# AN-300-Final-Exam

Elijah Russell

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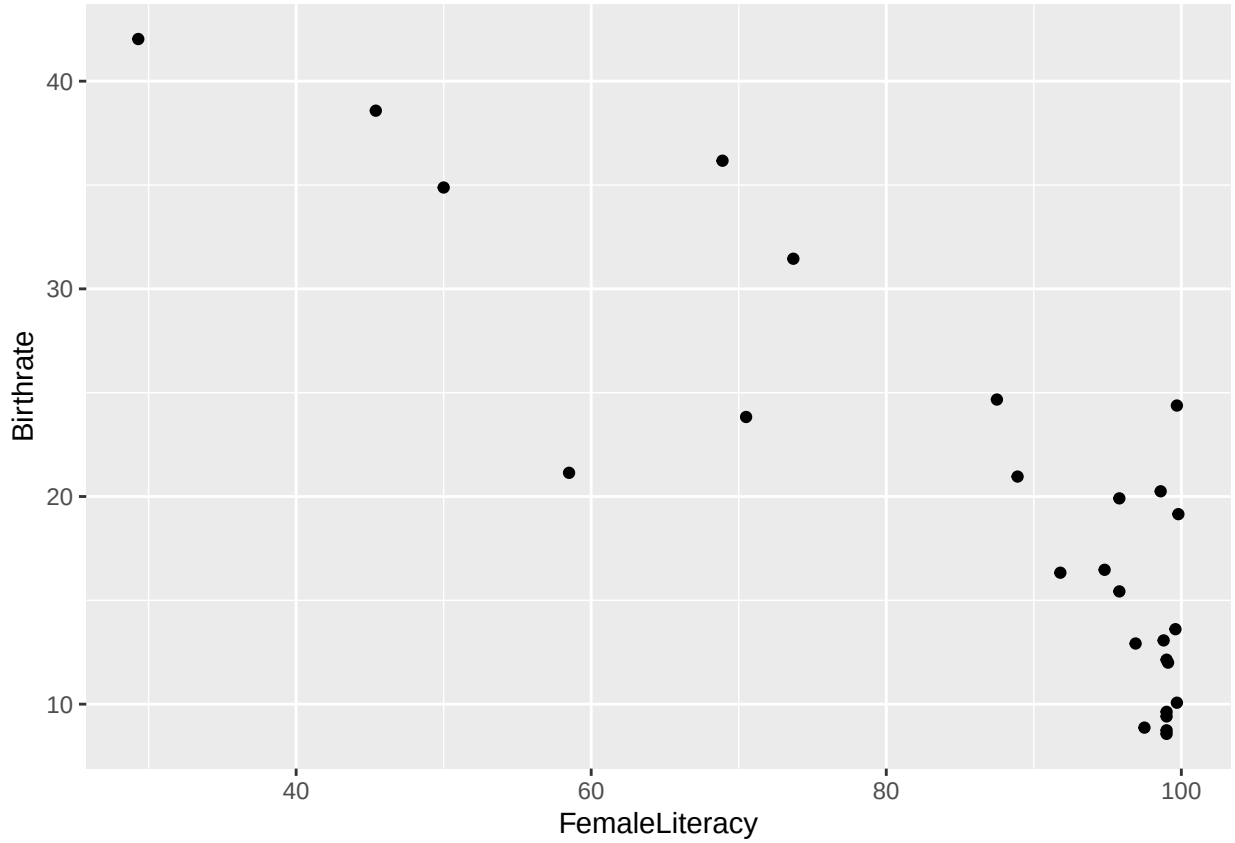
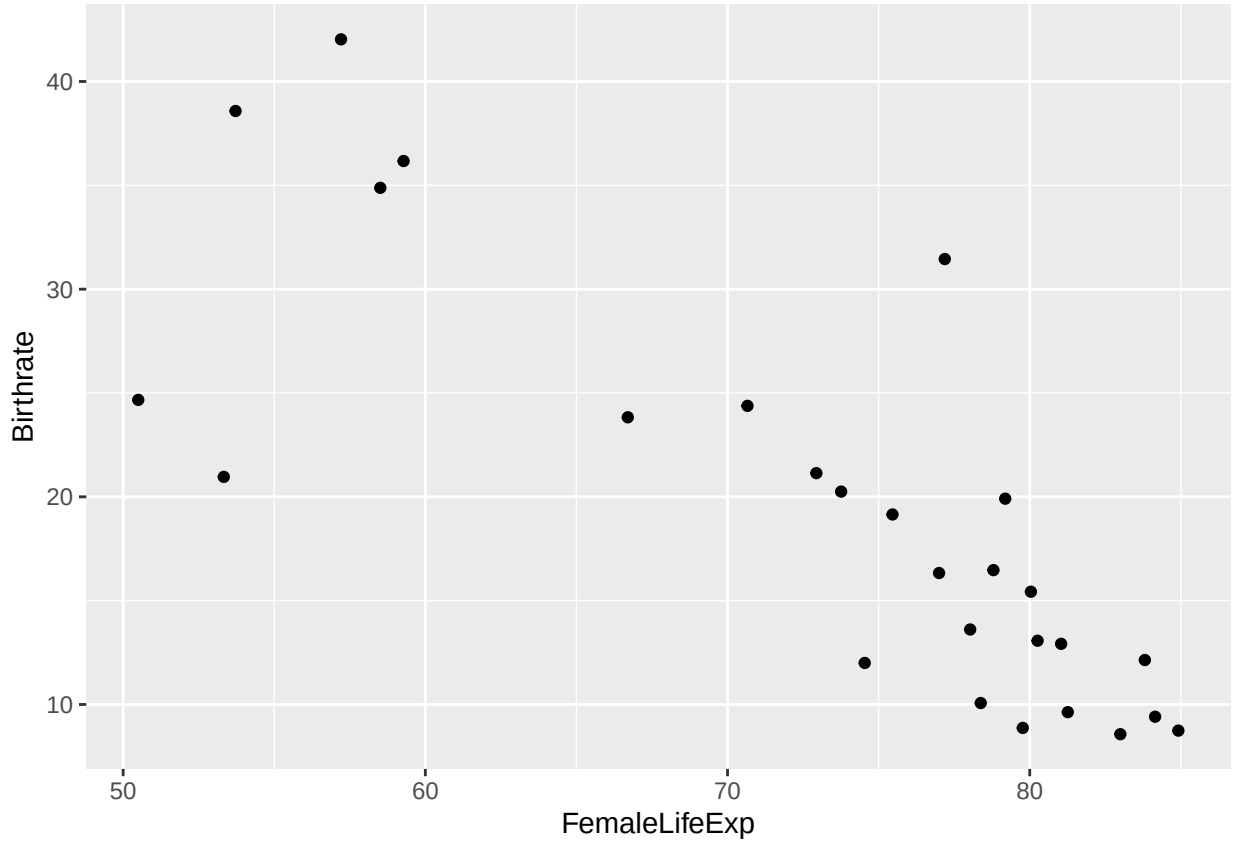
```
library(tidyverse)
library(readxl)

CountryData <- read_excel("CountryData_F2025.xlsx")
ForecastingData <- read_excel("ForecastingProblems.xlsx", sheet = "Shipping")
```

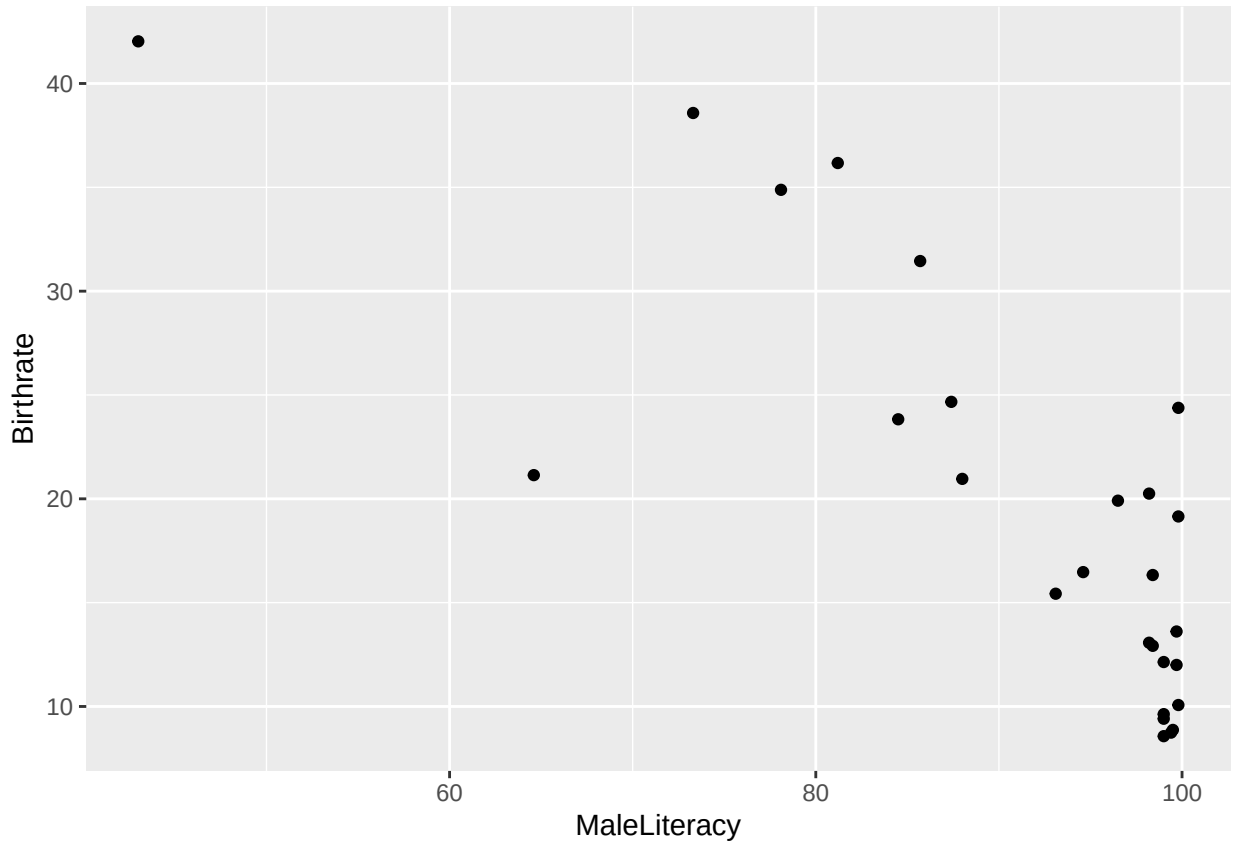
```
ggplot(CountryData,aes(x=FemaleLiteracy,y=Birthrate)) +
  geom_point()
```




```
ggplot(CountryData,aes(x=FemaleLifeExp,y=Birthrate)) +
  geom_point()
```




```
ggplot(CountryData,aes(x=MaleLiteracy,y=Birthrate)) +
  geom_point()
```




```
model <- lm(Birthrate ~ FemaleLiteracy + FemaleLifeExp, data = CountryData)
summary(model)
```

```
##
## Call:
## lm(formula = Birthrate ~ FemaleLiteracy + FemaleLifeExp, data = CountryData)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -6.6191 -2.9371 -0.1658  1.4069  9.7190
##
## Coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)     71.4338     5.9008  12.106 1.04e-11 ***
## FemaleLiteracy  -0.2954     0.0578  -5.111 3.14e-05 ***
## FemaleLifeExp   -0.3618     0.1088  -3.325  0.00284 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 4.287 on 24 degrees of freedom
## Multiple R-squared:  0.824,  Adjusted R-squared:  0.8093
## F-statistic: 56.17 on 2 and 24 DF,  p-value: 8.851e-10
```

```
model2 <- lm(Birthrate ~ FemaleLiteracy + FemaleLifeExp + MaleLiteracy + GDPPerCapita + MaleLifeExp, da
summary(model2)
```

```
##
```

```
## Call:
## lm(formula = Birthrate ~ FemaleLiteracy + FemaleLifeExp + MaleLiteracy +
##     GDPPerCapita + MaleLifeExp, data = CountryData)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -5.8211 -2.8832 -0.3126  1.5414 10.2317
##
## Coefficients:
##                  Estimate Std. Error t value Pr(>|t|)
## (Intercept)     7.233e+01  1.101e+01   6.567 1.67e-06 ***
## FemaleLiteracy -4.271e-01  1.416e-01  -3.017  0.00656 **
## FemaleLifeExp  -7.701e-03  3.512e-01  -0.022  0.98271
## MaleLiteracy    1.942e-01  1.990e-01   0.976  0.34020
## GDPPerCapita    5.962e-05  5.950e-05   1.002  0.32772
## MaleLifeExp    -5.038e-01  4.417e-01  -1.141  0.26686
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 4.341 on 21 degrees of freedom
## Multiple R-squared:  0.8421, Adjusted R-squared:  0.8044
## F-statistic: 22.39 on 5 and 21 DF,  p-value: 9.209e-08
```

```r
model3 <- lm(ShippingCostMean ~ Q1 + Q2 + Q3, data = ForecastingData)
summary(model3)
```

```
##
## Call:
## lm(formula = ShippingCostMean ~ Q1 + Q2 + Q3, data = ForecastingData)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -13.0575  -2.5513  -0.4581   2.7963  11.8713
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)   27.547      2.140  12.874 2.79e-13 ***
## Q1            -5.849      3.026  -1.933   0.0634 .
## Q2            -0.865      3.026  -0.286   0.7771
## Q3            -0.170      3.026  -0.056   0.9556
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 6.052 on 28 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  0.1529, Adjusted R-squared:  0.06213
## F-statistic: 1.685 on 3 and 28 DF,  p-value: 0.193
```