1 Box Plots

The BoxPlot can be used to summarize the statistical properties of different groups of data. The label specifies a column in the data to group by, and a box plot is generated for each group:

```
from bokeh.charts import BoxPlot, output_file, show
from bokeh.sampledata.autompg import autompg as df

p = BoxPlot(df, values='mpg', label='cyl',
title="MPG Summary (grouped by CYL)")

output_file("boxplot.html")

show(p)
```

The label can also accept a list of column names, in which case the data is grouped by all the groups in the list:

```
from bokeh.charts import BoxPlot, output_file, show
from bokeh.sampledata.autompg import autompg as df

p = BoxPlot(df, values='mpg', label=['cyl', 'origin'],
title="MPG Summary (grouped by CYL, ORIGIN)")

output_file("boxplot.html")

show(p)
```

1.1 Box Color

The color of the box in a BoxPlot can be set to a fixed color using the color parameter:

```
from bokeh.charts import BoxPlot, output_file, show
from bokeh.sampledata.autompg import autompg as df

p = BoxPlot(df, values='mpg', label='cyl', color='#00cccc',
title="MPG Summary (grouped by CYL)")
```

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```
output_file("boxplot.html")

show(p)
```

As with Bar charts, the color can also be given a column name, in which case the boxes are shaded automatically according to the group:

```
from bokeh.charts import BoxPlot, output_file, show
from bokeh.sampledata.autompg import autompg as df

p = BoxPlot(df, values='mpg', label='cyl', color='cyl',
title="MPG Summary (grouped and shaded by CYL)")

output_file("boxplot.html")

show(p)
```

1.2 Whisker Color

The color of the whiskers can be similary controlled using the `whisker_color` parameter. For a single color:

```
from bokeh.charts import BoxPlot, output_file, show
from bokeh.sampledata.autompg import autompg as df

p = BoxPlot(df, values='mpg', label='cyl', whisker_color='goldenrod',
title="MPG Summary (grouped by CYL, shaded whiskers)")

output_file("boxplot.html")

show(p)
```

Or shaded automatically according to a column grouping:

```
from bokeh.charts import BoxPlot, output_file, show
from bokeh.sampledata.autompg import autompg as df
```

```
p = BoxPlot(df, values='mpg', label='cyl', whisker_color='cyl',
title="MPG Summary (grouped and whiskers shaded by CYL)")

output_file("boxplot.html")

show(p)
```

1.3 Outliers

- By default, BoxPlot charts show outliers above and below the whiskers.

- However, the display of outliers can be turned on or off with the outliers parameter:

```
from bokeh.charts import BoxPlot, output_file, show
from bokeh.sampledata.autompg import autompg as df

p = BoxPlot(df, values='mpg', label='cyl', outliers=False,
title="MPG Summary (grouped by CYL, no outliers)")

output_file("boxplot.html")

show(p)
```

1.4 Markers

The marker used for displaying outliers is controlled by the marker parameter:

```
from bokeh.charts import BoxPlot, output_file, show
from bokeh.sampledata.autompg import autompg as df

p = BoxPlot(df, values='mpg', label='cyl', marker='square',
title="MPG Summary (grouped by CYL, square marker)")

output_file("boxplot.html")

show(p)
```