

2008 Casualty Loss Reserve Seminar

Current Issues and Trends in Medical Malpractice
Reserving for Alternative Insurance Markets

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Reserving For Alternative Insurance Markets

Captives, Risk Retention Groups, Self-Insurance Trusts, etc.

- Exposure Data
 - Adjust to base class / territory equivalent basis
 - Adjust to claims-made equivalent basis
- Loss Cost Approach (primary layer)
- Experience Ratio Approach (primary layer)
- Excess Layer Projections
- Estimated Outstanding Loss & ALAE
- Other Considerations
- Unreported Claim Liability (Tail)
- Insurance Industry Data Sources

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Exposure Data

- For Physicians Professional Liability (PPL), the exposures are base class equivalent physician counts.
 - Full Time Equivalent (FTE) physician counts × Class Relativity
- For Hospital Professional Liability (HPL), the exposures are occupied acute care equivalent bed counts.
 - Inpatient Exposures
 - Beds, Bassinets
 - Outpatient Exposures × Relativity
 - Outpatient surgical visits, ER visits, “Other” visits

Exposure Data

PPL Example

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Physician	Specialty	2003 Full Time Equivalent	Specialty Relativity	(3) × (4) 2003 Base Class Equivalent	Ratio of PPL to HPL Loss Cost	(5) × (6) 2003 Occupied Bed Equivalent
A	Occupational Medicine	1.00	0.75	0.75	2.56	1.92
B	Internal Medicine	0.50	1.00	0.50	2.56	1.28
C	Internal Medicine	1.00	1.00	1.00	2.56	2.56
D	Internal Medicine	1.00	1.00	1.00	2.56	2.56
E	Family Practice	0.50	1.00	0.50	2.56	1.28
F	Family Practice	0.50	1.00	0.50	2.56	1.28
G	Family Practice	1.00	1.00	1.00	2.56	2.56
H	Family Practice	1.00	1.00	1.00	2.56	2.56
I	Hospitalist	1.00	1.25	1.25	2.56	3.19
J	Hospitalist	1.00	1.25	1.25	2.56	3.19
K	Gastroenterology	1.00	1.50	1.50	2.56	3.83
L	Intensive Care	0.75	2.00	1.50	2.56	3.83
M	Intensive Care	0.75	2.00	1.50	2.56	3.83
N	Intensive Care	0.75	2.00	1.50	2.56	3.83
O	Orthopedic Surgeon	1.00	3.00	3.00	2.56	7.67
P	Orthopedic Surgeon	1.00	3.00	3.00	2.56	7.67
Q	Orthopedic Surgeon	1.00	3.00	3.00	2.56	7.67
R	General Surgery	1.00	4.00	4.00	2.56	10.22
S	Neurosurgery	1.00	6.00	6.00	2.56	15.33
T	Neurosurgery	1.00	6.00	6.00	2.56	15.33
Total		17.75		39.75		101.58

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Exposure Data

HPL Example

(1)	(2)	(3) (2) ÷ 365	(4)	(5)	(6)	(7)	(8) (3)+(7)
Fiscal Calendar Year	Acute Care Patient Days	Occupied Bed Counts (Inpatient Exposure)	Number of Outpatient Visits			Estimated Outpatient Bed-Equivalent Exposure	Estimated Total Bed-Equivalent Exposure
			Emergency Room	Outpatient Surgical	Other		
2003	150,000	411.0	50,000	25,000	100,000	120.0	531.0
2004	157,500	431.5	53,500	26,750	105,000	128.0	559.5
2005	165,375	453.1	57,245	28,623	110,250	136.5	589.6
2006	173,644	475.7	61,252	30,626	115,763	145.7	621.4
2007	182,326	499.5	65,540	32,770	121,551	155.4	654.9
2008	191,442	524.5	70,128	35,064	127,628	165.8	690.3
Factor to Adjust to Acute Care Equivalent Basis (per 100 Visits)			10.0%	20.0%	2.0%	851.4	3,646.7

Exposure Data

Conversion of Fiscal Year Exposures to Report Year

Fiscal Year	Estimated Bed-Equiv Exposure	Report Year										
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
2003	632.6	158.2	158.2	126.5	94.9	63.3	31.6					
2004	666.5		166.6	166.6	133.3	100.0	66.7	33.3				
2005	702.4			175.6	175.6	140.5	105.4	70.2	35.1			
2006	740.3				185.1	185.1	148.1	111.0	74.0	37.0		
2007	780.2					195.1	195.1	156.0	117.0	78.0	39.0	
2008	822.4						205.6	205.6	164.5	123.4	82.2	41.1
Total	4,344.4	158.2	324.8	468.7	588.9	683.8	752.4	576.3	390.7	238.4	121.3	41.1
Tail Exposures @ 12/31/08 =												1,367.7

Accident Year Pure IBNR Emergence Pattern

	Maturity					
	12	24	36	48	60	72
Incremental	25.0%	25.0%	20.0%	15.0%	10.0%	5.0%
Cumulative	25.0%	50.0%	70.0%	85.0%	95.0%	100.0%

Selection of Ultimate Loss Cost

\$500,000 Limit

(1)	(2)	(3)	(4)	(5) (3) × (4)	(6) (5) ÷ (2)	(7)
Report Period	Estimated Bed Equivalent Exposure	Incurring Loss & ALAE as of 12/31/2008	Incurring Loss Development Factor	Estimated Ultimate Loss & ALAE	Estimated Ultimate Loss Cost	Est. Ult Loss Cost Trended to 7/1/2008 at 5.0%
2003	158.2	\$1,500,000	1.000	\$1,500,000	\$9,485	\$12,105
2004	324.8	2,500,000	1.000	2,500,000	7,698	9,357
2005	468.7	4,000,000	1.250	5,000,000	10,667	12,348
2006	588.9	4,500,000	1.667	7,500,000	12,736	14,042
2007	683.8	2,500,000	2.500	6,250,000	9,140	9,597
2008	752.4	1,500,000	5.000	7,500,000	9,969	9,969
Total	2,976.7	\$16,500,000		\$30,250,000		
					Average	\$11,236
					Volume Weighted Average (using Exposure × % Reported)	\$11,417
					Selected Loss Cost Based on Company Data	\$11,400
					Credibility (using 5,000 beds as full credibility standard)	77.2%
					Selected Loss Cost Based on Insurance Industry Data	\$15,000
					Credibility Weighted Average Loss Cost	\$12,200

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Estimated Ultimate Loss & ALAE (Loss Cost)

Incurred Bornhuetter-Ferguson Method (\$500,000 Limit)

(1)	(2)	(3)	(4) (2) × (3)	(5)	(6)	(7) (4) × [(1.0-(5))] + (6)
Report Period	Estimated Bed Equivalent Exposure	Initial Estimated Ultimate Loss Cost	Expected Ultimate Loss & ALAE	Estimated Percent Reported as of 12/31/08	Case Incurred Loss & ALAE as of 12/31/08	B-F Estimated Ultimate Loss & ALAE
2003	158.2	\$9,559	\$1,511,759	100.0%	\$1,500,000	\$1,500,000
2004	324.8	10,037	3,259,757	100.0%	2,500,000	2,500,000
2005	468.7	10,539	4,940,019	80.0%	4,000,000	4,988,004
2006	588.9	11,066	6,516,239	60.0%	4,500,000	7,106,496
2007	683.8	11,619	7,945,570	40.0%	2,500,000	7,267,342
2008	752.4	12,200	9,178,670	20.0%	1,500,000	8,842,936
Total	2,976.7		\$33,352,014		\$16,500,000	\$32,204,778

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Selection of Ultimate Experience Ratio

Alternative to Loss Cost Approach (\$500,000 Limit)

(1)	(2)	(3)	(4) (2) x (3)	(5)	(6)	(7) (6) ÷ [(4)x(5)]
Report Period	Estimated Bed Equivalent Exposure	Industry Estimated Ultimate Loss Cost	Industry Expected Ultimate Loss & ALAE	Estimated Percent Reported as of 12/31/08	Case Incurred Loss & ALAE as of 12/31/08	Estimated Experience Ratio
2003	158.2	\$9,559	\$1,511,759	100.0%	\$1,500,000	0.992
2004	324.8	10,037	3,259,757	100.0%	2,500,000	0.767
2005	468.7	10,539	4,940,019	80.0%	4,000,000	1.012
2006	588.9	11,066	6,516,239	60.0%	4,500,000	1.151
2007	683.8	11,619	7,945,570	40.0%	2,500,000	0.787
2008	752.4	15,000	11,285,250	20.0%	1,500,000	0.665
Total	2,976.7		\$35,458,594		\$16,500,000	0.913
					Selected Experience Ratio	0.910
					Credibility (using 5,000 beds as full credibility standard)	77.2%
					Credibility Weighted Average Experience Ratio	0.931

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Est. Ult. Loss & ALAE (Experience Ratio)

Incurred Bornhuetter-Ferguson Method (\$500,000 Limit)

(1)	(2)	(3)	(4) (2) × (3)	(5)	(6)	(7) (4) × [(1.0-(5))] + (6)
Report Period	Industry Expected Ultimate Loss & ALAE	Selected Experience Ratio	Expected Ultimate Loss & ALAE	Estimated Percent Reported as of 12/31/08	Case Incurred Loss & ALAE as of 12/31/08	B-F Estimated Ultimate Loss & ALAE
2003	\$1,511,759	0.931	\$1,406,778	100.0%	\$1,500,000	\$1,500,000
2004	3,259,757	0.931	3,033,391	100.0%	2,500,000	2,500,000
2005	4,940,019	0.931	4,596,971	80.0%	4,000,000	4,919,394
2006	6,516,239	0.931	6,063,733	60.0%	4,500,000	6,925,493
2007	7,945,570	0.931	7,393,808	40.0%	2,500,000	6,936,285
2008	11,285,250	0.931	10,501,571	20.0%	1,500,000	9,901,257
Total	\$35,458,594		\$32,996,252		\$16,500,000	\$32,682,429

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Estimated Ultimate Loss & ALAE

Incurred Bornhuetter-Ferguson Method (\$10,000,000 Limit)

(1)	(2)	(3)	(4) (2) × [(3)-1.0]	(5)	(6)	(7) (4) × [(1.0-(5))] + (2) + (6)
Report Period	Estimated Ultimate Loss & ALAE (\$500k Limit)	Estimated Increased Limits Factor to \$10M	Initial Est. Ultimate Excess Loss & ALAE (\$500k to \$10M)	Estimated Excess % Rptd as of 12/31/08	Case Inc'd Indemnity Between \$500k and \$10M as of 12/31/08	Estimated Ultimate Loss & ALAE (\$10M Limit)
2003	\$1,500,000	1.500	\$750,000	90.0%	\$1,250,000	\$2,825,000
2004	2,500,000	1.500	1,250,000	80.0%	2,000,000	4,750,000
2005	4,988,004	1.500	2,494,002	60.0%	1,500,000	7,485,605
2006	7,106,496	1.500	3,553,248	40.0%	4,500,000	13,738,445
2007	7,267,342	1.500	3,633,671	20.0%	2,000,000	12,174,279
2008	8,842,936	1.500	4,421,468	10.0%	1,000,000	13,822,257
Total	\$32,204,778		\$16,102,389		\$12,250,000	\$54,795,586

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Estimated Outstanding Loss & ALAE

\$10,000,000 Limit

(1)	(2)	(3)	(4)	(5)	(6)
Report Period	Estimated Ultimate Loss & ALAE	Paid Loss and ALAE as of 12/31/08	Case O/S Loss and ALAE as of 12/31/08	(2) - (3) - (4) Estimated IBNR as of 12/31/08	(4) + (5) Estimated Total O/S Loss & ALAE as of 12/31/08
2003	\$2,825,000	\$2,542,500	\$207,500	\$75,000	\$282,500
2004	4,750,000	3,562,500	937,500	250,000	1,187,500
2005	7,485,605	4,865,643	634,357	1,985,605	2,619,962
2006	13,738,445	6,869,222	2,130,778	4,738,445	6,869,222
2007	12,174,279	2,434,856	2,065,144	7,674,279	9,739,423
2008	13,822,257	691,113	1,808,887	11,322,257	13,131,144
Total	\$54,795,586	\$20,965,834	\$7,784,166	\$26,045,586	\$33,829,751

Other Considerations

- Discounting
 - Need to select a report year payment pattern.
 - Need to select an annual interest rate.
 - Estimate future calendar year cash flows and discount to present value at the selected interest rate.
- Confidence Level Factors (CLFs)
 - Can be estimated using Monte Carlo simulation techniques.
 - Lognormal distribution is often used to model MPL indemnity loss severity.
 - Need to estimate number of outstanding claims to close with indemnity loss payment (CWIP).
 - Lognormal may or may not be appropriate for loss & ALAE combined.

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Other Considerations

(continued)

- Actuarial Standards of Practice (ASOP's)
 - ASOP 9 (Documentation and Disclosure in Property and Casualty Insurance Ratemaking, Loss Reserving, and Valuations)
 - ASOP 20 (Discounting of Property and Casualty Loss and Loss Adjustment Expense Reserves)
 - ASOP 23 (Data Quality)
 - ASOP 43 (Property/Casualty Unpaid Claim Estimates)
 - Other ASOP's may also apply, depending on the specific circumstances of the reserving exercise.

Estimated Unreported Claim Liability

Required by AICPA Guide, Audits of Providers of Health Care Services (SOP 87-1)

(1)	(2)	(3)	(4)	(5) (2) × (3) × (4)
Report Period	Estimated Bed Equivalent Exposure	Initial Estimated Ultimate Loss Cost (\$500k Limit)	Estimated Increased Limits Factor to \$10M	Estimated Ultimate Loss & ALAE (\$10M Limit)
2009	576.3	\$12,810	1.500	\$11,072,644
2010	390.7	13,451	1.500	7,881,858
2011	238.4	14,123	1.500	5,050,288
2012	121.3	14,829	1.500	2,697,056
2013	41.1	15,571	1.500	960,397
Total	1,367.7			\$27,662,243

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Insurance Industry Data Sources

Insurance company rate filings (publicly available)

- Good source for LDF's, ILF's, loss costs, class & territory relativities
- www.ratefilings.com (operated by Perr&Knight; fee per use)
- FL = <http://www.floir.com/edms/>
- NC = <http://infoportal.ncdoi.net/filelookup.jsp?divtype=2>
- PA = www.ins.state.pa.us/ins/cwp/view.asp?a=1280&Q=543175
- WA = <https://fortress.wa.gov/Search.aspx>
- WI = <https://ociaccess.oci.wi.gov/Companyfilings/jsp/rfsearch.oci>
- A.M. Best = <http://ambest.com/sales/staterate/default.asp>
(subscription required)

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Insurance Industry Data Sources

National Practitioner Data Bank (NPDB) Public Use Database

- <http://www.npdb-hipdb.hrsa.gov/publicdata.html>
- Can compile information by state (e.g., severity, ILF)
- Does not include ALAE
- Does not include claim report date
- Data is by payer, so assumptions have to be made when combining payers (e.g., primary carrier, state catastrophe fund, excess carrier)

Insurance Industry Data Sources

Closed Claim Databases / Studies

- WA = <http://www.insurance.wa.gov/insurers/special/MedMalDataColl2007.pdf>
- FL = <https://apps.fldfs.com/PLCR/Search/MPLClaim.aspx>
- MO = <http://insurance.mo.gov/industry/filings/stats/reports.htm#medmalpractice>
- TX = <http://www.tdi.state.tx.us/reports/report4.html>
- US DOJ = <http://www.ojp.gov/bjs/pub/pdf/mmicss04.pdf>
- PIAA Data Sharing Report (fee) = www.piaa.us/pdf_files/order_forms/2008_DSR_Order_Form.pdf

Insurance Industry Data Sources

Annual Statement Information

- NAIC InsData = <https://external-apps.naic.org/insData/index.jsp>
 - 5 free downloads
 - \$10 per additional download
- Highline Data Insurance Analyst Pro (subscription required) = <http://www.highlinedata.com/>
 - Online access to Annual Statements (including Schedule P and Schedule F), SAO's, market share by state, etc.
- SNL Financial (subscription required) = http://www.snl.com/insurance/unlimited/statutory_data.asp

Insurance Industry Data Sources

Benchmark Rate / Loss Cost Information

- Medical Liability Monitor (subscription required)
 - Rate survey included in October issue each year.
 - Includes filed rates, by territory, for most major MPL writers in each state for the current and prior years (Mature claims-made, \$1M / \$3M limits)
 - Specialties shown include: Internal Medicine, General Surgery, OB/Gyn
- Aon / ASHRM annual Hospital Professional Liability and Physician Liability Benchmark Analysis.
 - Aon also produces a Long Term Care GL and Professional Liability Actuarial Analysis

Questions?