Intermediate Track III GL Case Study

2010 CLRS
September 20-21, 2010
Lake Buena Vista, FL

Background Information

GL Insurance Company is a small, stock insurance company that has been insuring businesses against General Liability exposures for over 20 years. The company has insured a stable book of business over the years (essentially the same group of insureds). The company has been well managed and has a healthy balance sheet.

Background Information

- GL Insurance Company has a small actuarial staff headed by an actuarial student.
- The department calculated year-end reserves using both the paid and incurred loss development methods.
- The staff supplements this analysis with the use of expected loss techniques, if needed.

Background Information

- In previous years, the paid and incurred loss projections were almost identical.
- Recently, differences between the two estimates are emerging.
- GLIC has employed you, a consulting actuary, to complete its current reserve certification and to critique the actuarial work done by GLIC's actuarial department.
- You begin by examining the work done by GLIC's actuarial department.

Total GL Paid Loss Development

	Paid Losses ($000)										
Accident	Evaluation Age in Months										
Year	12	24	36	48	60	72	84	96	108	120	132
1999	1,340	3,188	5,072	6,973	8,677	10,008	11,802	12,606	13,174	13,596	14,033
2000	1,857	4,297	6,864	9,438	11,820	13,594	14,783	15,710	16,439	16,972	
2001	2,024	4,891	7,790	10,733	13,792	16,071	17,695	18,886	19,735		
2002	2,781	6,655	10,671	14,738	18,022	20,795	23,179	24,597			
2003	3,439	8,272	13,325	18,551	23,386	26,861	29,409				
2004	3,714	9,039	14,638	20,326	26,117	30,643					
2005	4,652	11,236	18,109	25,239	31,250						
2006	5,292	12,974	21,106	29,611							
2007	6,818	16,984	27,677								
2008	9,337	23,263									
2009	15,073										

Total GL Paid Loss Development

Accident	Paid Loss Development Age-to-Age Factors										
Year	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-132	132+
1999	2.379	1.591	1.375	1.244	1.153	1.179	1.068	1.045	1.032	1.032	
2000	2.314	1.597	1.375	1.252	1.150	1.087	1.063	1.046	1.032		
2001	2.417	1.593	1.378	1.285	1.165	1.101	1.067	1.045			
2002	2.393	1.603	1.381	1.223	1.154	1.115	1.061				
2003	2.405	1.611	1.392	1.261	1.149	1.095					
2004	2.434	1.619	1.389	1.285	1.173						
2005	2.415	1.612	1.394	1.238							
2006	2.452	1.627	1.403								
2007	2.491	1.630									
2008	2.491										
2009											
3 Yr Avg	2.478	1.623	1.395	1.261	1.159	1.104	1.064	1.045	1.032	1.032	
3 Yr Wtd	2.482	1.624	1.396	1.259	1.160	1.103	1.064	1.045	1.032	1.032	
5 Yr Avg	2.457	1.620	1.392	1.258	1.158	1.115	1.065	1.045	1.032	1.032	
Mid 3 of 5	2.459	1.619	1.391	1.261	1.156	1.104	1.065	1.045			
Wtd Avg	2.443	1.615	1.390	1.255	1.159	1.109	1.064	1.045	1.032	1.032	
Selected	2.478	1.623	1.395	1.261	1.159	1.104	1.064	1.045	1.032	1.032	

Total GL Paid Loss Development

Analysis of Development Patterns - Paid
Power Model
Curve: Y = A ^ (B ^ X)

Actual Values (slide 6)		Transformed Values		Fitted Values	
X Var.	Y Variable	X	Y'	X	Y
Age	LDFs	X	ln(ln(Y))	Age	LDFs
12	2.478	12	-0.366	12	2.092
24	1.623	24	-0.731	24	1.651
36	1.395	36	-1.096	36	1.406
48	1.261	48	-1.461	48	1.261
60	1.159	60	-1.827	60	1.171
72	1.104	72	-2.192	72	1.113
84	1.064	84	-2.557	84	1.075
96	1.045	96	-2.923	96	1.051
108	1.032	108	-3.288	108	1.034
120	1.032	120	-3.653	120	1.023
				132	1.016
				144	1.011
				156	1.007
				168	1.005
				180	1.003
				192	1.002
				204	1.002
				216	1.001
				228	1.001
				240	1.000
				252	1.000
				264	1.000
				276	1.000
				288	1.000

Cumulative Factors	
X	Y
Age	CDFs
12	11.522
24	4.650
36	2.865
48	2.054
60	1.628
72	1.406
84	1.274
96	1.197
108	1.145
120	1.110
132	1.075

Tail Factor x Actual LDFs (cumulative)

Parameter Estimates	
A =	2.962
B =	0.968

Tail Factor from 132-Ultimate	
Fitted Data	1.049
Broader Data Source	1.135
Selected Tail Factor	1.075

Total GL Incurred Loss Development

Accident Year	Incurred Losses ($000) Evaluation Age in Months										
	12	24	36	48	60	72	84	96	108	120	132
1999	5,662	8,879	11,006	12,396	13,067	13,526	13,838	14,075	14,315	14,573	14,778
2000	6,975	10,897	13,556	15,303	16,271	16,861	17,252	17,565	17,883	18,208	
2001	8,345	13,012	16,304	18,417	19,507	20,224	20,677	21,077	21,465		
2002	10,652	17,073	21,391	23,978	25,469	26,443	27,073	27,550			
2003	13,647	21,807	27,086	30,684	32,600	33,807	34,584				
2004	15,549	24,872	31,261	35,432	37,460	38,965					
2005	18,260	29,200	36,605	41,696	44,488						
2006	22,029	35,312	44,500	50,322							
2007	28,730	46,297	58,061								
2008	39,637	64,628									
2009	55,297										

Total GL Incurred Loss Development

Accident Year	Incurred Loss Development Age-to-Age Factors										
	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-132	132+
1999	1.568	1.240	1.126	1.054	1.035	1.023	1.017	1.017	1.018	1.014	
2000	1.562	1.244	1.129	1.063	1.036	1.023	1.018	1.018	1.018		
2001	1.559	1.253	1.130	1.059	1.037	1.022	1.019	1.018			
2002	1.603	1.253	1.121	1.062	1.038	1.024	1.018				
2003	1.598	1.242	1.133	1.062	1.037	1.023					
2004	1.600	1.257	1.133	1.057	1.040						
2005	1.599	1.254	1.139	1.067							
2006	1.603	1.260	1.131								
2007	1.611	1.254									
2008	1.630										
2009											
3 Yr Avg	1.615	1.256	1.134	1.062	1.038	1.023	1.018	1.018	1.018	1.014	
3 Yr Wtd	1.618	1.256	1.134	1.062	1.039	1.023	1.018	1.018	1.018	1.014	
5 Yr Avg	1.609	1.253	1.131	1.062	1.038	1.023	1.018	1.018	1.018	1.014	
Mid 3 of 5	1.605	1.255	1.132	1.061	1.037	1.023	1.018	1.018			
Wtd Avg	1.605	1.253	1.131	1.062	1.038	1.023	1.018	1.018	1.018	1.014	
Selected	1.615	1.256	1.134	1.062	1.038	1.023	1.018	1.018	1.018	1.014	

Total GL Incurred Loss Development

Analysis of Development Patterns - Incurred
Power Model
Curve: Y = A ^ (B ^ X)

Actual Values (slide 9)		Transformed Values		Fitted Values		Cumulative Factors	
X Var.	Y Variable	X	Y'	X	Y	X	Y
Age	LDFs	X	ln(ln(Y))	Age	LDFs	Age	CDFs
12	1.615	12	0.481	12	1.308	12	2.848
24	1.256	24	-0.446	24	1.200	24	1.764
36	1.134	36	-0.972	36	1.132	36	1.404
48	1.062	48	-1.331	48	1.088	48	1.238
60	1.038	60	-1.630	60	1.059	60	1.165
72	1.023	72	-1.896	72	1.040	72	1.122
84	1.018	84	-2.151	84	1.027	84	1.097
96	1.018	96	-2.410	96	1.018	96	1.077
108	1.018	108	-2.692	108	1.012	108	1.058
120	1.014	120	-3.031	120	1.008	120	1.039
				132	1.006	132	1.025
				144	1.004		
				156	1.003		
				168	1.002		
				180	1.001		
				192	1.001		
				204	1.001		
				216	1.000		
				228	1.000		
				240	1.000		
				252	1.000		
				264	1.000		
				276	1.000		
				288	1.000		

Parameter Estimates	
A =	1.484
B =	0.968

Tail Factor x Actual LDFs (cumulative)

Tail Factor from 132-Ultimate	
Fitted Data	1.018
Broader Data Source	1.037
Selected Tail Factor	1.025

Total GL Loss Development

Total General Liability
Summary of Loss Development Projections

Accident Year	Earned Premium	Actual Losses @ 12/31/09		Cumulative LDF		Estimated Ultimate Losses		Estimate Ultimate Loss Ratio	
		Paid	Incurred	Paid	Incurred	Paid	Incurred	Paid	Incurred
(1)	(2)	(3) slide 5	(4) slide 8	(5) slide 7	(6) slide 10	(7)=(3)x(5)	(8)=(4)x(6)	(9)=(7)/(2)	(10)=(8)/(2)
1999	22,122	14,033	14,778	1.075	1.025	15,085	15,147	68.2%	68.5%
2000	26,474	16,972	18,208	1.110	1.039	18,831	18,926	71.1%	71.5%
2001	30,286	19,735	21,465	1.145	1.058	22,603	22,715	74.6%	75.0%
2002	37,741	24,597	27,550	1.197	1.077	29,452	29,675	78.0%	78.6%
2003	45,691	29,409	34,584	1.274	1.097	37,458	37,936	82.0%	83.0%
2004	50,562	30,643	38,965	1.406	1.122	43,070	43,727	85.2%	86.5%
2005	60,349	31,250	44,488	1.628	1.165	50,889	51,846	84.3%	85.9%
2006	75,972	29,611	50,322	2.054	1.238	60,817	62,294	80.1%	82.0%
2007	97,616	27,677	58,061	2.865	1.404	79,303	81,537	81.2%	83.5%
2008	131,861	23,263	64,628	4.650	1.764	108,162	113,990	82.0%	86.4%
2009	168,391	15,073	55,297	11.522	2.848	173,668	157,512	103.1%	93.5%
Total	747,065	262,263	428,346			639,339	635,305	85.6%	85.0%

Total GL Expected Loss Techniques

Total General Liability
Bornhuetter-Ferguson Method

	AY 2008		AY 2009	
	Paid Estimate	Incurred Estimate	Paid Estimate	Incurred Estimate
(1) Earned Premium	131,861	131,861	168,391	168,391
(2) Expected Loss Ratio	86%	86%	90%	90%
(3) Expected Losses [(1) x (2)]	113,400	113,400	151,552	151,552
(4) Cumulative Loss Development Factor (slide 11)	4.650	1.764	11.522	2.848
(5) % of Losses Unpaid/Unreported [1 - 1 / (4)]	78.5%	43.3%	91.3%	64.9%
(6) $ of Losses Unpaid/Unreported [(3) x (5)]	89,011	49,107	138,398	98,347
(7) Actual Losses @ 12/31/09 (slide 11)	23,263	64,628	15,073	55,297
(8) Revised Ultimate Losses [(6) + (7)]	112,274	113,735	153,471	153,644

Total GL Loss Development

Total General Liability
Revised Ultimate Losses

Accident Year	Earned Premium	Actual Losses @ 12/31/09		Estimated Ultimate Losses		Estimated Required IBNR		Estimate Ultimate Loss Ratio	
		Paid	Incurred	Paid	Incurred	Paid	Incurred	Paid	Incurred
(1)	(2)	(3) slide 5	(4) slide 8	(5) slide 11 (latest 2 AY from slide 12)	(6) slide 11	(7)=(5)-(4)	(8)=(6)-(4)	(9)=(7)/(2)	(10)=(8)/(2)
1999	22,122	14,033	14,778	15,085	15,147	307	369	68.2%	68.5%
2000	26,474	16,972	18,208	18,831	18,926	623	718	71.1%	71.5%
2001	30,286	19,735	21,465	22,603	22,715	1,138	1,250	74.6%	75.0%
2002	37,741	24,597	27,550	29,452	29,675	1,902	2,125	78.0%	78.6%
2003	45,691	29,409	34,584	37,458	37,936	2,874	3,352	82.0%	83.0%
2004	50,562	30,643	38,965	43,070	43,727	4,105	4,762	85.2%	86.5%
2005	60,349	31,250	44,488	50,889	51,846	6,401	7,358	84.3%	85.9%
2006	75,972	29,611	50,322	60,817	62,294	10,495	11,972	80.1%	82.0%
2007	97,616	27,677	58,061	79,303	81,537	21,242	23,476	81.2%	83.5%
2008	131,861	23,263	64,628	112,274	113,735	47,646	49,107	85.1%	86.3%
2009	168,391	15,073	55,297	153,471	153,644	98,174	98,347	91.1%	91.2%
Total	747,065	262,263	428,346	623,255	631,182	194,909	202,836	83.4%	84.5%

Total GL Loss Development

Summary of IBNR Estimates

Total General Liability Paid Estimate (slide 13)	194,909
Total General Liability Incurred Estimate (slide 13)	202,836
GLIC Actuary Selection (average)	198,872
GLIC Carried IBNR Reserves	198,304
Indicated Redundancy/(Deficiency)	-568

Additional Research

Next you interview the vice president of each of the following departments:

- Claims
- Marketing
- Underwriting

Vice President of Claims

- Staff and procedures have remained the same for as long as anyone can remember.
- Systems have not changed, and there have been no accounting or other changes that would have impacted year-end processing.

Vice President of Marketing

- The client base is extremely stable.
- Growth has come primarily from increase in business from existing clients, as opposed to new clients.
- GLIC's clients represent almost all US distributors of Widgets.
- These clients are expanding into other areas, generating the growth in premium.
- Given the company's understanding of the product and their sensible approach to pricing (small annual increases), they have captured and retained their niche market.

Vice President of Underwriting

- The VP is concerned about the 10% loss ratio (including DCC) deterioration over the last four accident years.
- They attribute at least part of the problem to the heavier GL exposures being accepted from their long-term clients.

Distribution of Earned Premium

Accident Year	Earned Premium ($000)			
	Total	Heavy	Light	% Heavy
(1)	(2)	(3)	(4)	(5)
1999	22,122	192	21,930	0.9%
2000	26,474	822	25,652	3.1%
2001	30,286	2,499	27,787	8.3%
2002	37,741	5,101	32,640	13.5%
2003	45,691	9,987	35,704	21.9%
2004	50,562	12,065	38,497	23.9%
2005	60,349	15,174	45,175	25.1%
2006	75,972	22,537	53,435	29.7%
2007	97,616	35,455	62,161	36.3%
2008	131,861	59,999	71,862	45.5%
2009	168,391	86,337	82,054	51.3%
Total	747,065	250,168	496,897	33.5%

Vice President of Underwriting

- The underwriting department, with the help of the actuarial staff, will be conducting separate rate analyses for Heavy GL versus Light GL later in the year.
- Although the analysis has not yet been completed, the underwriting department suspects that Heavy GL rates need to increase by more than the traditional 5% annual increase taken in previous years for Total GL.
- Loss development triangles by class of business have just been provided via an ad hoc request to the data processing department.

Light GL

Light GL Paid Loss Development

Accident	Paid Losses ($000)										
	Evaluation Age in Months										
Year	12	24	36	48	60	72	84	96	108	120	132
1999	1,329	3,159	5,023	6,902	8,586	9,900	11,682	12,476	13,037	13,454	13,885
2000	1,812	4,177	6,654	9,129	11,420	13,122	14,250	15,134	15,830	16,337	
2001	1,886	4,517	7,150	9,838	12,543	14,575	16,018	17,075	17,826		
2002	2,463	5,810	9,220	12,631	15,359	17,647	19,606	20,763			
2003	2,795	6,565	10,399	14,288	17,831	20,345	22,176				
2004	2,956	7,012	11,149	15,263	19,384	22,563					
2005	3,643	8,561	13,535	18,584	22,765						
2006	3,932	9,331	14,836	20,444							
2007	4,661	11,154	17,679								
2008	5,544	13,128									
2009	10,484										

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Light GL Paid Loss Development

Accident	Paid Loss Development Age-to-Age Factors										
Year	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-132	132+
1999	2.377	1.590	1.374	1.244	1.153	1.180	1.068	1.045	1.032	1.032	
2000	2.305	1.593	1.372	1.251	1.149	1.086	1.062	1.046	1.032		
2001	2.395	1.583	1.376	1.275	1.162	1.099	1.066	1.044			
2002	2.359	1.587	1.370	1.216	1.149	1.111	1.059				
2003	2.349	1.584	1.374	1.248	1.141	1.090					
2004	2.372	1.590	1.369	1.270	1.164						
2005	2.350	1.581	1.373	1.225							
2006	2.373	1.590	1.378								
2007	2.393	1.585									
2008	2.368										
2009											
3 Yr Avg	2.378	1.585	1.373	1.248	1.151	1.100	1.062	1.045	1.032	1.032	
3 Yr Wtd	2.378	1.585	1.374	1.246	1.152	1.100	1.062	1.045	1.032	1.032	
5 Yr Avg	2.371	1.586	1.373	1.247	1.153	1.113	1.064	1.045	1.032	1.032	
Mid 3 of 5	2.371	1.586	1.372	1.248	1.153	1.100	1.064	1.045			
Wtd Avg	2.367	1.587	1.373	1.245	1.153	1.108	1.063	1.045	1.032	1.032	
Selected	2.378	1.585	1.373	1.248	1.151	1.100	1.062	1.045	1.032	1.032	

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Light GL Paid Loss Development

Analysis of Development Patterns - Paid
Power Model
Curve: Y = A ^ (B ^ X)

Actual Values (slide 23)		Transformed Values		Fitted Values		Cumulative Factors	
X Var.	Y Variable	X'	Y'	X	Y	X	Y
Age	LDF's	X	ln[ln(Y)]	Age	LDF's	Age	CDF's
12	2.378	12	(0.14)	12	2.007	12	10.398
24	1.585	24	(0.77)	24	1.610	24	4.373
36	1.373	36	(1.15)	36	1.385	36	2.758
48	1.248	48	(1.51)	48	1.249	48	2.008
60	1.151	60	(1.96)	60	1.164	60	1.610
72	1.100	72	(2.35)	72	1.110	72	1.398
84	1.062	84	(2.81)	84	1.074	84	1.271
96	1.045	96	(3.12)	96	1.050	96	1.196
108	1.032	108	(3.46)	108	1.034	108	1.145
120	1.032	120	(3.46)	120	1.023	120	1.109
				132	1.016	132	1.075
				144	1.011		
				156	1.007		
				168	1.005		
				180	1.003		
				192	1.002		
				204	1.002		
				216	1.001		
				228	1.001		
				240	1.001		
				252	1.000		
				264	1.000		
				276	1.000		
				288	1.000		

Tail Factor x Actual LDF's (cumulative)

Parameter Estimates		
	A =	2.771
	B =	0.969

Tail Factor from 132-Ultimate	
Fitted Data	1.050
Broader Data Source	1.135
Selected Tail Factor	1.075

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Light GL Incurred Loss Development

Accident	Incurred Losses ($000)										
	Evaluation Age in Months										
Year	12	24	36	48	60	72	84	96	108	120	132
1999	5,612	8,794	10,896	12,269	12,932	13,385	13,693	13,926	14,163	14,418	14,620
2000	6,752	10,520	13,066	14,738	15,666	16,230	16,603	16,902	17,206	17,516	
2001	7,642	11,837	14,773	16,649	17,615	18,249	18,650	19,004	19,346		
2002	9,187	14,561	18,128	20,249	21,464	22,258	22,770	23,157			
2003	10,611	16,569	20,491	23,073	24,434	25,289	25,845				
2004	11,775	18,475	22,964	25,857	27,253	28,289					
2005	13,600	21,311	26,404	29,863	31,744						
2006	15,388	24,082	29,934	33,586							
2007	18,143	28,394	35,038								
2008	21,383	33,614									
2009	29,195										

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Light GL Incurred Loss Development

Accident	Incurred Loss Development Age-to-Age Factors										
Year	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-132	132+
1999	1.567	1.239	1.126	1.054	1.035	1.023	1.017	1.017	1.018	1.014	
2000	1.558	1.242	1.128	1.063	1.036	1.023	1.018	1.018	1.018		
2001	1.549	1.248	1.127	1.058	1.036	1.022	1.019	1.018			
2002	1.585	1.245	1.117	1.060	1.037	1.023	1.017				
2003	1.561	1.237	1.126	1.059	1.035	1.022					
2004	1.569	1.243	1.126	1.054	1.038						
2005	1.567	1.239	1.131	1.063							
2006	1.565	1.243	1.122								
2007	1.565	1.234									
2008	1.572										
2009											
3 Yr Avg	1.567	1.239	1.126	1.059	1.037	1.022	1.018	1.018	1.018	1.014	
3 Yr Wtd	1.568	1.238	1.126	1.059	1.037	1.022	1.018	1.018	1.018	1.014	
5 Yr Avg	1.568	1.239	1.124	1.059	1.036	1.023	1.018	1.018	1.018	1.014	
Mid 3 of 5	1.567	1.240	1.125	1.059	1.036	1.023	1.018	1.018			
Wtd Avg	1.567	1.240	1.125	1.059	1.036	1.023	1.018	1.018	1.018	1.014	
Selected	1.567	1.239	1.126	1.059	1.037	1.022	1.018	1.018	1.018	1.014	

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Light GL Incurred Loss Development

Analysis of Development Patterns - Incurred
Power Model
Curve: Y = A ^ (B ^ X)

Actual Values (slide 26)		Transformed Values	
X Var.	Y Variable	X'	Y'
Age	LDF's	X	ln[ln(Y)]
12	1.567	12	(0.80)
24	1.239	24	(1.54)
36	1.126	36	(2.13)
48	1.059	48	(2.86)
60	1.037	60	(3.32)
72	1.022	72	(3.81)
84	1.018	84	(4.03)
96	1.018	96	(4.04)
108	1.018	108	(4.03)
120	1.014	120	(4.27)

Parameter Estimates		
	A =	1.439
	B =	0.969

Tail Factor from 132-Ultimate	
Fitted Data	1.018
Broader Data Source	1.037
Selected Tail Factor	1.025

Fitted Values	
X	Y
Age	LDF's
12	1.284
24	1.187
36	1.125
48	1.084
60	1.057
72	1.039
84	1.026
96	1.018
108	1.012
120	1.008
132	1.006
144	1.004
156	1.003
168	1.002
180	1.001
192	1.001
204	1.001
216	1.000
228	1.000
240	1.000
252	1.000
264	1.000
276	1.000
288	1.000

Cumulative Factors	
X	Y
Age	CDF's
12	2.689
24	1.716
36	1.385
48	1.230
60	1.162
72	1.121
84	1.096
96	1.077
108	1.058
120	1.039
132	1.025

Tail Factor x Actual LDF's
(cumulative)

2010 CLRS 27

Light GL Loss Development

Summary of Loss Development Projections

Accident Year	Earned Premium	Actual Losses @ 12/31/09		Cumulative LDF		Estimated Ultimate Losses		Estimate Ultimate Loss Ratio	
		Paid	Incurred	Paid	Incurred	Paid	Incurred	Paid	Incurred
(1)	(2)	(3) slide 22	(4) slide 25	(5) slide 24	(6) slide 27	(7)=(3)x(5)	(8)=(4)x(6)	(9)=(7)/(2)	(10)=(8)/(2)
1999	21,930	13,885	14,620	1.075	1.025	14,926	14,986	68.1%	68.3%
2000	25,652	16,337	17,516	1.109	1.039	18,125	18,205	70.7%	71.0%
2001	27,787	17,826	19,346	1.145	1.058	20,410	20,470	73.5%	73.7%
2002	32,640	20,763	23,157	1.196	1.077	24,842	24,935	76.1%	76.4%
2003	35,704	22,176	25,845	1.271	1.096	28,187	28,330	78.9%	79.3%
2004	38,497	22,563	28,289	1.398	1.121	31,546	31,701	81.9%	82.3%
2005	45,175	22,765	31,744	1.610	1.162	36,645	36,877	81.1%	81.6%
2006	53,435	20,444	33,586	2.008	1.230	41,059	41,306	76.8%	77.3%
2007	62,161	17,679	35,038	2.758	1.385	48,762	48,535	78.4%	78.1%
2008	71,862	13,128	33,614	4.373	1.716	57,403	57,675	79.9%	80.3%
2009	82,054	10,484	29,195	10.398	2.689	109,015	78,512	132.9%	95.7%
Total	496,897	198,050	291,950			430,920	401,531	86.7%	80.8%

Light GL Expected Loss Techniques

Bornhuetter-Ferguson Method

	AY 2009	
	Paid Estimate	Incurred Estimate
(1) Earned Premium (slide 28)	82,054	82,054
(2) Expected Loss Ratio	83.5%	83.5%
(3) Expected Losses [(1) x (2)]	68,515	68,515
(4) Cumulative Loss Development Factor (slide 28)	10.398	2.689
(5) % of Losses Unpaid/Unreported [1 - 1 / (4)]	90.4%	62.8%
(6) $ of Losses Unpaid/Unreported [(3) x (5)]	61,926	43,038
(7) Actual Losses @ 12/31/09 (slide 28)	10,484	29,195
(8) Revised Ultimate Losses [(6) + (7)]	72,410	72,233

Light GL Loss Development

Light General Liability
Revised Ultimate Losses

Accident Year	Earned Premium	Actual Losses @ 12/31/09		Estimated Ultimate Losses		Estimated Required IBNR		Estimate Ultimate Loss Ratio	
		Paid	Incurred	Paid	Incurred	Paid	Incurred	Paid	Incurred
(1)	(2)	(3) slide 22	(4) slide 25	(5) slide 28 (latest AY from slide 29)	(6) slide 28	(7)=(5)-(4)	(8)=(6)-(4)	(9)=(7)/(2)	(10)=(8)/(2)
1999	21,930	13,885	14,620	14,926	14,986	306	365	68.1%	68.3%
2000	25,652	16,337	17,516	18,125	18,205	609	689	70.7%	71.0%
2001	27,787	17,826	19,346	20,410	20,470	1,064	1,124	73.5%	73.7%
2002	32,640	20,763	23,157	24,842	24,935	1,685	1,778	76.1%	76.4%
2003	35,704	22,176	25,845	28,187	28,330	2,342	2,485	78.9%	79.3%
2004	38,497	22,563	28,289	31,546	31,701	3,257	3,412	81.9%	82.3%
2005	45,175	22,765	31,744	36,645	36,877	4,901	5,133	81.1%	81.6%
2006	53,435	20,444	33,586	41,059	41,306	7,473	7,720	76.8%	77.3%
2007	62,161	17,679	35,038	48,762	48,535	13,724	13,497	78.4%	78.1%
2008	71,862	13,128	33,614	57,403	57,675	23,789	24,061	79.9%	80.3%
2009	82,054	10,484	29,195	72,410	72,233	43,215	43,038	88.2%	88.0%
Total	496,897	198,050	291,950	394,315	395,252	102,365	103,302	79.4%	79.5%

Heavy GL

Heavy GL Paid Loss Development

Accident Year	Paid Losses ($000) Evaluation Age in Months										
	12	24	36	48	60	72	84	96	108	120	132
1999	11	29	49	71	91	108	120	130	137	142	148
2000	45	120	210	309	400	472	533	576	609	635	
2001	138	374	640	895	1,249	1,496	1,677	1,811	1,909		
2002	318	845	1,451	2,107	2,663	3,148	3,573	3,834			
2003	644	1,707	2,926	4,263	5,555	6,516	7,233				
2004	758	2,027	3,489	5,063	6,733	8,080					
2005	1,009	2,675	4,574	6,655	8,485						
2006	1,360	3,643	6,270	9,167							
2007	2,157	5,830	9,998								
2008	3,793	10,135									
2009	4,589										

Heavy GL Paid Loss Development

Accident Year	Paid Loss Development Age-to-Age Factors										
	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-132	132+
1999	2.636	1.690	1.449	1.282	1.187	1.111	1.083	1.054	1.036	1.042	
2000	2.667	1.750	1.471	1.294	1.180	1.129	1.081	1.057	1.043		
2001	2.710	1.711	1.398	1.396	1.198	1.121	1.080	1.054			
2002	2.657	1.717	1.452	1.264	1.182	1.135	1.073				
2003	2.651	1.714	1.457	1.303	1.173	1.110					
2004	2.674	1.721	1.451	1.330	1.200						
2005	2.651	1.710	1.455	1.275							
2006	2.679	1.721	1.462								
2007	2.703	1.715									
2008	2.672										
2009											
3 Yr Avg	2.685	1.715	1.456	1.303	1.185	1.122	1.078	1.055	1.040	1.042	
3 Yr Wtd	2.682	1.716	1.457	1.300	1.187	1.119	1.076	1.055	1.042	1.042	
5 Yr Avg	2.676	1.716	1.455	1.313	1.187	1.121	1.079	1.055	1.040	1.042	
Mid 3 of 5	2.675	1.717	1.455	1.303	1.187	1.120	1.080	1.054			
Wtd Avg	2.676	1.716	1.455	1.300	1.187	1.119	1.076	1.055	1.042	1.042	
Selected	2.685	1.715	1.456	1.303	1.185	1.122	1.078	1.055	1.040	1.042	

Heavy GL Paid Loss Development

Analysis of Development Patterns - Paid
Power Model
Curve: Y = A ^ (B ^ X)

Actual Values (slide 33)		Transformed Values		Fitted Values	
X Var.	Y Variable	X'	Y'	X	Y
Age	LDF's	X	ln(ln(Y))	Age	LDF's
12	2.685	12	0.011	12	2.227
24	1.715	24	-0.630	24	1.740
36	1.456	36	-0.995	36	1.467
48	1.303	48	-1.248	48	1.303
60	1.185	60	-1.475	60	1.201
72	1.122	72	-1.634	72	1.135
84	1.078	84	-1.765	84	1.091
96	1.055	96	-1.859	96	1.062
108	1.040	108	-1.939	108	1.043
120	1.042	120	-1.917	120	1.029
				132	1.020
				144	1.014
				156	1.010
				168	1.007
				180	1.005
				192	1.003
				204	1.002
				216	1.002
				228	1.001
				240	1.001
				252	1.001
				264	1.000
				276	1.000
				288	1.000

Cumulative Factors	
X	Y
Age	CDF's
12	15.741
24	5.864
36	3.418
48	2.348
60	1.802
72	1.521
84	1.355
96	1.258
108	1.192
120	1.146
132	1.100

Tail Factor x Actual LDF's (cumulative)

Parameter Estimates	
A =	3.184
B =	0.970

Tail Factor from 132-Ultimate	
Fitted Data	1.067
Broader Data Source	1.135
Selected Tail Factor	1.100

Heavy GL Incurred Loss Development

Accident Year	Incurred Losses ($000) Evaluation Age in Months										
	12	24	36	48	60	72	84	96	108	120	132
1999	50	85	110	127	135	141	145	149	152	155	158
2000	223	377	490	565	605	631	649	663	677	692	
2001	703	1,175	1,531	1,768	1,892	1,975	2,027	2,073	2,119		
2002	1,465	2,512	3,263	3,729	4,005	4,185	4,303	4,393			
2003	3,036	5,238	6,595	7,611	8,166	8,518	8,739				
2004	3,774	6,397	8,297	9,575	10,207	10,676					
2005	4,660	7,889	10,201	11,833	12,744						
2006	6,641	11,230	14,566	16,736							
2007	10,587	17,903	23,023								
2008	18,254	31,014									
2009	26,102										

Heavy GL Incurred Loss Development

Accident Year	Incurred Loss Development Age-to-Age Factors										
	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-132	132+
1999	1.700	1.294	1.155	1.063	1.044	1.028	1.028	1.020	1.020	1.019	
2000	1.691	1.300	1.153	1.071	1.043	1.029	1.022	1.021	1.022		
2001	1.671	1.303	1.155	1.070	1.044	1.026	1.023	1.022			
2002	1.715	1.299	1.143	1.074	1.045	1.028	1.021				
2003	1.725	1.259	1.154	1.073	1.043	1.026					
2004	1.695	1.297	1.154	1.066	1.046						
2005	1.693	1.293	1.160	1.077							
2006	1.691	1.297	1.149								
2007	1.691	1.286									
2008	1.699										
2009											
3 Yr Avg	1.694	1.292	1.154	1.072	1.045	1.027	1.022	1.021	1.021	1.019	
3 Yr Wtd	1.695	1.291	1.154	1.072	1.045	1.027	1.021	1.022	1.022	1.019	
5 Yr Avg	1.694	1.286	1.152	1.072	1.044	1.027	1.023	1.021	1.021	1.019	
Mid 3 of 5	1.693	1.292	1.152	1.072	1.044	1.028	1.022	1.021			
Wtd Avg	1.697	1.289	1.153	1.072	1.045	1.027	1.022	1.022	1.022	1.019	
Selected	1.694	1.292	1.154	1.072	1.045	1.027	1.022	1.021	1.021	1.019	

Heavy GL Incurred Loss Development

Analysis of Development Patterns - Incurred
Power Model
Curve: Y = A ^ (B ^ X)

Actual Values (slide 36) X Var. Age	Y Variable LDF's	Transformed Values X' X	Y' ln[ln(Y)]	Fitted Values X Age	Y LDF's
12	1.694	12	(0.64)	12	1.341
24	1.292	24	(1.36)	24	1.225
36	1.154	36	(1.94)	36	1.150
48	1.072	48	(2.67)	48	1.102
60	1.045	60	(3.13)	60	1.069
72	1.027	72	(3.63)	72	1.047
84	1.022	84	(3.84)	84	1.032
96	1.021	96	(3.87)	96	1.022
108	1.021	108	(3.88)	108	1.015
120	1.019	120	(3.95)	120	1.011
				132	1.007
				144	1.005
				156	1.003
				168	1.002
				180	1.002
				192	1.001
				204	1.001
				216	1.001
				228	1.000
				240	1.000
				252	1.000
				264	1.000
				276	1.000
				288	1.000

Parameter Estimates A = **1.530**, B = **0.970**

Tail Factor from 132-Ultimate	
Fitted Data	**1.024**
Broader Data Source	**1.037**
Selected Tail Factor	**1.030**

Cumulative Factors X Age	Y CDF's
12	3.249
24	1.918
36	1.484
48	1.286
60	1.200
72	1.148
84	1.118
96	1.095
108	1.072
120	1.050
132	1.030

Tail Factor x Actual LDF's
(cumulative)

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Heavy GL Loss Development

Summary of Loss Development Projections

Accident Year	Earned Premium	Actual Losses @ 12/31/09 Paid	Incurred	Cumulative LDF Paid	Incurred	Estimated Ultimate Losses Paid	Incurred	Estimate Ultimate Loss Ratio Paid	Incurred
(1)	(2)	(3) slide 32	(4) slide 35	(5) slide 34	(6) slide 37	(7)=(3)x(5)	(8)=(4)x(6)	(9)=(7)/(2)	(10)=(8)/(2)
1999	192	148	158	1.100	1.030	163	163	84.8%	84.8%
2000	822	635	692	1.146	1.050	728	727	88.6%	88.4%
2001	2,499	1,909	2,119	1.192	1.072	2,275	2,271	91.0%	90.9%
2002	5,101	3,834	4,393	1.258	1.095	4,821	4,809	94.5%	94.3%
2003	9,987	7,233	8,739	1.355	1.118	9,804	9,774	98.2%	97.9%
2004	12,065	8,080	10,676	1.521	1.148	12,288	12,260	101.9%	101.6%
2005	15,174	8,485	12,744	1.802	1.200	15,292	15,289	100.8%	100.8%
2006	22,537	9,167	16,736	2.348	1.286	21,522	21,523	95.5%	95.5%
2007	35,455	9,998	23,023	3.418	1.484	34,177	34,177	96.4%	96.4%
2008	59,999	10,135	31,014	5.864	1.918	59,428	59,485	99.0%	99.1%
2009	86,337	4,589	26,102	15.741	3.249	72,235	84,793	83.7%	98.2%
Total	250,168	64,213	136,396			232,733	245,269	93.0%	98.0%

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Heavy GL Expected Loss Techniques

Bornhuetter-Ferguson Method

	AY 2009 Paid Estimate	Incurred Estimate
(1) Earned Premium (slide 38)	86,337	86,337
(2) Expected Loss Ratio	102.0%	102.0%
(3) Expected Losses [(1) x (2)]	88,064	88,064
(4) Cumulative Loss Development Factor (slide 38)	15.741	3.249
(5) % of Losses Unpaid/Unreported [1 - 1 / (4)]	93.6%	69.2%
(6) $ of Losses Unpaid/Unreported [(3) x (5)]	82,469	60,955
(7) Actual Losses @ 12/31/09 (slide 38)	4,589	26,102
(8) Revised Ultimate Losses [(6) + (7)]	87,058	87,057

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Heavy GL Loss Development

Heavy General Liability
Revised Ultimate Losses

Accident Year	Earned Premium	Actual Losses @ 12/31/09		Estimated Ultimate Losses		Estimated Required IBNR		Estimate Ultimate Loss Ratio	
		Paid	Incurred	Paid	Incurred	Paid	Incurred	Paid	Incurred
(1)	(2)	(3) slide 32	(4) slide 35	(5) slide 38 (latest AY from slide 39)	(6) slide 38	(7)=(5)-(4)	(8)=(6)-(4)	(9)=(7)/(2)	(10)=(8)/(2)
1999	192	148	158	163	163	5	5	84.8%	84.8%
2000	822	635	692	728	727	36	35	88.6%	88.4%
2001	2,499	1,909	2,119	2,275	2,271	156	152	91.0%	90.9%
2002	5,101	3,834	4,393	4,821	4,809	428	416	94.5%	94.3%
2003	9,987	7,233	8,739	9,804	9,774	1,065	1,035	98.2%	97.9%
2004	12,065	8,080	10,676	12,288	12,260	1,612	1,584	101.9%	101.6%
2005	15,174	8,485	12,744	15,292	15,289	2,548	2,545	100.8%	100.8%
2006	22,537	9,167	16,736	21,522	21,523	4,786	4,787	95.5%	95.5%
2007	35,455	9,998	23,023	34,177	34,177	11,154	11,154	96.4%	96.4%
2008	59,999	10,135	31,014	59,428	59,485	28,414	28,471	99.0%	99.1%
2009	86,337	4,589	26,102	87,058	87,057	60,956	60,955	100.8%	100.8%
Total	250,168	64,213	136,396	247,556	247,533	111,160	111,137	99.0%	98.9%

Summary

Summary of IBNR Estimates

Summary of IBNR Estimates

	Paid Estimates	Incurred Estimates
Total General Liability (slide 14)	194,909	202,836
GLIC Actuary Selection (average)	198,872	
Sum of Components		
Light GL (slide 30)	102,365	103,302
Heavy GL (slide 40)	111,160	111,137
Total GL	213,525	214,439
Selected by Consulting Actuary (average)	213,982	
GLIC Carried IBNR Reserves	198,304	
Indicated Redundancy/(Deficiency)	(15,678)	