

Digital Assignemtn - 1

Course Details: PMDS503P

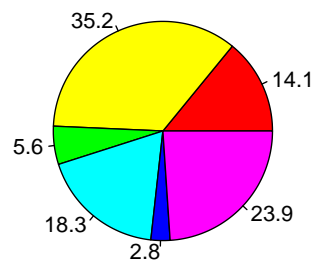
Reg No. 24MDT0179

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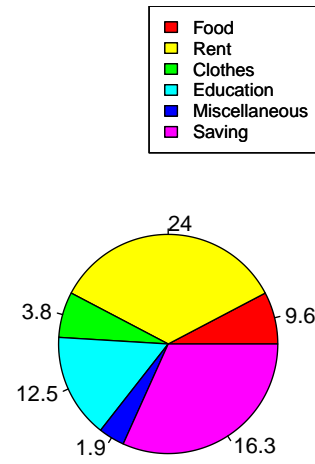
```
library("ggplot2")  
library("tinytex")  
library("knitr")
```

```
#Q1  
familyA <- c(10,25,4,13,2,17)  
familyB <- c(8,36,7,16,4,33)  
par(mfrow=c(1,2))  
  
piepercentA<- round(100*familyA/sum(familyA), 1)  
piepercentB<- round(100*familyB/sum(familyB), 1)  
  
pie(familyA, label=piepercentA, main="Family A Expenditure",col = rainbow(length(familyA)))  
pie(familyB, label=piepercentB, main="Family B Expenditure",col = rainbow(length(familyB)))  
  
legend("topright", c('Food','Rent','Clothes','Education','Miscellaneous', 'Saving'), cex = 0.8)  
legend("topright", c('Food','Rent','Clothes','Education','Miscellaneous', 'Saving'), cex = 0.8)
```

Family A Expenditure



Family B Expenditure



```
# Q2
# 2.1 Display the number of variables in dataset
datasets::airquality
```

```
##      Ozone Solar.R Wind Temp Month Day
## 1      41      190  7.4   67     5    1
## 2      36      118  8.0   72     5    2
## 3      12      149 12.6   74     5    3
## 4      18      313 11.5   62     5    4
## 5      NA       NA 14.3   56     5    5
## 6      28       NA 14.9   66     5    6
## 7      23      299  8.6   65     5    7
## 8      19       99 13.8   59     5    8
## 9       8       19 20.1   61     5    9
## 10     NA      194  8.6   69     5   10
## 11      7       NA  6.9   74     5   11
## 12     16      256  9.7   69     5   12
## 13     11      290  9.2   66     5   13
## 14     14      274 10.9   68     5   14
## 15     18       65 13.2   58     5   15
## 16     14      334 11.5   64     5   16
## 17     34      307 12.0   66     5   17
## 18      6       78 18.4   57     5   18
## 19     30      322 11.5   68     5   19
## 20     11       44  9.7   62     5   20
## 21      1        8  9.7   59     5   21
## 22     11      320 16.6   73     5   22
## 23      4       25  9.7   61     5   23
## 24     32       92 12.0   61     5   24
## 25     NA       66 16.6   57     5   25
## 26     NA      266 14.9   58     5   26
## 27     NA       NA  8.0   57     5   27
## 28     23       13 12.0   67     5   28
## 29     45      252 14.9   81     5   29
## 30    115      223  5.7   79     5   30
## 31     37      279  7.4   76     5   31
## 32     NA      286  8.6   78     6    1
## 33     NA      287  9.7   74     6    2
## 34     NA      242 16.1   67     6    3
## 35     NA      186  9.2   84     6    4
## 36     NA      220  8.6   85     6    5
## 37     NA      264 14.3   79     6    6
## 38     29      127  9.7   82     6    7
## 39     NA      273  6.9   87     6    8
## 40     71      291 13.8   90     6    9
## 41     39      323 11.5   87     6   10
```

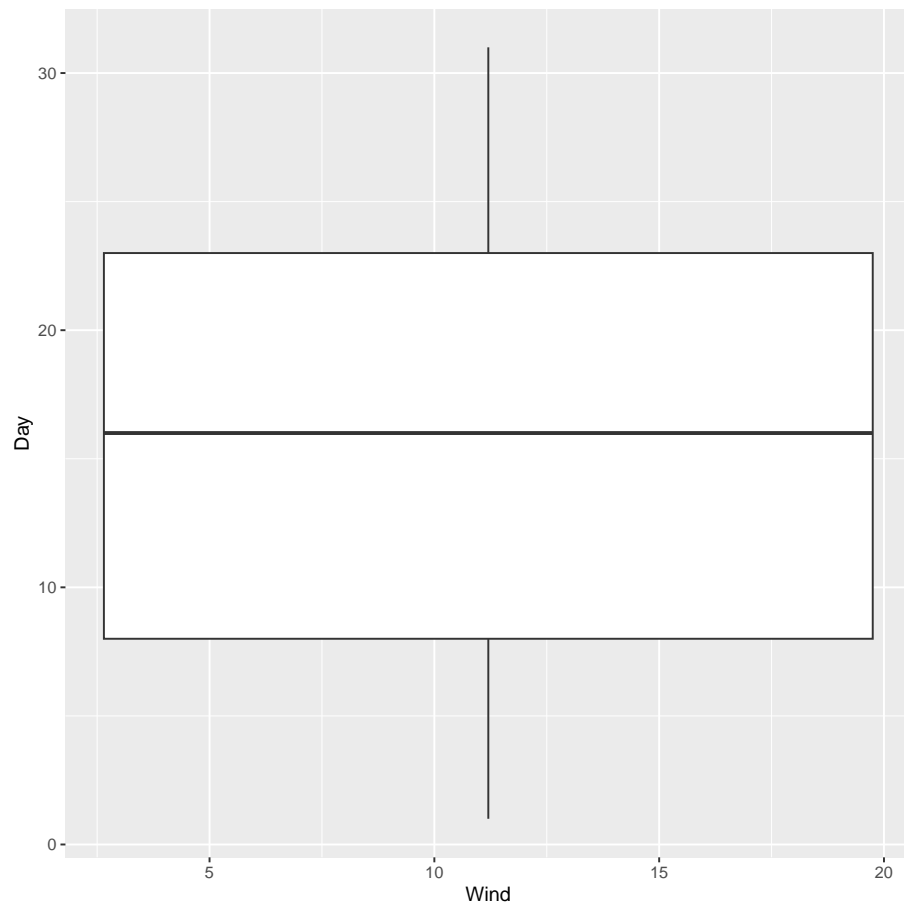
## 42	NA	259	10.9	93	6	11
## 43	NA	250	9.2	92	6	12
## 44	23	148	8.0	82	6	13
## 45	NA	332	13.8	80	6	14
## 46	NA	322	11.5	79	6	15
## 47	21	191	14.9	77	6	16
## 48	37	284	20.7	72	6	17
## 49	20	37	9.2	65	6	18
## 50	12	120	11.5	73	6	19
## 51	13	137	10.3	76	6	20
## 52	NA	150	6.3	77	6	21
## 53	NA	59	1.7	76	6	22
## 54	NA	91	4.6	76	6	23
## 55	NA	250	6.3	76	6	24
## 56	NA	135	8.0	75	6	25
## 57	NA	127	8.0	78	6	26
## 58	NA	47	10.3	73	6	27
## 59	NA	98	11.5	80	6	28
## 60	NA	31	14.9	77	6	29
## 61	NA	138	8.0	83	6	30
## 62	135	269	4.1	84	7	1
## 63	49	248	9.2	85	7	2
## 64	32	236	9.2	81	7	3
## 65	NA	101	10.9	84	7	4
## 66	64	175	4.6	83	7	5
## 67	40	314	10.9	83	7	6
## 68	77	276	5.1	88	7	7
## 69	97	267	6.3	92	7	8
## 70	97	272	5.7	92	7	9
## 71	85	175	7.4	89	7	10
## 72	NA	139	8.6	82	7	11
## 73	10	264	14.3	73	7	12
## 74	27	175	14.9	81	7	13
## 75	NA	291	14.9	91	7	14
## 76	7	48	14.3	80	7	15
## 77	48	260	6.9	81	7	16
## 78	35	274	10.3	82	7	17
## 79	61	285	6.3	84	7	18
## 80	79	187	5.1	87	7	19
## 81	63	220	11.5	85	7	20
## 82	16	7	6.9	74	7	21
## 83	NA	258	9.7	81	7	22
## 84	NA	295	11.5	82	7	23
## 85	80	294	8.6	86	7	24
## 86	108	223	8.0	85	7	25

## 87	20	81	8.6	82	7	26
## 88	52	82	12.0	86	7	27
## 89	82	213	7.4	88	7	28
## 90	50	275	7.4	86	7	29
## 91	64	253	7.4	83	7	30
## 92	59	254	9.2	81	7	31
## 93	39	83	6.9	81	8	1
## 94	9	24	13.8	81	8	2
## 95	16	77	7.4	82	8	3
## 96	78	NA	6.9	86	8	4
## 97	35	NA	7.4	85	8	5
## 98	66	NA	4.6	87	8	6
## 99	122	255	4.0	89	8	7
## 100	89	229	10.3	90	8	8
## 101	110	207	8.0	90	8	9
## 102	NA	222	8.6	92	8	10
## 103	NA	137	11.5	86	8	11
## 104	44	192	11.5	86	8	12
## 105	28	273	11.5	82	8	13
## 106	65	157	9.7	80	8	14
## 107	NA	64	11.5	79	8	15
## 108	22	71	10.3	77	8	16
## 109	59	51	6.3	79	8	17
## 110	23	115	7.4	76	8	18
## 111	31	244	10.9	78	8	19
## 112	44	190	10.3	78	8	20
## 113	21	259	15.5	77	8	21
## 114	9	36	14.3	72	8	22
## 115	NA	255	12.6	75	8	23
## 116	45	212	9.7	79	8	24
## 117	168	238	3.4	81	8	25
## 118	73	215	8.0	86	8	26
## 119	NA	153	5.7	88	8	27
## 120	76	203	9.7	97	8	28
## 121	118	225	2.3	94	8	29
## 122	84	237	6.3	96	8	30
## 123	85	188	6.3	94	8	31
## 124	96	167	6.9	91	9	1
## 125	78	197	5.1	92	9	2
## 126	73	183	2.8	93	9	3
## 127	91	189	4.6	93	9	4
## 128	47	95	7.4	87	9	5
## 129	32	92	15.5	84	9	6
## 130	20	252	10.9	80	9	7
## 131	23	220	10.3	78	9	8

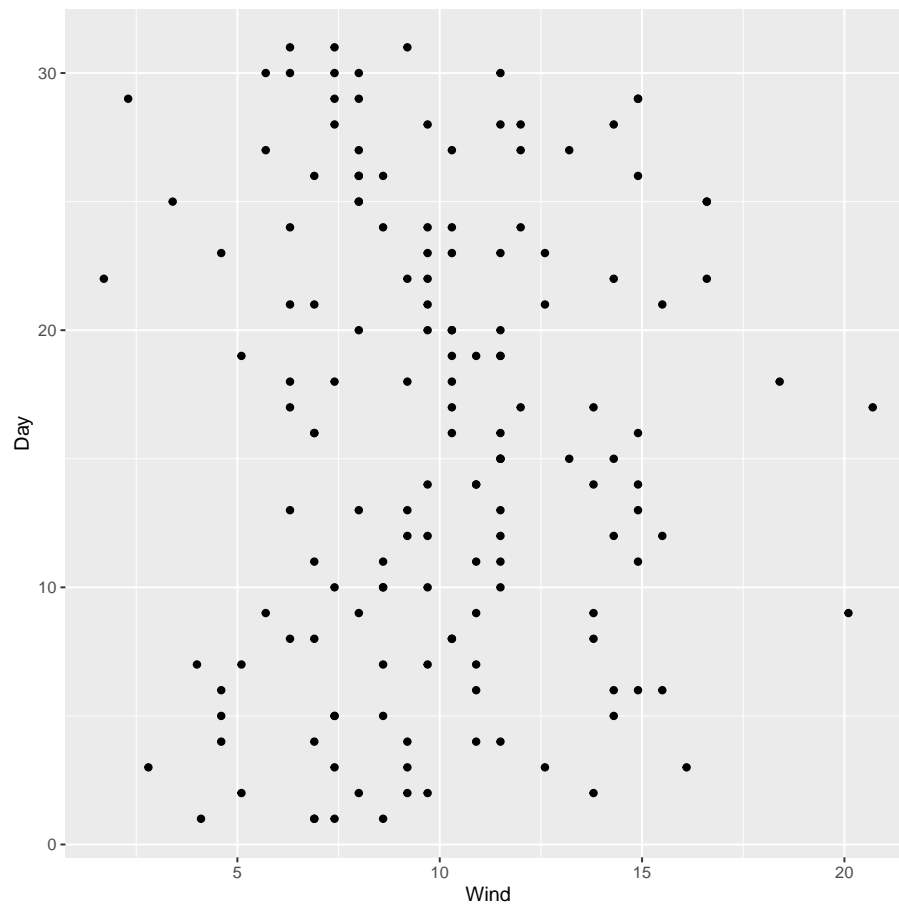
```
## 132    21    230 10.9   75    9    9
## 133    24    259  9.7   73    9   10
## 134    44    236 14.9   81    9   11
## 135    21    259 15.5   76    9   12
## 136    28    238  6.3   77    9   13
## 137     9     24 10.9   71    9   14
## 138    13    112 11.5   71    9   15
## 139    46    237  6.9   78    9   16
## 140    18    224 13.8   67    9   17
## 141    13     27 10.3   76    9   18
## 142    24    238 10.3   68    9   19
## 143    16    201  8.0   82    9   20
## 144    13    238 12.6   64    9   21
## 145    23     14  9.2   71    9   22
## 146    36    139 10.3   81    9   23
## 147     7     49 10.3   69    9   24
## 148    14     20 16.6   63    9   25
## 149    30    193  6.9   70    9   26
## 150    NA    145 13.2   77    9   27
## 151    14    191 14.3   75    9   28
## 152    18    131  8.0   76    9   29
## 153    20    223 11.5   68    9   30
```

```
# 2.2 Draw a box plot for any two variables
ggplot(data=airquality,aes(Wind,Day))+geom_boxplot()

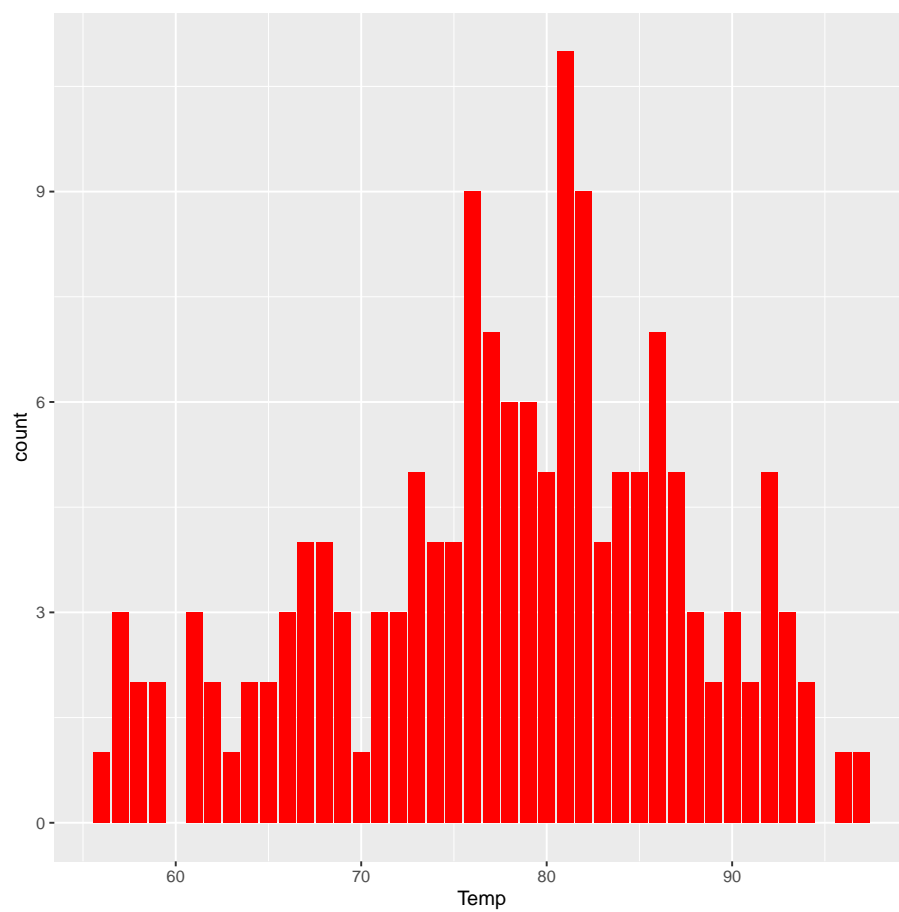
## Warning: Continuous x aesthetic
## i did you forget 'aes(group = ...)'?
```



```
# 2.3 Scatterplot for any two variables\  
ggplot(data = airquality, aes(Wind, Day)) + geom_point()
```



```
# 2.4 Multiple bar diagram(with different color)  
ggplot(data = airquality, aes(Temp)) + geom_bar(fill="red")
```

```

library("moments")
library("readr")
data=read_csv("student_scores.csv")

## Rows: 51 Columns: 7
## -- Column specification -----
## Delimiter: ","
## dbl (7): Sl_No, CAT1, CAT2, DA, QUIZ1, QUIZ2, FAT
##
## i Use 'spec()' to retrieve the full column specification for this
data.
## i Specify the column types or set 'show_col_types = FALSE' to quiet
this message.

data

## # A tibble: 51 x 7
##   Sl_No CAT1 CAT2 DA QUIZ1 QUIZ2 FAT
##   <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>
## 1     1     27     36    10     16     14     81
## 2     2     26     36    10     16     12     73
## 3     3     10     28    10     12     14     50
## 4     4      5      0    10     18     12      0
## 5     5     43     48    10     12     16     94
## 6     6     25     25    10     12     14     61
## 7     7     29     35    10     14     20     81
## 8     8     28     49    10     14     14     80
## 9     9     35     46    10     20     16     86
## 10    10     11     10    10     15     15     20
## # i 41 more rows

func<-function(x){
  mean <- mean(x)
  print(paste("Mean:", mean))

  Ctrl1 <- 0
  print(paste("First Central Moment: ", Ctrl1))

  Ctrl2 <- mean((x - mean)^2)
  print(paste("Second Central Moment: ", Ctrl2))

  Ctrl3 <- mean((x - mean)^3)
  print(paste("Third Central Moment: ", Ctrl3))

  Ctrl4 <- mean((x - mean)^4)
  print(paste("Fourth Central Moment: ", Ctrl3))
}

```

```

Skewness <- skewness(x)
print(paste("Skewness: ", Skewness))

Kurtosis<- kurtosis(x)
print(paste("Kurtosis: ", Kurtosis))
}
func(data$CAT1)

## [1] "Mean: 22.0588235294118"
## [1] "First Central Moment: 0"
## [1] "Second Central Moment: 87.1926182237601"
## [1] "Third Central Moment: 390.318746183595"
## [1] "Fourth Central Moment: 390.318746183595"
## [1] "Skewness: 0.479401989180729"
## [1] "Kurtosis: 2.87149902729972"

func(data$CAT2)

## [1] "Mean: 31.8823529411765"
## [1] "First Central Moment: 0"
## [1] "Second Central Moment: 114.692041522491"
## [1] "Third Central Moment: -615.401180541421"
## [1] "Fourth Central Moment: -615.401180541421"
## [1] "Skewness: -0.501023850301262"
## [1] "Kurtosis: 3.06931943645292"

func(data$DA)

## [1] "Mean: 10"
## [1] "First Central Moment: 0"
## [1] "Second Central Moment: 0"
## [1] "Third Central Moment: 0"
## [1] "Fourth Central Moment: 0"
## [1] "Skewness: NaN"
## [1] "Kurtosis: NaN"

func(data$FAT)

## [1] "Mean: 60.5686274509804"
## [1] "First Central Moment: 0"
## [1] "Second Central Moment: 501.18646674356"
## [1] "Third Central Moment: -6118.81567421279"
## [1] "Fourth Central Moment: -6118.81567421279"
## [1] "Skewness: -0.545341272658456"
## [1] "Kurtosis: 2.70711193286884"

func(data$QUIZ1)

```

```
## [1] "Mean: 12.8823529411765"
## [1] "First Central Moment: 0"
## [1] "Second Central Moment: 6.84890426758939"
## [1] "Third Central Moment: 10.4188886627315"
## [1] "Fourth Central Moment: 10.4188886627315"
## [1] "Skewness: 0.58128585298623"
## [1] "Kurtosis: 3.92555582492084"

func(data$QUIZ2)

## [1] "Mean: 13.7058823529412"
## [1] "First Central Moment: 0"
## [1] "Second Central Moment: 10.7566320645905"
## [1] "Third Central Moment: -31.2481172399756"
## [1] "Fourth Central Moment: -31.2481172399756"
## [1] "Skewness: -0.885746377645619"
## [1] "Kurtosis: 7.62197730740524"
```