



Matplotlib Cheat Sheet: Plotting in Python

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Data visualization and storytelling with your data are essential skills that every data scientist needs to communicate insights gained from analyses effectively to any audience out there.

For most beginners, the first package that they use to get in touch with data visualization and storytelling is, naturally, Matplotlib: it is a Python 2D plotting library that enables users to make publication-quality figures. But, what might be even more convincing is the fact that other packages, such as Pandas, intend to build more plotting integration with Matplotlib as time goes on.

However, what might slow down beginners is the fact that this package is pretty extensive. There is so much that you can do with it and it might be hard to still keep a structure when you're learning how to work with Matplotlib.

work with matplotlib, this might be the extra push to be convinced and to finally get started with data v

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(By the way, if you want to get started with this Python package, you might want to consider our [Ma](#)

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You'll see that this cheat sheet presents you with the six basic steps that you can go through to ma

Check out the infographic by clicking on the button below:

Python For Data Science Cheat Sheet
Matplotlib
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Matplotlib
Matplotlib is a Python 2D plotting library which produces publication-quality figures in a variety of hardcopy formats and interactive environments across platforms.

1 Prepare The Data *Also see Lists & NumPy*

1D Data

```
>>> import numpy as np
>>> x = np.linspace(0, 10, 100)
>>> y = np.cos(x)
>>> z = np.sin(x)
```

2D Data or Images

```
>>> data = z * np.random.random((10, 10))
>>> data2 = z * np.random.random((10, 10))
```

2 Plot Anatomy & Workflow

Plot Anatomy

Workflow

The basic steps to creating plots with matplotlib are:

- 1 Prepare data
- 2 Create plot
- 3 Plot
- 4 Customize plot
- 5 Save plot
- 6 Show plot

4 Customize Plot

Colors, Color Bars & Color Maps

```
>>> plt.plot(x, y, x**2, y, x**3)
>>> ax.plot(x, y, alpha = 0.4)
>>> ax.plot(x, y, c='k')
>>> fig.colorbar(lin, orientation='horizontal')
>>> im = ax.imshow(lin, cmap='seismic')
```

MathText

```
>>> plt.title(r'Example_1=155', fontsize=20)
```

Limits, Legends & Layouts

Limits & Autoscaling

```
>>> ax.margins(x=0.5, y=0.1)
```

3 Plotting Routines

1D Data

```
>>> fig, ax = plt.subplots()
>>> line = ax.plot(x, y)
>>> ax.scatter(x, y)
>>> ax.plot([0, 1], [2, 3], [3, 4, 5])
>>> ax.plot([0, 1], [2, 3], [4, 5], [6, 7, 8])
>>> ax.plot([0, 1], [2, 3], [4, 5])
>>> ax.plot([0, 1], [2, 3], [4, 5])
>>> ax.plot([0, 1], [2, 3], [4, 5])
>>> ax.plot([0, 1], [2, 3], [4, 5])
```

2D Data or Images

```
>>> fig, ax = plt.subplots()
>>> im = ax.imshow(lin, cmap='gray',
>>>                 interpolation='nearest',
>>>                 vmin=2,
>>>                 vmax=2)
```

Vector Fields

```
>>> ax.quiver(x, y, u, v)
>>> ax.quiver(x, y, u, v, angles='auto')
```

Data Distributions

```
>>> ax.hist(y)
>>> ax3.boxplot(y)
>>> ax3.violinplot(x)
```

5 Save Plot

Save figures

```
>>> plt.savefig('foo.png')
>>> plt.savefig('foo.png', transparent=True)
```

6 Show Plot

```
>>> plt.show()
```

Close & Clear

```
>>> plt.clf()
>>> plt.close()
```

Check Out Matplotlib Cheat Sheet

With this handy reference, you'll familiarize yourself in no time with the basics of Matplotlib: you'll learn how you can prepare your data, create a new plot, use some basic plotting routines to your advantage, add customizations to your plots, and save, show and

the [Matplotlib Gallery](#), the [documentation](#) and our [tutorial](#).

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Python

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