

# Life Expectancy

This table shows the relationship between the number of years a person might be expected to live and the year he or she was born. Life expectancy is a prediction that is very useful in professions like medicine and insurance.

US Life Expectancy at Birth			
Year	Combined	Male	Female
2009	78.5	76	80.9
2006	77.7	75.1	80.2
2001	76.9	74.2	79.4
2000	76.8	74.1	79.3
1995	75.8	72.5	78.9
1990	75.4	71.8	78.8
1985	74.7	71.1	78.2
1980	73.7	70.0	77.4
1970	70.8	67.1	74.7
1960	69.7	66.6	73.1
1950	68.2	65.6	71.1
1940	92.9	60.8	65.2

Deaths 2009 Release

Step 1 Choose one column of life expectancy data—female, male, or combined. Let  $x$  represent birth year, and let  $y$  represent life expectancy in years. Graph the data points.

Step 2 Choose two points on your graph so that a line through them closely reflects the pattern of all the points on the graph. Use the two points to write the equation of this line in point-slope form.

Step 3 Graph the line with your data points. Does it fit the data?

Step 4 Use your equation to predict the life expectancy of a person who will be born in 2022.

Step 5: Compare your prediction from Step 4 to the prediction that another group made analyzing the same data. Are your predictions the same? Are they close? Explain why it's possible to make different predictions from the same data.

Step 6: Compare the slope of your line of fit to the slopes that other groups found working with different data sets. What does the slope for each data set tell you?

Step 7: As a class, select one line of fit that you think is the best model for each column of data—female, male, and combined. Graph all three lines on the same set of axes. Is it reasonable for the line representing the combined data to lie between the other two lines? Explain why or why not.

Step 8: How does the point-slope method of finding a line compare to the intercept-form method you learned about in Lesson 4.2? What are the strengths and weaknesses of each method?

Summarize how you can fit a point-slope line to linear data.

How will you make sure that it fits the data you have graphed?