

PIC 16, Spring 2018

Lecture 7F: Plotly

Friday, May 18, 2018

Matt Haberland

Announcements

- ?

Intended Learning Outcomes

By the end of the assignment, students are intended to be able to:

- use Plotly to produce simple Box, Scatter, and Histogram plots;
- publish plots to the web and local files;
- strip data from existing Plotly plots;
- adjust the appearance of plots as desired using online editing tools;
- learn, as needed, how to edit the appearance of plots programmatically; and
- refer to the Plotly Python Library for plotting solutions.

Activities

- Finish assignment 7M
- Start assignment 7F

Getting Started

One time:

```
import plotly
plotly.tools.set_credentials_file(username='user', api_key='[REDACTED]')
```

To plot using cloud service (and make available online):

```
import plotly.plotly as py
    or
```

```
import plotly.offline as py
py.init_notebook_mode(connected=True)
```

Saves a file (.html) if plotting offline (otherwise uses this name for online plot). Returns file path (or url).

Once you have a Figure object:

```
py.plot(fig, filename='Example')
py.iplot(fig, filename='Example')
py.get_figure('user', plot_number)
py.image.save_as(fig, filename='Example.png')
```

← show in new browser window/tab

← show *inline*

← returns entire Figure object

Plotly Organization

All from `plotly.graph_objs`

Figure

layout:Layout

title:str height:int
margin:dict width:int
xaxis:dict

title:str
visible:bool
type:'log'|'date'
range:list

yaxis:dict

titlefont:dict

family:str
size:float
color:str

data:Data

Bar

x:list name:str
y:list text:list
orientation: 'v'|'h'
showlegend:bool

Pie

labels:list
values:list
hovertext:list
hole:float

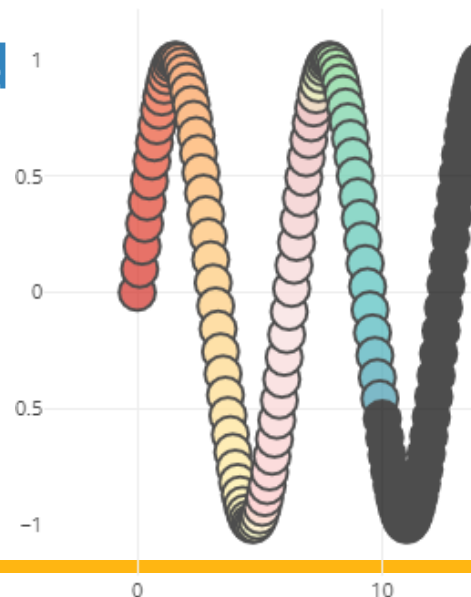
Colors in Plotly

1. Hand chosen

- `rgb` (e.g. `'rgb(255, 0, 0)'`)
- `rgba` (e.g. `'rgb(255, 0, 0, 0.5)'`)
- `hex` (e.g. `'#d3d3d3'`)
- named colors

2. Qualitative (i.e. different colors for different data)

3. Quantitative/Interpolated



plotly.graph_objs

- You can use a dictionary (or list, as appropriate) instead of an object from `plotly.graph_objs`
 - These classes subclass `dict` (or `list`)
- However, there are a few features of the objects that are convenient:
 - You can access fields as attributes (with dot notation)
 - e.g.

```
import plotly.graph_objs as go
h = Histogram()
h.x = [1, 2, 1, 2.5, 2, 5] # h.x is same as h['x']
```
 - You can see what attributes are available by typing the dot and pressing the tab key
 - They have some additional useful methods

```
In [46]: import plotly.graph_objs as go
         h = go.Histogram()
         h.
         h.text
         h.textsrc
         h.type
         h.uid
         h.visible
         h.x
         h.xaxis
         h.xbins
         h.xcalendar
         h.xsrc
         ,
```