Project

Nate Miller

12/4/2021

library(dplyr)

##   
## 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

library(boot)  
  
FB16<-read.csv("cfb16.csv")  
FB15<-read.csv("cfb15.csv")

## 2015

Teams who had “Upsets” in 2015, as defined by a top 25 team in final AP poll who lost to an unranked team in the final AP poll and ranked power 5 teams who had 3 or less total losses. (Upset Team, Winning team)-upset team total losses (Michigan State, Nebraska)-2 loss (Houston, UCONN)-2loss (West Kentucky,Indiana)-2loss (Ole Miss,Memphis)-3loss (ole Miss,Arkansas)-3loss (Baylor,Texas)-3loss (Florida State,Georgia Tech)-3loss (North Carolina,South Carolina)-3loss (LSU, Arkansas)-3loss (utah,USC,Arizona,UCLA)-3loss

msu15<-FB15 %>%   
 filter(Team == "Michigan St. (Big Ten)")  
  
hou15<-FB15 %>%   
 filter(Team == "Houston (AAC)")  
  
wku15<-FB15 %>%   
 filter(Team == "Western Ky. (C-USA)")  
  
miss15<-FB15 %>%   
 filter(Team == "Ole Miss (SEC)")  
  
  
bay15<-FB15 %>%   
 filter(Team == "Baylor (Big 12)")  
  
fsu15<-FB15 %>%   
 filter(Team == "Florida St. (ACC)")  
  
ncu15<-FB15 %>%   
 filter(Team == "North Carolina (ACC)")  
  
lsu15<-FB15 %>%   
 filter(Team == "LSU (SEC)")  
  
utah15<-FB15 %>%   
 filter(Team == "Utah (Pac-12)")  
  
  
  
  
  
upsetteams<-rbind(utah15,lsu15,msu15,hou15,fsu15,bay15,wku15,ncu15,miss15)  
  
  
neb15<-FB15 %>%   
 filter(Team == "Nebraska (Big Ten)")  
  
uconn15<-FB15 %>%   
 filter(Team == "UConn (AAC)")  
  
ind15<-FB15 %>%   
 filter(Team == "Indiana (Big Ten)")  
  
mem15<-FB15 %>%   
 filter(Team == "Memphis (AAC)")  
  
  
ark15<-FB15 %>%   
 filter(Team == "Arkansas (SEC)")  
  
gt15<-FB15 %>%   
 filter(Team == "Georgia Tech (ACC)")  
  
ncu15<-FB15 %>%   
 filter(Team == "South Carolina (SEC)")  
  
usc15<-FB15 %>%   
 filter(Team == "Southern California (Pac-12)")  
  
ariz15<-FB15 %>%   
 filter(Team == "Arizona (Pac-12)")  
  
ucla15<-FB15 %>%   
 filter(Team == "UCLA (Pac-12)")  
tex15<-FB15 %>%   
 filter(Team=="Texas (Big 12)")  
  
upsetters<-rbind(neb15,uconn15,ind15,mem15,ark15,gt15,ncu15,usc15,ariz15,ucla15,tex15)  
  
upsetters

## Team Games Win Loss Off.Rank Off.Plays Off.Yards  
## 1 Nebraska (Big Ten) 13 6 7 34 954 5810  
## 2 UConn (AAC) 13 6 7 123 819 4034  
## 3 Indiana (Big Ten) 13 6 7 14 1053 6556  
## 4 Memphis (AAC) 13 9 4 19 1028 6330  
## 5 Arkansas (SEC) 13 8 5 29 886 6051  
## 6 Georgia Tech (ACC) 12 3 9 80 775 4536  
## 7 South Carolina (SEC) 12 3 9 99 774 4346  
## 8 Southern California (Pac-12) 14 8 6 38 990 6131  
## 9 Arizona (Pac-12) 13 7 6 16 993 6434  
## 10 UCLA (Pac-12) 13 8 5 28 969 6057  
## 11 Texas (Big 12) 12 5 7 92 781 4449  
## Off.Yards.Play Off.TDs Total.TDs Off.Yards.per.Game Def.Rank Def.Plays  
## 1 6.09 51 45 446.9 64 885  
## 2 4.93 24 29 310.3 33 887  
## 3 6.23 54 65 504.3 120 1038  
## 4 6.16 59 46 486.9 77 960  
## 5 6.83 62 44 465.5 58 839  
## 6 5.85 44 38 378.0 42 759  
## 7 5.61 28 42 362.2 94 856  
## 8 6.19 56 44 437.9 65 984  
## 9 6.48 58 60 494.9 114 1024  
## 10 6.25 49 39 465.9 67 1044  
## 11 5.70 36 46 370.8 106 965  
## Yards.Allowed Yards.Play.Allowed Off.TDs.Allowed Total.TDs.Allowed  
## 1 5205 5.88 43 45  
## 2 4616 5.20 27 29  
## 3 6623 6.38 62 65  
## 4 5287 5.51 46 46  
## 5 5091 6.07 43 44  
## 6 4416 5.82 36 38  
## 7 5158 6.03 41 42  
## 8 5611 5.70 42 44  
## 9 6069 5.93 58 60  
## 10 5222 5.00 35 39  
## 11 5431 5.63 45 46  
## Yards.Per.Game.Allowed First.Down.Rank First.Down.Runs First.Down.Passes  
## 1 400.4 39 57 163  
## 2 355.1 33 107 120  
## 3 509.5 120 113 187  
## 4 406.7 97 113 136  
## 5 391.6 68 90 158  
## 6 368.0 6 94 106  
## 7 429.8 73 133 119  
## 8 400.8 116 119 161  
## 9 466.8 112 134 145  
## 10 401.7 115 150 128  
## 11 452.6 114 147 137  
## First.Down.Penalties First.Downs First.Down.Def.Rank Opp.First.Down.Runs  
## 1 26 246 39 57  
## 2 14 241 33 107  
## 3 26 326 120 113  
## 4 35 284 97 113  
## 5 13 261 68 90  
## 6 11 211 6 94  
## 7 11 263 73 133  
## 8 29 309 116 119  
## 9 21 300 112 134  
## 10 29 307 115 150  
## 11 22 306 114 147  
## Opp.First.Down.Passes Opp.First.Down.Penalties Opp.First.Downs  
## 1 163 26 246  
## 2 120 14 241  
## 3 187 26 326  
## 4 136 35 284  
## 5 158 13 261  
## 6 106 11 211  
## 7 119 11 263  
## 8 161 29 309  
## 9 145 21 300  
## 10 128 29 307  
## 11 137 22 306  
## X4th.Down.Rank X4th.Attempts X4th.Conversions X4th.Percent  
## 1 23 5 8 0.625  
## 2 121 6 20 0.300  
## 3 89 13 29 0.448  
## 4 47 10 18 0.556  
## 5 42 12 21 0.571  
## 6 66 13 26 0.500  
## 7 51 11 20 0.550  
## 8 16 17 26 0.654  
## 9 110 10 27 0.370  
## 10 29 8 13 0.615  
## 11 104 6 15 0.400  
## X4rd.Down.Def.Rank Opp.4th.Conversion Opp.4th.Attempt Opponent.4th.Percent  
## 1 14 9 25 0.360  
## 2 20 9 23 0.391  
## 3 44 13 28 0.464  
## 4 5 5 19 0.263  
## 5 38 9 20 0.450  
## 6 88 6 11 0.545  
## 7 103 10 17 0.588  
## 8 18 8 21 0.381  
## 9 93 10 18 0.556  
## 10 100 15 26 0.577  
## 11 82 9 17 0.529  
## Kickoff.Return.Rank Kickoffs.Returned Kickoff.Return.Yards  
## 1 21 47 888  
## 2 66 35 750  
## 3 106 37 878  
## 4 2 22 340  
## 5 33 62 1210  
## 6 100 19 440  
## 7 24 15 286  
## 8 51 72 1490  
## 9 71 51 1106  
## 10 110 24 572  
## 11 120 12 316  
## Kickoff.Return.Touchdowns Avg.Yard.per.Kickoff.Return Passing.Off.Rank  
## 1 0 18.89 33  
## 2 1 21.43 103  
## 3 1 23.73 22  
## 4 0 15.45 18  
## 5 1 19.52 32  
## 6 1 23.16 123  
## 7 0 19.07 84  
## 8 0 20.69 31  
## 9 0 21.69 30  
## 10 0 23.83 25  
## 11 0 26.33 117  
## Pass.Attempts Pass.Completions Interceptions.Thrown.x Pass.Yards  
## 1 458 256 21 3470  
## 2 342 201 10 2412  
## 3 461 269 8 3820  
## 4 465 311 5 3997  
## 5 374 246 8 3486  
## 6 192 81 10 1462  
## 7 351 191 12 2490  
## 8 463 309 7 3776  
## 9 466 273 10 3544  
## 10 510 300 13 3749  
## 11 252 139 6 1751  
## Pass.Yards.Attempt Yards.Completion Pass.Touchdowns Pass.Yards.Per.Game  
## 1 7.58 13.55 27 266.9  
## 2 7.05 12.00 10 185.5  
## 3 8.29 14.20 27 293.8  
## 4 8.60 12.85 30 307.5  
## 5 9.32 14.17 31 268.2  
## 6 7.61 18.05 14 121.8  
## 7 7.09 13.04 17 207.5  
## 8 8.16 12.22 30 269.7  
## 9 7.61 12.98 27 272.6  
## 10 7.35 12.50 23 288.4  
## 11 6.95 12.60 9 145.9  
## Pass.Def.Rank Opp.Completions.Allowed Opp.Pass.Attempts Opp.Pass.Yds.Allowed  
## 1 121 293 506 3777  
## 2 20 235 401 2461  
## 3 126 328 551 4079  
## 4 106 242 419 3382  
## 5 116 280 436 3577  
## 6 35 202 337 2435  
## 7 50 228 347 2549  
## 8 93 288 457 3521  
## 9 114 276 443 3488  
## 10 36 261 457 2642  
## 11 73 229 382 2801  
## Opp.Pass.TDs.Allowed Yards.Attempt.Allowed Yards.Completion.Allowed  
## 1 25 7.46 12.89  
## 2 14 6.14 10.47  
## 3 32 7.40 12.44  
## 4 22 8.07 13.98  
## 5 18 8.20 12.78  
## 6 12 7.23 12.05  
## 7 15 7.35 11.18  
## 8 25 7.70 12.23  
## 9 28 7.87 12.64  
## 10 18 5.78 10.12  
## 11 24 7.33 12.23  
## Pass.Yards.Per.Game.Allowed Penalty.Rank Penalties Penalty.Yards  
## 1 290.5 99 94 829  
## 2 189.3 31 74 595  
## 3 313.8 90 91 778  
## 4 260.2 123 99 976  
## 5 275.2 6 55 477  
## 6 202.9 2 38 329  
## 7 212.4 11 60 468  
## 8 251.5 112 103 961  
## 9 268.3 42 74 632  
## 10 203.2 117 108 916  
## 11 233.4 89 77 709  
## Penalty.Yards.Per.Game Punt.Return.Rank Punt.Returns Net.Punt.Return.Yards  
## 1 63.77 104 18 207  
## 2 45.77 18 17 71  
## 3 59.85 46 27 191  
## 4 75.08 84 16 155  
## 5 36.69 43 18 125  
## 6 27.42 59 14 109  
## 7 39.00 63 10 81  
## 8 68.64 118 17 236  
## 9 48.62 11 23 79  
## 10 70.46 40 9 60  
## 11 59.08 15 13 50  
## Punt.Return.Touchdowns Avg.Yards.Per.Punt.Return Punt.Return.Def.Rank  
## 1 0 11.50 104  
## 2 0 4.18 18  
## 3 1 7.07 46  
## 4 0 9.69 84  
## 5 0 6.94 43  
## 6 0 7.79 59  
## 7 0 8.10 63  
## 8 1 13.88 118  
## 9 0 3.43 11  
## 10 1 6.67 40  
## 11 0 3.85 15  
## Opp.Punt.Returns Opp.Net.Punt.Return.Yards  
## 1 18 207  
## 2 17 71  
## 3 27 191  
## 4 16 155  
## 5 18 125  
## 6 14 109  
## 7 10 81  
## 8 17 236  
## 9 23 79  
## 10 9 60  
## 11 13 50  
## Opp.Punt.Return.Touchdowns.Allowed Avg.Yards.Allowed.per.Punt.Return  
## 1 0 11.50  
## 2 0 4.18  
## 3 1 7.07  
## 4 0 9.69  
## 5 0 6.94  
## 6 0 7.79  
## 7 0 8.10  
## 8 1 13.88  
## 9 0 3.43  
## 10 1 6.67  
## 11 0 3.85  
## Redzone.Off.Rank Redzone.Attempts Redzone.Rush.TD Redzone.Pass.TD  
## 1 18 54 21 17  
## 2 98 33 12 4  
## 3 24 61 21 15  
## 4 18 63 27 14  
## 5 76 59 25 16  
## 6 64 37 22 6  
## 7 49 36 8 9  
## 8 32 57 23 17  
## 9 75 65 21 20  
## 10 15 57 22 13  
## 11 26 34 18 2  
## Redzone.Field.Goals.Made Redzone.Scores Redzone.Points Redzone.Def.Rank  
## 1 10 48 0.889 52  
## 2 10 26 0.788 7  
## 3 18 54 0.885 62  
## 4 15 56 0.889 70  
## 5 8 49 0.831 90  
## 6 3 31 0.838 62  
## 7 14 31 0.861 56  
## 8 10 50 0.877 104  
## 9 13 54 0.831 125  
## 10 16 51 0.895 67  
## 11 10 30 0.882 121  
## Opp.Redzone.Attempts Opp.Redzone.Rush.TD.Allowed  
## 1 49 13  
## 2 44 11  
## 3 48 16  
## 4 44 21  
## 5 53 22  
## 6 42 17  
## 7 46 21  
## 8 53 16  
## 9 58 26  
## 10 49 12  
## 11 51 17  
## Opp.Redzone.Pass.Touchdowns.Allowed Opp.Redzone.Field.Goals.Made  
## 1 15 12  
## 2 6 15  
## 3 14 10  
## 4 7 9  
## 5 11 13  
## 6 7 11  
## 7 9 8  
## 8 16 15  
## 9 16 12  
## 10 14 15  
## 11 18 12  
## Opp.Redzone.Scores Redzone.Points.Allowed Rushing.Off.Rank Rush.Attempts  
## 1 40 0.816 52 496  
## 2 32 0.727 114 477  
## 3 40 0.833 26 592  
## 4 37 0.841 55 563  
## 5 46 0.868 34 512  
## 6 35 0.833 8 583  
## 7 38 0.826 87 423  
## 8 47 0.887 70 527  
## 9 54 0.931 22 527  
## 10 41 0.837 59 459  
## 11 47 0.922 17 529  
## Rush.Yds Yards.Rush Rushing.TD Rushing.Yards.per.Game Rushing.Def.Rank  
## 1 2340 4.72 24 180.0 9  
## 2 1622 3.40 14 124.8 60  
## 3 2736 4.62 27 210.5 95  
## 4 2333 4.14 29 179.5 38  
## 5 2565 5.01 31 197.3 12  
## 6 3074 5.27 30 256.2 57  
## 7 1856 4.39 11 154.7 109  
## 8 2355 4.47 26 168.2 41  
## 9 2890 5.48 31 222.3 98  
## 10 2308 5.03 26 177.5 97  
## 11 2698 5.10 27 224.8 111  
## Opp.Rush.Attempts Opp.Rush.Yards.Alloweed Yds.Rush.Allowed  
## 1 379 1428 3.77  
## 2 486 2155 4.43  
## 3 487 2544 5.22  
## 4 541 1905 3.52  
## 5 403 1514 3.76  
## 6 422 1981 4.69  
## 7 509 2609 5.13  
## 8 527 2090 3.97  
## 9 581 2581 4.44  
## 10 587 2580 4.40  
## 11 583 2630 4.51  
## Opp.Rush.Touchdowns.Allowed Rush.Yards.Per.Game.Allowed Sack.Rank Sacks  
## 1 18 109.8 9 14  
## 2 13 165.8 107 37  
## 3 30 195.7 6 13  
## 4 24 146.5 22 17  
## 5 25 116.5 9 14  
## 6 24 165.1 25 16  
## 7 26 217.4 70 26  
## 8 17 149.3 105 38  
## 9 30 198.5 82 31  
## 10 17 198.5 15 15  
## 11 21 219.2 102 32  
## Sack.Yards Average.Sacks.per.Game Scoring.Def.Rank Touchdowns.Allowed  
## 1 143 1.08 76 45  
## 2 180 2.85 15 29  
## 3 92 1.00 116 65  
## 4 119 1.31 67 46  
## 5 92 1.08 68 44  
## 6 123 1.33 51 38  
## 7 169 2.17 71 42  
## 8 256 2.71 50 44  
## 9 152 2.38 107 60  
## 10 119 1.15 54 39  
## 11 212 2.67 87 46  
## Opponent.Extra.Points X2.Point.Conversions.Allowed  
## 1 40 2  
## 2 27 0  
## 3 54 3  
## 4 43 0  
## 5 40 2  
## 6 32 1  
## 7 40 0  
## 8 42 0  
## 9 57 0  
## 10 33 2  
## 11 44 0  
## Opp.Deflected.Extra.Points Opp.Feild.Goals.Made Opp.Safety Points.Allowed  
## 1 0 16 0 362  
## 2 0 16 2 253  
## 3 0 13 0 489  
## 4 0 12 0 355  
## 5 0 16 0 356  
## 6 0 15 1 309  
## 7 1 12 0 330  
## 8 0 18 0 360  
## 9 0 16 0 465  
## 10 0 21 2 338  
## 11 0 14 1 364  
## Avg.Points.per.Game.Allowed Scoring.Off.Rank Touchdowns PAT  
## 1 27.8 43 52 44  
## 2 19.5 121 25 21  
## 3 37.6 24 58 53  
## 4 27.3 11 64 63  
## 5 27.4 27 62 58  
## 6 25.8 63 47 44  
## 7 27.5 110 29 25  
## 8 25.7 37 63 58  
## 9 35.8 20 62 60  
## 10 26.0 45 51 47  
## 11 30.3 83 40 38  
## X2.Point.Conversions Defensive.Points Feild.Goals Safety Total.Points  
## 1 3 0 21 1 427  
## 2 1 0 16 1 223  
## 3 1 0 24 0 475  
## 4 1 0 23 2 522  
## 5 4 0 9 1 467  
## 6 1 0 7 1 351  
## 7 1 0 20 1 263  
## 8 0 0 13 0 475  
## 9 0 0 18 0 486  
## 10 3 0 20 0 419  
## 11 0 0 13 0 317  
## Points.Per.Game Tackle.for.Loss.Rank Solo.Tackle.For.Loss  
## 1 32.8 83 57  
## 2 17.2 101 56  
## 3 36.5 62 69  
## 4 40.2 83 63  
## 5 35.9 96 49  
## 6 29.3 127 39  
## 7 21.9 93 51  
## 8 33.9 67 70  
## 9 37.4 74 66  
## 10 32.2 89 56  
## 11 26.4 43 71  
## Assist.Tackle.For.Loss Tackle.for.Loss.Yards Total.Tackle.For.Loss  
## 1 30 284 72  
## 2 22 209 67  
## 3 26 289 82  
## 4 18 281 72  
## 5 40 275 69  
## 6 16 153 47  
## 7 26 228 64  
## 8 30 368 85  
## 9 18 308 75  
## 10 30 324 71  
## 11 20 340 81  
## Tackle.For.Loss.Per.Game X3rd.Down.Rank X3rd.Attempts X3rd.Conversions  
## 1 5.5 24 181 81  
## 2 5.2 116 179 57  
## 3 6.3 80 202 77  
## 4 5.5 8 207 101  
## 5 5.3 15 160 75  
## 6 3.9 108 149 52  
## 7 5.3 101 164 58  
## 8 6.1 67 189 74  
## 9 5.8 52 190 78  
## 10 5.5 23 195 88  
## 11 6.8 102 173 61  
## X3rd.Percent X3rd.Down.Def.Rank Opp.3rd.Conversion Opp.3rd.Attempt  
## 1 0.448 24 64 188  
## 2 0.318 80 77 190  
## 3 0.381 91 88 209  
## 4 0.488 57 72 194  
## 5 0.469 102 75 170  
## 6 0.349 43 56 155  
## 7 0.354 121 78 166  
## 8 0.392 44 68 188  
## 9 0.411 113 96 209  
## 10 0.451 71 86 217  
## 11 0.353 104 84 190  
## Opponent.3rd.Percent Time.of.Possession.Rank Time.of.Possession  
## 1 0.340 20 Â Â Â 421:06  
## 2 0.405 48 Â Â Â 400:44  
## 3 0.421 80 Â Â Â 379:03  
## 4 0.371 53 Â Â Â 394:33  
## 5 0.441 3 Â Â Â 447:04  
## 6 0.361 41 Â Â Â 373:37  
## 7 0.470 93 Â Â Â 341:52  
## 8 0.362 79 Â Â Â 409:14  
## 9 0.459 121 Â Â Â 342:31  
## 10 0.396 125 Â Â Â 337:03  
## 11 0.442 114 Â Â Â 325:26  
## Average.Time.of.Possession.per.Game Turnover.Rank Fumbles.Recovered  
## 1 Â Â Â 32:23 117 5  
## 2 Â Â Â 30:49 15 7  
## 3 Â Â Â 29:09 23 10  
## 4 Â Â Â 30:21 23 10  
## 5 Â Â Â 34:23 28 7  
## 6 Â Â Â 31:08 105 8  
## 7 Â Â Â 28:29 32 8  
## 8 Â Â Â 29:13 11 9  
## 9 Â Â Â 26:20 92 5  
## 10 Â Â Â 25:55 66 7  
## 11 Â Â Â 27:07 8 12  
## Opponents.Intercepted Turnovers.Gain Fumbles.Lost Interceptions.Thrown.y  
## 1 10 15 6 21  
## 2 18 25 6 10  
## 3 12 22 6 8  
## 4 12 22 9 5  
## 5 11 18 3 8  
## 6 9 17 14 10  
## 7 12 20 3 12  
## 8 14 23 5 7  
## 9 11 16 10 10  
## 10 12 19 6 13  
## 11 13 25 8 6  
## Turnovers.Lost Turnover.Margin Avg.Turnover.Margin.per.Game  
## 1 27 -12 -0.92  
## 2 16 9 0.69  
## 3 14 8 0.62  
## 4 14 8 0.62  
## 5 11 7 0.54  
## 6 24 -7 -0.58  
## 7 15 5 0.42  
## 8 12 11 0.79  
## 9 20 -4 -0.31  
## 10 19 0 0.00  
## 11 14 11 0.92

upsetteams

## Team Games Win Loss Off.Rank Off.Plays Off.Yards  
## 1 Utah (Pac-12) 13 10 3 97 923 4719  
## 2 LSU (SEC) 12 9 3 39 783 5247  
## 3 Michigan St. (Big Ten) 14 12 2 73 992 5397  
## 4 Houston (AAC) 14 13 1 20 1101 6778  
## 5 Florida St. (ACC) 13 10 3 51 844 5512  
## 6 Baylor (Big 12) 13 10 3 1 1103 8011  
## 7 Western Ky. (C-USA) 14 12 2 9 1019 7369  
## 8 North Carolina (ACC) 14 11 3 18 936 6817  
## 9 Ole Miss (SEC) 13 10 3 10 952 6731  
## Off.Yards.Play Off.TDs Total.TDs Off.Yards.per.Game Def.Rank Def.Plays  
## 1 5.11 39 35 363.0 41 921  
## 2 6.70 49 38 437.3 25 806  
## 3 5.44 50 39 385.5 26 895  
## 4 6.16 68 36 484.1 53 980  
## 5 6.53 49 26 424.0 19 936  
## 6 7.26 85 49 616.2 62 994  
## 7 7.23 80 48 526.4 72 997  
## 8 7.28 71 44 486.9 95 1110  
## 9 7.07 64 33 517.8 54 1029  
## Yards.Allowed Yards.Play.Allowed Off.TDs.Allowed Total.TDs.Allowed  
## 1 4768 5.18 33 35  
## 2 4166 5.17 36 38  
## 3 4898 5.47 36 39  
## 4 5370 5.48 36 36  
## 5 4380 4.68 24 26  
## 6 5155 5.19 47 49  
## 7 5673 5.69 45 48  
## 8 6103 5.50 44 44  
## 9 5016 4.87 32 33  
## Yards.Per.Game.Allowed First.Down.Rank First.Down.Runs First.Down.Passes  
## 1 366.8 54 82 148  
## 2 347.2 24 89 127  
## 3 349.9 49 90 136  
## 4 383.6 54 84 151  
## 5 336.9 39 107 122  
## 6 396.5 88 119 126  
## 7 405.2 104 126 139  
## 8 435.9 126 184 134  
## 9 385.8 92 99 157  
## First.Down.Penalties First.Downs First.Down.Def.Rank Opp.First.Down.Runs  
## 1 23 253 54 82  
## 2 17 233 24 89  
## 3 23 249 49 90  
## 4 18 253 54 84  
## 5 17 246 39 107  
## 6 29 274 88 119  
## 7 24 289 104 126  
## 8 26 344 126 184  
## 9 22 278 92 99  
## Opp.First.Down.Passes Opp.First.Down.Penalties Opp.First.Downs X4th.Down.Rank  
## 1 148 23 253 14  
## 2 127 17 233 47  
## 3 136 23 249 98  
## 4 151 18 253 66  
## 5 122 17 246 91  
## 6 126 29 274 12  
## 7 139 24 289 42  
## 8 134 26 344 38  
## 9 157 22 278 80  
## X4th.Attempts X4th.Conversions X4th.Percent X4rd.Down.Def.Rank  
## 1 16 24 0.667 88  
## 2 5 9 0.556 43  
## 3 8 19 0.421 71  
## 4 13 26 0.500 50  
## 5 4 9 0.444 51  
## 6 28 40 0.700 20  
## 7 12 21 0.571 111  
## 8 7 12 0.583 117  
## 9 7 15 0.467 8  
## Opp.4th.Conversion Opp.4th.Attempt Opponent.4th.Percent Kickoff.Return.Rank  
## 1 12 22 0.545 53  
## 2 12 26 0.462 42  
## 3 16 31 0.516 69  
## 4 8 17 0.471 45  
## 5 9 19 0.474 5  
## 6 9 23 0.391 98  
## 7 22 36 0.611 25  
## 8 24 37 0.649 26  
## 9 7 23 0.304 27  
## Kickoffs.Returned Kickoff.Return.Yards Kickoff.Return.Touchdowns  
## 1 59 1222 1  
## 2 56 1140 1  
## 3 48 1038 1  
## 4 68 1389 0  
## 5 33 557 0  
## 6 61 1406 1  
## 7 96 1832 1  
## 8 43 822 0  
## 9 40 765 0  
## Avg.Yard.per.Kickoff.Return Passing.Off.Rank Pass.Attempts Pass.Completions  
## 1 20.71 106 352 224  
## 2 20.36 105 278 149  
## 3 21.63 55 440 244  
## 4 20.43 44 432 285  
## 5 16.88 38 419 264  
## 6 23.05 24 389 229  
## 7 19.08 4 554 398  
## 8 19.12 34 409 261  
## 9 19.13 10 489 318  
## Interceptions.Thrown.x Pass.Yards Pass.Yards.Attempt Yards.Completion  
## 1 11 2340 6.65 10.45  
## 2 6 2165 7.79 14.53  
## 3 8 3279 7.45 13.44  
## 4 7 3477 8.05 12.20  
## 5 9 3325 7.94 12.59  
## 6 13 3764 9.68 16.44  
## 7 9 5211 9.41 13.09  
## 8 10 3675 8.99 14.08  
## 9 14 4351 8.90 13.68  
## Pass.Touchdowns Pass.Yards.Per.Game Pass.Def.Rank Opp.Completions.Allowed  
## 1 15 180.0 102 265  
## 2 13 180.4 65 236  
## 3 26 234.2 76 270  
## 4 22 248.4 115 278  
## 5 22 255.8 21 252  
## 6 44 289.5 75 255  
## 7 50 372.2 85 254  
## 8 31 262.5 18 237  
## 9 35 334.7 104 319  
## Opp.Pass.Attempts Opp.Pass.Yds.Allowed Opp.Pass.TDs.Allowed  
## 1 491 3356 22  
## 2 419 2691 22  
## 3 446 3274 20  
## 4 500 3846 20  
## 5 443 2491 14  
## 6 442 3035 30  
## 7 472 3355 28  
## 8 435 2640 16  
## 9 533 3364 23  
## Yards.Attempt.Allowed Yards.Completion.Allowed Pass.Yards.Per.Game.Allowed  
## 1 6.84 12.66 258.2  
## 2 6.42 11.40 224.3  
## 3 7.34 12.13 233.9  
## 4 7.69 13.83 274.7  
## 5 5.62 9.88 191.6  
## 6 6.87 11.90 233.5  
## 7 7.11 13.21 239.6  
## 8 6.07 11.14 188.6  
## 9 6.31 10.55 258.8  
## Penalty.Rank Penalties Penalty.Yards Penalty.Yards.Per.Game Punt.Return.Rank  
## 1 57 72 693 53.31 49  
## 2 104 96 774 64.50 127  
## 3 23 75 600 42.86 114  
## 4 70 85 783 55.93 4  
## 5 60 89 702 54.00 80  
## 6 126 118 1043 80.23 12  
## 7 82 83 810 57.86 52  
## 8 36 80 650 46.43 74  
## 9 60 79 702 54.00 32  
## Punt.Returns Net.Punt.Return.Yards Punt.Return.Touchdowns  
## 1 11 79 0  
## 2 11 208 1  
## 3 21 269 2  
## 4 16 35 0  
## 5 21 197 1  
## 6 8 28 0  
## 7 18 132 1  
## 8 5 44 0  
## 9 18 107 0  
## Avg.Yards.Per.Punt.Return Punt.Return.Def.Rank Opp.Punt.Returns  
## 1 7.18 49 11  
## 2 18.91 127 11  
## 3 12.81 114 21  
## 4 2.19 4 16  
## 5 9.38 80 21  
## 6 3.50 12 8  
## 7 7.33 52 18  
## 8 8.80 74 5  
## 9 5.94 32 18  
## Opp.Net.Punt.Return.Yards Opp.Punt.Return.Touchdowns.Allowed  
## 1 79 0  
## 2 208 1  
## 3 269 2  
## 4 35 0  
## 5 197 1  
## 6 28 0  
## 7 132 1  
## 8 44 0  
## 9 107 0  
## Avg.Yards.Allowed.per.Punt.Return Redzone.Off.Rank Redzone.Attempts  
## 1 7.18 10 46  
## 2 18.91 58 46  
## 3 12.81 59 51  
## 4 2.19 29 67  
## 5 9.38 17 46  
## 6 3.50 41 70  
## 7 7.33 33 73  
## 8 8.80 18 72  
## 9 5.94 62 62  
## Redzone.Rush.TD Redzone.Pass.TD Redzone.Field.Goals.Made Redzone.Scores  
## 1 20 8 14 42  
## 2 24 6 9 39  
## 3 20 15 8 43  
## 4 38 11 10 59  
## 5 15 11 15 41  
## 6 36 17 8 61  
## 7 25 28 11 64  
## 8 34 14 16 64  
## 9 21 16 15 52  
## Redzone.Points Redzone.Def.Rank Opp.Redzone.Attempts  
## 1 0.913 56 46  
## 2 0.848 86 36  
## 3 0.843 78 41  
## 4 0.881 119 35  
## 5 0.891 60 35  
## 6 0.871 112 42  
## 7 0.877 24 49  
## 8 0.889 34 58  
## 9 0.839 69 50  
## Opp.Redzone.Rush.TD.Allowed Opp.Redzone.Pass.Touchdowns.Allowed  
## 1 11 15  
## 2 11 14  
## 3 15 11  
## 4 15 10  
## 5 8 9  
## 6 14 16  
## 7 13 17  
## 8 22 14  
## 9 9 16  
## Opp.Redzone.Field.Goals.Made Opp.Redzone.Scores Redzone.Points.Allowed  
## 1 12 38 0.826  
## 2 6 31 0.861  
## 3 9 35 0.854  
## 4 7 32 0.914  
## 5 12 29 0.829  
## 6 8 38 0.905  
## 7 8 38 0.776  
## 8 10 46 0.793  
## 9 17 42 0.840  
## Rushing.Off.Rank Rush.Attempts Rush.Yds Yards.Rush Rushing.TD  
## 1 46 571 2379 4.17 24  
## 2 7 505 3082 6.10 36  
## 3 93 552 2118 3.84 24  
## 4 13 669 3301 4.93 46  
## 5 69 425 2187 5.15 27  
## 6 2 714 4247 5.95 41  
## 7 89 465 2158 4.64 30  
## 8 18 527 3142 5.96 40  
## 9 45 463 2380 5.14 29  
## Rushing.Yards.per.Game Rushing.Def.Rank Opp.Rush.Attempts  
## 1 183.0 6 430  
## 2 256.8 17 387  
## 3 151.3 11 449  
## 4 235.8 8 480  
## 5 168.2 37 493  
## 6 326.7 56 552  
## 7 154.1 59 525  
## 8 224.4 121 675  
## 9 183.1 23 496  
## Opp.Rush.Yards.Alloweed Yds.Rush.Allowed Opp.Rush.Touchdowns.Allowed  
## 1 1412 3.28 11  
## 2 1475 3.81 14  
## 3 1624 3.62 16  
## 4 1524 3.18 16  
## 5 1889 3.83 10  
## 6 2120 3.84 17  
## 7 2318 4.42 17  
## 8 3463 5.13 28  
## 9 1652 3.33 9  
## Rush.Yards.Per.Game.Allowed Sack.Rank Sacks Sack.Yards Average.Sacks.per.Game  
## 1 108.6 52 23 157 1.77  
## 2 122.9 30 17 119 1.42  
## 3 116.0 38 21 135 1.50  
## 4 108.9 58 28 160 2.00  
## 5 145.3 58 26 222 2.00  
## 6 163.1 15 15 86 1.15  
## 7 165.6 13 16 128 1.14  
## 8 247.4 13 16 112 1.14  
## 9 127.1 33 19 147 1.46  
## Scoring.Def.Rank Touchdowns.Allowed Opponent.Extra.Points  
## 1 31 35 33  
## 2 41 38 34  
## 3 25 39 34  
## 4 20 36 34  
## 5 9 26 24  
## 6 79 49 47  
## 7 53 48 45  
## 8 42 44 41  
## 9 33 33 28  
## X2.Point.Conversions.Allowed Opp.Deflected.Extra.Points Opp.Feild.Goals.Made  
## 1 0 0 15  
## 2 1 0 9  
## 3 0 0 12  
## 4 2 0 12  
## 5 0 0 15  
## 6 0 0 9  
## 7 0 0 10  
## 8 1 0 12  
## 9 1 0 22  
## Opp.Safety Points.Allowed Avg.Points.per.Game.Allowed Scoring.Off.Rank  
## 1 1 290 22.3 55  
## 2 0 291 24.3 44  
## 3 0 304 21.7 60  
## 4 0 290 20.7 10  
## 5 1 227 17.5 47  
## 6 0 368 28.3 1  
## 7 0 363 25.9 3  
## 8 0 343 24.5 9  
## 9 0 294 22.6 8  
## Touchdowns PAT X2.Point.Conversions Defensive.Points Feild.Goals Safety  
## 1 47 47 0 0 23 0  
## 2 51 49 0 0 13 0  
## 3 55 51 0 0 12 0  
## 4 75 75 0 0 13 1  
## 5 50 49 0 0 21 0  
## 6 86 83 1 0 8 0  
## 7 82 79 2 0 15 0  
## 8 73 68 2 0 20 0  
## 9 68 66 0 0 19 0  
## Total.Points Points.Per.Game Tackle.for.Loss.Rank Solo.Tackle.For.Loss  
## 1 398 30.6 21 74  
## 2 394 32.8 60 62  
## 3 417 29.8 39 70  
## 4 566 40.4 67 73  
## 5 412 31.7 72 61  
## 6 625 48.1 9 85  
## 7 620 44.3 70 73  
## 8 570 40.7 114 54  
## 9 531 40.8 7 83  
## Assist.Tackle.For.Loss Tackle.for.Loss.Yards Total.Tackle.For.Loss  
## 1 40 375 94  
## 2 28 332 76  
## 3 50 366 95  
## 4 24 388 85  
## 5 30 297 76  
## 6 26 349 98  
## 7 20 299 83  
## 8 20 248 64  
## 9 44 398 105  
## Tackle.For.Loss.Per.Game X3rd.Down.Rank X3rd.Attempts X3rd.Conversions  
## 1 7.2 54 200 82  
## 2 6.3 63 148 59  
## 3 6.8 10 204 99  
## 4 6.1 3 232 117  
## 5 5.8 78 160 61  
## 6 7.5 16 195 91  
## 7 5.9 11 184 88  
## 8 4.6 9 164 80  
## 9 8.1 48 169 70  
## X3rd.Percent X3rd.Down.Def.Rank Opp.3rd.Conversion Opp.3rd.Attempt  
## 1 0.410 69 76 193  
## 2 0.399 40 60 168  
## 3 0.485 30 65 186  
## 4 0.504 60 79 211  
## 5 0.381 65 82 209  
## 6 0.467 51 74 201  
## 7 0.478 33 70 199  
## 8 0.488 103 99 224  
## 9 0.414 64 88 226  
## Opponent.3rd.Percent Time.of.Possession.Rank Time.of.Possession  
## 1 0.394 18 Â Â Â 425:23  
## 2 0.357 37 Â Â Â 376:01  
## 3 0.349 15 Â Â Â 460:03  
## 4 0.374 38 Â Â Â 438:34  
## 5 0.392 74 Â Â Â 382:24  
## 6 0.368 107 Â Â Â 362:13  
## 7 0.352 59 Â Â Â 422:39  
## 8 0.442 126 Â Â Â 353:49  
## 9 0.389 119 Â Â Â 344:51  
## Average.Time.of.Possession.per.Game Turnover.Rank Fumbles.Recovered  
## 1 Â Â Â 32:43 4 12  
## 2 Â Â Â 31:20 26 7  
## 3 Â Â Â 32:51 4 13  
## 4 Â Â Â 31:19 2 14  
## 5 Â Â Â 29:24 66 7  
## 6 Â Â Â 27:51 66 12  
## 7 Â Â Â 30:11 4 14  
## 8 Â Â Â 25:16 30 9  
## 9 Â Â Â 26:31 66 8  
## Opponents.Intercepted Turnovers.Gain Fumbles.Lost Interceptions.Thrown.y  
## 1 22 34 10 11  
## 2 10 17 4 6  
## 3 15 28 6 8  
## 4 21 35 7 7  
## 5 8 15 6 9  
## 6 14 26 13 13  
## 7 17 31 8 9  
## 8 17 26 9 10  
## 9 15 23 9 14  
## Turnovers.Lost Turnover.Margin Avg.Turnover.Margin.per.Game  
## 1 21 13 1.00  
## 2 10 7 0.58  
## 3 14 14 1.00  
## 4 14 21 1.50  
## 5 15 0 0.00  
## 6 26 0 0.00  
## 7 17 14 1.00  
## 8 19 7 0.50  
## 9 23 0 0.00

## Team Analysis

I will extract a few specific columns including the following. Wins, Off Rank, Def Rank,Passing.Off.Rank,Penalty.Yards.Per.Game,Redzone.Points,Redzone.Points.Allowed,Rushing.Off.Rank and Scoring,Def.Rank

## Win Off.Rank Def.Rank Passing.Off.Rank Penalty.Yards.Per.Game Redzone.Points  
## 1 6 34 64 33 63.77 0.889  
## 2 6 123 33 103 45.77 0.788  
## 3 6 14 120 22 59.85 0.885  
## 4 9 19 77 18 75.08 0.889  
## 5 8 29 58 32 36.69 0.831  
## 6 3 80 42 123 27.42 0.838  
## 7 3 99 94 84 39.00 0.861  
## 8 8 38 65 31 68.64 0.877  
## 9 7 16 114 30 48.62 0.831  
## 10 8 28 67 25 70.46 0.895  
## 11 5 92 106 117 59.08 0.882  
## Redzone.Points.Allowed Rushing.Off.Rank Scoring.Def.Rank  
## 1 0.816 52 76  
## 2 0.727 114 15  
## 3 0.833 26 116  
## 4 0.841 55 67  
## 5 0.868 34 68  
## 6 0.833 8 51  
## 7 0.826 87 71  
## 8 0.887 70 50  
## 9 0.931 22 107  
## 10 0.837 59 54  
## 11 0.922 17 87

## Win Off.Rank Def.Rank Passing.Off.Rank Penalty.Yards.Per.Game Redzone.Points  
## 1 10 97 41 106 53.31 0.913  
## 2 9 39 25 105 64.50 0.848  
## 3 12 73 26 55 42.86 0.843  
## 4 13 20 53 44 55.93 0.881  
## 5 10 51 19 38 54.00 0.891  
## 6 10 1 62 24 80.23 0.871  
## 7 12 9 72 4 57.86 0.877  
## 8 11 18 95 34 46.43 0.889  
## 9 10 10 54 10 54.00 0.839  
## Redzone.Points.Allowed Rushing.Off.Rank Scoring.Def.Rank  
## 1 0.826 46 31  
## 2 0.861 7 41  
## 3 0.854 93 25  
## 4 0.914 13 20  
## 5 0.829 69 9  
## 6 0.905 2 79  
## 7 0.776 89 53  
## 8 0.793 18 42  
## 9 0.840 45 33

mean.upset<-means.over-means.under ## Upset teams means - upsetters means.   
mean.all<-means.over-fb.means ## upset teams - all team means  
  
mean.upset-mean.all

## Win Off.Rank Def.Rank   
## 0.57075099 10.94782609 -12.04189723   
## Passing.Off.Rank Penalty.Yards.Per.Game Redzone.Points   
## 5.01818182 0.49536759 -0.02615415   
## Redzone.Points.Allowed Rushing.Off.Rank Scoring.Def.Rank   
## -0.01847668 16.32806324 -5.96837945

mean.upset

## Win Off.Rank Def.Rank   
## 4.505050505 -16.666666667 -26.696969697   
## Passing.Off.Rank Penalty.Yards.Per.Game Redzone.Points   
## -9.515151515 2.534343434 0.011898990   
## Redzone.Points.Allowed Rushing.Off.Rank Scoring.Def.Rank   
## -0.003141414 -7.010101010 -32.272727273

Based on these means, the upsetting teams had much better offensive rankings than what an average team would be, that includes off rank, passing off rank and rushing off rank. C0mparatively there was a drop in defensive rankings, however slightly less in terms of overall magnitude.

the biggest thing to point out is Rushing Offense Rank, the average upset team is better at running the ball than the average football team.

#3 Predictive Modeling

I will be using a linear model to see if a teams attributes accurately predicted their overall wins. using only categories extracted

par(mfrow=c(2,2))  
  
model.fit<-lm(Win~.,data=all.fbselect)  
  
step(model.fit,direction = "both",trace=F)

##   
## Call:  
## lm(formula = Win ~ Off.Rank + Redzone.Points + Scoring.Def.Rank,   
## data = all.fbselect)  
##   
## Coefficients:  
## (Intercept) Off.Rank Redzone.Points Scoring.Def.Rank   
## 5.90720 -0.04453 8.59880 -0.05427

best.lm<-lm(Win~Off.Rank+Redzone.Points+Scoring.Def.Rank,data = all.fbselect)  
summary(best.lm)

##   
## Call:  
## lm(formula = Win ~ Off.Rank + Redzone.Points + Scoring.Def.Rank,   
## data = all.fbselect)  
##   
## Residuals:  
## Min 1Q Median 3Q Max   
## -3.8142 -0.9293 -0.2823 0.9032 3.8968   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 5.907201 2.171164 2.721 0.007563 \*\*   
## Off.Rank -0.044527 0.004081 -10.910 < 2e-16 \*\*\*  
## Redzone.Points 8.598803 2.432029 3.536 0.000595 \*\*\*  
## Scoring.Def.Rank -0.054272 0.003855 -14.080 < 2e-16 \*\*\*  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 1.521 on 111 degrees of freedom  
## Multiple R-squared: 0.784, Adjusted R-squared: 0.7782   
## F-statistic: 134.3 on 3 and 111 DF, p-value: < 2.2e-16

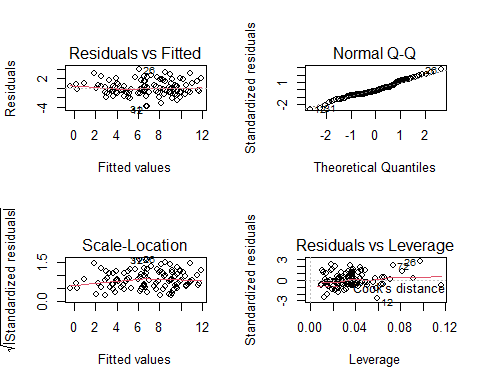
mean(predict.lm(best.lm,upsetteams)-upsetteams$Win)

## [1] -0.9499264

mean(predict.lm(best.lm,upsetters)-upsetters$Win)

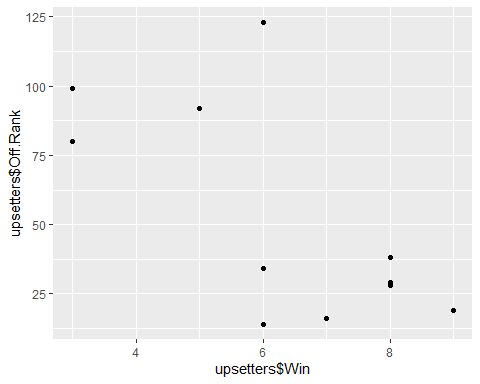
## [1] 0.9591995

plot(best.lm)

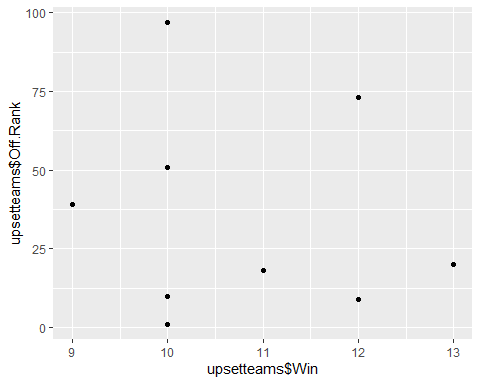
 This model predicted that the Upset teams would perform about one game below on average what they actually did, and the reverse is true with the upsetters

## Plots and Correlations

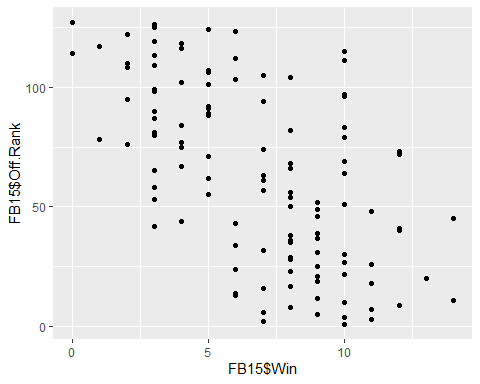
library(ggplot2)  
par(mfrow=c(2,2))  
ggplot(mapping=aes(upsetters$Win,upsetters$Off.Rank))+geom\_point()



ggplot(mapping=aes(upsetteams$Win,upsetteams$Off.Rank))+geom\_point()



ggplot(mapping = aes(FB15$Win,FB15$Off.Rank))+geom\_point()



cor.test(FB15$Win,FB15$Off.Rank)

##   
## Pearson's product-moment correlation  
##   
## data: FB15$Win and FB15$Off.Rank  
## t = -7.8217, df = 113, p-value = 3.003e-12  
## alternative hypothesis: true correlation is not equal to 0  
## 95 percent confidence interval:  
## -0.6998218 -0.4594018  
## sample estimates:  
## cor   
## -0.5926572

cor.test(upsetters$Win,upsetters$Off.Rank)

##   
## Pearson's product-moment correlation  
##   
## data: upsetters$Win and upsetters$Off.Rank  
## t = -2.7106, df = 9, p-value = 0.02397  
## alternative hypothesis: true correlation is not equal to 0  
## 95 percent confidence interval:  
## -0.9059470 -0.1179818  
## sample estimates:  
## cor   
## -0.6704091

cor.test(upsetteams$Win,upsetteams$Off.Rank)

##   
## Pearson's product-moment correlation  
##   
## data: upsetteams$Win and upsetteams$Off.Rank  
## t = -0.34791, df = 7, p-value = 0.7381  
## alternative hypothesis: true correlation is not equal to 0  
## 95 percent confidence interval:  
## -0.7311874 0.5843413  
## sample estimates:  
## cor   
## -0.1303759

Purely based on offense, the upset teams had a much smaller correlation between their offensive ranking and their Win totals when compared to the average fbs team as well as the upsetters.

## Limitations

1. Unable to use full data set as using every variabe was too taxing, s=could have potentially missed key variables.
2. Human bias in determining what a key statistic would be
3. Small Sample size in terms of # of teams in individual years.

## Interpretation

Overall there seems to be a small set of statistics that one could use to reason why teams get upset. The biggest one is that the average team who upsets another tends to have a better than average offense.

Also, the linear models generated predicted that the Upset teams outperformed their predictions while the Upsetter teams underperformed their predictions. This leads to uncounted variables(such as injuries, home/away game, time of day etc.) or natual variation being an explanation for why these teams got upset.

Overall based on this data and testing, i have found no significant characteristics of upset teams in 2015.

## 2016

Same Criteria as 2015

(Clemson,Pitt) (Oklahoma,Houston) (Penn State,Pitt) (FSU,North Carolina) (Michigan, Iowa) (OKstate, Central Michigan) (Stanford, Wash st.) (USF, Temple) (san diego state, south alabama,wyoming,colorado state)

cle16<-FB16 %>%   
 filter(Team == "Clemson (ACC)")  
ok16<-FB16 %>%   
 filter(Team == "Oklahoma (Big 12)")  
psu16<-FB16 %>%   
 filter(Team == "Penn St. (Big Ten)")  
mich16<-FB16 %>%   
 filter(Team == "Michigan (Big Ten)")  
okst16<-FB16 %>%   
 filter(Team == "Oklahoma St. (Big 12)")  
fsu16<-FB16 %>%   
 filter(Team == "Florida St. (ACC)")  
sfa16<-FB16 %>%   
 filter(Team == "South Fla. (AAC)")  
sdsa16<-FB16 %>%   
 filter(Team == "San Diego St. (MW)") #no data  
stan16<-FB16 %>%   
 filter(Team == "Stanford (Pac-12)")  
upset.16<-rbind(cle16,ok16,psu16,mich16,okst16,fsu16,sfa16,stan16)  
  
  
  
  
pitt16<-FB16 %>%   
 filter(Team == "Pittsburgh (ACC)")  
  
hou16<-FB16 %>%   
 filter(Team == "Houston (AAC)")  
  
iwa16<-FB16 %>%   
 filter(Team == "Iowa (Big Ten)")  
  
cmu16<-FB16 %>%   
 filter(Team == "Central Mich. (MAC)")  
  
  
sab16<-FB16 %>%   
 filter(Team == "South Alabama (Sun Belt)")  
  
ncu16<-FB16 %>%   
 filter(Team == "North Carolina (ACC)")  
  
tmp16<-FB16 %>%   
 filter(Team == "Temple (AAC)")  
wsu16<-FB16 %>%   
 filter(Team == "Washington St. (Pac-12)")  
  
upsetters.16<-rbind(pitt16,hou16,iwa16,cmu16,sab16,ncu16,tmp16,wsu16)  
  
  
  
upsetters.16

## Team Games Win Loss Off.Rank Off.Plays Off.Yards  
## 1 Pittsburgh (ACC) 13 8 5 38 866 5808  
## 2 Houston (AAC) 13 9 4 41 1084 5764  
## 3 Iowa (Big Ten) 13 8 5 121 812 4225  
## 4 Central Mich. (MAC) 13 6 7 78 878 5096  
## 5 South Alabama (Sun Belt) 13 6 7 82 884 5062  
## 6 North Carolina (ACC) 13 8 5 45 860 5707  
## 7 Temple (AAC) 14 10 4 66 967 5790  
## 8 Washington St. (Pac-12) 13 8 5 18 1026 6273  
## Off.Yards.Play Off.TDs Off.Yards.per.Game Def.Rank Def.Plays Yards.Allowed  
## 1 6.71 64 446.8 101 985 5886  
## 2 5.32 53 443.4 13 866 4155  
## 3 5.20 40 325.0 23 893 4565  
## 4 5.80 41 392.0 54 888 5095  
## 5 5.73 40 389.4 53 900 5068  
## 6 6.64 51 439.0 63 987 5305  
## 7 5.99 53 413.6 3 852 3955  
## 8 6.11 63 482.5 62 873 5277  
## Yards.Play.Allowed Off.TDs.Allowed Total.TDs.Allowed Yards.Per.Game.Allowed  
## 1 5.98 56 59 452.8  
## 2 4.80 35 37 319.6  
## 3 5.11 28 30 351.2  
## 4 5.74 48 51 391.9  
## 5 5.63 40 44 389.8  
## 6 5.37 39 40 408.1  
## 7 4.64 30 33 282.5  
## 8 6.04 41 45 405.9  
## First.Down.Rank First.Down.Runs First.Down.Passes First.Down.Penalties  
## 1 117 87 193 23  
## 2 9 74 123 16  
## 3 20 106 115 15  
## 4 54 108 134 17  
## 5 82 142 108 26  
## 6 95 154 108 23  
## 7 10 101 96 18  
## 8 62 89 151 24  
## First.Downs First.Down.Def.Rank Opp.First.Down.Runs Opp.First.Down.Passes  
## 1 303 117 87 193  
## 2 213 9 74 123  
## 3 236 20 106 115  
## 4 259 54 108 134  
## 5 276 82 142 108  
## 6 285 95 154 108  
## 7 215 10 101 96  
## 8 264 62 89 151  
## Opp.First.Down.Penalties Opp.First.Downs X4th.Down.Rank X4th.Attempts  
## 1 23 303 51 7  
## 2 16 213 13 19  
## 3 15 236 11 11  
## 4 17 259 51 7  
## 5 26 276 90 10  
## 6 23 285 108 6  
## 7 18 215 100 10  
## 8 24 264 47 17  
## X4th.Conversions X4th.Percent X4rd.Down.Def.Rank Opp.4th.Conversion  
## 1 13 0.538 125 21  
## 2 30 0.633 36 8  
## 3 17 0.647 87 12  
## 4 13 0.538 40 9  
## 5 22 0.455 78 11  
## 6 15 0.400 116 14  
## 7 23 0.435 58 11  
## 8 31 0.548 19 6  
## Opp.4th.Attempt Opponent.4th.Percent Kickoff.Return.Rank Kickoffs.Returned  
## 1 28 0.750 44 66  
## 2 19 0.421 104 43  
## 3 21 0.571 58 21  
## 4 21 0.429 15 46  
## 5 20 0.550 84 47  
## 6 21 0.667 102 34  
## 7 22 0.500 82 73  
## 8 16 0.375 42 52  
## Kickoff.Return.Yards Kickoff.Return.Touchdowns Avg.Yard.per.Kickoff.Return  
## 1 26 1297 1  
## 2 37 991 0  
## 3 42 428 0  
## 4 12 829 0  
## 5 9 1017 0  
## 6 47 775 0  
## 7 18 1566 1  
## 8 35 1018 1  
## ...40 Kickoff.Return.Def.Rank Opp.Kickoff.Returns Kickoff.Touchbacks  
## 1 19.65 44 66 26  
## 2 23.05 104 43 37  
## 3 20.38 58 21 42  
## 4 18.02 15 46 12  
## 5 21.64 84 47 9  
## 6 22.79 102 34 47  
## 7 21.45 82 73 18  
## 8 19.58 42 52 35  
## Opponent.Kickoff.Return.Yards Opp.Kickoff.Return.Touchdowns.Allowed  
## 1 1297 1  
## 2 991 0  
## 3 428 0  
## 4 829 0  
## 5 1017 0  
## 6 775 0  
## 7 1566 1  
## 8 1018 1  
## Avg.Yards.per.Kickoff.Return.Allowed Passing.Off.Rank Pass.Attempts  
## 1 19.65 76 324  
## 2 23.05 17 523  
## 3 20.38 118 310  
## 4 18.02 26 471  
## 5 21.64 56 416  
## 6 22.79 22 459  
## 7 21.45 63 403  
## 8 19.58 3 664  
## Pass.Completions Interceptions.Thrown.x Pass.Yards Pass.Yards.Attempt  
## 1 189 9 2882 8.90  
## 2 352 15 3852 7.37  
## 3 175 10 1991 6.42  
## 4 280 16 3589 7.62  
## 5 233 14 3169 7.62  
## 6 313 6 3811 8.30  
## 7 232 13 3324 8.25  
## 8 467 12 4713 7.10  
## Yards.Completion Pass.Touchdowns Pass.Yards.Per.Game Pass.Def.Rank  
## 1 15.25 28 221.7 127  
## 2 10.94 24 296.3 51  
## 3 11.38 17 153.2 29  
## 4 12.82 23 276.1 60  
## 5 13.60 15 243.8 9  
## 6 12.18 30 293.2 12  
## 7 14.33 22 237.4 3  
## 8 10.09 40 362.5 112  
## Opp.Completions.Allowed Opp.Pass.Attempts Opp.Pass.Yds.Allowed  
## 1 350 549 4331  
## 2 235 419 2853  
## 3 202 401 2618  
## 4 248 414 2898  
## 5 188 313 2270  
## 6 183 328 2350  
## 7 182 342 2130  
## 8 278 445 3532  
## Opp.Pass.TDs.Allowed Yards.Attempt.Allowed Yards.Completion.Allowed  
## 1 28 7.89 12.37  
## 2 19 6.81 12.14  
## 3 18 6.53 12.96  
## 4 33 7.00 11.69  
## 5 14 7.25 12.07  
## 6 11 7.16 12.84  
## 7 13 6.23 11.70  
## 8 20 7.94 12.71  
## Pass.Yards.Per.Game.Allowed Penalty.Rank Penalties Penalty.Yards  
## 1 333.2 48 74 647  
## 2 219.5 18 58 554  
## 3 201.4 15 65 537  
## 4 222.9 46 62 630  
## 5 174.6 112 99 862  
## 6 180.8 100 99 797  
## 7 152.1 21 75 604  
## 8 271.7 119 103 896  
## Penalty.Yards.Per.Game Punt.Return.Rank Punt.Returns Net.Punt.Return.Yards  
## 1 49.77 73 29 236  
## 2 42.62 7 13 34  
## 3 41.31 105 12 134  
## 4 48.46 37 19 105  
## 5 66.31 3 14 28  
## 6 61.31 1 9 2  
## 7 43.14 13 21 78  
## 8 68.92 79 12 106  
## Punt.Return.Touchdowns Avg.Yards.Per.Punt.Return Punt.Return.Def.Rank  
## 1 0 8.14 73  
## 2 0 2.62 7  
## 3 0 11.17 105  
## 4 1 5.53 37  
## 5 0 2.00 3  
## 6 0 0.22 1  
## 7 0 3.71 13  
## 8 1 8.83 79  
## Opp.Punt.Returns Opp.Net.Punt.Return.Yards Opp.Punt.Return.Touchdowns.Allowed  
## 1 29 236 0  
## 2 13 34 0  
## 3 12 134 0  
## 4 19 105 1  
## 5 14 28 0  
## 6 9 2 0  
## 7 21 78 0  
## 8 12 106 1  
## Avg.Yards.Allowed.per.Punt.Return Redzone.Off.Rank Redzone.Attempts  
## 1 8.14 44 59  
## 2 2.62 48 64  
## 3 11.17 34 41  
## 4 5.53 125 40  
## 5 2.00 89 48  
## 6 0.22 71 55  
## 7 3.71 49 63  
## 8 8.83 73 71  
## Redzone.Rush.TD Redzone.Pass.TD Redzone.Field.Goals.Made Redzone.Scores  
## 1 31 14 6 51  
## 2 26 17 12 55  
## 3 16 11 9 36  
## 4 14 10 5 29  
## 5 21 9 9 39  
## 6 18 18 10 46  
## 7 26 8 20 54  
## 8 22 28 9 59  
## Redzone.Points Redzone.Def.Rank Opp.Redzone.Attempts  
## 1 0.864 119 58  
## 2 0.859 93 34  
## 3 0.878 13 36  
## 4 0.725 29 52  
## 5 0.813 56 48  
## 6 0.836 34 54  
## 7 0.857 18 34  
## 8 0.831 65 38  
## Opp.Redzone.Rush.TD.Allowed Opp.Redzone.Pass.Touchdowns.Allowed  
## 1 22 18  
## 2 13 6  
## 3 8 10  
## 4 9 24  
## 5 21 6  
## 6 25 6  
## 7 11 8  
## 8 16 12  
## Opp.Redzone.Field.Goals.Made Opp.Redzone.Scores Redzone.Points.Allowed  
## 1 13 53 0.914  
## 2 11 30 0.882  
## 3 9 27 0.750  
## 4 8 41 0.788  
## 5 13 40 0.833  
## 6 12 43 0.796  
## 7 7 26 0.765  
## 8 4 32 0.842  
## Rushing.Off.Rank Rush.Attempts Rush.Yds Yards.Rush Rushing.TD  
## 1 28 542 2926 5.40 36  
## 2 99 561 1912 3.41 29  
## 3 67 502 2234 4.45 23  
## 4 120 407 1507 3.70 18  
## 5 102 468 1893 4.04 25  
## 6 100 401 1896 4.73 21  
## 7 61 564 2466 4.37 31  
## 8 114 362 1560 4.31 23  
## Rushing.Yards.per.Game Rushing.Def.Rank Opp.Rush.Attempts  
## 1 225.1 16 436  
## 2 147.1 4 447  
## 3 171.8 45 492  
## 4 115.9 61 474  
## 5 145.6 100 587  
## 6 145.8 109 659  
## 7 176.1 25 510  
## 8 120.0 29 428  
## Opp.Rush.Yards.Alloweed Yds.Rush.Allowed Opp.Rush.Touchdowns.Allowed  
## 1 1555 3.57 28  
## 2 1302 2.91 16  
## 3 1947 3.96 10  
## 4 2197 4.64 15  
## 5 2798 4.77 26  
## 6 2955 4.48 28  
## 7 1825 3.58 17  
## 8 1745 4.08 21  
## Rush.Yards.Per.Game.Allowed Sack.Rank Sacks Sack.Yards Average.Sacks.per.Game  
## 1 119.6 3 10 75 0.77  
## 2 100.2 111 37 243 2.85  
## 3 149.8 84 30 217 2.31  
## 4 169.0 112 38 252 2.92  
## 5 215.2 89 31 229 2.38  
## 6 227.3 30 20 132 1.54  
## 7 130.4 62 29 254 2.07  
## 8 134.2 78 29 196 2.23  
## Scoring.Def.Rank Touchdowns.Allowed Opponent.Extra.Points  
## 1 106 59 54  
## 2 30 37 34  
## 3 13 30 29  
## 4 79 51 47  
## 5 56 44 34  
## 6 43 40 39  
## 7 11 33 28  
## 8 50 45 41  
## X2.Point.Conversions.Allowed Opp.Deflected.Extra.Points Opp.Feild.Goals.Made  
## 1 1 0 16  
## 2 1 0 15  
## 3 0 0 12  
## 4 1 0 13  
## 5 4 0 15  
## 6 0 0 13  
## 7 1 0 10  
## 8 1 0 10  
## Opp.Safety Points.Allowed Avg.Points.per.Game.Allowed Scoring.Off.Rank  
## 1 0 458 35.2 10  
## 2 1 305 23.5 26  
## 3 0 245 18.8 95  
## 4 0 394 30.3 83  
## 5 0 351 27.0 92  
## 6 3 324 24.9 44  
## 7 0 258 18.4 43  
## 8 0 343 26.4 18  
## Touchdowns PAT X2.Point.Conversions Defensive.Points Feild.Goals Safety  
## 1 72 66 1 0 10 1  
## 2 59 56 0 0 16 4  
## 3 42 38 1 0 10 1  
## 4 45 42 1 0 8 2  
## 5 43 42 0 0 10 0  
## 6 54 51 0 0 15 0  
## 7 54 52 0 0 25 1  
## 8 67 63 1 0 9 1  
## Total.Points Points.Per.Game Tackle.for.Loss.Rank Solo.Tackle.For.Loss  
## 1 532 40.9 31 70  
## 2 466 35.8 14 83  
## 3 324 24.9 113 46  
## 4 342 26.3 90 64  
## 5 330 25.4 29 77  
## 6 420 32.3 101 50  
## 7 453 32.4 21 84  
## 8 496 38.2 78 56  
## Assist.Tackle.For.Loss Tackle.for.Loss.Yards Total.Tackle.For.Loss  
## 1 40 411 90  
## 2 34 429 100  
## 3 28 247 60  
## 4 12 248 70  
## 5 28 317 91  
## 6 34 294 67  
## 7 38 432 103  
## 8 32 269 72  
## Tackle.For.Loss.Per.Game X3rd.Down.Rank X3rd.Attempts X3rd.Conversions  
## 1 6.9 22 174 79  
## 2 7.7 14 231 109  
## 3 4.6 120 157 50  
## 4 5.4 57 183 76  
## 5 7.0 80 173 67  
## 6 5.2 21 165 75  
## 7 7.4 56 190 79  
## 8 5.5 15 191 90  
## X3rd.Percent X3rd.Down.Def.Rank Opp.3rd.Conversion Opp.3rd.Attempt  
## 1 0.454 76 80 197  
## 2 0.472 19 69 202  
## 3 0.318 27 64 183  
## 4 0.415 86 79 189  
## 5 0.387 22 58 167  
## 6 0.455 93 89 209  
## 7 0.416 21 68 196  
## 8 0.471 70 69 173  
## Opponent.3rd.Percent Time.of.Possession.Rank Time.of.Possession  
## 1 0.406 47 Â Â Â 401:33  
## 2 0.342 14 Â Â Â 429:50  
## 3 0.350 105 Â Â Â 356:51  
## 4 0.418 24 Â Â Â 420:17  
## 5 0.347 71 Â Â Â 383:34  
## 6 0.426 127 Â Â Â 317:05  
## 7 0.347 10 Â Â Â 469:35  
## 8 0.399 21 Â Â Â 421:35  
## Average.Time.of.Possession.per.Game Turnover.Rank Fumbles.Recovered  
## 1 Â Â Â 30:53 58 10  
## 2 Â Â Â 33:03 107 11  
## 3 Â Â Â 27:27 28 9  
## 4 Â Â Â 32:19 104 5  
## 5 Â Â Â 29:30 78 10  
## 6 Â Â Â 24:23 78 13  
## 7 Â Â Â 33:32 32 13  
## 8 Â Â Â 32:25 28 11  
## Opponents.Intercepted Turnovers.Gain Fumbles.Lost Interceptions.Thrown.y  
## 1 9 19 9 9  
## 2 7 18 10 15  
## 3 9 18 2 10  
## 4 13 18 8 16  
## 5 10 20 8 14  
## 6 1 14 10 6  
## 7 12 25 6 13  
## 8 12 23 5 12  
## Turnovers.Lost Turnover.Margin Avg.Turnover.Margin.per.Game  
## 1 18 1 0.08  
## 2 25 -7 -0.54  
## 3 12 6 0.46  
## 4 24 -6 -0.46  
## 5 22 -2 -0.15  
## 6 16 -2 -0.15  
## 7 19 6 0.43  
## 8 17 6 0.46

upset.16

## Team Games Win Loss Off.Rank Off.Plays Off.Yards  
## 1 Clemson (ACC) 15 14 1 12 1220 7555  
## 2 Oklahoma (Big 12) 13 11 2 2 957 7212  
## 3 Penn St. (Big Ten) 14 11 3 49 931 6056  
## 4 Michigan (Big Ten) 13 10 3 58 944 5524  
## 5 Oklahoma St. (Big 12) 13 10 3 14 956 6432  
## 6 Florida St. (ACC) 13 10 3 25 939 6063  
## 7 South Fla. (AAC) 13 11 2 11 928 6650  
## 8 Stanford (Pac-12) 13 10 3 103 827 4772  
## Off.Yards.Play Off.TDs Off.Yards.per.Game Def.Rank Def.Plays Yards.Allowed  
## 1 6.19 75 503.7 8 1008 4672  
## 2 7.54 73 554.8 82 960 5616  
## 3 6.50 63 432.6 37 1023 5151  
## 4 5.85 61 424.9 1 809 3403  
## 5 6.73 61 494.8 92 979 5802  
## 6 6.46 56 466.4 22 861 4538  
## 7 7.17 73 511.5 120 1077 6266  
## 8 5.77 35 367.1 38 894 4785  
## Yards.Play.Allowed Off.TDs.Allowed Total.TDs.Allowed Yards.Per.Game.Allowed  
## 1 4.63 33 34 311.5  
## 2 5.85 44 46 432.0  
## 3 5.04 40 42 367.9  
## 4 4.21 20 22 261.8  
## 5 5.93 44 46 446.3  
## 6 5.27 37 40 349.1  
## 7 5.82 50 50 482.0  
## 8 5.35 33 33 368.1  
## First.Down.Rank First.Down.Runs First.Down.Passes First.Down.Penalties  
## 1 46 102 116 37  
## 2 82 112 145 19  
## 3 79 109 140 25  
## 4 1 91 71 24  
## 5 110 126 144 25  
## 6 26 89 125 31  
## 7 125 144 159 23  
## 8 40 105 129 19  
## First.Downs First.Down.Def.Rank Opp.First.Down.Runs Opp.First.Down.Passes  
## 1 255 46 102 116  
## 2 276 82 112 145  
## 3 274 79 109 140  
## 4 186 1 91 71  
## 5 295 110 126 144  
## 6 245 26 89 125  
## 7 326 125 144 159  
## 8 253 40 105 129  
## Opp.First.Down.Penalties Opp.First.Downs X4th.Down.Rank X4th.Attempts  
## 1 37 255 22 15  
## 2 19 276 51 7  
## 3 25 274 61 10  
## 4 24 186 9 13  
## 5 25 295 104 5  
## 6 31 245 22 3  
## 7 23 326 1 17  
## 8 19 253 61 6  
## X4th.Conversions X4th.Percent X4rd.Down.Def.Rank Opp.4th.Conversion  
## 1 25 0.600 32 10  
## 2 13 0.538 81 15  
## 3 20 0.500 22 8  
## 4 20 0.650 27 11  
## 5 12 0.417 27 11  
## 6 5 0.600 43 8  
## 7 19 0.895 70 18  
## 8 12 0.500 87 16  
## Opp.4th.Attempt Opponent.4th.Percent Kickoff.Return.Rank Kickoffs.Returned  
## 1 24 0.417 48 57  
## 2 27 0.556 86 51  
## 3 21 0.381 28 50  
## 4 27 0.407 91 42  
## 5 27 0.407 19 53  
## 6 18 0.444 16 33  
## 7 34 0.529 93 71  
## 8 28 0.571 59 25  
## Kickoff.Return.Yards Kickoff.Return.Touchdowns Avg.Yard.per.Kickoff.Return  
## 1 38 1123 0  
## 2 49 1110 0  
## 3 46 941 0  
## 4 53 928 0  
## 5 41 969 0  
## 6 57 595 0  
## 7 26 1577 0  
## 8 44 510 0  
## ...40 Kickoff.Return.Def.Rank Opp.Kickoff.Returns Kickoff.Touchbacks  
## 1 19.70 48 57 38  
## 2 21.76 86 51 49  
## 3 18.82 28 50 46  
## 4 22.10 91 42 53  
## 5 18.28 19 53 41  
## 6 18.03 16 33 57  
## 7 22.21 93 71 26  
## 8 20.40 59 25 44  
## Opponent.Kickoff.Return.Yards Opp.Kickoff.Return.Touchdowns.Allowed  
## 1 1123 0  
## 2 1110 0  
## 3 941 0  
## 4 928 0  
## 5 969 0  
## 6 595 0  
## 7 1577 0  
## 8 510 0  
## Avg.Yards.per.Kickoff.Return.Allowed Passing.Off.Rank Pass.Attempts  
## 1 19.70 7 629  
## 2 21.76 12 384  
## 3 18.82 36 391  
## 4 22.10 85 370  
## 5 18.28 9 465  
## 6 18.03 33 421  
## 7 22.21 70 358  
## 8 20.40 115 305  
## Pass.Completions Interceptions.Thrown.x Pass.Yards Pass.Yards.Attempt  
## 1 422 17 5009 7.96  
## 2 271 8 4134 10.77  
## 3 226 8 3650 9.34  
## 4 228 7 2756 7.45  
## 5 295 4 4211 9.06  
## 6 244 8 3433 8.15  
## 7 225 8 2941 8.22  
## 8 179 9 2056 6.74  
## Yards.Completion Pass.Touchdowns Pass.Yards.Per.Game Pass.Def.Rank  
## 1 11.87 45 333.9 14  
## 2 15.25 43 318.0 111  
## 3 16.15 29 260.7 50  
## 4 12.09 20 212.0 1  
## 5 14.27 29 323.9 98  
## 6 14.07 23 264.1 57  
## 7 13.07 26 226.2 122  
## 8 11.49 15 158.2 61  
## Opp.Completions.Allowed Opp.Pass.Attempts Opp.Pass.Yds.Allowed  
## 1 252 483 2728  
## 2 271 495 3502  
## 3 292 472 3033  
## 4 143 328 1853  
## 5 263 431 3287  
## 6 224 404 2874  
## 7 303 507 3712  
## 8 239 437 2907  
## Opp.Pass.TDs.Allowed Yards.Attempt.Allowed Yards.Completion.Allowed  
## 1 13 5.65 10.83  
## 2 29 7.07 12.92  
## 3 18 6.43 10.39  
## 4 11 5.65 12.96  
## 5 22 7.63 12.50  
## 6 18 7.11 12.83  
## 7 21 7.32 12.25  
## 8 18 6.65 12.16  
## Pass.Yards.Per.Game.Allowed Penalty.Rank Penalties Penalty.Yards  
## 1 181.9 85 95 870  
## 2 269.4 54 66 679  
## 3 216.6 28 68 622  
## 4 142.5 33 63 593  
## 5 252.8 47 69 643  
## 6 221.1 124 100 948  
## 7 285.5 89 83 763  
## 8 223.6 65 85 707  
## Penalty.Yards.Per.Game Punt.Return.Rank Punt.Returns Net.Punt.Return.Yards  
## 1 58.00 28 10 52  
## 2 52.23 59 9 67  
## 3 44.43 54 21 146  
## 4 45.62 47 21 137  
## 5 49.46 2 16 15  
## 6 72.92 127 15 279  
## 7 58.69 85 20 185  
## 8 54.38 63 19 143  
## Punt.Return.Touchdowns Avg.Yards.Per.Punt.Return Punt.Return.Def.Rank  
## 1 0 5.20 28  
## 2 0 7.44 59  
## 3 0 6.95 54  
## 4 0 6.52 47  
## 5 0 0.94 2  
## 6 1 18.60 127  
## 7 0 9.25 85  
## 8 0 7.53 63  
## Opp.Punt.Returns Opp.Net.Punt.Return.Yards Opp.Punt.Return.Touchdowns.Allowed  
## 1 10 52 0  
## 2 9 67 0  
## 3 21 146 0  
## 4 21 137 0  
## 5 16 15 0  
## 6 15 279 1  
## 7 20 185 0  
## 8 19 143 0  
## Avg.Yards.Allowed.per.Punt.Return Redzone.Off.Rank Redzone.Attempts  
## 1 5.20 66 76  
## 2 7.44 29 59  
## 3 6.95 43 67  
## 4 6.52 13 68  
## 5 0.94 26 69  
## 6 18.60 1 57  
## 7 9.25 47 50  
## 8 7.53 60 39  
## Redzone.Rush.TD Redzone.Pass.TD Redzone.Field.Goals.Made Redzone.Scores  
## 1 26 29 9 64  
## 2 24 17 11 52  
## 3 26 11 21 58  
## 4 32 12 18 62  
## 5 29 14 18 61  
## 6 26 18 11 55  
## 7 30 5 8 43  
## 8 11 8 14 33  
## Redzone.Points Redzone.Def.Rank Opp.Redzone.Attempts  
## 1 0.842 30 38  
## 2 0.881 25 46  
## 3 0.866 106 48  
## 4 0.912 3 28  
## 5 0.884 13 48  
## 6 0.965 36 45  
## 7 0.860 68 60  
## 8 0.846 36 45  
## Opp.Redzone.Rush.TD.Allowed Opp.Redzone.Pass.Touchdowns.Allowed  
## 1 14 8  
## 2 11 11  
## 3 18 11  
## 4 7 7  
## 5 16 12  
## 6 15 11  
## 7 24 13  
## 8 14 12  
## Opp.Redzone.Field.Goals.Made Opp.Redzone.Scores Redzone.Points.Allowed  
## 1 8 30 0.789  
## 2 14 36 0.783  
## 3 14 43 0.896  
## 4 6 20 0.714  
## 5 8 36 0.750  
## 6 10 36 0.800  
## 7 14 51 0.850  
## 8 10 36 0.800  
## Rushing.Off.Rank Rush.Attempts Rush.Yds Yards.Rush Rushing.TD  
## 1 71 591 2546 4.31 30  
## 2 18 573 3078 5.37 30  
## 3 66 540 2406 4.46 34  
## 4 33 574 2768 4.82 41  
## 5 68 491 2221 4.52 32  
## 6 40 518 2630 5.08 33  
## 7 5 570 3709 6.51 47  
## 8 35 522 2716 5.20 20  
## Rushing.Yards.per.Game Rushing.Def.Rank Opp.Rush.Attempts  
## 1 169.7 24 525  
## 2 236.8 55 465  
## 3 171.9 48 551  
## 4 212.9 15 481  
## 5 170.8 82 548  
## 6 202.3 21 457  
## 7 285.3 84 570  
## 8 208.9 38 457  
## Opp.Rush.Yards.Alloweed Yds.Rush.Allowed Opp.Rush.Touchdowns.Allowed  
## 1 1944 3.70 20  
## 2 2114 4.55 15  
## 3 2118 3.84 22  
## 4 1550 3.22 9  
## 5 2515 4.59 22  
## 6 1664 3.64 19  
## 7 2554 4.48 29  
## 8 1878 4.11 15  
## Rush.Yards.Per.Game.Allowed Sack.Rank Sacks Sack.Yards Average.Sacks.per.Game  
## 1 129.6 22 20 114 1.33  
## 2 162.6 36 21 134 1.62  
## 3 151.3 41 24 161 1.71  
## 4 119.2 40 22 145 1.69  
## 5 193.5 93 32 201 2.46  
## 6 128.0 106 36 301 2.77  
## 7 196.5 14 15 94 1.15  
## 8 144.5 100 34 202 2.62  
## Scoring.Def.Rank Touchdowns.Allowed Opponent.Extra.Points  
## 1 10 34 30  
## 2 68 46 43  
## 3 47 42 40  
## 4 2 22 17  
## 5 53 46 37  
## 6 44 40 32  
## 7 92 50 42  
## 8 18 33 29  
## X2.Point.Conversions.Allowed Opp.Deflected.Extra.Points Opp.Feild.Goals.Made  
## 1 0 0 12  
## 2 1 0 18  
## 3 1 0 20  
## 4 1 0 10  
## 5 1 0 10  
## 6 2 1 15  
## 7 2 0 21  
## 8 1 0 12  
## Opp.Safety Points.Allowed Avg.Points.per.Game.Allowed Scoring.Off.Rank  
## 1 0 270 18.0 14  
## 2 0 375 28.8 3  
## 3 1 356 25.4 21  
## 4 1 183 14.1 11  
## 5 0 345 26.5 17  
## 6 1 325 25.0 31  
## 7 1 411 31.6 4  
## 8 0 265 20.4 83  
## Touchdowns PAT X2.Point.Conversions Defensive.Points Feild.Goals Safety  
## 1 78 72 2 0 14 1  
## 2 77 72 2 0 11 0  
## 3 66 62 1 0 22 0  
## 4 66 63 2 2 19 0  
## 5 63 60 1 1 20 0  
## 6 57 54 0 0 20 0  
## 7 77 75 1 0 10 0  
## 8 39 34 1 0 22 3  
## Total.Points Points.Per.Game Tackle.for.Loss.Rank Solo.Tackle.For.Loss  
## 1 588 39.2 3 108  
## 2 571 43.9 97 53  
## 3 526 37.6 7 79  
## 4 524 40.3 2 88  
## 5 502 38.6 31 74  
## 6 456 35.1 22 81  
## 7 569 43.8 52 70  
## 8 342 26.3 78 55  
## Assist.Tackle.For.Loss Tackle.for.Loss.Yards Total.Tackle.For.Loss  
## 1 44 551 130  
## 2 30 244 68  
## 3 68 442 113  
## 4 66 497 121  
## 5 32 339 90  
## 6 28 431 95  
## 7 18 305 79  
## 8 34 327 72  
## Tackle.For.Loss.Per.Game X3rd.Down.Rank X3rd.Attempts X3rd.Conversions  
## 1 8.7 8 233 117  
## 2 5.2 4 169 87  
## 3 8.1 117 172 56  
## 4 9.3 40 183 79  
## 5 6.9 41 179 77  
## 6 7.3 34 169 74  
## 7 6.1 27 189 84  
## 8 5.5 50 178 75  
## X3rd.Percent X3rd.Down.Def.Rank Opp.3rd.Conversion Opp.3rd.Attempt  
## 1 0.502 5 62 221  
## 2 0.515 94 92 216  
## 3 0.326 52 84 219  
## 4 0.432 1 37 176  
## 5 0.430 61 76 195  
## 6 0.438 17 61 180  
## 7 0.444 63 85 217  
## 8 0.421 37 70 188  
## Opponent.3rd.Percent Time.of.Possession.Rank Time.of.Possession  
## 1 0.281 55 Â Â Â 459:01  
## 2 0.426 25 Â Â Â 419:30  
## 3 0.384 102 Â Â Â 388:17  
## 4 0.210 15 Â Â Â 429:38  
## 5 0.390 84 Â Â Â 375:00  
## 6 0.339 16 Â Â Â 428:00  
## 7 0.392 114 Â Â Â 348:35  
## 8 0.372 17 Â Â Â 426:09  
## Average.Time.of.Possession.per.Game Turnover.Rank Fumbles.Recovered  
## 1 Â Â Â 30:36 71 7  
## 2 Â Â Â 32:16 67 8  
## 3 Â Â Â 27:44 64 11  
## 4 Â Â Â 33:02 24 6  
## 5 Â Â Â 28:50 10 11  
## 6 Â Â Â 32:55 42 8  
## 7 Â Â Â 26:48 14 11  
## 8 Â Â Â 32:46 49 6  
## Opponents.Intercepted Turnovers.Gain Fumbles.Lost Interceptions.Thrown.y  
## 1 20 27 11 17  
## 2 9 17 9 8  
## 3 10 21 12 8  
## 4 13 19 5 7  
## 5 14 25 10 4  
## 6 15 23 12 8  
## 7 15 26 9 8  
## 8 14 20 9 9  
## Turnovers.Lost Turnover.Margin Avg.Turnover.Margin.per.Game  
## 1 28 -1 -0.07  
## 2 17 0 0.00  
## 3 20 1 0.07  
## 4 12 7 0.54  
## 5 14 11 0.85  
## 6 20 3 0.23  
## 7 17 9 0.69  
## 8 18 2 0.15

Analysis simila to 2015, but will include more statistics

select.upsetters.16<-upsetters.16 %>%   
 select(Win,Off.Rank,Def.Rank,Passing.Off.Rank,Penalty.Yards.Per.Game,Redzone.Points,Redzone.Points.Allowed,Rushing.Off.Rank,Scoring.Def.Rank,Redzone.Off.Rank,Redzone.Def.Rank,Sack.Rank,X3rd.Down.Def.Rank)  
   
select.upset.16<-upset.16 %>%   
 select(Win,Off.Rank,Def.Rank,Passing.Off.Rank,Penalty.Yards.Per.Game,Redzone.Points,Redzone.Points.Allowed,Rushing.Off.Rank,Scoring.Def.Rank,Redzone.Off.Rank,Redzone.Def.Rank,Sack.Rank,X3rd.Down.Def.Rank)  
select.upsetters.16

## Win Off.Rank Def.Rank Passing.Off.Rank Penalty.Yards.Per.Game Redzone.Points  
## 1 8 38 101 76 49.77 0.864  
## 2 9 41 13 17 42.62 0.859  
## 3 8 121 23 118 41.31 0.878  
## 4 6 78 54 26 48.46 0.725  
## 5 6 82 53 56 66.31 0.813  
## 6 8 45 63 22 61.31 0.836  
## 7 10 66 3 63 43.14 0.857  
## 8 8 18 62 3 68.92 0.831  
## Redzone.Points.Allowed Rushing.Off.Rank Scoring.Def.Rank Redzone.Off.Rank  
## 1 0.914 28 106 44  
## 2 0.882 99 30 48  
## 3 0.750 67 13 34  
## 4 0.788 120 79 125  
## 5 0.833 102 56 89  
## 6 0.796 100 43 71  
## 7 0.765 61 11 49  
## 8 0.842 114 50 73  
## Redzone.Def.Rank Sack.Rank X3rd.Down.Def.Rank  
## 1 119 3 76  
## 2 93 111 19  
## 3 13 84 27  
## 4 29 112 86  
## 5 56 89 22  
## 6 34 30 93  
## 7 18 62 21  
## 8 65 78 70

select.upset.16

## Win Off.Rank Def.Rank Passing.Off.Rank Penalty.Yards.Per.Game Redzone.Points  
## 1 14 12 8 7 58.00 0.842  
## 2 11 2 82 12 52.23 0.881  
## 3 11 49 37 36 44.43 0.866  
## 4 10 58 1 85 45.62 0.912  
## 5 10 14 92 9 49.46 0.884  
## 6 10 25 22 33 72.92 0.965  
## 7 11 11 120 70 58.69 0.860  
## 8 10 103 38 115 54.38 0.846  
## Redzone.Points.Allowed Rushing.Off.Rank Scoring.Def.Rank Redzone.Off.Rank  
## 1 0.789 71 10 66  
## 2 0.783 18 68 29  
## 3 0.896 66 47 43  
## 4 0.714 33 2 13  
## 5 0.750 68 53 26  
## 6 0.800 40 44 1  
## 7 0.850 5 92 47  
## 8 0.800 35 18 60  
## Redzone.Def.Rank Sack.Rank X3rd.Down.Def.Rank  
## 1 30 22 5  
## 2 25 36 94  
## 3 106 41 52  
## 4 3 40 1  
## 5 13 93 61  
## 6 36 106 17  
## 7 68 14 63  
## 8 36 100 37

means.under.16<-sapply(select.upsetters.16,FUN=mean)  
means.over.16<-sapply(select.upset.16,FUN=mean)  
  
all.fbselect.16<-FB16 %>%   
 select(Win,Off.Rank,Def.Rank,Passing.Off.Rank,Penalty.Yards.Per.Game,Redzone.Points,Redzone.Points.Allowed,Rushing.Off.Rank,Scoring.Def.Rank,Redzone.Off.Rank,Redzone.Def.Rank,Sack.Rank,X3rd.Down.Def.Rank)  
  
fb.means.16<-sapply(all.fbselect.16,FUN=mean)

mean.upset.16<-means.over.16-means.under.16 ## Upset teams means - upsetters means.   
mean.all.16<-means.over.16-fb.means.16 ## upset teams - all team means  
  
mean.upset.16 # Positive rank is better for upsetters teams.

## Win Off.Rank Def.Rank   
## 3.000000 -26.875000 3.500000   
## Passing.Off.Rank Penalty.Yards.Per.Game Redzone.Points   
## -1.750000 1.736250 0.049125   
## Redzone.Points.Allowed Rushing.Off.Rank Scoring.Def.Rank   
## -0.023500 -44.375000 -6.750000   
## Redzone.Off.Rank Redzone.Def.Rank Sack.Rank   
## -31.000000 -13.750000 -14.625000   
## X3rd.Down.Def.Rank   
## -10.500000

mean.all.16

## Win Off.Rank Def.Rank   
## 4.11637931 -30.15517241 -14.06034483   
## Passing.Off.Rank Penalty.Yards.Per.Game Redzone.Points   
## -16.38362069 0.59762931 0.04709483   
## Redzone.Points.Allowed Rushing.Off.Rank Scoring.Def.Rank   
## -0.03432759 -24.20689655 -21.32758621   
## Redzone.Off.Rank Redzone.Def.Rank Sack.Rank   
## -30.71120690 -22.16810345 -8.94827586   
## X3rd.Down.Def.Rank   
## -20.89655172

means.under.16-fb.means.16 ## upsetting teams-all teams , negative rank is better for upsetters teams

## Win Off.Rank Def.Rank   
## 1.116379310 -3.280172414 -17.560344828   
## Passing.Off.Rank Penalty.Yards.Per.Game Redzone.Points   
## -14.633620690 -1.138620690 -0.002030172   
## Redzone.Points.Allowed Rushing.Off.Rank Scoring.Def.Rank   
## -0.010827586 20.168103448 -14.577586207   
## Redzone.Off.Rank Redzone.Def.Rank Sack.Rank   
## 0.288793103 -8.418103448 5.676724138   
## X3rd.Down.Def.Rank   
## -10.396551724

The most intruiging statistic here is that the average upsetting team had a better defense than the team that they upset, but overall were a lot worse in terms of total offense. Passingoffenses were very close as were redzone points allowed. Overall the upsetting teams seemed to perform much better defensively than offensively.

In genreal it appears that the upsetting teams need to be better than average in order to upset a top 25 team

## Predictive analytics

model.fit.16<-lm(Win~.,data=all.fbselect.16)  
  
step(model.fit.16,direction = "both",trace=F)

##   
## Call:  
## lm(formula = Win ~ Off.Rank + Redzone.Points + Redzone.Points.Allowed +   
## Scoring.Def.Rank + Redzone.Off.Rank + Sack.Rank, data = all.fbselect.16)  
##   
## Coefficients:  
## (Intercept) Off.Rank Redzone.Points   
## 30.684713 -0.030148 -21.616674   
## Redzone.Points.Allowed Scoring.Def.Rank Redzone.Off.Rank   
## 3.781418 -0.052237 -0.050582   
## Sack.Rank   
## -0.006609

lm(formula = Win ~ Off.Rank + Redzone.Points + Redzone.Points.Allowed +   
 Scoring.Def.Rank + Redzone.Off.Rank + Sack.Rank, data = all.fbselect.16) # Best Model

##   
## Call:  
## lm(formula = Win ~ Off.Rank + Redzone.Points + Redzone.Points.Allowed +   
## Scoring.Def.Rank + Redzone.Off.Rank + Sack.Rank, data = all.fbselect.16)  
##   
## Coefficients:  
## (Intercept) Off.Rank Redzone.Points   
## 30.684713 -0.030148 -21.616674   
## Redzone.Points.Allowed Scoring.Def.Rank Redzone.Off.Rank   
## 3.781418 -0.052237 -0.050582   
## Sack.Rank   
## -0.006609

mean(predict.lm(model.fit.16,select.upset.16)-select.upset.16$Win)

## [1] -1.58287

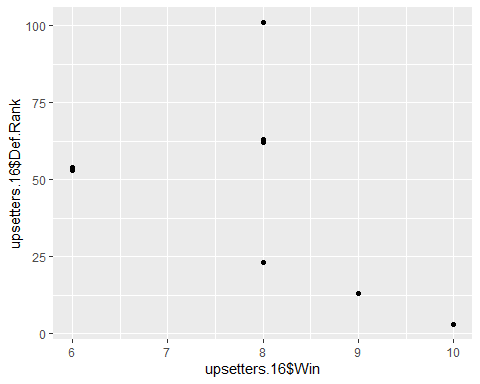
mean(predict.lm(model.fit.16,select.upsetters.16)-select.upsetters.16$Win)

## [1] -0.3136302

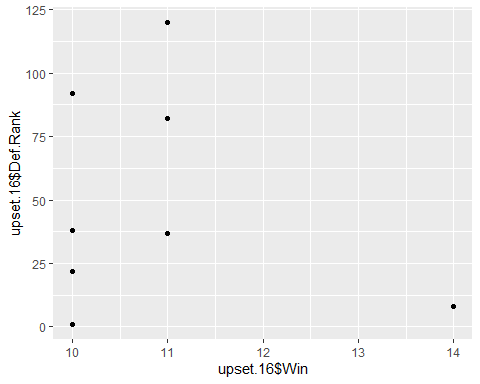
This model under predicted the win totals for each group, but much more for the teams that were upset, this leads me to believe that the better teams were outperforming their true talent relative to the upset teams. This may be decent evidence towards a pattern of upset.

## Plotting and Correlations

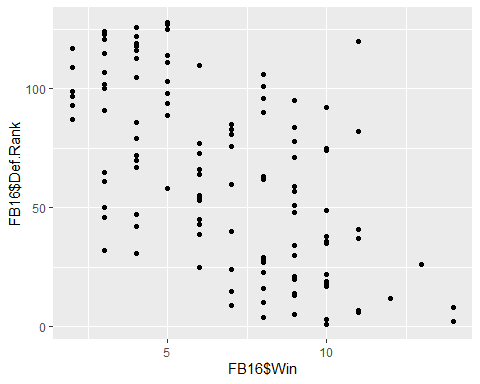
library(ggplot2)  
par(mfrow=c(2,2))  
ggplot(mapping=aes(upsetters.16$Win,upsetters.16$Def.Rank))+geom\_point()



ggplot(mapping=aes(upset.16$Win,upset.16$Def.Rank))+geom\_point()



ggplot(mapping = aes(FB16$Win,FB16$Def.Rank))+geom\_point()



cor.test(FB16$Win,FB16$Def.Rank)

##   
## Pearson's product-moment correlation  
##   
## data: FB16$Win and FB16$Def.Rank  
## t = -7.974, df = 114, p-value = 1.308e-12  
## alternative hypothesis: true correlation is not equal to 0  
## 95 percent confidence interval:  
## -0.7038991 -0.4670037  
## sample estimates:  
## cor   
## -0.5983733

cor.test(upset.16$Win,upset.16$Def.Rank)

##   
## Pearson's product-moment correlation  
##   
## data: upset.16$Win and upset.16$Def.Rank  
## t = -0.48303, df = 6, p-value = 0.6462  
## alternative hypothesis: true correlation is not equal to 0  
## 95 percent confidence interval:  
## -0.7903879 0.5918967  
## sample estimates:  
## cor   
## -0.1934722

cor.test(upsetters.16$Win,upsetters.16$Def.Rank)

##   
## Pearson's product-moment correlation  
##   
## data: upsetters.16$Win and upsetters.16$Def.Rank  
## t = -1.3751, df = 6, p-value = 0.2183  
## alternative hypothesis: true correlation is not equal to 0  
## 95 percent confidence interval:  
## -0.8879047 0.3284665  
## sample estimates:  
## cor   
## -0.4895089

There is a much stronger correlation between all teams Wins and Defensive ranking than upset teams or upsetting teams, howeveer upsetting teams correlation is much higher than upset teams.

## Interpretation

In this case i would argue that there could be a slight connection between the defense of the upsetting team and their victory. in 2016 the defensive ranking of these upset teams was overall higher than the teams they upset.

## combination of years

all.upsetters<-rbind(select.upsetters,select.upsetters.16[,1:9])  
all.upsets<-rbind(select.upsetted,select.upset.16[,1:9])  
all.fbs<-rbind(all.fbselect,all.fbselect.16[,1:9])  
  
sapply(all.upsetters, mean)->mean.u  
sapply(all.upsets,mean)->mean.up  
sapply(all.fbs,mean)->mean.all.full  
  
  
mean.u-mean.all.full

## Win Off.Rank Def.Rank   
## 0.146502620 -7.837548416 -0.401002506   
## Passing.Off.Rank Penalty.Yards.Per.Game Redzone.Points   
## -9.152654363 -0.712572340 0.014245386   
## Redzone.Points.Allowed Rushing.Off.Rank Scoring.Def.Rank   
## 0.005879244 -0.995670996 -2.664160401

mean.u-mean.up

## Win Off.Rank Def.Rank   
## -3.87616099 21.01857585 13.96594427   
## Passing.Off.Rank Penalty.Yards.Per.Game Redzone.Points   
## 6.28482972 -2.09414861 -0.02804644   
## Redzone.Points.Allowed Rushing.Off.Rank Scoring.Def.Rank   
## 0.01401548 22.76470588 21.29102167

par(mfrow=c(2,2))  
  
  
  
plot(all.upsets$Def.Rank,all.upsets$Off.Rank)  
plot(all.upsetters$Def.Rank,all.upsetters$Off.Rank)  
  
  
mean(all.upsets$Off.Rank)

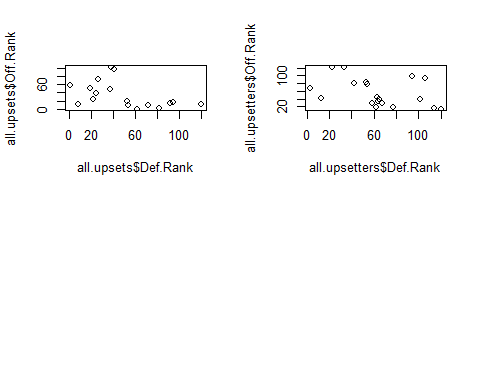
## [1] 34.82353

mean(all.upsetters$Off.Rank)

## [1] 55.84211

mean(all.fbs$Off.Rank)

## [1] 63.67965

 Combining the years of 2015 and 2016 doesnt change much, however the clearest piece of evidence is still that in order to upset a top 25 team, you must be above average on offensive and defensive rankings.

## Limitations

1. Unable to use full data set as using every variable was too taxing, could have potentially missed key variables.
2. Human bias in determining what a key statistic would be
3. Small Sample size in terms of # of teams in individual years.
4. Data did not contain every single college football team in the NCAA-FBS league