



Online Advanced Healthcare Modeling

Expand your skills with hands-on techniques for building and analyzing complex health economic models.

Course Agenda

1. Patient Simulation

- Model complex disease processes by **simulating individual patients** over time.
- Add **heterogeneity** and **patient event history** to drive disease progression.
- **Validate your model** with patient-level reporting and debugging tools.
- Strengthen your skills with a **patient simulation exercise**.

2. Assign Clinical Data to Patients and Analyze Subgroups

- Use Bootstrapping to assign simulated patient **characteristics** from **clinical data**.
- **Analyze results by subgroup** to examine how treatment recommendations can vary by patient characteristics.

3. Survival Analysis and Hazards

- Examine clinical survival data and understand how risk changes over time - **survival analysis**.
- Fit **parametric distributions** to survival data for **extrapolation** beyond observed data.
- Incorporate **survival functions and hazards** into models to represent disease progression and event risk.

4. Partitioned Survival Models (PartSA)

- Define model disease progression **directly from clinical survival curves** – progression-free survival (PFS) and overall survival (OS).
- Calculate **costs and QALYs** based on changing health-state membership over time.

5. Model Calibration

- **Calibrate uncertain model inputs** to reproduce observed clinical outcomes.

6. Model Diagnosis & Screening

- Incorporate **screening strategies** to diagnose disease and **initiate treatment earlier**.
- Assess how **screening cost, frequency, sensitivity, specificity, incidence, and prevalence** affect cost-effectiveness.

7. Share Models with Colleagues

- Share models with **TreeAge Pro Web**, so colleagues can examine the model, edit inputs and run analyses through a simple web interface.
- **Export Markov models** to Excel.

8. Budget Impact Analysis

- Calculate annualized model costs and apply population estimates to assess budget impact.