Worksheet 7-2

William Easter, Jr.

2/22/2023

```
library(HistData)
library(tidyverse)
library(zeallot)
library(ggplot2)
library(gridExtra)
# Set the working directory to where the CSV file is located
setwd("C:/Users/weyen/OneDrive/Documents/Warhawk Softball/Warhawk-Softball")

# Import the CSV file using read.csv()
wh <- read.csv("2022 GSC SOFTBALL HITTING.csv")
wh
```

```
##                                     Player   AVG   OPS  AB  R  H X2B X3B HR
## 1               Teala Howard (West Florida) 0.435 1.097 168 46 73   9   6  4
## 2                 R.J. Janke (West Georgia) 0.434 1.378  76 14 33   8   0  9
## 3              Cassie Matlock (West Alabama) 0.423 1.104 168 48 71  13   6  3
## 4         Shelby Booker (Alabama Huntsville) 0.420 0.997 188 52 79   5   7  1
## 5             Sierra Easterwood (Montevallo) 0.395 1.364 162 52 64  14   4 20
## 6         Kaylee Vaught (Alabama Huntsville) 0.393 1.030 196 44 77  14   4  6
## 7                       Breanna Patton (Lee) 0.391 0.999 174 42 68  16   2  2
## 8              Kelsie Gilliam (West Alabama) 0.390 0.844 118 29 46   3   0  0
## 9       Haley Ann Frank (Auburn Montgomery) 0.385 0.857 161 46 62   4   0  0
## 10                        Sidney Lee (Lee) 0.382 1.100 110 16 42  12   1  5
## 11            Kat Fallen (Auburn Montgomery) 0.379 1.140 177 35 67  16   1 12
## 12                         Ana Macha (Lee) 0.368 0.863 152 43 56   3   2  1
## 13                    Taylor De Adder (Lee) 0.364 1.122 143 44 52   7   0  9
## 14                Kacy Noland (West Alabama) 0.363 1.071 168 45 61  16   3  7
## 15          Kiara Akles (Alabama Huntsville) 0.363 1.111 146 30 53  11   0 12
## 16                  Erin Moon (West Florida) 0.358 0.882 134 14 48  10   1  1
## 17                Kristyn Nix (West Georgia) 0.358 0.999 137 37 49  10   5  4
## 18                Alana Walker (Delta State) 0.352 0.760 122 21 43   3   0  0
## 19                       Javaria Smith (Lee) 0.348 0.888 158 37 55  11   2  1
## 20                        Macey Neal (Union) 0.344 0.890 131 26 45   7   2  3
## 21             Chandler Mevis (West Georgia) 0.341 0.851 129 23 44  11   0  1
## 22            Katie Proctor (Valdosta State) 0.339 1.007 118 11 40   7   0  7
## 23           Faith Wheat (Auburn Montgomery) 0.333 0.804 117 27 39   1   4  1
## 24                 Hannah Carey (Montevallo) 0.333 0.902 162 30 54   9   0  6
## 25               Ally Clegg (Valdosta State) 0.329 1.095 161 47 53  11   0 15
## 26                   Morgan Jennings (Union) 0.327 0.840 113 24 37   9   1  1
## 27               Chrissy Tubbs (Delta State) 0.326 0.870 138 31 45   8   1  4
## 28          Mccall Lee (Mississippi College) 0.324 0.835 145 22 47   8   1  2
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## 29       Elaina McGill (Christian Brothers) 0.323 1.122  96 32 31   4   3  6
## 30        Jenna Ergle (Mississippi College) 0.321 1.081 134 26 43  10   0 10
## 31    Alexis Laughlin (Mississippi College) 0.321 0.766 140 29 45   5   1  0
## 32  Kendall Westbrooks (Christian Brothers) 0.319 1.026 135 39 43  12   2  7
## 33               Taylor Picou (Delta State) 0.318 0.844 132 16 42  10   2  2
## 34           Taylor  Robinson (Montevallo) 0.316 1.063 152 44 48  11   2 11
## 35              Olivia Burns (Delta State) 0.316 0.977  79 13 25   9   0  3
## 36        Nikki Pennington (Valdosta State) 0.316 1.039 152 38 48   8   0 14
## 37              Alisha Lanyon (Montevallo) 0.315 0.861 162 40 51  10   0  6
## 38      Jada Henderson (Alabama Huntsville) 0.315 0.890  73 14 23   3   2  1
## 39       M. Willingham (Christian Brothers) 0.313 0.889 134 38 42  11   0  3
## 40                 Kaylee Combs (Shorter) 0.312 0.784 141  9 44   9   0  2
## 41            Laurynn Boggs (West Florida) 0.311 0.937  45 22 14   2   1  2
## 42                Hannah Morales (Shorter) 0.311 0.752 103 21 32   1   0  0
## 43              Lauren Hamby (Montevallo) 0.310 0.762 126 17 39   8   0  3
## 44        Chloe Derrick (Auburn Montgomery) 0.309 0.993 162 40 50   8   2 11
## 45              Kinley Adams (Montevallo) 0.308 0.714 133 30 41   4   1  0
## 46           Aniston Gano (Valdosta State) 0.308 1.014 143 32 44   6   1 10
## 47                    Grace White (Union) 0.305 0.754 105 15 32   6   0  0
## 48                Angela Cecere (Shorter) 0.305 0.737 118 17 36   4   1  0
## 49        Lawren Hayes (Alabama Huntsville) 0.305 0.772 105 22 32   3   1  2
## 50        Olivia Aycock (Auburn Montgomery) 0.304 0.792 184 44 56   9   5  0
## 51                  Fallon Groves (Union) 0.303 0.810 119 18 36   9   1  4
## 52          Madelyn Vasquez (West Florida) 0.302 1.015 139 30 42   9   0 11
## 53                Bryleigh Carneal (Union) 0.302 0.659 129 11 39   5   0  0
## 54          Gia Martin (Auburn Montgomery) 0.300 0.984 180 42 54   9   6 11
## 55          Taylor Macera (Valdosta State) 0.300 0.790 150 24 45   9   0  4
## 56         Baylee Everson (Valdosta State) 0.300 0.639 110 19 33   0   0  0
## 57    Annemarie Peavy (Mississippi College) 0.298 0.959 141 31 42   9   2  9
## 58      Sadie Thompson (Alabama Huntsville) 0.298 0.766 124 34 37   5   1  1
## 59             Karley Bloesch (Delta State) 0.298 0.769 121 12 36   9   0  2
## 60           Nicole Buccieri (West Alabama) 0.297 0.849 111 11 33   4   1  3
## 61             Carlee Mullinax (Montevallo) 0.295 0.949 122  8 36   5   0  8
## 62      Alaina Hampton (Alabama Huntsville) 0.295 0.984 139 26 41  18   0  8
## 63                      Alexa Scalzo (Lee) 0.293 0.739 133 31 39   3   0  2
## 64             Kailyn Lofton (Delta State) 0.291 0.770 158 22 46   8   0  5
## 65         Hannah Scarbrough (West Georgia) 0.290 0.949 131 30 38   7   1  9
## 66     Jordan Lafosse (Mississippi College) 0.287 0.736 136 19 39   3   4  1
## 67          Lila Young (Alabama Huntsville) 0.285 0.768 158 34 45  14   1  1
## 68        Kamryn Eaton (Mississippi College) 0.282 0.999  85 24 24   6   1  5
## 69              Hannah Mynard (West Alabama) 0.281 0.907 146 31 41  15   1  6
## 70        Gracie Green (Alabama Huntsville) 0.281 0.751 121 26 34   6   0  2
## 71          Hunter Meadows (Valdosta State) 0.281 0.661 114 25 32   1   1  0
## 72         Ashley Dyer (Christian Brothers) 0.280 1.113 107 40 30   7   2 10
## 73              Alley Taylor (West Georgia) 0.279 0.770 136 26 38   6   1  4
## 74              Rylie Grantz (West Alabama) 0.277 0.852  65  9 18   2   0  5
## 75        Brooke Fagan (Mississippi College) 0.276 0.816 145 35 40  12   0  3
## 76              Katelyn Hayman (Delta State) 0.276 0.735 116 24 32   6   0  1
## 77          RJ Simpson (Christian Brothers) 0.275 0.985 109 22 30   8   0  9
## 78              Jessica Ford (West Florida) 0.273 0.848 132 31 36   9   1  7
## 79              Taylor Clegg (West Alabama) 0.273 0.767 143 32 39   7   3  1
## 80      Margaret Morgan (Auburn Montgomery) 0.271 0.733  85  6 23   5   0  2
## 81              Georgia Hughes (Montevallo) 0.271 0.693 107 23 29   4   1  0
## 82           Molly Cobb (Auburn Montgomery) 0.270 0.780 137 24 37   7   0  7
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## 83               Sydnee Pawlak (Montevallo) 0.269 0.770 130 29 35   7   1  3
## 84          Josie Bond (Christian Brothers) 0.268 0.653 149 36 40   2   3  0
## 85      Bailee Avants (Mississippi College) 0.268 0.595  41 13 11   1   0  0
## 86                Kayla Mayo (West Florida) 0.266 0.782 124 24 33   8   1  4
## 87                   Idalia Alarcon (Union) 0.264 0.678 110 14 29   5   0  2
## 88              Morgan Hill (Valdosta State) 0.264 0.885 148 45 39   7   1  8
## 89             Lexi Love (Auburn Montgomery) 0.260 0.624 104 14 27   2   0  1
## 90              Kayanna Perez (West Florida) 0.258 0.544  66 10 17   0   0  0
## 91                   Brooke Puckett (Union) 0.258 0.647  62  3 16   1   1  1
## 92        Kiera Coulon (Christian Brothers) 0.258 0.809  66 14 17   3   0  3
## 93      Mackenzie Nutt (Alabama Huntsville) 0.257 0.639 113 23 29   2   0  1
## 94              Peyton Coots (West Alabama) 0.256 0.639  39  1 10   0   0  0
## 95                     Annalyn Ormsby (Lee) 0.255 0.775 106 19 27   3   2  6
## 96             Taylor Lewis (Valdosta State) 0.255 0.799 137 16 35   5   0  7
## 97                  Kaylee George (Shorter) 0.254 0.606 122 12 31   5   0  0
## 98             Madilynne Webb (West Florida) 0.253 0.822  91 11 23   2   0  6
## 99              Morgan Zettle (West Florida) 0.250 0.669  68 12 17   1   3  0
## 100               Lp Trammell (West Alabama) 0.250 0.839 128 32 32  12   0  7
## 101                Grace Self (West Alabama) 0.250 0.931  44  8 11   2   0  3
## 102               MyCala Helms (Delta State) 0.250 0.824 104 27 26   7   1  4
## 103                     Alyssa Ward (Union) 0.248 0.586 145 18 36   2   1  0
## 104       Rayne Minor (Mississippi College) 0.246 0.540 118 18 29   0   0  0
## 105              Harley Bartholomew (Union) 0.243 0.612 107 13 26   1   1  0
## 106                  Mackenzi David (Union) 0.241 0.736 116 16 28   8   0  3
## 107                    Kira Finkley (Union) 0.240 0.736  25  2  6   2   0  1
## 108                 Carlee Graham (Shorter) 0.240 0.706 121  7 29   3   0  3
## 109       Lexie Bullock (Auburn Montgomery) 0.240 0.686  25 15  6   1   0  1
## 110                 Payton Tuder (Shorter) 0.238 0.634 122 14 29   4   0  3
## 111                     Laney Harris (Lee) 0.238 0.612 143 14 34   9   1  0
## 112           Angela Agurkis (West Florida) 0.233 0.826  73 15 17   7   0  3
## 113            Alyssa Branyan (Delta State) 0.232 0.753  56  4 13   1   0  1
## 114      Shelby Newsome (Auburn Montgomery) 0.231 0.807 134 38 31   6   1  4
## 115             Jenny Griggers (Delta State) 0.229 0.701 157 26 36   6   1  8
## 116                  Baylee Stewart (Union) 0.227 0.558  66  6 15   1   0  0
## 117                Taylor Phillips (Shorter) 0.227 0.652 119 17 27   7   1  1
## 118         Lauren Higginbotham (Montevallo) 0.226 0.626  53  9 12   1   0  2
## 119    Mallory Little (Mississippi College) 0.224 0.596  85  6 19   2   1  1
## 120                   Alana Loyd (Shorter) 0.222 0.485  18  1  4   0   0  0
## 121          Jacie Arrington (West Georgia) 0.220 0.736 100 15 22   2   0  7
## 122      Ashlynn Smith (Christian Brothers) 0.217 0.505  46  7 10   0   0  0
## 123           Raegan Stafford (Delta State) 0.216 0.669  74 20 16   0   1  0
## 124  Mackenzie Puckett (Christian Brothers) 0.214 0.655 117 18 25   3   0  5
## 125               Lexy House (West Alabama) 0.213 0.533  80 20 17   1   0  0
## 126                    Janina Remley (Lee) 0.211 0.863  90 26 19   3   1  5
## 127     Cara Alexander (Christian Brothers) 0.209 0.649  67 11 14   5   0  0
## 128                  Paytn Cripps (Shorter) 0.207 0.599  92 11 19  10   1  1
## 129                Alexis Sewell (Shorter) 0.206 0.532 107  9 22   2   1  1
## 130              Ava Ramirez (West Georgia) 0.197 0.584  71  5 14   4   0  1
## 131  Savannah Crockett (Christian Brothers) 0.196 0.598  56 12 11   1   0  0
## 132           Maddie Gorsuch (West Georgia) 0.195 0.675  77 13 15   2   0  5
## 133           Kayla Tosone (Valdosta State) 0.188 0.376  16 15  3   0   0  0
## 134            Chelsea Dumas (West Florida) 0.179 0.437  28 11  5   0   0  0
## 135            Kelsey Hodges (West Florida) 0.172 0.549  58  8 10   3   0  1
## 136   Reese Earleywine (Christian Brothers) 0.169 0.436  71 12 12   1   0  1
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## 137          Kendall Johnson (West Alabama) 0.160 0.548  94 31 15   3   0  1
## 138       Jaycee Dill (Mississippi College) 0.154 0.421  26  8  4   0   0  0
## 139             Alyssa Gover (Delta State) 0.148 0.392  27 14  4   1   0  0
## 140            M. Sheffield (West Alabama) 0.083 0.374  24 12  2   0   1  0
##     RBI  TB  SLG. BB HPB SO GDP   OB. SF SH  X
## 1    19 106 0.631  4   6 11   0 0.466  0  0 NA
## 2    29  68 0.895  6   3 13   0 0.483  2  0 NA
## 3    37 105 0.625 19   2 12   0 0.479  3  2 NA
## 4    23 101 0.537 10   4 14   0 0.460  0  8 NA
## 5    59 146 0.901 20   4 14   0 0.463  4  1 NA
## 6    43 117 0.597 16   0 16   1 0.433  3  0 NA
## 7    31  94 0.540 14   8 16   0 0.459  0  2 NA
## 8    14  49 0.415  7   1  8   0 0.429  0  9 NA
## 9    20  66 0.410 17   1 22   0 0.447  0  3 NA
## 10   38  71 0.645 17   2 16   1 0.455  5  1 NA
## 11   58 121 0.684 24   3 17   0 0.456  2  3 NA
## 12    9  66 0.434 14   2 19   0 0.429  0  2 NA
## 13   42  86 0.601 42   7 11   0 0.521  2  5 NA
## 14   56 104 0.619 13  16 11   0 0.452  2  2 NA
## 15   57 100 0.685 17   2 12   1 0.426  4  3 NA
## 16   25  63 0.470 11   2  4   0 0.412  1  1 NA
## 17   25  81 0.591 11   2 19   0 0.408  2  2 NA
## 18    9  46 0.377  5   1 24   0 0.383  0  2 NA
## 19   30  73 0.462 23   0 25   1 0.426  2  4 NA
## 20   20  65 0.496  9   2 19   0 0.394  0  1 NA
## 21   20  58 0.450  9   4 16   0 0.401  0  1 NA
## 22   36  68 0.576 19   0 28   0 0.431  0  1 NA
## 23    7  51 0.436  7   0 22   0 0.368  1  4 NA
## 24   40  81 0.500 16   4 13   2 0.402  2  0 NA
## 25   47 109 0.677 22   4 12   0 0.418  2  1 NA
## 26   16  51 0.451 11   1 22   0 0.389  1  1 NA
## 27   17  67 0.486  9   4 11   2 0.384  0  6 NA
## 28   32  63 0.434 17   3 13   0 0.401  2  0 NA
## 29   36  59 0.615 33   5 20   0 0.507  2  1 NA
## 30   31  83 0.619 29   7 18   3 0.462  1  0 NA
## 31   19  52 0.371 12   5 21   0 0.395  0  4 NA
## 32   30  80 0.593 24   4 29   0 0.433  1  1 NA
## 33   28  62 0.470  8   5 13   0 0.374  2  7 NA
## 34   46  96 0.632 30   3 26   1 0.431  3  0 NA
## 35   14  43 0.544 13   4 19   1 0.433  1  0 NA
## 36   43  98 0.645 23   0 25   0 0.394  5  1 NA
## 37   36  79 0.488 10   5 24   0 0.373  0  1 NA
## 38   10  33 0.452 13   3  9   2 0.438  0  3 NA
## 39   36  62 0.463 25   5 14   1 0.426  5  4 NA
## 40   15  59 0.418 10   2 17   1 0.366  0  0 NA
## 41   12  24 0.533  6   1  9   0 0.404  0  2 NA
## 42    5  33 0.320 21   1 12   0 0.432  0  4 NA
## 43   21  56 0.444  3   0 24   1 0.318  3  1 NA
## 44   45  95 0.586 25   4 21   0 0.407  3  6 NA
## 45   14  47 0.353 11   0 12   0 0.361  0  4 NA
## 46   37  82 0.573 30   5 20   0 0.441  1  6 NA
## 47   18  38 0.362 14   3 11   1 0.392  3  3 NA
## 48    9  42 0.356 15   0 23   0 0.381  1  3 NA
## 49   20  43 0.410  8   2 11   0 0.362  1  1 NA
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## 50   26  75 0.408 24   1 24   0 0.384  2 13 NA
## 51   18  59 0.496  2   0 12   2 0.314  0  0 NA
## 52   39  84 0.604 24   3 27   1 0.411  2  1 NA
## 53    8  44 0.341  3   0 29   1 0.318  0  3 NA
## 54   55 108 0.600 25   2 34   1 0.384  4  1 NA
## 55   33  66 0.440 11   1 16   0 0.350  1  7 NA
## 56    4  33 0.300  7   0 11   0 0.339  1  6 NA
## 57   40  82 0.582 16   2 31   0 0.377  0  4 NA
## 58   19  47 0.379 14   4 18   1 0.387  0  7 NA
## 59   29  51 0.421  7   3 23   2 0.348  1  0 NA
## 60   25  48 0.432 23   4 14   0 0.417  6  3 NA
## 61   17  65 0.533 25   1 27   2 0.416  1  3 NA
## 62   39  83 0.597 15   7 21   1 0.387  2  2 NA
## 63   21  48 0.361 17   3 21   0 0.378  3  5 NA
## 64   33  69 0.437 11   1 26   0 0.333  4  7 NA
## 65   21  74 0.565 18   2 21   1 0.384  0  2 NA
## 66   21  53 0.390 10   4 14   1 0.346  3  5 NA
## 67   20  64 0.405 20   1 11   1 0.363  3  2 NA
## 68   16  47 0.553 15  11 25   0 0.446  1  0 NA
## 69   27  76 0.521 18   7 32   1 0.386  0  1 NA
## 70   19  46 0.380 15   3  9   1 0.371  1 11 NA
## 71    4  35 0.307 13   0 14   0 0.354  0  3 NA
## 72   26  71 0.664 22  14 14   0 0.449  4  0 NA
## 73   24  58 0.426 14   0 25   0 0.344  1  0 NA
## 74   17  35 0.538  4   0 18   0 0.314  1  6 NA
## 75   22  61 0.421 24   6 12   0 0.395  2  4 NA
## 76   12  41 0.353  7  13 25   0 0.382  0  5 NA
## 77   37  65 0.596 15   6 21   1 0.389  1  2 NA
## 78   24  68 0.515 13   0 27   0 0.333  2  1 NA
## 79   34  55 0.385 25   2 26   0 0.382  3 11 NA
## 80   17  34 0.400  6   2  7   0 0.333  0 12 NA
## 81   15  35 0.327 13   3 17   0 0.366  0  1 NA
## 82   27  65 0.474  6   2 14   2 0.306  2  0 NA
## 83   26  53 0.408 18   1 23   0 0.362  0  2 NA
## 84   15  48 0.322 13   2 26   0 0.331  2  6 NA
## 85    3  12 0.293  2   0 13   0 0.302  0  0 NA
## 86   26  55 0.444 12   3 13   0 0.338  3  9 NA
## 87   15  40 0.364  9   0 24   1 0.314  2 11 NA
## 88   35  72 0.486 34   0 21   0 0.399  1  1 NA
## 89   10  32 0.308  8   1 14   0 0.316  1  5 NA
## 90    5  17 0.258  3   0  7   0 0.286  1  6 NA
## 91    8  22 0.355  3   0 10   0 0.292  0  1 NA
## 92   13  29 0.439 11   2 16   0 0.370  2  1 NA
## 93   25  34 0.301 15   0 11   0 0.338  2  3 NA
## 94    5  10 0.256  5   3 10   1 0.383  0  0 NA
## 95   24  52 0.491  6   0 34   0 0.284  4  0 NA
## 96   24  61 0.445 18   4 18   0 0.354  2  8 NA
## 97   12  36 0.295  8   2 10   1 0.311  0  0 NA
## 98   17  43 0.473 11   3 17   1 0.349  1  2 NA
## 99   12  24 0.353  7   0 18   0 0.316  1  4 NA
## 100  25  65 0.508 14   4 27   1 0.331  5  8 NA
## 101  10  22 0.500 13   1  8   0 0.431  0  3 NA
## 102  21  47 0.452 16   6 18   0 0.372  3  6 NA
## 103   9  40 0.276 10   3 19   0 0.310  0  6 NA
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## 104   3  29 0.246  6   2 13   0 0.294  0  2 NA
## 105   2  29 0.271 14   2 23   0 0.341  0  2 NA
## 106  17  45 0.388 18   2 22   4 0.348  2  1 NA
## 107   6  11 0.440  2   0  6   0 0.296  0  1 NA
## 108  18  41 0.339 19   6 20   1 0.367  1  0 NA
## 109   5  10 0.400  2   0  0   1 0.286  1  4 NA
## 110  18  42 0.344  8   1 26   0 0.290  0  5 NA
## 111  20  45 0.315  8   5 21   0 0.297  2  4 NA
## 112  13  33 0.452 17   0 14   0 0.374  1  2 NA
## 113   8  17 0.304 19   3 18   1 0.449  0  5 NA
## 114  24  51 0.381 30  17 22   0 0.426  2  4 NA
## 115  23  68 0.433  9   0 30   0 0.268  2  3 NA
## 116  11  16 0.242  6   3 14   2 0.316  1  2 NA
## 117  17  39 0.328 14   3 21   0 0.324  0  1 NA
## 118   7  19 0.358  3   0 11   0 0.268  0  1 NA
## 119  16  26 0.306  7   1 23   0 0.290  0  2 NA
## 120   2   4 0.222  1   0  5   0 0.263  0  0 NA
## 121  22  45 0.450  9   1 27   0 0.286  2  1 NA
## 122   3  10 0.217  4   1 14   0 0.288  1  0 NA
## 123   6  18 0.243 23   4 11   0 0.426  0  1 NA
## 124  27  43 0.368  9   3 22   1 0.287  0  1 NA
## 125   8  18 0.225 10   1  8   0 0.308  0  4 NA
## 126  25  39 0.433 25  11 33   0 0.430  2  0 NA
## 127   9  19 0.284 16   1  8   0 0.365  1  1 NA
## 128  11  34 0.370  3   0 16   2 0.229  1  4 NA
## 129   6  29 0.271  7   1 16   1 0.261  0  2 NA
## 130  12  21 0.296  8   1 14   1 0.288  0  1 NA
## 131   3  12 0.214 11   6 14   0 0.384  0  0 NA
## 132  11  32 0.416  6   1 16   1 0.259  1  0 NA
## 133   0   3 0.188  0   0  4   0 0.188  0  1 NA
## 134   0   5 0.179  2   1  5   0 0.258  0  3 NA
## 135  14  16 0.276  7   1  9   0 0.273  0  1 NA
## 136   7  16 0.225  3   1 20   2 0.211  1  0 NA
## 137   6  21 0.223 19   4 31   0 0.325  0  5 NA
## 138   2   4 0.154  3   1  4   0 0.267  0  1 NA
## 139   2   5 0.185  1   1  8   0 0.207  0  0 NA
## 140   2   4 0.167  4   0  9   0 0.207  1  2 NA
```

```
summary(wh)
```

```
##     Player               AVG              OPS               AB
##  Length:140         Min.   :0.0830   Min.   :0.3740   Min.   : 16.0
##  Class :character   1st Qu.:0.2425   1st Qu.:0.6580   1st Qu.: 85.0
##  Mode  :character   Median :0.2810   Median :0.7775   Median :120.0
##                     Mean   :0.2821   Mean   :0.7952   Mean   :113.1
##                     3rd Qu.:0.3160   3rd Qu.:0.9032   3rd Qu.:141.0
##                     Max.   :0.4350   Max.   :1.3780   Max.   :196.0
##        R                H               X2B              X3B
##  Min.   : 1.00   Min.   : 2.00   Min.   : 0.000   Min.   :0.0000
##  1st Qu.:13.00   1st Qu.:22.00   1st Qu.: 2.000   1st Qu.:0.0000
##  Median :22.00   Median :34.00   Median : 5.000   Median :0.0000
##  Mean   :22.81   Mean   :33.49   Mean   : 5.807   Mean   :0.9286
##  3rd Qu.:31.00   3rd Qu.:43.00   3rd Qu.: 9.000   3rd Qu.:1.0000
##  Max.   :52.00   Max.   :79.00   Max.   :18.000   Max.   :7.0000
```

```
##        HR              RBI              TB              SLG.
##  Min.   : 0.000   Min.   : 0.00   Min.   :  3.00   Min.   :0.1540
##  1st Qu.: 0.750   1st Qu.:10.00   1st Qu.: 33.00   1st Qu.:0.3362
##  Median : 2.000   Median :19.00   Median : 48.00   Median :0.4290
##  Mean   : 3.471   Mean   :20.71   Mean   : 51.57   Mean   :0.4300
##  3rd Qu.: 6.000   3rd Qu.:27.25   3rd Qu.: 68.00   3rd Qu.:0.5165
##  Max.   :20.000   Max.   :59.00   Max.   :146.00   Max.   :0.9010
##        BB             HPB              SO             GDP
##  Min.   : 0.00   Min.   : 0.000   Min.   : 0.00   Min.   :0.0000
##  1st Qu.: 7.00   1st Qu.: 1.000   1st Qu.:12.00   1st Qu.:0.0000
##  Median :12.50   Median : 2.000   Median :16.50   Median :0.0000
##  Mean   :13.16   Mean   : 2.714   Mean   :17.28   Mean   :0.4286
##  3rd Qu.:18.00   3rd Qu.: 4.000   3rd Qu.:22.25   3rd Qu.:1.0000
##  Max.   :42.00   Max.   :17.000   Max.   :34.00   Max.   :4.0000
##       OB.               SF              SH            X
##  Min.   :0.1880   Min.   :0.00   Min.   : 0.000   Mode:logical
##  1st Qu.:0.3160   1st Qu.:0.00   1st Qu.: 1.000   NA's:140
##  Median :0.3725   Median :1.00   Median : 2.000
##  Mean   :0.3652   Mean   :1.25   Mean   : 2.814
##  3rd Qu.:0.4163   3rd Qu.:2.00   3rd Qu.: 4.000
##  Max.   :0.5210   Max.   :6.00   Max.   :13.000
```

```
c(q1,md,mm,q3)%<-%summary(wh)[2:5]
mad_values <- apply(wh[, 2:ncol(wh)], 2, mad)
mad_values
```

```
##        AVG        OPS         AB          R          H        X2B        X3B
##  0.0518910  0.1831011 36.3237000 13.3434000 15.5673000  4.4478000  0.0000000
##         HR        RBI         TB       SLG.         BB        HPB         SO
##  2.9652000 13.3434000 26.6868000  0.1349166  8.1543000  2.9652000  8.1543000
##        GDP        OB.         SF         SH          X
##  0.0000000  0.0793191  1.4826000  2.9652000         NA
```

```
iqr<-q3<-q1
apply(wh[, 2:ncol(wh)], 2, fivenum)
```

```
##        AVG    OPS  AB  R  H X2B X3B   HR  RBI  TB   SLG.   BB HPB   SO GDP
## [1,] 0.083 0.3740  16  1  2   0   0  0.0  0.0   3 0.1540  0.0   0  0.0   0
## [2,] 0.242 0.6570  85 13 22   2   0  0.5 10.0  33 0.3335  7.0   1 12.0   0
## [3,] 0.281 0.7775 120 22 34   5   0  2.0 19.0  48 0.4290 12.5   2 16.5   0
## [4,] 0.316 0.9045 141 31 43   9   1  6.0 27.5  68 0.5180 18.0   4 22.5   1
## [5,] 0.435 1.3780 196 52 79  18   7 20.0 59.0 146 0.9010 42.0  17 34.0   4
##         OB. SF SH  X
## [1,] 0.1880  0  0 NA
## [2,] 0.3160  0  1 NA
## [3,] 0.3725  1  2 NA
## [4,] 0.4165  2  4 NA
## [5,] 0.5210  6 13 NA
```

```
#fivenum(wh)[2:5]
#m <- sum(wh)/length(wh)
```

```
bp_AVG<-wh %>%
  ggplot(aes(AVG)) +
  geom_boxplot(color="orange", fill="black", size=1, outlier.shape = 7)

qq_AVG<-ggplot(wh, aes(sample = AVG)) +
  geom_qq()

d_AVG<-wh %>% ggplot(aes(AVG)) +
  geom_density(fill="orange", adjust=.05)+ggtitle("Density Plot")

h_AVG<-wh %>%
  ggplot(aes(AVG)) +
  geom_histogram(color='black', fill='orange')+ggtitle("Histogram")

b_AVG<-wh %>% ggplot(aes(AVG)) + geom_bar(color= 'orange', fill='black')+ggtitle("Barplot")

grid.arrange(bp_AVG,qq_AVG,d_AVG,h_AVG,b_AVG, ncol = 3, nrow=2 )
```