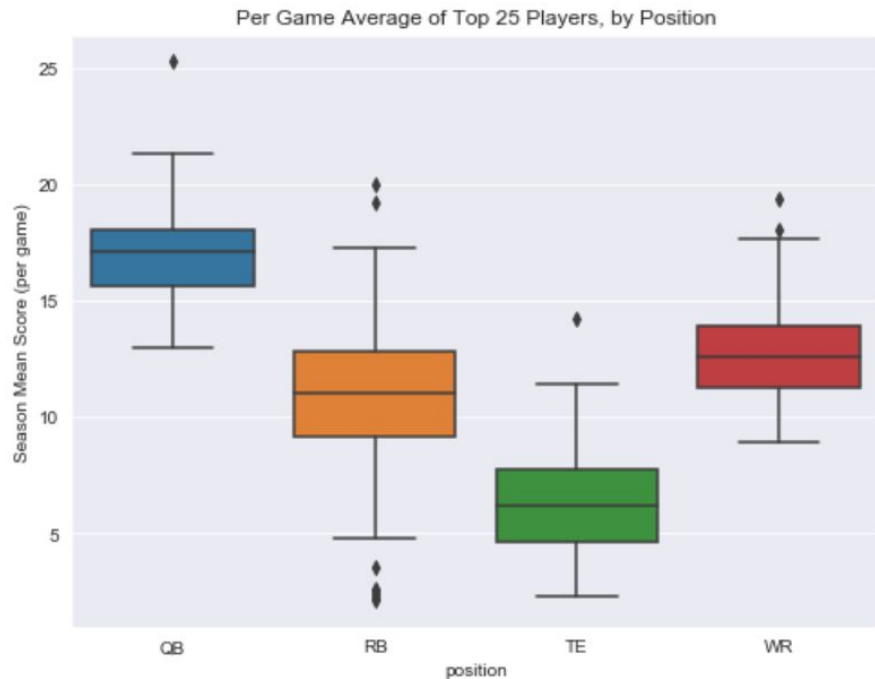# Predicting Fantasy Football Performance

Data Storytelling & Inferential Statistics

Not all positions are created equal

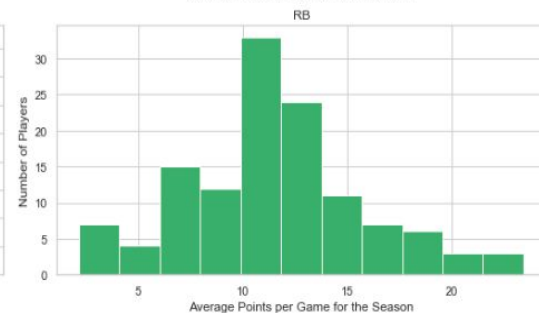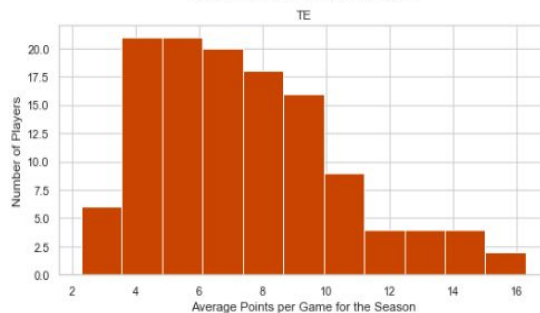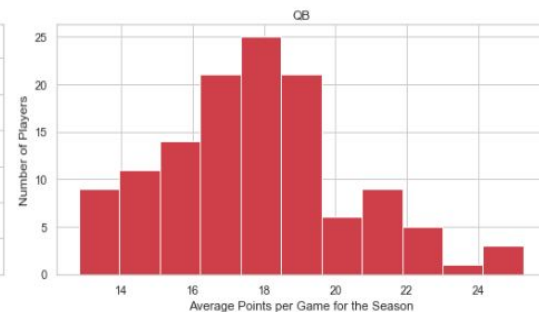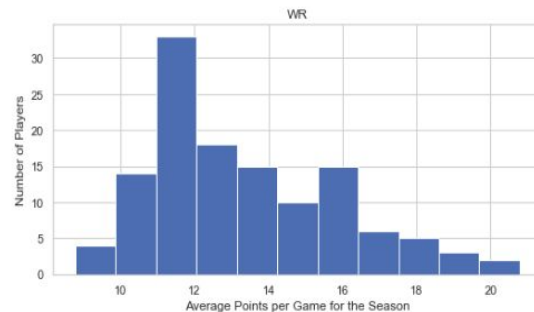Per Game Average of Top 25 Players, by Position

QBs tend to provide your team the most points and TEs the least.

A middle-of-the-pack WR will help out more than his RB peer, but elite RBs outshine top WRs.
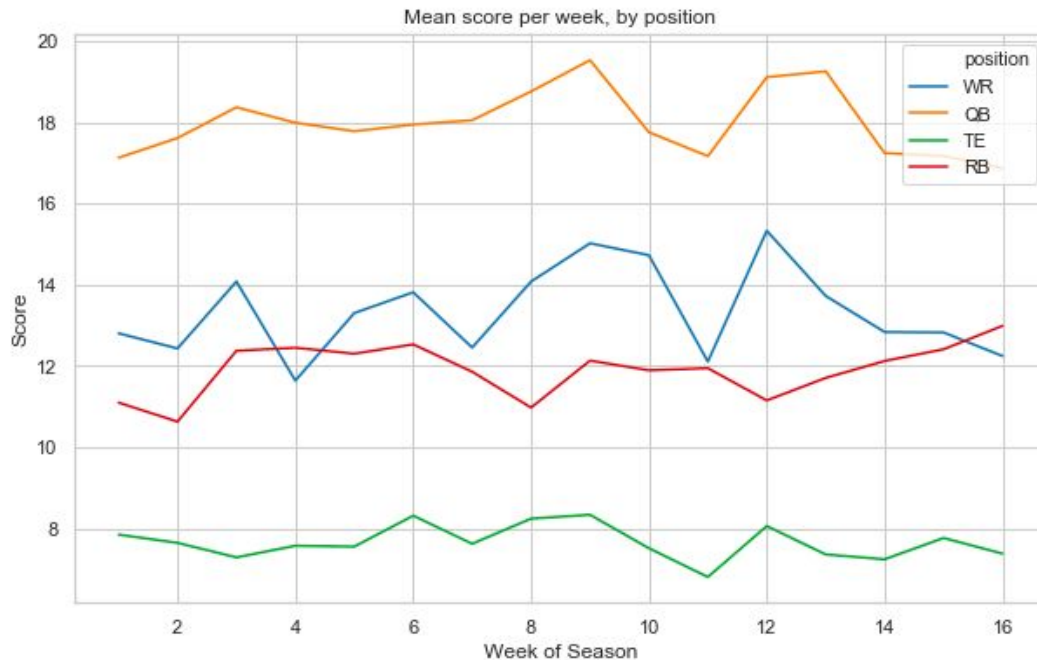
Positional Scarcity

Right skew implies there is some scarcity for top talent in each position.

Season Fatigue

Does performance decay in some positions as the season progresses?

Looks like TEs, QBs, and WRs tend to drop off slightly as the season progresses, while RBs actually improve.
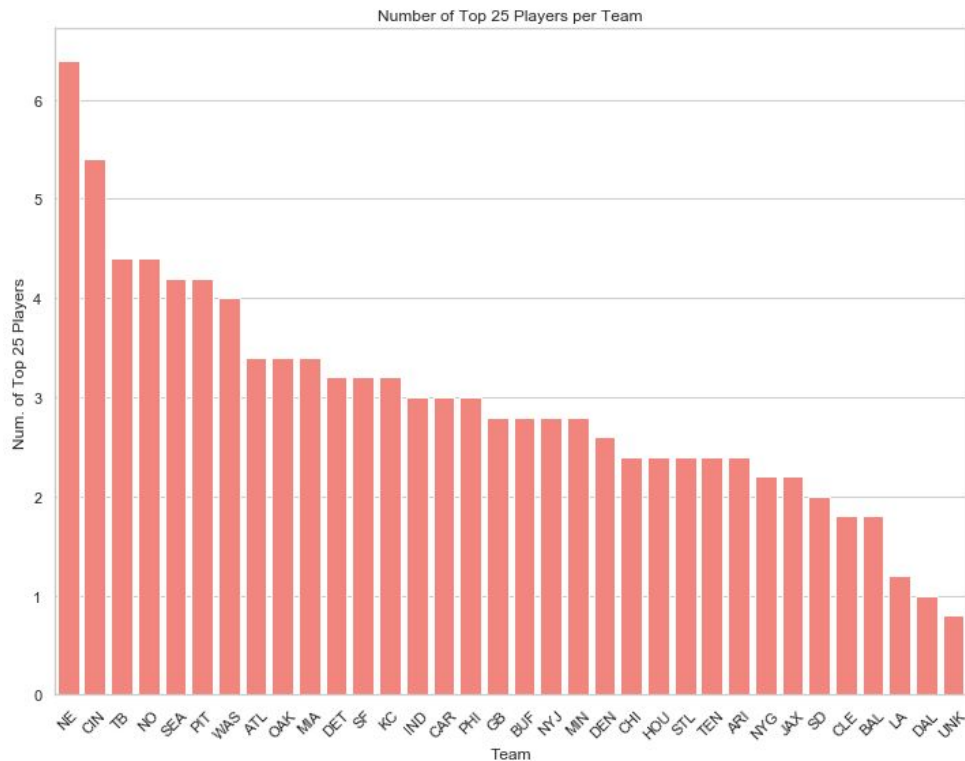

Mean score per week, by position

*Does not account for players out due to injury

The Fantasy Football 1%

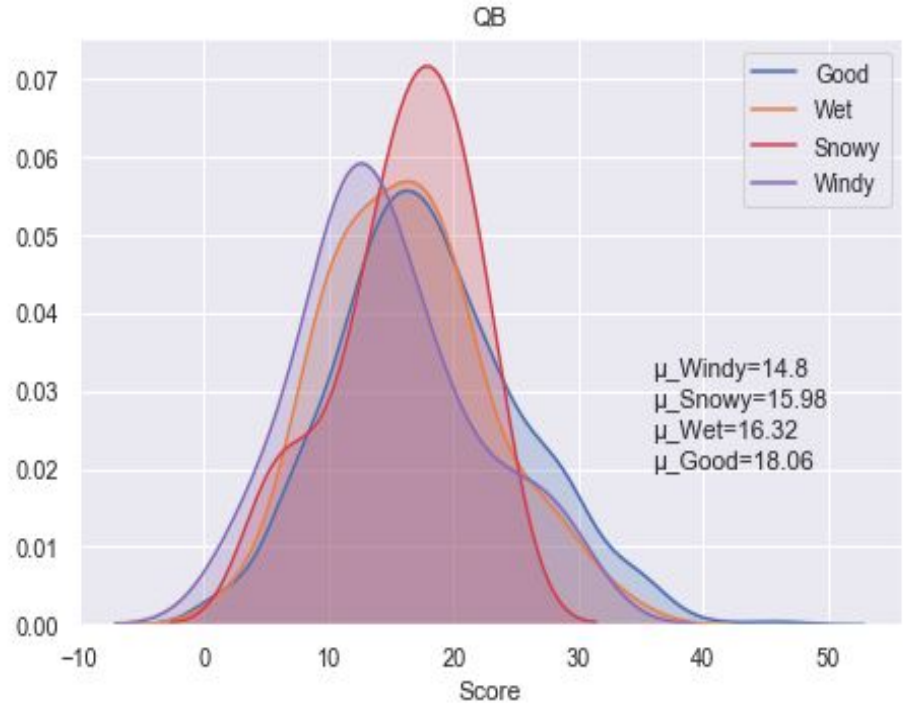Do certain teams enjoy most of the talent while others go without?

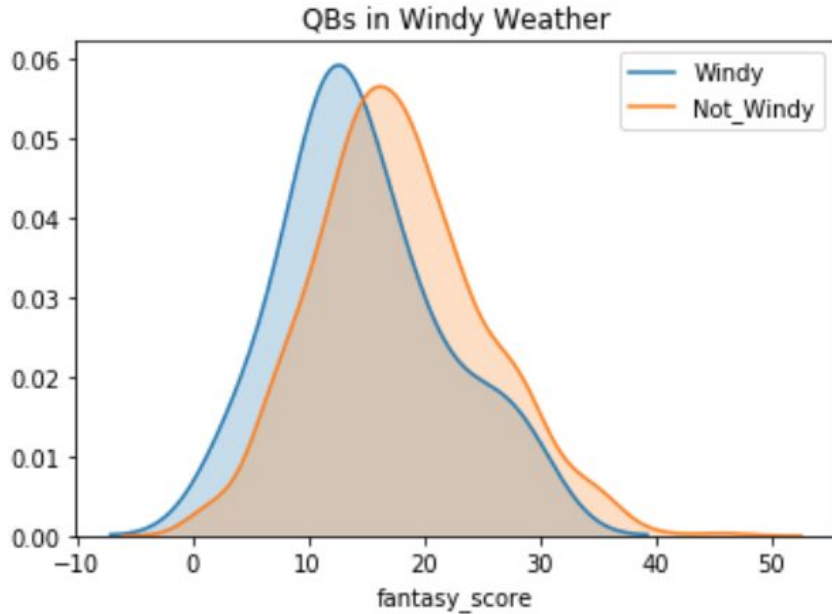Absolutely, New England has 6.5x more Top 25 players **each season** than Dallas.

Number of Top 25 Players per Team

Sample Weather Analysis

QBs tend to score more in good weather, as you'd expect.

But wind causes more harm than rain or snow.

Is the weather effect significant on QBs? *(z-test)*

QBs in Windy Weather
— Windy
— Not_Windy
fantasy_score

Windy weather

μ_{windy} =14.8

$\mu_{not\ windy}$=17.90

n=16

z=1.67

p-value=0.0476

**Reject null hypothesis* =>
Significant negative effect**

*90% confidence interval

Is the weather effect significant on QBs? *(z-test)*

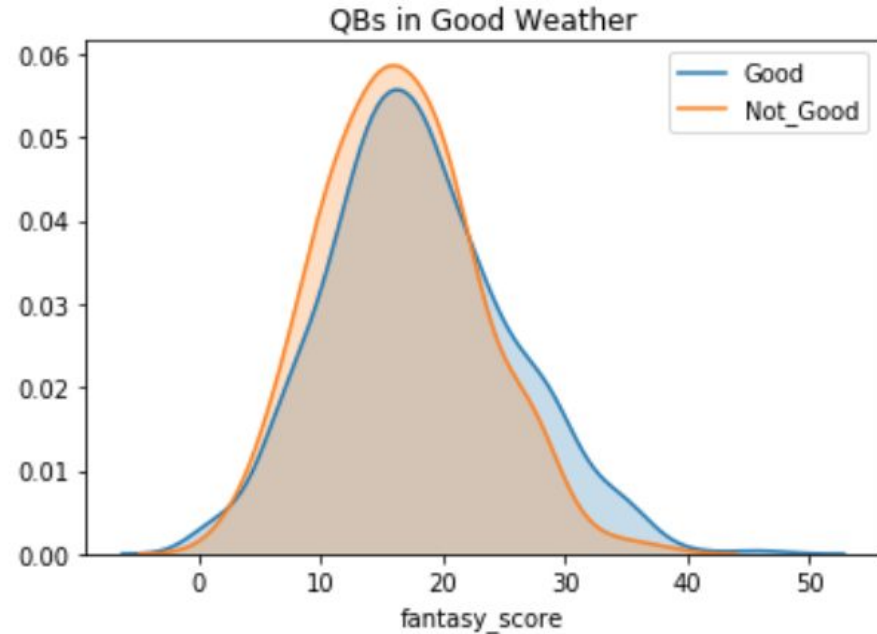**Good weather**

μ_{good}=18.06

$\mu_{not\ good}$=16.54

n=1506

z=2.78

p-value=0.0027

**Reject null hypothesis* =>
Significant positive effect**

*90% confidence interval

QBs in Good Weather
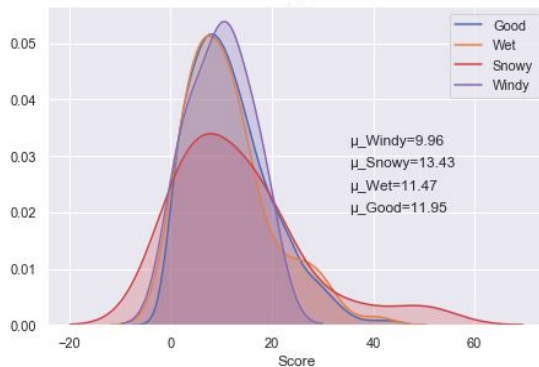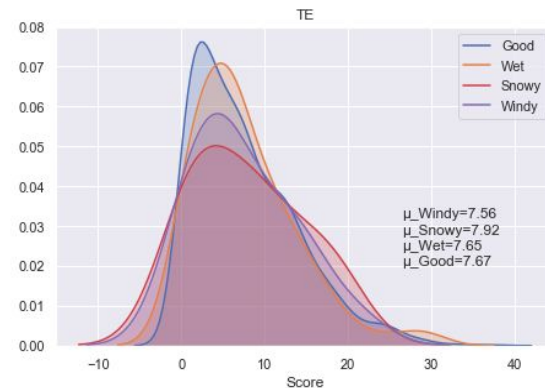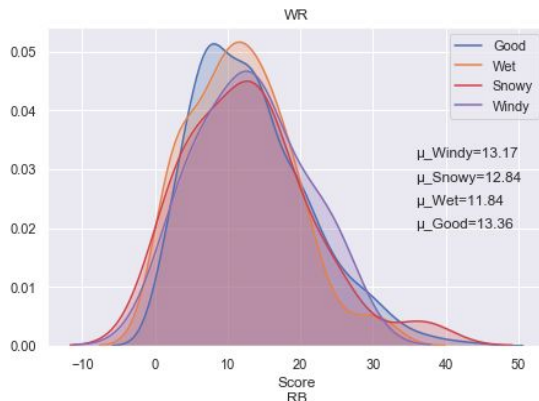
Future work: What's the effect on other positions?

Example: RBs appear to do well in snowy conditions.

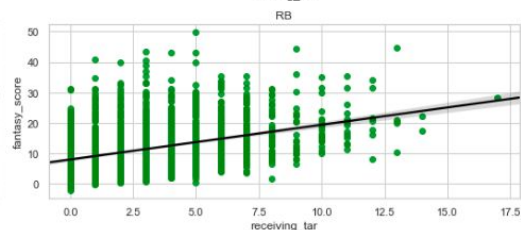Is this statistically significant?
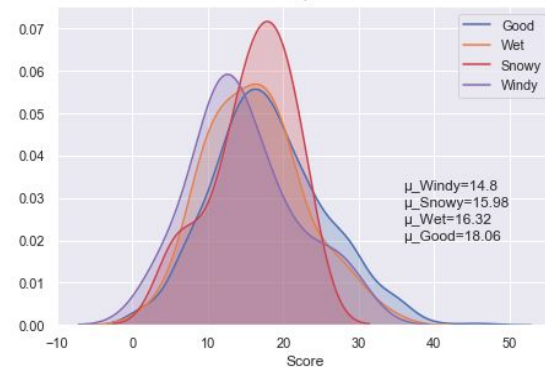
Opportunity Relates to Performance

How does the number of scoring opportunities (e.g. rushing attempts) correlate with the actual score?

Appears to be a positive correlation between opportunity and score.
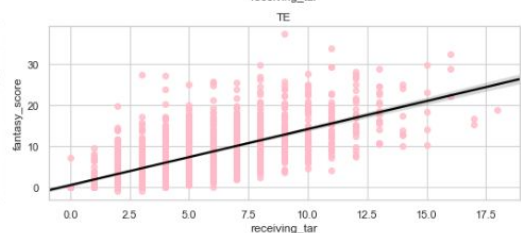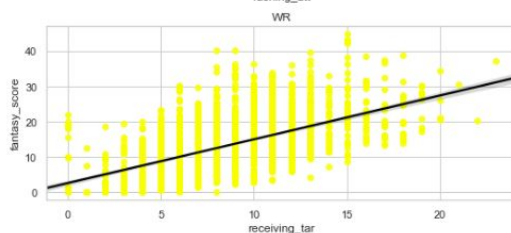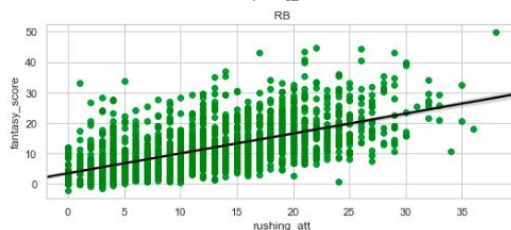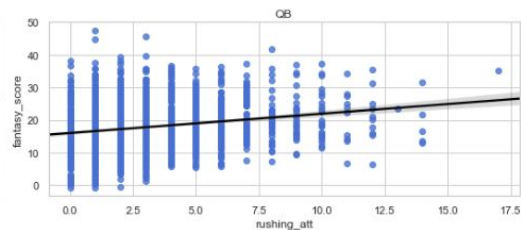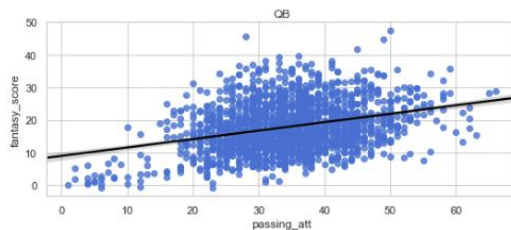
Opportunity & Performance - Correlation

Metric	Pearson R (Correlation Coefficient)
QB - Passing Attempts	0.3178
QB - Rushing Attempts	0.2052
RB - Rushing Attempts	0.598
RB - Targets	0.373
WR - Targets	0.5575
TE - Targets	0.6845

Only half of the metrics have a moderate positive correlation.

The other half have a low or negligible correlation.

Past Performance: Indicator of Future Results?

Not quite. The highest correlation coefficient isn't even 0.4. *(avg5_score)*

There's almost no correlation from one game's score to the next. *(prev_score)*
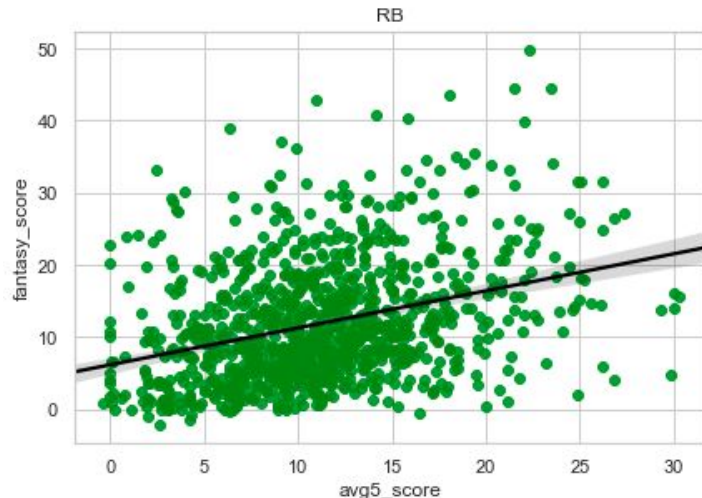

	prev_score	avg3_score	avg5_score	fantasy_score
prev_score	1.000000	0.750957	0.688946	0.270993
avg3_score	0.750957	1.000000	0.915979	0.363358
avg5_score	0.688946	0.915979	1.000000	0.387270
fantasy_score	0.270993	0.363358	0.387270	1.000000

Thursday Night Curse

Do players in Thursday night games perform worse than those in games the rest of the week?

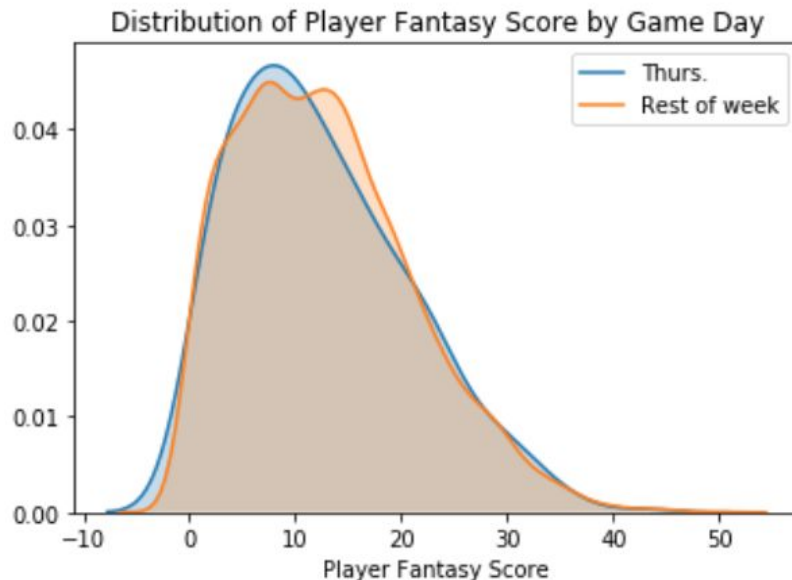We fail to reject the null hypothesis; no significant difference*.

*95% confidence interval = [-0.9874142   0.57674302]

1-sided z-test, a=.05

H(0): There is no difference in mean player performance between Thursday games and the rest of the week.
H(a): Thursday games have lower player performance than the rest of the week.

p=0.303

Distribution of Player Fantasy Score by Game Day

Thursday Night Curse

Do Thursday night games have lower final scores than other games?

We fail to reject the null hypothesis; no significant difference.

Bootstrapping(n=10000):

H(0): No significant difference in mean final game score between Thurs. games and rest of week.
H(a): Thursday games have lower mean final game score.

1948 / 10000 BS samples where BS difference of means is less than or equal sample difference of means

p-value: 0.1948