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Predictive Modeling and Data Management: Turn Information into Knowledge to Make Advanced Risk Informed Decisions

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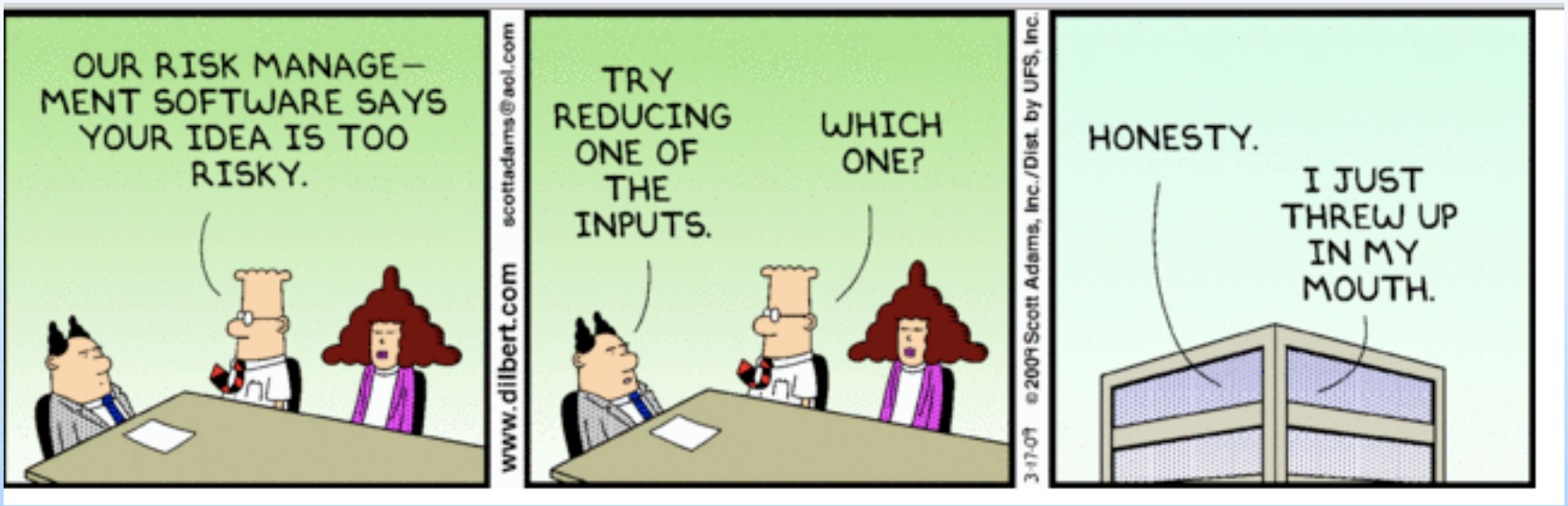
Agenda


OUR RISK MANAGE-
MENT SOFTWARE SAYS
YOUR IDEA IS TOO
RISKY.
TRY
REDUCING
ONE OF
THE
INPUTS.
WHICH
ONE?
HONESTY.
I JUST
THREW UP
IN MY
MOUTH.
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Agenda

- Turning information into knowledge and making your organization risk intelligent
  - Traditional approach to data management
  - Evolution of data management (and risk management)
  - The value proposition of making risk informed decisions
  - Examples

Traditional Approach to Data Management

Status quo

- Decentralized data
- Descriptive data
- RMIS
  - The illusion of centralized data
  - Might be just claim information and, in many cases, just insured claim information!
    - For example, there may be a property level deductible of $10 K, a corporate occurrence retention of $1 M, and a corporate aggregate retention of $5 M before any information is captured in a “carrier system.”
  - Loss runs for marketing purposes and COPE schedules, even secondary modifier data collection are all still descriptive.

Evolution of Data Management

- Turning Information into Knowledge
  - Not just centralized data, but connected data and “dimensional slices” of relevant information.
  - Prescriptive versus descriptive
  - The purpose of the data is to lead to meaningful analysis
    - Quantitative: regression analysis
    - Qualitative: judgments of relative likelihood
    - Hybrid models: Bayesian analysis
  - The “Black Box” of analysis
    - You do not need to know how to do it (technical).
    - You do need to know what is in the box (strategic)

How can Predictive Modeling Help?

- Total Cost of Risk Implications
  - Assume TCOR of $25 M
  - What might the return on investment be?
    - 1% value creation = $250 K
    - 5% value creation = $1.250 M
    - 10% value creation = $2.5 M
  - Less cost to mitigate or transfer. Net impact.
    - FFO (funds from operations)
    - Goodwill and reputation

Examples

- Status quo
  - Resident caused fires.
    - Risk owner: Risk Management.
- Risk Intelligence
  - What is the relationship between cut-points for resident screening and resident caused insurance losses?
    - Risk owners: Operations, finance, and risk management.
    - Data sources: Operations and risk management. What is the dimensional view?
      - Operations decides to reduce the cut-points for a particular region for a short term gain in occupancy of 2%, or $500 K in NOI / quarter.
      - Loss analysis shows that there is a 50% increase in the likelihood of a resident caused fire if cut-points are lowered. Average cost of resident caused fire is $100 K and there are 4 on average per quarter. Therefore, the value proposition is $300 K, not $500 K ($500 K – (4*.5)*100 K) = $300 K.
        - Could be higher as well, when will a $1 M fire occur?

Examples

- Status quo
  - Occupational injury management.
    - Risk owner: Risk Management or Human Resources.
- Risk Intelligence
  - What is the relationship between occupational injuries and non-occupational injuries?
    - Risk owners: Operations, finance, risk management, human resources.
    - Data sources: Operations, risk management, human resources. What is the dimensional view?
      - HR increases deductibles on health insurance plans in an effort to reduce the company's self-insured expense for health insurance and encourage employees to take more ownership of their health care costs.
      - Risk analysis shows that there is an increase in "Monday morning work comp claims" as a result of employees attempting to avoid paying higher deductibles under the health plan.
      - Conversely, loss prevention and wellness programs have an amplified impact.

Risk Management at Weidner Apartment Homes

- Our Charge: Helping to Achieve Organizational Goal

- Organizational Goal:
  - Optimum Financial Performance of Asset
- Operational Strategy for Achieving Goal
  - Provide an Exceptional Product and Exceptional Service to Our Customers
  - Preserve Physical Integrity of the Asset (maintenance and capital replacements)

Risk Management at Weidner Apartment Homes

- Green River Valley Flood Situation
  - Unforeseen Change in External Influences
    - Howard Hansen Dam and Green River levees found to be compromised
    - New Circumstances:
      - Emergence of Flood Risk
      - Massive media campaign – cities, county, Army Corps

Examples

Risk Management at Weidner Apartment Homes

- Green River Valley Flood Situation
  - Consequence:
    - Fear by residents
    - Heightened visibility to greater community (corporate citizenship)
    - Threat to physical integrity of the asset
    - Threat to income generating capacity of asset
  - Response to Resident Fear
    - Provide information and support
    - Buy them flood insurance to cover their personal property (contents)
    - Buy flood insurance to cover asset
    - Develop flood response procedure

Examples

Risk Management at Weidner Apartment Homes

- Organizational Goal:
  - Optimum Financial Performance of Asset

- Keeping Organizational Goal in mind when making insurance purchase decision

  - Minimize total cost of *insurable risk* (i.e., perils typically covered by customary insurance policies)

Retained Loss Cost Analysis Tool

Theoretical Retained Losses at Various Retention Levels Based on Actual Loss Experience

Loss experience valued January 2009

	Total Losses 04-05	Total Losses 05-06	Total Losses 06-07	Total Losses 07-08	Total Losses 08-09	Average	σ	σ %
Total Incurred	$2,204,475	$4,364,063	$534,660	$1,819,541	$1,582,141	$2,100,976	$1,408,369	67%
Actual Retained	$105,336	$1,078,193	$206,048	$102,030	$369,950	$372,311	$409,343	110%
Property/GL Deductible	**Retained Losses 04-05**	**Retained Losses 05-06**	**Retained Losses 06-07**	**Retained Losses 07-08**	**Retained Losses 08-09**	**Average**	**σ**	**σ %**
$25,000 / $10,000	$61,793	$349,125	$194,782	$146,579	$233,476	$197,151	$106,420	54%
Δ	$195,112	$610,969	$257,995	$272,959	$442,273	$355,862	$169,439	48%
$100,000 / $50,000	$256,905	$960,094	$452,778	$419,538	$675,749	$553,013	$272,177	49%
Δ	$243,890	$567,328	$81,882	$350,000	$299,845	$308,589	$176,295	57%
$250,000 / $100,000	$500,794	$1,527,422	$534,660	$769,538	$975,594	$861,601	$418,885	49%
Δ	$731,669	$872,813	$0	$574,651	$479,976	$531,822	$333,005	63%
$500,000 / $250,000	$1,232,463	$2,400,234	$534,660	$1,344,189	$1,455,570	$1,393,423	$667,708	48%

	Loss Ratios 04-05	Loss Ratios 05-06	Loss Ratios 06-07	Loss Ratios 07-08	Loss Ratios 08-09	Average	σ	σ %
Property Premiums	$3,250,000	$3,125,000	$3,350,000	$3,600,200	$4,102,000			
Property Total Incurred	$925,880	$436,406	$320,796	$1,091,725	$1,423,927	$839,747	$459,394	55%
Loss Ratio	28%	14%	10%	30%	35%	23%	11%	47%
GL Premiums	$1,072,500	$1,031,250	$1,105,500	$1,188,066	$1,353,660			
GL Total Incurred	$1,278,596	$3,927,656	$213,864	$727,816	$158,214	$1,261,229	$1,557,906	124%
Loss Ratio	119%	381%	19%	61%	12%	118%	153%	129%
Total Premiums	$4,322,500	$4,156,250	$4,455,500	$4,788,266	$5,455,660			
Total Incurred	$2,204,475	$4,364,063	$534,660	$1,819,541	$1,582,141	$2,100,976	$1,408,369	67%
Loss Ratio	51%	105%	12%	38%	29%	47%	35%	75%

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- Selected Resources

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