Death Simulator

Project Presentation

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Changes from Last Time

- Added dark theme in a Binder instance
- 10/10 PEP8 compliant (except one script)
- Switched to constants instead of string literals (except one script)
- Created a name field to populate the .pdf
- .pdf of the Pre-Death Certificate working
- Added readme
- Cleaned up directory structure
  - Removed unused scripts
  - Converted .ipynb to .py except the intereactive_frontend
  - Changed directory names
- Created function to read the data

Background

- As humans, we know we die
- Not knowing when or how causes suffering
- By providing a date, mechanism, and cause of death, the suffering is extinguished

Our goal is to cheat death of its surprise and reduce death anxiety
(but only jokingly so)

Data Used

- Center for Disease Control: Underlying Causes of Death 1999-2018
  - Data Accessed and extracted via CDC Wonder
- Bureau of Labor Statistics: Census of Fatal Occupational Injuries 2018

Use Case

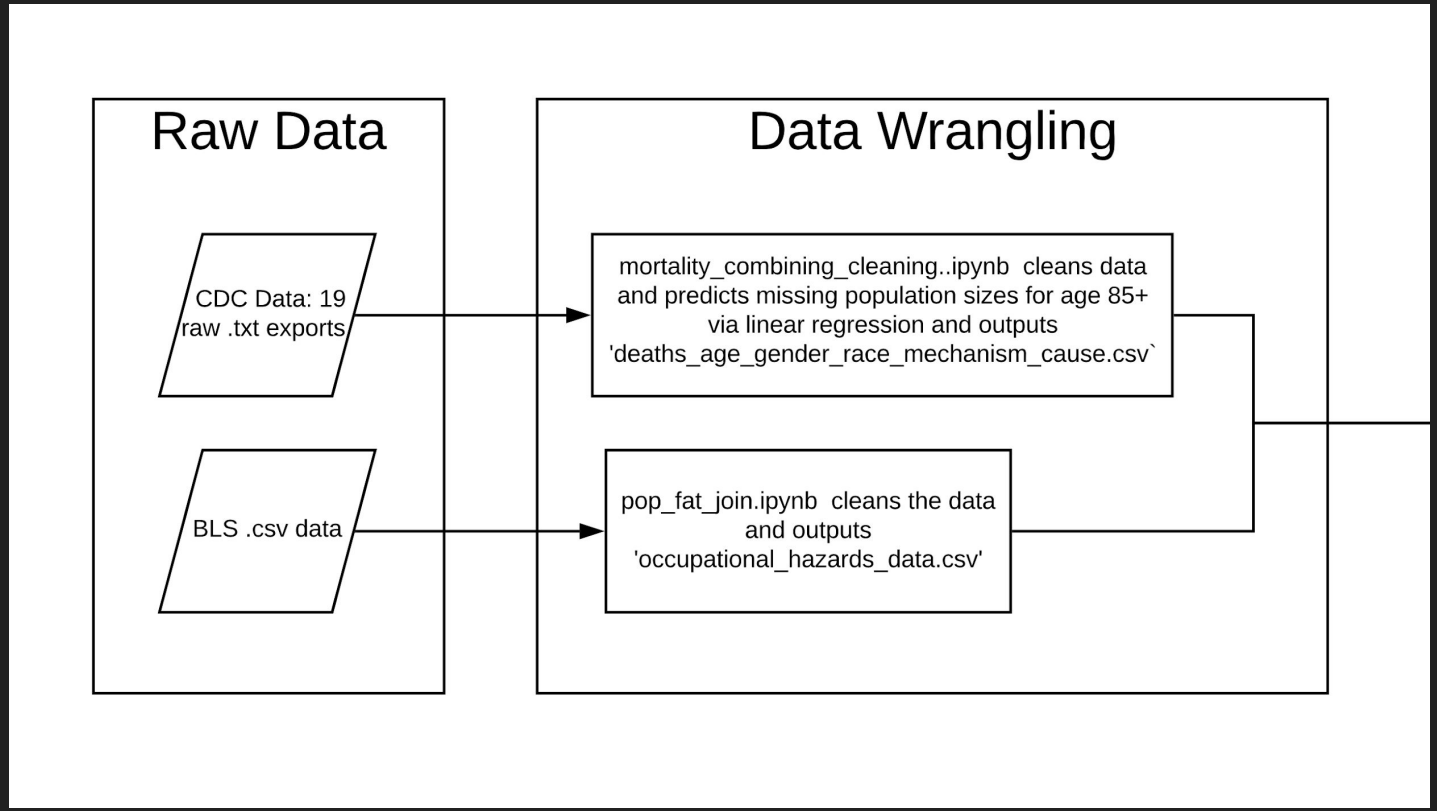
As a person afflicted with death anxiety, when I enter my:

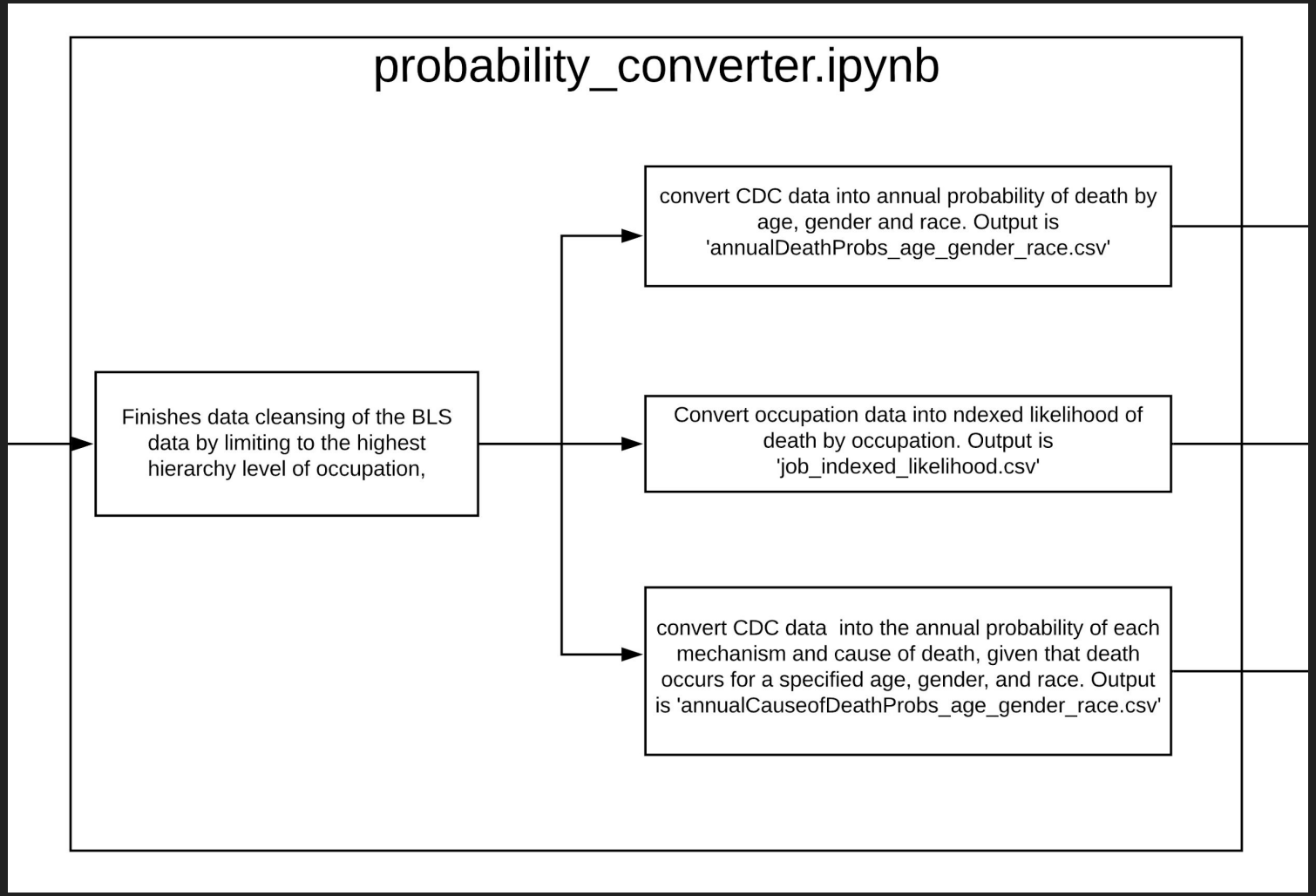
birthdate, occupation, gender, race, exercise frequency, BMI, Height, Weight, and McDonalds consumption frequency

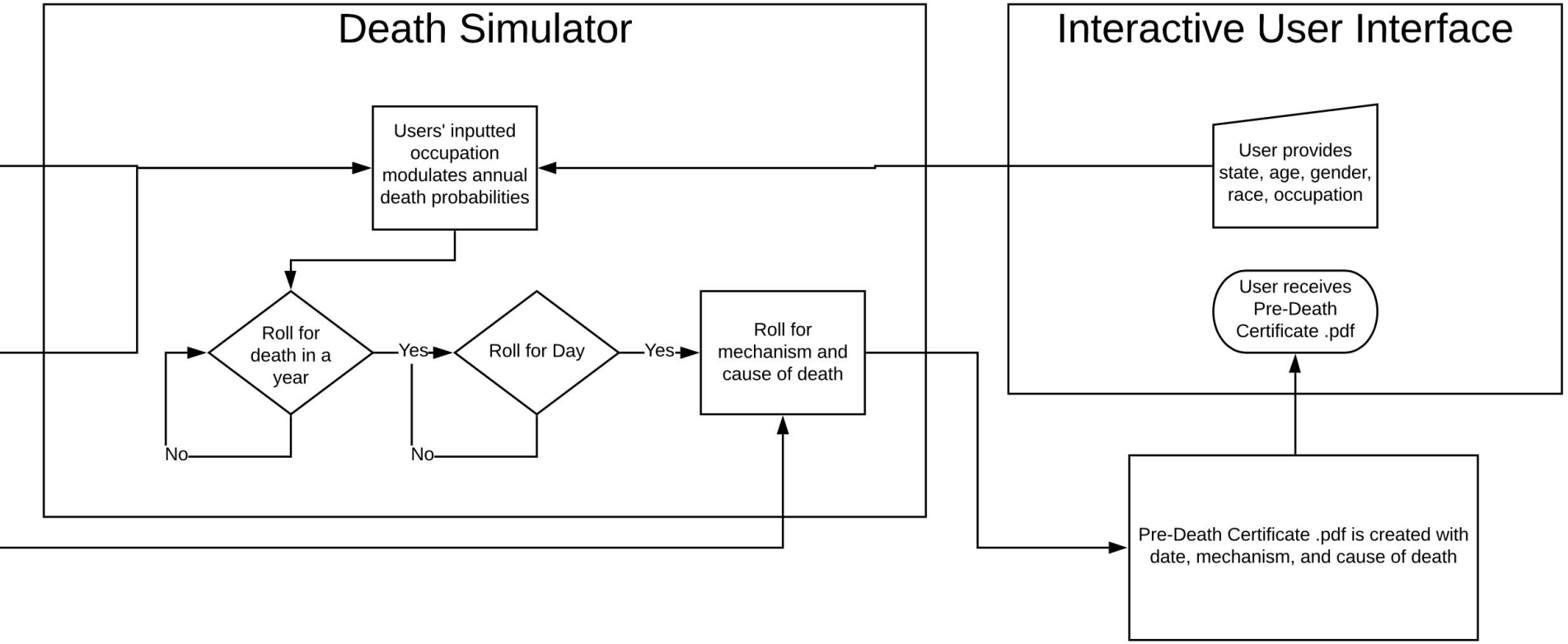
…into the Death Simulator Jupyter Notebook, I receive my simulated date, mechanism, and cause of death—all neatly packaged into a pre-death certificate .pdf for me to print and mount on my wall.

Knowing how it all ends, my anxiety is released.

Design Part 1




probability_converter.ipynb
Finishes data cleansing of the BLS data by limiting to the highest hierarchy level of occupation,
convert CDC data into annual probability of death by age, gender and race. Output is 'annualDeathProbs_age_gender_race.csv'
Convert occupation data into ndexed likelihood of death by occupation. Output is 'job_indexed_likelihood.csv'
convert CDC data into the annual probability of each mechanism and cause of death, given that death occurs for a specified age, gender, and race. Output is 'annualCauseofDeathProbs_age_gender_race.csv'


Death Simulator
Interactive User Interface
Users' inputted occupation modulates annual death probabilities
User provides state, age, gender, race, occupation
Roll for death in a year
Yes
Roll for Day
Yes
Roll for mechanism and cause of death
No
No
User receives Pre-Death Certificate .pdf
Pre-Death Certificate .pdf is created with date, mechanism, and cause of death

Demonstration

Project Structure

```
death_simulator/
  |- README.md
  |- death_simulator/
     |- death_simulator/
        |-print_death_cert.py
        |-probability_converter.py
        |-death_simulator.py
        |-create_death_data.py
        |-interactive_frontend.ipynb
    |- tests/
      |-...
  |-data
     |-annualCauseOfDeathProbs_age_gender_race.csv
     |-annualDeathProbs_age_gender_race.csv
     |-job_indexed_likelihood.csv
     |-deaths_age_gender_race_mechanism_cause.csv
     |-occupational_hazards_data.csv
  |- data_raw
     |-mortality_ages0-10.txt
     |-mortality_ages11-15.txt
     |-...
  |- doc/
     |- FunctionalSpec
     |- Designspec
     |- Projectplan
     |- TechnologyReview
     |-Final presentation
  |- setup.py
  |- LICENSE
  |- requirements.txt
```

Pre-Death Certificate

This is how you die...

James Lee

You will die on 2087-08-17 from "Non-Injury: All other diseases (Residual)", at the age of 94. Cause of death will be Other specified disorders of peritoneum. You have 67 more years to live.

Pre-Death Certificate

This is how you die...

Aniruddha

You will die on 2089-12-03 from "Non-Injury: All other diseases (Residual)", at the age of 95. Cause of death will be Rupture of bladder, nontraumatic. You have 69 more years to live.

Pre-Death Certificate

This is how you die...

Thomas Winegarden

You will die on 2084-01-04 from "Non-Injury: All other diseases (Residual)", at the age of 92. Cause of death will be Dyskinesia of oesophagus. You have 63 more years to live.

Lessons Learned and Future Work

- Getting and cleaning data proved to be ~80% of the work
  - Unexpectedly had to change data sources (in order to get age in years instead of age group_
  - Unexpectedly had to model population sizes for age 85+
- Turns out that 2^4^100^21^3753 is a big number
  - We had to change our methodology from having the death simulator be a pure-lookup to doing some of the calculations
- Scope goes out the window under time constraints with limited resources
  - Removed the mass death module
  - Didn’t complete fancy modeling for ages 85+ when it became a blocker
- More fun ideas tend to get priority
  - .pdf of the death cert made it into scope
  - Binder made it into scope