HEOR 533 – Markov Modeling in R

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**Prompt**

* A new end-of-life care was approved based on the clinical trial result that it can reduce the excess mortality due to progressive disease by 50%. It costs $500.
* Decision makers (e.g. clinicians) requested information on whether they should provide this end-of-life care in addition to the original treatment to reduce the disease progression.
* Using the same health sate transition model, conduce a cost-effectiveness analysis considering three strategies: 1) without treatment, 2) with treatment but no end-of-life care, 3) with both treatment and end-of-life care. Provide a table of cost and QALY of three strategies and report ICER. *It is optional to generate an ICER graph.*

**Code**

* Used “Markov\_model\_realworld\_explain2\_2024.Rmd” provided in class
* Strategy 3
  + Changes were made in the state\_c\_matrix to add the additional $500 in cost for those with drug receiving the end-of-life care.
  + Changes were made in the p\_matrix to reduce the excess mortality due to progressive disease by 50%.
* For the PSA, a seed was set at 1234.

**Tables**

Table 1: Total costs and QALYs using a basecase analysis and PSA

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Basecase | | PSA | |
| Strategy | Total Cost | Total QALYs | Total Cost | Total QALYS |
| 1. No Treatment | $9331448 | 7755.952 | $9361027 | 7753.141 |
| 2. Treatment | $16210620 | 8624.738 | $16275890 | 8613.081 |
| 3. Treatment & End-of-Life Care | $18548626 | 8993.777 | $18602925 | 8979.306 |

Table 2: ICER comparing each of the three strategies

|  |  |  |
| --- | --- | --- |
|  | ICER | |
| Strategies | Basecase | PSA |
| 2:1 | 7918.143 | 8041.099 |
| 3:1 | 7446.269 | 7537.238 |
| 3:2 | 6335.39 | 6354.113 |