Do Advanced WNBA Defensive Stats Predict Making the All-Defensive Team Chosen by the Coaches?

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INTRO: In basketball a made shot is an easily measurable offensive measure, but individual defensive metrics are harder to quantify. To address that, Defensive Rating (a measure of how many points per 100 possessions are allowed when that player plays) and Defensive Win Shares (how many wins the player added based on their defensive play) were created. But do they align with what coaches judge as good individual defenders?

METHODS: As a proxy for how coaches evaluate defenders, I chose WNBA All-Defensive first and second teams selected by the league head coaches. Quantitative metrics were taken from www.stats.wnba.com for the 2018 and 2019 seasons for players with more than 250 minutes. I ran a binary logistic regression to see whether or not Defensive Ratings or Defensive Win Shares significantly increased the odds of being on the All-Defensive First of Second Teams.

RESULTS: Players with a Defensive Rating under 100 had statistically significantly better odds of being on one of the All-Defensive teams, as did players with more than 3 Defensive Win Shares. Thus, the quantitative measures appear to align with the qualitative opinion of the coaches. At least for the top ten players. This is an encouraging development in measuring defensive impact and bodes well for the future of basketball analytics. Perhaps in the future teams can follow the lead of baseball and devise analytic based defensive strategies.

Players rated well defensively by the numbers have better odds of being chosen as top defenders by the coaches.

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         Gradient evaluations: 15
                         Results: Logit
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Model:              Logit            Pseudo R-squared: 0.084
Dependent Variable: All Defense      AIC:              126.0162
Date:               2019-10-30 22:34 BIC:              132.7667
No. Observations:   216              Log-Likelihood:   -61.008
Df Model:           1                LL-Null:          -66.635
Df Residuals:       214              LLR p-value:      0.00079457
Converged:          1.0000           Scale:            1.0000
-------------------------------------------------------------------
              Coef.  Std.Err.    z     P>|z|   [0.025   0.975]
-------------------------------------------------------------------
Under100      1.8368   0.6424  2.8594 0.0042  0.5778   3.0958
constant     -3.5362   0.5857 -6.0374 0.0000 -4.6841  -2.3882
==================================================================


              2.5%     97.5%       OR
Under100  1.782060  22.104527  6.276273
constant  0.009241   0.091796  0.029125
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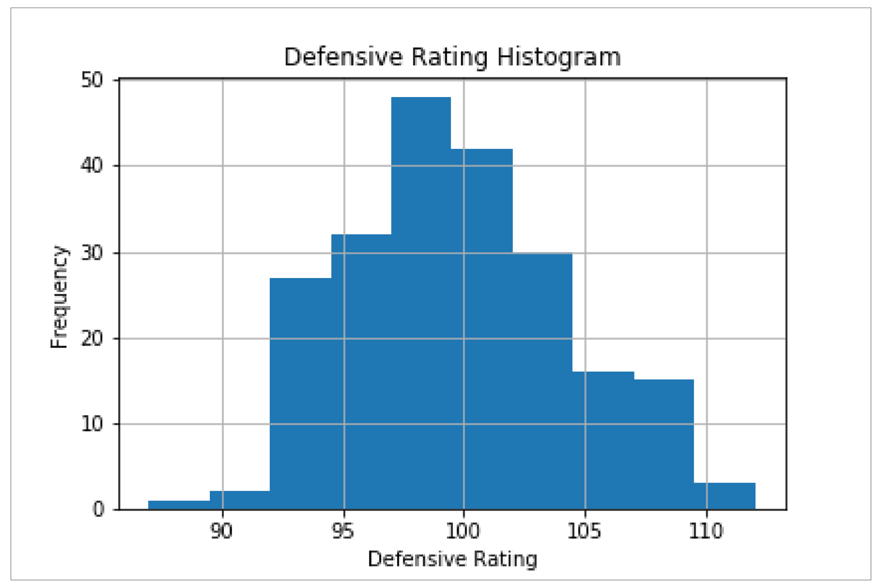


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Model:              Logit            Pseudo R-squared: 0.251
Dependent Variable: All Defense      AIC:              103.7865
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No. Observations:   216              Log-Likelihood:   -49.893
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Df Residuals:       214              LLR p-value:      7.1869e-09
Converged:          1.0000           Scale:            1.0000
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              Coef.  Std.Err.    z     P>|z|   [0.025   0.975]
-------------------------------------------------------------------
Over3         3.2691   0.7632  4.2831 0.0000  1.7731   4.7650
constant     -4.2908   0.7120 -6.0260 0.0000 -5.6863  -2.8952
==================================================================


              2.5%      97.5%        OR
Over3     5.889156  117.330621  26.286467
constant  0.003392    0.055289   0.013695
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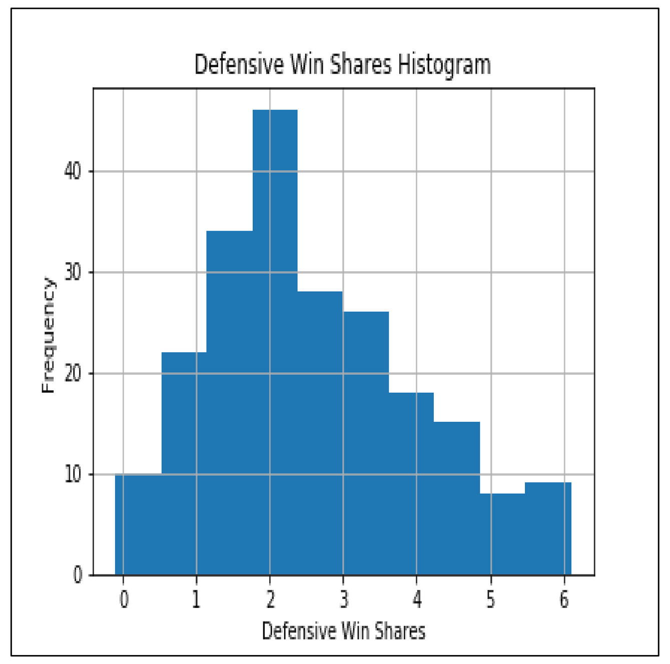

www.danoff.org/ball