

# Tools for collaborating in teams

(sample solution for the test case)

## A test case

Using the gapminder data provided, we are asked to:

1. Visualize life expectancy over time for Canada in the 1950s and 1960s using a line plot.
2. Something is clearly wrong with this plot! Turns out there's a data error in the data file: life expectancy for Canada in the year 1957 is coded as 999999, it should actually be 69.96. Make this correction.
3. Visualize life expectancy over time for Canada again, with the corrected data.

## Step-by-step plan of work

1. Read the data
2. Focus on values of Canada
3. Visualize the values for Canada
4. See whether we can find the problem
5. ... then we'll see ...

## Reading the data

```
life5060 <- read.csv("https://raw.githubusercontent.com/Stat480-at-ISU/materials/master/01_collaborativ  
head(life5060)
```

```
##      country continent year lifeExp      pop gdpPercap  
## 1 Afghanistan      Asia 1952  28.801  8425333  779.4453  
## 2 Afghanistan      Asia 1957  30.332  9240934  820.8530  
## 3 Afghanistan      Asia 1962  31.997 10267083  853.1007  
## 4 Afghanistan      Asia 1967  34.020 11537966  836.1971  
## 5      Albania    Europe 1952  55.230  1282697 1601.0561  
## 6      Albania    Europe 1957  59.280  1476505 1942.2842
```

## Focus on the values for Canada

```
canada <- life5060 %>% filter(country == "Canada")  
head(canada)
```

```
##   country continent year  lifeExp      pop gdpPercap  
## 1  Canada  Americas 1952    68.75 14785584 11367.16  
## 2  Canada  Americas 1957 999999.00 17010154 12489.95  
## 3  Canada  Americas 1962    71.30 18985849 13462.49  
## 4  Canada  Americas 1967    72.13 20819767 16076.59
```

## Visualize

Draw a line for the life expectancy in Canada

```
canada %>%  
  ggplot(aes(x = year, y = lifeExp)) +  
  geom_line()
```



Find the problematic value and fix it

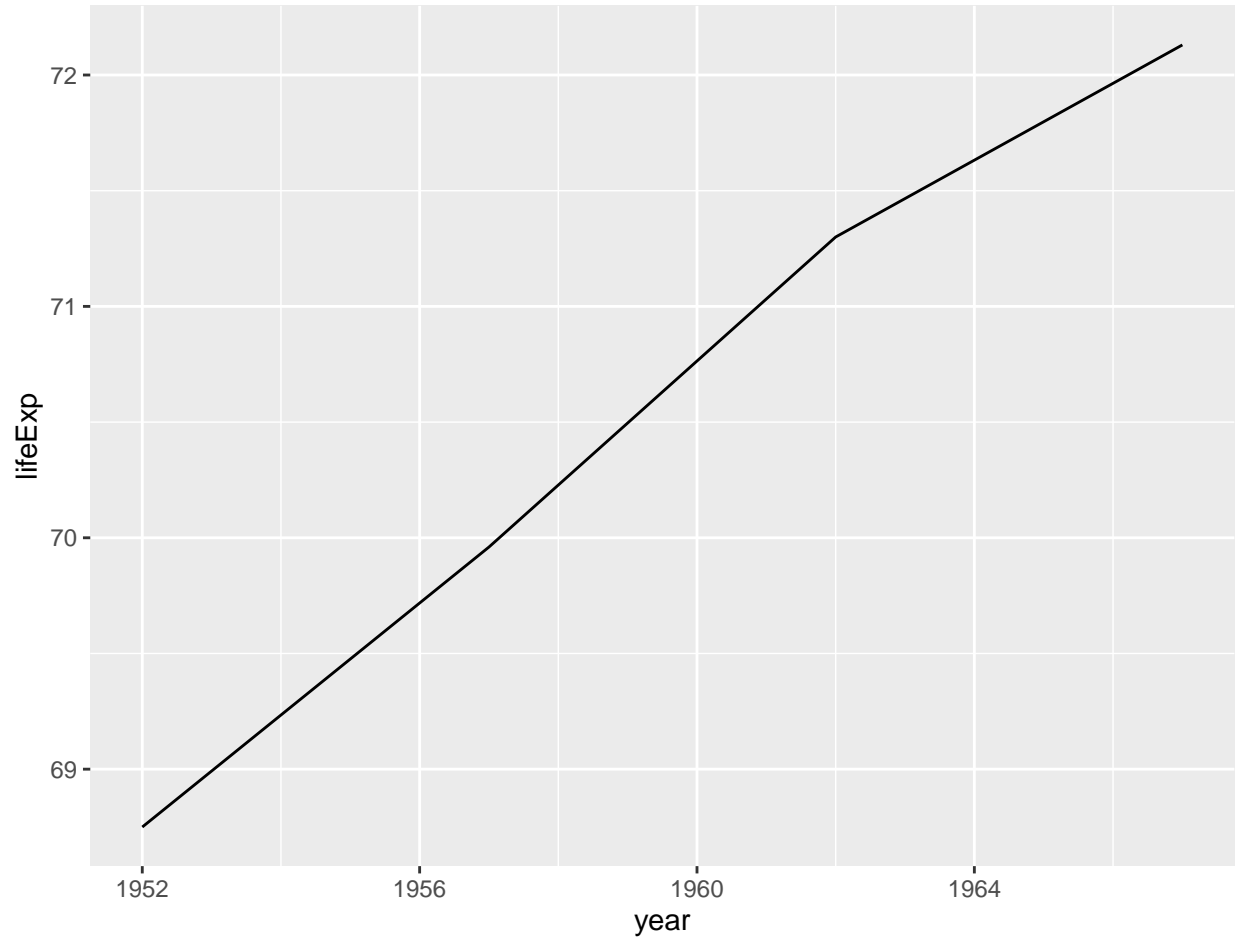
```
canada %>% filter(year == 1957)
```

```
##   country continent year lifeExp      pop gdpPercap  
## 1  Canada  Americas 1957  999999 17010154 12489.95
```

```
canada_fixed <- canada %>% mutate(  
  lifeExp = replace(lifeExp, year==1957, 69.96)  
)
```

visualize the fixed data

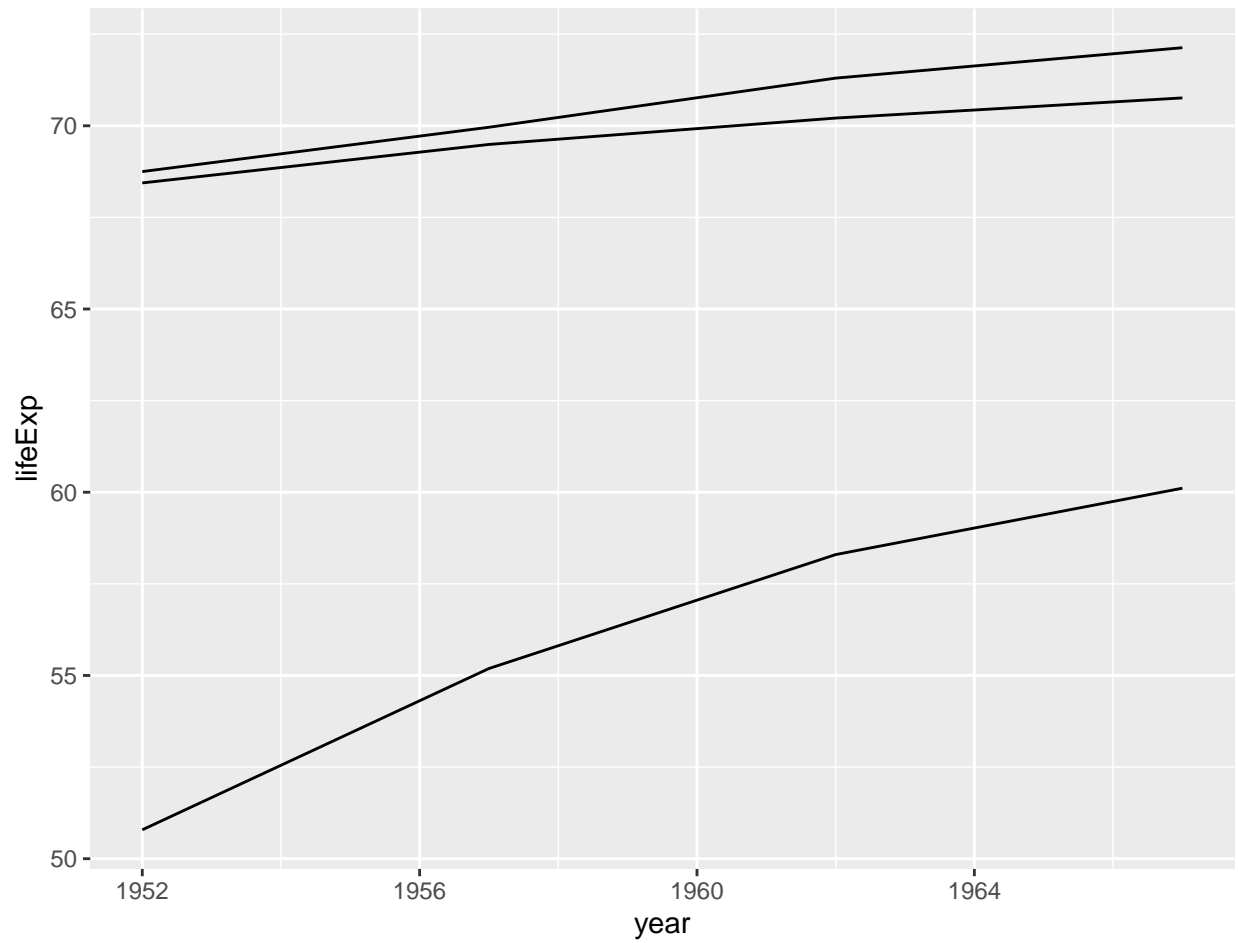
```
canada_fixed %>% ggplot(aes(x = year, y = lifeExp)) +  
  geom_line()
```



... on to the stretch goal ...

Add lines for Mexico and the US

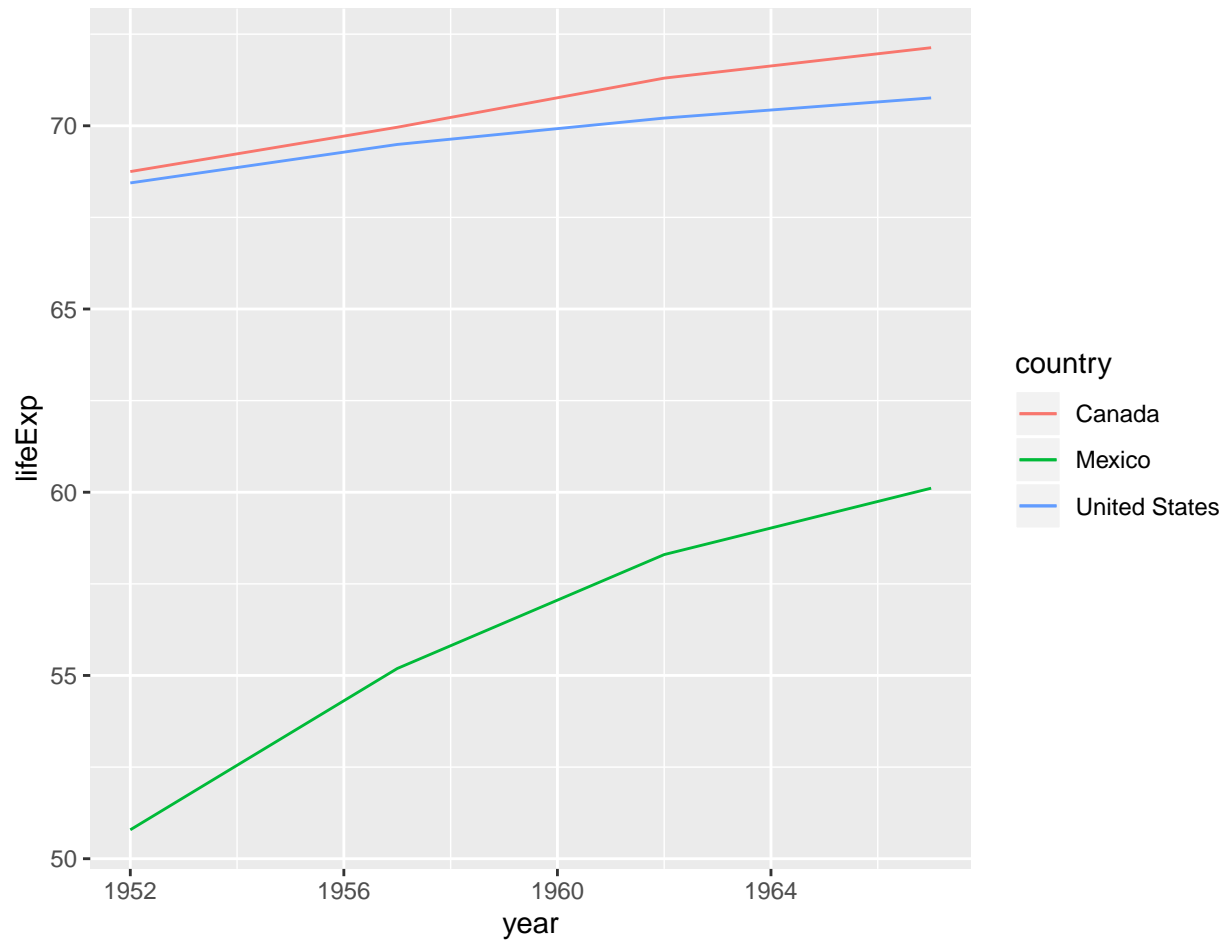
```
canada_fixed %>%  
  ggplot(aes(x = year, y = lifeExp, group=country)) + geom_line() +  
  geom_line(data = life5060 %>%  
    filter(country %in% c("United States", "Mexico")))
```



... on to the stretch goal ...

Add lines for Mexico and the US, color lines by country and add a legend

```
canada_fixed %>%
  ggplot(aes(x = year, y = lifeExp, colour=country)) + geom_line() +
  geom_line(data = life5060 %>%
    filter(country %in% c("United States", "Mexico")))
```



## How reproducible is this solution?

1. Navigate to <https://github.com/stat480-at-isu/materials>
2. Open the folder `01_collaborative-environment`
3. Download the file `02_test-case-solution.Rmd`
4. Open the file in RStudio.
5. “Knit” the file.

## R Markdown

- code and text/documentation are interwoven: reproducible and self-documenting.
- extend or refine analyses by copying and modifying code blocks.
- disseminate your work by sharing the RMarkdown file