



Produced by Dr. Mario | UNC STOR 390





- Use Data Science to Appreciate the Sport
- Case Study 2006 Super Bowl
 - Indianapolis Colts vs Chicago Bears
 - Tony Dungy vs Lovie Smith
 - Peyton Manning vs Rex Grossman
 - ❖ Final Score: 29 17
 - Peyton Manning's Only Super Bowl
- Book Uses State and Value Approach to Appreciate the Game







- Play-by-Play Logs for Each NFL Game
 - Down Before the Play
 - Yards to Go For a 1st Down Before the Play
 - Yard Line Before the Play
 - Was the Play a Run or Pass
 - The Ball Carrier on the Running Play
 - Where the Runner was Positioned
 - Quarterback and Intended Receiver
 - Classification of Pass Distance
 - Result of the Play Measured by Down, Distance to 1st Down, and Yard Line







Example of Data Used by Textbook



Play Number	Start Down	Start Yards to Go	Start Deadline	End Down	End Yards to Go	End Yardline	Start Value	End Value	Delta
1	1	10	34	1	10	47	0.769	1.67	0.898
2	1	10	47	2	6	51	1.667	1.78	0.113
3	2	6	51	3	6	51	1.78	1.25	-0.53
4	3	6	51	1	10	58	1.25	2.47	1.215
5	1	10	58	2	2	66	2.465	3.19	0.725
6	2	2	66	3	1	67	3.19	2.92	-0.273
7	3	1	67	1	10	69	2.917	3.35	0.43
8	1	10	69	2	14	65	3.347	2.13	-1.219
9	2	14	65	3	13	66	2.128	1.5	-0.63
10	3	13	66	1	10	80	1.498	4.37	2.872





Example of Data Used by Textbook



Play Number	Run or Pass?	Runner	Run or Pass Location	Quarterback	Receiver	
1	Р		Short	P. Manning	R. Wayne	
2	R	D. Rhodes	RE			
3	Р		Short	P. Manning	R. Wayne	
4	Р		Short	P. Manning	B. Utrecht	
5	Р		Short	P. Manning	M. Harrison	
6	R	D. Rhodes	LT			
7	R	D. Rhodes	LT			
8	Р			P. Manning		
9	R	D. Rhodes	RT			
10	Р		Short	P. Manning	D. Rhodes	





Focus on Value Measures

	ı	Start Yards to Go	ı		I				
1	1	10	34	1	10	47	0.769	1.67	0.898
2	1	10	47	2	6	51	1.667	1.78	0.113



Value of Starting State
Value of Ending State

How is This Useful?





- On First and 10, Is Running More Effective Than Passing?
 - Filter Data Based on 1st and 10 Situations
 - Split Data Into Running and Passing Plays
 - Colts Ran 222 Times and Averaged 0.119 Points Per Run
 - Colts Passed 204 Times and Averaged 0.451 Points Per Pass
 - Interesting: Colts Ran More than Passed But Won the Game
 - Shows the Importance of Looking at More Granular Data When Making a Sports Argument
- Are Runs More or Less Effective Than Passes?
 - Passing Plays Averaged 0.416 Points
 - Running Plays Averaged 0.102 Points
- Clearly, They Should Pass Every Time. Any Problems Here?







- Which Runner Was More Effective?
 - Joseph Addai Averaged 0.134 Points Per Run
 - Dominique Rhode's Averaged 0.041 Points Per Run
- Which Receiver Was More Effective?
 - Passes to Reggie Wayne Averaged 0.67 Points (140 Passes)
 - Passes to Marvin Harrison Averaged 0.56 Points (152 Passes)
- Where Could These Analyses Be Problematic?



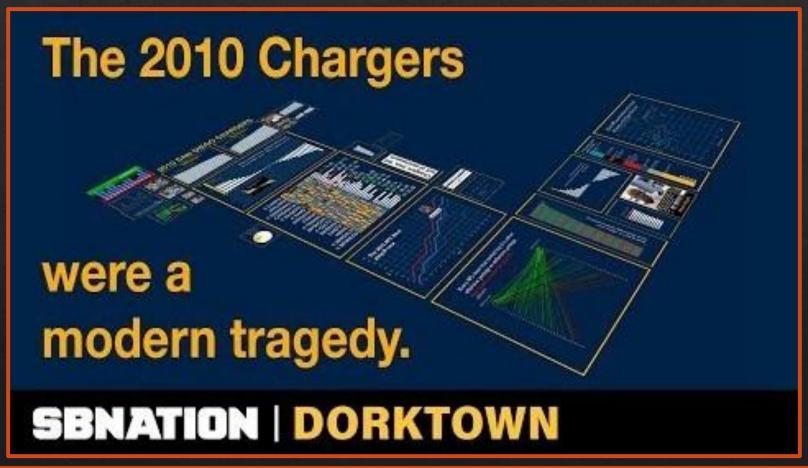


Football Decision Making



Now Check Out the 2010 San Diego Chargers







Final Inspiration

I want to be the greatest at mediocrity.

- Mahatma Mario