

**Advanced Hover Label Extensions Exercise**  
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**Introduction**

Beginning with JMP 15, *Hover Label Extensions* allow users to customize and augment the information displayed in hover labels. Users can add data-driven, markup-based rich text paragraphs to describe the underlying data to the visualization consumers; add, remove, reformat and style the hover label individual entries; and embed visualizations that not only provide an additional insight on the underlying data, but can also be launched in their own windows to further advance the data exploration.

In this exercise we will try *Hover Label Extensions* and see how they can enhance your exploratory workflow.

**Tip:** Each task is implemented as a table script, with a corresponding “(Final)” version that illustrates the desired result of the exercise. If you close a window by mistake, you can use these scripts to re-create them.

### Task 1 (Rich text customization using Textlets)

1. Open the table `CrimeData_Tucson2019.jmp` located in the **Hover Label Extensions** Folder on the desktop
2. Run the table script **Step 1**. It will launch a map of the USA with states colored by crime rate.
3. Hover the mouse pointer over the map and observe how the hover labels include both a description of the associated state as well as a representative image.

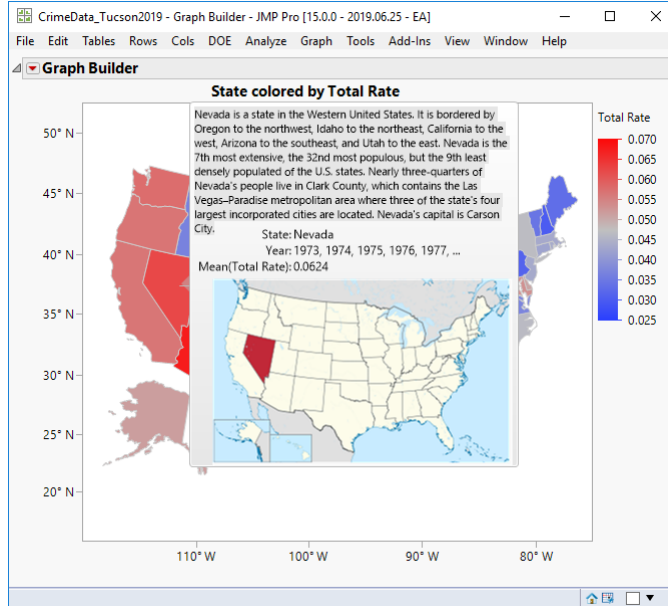


Figure 1 Hover label w/ description and thumbnail.

4. The description can be a bit long and hard to read. Let's use the new *Textlet* extension to improve that. Right-click on the graph background to open the Hover Label Editor, located under the Hover Label RMB menu entry.

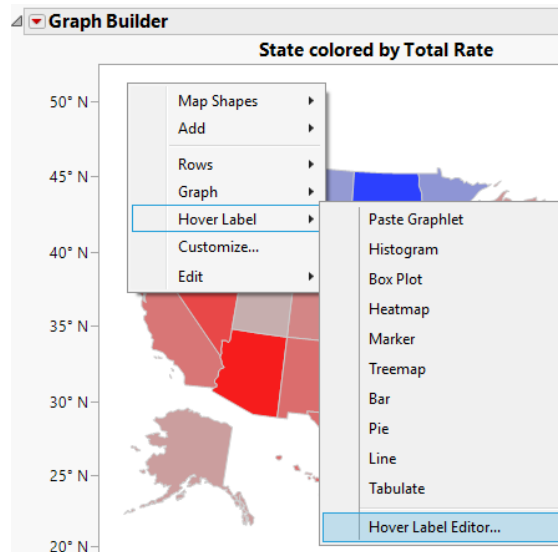


Figure 2 Hover Label Editor menu entry

- On the left side panel, select `Textlet`. Inspect the panels to see how the content is defined (JSL Variables) and then how it is formatted (HTML Markup) for display.

**Tip:** If you pin a hover label to the map, you can see the results of your changes as soon as you click on the `Apply` button in the Hover Label Editor.

- Reduce the length of the content by using JSL to truncate it to a Tweet size, for example:

```
local:text = Substr( :wr << getDescription( local:_state ), 1, 140 ) || "..."
```

- Change the markup to make the text easier to read. For example, select a different font, increase the font size and use a lighter background color:

```
<background color='white'><font family='Arial'
size='12'>{local:text}</font></background>
```

- Play around with the content generation and the markup to try out different configurations for the description block. Try making the text bold, use different text colors, or add your own text.

## Task 2 (Content augmentation using Gridlets)

- Go back to the data table (`CrimeData_Tucson2019 . jmp`) and run the table script **Step 2**. It will launch a time series visualization showing the average number of four crime categories (Murder, Robbery, Burglary and Larceny) over time.

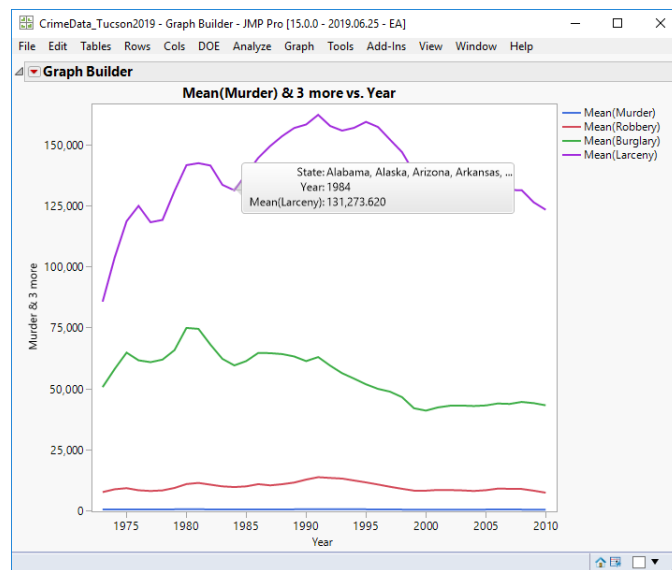


Figure 3 Crime Time Series

- The hover label includes the average number of occurrences for the underlying crime type on a given year. Let's use the `Gridlet` extension to include values for all other years and improve the display.
- Once again open the Hover Label Editor; this time select the `Gridlet` option in the left side panel.

- Use the `Delete` panel to remove the first and the third entries. In the `Matching Criteria` box, select `Index` in the `Type` selector and specify the desired entry index as the `Target` input value.  
**Tip:** Click on `Add` to record each selection, before clicking on `Apply` or `OK` to save it.
- Use the `Style` panel to increase the font size of the `Year` value.
- Use the `Append` panel to add an entry for each crime type. Use `Target` to specify the entry name and the following JSL expression for `Value`, changing the first argument to match the crime type:

```
::mr << getMetric( "Murder", Namespace( "Local" ) )
```

*Note:* Once you're done, the hover label should be looking like this:

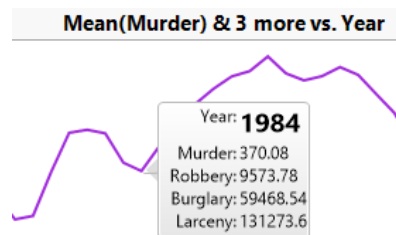


Figure 4 Hover Label with Gridlet changes

### Task 3 (Embedded graphs and drill-down using Graphlets)

- Switch back to the map and hover over a state. Note how the hover label shows a static image. Let's use the `Graphlet` extension to display an informative data visualization.
- You can insert a dynamically configured visualization (*preset*) by using one of the options under the `graphHover Label` RMB menu. For example, try the `Heatmap` option. You should see a hover label like this one:

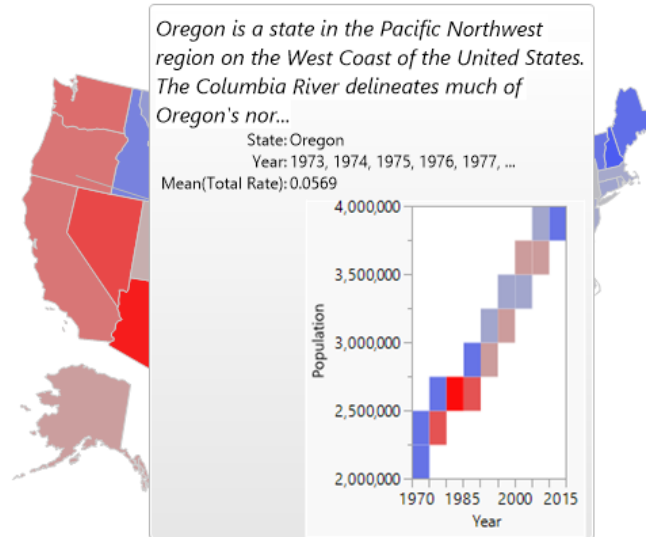


Figure 5 Hover Label w/ Heat Map graphlet

3. Compare the heatmaps of North Dakota and Florida. What can you say about the population growth of these states?

**Tip:** You can open an embedded graph on its own window by clicking on it.

4. You can also use your own visualizations as graphlet templates. Switch to the time series window and under the Little Red Trianble (LRT) menu, select Save Script > To Clipboard

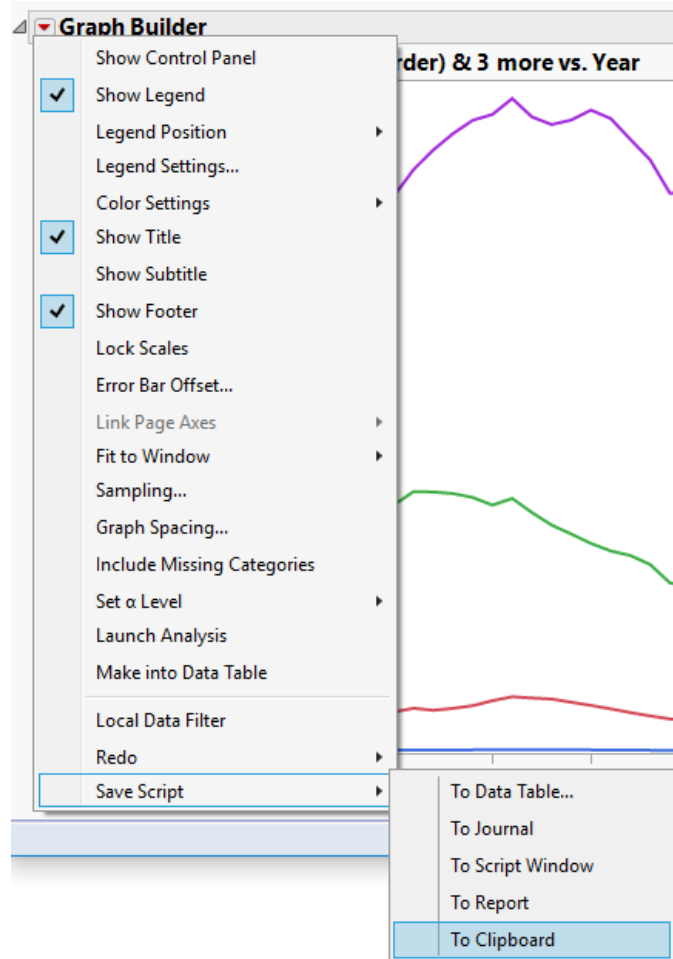


Figure 6 Save to clipboard to paste as graphlet

5. Now switch back to the map, and under the graph Hover Label RMB menu select Paste Graphlet.
6. Verify that the map hover label now displays the crime time series for the associated state. Can you compare the crime time series for North Dakota and Florida?