Playing Around with 2022 NFL Data

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A running R markdown looking at 2022 NFL data using the `nflfastR` package.

```
library(tidyverse)
library(ggrepel)
library(nflreadr)
library(nflplotR)
stats2022 <- load_player_stats(2022)
pbp2022 <- load_pbp(2022)
stats2020_22 <- load_player_stats(2020:2022)
```

```
week7_carry_leaders <- stats2022 %>%
  filter(week == 7) %>%
  arrange(desc(carries)) %>%
  select(player_name, position, carries, rushing_yards, rushing_epa, rushing_tds)
week7_rb_target_leaders <- stats2022 %>%
  filter(week == 7,  position == "RB") %>%
  arrange(desc(targets)) %>%
  select(player_name, position, targets, receptions, receiving_epa, target_share)
week7_wr_target_leaders <- stats2022 %>%
  filter(week == 7,  position == "WR") %>%
  arrange(desc(targets)) %>%
  select(player_name, position, targets, receptions, receiving_epa, target_share)
week7_te_target_leaders <- stats2022 %>%
  filter(week == 7,  position == "TE") %>%
  arrange(desc(targets), desc(target_share)) %>%
  select(player_name, position, targets, receptions, receiving_epa, target_share)
head(week7_carry_leaders, 20)
```

```
## # A tibble: 20 x 6
##    player_name  position carries rushing_yards rushing_epa rushing_tds
##    <chr>        <chr>      <int>         <dbl>       <dbl>       <int>
##  1 D.Henry      RB            30           128      -4.47            0
##  2 S.Barkley    RB            24           110      -0.966           0
##  3 K.Walker     RB            23           167       5.58            2
##  4 J.Jacobs     RB            20           143       6.93            3
##  5 D.Pierce     RB            20            92      -0.825           0
##  6 B.Robinson   RB            20            73      -3.31            0
##  7 J.Mixon      RB            17            58      -1.25            1
##  8 N.Harris     RB            17            65      -3.25            0
##  9 R.Mostert    RB            16            79      -1.45            0
## 10 G.Edwards    RB            16            66       4.89            2
## 11 N.Chubb      RB            16            91       3.20            1
## 12 T.Allgeier   RB            16            50       0.474           1
```

```
## 13 E.Elliott    RB            15            57      -0.544           2
## 14 D.Foreman    RB            15           118       0.862           0
## 15 J.Williams   RB            15            79      -6.05            0
## 16 D.Montgomery RB            15            62      -0.141           1
## 17 J.Fields     QB            14            82       3.53            1
## 18 T.Etienne    RB            14           114      -1.38            1
## 19 M.Carter     RB            13            29      -3.05            0
## 20 T.Pollard    RB            12            83      -0.447           0
```

```
head(week7_rb_target_leaders, 20)
```

```
## # A tibble: 20 x 6
##    player_name  position targets receptions receiving_epa target_share
##    <chr>        <chr>      <int>      <int>         <dbl>        <dbl>
##  1 A.Ekeler     RB            12         12        6.37         0.235
##  2 A.Jones      RB            10          9        3.83         0.303
##  3 A.Kamara     RB             9          7        1.68         0.196
##  4 J.Taylor     RB             8          7       -4.55         0.195
##  5 R.Stevenson  RB             8          8        2.48         0.286
##  6 D.Ogunbowale RB             7          5        0.215        0.175
##  7 R.Burkhead   RB             6          5       -3.30         0.15
##  8 R.Mostert    RB             5          4        2.03         0.143
##  9 N.Hines      RB             5          5        3.58         0.122
## 10 E.Benjamin   RB             5          4       -0.0946       0.172
## 11 T.Etienne    RB             5          1       -2.65         0.116
## 12 M.Gordon     RB             4          2       -1.13         0.0889
## 13 S.Barkley    RB             4          4        1.29         0.138
## 14 J.Jacobs     RB             4          3        0.709        0.154
## 15 A.Gibson     RB             4          3        2.20         0.125
## 16 N.Harris     RB             4          3       -1.41         0.0952
## 17 D.Pierce     RB             4          4        1.39         0.1
## 18 M.Ingram     RB             3          3       -0.199        0.0652
## 19 L.Murray     RB             3          2       -2.48         0.0667
## 20 J.McKinnon   RB             3          2        3.86         0.0882
```

```
head(week7_wr_target_leaders, 20)
```

```
## # A tibble: 20 x 6
##    player_name position targets receptions receiving_epa target_share
##    <chr>       <chr>      <int>      <int>         <dbl>        <dbl>
##  1 M.Evans     WR            15          9        0.746        0.312
##  2 D.Hopkins   WR            14         10        2.01         0.483
##  3 C.Olave     WR            14          7       -3.28         0.304
##  4 T.Hill      WR            13          7       -1.45         0.371
##  5 C.Godwin    WR            13          7       -4.39         0.271
##  6 P.Campbell  WR            12         10       -5.38         0.293
##  7 B.Aiyuk     WR            11          7        3.29         0.239
##  8 J.Jeudy     WR            11          7        3.27         0.244
##  9 J.Chase     WR            11          8       11.5          0.262
## 10 Z.Jones     WR            10          4        4.20         0.233
## 11 C.Kirk      WR            10          7        2.45         0.233
## 12 D.Moore     WR            10          7        2.49         0.476
## 13 D.Johnson   WR            10          5       -7.56         0.238
```

```
## 14 D.Adams     WR              9          8         7.61         0.346
## 15 T.Boyd      WR              9          8        11.5          0.214
## 16 M.Williams  WR              9          7         5.03         0.176
## 17 C.Sutton    WR              9          3        -5.19         0.2
## 18 M.Pittman   WR              9          6        -2.15         0.220
## 19 M.Jones     WR              8          4         2.55         0.186
## 20 T.Lockett   WR              8          7        -2.73         0.308
```

```
head(week7_te_target_leaders, 20)
```

```
## # A tibble: 20 x 6
##    player_name  position targets receptions receiving_epa target_share
##    <chr>        <chr>      <int>      <int>         <dbl>        <dbl>
##  1 P.Freiermuth TE             9          8        4.08          0.214
##  2 G.Dulcich    TE             9          6       -2.46          0.2
##  3 G.Kittle     TE             9          6        2.90          0.196
##  4 G.Everett    TE             9          5        0.0697        0.176
##  5 T.Kelce      TE             8          6        4.63          0.235
##  6 H.Hurst      TE             8          6        3.21          0.190
##  7 D.Njoku      TE             7          7        3.41          0.28
##  8 M.Gesicki    TE             7          3       -2.86          0.2
##  9 E.Engram     TE             7          4        3.65          0.163
## 10 T.Conklin    TE             6          4       -2.99          0.261
## 11 K.Pitts      TE             5          3       -2.63          0.417
## 12 D.Schultz    TE             5          5        3.87          0.2
## 13 T.Hockenson  TE             5          4        2.83          0.2
## 14 F.Moreau     TE             5          3       -0.273         0.192
## 15 J.Johnson    TE             5          5        2.85          0.109
## 16 C.Otton      TE             5          4        1.19          0.104
## 17 B.Wright     TE             4          4        4.22          0.16
## 18 W.Dissly     TE             4          4        3.74          0.154
## 19 Z.Ertz       TE             4          2        0.728         0.138
## 20 R.Tonyan     TE             4          3       -0.622         0.121
```

```
week7_passing_leaders <- stats2022 %>%
  filter(week == 7, position == "QB") %>%
  arrange(desc(passing_epa)) %>%
  select(player_name, position, passing_epa, passing_yards, completions, passing_tds)
week7_rushing_leaders <- stats2022 %>%
  filter(week == 7, position == "RB") %>%
  arrange(desc(rushing_epa)) %>%
  select(player_name, position, rushing_epa, rushing_yards, carries, rushing_tds)
week7_receiving_leaders <- stats2022 %>%
  filter(week == 7) %>%
  arrange(desc(receiving_epa)) %>%
  select(player_name, position, receiving_epa, receiving_yards, targets, receptions, receiving_tds)
head(week7_passing_leaders, 20)
```

```
## # A tibble: 20 x 6
##    player_name  position passing_epa passing_yards completions passing_tds
##    <chr>        <chr>          <dbl>         <dbl>       <int>       <int>
##  1 P.Mahomes    QB              29.8           423          25           3
##  2 J.Burrow     QB              27.0           481          34           3
```

```
##  3 D.Carr       QB            12.2             241          21           1
##  4 T.Lawrence   QB            11.3             310          22           0
##  5 D.Prescott   QB             9.68            207          19           1
##  6 T.Tagovailoa QB             5.57            261          21           1
##  7 P.Walker     QB             5.27            177          16           2
##  8 G.Smith      QB             4.57            210          20           2
##  9 R.Tannehill  QB             3.51            132          13           0
## 10 D.Mills      QB             3.07            302          28           2
## 11 J.Garoppolo  QB             2.41            303          25           2
## 12 J.Fields     QB             2.39            179          13           1
## 13 D.Jones      QB             1.85            202          19           1
## 14 K.Murray     QB             1.80            204          20           1
## 15 M.Mariota    QB             1.10            124           8           1
## 16 J.Brissett   QB             0.483           258          22           0
## 17 B.Purdy      QB             0.112            66           4           0
## 18 T.Heinicke   QB            -1.09            201          20           2
## 19 A.Dalton     QB            -1.35            361          30           4
## 20 C.Henne      QB            -1.89              0           0           0
```

```
head(week7_rushing_leaders, 20)
```

```
## # A tibble: 20 x 6
##    player_name       position rushing_epa rushing_yards carries rushing_tds
##    <chr>             <chr>          <dbl>         <dbl>   <int>       <int>
##  1 J.Jacobs          RB             6.93            143      20           3
##  2 E.Benjamin        RB             6.09             92      12           1
##  3 K.Walker          RB             5.58            167      23           2
##  4 G.Edwards         RB             4.89             66      16           2
##  5 B.Hall            RB             4.63             72       4           1
##  6 C.Hubbard         RB             4.08             63       9           1
##  7 N.Chubb           RB             3.20             91      16           1
##  8 J.Taylor          RB             2.86             58      10           0
##  9 J.Wilson          RB             2.74             54       7           0
## 10 D.Dallas          RB             2.07             35       6           0
## 11 J.Warren          RB             1.92              7       2           0
## 12 A.Gibson          RB             1.20             59      10           0
## 13 C.Edwards-Helaire RB             0.866            32       6           1
## 14 D.Foreman         RB             0.862           118      15           0
## 15 D.Ogunbowale      RB             0.797             8       1           0
## 16 R.Burkhead        RB             0.695             8       2           0
## 17 J.Hasty           RB             0.582             6       1           0
## 18 J.McKinnon        RB             0.530            12       2           0
## 19 R.Stevenson       RB             0.491            39      11           1
## 20 T.Allgeier        RB             0.474            50      16           1
```

```
head(week7_receiving_leaders, 20)
```

```
## # A tibble: 20 x 7
##    player_name       position receiving_epa receiving~1 targets recep~2 recei~3
##    <chr>             <chr>            <dbl>       <dbl>   <int>   <int>   <int>
##  1 J.Smith-Schuster  WR               12.9          124       8       7       1
##  2 T.Boyd            WR               11.5          155       9       8       1
##  3 J.Chase           WR               11.5          130      11       8       2
```

```
##  4 M.Valdes-Scantling WR                8.61         111       4       3       0
##  5 M.Goodwin          WR                7.94          67       5       4       2
##  6 J.Akins            TE                7.84          68       4       3       0
##  7 D.Adams            WR                7.61          95       9       8       0
##  8 J.Waddle           WR                7.02          88       5       4       0
##  9 R.McCloud          WR                6.79          65       4       4       1
## 10 D.Byrd             WR                6.61          75       1       1       1
## 11 C.Lamb             WR                6.45          70       6       4       0
## 12 A.Ekeler           RB                6.37          96      12      12       1
## 13 G.Pickens          WR                6.34          61       6       6       1
## 14 A.Hooper           TE                6.00          56       3       3       0
## 15 R.Shaheed          WR                5.28          53       1       1       1
## 16 C.Samuel           WR                5.23          53       8       5       0
## 17 M.Williams         WR                5.03          86       9       7       1
## 18 K.White            WR                4.85          64       1       1       0
## 19 D.Slayton          WR                4.70          58       6       3       1
## 20 T.Kelce            TE                4.63          98       8       6       0
## # ... with abbreviated variable names 1: receiving_yards, 2: receptions,
## #   3: receiving_tds
```

```
pbp_2022 <- load_pbp(2022)
week10_pbp <- pbp_2022 %>%
  filter(week == 10) %>%
  arrange(desc(yards_gained)) %>%
  select(yards_gained, posteam)
head(week10_pbp, 10)
```

```
## -- nflverse play by play data -------------------------------------------------
```

```
## i Data updated: 2022-11-22 04:09:25 EST
```

```
## # A tibble: 10 x 2
##    yards_gained posteam
##           <dbl> <chr>
##  1           81 MIN
##  2           67 CHI
##  3           66 DEN
##  4           66 IND
##  5           63 TEN
##  6           58 GB
##  7           54 NYG
##  8           50 CHI
##  9           50 PHI
## 10           48 LV
```

```
week10_carry_leaders <- stats2022 %>%
  filter(week == 10) %>%
  arrange(desc(carries)) %>%
  select(player_name, position, carries, rushing_yards, rushing_epa, rushing_tds)
week10_rb_target_leaders <- stats2022 %>%
  filter(week == 10,  position == "RB") %>%
  arrange(desc(targets)) %>%
```

```
  select(player_name, position, targets, receptions, receiving_epa, target_share)
week10_wr_target_leaders <- stats2022 %>%
  filter(week == 10,  position == "WR") %>%
  arrange(desc(targets)) %>%
  select(player_name, position, targets, receptions, receiving_epa, target_share)
week10_te_target_leaders <- stats2022 %>%
  filter(week == 10,  position == "TE") %>%
  arrange(desc(targets), desc(target_share)) %>%
  select(player_name, position, targets, receptions, receiving_epa, target_share)
head(week10_carry_leaders, 20)
```

```
## -- nflverse player stats: offense ----------------------------------------------

## i Data updated: 2022-11-22 04:10:57 EST

## # A tibble: 20 x 6
##    player_name position carries rushing_yards rushing_epa rushing_tds
##    <chr>       <chr>      <int>         <dbl>       <dbl>       <int>
##  1 S.Barkley   RB            35           152      -1.24            1
##  2 D.Foreman   RB            31           130       0.569           1
##  3 B.Robinson  RB            26            86      -1.02            1
##  4 A.Jones     RB            24           138       5.47            1
##  5 T.Pollard   RB            22           115       1.72            1
##  6 J.Taylor    RB            22           147       2.50            1
##  7 R.White     RB            22           105      -0.259           0
##  8 J.Conner    RB            21            69      -2.14            2
##  9 J.Jacobs    RB            21            78      -3.55            1
## 10 N.Harris    RB            20            99      -0.129           0
## 11 D.Henry     RB            19            53      -5.27            0
## 12 E.Mitchell  RB            18            89       0.902           0
## 13 J.Wilson    RB            17           119       4.99            1
## 14 D.Pierce    RB            17            94      -3.54            0
## 15 J.Williams  RB            16            59      -2.75            1
## 16 I.Pacheco   RB            16            82      -5.88            0
## 17 C.McCaffrey RB            14            38      -2.87            1
## 18 L.Fournette RB            14            57       1.69            1
## 19 D.Cook      RB            14           119       2.87            1
## 20 A.Gibson    RB            14            44       2.52            1
```

```
head(week10_rb_target_leaders, 20)
```

```
## -- nflverse player stats: offense ----------------------------------------------
## i Data updated: 2022-11-22 04:10:57 EST

## # A tibble: 20 x 6
##    player_name position targets receptions receiving_epa target_share
##    <chr>       <chr>      <int>      <int>         <dbl>        <dbl>
##  1 A.Ekeler    RB            12          7       -0.916        0.343
##  2 J.McKinnon  RB             8          6        0.219        0.229
##  3 J.Jacobs    RB             8          6       -0.917        0.211
##  4 K.Walker    RB             8          6        1.83         0.242
```

```
##  5 M.Gordon     RB              6          4        2.35         0.154
##  6 C.McCaffrey  RB              6          4        0.351        0.214
##  7 T.Pollard    RB              6          3       -3.31         0.136
##  8 D.Cook       RB              5          3        1.15         0.1
##  9 J.Wilson     RB              5          2       -0.912        0.152
## 10 R.Mostert    RB              4          4        0.417        0.121
## 11 A.Abdullah   RB              4          4        2.28         0.105
## 12 A.Kamara     RB              4          3       -1.78         0.143
## 13 N.Chubb      RB              4          3        0.764        0.118
## 14 L.Murray     RB              3          3        0.508        0.0769
## 15 D.Henry      RB              3          2        0.162        0.0833
## 16 J.Conner     RB              3          3       -0.0173       0.0857
## 17 J.Jackson    RB              3          2       -0.754        0.12
## 18 D.Swift      RB              3          1       -0.798        0.12
## 19 A.Gibson     RB              3          3       -1.25         0.12
## 20 T.Etienne    RB              3          3        2.47         0.0769
```

```
head(week10_wr_target_leaders, 20)
```

```
## -- nflverse player stats: offense ----------------------------------------------
## i Data updated: 2022-11-22 04:10:57 EST
```

```
## # A tibble: 20 x 6
##    player_name        position targets receptions receiving_epa target_share
##    <chr>              <chr>      <int>      <int>         <dbl>        <dbl>
##  1 S.Diggs            WR            16         12         7.50         0.390
##  2 J.Jefferson        WR            16         10        10.5          0.32
##  3 C.Lamb             WR            15         11         5.77         0.341
##  4 D.Hopkins          WR            14         10         0.187        0.4
##  5 D.Adams            WR            14          9         5.23         0.368
##  6 R.Moore            WR            13          9         3.28         0.371
##  7 C.Kirk             WR            12          9         7.87         0.308
##  8 C.Sutton           WR            11          6        -0.319        0.282
##  9 T.McLaurin         WR            11          8         8.82         0.44
## 10 K.Osborn           WR            11          4        -8.63         0.22
## 11 A.St. Brown        WR            11         10        11.6          0.44
## 12 Z.Jones            WR            10          8         9.92         0.256
## 13 G.Davis            WR            10          6         1.92         0.244
## 14 N.Collins          WR            10          5         0.448        0.270
## 15 P.Campbell         WR             9          7         4.80         0.333
## 16 D.Metcalf          WR             9          6         1.08         0.273
## 17 D.Peoples-Jones    WR             9          5         2.55         0.265
## 18 M.Pittman          WR             9          7         1.73         0.333
## 19 C.Godwin           WR             8          6         5.87         0.276
## 20 N.Westbrook-Ikhine WR             8          5         8.89         0.222
```

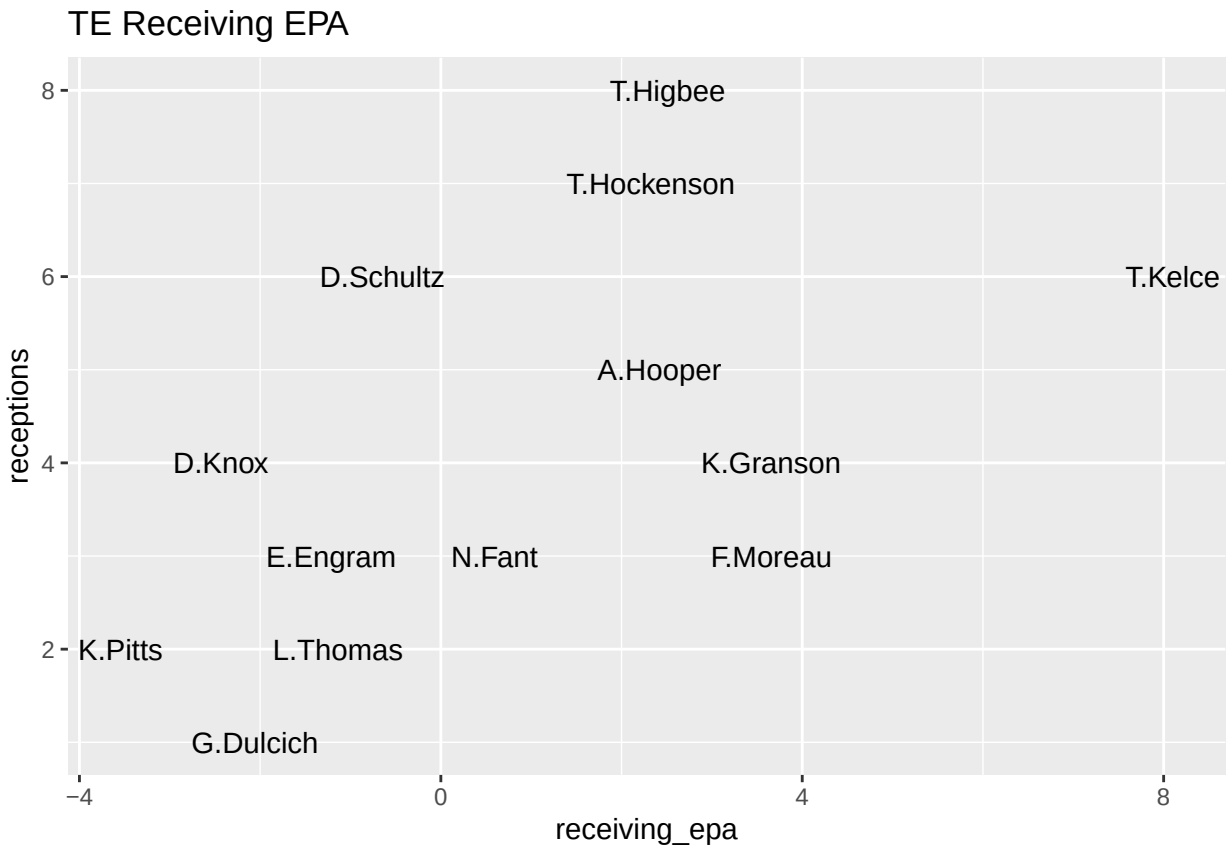
```
head(week10_te_target_leaders, 20)
```

```
## -- nflverse player stats: offense ----------------------------------------------
## i Data updated: 2022-11-22 04:10:57 EST
```

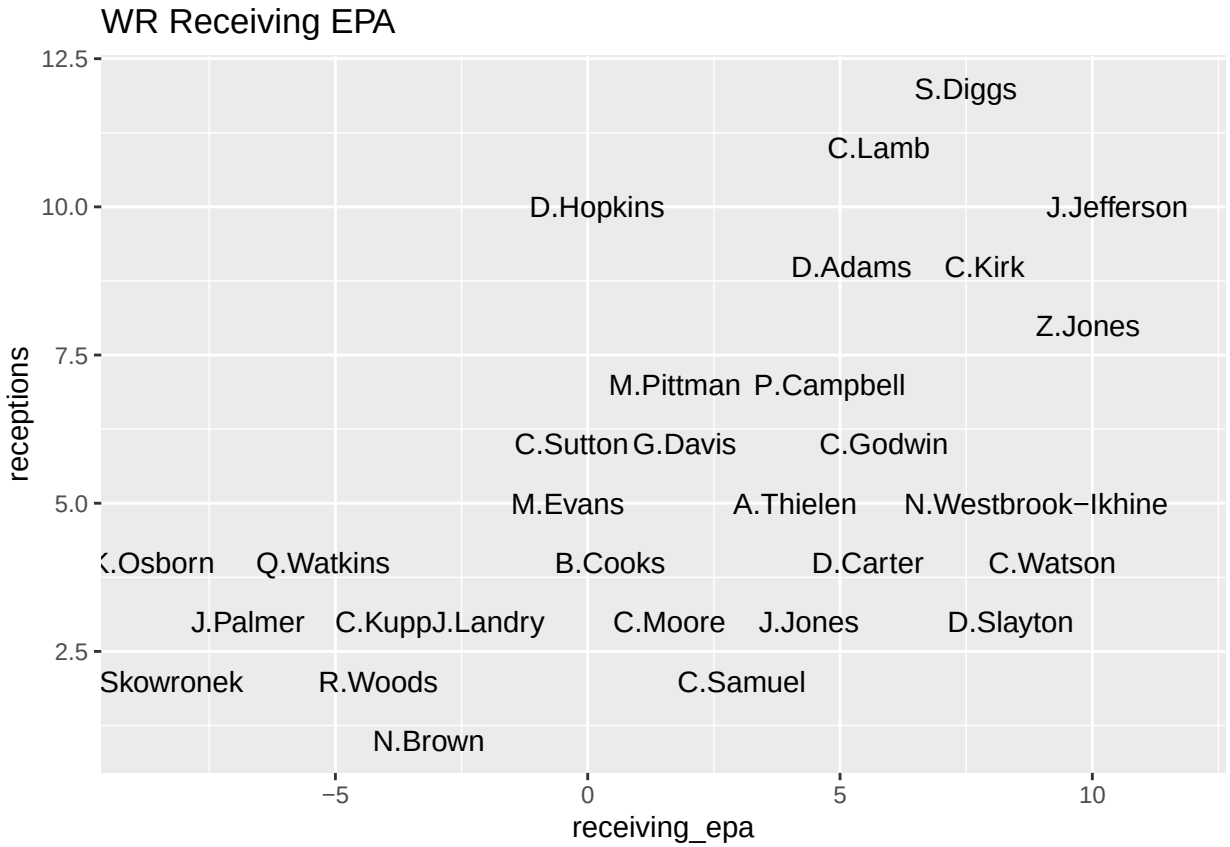
```
## # A tibble: 20 x 6
```

```
##    player_name  position targets receptions receiving_epa target_share
##    <chr>        <chr>      <int>      <int>         <dbl>        <dbl>
##  1 T.Hockenson  TE            10          7         2.32         0.2
##  2 K.Pitts      TE             8          2        -3.55         0.276
##  3 T.Higbee     TE             8          8         2.51         0.216
##  4 D.Schultz    TE             8          6        -0.646        0.182
##  5 C.Kmet       TE             7          4        -2.10         0.389
##  6 P.Freiermuth TE             7          4        -2.48         0.269
##  7 J.Johnson    TE             7          5         2.30         0.25
##  8 T.Kelce      TE             7          6         8.10         0.2
##  9 A.Hooper     TE             7          5         2.42         0.194
## 10 T.McKitty    TE             6          3        -1.88         0.171
## 11 D.Knox       TE             6          4        -2.43         0.146
## 12 P.Brown      TE             5          2        -1.31         0.147
## 13 L.Thomas     TE             4          2        -1.14         0.16
## 14 K.Granson    TE             4          4         3.66         0.148
## 15 N.Fant       TE             4          3         0.594        0.121
## 16 F.Moreau     TE             4          3         3.66         0.105
## 17 E.Engram     TE             4          3        -1.22         0.103
## 18 G.Dulcich    TE             4          1        -2.06         0.103
## 19 T.Hudson     TE             3          3        -0.419        0.176
## 20 D.Goedert    TE             3          3        -2.90         0.12
```

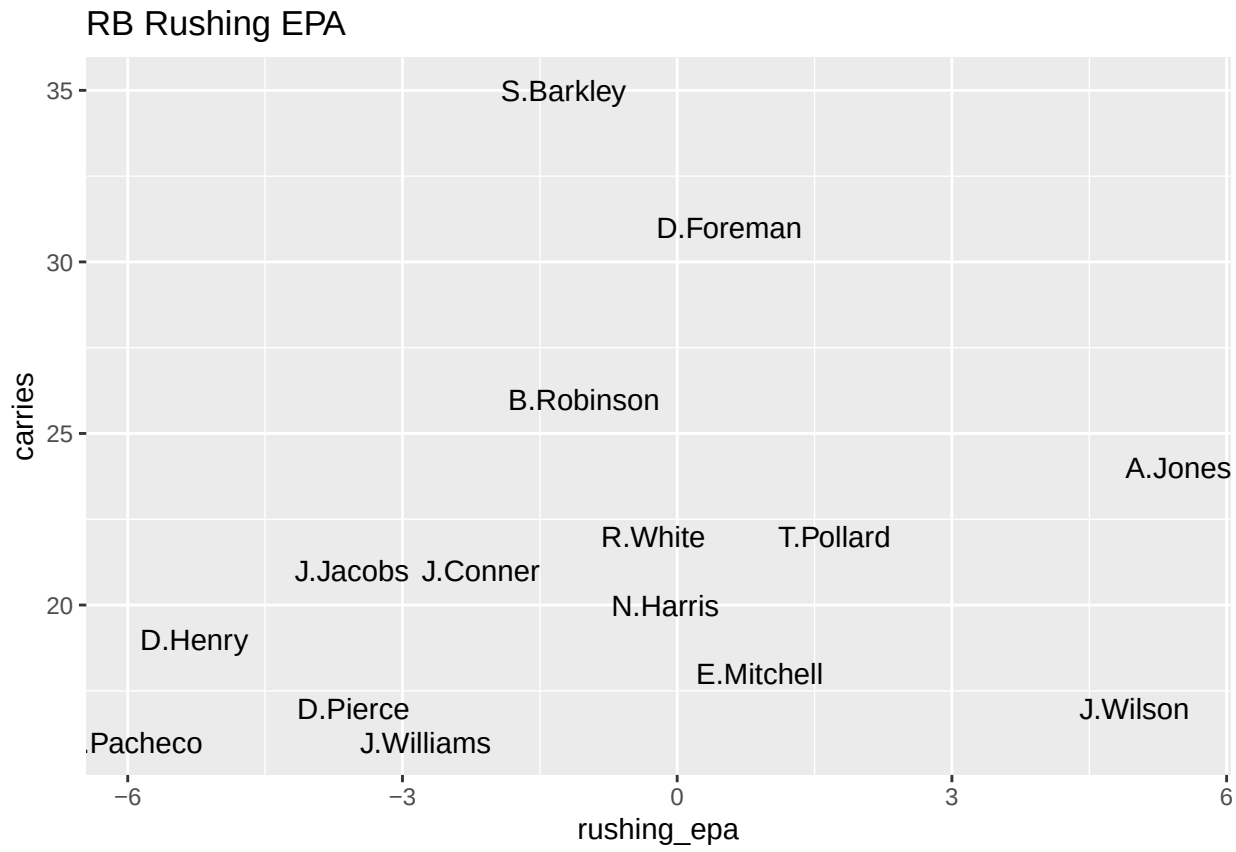
```
stats2022 %>% filter(week == 10 & targets > 3 & position == "TE") %>%
  ggplot(aes(x = receiving_epa, y = receptions, label = player_name)) +
  geom_text(check_overlap = TRUE) +
  labs(title = "TE Receiving EPA ")
```




```
stats2022 %>% filter(week == 10 & targets > 3 & position == "WR") %>%
  ggplot(aes(x = receiving_epa, y = receptions, label = player_name)) +
  geom_text(check_overlap = TRUE) +
  labs(title = "WR Receiving EPA ")
```

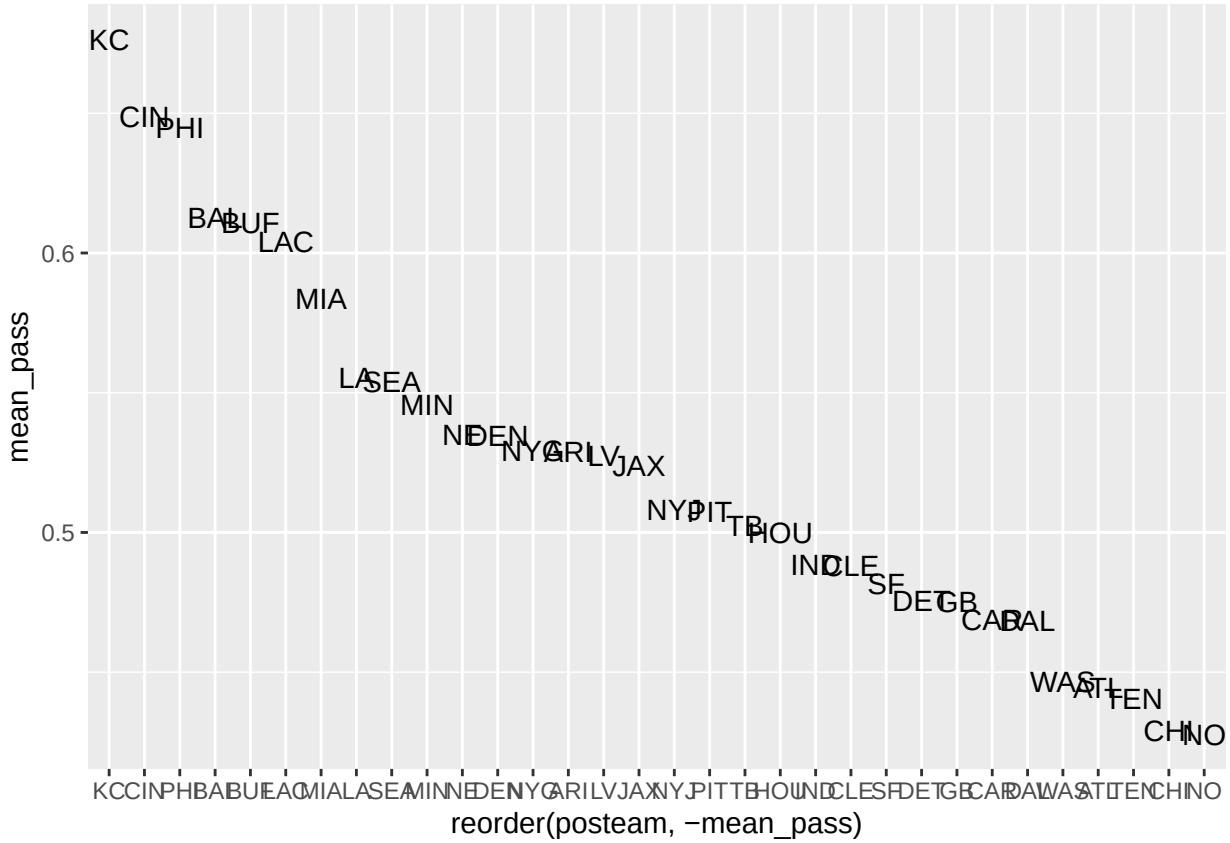



```
stats2022 %>% filter(week == 10 & carries > 15 & position == "RB") %>%
  ggplot(aes(x = rushing_epa, y = carries, label = player_name)) +
  geom_text(check_overlap = TRUE) +
  labs(title = "RB Rushing EPA ")
```



Mean Pass on Neutral Plays

```
pbp_rp <- pbp2022 %>%
  filter(rush == 1 | pass == 1, !is.na(epa))
schotty <- pbp_rp %>%
  filter(wp > .20 & wp < .80 & down <= 2 & qtr <= 2 &
           half_seconds_remaining > 120) %>%
    group_by(posteam) %>%
    summarize(mean_pass = mean(pass), plays = n()) %>%
    arrange(-mean_pass)
ggplot(schotty, aes(x=reorder(posteam,-mean_pass), y=mean_pass)) +
        geom_text(aes(label=posteam))
```



EPA Exploration

```
pbp2022 %>%
  filter(!is.na(epa)) %>%
  select(posteam, yardline_100, game_seconds_remaining, down, ydstogo, yards_gained, play_type, score_di
```

```
## -- nflverse play by play data -------------------------------------------------

## i Data updated: 2022-11-22 04:09:25 EST

## # A tibble: 28,654 x 10
##    posteam yardli~1 game_~2  down ydstogo yards~3 play_~4 score~5     ep     epa
##    <chr>      <dbl>   <dbl> <dbl>   <dbl>   <dbl> <chr>     <dbl>  <dbl>   <dbl>
##  1 <NA>          NA    3600    NA       0      NA <NA>         NA  1.47   0
##  2 NYJ           35    3600    NA       0       0 kickoff       0  1.47  -0.444
##  3 NYJ           78    3596     1      10      19 run           0  1.03   1.47
##  4 NYJ           59    3569     1      10       0 pass          0  2.50  -0.492
##  5 NYJ           59    3565     2      10       5 run           0  2.01  -0.326
##  6 NYJ           54    3541     3       5       0 pass          0  1.68  -2.40
##  7 NYJ           64    3533     4      15       0 punt          0 -0.721 -0.232
##  8 BAL           72    3522     1      10       4 pass          0  0.953  0.0751
##  9 BAL           68    3501     2       6       4 pass          0  1.03  -0.105
```

```
## 10 BAL           64    3461     3       2       4 run           0  0.923  0.895
## # ... with 28,644 more rows, and abbreviated variable names 1: yardline_100,
## #   2: game_seconds_remaining, 3: yards_gained, 4: play_type,
## #   5: score_differential
```

2017-2021 QB EPA Example

```
pbp <- load_pbp(2017:2021)
qbs <- pbp %>%
  filter(season_type == "REG", !is.na(epa)) %>%
  group_by(id, name) %>%
  summarize(
    epa = mean(qb_epa),
    cpoe = mean(cpoe, na.rm = T),
    n_dropbacks = sum(pass),
    n_plays = n(),
    team = last(posteam)
  ) %>%
  ungroup() %>%
  filter(n_dropbacks > 100 & n_plays > 1000) %>%
  left_join(load_teams(), by = c('team' = 'team_abbr'))
```

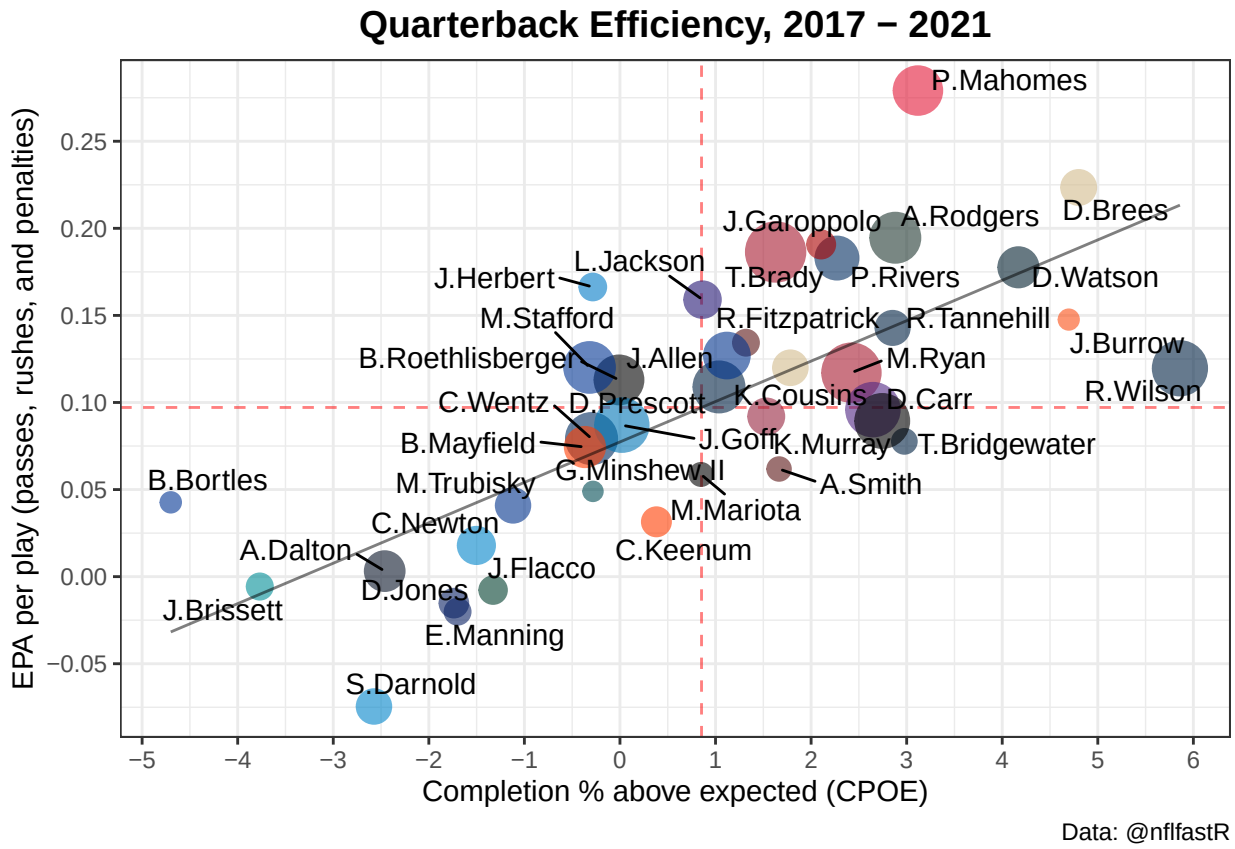
```
## `summarise()` has grouped output by 'id'. You can override using the `.groups`
## argument.
```

```
qbs %>%
  ggplot(aes(x = cpoe, y = epa)) +
  #horizontal line with mean EPA
  geom_hline(yintercept = mean(qbs$epa), color = "red", linetype = "dashed", alpha=0.5) +
  #vertical line with mean CPOE
  geom_vline(xintercept =  mean(qbs$cpoe), color = "red", linetype = "dashed", alpha=0.5) +
  #add points for the QBs with the right colors
  #cex controls point size and alpha the transparency (alpha = 1 is normal)
  geom_point(color = qbs$team_color, cex=qbs$n_plays / 350, alpha = .6) +
  #add names using ggrepel, which tries to make them not overlap
  geom_text_repel(aes(label=name)) +
  #add a smooth line fitting cpoe + epa
  stat_smooth(geom='line', alpha=0.5, se=FALSE, method='lm')+
  #titles and caption
  labs(x = "Completion % above expected (CPOE)",
       y = "EPA per play (passes, rushes, and penalties)",
       title = "Quarterback Efficiency, 2017 - 2021",
       caption = "Data: @nflfastR") +
  #uses the black and white ggplot theme
  theme_bw() +
  #center title with hjust = 0.5
  theme(
    plot.title = element_text(size = 14, hjust = 0.5, face = "bold")
  ) +
  #make ticks look nice
  #if this doesn't work, `install.packages('scales')`
```

```
  scale_y_continuous(breaks = scales::pretty_breaks(n = 10)) +
  scale_x_continuous(breaks = scales::pretty_breaks(n = 10))
```

```
## `geom_smooth()` using formula = 'y ~ x'
```

```
## Warning: ggrepel: 1 unlabeled data points (too many overlaps). Consider
## increasing max.overlaps
```



2022 NFL QB EPA

```
qb_2022 <- pbp_2022 %>%
  filter(!is.na(epa)) %>%
  group_by(id, name) %>%
  summarize(
    epa = mean(qb_epa),
    cpoe = mean(cpoe, na.rm = T),
    n_dropbacks = sum(pass),
    n_plays = n(),
    team = last(posteam)
  ) %>%
  ungroup() %>%
```

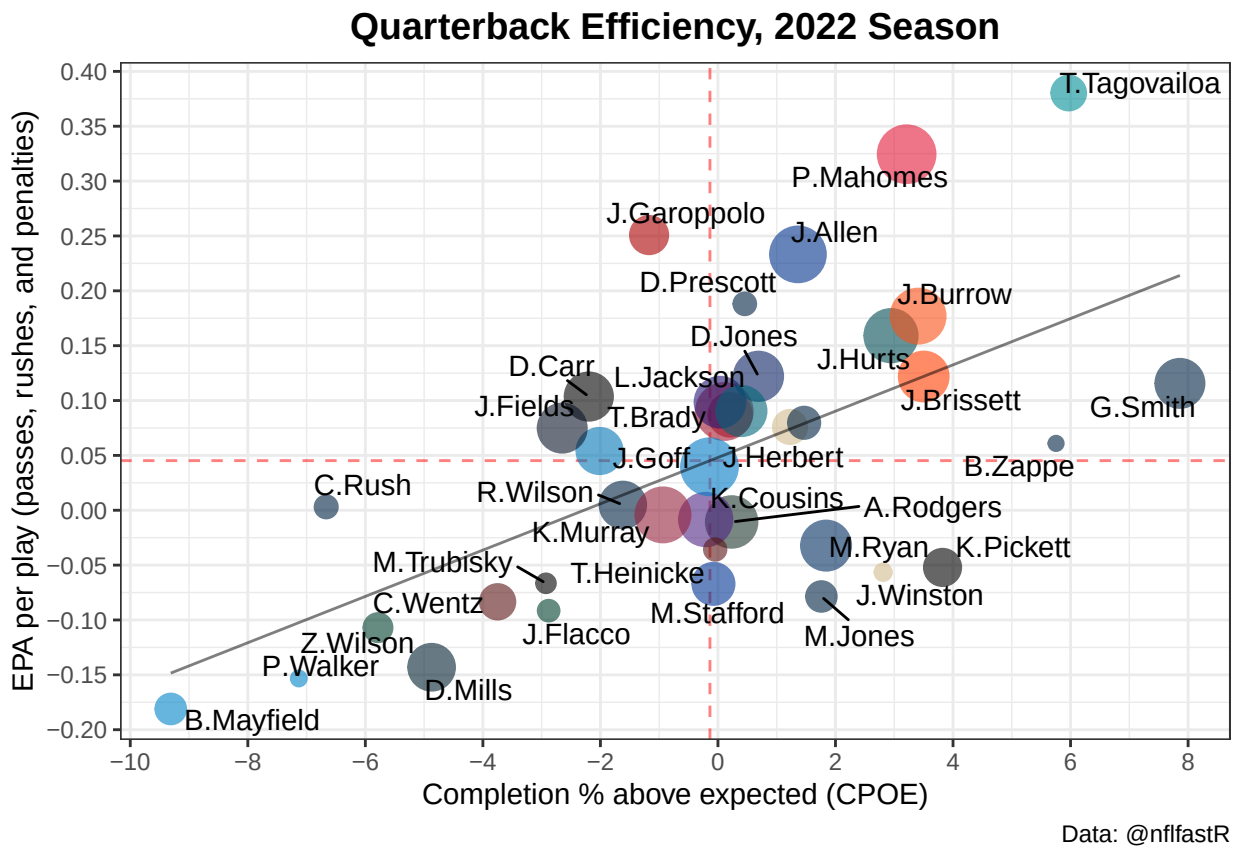
```
  filter(n_dropbacks > 10 & n_plays > 100) %>%
  left_join(load_teams(), by = c('team' = 'team_abbr'))
```

```
## `summarise()` has grouped output by 'id'. You can override using the `.groups`
## argument.
```

```
qb_2022 %>%
  ggplot(aes(x = cpoe, y = epa)) +
  geom_hline(yintercept = mean(qb_2022$epa), color = "red", linetype = "dashed", alpha=0.5) +
  geom_vline(xintercept =  mean(qb_2022$cpoe), color = "red", linetype = "dashed", alpha=0.5) +
  geom_point(color = qb_2022$team_color, cex=qb_2022$n_plays / 50, alpha = .6) +
  geom_text_repel(aes(label=name)) +
  stat_smooth(geom='line', alpha=0.5, se=FALSE, method='lm')+
  labs(x = "Completion % above expected (CPOE)",
       y = "EPA per play (passes, rushes, and penalties)",
       title = "Quarterback Efficiency, 2022 Season",
       caption = "Data: @nflfastR") +
  theme_bw() +
  theme(
    plot.title = element_text(size = 14, hjust = 0.5, face = "bold")
  ) +
  scale_y_continuous(breaks = scales::pretty_breaks(n = 10)) +
  scale_x_continuous(breaks = scales::pretty_breaks(n = 10))
```

```
## `geom_smooth()` using formula = 'y ~ x'
```

```
## Warning: ggrepel: 4 unlabeled data points (too many overlaps). Consider
## increasing max.overlaps
```

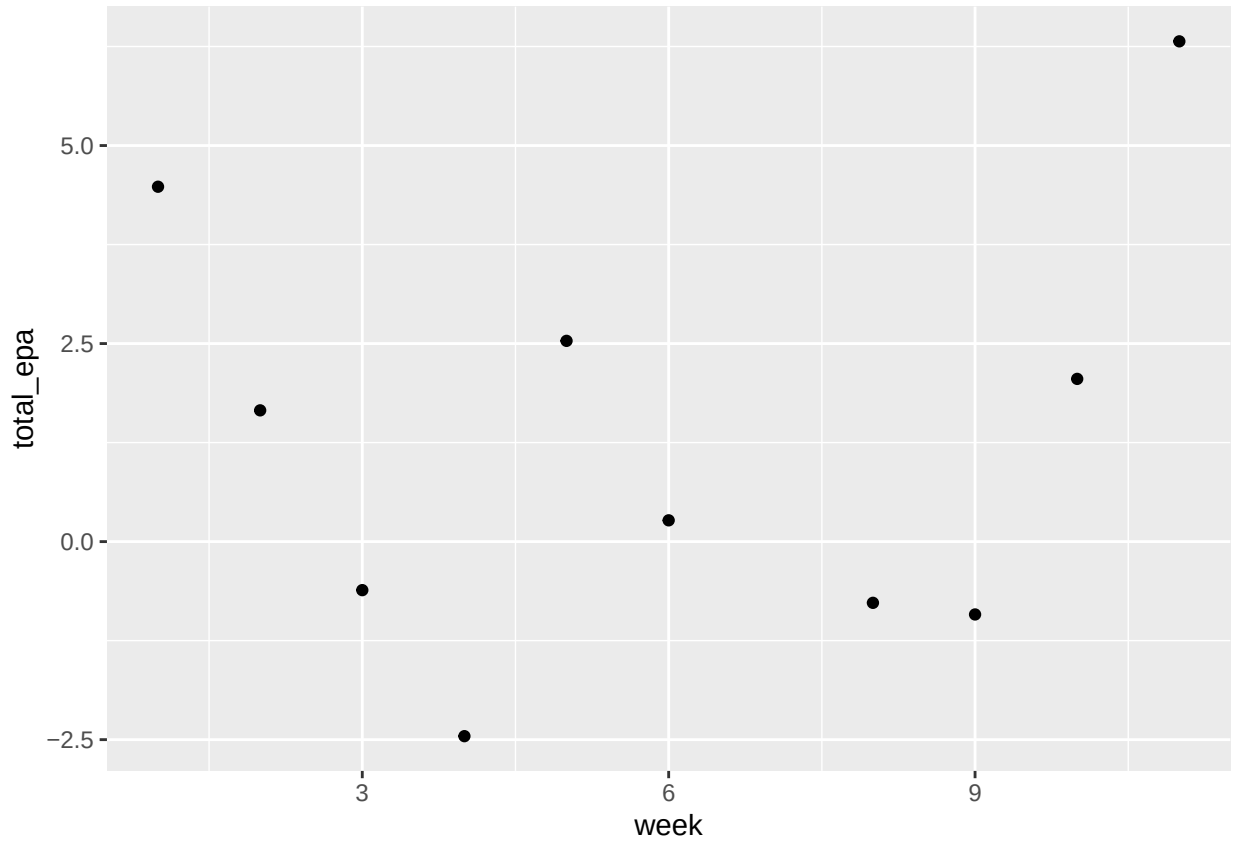


Week 11 Jalen Hurts

```
jalen_epa <- pbp_2022 %>%
  filter(name == "J.Hurts" & play_type == c("run", "pass")) %>%
  group_by(week, play_type) %>%
  summarise(total_epa = sum(epa))
```

```
## `summarise()` has grouped output by 'week'. You can override using the
## `.groups` argument.
```

```
jalen_epa %>%
  filter(play_type == "run") %>%
  ggplot(aes(x = week, y = total_epa)) +
  geom_point()
```




```
jalen_epa %>%
  filter(play_type == "pass") %>%
  arrange(desc(total_epa))
```

```
## # A tibble: 10 x 3
## # Groups:   week [10]
##     week play_type total_epa
##    <int> <chr>         <dbl>
##  1     9 pass         12.0
##  2     8 pass          8.76
##  3     3 pass          3.65
##  4     1 pass          2.07
##  5    10 pass          1.13
##  6     6 pass          0.976
##  7     5 pass         -2.81
##  8     4 pass         -4.41
##  9     2 pass         -4.46
## 10    11 pass         -4.83
```