

Using Likelihood to Describe Actuarial Data

One profession that makes great use of probability is the actuarial profession. An **actuary** is a person who assesses the risk of an event occurring and calculates the cost of that risk. Most actuaries work in the insurance industry.

EXAMPLE 5 Using Actuarial Data

Explain how an actuary for an insurance company might use the following information.

A life insurance policy is a wager on when you will die. Insurance companies put a lot of work into determining how long you will live. How do insurance companies determine the probability of when you will die? Actuaries analyze data to determine factors that influence a person's probability of dying. A person's age is a very significant factor.

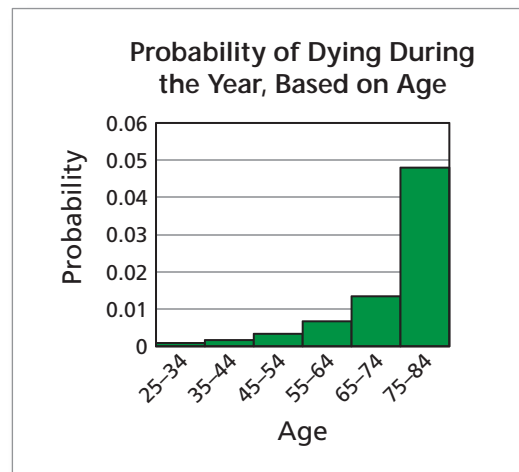
For instance, in 2005, the probability of dying for a Californian in the 25–34 age group was 84 in 100,000. The probability nearly doubled to 161 in 100,000 for a Californian in the 35–44 age group. This doubling pattern generally continued for consecutive 10-year age groups. The probability of dying for a Californian in the 75–84 age group was about 60 times greater than that of a Californian in the 25–34 age group.

Actuaries also consider a person's gender when determining the probability of dying. Generally, for a man and woman of the same age, the man has a greater risk of dying.



SOLUTION

The paragraph is basically saying that the older you are, the more likely you are to die. It claims that through age 74 the probability of dying roughly doubles each time your age increases by 10 years. This is shown in the graph. An actuary uses this information by creating questionnaires for people who are applying for life insurance and by setting the insurance rates based on the answers to the questions in the questionnaires.



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You have taken a job at a large corporation that provides life insurance for its employees. As part of the employment process, you are asked to supply your age, gender, height, weight, blood pressure, cholesterol level, race, and marital status. You are also asked whether you smoke, drink alcohol, exercise regularly, or participate in dangerous activities, such as skydiving. What is your opinion about this?