



Can Gen-Al assist in translating health economic data across formats? A Proof-of-Concept for an HEOR Translator Framework

INTRODUCTION

In Health Economics and Outcomes Research (HEOR), translating complex data across formats (code, visuals, or summaries) is often slow and error-prone.

This study explores whether Generative AI (Gen-AI) can automate these translations .We present a proof-of-concept HEOR Translator framework capable of converting:

- Inter-language code conversion (e.g.: VBA \rightleftharpoons Python or R)
- Natural Language (NL) \rightleftharpoons VBA/Python/R
- NL/Code \rightleftharpoons Flow diagrams

All using fine-tuned Large Language Models (LLM)s and multimodal generation frameworks.



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METHODS

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language models (LLMs) integrated into a Python environment. The framework was trained and enhanced through the following technical strategies:

- Code-aware LLMs trained on programming languages
- RAG-based context using HEOR analysis and code examples
- A Multimodal capability to generate both text & visuals

Why not use proprietary GPTs in the market? HEOR Translator framework is purpose-built for health economics. It is fine-tuned on HEORformat translations (VBA \rightleftharpoons Python, Narratives \rightleftharpoons Visuals) that general-purpose GPTs cannot match.

RESULTS: VBA to NL

OUTPUT

1. Set Parameters for PSA

The macro starts by looking at a defined group of cells in the spreadsheet - this group is referred to as the "PSA_PARAMETER_RANGE." For each cell in this group, it checks whether the cell two columns to the left contains the word "Yes." That likely means the user has marked this parameter to be included in the PSA. If the parameter is marked "Yes," the macro changes its value to 4. This number (4) probably signals the model to switch that parameter from a fixed value to a randomly varying one, which is essential for conducting PSA.

2. Clear Results from Previous Runs

Before running the new analysis, the macro clears the contents of a specific area in the "PSA Calculations" sheet. This is where results from previous PSA runs were stored. Clearing it ensures that the new run starts fresh and doesn't mix with old data.

3. Run the PSA Loop

The macro reads the number of PSA runs to perform from a specific cell called "PSA Runs". It then begins a loop that will repeat this number of times.

In each run:

The model is recalculated. This generates a new set of random values for probabilistic parameters. The macro waits for Excel to finish calculating.

Once the calculation is complete, it copies the current values of several key outputs (like DrugA, DrugB, DrugC, DrugD, DrugE) and stores them row by row in a results table within the "PSA Calculations" sheet.

This way, each row in the results table represents the outcomes from one full simulation run.

...type to chat with HEOR-Translator

INPUT:

In the cost-effectiveness model for Type 2 Diabetes, patients begin with first-line metformin. Upon inadequate glycemic control, patients may escalate to second-line therapy with either a GLP-1 receptor agonist or an SGLT2 inhibitor. If HbA1c remains above target, insulin therapy is initiated. Throughout the pathway, patients may develop complications such as nephropathy, cardiovascular events, or retinopathy, each impacting quality of life and costs. Mortality is a terminal outcome at any stage.



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- A proof-of-concept (PoC) Gen-AI-based HEOR Translator framework was developed using large

- specific datasets, equipped with agentic workflows, and integrated with specialized frameworks (e.g., syntax validators, model analyzers). This enables deeper context understanding, precise cross-



RESULTS: NL to Diagram

Convert the textual summary into a visual explanation





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KEY TAKE-AWAYS

The HEOR Translator framework demonstrates how fine-tuned Gen-AI systems can outperform general GPTs in optimizing HEOR workflows, reducing manual effort, and ensuring effective communication across stakeholders with varying technical expertise. Such a tool can act as a bridge between technical teams and decision-makers, facilitating the effective interpretation and dissemination of HEOR results.