

PENNSYLVANIA COMPENSATION RATING BUREAU

Tail Factors for Loss Development

For a given calendar year, the PCRB collects financial loss development data for the current policy year and the twenty previous individual policy years. A single aggregate line of experience is reported for all older policy years combined.

Thus, the 2005 vs. 2006, 2006 vs. 2007, 2007 vs. 2008 and 2008 vs. 2009 valuations in the tail factor calculation will use policy year 1986 as the earliest separate policy year and an aggregate line of experience for policy years 1985 and prior.

The following discussion focuses on data with an earliest available policy year of 1978 for illustrative purposes. The discussion for data starting with later policy years would, however, be analogous.

Prior to 1995, the PCRB has computed incurred loss development for maturities older than policy year 1978 (i.e., the pre-1978 “tail”) by comparing the total amount of dollar development in incurred losses occurring in a given calendar year to the incurred loss reported for policy year 1978 at the beginning of that same calendar period.

As part of the Insurance Department’s examination of the Bureau, the actuarial firm retained to perform portions of that review commented that the PCRB’s approach effectively assumed that each policy year prior to 1978 had the same amount of ultimate losses as did policy year 1978. Since policy year losses have tended to increase from year to year in response to benefit and price changes, changes in employment volume and other features affecting loss trends, this assumption was noted as understating the true tail in the PCRB’s loss development analysis. The contractor recommended that for future filings the PCRB add a growth adjustment to its tail factor calculation.

In response to this recommendation the PCRB changed its derivation of tail factors for its 12/1/95 filing. That approach, used again for this filing, is applied separately for indemnity and medical loss experience and for each calendar year of experience, and outlined as follows:

1. A starting policy year loss amount based on the average reported incurred loss for policy years 1978-1980 was computed.
2. An annual loss inflation factor was selected based on observed changes in incurred losses by policy year for the older policy years having separate experience data reported.

3. A historical series of estimated incurred losses by policy year beginning with policy year 1977 was computed using the starting point from #1 and the selected inflation factor from #2.
4. A calendar year loss development factor was selected for policy year 1977 based on observed developments for the oldest years with actual separate experience available.
5. A rate of decline in calendar year loss development factors by policy year was then computed such that when the resulting series of loss development factors was applied to the historical series of estimated incurred losses in #3, the total implied dollar amount of loss development for the calendar year balanced to the observed amount of development on policy years prior to 1978.
6. The “tail factor” applicable to maturities prior to policy year 1978 based on that calendar year of experience was then computed as the cumulative product of the series of loss development factors constructed in #5.

In general, this approach produced policy year incurred losses and loss development factors such that measurable development terminated for policy years in the mid- to early 1930’s. Because the amount of calendar year development observed for policy years prior to 1978 varied considerably from year to year, some variations in the application of the initial selected loss development factor were necessary (i.e., whether the initial selection was applied to 1,2 or 3 prior policy years before beginning the application of the selected rate of decline in loss development). In addition, the selected rates of decline in loss development factors vary from calendar year to calendar year in order to achieve the desired balance with observed calendar year development.

Recognizing the volatility of observed calendar year development for policy years prior to 1978 in the aggregate, the PCRB elected to use an experience period comprising four calendar years of loss development in computing indicated tail factors for this filing.

A summary exhibit on page 1 presents results of both the previous and revised approaches to the derivation of tail development factors. Following the summary page, eight exhibits presenting the derivation of indicated tail factors using the procedure outlined above are attached (four for indemnity and four for medical). These exhibits are numbered as pages 2 through 9 respectively.

SUMMARY OF LOSS DEVELOPMENT TAIL FACTOR CALCULATIONS

VALUATION	MATURITY	<u>INDEMNITY</u>	<u>MEDICAL</u>
		Tail Factor	Tail Factor
08V09	22ND TO ULT.	1.0057	1.0335
07V08	22ND TO ULT.	1.0028	1.0494
06V07	22ND TO ULT.	0.9983	1.0395
05V06	22ND TO ULT.	1.0025	1.0410
AVERAGE OF LATEST 4 VALUATIONS		1.0023	1.0408

Inputs for Tail Factor Estimation - 2011 Loss Cost Filing

Indemnity: 08v09

Latest 12/31 Prior to 1986 Incurred	4,726,386,567
Next Latest 12/31 Prior to 1986 Incurred	4,722,969,189
CY Development of Prior Yrs	3,417,378
Next Latest PY 1986 Incurred	717,417,262
# of 1986 Yrs in Prior Data	6.59
Selected Decrement, Development Factor	0.75
Selected Average PY Deflation Factor	0.95

- 1 Policy Yr 1985 Incurred = Average of 1986, 1987, 1988, reduced by PY Deflation ^ 2
- 2 PY 1984 & Prior = Subsequent Yr x PY Deflation
- 3 1985 Development Selected Based on Observed 1986, 1987, 1988
- 4 PY 1984 & Prior Development = (Subsequent Yr - 1.0) x Selected Decrement + 1.0

TAIL = 1.0057 vs 1.0048 3,417,378
0

Pennsylvania Compensation Rating Bureau
Tail Factor Model - 2011 Loss Cost Filing

INDEMNITY

Policy Year	(*=Estimate)	12/31/09 Incurred	Prior Year Development	Dollar Development	DF	Policy Year	(*=Estimate)	12/31/09 Incurred	Prior Year Development	Dollar Development	DF
1940	*	76,823,402	1.000000	0	1.0000 #	1975	*	462,559,231	1.000072	33,150	1.0003
1941	*	80,866,739	1.000000	0	1.0000 #	1976	*	486,904,454	1.000096	46,526	1.0004
1942	*	85,122,884	1.000000	0	1.0000 #	1977	*	512,531,004	1.000127	65,297	1.0005
1943	*	89,603,035	1.000000	1	1.0000 #	1978	*	539,506,320	1.000170	91,642	1.0007
1944	*	94,318,985	1.000000	1	1.0000 #	1979	*	567,901,390	1.000227	128,612	1.0009
1945	*	99,283,142	1.000000	1	1.0000 #	1980	*	597,790,937	1.000302	180,495	1.0012
1946	*	104,508,570	1.000000	2	1.0000 #	1981	*	629,253,617	1.000403	253,301	1.0016
1947	*	110,009,021	1.000000	3	1.0000 #	1982	*	662,372,229	1.000537	355,462	1.0021
1948	*	115,798,970	1.000000	4	1.0000 #	1983	*	697,233,925	1.000716	498,806	1.0029
1949	*	121,893,652	1.000000	5	1.0000 #	1984	*	733,930,448	1.000955	699,911	1.0038
1950	*	128,309,108	1.000000	7	1.0000 #	1985	*	772,558,366	1.001272744	982,019	1.0051
1951	*	135,062,219	1.000000	10	1.0000 #	1986	*	717,837,164	1.0006		1.0057
1952	*	142,170,756	1.000000	14	1.0000 #	1987	*	868,928,019	1.0003		
1953	*	149,653,428	1.000000	19	1.0000 #	1988	*	981,295,867	1.0006		
1954	*	157,529,924	1.000000	27	1.0000 #	1989	*	1,130,532,401	1.0001	Total	
1955	*	165,820,973	1.000000	38	1.0000 #	1990	*	1,166,661,363	1.0018	Development:	
1956	*	174,548,392	1.000000	53	1.0000 #	1991	*	1,016,096,476	1.0006	3,417,378	
1957	*	183,735,150	1.000000	74	1.0000 #	1992	*	862,142,434	0.9993		
1958	*	193,405,421	1.000001	104	1.0000 #	1993	*	742,057,339	1.0021		
1959	*	203,584,654	1.000001	146	1.0000 #	1994	*	679,209,664	1.0025		
1960	*	214,299,635	1.000001	205	1.0000 #	1995	*	582,426,523	1.0016		
1961	*	225,578,563	1.000001	288	1.0000 #	1996	*	500,769,471	1.0029		
1962	*	237,451,119	1.000002	404	1.0000 #	1997	*	523,772,482	1.0005		
1963	*	249,948,547	1.000002	567	1.0000 #	1998	*	558,586,259	1.0007		
1964	*	263,103,733	1.000003	796	1.0000 #	1999	*	643,435,972	1.0017		
1965	*	276,951,298	1.000004	1,118	1.0000 #	2000	*	676,123,459	1.0022		
1966	*	291,527,683	1.000005	1,569	1.0000 #	2001	*	653,102,792	1.0022		
1967	*	306,871,245	1.000007	2,202	1.0000 #	2002	*	664,305,894	1.0121		
1968	*	323,022,363	1.000010	3,090	1.0000 #	2003	*	630,963,832	1.0132		
1969	*	340,023,540	1.000013	4,337	1.0001 #	2004	*	646,560,982	1.0145		
1970	*	357,919,516	1.000017	6,087	1.0001 #	2005	*	653,027,404	1.0449		
1971	*	376,757,385	1.000023	8,544	1.0001 #	2006	*	653,117,036	1.1358		
1972	*	396,586,721	1.000030	11,991	1.0001 #	2007	*	633,640,727	1.4239		
1973	*	417,459,706	1.000040	16,830	1.0002 #	2008	*	427,670,395	3.4179		
1974	*	439,431,270	1.000054	23,620	1.0002 #	2009	*	113,755,227			

Inputs for Tail Factor Estimation - 2011 Loss Cost Filing

Medical 08v09

Latest 12/31 Prior to 1986 Incurred	1,462,197,610
Next Latest 12/31 Prior to 1986 Incurred	1,453,916,273
CY Development of Prior Yrs	8,281,337
Next Latest PY 1986 Incurred	315,223,928
# of 1986 Yrs in Prior Data	4.64
Selected Decrement, Development Factor	0.75
Selected Average PY Deflation Factor	0.93

- 1 Policy Yr 1985 Incurred = Average of 1986, 1987, 1988, reduced by PY Deflation ^ 2
- 2 PY 1984 & Prior = Subsequent Yr x PY Deflation
- 3 1985 Development Selected Based on Observed 1986, 1987, 1988
- 4 PY 1984 & Prior Development = (Subsequent Yr - 1.0) x Selected Decrement + 1.0

TAIL = 1.0335 vs 1.0263 8,281,337
0

Pennsylvania Compensation Rating Bureau
Tail Factor Model - 2011 Loss Cost Filing

MEDICAL

Policy Year	(*=Estimate)	12/31/09 Incurred	Prior Year Development	Dollar Development	DF	Policy Year	(*=Estimate)	12/31/09 Incurred	Prior Year Development	Dollar Development	DF
1940	*	13,684,740	1.000000	0	1.0000 #	1975	*	173,513,538	1.000395	68,553	1.0016
1941	*	14,714,775	1.000000	0	1.0000 #	1976	*	186,573,696	1.000527	98,270	1.0021
1942	*	15,822,338	1.000000	0	1.0000 #	1977	*	200,616,878	1.000703	140,865	1.0028
1943	*	17,013,267	1.000000	1	1.0000 #	1978	*	215,717,073	1.000937	201,909	1.0038
1944	*	18,293,836	1.000000	1	1.0000 #	1979	*	231,953,842	1.001249	289,385	1.0050
1945	*	19,670,791	1.000000	1	1.0000 #	1980	*	249,412,733	1.001666	414,717	1.0067
1946	*	21,151,388	1.000000	2	1.0000 #	1981	*	268,185,735	1.002221	594,246	1.0089
1947	*	22,743,428	1.000000	3	1.0000 #	1982	*	288,371,758	1.002961	851,337	1.0119
1948	*	24,455,299	1.000000	4	1.0000 #	1983	*	310,077,159	1.003948	1,219,356	1.0159
1949	*	26,296,020	1.000000	6	1.0000 #	1984	*	333,416,300	1.005264	1,745,891	1.0212
1950	*	28,275,291	1.000000	8	1.0000 #	1985	*	358,512,150	1.007018580	2,498,709	1.0284 23RD TO ULT.
1951	*	30,403,538	1.000000	12	1.0000 #	1986	*	316,775,938	1.0049	1.0335 22ND TO ULT.	
1952	*	32,691,977	1.000001	17	1.0000 #	1987	*	421,695,088	1.0058		
1953	*	35,152,663	1.000001	25	1.0000 #	1988	*	505,067,477	1.0089		
1954	*	37,798,563	1.000001	36	1.0000 #	1989	*	611,977,572	1.0081	Total	
1955	*	40,643,616	1.000001	51	1.0000 #	1990	*	644,780,346	1.0017	Development:	
1956	*	43,702,813	1.000002	73	1.0000 #	1991	*	611,664,167	1.0116	8,281,337	
1957	*	46,992,272	1.000002	105	1.0000 #	1992	*	547,166,960	1.0114		
1958	*	50,529,324	1.000003	150	1.0000 #	1993	*	458,316,658	1.0093		
1959	*	54,332,607	1.000004	215	1.0000 #	1994	*	432,766,352	1.0119		
1960	*	58,422,158	1.000005	309	1.0000 #	1995	*	395,079,638	1.0106		
1961	*	62,819,524	1.000007	442	1.0000 #	1996	*	389,766,490	1.0091		
1962	*	67,547,876	1.000009	634	1.0000 #	1997	*	419,893,061	1.0127		
1963	*	72,632,124	1.000013	909	1.0001 #	1998	*	483,026,754	1.0083		
1964	*	78,099,059	1.000017	1,304	1.0001 #	1999	*	518,630,041	1.0034		
1965	*	83,977,482	1.000022	1,869	1.0001 #	2000	*	533,268,893	1.0006		
1966	*	90,298,368	1.000030	2,680	1.0001 #	2001	*	496,879,316	1.0077		
1967	*	97,095,019	1.000040	3,842	1.0002 #	2002	*	511,909,445	1.0145		
1968	*	104,403,247	1.000053	5,508	1.0002 #	2003	*	520,148,325	1.0152		
1969	*	112,261,556	1.000070	7,896	1.0003 #	2004	*	546,443,354	1.0044		
1970	*	120,711,350	1.000094	11,321	1.0004 #	2005	*	566,759,435	1.0182		
1971	*	129,797,151	1.000125	16,230	1.0005 #	2006	*	564,203,565	1.0475		
1972	*	139,566,829	1.000167	23,268	1.0007 #	2007	*	614,658,186	1.1087		
1973	*	150,071,859	1.000222	33,357	1.0009 #	2008	*	516,336,690	2.2132		
1974	*	161,367,590	1.000296	47,820	1.0012 #	2009	*	213,510,056			

Inputs for Tail Factor Estimation - 2011 Loss Cost Filing

Indemnity: 07v08

Latest 12/31 Prior to 1986 Incurred	4,823,613,335
Next Latest 12/31 Prior to 1986 Incurred	4,821,729,417
CY Development of Prior Yrs	1,883,918
Next Latest PY 1986 Incurred	730,672,424
# of 1986 Yrs in Prior Data	6.60
Selected Decrement, Development Factor	0.75
Selected Average PY Deflation Factor	0.95

- 1 Policy Yr 1985 Incurred = Average of 1986, 1987, 1988, reduced by PY Deflation ^ 2
- 2 PY 1984 & Prior = Subsequent Yr x PY Deflation
- 3 1985 Development Selected Based on Observed 1986, 1987, 1988
- 4 PY 1984 & Prior Development = (Subsequent Yr - 1.0) x Selected Decrement + 1.0

TAIL = 1.0028 vs 1.0026 1,883,918
0

Pennsylvania Compensation Rating Bureau
Tail Factor Model - 2010 Loss Cost Filing

INDEMNITY

Policy Year	(*=Estimate)	12/31/08 Incurred	Prior Year Development	Dollar Development	DF	Policy Year	(*=Estimate)	12/31/08 Incurred	Prior Year Development	Dollar Development	DF
1941	*	82,544,574	1.000000	0	1.0000 #	1975	*	472,156,476	1.000039	18,269	1.0002
1942	*	86,889,025	1.000000	0	1.0000 #	1976	*	497,006,817	1.000052	25,640	1.0002
1943	*	91,462,132	1.000000	0	1.0000 #	1977	*	523,165,071	1.000069	35,986	1.0003
1944	*	96,275,928	1.000000	0	1.0000 #	1978	*	550,700,074	1.000092	50,505	1.0004
1945	*	101,343,082	1.000000	1	1.0000 #	1979	*	579,684,289	1.000122	70,883	1.0005
1946	*	106,676,929	1.000000	1	1.0000 #	1980	*	610,193,988	1.000163	99,480	1.0007
1947	*	112,291,504	1.000000	1	1.0000 #	1981	*	642,309,461	1.000217	139,614	1.0009
1948	*	118,201,583	1.000000	2	1.0000 #	1982	*	676,115,222	1.000290	195,935	1.0012
1949	*	124,422,719	1.000000	3	1.0000 #	1983	*	711,700,234	1.000387	274,971	1.0015
1950	*	130,971,283	1.000000	4	1.0000 #	1984	*	749,158,141	1.000515	385,874	1.0021
1951	*	137,864,509	1.000000	5	1.0000 #	1985	*	788,587,517	1.0006871227	541,484	1.0028 22ND TO ULT.
1952	*	145,120,536	1.000000	8	1.0000 #	1986		729,365,680	0.9982		
1953	*	152,758,459	1.000000	11	1.0000 #	1987		885,407,408	1.0006		
1954	*	160,798,377	1.000000	15	1.0000 #	1988		1,006,570,459	1.0002		
1955	*	169,261,450	1.000000	21	1.0000 #	1989		1,164,088,392	1.0015	Total	
1956	*	178,169,947	1.000000	29	1.0000 #	1990		1,191,295,662	1.0000	Development:	
1957	*	187,547,313	1.000000	41	1.0000 #	1991		1,049,568,925	1.0012	1,883,918	
1958	*	197,418,224	1.000000	57	1.0000 #	1992		896,325,114	1.0007		
1959	*	207,808,657	1.000000	81	1.0000 #	1993		771,091,629	1.0016		
1960	*	218,745,955	1.000001	113	1.0000 #	1994		709,821,060	1.0019		
1961	*	230,258,900	1.000001	159	1.0000 #	1995		616,311,682	1.0025		
1962	*	242,377,789	1.000001	223	1.0000 #	1996		534,720,552	0.9998		
1963	*	255,134,515	1.000001	313	1.0000 #	1997		562,718,687	1.0006		
1964	*	268,562,647	1.000002	439	1.0000 #	1998		586,919,103	0.9933		
1965	*	282,697,523	1.000002	616	1.0000 #	1999		669,590,595	1.0009		
1966	*	297,576,340	1.000003	865	1.0000 #	2000		706,572,308	1.0000		
1967	*	313,238,253	1.000004	1,213	1.0000 #	2001		685,847,135	1.0016		
1968	*	329,724,477	1.000005	1,703	1.0000 #	2002		683,448,332	1.0185		
1969	*	347,078,397	1.000007	2,390	1.0000 #	2003		644,770,809	1.0385		
1970	*	365,345,681	1.000009	3,355	1.0000 #	2004		664,194,830	1.0701		
1971	*	384,574,401	1.000012	4,708	1.0000 #	2005		648,604,553	1.1634		
1972	*	404,815,159	1.000016	6,608	1.0001 #	2006		596,426,891	1.4728		
1973	*	426,121,220	1.000022	9,275	1.0001 #	2007		460,887,927	3.3570		
1974	*	448,548,652	1.000029	13,017	1.0001 #	2008		130,532,565			

Inputs for Tail Factor Estimation - 2011 Loss Cost Filing

Medical **07v08**

Latest 12/31 Prior to 1986 Incurred	1,489,000,219
Next Latest 12/31 Prior to 1986 Incurred	1,474,478,859
CY Development of Prior Yrs	14,521,360
Next Latest PY 1986 Incurred	320,233,212
# of 1986 Yrs in Prior Data	4.65
Selected Decrement, Development Factor	0.75
Selected Average PY Deflation Factor	0.93

- 1 Policy Yr 1985 Incurred = Average of 1986, 1987, 1988, reduced by PY Deflation ^ 2
- 2 PY 1984 & Prior = Subsequent Yr x PY Deflation
- 3 1985 Development Selected Based on Observed 1986, 1987, 1988
- 4 PY 1984 & Prior Development = (Subsequent Yr - 1.0) x Selected Decrement + 1.0

TAIL = 1.0494 vs 1.0453 14,521,360
0

Pennsylvania Compensation Rating Bureau
Tail Factor Model - 2010 Loss Cost Filing

MEDICAL

Policy Year	(*=Estimate)	12/31/08 Incurred	Prior Year Development	Dollar Development	DF	Policy Year	(*=Estimate)	12/31/08 Incurred	Prior Year Development	Dollar Development	DF
1941	*	15,027,953	1.000000	1	1.0000 #	1975	*	177,206,468	1.000681	120,557	1.0027
1942	*	16,159,089	1.000000	1	1.0000 #	1976	*	190,544,589	1.000908	172,802	1.0036
1943	*	17,375,364	1.000000	1	1.0000 #	1977	*	204,886,655	1.001210	247,670	1.0049
1944	*	18,683,188	1.000000	2	1.0000 #	1978	*	220,308,231	1.001614	354,939	1.0065
1945	*	20,089,449	1.000000	2	1.0000 #	1979	*	236,890,571	1.002152	508,600	1.0086
1946	*	21,601,558	1.000000	4	1.0000 #	1980	*	254,721,044	1.002869	728,654	1.0115
1947	*	23,227,482	1.000000	5	1.0000 #	1981	*	273,893,596	1.003825	1,043,670	1.0154
1948	*	24,975,787	1.000000	7	1.0000 #	1982	*	294,509,243	1.005100	1,494,403	1.0206
1949	*	26,855,685	1.000000	10	1.0000 #	1983	*	316,676,606	1.006800	2,138,895	1.0275
1950	*	28,877,080	1.000001	15	1.0000 #	1984	*	340,512,479	1.009067	3,059,628	1.0368
1951	*	31,050,624	1.000001	21	1.0000 #	1985	*	366,142,451	1.0120891080	4,373,464	1.0494 22ND TO ULT.
1952	*	33,387,768	1.000001	30	1.0000 #	1986	*	321,338,380	1.0035		
1953	*	35,900,826	1.000001	44	1.0000 #	1987	*	429,883,710	1.0033		
1954	*	38,603,038	1.000002	63	1.0000 #	1988	*	518,782,942	1.0121		
1955	*	41,508,643	1.000002	90	1.0000 #	1989	*	630,672,362	1.0071	Total	
1956	*	44,632,950	1.000003	128	1.0000 #	1990	*	660,591,177	1.0068	Development:	
1957	*	47,992,419	1.000004	184	1.0000 #	1991	*	625,784,460	1.0074	14,521,360	
1958	*	51,604,752	1.000005	264	1.0000 #	1992	*	565,613,825	1.0074		
1959	*	55,488,981	1.000007	379	1.0000 #	1993	*	475,205,952	1.0025		
1960	*	59,665,571	1.000009	543	1.0000 #	1994	*	450,643,640	1.0166		
1961	*	64,156,527	1.000012	778	1.0000 #	1995	*	420,157,331	1.0076		
1962	*	68,985,513	1.000016	1,116	1.0001 #	1996	*	415,458,474	1.0020		
1963	*	74,177,971	1.000022	1,600	1.0001 #	1997	*	445,640,747	1.0088		
1964	*	79,761,260	1.000029	2,293	1.0001 #	1998	*	502,382,124	1.0041		
1965	*	85,764,795	1.000038	3,288	1.0002 #	1999	*	539,604,296	1.0084		
1966	*	92,220,210	1.000051	4,714	1.0002 #	2000	*	556,380,158	1.0039		
1967	*	99,161,516	1.000068	6,758	1.0003 #	2001	*	517,817,894	1.0106		
1968	*	106,625,286	1.000091	9,688	1.0004 #	2002	*	527,653,955	1.0033		
1969	*	114,650,845	1.000121	13,890	1.0005 #	2003	*	530,585,927	1.0072		
1970	*	123,280,479	1.000162	19,913	1.0006 #	2004	*	565,590,827	1.0049		
1971	*	132,559,655	1.000215	28,548	1.0009 #	2005	*	582,326,632	1.0366		
1972	*	142,537,263	1.000287	40,926	1.0011 #	2006	*	561,217,472	1.1110		
1973	*	153,265,874	1.000383	58,669	1.0015 #	2007	*	581,053,682	2.2194		
1974	*	164,802,015	1.000511	84,103	1.0020 #	2008	*	242,952,032			

Inputs for Tail Factor Estimation - 2011 Loss Cost Filing

Indemnity: 06v07

Latest 12/31 Prior to 1986 Incurred	4,520,085,294
Next Latest 12/31 Prior to 1986 Incurred	4,521,571,057
CY Development of Prior Yrs	-1,485,763
Next Latest PY 1986 Incurred	691,536,001
# of 1986 Yrs in Prior Data	6.54
Selected Decrement, Development Factor	0.75
Selected Average PY Deflation Factor	0.95

- 1 Policy Yr 1985 Incurred = Average of 1986, 1987, 1988, reduced by PY Deflation ^ 2
- 2 PY 1984 & Prior = Subsequent Yr x PY Deflation
- 3 1985 Development Selected Based on Observed 1986, 1987, 1988
- 4 PY 1984 & Prior Development = (Subsequent Yr - 1.0) x Selected Decrement + 1.0

TAIL = .9983 vs .9979 -1,485,763
0

Pennsylvania Compensation Rating Bureau
Tail Factor Model - 2010 Loss Cost Filing

INDEMNITY

Policy Year	(*=Estimate)	12/31/07 Incurred	Prior Year Development	Dollar Development	DF	Policy Year	(*=Estimate)	12/31/07 Incurred	Prior Year Development	Dollar Development	DF
1940	*	74,566,567	1.000000	0	1.0000 #	1974	*	426,522,132	.999976	-10,258	.9999
1941	*	78,491,124	1.000000	0	1.0000 #	1975	*	448,970,665	.999968	-14,398	.9999
1942	*	82,622,235	1.000000	0	1.0000 #	1976	*	472,600,701	.999957	-20,208	.9998
1943	*	86,970,774	1.000000	0	1.0000 #	1977	*	497,474,422	.999943	-28,362	.9998
1944	*	91,548,183	1.000000	0	1.0000 #	1978	*	523,657,286	.999924	-39,807	.9997
1945	*	96,366,509	1.000000	-1	1.0000 #	1979	*	551,218,196	.999899	-55,871	.9996
1946	*	101,438,430	1.000000	-1	1.0000 #	1980	*	580,229,680	.999865	-78,418	.9995
1947	*	106,777,295	1.000000	-1	1.0000 #	1981	*	610,768,084	.999820	-110,066	.9993
1948	*	112,397,153	1.000000	-2	1.0000 #	1982	*	642,913,772	.999760	-154,488	.9990
1949	*	118,312,792	1.000000	-2	1.0000 #	1983	*	676,751,339	.999680	-216,842	.9987
1950	*	124,539,781	1.000000	-3	1.0000 #	1984	*	712,369,831	.999573	-304,373	.9983
1951	*	131,094,507	1.000000	-4	1.0000 #	1985	*	749,862,980	.9994305530	-427,251	.9977
1952	*	137,994,217	1.000000	-6	1.0000 #	1986		693,800,732	1.0033		
1953	*	145,257,071	1.000000	-8	1.0000 #	1987		838,838,311	1.0012		
1954	*	152,902,180	1.000000	-12	1.0000 #	1988		959,980,281	1.0010	Total	
1955	*	160,949,663	1.000000	-16	1.0000 #	1989		1,113,719,865	1.0026	Development:	
1956	*	169,420,698	1.000000	-23	1.0000 #	1990		1,148,748,610	1.0082	-1,485,763	
1957	*	178,337,577	1.000000	-32	1.0000 #	1991		1,016,226,446	1.0064		
1958	*	187,723,765	1.000000	-45	1.0000 #	1992		881,157,810	1.0040		
1959	*	197,603,963	1.000000	-64	1.0000 #	1993		765,597,656	1.0000		
1960	*	208,004,172	1.000000	-89	1.0000 #	1994		700,623,961	1.0013		
1961	*	218,951,760	.999999	-125	1.0000 #	1995		612,378,283	0.9916		
1962	*	230,475,537	.999999	-176	1.0000 #	1996		526,287,216	1.0006		
1963	*	242,605,828	.999999	-246	1.0000 #	1997		556,415,795	1.0035		
1964	*	255,374,556	.999999	-346	1.0000 #	1998		585,357,536	1.0106		
1965	*	268,815,322	.999998	-485	1.0000 #	1999		663,535,830	0.9977		
1966	*	282,963,497	.999998	-681	1.0000 #	2000		700,642,782	1.0069		
1967	*	297,856,313	.999997	-956	1.0000 #	2001		666,909,293	1.0114		
1968	*	313,532,961	.999996	-1,342	1.0000 #	2002		654,229,371	1.0338		
1969	*	330,034,695	.999994	-1,884	1.0000 #	2003		614,220,984	1.0676		
1970	*	347,404,942	.999992	-2,644	1.0000 #	2004		617,044,713	1.1531		
1971	*	365,689,413	.999990	-3,710	1.0000 #	2005		552,223,744	1.4602		
1972	*	384,936,224	.999986	-5,208	.9999 #	2006		400,301,692	3.3234		
1973	*	405,196,026	.999982	-7,309	.9999 #	2007		136,763,184			

Inputs for Tail Factor Estimation - 2011 Loss Cost Filing

Medical **06v07**

Latest 12/31 Prior to 1986 Incurred	1,372,850,870
Next Latest 12/31 Prior to 1986 Incurred	1,358,187,617
CY Development of Prior Yrs	14,663,253
Next Latest PY 1986 Incurred	303,061,205
# of 1986 Yrs in Prior Data	4.53
Selected Decrement, Development Factor	0.75
Selected Average PY Deflation Factor	0.93

- 1 Policy Yr 1985 Incurred = Average of 1986, 1987, 1988, reduced by PY Deflation ^ 2
- 2 PY 1984 & Prior = Subsequent Yr x PY Deflation
- 3 1985 Development Selected Based on Observed 1986, 1987, 1988
- 4 PY 1984 & Prior Development = (Subsequent Yr - 1.0) x Selected Decrement + 1.0

TAIL = 1.0395 vs 1.0484 14,663,253
0

Pennsylvania Compensation Rating Bureau
Tail Factor Model - 2010 Loss Cost Filing

MEDICAL

Policy Year	(*=Estimate)	12/31/07 Incurred	Prior Year Development	Dollar Development	DF	Policy Year	(*=Estimate)	12/31/07 Incurred	Prior Year Development	Dollar Development	DF		
1940	*	13,190,262	1.000000	0	1.0000	#	1974	*	155,536,805	1.000547	84,967	1.0022	
1941	*	14,183,077	1.000000	1	1.0000	#	1975	*	167,243,876	1.000729	121,794	1.0029	
1942	*	15,250,621	1.000000	1	1.0000	#	1976	*	179,832,125	1.000972	174,572	1.0039	
1943	*	16,398,517	1.000000	1	1.0000	#	1977	*	193,367,876	1.001296	250,202	1.0052	
1944	*	17,632,814	1.000000	2	1.0000	#	1978	*	207,922,447	1.001727	358,558	1.0069	
1945	*	18,960,015	1.000000	2	1.0000	#	1979	*	223,572,524	1.002303	513,766	1.0092	
1946	*	20,387,113	1.000000	4	1.0000	#	1980	*	240,400,564	1.003071	736,019	1.0123	
1947	*	21,921,627	1.000000	5	1.0000	#	1981	*	258,495,230	1.004095	1,054,148	1.0165	
1948	*	23,571,642	1.000000	7	1.0000	#	1982	*	277,951,860	1.005460	1,509,272	1.0220	
1949	*	25,345,852	1.000000	10	1.0000	#	1983	*	298,872,968	1.007279	2,159,922	1.0295	
1950	*	27,253,604	1.000001	15	1.0000	#	1984	*	321,368,782	1.009706	3,089,220	1.0395	22ND TO ULT.
1951	*	29,304,950	1.000001	21	1.0000	#	1985	*	345,557,830	1.0129413270	4,414,843	1.0529	21ST TO ULT.
1952	*	31,510,699	1.000001	31	1.0000	#	1986	*	303,221,174	1.0005			
1953	*	33,882,472	1.000001	44	1.0000	#	1987	*	407,533,405	1.0100			
1954	*	36,432,766	1.000002	63	1.0000	#	1988	*	487,850,452	1.0078	Total		
1955	*	39,175,017	1.000002	91	1.0000	#	1989	*	599,173,701	1.0095	Development:		
1956	*	42,123,674	1.000003	130	1.0000	#	1990	*	630,520,109	1.0098	14,663,253		
1957	*	45,294,274	1.000004	186	1.0000	#	1991	*	601,169,478	1.0135			
1958	*	48,703,520	1.000005	267	1.0000	#	1992	*	552,592,157	1.0127			
1959	*	52,369,376	1.000007	383	1.0000	#	1993	*	470,416,175	1.0112			
1960	*	56,311,157	1.000010	548	1.0000	#	1994	*	437,260,586	1.0105			
1961	*	60,549,631	1.000013	786	1.0001	#	1995	*	413,711,051	1.0134			
1962	*	65,107,131	1.000017	1,127	1.0001	#	1996	*	407,625,675	1.0079			
1963	*	70,007,667	1.000023	1,616	1.0001	#	1997	*	436,063,662	1.0107			
1964	*	75,277,062	1.000031	2,317	1.0001	#	1998	*	494,960,370	1.0220			
1965	*	80,943,077	1.000041	3,322	1.0002	#	1999	*	530,666,833	1.0164			
1966	*	87,035,567	1.000055	4,762	1.0002	#	2000	*	550,053,483	1.0208			
1967	*	93,586,631	1.000073	6,828	1.0003	#	2001	*	502,594,617	1.0095			
1968	*	100,630,786	1.000097	9,788	1.0004	#	2002	*	516,812,549	1.0207			
1969	*	108,205,146	1.000130	14,033	1.0005	#	2003	*	520,053,192	1.0272			
1970	*	116,349,619	1.000173	20,118	1.0007	#	2004	*	559,612,453	1.0407			
1971	*	125,107,118	1.000231	28,842	1.0009	#	2005	*	557,322,336	1.0915			
1972	*	134,523,782	1.000307	41,347	1.0012	#	2006	*	501,174,144	2.2568			
1973	*	144,649,228	1.000410	59,272	1.0016	#	2007	*	259,314,490				

Inputs for Tail Factor Estimation - 2011 Loss Cost Filing

Indemnity: 05v06

Latest 12/31 Prior to 1986 Incurred	4,540,203,598
Next Latest 12/31 Prior to 1986 Incurred	4,537,284,525
CY Development of Prior Yrs	2,919,073
Next Latest PY 1986 Incurred	697,208,437
# of 1986 Yrs in Prior Data	6.51
Selected Decrement, Development Factor	0.75
Selected Average PY Deflation Factor	0.95

- 1 Policy Yr 1985 Incurred = Average of 1986, 1987, 1988, reduced by PY Deflation ^ 2
- 2 PY 1984 & Prior = Subsequent Yr x PY Deflation
- 3 1985 Development Selected Based on Observed 1986, 1987, 1988
- 4 PY 1984 & Prior Development = (Subsequent Yr - 1.0) x Selected Decrement + 1.0

TAIL = 1.0025 vs 1.0042 2,919,073
0

Pennsylvania Compensation Rating Bureau
Tail Factor Model - 2010 Loss Cost Filing

INDEMNITY

Policy Year	(*=Estimate)	12/31/06 Incurred	Prior Year Development	Dollar Development	DF	Policy Year	(*=Estimate)	12/31/06 Incurred	Prior Year Development	Dollar Development	DF
1939	*	71,078,204	1.000000	0	1.0000 #	1973	*	406,568,630	1.000035	14,374	1.0001
1940	*	74,819,162	1.000000	0	1.0000 #	1974	*	427,966,979	1.000047	20,174	1.0002
1941	*	78,757,013	1.000000	0	1.0000 #	1975	*	450,491,557	1.000063	28,314	1.0003
1942	*	82,902,119	1.000000	0	1.0000 #	1976	*	474,201,639	1.000084	39,738	1.0003
1943	*	87,265,388	1.000000	1	1.0000 #	1977	*	499,159,620	1.000112	55,772	1.0004
1944	*	91,858,303	1.000000	1	1.0000 #	1978	*	525,431,179	1.000149	78,273	1.0006
1945	*	96,692,951	1.000000	1	1.0000 #	1979	*	553,085,451	1.000199	109,851	1.0008
1946	*	101,782,054	1.000000	2	1.0000 #	1980	*	582,195,212	1.000265	154,167	1.0011
1947	*	107,139,004	1.000000	2	1.0000 #	1981	*	612,837,065	1.000353	216,356	1.0014
1948	*	112,777,899	1.000000	3	1.0000 #	1982	*	645,091,647	1.000471	303,621	1.0019
1949	*	118,713,578	1.000000	4	1.0000 #	1983	*	679,043,839	1.000628	426,069	1.0025 22ND TO ULT.
1950	*	124,961,661	1.000000	6	1.0000 #	1984	*	714,782,989	1.000837	597,866	1.0034 21ST TO ULT.
1951	*	131,538,590	1.000000	8	1.0000 #	1985	*	752,403,146	1.00111617	838,876	1.0045 20TH TO ULT.
1952	*	138,461,674	1.000000	12	1.0000 #	1986		695,237,353	0.9972		
1953	*	145,749,130	1.000000	16	1.0000 #	1987		842,349,548	1.0010	Total	
1954	*	153,420,137	1.000000	23	1.0000 #	1988		963,476,188	0.9991	Development:	
1955	*	161,494,881	1.000000	32	1.0000 #	1989		1,117,268,182	1.0009	2,919,073	
1956	*	169,994,612	1.000000	45	1.0000 #	1990		1,146,603,178	1.0015		
1957	*	178,941,697	1.000000	63	1.0000 #	1991		1,016,455,952	0.9993		
1958	*	188,359,681	1.000000	89	1.0000 #	1992		881,816,911	1.0007		
1959	*	198,273,348	1.000001	125	1.0000 #	1993		768,680,423	0.9988		
1960	*	208,708,787	1.000001	175	1.0000 #	1994		702,895,888	0.9991		
1961	*	219,693,460	1.000001	246	1.0000 #	1995		619,067,825	1.0138		
1962	*	231,256,274	1.000001	345	1.0000 #	1996		527,262,064	1.0059		
1963	*	243,427,657	1.000002	485	1.0000 #	1997		556,001,271	1.0061		
1964	*	256,239,639	1.000003	680	1.0000 #	1998		580,107,647	1.0061		
1965	*	269,725,936	1.000004	955	1.0000 #	1999		667,120,254	1.0062		
1966	*	283,922,038	1.000005	1,340	1.0000 #	2000		698,572,354	1.0052		
1967	*	298,865,303	1.000006	1,881	1.0000 #	2001		660,373,911	1.0223		
1968	*	314,595,056	1.000008	2,639	1.0000 #	2002		633,659,281	1.0548		
1969	*	331,152,690	1.000011	3,705	1.0000 #	2003		576,608,613	1.1656		
1970	*	348,581,779	1.000015	5,199	1.0001 #	2004		535,732,411	1.4119		
1971	*	366,928,188	1.000020	7,297	1.0001 #	2005		379,313,306	3.0844		
1972	*	386,240,198	1.000027	10,242	1.0001 #	2006		120,639,505			

Inputs for Tail Factor Estimation - 2011 Loss Cost Filing

Medical 05v06

Latest 12/31 Prior to 1986 Incurred	1,363,971,912					
Next Latest 12/31 Prior to 1986 Incurred	1,343,731,732					1 Policy Yr 1985 Incurred = Average of 1986, 1987, 1988, reduced by PY Deflation ^ 2
CY Development of Prior Yrs	20,240,180					2 PY 1984 & Prior = Subsequent Yr x PY Deflation
Next Latest PY 1986 Incurred	301,204,176					3 1985 Development Selected Based on Observed 1986, 1987, 1988
# of 1986 Yrs in Prior Data	4.53					4 PY 1984 & Prior Development = (Subsequent Yr - 1.0) x Selected Decrement + 1.0
Selected Decrement, Development Factor	0.75					
Selected Average PY Deflation Factor	0.93					
TAIL =	1.0410	vs	1.0672	20,240,180		
				0		

Pennsylvania Compensation Rating Bureau
Tail Factor Model - 2010 Loss Cost Filing

MEDICAL

Policy Year	(*=Estimate)	12/31/06 Incurred	Prior Year Development	Dollar Development	DF	Policy Year	(*=Estimate)	12/31/06 Incurred	Prior Year Development	Dollar Development	DF
1939	*	12,272,884	1.000000	0	1.0000 #	1973	*	144,719,270	1.000567	82,057	1.0023
1940	*	13,196,649	1.000000	1	1.0000 #	1974	*	155,612,118	1.000756	117,623	1.0030
1941	*	14,189,945	1.000000	1	1.0000 #	1975	*	167,324,858	1.001009	168,592	1.0040
1942	*	15,258,006	1.000000	1	1.0000 #	1976	*	179,919,202	1.001345	241,628	1.0054
1943	*	16,406,458	1.000000	2	1.0000 #	1977	*	193,461,508	1.001793	346,265	1.0072
1944	*	17,641,352	1.000000	2	1.0000 #	1978	*	208,023,127	1.002391	496,141	1.0096
1945	*	18,969,196	1.000000	3	1.0000 #	1979	*	223,680,782	1.003188	710,749	1.0128
1946	*	20,396,985	1.000000	5	1.0000 #	1980	*	240,516,969	1.004250	1,017,916	1.0171
1947	*	21,932,242	1.000000	7	1.0000 #	1981	*	258,620,397	1.005667	1,457,323	1.0229
1948	*	23,583,056	1.000000	10	1.0000 #	1982	*	278,086,449	1.007556	2,085,434	1.0306
1949	*	25,358,124	1.000001	14	1.0000 #	1983	*	299,017,687	1.010075	2,982,415	1.0410 22ND TO ULT.
1950	*	27,266,800	1.000001	21	1.0000 #	1984	*	321,524,394	1.013433	4,261,695	1.0550 21ST TO ULT.
1951	*	29,319,140	1.000001	30	1.0000 #	1985	*	345,725,155	1.017910	6,083,080	1.0739 20TH TO ULT.
1952	*	31,525,957	1.000001	43	1.0000 #	1986		305,487,715	1.0142		
1953	*	33,898,879	1.000002	61	1.0000 #	1987		406,243,874	1.0144	Total	
1954	*	36,450,407	1.000002	87	1.0000 #	1988		487,453,826	1.0086	Development:	
1955	*	39,193,986	1.000003	125	1.0000 #	1989		598,001,103	1.0089	20,240,180	
1956	*	42,144,071	1.000004	180	1.0000 #	1990		629,106,068	1.0115		
1957	*	45,316,206	1.000006	258	1.0000 #	1991		597,918,050	1.0108		
1958	*	48,727,103	1.000008	369	1.0000 #	1992		549,255,270	1.0146		
1959	*	52,394,734	1.000010	530	1.0000 #	1993		467,299,733	1.0106		
1960	*	56,338,424	1.000013	759	1.0001 #	1994		435,175,224	1.0199		
1961	*	60,578,951	1.000018	1,089	1.0001 #	1995		409,668,534	1.0206		
1962	*	65,138,657	1.000024	1,561	1.0001 #	1996		405,697,781	1.0169		
1963	*	70,041,566	1.000032	2,238	1.0001 #	1997		432,810,864	1.0163		
1964	*	75,313,512	1.000043	3,208	1.0002 #	1998		485,182,557	1.0304		
1965	*	80,982,271	1.000057	4,599	1.0002 #	1999		523,763,701	1.0080		
1966	*	87,077,711	1.000076	6,594	1.0003 #	2000		541,121,837	1.0126		
1967	*	93,631,947	1.000101	9,453	1.0004 #	2001		498,350,772	1.0126		
1968	*	100,679,513	1.000135	13,553	1.0005 #	2002		507,163,723	1.0501		
1969	*	108,257,541	1.000180	19,430	1.0007 #	2003		507,944,200	1.0681		
1970	*	116,405,958	1.000239	27,854	1.0010 #	2004		538,938,341	1.1243		
1971	*	125,167,697	1.000319	39,931	1.0013 #	2005		511,941,716	2.3210		
1972	*	134,588,921	1.000425	57,243	1.0017 #	2006		222,410,461			