

Will students who have high GPA in high school get high GPA in the first year college?

## Interpretation and Implementation

```
#set up
#install.packages("ggplot2")
library(ggplot2)

#load the data
student_info<-read.csv("FirstYearGPA.csv",header=T)

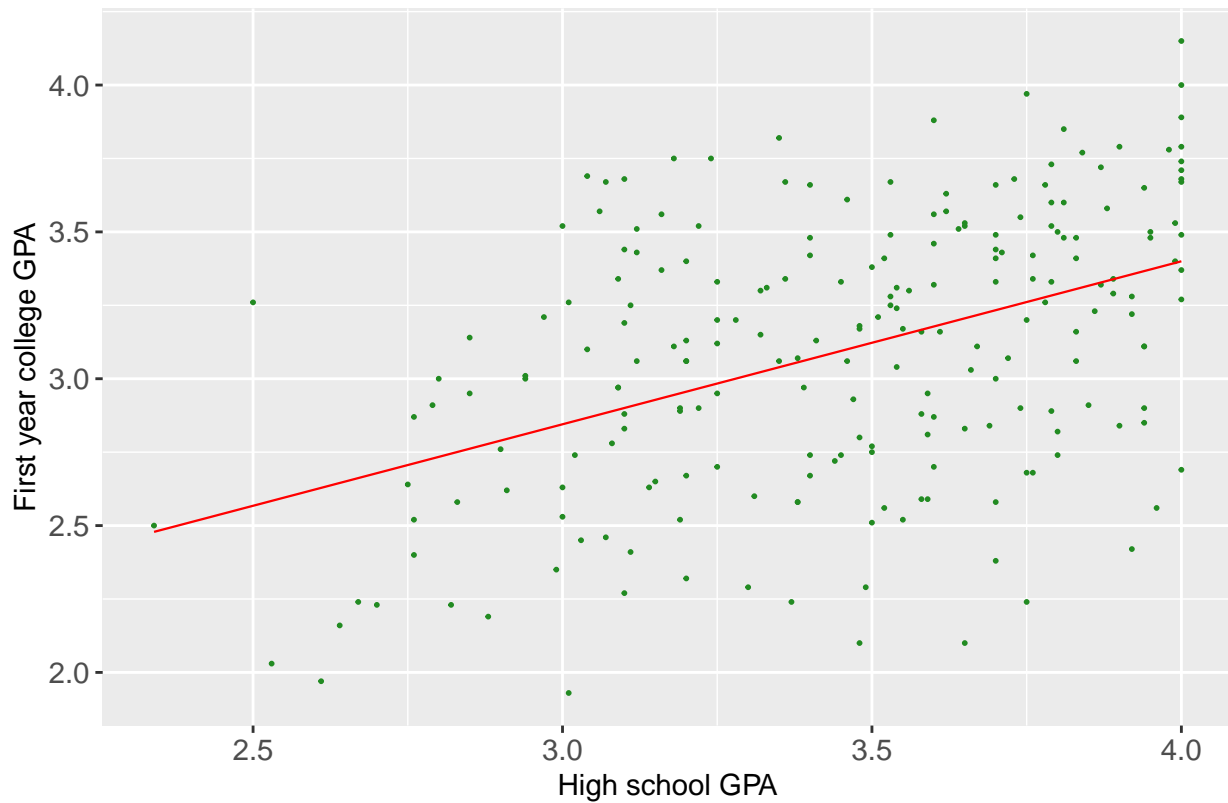
#set up variables
x<-student_info$HSGPA
y<-student_info$GPA

#Graph plotting
graph_GPA<-ggplot(student_info,aes(x=HSGPA,y=GPA))+geom_point(size=0.35,color="forestgreen")+geom_smooth()

graph_GPA

## `geom_smooth()` using formula 'y ~ x'
```

First year college GPA versus High school GPA



*#Pearson's Correlation Coefficient*

```
size_of_sample<-length(x)
```

```
mean_x<-mean(x)
```

```
mean_y<-mean(y)
```

```
numerator<-rep(0,size_of_sample)
```

```
denominator<-rep(0,size_of_sample)
```

```
numerator<-sum((x-mean_x)*(y-mean_y))
```

```
denominator_1<-(sqrt(sum((x-mean_x)^2)))
```

```
denominator_2<-(sqrt(sum((y-mean_y)^2)))
```

```
r<-numerator/(denominator_1*denominator_2)
```

```
r
```

```
## [1] 0.4468873
```