Data Assessment

Owner	TJ Barra
Tags	

Overview

As part of our interview process, we ask applicants complete a data assessment. This provides the applicant an opportunity to work with real basketball data and demonstrate analytical skills and abilities.

Questionnaire will be distributed Saturday 9/23/23. Deadline to submitted responses to questionnaire will be 9/30/23 at 12pm ET.

Questionnaire must be submitted in Github and shared with tj.barra@bucks.com.

Please include all responses and any code / data viz used in your analysis. Candidates may use any tools and software they would like for this project.

Any questions can be submitted to TJ Barra (tj.barra@bucks.com)

Question 1

Situation

- 4th Quarter
- <24 seconds in the game
- Shot clock is off
- We are up 3
- We are on defense

Question

One of our coaches asks whether we should foul.

Given the resources available, make a recommendation to the coach on a prescribed course of action. Be sure to include any code / data viz used in your analysis. Keep response to 1-2 pages (including data viz, not including any code). Be sure that the recommendation can be understood by both technical and non-technical audiences. Indicate what other data points not provided that would help improve your response.

Data

In the shared github repository, you will find a csv of data (chances.csv).

The csv includes all chances in the past 3 regular seasons with less than 24 seconds in the game (4th quarter or overtime), shot clock off, and offensive team down 3.

Spec

field	type	description
gid_nba	string	unique identifier of game
game_date	date	game date
xid_possession	string	unique identifier of possession, which captures the stretch of time that one team has the ball on offense
xid_chance	string	unique identifier of chance. chances divide possessions into smaller continuous sequences of live play that are split up by shots and dead balls.
team_nba_off	string	team on offense
team_nba_def	string	team on defense
period	integer	period / quarter
gameClock_start	float	time remaining in period (seconds) at start of chance
gameClock_end	float	time remaining in period (seconds) at end of chance
startType	string	the type of the chance, divided based on how the chance starts. the following categories are used:

		DEFOB - Defensive Out of Bounds FGDRB - Field Goal Defensive RB FGORB - Field Goal Offensive RB FTDRB - Free Throw Defensive RB FTORB - Free Throw Offensive RB SLOB - Sideline Out of Bounds BLOB - Baseline Out of Bounds FTLINE - Free Throw Line (loose ball foul in the bonus) JMP - Jump Ball TO - Live Ball Turnover FTM - Free Throw Made FGM - Field Goal Made
outcome	string	event that ended the chance. FG - Any made field goal FGM - Made 2 pointer FGM3 - Made 3 pointer FGX - Any missed field goal FOUL - Any foul TO - Turnover VIO - Violation TMO - Timeout SUB - Substitution JMP - Jump Ball OOB - Out of Bounds Stoppage REP - Replay Stoppage AST - Assist PASS - Pass AST0 - A pass was made to someone who took a shot within one dribble and missed AST2 - A pass was made to someone who took a shot within one dribble and made a two pointer AST3 - A pass was made to someone who took a shot within one dribble and made a three pointer ASTO - The pass was made to someone who turned the ball over within one dribble. ASTF - The pass was made to someone who was fouled and shot free throws AST_SCR - The assist was made to the screener PASS_SCR - The pass was made to the screener FOU_S - Shooting Foul FOU_B - Foul in the bonus FOU_N - Personal foul that is neither shooting nor in the bonus FOU_T - Technical foul FOU_F - Flagrant Foul FOU_TT- Transition take foul FOU_O - Offensive Foul FOU_A - Away from the ball foul
score_margin	Integer	score differential from perspective of offensive team. positive indicates offensive team is leading. negative indicates offensive team is trailing.
ptsScored_team	integer	points scored on chance by the offensive team
shot_fga	integer	field goal attempts on the chance by the offensive team
shot_fg	integer	field goals made on the chance by the offensive team

shot_fga3	integer	3-point field goal attempts on the chance by the offensive team
shot_fg3	integer	3-point field goals made on the chance by the offensive team
shot_qSP	float	shot probability of shot attempt in chance. in format of effective field goal percentage. a 3-point field goal made would have a value of 150. a 2-point field goal made would have a value of 100. shot probability takes into account quality of the shooter.
shot_m_region	string	region of fga: ATB (Above the Break), Corner (Corner 3), Mid (Mid Range 2), NRA (Non-Restricted Paint), RA (Restricted Area)
fouls_def	integer	# of fouls by defensive team on chance
fouls_def_shooting	integer	# of shooting fouls be defensive team on chance
fta	integer	# of free throw attempts by offensive team on chance
fta_shooting	integer	# of free throw attempts from shooting fouls by offensive team on chance
team_nba_winner	string	team that won game

Question 2

In 500 words or less, describe a problem / question that you would like to solve when given access to an NBA team’s database. Outline the scope of the project, the benefits for the team / yourself, and the challenges that you may face with such project.