

On a Formula giving the Expectation of Life approximatively.
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[Read before the Institute of Actuaries, 31st January, 1859, and ordered by the Council to be printed.]

DR. FARR, in the 12th Report of the Registrar-General, has given the value of annuities and the expectation of life, as deduced from the male English Life Table.

Observing a very uniform difference between the results thus obtained and those from the Carlisle Table of Mortality, it appeared to me probable that a simple hypothesis might be constructed which would produce a close approximation to the expectation of life between certain ages, but somewhat less favourable than the hypothesis* I proposed in 1857 for the expectation of life according to the Carlisle Table of Mortality.

On a further investigation, I have found that, between the ages of 5 and 60, the following hypothesis will give a very close approximation to the expectation of life as calculated by Dr. Farr:—

$$\text{Let } a = \text{the age, then } \frac{2(80-a)}{3} = \text{expectation;}$$

or, $\frac{2}{3}$ ds of the difference between the age and 80 = expectation.

Table showing the Expectation of Life, from the age of 5 to 60 years of age.

Age.	By Dr. Farr's English Life Table. Males.	By C. M. Willich's proposed Hypothesis.	Age.	By Dr. Farr's English Life Table. Males.	By C. M. Willich's proposed Hypothesis.
	Years.	Years.		Years.	Years.
5	50·21	50·00	18	41·35	41·33
6	49·39	49·33	19	40·67	40·66
7	49·39	48·66	20	39·99	40·00
8	48·81	48·00	21	39·31	39·33
9	48·16	47·33	22	38·63	38·66
10	47·47	46·66	23	37·96	38·00
11	46·73	46·00	24	37·28	37·33
12	45·95	45·33	25	36·60	36·66
13	45·17	44·66	26	35·92	36·00
14	44·38	44·00	27	35·24	35·33
15	43·62	43·33	28	34·57	34·66
16	42·84	42·66	29	33·89	34·00
17	42·08	42·00	30	33·21	33·33

* See *Journal of the Institute of Actuaries*, page 181 of vol. vii. Expectation of life from the age of 5 to 60—*Carlisle* Table of Mortality:—

$$\text{"Let } a = \text{the age, then } \frac{2(81\frac{1}{2}-a)}{3} = \text{expectation."}$$

Table showing the Expectation of Life (continued).

Age.	By Dr. Farr's English Life Table. Males.	By C. M. Willich's proposed Hypothesis.	Age.	By Dr. Farr's English Life Table. Males.	By C. M. Willich's proposed Hypothesis.
	Years.	Years.		Years.	Years.
31	32·53	32·66	46	22·43	22·66
32	31·85	32·00	47	21·82	22·00
33	31·17	31·33	48	21·17	21·33
34	30·50	30·66	49	20·52	20·66
35	29·82	30·00	50	19·87	20·00
36	29·15	29·33	51	19·22	19·33
37	28·47	28·66	52	18·58	18·66
38	27·80	28·00	53	17·94	18·00
39	27·13	27·33	54	17·30	17·33
40	26·46	26·66	55	16·66	16·66
41	25·79	26·00	56	16·02	16·00
42	25·12	25·33	57	15·39	15·33
43	24·46	24·66	58	14·77	14·66
44	23·79	24·00	59	14·18	14·00
45	23·13	23·33	60	13·60	13·33