Data Vizualization

11/8/2019

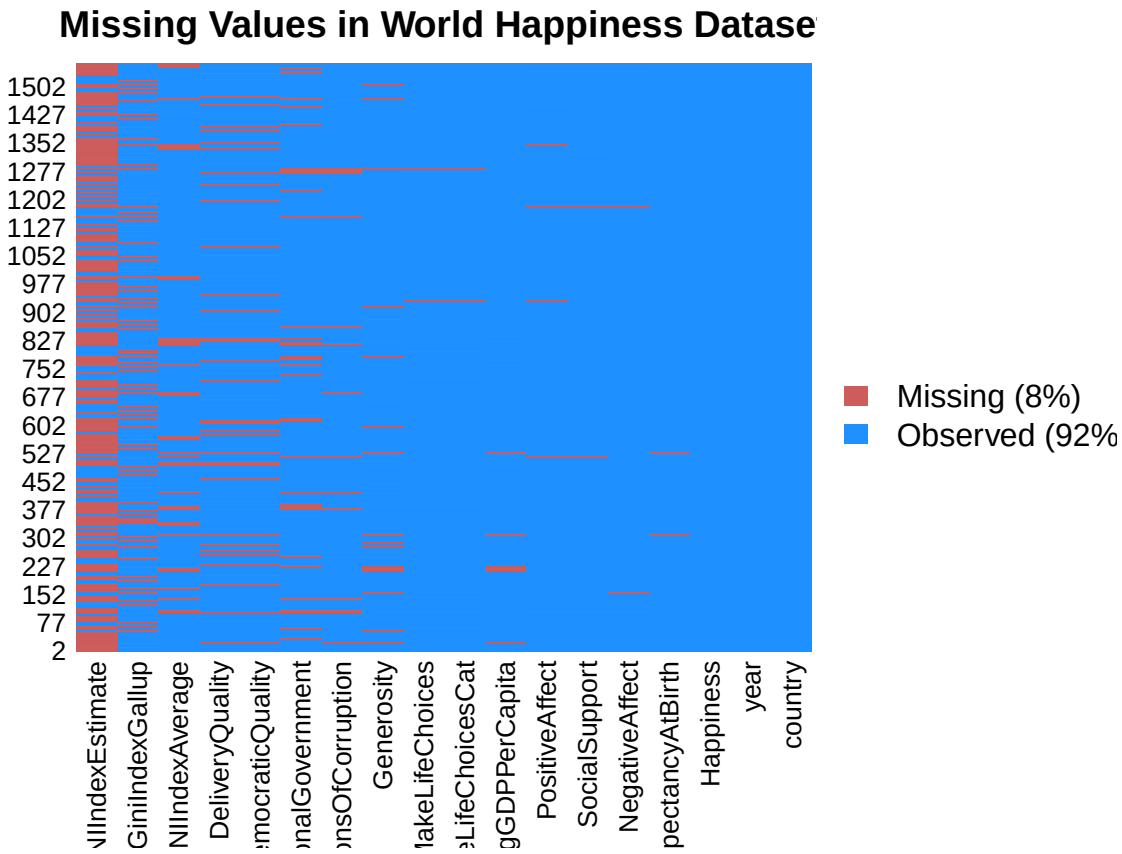
1)

```
#Import using read_excel and assign to whappy
whappy<- read_excel("DVMP - World Happiness Data 2018.xlsx",col_names = T,na= c("",",","?","NA"))

#Structure of dataset
glimpse(whappy)
```

```
## Observations: 1,562
## Variables: 18
## $ country                          <chr> "Afghanistan", "Afghanistan", "Afgha...
## $ year                             <dbl> 2008, 2009, 2010, 2011, 2012, 2013, ...
## $ Happiness                        <dbl> 3.723590, 4.401778, 4.758381, 3.8317...
## $ LogGDPPerCapita                  <dbl> 7.168690, 7.333790, 7.386629, 7.4150...
## $ SocialSupport                    <dbl> 0.4506623, 0.5523084, 0.5390752, 0.5...
## $ HealthyLifeExpectancyAtBirth     <dbl> 49.20966, 49.62443, 50.00896, 50.367...
## $ FreedomToMakeLifeChoices         <dbl> 0.7181143, 0.6788964, 0.6001272, 0.4...
## $ FreedomToMakeLifeChoicesCat      <chr> "Med", "Med", "Med", "Low", "Low", "...
## $ Generosity                       <dbl> 0.18181947, 0.20361446, 0.13763019, ...
## $ PerceptionsOfCorruption          <dbl> 0.8816863, 0.8500354, 0.7067661, 0.7...
## $ PositiveAffect                   <dbl> 0.5176372, 0.5839256, 0.6182655, 0.6...
## $ NegativeAffect                   <dbl> 0.2581955, 0.2370924, 0.2753238, 0.2...
## $ ConfidenceInNationalGovernment   <dbl> 0.6120721, 0.6115452, 0.2993574, 0.3...
## $ DemocraticQuality                <dbl> -1.92968953, -2.04409266, -1.9918099...
## $ DeliveryQuality                  <dbl> -1.6550844, -1.6350248, -1.6171761, ...
## $ GINIIndexEstimate                <dbl> NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ GINIIndexAverage                 <dbl> NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
## $ GiniIndexGallup                  <dbl> NA, 0.4419058, 0.3273182, 0.3367642,...
```

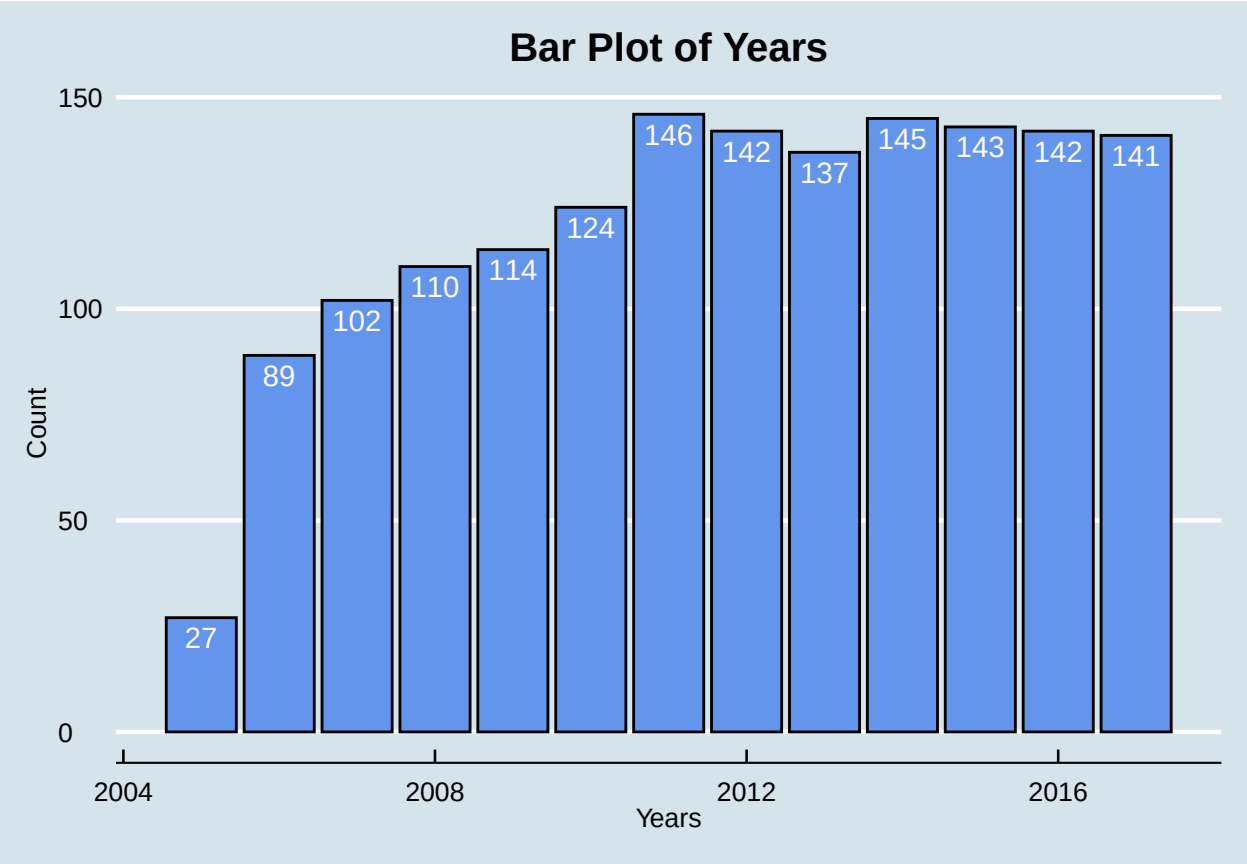
```
#CHECKING for variables with Missing Values:Graphical representation using missmap
missmap(whappy,main = "Missing Values in World Happiness Dataset")
```

```
## Warning in if (class(obj) == "amelia") {: the condition has length > 1 and only
## the first element will be used

## Warning: Unknown or uninitialised column: 'arguments'.

## Warning: Unknown or uninitialised column: 'arguments'.

## Warning: Unknown or uninitialised column: 'imputations'.
```



All variables except Happiness, country and year have missing values.

```
#BarPLot of YEAR
whappy %>%
  ggplot(aes(year))+geom_bar(fill="cornflowerblue",color="black")+theme_economist()+
  labs(title = "Bar Plot of Years",x="Years",y="Count")+
  theme(plot.title = element_text(hjust = .5))+
  geom_text(stat = 'count', aes(label=..count..),vjust = 1.45,color="floralwhite")
```



The plot shows that 2011 had the highest count followed by 2014. 2005 had the lowest count with only 27. Overall, the counts have gradually increased till 2011 and have somewhat remained constant till 2017 with a few fluctuations.

2) a. *Reference:Dotted blue line is the mean for the variable*

```
#Filter and remove "USE?=NO" columns
whappy2017<-whappy %>%
  dplyr:: filter(year=="2017") %>%
  select(-c(6,7,9,11:18))
#glimpse(whappy2017)

#Happiness
whappy2017 %>%
  ggplot(aes(Happiness))+geom_histogram(color="black",fill="red")+
  theme_economist()+
  labs(title = "Histogram of Happiness",x="Happiness",y="Count")+
  theme(plot.title = element_text(hjust = .5))+
  geom_vline(aes(xintercept=mean(Happiness, na.rm=T)),   # Ignore NA values for mean
             color="blue", linetype="dashed", size=1)
```

```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```


```
#Additonal CHECKING for skewness and outliers:
boxplot(whappy2017$Happiness, plot=F)$out
```

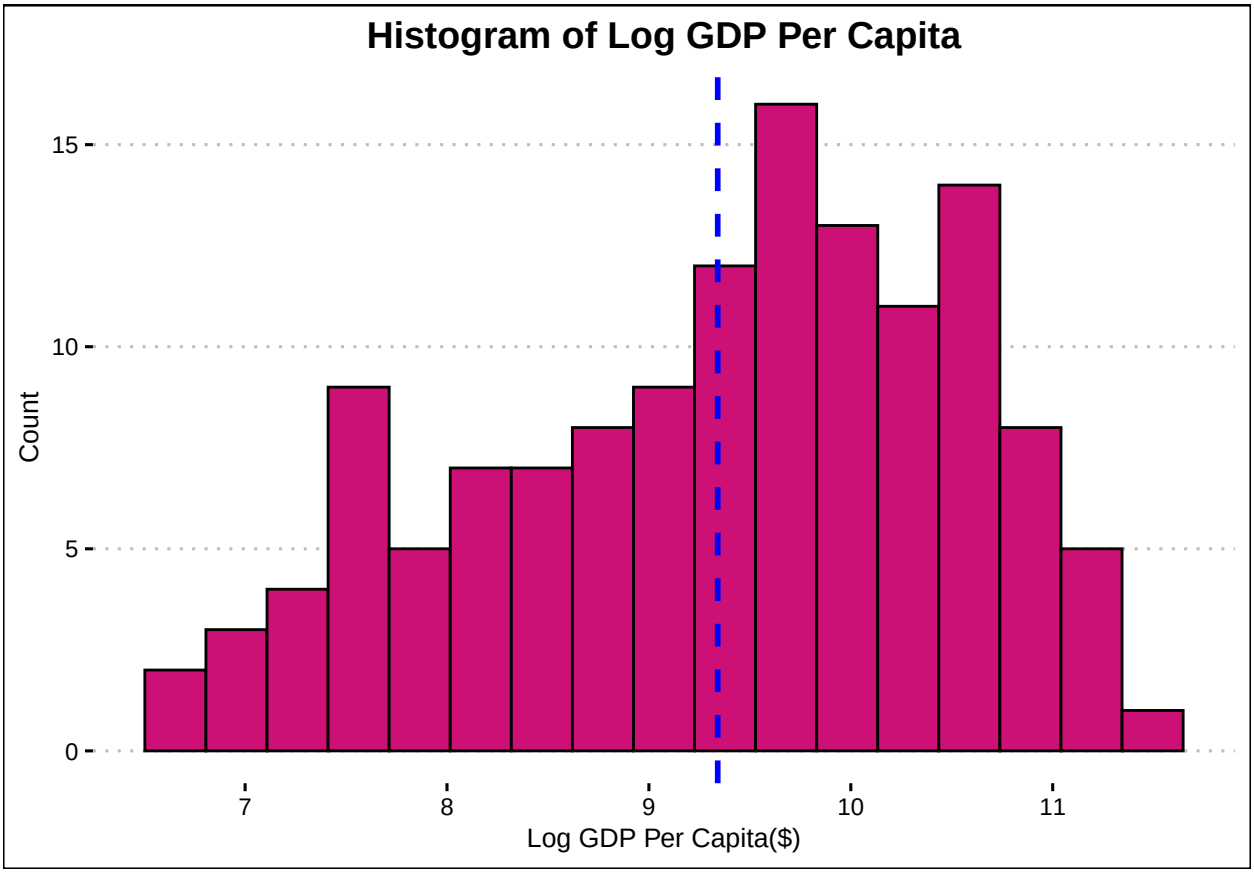
```
## numeric(0)
```

```
skewness(whappy2017$Happiness,na.rm = T)
```

```
## [1] -0.07688792
## attr(,"method")
## [1] "moment"
```

```
#GDP
whappy2017 %>%
  ggplot(aes(LogGDPPerCapita))+geom_histogram(bins=17,color="black",fill="deeppink3")+
  theme_clean()+
  labs(title = "Histogram of Log GDP Per Capita",x="Log GDP Per Capita($)",y="Count")+
  theme(plot.title = element_text(hjust = .5))+
  geom_vline(aes(xintercept=mean(LogGDPPerCapita, na.rm=T)),
             color="blue", linetype="dashed", size=1)
```

```
## Warning: Removed 7 rows containing non-finite values (stat_bin).
```




```
#Additional CHECKING for skewness nad outliers:
boxplot(whappy2017$LogGDPPerCapita, plot=F)$out
```

```
## numeric(0)
```

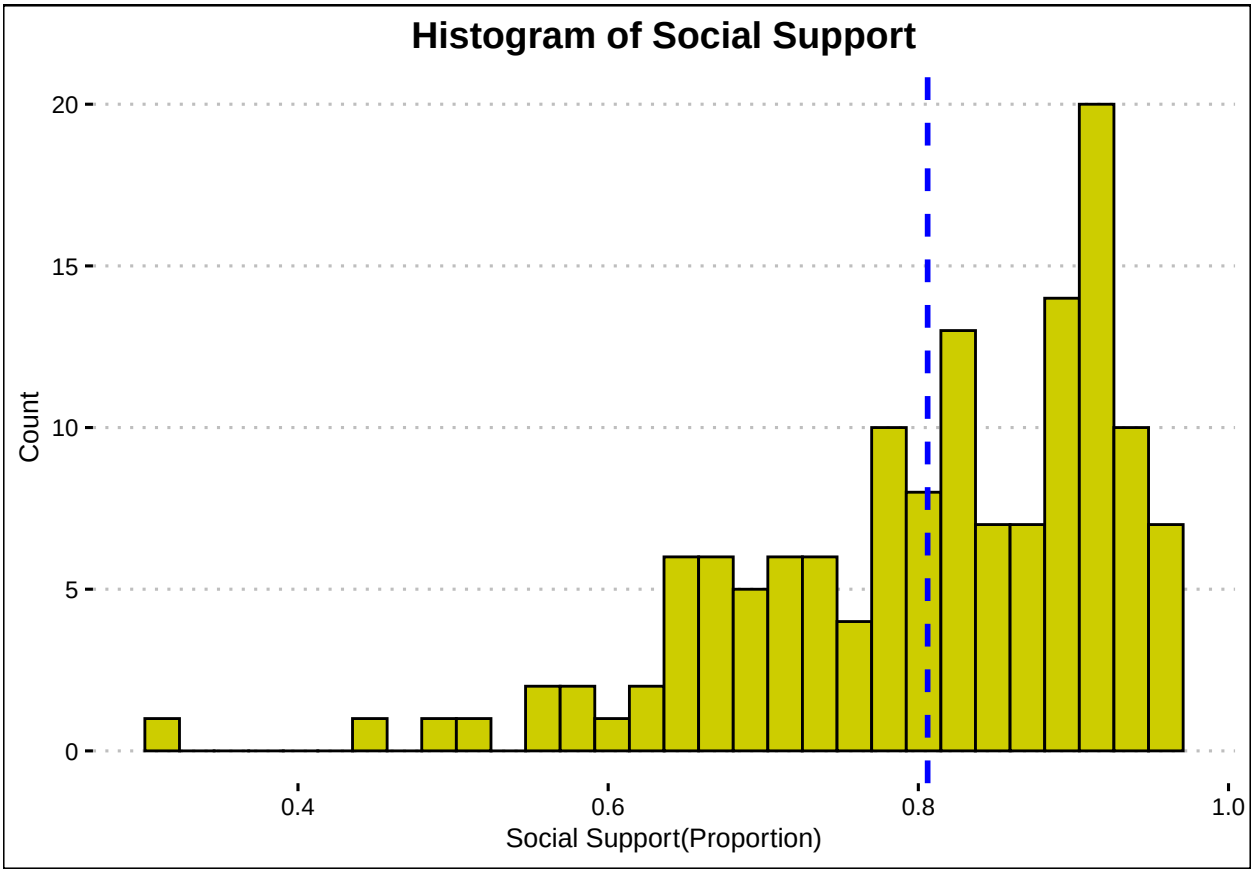
```
skewness(whappy2017$LogGDPPerCapita,na.rm = T)
```

```
## [1] -0.4318729
## attr(,"method")
## [1] "moment"
```

```
#Social Support
whappy2017 %>%
  ggplot(aes(SocialSupport))+geom_histogram(color="black",fill="yellow3")+
  theme_clean()+
  labs(title = "Histogram of Social Support",x="Social Support(Proportion)",y="Count")+
  theme(plot.title = element_text(hjust = .5))+
  geom_vline(aes(xintercept=mean(SocialSupport, na.rm=T)),
             color="blue", linetype="dashed", size=1)
```

```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```

```
## Warning: Removed 1 rows containing non-finite values (stat_bin).
```



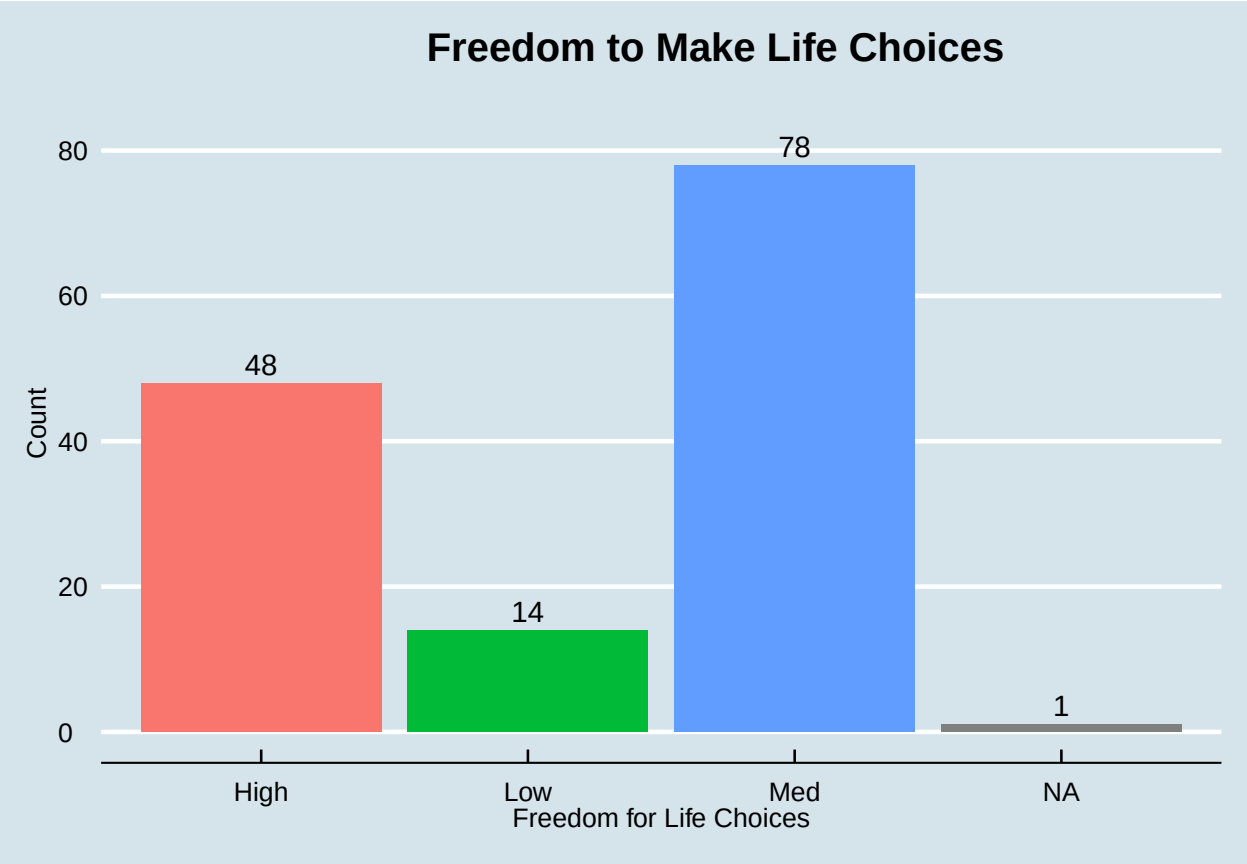

```
#Additional CHECKING for skewness nad outliers:
boxplot(whappy2017$SocialSupport, plot=F,col ="Yellow3")$out
```

```
## [1] 0.4358790 0.3195891
```

```
skewness(whappy2017$SocialSupport,na.rm = T)
```

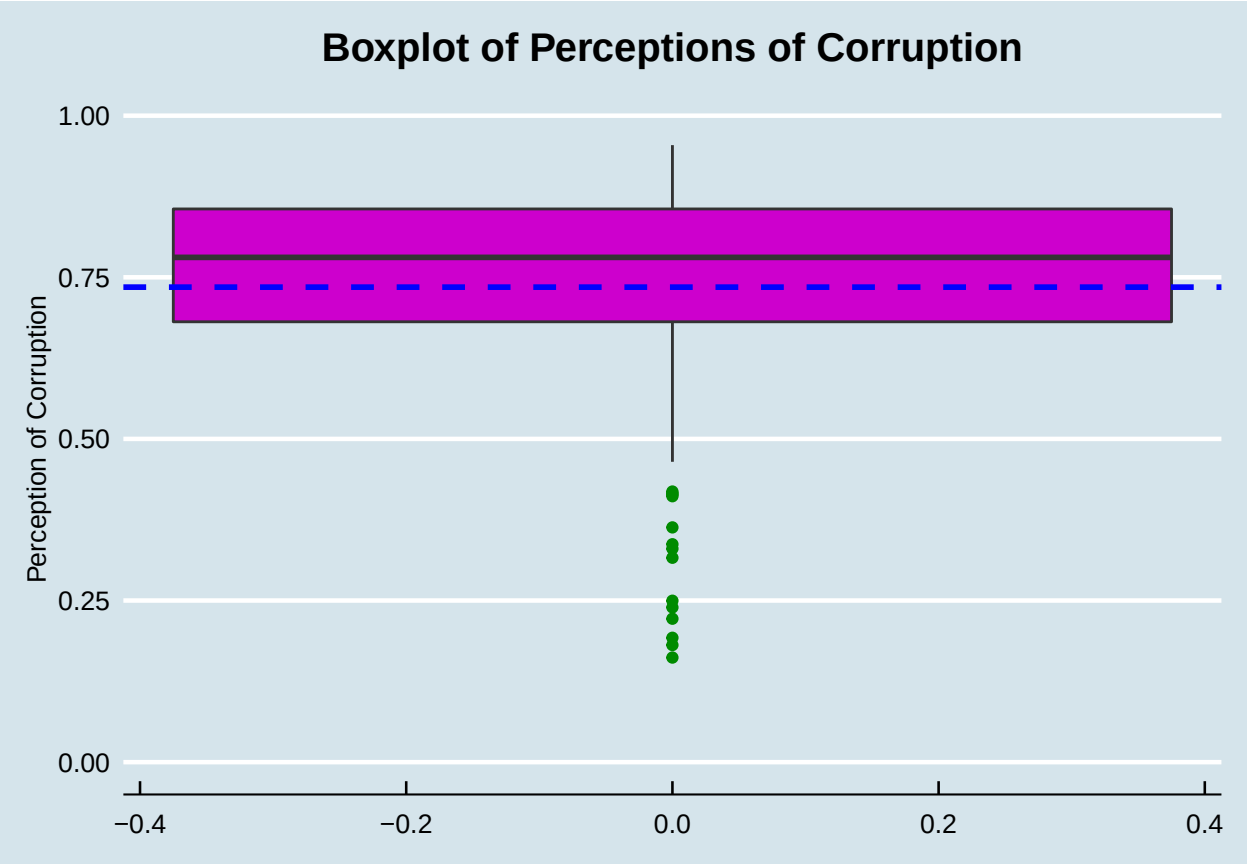
```
## [1] -1.079831
## attr(,"method")
## [1] "moment"
```

```
#Freedom to Make Life Choices Cat
whappy2017 %>%
  ggplot(aes(as.factor(FreedomToMakeLifeChoicesCat)))+
  geom_bar(aes(fill=FreedomToMakeLifeChoicesCat))+
  theme_economist()+
  labs(title = "Freedom to Make Life Choices",x="Freedom for Life Choices",y="Count")+
  theme(plot.title = element_text(hjust = .6))+
  geom_text(stat = 'count', aes(label=..count..),vjust = -.4,color="black")+
  theme(legend.position = "none")+
  scale_y_continuous(limits = c(0,85))
```




```
#Perceptions of Corruption
whappy2017 %>%
  ggplot(aes(y=PerceptionsOfCorruption))+geom_boxplot(fill="magenta3",outlier.color="green4")+
  theme_economist()+
  labs(title = "Boxplot of Perceptions of Corruption",y="Perception of Corruption")+
  theme(plot.title = element_text(hjust = .5))+
  geom_hline(aes(yintercept=mean(PerceptionsOfCorruption, na.rm=T)),
             color="blue", linetype="dashed", size=1)+
scale_y_continuous(limits = c(0,1))
```

```
## Warning: Removed 12 rows containing non-finite values (stat_boxplot).
```




```
#Additional CHECKING for skewness:
skewness(whappy2017$PerceptionsOfCorruption,na.rm = T)
```

```
## [1] -1.560214
## attr(,"method")
## [1] "moment"
```

The histogram for happiness is not really normal. It seems more like a bimodal distribution. No outliers present for this variable.

The histogram for Log GDP seems negatively skewed. Checking for skewness, it has skewness of -0.43. No outliers present for this variable.

The histogram for Social support looks negatively skewed. There are outliers present, two to be exact.

The barplot for Freedom to Make Life Choices Category shows the highest count for Medium category with 78, followed by High and Low. There is 1 missing value.

The boxplot for Perceptions of Corruption shows a negative skew of -1.56. There are many outliers present for this variable which are making the left tail longer, giving it a negative skew.

b.

```
#GRAPHS#

#Log GDP Per Capita
whappy2017 %>%
  ggplot(aes(LogGDPPerCapita,Happiness))+geom_point(color="deeppink3")+
  theme_economist()+
  labs(title = "Happiness vs Log GDP",x="Log GDP Per Capita ($)",y="Happiness")+
```

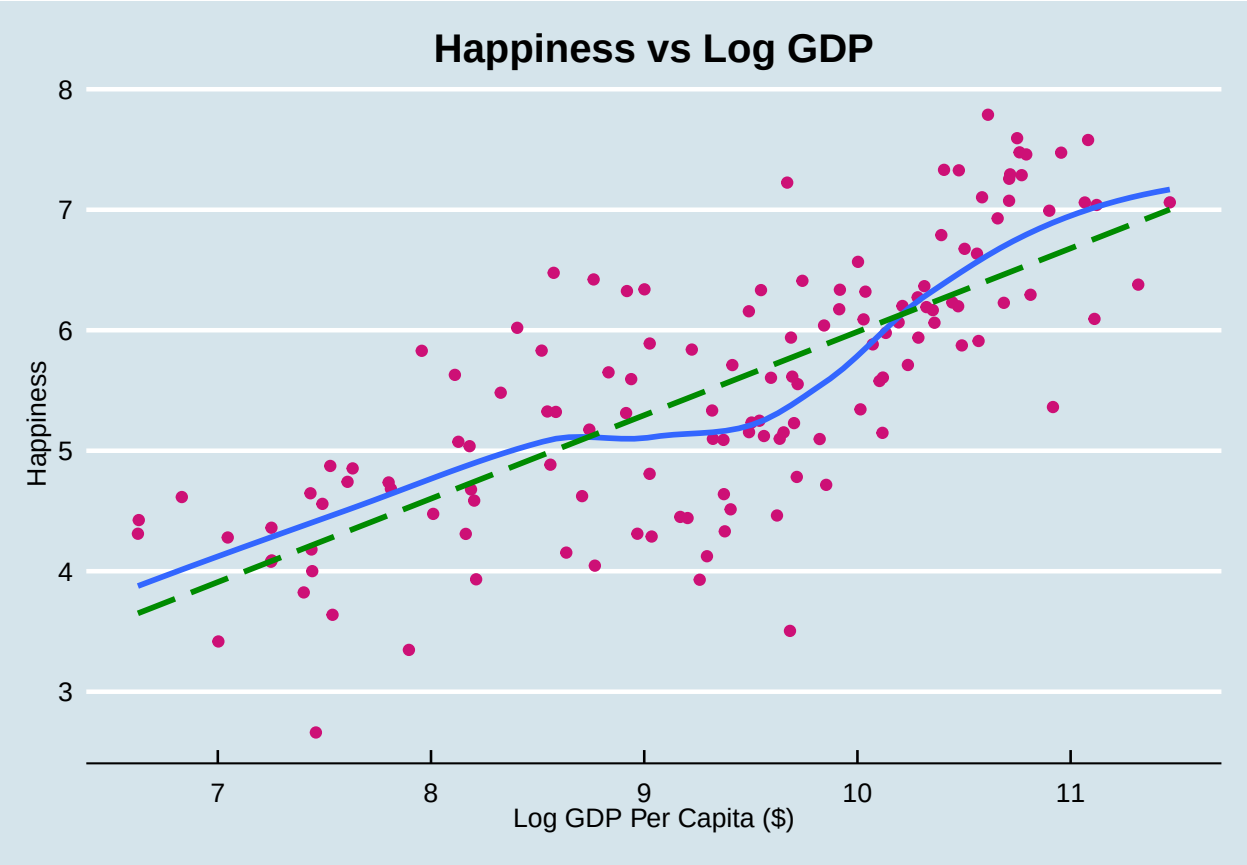
```
  theme(plot.title = element_text(hjust = .5))+geom_smooth(se=F)+
  geom_smooth(method = "lm",se=F,color="green4",lty=5)
```

```
## `geom_smooth()` using method = 'loess' and formula 'y ~ x'
```

```
## Warning: Removed 7 rows containing non-finite values (stat_smooth).
```

```
## Warning: Removed 7 rows containing non-finite values (stat_smooth).
```

```
## Warning: Removed 7 rows containing missing values (geom_point).
```



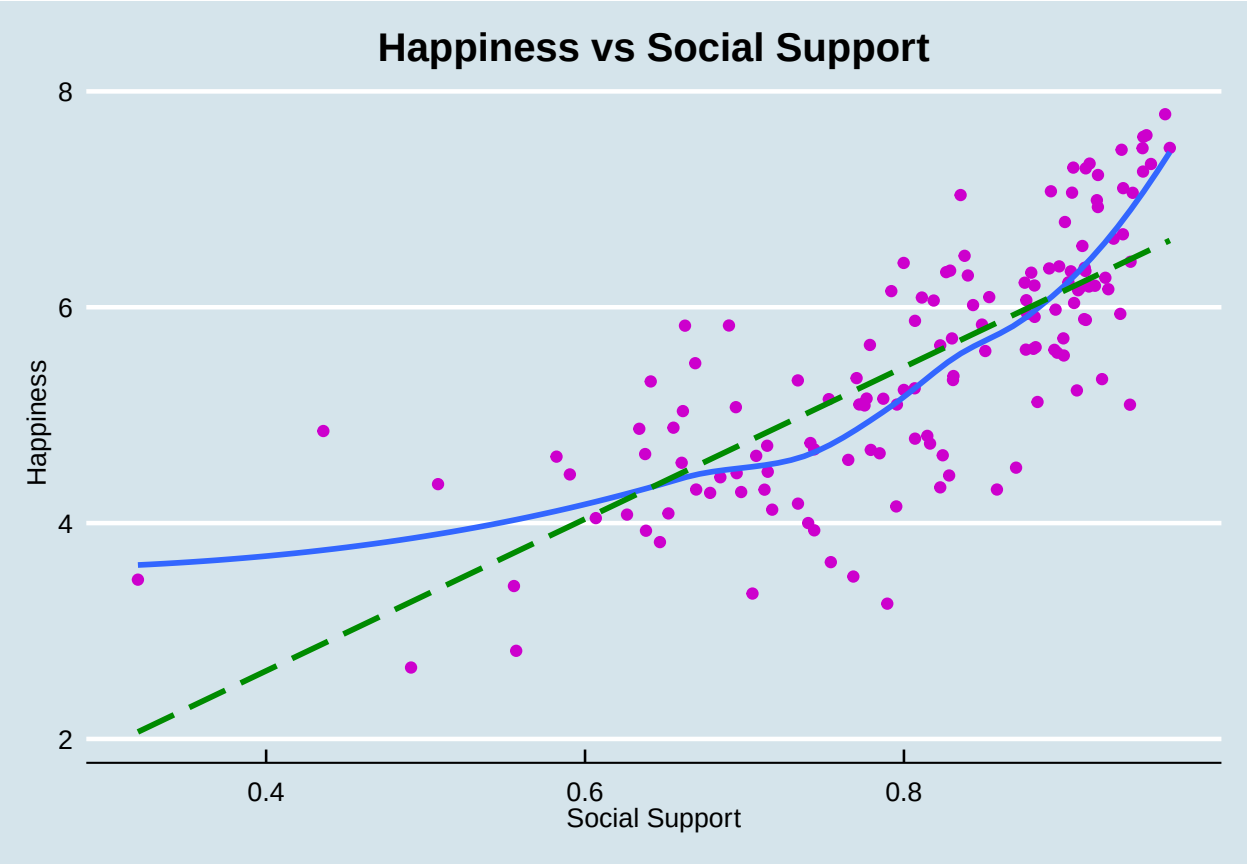

```
#Social Support
whappy2017 %>%
  ggplot(aes(SocialSupport,Happiness))+geom_point(color="magenta3")+
  theme_economist()+
  labs(title = "Happiness vs Social Support",x="Social Support",y="Happiness")+
  theme(plot.title = element_text(hjust = .5))+geom_smooth(se=F)+
  geom_smooth(method = "lm",se=F,color="green4",lty=5)
```

```
## `geom_smooth()` using method = 'loess' and formula 'y ~ x'
```

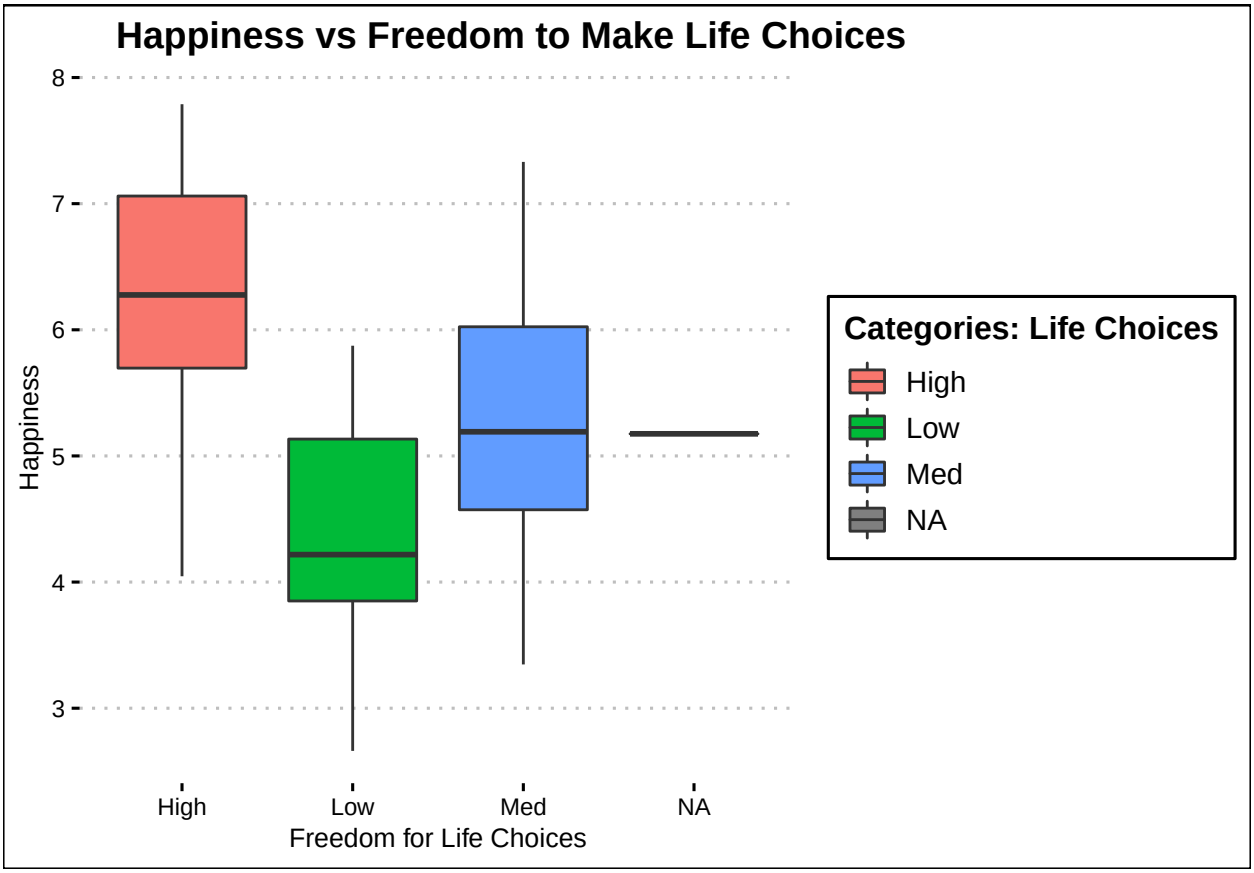
```
## Warning: Removed 1 rows containing non-finite values (stat_smooth).
```

```
## Warning: Removed 1 rows containing non-finite values (stat_smooth).
```

```
## Warning: Removed 1 rows containing missing values (geom_point).
```

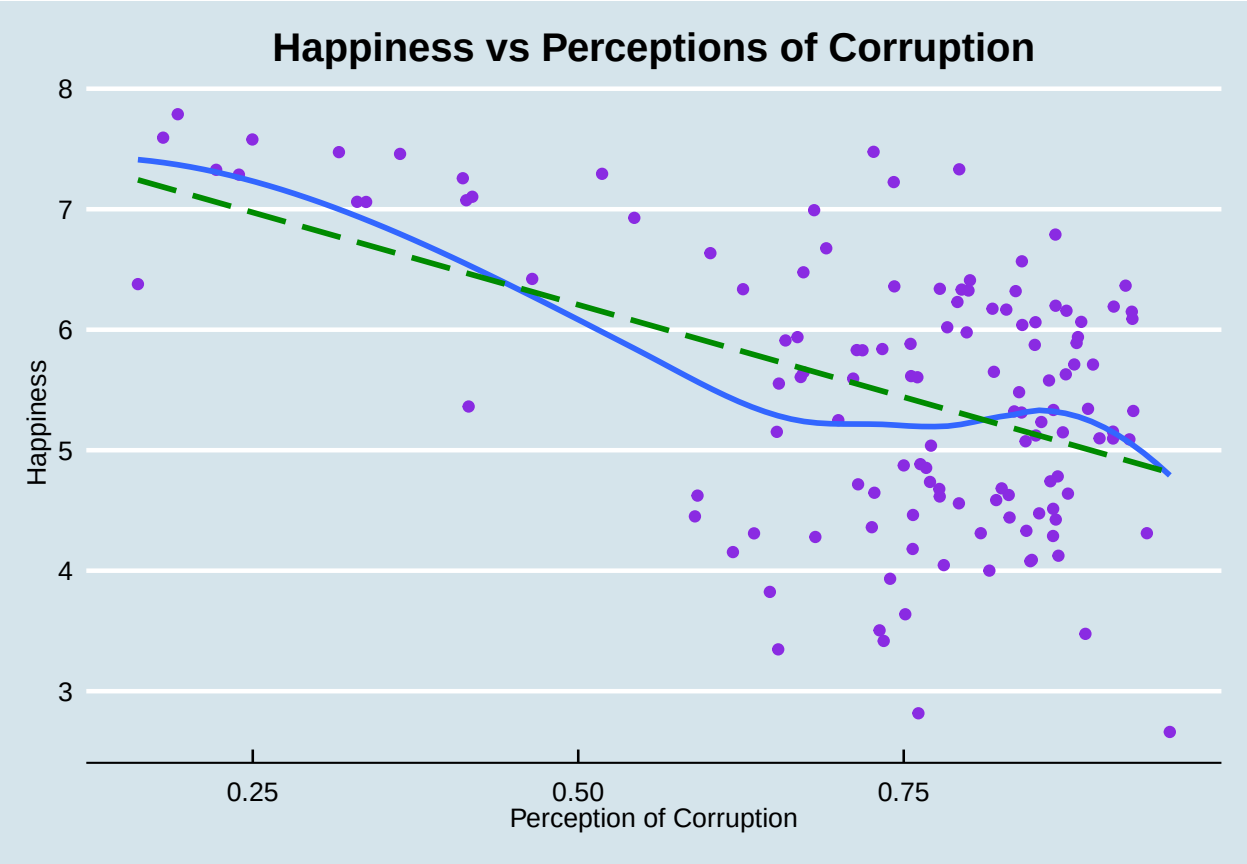



```
#FreedomToMakeLifeChoices
whappy2017 %>%
  ggplot(aes(FreedomToMakeLifeChoicesCat,Happiness))+geom_boxplot(aes(fill=
  theme_clean()+
  labs(title = "Happiness vs Freedom to Make Life Choices",x=
         "Freedom for Life Choices",y="Happiness")+
  theme(plot.title = element_text(hjust = -.5))+
  guides(fill=guide_legend(title="Categories: Life Choices"))
```




```
#Perceptions Of Corruption
whappy2017 %>%
  ggplot(aes(PerceptionsOfCorruption, Happiness))+
  geom_point(color="blueviolet")+
  theme_economist()+
  labs(title = "Happiness vs Perceptions of Corruption",x="Perception of Corruption",y="Happiness")+
  theme(plot.title = element_text(hjust = .5))+geom_smooth(se=F)+
  geom_smooth(method = "lm",se=F,color="green4",lty=5)
```

```
## `geom_smooth()` using method = 'loess' and formula 'y ~ x'
## Warning: Removed 12 rows containing non-finite values (stat_smooth).
## Warning: Removed 12 rows containing non-finite values (stat_smooth).
## Warning: Removed 12 rows containing missing values (geom_point).
```




```
#Pearson orrelation coefficient for Happiness against numeric variables
indx<--grep("^(country|Freedom|Happiness)",names(whappy2017))
corrVals<- sapply(whappy2017[indx],
                  function(x) cor(x, whappy2017$Happiness, use = "complete.obs"))
```

```
## Warning in cor(x, whappy2017$Happiness, use = "complete.obs"): the standard
## deviation is zero
```

```
sort(corrVals, decreasing = TRUE)
```

```
##           SocialSupport         LogGDPPerCapita PerceptionsOfCorruption
##               0.7571754               0.7522870              -0.4884795
```

```
#Using Lowess R^2 to see the variable with strongest correlation with Happiness
library(caret)
```

```
## Loading required package: lattice
```

```
##
## Attaching package: 'caret'
```

```
## The following object is masked from 'package:purrr':
##
##     lift
```

```
data.loess<-whappy2017[complete.cases(whappy2017$Happiness), ]
loessResults<- filterVarImp(x = data.loess[-(1:3)], y = data.loess$Happiness,
                            nonpara = TRUE)
loessResults
```

```
##                                 Overall
## LogGDPPerCapita              0.6658694
## SocialSupport                0.6607475
## FreedomToMakeLifeChoicesCat 0.2947826
## PerceptionsOfCorruption     0.3472870
```

The scatterplot shows a positive correlation between Log GDP and Happiness.As Log GDP per capita increases so does Happiness

Social support is positively correlated to Happiness.

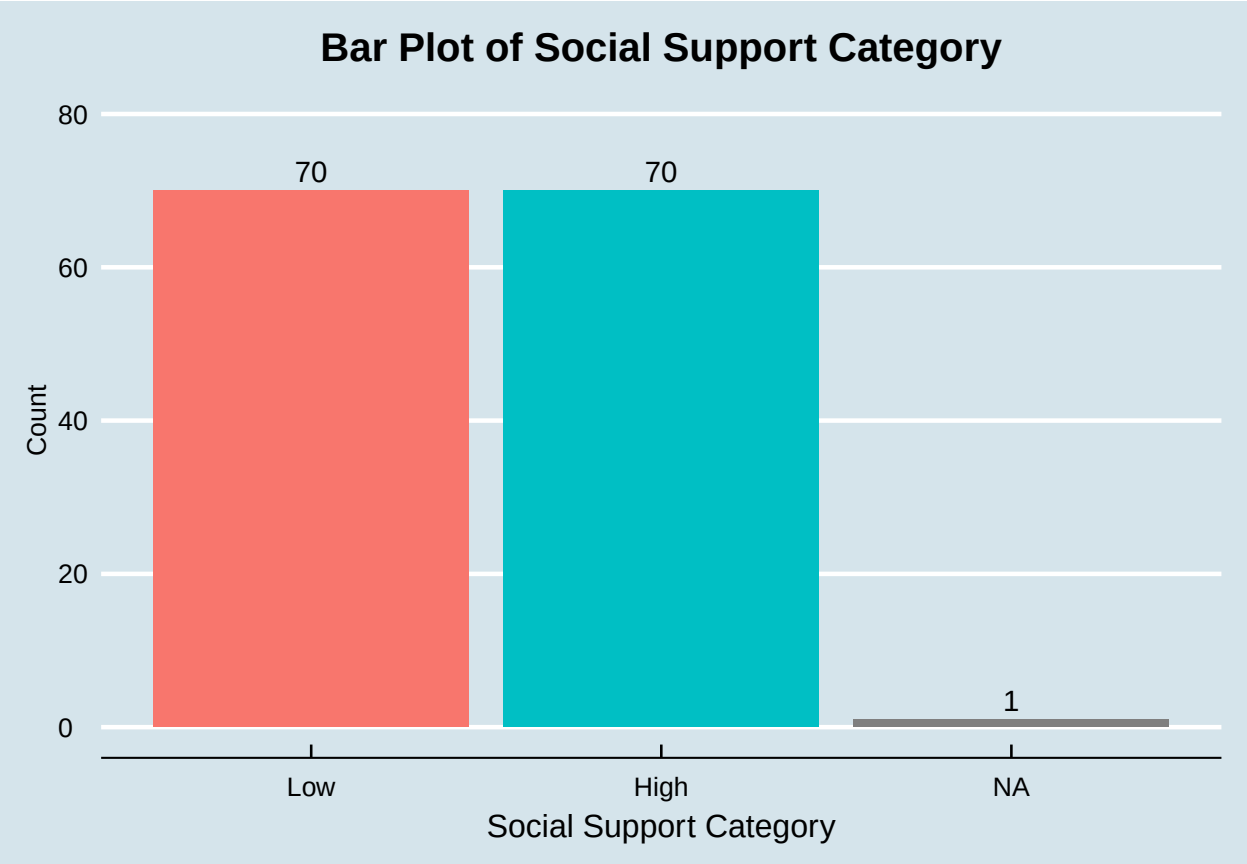
The boxplots for Freedom to Make Life Choices vs Happiness shows that Happiness is the highest for the High Category. Moreover, as the category increases from Low to High, so does Happiness.

The scatterplot shows a negative correlation between Perceptions of Corruption and Happiness.As Perceptions of Corruption increases, Happiness decreases.

Just looking at the graphs, Happiness appears to be mostly correlated with Log GDP per Capita as compared to other variables. To confirm this I calculated correlation coefficient for the numeric variables (i.e.country,year,FreedomToMakeLifeChoices removed) against Happiness. Social Support and Log GDP per Capita have had a cor.coefficient of about .75 each. Calculating Lowess R^2 for all variables (included: FreedomToMakeLifeChoices) against Happiness I found out that R^2 for LogGDP and Social Support were still the top two variables (very close values) with R^2 being about 65% each.
****

c.

```
#New variable SocialSupportCategory and assign 1 and 0 accordingly
whappy2017$SocialSupportCategory<-if_else(
  whappy2017$SocialSupport>median(whappy2017$SocialSupport,na.rm = T),1,0)
#view(whappy2017) CHECKED
#glimpse(whappy2017)

#make it a factor variable
whappy2017$SocialSupportCategory<-factor(whappy2017$SocialSupportCategory,levels = c("0","1"), labels =

#Bar plot for SocialSupportCategory
whappy2017 %>%
  ggplot(aes(SocialSupportCategory))+
  geom_bar(aes(fill=SocialSupportCategory))+
  theme_economist()+
  labs(title = "Bar Plot of Social Support Category",x="Social Support Category",y="Count")+
  theme(plot.title = element_text(hjust = .5))+
  geom_text(stat = 'count', aes(label=..count..),vjust = -.4,color="black")+
  theme(legend.position = "none",axis.title.x = element_text(vjust = -.6,size=12))+
  scale_y_continuous(limits = c(0,80))
```



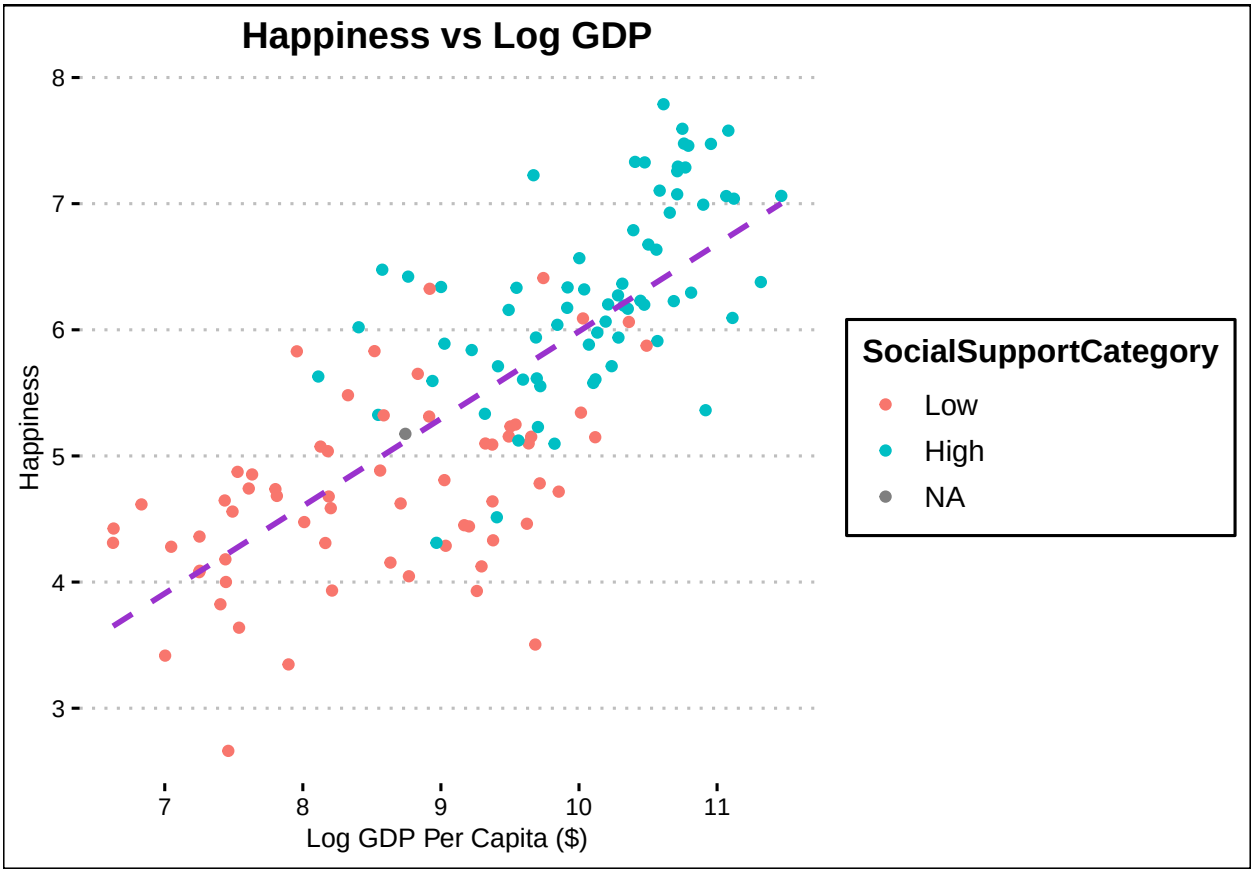
The barplot shows that both High and Low levels for Social Support Category have equal counts of *(they were divided between the median)* There is one missing value for the variable as there was one missing value present in the Social Support variable.

d.

```
#scatterplot of Happiness as the dependent (y) variable and LogGDPPerCapita as the
#independent (x) variables, with SocialSupportCategory as the color aesthetic
whappy2017 %>%
  ggplot(aes(LogGDPPerCapita,Happiness))+
  geom_point(aes(color=SocialSupportCategory))+
  theme_clean()+
  labs(title = "Happiness vs Log GDP",x="Log GDP Per Capita ($)",y="Happiness")+
  theme(plot.title = element_text(hjust = .5))+
   geom_smooth(method="lm",se=F,color="darkorchid3",lty=2)
```

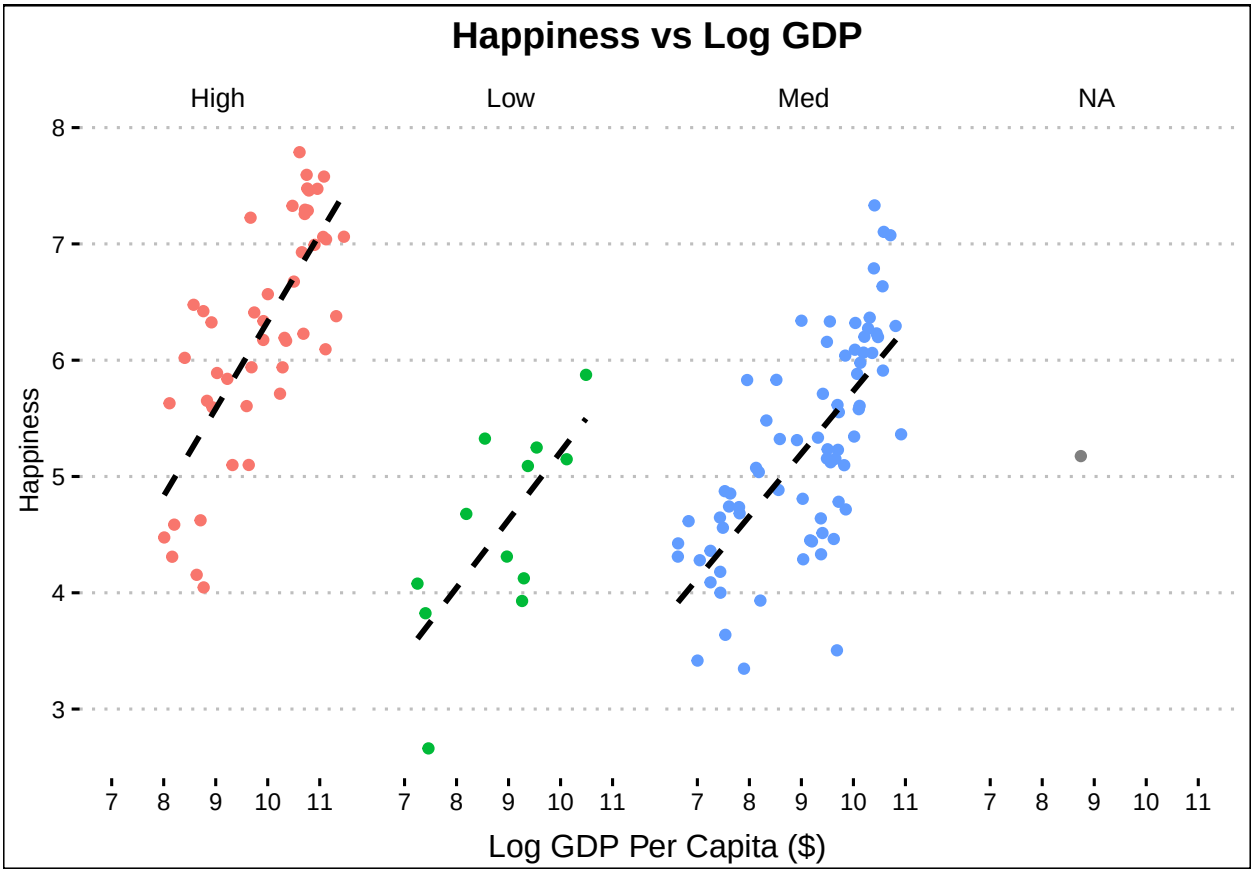
```
## Warning: Removed 7 rows containing non-finite values (stat_smooth).
```

```
## Warning: Removed 7 rows containing missing values (geom_point).
```




```
  #facet_grid(.~SocialSupportCategory)

#Facet grid
whappy2017 %>%
  ggplot(aes(LogGDPPerCapita,Happiness))+
  geom_point(aes(color=FreedomToMakeLifeChoicesCat))+
  theme_clean()+
  labs(title = "Happiness vs Log GDP",x="Log GDP Per Capita ($)",y="Happiness")+
  theme(plot.title = element_text(hjust = .5),legend.position = "none",
        axis.title.x = element_text(vjust = -.6,size=12))+
  geom_smooth(method="lm",se=F,color="black",lty=2)+facet_grid(~FreedomToMakeLifeChoicesCat)
```

```
## Warning: Removed 7 rows containing non-finite values (stat_smooth).

## Warning: Removed 7 rows containing missing values (geom_point).
```



In the graph with SocialSupport Category as the color aesthetic, the higher the increase in Happiness as Log GDP increases for the *High* category as compared to the *Low* category.

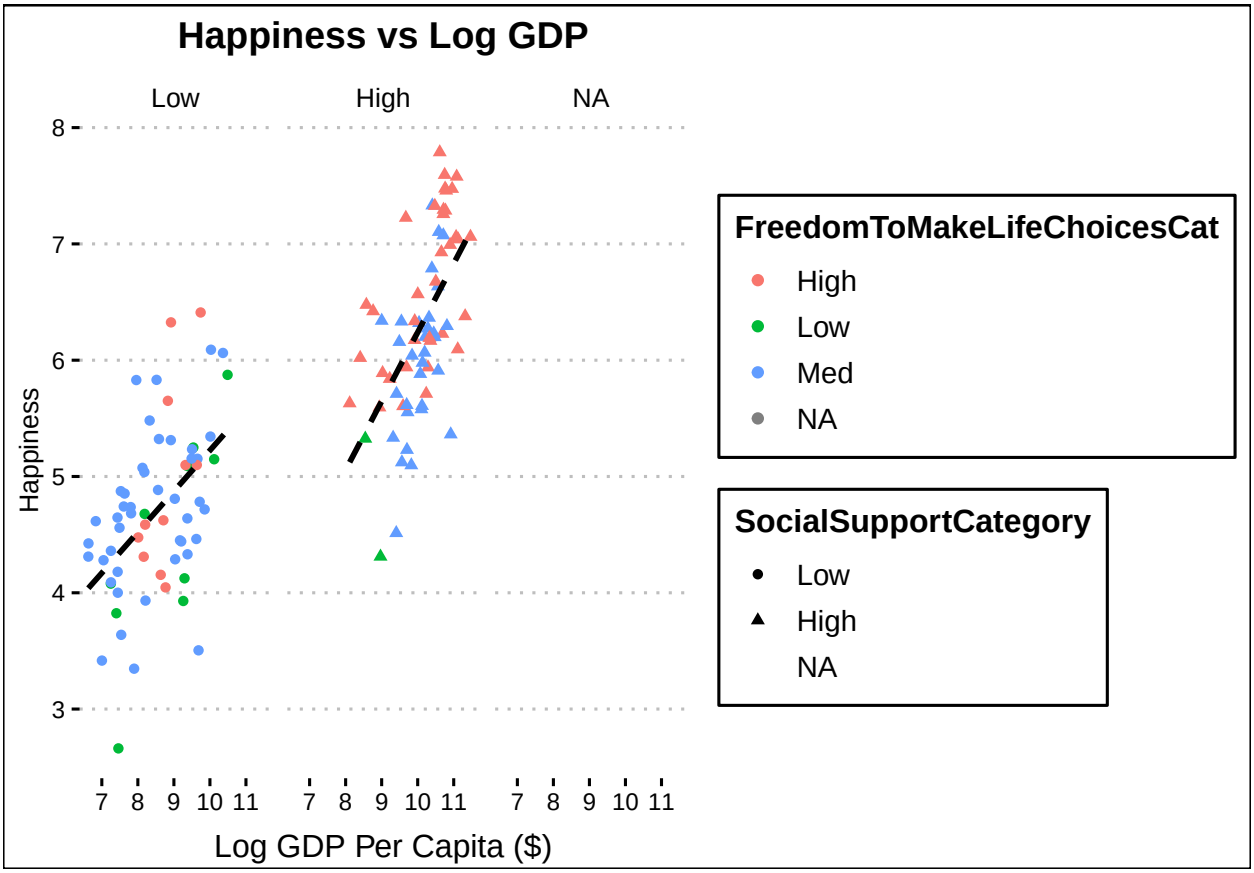
For Happiness vs. Log GDP per Capita, the higher the Freedom to Make Choices categories, the higher the Happiness as the Log GDP increases.

e.

```
#Graph that includes Happiness, LogGDPPerCapita, SocialSupportCategory, and
#FreedomToMakeLifeChoiceCat
whappy2017 %>%
  ggplot(aes(LogGDPPerCapita,Happiness))+
  geom_point(aes(color=FreedomToMakeLifeChoicesCat,shape=SocialSupportCategory))+
  theme_clean()+
  labs(title = "Happiness vs Log GDP",x="Log GDP Per Capita ($)",y="Happiness")+
  theme(plot.title = element_text(hjust = .5),axis.title.x = element_text(vjust = -.6,size=12))+
  geom_smooth(method="lm",se=F,color="black",lty=2)+facet_wrap(.~SocialSupportCategory)+
  guides(fill=guide_legend(title="Categories: Life Choices"))
```

```
## Warning: Removed 7 rows containing non-finite values (stat_smooth).
```

```
## Warning: Removed 8 rows containing missing values (geom_point).
```



For High SocialSupportCategory, there is more count of High categories from Freedom To Make Life Choices and the increase in Happiness with LogGDP per Capita is higher as compared to Low SocialSupport category.

3)a.

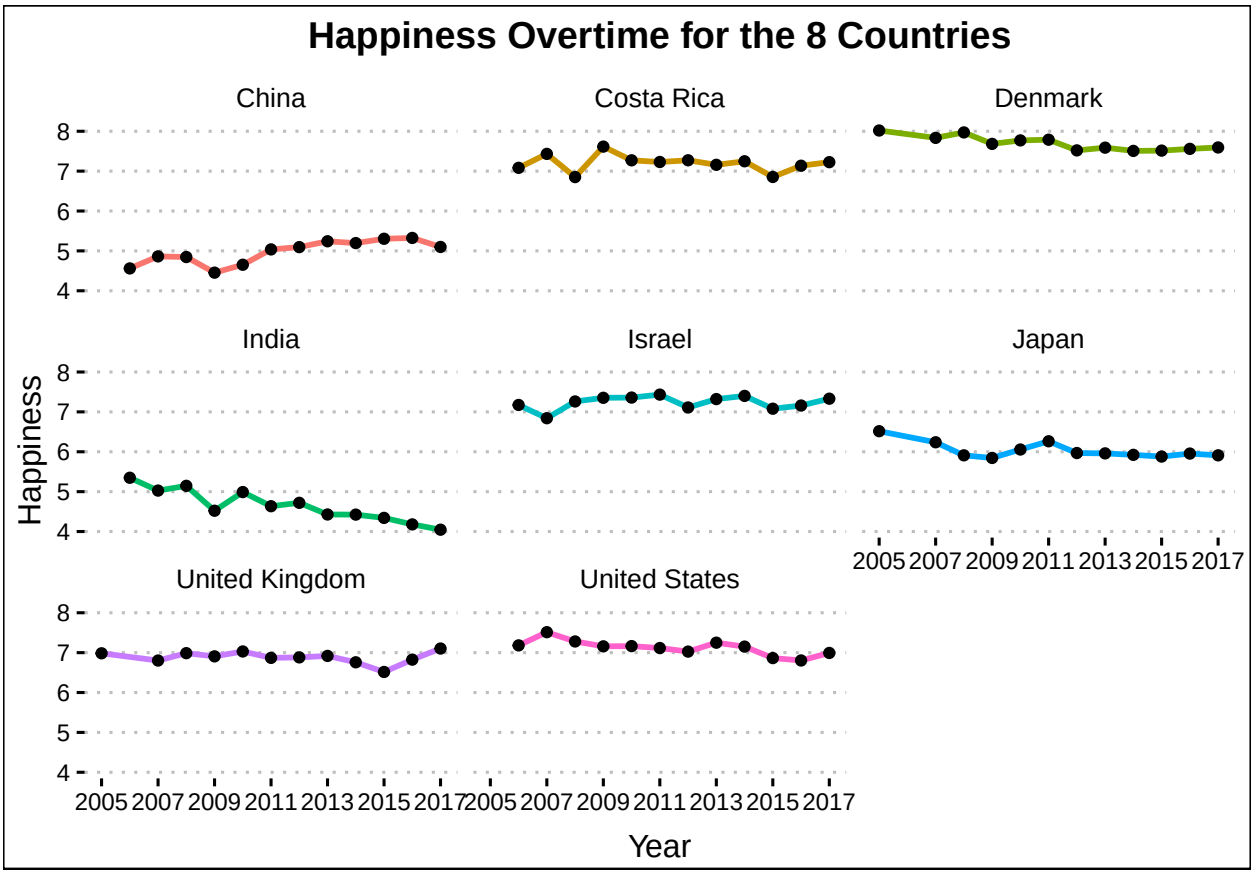
```
#Filter out 8 countries of interest
happy8<-whappy %>%
            dplyr:: filter(country %in%
                       c("Costa Rica","Denmark","Israel",
                        "United Kingdom","United States",
                        "Japan","India","China")) %>%
                select(-c(6,7,9,11:18)) #Remove "use? NO" columns
```

I chose these 8 countries because 2019 google results showed Costa Rica, Denmark, Israel, United Kingdom to fall in the top 20 happiest countries in the world wheras United States, Japan, India, China fall in the top 5 countries with highest GDP. Also, each of these countries have equal number (12) of observations (from 2005-2017)

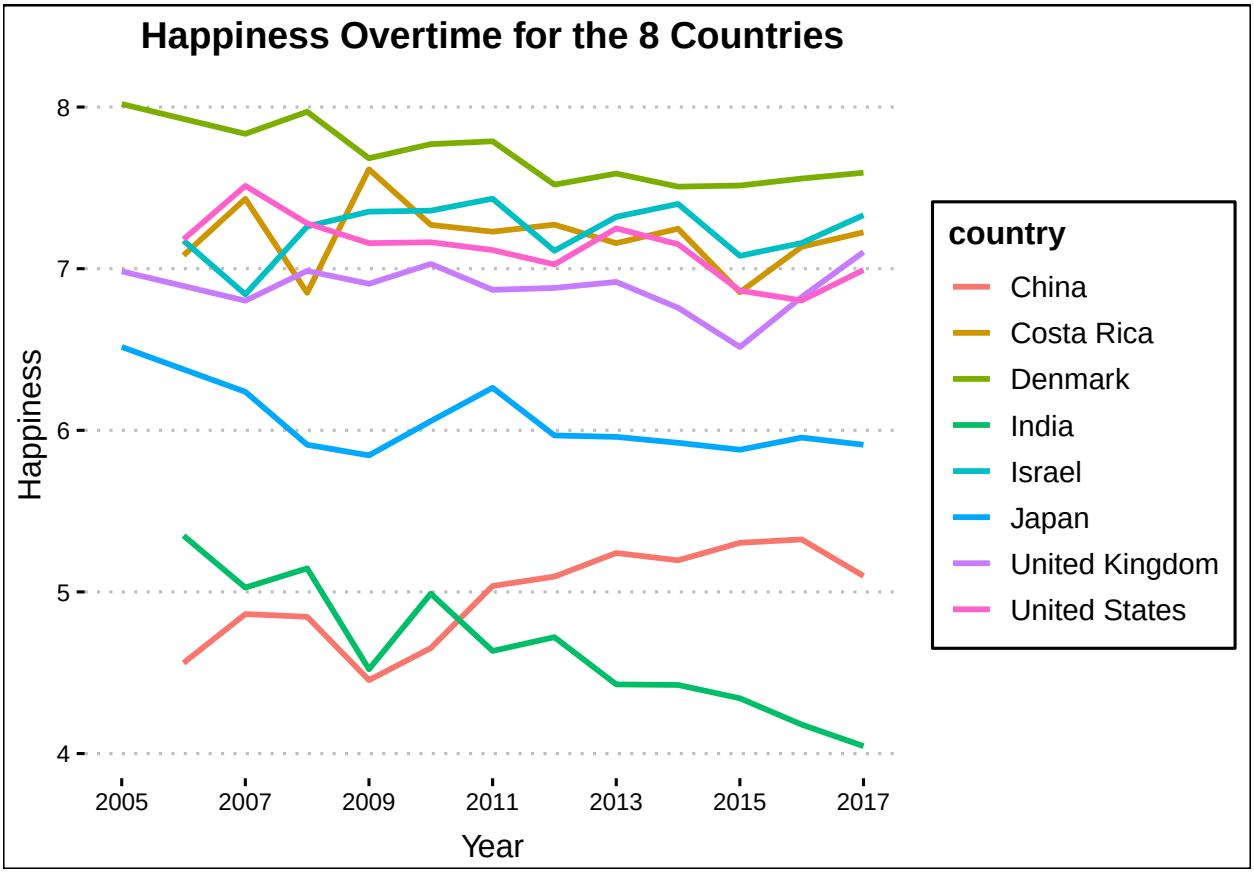
b

```
#Facet wrap
happy8 %>%
  ggplot(aes(year))+
  geom_line(aes(y=Happiness,color=country),size=1.01)+
  geom_point(aes(y=Happiness))+theme_clean()+
  labs(title ="Happiness Overtime for the 8 Countries",x="Year",y="Happiness")+
  theme(plot.title = element_text(hjust = .5, face = "bold"),
                      axis.title.x =element_text(vjust = -.6,size=12),
                      axis.title.y =element_text(vjust=1.2,size=12),
```

```
                    legend.position = "none")+
  scale_x_continuous(breaks=c(2005,2007,2009,2011,2013,2015,2017),
                     labels = c("2005","2007","2009","2011","2013","2015","2017"))+
  facet_wrap(.~country)
```

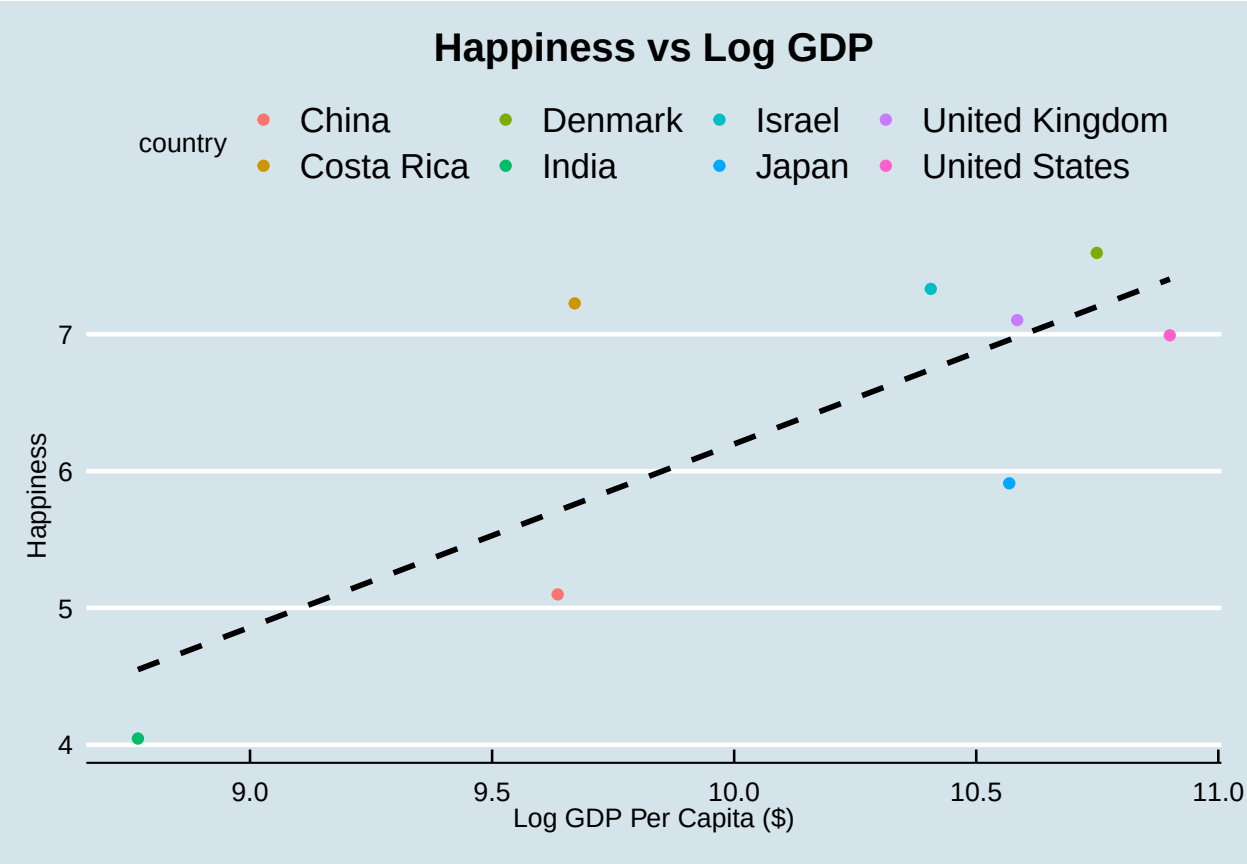



```
happy8 %>%
  ggplot(aes(year))+
  geom_line(aes(y=Happiness,color=country),size=1.01)+
  labs(title ="Happiness Overtime for the 8 Countries",x="Year",y="Happiness")+
  theme_clean()+theme(plot.title = element_text(hjust = .5),
                      axis.title.x =element_text(vjust = -.6,size=12),
                      axis.title.y =element_text(vjust=1.2,size=12))+
  scale_x_continuous(breaks=c(2005,2007,2009,2011,2013,2015,2017))
```

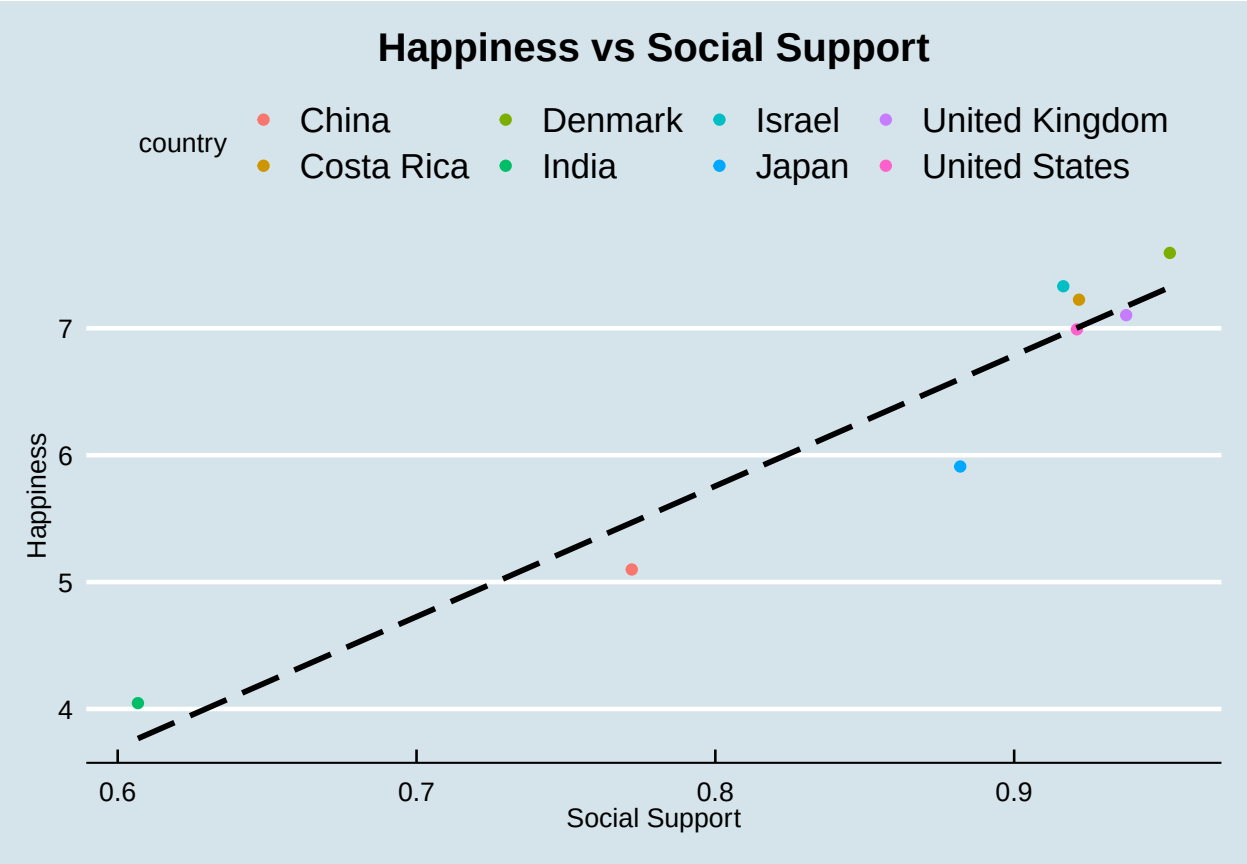


Among the 8 countries, Denmark has the highest Happiness overtime. There have been fluctuatoins of Happiness overtime for all of the 8 countries. India and China have the lowest Happiness overtime as compared to other countries. Happiness for China has increased overall throughout the years and at 2017, it has been at it's highest from 2005. However, for India Happiness has decreased overtime and at 2017, it has reached it's lowest. **c.**

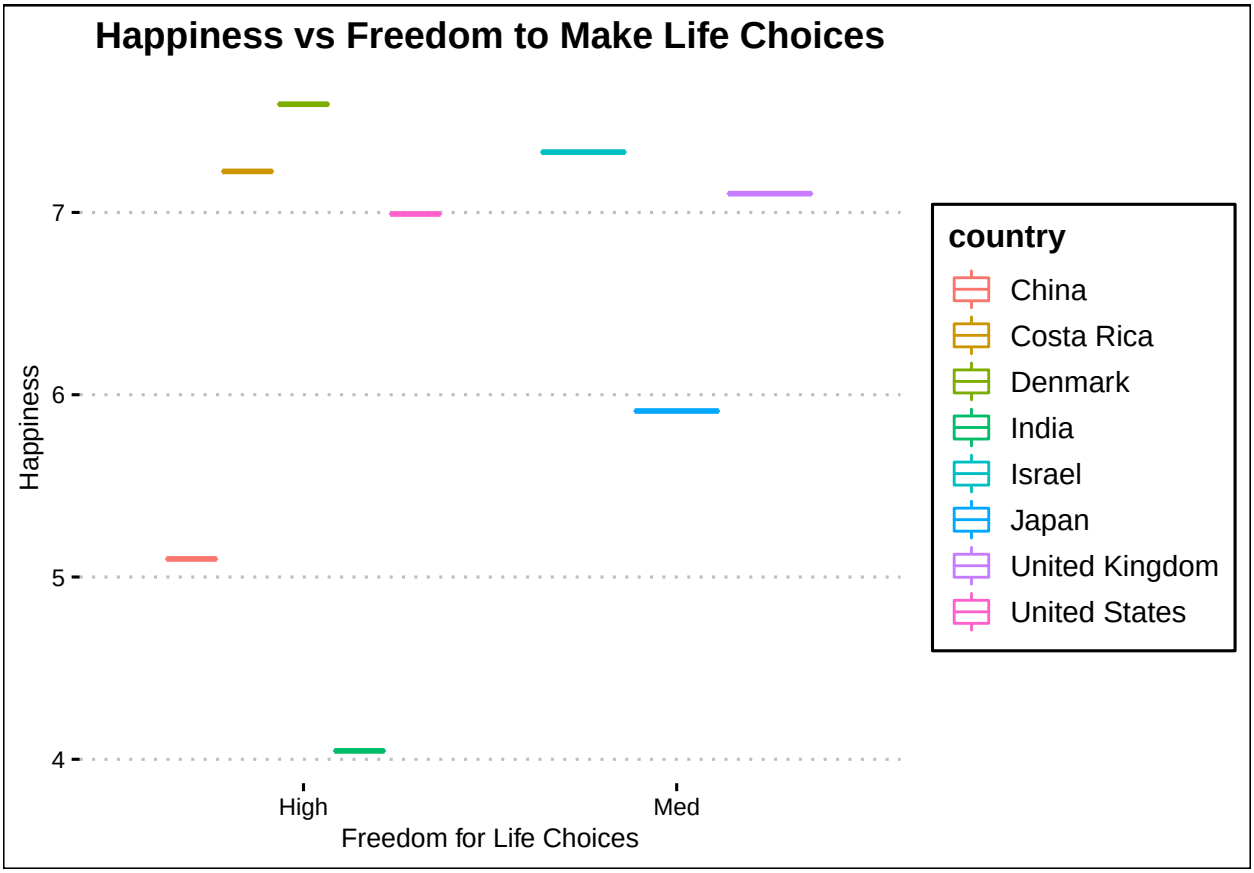
```
new.happy8<- happy8 %>%
  dplyr:: filter(year=="2017")

#GDP
new.happy8 %>%
  ggplot(aes(LogGDPPerCapita,Happiness))+geom_point(aes(color=country))+
  theme_economist()+
  labs(title = "Happiness vs Log GDP",x="Log GDP Per Capita ($)",y="Happiness")+
  theme(plot.title = element_text(hjust = .5))+
  geom_smooth(method = "lm",se=F,color="black",lty=2)
```




```
#SocialSupport
new.happy8 %>%
  ggplot(aes(SocialSupport,Happiness))+geom_point(aes(color=country))+
  theme_economist()+
  labs(title = "Happiness vs Social Support",x="Social Support",y="Happiness")+
  theme(plot.title = element_text(hjust = .5))+
  geom_smooth(method = "lm",se=F,color="black",lty=5)
```



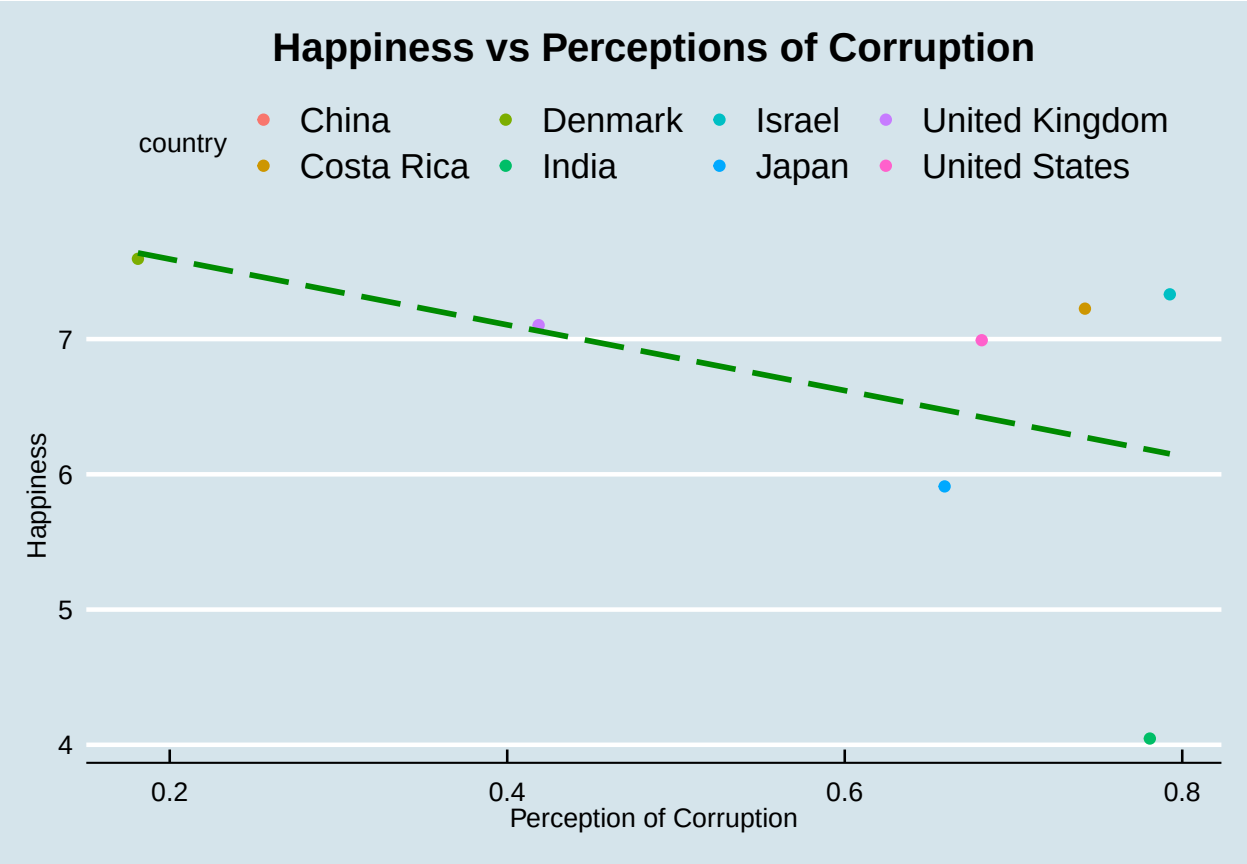

```
#Freedom to Make Life Choices
new.happy8 %>%
  ggplot(aes(FreedomToMakeLifeChoicesCat,Happiness))+geom_boxplot(aes(color=country))+
  theme_clean()+
  labs(title = "Happiness vs Freedom to Make Life Choices",x=
         "Freedom for Life Choices",y="Happiness")+
  theme(plot.title = element_text(hjust = .5))+
  guides(fill=guide_legend(title="COuntry"))
```




```
#Corruption
new.happy8 %>%
  ggplot(aes(PerceptionsOfCorruption, Happiness))+
  geom_point(aes(color=country))+
  theme_economist()+
  labs(title = "Happiness vs Perceptions of Corruption",x="Perception of Corruption",y="Happiness")+
  theme(plot.title = element_text(hjust = .5))+
  geom_smooth(method = "lm",se=F,color="green4",lty=5)
```

```
## Warning: Removed 1 rows containing non-finite values (stat_smooth).
```

```
## Warning: Removed 1 rows containing missing values (geom_point).
```



We can see Happiness against Log GDP per capita has a positive correlation. In 2017, Denmark had highest Happiness and second-highest Log GDP per capita with United States having the highest Log GDP per capita.India has the lowest Happiness as well as Log GDP per capita.

In the scatterplot Happiness against Social Support has a positive correlation. In 2017, Denmark had highest Happiness and highest Social Support. India has the lowest Happiness as well as Social Support.

In the boxplots for Happiness against Freedom to Make Life Choices, the High Category has 5 (United States, Denmark, Costa Rica, China, India) out of 8 countries and the medium Category has the remaining 3 (UK, Japan, Israel). Denmark has the highest Happiness in High category, and Israel has the highest Happiness in Medium category in 2017.

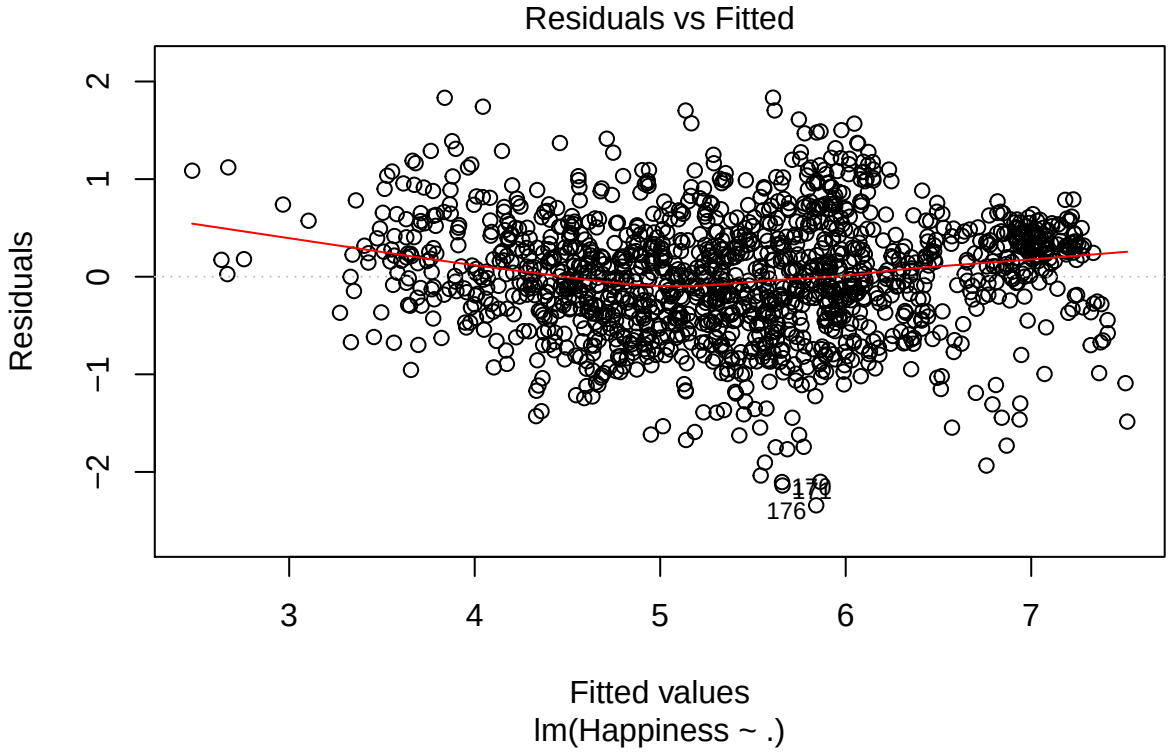
We can see Happiness against Perceptions of corruption has a negative correlation. In 2017, Denmark had highest Happiness and lowest Perception of corruption. However, it is interesting to note that Israel has the highest Perceptions of corrution among the 8 countries and also has the second-highest Happiness.United states and Costa rica also happen to follow a similar pattern as Israel. India has the lowest Happiness and the second-highest Perceptions. China has a missing value for Perceptions of corruption in 2017.

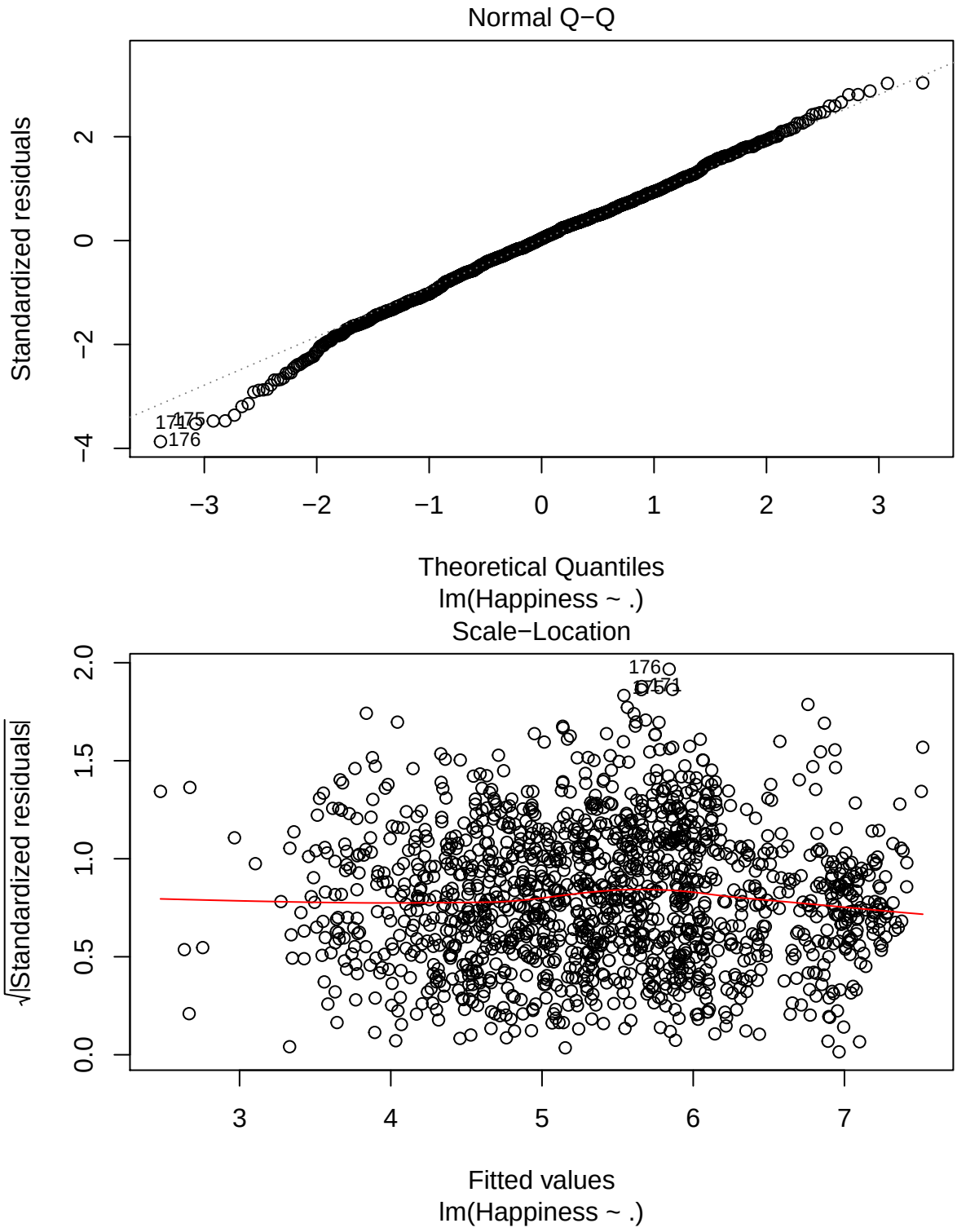
```
#Regression Model for Happiness vs. all other predictors.
model<-whappy %>%
  select(-c(1,2,6,7,9,11:18))
model.reg<-lm(Happiness~.,data = model)
summary(model.reg)
```

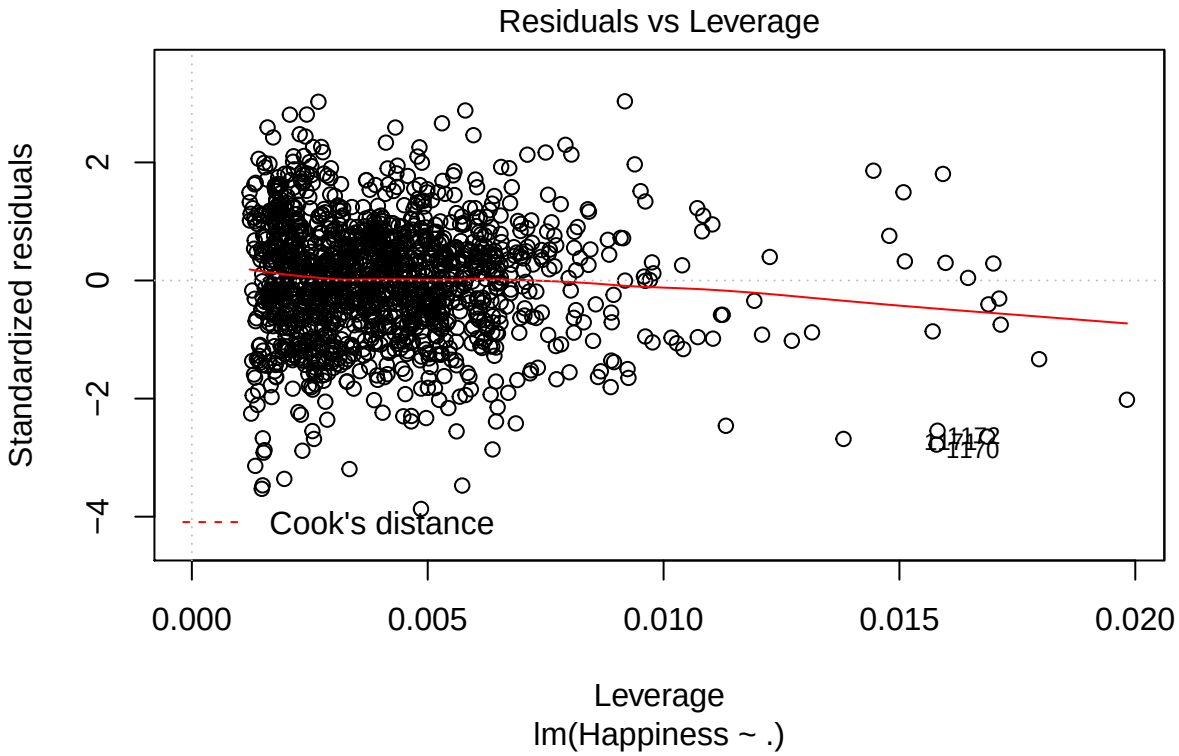
```
##
## Call:
## lm(formula = Happiness ~ ., data = model)
##
## Residuals:
```

```
##      Min       1Q   Median       3Q      Max
## -2.34209 -0.37296  0.02475  0.38926  1.83441
##
## Coefficients:
##                                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)                     -0.22231    0.17841  -1.246    0.213
## LogGDPPerCapita                  0.46830    0.01901  24.635  < 2e-16 ***
## SocialSupport                    2.67914    0.18535  14.454  < 2e-16 ***
## FreedomToMakeLifeChoicesCatLow -0.57277    0.05985  -9.571  < 2e-16 ***
## FreedomToMakeLifeChoicesCatMed -0.30729    0.04680  -6.567 7.19e-11 ***
## PerceptionsOfCorruption        -0.71344    0.10466  -6.817 1.37e-11 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6067 on 1425 degrees of freedom
##   (131 observations deleted due to missingness)
## Multiple R-squared:  0.7148, Adjusted R-squared:  0.7138
## F-statistic: 714.3 on 5 and 1425 DF,  p-value: < 2.2e-16
```

```
plot(model.reg)
```




Normal Q−Q
Standardized residuals
Theoretical Quantiles
lm(Happiness ~ .)
Scale−Location
√|Standardized residuals|
Fitted values
lm(Happiness ~ .)



From the linear regression model summary, we can see that all of the predictors except the intercept are significant.(2 dummy variable for 3 levels of FreedomtoMakeLIfeCHoices) The model with a p-value <2.2e-16 is also significant. Adjusted R-squared is about 71%, which is pretty strong. From the residual vs. fitted plots, we see that the linear fit looks decent enough with some outliers, and the errors do not deviate much from a normal distribution in the QQplot.