

double standard ??

Age	1971 Qué m Population P	1971 Deaths D	1991 Qué m Population P	1991 Deaths D	Ratio of Rates (D71/P71)*P91	71 / 91 (D91/P91)*P71	
0-	46 700	948	50 722	321	3.21	1 029.6	295.5
1-	202 400	196	182 160	58	3.04	176.4	64.4
5-	326 700	213	234 320	51	3.00	152.8	71.1
10-	344 900	184	252 547	77	1.75	134.7	105.2
15-	323 100	427	237 408	234	1.34	313.8	318.5
20-	287 900	521	251 904	316	1.44	455.9	361.2
25-	251 900	355	320 933	410	1.10	452.3	321.8
30-	198 700	311	342 961	463	1.16	536.8	268.2
35-	186 600	399	310 613	490	1.36	664.2	294.4
40-	182 800	660	282 072	645	1.58	1 018.4	418.0
45-	169 900	1 023	234 623	870	1.62	1 412.7	630.0
50-	140 100	1 429	180 178	1 110	1.66	1 837.8	863.1
55-	124 600	2 026	162 195	1 658	1.59	2 637.3	1 273.7
60-	100 600	2 545	148 832	2 656	1.42	3 765.2	1 795.3
65-	74 800	2 813	123 157	3 471	1.33	4 631.6	2 108.1
70-	50 300	2 780	84 645	3 702	1.26	4 678.2	2 199.9
75-	31 800	2 617	57 282	3 946	1.19	4 714.1	2 190.6
80-	17 300	2 165	30 817	3 251	1.19	3 856.6	1 825.0
85-	9 800	2 064	17 799	3 197	1.17	3 748.7	1 760.2
Total	3 070 900	23 676	3 505 168	26 926	1.004	36 216.9	17 164.3

[D71*]: D91 if 71 rates [D91*]: D71 if 91 rates

D71/P71	D91/P91
0.00771	0.00768
0.01033	0.00559
[D71*] / P91	[D91*] / P71

"Direct"

Ratio 71/91 = 0.01033 / 0.00768 = 1.35 if standardize to 91 population
 Ratio 71/91 = 0.00771 / 0.00559 = 1.38 if standardize to 71 population
 Directly standardized ratio = Sum w rate_ratio / Sum w ; w = DEATHS IN REFERENCE POPULATION
 Deaths in 91 are at older ages and so the lower ratios at older ages get more weight if standardize to 91

"Indirect"

Ratio 71/91 = 23676 / 17164.3 = 1.38 if obtain EXPECTED DEATHS using 91 rates
 Ratio 91/71 = 26926 / 36216.9 = 0.74 if EXPECTED D's using 71 rates (1 / ratio = 1.35)
 "SMR" = Sum w rate_ratio / Sum w ; w = EXPECTED DEATHS IN INDEX POPULATION

MESSAGES...

Are "direct" and "indirect" just opposite sides of same coin? See Miettinen on "mutual standardization"
 Where does Mantel-Haenszel technique for rates fit in with these? What about regression methods?

Source: overall mortality, males Quebec. MSSS