DSC520_Week3_Assignement01_CHRISTUDASS_REENIE

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2022-06-24

```
survey_df <- read.csv("C:/Users/chris/dsc520/data/acs-14-1yr-s0201.csv")
print(survey_df)
```

```
##                 Id   Id2                                 Geography PopGroupID
## 1   0500000US01073  1073                 Jefferson County, Alabama          1
## 2   0500000US04013  4013                  Maricopa County, Arizona          1
## 3   0500000US04019  4019                      Pima County, Arizona          1
## 4   0500000US06001  6001                 Alameda County, California          1
## 5   0500000US06013  6013              Contra Costa County, California          1
## 6   0500000US06019  6019                   Fresno County, California          1
## 7   0500000US06029  6029                     Kern County, California          1
## 8   0500000US06037  6037              Los Angeles County, California          1
## 9   0500000US06059  6059                   Orange County, California          1
## 10  0500000US06065  6065                Riverside County, California          1
## 11  0500000US06067  6067              Sacramento County, California          1
## 12  0500000US06071  6071           San Bernardino County, California          1
## 13  0500000US06073  6073                San Diego County, California          1
## 14  0500000US06075  6075            San Francisco County, California          1
## 15  0500000US06077  6077              San Joaquin County, California          1
## 16  0500000US06081  6081                San Mateo County, California          1
## 17  0500000US06085  6085              Santa Clara County, California          1
## 18  0500000US06097  6097                   Sonoma County, California          1
## 19  0500000US06099  6099                Stanislaus County, California          1
## 20  0500000US06111  6111                   Ventura County, California          1
## 21  0500000US08005  8005                  Arapahoe County, Colorado          1
## 22  0500000US08031  8031                    Denver County, Colorado          1
## 23  0500000US08041  8041                  El Paso County, Colorado          1
## 24  0500000US08059  8059                 Jefferson County, Colorado          1
## 25  0500000US09001  9001               Fairfield County, Connecticut          1
## 26  0500000US09003  9003               Hartford County, Connecticut          1
## 27  0500000US09009  9009              New Haven County, Connecticut          1
## 28  0500000US10003 10003                New Castle County, Delaware          1
## 29  0500000US11001 11001 District of Columbia, District of Columbia          1
## 30  0500000US12009 12009                     Brevard County, Florida          1
## 31  0500000US12011 12011                     Broward County, Florida          1
## 32  0500000US12031 12031                       Duval County, Florida          1
## 33  0500000US12057 12057                Hillsborough County, Florida          1
## 34  0500000US12071 12071                         Lee County, Florida          1
## 35  0500000US12086 12086                  Miami-Dade County, Florida          1
## 36  0500000US12095 12095                      Orange County, Florida          1
## 37  0500000US12099 12099                  Palm Beach County, Florida          1
```

```
## 38  0500000US12103 12103                Pinellas County, Florida          1
## 39  0500000US12105 12105                    Polk County, Florida          1
## 40  0500000US12127 12127                Volusia County, Florida           1
## 41  0500000US13067 13067                   Cobb County, Georgia           1
## 42  0500000US13089 13089                  DeKalb County, Georgia          1
## 43  0500000US13121 13121                  Fulton County, Georgia          1
## 44  0500000US13135 13135                Gwinnett County, Georgia          1
## 45  0500000US15003 15003                Honolulu County, Hawaii           1
## 46  0500000US17031 17031                  Cook County, Illinois           1
## 47  0500000US17043 17043                DuPage County, Illinois           1
## 48  0500000US17089 17089                  Kane County, Illinois           1
## 49  0500000US17097 17097                  Lake County, Illinois           1
## 50  0500000US17197 17197                  Will County, Illinois           1
## 51  0500000US18097 18097                 Marion County, Indiana           1
## 52  0500000US20091 20091                 Johnson County, Kansas           1
## 53  0500000US20173 20173                 Sedgwick County, Kansas          1
## 54  0500000US21111 21111               Jefferson County, Kentucky         1
## 55  0500000US24003 24003            Anne Arundel County, Maryland         1
## 56  0500000US24005 24005               Baltimore County, Maryland         1
## 57  0500000US24031 24031              Montgomery County, Maryland         1
## 58  0500000US24033 24033        Prince George's County, Maryland          1
## 59  0500000US24510 24510                Baltimore city, Maryland          1
## 60  0500000US25005 25005             Bristol County, Massachusetts        1
## 61  0500000US25009 25009               Essex County, Massachusetts        1
## 62  0500000US25017 25017           Middlesex County, Massachusetts        1
## 63  0500000US25021 25021             Norfolk County, Massachusetts        1
## 64  0500000US25023 25023            Plymouth County, Massachusetts        1
## 65  0500000US25025 25025            Suffolk County, Massachusetts         1
## 66  0500000US25027 25027           Worcester County, Massachusetts        1
## 67  0500000US26081 26081                  Kent County, Michigan           1
## 68  0500000US26099 26099                 Macomb County, Michigan          1
## 69  0500000US26125 26125                Oakland County, Michigan          1
## 70  0500000US26163 26163                  Wayne County, Michigan          1
## 71  0500000US27053 27053               Hennepin County, Minnesota         1
## 72  0500000US27123 27123                 Ramsey County, Minnesota          1
## 73  0500000US29095 29095                 Jackson County, Missouri          1
## 74  0500000US29189 29189               St. Louis County, Missouri          1
## 75  0500000US31055 31055                 Douglas County, Nebraska          1
## 76  0500000US32003 32003                     Clark County, Nevada          1
## 77  0500000US34003 34003                Bergen County, New Jersey          1
## 78  0500000US34007 34007                Camden County, New Jersey          1
## 79  0500000US34013 34013                 Essex County, New Jersey          1
## 80  0500000US34017 34017                Hudson County, New Jersey          1
## 81  0500000US34023 34023              Middlesex County, New Jersey         1
## 82  0500000US34025 34025              Monmouth County, New Jersey          1
## 83  0500000US34029 34029                 Ocean County, New Jersey          1
## 84  0500000US34031 34031               Passaic County, New Jersey          1
## 85  0500000US34039 34039                 Union County, New Jersey          1
## 86  0500000US35001 35001             Bernalillo County, New Mexico         1
## 87  0500000US36005 36005                    Bronx County, New York         1
## 88  0500000US36029 36029                     Erie County, New York         1
## 89  0500000US36047 36047                    Kings County, New York         1
## 90  0500000US36055 36055                   Monroe County, New York         1
## 91  0500000US36059 36059                   Nassau County, New York         1
```

```
## 92  0500000US36061 36061                 New York County, New York          1
## 93  0500000US36081 36081                   Queens County, New York          1
## 94  0500000US36103 36103                  Suffolk County, New York          1
## 95  0500000US36119 36119                Westchester County, New York        1
## 96  0500000US37081 37081              Guilford County, North Carolina       1
## 97  0500000US37119 37119           Mecklenburg County, North Carolina       1
## 98  0500000US37183 37183                 Wake County, North Carolina        1
## 99  0500000US39035 39035                       Cuyahoga County, Ohio        1
## 100 0500000US39049 39049                       Franklin County, Ohio        1
## 101 0500000US39061 39061                       Hamilton County, Ohio        1
## 102 0500000US39113 39113                     Montgomery County, Ohio        1
## 103 0500000US39153 39153                        Summit County, Ohio         1
## 104 0500000US40109 40109                    Oklahoma County, Oklahoma       1
## 105 0500000US40143 40143                      Tulsa County, Oklahoma        1
## 106 0500000US41051 41051                    Multnomah County, Oregon        1
## 107 0500000US41067 41067                    Washington County, Oregon       1
## 108 0500000US42003 42003               Allegheny County, Pennsylvania       1
## 109 0500000US42017 42017                  Bucks County, Pennsylvania        1
## 110 0500000US42029 42029                 Chester County, Pennsylvania       1
## 111 0500000US42045 42045                Delaware County, Pennsylvania       1
## 112 0500000US42071 42071               Lancaster County, Pennsylvania       1
## 113 0500000US42091 42091              Montgomery County, Pennsylvania       1
## 114 0500000US42101 42101            Philadelphia County, Pennsylvania       1
## 115 0500000US44007 44007              Providence County, Rhode Island       1
## 116 0500000US47037 47037                   Davidson County, Tennessee       1
## 117 0500000US47157 47157                     Shelby County, Tennessee       1
## 118 0500000US48029 48029                          Bexar County, Texas       1
## 119 0500000US48085 48085                         Collin County, Texas       1
## 120 0500000US48113 48113                         Dallas County, Texas       1
## 121 0500000US48121 48121                         Denton County, Texas       1
## 122 0500000US48141 48141                        El Paso County, Texas       1
## 123 0500000US48157 48157                      Fort Bend County, Texas       1
## 124 0500000US48201 48201                         Harris County, Texas       1
## 125 0500000US48215 48215                        Hidalgo County, Texas       1
## 126 0500000US48339 48339                     Montgomery County, Texas       1
## 127 0500000US48439 48439                        Tarrant County, Texas       1
## 128 0500000US48453 48453                         Travis County, Texas       1
## 129 0500000US49035 49035                       Salt Lake County, Utah       1
## 130 0500000US49049 49049                            Utah County, Utah       1
## 131 0500000US51059 51059                     Fairfax County, Virginia       1
## 132 0500000US53033 53033                      King County, Washington       1
## 133 0500000US53053 53053                    Pierce County, Washington       1
## 134 0500000US53061 53061                  Snohomish County, Washington      1
## 135 0500000US55025 55025                       Dane County, Wisconsin       1
## 136 0500000US55079 55079                   Milwaukee County, Wisconsin      1
##     POPGROUP.display.label RacesReported HSDegree BachDegree
## 1          Total population        660793     89.1       30.5
## 2          Total population       4087191     86.8       30.2
## 3          Total population       1004516     88.0       30.8
## 4          Total population       1610921     86.9       42.8
## 5          Total population       1111339     88.8       39.7
## 6          Total population        965974     73.6       19.7
## 7          Total population        874589     74.5       15.4
## 8          Total population      10116705     77.5       30.3
```

```
## 9         Total population       3145515     84.6       38.0
## 10        Total population       2329271     80.6       20.7
## 11        Total population       1482026     86.8       28.9
## 12        Total population       2112619     78.6       18.9
## 13        Total population       3263431     86.6       37.1
## 14        Total population        852469     88.1       54.2
## 15        Total population        715597     77.6       18.3
## 16        Total population        758581     88.1       47.5
## 17        Total population       1894605     87.4       48.4
## 18        Total population        500292     87.6       34.8
## 19        Total population        531997     78.4       17.0
## 20        Total population        846178     83.6       31.6
## 21        Total population        618821     91.9       40.9
## 22        Total population        663862     85.5       44.3
## 23        Total population        663519     92.8       36.5
## 24        Total population        558503     94.1       42.0
## 25        Total population        945438     89.8       46.7
## 26        Total population        897985     89.3       36.8
## 27        Total population        861277     89.5       34.5
## 28        Total population        552778     90.1       35.8
## 29        Total population        658893     90.2       55.0
## 30        Total population        556885     91.6       27.2
## 31        Total population       1869235     88.4       30.5
## 32        Total population        897698     89.0       26.1
## 33        Total population       1316298     87.3       29.8
## 34        Total population        679513     86.3       26.5
## 35        Total population       2662874     80.9       26.6
## 36        Total population       1253001     87.9       31.4
## 37        Total population       1397710     87.7       33.0
## 38        Total population        938098     90.1       29.5
## 39        Total population        634638     84.9       19.7
## 40        Total population        507531     88.9       22.5
## 41        Total population        730981     90.3       43.7
## 42        Total population        722161     88.4       41.7
## 43        Total population        996319     91.3       49.2
## 44        Total population        877922     88.0       35.4
## 45        Total population        991788     91.8       32.6
## 46        Total population       5246456     85.5       36.2
## 47        Total population        932708     92.3       48.0
## 48        Total population        527306     82.9       32.6
## 49        Total population        705186     90.3       44.0
## 50        Total population        685419     90.7       33.1
## 51        Total population        934243     85.0       28.8
## 52        Total population        574272     95.5       52.8
## 53        Total population        508803     88.8       30.7
## 54        Total population        760026     88.5       31.6
## 55        Total population        560133     91.9       38.8
## 56        Total population        826925     90.4       37.2
## 57        Total population       1030447     90.9       58.5
## 58        Total population        904430     85.5       31.0
## 59        Total population        622793     84.4       30.0
## 60        Total population        554194     82.5       25.7
## 61        Total population        769091     89.1       38.9
## 62        Total population       1570315     92.3       52.3
```

```
## 63        Total population        692254     94.1       51.9
## 64        Total population        507022     92.2       34.1
## 65        Total population        767254     83.9       42.3
## 66        Total population        813475     90.1       34.6
## 67        Total population        629237     89.1       33.7
## 68        Total population        860112     89.3       23.9
## 69        Total population       1237868     93.6       44.8
## 70        Total population       1764804     84.9       22.1
## 71        Total population       1212064     93.2       47.3
## 72        Total population        532655     89.9       40.9
## 73        Total population        683191     90.0       29.5
## 74        Total population       1001876     93.2       42.8
## 75        Total population        543244     88.2       36.3
## 76        Total population       2069681     84.5       22.7
## 77        Total population        933572     91.5       46.2
## 78        Total population        511038     88.3       31.3
## 79        Total population        795723     85.5       32.7
## 80        Total population        669115     83.4       38.2
## 81        Total population        836297     89.1       41.0
## 82        Total population        629279     93.1       43.7
## 83        Total population        586301     91.7       28.6
## 84        Total population        508856     83.8       28.6
## 85        Total population        552939     86.2       33.0
## 86        Total population        675551     88.0       32.7
## 87        Total population       1438159     70.5       19.3
## 88        Total population        922835     90.6       31.3
## 89        Total population       2621793     80.0       34.3
## 90        Total population        749857     90.3       35.9
## 91        Total population       1358627     90.7       43.2
## 92        Total population       1636268     86.8       59.9
## 93        Total population       2321580     80.4       29.8
## 94        Total population       1502968     89.8       34.0
## 95        Total population        972634     87.4       47.1
## 96        Total population        512119     89.0       33.3
## 97        Total population       1012539     89.5       43.0
## 98        Total population        998691     92.4       49.2
## 99        Total population       1259828     88.1       31.0
## 100       Total population       1231393     90.0       38.0
## 101       Total population        806631     90.5       35.6
## 102       Total population        533116     89.7       25.7
## 103       Total population        541943     91.1       30.3
## 104       Total population        766215     86.8       30.6
## 105       Total population        629598     88.6       30.7
## 106       Total population        776712     91.1       41.6
## 107       Total population        562998     90.2       39.7
## 108       Total population       1231255     93.9       37.7
## 109       Total population        626685     93.9       37.7
## 110       Total population        512784     92.3       49.3
## 111       Total population        562960     91.5       36.3
## 112       Total population        533320     84.9       26.0
## 113       Total population        816857     93.7       47.3
## 114       Total population       1560297     82.6       26.0
## 115       Total population        631974     82.0       25.2
## 116       Total population        668347     86.7       37.3
```

```
## 117       Total population        938803     87.4       29.9
## 118       Total population       1855866     83.0       26.3
## 119       Total population        885241     93.7       50.0
## 120       Total population       2518638     77.6       29.1
## 121       Total population        753363     91.9       41.5
## 122       Total population        833487     75.8       21.1
## 123       Total population        685345     88.6       44.1
## 124       Total population       4441370     79.8       29.7
## 125       Total population        831073     62.2       17.9
## 126       Total population        518947     85.9       34.1
## 127       Total population       1945360     84.9       30.0
## 128       Total population       1151145     88.6       45.6
## 129       Total population       1091742     89.5       31.9
## 130       Total population        560974     93.7       37.5
## 131       Total population       1137538     91.5       60.3
## 132       Total population       2079967     92.3       48.6
## 133       Total population        831928     90.3       24.6
## 134       Total population        759583     92.0       29.1
## 135       Total population        516284     94.9       49.8
## 136       Total population        956406     86.9       29.5
```

```
survey_df <- read.csv("C:/Users/chris/dsc520/data/acs-14-1yr-s0201.csv")
##print(survey_df)
##What are the elements in your data (including the categories and data types)?
print(sapply(survey_df, class))
```

```
##                     Id                    Id2              Geography
##            "character"              "integer"            "character"
##             PopGroupID POPGROUP.display.label          RacesReported
##              "integer"            "character"              "integer"
##               HSDegree             BachDegree
##              "numeric"              "numeric"
```

```
##print(survey_df)
##Please provide the output from the following functions: str(); nrow(); ncol()
print(paste("Structure of the dataset is:",str(survey_df)))
```

```
## 'data.frame':    136 obs. of  8 variables:
##  $ Id                    : chr  "0500000US01073" "0500000US04013" "0500000US04019" "0500000US06001"
##  $ Id2                   : int  1073 4013 4019 6001 6013 6019 6029 6037 6059 6065 ...
##  $ Geography             : chr  "Jefferson County, Alabama" "Maricopa County, Arizona" "Pima County,
##  $ PopGroupID            : int  1 1 1 1 1 1 1 1 1 1 ...
##  $ POPGROUP.display.label: chr  "Total population" "Total population" "Total population" "Total popul
##  $ RacesReported         : int  660793 4087191 1004516 1610921 1111339 965974 874589 10116705 314551
##  $ HSDegree              : num  89.1 86.8 88 86.9 88.8 73.6 74.5 77.5 84.6 80.6 ...
##  $ BachDegree            : num  30.5 30.2 30.8 42.8 39.7 19.7 15.4 30.3 38 20.7 ...
## [1] "Structure of the dataset is: "
```

```
print(paste("Number of rows is:",nrow(survey_df)))
```

```
## [1] "Number of rows is: 136"
```

```
print(paste("Number of coloumns is:",ncol(survey_df)))
```

```
## [1] "Number of coloumns is: 8"
```

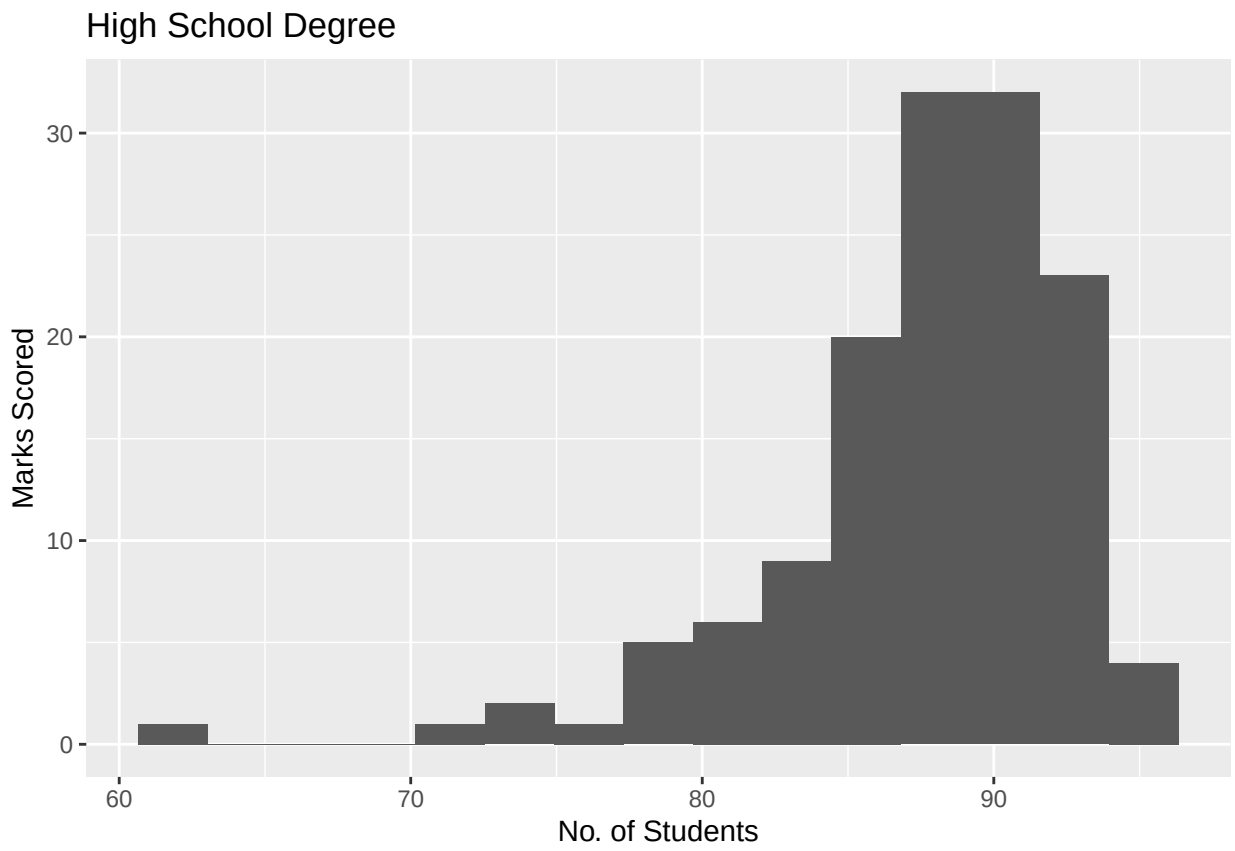
```
##Create a Probability Plot of the HSDegree variable.
install.packages("ggplot2", repos="http://cran.us.r-project.org")
```

```
## Installing package into 'C:/Users/chris/AppData/Local/R/win-library/4.2'
## (as 'lib' is unspecified)

## package 'ggplot2' successfully unpacked and MD5 sums checked
##
## The downloaded binary packages are in
##  C:\Users\chris\AppData\Local\Temp\RtmpYvVKEu\downloaded_packages
```

```
library(ggplot2)
```

```
##Create a Histogram of the HSDegree variable using the ggplot2 package.
##Set a bin size for the Histogram.
##Include a Title and appropriate X/Y axis labels on your Histogram Plot.
ggplot(survey_df, aes(HSDegree)) + geom_histogram(bins=15)+
  labs(size= "Nitrogen",
       x = "No. of Students",
       y = "Marks Scored",
       title = "High School Degree")
```



```r
##Based on what you see in this histogram, is the data distribution unimodal?
print("The distribution has only one peak, its Unimodal")
```

```
## [1] "The distribution has only one peak, its Unimodal"
```

```r
##Is it approximately symmetrical?
print("The peak are not symmetrical")
```

```
## [1] "The peak are not symmetrical"
```

```r
##Is it approximately normal?
print("The peak are skewed so its not normal")
```

```
## [1] "The peak are skewed so its not normal"
```

```r
##If not normal, is the distribution skewed? If so, in which direction?
print("The peak are left skewed")
```

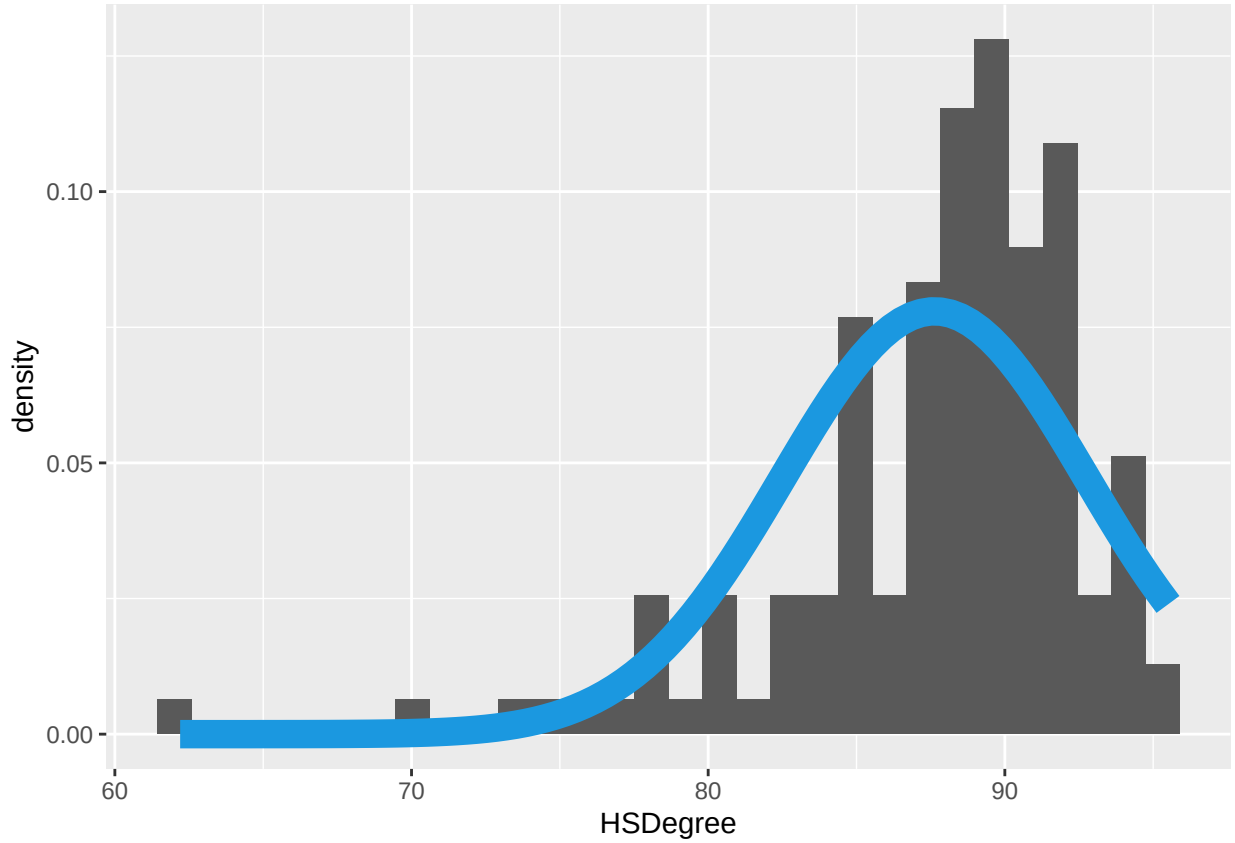
```
## [1] "The peak are left skewed"
```

```r
##Include a normal curve to the Histogram that you plotted.
#define x and y values to use for normal curve



ggplot(survey_df, aes(HSDegree)) +
  geom_histogram(aes(y = ..density..)) +
    stat_function(fun = dnorm,
                  args = list(mean = mean(survey_df$HSDegree),
                              sd = sd(survey_df$HSDegree)),
                  col = "#1b98e0",
                  size = 5)
```

```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```




```
##Explain whether a normal distribution can accurately be used as a model for this data.
```

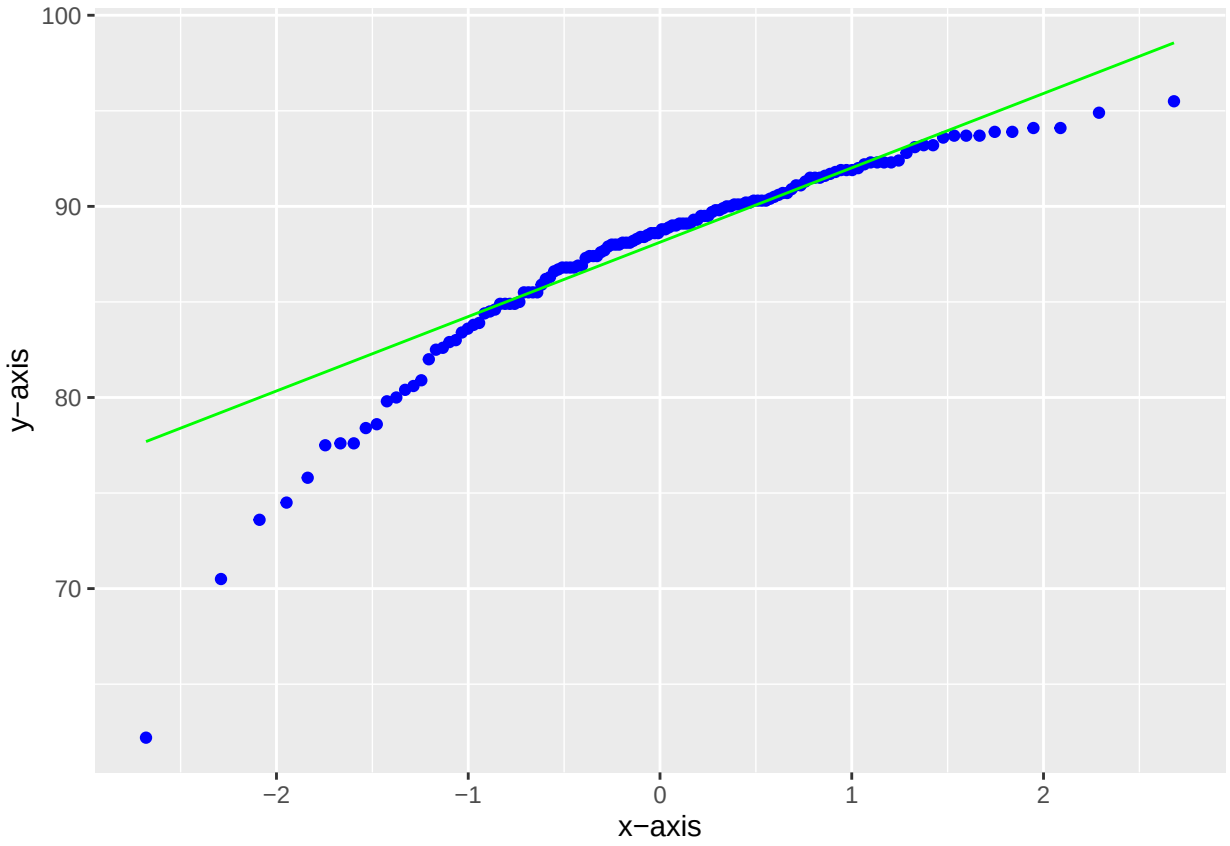
```
##creating random data

print(head(survey_df))
```

```
##                Id  Id2                        Geography PopGroupID
## 1 0500000US01073 1073       Jefferson County, Alabama          1
## 2 0500000US04013 4013        Maricopa County, Arizona          1
## 3 0500000US04019 4019            Pima County, Arizona          1
## 4 0500000US06001 6001      Alameda County, California          1
## 5 0500000US06013 6013 Contra Costa County, California          1
## 6 0500000US06019 6019       Fresno County, California          1
##   POPGROUP.display.label RacesReported HSDegree BachDegree
## 1       Total population        660793     89.1       30.5
## 2       Total population       4087191     86.8       30.2
## 3       Total population       1004516     88.0       30.8
## 4       Total population       1610921     86.9       42.8
## 5       Total population       1111339     88.8       39.7
## 6       Total population        965974     73.6       19.7
```

```
p <- ggplot(survey_df, aes(sample=HSDegree))
##+ stat_qq_point(size = 2,color = "red")
##+ stat_qq_line(color="green")
```

```
##+ xlab("x-axis") + ylab("y-axis")
p + stat_qq(color="blue") + stat_qq_line(color="green")+ xlab("x-axis") + ylab("y-axis")
```




```
##Based on what you see in this probability plot, is the distribution approximately normal? Explain how
print("Its approximately normal - The given data resides in a shape like a straight line.")
```

```
## [1] "Its approximately normal - The given data resides in a shape like a straight line."
```

```
##If not normal, is the distribution skewed? If so, in which direction? Explain how you know.
print("It is normal and not skewed")
```

```
## [1] "It is normal and not skewed"
```

```
install.packages("pastecs", repos="http://cran.us.r-project.org")
```

```
## Installing package into 'C:/Users/chris/AppData/Local/R/win-library/4.2'
## (as 'lib' is unspecified)

## package 'pastecs' successfully unpacked and MD5 sums checked
##
## The downloaded binary packages are in
##  C:\Users\chris\AppData\Local\Temp\RtmpYvVKEu\downloaded_packages
```

```
library(pastecs)
```

```
##Now that you have looked at this data visually for normality, you will now quantify normality with nu
data <- data.frame(survey_df)
stat.desc(data)
```

```
##          Id          Id2 Geography PopGroupID POPGROUP.display.label
## nbr.val  NA 1.360000e+02        NA        136                      NA
## nbr.null NA 0.000000e+00        NA          0                      NA
## nbr.na   NA 0.000000e+00        NA          0                      NA
## min      NA 1.073000e+03        NA          1                      NA
## max      NA 5.507900e+04        NA          1                      NA
## range    NA 5.400600e+04        NA          0                      NA
## sum      NA 3.649306e+06        NA        136                      NA
## median   NA 2.611200e+04        NA          1                      NA
## mean     NA 2.683313e+04        NA          1                      NA
## SE.mean  NA 1.323036e+03        NA          0                      NA
## CI.mean  NA 2.616557e+03        NA          0                      NA
## var      NA 2.380576e+08        NA          0                      NA
## std.dev  NA 1.542911e+04        NA          0                      NA
## coef.var NA 5.750024e-01        NA          0                      NA
##          RacesReported     HSDegree   BachDegree
## nbr.val   1.360000e+02 1.360000e+02  136.0000000
## nbr.null  0.000000e+00 0.000000e+00    0.0000000
## nbr.na    0.000000e+00 0.000000e+00    0.0000000
## min       5.002920e+05 6.220000e+01   15.4000000
## max       1.011671e+07 9.550000e+01   60.3000000
## range     9.616413e+06 3.330000e+01   44.9000000
## sum       1.556385e+08 1.191800e+04 4822.7000000
## median    8.327075e+05 8.870000e+01   34.1000000
## mean      1.144401e+06 8.763235e+01   35.4610294
## SE.mean   9.351028e+04 4.388598e-01    0.8154527
## CI.mean   1.849346e+05 8.679296e-01    1.6127146
## var       1.189207e+12 2.619332e+01   90.4349886
## std.dev   1.090508e+06 5.117941e+00    9.5097313
## coef.var  9.529072e-01 5.840241e-02    0.2681741
```

```
install.packages("psych", repos="http://cran.us.r-project.org")
```

```
## Installing package into 'C:/Users/chris/AppData/Local/R/win-library/4.2'
## (as 'lib' is unspecified)
```

```
## package 'psych' successfully unpacked and MD5 sums checked
##
## The downloaded binary packages are in
##  C:\Users\chris\AppData\Local\Temp\RtmpYvVKEu\downloaded_packages
```

```
library(psych)
```

```
##
## Attaching package: 'psych'
```

```
## The following objects are masked from 'package:ggplot2':
##
##     %+%, alpha
```

```
##Now that you have looked at this data visually for normality, you will now quantify normality with nu
##In several sentences provide an explanation of the result produced for skew, kurtosis, and z-scores.


#take the whole population of the dataframe
data <- data.frame(survey_df)
print(stat.desc(data$HSDegree))
```

```
##      nbr.val     nbr.null       nbr.na          min          max        range
## 1.360000e+02 0.000000e+00 0.000000e+00 6.220000e+01 9.550000e+01 3.330000e+01
##          sum       median         mean      SE.mean CI.mean.0.95          var
## 1.191800e+04 8.870000e+01 8.763235e+01 4.388598e-01 8.679296e-01 2.619332e+01
##      std.dev     coef.var
## 5.117941e+00 5.840241e-02
```

```
psych::describe(data$HSDegree)
```

```
##    vars   n  mean   sd median trimmed  mad  min  max range  skew kurtosis   se
## X1    1 136 87.63 5.12   88.7   88.28 3.78 62.2 95.5  33.3 -1.67     4.35 0.44
```

```
# take a small population from the dataframe
survey_df1 <- read.csv("C:/Users/chris/dsc520/data/acs-14-1yr-s0201.csv", nrow=50)
data1 <- data.frame(survey_df1)
print(stat.desc(data1$HSDegree))
```

```
##      nbr.val     nbr.null       nbr.na          min          max        range
##   50.0000000    0.0000000    0.0000000   73.6000000   94.1000000   20.5000000
##          sum       median         mean      SE.mean CI.mean.0.95          var
## 4340.9000000   88.0000000   86.8180000    0.6663620    1.3391045   22.2019143
##      std.dev     coef.var
##    4.7118907    0.0542732
```

```
psych::describe(data1$HSDegree)
```

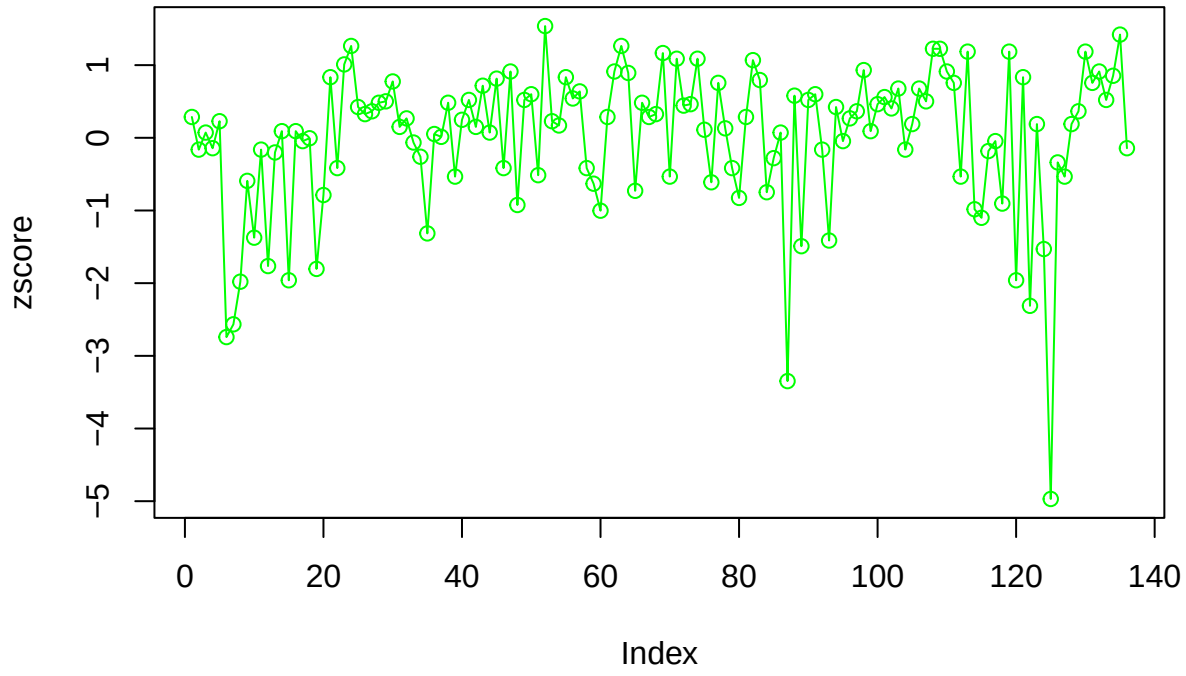
```
##    vars  n  mean   sd median trimmed  mad  min  max range  skew kurtosis   se
## X1    1 50 86.82 4.71     88   87.41 3.19 73.6 94.1  20.5 -1.13     0.63 0.67
```

```
print("Skew and Kurtosis is dependent on the size of the data when compared to population vs sample. Sma
```

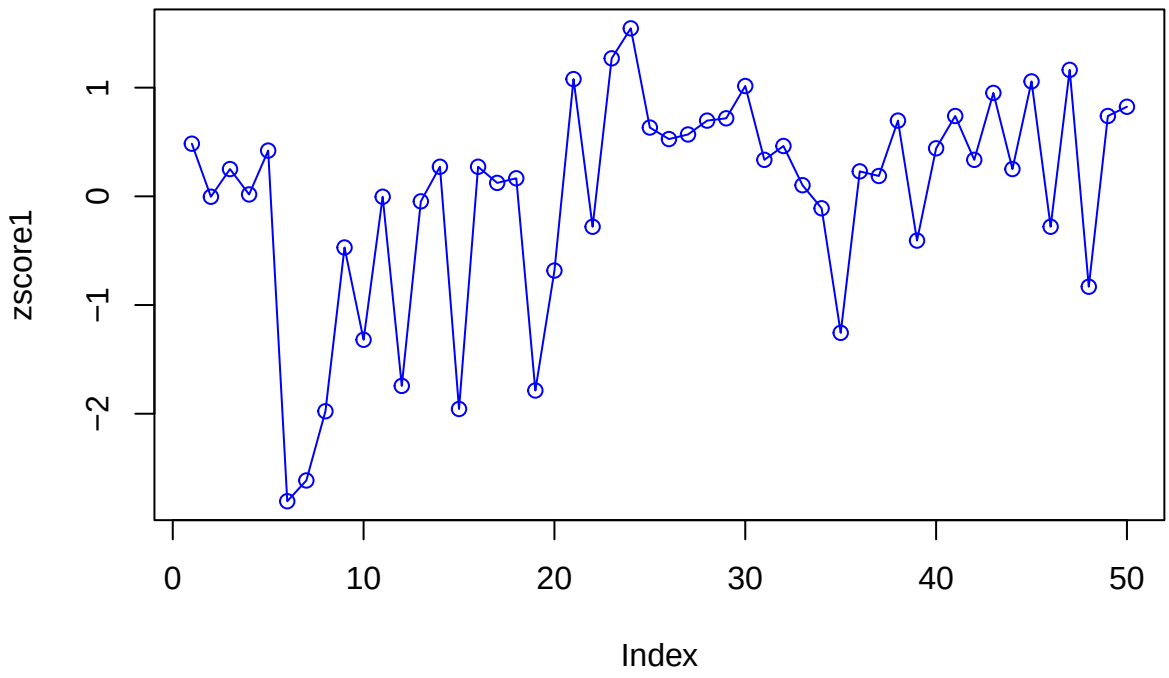
```
## [1] "Skew and Kurtosis is dependent on the size of the data when compared to population vs sample. Sm
```

```
##Z-score comparison
## population
data <- data.frame(survey_df)
## sample
data1 <- data.frame(survey_df1)
```

```
x <- data[['HSDegree']]
x1 <- data1[['HSDegree']]
zscore <- (x - mean(x, na.rm = TRUE)) / sd(x, na.rm = TRUE)
zscore1 <- (x1 - mean(x1, na.rm = TRUE)) / sd(x1, na.rm = TRUE)
plot(zscore, type="o", col="green")
```




```
plot(zscore1, type="o", col="blue")
```




```
##print(zscore)
```

```
print("Z-Score represent how many SD you are away from mean. This has got nothing to do with population
```

```
## [1] "Z-Score represent how many SD you are away from mean. This has got nothing to do with populatio
```