Final_Project _Draft

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Intro

What

This project is about US winter Olympic Gold medalists for the past 20 years. ## Why The reason I chose this topic is because winter Olympic just finished this year in Beijing, China. I did see some improvements of Chinese athletes this year, it seems that they won some gold medals that were big challenges for them in the past. I am curious to know how has Team US been doing, for example, some of the winter games Team US have been quite good at 10 years ago, are they still leaders? ## How I created an excel file which contains data of US Winter Olympics Gold Medalists from year 2002 to year 2022.I found these data from Wikipedia. # Body

My excel file has the following columns:

```
library(readxl)
```

```
## Warning: package 'readxl' was built under R version 4.1.3
```

```
winter_olympics <- read_excel("C:/Users/vicky/Downloads/Ying-s-631-final-p/winter olympics.xlsx")
```

```
names(winter_olympics)
```

```
## [1] "YEAR"       "NAME"       "SPORT"      "WOMEN"      "MEN"
## [6] "GENDER"     "Gold Medal"
```

1. I would like to see how many gold medals did Team US won for the past 20 years?

```
table(winter_olympics$`Gold Medal`)
```

```
##
##  0  1
##  5 54
```

There are total of 54 gold medals Team Us won in the past 20 years.

2. I would like to compare women vs. men who won more medals overall and compare the ratios.

```
table(winter_olympics$WOMEN)
```

```
##
##  0  1
## 37 22
```

```
table(winter_olympics$MEN)
```

```
##
##  0  1
## 31 28
```

```
table(winter_olympics$WOMEN)/table(winter_olympics$`Gold Medal`)
```

```
##
##         0         1
## 7.4000000 0.4074074
```

```
table(winter_olympics$MEN)/table(winter_olympics$`Gold Medal`)
```

```
##
##         0         1
## 6.2000000 0.5185185
```

As we can see the above calculations, overall, men won more gold medals than women for the past 20 years in winter Olympics.

3. I want to find out which year did TEAM US won the most Gold Medals in Winter Olympics?

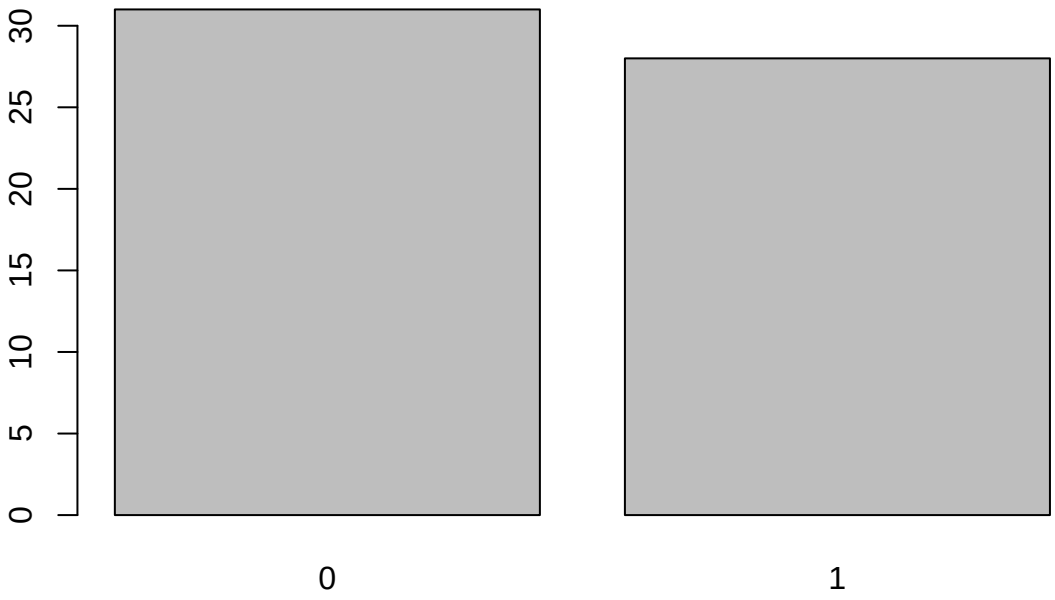
```
aggregate(`Gold Medal` ~ YEAR, data=winter_olympics, FUN=sum)
```

```
##   YEAR Gold Medal
## 1 2002         10
## 2 2006          9
## 3 2010          9
## 4 2014          9
## 5 2018          9
## 6 2022          8
```

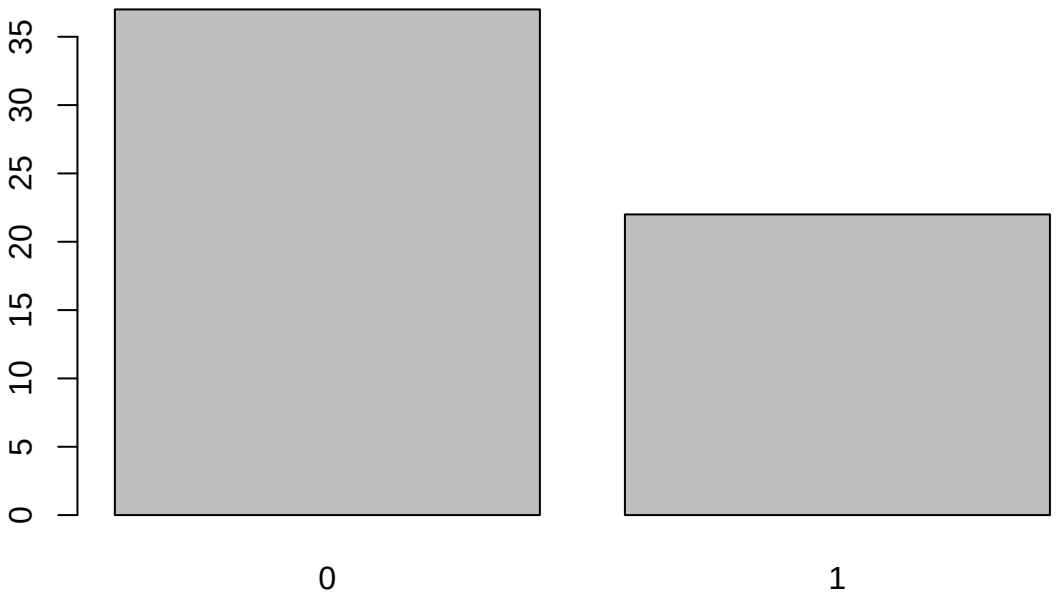
As we can tell that Team US won the most gold medals in year 2002 winter olympics with a total of 10. Year 2022 Team US won least gold medals, with a total of 8.

4. below are some bar plots I use to further represent the portion of women vs. men in winter olympics.

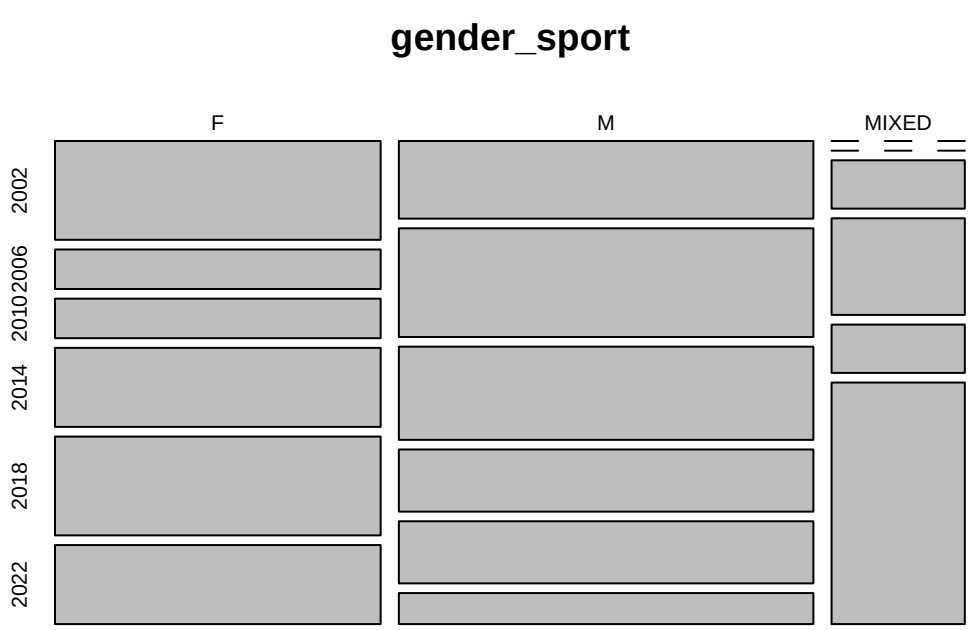
```
barplot(table(winter_olympics$MEN))
```




```
barplot(table(winter_olympics$WOMEN))
```

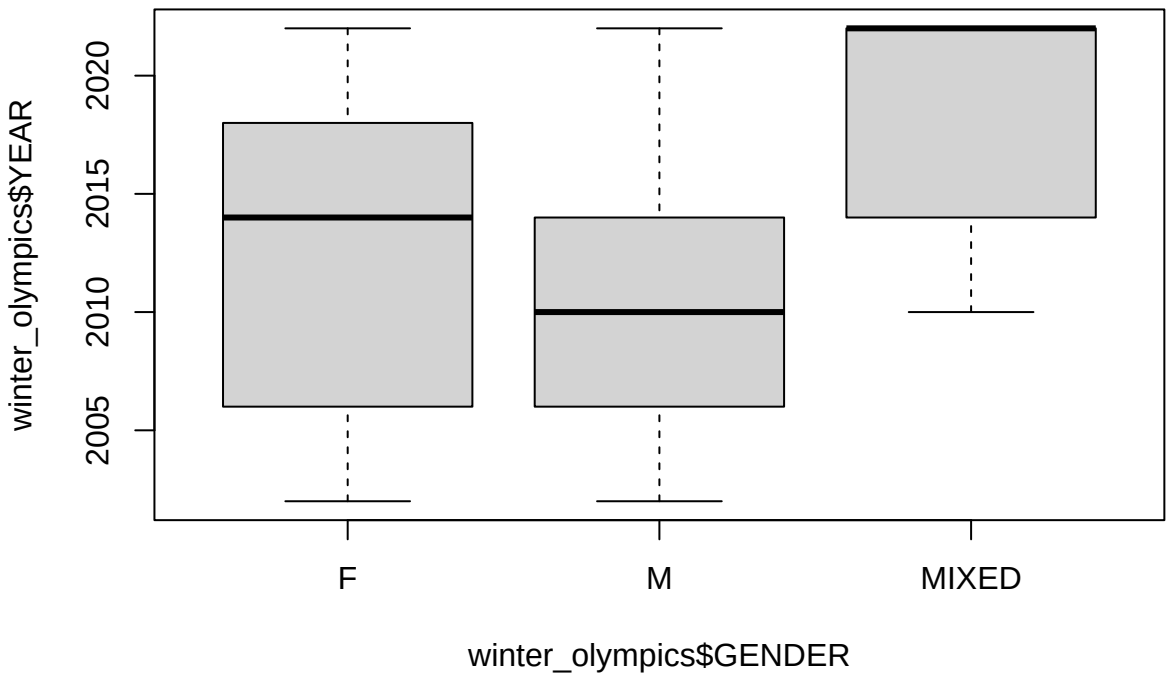



```
gender_sport <- table(winter_olympics$GENDER, winter_olympics$YEAR)
mosaicplot(gender_sport)
```

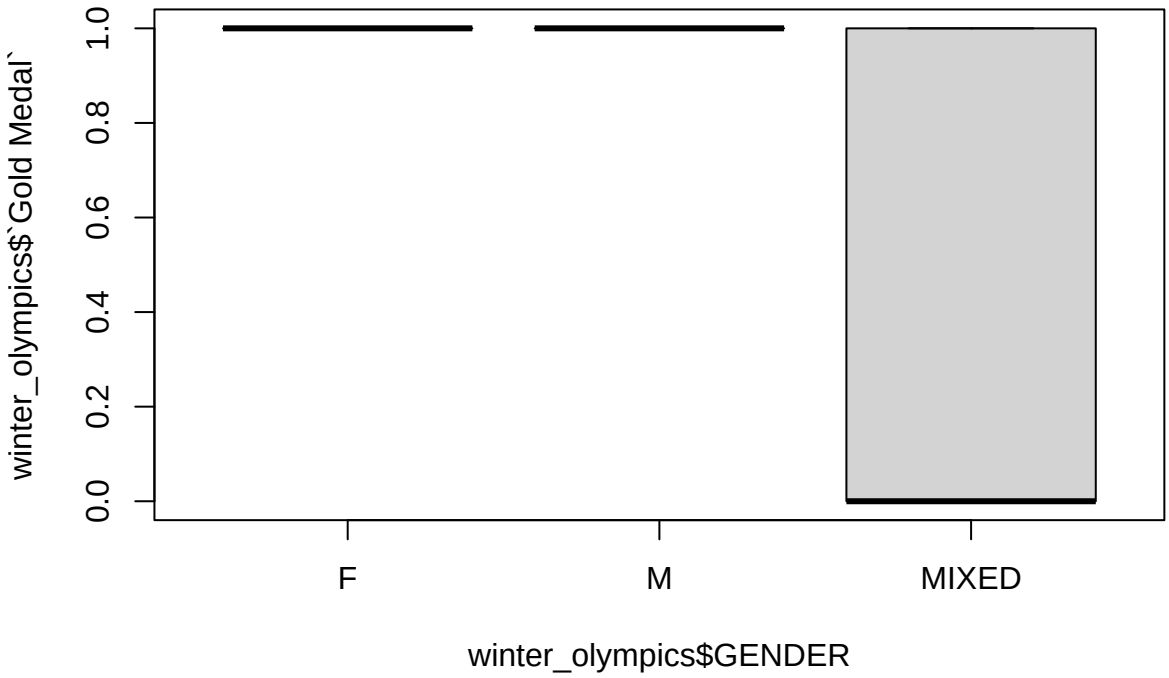


5. below are the box plots of showing gender portion of different Olympic games

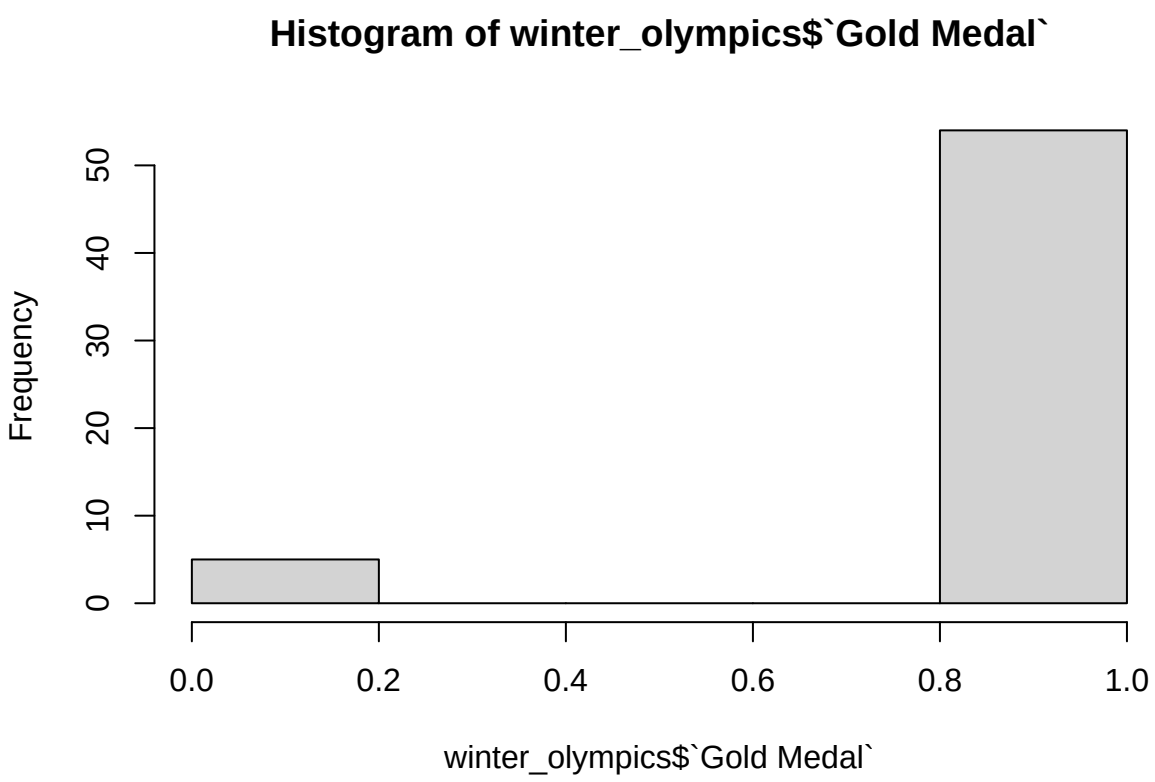
```
boxplot(winter_olympics$YEAR ~ winter_olympics$GENDER)
```




```
boxplot(winter_olympics$`Gold Medal` ~ winter_olympics$GENDER)
```




```
hist(winter_olympics$`Gold Medal`)
```



6. I would like to see which sports Team US won the most medals,I will use tidyverse to demonstrate this.

```
library(tidyverse)
```

```
## Warning: package 'tidyverse' was built under R version 4.1.3
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.1 --
```

```
## v ggplot2 3.3.5     v purrr   0.3.4
## v tibble  3.1.6     v dplyr   1.0.8
## v tidyr   1.2.0     v stringr 1.4.0
## v readr   2.1.2     v forcats 0.5.1
```

```
## Warning: package 'ggplot2' was built under R version 4.1.3
```

```
## Warning: package 'tibble' was built under R version 4.1.3
```

```
## Warning: package 'tidyr' was built under R version 4.1.3
```

```
## Warning: package 'readr' was built under R version 4.1.3
```

```
## Warning: package 'purrr' was built under R version 4.1.3
```

```
## Warning: package 'dplyr' was built under R version 4.1.3

## Warning: package 'forcats' was built under R version 4.1.3

## -- Conflicts --------------------------------------- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
winter_olympics%>% group_by(SPORT)%>% summarise(n=n())
```

```
## # A tibble: 13 x 2
##    SPORT                        n
##    <chr>                    <int>
##  1 Alpine skiing                7
##  2 Bobsled                      1
##  3 Bobsleigh                    2
##  4 Cross-country skiing         2
##  5 Curling                      1
##  6 Figure skating               5
##  7 Freestyle skiing             9
##  8 Ice hockey                   1
##  9 Nordic combined              1
## 10 Short track speed skating    2
## 11 Skeleton                     2
## 12 Snowboarding                18
## 13 Speed skating                8
```

As we can see from the above, Team US won the most gold medals in Snowboarding with 18 gold medals in total.

‘‘‘

Topics From Class

Topic 1:

R Markdown-I really like how many functions R Markdown has offered. We can easily convert the files to word, pdf and html by using Knit. We can also insert R commands in between our texts and run it by single sentence or run the whole commands.

Topic 2:

Github-we can push R Markdown files on Github, share a link, and others can read our files.

Topic 3:

Probability-I used probability calculation for my project to show women and men's ratio in winter olympic games.

Topic 4:

Tidyservice-I used tidyservice to show which sport Team USA won the most gold medals in winter olympics, because the column sport are not numbers, they are strings, I couldn't get it to work in the basic R, tidyservice has the functions to group strings.

Topic 5:

table command-I used this command to show a summary of how many men or women won the onlympic gold medals.

Conclusion

This final project helps me review some of the knowleges or commands we learned in class and assignments, such as R markdown, Tidyservice, probability, barplots, mosiacplot, etc. I think this is a good way to put what we learned into practices.