4.3.1 Start Your Jupyter Notebook Server

Familiarity with Jupyter Notebook is essential for this analysis. Maria recommends checking to make sure the PythonData environment has been added to Jupyter Notebook, and then learning how to start Jupyter Notebook.

To start Jupyter Notebook, we'll be using the command line on macOS and the Anaconda Prompt on Windows. But before we can do that, we need to allow Jupyter Notebook to access our PythonData environment. Follow the set of directions below that corresponds to your operating system.

Check out the macOS instructions below, or jump to the **Windows instructions**.

Add a Development Environment to Jupyter Notebook on macOS

In order to use the PythonData environment in Jupyter Notebook, we need to add it to your Jupyter Notebook.

In the command line, type `python -m ipykernel install --user --name PythonData` and press Enter.

If you get an error that states `No module name ipykernel`, you will have to install "ipykernel" by doing the following:

- Run the following in the command line: `pip install ipykernel`.
- When ipykernel is installed, run `python -m ipykernel install --user --name PythonData`again.

If you see `Installed kernelspec PythonData in \Users\<your computer name>\AppData\Roaming\jupyter\kernels\PythonData` in your command line, you have successfully added the PythonData environment to Jupyter Notebook.

The command `python -m ipykernel install --user --name PythonData` tells Python to use the IPython kernel to install the PythonData environment in the Jupyter kernels. A **kernel** is a computer program that runs and examines the Python code. A kernel interfaces between the application and your computer memory.

When we type and run the command `python -m pip install ipykernel`, we are having the software "pip" install the `ipykernel` package, which is needed to install the PythonData environment in Jupyter Notebook.

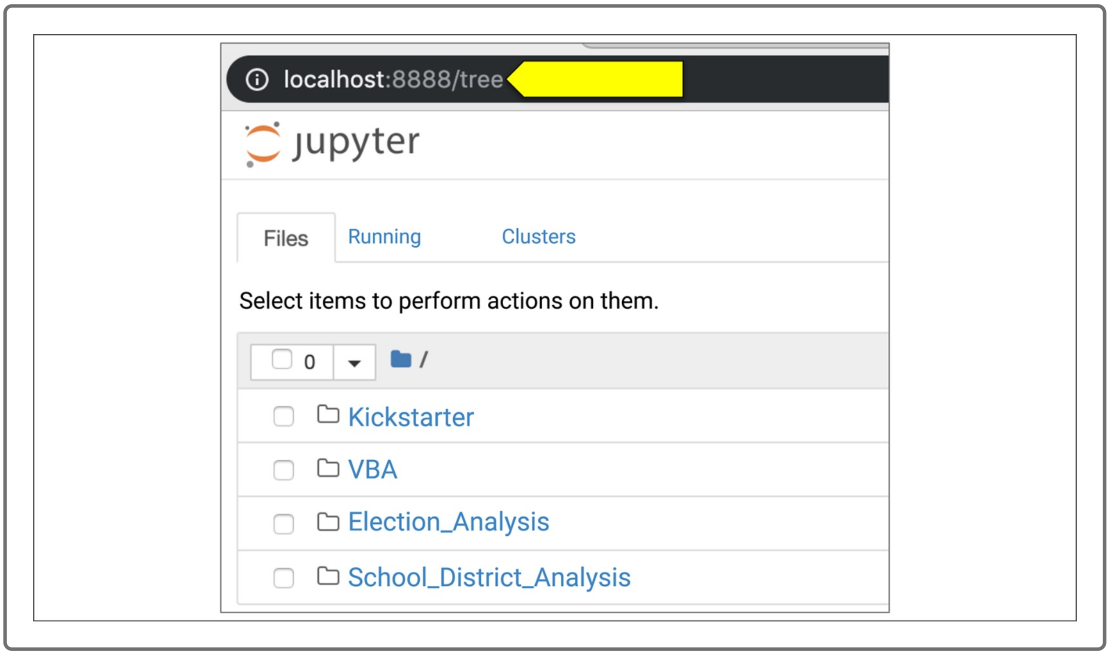
Start Jupyter Notebook on macOS

To access folders and files on Jupyter Notebook, you should use the command line to navigate to the working directory containing the files you want to work with.

For instance, to create new files in the "School_District_Analysis" folder, use the command line to navigate to the `Class` folder. Activate the PythonData environment (if it isn't already activated), and at the command prompt `$` type and run `jupyter notebook`. The command line should look something like this before you press Enter:

```
(PythonData) computer_name:Class tom$ jupyter notebook
```

When you run this command, your computer's operating system starts a Python server to "serve" up the Jupyter Notebook application and the folders in the directory where you launched Jupyter Notebook. In your default web browser, a new window will open where you'll see this URL in the address bar: http://localhost:8888/tree. (More on **localhost** later.)



localhost:8888/tree

Select items to perform actions on them.

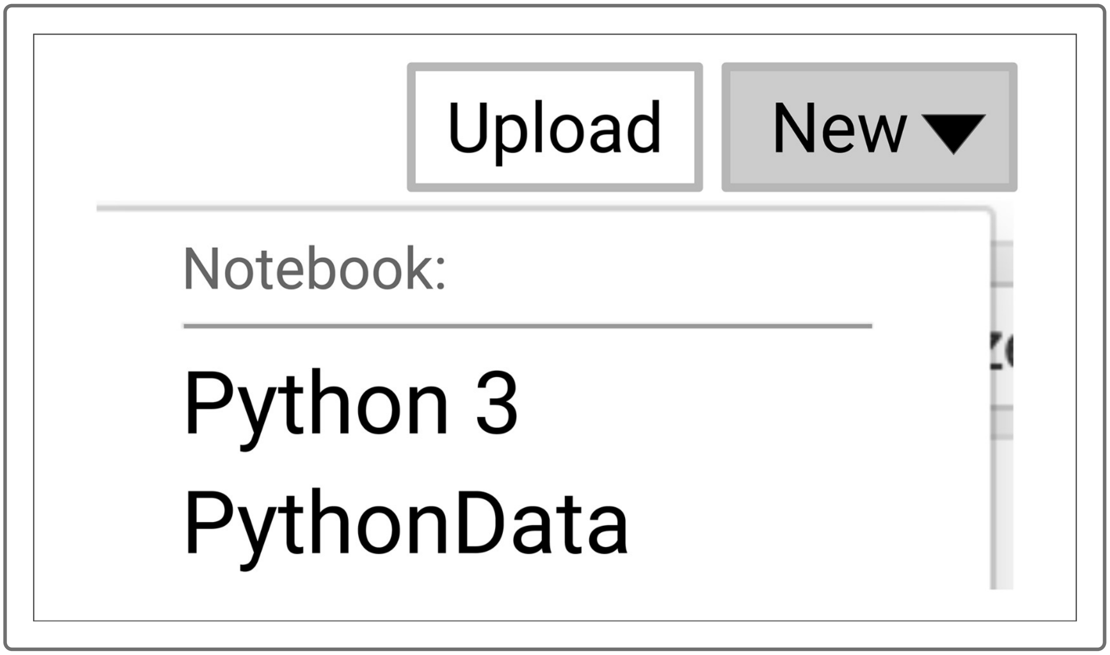
□ Kickstarter
□ VBA
□ Election_Analysis
□ School_District_Analysis

Check the PythonData Environment in Jupyter Notebook on macOS

Now that you have added your PythonData environment in the Jupyter kernels, let's determine if the PythonData environment is loaded.

In the command line, activate the PythonData environment (if it isn't already) and type `jupyter notebook`. Press Enter.

When the Jupyter Notebook webpage opens in your browser, click the "New" dropdown link, which is located on the right side of the screen. If you see the PythonData environment listed, you have successfully added it to your kernels. Note that you may also have an environment that says "Python 3," which is the default environment added during installation.



Add a Development Environment to Jupyter Notebook on Windows

In order to use the PythonData environment in Jupyter Notebook, we need to add it to your Jupyter Notebook.

Open the Anaconda Prompt associated with the environment, i.e., PythonData.

In the prompt, type `python -m ipykernel install --user --name PythonData` and press Enter. If you get an error that states `No module name ipykernel`, you will have to install "ipykernel" by doing the following:

- Run the following in the Anaconda Prompt: `python -m pip install ipykernel`.

- When ipykernel is installed, run `python -m ipykernel install --user --name PythonData`again.

If you see something like `Installed kernelspec PythonData in \Users\<your computer name>\AppData\Roaming\jupyter\kernels\PythonData` in the Anaconda Prompt, you have successfully added the PythonData environment to Jupyter Notebook.

The command `python -m ipykernel install --user --name PythonData` tells Python to use the IPython kernel to install the PythonData environment in the Jupyter kernels. A **kernel** is a computer program that runs and examines the Python code. A kernel interfaces between the application and your computer memory.

When we typed and ran the command `python -m pip install ipykernel`, we are having the software "pip" install the `ipykernel` package, which is needed to install the PythonData environment in Jupyter Notebook.

NOTE

> "pip" is a package-management system that is used to install and manage software packages written in Python. To install a package, use the command `pip install`. Packages can be found on the **Python Package Index** **(https://pypi.org/)** .

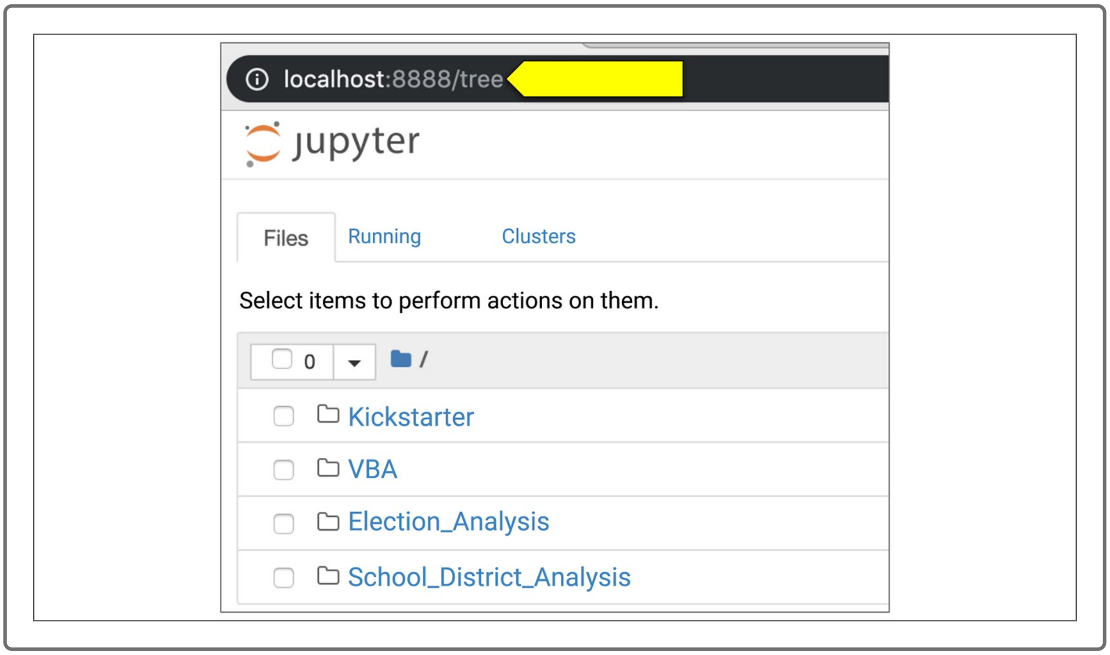
Start Jupyter Notebook on Windows

To access folders and files on Jupyter Notebook, you should use the Anaconda Prompt to navigate to the working directory containing the files you want to work with.

In the Anaconda Prompt, navigate to the Class folder. At the Anaconda prompt, `>`, type `jupyter notebook`. The prompt should look something like this before you press Enter:

```
C:\Users\computer_name\Class> jupyter notebook
```

When you run this command, your computer's operating system starts a Python server to "serve" up the Jupyter Notebook application and the folders in the directory where you launched Jupyter Notebook. In your default web browser, a new window will open where you'll see this URL in the address bar: http://localhost:8888/tree. (More on **localhost** later.)



Select items to perform actions on them.

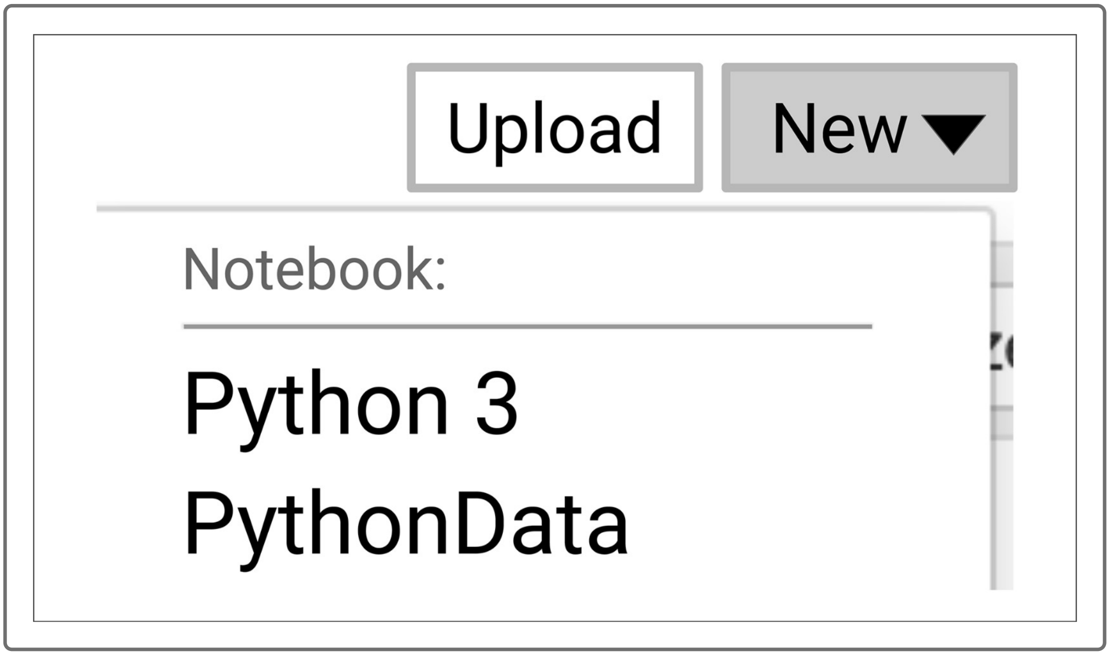
- □ Kickstarter
- □ VBA
- □ Election_Analysis
- □ School_District_Analysis

Check the PythonData Environment on Jupyter Notebook on Windows

Now that you have added your PythonData environment in the Jupyter kernels, let's determine if the PythonData environment is loaded.

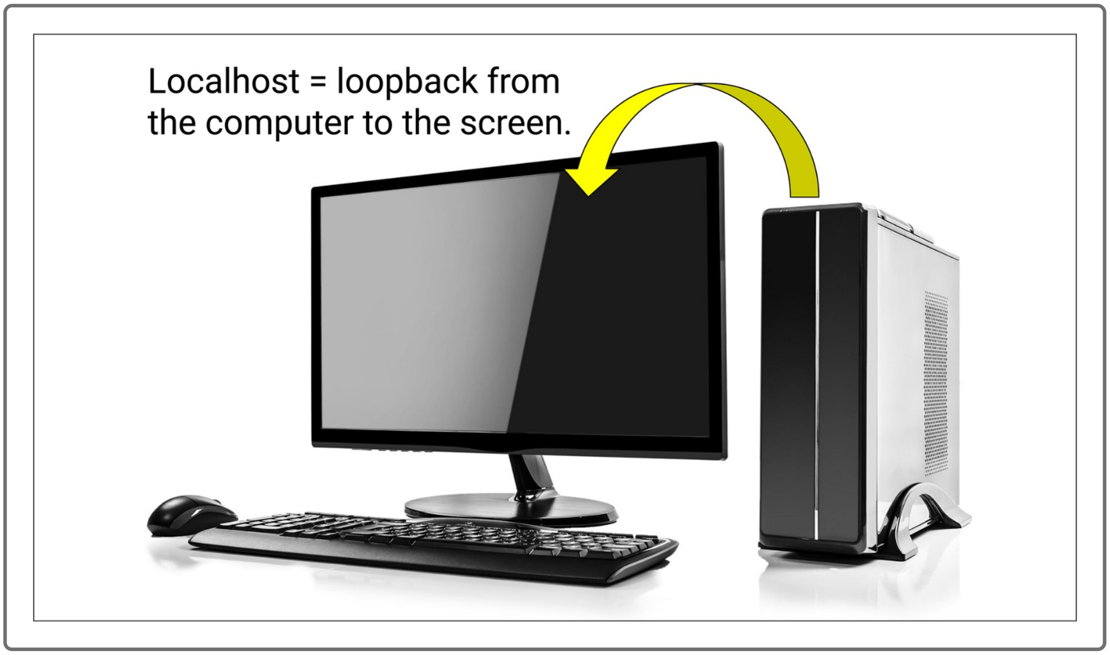
Open the Anaconda Prompt for the PythonData environment and type `jupyter notebook`. Press Enter.

When the Jupyter Notebook webpage opens in your browser, click the "New" dropdown link, which is located on the right side of the screen. If you see the PythonData environment listed, you have successfully added it to your kernels. Note that you may also have an environment that says "Python 3," which is the default environment added during installation.



What Is Localhost?

The **localhost** is your computer running a web browser on your computer, like Jupyter Notebook.



The localhost has the **internet protocol (IP)** address 127.0.0.1. Think of this as your home or street address where you live. In technical terms, this is considered a **loopback** address because the information sent to this IP address is routed back to your computer. (This is kind of like copying, or "CC-ing," yourself on an email to make sure your email was sent.)

The number 8888 is the port number on your computer where the Jupyter Notebook accesses the files and folders in your Class folder. There are 49,151 ports on your computer. The first 1,023 are system ports that have specific uses. Ports 1,024–49,151 are registered ports and are assigned to a service, such as using Jupyter Notebook.

When you are on this webpage, you can navigate to any folders in the Class folder. If you want to access a folder that is not in this tree structure, you must quit Jupyter Notebook, navigate to the folder you want on the command line, and start your Jupyter Notebook server.

NOTE

> For more information on the topics covered in this lesson, see the following documentation:
>
> - **Adding your development environment to your Jupyter Notebook (https://ipython.readthedocs.io/en/stable/install/kernel_install.html)**
> - **What is localhost? (https://whatismyipaddress.com/localhost)**
> - **What are my computer port numbers? (https://www.expressvpn.com/what-is-my-ip/port-number)**