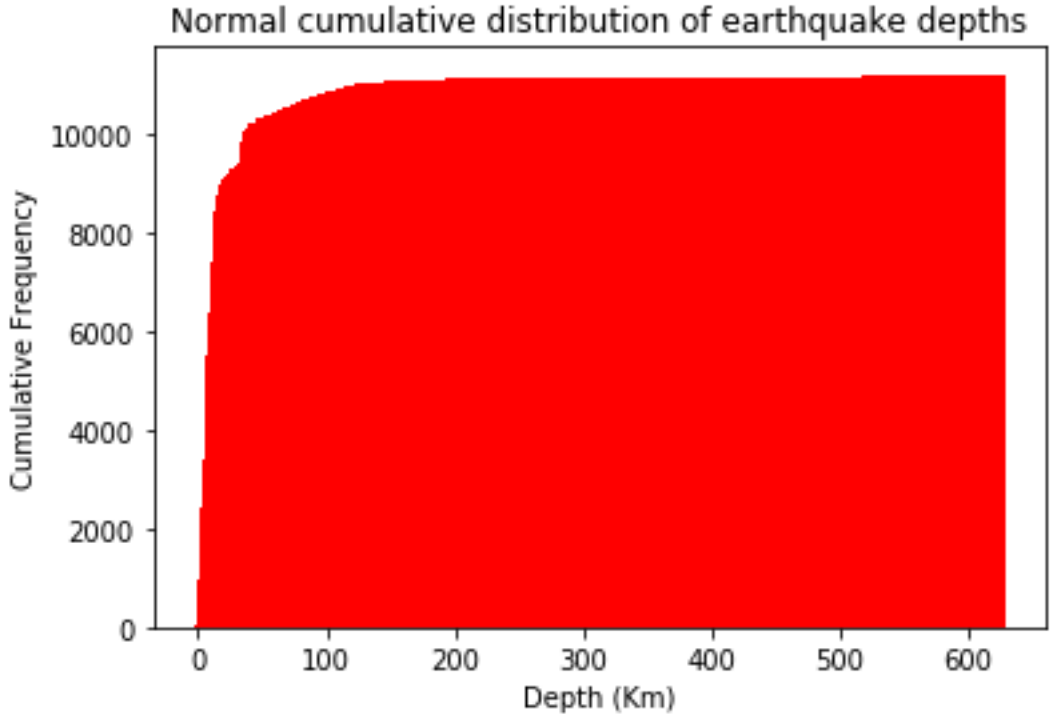

Figure 4: Normalized CDF Plot of Earthquake Depths, assuming normal distribution of values. This plot appears to show the bulk of earthquake depths being very shallow, with nearly 9000 striking at less than 100 kilometers deep.

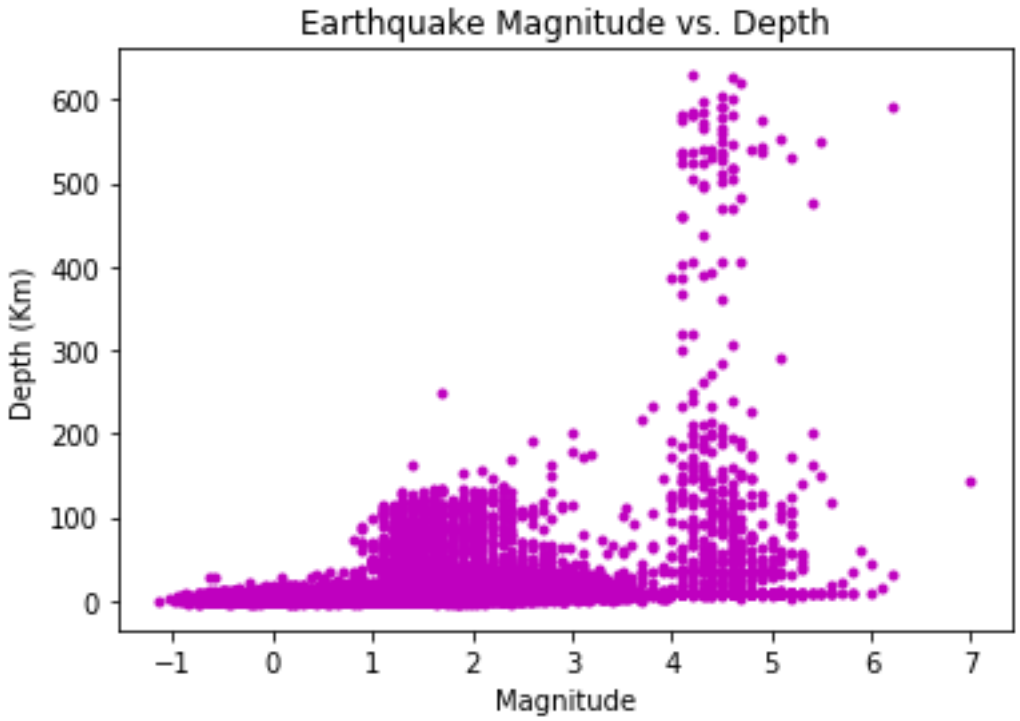

Figure 5: Scatterplot of Earthquake Magnitude vs. Depth. An earthquake is typically less destructive at a greater depth. The biggest disasters caused by earthquakes have been at a shallow depth and high magnitude. Upon studying this Figure, the outlier is above 7.0 in magnitude and very shallow at around 100 Km.

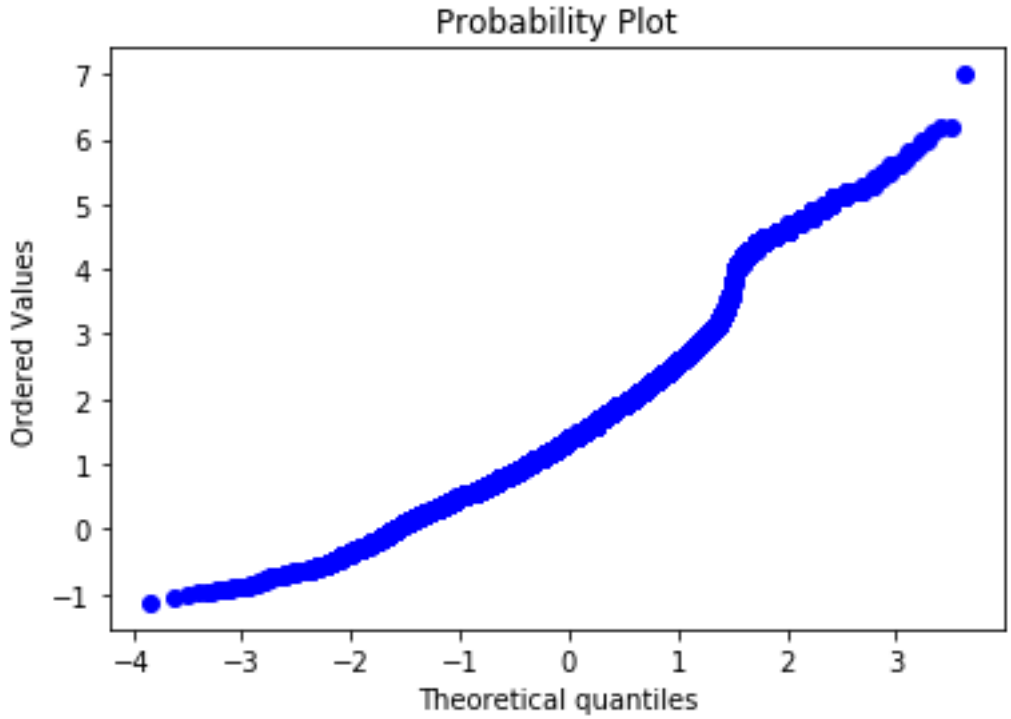

Figure 6: QQ-Plot of Earthquake Magnitudes. This plot utilizes a normal distribution of data values. It appears that majority of the data complies with this distribution, aside from the lowest left (-4, -1) and highest right (4, 7) outliers.

3.5. Metadata is provided as a PDF