# PENNSYLVANIA COMPENSATION RATING BUREAU F CLASS FILING

# ANALYSIS OF EXPERIENCE

The following pages present an analysis of Pennsylvania "F" class experience. The analysis is based on data reported to the Bureau under the Unit Statistical Plan.

<u>Reported Premium and Losses</u> - Pages 1 and 2 present reported standard earned premiums and incurred losses by policy year separately for indemnity (page 1) and medical (page 2). Losses are shown through 10th report which is the latest report currently available under the Unit Statistical Plan.

<u>Indicated Loss Development Factors</u> - Page 3 (indemnity) and page 4 (medical) show age-to-age development factors based on reported losses. A seven year average, or all available points if fewer than seven were available, for indemnity and medical was calculated and formed the basis for the factors ultimately selected. The process for calculation of selected loss development factors and a tail factor for indemnity is shown on page 5. Factors to ultimate are calculated by compounding the age-to-age and 10th-to-ultimate factors.

<u>Selected Loss Development Factors</u> - Page 5 shows the derivation of selected age-to-age and 10th-to-ultimate development factors for indemnity. The residuals of all years available average indicated age-to-age development factors from page 3 were fitted to a curve of the form  $Y = 1/(a+b*x+c*x^2)$  for indemnity. A value of 1.0000 was selected from the 14th-to-15th development stage to ensure a more reasonable shape for the final fitted curve. The 10th-to-ultimate factor was then calculated by compounding the age-to-age factors for 10th-to-11th and all subsequent development stages through the  $15^{th}$  report. These factors became the "selected" values on page 3. The actual data points (7 year average) for medical were used for age-to-age development factors and a  $10^{th}$ -to-ultimate factor of 1.0000 was selected. These factors became the "selected" values on page 4.

Loss Ratios - Indemnity and medical ultimate loss ratios are calculated on page 6.

<u>Graphs</u> - Indemnity, medical and total ultimate loss ratio graphs for policy years 2001 through 2010 are shown on page 7.

<u>Trend Summary</u> - Ultimate loss ratios were then fitted to both a linear and experimental curve to project a loss ratio for the prospective rating period. A summary of these results are shown on page 8.

# "F" CLASS UNIT STATISTICAL PLAN EXPERIENCE

# REPORTED STANDARD EARNED PREMIUM AND INDEMNITY INCURRED LOSSES

Policy	Standard Earned	Reported Indemnity Incurred Losses Report Level										
Year	Premium	1	2	3	4	5	6	7	8	9	10	
95	9,317,313	518,260	1,106,477	1,403,489	916,600	1,123,965	1,144,298	987,901	1,052,159	892,189	892,191	
96	10,841,351	1,628,776	2,237,575	2,717,205	3,471,694	4,897,966	4,493,113	4,383,289	4,370,894	4,466,226	4,194,215	
97	6,729,291	1,665,526	2,517,585	2,932,035	2,936,181	2,959,307	3,143,129	2,838,081	2,838,080	2,838,080	3,012,679	
98	11,198,940	2,189,207	2,741,853	1,455,480	1,638,418	1,655,549	2,145,803	1,734,303	1,752,606	1,752,606	1,752,606	
99	7,004,741	2,278,068	1,444,801	1,491,375	1,545,642	1,413,730	1,525,607	1,578,164	1,500,805	1,500,805	1,510,804	
00	10,673,321	968,974	2,575,955	3,013,038	3,243,897	3,259,124	3,385,904	3,322,367	3,322,367	3,322,367	3,322,367	
01	16,185,988	1,167,275	2,142,613	2,358,411	2,720,696	3,100,357	3,409,132	3,862,772	3,823,070	3,823,070	3,823,070	
02	18,811,734	1,334,807	1,840,111	2,309,583	2,603,880	2,645,245	2,940,184	2,940,184	2,940,184	2,940,184		
03	9,703,002	1,654,185	2,378,806	3,594,256	4,307,912	4,693,497	4,806,614	4,707,955	4,723,547			
04	5,412,095	1,206,032	2,063,556	2,214,772	2,227,923	2,311,423	2,368,031	2,472,464				
05	4,247,161	1,180,618	1,163,588	1,682,054	1,682,054	1,682,054	1,682,054					
06	6,041,432	1,874,241	2,929,488	4,459,050	4,372,431	4,393,241						
07	4,712,048	718,534	1,126,675	1,376,732	1,358,792							
08	3,821,718	766,266	1,024,945	1,298,428								
09	3,956,471	344,857	464,448									
10	3,197,368	277,565										

# "F" CLASS UNIT STATISTICAL PLAN EXPERIENCE

# REPORTED STANDARD EARNED PREMIUM AND MEDICAL INCURRED LOSSES

Policy	Standard Earned	Reported Medical Incurred Losses									
Year	Premium	1	2	3	4	5	6	7	8	9	10
95	9,317,313	342,845	430,150	445,861	417,162	495,125	528,071	517,446	720,412	492,852	474,780
96	10,841,351	691,917	834,832	835,823	914,477	1,220,308	1,246,665	1,383,436	1,165,611	1,067,852	1,060,852
97	6,729,291	840,133	1,020,538	917,578	871,202	863,085	877,234	1,041,526	1,041,526	1,041,526	879,526
98	11,198,940	3,005,891	2,084,986	1,484,608	1,461,769	1,442,004	2,078,423	1,308,839	1,141,665	1,141,665	1,141,665
99	7,004,741	1,102,392	277,212	281,541	260,139	256,350	260,301	265,301	265,601	259,001	259,001
00	10,673,321	577,870	751,041	975,821	1,166,316	1,259,843	1,333,519	1,330,827	1,300,737	1,337,427	1,307,688
01	16,185,988	599,903	1,077,410	1,140,050	1,167,045	1,307,657	1,235,261	1,358,737	1,362,556	1,362,647	1,362,647
02	18,811,734	688,788	764,960	902,425	876,765	907,488	1,199,647	1,202,876	1,203,277	1,203,277	
03	9,703,002	1,186,330	1,360,549	1,431,650	1,482,740	1,470,197	1,468,379	1,442,222	1,442,441		
04	5,412,095	793,110	984,276	1,070,624	1,126,241	1,110,882	1,126,617	1,111,232			
05	4,247,161	619,947	499,031	552,839	552,839	552,839	552,839				
06	6,041,432	1,132,127	1,641,357	1,793,848	1,893,511	2,174,911					
07	4,712,048	525,340	529,351	763,343	800,089						
08	3,821,718	470,052	467,724	442,719							
09	3,956,471	202,604	202,148								
10	3,197,368	278,473									

# "F" CLASS UNIT STATISTICAL PLAN EXPERIENCE

# INDEMNITY INCURRED LOSS DEVELOPMENT FACTORS

# Age-to-Age Development Factors

Policy Year	1 - 2	2 - 3	3 - 4	4 - 5	F 5 - 6	eport 6 - 7	7 - 8	8 - 9	9 - 10	10 - ULT
95	***	1.2684	0.6531	1.2262	1.0181	0.8633	1.0650	0.8480	1.0000	
96	1.3738	***	1.2777	****	0.9173	0.9756	0.9972	1.0218	0.9391	
97	***	1.1646	****	1.0079	1.0621	0.9029	1.0000	1.0000	1.0615	
98	1.2524	****	1.1257	1.0105	1.2961	0.8082	1.0106	1.0000	1.0000	
99	****	1.0322	1.0364	0.9147	1.0791	1.0344	0.9510	1.0000	1.0067	
00	2.6584	****	1.0766	1.0047	1.0389	0.9812	1.0000	1.0000	1.0000	
01	****	1.1007	****	1.1395	1.0996	1.1331	0.9897	1.0000	1.0000	
02	1.3786	****	1.1274	1.0159	1.1115	1.0000	1.0000	1.0000		
03	1.4381	1.5109	1.1986	1.0895	1.0241	0.9795	1.0033			
04	1.7110	1.0733	1.0059	1.0375	1.0245	1.0441				
05	0.9856	1.4456	1.0000	1.0000	1.0000					
06	***	1.5221	0.9806	1.0048						
07	1.5680	1.2219	0.9870							
08	1.3376	1.2668								
09	1.3468									
3 Yr Avg (Latest 3)	1.4175	1.3369	0.9892	1.0141	1.0162	1.0079	0.9977	1.0000	1.0022	
5 Yr Avg	1.3898	1.3059	1.0344	1.0295	1.0519	1.0276	0.9888	1.0000	1.0136	
7 Yr Avg	1.3951	1.3059	1.0537	1.0417	1.0540	0.9972	0.9935	1.0031	1.0010	
Selected (Fitted)	1.3953	1.3051	1.0677	1.0270	1.0143	1.0088	1.0059	1.0043	1.0032	1.0088
				Developme	nt Factors to UI	timate				
	1-ULT	2-ULT	3-ULT	4-ULT	5-ULT	6-ULT	7-ULT	8-ULT	9-ULT	10-ULT *
3 Yr Avg (Latest 3)										
5 Yr Avg										
7 Yr Avg	2.1151	1.5161	1.1610	1.1018	1.0577	1.0035	1.0063	1.0129	1.0098	1.0088
Selected	2.0887	1.4970	1.1470	1.0743	1.0461	1.0314	1.0224	1.0164	1.0121	1.0088

<sup>\*</sup> Based on selected value

<sup>\*\*\*\*</sup> Loss development factor not used

# "F" CLASS UNIT STATISTICAL PLAN EXPERIENCE

#### MEDICAL INCURRED LOSS DEVELOPMENT FACTORS

# Age-to-Age Development Factors

Policy Year	1 - 2	2-3	3 - 4	4 - 5	5 - 6	leport 6 - 7	7 - 8	8 - 9	9 - 10	10 - ULT
95	***	1.0365	0.9356	1.1869	***	0.9799	1.3922	0.6841	***	
96	1.2065	****	1.0941	****	1.0216	1.1097	0.8425	0.9161	0.9934	
97	****	0.8991	****	0.9907	1.0164	1.1873	1.0000	1.0000	0.8445	
98	0.6936	****	0.9846	0.9865	1.4413	0.6297	0.8723	1.0000	1.0000	
99	****	1.0156	0.9240	0.9854	1.0154	1.0192	1.0011	***	1.0000	
00	1.2997	****	1.1952	1.0802	1.0585	0.9980	***	1.0282	0.9778	
01	****	1.0581	****	1.1205	0.9446	***	1.0028	1.0001	1.0000	
02	1.1106	****	0.9716	1.0350	1.3219	1.0027	1.0003	1.0000		
03	1.1469	1.0523	1.0357	0.9915	0.9988	0.9822	1.0002			
04	1.2410	1.0877	1.0519	0.9864	1.0142	0.9863				
05	0.8050	1.1078	1.0000	1.0000	1.0000					
06	****	1.0929	1.0556	1.1486						
07	1.0076	1.4420	1.0481							
08	0.9950	0.9465								
09	0.9977									
3 Yr Avg (Latest 3)	1.0001	1.1605	1.0346	1.0450	1.0043	0.9904	1.0011	1.0094	0.9926	
5 Yr Avg	1.0093	1.1354	1.0383	1.0323	1.0559	0.9977	0.9753	1.0057	0.9645	
7 Yr Avg	1.0434	1.1125	1.0512	1.0517	1.0505	0.9722	0.9599	0.9469	0.9693	
Selected (7 yr Avg)	1.0434	1.1125	1.0512	1.0517	1.0505	0.9722	0.9599	0.9469	0.9693	1.0000
				Developme	nt Factors to U	Itimate				
	1-ULT	2-ULT	3-ULT	4-ULT	5-ULT	6-ULT	7-ULT	8-ULT	9-ULT	10-ULT *
3 Yr Avg (Latest 3)										
5 Yr Avg										
7 Yr Avg	1.1547	1.1067	0.9948	0.9463	0.8998	0.8565	0.8810	0.9178	0.9693	1.0000
Selected	1.1547	1.1067	0.9948	0.9463	0.8998	0.8565	0.8810	0.9178	0.9693	1.0000

<sup>\*</sup> Based on selected value

<sup>\*\*\*\*</sup> Loss development factor not used

# "F" CLASS UNIT STATISTICAL PLAN EXPERIENCE

# FITTED DEVELOPMENT FACTORS

# **INDEMNITY INCURRED LOSSES**

Y = 1/(a+b\*x+c\*x^2) a 12.5361799 b -15.38285246 c 5.376680173 R ^ 2 = 0.9842

Incurred Development	7 Year Average	7 Year Average - 1	Fitted Value	Fitted Value + 1
1 1st to 2nd	1.3951	0.3951	0.3953	1.3953
2 2nd to 3rd	1.3059	0.3059	0.3051	1.3051
3 3rd to 4th	1.0537	0.0537	0.0677	1.0677
4 4th to 5th	1.0417	0.0417	0.0270	1.0270
5 5th to 6th	1.0540	0.0540	0.0143	1.0143
6 6th to 7th	0.9972	(0.0028)	0.0088	1.0088
7 7th to 8th	0.9935	(0.0065)	0.0059	1.0059
8 8th to 9th	1.0031	0.0031	0.0043	1.0043
9 9th to 10th	1.0010	0.0010	0.0032	1.0032
10 10th to 11th			0.0025	1.0025
11 11th to 12th			0.0020	1.0020
12 12th to 13th			0.0017	1.0017
13 13th to 14th			0.0014	1.0014
14 14th to 15th	1.0000	-	0.0012	1.0012
10th to Ultimate				1.0088

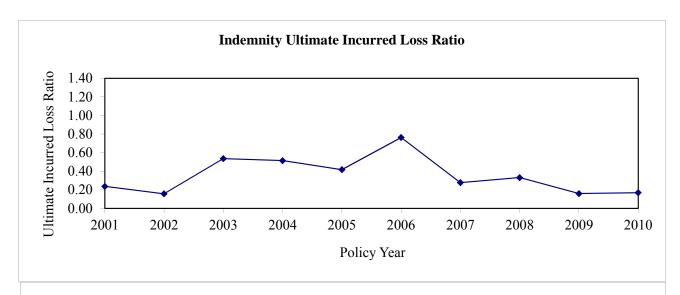
<sup>(</sup>a) 14th to 15th age-to-age factor set at 1.0000 to ensure proper tendency for the fitted curve.

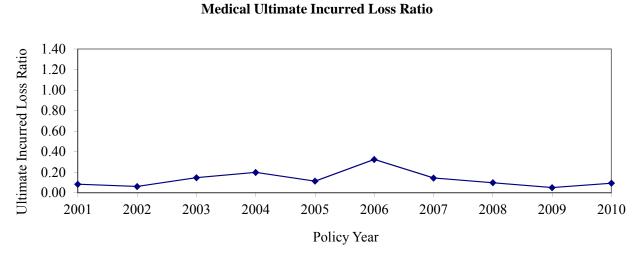
# "F" CLASS UNIT STATISTICAL PLAN EXPERIENCE

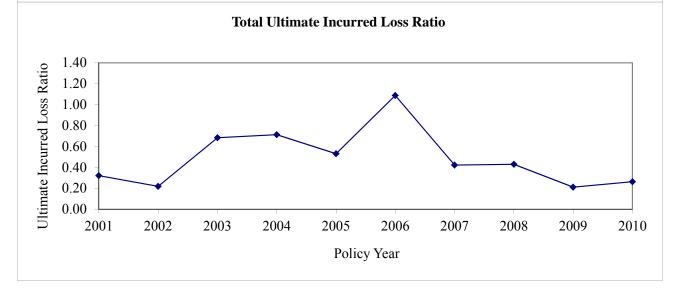
# **ULTIMATE LOSS RATIOS**

	Policy Year	Standard Earned Premium	Premium On-Level Factor	Adjusted Premium	Reported Incurred Loss	Loss Level	Loss Development Factor	Ultimate Incurred Loss	Loss Ratio
		(1)	(2)	(3)	(4)	(5)	(6)	(7)=(4)*(6)	(8)=(7)/(3)
		. ,	` '	` '	` '	` '	` '	.,,,,,,	
Indemnity	2001	16,185,988	1.0037	16,245,876	3,823,070	10	1.0088	3,856,713	0.2374
	2002	18,811,734	1.0037	18,881,337	2,940,184	9	1.0121	2,975,760	0.1576
	2003	9,703,002	0.9236	8,961,693	4,723,547	8	1.0164	4,801,013	0.5357
	2004	5,412,095	0.9082	4,915,265	2,472,464	7	1.0224	2,527,847	0.5143
	2005	4,247,161	0.9799	4,161,793	1,682,054	6	1.0314	1,734,870	0.4169
	2006	6,041,432	0.9967	6,021,495	4,393,241	5	1.0461	4,595,769	0.7632
	2007	4,712,048	1.1136	5,247,337	1,358,792	4	1.0743	1,459,750	0.2782
	2008	3,821,718	1.1737	4,485,550	1,298,428	3	1.1470	1,489,297	0.3320
	2009	3,956,471	1.0992	4,348,953	464,448	2	1.4970	695,279	0.1599
	2010	3,197,368	1.0696	3,419,905	277,565	1	2.0887	579,750	0.1695
	10 Year Total	76,089,017		76,689,204	23,433,793			24,716,048	0.3223
	7 Year Average								0.3763
Medical									
Medical									
	2001	16,185,988	1.0037	16,245,876	1,362,647	10	1.0000	1,362,647	0.0839
	2002	18,811,734	1.0037	18,881,337	1,203,277	9	0.9693	1,166,336	0.0618
	2003	9,703,002	0.9236	8,961,693	1,442,441	8	0.9178	1,323,872	0.1477
	2004	5,412,095	0.9082	4,915,265	1,111,232	7	0.8810	978,995	0.1992
	2005	4,247,161	0.9799	4,161,793	552,839	6	0.8565	473,507	0.1138
	2006	6,041,432	0.9967	6,021,495	2,174,911	5	0.8998	1,956,985	0.3250
	2007	4,712,048	1.1136	5,247,337	800,089	4	0.9463	757,124	0.1443
	2008	3,821,718	1.1737	4,485,550	442,719	3	0.9948	440,417	0.0982
	2009	3,956,471	1.0992	4,348,953	202,148	2	1.1067	223,717	0.0514
	2010	3,197,368	1.0696	3,419,905	278,473	1	1.1547	321,553	0.0940
	10 Year Total	76,089,017		76,689,204	9,570,776			9,005,153	0.1174
	7 Year Average								0.1466
Total	2001	16,185,988	1.0037	16,245,876	5,185,717			5,219,360	0.3213
	2002	18,811,734	1.0037	18,881,337	4,143,461			4,142,096	0.2194
	2003	9,703,002	0.9236	8,961,693	6,165,988			6,124,885	0.6835
	2004	5,412,095	0.9082	4,915,265	3,583,696			3,506,842	0.7135
	2005	4,247,161	0.9799	4,161,793	2,234,893			2,208,377	0.5306
	2006	6,041,432	0.9967	6,021,495	6,568,152			6,552,754	1.0882
	2007	4,712,048	1.1136	5,247,337	2,158,881			2,216,874	0.4225
	2008	3,821,718	1.1737	4,485,550	1,741,147			1,929,714	0.4302
	2009	3,956,471	1.0992	4,348,953	666,596			918,996	0.2113
	2010	3,197,368	1.0696	3,419,905	556,038			901,303	0.2635
	10 Year Total	76,089,017		76,689,204	33,004,569			33,721,201	0.4397
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0.5229







INDEMNITY		3 points	4 points	5 points	6 points	7 points	8 points	9 points	10 points
LINEAR	Average Loss Ratio	0.2205	0.2349	0.3406	0.3533	0.3763	0.3962	0.3697	0.3565
LINEZAR	Trended Loss Ratio Trend Factor Annual. Trend Factor	(0.1248) (0.5660) #NUM!	(0.0017) (0.0072) #NUM!	(0.3449) (1.0126) #NUM!	(0.1384) (0.3917) #NUM!	(0.0656) (0.1743) #NUM!	(0.0116) (0.0293) #NUM!	0.1784 0.4826 0.9423	0.2637 0.7397 0.9775
EXPONENTIAL	R^2	0.7058	0.5852	0.6973	0.5133	0.5154	0.5218	0.1213	0.0328
	Trended Loss Ratio Trend Factor Annual. Trend Factor	0.0498 0.2259 0.7882	0.0780 0.3321 0.8590	0.0440 0.1292 0.7803	0.0693 0.1962 0.8386	0.0845 0.2246 0.8644	0.0997 0.2516 0.8846	0.1829 0.4947 0.9442	0.2278 0.6390 0.9668
	R^2	0.6854	0.6251	0.7944	0.6759	0.6760	0.6689	0.1304	0.0465
MEDICAL									
LINEAR	Average Loss Ratio	0.0812	0.0970	0.1426	0.1378	0.1466	0.1467	0.1373	0.1319
	Trended Loss Ratio Trend Factor Annual, Trend Factor	0.0723 0.8904 0.9816	0.0031 0.0320 0.6220	(0.1487) (1.0428) #NUM!	(0.0209) (0.1517) #NUM!	(0.0024) (0.0164) #NUM!	0.0388 0.2645 0.8885	0.0972 0.7079 0.9722	0.1233 0.9348 0.9949
EXPONENTIAL	R^2	0.0066	0.4516	0.6705	0.2859	0.3189	0.2152	0.0326	0.0017
	Trended Loss Ratio Trend Factor Annual. Trend Factor	0.0711 0.8756 0.9790	0.0363 0.3742 0.8732	0.0186 0.1304 0.7812	0.0377 0.2736 0.8693	0.0409 0.2790 0.8829	0.0523 0.3565 0.9124	0.0859 0.6256 0.9624	0.1031 0.7817 0.9816
	R^2	0.0036	0.3424	0.6698	0.3660	0.4343	0.3532	0.0458	0.0056
TOTAL	Average Loss Ratio	0.3017	0.3319	0.4832	0.4911	0.5229	0.5429	0.5070	0.4884
EXPONENTIAL	Trended Loss Ratio	(0.0525)	0.0014	(0.4936)	(0.1593)	(0.0680)	0.0272	0.2756	0.3870
	Trended Loss Ratio	0.1209	0.1143	0.0626	0.1070	0.1254	0.1520	0.2688	0.3309