practical_activity3.R

BDATC01/0832/2022

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```
#read.csv("C:\Users\User\Downloads")this can also be used to import csv to R
Birthweight_data<- read.csv("C:/Users/User/Downloads/Birthweight_data.csv")
Birthweight_data
```

```
##      id headcirumference length Birthweight Gestation smoker motherage
mnocig
## 1  1313              12     17         5.8        33      0        24
0
## 2   431              12     19         4.2        33      1        20
7
## 3   808              13     19         6.4        34      0        26
0
## 4   300              12     18         4.5        35      1        41
7
## 5   516              13     18         5.8        35      1        20
35
## 6   321              13     19         6.8        37      0        28
0
## 7  1363              12     19         5.2        37      1        20
7
## 8   575              12     19         6.1        37      1        19
7
## 9   822              13     19         7.5        38      0        20
0
## 10 1081              14     21         8.0        38      0        18
0
## 11 1636              14     20         8.6        38      0        29
0
## 12 1107              14     20         7.1        38      0        31
0
## 13 1023              13     20         6.6        38      1        30
12
## 14 1369              13     19         7.0        38      1        31
25
## 15  697              13     19         6.6        39      0        27
0
## 16 1600              13     21         6.3        39      0        19
0
## 17   57              14     20         7.3        39      1        23
17
```

```
## 18  272               14      20          8.5         39       1         30
25
## 19  569               13      19          5.5         39       1         22
7
## 20  619               13      20          7.5         39       1         23
25
## 21 1522               13      19          6.0         39       1         21
17
## 22  820               13      20          8.3         40       0         24
0
## 23 1016               14      21          9.5         40       0         19
0
## 24 1058               13      20          6.9         40       0         29
0
## 25 1088               14      20          7.2         40       0         24
0
## 26  365               14      20          7.7         40       1         26
25
## 27  532               13      21          7.9         40       1         31
12
## 28  752               14      19          7.3         40       1         27
12
## 29  792               14      21          8.0         40       1         20
2
## 30 1272               12      20          6.0         40       1         37
50
## 31  462               15      22          9.0         41       0         35
0
## 32  755               13      21          7.0         41       0         21
0
## 33 1683               13      21          7.3         41       0         27
0
## 34   27               14      20          7.8         41       1         37
25
## 35 1262               13      21          7.0         41       1         27
35
## 36 1388               13      20          6.9         41       1         22
7
## 37 1764               15      22         10.0         41       1         32
12
## 38  553               14      21          8.6         42       0         24
0
## 39 1191               13      21          8.0         42       0         21
0
## 40 1360               13      22         10.0         44       0         20
0
## 41  223               13      19          8.5         45       1         28
25
## 42 1187               14      20          8.9         44       0         20
0
```

```
##    mheight mppwt fage fedyrs fnocig fheight lowbwt mage35 LowBirthWeight
## 1       58    99   26     16      0      66      1      0            Low
## 2       63   109   20     10     35      71      1      0            Low
## 3       65   140   25     12     25      69      0      0         Normal
## 4       65   125   37     14     25      68      1      1            Low
## 5       67   125   23     12     50      73      1      0            Low
## 6       62   118   39     10      0      67      0      0         Normal
## 7       64   104   20     10     35      73      1      0            Low
## 8       65   132   20     14      0      72      0      0         Normal
## 9       62   103   22     14      0      70      0      0         Normal
## 10      67   109   20     12      7      67      0      0         Normal
## 11      64   135   31     16      0      70      0      0         Normal
## 12      64   125   35     16      0      72      0      0         Normal
## 13      64   140   38     14     50      70      0      0         Normal
## 14      63   124   32     16     50      76      0      0         Normal
## 15      63   135   27     14      0      70      0      0         Normal
## 16      64   125   23     14      2      76      0      0         Normal
## 17      62   104   32     12     25      66      0      0         Normal
## 18      67   170   40     16     50      70      0      0         Normal
## 19      62   115   23     14     25      78      1      0            Low
## 20      71   152   23     16      2      71      0      0         Normal
## 21      61   115   24     12      7      70      0      0         Normal
## 22      62   110   31     16      0      68      0      0         Normal
## 23      67   135   19     12      0      72      0      0         Normal
## 24      65   130   30     16     25      71      0      0         Normal
## 25      66   117   29     16      0      71      0      0         Normal
## 26      67   137   30     10     25      71      0      0         Normal
## 27      64   107   41     12     50      75      0      0         Normal
## 28      60   105   37     12     25      66      0      0         Normal
## 29      66   130   24     12     12      73      0      0         Normal
## 30      66   135   31     16      0      68      0      1         Normal
## 31      67   127   31     16     25      73      0      1         Normal
## 32      61   120   25     14     25      72      0      0         Normal
## 33      64   135   37     14      0      66      0      0         Normal
## 34      63   145   46     16      0      68      0      1         Normal
## 35      64   110   31     16     25      72      0      0         Normal
## 36      63   117   24     16     12      69      0      0         Normal
## 37      68   154   38     14     25      71      0      0         Normal
## 38      69   143   30     12      0      72      0      0         Normal
## 39      65   132   21     10     25      73      0      0         Normal
## 40      63   125   23     10     35      70      0      0         Normal
## 41      64   118   30     16      0      72      0      0         Normal
## 42      68   150   26     14     25      74      0      0         Normal
```

```
id.t<- data.frame(Birthweight_data) # CREATING A NEW DATA FRAME CALLED id.t
id.t
```

```
##      id headcirumference length Birthweight Gestation smoker motherage
mnocig
## 1  1313              12     17         5.8        33      0        24
```

```
## 2   431                12      19          4.2         33       1         20
7
## 3   808                13      19          6.4         34       0         26
0
## 4   300                12      18          4.5         35       1         41
7
## 5   516                13      18          5.8         35       1         20
35
## 6   321                13      19          6.8         37       0         28
0
## 7  1363                12      19          5.2         37       1         20
7
## 8   575                12      19          6.1         37       1         19
7
## 9   822                13      19          7.5         38       0         20
0
## 10 1081                14      21          8.0         38       0         18
0
## 11 1636                14      20          8.6         38       0         29
0
## 12 1107                14      20          7.1         38       0         31
0
## 13 1023                13      20          6.6         38       1         30
12
## 14 1369                13      19          7.0         38       1         31
25
## 15  697                13      19          6.6         39       0         27
0
## 16 1600                13      21          6.3         39       0         19
0
## 17   57                14      20          7.3         39       1         23
17
## 18  272                14      20          8.5         39       1         30
25
## 19  569                13      19          5.5         39       1         22
7
## 20  619                13      20          7.5         39       1         23
25
## 21 1522                13      19          6.0         39       1         21
17
## 22  820                13      20          8.3         40       0         24
0
## 23 1016                14      21          9.5         40       0         19
0
## 24 1058                13      20          6.9         40       0         29
0
## 25 1088                14      20          7.2         40       0         24
0
## 26  365                14      20          7.7         40       1         26
```

```
25
## 27  532               13     21          7.9        40      1         31
12
## 28  752               14     19          7.3        40      1         27
12
## 29  792               14     21          8.0        40      1         20
2
## 30 1272               12     20          6.0        40      1         37
50
## 31  462               15     22          9.0        41      0         35
0
## 32  755               13     21          7.0        41      0         21
0
## 33 1683               13     21          7.3        41      0         27
0
## 34   27               14     20          7.8        41      1         37
25
## 35 1262               13     21          7.0        41      1         27
35
## 36 1388               13     20          6.9        41      1         22
7
## 37 1764               15     22         10.0        41      1         32
12
## 38  553               14     21          8.6        42      0         24
0
## 39 1191               13     21          8.0        42      0         21
0
## 40 1360               13     22         10.0        44      0         20
0
## 41  223               13     19          8.5        45      1         28
25
## 42 1187               14     20          8.9        44      0         20
0
##    mheight mppwt fage fedyrs fnocig fheight lowbwt mage35 LowBirthWeight
## 1       58    99   26     16      0      66      1      0            Low
## 2       63   109   20     10     35      71      1      0            Low
## 3       65   140   25     12     25      69      0      0         Normal
## 4       65   125   37     14     25      68      1      1            Low
## 5       67   125   23     12     50      73      1      0            Low
## 6       62   118   39     10      0      67      0      0         Normal
## 7       64   104   20     10     35      73      1      0            Low
## 8       65   132   20     14      0      72      0      0         Normal
## 9       62   103   22     14      0      70      0      0         Normal
## 10      67   109   20     12      7      67      0      0         Normal
## 11      64   135   31     16      0      70      0      0         Normal
## 12      64   125   35     16      0      72      0      0         Normal
## 13      64   140   38     14     50      70      0      0         Normal
## 14      63   124   32     16     50      76      0      0         Normal
## 15      63   135   27     14      0      70      0      0         Normal
## 16      64   125   23     14      2      76      0      0         Normal
```

```
## 17      62   104   32     12     25      66      0      0          Normal
## 18      67   170   40     16     50      70      0      0          Normal
## 19      62   115   23     14     25      78      1      0             Low
## 20      71   152   23     16      2      71      0      0          Normal
## 21      61   115   24     12      7      70      0      0          Normal
## 22      62   110   31     16      0      68      0      0          Normal
## 23      67   135   19     12      0      72      0      0          Normal
## 24      65   130   30     16     25      71      0      0          Normal
## 25      66   117   29     16      0      71      0      0          Normal
## 26      67   137   30     10     25      71      0      0          Normal
## 27      64   107   41     12     50      75      0      0          Normal
## 28      60   105   37     12     25      66      0      0          Normal
## 29      66   130   24     12     12      73      0      0          Normal
## 30      66   135   31     16      0      68      0      1          Normal
## 31      67   127   31     16     25      73      0      1          Normal
## 32      61   120   25     14     25      72      0      0          Normal
## 33      64   135   37     14      0      66      0      0          Normal
## 34      63   145   46     16      0      68      0      1          Normal
## 35      64   110   31     16     25      72      0      0          Normal
## 36      63   117   24     16     12      69      0      0          Normal
## 37      68   154   38     14     25      71      0      0          Normal
## 38      69   143   30     12      0      72      0      0          Normal
## 39      65   132   21     10     25      73      0      0          Normal
## 40      63   125   23     10     35      70      0      0          Normal
## 41      64   118   30     16      0      72      0      0          Normal
## 42      68   150   26     14     25      74      0      0          Normal
```

```
library(dplyr)
```

```
## Warning: package 'dplyr' was built under R version 4.3.2
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
install.packages("dplyr")
```

```
## Warning: package 'dplyr' is in use and will not be installed
```

```
#CREATE A NEW DATAFRAME WITH THE ID OF THE BABY
baby_data<-
data.frame(id.t[,c("id","headcirumference","length","Birthweight","Gestation"
)] )
#created a new data frame with the details corresponding to the ID of the
```

```
baby and also excluding the details of the parents
baby_data#output the data frame
```

```
##      id headcirumference length Birthweight Gestation
## 1  1313               12     17         5.8        33
## 2   431               12     19         4.2        33
## 3   808               13     19         6.4        34
## 4   300               12     18         4.5        35
## 5   516               13     18         5.8        35
## 6   321               13     19         6.8        37
## 7  1363               12     19         5.2        37
## 8   575               12     19         6.1        37
## 9   822               13     19         7.5        38
## 10 1081               14     21         8.0        38
## 11 1636               14     20         8.6        38
## 12 1107               14     20         7.1        38
## 13 1023               13     20         6.6        38
## 14 1369               13     19         7.0        38
## 15  697               13     19         6.6        39
## 16 1600               13     21         6.3        39
## 17   57               14     20         7.3        39
## 18  272               14     20         8.5        39
## 19  569               13     19         5.5        39
## 20  619               13     20         7.5        39
## 21 1522               13     19         6.0        39
## 22  820               13     20         8.3        40
## 23 1016               14     21         9.5        40
## 24 1058               13     20         6.9        40
## 25 1088               14     20         7.2        40
## 26  365               14     20         7.7        40
## 27  532               13     21         7.9        40
## 28  752               14     19         7.3        40
## 29  792               14     21         8.0        40
## 30 1272               12     20         6.0        40
## 31  462               15     22         9.0        41
## 32  755               13     21         7.0        41
## 33 1683               13     21         7.3        41
## 34   27               14     20         7.8        41
## 35 1262               13     21         7.0        41
## 36 1388               13     20         6.9        41
## 37 1764               15     22        10.0        41
## 38  553               14     21         8.6        42
## 39 1191               13     21         8.0        42
## 40 1360               13     22        10.0        44
## 41  223               13     19         8.5        45
## 42 1187               14     20         8.9        44
```

```
#SMOKING MOTHER
sm<- data.frame(id.t[id.t$smoker==1,])
#created a new data frame for mothers who smoke it will also show all their
```

```
corresponding details
sm #output the data frame

##      id headcirumference length Birthweight Gestation smoker motherage
mnocig
## 2   431              12     19         4.2        33      1        20
7
## 4   300              12     18         4.5        35      1        41
7
## 5   516              13     18         5.8        35      1        20
35
## 7  1363              12     19         5.2        37      1        20
7
## 8   575              12     19         6.1        37      1        19
7
## 13 1023              13     20         6.6        38      1        30
12
## 14 1369              13     19         7.0        38      1        31
25
## 17   57              14     20         7.3        39      1        23
17
## 18  272              14     20         8.5        39      1        30
25
## 19  569              13     19         5.5        39      1        22
7
## 20  619              13     20         7.5        39      1        23
25
## 21 1522              13     19         6.0        39      1        21
17
## 26  365              14     20         7.7        40      1        26
25
## 27  532              13     21         7.9        40      1        31
12
## 28  752              14     19         7.3        40      1        27
12
## 29  792              14     21         8.0        40      1        20
2
## 30 1272              12     20         6.0        40      1        37
50
## 34   27              14     20         7.8        41      1        37
25
## 35 1262              13     21         7.0        41      1        27
35
## 36 1388              13     20         6.9        41      1        22
7
## 37 1764              15     22        10.0        41      1        32
12
## 41  223              13     19         8.5        45      1        28
25
##    mheight mppwt fage fedyrs fnocig fheight lowbwt mage35 LowBirthWeight
```

```
## 2       63   109   20     10     35      71      1      0            Low
## 4       65   125   37     14     25      68      1      1            Low
## 5       67   125   23     12     50      73      1      0            Low
## 7       64   104   20     10     35      73      1      0            Low
## 8       65   132   20     14      0      72      0      0         Normal
## 13      64   140   38     14     50      70      0      0         Normal
## 14      63   124   32     16     50      76      0      0         Normal
## 17      62   104   32     12     25      66      0      0         Normal
## 18      67   170   40     16     50      70      0      0         Normal
## 19      62   115   23     14     25      78      1      0            Low
## 20      71   152   23     16      2      71      0      0         Normal
## 21      61   115   24     12      7      70      0      0         Normal
## 26      67   137   30     10     25      71      0      0         Normal
## 27      64   107   41     12     50      75      0      0         Normal
## 28      60   105   37     12     25      66      0      0         Normal
## 29      66   130   24     12     12      73      0      0         Normal
## 30      66   135   31     16      0      68      0      1         Normal
## 34      63   145   46     16      0      68      0      1         Normal
## 35      64   110   31     16     25      72      0      0         Normal
## 36      63   117   24     16     12      69      0      0         Normal
## 37      68   154   38     14     25      71      0      0         Normal
## 41      64   118   30     16      0      72      0      0         Normal
```

```
# LOW BIRTH RATE AND AGE GREATER THAN 35
lbr<-id.t%>%  #the
  filter(mage35==1 & lowbwt==1)
lbr
```

```
##    id headcirumference length Birthweight Gestation smoker motherage
mnocig
## 1 300              12     18         4.5        35      1        41
7
##   mheight mppwt fage fedyrs fnocig fheight lowbwt mage35 LowBirthWeight
## 1      65   125   37     14     25      68      1      1            Low
```

```
#CREATING A VARIABLE FOR TOTAL NUMBER OF CIGS SMOKED BY MOTHER AND FATHER #
id.t<- id.t%>%
mutate(totalcig=fnocig+mnocig)
```

totalcig' is the new variable representing total number of cigarettes smoked by the parents

```
id.t
```

```
##      id headcirumference length Birthweight Gestation smoker motherage
mnocig
## 1  1313              12     17         5.8        33      0        24
0
## 2   431              12     19         4.2        33      1        20
7
## 3   808              13     19         6.4        34      0        26
0
```

```
## 4   300               12      18          4.5         35       1         41
7
## 5   516               13      18          5.8         35       1         20
35
## 6   321               13      19          6.8         37       0         28
0
## 7  1363               12      19          5.2         37       1         20
7
## 8   575               12      19          6.1         37       1         19
7
## 9   822               13      19          7.5         38       0         20
0
## 10 1081               14      21          8.0         38       0         18
0
## 11 1636               14      20          8.6         38       0         29
0
## 12 1107               14      20          7.1         38       0         31
0
## 13 1023               13      20          6.6         38       1         30
12
## 14 1369               13      19          7.0         38       1         31
25
## 15  697               13      19          6.6         39       0         27
0
## 16 1600               13      21          6.3         39       0         19
0
## 17   57               14      20          7.3         39       1         23
17
## 18  272               14      20          8.5         39       1         30
25
## 19  569               13      19          5.5         39       1         22
7
## 20  619               13      20          7.5         39       1         23
25
## 21 1522               13      19          6.0         39       1         21
17
## 22  820               13      20          8.3         40       0         24
0
## 23 1016               14      21          9.5         40       0         19
0
## 24 1058               13      20          6.9         40       0         29
0
## 25 1088               14      20          7.2         40       0         24
0
## 26  365               14      20          7.7         40       1         26
25
## 27  532               13      21          7.9         40       1         31
12
## 28  752               14      19          7.3         40       1         27
12
```

```
## 29  792               14     21          8.0         40      1         20
2
## 30 1272               12     20          6.0         40      1         37
50
## 31  462               15     22          9.0         41      0         35
0
## 32  755               13     21          7.0         41      0         21
0
## 33 1683               13     21          7.3         41      0         27
0
## 34   27               14     20          7.8         41      1         37
25
## 35 1262               13     21          7.0         41      1         27
35
## 36 1388               13     20          6.9         41      1         22
7
## 37 1764               15     22         10.0         41      1         32
12
## 38  553               14     21          8.6         42      0         24
0
## 39 1191               13     21          8.0         42      0         21
0
## 40 1360               13     22         10.0         44      0         20
0
## 41  223               13     19          8.5         45      1         28
25
## 42 1187               14     20          8.9         44      0         20
0
##    mheight mppwt fage fedyrs fnocig fheight lowbwt mage35 LowBirthWeight
## 1       58    99   26     16      0      66      1      0            Low
## 2       63   109   20     10     35      71      1      0            Low
## 3       65   140   25     12     25      69      0      0         Normal
## 4       65   125   37     14     25      68      1      1            Low
## 5       67   125   23     12     50      73      1      0            Low
## 6       62   118   39     10      0      67      0      0         Normal
## 7       64   104   20     10     35      73      1      0            Low
## 8       65   132   20     14      0      72      0      0         Normal
## 9       62   103   22     14      0      70      0      0         Normal
## 10      67   109   20     12      7      67      0      0         Normal
## 11      64   135   31     16      0      70      0      0         Normal
## 12      64   125   35     16      0      72      0      0         Normal
## 13      64   140   38     14     50      70      0      0         Normal
## 14      63   124   32     16     50      76      0      0         Normal
## 15      63   135   27     14      0      70      0      0         Normal
## 16      64   125   23     14      2      76      0      0         Normal
## 17      62   104   32     12     25      66      0      0         Normal
## 18      67   170   40     16     50      70      0      0         Normal
## 19      62   115   23     14     25      78      1      0            Low
## 20      71   152   23     16      2      71      0      0         Normal
## 21      61   115   24     12      7      70      0      0         Normal
```

```
## 22      62   110   31      16       0       68       0       0          Normal
## 23      67   135   19      12       0       72       0       0          Normal
## 24      65   130   30      16      25       71       0       0          Normal
## 25      66   117   29      16       0       71       0       0          Normal
## 26      67   137   30      10      25       71       0       0          Normal
## 27      64   107   41      12      50       75       0       0          Normal
## 28      60   105   37      12      25       66       0       0          Normal
## 29      66   130   24      12      12       73       0       0          Normal
## 30      66   135   31      16       0       68       0       1          Normal
## 31      67   127   31      16      25       73       0       1          Normal
## 32      61   120   25      14      25       72       0       0          Normal
## 33      64   135   37      14       0       66       0       0          Normal
## 34      63   145   46      16       0       68       0       1          Normal
## 35      64   110   31      16      25       72       0       0          Normal
## 36      63   117   24      16      12       69       0       0          Normal
## 37      68   154   38      14      25       71       0       0          Normal
## 38      69   143   30      12       0       72       0       0          Normal
## 39      65   132   21      10      25       73       0       0          Normal
## 40      63   125   23      10      35       70       0       0          Normal
## 41      64   118   30      16       0       72       0       0          Normal
## 42      68   150   26      14      25       74       0       0          Normal
##    totalcig
## 1         0
## 2        42
## 3        25
## 4        32
## 5        85
## 6         0
## 7        42
## 8         7
## 9         0
## 10        7
## 11        0
## 12        0
## 13       62
## 14       75
## 15        0
## 16        2
## 17       42
## 18       75
## 19       32
## 20       27
## 21       24
## 22        0
## 23        0
## 24       25
## 25        0
## 26       50
## 27       62
## 28       37
```

```
## 29       14
## 30       50
## 31       25
## 32       25
## 33        0
## 34       25
## 35       60
## 36       19
## 37       37
## 38        0
## 39       25
## 40       35
## 41       25
## 42       25
```

```
# to create a new variable the mutate() is used it can only be used after
installing the dplyr package


#AVERAGE FOR ABOVE 35
avrg35<- mean(id.t$Birthweight[id.t$mage35==1])
avrg35
```

```
## [1] 6.825
```

```
#AVERAGE FOR BELOW 35
avrg_35<- mean(id.t$Birthweight[id.t$mage35==0])
avrg_35
```

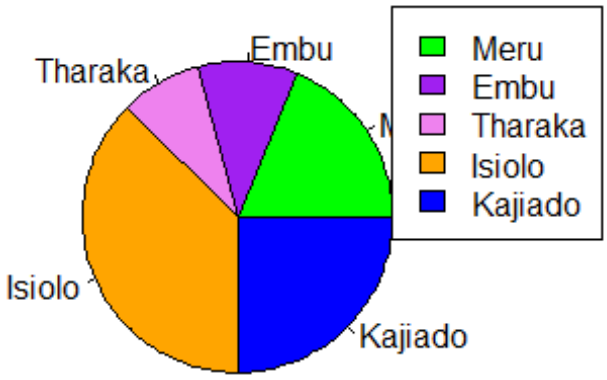
```
## [1] 7.310526
```

```
# to find the average the mean() is used

## PART B ##

#read  data as vectors
county<-c('Meru','Embu','Tharaka','Isiolo','Kajiado')
no.swarms<- c(90,50,42,180,120)
colours<-c('green','purple','violet','orange','blue') # adding colors to my
pie chart
#PIE CHART
pie(no.swarms,county,col = colours)
#to create a pie chart the pie()
# the no.swarms is first declared in the function because it contains the
values
#then we declare the county as the labels
pie
```

```
## function (x, labels = names(x), edges = 200, radius = 0.8, clockwise =
FALSE,
##     init.angle = if (clockwise) 90 else 0, density = NULL, angle = 45,
```

```
##     col = NULL, border = NULL, lty = NULL, main = NULL, ...)
## {
##     if (!is.numeric(x) || any(is.na(x) | x < 0))
##         stop("'x' values must be positive.")
##     if (is.null(labels))
##         labels <- as.character(seq_along(x))
##     else labels <- as.graphicsAnnot(labels)
##     x <- c(0, cumsum(x)/sum(x))
##     dx <- diff(x)
##     nx <- length(dx)
##     plot.new()
##     pin <- par("pin")
##     xlim <- ylim <- c(-1, 1)
##     if (pin[1L] > pin[2L])
##         xlim <- (pin[1L]/pin[2L]) * xlim
##     else ylim <- (pin[2L]/pin[1L]) * ylim
##     dev.hold()
##     on.exit(dev.flush())
##     plot.window(xlim, ylim, "", asp = 1)
##     if (is.null(col))
##         col <- if (is.null(density))
##             c("white", "lightblue", "mistyrose", "lightcyan",
##                 "lavender", "cornsilk")
##         else par("fg")
##     if (!is.null(col))
##         col <- rep_len(col, nx)
##     if (!is.null(border))
##         border <- rep_len(border, nx)
##     if (!is.null(lty))
##         lty <- rep_len(lty, nx)
##     angle <- rep(angle, nx)
##     if (!is.null(density))
##         density <- rep_len(density, nx)
##     twopi <- if (clockwise)
##         -2 * pi
##     else 2 * pi
##     t2xy <- function(t) {
##         t2p <- twopi * t + init.angle * pi/180
##         list(x = radius * cos(t2p), y = radius * sin(t2p))
##     }
##     for (i in 1L:nx) {
##         n <- max(2, floor(edges * dx[i]))
##         P <- t2xy(seq.int(x[i], x[i + 1], length.out = n))
##         polygon(c(P$x, 0), c(P$y, 0), density = density[i], angle =
angle[i],
##             border = border[i], col = col[i], lty = lty[i])
##         P <- t2xy(mean(x[i + 0:1]))
##         lab <- as.character(labels[i])
##         if (!is.na(lab) && nzchar(lab)) {
##             lines(c(1, 1.05) * P$x, c(1, 1.05) * P$y)
```

```
##             text(1.1 * P$x, 1.1 * P$y, labels[i], xpd = TRUE,
##                 adj = ifelse(P$x < 0, 1, 0), ...)
##         }
##     }
##     title(main = main, ...)
##     invisible(NULL)
## }
## <bytecode: 0x000001df96b2dc20>
## <environment: namespace:graphics>

#LEGEND FUNCTION
legend("topright",county,fill = colours)
```




```
# the "top right" is used to specify where the legend should be can be
specified anywhere
# then specify what you want to appear on the legend
```