Welcome to Foundations of Python

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Introduction

UCL Social Data Institute: Foundations of Python

Course aims

- A foundation in Python programming.
  - *Variables, data structures, control logic, functions, classes.*
- An Introduction to popular Python tools for data science.
  - *pandas, matplotlib, sklearn.*
- A hands-on data science challenge.
  - Predicting the price of London AirBnBs.

About me

- Final year PhD student (Supervised by James Cheshire).
- My research interests: Human mobility, disease transmission, bias & uncertainty.
- Python experience: 9 years.
- Python projects: TODO

About you

- Programming experience?
- Statistics experience?
- Installation problems?

Schedule

- *This is a short course!*
- **Day 1:** Python basics.
  - Variables, data structures (`list`, `dict`), control logic (`if`, `for`, `while`).
- **Day 2:** Abstraction & composition.
  - Functions, Classes.
  - *Also:* Using `.py` files, not `.ipynb`.

Schedule

- **Day 3:** Python data science.
  - `pandas`, `numpy`, `matplotlib`.
- **Day 4:** Challenge: regression analysis.
  - Predicting the price of London AirBnBs using Inside AirBnB data.

Learning python

Source: Sarah's Scribbles

Learning python

- Practice is the most important ingredient to becoming a good programmer.
- It is easier to “practice” if you find *personally compelling* reasons to use Python.
  - Coursework, side projects, random curiosity, automating things in your life.
- Programming is all about trial and error.

AI

- New AI programming assistants:
  - Chat GPT, GitHub Copilot, Copilot Chat
- I recommend using them all, especially as a study aid.
  - **Bad idea:** Using AI to *generate* code you can't understand.
  - **Good idea:** Using AI to *explain* code you can't understand.

Variables

(compare R to Python)

Lists

(compare R to Python)

Dictionaries

(compare Python to R - put R last (it is more confusing))