

TRANSACTIONS
OF THE
Nova Scotian Institute of Science

SESSIONS OF 1923-1924

(VOL. XVI PART 2)

A NOVA SCOTIA LIFE TABLE. — BY A. C. JOST, M. D., C. M.,
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(Read 14 January, 1924)

For the preparation of the Life Table presented herewith there were available the following data.—

I. Population Statistics of the Province by sexes, in single years of age, (age 0-4), in five year periods, (ages 5-89), and in one eleven year period (90-100). These had been obtained from the census figures of the censuses of 1911 and 1921. The geometrical method of computing the populations of the various age groups during the intercensal years was followed. Both censuses were taken as at June first of the census year. Since April first was the central point of the years for which mortality statistics were available, some correction of the population figures was necessary and was carried out. Correction was also made for the persons of the population whose ages were not given in the census returns, these persons being placed pro rata in the various age groups. During the three years there were all told 793837 male lives and 766282 female lives at risk divided into the age groups hereafter given.

II. Mortality Statistics showing deaths by sexes and for various age groups for the three years ending Sept. 30th, 1918-19, 1919-20 and 1920-21. This information gave the number of deaths by years, (ages 0-4), in five year age groups, (5-19), in ten year groups, (20-89), and one eleven year group, (90-100). As before, these figures were corrected for those whose ages were not given in the returns. The total number of deaths which occurred in the three years was 12152 males and 11060 females.

The lack of data respecting deaths in quinquennial periods, and the occurrence of one eleven year group, made impossible the wholly mathematical method of life table construction advised by George King. The method used was that recommended by Sir Arthur Newsholme, and might be called a graphical rather than a mathematical method. Curves showing the population and the deaths for the individual years from 0 to 106 were laid off. From these, there was computed the death rates of the individual years and from these death rates the "Probability of living" (px) was computed by using the usual formula.

By selecting the three years 1918-19, 1919-20 and 1920-21, the high provincial mortality, due to the Halifax disaster and the influenza epidemic, was avoided, and figures were obtained, which, it was thought, represented with a fair degree of accuracy the average mortality prevailing in the Province.

The numerical data from which the table was constructed is here given according to age groups.

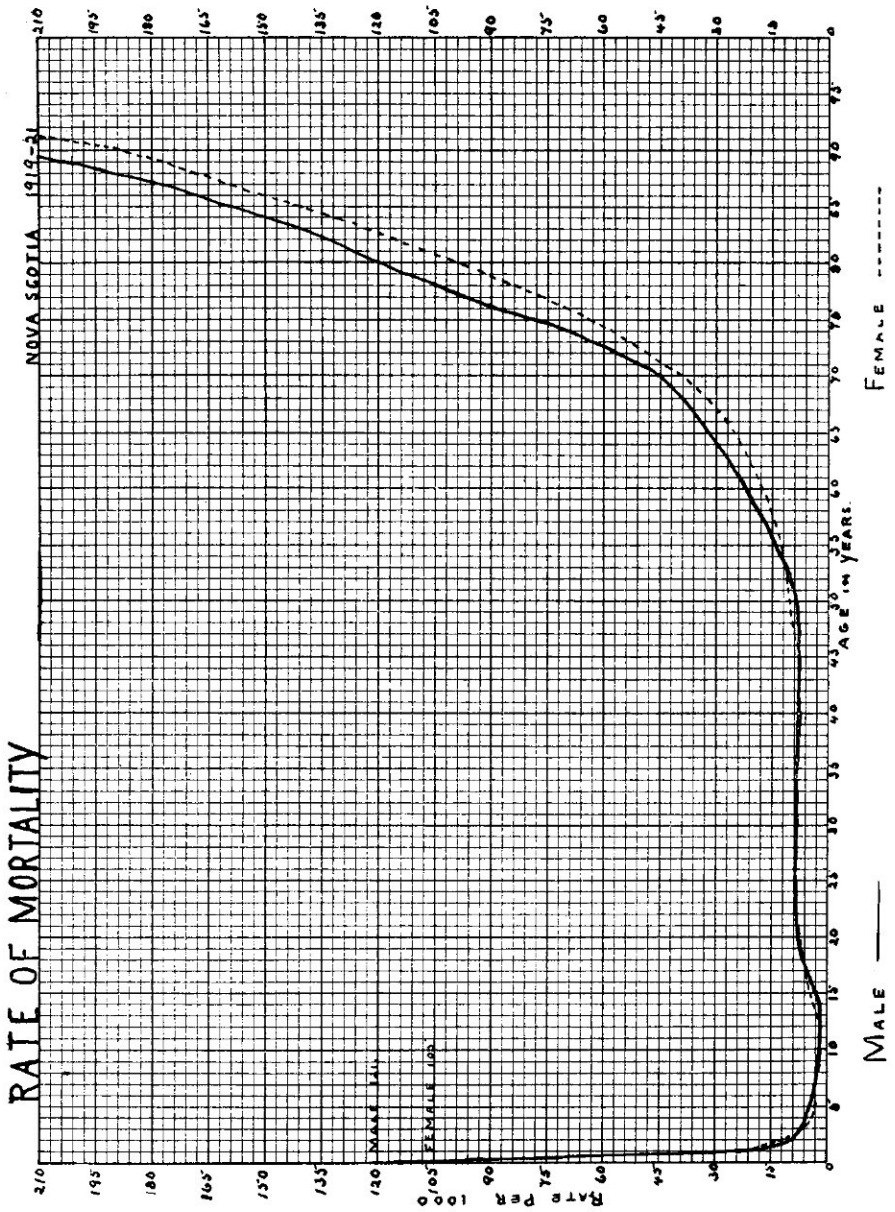
AGE GROUPS	MALE		FEMALE	
	LIVES AT RISK	DEATHS	LIVES AT RISK	DEATHS
0-4.....	91228	3199	89472	2571
5-9.....	90689	315	87565	244
10-14.....	86857	161	83082	214
15-19.....	77740	412	77365	442
20-29.....	122718	1057	122906	984
30-39.....	98304	862	91866	800
40-49.....	84218	672	75555	649
50-59.....	61073	848	57430	738
60-69.....	45936	1236	42444	1043
70-79.....	25633	1823	26411	1589
80-89.....	8604	1305	10608	1354
90-100.....	801	251	1514	416
Over 100.....	36	11	64	16
Totals.....	793837	12152	766282	11060

The calculated death rates of the individual ages for both males and females, from which the "probability of living" was obtained, are shown on the accompanying chart. It will be seen that a fair degree of "smoothness" was secured. In the table itself will be found, not only the expectation of life (the curtate expectation) for the period given, but for the purpose of comparison the corresponding expectation obtained from a life table of the Province based upon figures of the two years 1910 and 1911.

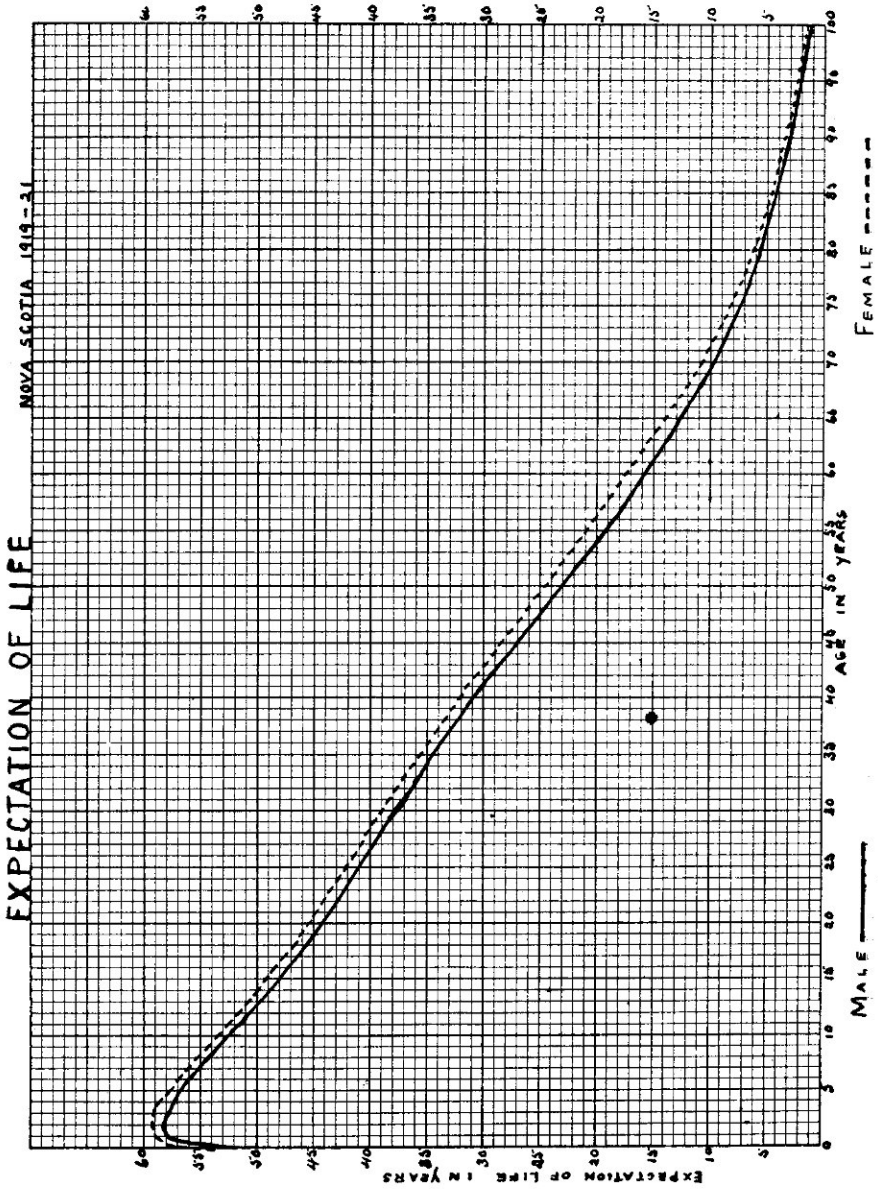
The difference between the "curtate" and the "complete" expectations of life should be noted. These for practically all ages except those of the extremes of life, differ from each other by one half year exactly—the curtate being the shorter.

Many published tables give "complete" not "curtate" expectations, and, if comparisons are being made, this fact, and a possible difference in nomenclature, must be kept in mind.

In addition, reference should be made to another term, frequently used, namely the "Probable duration of Life." This is to the age at which half the life table population shall have ceased to exist, or in this case, when the 100,000 persons with whom life table started have become 50,000. This point will be found to be between the ages of 62 and 63 in the case of the males—and of 64 and 65 in the case of the females of the Provincial population. Its position has changed relatively little in the period between the two censuses.



No. 1



No. 2

LIFE TABLE — FEMALES (Continued)

AGE	Rate of Mortality per thousand	Probability of living	Number Alive at beginning of age interval	Population or years of life lived.	Curtate Expect- ation of Life 1921	Curtate Expect- ation of Life 1911
10	2.03	.99798	84178	4504893	53.51	53.50
11	2.01	.99800	84009	4420884	52.62	52.65
12	2.04	.99796	83841	4337043	51.72	51.79
13	2.76	.99724	83670	4253373	50.83	50.93
14	4.12	.99588	83439	4169934	49.97	50.10
15	4.73	.99529	83096	4086838	49.18	49.33
16	5.23	.99479	82705	4004133	48.41	48.59
17	5.81	.99421	82274	3921859	47.66	47.65
18	6.21	.99381	81798	3840061	46.94	47.12
19	6.49	.99352	81293	3758768	46.23	46.40
20	6.82	.99320	80766	3678002	45.53	45.80
21	7.17	.99286	80217	3597785	44.85	44.96
22	7.53	.99250	79645	3518140	44.17	44.26
23	7.83	.99221	79048	3439092	43.50	43.57
24	8.12	.99191	78432	3360660	42.84	42.90

LIFE TABLE — FEMALES (Continued)

AGE	Rate of Mortality per thousand	Probability of living	Number Alive at beginning of age interval	Population or years of life lived.	Curtate Expectation of Life 1921	Curtate Expectation of Life 1911
25	8.32	.99171	77798	3282862	42.19	42.24
26	8.55	.99149	77154	3205708	41.54	41.59
27	8.70	.99133	76497	3129211	40.90	40.95
28	8.88	.99115	75835	3053376	40.26	40.31
29	8.97	.99108	75164	2978212	39.62	39.65
30	8.98	.99106	74494	2903718	38.97	38.98
31	9.03	.99102	73828	2829890	38.33	38.28
32	9.08	.99096	73165	2756725	37.67	37.57
33	9.03	.99102	72504	2684221	37.02	36.84
34	9.00	.99105	71853	2612368	36.35	36.10
35	8.76	.99127	71209	2541159	35.68	35.37
36	8.54	.99149	70588	2470571	34.99	34.63
37	8.31	.99173	69988	2400583	34.29	33.89
38	8.19	.99185	69409	2331174	33.58	33.14
39	8.06	.99197	68844	2262330	32.86	32.40

LIFE TABLE — FEMALES (Continued)

AGE	Rzte of Mortality per thousand	Probability of living	Number Alive at beginning of age interval	Population or years of life lived.	Curtate Expect- ation of Life 1921	Curtate Expect- ation of Life 1911
40	7.94	.99209	68291	2194039	32.12	31.66
41	8.03	.99201	67751	2126288	31.38	30.91
42	8.13	.99191	67210	2059078	30.63	30.16
43	8.23	.99181	66666	1992412	29.88	29.41
44	8.34	.99169	66120	1926292	29.13	28.66
65	8.46	.99157	65571	1860721	28.37	27.92
46	8.72	.99131	65019	1795702	27.61	27.17
47	9.00	.99104	64454	1731248	26.86	26.43
48	9.45	.99060	63877	1667371	26.10	25.70
49	10.08	.98997	63277	1604094	25.35	24.97
50	10.51	.98955	62642	1541452	24.60	24.25
51	10.91	.98915	61988	1479464	23.86	23.32
52	11.32	.98874	61316	1418148	23.12	22.80
53	11.76	.98830	60626	1357522	22.39	22.09
54	12.38	.98769	59917	1297605	21.65	21.37

LIFE TABLE — FEMALES (Continued)

AGE	Rate of Mortality per thousand	Probability of living	Number Alive at beginning of age interval	Population or years of life lived.	Curtate Expectation of Life 1921	Curtate Expectation of Life 1911
55	13.04	.98704	59180	1238425	20.92	20.66
56	13.73	.98637	58413	1180012	20.20	19.94
57	14.46	.98564	57617	1122395	19.48	19.23
58	15.23	.98489	56790	1065605	18.76	18.51
59	16.43	.98371	55932	1009673	18.05	17.79
60	17.66	.98249	55021	954652	17.35	17.07
61	19.09	.98110	54058	900594	16.66	16.36
62	20.62	.97959	53036	847558	15.98	15.64
63	21.82	.97841	51954	795604	15.31	14.95
64	23.11	.97716	50823	744772	14.65	14.26
65	24.99	.97532	49672	695100	13.99	13.59
66	27.01	.97335	48446	646654	13.34	12.95
67	29.21	.97122	47155	599499	12.71	12.32
68	32.42	.96809	45798	553701	12.09	11.71
69	35.94	.96469	44337	509364	11.48	11.11

LIFE TABLE — FEMALES (Continued)

AGE	Rate of Mortality per thousand	Probability of living	Number Alive at beginning of age interval	Population or years of life lived.	Curtate Expect- ation of Life 1921	Curtate Expect- ation of Life 1911
70	39.36	.96139	42772	466592	10.90	10.52
71	43.52	.95741	41121	425471	10.34	9.95
72	48.09	.95304	39369	386102	9.80	9.40
73	53.16	.94821	37521	348581	9.29	8.88
74	58.45	.94321	35578	313003	8.79	8.40
75	64.40	.93760	33558	279445	8.32	7.94
76	70.30	.93208	31464	247981	7.88	7.54
77	77.02	.92583	29327	218654	7.45	7.14
78	84.30	.91910	27152	191502	7.05	6.75
79	91.70	.91232	24956	166546	6.67	6.36
80	99.82	.90492	22768	143778	6.31	5.97
81	108.27	.89729	20603	123175	5.97	5.56
82	116.47	.88994	18487	104688	5.66	5.15
83	124.32	.88295	16452	88236	5.36	4.74
84	133.45	.87490	14527	73709	5.07	4.31

LIFE TABLE — FEMALES (Concluded)

AGE	Rate of Mortality per thousand	Probability of living	Number Alive at beginning of age interval	Population or years of life lived.	Curtate Expect- ation of Life 1921	Curtate Expect- ation of Life 1911
85	142.42	.86704	12709	61000	4.79	3.87
86	151.14	.85947	11020	49980	4.53	3.46
87	160.20	.85159	9471	40509	4.27	3.10
88	167.31	.84561	8065	32444	4.02	2.76
89	177.37	.83708	6821	25623	3.75	2.47
90	190.28	.82625	5710	19913	3.49	2.26
91	207.96	.81162	4717	15196	3.22	2.10
92	229.26	.79431	3829	11367	2.96	1.99
93	244.56	.78208	3040	8327	2.73	1.88
94	269.93	.76217	2378	5949	2.50	1.82
95	295.77	.74234	1813	4136	2.28	1.75
96	330.57	.71632	1345	2791	2.07	1.66
97	363.63	.69231	964	1827	1.89	1.54
98	384.61	.67743	667	1160	1.73	1.42
99	410.71	.65926	452	708	1.56	1.26
100	441.17	.63856	298	410	1.37	1.03

LIFE TABLE

MALES

NOVA SCOTIA

Based on the Population Statistics of 1911 and 1921, and the Mortality Statistics of 1918-19, 1919-20, and 1920-21.

AGE	Rate of Mortality per thousand	Probability of living	Number alive at beginning of age interval	Population or years of life lived.	Curtate Expectation of Life 1921	Curtate Expectation of life 1911
0	121.35	100000	5180823	51.80	51.36
1	22.12	.97812	87865	5092958	57.96	57.81
2	9.76	.99028	85941	5007017	58.26	58.31
3	6.49	.99308	85107	4921910	57.83	57.97
4	5.62	.99439	84519	4837391	57.23	57.39
5	4.67	.99533	84045	4753346	56.55	56.73
6	3.90	.99610	83653	4669693	55.82	56.04
7	3.26	.99664	83327	4586366	55.04	55.30
8	2.87	.99712	83048	4503318	54.22	54.52
9	2.54	.99746	82809	4420509	53.38	53.73

LIFE TABLE — MALES (Continued)

AGE	Rate of Mortality per thousand	Probability of living	Number Alive at beginning of age interval	Population or years of life lived.	Curtate Expectation of Life 1921	Curtate Expectation of Life 1911
10	2.14	.99786	82599	4337910	52.51	52.93
11	1.88	.99812	82422	4255488	51.62	52.10
12	1.68	.99832	82267	4173221	50.72	51.25
13	1.74	.99825	82129	4091092	49.81	50.37
14	1.82	.99818	81986	4009106	48.90	49.52
15	2.58	.99742	81837	3927269	47.99	48.68
16	4.14	.99586	81626	3845643	47.11	47.86
17	5.53	.99447	81289	3764354	46.30	47.07
18	6.82	.99320	80840	3683514	45.56	46.30
19	7.55	.99246	80290	3603224	44.87	45.56
20	8.11	.99191	79685	3523539	44.21	44.84
21	8.44	.99159	79041	3444498	43.57	44.13
22	5.85	.99145	78377	3366121	42.94	43.42
23	8.65	.99137	77707	3288414	42.31	42.72
24	8.72	.99131	77037	3211377	41.68	42.02

LIFE TABLE — MALES (Continued)

AGE	Rate of Mortality per thousand	Probability of living	Number Alive at beginning of age interval	Population or years of life lived.	Curtate Expect- ation of Life 1921	Curtate Expect- ation of Life 1911
25	8.75	.99127	76368	3135009	41.05	41.32
26	8.78	.99125	75702	3059307	40.41	40.65
27	8.81	.99122	75040	2984267	39.76	39.96
28	8.83	.99119	74382	2909885	39.11	39.28
29	8.82	.99121	73728	2836157	38.46	38.60
30	8.81	.99122	73080	2763077	37.80	37.91
31	8.80	.99123	72439	2690638	37.14	37.21
32	8.79	.99124	71805	2618833	36.47	36.51
33	8.78	.99125	71176	2547657	35.79	35.79
34	8.77	.99126	70554	2477103	35.10	35.06
35	8.76	.99127	69938	2407165	34.41	34.32
36	8.74	.99129	69328	2337837	33.72	33.57
37	8.71	.99131	68725	2269112	33.01	32.81
38	8.68	.99135	68128	2200984	32.30	32.05
39	8.65	.99137	67539	2133445	31.58	31.29

LIFE TABLE — MALES (Continued)

AGE	Rate of Mortality per thousand	Probability of living	Number Alive at beginning of age interval	Population or years of life lived.	Curtate Expect- ation of Life 1921	Curtate Expect- ation of Life 1911
40	8.62	.99141	66957	2066488	30.86	30.53
41	8.41	.99163	66382	2000106	30.13	29.76
42	8.20	.99182	65827	1934279	29.38	28.98
43	7.96	.99207	65289	1868990	28.62	28.21
44	7.84	.99219	64771	1804219	27.85	27.44
45	7.71	.99232	64265	1739954	27.07	26.67
46	7.63	.99240	64772	1676182	26.28	25.92
47	7.55	.99248	63288	1612894	25.48	25.17
48	7.66	.99236	62813	1550081	24.67	24.42
49	7.91	.99213	62334	1487747	23.86	23.68
50	8.28	.99175	61843	1425904	23.05	22.94
51	9.25	.99080	61333	1364571	22.24	22.19
52	10.26	.98979	60769	1303802	21.45	21.40
53	11.55	.98852	60149	1243653	20.67	20.70
54	12.92	.98716	59459	1184194	19.91	19.96

LIFE TABLE — MALES (Continued)

AGE	Rzte of Mortality per thousand	Probability of living	Number Alive at beginning of age interval	Population or years of life lived.	Curtate Expect- ation of Life 1921	Curtate Expect- ation of Life 1911
55	14.48	.98562	58695	1125499	19.17	19.22
56	16.08	.98404	57851	1067648	18.45	18.48
57	17.68	.98247	56929	1010719	17.75	17.75
58	19.27	.98092	55931	954788	17.07	17.05
59	20.98	.97923	54864	899924	16.40	16.37
60	22.68	.97757	53725	846199	15.75	15.74
61	24.38	.97591	52520	793679	15.11	15.12
62	26.08	.97425	51255	742424	14.48	14.52
63	27.78	.97260	49936	692488	13.86	13.91
64	29.58	.97085	48567	643921	13.25	13.31
65	31.38	.96910	47152	596769	12.65	12.71
66	33.18	.96736	45695	551074	12.06	12.11
67	35.08	.96552	44203	506871	11.46	11.51
68	36.98	.96369	42680	464191	10.87	10.92
69	39.98	.96080	41130	423061	10.28	10.32

LIFE TABLE — MALES (Continued)

AGE	Rzte of Mortality per thousand	Probability of living	Number Alive at beginning of age interval	Population or years of life lived.	Curtate Expectation of Life 1921	Curtate Expectation of Life 1911
70	45.44	.95556	39518	383543	9.70	9.74
71	51.90	.94941	37762	345781	9.15	9.16
72	58.87	.94282	35852	309929	8.64	8.59
73	65.84	.93625	33802	276127	8.16	8.05
74	73.14	.92944	31647	244480	7.72	7.52
75	80.90	.92215	29415	215065	7.31	7.03
76	89.03	.91477	27124	187941	6.92	6.57
77	97.44	.90707	24812	163129	6.57	6.14
78	105.63	.89967	22507	140622	6.24	5.73
79	113.54	.89255	20249	120373	5.94	5.34
80	120.26	.88656	18073	102300	5.66	4.96
81	127.39	.88024	16023	86277	5.38	4.59
82	134.35	.87411	14104	72173	5.11	4.23
83	142.44	.86703	12329	59844	4.85	3.86
84	151.73	.85897	10689	49155	4.59	3.50

LIFE TABLE — MALES (Continued)

AGE	Rate of Mortality per thousand	Probability of living	Number Alive at beginning of age interval	Population or years of life lived.	Curtate Expectation of Life 1921	Curtate Expectation of Life 1911
85	160.40	.85150	9182	39973	4.35	3.16
86	169.89	.84342	7818	32155	4.11	2.92
87	179.46	.83531	6594	25561	3.87	2.69
88	191.73	.82505	5508	20053	3.64	2.50
89	204.88	.81415	4544	15509	3.41	2.36
90	219.29	.80238	3700	11809	3.19	2.20
91	233.64	.79079	2968	8841	2.97	2.09
92	250.00	.77777	2347	6494	2.76	1.99
93	269.66	.76237	1826	4668	2.55	1.88
94	289.15	.74672	1392	3276	2.35	1.79
95	310.81	.73100	1039	2237	2.15	1.72
96	333.33	.71429	759	1478	1.94	1.64
97	362.06	.69343	542	936	1.72	1.52
98	403.86	.66399	376	560	1.48	1.39
99	477.27	.61468	249	311	1.24	1.23
100	555.55	.56522	153	158	1.03	1.00