University of Michigan
2013/2014 Men's Basketball Big Ten Champions

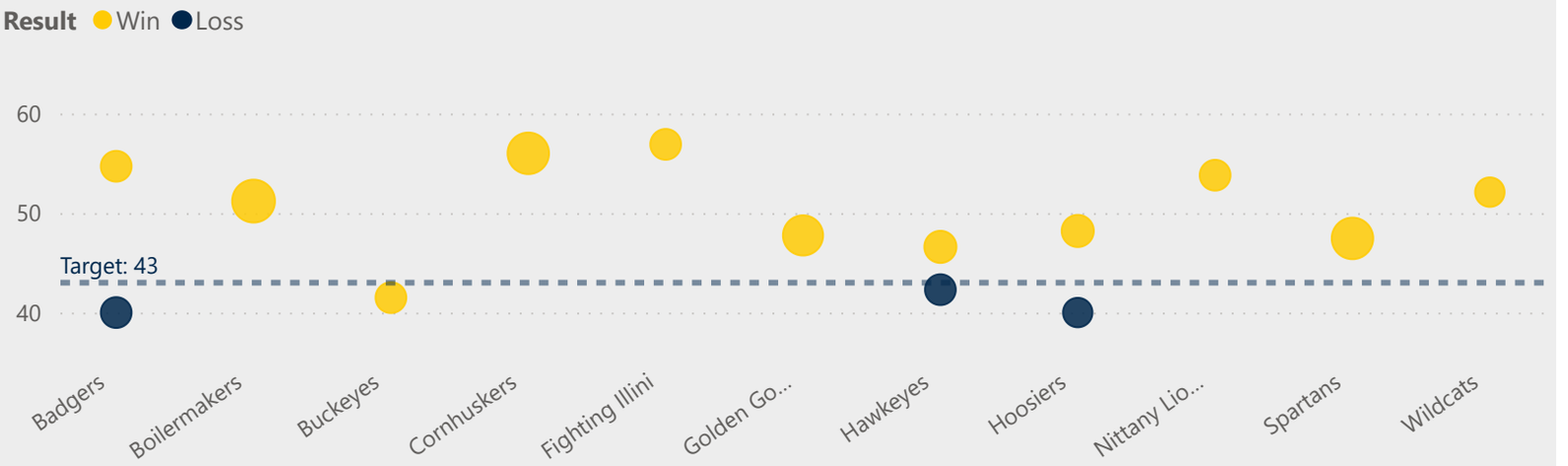
Opponent
All

Home
Away

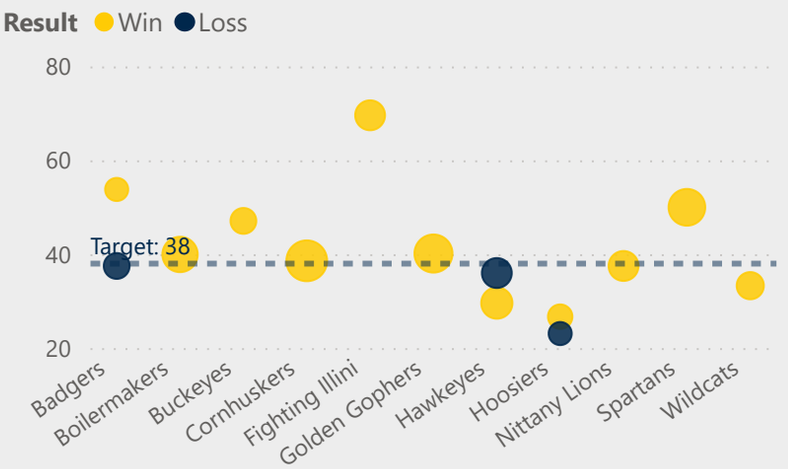
Result
Win
Loss

Average Field Goal %	Average Three Point %	Average Free Throw %
48.94	40.64	76.84

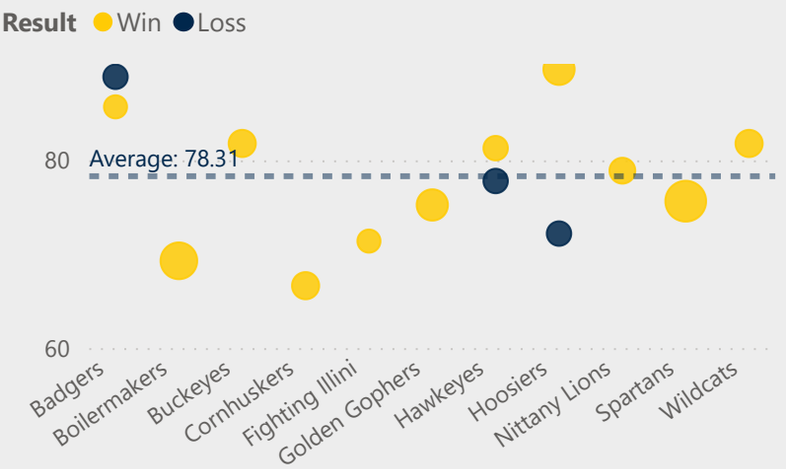
Average Field Goal Percentage



Average Three Point Percentage



Average Free Throw Percentage



Date	Opponent	Result	Mich Home or Away	Home Score	Away Score
1/3/2014	Golden Gophers	Win	Away	60	63
1/5/2014	Wildcats	Win	Home	74	51
1/10/2014	Cornhuskers	Win	Away	70	71
1/15/2014	Nittany Lions	Win	Home	80	67
1/18/2014	Badgers	Win	Away	70	77
1/23/2014	Hawkeyes	Win	Home	75	67
1/26/2014	Spartans	Win	Away	75	80
1/31/2014	Boilermakers	Win	Home	75	66
2/2/2014	Hoosiers	Loss	Away	63	52
2/5/2014	Cornhuskers	Win	Home	70	50

2014 University of Michigan Men's Basketball Analysis

by Brandon Hopkins

Background and Purpose

In 2014, the University of Michigan Men's basketball team won the regular season Big Ten Championship (outright) since the 1985-86 season! They also had the most conference wins (15) since the 1992-93 season. As a lifelong Michigan fan being born in 1992, I had never witnessed a Big Ten championship season, so naturally I was very excited. That excitement led me to take a closer look at some of the season statistics to try and get a better appreciation of the team performance.

I decided to analyze the shooting performance (field goals, three pointers, and free throws) as that is usually a good performance indicator for the overall team performance. There are, of course, so many other factors that impact the results (defense, turnovers, injuries, etc.) but for the purposes of this study I wanted to only focus on shooting statistics.

Data Collection

The data I used was accessed via a public database in Google Big Query. The table I pulled data from consists of team-level box scores from every men's basketball game from 2013-2018, provided by Sportradar LLC.

Dataset ID: bigquery-piblic-data.ncaa_basketball

Table ID: bigquery-piblic-data.ncaa_basketball.mbb_games_sr

I wrote a SQL query to filter the table to include only the data I was interested in – 2014 Big Ten conference games played by Michigan. I've included the query in its entirety and a screenshot of the results on page 3. The resulting table included the data, teams involved, points, whether Michigan won or loss, and shooting statistics.

Data Visualization

I saved the resulting table from my SQL query as a .csv and loaded the file into Microsoft Power BI. At this point, I viewed the data in Power Query to make sure it was clean and formatted the way I wanted. I also wrote a few DAX expressions to aggregate shooting stats over the course of the season.

I created a dashboard that lets the user filter based on opponent, whether Michigan was home or away, and whether they won or lost. It also displays the season average shooting percentages at the top for reference. There are scatter plots for each of average field goal percentage, three-point percentage, and free throw percentage by opponent, that also clearly shows the user the number of attempts (via marker size) and the result of the game (via color). Also included in these plots is the target line, for field goals and three pointers, and an average line for free throws. At the bottom of the dashboard is a table which shows the team's overall record.

Key Insight

The average field goal and three-point percentage over the course of the season was 48.94% and 40.64% respectively, and the average free throw percentage was 76.84%. Michigan outperformed all other Big Ten teams in these categories.

During my analysis, I found that Michigan won every game in which their field goal percentage averaged over 43% except for one game. I found a similar target for three-point percentage; however, this was less clear. Michigan won every game in which they shot over 38% from the three-point line, but also won a few when they shot below that mark. Free throw percentage did not seem to have an obvious impact on performance. Michigan lost games in which their free throw percentage was higher and won games when the percentage was lower. The average per game did seem to be lower in games where the attempts were higher. The clear takeaway from this analysis is that field goal percentage has a great impact on overall performance, and when the 2014 Wolverines shot over 43% on any given day, they were heavily favored to win the game.

```
# The purpose of this query is to summarize the results of the 2013-2014 Michigan Big Ten Conference season.
# Columns selected from the data source table include game time, teams involved, an IF statement to determine the outcome of the game, and key stats. Created aliases for column names for easier readability.
SELECT
  scheduled_date AS Date,
  a_name AS Opponent,
  h_name AS Home_Team,
  a_name AS Away_Team,
  IF (h_points_game > a_points_game,"Win","Loss") AS Result,
  h_points_game AS Home_Points_Total,
  a_points_game AS Away_Points_Total,
  h_field_goals_pct AS Field_Goal_Percentage,
  h_three_points_pct AS Three_Point_Percentage,
  h_free_throws_pct AS Free_Throw_Percentage,
  h_field_goals_att AS Field_Goal_Attempts,
  h_three_points_att AS Three_Point_Attempts,
  h_free_throws_att AS Free_Throw_Attempts

FROM
  `bigquery-public-data.ncaa_basketball.mbb_games_sr`

# Filter results with Michigan as the home team,the season as 2013, and to only include conference games (excluding non-conference and tournament games for this analysis)
WHERE
  h_alias = "MICH"
  AND season = 2013
  AND conference_game=TRUE

# Union statement that repeats the select statement above, but filters results to oniy include games with Michigan as the away team. The union statement allows to combine the two select statements so that the query ultimately includes all Michigan conference games (both home and away)
UNION ALL

# Select same number of columns as the above select statement, but be sure to change from home to away data for opponent name, if statement to determine results, and team statistics - for this statement we want Michigan as the away team so the columns selected must reflect that accordingly
SELECT
  scheduled_date,
  h_name,
  h_name,
  a_name,
  IF (a_points_game > h_points_game, "Win", "Loss"),
  h_points_game,
  a_points_game,
  a_field_goals_pct,
  a_three_points_pct,
  a_free_throws_pct,
  a_field_goals_att,
  a_three_points_att,
  a_free_throws_att
```

```
FROM
  `bigquery-public-data.ncaa_basketball.mbb_games_sr`

# Same filters as above except with Michigan as the away team
WHERE
  a_alias = "MICH"
  AND season = 2013
  AND conference_game=TRUE

# Organize resulting query by date that the games were played (default is to order by ascending)
ORDER BY
  Date;
```

Query results

SAVE RESULTS | EXPLORE DATA

JOB INFORMATION | RESULTS | JSON | EXECUTION DETAILS

Row	Date	Opponent	Home_Team	Away_Team	Result	Home_Point...	Away_Point...	Field_Goal_...	Three_Point...	Free_Throw...	Fie
1	2014-01-03	Golden Gophers	Golden Gophers	Wolverines	Win	60	63	45.5	41.2	72.7	
2	2014-01-05	Wildcats	Wolverines	Wildcats	Win	74	51	52.1	33.3	81.8	
3	2014-01-10	Cornhuskers	Cornhuskers	Wolverines	Win	70	71	62.0	35.3	33.3	
4	2014-01-15	Nittany Lions	Wolverines	Nittany Lions	Win	80	67	53.8	37.5	78.9	
5	2014-01-18	Badgers	Badgers	Wolverines	Win	70	77	54.7	53.8	85.7	
6	2014-01-23	Hawkeyes	Wolverines	Hawkeyes	Win	75	67	46.6	29.6	81.3	
7	2014-01-26	Spartans	Spartans	Wolverines	Win	75	80	44.9	57.9	83.3	
8	2014-01-31	Boilermakers	Wolverines	Boilermakers	Win	75	66	60.9	53.8	70.6	
9	2014-02-02	Hoosiers	Hoosiers	Wolverines	Loss	63	52	40.0	23.1	72.2	