

## 00. Introduction and Setup



### Bokeh Tutorial

(<http://bokeh.pydata.org/>)

## Tutorial Overview

The tutorial is broken into several sections, which are each presented in their own notebook:

1. [Basic Plotting \(01 - Basic Plotting.ipynb\)](#)
2. [Styling and Theming \(02 - Styling and Theming.ipynb\)](#)
3. [Adding Annotations \(03 - Adding Annotations.ipynb\)](#)
4. [Data Sources and Transformations \(04 - Data Sources and Transformations.ipynb\)](#)
5. [Presentation Layouts \(05 - Presentation Layouts.ipynb\)](#)
6. [Linking and Interactions \(06 - Linking and Interactions.ipynb\)](#)
7. [Bar and Categorical Data Plots \(07 - Bar and Categorical Data Plots.ipynb\)](#)
8. [Graph and Network Plots \(08 - Graph and Network Plots.ipynb\)](#)
9. [Geographic Plots \(09 - Geographic Plots.ipynb\)](#)
10. [Exporting and Embedding \(10 - Exporting and Embedding.ipynb\)](#)
11. [Running Bokeh Applications \(11 - Running Bokeh Applications.ipynb\)](#)

As well as some extra topic appendices:

- A1. [Models and Primitives \(A1 - Models and Primitives.ipynb\)](#)
- A2. [Visualizing Big Data with Datashader \(A2 - Visualizing Big Data with Datashader.ipynb\)](#)
- A3. [High-Level Charting with Holoviews \(A3 - High-Level Charting with Holoviews.ipynb\)](#)
- A4. [Additional Resources \(A4 - Additional Resources.ipynb\)](#)

## What is Bokeh

Bokeh is an interactive visualization library that targets modern web browsers for presentation. It is good for:

- Interactive visualization in modern browsers
- Standalone HTML documents, or server-backed apps
- Expressive and versatile graphics
- Large, dynamic or streaming data
- Easy usage from python (or Scala, or R, or...)

And most importantly:

### ***NO JAVASCRIPT REQUIRED***

The goal of Bokeh is to provide elegant, concise construction of novel graphics in the style of D3.js, from the comfort of high level languages such as Python, and to extend this capability with high-performance interactivity over very large or streaming datasets. Bokeh can help anyone who would like to quickly and easily create interactive plots, dashboards, and data applications.

## What can I do with Bokeh

In [2]: `# Standard imports`

```
from bokeh.io import output_notebook, show
output_notebook()
```

<https://bokeh.pydata.org/en/0.12.14/> successfully loaded.

In [3]: `# Plot a complex chart with interactive hover in a few lines of code`

```
from bokeh.models import ColumnDataSource, HoverTool
from bokeh.plotting import figure
from bokeh.sampledata.autompg import autmpg_clean as df
from bokeh.transform import factor_cmap

df.cyl = df.cyl.astype(str)
df.yr = df.yr.astype(str)

group = df.groupby(('cyl', 'mfr'))
source = ColumnDataSource(group)

p = figure(plot_width=800, plot_height=300, title="Mean MPG by # Cylinders and Manufacturer",
           x_range=group, toolbar_location=None, tools="")

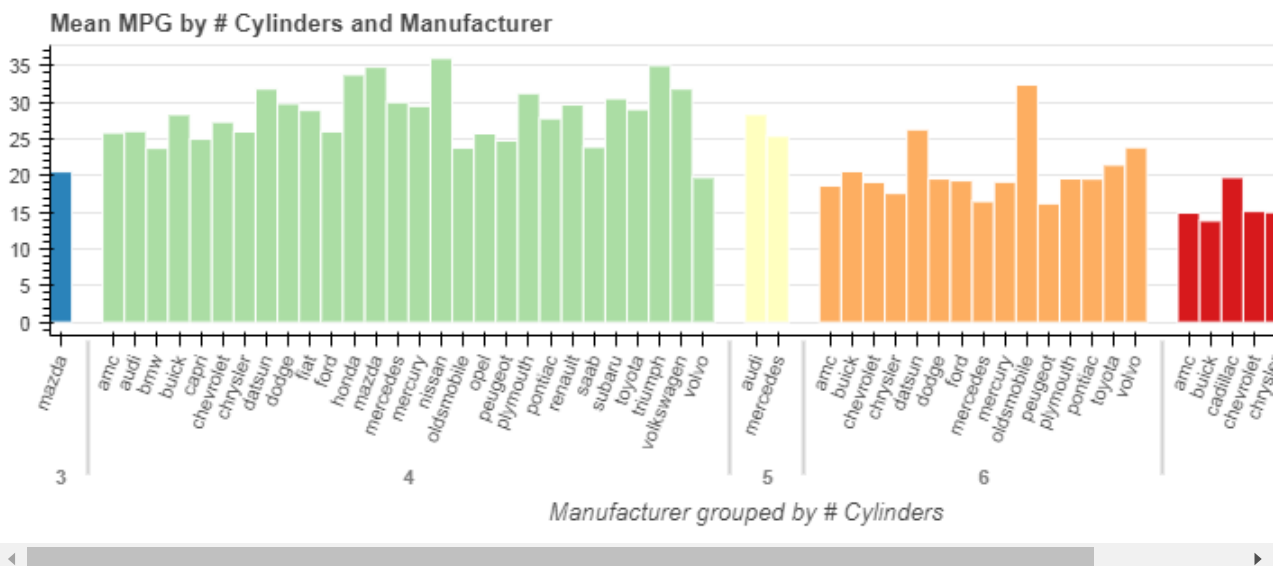
p.xgrid.grid_line_color = None
p.xaxis.axis_label = "Manufacturer grouped by # Cylinders"
p.xaxis.major_label_orientation = 1.2

index_cmap = factor_cmap('cyl_mfr', palette=['#2b83ba', '#abdda4', '#ffffbf', '#fdae61', '#d62728'],
                        factors=sorted(df.cyl.unique()), end=1)

p.vbar(x='cyl_mfr', top='mpg_mean', width=1, source=source,
       line_color="white", fill_color=index_cmap,
       hover_line_color="black", hover_fill_color=index_cmap)

p.add_tools(HoverTool(tooltips=[("MPG", "@mpg_mean"), ("Cyl, Mfr", "@cyl_mfr")]))

show(p)
```



In [4]: *# Create and deploy interactive data applications*

```
from IPython.display import IFrame
IFrame('https://demo.bokehplots.com/apps/sliders', width=900, height=500)
```

title

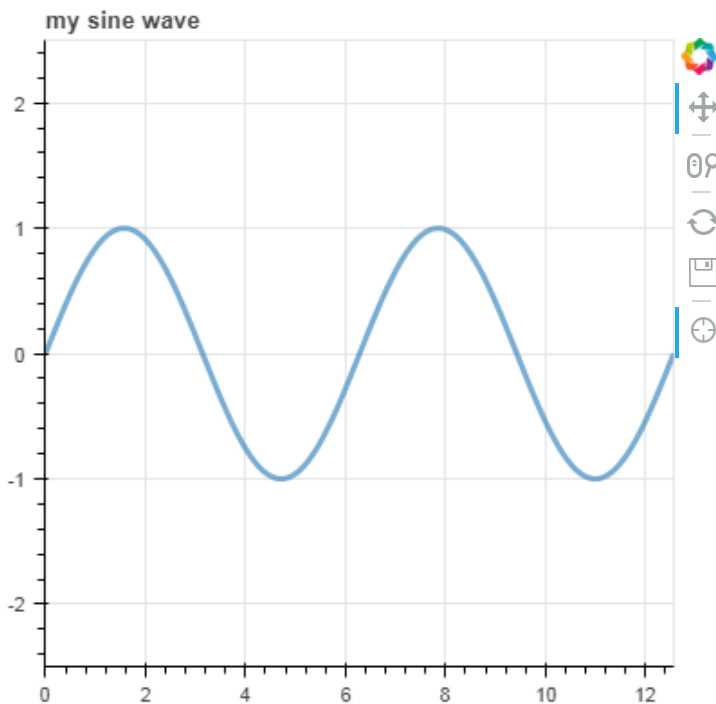
my sine wave

offset: 0

amplitude: 1

phase: 0

frequency: 1



## Getting set up

```
In [ ]: from IPython.core.display import Markdown
Markdown(open("README.md").read())
```

Setup-test, run the next cell. Hopefully you should see output that looks something like this:

```
IPython - 6.1.0
Pandas - 0.20.3
Bokeh - 0.12.7
```

If this isn't working for you, see the [README.md](#) [\(README.md\)](#) in this directory.

```
In [6]: from IPython import __version__ as ipython_version
from pandas import __version__ as pandas_version
from bokeh import __version__ as bokeh_version
print("IPython - %s" % ipython_version)
print("Pandas - %s" % pandas_version)
print("Bokeh - %s" % bokeh_version)
```

```
IPython - 6.2.1
Pandas - 0.22.0
Bokeh - 0.12.14
```