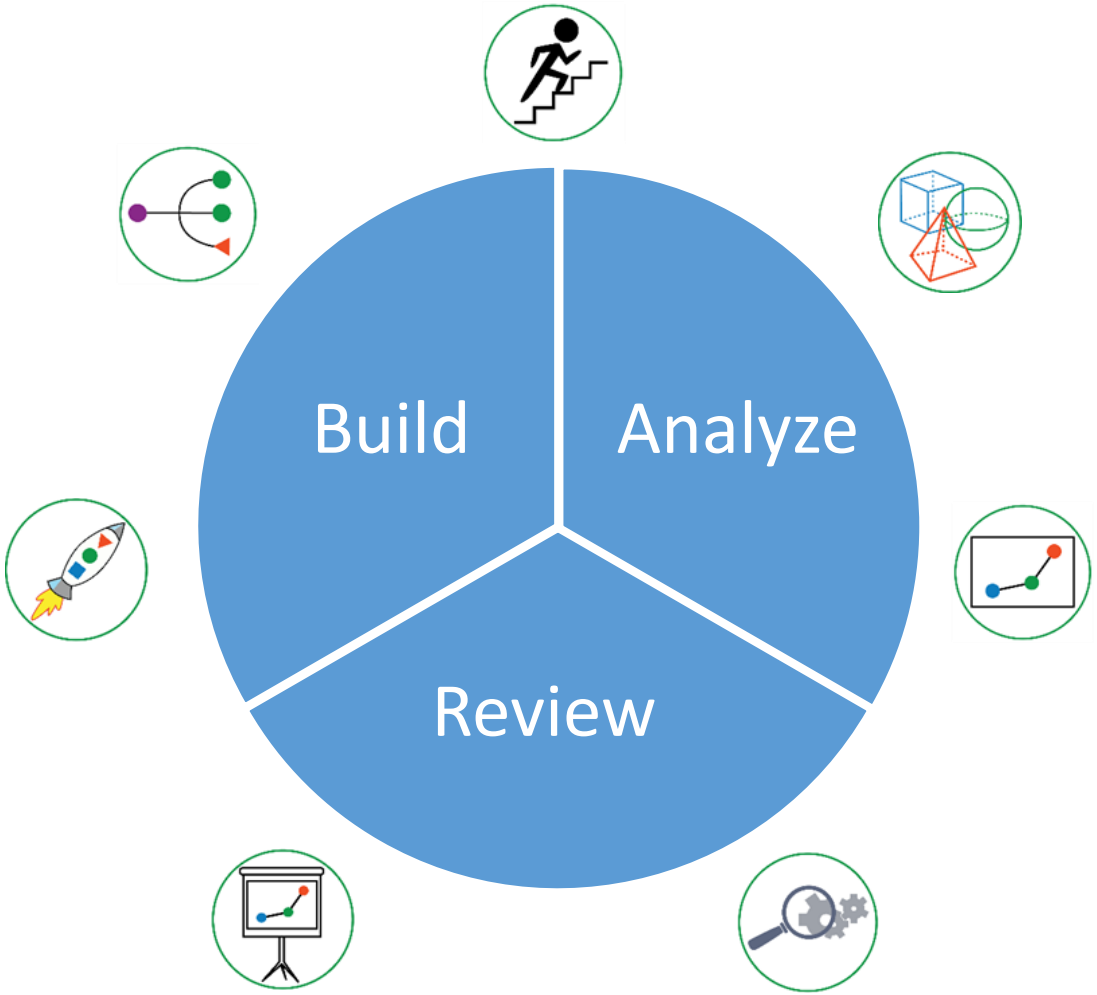
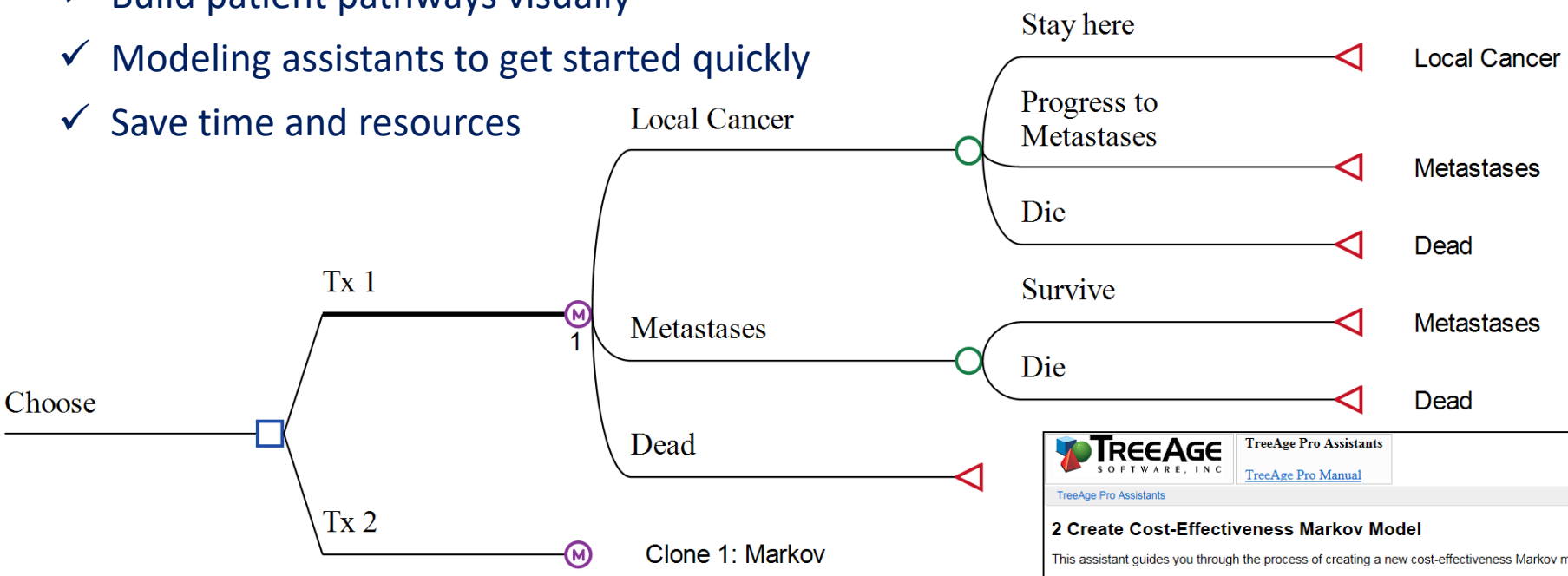
Supporting economic assessments and decision analysis for over 30 years

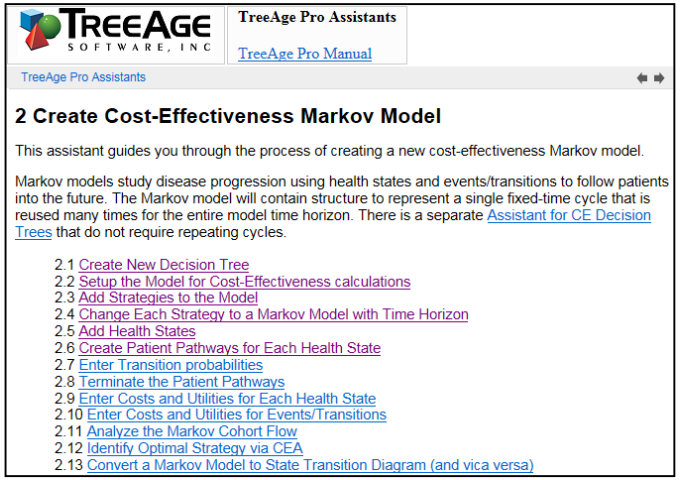
TreeAge Pro meets your decision analytics needs



Start Fast

- ✓ Build patient pathways visually
- ✓ Modeling assistants to get started quickly
- ✓ Save time and resources




TreeAge SOFTWARE, INC

TreeAge Pro Assistants

TreeAge Pro Manual

TreeAge Pro Assistants

2 Create Cost-Effectiveness Markov Model

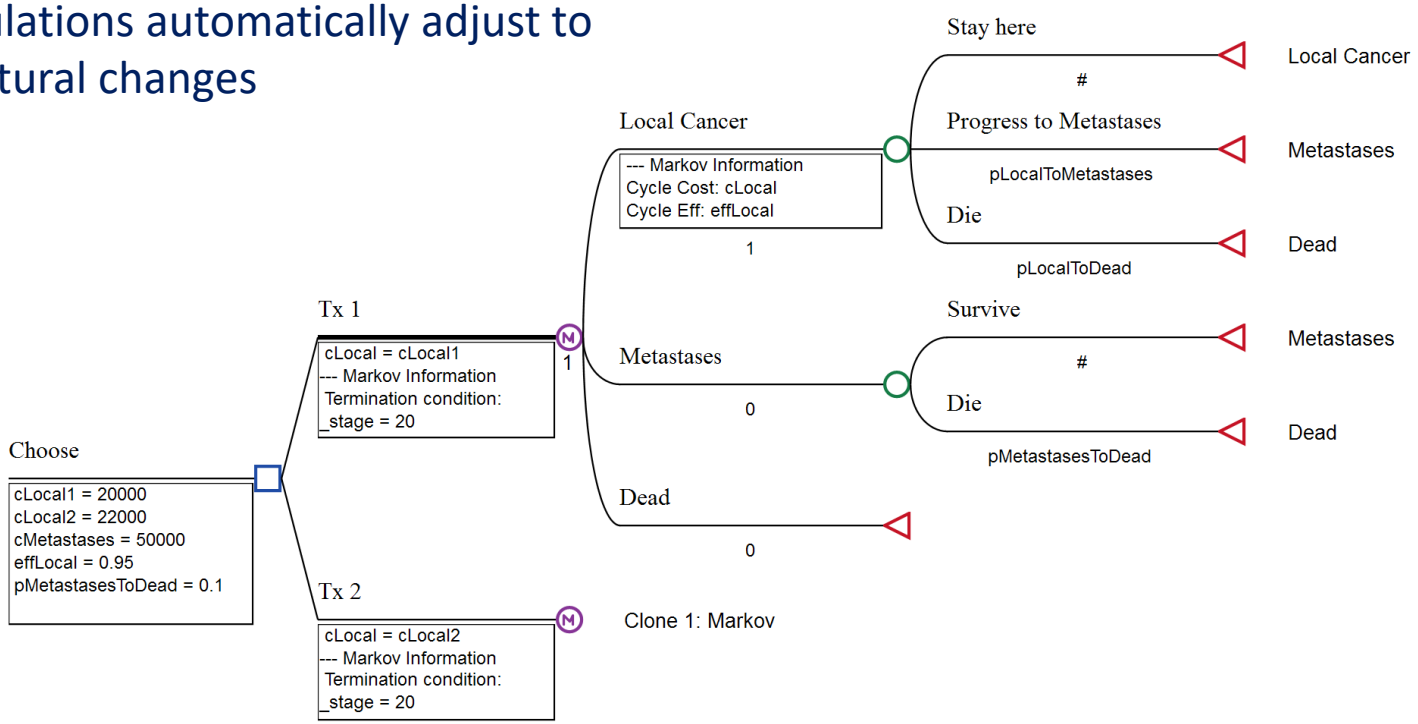
This assistant guides you through the process of creating a new cost-effectiveness Markov model.

Markov models study disease progression using health states and events/transitions to follow patients into the future. The Markov model will contain structure to represent a single fixed-time cycle that is reused many times for the entire model time horizon. There is a separate Assistant for CE Decision Trees that do not require repeating cycles.

2.1 Create New Decision Tree
2.2 Setup the Model for Cost-Effectiveness calculations
2.3 Add Strategies to the Model
2.4 Change Each Strategy to a Markov Model with Time Horizon
2.5 Add Health States
2.6 Create Patient Pathways for Each Health State
2.7 Enter Transition probabilities
2.8 Terminate the Patient Pathways
2.9 Enter Costs and Utilities for Each Health State
2.10 Enter Costs and Utilities for Events/Transitions
2.11 Analyze the Markov Cohort Flow
2.12 Identify Optimal Strategy via CEA
2.13 Convert a Markov Model to State Transition Diagram (and vica versa)

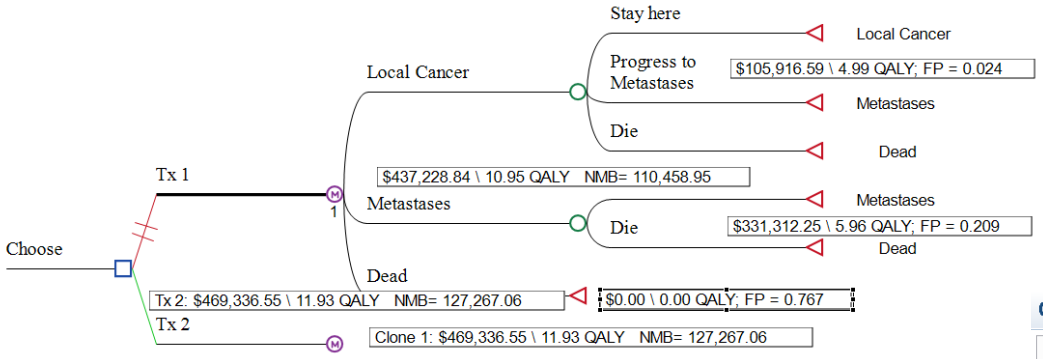
Visual Design, No Coding Knowledge Required

- ✓ Inputs entered directly into structure
- ✓ Software handles calculations
- ✓ Calculations automatically adjust to structural changes



Robust Healthcare Modeling Framework

- ✓ Reproducible structure
- ✓ Built-in calculations
- ✓ One-click analysis and transparent reporting



Markov Cohort (Extended)

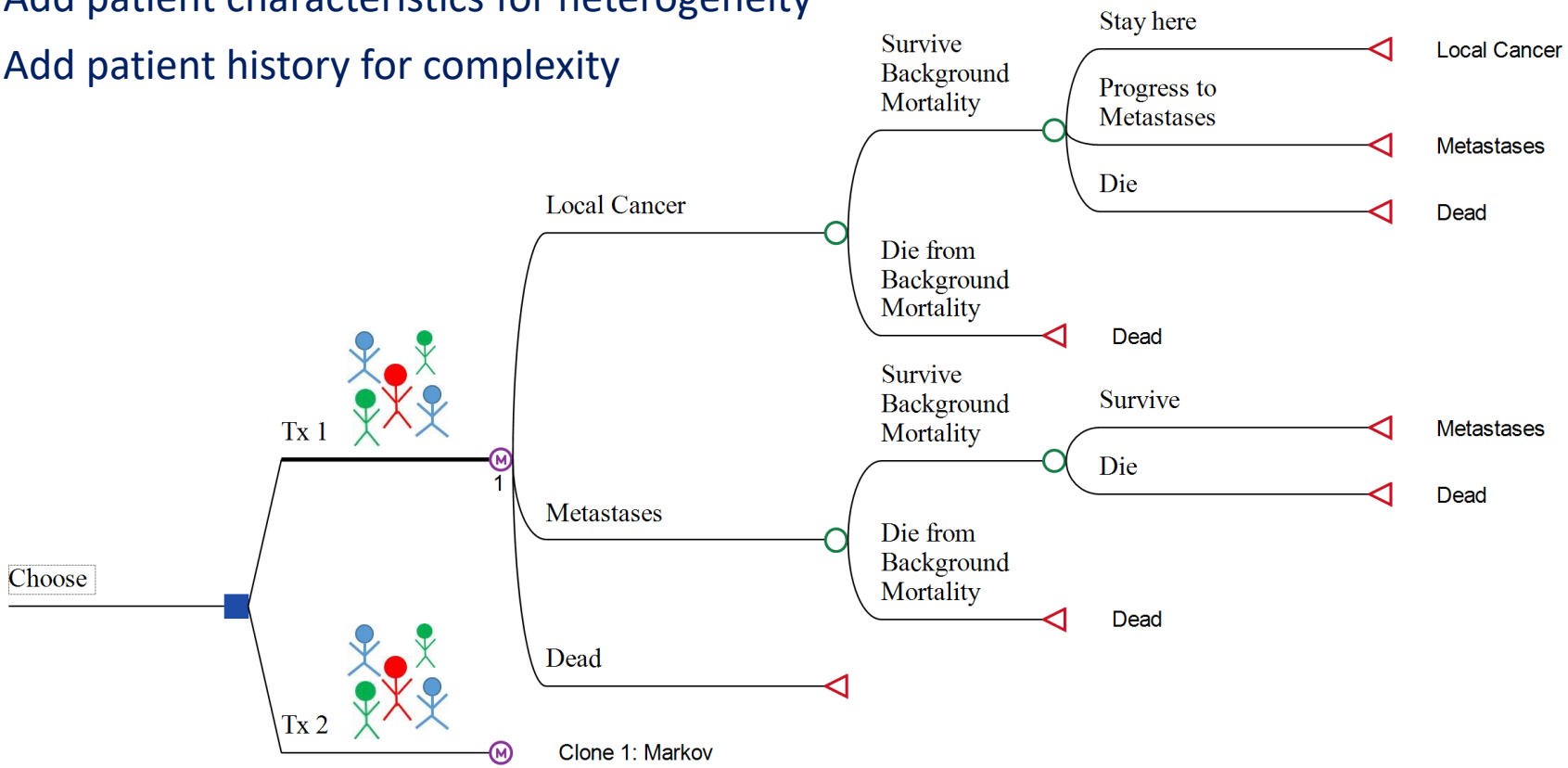
State/Transition	Stage	Cohort %	Cost Entry	Cost	Cum Cost	Effectiveness Entry	Effectiveness	Cum Effectiveness
Local Cancer	16	0.051	20,000.00	1,014.56		0.95	0.05	
Metastases	16	0.288	50,000.00	14,418.62		0.90	0.26	
Dead	16	0.661	0.00	0.00		0.00	0.00	
Summary	17			14,205.63	406,773.20		0.28	10.36
Local Cancer	17	0.042	20,000.00	842.09		0.95	0.04	
Metastases	17	0.267	50,000.00	13,357.22		0.90	0.24	
Dead	17	0.691	0.00	0.00		0.00	0.00	
Summary	18			13,041.46	419,814.66		0.26	10.62
Local Cancer	18	0.035	20,000.00	698.93		0.95	0.03	
Metastases	18	0.247	50,000.00	12,337.28		0.90	0.22	
Dead	18	0.718	0.00	0.00		0.00	0.00	
Summary	19			11,950.12	431,764.78		0.23	10.85
Local Cancer	19	0.029	20,000.00	580.11		0.95	0.03	
Metastases	19	0.227	50,000.00	11,365.65		0.90	0.20	
Dead	19	0.744	0.00	0.00		0.00	0.00	
Summary	20			5,464.06	437,228.84		0.11	10.95
Local Cancer	20	0.024	10,000.00	240.75		0.47	0.01	
Metastases	20	0.209	25,000.00	5,223.32		0.45	0.09	
Dead	20	0.767	0.00	0.00		0.00	0.00	
Summary	Summary			437,228.84	437,228.84		10.95	10.95
Local Cancer	Summary			105,055.48			4.99	
Metastases	Summary			331,312.25			5.96	
Dead	Summary			0.00			0.00	

Cost-Effectiveness Rankings

Category	Strategy	Cost	Incr Cost	Eff	Incr eff	Incr C/E (ICER)	NMB
Excluding dominated							
undominated	Tx 1	437,228.84		10.95			110,458.95
undominated	Tx 2	469,336.55	32,107.71	11.93	0.98	32,819.35	127,267.06

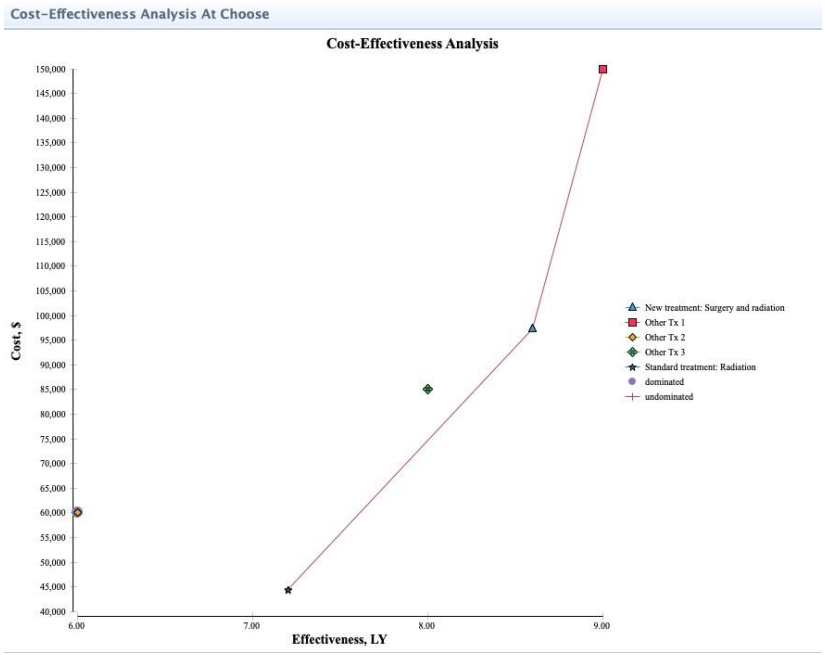
Quickly Advance and Evolve Your Model Complexity

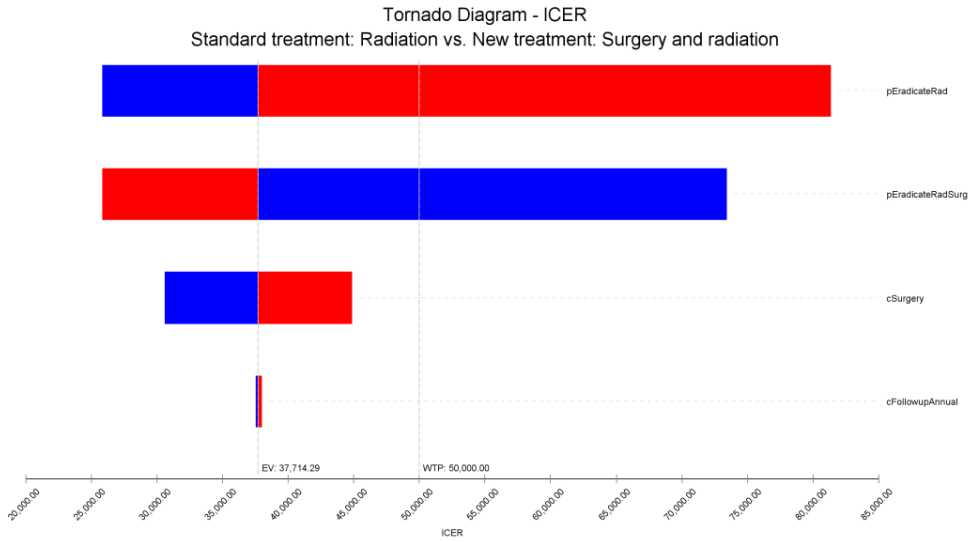
- ✓ Build Markov Cohort, Patient simulation, Discrete Event Simulation models
- ✓ Add patient characteristics for heterogeneity
- ✓ Add patient history for complexity



Familiar Healthcare Reports with a Single Click

- ✓ Cohort and Patient-level Tracking Reports
- ✓ Cost-Effectiveness Analysis, Acceptability Curve, Tornado and much more
- ✓ Single-click report generation





Transparency

- ✓ Validate patient pathways and calculations step-by-step, cycle-by-cycle
- ✓ Review and confirm calculation details

Markov Cohort (Extended)

State/Transition	Stage	Cohort %	Cost Entry	Cost	Cum Cost	Effectiveness Entry	Effectiveness	Cum Effectiveness
Summary	0			10,000	10,000		0.47	0.47
Local Cancer	0	1.000	10,000	10,000		0.47	0.47	
Stay here	0	0.830	0	0		0.00	0.00	
Progress...	0	0.150	0	0		0.00	0.00	
Die	0	0.020	0	0		0.00	0.00	
Metastases	0	0.000	25,000	0		0.45	0.00	
Survive	0	0.000	0	0		0.00	0.00	
Die	0	0.000	0	0		0.00	0.00	
Dead	0	0.000	0	0		0.00	0.00	
Summary	1			24,100	34,100		0.92	1.40
Local Cancer	1	0.830	20,000	16,600		0.95	0.79	
Stay here	1	0.689	0	0		0.00	0.00	
Progress...	1	0.124	0	0		0.00	0.00	
Die	1	0.017	0	0		0.00	0.00	
Metastases	1	0.150	50,000	7,500		0.90	0.14	
Survive	1	0.135	0	0		0.00	0.00	
Die	1	0.015	0	0		0.00	0.00	
Dead	1	0.020	0	0		0.00	0.00	
Summary	2			26,753	60,853		0.89	2.29
Local Cancer	2	0.689	20,000	13,778		0.95	0.65	
Metastases	2	0.260	50,000	12,975		0.90	0.23	
Dead	2	0.052	0	0		0.00	0.00	

Console | Evaluator | Help | Files

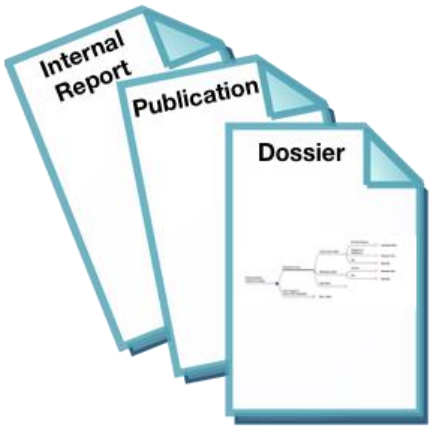
Calculation Trace Console

```
******* cLocal - START *******
  Context: Cycle Reward (Payoff 1) / Local Cancer / thread 0 / _strategy 1
  Time: 2019.01.24 11:43:17.813
  cLocal = cLocal1
    cLocal1 = 20000
  cLocal = 20000
  cLocal = 20000.0
******* cLocal - END *******

******* cLocal - START *******
  Context: Cycle Reward (Payoff 1) / Local Cancer / thread 0 / _strategy 2
  Time: 2019.01.24 11:43:17.814
  cLocal = cLocal2
    cLocal2 = 22000
  cLocal = 22000
  cLocal = 22000.0
******* cLocal - END *******
```

Communicate Results

- ✓ Publish graphs and reports
- ✓ Allow others to use your model to explore scenarios
- ✓ Convert TreeAge Pro Markov Models to fully-functional Excel models with a single click



Editable Model Inputs				
Description	Value	Low	Base	High
cLocal1	20000	15000	20000	25000
cLocal2	22000	16500	22000	27500
effLocal	0.95	0.92	0.95	0.97
pLocalToMets1	0.15	0.11	0.15	0.18
pLocalToMets2	0.13	0.1	0.13	0.16
WTP	50000			

Additional Inputs	
Description	Value
cMetastases	50000
effMetastases	0.9
pMetastasesToDead	0.1
totalCycles	20
pLocalToDead1	0.02
pLocalToDead2	0.01
startAge	50
cProgression	1000

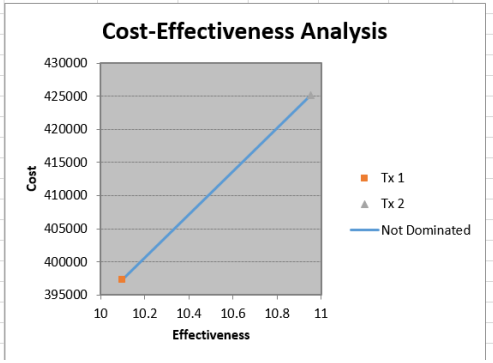
Run Model

Save Results on New

Restore Base Case Inputs

Dynamic Rankings report

Category	Strategy	Cost	Incr. Cost	Eff	Incr. Eff	ICER
Undominated	Tx 1	397325.3		10.09721		
Undominated	Tx 2	425218.4	27893.04	10.95143	0.85422	32653.14



Why We Are the Better Choice

Modelling is not just science, it is an art. TreeAge Pro provides a scientifically robust canvas for your models so you can focus on the art.

Product Attribute	Advantages of TreeAge Pro	How Excel Compares	How R Compares
Start Fast	• User-friendly modeling platform with step-by-step assistants	• Complex formulas and/or knowledge of Visual Basic required to build	• Advanced Programming knowledge required to build
Visual Design	• Visual interface allows for flexibility in structure and updating or editing model	• No visual structure to support model design; edits require coding and manipulation of cells	• Visual skins can be added but requires knowledge of programming to apply
Robust Framework for Analysis and Reporting	• Built-In Analysis and Reporting tools	• Analysis typically requires knowledge of coding/programming	• Modeler required to find and piece together various packages (modules)
Quickly Advance	• Create complex simulation models easily	• Complex modelling requires knowledge of coding/programming	• Complex modelling requires knowledge of coding/programming
Transparency	• Comprehensive reporting and visualization capabilities to examine and validate model behavior	• Good set of generic spreadsheet reporting and debugging. Model validation highly dependent on modeler coding/programming skills	• Validation and reporting are functions of each package design and modeler programming skills
HTA	• Models accepted by HTA	• Models accepted by HTA	• Limited acceptance by HTA
Dedication to decision analysis and modelling	• Well-established company with 30+ years of experience solely focused on a modelling software product	• Well-established company with focus on hardware and a large swath of software offerings	• Not commercially supported or validated as a peer-to-peer platform
Commercial Support	• Excellent support team for customer trouble-shooting	• Not designed/supported as a modelling tool; no formal support	• No formal support; relies on peer contributions; user forums

A high-touch company that is here to support you

- ✓ A beacon in economic assessments and decision analysis for over 30 years
- ✓ Dedicated team of scientists, engineers and product support that have built and refined TreeAge Pro to meet your evolving needs
- ✓ Commercially-sourced, scientifically robust tool that is updated and validated frequently to satisfy the requirements of new and advanced modelers alike