# EV Power - Lab 4 Project Report

## Example Solution 1

### Part 0: libraries

```
options(repos = c(CRAN = "https://cloud.r-project.org/"))
install.packages("dplyr")
```

```
package 'dplyr' successfully unpacked and MD5 sums checked
```

```


The downloaded binary packages are in
    C:\Users\Administrator\AppData\Local\Temp\RtmpacNh1z\downloaded_packages
```

```
install.packages("ggplot2")
```

```
package 'ggplot2' successfully unpacked and MD5 sums checked

The downloaded binary packages are in
    C:\Users\Administrator\AppData\Local\Temp\RtmpacNh1z\downloaded_packages
```

```
install.packages("tidyverse")
```

```
package 'tidyverse' successfully unpacked and MD5 sums checked

The downloaded binary packages are in
    C:\Users\Administrator\AppData\Local\Temp\RtmpacNh1z\downloaded_packages
```

```
install.packages("tidyr")
```

```
package 'tidyr' successfully unpacked and MD5 sums checked
```

```


The downloaded binary packages are in
    C:\Users\Administrator\AppData\Local\Temp\RtmpacNh1z\downloaded_packages
```

```
library(dplyr)
library(ggplot2)
library(tidyverse)
library(tidyr)
```

## Part 1: Defining Research Question

Chosen Question: Is there a positive relationtship between ev registration and Renewable Energy Use? ## **Part 2: Data Preparation and Cleaning**

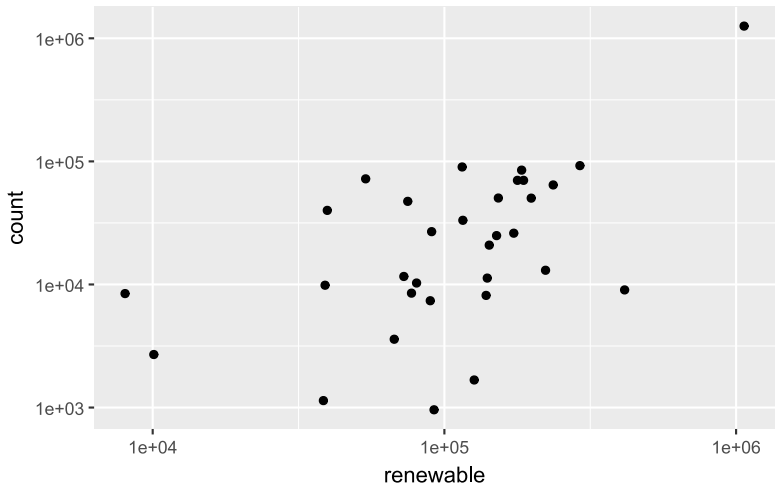
```
ru<-read_csv("./data/renew-use-2023.csv")
ru$Renewable_Use_2023<- as.double(gsub("[A-Za-z]", "",ru$Renewable_Use_2023))
ev<-read_csv("./data/ev-registrations-by-state-2023.csv")
colnames(ev)<-c("state","count")
ev<-ev|>filter(str_detect(count,"\\d"))
ev$count<-as.double(gsub("[^0-9]","",ev$count))
ev$state<-state.abb[match(ev$state, state.name)]
```

## Part 3: Joining / Pivoting Datasets for Analysis

```
sru<-ru|>group_by(State)|>summarize(renewable = sum(Renewable_Use_2023))
total<-inner_join(x=sru, y=ev, by=join_by(State==state))
```

## Part 4: Mapping Visualization

```
total|>ggplot(aes(x=renewable,y=count))+
    geom_point()+
    scale_x_log10()+
    scale_y_log10()
```



From the Scatter plot, we can tell that there is a positive relationship between the registered ev company and renewable resources.