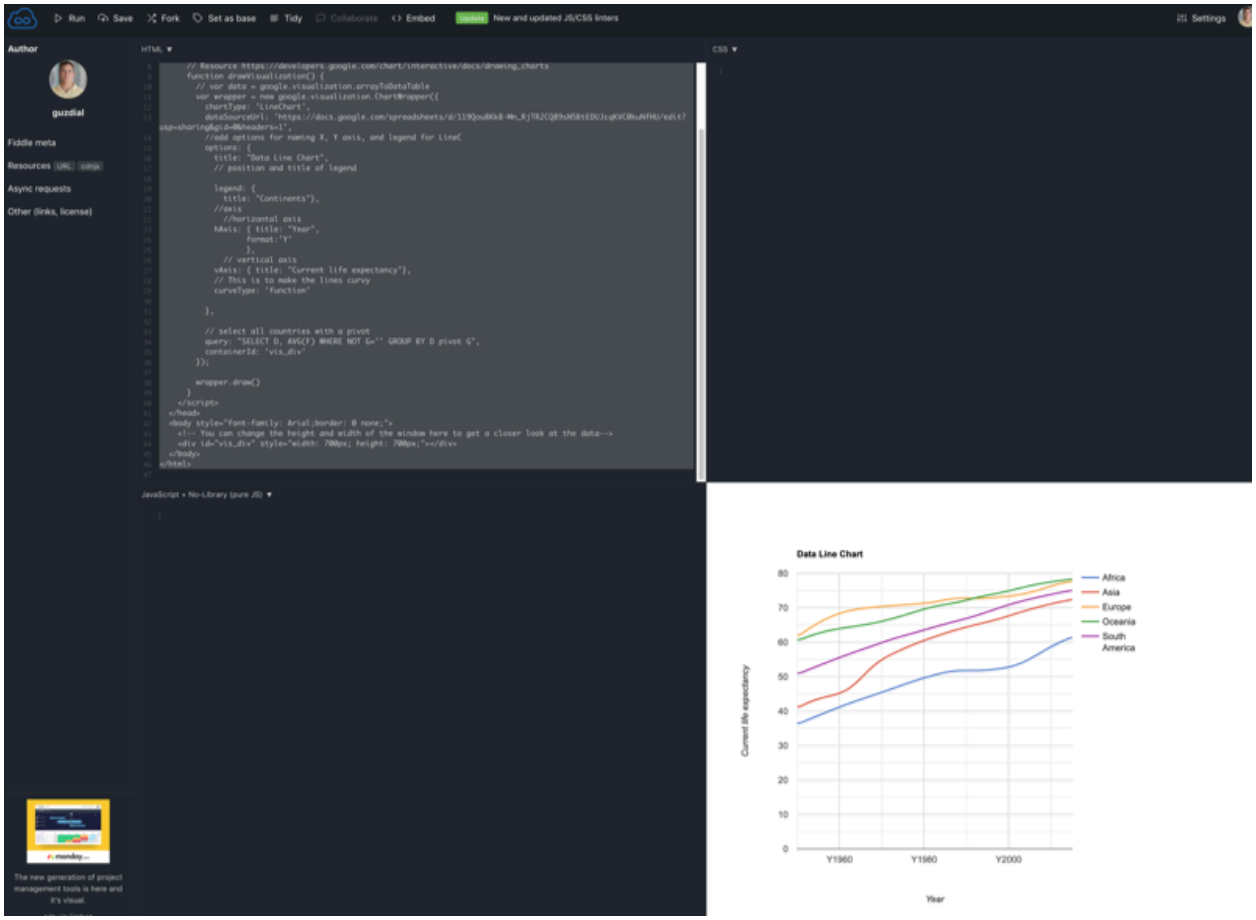
Activity: JavaScript

In this activity, we will be using JavaScript, a standard Web programming language. JavaScript will be inside an HTML page, just like most pages on the Internet. (See the Wikipedia page on HTML.) Our program will read in data from a Google Sheet, and will display the visualization using Google's Chart service (see explanation and examples here).

First, please take this quick overview of the data set that we will be using -- click here.
The data set itself can be found in this Google Sheet. You will not be working with the Google Sheet directly. Instead, you will be modifying a program in JavaScript that will do it for you.

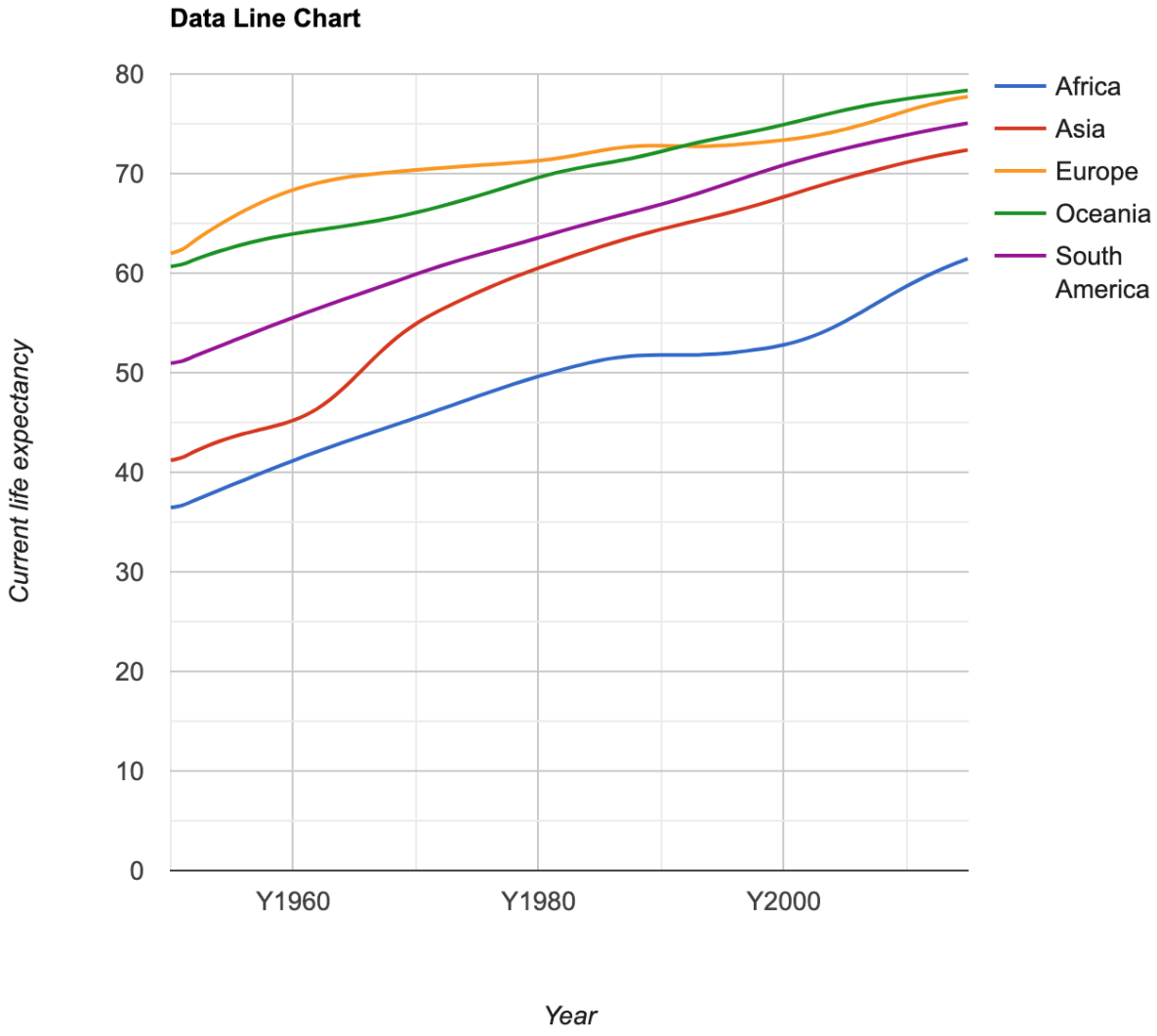
Now, please click on this link. It will take you to JSFiddle, a website that lets you work with JavaScript and HTML. You will see some text code in the upper left hand corner, some control buttons on the top, and a visualization in the lower right hand corner. It should look something like this:



Click the "Run" button to run the JavaScript program again: ▷ Run

You will need to do this after we make changes to the program to get a different visualization.

What this Visualization Shows Us



This visualization shows us how expected life expectancy has increased on all continents, but is different between continents. Life expectancy in Europe has always been well above life expectancy in Africa, for example.

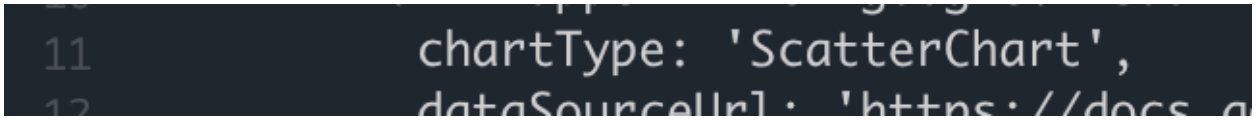
Making Changes

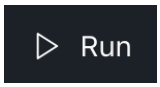
Let's make changes to your visualization, by changing the program.

First, click the Fork button along the top row 

. This gives you your own copy of the program, different from anyone else's.

1. Easiest change: In line 11, change the word **LineChart** to **ScatterChart.** It should look like this:



Press the Run button. 

This will generate a scatter chart instead of a line chart.

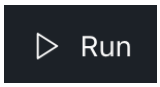
2. Changing what data we see: Currently, the visualization is showing measured (current) life expectancy. To get the predicted, future life expectancy, we need to access different data in the data set.

We specify which data we want from the data set using the *query* on line #33 in the JavaScript program. Currently, it says:

SELECT D, AVG(F) WHERE NOT G='' GROUP BY D pivot G

This is an industry-standard notation called SQL (often pronounce "sequel" -- see WIkipedia page here). It says to return the year (column D) and the average of values in column F (current life expectancy) where the continent (G) is not empty, group by year (D), and *pivot* by continent. The "pivot" organizes the data around continents.

To change the visualization to show the future life expectancy instead of currently, simply change the **F** to column **E**, like this:
SELECT D, AVG(E) WHERE NOT G='' GROUP BY D pivot G

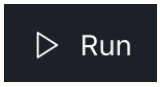
Press the Run button. 

Optional: If you want to fix the vertical axis label to match the data you're seeing, change line #26. From:

vAxis: { title: "Current life expectancy"},

To:

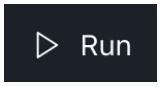
vAxis: { title: "Future life expectancy"},

Press the Run button. 

3. Focusing on certain data: One last change we will make is to look at only a single country. Change the query on line #33 so specify the country, which is in column B. For example, changing that line to

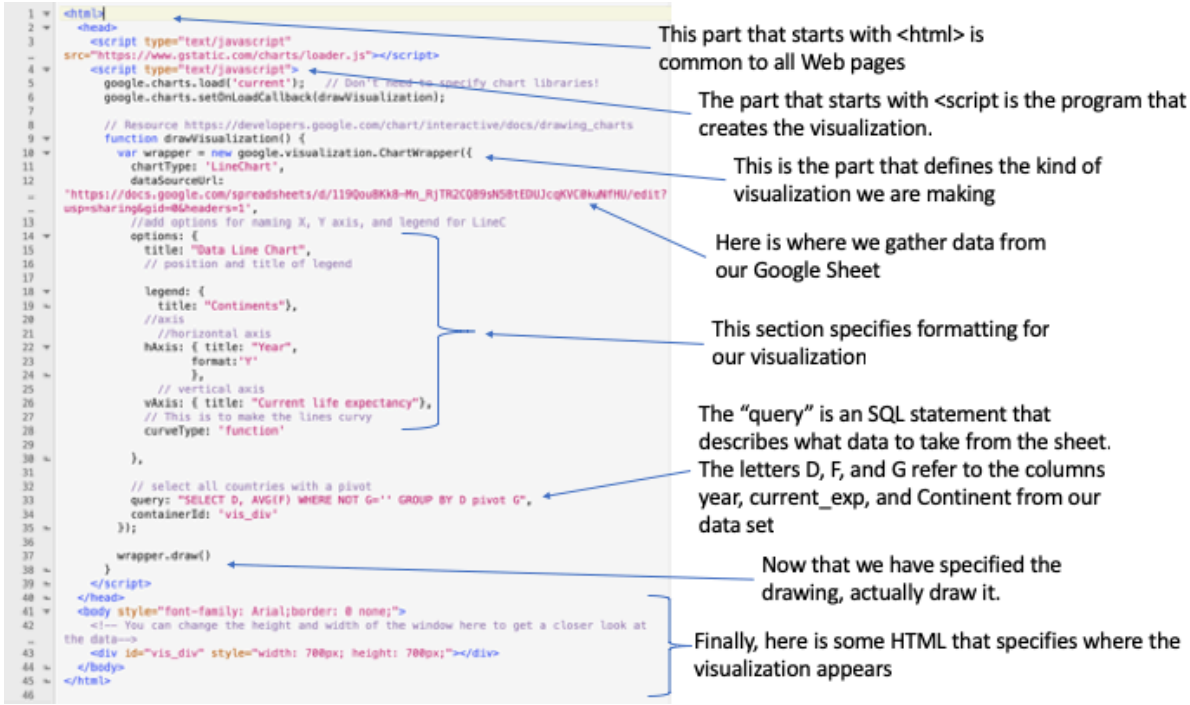
query: "SELECT D, AVG(E) WHERE B = 'Afghanistan' GROUP BY D pivot G",

Allows us to see a graph of just Afghanistan's future life expectancy (column E).

Press the Run button. 

Can you show a visualization of the measured life expectancy (column F instead of E) for just the country France?
How about for Cuba?

How the program works



Something else to try

Google Charts supports a wide variety of visualizations. If you are interested, try the example at this JSFiddle (click here). This presents the current life expectancy data on a map of the world.