

Economic Evaluation II: ICER Term Project

Due 12/16/2024

Project

The goal of this project is to give students hands-on exposure to well-done, complex, published cost-effectiveness models that are used to impact healthcare decision-making and are increasingly relevant for public policy in the United States.

Your team must comprehend, critique, and rebuild a published cost-effectiveness analysis. Because generating a novel evidence base in an 8-week course is unrealistic, and because there is a wide variation in the quality of reporting in published journal articles, you will be selecting one model from the list below of Evidence Reports published by the Institute for Clinical Evaluation and Review (ICER). ICER is an independent and non-partisan research organization that objectively evaluates the clinical and economic value of prescription drugs, medical tests, and other healthcare and healthcare delivery innovations in the United States. It was conceived to fill a role that is generally performed by governments/Health Technology Appraisal bodies in other countries, to evaluate the cost-effectiveness of new health technologies. Read more about ICER here: (<https://icer-review.org/about/>) and their methodology here: (<https://icer.org/our-approach/methods-process/value-assessment-framework/>)

Reports

- ▶ Report 1: Midomafetamine-Assisted Psychotherapy for Post-Traumatic Stress Disorder https://icer.org/wp-content/uploads/2024/06/PTSD_Final-Report_For-Publication_06272024.pdf
- ▶ Report 2: Lecanemab for Early Alzheimer's Disease https://icer.org/wp-content/uploads/2023/04/ICER_Alzheimers-Disease_Final-Report_For-Publication_04172023.pdf
- ▶ Report 3: Ensifentrine for the Treatment of Chronic Obstructive Pulmonary Disease: Effectiveness and Value https://icer.org/wp-content/uploads/2023/11/ICER_COPD_Final-Report_For-Publication_071624.pdf
- ▶ Report 4: Digital Health Technologies as an Adjunct to Medication-Assisted Therapy for Opioid Use Disorder https://icer.org/wp-content/uploads/2020/08/ICER_DHTs_for_OUD_Final_Report_052722.pdf

If you have a strong preference to do a different report, go here: <https://icer.org/explore-our-research/assessments/> and search for completed Assessments that have “Final Evidence Reports” and let me know. I will assess whether it is feasible/appropriate for this project.

Groups

Students may work in groups of 1-5 on this project. I am allowing students to select their own groups. Please email me by 10/30 at 5pm, (jlevy@jhu.edu) with 1) your group members (all cc'ed with preferred email) and 2) the report you would like to complete. If you would like to be assigned to a group, contact me by 5pm on 10/30, with your preference for Reports ranked 1-4, and I will assign you to a group efficiently.

Part 1: Comprehension

Complete the Reporting Checklist (Table 13.1) and the Impact Inventory template (Table 13.3) in the Second Panel textbook for your assigned report. I have created two excel files on courseplus that mimic the textbook tables with additional columns (and modifications) to be filled in.

Reporting Checklist: I have added a column for Source; you should cite the page number/ranges where the Element is mentioned in the report or appendix. Also, there is a column for Explanation, you should describe *IN BREIF* how this element was discussed and ultimately computed (if applicable). **Keep this answer to under 150 words per cell (some should be even shorter).** If the Element was not included, speculate as to why and make a suggestion for what they ideally would have included (if anything).

Impact Inventory: Complete the impact inventory, for each item regardless of whether it was included in the ICER report. If it was included, describe how it was estimated (**less than 150 words for each cell**). If it was not included, and you think it should have been, speculate as to why and then suggest how it may have been included. If its exclusion was reasonable, state and defend this. ICERs reference case only considers health system (third party) payers perspective, however they increasingly incorporate items that would fall under the prevue of societal perspective in scenario analysis section of reports.

Note: if you would prefer you can complete these additional columns in a separate word document.

Scoring

50 Points for Reporting Checklist (due on 12/16)

50 Points for Impact Inventory (due on 12/16)

Part 2: Build Model and Present Results

After you have reviewed and understand all aspects of the model via Part 1, you will now create a markov model that attempts to answer the same question as the ICER report did. You will be creating a working model that will be simpler than the full model described in the report. As you will see, all models assigned take lifetime time horizons and have a markov structure. Your task is to recreate (and possibly simplify as needed) this model, by constructing a model of the problem that maintains the general structure and uses inputs derived from the ICER report. How (and if) you decide to simplify the model is up to you, however, some suggestions would be to 1) reduce the time horizon 2) modify event rates reported in short time intervals to longer time intervals/probabilities 3) focus on fewer treatments than the full model explored 4) focus only on one subgroup the full model examined. As there is some level of subjectivity to what a reasonable reduction in complexity should be, you will submit the proposed model structure for my approval, as a decision tree/markov diagram (just the diagram, does not need to be a working model), by 11/30 (earlier is fine AND ENCOURAGED).

Next, build the model, you need to construct a “base case” model and perform a sensitivity analysis of at least 8 parameters in the model (at least two transition probabilities, costs and utilities, plus at least two more). You should follow the basic structure of the excel (or R) decision template we have used in class. Explain how the inputs were derived in the model, using the column ‘Source’ in the decision tree model template, alternatively, each parameter (and its uncertainty) can be explained in a separate word document.

Finally, write up the model as a report based on the **Structured Abstract** template in Table 13.2 (page 349) of the Second Panel textbook. Write in greater detail than an abstract for each item, add one additional section, Discussion (after “Results of Uncertainty Analysis”), that discusses how your model and results differ from the published ICER report, and hypothesize how and why your results differ as they do. This write-up should be no more than 6 pages, including Figures and Tables.

Scoring

50 points for completing the model diagram (submit to me by 11/25, full credit once I sign off)

100 points for the working model (including model diagram, input tables, sources, calculations and results) (due on 12/16)

100 points for structured abstract (due on 12/16)

100 points for the presentation of the model to the class (either 12/16 or 12/18)

Deliverables

Part I	Points
Reporting Checklist <ul style="list-style-type: none"> • Complete Excel Template: “ICER_Project_Reporting_Checklist.xls” • Identify if each Element exists in the Evidence Report or Appendix if at all • Cite page number in report • Provide brief explanation (max 150 words per cell) as to how each element was discussed and ultimately computed 	50
Impact Inventory <ul style="list-style-type: none"> • Complete Excel Template “ICER_Project_Impact_Inventory.xls” • Identify if the element was included in the Report (healthcare sector) or included in scenario analysis (societal) • If it was included, describe how it was estimated (less than 150 words for each cell). • If it was not included, and you think it should have been, speculate as to why and then suggest how it may have been included. 	50
Part II	
Model Diagram <ul style="list-style-type: none"> • Simplify model, draw out a markov model that you will be able to construct given evidence in ICER report • Submit to me (via email) by 11/25 	50
Model <ul style="list-style-type: none"> • Create a Working Excel or R Model, with the following tabs/tables/schematics: • Markov Model or hybrid decision tree/Markov model • Parameter Inputs • Calculations • Results • Tornado Plot • Probabilistic Sensitivity Analysis 	100
Write-Up <ul style="list-style-type: none"> • Max 6 pages (including tables and figures) • Use items from Table 13.2 2nd Panel as section headers • +Discussion where you discuss how your models differs from the published model and why 	100
Presentation <ul style="list-style-type: none"> • Present your model to the class 10-15-minute presentation, covering the clinical issue, impact inventory and reporting checklist (key points) and features of your model, your adaptations and comparison with the published model 	100