

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

4

5 1 Abstract

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

2 Long intro

“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 sport 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 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 for 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 re-define and express his masculinity in a way that allows dominance, control, and can ultimately manifest in the perpetration of domestic abuse, given susceptibility to such behaviours^{Sabo, 10}. We speculate that this observation is especially pertinent in the context of England’s participation in national tournaments, owing to the popularity of the sport in the country, the associated media attention, and the 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 injuries¹². 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^{12,13}. 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)¹². 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 abuser¹³.

In the US, the relationship between unexpected NFL losses and IPV did not depend on alcohol-involvement in the incident¹. The England-based quantitative studies did not look at the role of alcohol in particular. Given the strong association between drinking culture and football in England¹⁴, a relationship continuously reinforced by the marketing practices of the alcohol industry¹⁵, we hypothesize that alcohol will play an important role in the relationship between national football tournaments and domestic abuse.

To explore this hypothesis, we investigate whether 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. We also consider whether the result of the match alters the relationship, as previous research suggested that the effect is heightened when England loses².

103 Our rich dataset further allows us to investigate various aspects of the link
104 between football tournaments and domestic abuse, including how the re-
105 lationship depends on the gender of the perpetrator and victim, whether
106 similar patterns exist between other types of crimes and football, and how
107 the strength of the effect depends on the exact timing of the match. We also
108 examine whether similar links exist between rugby and domestic abuse, and
109 if the abuse perpetrated on England match days is characteristically different
110 from abuse occurring on non-match days.

111 In the UK, the term “domestic abuse” refers to a wide range of be-
112 haviours, from physical and sexual violence to psychological, emotional, fi-
113 nancial abuse, threatening behaviour, stalking and harassment either within
114 a family or an intimate relationship¹⁶. Recent changes to the definition in-
115 troduced the concept of coercive control, which recognises domestic abuse as
116 a pattern of incidents, which can include any of the above behaviours. Previ-
117 ous research has mostly focused on IPV, the largest subcategory of domestic
118 abuse. While IPV is more common than abuse perpetrated by family mem-
119 bers¹⁶, our dataset does not contain information about the exact relationship
120 between the victim and perpetrator, therefore we cannot separate the two
121 types of abuse, and we will refer to them collectively as “domestic abuse”.

122 Our dataset contains all cases of domestic abuse that have been reported
123 to the West Midlands Police between 2010 and 2018, but the vast majority
124 of all domestic abuse incidents in fact never get reported (according to the
125 Crime Survey of England and Wales, only 17% of all domestic abuse victims
126 reported the abuse to the police between April, 2017 and March, 2018¹⁶).
127 This substantial reporting bias, and its potential correlation with other con-
128 textual factors warrants a careful interpretation of the estimates from any
129 quantitative study investigating domestic abuse, and highlights the impor-
130 tance of utilising a mixed methods approach to explore the factors facilitating
131 domestic abuse.

3 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 tournament, but not 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

169 effect is sensitive to the gender of the perpetrator and the victim. Previous
170 qualitative research has suggested that the link between football and domes-
171 tic abuse is a result of violent expression of masculinity, where heavy drinking
172 is also often present^{Sabo}. If this was the case, we would expect football and
173 alcohol to only affect reported numbers of male-perpetrated domestic abuse.

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

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

201 Table 3 shows the results from a series of negative binomial regression for
202 different types of criminal behaviours. These reveal that while there is no ev-
203 idence that England matches affect the number of reported property-related
204 offences, we see an increase in the number of non-alcohol related public or-
205 der offence cases on tournament days, when England wins, and on days after
206 an England game. Hate incidents with no alcohol involvement also increase

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

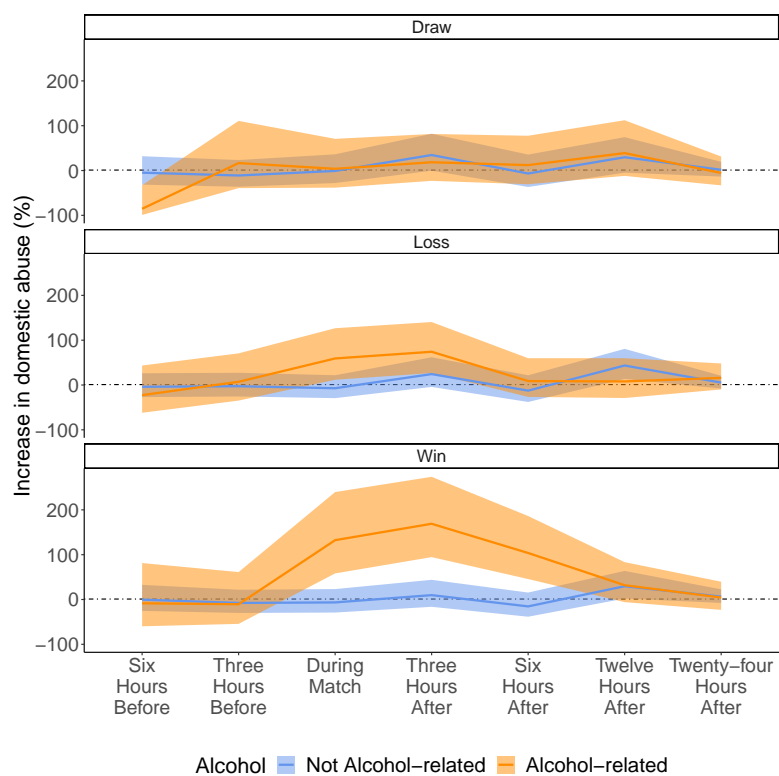
^a * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

^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

207 when the tournament is on. But most importantly, the effect of England
 208 matches on alcohol-related cases extends to other, non-domestic violent of-
 209 fences, resulting in a 55%, 95% [43%–72%] increase on days when England
 210 wins, and a smaller increase on days following an England match, the ex-
 211 act same pattern we have seen for domestic abuse. This result highlights
 212 that football-induced and alcohol-related violent behaviour is not limited
 213 to family relationships. Further analysis reveals that the increase in these
 214 alcohol-related non-domestic violent crimes also predominantly comes from
 215 male to female cases (although male to male and female to male cases also
 216 contribute, see Table A1 in the Appendix). While it is possible that misclas-
 217 sified domestic abuse cases contribute to this result (e.g, if the victim refuses
 218 to admit any relationship to the offender), but even if this was the case,
 219 taken together, these findings only strengthen our conclusion that football
 220 and alcohol primarily make men more violent, and overwhelmingly towards
 221 women.

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

240 4 Discussion

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

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

267 Based on the pre-match betting odds, all of the England victories were
268 expected in our dataset. This suggests that in the context of England's
269 participation in national football tournaments, it is living up to the expec-
270 tations of the fans that results in largest emotional effect. Indeed, English
271 newspapers' narratives about the team's performance in these tournaments
272 are characterised with high levels of optimism, expectation and yearning for
273 the glory of the 1966 World Cup¹⁷. Previous research has demonstrated how
274 the vicarious experience of watching their team play can increase supporter's
275 testosterone and cortisol levels, even when they expect their team to win,
276 suggested to be an adaptive response to the perceived threat to one's social

identity¹⁸. Anecdotal evidence suggests that alcohol consumption increases following an England victory¹⁹, 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 (38%) in domestic abuse, 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 when England wins for alcohol-involved cases of abuse, 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

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

316 Does this effect generalise to other sporting events, or is it specific to
317 football? It has been previously suggested that other popular sports, such
318 as rugby have similar links with domestic abuse⁹. Rugby is the second most
319 popular sport in England after football²⁰. Focusing on the Six Nations, a
320 high-profile rugby tournament that takes place every year with the partici-
321 pation of England, Wales, Scotland, Ireland, France and Italy, we explored
322 whether the reported number of domestic abuse cases increase on days when
323 the England national rugby team plays. Since the Six Nations takes place
324 every year with 15 matches played by each team as opposed to the World
325 Cup and the European Championship, which are relatively rare, we have
326 many more days when England lost or won. The results show no comparable
327 effects for rugby matches (see Table A5 in the Appendix), potentially stem-
328 ming from differences in media coverage and audience numbers between the
329 two tournaments.

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

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

353 is absent from alcohol-related cases.

354 Next, we turn to repeated cases of domestic abuse (multiple cases with
355 the same victim-offender pair). We are interested in whether the number of
356 days elapsed between two consecutive cases is affected by England football
357 matches. For example, it is possible that England match days bring reported
358 cases of domestic abuse forward, which would have otherwise happened at a
359 later point in time. To investigate this question, we use two negative binomial
360 regressions, where the outcome variables are the number of days elapsed since
361 the last reported case, the number of days until the next case, respectively.
362 In addition, using all reported cases, we explore whether the number of hours
363 elapsed before reporting the case is affected by England match days.

364 The results show that non-alcohol related cases, but not alcohol-related
365 cases, perpetrated on England loss days occur slightly sooner after the pre-
366 vious incident, compared to non-alcohol repeat cases reoccurring on non-
367 match days (see Table A8 in the Appendix). Non-alcohol related domestic
368 abuse cases, perpetrated on England win days or the day after an England
369 match are more likely to be followed by another case of abuse sooner, com-
370 pared to cases occurring on non-match days, and this pattern is absent from
371 alcohol-related cases. Interestingly, non-alcohol related cases perpetrated on
372 England loss days or on days following an England match day are likely to
373 be reported sooner, compared to non-alcohol related abuse perpetrated on
374 non-match days.

375 It is perhaps surprising that although we have not found evidence for
376 an increase in the number of reported non-alcohol related domestic abuse
377 cases on England loss days, non-alcohol related domestic abuse perpetrated
378 on these days seems to be characteristically different from domestic abuse
379 perpetrated on other days. More specifically, cases perpetrated on England
380 loss days are more likely to occur outside, result in an injury, and get reported
381 sooner. Furthermore, repeated cases perpetrated on England loss days occur
382 sooner following the previous case, but abuse perpetrated on England win
383 days are followed by another incident sooner. While these findings should
384 be interpreted with caution due to the high levels of underreporting, these
385 results suggest important differences in the emotional effect of England wins
386 and losses.

387 I think this is a really interesting result! Potentially a nice link back to
388 the Card and Lee results. Not sure what's the best way, it is a bit tenuous
389 Can we quantify coefficients as a number of days with a CI in the main
390 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 investigated this question using a logistic regression, controlling for the type of the previous case (alcohol/non-alcohol related). We find 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 cases perpetrated on England win days are not characteristically different from domestic abuse cases 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. On England match days, we could expect that higher levels of policing would result in an increased number of recorded cases perpetrated outside, and that a successful pre-tournament awareness campaign would result in a higher number of

429 newly reported cases. Our results do not support either of these alternative
430 hypotheses (see Table A7 in the Appendix). In addition, it is unclear why
431 the effect of other events, different policing practices, or awareness campaigns
432 would depend on the result of the match.

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

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

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

456 5 Method

457 Our dataset comprises all crimes and specific types of incidents (such as
458 domestic abuse) that have been reported to the West Midlands Police (the
459 third largest police force in England²¹, serving an estimated 2.9 million people
460 in 2017³) in the period between 2010 and 2018. The first half of 2017 has been
461 excluded due to missing data. The number of reported domestic abuse cases
462 is the sum of crimes that have a domestic abuse marker, and all domestic
463 abuse incidents. Crimes that have a domestic abuse marker indicate cases
464 of domestic abuse that meet the criteria for notifiable offences in the UK,
465 whereas domestic abuse incidents refer to cases that do not qualify as a
466 crime. For each record in this dataset, we have information about the time
467 and location of the incident or crime, and the gender and age of the offender
468 and victim. We can also identify repeat offenders and victims by their unique
469 person identifier. Domestic abuse cases comprise about 31% of all recorded
470 crimes and incidents in the dataset, and about 23% of all domestic abuse cases
471 are alcohol-related. In the period between 2010 and 2018, the daily rate of
472 non-alcohol related domestic incidents falls between 1.6-3 cases per 100,000
473 individuals, whereas the daily rate of alcohol-related cases falls between 0.35-
474 1 cases per 100,000 individuals. There were three World Cups (2010, 2014,
475 2018) and two European Championships (2012, 2016) in the period covered
476 by our dataset. All included tournaments took place in the months of June
477 and July.

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

488 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 (1)	Win/Draw Separate (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

Dependent variable:									
Number of IPV cases per day in Lancashire					Number of domestic abuse cases per day in West Midlands				
	Poisson			negative binomial					
	2002	2006	2010	2010	2012	2014	2016	2018	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
Tournament on				0.074*	-0.066	-0.048	0.035	0.089*	
England win	0.596*** (0.152)	0.297*** (0.077)	0.916*** (0.114)	(0.041)	(0.085)	(0.044)	(0.041)	(0.044)	
England draw	0.100 (0.150)	0.098 (0.156)	-0.137 (0.095)	0.050 (0.155)	-0.237 (0.175)		-0.008 (0.151)	0.061 (0.077)	
England loss	0.200 (0.232)	0.373*** (0.117)	0.568*** (0.106)	-0.029 (0.112)	0.324 (0.204)	-0.077 (0.173)	-0.021 (0.108)		
After England	0.253** (0.101)	0.122* (0.070)	0.024 (0.065)	0.174 (0.140)	-0.127 (0.212)	-0.042 (0.124)	-0.155 (0.154)	0.066 (0.088)	
Tournament on:Alcohol				0.070 (0.082)	-0.008 (0.125)	0.007 (0.103)	0.038 (0.081)	0.140** (0.060)	
England win:Alcohol				-0.093 (0.101)	0.076 (0.162)	0.063 (0.076)	-0.163** (0.072)	-0.068 (0.078)	
England draw:Alcohol				2.558*** (0.277)	0.756* (0.314)		0.348 (0.257)	0.460*** (0.123)	
England loss:Alcohol				0.078 (0.246)	-0.581 (0.571)	0.089 (0.307)	0.129 (0.180)	0.160 (0.149)	
After England:Alcohol				0.748** (0.259)	0.301 (0.372)	0.048 (0.206)	-0.289 (0.322)	0.188* (0.102)	
				0.128 (0.183)	-0.072 (0.254)	0.068 (0.171)	-0.112 (0.144)		
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 (1)	Other Abuse (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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