



IntelliHealth

Your AI-Driven Guide to Smarter Health Plan Choices



The Problem

Navigating the Health Insurance marketplace is overwhelming. Plans are laden with jargon, buried rules, and confusing criteria. Many individuals end up choosing suboptimal plans — or worse, none at all. People need help translating their real-life needs into the right plan, quickly and clearly

Solution

IntelliHealth is a **FastAPI-powered AI solution** designed to transform how patients find and understand health plans. It integrates **demographic insights, graph-based rules, and LLMs** to generate tailored, explainable recommendations

What It Does

- **Patient Management**
Enter and manage patient profiles via RESTful APIs and a user-friendly UI
- **Plan Retrieval & Filtering**
Connects to Snowflake to fetch, clean, and paginate plan data
Filters results based on user-selected preferences like location, travel, and budget
- **Graph-Based Rule Reasoning**
Leverages Neo4j to apply smart rules (Diabetes, Maternity, Family Needs, etc.) and dynamically eliminate non-matching plans
- **LLM-Powered Recommendations**
Uses GPT-4o and Claude (via Cortex) to evaluate the best-fit plans using step-by-step or internalized Chain-of-Thought reasoning
- **Model Flexibility**
Switch between models seamlessly — whether using Claude via SQL or OpenAI APIs

We compared GPT-4o and o3 on how they interpret patient profiles and assign attribute relevance. Here we showcase the difference between step by step COT in the output and leveraging internalized COT which occurs in o-series models.

- 💡 Transparent – See exactly how a recommendation is made
- 🧠 AI-Powered – Smart enough to understand nuanced needs
- ⚙️ Modular – Easy to extend with more rules, data sources, or scoring logic
- 💻 Scalable – Built with Docker Compose for easy deployment

LLM Comparison: GPT-4o vs o3

Why IntelliHealth

Tech Stack

- FastAPI · Streamlit · Neo4j · Snowflake · PostgreSQL
- OpenAI GPT-4o · Claude via Cortex · Docker Compose



<https://github.com/Nishita-Shewale/Intellihealth-Health-Plan-Advisor>



Anoushka Bansal
bansal.ano@northeastern.edu

Nishita Vikas Shewale
shewale.n@northeastern.edu