McMaster Basketball

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McMaster Men's Basketball ranks near the bottom in the standings but does that really mean they are that far away from the competition?
If we examine what they would need exhibit day in day out, there are really just 4 important aspects of the game once it is broken down into statistics.
Shooting percentage, getting offensive rebounds, committing turnovers, going to the foul line a lot and making the shots.
We can see that it is true upon looking at McMasters win versus Windsor. We can see McMaster went $\frac{27}{32}$ from the free throw line getting them more than a quarter of their total points! Next we see that they dominated the board and got 38 rebounds in the game. The presence in the paint can be lethal to teams that cannot defend in the paint or are susceptible to height match-ups. This stat lead to McMaster getting more second chances and opportunities to score since they got us more possessions off of their second chances. When we take a closer look at the full game we see how many possessions we really had using the following formula:

$$Possessions = FGA - OREB + TOV + 0.4 * FTA$$

Ideally, on every possession you would like to score a point and achieve that to a high percentage to accumulate the win. When we look at how each possession converts into a point we realize that we must break it down into possession results:
Scoring Percentage is a percentage of a team's possessions in which the team scores at least one point. We view Scoring Possessions (SP) as:

$$ScoringPossessions = FGM + (1 - (1 - FTP)^2) * FTA * 0.4$$

McMaster does an excellent job converting, and through out the game, on their 79 possessions that they had, 44 of them were scoring possessions. Now it may seem that McMaster had a $\frac{44}{79} = 56\%$ effectiveness per possession but in reality we have to look at "plays" rather than possessions. We define a play as a opportunity to score with the formula:

$$Plays = FGA + FTA * 0.4 + TOV$$

This is different from possession because the possession statistic assumes if you get the offensive rebound as apart of the play it was part of your intention not to necessarily score but continue the possession, where as "play" strictly expects you to score. So now if we look at play percentage to get a more accurate representation of how well the team really converts, we see from the following formula,

$$PlaysPercentage = \frac{ScoringPossessions}{Plays}$$

When calculated we see that the Plays percentage is actually 52%. Any where above 50% is a good place to be so long your plays percentage is greater than the other teams. When you have a higher plays percentage, your players are more effective and their performance is statistically improved. This results in a higher offensive rating. An offensive rating is used to measure a team's offensive performance or an individual player's efficiency at producing points for the offence.

$OffensiveRating = 100*Pts/(0.5*((TmFGA+0.4*TmFTA-1.07*(TmORB/(TmORB+OppDRB)) * (TmFGA - TmFG) + TmTOV) + (OppFGA + 0.4 * OppFTA - 1.07 * (OppORB/(OppORB + TmDRB)) * (OppFGA - OppFG) + OppTOV)))$

The terribly long formula is very effective when examining match up scenarios when unsure whether to tailor the game plan to a more aggressive offence or a more passive defence. Overall, statistics and analytics are a great resource in decision making and preparation against certain match ups and should be used by all coaches and staff in order to have a winning team.