

Table 1—: Summary Statistics

Statistic	N	Mean	St. Dev.	Min	Max
RallyLength	2,140	17.086	13.883	1	86
TotalBack	2,140	4.446	4.837	0	35
BackDiff	2,091	-0.460	1.893	-15	9
TotalBoast	2,140	0.788	1.123	0	11
BoastDiff	2,091	0.011	0.912	-5	7
TotalDeepVolley	2,140	1.475	1.434	0	15
DeepVolleyDiff	2,091	0.140	1.294	-6	7
TotalOtherVolley	2,140	1.462	1.484	0	10
OtherVolleyDiff	2,091	0.033	1.215	-7	5
TotalStraight	2,140	10.036	9.051	0	62
StraightDiff	2,091	0.011	2.090	-12	10
TotalFrontLift	2,140	0.524	0.857	0	6
FrontLiftDiff	2,091	-0.019	0.771	-5	4
TotalDeepLift	2,140	0.699	1.211	0	11
DeepLiftDiff	2,091	0.106	0.898	-6	6
StraightWidthQualityDiff	2,091	0.001	0.048	-0.640	0.489
DepthQualityDiff	2,051	-0.007	0.065	-0.421	0.289

II. Shot-Selection Based Models

$$(1) \quad \log \left(\frac{P(AW on Point)}{1 - P(AW on Point)} \right) =$$

$$\beta_0 + \beta_1 \text{BackDiff} + \beta_2 \text{FrontLiftDiff} + \beta_3 \text{DeepLiftDiff} + \beta_4 \text{DeepVolleyDiff} + \beta_5 \text{OtherVolleyDiff} + \beta_6 \text{BoastDiff} + \beta_7 \text{StraightDiff}$$

$$(2) \quad \log \left(\frac{P(AW on Point)}{1 - P(AW on Point)} \right) =$$

$$\beta_0 + \beta_1 \text{BackDiff} + \beta_2 \text{FrontLiftDiff} + \beta_3 \text{DeepLiftDiff} + \beta_4 \text{DeepVolleyDiff} + \beta_5 \text{OtherVolleyDiff} + \beta_6 \text{BoastDiff} + \beta_7 \text{StraightDiff} + u_{\text{gameNumber}} + \epsilon$$

III. Quality Based Models

$$(3) \quad \log \left(\frac{P(AW on Point)}{1 - P(AW on Point)} \right) =$$

$$\beta_0 + \beta_1 \text{DistanceDiff} + \beta_2 \text{StraightWidthQualityDiff} + \beta_3 \text{DepthQualityDiff}$$

IV. Combined Model

$$(4) \quad \log \left(\frac{P(AW on Point)}{1 - P(AW on Point)} \right) =$$

$$\beta_0 + \beta_1 \text{BackDiff} + \beta_2 \text{FrontLiftDiff} + \beta_3 \text{DeepLiftDiff} + \beta_4 \text{DeepVolleyDiff} + \beta_5 \text{OtherVolleyDiff} + \beta_6 \text{BoastDiff} + \beta_7 \text{StraightDiff} + \beta_8 \text{DistanceDiff} + \beta_9 \text{StraightWidthQualityDiff} + \beta_{10} \text{DepthQualityDiff}$$

Table 2—: Shot-Selection Based Models

<i>Dependent variable: AWonPoint</i>				
	(1) All Points <i>logistic</i>	(2) No Unforced Errors <i>logistic</i>	(3) No Winners or Errors <i>logistic</i>	(4) All Points <i>linear mixed-effects (gameNumber)</i>
BackDiff	-0.072*** (-0.114, -0.031)	-0.089*** (-0.140, -0.037)	-0.067 (-0.149, 0.015)	-0.018*** (-0.028, -0.008)
FrontLiftDiff	-0.205*** (-0.311, -0.099)	-0.191** (-0.321, -0.061)	-0.323** (-0.543, -0.102)	-0.050*** (-0.076, -0.024)
DeepLiftDiff	-0.064 (-0.150, 0.022)	0.014 (-0.092, 0.121)	0.055 (-0.130, 0.240)	-0.016 (-0.037, 0.005)
DeepVolleyDiff	-0.083** (-0.146, -0.020)	-0.066 (-0.142, 0.011)	-0.082 (-0.210, 0.047)	-0.020** (-0.036, -0.005)
OtherVolleyDiff	-0.053 (-0.119, 0.012)	0.067 (-0.012, 0.146)	-0.170** (-0.308, -0.033)	-0.013 (-0.029, 0.003)
BoastDiff	-0.137*** (-0.220, -0.053)	-0.094 (-0.192, 0.005)	-0.198* (-0.366, -0.031)	-0.033*** (-0.054, -0.013)
StraightDiff	0.005 (-0.031, 0.041)	0.015 (-0.029, 0.058)	-0.008 (-0.082, 0.066)	0.001 (-0.008, 0.010)
Constant	-0.038 (-0.112, 0.037)	-0.067 (-0.158, 0.023)	-0.044 (-0.194, 0.106)	0.491*** (0.472, 0.509)
Observations	2,140	1,452	544	2,140
Log Likelihood	-1,469.373	-994.283	-370.570	-1,569.293
Akaike Inf. Crit.	2,954.746	2,004.566	757.141	3,158.585
Bayesian Inf. Crit.				3,215.271

Note:

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 3—: Quality-Based Models

<i>Dependent variable: AWonPoint</i>			
	(1) All Points	(2) No Unforced Errors	(3) No Winners or Errors
DistanceDiff	-0.585*** (-0.783, -0.386)	0.152 (-0.089, 0.392)	-2.254*** (-2.709, -1.798)
StraightWidthQualityDiff	-2.408** (-4.098, -0.719)	-3.705*** (-5.788, -1.623)	-4.260* (-8.123, -0.397)
DepthQualityDiff	-1.674** (-2.814, -0.534)	-3.887*** (-5.300, -2.475)	2.707* (0.215, 5.200)
Constant	-0.061 (-0.134, 0.013)	-0.082 (-0.172, 0.007)	0.004 (-0.153, 0.162)
Observations	2,098	1,418	541
Log Likelihood	-1,429.816	-963.829	-323.607
Akaike Inf. Crit.	2,867.632	1,935.658	655.213

Note:

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 4—: Combined Model

	<i>Dependent variable: AWonPoint</i>		
	(1)	(2)	(3)
BackDiff	-0.072*** (-0.114, -0.031)		-0.045* (-0.087, -0.002)
FrontLiftDiff	-0.205*** (-0.311, -0.099)		-0.168** (-0.278, -0.059)
DeepLiftDiff	-0.064 (-0.150, 0.022)		-0.049 (-0.135, 0.037)
DeepVolleyDiff	-0.083** (-0.146, -0.020)		-0.102** (-0.168, -0.036)
OtherVolleyDiff	-0.053 (-0.119, 0.012)		-0.064 (-0.132, 0.003)
BoastDiff	-0.137*** (-0.220, -0.053)		-0.132** (-0.218, -0.047)
StraightDiff	0.005 (-0.031, 0.041)		0.006 (-0.031, 0.043)
DistanceDiff		-0.585*** (-0.783, -0.386)	-0.514*** (-0.721, -0.307)
StraightWidthQualityDiff		-2.408** (-4.098, -0.719)	-2.456** (-4.166, -0.745)
DepthQualityDiff		-1.674** (-2.814, -0.534)	-1.920** (-3.182, -0.659)
Constant	-0.038 (-0.112, 0.037)	-0.061 (-0.134, 0.013)	-0.063 (-0.139, 0.013)
Observations	2,140	2,098	2,098
Log Likelihood	-1,469.373	-1,429.816	-1,419.510
Akaike Inf. Crit.	2,954.746	2,867.632	2,861.019

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 5—: Shot-Selection Model Predictors Correlation Matrix

	BackDiff	FrontLiftDiff	DeepLiftDiff	DeepVolleyDiff	OtherVolleyDiff	BoastDiff	StraightDiff
BackDiff	1	-0.027	0.084	-0.333	-0.097	0.106	-0.070
FrontLiftDiff	-0.027	1	0.098	-0.224	-0.374	-0.089	-0.148
DeepLiftDiff	0.084	0.098	1	-0.287	-0.144	0.118	0.004
DeepVolleyDiff	-0.333	-0.224	-0.287	1	0.116	0.005	0.021
OtherVolleyDiff	-0.097	-0.374	-0.144	0.116	1	0.026	0.163
BoastDiff	0.106	-0.089	0.118	0.005	0.026	1	-0.212
StraightDiff	-0.070	-0.148	0.004	0.021	0.163	-0.212	1

Table 6—: Quality Model Predictors Correlation Matrix

	DistanceDiff	StraightWidthQualityDiff	DepthQualityDiff
DistanceDiff	1	0.224	0.091
StraightWidthQualityDiff	0.224	1	0.201
DepthQualityDiff	0.091	0.201	1

Figure 1. : Combined Model Correlation Matrix

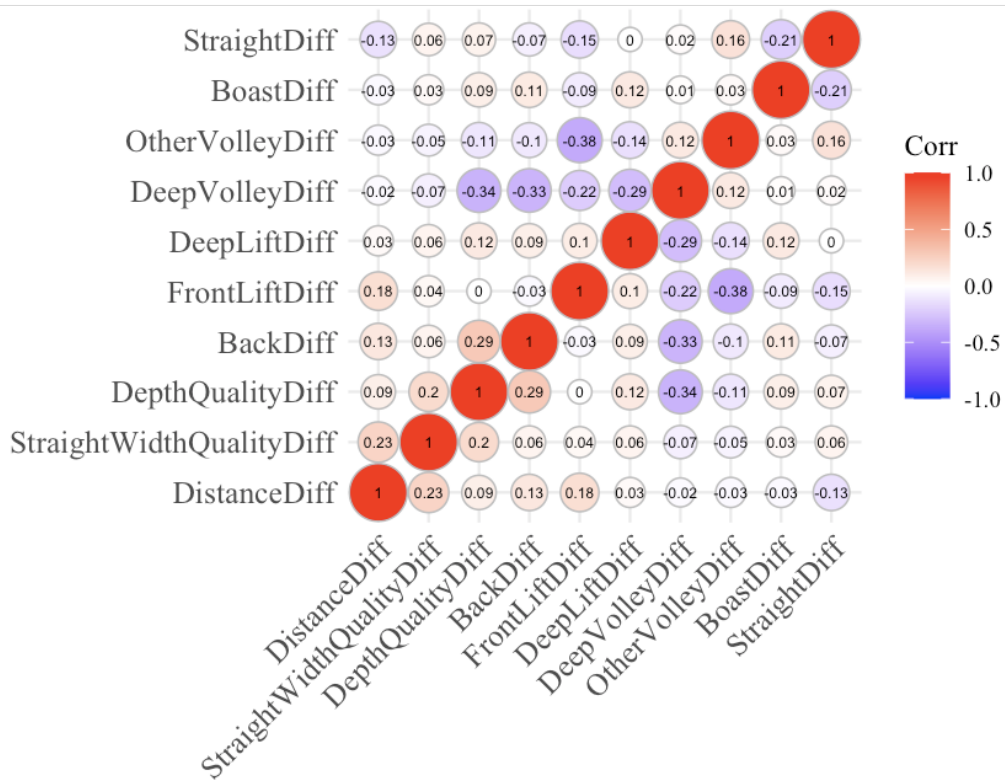
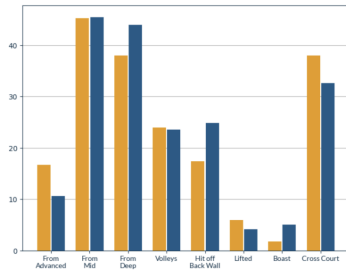
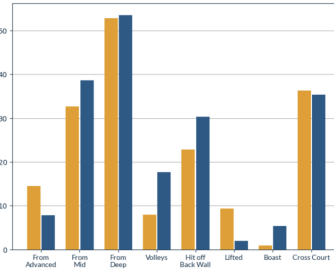


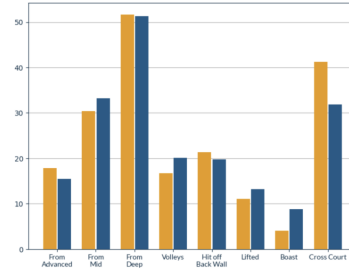
Figure 2. : Match Performance Metrics



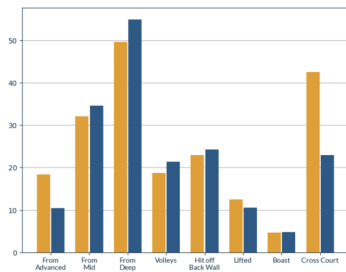
(a) Match 1



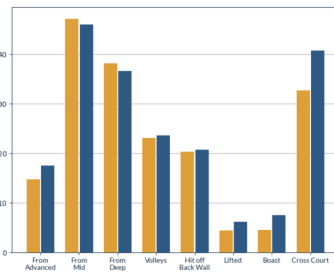
(b) Match 2



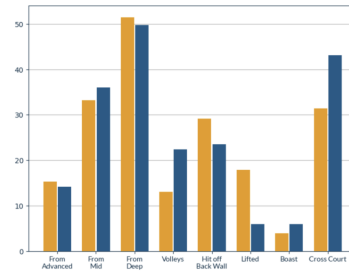
(c) Match 3



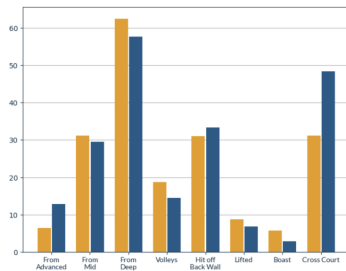
(d) Match 4



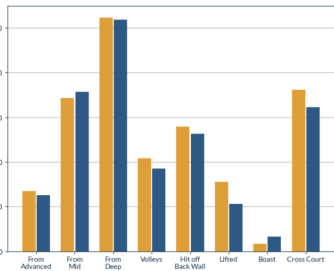
(e) Match 5



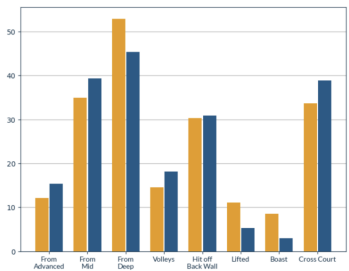
(f) Match 6



(g) Match 7

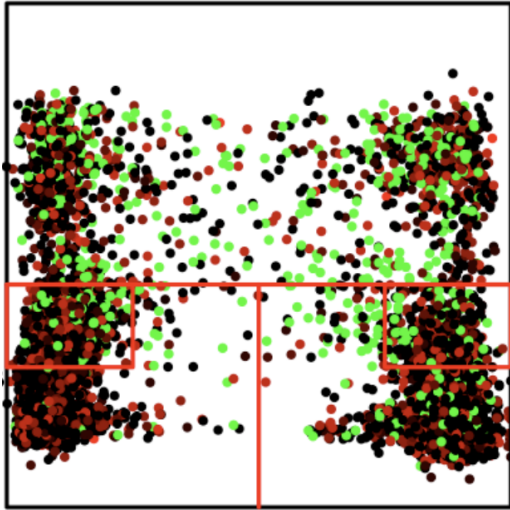


(h) Match 8

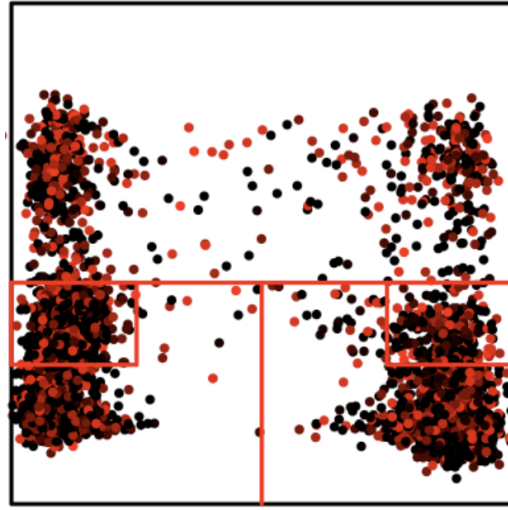


(i) Match 9

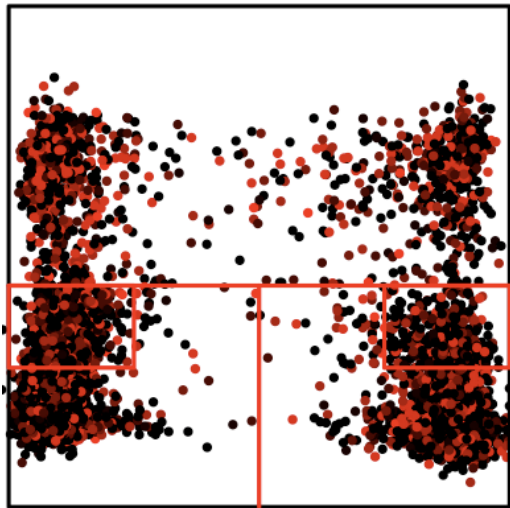
Figure 3. : Shots by Rally Finish by Winner/Loser of Rally



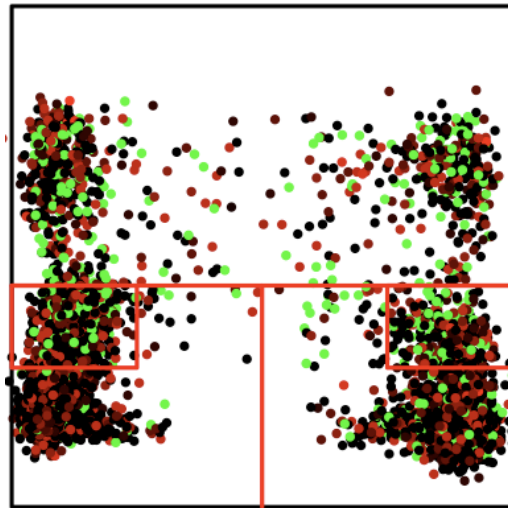
(a) Hit winner: rally winner



(b) Hit winner: rally loser



(c) Unforced error: rally winner



(d) Unforced error: rally loser

Figure 4. : Shots by Rally Length by Winner/Loser of Rally

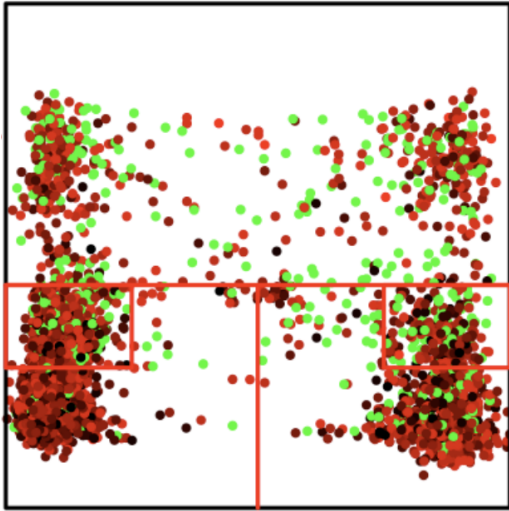
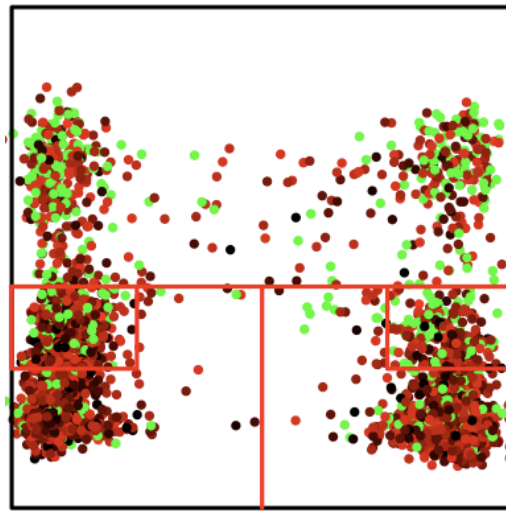
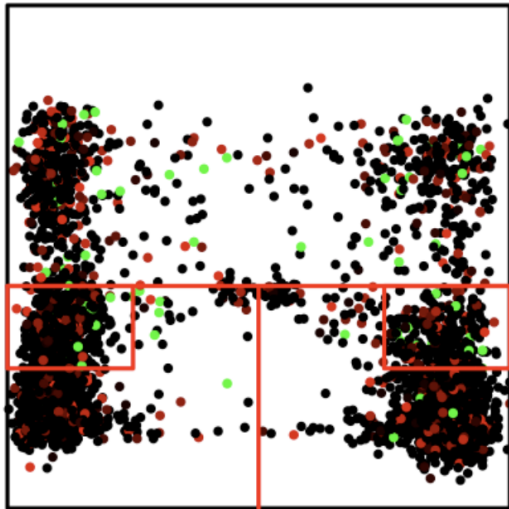
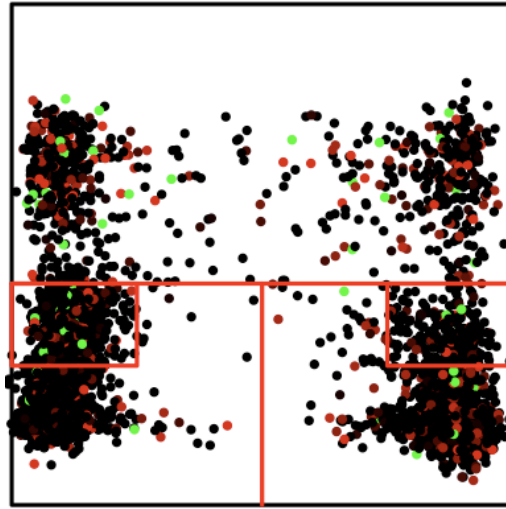
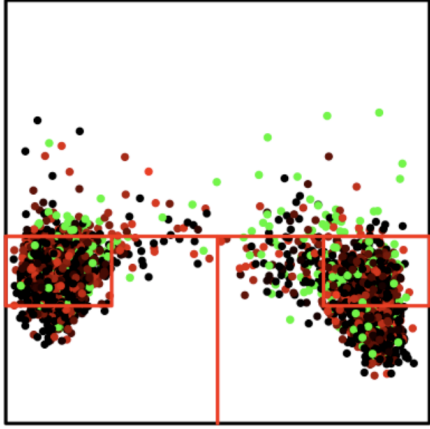
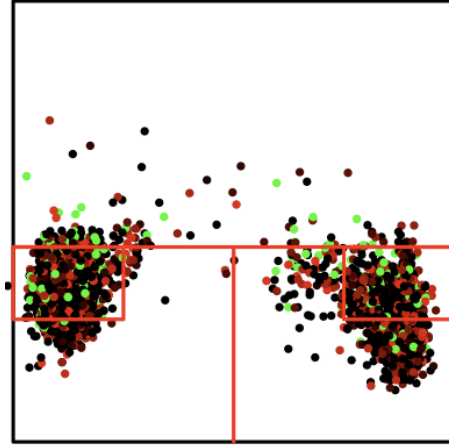
(a) Shots by winner of short ($<Q1$) rally(b) Shots by loser of short ($<Q1$) rally(c) Shots by winner of long ($>Q3$) rally(d) Shots by loser of long ($>Q3$) rally

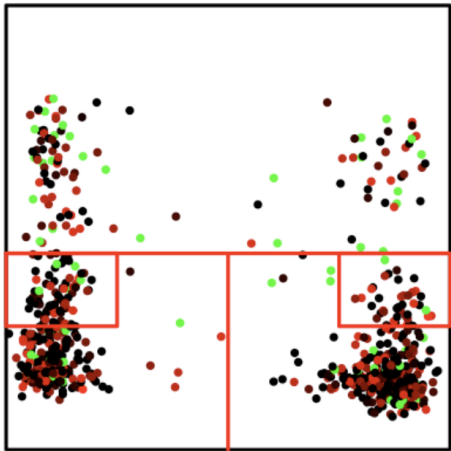
Figure 5. : Shots by Type by Winner/Loser of Rally



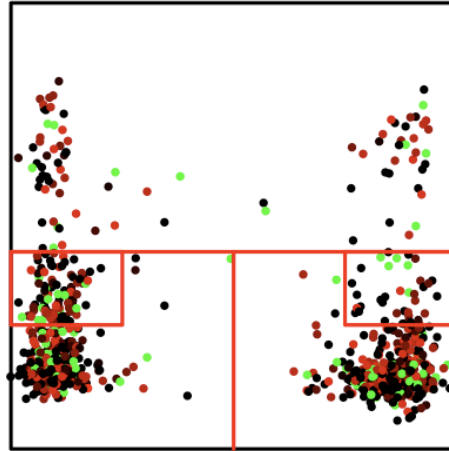
(a) Volleys played by rally winner



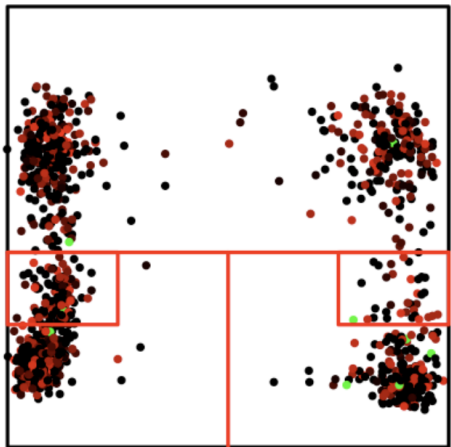
(b) Volleys played by rally loser



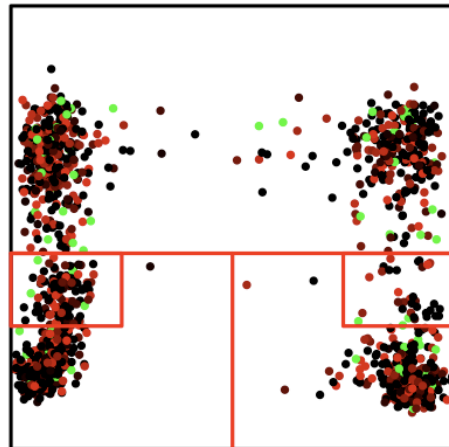
(c) Boasts played by rally winner



(d) Boasts played by rally loser



(e) Lifts played by rally winner



(f) Lifts played by rally loser