Revisiting the link between domestic abuse and football

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main findings: 1) The result of the match matters: winning increases DA the most, driven by an increase in male to female alcohol-related violence. The effect is comparable to that of a Saturday. 2)

1 Introduction

During the 2018 World Cup, the UK-based National Centre for Domestic Violence has launched a campaign called "The Not-So-Beautiful Game", aiming to raise awareness of the relationship between national football games and domestic abuse. The posters read "If England get beaten, so will she. Domestic violence increases 26% when England play, 38% if they lose".

Sporting events - being a fan of a team creates a sense of belonging

this is heightened during euro and world cups, as the whole tournament is now about national pride - during these times, a much stronger sense of belonging is created through advertisements and public displays of flags - when the team wins, the whole country celebrates together, which creates an atmosphere where inhibitions are low and an excuse for behaviours that otherwise would break the social norms (excess drinking) - we would expect that people who hasn't done bad stuff before are more likely to do so and people who are regular abusers would do worse stuff than normal

drinking and sports - beer ads, focusing on masculinity

2 Method

Up until 2013, domestic violence in the UK was defined as any incident involving threatening or violent behaviour between people aged over 18 in a domestic context (typically people who are, or have been in an intimate relationship or are family members). In 2013, this definition was broadened by the government to include incidents that involve coercive or controlling behaviours as well as lowering the age limit for potential victims from 18 to 16 years, and the term

Figure 1
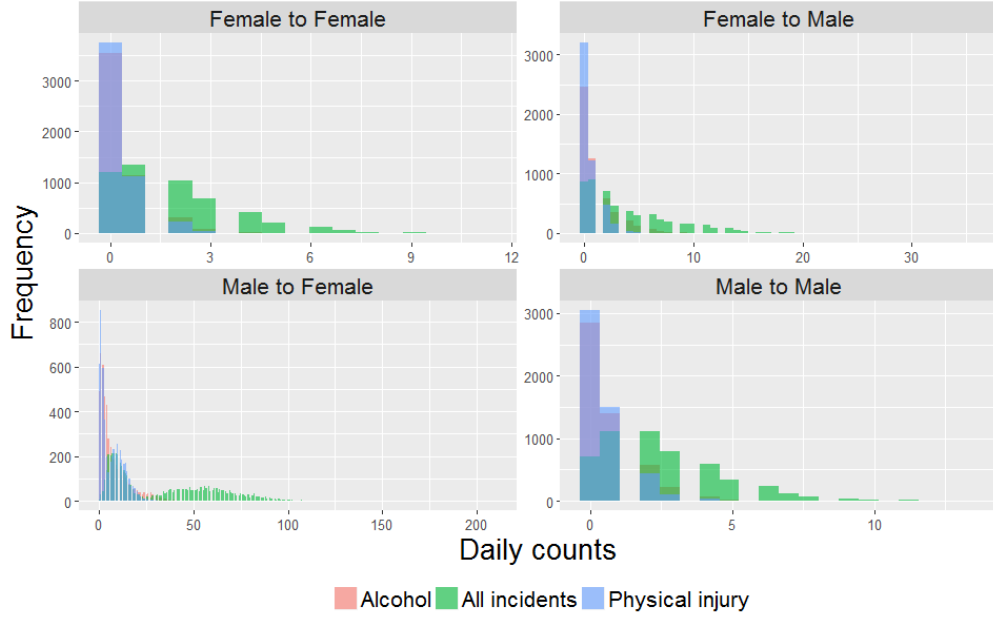
was changed to domestic abuse to signify that abusive behaviour need not imply physical violence. underreporting

Our data includes every incident recorded by the West Midlands police between 2010 and 2016. For each reported incident, the age and gender of the victim and the offender are recorded.

1) day-level regression with gender and age difference

2) then see the time course of the effect

3   Results

3.1   Result of the match, gender differences

Our outcome variables are counts of reported incidents on each day, therefore, a natural choice of regression model can be either a Poisson regression or a negative binomial model, depending on the extent of overdispersion. A series of likelihood ratio tests indicated that the negative binomial model outperformed the Poisson model in 13 out of the 15 cases, with the Poisson model only outperforming the negative binomial when predicting the number of female to female alcohol-related and physical injury cases.

Figure 2
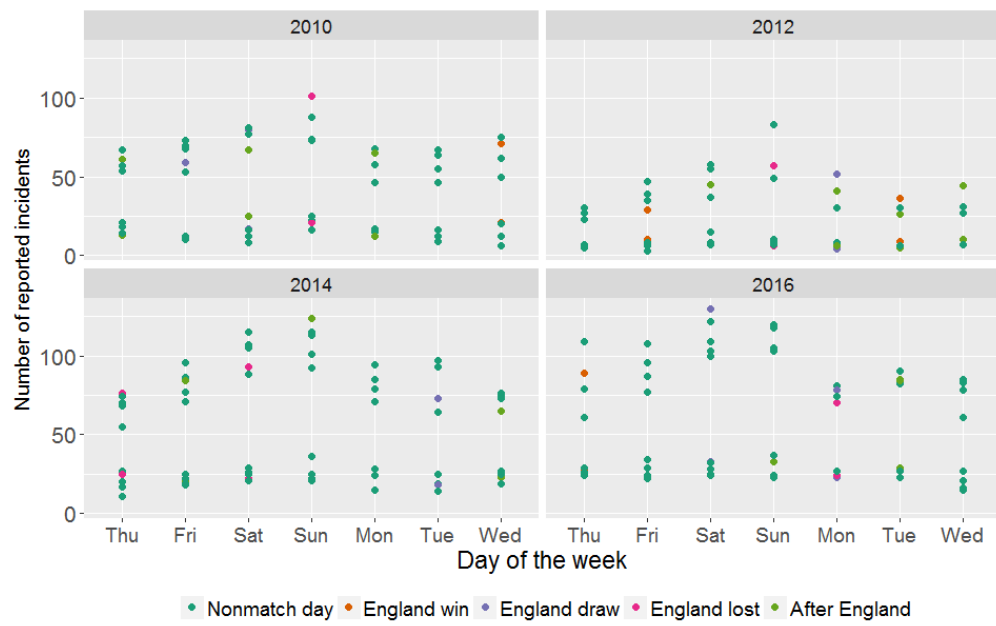
Some of our outcome variables have a significant proportion of zeroes, which warrant a comparison between our standard Poisson/negative binomial models and a model that can handle an excess number of zeroes, e.g. hurdle models. Thus, we compared the standard models with their hurdle counterparts (Poisson hurdle, negative binomial hurdle), and on the basis of the Akaike Information Criterion (AIC) score, we found that the standard models are preferred in all cases. To assess the fit of the count models, Kleiber and Zeileis (2016) propose plotting the empirical counts against the model predictions in the form of a rootogram. Figure 5 in the Appendix shows the rootograms for our series of regressions, showing that our models perform well in terms of predicting the outcome.

Figure 3 shows the coefficients from these regressions for our main variables of interest (other control variables include day of the week, month of the year and year). For the overall number of incidents reported, the result of the match does not seem to matter. However, when England wins, we see a twofold increase in the number of male to female alcohol-related incidents, $\exp(\beta) = 2.08$, p < .001, 95% CI [1.53, 2.82], which is reflected in a comparable increase in alcohol-related incidents for all victim-offender gender combinations, $\exp(\beta) = 1.86$, p < .001, 95% CI [1.39, 2.47]. For physical injuries, we see a slight increase in the number of male to male violence when England wins, $\exp(\beta) = 1.25$, p = .032, 95% CI [0.93, 1.65], and a similarly slight increase in the number of male to female incidents when England loses, $\exp(\beta) = 1.31$, p = .027, 95% CI [1.02, 1.65].

Surprisingly, female to female physical violence increases substantially on days following an England match day, $\exp(\beta) = 2.61$, p < .001, 95% CI [1.63, 4.01]. ????????

We can also see that in all types of incidents, it is much more likely that the offender and the victim are close to each other in age if they are of different genders, which might show the underlying proportion of intimate partner violence versus violence between family members of different generations.

There is also a consistent weekend effect: in all the subgroups and types of incidents, we see an almost twofold increase with a Friday onset and a Saturday peak that ends on Sunday.

Figure 3: Exponentiated coefficients from a series of negative binomial and Poisson regressions (Female to Female Alcohol and Physical injury). Error bars represent 95% confidence bounds on the coefficients. Month and year controls were also included in the regressions.
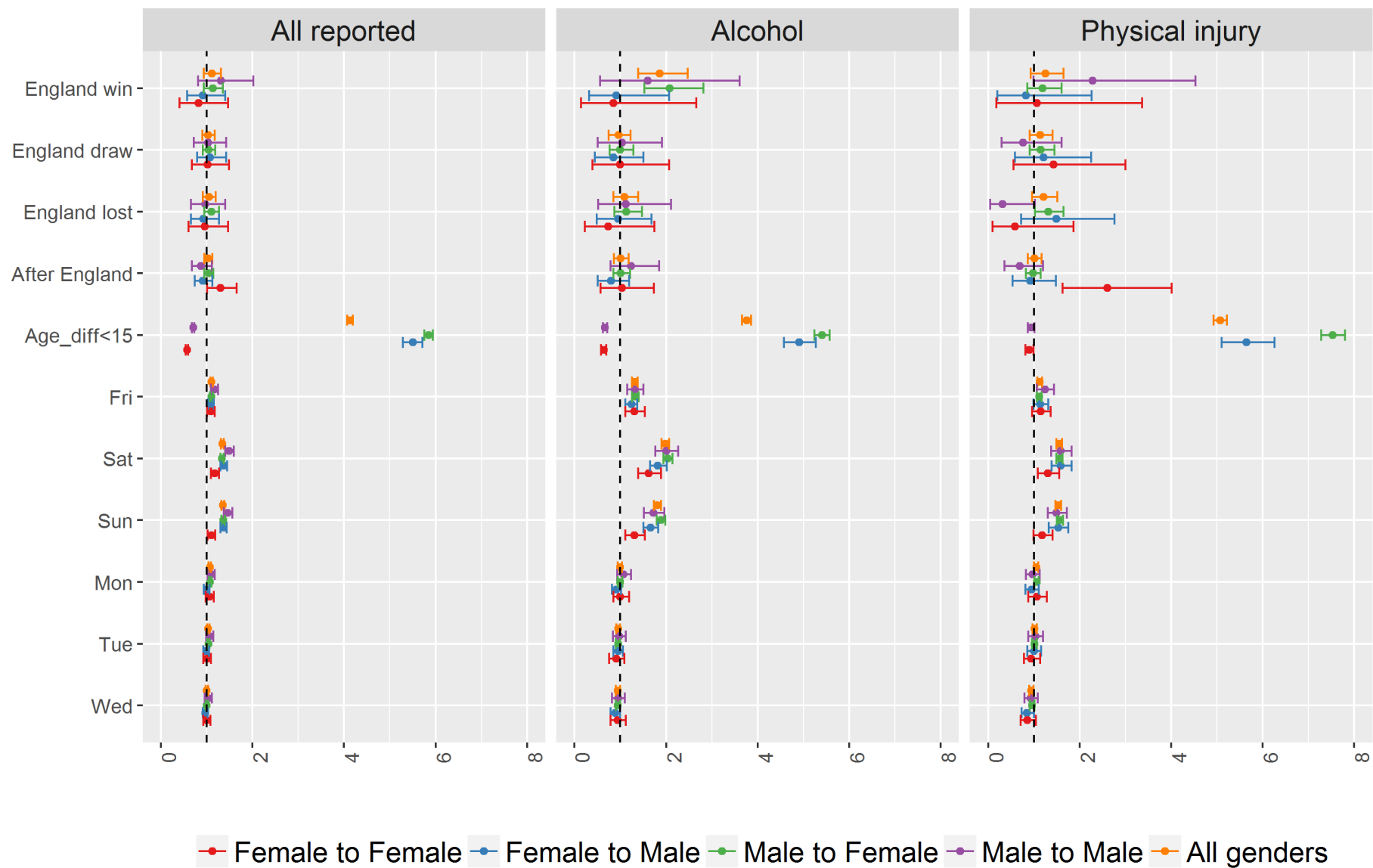
3.2 Time course of the effect by result of the match

Our dataset allows us to investigate how the effect of an England national football team victory

Figure 4: Exponentiated coefficients from a series of negative binomial regressions. Error bars represent 95% confidence bounds on the coefficients. Three-hour period of the day, day of the week, month and year controls were also included in the regressions.
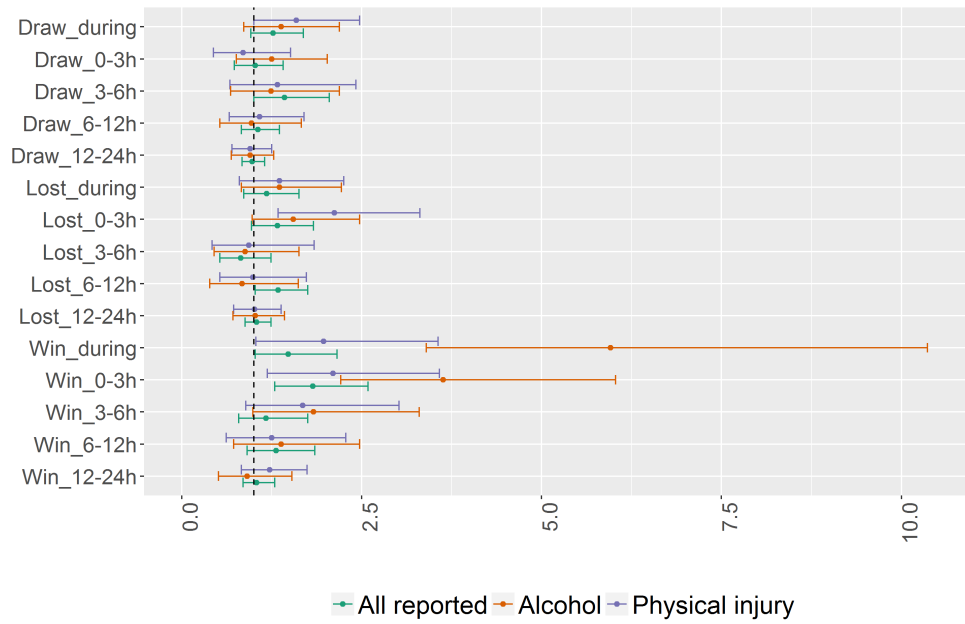
4 Discussion

5 Appendix

Figure 5: Hanging rootograms comparing the empirical distributions with the predicted frequencies. Fitted frequencies are obtained from either a Poisson (Alcohol, F to F and Physical injury, F to F) or a negative binomial model. The coloured line shows the predicted frequencies, whereas the bars show the actual outcome. Deviances between the bars and the lines indicate that some counts are over/underfitted by the model.