

1 Reported cases of alcohol-related domestic 2 abuse increase following the victory of the 3 England national football team

4

5 **Abstract**

6 Can sporting events act as triggers of domestic abuse? Previous research
7 has suggested a link between large-scale televised sport tournaments and
8 increased rates of reported domestic abuse^{1,2}. While hypothesized to be
9 a significant factor, the role alcohol plays in this relationship is unknown.
10 Using crime data from the third largest police force in England, serving a
11 population of 2.9 million³, we show that the number of reported alcohol-
12 related domestic abuse cases increases by 61% following an England victory
13 in a national football tournament (World Cup, European Championship).
14 The effect is driven by male to female alcohol-related cases, and is absent
15 from male to male, female to male, and female to female cases. A three-hour
16 analysis reveals that the increase starts in the three-hour period of the match,
17 peaks in the three hours following the victory, and gradually declines to its
18 baseline level 12 hours after the match. This temporal pattern, along with
19 the random allocation of match days strongly suggests a causal effect of an
20 England victory on alcohol-related domestic abuse. We find a comparable
21 increase in other, violent, male to female, alcohol-related offences on England
22 win days. The win-effect is robust to the exclusion of specific tournament
23 years, and using data from another geographical area within England. The
24 domestic abuse that occurs on these days is not characteristically different
25 from domestic abuse cases occurring on non-match days, apart from the
26 stronger association with alcohol. The alcohol and time specificity go beyond
27 existing reports of the link between football and domestic abuse^{2,4}.

Long introduction

“If England gets beaten, so will she” - read the poster as part of the “The Not-So-Beautiful-Game” awareness campaign launched by the National Centre for Domestic Violence in the wake of the 2018 FIFA World Cup⁵. While the link between sporting events and domestic abuse has been the focus of a number of smaller studies⁶, large-scale quantitative investigations of this relationship are relatively scarce. The most extensive study in the topic found that an unexpected loss of the local National Football League (NFL) team resulted in a 10% increase in the rate of reported male to female intimate partner violence (IPV) in the US¹.

In England, most studies have focused on the link between football (soccer) and domestic abuse. Football’s history is inextricably linked to England, and it is by far the most popular sport in the country⁷, with the 2018 World Cup attracting a record number of 44.5 million viewers⁸. One of the earliest examinations of the link between football and domestic abuse used daily data from 33 out of 39 police forces in England from the period of June-July in 2009 and 2010 (World Cup tournament year)⁴. They tested whether the reported number of domestic abuse cases increased significantly on days when the England national football team won, lost, or drew, compared to the same days in 2009, and other, non-match days during the tournament in 2010. The study found that rates of reported domestic abuse increased significantly when England lost or won (about 33-35%), but did not change on days when they drew.

A more comprehensive investigation, using daily counts of domestic abuse in Lancashire from the 2002, 2006 and 2010 World Cup, found a 38% increase in the number of reported domestic violence cases when the England team lost, and a 26% increase when they won or drew². These estimates had been widely discussed in the British media before the 2018 World Cup, and the figures were also quoted on the posters in the Not-So Beautiful Game Campaign. While domestic abuse is predominantly understood as a pattern of ongoing behaviour involving a series of occurrences, rather than a one-off incident triggered by football⁹, these studies, and other qualitative investigations¹⁰ nevertheless suggest that national football tournaments can create an environment for abusers that is conducive to domestic abuse.

Why would national football tournaments, such as the World Cup or the European Championship precipitate domestic abuse? England’s participation in these tournaments are times of heightened patriotic emotions and a

strengthened sense of “Englishness”, fuelled by media narratives that often use war references, and a “us vs. them” rhetoric to generate and represent an English national identity¹¹. Previous qualitative research has suggested that televised contact sports can serve as vehicle for the male sports fan to redefine, and express his masculinity in a way that allows dominance, control, and can ultimately manifest in the perpetration of domestic abuse^{10,12}, given susceptibility to such behaviours. We speculate that this observation is especially pertinent in the context of England’s participation in national football tournaments, owing to the popularity of the sport in the country, the associated media attention, and the resulting heightened sense of national consciousness.

Qualitative investigations suggest that alcohol can be a significant factor in the link between football and domestic abuse. Alcohol has a strong association with domestic abuse, those with alcohol-problems are more likely to be perpetrators, and when alcohol is involved, there is evidence that the violence might result in more serious injuries¹³. However, it is generally understood that the role of alcohol should be considered in the context of a range of social, biological and psychological factors, and that alcohol is not the direct cause of domestic abuse^{13,14}. One explanation for the co-occurrence of domestic abuse and alcohol is that, for some men, drinking and violence plays an instrumental role in the construction and expression of masculinity, especially when the problem of masculine deficiency is present (e.g., by unemployment)¹³. It has also been suggested that some perpetrators use alcohol to deflect responsibility for their actions, using alcohol as a “shield” that protects them from being seen as a violent abuser¹⁴.

In the US, the relationship between unexpected NFL losses and IPV did not depend on alcohol-involvement in the abuse case¹, while England-based quantitative studies did not look at the role of alcohol in particular. Given the strong association between drinking culture and football in England¹⁵, a relationship continuously reinforced by the marketing practices of the alcohol industry¹⁶, we hypothesize that alcohol plays an important role in the relationship between national football tournaments and domestic abuse.

To explore this hypothesis, we test if the daily number of reported domestic abuse cases recorded by the West Midland Police in England between 2010 and 2018 increase on days when the England national team plays in the World Cup or the European Championship, and whether the effect, if any, depends on alcohol-involvement in the reported case or the result of the match. We find that alcohol-related domestic abuse significantly increases

103 following an England victory. Our rich dataset further allows us to inves-
104 tigate various aspects of this win-effect, including the temporal pattern of
105 the increase, and exploring if the link between football and domestic abuse
106 depends on the gender of the perpetrator and victim. We conduct various ro-
107 bustness checks of the win-effect. We also examine if the increase extends to
108 other types of criminal behaviours apart from domestic abuse, and whether
109 similar links exist between rugby and domestic abuse. Finally, we test if the
110 abuse perpetrated on England match days is characteristically different from
111 abuse occurring on non-match days.

112 In the UK, the term “domestic abuse” refers to a wide range of be-
113 haviours, from physical and sexual violence to psychological, emotional, fi-
114 nancial abuse, threatening behaviour, stalking and harassment, either within
115 a family or an intimate relationship¹⁷. Recent changes to the definition in-
116 troduced the concept of coercive control, which recognises domestic abuse as
117 a pattern of incidents, which can include any of the above behaviours. Previ-
118 ous research has mostly focused on IPV, the largest subcategory of domestic
119 abuse. While IPV is more common than abuse perpetrated by family mem-
120 bers¹⁷, our dataset does not contain information about the exact relationship
121 between the victim and perpetrator, therefore we cannot separate the two
122 types of abuse, and we will refer to them collectively as “domestic abuse”.

123 Our dataset contains all cases of domestic abuse that have been reported
124 to the West Midlands Police between 2010 and 2018, but the vast majority
125 of all domestic abuse incidents in fact never get reported (according to the
126 Crime Survey of England and Wales, only 17% of all domestic abuse victims
127 reported the abuse to the police between April, 2017 and March, 2018¹⁷).
128 This substantial reporting bias, and its potential correlation with other con-
129 textual factors warrants a careful interpretation of the estimates from any
130 quantitative study investigating domestic abuse, and highlights the impor-
131 tance of utilising a mixed methods approach to explore the factors facilitating
132 domestic abuse.

1 Results

In the following regressions, each observation is a day in the period between 2010 and 2018, and the outcome variable is the number of domestic abuse cases reported to have been perpetrated on that day. To investigate whether national football tournaments affect the number of reported abuse cases, we classify each day in our dataset as either a day on which England won (England win), lost (England lost) or drew (England draw), a day after an England match day (After England), any other day during the tournament (Tournament on), or any other day during the rest of the year (Nonmatch day).

Using a series of negative binomial regressions, we first compare various, increasingly complex model specifications to understand the relationship between football, alcohol and domestic abuse. As shown in Table 1, adding type of day as an explanatory variable to a model with only alcohol and time controls marginally improves the model fit (see column 2), and the results show a 20%, 95% CI [5%–38%] increase in the number of reported domestic abuse cases when the England national football team wins. The comparison between column 2 and 3 reveals that this increase stems from a much more pronounced, 61%, 95% CI [24%–110%] increase within the subgroup of alcohol-related domestic abuse cases on days when England wins. Interestingly, we find no evidence for comparable increases in the number of reported domestic abuse cases when the England national team loses. Less surprising, and more consistent with previous findings is the lack of an increase on England draw days, probably due to the fact that high-stake matches after the group-stage in the tournament cannot result in a draw.

Further interacting alcohol with the rest of the time-specific control variables results in a substantially improved model fit (see column 4), but does not alter the effect of an England win on alcohol-related domestic abuse (61%, 95% CI [32%–96%]). The results also reveal a smaller, 9%, 95% CI [1%–17%] increase in non-alcohol related cases on days following an England match day, potentially the result of a temporal spillover effect from the previous match day. We also see an 8%, 95% CI [2%–14%] decrease in alcohol-related cases during the tournament, but not on England match days, perhaps stemming from heavy drinking being mostly concentrated around England match (and particularly England win) days, and relatively lower alcohol consumption on other days during the tournament.

To explore the characteristics of this increase, we investigate whether the

Table 1: Number of reported domestic abuse incidents by alcohol involvement and type of day

	<i>Dependent variable:</i>			
	Number of reported domestic abuse cases per day			
	(1)	(2)	(3)	(4)
Alcohol	−0.719*** (0.007)	−0.719*** (0.007)	−0.719*** (0.008)	−0.862*** (0.031)
Tournament on		−0.004 (0.023)	0.014 (0.027)	0.032 (0.020)
England win		0.205*** (0.069)	−0.037 (0.091)	−0.031 (0.063)
England draw		0.025 (0.082)	0.048 (0.104)	0.047 (0.072)
England loss		0.078 (0.068)	−0.013 (0.089)	0.050 (0.061)
After England		0.097** (0.043)	0.075 (0.055)	0.086** (0.038)
Tournament on:Alcohol			−0.043 (0.040)	−0.083** (0.035)
England win:Alcohol			0.610*** (0.135)	0.606*** (0.101)
England draw:Alcohol			−0.055 (0.165)	−0.034 (0.129)
England loss:Alcohol			0.223 (0.135)	0.076 (0.101)
After England:Alcohol			0.051 (0.084)	0.037 (0.066)
Number of days	3,017	3,017	3,017	3,017
AIC	45,539.500	45,536.770	45,530.360	41,959.280

^a * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

^b Estimates are from a series of negative binomial regressions (based on tests of overdispersion) with year, month, day of week, Christmas, New Year's eve controls; Model 4 further includes interactions between alcohol and all control variables; standard errors in parentheses

170 strength of the effect varies by offender-victim gender subgroup. Previous
171 qualitative research has suggested that the link between football and do-
172 mestic abuse is a result of violent expression of masculinity¹², where heavy
173 drinking is also often present. If this was the case, we would expect football
174 and alcohol to only affect reported numbers of male-perpetrated domestic
175 abuse.

176 Table 2 shows the results from four negative binomial regressions, one for
177 each offender-victim gender groups. These reveal a pronounced increase in
178 the subgroup of Male to Female abuse (which comprises about 80% of all
179 domestic abuse cases in our data), where the number of reported alcohol-
180 related cases increase by 67%, 95% CI [35%–107%] on England win days.
181 While we see similar tendencies for alcohol-related cases in other gender sub-
182 groups on England win days, these coefficients are about half the size of
183 the male to female effect, and are not statistically different from zero. These
184 results can be interpreted in light of the observation that British football fan-
185 dom is prevalently male-dominated⁷, and they lend support to the hypothesis
186 that masculinity construction and alcohol may be key to the link between
187 football and domestic abuse. However, it is unclear why victory-induced,
188 alcohol-related masculinity construction would culminate in violence only
189 against women. *is there an inference from the null problem, as the m-to-m
190 confidence interval is quite big? I changed the wording, so I am not saying
191 that it is exclusively male to female. Also included a sentence about similar
192 patterns in other subgroups.*

193 Our unique dataset further allows us to explore whether England games
194 have similar effects on other types of criminal behaviours. Specifically, we
195 are interested in how an England match day affects the number of reported
196 property-related crimes (including burglary, theft and robbery), public order
197 offences (behaviours that cause offence to the general public), hate crimes
198 (hate incidents and any other racially or religiously aggravated crime), and
199 other violent crimes (excluding cases of domestic abuse). Of particular inter-
200 est is the effect of football on non-domestic violent crimes, since it is possible
201 that alcohol-fuelled violence that follows an England victory is not limited
202 to family and intimate partner relationships.

203 Table 3 shows the results from a series of negative binomial regressions
204 for different types of criminal behaviours. These reveal that while there is
205 no evidence that England matches affect the number of reported property-
206 related offences, we see an increase in the number of non-alcohol related
207 public order offence cases on tournament days, when England wins, and on

Table 2: Number of reported domestic abuse incidents by type of day, alcohol involvement, and gender of perpetrator and victim

	<i>Dependent variable:</i>			
	Number of reported domestic abuse cases per day			
	Male to Male (1)	Male to Female (2)	Female to Female (3)	Female to Male (4)
Tournament on	0.005 (0.054)	0.038* (0.021)	0.053 (0.062)	−0.048 (0.045)
England win	−0.068 (0.165)	−0.022 (0.066)	0.019 (0.193)	−0.147 (0.135)
England draw	0.080 (0.194)	0.038 (0.076)	0.043 (0.225)	0.107 (0.169)
England loss	−0.063 (0.162)	0.065 (0.064)	−0.036 (0.171)	0.117 (0.136)
After England	−0.036 (0.103)	0.093** (0.040)	0.152* (0.114)	0.025 (0.082)
Alcohol:Tournament on	−0.181* (0.106)	−0.077** (0.038)	−0.018 (0.137)	−0.215* (0.084)
Alcohol:England win	0.334 (0.285)	0.674*** (0.108)	0.360 (0.358)	0.472 (0.231)
Alcohol:England draw	−0.282 (0.411)	0.031 (0.138)	0.071 (0.629)	−0.580 (0.313)
Alcohol:England loss	0.286 (0.279)	0.028 (0.111)	0.328 (0.356)	−0.088 (0.231)
Alcohol:After England	0.209 (0.185)	0.052 (0.071)	−0.111 (0.242)	−0.040 (0.159)
Number of days	3,017	3,017	3,017	3,017

^a * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

^b Estimates are from a series of negative binomial regressions (based on tests of overdispersion) with year, month, day of week, Christmas, New Year's eve controls interacted with alcohol; standard errors in parentheses

Table 3: Number of reported cases for each crime type, by type of day, and alcohol involvement

	<i>Dependent variable:</i>			
	Number of reported domestic abuse cases per day			
	Property-related (1)	Public Order Offences (2)	Hate incidents (3)	Other violence (4)
Tournament on	0.042 (0.026)	0.096** (0.036)	0.138*** (0.047)	0.034 (0.027)
England win	0.052 (0.074)	0.234** (0.095)	0.073 (0.136)	0.094 (0.077)
England draw	0.100 (0.085)	−0.065 (0.128)	−0.066 (0.168)	0.035 (0.092)
England loss	−0.042 (0.078)	0.075 (0.100)	0.011 (0.139)	0.089 (0.078)
After England	0.052 (0.047)	0.161** (0.062)	0.141 (0.084)	0.108** (0.048)
Alcohol:Tournament on	0.135 (0.080)	−0.197** (0.101)	−0.215* (0.141)	−0.009 (0.051)
Alcohol:England win	0.259 (0.219)	0.020 (0.256)	0.310 (0.359)	0.507*** (0.132)
Alcohol:England draw	0.060 (0.264)	0.374 (0.303)	0.393 (0.431)	0.360* (0.161)
Alcohol:England loss	0.144 (0.226)	0.456* (0.228)	−0.032 (0.393)	0.018 (0.138)
Alcohol:After England	0.094 (0.144)	0.127 (0.158)	0.446* (0.211)	0.053 (0.088)
Number of days	3,017	3,017	3,017	3,017

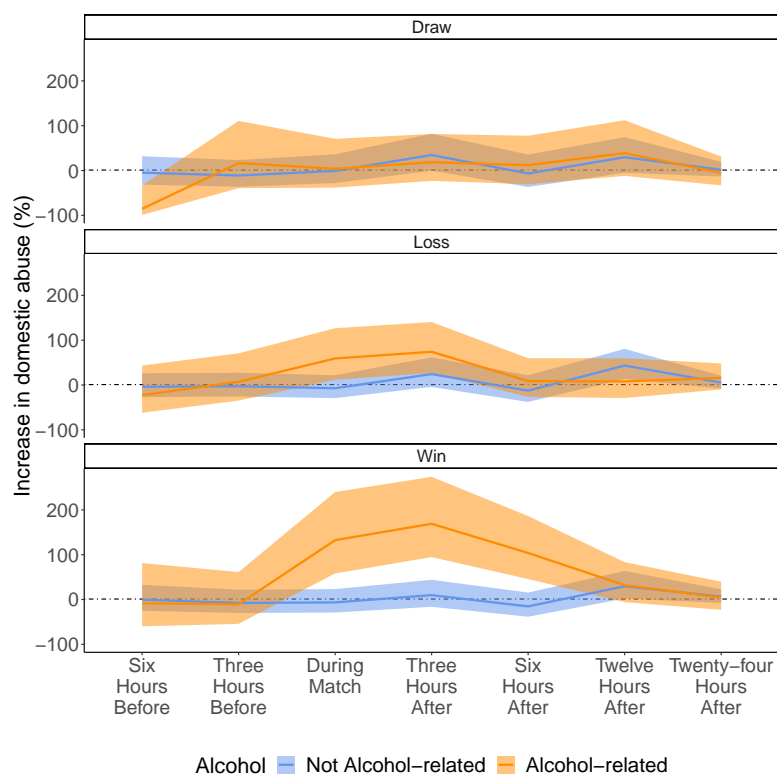
^a * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

^b Estimates are from a series of negative binomial regressions (based on tests of overdispersion) with year, month, day of week, Christmas, New Year's eve controls interacted by alcohol; standard errors in parentheses

208 days after an England game. Hate incidents with no alcohol involvement
 209 also increase when the tournament is on. But most importantly, the effect
 210 of an England match on alcohol-related cases extends to other, non-domestic
 211 violent offences, resulting in a 55%, 95% [43%–72%] increase on days when
 212 England wins, and a smaller increase on days following an England match, the
 213 exact same pattern we have seen for domestic abuse. This result highlights
 214 that alcohol-related violent behaviour on England win days is not limited
 215 to family relationships. Further analysis reveals that the increase in these
 216 alcohol-related non-domestic violent crimes also predominantly comes from
 217 male to female cases (although male to male and female to male cases also
 218 contribute, see Table A1 in the Appendix). While it is possible that a number
 219 of misclassified domestic abuse cases are reflected in this result (e.g, if the
 220 victim refuses to admit any relationship to the offender), but even if this was
 221 the case, taken together, these findings only strengthen our conclusion that
 222 football and alcohol primarily make men more violent, and overwhelmingly
 223 towards women.

224 Next, we explore the temporal dynamics of the increase in alcohol-related
 225 domestic abuse on England match days in more detail. Our previous results
 226 revealed important differences in the effect of football on alcohol and non-
 227 alcohol cases, therefore we run two separate regressions for alcohol and non-
 228 alcohol related domestic abuse cases to analyse the temporal pattern of the
 229 increase. Figure 1 shows a plot of the estimated percentage increase from
 230 these negative binomial regressions, revealing a stark increase in alcohol-
 231 related domestic abuse on days of an England victory, starting in the three
 232 hour period of the match, peaking in the three-hour period afterwards, and
 233 gradually declining to its original level in the twenty-four hours following the
 234 victory. These results strongly suggest that the emotional effect of a win
 235 drive the subsequent increase in alcohol-related domestic abuse, and high-
 236 light the possibility that the effect of England victories stem from prolonged
 237 post-match celebrations coupled with increased alcohol consumption. Inter-
 238 estingly, we also see a slight increase in non-alcohol related incidents twelve
 239 hours after a loss or a victory, probably reflecting the small increase in non-
 240 alcohol related domestic abuse after an England match day seen in Table
 241 1.

Figure 1: The temporal dynamics of the football-induced increase in domestic abuse, by alcohol involvement



Note: Estimates are from two separate negative binomial regressions (based on tests of overdispersion) with year, month, day of week, three-hour period of day, Christmas, New Year's eve controls. Shaded area is 95% CIs.

242 2 Discussion

243 Our results have shown that an England victory in a national football tourna-
244 ment is followed by a 61% increase in the reported number of alcohol-related
245 domestic abuse. This is a large effect, translating into a 0.43 increase in
246 the daily rate of alcohol-related cases per 100,000 individuals, against a base
247 rate 0.71 cases per 100,000. The effect is entirely limited to alcohol-related
248 abuse, even though alcohol-related domestic abuse cases comprise only 23%
249 of all domestic abuse in our dataset. As such, we see this as strong quan-
250 titative evidence that alcohol plays an instrumental role in the relationship
251 between football and domestic abuse in England. The effect is also exclu-
252 sively limited to male-perpetrated domestic abuse, implicating masculinity
253 and alcohol consumption as the pathway by which football increases abuse.
254 The temporal pattern of the increase following an England victory is highly
255 consistent with a causal explanation, further supported by the fact that the
256 allocation of England win days can be considered random. [Is this ok?](#)

257 Our findings show both similarities and differences with results from pre-
258 vious quantitative investigations. Replicating the results of a previous US
259 study, we found that it is male to female abuse that is affected by a sporting
260 event¹. In the same study, the effect of the match did not depend on alcohol-
261 involvement in the abuse case, and the increase was driven by unexpected
262 losses. In contrast, we find that in the context of England and football, it
263 is a victory that results in the largest increase, and that alcohol involvement
264 is critical. This discrepancy most likely stems from the contextual differ-
265 ences between the two studies (England, football, national tournaments vs.
266 US, American football, NFL matches), highlighting that the effect of sports-
267 induced emotional cues on domestic abuse is highly sensitive to the cultural
268 context.

269 Based on the pre-match betting odds, all of the England victories were
270 expected in our dataset. This suggests that in the context of England's
271 participation in national football tournaments, it is living up to the expec-
272 tations of the fans that results in largest emotional effect. Indeed, English
273 newspapers' narratives about the team's performance in these tournaments
274 are characterised with high levels of optimism, expectation and yearning for
275 the glory of the 1966 World Cup¹⁸. Previous research has demonstrated how
276 the vicarious experience of watching their team play can increase supporter's
277 testosterone and cortisol levels, even when they expect their team to win,
278 suggested to be an adaptive response to the perceived threat to one's social

identity¹⁹. Anecdotal evidence suggests that alcohol consumption increases following an England victory²⁰, consistent with our findings.

The most widely-discussed England-based investigation of the link between football and domestic abuse have found that an England loss results in the most pronounced increase in domestic abuse (38%), and a win or draw have a slightly smaller effect (26%)². This study used daily data on IPV from Lancashire Constabulary (serving a population of 1.4 million, about half the population of the West Midlands county) for the period of the 2002, 2004 and 2010 World Cup tournaments (June-July). Using daily domestic abuse data from the West Midlands for the period between 2010 and 2018, we find a different pattern, with the largest increase in alcohol-involved cases of abuse when England wins, but no comparable effects when England loses. Upon re-analysing their data by treating wins and draws as two separate variables (resulting in an improved model fit, see Table A2 in the Appendix), we see a roughly similar effect for wins (45%, 95% CI [28%–64%]) and losses (39%, 95% CI [18%–64%]), and no effect when England draws. Our reanalysis replicates the win effect seen in the current data in the earlier sample, though the absence of a loss effect remains a stark difference between the two studies. While our data is from a different geographical area and time period, the discrepancy is still puzzling. [Hopefully I managed to emphasize that our study is way more comprehensive & sell our results a bit better](#)

To explore the underlying reason for this discrepancy and test the robustness of our results, we find it instructive to break our analysis into specific tournament years for the two datasets (see Table A3 in the Appendix). An interesting common pattern in both datasets is the large effect of England’s victory over Slovenia in the group stage of the 2010 World Cup, which, after much anticipation, secured their progression to the next stage of the tournament. Equally, the subsequent loss against Germany in the knockout stage resulted in a substantial increase in the number of reported domestic abuse incidents, which is the only tournament in our dataset where this pattern appears. Interestingly, an earlier examination of the 2010 World Cup found a similar pattern, using daily data from 33 out of 39 police forces in England⁴.

While the effect of a victory or loss is likely to be highly specific to the context of a particular match (e.g., group stage or knockout stage, previous performance of the team, weather on the day, etc.), the estimated effect of an England victory on the number of reported domestic abuse cases is robust to different model specifications (see Table 1), using data from a different geographical area (see Table A3 in the Appendix), and the exclusion

317 of specific tournament years (see Table A4 in the Appendix).

318 Does this effect generalise to other sporting events, or is it specific to
319 football? It has been previously suggested that other popular sports, such
320 as rugby have similar links with domestic abuse⁹. Rugby is the second most
321 popular sport in England after football²¹. Focusing on the Six Nations, a
322 high-profile rugby tournament that takes place every year with the partici-
323 pation of England, Wales, Scotland, Ireland, France and Italy, we explored
324 whether the reported number of domestic abuse cases increase on days when
325 the England national rugby team plays. Between 2010 and 2018, there are
326 many more win and loss days of the England rugby union team compared to
327 the England national football team. The results show no comparable effects
328 for rugby matches (see Table A5 in the Appendix), potentially stemming
329 from differences in media coverage and audience numbers between the two
330 tournaments.

331 We also investigated whether England match days have similar effects on
332 other types of non-domestic abusive behaviours, including sexual offences,
333 child and vulnerable adult abuse. A commonality between domestic abuse
334 and these types of offences is the element of control and domination, although
335 domestic abuse is much more frequent in our dataset. We find no evidence
336 that England matches have comparable effects on non-domestic sexual of-
337 fences and other abuse cases (see Table A6 in the Appendix).

338 Our data further allows us to explore the characteristics of alcohol-related
339 domestic abuse perpetrated on England match days. First, using a series
340 of logistic regressions, we investigate whether these cases are more likely
341 to be newly reported (with no earlier record for the same victim-offender
342 pair in our dataset), happen in a residential dwelling as opposed to a public
343 location, or result in an injury. We find no evidence that domestic abuse cases
344 perpetrated on England match days are more likely to be newly reported (see
345 Table A7 in the Appendix), compared to domestic abuse cases occurring on
346 non-match days. It could be argued that since fans often congregate in
347 pubs to watch England play, there is a higher likelihood that domestic abuse
348 occurs in public and get reported on these days. Interestingly, our results
349 indicate that, compared to non-match days, reported cases are more likely
350 to be perpetrated in public on England loss days, but not on England win
351 days, and that this effect does not differ by alcohol-involvement in the case.
352 Non-alcohol related cases reported on England loss days are also more likely
353 to result in an injury, a pattern that is absent from alcohol-related cases.

354 Next, we turn to repeated cases of domestic abuse (multiple cases with

the same victim-offender pair). We are interested in whether the number of days elapsed between two consecutive cases is affected by England football matches. For example, it is possible that England match days bring reported cases of domestic abuse forward, which would have otherwise happened at a later point in time. We investigate this question with two negative binomial regressions, where the outcome variables are the number of days elapsed since the last reported case, and the number of days until the next case, respectively. In addition, using all reported cases, we explore whether the number of hours elapsed before reporting the case is affected by England match days.

The results show that non-alcohol related cases perpetrated on England loss days occur slightly sooner after the previous incident, compared to non-alcohol cases reoccurring on non-match days (see Table A8 in the Appendix). Non-alcohol related domestic abuse cases perpetrated on England win days or the day after an England match are more likely to be followed by another case of abuse sooner, compared to non-alcohol cases occurring on non-match days. Interestingly, non-alcohol related cases perpetrated on England loss days or on days following an England match day are likely to be reported sooner, compared to non-alcohol related abuse perpetrated on non-match days.

It is perhaps surprising that while we found no evidence for an increase in the reported number of domestic abuse cases on England loss days (see Table 1), domestic abuse perpetrated on these days seems to be characteristically different from domestic abuse perpetrated on other days. More specifically, cases perpetrated on England loss days are more likely to occur outside, result in an injury, and get reported sooner. Furthermore, repeated cases perpetrated on England loss days occur slightly sooner following the previous case, but abuse perpetrated on England win days are followed by another incident sooner. While these findings should be interpreted with caution due to the pervasive problem of underreporting, the results suggest differences in the effect of England wins and losses on domestic abuse.

I think this is a really interesting result! Potentially a nice link back to the Card and Lee results. Not sure what's the best way, it is a bit tenuous. Can we quantify coefficients as a number of days with a CI in the main text. So "5 days sooner", etc.? Is there a break between the text and the table? England loss no-alcohol cases occur sooner but England-loss no-alcohol cases occur later? England win no-alcohol cases reoccur sooner but England-win alcohol cases do not. I don't know how to do this properly.

I can report it like this: The results show that non-alcohol related cases perpetrated on England loss days occur slightly sooner after the previous incident, 192 days, 95% CI [159 days, 232 days], compared to non-alcohol repeat cases reoccurring on non-match days, 226 days, 95% CI [207 days, 248 days] (see Table A8 in the Appendix). Non-alcohol related domestic abuse cases perpetrated on England win days are more likely to be followed by another case of abuse sooner, 172 days, 95% CI [138 days, 214 days], compared to cases occurring on non-match days, 242 days, 95% CI [223 days, 261 days], and this pattern is absent from alcohol-related cases. Interestingly, non-alcohol related cases perpetrated on England loss days are likely to be reported sooner, 59 hours, 95% CI [45 hours, 78 hours], compared to non-alcohol related abuse perpetrated on non-match days, 104 hours, 95% CI [91 hours, 119 hours].

Finally, using the sample of repeated cases, we explore whether previously non-alcohol related cases are more likely to reoccur as alcohol-related abuse on England match days. We investigate this question using a logistic regression, controlling for the type of the previous case (alcohol/non-alcohol related). The results show that on England win days, there is an increased likelihood of an alcohol-related case occurring, irrespective of whether the previous case was alcohol-related or not (see Table A9 in the Appendix). Taken together, these results indicate that apart from the higher likelihood of alcohol-involvement, domestic abuse that follows an England victory is not characteristically different from domestic abuse perpetrated on other days during the year.

Suggested alternative explanations for the increased number of reported domestic abuse cases on England match days include other high-profile events taking place around the time of the match, increased policing on England match days, and the effect of awareness campaigns before the tournaments⁹. Our three-hour analysis of the England win effect (Figure 1) show that the temporal pattern of the effect is highly consistent with a match-induced explanation of the increase, making it unlikely that other events occurring on England win days would be responsible for the increase. We could expect that higher levels of policing on England match days would result in an increased number of recorded cases perpetrated outside, and that a successful pre-tournament awareness campaign would result in an increase in the number of newly reported cases. Our results do not support either of these alternative hypotheses (see Table A7 in the Appendix). In addition, it is unclear why the effect of other events, different policing practices, or awareness

431 campaigns would depend on the result of the match.

432 To summarise, we have found that when the England national football
433 team wins, there is a 61% increase in domestic abuse—but only male-on-
434 female abuse involving alcohol. An increase is also seen in other violent
435 crimes, predominantly in violence perpetrated by men on women. The tem-
436 poral pattern of the increase suggests a causal mechanism, and the effect
437 is robust to the exclusion of specific tournament years and using data from
438 a different time period and geographical area within England. The effect
439 is specific to football, but not rugby. Apart from the higher likelihood of
440 alcohol-involvement, these cases of abuse are not characteristically different
441 from abuse occurring on other days throughout the year.

442 For victims, domestic abuse does not occur once every four years follow-
443 ing a football match, but is a lived experience of constant fear. Nevertheless,
444 our results provide a deeper understanding of the contexts that can be con-
445 ducive to abuse. In particular, these findings illuminate that the experience
446 of “national success” in a highly male-dominated sport is a breeding ground
447 for male-perpetrated, alcohol-related domestic abuse. From a policy perspec-
448 tive, only a radical transformation of football culture is likely to make any
449 difference¹⁰. Leadership in football must be the catalyst for the change that
450 transforms football fandom from an exclusively male-dominated space where
451 misogyny, racism and homophobia are tolerated, into an environment where
452 women and other minorities are more visible, and everyone is welcome and
453 safe from abuse, irrespective of their gender, race and sexual orientation.

454 [Is it it too hippie?](#)

3 Method

Our dataset comprises all crimes and specific types of incidents (such as domestic abuse) that have been reported to the West Midlands Police (the third largest police force in England²², serving an estimated 2.9 million people in 2017³) in the period between 2010 and 2018. The first half of 2017 has been excluded due to missing data. The number of reported domestic abuse cases is the sum of crimes that have a domestic abuse marker, and all domestic abuse incidents. Crimes that have a domestic abuse marker indicate cases of domestic abuse that meet the criteria for notifiable offences in the UK, whereas domestic abuse incidents refer to cases that do not qualify as a crime. For each record in this dataset, we have information about the time and location of the incident or crime, and the gender and age of the offender and victim. We restricted our analyses to cases with one victim and one offender. We can also identify repeat offenders and victims by their unique person identifier. Domestic abuse cases comprise about 31% of all recorded crimes and incidents in the dataset, and about 23% of all domestic abuse cases are alcohol-related. In the period between 2010 and 2018, the daily rate of non-alcohol related domestic incidents falls between 1.6-3 cases per 100,000 individuals, whereas the daily rate of alcohol-related cases falls between 0.35-1 cases per 100,000 individuals. There were three World Cups (2010, 2014, 2018) and two European Championships (2012, 2016) in the period covered by our dataset. All included tournaments took place in the months of June and July.

To analyse the temporal dynamics of the England win effect (see Figure 1), we divided each day in our dataset into eight three-hour periods, the first one starting at 12am, and used these to identify specific time windows around the time of the match. The exact time of the matches vary considerably (the earliest starting at 1pm, and the latest at 11pm). We first identified the three-hour period of the day into which each match falls. If the start and end time of the match did not fall in the same three-hour period, we chose the three-hour period that covers the larger part of the match (e.g., a 2.5 hour long match starting at 7pm will be assigned to the 6-9pm period and not to the 9pm-12am period).

Data availability statement

The data that support the findings of this study are available from West Midlands Police but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of West Midlands Police.

Appendix

Table A1: Non-domestic violent cases by gender

	<i>Dependent variable:</i>			
	Number of other violent abuse cases per day			
	Male to Male (1)	Male to Female (2)	Female to Female (3)	Female to Male (4)
Tournament on	0.037 (0.026)	0.050** (0.021)	0.041 (0.038)	0.051 (0.036)
England win	0.013 (0.082)	0.019 (0.067)	-0.031 (0.111)	0.174 (0.112)
England draw	0.089 (0.094)	0.012 (0.078)	0.115 (0.139)	0.042 (0.132)
England loss	0.018 (0.082)	0.028 (0.066)	0.088 (0.114)	0.118 (0.108)
After England	0.085 (0.050)	0.070 (0.042)	0.181** (0.071)	0.149** (0.067)
Alcohol:Tournament on	-0.027 (0.055)	-0.086** (0.038)	-0.077 (0.087)	-0.167** (0.073)
Alcohol:England win	0.391** (0.158)	0.613*** (0.109)	0.441* (0.251)	-0.114 (0.199)
Alcohol:England draw	0.071 (0.192)	0.102 (0.137)	0.127 (0.361)	-0.337 (0.254)
Alcohol:England loss	0.296* (0.153)	0.057 (0.112)	-0.023 (0.237)	0.027 (0.207)
Alcohol:After England	0.208* (0.100)	0.053 (0.072)	-0.119 (0.163)	-0.158 (0.136)
Number of days	3,017	3,017	3,017	3,017

^a * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

^b *Estimates are from a series of negative binomial regressions (based on tests of overdispersion) with year, month, day of week, Christmas, New Year's eve controls interacted with alcohol; standard errors in parentheses*

Table A2: Replication of Kirby et al. (2014) with an alternative specification

	<i>Dependent variable:</i>	
	Number of reported IPV cases per day	
	Original Model	Win/Draw Separate
	(1)	(2)
England windraw	0.256*** (0.055)	
England win		0.452*** (0.064)
England draw		0.032 (0.073)
England loss	0.382*** (0.094)	0.388*** (0.085)
After England	0.111** (0.051)	0.113** (0.047)
Number of days	92	92
AIC	714.980	704.356

^a * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

^b *Estimates are from a series of negative binomial regressions (based on tests of overdispersion) with year and day of week controls; standard errors in parentheses; data is only available during the tournament period*

Table A3: Year subgroup regressions, Lancashire and West Midlands data

	<i>Dependent variable:</i>							
	<i>Poisson</i>				<i>negative binomial</i>			
	Number of IPV cases per day in Lancashire	2010	2012	2014	2016	2018		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Tournament on				0.074* (0.041)	-0.066 (0.085)	-0.048 (0.044)	0.035 (0.041)	0.089* (0.044)
England win	0.596*** (0.152)	0.297*** (0.077)	0.916*** (0.114)	0.050 (0.155)	-0.237 (0.175)		-0.008 (0.151)	0.061 (0.077)
England draw	0.100 (0.150)	0.098 (0.156)	-0.137 (0.095)	-0.029 (0.112)	0.324 (0.204)	-0.077 (0.173)	-0.021 (0.108)	
England loss	0.200 (0.232)	0.373*** (0.117)	0.568*** (0.106)	0.174 (0.140)	-0.127 (0.212)	-0.042 (0.124)	-0.155 (0.154)	0.066 (0.088)
After England	0.253** (0.101)	0.122* (0.070)	0.024 (0.065)	0.070 (0.082)	-0.008 (0.125)	0.007 (0.103)	0.038 (0.081)	0.140** (0.060)
Tournament on:Alcohol				-0.093 (0.101)	0.076 (0.162)	0.063 (0.076)	-0.163** (0.072)	-0.068 (0.078)
England win:Alcohol				2.558*** (0.277)	0.756* (0.314)		0.348 (0.257)	0.460*** (0.123)
England draw:Alcohol				0.078 (0.246)	-0.581 (0.571)	0.089 (0.307)	0.129 (0.180)	
England loss:Alcohol				0.748** (0.259)	0.301 (0.372)	0.048 (0.206)	-0.289 (0.322)	0.160 (0.149)
After England:Alcohol				0.128 (0.183)	-0.072 (0.254)	0.068 (0.171)	-0.112 (0.144)	0.188* (0.102)
Number of days	30	32	30	730	732	730	732	618

^a * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

^b Estimates are from a series of negative binomial or poisson regressions (based on tests of overdispersion). The first three regressions have day of week control, the rest of the regressions have month, day of week, Christmas, New Year's eve controls interacted with alcohol; standard errors in parentheses

Table A4: Robustness of the result: sensitivity to the exclusion of specific years

	<i>Dependent variable:</i>				
	Number of domestic abuse cases per day				
	2018 excluded (1)	2016 excluded (2)	2014 excluded (3)	2012 excluded (4)	2010 excluded (5)
Tournament on	(0.033) 0.018 (0.022)	(0.033) 0.015 (0.025)	(0.032) 0.027 (0.025)	(0.031) 0.030 (0.022)	(0.033) −0.003 (0.025)
England win	−0.093 (0.097)	−0.047 (0.068)	−0.029 (0.062)	0.019 (0.066)	−0.051 (0.067)
England draw	0.038 (0.072)	0.077 (0.091)	0.057 (0.078)	0.004 (0.075)	0.046 (0.088)
England loss	0.030 (0.079)	0.066 (0.065)	0.053 (0.069)	0.054 (0.062)	0.013 (0.065)
After England	0.057 (0.048)	0.080* (0.042)	0.088** (0.040)	0.099** (0.039)	0.071* (0.042)
Alcohol:Tournament on	−0.086** (0.039)	−0.037 (0.046)	−0.118*** (0.047)	−0.092** (0.040)	−0.048 (0.042)
Alcohol:England win	0.884*** (0.163)	0.674*** (0.109)	0.609*** (0.100)	0.574*** (0.105)	0.511*** (0.107)
Alcohol:England draw	−0.046 (0.130)	−0.141 (0.179)	−0.048 (0.141)	0.055 (0.131)	−0.017 (0.151)
Alcohol:England loss	0.014 (0.134)	0.139 (0.107)	0.131 (0.116)	0.078 (0.103)	0.039 (0.109)
Alcohol:After England	−0.065 (0.086)	0.096 (0.073)	0.050 (0.071)	0.054 (0.067)	0.050 (0.071)
Number of days	2,708	2,651	2,652	2,651	2,652

^a * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

^b Estimates are from a series of negative binomial regressions (based on tests of overdispersion) with year, month, day of week, Christmas, New Year's eve controls interacted by alcohol; standard errors in parentheses

Table A5: The effect of England matches in the Six Nations rugby tournament on domestic abuse

	<i>Dependent variable:</i>
	Number of reported domestic abuse cases per day
Tournament on	0.005 (0.019)
England win	0.0001 (0.035)
England loss	0.056 (0.055)
After England	-0.010 (0.031)
Alcohol:Tournament on	-0.047 (0.035)
Alcohol:England win	0.045 (0.059)
Alcohol:England loss	-0.073 (0.091)
Alcohol:After England	-0.021 (0.055)
Number of days	3,017

^a * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

^b *Estimates are from a series of negative binomial regressions (based on tests of overdispersion) with year, month, day of week, Christmas, New Year's eve controls interacted by alcohol; there was only one England rugby match that resulted in a draw between 2010 and 2018, therefore we excluded it from the data; standard errors in parentheses*

Table A6: Non domestic abuse incidents that are about power

	<i>Dependent variable:</i>	
	Number of cases per day	
	Sexual Offences	Other Abuse
	(1)	(2)
Tournament on	0.079 (0.068)	0.078* (0.042)
England win	-0.172 (0.217)	-0.073 (0.132)
England draw	-0.062 (0.253)	0.175 (0.148)
England loss	-0.220 (0.223)	0.153 (0.132)
After England	-0.035 (0.134)	0.095 (0.081)
Alcohol:Tournament on	-0.121 (0.157)	-0.069 (0.093)
Alcohol:England win	0.191 (0.462)	0.166 (0.274)
Alcohol:England draw	0.781 (0.503)	-0.252 (0.346)
Alcohol:England loss	0.011 (0.483)	-0.111 (0.285)
Alcohol:After England	0.114 (0.287)	-0.172 (0.182)
Number of days	3,017	3,017

^a * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

^b *Estimates are from a series of negative binomial regressions (based on tests of overdispersion) with year, month, day of week, Christmas, New Year's eve controls interacted by alcohol; standard errors in parentheses*

Table A7: Characteristics of domestic abuse cases reported on match days I

	<i>Dependent variable:</i>		
	Newly Reported Yes=1, No=0 (1)	Public Location Yes=1, No=0 (2)	Results in Injury Yes=1, No=0 (3)
Tournament on	−0.037 (0.030)	0.021 (0.037)	0.007 (0.033)
England win	0.011 (0.089)	0.167 (0.110)	0.153 (0.101)
England draw	0.082 (0.121)	0.014 (0.138)	0.119 (0.117)
England loss	−0.099 (0.086)	0.337*** (0.099)	0.265*** (0.093)
After England	0.035 (0.056)	0.070 (0.068)	0.049 (0.062)
Alcohol:Tournament on	0.087 (0.060)	0.063 (0.080)	−0.058 (0.066)
Alcohol:England win	0.093 (0.156)	0.104 (0.196)	−0.064 (0.165)
Alcohol:England draw	−0.151 (0.233)	−0.016 (0.306)	−0.209 (0.237)
Alcohol:England loss	0.221 (0.171)	0.044 (0.198)	−0.413** (0.182)
Alcohol:After England	−0.036 (0.108)	0.042 (0.143)	−0.122 (0.118)
Number of cases	251,976	279,777	279,777

^a * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

^b *Estimates are log odds from a series of logistic regressions with year, month, day of week, Christmas, New Year's eve controls interacted by alcohol, where every observation is a reported domestic abuse case; cases that happened in 2010 were excluded from the first regression; standard errors clustered by victim-offender pairs are in parentheses*

Table A8: Characteristics of domestic abuse cases reported on match days
II

	<i>Dependent variable:</i>		
	Days since last	Days until next	Hours until reported
	(1)	(2)	(3)
Tournament on	−0.014 (0.028)	−0.047* (0.028)	0.080 (0.063)
England win	0.016 (0.082)	−0.340*** (0.095)	−0.098 (0.162)
England draw	−0.017 (0.096)	−0.111 (0.105)	0.034 (0.208)
England loss	−0.163* (0.087)	−0.104 (0.087)	−0.560*** (0.170)
After England	0.052 (0.054)	−0.139** (0.055)	−0.243** (0.108)
Alcohol:Tournament on	0.026 (0.057)	0.025 (0.056)	0.200 (0.197)
Alcohol:England win	−0.119 (0.146)	0.358** (0.159)	0.152 (0.450)
Alcohol:England draw	−0.266 (0.231)	−0.116 (0.208)	−0.935** (0.390)
Alcohol:England loss	0.277* (0.159)	0.114 (0.166)	0.552 (0.654)
Alcohol:After England	−0.104 (0.106)	0.147 (0.102)	−0.265 (0.297)
Number of cases	95,091	95,091	272,793

^a * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

^b *Estimates are from a series of negative binomial regressions (based on tests of overdispersion) with year, month, day of week, Christmas, New Year's eve controls interacted by alcohol, where every observation is a reported domestic abuse case; for each regression, we excluded the upper 2.5% of the outcome variable; standard errors clustered by victim-offender pairs are in parentheses*

Table A9: Alcohol transition on England match days

	<i>Dependent variable:</i>
	Alcohol-involvement in case Yes=1, No=0
Tournament on	-0.134** (0.062)
England win	0.443*** (0.157)
England draw	0.368* (0.201)
England loss	-0.113 (0.180)
After England	0.041 (0.114)
Tournament on:Previous alcohol	-0.051 (0.100)
England win:Previous alcohol	-0.110 (0.277)
England draw:Previous alcohol	-0.365 (0.372)
England lost:Previous alcohol	0.179 (0.292)
After England:Previous alcohol	0.066 (0.180)
Number of cases	97,292

^a * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

^b *Estimates are log odds from a logistic regression with year, month, day of week, Christmas, New Year's eve controls interacted by alcohol involvement of the previous case, where every observation is a reported domestic abuse case; standard errors clustered by victim-offender pairs are in parentheses*

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