

# Revised Tables: By Ariel Sosnovsky

Ariel Sosnovsky

January 17, 2020

Table # 1b							
Gompertz-Makeham Parameters Around the World: FEMALE							
Country	$\ln h[i]$	$\lambda_0[i]$	Makeham: $\lambda$	$g[i]$	$\lambda_{55}[i]$	$m$	$b$
1. Australia	-12.243	$30.5 \times 10^{-5}$	$30.0 \times 10^{-5}$	11.11%	0.273%	90.40	9.00
2. Austria	-11.818	$2.8 \times 10^{-5}$	$2.0 \times 10^{-5}$	10.77%	0.309%	89.05	9.29
3. Belgium	-11.473	$12.2 \times 10^{-5}$	$11.0 \times 10^{-5}$	10.36%	0.356%	88.83	9.65
4. Bulgaria	-11.363	$49.3 \times 10^{-5}$	$48.0 \times 10^{-5}$	10.84%	0.552%	84.31	9.22
5. Belarus	-10.646	$70.6 \times 10^{-5}$	$68.0 \times 10^{-5}$	9.95%	0.695%	83.78	10.05
6. Canada	-11.656	$17.0 \times 10^{-5}$	$16.0 \times 10^{-5}$	10.45%	0.318%	89.91	9.57
7. Switzerland	-12.164	$6.6 \times 10^{-5}$	$6.0 \times 10^{-5}$	11.02%	0.255%	90.39	9.08
8. Czechia	-11.846	$16.8 \times 10^{-5}$	$16.0 \times 10^{-5}$	11.17%	0.389%	86.42	8.95
9. Germany	-11.773	$9.9 \times 10^{-5}$	$9.0 \times 10^{-5}$	10.79%	0.333%	88.49	9.27
10. Denmark	-11.530	$2.1 \times 10^{-5}$	$1.0 \times 10^{-5}$	10.60%	0.374%	87.57	9.43
11. Spain	-12.223	$15.5 \times 10^{-5}$	$15.0 \times 10^{-5}$	11.02%	0.250%	90.94	9.08
12. Estonia	-10.986	$14.9 \times 10^{-5}$	$13.0 \times 10^{-5}$	9.96%	0.460%	87.16	10.04
13. Finland	-11.740	$7.9 \times 10^{-5}$	$7.0 \times 10^{-5}$	10.64%	0.316%	89.27	9.40
14. France	-11.509	$20.1 \times 10^{-5}$	$19.0 \times 10^{-5}$	10.08%	0.303%	91.41	9.92
15. U.K.	-11.715	$26.9 \times 10^{-5}$	$26.0 \times 10^{-5}$	10.67%	0.347%	88.85	9.38
16. Greece	-12.483	$23.4 \times 10^{-5}$	$23.0 \times 10^{-5}$	11.59%	0.272%	89.14	8.63
17. Croatia	-11.693	$1.9 \times 10^{-5}$	$1.0 \times 10^{-5}$	11.07%	0.412%	85.75	9.03
18. Hungary	-10.718	$3.4 \times 10^{-5}$	$1.0 \times 10^{-5}$	9.95%	0.585%	84.49	10.05
19. Ireland	-11.619	$7.0 \times 10^{-5}$	$6.0 \times 10^{-5}$	10.58%	0.342%	88.61	9.45
20. Israel	-12.339	$21.5 \times 10^{-5}$	$21.0 \times 10^{-5}$	11.39%	0.279%	89.25	8.78
21. Italy	-12.374	$14.5 \times 10^{-5}$	$14.0 \times 10^{-5}$	11.31%	0.252%	90.14	8.84
22. Japan	-12.252	$37.5 \times 10^{-5}$	$37.0 \times 10^{-5}$	10.85%	0.245%	92.44	9.22
23. Korea	-13.150	$46.2 \times 10^{-5}$	$46.0 \times 10^{-5}$	12.27%	0.233%	90.10	8.15
24. Lithuania	-10.550	$40.9 \times 10^{-5}$	$38.0 \times 10^{-5}$	9.57%	0.596%	85.70	10.45
25. Luxembourg	-11.787	$1.8 \times 10^{-5}$	$1.0 \times 10^{-5}$	10.75%	0.314%	88.90	9.30
26. Latvia	-10.467	$15.1 \times 10^{-5}$	$12.0 \times 10^{-5}$	9.56%	0.612%	84.96	10.46
27. Netherlands	-11.554	$10.1 \times 10^{-5}$	$9.0 \times 10^{-5}$	10.50%	0.352%	88.60	9.53
28. Norway	-11.878	$3.8 \times 10^{-5}$	$3.0 \times 10^{-5}$	10.84%	0.304%	89.06	9.22
29. New Zealand	-11.948	$31.7 \times 10^{-5}$	$31.0 \times 10^{-5}$	10.96%	0.330%	88.86	9.13
30. Poland	-11.145	$7.6 \times 10^{-5}$	$6.0 \times 10^{-5}$	10.23%	0.449%	86.69	9.78
31. Portugal	-12.120	$25.6 \times 10^{-5}$	$25.0 \times 10^{-5}$	11.10%	0.298%	89.36	9.01
32. Russia	-10.971	$154.9 \times 10^{-5}$	$153.0 \times 10^{-5}$	10.34%	0.716%	84.15	9.67
33. Slovakia	-11.393	$6.3 \times 10^{-5}$	$5.0 \times 10^{-5}$	10.72%	0.461%	85.45	9.33
34. Slovenia	-11.635	$2.0 \times 10^{-5}$	$1.0 \times 10^{-5}$	10.64%	0.343%	88.32	9.40
35. Sweden	-12.242	$9.5 \times 10^{-5}$	$9.0 \times 10^{-5}$	11.28%	0.276%	89.17	8.86
36. Taiwan	-11.928	$38.7 \times 10^{-5}$	$38.0 \times 10^{-5}$	10.95%	0.342%	88.75	9.13
37. Ukraine	-11.257	$123.4 \times 10^{-5}$	$122.0 \times 10^{-5}$	10.79%	0.664%	83.73	9.27
38. U.S.A.	-10.940	$39.0 \times 10^{-5}$	$37.0 \times 10^{-5}$	9.77%	0.458%	88.19	10.24
<b>Average:</b>	<b>- 11.661</b>	<b><math>25.5 \times 10^{-5}</math></b>	<b><math>24.4 \times 10^{-5}</math></b>	<b>10.70%</b>	<b>0.386%</b>	<b>88.07</b>	<b>9.37</b>
Source: Human Mortality Database, Period 2011							

Table # 1a							
Gompertz-Makeham Parameters Around the World: MALE							
Country	$\ln h[i]$	$\lambda_0[i]$	Makeham: $\lambda$	$g[i]$	$\lambda_{55}[i]$	$m$	$b$
1. Australia	-11.693	$63.9 \times 10^{-5}$	$63.0 \times 10^{-5}$	10.92%	0.442%	86.78	9.16
2. Austria	-10.681	$3.5 \times 10^{-5}$	$1.0 \times 10^{-5}$	9.91%	0.590%	84.49	10.10
3. Belgium	-10.656	$19.6 \times 10^{-5}$	$17.0 \times 10^{-5}$	9.89%	0.616%	84.36	10.11
4. Bulgaria	-9.367	$10.3 \times 10^{-5}$	$1.0 \times 10^{-5}$	8.86%	1.220%	78.39	11.29
5. Belarus	-7.640	$52.5 \times 10^{-5}$	$1.0 \times 10^{-5}$	6.90%	2.289%	72.00	14.50
6. Canada	-11.140	$33.6 \times 10^{-5}$	$32.0 \times 10^{-5}$	10.28%	0.492%	86.23	9.73
7. Switzerland	-11.551	$22.1 \times 10^{-5}$	$21.0 \times 10^{-5}$	10.79%	0.426%	86.42	9.27
8. Czechia	-10.150	$5.3 \times 10^{-5}$	$1.0 \times 10^{-5}$	9.60%	0.844%	81.34	10.42
9. Germany	-10.631	$3.7 \times 10^{-5}$	$1.0 \times 10^{-5}$	9.90%	0.619%	84.02	10.10
10. Denmark	-10.633	$7.7 \times 10^{-5}$	$5.0 \times 10^{-5}$	9.92%	0.630%	83.87	10.08
11. Spain	-10.737	$3.4 \times 10^{-5}$	$1.0 \times 10^{-5}$	9.87%	0.546%	85.35	10.14
12. Estonia	-9.014	$14.2 \times 10^{-5}$	$1.0 \times 10^{-5}$	8.25%	1.240%	78.98	12.11
13. Finland	-10.391	$27.4 \times 10^{-5}$	$24.0 \times 10^{-5}$	9.59%	0.683%	83.93	10.43
14. France	-10.211	$28.0 \times 10^{-5}$	$24.0 \times 10^{-5}$	9.17%	0.650%	85.27	10.90
15. U.K.	-11.230	$60.5 \times 10^{-5}$	$59.0 \times 10^{-5}$	10.47%	0.526%	85.69	9.55
16. Greece	-10.309	$9.7 \times 10^{-5}$	$6.0 \times 10^{-5}$	9.39%	0.645%	84.63	10.65
17. Croatia	-10.070	$5.7 \times 10^{-5}$	$1.0 \times 10^{-5}$	9.57%	0.902%	80.69	10.45
18. Hungary	-9.293	$11.1 \times 10^{-5}$	$1.0 \times 10^{-5}$	8.72%	1.220%	78.56	11.46
19. Ireland	-11.191	$36.5 \times 10^{-5}$	$35.0 \times 10^{-5}$	10.50%	0.527%	85.15	9.53
20. Israel	-10.950	$2.9 \times 10^{-5}$	$1.0 \times 10^{-5}$	10.02%	0.482%	86.31	9.98
21. Italy	-11.453	$18.2 \times 10^{-5}$	$17.0 \times 10^{-5}$	10.75%	0.454%	85.79	9.30
22. Japan	-11.113	$34.7 \times 10^{-5}$	$33.0 \times 10^{-5}$	10.28%	0.505%	85.98	9.73
23. Korea	-10.639	$31.6 \times 10^{-5}$	$29.0 \times 10^{-5}$	9.92%	0.648%	83.96	10.08
24. Lithuania	-8.046	$35.4 \times 10^{-5}$	$1.0 \times 10^{-5}$	7.14%	1.744%	75.75	14.01
25. Luxembourg	-11.236	$2.5 \times 10^{-5}$	$1.0 \times 10^{-5}$	10.64%	0.512%	84.53	9.40
26. Latvia	-8.398	$25.3 \times 10^{-5}$	$1.0 \times 10^{-5}$	7.62%	1.608%	76.43	13.12
27. Netherlands	-11.432	$13.2 \times 10^{-5}$	$12.0 \times 10^{-5}$	10.80%	0.471%	85.25	9.26
28. Norway	-11.390	$29.3 \times 10^{-5}$	$28.0 \times 10^{-5}$	10.72%	0.485%	85.43	9.33
29. New Zealand	-11.353	$44.3 \times 10^{-5}$	$43.0 \times 10^{-5}$	10.58%	0.481%	86.10	9.45
30. Poland	-9.092	$13.2 \times 10^{-5}$	$1.0 \times 10^{-5}$	8.27%	1.156%	79.80	12.09
31. Portugal	-10.208	$35.0 \times 10^{-5}$	$31.0 \times 10^{-5}$	9.35%	0.722%	83.87	10.70
32. Russia	-7.941	$250.2 \times 10^{-5}$	$212.0 \times 10^{-5}$	7.15%	2.161%	74.18	13.99
33. Slovakia	-9.511	$9.1 \times 10^{-5}$	$1.0 \times 10^{-5}$	8.93%	1.102%	79.44	11.20
34. Slovenia	-10.402	$4.3 \times 10^{-5}$	$1.0 \times 10^{-5}$	9.72%	0.703%	83.03	10.29
35. Sweden	-11.693	$20.9 \times 10^{-5}$	$20.0 \times 10^{-5}$	11.07%	0.431%	85.76	9.04
36. Taiwan	-9.735	$92.5 \times 10^{-5}$	$86.0 \times 10^{-5}$	8.69%	0.856%	83.88	11.50
37. Ukraine	-8.307	$169.6 \times 10^{-5}$	$143.0 \times 10^{-5}$	7.64%	1.920%	75.09	13.09
38. U.S.A.	-10.101	$57.5 \times 10^{-5}$	$53.0 \times 10^{-5}$	9.14%	0.738%	84.36	10.94
<b>Average:</b>	<b>-10.252</b>	<b><math>34.4 \times 10^{-5}</math></b>	<b><math>26.6 \times 10^{-5}</math></b>	<b>9.50%</b>	<b>0.850%</b>	<b>82.66</b>	<b>10.70</b>
Source: Human Mortality Database, Period 2011							

Table #2:						
CLaM Regression Line Around the World						
Variable	MALE			FEMALE		
	Coeff.	Std.Er	t-val.	Coeff.	Std.Er	t-val.
Intercept ( $L$ )	-0.942	0.184	-5.116	-1.264	0.679	-1.861
Slope: $(-x^*)$	<b>-98.033</b>	1.924	-50.944	<b>-97.211</b>	6.342	-15.329
Adj. $R^2$	98.59%			86.35%		
Range: $g[i]$	(6.90%, 11.07%)			(9.56%, 12.27%)		
Average: $g[i]$	G = 9.50%%			G = 10.70%%		
Plateau (+/-): $\lambda^*$	(0.270, 0.564)			(0.073, 1.099)		
Countries	$N = 38$			$N = 38$		

Note: These are the results from regressing the (male and female) Gompertz-Makeham (log) mortality intercepts  $\ln h[i]$  on the mortality growth rates  $g[i]$ , from the Human Mortality Database (HMD) for *period* mortality in 2011. This is the second phase regression.

Table # 3						
Mortality-Adjusted Biological Ages ( $\xi$ ) Around the World						
	MALE			FEMALE		
Country	$x = 55$	$x = 70$	$x = 85$	$x = 55$	$x = 70$	$x = 85$
1. Australia	48.55	65.80	83.05	53.35	68.94	84.52
2. Austria	53.15	68.80	84.44	54.71	69.81	84.92
3. Belarus	66.79	77.68	88.57	57.93	71.89	85.85
4. Belgium	53.23	68.85	84.46	56.31	70.84	85.38
5. Bulgaria	57.90	71.89	85.88	54.42	69.62	84.83
6. Canada	51.45	67.69	83.93	55.96	70.62	85.28
7. Croatia	54.66	69.78	84.90	53.52	69.05	84.57
8. Czechia	54.55	69.71	84.86	53.12	68.79	84.46
9. Denmark	53.07	68.74	84.42	55.36	70.23	85.10
10. Estonia	60.63	73.67	86.71	57.91	71.88	85.84
11. Finland	54.59	69.74	84.88	55.21	70.14	85.06
12. France	56.46	70.95	85.44	57.43	71.56	85.70
13. Germany	53.17	68.81	84.45	54.63	69.76	84.89
14. Greece	55.50	70.33	85.15	51.49	67.74	83.98
15. Hungary	58.51	72.29	86.06	57.92	71.88	85.85
16. Ireland	50.48	67.05	83.63	55.46	70.30	85.13
17. Israel	52.62	68.45	84.28	52.25	68.23	84.21
18. Italy	49.32	66.30	83.28	52.58	68.44	84.30
19. Japan	51.46	67.69	83.93	54.39	69.60	84.82
20. Korea	53.09	68.76	84.42	48.80	66.00	83.21
21. Latvia	63.50	75.54	87.58	59.50	72.90	86.30
22. Lithuania	65.69	76.97	88.24	59.43	72.86	86.28
23. Luxembourg	49.81	66.62	83.43	54.78	69.86	84.94
24. Netherlands	49.10	66.16	83.21	55.79	70.51	85.23
25. New Zealand	50.11	66.82	83.52	53.97	69.33	84.70
26. Norway	49.47	66.40	83.33	54.42	69.63	84.83
27. Poland	60.56	73.62	86.69	56.85	71.20	85.54
28. Portugal	55.69	70.45	85.21	53.39	68.96	84.53
29. Russia	65.65	76.94	88.22	56.40	70.90	85.41

30. Slovakia	57.57	71.67	85.78	54.90	69.94	84.97
31. Slovenia	53.99	69.34	84.69	55.23	70.15	85.07
32. Spain	53.33	68.91	84.49	53.74	69.19	84.63
33. Sweden	47.89	65.37	82.85	52.68	68.51	84.33
34. Switzerland	49.14	66.18	83.23	53.73	69.18	84.63
35. Taiwan	58.64	72.37	86.10	54.00	69.36	84.71
36. U.K.	50.59	67.12	83.66	55.12	70.07	85.03
37. U.S.A.	56.63	71.06	85.49	58.66	72.36	86.06
38. Ukraine	63.43	75.49	87.55	54.65	69.77	84.90
<b>Average:</b>	<b>55.00</b>	<b>70.00</b>	<b>85.00</b>	<b>55.00</b>	<b>70.00</b>	<b>85.00</b>
<i>Source: Human Mortality Database, Period 2011</i>						