BIS 567 HW0

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```
library(here)
```

```
here() starts at /home/cole/github/fall-courses-2024
```

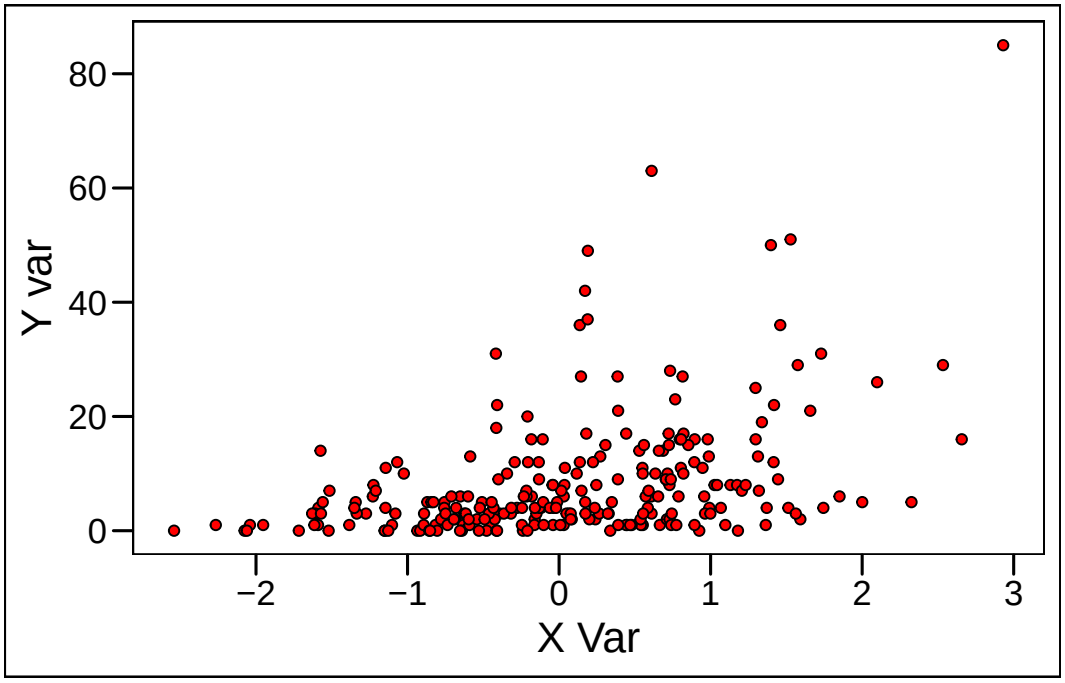
```
load(here::here("./bis567/homework/hw04/HW4.RData"))

str(y)
```

```
 int [1:250] 31 5 8 4 13 14 7 2 1 0 ...
```

```
str(x)
```

```
 num [1:250] 1.729 0.172 1.026 -0.278 0.272 ...
```

```
ggplot2::ggplot(data = data.frame(x, y)) +
    ggplot2::geom_point(ggplot2::aes(x = x, y = y),
        colour = "black", fill = "red",
        shape = 21
    ) +
    ggthemes::theme_base() +
    ggplot2::labs(x = "X Var", y = "Y var")
```



The model takes the form of

$$Y_i|\lambda_i \overset{\text{iid}}{\sim} \text{Poisson}(\lambda_i), i = 1, ..., n \tag{1}$$

where

$$\ln(\lambda_i) = \beta_0 + \beta_1 x_i + \phi_i \tag{2}$$

and

$$\phi_i|\sigma^2 \overset{\text{iid}}{\sim} \text{N}(0, \sigma^2) \tag{3}$$