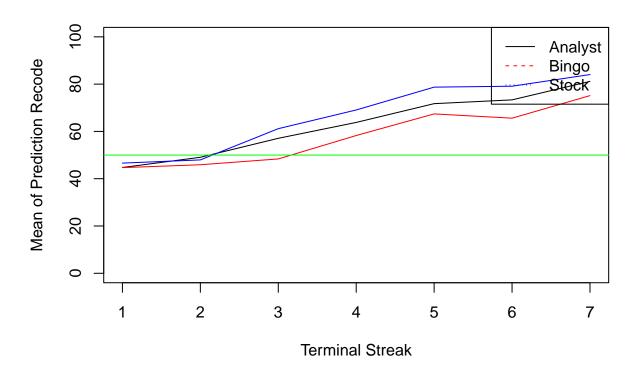
```
library(readxl)
library(lme4)
## Loading required package: Matrix
library(lmerTest)
##
## Attaching package: 'lmerTest'
## The following object is masked from 'package:lme4':
##
##
       lmer
## The following object is masked from 'package:stats':
##
##
       step
library(car)
## Loading required package: carData
library(MuMIn)
library(afex)
## *******
## Welcome to afex. For support visit: http://afex.singmann.science/
## - Functions for ANOVAs: aov_car(), aov_ez(), and aov_4()
## - Methods for calculating p-values with mixed(): 'S', 'KR', 'LRT', and 'PB'
## - 'afex_aov' and 'mixed' objects can be passed to emmeans() for follow-up tests
## - NEWS: emmeans() for ANOVA models now uses model = 'multivariate' as default.
## - Get and set global package options with: afex_options()
## - Set orthogonal sum-to-zero contrasts globally: set_sum_contrasts()
## - For example analyses see: browseVignettes("afex")
## *******
##
## Attaching package: 'afex'
## The following object is masked from 'package:lme4':
##
##
       lmer
data <- read_excel("../Data/PredictingOutcomes_ParticipantPredictions.xlsx", sheet = "Study 1A")
# divide the data based on the generator
data1 <- data[data$generator == "analyst",]</pre>
data2 <- data[data$generator == "bingo",]</pre>
data3 <- data[data$generator == "stock",]</pre>
```

```
mean1 <- aggregate(data1$prediction_recode, by = list(data1$terminal_streak_length), FUN = mean)
mean2 <- aggregate(data2$prediction_recode, by = list(data2$terminal_streak_length), FUN = mean)
mean3 <- aggregate(data3$prediction_recode, by = list(data3$terminal_streak_length), FUN = mean)

plot(mean1$Group.1,mean1$x, type = "l",ylim=c(0,100), xlab = "Terminal Streak", ylab = "Mean of Predict
lines(mean2$Group.1,mean2$x, col = "red")
lines(mean3$Group.1,mean3$x, col = "blue")
abline(h = 50, col = "green")
legend("topright", legend = c("Analyst", "Bingo", "Stock"), col = c("black", "red", "blue"), lty = 1:3)</pre>
```

Mean of Prediction Recode for each Terminal Streak



calculate the mean of prediciotn_recode for each participant_id

```
mean1_id <- aggregate(data1$prediction_recode, by = list(data1$participant_id), FUN = mean)
mean2_id <- aggregate(data2$prediction_recode, by = list(data2$participant_id), FUN = mean)
mean3_id <- aggregate(data3$prediction_recode, by = list(data3$participant_id), FUN = mean)</pre>
```

Data is not normally distributed

```
shapiro.test(mean1_id$x)
```

```
##
## Shapiro-Wilk normality test
##
## data: mean1_id$x
## W = 0.92966, p-value = 0.005365
```

```
shapiro.test(mean2_id$x)
##
##
    Shapiro-Wilk normality test
##
## data: mean2_id$x
## W = 0.95628, p-value = 0.06212
shapiro.test(mean3_id$x)
##
##
    Shapiro-Wilk normality test
##
## data: mean3_id$x
## W = 0.97847, p-value = 0.5734
apply kruskal wais test so that the p value is 0.018
kruskal.test(mean1_id$x, mean2_id$x, mean3_id$x)
##
   Kruskal-Wallis rank sum test
##
## data: mean1_id$x and mean2_id$x
## Kruskal-Wallis chi-squared = 43.836, df = 44, p-value = 0.4786
apply a one way mixed anova to test the effect of condition and one within streak length on the rating of
probability that the terminal streak would repeat
model <- lm(prediction_recode ~ generator , data = data)</pre>
summary(model)
##
## Call:
## lm(formula = prediction_recode ~ generator, data = data)
## Residuals:
##
       Min
                1Q Median
                                 3Q
                                        Max
## -54.399 -21.824 -0.824 22.164 50.176
##
## Coefficients:
##
                  Estimate Std. Error t value Pr(>|t|)
                   51.8356
                                0.9009 57.537
## (Intercept)
                                                 <2e-16 ***
## generatorbingo -2.0111
                                1.2741
                                       -1.578
                                                 0.1146
                                                 0.0517 .
## generatorstock
                   2.5634
                                1.3168
                                         1.947
## ---
## Signif. codes: 0 '*** 0.001 '** 0.01 '* 0.05 '.' 0.1 ' ' 1
## Residual standard error: 27.03 on 2589 degrees of freedom
## Multiple R-squared: 0.004645,
                                     Adjusted R-squared: 0.003876
## F-statistic: 6.041 on 2 and 2589 DF, p-value: 0.002412
```

anova (model1)

```
anova(model)
## Analysis of Variance Table
## Response: prediction_recode
##
              Df Sum Sq Mean Sq F value
                                            Pr(>F)
               2
                     8826 4412.9 6.0412 0.002412 **
## generator
## Residuals 2589 1891174
                           730.5
## Signif. codes: 0 '*** 0.001 '** 0.01 '* 0.05 '.' 0.1 ' ' 1
calculate the effect of condition on participant predicition
model1 <- lmer(prediction_recode ~ generator + (1|participant_id), data = data)</pre>
summary(model1)
## Linear mixed model fit by REML. t-tests use Satterthwaite's method [
## lmerModLmerTest]
## Formula: prediction_recode ~ generator + (1 | participant_id)
     Data: data
##
## REML criterion at convergence: 24430.8
##
## Scaled residuals:
##
       Min
                1Q
                      Median
                                    3Q
                                            Max
## -2.12973 -0.80433 -0.03269 0.81549 2.01101
##
## Random effects:
## Groups
                   Name
                               Variance Std.Dev.
                                         3.905
## participant_id (Intercept) 15.25
## Residual
                               715.52
                                        26.749
## Number of obs: 2592, groups: participant_id, 144
##
## Fixed effects:
                  Estimate Std. Error
                                           df t value Pr(>|t|)
                               1.049 141.000 49.423
## (Intercept)
                   51.836
                                                        <2e-16 ***
## generatorbingo -2.011
                                1.483 141.000 -1.356
                                                        0.1773
## generatorstock
                  2.563
                                1.533 141.000 1.672
                                                        0.0967 .
## ---
## Signif. codes: 0 '*** 0.001 '** 0.01 '* 0.05 '.' 0.1 ' 1
## Correlation of Fixed Effects:
               (Intr) gnrtrb
## generatrbng -0.707
## genertrstck -0.684 0.484
tell the p value using one way mixed anova
```

```
## Type III Analysis of Variance Table with Satterthwaite's method
            Sum Sq Mean Sq NumDF DenDF F value Pr(>F)
## generator 6378.7 3189.4
                             2
                                  141 4.4574 0.01327 *
## ---
## Signif. codes: 0 '*** 0.001 '** 0.01 '* 0.05 '.' 0.1 ' 1
aov1<-aov_ez('participant_id', 'prediction_recode', data, between=c('generator'), within=c('terminal_strea
## Converting to factor: generator
## Warning: More than one observation per design cell, aggregating data using 'fun_aggregate = mean'.
## To turn off this warning, pass 'fun_aggregate = mean' explicitly.
## Contrasts set to contr.sum for the following variables: generator
aov1
## Anova Table (Type 3 tests)
## Response: prediction_recode
##
                                                       MSE
                              Effect
                                                df
                                                                   F ges p.value
                           generator
                                            2, 141 1460.31
                                                              4.38 * .025
                                                                             .014
              terminal_streak_length 5.09, 718.00 417.95 72.94 *** .235
## 2
                                                                            <.001
## 3 generator:terminal_streak_length 10.18, 718.00 417.95
                                                                0.88 .007
                                                                             .556
## Signif. codes: 0 '*** 0.001 '** 0.01 '* 0.05 '+' 0.1 ' ' 1
## Sphericity correction method: GG
pairwise.t.test(data$prediction_recode, data$generator, p.adjust.method = "bonferroni")
##
## Pairwise comparisons using t tests with pooled SD
## data: data$prediction_recode and data$generator
##
##
        analyst bingo
## bingo 0.3437 -
## stock 0.1550 0.0016
## P value adjustment method: bonferroni
```