Recent Developments in Predictive Analytics for Payment Integrity

Dr. Andrea Allmon
Sr. Director, Global Insurance Fraud
FICO

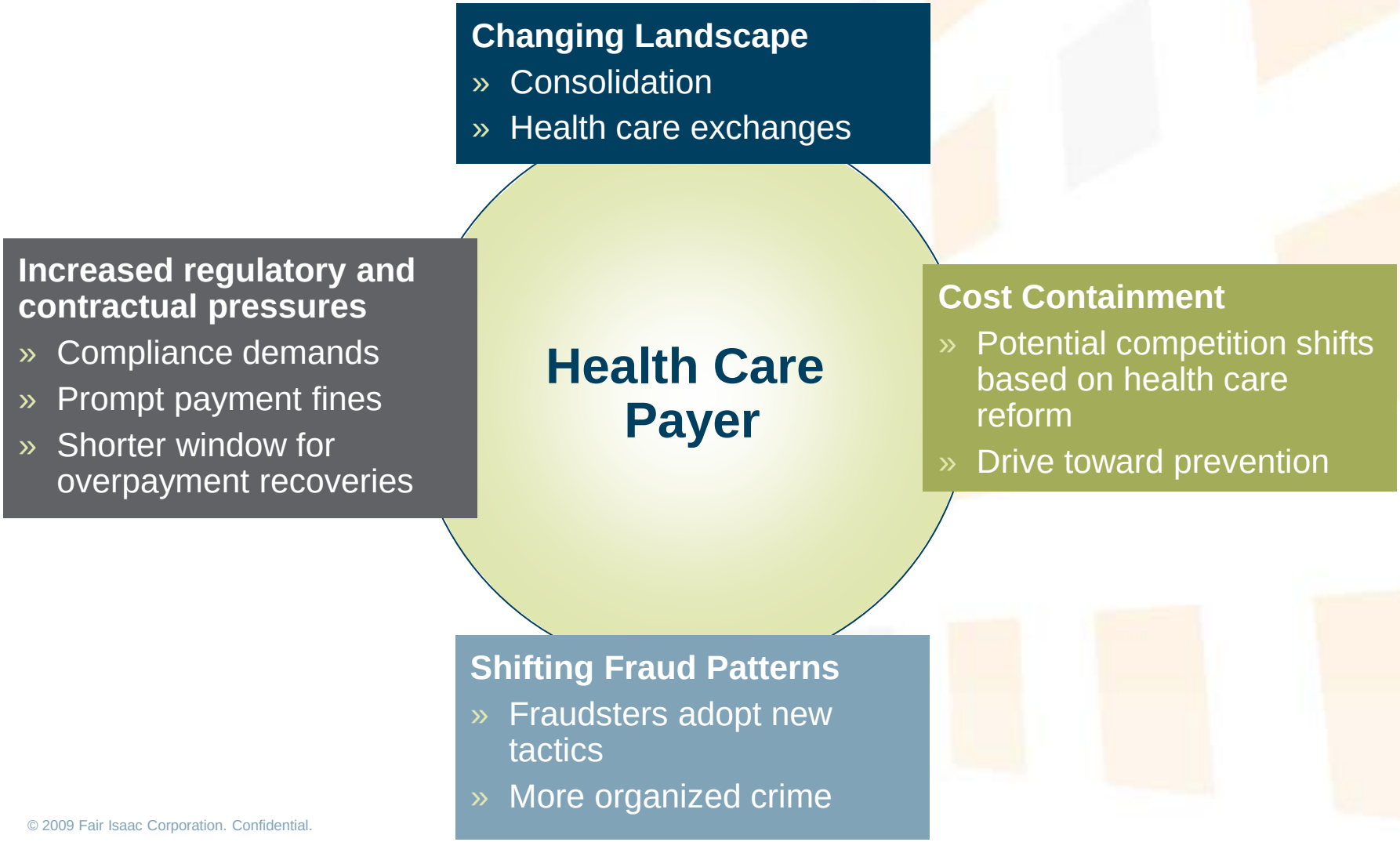
August 20, 2013

Agenda

- Entity Resolution and Social Network Analysis
- Facility Claims
- Encounter models to monitor MCO
- Use Cases

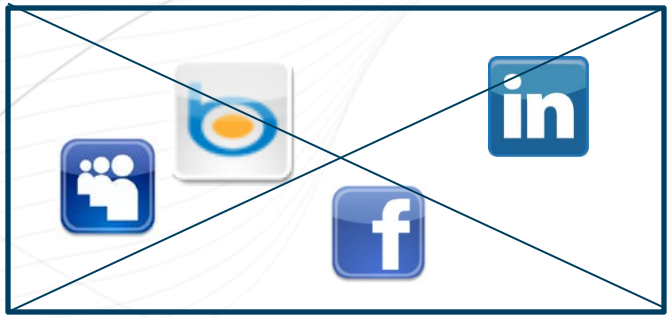
Key Business Challenges

» Fraud represents 3% to 10% of claims



What is Social Link Analysis?

- Also called Social Network Analysis
- There is much more to Social Link Analysis than looking at graphs
- Should ID high risk networks of aberrant entities (claims, providers, patients, places, etc.)
- Is not related to monitoring Facebook, Twitter, or LinkedIn
- Should be integrated in the Payment/Program Integrity work flow

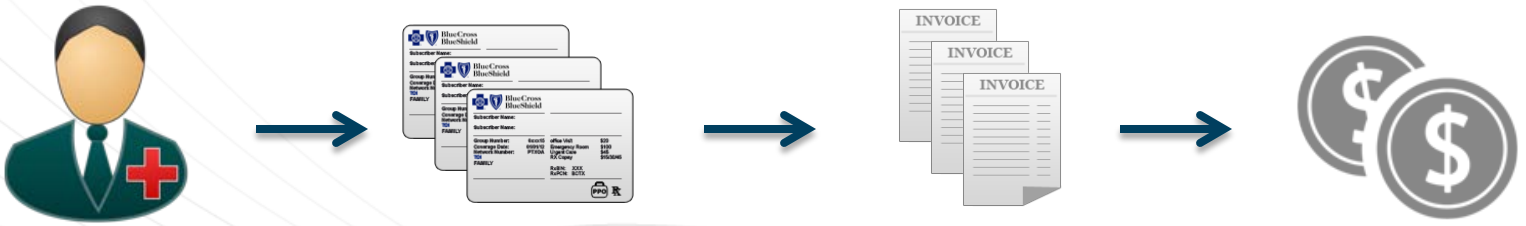


FICO IFM Link Analysis for Provider Fraud

Insurance Fraud Manager's Link Analysis component automatically ID's relationships, links and hidden patterns of information sharing and interactions within potentially fraudulent clusters, including:

- Shared patient relationships among providers
- Provider relationships with known perpetrators or known fraudulent address information
- Patient relationships with known perpetrators of health care fraud
- Hidden relationships between patients, providers, employees, and partners
- Association with aberrant (high scoring) claims

Use Case – Insurance Card Sharing (Part 1)

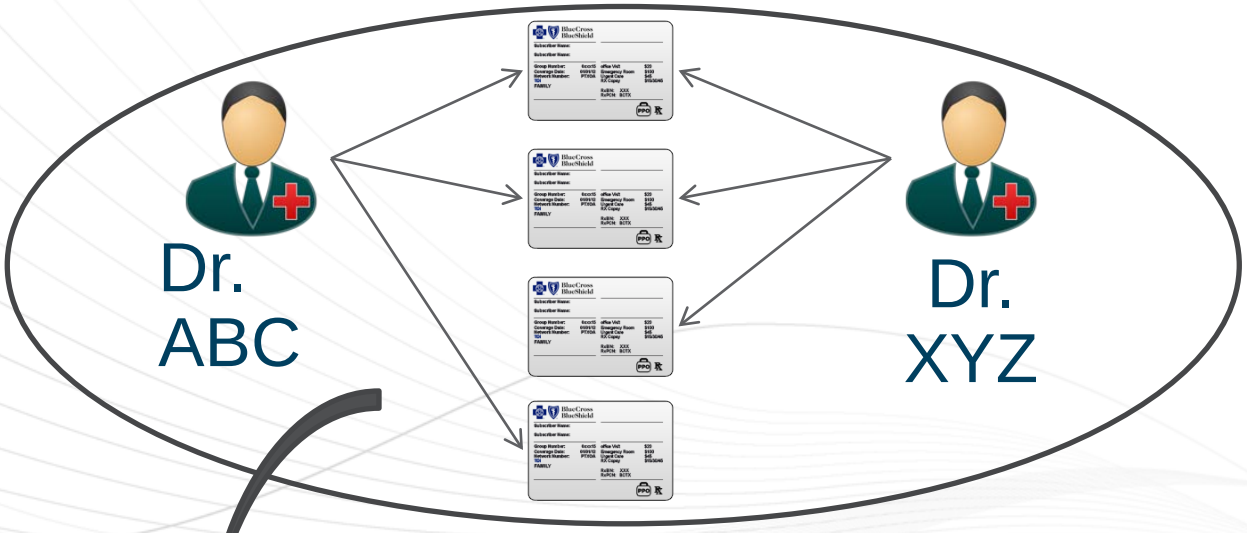


Dishonest Doctors → **Steal/Acquire Patient Insurance IDs** → **Bill Patient Insurance for Lab tests** → **Make off with Insurance Payouts**

Social Link Analysis

- Analyzes all patient and provider data and discovers relationships between all providers and patients
- Scores providers based on shared patients (providers that share an abnormally high % of patients with other providers)
- Provides analysts with a ranked view where they can view relationships and drill down on data

Use Case – Insurance Card Sharing (Part 2)



In this example, ABC shares 66% of his patients with XYZ. Insurance Fraud Manager produce a sorted list of providers that share the highest proportion of patients. This could be drilled down to view the relationships. A future phase could analyze the types of doctors to help determine whether sharing is legitimate or not.

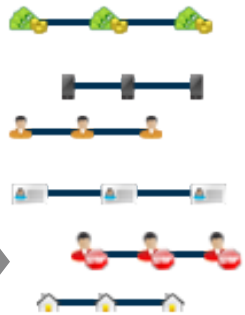
Provider	Provider	Shared #	Shared %
54665	68995	56	88
12345	98765	88	75
ABC	XYZ	2	66
85859	25832	26	41
65803	43512	55	30

FICO's Approach to Social Link Analysis

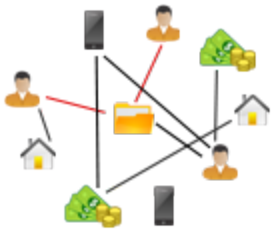
1. **Search**
2. **Match**
3. **Link**
4. **Analyze**
5. **Act**

Federated Similarity Search

Identity Matching & Relationship Intelligence

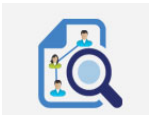


Social Network Discovery



Fraud Network Analysis

Alert, Triage, & Investigate



Provider Claims

Alert Processing

Visualization

1) Federated Search – Access to Data

1 **Search** | 2 Match | 3 Link | 4 Analyze | 5 Act

- Access enterprise and third party data across geographic and organizational silos
  - Protect personally identifiable info
  - “Single sign on” – access all data at once
  - Real time and batch mode
  - Scale

2) Match and Resolve Entities

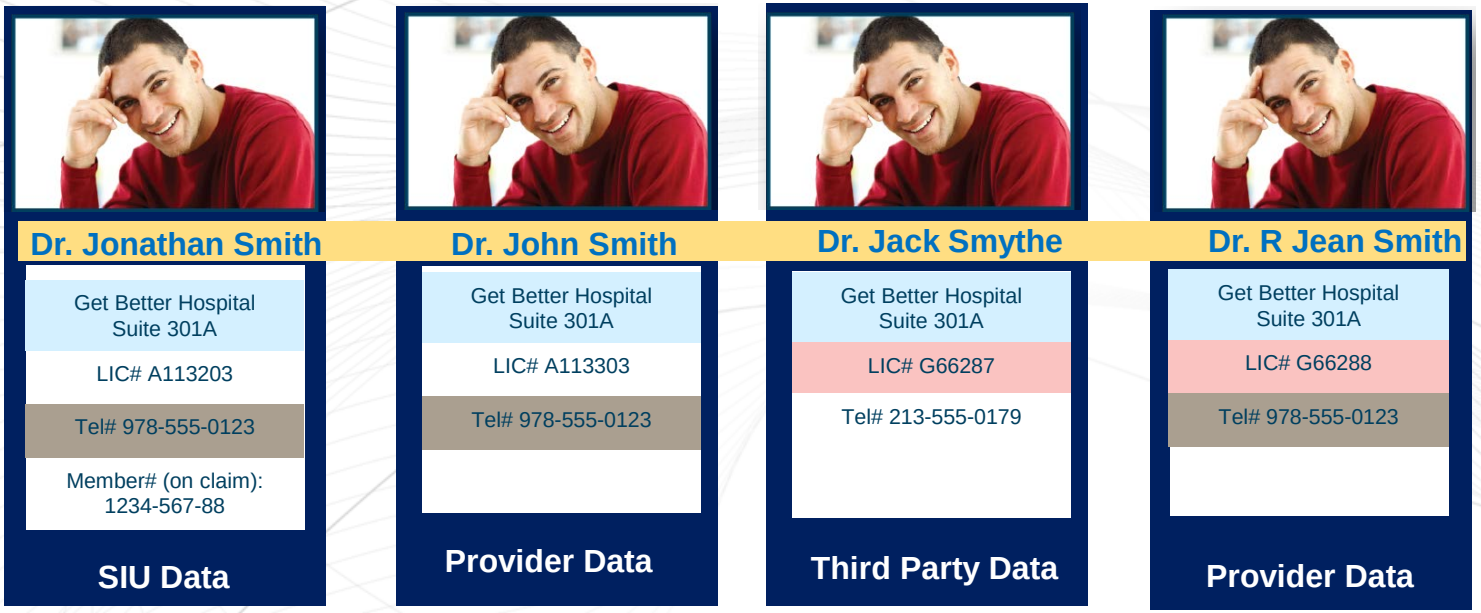
1 Search | 2 Match | 3 Link | 4 Analyze | 5 Act

Duplicate entities (people, addresses, etc.) often exists in multiple places within the data.

2) Match and Resolve Entities

1 Search | 2 Match | 3 Link | 4 Analyze | 5 Act

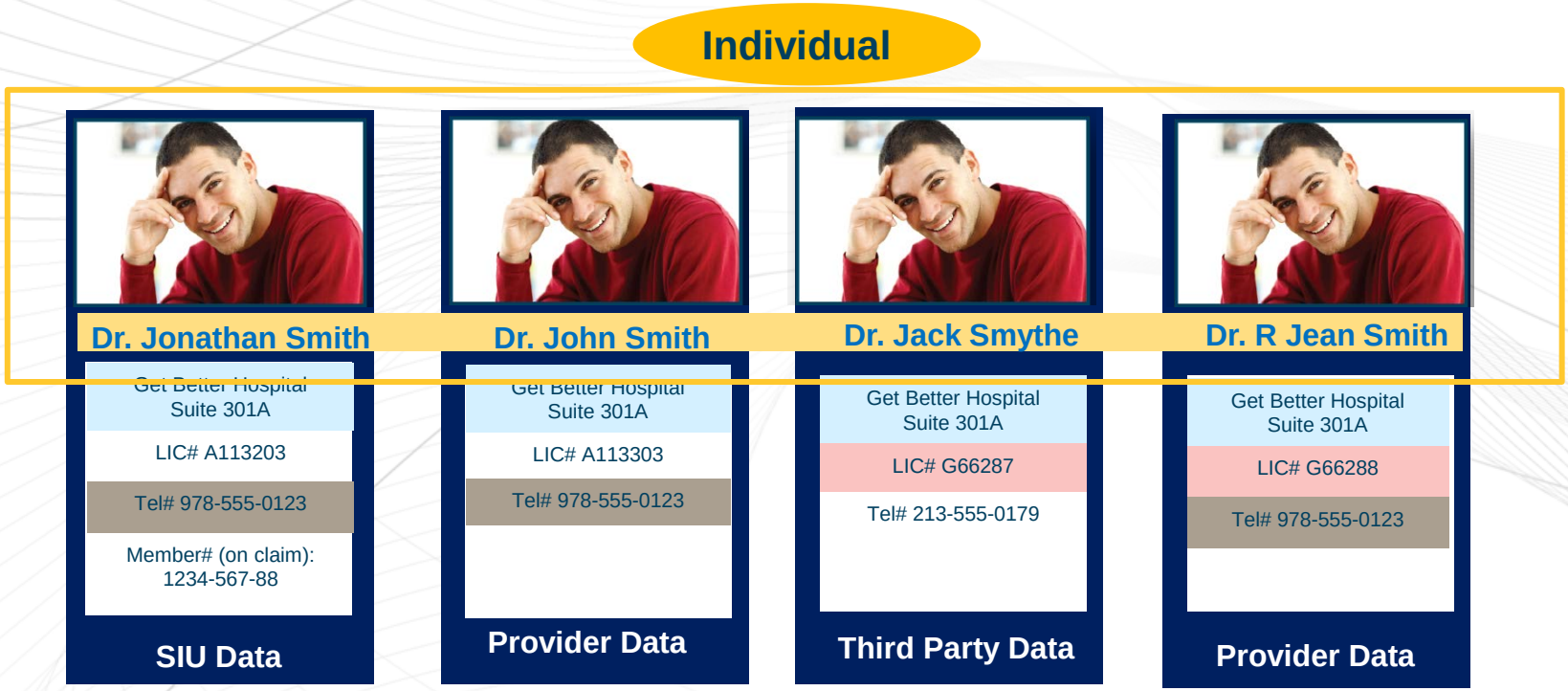
Entity Resolution bridges the organizational and geographical siloes to connect identities to improve risk analytics



2) Match and Resolve Entities

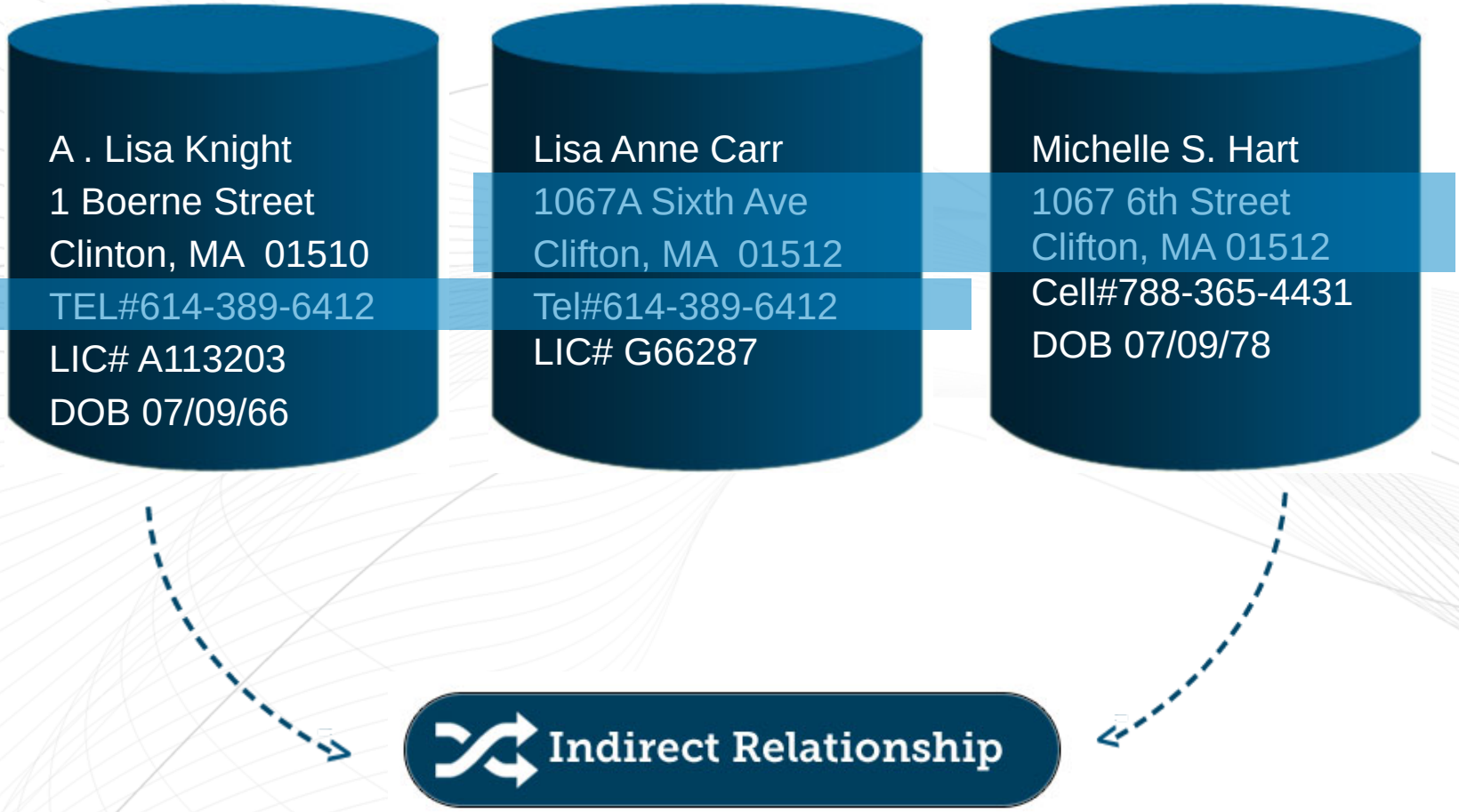
1 Search | 2 Match | 3 Link | 4 Analyze | 5 Act

Entity Resolution bridges the organizational and geographical siloes to connect identities to improve risk analytics



3) Link networks based on Shared Attributes

1 Search | 2 Match | 3 **Link** | 4 Analyze | 5 Act



4) Apply FICO Analytics to “Codified” Network

1 Search | 2 Match | 3 Link | 4 **Analyze** | 5 Act

» Leverages FICO analytics expertise to detect fraudulent patterns within a network

» Networks can be systematically scored and viewed

» Alerts and reason codes can be sent to claims system

Type of Analysis	Examples
Network Connections to “Bad Guy” Data	➢ SIU data ➢ Hot addresses ➢ Consortium Data
Domain Specific Rules	➢ Multiple surnames at address ➢ Shared NPI’s or SSN’s ➢ Shared patients
Statistical Anomalies	➢ Large Network Size ➢ High Interconnectedness within network

5) Act on the Knowledge

1 Search | 2 Match | 3 Link | 4 Analyze | 5 Act

Alerts

Alerts can be generated when a network meets certain criteria

- Example: “Connected to known criminals”

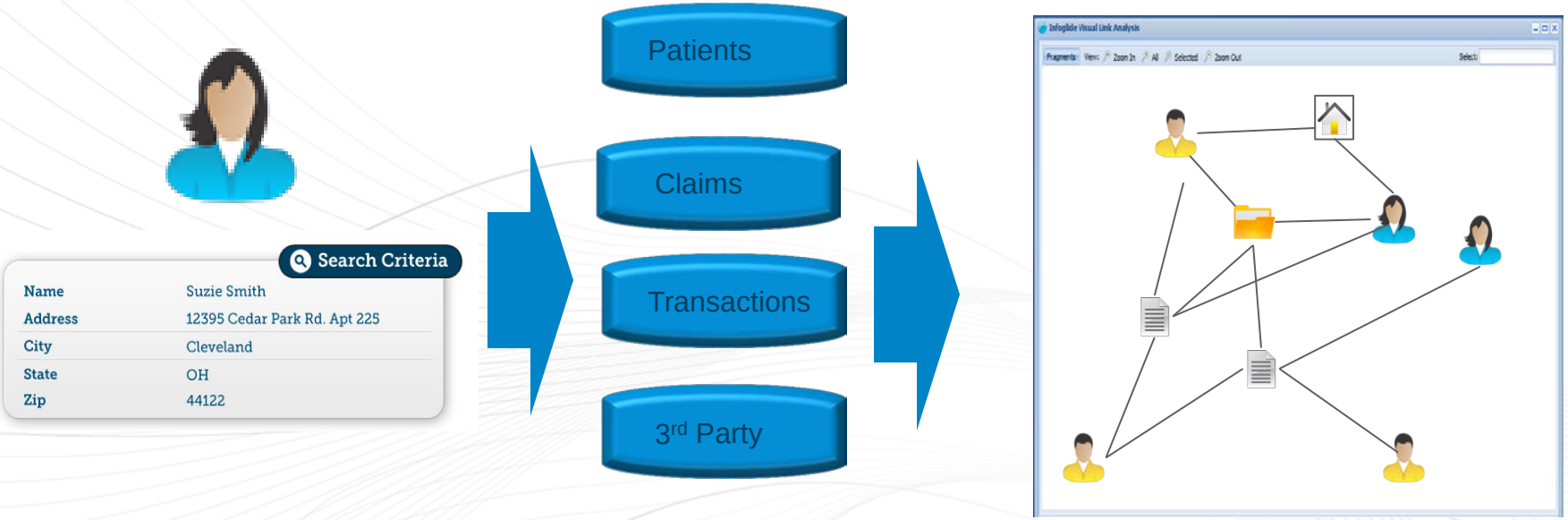
Visualization

Connected networks can be visualized and saved to aid investigations

Provider Claim Review

Networks can be viewed and sorted according to risk criteria

Link Analysis for Claims Fraud – How it Works?



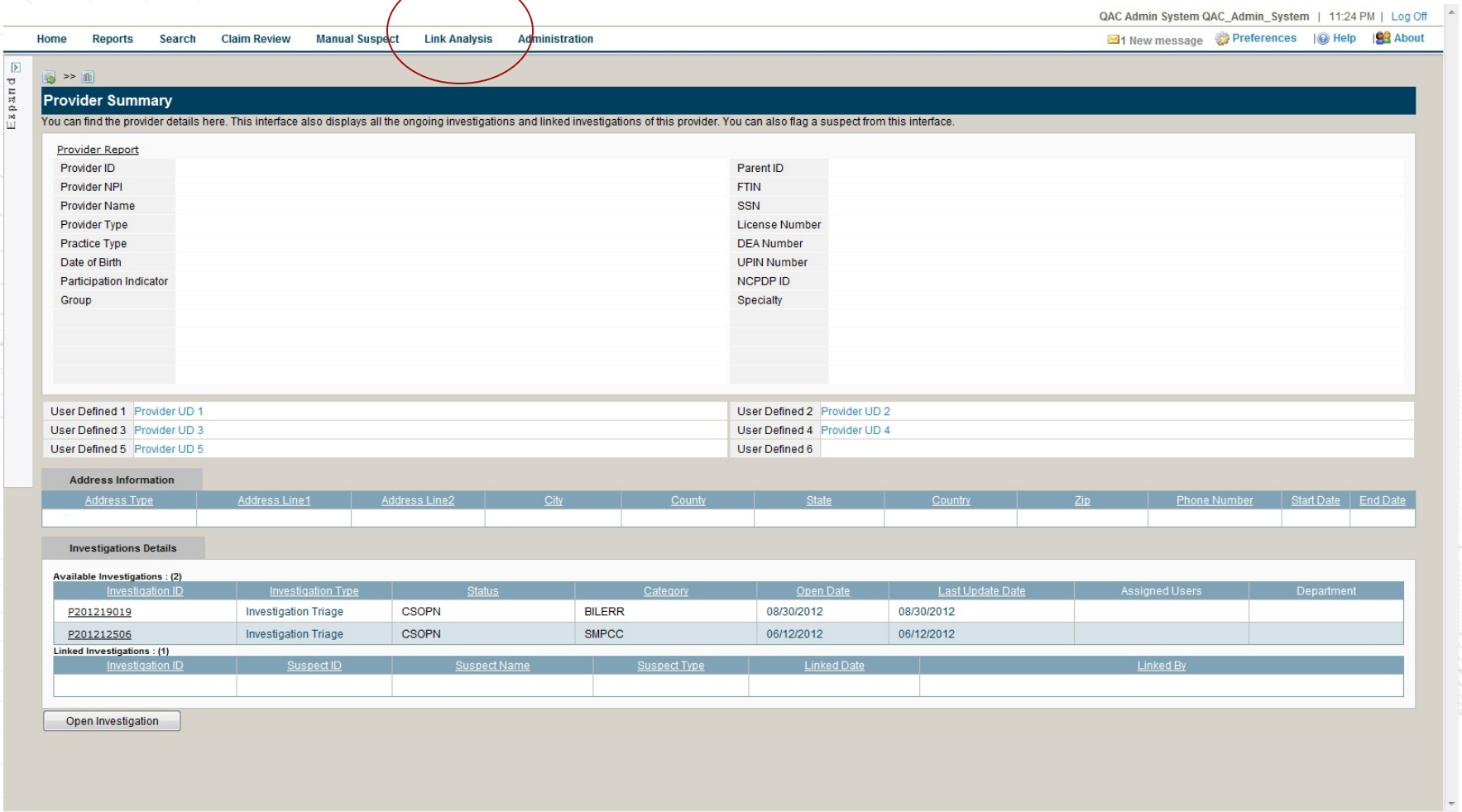
1. A Suspect is viewed in the FICO Case Manager.

2. FICO Link Analysis queries enterprise data and builds networks based on shared relationships.

3. The suspect's social network can be visualized, annotated and exported to FICO case review.

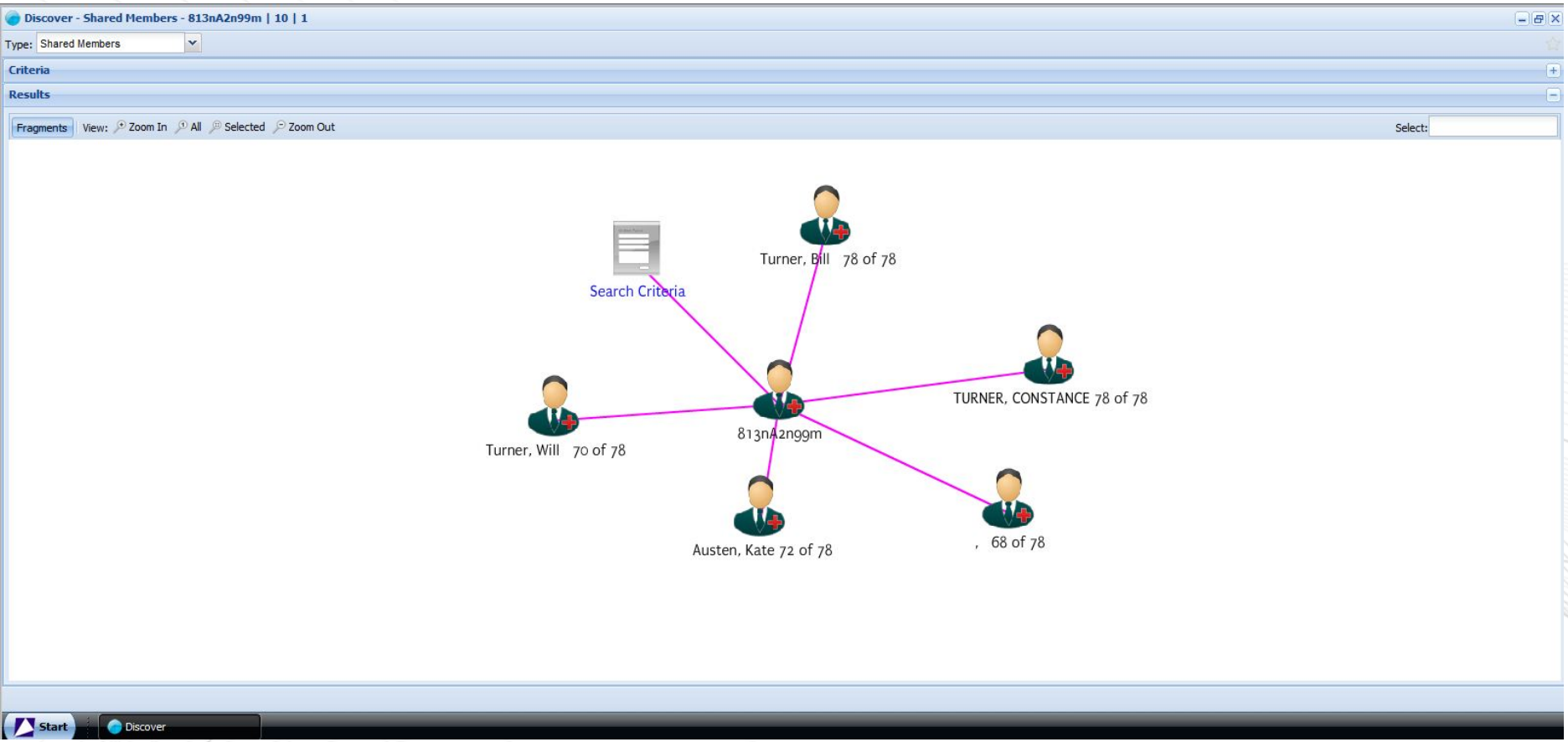
FICO Link Analysis Within IFM

- FICO Link Analysis is fully integrated within IFM



FICO Link Analysis Within IFM

Provider relationships can be viewed in IFM and saved in the IFM Case Manager



Agenda

- Identity Resolution and Social Network Analysis
- **Facility Claims**
- Encounter models to monitor MCO

Facility Analytics

- Both Inpatient and Outpatient Facility Claims are scored
  - Scores are data driven based on your own data
    - Takes into account the wide variety of payment policies in health care
  - Analytics have both Claim-centricity and Member-centricity
- Claim-centricity
  - Analytics use a variety of variables that can be obtained directly from single claims - DRG payments and Length of Stay are just two examples.
- Member/Beneficiary-centricity
  - Analytics use a variety of variables that can be obtained from the pattern of care rendered to a Member/Beneficiary – Readmission rates and Major Diagnostic Categories are just two examples

Scores and Review (Claim-centricity)

- A suite of easy to understand scores
- Immediately apparent why a claim scores high
- Review is very focused and efficient
- Scores are calibrated to match the score distribution of other IFM claims scores

Scores and Review (Member-Centricity)

- Scores are based on a small batch of claims
- Generally small batch is designed around a member/beneficiary
- Member/beneficiary focus eliminates any fragmentation
- Following the member/beneficiary is a fruitful way to uncover inconsistencies
- Looking across both inpatient and outpatient claims for fraud indicators is powerful

Facility Model Advantages

- Scoring and Reviewing Facility Claims on a Regular Basis
  - Allows recovery earlier
  - Prevents recovery from ending up in contract negotiations
  - Identifies potentially fraudulent activity as well as abusive practices

Agenda

- Entity Resolution and Social Network Analysis
- Facility Claims
- Encounter models to monitor MCO

Over half the US population with health care insurance are enrolled in managed care

» Of those who have health care insurance, 52% are enrolled in managed care.

2010 Enrollment and Managed Care Penetration by Segment *(#s in millions)*

Segment	Total US	Percent US	Managed Care #	Managed Care %
Medicare	47.00	15.21%	11.40	24.2%
Medicaid	46.87	15.17%	33.28*	71.0%
Military	3.80	1.20%	3.80	100.0%
Commercial	161.93	52.40%	86.89	53.65%
Uninsured	49.40	16.0%	0.00	0.00%
Total	309.00	100.0%	135.37	43.80%

Notes

Source for enrollment by segment: Managed care enrollment –http://www.mcareol.com/factshts/factnati.htm; Medicaid managed care enrollment number differs from cms.gov (39.0M); data used to illustrate relativity

How big is the fraud problem in managed care?

- As the private sector is increasingly providing more Medicare and Medicaid services, new types of fraud are "cropping up that are harder to spot, more complicated to prosecute and potentially more harmful to patients," prompting the federal government to increase scrutiny of managed care.
  - CVS agreed to pay nearly $37 million to settle claims that it fraudulently billed Medicaid.
  - Growing practice of hospitals to reuse medical devices that have designated for one time use

- A 1999 study conducted by Dept of HHS, OIG found 2 states (AZ and TN) accounted for 97%, or 490 managed care referrals resulting in $4.3M in recoveries during a 12-month period.

- However, the Florida Agency for Health Care Administration/Florida Medicare report in its March 2010 presentation to the House Select Council on Strategic and Economic Planning that “Medicaid experience and data indicate that fraud and abuse is primarily a fee-for-service system problem”
  - Of the 7,418 Medicaid Program Integrity Cases in Florida Medicaid program from 7/1/2002 to 11/30/2009, 3% (252 cases) were from managed care; the remaining 97% was non-HMO (Dollar impact information not available).

Fraud in managed care

In traditional fee-for-service system, providers and patients have been the primary actors committing fraud against the government and private payers. Managed care has introduced another actor, the private payer themselves defrauding the government payer.

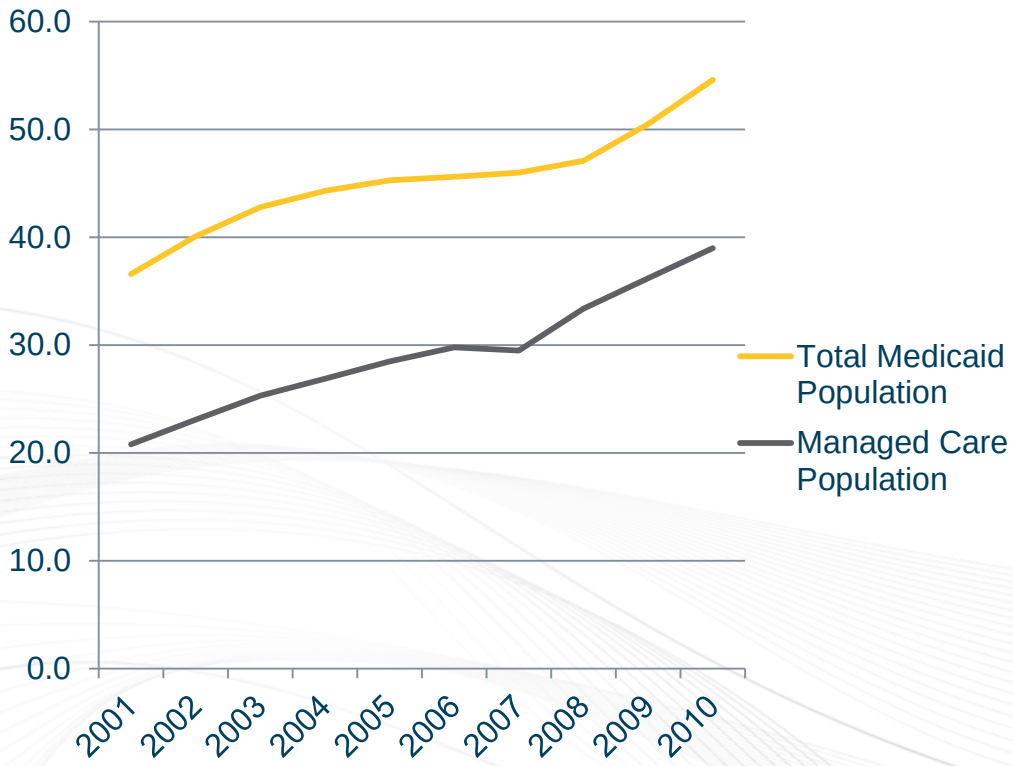
- »Types of fraud and abuse committed by the Private Payer
  - »Procurement of the managed care contract
  - »Marketing and enrollment
  - »Exclusion of certain groups from services (elderly, chronically ill)
  - »Submission of falsely elevated cost data to justify higher capitation payments
  - »Enrolling fictitious enrollees or those ineligible for enrollment
- »Types of fraud and abuse committed by the Provider
  - »Under-treating patients
  - »Dissimilar treatment of patients based on what their plans pay
  - »Placing unreasonable restrictions on needed ancillary services
- »The FFS component in managed care is subject to the same fraud, abuse and waste as in traditional FFS

Medicaid: Law mandates fraud, abuse and waste detection in managed Medicaid (by MCOs) to support expansion

- Encourages managed care in Medicaid programs (to decrease the number of uninsureds by 32M in 2019)
  - 16M will be added to Medicaid
- Authorizes the Secretary to withhold matching payment when states do not report enrollee encounter data through MMIS in a timely way
- Excludes certain providers from Medicaid due to ownership control or management affiliations with individuals or entities that have been excluded from participation or have unpaid overpayments.
- Requires additional data reporting to MMIS to detect waste, fraud and abuse (implementation January 1, 2010)
- Requires providers and suppliers to adopt programs to reduce fraud, waste and abuse, such as MCOs
- Established a minimum MLR for Medicaid MCOs of 85% (for contract years beginning on or after January 1, 2010)
- Prohibits payments for litigation-related misconduct for managed care organizations (implementation January 1, 2010)

Medicaid: As enrollment grows under the health care reform, States are looking to managed care to control health care expenditures, with a keen interest in monitoring fraud, abuse and waste in encounter data

- Medicaid enrollment
  - 46.87M Medicaid beneficiaries; 33.28M in Managed Medicaid
  - 16M uninsureds forecasted to be covered under Medicaid by 2019
- Under Medicaid FFS, each state has its own fraud fighting measures.
- In managed care, the risk is assumed by the commercial payer.
  - Each commercial payer is responsible for any fraud-fighting measures. The degree of fraud-fighting efforts vary widely in the commercial market, from manual to predictive analytics-based.



- Up until recently, Medicaid states focus was on FFS, and have done little to detect fraud in managed care as risk is assumed by the commercial payer
- As enrollment in Medicaid grows and FFS declines, States have a lot more at stake in detection of encounter fraud and abuse.

IFM for MCO Fraud

» Suspect List that rank orders MCO's and provides reasons for fraud risk

Encounters MCO SDA suspect

Model	Summary
	Encounters MCO Model 01/01/2011-12/31/2011

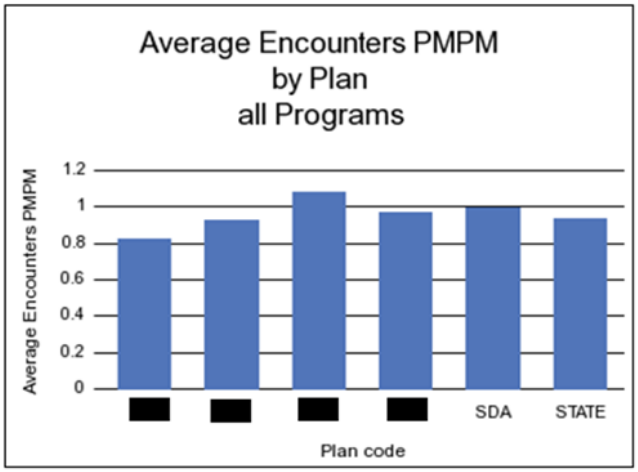
Row	MCO plan code	MCO plan	SDA	Managed care program type	Score	Total members	Total expended	# Encounter lines	Reasons
1					876	7,324	$83,598,311.04	543,036	1) High encounter denial rate 2) Low amount expended per member 3) Low encounters per member
2					684	4,841	$37,159,138.80	181,536	1) Low amount expended per member 2) Low encounters per member 3) High frequency of severe conditions
3					644	16,727	$180,751,489.68	1,190,616	1) High frequency of severe conditions 2) High encounter denial rate 3) Low encounters per member
4					630	1,870	$15,338,617.44	100,608	1) High disenrollment rate 2) Low amount expended per member 3) Low encounters per member
5					609	18,998	$257,240,367.60	1,342,020	1) Low amount expended per member 2) Low encounters per member 3) High frequency of severe conditions
6					600	1,445	$158,301,682.68	499,764	1) Low amount expended per member 2) Low encounters per member 3) High disenrollment rate
7					561	375	$22,584,234.84	65,700	1) Low amount expended per member 2) Low encounters per member 3) High disenrollment rate
8					561	12,142	$147,703,843.68	910,944	1) Low encounters per member 2) Low amount expended per member 3) High disenrollment rate
9					535	350	$43,333,711.80	136,476	1) Low encounters per member 2) Low amount expended per member 3) High frequency of severe conditions
10					520	22,772	$250,980,708.36	1,454,148	1) High frequency of severe conditions 2) Low amount expended per member 3) High encounter denial rate
11					513	377	$45,510,310.68	138,420	1) Low encounters per member 2) High enrollment rate 3) Low amount expended per member

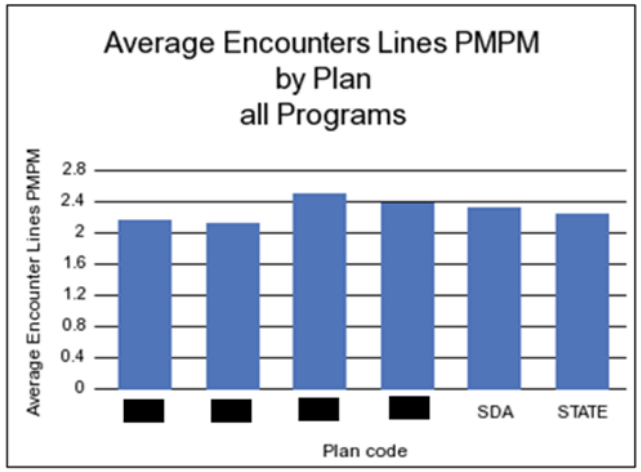
Variables have peer group Comparisons

Encounters MCO SDA - Low encounters per member

Date	03/22/2013

MCO plan	[redacted]
MCO plan code	[redacted]
Service delivery area	[redacted]
Managed care program type	[redacted]
Model	Encounters Model 01/01/2012-12/31/2012
Score	993
Average encounters PMPM - SDA	0.99
Average encounters PMPM - State	0.93
Average encounter lines PMPM - SDA	2.31
Average encounter lines PMPM - State	2.23





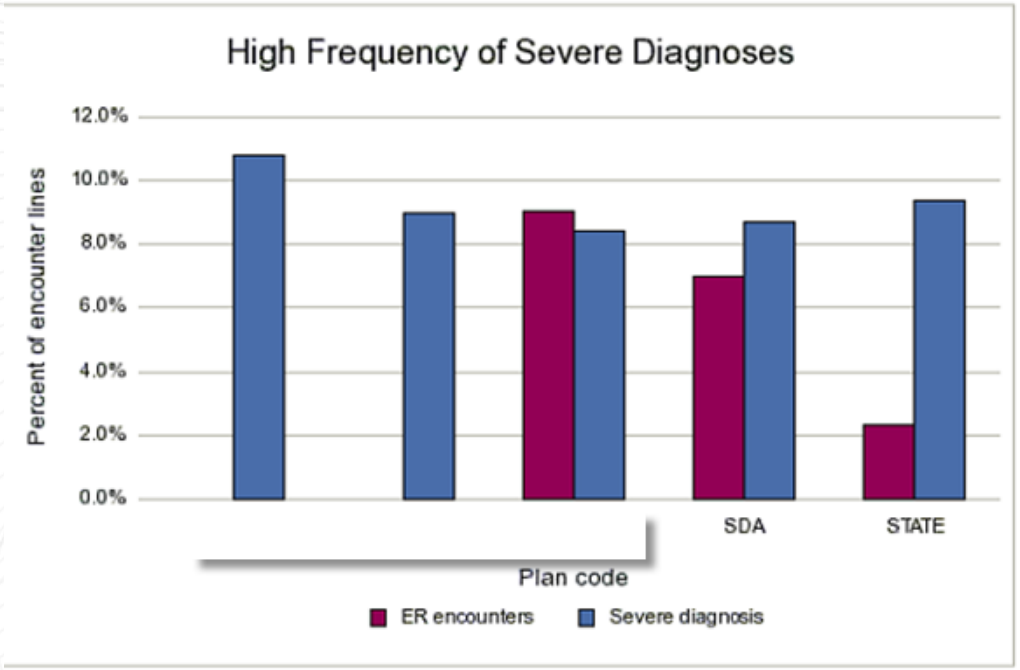
MCO plan code	MCO plan	Average encounters PMPM	Average encounter lines PMPM
44	[redacted]	0.82	2.15
40	[redacted]	0.93	2.13
42	[redacted]	1.08	2.5
43	[redacted]	0.97	2.39

Quality of Care is an Important Indicator

Encounters MCO SDA - High frequency of severe diagnoses

Date	02/25/2013

MCO plan	
MCO plan code	
Service delivery area	
Managed care program type	
Model	Encounter MCO Model 01/01/2011-12/31/2011
Score	746
Percent of encounter lines - severe diagnoses - SDA	8.71%
Percent of encounter lines - severe diagnoses - State	9.35%
Percent of encounter lines - emergency room - SDA	6.98%
Percent of encounter lines - emergency room - State	2.35%



Are your MCO's churning?

Encounters MCO SDA – High monthly disenrollment rate

Date	03/22/2013

MCO plan	
MCO plan code	
Service delivery area	
Managed care program type	
Model	Encounters Model 01/01/2012-12/31/2012
Score	993
Average monthly disenrollment rate – SDA	12.21%
Average monthly disenrollment rate – State	13.39%
Average expended PMPM - disenrolled members – SDA	$190.62
Average expended PMPM - disenrolled members – State	$158.75
Average expended PMPM - enrolled members – SDA	$175.32
Average expended PMPM - enrolled members – State	$146.01

MCO plan code	MCO plan	Average monthly disenrollment rate	Average expended PMPM disenrolled members	Average expended PMPM enrolled members	Average monthly number of disenrolled members	Total enrollment
		27.52%	$156.23	$143.68	21,637	27,928
		12.26%	$163.74	$150.59	88,507	134,356
		10.32%	$228.35	$210.01	78,141	125,823
		10.89%	$168.81	$155.25	25,655	40,459

MCO Fraud, Waste and Abuse

- Monitor your MCO's closely
- Use Insurance Fraud Manager to document audits
- The fraud is different from traditional Fee for Service so traditional SURS profiles don't work
- Provider fraud is still happening, it's just the MCO's responsibility
  - Provider fraud inflates the negotiated rates – make sure you still monitor it

Key Takeaways

FICO covers three key activities:

- Detection
  - Powerful analytic models that find known and unknown fraud types
  - Claims are scored with reason codes for score
  - Claims rescored as more data emerges
- Action
  - Focus attention on highest scoring claims
  - Pay, pend, deny claims
  - Open investigations based on provider or patient.
- Investigation
  - Quickly drill to related claims by patient or provider
  - Gather data to store for recovery or prosecution

Customer Business Benefits

Benefit	Details
Detect More Fraud and Stop Fraud rings	Detects fraud rings that are not obvious to traditional rules-based systems
Improve Operational Efficiencies	Prioritizes investigations based on score of Link Analysis
Reduce False Positives	Includes an additional check against initial predictive rules and predictive-based alerts
Grow Customer Satisfaction	Streamlines process of clearing alerts (AML, claims, etc.)
Gain Financial Benefits	Provides real cost savings in fraud loss + improved screening and investigation efficiencies and improves overall customer experience

THANK YOU