

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 thirty previous individual policy years. A single aggregate line of experience is reported for all older policy years combined.

The following discussion focuses on data with an earliest available policy year of 1986 for illustrative purposes. The discussion for data starting with later policy years would, however, be analogous.

The PCRB's tail factor methodology 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 1986-1988 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 1985 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 1985 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 1986.
6. The "tail factor" applicable to maturities prior to Policy Year 1986 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 1940's. Because the amount of calendar year development observed for policy years prior to 1986 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 1986 in the aggregate, the PCRБ elected to use an experience period comprising five calendar years of loss development in computing indicated tail factors for this filing.

A summary exhibit on Page 1 presents results of the tail development factor calculations. On the subsequent pages, ten exhibits presenting the derivation of indicated tail factors using the procedure outlined above are attached (five for indemnity and five for medical).

Superseded

**SUMMARY OF LOSS DEVELOPMENT TAIL FACTOR CALCULATIONS**

VALUATION	MATURITY	<u>INDEMNITY</u>	<u>MEDICAL</u>
		Tail Factor	Tail Factor
16V17	30TH TO ULT.	1.0014	1.0047
15V16	30TH TO ULT.	1.0005	1.0151
14V15	30TH TO ULT.	1.0014	0.9940
13V14	30TH TO ULT.	1.0006	1.0121
12V13	30TH TO ULT.	1.0004	1.0026
AVERAGE OF LATEST 5 VALUATIONS		1.0009	1.0057

Superseded

INDEMNITY 16 vs 17

Inputs and Notes for Tail Factor Estimation

Latest 12/31 Prior to 1987 PYs Incurred	5,347,825,880
Next Latest 12/31 Prior to 1987 PYs Incurred	5,346,841,588
CY Development of Prior to 1987 PYs	984,292
Next Latest PY 1987 Incurred	862,871,442
# of 1987 PYs in Prior to 1987 PYs Data	6.20
Selected Decrement Development Factor	0.75
Selected Average PY Deflation Factor	0.95

- 1 PY 1986 Incurred = (Average of 1987, 1988, 1989) x (PY Deflation Factor ^ 2)
- 2 PY 1985 & Prior Incurred = Subsequent Year x PY Deflation
- 3 PY 1986 LDF selected based on balancing Prior to 1987 PYs Total Dollar Dev. to Actual CY Dev.
- 4 PY 1985 & Prior LDFs = (Subsequent Year - 1.0) x Selected Decrement + 1.0

CY Development of Prior to 1987 PYs:	984,292
Total Dollar Development:	984,292
Difference:	0

Tail Factor Model - 2019 Loss Cost Filing

Policy Year	(*=Estimate)	Incurred as of 12/31/17	Prior Year LDF	Dollar Development	Cumulative LDF	Policy Year	(*=Estimate)	Incurred as of 12/31/17	Prior Year LDF	Dollar Development	Cumulative LDF	
1946	*	105,397,439	1.000000	0	1.0000	1982	*	668,005,852	1.000109	72,937	1.0004	34TH TO ULT
1947	*	110,944,673	1.000000	1	1.0000	1983	*	703,164,055	1.000146	102,364	1.0006	33RD TO ULT
1948	*	116,783,866	1.000000	1	1.0000	1984	*	740,172,690	1.000194	143,661	1.0008	32ND TO ULT
1949	*	122,930,385	1.000000	1	1.0000	1985	*	779,129,147	1.000259	201,617	1.0010	31ST TO ULT
1950	*	129,400,405	1.000000	1	1.0000	1986	*	820,135,944	1.000345	282,946	1.0014	30TH TO ULT
1951	*	136,210,953	1.000000	2	1.0000	1987		863,300,994	1.0005			
1952	*	143,379,950	1.000000	3	1.0000	1988		979,588,821	0.9996			
1953	*	150,926,264	1.000000	4	1.0000	1989		1,142,110,456	1.0002			
1954	*	158,869,751	1.000000	6	1.0000	1990		1,166,247,884	1.0001			
1955	*	167,231,317	1.000000	8	1.0000	1991		1,011,749,304	1.0000			
1956	*	176,032,965	1.000000	11	1.0000	1992		855,050,848	0.9993			
1957	*	185,297,858	1.000000	15	1.0000	1993		746,615,911	1.0006			
1958	*	195,050,377	1.000000	21	1.0000	1994		691,263,631	0.9997			
1959	*	205,316,186	1.000000	30	1.0000	1995		587,334,801	1.0009			
1960	*	216,122,302	1.000000	42	1.0000	1996		505,560,965	0.9997			
1961	*	227,497,159	1.000000	59	1.0000	1997		514,132,168	1.0004			
1962	*	239,470,694	1.000000	83	1.0000	1998		514,723,208	0.9996			
1963	*	252,074,415	1.000000	116	1.0000	1999		586,761,348	1.0009			
1964	*	265,341,489	1.000001	163	1.0000	2000		624,014,355	1.0011			
1965	*	279,306,831	1.000001	229	1.0000	2001		634,059,265	1.0001			
1966	*	294,007,190	1.000001	322	1.0000	2002		664,994,362	1.0014			
1967	*	309,481,253	1.000001	452	1.0000	2003		649,749,346	1.0016			
1968	*	325,769,740	1.000002	634	1.0000	2004		688,128,676	1.0009			
1969	*	342,915,516	1.000003	890	1.0000	2005		693,974,966	1.0011			
1970	*	360,963,701	1.000003	1,249	1.0000	2006		713,046,040	1.0011			
1971	*	379,961,791	1.000005	1,752	1.0000	2007		750,610,425	1.0032			
1972	*	399,959,780	1.000006	2,459	1.0000	2008		700,250,984	1.0010			
1973	*	421,010,294	1.000008	3,452	1.0000	2009		634,354,346	1.0041			
1974	*	443,168,731	1.000011	4,845	1.0000	2010		654,448,556	1.0062			
1975	*	466,493,401	1.000015	6,800	1.0001	2011		629,011,884	1.0078			
1976	*	491,045,685	1.000019	9,543	1.0001	2012		571,753,520	1.0054			
1977	*	516,890,195	1.000026	13,394	1.0001	2013		578,028,628	1.0106			
1978	*	544,094,942	1.000035	18,798	1.0001	2014		564,960,436	1.0876			
1979	*	572,731,518	1.000046	26,383	1.0002	2015		496,705,992	1.3390			
1980	*	602,875,282	1.000061	37,029	1.0002	2016		359,295,065	3.3685			
1981	*	634,605,560	1.000082	51,969	1.0003	2017		113,343,806				

Inputs and Notes for Tail Factor Estimation

Latest 12/31 Prior to 1987 PYs Incurred	2,149,879,039
Next Latest 12/31 Prior to 1987 PYs Incurred	2,148,277,611
CY Development of Prior to 1987 PYs	1,601,428
Next Latest PY 1987 Incurred	441,148,029
# of 1987 PYs in Prior to 1987 PYs Data	4.87
Selected Decrement Development Factor	0.75
Selected Average PY Deflation Factor	0.93

- 1 PY 1986 Incurred = (Average of 1987, 1988, 1989) x (PY Deflation Factor ^ 2)
- 2 PY 1985 & Prior Incurred = Subsequent Year x PY Deflation
- 3 PY 1986 LDF selected based on balancing Prior to 1987 PYs Total Dollar Dev. to Actual CY Dev.
- 4 PY 1985 & Prior LDFs = (Subsequent Year - 1.0) x Selected Decrement + 1.0

CY Development of Prior to 1987 PYs:	1,601,428
Total Dollar Development:	1,601,428
Difference:	0

Tail Factor Model - 2019 Loss Cost Filing

Policy Year	(*=Estimate)	Incurred as of 12/31/17	Prior Year LDF	Dollar Development	Cumulative LDF	Policy Year	(*=Estimate)	Incurred as of 12/31/17	Prior Year LDF	Dollar Development	Cumulative LDF	
1946	*	22,917,111	1.000000	0	1.0000	1982	*	312,445,107	1.000367	114,702	1.0015	34TH TO ULT
1947	*	24,642,055	1.000000	0	1.0000	1983	*	335,962,481	1.000490	164,427	1.0020	33RD TO ULT
1948	*	26,496,834	1.000000	1	1.0000	1984	*	361,249,980	1.000653	235,700	1.0026	32ND TO ULT
1949	*	28,491,219	1.000000	1	1.0000	1985	*	388,440,838	1.000871	337,847	1.0035	31ST TO ULT
1950	*	30,635,719	1.000000	1	1.0000	1986	*	417,678,321	1.00116068	484,228	1.0047	30TH TO ULT
1951	*	32,941,634	1.000000	2	1.0000	1987		449,116,474	1.0181			
1952	*	35,421,112	1.000000	2	1.0000	1988		531,644,703	0.9980			
1953	*	38,087,217	1.000000	3	1.0000	1989		652,174,133	1.0010			
1954	*	40,953,996	1.000000	5	1.0000	1990		672,810,097	0.9996			
1955	*	44,036,555	1.000000	7	1.0000	1991		624,824,128	1.0025			
1956	*	47,351,135	1.000000	10	1.0000	1992		551,850,822	0.9995			
1957	*	50,915,199	1.000000	14	1.0000	1993		432,557,841	1.0047			
1958	*	54,747,525	1.000000	20	1.0000	1994		407,092,853	1.0032			
1959	*	58,868,307	1.000000	29	1.0000	1995		374,821,900	1.0013			
1960	*	63,299,255	1.000001	41	1.0000	1996		376,983,430	1.0078			
1961	*	68,063,715	1.000001	59	1.0000	1997		393,373,140	0.9980			
1962	*	73,186,790	1.000001	85	1.0000	1998		424,372,325	1.0082			
1963	*	78,695,473	1.000002	122	1.0000	1999		449,660,093	0.9944			
1964	*	84,618,788	1.000002	175	1.0000	2000		483,494,029	1.0022			
1965	*	90,987,944	1.000003	251	1.0000	2001		476,555,529	1.0006			
1966	*	97,836,499	1.000004	360	1.0000	2002		537,363,133	1.0058			
1967	*	105,200,537	1.000005	516	1.0000	2003		553,079,321	1.0046			
1968	*	113,118,857	1.000007	740	1.0000	2004		607,795,211	1.0033			
1969	*	121,633,180	1.000009	1,061	1.0000	2005		636,308,992	1.0073			
1970	*	130,788,365	1.000012	1,521	1.0000	2006		646,488,471	1.0046			
1971	*	140,632,651	1.000016	2,181	1.0001	2007		695,328,858	1.0022			
1972	*	151,217,904	1.000021	3,127	1.0001	2008		626,418,940	0.9978			
1973	*	162,599,897	1.000028	4,483	1.0001	2009		556,677,803	0.9973			
1974	*	174,838,599	1.000037	6,428	1.0001	2010		604,879,879	1.0082			
1975	*	187,998,493	1.000049	9,216	1.0002	2011		596,687,478	1.0085			
1976	*	202,148,917	1.000065	13,212	1.0003	2012		556,010,152	1.0308			
1977	*	217,364,427	1.000087	18,941	1.0003	2013		579,531,357	0.9974			
1978	*	233,725,191	1.000116	27,155	1.0005	2014		584,417,377	1.0200			
1979	*	251,317,409	1.000155	38,931	1.0006	2015		534,288,608	1.0479			
1980	*	270,233,773	1.000207	55,812	1.0008	2016		491,373,811	2.2000			
1981	*	290,573,950	1.000275	80,012	1.0011	2017		248,835,260				

INDEMNITY 15 vs 16

Inputs and Notes for Tail Factor Estimation

Latest 12/31 Prior to 1986 PYs Incurred	4,671,353,956
Next Latest 12/31 Prior to 1986 PYs Incurred	4,671,047,086
CY Development of Prior to 1986 PYs	306,870
Next Latest PY 1986 Incurred	709,958,220
# of 1986 PYs in Prior to 1986 PYs Data	6.58
Selected Decrement Development Factor	0.75
Selected Average PY Deflation Factor	0.95

- 1 PY 1985 Incurred = (Average of 1986, 1987, 1988) x (PY Deflation Factor ^ 2)
- 2 PY 1984 & Prior Incurred = Subsequent Year x PY Deflation
- 3 PY 1985 LDF selected based on balancing Prior to 1986 PYs Total Dollar Dev. to Actual CY Dev.
- 4 PY 1984 & Prior LDFs = (Subsequent Year - 1.0) x Selected Decrement + 1.0

CY Development of Prior to 1986 PYs:	306,870
Total Dollar Development:	306,870
Difference:	0

Tail Factor Model - 2019 Loss Cost Filing

Policy Year	(*=Estimate)	Incurred as of 12/31/16	Prior Year LDF	Dollar Development	Cumulative LDF	Policy Year	(*=Estimate)	Incurred as of 12/31/16	Prior Year LDF	Dollar Development	Cumulative LDF	
1945	*	98,243,111	1.000000	0	1.0000	1981	*	622,661,932	1.000037	22,738	1.0001	34TH TO ULT
1946	*	103,413,801	1.000000	0	1.0000	1982	*	655,433,613	1.000049	31,912	1.0002	33RD TO ULT
1947	*	108,856,632	1.000000	0	1.0000	1983	*	689,930,119	1.000065	44,789	1.0003	32ND TO ULT
1948	*	114,585,929	1.000000	0	1.0000	1984	*	726,242,230	1.000087	62,860	1.0003	31ST TO ULT
1949	*	120,616,767	1.000000	0	1.0000	1985	*	764,465,506	1.00011542	88,222	1.0005	30TH TO ULT
1950	*	126,965,018	1.000000	1	1.0000	1986	*	710,223,713	1.0004		1.0009	29TH TO ULT
1951	*	133,647,388	1.000000	1	1.0000	1987	*	858,795,309	0.9992			
1952	*	140,681,461	1.000000	1	1.0000	1988	*	972,140,554	1.0004			
1953	*	148,085,748	1.000000	2	1.0000	1989	*	1,130,519,400	1.0005			
1954	*	155,879,735	1.000000	2	1.0000	1990	*	1,155,458,990	1.0006			
1955	*	164,083,931	1.000000	3	1.0000	1991	*	997,801,259	1.0008			
1956	*	172,719,928	1.000000	5	1.0000	1992	*	838,662,162	1.0011			
1957	*	181,810,450	1.000000	7	1.0000	1993	*	731,646,821	1.0002			
1958	*	191,379,421	1.000000	9	1.0000	1994	*	668,564,530	1.0017			
1959	*	201,452,022	1.000000	13	1.0000	1995	*	563,486,707	0.9984			
1960	*	212,054,760	1.000000	18	1.0000	1996	*	481,377,066	0.9999			
1961	*	223,215,537	1.000000	26	1.0000	1997	*	491,514,461	1.0021			
1962	*	234,963,723	1.000000	36	1.0000	1998	*	489,207,206	1.0003			
1963	*	247,330,235	1.000000	51	1.0000	1999	*	555,308,615	1.0005			
1964	*	260,347,616	1.000000	71	1.0000	2000	*	590,838,562	0.9999			
1965	*	274,050,122	1.000000	100	1.0000	2001	*	594,475,158	1.0013			
1966	*	288,473,813	1.000000	141	1.0000	2002	*	620,062,653	1.0016			
1967	*	303,656,645	1.000001	198	1.0000	2003	*	603,777,247	1.0007			
1968	*	319,638,574	1.000001	277	1.0000	2004	*	651,767,703	1.0014			
1969	*	336,461,656	1.000001	389	1.0000	2005	*	666,303,453	1.0014			
1970	*	354,170,165	1.000002	546	1.0000	2006	*	692,203,844	1.0025			
1971	*	372,810,700	1.000002	767	1.0000	2007	*	730,660,505	1.0013			
1972	*	392,432,315	1.000003	1,076	1.0000	2008	*	675,303,249	0.9999			
1973	*	413,086,648	1.000004	1,510	1.0000	2009	*	615,292,553	1.0058			
1974	*	434,828,050	1.000005	2,120	1.0000	2010	*	636,341,190	1.0002			
1975	*	457,713,737	1.000006	2,975	1.0000	2011	*	609,071,866	1.0040			
1976	*	481,803,934	1.000009	4,175	1.0000	2012	*	540,493,744	1.0319			
1977	*	507,162,036	1.000012	5,860	1.0000	2013	*	542,249,780	1.0948			
1978	*	533,854,774	1.000015	8,225	1.0001	2014	*	483,727,223	1.3303			
1979	*	561,952,394	1.000021	11,543	1.0001	2015	*	343,601,938	3.2468			
1980	*	591,528,836	1.000027	16,201	1.0001	2016	*	98,250,325				

Inputs and Notes for Tail Factor Estimation

Latest 12/31 Prior to 1986 PYs Incurred	1,819,962,642
Next Latest 12/31 Prior to 1986 PYs Incurred	1,815,370,230
CY Development of Prior to 1986 PYs	4,592,412
Next Latest PY 1986 Incurred	326,407,242
# of 1986 PYs in Prior to 1986 PYs Data	5.58
Selected Decrement Development Factor	0.75
Selected Average PY Deflation Factor	0.93

- 1 PY 1985 Incurred = (Average of 1986, 1987, 1988) x (PY Deflation Factor ^ 2)
- 2 PY 1984 & Prior Incurred = Subsequent Year x PY Deflation
- 3 PY 1985 LDF selected based on balancing Prior to 1986 PYs Total Dollar Dev. to Actual CY Dev.
- 4 PY 1984 & Prior LDFs = (Subsequent Year - 1.0) x Selected Decrement + 1.0

CY Development of Prior to 1986 PYs:	4,592,412
Total Dollar Development:	4,592,412
Difference:	0

Tail Factor Model - 2019 Loss Cost Filing

Policy Year	(*=Estimate)	Incurred as of 12/31/16	Prior Year LDF	Dollar Development	Cumulative LDF	Policy Year	(*=Estimate)	Incurred as of 12/31/16	Prior Year LDF	Dollar Development	Cumulative LDF	
1945	*	20,371,096	1.000000	1	1.0000	1981	*	277,733,488	1.001187	329,200	1.0048	34TH TO ULT
1946	*	21,904,404	1.000000	1	1.0000	1982	*	298,638,159	1.001582	471,784	1.0063	33RD TO ULT
1947	*	23,553,123	1.000000	2	1.0000	1983	*	321,116,300	1.002110	676,038	1.0085	32ND TO ULT
1948	*	25,325,939	1.000000	2	1.0000	1984	*	345,286,344	1.002813	968,550	1.0113	31ST TO ULT
1949	*	27,232,192	1.000000	3	1.0000	1985	*	371,275,639	1.00375060	1,387,305	1.0151	30TH TO ULT
1950	*	29,281,927	1.000000	5	1.0000	1986	*	329,204,491	1.0086		1.0238	29TH TO ULT
1951	*	31,485,943	1.000000	7	1.0000	1987	*	434,790,624	1.0013			
1952	*	33,855,853	1.000000	10	1.0000	1988	*	523,814,940	1.0017			
1953	*	36,404,143	1.000000	14	1.0000	1989	*	641,852,652	1.0067			
1954	*	39,144,239	1.000001	20	1.0000	1990	*	658,820,583	1.0055			
1955	*	42,090,580	1.000001	28	1.0000	1991	*	609,629,862	0.9988			
1956	*	45,258,688	1.000001	40	1.0000	1992	*	533,807,203	1.0045			
1957	*	48,665,256	1.000001	58	1.0000	1993	*	414,664,513	1.0057			
1958	*	52,328,232	1.000002	83	1.0000	1994	*	388,052,694	1.0053			
1959	*	56,266,917	1.000002	119	1.0000	1995	*	355,594,197	0.9991			
1960	*	60,502,061	1.000003	171	1.0000	1996	*	350,304,863	1.0060			
1961	*	65,055,979	1.000004	245	1.0000	1997	*	375,893,068	1.0052			
1962	*	69,952,666	1.000005	351	1.0000	1998	*	389,012,659	1.0010			
1963	*	75,217,920	1.000007	503	1.0000	1999	*	428,114,332	1.0035			
1964	*	80,879,484	1.000009	721	1.0000	2000	*	449,458,717	1.0048			
1965	*	86,967,187	1.000012	1,034	1.0000	2001	*	445,555,423	1.0019			
1966	*	93,513,105	1.000016	1,483	1.0001	2002	*	495,481,741	1.0033			
1967	*	100,551,726	1.000021	2,126	1.0001	2003	*	508,230,912	1.0069			
1968	*	108,120,135	1.000028	3,048	1.0001	2004	*	575,481,578	0.9996			
1969	*	116,258,210	1.000038	4,370	1.0002	2005	*	606,205,127	1.0083			
1970	*	125,008,828	1.000050	6,265	1.0002	2006	*	623,544,374	1.0041			
1971	*	134,418,094	1.000067	8,982	1.0003	2007	*	670,684,516	1.0062			
1972	*	144,535,585	1.000089	12,878	1.0004	2008	*	603,219,591	0.9991			
1973	*	155,414,608	1.000119	18,462	1.0005	2009	*	541,817,915	1.0162			
1974	*	167,112,481	1.000158	26,468	1.0006	2010	*	595,748,655	0.9987			
1975	*	179,690,840	1.000211	37,944	1.0008	2011	*	576,757,464	1.0088			
1976	*	193,215,957	1.000282	54,397	1.0011	2012	*	510,310,258	1.0047			
1977	*	207,759,094	1.000375	77,981	1.0015	2013	*	553,994,065	1.0201			
1978	*	223,396,875	1.000501	111,787	1.0020	2014	*	533,457,070	1.0717			
1979	*	240,211,694	1.000668	160,241	1.0027	2015	*	468,896,395	2.1736			
1980	*	258,292,144	1.000890	229,685	1.0036	2016	*	199,538,261				

INDEMNITY 14 vs 15

Inputs and Notes for Tail Factor Estimation

Latest 12/31 Prior to 1986 PYs Incurred	4,681,301,566
Next Latest 12/31 Prior to 1986 PYs Incurred	4,680,071,625
CY Development of Prior to 1986 PYs	1,229,941
Next Latest PY 1986 Incurred	714,807,350
# of 1986 PYs in Prior to 1986 PYs Data	6.55
Selected Decrement Development Factor	0.75
Selected Average PY Deflation Factor	0.95

- 1 PY 1985 Incurred = (Average of 1986, 1987, 1988) x (PY Deflation Factor ^ 2)
- 2 PY 1984 & Prior Incurred = Subsequent Year x PY Deflation
- 3 PY 1985 LDF selected based on balancing Prior to 1986 PYs Total Dollar Dev. to Actual CY Dev.
- 4 PY 1984 & Prior LDFs = (Subsequent Year - 1.0) x Selected Decrement + 1.0

CY Development of Prior to 1986 PYs:	1,229,941
Total Dollar Development:	1,229,941
Difference:	0

Tail Factor Model - 2019 Loss Cost Filing

Policy Year	(*=Estimate)	Incurred as of 12/31/15	Prior Year LDF	Dollar Development	Cumulative LDF	Policy Year	(*=Estimate)	Incurred as of 12/31/15	Prior Year LDF	Dollar Development	Cumulative LDF	
1944	*	94,189,412	1.000000	0	1.0000	1980	*	596,969,712	1.000109	64,941	1.0004	34TH TO ULT
1945	*	99,146,750	1.000000	0	1.0000	1981	*	628,389,171	1.000145	91,143	1.0006	33RD TO ULT
1946	*	104,365,000	1.000000	1	1.0000	1982	*	661,462,285	1.000193	127,913	1.0008	32ND TO ULT
1947	*	109,857,895	1.000000	1	1.0000	1983	*	696,276,090	1.000258	179,516	1.0010	31ST TO ULT
1948	*	115,639,889	1.000000	1	1.0000	1984	*	732,922,200	1.000344	251,931	1.0014	30TH TO ULT
1949	*	121,726,199	1.000000	2	1.0000	1985	*	771,497,052	1.00045847	353,546	1.0018	29TH TO ULT
1950	*	128,132,841	1.000000	2	1.0000	1986		715,516,906	1.0010			
1951	*	134,876,675	1.000000	3	1.0000	1987		866,931,127	1.0005			
1952	*	141,975,447	1.000000	5	1.0000	1988		982,085,105	0.9996			
1953	*	149,447,839	1.000000	7	1.0000	1989		1,142,902,544	1.0019			
1954	*	157,313,515	1.000000	10	1.0000	1990		1,168,287,167	1.0002			
1955	*	165,593,174	1.000000	14	1.0000	1991		1,016,385,928	1.0006			
1956	*	174,308,604	1.000000	19	1.0000	1992		861,793,648	0.9989			
1957	*	183,482,741	1.000000	27	1.0000	1993		753,773,119	1.0003			
1958	*	193,139,727	1.000000	37	1.0000	1994		692,130,367	1.0008			
1959	*	203,304,976	1.000000	53	1.0000	1995		588,598,325	1.0004			
1960	*	214,005,238	1.000000	74	1.0000	1996		506,643,542	0.9970			
1961	*	225,268,672	1.000000	104	1.0000	1997		514,875,882	0.9996			
1962	*	237,124,917	1.000001	145	1.0000	1998		517,111,579	0.9996			
1963	*	249,605,176	1.000001	204	1.0000	1999		588,441,705	0.9995			
1964	*	262,742,291	1.000001	287	1.0000	2000		630,932,722	0.9998			
1965	*	276,570,832	1.000001	402	1.0000	2001		641,302,318	0.9996			
1966	*	291,127,192	1.000002	564	1.0000	2002		670,956,683	0.9986			
1967	*	306,449,676	1.000003	792	1.0000	2003		663,124,433	0.9998			
1968	*	322,578,606	1.000003	1,112	1.0000	2004		702,827,748	0.9996			
1969	*	339,556,428	1.000005	1,560	1.0000	2005		710,682,018	1.0013			
1970	*	357,427,818	1.000006	2,190	1.0000	2006		732,756,067	0.9989			
1971	*	376,239,809	1.000008	3,073	1.0000	2007		762,842,530	1.0003			
1972	*	396,041,904	1.000011	4,314	1.0000	2008		716,095,162	1.0028			
1973	*	416,886,215	1.000015	6,054	1.0001	2009		646,516,614	1.0112			
1974	*	438,827,595	1.000019	8,497	1.0001	2010		674,662,838	1.0060			
1975	*	461,923,784	1.000026	11,926	1.0001	2011		651,348,938	1.0240			
1976	*	486,235,562	1.000034	16,738	1.0001	2012		592,377,519	1.1086			
1977	*	511,826,907	1.000046	23,491	1.0002	2013		567,711,709	1.3936			
1978	*	538,765,165	1.000061	32,970	1.0002	2014		407,476,651	3.3485			
1979	*	567,121,227	1.000082	46,272	1.0003	2015		117,270,981				

**MEDICAL 14 vs 15**

Inputs and Notes for Tail Factor Estimation

Latest 12/31 Prior to 1986 PYs Incurred	1,825,355,757
Next Latest 12/31 Prior to 1986 PYs Incurred	1,827,844,461
CY Development of Prior to 1986 PYs	-2,488,704
Next Latest PY 1986 Incurred	331,484,270
# of 1986 PYs in Prior to 1986 PYs Data	5.51
Selected Decrement Development Factor	0.75
Selected Average PY Deflation Factor	0.93

- 1 PY 1985 Incurred = (Average of 1986, 1987, 1988) x (PY Deflation Factor ^ 2)
- 2 PY 1984 & Prior Incurred = Subsequent Year x PY Deflation
- 3 PY 1985 LDF selected based on balancing Prior to 1986 PYs Total Dollar Dev. to Actual CY Dev.
- 4 PY 1984 & Prior LDFs = (Subsequent Year - 1.0) x Selected Decrement + 1.0

CY Development of Prior to 1986 PYs:	-2,488,704
Total Dollar Development:	-2,488,704
Difference:	0

Tail Factor Model - 2019 Loss Cost Filing

Policy Year	(*=Estimate)	Incurred as of 12/31/15	Prior Year LDF	Dollar Development	Cumulative LDF	Policy Year	(*=Estimate)	Incurred as of 12/31/15	Prior Year LDF	Dollar Development	Cumulative LDF	
1944	*	19,243,304	1.000000	0	1.0000	1980	*	262,357,509	0.999527	-124,187	0.9981	34TH TO ULT
1945	*	20,691,725	1.000000	0	1.0000	1981	*	282,104,848	0.999369	-178,074	0.9975	33RD TO ULT
1946	*	22,249,167	1.000000	-1	1.0000	1982	*	303,338,546	0.999159	-255,356	0.9966	32ND TO ULT
1947	*	23,923,835	1.000000	-1	1.0000	1983	*	326,170,480	0.998879	-366,205	0.9955	31ST TO ULT
1948	*	25,724,554	1.000000	-1	1.0000	1984	*	350,720,946	0.998505	-525,222	0.9940	30TH TO ULT
1949	*	27,660,811	1.000000	-2	1.0000	1985	*	377,119,297	0.9980625	-753,382	0.9921	29TH TO ULT
1950	*	29,742,807	1.000000	-3	1.0000	1986		330,783,106	0.9979			
1951	*	31,981,513	1.000000	-4	1.0000	1987		444,044,245	1.0016			
1952	*	34,388,724	1.000000	-5	1.0000	1988		533,252,069	0.9988			
1953	*	36,977,122	1.000000	-7	1.0000	1989		649,093,688	1.0090			
1954	*	39,760,347	1.000000	-11	1.0000	1990		671,601,725	1.0033			
1955	*	42,753,061	1.000000	-15	1.0000	1991		627,460,078	1.0037			
1956	*	45,971,033	1.000000	-22	1.0000	1992		554,257,585	1.0011			
1957	*	49,431,218	0.999999	-31	1.0000	1993		431,139,963	1.0062			
1958	*	53,151,848	0.999999	-45	1.0000	1994		404,377,074	1.0073			
1959	*	57,152,524	0.999999	-64	1.0000	1995		375,036,035	1.0109			
1960	*	61,454,327	0.999998	-92	1.0000	1996		372,620,301	0.9924			
1961	*	66,079,922	0.999998	-132	1.0000	1997		393,900,312	1.0020			
1962	*	71,053,679	0.999997	-190	1.0000	1998		422,566,295	0.9995			
1963	*	76,401,806	0.999996	-272	1.0000	1999		453,288,985	0.9993			
1964	*	82,152,479	0.999995	-390	1.0000	2000		489,772,399	1.0049			
1965	*	88,335,999	0.999994	-559	1.0000	2001		484,687,514	1.0035			
1966	*	94,984,946	0.999992	-801	1.0000	2002		538,615,380	1.0088			
1967	*	102,134,350	0.999989	-1,148	1.0000	2003		558,574,454	1.0059			
1968	*	109,821,882	0.999985	-1,646	0.9999	2004		619,397,223	1.0006			
1969	*	118,088,045	0.999980	-2,360	0.9999	2005		643,198,345	1.0026			
1970	*	126,976,392	0.999973	-3,383	0.9999	2006		660,915,260	1.0066			
1971	*	136,533,755	0.999964	-4,850	0.9999	2007		706,520,701	0.9981			
1972	*	146,810,489	0.999953	-6,954	0.9998	2008		644,272,891	1.0077			
1973	*	157,860,741	0.999937	-9,970	0.9997	2009		573,651,180	0.9975			
1974	*	169,742,733	0.999916	-14,295	0.9997	2010		631,489,679	1.0052			
1975	*	182,519,067	0.999888	-20,495	0.9996	2011		622,332,041	0.9913			
1976	*	196,257,062	0.999850	-29,384	0.9994	2012		579,725,181	1.0238			
1977	*	211,029,099	0.999800	-42,130	0.9992	2013		623,856,519	1.0841			
1978	*	226,913,009	0.999734	-60,405	0.9989	2014		571,504,277	2.2007			
1979	*	243,992,483	0.999645	-86,610	0.9986	2015		250,519,114				

INDEMNITY 13 vs 14

Inputs and Notes for Tail Factor Estimation

Latest 12/31 Prior to 1986 PYs Incurred	4,786,919,665
Next Latest 12/31 Prior to 1986 PYs Incurred	4,786,182,375
CY Development of Prior to 1986 PYs	737,290
Next Latest PY 1986 Incurred	725,101,800
# of 1986 PYs in Prior to 1986 PYs Data	6.60
Selected Decrement Development Factor	0.75
Selected Average PY Deflation Factor	0.95

- 1 PY 1985 Incurred = (Average of 1986, 1987, 1988) x (PY Deflation Factor ^ 2)
- 2 PY 1984 & Prior Incurred = Subsequent Year x PY Deflation
- 3 PY 1985 LDF selected based on balancing Prior to 1986 PYs Total Dollar Dev. to Actual CY Dev.
- 4 PY 1984 & Prior LDFs = (Subsequent Year - 1.0) x Selected Decrement + 1.0

CY Development of Prior to 1986 PYs:	737,290
Total Dollar Development:	737,290
Difference:	0

Tail Factor Model - 2019 Loss Cost Filing

Policy Year	(*=Estimate)	Incurred as of 12/31/14	Prior Year LDF	Dollar Development	Cumulative LDF	Policy Year	(*=Estimate)	Incurred as of 12/31/14	Prior Year LDF	Dollar Development	Cumulative LDF	
1943	*	90,715,332	1.000000	0	1.0000	1979	*	574,951,094	1.000048	27,736	1.0002	34TH TO ULT
1944	*	95,489,823	1.000000	0	1.0000	1980	*	605,211,678	1.000064	38,927	1.0003	33RD TO ULT
1945	*	100,515,603	1.000000	0	1.0000	1981	*	637,064,924	1.000086	54,633	1.0003	32ND TO ULT
1946	*	105,805,898	1.000000	0	1.0000	1982	*	670,594,657	1.000114	76,675	1.0005	31ST TO ULT
1947	*	111,374,630	1.000000	1	1.0000	1983	*	705,889,112	1.000152	107,610	1.0006	30TH TO ULT
1948	*	117,236,452	1.000000	1	1.0000	1984	*	743,041,171	1.000203	151,024	1.0008	29TH TO ULT
1949	*	123,406,792	1.000000	1	1.0000	1985	*	782,148,601	1.00027106	211,950	1.0011	28TH TO ULT
1950	*	129,901,886	1.000000	1	1.0000	1986	*	725,185,434	1.0001			
1951	*	136,738,828	1.000000	2	1.0000	1987	*	877,603,995	1.0006			
1952	*	143,935,608	1.000000	3	1.0000	1988	*	997,150,518	1.0002			
1953	*	151,511,167	1.000000	4	1.0000	1989	*	1,158,043,777	0.9996			
1954	*	159,485,438	1.000000	6	1.0000	1990	*	1,187,075,451	1.0001			
1955	*	167,879,409	1.000000	8	1.0000	1991	*	1,039,310,399	1.0000			
1956	*	176,715,167	1.000000	11	1.0000	1992	*	885,410,644	0.9995			
1957	*	186,015,966	1.000000	16	1.0000	1993	*	767,693,588	1.0017			
1958	*	195,806,279	1.000000	22	1.0000	1994	*	709,000,472	1.0002			
1959	*	206,111,873	1.000000	32	1.0000	1995	*	613,761,927	1.0011			
1960	*	216,959,866	1.000000	44	1.0000	1996	*	535,392,246	1.0002			
1961	*	228,378,807	1.000000	62	1.0000	1997	*	554,980,072	0.9983			
1962	*	240,398,744	1.000000	87	1.0000	1998	*	569,318,194	1.0010			
1963	*	253,051,309	1.000000	122	1.0000	1999	*	639,809,812	1.0004			
1964	*	266,369,799	1.000001	172	1.0000	2000	*	679,801,883	0.9993			
1965	*	280,389,263	1.000001	241	1.0000	2001	*	676,510,143	1.0014			
1966	*	295,146,592	1.000001	338	1.0000	2002	*	699,333,942	1.0007			
1967	*	310,680,623	1.000002	475	1.0000	2003	*	673,508,608	1.0024			
1968	*	327,032,235	1.000002	666	1.0000	2004	*	704,174,079	1.0018			
1969	*	344,244,458	1.000003	935	1.0000	2005	*	709,786,061	1.0026			
1970	*	362,362,587	1.000004	1,313	1.0000	2006	*	734,030,743	1.0035			
1971	*	381,434,303	1.000005	1,842	1.0000	2007	*	766,781,282	1.0025			
1972	*	401,509,792	1.000006	2,586	1.0000	2008	*	715,805,845	1.0034			
1973	*	422,641,886	1.000009	3,629	1.0000	2009	*	643,201,472	1.0037			
1974	*	444,886,196	1.000011	5,093	1.0000	2010	*	677,045,260	1.0337			
1975	*	468,301,259	1.000015	7,148	1.0001	2011	*	642,000,667	1.0992			
1976	*	492,948,694	1.000020	10,032	1.0001	2012	*	539,269,831	1.3808			
1977	*	518,893,362	1.000027	14,080	1.0001	2013	*	406,227,129	3.4334			
1978	*	546,203,539	1.000036	19,762	1.0001	2014	*	121,301,791				

MEDICAL 13 vs 14

Inputs and Notes for Tail Factor Estimation

Latest 12/31 Prior to 1986 PYs Incurred	1,869,853,538
Next Latest 12/31 Prior to 1986 PYs Incurred	1,863,095,378
CY Development of Prior to 1986 PYs	6,758,160
Next Latest PY 1986 Incurred	336,913,358
# of 1986 PYs in Prior to 1986 PYs Data	5.55
Selected Decrement Development Factor	0.75
Selected Average PY Deflation Factor	0.93

- 1 PY 1985 Incurred = (Average of 1986, 1987, 1988) x (PY Deflation Factor ^ 2)
- 2 PY 1984 & Prior Incurred = Subsequent Year x PY Deflation
- 3 PY 1985 LDF selected based on balancing Prior to 1986 PYs Total Dollar Dev. to Actual CY Dev.
- 4 PY 1984 & Prior LDFs = (Subsequent Year - 1.0) x Selected Decrement + 1.0

CY Development of Prior to 1986 PYs:	6,758,160
Total Dollar Development:	6,758,160
Difference:	0

Tail Factor Model - 2019 Loss Cost Filing

Policy Year	(*=Estimate)	Incurred as of 12/31/14	Prior Year LDF	Dollar Development	Cumulative LDF	Policy Year	(*=Estimate)	Incurred as of 12/31/14	Prior Year LDF	Dollar Development	Cumulative LDF	
1941	*	15,744,966	1.000000	0	1.0000	1978	*	230,819,578	1.000714	164,635	1.0029	35TH TO ULT
1942	*	16,930,071	1.000000	0	1.0000	1979	*	248,193,095	1.000952	235,980	1.0038	34TH TO ULT
1943	*	18,204,378	1.000000	1	1.0000	1980	*	266,874,296	1.001269	338,216	1.0051	33RD TO ULT
1944	*	19,574,600	1.000000	1	1.0000	1981	*	286,961,608	1.001692	484,692	1.0068	32ND TO ULT
1945	*	21,047,957	1.000000	1	1.0000	1982	*	308,560,869	1.002256	694,508	1.0091	31ST TO ULT
1946	*	22,632,212	1.000000	2	1.0000	1983	*	331,785,881	1.003008	994,964	1.0121	30TH TO ULT
1947	*	24,335,712	1.000000	2	1.0000	1984	*	356,759,012	1.004010	1,425,048	1.0162	29TH TO ULT
1948	*	26,167,432	1.000000	3	1.0000	1985	*	383,611,840	1.00534726	2,040,362	1.0216	28TH TO ULT
1949	*	28,137,023	1.000000	5	1.0000	1986	*	338,103,809	1.0035			
1950	*	30,254,864	1.000000	7	1.0000	1987	*	448,702,228	1.0054			
1951	*	32,532,112	1.000000	10	1.0000	1988	*	543,793,479	1.0061			
1952	*	34,980,765	1.000000	14	1.0000	1989	*	655,887,487	1.0042			
1953	*	37,613,726	1.000001	20	1.0000	1990	*	682,747,856	1.0088			
1954	*	40,444,867	1.000001	29	1.0000	1991	*	643,486,309	1.0018			
1955	*	43,489,104	1.000001	42	1.0000	1992	*	572,714,896	1.0052			
1956	*	46,762,477	1.000001	60	1.0000	1993	*	439,235,344	1.0108			
1957	*	50,282,234	1.000002	85	1.0000	1994	*	415,412,329	1.0095			
1958	*	54,066,918	1.000002	122	1.0000	1995	*	389,486,751	1.0016			
1959	*	58,136,471	1.000003	175	1.0000	1996	*	399,218,962	1.0130			
1960	*	62,512,334	1.000004	252	1.0000	1997	*	426,186,974	1.0065			
1961	*	67,217,564	1.000005	361	1.0000	1998	*	468,614,760	1.0042			
1962	*	72,276,950	1.000007	517	1.0000	1999	*	513,089,197	1.0140			
1963	*	77,717,151	1.000010	741	1.0000	2000	*	526,648,047	1.0043			
1964	*	83,566,829	1.000013	1,063	1.0001	2001	*	512,765,977	1.0044			
1965	*	89,856,805	1.000017	1,524	1.0001	2002	*	558,236,113	1.0164			
1966	*	96,620,221	1.000023	2,185	1.0001	2003	*	567,843,054	1.0100			
1967	*	103,892,711	1.000030	3,132	1.0001	2004	*	619,599,818	1.0115			
1968	*	111,712,592	1.000040	4,490	1.0002	2005	*	641,368,415	1.0108			
1969	*	120,121,067	1.000054	6,437	1.0002	2006	*	656,489,622	1.0211			
1970	*	129,162,437	1.000071	9,229	1.0003	2007	*	709,808,796	1.0061			
1971	*	138,884,341	1.000095	13,231	1.0004	2008	*	639,604,718	1.0073			
1972	*	149,338,001	1.000127	18,969	1.0005	2009	*	577,255,307	1.0164			
1973	*	160,578,496	1.000169	27,194	1.0007	2010	*	633,054,955	1.0139			
1974	*	172,665,050	1.000226	38,986	1.0009	2011	*	629,224,189	1.0316			
1975	*	185,661,344	1.000301	55,890	1.0012	2012	*	568,845,855	1.0682			
1976	*	199,635,853	1.000401	80,121	1.0016	2013	*	571,430,901	2.2140			
1977	*	214,662,208	1.000535	114,854	1.0021	2014	*	257,325,556				

INDEMNITY 12 vs 13

Inputs and Notes for Tail Factor Estimation

Latest 12/31 Prior to 1986 PYs Incurred	4,786,422,894
Next Latest 12/31 Prior to 1986 PYs Incurred	4,785,732,069
CY Development of Prior to 1986 PYs	690,825
Next Latest PY 1986 Incurred	724,447,259
# of 1986 PYs in Prior to 1986 PYs Data	6.61
Selected Decrement Development Factor	0.75
Selected Average PY Deflation Factor	0.95

- 1 PY 1985 Incurred = (Average of 1986, 1987, 1988) x (PY Deflation Factor ^ 2)
- 2 PY 1984 & Prior Incurred = Subsequent Year x PY Deflation
- 3 PY 1985 LDF selected based on balancing Prior to 1986 PYs Total Dollar Dev. to Actual CY Dev.
- 4 PY 1984 & Prior LDFs = (Subsequent Year - 1.0) x Selected Decrement + 1.0

CY Development of Prior to 1986 PYs:	690,825
Total Dollar Development:	690,825
Difference:	0

Tail Factor Model - 2019 Loss Cost Filing

Policy Year	(*=Estimate)	Incurred as of 12/31/13	Prior Year LDF	Dollar Development	Cumulative LDF	Policy Year	(*=Estimate)	Incurred as of 12/31/13	Prior Year LDF	Dollar Development	Cumulative LDF	
1942	*	86,154,410	1.000000	0	1.0000	1978	*	546,044,101	1.000034	18,516	1.0001	34TH TO ULT
1943	*	90,688,852	1.000000	0	1.0000	1979	*	574,783,265	1.000045	25,987	1.0002	33RD TO ULT
1944	*	95,461,950	1.000000	0	1.0000	1980	*	605,035,015	1.000060	36,473	1.0002	32ND TO ULT
1945	*	100,486,263	1.000000	0	1.0000	1981	*	636,878,964	1.000080	51,189	1.0003	31ST TO ULT
1946	*	105,775,013	1.000000	0	1.0000	1982	*	670,398,909	1.000107	71,843	1.0004	30TH TO ULT
1947	*	111,342,119	1.000000	1	1.0000	1983	*	705,683,062	1.000143	100,828	1.0006	29TH TO ULT
1948	*	117,202,231	1.000000	1	1.0000	1984	*	742,824,276	1.000191	141,506	1.0008	28TH TO ULT
1949	*	123,370,769	1.000000	1	1.0000	1985	*	781,920,290	1.00025405	198,593	1.0010	27TH TO ULT
1950	*	129,863,968	1.000000	1	1.0000	1986		725,182,614	1.0010			
1951	*	136,698,914	1.000000	2	1.0000	1987		877,078,060	0.9994			
1952	*	143,893,593	1.000000	3	1.0000	1988		996,920,347	0.9999			
1953	*	151,466,940	1.000000	4	1.0000	1989		1,158,437,660	1.0009			
1954	*	159,438,884	1.000000	5	1.0000	1990		1,186,746,571	1.0009			
1955	*	167,830,405	1.000000	8	1.0000	1991		1,039,274,399	0.9990			
1956	*	176,663,584	1.000000	11	1.0000	1992		885,471,978	0.9992			
1957	*	185,961,667	1.000000	15	1.0000	1993		766,415,267	1.0011			
1958	*	195,749,123	1.000000	21	1.0000	1994		708,799,517	1.0025			
1959	*	206,051,709	1.000000	30	1.0000	1995		613,092,228	1.0009			
1960	*	216,896,536	1.000000	41	1.0000	1996		535,289,820	0.9998			
1961	*	228,312,143	1.000000	58	1.0000	1997		556,100,776	1.0014			
1962	*	240,328,571	1.000000	82	1.0000	1998		569,027,758	1.0005			
1963	*	252,977,443	1.000000	115	1.0000	1999		639,401,482	0.9997			
1964	*	266,292,046	1.000001	161	1.0000	2000		681,117,418	1.0015			
1965	*	280,307,417	1.000001	226	1.0000	2001		675,300,456	1.0051			
1966	*	295,060,439	1.000001	317	1.0000	2002		699,285,680	1.0020			
1967	*	310,589,935	1.000001	445	1.0000	2003		672,559,618	1.0022			
1968	*	326,936,774	1.000002	624	1.0000	2004		702,935,309	1.0050			
1969	*	344,143,973	1.000003	876	1.0000	2005		708,118,183	1.0025			
1970	*	362,256,813	1.000003	1,230	1.0000	2006		731,450,002	1.0068			
1971	*	381,322,961	1.000005	1,726	1.0000	2007		764,845,111	1.0000			
1972	*	401,392,591	1.000006	2,423	1.0000	2008		713,326,485	1.0089			
1973	*	422,518,517	1.000008	3,400	1.0000	2009		640,223,240	1.0291			
1974	*	444,756,333	1.000011	4,772	1.0000	2010		652,940,395	1.1100			
1975	*	468,164,561	1.000014	6,698	1.0001	2011		581,366,135	1.3937			
1976	*	492,804,802	1.000019	9,400	1.0001	2012		388,302,639	3.3336			
1977	*	518,741,896	1.000025	13,193	1.0001	2013		118,254,472				

MEDICAL 12 vs 13

Inputs and Notes for Tail Factor Estimation

Latest 12/31 Prior to 1986 PYs Incurred	1,862,509,003
Next Latest 12/31 Prior to 1986 PYs Incurred	1,860,567,546
CY Development of Prior to 1986 PYs	1,941,457
Next Latest PY 1986 Incurred	335,241,599
# of 1986 PYs in Prior to 1986 PYs Data	5.56
Selected Decrement Development Factor	0.75
Selected Average PY Deflation Factor	0.93

- 1 PY 1985 Incurred = (Average of 1986, 1987, 1988) x (PY Deflation Factor ^ 2)
- 2 PY 1984 & Prior Incurred = Subsequent Year x PY Deflation
- 3 PY 1985 LDF selected based on balancing Prior to 1986 PYs Total Dollar Dev. to Actual CY Dev.
- 4 PY 1984 & Prior LDFs = (Subsequent Year - 1.0) x Selected Decrement + 1.0

CY Development of Prior to 1986 PYs:	1,941,457
Total Dollar Development:	1,941,457
Difference:	0

Tail Factor Model - 2019 Loss Cost Filing

Policy Year	(*=Estimate)	Incurred as of 12/31/13	Prior Year LDF	Dollar Development	Cumulative LDF	Policy Year	(*=Estimate)	Incurred as of 12/31/13	Prior Year LDF	Dollar Development	Cumulative LDF	
1940	*	14,568,109	1.000000	0	1.0000	1977	*	213,566,963	1.000154	32,928	1.0006	35TH TO ULT
1941	*	15,664,633	1.000000	0	1.0000	1978	*	229,641,895	1.000206	47,206	1.0008	34TH TO ULT
1942	*	16,843,691	1.000000	0	1.0000	1979	*	246,926,769	1.000274	67,674	1.0011	33RD TO ULT
1943	*	18,111,496	1.000000	0	1.0000	1980	*	265,512,655	1.000366	97,015	1.0015	32ND TO ULT
1944	*	19,474,727	1.000000	0	1.0000	1981	*	285,497,478	1.000487	139,073	1.0020	31ST TO ULT
1945	*	20,940,566	1.000000	0	1.0000	1982	*	306,986,536	1.000650	199,356	1.0026	30TH TO ULT
1946	*	22,516,738	1.000000	0	1.0000	1983	*	330,093,049	1.000866	285,752	1.0035	29TH TO ULT
1947	*	24,211,546	1.000000	1	1.0000	1984	*	354,938,763	1.001155	409,563	1.0046	28TH TO ULT
1948	*	26,033,921	1.000000	1	1.0000	1985	*	381,654,584	1.00154031	586,961	1.0062	27TH TO ULT
1949	*	27,993,463	1.000000	1	1.0000	1986	*	337,139,137	1.0057			
1950	*	30,100,498	1.000000	2	1.0000	1987	*	446,286,865	1.0097			
1951	*	32,366,127	1.000000	3	1.0000	1988	*	540,384,555	1.0107			
1952	*	34,802,287	1.000000	4	1.0000	1989	*	653,047,741	1.0054			
1953	*	37,421,814	1.000000	6	1.0000	1990	*	676,686,326	1.0065			
1954	*	40,238,510	1.000000	8	1.0000	1991	*	642,259,687	1.0100			
1955	*	43,267,215	1.000000	12	1.0000	1992	*	569,654,127	1.0093			
1956	*	46,523,887	1.000000	17	1.0000	1993	*	434,463,522	1.0061			
1957	*	50,025,685	1.000000	24	1.0000	1994	*	411,389,317	1.0058			
1958	*	53,791,059	1.000001	35	1.0000	1995	*	388,875,539	1.0081			
1959	*	57,839,848	1.000001	50	1.0000	1996	*	394,051,027	1.0121			
1960	*	62,193,385	1.000001	72	1.0000	1997	*	423,665,723	1.0098			
1961	*	66,874,608	1.000002	103	1.0000	1998	*	466,720,697	1.0077			
1962	*	71,908,180	1.000002	148	1.0000	1999	*	505,797,302	1.0066			
1963	*	77,320,624	1.000003	212	1.0000	2000	*	525,077,183	1.0081			
1964	*	83,140,456	1.000004	305	1.0000	2001	*	510,306,048	1.0072			
1965	*	89,398,340	1.000005	437	1.0000	2002	*	549,255,882	1.0102			
1966	*	96,127,247	1.000007	626	1.0000	2003	*	562,237,180	1.0026			
1967	*	103,362,631	1.000009	898	1.0000	2004	*	612,712,614	1.0141			
1968	*	111,142,614	1.000012	1,287	1.0000	2005	*	634,622,040	1.0131			
1969	*	119,508,187	1.000015	1,845	1.0001	2006	*	642,897,013	1.0065			
1970	*	128,503,427	1.000021	2,645	1.0001	2007	*	705,531,103	1.0114			
1971	*	138,175,728	1.000027	3,792	1.0001	2008	*	635,146,573	1.0125			
1972	*	148,576,052	1.000037	5,437	1.0001	2009	*	567,151,122	1.0144			
1973	*	159,759,196	1.000049	7,794	1.0002	2010	*	620,722,916	1.0340			
1974	*	171,784,081	1.000065	11,175	1.0003	2011	*	608,890,597	1.0904			
1975	*	184,714,066	1.000087	16,021	1.0003	2012	*	530,565,176	2.1620			
1976	*	198,617,275	1.000116	22,968	1.0005	2013	*	258,624,991				