



GRAND LEDGE READOUT

THE PURDUE TEAM

**HOW DID WE
GET HERE?**

GOALS &
OBJECTIVES

GOALS

Primary Goal

BEAT DEWITT!!

Secondary Goals (Even if Dewitt wins)

- 1) Show improvement in limiting explosive plays
- 2) Stunt Dewitt's offense and decrease their offensive output
- 3) Decrease their margin of victory (Stay within one score)

OBJECTIVE

- GET: Grand Ledge
- TO: Beat Dewitt
- BY: Using analytics to find and exploit their weaknesses
and emphasize your strengths

DEFENSE



WHAT YOU ALREADY DO WELL

- You do a good job against them on 1st down
- Can create pressure against a good O-line
- Have the ability to slow down their offense i.e., 2017

DEFENSIVE DATA

DEWITT'S MOST COMMON PLAYS AND FORMATIONS

TOP Offensive Formations

OFF FORM	AVG YARDS	% USED
THUNDER	6.62	21%
4 WIDE	12.44	18%
LIGHTNING	9.71	12%
WISHBONE	4.00	8%
SINGLE WING	9.17	5%
OPEN LEFT	5.08	3%
ACE	8.90	3%
TROJAN RIGHT	7.33	3%
TRIPS RIGHT	-0.13	2%
TWINS SPLIT	0.29	2%

TOP Offensive Plays

OFF PLAY	AVG YARDS	% USED
24 ISO	6.09	6.45%
25 ISO	9.06	5.28%
93	18.75	4.69%
JET 18	4.77	3.81%
FB Dive	3.54	3.81%
14 SINGLE OMAHA	3.23	3.81%
JET 19	5.50	3.52%
15 SINGLE OMAHA	7.73	3.23%
JET 93	11.25	2.35%
50 ALL SEAM	10.00	2.05%
91	7.43	2.05%
62 FLORIDA	9.57	2.05%
JET 26 QB POWER READ	19.14	2.05%

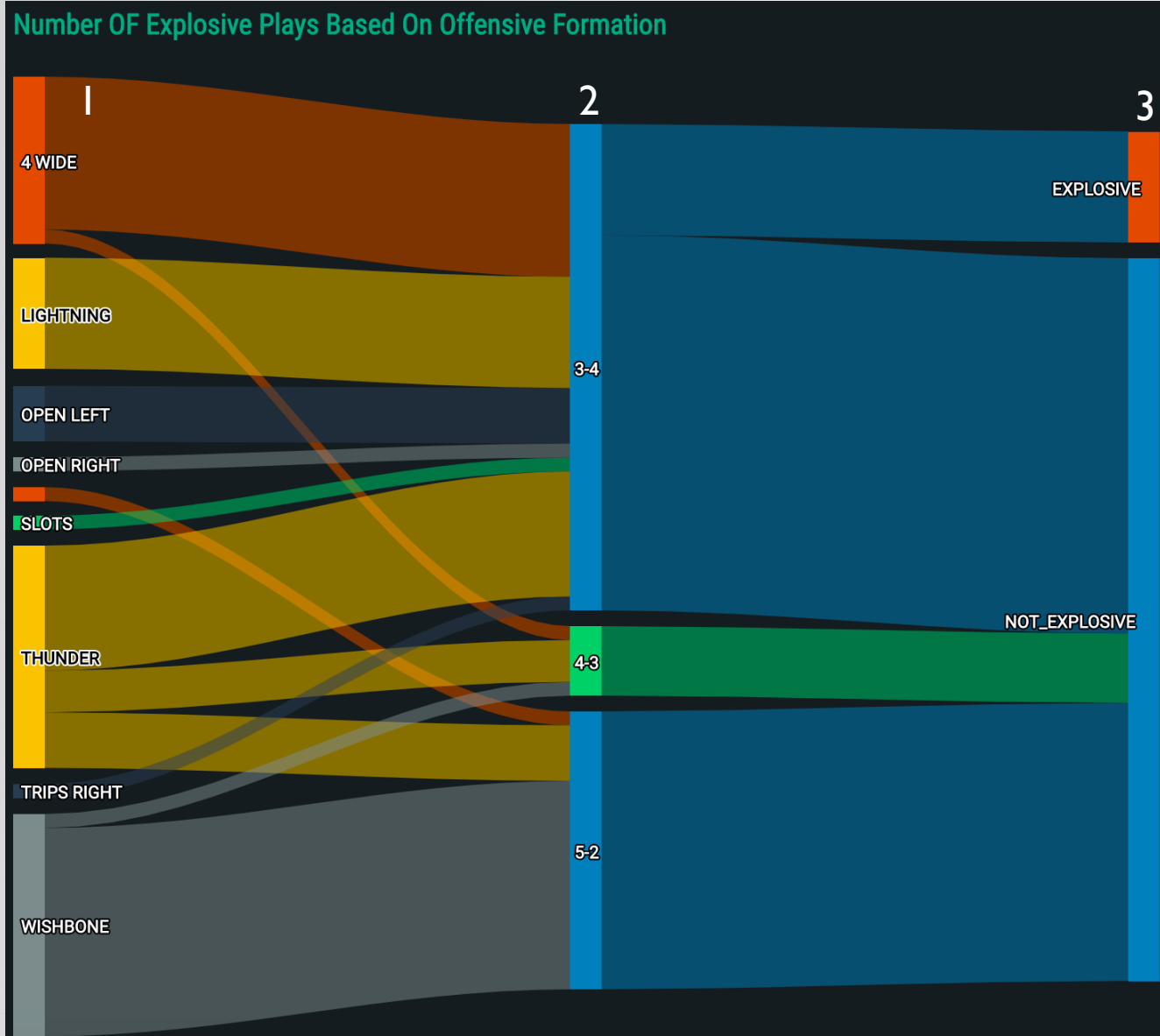
DEWITT'S MOST COMMON PLAYS AND FORMATIONS ON EXPLOSIVE PLAYS

Formations

OFF FORMATION	AVG YARDS	#TIMES USED
4 WIDE	38.06	17
THUNDER	30.38	8
LIGHTNING	41.75	4
EMPTY	32.67	3
SINGLE WING	34.00	3
SLOTS	18.00	2
TROJAN LEFT	18.50	2
ACE	28.00	2

Plays

OFF PLAY	AVG YARDS	#TIMES USED
93	51.60	5
JET 93	30.00	3
JET 18	25.00	3
25 ISO	37.33	3
24 ISO	24.00	2
JET 26 QB POWER READ	51.50	2
18 JET	16.00	2
15 SINGLE OMAHA	20.00	2
JET 50 CHINA	31.50	2
50 ALL SEAM	28.00	2
50 CHINA	34.00	2
Z REVERSE	43.00	2

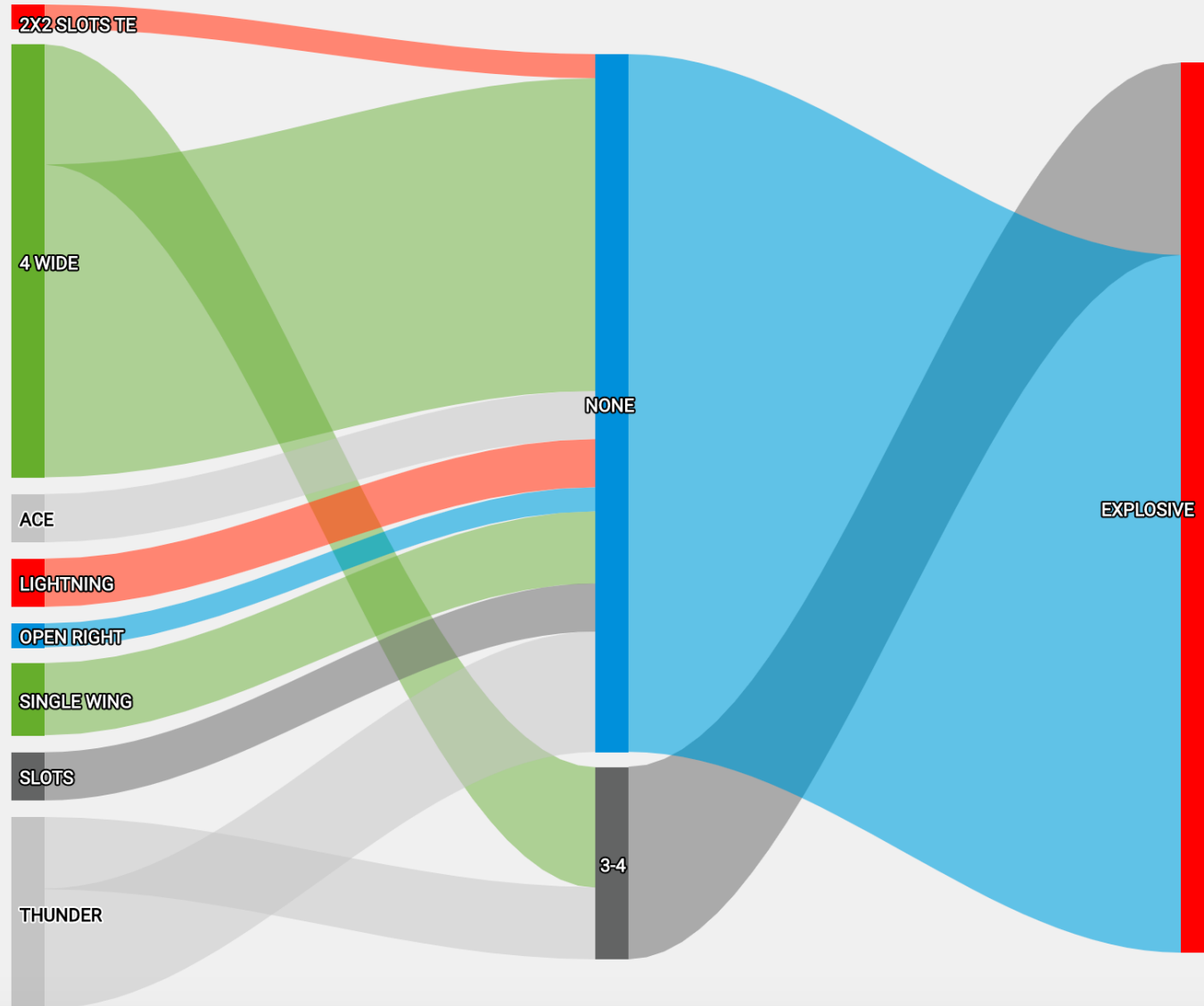


- GRAND LEDGE DEFENSIVE FORMATIONS (2) VS DEWITT OFFENSIVE FORMATIONS (1) & LIMITING EXPLOSIVE PLAYS (3)

Focus Point:

The 5-2 and 4-3 defenses didn't give up any explosive plays

Number OF Explosive Plays Based On Offensive Formation



- Grand ledge Defensive formations vs Dewitt offensive formations & limiting explosive plays

(ONLY EXPLOSIVE PLAYS)

DEWITT'S WIN THE DOWN %

DOWN	DEWITT'S SUCCESS RATE
ALL	50%
1 st Down	43%
2 nd Down	58%
3 rd Down	63%

Win The Down means that a team gains at least half of the remaining distance to get a first down.

On 3rd down it means you got the first down

DEWITT'S PASS/RUN %

Down & Distance	Pass	Run	Grand Total
1	22.86%	77.14%	100.00%
LONG	33.33%	66.67%	100.00%
MEDIUM	0.00%	100.00%	100.00%
SHORT	23.33%	76.67%	100.00%
2	26.09%	73.91%	100.00%
LONG	21.95%	78.05%	100.00%
MEDIUM	30.00%	70.00%	100.00%
SHORT	33.33%	66.67%	100.00%
3	43.59%	56.41%	100.00%
LONG	50.00%	50.00%	100.00%
MEDIUM	33.33%	66.67%	100.00%
SHORT	25.00%	75.00%	100.00%
4	50.00%	50.00%	100.00%
LONG	0.00%	100.00%	100.00%
SHORT	100.00%	0.00%	100.00%
Grand Total	27.91%	72.09%	100.00%

What play will Dewitt run next?

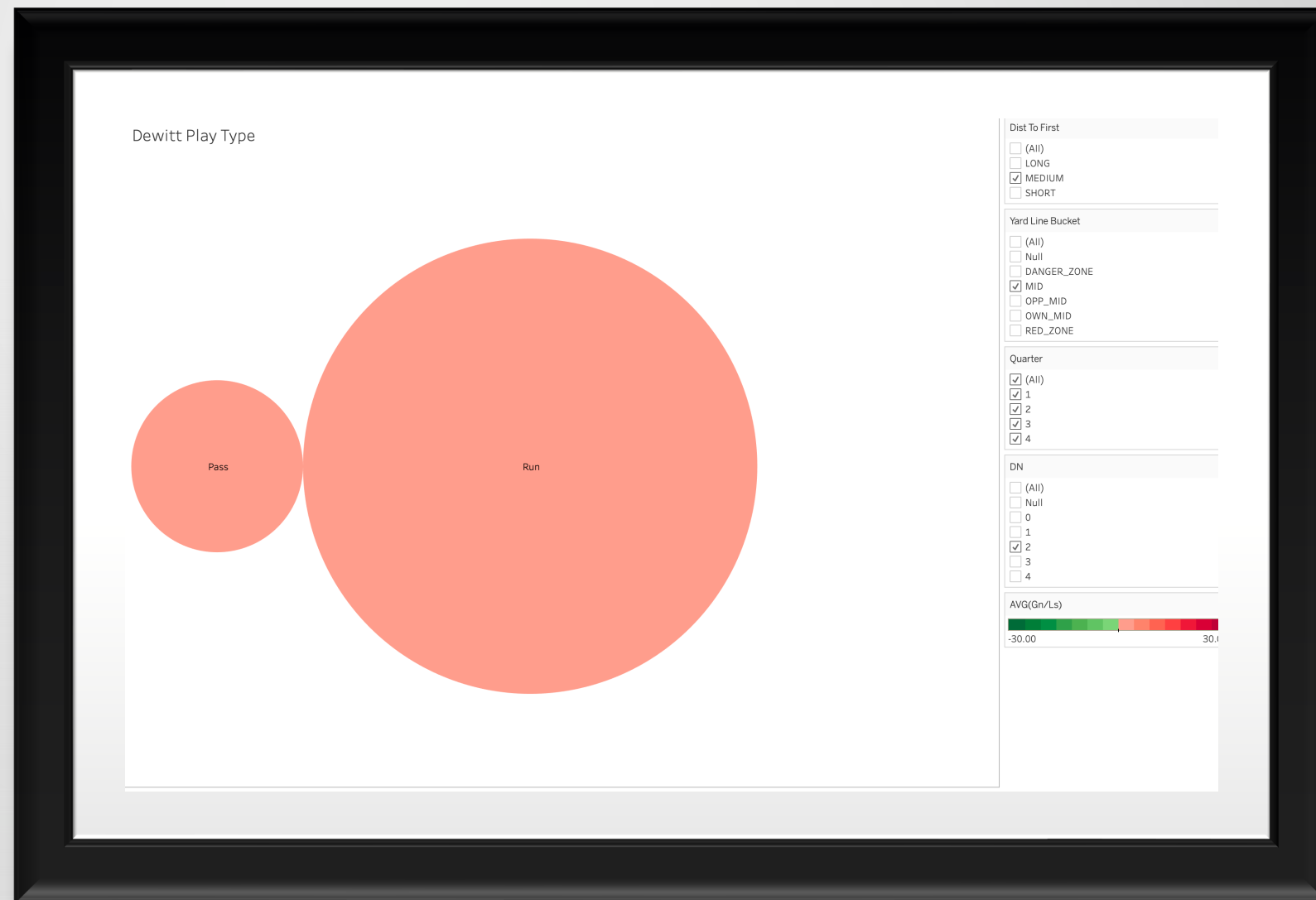
		RED_ZONE		
DOWN & DISTANCE	Pass %	Run %	Pass Avg Yards	Run Avg Yards
1st and Short	0%	100%	0.00	2.83
1st and Mid	20%	80%	0.00	2.00
1st and Long	33%	57%	3.57	5.17
2nd and Short	0%	100%	0.00	2.83
2nd and Mid	25%	75%	6.00	2.33
2nd and Long	38%	63%	6.67	-1.40
3rd and Short	20%	80%	15.00	5.50
3rd and Mid	100%	0%	5.00	0.00
3rd and Long	60%	40%	8.33	5.50

	OPP_MID			
DOWN & DISTANCE	Pass%	Run%	Pass Avg Yards	Run Avg Yards
1st and Short	0%	0%	0.00	0.00
1st and Mid	0%	100%	0.00	8.50
1st and Long	33%	65%	4.54	9.27
2nd and Short	33%	67%	16.50	2.25
2nd and Mid	0%	100%	0.00	10.50
2nd and Long	45%	55%	14.00	6.73
3rd and Short	33%	67%	7.00	3.00
3rd and Mid	0%	100%	0.00	4.00
3rd and Long	83%	17%	13.00	-4.00

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PASS RUN% MODEL

Real-time tool for use by
your coaches in the Press
Box to call in plays



THE EFFECTS OF BLITZING



POSITIVES

- QB Base Completion % - 63%
- No Blitz Completion % - 75%
- Blitzed Completion % - 50%
- 17% decrease in yards per pass

NEGATIVES

- You give up 7% more yards per rush
- Dewitt runs ~ 70% of the time
- Rushing yards add up quick

OUR SOLUTIONS

- 1) Create pressure without blitzing
 - Throw in some unique stunts or defensive alignments
 - Could incorporate some more advanced ideas like rushing with not all 4 down lineman and dropping one or more back into coverage as well as utilizing defensive motions to create confusion
- 2) If you do want to blitz only do so on passes
- 3) We found that your most effective defensive formation against Dewitt was the 5-2 for both run and pass
 - We know you guys run a 3-4 system but maybe throw in some heavier packages defensively

TIME-OUT ANALYSIS

- After Timeouts Dewitt passes 2/3 of the time & every time they passed, they came out in the 4-Wide formation
- Their favorite out of timeout play was 93
- They also average 26 yards per pass coming out of timeouts

OFFENSE



WHAT YOU ALREADY DO WELL

- You can put up points against a great defense
- Had the most points against Dewitt of anyone they faced
- Fairly Balanced offense 58% run 42% pass
- Your quarterbacks can audible, which is not incredibly common



OFFENSIVE DATA

GL'S WIN THE DOWN %

DOWN	GL SUCCESS RATE
ALL	39%
1 st Down	40%
2 nd Down	40%
3 rd Down	48%

GL'S PASS/RUN %

Down & Distance	Pass	Run	Grand Total
1	41.18%	58.82%	100.00%
LONG	47.37%	52.63%	100.00%
MEDIUM	23.08%	76.92%	100.00%
SHORT	33.33%	66.67%	100.00%
2	33.33%	66.67%	100.00%
LONG	37.14%	62.86%	100.00%
MEDIUM	22.22%	77.78%	100.00%
SHORT	31.25%	68.75%	100.00%
3	51.02%	48.98%	100.00%
LONG	56.25%	43.75%	100.00%
MEDIUM	66.67%	33.33%	100.00%
SHORT	27.27%	72.73%	100.00%
4	61.54%	38.46%	100.00%
LONG	60.00%	40.00%	100.00%
SHORT	66.67%	33.33%	100.00%
Grand Total	42.51%	57.49%	100.00%

TIME OF POSSESSION FINDINGS

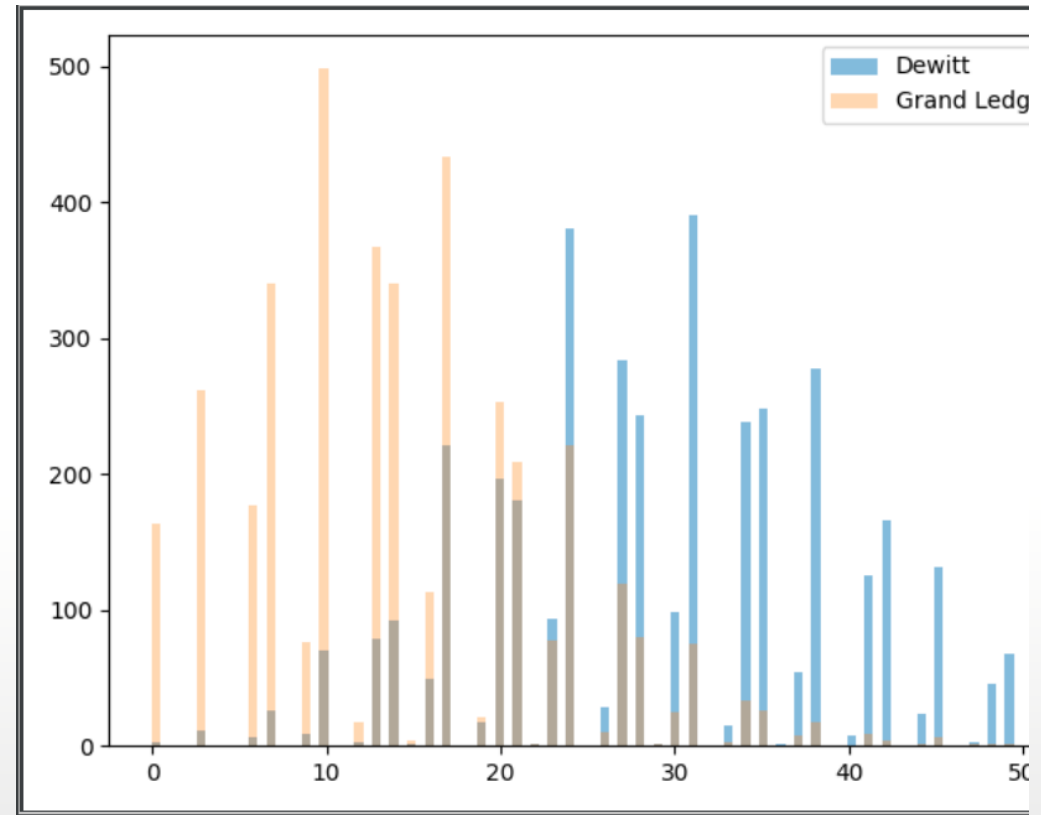
- increase T.O.P to around 32 or more minutes
- in 2017, in the game you almost won, you had the ball for almost 28 minutes compared to their 20.
- In 2020 Dewitt won the T.O.P battle controlling the ball for 25 out of 48 minutes.
- You currently average 24 seconds per play.
- If you increase that by 10 seconds per play you have a real good shot at winning.

POINTS PER MINUTE ANALYSIS

- Dewitt score 1.46 PPM/ 37 PPG.
- Grand Ledge's PPM of .654/ 15.75 PPG.
- If you increase your T.O.P to 32.5 minutes theoretically you should score 21 points and they should score 21 points

MONTE CARLO

- SIMULATION OF 5000 GAMES
- FINAL POINTS TALLIES FOR GL & DEWITT
- AVERAGE SCORE:
 - DEWITT 30, GRAND LEDGE 16



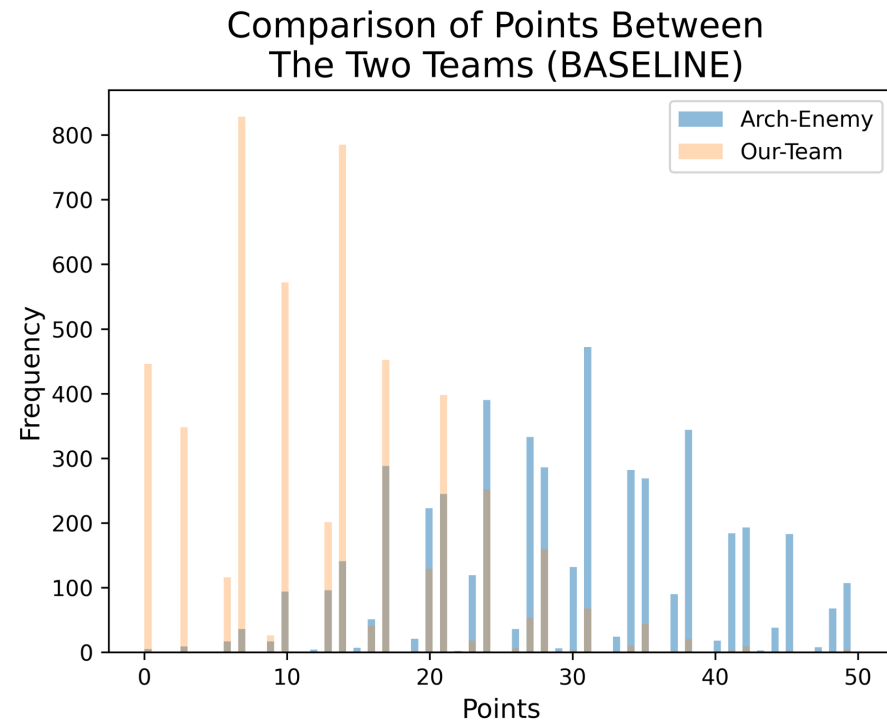
A BRIEF OVERVIEW OF THE MONTE CARLO SYSTEM



RESULTS OF MONTE CARLO RUNS

BASE

- Dewitt scores 30 PPG
- Grand Ledge scores 13 PPG
- **Grand Ledge win percentage 13.2%**
- **One possession game percentage 27.8%**



UTILIZING MONTE CARLO SIM TO LOOK AT SOME SPECIFIC VARIABLES

- **We used the Monte Carlo Simulation to look at some specific, targeted variables**
 - Blitzing, and blitzing percentage
 - Time of Possession (TOP)
 - Onside kick percentage and recovery rate
 - Going for it on 4th down and short from different yard lines

BLITZING

50% increase in blitz

- Dewitt scores 31 PPG
- Grand Ledge scores 13 PPG
- Grand Ledge win percentage **12.2%**

Never blitz

- Dewitt scores 28.5 PPG
- Grand Ledge scores 12.7 PPG
- Grand Ledge win percentage **14.7%**

50% decrease in blitz

- Dewitt scores 29 PPG
- Grand Ledge scores 13 PPG
- Grand Ledge win percentage **13.7%**

Only blitz on passes

- Dewitt scores 28.6 PPG
- Grand Ledge scores 12.8 PPG
- Grand Ledge win percentage **14.1%**

T.O.P

10 second increase in T.O.P

- Dewitt scores 25 PPG
- Grand Ledge scores 10.5 PPG
- Grand Ledge win percentage **14.3%**

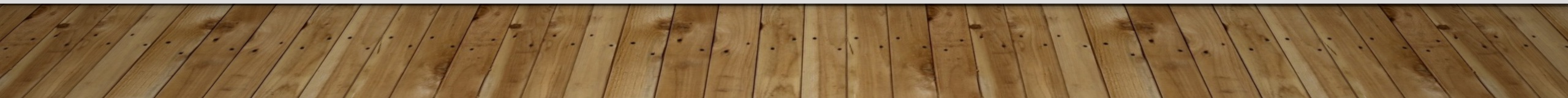
15 sec Per Play for both GL & Dewitt

- Dewitt scores 50 PPG
- Grand Ledge scores 21.5 PPG
- Grand Ledge win percentage **8.4%**

16 second increase in T.O.P

- Dewitt scores 23 PPG
- Grand Ledge scores 9.6 PPG
- Grand Ledge win percentage **15.8%**

40 sec Per Play for both GL & Dewitt

- Dewitt scores 18.6 PPG
 - Grand Ledge scores 8 PPG
 - Grand Ledge win percentage **20.4%**
- 

ONSIDE KICKS

50% Onside Kick & 25% recovery rate

- Dewitt scores 29.7 PPG
- Grand Ledge scores 13.1 PPG
- Grand Ledge win percentage **13.1%**

100% Onside Kick & 25% recovery rate

- Dewitt scores 30 PPG
- Grand Ledge scores 13.5 PPG
- Grand Ledge win percentage **13.3%**

50% Onside Kick & 50% recovery rate

- Dewitt scores 29.1 PPG
- Grand Ledge scores 13.5 PPG
- Grand Ledge win percentage **15.1%**

100% Onside Kick & 50% recovery rate

- Dewitt scores 29 PPG
- Grand Ledge scores 14 PPG
- Grand Ledge win percentage **17.6%**

DEWITT'S EXPECTED POINTS BY FIELD POSITION

**DANGER
ZONE**

- 2.3 points

OWN_MID

- 2.7 points

MID

- 3.1 points

OPP_MID

- 4.2 points

RED ZONE

- 5.7 points

GOING FOR IT ON 4TH DOWN & SHORT

Go for it inside Dewitt's 50

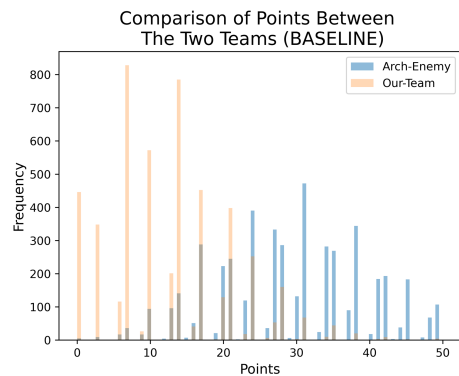
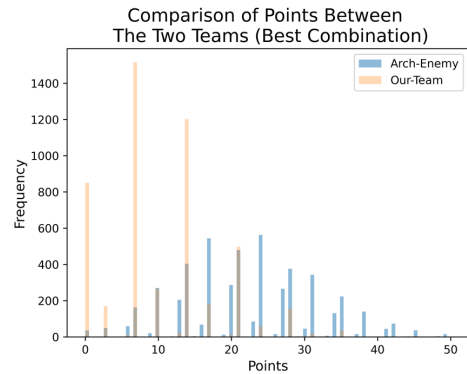
- Dewitt scores 29.8 PPG
- Grand Ledge scores 14.2 PPG
- Grand Ledge win percentage **15.3%**

Go for it inside Dewitt's 20

- Dewitt scores 29.8 PPG
- Grand Ledge scores 13.5 PPG
- Grand Ledge win percentage **14.6%**

- Results depend on kicker ability and range

BEST COMBINATION



- Dewitt scores **21.6 PPG**
 - (**Decrease of 8.4 points from baseline 30 PPG**)
- Grand Ledge scores **10.2 PPG**
 - (**Decrease of 3.8 points from baseline 13 PPG**)
- Grand Ledge win percentage **20.2%**
 - (**7% increase from base line 13.2%**)
- One possession game percentage **40.25%**
 - (**13.4% increase from base line 27.8%**)



CONCLUSION

DEFENSIVE RECOMMENDATIONS

- Get Dewitt off the field on 3rd downs
- Create Pressure on quarterback to limit passing attack and potentially cause turnovers
- Use the pass run model to evaluate the upcoming play type given the in-game scenario
- Implement some heavier 5-man or 4-man fronts to diversify defense and limit Dewitt's Offensive potency

OFFENSIVE RECOMMENDATIONS

- Increase time per play from 24 to 34 seconds for a total T.O.P of ~ 32 minutes
- Utilize your Quarterback's ability to audible to confuse for the defense and potentially create "dummy" audible calls
- Pass more on 2nd down because you currently run 2/3 of the time and are quite predictable on 2nd down

MONTE CARLO RECOMMENDATIONS

- Slow down the pace of the game make it a low scoring, grind it out game.
 - Hold the ball for as long as possible and sustain drives to run out as much clock as you can
- Onside kicks may help to improve win%, but only if you can get the success rate higher than 25%
- Going for it on fourth down & short but only between the 50 & 20 looks promising
 - If you have a chance to get 3 take it (Depends on kicker ability)

QUESTIONS ?
