

# Computational Appendix to “Recursive Preferences and the Value of Life. Theory and Application to Epidemics”

Antoine Bommier

François Le Grand

Daniel Harenberg\*

July 8, 2021

The folder available at [http://francois-le-grand.net/docs/codes/BLH\\_Recursive\\_Prefs\\_Epidemics\\_codes.zip](http://francois-le-grand.net/docs/codes/BLH_Recursive_Prefs_Epidemics_codes.zip) contains a set of files that enable to replicate the numerical computations of the paper “Recursive Preferences and the Value of Life. Theory and Application to Epidemics”.

The initial zip file contains two zip files entitled `consumption-profiles.zip` and `WTP-epidemics.zip`, which correspond respectively to the two quantitative exercises of the paper: (i) computing consumption profiles (Sections 2.6 and 2.7); (ii) computing aggregate willingness-to-pay for mortality risk reduction in case of epidemics (Sections 3.2, 3.3, and 3.4).

## 1 First archive: `consumption-profiles.zip`

This archive embeds two files.

1. A csv file, `mortality-data-US.csv`, that contains mortality data from Human Mortality Database. This file is needed for the computation.
2. A Julia Jupyter notebook, `consumption-profiles.ipynb`, that contains the code to compute and plot consumption profiles of Sections 2.6 and 2.7. The code is commented and self-contained for explanations.

---

\*Bommier: ETH Zurich, [abommier@ethz.ch](mailto:abommier@ethz.ch); Le Grand: EMLyon Business School and ETH Zurich, [legrand@em-lyon.com](mailto:legrand@em-lyon.com); Harenberg: ETH Zurich, Switzerland, and Oxford Economics Ltd., Germany, e-mail: [dan.harenberg@gmail.com](mailto:dan.harenberg@gmail.com).

## 2 Second archive: WTP-epidemics.zip

This archive embeds five files (the first four are auxiliary data files and the last one is the actual code):

1. A csv file `mortality-data-US.csv`, that contains mortality data from Human Mortality Database.
2. A csv file `US-pop-shares-2018.csv` containing US population shares according to US Social Security (<https://data.census.gov/cedsci/table?q=population&tid=ACSDP1Y2018.DP05>).
3. A csv file `covid-case-fatality-rates.csv` with the Covid-19 infection fatality rates as computed by Ferguson et al. (2020).
4. A csv file `1918-flu-death-rates.csv` with the mortality rates of 1918 influenza (source: Collins, 1931 and Taubenberger and Morens, 2006).
5. A Julia Jupyter notebook `WTP-epidemics.ipynb`, that contains the code to replicate the computations of Section 3 about Covid-19 and the 1918 influenza. The code is commented and self-contained for explanations.

## References

- COLLINS, S. D. (1931): “Age and Sex Incidence of Influenza and Pneumonia Morbidity and Mortality in the Epidemic of 1928-29 with Comparative Data for the Epidemic of 1918-19: Based on Surveys of Families in Certain Localities in the United States following the Epidemics,” *Public Health Reports (1896-1970)*, 46, 1909–1937.
- FERGUSON, N., D. LAYDON, G. NEDJATI GILANI, N. IMAI, K. AINSLIE, M. BAGUELIN, S. BHATIA, A. BOONYASIRI, Z. CUCUNUBA PEREZ, G. CUOMO-DANNENBURG, ET AL. (2020): “Impact of Non-Pharmaceutical Interventions (NPIs) to Reduce COVID19 Mortality and Healthcare Demand,” Report 9, London: Imperial College COVID-19 Response Team.
- TAUBENBERGER, J. K. AND D. M. MORENS (2006): “1918 Influenza: the Mother of All Pandemics,” *Emerging Infectious Diseases*, 12, 15–22.