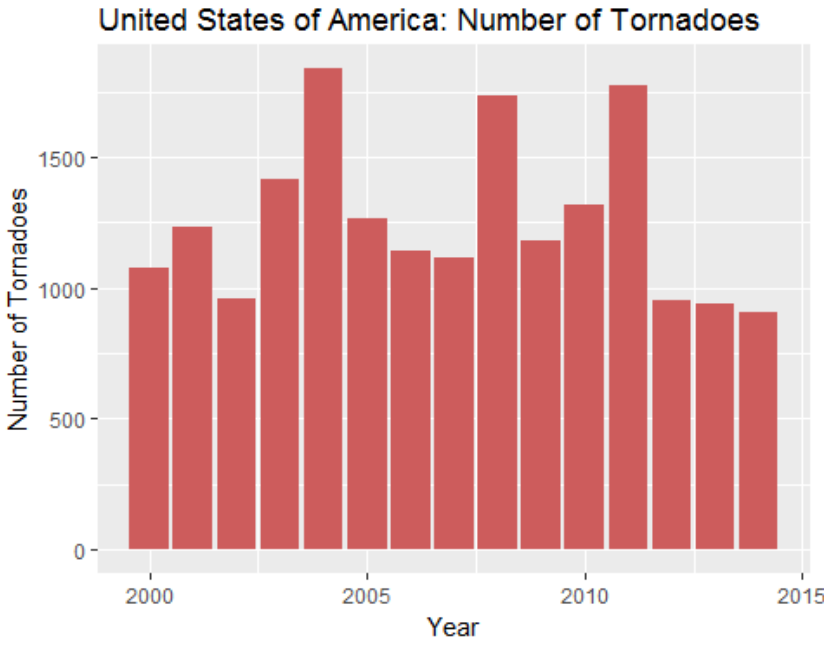
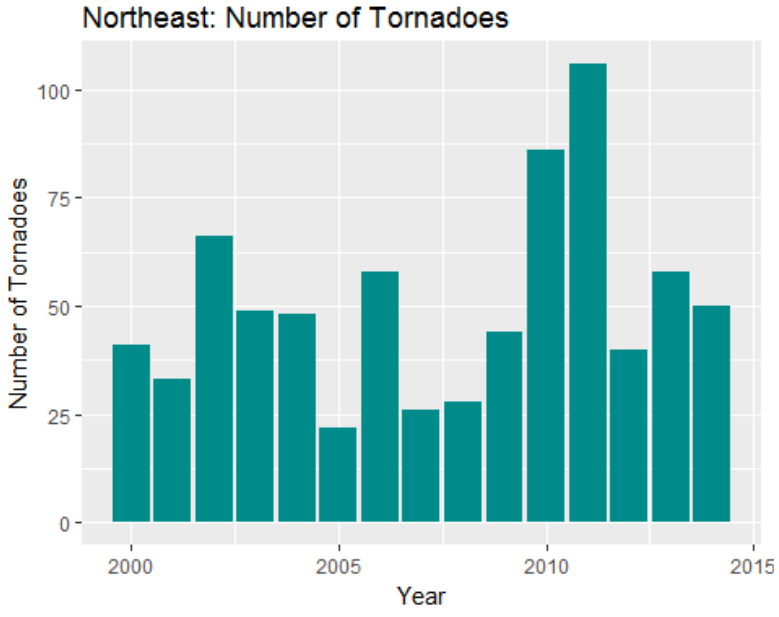
Analysis_Rscript

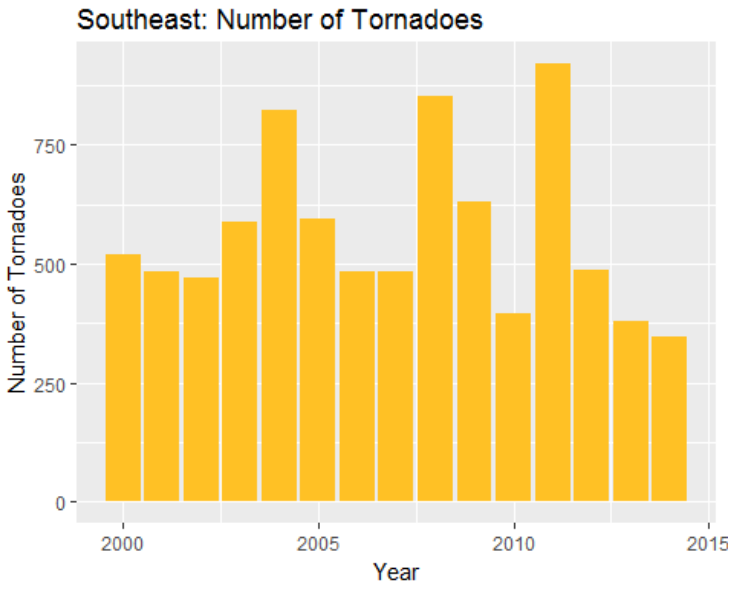
```
#-************************ Impressive Impalas ************************-#

#-************************ Question-1 ************************-#
#-How has the tornado occurrence varied over the last 10 years?
#Variable under consideration: Count of the tornadoes each year

#Importing the ggplot2 library
library(ggplot2)

## Warning: package 'ggplot2' was built under R version 3.3.2

#-Read the csv file by manually browsing through the file structure
#-Read he state-wise data for tornadoes and exports in d
#-Read he region-wise data for tornadoes and exports in x
d=read.csv("C:\\Users\\kavas\\Desktop\\Documents\\Courses\\600_AW\\Project\\R
plot\\Tor_Exp_StateWise_RPlot.csv")
x=read.csv("C:\\Users\\kavas\\Desktop\\Documents\\Courses\\600_AW\\Project\\R
plot\\Tor_Exp_RegionWise_RPlot.csv")

#-We divide the data set using the subset command to analyze
#--different geographic regions in the United States
#--namely Midwest, Northeast, Southeast and West
dMW=subset(d,d$Region=="Mid-West")
dNE=subset(d,d$Region=="North-East")
dSE=subset(d,d$Region=="South-East")
dW=subset(d,d$Region=="Western")

xMW=subset(x,x$Region=="Mid-West")
xNE=subset(x,x$Region=="North-East")
xSE=subset(x,x$Region=="South-East")
xW=subset(x,x$Region=="Western")

#Plot for the number of tornadoes in United-States
ggplot(d,aes(x=d$Year,y=d$Count))+
  geom_bar(stat="identity", fill="indianred")+
  xlab("Year")+ylab("Number of Tornadoes")+
  ggtitle("United States of America: Number of Tornadoes")
```



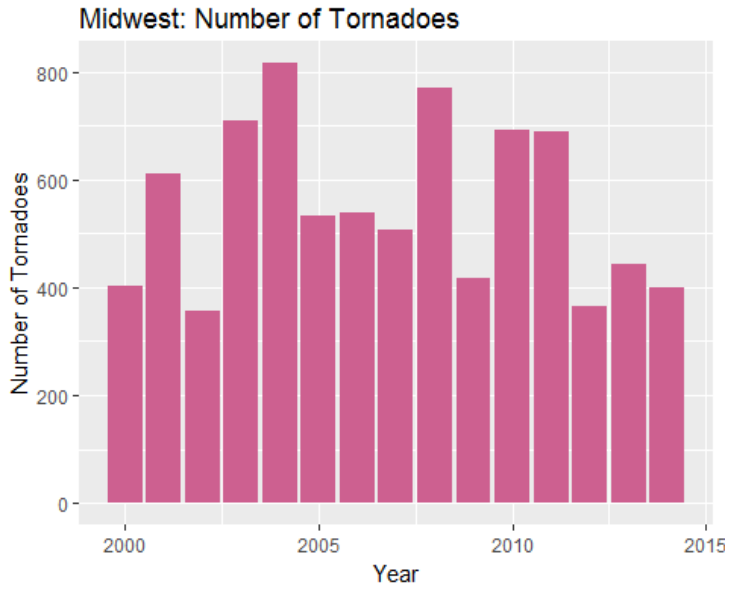

```r
#Plot for the number of tornadoes in North-East
ggplot(dNE,aes(x=dNE$Year,y=dNE$Count))+
  geom_bar(stat="identity", fill="darkcyan")+
  xlab("Year")+ylab("Number of Tornadoes")+
  ggtitle("Northeast: Number of Tornadoes")
```



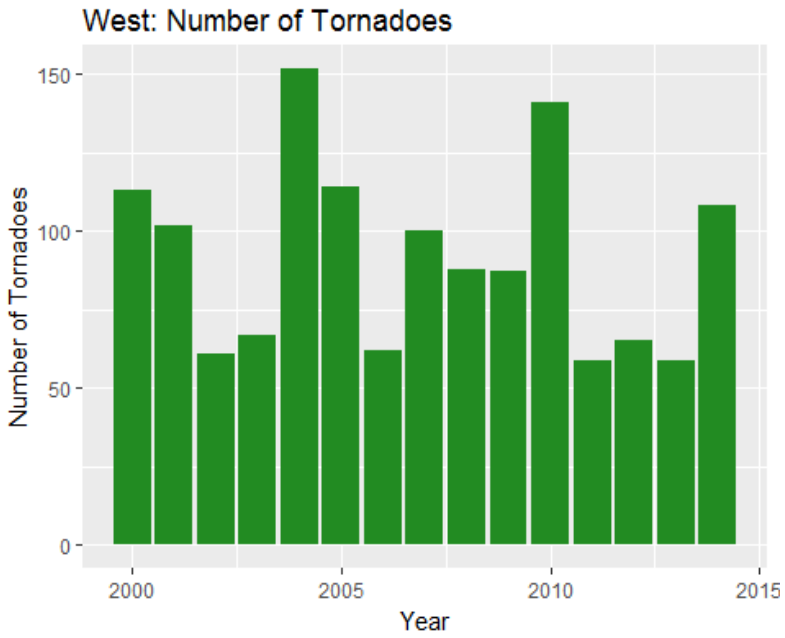

```r
#Plot for the number of tornadoes in South-East
ggplot(dSE,aes(x=dSE$Year,y=dSE$Count))+
  geom_bar(stat="identity", fill="goldenrod1")+
  xlab("Year")+ylab("Number of Tornadoes")+
  ggtitle("Southeast: Number of Tornadoes")
```




```
#Plot for the number of tornadoes in Mid-West
ggplot(dMW,aes(x=dMW$Year,y=dMW$Count))+
  geom_bar(stat="identity", fill="hotpink3")+
  xlab("Year")+ylab("Number of Tornadoes")+
  ggtitle("Midwest: Number of Tornadoes")
```




```
#Plot for the number of tornadoes in West
ggplot(dW,aes(x=dW$Year,y=dW$Count))+
  geom_bar(stat="identity", fill="forestgreen")+
  xlab("Year")+ylab("Number of Tornadoes")+
  ggtitle("West: Number of Tornadoes")
```




```
#-************************ Question-2 ************************-#
#-What is the relationship between tornado occurrences and Exports
#-Variable under consideration:
#-Dependent Variable: Total exports from a state/region
#-Independent Variable: Average F-scale value, Count of tornadoes

#Analyzing the data using linear regression model for each region

#Region: Mid-West, Dependent Variable: Agricultural Exports, Independent
Variable: Count of Tornadoes
summary(lm(xMW$Sum.of.Agricultural.Exports~xMW$Sum.of.Count))

##
## Call:
## lm(formula = xMW$Sum.of.Agricultural.Exports ~ xMW$Sum.of.Count)
##
## Residuals:
##    Min     1Q Median     3Q    Max
## -22321 -15235  -1634  17697  23515
##
## Coefficients:
##                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)       48153.77   18163.14   2.651    0.020 *
## xMW$Sum.of.Count    -11.97      31.86  -0.376    0.713
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 18460 on 13 degrees of freedom
## Multiple R-squared:  0.01074,    Adjusted R-squared:  -0.06535
## F-statistic: 0.1412 on 1 and 13 DF,  p-value: 0.7131
```

```r
#Region: Mid-West, Dependent Variable: Animal Product Exports, Independent Variable: Count of Tornadoes

summary(lm(xMW$Sum.of.Animal.Products~xNE$Sum.of.Count))
```

```
##
## Call:
## lm(formula = xMW$Sum.of.Animal.Products ~ xNE$Sum.of.Count)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4559.0 -2947.0  -259.9  1791.9  6855.4
##
## Coefficients:
##                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)        5157.13    2422.28   2.129   0.0529 .
## xNE$Sum.of.Count    58.77      44.14   1.331   0.2059
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 3737 on 13 degrees of freedom
## Multiple R-squared:   0.12,  Adjusted R-squared:  0.0523
## F-statistic: 1.773 on 1 and 13 DF,  p-value: 0.2059
```

```r
#Region: Mid-West, Dependent Variable: Plant Product Exports, Independent Variable: Count of Tornadoes

summary(lm(xMW$Sum.of.Plant.Products~xNE$Sum.of.Count))
```

```
##
## Call:
## lm(formula = xMW$Sum.of.Plant.Products ~ xNE$Sum.of.Count)
##
## Residuals:
##    Min     1Q Median     3Q    Max
## -18213 -12236   3111   9408  20115
##
## Coefficients:
##                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)        23126.6     9013.3   2.566   0.0235 *
## xNE$Sum.of.Count     205.2      164.2   1.249   0.2337
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 13910 on 13 degrees of freedom
## Multiple R-squared:  0.1071, Adjusted R-squared:  0.03847
## F-statistic:  1.56 on 1 and 13 DF,  p-value: 0.2337
```

```r
#Region: Northeast, Dependent Variable: Agricultural Exports, Independent Variable: Count of Tornadoes

summary(lm(xNE$Sum.of.Agricultural.Exports~xNE$Sum.of.Count))
```

```
##
## Call:
## lm(formula = xNE$Sum.of.Agricultural.Exports ~ xNE$Sum.of.Count)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -3268.9 -2074.4   347.3  1408.4  4099.5
##
## Coefficients:
##                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)        4328.29    1662.70   2.603   0.0219 *
## xNE$Sum.of.Count    34.69      30.30   1.145   0.2729
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 2565 on 13 degrees of freedom
## Multiple R-squared:  0.0916, Adjusted R-squared:  0.02173
## F-statistic: 1.311 on 1 and 13 DF,  p-value: 0.2729
```

```r
#Region: Northeast, Dependent Variable: Animal Product Exports, Independent Variable: Count of Tornadoes

summary(lm(xNE$Sum.of.Animal.Products~xNE$Sum.of.Count))
```

```
##
## Call:
## lm(formula = xNE$Sum.of.Animal.Products ~ xNE$Sum.of.Count)
##
## Residuals:
##    Min     1Q Median     3Q    Max
## -804.6 -529.1 -118.9  278.8 1262.8
##
## Coefficients:
##                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)        902.925    439.483   2.055   0.0606 .
## xNE$Sum.of.Count    9.909      8.009   1.237   0.2379
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 678.1 on 13 degrees of freedom
## Multiple R-squared:  0.1054, Adjusted R-squared:  0.03653
## F-statistic: 1.531 on 1 and 13 DF,  p-value: 0.2379
```

```r
#Region: Northeast, Dependent Variable: Plant Product Exports, Independent Variable: Count of Tornadoes

summary(lm(xNE$Sum.of.Plant.Products~xNE$Sum.of.Count))
```

```
##
## Call:
## lm(formula = xNE$Sum.of.Plant.Products ~ xNE$Sum.of.Count)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -2697.0 -1620.9   179.3  1273.2  3221.0
##
## Coefficients:
##                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)        3659.59    1320.72   2.771   0.0159 *
## xNE$Sum.of.Count    27.19      24.07   1.130   0.2790
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 2038 on 13 degrees of freedom
## Multiple R-squared:  0.08939,    Adjusted R-squared:  0.01934
## F-statistic: 1.276 on 1 and 13 DF,  p-value: 0.279
```

```r
#Region: Southeast, Dependent Variable: Agricultural Exports, Independent Variable: Count of Tornadoes

summary(lm(xSE$Sum.of.Agricultural.Exports~xSE$Sum.of.Count))
```

```
##
## Call:
## lm(formula = xSE$Sum.of.Agricultural.Exports ~ xSE$Sum.of.Count)
##
## Residuals:
##    Min     1Q Median     3Q    Max
## -11492  -8023  -1180   9209  13335
##
## Coefficients:
##                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)       28723.193   8847.565   3.246  0.00637 **
## xSE$Sum.of.Count    -3.268     15.017  -0.218  0.83110
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9855 on 13 degrees of freedom
## Multiple R-squared:  0.00363,    Adjusted R-squared:  -0.07301
## F-statistic: 0.04736 on 1 and 13 DF,  p-value: 0.8311
```

```r
#Region: Southeast, Dependent Variable: Animal Product Exports, Independent Variable: Count of Tornadoes

summary(lm(xSE$Sum.of.Animal.Products~xSE$Sum.of.Count))
```

```
##
## Call:
## lm(formula = xSE$Sum.of.Animal.Products ~ xSE$Sum.of.Count)
##
## Residuals:
##    Min     1Q Median     3Q    Max
##  -2520  -1866   -348   2030   3072
##
## Coefficients:
##                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)        7477.503   1982.422   3.772  0.00233 **
## xSE$Sum.of.Count    -1.733      3.365  -0.515  0.61509
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 2208 on 13 degrees of freedom
## Multiple R-squared:  0.02001,    Adjusted R-squared:  -0.05538
## F-statistic: 0.2654 on 1 and 13 DF,  p-value: 0.6151
```

```r
#Region: Southeast, Dependent Variable: Plant Product Exports, Independent Variable: Count of Tornadoes

summary(lm(xSE$Sum.of.Plant.Products~xSE$Sum.of.Count))
```

```
##
## Call:
## lm(formula = xSE$Sum.of.Plant.Products ~ xSE$Sum.of.Count)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -7460.2 -4685.0  -571.6  5535.0  7995.8
##
## Coefficients:
##                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)        17947.960   5412.662   3.316  0.00557 **
## xSE$Sum.of.Count      -1.369      9.187  -0.149  0.88383
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 6029 on 13 degrees of freedom
## Multiple R-squared:  0.001705,   Adjusted R-squared:  -0.07509
## F-statistic: 0.02221 on 1 and 13 DF,  p-value: 0.8838
```

```r
#Region: West, Dependent Variable: Agricultural Exports, Independent Variable: Count of Tornadoes

summary(lm(xW$Sum.of.Agricultural.Exports~xW$Sum.of.Count))
```

```
##
## Call:
## lm(formula = xW$Sum.of.Agricultural.Exports ~ xW$Sum.of.Count)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -11774.4  -7578.6   -964.2   7120.5  17369.1
##
## Coefficients:
##                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)      29294.93    7933.40   3.693  0.00271 **
## xW$Sum.of.Count    -76.02      82.30  -0.924  0.37251
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9304 on 13 degrees of freedom
## Multiple R-squared:  0.06158,    Adjusted R-squared:  -0.01061
## F-statistic: 0.8531 on 1 and 13 DF,  p-value: 0.3725
```

```r
#Region: West, Dependent Variable: Animal Product Exports, Independent Variable: Count of Tornadoes

summary(lm(xW$Sum.of.Animal.Products~xW$Sum.of.Count))
```

```
##
## Call:
## lm(formula = xW$Sum.of.Animal.Products ~ xW$Sum.of.Count)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -1794.1 -1070.7  -574.9  1236.2  3216.2
##
## Coefficients:
##                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)       4753.57    1365.93   3.480  0.00407 **
## xW$Sum.of.Count    -15.50      14.17  -1.094  0.29401
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1602 on 13 degrees of freedom
## Multiple R-squared:  0.08424,    Adjusted R-squared:  0.0138
## F-statistic: 1.196 on 1 and 13 DF,  p-value: 0.294
```

```r
#Region: West, Dependent Variable: Plant Product Exports, Independent
Variable: Count of Tornadoes

summary(lm(xW$Sum.of.Plant.Products~xW$Sum.of.Count))

##
## Call:
## lm(formula = xW$Sum.of.Plant.Products ~ xW$Sum.of.Count)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -9980.3 -6266.7  -517.7  5884.3 14152.9
##
## Coefficients:
##                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)      24541.36    6597.63   3.720  0.00257 **
## xW$Sum.of.Count    -60.52      68.45  -0.884  0.39264
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 7738 on 13 degrees of freedom
## Multiple R-squared:  0.05673,    Adjusted R-squared:  -0.01583
## F-statistic: 0.7818 on 1 and 13 DF,  p-value: 0.3926



#-We divide the data set using the subset command to analyze
#--different states in the United States

dTexas=subset(d,d$State=="TX")
dNEMex=subset(d,d$State=="NM")
dOk=subset(d,d$State=="OK")
dAr=subset(d,d$State=="AR")
dLa=subset(d,d$State=="LA")
dAz=subset(d,d$State=="AZ")
dKs=subset(d,d$State=="KS")

#Analyzing the data using multiple regression model for states
#--with high occurrence of tornadoes

#Two independent variables are used in this analysis – 'Count of Tornadoes'
and 'Average of F-scale'

#State: Texas, Dependent Variable: Agricultural Exports
summary(lm(dTexas$Agricultural.Exports~dTexas$Count+dTexas$Average.of.F.Scale
))

##
## Call:
## lm(formula = dTexas$Agricultural.Exports ~ dTexas$Count +
dTexas$Average.of.F.Scale)
```

```
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -1741.8  -912.2  -187.2   939.7  1987.3
##
## Coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  8429.654   1758.734   4.793 0.000439 ***
## dTexas$Count                  -22.567      8.728  -2.586 0.023852 *
## dTexas$Average.of.F.Scale -2327.622   4699.187  -0.495 0.629317
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1251 on 12 degrees of freedom
## Multiple R-squared:  0.402,  Adjusted R-squared:  0.3023
## F-statistic: 4.033 on 2 and 12 DF,  p-value: 0.04573
```

```
#State: Texas, Dependent Variable: Animal Product Exports

summary(lm(dTexas$Animal.Products~dTexas$Count+dTexas$Average.of.F.Scale))
```

```
##
## Call:
## lm(formula = dTexas$Animal.Products ~ dTexas$Count +
dTexas$Average.of.F.Scale)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -771.06 -187.11   27.68  243.24  570.26
##
## Coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 2401.994    592.573   4.053  0.00160 **
## dTexas$Count                 -9.935      2.941  -3.378  0.00548 **
## dTexas$Average.of.F.Scale  818.766   1583.305   0.517  0.61447
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 421.6 on 12 degrees of freedom
## Multiple R-squared:  0.4899, Adjusted R-squared:  0.4049
## F-statistic: 5.763 on 2 and 12 DF,  p-value: 0.01762
```

```
#State: Texas, Dependent Variable: Plant Product Exports

summary(lm(dTexas$Plant.Products~dTexas$Count+dTexas$Average.of.F.Scale))
```

```
##
## Call:
```

```
## lm(formula = dTexas$Plant.Products ~ dTexas$Count +
dTexas$Average.of.F.Scale)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1142.55  -836.13   -32.46   640.71  1555.36
##
## Coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  6027.666   1364.876   4.416 0.000841 ***
## dTexas$Count                  -12.632      6.773  -1.865 0.086829 .
## dTexas$Average.of.F.Scale -3146.421   3646.832  -0.863 0.405171
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 971 on 12 degrees of freedom
## Multiple R-squared:  0.3085, Adjusted R-squared:  0.1933
## F-statistic: 2.677 on 2 and 12 DF,  p-value: 0.1093
```

```
#State: New Mexico, Dependent Variable: Agricultural Exports

summary(lm(dNEMex$Agricultural.Exports~dNEMex$Count+dNEMex$Average.of.F.Scale
))
```

```
##
## Call:
## lm(formula = dNEMex$Agricultural.Exports ~ dNEMex$Count +
dNEMex$Average.of.F.Scale)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -193.45 -148.24  -53.13  119.48  309.90
##
## Coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  494.400     87.381   5.658 0.000106 ***
## dNEMex$Count                  -4.171     10.306  -0.405 0.692809
## dNEMex$Average.of.F.Scale    400.619    271.959   1.473 0.166468
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 189.6 on 12 degrees of freedom
## Multiple R-squared:  0.1564, Adjusted R-squared:  0.01583
## F-statistic: 1.113 on 2 and 12 DF,  p-value: 0.3604
```

```r
#State: Oklahoma, Dependent Variable: Agricultural Exports

summary(lm(dOk$Agricultural.Exports~dOk$Count+dOk$Average.of.F.Scale))
```

```
##
## Call:
## lm(formula = dOk$Agricultural.Exports ~ dOk$Count +
dOk$Average.of.F.Scale)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -482.29 -240.23  -11.78  179.17  677.74
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)               861.469    308.726   2.790   0.0163 *
## dOk$Count                   6.458      3.798   1.700   0.1148
## dOk$Average.of.F.Scale     19.430    591.229   0.033   0.9743
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 376.3 on 12 degrees of freedom
## Multiple R-squared:  0.2599, Adjusted R-squared:  0.1365
## F-statistic: 2.107 on 2 and 12 DF,  p-value: 0.1644
```

```r
#State: Arkansas, Dependent Variable: Agricultural Exports

summary(lm(dAr$Agricultural.Exports~dAr$Count+dAr$Average.of.F.Scale))
```

```
##
## Call:
## lm(formula = dAr$Agricultural.Exports ~ dAr$Count +
dAr$Average.of.F.Scale)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1531.37  -759.12    80.32   851.64  1295.43
##
## Coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)             1153.4944  1172.2499   0.984    0.345
## dAr$Count                 0.9216    12.3591   0.075    0.942
## dAr$Average.of.F.Scale 1551.5482  1039.1923   1.493    0.161
##
## Residual standard error: 1000 on 12 degrees of freedom
## Multiple R-squared:  0.1573, Adjusted R-squared:  0.01684
## F-statistic:  1.12 on 2 and 12 DF,  p-value: 0.3581
```

```r
#State: Louisiana, Dependent Variable: Agricultural Exports

summary(lm(dLa$Agricultural.Exports~dLa$Count+dLa$Average.of.F.Scale))
```

```
##
## Call:
## lm(formula = dLa$Agricultural.Exports ~ dLa$Count +
dLa$Average.of.F.Scale)
##
## Residuals:
##    Min     1Q Median     3Q    Max
## -609.2 -365.4  -89.0  462.1  835.5
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)               980.705    996.972   0.984    0.345
## dLa$Count                   4.568      9.735   0.469    0.647
## dLa$Average.of.F.Scale     48.757   1079.636   0.045    0.965
##
## Residual standard error: 558.4 on 12 degrees of freedom
## Multiple R-squared:  0.02527,    Adjusted R-squared:  -0.1372
## F-statistic: 0.1556 on 2 and 12 DF,  p-value: 0.8576
```

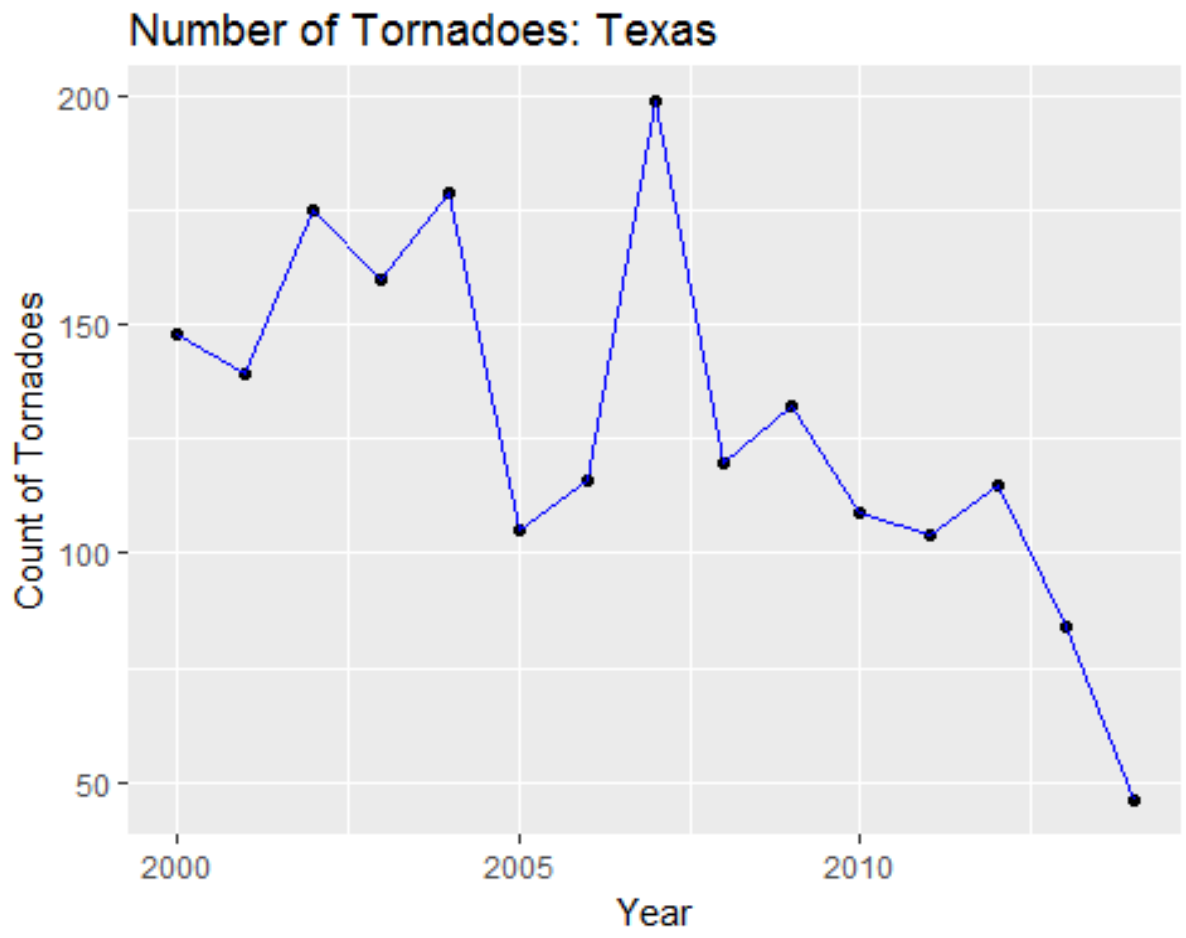
```r
#State: Arizona, Dependent Variable: Agricultural Exports

summary(lm(dAz$Agricultural.Exports~dAz$Count+dAz$Average.of.F.Scale))
```

```
##
## Call:
## lm(formula = dAz$Agricultural.Exports ~ dAz$Count +
dAz$Average.of.F.Scale)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -486.60 -164.89  -43.33  235.55  484.96
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)               962.47     137.06   7.022 1.39e-05 ***
## dAz$Count                 -40.92      31.91  -1.283    0.224
## dAz$Average.of.F.Scale    608.83     361.12   1.686    0.118
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 354.6 on 12 degrees of freedom
## Multiple R-squared:  0.2009, Adjusted R-squared:  0.0677
## F-statistic: 1.508 on 2 and 12 DF,  p-value: 0.2604
```

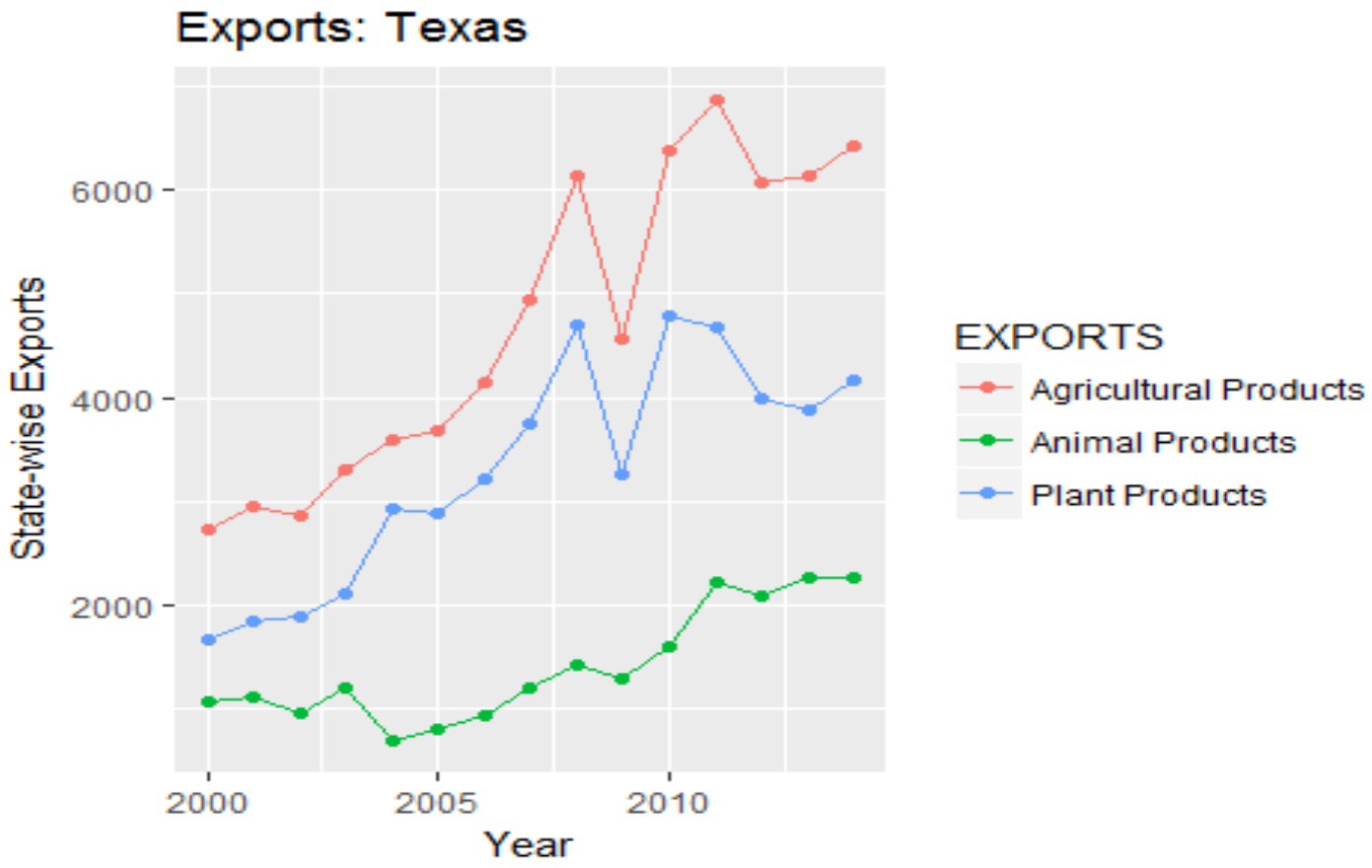
```r
#State: Kansas, Dependent Variable: Agricultural Exports

summary(lm(dKs$Agricultural.Exports~dKs$Count+dKs$Average.of.F.Scale))
```

```
##
## Call:
## lm(formula = dKs$Agricultural.Exports ~ dKs$Count +
dKs$Average.of.F.Scale)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -1619.6 -1119.5   359.7  1046.4  1693.1
##
## Coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)               3199.433   1268.287   2.523   0.0268 *
## dKs$Count                   -8.752      8.898  -0.984   0.3447
## dKs$Average.of.F.Scale    2312.203   2529.977   0.914   0.3788
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1243 on 12 degrees of freedom
## Multiple R-squared:  0.1143, Adjusted R-squared:  -0.03328
## F-statistic: 0.7745 on 2 and 12 DF,  p-value: 0.4826
```

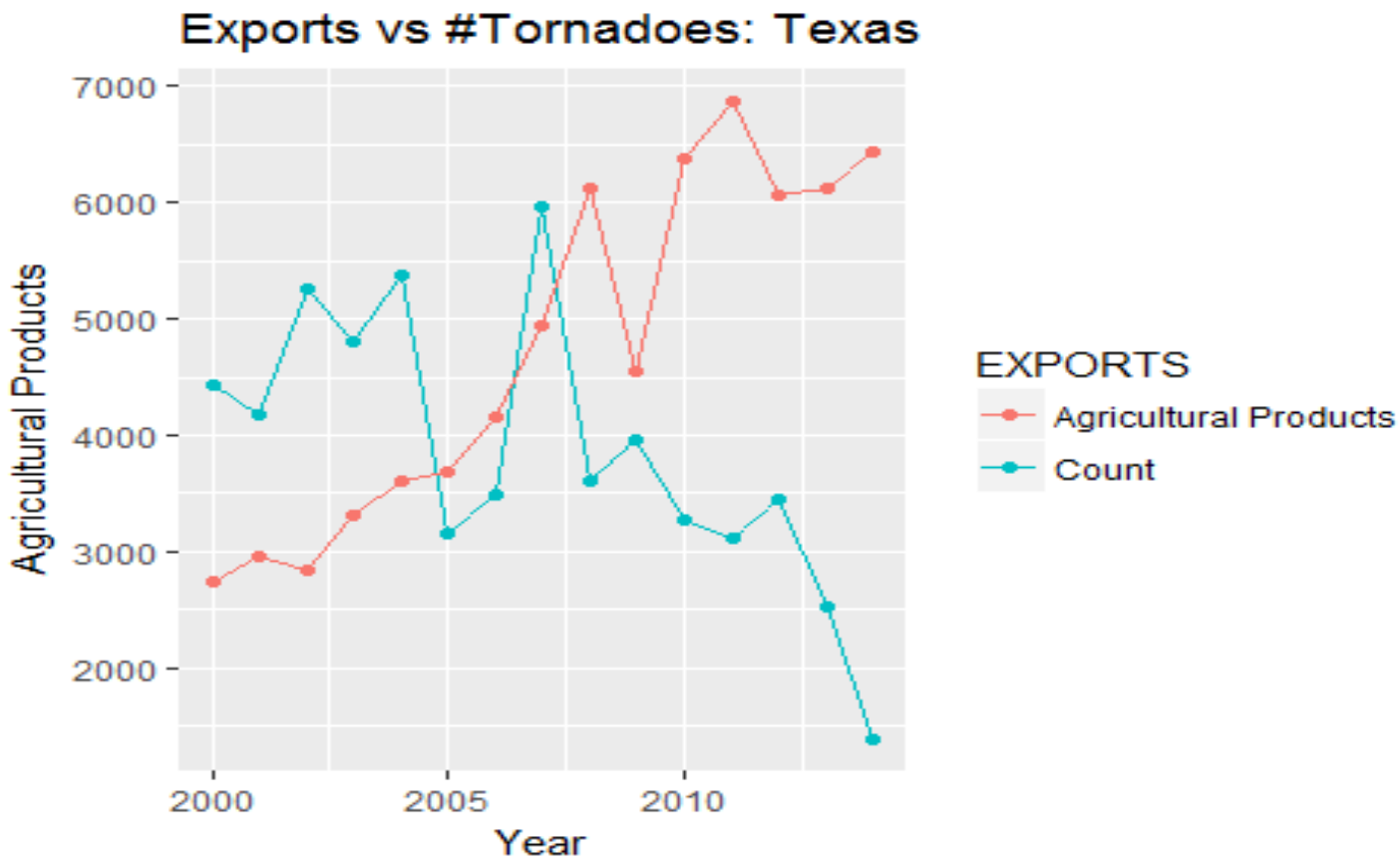
```
#-We plotted the count of tornadoes vs the year for the state of Texas
ggplot(dTexas,aes(dTexas$Year,dTexas$Count))+
  geom_point() + geom_line(colour="blue")+
  xlab("Year") + ylab("Count of Tornadoes") + ggtitle("Number of Tornadoes:
Texas")
```



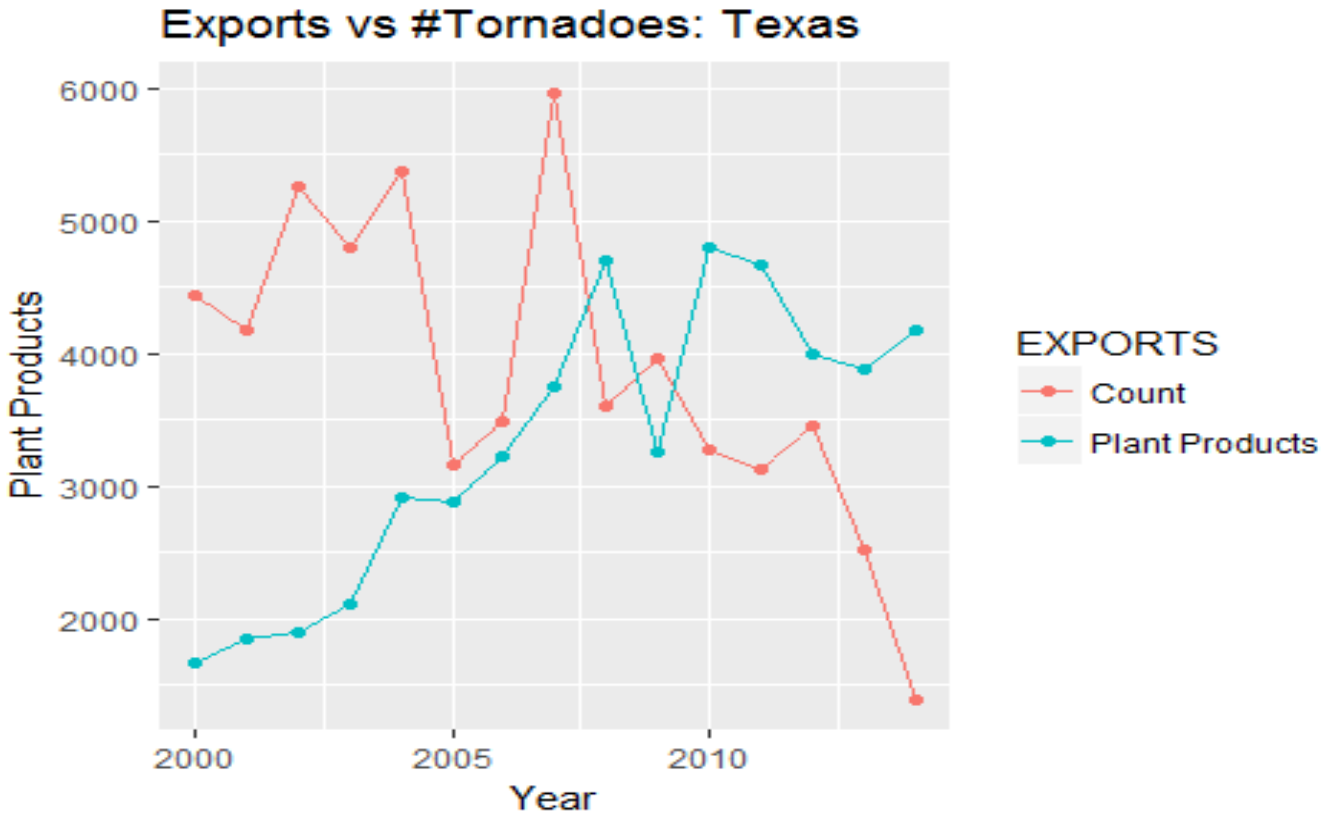
```r
#-We plotted the exports vs the year for the state of Texas
ggplot(dTexas, aes(dTexas$Year)) +
  geom_line(aes(y = dTexas$Agricultural.Exports, colour = "Agricultural
Products")) +
  geom_point(aes(y = dTexas$Agricultural.Exports, colour = "Agricultural
Products")) +
  geom_line(aes(y = dTexas$Plant.Products, colour = "Plant Products")) +
  geom_point(aes(y = dTexas$Plant.Products, colour = "Plant Products")) +
  geom_line(aes(y = dTexas$Animal.Products, colour = "Animal Products")) +
  geom_point(aes(y = dTexas$Animal.Products, colour = "Animal Products")) +
  xlab("Year") + ylab("State-wise Exports") + ggtitle("Exports: Texas") +
labs(color='EXPORTS')
```



```
#--We plot the agricultural products and the
#--magnified version of number of tornadoes
#--to observe a pattern and deduce a conclusion for the state of Texas
ggplot(dTexas, aes(dTexas$Year)) +
  geom_line(aes(y = dTexas$Count*30, colour = "Count")) +
  geom_point(aes(y = dTexas$Count*30, colour = "Count")) +
  geom_line(aes(y = dTexas$Agricultural.Exports, colour = "Agricultural
Products")) +
  geom_point(aes(y = dTexas$Agricultural.Exports, colour = "Agricultural
Products")) +
  xlab("Year") + ylab("Agricultural Products") + ggtitle("Exports vs
#Tornadoes: Texas") + labs(color='EXPORTS');
```



```r
#--We plot the Plant products and the
#--magnified version of number of tornadoes
#--to observe a pattern and deduce a conclusion for the state of Texas
ggplot(dTexas, aes(dTexas$Year)) +
  geom_line(aes(y = dTexas$Count*30, colour = "Count")) +
  geom_point(aes(y = dTexas$Count*30, colour = "Count")) +
  geom_line(aes(y = dTexas$Plant.Products, colour = "Plant Products")) +
  geom_point(aes(y = dTexas$Plant.Products, colour = "Plant Products")) +
  xlab("Year") + ylab("Plant Products") + ggtitle("Exports vs #Tornadoes:
Texas") + labs(color='EXPORTS');
```



```r
#--We plot the Animal products and the
#--magnified version of number of tornadoes
#--to observe a pattern and deduce a conclusion for the state of Texas
ggplot(dTexas, aes(dTexas$Year)) +
  geom_line(aes(y = dTexas$Count*10, colour = "Count")) +
  geom_point(aes(y = dTexas$Count*10, colour = "Count")) +
  geom_line(aes(y = dTexas$Animal.Products, colour = "Animal Products")) +
  geom_point(aes(y = dTexas$Animal.Products, colour = "Animal Products")) +
  xlab("Year") + ylab("Animal Products") + ggtitle("Exports: Texas") +
labs(color='EXPORTS')
```