

## HOW LATE-CAREER RAISES DRIVE TEACHER PENSION DEBT

Table A1: Observed and/or adapted pension terms and statistics for veteran teachers (for use in future and present value calculations)

	Final Average Salary (definition)	Years of Service (definition)	Pension Multiplier (definition)	Retirement Age	COLA	Average Years of Service*	Average Beginning Pension*	Final Average Salary*	Beginning Pension-to-Final Average Salary Ratio*
<b>California</b>	Highest salary during any 12 months of employment + longevity bonus	Years of service+ credit earned from additional duties + unused sick leave + purchased credit	Changing: 1.4% – 2.4% based on age	62 years (average of those retired in the past year)	2% interest, on a simple annual basis	32.5 years	\$70,158	\$91,108	77%
<b>Illinois</b>	Average of the highest 4 consecutive salary rates in last 10 years	Years of service (170 days per year) + unused sick leave + purchased credit	Changing: 1.67% – 2.3% based on service	61 years (average of those retired in the past year)	3% interest, compounded annually	34 years	\$65,895	\$91,800	72%
<b>New Jersey</b>	Average of the last 3 years (or the 3 highest salary years)	Years of service + purchased credit	Constant: 1/55 (1.82%) per year of service	60 years (minimum retirement age)	0%	35 years	\$56,500	\$90,100	63%

\*Author's calculations

## HOW LATE-CAREER RAISES DRIVE TEACHER PENSION DEBT

Table A2: Future values of annual pension allowances in California

A	B	C	D	E	F	G	H	I
Year	FV of allowance FV of allowance \$70,158 × 1.03 × (A – 1)	Age 62 + (A-1)	Mortality Rate (deaths per 1000)	Deaths in population in YearA (D x 1000)	Population in YearA (starting = 1000) Previous year (F) – deaths (E)	Portion of population that die in YearA F ÷ 1000	Portion of beginning population alive 1 – cumulative sum(F)	Average FV of allowance, accounting for mortality rates B x H
1	\$70,158	62	0.006921	6.9210	993.0790	0.69%	99.31%	\$69,672
2	\$71,561	63	0.007659	7.6060	985.4730	0.76%	98.55%	\$70,521
3	\$72,964	64	0.008456	8.3332	977.1398	0.83%	97.71%	\$71,296
4	\$74,367	65	0.009329	9.1157	968.0241	0.91%	96.80%	\$71,989
5	\$75,770	66	0.010273	9.9445	958.0796	0.99%	95.81%	\$72,594
6	\$77,174	67	0.011287	10.8138	947.2658	1.08%	94.73%	\$73,104
7	\$78,577	68	0.012395	11.7414	935.5244	1.17%	93.55%	\$73,510
8	\$79,980	69	0.013639	12.7596	922.7648	1.28%	92.28%	\$73,803
9	\$81,383	70	0.015069	13.9051	908.8596	1.39%	90.89%	\$73,966
10	\$82,786	71	0.016373	14.8808	893.9789	1.49%	89.40%	\$74,009
11	\$84,189	72	0.018212	16.2811	877.6977	1.63%	87.77%	\$73,893
12	\$85,593	73	0.01982	17.3960	860.3018	1.74%	86.03%	\$73,635
13	\$86,996	74	0.021966	18.8974	841.4044	1.89%	84.14%	\$73,199
14	\$88,399	75	0.023743	19.9775	821.4269	2.00%	82.14%	\$72,613
15	\$89,802	76	0.02616	21.4885	799.9384	2.15%	79.99%	\$71,836
16	\$91,205	77	0.029427	23.5398	776.3986	2.35%	77.64%	\$70,812
17	\$92,608	78	0.032439	25.1856	751.2130	2.52%	75.12%	\$69,569
18	\$94,012	79	0.035813	26.9032	724.3098	2.69%	72.43%	\$68,093
19	\$95,415	80	0.039587	28.6733	695.6366	2.87%	69.56%	\$66,374
20	\$96,818	81	0.043815	30.4793	665.1572	3.05%	66.52%	\$64,399
21	\$98,221	82	0.048573	32.3087	632.8486	3.23%	63.28%	\$62,159
22	\$99,624	83	0.053933	34.1314	598.7171	3.41%	59.87%	\$59,647
23	\$101,027	84	0.059983	35.9129	562.8043	3.59%	56.28%	\$56,859
24	\$102,430	85	0.068252	38.4125	524.3918	3.84%	52.44%	\$53,714
25	\$103,834	86	0.077746	40.7694	483.6224	4.08%	48.36%	\$50,216
26	\$105,237	87	0.08856	42.8296	440.7928	4.28%	44.08%	\$46,388
27	\$106,640	88	0.098641	43.4802	397.3126	4.35%	39.73%	\$42,369
28	\$108,043	89	0.111868	44.4466	352.8660	4.44%	35.29%	\$38,125
29	\$109,446	90	0.12363	43.6248	309.2412	4.36%	30.92%	\$33,845
30	\$110,849	91	0.135762	41.9832	267.2580	4.20%	26.73%	\$29,625
31	\$112,253	92	0.14798	39.5488	227.7091	3.95%	22.77%	\$25,561
32	\$113,656	93	0.163416	37.2113	190.4978	3.72%	19.05%	\$21,651
33	\$115,059	94	0.175273	33.3891	157.1087	3.34%	15.71%	\$18,077
34	\$116,462	95	0.186501	29.3009	127.8078	2.93%	12.78%	\$14,885
35	\$117,865	96	0.196923	25.1683	102.6395	2.52%	10.26%	\$12,098
36	\$119,268	97	0.210765	21.6328	81.0067	2.16%	8.10%	\$9,662
37	\$120,671	98	0.219291	17.7640	63.2426	1.78%	6.32%	\$7,632
38	\$122,075	99	0.226576	14.3293	48.9134	1.43%	4.89%	\$5,971
39	\$123,478	100	0.23253	11.3738	37.5395	1.14%	3.75%	\$4,635
40	\$124,881	101	0.244834	9.1910	28.3486	0.92%	2.83%	\$3,540
41	\$126,284	102	0.254498	7.2147	21.1339	0.72%	2.11%	\$2,669
42	\$127,687	103	0.266044	5.6226	15.5114	0.56%	1.55%	\$1,981
43	\$129,090	104	0.279055	4.3285	11.1828	0.43%	1.12%	\$1,444
44	\$130,494	105	0.293116	3.2779	7.9050	0.33%	0.79%	\$1,032
45	\$131,897	106	0.307811	2.4332	5.4717	0.24%	0.55%	\$722
46	\$133,300	107	0.322725	1.7659	3.7059	0.18%	0.37%	\$494
47	\$134,703	108	0.337441	1.2505	2.4554	0.13%	0.25%	\$331
48	\$136,106	109	0.351544	0.8632	1.5922	0.09%	0.16%	\$217
49	\$137,509	110	0.364617	0.5805	1.0117	0.06%	0.10%	\$139
50	\$138,913	111	0.376246	0.3806	0.6310	0.04%	0.06%	\$88
51	\$140,316	112	0.386015	0.2436	0.3874	0.02%	0.04%	\$54
52	\$141,719	113	0.393507	0.1525	0.2350	0.02%	0.02%	\$33
53	\$143,122	114	0.398308	0.0936	0.1414	0.01%	0.01%	\$20
54	\$144,525	115	0.4	0.0566	0.0848	0.01%	0.01%	\$12
55	\$145,928	116	0.4	0.0339	0.0509	0.00%	0.01%	\$7
56	\$147,331	117	0.4	0.0204	0.0305	0.00%	0.00%	\$4
57	\$148,735	118	0.4	0.0122	0.0183	0.00%	0.00%	\$3
58	\$150,138	119	0.4	0.0073	0.0110	0.00%	0.00%	\$2
59	\$151,141	120	1	0.0183	-	0.00%	0.00%	\$2
<b>SUM = \$2,038,676</b>								

## HOW LATE-CAREER RAISES DRIVE TEACHER PENSION DEBT

Table A3: Present values of annual pension allowances in California

A	B	C	D	E	F	G
Year	FV of allowance	Portion of beginning population alive	PV of allowance, discounted at 3.78% $B \div (1.0378) \times (A-1)$	Average PV of allowance, discounted at 3.78%, accounting for mortality rates E x C	PV of allowance, discounted at 8% $B \div (1.08) \times (A-1)$	Average PV of allowance, discounted at 8%, accounting for mortality rates F x C
1	\$70,158	99.31%	\$70,928	\$69,672	\$70,928	\$69,672
2	\$71,561	98.55%	\$69,711	\$67,953	\$66,987	\$65,298
3	\$72,964	97.71%	\$68,489	\$66,197	\$63,242	\$61,125
4	\$74,367	96.80%	\$67,264	\$64,406	\$59,683	\$57,147
5	\$75,770	95.81%	\$66,037	\$62,582	\$56,305	\$53,359
6	\$77,174	94.73%	\$64,810	\$60,726	\$53,100	\$49,753
7	\$78,577	93.55%	\$63,585	\$58,839	\$50,060	\$46,324
8	\$79,980	92.28%	\$62,363	\$56,922	\$47,180	\$43,063
9	\$81,383	90.89%	\$61,146	\$54,969	\$44,451	\$39,961
10	\$82,786	89.40%	\$59,934	\$52,998	\$41,868	\$37,023
11	\$84,189	87.77%	\$58,730	\$50,988	\$39,424	\$34,227
12	\$85,593	86.03%	\$57,534	\$48,959	\$37,112	\$31,581
13	\$86,996	84.14%	\$56,348	\$46,896	\$34,926	\$29,068
14	\$88,399	82.14%	\$55,171	\$44,827	\$32,861	\$26,700
15	\$89,802	79.99%	\$54,005	\$42,732	\$30,910	\$24,457
16	\$91,205	77.64%	\$52,851	\$40,588	\$29,067	\$22,323
17	\$92,608	75.12%	\$51,710	\$38,423	\$27,328	\$20,306
18	\$94,012	72.43%	\$50,581	\$36,239	\$25,687	\$18,404
19	\$95,415	69.56%	\$49,466	\$34,037	\$24,140	\$16,610
20	\$96,818	66.52%	\$48,366	\$31,821	\$22,680	\$14,922
21	\$98,221	63.28%	\$47,279	\$29,596	\$21,304	\$13,336
22	\$99,624	59.87%	\$46,208	\$27,365	\$20,008	\$11,849
23	\$101,027	56.28%	\$45,152	\$25,136	\$18,787	\$10,459
24	\$102,430	52.44%	\$44,112	\$22,881	\$17,637	\$9,148
25	\$103,834	48.36%	\$43,087	\$20,612	\$16,554	\$7,919
26	\$105,237	44.08%	\$42,079	\$18,347	\$15,535	\$6,773
27	\$106,640	39.73%	\$41,087	\$16,147	\$14,576	\$5,728
28	\$108,043	35.29%	\$40,111	\$14,000	\$13,674	\$4,773
29	\$109,446	30.92%	\$39,152	\$11,976	\$12,826	\$3,923
30	\$110,849	26.73%	\$38,210	\$10,101	\$12,028	\$3,180
31	\$112,253	22.77%	\$37,284	\$8,398	\$11,278	\$2,540
32	\$113,656	19.05%	\$36,375	\$6,854	\$10,573	\$1,992
33	\$115,059	15.71%	\$35,483	\$5,514	\$9,911	\$1,540
34	\$116,462	12.78%	\$34,608	\$4,375	\$9,288	\$1,174
35	\$117,865	10.26%	\$33,749	\$3,426	\$8,704	\$884
36	\$119,268	8.10%	\$32,907	\$2,637	\$8,155	\$653
37	\$120,671	6.32%	\$32,081	\$2,007	\$7,640	\$478
38	\$122,075	4.89%	\$31,272	\$1,513	\$7,156	\$346
39	\$123,478	3.75%	\$30,480	\$1,132	\$6,702	\$249
40	\$124,881	2.83%	\$29,703	\$833	\$6,276	\$176
41	\$126,284	2.11%	\$28,943	\$605	\$5,877	\$123
42	\$127,687	1.55%	\$28,199	\$433	\$5,502	\$84
43	\$129,090	1.12%	\$27,470	\$304	\$5,150	\$57
44	\$130,494	0.79%	\$26,757	\$209	\$4,821	\$38
45	\$131,897	0.55%	\$26,060	\$141	\$4,512	\$24
46	\$133,300	0.37%	\$25,378	\$93	\$4,222	\$15
47	\$134,703	0.25%	\$24,711	\$60	\$3,950	\$10
48	\$136,106	0.16%	\$24,059	\$38	\$3,696	\$6
49	\$137,509	0.10%	\$23,422	\$23	\$3,457	\$3
50	\$138,913	0.06%	\$22,799	\$14	\$3,234	\$2
51	\$140,316	0.04%	\$22,190	\$9	\$3,025	\$1
52	\$141,719	0.02%	\$21,596	\$5	\$2,829	\$1
53	\$143,122	0.01%	\$21,015	\$3	\$2,645	\$0
54	\$144,525	0.01%	\$20,448	\$2	\$2,473	\$0
55	\$145,928	0.01%	\$19,895	\$1	\$2,312	\$0
56	\$147,331	0.00%	\$19,355	\$1	\$2,161	\$0
57	\$148,735	0.00%	\$18,827	\$0	\$2,020	\$0
58	\$150,138	0.00%	\$18,313	\$0	\$1,888	\$0
59	\$151,541	0.00%	\$17,811	\$0	\$1,765	\$0
		SUM = \$2,034,796		SUM = \$1,265,566		SUM = \$848,811

## HOW LATE-CAREER RAISES DRIVE TEACHER PENSION DEBT

Table A4: Present values of annual pension allowances in California after a late-term pay raise which increases the teacher's final average salary by \$1,000

A	B	C	D
Year	FV of allowance	Average PV of allowance, discounted at 3.78%, accounting for mortality rates	Average PV of allowance, discounted at 8%, accounting for mortality rates
1	\$70,928	\$70,437	\$70,437
2	\$72,346	\$68,699	\$66,014
3	\$73,765	\$66,924	\$61,796
4	\$75,184	\$65,113	\$57,775
5	\$76,602	\$63,269	\$53,945
6	\$78,021	\$61,392	\$50,299
7	\$79,439	\$59,485	\$46,833
8	\$80,858	\$57,546	\$43,536
9	\$82,276	\$55,573	\$40,400
10	\$83,695	\$53,580	\$37,429
11	\$85,113	\$51,547	\$34,602
12	\$86,532	\$49,497	\$31,928
13	\$87,951	\$47,411	\$29,387
14	\$89,369	\$45,319	\$26,993
15	\$90,788	\$43,201	\$24,726
16	\$92,206	\$41,034	\$22,568
17	\$93,625	\$38,845	\$20,529
18	\$95,043	\$36,636	\$18,606
19	\$96,462	\$34,411	\$16,792
20	\$97,880	\$32,171	\$15,086
21	\$99,299	\$29,921	\$13,482
22	\$100,718	\$27,666	\$11,979
23	\$102,136	\$25,412	\$10,573
24	\$103,555	\$23,132	\$9,249
25	\$104,973	\$20,838	\$8,006
26	\$106,392	\$18,548	\$6,848
27	\$107,810	\$16,324	\$5,791
28	\$109,229	\$14,154	\$4,825
29	\$110,648	\$12,108	\$3,966
30	\$112,066	\$10,212	\$3,215
31	\$113,485	\$8,490	\$2,568
32	\$114,903	\$6,929	\$2,014
33	\$116,322	\$5,575	\$1,557
34	\$117,740	\$4,423	\$1,187
35	\$119,159	\$3,464	\$893
36	\$120,577	\$2,666	\$661
37	\$121,996	\$2,029	\$483
38	\$123,415	\$1,530	\$350
39	\$124,833	\$1,144	\$252
40	\$126,252	\$842	\$178
41	\$127,670	\$612	\$124
42	\$129,089	\$437	\$85
43	\$130,507	\$307	\$58
44	\$131,926	\$212	\$38
45	\$133,344	\$143	\$25
46	\$134,763	\$94	\$16
47	\$136,182	\$61	\$10
48	\$137,600	\$38	\$6
49	\$139,019	\$24	\$3
50	\$140,437	\$14	\$2
51	\$141,856	\$9	\$1
52	\$143,274	\$5	\$1
53	\$144,693	\$3	\$0
54	\$146,111	\$2	\$0
55	\$147,530	\$1	\$0
56	\$148,949	\$1	\$0
57	\$150,367	\$0	\$0
58	\$151,786	\$0	\$0
59	\$153,204	\$0	\$0
<b>SUM = \$2,057,130</b>	<b>SUM = \$1,279,457</b>	<b>SUM = \$858,127</b>	