Infrastructure for reproducible and validatable multi-site cost-effectiveness studies.

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  2. Resolving cohort overlap conflicts.
  3. Choosing the trajectory creation settings.

- **TrajectoryMarkovAnalysis**
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  2. Using them to produce discrete or continuous time Markov chain models.
  3. Querying data from specific domains for state cost analysis.
  4. Synthetic trajectories can be generated from the assembled Markov models.
  5. Output: Markov model, state cost statistics, synthetic medical data.

- **Validation study**
  1. To showcase the functionalities of the R packages we reproduced the study of heart failure carried out in the UK (Thokala et al., 2020) on data supplied by five EHDEN data partners.

**FUTURE WORK:**
- Predicting patients’ health trajectories using all the historic medical data (white box solutions).
- Using DTW for finding the most common treatment regimens from data.
- Simple but conclusive visualizations of patients’ trajectories.
- Creating more powerful models for describing patients’ treatment trajectories (black box solutions).

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- Treatment trajectories give us a foundation to find out the best healthcare practices, evaluate the economics of treatment patterns and model the treatment paths.
- Two R packages (Cohort2Trajectory & TrajectoryMarkovAnalysis) were developed.

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**CASE STUDY:**
- Study by Thokala et al. for comparing traditional care with additional telemonitoring use among heart failure patients was reproduced using the packages.
- Five monthly Markov states for isolating heart failure progression (HF0, HF1, HF2, HF3) capturing the number of heart failure related hospital visits in the last year and death (HFD).
- Markov and cost-effectiveness analyses were conducted.
- Data from Estonia (EC & ER), Serbia (ZB), Spain (ISS) and USA (CU).
- Cost data were provided by EC and ZB.

**JOIN THE STUDY!**

**AUTHORS:**
Markus Haug, Raivo Kolde

**SPECIAL THANKS TO DATA PARTNERS:**
- Antonio Fernandez (IIS INCLIVA, Spain, Valencia)
- Thomas Falconer (The Columbia University Irving Medical Center, USA)
- Ana Danilovic, Filip Majkovic (CHC Zvezdara, Belgrade, Serbia)

**UNIVERSITY OF TARTU, ESTONIA**

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