Case study
Introduction to R
EBdata_Hungary

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1. Importing and Cleaning Your Dataset.

1 a,b,c : dataset processing

- Set working directory and load Haven
- Select the subset, country of interest: **Hungary**
- Rename variables as required

1d : describle rough data

Observations: 1044,
Variables: 13

Table 1: Table of NA in each variavle

alc_12m	alcfreq_5dr	alc_30da	alcfreq_30d	alc_am_dd	pa7d_work	pa7d_mov	pa7d_recr
7	397	397	515	512	89	7	1

1e & 1f : coverstion and droplevels

use the ***unique( )*** function to check categorical values
the function ***data_converter*** is created to convert *categorical ones into factors and drop the levels*

1g: descriptive statistics of alc_12m and pa7d_work

Table 2: Descriptive statistics of the variable alc_12

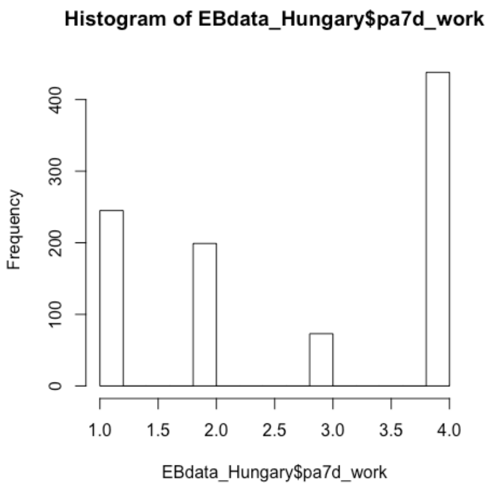
Yes	No	NA
647	390	7

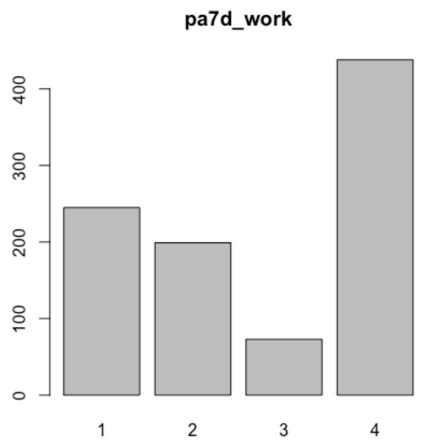
Table 3: Descriptive statistics of the variable pa7d_work

A lot	Some	Little	None	NA
245	199	73	438	89

#1h: histogram and bar chart of pa7d_work

Apparently, bar chart is more suitable to present these data.





2. Problematic Alcohol Use

2a: number of drinking days/week

In terms of drinking days per week,
assumption are as follows:
"once"=0.25,"once a week"=1,
"2 - 3 times a month"=0.5,
"Daily"=7, "4 - 5 times a week"=4,
"2 - 3 times a week"=2

2b: quantity of alcohol consumed on a drinking day

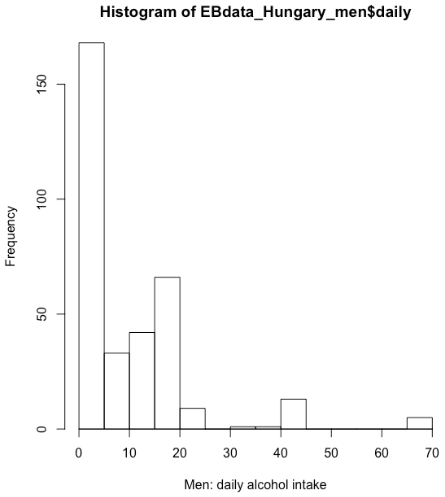
If one drinks equal 12g alcohol, accordingly, the assumptions are as follows:

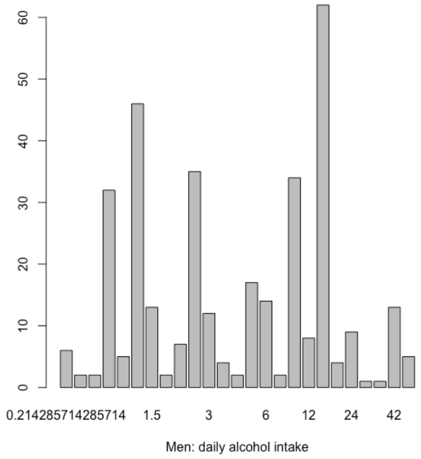
"Less than 1 drink"=6,"1 - 2 drinks"=18,
"3 - 4 drinks"=42,"5 - 6 drinks"=66,
"7 - 9 drinks"= 8," 10 drinks or more"=120,

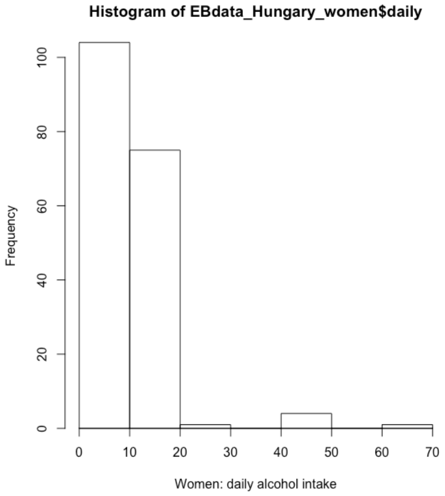
2c: average quantity of alcohol per week

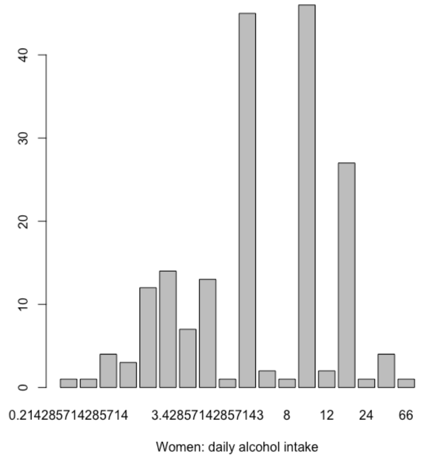
Multiplying the two variables above: i.e.
*(quantity of alcohol per day) * (*number of drinking days per week)

2d: histogram / bar plot of daily intake.


Histogram of EBdata_Hungary_men$daily




Histogram of EBdata_Hungary_women$daily



2e: heavy drinker” for men and women and set cut-off

alcohol daily intake = quant per week / 7

2f: Define a new variable “binge”

2g: problem drinker

Choose the logistic operators |, meaning “OR”.

2h: Check the contents of this new variable: problem_drinker

Yes, the variable makes sense due to it meets the given requirements.

2i: define a new variable total physical activity and categorization of physical activity

as.numeric was used to convert these factors (pa7d_*) to numeric values before doing the calculation.

Ifelse was used to categorize the people as “inactive, active, moderately active”.

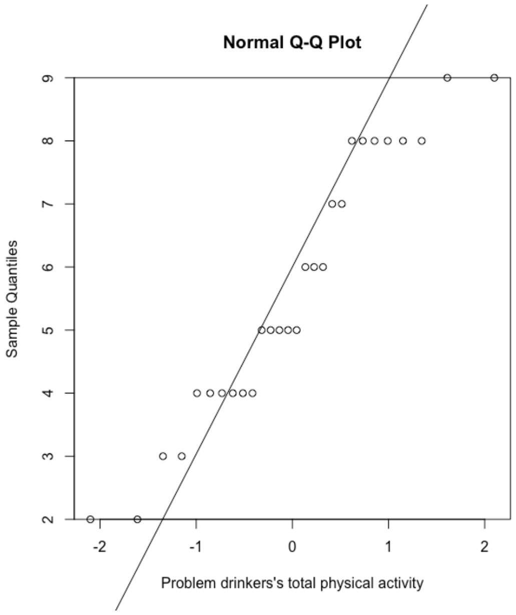
3. Analyzing the data

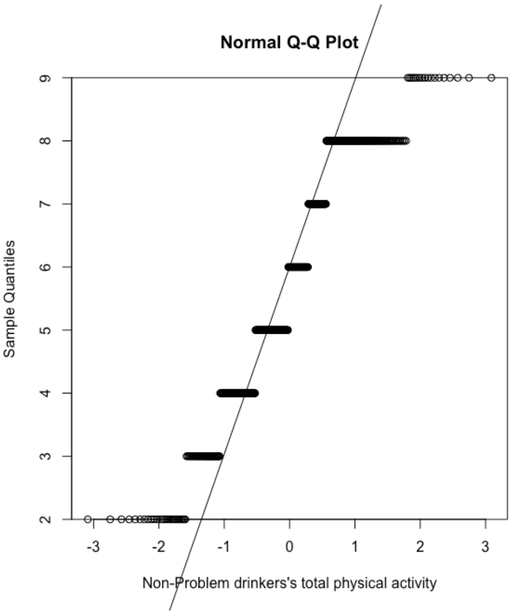
3a: Print a table contrasting the variable on physical activity VS problem drinker and non-problem drinker

Table 4: Physical activity in problem drinker and non-problem drinker

Problem_drinker	NO	YES
Active	28	2
Inactive	193	10
Mod. active	276	16

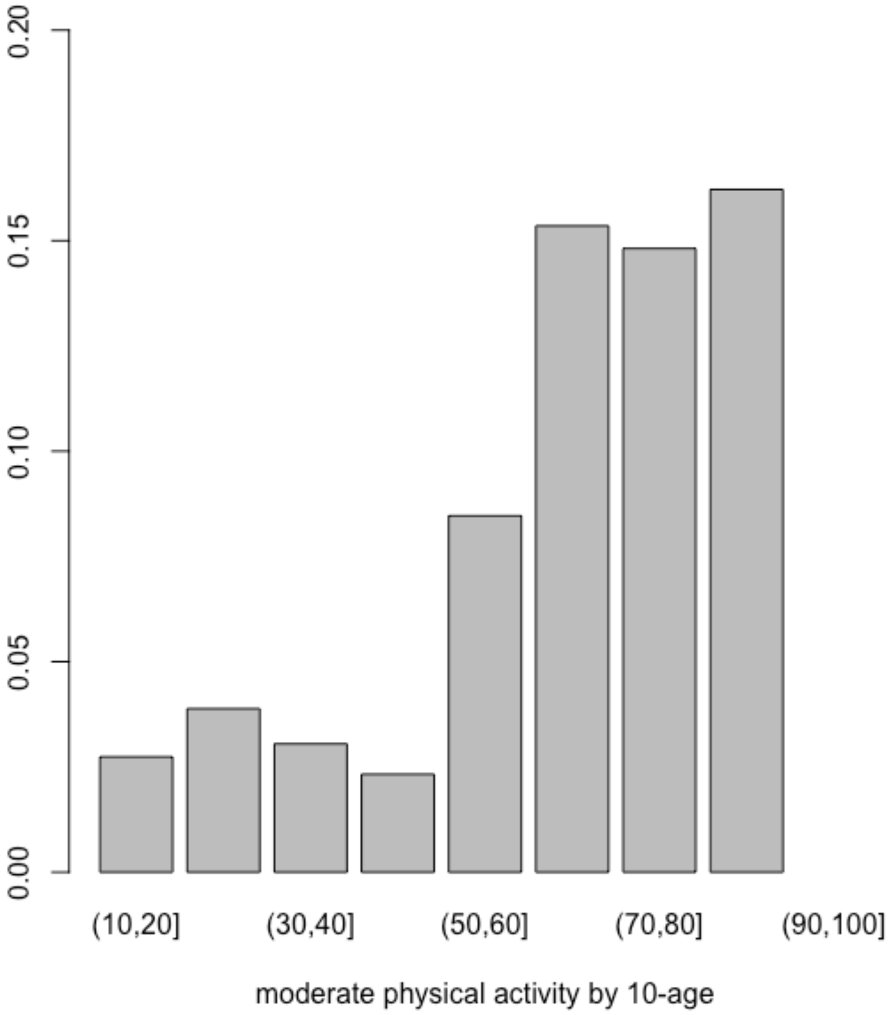
Before choosing some tests to check the difference, it is of great significance to check if these data are normally distributed. Therefore, the ***qqnorm()*** and ***qqline()*** was used. These data are not distributed along the given line and the non-parametrical approach ***wilcox.test()*** was chosen to compare the difference of total physical acitivities between problem drinkers and non-problems drinkers.

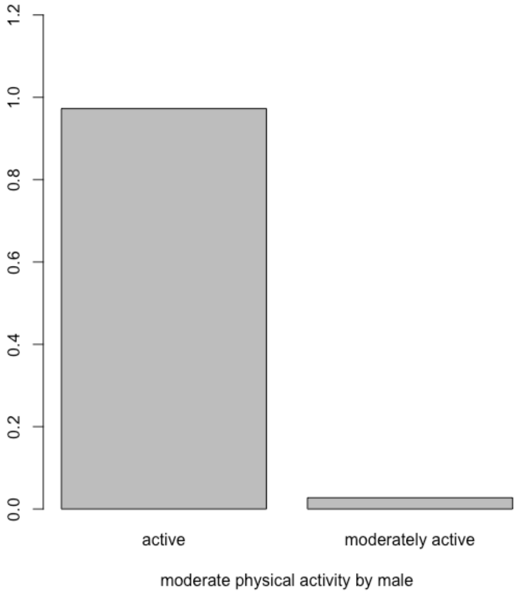


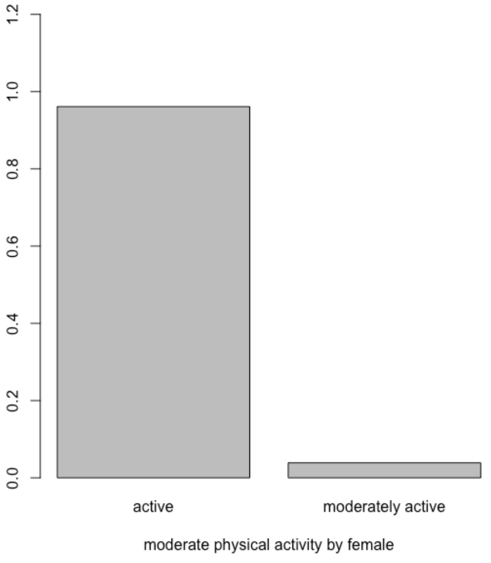


After using ***wilcox.test( ),*** the p-value is 0.7619, indicating that there is no significant difference between these two groups of alcohol drinkers.

3b: Make a graph of percentages with at least moderate physical activity

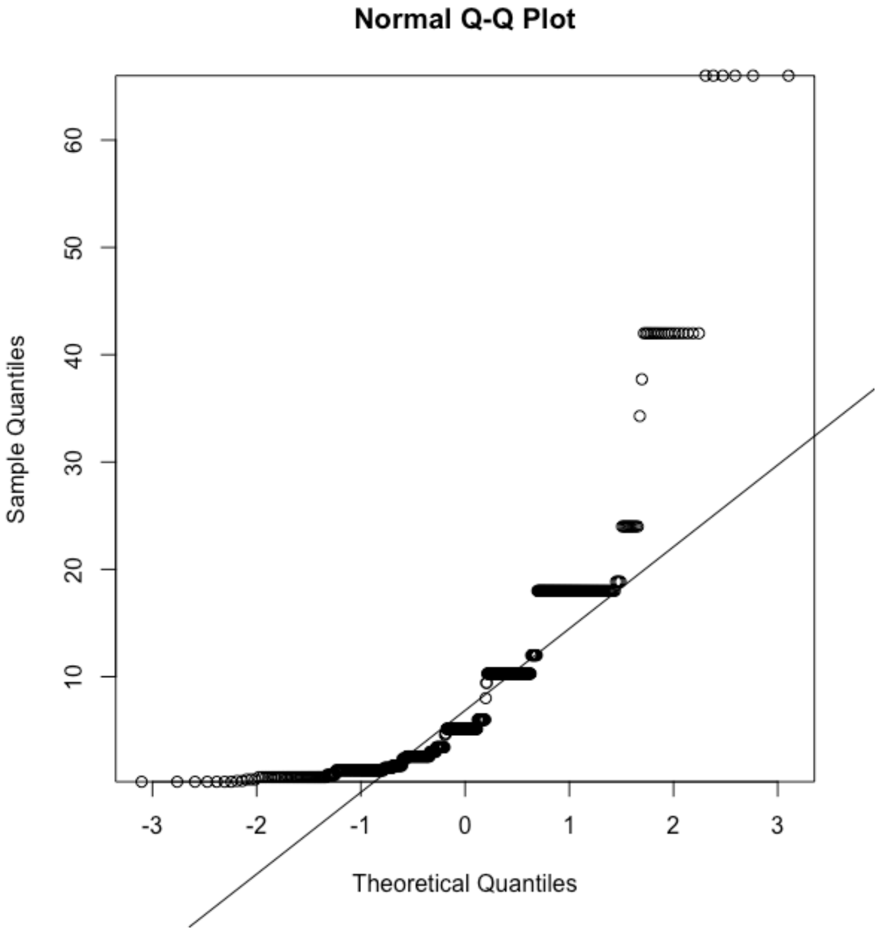

0.20
0.15
0.10
0.05
0.00
(10,20]
(30,40]
(50,60]
(70,80]
(90,100]
moderate physical activity by 10-age


1.2
1.0
0.8
0.6
0.4
0.2
0.0
active
moderately active
moderate physical activity by male


1.2
1.0
0.8
0.6
0.4
0.2
0.0
active
moderately active
moderate physical activity by female

3c: daily alcohol use in grams and check if normal distribution

By using QQplot and QQline, daily alcohol use is not normally distributed.



3d: regress total daily alcohol use on age, gender, and physical activity

By using the logistic regression ***lm( ),*** the P-value for age, gender, total physical activity is 1.406e-09, 0.3236, 1.317e-05 respectively, indicating that there is no significant correlation between gender and daily alcohol use, but the significant correlation can be found in terms of age and physical activity.

3e+3f: regression analysis

To be honest, it is difficult for me to interpret the results of regression analysis. To better understand the regression of daily alcohol intake to the addition of age plus total physical alcohol, or gender plus total physical alcohol, the further learning of statistical background is greatly needed.

4. The uncounted problems

- The unfamiliarity with the specific function： The first eight-day exercises are greatly helpful for me get a better understanding of the detail and the meaning of some important functions. Although I can understand most of the codes, I cannot make it alone. Therefore, I have searched for some functions and examples in these previous exercises.
- The coding of specific function: For the case study, some new functions, like ***switch( )*** are advised to use to achieve the main aim. Difficult as it is at first sight, I finally made it by browsing through the webpages on ***stackoverflow***, after some struggles.