Analysis of Winning in the 2019-2020 NFL Regular Season

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Introduction

· Topic
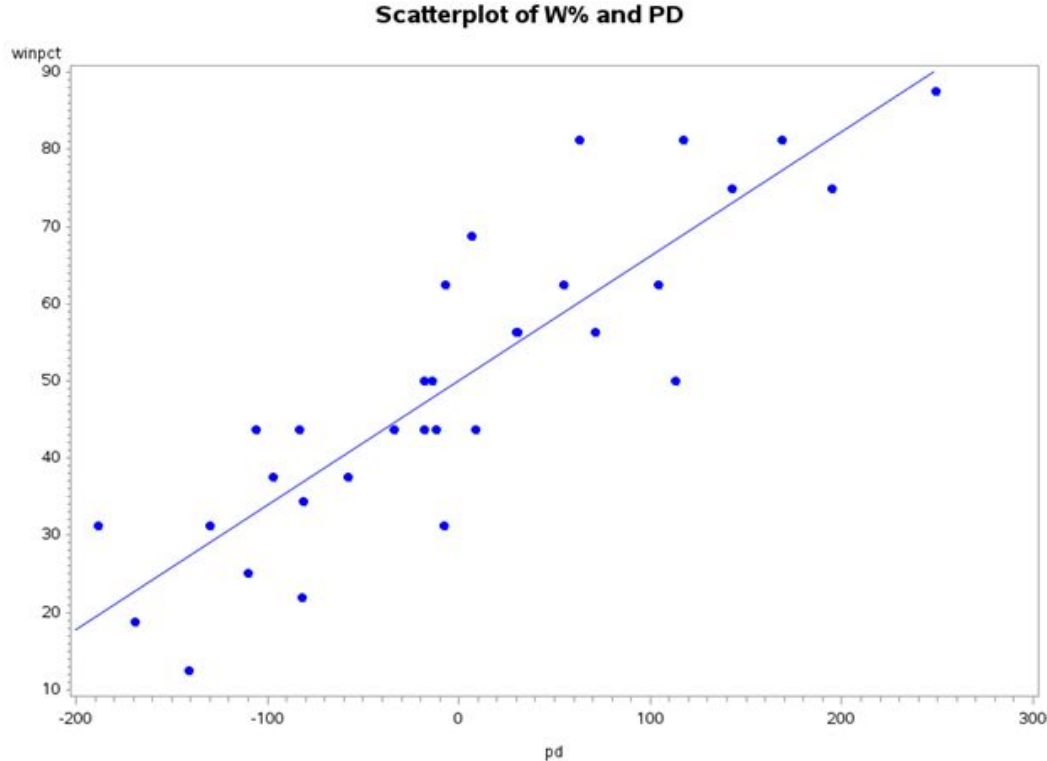

you play to win the game!

Introduction

- Variables of interest: win percentage, point differential, playoff appearance, and coaching change.

- This talk's main focus: Is point differential (point scored - point allowed) a good predictor for win percentage?

- Data: obtained from pro-football-reference.com

Team	Conference	Division	Wins	Losses	Ties	Playoffs

PS	YG	TDS	PA	YA	TDA	NewCoach	WinPct	PD	YD	TDD

Analysis: Win Percentage vs. Point Differential

- Exploratory Data Analysis

Scatterplot of W% and PD
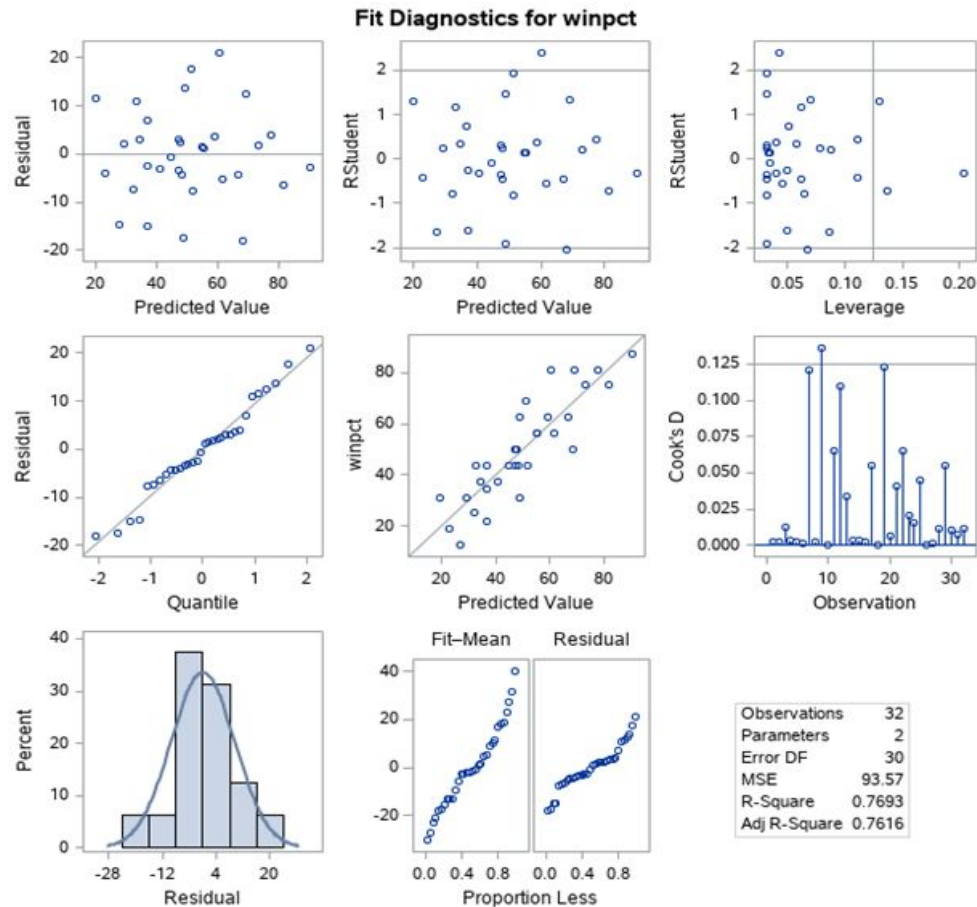
Model

- Linear Regression

- WinPct = 50 + 0.161*PD

- What do the slope and intercept tell us?

		Parameter Estimates					
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	95% Confidence Limits	
Intercept	1	50.00000	1.70999	29.24	<.0001	46.50774	53.49226
pd	1	0.16135	0.01613	10.00	<.0001	0.12841	0.19430

Assumptions

- Linearity

- Constant variance

- Normality

Fit Diagnostics for winpct

Case Study: The 2019 Chicago Bears

· 8-8 record (50% win percentage), -18 point differential

· According to our model...

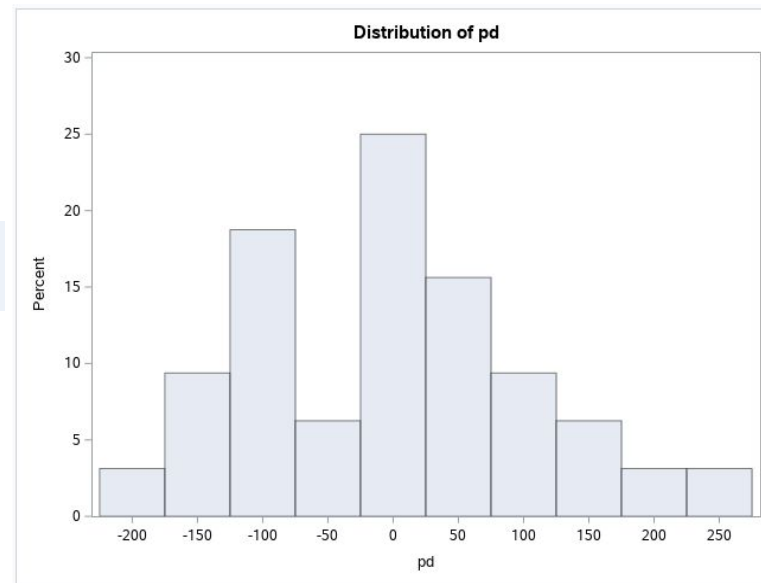|			**Output Statistics**					
Obs	**Dependent Variable**	**Predicted Value**	**Std Error Mean Predict**	**95% CL Mean**		**95% CL Predict**		**Residual**
1	34.4	36.9306	2.1521	32.5354	41.3257	16.6923	57.1688	-2.5556
2	43.8	47.0957	1.7345	43.5534	50.6379	27.0254	67.1660	-3.3457
3	87.5	90.1764	4.3656	81.2605	99.0922	68.5024	111.8503	-2.6764
4	62.5	58.8743	1.9265	54.9399	62.8087	38.7311	79.0175	3.6257
5	31.3	29.0244	2.7059	23.4982	34.5506	8.5108	49.5380	2.2256
6	50.0	47.0957	1.7345	43.5534	50.6379	27.0254	67.1660	2.9043
7	12.5	27.2495	2.8457	21.4379	33.0611	6.6572	47.8419	-14.7495
8	37.5	40.6417	1.9492	36.6608	44.6225	20.4893	60.7940	-3.1417

Other Results

- Mean point differential for playoff teams is 159.6 points greater than mean point differential of non-playoff teams (99.75 vs. -59.85).

Analysis Variable : pd						
Playoffs	N Obs	Mean	Std Dev	Median	Minimum	Maximum
No	20	-59.850	73.0128	-69.500	-188.000	113.000
Yes	12	99.750	78.1806	87.500	-7.000	249.000

- There is *in*sufficient evidence for an association between whether a team hired a new coach and whether that team made the playoffs (Fisher's Exact test, p-value = 0.2045).

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Thanks!

· Good luck with Finals!