

Student Version

Title: No fans, Home advantage lost? Utilizing Covid-19 Data to Explore Fan effect

Author: Reza O. Abbasian, Dept of math-CS

Instructions to students:

Background information: With all sports, there is always a concept of home field advantage or home advantage, where a team playing at their home stadium increases the chances of victory for the home team. Playing at home stadium, in front of fans and not having to travel are all factors which help the home team. One of the few advantages of the recent pandemic was to provide us with data to study performance of a team at home, but without fans in comparison to performance in away games. A simple metric used for comparison is the collective ratio of home wins to away games. This ratio will be one if there was no home field advantage. In reality, home field advantage exists, and this ratio is generally greater than one and at times it could get close to two. Jackson [1] uses soccer data from the English Premier League to investigate home advantage. He takes data from the 1992/93 season to 2020/21 season comparing the ratio of home wins to away wins. He finds that the seasons before COVID-19 gave a higher home wins to away wins ratio, around 1.5:1, but when COVID-19 hit, the 2020/21 season showed a lower home wins to away wins ratio that was quite startling: he stated a ratio that was very close to one-to-one. Students are supposed to use the same methodology in other sports (NBA, MLB, etc.) utilizing at least twenty years of data.

- **Individual or group project:** This project will be assigned to teams of students
- **Data:** A complete set of references given at the bottom of this document is intended to help students to have access to data they need.
- **Procedure/plan of action to complete the project:**
Pre-project Assignment for students:
Think about these questions we'll discuss in class:
 - 1) Why is there a home field advantage? Is it because the home team does not travel, or because of the familiarity with the home court/field or is it because of fans support? In your opinion which one is more important?
 - 2) Read reference 1, to familiarize yourself with the background information and methodology
 - 3) After the preliminary discussion on these questions, instructor and students will do a simple example to practice with the methodology suggested by the author in reference 1. See example in the next section.
 - 4) The instructor then divides the class into groups of 2-3 student . Students are supposed to repeat the process using a different sport. Data for NBA , MLB and

MLS are readily available. Ideally students should use at least ten years of data to arrive at meaningful conclusions. Results for different sports are going to be different (some will have much smaller ratio in the covid year). Students should prepare a document on the reasons for the discrepancy and discuss it in class.

- **Example:**

We selected ten years of data from the British Basketball League from 2010 to 2019 and compared the results with 2020-2021 season (Covid year) where either no fans or very few fans were present. As the results show, there was a sharp decline in the ratio of home wins to away wins.

Year	Total Home Wins	Total Away Wins	Ratio of Home vs. Away Wins
2010-11	120	78	1.538:1
2011-12	94	71	1.324:1
2012-13	121	77	1.571:1
2013-14	110	88	1.25:1
2014-15	128	106	1.208:1
2015-16	112	86	1.302:1
2016-17	108	90	1.2:1
2017-18	114	84	1.357:1
2018-19	117	81	1.444:1
2019-20	46	27	1.704:1
2020-21	89	76	1.171:1

- **Duration:** This is a one to two-week project depending on the scope of the project and details expected from the students

- **Deliverables and evaluation:**

Students are expected to be prepared for the pre-project questions.

Each team will present their results in a five-minute presentation.

Students are expected to be prepared for the post-project discussions.

[1] Jackson, A. (2021), "No fans, no home advantage?". *Significance*, 18: 4-5.

<https://doi.org/10.1111/1740-9713.01541>

[2] Basketball24 (n.d.), "BBL". Retrieved May 22, 2022, from

<https://www.basketball24.com/united-kingdom/bbl/>

[3] MLB (n.d.), "Standings". Retrieved May 20, 2022, from

<https://www.mlb.com/standings/league/>

[4] Daniel, J. F. III and Fullmer, E. (2021), "When the Fans Didn't Go Wild: The 2020 MLB

Season as a Natural Experiment on Home Team Performance”. *Baseball Research Journal*, 50: 65-73. <https://sabr.org/journal/article/when-the-fans-didnt-go-wild-the-2020-mlb-season-as-a-natural-experiment-on-home-team-performance/>

[5] NBA (n.d.), “NBA Advanced Stats”. Retrieved May 22, 2022, from <https://www.nba.com/stats/teams/traditional/>

[6] NBA.com Staff (2020), “Which NBA arenas will allow fans during the 2020-21 season?”, *The Sporting News*. Retrieved May 22, 2022, from <https://www.sportingnews.com/au/nba/news/which-nba-arenas-will-allow-fans-to-start-the-2020-21-nba-season/5m143rzencat1dez4c63kxehn>

[7] FBREF (n.d.), “2015 Major League Soccer Stats”. Retrieved May 22, 2022, from <https://fbref.com/en/comps/22/1369/2015-Major-League-Soccer-Stats>

[8] Edwards, A. (2020), “MLS restart to include games played in home stadiums, with fans”, *NBCSports*. Retrieved May 22, 2022, from <https://soccer.nbcsports.com/2020/08/08/mls-restart-include-games-played-home-stadiums-with-fans/>