Getting Started with Python

AND ANACONDA NAVIGATOR

Charlotte Lloyd | 28 June 2017
Summer Institute in Computational Social Science

Outline

I. Introduction to Python
II. Python Three Ways
III. Hands-on Demo
IV. Celebration, Back-slapping

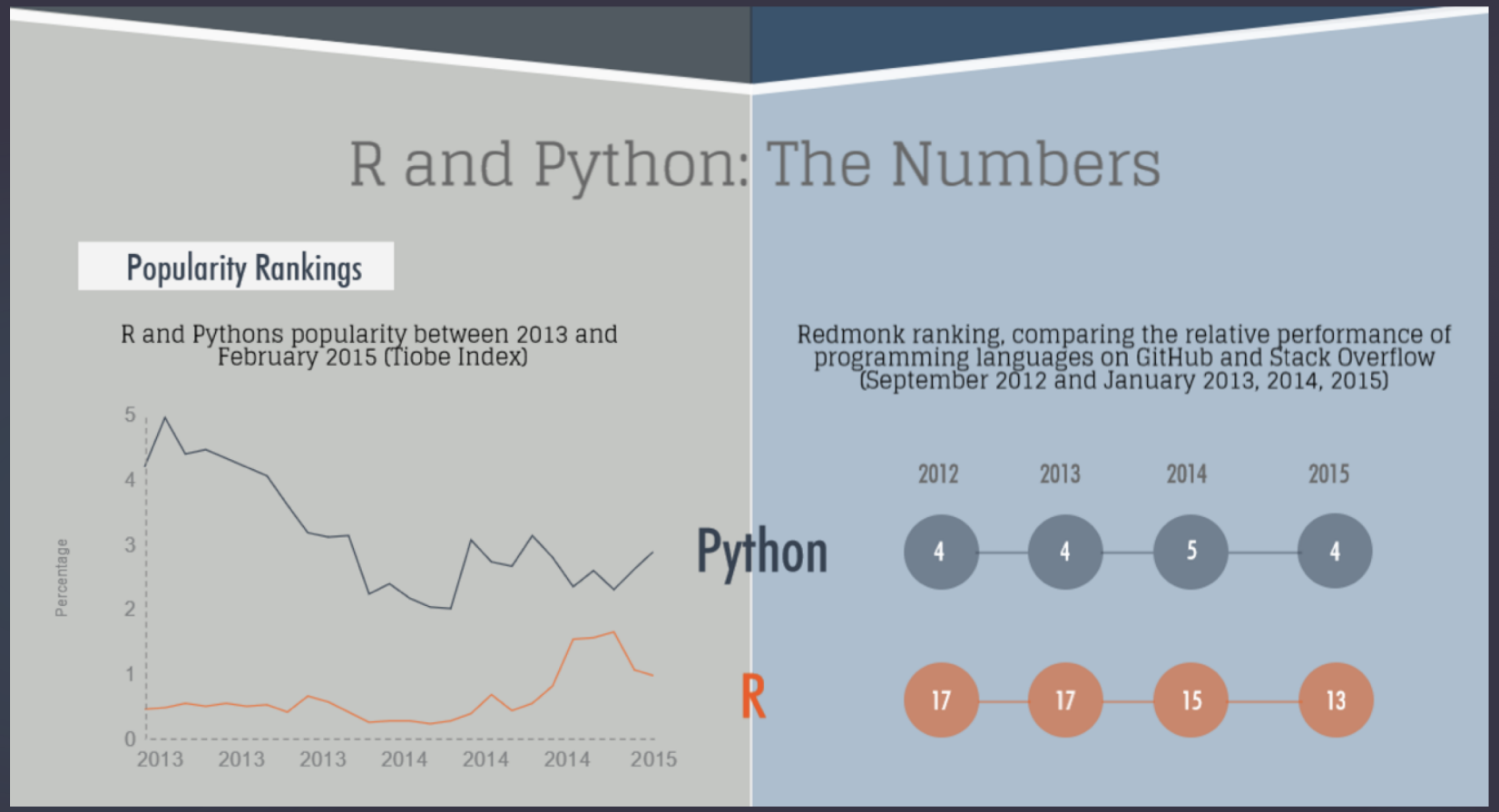
Introduction to Python

PART I

What is Python?

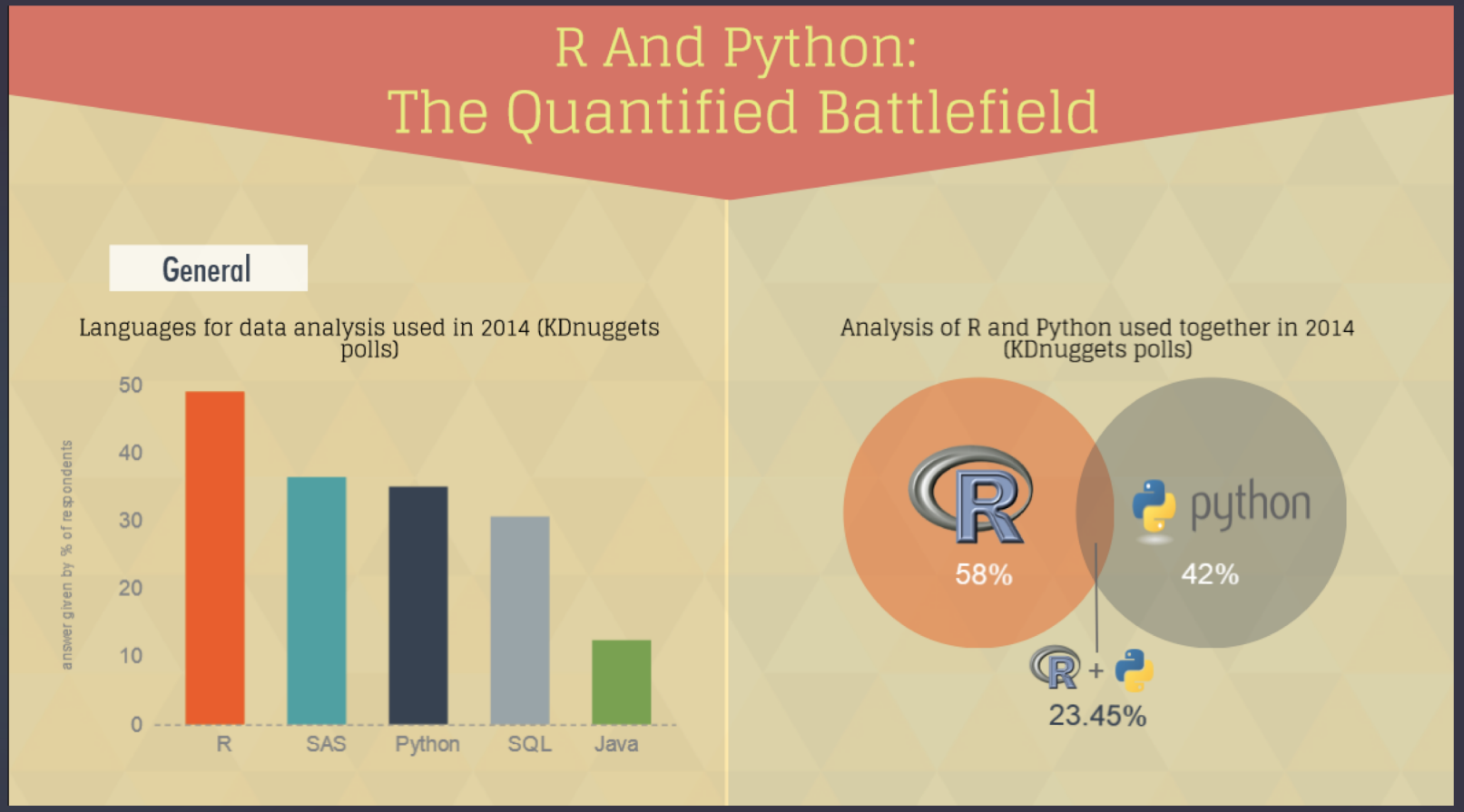
- general purpose
- high-level
- interpreted (not compiled)
- name is related to Monty Python

Very Popular Language



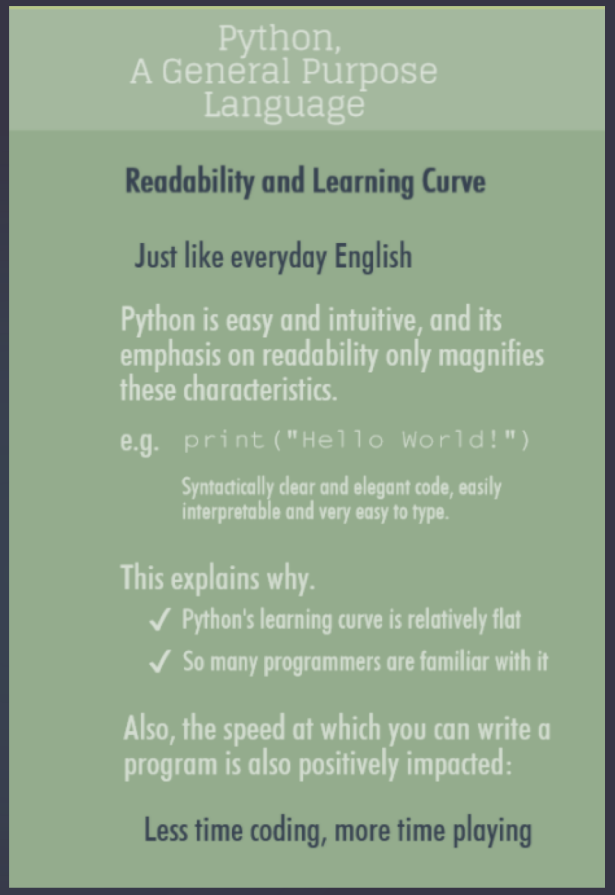
Checkout the full infographic: http://blog.datacamp.com/wp-content/uploads/2015/05/R-vs-Python-216-2.png

Less Popular in Data Analysis



Checkout the full infographic: http://blog.datacamp.com/wp-content/uploads/2015/05/R-vs-Python-216-2.png

Great Beginner Language



Python's focus on readability and simplicity makes that its learning curve is relatively low and gradual.

Python is considered a good language for starting programmers.

Checkout the full infographic: http://blog.datacamp.com/wp-content/uploads/2015/05/R-vs-Python-216-2.png

Packages for Python

- Packages are bits of code that other people have built to extend Python functionality.
  - If you install a package you will be able to use the additional commands that package has defined.

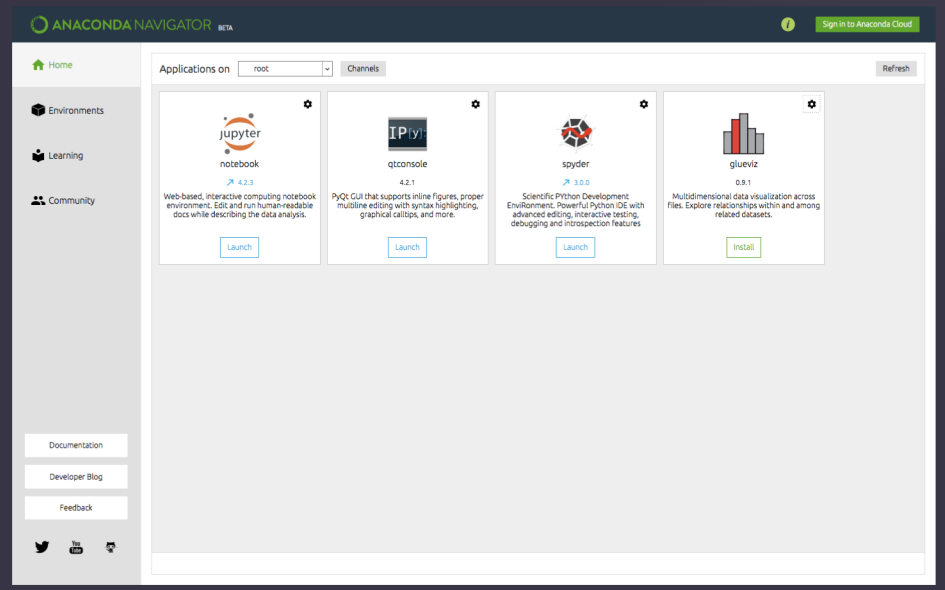
- Over 100,000 publically listed packages famously including:
  - numpy
  - scikit-learn
  - pandas

Python Three Ways

PART II

What is Anaconda?

- Anaconda is an “installation” of Python that includes:
  - package management
  - environment management
  - python distribution
- Anaconda pre-installs over 100 packages



Three Major Ways to Use Python

1. Command Line
2. “IDE”
3. Notebook

1. “Command Line” Python

A. **Run an interactive session in a Unix shell**
   1. In Terminal (Mac) or Powershell (PC):
      1. type ”`python`”
      2. type “`2+2`”
   2. In qtconsole (Anaconda Navigator): [do nothing, it’]
      - try typing ”`2+2`”

B. **Run a script (file)**
   1. In Terminal (Mac) or Powershell (PC): type “`python file.py`”
   2. In qtconsole (Anaconda Navigator): type “`%load file.py`”

2. Python in IDEs

- IDE ("integrated development environment")
  - Spyder (provided in Anaconda)
  - PyCharm (my fav!)
  - Xcode (Macs)

- Write code (esp. multiple files) and easily execute within the IDE.

- **Activity: Write a "helloworld" program in Spyder. Execute in both Spyder and Terminal/Powershell.**

3. Python Notebooks

- web-based “interactive computational environment”
- very visual, very cool
- segmented into small cells of executable code

Packages

- Several ways to install packages. It's more complicated than R :-/
- **Command line:**
  - conda install *package*
  - pip install *package*
- **Anaconda Navigator:**
  - Under the "environments" tab look at "not installed" packages and choose which ones to install.
- **Follow the instructions provided in the package documentation.**

Hands-on Demo

PART III

Hands-on Demo

- Open Anaconda Navigator. Open the Jupyter Notebook.
  - Navigate to "**handypy.ipynb**" and open.

- Topics to be covered:
  - integers, floats, and strings
  - lists
  - for and while loops
  - conditionals
  - functions
  - reading and writing csv files