

# FRAUD PREVENTION SYSTEM

The Centers for Medicaid and Medicare (CMS) Fraud Prevention System (FPS) detects fraud, waste, and abuse (FWA) to minimize taxpayer dollars spent on fraudulent medical claims. FPS provides users access to the latest technologies, enabling them to stay one step ahead of fraudulent providers. In 2023, FPS won the Forum Health IT Innovation award for its work pushing the envelope, driving innovation, and securing results. FPS infrastructure consists of a powerful analytics platform that supports the development and implementation of Artificial Intelligence/machine learning (AI/ML) FWA models and provides an investigative user interface (UI) that displays providers flagged by the models, indicating potential fraudulent, wasteful, or abusive billing practices. CMS Program Integrity Contractors use the FPS UI to identify and act on risky providers, quickly stopping the FWA and protecting taxpayer dollars. FPS models detect a wide variety of vulnerabilities, and the ability to rapidly deploy new models helps CMS stay ahead of emerging fraud schemes. Furthermore, to assist decision-making, FPS applies additional AI/ML models that calculate each flagged provider's risk, priority, actionability, and timeliness scores:

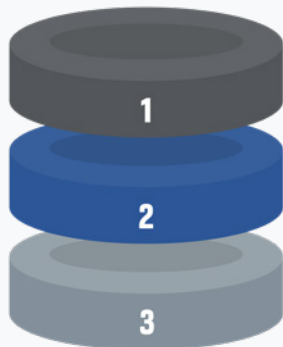
- **Risk Score:** relative probability the provider is fraudulent between 0 (unlikely fraudulent) and 1 (highly likely fraudulent)
- **Priority Score:** recommended priority for investigation based on FWA model results and supplemental FPS data between 0 (low priority) and 1 (high priority)

- **Actionability Score:** probability an investigation of the provider will result in an administrative action that protects the CMS Trust Fund
- **Timeliness:** predicted number of days it will take an investigator to implement an administrative action against the provider to protect the CMS Trust Fund

In addition to supporting FWA investigations efforts, FPS also recommends rejection or denial of claims daily. By preventing the payment of claims to fraudulent providers, CMS avoids the effort required to “pay and chase” funds sent to fraudulent providers. This is achieved through execution of pre-payment models on 5M claims (15M claim lines) each day.

FPS models are created using the FPS analytics platform, which is built on top of Snowflake (data warehouse) and Databricks (model development and processing platform) in the AWS cloud. FPS Analytics Consultants and Data Coaches assist modelers with query development, troubleshooting, and data exploration and selection. FPS data engineers maintain and refresh production-level data within the model development environment and ingest new data requested by modelers for data and model discovery. FPS also continuously solicits feedback from the modeling community to implement new modeling tools, such as graph analytics (e.g., Neo4j and Tableau) and geospatial analysis, and developer packages that lead to better FWA models, such as those that employ Natural Language Processing. Finally, FPS provides reporting dashboards for post-implementation analysis of model effectiveness, enabling a feedback loop for continuous model refinement.

## VALUE STACK



### 1. FPS2 MEDICARE AND MEDICAID INVESTIGATIVE USER INTERFACES (UIs)

- Provide a UI for investigators to research and build Medicare and Medicaid fraud investigations
- Enable prioritization of leads to an external case management system (UCM)
- Enhance UIs to address evolving stakeholder and business needs

### 2. MODEL INTEGRATION AND PRODUCTION SUPPORT

- QC and integrate pre-payment models (edits) and post-payment models (models) into FPS2 Production system
- Execute post-payment models weekly. Populate in FPS UI with results and supplement information
- Execute pre-payment models on 15M claim lines/day and send recommended denials/rejections to CMS
- Apply analytics on post-payment model output to generate provider risk, priority, and actionability scores

### 3. FPS2 ANALYTIC PLATFORM

- Used by external modelers to build Fraud, Waste, and Abuse (FWA) detection models
- FPS2 Analytic Consultants and Data Coaches support modelers with best practices and data coaching
- Tools: Snowflake, Databricks, Geospatial (ESRI), Graph Analytics (Neo4j), ML developer packages

