

# Projecting Value and Trends of Fantasy Drafts on a Positional Basis

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# What is Fantasy Football?

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- Imaginary team
- Fantasy Draft
- 10 Teams On Average
- Random Pick
- Individual Offensive players are selected & Team defenses are selected



# Project Goals:

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1. Modeling the relationship between draft position and fantasy points per game
2. Use our model to evaluate past fantasy drafts
3. Use our model to identify projected sleepers and possibly overrated players
4. Analyze overall draft trends derived from our model

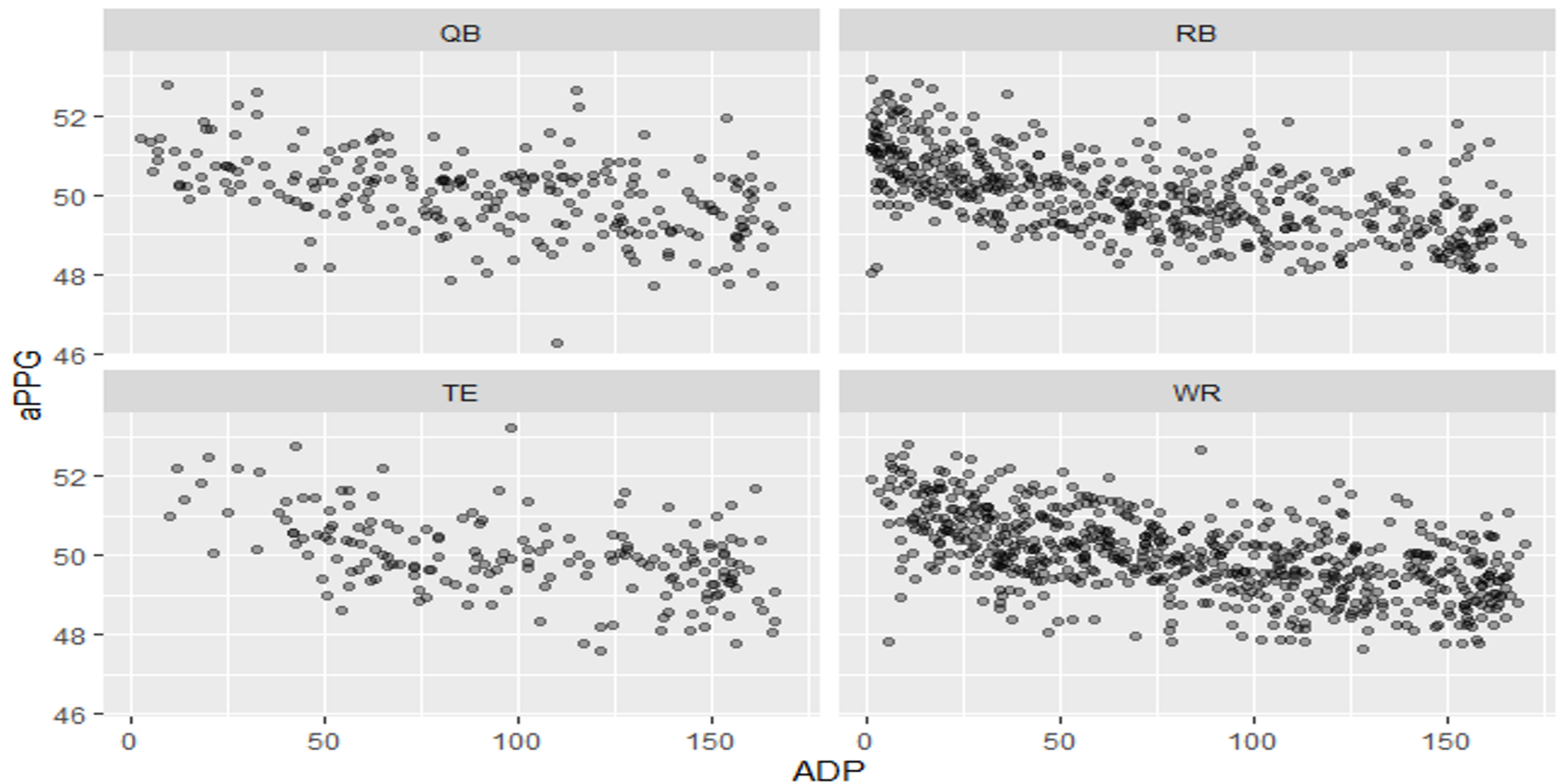
# Building Our Model

Data set: 2017 NFL data is used to predict 2018 fantasy performance

Analysis is conducted on:

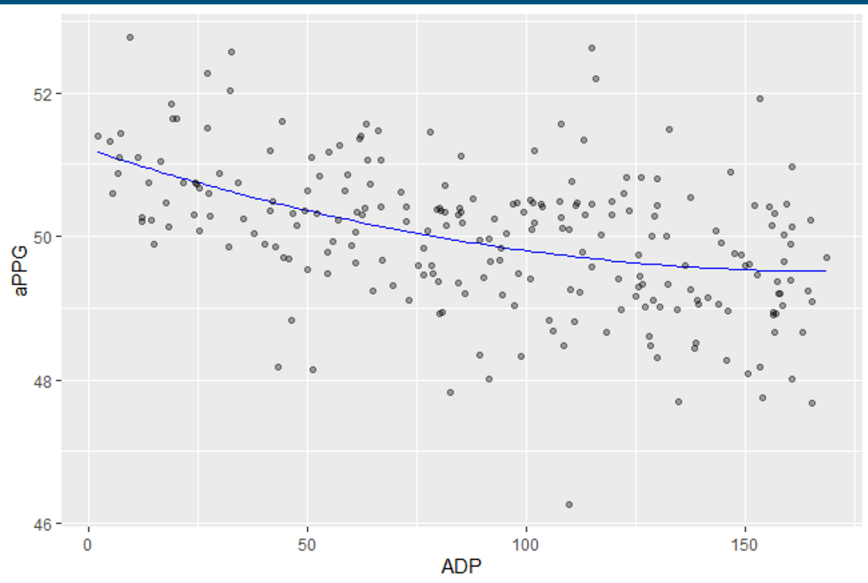
- Individual offensive players from position of QB, RB, TE, WR
- Team defenses

# Relationship between ADP and FPPG

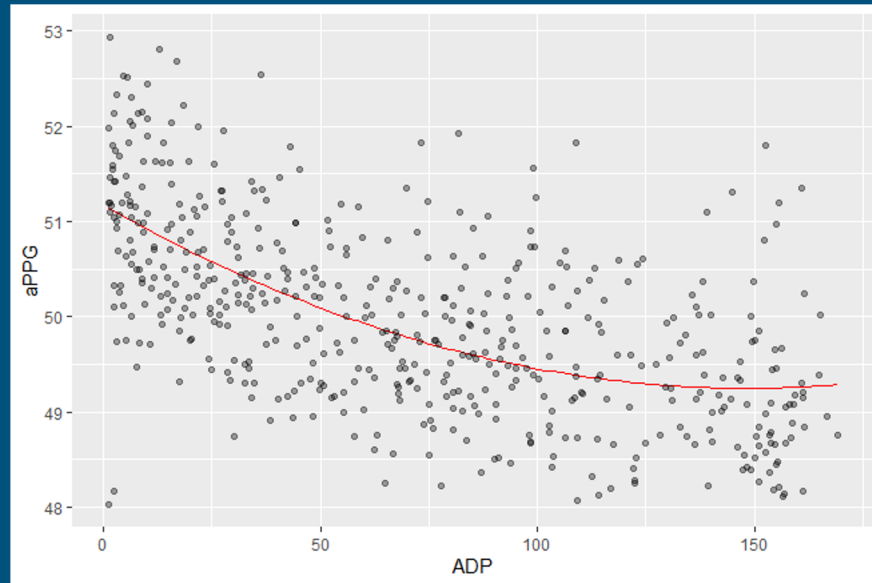


# Building and Testing our models

QB



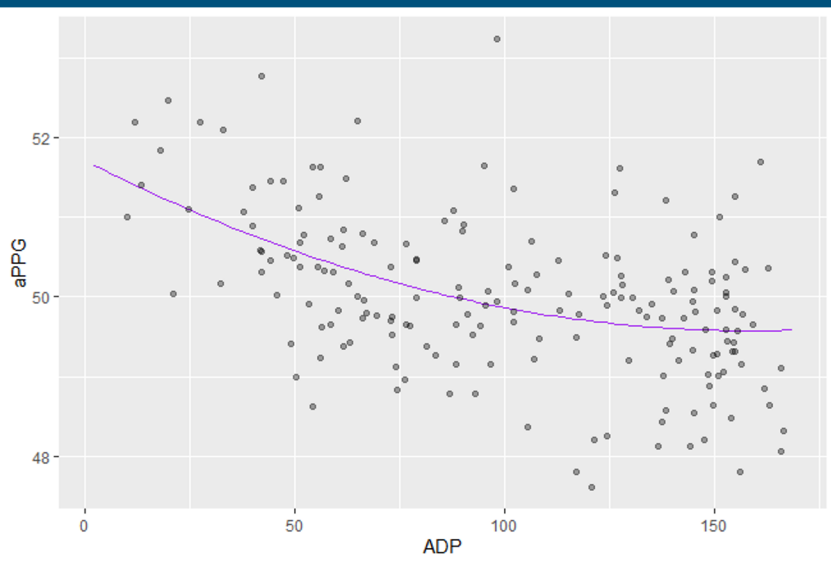
RB



```
> oos_rmse_L_QB  
[1] 0.8983015  
> oos_rmse_Log_QB  
[1] 2.023912  
> oos_rmse_p_QB  
[1] 0.9166738
```

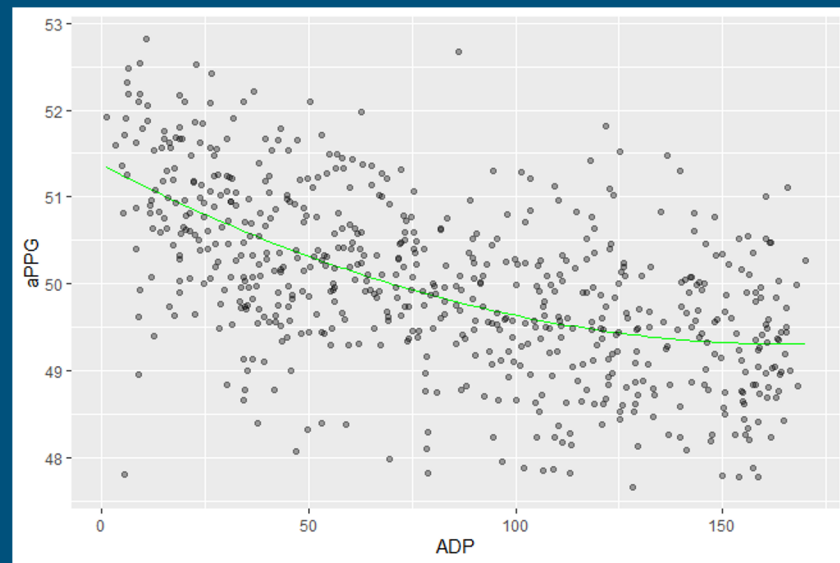
```
> oos_rmse_L_RB  
[1] 0.919645  
> oos_rmse_Log_RB  
[1] 1.345925  
> oos_rmse_p_RB  
[1] 0.9189915
```

TE



```
> oos_rmse_L_TE  
[1] 0.8735666  
> oos_rmse_Log_TE  
[1] 2.073104  
> oos_rmse_p_TE  
[1] 0.8530839
```

WR



```
> oos_rmse_L_WR  
[1] 0.8848191  
> oos_rmse_Log_WR  
[1] 0.8844747  
> oos_rmse_p_WR  
[1] 0.8769292  
>
```

# Comparing models

```
> summary(pfit_QB)
```

Call:

```
lm(formula = aPPG ~ ADP + ADP2, data = training_data_QB)
```

Residuals:

Min	1Q	Median	3Q	Max
-3.4489	-0.5681	0.0047	0.6013	2.9384

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	5.121e+01	2.356e-01	217.309	< 2e-16 ***
ADP	-1.992e-02	5.895e-03	-3.380	0.000885 ***
ADP2	5.837e-05	3.220e-05	1.813	0.071478 .

---  
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.8869 on 185 degrees of freedom

Multiple R-squared: 0.2097, Adjusted R-squared: 0.2012

F-statistic: 24.55 on 2 and 185 DF, p-value: 3.5e-10

```
> summary(Lfit_QB)
```

Call:

```
lm(formula = aPPG ~ ADP, data = training_data_QB)
```

Residuals:

Min	1Q	Median	3Q	Max
-3.5465	-0.5556	0.0363	0.5593	2.8549

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	50.868021	0.144958	350.916	< 2e-16 ***
ADP	-0.009547	0.001419	-6.727	2.07e-10 ***

---  
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.8923 on 186 degrees of freedom

Multiple R-squared: 0.1957, Adjusted R-squared: 0.1914

F-statistic: 45.26 on 1 and 186 DF, p-value: 2.07e-10



# Results of our polynomial model

```
> summary(pfit_TE)
```

```
Call:
lm(formula = aPPG ~ ADP + ADP2, data = training_data_TE)
```

```
Residuals:
    Min       1Q   Median       3Q      Max
-1.8753 -0.5636 -0.0212  0.4903  3.3498
```

```
Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  5.171e+01  3.752e-01  137.804 < 2e-16 ***
ADP          -2.693e-02  8.748e-03   -3.078  0.0025 **
ADP2         8.495e-05  4.479e-05    1.896  0.0599 .
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
Residual standard error: 0.8793 on 143 degrees of freedom
Multiple R-squared:  0.2328,    Adjusted R-squared:  0.2221
F-statistic: 21.7 on 2 and 143 DF,  p-value: 5.875e-09
```

```
> summary(pfit_RB)
```

```
Call:
lm(formula = aPPG ~ ADP + ADP2, data = training_data_RB)
```

```
Residuals:
    Min       1Q   Median       3Q      Max
-3.1012 -0.5502 -0.0354  0.4580  2.5559
```

```
Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  5.117e+01  9.338e-02  547.979 < 2e-16 ***
ADP          -2.591e-02  2.885e-03   -8.982 < 2e-16 ***
ADP2         8.726e-05  1.774e-05    4.920 1.26e-06 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
Residual standard error: 0.77 on 407 degrees of freedom
Multiple R-squared:  0.4018,    Adjusted R-squared:  0.3988
F-statistic: 136.7 on 2 and 407 DF,  p-value: < 2.2e-16
```

```
> summary(pfit_WR)
```

```
Call:
lm(formula = aPPG ~ ADP + ADP2, data = training_data_WR)
```

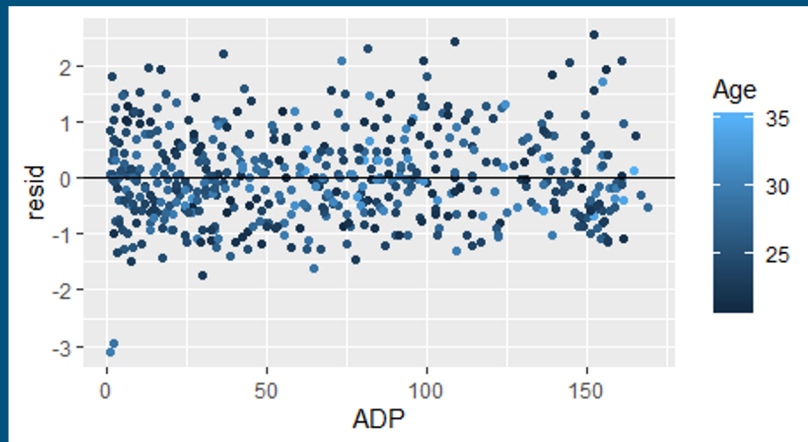
```
Residuals:
    Min       1Q   Median       3Q      Max
-3.4215 -0.5269  0.0206  0.5572  2.1041
```

```
Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  5.137e+01  1.188e-01  432.543 < 2e-16 ***
ADP          -2.476e-02  3.244e-03   -7.632 1.13e-13 ***
ADP2         7.419e-05  1.817e-05    4.084 5.13e-05 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

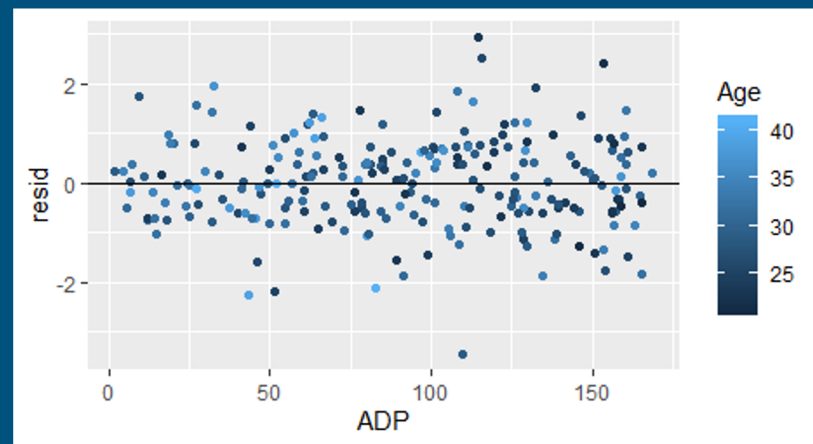
```
Residual standard error: 0.8158 on 513 degrees of freedom
Multiple R-squared:  0.3435,    Adjusted R-squared:  0.3409
F-statistic: 134.2 on 2 and 513 DF,  p-value: < 2.2e-16
```

## Residual Plots

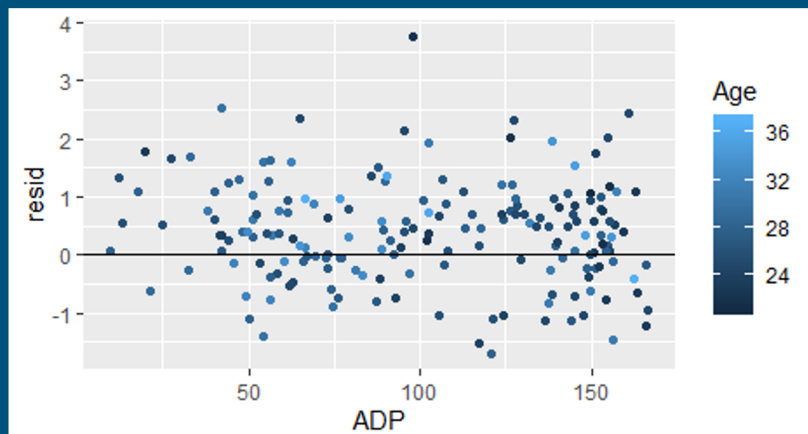
QB



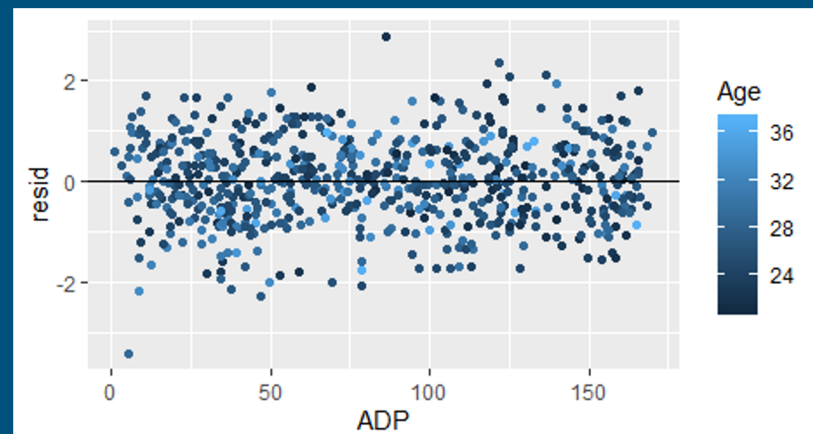
RB



TE



WR



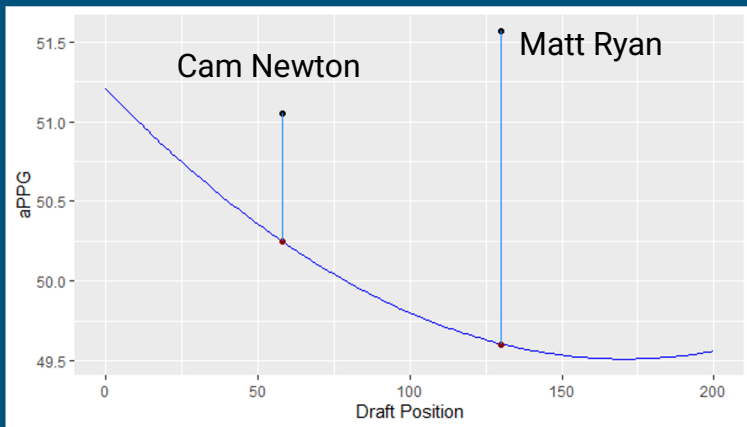
Using Our Model to  
Evaluate Avi's Draft

## Avi's 2018 Draft Choices:

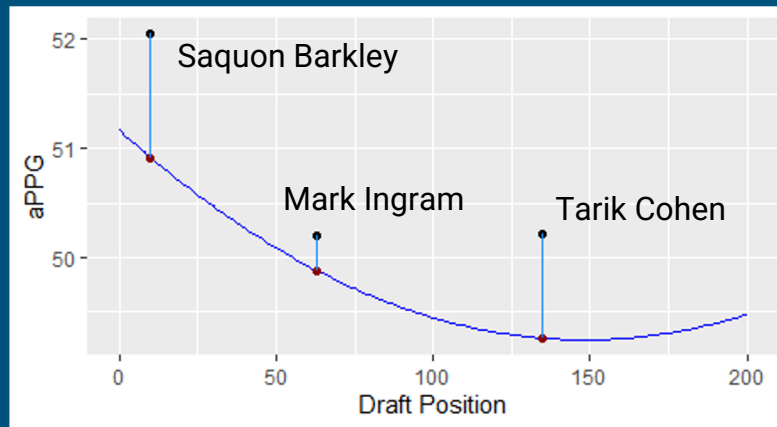
1. Saquon Barkley (RB - NYG )
2. Keenan Allen (WR - LAC)
3. Travis Kelce (TE - KC)
4. Golden Tate (WR - NYG)
5. Cam Newton (QB - CAR)
6. Mark Ingram (RB - BAL)
7. Jamison Crowder (WR - NYJ)
8. Minnesota (DEF - MIN)
9. Stephen Gostkowski (K - NE)
10. Delanie Walker (TE - TEN)
11. Matt Ryan (QB - ATL)
12. Tarik Cohen (RB - CHI)
13. New Orleans (DEF - NO)
14. Marqise Lee (WR - JAX)
15. DeSean Jackson (WR - PHI)

# How did his draft choices do?

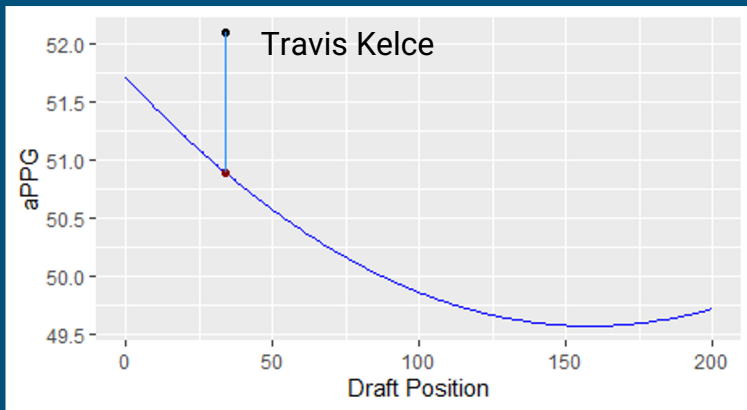
## QB



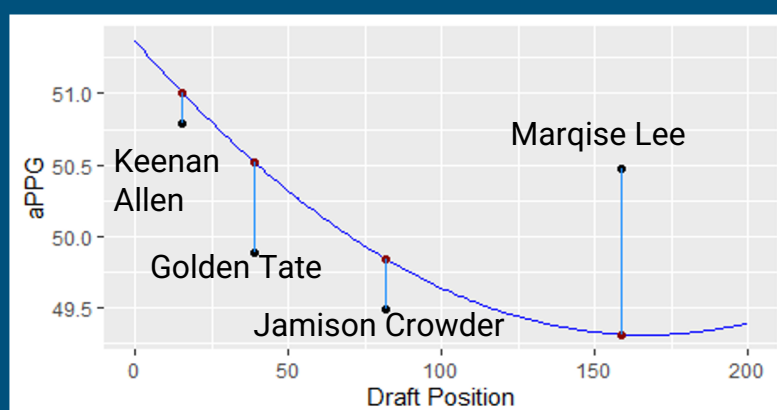
## RB



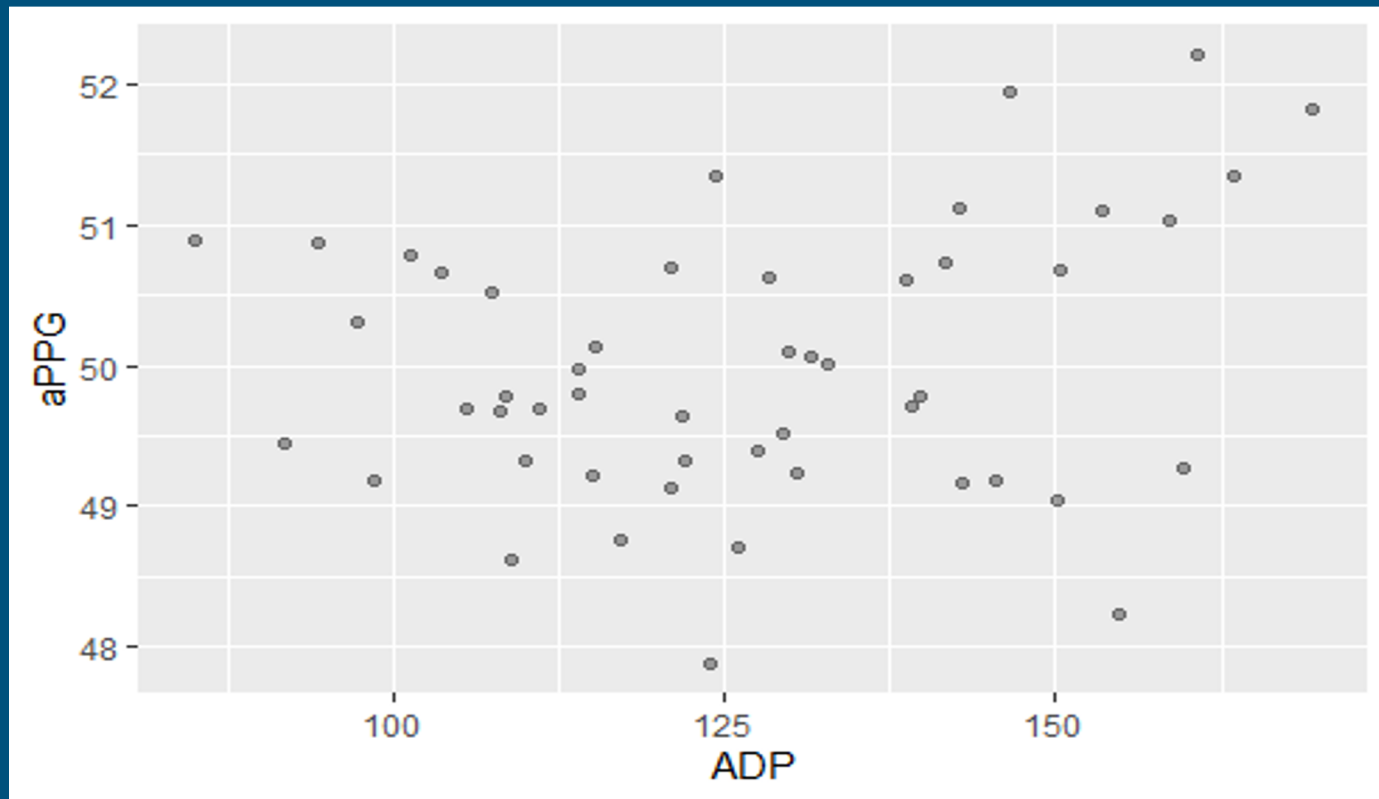
## TE



## WR

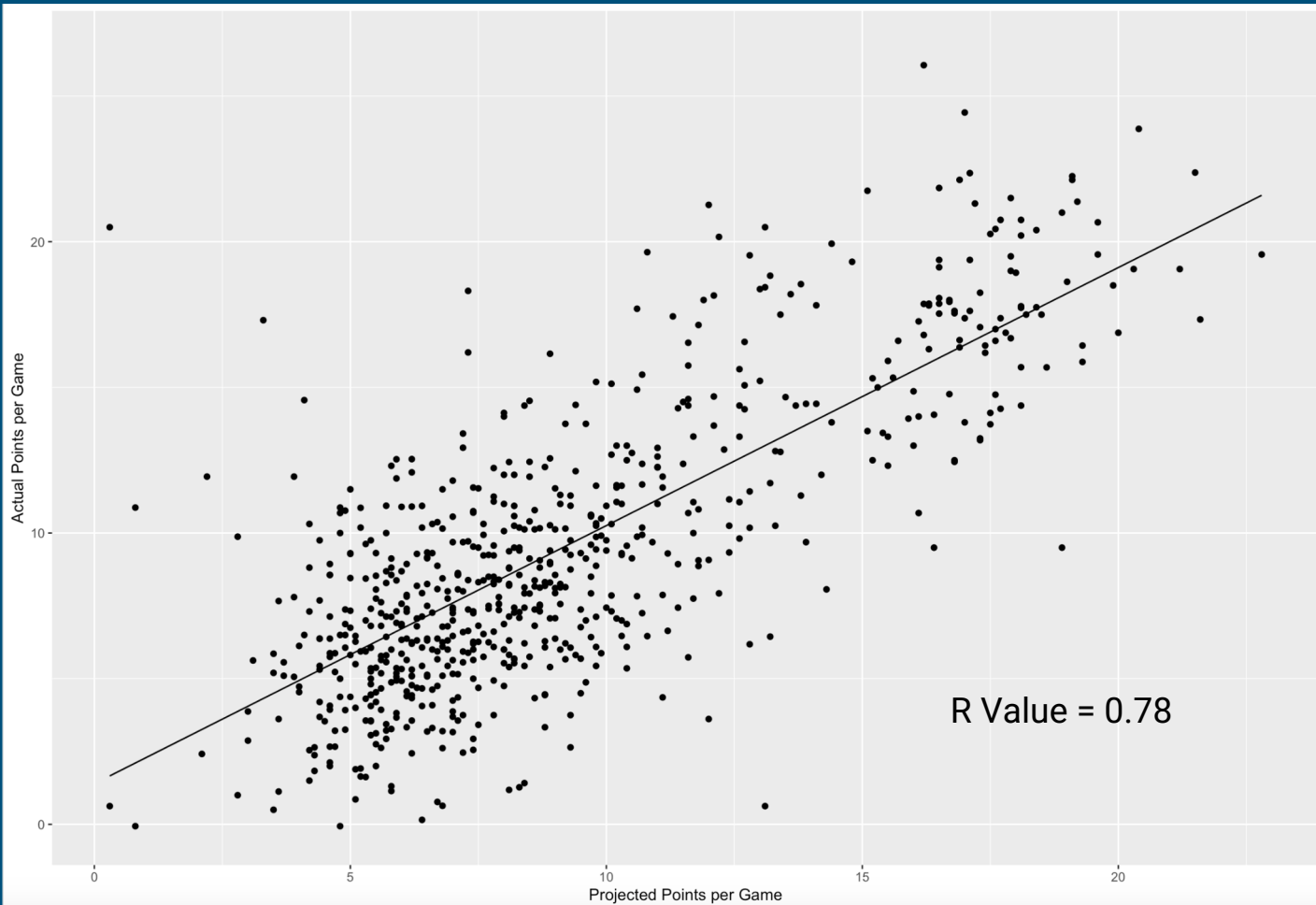


*There is no trend in ADP and FPPG for Defenses*



# Applying Our Model in a Predictive Manner

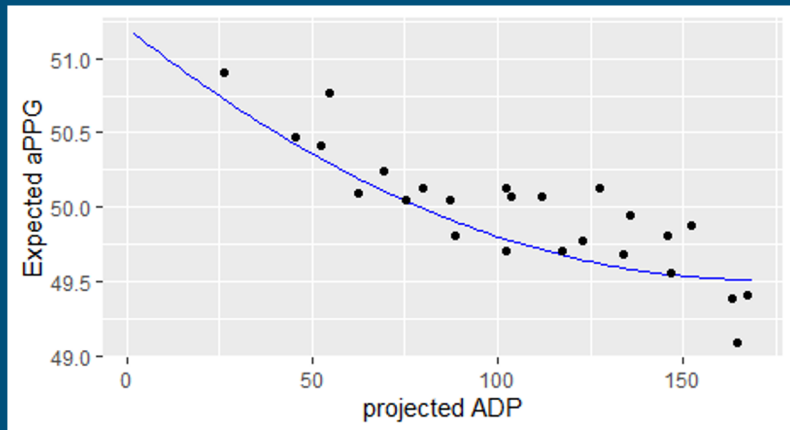
# Correlation between ESPN Projected PPG and PPG



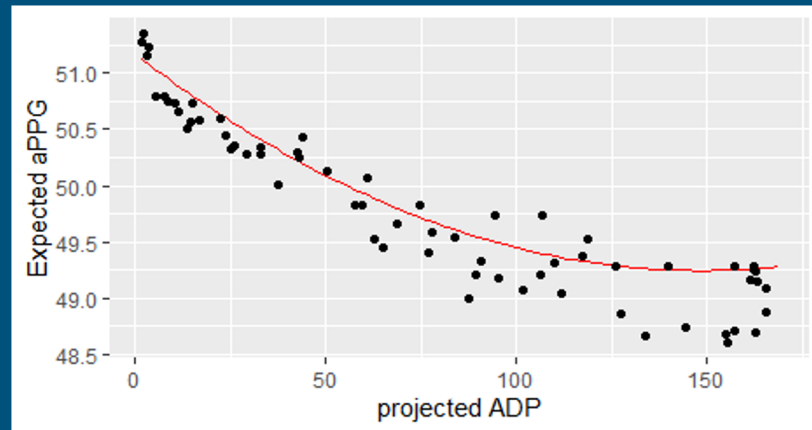


# Relationship Between Projected ADP and Projected aPPG

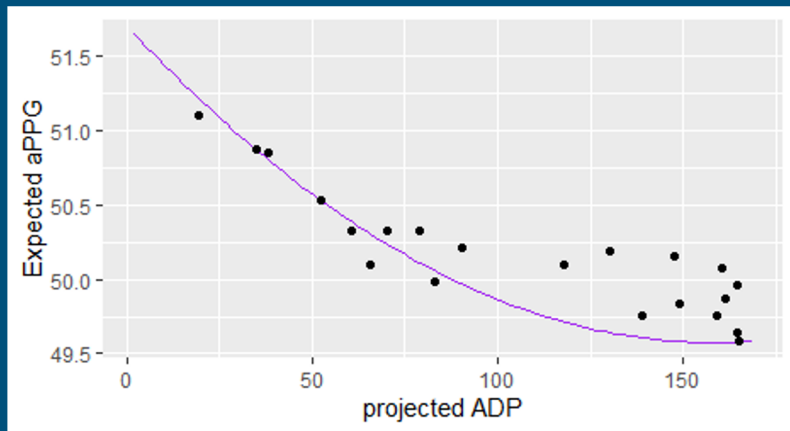
QB



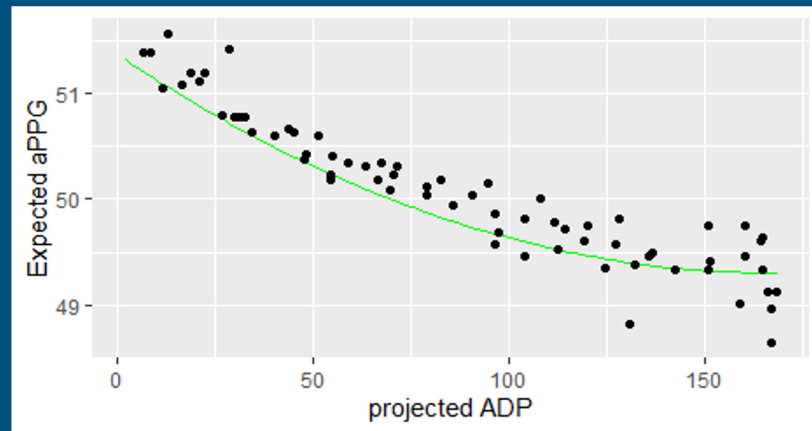
RB



TE

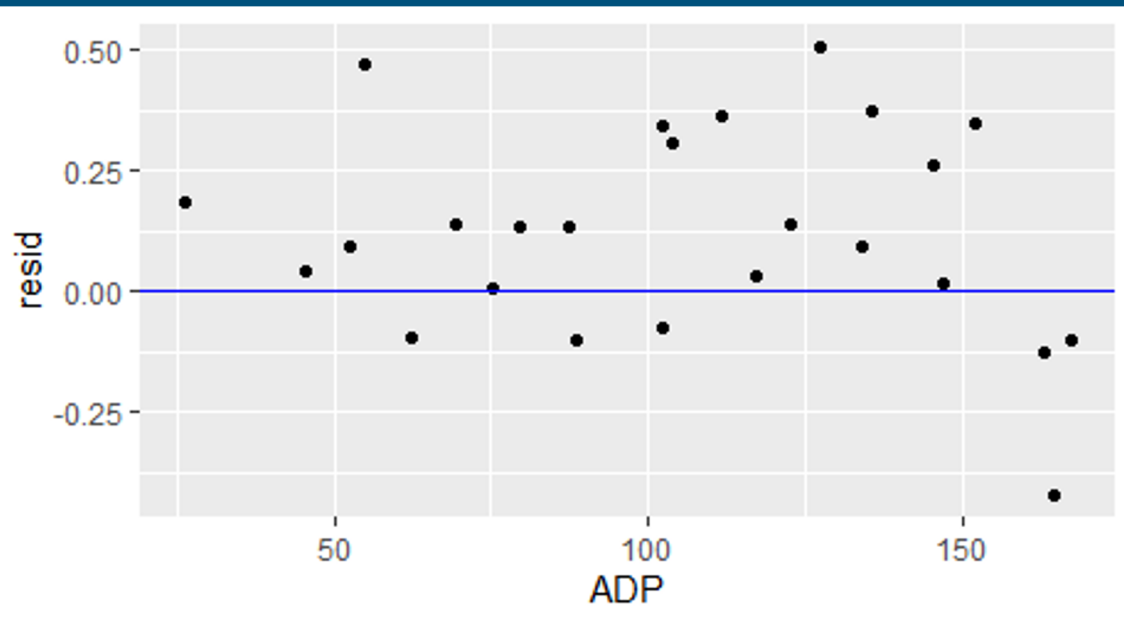


WR



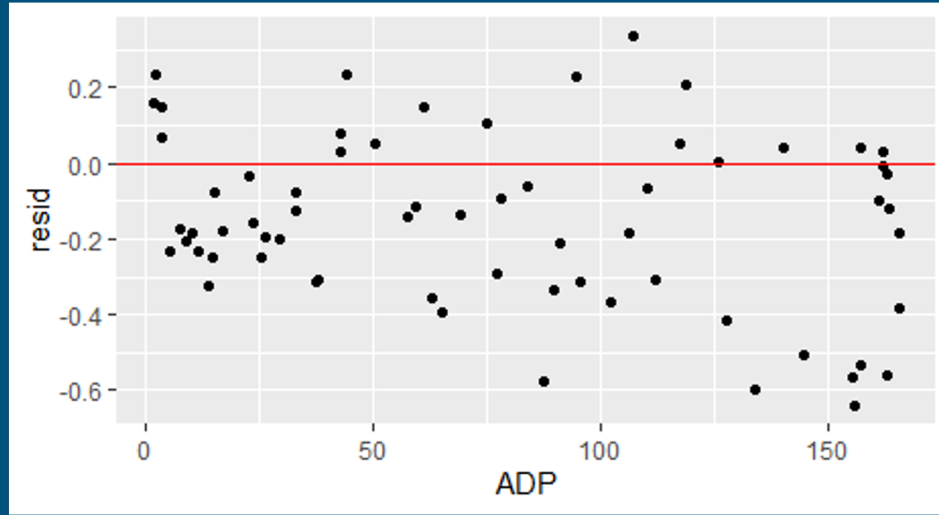
Projecting Players to  
Overperform or Underperform for  
the 2019-2020 Season

# QB Residual Plot



	Name	resid	ADP
1	Dak Prescott	0.505861119	127.3
2	Deshaun Watson	0.472004732	54.8
3	Lamar Jackson	0.371566841	135.6
4	Jameis Winston	0.363476643	111.7
5	Mitch Trubisky	0.349362988	152.1
6	Cam Newton	0.343644370	102.4
7	Jared Goff	0.305462123	103.8
8	Kirk Cousins	0.258982683	145.6
9	Patrick Mahomes	0.185108139	26.2
10	Matt Ryan	0.141366843	69.5
11	Ben Roethlisberger	0.137340257	122.8
12	Russell Wilson	0.136180371	87.3
13	Carson Wentz	0.132688000	79.7
14	Jimmy Garoppolo	0.094568895	134.1
15	Aaron Rodgers	0.093263794	52.3
16	Andrew Luck	0.044370326	45.4
17	Tom Brady	0.030389713	117.2
18	Josh Allen	0.016569830	146.9
19	Drew Brees	0.008773832	75.1
20	Philip Rivers	-0.076349681	102.2
21	Baker Mayfield	-0.094354312	62.3
22	Kyler Murray	-0.098342976	88.5
23	Derek Carr	-0.098745153	167.5
24	Matthew Stafford	-0.126195583	163.0
25	Sam Darnold	-0.420116204	164.8

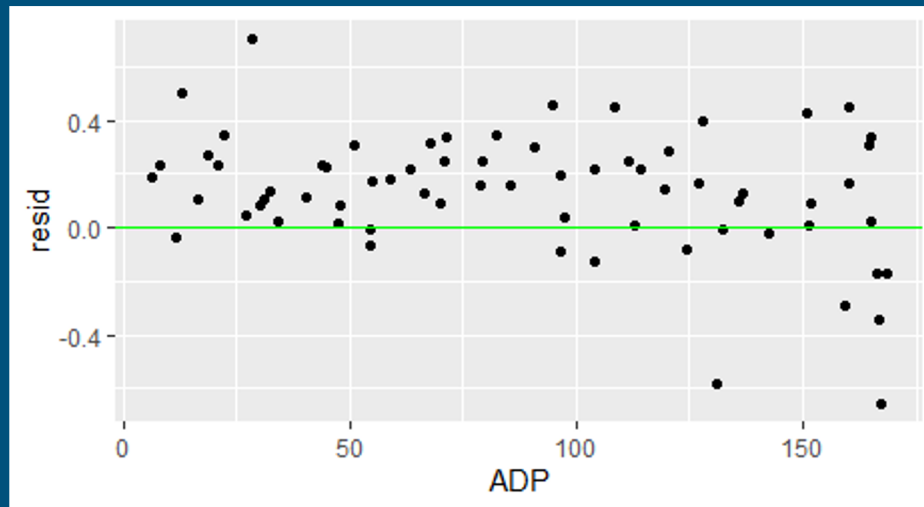
# RB Residual Plot



	Name	resid	ADP
1	Peyton Barber	0.336727843	106.9
2	Saquon Barkley	0.235746107	2.0
3	Chris Carson	0.234734656	44.0
4	LeSean McCoy	0.231405578	94.3
5	Austin Ekeler	0.207653100	118.7
6	Ezekiel Elliott	0.156961372	1.8
7	Lamar Miller	0.149665258	60.9
8	Christian McCaffrey	0.147508626	3.6
9	James White	0.104587442	74.7
10	Sony Michel	0.080113732	42.6

50	Adrian Peterson	-0.310806660	95.4
51	Mark Ingram	-0.313016889	37.4
52	Nick Chubb	-0.321911596	13.8
53	Ronald Jones II	-0.332711998	89.4
54	Rashaad Penny	-0.358692819	62.6
55	Carlos Hyde	-0.364763985	101.9
56	Mike Davis	-0.384090928	165.3
57	Darrell Henderson	-0.395430471	65.1
58	Alexander Mattison	-0.416721950	127.4
59	Justice Hill	-0.508124045	144.6
60	Malcolm Brown	-0.531669314	157.1
61	Justin Jackson	-0.560981053	162.6
62	Darwin Thompson	-0.565850486	155.1
63	Kareem Hunt	-0.574692210	87.4
64	Devin Singletary	-0.599062664	133.9
65	Ryquell Armstead	-0.639993328	155.5

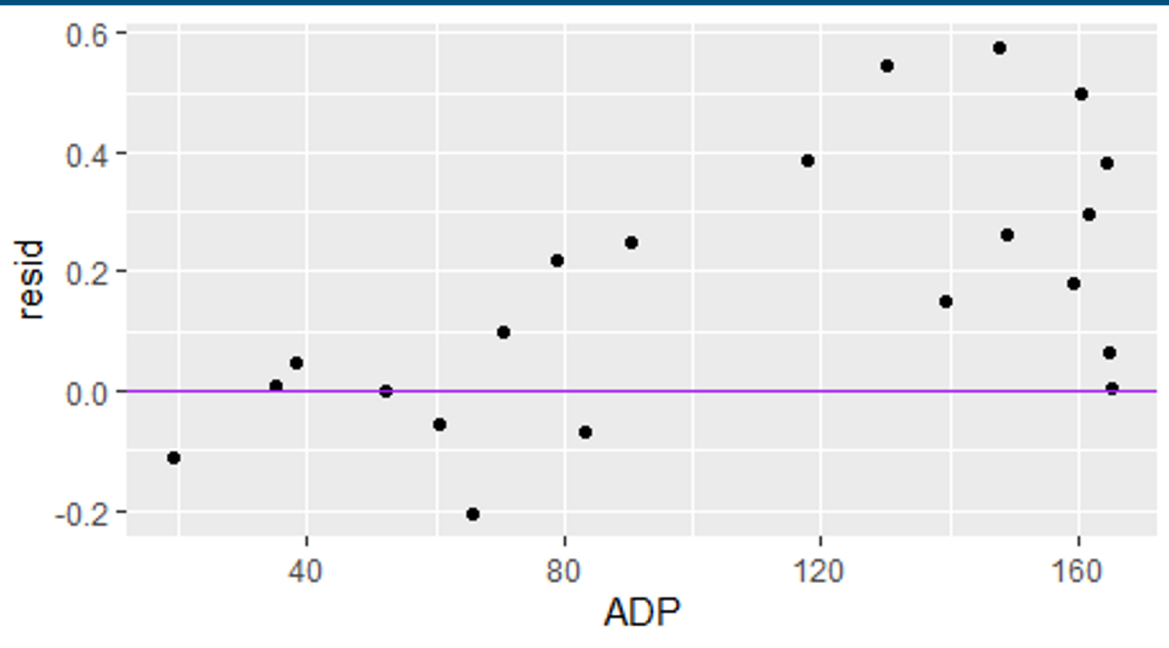
# WR Residual Plot



	Name	resid	ADP
1	Tyreek Hill	0.704956234	28.6
2	Julio Jones	0.504086526	12.8
3	Marvin Jones	0.460905784	94.7
4	Corey Davis	0.451006924	108.3
5	Kenny Stills	0.446903751	160.3
6	Tyrell Williams	0.431232260	150.9
7	Golden Tate	0.395450394	128.1
8	Allen Robinson	0.347623173	82.5
9	Mike Evans	0.343834521	22.2
10	Robby Anderson	0.339905936	71.3

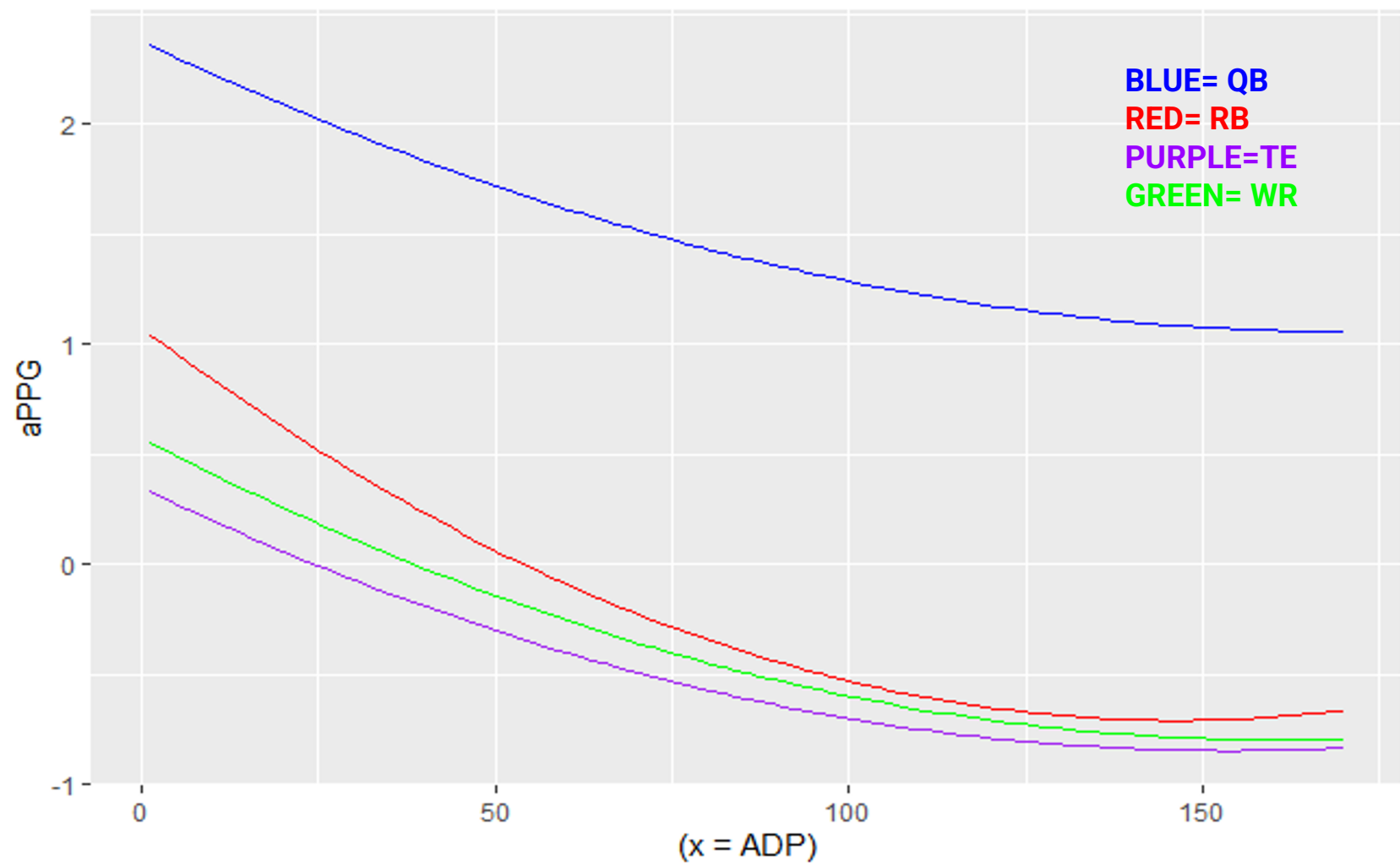
53	Marquise Brown	0.006448336	151.1
54	Marquez Valdes-Scantling	0.005834459	112.7
55	Mike Williams	-0.002582566	54.6
56	Keke Coutee	-0.007484383	132.2
57	Parris Campbell	-0.018400253	142.7
58	Michael Thomas	-0.033753545	11.6
59	Calvin Ridley	-0.062616948	54.4
60	James Washington	-0.079807676	124.5
61	N'Keal Harry	-0.087072437	96.5
62	D.K. Metcalf	-0.126369585	104.0
63	Deebo Samuel	-0.173654435	166.3
64	Randall Cobb	-0.173838822	168.5
65	Tre'Quan Smith	-0.291359473	159.2
66	Andy Isabella	-0.343736751	167.0
67	Mecole Hardman	-0.581296273	130.9
68	Demaryius Thomas	-0.655592782	167.1

# TE Residual Plot

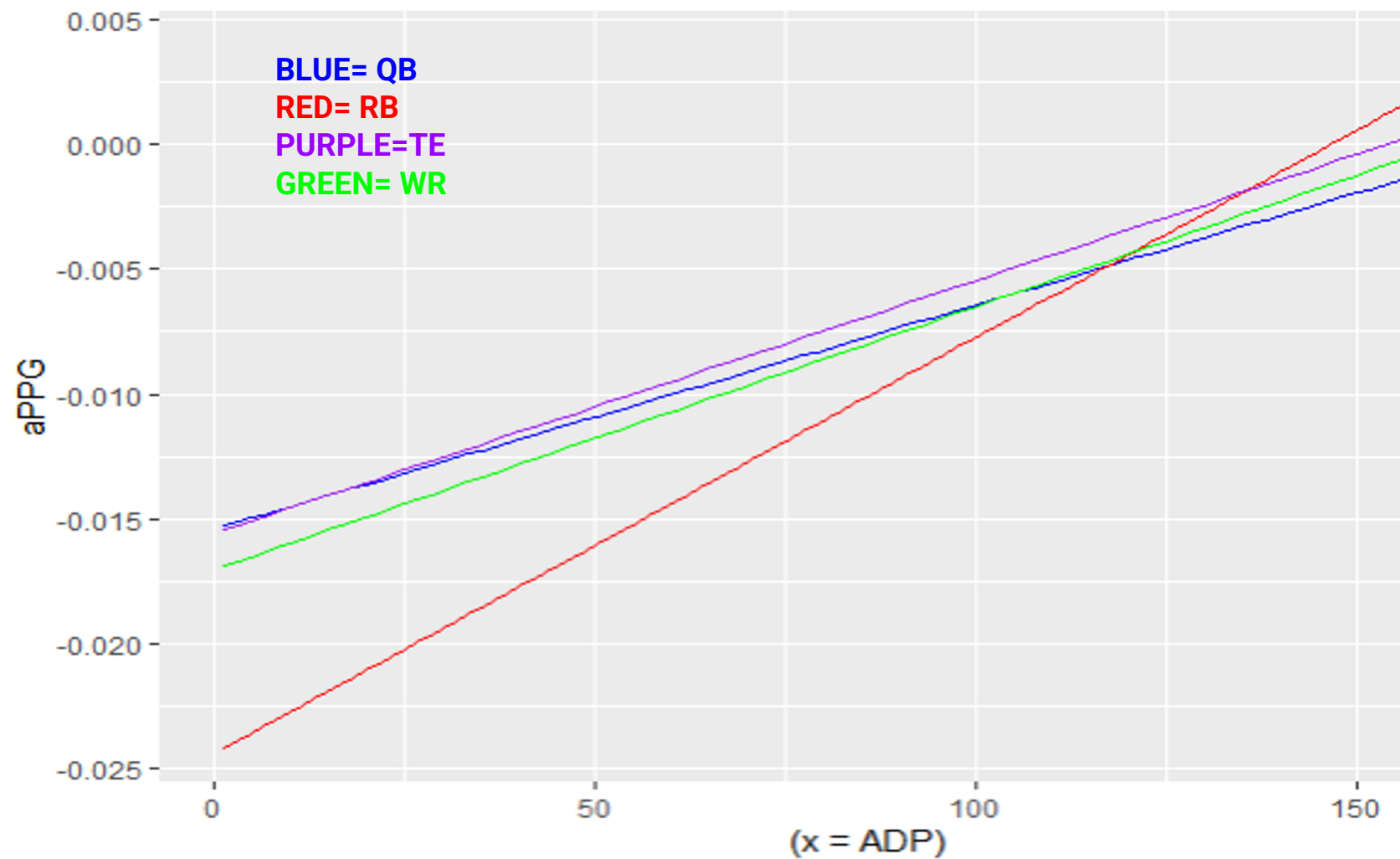


	Name	resid	ADP
1	Greg Olsen	0.5759512880	147.8
2	Delanie Walker	0.5464443771	130.2
3	Kyle Rudolph	0.4989806876	160.4
4	Trey Burton	0.3887616711	118.0
5	Mark Andrews	0.3811485950	164.4
6	Jimmy Graham	0.2970069771	161.4
7	Austin Hooper	0.2611018185	148.9
8	David Njoku	0.2493329182	90.4
9	Jared Cook	0.2202294488	78.9
10	Noah Fant	0.1824873878	159.3
11	T.J. Hockenson	0.1505778064	139.1
12	Eric Ebron	0.0991437895	70.4
13	Chris Herndon IV	0.0640941601	164.7
14	Zach Ertz	0.0494701200	38.3
15	George Kittle	0.0099506199	35.0
16	Jordan Reed	0.0060689142	165.1
17	OJ Howard	0.0001641993	52.2
18	Hunter Henry	-0.0540329678	60.7
19	Vance McDonald	-0.0687320300	83.2
20	Travis Kelce	-0.1100403768	19.3
21	Evan Engram	-0.2050177572	65.6

# Comparing Draft Trends Between Positions







# Draft Strategy Conclusion

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- Draft RB's early
- Draft WR's early
- Draft Defense in the last two rounds
- Do not draft Sam Darnold
- Do not trust Avi with advice drafting wide receivers or defense

**Thank You!**