Metadata File

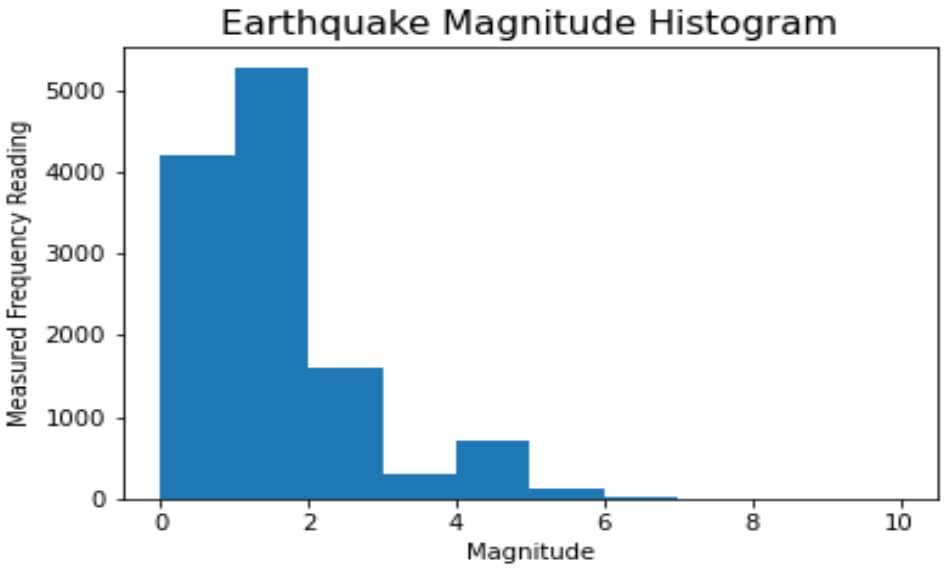
#download all_month.csv from the USGS earthquake hazards web site
#and saved at 1.50pm on October 14th 2020
#read all_month.csv in read_csv to dataFrame
#define and plot functions
    generate_histogram_plot(dataFrame)
    generate_kde_plot(dataFrame)
    generate_lat_long_plot(dataFrame)
    generate_cdf_plot(dataFrame)
    generate_scatter_plot(dataFrame)
    generate_quantile_plot(dataFrame)

#build plots and format
#import and save plot graphs to TIF files
    savefig('histogram.tif')
    savefig('kde.tif')
    savefig('lat-long.tif')
    savefig('cdf.tif')
    savefig('scatter.tif')
    savefig('quantile.tif')

The function np.genfromtxt() is used in Numpy to load data for simple homogenous datasets and covers functions for missing values because the datasets are all same and doesnt change, whereas the pandas dataframe is used to handle heterogeneous data, which the datasets arent same always.

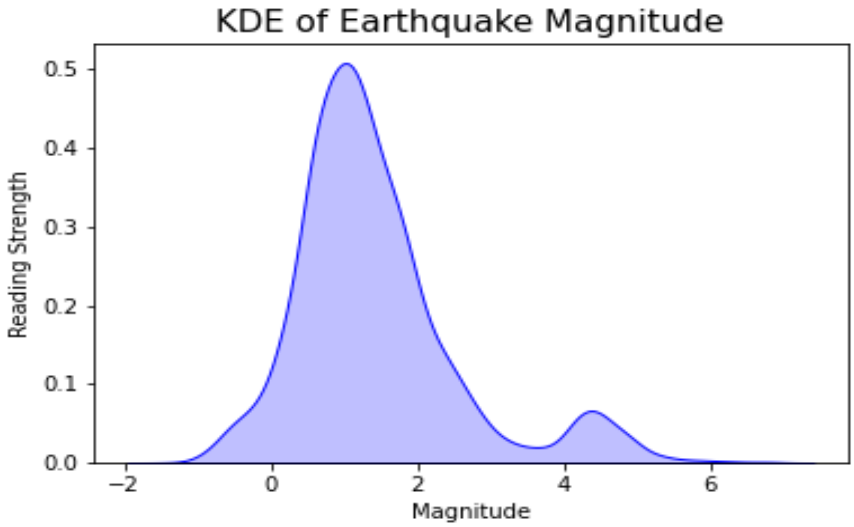
Metadata Figures

1. Histogram_plot



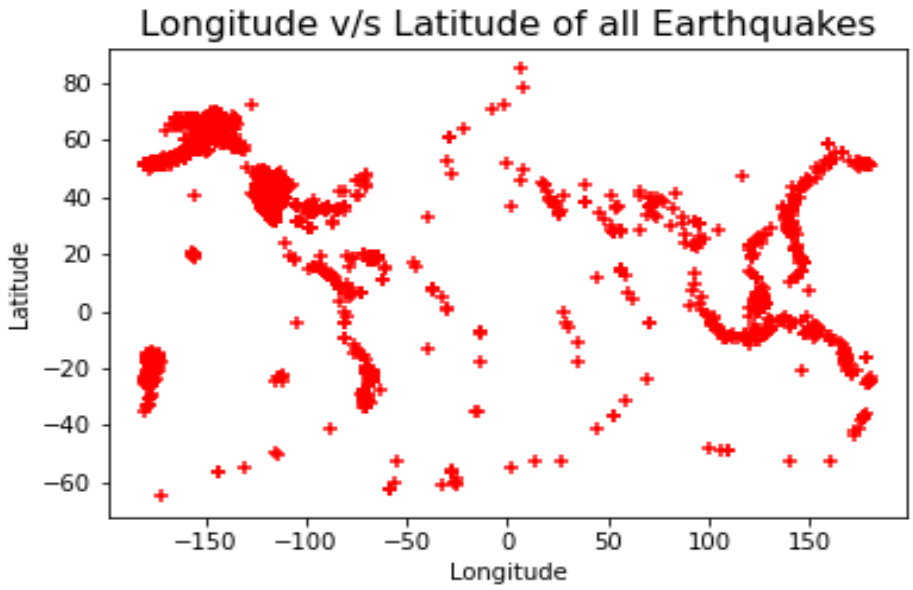
A histogram plot of earthquake magnitude is generated, using a bin width of 1 and a range of bins from 0 to 10 with x-axis as magnitude and y-axis as frequency reading. Each bin contains the number of occurrences of magnitudes in the earthquakle data set that are contained within that bin. Width of a bin is based on rules of thumb.

2. KDE_plot



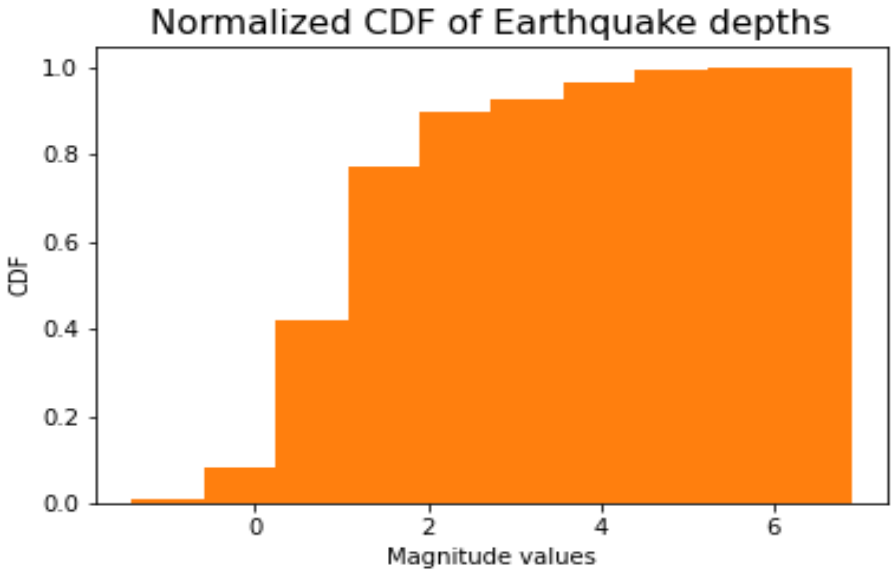
KDE plot is generated to compute the density estimation earthquake magnitude. KDEs are very flexible compared to histogram. Histograms are commonly used for exploratory data analysis. There is a similarity in the calculations of algorithms histograms and KDEs are very similar.

3. Longitude and Latitude (lat_long_plot) plot



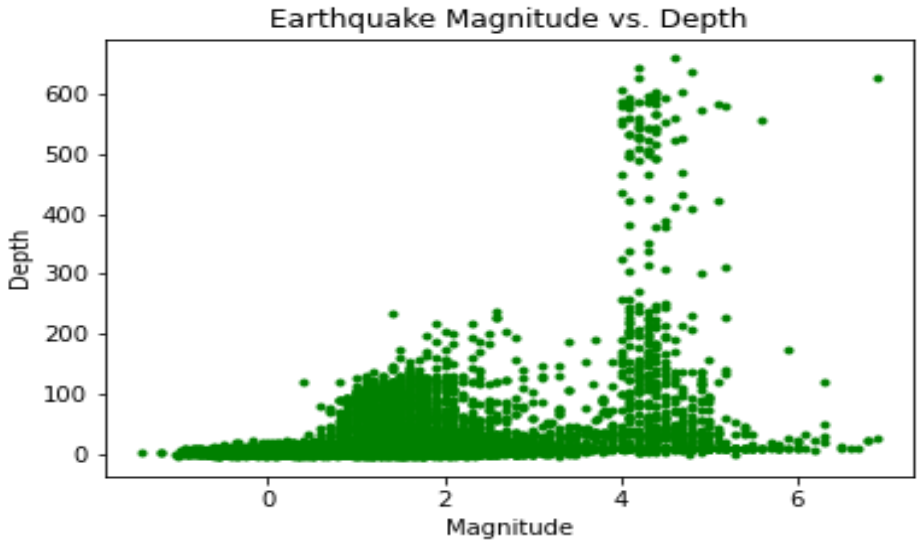
A plot of latitude versus longitude for all earthquakes generated here with x-axis as longitude and y-axis as latitude. Here the distribution of plots are scattered throughout from -150 to 150 Longtitude and -60 to 80 Latitude.

4. Normalized cumulative distribution plot



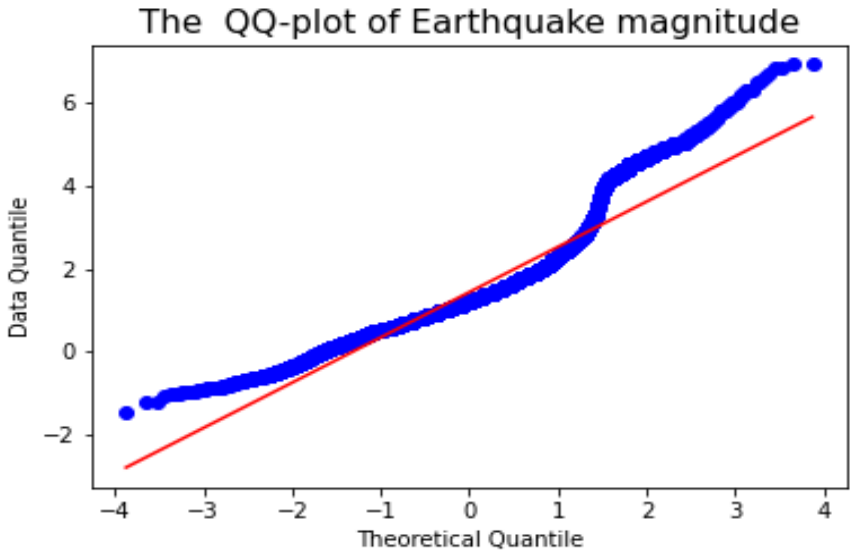
A normalized cumulative distribution plot of earthquake depths is generated here which indicates the seismic depth and distribution of the earthquake magnitudes

5. Scatter plot



A scatter plot of earthquake magnitude with x-axis as magnitude and y-axis as depth is generated. The depth and magnitude helps in the measurement of an earthquake's intensity. It gives us an important information about the Earth's structure and the tectonic setting where the earthquakes are occurring, its time and location of occurrence.

6. Quantile_plot



The Q-Q plot, or quantile-quantile plot often referred to as "percentiles", is a graphical tool to help assess if a set of data possibly came from some theoretical distribution. It is a scatterplot created by plotting two sets of quantiles against one another. If both sets of quantiles came from the same distribution, then the points forms a roughly straight line