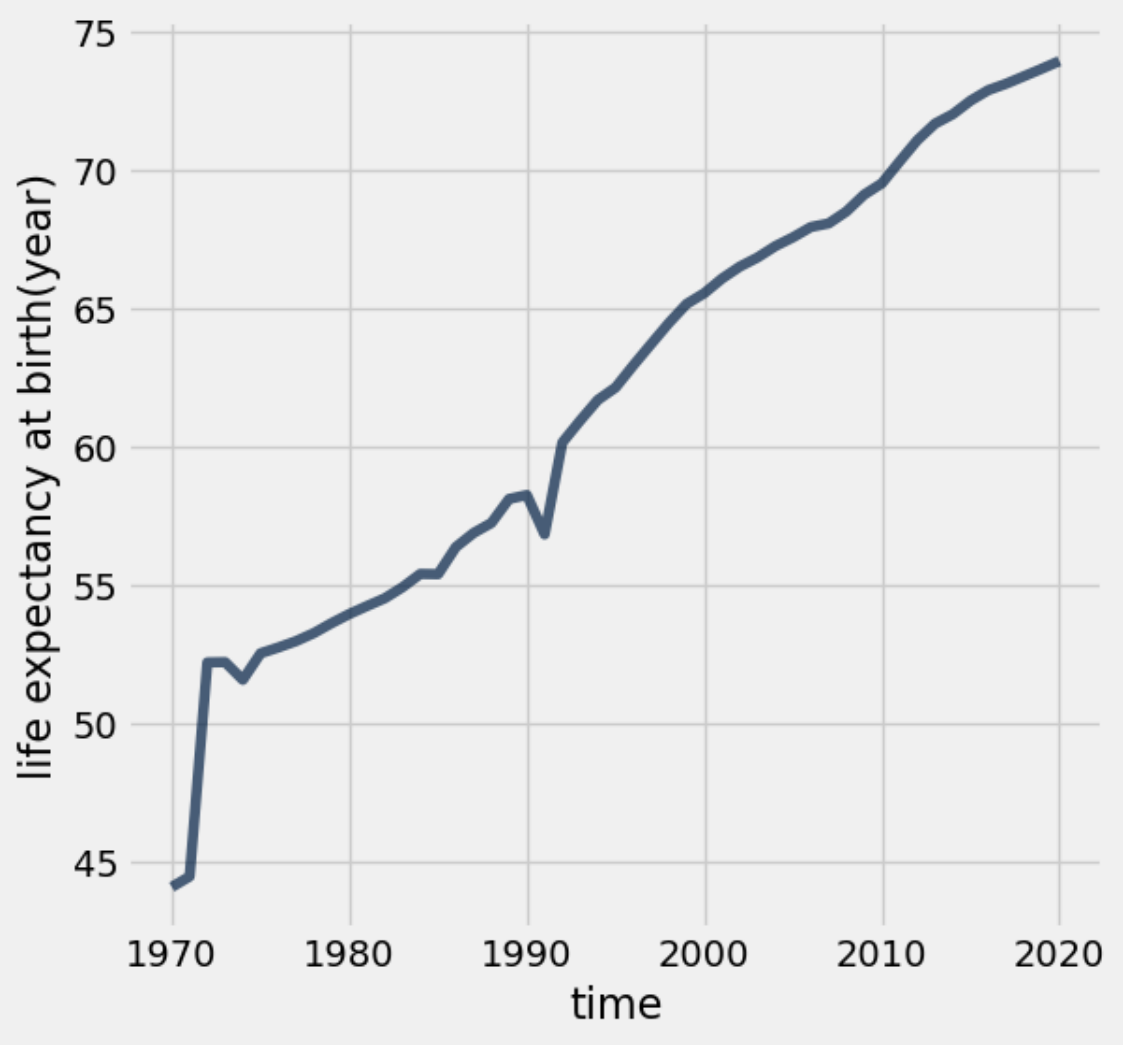
Question 3. Perhaps population is growing more slowly because people aren't living as long. Use the `life_expectancy` table to draw a line graph with the years 1970 and later on the horizontal axis that shows how the *life expectancy at birth* has changed in Bangladesh.

```
In [67]: #Fill in code here
         life_expectancy_bgd_1970 = life_expectancy.where("geo",are.equal_to("bgd")).where("time",are.al
         life_expectancy_bgd_1970.relabel("life_expectancy_years", "life expectancy at birth(year)")
         life_expectancy_bgd_1970.plot("time", "life expectancy at birth(year)")
         life_expectancy_bgd_1970
```

```
Out[67]: time | life expectancy at birth(year)
         1970 | 44.08
         1971 | 44.46
         1972 | 52.2
         1973 | 52.21
         1974 | 51.57
         1975 | 52.53
         1976 | 52.74
         1977 | 52.97
         1978 | 53.26
         1979 | 53.62
         … (41 rows omitted)
```


75
70
65
60
55
50
45
life expectancy at birth(year)
1970
1980
1990
2000
2010
2020
time

Question 4. Assuming everything else stays the same, do the trends in life expectancy in the graph above directly explain why the population growth rate decreased from 1985 to 2015 in Bangladesh? Why or why not?

Hint: What happened in Bangladesh in 1991, and does that event explain the overall change in population growth rate? This webpage provides relevant context.

The trends in life expectancy in the graph above cannot directly explain why the population growth rate decreased from 1985 to 2015 in Bangladesh. By eyeballing the table of Bangladesh annual growth, we can see that the growth rate is increasing from 1970 to 1980. The line graph of life expectancy vs. time of Bangladesh is also increasing from 1970 to 1980. However, the annual growth starts to decrease from 1985 to 2015 while life expectancy is still increasing. Thus life expectancy cannot directly explain the drop in annual population growth rate.

A cyclone disaster happened in 1991 in Bangladesh and caused about 138,866 deaths. This increases the mortality thus causing a dip in the graph of life expectancy vs. time in 1991. This event does not explain the overall change in population growth rate. From the table, annual growth dropped from 2.60% to 2.22% from 1985 to 1990, prior to this event. Annual growth dropped from 2.22% to 2.08% from 1990 to 1995, after this event. Annual growth continues its trend regardless of the cyclone.

Question 6. Assuming everything else is constant, do the trends in fertility in the graph above help directly explain why the population growth rate decreased from 1980 to 2020 in Bangladesh? Why or why not?

Trends in fertility in the graph helps directly explain why the population growth rate decreased from 1980 to 2020 in Bangladesh. The fertility rate from 1970 to 1980 is decreasing slowly, and the annual growth rate is increasing. After 1980, the fertility continued to decline but at a much faster rate. The annual growth rate now is decreasing.

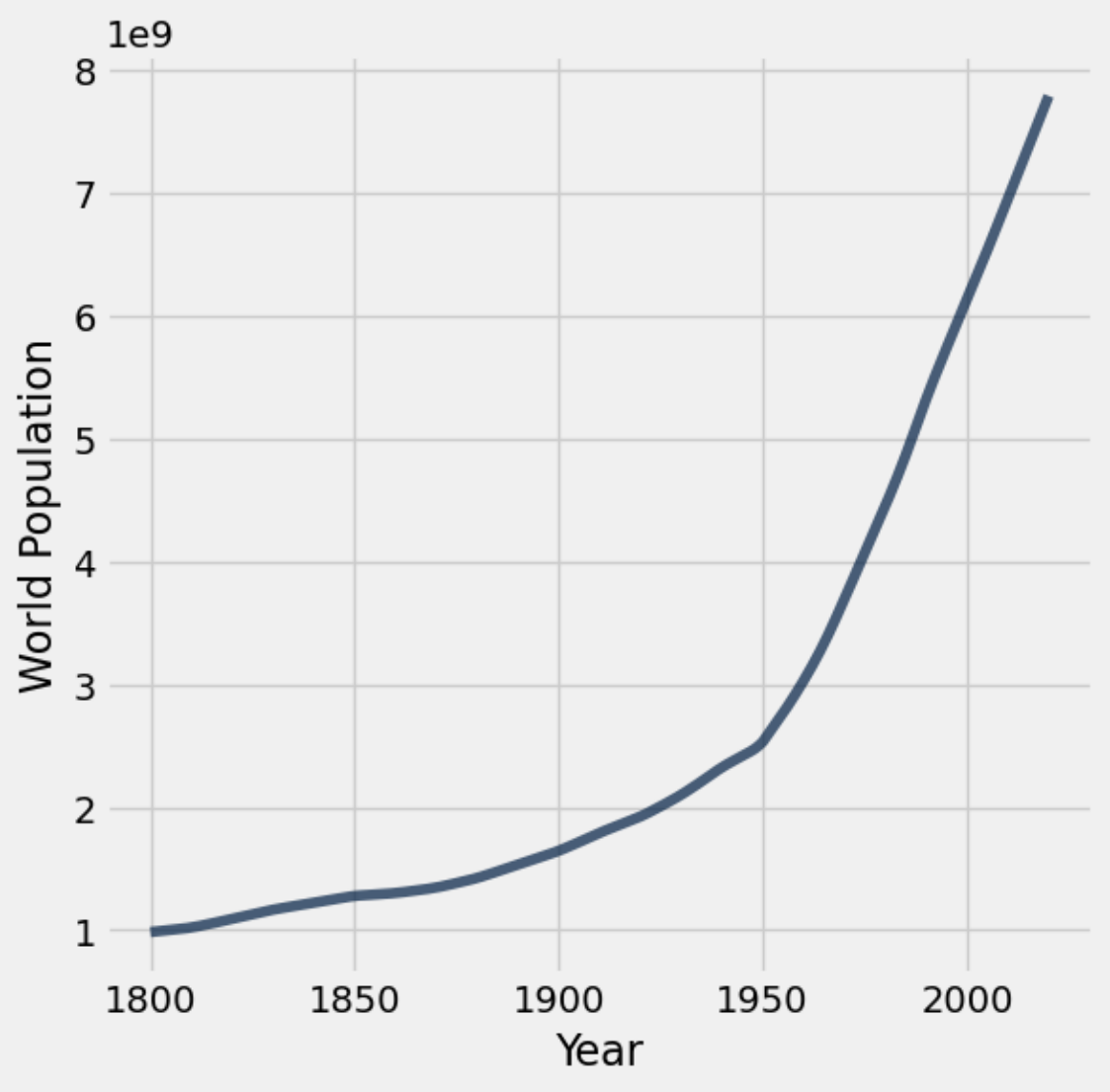
Question 8. In one or two sentences, describe the association (if any) that is illustrated by this scatter diagram. Does the diagram show that reduced child mortality *causes* parents to choose to have fewer children?

Illustrated by this scatter diagram, fertility and child mortality has a strong positive correlation that as children per woman increases, child deaths per 1000 born also increases. We cannot conclude that the reduced child mortality "causes" parents to choose to have fewer children because no experiments are conducted.

Question 10. Draw a line plot of the world population from 1800 through 2020 (inclusive of both endpoints). The world population is the sum of all of the countries' populations. You should use the `population` table defined earlier in the project.

```
In [77]: #Fill in code here
         word_population_1800_to_2020 = population.where("time",are.between_or_equal_to(1800,2020)).sel
         word_population_1800_to_2020.plot("time","population_total sum")
         plots.xlabel("Year")
         plots.ylabel("World Population")
```

```
Out[77]: Text(0, 0.5, 'World Population')
```



Question 6. It is important to study the absolute number of people living in poverty, not just the percent. The absolute number is an important factor in determining the amount of resources needed to support people living in poverty. In the next two questions you will explore this.

In Question 7, you will be asked to write a function called `poverty_timeline` that takes **the name of a country** as its argument (not the Alpha-3 country code). It should draw a line plot of the number of people living in poverty in that country with time on the horizontal axis. The line plot should have a point for each row in the `poverty` table for that country. To compute the population living in poverty from a poverty percentage, multiply by the population of the country **in that year**.

For this question, write out a generalized process for Question 7. What should this function output, and what steps will you take within the function?

This function should output a line plot of Time vs. Number of people in poverty of the inputted country. I will first write a helper function that can return the total population of a country in that year. In the "poverty_timeline" function, I will first identify the code for that country, then I will use the code to filter the poverty table. A final table will be created using "time" of the filtered table, and percentages time the returned array of total population.