Week 1 seminar

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Aim: Visualising the gapminder data.

Task 1: Gapminder analysis

1.1: Loading the required packages

```
library("gapminder")
library("tidyverse")
```

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

```
## v ggplot2 3.3.5     v purrr   0.3.4
## v tibble  3.1.5     v dplyr   1.0.7
## v tidyr   1.1.4     v stringr 1.4.0
## v readr   2.0.2     v forcats 0.5.1
```

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

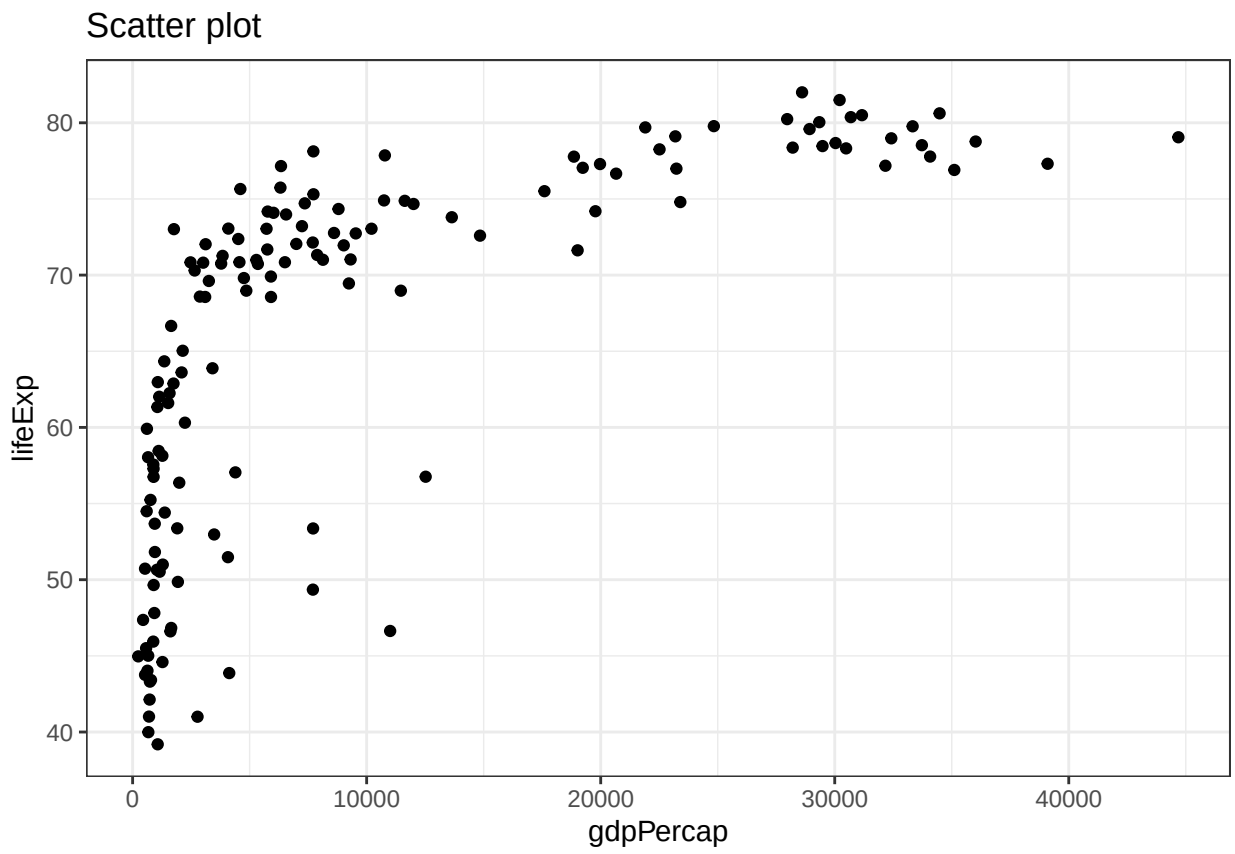
1.2

Generating a scatterplot with x=gdpPercap, and y=lifeExp

- we call the data object from 2002 gm2002
- we call the scatterplot gm_scatterplot
- we display the plot

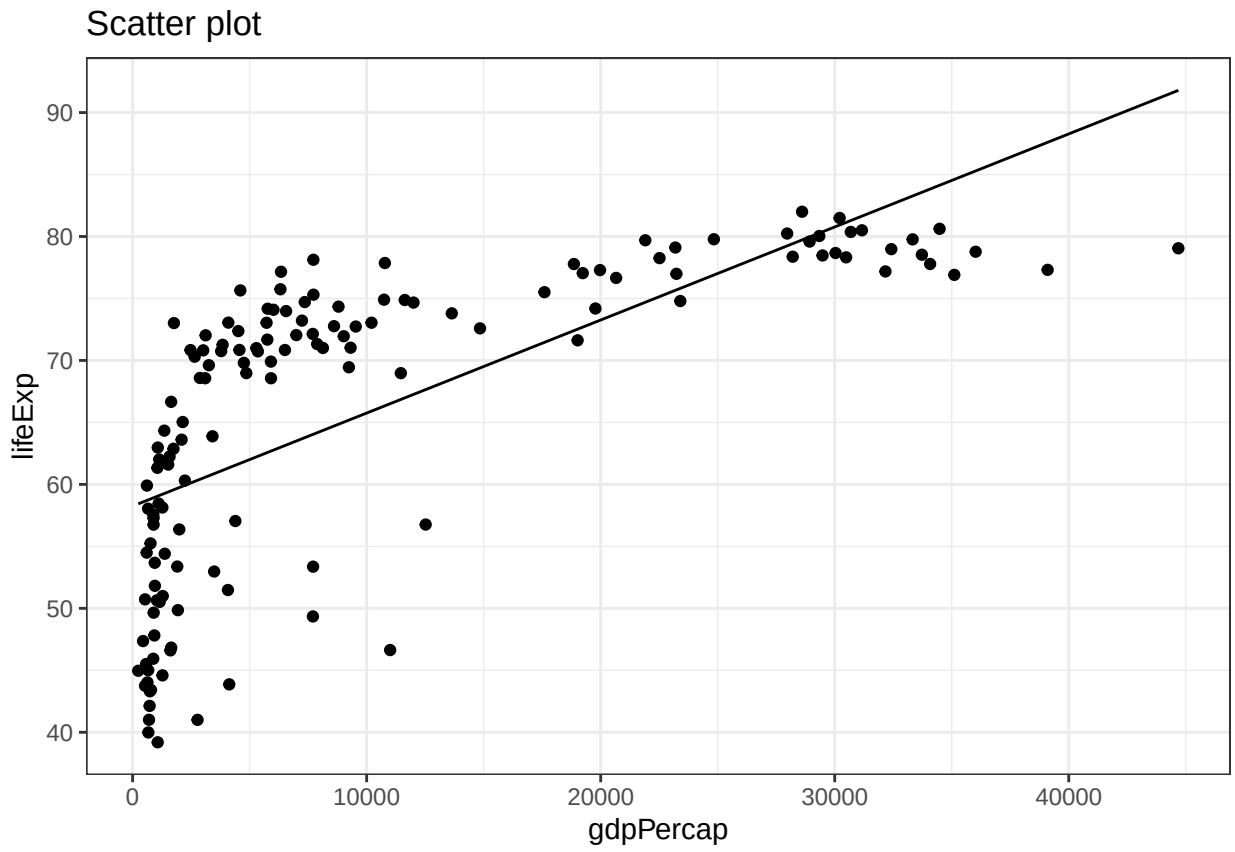
```
gm2002 <- gapminder %>% filter(year == 2002)
gm_scatterplot <- ggplot(data=gm2002, aes(x=gdpPercap, y=lifeExp)) +
  geom_point()+
  labs(title="Scatter plot")+
  theme_bw()

gm_scatterplot
```



1.3: Adding lines to the scatterplot to show the linear model and loess model

```
model_lm <- lm(lifeExp ~ gdpPercap, data = gm2002)
predictions_lm <- broom::augment(model_lm)
gm_scatterplot + geom_line(data = predictions_lm, aes(y=.fitted))
```



1.3.2 loess model to predict lifeExp

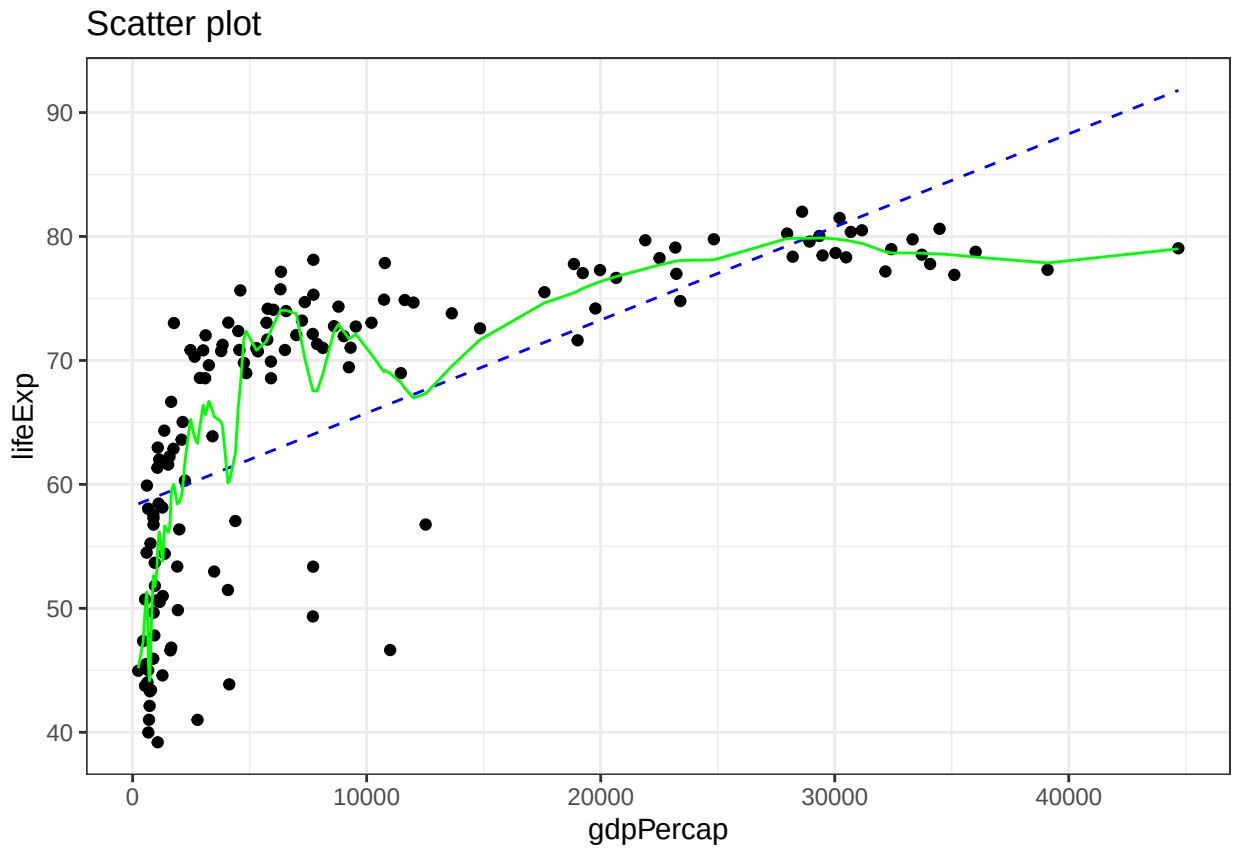
```
model_loess <- loess(lifeExp ~ gdpPercap,
                     data = gm2002,
                     span = 0.1)

predictions_loess <- broom::augment(model_loess)
summary(predictions_loess)
```

```
##     lifeExp        gdpPercap          .fitted          .resid
##  Min.   :39.19   Min.   :  241.2   Min.   :44.15   Min.   :-22.32928
##  1st Qu.:55.52   1st Qu.: 1409.6   1st Qu.:56.26   1st Qu.: -2.17004
##  Median :70.83   Median : 5319.8   Median :67.55   Median :  0.49155
##  Mean   :65.69   Mean   : 9917.9   Mean   :65.63   Mean   :  0.06093
##  3rd Qu.:75.46   3rd Qu.:13359.5   3rd Qu.:74.03   3rd Qu.:  3.89777
##  Max.   :82.00   Max.   :44684.0   Max.   :79.88   Max.   : 13.04562
```

Now all three models together

```
gm_scatterplot + geom_line(data = predictions_lm, aes(y=.fitted), color = "blue", linetype = "dashed") +
```


Scatter plot
lifeExp
gdpPercap
90
80
70
60
50
40
0
10000
20000
30000
40000