The Cost of Misclassification

2016 CAS Ratemaking Seminar

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Discussion Leaders
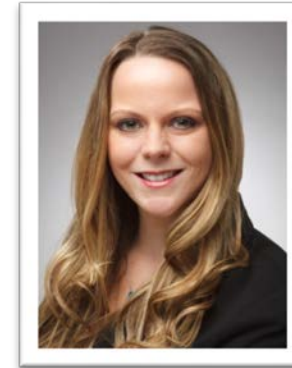
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Agenda

Explore the impact of Misclassification on the business of risk transfer

- **Premise**: Level set an understanding of the information we will explore and our premise

- **ProMetrix**® : Overview of business and how it informs our discussion today

- **Empirical Findings** on Data Quality

- **Impact of Findings** on Carriers

- **Discussion of Solutions** to the Issues Uncovered

Premise

Premise for our dialogue today

- Inconsistent data persists in Commercial Underwriting Process in terms of <u>quality, reliability, & completeness</u>. The impact is significant.

- The <u>sources</u> of this data are:
  - Premium paying clients
  - Distributors
  - Insurance company resources
  - 3rd party vendors

- There are <u>solutions</u> coalescing which may begin to improve quality of data

ProMetrix

Insurance Solutions

Overview of ProMetrix

- Level set an understanding

- Customer Profile

- Field verified data

- Diagnostic Tool – Portfolio Assessment

Level set an understanding of ProMetrix

- **ProMetrix:** Database, reports, analytics, and order platform (formerly SPI+)
  - ~ 3.7 million commercial buildings locations collected during fire surveys
  - ~ 2 million from other sources
  - ~ 26 million occupants and businesses
  - Delivers specific loss cost for buildings and other key analytics
  - > 5 million reports generated annually

- **Underwriting Markets Served:**
  - Commercial Property
  - Businessowners,
  - Workers Compensation
  - General Liability
  - Commercial Auto

- **Customers:**
  - > 225+ insurance company clients
  - 49 of the Top 100 Distributors based on revenue

Customer Profile

Insurance companies

- Standard lines companies
  - Admitted business
  - National and regional footprints
  - Publicly traded, privately held, or a mutual
- Excess and surplus lines companies
  - Non-admitted business
  - National or regional footprint
  - Publicly traded or privately held
- Specialty companies
  - Niche focus

Distributors

- Agents and brokers
- Wholesale brokers
  - Managing General Agents (MGA's)
  - Managing General Underwriters (MGU's)
- Program administrators

Field Verified Data - ProMetrix Field Force:

National breadth, local depth

- **National presence** – **550 highly trained F/T Verisk field staff** with an average of **11-plus years** conducting property evaluations

- **Property assessments** performed for lenders, insurers, government agencies, and community hazard mitigation

- Experience working across **all commercial property types** obtaining detailed building information through onsite observation
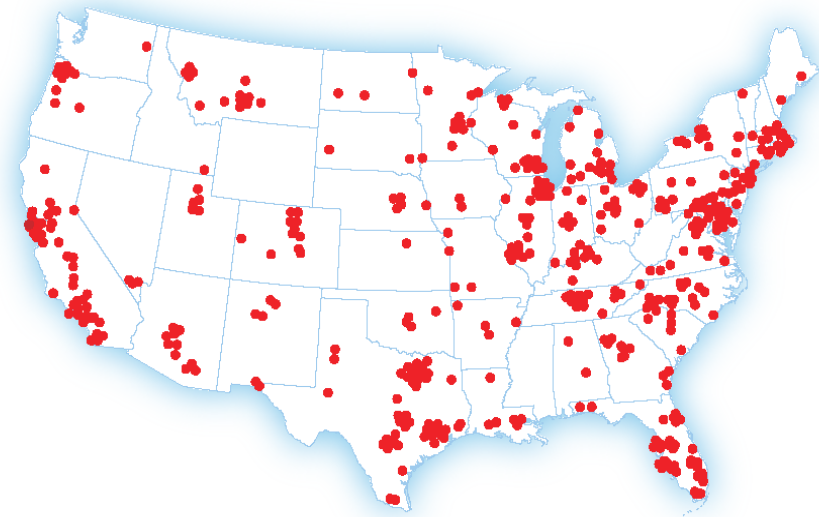
● = Office or at least one Field Rep

Diagnostic Tool – Portfolio Assessment

- Snapshot assessment of book of business
- Analysis on current book using both carrier and appended data

Portfolio Improvement	**Portfolio Expansion**	**Portfolio Analytics**	**Portfolio Efficiency**
• Data quality assessment and verification • Building and business information verification • Risk Profile • Identify risk factors • Benchmark characteristics against industry norms	• Cross sell opportunities • New classes and/or geographies for expansion	• Benchmark key property metrics vs. state or industry • Benchmark carrier loss cost, loss ratio, claim severity, claim frequency vs. peer group and/or vs. industry	• Agency assessment • Loss control

Portfolio Improvement

Services	Area of focus	Description
Portfolio Improvement	**Building Characteristics**	• Verify policy listed characteristics of the building including size, construction, etc
	Address Verification	• Verify policy listed address is the actual address where the business is located
	Business Classification	• Identify businesses misclassified • Identify additional lines of business that are undesirable
	Occupancy and Vacancy	• Verify single or multi-tenant building • Identify unreported occupants
	Verify Protection Systems	• Verify policy stated protection systems – sprinkler systems, etc.
	Location Specific Information	• PPC misclassification • Crime exposure • Policy holder distribution by geography • PPC distribution
	Data Append for Cat Impact Analysis	• Provide the key property characteristics needed for catastrophic modeling

Empirical Findings

Drivers in the Marketplace

Competition

- New competitors and models
- Need to respond quickly
- General downward pressure on pricing and expansion of terms
- Consolidation

Data

- Spectrum of sources in addition to Distribution channel and premium paying clients
- Shaping new predictive analytics
- Varying levels of data reliability
- Presenting a value proposition for more informed decision making – but is it?

Technology

- Driving change – creating a gap in quality decision making or enhancing it?
- Fostering and enabling competiveness in market
- Enabling higher volumes of work/transactions to be administered efficiently

Profitability

- Achieving underwriting profit in a low interest rate environment
- Efficiently handling the higher volumes presented
- Adherence to guidelines
- Risk insight and selection keys

Scope of Analysis

- All Commercial Lines
    - ~ $240B in Net Written Premium

- Commercial Property Market Size
    - ~$35B in Net Written Premium
    - ~ 6.5B locations

- Analysis performed in database of ~3.7M field verified Commercial Property locations

- Analyzed ~2 million commercial property characteristics for variety of building types, sizes & locations
    - Hit rate ~65%

Impact of Misclassified Data

- Exposure

- Pricing

- Internal Insurer Information and data going forward

- Risk Decision Making

- Source of Misclassification - systemic

Overage vs. Leakage

	Exposure	Premium
Overage	• Net retention in previous example is <u>higher than expected,</u> impacting profitability and potentially reinsurance relationships	• Carrier lists a property as a frame construction building when it is actually a masonry building.
Leakage	• Premium calculated on inaccurate PPC will not reflect true impact on exposure and most likely be <u>inadequate for risk assumed.</u>	• Carrier lists a property as a having a PPC score of 4 when it is should actually receive a score of 8.

Select Variables Reviews

- Construction

- Protection

- Square Footage

- Class Code

- Insurance to Value

Exposure Impact Example

Bound Info on 1/1/2016

- Occupancy – Commercial Real Estate

- Construction – Joisted Masonry

- Protection – No Sprinklers

- Public Protection Class – 4

- Values Insured - $10, 000,000 (Building and Contents)

- Coinsurance – None

- Annual Gross Written Premium (GWP) - $5,000

- PML – 15% - 1,500,000

- MFL – 60% - 6,000,000

- Net Retention – 100%

Claim on 3/3/2016

- Loss - $3 million after deductible

- Construction – Frame

- Public Protection Class – 8

Impact of Misclassification

- UW guidelines for a Frame risk call for a mandatory 50% cession to a quota share reinsurance facility.

- In this scenario, net retention would be $1.5 million versus $3.0 million
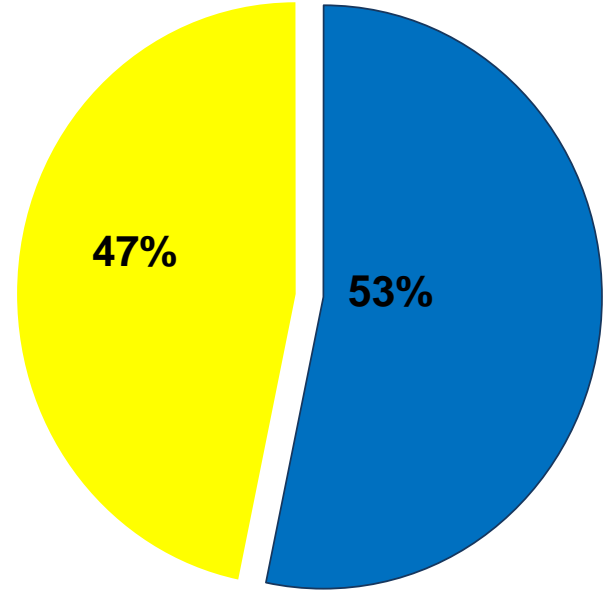
- Lost ceding commission

When compared to field verified data, nearly 40% of the records have incorrect construction class information

Verisk's Assessment of Carrier's Records

37%

63%

■ Verified Accurate   ■ Incorrect
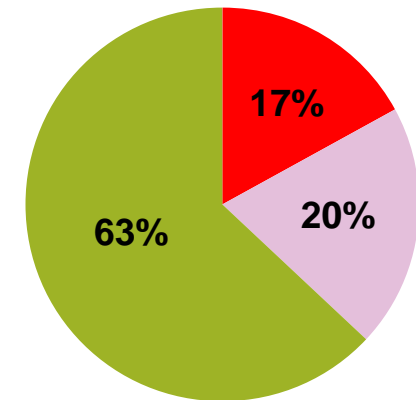
Inaccurate Records' Impact on Premium

47%

53%
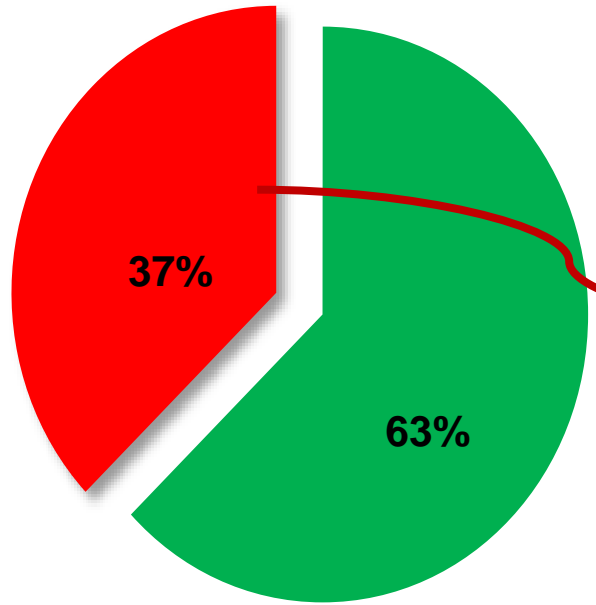
■ Prem Overage   ■ Prem Leakage

Severity of Construction Class Mismatch

		Carrier Listed Construction Class					
		Class 1	Class 2	Class 3	Class 4	Class 5	Class 6
Verisk Construction Class	Class 1	27.9%	5.8%	3.7%	1.6%	0.1%	0.1%
	Class 2	4.2%	13.7%	1.3%	2.1%	0.1%	0.1%
	Class 3	3.0%	1.9%	10.3%	1.8%	0.1%	0.2%
	Class 4	2.0%	3.5%	1.9%	9.4%	0.1%	0.2%
	Class 5	0.4%	0.3%	0.2%	0.3%	0.7%	0.1%
	Class 6	1.1%	0.4%	0.2%	0.4%	0.1%	0.8%

Impact on Premium

17%
20%
63%

- Premium Leakage
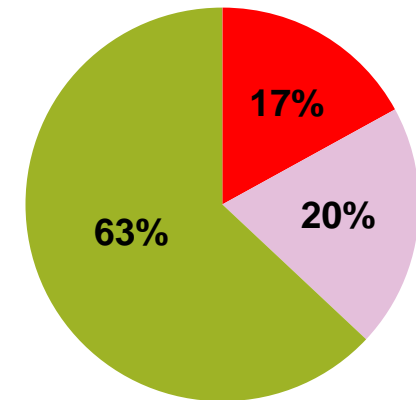- Premium Overage
- Match

Construction class:

Class 6 is the "better" construction class = lower rate or loss cost

Class 1 is a "poorer" construction class = higher rate or loss cost

Severity of Construction Class Mismatch

| | Carrier Listed Construction Class | | | | | |
	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6
Class 1	27.9%	5.8%	3.7%	1.6%	0.1%	0.1%
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Class 3	3.0%	1.9%	10.3%	1.8%	0.1%	0.2%
Class 4	2.0%	3.5%	1.9%	9.4%	0.1%	0.2%
Class 5	0.4%	0.3%	0.2%	0.3%	0.7%	0.1%
Class 6	1.1%	0.4%	0.2%	0.4%	0.1%	0.8%

(Verisk Construction Class — row axis)

Impact on Premium

17%, 20%, 63%

- Premium Leakage
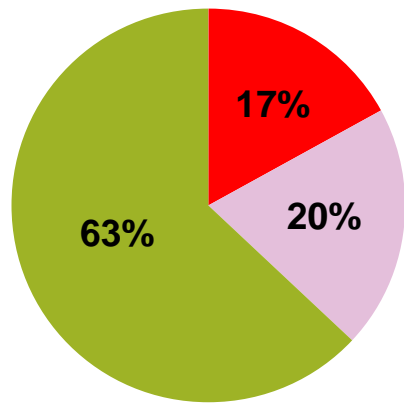- Premium Overage
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Construction class:
Class 6 is the "better" construction class = lower rate or loss cost
Class 1 is a "poorer" construction class = higher rate or loss cost

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Severity of Construction Class Mismatch

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	Class 4	2.0%	3.5%	1.9%	9.4%	0.1%	0.2%
	Class 5	0.4%	0.3%	0.2%	0.3%	0.7%	0.1%
	Class 6	1.1%	0.4%	0.2%	0.4%	0.1%	0.8%

Impact on Premium

17%
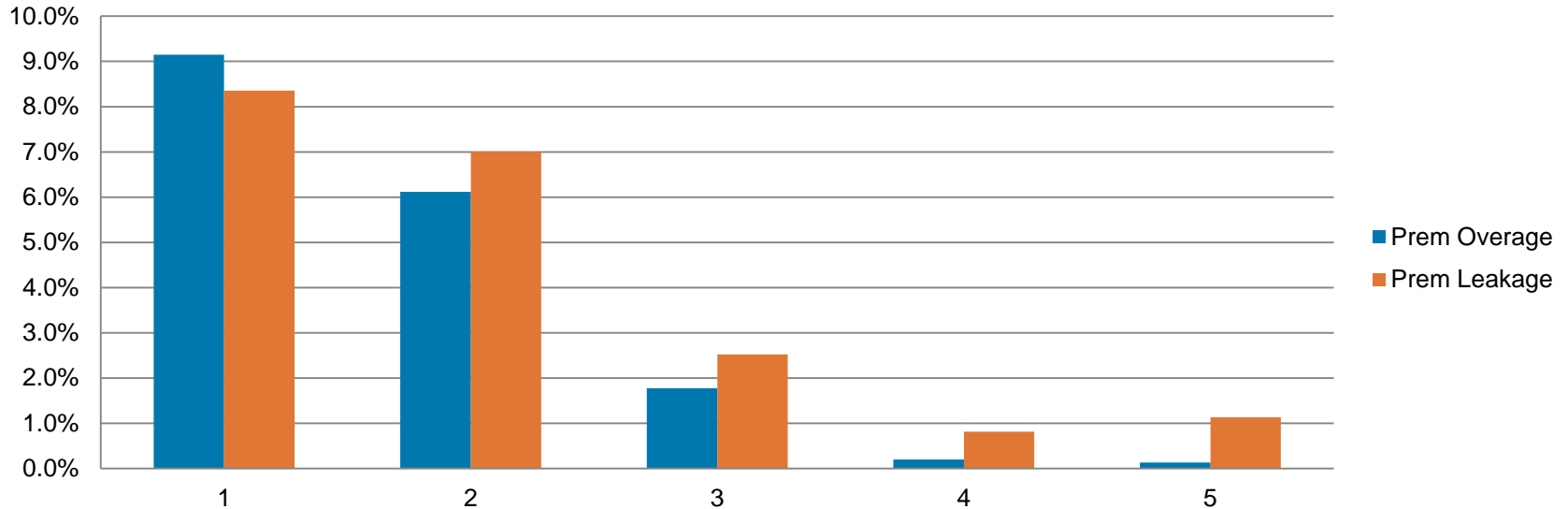20%
63%

- Premium Leakage
- Premium Overage
- Match

Construction class:

Class 6 is the "better" construction class = lower rate or loss cost

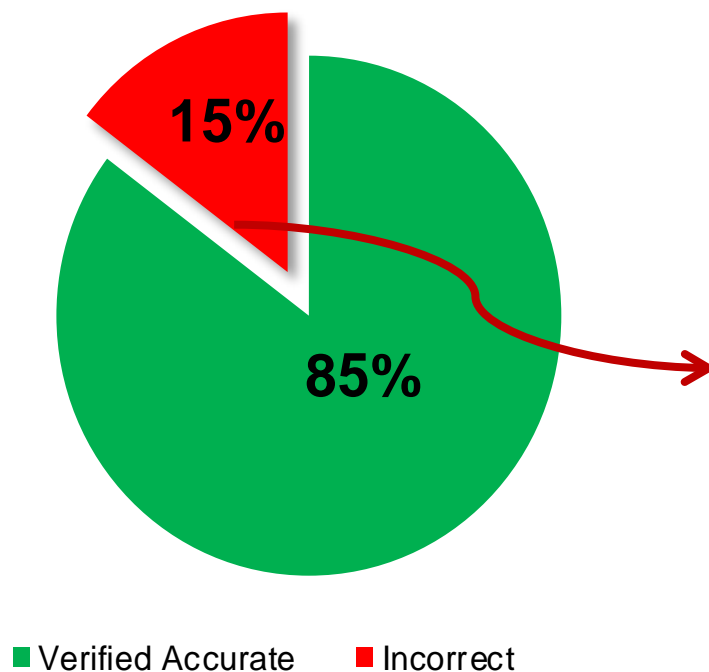Class 1 is a "poorer" construction class = higher rate or loss cost

Premium Impact

| Actual Verisk Verified Construction Code	Percent of Risks Examined	Percent Premium Error
1	39.16%	-5.96%
2	21.53%	0.69%
3	17.23%	6.31%
4	17.09%	10.04%
5	1.97%	17.70%
6	3.02%	34.53%

When compared to Verisk field verified data half of the records have incorrect PPC information

Verisk's Assessment of Carrier's Records

15%

85%

■ Verified Accurate   ■ Incorrect

Inaccurate Records' Impact on Premium

42%

58%

■ Prem Leakage   ■ Prem Overage
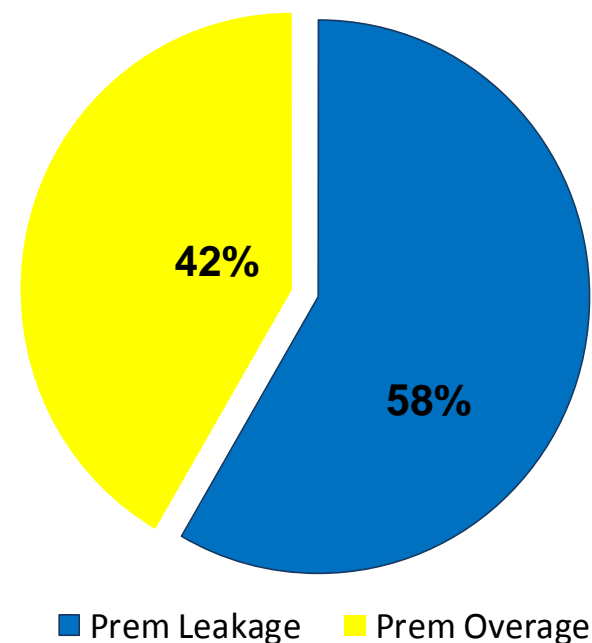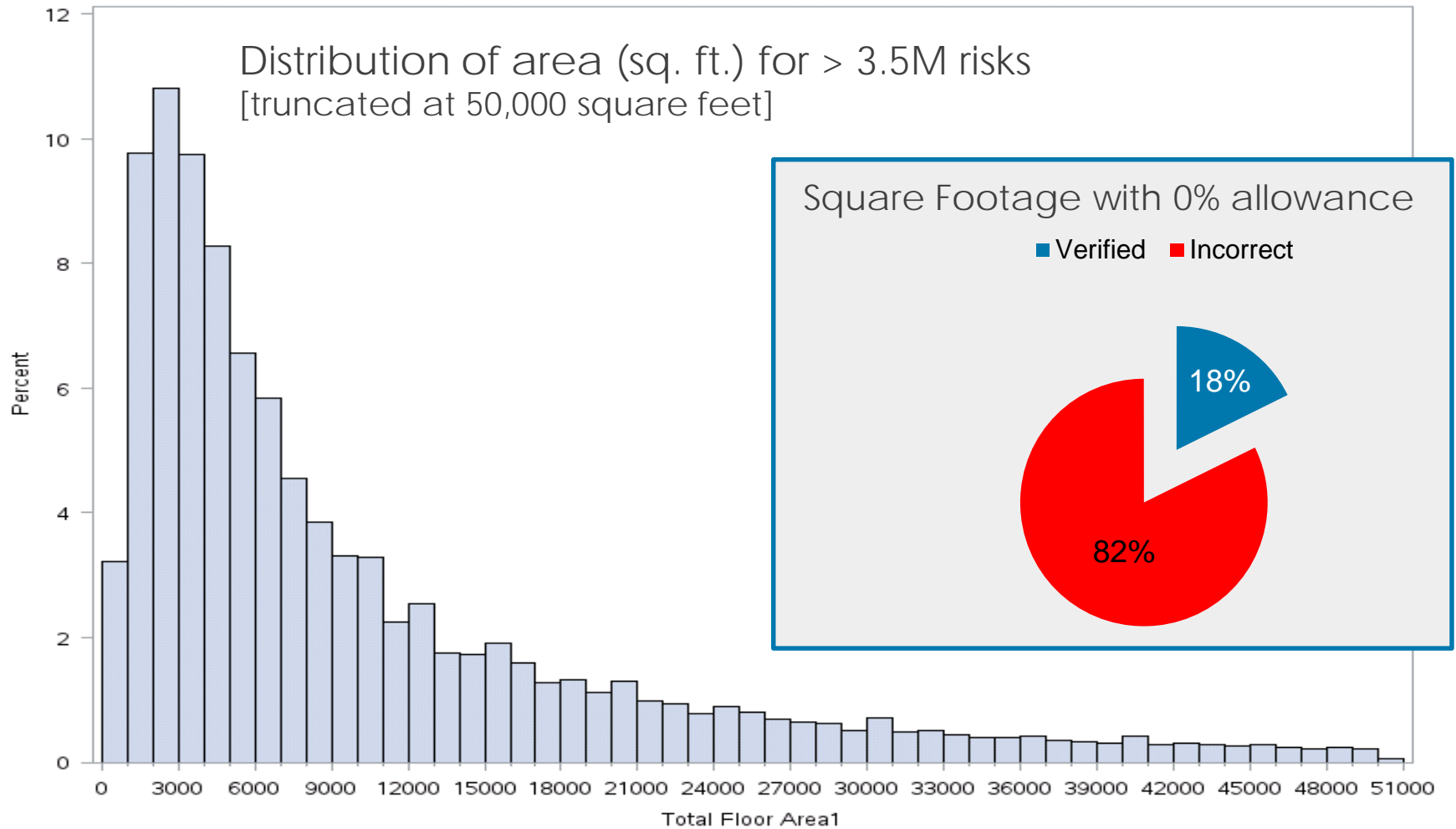
Mild Mismatches

PPC scores tend to gravitate towards more favorable scores over time thus accounting for a large percent of the premium overage we see.

Frequency of PPC score update may be a concern. For instance, upon renewal.

Large Mismatches

PPC scores are typically geographically determined at the community level.

Buildings with a needed fire flow greater than 3,500 gallons/minute deserve a second look to evaluate the Water, Fire Flow Availability, Hydrant Spacing, and the Fire Department to determine if the community based PPC score should be reduced for that specific building.

Distribution of area (sq. ft.) for > 3.5M risks
[truncated at 50,000 square feet]

Square Footage with 0% allowance

- Verified
- Incorrect

18%

82%

Less than half of reported class codes matched available SIC data

Assessment of Carrier vs. Listed Business Classification

54% Inaccurate

46%

54%

■ Accurate   ■ Inaccurate
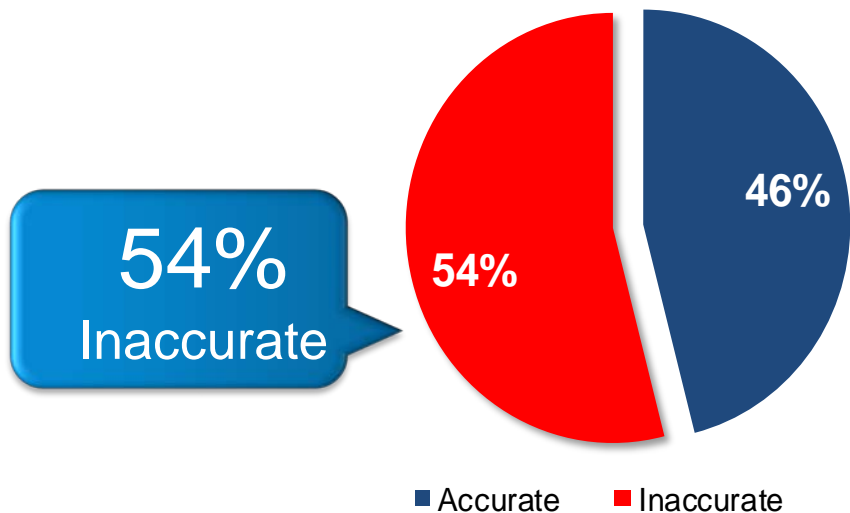
Example 1

Carrier Provided:
"Motor Vehicle Dealer - Used only"

Actual Business Classification:
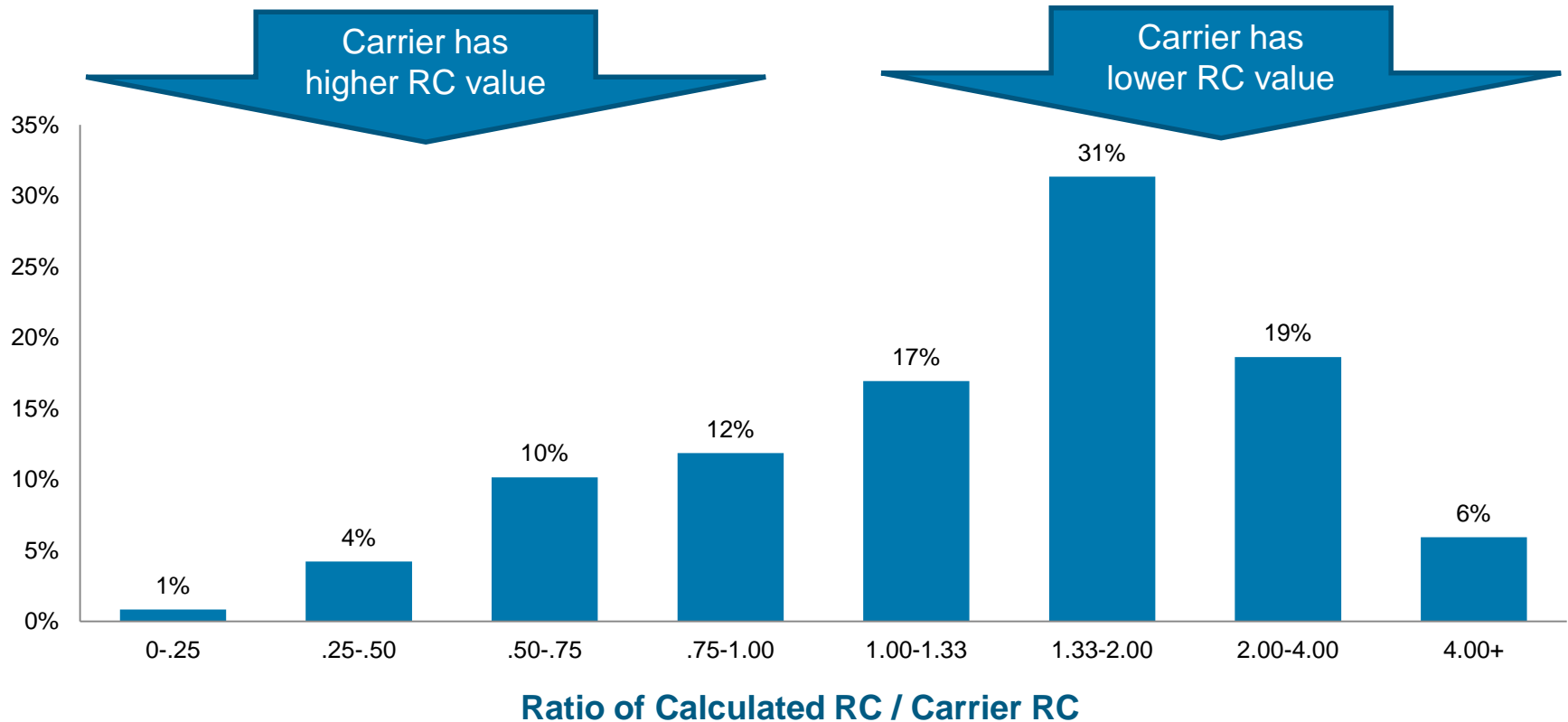"Motor Vehicle Dealer - New and used"

Example 2

Carrier Provided:
"Restaurants with Commercial Cooking"

Actual Business Classification:
"Food Products Mercantile < 15,000 square feet"

The majority sample risks are written at Replacement Value Costs that are likely too low

The replacement cost amount represents the estimated cost to rebuild the structure (s) in the geographic market in accordance with current building codes following a total loss. Replacement cost amounts includes pricing for labor, materials and contractor's overhead and profit; it does not include costs for excavation or land value.

Carrier has higher RC value

Carrier has lower RC value

Ratio of Calculated RC / Carrier RC	Percentage
0-.25	1%
.25-.50	4%
.50-.75	10%
.75-1.00	12%
1.00-1.33	17%
1.33-2.00	31%
2.00-4.00	19%
4.00+	6%

Ratio of Calculated RC / Carrier RC

Summary - Portfolio Assessment Analysis

Rating Information	Analysis Identified
Construction Class	• ~40% of the carriers' risks had incorrect construction class
Protection	• 15% of the carrier risk were listed in an incorrect PPC • Many of the sprinklered risks received sprinkler credit when not warranted
Square Footage	• ~80% of the carriers' risks had incorrect square footage. • Percentage decreased as allowance for error increased, but there are gross mismatches
Class Code	• ~50% of the carriers' risks had incorrect class code information. • Some codes were not even valid Commercial Property codes.
Limits	• ~75% of the carriers' risks had underestimated limit for Insurance to Value

20% Underpriced risks
Adverse Selection

14% Overpriced Risks
Risk Retention Issues

$1.3B
In annual premium leakage

Impact of Findings

Areas Affected By Poor Data Quality

- Profitability
  - Exposure Assessment
  - Rate Adequacy – Earned Premium generation
  - Reinsurance need and expense
- Operations
- Claims Administration
- Regulatory Compliance

Profitability - Exposure Assessment

- Exposure Assessment
  - Setting terms, conditions and rate
  - Validation of exposure basis
  - Risk survey or safety plans
  - Loss estimates and accumulation of risk
  - Marketplace flexibility
  - Capital allocation

Profitability - Rate Adequacy

- Earned Premium base
  - Sustainability of a portfolio
  - Positioning in the market
  - Key financial ratios

- Distributor Relationships

- Sustainability of the Business

Profitability - Reinsurance need & Expense

- Aggregate limits purchased and their cost

- Individual risk retentions and the benefit to ceding underwriter

- Type of coverage purchased - Following form versus carve out protection

- Allocation of treaty cost

Additional impacts

Operations

- Re-work

- Mis-coding

- Cash flow

  - Collection issues

  - Non admitted penalties to surplus

- Allocation of resources

Claims Administration

- Application of coverage and reserve setting
- Clarity among named insureds' and additional named insured's
- Aggregate erosion
- Efficient and compliant claims handling and adjustment
  - Definition and/or application of "Occurrence"
  - Aggregate Erosion record keeping
  - Bad Faith
  - Ex Gratia Payments

Regulatory Compliance

- Using appropriate Loss Cost
- Claims payment completeness and timeliness
- Achieving contract certainty compliance efficiently
- Achieving Broker or Agent Licensing standards
- Condition of portfolio's for Market Conduct examinations
-

Possible Solutions

Solutions in play today

Consume 3rd Party data
- Augment data received from premium paying client and distributor
- Create predictive analytics
- Develop benchmarks

Embed reliable data in the business process
- Establish automated business rules
- Retain data for future transactions

Re-Work the business process
- Review sources of data;
- Build hard edits around known anomalies
- Link Audit activity into data quality process

Thank You

Appendix A
Impacts on Individual Lines of Business

verisk
Insurance Solutions

Commonly found data issues impacting all lines

- Brokers and agents without appropriate licenses

- Number and valuation of paid and incurred losses

- Misclassified business type

- Underlying coverage terms and attachment points

- Coverage gaps or misleading policy language created by manuscript wordings

- Inaccurate exposure basis for premium calculation

Commercial Property

Commercial Auto

- Accuracy of Insurance to Value
  - Business property - contents
- Clarity of address of risk
- Accurate information related to:
  - Construction
  - Occupancy
  - Protection
  - Exposure
- Time element exposures

- Number of Autos, vehicle type, age and their use
- Garaged Location of vehicles
- Valuation of vehicles, its service & maintenance
- Mileage radius: long, intermediate or short haul
- Validation of driver details: age, valid license, MVR etc.
- Qualifications of vehicle operators

General Liability

- Omission of full description of operations and/or location of a business
- Proximity to attractive nuisances and hazardous exposures
- Access to property and protective measures in place to secure property and personnel
- Accurate application and validation of exposure basis
- Appropriate deductible level and use
- Treatment of ALAE and erosion of deductible limit and policy limit

Umbrella

- Type and amount of business conducted at a location
- Underlying coverage terms and attachment points
- Misinterpretation or use of worldwide territory definition(high war risk locations)
- Confirmation of drop down provisions of coverage
- Misinterpretation or use of General Aggregate provision
- Financial security of Primary Carrier

Workers Compensation

- Falsified injuries
- Type and amount of business conducted at a location
- Inaccurate payroll and employees count
  - ~22B of payroll is misclassified each year with a 1.6B impact on WC premiums
- Employee concentration
- Terrorist attraction of location
- Adverse legal environment/jurisdiction
- Validation of occupational disease exposures: industrial hygiene, silica, lead, asbestos, mold etc,
- Proximity Validation of medical facilities & fire house stations