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# ARTIFICIAL INTELLIGENCE IN INSURANCE

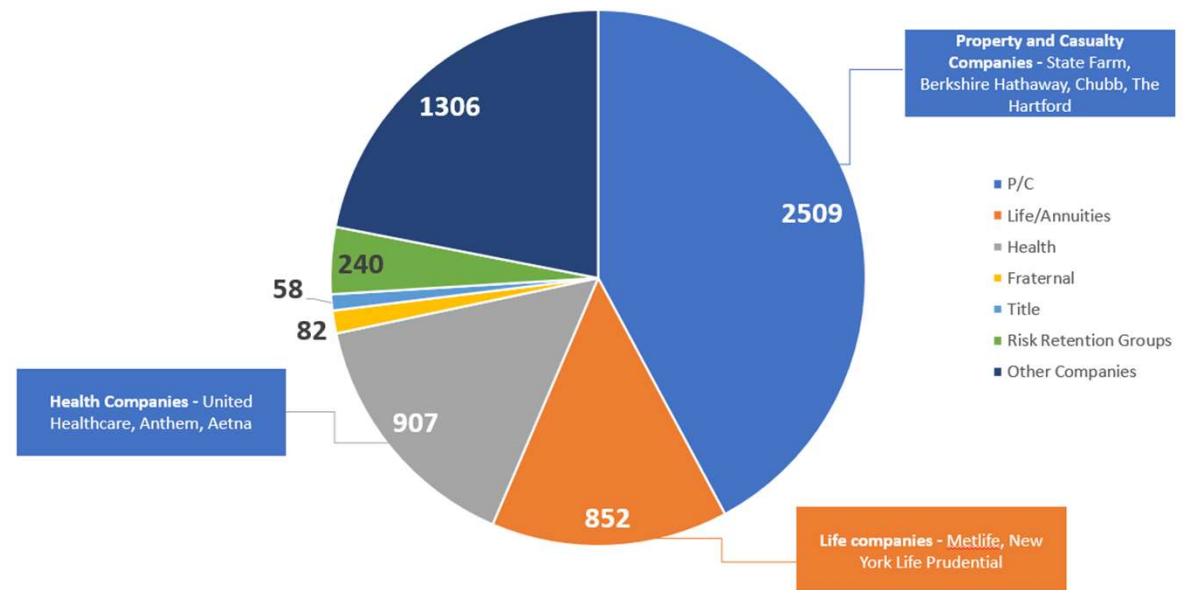
CREATING EFFICIENCIES TO SOLVE A LABOR CRISIS

# ECONOMIC IMPACT OF THE INSURANCE INDUSTRY (2020)

There were 5,929 insurance companies in the U.S. (including territories), according to the National Association of Insurance Commissioners.

- Insurance premiums written in the United States amounted to 1.3 trillion U.S. dollars
- The insurance industry's value-added to GDP stood at 3.1 percent.
- 2.6 million of employees
- By 2030, it's estimated that 46 percent of current insurance claims and policy processing jobs in the United States will be displaced by automation

Source: Insurance Information Institute



## WHAT IS THE CRISIS IN THE INSURANCE INDUSTRY?

Nearly 400,000 employees are expected to retire from the insurance industry workforce within the next few years according to the U.S. Bureau of Labor Statistics.

# WHAT IS THE POTENTIAL SOLUTION?

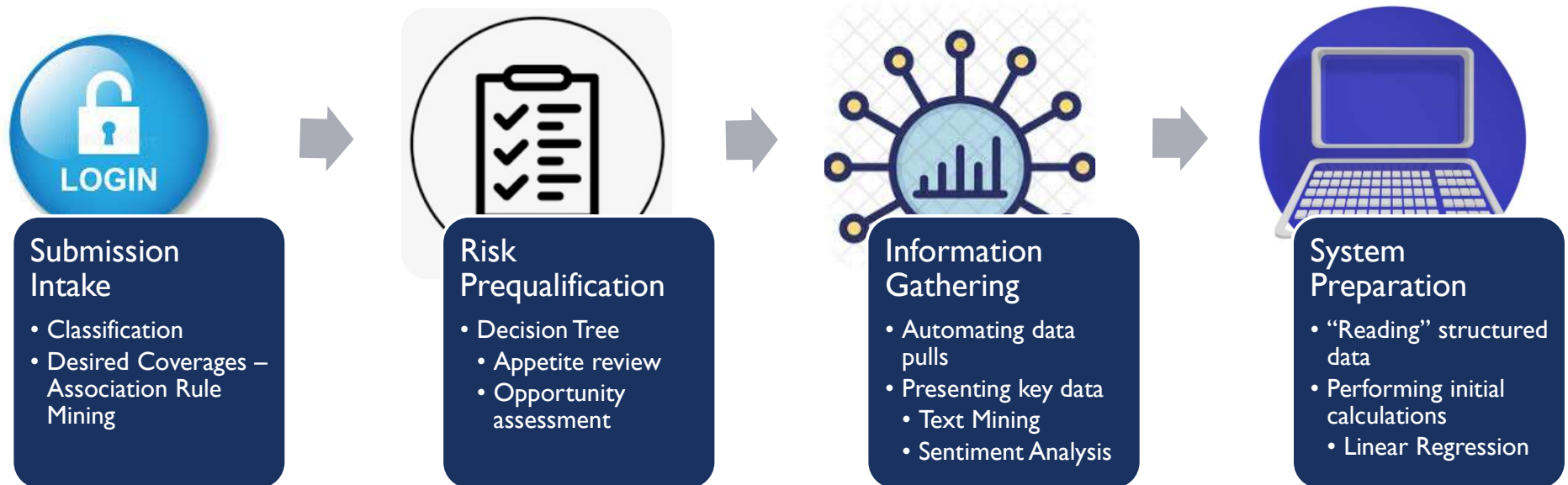
## Artificial Intelligence and Predictive Modeling Solutions In Insurance

- Underwriting Process Efficiency
- Enhancing Risk Selection
- Claims Processing

“Insurers are increasingly dependent on emerging technologies and data sources to drive efficiency, enhance cybersecurity, and expand capabilities across the organization. However, most should also focus on improving the customer experience by both streamlining processes with automation as well as providing customers service where needed and preferred.”

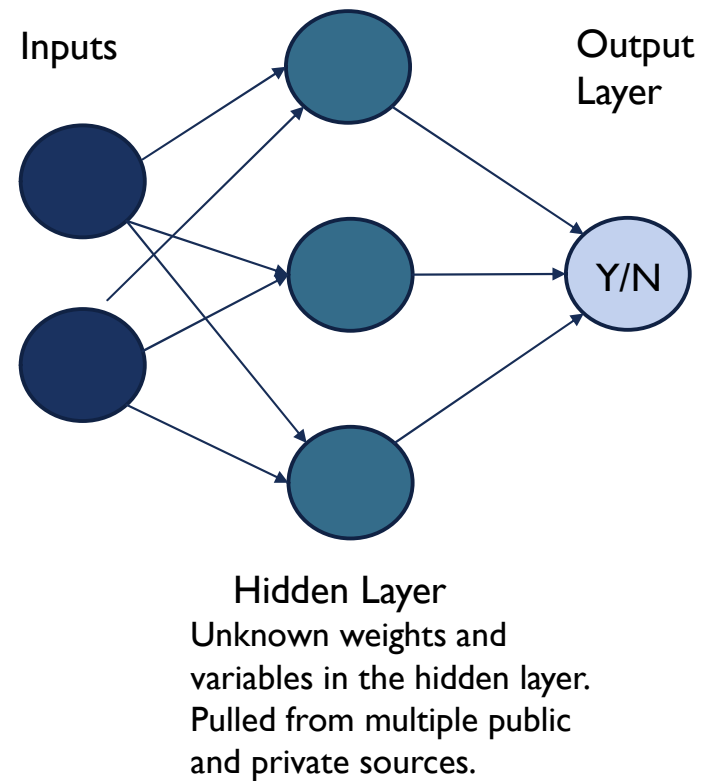
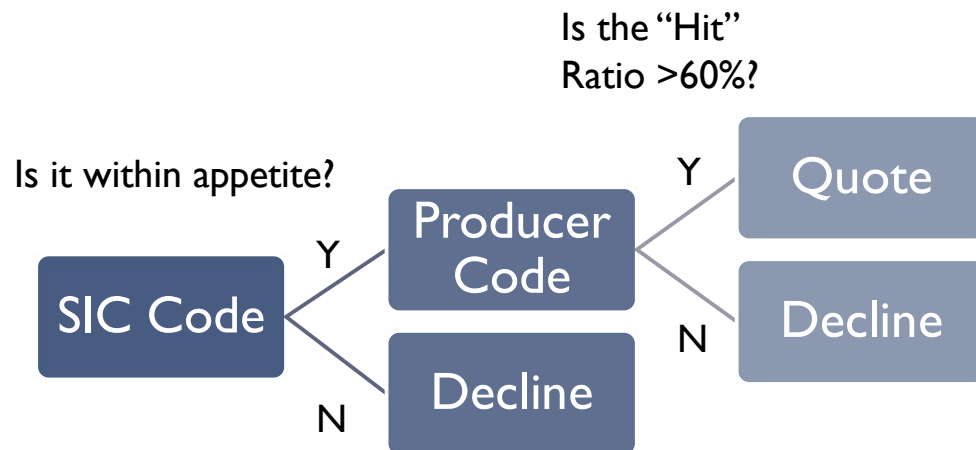
- Deloitte 2022 insurance industry outlook.

# UNDERWRITING PROCESS EFFICIENCY



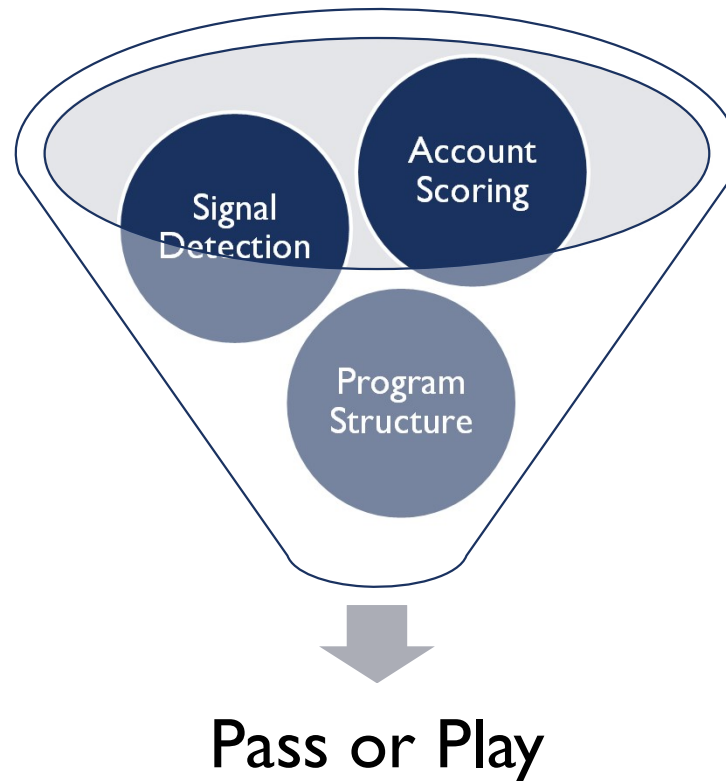
In the insurance industry, firms have primarily relied on traditional generalized linear models (GLMs) to assess and price risks. However, some firms have started to use other analytical techniques as well to create inputs to GLM. For example, decision tree analytics or non-linear techniques, such as machine learning techniques, are being used (FCA, 2016[12]).

## RISK PREQUALIFICATION EXAMPLE



# RISK SELECTION

Risk  
Selection in  
insurance is  
based on  
modeling



- **Account Scoring** is a classification of the account based upon the likelihood of winning the business and the desirability of the risk.
- **Signal Detection** is a classification of retrieved information as “bad” or “good” based upon assignment rules from the user.
- **Program Structure** is set of applied rules/terms determined from association rule mining performed upon data from prior similar risks.

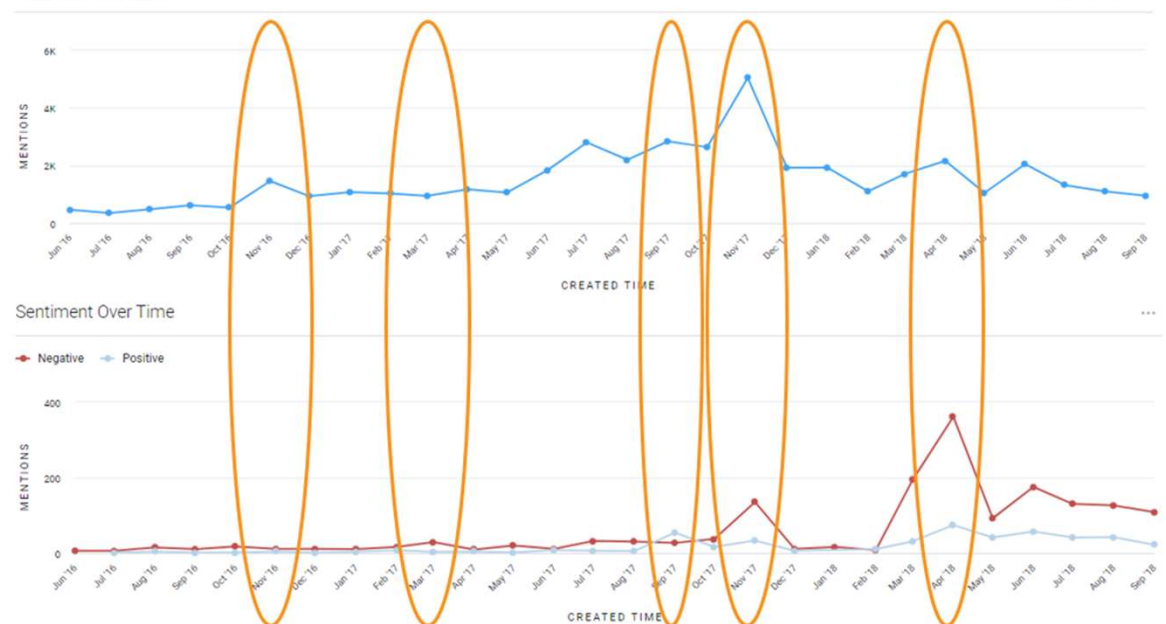


# PHARMACEUTICAL INSURED RISK SELECTION EXAMPLE

*Proton Pump Inhibitors - Mentions Since June 2016*



Mentions Over Time





# CLAIMS PROCESSING

## First Notice of Claim

- Advanced telematics data can be instantaneously captured and downloaded to trigger notification of loss(EY Americas 2019).
- Predictive modeling enables companies to identify claims that are likely to represent the greatest loss exposure and apply claim practices, business rules and experienced claims resources to manage these claims

## Claim Management

- Imaging allows loss models to be run that can determine initial payments
- .Tracking of vendor performance allows the insurance carrier to identify those vendors that provide the best experiences and outcomes.

## Fraud Detection

- Moving towards predictive systems and technology used by credit card companies and banks to detect fraud
- Sentiment analysis on recorded conversations can identify customers that are upset or committing fraud

# CATASTROPHIC MODELING

- The premiums of the many pay for the losses of the few. What happens when large events impact large numbers of individuals? Modeling determines losses and the answers(costs).

## Catastrophe Modeling Process - Hurricane

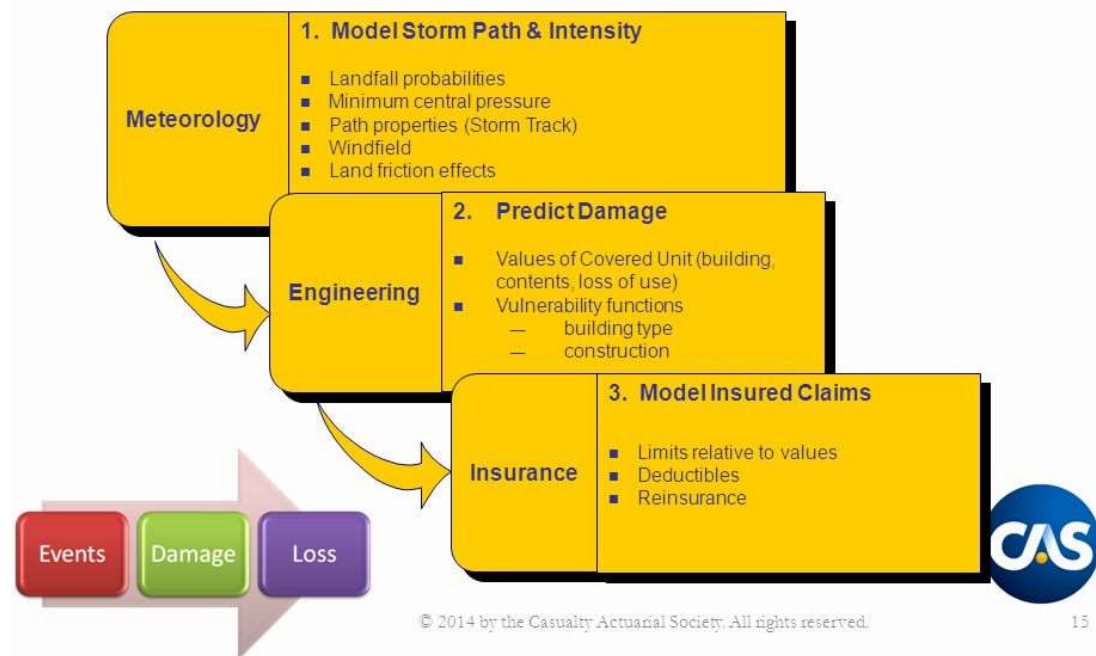


Image courtesy of: Casualty Actuarial Society

# CONCERNS WITH USING BIG DATA IN MODELING

- Unintended Discriminatory Practices.
  - There may be constitutional, legal or regulatory concerns of discriminating groups based on ethnicity, race, gender, etc. (Swedloff, 2014[19]).
- Privacy
  - The amount of individual data that is collected presents and attractive target for nefarious uses.
- Minimizing self determination
  - Business models based on digital monitoring reward or penalize certain behaviors or lifestyle choices that are deemed 'good' or 'bad' by the insurance company. (Keller, 2018)

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# THANK YOU

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