MTGA_Data

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Name: Name of the card

Color: Color of the cards.

U = Blue, G = Green, B = Black, W = White, R = Red

Rarity: Rarity of the cards; dictates chances of earning the card

C = Common, U = Uncommon, R = Rare, M = Mythic

GPWR: Win Rate when Maindecked

OHWR: Win Rate in Opening Hand

GIHWR: Win Rate in Hand (Opener or Drawn)

IWD: Win Rate Improvement When Drawn

1) Importing and Cleaning the Data

```
library(rvest)
```

```
## Warning: package 'rvest' was built under R version 3.6.3
```

```
## Loading required package: xml2
```

```
## Warning: package 'xml2' was built under R version 3.6.3
```

```
cnames <- c("Name", "Color", "Rarity", "NumSeen", "ALSA", "NumPicked",
            "ATA", "NumGP", "GPWR", "NumOH", "OHWR", "NumGD", "GDWR", "NumGIH",
            "GIHWR", "NumGND", "GNDWR", "IWD") # Names of the columns for data
# Now we'll import the .csv from data gathered in 17lands.com
mtg <- read.csv("card_list.csv", header = F, col.names = cnames)
mtg <- mtg[-which(duplicated(mtg) == TRUE), ] # Removes duplicate rows
mtg <- mtg[-2, ] # Removes empty row
# We'll now use a for loop and Regex to remove unwanted strings in select columns
for(i in 1:dim(mtg)[2]) {
```

```
  if(sum(i == c(9, 11, 13, 15, 17)) == 1) {
    mtg[, i] <-  as.numeric(substr(mtg[, i], start = 1, stop = 5)) / 100
  }
}
mtg$IWD <- as.numeric(gsub("[^0-9.-]", "", mtg$IWD)) # More regex to extract numbers
# Here, I'll be removeing data that contains cards with more than one
# color and also without color (colorless). The reasoning is that we want the data
# to only contain monocolored cards as many cards with multiple colors. For example,
# this card:
# https://gatherer.wizards.com/Pages/Card/Details.aspx?name=Chatterfang%2C+Squirrel+General
# is supposed to be primarily green, however due to the black mana symbol in the text,
# it would be counted as "GB" in this data, which is somewhat wrong and convolutes
# the data. With colorless cards, we're removing them because we're only examining
# the main 5 colors in the game.
mtga <- mtg[-which(nchar(as.character(mtg$Color)) > 1), ] # Removes multicolor cards
mv <- which(nchar(as.character(mtga$Color)) < 1) # Index of colorless cards
mtga$Color <- as.character(mtga$Color)
mtga <- mtga[-mv, ] # Removes colorless cards
mtga$Color <- as.factor(mtga$Color)
# Finally, we'll remove variables from the data that don't
# tell us anything about the success of a card.
mtga <- mtga[, -c(4, 5, 6, 7, 8, 10, 12, 14, 16, 17)]
head(mtga, 10)
```

```
##                      Name Color Rarity  GPWR  OHWR  GDWR GIHWR  IWD
## 1    Acclaimed Contender     W      R 0.572    NA    NA 0.591  2.4
## 3      All That Glitters     W      U 0.517 0.535 0.492 0.513 -0.7
## 5   Archon of Absolution     W      U 0.554 0.580 0.580 0.582  5.4
## 7      Ardenvale Paladin     W      C 0.527 0.519 0.511 0.517 -1.7
## 9    Ardenvale Tactician     W      C 0.551 0.551 0.572 0.563  1.8
## 11          Bartered Cow     W      C    NA    NA    NA 0.473   NA
## 13      Beloved Princess     W      C 0.517 0.545 0.480 0.510 -0.6
## 15       Charming Prince     W      R    NA    NA    NA 0.556  1.0
## 17 The Circle of Loyalty     W      M    NA    NA    NA    NA   NA
## 19     Deafening Silence     W      U    NA    NA    NA    NA   NA
```

2) Visualizations Using Boxplots

```
library(ggplot2)
```

```
## Warning: package 'ggplot2' was built under R version 3.6.3
```

```
summary(mtga) # Summary statistics of each variable
```

```
##                      Name      Color   Rarity       GPWR             OHWR
##  Plummet              :   4   B:415    :  0   Min.   :0.4370   Min.   :0.3670
##  Return to Nature     :   4   G:406   B: 10   1st Qu.:0.5280   1st Qu.:0.5190
##  Thrill of Possibility:   4   R:412   C:910   Median :0.5470   Median :0.5510
##  Duress               :   3   U:408   M:133   Mean   :0.5447   Mean   :0.5509
```

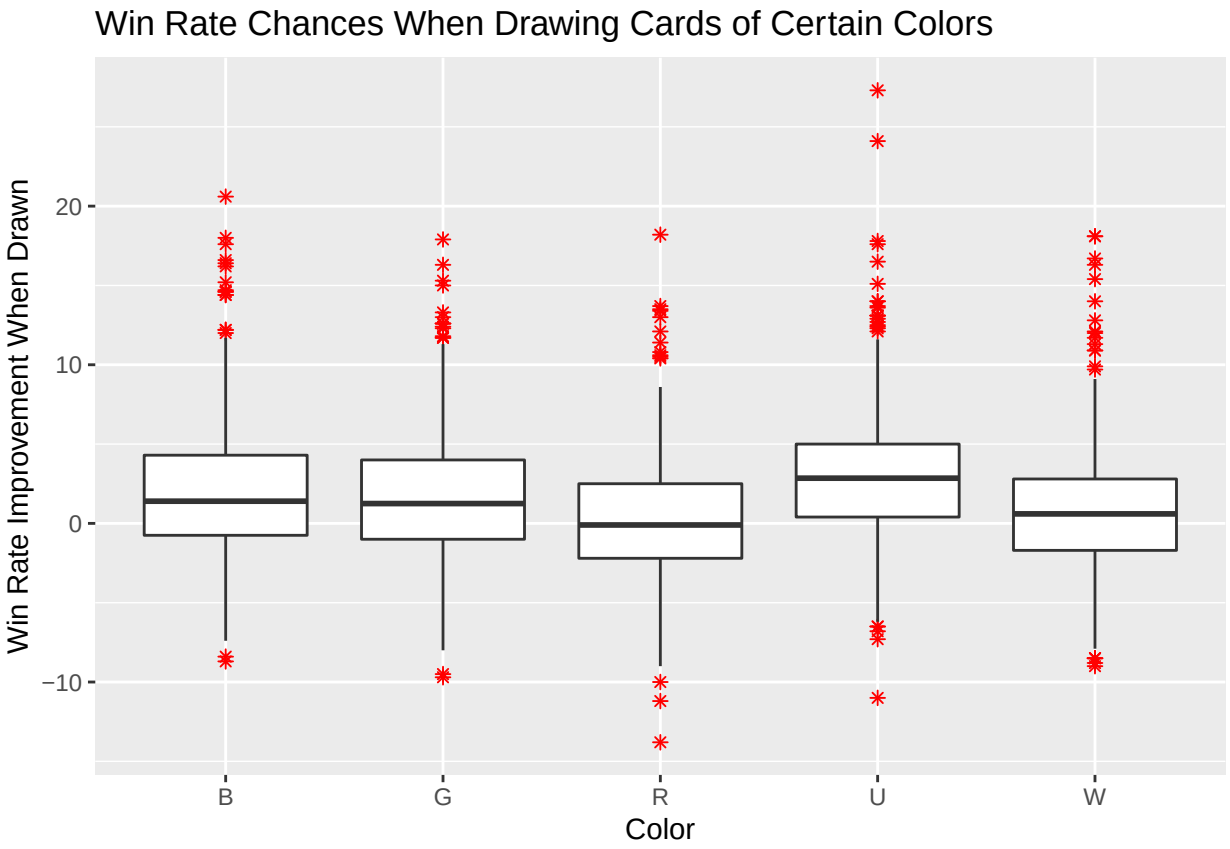
```
##  Opt                :   3   W:410   R:396   3rd Qu.:0.5630   3rd Qu.:0.5800
##  Revitalize         :   3           U:602   Max.   :0.6240   Max.   :0.7700
##  (Other)            :2030                   NA's   :262      NA's   :469
##       GDWR            GIHWR             IWD
##  Min.   :0.3990   Min.   :0.3670   Min.   :-13.800
##  1st Qu.:0.5300   1st Qu.:0.5262   1st Qu.: -1.200
##  Median :0.5580   Median :0.5540   Median :  1.150
##  Mean   :0.5574   Mean   :0.5537   Mean   :  1.675
##  3rd Qu.:0.5820   3rd Qu.:0.5800   3rd Qu.:  4.000
##  Max.   :0.7190   Max.   :0.7050   Max.   : 27.300
##  NA's   :293      NA's   :201      NA's   :217
```

```
table(mtga$Color) # Checks amount of cards per colors
```

```
##
##   B   G   R   U   W
## 415 406 412 408 410
```

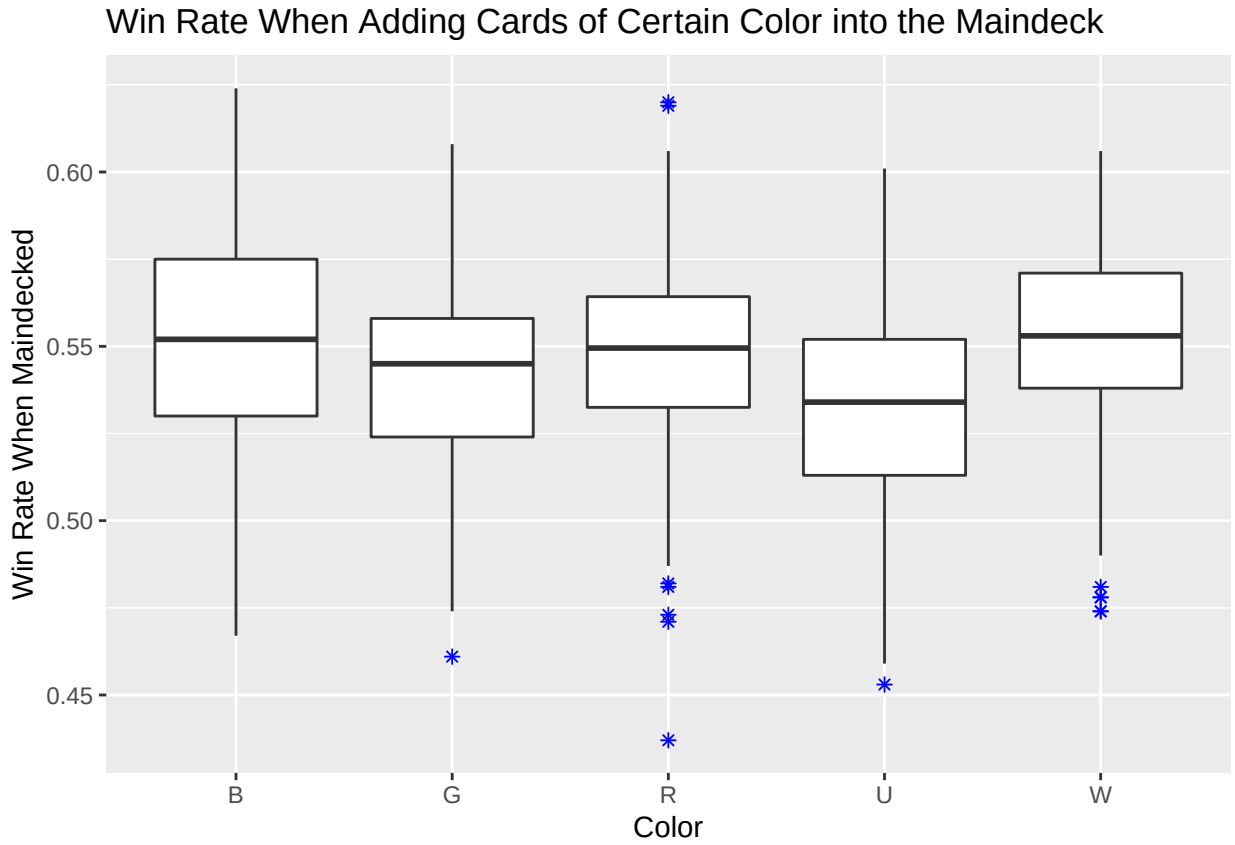
```
# Now we'll build boxplots to see a visualization of the
# success rate of each color depending on the turn
# the cards were drawn/time of usage. Each graph will have
# self-explanatory axis names and titles.
ggplot(mtga, aes(x = Color, y = IWD)) +
  geom_boxplot(outlier.colour = "red", outlier.shape = 8,
               outlier.size = 1.5) +
  ylab("Win Rate Improvement When Drawn") +
  ggtitle("Win Rate Chances When Drawing Cards of Certain Colors")
```

```
## Warning: Removed 217 rows containing non-finite values (stat_boxplot).
```



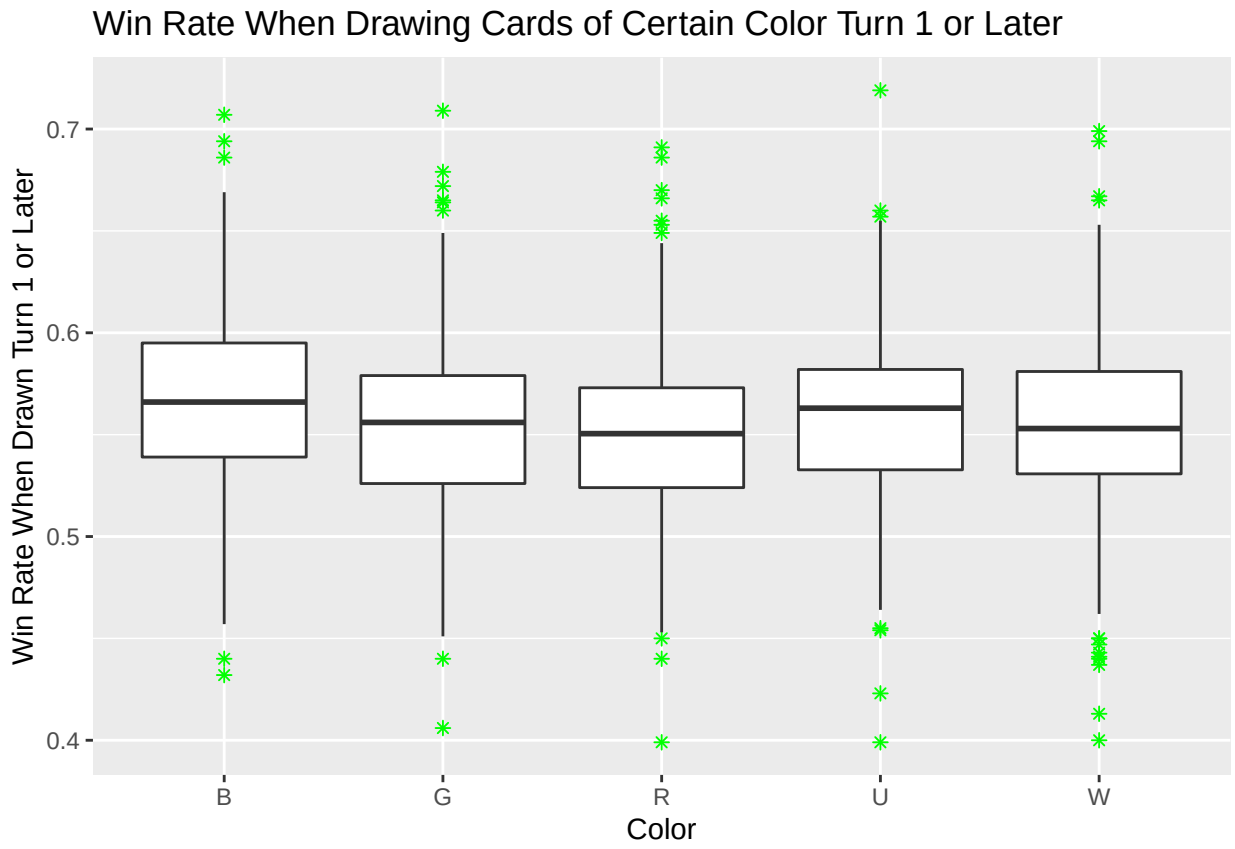

```
# We can see that the overall win rate chances improve more when drawing
# a blue card compared to the other 4 colors, with red and white having
# the lowest win rate improvement.

ggplot(mtga, aes(x = Color, y = GPWR)) +
  geom_boxplot(outlier.colour = "blue", outlier.shape = 8,
               outlier.size = 1.5) +
  ylab("Win Rate When Maindecked") +
  ggtitle("Win Rate When Adding Cards of Certain Color into the Maindeck")
```

```
## Warning: Removed 262 rows containing non-finite values (stat_boxplot).
```



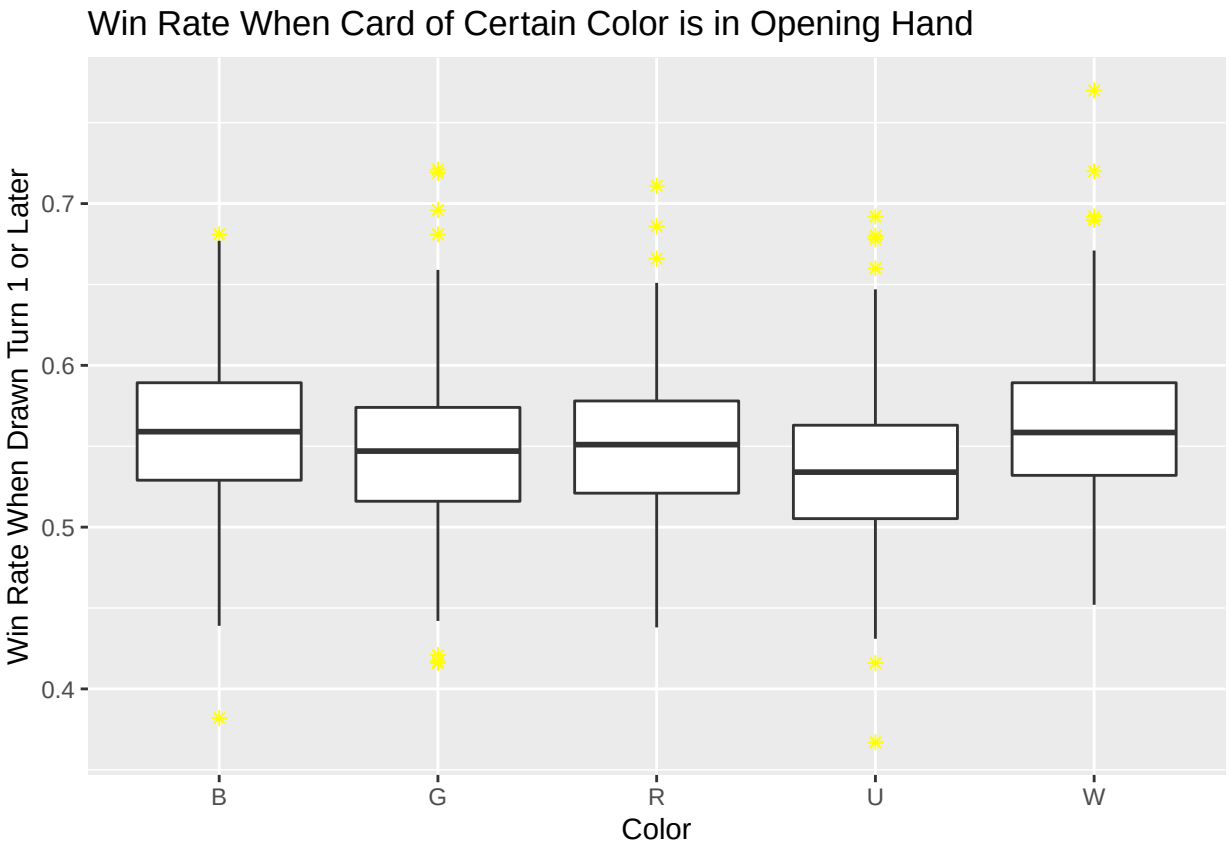

```
# This graph seemingly contradicts the last graph, showing us that adding
# blue cards gives the lowest win rate compared to the other 4 colors, with
# red, white, and especially black leading the numbers here. Perhaps those
# blue cards just weren't drawn at all or weren't used to their full effect...

ggplot(mtga, aes(x = Color, y = GDWR)) +
  geom_boxplot(outlier.colour = "green", outlier.shape = 8,
               outlier.size = 1.5) +
  ylab("Win Rate When Drawn Turn 1 or Later") +
  ggtitle("Win Rate When Drawing Cards of Certain Color Turn 1 or Later")
```

```
## Warning: Removed 293 rows containing non-finite values (stat_boxplot).
```



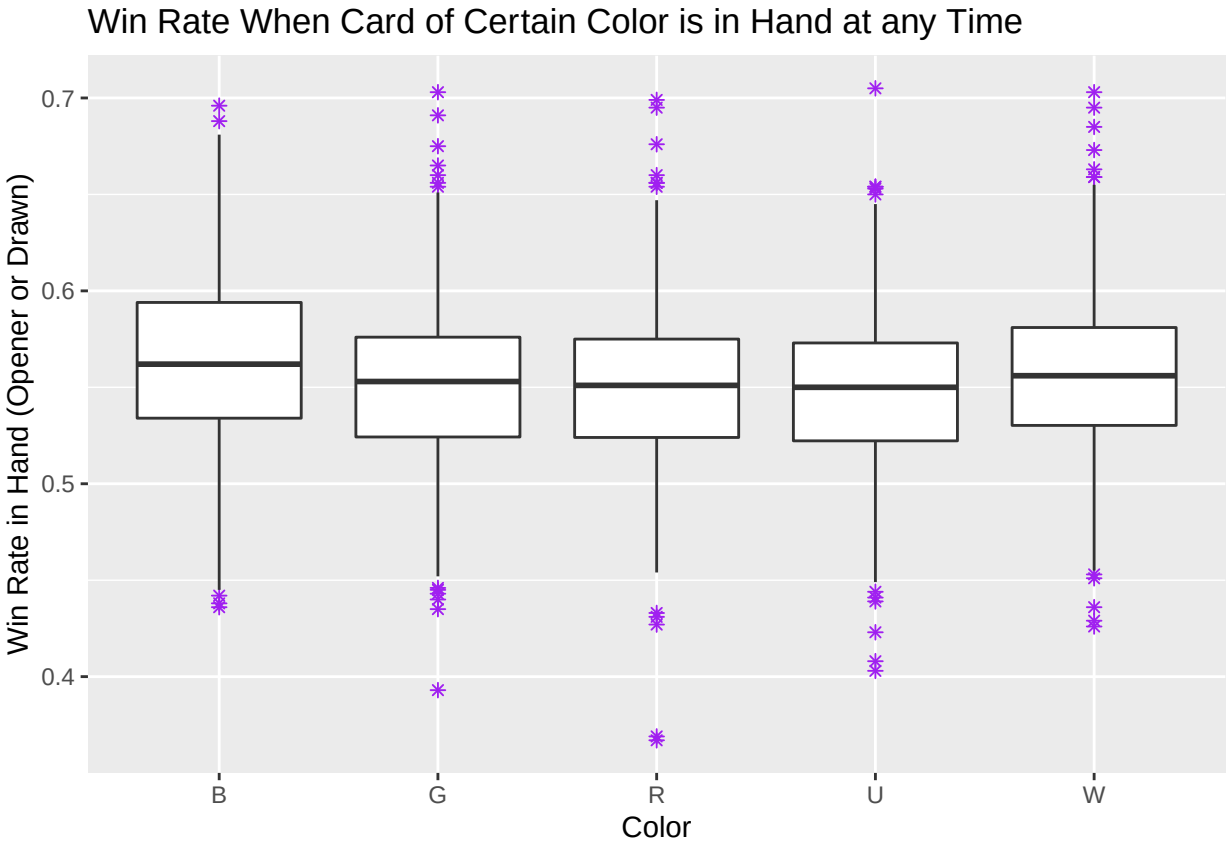

```
# Here, we can see a bit of a composite scenario of the previous two graphs
# where black has the highest win rate followed by blue, but the other 3 colors
# seem to be equally matched. It tells us that there is a major difference in
# simply adding a card to a deck and actually drawing it in an actual game.

ggplot(mtga, aes(x = Color, y = OHWR)) +
  geom_boxplot(outlier.colour = "yellow", outlier.shape = 8,
               outlier.size = 1.5) +
  ylab("Win Rate When Drawn Turn 1 or Later") +
  ggtitle("Win Rate When Card of Certain Color is in Opening Hand")
```

```
## Warning: Removed 469 rows containing non-finite values (stat_boxplot).
```

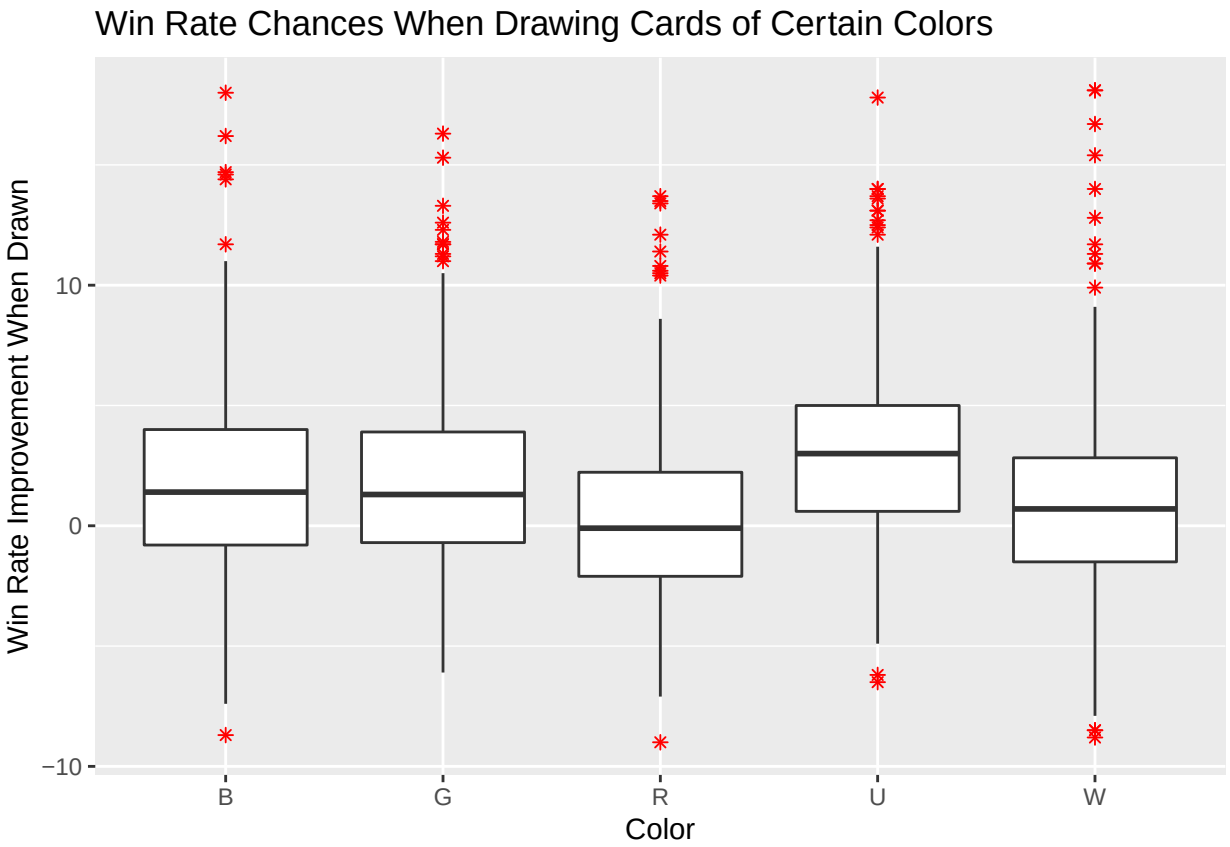



```
# We get strange results here with white having the highest win rate when a
# white card is in the hand right off the bat with black and red slightly
# behind it and blue at the bottom. Seems to indicate that white cards
# are at their best in the early game, while black is effective at any point
# of the game, and blue does not fare well in the beginning. At least, that's what
# I believe is happening in this data. Could also just simply be that
# games of quick draft are varied wildly.

ggplot(mtga, aes(x = Color, y = GIHWR)) +
  geom_boxplot(outlier.colour = "purple", outlier.shape = 8,
               outlier.size = 1.5) +
  ylab("Win Rate in Hand (Opener or Drawn)") +
  ggtitle("Win Rate When Card of Certain Color is in Hand at any Time")
```

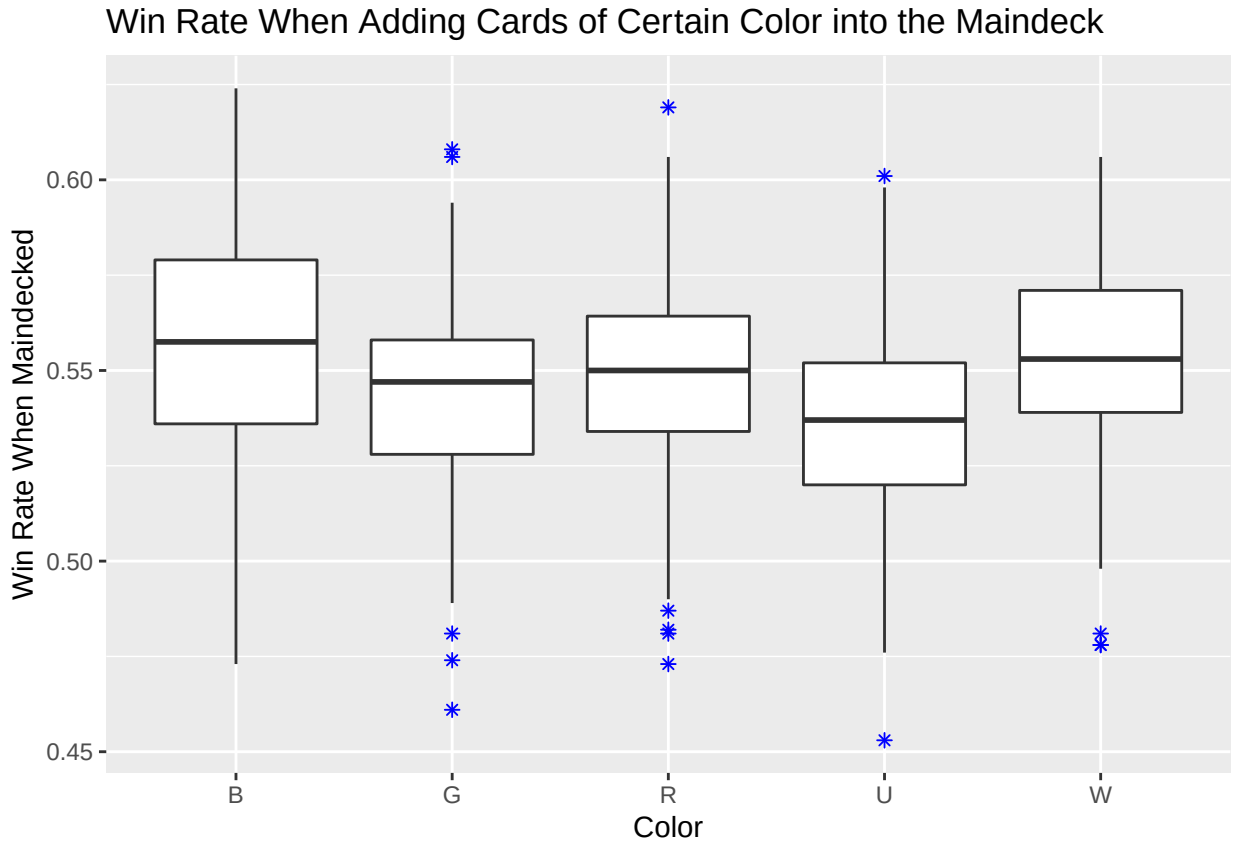
```
## Warning: Removed 201 rows containing non-finite values (stat_boxplot).
```



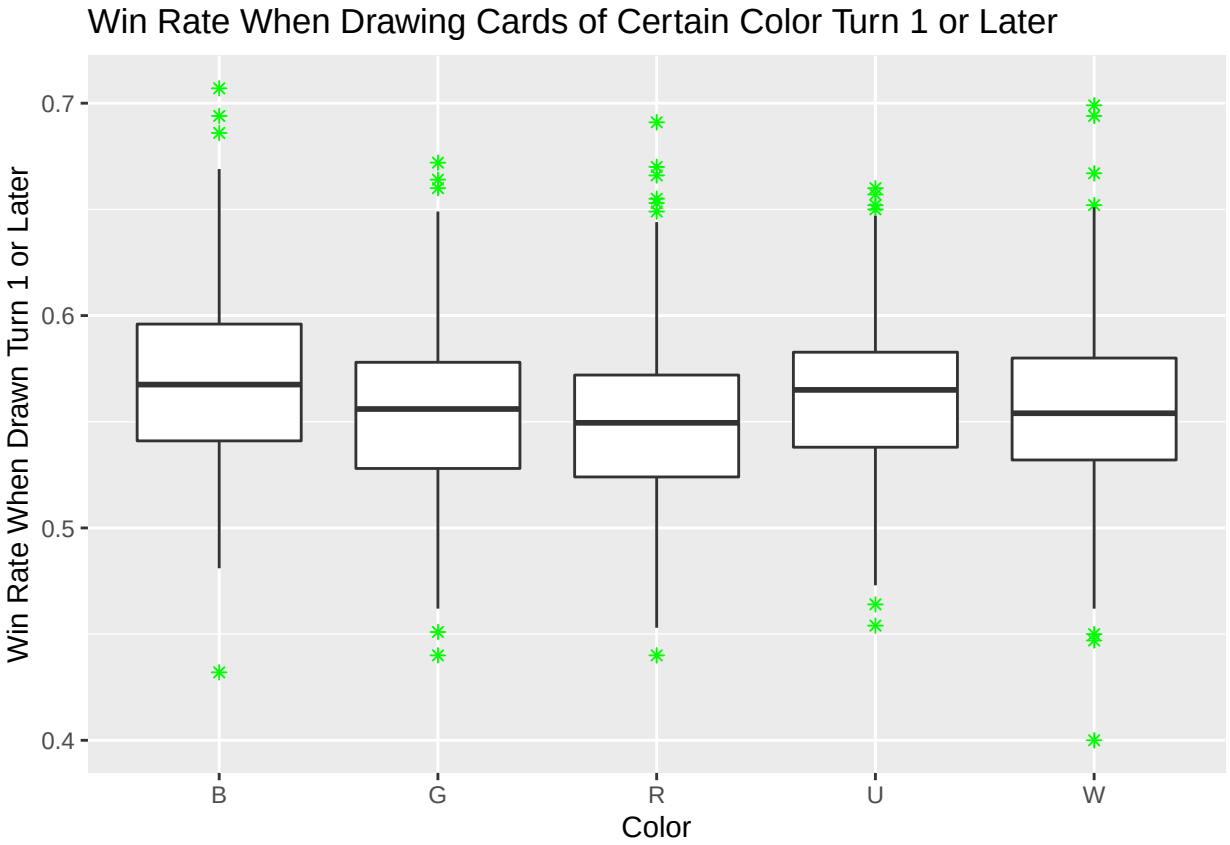

```
# When it comes to data with having the specific card in your hand at any time,
# it does appear that this boxplot confirms what we've seen in the previous graphs:
# that black seems to be the superior color of choice in quick draft. White also
# seems to be performing well, perhaps that's from white being strong at the
# early game as we inferred in the previous graph. Surprisingly, blue
# just seems to be a middling color, matched with green and red. Could
# be that, once again, blue is probably not strong in the early game.

# One noticable thing from the previous graphs is that they had to omit a ton
# observations due to NA's. SO here, I'll remove them to see if they make a difference.
mtga_nona <- mtga[-which(rowSums(is.na(mtga)) > 0), ]

ggplot(mtga_nona, aes(x = Color, y = IWD)) +
  geom_boxplot(outlier.colour = "red", outlier.shape = 8,
               outlier.size = 1.5) +
  ylab("Win Rate Improvement When Drawn") +
  ggtitle("Win Rate Chances When Drawing Cards of Certain Colors")
```



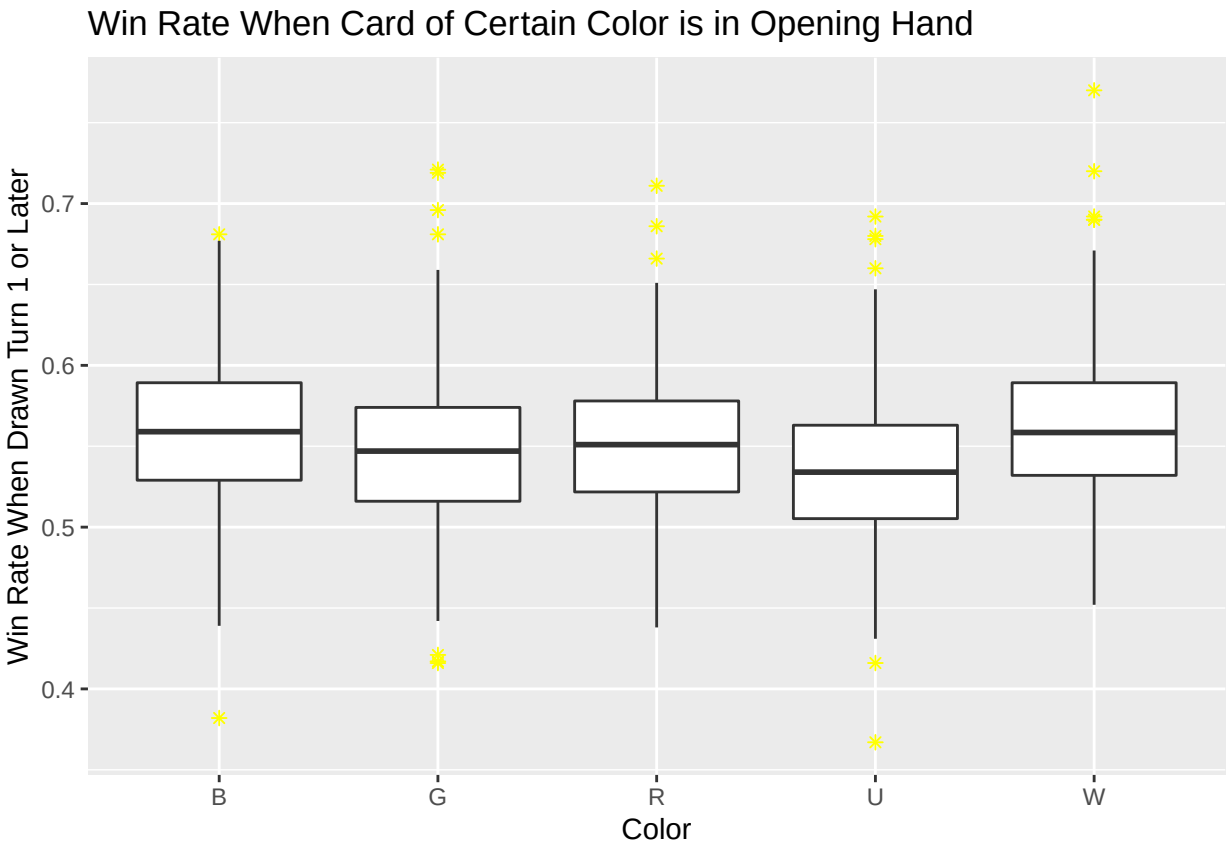

```
ggplot(mtga_nona, aes(x = Color, y = GPWR)) +
  geom_boxplot(outlier.colour = "blue", outlier.shape = 8,
               outlier.size = 1.5) +
  ylab("Win Rate When Maindecked") +
  ggtitle("Win Rate When Adding Cards of Certain Color into the Maindeck")
```



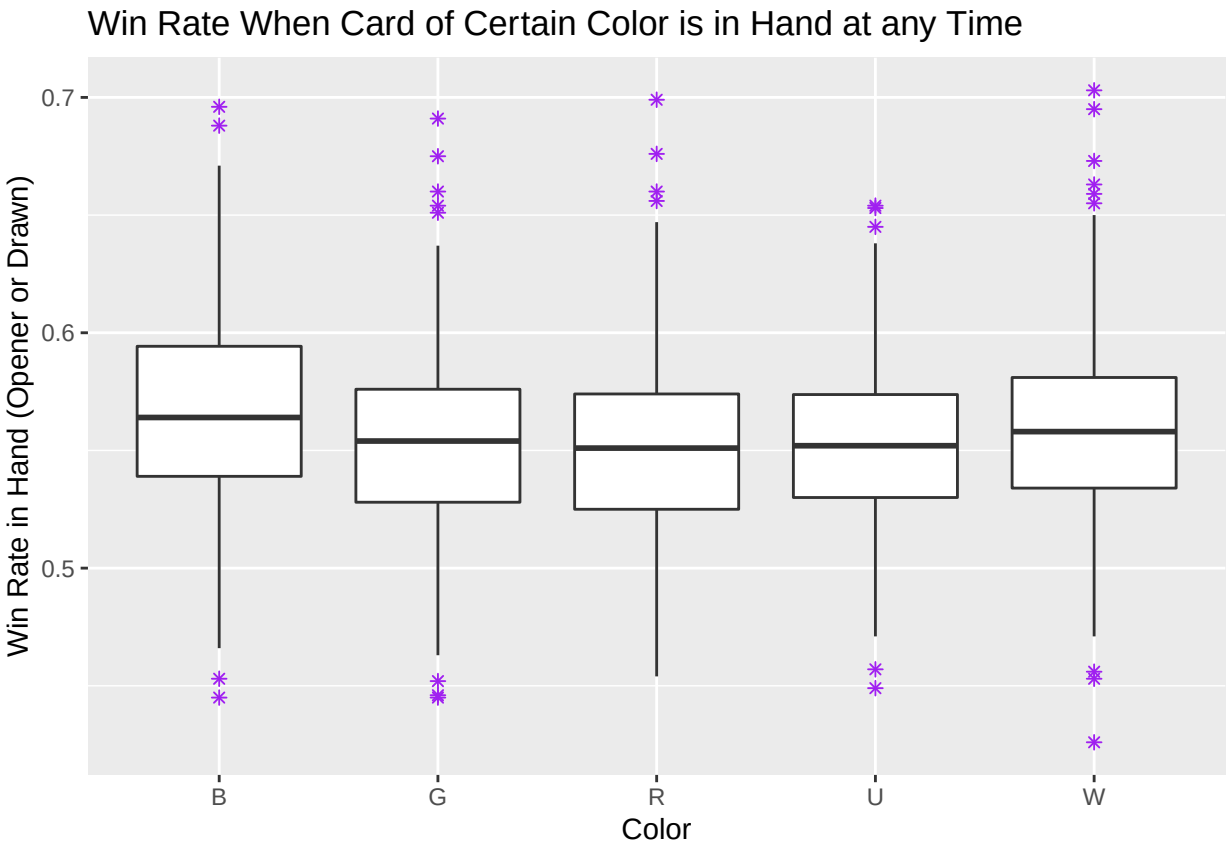

```
ggplot(mtga_nona, aes(x = Color, y = GDWR)) +
  geom_boxplot(outlier.colour = "green", outlier.shape = 8,
               outlier.size = 1.5) +
  ylab("Win Rate When Drawn Turn 1 or Later") +
  ggtitle("Win Rate When Drawing Cards of Certain Color Turn 1 or Later")
```



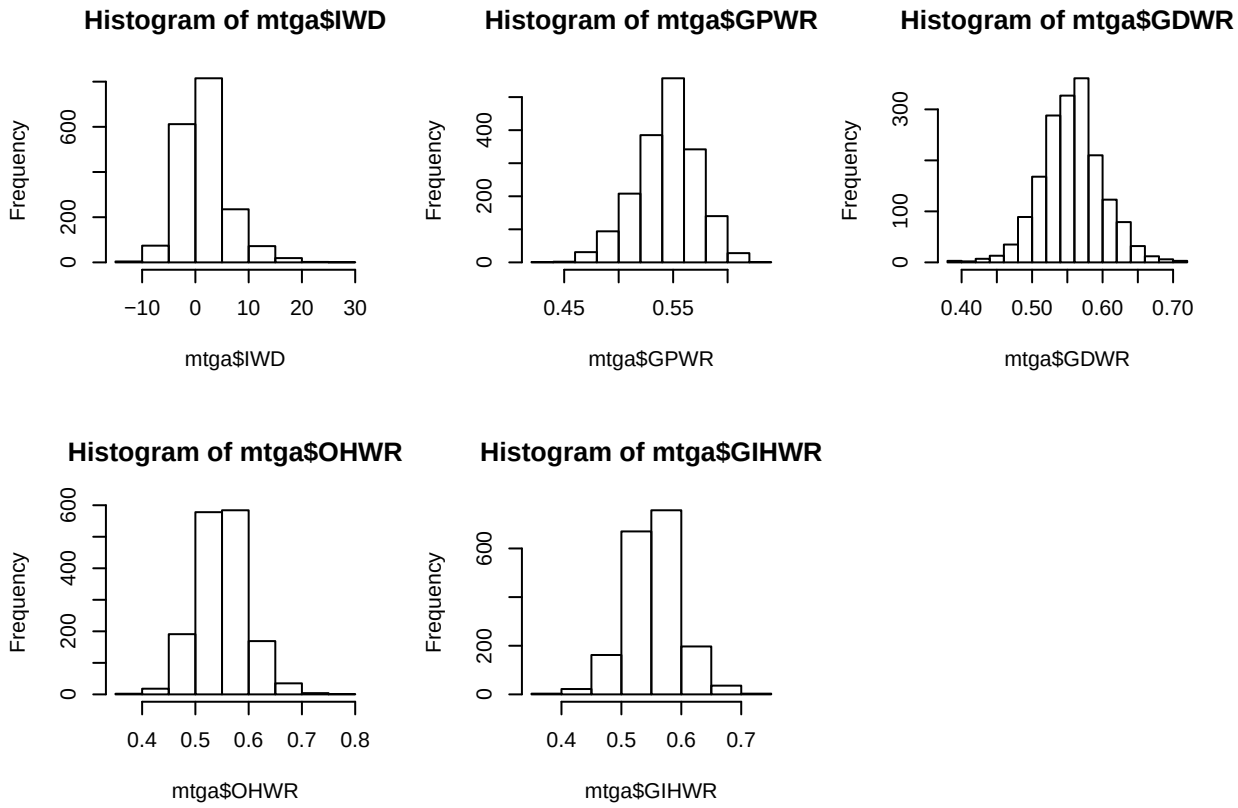

```
ggplot(mtga_nona, aes(x = Color, y = OHWR)) +
  geom_boxplot(outlier.colour = "yellow", outlier.shape = 8,
               outlier.size = 1.5) +
  ylab("Win Rate When Drawn Turn 1 or Later") +
  ggtitle("Win Rate When Card of Certain Color is in Opening Hand")
```




```
ggplot(mtga_nona, aes(x = Color, y = GIHWR)) +
  geom_boxplot(outlier.colour = "purple", outlier.shape = 8,
               outlier.size = 1.5) +
  ylab("Win Rate in Hand (Opener or Drawn)") +
  ggtitle("Win Rate When Card of Certain Color is in Hand at any Time")
```




```
# There doesn't seem to be much noticable difference from the graphs using
# the data with the NA's, so we'll continue to use that data.

# Here, we're just gonna use histograms on the predictor variables
# to see their distribution.
par(mfrow = c(2, 3))
hist(mtga$IWD)
hist(mtga$GPWR)
hist(mtga$GDWR)
hist(mtga$OHWR)
hist(mtga$GIHWR)

# Looks like they all follow normal distribution.
```



3) Statistical Tests

```
# Since we've shown that the variables are indeed normal dist., we'll be
# using one-way ANOVA, TukeyHSD, and pairwise t-tests to see
# if the differences in sucess rate of each color are significant (< 0.05).

iwd_aov <- aov(mtga$IWD ~ mtga$Color)
summary(iwd_aov)
```

```
##               Df Sum Sq Mean Sq F value Pr(>F)
## mtga$Color     4   1874   468.6    24.3 <2e-16 ***
## Residuals   1829  35264    19.3
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 217 observations deleted due to missingness
```

```
# ANOVA shows significance in Color.
TukeyHSD(iwd_aov)
```

```
##   Tukey multiple comparisons of means
##     95% family-wise confidence level
##
```

```
## Fit: aov(formula = mtga$IWD ~ mtga$Color)
##
## $`mtga$Color`
##           diff        lwr         upr     p adj
## G-B -0.5302778 -1.4147578  0.35420216 0.4737787
## R-B -1.9197069 -2.8066101 -1.03280362 0.0000000
## U-B  0.9798651  0.0917327  1.86799753 0.0220574
## W-B -1.3414300 -2.2229450 -0.45991508 0.0003280
## R-G -1.3894290 -2.2757320 -0.50312606 0.0001903
## U-G  1.5101429  0.6226099  2.39767593 0.0000357
## W-G -0.8111522 -1.6920633  0.06975881 0.0878787
## U-R  2.8995720  2.0096240  3.78951993 0.0000000
## W-R  0.5782768 -0.3050673  1.46162092 0.3811394
## W-U -2.3212952 -3.2058734 -1.43671693 0.0000000
```

```
# We see signicance in almost every color pairing except G-B, W-G,
# and W-R. Looking at the boxplot, we can see that
# these results do appear to be the case although W-R seem
# decptively different at first glance.
pairwise.t.test(mtga$IWD, mtga$Color)
```

```
##
##  Pairwise comparisons using t tests with pooled SD
##
## data:  mtga$IWD and mtga$Color
##
##   B       G       R       U
## G 0.14804 -       -       -
## R 3.3e-08 0.00012 -       -
## U 0.01051 2.5e-05 < 2e-16 -
## W 0.00017 0.03604 0.14804 1.0e-11
##
## P value adjustment method: holm
```

```
# The t-tests seem to confirm the results with one important
# exception: W-G. Here, that pairing is significant, granted
# it barely is since the value is at 0.036. This discrepancy
# can possibly be due to the differences in the test methods.

gp_aov <- aov(mtga$GPWR ~ mtga$Color)
summary(gp_aov)
```

```
##               Df Sum Sq Mean Sq F value Pr(>F)
## mtga$Color     4 0.0922 0.02305   31.59 <2e-16 ***
## Residuals   1784 1.3016 0.00073
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 262 observations deleted due to missingness
```

```
# ANOVA shows significance in Color.
TukeyHSD(gp_aov)
```

```
##   Tukey multiple comparisons of means
##     95% family-wise confidence level
##
## Fit: aov(formula = mtga$GPWR ~ mtga$Color)
##
## $`mtga$Color`
##             diff           lwr          upr     p adj
## G-B -0.009568026 -0.0150550950 -0.004080958 0.0000205
## R-B -0.002581659 -0.0080608552  0.002897538 0.6995720
## U-B -0.017301170 -0.0228082630 -0.011794077 0.0000000
## W-B  0.002592678 -0.0028671723  0.008052528 0.6933455
## R-G  0.006986368  0.0014504629  0.012522272 0.0052658
## U-G -0.007733144 -0.0132966605 -0.002169627 0.0014316
## W-G  0.012160704  0.0066439469  0.017677461 0.0000000
## U-R -0.014719512 -0.0202752644 -0.009163759 0.0000000
## W-R  0.005174336 -0.0003345911  0.010683264 0.0774441
## W-U  0.019893848  0.0143571742  0.025430522 0.0000000
```

```
# We see signicance in almost every color pairing except R-B, W-B,
# and W-R. Looking at the boxplot, we can see that
# these results do appear to be the case.
pairwise.t.test(mtga$GPWR, mtga$Color)
```

```
##
##  Pairwise comparisons using t tests with pooled SD
##
## data:  mtga$GPWR and mtga$Color
##
##   B       G       R       U
## G 1.2e-05 -       -       -
## R 0.38984 0.00233 -       -
## U < 2e-16 0.00076 5.5e-12 -
## W 0.38984 1.5e-08 0.03122 < 2e-16
##
## P value adjustment method: holm
```

```
# The t-tests seem to confirm the results with one important
# exception: W-R. Here, that pairing is significant, granted
# it barely is since the value is at 0.031. Once again, this discrepancy
# can possibly be due to the differences in the test methods.

gd_aov <- aov(mtga$GDWR ~ mtga$Color)
summary(gd_aov)
```

```
##               Df Sum Sq  Mean Sq F value   Pr(>F)
## mtga$Color     4  0.060 0.015008   8.302 1.24e-06 ***
## Residuals   1753  3.169 0.001808
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 293 observations deleted due to missingness
```

```r
# Shows significance in Color.
TukeyHSD(gd_aov)
```

```
##   Tukey multiple comparisons of means
##     95% family-wise confidence level
##
## Fit: aov(formula = mtga$GDWR ~ mtga$Color)
##
## $`mtga$Color`
##             diff           lwr           upr     p adj
## G-B -0.013304071 -0.0220804222 -0.0045277204 0.0003514
## R-B -0.017418396 -0.0262011398 -0.0086356514 0.0000007
## U-B -0.008960944 -0.0177058048 -0.0002160823 0.0414579
## W-B -0.012192320 -0.0208883935 -0.0034962461 0.0012581
## R-G -0.004114324 -0.0129345740  0.0047059254 0.7074594
## U-G  0.004343128 -0.0044394007  0.0131256563 0.6595982
## W-G  0.001111752 -0.0076221998  0.0098457029 0.9968705
## U-R  0.008457452 -0.0003314653  0.0172463694 0.0658629
## W-R  0.005226076 -0.0035142999  0.0139664515 0.4765523
## W-U -0.003231376 -0.0119336845  0.0054709320 0.8490460
```

```r
# We see signicance in only color pairings with B, which makes
# sense as the boxplots clearly show black being superior
# in this category.
pairwise.t.test(mtga$GDWR, mtga$Color)
```

```
##
##  Pairwise comparisons using t tests with pooled SD
##
## data:  mtga$GDWR and mtga$Color
##
##   B       G       R       U
## G 0.00033 -       -       -
## R 7e-07   0.70832 -       -
## U 0.03638 0.70832 0.05204 -
## W 0.00107 0.72820 0.51356 0.70832
##
## P value adjustment method: holm
```

```r
# Shows similar results to the TukeyHSD across the board.

oh_aov <- aov(mtga$OHWR ~ mtga$Color)
summary(oh_aov)
```

```
##               Df Sum Sq Mean Sq F value   Pr(>F)
## mtga$Color     4  0.134 0.03343   15.63 1.49e-12 ***
## Residuals   1577  3.372 0.00214
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 469 observations deleted due to missingness
```

```r
# Shows significance in Color.
TukeyHSD(oh_aov)
```

```
##   Tukey multiple comparisons of means
##     95% family-wise confidence level
##
## Fit: aov(formula = mtga$OHWR ~ mtga$Color)
##
## $`mtga$Color`
##             diff          lwr           upr     p adj
## G-B -0.011263663 -0.021320949 -0.0012063763 0.0191730
## R-B -0.009398703 -0.019374204  0.0005767977 0.0758834
## U-B -0.023392157 -0.033457878 -0.0133264359 0.0000000
## W-B  0.002561653 -0.007328937  0.0124522432 0.9548759
## R-G  0.001864960 -0.008246208  0.0119761271 0.9870167
## U-G -0.012128494 -0.022328682 -0.0019283064 0.0104451
## W-G  0.013825316  0.003797910  0.0238527214 0.0016163
## U-R -0.013993454 -0.024113011 -0.0038738965 0.0015482
## W-R  0.011960356  0.002014982  0.0219057306 0.0092288
## W-U  0.025953810  0.015917945  0.0359896753 0.0000000
```

```r
# We see signicance in almost every color pairing except R-B, W-B,
# and R-G. Looking at the boxplot, we can see that
# these results do appear to be the case.
pairwise.t.test(mtga$OHWR, mtga$Color)
```

```
##
##  Pairwise comparisons using t tests with pooled SD
##
## data:  mtga$OHWR and mtga$Color
##
##   B       G      R      U
## G 0.0090  -      -      -
## R 0.0305  0.9590 -      -
## U 2.6e-09 0.0063 0.0013 -
## W 0.9590  0.0013 0.0063 2.4e-11
##
## P value adjustment method: holm
```

```r
# The t-tests seem to confirm the results with one important
# exception: R-B. Here, that pairing is significant, however
# its significance is at 0.03.

gih_aov <- aov(mtga$GIHWR ~ mtga$Color)
summary(gih_aov)
```

```
##               Df Sum Sq  Mean Sq F value   Pr(>F)
## mtga$Color     4  0.062 0.015570   8.188 1.53e-06 ***
## Residuals   1845  3.508 0.001902
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 201 observations deleted due to missingness
```

```r
# Shows significance in Color.
TukeyHSD(gih_aov)
```

```
##   Tukey multiple comparisons of means
##     95% family-wise confidence level
##
## Fit: aov(formula = mtga$GIHWR ~ mtga$Color)
##
## $`mtga$Color`
##              diff           lwr          upr     p adj
## G-B -0.0129002938 -0.0216662661 -0.004134321 0.0005831
## R-B -0.0146711957 -0.0234490380 -0.005893353 0.0000526
## U-B -0.0152701948 -0.0240600205 -0.006480369 0.0000223
## W-B -0.0066681044 -0.0153876990  0.002051490 0.2255939
## R-G -0.0017709019 -0.0105368742  0.006995070 0.9817576
## U-G -0.0023699010 -0.0111478730  0.006408071 0.9477849
## W-G  0.0062321893 -0.0024754558  0.014939834 0.2891369
## U-R -0.0005989992 -0.0093888249  0.008190827 0.9997325
## W-R  0.0080030912 -0.0007165033  0.016722686 0.0896669
## W-U  0.0086020904 -0.0001295675  0.017333748 0.0558104
```

```r
# We see signicance in only color pairing with B, which makes
# sense as the boxplots clearly show black being superior
# in this category as similary seen with GDWR.
pairwise.t.test(mtga$GIHWR, mtga$Color)
```

```
##
##  Pairwise comparisons using t tests with pooled SD
##
## data:  mtga$GIHWR and mtga$Color
##
##   B       G       R       U
## G 0.00049 -       -       -
## R 4.8e-05 1.00000 -       -
## U 2.3e-05 1.00000 1.00000 -
## W 0.18464 0.20329 0.07375 0.05047
##
## P value adjustment method: holm
```

```r
# Shows similar results to the TukeyHSD across the board, although,
# W-U comes very close to being significant being at 0.05047.
```

4) RandomForest Model

```r
# Now that we see that there are plenty of significant differences
# in each color (with black having a major advantage), now we want to
# see if we can build a model that can predict card colors by simply
# using their success rate, and we can accomplish this with
# RandomForest which should be able to differentiate between the
```

```r
# the characteristics in success between each card and color.
library(randomForest)
```

```
## Warning: package 'randomForest' was built under R version 3.6.3
```

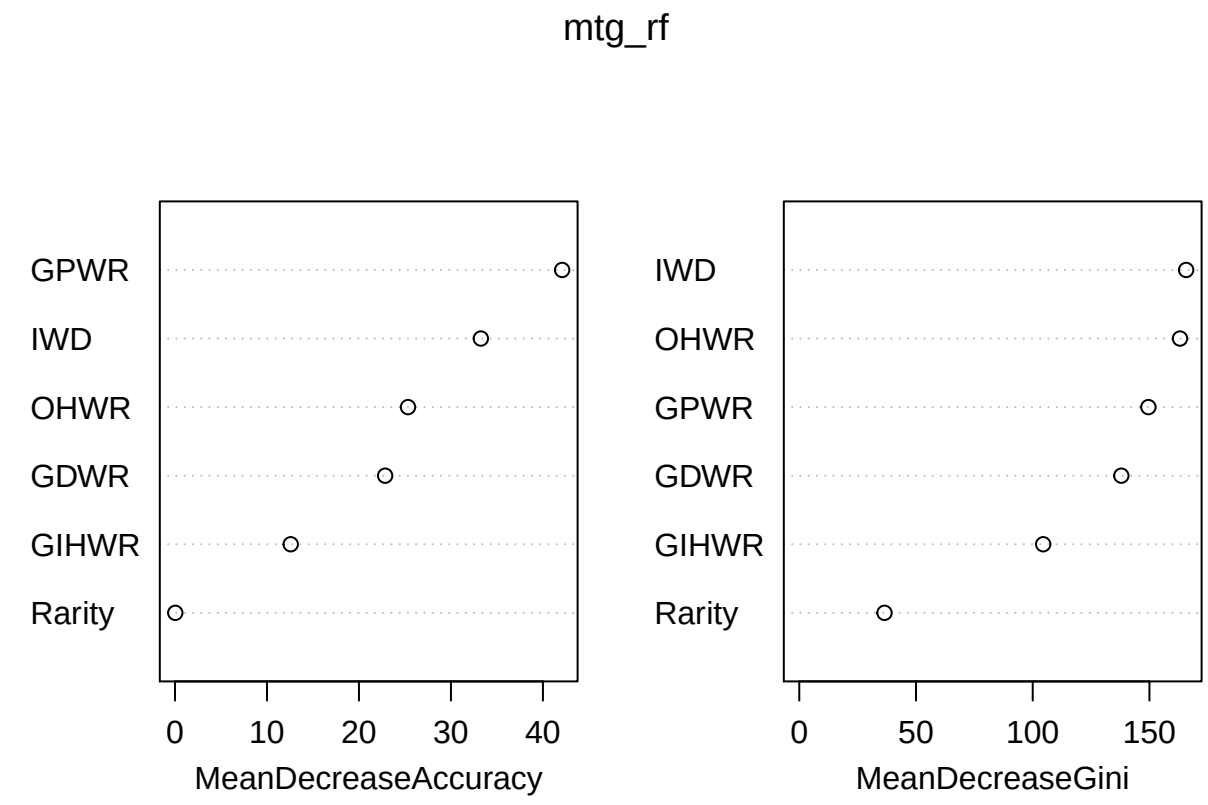
```
## randomForest 4.6-14
```

```
## Type rfNews() to see new features/changes/bug fixes.
```

```
##
## Attaching package: 'randomForest'
```

```
## The following object is masked from 'package:ggplot2':
##
##     margin
```

```r
set.seed(1) # Set seed for replication
# We want a training and testing set with a 60/40 split.
train <- sample(dim(mtga)[1], dim(mtga)[1] * 0.60, replace = F)
mtg_train <- mtga[train, ] # Training set
mtg_test <- mtga[-train, ] # Testing set
mtg_rf <- randomForest(Color ~ ., mtg_train[, -1], mtry = 6,
                       importance = T, na.action = na.omit)
# Using the model, we'll the testing eubset to make predictions.
mtg_pred <- predict(mtg_rf, mtg_test)
varImpPlot(mtg_rf) # Shows the most important variable from top to bottom
```



```r
# Shows a table with the avccuacy. Successful prediction are from
# top-left to bottom-right with the other results being wrong prediction.
t_mtg <- table(mtga$Color[-train], mtg_pred)
t_mtg # Confusion matrix of predictions
```

```
##    mtg_pred
##      B  G  R  U  W
##   B 36 23 25 19 23
##   G 15 37 20 28 15
##   R 28 27 36 16 32
##   U 26 20  7 49 14
##   W 30 29 28 15 35
```

```r
accuracy <- sum(diag(t_mtg)) / sum(t_mtg)
accuracy # Calculation of the prediction accuracy.
```

```
## [1] 0.3048973
```

```r
# As we can see, the model doesn't really make many accurate predictions
# despite the statistical tests showing plenty of differences in each
# color's win rates. But to be fair, the majority of the significance came from
# black being the most successful while most other color pairings were in
# similar standing. While the model failed, we can still come out from this with
# the knowledge that black is very successful, at least in the quick draft format.
```