

CHRISTOPHER GROSS CONSULTING

CREATIVE SOLUTIONS TO COMPLEX PROBLEMS

LOB-4: Reserving for Construction Risks

Approaches you may find Useful

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Agenda

- General Liability
 - Construction Defect
 - Premises Exposure
- Workers Compensation
- Auto Liability
- Pollution Liability
- Professional Liability
- Subcontractor Default
- Builders Risk



Construction Defect

- Trigger
 - Accident date may be continuous and impact multiple annual policy terms
 - Triggers are different by state
- Completed Operations Coverage
 - Like Products Liability, provides insurance for claims resulting after a construction project is completed
 - This feels like Claims Made
 - Statute of Limitations/Repose

Accident Year Ultimate

- Current Case Incurred
- Case Development from the Report Year analysis – allocate to Accident Year
- True IBNR from Frequency-Severity process

Report Year Closed Counts

Data set for example purposes only – not to be considered typical

	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Period 8	Period 9	Period 10
1996		5	1							
1997	8	6	10	1		2	2			
1998	11	12	1	4	-1					
1999	6	6	8	9	2	-1	2		6	
2000	12	7	7	4	6	10			2	
2001	6	26	24	8	4	1	3		9	
2002	19	34	17	7	4	7	5		8	
2003	20	18	30	13	8	6	4		7	
2004	18	43	20	20	9	8	11		16	
2005	25	41	37	18	8	10	2		7	
2006	20	67	46	22	10	12	3		9	
2007	51	49	38	15	7	10	-2		2	

Report Year Reported Counts

Data set for example purposes only – not to be considered typical

	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Period 8	Period 9	Period 10
1996	9	-3								
1997	30	-5	3		1					
1998	28	-1	2	-1		-1				
1999	35	8	-1		-5	-1			3	
2000	50	3	-5	-2	-1	1			2	
2001	87	-3	-11	4			1		3	
2002	106	-2	-4	-6	1	1	1		3	
2003	135	-17	-10	-8	1	1	1		3	
2004	191	-53	3	-3	1	1	1		5	
2005	225	-65	-13	-7	1	1	1		5	
2006	273	-75	-9	-9	1	2	1		6	
2007	247	-69	-9	-8	1	1	1		5	

Report Year Statistics

Data set for example purposes only – not to be considered typical

Ultimate by Report Year

Year	Count	Dollars	Severity
1996	6	40,767	6,795
1997	29	898,216	30,973
1998	27	919,365	34,051
1999	39	4,944,698	126,787
2000	48	10,105,585	210,533
2001	81	13,922,857	171,887
2002	100	5,746,417	57,464
2003	106	7,908,048	74,604
2004	146	7,666,647	52,511
2005	147	15,997,441	108,826
2006	189	10,615,451	56,166
2007	170	19,793,786	116,434



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Accident Year Closed

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	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Period 8	Period 9	Period 10	Period 11	Period 12	tail
1996		6	3	10	3	4	9	11	7	12	7	2	4
1997	7	12	9	4	5	4	13	1	10	7	8	1	3
1998	3	4	2	5	7	4	3	14	11	19	26	5	10
1999	5	5	4	7	3	9	6	3	6	12	-6		2
2000	6	6	16	5	10	7	2	3	-16	16	2	2	5
2001	1	17	31	23	20	14	27	11	16	22	13	4	9
2002	2	17	4	20	15	20	7	13	12	25	14	4	9
2003	2	5	14	11	37	13	10	15	16	28	16	5	11
2004	4	15	18	40	23	19	50	16	50	34	27	7	14
2005	3	9	23	10	23	14	3	16	11	31	16	5	11
2006	2	12	14	10	19	12	5	13	11	26	14	4	10
2007	2	5	9	7	12	8	4	9	8	17	9	3	7

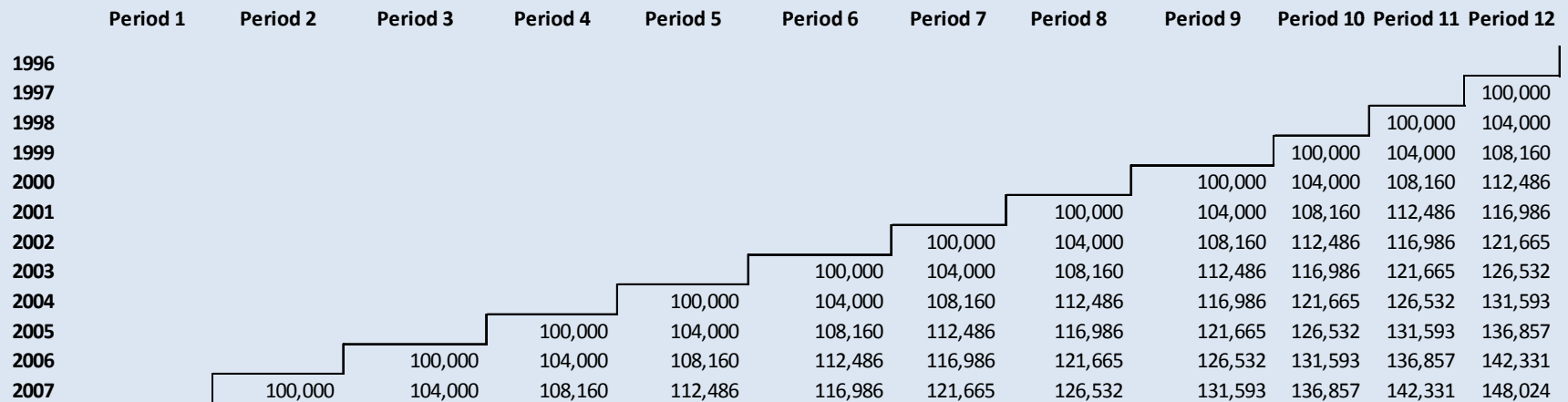
Accident Year Reported

Data set for example purposes only – not to be considered typical

	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Period 8	Period 9	Period 10	Period 11	Period 12	tail
1996	9	9	2	7	10	10	16	15	9	-2	-5	-2	0
1997	18	14	10	4	17	8	7	5	4	-1	-2		0
1998	7	7	7	10	7	4	28	14	26	3			0
1999	13	10	8	5	6	8	3	2		1			0
2000	29	15	9	1	4	3	1		1	1			0
2001	29	34	30	28	26	43	4	10	2	2			0
2002	19	30	29	9	25	25	14	8	2	2			0
2003	21	33	41	16	18	26	15	9	2	2			0
2004	28	30	60	69	37	45	27	15	3	3			0
2005	29	19	21	21	18	21	14	7	21	2	1		0
2006	18	22	30	19	18	22	13	7	1	1			0
2007	4	5	7	10	6	5	6	2	54	1	1	1	0

Severity by Report Year/Accident Year

Data set for example purposes only – not to be considered typical



Incremental Ultimates

Data set for example purposes only – not to be considered typical

	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Period 8	Period 9	Period 10	Period 11	Period 12
1996												
1997												
1998												
1999												
2000									100,000	104,000		
2001								1,000,000	208,000	216,320		
2002							1,400,000	832,000	216,320	224,973		
2003						2,600,000	1,560,000	973,440	224,973	233,972		
2004					3,700,000	4,680,000	2,920,320	1,687,296	350,958	364,996		
2005				2,100,000	1,872,000	2,271,360	1,574,810	818,901	2,554,971	253,064	131,593	
2006			3,000,000	1,976,000	1,946,880	2,474,701	1,520,816	851,657	126,532	131,593		
2007		500,000	728,000	1,081,600	674,918	584,929	729,992	253,064	7,106,032	136,857	142,331	148,024

New Issues

- No known claims
- Severity may be determinable/homogeneous
- Potential for lack of coverage
- Hits the entire diagonal at once
- Do you include in overall data in the future

Industry Data – Chinese Drywall

- Method 1: CPSC.gov Drywall Information Center
- Method 2: Import data (100,000 total homes)
- Method 3: Import data (36,000 total homes)

	Method One			Method 2		Method 3	
	Industry Reported Incidents	Allocate Impacted Home #	Company Market Share	# Homes Imported by State	Company Market Share	# Homes Imported by State	Company Market Share
State 1	669	19,060	381		-	3,431	69
State 2	227	6,467	129		-	1,164	23
State 3	194	5,527	111		-	995	20
State 4	249	7,094	142	14,500	290	3,887	78
State 5	2,031	57,863	1,157	85,000	1,700	25,715	514
<u>State 6</u>	<u>140</u>	<u>3,989</u>	<u>80</u>	<u>500</u>	<u>10</u>	<u>808</u>	<u>16</u>
Total	3,510	100,000	2,000	100,000	2,000	36,000	720

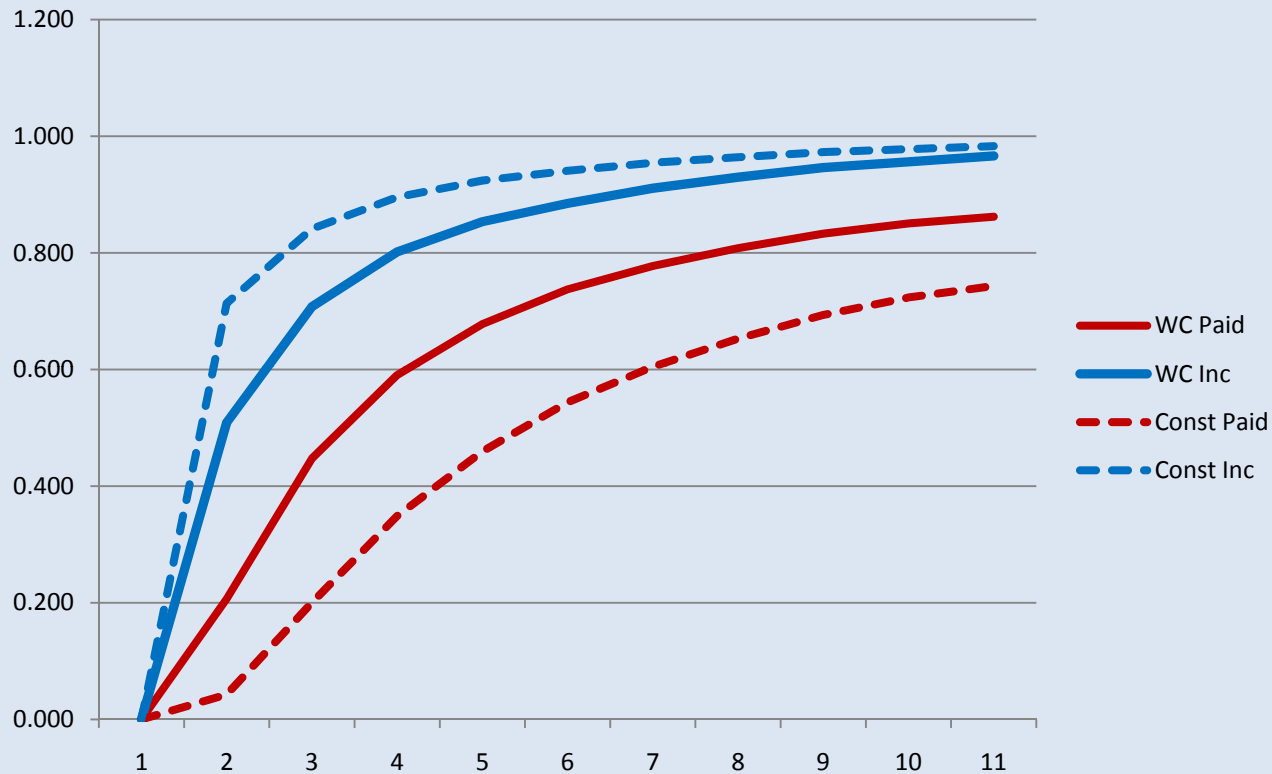
Added Adjustments

- Coverage triggers
 - Manifestation states with expiring/new policies
- How does the Pollution Exclusion apply
 - There may only be LAE in some states
- How does ALAE apply
- How do policy deductibles apply
- How do claims/claimants work in these states and for this policy
- How do policy aggregates apply
- Potential for BI Exposure

GL Premises Exposures

- Mix
 - Premises versus Products
 - Construction Defect versus non
- Large Loss
- High Severity / Low Frequency
- Mix with Construction Defect
 - Different mix of overall Premises versus Products (Construction Defect) due to building type such as Commercial versus Residential versus Heavy Highway
 - Different Trades impacted differently
 - Jurisdictions

Workers Compensation



- Losses are known faster since they are more severe
- Payment patterns are slower since there are a higher percentage of lifetime benefits cases on younger workers

Auto Liability

- Higher Severity
- Many vehicles used primarily on the job site – less frequency
- Use standard methods that allow you to cap losses and add back in a large loss load

Pollution Liability

- Sub limits
- Model as a percentage of General Liability if there are limited or no claims

Professional Liability

- Claims made (usually)
- Known claims can “blow up” – review open claims
- Look at frequency and the % of claims closed without payment to find the expected changes year to year

Subcontractor Default

- Surety data may be a good place to start
- Use frequency and severity methods with parameters based on the size of the subcontract
- Model for all subcontracts individually

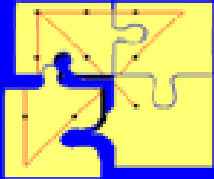
Builders Risk

- Buildings in progress – values are variable
- Sprinklers, etc. may not yet be installed
- Unknown expiration date, is EP a good measure of exposure
- Do you have “Master” policies?
- Soft costs with delayed expiration date
- Additional insured impact on subrogation
- Impact of catastrophes, deductibles, etc.



Overall

- Higher Severity
- Losses with defined accident dates are known quickly
- Losses without defined accident dates impact the development in interesting ways



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