Chapter 7 - Collaborative Analytics with Plotly

Part 1 - Creating Basic Charts

Setting up to use Plotyly within Jupyter

In [1]:
```
! pip install Plotly
```

```
Collecting Plotly
  Downloading plotly-4.8.2-py2.py3-none-any.whl (11.5 MB)
Collecting retrying>=1.3.3
  Downloading retrying-1.3.3.tar.gz (10 kB)
Requirement already satisfied: six in c:\users\danal\anaconda3\lib\site-package
s (from Plotly) (1.14.0)
Building wheels for collected packages: retrying
  Building wheel for retrying (setup.py): started
  Building wheel for retrying (setup.py): finished with status 'done'
  Created wheel for retrying: filename=retrying-1.3.3-py3-none-any.whl size=114
35 sha256=391972e36605d4c25829257835599ad0da1bb01f5d990d2e2fd1c547811d5bb3
  Stored in directory: c:\users\danal\appdata\local\pip\cache\wheels\f9\8d\8d\f
6af3f7f9eea3553bc2fe6d53e4b287dad18b06a861ac56ddf
Successfully built retrying
Installing collected packages: retrying, Plotly
Successfully installed Plotly-4.8.2 retrying-1.3.3
```

In [2]: `! pip install cufflinks`

```
Collecting cufflinks
  Downloading cufflinks-0.17.3.tar.gz (81 kB)
Requirement already satisfied: numpy>=1.9.2 in c:\users\danal\anaconda3\lib\sit
e-packages (from cufflinks) (1.18.1)
Requirement already satisfied: pandas>=0.19.2 in c:\users\danal\anaconda3\lib\s
ite-packages (from cufflinks) (1.0.1)
Requirement already satisfied: plotly>=4.1.1 in c:\users\danal\anaconda3\lib\si
te-packages (from cufflinks) (4.8.2)
Requirement already satisfied: six>=1.9.0 in c:\users\danal\anaconda3\lib\site-
packages (from cufflinks) (1.14.0)
Collecting colorlover>=0.2.1
  Downloading colorlover-0.3.0-py3-none-any.whl (8.9 kB)
Requirement already satisfied: setuptools>=34.4.1 in c:\users\danal\anaconda3\l
ib\site-packages (from cufflinks) (45.2.0.post20200210)
Requirement already satisfied: ipython>=5.3.0 in c:\users\danal\anaconda3\lib\s
ite-packages (from cufflinks) (7.12.0)
Requirement already satisfied: ipywidgets>=7.0.0 in c:\users\danal\anaconda3\li
b\site-packages (from cufflinks) (7.5.1)
Requirement already satisfied: python-dateutil>=2.6.1 in c:\users\danal\anacond
a3\lib\site-packages (from pandas>=0.19.2->cufflinks) (2.8.1)
Requirement already satisfied: pytz>=2017.2 in c:\users\danal\anaconda3\lib\sit
e-packages (from pandas>=0.19.2->cufflinks) (2019.3)
Requirement already satisfied: retrying>=1.3.3 in c:\users\danal\anaconda3\lib
\site-packages (from plotly>=4.1.1->cufflinks) (1.3.3)
Requirement already satisfied: traitlets>=4.2 in c:\users\danal\anaconda3\lib\s
ite-packages (from ipython>=5.3.0->cufflinks) (4.3.3)
Requirement already satisfied: pickleshare in c:\users\danal\anaconda3\lib\site
-packages (from ipython>=5.3.0->cufflinks) (0.7.5)
Requirement already satisfied: jedi>=0.10 in c:\users\danal\anaconda3\lib\site-
packages (from ipython>=5.3.0->cufflinks) (0.14.1)
Requirement already satisfied: backcall in c:\users\danal\anaconda3\lib\site-pa
ckages (from ipython>=5.3.0->cufflinks) (0.1.0)
Requirement already satisfied: colorama; sys_platform == "win32" in c:\users\da
nal\anaconda3\lib\site-packages (from ipython>=5.3.0->cufflinks) (0.4.3)
Requirement already satisfied: pygments in c:\users\danal\anaconda3\lib\site-pa
ckages (from ipython>=5.3.0->cufflinks) (2.5.2)
Requirement already satisfied: prompt-toolkit!=3.0.0,!=3.0.1,<3.1.0,>=2.0.0 in
c:\users\danal\anaconda3\lib\site-packages (from ipython>=5.3.0->cufflinks) (3.
0.3)
Requirement already satisfied: decorator in c:\users\danal\anaconda3\lib\site-p
ackages (from ipython>=5.3.0->cufflinks) (4.4.1)
Requirement already satisfied: nbformat>=4.2.0 in c:\users\danal\anaconda3\lib
\site-packages (from ipywidgets>=7.0.0->cufflinks) (5.0.4)
Requirement already satisfied: widgetsnbextension~=3.5.0 in c:\users\danal\anac
onda3\lib\site-packages (from ipywidgets>=7.0.0->cufflinks) (3.5.1)
Requirement already satisfied: ipykernel>=4.5.1 in c:\users\danal\anaconda3\lib
\site-packages (from ipywidgets>=7.0.0->cufflinks) (5.1.4)
Requirement already satisfied: ipython-genutils in c:\users\danal\anaconda3\lib
\site-packages (from traitlets>=4.2->ipython>=5.3.0->cufflinks) (0.2.0)
Requirement already satisfied: parso>=0.5.0 in c:\users\danal\anaconda3\lib\sit
e-packages (from jedi>=0.10->ipython>=5.3.0->cufflinks) (0.5.2)
Requirement already satisfied: wcwidth in c:\users\danal\anaconda3\lib\site-pac
kages (from prompt-toolkit!=3.0.0,!=3.0.1,<3.1.0,>=2.0.0->ipython>=5.3.0->cuffl
inks) (0.1.8)
```

```
Requirement already satisfied: jsonschema!=2.5.0,>=2.4 in c:\users\danal\anacon
da3\lib\site-packages (from nbformat>=4.2.0->ipywidgets>=7.0.0->cufflinks) (3.
2.0)
Requirement already satisfied: jupyter-core in c:\users\danal\anaconda3\lib\sit
e-packages (from nbformat>=4.2.0->ipywidgets>=7.0.0->cufflinks) (4.6.1)
Requirement already satisfied: notebook>=4.4.1 in c:\users\danal\anaconda3\lib
\site-packages (from widgetsnbextension~=3.5.0->ipywidgets>=7.0.0->cufflinks)
(6.0.3)
Requirement already satisfied: tornado>=4.2 in c:\users\danal\anaconda3\lib\sit
e-packages (from ipykernel>=4.5.1->ipywidgets>=7.0.0->cufflinks) (6.0.3)
Requirement already satisfied: jupyter-client in c:\users\danal\anaconda3\lib\s
ite-packages (from ipykernel>=4.5.1->ipywidgets>=7.0.0->cufflinks) (5.3.4)
Requirement already satisfied: importlib-metadata; python_version < "3.8" in
c:\users\danal\anaconda3\lib\site-packages (from jsonschema!=2.5.0,>=2.4->nbfor
mat>=4.2.0->ipywidgets>=7.0.0->cufflinks) (1.5.0)
Requirement already satisfied: attrs>=17.4.0 in c:\users\danal\anaconda3\lib\si
te-packages (from jsonschema!=2.5.0,>=2.4->nbformat>=4.2.0->ipywidgets>=7.0.0->
cufflinks) (19.3.0)
Requirement already satisfied: pyrsistent>=0.14.0 in c:\users\danal\anaconda3\l
ib\site-packages (from jsonschema!=2.5.0,>=2.4->nbformat>=4.2.0->ipywidgets>=7.
0.0->cufflinks) (0.15.7)
Requirement already satisfied: pywin32>=1.0; sys_platform == "win32" in c:\user
s\danal\anaconda3\lib\site-packages (from jupyter-core->nbformat>=4.2.0->ipywid
gets>=7.0.0->cufflinks) (227)
Requirement already satisfied: jinja2 in c:\users\danal\anaconda3\lib\site-pack
ages (from notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=7.0.0->cuffl
inks) (2.11.1)
Requirement already satisfied: nbconvert in c:\users\danal\anaconda3\lib\site-p
ackages (from notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=7.0.0->cu
fflinks) (5.6.1)
Requirement already satisfied: Send2Trash in c:\users\danal\anaconda3\lib\site-
packages (from notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=7.0.0->c
ufflinks) (1.5.0)
Requirement already satisfied: prometheus-client in c:\users\danal\anaconda3\li
b\site-packages (from notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=
7.0.0->cufflinks) (0.7.1)
Requirement already satisfied: terminado>=0.8.1 in c:\users\danal\anaconda3\lib
\site-packages (from notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=7.
0.0->cufflinks) (0.8.3)
Requirement already satisfied: pyzmq>=17 in c:\users\danal\anaconda3\lib\site-p
ackages (from notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=7.0.0->cu
fflinks) (18.1.1)
Requirement already satisfied: zipp>=0.5 in c:\users\danal\anaconda3\lib\site-p
ackages (from importlib-metadata; python_version < "3.8"->jsonschema!=2.5.0,>=
2.4->nbformat>=4.2.0->ipywidgets>=7.0.0->cufflinks) (2.2.0)
Requirement already satisfied: MarkupSafe>=0.23 in c:\users\danal\anaconda3\lib
\site-packages (from jinja2->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywid
gets>=7.0.0->cufflinks) (1.1.1)
Requirement already satisfied: pandocfilters>=1.4.1 in c:\users\danal\anaconda3
\lib\site-packages (from nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0-
>ipywidgets>=7.0.0->cufflinks) (1.4.2)
Requirement already satisfied: testpath in c:\users\danal\anaconda3\lib\site-pa
ckages (from nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>
=7.0.0->cufflinks) (0.4.4)
Requirement already satisfied: entrypoints>=0.2.2 in c:\users\danal\anaconda3\l
ib\site-packages (from nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->i
pywidgets>=7.0.0->cufflinks) (0.3)
```

```
Requirement already satisfied: mistune<2,>=0.8.1 in c:\users\danal\anaconda3\li
b\site-packages (from nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ip
ywidgets>=7.0.0->cufflinks) (0.8.4)
Requirement already satisfied: bleach in c:\users\danal\anaconda3\lib\site-pack
ages (from nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=
7.0.0->cufflinks) (3.1.0)
Requirement already satisfied: defusedxml in c:\users\danal\anaconda3\lib\site-
packages (from nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidget
s>=7.0.0->cufflinks) (0.6.0)
Requirement already satisfied: webencodings in c:\users\danal\anaconda3\lib\sit
e-packages (from bleach->nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0-
>ipywidgets>=7.0.0->cufflinks) (0.5.1)
Building wheels for collected packages: cufflinks
  Building wheel for cufflinks (setup.py): started
  Building wheel for cufflinks (setup.py): finished with status 'done'
  Created wheel for cufflinks: filename=cufflinks-0.17.3-py3-none-any.whl size=
68729 sha256=cc582d1f3c3cdd528f686209c2dced8c88d1c8e7bf647958cd49383e388816b2
  Stored in directory: c:\users\danal\appdata\local\pip\cache\wheels\e1\27\13\3
fe67fa7ea7be444b831d117220b3b586b872c9acd4df480d0
Successfully built cufflinks
Installing collected packages: colorlover, cufflinks
Successfully installed colorlover-0.3.0 cufflinks-0.17.3
```

In [25]:
```python
import plotly
plotly.__version__
```

Out[25]: '4.8.2'

In [16]:
```python
import cufflinks
cufflinks.__version__
```

Out[16]: '0.17.3'

In [20]:
```
pip install chart_studio
```

```
Collecting chart_studio
  Downloading chart_studio-1.1.0-py3-none-any.whl (64 kB)
Requirement already satisfied: requests in c:\users\danal\anaconda3\lib\site-pa
ckages (from chart_studio) (2.22.0)
Requirement already satisfied: six in c:\users\danal\anaconda3\lib\site-package
s (from chart_studio) (1.14.0)
Requirement already satisfied: retrying>=1.3.3 in c:\users\danal\anaconda3\lib
\site-packages (from chart_studio) (1.3.3)
Requirement already satisfied: plotly in c:\users\danal\anaconda3\lib\site-pack
ages (from chart_studio) (4.1.1)
Requirement already satisfied: idna<2.9,>=2.5 in c:\users\danal\anaconda3\lib\s
ite-packages (from requests->chart_studio) (2.8)
Requirement already satisfied: chardet<3.1.0,>=3.0.2 in c:\users\danal\anaconda
3\lib\site-packages (from requests->chart_studio) (3.0.4)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\danal\anaconda3\l
ib\site-packages (from requests->chart_studio) (2019.11.28)
Requirement already satisfied: urllib3!=1.25.0,!=1.25.1,<1.26,>=1.21.1 in c:\us
ers\danal\anaconda3\lib\site-packages (from requests->chart_studio) (1.25.8)
Installing collected packages: chart-studio
Successfully installed chart-studio-1.1.0
Note: you may need to restart the kernel to use updated packages.
```

In [8]:
```
import numpy as np
import pandas as pd

import cufflinks as cf

import chart_studio.plotly as py
import chart_studio.tools as tls
import plotly.graph_objs as go
```

In [9]:
```
tls.set_credentials_file(username='danali', api_key='man02s07DhFk381CteOY')
```

```
Creating line charts

A very basic line chart
```

In [12]:
```python
a = np.linspace(start=0, stop=30, num=30)

np.random.seed(25)

b = np.random.uniform(low=0.0, high=1.0, size=30)

trace = go.Scatter(x=a, y=b)

data = [trace]

py.iplot(data, filename="basic-line-chart")
```
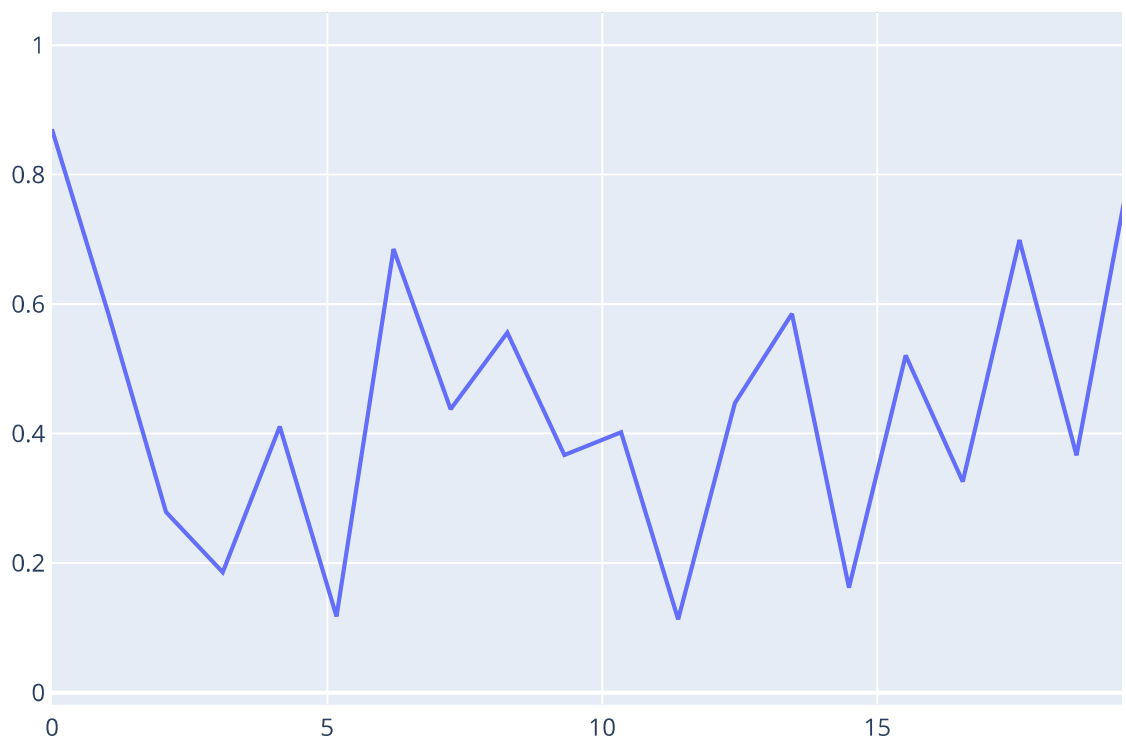
Out[12]:

EDIT CHART

A line chart from a pandas dataframe

In [19]:
```
address = 'C:/Users/danal/Desktop/ExerciseFiles/Data/mtcars.csv'

cars = pd.read_csv(address)
cars.columns = ['car_names','mpg','cyl','disp', 'hp', 'drat', 'wt', 'qsec', 'vs',

df = cars[['cyl', 'wt','mpg']]

layout = dict(title='Chart from Pandas DataFrame', xaxis= dict(title='x-axis'), y

df.iplot(filename='cf-simple-line-chart', layout=layout)
```
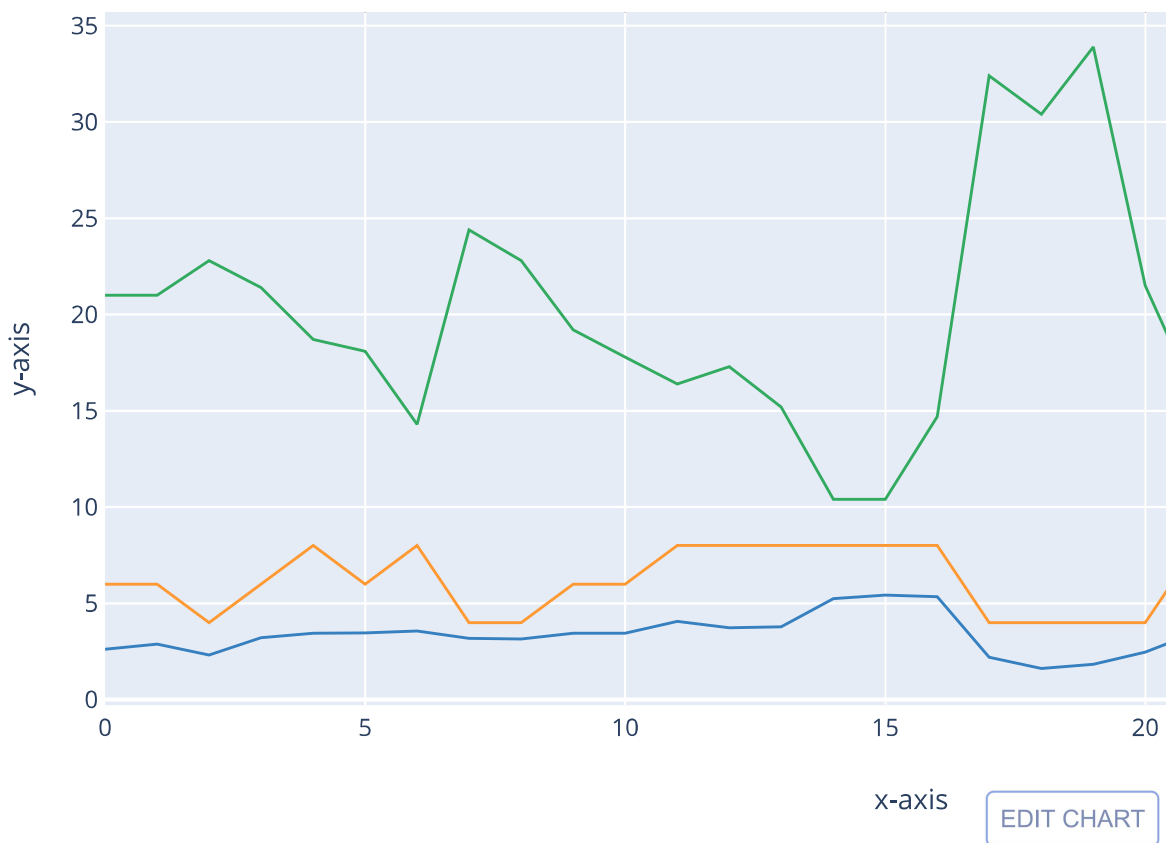
Out[19]:
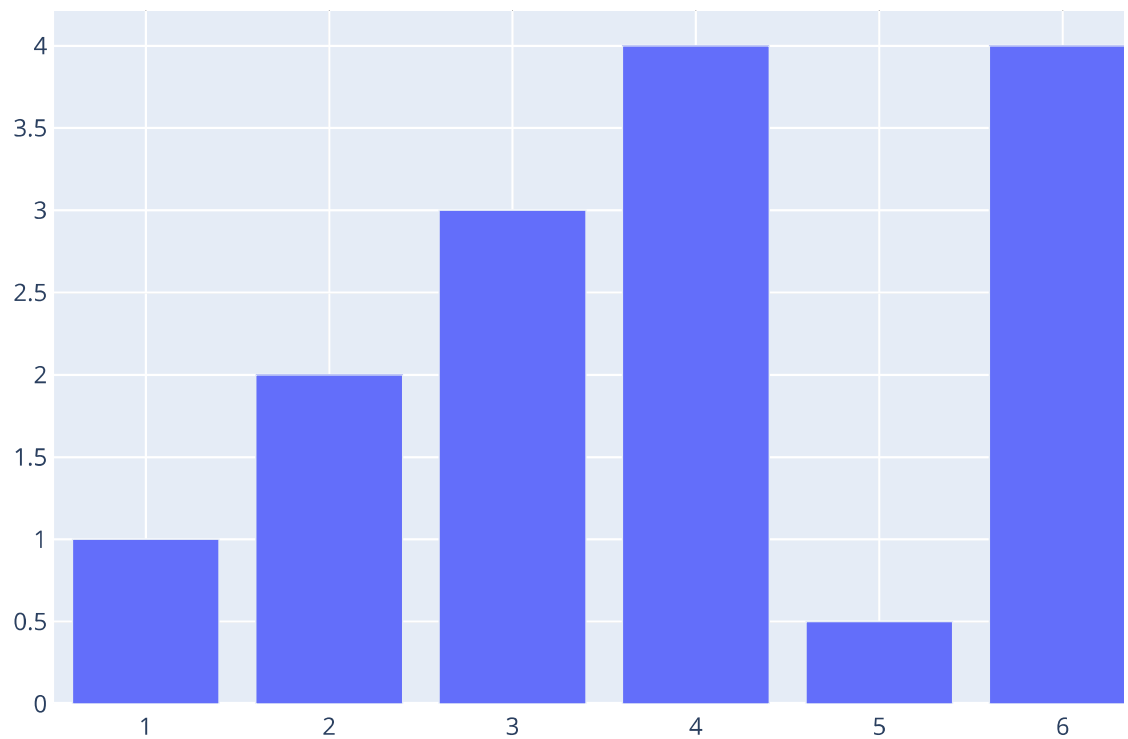
Chart from Pandas DataFrame

Creating bar Charts

In [20]:
```python
data = [go.Bar(x=[1,2,3,4,5,6,7,8,9,10], y=[1,2,3,4,0.5,4,3,2,1])]
print(data)
```

```
[Bar({
    'x': [1, 2, 3, 4, 5, 6, 7, 8, 9, 10], 'y': [1, 2, 3, 4, 0.5, 4, 3, 2, 1]
})]
```

In [21]:
```python
layout = dict(title='Simple Bar Chart',
              xaxis= dict(title='x-axis'), yaxis=dict(title='y-axis'))
py.iplot(data, filename='basic-bar-chart', layout=layout)
```
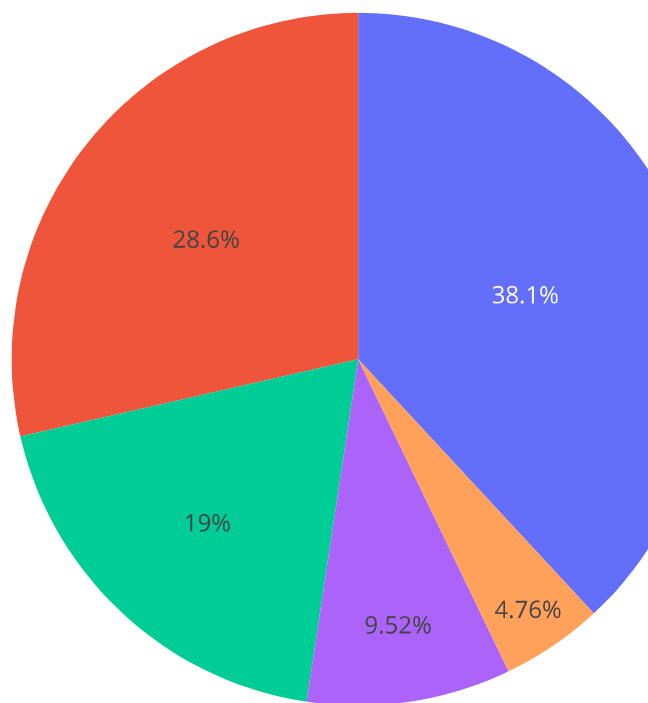
Out[21]:

EDIT CHART

```
Creating pie charts
```

In [24]:
```python
fig = {'data':[{'labels': ['bicycle', 'motorbike','car','van', 'stroller'],
                'values': [1, 2, 3, 4, 0.5],'type': 'pie'}],
       'layout': {'title': 'Simple Pie Chart'}}
py.iplot(fig)
```

Out[24]:

Simple Pie Chart

EDIT CHART