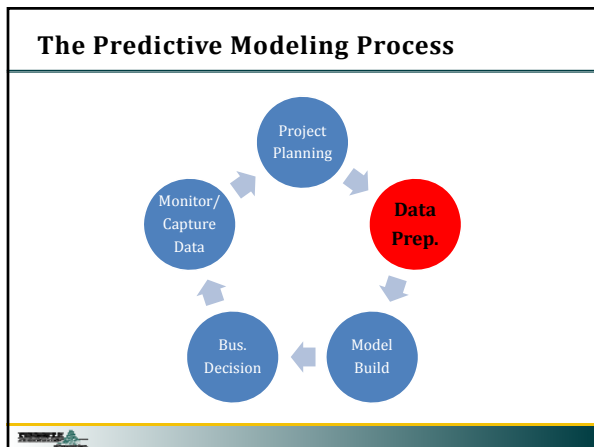


Pinnacle
The Power of Choice

Commercial Lines Predictive Analytics: Before & After

CAS RPM Seminar 2011
March 22, 2011
Robert J. Walling, III, FCAS, MAAA

Experience the Pinnacle Difference!



- ### Approaches to Getting More Out of Data
- Internal Data
 - Modelers: AIR, RMS, EQECAT, Baseline
 - Statistical Agents: NCCI, ISO
 - Insurers:
 - Commercial Auto: Progressive, Hartford
 - Medical Malpractice: The Doctors Company, Medical Protective, (also NCMIC, PICA in specialties)
 - Casualty & Package Programs: CNA, Zurich, Hartford, Farmers, Safeco, Travelers
 - Data Collectors:
 - Commercial Auto: RL Polk, Central Analysis Bureau
 - Credit: Lexis-Nexis, Experien, TransUnion
 - Property: MSB,
 - Medical Malpractice: PointRight, NPDB, State Closed Claims Databases

Combining Data

- Lawrence, H. Longley-Cook's - "We may liken our (data) to a large crumbly loaf cake, which we may cut in slices to obtain easily edible helpings. ... If we try to slice the cake more than one way at a time, we shall be left with a useless collection of crumbs"
- Increase the size of your cake
- For small Books of Businessowners (BOP) and Commercial Package (CPP/CMP), consider combining into single underwriting score model
- Small companies may also look at account based models



Got the Data...Sort of

- Problem: Lots of data accurately captured by agents on ACORD BOP application and company supplemental application... in ink (pencil, crayon). Never gets into systems.
- Solution: Hire college kids? No.



Seek out retirees group that knows company systems and is familiar with applications. They're looking for supplemental income and a way to stay connected. You get accurate, inexpensive data input.

Loss Control Survey Scores

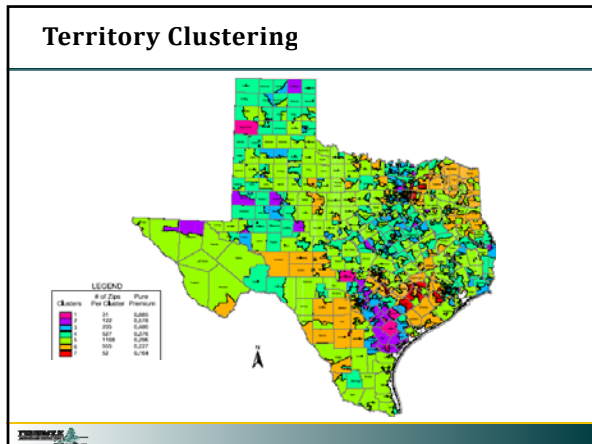
Core Section	Questions	Points	# of N/A
1. Frequency and Severity Trends	3	18	0
2. Loss Prevention Direction	13	41	1
3. Substance Abuse	1	4	0
4. Accident Investigation	2	6	0
5. Claims Management	3	12	0
6. Emergency Response	5	15	1
7. Regulatory Compliance	14	21	4
8. Liability	4	7	2
9. Motor Vehicle	4	14	0
10. Ergonomics	4	2	2
TOTALS	53	128	12

Supplemental Section	Applicable Sections	Questions	Points	# of N/A
A. Construction	<input checked="" type="checkbox"/>	20	80	8
B. Distribution	<input type="checkbox"/>	6		
C. Health Care	<input type="checkbox"/>	6		
D. Quarries	<input type="checkbox"/>	12		
E. Service Companies	<input type="checkbox"/>	4		
F. Transportation	<input type="checkbox"/>	7		
TOTALS		26	80	8

$$\frac{79}{179} \times \frac{17}{224} = \frac{1343}{49056} \approx 2.7\%$$

(Total Questions (Core & Supplemental) / # of N/A) x (Maximum Points / Total Points (Core & Supplemental)) = Final Score %

- How does improving my score impact my renewal?
- Are insureds with low scores more likely to have losses in reinsurance/excess layer?
- Are there specific programs, devices, training, that can be offered to insureds with specific weaknesses?
- Can the cost/benefit be supported from the experience of other insureds?
- Is there a bias in my experience rating plan?



Constrained or Restricted Models

- Many companies face the problem of not enough data to model all of the rating and tiering/scoring variables simultaneously
- (Wouldn't be able to file independent rates even if I could model them.)
- Solution: Constrain the rating factors in the model to AAIS, ISO, or NCCI loss costs (or a competitor) and focus on scorecard/tiering factors.

Constrained or Restricted Model

Construction Type	Factor
Frame Construction	1.000
Joisted Masonry	0.825
Non-Combustible	0.825
Masonry Non-Combustible	0.749
Modified Fire Resistant Or Fire Resistant	0.560

Public Protection (Fire) Classification	Factor
1 - 4	1.000
5 - 6	1.063
7 - 8	1.260
8B	1.490
9 - 10	1.490

Publicly Available Rate Filings - 1

DRVR-CLASS-FCT-TBL	WEIGHT	SAND	DRVR
CODE NO POINTS	CLASS	GRAVEL	CLASS
AGE			FCT
14 ... 18 M 0	M	Y	2.87
14 ... 18 M 0	M	N	3.93
14 ... 18 M 0	L	Y	2.51
14 ... 18 M 0	L	N	2.51
14 ... 18 M 0	M	Y	2.87
14 ... 18 M 0	M	N	3.93
14 ... 18 M 0	X	Y	2.87
14 ... 18 M 0	X	N	3.93
14 ... 18 M 1	M	Y	2.95
14 ... 18 M 1	M	N	4.12
14 ... 18 M 1	L	Y	3.55
14 ... 18 M 1	L	N	3.38

Type of Operation Multiplier x Rate for Bodily Injury, Property Damage and Medical Payments Coverage

0.95 - Grain Haulers	0.95 - Dry Freight - Truckload
1.00 - Livestock Haulers	1.15 - Intermodal
1.10 - Bulk/Tank - Chemical/Food Grade	1.10 - Dry Freight - Less Than Truckload (LTL)
1.00 - Bulk - Dry Bulk	1.20 - Auto Transporters
1.10 - Tank - Fuel, Oil, Petroleum	1.40 - Dumping Operations
0.95 - Refrigerated (Reefer)	1.25 - Drive Away Operations
1.00 - Flatbeds	1.30 - Logging Operations
1.00 - Specialized Carriers	1.40 - Mobile Home Toters

Publicly Available Rate Filings -2

C. TIERED RATING

1. Tier is determined at policy inception, renewal or anniversary based on the following characteristics: Number of "power units", length of time insured with company, accident history, age of driver(s), Motor Vehicle Record of driver(s), management safety rating, and driver retention.

Tiered Rating Multipliers

TIERED RATING MULTIPLIERS							
Tier	Multiplier	Tier	Multiplier	Tier	Multiplier	Tier	Multiplier
1	0.401	10	0.557	19	0.774	28	1.076
2	0.416	11	0.578	20	0.803	29	1.116
3	0.431	12	0.599	21	0.833	30	1.158
4	0.447	13	0.622	22	0.864	31	1.201
5	0.464	14	0.645	23	0.896	32	1.245
6	0.481	15	0.669	24	0.929	33	1.292
7	0.499	16	0.694	25	0.964	34	1.340
8	0.518	17	0.719	26	1.000	35	1.390
9	0.537	18	0.746	27	1.037	36	1.442
						37	1.495
						38	1.551
						39	1.609
						40	1.669
						41	1.731
						42	1.795
						43	1.862
						44	1.932
						45	2.004

CA Scorecard Example - Hartford

Company Rates applicable to Sentinel Insurance Company, LTD only: ✓

Based on the following risk characteristics:

1. MVR Information
2. Average Driver Age
3. Youthful Composition
4. Length of Credit History,
5. Total Number of Trades
6. Percentage of Balance Overdue of All Trades
7. Total Balance of Regular Trades
8. Number of Public Records / Collections
9. Amount of Judgment
10. Average Number of Days Balance Overdue in the Past 3 Months
11. Number of Inquiries in the Past 9 Months
12. Years in Business (when financial information is not available)
13. Industry Classification
14. Percentage of TTT Power Units
15. Prior 3-Year Loss Frequency by Size of Risks
16. Other risk-specific characteristics that are not contemplated above

use the applicable tier factor as a final step prior to rounding to determine the final rates.

CA Scorecard Example - Hartford

Tier	Factor	Tier	Factor	Tier	Factor
1	0.40	18	0.81	35	1.66
2	0.42	19	0.85	36	1.73
3	0.43	20	0.89	37	1.81
4	0.45	21	0.92	38	1.88
5	0.47	22	0.96	39	1.96
6	0.49	23	1.00	40	2.05
7	0.51	24	1.05	41	2.13
8	0.54	25	1.09	42	2.23
9	0.56	26	1.14	43	2.32
10	0.58	27	1.19	44	2.42
11	0.61	28	1.24	45	2.52
12	0.63	29	1.29	46	2.63
13	0.66	30	1.35	47	2.74
14	0.69	31	1.40	48	2.86
15	0.72	32	1.46	49	2.98
16	0.75	33	1.53	50	3.11
17	0.78	34	1.59		

UNINSURED/UNDERINSURED MOTORISTS Factor is 1.00.

Physician Surcharge Program - 1

PAYMENT HISTORY	
A. Two or more late payments within the last three years.	100
B. Two or more cancellations for non-payment of premium within the last three years.	150
OTHER	
A. Uncooperative in Claims Handling	75
B. Patient Load:	
For Surgeons, 61-99 patients per week	50
For Surgeons, 100 or more patients per week	100
For all others, 101-149 patients per week	50
For all others, 150 or more patients per week	100

Physician Surcharge Program - 2

C. Advertising: If insured advertises his/her services on TV, newspapers, billboards or radio	25
D. Uses collection agency that can file suit without insured's written consent.	25
E. Previous insurance history (bare, insolvent prior insurer or nonrenewed).	100
F. Claim experience of Associates, Partners or Corporation:	
If one member with claim(s)	75
If more than one member with claim(s)	100
Favorable experience of group as a whole	-150
G. For each claim or suit in which the physician breached the standard of care:	
Mixed Reviews	50
All Negative Reviews	100
Admitted or Clear Liability	100

Physician Surcharge Program - 3

Ranges & Surcharges

0 to 50 points-No surcharge	51 to 90 points-20% surcharge	91 to 130 points-30% surcharge
131 to 170 points-40% surcharge	171 to 210 points-50% surcharge	211 to 250 points-60% surcharge
251 to 280 points-70% surcharge	281 to 300 points-80% surcharge	301 to 325 points-90% surcharge
326 to 350 points-100% surcharge	351 to 370 points-125% surcharge	371 to 390 points-150% surcharge
391 to 410 points-175% surcharge	411 to 430 points-200% surcharge	431 to 450 points-225% surcharge
451 to 470 points-250% surcharge	471 to 490 points-275% surcharge	491 to 510 points-300% surcharge
511 to 530 points-325% surcharge	531 to 550 points-350% surcharge	551 to 570 points-375% surcharge
571 to 590 points-400% surcharge	591 or more points-Nonrenew	

BOP Competitive Information

Eligible Occupancies	Classification Factors			
	Building Lessors	Building Occupants	Business Personal Property	Class Code
The following are the eligible classes of business. No other types of business may be insured under this program. See also the Ineligibility List in the main section of this manual.				
Air Conditioning Equipment Dealers	1.314	1.150	0.806	00072
Alterations - Clothing	1.278	1.333	1.512	71961
Animal Cemetery	NA	0.526	0.619	00056
Animal Cemetery - Lessors Risk	0.504	NA	0.619	00056
Animal Hospital	NA	0.526	0.619	00057

BOP Competitive Information

Age of Building Credit Factors:		
Age	Original Construction	Significantly Renovated
0 -- 5	0.900	0.900
6 -- 10	0.950	0.950
11 -- 15	0.975	0.975

Franchise Factor:	Property	Liability
	0.950	0.975

Mall Credit	Property	Liability
	0.975	0.950

Publicly Available Scorecards

Location of Business	Attached to Habitational Structure	10
	Stand-alone Building	3
	Strip Shopping Center	0
	Enclosed Mall	-3
Hours of Operation Open to Public	21-24 Hours	10
	16-20 Hours	5
	12-15 Hours	0
	Less than 12 Hours	-5
Percentage of Sales from Catering Services	Over 10%	10
	1-10%	5
	None	0
Total Percent of Sales from Liquor Sales	More than 20%	5
	1-20%	2
	None	0
Drive Thru	Yes	0
	No	0
Credit Score	All Responses	0

Polk Vehicle Data

Polk Commercial Trailer File

Enables you to:

- Assess market performance
- Discover new markets
- Monitor the competition
- Identify fleet purchasing patterns

Description
 Polk's Commercial Trailer File is an online database of over 5 million new U.S. commercial trailer registrations. Updated monthly and available online, the Polk Commercial Trailer File gives you fast, easy access to valuable sales data broken down into numerous categories including:

- Geographic area
- Custom geography
- Makes
- Body styles
- Axles per trailer
- Length
- Vehicle Identification Number (VIN)
- Year model
- Fleet size
- Carrier type
- Vocations (from agriculture to wholesale)
- Trailer counts
- And much more

Central Analysis Bureau – Part 1

Entity Type: Carrier

Out of Service (Interstate Only): No Out of Service Date: None

Legal Name: KA BULK TRANSPORT LLC
DBA Name: KLEMM TANK LINES
Physical Address: 2204 PAMPERIN RD
 GREEN BAY, WI 54313-0931
Phone: (920) 434-6343
Mailing Address: P O BOX 11708
 GREEN BAY, WI 54307-1798

USDOT Number: 171830 State Carrier ID Number:

MC or MX Number: MC-147216 DUNS Number: 02-320-3300

Power Units: 547 Drivers: 636

MCS-150 Form Date: 10/14/2009 MCS-150 Mileage (Year): 49,073,288 (2008)

Central Analysis Bureau – Part 2

Inspection results for 24 months prior to: 02/22/2010

Total inspections: 1,105
 Note: Total inspections may be less than the sum of vehicle, driver, and hazmat inspections. Go to [Inspections Help](#) for further information.

Inspections:

Inspection Type	Vehicle	Driver	Hazmat
Inspections	859	1095	919
Out of Service	77	3	13
Out of Service %	9%	0.3%	1.4%
Nat'l Average % (2007- 2008)	22.27%	6.60%	5.02%

Crashes reported to FMCSA by states for 24 months prior to: 02/22/2010

Crashes:

Type	Fatal	Injury	Tow	Total
Crashes	1	20	28	49

Personal vs. Commercial Scores

<p>Personal</p> <ul style="list-style-type: none"> ▪ FICO Score ▪ 35% Payment History ▪ 30% Amounts Owed ▪ 15% Length of Credit ▪ 10% New Credit ▪ 10% Type of Credit 	<p>Commercial</p> <ul style="list-style-type: none"> ▪ Experian ▪ Payment habits ▪ Outstanding balances ▪ Trends over time ▪ Credit utilization ▪ Number of trade experiences ▪ Public record recency, frequency and dollar amount ▪ Demographics *
--	--

Credit Data Example

Public Filings
 The following data includes both open and closed filings found in D&B's database on this company.

Record Type	Number of Records	Most Recent Filing Date
Bankruptcies	0	-
Judgments	0	-
Liens	0	-
Suits	0	-
UCC's	1	01/27/03

The public record items contained herein may have been paid, terminated, vacated or released prior to today's date.

Financial Stress Score Class
Financial Stress Score Class: 1
 (Lowest Risk:1; Highest Risk:5)

Commercial Issues

- How much debt is the business carrying?
- What is the structure of the company's debt?
- Strong consideration is also given to:
 - Cash flow
 - Financial resources
 - Working capital
 - Net worth
- Fiscal information is not considered in a vacuum.

Credit Scores Include Demographics

- Years in Business
- Standard Industrial Classification codes
- Business Size
 - Revenues
 - Capital
 - Net Worth
 - Number of Employees
- History
- Reputation
- Background of Principals
- Structure of the business

Demographics Example

D&B Company Overview
 This is a headquarters location
 Branch(es) or Division(s) exist Y

Chief Executive	JOSEPH HERBERS, PRES
Year Started	2003
Employees	45 (35 Here)
Financing	SECURED
SIC	8999
Line of business	Services
NAICS	541612
History Status	CLEAR

Indicated SIC Relativities

SIC 3	Description	Exposure	On-Balance Relativity
171X	Plumbing/HVAC	37,542	1.055
173X	Electrical Contractors	36,629	0.886
175X	Carpentry	32,404	0.969
179X	Misc. Contractors	23,829	0.982
27XX	Printing/Publishing	16,005	0.824
35XX (o/t 357)	Industrial Machinery	19,753	0.838
507X	Hardware Wholesaler	10,866	0.932
514X	Grocery Wholesaler	16,486	1.149
571X	Home Furnishings	11,795	0.918
581X	Restaurants	12,239	0.916
59XX	Misc. Retail	36,818	1.031
64XX	Insurance Agents	13,209	0.921
65XX	Real Estate	30,656	0.966
721X	Laundry/Dry Cleaning	13,341	1.373
734X	Building Services	19,012	1.145
737X	Computer Services	16,663	1.145
76XX	Misc. Repair Services	15,425	1.010
80XX	Health Services	18,607	1.068
87XX	Eng. & Mgt. Services	80,160	0.927

- ### A Hierarchical Approach to No-Hits
- Use a Commercial Score First
 - High hit rate for large, more established businesses
 - Not great on small, new businesses
 - New, Small Businesses often have simple ownership structure
 - Use Personal Credit Information on Principal Owner
 - Close proxy to financial resolve of a small business
 - Some programs focusing exclusively on small business skip commercial score

Medicare Data - Nursing Homes

Data.Medicare.gov Home | Create an Account on Data.gov

Unsaved View Save As... Reset

Based on Medicare Rating for Skilled Nursing Home

Sort columns and change view for each nursing home. All columns such as Overall Health Inspections, and Quality Measures.

Provider ID	Nursing Home Name	State	Overall Star Rating	Health Inspections	Nurse Staffing	SQ/Quality Measures	RN Duty Star
1	495238 MANASSAS HEALTH AND REHAB CENTER	VA	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★
2	495300 BIRMINGHAM GREEN	VA	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★
3	495388 GAINESVILLE HEALTH AND REHAB CENTER	VA	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★
4	495312 JOHNSON CENTRAL COLONY LANDING	VA	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★
5	495275 LOUDOUN NURSING AND REHAB CNTR	VA	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★
6	495261 HERITAGE HALL NRSNG AND REHAB	VA	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★
7	495267 OAK SPRINGS OF WARRENTON	VA	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★
8	495233 FALGOUTER HEALTH REHABILITATION & NURSING	VA	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★
9	495179 CAMERON GLENH HEALTH & REHAB CENTER	VA	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★
10	495165 GOLDEN LIVING CENTER-SLEEPY HOLLOW	VA	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★
11	495337 LEEWOOD HEALTHCARE CENTER	VA	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★
12	495246 BURKE HEALTH CARE CENTER	VA	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★

Nursing Home Data

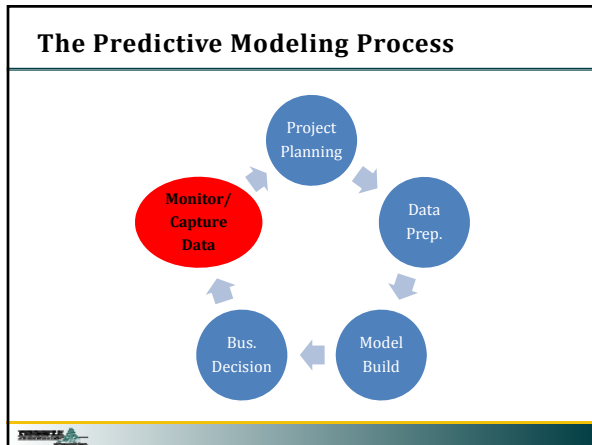
Legend
 ● High Risk
 ● High Risk with Decline
 ○ Decline
 ○ Resident Interview
 ○ Staff Assessment

RADAR Report as of: 03/23/2011

Risk Assessment Details - Active Residents

Resident	Room#	ABO	QSOB	ACL	Profile Scores													
					Delirium	Delirium	Wound	Wound	Pressure	Pressure	Med	Med	SA	SA	Falls	Falls	Other	Other
A. D.	208	5/21/2011	NA Data	●	○	-	○	-	○	-	○	-	○	-	○	-	○	-
B. P.	208	5/20/11	NA Data	●	○	-	○	-	○	-	○	-	○	-	○	-	○	-
B. T.	20	5/20/2011	NA Data	●	○	-	○	-	○	-	○	-	○	-	○	-	○	-
B. VV.	09	5/20/11	NA Data	○	○	-	○	-	○	-	○	-	○	-	○	-	○	-
B. Q.	09	5/20/11	NA Data	○	○	-	○	-	○	-	○	-	○	-	○	-	○	-
B. M.	09	5/20/11	NA Data	○	○	-	○	-	○	-	○	-	○	-	○	-	○	-
D. P.	09	5/20/11	NA Data	○	○	-	○	-	○	-	○	-	○	-	○	-	○	-
D. X.	09	5/20/11	NA Data	○	○	-	○	-	○	-	○	-	○	-	○	-	○	-
L. R.	09	5/20/11	NA Data	○	○	-	○	-	○	-	○	-	○	-	○	-	○	-
W. K.	102	5/21/2011	NA Data	○	○	-	○	-	○	-	○	-	○	-	○	-	○	-

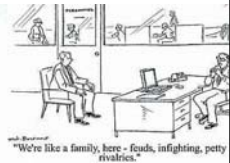
Change page: 1 of 1 | Showing page 1 of 2. Items 1 to 15 of 15.



- ### Implementation Issues
- Is it working?
 - Is it doing what we thought it would?
 - Are underwriters/agents accepting it?
 - Are we getting buy-in?
 - Are we avoiding turf wars?
 - How are we going to do even better next time?

Avoiding Turf Wars

- Problem: If not implemented correctly, predictive modeling often leads to turf wars.
 - The models aren't stable year to year.
 - We're not sticking to the pricing guidance.
 - It doesn't work in a soft market.
 - The models aren't right.
 - Too many exceptions.



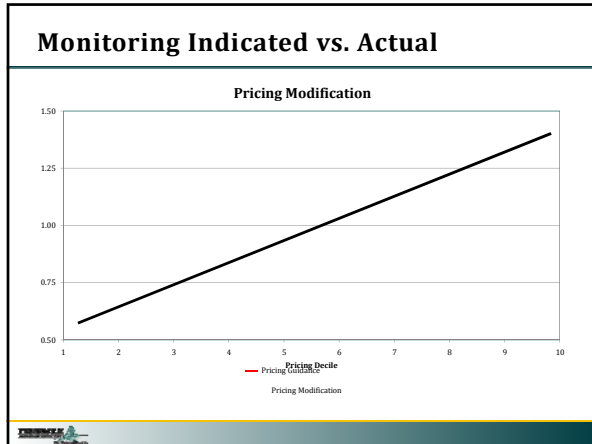
with Howard
"We're like a family, here - feuds, infighting, petty rivalries."

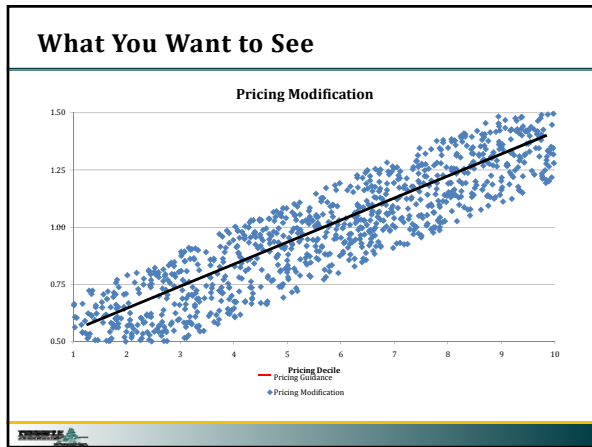
Achieving Buy In

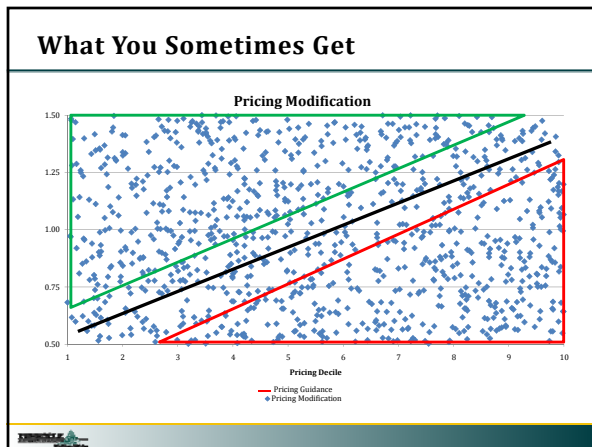
- Solutions:
 - Highly visible commitment at the C-level
 - Active involvement of all departments in modeling and product development processes
 - Testing prior to implementation
 - Reason codes/Feedback
 - **Monitoring/Keeping Score**

Common Monitoring Metrics

Metrics	Dimensions
▪ Hit Ratios	▪ Industry Segment
▪ Retention Ratios	▪ State
▪ Renewal Price Change	▪ Pricing Guidance Bands
▪ Percent of Pricing Guidance/Manual	▪ Size of Account
▪ Premium/Policy Mix Shifts	▪ Agent
▪ Claim Frequency	
▪ Limited Severity	





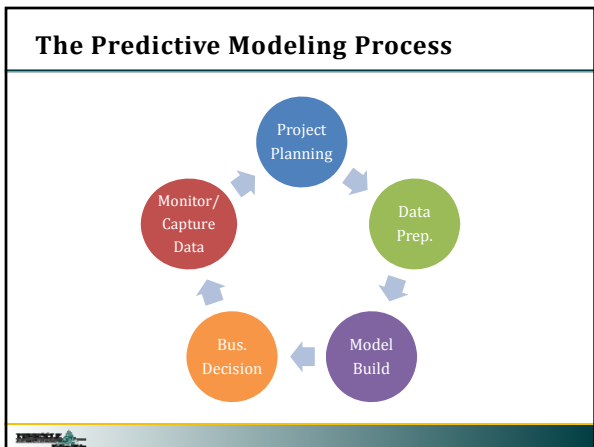


Do whatever you want, I get to keep score...

- Track Exception Accounts, Monitor Results
 - Individually or Collectively
- WC Combined Ratio Comparison
 - Actual Pricing 85% of Indicated or Less – 150%
 - Between 90% and 110% of Indicated – 105%
 - Greater than 115% of Indicated – 88%

“Every New Beginning Comes From Some Other Beginning's End...”

- We know it works, they're using it or Rob told me so, but we don't capture it.
- Solutions:
 - Commit to collecting them as a project objective – at the beginning of the project
 - Expect it as a project deliverable
 - Plan for implementing it, just like other deliverables
- Do Not:
 - Try to capture everything at once.
 - Overlook this step and still expect the data to be better in three years.



Pinnacle **Thank You for Your Attention**
The Power of Choice

Monograph

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About the Author
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