# The link between football and domestic abuse in England: evidence from the West Midlands

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# Domestic abuse in England

- "any incident of controlling, coercive or threatening behaviour, violence or abuse (psychological, physical, sexual, financial or emotional) between those aged 16 or over who are or have been intimate partners or family members" (The Crown Prosecution Service, 2017)
- almost two million people (0.695 million men and 1.3 million women) have reported to have experienced some form of domestic abuse in England and Wales in the year ending March, 2018 (Office for National Statistics, 2018)
- the estimated economic cost of domestic abuse in the year ending March, 2017 was £66 billion (Oliver, Alexander, Roe, & Miriam, 2019)

# The link between football and domestic abuse in England


- "If England get beaten, so will she. Domestic violence increases 26% when England play, 38% if they lose."
- Kirby, Francis, & O'Flaherty, 2014: daily number of domestic abuse (IPV) cases reported to the Lancashire Constabulary during the 2002, 2006 and 2010 World Cups
- Does the pattern replicate using data from a different time period, and geographical area within England? What is the role of alcohol in this relationship?

# Data

- All crimes and incidents recorded by the West Midlands Police (WMP) in the period between 2010 and 2018
- 31% of all cases recorded are domestic abuse related, average daily rate of reported domestic abuse cases is 3.11 per 100,000 individuals
- exact time of incident, age, gender of victim and perpetrator, alcohol involvement in the case
- England participated in 5 international football tournaments within this period (3 World Cups, 2 Euro Cups)

# Methodological Approach

- Outcome variable: daily number of reported domestic abuse cases
- Explanatory variables:
  - Type.of.day: Nonmatch day (2867), Tournament on (106), England win (8), lose (8) or draw (6), Day after England (22)
  - Alcohol-involvement in the cases (Yes/No)
  - Time.Controls: year, month, day of the week, Christmas, NYE

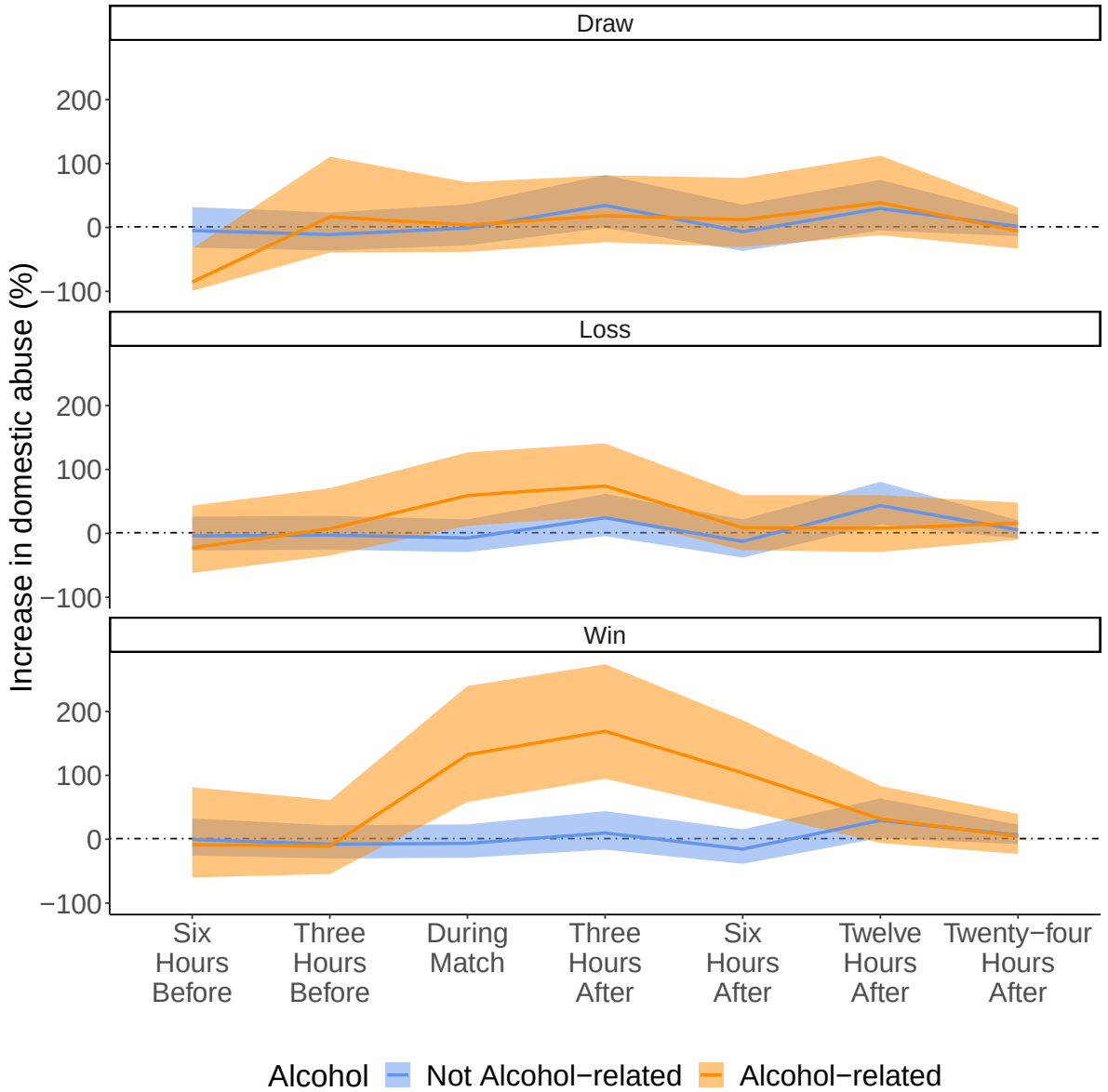
# Results I - Model specifications

| | *Dependent variable:* | | | |
|---|---|---|---|---|
| | Number of reported domestic abuse cases per day | | | |
| | (1) | (2) | (3) | (4) |
| Alcohol | −0.719*** | −0.719*** | −0.719*** | −0.862*** |
| | (0.007) | (0.007) | (0.008) | (0.031) |
| Tournament on | | −0.004 | 0.014 | 0.032 |
| | | (0.023) | (0.027) | (0.020) |
| England win | | 0.205*** | −0.037 | −0.031 |
| | | (0.069) | (0.091) | (0.063) |
| England draw | | 0.025 | 0.048 | 0.047 |
| | | (0.082) | (0.104) | (0.072) |
| England loss | | 0.078 | −0.013 | 0.050 |
| | | (0.068) | (0.089) | (0.061) |
| After England | | 0.097** | 0.075 | 0.086** |
| | | (0.043) | (0.055) | (0.038) |
| Tournament on:Alcohol | | | −0.043 | −0.083** |
| | | | (0.040) | (0.035) |
| England win:Alcohol | | | 0.610*** | 0.606*** |
| | | | (0.135) | (0.101) |
| England draw:Alcohol | | | −0.055 | −0.034 |
| | | | (0.165) | (0.129) |
| England loss:Alcohol | | | 0.223 | 0.076 |
| | | | (0.135) | (0.101) |
| After England:Alcohol | | | 0.051 | 0.037 |
| | | | (0.084) | (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 exponentiated coefficients 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*

# Results II - Three hour analysis



# Results III - Gender subgroups, Rugby, Other offences

| | *Dependent variable:* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Reported number of domestic abuse cases | | | | | Property-related Offences | Public Order Offences | Hate incidents | Other violent Offences |
| | Male to Male | Male to Female | Female to Female | Female to Male | Six Nations (Rugby) | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Alcohol | −0.825*** | −0.870*** | −0.858*** | −0.808*** | −0.862*** | −0.981*** | −0.922*** | −0.934*** | −0.902*** |
| | (0.101) | (0.034) | (0.080) | (0.080) | (0.031) | (0.065) | (0.080) | (0.115) | (0.040) |
| Tournament on | 0.005 | 0.038* | −0.048 | 0.053 | 0.005 | 0.042 | 0.096** | 0.138*** | 0.034 |
| | (0.054) | (0.021) | (0.045) | (0.045) | (0.019) | (0.026) | (0.036) | (0.047) | (0.027) |
| England win | −0.068 | −0.022 | −0.147 | 0.019 | 0.0001 | 0.052 | 0.234** | 0.073 | 0.094 |
| | (0.165) | (0.066) | (0.135) | (0.135) | (0.035) | (0.074) | (0.095) | (0.136) | (0.077) |
| England draw | 0.080 | 0.038 | 0.107 | 0.043 | | 0.100 | −0.065 | −0.066 | 0.035 |
| | (0.194) | (0.076) | (0.169) | (0.169) | | (0.085) | (0.128) | (0.168) | (0.092) |
| England lost | −0.063 | 0.065 | 0.117 | −0.036 | 0.056 | −0.042 | 0.075 | 0.011 | 0.089 |
| | (0.162) | (0.064) | (0.136) | (0.136) | (0.055) | (0.078) | (0.100) | (0.139) | (0.078) |
| After England | −0.036 | 0.093** | 0.025 | 0.152* | −0.010 | 0.052 | 0.161** | 0.141 | 0.108** |
| | (0.103) | (0.040) | (0.082) | (0.082) | (0.031) | (0.047) | (0.062) | (0.084) | (0.048) |
| Alcohol:Tournament on | −0.181* | −0.077** | −0.215* | −0.018 | −0.047 | 0.135 | −0.197** | −0.215* | −0.009 |
| | (0.106) | (0.038) | (0.084) | (0.084) | (0.035) | (0.080) | (0.101) | (0.141) | (0.051) |
| Alcohol:England win | 0.334 | 0.674*** | 0.472 | 0.360 | 0.045 | 0.259 | 0.020 | 0.310 | 0.507*** |
| | (0.285) | (0.108) | (0.231) | (0.231) | (0.059) | (0.219) | (0.256) | (0.359) | (0.132) |
| Alcohol:England draw | −0.282 | 0.031 | −0.580 | 0.071 | | 0.060 | 0.374 | 0.393 | 0.360* |
| | (0.411) | (0.138) | (0.313) | (0.313) | | (0.264) | (0.303) | (0.431) | (0.161) |
| Alcohol:England lost | 0.286 | 0.028 | −0.088 | 0.328 | −0.073 | 0.144 | 0.456* | −0.032 | 0.018 |
| | (0.279) | (0.111) | (0.231) | (0.231) | (0.091) | (0.226) | (0.228) | (0.393) | (0.138) |
| Alcohol:After England | 0.209 | 0.052 | −0.040 | −0.111 | −0.021 | 0.094 | 0.127 | 0.446* | 0.053 |
| | (0.185) | (0.071) | (0.159) | (0.159) | (0.055) | (0.144) | (0.158) | (0.211) | (0.088) |
| Observations | 6,034 | 6,034 | 6,034 | 6,034 | 6,034 | 6,034 | 6,034 | 6,034 | 6,034 |

*Note:* *p<0.1; **p<0.05; ***p<0.01

[a] *p<0.1; **p<0.05; ***p<0.01

[b] *Estimates are exponentiated coefficients from a series of negative binomial regressions (based on tests of overdispersion) with month, day of week, Christmas, New Year's eve controls interacted with 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*


"If England get beaten, so will she. Domestic violence increases 26% when England play, 38% if they lose."

# Results IV - Kirby et al. (2014) replication

| | *Dependent variable:* | |
|---|---|---|
| | 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*** | 0.388*** |
| | (0.094) | (0.085) |
| After England | 0.111** | 0.113** |
| | (0.051) | (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 exponentiated coefficients 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*

# Results IV - Robustness checks

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

# Results IV - Robustness checks

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

# Summary

- All crimes and incidents recorded by the West Midlands Police between 2010-2018
- Alcohol-related domestic abuse increases by 61% following an England victory, its temporal dynamics suggests a causal link, non-alcohol related abuse is unaffected
- The effect is specific to male to female abuse and football
- The win effect is consistent across different time periods and geographical areas

# References

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# Appendix

# Other violence - Gender subgroups

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

# Characteristics I

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

# Characteristics II

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

[a] *$p<0.1$; **$p<0.05$; ***$p<0.01$

[b] *Estimates are exponentiated coefficients 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*

# Characteristics III

| | *Dependent variable:* |
|---|---|
| | 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*