

Exploratory Data Analysis

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```
moon <- read.delim("C:/Users/krosc/OneDrive/Desktop/Intro. to R/Data/dementia_moon.txt", sep="\t", head=1)
dim(moon)
```

```
## [1] 15 3
```

```
library(ggplot2)
library(forcats)
library(knitr)
library(sjPlot)
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##   filter, lag
```

```
## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union
```

1. Introduction

This data set offers an analysis regarding the correlation between aggressive behaviors of patients with dementia living in nursing homes and full moons. With “moon” days being +/-1 day of a full moon and “other” days being all days outside that range, this study accounts for twelve weeks of aggressive incidents taking place on moon days and other days within fifteen different observed nursing homes. The data set consists of fifteen observations of three variables. I predict to observe a positive correlation between moon days and aggressive behavior as moonlight may stimulate and possibly even confuse patients with a mental disorder such as that of dementia.

2. Univariate Descriptions

Aggressive Incidents on Moon Days:

Table 1. This summary shows the total number of aggressive behaviors on moon days. The average number of aggressive behaviors on a full moon day according to this data is determined to be 3.022 incidents.

```
summary(moon$aggmoon)
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## 0.330  2.335   3.330   3.022  3.670   6.000
```

```
ggplot(moon, aes(x=aggmoon, y=patient)) + geom_point() + ggtitle("Incidents of Aggressive Behaviors During Full Moons")
```

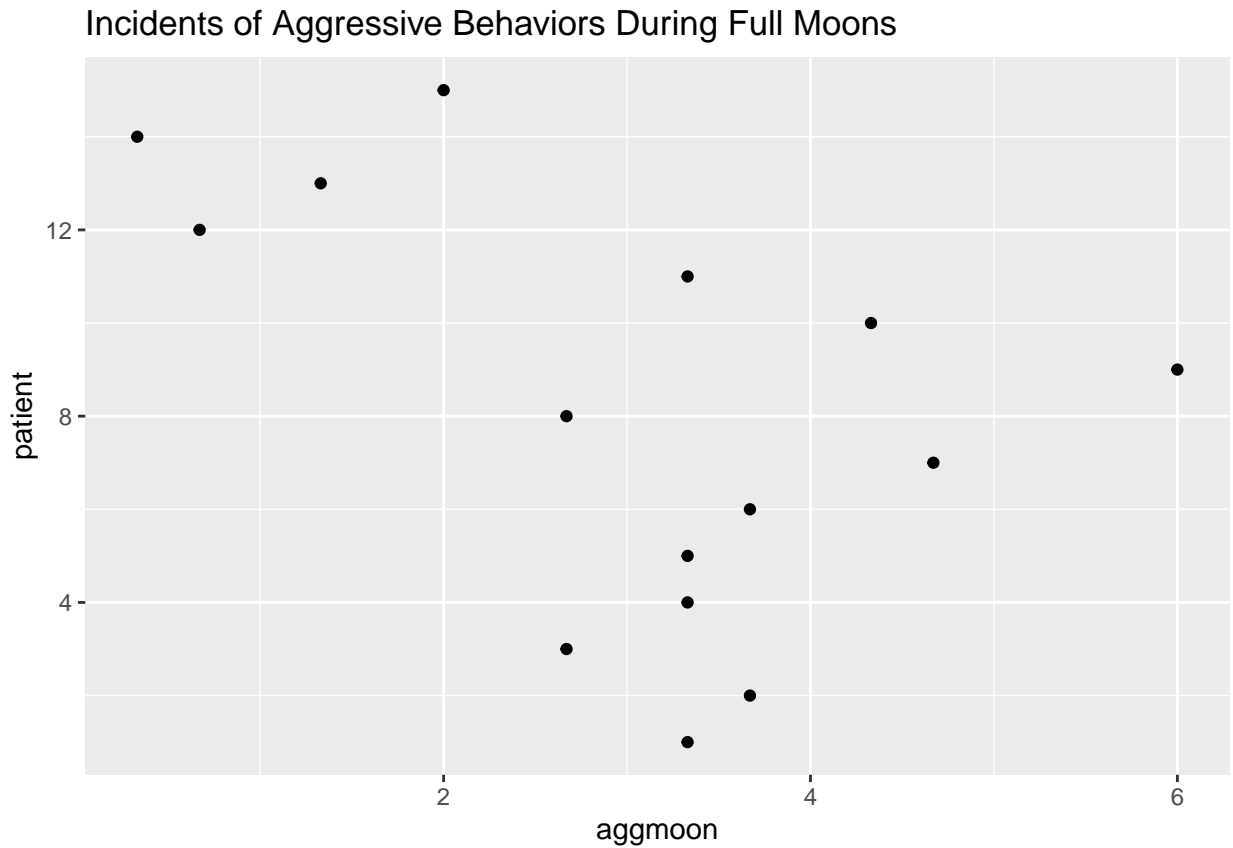


Figure 1. This scatter plot depicts average number of aggressive incidents that took place during moon days per nursing home (i.e., “patient”).

Aggressive Incidents on Other Days:

Table 2. This summary shows the total number of aggressive behaviors on other (non-moon) days. The average number of aggressive behaviors on a non-moon day according to this data set is determined to be 0.5893 incidents.

```
summary(moon$aggother)
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## 0.1100  0.2850  0.4000  0.5893  0.6700  1.5900
```

```
ggplot(moon, aes(x=aggother, y=patient)) + geom_point() + ggtitle("Incidents of Aggressive Behaviors During Other Days")
```

Incidents of Aggressive Behaviors During Full Moons

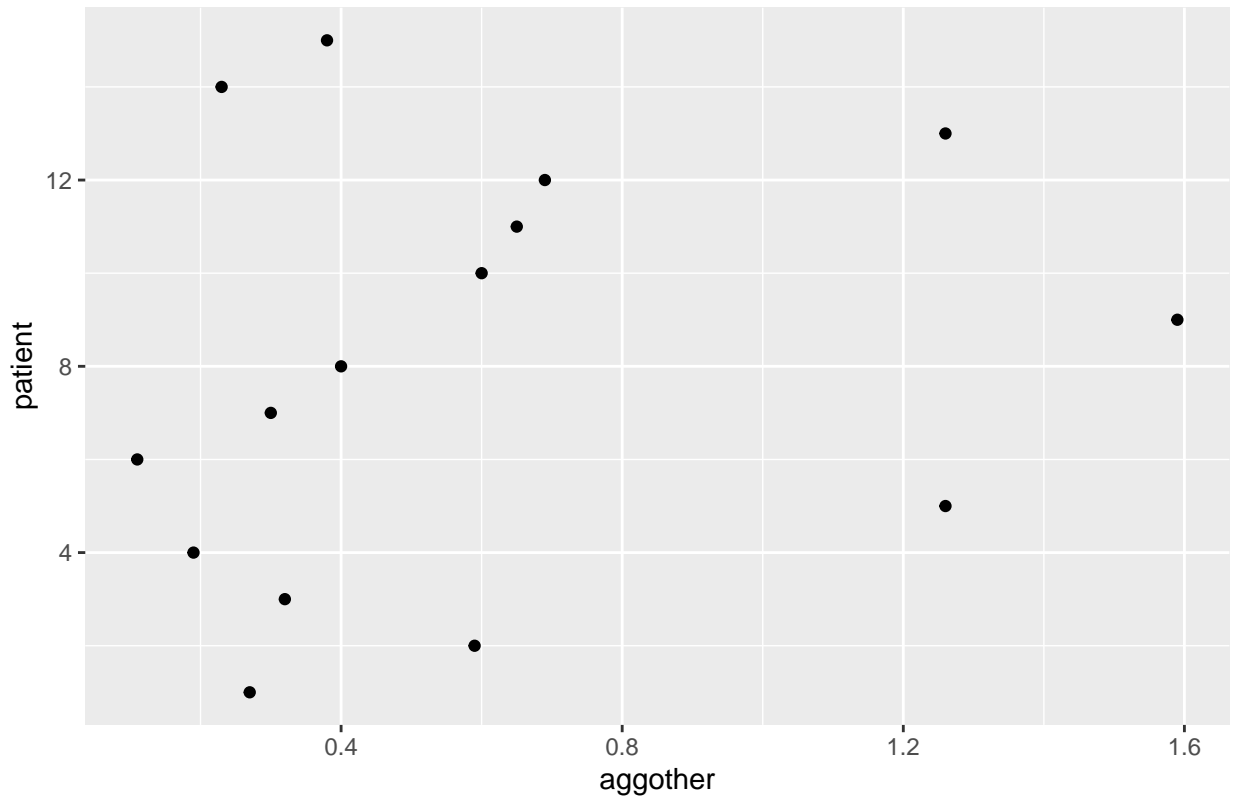


Figure 2. This scatter plot depicts the average number of aggressive incidents that took place during other days per nursing home (i.e., “patient”).

3. Bivariate Descriptions

```
moon$aggboth <- moon$aggmoon + moon$aggother
```

Table 1. This table depicts a summary of the average number of incidents taking place per full moon day, per other day, and the summation of both variables.

```
head(moon[,c('aggmoon', 'aggother', 'aggboth')])
```

##	aggmoon	aggother	aggboth
## 1	3.33	0.27	3.60
## 2	3.67	0.59	4.26
## 3	2.67	0.32	2.99
## 4	3.33	0.19	3.52
## 5	3.33	1.26	4.59
## 6	3.67	0.11	3.78

```
ggplot(moon, aes(x=aggboth, y=patient, color=aggboth)) +  
geom_jitter(width = .2) + ggtitle("Incidents of Aggressive Behaviors on Both")
```

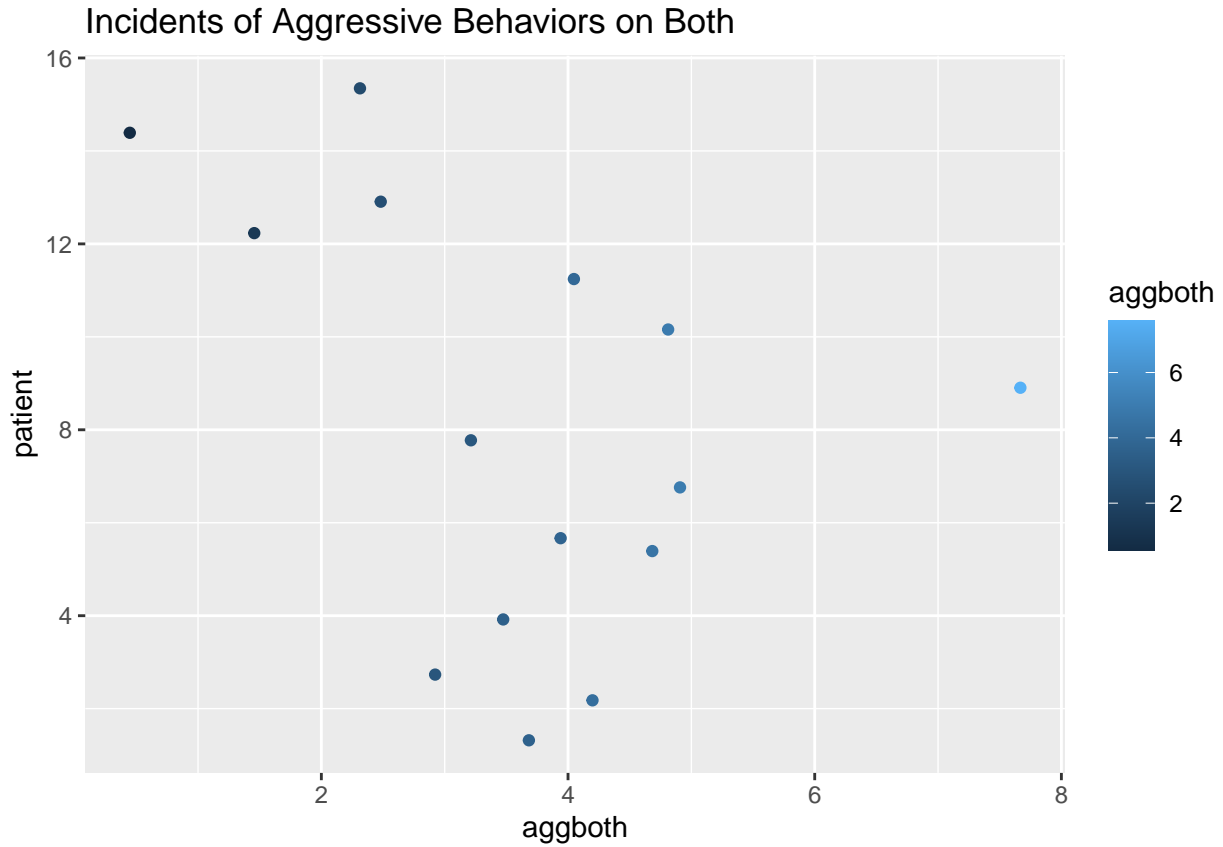


Figure 3. This scatter plot depicts the average number of aggressive incidents that took place during both days per nursing home (i.e., “patient”).

4. Conclusion

The average number of aggressive behaviors in nursing homes on full moon days is observed to be significantly greater than that of incidents taking place on other days. Additionally, the average number of incidents per moon contains a far lesser standard deviation from the mean compared to that of other days. This data set shows a positive correlation between the number of aggressive incidents in patients with dementia living in nursing homes and full moons.