STATISTICS INDONESIA

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# Premature Mortality

BPS-Statistics Indonesia

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# Premature Mortality

- Definition: Premature mortality is defined as deaths occurring before age 70.

- The premature mortality rate (PMR) is the number of deaths/100,000 persons, age-adjusted to the 2000 US Standard population.

# PMR : Strenghts

- The PMR is considered an excellent, single measure that reflects the health status of a population, and the need for systematic public health approaches to health promotion and disease prevention.
- PMR analyses make clear that community health status is related to many factors.
- Health care is certainly one of these factors, but not the only factor.

# PMR : Strenghts

- As our analyses make clear, the PMR may be related to socioeconomic status and its correlates: potential issues such as environmental conditions, housing, education, stress, higher rates of smoking, substance abuse, violence, obesity, and lack of access to care.

- However, there are other possible reasons for high PMRs: specific subpopulations of younger persons at risk such as HIV/AIDS in Province town; increased motor vehicle deaths in rural areas; heart attack deaths in persons 45-64 in suburbia, etc.).

# PMR Limitation

- it does not identify specific reasons why in some areas may be high or low;
- mortality might not be a good measure of important public health issues (e.g. arthritis, poor housing, etc.)

# PMR : Usage

- Ultimately, the PMR is a useful planning tool to begin discussions that allow policy makers, community advocates, public health professionals, and cities and towns to consider more effective and cost efficient approaches to improving the quality of life and health of the public.
- Furthermore, the PMR is helpful because it moves us away from considering only individual diseases, and directs us towards considering the overall health of our communities.

# PMR : Calculating

- There are three pieces of data that you will need in order to calculate the PMR.
- They are mortality data, population data and “standard” population data.

The following are steps needed to calculate the premature mortality rate.

- The ensuing example will look at the number of deaths to “A” Country residents under the age of 75 during the years 2004-2006.
- The standard population used in the example was the year 2000 United States standard million population age distribution.

# PMR : Calculating

- We will use a method of adjusting called "direct standardization."
- It consists of applying specific crude rates to a standard population.
- The method serves the purpose of summarizing a set of specific rates independently of the characteristics of the population being studied.
- (Note: We will use the standard population up to the age group 65-74 for the calculation of premature mortality rates.)

# PMR : Step 1

- Using the same age groups as the 2000 U.S. standard population distribution (<1, 1-4, 5-14, up to age group 65-74), record the number of deaths to “A” residents under the age of 75 for the period 2004-2006.

| Ages | Deaths |
|---|---|
| <1 | 294 |
| 1-4 | 44 |
| 5-14 | 59 |
| 15-24 | 385 |
| 25-34 | 481 |
| 35-44 | 1,067 |
| 45-54 | 2,640 |
| 55-64 | 3,937 |
| 65-74 | 6,415 |
| TOTAL | 15,322 |

# PMR : Step 2

- **Step 2 –**List the population of "A" Country residents under the age of 75 for 2004-2006 for each of the age groups.

| Ages | Pop |
|---|---|
| <1 | 38,713 |
| 1-4 | 161,039 |
| 5-14 | 442,149 |
| 15-24 | 505,121 |
| 25-34 | 426,961 |
| 35-44 | 516,469 |
| 45-54 | 558,476 |
| 55-64 | 416,442 |
| 65-74 | 310,068 |
| TOTAL | 3,375,438 |

# PMR : Step 3

- Compute age-specific rates (crude rates) for each of the age-groups using data from Steps 1 and 2. (Deaths / Pop = Age-Specific Rate).

| Ages | Deaths | Pop | Age-Specific Rate |
|---|---|---|---|
| <1 | 294 | 38,713 | 0.0076 |
| 1-4 | 44 | 161,039 | 0.0003 |
| 5-14 | 59 | 442,149 | 0.0001 |
| 15-24 | 385 | 505,121 | 0.0008 |
| 25-34 | 481 | 426,961 | 0.0011 |
| 35-44 | 1,067 | 516,469 | 0.0021 |
| 45-54 | 2,640 | 558,476 | 0.0047 |
| 55-64 | 3,937 | 416,442 | 0.0095 |
| 65-74 | 6,415 | 310,068 | 0.0207 |

# PMR : Step 4

List the “standard” population as the next column in the table.

(Remember that the standard used in this example was the 2000 U.S. standard million population distribution by age.)

# PMR : Step 5

- Multiply each age-specific rate by the corresponding “standard” population. The result is an artificial index displaying the number of deaths each age group would have experienced if the age-specific death rates had actually occurred to the same age group totals found within the "standard" population.

| Ages | Deaths | Pop | Age-Specific Rate | Std Population | Index of Expected Deaths |
|---|---|---|---|---|---|
| <1 | 294 | 38,713 | 0.0076 | 13,818 | 104.9 |
| 1-4 | 44 | 161,039 | 0.0003 | 55,317 | 15.1 |
| 5-14 | 59 | 442,149 | 0.0001 | 145,565 | 19.4 |
| 15-24 | 385 | 505,121 | 0.0008 | 138,647 | 105.7 |
| 25-34 | 481 | 426,961 | 0.0011 | 135,573 | 152.7 |
| 35-44 | 1,067 | 516,469 | 0.0021 | 162,613 | 336.0 |
| 45-54 | 2,640 | 558,476 | 0.0047 | 134,834 | 637.4 |
| 55-64 | 3,937 | 416,442 | 0.0095 | 87,247 | 824.8 |
| 65-74 | 6,415 | 310,068 | 0.0207 | 66,037 | 1,366.2 |

# PMR : Step 6

- Sum the “standard” population column, as well as the index of expected deaths column

| Std Population | Index of Expected Deaths |
|---|---|
| 13,818 | 104.9 |
| 55,317 | 15.1 |
| 145,565 | 19.4 |
| 138,647 | 105.7 |
| 135,573 | 152.7 |
| 162,613 | 336.0 |
| 134,834 | 637.4 |
| 87,247 | 824.8 |
| 66,037 | 1,366.2 |
| **939,651** | **3,562.3** |

# PMR : Step 7

divide the index total by the total “standard” population and multiply that result by 100,000.
(Total expected deaths / Total “standard” population) x 100,000.

From the table before, we would compute the age-adjusted rate by dividing 3,562.3 by 939,651 and then multiplying the result (0.003791) by 100,000.

Hence, the premature mortality rate for “A” County residents under 75 for 2004-2006 was 379.1 per 100,000.

# Thank you

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