MODULE 9 ASSIGNMENT - DIMENSIONAL CONCEPTS OF STATISTICAL SITES

BY RANDY LEON

Live Updates: We're Tracking The Unresolved 2020 Races

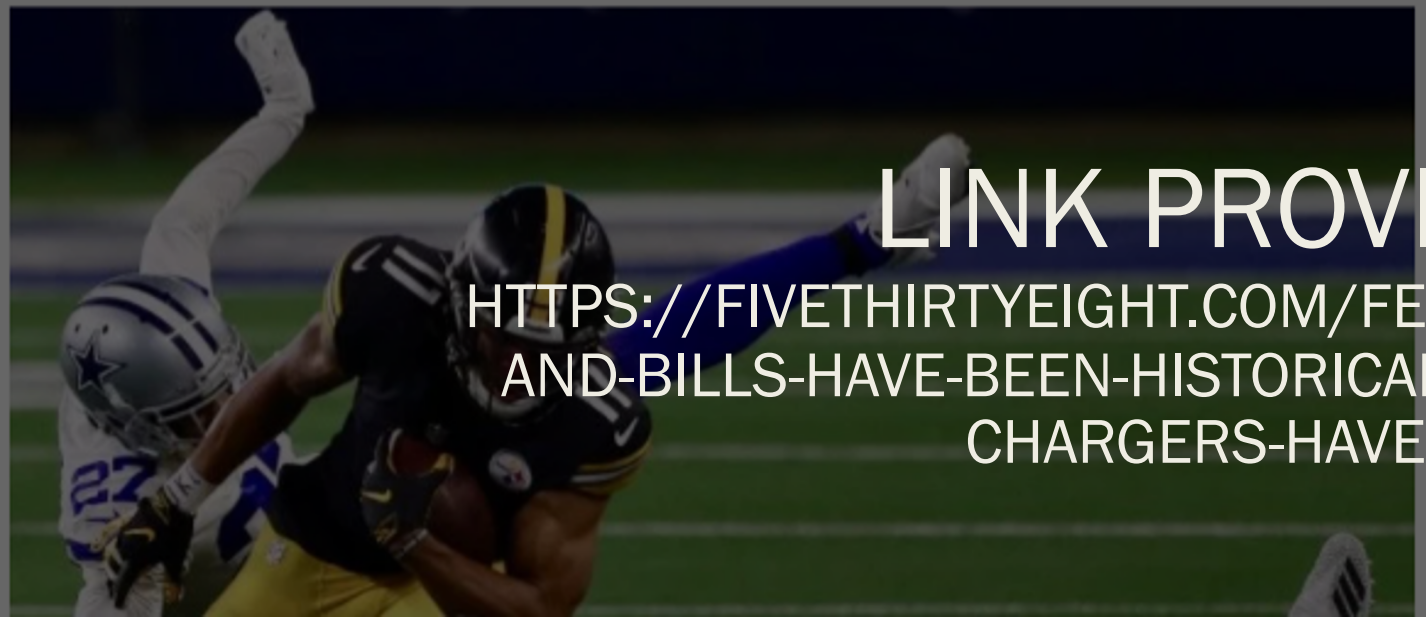
NOV. 12, 2020, AT 1:15 PM

Which NFL Teams Have Been The Luckiest — And The Unluckiest — This Season?

By Neil Paine

Filed under NFL

SINCE I AM REALLY INTO SPORTS, I'VE DECIDED TO CHOOSE AN ARTICLE TITLED: *WHICH NFL TEAMS HAVE BEEN THE LUCKIEST — AND THE UNLUCKIEST — THIS SEASON?*



LINK PROVIDED:

HTTPS://FIVETHIRTYEIGHT.COM/FEATURES/THE-STEELERS-AND-BILLS-HAVE-BEEN-HISTORICALLY-LUCKY-SO-FAR-THE-CHARGERS-HAVE-NOT/

RECOMMENDED

The Bills Haven't Been AFC East Champs In Josh Allen's Lifetime. Odds Are, That Change...

Why Trump Has A Better Chance Of Winning Pennsylvania Than Wisconsin Or Michigan

What's Wrong With The NFL's Best Teams?

What decision could the report help make?

- This report explores the use of the Pythagorean expectation (with respect to the National Football League), a theorem used to predict a team's win-loss record based on metrics such as this season's points scored, this season's points allowed, strength of current schedule(comparing the competing opponent's records), and previous year's record.
- These decisions may be used in supplement for live television analysts to give their take on which teams will do what come game day. While it is important to look at the matchups on game day on a case-by-case basis, (who is injured, what key players are looking in form/out of form, etc.) these reports can provide insight as to where the season is headed and what to look out for.
- When fans can normally attend games at full capacity, these numbers can also give ticket vendors a reason to mark up or discount their tickets. Usually, teams that do well have higher ticket prices because fans will pay more to see their team win than lose. You can bet that since the Steelers are 8-0, if fans are able to enter Heinz field, they will be willing to pay top dollar.

What do you suppose the grain of the underlying data?

- The article features a couple of analyses with slightly unrelated data.

FiveThirtyEight's NFL Elo ratings

How each team ranks through **Week 9** of the 2020 season, according to our quarterback-adjusted predictions

RK	TEAM	STARTING QB	QB RK*	ELO RATING	PROJ. RECORD	CHANCE TO ... MAKE PLAYOFFS	WIN DIV.	WIN SB
1	Chiefs	Mahomes	1	1735	13-3	>99%	92%	24%
2	Saints	Brees	3	1668	12-4	96	80	14
3	Ravens	Jackson	7	1659	12-4	95	20	7
4	Steelers	R'lisberger✚	9	1638	14-2	>99	78	15
5	Packers	Rodgers	5	1628	12-4	96	81	9
6	Seahawks	Wilson	4	1617	11-5	93	60	8
7	Bills	Allen	8	1607	11-5	94	87	4
8	Bucs	Brady	16	1593	10-6	80	20	5
9	Titans	Tannehill	11	1578	11-5	83	70	2
10	Rams	Goff	15	1558	9-7	63	20	2
11	Cardinals	Murray	2	1554	9-7	63	19	2
12	Colts	Rivers	18	1551	9-7	48	29	1
13	Raiders	Carr	10	1548	10-6	62	8	1
14	49ers	Mullens	29	1519	7-9	17	2	<1
15	Bears	Foles	22	1517	9-7	57	16	1
16	Browns	Mayfield✚	24	1515	10-6	56	2	<1
17	Vikings	Cousins	23	1510	7-9	24	2	<1
18	Falcons	Ryan	12	1506	6-10	2	<1	<1
19	Patriots	Newton	19	1505	7-9	12	2	<1
20	Dolphins	Tagovailoa	27	1485	9-7	38	11	<1
21	Broncos	Lock	28	1484	6-10	6	<1	<1
22	Eagles	Wentz	25	1483	7-8-1	71	71	<1
23	Chargers	Herbert	13	1456	5-11	1	<1	<1
24	Texans	Watson	6	1449	5-11	3	1	<1
25	Panthers	Bridgewater	14	1431	6-10	3	<1	<1
26	Bengals	Burrow	20	1430	5-10-1	2	<1	<1
27	Wash.	Smith	21	1410	5-11	17	16	<1
28	Lions	Stafford✚	17	1400	6-10	5	<1	<1
29	Giants	Jones	26	1367	4-12	7	7	<1
30	Cowboys	Dalton✚	31	1316	4-12	6	6	<1
31	Jets	Darnold✚	30	1296	2-14	<1	<1	<1
32	Jaguars	Luton	32	1208	2-14	<1	<1	<1

Justin Herbert should be winning more ballgames

NFL quarterbacks arranged by an updated version of the Rivers Index — the biggest shortfalls between actual and expected wins (based on QB stats) — through a season's first eight games, 1960-2020

QUARTERBACK	SEASON	TEAM	STARTS	AVG. GAME VALUE*	QB WINS ACTUAL	QB WINS PREDICTED	RIVERS INDEX
Archie Manning	1980	NO	8	+31.7	0	4.4	-4.4
Jeff Garcia	2000	SF	8	+165.3	2	6.4	-4.4
Steve DeBerg	1985	TB	8	+9.0	0	3.9	-3.9
Brett Favre	2005	GB	8	+74.0	1	4.9	-3.9
Derek Carr	2014	OAK	8	-2.6	0	3.9	-3.9
Cam Newton	2011	CAR	8	+109.4	2	5.8	-3.8
Justin Herbert	**2020**	**LAC**	**7**	**+85.3**	**1**	**4.8**	**-3.8**
Jim Hart	1978	ARI	7	+12.0	0	3.7	-3.7
Ryan Fitzpatrick	2010	BUF	6	+56.3	0	3.7	-3.7
Philip Rivers	2015	LAC	8	+101.9	2	5.6	-3.6
Warren Moon	1984	TEN	8	-19.5	0	3.6	-3.6
Andy Dalton	2019	CIN	8	-34.8	0	3.6	-3.6
Steve DeBerg	1979	SF	8	+31.3	1	4.6	-3.6
Matt Ryan	2019	ATL	7	+76.2	1	4.5	-3.5
Joe Ferguson	1984	BUF	6	+37.7	0	3.5	-3.5
Steve Pelluer	1988	DAL	8	+82.7	2	5.4	-3.4
Jeff George	1991	IND	8	-39.8	0	3.3	-3.3
Carson Palmer	2007	CIN	8	+84.5	2	5.3	-3.3
Roman Gabriel	1975	PHI	7	+45.7	1	4.2	-3.2
Matt Ryan	2013	ATL	8	+76.9	2	5.2	-3.2

Who's winning more than their margins predict?

2020 NFL teams by gap between actual wins and wins predicted by the Pythagorean expectation

TEAM	WINS ACTUAL	WINS PYTHAG	DIFF	TEAM	WINS ACTUAL	WINS PYTHAG	DIFF
PIT	8.0	5.7	+2.3	ARI	5.0	5.2	-0.2
BUF	7.0	4.7	+2.3	IND	5.0	5.2	-0.2
CLE	5.0	3.3	+1.7	NE	3.0	3.3	-0.3
SEA	6.0	4.6	+1.4	MIA	5.0	5.5	-0.5
TEN	6.0	4.7	+1.3	MIN	3.0	3.6	-0.6
KC	8.0	6.7	+1.3	DAL	2.0	2.7	-0.7
OAK	5.0	3.8	+1.2	SF	4.0	4.9	-0.9
NO	6.0	4.9	+1.1	HOU	2.0	3.0	-1.0
GB	6.0	5.0	+1.0	CIN	2.5	3.5	-1.0
CHI	5.0	4.2	+0.8	WSH	2.0	3.0	-1.0
TB	6.0	5.6	+0.4	CAR	3.0	4.1	-1.1
DEN	3.0	3.0	+0.0	NYG	2.0	3.1	-1.1
BAL	6.0	6.0	+0.0	NYJ	0.0	1.2	-1.2
PHI	3.5	3.5	+0.0	ATL	3.0	4.3	-1.3
DET	3.0	3.1	-0.1	JAX	1.0	2.5	-1.5
LAR	5.0	5.1	-0.1	LAC	2.0	3.8	-1.8

The luckiest 8-0 teams?

Among NFL teams that started 8-0 since 1960, largest gaps between actual and expected record (based on the Pythagorean expectation*)

YEAR	TEAM	RECORD	POINTS SCORED	POINTS ALLOWED	PYTHAG. W	DIFF. VS EXP.
2006	Colts	8-0	232	173	5.3	+2.7
2015	Panthers	8-0	228	165	5.5	+2.5
1990	49ers	8-0	198	138	5.6	+2.4
2020	**Steelers**	**8-0**	**235**	**161**	**5.7**	**+2.3**
2011	Packers	8-0	275	179	5.9	+2.1
2012	Falcons	8-0	220	143	5.9	+2.1
2015	Bengals	8-0	229	142	6.1	+1.9
2018	Rams	8-0	264	155	6.2	+1.8
1998	Broncos	8-0	273	159	6.3	+1.7
2009	Saints	8-0	303	174	6.3	+1.7

What do you suppose the grain of the underlying data? ii

- In FiveThirtyEight's Elo ranking chart, the grain consists of 2020 starting quarterbacks for each NFL teams.

- In "The Luckiest 8-0 teams," by Pro Football Reference, the grain consists only of NFL teams that have been 8-0 since 1960.

- In "Justin Herbert should be winning more ballgames" by Pro Football Reference, the grain is quarterbacks with "the biggest shortfalls between actual and expected wins (based on QB stats) — through a season's first eight games, 1960-2020".

- In "**Who's winning more than their margins predict?" by** Pro Football Reference, the grain is simply NFL teams' abbreviations.

What are the measure(s) and dimension(s) on the report?

- In FiveThirtyEight's Elo ranking chart, team and starting QBs are the dimensions and measures are QB rank, Elo ranking, projected record, %age to make playoffs, %age to make division, and %age to win the Super Bowl.

- In "The Luckiest 8-0 teams," by Pro Football Reference, dimension is NFL team, and measures are year, record, points scored, points allowed, Pythagorean Theorem expected wins, and the difference between actual wins and Pythagorean Theorem expected wins.

- In "Justin Herbert should be winning more ballgames" by Pro Football Reference, Quarterback and Team are dimensions while season, starts, average game value, actual QB wins, predicted QB wins, and Rivers Index are the measures.

- In "**Who's winning more than their margins predict?" by** Pro Football Reference, NFL team abbreviation is the dimension, and actual wins, Pythagorean Theorem wins, and the difference of actual wins between Pythagorean wins are the measures.

If you were to add additional measures, levels, and/or dimensions, what would they be? Would this allow users to make better decisions?

- In FiveThirtyEight's Elo ranking chart, I would have added the measure of average QB rating to better compare the relative performances of quarterbacks to one another. This would allow users to help make the decision of seeing what quarterback truly deserved their Elo ranking by incorporating personal stats and having more evidence to determine who is a better quarterback.

- In "The Luckiest 8-0 teams," by Pro Football Reference, I would add the measure of "Strength of schedule" which measures the records of the opponents being faced. If one 8-0 team has a harder schedule than another, than that 8-0 record was harder to earn than another team's 8-0 run.

- In "Justin Herbert should be winning more ballgames" by Pro Football Reference, both the previous measures of average QB rating to compare relative performance of Quarterbacks and Strength of Schedule to gauge how close the games

- In "**Who's winning more than their margins predict?" by** Pro Football Reference, I would have added the starting quarterback as a dimension so that I could tie together the analyses with the other entities. Some entities share 2020 as a common season so in theory all these entities could be linked together.