

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)
```

Box Color

The colour of the box in a **BoxPlot** can be set to a fixed colour 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)")

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)
```

Whisker Color

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

```
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)
```

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)
```

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)
```