PENNSYLVANIA COMPENSATION RATING BUREAU

<u>Measures of Goodness of Fit in Trend Calculations Using Loss Ratios</u>

Estimates of trended loss ratios using from 4 to 10 data points for each loss development technique are shown in Exhibit 6 of this mailing.

The first page of the attachment shows R^2 values for the regressions producing those trended loss ratios.

Pages 2 and 3 show indemnity fitted loss ratios for each loss development method using from 4 to 10 data points. Page 2 uses linear regression and page 3 uses exponential techniques. Pages 4 and 5 present analogous results for medical-linear and medical-exponential respectively.

Pages 6 through 9 show residuals resulting from the comparison of actual and fitted (actual minus fitted) values for the curves used in the trend projections. Page 6 shows indemnity results using linear regression, page 7 is for indemnity-exponential, page 8 for medical-linear and page 9 for medical-exponential.

INDEMNITY r^2		Average (Pd & Inc)	(Incur)	(Pd-20)
4 Point	Linear	0.677	0.672	0.680
5 Point	Linear	0.798	0.784	0.810
6 Point	Linear	0.882	0.875	0.888
7 Point	Linear	0.852	0.864	0.833
8 Point	Linear	0.556	0.651	0.435
9 Point	Linear	0.446	0.570	0.296
10 Point	Linear	0.240	0.424	0.076
4 Point	Expon'l	0.677	0.672	0.679
5 Point	Expon'l	0.790	0.777	0.803
6 Point	Expon'l	0.880	0.872	0.887
7 Point	Expon'l	0.849	0.859	0.832
8 Point	Expon'l	0.565	0.658	0.444
9 Point	Expon'l	0.459	0.579	0.308
10 Point	Expon'l	0.254	0.438	0.081

MEDICAL r^2		Average (Pd & Inc)	(Incur)	(Pd-20)
4 Point	Linear	0.294	0.391	0.185
5 Point	Linear	0.491	0.605	0.333
6 Point	Linear	0.084	0.091	0.071
7 Point	Linear	0.028	0.015	0.049
8 Point	Linear	0.071	0.018	0.168
9 Point	Linear	0.201	0.122	0.294
10 Point	Linear	0.404	0.316	0.484
4 Point	Expon'l	0.302	0.398	0.190
5 Point	Expon'l	0.504	0.617	0.342
6 Point	Expon'l	0.085	0.092	0.070
7 Point	Expon'l	0.026	0.014	0.047
8 Point	Expon'l	0.069	0.016	0.168
9 Point	Expon'l	0.202	0.121	0.299
10 Point	Expon'l	0.409	0.321	0.490

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INDEMNITY Linear **FITTED**	Policy Year	Loss Ratio Average (Pd & Inc)	Loss Ratio (Incur)	Loss Ratio (Pd-20)
4 Point	2002	0.4948	0.4674	0.5223
	2003	0.4777	0.4484	0.5070
	2004	0.4606	0.4294	0.4917
	2005	0.4435	0.4105	0.4764
5 Point	2001	0.5104	0.4833	0.5376
	2002	0.4938	0.4654	0.5223
	2003	0.4772	0.4474	0.5070
	2004	0.4606	0.4294	0.4917
	2005	0.4440	0.4115	0.4764
6 Point	2000	0.5371	0.5120	0.5622
	2001	0.5178	0.4911	0.5444
	2002	0.4984	0.4702	0.5265
	2003	0.4790	0.4494	0.5087
	2004	0.4597	0.4285	0.4909
	2005	0.4403	0.4076	0.4730
7 Point	1999	0.5434	0.5209	0.5660
	2000	0.5271	0.5028	0.5514
	2001	0.5107	0.4847	0.5368
	2002	0.4944	0.4666	0.5222
	2003	0.4780	0.4484	0.5076
	2004	0.4617	0.4303	0.4930
	2005	0.4453	0.4122	0.4784
8 Point	1998	0.5320	0.5129	0.5511
	1999	0.5212	0.5000	0.5424
	2000	0.5104	0.4871	0.5337
	2001	0.4996	0.4742	0.5250
	2002	0.4888	0.4613	0.5163
	2003	0.4780	0.4484	0.5076
	2004	0.4672	0.4355	0.4989
	2005	0.4565	0.4226	0.4902
9 Point	1997	0.5276	0.5107	0.5445
	1998	0.5195	0.5005	0.5385
	1999	0.5114	0.4902	0.5325
	2000	0.5033	0.4800	0.5265
	2001	0.4951	0.4698	0.5205
	2002	0.4870	0.4595	0.5145
	2003	0.4789	0.4493	0.5085
	2004	0.4708	0.4391	0.5025
	2005	0.4627	0.4289	0.4965
10 Point	1996	0.5168	0.5038	0.5298
	1997	0.5117	0.4963	0.5271
	1998	0.5065	0.4887	0.5243
	1999	0.5014	0.4812	0.5216
	2000	0.4963	0.4737	0.5189
	2001	0.4912	0.4662	0.5161
	2002	0.4860	0.4586	0.5134
	2003	0.4809	0.4511	0.5107
	2004	0.4758	0.4436	0.5080
	2005	0.4707	0.4361	0.5052

INDEMNITY Expon'l FITTED	Policy Year	Loss Ratio Average (Pd & Inc)	Loss Ratio (Incur)	Loss Ratio (Pd-20)
4 Point	2002	0.4952	0.4678	0.5227
	2003	0.4773	0.4478	0.5067
	2004	0.4600	0.4287	0.4912
	2005	0.4433	0.4104	0.4762
5 Point	2001	0.5112	0.4842	0.5382
	2002	0.4935	0.4650	0.5221
	2003	0.4765	0.4465	0.5064
	2004	0.4600	0.4287	0.4912
	2005	0.4441	0.4116	0.4765
6 Point	2000	0.5382	0.5134	0.5631
	2001	0.5173	0.4906	0.5440
	2002	0.4972	0.4688	0.5256
	2003	0.4779	0.4479	0.5078
	2004	0.4593	0.4280	0.4906
	2005	0.4415	0.4090	0.4740
7 Point	1999	0.5451	0.5231	0.5672
	2000	0.5272	0.5029	0.5514
	2001	0.5099	0.4835	0.5361
	2002	0.4931	0.4649	0.5212
	2003	0.4769	0.4470	0.5067
	2004	0.4612	0.4298	0.4926
	2005	0.4461	0.4132	0.4789
8 Point	1998	0.5330	0.5147	0.5515
	1999	0.5213	0.5004	0.5423
	2000	0.5098	0.4865	0.5332
	2001	0.4986	0.4729	0.5242
	2002	0.4876	0.4598	0.5154
	2003	0.4769	0.4470	0.5067
	2004	0.4664	0.4346	0.4982
	2005	0.4561	0.4225	0.4898
9 Point	1997	0.5286	0.5125	0.5448
	1998	0.5198	0.5011	0.5385
	1999	0.5111	0.4900	0.5321
	2000	0.5025	0.4791	0.5259
	2001	0.4941	0.4684	0.5197
	2002	0.4859	0.4580	0.5136
	2003	0.4778	0.4478	0.5076
	2004	0.4698	0.4379	0.5016
	2005	0.4619	0.4282	0.4957
10 Point	1996	0.5173	0.5053	0.5295
	1997	0.5118	0.4969	0.5267
	1998	0.5063	0.4887	0.5238
	1999	0.5008	0.4806	0.5210
	2000	0.4955	0.4726	0.5181
	2001	0.4902	0.4648	0.5153
	2002	0.4849	0.4571	0.5125
	2003	0.4797	0.4496	0.5097
	2004	0.4745	0.4421	0.5070
	2005	0.4694	0.4348	0.5042

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MEDICAL Linear **FITTED**	Policy Year	Loss Ratio Average (Pd & Inc)	Loss Ratio (Incur)	Loss Ratio (Pd-20)
4 Point	2002	0.4756	0.4731	0.4782
	2003	0.4847	0.4843	0.4850
	2004	0.4937	0.4956	0.4918
	2005	0.5028	0.5068	0.4986
5 Point	2001	0.4644	0.4584	0.4704
	2002	0.4742	0.4708	0.4775
	2003	0.4840	0.4832	0.4847
	2004	0.4937	0.4956	0.4918
	2005	0.5035	0.5080	0.4990
6 Point	2000	0.4786	0.4771	0.4800
	2001	0.4818	0.4810	0.4826
	2002	0.4851	0.4849	0.4852
	2003	0.4883	0.4889	0.4877
	2004	0.4916	0.4928	0.4903
	2005	0.4948	0.4967	0.4929
7 Point	1999	0.4830	0.4847	0.4812
	2000	0.4845	0.4860	0.4829
	2001	0.4860	0.4872	0.4846
	2002	0.4874	0.4885	0.4863
	2003	0.4889	0.4897	0.4880
	2004	0.4904	0.4910	0.4897
	2005	0.4919	0.4923	0.4914
8 Point	1998	0.4790	0.4841	0.4739
	1999	0.4810	0.4852	0.4768
	2000	0.4830	0.4863	0.4796
	2001	0.4849	0.4875	0.4824
	2002	0.4869	0.4886	0.4852
	2003	0.4889	0.4897	0.4880
	2004	0.4909	0.4909	0.4908
	2005	0.4929	0.4920	0.4937
9 Point	1997	0.4705	0.4735	0.4676
	1998	0.4736	0.4763	0.4710
	1999	0.4768	0.4791	0.4745
	2000	0.4799	0.4819	0.4779
	2001	0.4830	0.4847	0.4813
	2002	0.4862	0.4875	0.4848
	2003	0.4893	0.4903	0.4882
	2004	0.4924	0.4931	0.4917
	2005	0.4956	0.4959	0.4951
10 Point	1996	0.4545	0.4567	0.4523
	1997	0.4597	0.4617	0.4576
	1998	0.4648	0.4667	0.4629
	1999	0.4700	0.4717	0.4683
	2000	0.4752	0.4767	0.4736
	2001	0.4803	0.4818	0.4789
	2002	0.4855	0.4868	0.4842
	2003	0.4906	0.4918	0.4895
	2004	0.4958	0.4968	0.4948
	2005	0.5010	0.5018	0.5001

MEDICAL Expon'l FITTED	Policy Year	Loss Ratio Average (Pd & Inc)	Loss Ratio (Incur)	Loss Ratio (Pd-20)
4 Point	2002	0.4755	0.4729	0.4780
	2003	0.4843	0.4839	0.4847
	2004	0.4934	0.4952	0.4915
	2005	0.5026	0.5067	0.4984
5 Point	2001	0.4645	0.4586	0.4704
	2002	0.4739	0.4705	0.4773
	2003	0.4836	0.4827	0.4844
	2004	0.4934	0.4952	0.4915
	2005	0.5034	0.5081	0.4988
6 Point	2000	0.4784	0.4767	0.4799
	2001	0.4815	0.4805	0.4824
	2002	0.4847	0.4844	0.4849
	2003	0.4879	0.4884	0.4874
	2004	0.4912	0.4923	0.4900
	2005	0.4944	0.4963	0.4925
7 Point	1999	0.4828	0.4843	0.4812
	2000	0.4843	0.4856	0.4828
	2001	0.4857	0.4868	0.4845
	2002	0.4871	0.4880	0.4861
	2003	0.4885	0.4893	0.4877
	2004	0.4900	0.4905	0.4894
	2005	0.4914	0.4918	0.4910
8 Point	1998	0.4789	0.4839	0.4739
	1999	0.4809	0.4850	0.4767
	2000	0.4828	0.4860	0.4794
	2001	0.4847	0.4871	0.4822
	2002	0.4866	0.4882	0.4849
	2003	0.4885	0.4893	0.4877
	2004	0.4905	0.4903	0.4905
	2005	0.4924	0.4914	0.4934
9 Point	1997	0.4704	0.4732	0.4676
	1998	0.4735	0.4759	0.4709
	1999	0.4765	0.4787	0.4743
	2000	0.4796	0.4815	0.4777
	2001	0.4827	0.4842	0.4811
	2002	0.4858	0.4870	0.4845
	2003	0.4889	0.4898	0.4880
	2004	0.4921	0.4927	0.4914
	2005	0.4953	0.4955	0.4949
10 Point	1996	0.4542	0.4562	0.4521
	1997	0.4592	0.4611	0.4573
	1998	0.4643	0.4660	0.4625
	1999	0.4694	0.4710	0.4677
	2000	0.4746	0.4760	0.4730
	2001	0.4798	0.4811	0.4784
	2002	0.4851	0.4862	0.4838
	2003	0.4904	0.4914	0.4893
	2004	0.4958	0.4967	0.4949
	2005	0.5013	0.5020	0.5005

INDEMNITY Linear RESIDUALS	Policy Year	Loss Ratio Average (Pd & Inc)	Loss Ratio (Incur)	Loss Ratio (Pd-20)
4 Point	2002	0.0020	0.0036	0.0004
	2003	-0.0133	-0.0166	-0.0101
	2004	0.0207	0.0224	0.0190
	2005	-0.0094	-0.0094	-0.0093
5 Point	2001	-0.0010	-0.0020	0.0000
	2002	0.0030	0.0056	0.0004
	2003	-0.0128	-0.0156	-0.0101
	2004	0.0207	0.0224	0.0190
	2005	-0.0099	-0.0104	-0.0093
6 Point	2000	0.0092	0.0098	0.0085
	2001	-0.0084	-0.0098	-0.0068
	2002	-0.0016	0.0008	-0.0038
	2003	-0.0146	-0.0176	-0.0118
	2004	0.0216	0.0233	0.0198
	2005	-0.0062	-0.0065	-0.0059
7 Point	1999	-0.0150	-0.0138	-0.0163
	2000	0.0192	0.0190	0.0193
	2001	-0.0013	-0.0034	0.0008
	2002	0.0024	0.0044	0.0005
	2003	-0.0136	-0.0166	-0.0107
	2004	0.0196	0.0215	0.0177
	2005	-0.0112	-0.0111	-0.0113
8 Point	1998	-0.0390	-0.0366	-0.0413
	1999	0.0072	0.0071	0.0073
	2000	0.0359	0.0347	0.0370
	2001	0.0098	0.0071	0.0126
	2002	0.0080	0.0097	0.0064
	2003	-0.0136	-0.0166	-0.0107
	2004	0.0141	0.0163	0.0118
	2005	-0.0224	-0.0215	-0.0231
9 Point	1997	-0.0250	-0.0249	-0.0252
	1998	-0.0265	-0.0242	-0.0287
	1999	0.0170	0.0169	0.0172
	2000	0.0430	0.0418	0.0442
	2001	0.0143	0.0115	0.0171
	2002	0.0098	0.0115	0.0082
	2003	-0.0145	-0.0175	-0.0116
	2004	0.0105	0.0127	0.0082
	2005	-0.0286	-0.0278	-0.0294
10 Point	1996	-0.0358	-0.0325	-0.0392
	1997	-0.0091	-0.0105	-0.0078
	1998	-0.0135	-0.0124	-0.0145
	1999	0.0270	0.0259	0.0281
	2000	0.0500	0.0481	0.0518
	2001	0.0182	0.0151	0.0215
	2002	0.0108	0.0124	0.0093
	2003	-0.0165	-0.0193	-0.0138
	2004	0.0055	0.0082	0.0027
	2005	-0.0366	-0.0350	-0.0381

INDEMNITY Expon'l RESIDUALS	Policy Year	Loss Ratio Average (Pd & Inc)	Loss Ratio (Incur)	Loss Ratio (Pd-20)
4 Point	2002	0.0016	0.0032	0.0000
	2003	-0.0129	-0.0160	-0.0098
	2004	0.0213	0.0231	0.0195
	2005	-0.0092	-0.0093	-0.0091
5 Point	2001	-0.0018	-0.0029	-0.0006
	2002	0.0033	0.0060	0.0006
	2003	-0.0121	-0.0147	-0.0095
	2004	0.0213	0.0231	0.0195
	2005	-0.0100	-0.0105	-0.0094
6 Point	2000	0.0081	0.0084	0.0076
	2001	-0.0079	-0.0093	-0.0064
	2002	-0.0004	0.0022	-0.0029
	2003	-0.0135	-0.0161	-0.0109
	2004	0.0220	0.0238	0.0201
	2005	-0.0074	-0.0079	-0.0069
7 Point	1999	-0.0167	-0.0160	-0.0175
	2000	0.0191	0.0189	0.0193
	2001	-0.0005	-0.0022	0.0015
	2002	0.0037	0.0061	0.0015
	2003	-0.0125	-0.0152	-0.0098
	2004	0.0201	0.0220	0.0181
	2005	-0.0120	-0.0121	-0.0118
8 Point	1998	-0.0400	-0.0384	-0.0417
	1999	0.0071	0.0067	0.0074
	2000	0.0365	0.0353	0.0375
	2001	0.0108	0.0084	0.0134
	2002	0.0092	0.0112	0.0073
	2003	-0.0125	-0.0152	-0.0098
	2004	0.0149	0.0172	0.0125
	2005	-0.0220	-0.0214	-0.0227
9 Point	1997	-0.0260	-0.0267	-0.0255
	1998	-0.0268	-0.0248	-0.0287
	1999	0.0173	0.0171	0.0176
	2000	0.0438	0.0427	0.0448
	2001	0.0153	0.0129	0.0179
	2002	0.0109	0.0130	0.0091
	2003	-0.0134	-0.0160	-0.0107
	2004	0.0115	0.0139	0.0091
	2005	-0.0278	-0.0271	-0.0286
10 Point	1996	-0.0363	-0.0340	-0.0389
	1997	-0.0092	-0.0111	-0.0074
	1998	-0.0133	-0.0124	-0.0140
	1999	0.0276	0.0265	0.0287
	2000	0.0508	0.0492	0.0526
	2001	0.0192	0.0165	0.0223
	2002	0.0119	0.0139	0.0102
	2003	-0.0153	-0.0178	-0.0128
	2004	0.0068	0.0097	0.0037
	2005	-0.0353	-0.0337	-0.0371

MEDICAL Linear RESIDUALS	Policy Year	Loss Ratio Average (Pd & Inc)	Loss Ratio (Incur)	Loss Ratio (Pd-20)
4 Point	2002	0.0002	0.0027	-0.0024
	2003	-0.0131	-0.0163	-0.0097
	2004	0.0256	0.0244	0.0267
	2005	-0.0127	-0.0108	-0.0145
5 Point	2001	-0.0014	-0.0022	-0.0007
	2002	0.0016	0.0050	-0.0017
	2003	-0.0124	-0.0152	-0.0094
	2004	0.0256	0.0244	0.0267
	2005	-0.0134	-0.0120	-0.0149
6 Point	2000	0.0218	0.0283	0.0153
	2001	-0.0188	-0.0248	-0.0129
	2002	-0.0093	-0.0091	-0.0094
	2003	-0.0167	-0.0209	-0.0124
	2004	0.0277	0.0272	0.0282
	2005	-0.0047	-0.0007	-0.0088
7 Point	1999	0.0088	0.0132	0.0044
	2000	0.0159	0.0195	0.0124
	2001	-0.0230	-0.0310	-0.0149
	2002	-0.0116	-0.0127	-0.0105
	2003	-0.0173	-0.0217	-0.0127
	2004	0.0289	0.0290	0.0288
	2005	-0.0018	0.0037	-0.0073
8 Point	1998	-0.0035	0.0009	-0.0078
	1999	0.0108	0.0127	0.0088
	2000	0.0174	0.0191	0.0157
	2001	-0.0219	-0.0313	-0.0127
	2002	-0.0111	-0.0128	-0.0094
	2003	-0.0173	-0.0217	-0.0127
	2004	0.0284	0.0291	0.0277
	2005	-0.0028	0.0040	-0.0096
9 Point	1997	-0.0108	-0.0157	-0.0059
	1998	0.0019	0.0087	-0.0049
	1999	0.0150	0.0188	0.0111
	2000	0.0205	0.0235	0.0174
	2001	-0.0200	-0.0285	-0.0116
	2002	-0.0104	-0.0117	-0.0090
	2003	-0.0177	-0.0223	-0.0129
	2004	0.0269	0.0269	0.0268
	2005	-0.0055	0.0001	-0.0110
10 Point	1996	-0.0243	-0.0263	-0.0223
	1997	0.0000	-0.0039	0.0041
	1998	0.0107	0.0183	0.0032
	1999	0.0218	0.0262	0.0173
	2000	0.0252	0.0287	0.0217
	2001	-0.0173	-0.0256	-0.0092
	2002	-0.0097	-0.0110	-0.0084
	2003	-0.0190	-0.0238	-0.0142
	2004	0.0235	0.0232	0.0237
	2005	-0.0109	-0.0058	-0.0160

MEDICAL Expon'l RESIDUALS	Policy Year	Loss Ratio Average (Pd & Inc)	Loss Ratio (Incur)	Loss Ratio (Pd-20)
4 Point	2002	0.0003	0.0029	-0.0022
	2003	-0.0127	-0.0159	-0.0094
	2004	0.0259	0.0248	0.0270
	2005	-0.0125	-0.0107	-0.0143
5 Point	2001	-0.0015	-0.0024	-0.0007
	2002	0.0019	0.0053	-0.0015
	2003	-0.0120	-0.0147	-0.0091
	2004	0.0259	0.0248	0.0270
	2005	-0.0133	-0.0121	-0.0147
6 Point	2000	0.0220	0.0287	0.0154
	2001	-0.0185	-0.0243	-0.0127
	2002	-0.0089	-0.0086	-0.0091
	2003	-0.0163	-0.0204	-0.0121
	2004	0.0281	0.0277	0.0285
	2005	-0.0043	-0.0003	-0.0084
7 Point	1999	0.0090	0.0136	0.0044
	2000	0.0161	0.0198	0.0125
	2001	-0.0227	-0.0306	-0.0148
	2002	-0.0113	-0.0122	-0.0103
	2003	-0.0169	-0.0213	-0.0124
	2004	0.0293	0.0295	0.0291
	2005	-0.0013	0.0042	-0.0069
8 Point	1998	-0.0034	0.0011	-0.0078
	1999	0.0109	0.0129	0.0089
	2000	0.0176	0.0194	0.0159
	2001	-0.0217	-0.0309	-0.0125
	2002	-0.0108	-0.0124	-0.0091
	2003	-0.0169	-0.0213	-0.0124
	2004	0.0288	0.0297	0.0280
	2005	-0.0023	0.0046	-0.0093
9 Point	1997	-0.0107	-0.0154	-0.0059
	1998	0.0020	0.0091	-0.0048
	1999	0.0153	0.0192	0.0113
	2000	0.0208	0.0239	0.0176
	2001	-0.0197	-0.0280	-0.0114
	2002	-0.0100	-0.0112	-0.0087
	2003	-0.0173	-0.0218	-0.0127
	2004	0.0272	0.0273	0.0271
	2005	-0.0052	0.0005	-0.0108
10 Point	1996	-0.0240	-0.0258	-0.0221
	1997	0.0005	-0.0033	0.0044
	1998	0.0112	0.0190	0.0036
	1999	0.0224	0.0269	0.0179
	2000	0.0258	0.0294	0.0223
	2001	-0.0168	-0.0249	-0.0087
	2002	-0.0093	-0.0104	-0.0080
	2003	-0.0188	-0.0234	-0.0140
	2004	0.0235	0.0233	0.0236
	2005	-0.0112	-0.0060	-0.0164