DEMG 6090

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PSET5 Part A

Problem 1 - 5

See the spreadsheet for numbers and calculations.

$$GFR = 0.053628419$$

Ultimately, this will differ from the CBR according to what proportion of the population is of reproductive age, as the CBR includes person-years lived by those under the age of 15 and those over the age of 50 in the denominator, whereas the GFR only includes person-years lived by women of reproductive age.

$$TFR = 1.841847031$$

$$GRR = 0.89846197$$

$$NRR = 0.88559029$$

$$A_m = 29.1245187$$

Problem 6

Derivation of l(x) linear interpolation formula.

$$l_{25} = 98.891 = m * 25 + b$$

$$l_{30} = 98.590 = m * 30 + b$$

$$l_{25} - l_{30} = 0.301 = m(-5)$$

$$m = -.0602$$

$$b = 100.396$$

$$l_{A_m} = m * A_m + b$$

$$l_{29.1245187} = -.0602 * 29.1245187 + 100.396 = 98.64270398$$

Ultimately using the formula NRR = p(Am)*GRR approximated the correct NRR value quite well, with the error as follows:

$$NRR_{correct} - NRR_{approx} = 0.88559029 - 0.882771403 = 0.002818887$$