Life Expectancy Calculator

Lotus

2024

1. Intro

Each client of Lotus undergoes a thorough life expectancy assessment, uiltised from the customised generalised linear model, built by the firm's data engineers.

Customised GLM:

$$\overline{E} = E_{base} \times \left(1 + \sum_{i=1}^{n} \Delta_i\right)$$

$\overline{E}$ is the adjusted life expectancy
E_{base} is the based life expectancy from actuarial tables
Δ_i is the adjustment factor i

2. National Life Tables

2.1 Abstract.

Period life expectancy by age and sex for the UK is referenced at the Office for National Statistics, whose datasets can be found [here](#). The newest statistics, released this year, recorded the national life expectancy of males and females at each age from 2020 to 2022.

2.2 National Life Tables

Male		Female	
Age	**Expected Years of Living**	**Age**	**Expected Years of Living**
60	22.23	60	25.02
61	21.41	61	24.15
62	20.61	62	23.29
63	19.81	63	22.44
64	19.03	64	21.60
65	18.25	65	20.76
66	17.48	66	19.93
67	16.73	67	19.12
68	15.99	68	18.31
69	15.26	69	17.51
70	14.54	70	16.72
71	13.84	71	15.94
72	13.14	72	15.17
73	12.46	73	14.41
74	11.78	74	13.66
75	11.12	75	12.92
76	10.47	76	12.20
77	9.86	77	11.51
78	9.26	78	10.83
79	8.68	79	10.16
80	8.12	80	9.53
81	7.60	81	8.91
82	7.08	82	8.32
83	6.60	83	7.75
84	6.12	84	7.20
85	5.68	85	6.67
86	5.25	86	6.17
87	4.85	87	5.70
88	4.48	88	5.26
89	4.14	89	4.85
90	3.81	90	4.47
91	3.52	91	4.11
92	3.25	92	3.78
93	3.00	93	3.49
94	2.78	94	3.23
95	2.57	95	2.97
96	2.40	96	2.74
97	2.22	97	2.54
98	2.07	98	2.35
99	1.91	99	2.20
100	1.8	100	2.04

3 Adjustment Factors

3.1 Factor 1: Smoker

Age	No	Light	Moderate	Heavy
60	0	-0.029	-0.063	-0.108
61	0	-0.032	-0.069	-0.118
62	0	…	…	…
90	0	-0.186	-0.262	-0.313
91	0	""	""	""
100	0	-0.186	-0.262	-0.313

Reference:
https://www.cbs.nl/en-gb/news/2017/37/heavy-smokers-cut-their-lifespan-by-13-years-on-average

3.2 Factor 2: Obesity (BMI)

Gender	Overweight (25.0-29.9)	Obese I (30.0-34.9)	Obese II (35.0-39.9)	Obese III (>39.9)
Male	-0.012	-0.012	-0.031	-0.074
Female	0.012	0.006	-0.017	-0.053

Reference:
https://onlinelibrary.wiley.com/doi/epdf/10.1038/oby.2009.253

3.3 Factor 3: Alcohol Consumption

Reference:
https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2802963#:~:text=Observational%20studies%20tend%20to%20show,than%20those%20classified%20as%20abstainers.

3.4 Factor 4: Exercise

Reference:

https://www.ama-assn.org/delivering-care/public-health/massive-study-uncovers-how-much-exercise-needed-live-longer

3.5 Factor 5: Diseases

Reference:
https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/deathsregisteredinenglandandwalesseriesdrreferencetables