How will the Green Bay Packers offense fare without Davante Adams this season?

Introduction

By far one of the biggest names that got traded this offseason was Davante Adams. Davante Adams has been the best Packers wide receiver and one of the best wide receivers across the NFL over the past five seasons. Now that he is no longer a part of the Packers, how will his absence affect Aaron Rodgers numbers and the Green Bay Packers offense as a whole? The following analysis will attempt to analyze and quantify the impact.

This analysis will be broken into two parts: the first part will analyze the impact of Davante Adams loss on the Packers offense as a whole. The second part will analyze how his absence will affect Aaron Rodgers' stats.

Part 1: The Davante Adams effect on the Green Bay Packers offense as a whole

I will first examine the effect that losing Davante Adams will have on the Green Bay Packers offense as a whole. Below are Davante Adams statistics for his entire career:

In [2]:
```
import pandas as pd
import numpy as np

Davante_df = pd.read_csv('/Users/jeremydantzig/Documents/Sports Analytics Projects/DavanteAdams.csv')
Davante_df
```

Out[2]:

	Year	Age	Tm	Pos	No.	G	GS	Tgt	Rec	Yds	...	Y/A	Y/G.1	A/G	Touch	Y/Tch	YScm	RRTD	Fmb	AV	Awards
0	2014	22	GNB	WR	17	16	11	66	38	446	...	NaN	NaN	NaN	38	11.7	446	3	0	5	NaN
1	2015	23	GNB	WR	17	13	12	94	50	483	...	NaN	NaN	NaN	50	9.7	483	1	0	4	NaN
2	2016	24	GNB	WR	17	16	15	121	75	997	...	NaN	NaN	NaN	75	13.3	997	12	2	10	NaN
3	2017	25	GNB	WR	17	14	14	117	74	885	...	NaN	NaN	NaN	74	12.0	885	10	0	8	PB
4	2018	26	GNB	WR	17	15	15	169	111	1386	...	NaN	NaN	NaN	111	12.5	1386	13	0	10	PB
5	2019	27	GNB	WR	17	12	12	127	83	997	...	NaN	NaN	NaN	83	12.0	997	5	2	9	PB
6	2020	28	GNB	WR	17	14	14	149	115	1374	...	NaN	NaN	NaN	115	11.9	1374	18	1	16	AP1, PB
7	2021	29	GNB	WR	17	16	16	169	123	1553	...	NaN	NaN	NaN	123	12.6	1553	11	0	15	AP1, PB

8 rows × 33 columns

For this analysis I am going to use the years 2018-2021 because those are the peak years of Davante Adams career to this point. It was also a time where he had the greatest impact on the Packers offense Although 2017 was a Pro Bowl Year as evidenced by the PB designation under the Awards column, it was also a year where Aaron Rodgers got hurt and keeping that year in our analysis would distort the true impact of Adams' loss on the offense.

In [3]:
```
Davante_df_2018_2021 = Davante_df[Davante_df['Year'] >= 2018]
Davante_df_2018_2021
```

Out[3]:

	Year	Age	Tm	Pos	No.	G	GS	Tgt	Rec	Yds	...	Y/A	Y/G.1	A/G	Touch	Y/Tch	YScm	RRTD	Fmb	AV	Awards
4	2018	26	GNB	WR	17	15	15	169	111	1386	...	NaN	NaN	NaN	111	12.5	1386	13	0	10	PB
5	2019	27	GNB	WR	17	12	12	127	83	997	...	NaN	NaN	NaN	83	12.0	997	5	2	9	PB
6	2020	28	GNB	WR	17	14	14	149	115	1374	...	NaN	NaN	NaN	115	11.9	1374	18	1	16	AP1, PB
7	2021	29	GNB	WR	17	16	16	169	123	1553	...	NaN	NaN	NaN	123	12.6	1553	11	0	15	AP1, PB

4 rows × 33 columns

Now I will filter for the columns that we want in our analysis:

In [4]:
```
Davante_df_2018_2021 = Davante_df_2018_2021[['Year', 'G', 'GS', 'Yds', 'TD', 'Y/G']]
Davante_df_2018_2021
```

Out[4]:

	Year	G	GS	Yds	TD	Y/G
4	2018	15	15	1386	13	92.4
5	2019	12	12	997	5	83.1
6	2020	14	14	1374	18	98.1
7	2021	16	16	1553	11	97.1

I'm going to rename some of the columns to make it more understandable:

In [5]:
```
Davante_df_2018_2021.rename(columns = {'G':'Games', 'GS': 'Games Started', 'Y/G': 'Yards per game'}, inplace = True)
Davante_df_2018_2021
```

```
/var/folders/f7/h6f6nw5s67389vkvy6bbp0rc0000gn/T/ipykernel_25765/3367615908.py:1: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  Davante_df_2018_2021.rename(columns = {'G':'Games', 'GS': 'Games Started', 'Y/G': 'Yards per game'}, inplace = True)
```

Out[5]:

	Year	Games	Games Started	Yds	TD	Yards per game
4	2018	15	15	1386	13	92.4
5	2019	12	12	997	5	83.1
6	2020	14	14	1374	18	98.1
7	2021	16	16	1553	11	97.1

Now I will calculate the averages of the numbers of games, yards, TD, and yards per game for Davante Adams over the course of these four seasons:

In [6]:
```
Davante_df_2018_2021['Games'].mean()
```

Out[6]:
```
14.25
```

In [7]:
```
Davante_df_2018_2021['Yds'].mean()
```

Out[7]:
```
1327.5
```

In [8]:
```
Davante_df_2018_2021['TD'].mean()
```

Out[8]:
```
11.75
```

In [9]:
```
Davante_df_2018_2021['Yards per game'].mean()
```

Out[9]:
```
92.67500000000001
```

One other thing we want to look at is how many points did Davante Adams score/account for during each of the last four seasons as that will have an effect on the total number of points scored and the scoring average per game for the Packers during the upcoming season. I will create two columns: the number of points Davante Adams scored during each season and the PPG he had.

In [10]:
```
Davante_df_2018_2021['Points']= Davante_df_2018_2021['TD']*6
Davante_df_2018_2021['PPG']= Davante_df_2018_2021['Points']/Davante_df_2018_2021['Games']
Davante_df_2018_2021
```

```
/var/folders/f7/h6f6nw5s67389vkvy6bbp0rc0000gn/T/ipykernel_25765/486174145.py:1: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  Davante_df_2018_2021['Points']= Davante_df_2018_2021['TD']*6
/var/folders/f7/h6f6nw5s67389vkvy6bbp0rc0000gn/T/ipykernel_25765/486174145.py:2: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  Davante_df_2018_2021['PPG']= Davante_df_2018_2021['Points']/Davante_df_2018_2021['Games']
```

Out[10]:

	Year	Games	Games Started	Yds	TD	Yards per game	Points	PPG
4	2018	15	15	1386	13	92.4	78	5.200000
5	2019	12	12	997	5	83.1	30	2.500000
6	2020	14	14	1374	18	98.1	108	7.714286
7	2021	16	16	1553	11	97.1	66	4.125000

The averages of Davante Adams Points and PPG are as follows:

In [11]:
```
Davante_df_2018_2021['Points'].mean()
```

Out[11]:
```
70.5
```

In [12]:
```
Davante_df_2018_2021['PPG'].mean()
```

Out[12]:
```
4.884821428571429
```

Now I will bring in the statistics for the Green Bay Packers offense for the last 8 years and then filter it out for the years 2018-2021:

In [13]:
```
Packers_df = pd.read_csv('/Users/jeremydantzig/Documents/Sports Analytics Projects/GreenBayScoringOffense.csv')
Packers_df
```

Out[13]:

	Year	Tm	G	RshTD	RecTD	PR TD	KR TD	FblTD	IntTD	OthTD	...	2PM	2PA	D2P	XPM	XPA	FGM	FGA	Sfty	Pts	Pts/G
0	2021	Green Bay Packers	17	13	39	NaN	NaN	NaN	2.0	NaN	...	1	3	NaN	49	51	25	34	NaN	450	26.5
1	2020	Green Bay Packers	16	16	48	NaN	NaN	1.0	1.0	NaN	...	2	3	NaN	59	63	16	16	1.0	509	31.8
2	2019	Green Bay Packers	16	18	26	NaN	NaN	NaN	NaN	NaN	...	3	3	NaN	40	41	22	24	NaN	376	23.5
3	2018	Green Bay Packers	16	14	25	NaN	NaN	NaN	1.0	1.0	...	3	4	NaN	34	36	30	37	NaN	376	23.5
4	2017	Green Bay Packers	16	13	25	NaN	NaN	1.0	1.0	NaN	...	1	3	NaN	33	35	15	19	NaN	320	20.0
5	2016	Green Bay Packers	16	11	40	NaN	NaN	NaN	NaN	NaN	...	2	4	NaN	44	47	26	30	NaN	432	27.0
6	2015	Green Bay Packers	16	8	31	NaN	NaN	1.0	2.0	NaN	...	4	6	NaN	36	36	24	28	NaN	368	23.0
7	2014	Green Bay Packers	16	14	38	2.0	NaN	1.0	3.0	NaN	...	1	3	NaN	53	55	27	33	1.0	486	30.4

8 rows × 21 columns

In [14]:
```
Packers_df.rename(columns = {'Year ': 'Year'}, inplace = True)
Packers_df
```

Out[14]:

	Year	Tm	G	RshTD	RecTD	PR TD	KR TD	FblTD	IntTD	OthTD	...	2PM	2PA	D2P	XPM	XPA	FGM	FGA	Sfty	Pts	Pts/G
0	2021	Green Bay Packers	17	13	39	NaN	NaN	NaN	2.0	NaN	...	1	3	NaN	49	51	25	34	NaN	450	26.5
1	2020	Green Bay Packers	16	16	48	NaN	NaN	1.0	1.0	NaN	...	2	3	NaN	59	63	16	16	1.0	509	31.8
2	2019	Green Bay Packers	16	18	26	NaN	NaN	NaN	NaN	NaN	...	3	3	NaN	40	41	22	24	NaN	376	23.5
3	2018	Green Bay Packers	16	14	25	NaN	NaN	NaN	1.0	1.0	...	3	4	NaN	34	36	30	37	NaN	376	23.5
4	2017	Green Bay Packers	16	13	25	NaN	NaN	1.0	1.0	NaN	...	1	3	NaN	33	35	15	19	NaN	320	20.0
5	2016	Green Bay Packers	16	11	40	NaN	NaN	NaN	NaN	NaN	...	2	4	NaN	44	47	26	30	NaN	432	27.0
6	2015	Green Bay Packers	16	8	31	NaN	NaN	1.0	2.0	NaN	...	4	6	NaN	36	36	24	28	NaN	368	23.0
7	2014	Green Bay Packers	16	14	38	2.0	NaN	1.0	3.0	NaN	...	1	3	NaN	53	55	27	33	1.0	486	30.4

8 rows × 21 columns

In [15]:
```
Packers_df_2018_2021 = Packers_df[Packers_df['Year'] >= 2018]
Packers_df_2018_2021
```

Out[15]:

	Year	Tm	G	RshTD	RecTD	PR TD	KR TD	FblTD	IntTD	OthTD	...	2PM	2PA	D2P	XPM	XPA	FGM	FGA	Sfty	Pts	Pts/G
0	2021	Green Bay Packers	17	13	39	NaN	NaN	NaN	2.0	NaN	...	1	3	NaN	49	51	25	34	NaN	450	26.5
1	2020	Green Bay Packers	16	16	48	NaN	NaN	1.0	1.0	NaN	...	2	3	NaN	59	63	16	16	1.0	509	31.8
2	2019	Green Bay Packers	16	18	26	NaN	NaN	NaN	NaN	NaN	...	3	3	NaN	40	41	22	24	NaN	376	23.5
3	2018	Green Bay Packers	16	14	25	NaN	NaN	NaN	1.0	1.0	...	3	4	NaN	34	36	30	37	NaN	376	23.5

4 rows × 21 columns

Once again, I will filter out the statistics we want to track in our analysis:

In [16]:
```
Packers_df_2018_2021 = Packers_df_2018_2021[['Year', 'G', 'RecTD', 'Pts', 'Pts/G']]
Packers_df_2018_2021
```

Out[16]:

	Year	G	RecTD	Pts	Pts/G
0	2021	17	39	450	26.5
1	2020	16	48	509	31.8
2	2019	16	26	376	23.5
3	2018	16	25	376	23.5

In [17]:
```
Packers_df_2018_2021.rename(columns = {'G':'Games', 'Pts/G': 'PPG'}, inplace = True)
Packers_df_2018_2021
```

```
/var/folders/f7/h6f6nw5s67389vkvy6bbp0rc0000gn/T/ipykernel_25765/2245428058.py:1: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  Packers_df_2018_2021.rename(columns = {'G':'Games', 'Pts/G': 'PPG'}, inplace = True)
```

Out[17]:

	Year	Games	RecTD	Pts	PPG
0	2021	17	39	450	26.5
1	2020	16	48	509	31.8
2	2019	16	26	376	23.5
3	2018	16	25	376	23.5

Calculating the averages of the RecTD, Pts, and PPG for the Packers offense the last four years yields the following results:

In [18]:
```
Packers_df_2018_2021['RecTD'].mean()
```

Out[18]:
```
34.5
```

In [19]:
```
Packers_df_2018_2021['Pts'].mean()
```

Out[19]:
```
427.75
```

In [20]:
```
Packers_df_2018_2021['PPG'].mean()
```

Out[20]:
```
26.325
```

As we saw previously Davante Adams' averages for the last four seasons were as follows:

Touchdowns: 11.75 Points: 70.5 PPG: 4.884821428571429

Taking Davante Adams' averages and the Packers offense averages over the last four seasons, my forecasts for the Packers offensive numbers for this season would be as follows:

Packers Receiving TDs estimate for 2022 = Packers Average Receiving TDs - Davante Adams Receiving TDs= 34.5-11.75 = 22.75 TDs

Packers PPG estimate for 2022 = Packers Average PPG - Davante Adams PPG = 26.32 - 4.884821428571429 = 21.43517857

Packers Total Points estimate for 2022 = 21.43517857*17 = 364.3980357

In examining the numbers closely, the loss of Davante Adams should have a significant negative impact on the Packers offense this year.

Part 2: The Davante Adams effect on Aaron Rodgers

Next we want to examine how the loss of Davante Adams will affect Aaron Rodgers numbers for the upcoming season. Below are Aaron Rodgers statistics during all of the seasons that Davante Adams has been in the NFL so far:

In [24]:
```
Rodgers_df = pd.read_csv('/Users/jeremydantzig/Documents/Sports Analytics Projects/Aaronrodgers.csv')
Rodgers_df
```

Out[24]:

	Year	Age	Tm	Pos	No.	G	GS	QBrec	Cmp	Att	...	QBR	Sk	Yds.1	Sk%	NY/A	ANY/A	4QC	GWD	AV	Awards
0	2014	31	GNB	QB	12	16	16	12/4/00	341	520	...	78.3	28	174	5.1	7.68	8.65	1	1	22	AP MVP-1, AP OPoY-2, AP1, PB
1	2015	32	GNB	QB	12	16	16	10/6/00	347	572	...	60.0	46	314	7.4	5.67	6.10	2	2	14	PB
2	2016	33	GNB	QB	12	16	16	10/6/00	401	610	...	72.4	35	246	5.4	6.48	7.24	0	2	18	AP MVP-5, AP OPoY-2, PB
3	2017	34	GNB	qb	12	7	7	4/3/00	154	238	...	66.0	22	168	8.5	5.80	5.99	2	2	6	NaN
4	2018	35	GNB	QB	12	16	16	6/9/01	372	597	...	58.0	49	353	7.6	6.33	6.96	3	3	13	PB
5	2019	36	GNB	QB	12	16	16	13-3-0	353	569	...	52.5	36	284	6.0	6.15	6.71	2	3	14	PB
6	2020	37	GNB	QB	12	16	16	13-3-0	372	526	...	79.8	20	182	3.7	7.54	8.89	1	2	18	AP MVP-1, AP OPoY-2, AP1, PB
7	2021	38	GNB	QB	12	16	16	13-3-0	366	531	...	69.1	30	188	5.3	7.00	8.00	1	2	15	AP MVP-1, AP OPoY-4, AP1, PB

8 rows × 33 columns

Like the previous section, I will filter out the years 2018-2021 for our analysis.

In [25]:
```
Rodgers_df_2018_2021 = Rodgers_df[Rodgers_df['Year'] >= 2018]
Rodgers_df_2018_2021
```

Out[25]:

	Year	Age	Tm	Pos	No.	G	GS	QBrec	Cmp	Att	...	QBR	Sk	Yds.1	Sk%	NY/A	ANY/A	4QC	GWD	AV	Awards
4	2018	35	GNB	QB	12	16	16	6/9/01	372	597	...	58.0	49	353	7.6	6.33	6.96	3	3	13	PB
5	2019	36	GNB	QB	12	16	16	13-3-0	353	569	...	52.5	36	284	6.0	6.15	6.71	2	3	14	PB
6	2020	37	GNB	QB	12	16	16	13-3-0	372	526	...	79.8	20	182	3.7	7.54	8.89	1	2	18	AP MVP-1, AP OPoY-2, AP1, PB
7	2021	38	GNB	QB	12	16	16	13-3-0	366	531	...	69.1	30	188	5.3	7.00	8.00	1	2	15	AP MVP-1, AP OPoY-4, AP1, PB

4 rows × 33 columns

I will be examining Davante Adams absence on the number of TDs, passing yards per game, and total passing yards that Rodgers will have this upcoming season.

In [26]:
```
Rodgers_df_2018_2021 = Rodgers_df_2018_2021[['Year', 'G', 'GS', 'Yds', 'TD', 'Y/G']]
Rodgers_df_2018_2021
```

Out[26]:

	Year	G	GS	Yds	TD	Y/G
4	2018	16	16	4442	25	277.6
5	2019	16	16	4002	26	250.1
6	2020	16	16	4299	48	268.7
7	2021	16	16	4115	37	257.2

In [27]:
```
Rodgers_df_2018_2021.rename(columns = {'G':'Games', 'Yds': 'Passing Yards', 'Y/G': 'Passing Yards per game'}, inplace = True)
Rodgers_df_2018_2021
```

```
/var/folders/f7/h6f6nw5s67389vkvy6bbp0rc0000gn/T/ipykernel_25765/717503054.py:1: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  Rodgers_df_2018_2021.rename(columns = {'G':'Games', 'Yds': 'Passing Yards', 'Y/G': 'Passing Yards per game'}, inplace = True)
```

Out[27]:

	Year	Games	GS	Passing Yards	TD	Passing Yards per game
4	2018	16	16	4442	25	277.6
5	2019	16	16	4002	26	250.1
6	2020	16	16	4299	48	268.7
7	2021	16	16	4115	37	257.2

The averages of Rodgers passing yards, TDs, and passing yards per game for the last four seasons are below:

In [28]:
```
Rodgers_df_2018_2021['Passing Yards'].mean()
```

Out[28]:
```
4214.5
```

In [29]:
```
Rodgers_df_2018_2021['TD'].mean()
```

Out[29]:
```
34.0
```

In [30]:
```
Rodgers_df_2018_2021['Passing Yards per game'].mean()
```

Out[30]:
```
263.40000000000003
```

Taking into account Davante Adams' numbers from the past four seasons, here are my forecasted passing TDs, passing yards per game and total passing yards for Aaron Rodgers this upcoming season:

Rodgers passing TDs estimate for 2022 = Rodgers Average Passing TDs - Davante Adams Receiving TDs= 34.0-11.75=22.25

Rodgers passing yards per game estimate for 2022 = Rodgers Average Passing Yards per game - Davante Adams Average Receiving Yards per game = 263.40 - 92.68 = 170.7

Rodgers Total Passing Yards estimate for 2022 = 170.7*17= 2,902

It appears that Aaron Rodgers numbers will take a bit of a dive this year. Combine Davante Adams absence with the fact that the Packers didn't replace Adams with another top receiver and it will be difficult for Aaron Rodgers to win three straight MVP awards and take the Packers to a Super Bowl. From a fantasy and gambling standpoint, Rodgers does not seem as good of a play to bet on as prior years. But I wouldn't put anything past him.

Conclusion

Based on the above analysis, it is very likely that both the Packers offense and Aaron Rodgers will not have as good a season this year as they had the previous four years. It is going to take quite a team effort to try to make up for Davante Adams' production that is no longer there.

Notes

Note 1: The statistics for this analysis all came from https://www.pro-football-reference.com/.

Note 2: Davante Adams has 53 yards of receptions from 2018-2021 that came from QBs other than Aaron Rodgers. I did not take that into account during this analysis as it would not significantly impact the conclusions derived.