Project Proposal: Data-Driven Analysis of FFS vs. VBC Trends

Overview:
This project leverages CMS healthcare datasets alongside advanced NLP techniques to evaluate the impact of policy reforms on Fee-For-Service (FFS) and Value-Based Care (VBC) models. By integrating quantitative claims data with qualitative policy analysis using modern large language models (LLMs) and Retrieval-Augmented Generation (RAG), we aim to generate actionable insights on provider performance and patient outcomes.

Objectives:

- **Data Analysis:** Quantify key metrics (e.g., readmission rates, service volumes) from CMS datasets to identify FFS and VBC patterns.
- **Policy Impact:** Use LLMs to extract and classify themes from CMS policy documents, linking them to observable trends in the datasets.
- **Integration:** Synthesize quantitative and qualitative findings into an integrated, actionable report.

Methodology:

- **Data Preparation:** Clean and merge 2010 IPBS, Carrier, and Chronic Conditions PUF datasets; map service codes using BETOS classifications.
- **Quantitative Analysis:** Employ Python (Pandas, Matplotlib) to analyze trends and perform temporal comparisons (2008 vs. 2010).
- **Policy Analysis:** Scrape CMS policy PDFs and apply state-of-the-art LLMs with chain-of-thought reasoning and RAG to classify policy language (FFS vs. VBC).
- **Reporting:** Integrate findings into a concise report; optionally develop an interactive dashboard for stakeholder exploration.

Timeline:

- **Weeks 1–2:** Data ingestion, cleaning, and policy document collection.
- **Weeks 3–5:** Quantitative analysis and LLM-based policy classification.
- **Weeks 6–8:** Integration, reporting, and dashboard prototyping.

Expected Outcomes:

- **Validated Insights:** Data-backed evidence of policy impacts on healthcare provider behavior.
- **Actionable Report:** A comprehensive, audit-ready report linking CMS policy changes to measurable outcomes.
- **Interactive Tool:** An optional dashboard for real-time exploration of FFS and VBC trends.

This project will deliver a robust framework for understanding and improving healthcare payment models, ensuring that policy reforms translate into enhanced care quality and efficiency.