This software was designed as the second assessment of the Programming for Geographical Information Analysis course. It required the creation of a Jupyter Notebook that carries out set tasks relating to the provided data, as a hypothetical epidemiologist looking at rat population and population density during the Black Death.

After importing the necessary packages, a setup line for NumPy was needed as a difficulty I found was how to multiply the two datasets together. I converted them to an array using the NumPy package, which then enabled the multiplication of both inputted data lists. This required setting up NumPy so that the array produced by NumPy was not automatically truncated when exported as a csv file.

After importing the csv files of rat population and population density, I created the plots of each within their own functions, ratplot() and parishplot(), which would allow me to call upon these again if required later in the program. On reflection, this was probably unnecessary in such a small program, but I feel it looks neater.

The two datasets were then multiplied and plotted, again using within a function, deathplot() so it could be called again easily if required. The total population, rats killed each week and the weekly deaths were then displayed as a sum of the datasets, again using NumPy. This was then written to a new csv file.

The function inputdeath() was created to collect the multipliers inputted by the user, to calculate a new death rate from these, and display this result.

Finally, using TkInter, I created a window with two sliders to input a multiplier between 0 and 1 and multiply this by the rat and death numbers respectively. The window also has a “quit” button.

I would like a future version of this software to show a graphical plot of the weekly death rate which updates as the value of the sliders are changed.