SAS® Detection and Investigation for Health Care

Providing unnecessary services. Billing for services not rendered. Unbundling or upgrading services. Establishing fictitious providers and billing agents. Making false referrals. Getting illegal kickbacks. Misrepresenting services. The list goes on and on.

In the US, the National Health Care Anti-Fraud Association estimates that outright fraud costs the health care industry an estimated $70 billion to $230 billion each year. In the EU the figures are similar: 5.6 percent of national health care budgets, or $30 billion to $100 billion each year. Only 10 percent of such fraud is ever detected, and only 10 cents of each fraudulent dollar billed is ever recovered. That adds up to tremendous losses for health care – losses that are often passed on to consumers in the form of higher premiums. And, of course, money lost to fraud and abuse is money that can't be spent on improving the quality of care for those incurring valid expenses.

Unfortunately, the methodologies typically used by health payers to detect fraud, waste and abuse have not kept pace with technological advances – a fact that has not gone unnoticed by opportunistic criminals. And prompt pay laws, as well as marketplace expectations, have payers striving to pay provider claims quickly. As a result, fraud isn't discovered until after claims are paid – and recovery of funds is unlikely.

The Solution

Is claims fraud just an unfortunate cost of doing business? It doesn't have to be. SAS® Detection and Investigation for Health Care takes a unique, end-to-end approach to detecting and preventing both opportunistic and professional fraud at each stage of the claims process.

The solution's fraud analytics engine uses multiple techniques (automated business rules, outlier analysis, predictive modeling, text mining, database searches, exception reporting, network link analysis, etc.) to uncover the likelihood of fraud, waste, abuse and other improper payments that cause loss and compromise payment integrity. Prioritized alerts are then routed to investigators, auditors, provider payment specialists and other business units, where analysts can use case management tools to efficiently triage and investigate.

Once a claim is scored and prioritized, an analyst can perform a more in-depth review of the claim's characteristics to determine if the claim or any associated historical data are fraudulent or suggest improper payment.

The solution provides an end-to-end framework and workflow for detecting, preventing and managing health care claims fraud. It includes components for fraud detection, alert management and case handling. In addition, you get:

- A category-specific workflow.
- Rule and analytic model management.
- Content management.
- Advanced analytics, machine learning and artificial intelligence.
- Link and social network analysis.
- Integration with a case management system.
- Full integration with an enterprisewide advanced analytics architecture and platform.

Benefits

Proactively detect more fraudulent activity

- Insert analytical models into the process, in addition to rules engines.
- Process all data (not just a sample) through rules and analytical models.
- Leverage advanced data mining and machine learning algorithms.
- Use customized models to detect previously unknown schemes.
- Spot linked entities and crime rings, which can help stem larger losses.

Reduce false positives and increase investigator efficiency

- Apply risk-based scoring to model output before it goes to investigators.
- Enable investigators to work more cases than ever before.

Lower fraud losses while increasing recoveries

- Prevent fraud *before* claims are paid using online, real-time probability risk scoring:
  - Detect loss padding in similar claims using anomaly and loss comparisons.
  - Identify repeat offenders and score incoming data more accurately by searching databases of known fraudsters and recording outcomes, claims settlement amounts, referrals and suspects for future reference.
- Uncover insider fraud by integrating staff data and audit records showing who handled claims.
- Focus investigations on higher-value networks and alerts by using risk- and value-based scoring models.
- Gain real-time access to information by inserting analytical models into your process workflow.

Gain a consolidated view of fraud risk and improper payments

- Continually improve models and adapt the system to address changes in fraud trends.

- Manage waste, abuse and improper payments at the operations level by differentiating from fraud and routing for resolution.
- Better understand new threats and prevent big losses early using social network diagrams and sophisticated data mining capabilities.

Apply machine learning and artificial intelligence

- As a SAS Viya product, gain enhanced AI capabilities like automation for built-in intelligence, simplicity, collaboration and transparency.
- Embedded machine learning attributes make predictions more explainable, transparent and accountable.
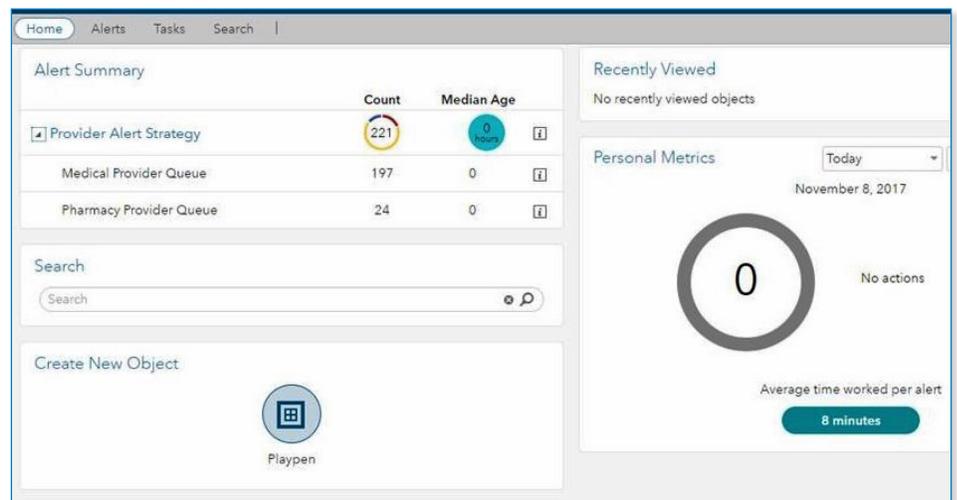
Capabilities

Data management

- Consolidate historical data from internal and external sources – claims systems, watch lists, third parties, unstructured text, etc.
- Eliminate or reduce redundant or inconsistent data with the solution's built-in data quality tools.
- Provides an interactive, self-service environment for users who need to access, blend, shape and cleanse data to prepare it for reporting or analytics.

- Designed for business analysts, citizen data scientists and other nontechnical users.
- Seamlessly integrate the solution with your payment integrity solutions such as case management systems, overpayment recovery vendors, audit control systems, etc.

Rule and analytic model management

- Create and logically manage business rules, analytic models, alerts and known fraudster lists.
- Customize analytic models to identify fraud, waste and abuse not found by existing business rules.
- Easily manage the deployment, aggregation, scheduling, suppression and routing of similar rules across multiple factors, such as parties, data sources and business lines.
- Run groups of rules and models alone, in parallel or at different times (intraday, daily, weekly, monthly, etc.).
- Coordinate model development across the enterprise with areas such as member cost management, chronic condition management, operations analytics and other informatics business units.

Home page alert summary.

SAS® Visual Investigator

Score ↓ ⋮	Alert ID ⋮	Actionable ... ⋮	Actionable ... ⋮	Provider Na... ⋮	Provider Pe...
① 100	25931267703	Medical_Provi...	3265	SCHMITT , SH...	INTERNALME
① 100	8855499655	Medical_Provi...	4762	LYONS , GWE...	GENERALPRA
① 100	41283303831	Medical_Provi...	1490	HARRIS , AND...	GENERALPRA
① 100	14429152150	Medical_Provi...	8826	JOHNSON , L...	GENERALPRA
① 100	7585699449	Medical_Provi...	14345	TRAN , MICH...	GENERALPRA
① 100	5203638954	Pharmacy_Pro...	38887	PEARL PHAR...	GENERALPRA
① 100	17168323146	Medical_Provi...	361	LAWRENCE , ...	GENERALPRA
① 100	15819797493	Medical_Provi...	14896	LUCAS , MAR...	GENERALPRA
① 100	25622161579	Medical_Provi...	4281	MARTIN , JAN...	INTERNALME

Prioritized scored alerts.

Detection and alert generation

- Calculate the propensity for fraud at first submission, then rescore claims at each processing stage as new claims data is captured.
- Review claims early in the adjudication process so you can stop suspicious activity at the prepayment stage.
- Incorporate fraud detection methods into the process at the most appropriate points – e.g., cases where anomaly detection scenarios may require data that is not available until later in the adjudication process.

Alert management

- Combine alerts from multiple monitoring systems, associate them with common individuals and gain a more complete perspective on the risk of individuals or groups.
- Prioritize the investigative order of alerts by scoring alerts in real time, based on the specific characteristics.
- Route alerts to appropriate team members based on user-set rules and requirements.
- View all evidence for each case via a dashboard that is customizable to your investigative unit's processes.

Social network analysis

- Go beyond transaction and account views to analyze related activities and relationships at a network dimension.
- Identify linkages among seemingly unrelated claims using a unique network visualization interface.
- Produce complete dossiers of networks surrounding a case and gain fast access to full details on all related parties and networks.
- Produce independent and combined fraud scores, so you can assess overall risk on a customer, claim or network basis.
- Increase investigator effectiveness by enabling investigators to merge and delete network entities and add annotations (text and images) to specific entities in a network.
- View how activity in a network develops over time with time-slider functionality.
- Geospatial view of actors and activity with an integrated map view.
- For search and discovery, perform free-text (natural language processing), field-based or geospatial searches across all data (internal and external).
- Refine searches using interactive filters and facets that are designed for the SIU team.

- Construct complex queries through an intuitive interface without the need to understand specific syntax. For example, use fuzzy searching, proximity searching and field boosting while restricting searches to specific entity types, fields, comments or insights.

Machine learning and artificial intelligence

- A broad set of modern statistical, machine learning, deep learning and text analytics algorithms are all accessible within a single environment.
- Improve fraud models by testing different approaches in a single run and comparing results of multiple supervised learning algorithms with standardized tests to reduce false positives.

- Analytical capabilities include clustering, several types of regression, random forests, gradient boosting models, support vector machines, natural language processing, topic detection and more.
- Continuous learning based on prior output results.
- Visual text analytics combines text mining, contextual extraction, categorization, sentiment analysis and search within a modern and flexible framework.
- Decision Manager streamlines analytical model deployment and takes data, business rules and models and creates validated, managed assets. This provides assurance and integrity for automated operational decisions – all from a single interface.

Intelligent case handling

- Systematically facilitate investigations using a configurable workflow.
- Store all information pertinent to a case, including detailed investigation information, e.g., interview notes and evidence for criminal or civil prosecution, restitution and collections.
- Assess overall fraud exposure, including losses due to fraud, as well as fraud detected or prevented.

Access on the go

SAS® Mobile Investigator is an app to access SAS® Visual Investigator on the go. Users can search data, receive and process tasks, create new content and manage investigations from mobile devices with the added capability of GPS location services. The app is available at an additional cost.

Analytic model-ready

- Provides prepackaged heuristic rules, anomaly detection and predictive models.
- Includes a health care-specific fraud, waste and abuse data model.
- Lets you harness the power of advanced analytics out of the box.

Hosting and analytical services

- Can be installed and administered at the SAS hosting site, which enables faster implementation (and faster ROI) while eliminating the need for payer staff to oversee the system.
- Can be hosted on your site, in which case SAS Professional Services staff will assist with the implementation and transfer knowledge.
- Can be fully integrated with your existing operations environment, workflow solution and business process management objectives, including thorough business process discovery and review to ensure your objectives are met or exceeded.

To learn more about SAS Detection and Investigation for Health Care, download white papers, view screenshots and see other related material, please visit sas.com/detect-investigate-hc.
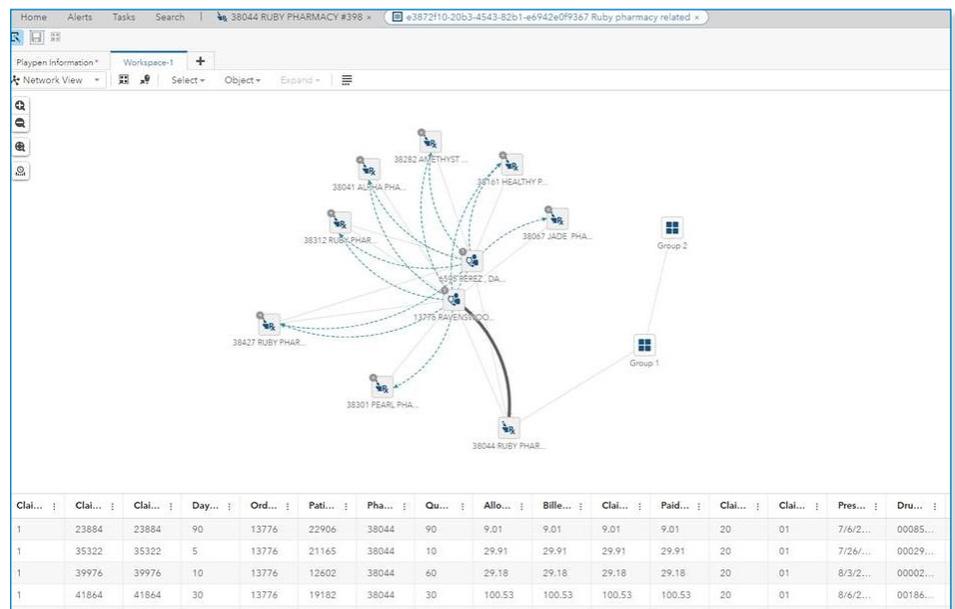
Visualization of a common – and typically undetected – fraud scheme.