

# Guide for the Quantitative Model and Auxiliary Simulation Model Codes

January 31, 2019

This document explains how to use the included Matlab code to produce the findings in “Old, frail, and uninsured: Accounting for features of the U.S. long-term care insurance market” by R. Anton Braun, Karen A. Kopecky and Tatyana Koreshkova published in *Econometrica* in 2019. Additional information about the codes can be found as comments inside the files. This document contains instructions on how to use the quantitative model codes to produce the model results in the paper and instructions on how to use the auxiliary model codes to produce estimates reported in the paper that are based on the auxiliary model. Note that instructions pertaining to the Stata files used to generate the other HRS data results are in `readme_HRS.txt`.

## Quantitative Model Codes

1. The Matlab code to compute the quantitative model is in the folder QUANTITATIVE\_MODEL.
2. The Matlab code uses the following Matlab toolboxes: statistics, optimization, parallel.
3. The main program file is `DoRuns.m`.
4. The code is currently setup to generate the results of the baseline model. It generates three files: an excel file and a `.mat` file which both have the same title. The title is the date (four digit year, then two digit month month, then tow digit day) and military time (two digit hour, then minute, then second) of the run followed by “\_v1”. The excel file contains information about the current parameterization as well as all the Baseline model results reported in the paper. The third file is an excel file titled with the date and time in the same format as the other two files followed by “\_CompareRuns”. This

file creates one line of excel output for a subset of the parameters and moments that can be used to easily compare output across runs by modifying DoRuns.m to iterate over multiple parametrizations.

5. To generate the figures that are based on output from the quantitative model and are in the paper or the online appendix run results\_05022018.m and Make\_paper\_plots.m. These two Matlab files require the three .mat files in the folder QUANTITATIVE\_MODEL: 20180502\_115539\_v1.mat (Baseline Economy Solution), 20180502\_161729\_v2.mat (Full Information Economy Solution), and 20180502\_154049\_v1.mat (No Medicaid Economy Solution).
6. To generate the results from the other economies considered the following modifications must be made:
  - (a) To generate the No Medicaid economy: In DoRuns.m, lines 64 and 65, set cminDoRuns\_l and cminDoRuns\_u to 0.001.
  - (b) To generate the Full Information economy: In economy.m, comment out line 41 and uncomment line 42.
  - (c) To generate the No Administrative Costs economy: In main.m, lines 44 and 45, set lambda (the proportional cost) to 1 and k (the fixed cost) to 0.
  - (d) To generate the Full Information and No Administrative Costs economy: Do numbers 2 and 3 above at the same time.

## Auxiliary Model Codes

1. The Matlab code for the auxiliary simulation model is called statetrans62\_72.m and is in the folder AUXILIARY\_MODEL.
2. The .txt files included in the folder must be in the same directory as the Matlab code.
3. When the code is run the lifetime nursing home entry probabilities reported in Figure 4 are produced.
4. The Stata .do file that creates the .txt files, statetrans.do, and the Stata datasets, HRS\_nhm.dta and frail.dta, are also in the folder. Note that the numbers produced by the .do file vary slightly from those in the paper due to updates made to the dataset after the simulation model results were produced.