

Claims Process Reengineering and Predictive Analytics

CASE 2014

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Critical thinking at the critical time™

Agenda

- Claims Leakage Defined
- Case Study on Claims Leakage
- Monitoring & Analysis
- GLM Settlement Model
- Cluster Model to Identify Leakage

Introduction

Claim Process Reengineering - in Actuarial Context

- The actuarial starting point is generally historical claims

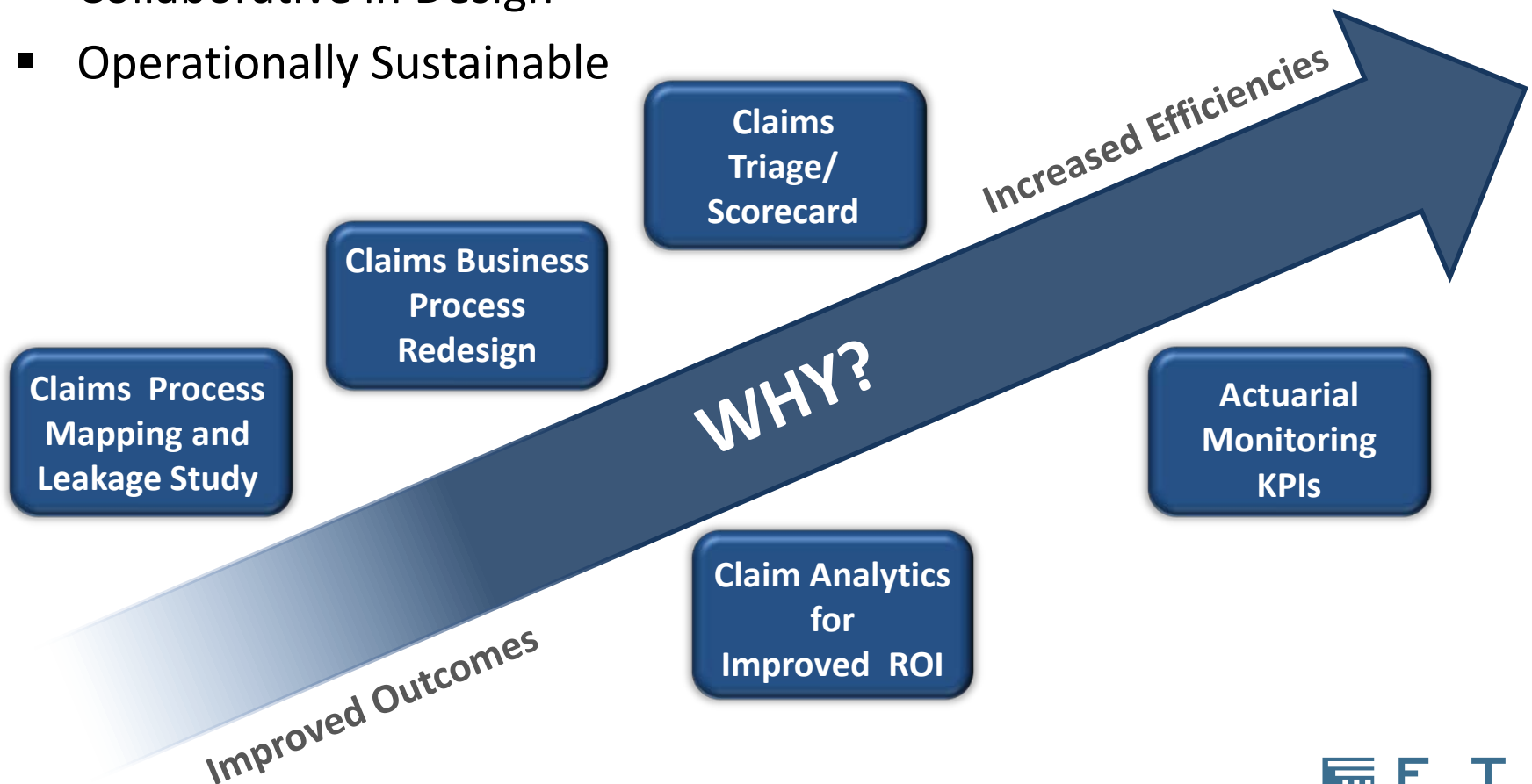
- Normally, claims process changes means:
 - Faster settlement
 - More adequate case reserves
 - Tighter controls with uncertain import

- For the bulk of the claims, not the few jumbo's and not the numerous small items, can claim process change the actual cost of the unpaid or future claims?

Claims Process Reengineering and Predictive Analytics

Combining several stand-alone Claims and Actuarial concepts to improve Total Outcome Management over Claims

- Holistic in Scope
- Collaborative in Design
- Operationally Sustainable



Claims Leakage Defined

Claim Life Cycle Components



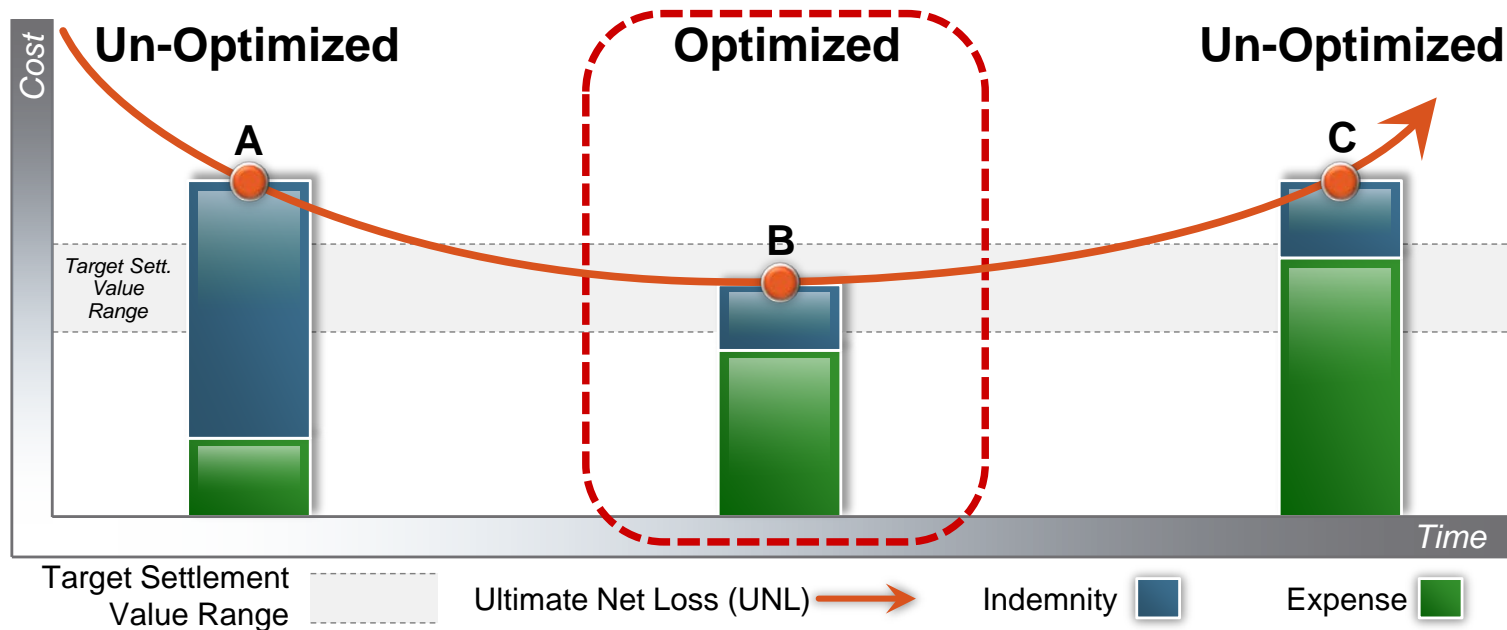
Claims Leakage is a methodology which assesses the adequacy of the claims process by performing an audit on a set of closed claims in an objective way. Shortfalls in performance of the claims function at any point in the life cycle are identified as leakage.

- Typical outputs serve as an index of claim management performance across the claim's process life cycle
 - Results are expressed as either \$\$ or % impact of failure to consider Best Practices
 - Provides baseline for targeted areas of process improvements

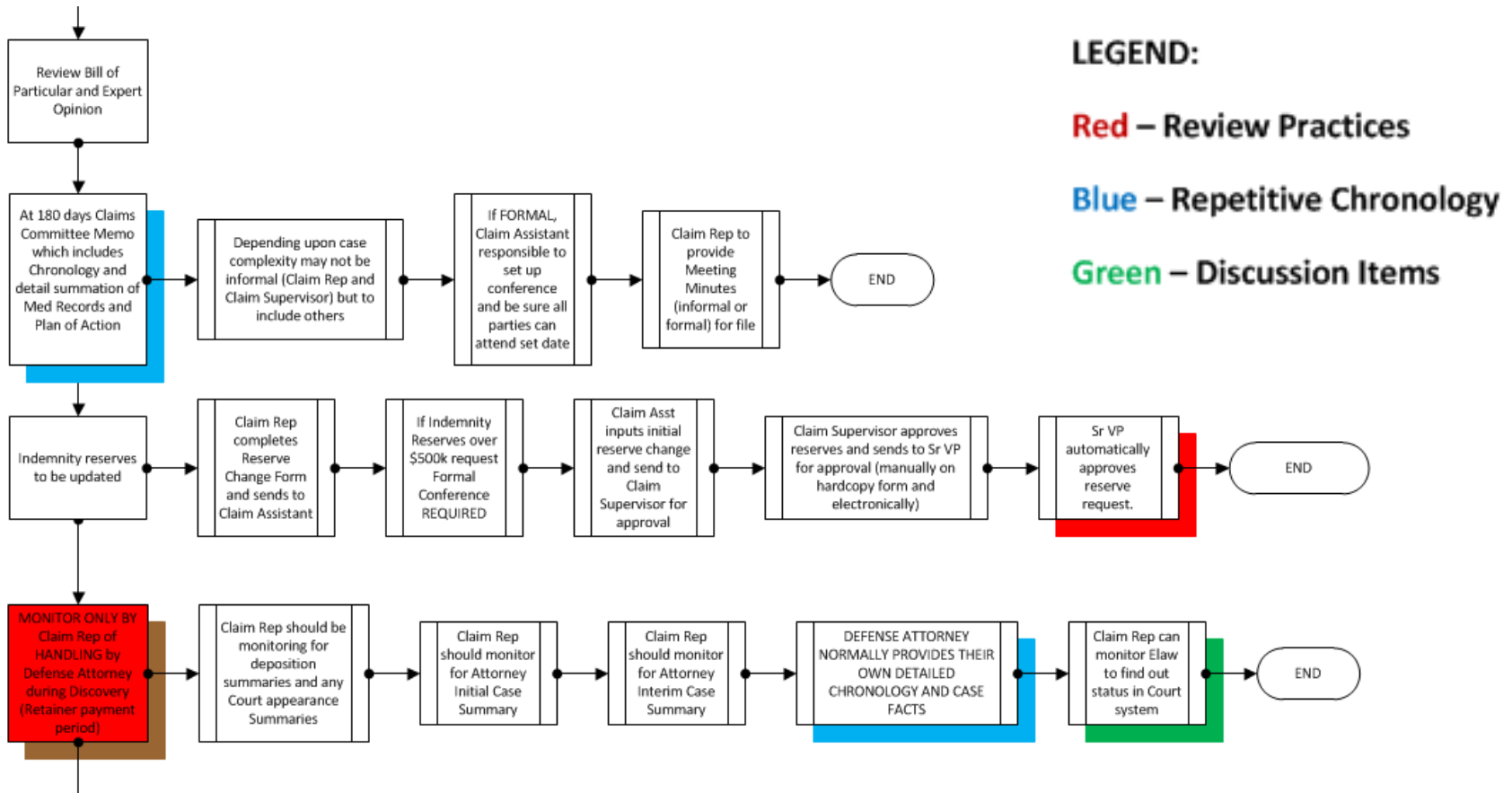
Claims Leakage Outputs and Analysis Direct Us to Areas for Redesign

- Issues of Loss Recognition
 - Alignment of facts development and, reserve and exposure recognition
 - Level of understanding of return on investment in DCC to Ultimate Net Loss
 - Scale within the general claim population – not all claims are created equal

Claims Return On Investment Model Total Outcome Management



Claims Process Mapping and Gap Analysis



- Process mapping establishes “as is” workflows
- GAP Analysis targets
 - Inefficiencies/Redundant processes
 - Potential sources of claims leakage
 - Opportunities for supply chain improvements



Claims Leakage To Evaluate Process Improvements Opportunities

- Leakage targets a review of recently closed-settled claims
 - Recent date of claim closures describe the current claims operating environment
 - Sampling is actuarially developed based upon claims and actuarial agreed upon factors

- Leakage parameters are set by consensus with Leakage team management: combination of claims, claims legal and actuarial
 - Minimize subjectivity of interpretation of leakage testing conditions
 - Agreed upon weighting of test standards across the total life-cycle of claims resolution process
 - Quality assurance includes multiple reviews of claims to further minimize subjectivity
 - Where leakage exists, specific mitigation steps are identified

Claims Leakage Applied

CLAIMANT

Age: 52

Sex: M

Claim Life Cycle: 3.2 yrs

Ultimate Let Loss: \$375,000

Description: Spinal fusion, documented liability, settlement prior to trial

Claim Life Cycle	Weight (%)	Actual (%)
Coverage Verification	5	5
Investigation	10	8.5
Case Management	20	16
Litigation Management	20	14
Reserve and Financial	10	6
Resolution/Disposition	20	17
Subro/Salvage	5	5
Reinsurance/Accounting	5	5
Data Management	5	3
	100	79.5
Leakage:	20.50%	\$76,875
Target Settlement Value:		\$298,125
Optimal Life Cycle:		2.8 years



Sample Results

Claim Life Cycle	Weight (%)	Average Actual (%)
Coverage Verification	5	3
Investigation	10	9
Case Management	20	14
Litigation Management	20	18
Reserve and Financial	10	8
Resolution/Disposition	20	10
Subro/Salvage	5	4
Reinsurance/Accounting	5	4
Data Management	5	3
	100	73
Total Average Leakage:	27%	



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	100	73
Total Average Leakage:	27%	
Leakage from Targeted Areas:	14%	



Redesign Integrates Leakage and Process Flow Improvements to Improve Results

- Lowering of Indemnity and DCC through an improved Claim ROI model
- Development of a framework for continuous improvement which supports
 - Ongoing redesign activities
 - Viral halo effect of new processes support
 - ◆ Cultural change management
 - ◆ Management ownership

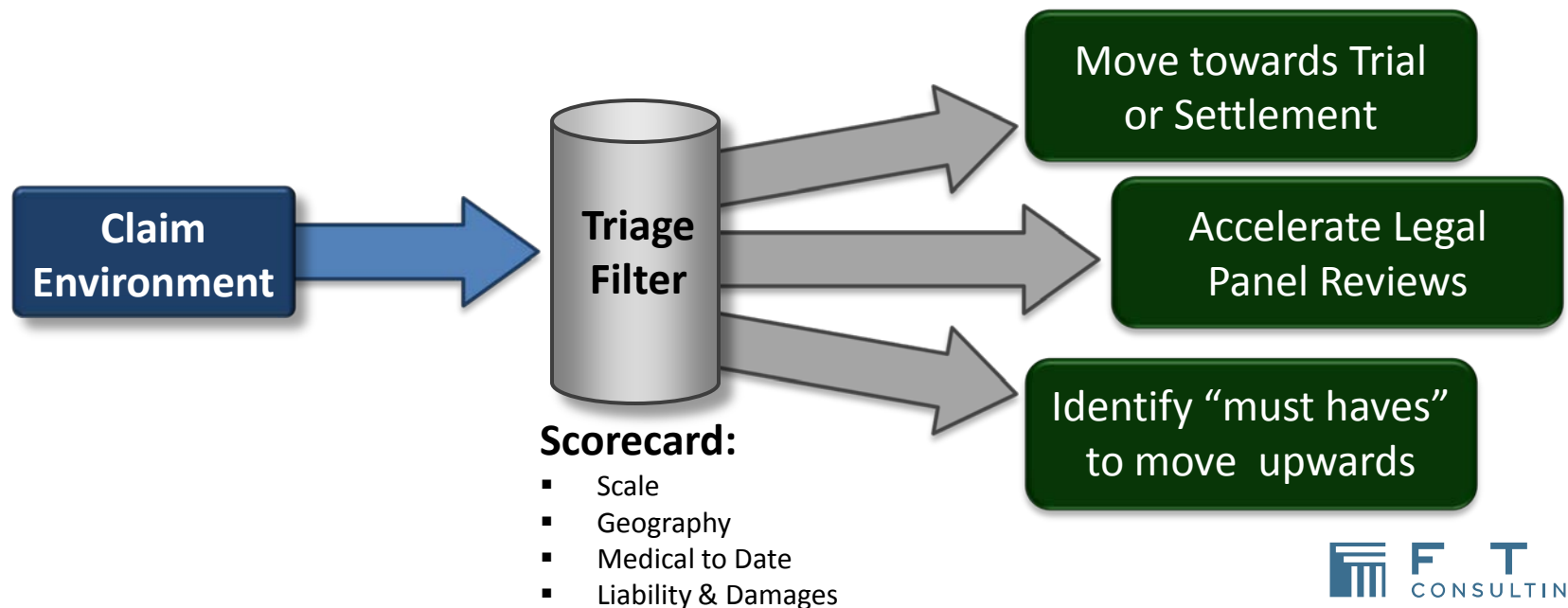


Case Study: Medical Malpractice Claims

- Leakage Study indicated large potential for improved claim outcomes.
- Many claims were not being actively managed and settling for higher values.
- Current process lacked a tiering system to escalate certain cases to claims specialists.
- Results were reported to management and a decision was made to redesign the claims process.

Redesign Integrates Leakage and Process Flow Findings to Drive Improved Total Outcomes

- Segmentation and triage of claim population to recognize High to Low opportunities
 - Uses data analysis and input from leakage analysis to identify opportunities for high total outcome resolutions
 - Tests claims sub-populations based upon common characteristics (“tranches”)



Claims Redesign – Implementation of Redesign

Claims Process workflow is targeted based upon the triage and scoring of claims

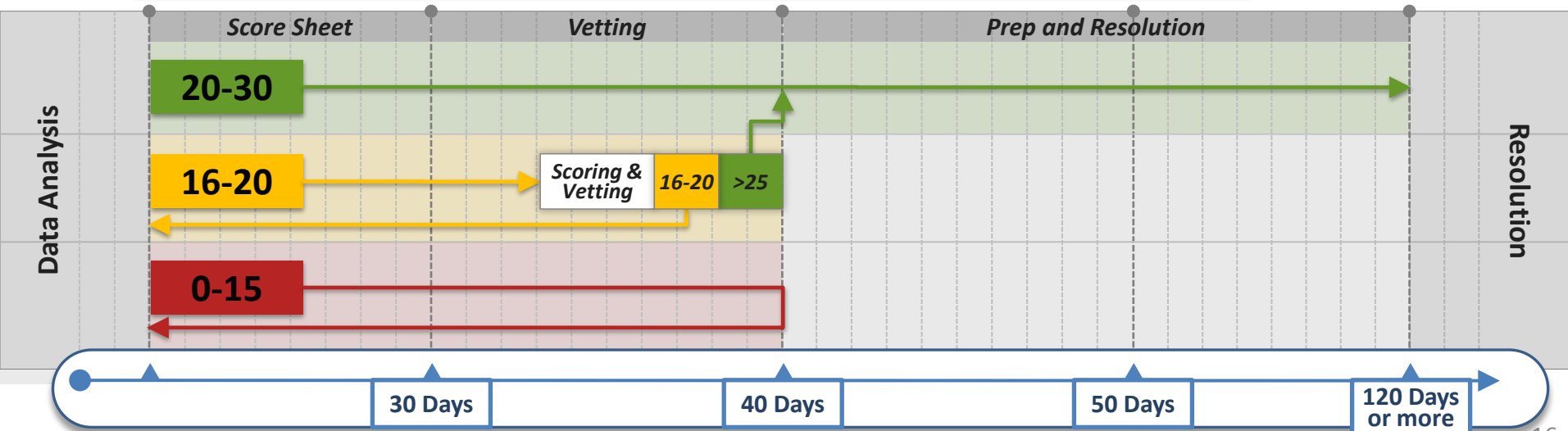
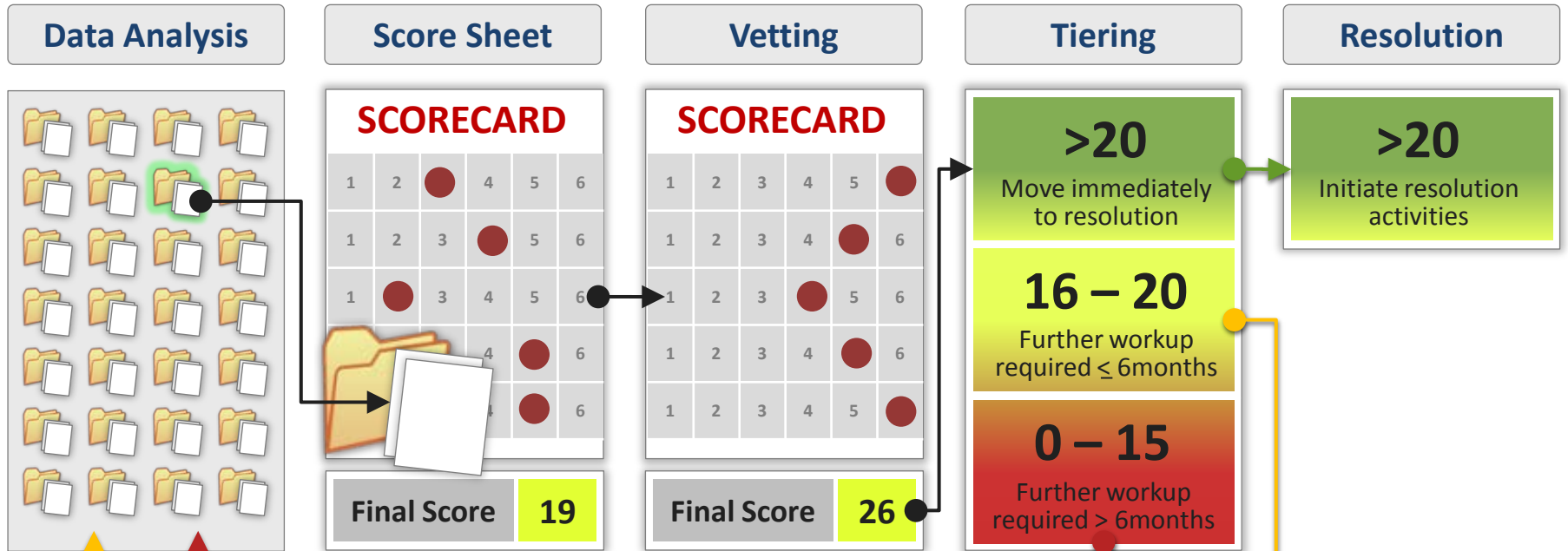
- Claim tranche populations are triaged to identify opportunities
- Each sub-population is scored by claims units on a 1 -30 numerical ranking
- Claims with scores above 20 are moved to newly created Claims Resolution Specialist to resolve
 - Scores support claim readiness for resolution
 - Triage supports likelihood of success in negotiations

CATEGORY	1	2	3	Score
Coverage:				10
Value:	undetermined	determined		2
Litigation stage:	pre EBT	Pre NOI	Post NOI	3
File Completeness:	lacks many deps or reviews	lacks one dep or review	all deps & reviews in	3
Insured as target:	peripheral	co-target	target	3
Liability:	minimal	moderate	high	3
Stay:	yes	lifted	none	3
Dispository Motion:	pending/appeal		denied or not an issue	3
Score:				Total: 30

(1)10 - 1 = Approval Unlikely,(5) = 50/50 Approval, (10) 10 = Approval Not Required

	Jury Verdict		Settlement		
Def atty values as	Insured:	JV Low	JV High	SV Low	SV High
	Globally:	JV Low	JV High	SV Low	SV High
Comments:					
A score of 30 would indicate a high probability that case could be moved.					
A score of 10 would indicate that this would not be a case to attempt to move.					

Redesign Triage and Resolution Process





Actuarial Contribution

- Supporting the initial studies
- Assist in recommendations to management
- Adjusting reserve analyses
- Monitoring progress/Evaluating Results

Impact of Claims Redesign on Reserving

These redesign efforts will have an impact on reserving, and can be accounted for in different ways during the life of the project:

After Leakage Study, Before Implementation

- Once the company has agreed to implement changes, the future favorable impact on reserves can be estimated from the leakage study and have an impact on the reserve estimates.

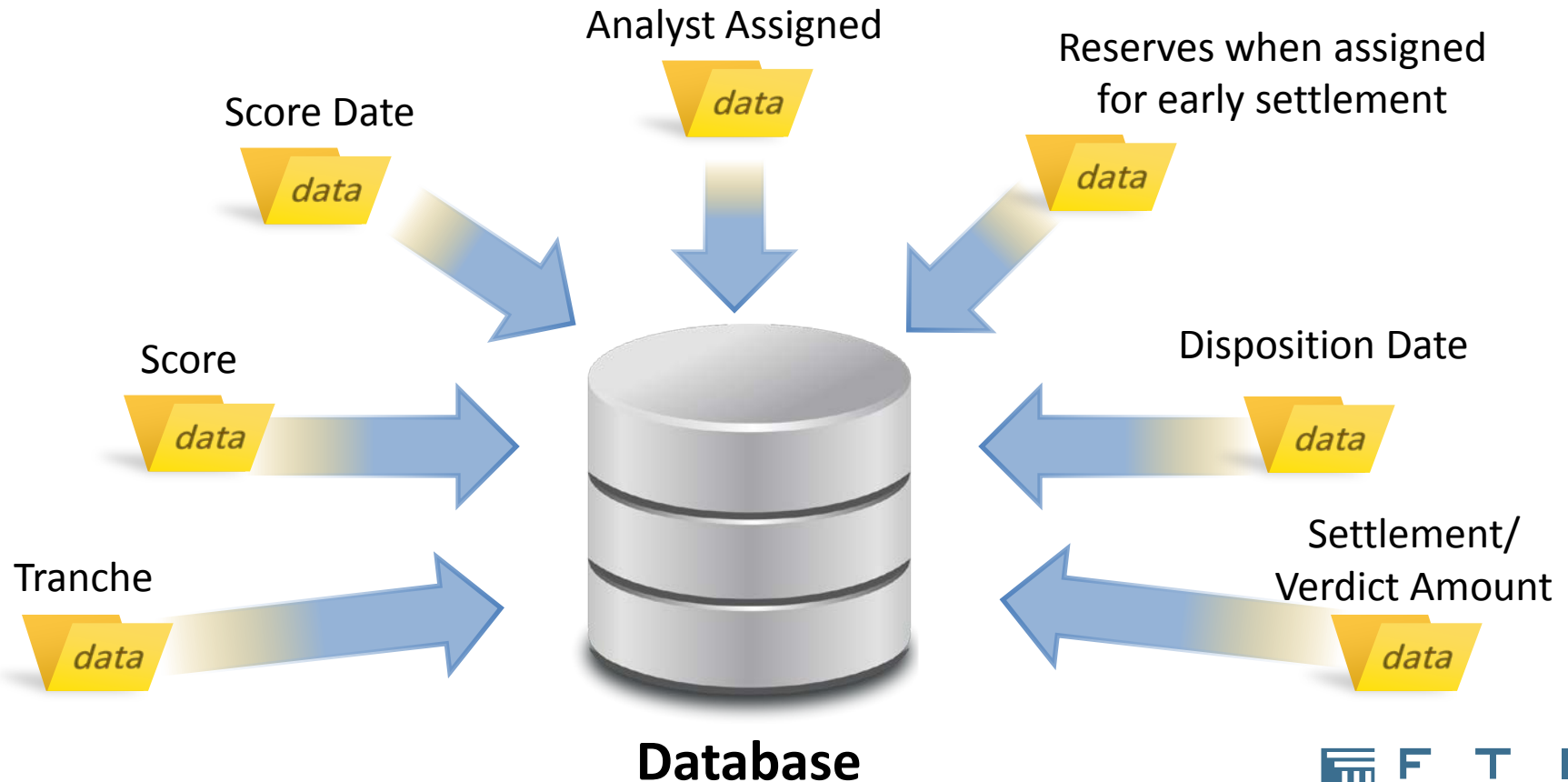
During Implementation

- As the company implements changes to the claims department, the results from monitoring can be used to determine whether the expected savings is being achieved.
- As the redesign efforts will impact development, adjustments can be made to account for these effects.

Monitoring & Analysis for Claims Department

A system to monitor claims can be developed to manage work flow and provide data available for analyses.

All Claims Scored 20 or Greater

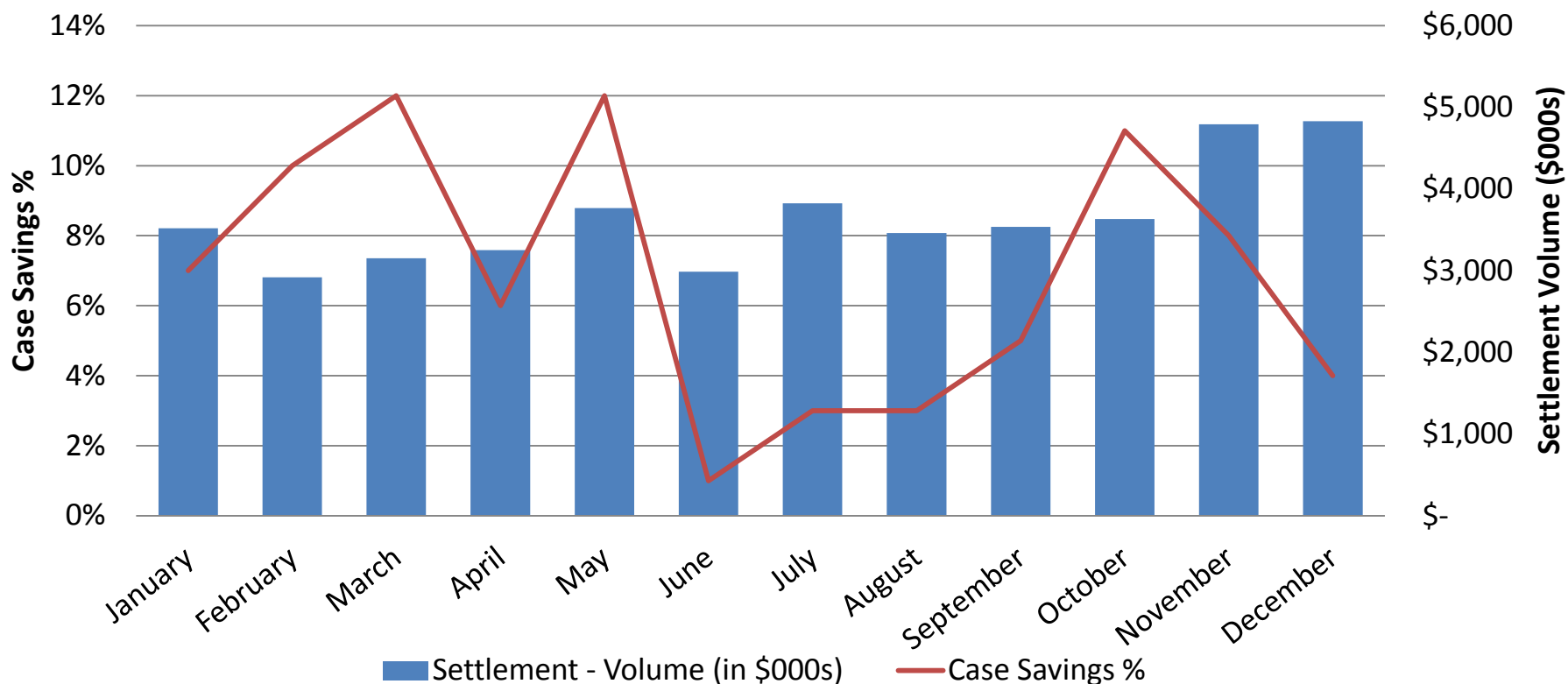




Monitoring & Analysis for Claims Department

From information gathered, periodic reporting is done to capture key metrics, such as volume of settlements, savings off reserves, and tranche effectiveness

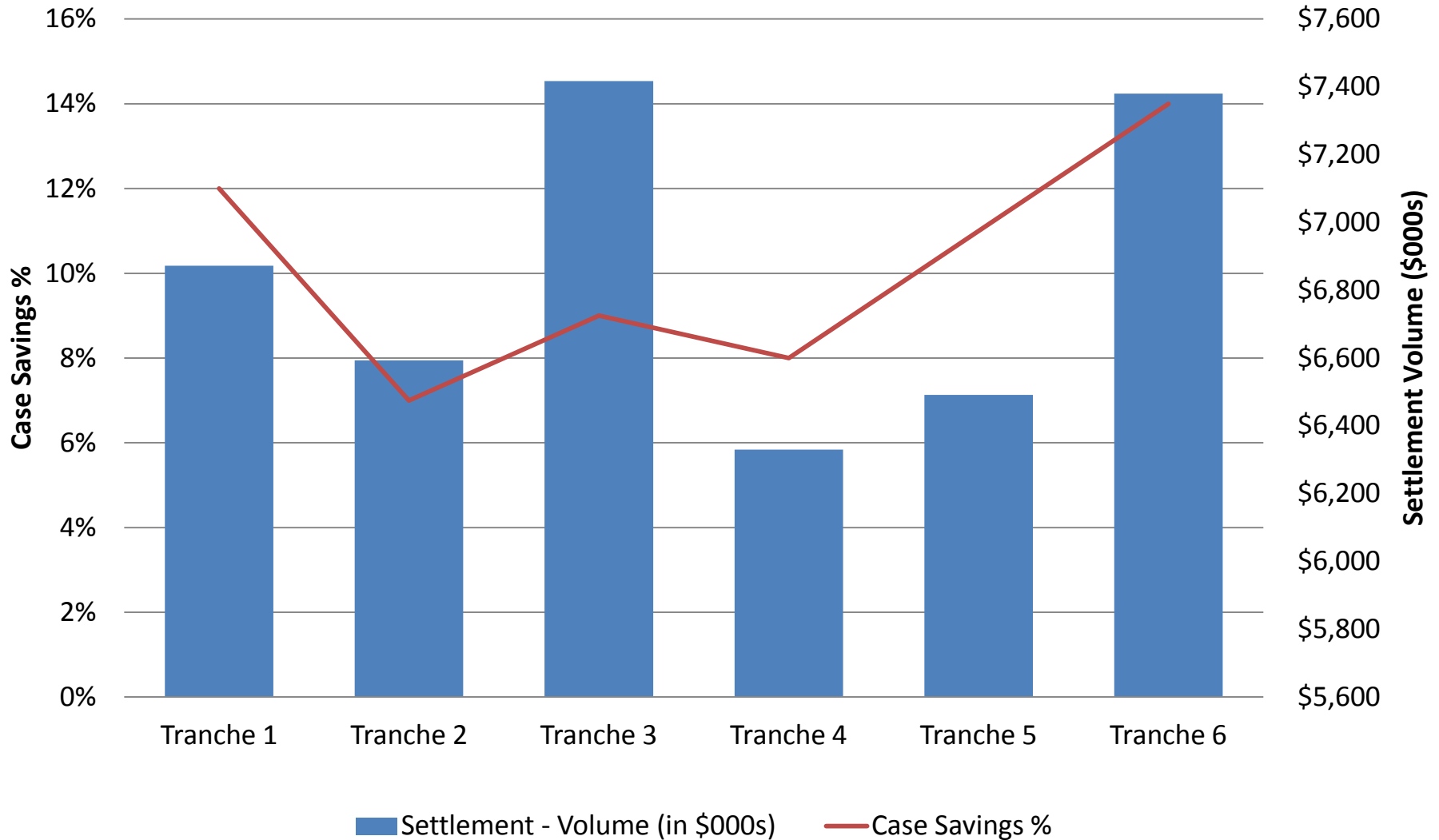
Redesign Monitoring by Month





Monitoring & Analysis for Claims Department

Redesign Monitoring by Tranche





Monitoring & Analysis for Claims Department

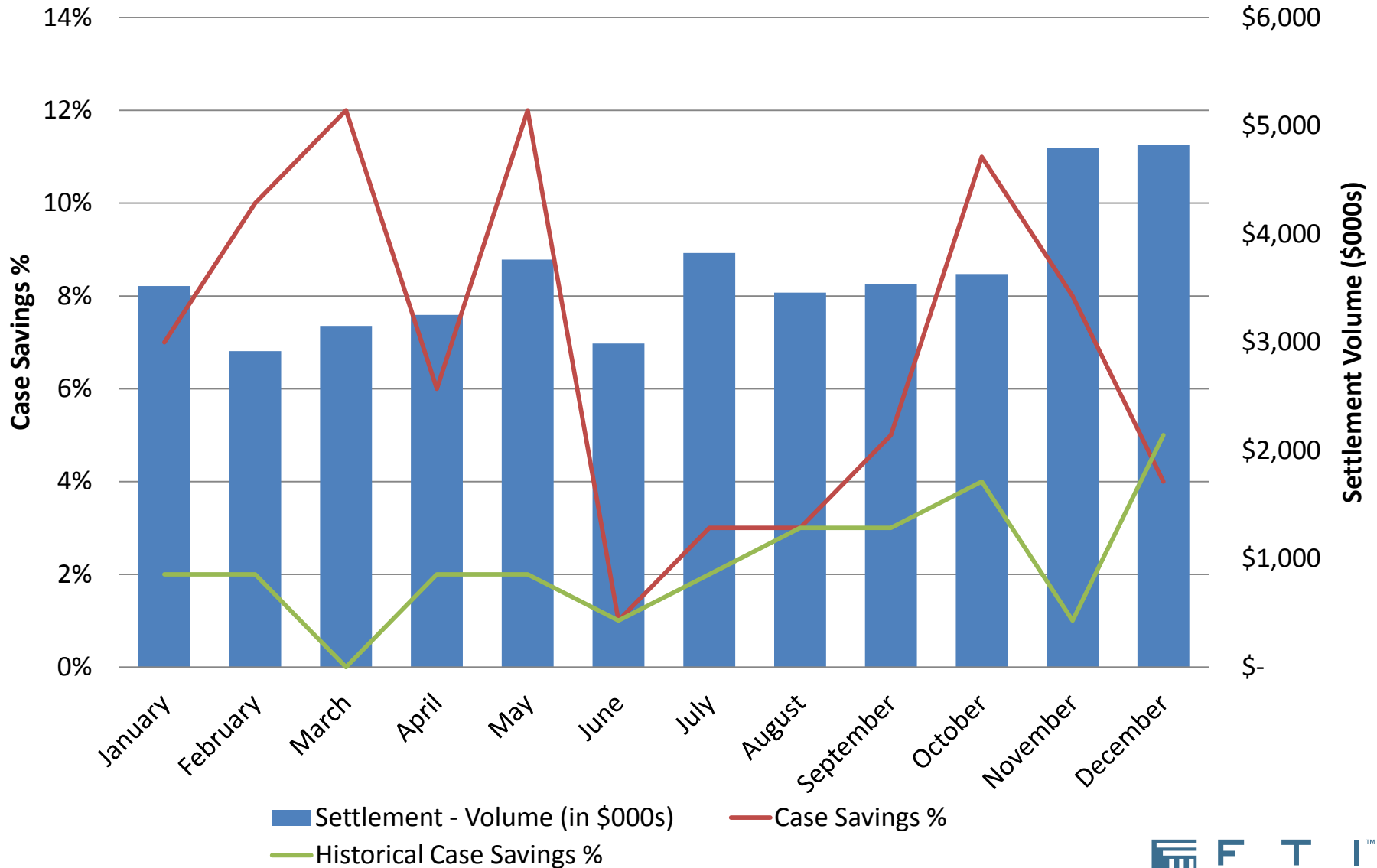
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Monitoring & Analysis for Claims Department

Redesign Monitoring by Month

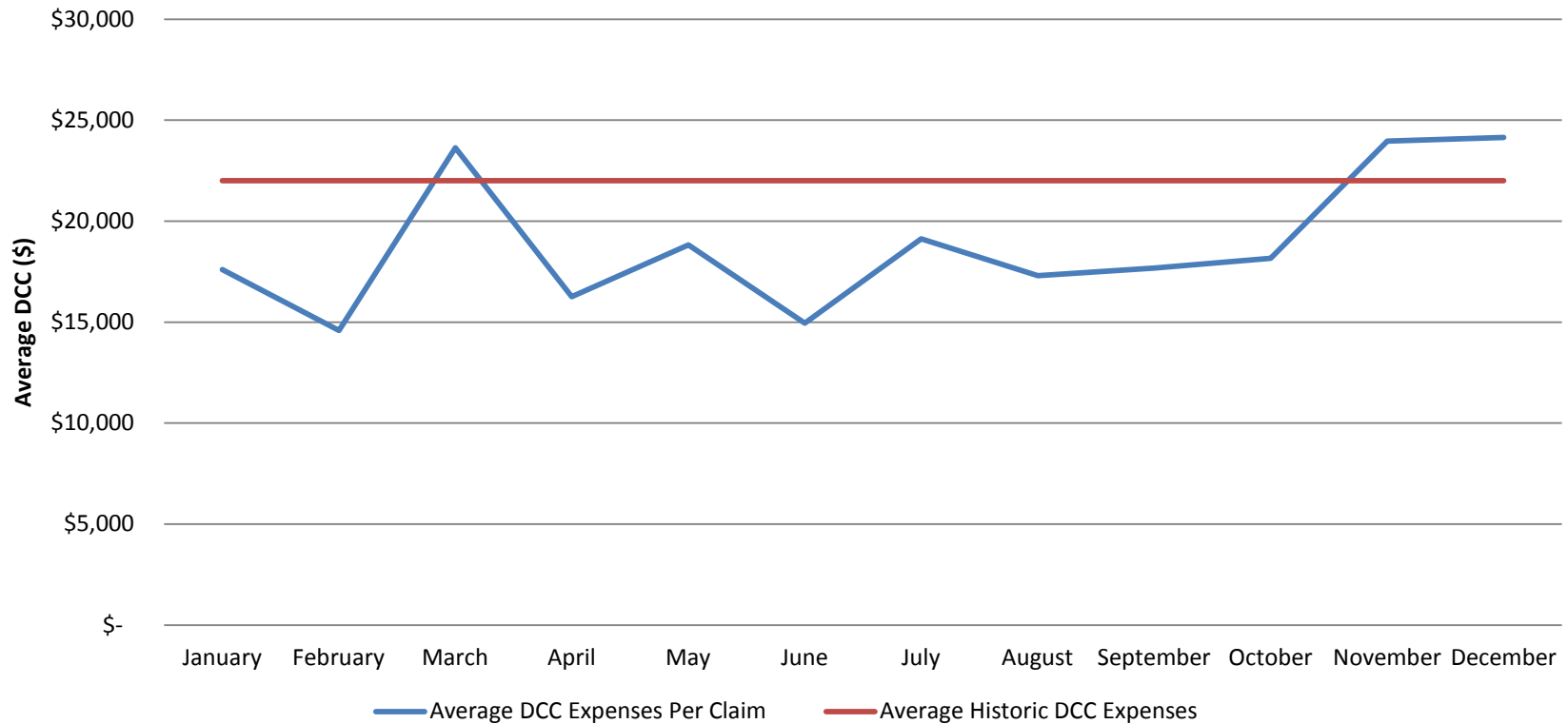




Monitoring & Analysis for Claims Department

*DCC should be reduced as well, due to a faster claim settlement.
The average DCC can be monitored and compared against historic averages*

Redesign Monitoring - DCC Analysis

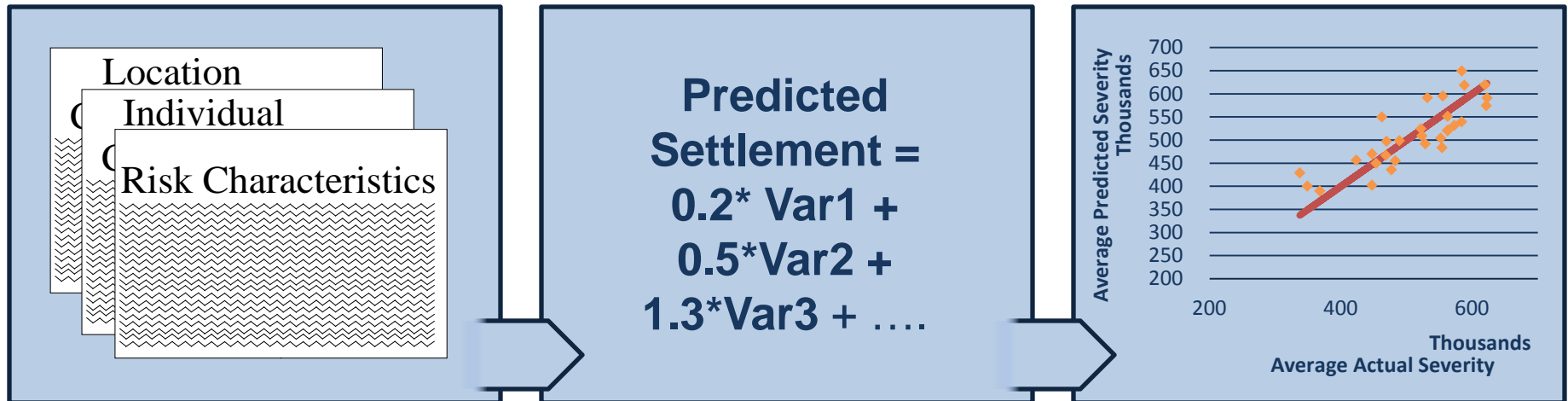


Monitoring & Analysis for Claims Department

- However, the claims identified in the tranche/scoring process may not have the same case savings potential as the average claim in the book of business
- Another valuable tool to use to assess the redesign effectiveness would be a generalized linear model (GLM)
- A GLM tool can pull together all relevant available claims information and predict the settlement value, based on how claims with similar characteristics have settled

Monitoring & Analysis for Claims Department

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GLM outputs Equation

- Stepwise regression can determine which predictors to retain in the model
 - From Case Study, Key Predictors could Include:
 - Injury Type
 - Jurisdiction
 - Coverage
 - Current Reserve Amount
 - Physician's Specialty
 - Etc.

GLM outputs Equation

- Model results in an equation of the predicted settlement amount:

$$\begin{aligned} \text{Predicted Settlement Amount} = & \\ E \wedge & (\text{Intercept} + \\ & \beta_1 * \text{Injury Type Index} + \\ & \beta_2 * \text{Jurisdiction Index} + \\ & \beta_3 * \text{Current Reserve Amount} + \\ & \dots) \end{aligned}$$



GLM Results Tested on Holdout Sample



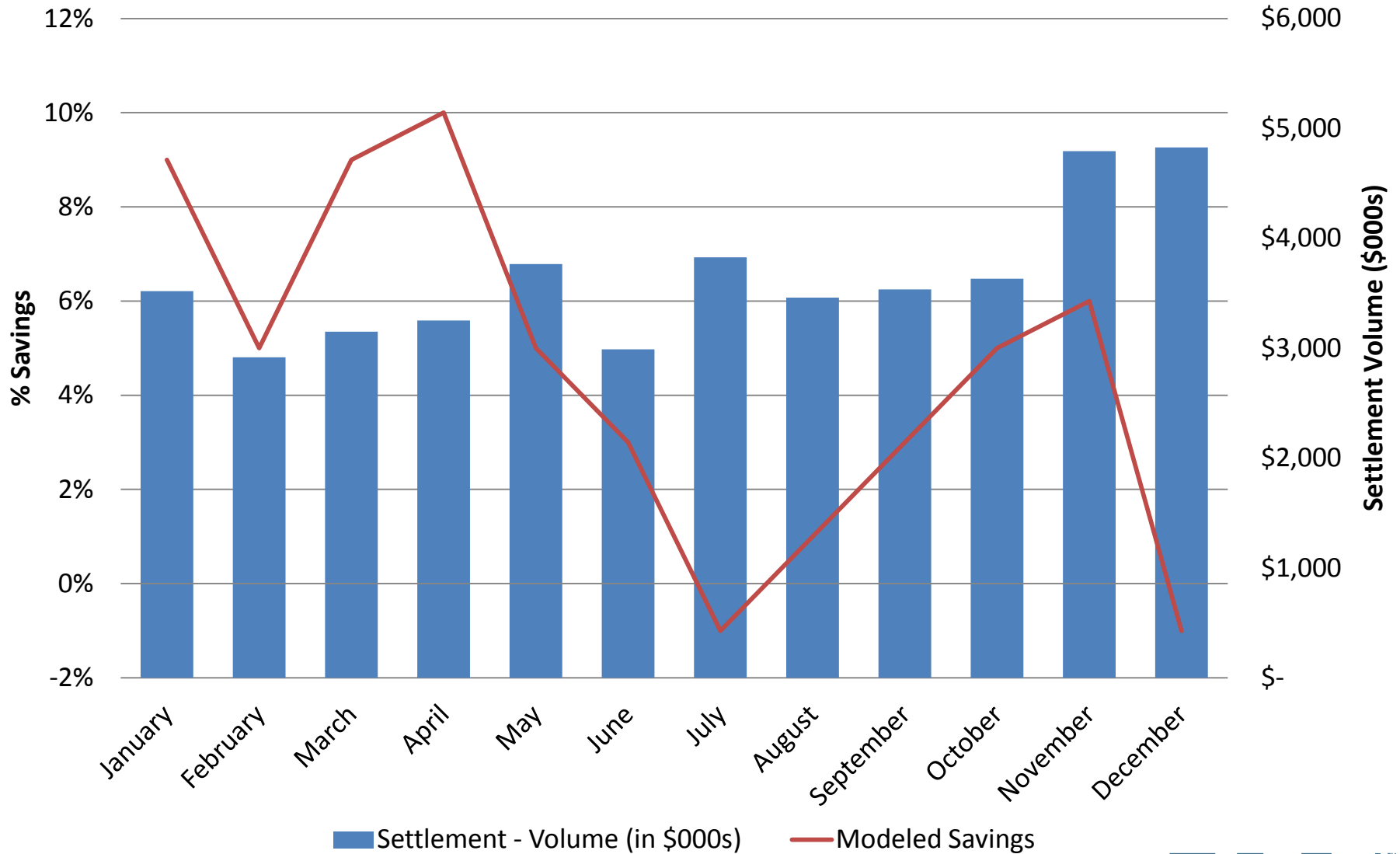
Predictive Model for Claim Settlement Value

- Predictive analytics can be used to approximate a number of key elements to the ultimate value of claims:
 - Probability of Claim Dismissal
 - Estimate of Settlement Amount
 - Estimate of Total Defense & Containment Costs
- Uses sophisticated statistical techniques (such as Generalized Linear Modeling) to review insurer's data and determine key predictors and resulting correlations.



Monitoring & Analysis for Claims Department

Redesign Monitoring by Month

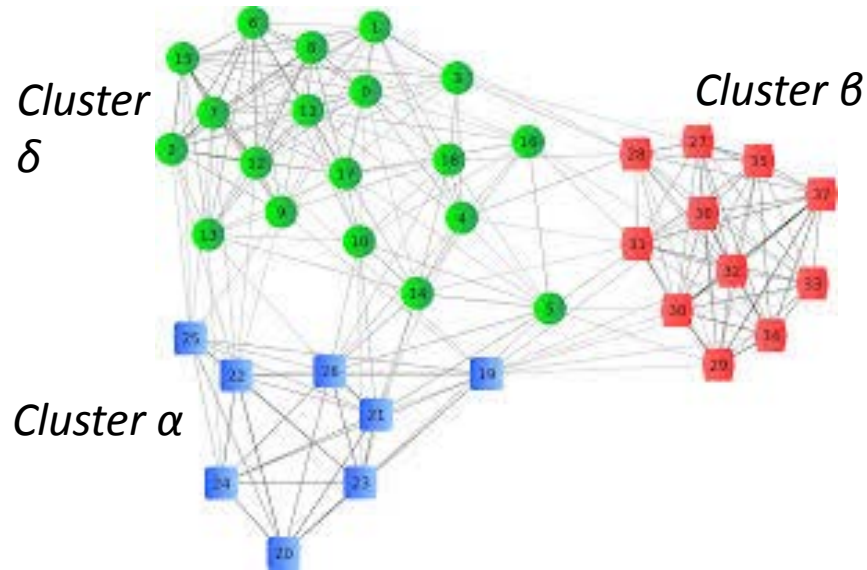


Applications of Analytics on Claim Settlement Value

- Use to prioritize claims
- Use to guide claims analyst when negotiating settlement
- Use to set case reserves at some stage of the claims lifecycle
- Provide a timely and objective measure of changes in case reserve adequacy over time
- Provide an indication of actuarial reserve estimate
- Testing the impact of claim department initiatives to determine effectiveness, for example:
 - ◆ Testing alternative settlement strategies
 - ◆ Testing alternative claim handling strategies
 - ◆ Selecting effective defense counsel
 - ◆ Guiding and evaluating claim staff
 - ◆ Determining optimum level of claim defense efforts

Cluster Model – Step 1

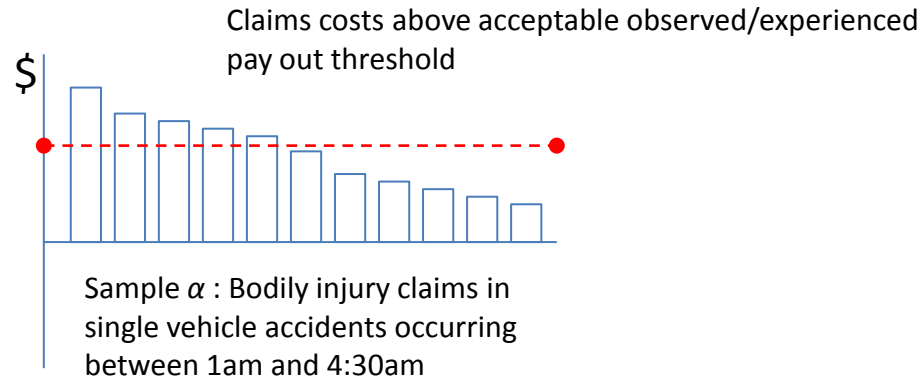
*Statistical methodology to identify
homogenous claim pools*



- Aggregate all available data to claim level i.e. a dataset with one row per claim containing the following:
 - Policy information
 - Risk information
 - Incident information
- Cluster similar combinations of the above characteristics into the same claim pools

Cluster Model – Step 2

Identify claims which have a cost above a 'normal' threshold



- Assumption: similar claims should have similar cost types and cost values associated with them
- For each **cost type** within each pool, calculate a baseline and threshold value i.e. the range of values between which that particular cost is deemed acceptable
- Any claim which is seen to have a cost above the threshold will be labeled as having **waste**

Questions?

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