Predicting the Winner of 2021 D1 NCAA Basketball Tournament

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EDA

- Build data frames for exploratory data analysis and model construction:

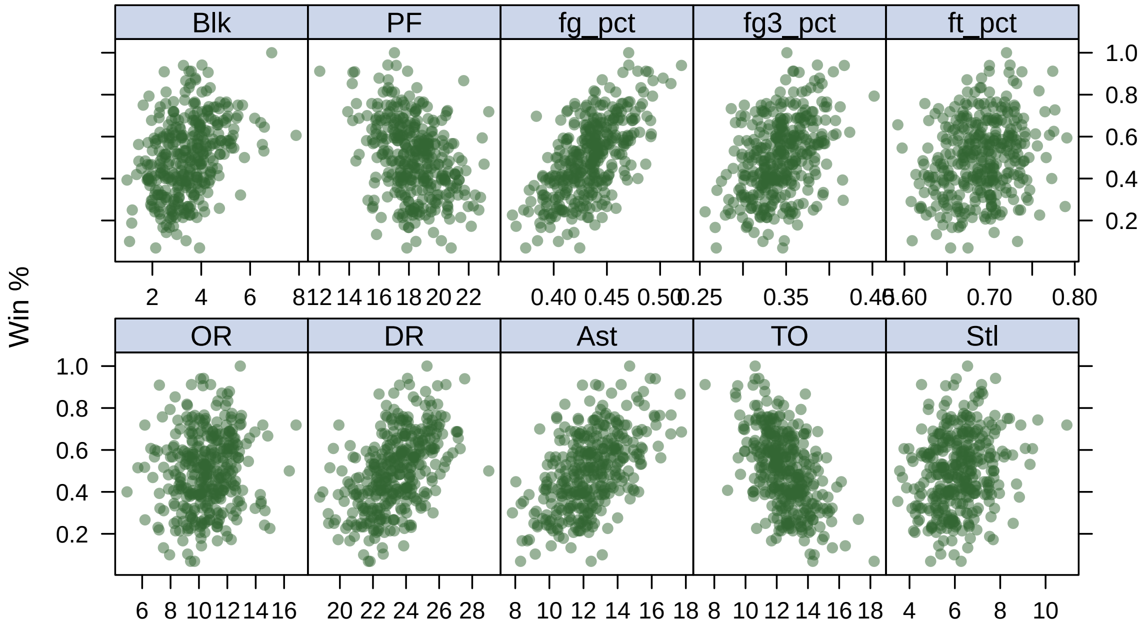
```r
season_df =
  read_csv("./data/MRegularSeasonDetailedResults.csv") %>%
  rowid_to_column("game_id") %>%
  relocate(WLoc:NumOT, .after = DayNum) %>%
  pivot_longer(
    WTeamID:LPF,
    names_to = "stat",
    values_to = "count"
  ) %>%
  mutate(outcome = case_when(
    str_detect(stat, "^W") ~ "win",
    str_detect(stat, "^L") ~ "loss"
  )) %>%
  mutate(stat = substr(stat, 2, nchar(stat))) %>%
  pivot_wider(
    names_from = stat,
    values_from = count
  ) %>%
  mutate(TeamID = as.factor(TeamID)) %>%
  filter(Season > 2014) %>%
  mutate(
    Season = as.factor(Season),
    outcome = as.factor(outcome),
    fg_pct = FGM/FGA,
    fg3_pct = FGM3/FGA3,
    ft_pct = FTM/FTA) %>%
  select(-(FGM:FTA)) %>%
  unnest()

opp_df =
  season_df %>%
  group_by(game_id) %>%
  arrange(outcome, .by_group = T) %>%
  ungroup() %>%
  select(OR:ft_pct) %>%
  rename_all(~paste0("opp", .x))
```

```r
train_df =
  season_df %>%
  cbind(opp_df) %>%
  as_tibble() %>%
  mutate(
    OR_diff = OR - oppOR,
    DR_diff = DR - oppDR,
    Ast_diff = Ast - oppAst,
    TO_diff = TO - oppTO,
    Stl_diff = Stl - oppStl,
    Blk_diff = Blk - oppBlk,
    PF_diff = PF - oppPF,
    FGpct_diff = fg_pct - oppfg_pct,
    FG3pct_diff = fg3_pct - oppfg3_pct,
    FTpct_diff = ft_pct - oppft_pct
  ) %>%
  select(Season, outcome, TeamID, OR_diff:FTpct_diff)

tourney_df =
  read_csv("./data/MNCAATourneyDetailedResults.csv") %>%
  rowid_to_column("game_id") %>%
  relocate(WLoc:NumOT, .after = DayNum) %>%
  pivot_longer(
    WTeamID:LPF,
    names_to = "stat",
    values_to = "count"
  ) %>%
  mutate(outcome = case_when(
    str_detect(stat, "^W") ~ "win",
    str_detect(stat, "^L") ~ "loss"
  )) %>%
  mutate(stat = substr(stat, 2, nchar(stat))) %>%
  pivot_wider(
    names_from = stat,
    values_from = count
  ) %>%
  mutate(TeamID = as.factor(TeamID)) %>%
  filter(Season > 2014) %>%
  mutate(
    Season = as.factor(Season),
    outcome = as.factor(outcome),
    fg_pct = FGM/FGA,
    fg3_pct = FGM3/FGA3,
    ft_pct = FTM/FTA) %>%
  select(-(FGM:FTA)) %>%
  unnest()

opp_tourney =
  tourney_df %>%
  group_by(game_id) %>%
  arrange(outcome, .by_group = T) %>%
  ungroup() %>%
  select(OR:ft_pct) %>%
  rename_all(~paste0("opp", .x))

test_df =
  tourney_df %>%
  cbind(opp_tourney) %>%
  as_tibble() %>%
  mutate(
    OR_diff = OR - oppOR,
    DR_diff = DR - oppDR,
    Ast_diff = Ast - oppAst,
    TO_diff = TO - oppTO,
    Stl_diff = Stl - oppStl,
    Blk_diff = Blk - oppBlk,
    PF_diff = PF - oppPF,
    FGpct_diff = fg_pct - oppfg_pct,
    FG3pct_diff = fg3_pct - oppfg3_pct,
    FTpct_diff = ft_pct - oppft_pct
  ) %>%
  select(Season, outcome, TeamID, OR_diff:FTpct_diff)

total_games_df =
  season_df %>%
  group_by(Season, TeamID) %>%
  summarize(n_games = n())

win_pct_df =
  season_df %>%
  group_by(Season, TeamID) %>%
  filter(outcome == "win") %>%
  summarize(n_wins = n()) %>%
  left_join(total_games_df) %>%
  mutate(win_pct = n_wins/n_games)

regstats_df =
  season_df %>%
  select(Season, TeamID, OR:ft_pct) %>%
  group_by(Season, TeamID) %>%
  summarize_at(vars(OR:ft_pct), ~mean(.x))

regszn_df =
  win_pct_df %>%
  left_join(regstats_df) %>%
  drop_na() %>%
  group_split(Season)
```

- Scatter plots of win probability across different seasonal stats:

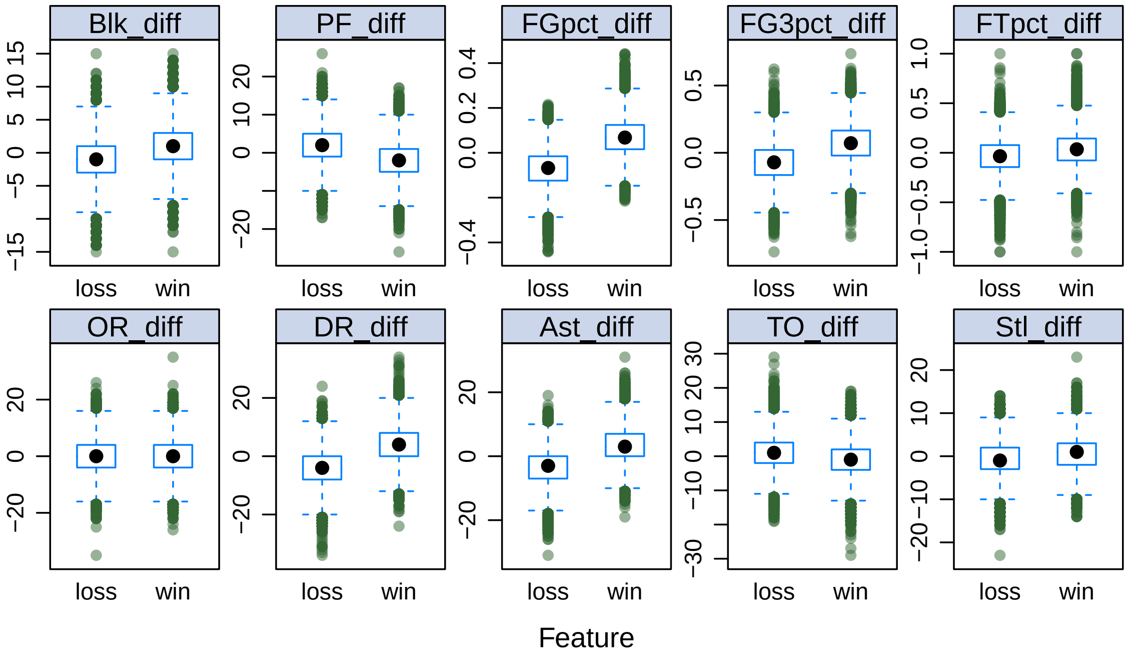
```
x = model.matrix(win_pct ~ ., regszn_df[[1]] %>% dplyr::select(-(Season:n_games)))[ ,-1]
y = regszn_df[[1]]$win_pct

theme1 = trellis.par.get()
theme1$plot.symbol$col = rgb(.2, .4, .2, .5)
theme1$plot.symbol$pch = 16
```

```r
theme1$plot.line$col = rgb(.8, .1, .1, 1)
theme1$plot.line$lwd = 2
theme1$strip.background$col = rgb(.0, .2, .6, .2)
trellis.par.set(theme1)
featurePlot(x, y, plot = "scatter", labels = c("", "Win %"), type = c("p"), layout = c(5, 2))
```



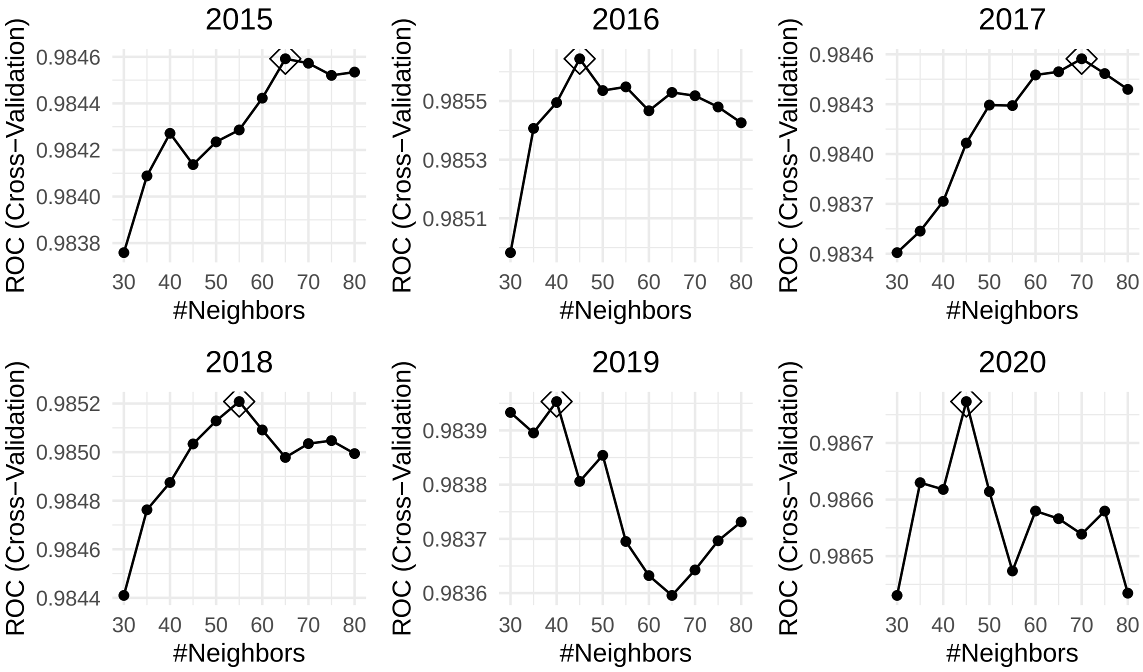
- Distributions of game stat differences, grouped by outcome:

```r
featurePlot(x = train_df[, 4:13],
            y = train_df$outcome,
            scales = list(x = list(relation = "free"),
                          y = list(relation = "free")),
            plot = "box",
            auto.key = list(columns = 2))
```

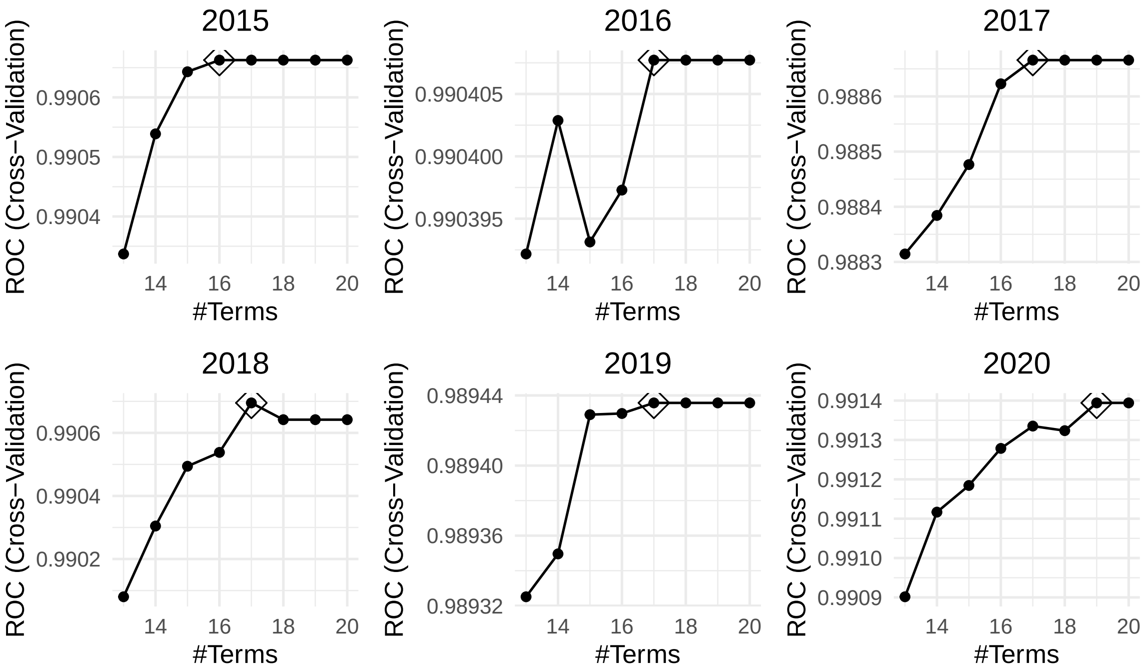


- Test three different models (simple logistic regression, MARS, and KNN) using 10-fold cross-validation:

```
set.seed(37564)

ctrl = trainControl(method = "cv", summaryFunction = twoClassSummary, classProbs = T, number = 10)

mods_df =
  tibble(Year = c(2015:2020)) %>%
  mutate(train = map(.x = Year, ~filter(train_df, Season == .x)),
         test = map(.x = Year, ~filter(test_df, Season == .x))) %>%
  mutate(mod_glm = map(.x = train, ~train(outcome ~ . -Season -TeamID,
                                       na.action = na.exclude,
                                       data = .x,
                                       method = "glm",
                                       family = "binomial",
                                       metric = "ROC",
                                       trControl = ctrl)),
         mod_mars = map(.x = train, ~train(outcome ~ . -Season -TeamID,
                                       na.action = na.exclude,
                                       data = .x,
                                       method = "earth",
                                       tuneGrid = expand.grid(degree = 1, nprune = 13:20),
                                       metric = "ROC",
                                       trControl = ctrl)),
         mod_knn = map(.x = train, ~train(outcome ~ . -Season -TeamID,
                                       na.action = na.exclude,
                                       data = .x,
                                       method = "knn",
                                       metric = "ROC",
                                       preProcess = c("center","scale"),
                                       tuneGrid = data.frame(k = seq(30, 80, by = 5)),
                                       trControl = ctrl)))

plot_knn = map(.x = c(1:6), ~ggplot(mods_df$mod_knn[[.x]], highlight = T) + theme(plot.title = element_

(plot_knn[[1]] + labs(title = "2015")) + (plot_knn[[2]] + labs(title = "2016")) + (plot_knn[[3]] + labs
```

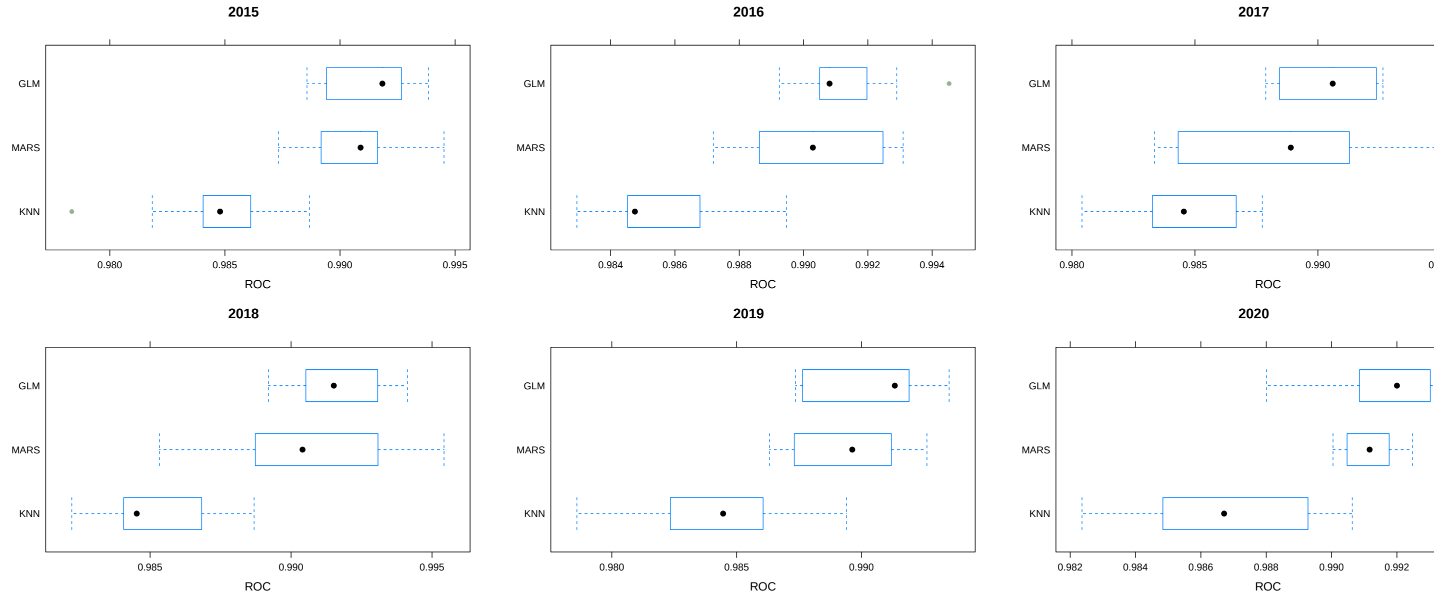


```
plot_mars = map(.x = c(1:6), ~ggplot(mods_df$mod_mars[[.x]], highlight = T) + theme(plot.title = element

(plot_mars[[1]] + labs(title = "2015")) + (plot_mars[[2]] + labs(title = "2016")) + (plot_mars[[3]] + la
```



```r
res = map(.x = c(1:6), ~resamples(list(GLM = mods_df$mod_glm[[.x]], MARS = mods_df$mod_mars[[.x]], KNN =
```

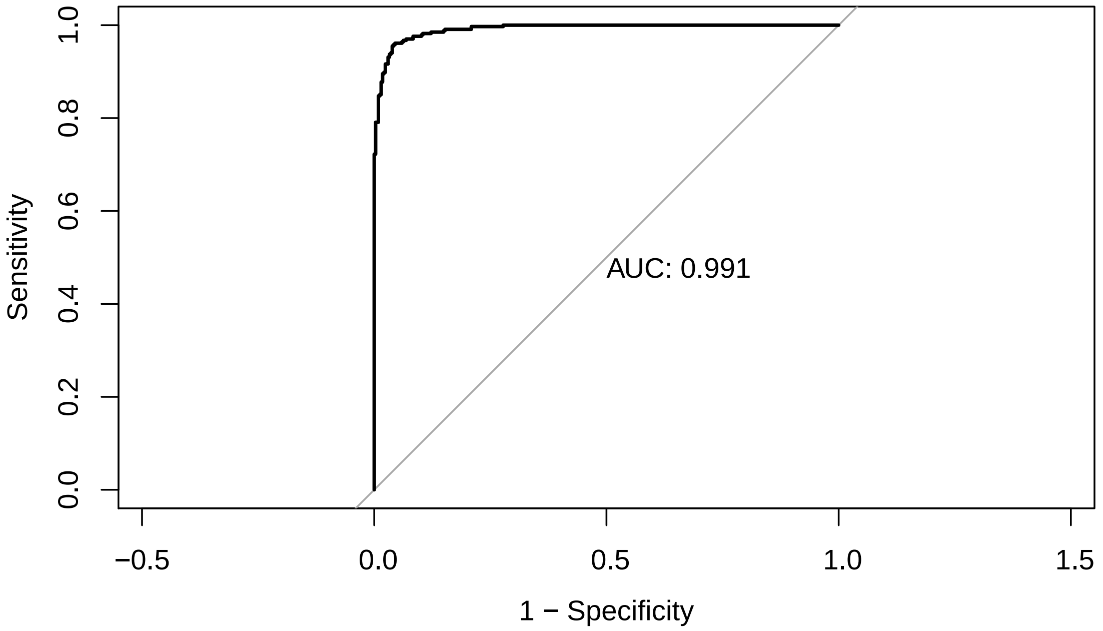
```r
bwplot(res[[1]], metric = "ROC", main = "2015")
bwplot(res[[2]], metric = "ROC", main = "2016")
bwplot(res[[3]], metric = "ROC", main = "2017")
bwplot(res[[4]], metric = "ROC", main = "2018")
bwplot(res[[5]], metric = "ROC", main = "2019")
bwplot(res[[6]], metric = "ROC", main = "2020")
```



- 10-fold CV determined that the GLM using logistic regression is the best model to use.

- Now, we test the GLM model for each season, excluding 2020 since that will be used for the Tournament predictions.

```
pred_df =
  mods_df %>%
  filter(Year < 2020) %>%
  dplyr::select(-mod_mars, -mod_knn) %>%
  mutate(pred = map2(.x = mod_glm, .y = test, ~predict(.x, .y, type = "prob")[, 2])) %>%
  unnest(test, pred) %>%
  dplyr::select(Season, outcome, pred)

plot(roc(pred_df$outcome, pred_df$pred), legacy.axes = TRUE, print.auc = TRUE)
```



- The AUC of the ROC using the logisitic regression model is **0.991**, suggesting that this model does a great job of predicting outcomes.
- Now, let's

```
team_df =
  read_csv("./data/MTeams.csv") %>%
  mutate(TeamID = as.factor(TeamID),
         TeamName = as.factor(TeamName))

reg2020 =
  regszn_df[[6]] %>%
  left_join(team_df) %>%
  select(Season, TeamID, TeamName, OR:ft_pct)

model = mods_df$mod_glm[[6]]
summary(model)
```

```
##
## Call:
## NULL
##
## Deviance Residuals:
##    Min      1Q  Median      3Q     Max
## -3.349  -0.056   0.000   0.056   3.349
##
## Coefficients:
##               Estimate Std. Error z value Pr(>|z|)
## (Intercept)  3.063e-16  5.221e-02   0.000     1.00
## OR_diff      3.817e-01  1.866e-02  20.461  < 2e-16 ***
## DR_diff      2.009e-01  2.535e-02   7.925 2.27e-15 ***
## Ast_diff     1.515e-01  1.254e-02  12.080  < 2e-16 ***
## TO_diff     -6.027e-01  2.645e-02 -22.790  < 2e-16 ***
## Stl_diff     2.927e-02  1.983e-02   1.476     0.14
## Blk_diff     1.057e-01  1.963e-02   5.385 7.24e-08 ***
## PF_diff     -3.108e-01  1.394e-02 -22.300  < 2e-16 ***
## FGpct_diff   4.762e+01  2.058e+00  23.140  < 2e-16 ***
## FG3pct_diff  1.231e+01  5.279e-01  23.327  < 2e-16 ***
## FTpct_diff   8.210e+00  4.403e-01  18.644  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 14764.0  on 10649  degrees of freedom
## Residual deviance:  2459.5  on 10639  degrees of freedom
## AIC: 2481.5
##
## Number of Fisher Scoring iterations: 8
```

```r
matchup = function(Team1, Team2) {

  t1_df =
    reg2020 %>%
    filter(TeamID %in% c(Team1, Team2))

  t2_df =
    reg2020 %>%
    filter(TeamID %in% c(Team1, Team2)) %>%
    arrange(desc(TeamID)) %>%
    select(OR:ft_pct) %>%
    rename_all(~paste0("opp", .x))

  test2020 =
    t1_df %>%
    cbind(t2_df) %>%
    as_tibble() %>%
    mutate(
      OR_diff = OR - oppOR,
      DR_diff = DR - oppDR,
      Ast_diff = Ast - oppAst,
      TO_diff = TO - oppTO,
      Stl_diff = Stl - oppStl,
      Blk_diff = Blk - oppBlk,
      PF_diff = PF - oppPF,
      FGpct_diff = fg_pct - oppfg_pct,
      FG3pct_diff = fg3_pct - oppfg3_pct,
      FTpct_diff = ft_pct - oppft_pct
    ) %>%
    select(Season, TeamID, OR_diff:FTpct_diff)

  win_prob = predict(model, test2020, type = "prob")[1, 2]

 if (Team1 < Team2) {if (win_prob > 0.5) {
    print(Team1)
  } else {
    print(Team2)
  }} else {if (win_prob > 0.5) {
    print(Team2)
  } else {
    print(Team1)
  }}

}
```

- For the first four play-in games:

```
reg2020 %>%
  filter(TeamName %in%
           c("Norfolk St", "Wichita St", "TX Southern", "UCLA", "Michigan St", "Drake", "Appalachian St
  select(TeamName, TeamID)

matchup(1111, 1313)
matchup(1111, 1313)
matchup(1111, 1313)
matchup(1111, 1313)
```

- Now, to create the 4 regions and seed all the teams:

```
seed2020 =
  read_csv("./data/MNCAATourneySeeds.csv") %>%
  filter(Season == "2021") %>%
  select(-Season) %>%
  mutate(TeamID = as.factor(TeamID)) %>%
  left_join(reg2020) %>%
  mutate(Region = as.factor(case_when(
    str_detect(Seed, "^W") ~ "East",
    str_detect(Seed, "^X") ~ "West",
    str_detect(Seed, "^Y") ~ "Midwest",
    str_detect(Seed, "^Z") ~ "South"))) %>%
  separate(Seed, c(NA, "Seed"), sep = "[W-Z]") %>%
  filter(TeamName %nin% c("Norfolk St", "Wichita St", "TX Southern", "UCLA")) %>%
  mutate(Seed = as.numeric(str_remove(Seed, "[ab]"))) %>%
  mutate(TeamID = as.character(TeamID),
         TeamID = as.numeric(TeamID))
```

```
## Parsed with column specification:
## cols(
##   Season = col_double(),
##   Seed = col_character(),
##   TeamID = col_double()
## )
```

```
## Joining, by = "TeamID"
```

```
East =
  seed2020 %>%
  filter(Region == "East")
West =
  seed2020 %>%
  filter(Region == "West")
Midwest =
  seed2020 %>%
  filter(Region == "Midwest")
South =
  seed2020 %>%
  filter(Region == "South")
```

- Simulate tournament by regions, using self-created `region_sim()` function:

```
region_sim = function(region) {

  r1 = region %>%
    filter(Seed %in% c(1, 16)) %>%
    arrange(TeamID) %>%
    pull(TeamID)

  r2 = region %>%
    filter(Seed %in% c(2, 15)) %>%
    arrange(TeamID) %>%
    pull(TeamID)

  r3 = region %>%
    filter(Seed %in% c(3, 14)) %>%
    arrange(TeamID) %>%
    pull(TeamID)

  r4 = region %>%
    filter(Seed %in% c(4, 13)) %>%
    arrange(TeamID) %>%
    pull(TeamID)

  r5 = region %>%
    filter(Seed %in% c(5, 12)) %>%
    arrange(TeamID) %>%
    pull(TeamID)

  r6 = region %>%
    filter(Seed %in% c(6, 11)) %>%
    arrange(TeamID) %>%
    pull(TeamID)

  r7 = region %>%
    filter(Seed %in% c(7, 10)) %>%
    arrange(TeamID) %>%
    pull(TeamID)

  r8 = region %>%
    filter(Seed %in% c(8, 9)) %>%
    arrange(TeamID) %>%
    pull(TeamID)

  res1 = matchup(r1[1], r1[2])
  res2 = matchup(r2[1], r2[2])
  res3 = matchup(r3[1], r3[2])
  res4 = matchup(r4[1], r4[2])
  res5 = matchup(r5[1], r5[2])
  res6 = matchup(r6[1], r6[2])
  res7 = matchup(r7[1], r7[2])
  res8 = matchup(r8[1], r8[2])

  quart1 = matchup(res1, res8)
  quart2 = matchup(res2, res7)
  quart3 = matchup(res3, res6)
  quart4 = matchup(res4, res5)

  sem1 = matchup(quart1, quart4)
  sem2 = matchup(quart2, quart3)

  fin1 = matchup(sem1, sem2)

  rd1 = c(res1, res2, res3, res4, res5, res6, res7, res8) %>%
    as_tibble() %>%
    rename(TeamID = value) %>%
    mutate(TeamID = as.factor(TeamID)) %>%
    left_join(mutate(seed2020, TeamID = as.factor(TeamID))) %>%
    dplyr::select(TeamID, Seed, TeamName)

  quart = c(quart1, quart2, quart3, quart4) %>%
    as_tibble() %>%
    rename(TeamID = value) %>%
    mutate(TeamID = as.factor(TeamID)) %>%
    left_join(mutate(seed2020, TeamID = as.factor(TeamID))) %>%
    dplyr::select(TeamID, Seed, TeamName)

  sem = c(sem1, sem2) %>%
    as_tibble() %>%
    rename(TeamID = value) %>%
    mutate(TeamID = as.factor(TeamID)) %>%
    left_join(mutate(seed2020, TeamID = as.factor(TeamID))) %>%
    dplyr::select(TeamID, Seed, TeamName)
  fin = c(fin1) %>%
    as_tibble() %>%
    rename(TeamID = value) %>%
    mutate(TeamID = as.factor(TeamID)) %>%
    left_join(mutate(seed2020, TeamID = as.factor(TeamID))) %>%
    dplyr::select(TeamID, Seed, TeamName)

  rbind(rd1, quart, sem, fin)

}

region_sim(East)
```

```
## [1] 1276
## [1] 1104
## [1] 1400
## [1] 1199
## [1] 1207
## [1] 1140
## [1] 1268
## [1] 1261
## [1] 1261
## [1] 1268
## [1] 1140
## [1] 1207
## [1] 1261
## [1] 1140
## [1] 1140
```

```
## Joining, by = "TeamID"
## Joining, by = "TeamID"
## Joining, by = "TeamID"
## Joining, by = "TeamID"
```

```
## # A tibble: 15 x 3
##    TeamID  Seed TeamName
##    <fct>  <dbl> <fct>
##  1 1276       1 Michigan
##  2 1104       2 Alabama
##  3 1400       3 Texas
##  4 1199       4 Florida St
##  5 1207      12 Georgetown
##  6 1140       6 BYU
##  7 1268      10 Maryland
##  8 1261       8 LSU
##  9 1261       8 LSU
## 10 1268      10 Maryland
## 11 1140       6 BYU
## 12 1207      12 Georgetown
## 13 1261       8 LSU
## 14 1140       6 BYU
## 15 1140       6 BYU
```

```r
region_sim(West)
```

```
## [1] 1211
## [1] 1234
## [1] 1242
## [1] 1325
## [1] 1166
## [1] 1179
## [1] 1332
## [1] 1328
## [1] 1211
## [1] 1332
## [1] 1242
## [1] 1166
## [1] 1211
## [1] 1242
## [1] 1211
```

```
## Joining, by = "TeamID"
## Joining, by = "TeamID"
## Joining, by = "TeamID"
## Joining, by = "TeamID"
```

```
## # A tibble: 15 x 3
##    TeamID  Seed TeamName
##    <fct>  <dbl> <fct>
##  1 1211       1 Gonzaga
##  2 1234       2 Iowa
##  3 1242       3 Kansas
##  4 1325      13 Ohio
##  5 1166       5 Creighton
##  6 1179      11 Drake
##  7 1332       7 Oregon
##  8 1328       8 Oklahoma
##  9 1211       1 Gonzaga
## 10 1332       7 Oregon
## 11 1242       3 Kansas
## 12 1166       5 Creighton
## 13 1211       1 Gonzaga
## 14 1242       3 Kansas
## 15 1211       1 Gonzaga
```

```r
region_sim(Midwest)
```

```
## [1] 1228
## [1] 1222
## [1] 1452
## [1] 1251
## [1] 1333
## [1] 1361
## [1] 1353
## [1] 1260
## [1] 1260
## [1] 1222
## [1] 1361
## [1] 1251
## [1] 1251
## [1] 1361
## [1] 1251
```

```
## Joining, by = "TeamID"
## Joining, by = "TeamID"
## Joining, by = "TeamID"
## Joining, by = "TeamID"
```

```
## # A tibble: 15 x 3
##    TeamID  Seed TeamName
##    <fct>  <dbl> <fct>
##  1 1228       1 Illinois
##  2 1222       2 Houston
##  3 1452       3 West Virginia
##  4 1251      13 Liberty
##  5 1333      12 Oregon St
##  6 1361       6 San Diego St
##  7 1353      10 Rutgers
##  8 1260       8 Loyola-Chicago
##  9 1260       8 Loyola-Chicago
## 10 1222       2 Houston
## 11 1361       6 San Diego St
## 12 1251      13 Liberty
## 13 1251      13 Liberty
## 14 1361       6 San Diego St
## 15 1251      13 Liberty
```

```r
region_sim(South)
```

```
## [1] 1124
## [1] 1331
## [1] 1159
## [1] 1317
## [1] 1437
## [1] 1429
## [1] 1196
## [1] 1458
## [1] 1458
## [1] 1331
## [1] 1159
## [1] 1437
## [1] 1437
## [1] 1159
## [1] 1159
```

```
## Joining, by = "TeamID"
## Joining, by = "TeamID"
## Joining, by = "TeamID"
## Joining, by = "TeamID"
## # A tibble: 15 x 3
##    TeamID  Seed TeamName
##    <fct>  <dbl> <fct>
##  1 1124       1 Baylor
##  2 1331      15 Oral Roberts
##  3 1159      14 Colgate
##  4 1317      13 North Texas
##  5 1437       5 Villanova
##  6 1429      11 Utah St
##  7 1196       7 Florida
##  8 1458       9 Wisconsin
##  9 1458       9 Wisconsin
## 10 1331      15 Oral Roberts
## 11 1159      14 Colgate
## 12 1437       5 Villanova
## 13 1437       5 Villanova
## 14 1159      14 Colgate
## 15 1159      14 Colgate
```

- Finish tournament by simulating the Final Four, using self-created `f4_sim()` function:

```
f4_sim = function(regE, regW, regMW, regS){

  winEast = region_sim(regE)[[15, 1]] %>% as.character() %>% as.numeric()
  winWest = region_sim(regW)[[15, 1]] %>% as.character() %>% as.numeric()
  winMidwest = region_sim(regMW)[[15, 1]] %>% as.character() %>% as.numeric()
  winSouth = region_sim(regS)[[15, 1]] %>% as.character() %>% as.numeric()

  nat_sem1 = matchup(winEast, winWest)
  nat_sem2 = matchup(winMidwest, winSouth)

  nat_fin = matchup(nat_sem1, nat_sem2)

  nat_sem = c(nat_sem1, nat_sem2) %>%
    as_tibble() %>%
    rename(TeamID = value) %>%
    mutate(TeamID = as.factor(TeamID)) %>%
    left_join(mutate(seed2020, TeamID = as.factor(TeamID))) %>%
    dplyr::select(TeamID, Seed, TeamName)

  nat_fin = c(nat_fin) %>%
    as_tibble() %>%
    rename(TeamID = value) %>%
    mutate(TeamID = as.factor(TeamID)) %>%
    left_join(mutate(seed2020, TeamID = as.factor(TeamID))) %>%
    dplyr::select(TeamID, Seed, TeamName)

  rbind(nat_sem, nat_fin)

}

f4_sim(East, West, Midwest, South)
```

```
## [1] 1276
## [1] 1104
## [1] 1400
## [1] 1199
## [1] 1207
## [1] 1140
## [1] 1268
## [1] 1261
## [1] 1261
## [1] 1268
## [1] 1140
## [1] 1207
## [1] 1261
## [1] 1140
## [1] 1140
```

```
## Joining, by = "TeamID"
## Joining, by = "TeamID"
## Joining, by = "TeamID"
## Joining, by = "TeamID"
```

```
## [1] 1211
## [1] 1234
## [1] 1242
## [1] 1325
## [1] 1166
## [1] 1179
## [1] 1332
## [1] 1328
## [1] 1211
## [1] 1332
## [1] 1242
## [1] 1166
## [1] 1211
## [1] 1242
## [1] 1211
```

```
## Joining, by = "TeamID"
## Joining, by = "TeamID"
## Joining, by = "TeamID"
## Joining, by = "TeamID"
```

```
## [1] 1228
## [1] 1222
## [1] 1452
## [1] 1251
## [1] 1333
## [1] 1361
## [1] 1353
## [1] 1260
## [1] 1260
## [1] 1222
## [1] 1361
## [1] 1251
## [1] 1251
## [1] 1361
## [1] 1251
```

```
## Joining, by = "TeamID"
## Joining, by = "TeamID"
## Joining, by = "TeamID"
## Joining, by = "TeamID"
```

```
## [1] 1124
## [1] 1331
## [1] 1159
## [1] 1317
## [1] 1437
## [1] 1429
## [1] 1196
## [1] 1458
## [1] 1458
## [1] 1331
## [1] 1159
## [1] 1437
## [1] 1437
## [1] 1159
## [1] 1159
```

```
## Joining, by = "TeamID"
## Joining, by = "TeamID"
## Joining, by = "TeamID"
## Joining, by = "TeamID"
```

```
## [1] 1211
## [1] 1251
## [1] 1211
```

```
## Joining, by = "TeamID"
## Joining, by = "TeamID"
```

```
## # A tibble: 3 x 3
##   TeamID  Seed TeamName
##   <fct>  <dbl> <fct>
## 1 1211       1 Gonzaga
## 2 1251      13 Liberty
## 3 1211       1 Gonzaga
```