

STATS 205: Final Project Write-Up

Brian Liu

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1. Background of the data and why it is interesting or important

The data we are using is the data from WHO suicide statistics from Kaggle. This gives population-based statistics on suicide rate...

2. Explanation of the method studied and its properties

3. Data analysis or simulation study

We will use the crude rate of suicide per 100,000 people.

This analysis provides information on age-standardized rates...

```
who_suicide_statistics_df <- read.csv("who_suicide_statistics.csv")
head(who_suicide_statistics_df)
```

```
##   country year    sex      age suicides_no population
## 1 Albania 1985 female 15-24 years         NA      277900
## 2 Albania 1985 female 25-34 years         NA      246800
## 3 Albania 1985 female 35-54 years         NA      267500
## 4 Albania 1985 female  5-14 years         NA      298300
## 5 Albania 1985 female 55-74 years         NA      138700
## 6 Albania 1985 female  75+ years         NA       34200
```

```
colnames(who_suicide_statistics_df)
```

```
## [1] "country"    "year"       "sex"        "age"        "suicides_no"
## [6] "population"
```

Filter and save countries with missing suicide rate.

```
library(tidyverse)
```

```
## Registered S3 methods overwritten by 'ggplot2':
```

```
##   method      from
## [.quosures   rlang
## c.quosures   rlang
## print.quosures rlang
```

```
## -- Attaching packages ----- tidyverse 1.2.1 --
```

```
## v ggplot2 3.1.1    v purrr   0.3.2
## v tibble  2.1.1    v dplyr  0.8.1
## v tidyr   0.8.3    v stringr 1.4.0
## v readr   1.3.1    v forcats 0.4.0
```

```
## -- Conflicts ----- tidyverse_conflicts() --
```

```
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
filtered_suicide_df <- drop_na(who_suicide_statistics_df, "suicides_no")
head(filtered_suicide_df)
```

```
##   country year    sex      age suicides_no population
## 25 Albania 1987 female 15-24 years         14    289700
## 26 Albania 1987 female 25-34 years          4    257200
## 27 Albania 1987 female 35-54 years          6    278800
## 28 Albania 1987 female  5-14 years          0    311000
## 29 Albania 1987 female 55-74 years          0    144600
## 30 Albania 1987 female  75+ years          1     35600
```

After filtering countries with missing suicide rate, take a random sample of 100 countries and make sure each continent has approximately equal countries.

Filter countries by continent:

```
library(countrycode)
filtered_suicide_df$continent <- countrycode(sourcevar = filtered_suicide_df[, "country"],
                                             origin = "country.name",
                                             destination = "continent")
```

```
## Warning in countrycode(sourcevar = filtered_suicide_df[, "country"], origin = "country.name", : Some
## Warning in countrycode(sourcevar = filtered_suicide_df[, "country"], origin = "country.name", : Some
head(filtered_suicide_df)
```

```
##   country year    sex      age suicides_no population continent
## 25 Albania 1987 female 15-24 years         14    289700    Europe
## 26 Albania 1987 female 25-34 years          4    257200    Europe
## 27 Albania 1987 female 35-54 years          6    278800    Europe
## 28 Albania 1987 female  5-14 years          0    311000    Europe
## 29 Albania 1987 female 55-74 years          0    144600    Europe
## 30 Albania 1987 female  75+ years          1     35600    Europe
```

```
write.csv(filtered_suicide_df, 'filtered_suicide.csv')
```

Let us find out which continents are counted:

```
# Get list of continents
list_of_continents <- unique(filtered_suicide_df$continent); list_of_continents
```

```
## [1] "Europe" "Americas" "Asia" "Oceania" "Africa" NA
```

Therefore,

$$\frac{100 \text{ countries}}{6 \text{ continents}} \approx 16 \text{ to } 17 \text{ countries per continent}$$

we should randomly sample 17 countries from each continent.

Notably, there are countries that are not on any of the listed continents. Let us see which ones those are:

```
not_in_a_continent = filtered_suicide_df[is.na(filtered_suicide_df$continent),]
write.csv(not_in_a_continent, 'not_in_a_continent.csv')
head(not_in_a_continent)
```

```
##   country year    sex      age suicides_no population continent
## 32317 Rodrigues 2001 female 15-24 years          0      NA      <NA>
## 32318 Rodrigues 2001 female 25-34 years          0      NA      <NA>
```

```
## 32319 Rodrigues 2001 female 35-54 years      0      NA      <NA>
## 32320 Rodrigues 2001 female  5-14 years      0      NA      <NA>
## 32321 Rodrigues 2001 female 55-74 years      0      NA      <NA>
## 32322 Rodrigues 2001 female  75+ years      0      NA      <NA>
```

```
unique(not_in_a_continent$country)
```

```
## [1] Rodrigues          Virgin Islands (USA)
## 141 Levels: Albania Anguilla Antigua and Barbuda Argentina ... Zimbabwe
```

Let us make the choice not to include these countries in the analysis, since there are only two countries.

We will now create six dataframes, filtered by list of countries for each continent.

```
# europe_suicide = filtered_suicide_df[filtered_suicide_df$continent == 'Europe',]
# head(europe_suicide)
# length(europe_suicide$country)
# americas_suicide = filtered_suicide_df[filtered_suicide_df$continent == 'Americas',]
# head(americas_suicide)
# length(americas_suicide$country)
# asia_suicide = filtered_suicide_df[filtered_suicide_df$continent == 'Asia',]
# head(asia_suicide)
# length(asia_suicide$country)
# oceania_suicide = filtered_suicide_df[filtered_suicide_df$continent == 'Oceania',]
# head(oceania_suicide)
# length(oceania_suicide$country)
africa_suicide = filtered_suicide_df[filtered_suicide_df$continent == 'Africa',]
head(africa_suicide)
```

```
##      country year    sex      age suicides_no population continent
## 7669 Cabo Verde 2011 female 15-24 years      1      56039      Africa
## 7670 Cabo Verde 2011 female 25-34 years      0      38528      Africa
## 7671 Cabo Verde 2011 female 35-54 years      2      49078      Africa
## 7672 Cabo Verde 2011 female  5-14 years      0      56558      Africa
## 7673 Cabo Verde 2011 female 55-74 years      2      19887      Africa
## 7674 Cabo Verde 2011 female  75+ years      0       7582      Africa
```

```
length(africa_suicide$country)
```

```
## [1] 1956
```

```
library(rlist)
countries_per_continent <- list()
length(list_of_continents)
```

```
## [1] 6
```

```
list_of_continents
```

```
## [1] "Europe" "Americas" "Asia" "Oceania" "Africa" NA
```

```
# does this work?
```

```
continent_eur <- filtered_suicide_df[filtered_suicide_df$continent == 'Europe',]
head(continent_eur)
```

```
##      country year    sex      age suicides_no population continent
## 25 Albania 1987 female 15-24 years      14      289700      Europe
## 26 Albania 1987 female 25-34 years      4       257200      Europe
## 27 Albania 1987 female 35-54 years      6       278800      Europe
## 28 Albania 1987 female  5-14 years      0       311000      Europe
```

```
## 29 Albania 1987 female 55-74 years      0      144600    Europe
## 30 Albania 1987 female   75+ years      1       35600    Europe
# ~ It seems to work! How about this?
stringerino <- "Europe"
asdfg <- filtered_suicide_df[filtered_suicide_df$continent == stringerino,]
head(asdfg)
```

```
##      country year    sex      age suicides_no population continent
## 25 Albania 1987 female 15-24 years      14      289700    Europe
## 26 Albania 1987 female 25-34 years       4      257200    Europe
## 27 Albania 1987 female 35-54 years       6      278800    Europe
## 28 Albania 1987 female  5-14 years       0      311000    Europe
## 29 Albania 1987 female 55-74 years       0      144600    Europe
## 30 Albania 1987 female   75+ years       1       35600    Europe
```

```
for (i in seq_along(list_of_continents))
{
  countries_per_continent[[i]] <- filtered_suicide_df[filtered_suicide_df$continent == list_of_continents[i],]
}

length(countries_per_continent)
```

```
## [1] 6
```

```
length(countries_per_continent)
```

```
## [1] 6
```

```
for (i in seq_along(countries_per_continent))
{
  print(head(countries_per_continent[[i]]))
  cat("\n")
}
```

```
##      country year    sex      age suicides_no population continent
## 25 Albania 1987 female 15-24 years      14      289700    Europe
## 26 Albania 1987 female 25-34 years       4      257200    Europe
## 27 Albania 1987 female 35-54 years       6      278800    Europe
## 28 Albania 1987 female  5-14 years       0      311000    Europe
## 29 Albania 1987 female 55-74 years       0      144600    Europe
## 30 Albania 1987 female   75+ years       1       35600    Europe
##
##      country year    sex      age suicides_no population continent
## 373 Anguilla 1983 female 15-24 years       0         NA    Americas
## 374 Anguilla 1983 female 25-34 years       0         NA    Americas
## 375 Anguilla 1983 female 35-54 years       0         NA    Americas
## 376 Anguilla 1983 female  5-14 years       0         NA    Americas
## 377 Anguilla 1983 female 55-74 years       0         NA    Americas
## 378 Anguilla 1983 female   75+ years       0         NA    Americas
##
##      country year    sex      age suicides_no population continent
## 1501 Armenia 1981 female 15-24 years       5      348000    Asia
## 1502 Armenia 1981 female 25-34 years       6      242200    Asia
## 1503 Armenia 1981 female 35-54 years       6      333500    Asia
## 1504 Armenia 1981 female  5-14 years       0      295200    Asia
## 1505 Armenia 1981 female 55-74 years      10      164300    Asia
```

```
## 1506 Armenia 1981 female 75+ years 7 43100 Asia
##
##      country year  sex      age suicides_no population continent
## 2161 Australia 1979 female 15-24 years 71 1236800 Oceania
## 2162 Australia 1979 female 25-34 years 86 1138500 Oceania
## 2163 Australia 1979 female 35-54 years 171 1572100 Oceania
## 2164 Australia 1979 female 5-14 years 1 1246500 Oceania
## 2165 Australia 1979 female 55-74 years 135 1137800 Oceania
## 2166 Australia 1979 female 75+ years 15 309900 Oceania
##
##      country year  sex      age suicides_no population continent
## 7669 Cabo Verde 2011 female 15-24 years 1 56039 Africa
## 7670 Cabo Verde 2011 female 25-34 years 0 38528 Africa
## 7671 Cabo Verde 2011 female 35-54 years 2 49078 Africa
## 7672 Cabo Verde 2011 female 5-14 years 0 56558 Africa
## 7673 Cabo Verde 2011 female 55-74 years 2 19887 Africa
## 7674 Cabo Verde 2011 female 75+ years 0 7582 Africa
##
##      country year  sex  age suicides_no population continent
## NA      <NA>  NA <NA> <NA>      NA      NA      <NA>
## NA.1    <NA>  NA <NA> <NA>      NA      NA      <NA>
## NA.2    <NA>  NA <NA> <NA>      NA      NA      <NA>
## NA.3    <NA>  NA <NA> <NA>      NA      NA      <NA>
## NA.4    <NA>  NA <NA> <NA>      NA      NA      <NA>
## NA.5    <NA>  NA <NA> <NA>      NA      NA      <NA>
```

This text links to very important information about why a `for` loop doesn't print anything.

Basically, `for` loops are functions themselves. Since R prints out the result of a command automatically, but functions are not a command, you need to have `print(command())` in order to get output.

4. Interpretation of the results or discussion