**Climate-Health Microsimulation Model Documentation**

**V2.0 – 6.21.2022**

This microsimulation models multiple health outcomes as a result of changing climate exposures. Climate projections are given to the model as inputs, along with individual non-climate characteristics for the population, and health outcomes of interest are estimated for a defined time period. The main structure of the code is based on Krijkamp et al (2018)1.

The model consists of five separate files:

* **CHM:** This is the main climate-health model file where inputs are defined, the model is run, and output graphics are generated.
* **MicroSim:** This contains the MicroSim() function (i.e., the loops taking each individual through each time cycle).
* **Probs:** This contains the Probs() function, which is used to assign health states to individual at each consecutive time cycle, given their current health state and individual characteristics and exposures.
* **Costs:** This contains the Costs() function, which is used to assign costs to each individual in each cycle, given their health state.
* **Effs:** This contains the Effs() function, which is used to calculate quality-adjusted life years for each individual in each cycle.

CHM

Population inputs

* Number of individuals
* Time horizon
* Length of each cycle in years
* Name of possible health states, separately for each condition being assessed
* Vector with initial health states of each individual
* Discount rates for costs and QALYs
* List of interventions
* Baseline annual birth rate and annual change
* Baseline annual all-cause mortality rate and annual change
* Data frame with individual characteristics (e.g., sex, age, rural/urban, prior exposure) and geographic identifiers

Transition probabilities

**References**

1. Krijkamp EM, Alarid-Escudero F, Enns EA, Jalal HJ, Hunink MGM, Pechlivanoglou P. Microsimulation Modeling for Health Decision Sciences Using R: A Tutorial. *Med Decis Making*. Apr 2018;38(3):400-422. doi:10.1177/0272989X18754513