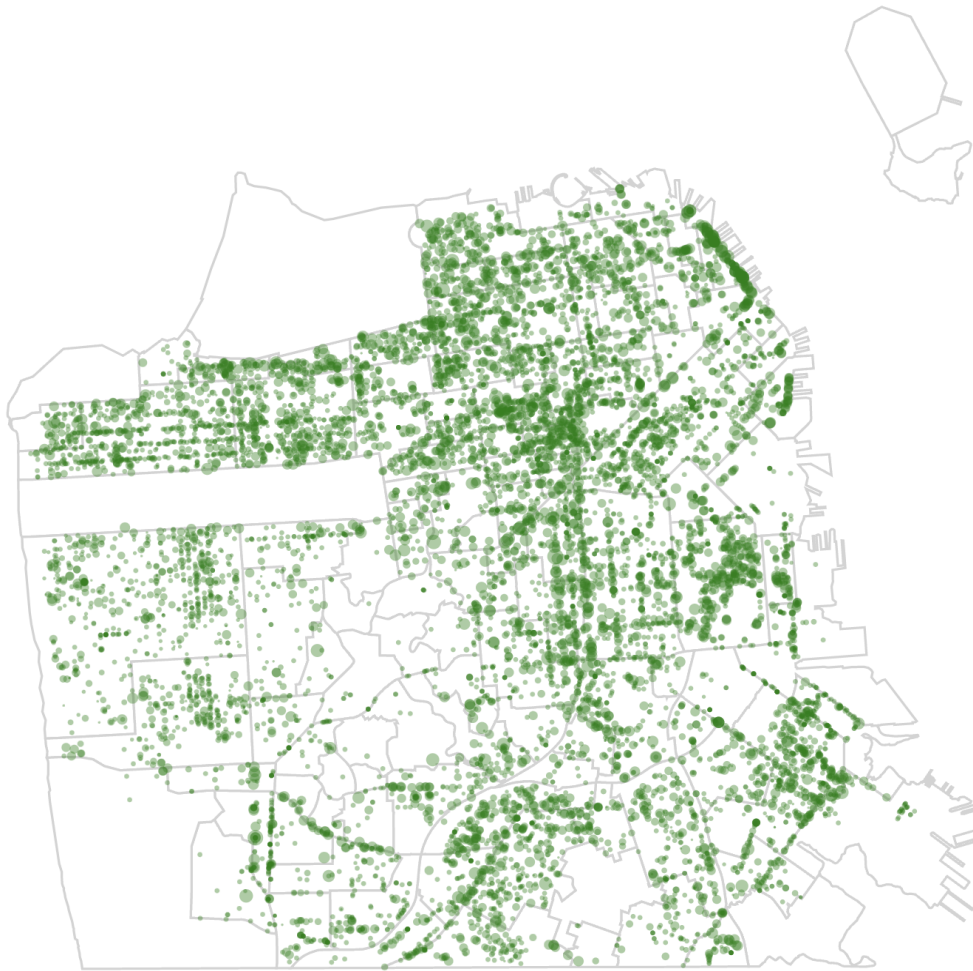# Assignment 1 Report (zl846)

Plot 1: Map - distribution of the trees and sizes

➤ *Story*

First, before we dive into the details, let us gain an overview of the trees distributed over San Francisco. Here are all the trees plotted on the map of San Francisco. It's obvious that there are a few regions that don't have any trees planted! Checking the visualization against Google Maps, we can find that the three big regions on the west of San Francisco that have no trees in it are all parks covered by trees. This makes sense since the dataset is about trees planted on the sidewalks. It is also very obvious that the regions in the east of San Francisco also do not have many trees. It turns out those are piers of San Francisco, and it makes sense to not have trees on the docks!

To make sure the plot correctly reflects the density of the trees, all the circles have some degree of transparency. In addition, since big trees can cover more areas than small trees, I also showed the diameter of the trees (DBH) by varying the size of the circles. Bigger the circle, the larger the tree.
- **Marks**: Circles.
- **Visual Channel 1**: Varying the size of the circles to show the width of the trees.
- **Visual Channel 2**: Varying the circle's position on the map based on the longitude and latitude.

Plot 2: How many trees were planted over the years?
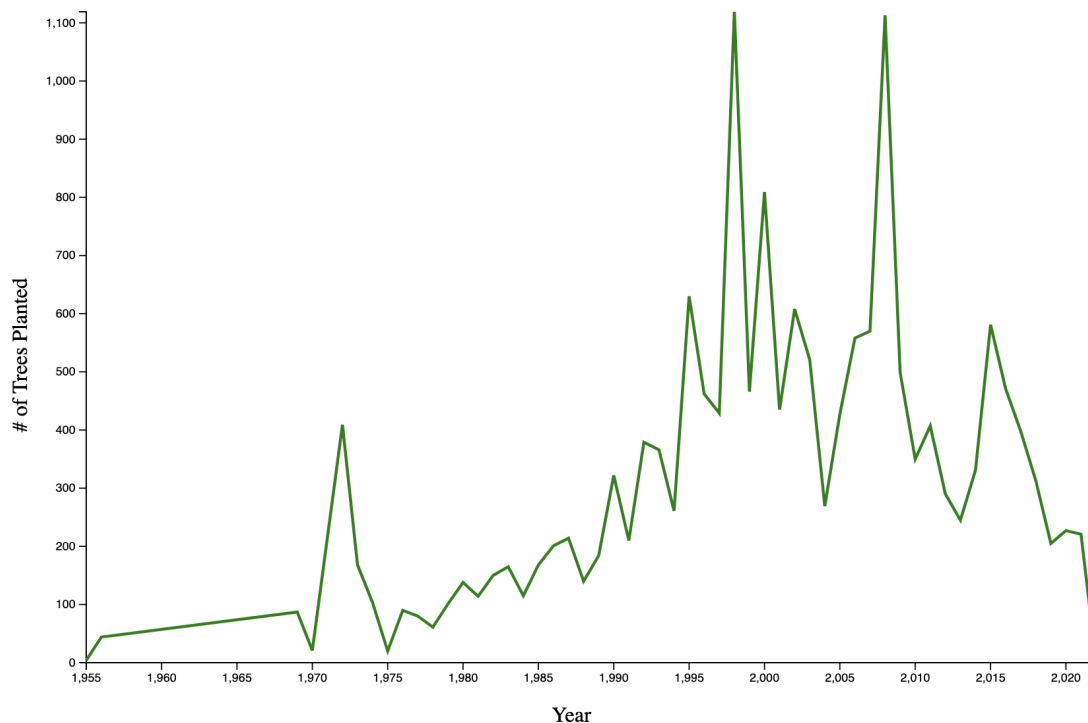
➤ *Story*

To better understand how the city has been doing with tree plotting, let's take a look at the number of trees planted over the years. From this line chart, we can see that there have been 4 periods where the city planted a large number of trees, 1970-1975, 1995-2003, 2006-2009, 2013-2016. From the chart, we can also see the city is slowing down tree planting in recent years.
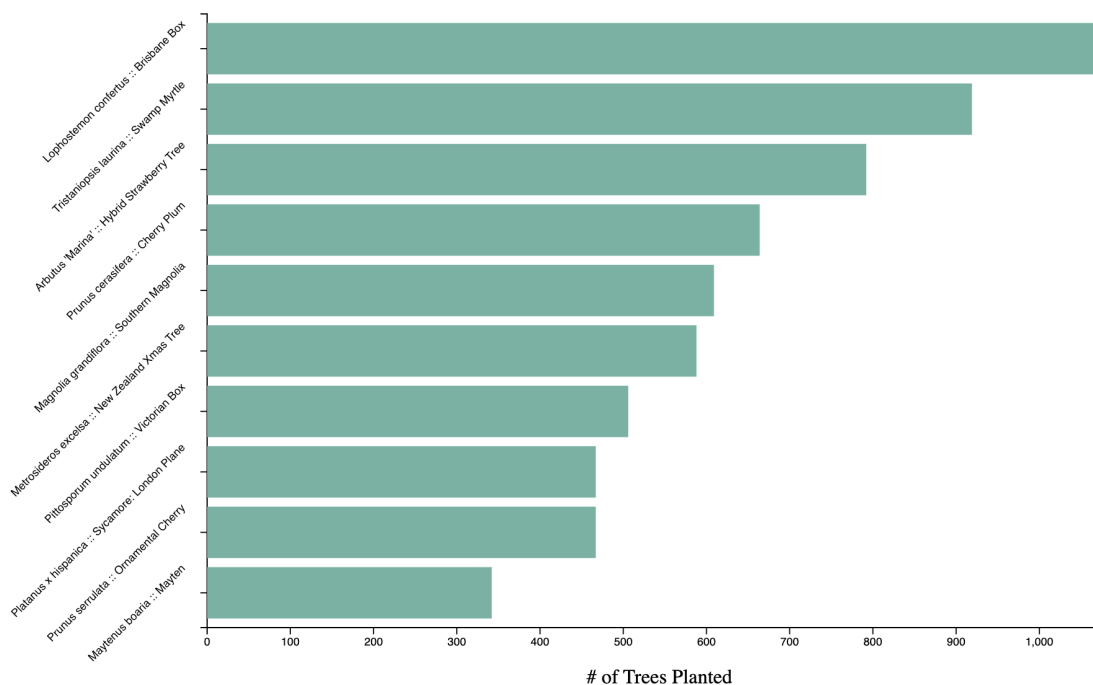
Line charts are best at showing trends over time. From this chart, it was very easy to see the peak planting periods.
- **Marks:** Lines.
- **Visual Channel:** Varying the data points' horizontally aligned position and vertically aligned position.

Plot 3: What are the top 10 tree species that are planted?

➤ *Story*

Now we have an understanding of the city's tree planting trend, it would also be interesting to see what kinds of trees get planted most. Here I plotted the top 10 tree species planted. Looks like Brisban Box is the most popular tree species. Upon checking Wikipedia, it turns out Brisban Box is a popular street tree, due to " its disease and pest resilience, its high tolerance for smog, drought, and poor drainage", which suits San Francisco very well.
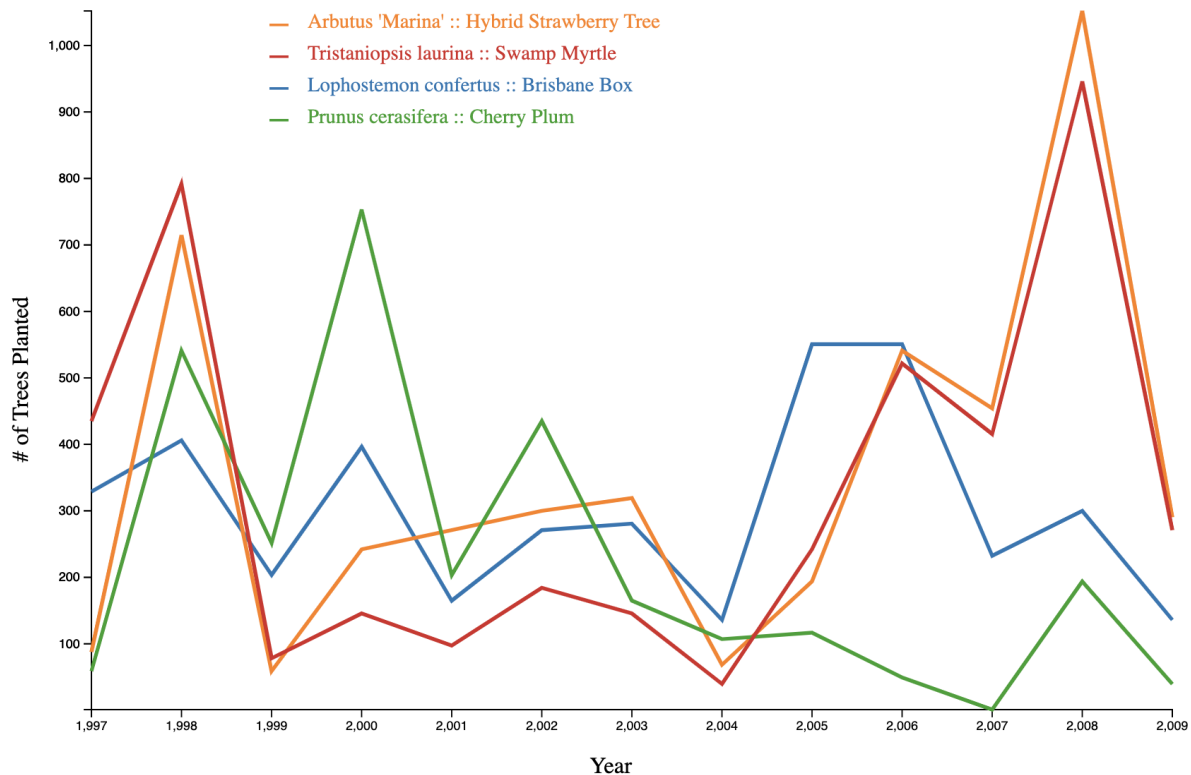
➤ *Visual Design and Reasoning*

Bar chart is good at showing the rankings among different data points.
- **Marks:** Rectangles.
- **Visual Channel:** Varying the rectangles' width based on the number of trees in a species.

Plot 4: A Closer Look at # of Top Four Species Planted In Peek Years (1997-2009)

➤ *Story*

Next I want to see how those popular tree species are planted over time. By plotting the top 4 species, it turns out that despite Brisban Box being the most planted trees historically in San Francisco, it is not the most planted species in recent years. From the line chart above, we can see that the most popular trees in recent years are the Swamp Myrtle and the Hybrid Strawberry Tree.

➤ *Visual Design and Reasoning*

- **Marks:** Lines.
- **Visual Channel 1:** Varying the data points' horizontally aligned position and vertically aligned position based on year and number of trees respectively.
- **Visual Channel 2:** Varying the lines' color hue.