What Are The Benefits Of Zone Coverage And Coverage As A Whole In The NFL?

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Introduction

For long, coverage in football has been thought of as just that, coverage. Whenever the common fan thinks of coverage, we automatically think of man-to-man, in which cornerbacks, safeties, and linebackers are assigned to one specific man to cover. However, there is another method, zone coverage, in which defenders are assigned to certain areas of the field. Each strategy comes with pros and cons, just like any other. When viewed separately, one may see flaws in each strategy, which is why teams utilize both, resulting in their overarching coverage scheme.

In this paper, our goal is to explain the benefits of the lesser-known coverage, zone, along with examining which aspect of defense is most important: run defense, pass-rush, or coverage. We focus on man and zone PFF grades, one of the best ways to evaluate secondary play available to the public, and demonstrate the relationship of coverages to different aspects of a team, including run defense, pass rush, points allowed, and much more. All data comes from PFF, nflfastR, and Spotrac, and a minimum snap requirement of at least 50 snaps was widely used.

A Simple Glance At Man Coverage vs. Zone Coverage

Utilizing the sapply() function in R to find the mean value of multiple coverage stats, the abilities of zone and man were measured.

	2018	2019	2020	Averages
Man PFF Grade	61.1	60.03	57.83	59.65
Zone PFF Grade	63.1	61.84	59.42	61.45
Man Yds/Cov Snap	1.14	1.04	1.03	1.07
Zone Yds/Cov Snap	1.08	1.05	1.07	1.07
Man Interceptions	0.29	0.31	0.27	0.29
Zone Interceptions	0.61	0.55	0.55	0.57
Man Rate	30.49%	32.69%	30.41%	31.20%
Zone Rate	62.14%	60.06%	62.83%	61.68%

Through PFF grade, it's witnessed zone presents a marginal, likely negligible benefit. Yards/Coverage Snap presents the same value, making that a wash. Zone interceptions are about doubled, but zone is utilized at almost twice the rate, explaining the difference in interception count. Overall, it's seen zone is played more often and presents a very minimal benefit for teams in PFF grade, but not much else.

What's More Important? A Good Pass-Rush, Run Defense, Or Secondary?

	2018 Wins	2019 Wins	2020 Wins	Average Correlation
Run Defense Grade	0.38	0.26	0.29	0.31
Pass Rush Grade	0.5	0.24	0.2	0.31
Man Grade	0.49	0.04	0.17	0.23
Zone Grade	0.04	0.06	0.34	0.15
Coverage Grade	0.55	0.68	0.41	0.55

	2018 Points Allowed	2019 Points Allowed	2020 Points Allowed	Average Correlation
Run Defense Grade	-0.57	-0.44	-0.53	-0.51
Pass Rush Grade	-0.31	-0.31	-0.47	-0.36
Man Grade	-0.52	-0.34	-0.37	-0.41
Zone Grade	0.05	-0.08	-0.59	-0.21
Coverage Grade	-0.66	-0.81	-0.63	-0.7

Using weighted means of PFF grades by snaps played, it's found that in the past three years, having a good secondary is most important to defensive play and wins, but it must be viewed as a whole, not in two. Each facet is relatively important, but run defense and pass rush do not have the same strength of association as coverage.

Does Run Defense Or Pass Rush Affect The Secondary?

	2018 Cov PFF Grade	2019 Cov PFF Grade	2020 Cov PFF Grade	Average Correlation
Same Year Run Defense Grade	0.29	0.32	0.53	0.38
Same Year Run Stop%	0.37	0.02	0.38	0.26
	2018 Yds/Cov S	2019 Yds/Cov S	2020 Yds/Cov S	Average Correlation
Same Year Run Defense Grade	-0.14	-0.36	-0.49	-0.33
Same Year Run Stop%	-0.35	-0.1	-0.39	-0.28
	2018 Cov PFF Grade	2019 Cov PFF Grade	2020 Cov PFF Grade	Average Correlation
Same Year Pass Rush Grade	0.27	0.33	0.24	0.28
Same Year PRWR	0.28	0.34	0.29	0.3
	2018 Yds/Cov S	2019 Yds/Cov S	2020 Yds/Cov S	Average Correlation
Same Year Pass Rush Grade	-0.17	-0.31	-0.43	-0.3
Same Year PRWR	-0.2	-0.29	-0.45	-0.28

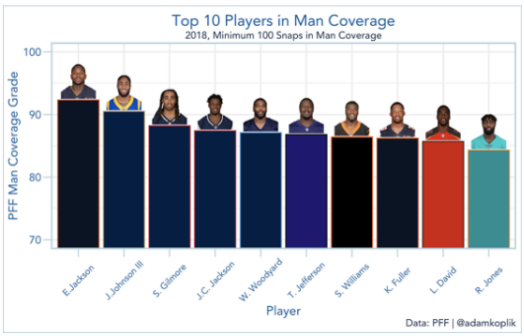
Using weighted means again, the correlation of pass rush and run defense to coverage statistics was analyzed to see if one has a greater association than the other. However, no meaningful results were found, as both played equal importance, indicating both are necessary in today's NFL.

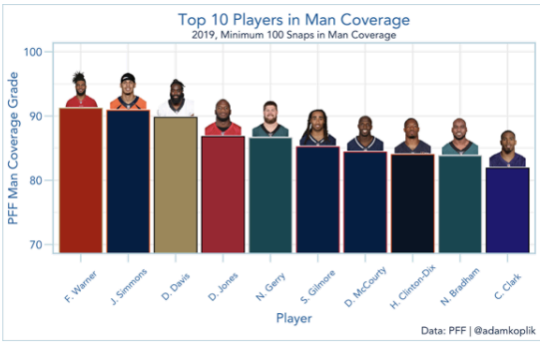
Do Certain Positions Benefit From Zone?

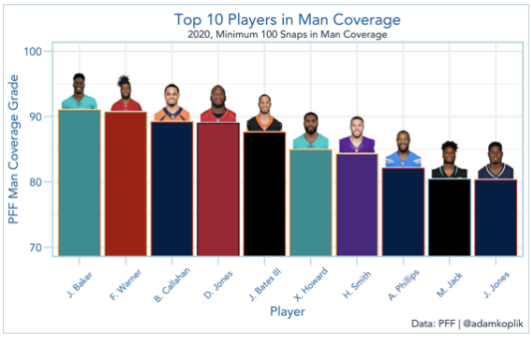
	2018 (Zone PFF Grade - Man PFF Grade)	2019	2020	Average
CB	8.65	10.6	12.4	10.55
LB	-5.63	-7.9	-10.8	-8.11
S	0.498	-1.32	-1.94	-0.92

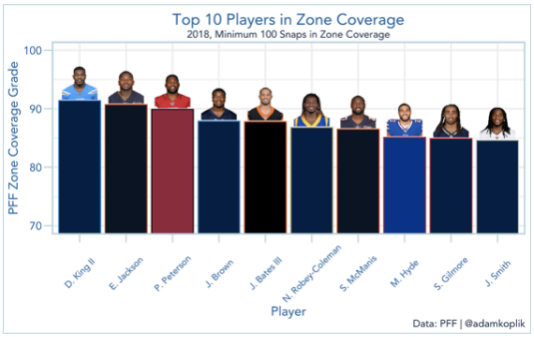
We found the average PFF zone coverage grade for each position and subtracted the average PFF man coverage grade for said position in each of the past three years. On average, cornerbacks significantly benefit from playing more zone (+10.55) whereas linebackers are harmed (-8.11). Safeties don't seem to be impacted one way or the other (-0.92).

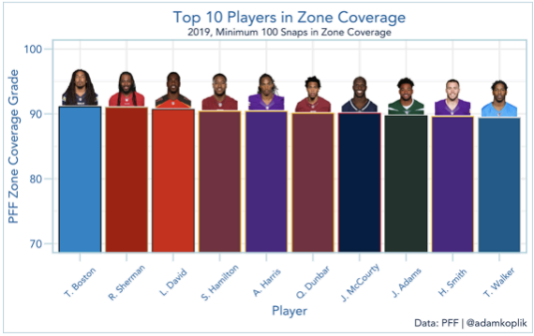
Who Are The Best Players In Zone? In Man?

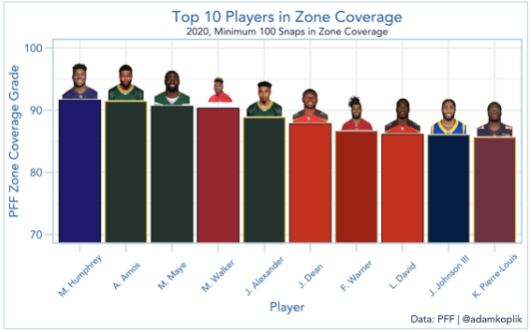

Top 10 Players in Man Coverage
2018, Minimum 100 Snaps in Man Coverage
PFF Man Coverage Grade
100
90
80
70
E.Jackson
J.Johnson III
S. Gilmore
J.C. Jackson
W. Woodyard
T. Jefferson
S. Williams
K. Fuller
L. David
R. Jones
Player
Data: PFF | @adamkoplik

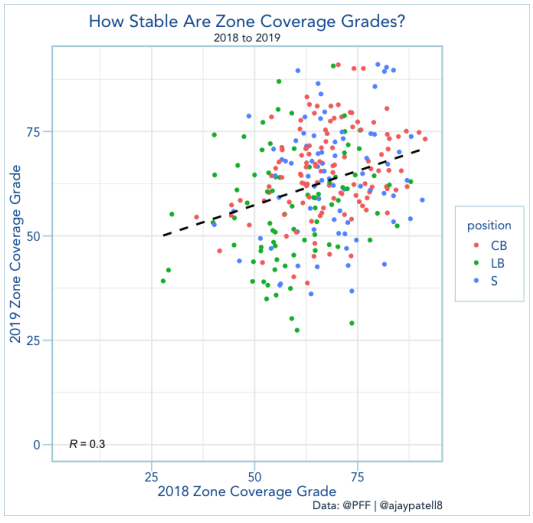

Top 10 Players in Man Coverage
2019, Minimum 100 Snaps in Man Coverage
PFF Man Coverage Grade
100
90
80
70
F. Warner
J. Simmons
D. Davis
D. Jones
N. Gerry
S. Gilmore
D. McCourty
H. Clinton-Dix
N. Bradham
C. Clark
Player
Data: PFF | @adamkoplik

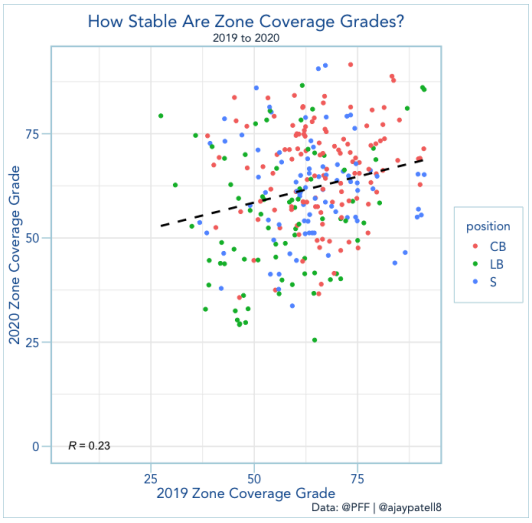

Top 10 Players in Man Coverage
2020, Minimum 100 Snaps in Man Coverage
PFF Man Coverage Grade
100
90
80
70
J. Baker
F. Warner
B. Callahan
D. Jones
J. Bates III
X. Howard
H. Smith
A. Phillips
M. Jack
J. Jones
Player
Data: PFF | @adamkoplik


Top 10 Players in Zone Coverage
2018, Minimum 100 Snaps in Zone Coverage
PFF Zone Coverage Grade
100
90
80
70
D. King II
E. Jackson
P. Peterson
J. Brown
J. Bates III
N. Robey-Coleman
S. McManis
M. Hyde
S. Gilmore
J. Smith
Player
Data: PFF | @adamkoplik


Top 10 Players in Zone Coverage
2019, Minimum 100 Snaps in Zone Coverage
PFF Zone Coverage Grade
100
90
80
70
T. Boston
R. Sherman
L. David
S. Hamilton
A. Harris
Q. Dunbar
J. McCourty
J. Adams
H. Smith
T. Walker
Player
Data: PFF | @adamkoplik


Top 10 Players in Zone Coverage
2020, Minimum 100 Snaps in Zone Coverage
PFF Zone Coverage Grade
100
90
80
70
M. Humphrey
A. Amos
M. Maye
M. Walker
J. Alexander
J. Dean
F. Warner
L. David
J. Johnson III
K. Pierre-Louis
Player
Data: PFF | @adamkoplik


How Stable Are Zone Coverage Grades?
2018 to 2019
2019 Zone Coverage Grade
75
50
25
0
R = 0.3
25
50
75
2018 Zone Coverage Grade
position
CB
LB
S
Data: @PFF | @ajaypatell8

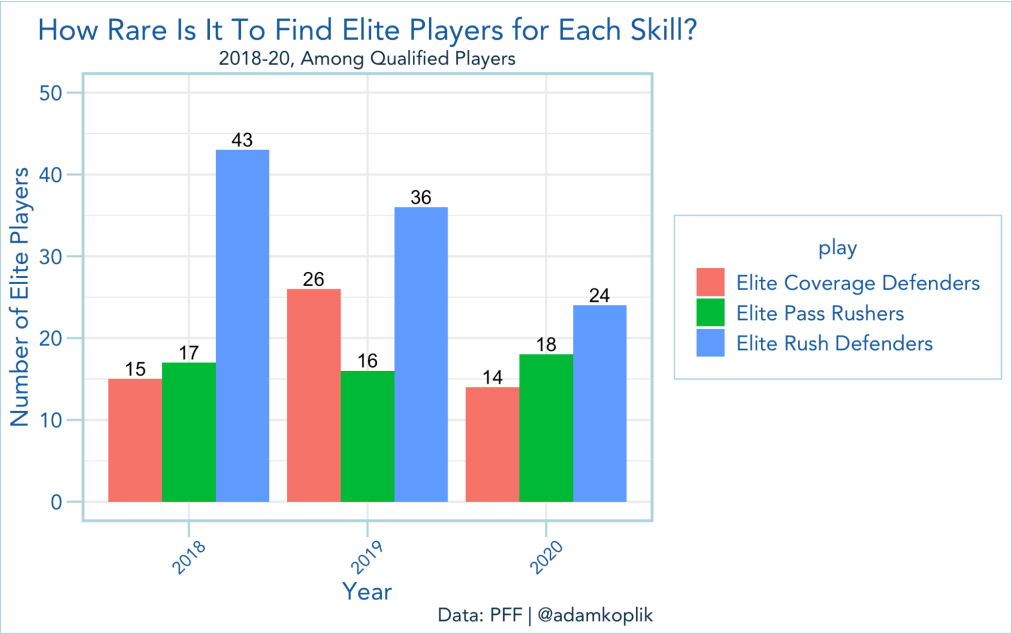

How Stable Are Zone Coverage Grades?
2019 to 2020
2020 Zone Coverage Grade
75
50
25
0
R = 0.23
25
50
75
2019 Zone Coverage Grade
position
CB
LB
S
Data: @PFF | @ajaypatell8

The best players in man/zone vary by year, though grades are somewhat stable. There seems to be a great variety of teams as well, but it's interesting that pairs of teammates are routinely near the top, showing that elite coverage players improve their teammates' production.

What Positions Should Teams Invest Resources In?

	2018 Wins	2019 Wins	2020 Wins	Average Correlation
Defensive Line	-0.13	-0.061	0.35	0.053
Linebackers	0.11	0.0052	0.023	0.046
Secondary	0.1	0.11	0.068	0.093

	2018 Points Allowed	2019 Points Allowed	2020 Points Allowed	Average Correlation
Defensive Line	0.16	-0.051	-0.34	-0.077
Linebackers	-0.26	0.093	-0.051	-0.073
Secondary	-0.13	-0.36	-0.066	-0.185



To answer the question, we used Spotrac to view the positional spending from the past few years. We then checked to see if there was a correlation between spending on any of the three defensive positional groups and wins or points allowed. Overall, there doesn't seem to be a huge correlation on spending on particular positions, however there was a greater correlation between secondary spending and wins/better defenses than any other position.

It's known that better players create better defenses, but the question arises: what positions should teams invest assets to acquire these elite players? To see, we checked to see the scarcity of elite players at three respective skills: run stuffers, pass rushers, and coverage. "Elite"was defined by how many players had a PFF grade greater than 90% of the maximum grade for that year. We found that elite run stuffers are significantly easier to find than the other two. While every part of defense - stopping the run, pass rush, and coverage - is extremely important, teams only have a finite number of resources. Spending high draft picks or a lot of money on replaceable run stuffers will lead to a depleted secondary and/or pass rush, and that's before considering what it will do to the offense. Finding elite coverage defenders is almost as rare as finding elite pass rushers, but have a greater effect on the game..

Conclusion

Obviously, stopping the run and pass are both key factors in the NFL, and each have a significant effect on the defense's quality. However, as a whole, we found that the most important factor to a good defense is coverage. The final question showed, beyond a doubt, that teams need to be investing resources into coverage players.

These findings can be used to help teams divvy up resources. While coverage players should be prioritized, which kind of coverage they excel at needs to be thought of. For example, cornerbacks significantly benefited from zone while linebackers benefited from man. Teams can look at that a couple ways - should they find more man corners since they're rarer, or more zone corners since the position benefits. On the whole, an elite secondary can help every facet of the defense. It will create coverage sacks, it will force the offense to keep the ball on the ground, and it will lead to wins.

Zone and man both hold their own benefits based on different situations. Man allows for more schemes, but zone has marginal benefits across the board. One thing is for sure: invest in coverage.