Math 125: Epidemiology

In-Class Activity: Life Expectancy and Standardized Death Rates

You're going to do a calculation of life expectancy and of a death rate standardized to a population.

To make the calculation easy, assume that people can die only when they reach a 10-year birthday.

Age	Proportion who die	Number Surviving	Number of Deaths	Age × Deaths	Standard Population	Deaths in the Standard Pop
born		100,000	0	0	1000	
10	0.1				1000	
20	0.1				1000	
30	0.1				1000	
40	0.1				1000	
50	0.2				500	
60	0.2				500	
70	0.2				500	
80	1.0				100	

Life Expectancy

1. Fill in the Number Surviving and Number of Deaths colums of the table. This is not the number of deaths in the actual population, but the hypothetical number in a group of people who happen to die at each age at the rates currently being observed. At each age, calculate the number of deaths as the number surviving the previous age times the proportion who die. Then find the number surviving that age.

2. At each age, the number of deaths times the ages is Age × Deaths.

3. Add up all the Age × Deaths and divide by the total number born to get the life expectancy.

4. Calculate life expectancy at age 55. Do this by considering only the people who survived to age 55.

Standardized Death Rate   The standardized death rate is an entirely different calculation, based on the actual "proportion who die" but combining that with the assumed "Standard Population."

At each age, multiply the "proportion who die" by the "standard population" at that age. Add up these "deaths in the standard population" and divide by the total "standard population".