

This workbook contains the proposed 2022 group life waiver tables and adjustment factors.

This workbook was developed by the Group Life Waiver of Premium (Waiver) Valuation Table Work Group (Work Group) of the American Academy of Actuaries (Academy) and the Society of Actuaries Research Institute (SOARI). It contains the proposed tables, as well as the current tables (2005 Tables). It supplements the information provided regarding an update to Actuarial Guideline XLIV (AG 44). Waiver tables are on a select and ultimate basis. There are separate sets of rates for mortality and recovery.

The select period is through claim duration 10 years. The select tables are based on age at disability and duration of The ultimate tables, which are for all claims in duration year 11 and beyond, are on an attained age basis only. Diagnosis adjustment factors have also been developed for select and ultimate tables.

2022 Table Select contains the select mortality / recovery rates for males and females. It also contains the diagnosis adjustment factors for mortality / recovery, as well as commentary on adjustments made by the Work

2022 Table Ultimate contains the same information for the ultimate period.

2005 Table Select and *2005 Table Ultimate* contain the 2005 tables.

July 2022

2022 TABLE MALES

PROBABILITY OF DEATH (1,000Q[X]+T) - SELECT PERIOD

Central Age =>	17	22	27	32	37	42	47	52	57	62	67	72
1 (3rd qtr.)	11	13	13	15	18	20	23	26	30	32	29	27
1 (4th qtr.)	14	17	17	19	22	26	29	34	39	41	37	34
2 (1st qtr.)	13	16	16	18	21	24	27	31	36	38	35	32
2 (2nd qtr.)	12	13	14	16	18	21	24	27	31	33	30	26
2 (3rd qtr.)	11	12	12	14	16	18	21	24	27	29	28	24
2 (4th qtr.)	10	10	10	12	14	16	18	21	24	25	25	22
3	29	33	32	37	42	48	56	64	73	81	81	81
4	13	19	23	27	31	35	41	47	54	60	61	65
5	8	11	21	24	28	32	37	42	48	53	55	58
6	7	11	20	23	26	30	35	40	46	51	56	59
7	8	12	19	22	26	30	34	39	45	49	63	70
8	10	16	19	22	25	29	33	38	45	50	68	75
9	11	17	19	22	25	29	33	38	46	51	68	75
10	13	19	19	22	25	29	33	38	47	52	70	81

MALES

PROBABILITY OF RECOVERY (1,000Q[X]+T) - SELECT PERIOD

4

Central Age => Year of Dis.	17	22	27	32	37	42	47	52	57	62	67	72
1 (3rd qtr.)	167	167	137	112	92	75	62	51	42	36	27	22
1 (4th qtr.)	165	165	136	111	91	75	61	50	41	36	27	22
2 (1st qtr.)	141	141	117	96	78	64	53	43	35	31	27	19
2 (2nd qtr.)	126	126	102	84	69	56	46	38	31	27	23	19
2 (3rd qtr.)	113	113	92	76	62	51	42	34	28	24	20	16
2 (4th qtr.)	102	102	86	70	58	47	39	32	26	23	18	14
3	434	434	353	290	244	187	143	115	90	73	54	50
4	259	259	195	163	130	99	77	59	45	36	23	20
5	189	189	139	114	86	66	52	38	29	23	16	14
6	136	136	116	87	65	49	38	28	21	16	11	10
7	107	107	97	71	52	40	31	23	17	13	8	6
8	92	92	83	61	45	34	26	19	14	11	5	4
9	78	78	74	54	40	30	22	16	12	9	4	2
10	74	74	68	49	37	27	20	15	11	8	4	0

Rates for both recovery and mortality for ages 17 and 22 were extended using the same slope from ages 27/22/17 as the 2005 table, on a gender specific basis

Rates for both recovery and mortality for ages 67 and 72 were extended using the same slope from ages 62/67/72 as the 2005 table, on a gender specific basis

FEMALES

PROBABILITY OF DEATH (1,000Q[X]+T) - SELECT PERIOD

Central Age => Year of Dis.	17	22	27	32	37	42	47	52	57	62	67	72
1 (3rd qtr.)	6	7	9	11	13	16	19	22	26	27	26	24
1 (4th qtr.)	7	9	12	14	17	20	24	28	33	35	33	31
2 (1st qtr.)	7	8	11	13	16	19	22	27	32	33	31	29
2 (2nd qtr.)	6	8	10	12	14	17	20	24	28	29	26	23
2 (3rd qtr.)	6	7	9	10	12	15	17	21	25	26	25	22
2 (4th qtr.)	5	6	8	9	11	13	16	18	22	23	23	20
3	18	21	28	29	34	41	48	57	67	76	76	76
4	12	19	24	25	26	31	37	44	51	58	66	69
5	12	16	19	20	21	25	30	35	41	47	53	56
6	7	13	17	18	19	22	26	31	36	41	45	47
7	9	15	16	17	17	21	25	29	36	39	48	50
8	10	14	15	16	17	20	24	28	35	40	51	53
9	10	14	15	16	17	20	24	28	36	41	55	57
10	9	12	14	15	17	20	24	28	36	43	60	63

FEMALES

PROBABILITY OF RECOVERY (1,000Q[X]+T) - SELECT PERIOD

Central Age => Year of Dis.	17	22	27	32	37	42	47	52	57	62	67	72
1 (3rd qtr.)	244	244	200	168	105	88	73	61	51	44	34	27
1 (4th qtr.)	184	184	151	126	105	87	73	61	51	44	34	27
2 (1st qtr.)	152	152	127	106	88	73	61	51	43	37	31	26
2 (2nd qtr.)	133	133	109	91	76	63	52	44	36	32	26	20
2 (3rd qtr.)	116	116	97	81	67	56	47	39	32	28	22	19
2 (4th qtr.)	107	107	89	74	62	51	43	36	30	26	22	17
3	430	430	350	295	276	214	174	135	106	86	67	59
4	286	286	215	187	152	117	94	70	54	42	26	21
5	201	201	147	126	100	76	60	45	33	25	19	16
6	144	144	122	93	73	55	42	32	23	17	12	9
7	114	114	102	75	57	43	32	24	17	13	9	7
8	96	96	87	64	47	36	26	19	14	11	6	4
9	82	82	77	55	41	30	22	16	12	9	4	1
10	76	76	69	50	36	27	20	14	10	8	5	0

Rates for both recovery and mortality for ages 17 and 22 were extended using the same slope from ages 27/22/17 as the 2005 Table, on a gender-specific basis

Rates for both recovery and mortality for ages 67 and 72 were extended using the same slope from ages 62/67/72 as the 2005 table, on a gender-specific basis

Death Diagnosis Adjustment

Duration	Adjusted & Finalized			
	Unclassified	Low Non-Cancer	High Non-Cancer	Cancer
Q3	1.00	0.20	0.50	3.65
Q4	1.00	0.20	0.50	3.95
Q5	1.00	0.20	0.60	4.20
Q6	1.00	0.25	0.60	4.50
Q7	1.00	0.30	0.65	4.70
Q8	1.00	0.35	0.75	4.73
3	1.00	0.40	0.90	4.75
4	1.00	0.50	1.25	4.60
5	1.00	0.60	1.35	4.00
6	1.00	0.65	1.45	3.60
7	1.00	0.70	1.55	3.05
8	1.00	0.70	1.65	2.65
9	1.00	0.75	1.60	2.30
10	1.00	0.75	1.57	2.15

Diagnosis factors were adjusted from those originally regressed by Jerry Holman to smooth transition points between duration groups. This applied to both Mortality and Recovery Adjustments

Death Diagnosis Adjustment

Duration	Jerry Holman			
	Unclassified	Low Non-Cancer	High Non-Cancer	Cancer
Q3	1.00	0.20	0.50	3.65
Q4	1.00	0.20	0.50	3.95
Q5	1.00	0.20	0.60	4.20
Q6	1.00	0.25	0.60	4.50
Q7	1.00	0.30	0.70	4.70
Q8	1.00	0.30	0.80	4.90
3	1.00	0.40	0.95	4.75
4	1.00	0.50	1.25	4.60
5	1.00	0.60	1.35	4.00
6	1.00	0.65	1.45	3.60
7	1.00	0.70	1.55	3.05
8	1.00	0.70	1.65	2.65
9	1.00	0.75	1.60	2.30
10	1.00	0.75	1.65	2.15

Recovery Diagnosis Adjustment

Duration	Adjusted & Finalized			
	Unclassified	Low	Mid	High
Q3	1.00	0.55	1.15	1.40
Q4	1.00	0.55	1.15	1.40
Q5	1.00	0.60	1.15	1.40
Q6	1.00	0.65	1.15	1.35
Q7	1.00	0.65	1.15	1.35
Q8	1.00	0.65	1.15	1.38
3	1.00	0.65	1.15	1.40
4	1.00	0.68	1.13	1.48
5	1.00	0.70	1.10	1.55
6	1.00	0.70	1.15	1.45
7	1.00	0.70	1.20	1.35
8	1.00	0.70	1.20	1.35
9	1.00	0.70	1.20	1.35
10	1.00	0.70	1.20	1.25

Recovery Diagnosis Adjustment

Duration	Jerry Holman			
	Unclassified	Low	Mid	High
Q3	1.00	0.55	1.05	1.60
Q4	1.00	0.55	1.15	1.35
Q5	1.00	0.60	1.15	1.40
Q6	1.00	0.65	1.15	1.35
Q7	1.00	0.65	1.15	1.35
Q8	1.00	0.75	1.10	1.30
3	1.00	0.65	1.15	1.40
4	1.00	0.60	1.10	1.65
5	1.00	0.70	1.10	1.55
6	1.00	0.70	1.15	1.45
7	1.00	0.70	1.25	1.35
8	1.00	0.75	1.15	1.35
9	1.00	0.70	1.25	1.35
10	1.00	0.70	1.10	1.25

Death Diagnosis Adjustment				
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Duration	Comparison			
	Unclassified	Low Non-Cancer	High Non-Cancer	Cancer
Q3	100%	100%	100%	100%
Q4	100%	100%	100%	100%
Q5	100%	100%	100%	100%
Q6	100%	100%	100%	100%
Q7	100%	100%	93%	100%
Q8	100%	117%	94%	96%
3	100%	100%	95%	100%
4	100%	100%	100%	100%
5	100%	100%	100%	100%
6	100%	100%	100%	100%
7	100%	100%	100%	100%
8	100%	100%	100%	100%
9	100%	100%	100%	100%
10	100%	100%	95%	100%

Recovery Diagnosis Adjustment				
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Duration	Comparison			
	Unclassified	Low	Mid	High
Q3	100%	100%	110%	88%
Q4	100%	100%	100%	104%
Q5	100%	100%	100%	100%
Q6	100%	100%	100%	100%
Q7	100%	100%	100%	100%
Q8	100%	87%	105%	106%
3	100%	100%	100%	100%
4	100%	113%	102%	89%
5	100%	100%	100%	100%
6	100%	100%	100%	100%
7	100%	100%	96%	100%
8	100%	93%	104%	100%
9	100%	100%	96%	100%
10	100%	100%	109%	100%

2022 Table

Graduated Rates(1,000Q[X]), No Margin
Ultimate Period (Durations 11 years and beyond)

Attained Age	Male		Female	
	Recovery	Death	Recovery	Death
27	71	16	73	11
28	70	16	72	11
29	70	16	71	11
30	69	18	70	12
31	68	18	69	12
32	68	18	69	12
33	67	18	68	12
34	66	18	67	12
35	66	19	66	13
36	65	19	65	13
37	64	19	64	13
38	60	20	60	14
39	56	20	55	14
40	53	21	51	14
41	49	21	48	15
42	46	22	44	15
43	43	22	41	16
44	41	23	39	16
45	38	24	36	17
46	35	24	33	17
47	33	25	30	18
48	30	26	28	18
49	29	26	27	19
50	27	27	26	20
51	26	28	24	20
52	24	29	23	21
53	23	29	22	22
54	22	30	21	22
55	20	31	20	23
56	19	32	19	24
57	18	33	18	24
58	17	34	17	25

Mortality rates for attained ages prior to 45 were extended back to attained age 27 using judgment, holding to monotonically decreasing slope, and to create a reasonable transition from the select period rates

Recovery rates for attained ages prior to age 45 were extended back to age 27 using a monotonically increasing slope, and to create a reasonable transition from the select period rates

Decrement rates for ages 45-70 were taken directly from Jerry Holman's Regressions/graduations

2015 VBT Unismoke Tables		
Attained Age	Male	Female
27	0.86	0.35
28	0.84	0.36
29	0.84	0.38
30	0.86	0.41
31	0.90	0.44
32	0.97	0.48
33	1.05	0.52
34	1.13	0.57
35	1.23	0.64
36	1.33	0.72
37	1.44	0.80
38	1.55	0.87
39	1.67	0.93
40	1.81	0.98
41	1.93	1.02
42	2.02	1.06
43	2.07	1.10
44	2.13	1.14
45	2.19	1.21
46	2.25	1.31
47	2.30	1.41
48	2.36	1.52
49	2.45	1.64
50	2.57	1.78
51	2.72	1.94
52	2.90	2.11
53	3.10	2.30
54	3.34	2.51
55	3.62	2.74
56	3.93	3.00
57	4.29	3.30
58	4.71	3.63

59	16	35	16	26
60	15	37	14	27
61	14	39	13	27
62	13	40	13	28
63	12	42	12	30
64	11	44	11	31
65	10	45	10	33
66	10	47	9	35
67	9	48	8	36
68	8	49	8	38
69	8	50	7	39
70	7	51	6	40
71	6	53	6	42
72	6	55	5	44
73	5	58	4	47
74	4	61	3	50
75	4	64	3	53
76	3	68	2	57
77	2	72	2	61
78	2	76	1	65
79	1	80	1	69
80	1	85	0	74
81	0	92	0	81
82	0	97	0	85
83	0	103	0	90
84	0	109	0	95
85	0	117	0	101
86	0	126	0	108
87	0	136	0	116
88	0	147	0	124
89	0	159	0	134
90	0	172	0	144
91	0	185	0	155
92	0	199	0	166
93	0	212	0	178
94	0	225	0	191
95	0	236	0	204
96	0	248	0	218
97	0	263	0	235
98	0	279	0	254

From Age 71 to 99, Mortality Rates were graduated to transition from the Jerry Holman rate at age 70 to 100% of the 2015 VBT table at age 100. This was done as the committee views that disabled mortality and the total mortality represented in the 2015 VBT table will converge by age 100.

Recovery rates were graduated down to 0 by age 80 from the Jerry Holman rates at age 70.

59	5.19	4.01
60	5.75	4.43
61	6.38	4.92
62	7.09	5.46
63	7.89	6.08
64	8.75	6.76
65	9.67	7.53
66	10.65	8.37
67	11.69	9.31
68	12.85	10.35
69	14.18	11.49
70	15.74	12.74
71	17.56	14.10
72	19.69	15.59
73	22.11	17.25
74	24.79	19.11
75	27.71	21.21
76	30.85	23.60
77	34.26	26.30
78	38.02	29.34
79	42.27	32.78
80	47.14	36.77
81	52.61	41.41
82	58.97	46.66
83	66.47	52.66
84	75.06	59.53
85	84.93	67.38
86	96.15	76.12
87	108.69	85.66
88	122.34	96.11
89	136.76	107.46
90	151.63	119.54
91	166.51	132.30
92	181.13	145.88
93	195.09	159.87
94	207.76	174.25
95	221.27	190.71
96	237.50	209.82
97	255.11	230.48
98	274.22	252.51

99	0	296	0	273	Mortality rates for attained ages 100-120 were set equal to the 2015 VBT unismoke tables. See columns H-J for reference of those rates
100	0	316	0	299	
101	0	337	0	323	
102	0	359	0	347	
103	0	380	0	370	
104	0	400	0	393	
105	0	420	0	414	
106	0	438	0	434	
107	0	455	0	452	
108	0	470	0	468	
109	0	482	0	481	
110	0	491	0	491	
111	0	497	0	497	
112	0	500	0	500	
113	0	500	0	500	
114	0	500	0	500	
115	0	500	0	500	
116	0	500	0	500	
117	0	500	0	500	
118	0	500	0	500	
119	0	500	0	500	
120	0	500	0	500	
121	0	1,000	0	1,000	All lives assumed to terminate by age 121

99	294.48	275.55
100	315.52	299.21
101	336.99	323.14
102	358.54	346.98
103	379.81	370.36
104	400.44	392.92
105	420.09	414.30
106	438.40	434.13
107	455.01	452.05
108	469.56	467.69
109	481.70	480.68
110	491.07	490.65
111	497.31	497.23
112	500	500
113	500	500
114	500	500
115	500	500
116	500	500
117	500	500
118	500	500
119	500	500
120	500	500

Attained Age	Recovery Diagnosis Group Adjustments			
	Other	Low	Medium	High
0-44	100%	70%	125%	110%
45-49	100%	70%	125%	105%
50-54	100%	75%	130%	110%
55-59	100%	75%	125%	120%
60-64	100%	77%	120%	105%
65+	100%	80%	120%	120%

As recovery rates are relatively small (compared to mortality) for ages 65, and reach a terminus value of 0 at age 80, no graduating of adjustments for diagnosis groups was deemed material or necessary for ages 65+

Attained Age	Death Diagnosis Group Adjustments			
	Other	Low	Medium	High
0-44	100%	75%	170%	200%
45-59	100%	85%	160%	200%
60-64	100%	80%	155%	200%
65-69	100%	75%	155%	200%
70	100%	75%	155%	200%
71	100%	76%	153%	197%
72	100%	77%	151%	193%
73	100%	78%	150%	190%
74	100%	78%	148%	187%
75	100%	79%	146%	183%
76	100%	80%	144%	180%
77	100%	81%	142%	177%
78	100%	82%	140%	173%
79	100%	83%	139%	170%
80	100%	83%	137%	167%
81	100%	84%	135%	163%
82	100%	85%	133%	160%
83	100%	86%	131%	157%
84	100%	87%	129%	153%
85	100%	88%	128%	150%
86	100%	88%	126%	147%
87	100%	89%	124%	143%
88	100%	90%	122%	140%
89	100%	91%	120%	137%
90	100%	92%	118%	133%
91	100%	92%	117%	130%
92	100%	93%	115%	127%
93	100%	94%	113%	123%
94	100%	95%	111%	120%
95	100%	96%	109%	117%
96	100%	97%	107%	113%
97	100%	97%	106%	110%
98	100%	98%	104%	107%
99	100%	99%	102%	103%
100+	100%	100%	100%	100%

Diagnosis Adjustments more death rates were assumed to ultimately disappear by age 100, and are so graduated to 100% by attained age 100, indicating no mortality differences by diagnosis grouping for ages 100+

2005 TABLE

MALES

PROBABILITY OF DEATH (1,000Q[X]+T) - SELECT PERIOD

Central Age =>	17	22	27	32	37	42	47	52	57	62	67	72
1 (4th qtr.)	17	20	20	23	28	28	28	30	31	37	34	31
2 (1st qtr.)	21	23	24	29	30	30	30	30	30	30	27	24
2 (2nd qtr.)	22	24	24	30	28	28	27	27	27	27	26	23
2 (3rd qtr.)	25	27	27	27	21	21	22	22	23	23	23	20
2 (4th qtr.)	27	31	30	26	18	18	18	18	17	17	17	17
3	30	45	55	56	57	58	59	60	65	67	69	73
4	18	26	48	48	49	50	50	50	55	57	59	62
5	12	18	33	39	40	41	42	42	45	47	52	55
6	12	18	30	33	34	35	36	37	42	43	55	61
7	12	18	22	25	26	27	28	30	39	42	57	63
8	12	18	20	23	25	26	27	29	44	46	62	68
9	12	18	18	19	23	25	27	32	45	48	65	75
10	12	18	15	17	19	22	27	34	45	50	70	81

MALES

PROBABILITY OF RECOVERY (1,000Q[X]+T) - SELECT PERIOD

Central Age =>	17	22	27	32	37	42	47	52	57	62	67	72
Year of Dis.												
1 (4th qtr.)	61	61	50	41	39	30	23	15	12	8	6	5
2 (1st qtr.)	58	58	48	40	36	25	21	13	11	8	7	5
2 (2nd qtr.)	53	53	43	35	34	24	19	12	10	7	6	5
2 (3rd qtr.)	49	49	40	33	32	23	15	11	9	6	5	4
2 (4th qtr.)	43	43	36	30	29	22	13	10	7	5	4	3
3	171	171	139	113	83	71	58	36	23	16	12	11
4	154	154	116	87	67	55	40	27	17	14	9	8
5	125	125	92	67	56	45	27	21	13	11	8	7
6	76	76	65	55	48	37	21	14	10	10	7	6
7	60	60	54	48	43	32	17	12	8	8	5	4
8	53	53	48	43	36	25	16	10	8	6	3	2
9	43	43	41	38	31	21	13	8	7	5	2	1
10	38	38	35	32	23	17	10	7	6	4	2	0

FEMALES

PROBABILITY OF DEATH (1,000Q[X]+T) - SELECT PERIOD

Central Age =>	17	22	27	32	37	42	47	52	57	62	67	72
Year of Dis.												
1 (4th qtr.)	10	12	16	17	18	21	25	27	29	32	30	28
2 (1st qtr.)	9	11	14	16	16	19	24	26	27	29	26	23
2 (2nd qtr.)	9	11	14	16	16	17	23	25	25	26	25	22
2 (3rd qtr.)	8	10	13	15	15	17	20	21	22	22	22	19
2 (4th qtr.)	8	9	12	13	13	14	16	17	16	16	16	16
3	15	23	29	30	32	35	42	52	53	54	61	64
4	12	17	20	21	23	25	32	39	44	45	51	54
5	8	15	19	20	21	23	25	30	36	41	45	47
6	8	13	14	14	16	19	24	28	36	39	48	50
7	8	11	12	13	14	19	24	28	35	40	51	53
8	8	11	12	13	14	18	23	27	35	41	55	57
9	8	10	12	13	14	16	23	27	33	42	59	62
10	8	9	11	12	14	16	23	27	32	42	63	67

FEMALES

PROBABILITY OF RECOVERY (1,000Q[X]+T) - SELECT PERIOD

Central Age =>	17	22	27	32	37	42	47	52	57	62	67	72
Year of Dis.												
1 (4th qtr.)	94	94	77	63	44	38	26	25	20	13	10	8
2 (1st qtr.)	71	71	59	49	41	34	25	23	18	13	11	9
2 (2nd qtr.)	59	59	48	39	38	30	22	21	15	11	9	7
2 (3rd qtr.)	53	53	44	36	35	26	18	17	12	9	7	6
2 (4th qtr.)	46	46	38	32	31	23	14	13	9	6	5	4
3	199	199	162	132	108	91	65	49	31	22	17	15
4	193	193	145	109	85	68	45	35	21	18	11	9
5	164	164	120	88	67	53	33	23	18	16	12	10
6	101	101	86	73	55	41	27	17	15	15	10	8
7	75	75	67	60	47	34	25	14	12	12	8	6
8	62	62	56	50	40	28	23	13	11	9	5	3
9	49	49	46	43	35	24	19	11	9	7	3	1
10	42	42	38	35	29	18	11	8	8	5	3	0

2005 Table

Graduated Rates(1,000Q[X]), No Margin
 Ultimate Period (Durations 11 years and beyond)

Attained Age	Male		Female	
	Recovery	Death	Recovery	Death
27	25	10	25	8
28	25	10	25	8
29	25	10	25	8
30	25	11	25	9
31	25	11	25	9
32	25	11	25	9
33	25	11	26	9
34	25	11	27	9
35	25	12	29	10
36	25	12	31	10
37	25	12	33	10
38	24	12	32	10
39	23	13	31	11
40	23	14	30	11
41	22	15	28	12
42	22	15	27	12
43	21	15	27	12
44	20	16	27	13
45	19	16	26	14
46	18	17	26	14
47	17	17	26	15
48	17	18	24	15
49	17	19	22	15
50	16	20	20	16
51	16	21	18	16
52	16	22	17	16
53	15	24	16	18
54	14	25	15	19
55	12	26	14	20
56	11	28	12	22
57	10	29	11	23
58	9	31	10	24
59	8	33	10	25

60	7	34	9	25
61	6	35	9	26
62	5	37	8	27
63	5	39	8	28
64	5	40	8	30
65	5	42	7	31
66	5	44	7	32
67	5	45	7	32
68	4	47	6	34
69	3	48	4	36
70	3	51	3	38
71	2	52	2	40
72	1	53	1	42
73	1	58	1	46
74	1	62	1	50
75	1	66	1	54
76	1	70	1	59
77	1	74	1	63
78	1	76	1	64
79	1	79	1	65
80	0	80	0	66
81	0	83	0	67
82	0	86	0	67
83	0	91	0	71
84	0	97	0	75
85	0	103	0	79
86	0	109	0	84
87	0	115	0	89
88	0	122	0	94
89	0	129	0	99
90	0	137	0	105
91	0	146	0	112
92	0	156	0	120
93	0	168	0	129
94	0	182	0	140
95	0	199	0	153
96	0	224	0	172
97	0	268	0	206
98	0	359	0	276
99	0	999.9	0	999.9