

Machine Learning - Assignment 1

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```
Laya_dataset <- read.csv("C:/Users/gauth/OneDrive/Desktop/Kent State University/volcanic-eruptions.csv")  
#Following is the dataset that has been imported. The dataset represents Volcanic eruptions by country.  
View(Laya_dataset)  
#The data has been taken from #https://public.opendatasoft.com/explore/dataset/significant-volcanic-eru
```

```
mean(Laya_dataset$Latitude)
```

```
## [1] 15.38975
```

```
sd(Laya_dataset$Latitude)
```

```
## [1] 25.80702
```

```
# The above values represent descriptive statistics for a selection of quantitative variables. The above
```

```
table(Laya_dataset$Location)
```

```
##  
## Admiralty Is-SW Paci      Africa-C      Africa-E  
##           2           5           5  
##      Africa-NE      Africa-W      Alaska-E  
##           6           3           2  
##      Alaska-SW  Alaska Peninsula  Aleutian Is  
##           6           3           8  
##      Antarctica      Arabia-S      Arabia-W  
##           1           2           1  
##      Azores      Banda Sea  Bougainville-SW Paci  
##           6          10           3  
##      Canada      Canary Is      Cape Verde Is  
##           1           4           3  
##      Chile-C      Chile-Is      Chile-S  
##           9           1           9  
##      China-E      China-S      Colombia  
##           1           1          10  
##      Costa Rica      Ecuador      El Salvador  
##           6          22           6  
##      Galapagos      Greece      Guatemala  
##           1           8          19  
##  Halmahera-Indonesia  Hawaiian Is  Hokkaido-Japan
```

```
##          17          20          17
##      Honshu-Japan      Iceland-NE      Iceland-S
##          51          16          33
##      Iceland-SE      Iceland-SW      Indian O-W
##          3          1          7
##      Indonesia      Italy      Izu Is-Japan
##          8          57          19
##      Java      Kamchatka      Kermadec Is
##      101          14          2
##      Kuril Is      Kyushu-Japan      Lesser Sunda Is
##          6          44          25
##      Luzon-N of      Luzon-Philippines Mariana Is-C Pacific
##          1          35          2
##      Mexico Mindanao-Philippines      New Britain-SW Pac
##          12          7          12
##      New Guinea      New Guinea-NE of      New Zealand
##          2          19          11
##      Nicaragua      Peru      Philippines-C
##          7          4          1
##      Red Sea      Ryukyu Is      Samoa-SW Pacific
##          2          3          3
## Sangihe Is-Indonesia Santa Cruz Is-SW Pac      SE Asia
##          21          4          1
## Solomon Is-SW Pacifi      Sulawesi-Indonesia      Sumatra
##          3          6          15
##      Taiwan-E of      Tonga-SW Pacific      Trinidad
##          1          4          1
##      Turkey      US-Oregon      US-Washington
##          1          2          2
##      US-Wyoming      Vanuatu-SW Pacific      W Indies
##          1          17          17
```

```
str(Laya_dataset$Country)
```

```
## chr [1:822] "United States" "United States" "Greece" "United States" ...
```

```
# The above values represent categorical descriptive analysis of the variables.
```

```
Layadataset_Trasnformed = (Laya_dataset$Latitude - mean(Laya_dataset$Latitude))/sd(Laya_dataset$Latitude)
Layadataset_Trasnformed
```

```
## [1] 55.57366024 56.28366024 35.80766024 59.88366024 -39.41633976
## [6] -6.17633976 14.53366024 -2.06333976 -1.27333976 -29.86633976
## [11] 35.80766024 -2.97633976 37.13766024 52.82366024 11.64566024
## [16] 35.80766024 -16.84633976 60.78366024 40.22466024 15.03366024
## [21] -39.41633976 51.20366024 58.77366024 -6.69833976 13.07566024
## [26] 15.03366024 13.13966024 26.48366024 -5.65233976 -4.86733976
## [31] -6.17633976 30.98366024 30.98366024 40.22466024 60.78366024
## [36] 63.03366024 20.52866024 63.03366024 63.03366024 41.38366024
## [41] 35.80766024 63.38366024 63.33366024 63.38366024 37.13766024
## [46] 37.13766024 63.03366024 63.38366024 8.37866024 63.03366024
## [51] -1.44633976 63.38366024 40.13366024 63.03366024 -8.52633976
```

##	[56]	37.13766024	37.13766024	32.28366024	-8.52633976	63.38366024
##	[61]	63.03366024	63.40366024	16.76366024	-8.52633976	-8.52633976
##	[66]	63.38366024	36.52366024	-17.42533976	30.98366024	64.03366024
##	[71]	32.28366024	63.03366024	63.38366024	63.38366024	37.13766024
##	[76]	40.23066024	58.77366024	1.08366024	0.77866024	13.78466024
##	[81]	31.33366024	-9.72633976	11.22966024	18.91766024	38.05366024
##	[86]	63.03366024	-6.68833976	13.87666024	-8.52633976	-8.13833976
##	[91]	18.91766024	-8.72133976	4.29866024	35.80366024	63.38366024
##	[96]	-8.72133976	35.80366024	-5.12133976	-17.20433976	32.53366024
##	[101]	0.20366024	24.72366024	-5.12133976	13.87666024	63.03366024
##	[106]	63.82366024	37.17366024	10.68366024	40.22466024	63.38366024
##	[111]	-8.72133976	41.47366024	-2.06333976	-0.27633976	35.80766024
##	[116]	13.13966024	-7.51633976	-7.51633976	63.03366024	-5.95433976
##	[121]	41.93366024	32.15366024	27.25366024	37.13766024	37.13766024
##	[126]	-15.99633976	38.00366024	-8.13833976	0.77866024	27.98366024
##	[131]	13.42366024	40.22466024	63.82366024	40.22466024	-7.72633976
##	[136]	-6.89633976	37.13766024	63.38366024	-5.12133976	40.22466024
##	[141]	-7.48833976	-1.27333976	27.67466024	35.80766024	34.75366024
##	[146]	3.07366024	64.03366024	40.22466024	-8.52633976	13.40566024
##	[151]	64.03366024	31.33366024	31.33366024	64.03366024	13.87666024
##	[156]	37.87366024	63.03366024	35.80366024	64.03366024	63.40366024
##	[161]	64.03366024	65.13366024	28.43366024	-8.72133976	54.52366024
##	[166]	40.22466024	40.90366024	-1.27333976	-1.27333976	13.40566024
##	[171]	63.82366024	13.40566024	63.03366024	38.05366024	-0.27633976
##	[176]	55.46066024	63.38366024	12.66066024	-1.27333976	0.20366024
##	[181]	-7.91633976	0.20366024	0.20366024	0.76166024	47.69566024
##	[186]	40.22466024	30.98366024	30.98366024	31.85366024	30.98366024
##	[191]	30.98366024	30.98366024	35.80366024	63.82366024	-16.37633976
##	[196]	19.09566024	31.85366024	-7.79633976	34.13366024	18.82866024
##	[201]	32.15366024	40.22466024	38.05366024	-7.72633976	12.66066024
##	[206]	-9.82633976	45.60366024	19.09566024	38.48366024	35.80366024
##	[211]	35.80366024	42.10366024	40.22466024	12.73366024	3.07366024
##	[216]	40.22466024	12.66066024	-8.84633976	32.28366024	-8.65433976
##	[221]	-8.72133976	18.91766024	19.07366024	53.92366024	-5.12133976
##	[226]	41.93366024	-7.84633976	-8.13833976	18.82866024	54.15366024
##	[231]	-6.42633976	-8.52633976	-7.79633976	32.28366024	52.65866024
##	[236]	52.65866024	-7.72633976	37.13766024	-8.13833976	-4.11633976
##	[241]	12.38366024	-5.12133976	4.31766024	0.20366024	-34.21633976
##	[246]	0.20366024	18.82866024	39.10366024	-9.72633976	-10.97633976
##	[251]	29.83366024	16.77366024	15.45366024	-8.59633976	37.13766024
##	[256]	0.51166024	4.29866024	63.38366024	-39.41633976	-7.36633976
##	[261]	41.20366024	14.35366024	-7.79633976	-8.52633976	-4.86733976
##	[266]	-16.19633976	12.66066024	23.40366024	56.05666024	32.28366024
##	[271]	50.26166024	3.07366024	54.15366024	41.47366024	-6.18533976
##	[276]	12.66066024	35.97366024	35.97366024	-8.70433976	13.87666024
##	[281]	63.82366024	12.98366024	63.82366024	-0.27633976	-20.11633976
##	[286]	-8.52633976	35.80766024	-14.77133976	37.55366024	18.87866024
##	[291]	37.13766024	-9.12633976	-8.59633976	1.68366024	-9.13633976
##	[296]	-15.99633976	1.68366024	8.60666024	0.20366024	12.66066024
##	[301]	-8.13833976	-8.13833976	40.22466024	-8.13833976	32.28366024
##	[306]	48.27866024	7.07366024	40.22466024	33.48366024	13.40566024
##	[311]	-8.52633976	64.43366024	12.66066024	18.87866024	-1.27333976
##	[316]	-20.11633976	-4.86733976	-20.11633976	52.82366024	38.19266024
##	[321]	-12.34633976	-6.69833976	58.77366024	-6.69833976	-6.73633976

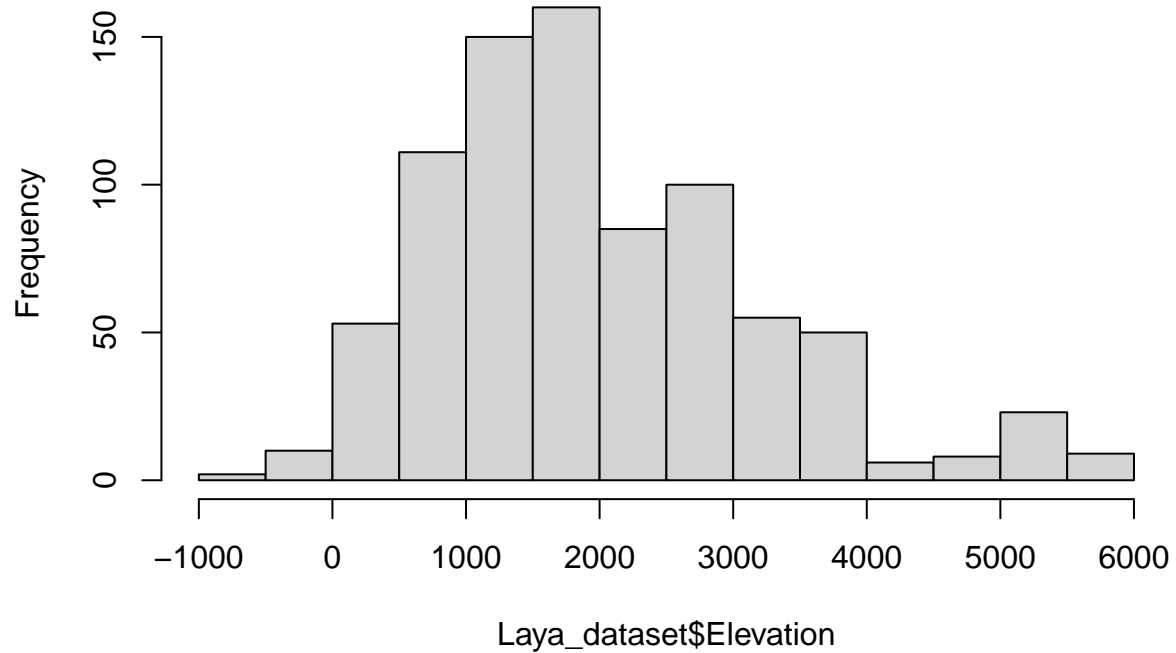
## [326]	-6.69833976	-8.70433976	1.72366024	-2.06333976	-38.71633976
## [331]	-16.19633976	12.66066024	-6.11633976	37.00366024	2.54166024
## [336]	-0.27633976	-9.79633976	0.08966024	3.07366024	-20.34633976
## [341]	-41.92233976	37.13366024	-16.84633976	-8.70433976	-5.24533976
## [346]	31.33366024	-5.65233976	31.33366024	-10.97633976	12.66066024
## [351]	0.87366024	-4.69633976	35.80366024	31.33366024	37.02366024
## [356]	7.56166024	-8.52633976	-17.27633976	14.22366024	12.73366024
## [361]	14.22366024	14.22366024	29.88366024	14.22366024	14.15966024
## [366]	-8.13833976	-38.71633976	-12.34633976	-12.34633976	40.22466024
## [371]	-14.20833976	40.22466024	-21.97633976	12.28366024	-9.12633976
## [376]	-14.20833976	3.60666024	-8.70433976	-39.41633976	41.93366024
## [381]	13.40566024	35.80366024	35.80366024	9.40366024	-8.70433976
## [386]	57.67366024	-2.00433976	18.91766024	3.07366024	35.80366024
## [391]	-8.70433976	-16.84633976	30.98366024	-6.17633976	-38.11633976
## [396]	-15.99633976	-2.06333976	38.19266024	-3.34733976	-38.71633976
## [401]	-41.92233976	13.13966024	2.54166024	63.03366024	18.42666024
## [406]	2.54166024	-8.52633976	38.19266024	36.52366024	18.87866024
## [411]	-8.13833976	13.21666024	36.52366024	9.56166024	-7.91633976
## [416]	-7.36633976	31.33366024	18.82866024	42.82366024	-8.91633976
## [421]	63.67366024	35.80766024	12.66066024	-6.69833976	-7.79633976
## [426]	-8.91633976	37.13766024	-41.92233976	41.47366024	37.13766024
## [431]	14.15966024	-6.69833976	35.80366024	38.19266024	-8.13833976
## [436]	35.80366024	13.87666024	-8.13833976	36.02366024	48.52366024
## [441]	34.62366024	29.83366024	12.17366024	44.77766024	35.80366024
## [446]	-39.28833976	-4.86733976	-2.00433976	37.00366024	12.66066024
## [451]	35.80366024	11.70366024	29.88366024	-7.79633976	2.18366024
## [456]	33.48366024	-3.34733976	35.80366024	-8.70433976	18.88366024
## [461]	-1.49633976	40.22466024	52.22366024	41.93366024	38.19266024
## [466]	41.93366024	-7.79633976	30.98366024	-8.70433976	-8.70433976
## [471]	47.49566024	12.66066024	35.80366024	35.93366024	63.38366024
## [476]	-9.13633976	-40.01633976	1.72366024	8.60666024	-8.70433976
## [481]	8.60666024	35.80366024	-9.54633976	12.38366024	-8.52633976
## [486]	34.62366024	8.60666024	-9.61633976	34.62366024	31.50366024
## [491]	31.50366024	31.50366024	31.50366024	16.72366024	31.50366024
## [496]	-8.13833976	31.50366024	32.28366024	-2.97633976	-9.10633976
## [501]	34.62366024	34.13366024	-39.87633976	38.19266024	35.97366024
## [506]	-4.19633976	8.60666024	-40.94633976	30.98366024	55.38166024
## [511]	52.53366024	32.15366024	34.13366024	32.28366024	0.76166024
## [516]	43.08366024	-17.42533976	-41.18633976	-41.92233976	35.97366024
## [521]	-8.13833976	43.08366024	35.80366024	42.82366024	-8.13833976
## [526]	0.20366024	9.38266024	-8.93833976	-8.70433976	-8.93833976
## [531]	-40.01633976	-8.83833976	13.87666024	9.38266024	-8.91633976
## [536]	-40.01633976	-7.79633976	13.40566024	11.70366024	-10.97633976
## [541]	-8.52633976	3.07366024	-3.34733976	-3.34733976	-8.70433976
## [546]	-63.56633976	12.66066024	9.86666024	-8.13833976	-9.47633976
## [551]	18.48066024	38.13366024	40.23066024	63.38366024	-46.49633976
## [556]	-10.97633976	13.87666024	27.98366024	-40.01633976	36.02366024
## [561]	-21.82533976	34.62366024	-6.11633976	62.83366024	-8.91633976
## [566]	-46.49633976	-9.13633976	2.18366024	30.98366024	36.32366024
## [571]	30.98366024	13.87666024	-6.11633976	-8.13833976	-0.97733976
## [576]	9.86666024	18.82866024	36.02366024	-2.62633976	-8.70433976
## [581]	2.18366024	-8.13833976	-2.11633976	-12.34633976	65.13366024
## [586]	55.46066024	41.93366024	41.93366024	12.17366024	14.15966024
## [591]	-8.70433976	-7.36633976	-7.79633976	-5.24533976	12.73366024

```
## [596] 37.13766024 -9.13633976 32.28366024 45.60366024 63.38366024
## [601] 44.77766024 37.13766024 -8.70433976 50.26166024 -8.70433976
## [606] 12.66066024 -8.91633976 52.08366024 16.76366024 16.76366024
## [611] -7.84633976 16.76366024 55.46066024 -0.76633976 -9.13633976
## [616] 33.48366024 5.65366024 12.66066024 35.30366024 37.13766024
## [621] -8.70433976 4.29866024 37.13766024 39.37366024 38.19266024
## [626] 5.65366024 -8.13833976 34.13366024 13.78466024 37.13766024
## [631] -9.10633976 -5.12133976 9.86666024 -8.70433976 -38.97333976
## [636] 39.37366024 32.28366024 31.33366024 56.05666024 -8.52633976
## [641] 32.28366024 32.28366024 -16.37633976 -4.86733976 14.15966024
## [646] 32.28366024 -2.11633976 -8.52633976 32.15366024 14.53366024
## [651] 51.85666024 -12.34633976 -46.49633976 0.76166024 37.13766024
## [656] 2.18366024 -7.79633976 11.90966024 2.18366024 -0.97733976
## [661] 14.53366024 60.70366024 -8.70433976 0.62366024 -7.72133976
## [666] 12.66066024 -0.76733976 18.82866024 -6.69833976 32.15366024
## [671] 14.53366024 14.53366024 -20.11633976 -8.70433976 32.28366024
## [676] 2.32366024 -4.86733976 -9.01633976 -8.13833976 -20.11633976
## [681] 35.62366024 14.35366024 13.78466024 -9.35433976 5.52366024
## [686] 53.45366024 18.42666024 9.81566024 10.84966024 63.82366024
## [691] -4.69633976 -8.13833976 2.18366024 16.12366024 40.05366024
## [696] 16.12366024 -8.70433976 37.02366024 32.28366024 16.12366024
## [701] 18.82866024 -8.52633976 12.10566024 16.12366024 13.87666024
## [706] 56.05666024 -0.76733976 -2.06333976 33.48366024 -8.70433976
## [711] 9.86666024 18.82866024 -8.13833976 37.13766024 37.13766024
## [716] -8.13833976 38.19266024 2.18366024 -2.11633976 37.13766024
## [721] -0.67433976 38.19266024 -8.70433976 16.12366024 -9.26633976
## [726] -8.53833976 -4.69633976 -4.69633976 13.25666024 -12.34633976
## [731] -29.86633976 16.12366024 12.17366024 -8.13833976 -2.06333976
## [736] -2.06333976 12.66066024 -4.69633976 2.32366024 -7.31633976
## [741] 15.10366024 -43.42933976 51.58366024 -2.06333976 2.32366024
## [746] 59.88366024 18.82866024 -2.06333976 63.03366024 13.78466024
## [751] 16.11166024 2.18366024 2.57366024 -8.13833976 -2.06333976
## [756] -8.53833976 -8.13833976 31.33366024 12.17366024 2.18366024
## [761] -2.06333976 -41.18633976 12.77366024 63.03366024 0.76166024
## [766] 0.20366024 18.82866024 18.82866024 55.23366024 -8.13833976
## [771] -8.91633976 12.66066024 -8.91633976 -16.95133976 30.98366024
## [776] 2.57366024 -38.71633976 2.57366024 -8.52633976 35.30366024
## [781] 18.82866024 14.35366024 0.20366024 2.57366024 -41.92233976
## [786] 2.18366024 -4.69633976 2.57366024 -38.71633976 2.57366024
## [791] 2.57366024 43.83366024 -9.01633976 32.28366024 37.13766024
## [796] 2.57366024 13.87666024 -7.79633976 40.23066024 -15.99633976
## [801] -8.13833976 2.57366024 -4.21633976 12.66066024 36.02366024
## [806] 18.82866024 -4.21633976 -8.65433976 -15.99633976 18.82866024
## [811] 13.87666024 18.82866024 -4.69633976 -16.84633976 -6.69833976
## [816] 37.13766024 -4.69633976 2.57366024 -5.64633976 -4.69633976
## [821] 38.19266024 38.19266024
```

```
#Transformation of variables has been done above.
```

```
hist(Laya_dataset$Elevation)
```

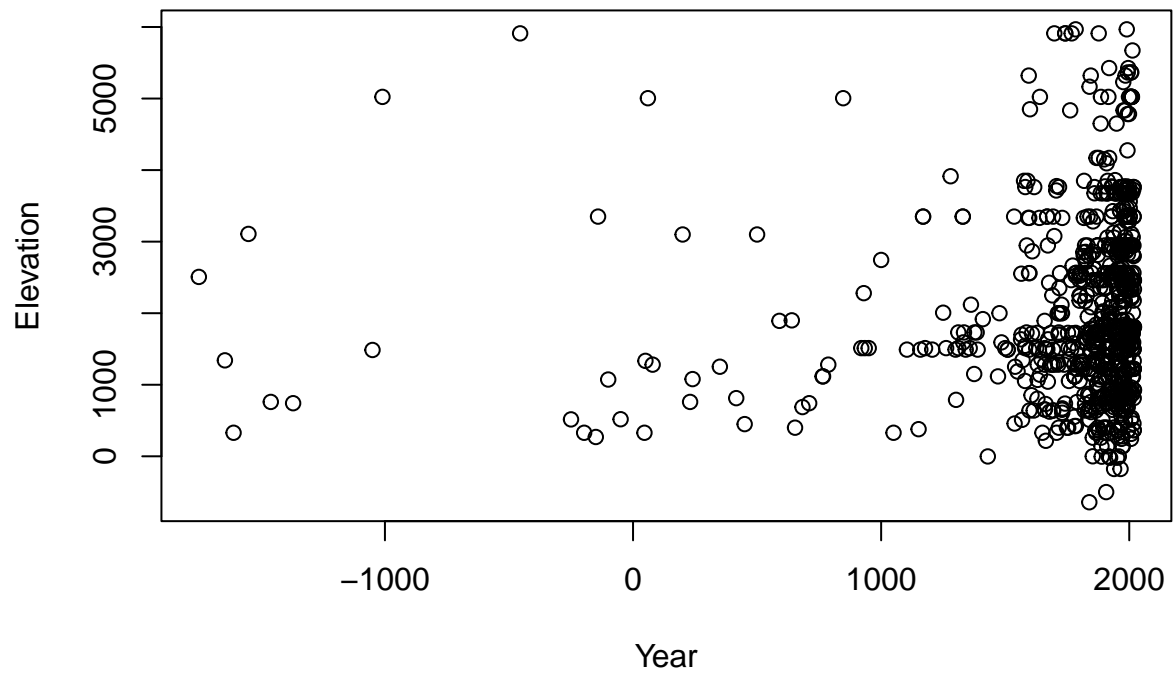
Histogram of Laya_dataset\$Elevation



#The above graphical representation is a histogram. The selected variable is the Elevation.

```
x <- Laya_dataset$Year
y <- Laya_dataset$Elevation
plot(x,y, main = "Year and Elevation", xlab = "Year",ylab = "Elevation")
```

Year and Elevation



*#The above graphical representation is a scatterplot.
#The selected variables are Year and Elevation*