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Demo: Creating Maps Using Coordinates

In this video, we show how to create geographic maps using X and Y coordinates.

The coordinates can be latitudes and longitudes, or they can be positions in two-dimensional space. First, we show how to create geographic maps using latitudes and longitudes with the Geographic Sales data.

This file includes sales information for a company in the western United States. There is data for nine states and 109 stores.

To start, we open Graph Builder from the Graph menu. The Customer Info group includes geographic information for each of the stores.

We drag both Latitude and Longitude into the middle of the graph frame and remove the smoother. There is a point for each of the 109 stores.

To add a geographic map, we right-click in the middle of the graph, and select Graph and then Background Map.

There are many background map options. For example, we can add simple or detailed background images.

Here, we select Simple Earth and then select US States to draw boundaries of the states. When we click OK, you see a background image of the Western US, corresponding to the latitudes and longitudes, and you see boundaries for each of the states.

Instead of adding a background image, if you are connected to the internet, you can connect to a map service. We repeat the steps from before, and this time we select Street Map Service. This connects us to an Open Street Map server.

When we click OK, we will again see a map. However, with the street map server, we can now drill down to the city or street level using the Magnifier tool.

We'll hold the Ctrl key (or Command on the Mac) and click several times to zoom back out.

With a geographic map, we can now add color, size the points based on values of a column, or even create a trellis plot.

What if your data set has X and Y coordinates rather than latitudes and longitudes?

For example, consider the file Wafer Stacked Small.jmp. This is data from the semiconductor industry.

The file includes measurements for wafers and dies. Wafers are produced in lots, and within each wafer, there are 1423 die locations. The locations within each die have X and Y coordinates.

We are interested in visualizing the number of defects at each die location. To create a map of the wafers, we again open the Graph Builder from the Graph menu.

We drag Y_Die to the Y zone, drag X_Die to the X zone, and remove the smoother. For each position, there is one dot.

To look at the overall pattern of defects, across all of the lots and wafers, we drag Defects to the Color zone, and click the heat map icon to display this as a heat map. Then, we change the number of increments for both the X and Y axes to 1.

You can see that positions that have a higher number of defects, overall, tend to be at the top and bottom of the wafers.

Let's break this down by Lot. We drag Lot to the Wrap zone.

Now, we can see the defect patterns across the different lots. For example, on average, lots 1 and 2 had very few defects, whereas lot 4 had a higher number of defects around the perimeter of the wafers.

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