Advanced Player Statistics Glossary

Shooting

- TS% - True Shooting Percentage

$$TS\% = 100 * \left(\frac{PTS}{2 * (FGA + (0.4 * FTA))} \right)$$

- eFG% - Effective Field Goal Percentage

$$eFG\% = 100 * \left(\frac{FGM + (0.5 * 3PM)}{FGA} \right)$$

- 3PAr - 3Pt Attempt Rate

$$3PAr = \frac{3PA}{FGA}$$

- 2PAr - 2Pt Attempt Rate

$$2PAr = \frac{2PA}{FGA}$$

- FTr - Free Throw Attempt Rate

$$FTr = \frac{FTA}{FGA}$$

Rebounding

- ORB% - Offensive Rebound Percentage

$$ORB\% = 100 * \left(\frac{ORB * \left(\frac{TmMP}{5} \right)}{MP * (TmORB + OppDRB)} \right)$$

- DRB% - Defensive Rebound Percentage

$$DRB\% = 100 * \left(\frac{DRB * \left(\frac{TmMP}{5} \right)}{MP * (TmDRB + OppORB)} \right)$$

- TRB% - Total Rebound Percentage

$$TRB\% = 100 * \left(\frac{TRB * \left(\frac{TmMP}{5} \right)}{MP * (TmTRB + OppTRB)} \right)$$

Miscellaneous

- AST% - Assist Percentage

$$AST\% = 100 * \left(\frac{AST}{\left(\left(\frac{MP}{\frac{TmMP}{5}} \right) * TmFGM \right) - FGM} \right)$$

- STL% - Steal Percentage

$$STL\% = 100 * \left(\frac{STL * \left(\frac{TmMP}{5}\right)}{MP * OppPoss} \right)$$

- BLK% - Block Percentage

$$BLK\% = 100 * \left(\frac{BLK * \left(\frac{TmMP}{5}\right)}{MP * (OppFGA - Opp3PA)} \right)$$

- TOV% - Turnover Percentage

$$TOV\% = 100 * \left(\frac{TOV}{FGA + (0.44 * FTA) + TOV} \right)$$

- USG% - Usage Percentage

$$USG\% = 100 * \left(\frac{(FGA + (0.44 * FTA) + TOV) * \left(\frac{TmMP}{5}\right)}{MP * (TmFGA + (0.44 * TmFTA) + TmTOV)} \right)$$

Player Performance Ratings
These calculations were taken from *Basketball on Paper* by Dean Oliver. While these calculations help with understanding what is incorporated, I would suggest reading *Basketball on Paper* if you are looking for a more in depth reasoning behind the inclusion of these statistics.

- ORtg - Offensive Rating

$$\textbf{ORtg} = 100 * \left(\frac{PtsProd}{TotalPoss} \right)$$

$$q_5 = 1.14 * \left(\frac{TmAST - AST}{TmFGM} \right)$$

$$q_{12} = \frac{\frac{TmAST}{TmMP} * (MP * 5) - AST}{\frac{TmFGM}{TmMP} * (MP * 5) - FGM}$$

$$q_{AST} = \left(\frac{TmMP}{\frac{MP}{5}} * q5 \right) + \left(1 - \frac{TmMP}{\frac{MP}{5}} \right) * q_{12}$$

$$FG_{part} = FGM * \left(1 - \frac{1}{2} * \left(\frac{PTS - FTM}{2 * FGA} \right) * q_{AST} \right)$$

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$$AST_{part} = \frac{1}{2} * \left(\frac{(TmPTS - TmFTM) - (PTS - FTM)}{2 * (TmFGA - FGA)} \right) * AST$$

$$FT_{part} = \left[1 - (1 - FT\%)^2 \right] * (0.4 * FTA)$$

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$$TmORB_{wt} = \frac{(1 - TmORB\%) * TmPlay\%}{[(1 - TmORB\%) * TmPlay\%] + [TmORB\% * (1 - TmPlay\%)]}$$

$$TmScorePoss = TmFGM + \left(1 - (1 - TmFT\%)^2\right) * (0.4 * TmFTA)$$

$$TmPlay\% = \frac{TmScorePoss}{TmFGA + (0.4 * TmFTA) + TmTOV}$$

$$ORB_{part} = ORB * TmORB_{wt} * TmPlay\%$$

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$$ScorePoss = \left(FG_{part} + AST_{part} + FT_{part}\right) * \left(1 - \frac{TmORB}{TmScorePoss} * TmORB_{wt} * TmPlay\%\right) + ORB_{part}$$

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$$FG_X = (FGA - FGM) * [1 - (1.07 * TmORB\%)]$$

$$FT_X == (1 - FT\%)^2 * (0.4 * FTA)$$

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$$TotalPoss = ScorePoss + FG_X + FT_X + TOV$$

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$$FG_{part_{PP}} = 2 * \left[FGM + \left(\frac{1}{2} * 3PM\right)\right] * \left[1 - \left(\frac{1}{2} * \left(\frac{PTS - FTM}{2 * FGA}\right) * q_{AST}\right)\right]$$

$$AST_{part_{PP}} = 2 * \left[\frac{(TmFGM - FGM) + \frac{1}{2} * (Tm3PM - 3PM)}{TmFGM - FGM}\right] * \frac{1}{2} * \left[\frac{(TmPTS - TmFTM) - (PTS - FTM)}{2 * (TmFGA - FGA)}\right] * AST$$

$$ORB_{part_{PP}} = ORB * TmORB_{wt} * TmPlay\% * \left(\frac{TmPTS}{TmFGM + \left[1 - (1 - TmFT\%)^2\right] * (0.4 * TmFTA)}\right)$$

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$$PtsProd = \left(FG_{part_{PP}} + AST_{part_{PP}} + FTM\right) * \left(1 - \frac{TmORB}{TmScorePoss} * TmORB_{wt} * TmPlay\%\right) + ORB_{part_{PP}}$$

- DRtg - Defensive Rating

$$\textbf{DRtg} = TmDRtg + 0.2 * (100 * TmDPts_{ScorePoss} * (1 - Stop\%) - TmDRtg)$$

$$TmDPts_{ScorePoss} = \frac{OppPTS}{OppFGM + \left(1 - (1 - OppFT\%)^2\right) * (0.4 * OppFTA)}$$

$$FM_{wt} = \frac{OppFG\% * (1 - OppORB\%)}{[OppFG\% * (1 - OppORB\%) + (1 - OppFG\%) * OppORB\%]}$$

$$Stops_1 = STL + [BLK * FM_{wt} * (1 - 1.07 * OppORB\%)] + [DRB * (1 - FM_{wt})]$$

$$Stops_2 = \left(\frac{OppFGA - OppFG - TmBLK}{TmMP}\right) * FM_{wt} * (1 - 1.07 * OppORB\%) + ...$$
$$\left(\frac{OppTOV - TmSTL}{TmMP}\right) * MP + \frac{PF}{TmPF} * (0.4 * OppFTA) * (1 - OppFT\%)^2$$

$$Stops = Stops_1 + Stops_2$$

$$Stop\% = \frac{Stops * TmMP}{TmPoss * MP}$$