

Assignment 3

Due: Monday, February 27th, by the start of class

For this exercise, you will replicate the analysis done in the following paper:

Friedman LS, Roberts MS, Brett AS, Marton KI. Management of asymptomatic gallstones in the diabetic patient: A decision analysis. *Annals of Internal Medicine* 1988;109:913-919.

<https://www.ncbi-nlm-nih-gov.ezp-prod1.hul.harvard.edu/pubmed/?term=Management+of+asymptomatic+gallstones+in+the+diabetic+patient%3A+A+decision+analysis>

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Figure 1 shows the model structures for the two strategies evaluated in the paper: (1) prophylactic surgery is a 4-state Markov model, and (2) expectant management is a 6-state Markov model. Refer to notes on the course website for additional “tips” on the model structure and data.

Deterministic Analysis: State all your assumptions and submit your tree*

1. Construct this decision-analytic model in TreeAge (or another software package) using the information provided in the paper.
2. Calculate the life expectancy for each strategy for at least one of the age/gender groups. Note: for background mortality, use the 2018 US life tables. These are published by the National Center for Health Statistics:
 - Go to https://www.cdc.gov/nchs/products/life_tables.htm
 - Click on the pdf link for the “United States Life Tables, 2020” (NVSR Volume 71, Number 1)**
 - On pages 17 and 19 in this document (Tables 2 and 3, top of page) there are links to download 2020 life tables for men and women respectively.
 - In these spreadsheets, the first column (q_x) provides annual mortality probabilities.
3. Compare your results with those shown in Table 3 of the paper, and discuss potential reasons for any discrepancies (besides the different life tables).
4. Perform one-way sensitivity analysis on 2 of the key variables.

* Please include an electronic copy of your TreeAge model (or other software code) with your submission.

** Note there is a different file with a very similar name (“**U.S. State** Life Tables, 2020”). This provides life tables for individual states. You don’t want that.