**Controlling Legend in lets-plot**

**1. Legend Appearance**

You can control the appearance of the legend, such as its title, position, direction, and theme settings.

* **Title**: Use the labs() function to set the legend title for different aesthetics (e.g., color, fill, shape).

from lets\_plot import \*

LetsPlot.setup\_html()

ggplot(data, aes(x, y, color=z)) + geom\_point() + labs(color='Legend Title')

* **Position**: The theme() function allows you to control the legend position. Use legend\_position with values like:
  + "left", "right", "top", "bottom" for fixed positions.
  + (x, y) for custom coordinates where (0, 0) is bottom-left and (1, 1) is top-right.

ggplot(data, aes(x, y, color=z)) + geom\_point() + theme(legend\_position='bottom')

* **Direction**: Use legend\_direction to set the legend orientation. Options:
  + "horizontal"
  + "vertical"

ggplot(data, aes(x, y, color=z)) + geom\_point() + theme(legend\_direction='horizontal')

**2. Legend Keys**

Control the size, shape, and styling of legend symbols:

* **Key Size**: Set with legend\_key\_size in theme(). Accepts numeric values.

ggplot(data, aes(x, y, color=z)) + geom\_point() + theme(legend\_key\_size=10)

* **Key Shape**: Depends on the shape aesthetic in the plot itself.

ggplot(data, aes(x, y, shape=z)) + geom\_point() + scale\_shape\_manual(values=[1, 2, 3])

**3. Legend Theme Settings**

Additional control is possible using the theme() function to adjust padding, background, and text:

* **Legend Background**: Customize the legend's appearance with legend\_background.

ggplot(data, aes(x, y, color=z)) + geom\_point() + theme(legend\_background=element\_rect(fill='lightgray'))

* **Legend Text**: Modify text appearance with legend\_text (font size, face, color).

ggplot(data, aes(x, y, color=z)) + geom\_point() + theme(legend\_text=element\_text(size=12, face='bold', color='blue'))

**4. Hiding or Removing Legends**

You can hide or remove legends completely if needed.

* **Hide a Legend for Specific Aesthetic**:

ggplot(data, aes(x, y, color=z)) + geom\_point(show\_legend=False)

* **Remove All Legends**:

ggplot(data, aes(x, y, color=z)) + geom\_point() + theme(legend\_position='none')

**5. Legend Guides**

Use the guides() function to customize how legends are displayed for specific aesthetics.

* **Customizing Guide for Specific Aesthetic**:

ggplot(data, aes(x, y, color=z)) + geom\_point() + guides(color=guide\_legend(title="Custom Title", ncol=2))

**Summary**

With lets-plot, you can fine-tune almost every aspect of the legend. Common parameters to use:

* **theme()**: Customize position, size, and styling (legend\_position, legend\_direction, etc.).
* **labs()**: Change legend titles for different aesthetics.
* **guides()**: Modify specific aesthetic guides (e.g., number of rows/columns in the legend).
* **show\_legend**: Show or hide legends for individual geoms.

Would you like help with a specific example or feature?