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|  | Covid-19 Natural Experiment | Country aggregate | Crowd Occupancy | Referee Bias | Crowd size | Team Age | Share of Foreigners | Study Conclusions |
| Boyko, Boyko, & Boyko (2007) | 🗶 | 🗶 | ✓ | ✓ | ✓ | 🗶 | 🗶 | Indivdual referees give significant different responses to crowd noise and have significant different levels of home team bias. |
| Carron & Agnew (1994) | 🗶 | 🗶 | ✓ | ✓ | ✓ | 🗶 | 🗶 | There is a positive relationship with crowd density and home advantage. But the explanatory power of crowd support effects is rather low |
| Courneya & Carron (1992) | 🗶 | ✓ | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | Crowd size is a significant predictor of home advantage |
| Endrich& Gesche (2020) | ✓ | 🗶 | ✓ | ✓ | 🗶 | 🗶 | 🗶 | There is a significant change in punishment for away teams in the situation of “ghost games”. |
| Fischer & Haucap (2020) | ✓ | 🗶 | ✓ | ✓ | ✓ | 🗶 | 🗶 | Crowd occupancy is the main driver of differences in home advantage pre and post covid-19. Referee bias and absolute crowd size appear less important. |
| Mccarick et al(2020) | ✓ | ✓ | ✓ | ✓ | 🗶 | 🗶 | 🗶 | Home advantage decreased significantly after covid-19, points and goals for home teams decreased. Also referee issued significantly fewer sanctions against away teams. |
| Nevill & Holder  (1999) | 🗶 | 🗶 | 🗶 | ✓ | ✓ | 🗶 | 🗶 | Referee bias is the most important component of crowd support effect on team performance |
| Pollard (2006) | 🗶 | ✓ | 🗶 | ✓ | ✓ | 🗶 | 🗶 | Home advantage is a result of many different factors all interacting with each-other. With differeng levels across countries and sports. |
| Pollard (2008) | 🗶 | ✓ | 🗶 | ✓ | ✓ | 🗶 | 🗶 | Home advantage is a result of many different factors all interacting with each-other. |
| Ponzo & Scoppa (2018) | 🗶 | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | 🗶 | Home advantage still persists in derby matches, where familiarity and travel factors are mitigated. Supporting the notion of crowd support influencing home advantage. |
| Schwartz & Barsky (1977) | 🗶 | ✓ | ✓ | 🗶 | ✓ | 🗶 | 🗶 | Home advantage primarily sterns from crowd support. With stronger crowd support(occupancy/size) increasing home advantage |
| Van der Ven (2016) | 🗶 | 🗶 | 🗶 | 🗶 | 🗶 | ✓ | 🗶 | Teams with a higher average age perform better in Away games |
| Tilp & Thaller (2020) | ✓ | 🗶 | 🗶 | ✓ | 🗶 | 🗶 | 🗶 | Covid has turned home advantage into a home disadvantage in case of “ghost games” |
| THIS PAPER | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  |

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|  | **Mean (M)** | **St. Dev. (SD)** | **Minimum** | **Median** | **Maximum** | **N** |
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| ***Variables of interest*** |  |  |  |  |  |  |
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| Variable | Operationalization | Source |
| **Dependent variables** |  |  |
| Percentage points home | The percentage of total points obtained by the home team in a single match, 0 = 0% , 1 = 100% | Football-data.co.uk |
| Expected goals difference | Continuous number obtained by deducting expected goals for the away team from the expected goals of the home team | Projects.fivethirtyeight.com |
| Goal difference | Integer value obtained by deducting number of away goals from number of home goals | Football-data.co.uk |
| **Moderators** |  |  |
| Foreigner share difference | Share of foreigners home team - Share of foreigners away team | Transfermarkt.com |
| Age difference | Average age Home Team - Average age Away Team | Transfermarkt.com |
| Occupancy rate | Continuous value between 0(no spectators) and 1(sold out stadium) | Transfermarkt.com |
| Crowdsize | Small if average attendance smaller than 20,000, Medium if average attendance between 20,000 and 40,000 , Large if average attendance > 40,000 | Transfermarkt.com |
| **Mediators** |  |  |
| Yellow card difference | Integer value obtained by deducting the number of away red cards from the number of home red cards | Football-data.co.uk |
| Foul difference | Integer value obtained by deducting the number of away red cards from the number of home red cards | Football-data.co.uk |
| Red Card difference | Integer value obtained by deducting the number of away red cards from the number of home red cards | Football-data.co.uk |
| **Independent variables** |  |  |
| Covid | 1 = match played post-covid 0 = match played pre covid |  |
| **Control variables** |  |  |
| Rating difference | Number between -100 and 100 obtained by deducting away team strength rating from home team strength rating | Projects.fivethirtyeight.com |
| Importance difference | Number between -100 and 100 obtained by deducting away team match importance from home team match performance | Projects.fivethirtyeight.com |
| VAR | 1 if VAR technology was available 0 if not | Projects.fivethirtyeight.com |

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|  | **Pre-Covid** | **Post-Covid** | **P-value** |
| Goal Difference | 0.3618 | 0.1702 | 4.209e-06 \* \* \* |
| Expected goals difference | 0.3143 | 0.1643 | 1.891e-06 \* \* \* |
| Yellow Card Difference | -0.3005 | 0.0130 | 2.083e-15 \* \* \* |
| Red Card Difference | -0.0342 | -0.0113 | 0.01048 \* |
| Foul Difference | -0.2923 | 0.2096 | 0.0001054\* \* \* |

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|  | **Pre-Covid** | **Post-Covid** | **P value** |
| Percentage points Home | 0.5772 | 0.5328 | 5.124e-06\* \* \* |
| Points Home | 1.6084 | 1.4692 | 5.124e-06\* \* \* |
| Home Goals | 1.5843 | 1.4689 | 0.0001494\* \* \* |
| Percentage home Wins | 0.4538 | 0.4038 | 2.2e-16\* \* \* |
| Expected goals Home | 1.5688 | 1.4638 | 1.075e-07\* \* \* |

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|  | **Pre-Covid** | **Post-Covid** | **P value** |
| Percentage points Away | 0.4228 | 0.4673 | 5.124e-06\* \* \* |
| Points Away | 1.1448 | 1.2730 | 5.124e-06\* \* \* |
| Away Goals | 1.2219 | 1.2987 | 0.001046\* \* \* |
| Percentage Away wins | 0.2993 | 0.3384 | 2.2e-16\* \* \* |
| Expected goals Away | 1.2544 | 1.2995 | 0.04368\* |

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|  | **Pre-Covid** | **Post-Covid** | **P value** |
| Yellow Card Home | 1.9607 | 1.9956 | 0.1898 |
| Red Card Home | 0.0928 | 0.0967 | 0.4763 |
| Fouls Home | 12.8697 | 13.1371 | 0.002633\* \* |
| Yellow Card Away | 2.2616 | 1.9826 | 6.207e-17\* \* \* |
| Red Card Away | 0.1207 | 0.1081 | 0.007042\* \* |
| Fouls Away | 13.16 | 12.9275 | 0.05631 |