Pensioner Mortality in the New York State Public Retirement Systems

Summary

New York State has mortality data going back to 1921. When we looked at that data, and graphed the mortality experience, with particular attention paid to the recent data after 1986 we noticed a smooth asymptotic trend in the curve of the mortality rates by age over the years, as well as a smooth asymptotic trend in the curve of the mortality rates by years for each age. This led us to examine a recursive method of forecasting as well as an exponential method. Based on a recursive method, we forecasted future mortality rates and then calculated the effects on the liabilities and the funding of the New York State Retirement System. The results showed, that based on patterns from the past continuing into the future, mortality rates thirty years from now for pensioners over age 80 would be approximately 67% of our current assumptions. This would translate in the life expectancy of a sixty-two year old pensioner changing from approximately 22 years to approximately 26 years, and an increase in the current new entrant rate of approximately 7.9%. These changes, although not insignificant, would be realized gradually over the next thirty years and would not represent an immediate burden. Again, this assumes that medical and social breakthroughs in the future will have no more of an impact on mortality than the changes which we have experienced over the last eighty years.

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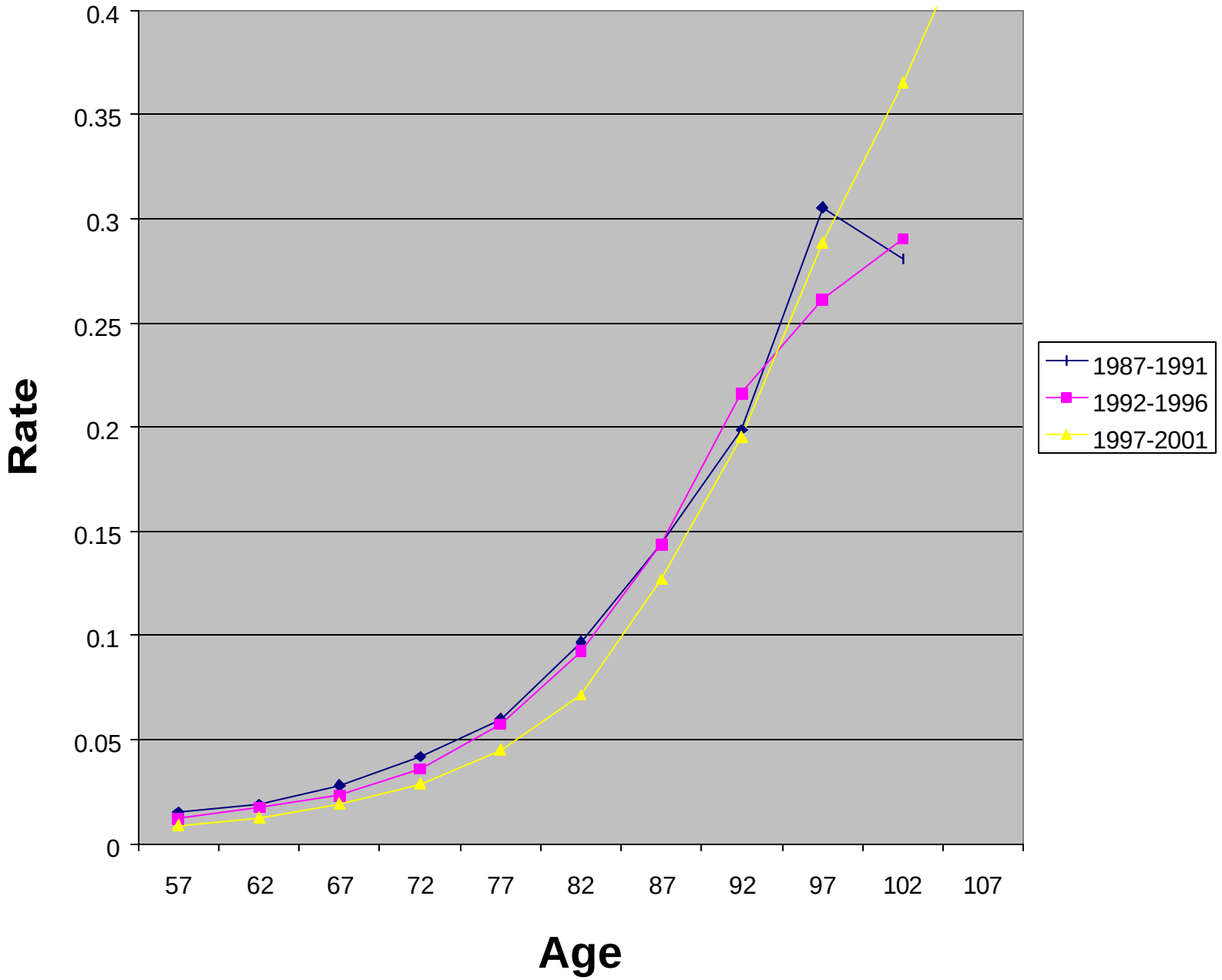
Introduction

The New York State and Local Employees' Retirement System has been providing retirement benefits to municipal employees since 1921. There have been more than 550,000 pensioners and beneficiaries paid in that time, with the current number of pensioners and beneficiaries in excess of 290,000. This collection of data shows a trend in mortality during a period of many medical breakthroughs and social improvements. The last fifteen years begin to show longevity reaching into ages beyond ninety. The question remains, however, what trends does the future hold, and can any information be gleaned from the past.

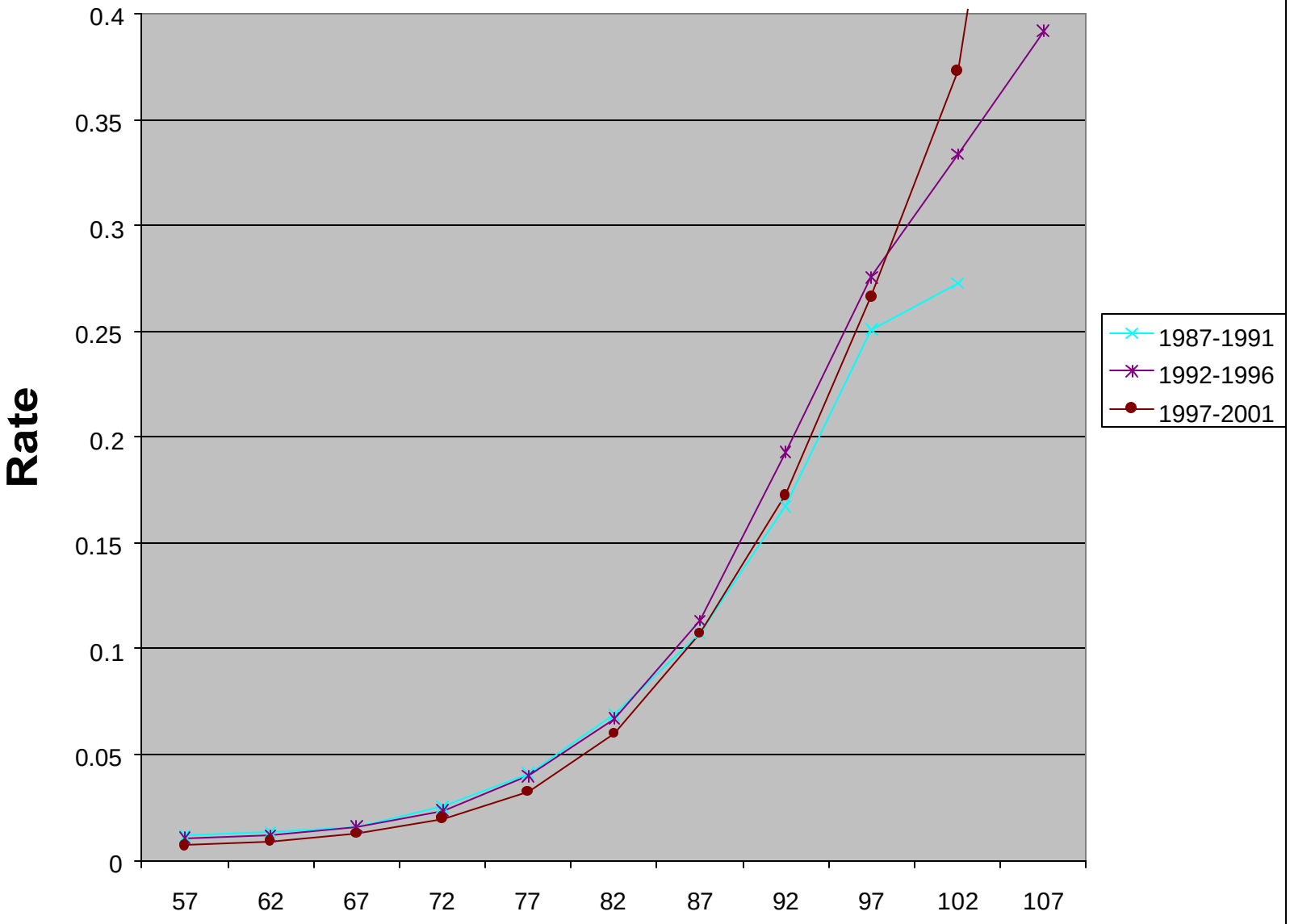
The Last Fifteen Years

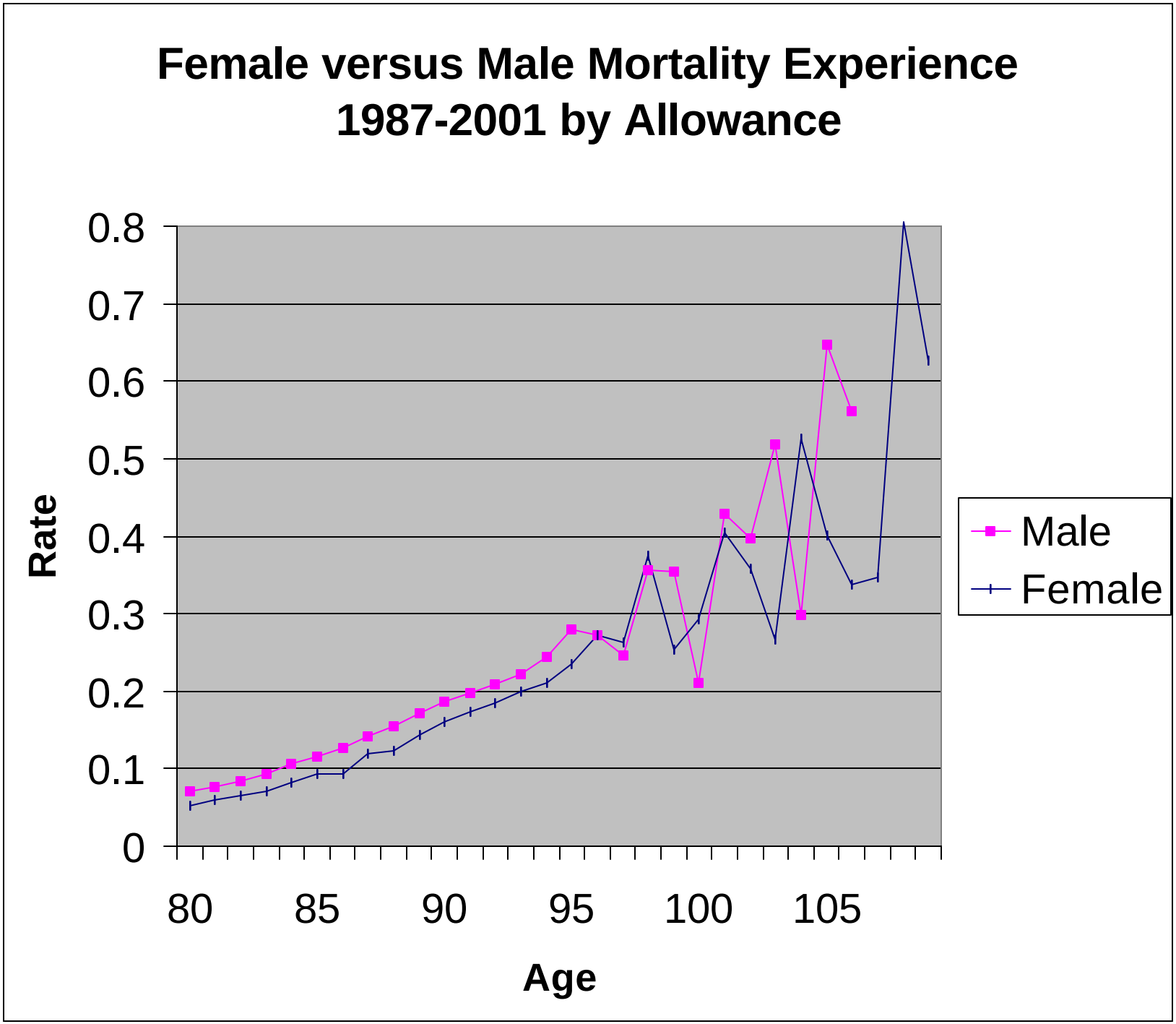
Attached are tables and graphs of our experience by allowance over the last fifteen years, broken down by gender. For our own purposes, we would also sort this data by job type (i.e. clerical, laborer, police officer, firefighter or beneficiary) and retirement type (i.e. service or disability). For this study, however, since we're interested in mortality at advanced ages where such distinctions lose their significance, we combined retirement types and job types.

Male Mortality Experience by Allowance



Female Mortality Experience by Allowance



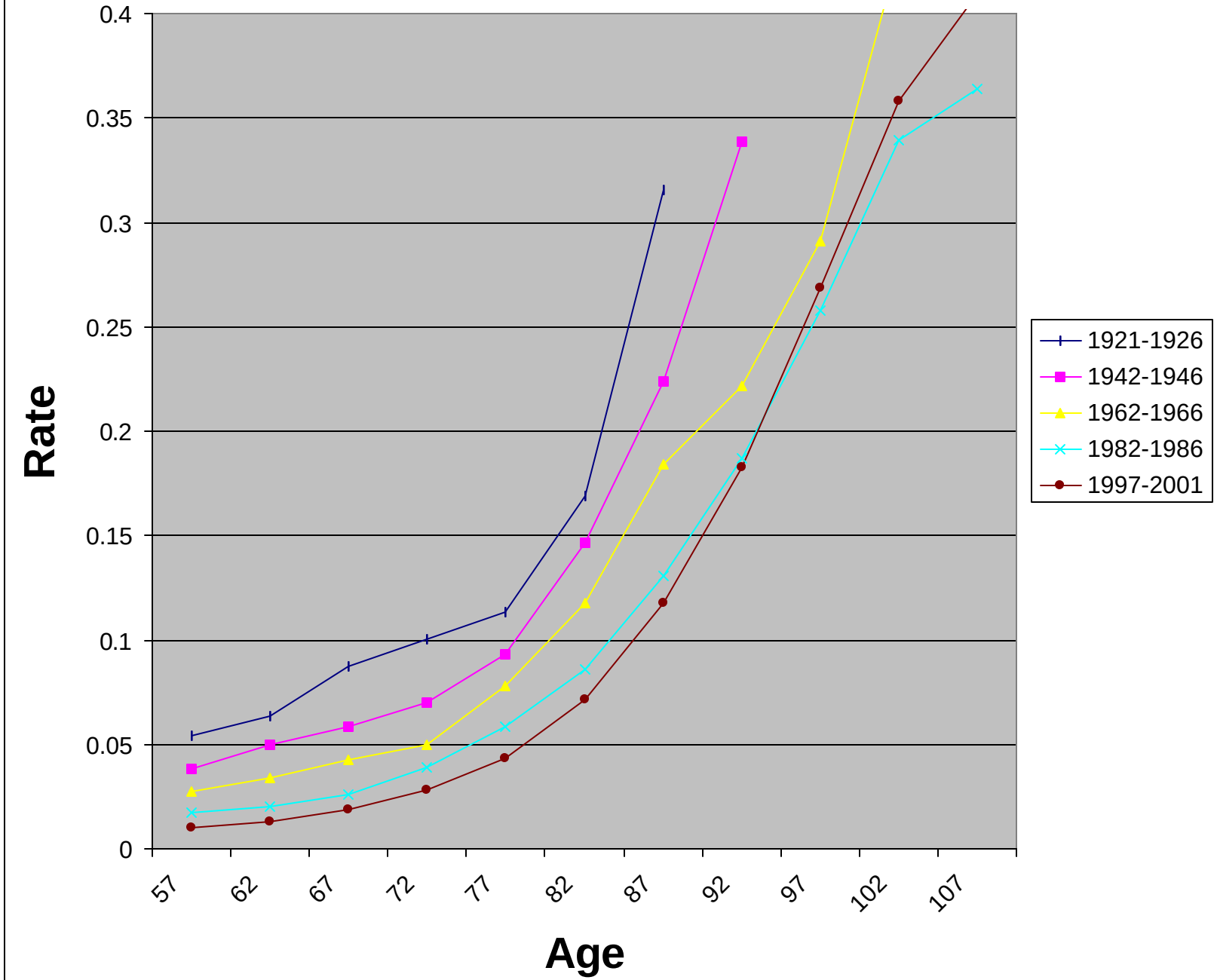

Female versus Male Mortality Experience
1987-2001 by Allowance
Rate
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
80
85
90
95
100
105
Age
Male
Female

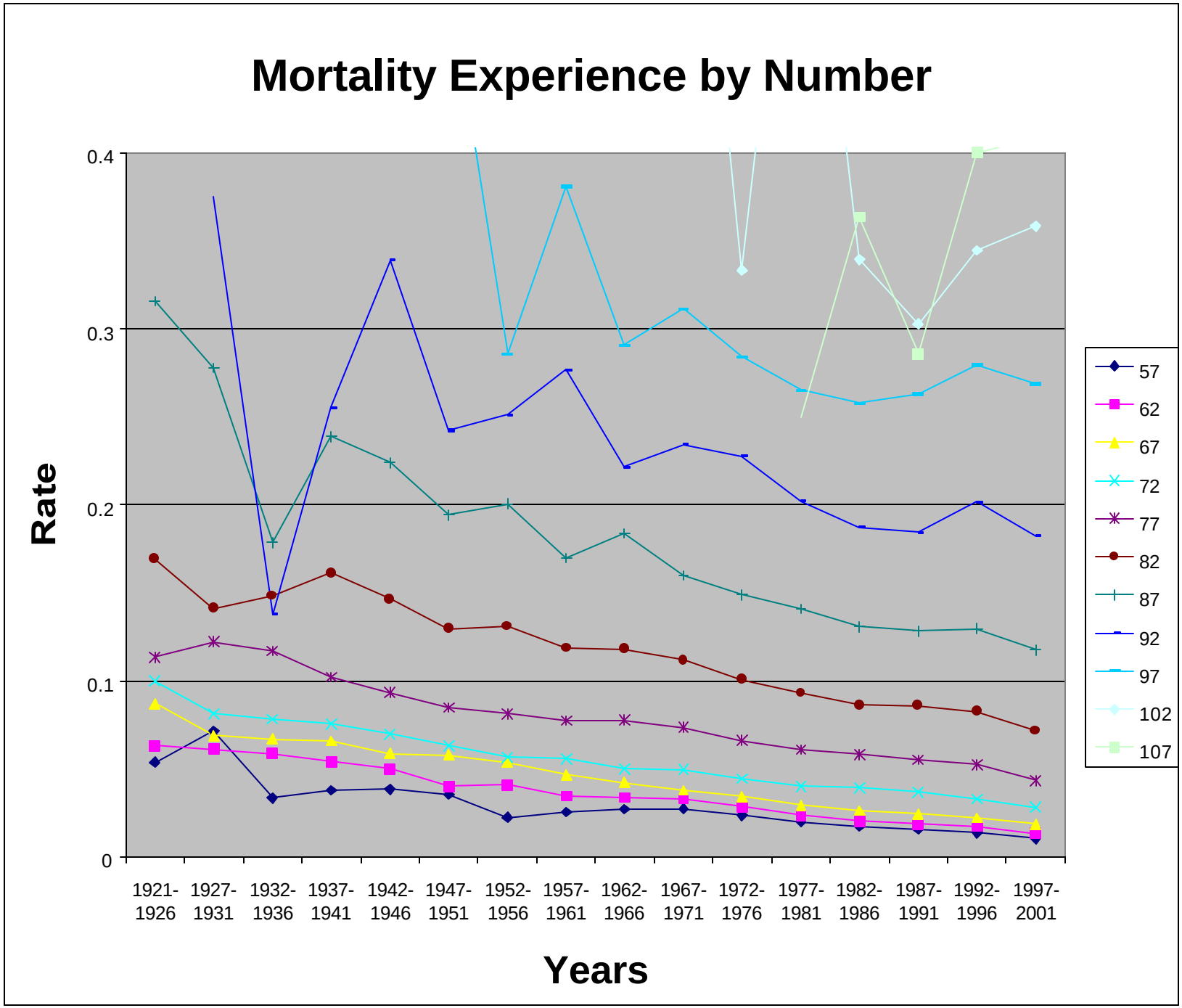
Possible Trends

Attached are two graphs of the data, by number, that has been accumulated over the past eighty years. The first graph shows a laying down trend in the curve of age versus mortality rate as we look at selected five year data since 1921. This is what we would expect as an effect of societal and medical changes. The second graph, of each centralized age of mortality rate versus the years the data was accumulated, seems to show a regressive relationship in the mortality at each age as the years have passed. For instance, the mortality rate for the age 77 group in the period 1937 to 1941 is about the same as the mortality rate for the age group 82 in the period 1972 to 1976. Also shown here is how wild the age 87 and 92 rates were, from 1921 through 1966 and how nicely they settled into a pattern after that. Now you can notice how wild the age 97 and above rates are, but you can also see the beginning of a pattern being set there as well.

The graphs appear to have an exponential quality. We looked at fitting them into the Lee-Carter Method for Forecasting Mortality (North American Actuarial Journal, January 2000), but couldn't get it to forecast trends that were as palatable as the regression method. The thought of an exponential mortality curve is enticing, however, we were not able to isolate all of the variables that were necessary to create viable forecasts.

Total Mortality Experience by Number




Mortality Experience by Number
Rate
0.4
0.3
0.2
0.1
0
1921-1926
1927-1931
1932-1936
1937-1941
1942-1946
1947-1951
1952-1956
1957-1961
1962-1966
1967-1971
1972-1976
1977-1981
1982-1986
1987-1991
1992-1996
1997-2001
Years
57
62
67
72
77
82
87
92
97
102
107

Impact on the liabilities and the funding for the New York State and Local Employees' Retirement System.

Using the recursive relationship noticed earlier, and shifting our current mortality rates at each five year centralized age to be that of age minus five, we can crudely estimate what the mortality rate at each age will be in about the year 2036. These projected rates end up being approximately 67% of our current expected mortality rates. The life expectancy for a current retiree age 62 on our current assumptions is approximately 22 years, whereas a retiree age 62 on the projected rates would have a life expectancy of approximately 26 years. In calculating liabilities based on these mortality rates, the concern is that our current demographics do not reflect this improved mortality and that actual liabilities in 2036 will be based on far more pensioners and beneficiaries being over age 90 and even over age 100. However, as a starting point, I valued our currently active members on the new projected pensioner mortality rates. As a result, the present value of benefits for current members increased by 4.2 billion. This represents a percent change of approximately 6.1% and a change in future normal rate of approximately 2.5% of salary. In addition, I valued our current pensioners on the new projected pensioner mortality rates. This generated an increase in present value of benefits of approximately 2.7 billion. This represents a percent change of approximately 9.1% and a change in future normal rate of approximately 1.6% of salary. The changes in mortality will be gradual and if we do see these changes, the effects will be phased in gradually in the future. Another way of looking at the effects of these changes is by looking at how the new entrant rate will be affected. By calculating the new entrant rate on the new projected pensioner mortality rates and then comparing that to the current new entrant rate there would be an increase in the new entrant rate of approximately .8% of salary, this corresponds to a 7.9% increase in the current new entrant rate. These increases are not small, but since we would realize them gradually, we should be prepared for them through our current process of creating new mortality tables every five years from our most recent experience and using the 25% loading factor. These assumptions assume that the trends from the past will continue into the future and thereby, that medical and societal changes in the future will be no more significant than the changes over the past eighty years, until proven otherwise.

Possible factors that have had an effect on the mortality experience of the New York State and Local Employees' Retirement System.

New York State has historically been a progressive, industrialized state with good health care and an above average standard of living. So it would not be surprising if Mortality rates in New York State were lower than the national rates and Global rates. However, the New York State Retirement System mortality rates are higher than the national rates in the UP83, GAM83, UP94, and GAM94 tables. Perhaps this may be accounted for by the differences in the way the tables are created and the differences in the characteristics of the individuals. In particular, that we grouped service retirees and disability retirees together even though disability retirees have significantly higher mortality rates at the lower ages.

We also looked at pensioners since 1987 broken down into two groups. The first group consists of pensioners who are receiving annual benefits which are less than twice the minimum wage of the year that they started receiving benefits. The second group consists of pensioners who are receiving annual benefits which are more than twice the minimum wage of the year that they started receiving benefits. The level of twice minimum wage was chosen because about half of the exposures fell into the under and into the over group. The attached graphs of that data shows no significant differences. This is not what one might expect, until you consider that a pension benefit should not be their sole means of support and that the majority of these pensioners have had health insurance. The results do lend some credibility to the consistency of the data over these years as a homogeneous group.

Lastly, New York State may be a reasonable model, because it has been a progressive state for this eighty year period. There has been a smooth transition in mortality rates over these years, not a cliff scenario where they would be catching up with medical and social advances.


Compare Mortality Experience by Allowance for pensions under and over twice minimum wage
Rate
0.400000
0.350000
0.300000
0.250000
0.200000
0.150000
0.100000
0.050000
0.000000
57
62
67
72
77
82
87
92
97
102
107
Age
Under
Over

Total Exposures by Allowance for Males

Age	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
80	6,208,965	7,805,715	8,979,489	9,681,860	10,053,836	10,528,668	12,143,497	12,012,653	14,112,159	15,466,150	15,547,288	17,375,965	20,085,032	20,162,117	25,407,80
81	5,745,270	5,685,031	7,057,135	8,205,193	9,063,249	9,276,662	9,799,449	11,197,697	10,965,245	13,247,003	14,161,919	14,504,484	16,052,427	18,697,753	18,915,54
82	4,304,245	5,246,288	5,130,431	6,325,469	7,433,327	8,313,994	8,490,421	9,014,282	10,395,173	10,132,455	12,260,927	13,089,457	13,547,940	14,840,361	17,316,50
83	3,525,378	3,905,414	4,701,776	4,696,154	5,715,493	6,727,545	7,680,250	7,729,640	8,194,619	9,532,895	9,295,396	11,233,648	11,947,052	12,357,480	13,585,86
84	2,842,212	3,204,129	3,481,553	4,175,072	4,243,826	5,147,107	5,941,942	6,834,900	6,986,435	7,295,440	8,524,165	8,579,365	10,260,710	10,736,080	11,487,91
85	1,837,344	2,549,109	2,803,246	3,088,088	3,671,492	3,687,567	4,547,216	5,292,070	6,060,613	6,176,218	6,367,071	7,580,067	7,743,055	9,149,780	9,510,05
86	1,432,107	1,533,614	2,230,127	2,511,240	2,693,905	3,250,610	3,192,794	4,065,392	4,673,548	5,344,767	5,501,239	5,523,688	6,631,416	6,787,123	7,994,23
87	1,134,132	1,207,109	1,347,393	1,886,394	2,169,171	2,329,879	2,857,149	2,633,714	3,547,750	4,026,550	4,784,494	4,955,914	4,867,182	5,628,514	5,668,46
88	729,063	1,012,324	947,862	1,122,486	1,649,538	1,883,327	1,986,597	2,325,607	2,217,297	2,992,659	3,467,966	4,027,883	4,289,744	4,171,240	4,769,89
89	533,155	618,136	865,201	823,904	919,513	1,425,593	1,578,861	1,607,058	1,987,976	1,824,890	2,429,481	2,956,444	3,287,516	3,647,264	3,407,10
90	408,314	426,961	479,642	676,326	630,259	774,157	1,172,506	1,268,400	1,312,645	1,616,745	1,518,613	1,948,306	2,515,522	2,728,049	2,956,18
91	266,632	316,519	357,179	344,886	591,280	515,152	584,945	968,112	1,026,689	1,070,155	1,274,411	1,200,901	1,377,405	2,134,545	2,148,78
92	158,896	222,884	232,003	285,081	276,718	475,426	409,746	451,742	812,528	835,638	839,772	1,025,480	888,594	1,073,467	1,610,28
93	145,592	120,879	180,641	197,095	236,932	244,539	351,847	305,829	359,014	586,313	684,929	677,992	725,768	681,288	798,34
94	117,395	110,023	90,752	148,217	128,295	185,457	171,276	261,686	232,771	289,839	436,395	518,670	520,357	516,423	538,13
95	61,088	102,150	69,863	76,216	119,674	107,190	138,350	155,258	157,814	166,308	199,275	322,680	427,002	389,175	356,78
96	25,954	47,612	59,489	55,517	55,261	104,150	65,128	90,952	120,230	131,320	120,170	119,867	211,012	296,513	241,98
97	32,552	16,567	30,367	29,863	19,731	38,714	86,420	41,530	61,786	106,086	108,543	94,995	68,654	160,272	236,61
98	16,470	29,624	10,130	17,183	22,731	18,114	27,610	71,061	19,195	53,925	66,938	93,541	60,835	35,226	111,78
99	5,896	13,208	11,506	6,765	13,921	20,653	6,071	15,970	55,497	14,218	36,380	31,880	53,826	30,271	21,22
100	2,592	2,982	12,129	10,366	4,046	8,623	13,905	3,243	9,728	33,368	12,433	16,147	15,743	34,756	17,82
101	2,438	2,592	1,207	10,617	8,162	3,353	6,890	10,191	1,273	4,012	32,876	12,433	3,310	12,062	29,69
102	0	1,833	0	974	10,034	1,247	2,917	5,675	10,191	1,273	554	1,420	11,431	2,598	10,00
103	0	0	0	0	974	10,034	1,247	2,474	1,963	4,387	0	401	1,420	735	2,59
104	0	0	0	0	0	0	783	1,247	1,977	1,963	4,116	0	401	1,420	73
105	0	0	0	0	0	0	0	783	0	1,977	1,963	2,002	0	0	1,42
106	0	0	0	0	0	0	0	0	0	0	640	819	0	0	0
107	0	0	0	0	0	0	0	0	0	0	0	640	0	0	0
108	0	0	0	0	0	0	0	0	0	0	0	0	640	0	0
109	0	0	0	0	0	0	0	0	0	0	0	0	0	640	0
110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	64
111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
116	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
117	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
119	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Actuals by Allowance for Males

Age	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
80	533,694	755,613	786,581	678,991	834,681	792,312	956,337	1,088,153	916,457	1,338,933	1,095,255	1,388,311	1,422,861	1,308,587	659,769
81	504,060	611,236	737,923	814,530	782,694	807,703	830,668	837,343	915,860	1,077,275	1,092,467	1,016,239	1,258,531	1,395,956	557,926
82	399,271	546,485	436,033	626,011	771,480	671,010	785,657	866,753	933,129	890,955	1,066,783	1,158,938	1,225,138	1,305,865	677,068
83	325,370	427,153	529,884	454,139	583,267	814,978	856,962	752,511	918,351	1,044,591	725,717	987,186	1,218,403	890,206	638,977
84	293,327	406,278	396,318	505,101	557,498	619,962	653,538	775,087	820,683	939,968	944,920	852,188	1,123,009	1,224,406	479,038
85	310,758	322,214	296,121	396,710	422,180	497,553	503,088	619,305	730,526	675,691	858,327	949,688	960,243	1,159,140	536,678
86	224,998	187,395	347,156	342,069	366,106	400,279	561,392	518,835	646,998	588,434	606,987	657,837	1,037,854	1,121,841	430,804
87	125,153	259,247	226,081	237,271	286,074	344,431	533,367	418,186	555,091	572,908	767,581	680,730	695,942	875,231	350,713
88	110,927	150,023	126,022	204,080	223,945	304,695	380,687	339,406	394,175	587,581	527,837	740,367	654,956	778,830	315,202
89	106,436	138,494	190,495	197,888	146,462	253,087	310,461	298,773	371,901	308,485	481,790	443,185	559,467	691,083	285,192
90	91,795	70,023	135,594	85,046	117,540	189,212	206,457	241,711	243,237	342,775	320,463	571,516	380,977	579,268	240,731
91	43,748	84,516	72,098	69,005	115,854	105,658	133,203	157,646	191,051	230,383	250,978	312,850	303,938	524,259	198,380
92	38,017	42,243	34,908	48,244	32,645	123,579	103,917	96,519	226,215	150,709	162,066	299,712	207,306	275,125	164,328
93	35,569	30,888	32,424	68,800	51,569	73,263	90,161	73,058	69,175	149,918	166,259	157,635	209,345	143,157	49,896
94	15,245	40,160	15,297	28,543	21,105	47,107	16,018	103,872	66,463	90,564	113,715	91,668	131,182	159,638	102,815
95	13,476	42,661	14,346	20,955	15,524	42,062	47,398	35,028	26,494	44,075	79,408	111,668	130,489	147,195	28,684
96	9,387	17,245	29,626	35,786	16,547	17,730	23,598	29,166	14,144	22,777	23,111	51,213	50,740	59,899	72,931
97	2,928	6,437	13,184	7,132	1,617	11,104	15,359	22,335	8,654	39,148	15,002	34,160	33,428	48,486	19,703
98	3,262	18,118	3,365	3,262	2,078	12,043	11,640	9,645	4,977	18,337	35,058	39,715	30,564	14,003	27,238
99	2,914	1,079	1,140	2,719	5,298	6,748	2,828	6,242	16,210	1,785	20,233	16,137	19,070	12,450	4,381
100	0	1,775	1,512	2,204	693	1,733	3,714	1,970	5,716	492	0	12,837	3,681	5,065	283
101	605	2,592	233	583	6,915	436	1,215	0	0	3,458	31,456	1,002	712	2,061	9,203
102	0	1,833	0	0	0	0	443	3,712	5,804	1,273	153	0	10,696	0	0
103	0	0	0	0	974	9,251	0	497	0	271	0	0	0	0	2,598
104	0	0	0	0	0	0	0	1,247	0	0	2,114	0	401	0	0
105	0	0	0	0	0	0	0	783	0	1,337	1,144	2,002	0	0	0
106	0	0	0	0	0	0	0	0	0	0	0	819	0	0	0
107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
109	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
116	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
117	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
119	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Exposures by Allowance for Females

Age	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
80	5,232,250	6,016,564	6,694,315	7,130,948	7,585,551	8,951,917	8,508,692	10,059,788	11,033,043	13,090,381	13,271,518	14,928,140	17,104,286	16,223,981	20,127,29
81	4,151,612	5,057,405	5,722,636	6,327,991	6,726,511	7,245,946	8,672,209	8,048,768	9,468,153	10,557,181	12,423,630	12,706,100	14,103,048	16,280,752	15,189,74
82	3,444,799	3,986,261	4,718,224	5,417,429	6,032,432	6,326,913	6,839,937	8,112,819	7,642,560	8,834,403	10,023,733	11,572,661	12,025,033	13,358,306	15,369,51
83	2,798,581	3,272,044	3,775,444	4,449,910	5,101,649	5,589,525	5,998,165	6,416,137	7,637,515	7,168,114	8,315,142	9,290,415	10,699,939	11,126,504	12,374,67
84	2,123,042	2,588,018	3,013,590	3,518,293	4,081,826	4,706,703	5,285,566	5,640,678	5,964,994	7,082,519	6,709,457	7,644,434	8,667,249	9,824,341	10,310,16
85	1,984,651	1,976,035	2,384,071	2,791,225	3,260,103	3,769,170	4,368,568	4,872,808	5,141,707	5,359,036	6,567,944	6,145,304	6,928,583	8,001,088	8,960,80
86	1,444,075	1,868,383	1,846,849	2,160,181	2,562,049	3,009,434	3,511,690	3,925,344	4,534,885	4,559,598	4,893,794	5,874,685	5,519,383	6,205,482	7,096,19
87	1,070,766	1,360,527	1,658,297	1,697,233	2,031,568	2,360,490	2,713,364	3,203,295	3,568,600	4,213,721	4,119,202	4,434,226	5,259,024	4,953,480	5,488,92
88	848,487	930,277	1,238,845	1,468,241	1,572,106	1,757,076	2,098,096	2,395,507	2,803,942	3,131,720	3,797,144	3,629,791	3,845,584	4,576,049	4,201,58
89	691,747	755,716	790,412	1,065,016	1,326,522	1,353,577	1,557,482	1,799,631	2,076,760	2,457,911	2,730,135	3,328,140	3,216,273	3,321,046	3,997,94
90	531,469	594,336	669,121	684,953	936,294	1,107,210	1,154,489	1,324,231	1,555,684	1,795,009	2,030,652	2,317,266	2,777,024	2,790,842	2,715,62
91	397,291	439,619	492,391	573,471	613,394	821,406	962,972	969,889	1,112,712	1,261,363	1,474,057	1,732,173	1,977,712	2,255,635	2,251,05
92	284,118	344,047	379,906	416,476	487,324	531,534	634,233	809,920	794,770	922,260	1,013,409	1,177,218	1,446,637	1,582,780	1,738,78
93	221,999	236,060	292,422	289,213	328,991	378,046	422,427	496,262	645,745	649,837	762,000	804,117	974,294	1,154,966	1,250,59
94	155,216	198,797	213,264	230,222	225,787	291,632	301,843	352,687	362,386	517,470	487,592	565,158	635,426	783,755	895,79
95	105,149	126,251	159,065	191,435	185,577	179,182	229,209	234,684	277,381	268,074	407,448	372,400	427,736	512,201	591,46
96	61,521	87,367	106,568	115,172	133,996	157,847	123,906	169,470	168,866	217,808	236,295	341,061	301,456	278,881	368,15
97	43,038	47,845	52,569	78,942	88,056	121,451	126,728	88,760	133,569	126,872	137,978	147,364	231,495	219,378	171,99
98	46,587	30,898	34,849	35,482	61,855	74,335	103,235	82,671	72,308	97,882	88,752	106,305	96,531	158,309	154,55
99	14,975	29,123	18,925	21,669	26,728	38,338	48,370	27,362	61,326	41,840	72,469	56,032	64,499	53,470	109,77
100	5,628	9,092	17,859	10,179	12,332	24,792	31,977	40,892	22,701	38,020	32,551	49,275	44,203	51,837	35,01
101	9,985	5,628	5,121	12,979	9,031	10,164	19,425	16,617	22,267	20,647	24,871	27,124	41,548	27,911	36,44
102	2,429	6,686	4,563	2,379	9,817	6,997	4,650	16,240	12,231	5,657	19,156	11,266	10,049	19,010	17,63
103	834	2,429	6,078	4,563	1,836	3,041	5,927	4,650	13,595	9,601	1,625	11,431	1,535	7,122	7,17
104	0	0	2,429	6,078	3,026	648	3,041	2,445	4,650	7,060	3,146	788	11,431	1,535	3,60
105	0	0	0	2,429	3,007	852	648	3,041	592	3,798	824	0	0	3,868	98
106	425	0	0	0	2,429	2,303	0	0	1,356	592	3,798	824	0	0	
107	695	0	0	0	0	1,829	2,303	0	0	1,356	592	1,698	0	0	
108	162	695	0	0	0	0	252	2,303	0	0	0	592	1,698	0	
109	0	162	695	0	0	0	0	252	0	0	0	0	0	0	
110	0	0	162	0	0	0	0	0	252	0	0	0	0	0	
111	0	0	0	162	0	0	0	0	0	252	0	0	0	0	
112	0	0	0	0	162	0	0	0	0	0	252	0	0	0	
113	0	0	0	0	0	162	0	0	0	0	0	252	0	0	
114	0	0	0	0	0	0	162	0	0	0	0	0	252	0	
115	0	0	0	0	0	0	0	162	0	0	0	0	0	0	
116	0	0	0	0	0	0	0	0	162	0	0	0	0	0	
117	0	0	0	0	0	0	0	0	0	162	0	0	0	0	
118	0	0	0	0	0	0	0	0	0	0	162	0	0	0	
119	0	0	0	0	0	0	0	0	0	0	0	162	0	0	
120	0	0	0	0	0	0	0	0	0	0	0	0	162	0	

Total Actuals by Allowance for Females

Age	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
80	255,259	331,959	419,139	451,827	385,072	374,979	501,336	613,274	552,425	726,269	687,045	907,450	940,947	1,124,679	403,608
81	217,096	359,955	374,611	355,861	443,810	488,411	611,358	455,362	655,543	631,094	891,139	758,394	791,627	1,011,895	381,556
82	207,856	263,801	299,803	398,806	499,530	378,579	510,364	527,642	518,109	565,303	764,519	906,151	945,998	1,004,548	354,166
83	239,918	282,869	288,758	391,547	424,469	352,161	398,753	498,583	607,791	514,034	702,887	625,789	920,318	841,475	330,842
84	178,767	237,783	243,043	299,630	339,916	365,466	466,288	523,121	662,970	562,546	638,256	731,107	686,355	880,596	315,580
85	152,264	146,316	248,088	255,798	283,303	293,459	466,520	386,251	612,379	507,296	702,117	670,146	735,508	911,789	422,385
86	116,575	214,955	166,349	167,991	216,575	302,700	344,599	380,836	371,657	469,989	503,918	647,990	586,474	717,062	312,870
87	153,929	142,535	198,078	153,624	287,543	268,108	330,292	413,532	453,435	470,886	523,475	629,572	686,410	752,880	257,585
88	98,859	141,935	186,469	146,891	237,020	204,557	308,287	325,218	367,506	417,136	492,925	425,102	529,159	578,106	240,839
89	98,569	95,334	106,427	135,181	220,159	200,033	242,361	248,888	292,459	445,442	435,306	557,849	453,800	608,233	257,147
90	94,469	103,477	103,887	75,859	117,063	145,065	185,545	221,882	296,164	333,601	300,235	355,312	526,788	546,829	269,794
91	56,428	60,575	76,739	89,021	86,188	191,018	157,818	179,394	193,081	250,305	302,158	286,426	396,073	516,849	163,310
92	49,441	52,982	93,880	87,918	109,677	109,982	137,971	176,144	145,250	164,496	209,672	205,903	295,358	333,327	153,447
93	23,202	48,305	62,200	69,057	39,951	76,203	76,323	133,876	134,172	162,561	199,710	168,691	190,539	259,170	135,218
94	31,304	39,732	45,954	44,645	49,048	67,054	68,191	82,374	95,215	110,912	115,192	145,609	123,225	192,291	93,555
95	17,782	19,683	43,893	57,439	27,730	55,276	61,778	67,896	60,058	47,864	67,276	70,944	148,855	144,050	108,940
96	14,975	34,798	28,144	27,116	12,545	31,119	35,146	35,901	41,994	82,260	88,931	109,849	82,078	106,886	51,223
97	12,140	13,865	17,087	18,034	13,721	18,216	44,057	16,452	35,687	38,120	31,673	50,833	73,186	64,828	29,056
98	17,464	11,973	14,049	11,438	23,946	25,965	75,873	21,345	30,468	25,413	32,720	41,806	43,061	48,538	43,015
99	5,883	11,264	8,746	9,337	4,619	6,361	7,478	4,661	23,306	9,289	23,194	11,829	12,662	18,460	17,147
100	0	3,971	4,880	1,148	2,168	5,367	15,360	18,625	2,054	13,149	5,427	7,727	16,292	15,391	13,195
101	3,299	1,065	2,742	3,162	2,034	5,514	3,185	4,386	16,610	1,491	13,605	17,075	22,538	10,278	10,189
102	0	608	0	543	6,776	1,070	0	2,645	2,630	4,032	7,725	9,731	2,927	11,834	2,666
103	834	0	0	1,537	1,188	0	3,482	0	3,852	6,455	837	0	0	3,520	0
104	0	0	0	3,071	2,174	0	0	1,853	852	3,552	3,146	788	7,563	546	2,701
105	0	0	0	0	704	852	648	1,685	0	0	0	0	0	3,868	299
106	425	0	0	0	600	0	0	0	0	0	2,100	824	0	0	0
107	0	0	0	0	0	1,577	0	0	0	1,356	0	0	0	0	0
108	0	0	0	0	0	0	0	2,303	0	0	0	592	1,698	0	0
109	0	0	695	0	0	0	0	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0	0	0	0	0	252	0	0
115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
116	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
117	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
119	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0