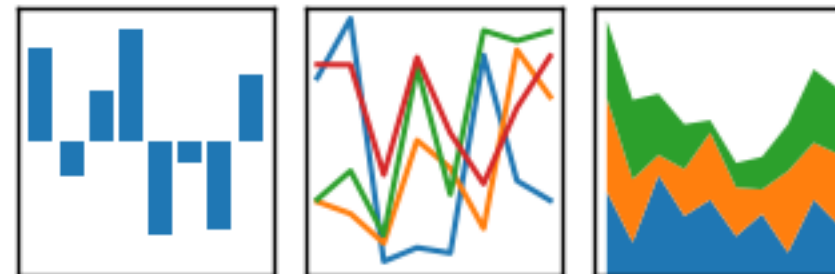




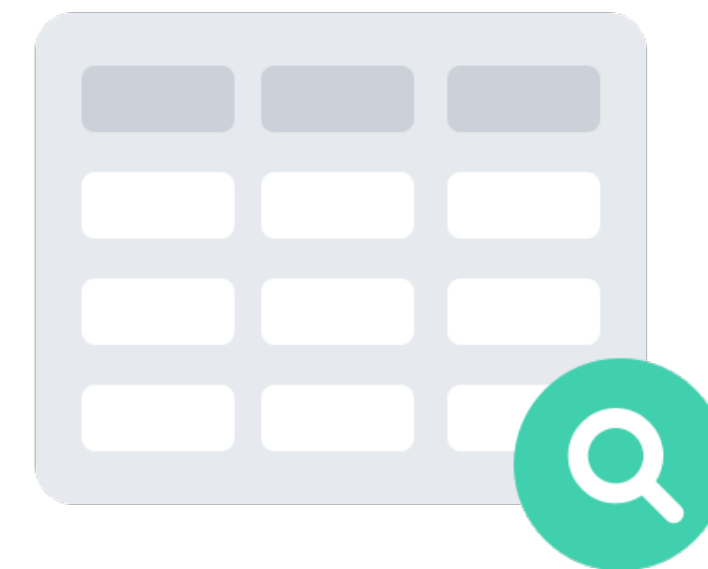
What is pandas?

pandas

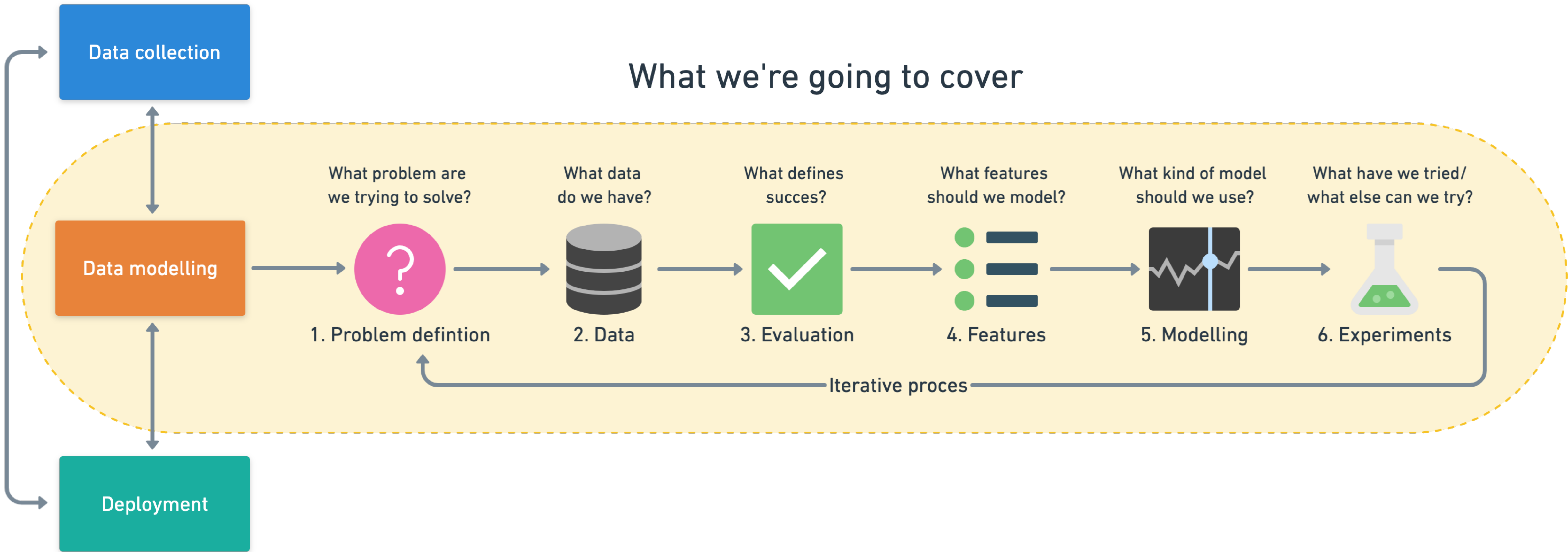
$$y_{it} = \beta' x_{it} + \mu_i + \epsilon_{it}$$



Data

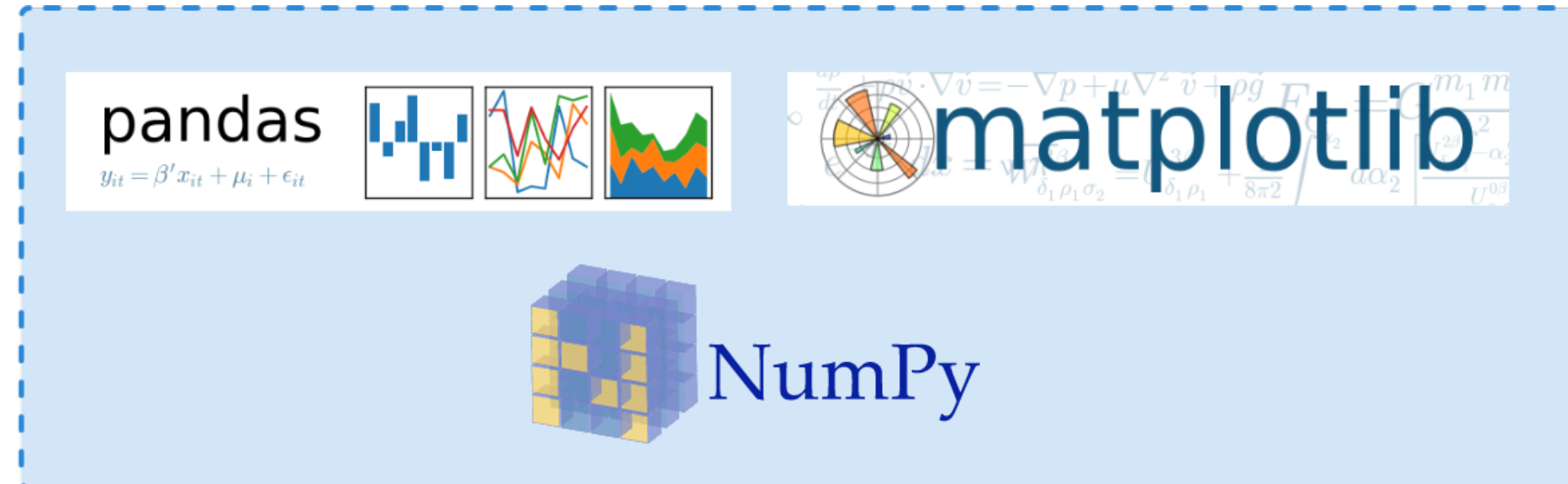
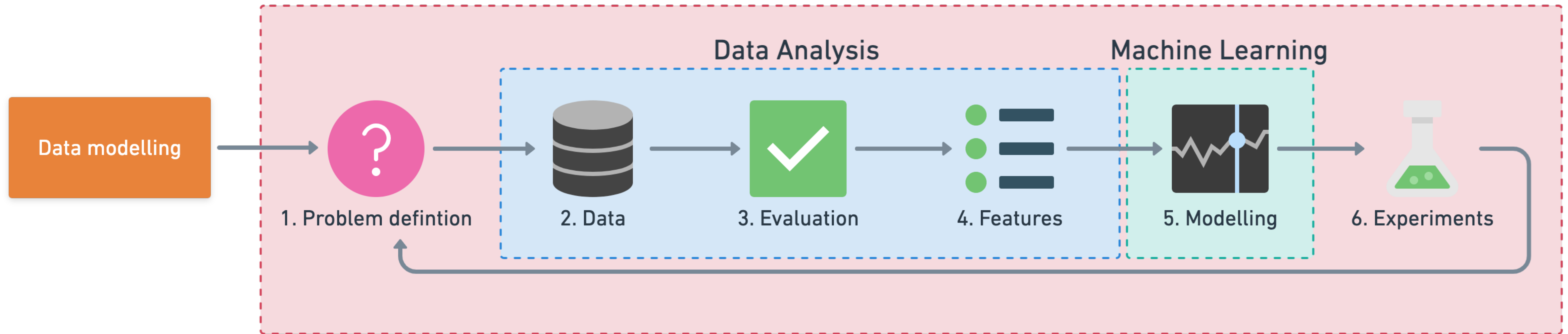


Steps in a full machine learning project



Tools you can use

Data Science



Why pandas?

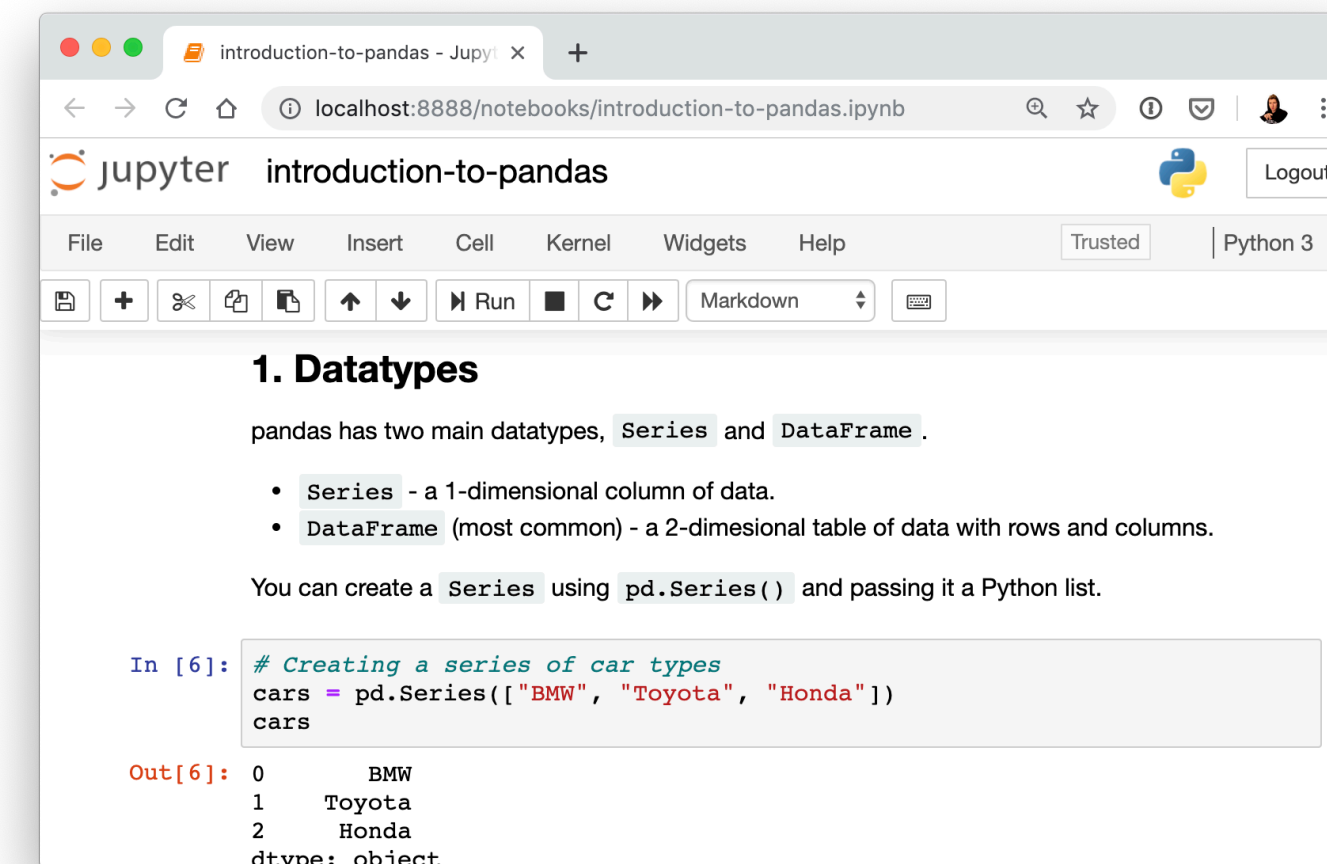
- **Simple to use**
- **Integrated with many other data science & ML Python tools**
- **Helps you get your data ready for machine learning**

What are we going to cover?

- **Most useful functions**
- **pandas Datatypes**
- **Importing & exporting data**
- **Describing data**
- **Viewing & selecting data**
- **Manipulating data**

Where can you get help?

- Follow along with the code
- Try it for yourself
- Search for it
- Try again
- Ask

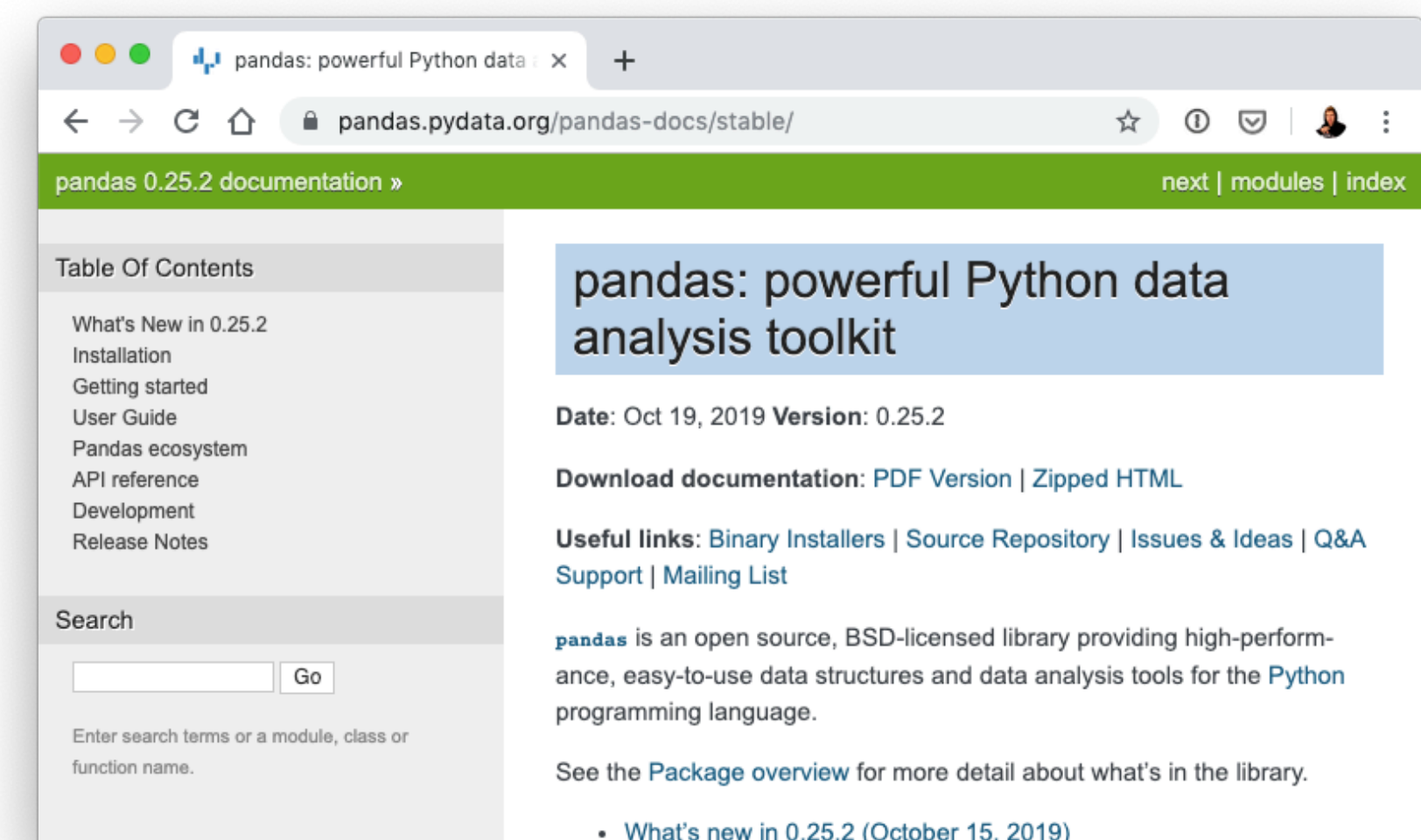


The screenshot shows a Jupyter Notebook interface in a web browser. The title bar says 'introduction-to-pandas - Jupyter'. The address bar shows 'localhost:8888/notebooks/introduction-to-pandas.ipynb'. The notebook content includes a section '1. Datatypes' explaining that pandas has two main datatypes: Series and DataFrame. It then shows a code cell with the following code:

```
In [6]: # Creating a series of car types
cars = pd.Series(["BMW", "Toyota", "Honda"])
cars
```

The output of the code cell is:

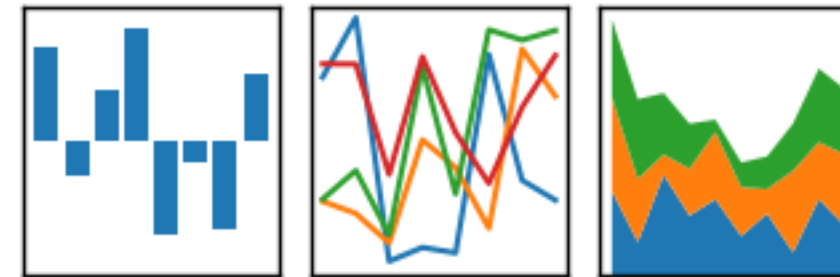
```
Out[6]: 0    BMW
        1   Toyota
        2    Honda
        dtype: object
```



Let's code!

pandas

$$y_{it} = \beta' x_{it} + \mu_i + \epsilon_{it}$$



Anatomy of a DataFrame

The diagram illustrates the anatomy of a DataFrame. It features a table with 5 rows and 5 columns. The first column contains index numbers (0-4), and the subsequent columns are labeled 'Make', 'Colour', 'Odometer', 'Doors', and 'Price'. Annotations include: 'Column (axis = 1)' above the column headers, 'Index number (starts at 0 by default)' to the left of the index column, 'Row (axis = 0)' to the left of the index column, 'Column name' to the right of the 'Price' header, and 'Data' with arrows pointing to specific data cells (150043, 4, \$4,000).

	Column (axis = 1)	Make	Colour	Odometer	Doors	Price	Column name
Index number (starts at 0 by default)	0	Toyota	White	150043	4	\$4,000	
1		Honda	Red	87899	4	\$5,000	
2		Toyota	Blue	32549	3	\$7,000	
Row (axis = 0)	3	BMW	Black	11179	5	\$22,000	
4		Nissan	White	213095	4	\$3,500	