Reinsurance Pricing Issues for Farm and Farmowners

2010 Casualty Actuaries in Reinsurance

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Agenda

- Farm Umbrella
- Farm Excess Liability Issues
- Farm Excess Property Issues

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FARM UMBRELLA

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Farm Umbrella Product Overview

- Product similar to personal umbrella
- Protects farm owner assets from large liability claims
- Low Frequency / High Severity
- Commonly "heavily" reinsured line
  - Umbrella Quota Share Treaty
  - Stacked in Excess Casualty Program
- Reinsurer needs product expertise

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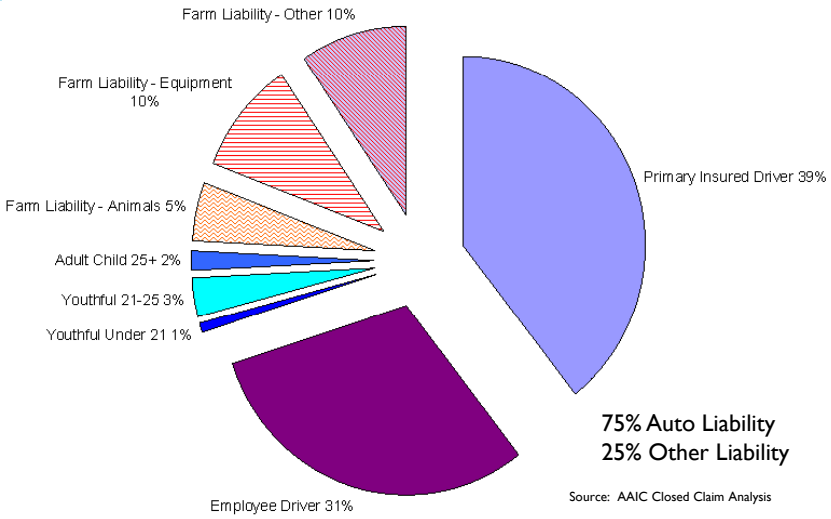
Farm Umbrella Closed Claim Study



75% Auto Liability
25% Other Liability

Source: AAIC Closed Claim Analysis

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Farm Umbrella Vehicle Loss Cost Drivers

- Fatal Accident Analysis
  - NHTSA FARS "public" web database
  - All fatal auto accidents reported in high detail
  - Proxy for serious "umbrella" auto accidents
- FARS "Driver" analysis findings:
  - Fatal accident involvement rates higher for rural zip codes
  - Heavier the vehicle, higher the risk
  - Youthful, double the risk over older
  - Male, double the female risk over all age groups

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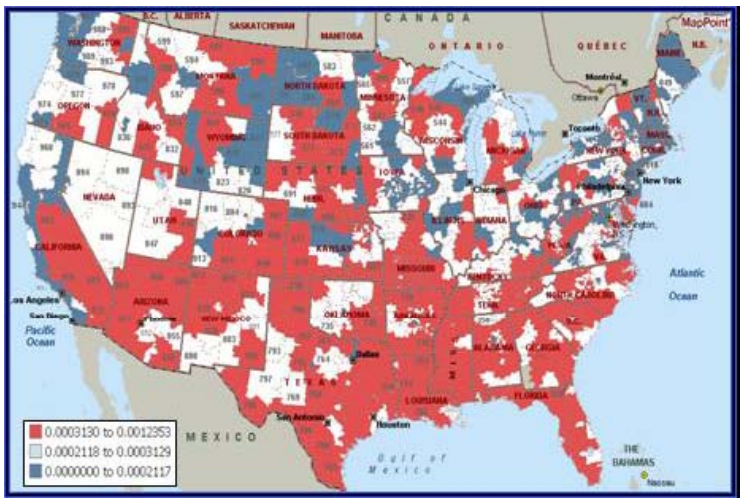
Fatal Accident Report System Involvement Rate by 3 Digit Zip



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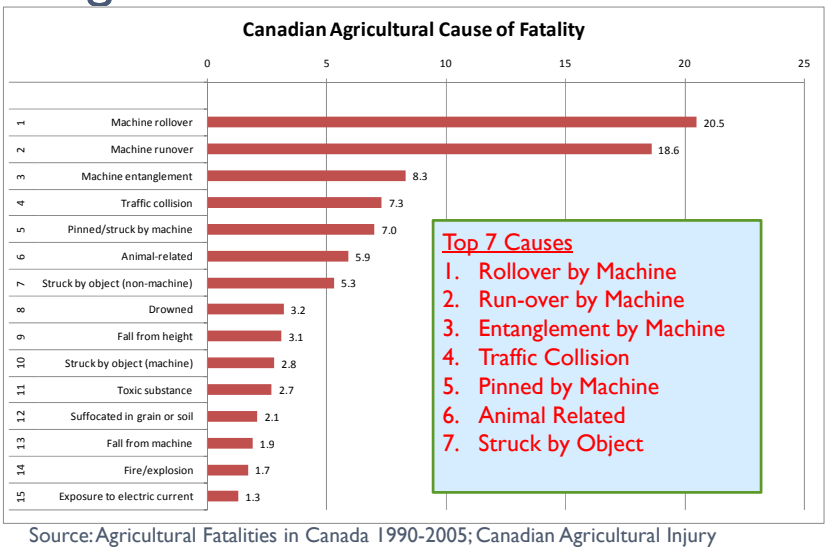
Agricultural Fatalities



Top 7 Causes
1. Rollover by Machine
2. Run-over by Machine
3. Entanglement by Machine
4. Traffic Collision
5. Pinned by Machine
6. Animal Related
7. Struck by Object

Source: Agricultural Fatalities in Canada 1990-2005; Canadian Agricultural Injury Surveillance Program

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Agricultural Fatalities

Fatal Agricultural Injuries by Relation to Farm Operator

Owner/Operator	55.3%
Child of Owner/Operator	16.1%
Hired Worker	12.8%
Other Relative of Operator	6.3%
Adult Visitor	4.1%
Spouse of Operator	2.3%
Child Visitor	1.9%
Other Adult Non Visitor	0.7%
Child of Hired Worker	0.5%
Owner/Operator or Family	80.0%
Non Family	20.0%

Low Percentage of 3rd Party Fatalities

Source: Agricultural Fatalities in Canada 1990-2005; Canadian Agricultural Injury Surveillance Program

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Farm Umbrella Common Rate Elements

- Often Fixed Dollar Charges
- Vehicular Liability Charges
  - Number of Vehicles
  - Vehicle Size and Function
  - Youthful Drivers
- Other Liability Charges
  - Personal Lines Charges
  - Farm Acreage and Farm Sites
  - Custom Farming Receipts
  - Livestock and Horses
  - Unique activities charges

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FARM & FARMOWNERS EXCESS LIABILITY RATING ISSUES

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Farm Liability Clash Exposure

- Farmers can be involved in a wide array of interrelated entities and activities.
- Concentrated market shares in specific rural geographic area and social/commercial networks.
- Higher likelihood of having more than one liability reinsured policy being exposed to a liability occurrence than typical personal or commercial liability situations.

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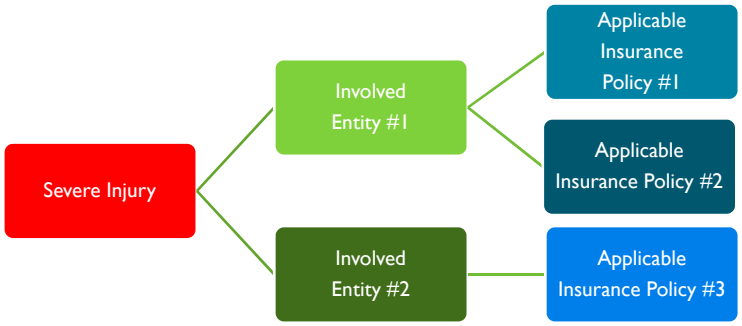
Casualty Clash Loss Schematic of the Exposure



If damages are large enough, plaintiffs will be looking for all potentially liability entities and insured policies.

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Farm Liability
Casualty Clash Scenarios

- Farm Related Policy Exposure
  - Farm Umbrella if included in treaty
  - Homeowner & Farm Liability Policy
  - Farmer owns separate commercial entity
- Related Entities to Policyholder
  - Family Farm Partnerships
  - Tenant Farmer & Land Owner
  - Custom Farming

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Experience Rating Issue
"Looking for Clash"

- Primary company Statistical Data is often LOB focused
- Review Experience by Date of Loss
- Same Date, Same "Occurrence" ? ? ?

Claim No	Date of Loss	LOB	Limit	Incurred Loss	ALAE	Status
GL00070656	3/15/2007	G.L.	1,000,000	400,000	35,000	Closed
FO00070356	4/29/2007	Farm	300,000	300,000	99,000	Open
GL00070936	4/29/2007	G.L.	1,000,000	1,000,000	200,000	Open
GL00071164	5/16/2007	G.L.	1,000,000	550,000	55,000	Closed
FO00070451	6/29/2007	Farm	300,000	125,000	12,500	Closed

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Exposure Rating Assumption Sets

Premium Mapping
- Allocated Liability Premium
- Policy Limit Profile
- Reconciliation with Subject Matter Premium and Limit Profile Premium

Loss Assumptions
- Overall Loss Ratio
  - Liability/Property Split Relative to Allocated Liability Premium
- Select Loss Distribution Assumption

Clash Loading
- Judgment Approaches:
  - Flat Load / Round Up / Payback Methods
- Technical Approaches

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Exposure Rating Adjusting for Clash

- Assume that Primary Policies have following Premium Profile
  - 5% - 100,000 CSL
  - 70% - 300,000 CSL
  - 20% - 500,000 CSL
  - 5% - 1,000,000 CSL
- Let's assume that 10% of claims could have more than one policy applicable "Potentially"

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Exposure Limit Profile Adjustment for Clash

- Create an clash exposure profile "matrix"
- Assume a primary and secondary policy limit in clash potential losses

		Clash Secondary Limit				Clash	No Clash
Primary	Primary	100,000	300,000	500,000	1,000,000	Sub-Total	Sub-Total
Allocation	Limit	0.50%	7.00%	2.00%	0.50%	10.00%	90.00%
5.0%	100,000	0.03%	0.35%	0.10%	0.03%	0.50%	4.50%
70.0%	300,000	0.35%	4.90%	1.40%	0.35%	7.00%	63.00%
20.0%	500,000	0.10%	1.40%	0.40%	0.10%	2.00%	18.00%
5.0%	1,000,000	0.03%	0.35%	0.10%	0.03%	0.50%	4.50%
	Sub-Total	0.50%	7.00%	2.00%	0.50%	10.00%	90.00%

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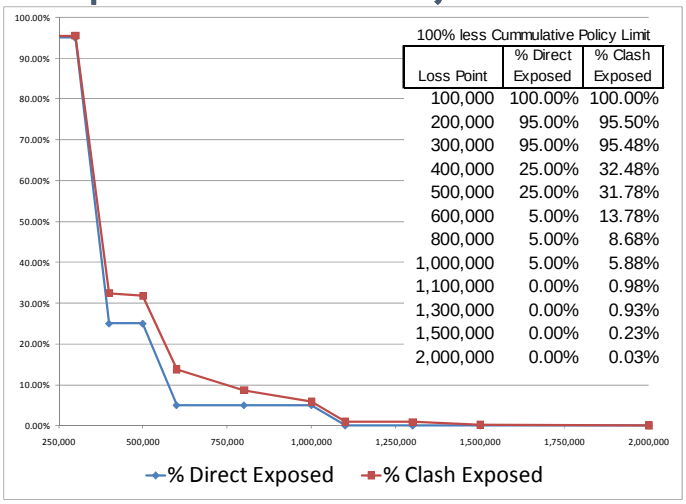
Exposure Limit Profile Impact of Clash Adjustment



100% less Cummulative Policy Limit

Loss Point	% Direct Exposed	% Clash Exposed
100,000	100.00%	100.00%
200,000	95.00%	95.50%
300,000	95.00%	95.48%
400,000	25.00%	32.48%
500,000	25.00%	31.78%
600,000	5.00%	13.78%
800,000	5.00%	8.68%
1,000,000	5.00%	5.88%
1,100,000	0.00%	0.98%
1,300,000	0.00%	0.93%
1,500,000	0.00%	0.23%
2,000,000	0.00%	0.03%

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Exposure Rating
Clash Assumptions Impact

Impact on Loss Distribution Due different Clash Assumptions

	Limit	125,000	125,000	250,000	500,000	1,000,000	
	Attach	0	125,000	250,000	500,000	1,000,000	Total
Clash %		Percentage of Losses in Allocated to Layer					
0.0%		70.93%	19.23%	9.01%	0.83%	0.00%	100.00%
2.5%		70.58%	19.16%	9.23%	1.01%	0.01%	100.00%
5.0%		70.23%	19.09%	9.45%	1.20%	0.03%	100.00%
10.0%		69.53%	18.96%	9.88%	1.56%	0.06%	100.00%
		Ratio of Percentage to No Clash Assumption					
0.0%		1.000	1.000	1.000	1.000	-.---	
2.5%		0.995	0.997	1.024	1.220	-.---	
5.0%		0.990	0.993	1.048	1.440	-.---	
10.0%		0.980	0.986	1.097	1.880	-.---	

Note: Underlying Loss Distribution is Illustrative Purpose Only

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FARM & FARMOWNERS PROPERTY PER RISK EXCESS ISSUES

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Farm Property Excess Rating

Traditional Rating Approach:

- Experience Rating
- Exposure Rating
- Blended Experience and Exposures

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Property Exposure Profile
Farm Property Limits Profile

- What is the Farm Property Limit Profile?
  - Policy Limit Profile
  - Farm Site Profile
  - Building Limit Profile
- What is a Farm Probable Maximum Loss?
  - 100% Loss to Policy Limit Probable or Foreseeable?

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Property Exposure Profile
Farm Property Limits Profile

- Dwelling Coverage / Characteristics
  - Homeowners
  - Likely Higher Fire Protection Class 10
- Scheduled Farm Equipment
- Other Farm Buildings
- Scheduled Property
- Blanket Limits

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Property Exposure Rating
Loss Distribution for Farm

- What is the basis of limit profile?
- What Loss Distribution to use?
  - Element of Personal Dwelling
  - Elements of Mono-line Commercial
  - Apples and Oranges issue

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Property Loss Distribution First Loss Scales ?

- Assumption that property loss distribution is scalable to Total Insured Value (TIV)
- Examples: Lloyds Salzmann, Ludwig, Swiss Re
- The theory and distributional assumptions are easy to work with.
- Curves can be segmented:
  - Class (Building Type, Commercial Class)
  - Peril (Fire, Wind, Other)
  - Amount of Insurance range

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Property Loss Distribution First Loss Scales ?

	Ludwig Curve; All Commercial Property; Fire Only				
	Excess Ratios: % of Loss Cost Exces of % of Insured Value				
Attachment as	Range 1	Range 2	Range 3	Range 4	Range 5
Percent of	1,000	25,000	100,000	300,000	1,000,000
Insured Value	25,000	100,000	300,000	1,000,000	over
5%	75.8%	62.5%	55.0%	47.5%	24.7%
20%	45.2%	33.2%	24.4%	17.6%	12.0%
40%	24.7%	15.7%	8.8%	4.7%	0.1%
60%	12.5%	7.1%	3.2%	1.0%	0.1%
80%	**5.5%**	**2.9%**	**1.3%**	**0.4%**	**0.1%**
90%	2.5%	1.4%	0.7%	0.3%	0.0%
100%	0.0%	0.0%	0.0%	0.0%	0.0%

If the basic assumption of a scalable loss distribution is correct, why does the excess ratios change across IV ranges?

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Farm Property Excess Market Study Approach

- Done by combining related reinsurance submissions for analysis
- "Meta-Analysis"
  - Performance of Assumptions
  - Year to Year Trends
  - Direct distribution studies
- Applies not just to Farm Property!

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Market Study Meta-Analysis design

- Pricing Metrics:
  - Experience Loss Cost
  - Experience Loss Cost to Premium
  - Experience to Exposure Rate Relativities
- Experience Loss Rate Metrics
  - XS Loss Counts to Exposed Polices
  - XS Loss Cost to Exposed Limits
  - XS Loss Cost to Pro-Rata Premium

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Market Study
Meta-Analysis design

Design Categories:

- Company
- Line of Business or Segment
- Excess Layer Range
- Year of Loss

Study design dependent on detail collected in majority company submission.

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Market Study
Example: Loss Rate Study

Excess Loss / Exposed Policy (TIV >= Threshold)

Company # 1 - Multi Year Analysis			
TIV Threshold	Policies Exposed	Claim Excess Threshold	Annual Loss Rate per 1,000
300,000	471,464	320.00	**0.68**
500,000	145,475	82.00	**0.56**
750,000	42,939	21.00	**0.49**
1,000,000	15,626	6.00	**0.38**
1,250,000	5,222	3.00	**0.57**
1,500,000	2,186	1.00	**0.46**
1,750,000	929	1.00	**1.08**
2,000,000	484	-	-
2,250,000	303	-	-
2,500,000	207	-	-
2,750,000	144	-	-
3,000,000	110	-	-

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Market Study
Example: Loss Rate Study

Multi-Company Annualized Loss Rate (Excess Loss per 1,000 Policies)

Threshold	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	Total
300,000	**0.68**	0.62	1.52	0.43	0.30	0.34	0.68	0.30	0.83	0.82	**0.63**
500,000	**0.56**	0.57	1.02	0.54	0.39	0.19	0.50	0.32	0.62	0.79	**0.55**
750,000	**0.49**	0.42	0.74	0.70	0.33	-	0.41	0.48	0.65	0.73	**0.49**
1,000,000	**0.38**	-	1.00	0.57	0.17	-	0.38	0.26	0.36	0.87	**0.40**
1,250,000	**0.57**	-	0.98	0.62	-	-	0.34	0.25	-	0.64	**0.35**
1,500,000	**0.46**	-	-	0.92	-	-	0.24	0.41	-	0.80	**0.35**
1,750,000	**1.08**	-	-	0.81	-	-	0.23	0.59	-	1.34	**0.41**
2,000,000	**-**	-	-	1.07	-	-	0.16	0.81	-	-	**0.32**
2,250,000	**-**	-	-	1.38	-	-	0.23	1.08	-	-	**0.44**
2,500,000	**-**	-	-	1.78	-	-	-	-	-	-	**0.36**
2,750,000	**-**	-	-	2.07	-	-	-	-	-	-	**0.46**
3,000,000	**-**	-	-	2.49	-	-	-	-	-	-	**0.58**

Loss Rate analysis is a Non-Parametric exposure rating approach

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Market Study / Meta-Analysis Benefits

- Meta-Analysis is applicable to all lines of business, but critical for segments where pricing assumptions are not readily available.
- Constantly need to challenge, validate, and monitor assumptions
- Searches and obtains knowledge from larger universe of data

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Questions

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