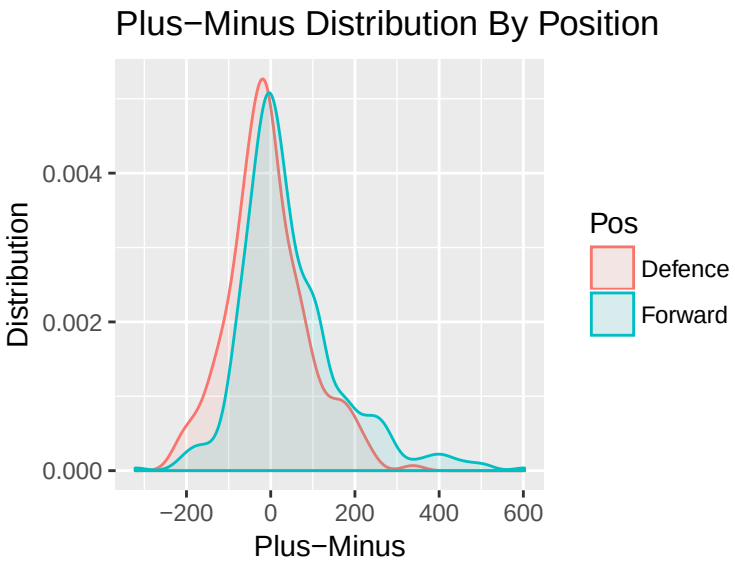
Analysis Of Hockey Plus-Minus Using Linear Regression



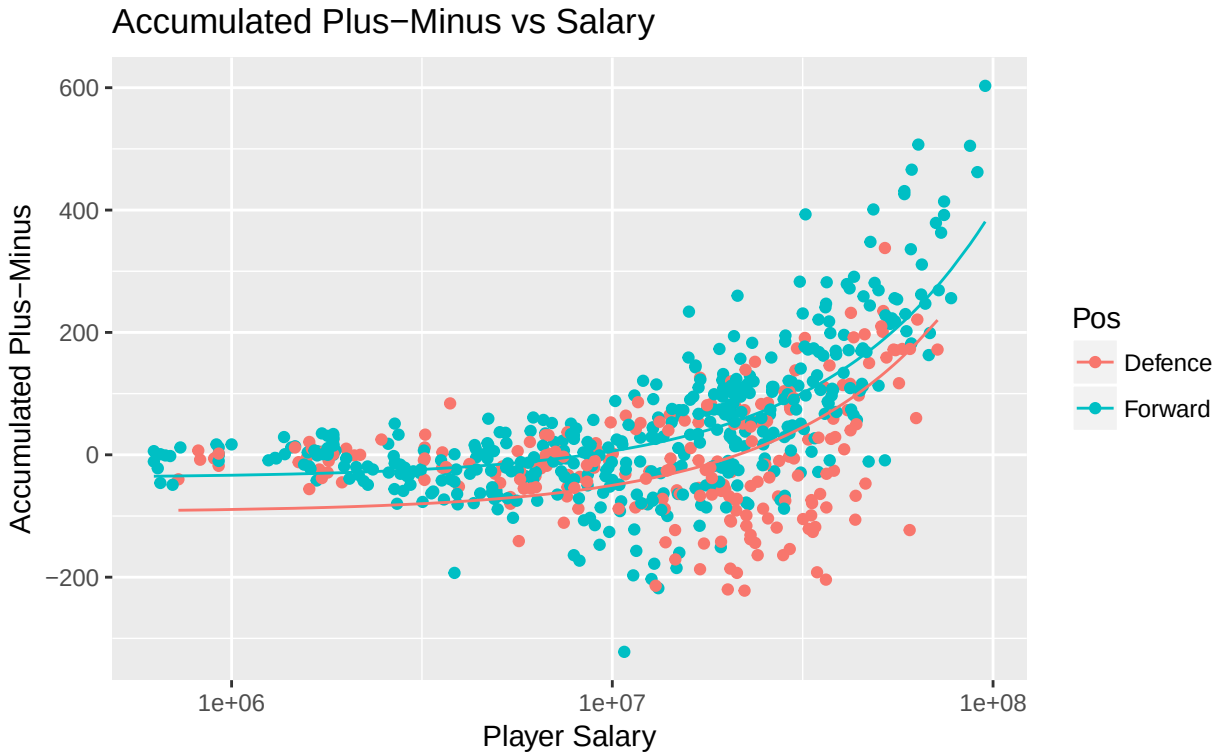


Figure 1: Scatter plot of players accumulated plus−minus form 2008 to 2017 vs accumulated player salary, positoin. The linear regression model is overlaid on the data, again catagorized by position

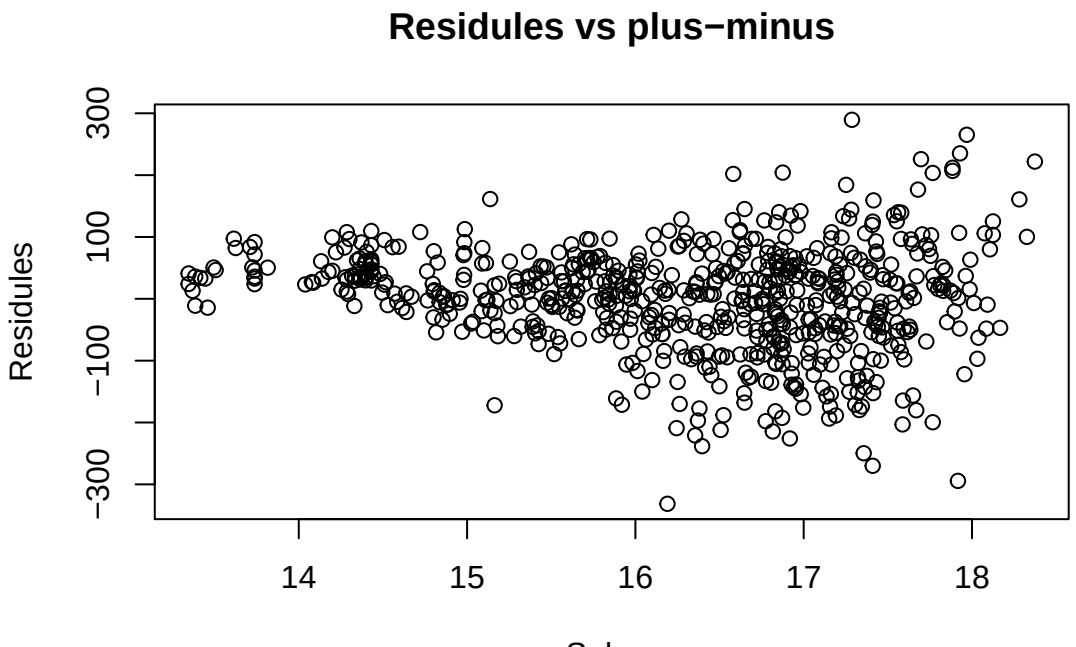
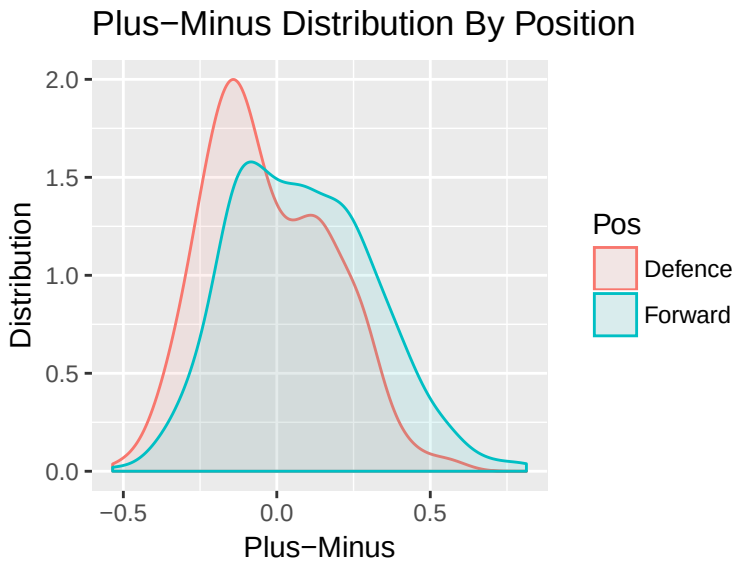


Figure 2: Residules for the linear model against the log scaled salary

Table 1: Summary statistics for linear regression to predict accumulated plus-minus

Terms	Estimates	Std Error	Wald Statistic	P-Value	.05 Confidence	.95 Confid
(Intercept)	-9.379708e+01	6.722286e+00	-13.953152	5.454847e-39	-1.069966e+02	-8.059758e
PosForward	5.604918e+01	6.838815e+00	8.195745	1.283956e-15	4.262088e+01	6.947749e
Salary	4.390840e-06	1.910186e-07	22.986455	1.807552e-86	4.015767e-06	4.765913

$$AveragePlusMinusPerGame = \beta_0 + \beta_1 \times Salary + \beta_2 \times Position + \epsilon$$



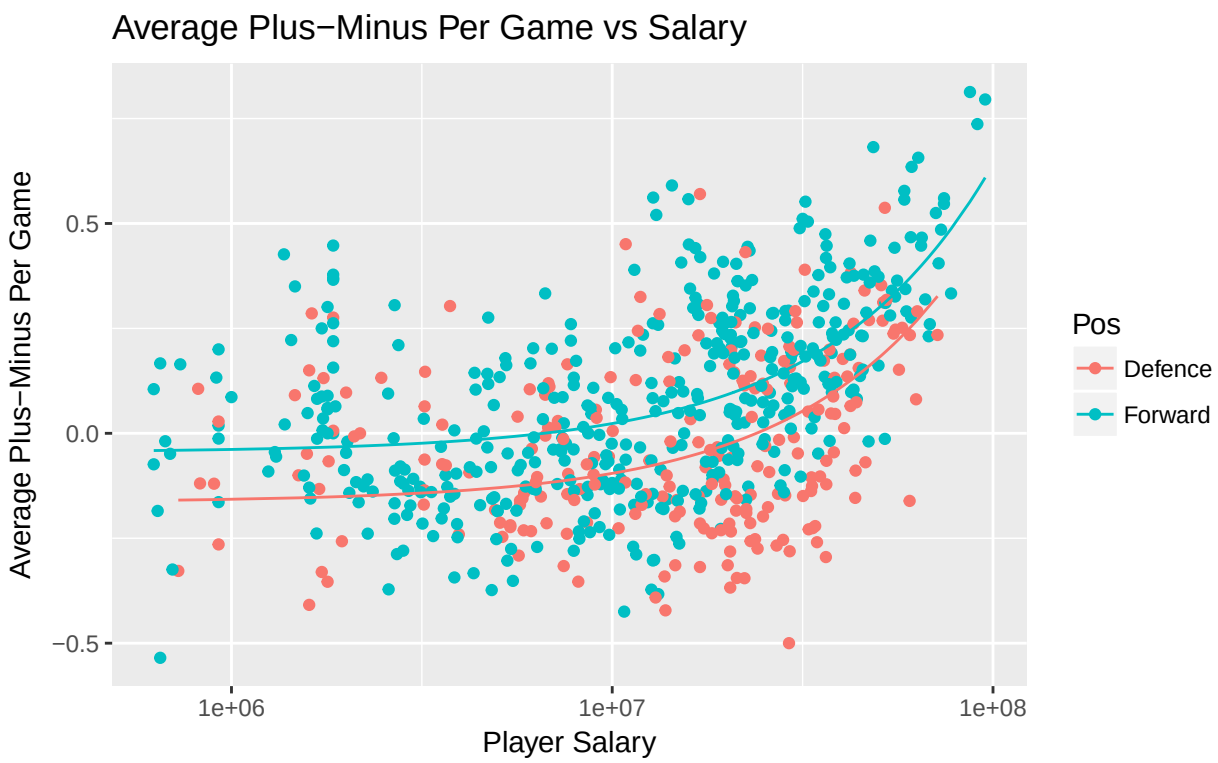


Figure 3: Scatter plot of players average plus−minus form 2008 to 2017 vs accumulated player salary, catag positoin. The linear regression model is overlaid on the data, again catagorized by position

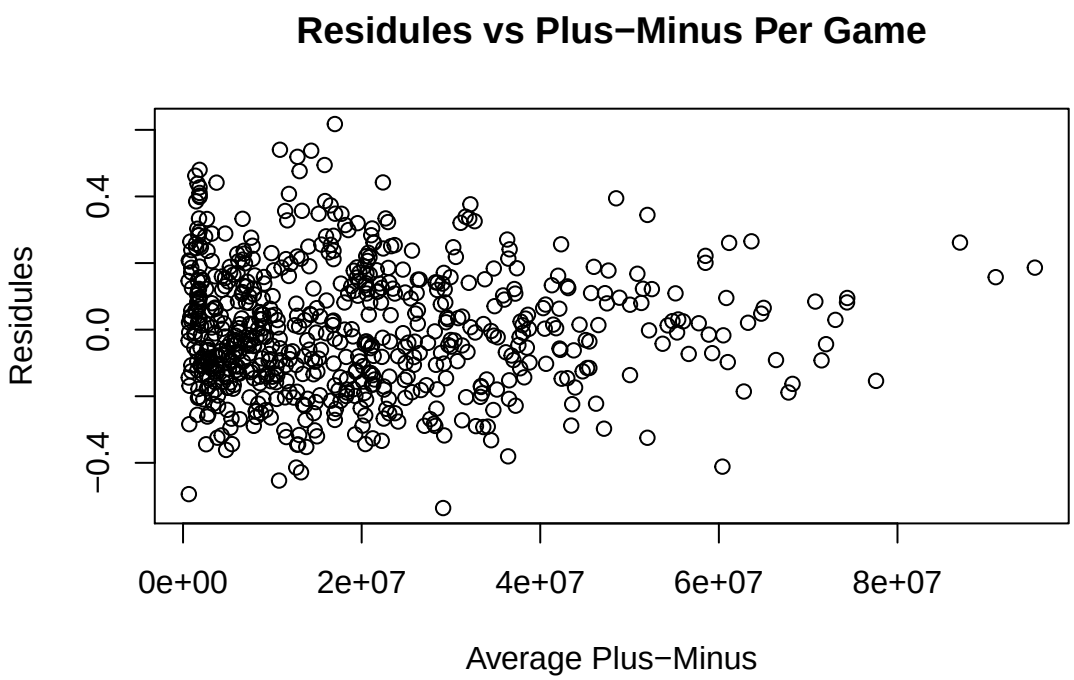


Figure 4: Residules for the linear model against the average plus−minus per ga

Table 2: Summary statistics for linear regression to predict average plus-minus per game

Terms	Estimates	Std Error	Wald Statistic	P-Value	.05 Confidence	.95 Confider
(Intercept)	-1.640206e-01	1.500709e-02	-10.929542	1.103317e-25	-1.934877e-01	-1.345536e-
PosForward	1.187330e-01	1.526724e-02	7.776979	2.842930e-14	8.875510e-02	1.487109e-
Salary	6.862683e-09	4.264373e-10	16.093066	1.905013e-49	6.025355e-09	7.700011e-

$$AccumulatedPlusMinus = \beta_0 + \beta_1 \times ZoneStartRatio + \beta_2 \times GamesPlayed + \epsilon$$

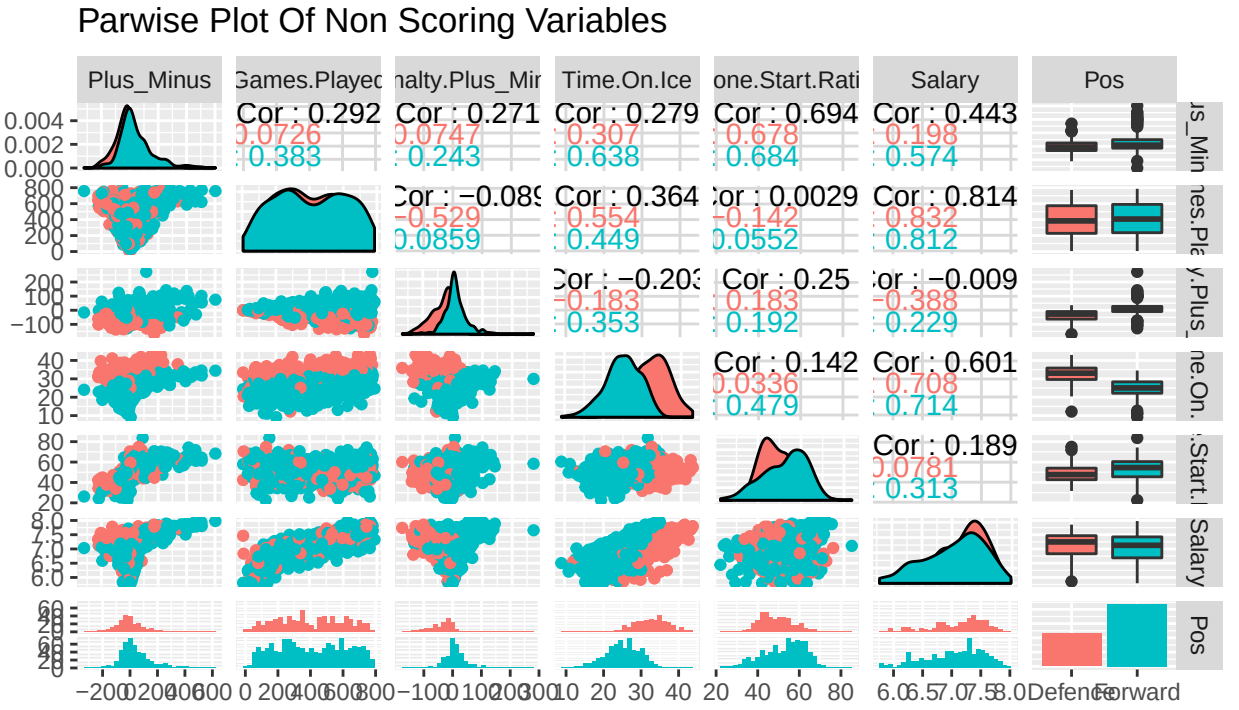


Figure 5: Pairwise plot of accumulated player plus−minus and non scoring statistical measurments including: G Played, Peantly Plus−Minus, Percentage Time On Ice, Zone Start Ratio, Salary, and Position. The data is cata player position. The diagnal is the density plots, the lower triangular are the scatterplots, the upper trianglular a the correlations and correlations by position.

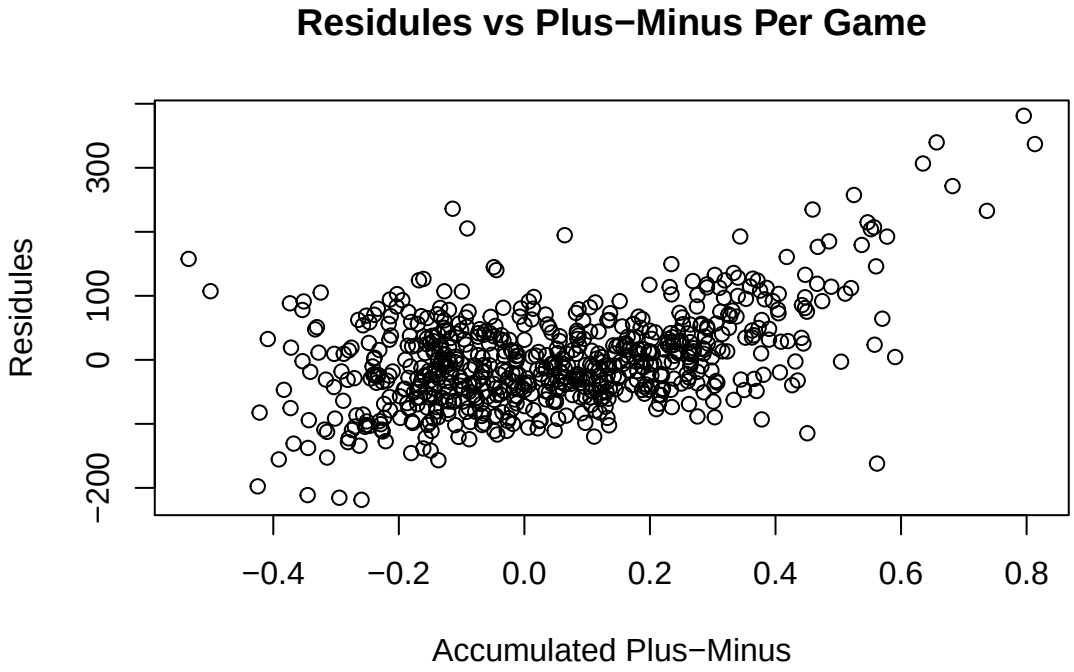


Figure 4: Residules for the linear model against the accumulated plus−minus per g

Table 3: Summary statistics for linear regression to predict accumulated plus-minus using non scoring stats

Terms	Estimates	Std Error	Wald Statistic	P-Value	.05 Confidence	.95 Conf
(Intercept)	-459.8023853	16.85230078	-27.28425	0.00000e+00	-492.8926041	-426.71
Zone.Start.Ratio	8.2173736	0.30342784	27.08181	0.00000e+00	7.6215800	8.81
Games.Played	0.1584141	0.01399287	11.32106	2.72676e-27	0.1309385	0.18