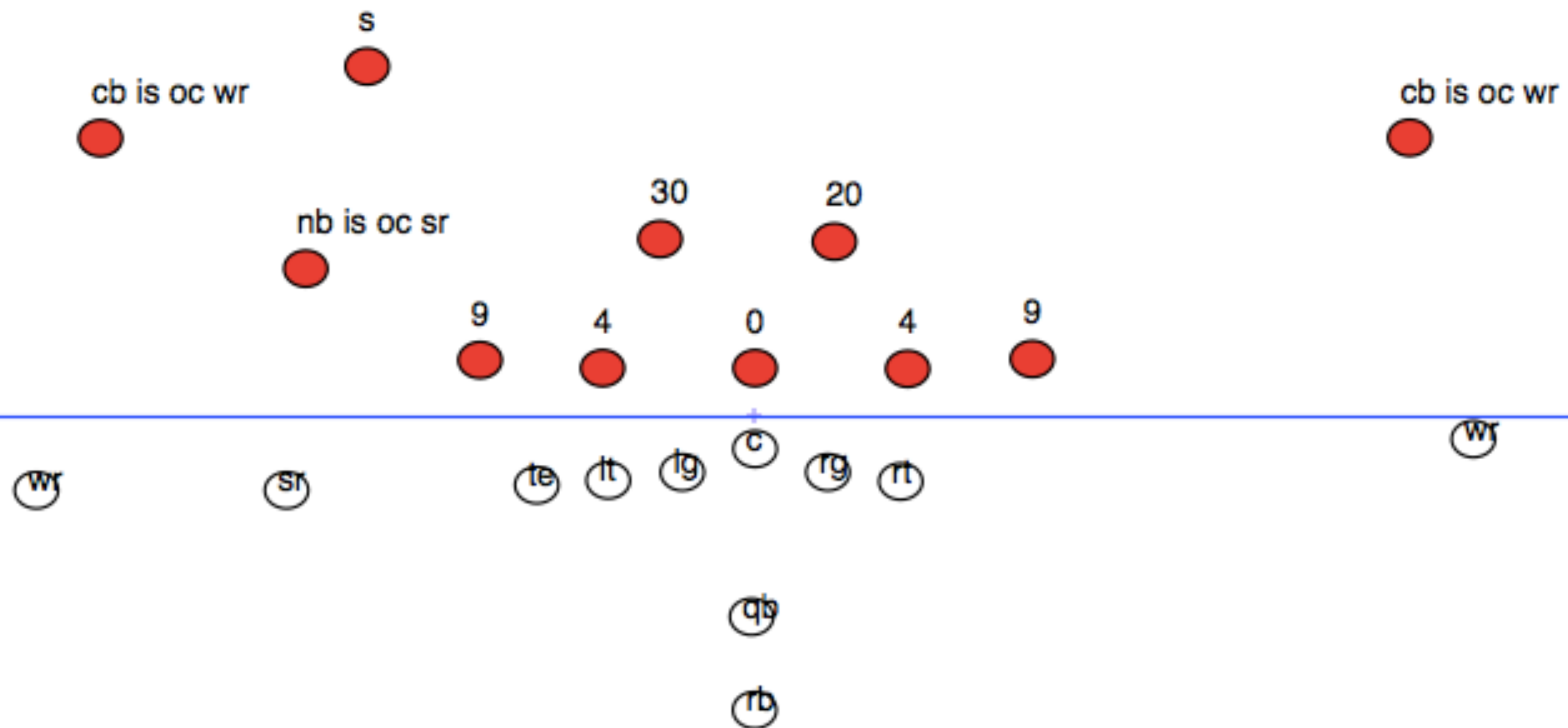# Run, pass, punt, or blitz
Predicting NFL plays from geospatial player data

A-Lab 2015 - Telemetry Sports, Indianapolis, IN
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Setting the stage

1. To predict plays, we must first understand who is playing which position. We created an algorithm to automatically classify player positions based on the line up at the start of a play.
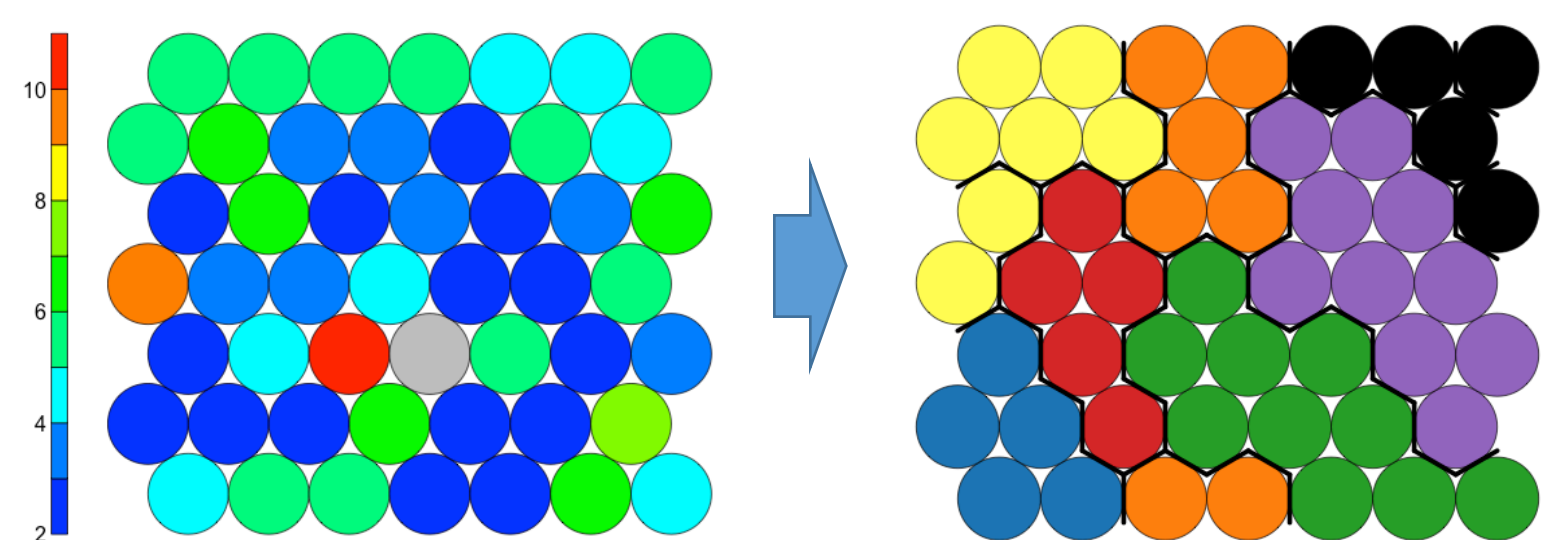

2. From there, it is possible to analyze plays and their outcomes to identify the best offensive play calls for a given defensive line up and the best blitz package for a given offensive line up.

Offense

3. We describe mathematically offensive plays by the offensive player routes
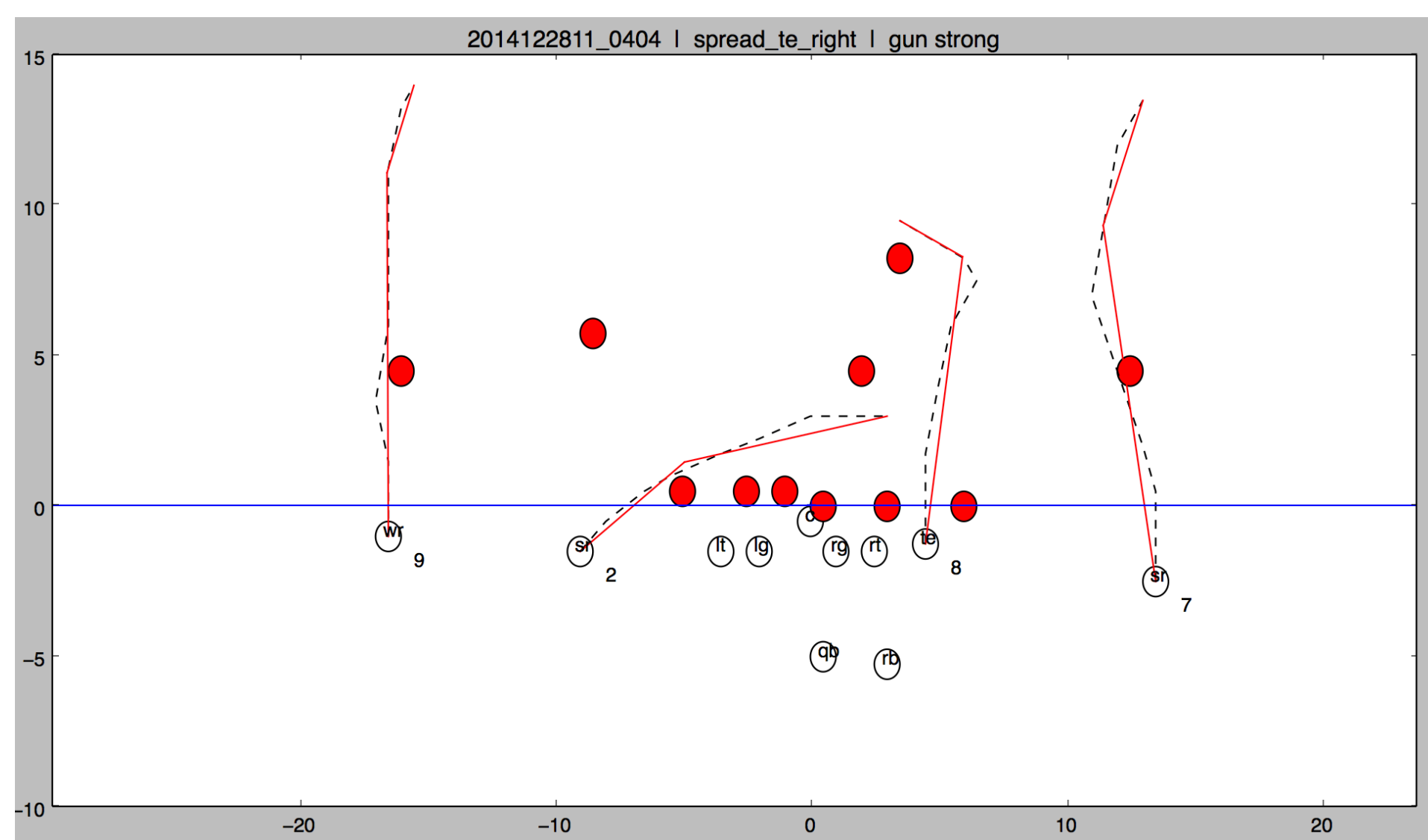

4. We then cluster plays with a neural network and calculate play statistics

| Key: Cluster Type	Completions	Plays	Yards	Yds/Play	Comp. %	Yds/Comp	INT
Max Protect, Deep	23	45	494	11.0	51.1	21.5	1
Intermediate	24	34	236	6.9	70.6	9.8	0
Multiple Routes, Deep	15	21	263	12.5	71.4	17.5	1
Short/Intermediate	32	52	391	7.5	61.5	12.2	0
Intermediate/Deep	22	36	254	7.1	61.1	11.5	3
Short/Intermediate	12	20	180	9.0	60.0	15.0	2
Screens	20	23	93	4.0	87.0	4.7	0

Defense

5. We cluster defensive blitzes by which 'gaps' are used in each blitz
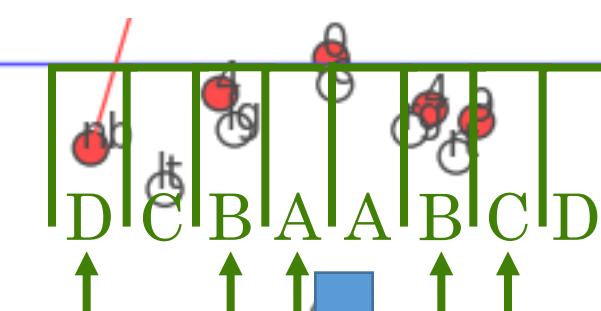
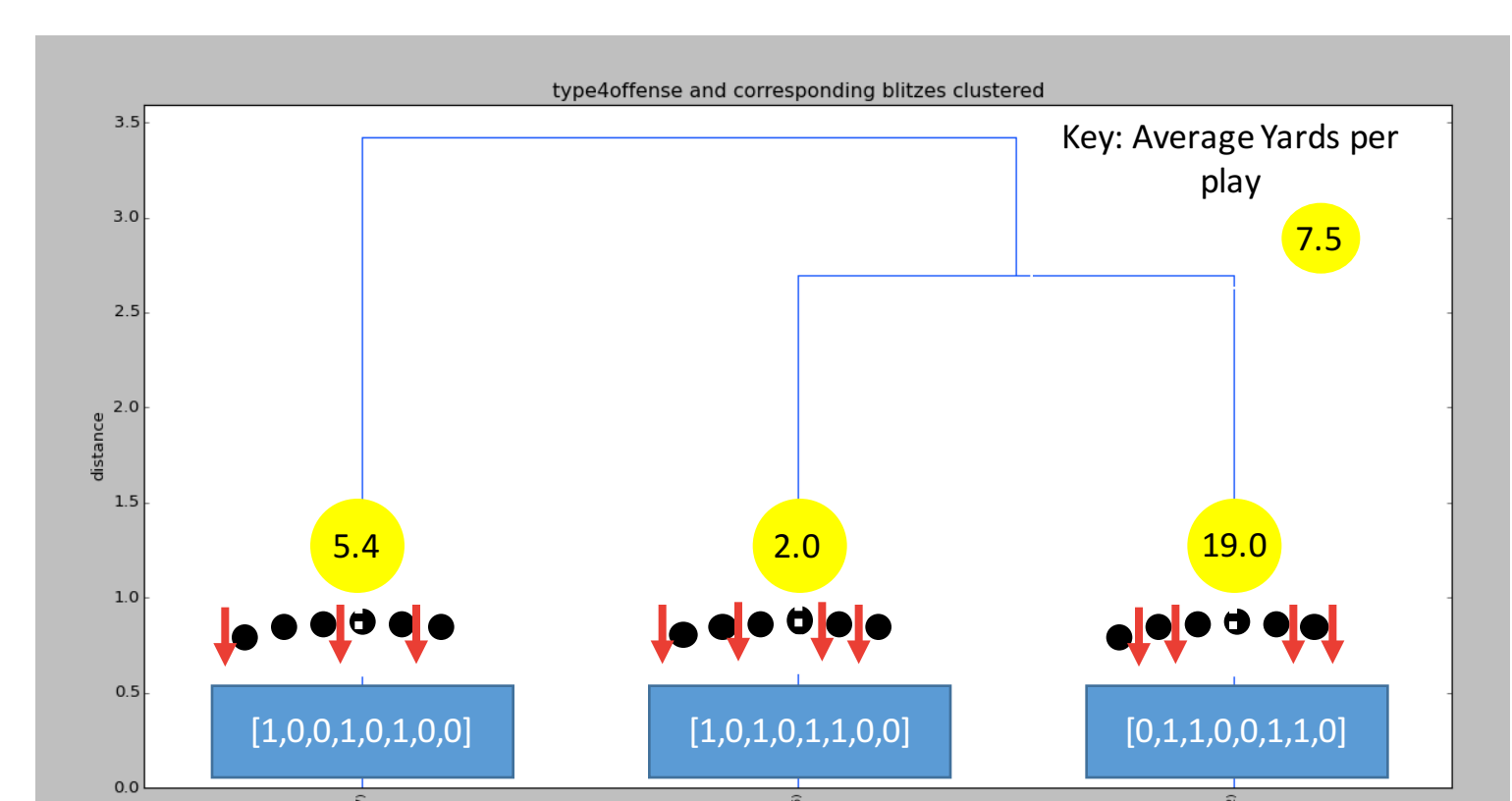6. We cluster offensive line ups to evaluate blitz effectiveness by offensive line up
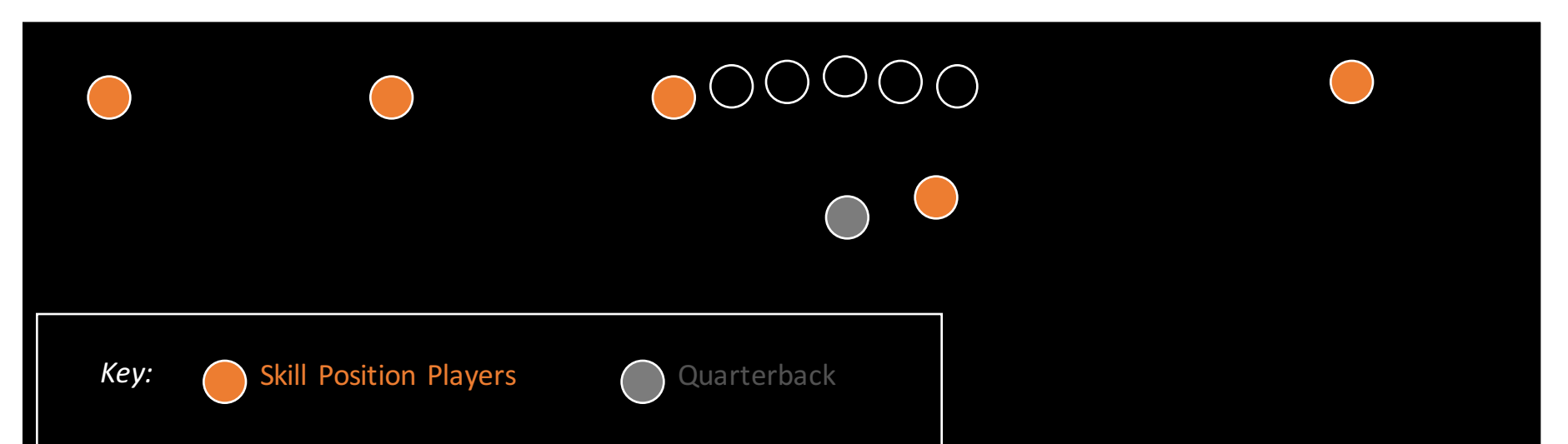
7. We finish by calculating statistics on offensive yards gained against each blitz

Added Value for Coaches

8. Understanding the optimal play against each formation can improve offensive and defensive decision-making, leading to higher success rates and better outcomes for teams