Project 1 Graphs

```
library(readr)
MSHS_DropoutRates <- read_csv("STAT 3220_ Project Part 1 - Sheet1.csv")
```

```
## Rows: 122 Columns: 10
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (3): County, Region of Virginia - Snigdha, Student Behavior
## dbl (6): Annual Drop out Rate, Percentage of People Over 25 with less than a...
## num (1): Average Individual Income - Karen
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
names(MSHS_DropoutRates) <- gsub(" ", "_", names(MSHS_DropoutRates))
#View(MSHS_DropoutRates)
```

Selection of Data Rows

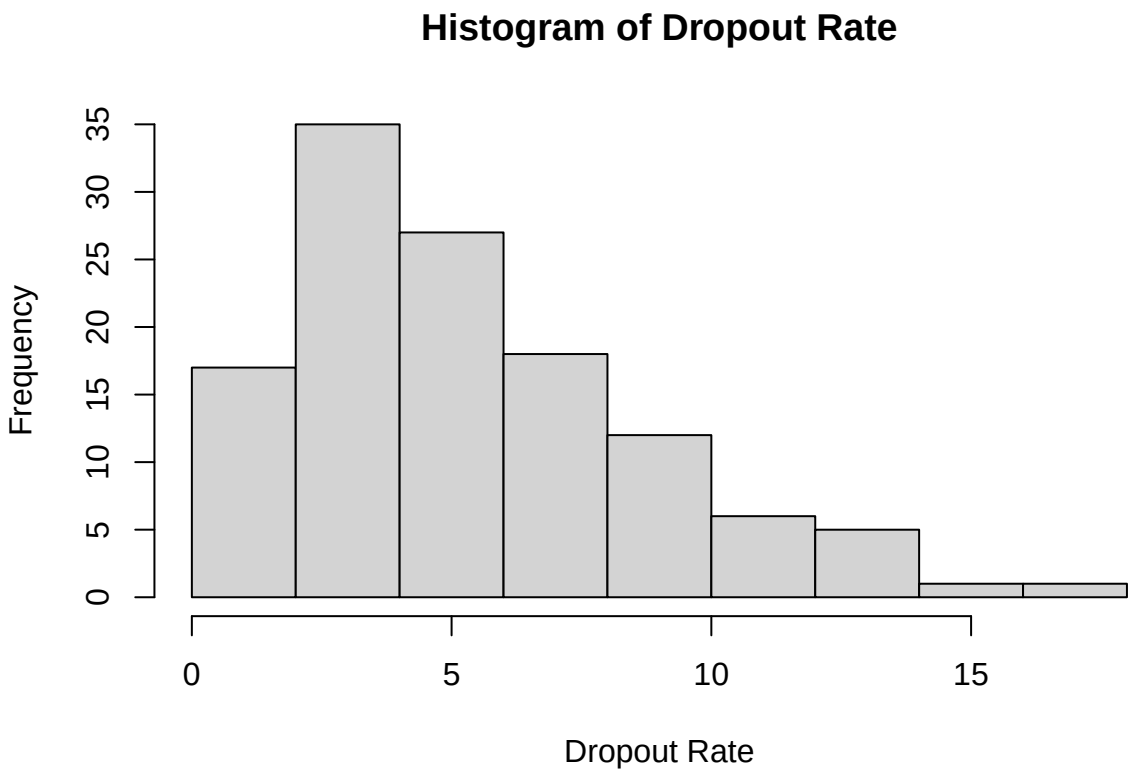
```
#for appendix B
head(MSHS_DropoutRates)
```

A tibble: 6 x 10

County Annual_Drop_out_Rate Average_Individual_I~1 Percentage_of_People~2 1 Accomack 5.5 54153 18.4 2 Albemarle 3.77 91201 6.2 3 Alexandria 12.8 105239 6.3 4 Alleghany ~ 2.48 46250 11.8 5 Amelia Cou~ 4.76 52977 13.6 6 Amherst 2.34 44723 12.3 # i abbreviated names: 1: Average_Individual_Income_-_Karen, # 2: Percentage_of_People_Over_25_with_less_than_a_High_School_Degree_ # i 6 more variables: Num.Truancies_2023-2024_(Counts)_-_Stephanie , # Percentage_White_-_Snigdha , Region_of_Virginia_-_Snigdha , # Fare-free_public_transportation_Project_-_Karen , # Rural_(0)_vs._Urban_(1)_-_Antigone , Student_Behavior

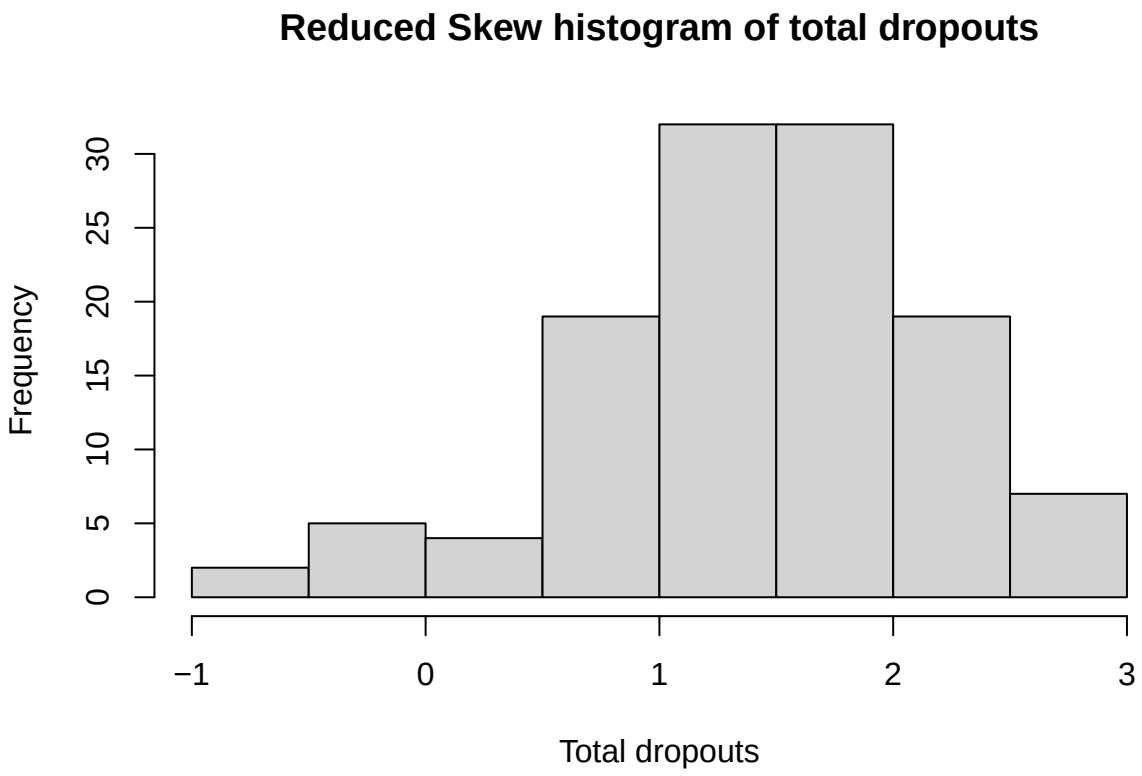
Histogram

```
hist(MSHS_DropoutRates$Annual_Drop_out_Rate, xlab="Dropout Rate", main="Histogram of Dropout Rate")
```



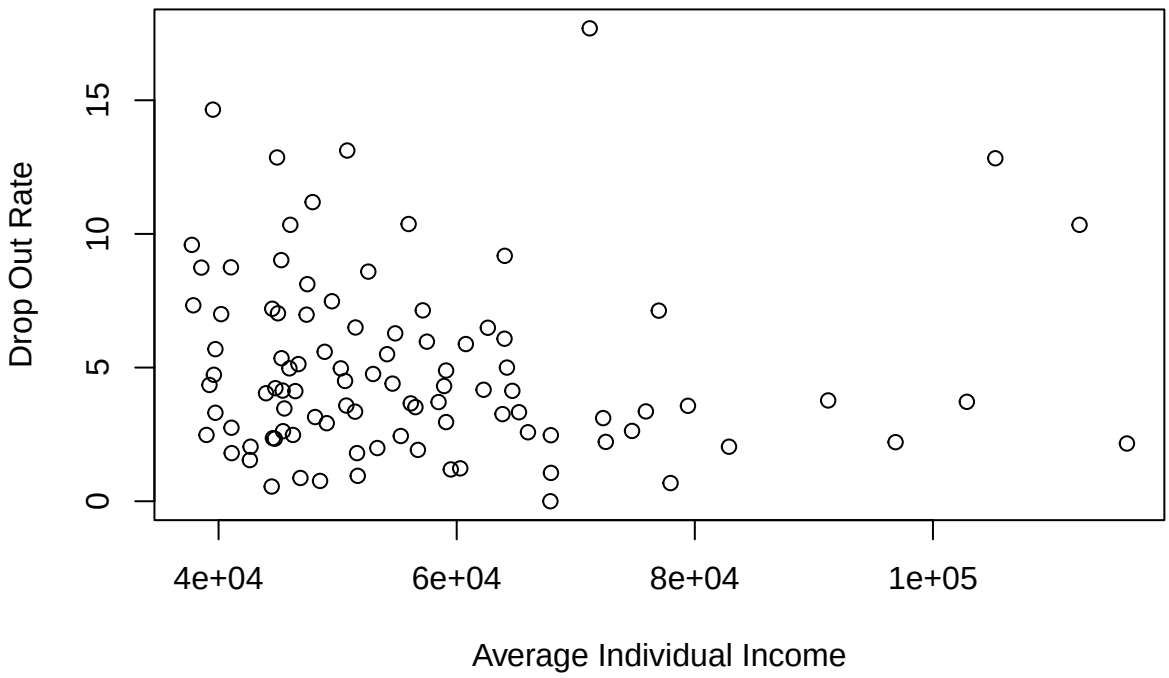
Graphical Summary #1

```
#transformed
hist(log(MSHS_DropoutRates$Annual_Drop_out_Rate), xlab="Total dropouts", main="Reduced Skew histogram o
```



Graphical Summary #2

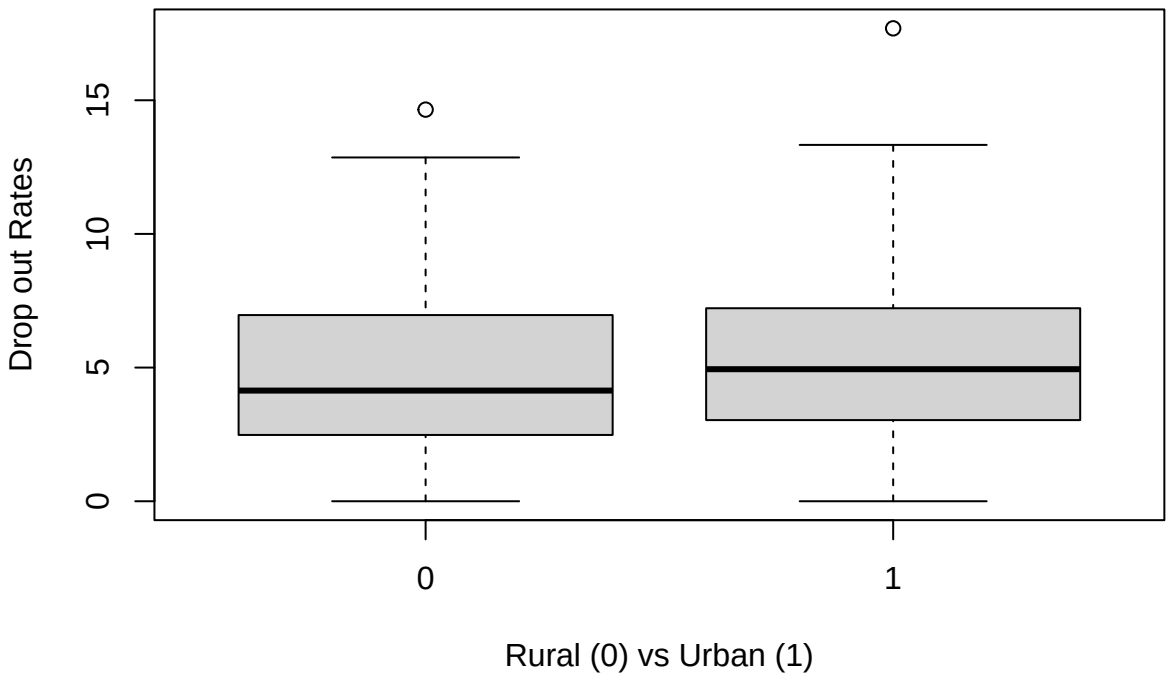
```
plot(MSHS_DropoutRates$`Average_Individual_Income_-_Karen`, MSHS_DropoutRates$Annual_Drop_out_Rate, xlab
```



This graph allows us to further explore our question "Do high school students in areas with a higher individual income stay in school more frequently than those in areas with a lower personal income?" It ranges from 30,000 to 120,000 and graphs the dropout rate for each county.

Graphical Summary #3

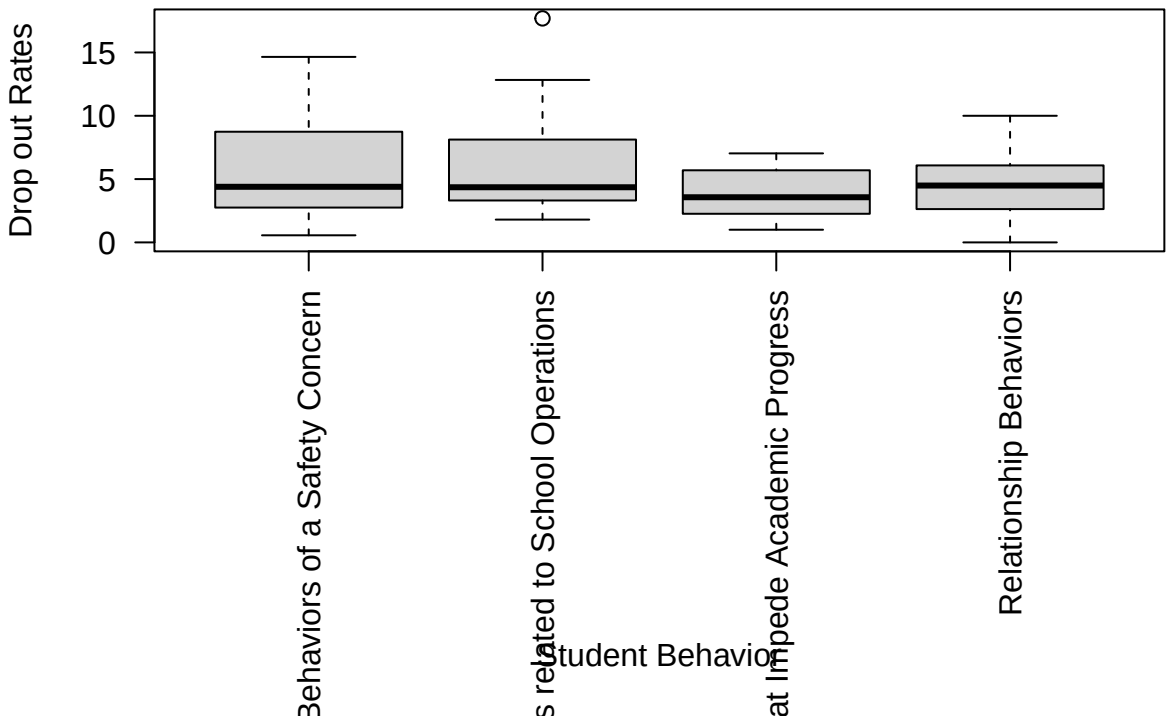
```
boxplot(Annual_Drop_out_Rate~`Rural_(0)_vs._Urban_(1)_-_Antigone`, MSHS_DropoutRates, xlab = "Rural (0)
```



This box plot helps us contextualize our qualitative variable of rural vs urban. This directly relates to our question of the relationship between the category of the student's county and the dropout rate for that county.

Graphical Summary #4

```
par(mar = c(12, 4, 4, 2) + 0.1)
boxplot(Annual_Drop_out_Rate~Student_Behavior, MSHS_DropoutRates, xlab = "", ylab = "Drop out Rates", la
mtext("Student Behavior", side = 1, line = 10)  # adjusting x label
```

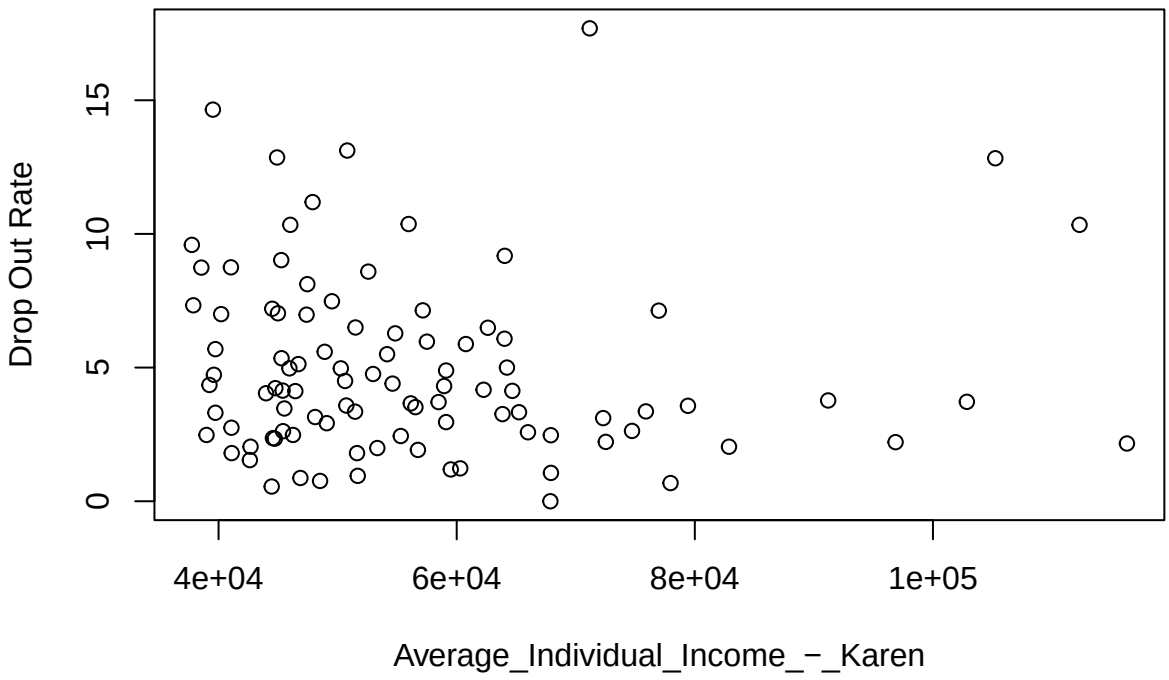


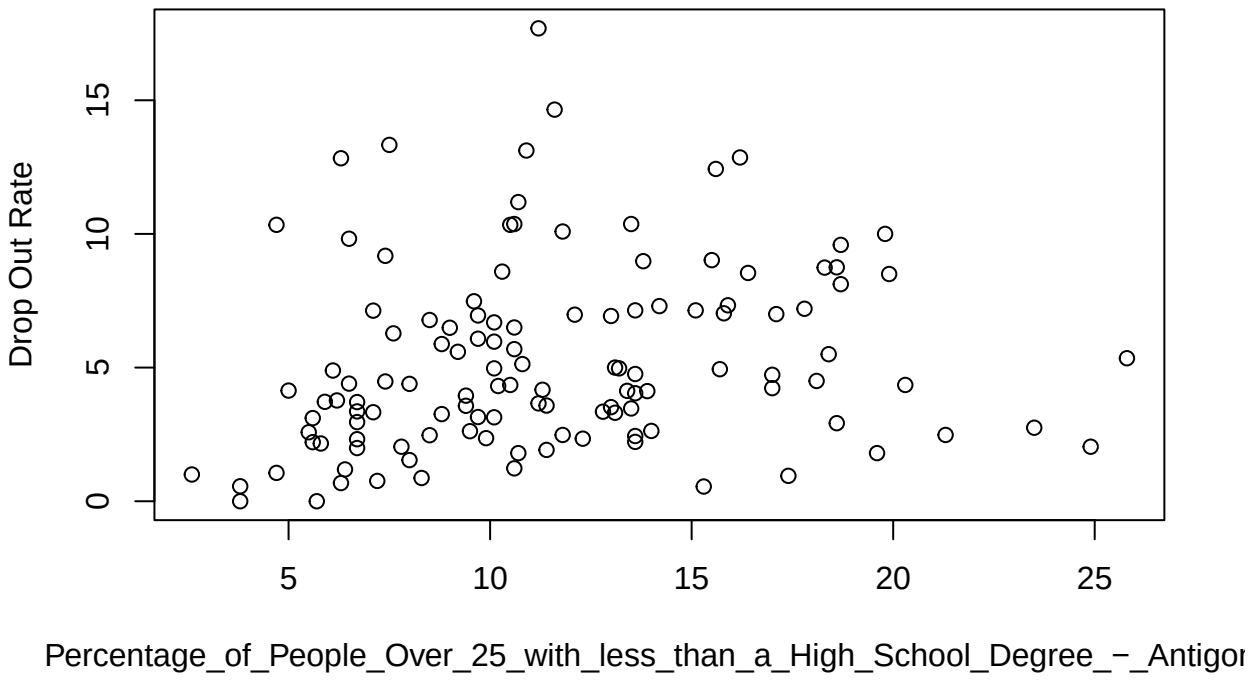
This is a box plot that plots the dropout rate of counties categorized by their highest student behavior issue.

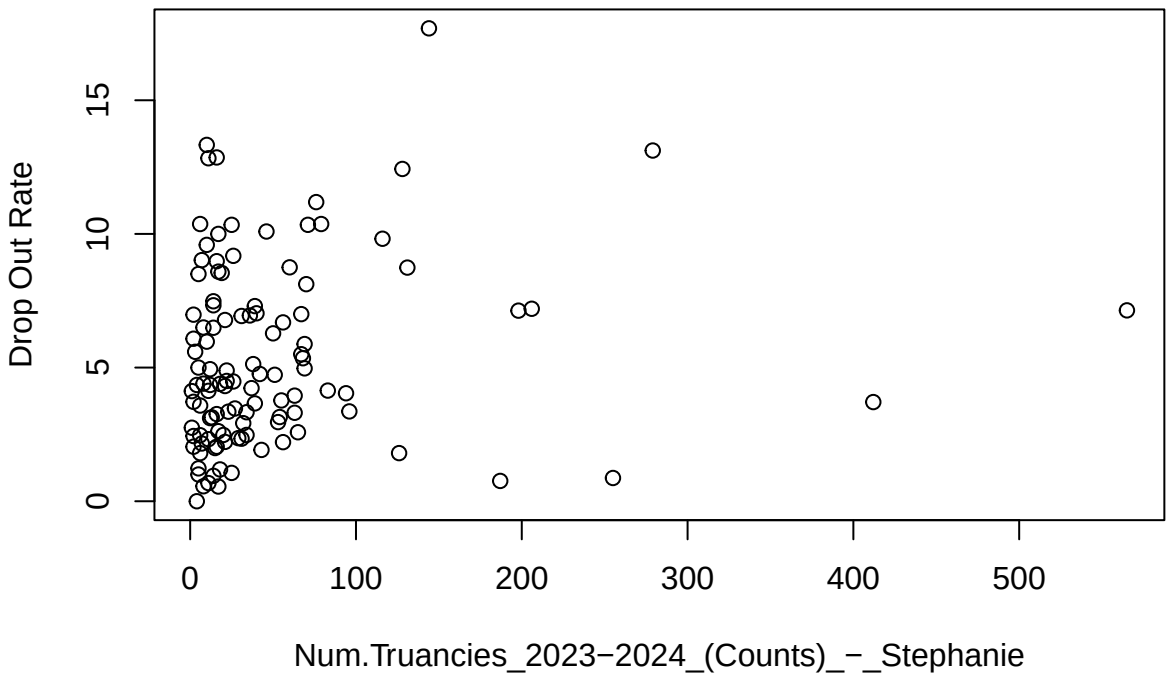
Scatterplots

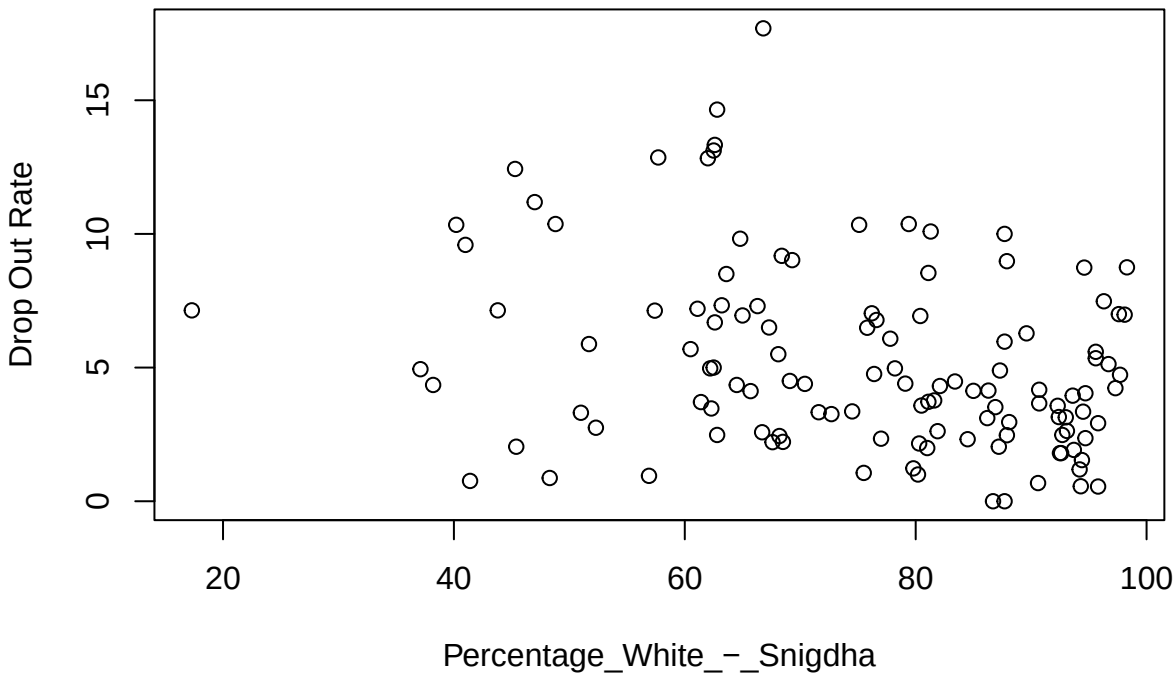
not necessarily directly related to our research questions but can be used if needed (can fix labels later)

```
for (i in names (MSHS_DropoutRates)[3:6]){
  plot(MSHS_DropoutRates[[i]], MSHS_DropoutRates$Annual_Drop_out_Rate, xlab = i, ylab="Drop Out Rate")
}
```


Drop Out Rate
0
5
10
15
4e+04
6e+04
8e+04
1e+05
Average_Individual_Income_−_Karen


Drop Out Rate
0
5
10
15
5
10
15
20
25
Percentage_of_People_Over_25_with_less_than_a_High_School_Degree_−_Antigo


Drop Out Rate
0
5
10
15
0
100
200
300
400
500
Num.Truancies_2023−2024_(Counts)_−_Stephanie


Drop Out Rate
0
5
10
15
20
40
60
80
100
Percentage_White_−_Snigdha