Point Guard Percentiles

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Statistical Conditions

Using statistics from Basketball Reference. Player has played over 20 games and over 6 minutes per game.

Loading Packages

```
lapply(
  c('heatmaply', # devtools::install_github('talgalili/heatmaply')
    'mclust', #install.packages('mclust')
    'dplyr', # devtools::install_github('hadley/dplyr')
    'plotly', # devtools::install_github('ropensci/plotly')
    'nbastatR', # devtools::install_github('abresler/nbastatR')
    'purrr', # devtools::install_github('hadley/purrr')
    'tidyr' # devtools::install_github('hadley/tidyr')
  ),
  library,
  character.only = T
)

options(digits = 4)
```

Using Statistics from Basketball Reference

Start by creating per minute stats. Then, use rank function to create rank vector for each stat. Use rank values to find percentile.

```
stat_2019 <- bref_players_stats(season = "2019", tables = c("advanced", "totals", "per game", "per 36")
  filter(countGames > 20) %>%
  filter(minutesPerGame > 6) %>%
  filter(slugPosition == 'PG') %>%
  mutate(df_size = length(ptsPerGame) - 1) %>%
  mutate(ptsPerMinute = ptsPerGame / minutesPerGame, fgaPerMinute = fgaPerGame / minutesPerGame) %>%
  mutate(astPerMinute = astPerGame / minutesPerGame, tovPerMinute = tovPerGame / minutesPerGame) %>%
  mutate(trbPerMinute = trbPerGame / minutesPerGame, orbPerMinute = orbPerGame / minutesPerGame, drbPer
  mutate(blkPerMinute = blkPerGame / minutesPerGame, stlPerMinute = stlPerGame / minutesPerGame, pfPerk
  mutate(pts_pg_rank = rank(ptsPerGame), pts_pm_rank = rank(ptsPerMinute), fga_pg_rank = rank(fgaPerGam
  mutate(ast_pg_rank = rank(astPerGame), ast_pm_rank = rank(astPerMinute), tov_pg_rank = rank(tovPerGam
  mutate(trb_pg_rank = rank(trbPerGame), trb_pm_rank = rank(trbPerMinute), orb_pg_rank = rank(orbPerGam
  mutate(drb_pg_rank = rank(drbPerGame), drb_pm_rank = rank(drbPerMinute), blk_pg_rank = rank(blkPerGam
  mutate(stl_pg_rank = rank(stlPerGame), stl_pm_rank = rank(stlPerMinute), pf_pg_rank = rank(pfPerGame)
  mutate(pctFG_rank = rank(pctFG), pctFG3_rank = rank(pctFG3), pctFG2_rank = rank(pctFG2), pctFT_rank =
  mutate(pctEFG_rank = rank(pctEFG), pctTS_rank = rank(pctTrueShooting)) %>%
  mutate(ratioOWS_rank = rank(ratioOWS), ratioOBPM_rank = rank(ratioOBPM), ratioDWS_rank = rank(ratioDW
  mutate(ratioWS_rank = rank(ratioWS), ratioWSPer48_rank = rank(ratioWSPer48), ratioBPM_rank = rank(rat
  mutate(ratioOWS_percentile = (100 * (ratioOWS_rank - 0.5) / df_size), ratioDWS_percentile = (100 * (
  mutate(ratioWS_percentile = (100 * (ratioWS_rank - 0.5) / df_size), ratioWSPer48_percentile = (100 *
  mutate(ratioOBPM_percentile = (100 * (ratioOBPM_rank - 0.5) / df_size), ratioDBPM_percentile = (100 =
```

```r
    mutate(ratioBPM_percentile = (100 * (ratioBPM_rank - 0.5) / df_size), ratioVORP_percentile = (100 *
    mutate(ratioPER_percentile = (100 * (ratioPER_rank - 0.5) / df_size)) %>%
    mutate(pts_pg_percentile = (100 * (pts_pg_rank - 0.5) / df_size), pts_pm_percentile = (100 * (pts_pm_
    mutate(fga_pg_percentile = (100 * (fga_pg_rank - 0.5) / df_size), fga_pm_percentile = (100 * (fga_pm_
    mutate(ast_pg_percentile = (100 * (ast_pg_rank - 0.5) / df_size), ast_pm_percentile = (100 * (ast_pm_
    mutate(tov_pg_percentile = (100 * (tov_pg_rank - 0.5) / df_size), tov_pm_percentile = (100 * (tov_pm_
    mutate(tov_ast_rank = rank(astPerMinute/tovPerMinute), tov_ast_percentile = (100 * (tov_ast_rank) -
    mutate(trb_pg_percentile = (100 * (trb_pg_rank - 0.5) / df_size), trb_pm_percentile = (100 * (trb_pm_
    mutate(orb_pg_percentile = (100 * (orb_pg_rank - 0.5) / df_size), orb_pm_percentile = (100 * (orb_pm_
    mutate(drb_pg_percentile = (100 * (drb_pg_rank - 0.5) / df_size), drb_pm_percentile = (100 * (drb_pm_
    mutate(blk_pg_percentile = (100 * (blk_pg_rank - 0.5) / df_size), blk_pm_percentile = (100 * (pts_pm_
    mutate(stl_pg_percentile = (100 * (stl_pg_rank - 0.5) / df_size), stl_pm_percentile = (100 * (stl_pm_
    mutate(pf_pg_percentile = (100 * (pf_pg_rank - 0.5) / df_size), pf_pm_percentile = (100 * (pf_pm_rank
    mutate(pctFG_percentile = (100 * (pctFG_rank - 0.5) / df_size), pctFG3_percentile = (100 * (pctFG3_ra
    mutate(pctFG2_percentile = (100 * (pctFG2_rank - 0.5) / df_size), pctFT_percentile = (100 * (pctFT_ra
    mutate(pctEFG_percentile = (100 * (pctEFG_rank - 0.5) / df_size), pctTS_percentile = (100 * (pctTS_ra
    mutate(pts_percentile = pts_pg_percentile + pts_pm_percentile / 200, ast_percentile =  ast_pg_percent
    mutate(fga_percentile = fga_pg_percentile + fga_pm_percentile / 200, tov_percentile =  tov_pg_percen
    mutate(trb_percentile = trb_pg_percentile + trb_pm_percentile / 200, orb_percentile =  orb_pg_percen
    mutate(drb_percentile = drb_pg_percentile + drb_pm_percentile / 200, blk_percentile =  blk_pg_percen
    mutate(stl_percentile = stl_pg_percentile + stl_pm_percentile / 200, pf_percentile =  pf_pg_percenti
    mutate(rebound_percentile = (trb_percentile + orb_percentile + drb_percentile) / 3) %>%
    mutate(total_percentile = (pts_percentile + ast_percentile + fga_percentile - tov_percentile + rebou
```

```
## parsed http://www.basketball-reference.com/leagues/NBA_2019_advanced.html
## parsed http://www.basketball-reference.com/leagues/NBA_2019_totals.html
## parsed http://www.basketball-reference.com/leagues/NBA_2019_per_game.html
## Advanced
## Assigning NBA player dictionary to df_dict_nba_players to your environment
## Totals
## PerGame
```

```r
size = length(stat_2019$ptsPerGame) - 1
```

Overview

Throughout this section players will be evaluated based on two simple factors: per game prodcution, and per minute production. This takes into account the total volume of their "raw" offensive stats, as well as the volume compared to their time on the court. In doing this, we are looking at players who produce at a high level while on the court, as well as players who can produce at a high volume of minutes.

The criteria do not necessarily speak to the efficiency of the player. The top 20% will be evaluated in the following criteria.

Raw Offensive Stats

Top 20% in points per game and points per minute, combined:

```r
stats_2019 <- stat_2019[order(-stat_2019$pts_percentile),] %>%
    filter(pts_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$pts_percentile))
```

```
##  [1] "James Harden"      "Stephen Curry"     "Damian Lillard"
##  [4] "Kemba Walker"      "Kyrie Irving"      "Russell Westbrook"
```

```
##  [7] "D'Angelo Russell"   "Mike Conley"        "John Wall"
## [10] "Trae Young"         "Jamal Murray"       "Derrick Rose"
## [13] "De'Aaron Fox"       "Ben Simmons"        "Spencer Dinwiddie"
## [16] "Collin Sexton"      "Eric Bledsoe"       "Chris Paul"
## [19] "101.112804878049"   "99.8871951219512"   "98.655487804878"
## [22] "97.4420731707317"   "96.2103658536585"   "94.9725609756098"
## [25] "93.155487804878"    "93.1371951219512"   "91.2957317073171"
## [28] "90.0823170731707"   "88.8384146341463"   "87.6615853658537"
## [31] "86.3871951219512"   "85.1189024390244"   "83.9725609756098"
## [34] "82.6920731707317"   "81.4969512195122"   "80.234756097561"
```

Top 20% in assists per game and assists per minute, combined:

```
stats_2019 <- stat_2019[order(-stat_2019$ast_percentile),] %>%
    filter(ast_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$ast_percentile))
```

```
##  [1] "Russell Westbrook" "Kyle Lowry"        "John Wall"
##  [4] "Jeff Teague"        "Chris Paul"        "Trae Young"
##  [7] "Rajon Rondo"        "Ben Simmons"       "Elfrid Payton"
## [10] "James Harden"       "De'Aaron Fox"      "D'Angelo Russell"
## [13] "Kyrie Irving"       "Damian Lillard"    "Mike Conley"
## [16] "Ricky Rubio"        "Darren Collison"   "Kris Dunn"
## [19] "101.112804878049"   "99.2469512195122"  "99.234756097561"
## [22] "96.8323170731707"   "96.8140243902439"  "94.9908536585366"
## [25] "93.7774390243902"   "92.5091463414634"  "91.3140243902439"
## [28] "90.0213414634146"   "88.8628048780488"  "87.6371951219512"
## [31] "85.765243902439"    "85.734756097561"   "83.8932926829268"
## [34] "82.734756097561"    "80.8993902439024"  "80.8689024390244"
```

Top 20% in rebounds per game and rebounds per minute, combined (including offensive and defensive):

```
stats_2019 <- stat_2019[order(-stat_2019$trb_percentile),] %>%
    filter(trb_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$trb_percentile))
```

```
##  [1] "Russell Westbrook" "Ben Simmons"       "James Harden"
##  [4] "Rajon Rondo"        "Lonzo Ball"        "Stephen Curry"
##  [7] "Elfrid Payton"      "Patrick Beverley"  "Kyrie Irving"
## [10] "Kyle Lowry"         "Eric Bledsoe"      "Chris Paul"
## [13] "Damian Lillard"     "Evan Turner"       "Kemba Walker"
## [16] "Jamal Murray"       "Kris Dunn"         "101.112804878049"
## [19] "99.8871951219512"   "98.6432926829268"  "96.1981707317073"
## [22] "96.1920731707317"   "96.1615853658537"  "93.7469512195122"
## [25] "91.9420731707317"   "91.875"            "90.0030487804878"
## [28] "87.6310975609756"   "87.5823170731707"  "87.5274390243902"
## [31] "85.2469512195122"   "83.8323170731707"  "82.6310975609756"
## [34] "81.4542682926829"
```

```
stats_2019 <- stat_2019[order(-stat_2019$orb_percentile),] %>%
    filter(orb_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$orb_percentile))
```

```
##  [1] "Ben Simmons"            "Russell Westbrook"
```

```
##  [3] "Elfrid Payton"         "Eric Bledsoe"
##  [5] "Lonzo Ball"            "Kyrie Irving"
##  [7] "Patrick Beverley"      "Delon Wright"
##  [9] "Jamal Murray"          "Damian Lillard"
## [11] "Alex Caruso"           "Trae Young"
## [13] "James Harden"          "Michael Carter-Williams"
## [15] "Shaun Livingston"      "Tim Frazier"
## [17] "George Hill"           "Shai Gilgeous-Alexander"
## [19] "Rajon Rondo"           "D'Angelo Russell"
## [21] "Collin Sexton"         "Stephen Curry"
## [23] "101.112804878049"      "99.8689024390244"
## [25] "98.6432926829268"      "96.1920731707317"
## [27] "96.1676829268293"      "96.1615853658537"
## [29] "93.734756097561"       "91.3201219512195"
## [31] "91.265243902439"       "91.2225609756098"
## [33] "87.6493902439024"      "87.5884146341463"
## [35] "87.4969512195122"      "80.375"
## [37] "80.3689024390244"      "80.3262195121951"
## [39] "80.3018292682927"      "80.2774390243902"
## [41] "80.2225609756098"      "80.2164634146341"
## [43] "80.1920731707317"      "80.155487804878"
```

```r
stats_2019 <- stat_2019[order(-stat_2019$drb_percentile),] %>%
    filter(drb_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$drb_percentile))
```

```
##  [1] "Russell Westbrook" "Ben Simmons"       "James Harden"
##  [4] "Stephen Curry"     "Rajon Rondo"       "Lonzo Ball"
##  [7] "Kyle Lowry"        "Elfrid Payton"     "Evan Turner"
## [10] "Patrick Beverley"  "Chris Paul"        "Kyrie Irving"
## [13] "Kemba Walker"      "Damian Lillard"    "Kris Dunn"
## [16] "Eric Bledsoe"      "Terry Rozier"      "Jamal Murray"
## [19] "101.112804878049"  "99.8871951219512"  "98.655487804878"
## [22] "97.4115853658537"  "96.2042682926829"  "94.3567073170732"
## [25] "94.3018292682927"  "92.5213414634146"  "90.734756097561"
## [28] "90.7103658536585"  "88.1859756097561"  "88.1798780487805"
## [31] "85.6798780487805"  "85.6676829268293"  "83.9298780487805"
## [34] "82.7225609756098"  "81.5762195121951"  "80.1676829268293"
```

Bottom 20% in turnovers per minute and top 20% in ast/tov per minute percentile ratio:

```r
stats_2019 <- stat_2019[order(-stat_2019$tov_pm_percentile),] %>%
    filter(tov_pm_percentile < 20)

print(c(stats_2019$namePlayer, stats_2019$tov_pm_percentile))
```

```
##  [1] "Delon Wright"         "Edmond Sumner"      "Brandon Knight"
##  [4] "Frank Jackson"        "George Hill"        "Trey Burke"
##  [7] "Shaquille Harrison"   "Patrick Beverley"   "Yogi Ferrell"
## [10] "Shaun Livingston"     "Cory Joseph"        "Terry Rozier"
## [13] "Raymond Felton"       "Ryan Arcidiacono"   "Tyus Jones"
## [16] "Monte Morris"         "18.9024390243902"   "17.6829268292683"
## [19] "16.4634146341463"     "15.2439024390244"   "14.0243902439024"
## [22] "12.8048780487805"     "11.5853658536585"   "10.3658536585366"
## [25] "9.14634146341463"     "7.92682926829268"   "6.70731707317073"
```

```
## [28] "5.48780487804878"   "4.26829268292683"   "3.04878048780488"
## [31] "1.82926829268293"   "0.609756097560976"
```

```r
stats_2019 <- stat_2019[order(-stat_2019$tov_ast_percentile),] %>%
  filter(tov_ast_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$tov_ast_percentile))
```

```
##  [1] "Tyus Jones"              "Monte Morris"
##  [3] "Ryan Arcidiacono"        "Raymond Felton"
##  [5] "Cory Joseph"             "Jerryd Bayless"
##  [7] "Darren Collison"         "Devonte' Graham"
##  [9] "Fred VanVleet"           "Michael Carter-Williams"
## [11] "Jeff Teague"             "Patrick Beverley"
## [13] "Trey Burke"              "Mike Conley"
## [15] "D.J. Augustin"           "Delon Wright"
## [17] "Ish Smith"               "Tim Frazier"
## [19] "101.213414634146"        "99.9939024390244"
## [21] "98.7743902439024"        "97.5548780487805"
## [23] "96.3353658536585"        "95.1158536585366"
## [25] "93.8963414634146"        "92.6768292682927"
## [27] "91.4573170731707"        "90.2378048780488"
## [29] "89.0182926829268"        "87.7987804878049"
## [31] "86.5792682926829"        "85.359756097561"
## [33] "84.140243902439"         "82.9207317073171"
## [35] "81.7012195121951"        "80.4817073170732"
```

Offensive Efficiency & Advanced Stats

Top 20% in field goal percent, 2-point percentage, 3-point percentage, and free throw percentage:

```r
stats_2019 <- stat_2019[order(-stat_2019$pctFG_percentile),] %>%
  filter(pctFG_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$pctFG_percentile))
```

```
##  [1] "Ben Simmons"             "T.J. McConnell"
##  [3] "Shaun Livingston"        "Monte Morris"
##  [5] "Kyrie Irving"            "Eric Bledsoe"
##  [7] "Derrick Rose"            "Derrick White"
##  [9] "Brad Wanamaker"          "Shai Gilgeous-Alexander"
## [11] "Stephen Curry"           "D.J. Augustin"
## [13] "Darren Collison"         "Jalen Brunson"
## [15] "Quinn Cook"              "Evan Turner"
## [17] "Raul Neto"               "Tony Parker"
## [19] "100.609756097561"        "99.390243902439"
## [21] "98.1707317073171"        "96.9512195121951"
## [23] "95.7317073170732"        "94.5121951219512"
## [25] "93.2926829268293"        "92.0731707317073"
## [27] "90.2439024390244"        "90.2439024390244"
## [29] "88.4146341463415"        "87.1951219512195"
## [31] "85.3658536585366"        "85.3658536585366"
## [33] "83.5365853658537"        "81.0975609756098"
## [35] "81.0975609756098"        "81.0975609756098"
```

```r
stats_2019 <- stat_2019[order(-stat_2019$pctFG2_percentile),] %>%
    filter(pctFG2_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$pctFG2_percentile))
```

```
##  [1] "Eric Bledsoe"      "Ben Simmons"       "George Hill"
##  [4] "T.J. McConnell"    "Frank Mason"       "Raul Neto"
##  [7] "Kyrie Irving"      "Monte Morris"      "Derrick White"
## [10] "James Harden"      "Spencer Dinwiddie" "Ryan Arcidiacono"
## [13] "Stephen Curry"     "Shaun Livingston"  "Jalen Brunson"
## [16] "Jeremy Lin"        "Brad Wanamaker"    "Quinn Cook"
## [19] "100.609756097561"  "99.390243902439"   "98.1707317073171"
## [22] "96.9512195121951"  "95.7317073170732"  "94.5121951219512"
## [25] "93.2926829268293"  "92.0731707317073"  "90.8536585365854"
## [28] "89.0243902439024"  "89.0243902439024"  "87.1951219512195"
## [31] "85.9756097560976"  "84.7560975609756"  "83.5365853658537"
## [34] "82.3170731707317"  "80.4878048780488"  "80.4878048780488"
```

```r
stats_2019 <- stat_2019[order(-stat_2019$pctFG3_percentile),] %>%
    filter(pctFG3_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$pctFG3_percentile))
```

```
##  [1] "Alex Caruso"       "Stephen Curry"     "D.J. Augustin"
##  [4] "Monte Morris"      "Brad Wanamaker"    "Darren Collison"
##  [7] "Quinn Cook"        "Collin Sexton"     "Kyrie Irving"
## [10] "Chasson Randle"    "Patrick Beverley"  "Patty Mills"
## [13] "Fred VanVleet"     "Ryan Arcidiacono"  "De'Aaron Fox"
## [16] "Derrick Rose"      "100.609756097561"  "99.390243902439"
## [19] "98.1707317073171"  "96.9512195121951"  "95.7317073170732"
## [22] "94.5121951219512"  "93.2926829268293"  "92.0731707317073"
## [25] "90.8536585365854"  "89.6341463414634"  "88.4146341463415"
## [28] "87.1951219512195"  "85.9756097560976"  "84.7560975609756"
## [31] "83.5365853658537"  "82.3170731707317"
```

```r
stats_2019 <- stat_2019[order(-stat_2019$pctFT_percentile),] %>%
    filter(pctFT_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$pctFT_percentile))
```

```
##  [1] "Raymond Felton"    "Stephen Curry"     "Damian Lillard"
##  [4] "Yogi Ferrell"      "James Harden"      "Kyrie Irving"
##  [7] "Ryan Arcidiacono"  "D.J. Augustin"     "Reggie Jackson"
## [10] "Chris Paul"        "Brad Wanamaker"    "Derrick Rose"
## [13] "Ricky Rubio"       "Patty Mills"       "Jamal Murray"
## [16] "Raul Neto"         "Mike Conley"       "100.609756097561"
## [19] "99.390243902439"   "98.1707317073171"  "96.9512195121951"
## [22] "95.7317073170732"  "93.9024390243902"  "93.9024390243902"
## [25] "92.0731707317073"  "90.8536585365854"  "89.6341463414634"
## [28] "88.4146341463415"  "87.1951219512195"  "85.9756097560976"
## [31] "84.7560975609756"  "82.9268292682927"  "82.9268292682927"
## [34] "81.0975609756098"
```

Top 20% in effective field goal percentage and true shooting percentage:

```r
stats_2019 <- stat_2019[order(-stat_2019$pctEFG_percentile),] %>%
    filter(pctEFG_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$pctEFG_percentile))
```

```
##  [1] "Stephen Curry"    "D.J. Augustin"    "Ben Simmons"
##  [4] "Monte Morris"     "Kyrie Irving"     "Quinn Cook"
##  [7] "Brad Wanamaker"   "Eric Bledsoe"     "Patty Mills"
## [10] "Ryan Arcidiacono" "T.J. McConnell"   "James Harden"
## [13] "Darren Collison"  "Chasson Randle"   "Patrick Beverley"
## [16] "Derrick White"    "Jalen Brunson"    "100.609756097561"
## [19] "99.390243902439"  "98.1707317073171" "96.9512195121951"
## [22] "95.1219512195122" "95.1219512195122" "93.2926829268293"
## [25] "92.0731707317073" "90.8536585365854" "89.6341463414634"
## [28] "88.4146341463415" "87.1951219512195" "85.9756097560976"
## [31] "84.7560975609756" "83.5365853658537" "81.7073170731707"
## [34] "81.7073170731707"
```

```r
stats_2019 <- stat_2019[order(-stat_2019$pctTS_percentile),] %>%
    filter(pctTS_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$pctTS_percentile))
```

```
##  [1] "Stephen Curry"    "D.J. Augustin"    "James Harden"
##  [4] "Brad Wanamaker"   "Kyrie Irving"     "Damian Lillard"
##  [7] "Ryan Arcidiacono" "Ben Simmons"      "Spencer Dinwiddie"
## [10] "Eric Bledsoe"     "Monte Morris"     "Darren Collison"
## [13] "Patty Mills"      "Alex Caruso"      "Mike Conley"
## [16] "Quinn Cook"       "Kyle Lowry"       "100.609756097561"
## [19] "98.780487804878"  "98.780487804878"  "96.9512195121951"
## [22] "95.7317073170732" "93.9024390243902" "93.9024390243902"
## [25] "92.0731707317073" "90.8536585365854" "89.0243902439024"
## [28] "89.0243902439024" "87.1951219512195" "85.9756097560976"
## [31] "84.1463414634146" "84.1463414634146" "82.3170731707317"
## [34] "81.0975609756098"
```

Top 20% in offensive box plus-minus and offensive win shares:

```r
stats_2019 <- stat_2019[order(-stat_2019$ratioOBPM_percentile),] %>%
    filter(ratioOBPM_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$ratioOBPM_percentile))
```

```
##  [1] "James Harden"      "Stephen Curry"    "Damian Lillard"
##  [4] "Kyrie Irving"      "Kemba Walker"     "Mike Conley"
##  [7] "D'Angelo Russell"  "Chris Paul"       "Eric Bledsoe"
## [10] "Kyle Lowry"        "Russell Westbrook" "Derrick Rose"
## [13] "Spencer Dinwiddie" "Reggie Jackson"   "Trae Young"
## [16] "D.J. Augustin"     "Monte Morris"     "Patty Mills"
## [19] "100.609756097561"  "99.390243902439"  "98.1707317073171"
## [22] "96.9512195121951"  "95.7317073170732" "94.5121951219512"
## [25] "93.2926829268293"  "92.0731707317073" "89.6341463414634"
## [28] "89.6341463414634"  "89.6341463414634" "87.1951219512195"
## [31] "85.9756097560976"  "84.1463414634146" "84.1463414634146"
## [34] "82.3170731707317"  "80.4878048780488" "80.4878048780488"
```

```
stats_2019 <- stat_2019[order(-stat_2019$ratioOWS_percentile),] %>%
    filter(ratioOWS_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$ratioOWS_percentile))
```

```
##  [1] "James Harden"      "Damian Lillard"    "Stephen Curry"
##  [4] "Kyrie Irving"      "Mike Conley"       "Kemba Walker"
##  [7] "D.J. Augustin"     "Ben Simmons"       "Chris Paul"
## [10] "Eric Bledsoe"      "Monte Morris"      "Darren Collison"
## [13] "Kyle Lowry"        "Spencer Dinwiddie" "De'Aaron Fox"
## [16] "Reggie Jackson"    "100.609756097561"  "99.390243902439"
## [19] "98.1707317073171"  "96.9512195121951"  "95.7317073170732"
## [22] "94.5121951219512"  "93.2926829268293"  "92.0731707317073"
## [25] "89.6341463414634"  "89.6341463414634"  "89.6341463414634"
## [28] "87.1951219512195"  "85.9756097560976"  "84.7560975609756"
## [31] "83.5365853658537"  "82.3170731707317"
```

Raw Defensive Stats

Due to the low number of "per-game" stats in these sections, the percentiles range will be widened.

Top 24% in blocks per game and blocks per minute, combined:

```
stats_2019 <- stat_2019[order(-stat_2019$blk_percentile),] %>%
    filter(blk_percentile > 76)

print(c(stats_2019$namePlayer, stats_2019$blk_percentile))
```

```
##  [1] "John Wall"               "Ben Simmons"
##  [3] "James Harden"            "Derrick White"
##  [5] "De'Aaron Fox"            "Patrick Beverley"
##  [7] "Kyrie Irving"            "Russell Westbrook"
##  [9] "Kyle Lowry"              "Shai Gilgeous-Alexander"
## [11] "Tyler Johnson"           "Kris Dunn"
## [13] "Michael Carter-Williams" "De'Anthony Melton"
## [15] "Stephen Curry"           "Kemba Walker"
## [17] "Damian Lillard"          "Jamal Murray"
## [19] "Eric Bledsoe"            "Alex Caruso"
## [21] "Jeff Teague"             "Delon Wright"
## [23] "Elfrid Payton"           "Shaquille Harrison"
## [25] "Lonzo Ball"              "Shaun Livingston"
## [27] "101.051829268293"        "99.7530487804878"
## [29] "98.0640243902439"        "97.7713414634146"
## [31] "95.5335365853659"        "95.1798780487805"
## [33] "89.5030487804878"        "89.484756097561"
## [35] "89.3079268292683"        "89.2896341463415"
## [37] "89.2835365853659"        "89.2225609756098"
## [39] "89.2042682926829"        "89.0335365853659"
## [41] "77.3262195121951"        "77.3201219512195"
## [43] "77.3140243902439"        "77.2530487804878"
## [45] "77.2286585365854"        "77.1493902439024"
## [47] "77.0823170731707"        "77.0335365853659"
## [49] "76.9969512195122"        "76.9603658536585"
## [51] "76.9481707317073"        "76.8628048780488"
```

Top 20% in steals per game and steals per minute, combined:
```

```r
stats_2019 <- stat_2019[order(-stat_2019$stl_percentile),] %>%
    filter(stl_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$stl_percentile))
```

```
## [1] "Chris Paul"         "James Harden"        "Russell Westbrook"
## [4] "De'Aaron Fox"       "Eric Bledsoe"        "Kris Dunn"
## [7] "Lonzo Ball"         "Kyrie Irving"        "John Wall"
## [10] "De'Anthony Melton" "Darren Collison"     "Kyle Lowry"
## [13] "Ben Simmons"        "Ricky Rubio"         "Mike Conley"
## [16] "Stephen Curry"      "100.496951219512"    "100.47256097561"
## [19] "98.6310975609756"   "97.3810975609756"    "93.7286585365854"
## [22] "93.7164634146341"   "93.7042682926829"    "93.6798780487805"
## [25] "93.655487804878"    "88.3079268292683"    "88.2225609756098"
## [28] "88.155487804878"    "88.1493902439024"    "83.9298780487805"
## [31] "83.844512195122"    "83.8323170731707"
```

Bottom 20% in fouls per minute, and fouls per game and fouls per minute, combined:

```r
stats_2019 <- stat_2019[order(-stat_2019$pf_pm_percentile),] %>%
    filter(pf_pm_percentile < 20)

print(c(stats_2019$namePlayer, stats_2019$pf_pm_percentile))
```

```
## [1] "Fred VanVleet"      "Delon Wright"        "Jamal Murray"
## [4] "Yogi Ferrell"       "Terry Rozier"        "D'Angelo Russell"
## [7] "Trae Young"         "Mike Conley"         "Damian Lillard"
## [10] "Trey Burke"        "Tony Parker"         "D.J. Augustin"
## [13] "Monte Morris"      "Tyus Jones"          "Kemba Walker"
## [16] "Derrick Rose"      "18.9024390243902"    "17.6829268292683"
## [19] "16.4634146341463"  "15.2439024390244"    "14.0243902439024"
## [22] "12.8048780487805"  "11.5853658536585"    "10.3658536585366"
## [25] "9.14634146341463"  "7.92682926829268"    "6.70731707317073"
## [28] "4.8780487804878"   "4.8780487804878"     "3.04878048780488"
## [31] "1.82926829268293"  "0.609756097560976"
```

```r
stats_2019 <- stat_2019[order(-stat_2019$pf_percentile),] %>%
    filter(pf_percentile < 20)

print(c(stats_2019$namePlayer, stats_2019$pf_percentile))
```

```
## [1] "Quinn Cook"         "Shaun Livingston"    "Shabazz Napier"
## [4] "Monte Morris"       "Edmond Sumner"       "Tyus Jones"
## [7] "Derrick Rose"       "Devonte' Graham"     "Trey Burke"
## [10] "Brad Wanamaker"    "Frank Mason"         "Raymond Felton"
## [13] "Yogi Ferrell"      "Tony Parker"         "Lorenzo Brown"
## [16] "16.1615853658537"  "16.1310975609756"    "16.0060975609756"
## [19] "15.8780487804878"  "12.0579268292683"    "11.6006097560976"
## [22] "11.5884146341463"  "8.67987804878049"    "8.57621951219512"
## [25] "4.65548780487805"  "4.52743902439024"    "4.51524390243902"
## [28] "4.34451219512195"  "4.30182926829268"    "1.0030487804878"
```

Defensive Advance Stats

Top 20% in defensive box plus-minus and defensive win shares:

```r
stats_2019 <- stat_2019[order(-stat_2019$ratioDBPM_percentile),] %>%
    filter(ratioDBPM_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$ratioDBPM_percentile))
```

```
##  [1] "Russell Westbrook"      "Ben Simmons"
##  [3] "Michael Carter-Williams" "Delon Wright"
##  [5] "Lonzo Ball"             "Lorenzo Brown"
##  [7] "Cory Joseph"            "Shaquille Harrison"
##  [9] "Patrick Beverley"       "Derrick White"
## [11] "James Harden"           "De'Anthony Melton"
## [13] "Eric Bledsoe"           "Evan Turner"
## [15] "Kyle Lowry"             "Ricky Rubio"
## [17] "100.609756097561"       "99.390243902439"
## [19] "98.1707317073171"       "95.7317073170732"
## [21] "95.7317073170732"       "95.7317073170732"
## [23] "92.6829268292683"       "92.6829268292683"
## [25] "90.8536585365854"       "89.0243902439024"
## [27] "89.0243902439024"       "86.5853658536585"
## [29] "86.5853658536585"       "84.7560975609756"
## [31] "82.9268292682927"       "82.9268292682927"
```

```r
stats_2019 <- stat_2019[order(-stat_2019$ratioDWS_percentile),] %>%
    filter(ratioDWS_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$ratioDWS_percentile))
```

```
##  [1] "Russell Westbrook" "James Harden"      "Eric Bledsoe"
##  [4] "Ben Simmons"       "Kyle Lowry"        "Cory Joseph"
##  [7] "Darren Collison"   "Kyrie Irving"      "Ricky Rubio"
## [10] "D'Angelo Russell"  "De'Aaron Fox"      "Stephen Curry"
## [13] "Damian Lillard"    "Delon Wright"      "Jamal Murray"
## [16] "Mike Conley"       "Terry Rozier"      "100.609756097561"
## [19] "99.390243902439"   "98.1707317073171"  "96.9512195121951"
## [22] "95.7317073170732"  "93.2926829268293"  "93.2926829268293"
## [25] "93.2926829268293"  "90.8536585365854"  "89.6341463414634"
## [28] "87.8048780487805"  "87.8048780487805"  "85.3658536585366"
## [31] "85.3658536585366"  "82.3170731707317"  "82.3170731707317"
## [34] "82.3170731707317"
```

Total Advance Stats

Top 20% in box plus-minus, win shares, and win shares per 48 minutes:

```r
stats_2019 <- stat_2019[order(-stat_2019$ratioBPM_percentile),] %>%
    filter(ratioBPM_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$ratioBPM_percentile))
```

```
##  [1] "James Harden"      "Russell Westbrook" "Kyrie Irving"
##  [4] "Stephen Curry"     "Damian Lillard"    "Ben Simmons"
##  [7] "Eric Bledsoe"      "D'Angelo Russell"  "Mike Conley"
## [10] "Kemba Walker"      "Kyle Lowry"        "Chris Paul"
## [13] "Patrick Beverley"  "Delon Wright"      "Darren Collison"
## [16] "De'Aaron Fox"      "Derrick White"     "100.609756097561"
```

```
## [19] "99.390243902439"     "98.1707317073171"  "96.9512195121951"
## [22] "95.7317073170732"   "94.5121951219512"  "93.2926829268293"
## [25] "91.4634146341463"   "91.4634146341463"  "89.6341463414634"
## [28] "88.4146341463415"   "87.1951219512195"  "85.9756097560976"
## [31] "84.7560975609756"   "83.5365853658537"  "82.3170731707317"
## [34] "81.0975609756098"
```

```r
stats_2019 <- stat_2019[order(-stat_2019$ratioWS_percentile),] %>%
   filter(ratioWS_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$ratioWS_percentile))
```

```
##  [1] "James Harden"      "Damian Lillard"    "Stephen Curry"
##  [4] "Kyrie Irving"      "Ben Simmons"       "Eric Bledsoe"
##  [7] "Mike Conley"       "Kemba Walker"      "D.J. Augustin"
## [10] "Darren Collison"   "Russell Westbrook" "Chris Paul"
## [13] "Kyle Lowry"        "Monte Morris"      "De'Aaron Fox"
## [16] "Jamal Murray"      "D'Angelo Russell"  "Reggie Jackson"
## [19] "100.609756097561"  "99.390243902439"   "98.1707317073171"
## [22] "96.9512195121951"  "95.1219512195122"  "95.1219512195122"
## [25] "93.2926829268293"  "92.0731707317073"  "90.8536585365854"
## [28] "89.0243902439024"  "89.0243902439024"  "86.5853658536585"
## [31] "86.5853658536585"  "84.7560975609756"  "83.5365853658537"
## [34] "82.3170731707317"  "80.4878048780488"  "80.4878048780488"
```

```r
stats_2019 <- stat_2019[order(-stat_2019$ratioWSPer48_percentile),] %>%
   filter(ratioWSPer48_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$ratioWSPer48_percentile))
```

```
##  [1] "James Harden"      "Damian Lillard"    "Stephen Curry"
##  [4] "Kyrie Irving"      "Eric Bledsoe"      "Chris Paul"
##  [7] "Mike Conley"       "Darren Collison"   "Monte Morris"
## [10] "Ben Simmons"       "D.J. Augustin"     "Kyle Lowry"
## [13] "Brad Wanamaker"    "Russell Westbrook" "Kemba Walker"
## [16] "Delon Wright"      "Spencer Dinwiddie" "100.609756097561"
## [19] "99.390243902439"   "98.1707317073171"  "96.9512195121951"
## [22] "95.7317073170732"  "94.5121951219512"  "93.2926829268293"
## [25] "92.0731707317073"  "90.8536585365854"  "89.0243902439024"
## [28] "89.0243902439024"  "87.1951219512195"  "85.9756097560976"
## [31] "84.7560975609756"  "83.5365853658537"  "81.7073170731707"
## [34] "81.7073170731707"
```

Top 20% in value over replacement player, and player efficiency rating:

```r
stats_2019 <- stat_2019[order(-stat_2019$ratioVORP_percentile),] %>%
   filter(ratioVORP_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$ratioVORP_percentile))
```

```
##  [1] "James Harden"      "Russell Westbrook" "Damian Lillard"
##  [4] "Stephen Curry"     "Kyrie Irving"      "Ben Simmons"
##  [7] "Kemba Walker"      "D'Angelo Russell"  "Eric Bledsoe"
## [10] "Mike Conley"       "Kyle Lowry"        "Chris Paul"
## [13] "Patrick Beverley"  "De'Aaron Fox"      "Darren Collison"
## [16] "Delon Wright"      "Derrick White"     "Jamal Murray"
## [19] "100.609756097561"  "99.390243902439"   "98.1707317073171"
```

```
## [22] "96.9512195121951"  "95.7317073170732"  "94.5121951219512"
## [25] "93.2926829268293"  "92.0731707317073"  "90.2439024390244"
## [28] "90.2439024390244"  "88.4146341463415"  "87.1951219512195"
## [31] "85.9756097560976"  "84.7560975609756"  "83.5365853658537"
## [34] "82.3170731707317"  "80.4878048780488"  "80.4878048780488"
```

```r
stats_2019 <- stat_2019[order(-stat_2019$ratioPER_percentile),] %>%
   filter(ratioPER_percentile > 80)

print(c(stats_2019$namePlayer, stats_2019$ratioPER_percentile))
```

```
##  [1] "James Harden"       "Stephen Curry"      "Kyrie Irving"
##  [4] "Damian Lillard"     "Kemba Walker"       "Mike Conley"
##  [7] "Russell Westbrook"  "Ben Simmons"        "Chris Paul"
## [10] "Derrick Rose"       "D'Angelo Russell"   "Eric Bledsoe"
## [13] "De'Aaron Fox"       "John Wall"          "Trae Young"
## [16] "Darren Collison"    "Kyle Lowry"         "Trey Burke"
## [19] "100.609756097561"   "99.390243902439"    "98.1707317073171"
## [22] "96.9512195121951"   "95.7317073170732"   "94.5121951219512"
## [25] "93.2926829268293"   "92.0731707317073"   "90.8536585365854"
## [28] "89.6341463414634"   "88.4146341463415"   "87.1951219512195"
## [31] "85.9756097560976"   "84.7560975609756"   "83.5365853658537"
## [34] "82.3170731707317"   "80.4878048780488"   "80.4878048780488"
```