



Financial Services Presents:

# Predictive Modeling for Claims: Strategies for Defusing Claim Losses

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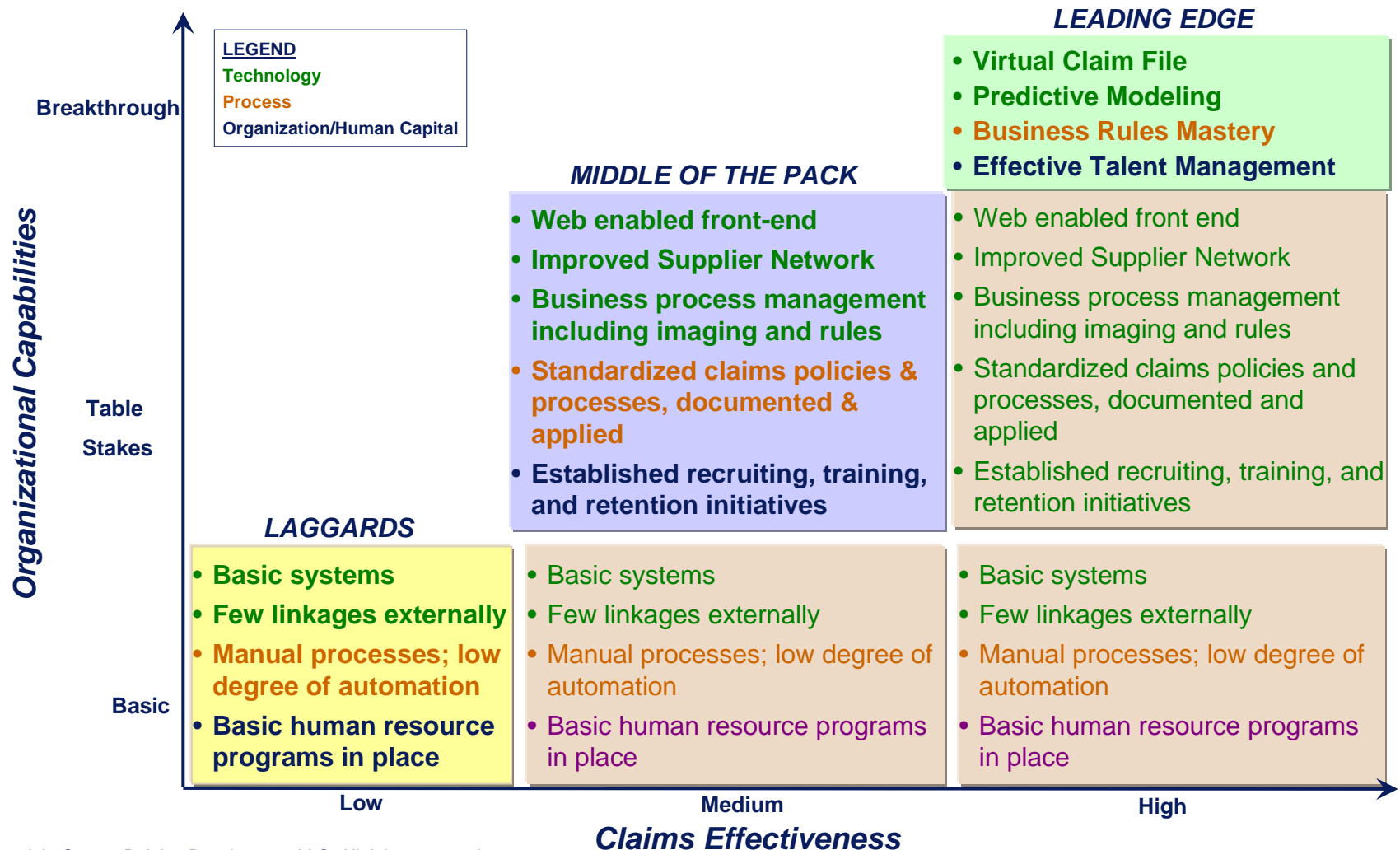
# Agenda

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- Introduction
- State of the Industry
- Applying Science to the Art of Claims
- Claims Modeling – A Technical Point of View
- Converting Insight to Action
- Questions and Answers

# State of the Industry

Leading, world-class claims organizations implement organizational capabilities that position them to achieve breakthrough performance.



# Polling Question #1

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Where do rank your claims capabilities (or those of your claims service provider) relative to the three categories described?

A.Lagging

B.Middle of the Pack

C.Leading

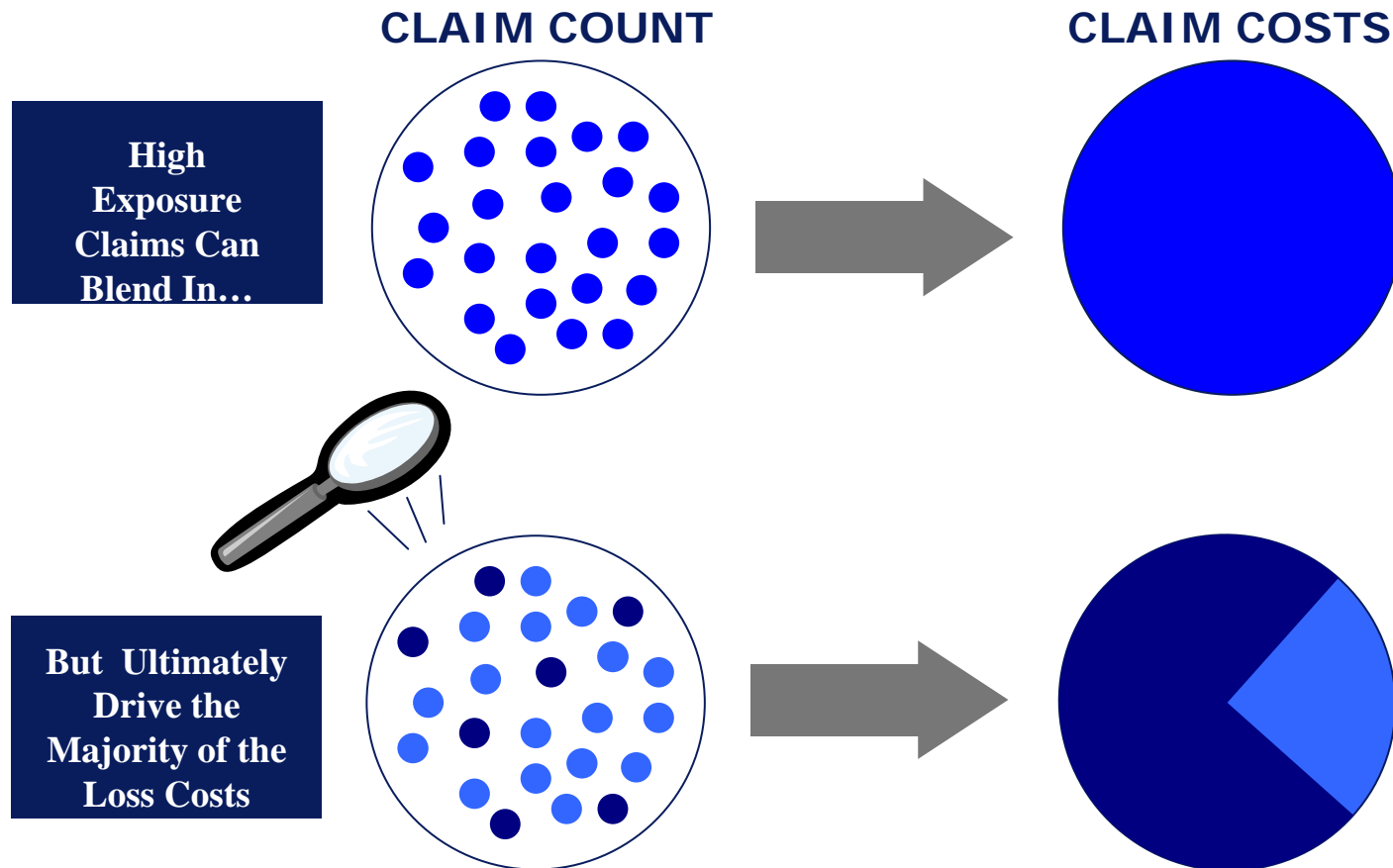
D.Don't know/Not Applicable

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# APPLYING SCIENCE TO THE ART OF CLAIMS

# Loss Cost Segmentation

Typically, a minority of the claims drives a significant portion of loss costs. The persistent challenge is to QUICKLY identify the adverse claims segment and take decisive action to minimize the exposure.



# Polling Question #2

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What percent of total claim costs do you believe is represented by high cost claims?

A. 50% of claims represent 60% of claim costs

B. 35% of claims represent 60% of claim costs

C. 20% of claims represent 60% of claim costs

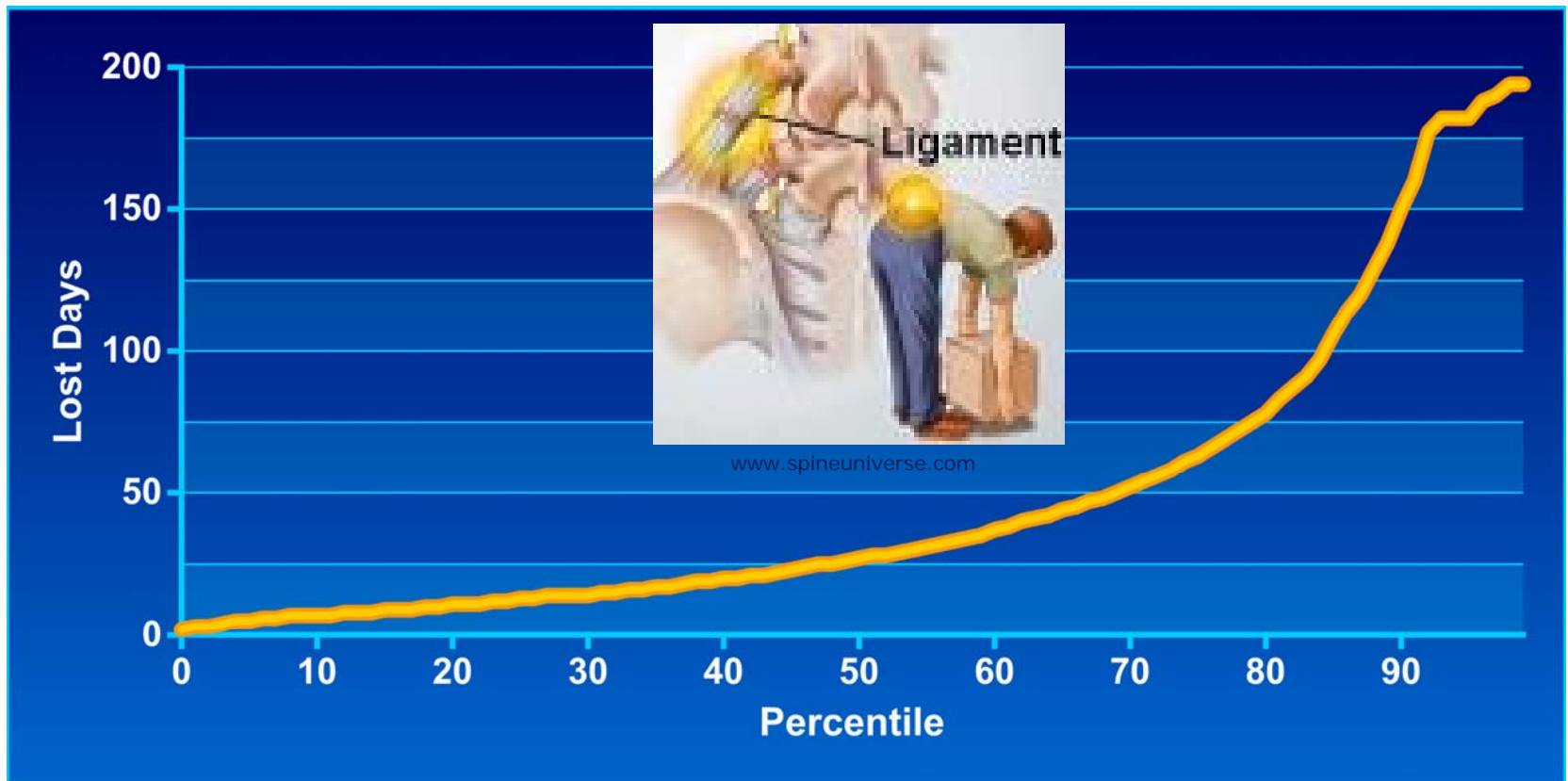
D. 10% of claims represent 60% of claim costs

E. Don't know/Not Applicable

# Sprain of Back

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There is a wide and varying distribution of claim outcomes for identical type of injury coding.

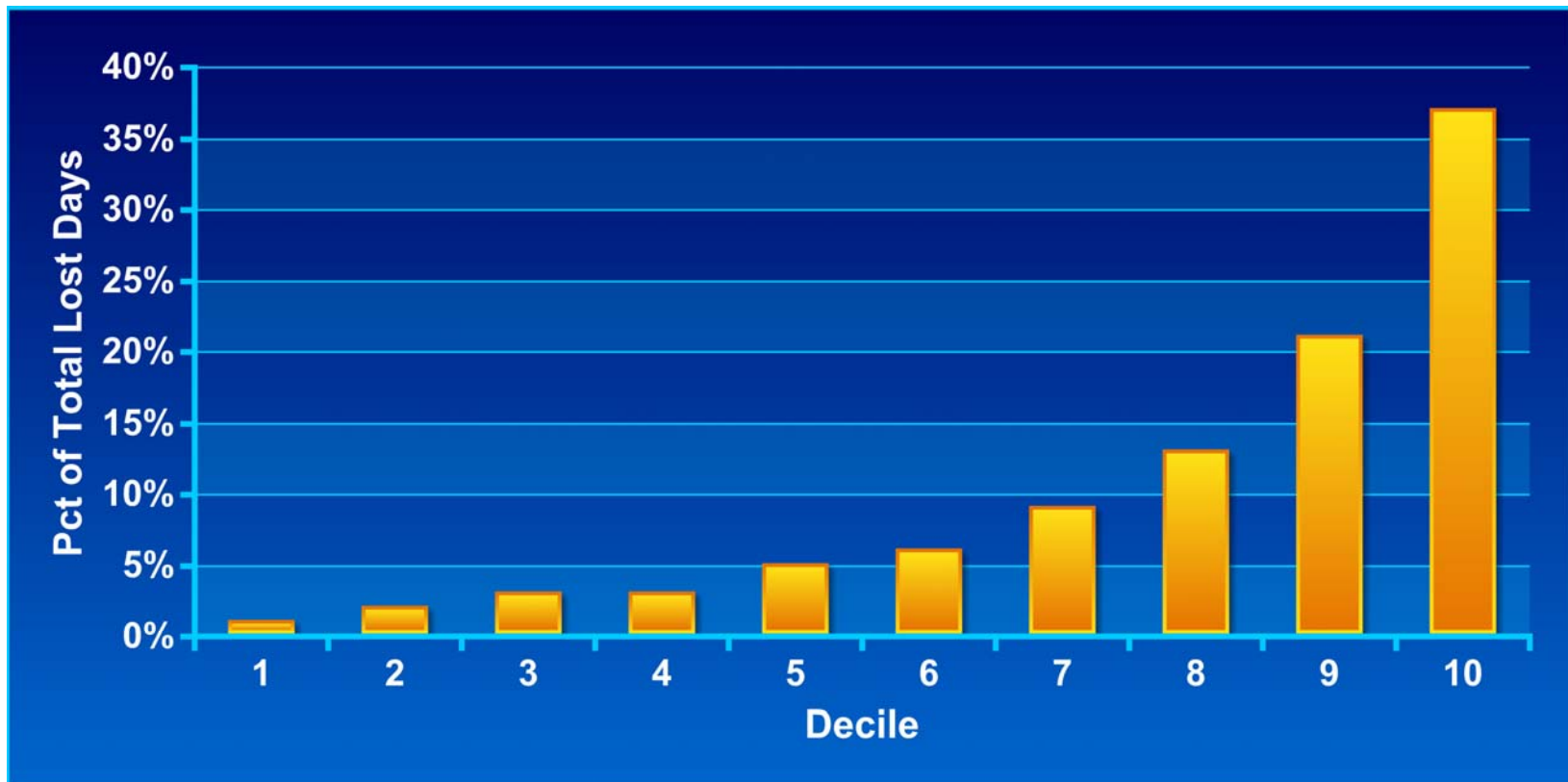


# Sprain of Back

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Worst 20% = 60% of Costs

A relatively small percent of claims represent a disproportionate amount of claim costs.



# Identifying High Exposure Claims

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## The Traditional View

Information provided in the First Notice of Loss is evaluated by a Claims Supervisor when assessing claim exposure and assigning the claim. Below are three soft-tissue back claims:

### Carol

- Female
- 38 years old
- File Clerk
- 1 prior claim
- Employed 6 years
- Network doctor

### Bill

- Male
- 32 years old
- Welder
- 3 prior claims
- Employed 2 years
- Out of network Dr.

### Joe

- Male
- 42 years old
- Mechanic
- No prior claims
- Employed 3 years
- Network doctor

# Identifying High Exposure Claims

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## The Deeper View

Adding non-traditional data elements from multiple sources adds insight and perspective when evaluating the potential exposure of a claim.

### Carol

- Female
- 38 years old
- File Clerk
- 1 prior claim
- Employed 6 years
- Network doctor

- Lives 42 miles from job
- Married with working spouse
- 3 children
- (-) Financial stability
- Doctor has adverse treatment patterns

### Bill

- Male
- 32 years old
- Welder
- 3 prior claims
- Employed 2 years
- Out of network Dr.

- Lives 4 miles from job
- Single
- No children
- (+) Financial stability
- Doctor has average treatment patterns

### Joe

- Male
- 42 years old
- Mechanic
- No prior claims
- Employed 3 years
- Network doctor

- Lives 16 miles from job
- Married (spouse not employed)
- 2 children
- Avg. financial stability
- Doctor has favorable treatment patterns

# Factors Influencing Claim Outcomes

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Claims are inflated beyond appropriate levels based on two factors: medical and behavioral.

Data mining, predictive modeling and business rules are tools that help identify claim risk factors and provide guidance on how to most effectively manage claims.

## Medical Factors

- Co-morbidity
- Misdiagnosis
- Improper treatment
- Over-treatment
- Complexity

## Behavioral Factors

- Financial
- Lifestyle
- Occupational
- Societal
- Medical orientation
- Entitlement

# Polling Question #3

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What is the primary factor that you use to identify potential high cost claimants with similar types of injuries?

- A. Medical complexity
- B. Co-morbidities
- C. Psycho-graphic (“behavioral”)
- D. Physician treatment patterns
- E. Don’t know/Not applicable

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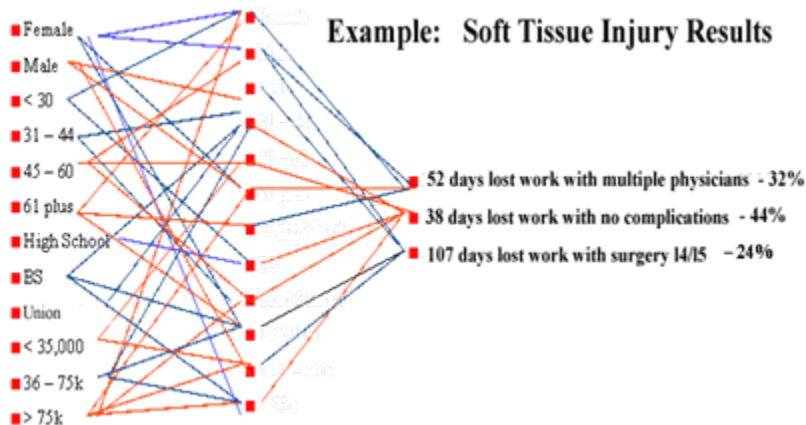
# CLAIMS MODELING – A TECHNICAL POINT OF VIEW

# Data Mining & Predictive Modeling



## Data Mining:

a process, which utilizes a number of mathematical techniques, to analyze large quantities of internal and external data, in order to unlock previously unknown and meaningful business relationships. Data mining lays the foundation for predictive modeling.



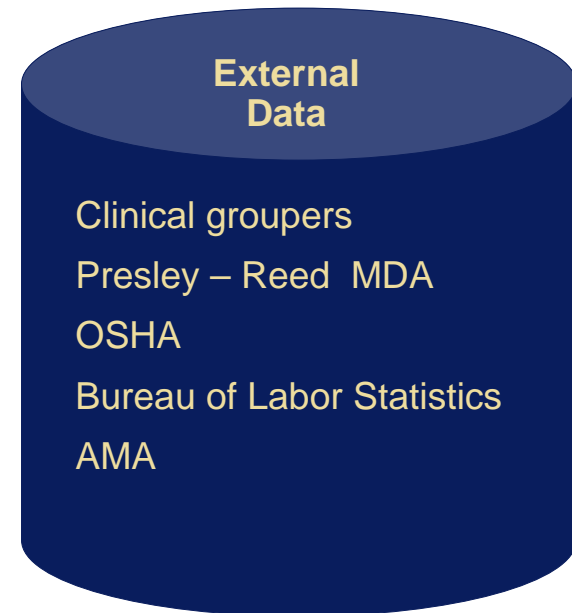
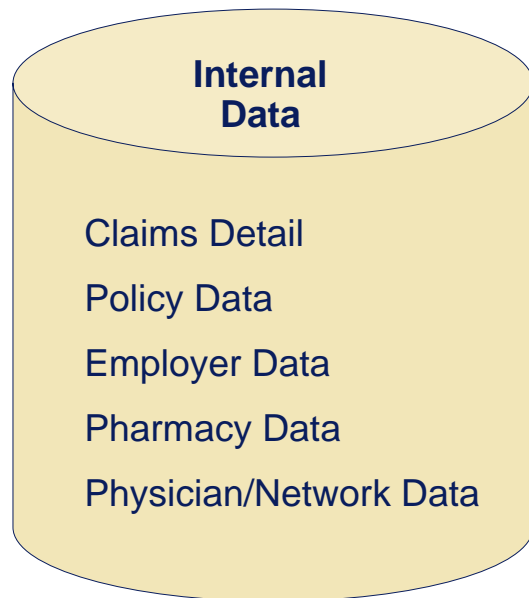
## Predictive Modeling:

the application of data mining techniques and algorithms to produce a mathematical model that can effectively predict and segment future events

# The Key is the Data

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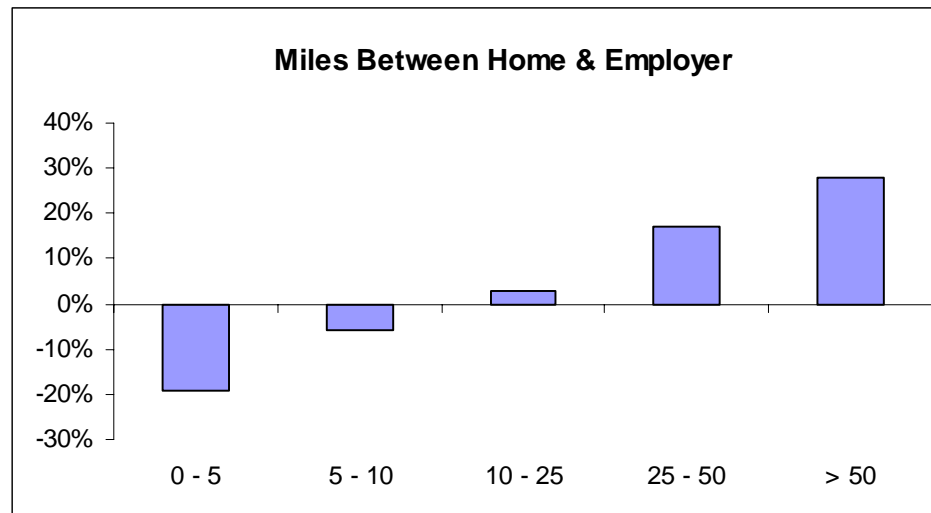
The most robust claims predictive models do not focus on just one category of characteristics. They include all – medical, psycho-graphic, co-morbidity, and other related risk characteristics.



# Sample Variable Analysis

The variable analysis (sometimes referred to as the univariate analysis) will provide a variable by variable examination of the relationship to claimant level results.

<b>Miles Home &amp; Employer</b>	<b>Number of Claimants</b>	<b>Claimants Percent</b>	<b>Percent Days from Expected</b>
0 - 5	17,256	17%	-19%
5 - 10	28,341	28%	-6%
10 - 25	34,769	35%	3%
25 - 50	13,421	13%	17%
> 50	6,438	6%	28%



# A Prototypical Claims Predictive Model

~ 40 - 50 Variables

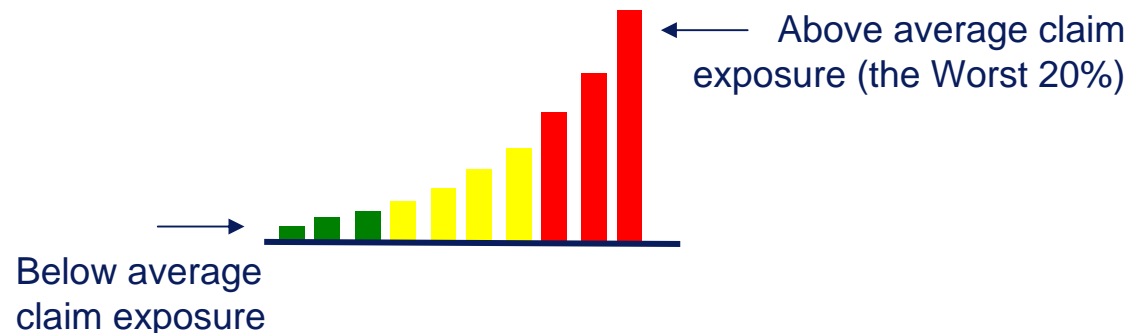
## Examples

- Claimant age
- Marital status
- Prescription drug patterns
- Injury date / time
- Distance to attorney
- Change in physician
- Physician type
- In network / out of network
- Household income
- Credit history
- Years of employment
- Salary category
- Obesity / Diabetes Flag
- Ratio of AWW to comp rate

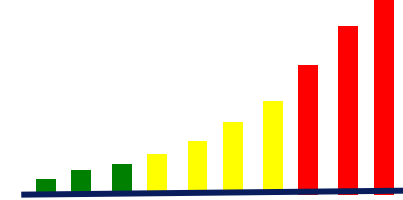
## Sample Model Equation

$$w_1(\text{JobClass}) + w_2(\text{Emp Distance}) + w_3(\text{In-Out Network}) + w_4(\text{HH Income}) + w_5(\text{Wage-Comp Ratio}) + w_6(\text{Clmt Age}) \dots$$

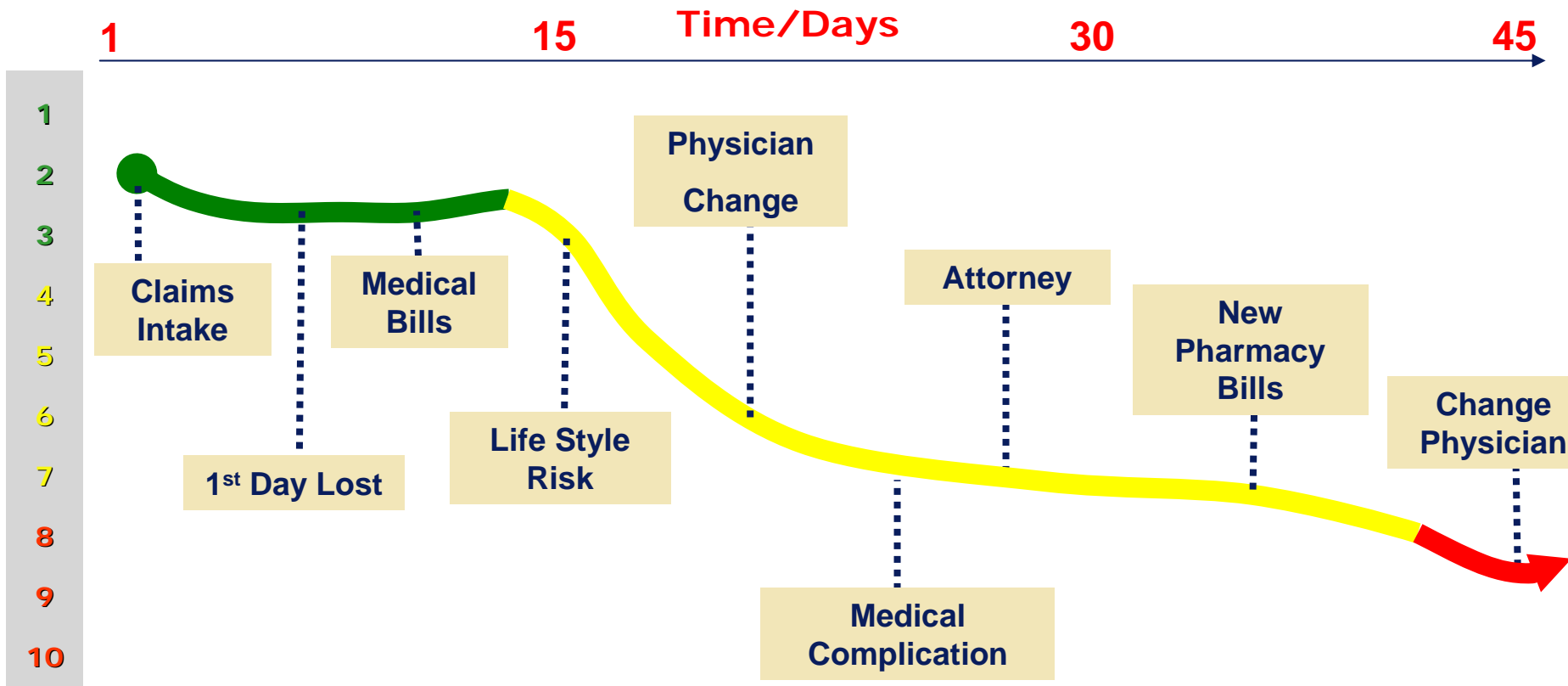
Score



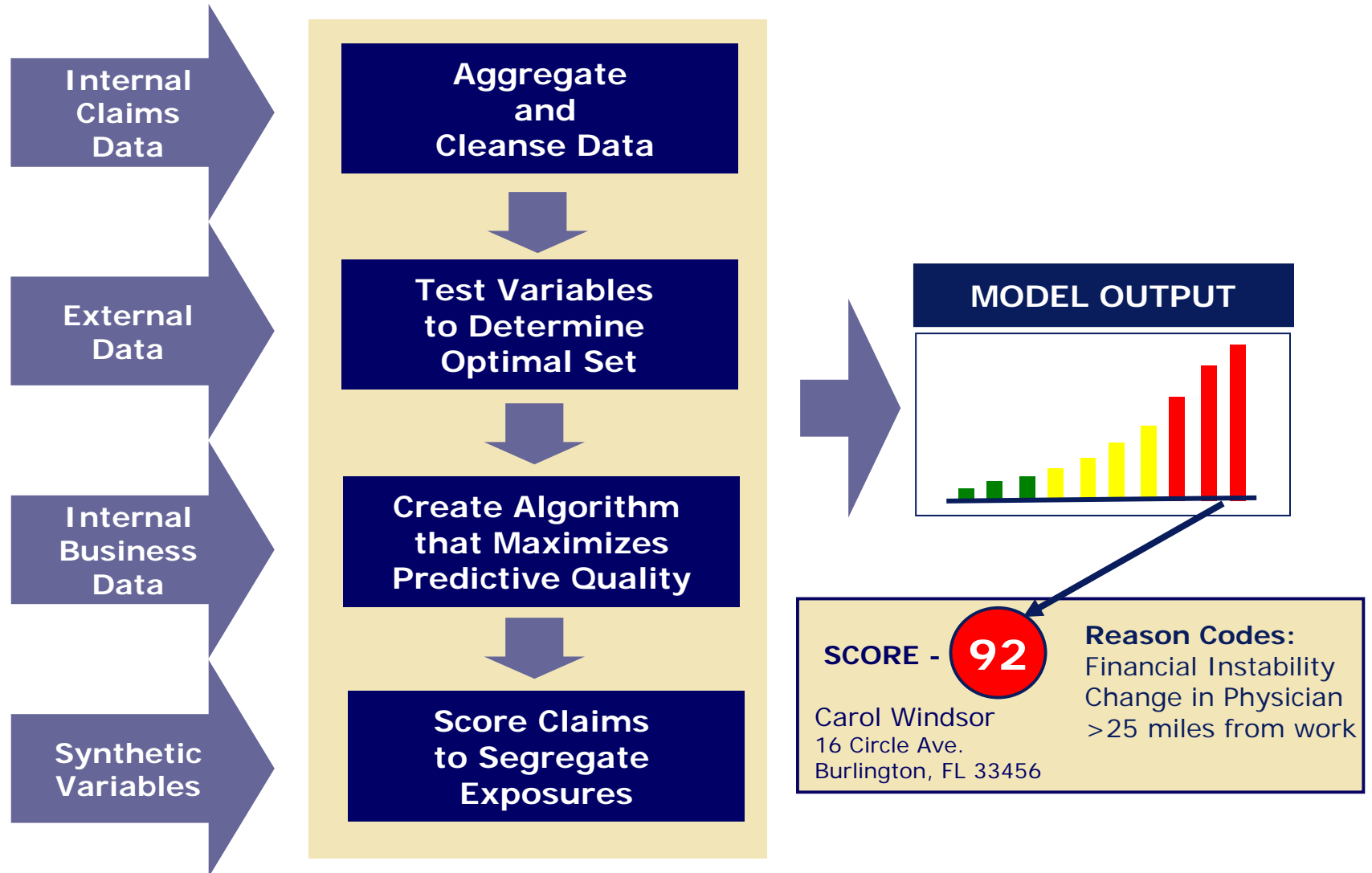
# Continual Scoring through Time



The score generated at claim intake is updated and refined as new data becomes available enabling an ongoing assessment of claim exposure.



# Predictive Modeling in Summary

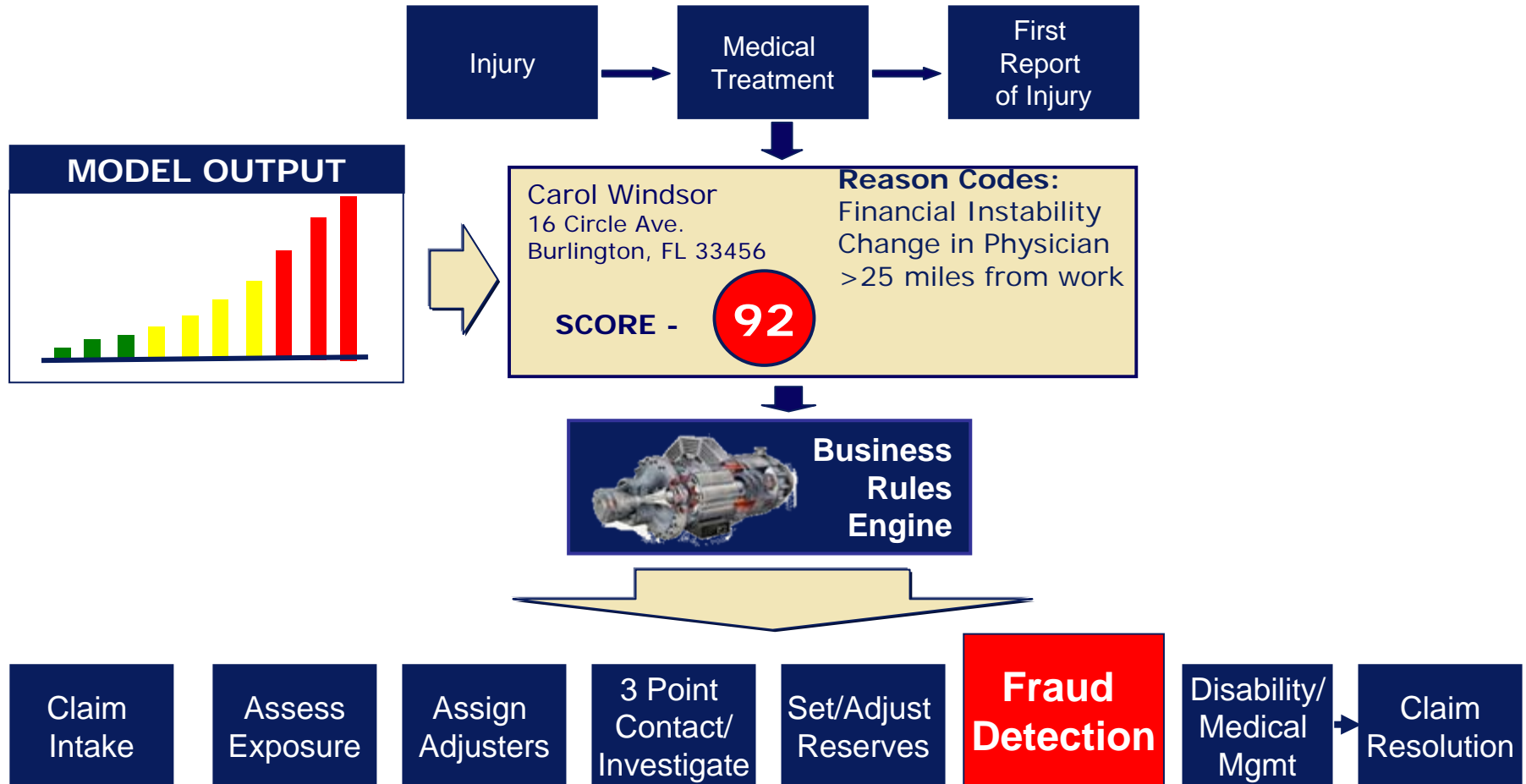


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# CONVERTING INSIGHT TO ACTION

# Driving Consistency through Business Rules

Predictive Model output can be channeled to a business rules engine that dictates proven, leading practices be performed by the claim handler, promoting consistent action, every time.



# Defining Soft Fraud

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**Hard fraud** (identification of criminal activities or “staged” events) has typically been the focus of criminal and insurance company resources, yet typical assumptions are that **soft fraud** results in **3-4 times** greater loss than hard fraud.

## SOFT FRAUD

- Exaggeration, embellishment or opportunistic claims situations
- Deliberate or subtle lagging of claims resolution
- Not necessarily the result of egregious criminal intent
- Typically by individuals without criminal history or criminal profiles

# Polling Question #4

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On average, what % of claim payments do you think are related to *soft* fraud?

A. Less than 5%

B. 6-15%

C. 16-25%

D. Over 25%

E. Don't Know/Not Applicable

# Soft Fraud: A Pervasive Problem

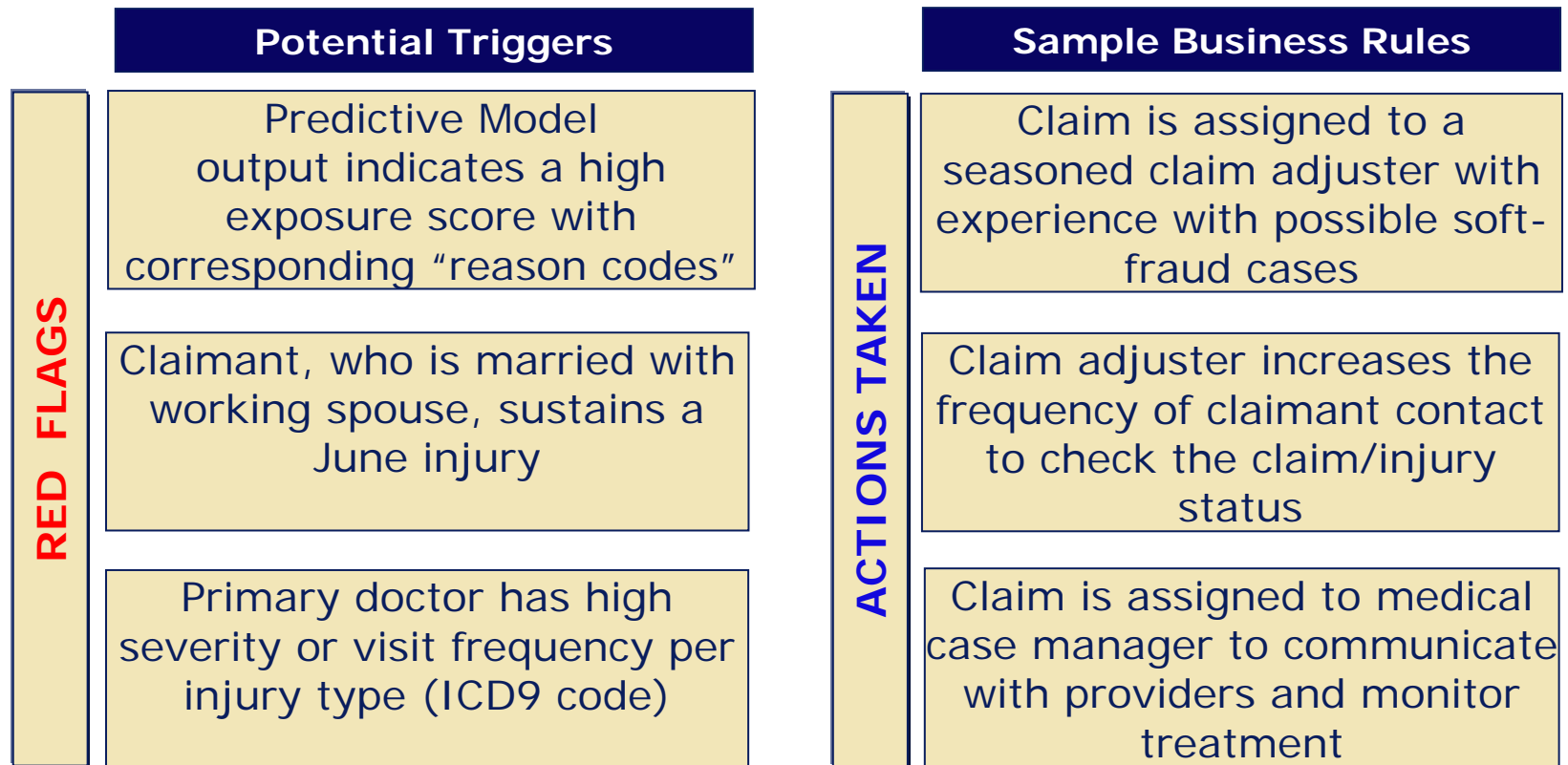
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- Recent surveys show more than 25% of respondents think it is acceptable to inflate insurance claims; even more believe it is reasonable to do so to recover deductibles
- A similar number felt it was acceptable to distort policy information to reduce the amount of policy premium owed

# Triggering Business Rules

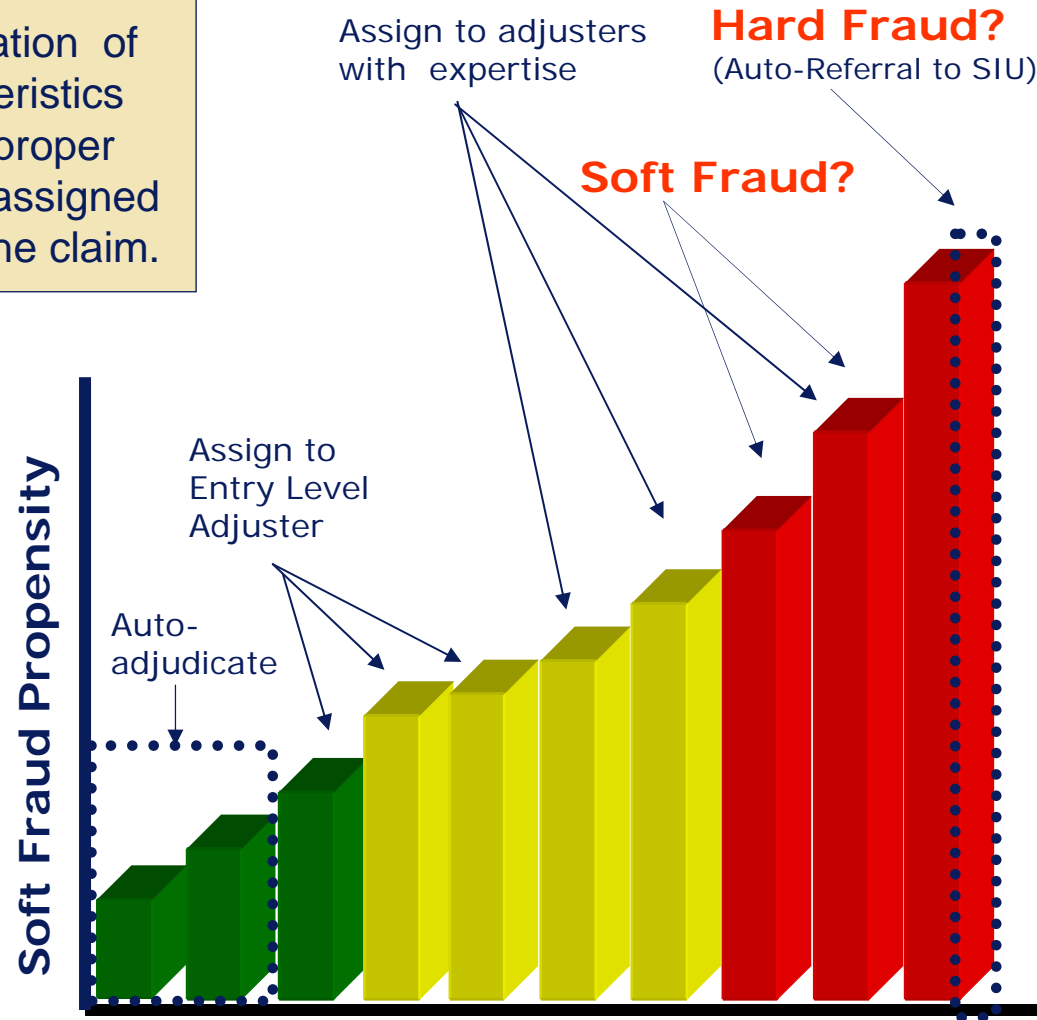


Business rules apply data analytics and logic to develop automated triggers that prompt an automated task or leading practice to be performed.



# Applying the Right Resources to the Right Claims

*Timely* identification of claims characteristics allows for the proper resources to be assigned at the outset of the claim.



# Sample Claim Work Station Screen

Carol Windsor  
16 Circle Ave.  
Burlington, FL 33456

**Claim #:** 2006-3456-90807

**Policy #:** 476-05-40-90-0002  
**Insured:** Billings Office Supply, Inc

SIC code: 2752 – Lithographer

Description of Operations: Lithographer specializing in 3 -4 color book/periodical printing

## New Data

Employee has changed treating physician  
Located 42 miles from work/home  
Life Style Risk Indicators  
Financial Influencers

**Total Reserve: \$24,500**

**Indemnity: \$16,000**

**Medical: \$8,500**

### CLAIM TRIAGE SYSTEM

92

#### Reason Codes

- Financial Instability
- Change in physician
- >25 miles from employer
- Co-morbidity: High blood pressure



### Medical Action Steps:

- Assign to Medical Case Manager
- Obtain medical causal-relationship.
- Identify treatment patterns for high blood pressure.

### Adjuster Advisory:

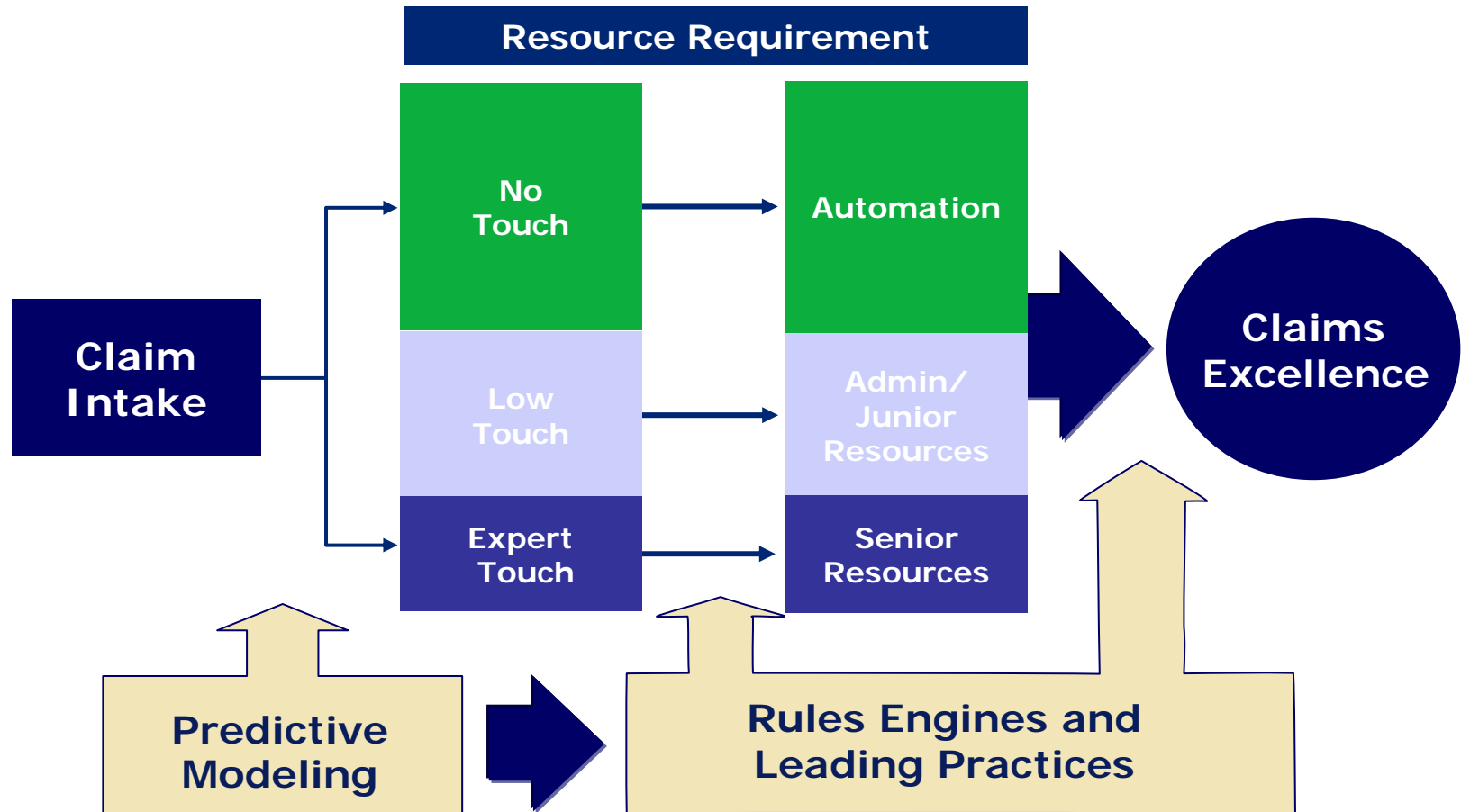
- Obtain recorded statement from claimant
- Increase frequency of claimant contact
- Obtain Case Manager update at next diary

### Supervisor Advisory:

- Diary claim for 30 day status review
- Strongly consider Special Investigative Unit (SIU) referral

# Achieving Excellence

When integrated and applied to a comprehensive approach to claims management, predictive modeling, business rules and leading practices drive best in class results.



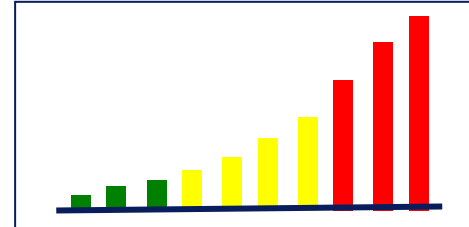
# Driving Results

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## Process Objectives:

- Optimally deploy resources
- Apply the established best practice, every time
- Standardize triage through automation
- Minimize claim duration balanced with quality of care
- Identify and address soft fraud propensity
- Identify explosive medical-only claims
- Reserving guidance
- Real-time claim escalation
- System driven quality assurance

## MODEL OUTPUT



## Financial Metrics:

- Reduced claim durations
- Lower loss cost per claim
- Increased customer satisfaction
- Cost per case by Dr and ICD9 code
- Increased worker productivity
- Reduced claim administration costs

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# Questions & Answers

Join us May 23<sup>rd</sup> at 2 PM EDT as  
our Financial Services group  
presents:

**Getting it Right with  
Underwriting: Predictive  
Modeling Strategies for  
Insurers in a Softening  
Market**

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Thank you for joining  
today's webcast.

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