Teacher's guide on how to use
a Gapminder Power Point presentation about

Life expectancy

Life expectancy is an important measure of a country's overall health. A Power Point presentation that explains the basics of Life expectancy is available at:
www.gapminder.org/downloads/life-expectancy-ppt
This is a guide on how to use the Power Point presentation.

About the Power Point presentation

Level: secondary school. *Subjects:* history, geography and social studies. *What you need:* a computer, a screen and a projector.

Key messages of the Power Point presentation

Life expectancy is a very important measure when we compare the health of different countries. However, students often misunderstand some of the characteristics of life expectancy. The Power Point presentation focuses on two of these characteristics:

1. Life expectancy is an *average*. Most people live either much longer or much shorter than what the life expectancy indicates.

2. When life expectancy is low, this is mostly due to a very high *child mortality rate*. Those that survive the dangers of childhood can expect to live to a relatively old age, even in countries with very low life expectancy.

To illustrate these points we display the expected life spans of five newborns in the African country of Burundi and five newborns in Sweden. The five Burundians (see the figure in the top-right) illustrates that most people live either longer or shorter than the mean life expectancy.

 A comparison of the five Swedes with the five Burundians (see the figure on the next page) illustrates that when a country has a low life expectancy it is usually because child deaths are common.

About this document

You will find an outline of the presentation on the next page. The Power Point presentation contains 22 slides (the first slide is not intended to be shown). Two types of graphs are used repeatedly throughout the Power Point. We will start by explaining these graphs.

The "life span" graph

The life spans are illustrated in a graph that we call the "life span graph". This is a simple bar chart, where each of the five bars represent the life span of one of five persons. Each person represents
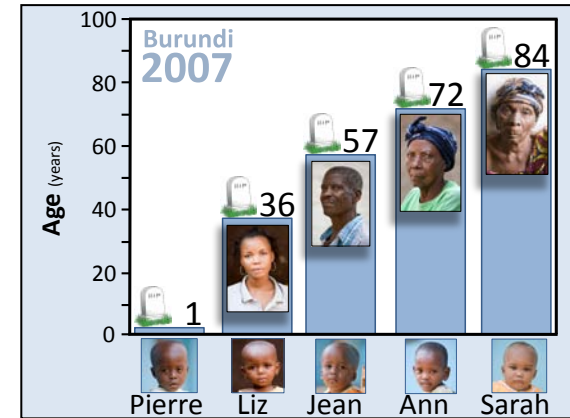
the average life span of 20% of the population. Hence, the first person from the left represents the average expected life span of the 20% of the population with the shortest life spans. The second person represents the next 20%, etc.

The "Gapminder World" graph

The Power Point presentation also contains a simplified version of a graph that we call "The gapminder world" graph. Each country is represented by a

bubble in this graph. The vertical axis shows the life expectancy and the horizontal axis shows income per person. The size of the bubble represents the population.
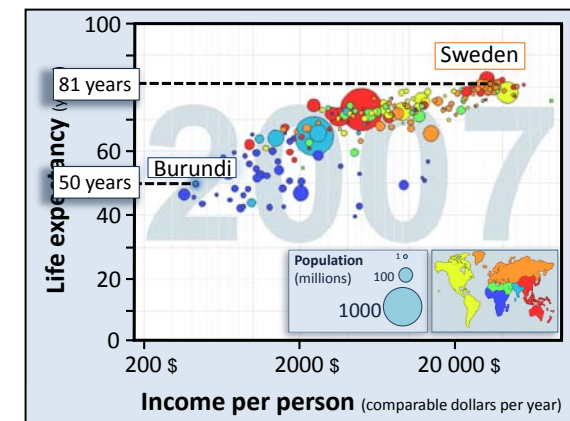
1. Intro *(slide 2)*

Explain that Life Expectancy is an important measure of overall health in a country. Explain the two bullet points. The bullet points summarise the two key messages: (1) Life Expectancy is a mean and (2) when Life Expectancy is short this is mostly due to the fact that child deaths are common.

2. Life Expectancy in the world... *(slide 3)*

... is displayed with a Gapminder world graph. Explain that each bubble is a country. Explain the horizontal and vertical axis. Explain that life expectancy in the world today roughly ranges from 40 to 85 years. Highlight Burundi (a life expectancy of 50 years) and Sweden (a life expectancy of 81 years).

3. The life spans of five Burundians. *(slides 4-10)*

Life expectancy in Burundi is only 50 years. Ask: "Does anyone get old in Burundi?". We display the life spans of five Burundians to answer this question. The answer is "yes, two in five live beyond the age of 70 years". The fact that many people reach old age, and others die very young illustrates the 1st bullet point: life expectancy is an average. We also illustrate how you calculate life expectancy, i.e. by taking the average of the five life spans.

**4. The life spans of five Swedes.** *(slide 11-17)*

The life expectancy is 31 years higher in Sweden than in Burundi. Ask if this is because *all* Swedes live 31 years longer than all Burundians *or* if it is because *some* Swedes live much longer than all Burundians.

We display the life spans of five Swedes to answer this question. However, we have to compare the Swedish life spans with the Burundian life spans in order to fully answer the question.

5. A comparison of the Swedes and Burundians. *(slide 18-21)*

The life spans of the five Burundians are displayed with the life spans of the five Swedes (see the figure below). The answer to the previous question is "no, all Swedes do not live 31 years longer than Burundians". The main difference is instead that one of five Burundians die *much* younger than the typical Swede, i.e. in childhood.

This illustrates the second key message: when a country has a low life expectancy it is usually because child deaths are common. The risk of dying at an older age is almost the same across countries.
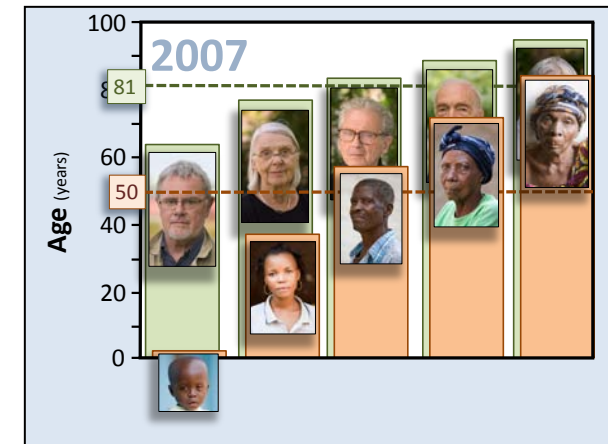
6. Conclusions *(slide 22)*

The two key messages in the intro are repeated in more detail in a number of bullet points. Repeat the key messages and refer back to the examples in the presentation.

Suggested simplifications

The presentation, in the form we provide it, requires at least 15 minutes of classroom time. However, you probably need 30 to 40 minutes if you want to elaborate on all the topics.

We are well aware that this might be too much time to spend on explaining just one concept, but we thought it is better to add a little too much and give users the opportunities to keep only the things they need. Here are a few suggestions on how to simplify the presentation.

Delete the text boxes. One of the most common recommendations about PowerPoint is to minimise the amount of text in the presentation. It is much better if you can talk about what you want to say rather than letting the audience read it on screen. PowerPoint is best suited for displaying pictures and figures. However, we have included several text boxes to guide users on what the messages are for each slide. But if you are confident enough about the content, it is much better to delete most of the text and just speak freely instead.

Focus on slide 20. If you want to make the presentation really short you could just display slide 20 (see the figure on the previous page), since that one picture summarises the key messages of the presentation. Delete all the slides except slide 20. Explain that we will discuss health in two countries: Sweden and Burundi. Explain the chart carefully: each bar represents the life span of one fifth of the population in each country. Explain that life expectancy is an average. Explain that the main difference between a healthy country, like Sweden, and an unhealthy one, like Burundi, is child mortality.

Suggested extensions

Here are a couple of suggestions if you want to extend the presentation or elaborate on the topics in some more depth.

Follow-up with Gapminder World online. Let the students explore Gapminder World online at: www.gapminder.org/world. The chart provides an interactive display of Life Expectancy and Income per person in the world. The chart can provide an animated illustration of changes from 1800 until today. The students can hopefully understand this chart better once you have made the presentation about life

Gapminder World online, as it looks when you open it

expectancy. We have suggestions for a lecture with Gapminder World on our "For teachers" site (see "200 years that changed the world").

Discuss reasons behind high child mortality. You can discuss *why* it is primarily child mortality that goes up when health conditions deteriorate. We will provide some background information on this topic in the document called "Life expectancy background information," which will be available on the "For teachers" page.

Add more examples. In the presentation, we use the example of Sweden and Burundi in 2007. You could add more examples to make the illustrations even clearer. Two possible examples to use are Sweden in 1773 and 1774, which are displayed in the table below.

	Sweden 1773	Sweden 1774
1ˢᵗ newborn	0 years	0 years
2ⁿᵈ newborn	1 years	7 years
3ʳᵈ newborn	5 years	46 years
4ᵗʰ newborn	25 years	67 years
5ᵗʰ newborn	58 years	80 years
Life expectancy	18 years	40 years

The concept is the same as in the presentation, i.e. the table gives the expected life spans of five Swedes born in 1773, and five born in 1774. The life expectancy corresponds to the average of these five life spans. The reason that we suggest these specific years is that they also

illustrate the fact that life expectancy can change sharply from one year to another.

1773 was a disastrous year in Swedish history due to a crop failure and several epidemics. The very next year, however, things had returned to normal. These examples are also practical because the cases of Sweden in 1773, Sweden in 1774, Burundi in 2007 and Sweden in 2007 are examples where three out of five, two out of five, one out of five and zero out of five children dies. Background information about these two years can be found in the document called "Life expectancy background information," which will be available on the "For teachers" page.

Explain that life expectancy reflects the health situation during one particular year only. Life expectancy summarises the health situation during one specific year. This topic is very challenging to explain, so if there is no urgent need to explain it (there probably isn't) then it is better to not talk about it. However, if you wish to discuss it you will find some background information on this topic in the document called "Life expectancy background information," which will be available on the "For teachers" page.