My final project is an interactive visualization, designed to show how Tokyo’s 23 wards differ in population, population density, percentage of commuters, traffic accidents, and income over a period of thirty years. It functions by drawing the wards on a map of Tokyo and coloring each one via a scale representative of its value for a selected category. Similarly, clicking on a ward reveals its name and important districts within it. By representing the data in this matter, the visualization not only shows how each ward compares to another, but also how the core of Tokyo is spatially divided with respect to this data. Similarly, this tool serves to further demonstrate information about Tokyo learned in class, examples of which I will outline below.

Firstly, I will describe the design process and, succinctly, the methodology behind the coding. I focused on Tokyo’s wards since, as they are Japanese municipalities, there is readily available data starting at 1980. When choosing the five datasets that the visualization ultimately utilizes, my methodology was dictated by a few thoughts: what data is most important regarding a city, particularly based on what I knew about Tokyo from our class. Areas of cities are normally described by their population, the income of their residents, and crime rate: this led me to choose population, population density, and income. Because the crime rate data was only available for 2005, I selected traffic accidents instead. Similarly, Tokyo is known for having an extensive railway network, the most used daily in the world, so I decided to display percentage of commuters.

When planning the visual design, I knew I wanted a map of the wards, as this would allow one to see Tokyo’s inner city’s spatial layout. I then had to think about how I would show differences in value through the wards’ polygons. There were several options: opacity, hue, or tone. I went with tone, so that relative difference could be seen by contrast and so each category could be easily differentiated, as they would be different colors. One last chose I had to make was how I would structure the timeline. For some of the datasets, years between 1980-2010 were missing. I could edit the timeline for each year, resetting to the earliest year available, on switching categories, but then the user could not compare categories for a specific year besides this earliest one. So my final choice was to have the timeline and year remain consistent upon switching categories and if data did not exist for this year then wards would fill in grey. The play button, however, would just show the animation for the years where data is available.

This visualization is coded in “Javascript”, mostly using the libraries “leaflet.js”, “D3.js” and “jQuery.js”. It operates by initially storing the data in variables. A map is then loaded on the screen centered at Tokyo, and the ward’s polygons are drawn on the map via a function that converts latitude and longitude into x and y coordinates on the screen. The timeline is placed on the screen as well, and it operates by calling a function to recolor the polygons when the year is changed. The animation button runs this function as well after 400 milliseconds for each year available for the selected category. Several functions exist that operate when a button to change categories is selected: they work in the following way: lets say population is selected, the code goes through the population data, for each ward it selects the corresponding polygon and chooses its new color based on a scale, it then animates from the old color to the new.