

미국 보건의료체계에서의 사기 근절을 위한 빅데이터 및 선진 분석 기술의 활용

Using Big Data and Advanced Analytics to
Help Eradicate Fraud throughout the U.S.
Health Care System



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초록

보건의료시스템을 운영하는 많은 국가들에서 보험사기, 의료비 낭비 및 오용 등 보건재정안정을 위협하는 문제가 나타나고 있다. 이에, 본고는 미국의 FWA(Health care Fraud, Waste and Abuse) 발생 현황과 그에 대응하기 위한 LexisNexis Risk Solutions(이하 LexisNexis)의 빅데이터 활용 및 분석 기술에 대해 다루고자 한다.

미국에서는 최근 공적·사적 보증을 대상으로 하는 사기가 빈번하게 발생하면서, 국가 재정을 위협하고 있다. 이렇게 FWA가 빠르게 증가하고 있는 주요 이유는 보건의료시스템이 허위 청구에 매우 취약하기 때문이며, 이는 신속하게 지불하는 것을 최우선으로 강조하는 기존의 규정과 법, 진료비 청구 데이터의 제한된 정보 활용으로 인해 발생한다.

지속적으로 증가하고 있는 FWA에 대응하기 위해서는 보다 효과적인 보험사기관리체계를 도입·활용해야 한다. 대표적으로 LexisNexis를 그 예로 들 수 있는데, 이는 보건의료 데이터의 연계·분석을 통한 정보를 생성하고 제공함으로써, 소비자들이 스스로 위험을 평가하고 예측하고 관리할 수 있도록 유도하고 있다. 이러한 정보 제공은 수 년 간 미국 보건의료 시장에서 FWA의 문제를 완화시키는데 기여하였다.

FWA는 국가의 경제를 위협하는 요인이다. 이를 해결하기 위해서는 LexisNexis에서 제공하는 기술과 같이, 국내의 다양한 빅데이터를 이용한 선진화된 분석 기술을 개발·활용하여 재정의 지속가능성을 유지할 수 있는 보건의료시스템을 운영해야 할 것이다.

1. Introduction

LexisNexis Risk Solutions, a wholly-owned subsidiary of Reed Elsevier Group plc., focuses on delivering essential information to help customers across industries, including health care, to assess, predict, and manage risk. More specifically, LexisNexis has proactively developed a portfolio of solutions that leverage big data, linking and predictive analytics, and advanced technology to address the very prominent problems in health care: fraud, waste and abuse.

Health care fraud, waste and abuse(FWA) is a rapidly growing problem that threatens the financial stability of every country in the world that has a formalized health care system. While the issue of health care fraud is not confined to a single nation, this white paper does single out the United States as an example to highlight the scale of the problem, as well as some of the promising progress the U.S. is making by using data and analytics technologies to combat health care FWA.

2. Billions of reasons to be concerned

Today, the United States spends approximately \$2.6 trillion per year on health care, which is the largest share of the nation's economy, representing 17.5% of gross domestic product(GDP)¹. Health care fraud in the U.S. is a national financial catastrophe, prevalent in federal, state and private insurance programs. Over the last decade U.S. health care fraud has expanded rapidly with billions of dollars being paid on improper claims every year². In fact, the National Health Care Anti-fraud Association(NHCAA) conservatively estimates that 3% of all health care spending, or \$60 billion, is lost to health care fraud each year, of which less than 10% is ever recovered³. Other estimates place this number closer to \$200 billion⁴. The Federal Bureau of Investigation(FBI) has estimated fraudulent billings to health care programs, both public and private, at between 3% and 10% of total health care expenditures⁵. In 2013 alone, the nation's two largest government funded health care programs, Medicare and Medicaid, paid an estimated \$62.2 billion in improper payments⁶. Compounding the problem, more than 1.5 million Americans have been

victimized by medical identity theft at an average cost of \$20,000 each. When all factors are considered, the NHCAA calculates that fraud costs the system between \$75 billion and \$250 billion a year⁷.

3. Vulnerabilities attract all kinds of fraud

One of the reasons health care fraud has been such a rapidly growing issue is that the system has been so vulnerable and easily exposed to false claims. False claims can be submitted by patients, physicians, pharmacists, providers of health care products and services, and even sophisticated organized groups of individuals conspiring to defraud the system. There are a lot of misguided assumptions about who commits fraud and abuse. All types of people are committing these crimes. The temptation to accumulate large sums of money illegally knows no socio-economic boundaries. There are a countless variety of fraudulent methods, techniques and schemes including:

- **Falsified Claim Coding**(i.e., a patient may come in for a routine checkup, but the insurance claim is up-coded to indicate a more expensive procedure)
- **Stolen Identification Data**(i.e., an individual steals or buys stolen provider and patient ID numbers to submit false claims for procedures, services and products that were never rendered)
- **Inflated/Unnecessary Treatment**(i.e., sophisticated schemes consisting of legitimate providers and patients obtaining inflated or unnecessary treatment)
- **Pill Mills**(i.e., criminal enterprises posing as pharmaciesome even buy real pharmacies that charge payers for massive numbers of fake prescriptions)
- **Ping-ponging**(i.e., when physicians refer patients to other physicians in the same office and double up on the claims)
- **Gang Visits**(i.e., bringing groups of Medicaid recipients to clinics for unnecessary medical visits)
- **Steering**(i.e., directing patients to particular pharmacies that are participating in prescription fraud schemes)

The overall industry success in stemming health care FWA with traditional tactics has been far less than satisfactory. Common causes stifling the health system's ability to reduce fraud, waste and abuse include:

- Laws and regulations that emphasize quick payment of provider and patient claims above all other priorities in the claims process
- Limitations brought on by use of single-source data, like health care claims data, as the only source to identify fraud, abuse and inappropriate payments

4. Turning the tide with innovative tools, technologies and tactics

As a result of the continuous growth of FWA, the health care industry has had to migrate to a new and more effective fraud control model, one that leverages big data, linking analytics, predictive modeling and other advanced technologies.

LexisNexis, a recognized global leader in the development of data technology, has been leveraging the power of big data and advanced data linking and analytics to detect and mitigate health care FWA for many years. The LexisNexis approach utilizes several components including: access to 37 billion public records, High Performance Computing Cluster(HPCC), advanced data linking and mining analytics. This combination makes it possible to proactively identify emerging trends and complex hidden relationships among providers, patients and businesses.

Along with identifying providers linked to fraud indicators, the LexisNexis approach allows health insurers to view fraud, waste and abuse from a much broader perspective than the traditional claim-level approach. LexisNexis technology automates much of the work that goes into identifying potential FWA and is designed to systemically reveal subtle and suspicious relationships and links.

Using their own internal data and linking technology, a private insurance carrier found just one link between seven collusive insurance fraud schemes representing hundreds of suspect claims.

By using LexisNexis's Advanced Linking Technology and linking the carrier's own internal data to the LexisNexis public records database, LexisNexis was able

to identify 11 additional potentially fraudulent schemes (representing hundreds of already paid claims) directly related to the original seven. In addition, LexisNexis identified two families that appeared to be at the center of the fraudulent scheme.

LexisNexis customers across both public and private sectors have already experienced firsthand the benefits of combining big data (specifically the use of public record sources) with linking and predictive analytics. Below are several real-world examples of the results LexisNexis customers have realized:

5. Information from Public Records Proves to Be Accurate Fraud Indicators for New York City Human Resources Administration

The New York City Human Resources Administration (NYC HRA) is the largest social services department in the U.S. and provides services to 2.9 million Medicaid recipients at a cost of \$2 billion each month. Finding fraud is nearly impossible, unless you know where to look. NYC HRA wanted to prioritize Medicaid fraud investigations by gaining a better understanding of where to look first. They chose to work with LexisNexis and SUNY Buffalo to conduct a study of the effectiveness of prioritizing investigative resource allocation.

The study looked at possible flags for fraud and found that property and luxury vehicle ownership by Medicaid recipients were strong fraud indicators resulting in a high percentage of successful fraud investigations. By focusing on individuals in this high risk category, NYC HRA found it could increase the probability of its investigative success by 71%. The study also showed that a streamlined investigation based on these indicators would reduce investigation time by 21% and reduce costly and time-consuming interviews by 56%.

6. Fake Address Scheme Uncovered for Large Commercial Health Provider

Recently a large commercial health provider contacted LexisNexis to help verify what they believed to be claims coming in from a fake address. They did not realize the same growing problem that many other providers were facing was also costing their organization millions in inappropriate payments. The problem involved fake providers setting-up an address, billing health care companies, relocating every few months to avoid detection and continuing to submit claims from each new address.

The provider's special investigation unit director described detection efforts used three years ago, in which investigators traveled long distances to a large southern state to physically visit 12-15 addresses and determine whether they were legitimate provider locations or fake locations. Those addresses (and the names of the providers at the locations) were immediately flagged on the relevant government-sponsored claims warehouses and enterprise-wide data was run to verify any possible commercial exposure.

Recently, LexisNexis ran those same addresses against public record sources and applied proprietary linking technology. The goal was to identify connections between data associated with those fake addresses from three years ago (persons, names of businesses, Taxpayer Identification Numbers, National Provider Identifiers, etc.) and current addresses. Tracing data from three years ago to current data revealed the current locations of these known fraudulent providers, which allowed the health care provider to take remedial action.

The search results lead investigators to two major crime rings containing more than 300 links back to fake addresses and providers. The original investigation, which was ongoing after years of effort, took LexisNexis only weeks to complete.

7. Complex Organized Crime Ring Revealed in the State of New York

The New York State Office of the Medicaid Inspector General(OMIG) suspected fraud among a group of 500 New York Medicaid recipients that all lived in the same upscale condo complex. LexisNexis was charged with identifying the hidden relationships between the tenants and their property, providers or other connected entities. In order to initiate the investigation, LexisNexis was given the list of names and addresses of the targeted group and nothing more. Leveraging 50 terabytes of public data, LexisNexis built a large-scale network map of the targeted Medicaid recipients and everyone associated within two degrees. Next, patented LexisNexis algorithms were used to cluster the network map and generate statistics and analytics to measure every cluster.

The resulting connections enabled LexisNexis to quickly uncover a massive fraud scheme and discover the key leaders, including several major participants not present in the input data. The analyses revealed hundreds of high-end automobiles, other properties owned, and direct and indirect links to provider networks. It also revealed suspiciously high volumes of deed flipping within the group, potentially indicative of mortgage fraud and money laundering. That investigation is ongoing.

8. Conclusion

Health care fraud, waste and abuse are already prevalent and a real threat to national economies around the world. The problem is going to continue to grow unless intelligent solutions that leverage traditional and non-traditional sources of data, coupled with advanced analytics, are implemented. Adopting fraud controls that leverage health care data, public records information, and powerful linking and predictive analytics, is critical for turning the tides of FWA losses and maintaining financially sustainable health care systems in the U.S. and abroad. 🌐

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