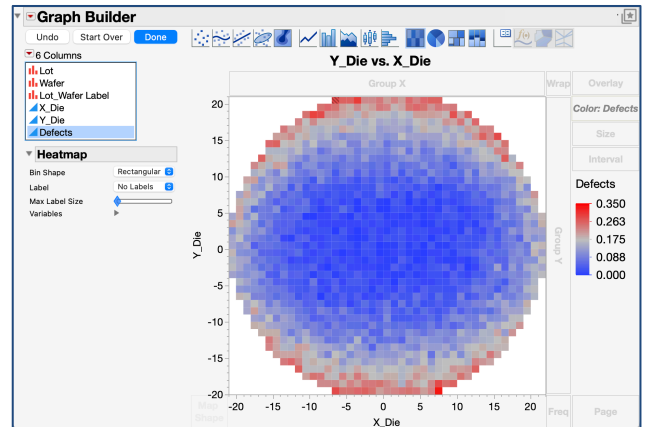# Shape Based Heat Map

Use to display the values of a numeric variable based upon the location on a physical area.

Shape Based Heat Map

To create a shape based heat map, the data set needs to have variables identifying locations. Typically this would be X and Y coordinate variables. In these data, there's a pair of variables 'X_Die' and 'Y_Die' identifying the location of the 1,423 integrated circuits on each semiconductor wafer.

Wafer Stacked.jmp (under Help > Sample Data

1. Launch **Graph > Graph Builder**.
2. Place the 'X_Die' variable in the **X axis** and 'Y_Die' variable on the **Y axis**.
3. Choose the heat map icon from the graph palete.
4. Resize the graph so it forms a symmetric circle by right-click inside the graph and choose **Graph > Size/Scale > Size to Isometric**.
   Note: This particular dataset requires us to change the increments on the axes so that each square corresponds to one die. Do this by right-clicking on each axis, open up the axis settings, and choosing an Increment of 5.
5. Place the frequency variable (in this example, 'Defects') in the **Color zone**.
   - The default is to display the average number of defects for each die location on all the wafers in the data set – in this example there are 100 wafers. A different statistic can be chosen (e.g., sum), by right-clicking on the color role area and select **Summary Statistics > Sum**.

Incorporating Additional Categorial Variables

- As there are 100 different wafers in the data set (20 wafers in 5 lots), the graph can be modified to show each wafer separately. This is done by placing the variables identifying the wafers and lots into desired roles in the graph such as **X Group**, **Y Group**, and/or **Wrap zone**.
- An alternative method is to set up a local data filter providing the means to select an individual wafer or group of wafers. Here we created a data filter based on 'Lot' and 'Wafer'.
  See the **Filtering Data for Analysis** guide to learn how to set up a **Local Data Filter**.
  The graph on the left shows the number of defects for Wafer 1 in Lot 1 (few defects). The graph on the right shows the number of defects for Wafer 24 in Lot 3 (many defects).
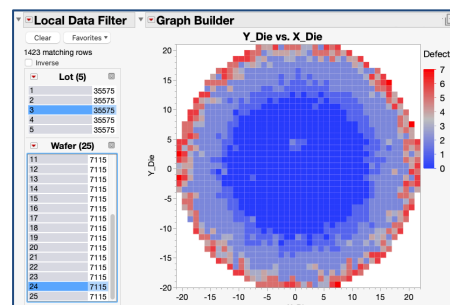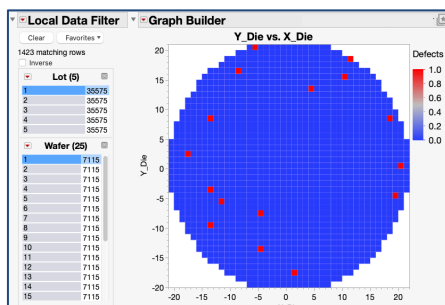
Visit **Discovering JMP > Visualize Your Data** and **Essential Graphing** in **JMP Help** to learn about more ways to visually explore data.