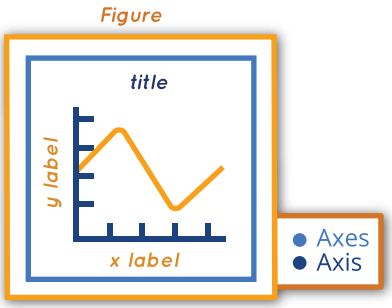
Plotting with Pandas Series and DataFrames

Pandas uses Matplotlib to generate figures. Once a figure is generated with Pandas, all of Matplotlib's functions can be used to modify the title, labels, legend, etc. In a Jupyter notebook, all plotting calls for a given plot should be in the same cell.

Parts of a Figure

An Axes object is what we think of as a "plot". It has a title and two Axis objects that define data limits. Each Axis can have a label. There can be multiple Axes objects in a Figure.



Setup

Import packages:

```
> import pandas as pd
> import matplotlib.pyplot as plt
```

Execute this at IPython prompt to display figures in new windows:

```
> %matplotlib
```

Use this in Jupyter notebooks to display static images inline:

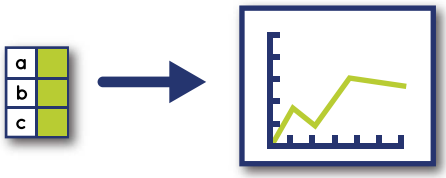
```
> %matplotlib inline
```

Use this in Jupyter notebooks to display zoom-able images inline:

```
> %matplotlib notebook
```

Plotting with Pandas Objects

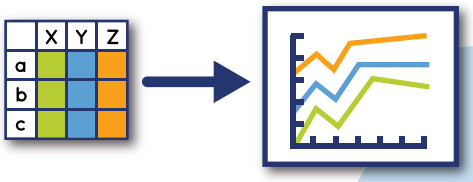
Series



With a Series, Pandas plots values against the index:

```
> ax = s.plot()
```

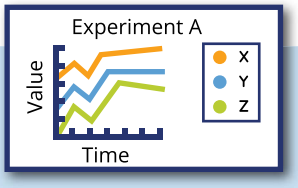
Dataframe



With a DataFrame, Pandas creates one line per column:

```
> ax = df.plot()
```

Labels



Use Matplotlib to override or add annotations:

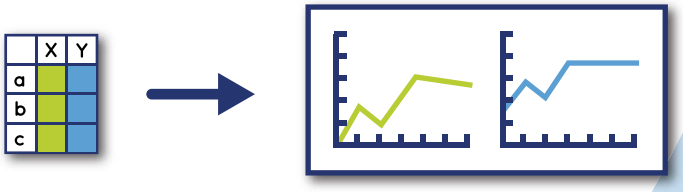
```
> ax.set_xlabel('Time')
> ax.set_ylabel('Value')
> ax.set_title('Experiment A')
```

Pass labels if you want to override the column names and set the legend location:

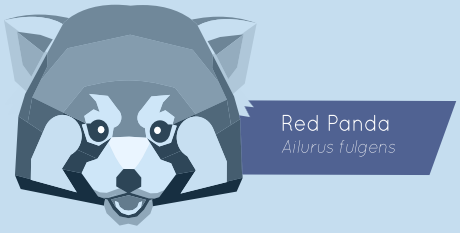
```
> ax.legend(labels, loc='best')
```

When plotting the results of complex manipulations with **groupby**, it's often useful to **stack/unstack** the resulting DataFrame to fit the one-line-per-column assumption (see Data Structures cheatsheet).

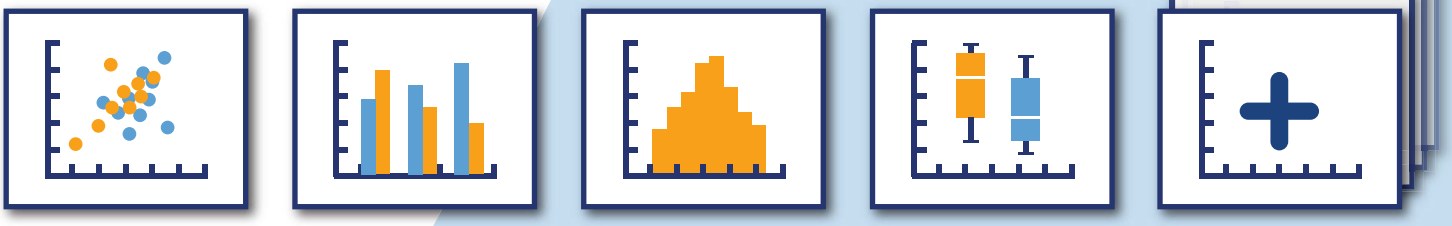
Useful Arguments to **plot**



- **subplots=True**: one subplot per column, instead of one line
- **figsize**: set figure size, in inches
- **x** and **y**: plot one column against another



Kinds of Plots



`df.plot(kind='scatter')` `df.plot(kind='bar')` `df.plot(kind='hist')` `df.boxplot()`

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