

Supplementary Material: Russian Holidays Predict Troll Activity 2015-2017

Douglas Almond*, Xinming Du[†] and Alana Vogel[‡]

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*Columbia University and NBER: da2152@columbia.edu

[†]Columbia University: xd2197@columbia.edu

[‡]Columbia University: asv2130@columbia.edu

1 Robustness of Table 1 First Stage

1.1 Dropping temperature variable

Table S1: First stage: Russian holiday on blocked tweets on the day shift

| | Panel A: #All tweets (z) | | | | | |
|--|-------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Holiday_RU \times Wave=1 | -0.293*** (0.103) | -0.292*** (0.103) | -0.292*** (0.103) | -0.292*** (0.103) | -0.293*** (0.092) | -0.293*** (0.092) |
| Holiday_RU \times Wave=2 | -0.040 (0.103) | -0.039 (0.103) | -0.039 (0.103) | -0.039 (0.103) | -0.040 (0.092) | -0.039 (0.092) |
| Holiday_RU \times Wave=3 | -0.007 (0.103) | -0.007 (0.103) | -0.007 (0.103) | -0.007 (0.103) | -0.007 (0.092) | -0.007 (0.092) |
| Holiday_RU \times Wave=4 | -0.009 (0.103) | -0.008 (0.103) | -0.008 (0.103) | -0.008 (0.103) | -0.009 (0.092) | -0.009 (0.092) |
| Holiday_US | .0125 (.047) | .0126 (.047) | .0127 (.0469) | .0127 (.0469) | .013 (.0422) | .0131 (.0422) |
| Days ($\times 10^{-3}$) | | .109 (.848) | .643 (.856) | .865 (.871) | | -.0484 (2.27) |
| Days ² ($\times 10^{-6}$) | | | -.187*** (.0419) | -.418** (.171) | | .406 (1.79) |
| Days ³ ($\times 10^{-9}$) | | | | .0527 (.0379) | | -.128 (.396) |
| Observations | 11688 | 11688 | 11688 | 11688 | 11688 | 11688 |
| R-square | 0.365 | 0.365 | 0.366 | 0.366 | 0.502 | 0.502 |
| Y-mean | 167.8 | 167.8 | 167.8 | 167.8 | 167.8 | 167.8 |
| Y-std.dev. | 687.0 | 687.0 | 687.0 | 687.0 | 687.0 | 687.0 |
| Y-mean Wave1 | 572.2 | 572.2 | 572.2 | 572.2 | 572.2 | 572.2 |
| Y-std.dev. Wave1 | 1280.2 | 1280.2 | 1280.2 | 1280.2 | 1280.2 | 1280.2 |
| Y-mean Wave2 | 93.36 | 93.36 | 93.36 | 93.36 | 93.36 | 93.36 |
| Y-std.dev. Wave2 | 159.7 | 159.7 | 159.7 | 159.7 | 159.7 | 159.7 |
| Y-mean Wave3 | 0.0010 | 0.0010 | 0.0010 | 0.0010 | 0.0010 | 0.0010 |
| Y-std.dev. Wave3 | 0.0414 | 0.0414 | 0.0414 | 0.0414 | 0.0414 | 0.0414 |
| Y-mean Wave4 | 5.785 | 5.785 | 5.785 | 5.785 | 5.785 | 5.785 |
| Y-std.dev. Wave4 | 19.28 | 19.28 | 19.28 | 19.28 | 19.28 | 19.28 |
| | Panel B: #Original tweets (z) | | | | | |
| Holiday_RU \times Wave=1 | -0.267** (0.109) | -0.266** (0.109) | -0.266** (0.109) | -0.266** (0.109) | -0.267*** (0.100) | -0.266*** (0.100) |
| Holiday_RU \times Wave=2 | -0.016 (0.109) | -0.015 (0.109) | -0.015 (0.109) | -0.015 (0.109) | -0.016 (0.100) | -0.015 (0.100) |
| Holiday_RU \times Wave=3 | -0.007 (0.109) | -0.006 (0.109) | -0.006 (0.109) | -0.006 (0.109) | -0.007 (0.100) | -0.006 (0.100) |
| Holiday_RU \times Wave=4 | -0.008 | -0.007 | -0.007 | -0.007 | -0.008 | -0.007 |

| | | | | | | |
|--|---------|---------|----------|----------|---------|---------|
| | (0.109) | (0.109) | (0.109) | (0.109) | (0.100) | (0.100) |
| Holiday_US | .0287 | .0288 | .0288 | .0289 | .0293 | .0294 |
| | (.0498) | (.0498) | (.0498) | (.0497) | (.0456) | (.0456) |
| Days ($\times 10^{-3}$) | | .134 | .474 | 1.21 | | .0828 |
| | | (.899) | (.908) | (.923) | | (2.45) |
| Days ² ($\times 10^{-6}$) | | | -.119*** | -.887*** | | .252 |
| | | | (.0444) | (.181) | | (1.94) |
| Days ³ ($\times 10^{-9}$) | | | | .175*** | | -.0832 |
| | | | | (.0401) | | (.428) |
| Observations | 11688 | 11688 | 11688 | 11688 | 11688 | 11688 |
| R-square | 0.287 | 0.287 | 0.287 | 0.288 | 0.417 | 0.417 |
| Y-mean | 100.4 | 100.4 | 100.4 | 100.4 | 100.4 | 100.4 |
| Y-std.dev. | 564.0 | 564.0 | 564.0 | 564.0 | 564.0 | 564.0 |
| Y-mean Wave1 | 375.4 | 375.4 | 375.4 | 375.4 | 375.4 | 375.4 |
| Y-std.dev. Wave1 | 1080.7 | 1080.7 | 1080.7 | 1080.7 | 1080.7 | 1080.7 |
| Y-mean Wave2 | 21.65 | 21.65 | 21.65 | 21.65 | 21.65 | 21.65 |
| Y-std.dev. Wave2 | 58.68 | 58.68 | 58.68 | 58.68 | 58.68 | 58.68 |
| Y-mean Wave3 | 0.0010 | 0.0010 | 0.0010 | 0.0010 | 0.0010 | 0.0010 |
| Y-std.dev. Wave3 | 0.0414 | 0.0414 | 0.0414 | 0.0414 | 0.0414 | 0.0414 |
| Y-mean Wave4 | 4.430 | 4.430 | 4.430 | 4.430 | 4.430 | 4.430 |
| Y-std.dev. Wave4 | 18.82 | 18.82 | 18.82 | 18.82 | 18.82 | 18.82 |

Panel C: #Retweeted tweets (z)

| | | | | | | |
|--|---------|---------|----------|----------|----------|----------|
| Holiday_RU \times Wave=1 | -0.179* | -0.179* | -0.179* | -0.179* | -0.180** | -0.180** |
| | (0.102) | (0.102) | (0.102) | (0.102) | (0.084) | (0.084) |
| Holiday_RU \times Wave=2 | -0.063 | -0.063 | -0.063 | -0.063 | -0.063 | -0.064 |
| | (0.102) | (0.102) | (0.102) | (0.102) | (0.084) | (0.084) |
| Holiday_RU \times Wave=3 | -0.005 | -0.005 | -0.005 | -0.005 | -0.004 | -0.005 |
| | (0.102) | (0.102) | (0.102) | (0.102) | (0.084) | (0.084) |
| Holiday_RU \times Wave=4 | -0.006 | -0.006 | -0.006 | -0.006 | -0.006 | -0.007 |
| | (0.102) | (0.102) | (0.102) | (0.102) | (0.084) | (0.084) |
| Holiday_US | -.0266 | -.0266 | -.0265 | -.0266 | -.0267 | -.0267 |
| | (.0467) | (.0467) | (.0466) | (.0466) | (.0385) | (.0385) |
| Days ($\times 10^{-3}$) | | -.00282 | .614 | -.317 | | -.281 |
| | | (.843) | (.851) | (.864) | | (2.07) |
| Days ² ($\times 10^{-6}$) | | | -.216*** | .75*** | | .481 |
| | | | (.0416) | (.17) | | (1.64) |
| Days ³ ($\times 10^{-9}$) | | | | -.221*** | | -.144 |
| | | | | (.0376) | | (.362) |
| Observations | 11688 | 11688 | 11688 | 11688 | 11688 | 11688 |
| R-square | 0.372 | 0.372 | 0.374 | 0.376 | 0.584 | 0.584 |
| Y-mean | 67.46 | 67.46 | 67.46 | 67.46 | 67.46 | 67.46 |
| Y-std.dev. | 284.1 | 284.1 | 284.1 | 284.1 | 284.1 | 284.1 |
| Y-mean Wave1 | 196.8 | 196.8 | 196.8 | 196.8 | 196.8 | 196.8 |
| Y-std.dev. Wave1 | 530.1 | 530.1 | 530.1 | 530.1 | 530.1 | 530.1 |

| | | | | | | |
|---------------------|-------|-------|-------|-------|-------|-------|
| Y-mean Wave2 | 71.70 | 71.70 | 71.70 | 71.70 | 71.70 | 71.70 |
| Y-std.dev. Wave2 | 127.6 | 127.6 | 127.6 | 127.6 | 127.6 | 127.6 |
| Y-mean Wave3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Y-std.dev. Wave3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Y-mean Wave4 | 1.355 | 1.355 | 1.355 | 1.355 | 1.355 | 1.355 |
| Y-std.dev. Wave4 | 2.660 | 2.660 | 2.660 | 2.660 | 2.660 | 2.660 |
| DOW FEs | Y | Y | Y | Y | Y | Y |
| Wave-Month FEs | Y | Y | Y | Y | | |
| Wave-Year FEs | Y | Y | Y | Y | | |
| Wave-Year-Month FEs | | | | | Y | Y |

Notes: * significant 10% level; ** significant at 5% level; *** significant at 1% level.

1.2 Dropping top 10 busiest tweeting days

Table S2: First stage: Russian holiday and temperature on blocked tweets on the day shift

| | Panel A: #All tweets (z) | | | | | |
|--|--------------------------|---------------------|---------------------|---------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Holiday_RU \times Wave=1 | -0.243*** (0.093) | -0.238** (0.093) | -0.238** (0.093) | -0.238** (0.093) | -0.247*** (0.077) | -0.243*** (0.077) |
| Holiday_RU \times Wave=2 | -0.047 (0.093) | -0.043 (0.093) | -0.043 (0.093) | -0.043 (0.093) | -0.046 (0.077) | -0.043 (0.077) |
| Holiday_RU \times Wave=3 | -0.009 (0.093) | -0.004 (0.093) | -0.004 (0.093) | -0.004 (0.093) | -0.009 (0.077) | -0.005 (0.077) |
| Holiday_RU \times Wave=4 | -0.009 (0.094) | -0.005 (0.094) | -0.006 (0.094) | -0.006 (0.094) | -0.009 (0.077) | -0.006 (0.077) |
| Temp \times Wave=1 (z) | -.0458 (.0292) | -.0459 (.0292) | -.0471 (.0291) | -.0467 (.0291) | -.0673** (.0276) | -.0674** (.0276) |
| Temp \times Wave=2 (z) | -.0178 (.0292) | -.0178 (.0292) | -.0192 (.0291) | -.0187 (.0291) | .00315 (.0275) | .003 (.0275) |
| Temp \times Wave=3 (z) | .000929 (.0291) | .000911 (.0291) | -.00033 (.0291) | .0000977 (.0291) | .00146 (.0275) | .00131 (.0275) |
| Temp \times Wave=4 (z) | .000188 (.0293) | .000178 (.0293) | -.00137 (.0292) | -.000926 (.0292) | .00129 (.0276) | .00115 (.0277) |
| Holiday_US | .0299 (.0428) | .0305 (.0428) | .0302 (.0427) | .0301 (.0427) | .028 (.0353) | .0285 (.0353) |
| Days ($\times 10^{-3}$) | | .612 (.77) | 1.32* (.776) | 1.23 (.79) | | -.194 (1.89) |
| Days ² ($\times 10^{-6}$) | | | -.25*** (.038) | -.154 (.156) | | 1.04 (1.49) |
| Days ³ ($\times 10^{-9}$) | | | | -.0218 | | -.284 |

| | | | | | | |
|------------------|--------|--------|--------|---------|--------|--------|
| | | | | (.0344) | | (.33) |
| Observations | 11531 | 11531 | 11531 | 11531 | 11531 | 11531 |
| R-square | 0.479 | 0.479 | 0.481 | 0.481 | 0.654 | 0.654 |
| Y-mean | 154.6 | 154.6 | 154.6 | 154.6 | 154.6 | 154.6 |
| Y-std.dev. | 544.0 | 544.0 | 544.0 | 544.0 | 544.0 | 544.0 |
| Y-mean Wave1 | 523.9 | 523.9 | 523.9 | 523.9 | 523.9 | 523.9 |
| Y-std.dev. Wave1 | 988.4 | 988.4 | 988.4 | 988.4 | 988.4 | 988.4 |
| Y-mean Wave2 | 89.88 | 89.88 | 89.88 | 89.88 | 89.88 | 89.88 |
| Y-std.dev. Wave2 | 145.7 | 145.7 | 145.7 | 145.7 | 145.7 | 145.7 |
| Y-mean Wave3 | 0.0010 | 0.0010 | 0.0010 | 0.0010 | 0.0010 | 0.0010 |
| Y-std.dev. Wave3 | 0.0416 | 0.0416 | 0.0416 | 0.0416 | 0.0416 | 0.0416 |
| Y-mean Wave4 | 5.212 | 5.212 | 5.212 | 5.212 | 5.212 | 5.212 |
| Y-std.dev. Wave4 | 5.824 | 5.824 | 5.824 | 5.824 | 5.824 | 5.824 |

Panel B: #Original tweets (z)

| | | | | | | |
|--|----------|----------|----------|----------|----------|----------|
| Holiday_RU \times Wave=1 | -0.195** | -0.189** | -0.189** | -0.189** | -0.206** | -0.200** |
| | (0.096) | (0.096) | (0.096) | (0.096) | (0.080) | (0.081) |
| Holiday_RU \times Wave=2 | -0.016 | -0.010 | -0.010 | -0.010 | -0.016 | -0.011 |
| | (0.096) | (0.096) | (0.096) | (0.096) | (0.080) | (0.081) |
| Holiday_RU \times Wave=3 | -0.009 | -0.003 | -0.003 | -0.003 | -0.009 | -0.004 |
| | (0.096) | (0.096) | (0.096) | (0.096) | (0.080) | (0.081) |
| Holiday_RU \times Wave=4 | -0.009 | -0.003 | -0.004 | -0.004 | -0.009 | -0.004 |
| | (0.097) | (0.097) | (0.097) | (0.097) | (0.081) | (0.081) |
| Temp \times Wave=1 (z) | -.0327 | -.0327 | -.0337 | -.0357 | -.0481* | -.0483* |
| | (.0302) | (.0302) | (.0301) | (.0301) | (.0289) | (.0289) |
| Temp \times Wave=2 (z) | -.00226 | -.00228 | -.00333 | -.00526 | .0024 | .00226 |
| | (.0302) | (.0302) | (.0301) | (.0301) | (.0289) | (.0289) |
| Temp \times Wave=3 (z) | .000225 | .000202 | -.000796 | -.00286 | .000628 | .000501 |
| | (.0301) | (.0301) | (.0301) | (.0301) | (.0288) | (.0288) |
| Temp \times Wave=4 (z) | -.000345 | -.000367 | -.00166 | -.00383 | .00085 | .000713 |
| | (.0303) | (.0303) | (.0302) | (.0302) | (.029) | (.029) |
| Holiday_US | .058 | .0588 | .0586 | .0589 | .056 | .0567 |
| | (.0443) | (.0443) | (.0443) | (.0443) | (.0371) | (.0371) |
| Days ($\times 10^{-3}$) | | .79 | 1.36* | 1.81** | | .243 |
| | | (.797) | (.803) | (.817) | | (1.98) |
| Days ² ($\times 10^{-6}$) | | | -.201*** | -.663*** | | .893 |
| | | | (.0393) | (.161) | | (1.57) |
| Days ³ ($\times 10^{-9}$) | | | | .106*** | | -.258 |
| | | | | (.0357) | | (.346) |
| Observations | 11531 | 11531 | 11531 | 11531 | 11531 | 11531 |
| R-square | 0.435 | 0.435 | 0.437 | 0.437 | 0.615 | 0.615 |
| Y-mean | 87.08 | 87.08 | 87.08 | 87.08 | 87.08 | 87.08 |
| Y-std.dev. | 377.6 | 377.6 | 377.6 | 377.6 | 377.6 | 377.6 |
| Y-mean Wave1 | 325.8 | 325.8 | 325.8 | 325.8 | 325.8 | 325.8 |
| Y-std.dev. Wave1 | 702.6 | 702.6 | 702.6 | 702.6 | 702.6 | 702.6 |

| | | | | | | |
|------------------|--------|--------|--------|--------|--------|--------|
| Y-mean Wave2 | 18.91 | 18.91 | 18.91 | 18.91 | 18.91 | 18.91 |
| Y-std.dev. Wave2 | 35.27 | 35.27 | 35.27 | 35.27 | 35.27 | 35.27 |
| Y-mean Wave3 | 0.0010 | 0.0010 | 0.0010 | 0.0010 | 0.0010 | 0.0010 |
| Y-std.dev. Wave3 | 0.0416 | 0.0416 | 0.0416 | 0.0416 | 0.0416 | 0.0416 |
| Y-mean Wave4 | 3.908 | 3.908 | 3.908 | 3.908 | 3.908 | 3.908 |
| Y-std.dev. Wave4 | 4.971 | 4.971 | 4.971 | 4.971 | 4.971 | 4.971 |

Panel C: #Retweeted tweets (z)

| | | | | | | |
|--|---------|---------|----------|---------|-----------|-----------|
| Holiday_RU \times Wave=1 | -0.187* | -0.187* | -0.186* | -0.186* | -0.190** | -0.191** |
| | (0.100) | (0.100) | (0.100) | (0.100) | (0.080) | (0.080) |
| Holiday_RU \times Wave=2 | -0.069 | -0.068 | -0.068 | -0.068 | -0.068 | -0.069 |
| | (0.100) | (0.100) | (0.100) | (0.100) | (0.080) | (0.080) |
| Holiday_RU \times Wave=3 | -0.004 | -0.004 | -0.004 | -0.004 | -0.004 | -0.005 |
| | (0.100) | (0.100) | (0.100) | (0.100) | (0.080) | (0.080) |
| Holiday_RU \times Wave=4 | -0.006 | -0.006 | -0.006 | -0.006 | -0.006 | -0.007 |
| | (0.100) | (0.100) | (0.100) | (0.100) | (0.080) | (0.080) |
| Temp \times Wave=1 (z) | -.0543* | -.0543* | -.0556* | -.0525* | -.0766*** | -.0767*** |
| | (.0314) | (.0314) | (.0313) | (.0313) | (.0286) | (.0286) |
| Temp \times Wave=2 (z) | -.0448 | -.0448 | -.0462 | -.043 | -.00414 | -.00423 |
| | (.0314) | (.0314) | (.0314) | (.0313) | (.0286) | (.0286) |
| Temp \times Wave=3 (z) | .00159 | .00159 | .000257 | .00338 | .00216 | .00208 |
| | (.0314) | (.0314) | (.0313) | (.0313) | (.0286) | (.0286) |
| Temp \times Wave=4 (z) | .00108 | .00108 | -.000641 | .00272 | .00195 | .00186 |
| | (.0315) | (.0315) | (.0315) | (.0315) | (.0287) | (.0287) |
| Holiday_US | -.0242 | -.0242 | -.0244 | -.025 | -.0268 | -.0268 |
| | (.0462) | (.0462) | (.0461) | (.0461) | (.0369) | (.0369) |
| Days ($\times 10^{-3}$) | | .0085 | .766 | .0872 | | -.3 |
| | | (.83) | (.837) | (.851) | | (1.96) |
| Days ² ($\times 10^{-6}$) | | | -.268*** | .432*** | | .508 |
| | | | (.0409) | (.167) | | (1.56) |
| Days ³ ($\times 10^{-9}$) | | | | -.16*** | | -.155 |
| | | | | (.0371) | | (.344) |
| Observations | 11530 | 11530 | 11530 | 11530 | 11530 | 11530 |
| R-square | 0.403 | 0.403 | 0.405 | 0.406 | 0.631 | 0.631 |
| Y-mean | 63.15 | 63.15 | 63.15 | 63.15 | 63.15 | 63.15 |
| Y-std.dev. | 246.8 | 246.8 | 246.8 | 246.8 | 246.8 | 246.8 |
| Y-mean Wave1 | 182.1 | 182.1 | 182.1 | 182.1 | 182.1 | 182.1 |
| Y-std.dev. Wave1 | 456.2 | 456.2 | 456.2 | 456.2 | 456.2 | 456.2 |
| Y-mean Wave2 | 69.44 | 69.44 | 69.44 | 69.44 | 69.44 | 69.44 |
| Y-std.dev. Wave2 | 116.8 | 116.8 | 116.8 | 116.8 | 116.8 | 116.8 |
| Y-mean Wave3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Y-std.dev. Wave3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Y-mean Wave4 | 1.270 | 1.270 | 1.270 | 1.270 | 1.270 | 1.270 |
| Y-std.dev. Wave4 | 2.202 | 2.202 | 2.202 | 2.202 | 2.202 | 2.202 |
| DOW FEs | Y | Y | Y | Y | Y | Y |

| | | | | | | |
|---------------------|---|---|---|---|---|---|
| Wave-Month FEs | Y | Y | Y | Y | | |
| Wave-Year FEs | Y | Y | Y | Y | | |
| Wave-Year-Month FEs | | | | | Y | Y |

Notes: * significant 10% level; ** significant at 5% level; *** significant at 1% level.

1.3 Add other major cities' temperature

Table S3: First stage: Russian holiday and temperature on blocked tweets on the day shift

| | Panel A: #All tweets (z) | | | | | |
|--|--------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Holiday_RU \times Wave=1 | -0.309*** (0.107) | -0.306*** (0.107) | -0.306*** (0.107) | -0.306*** (0.107) | -0.306*** (0.096) | -0.304*** (0.097) |
| Holiday_RU \times Wave=2 | -0.045 (0.107) | -0.042 (0.107) | -0.041 (0.107) | -0.042 (0.107) | -0.039 (0.096) | -0.038 (0.097) |
| Holiday_RU \times Wave=3 | -0.010 (0.107) | -0.007 (0.107) | -0.007 (0.107) | -0.007 (0.107) | -0.006 (0.096) | -0.005 (0.097) |
| Holiday_RU \times Wave=4 | -0.012 (0.107) | -0.009 (0.107) | -0.009 (0.107) | -0.009 (0.107) | -0.008 (0.096) | -0.007 (0.097) |
| Temp \times Wave=1 (z) | .0624* (.0334) | .0624* (.0334) | .0609* (.0333) | .0598* (.0334) | -.000613 (.0342) | -.000571 (.0342) |
| Temp \times Wave=2 (z) | -.0111 (.0334) | -.0111 (.0334) | -.0127 (.0333) | -.0138 (.0334) | .00443 (.0342) | .00447 (.0342) |
| Temp \times Wave=3 (z) | .00447 (.0334) | .0045 (.0334) | .00294 (.0333) | .00184 (.0334) | .00126 (.0342) | .00131 (.0342) |
| Temp \times Wave=4 (z) | .00258 (.0334) | .00261 (.0334) | .00105 (.0333) | -.0000528 (.0334) | -.000116 (.0342) | -.0000731 (.0342) |
| Holiday_US | .0356 (.0519) | .0364 (.052) | .0367 (.0519) | .0367 (.0519) | .0418 (.0467) | .0421 (.0467) |
| Temp_LosAngeles (z) | -.00739 (.0127) | -.00736 (.0127) | -.00333 (.0127) | -.00413 (.0127) | .0194 (.0125) | .0194 (.0125) |
| Temp_NewYork (z) | -.107*** (.0365) | -.108*** (.0365) | -.11*** (.0365) | -.107*** (.0365) | -.00978 (.0346) | -.00993 (.0346) |
| Temp_WashingtonDC (z) | .0956*** (.0355) | .0961*** (.0356) | .0989*** (.0355) | .099*** (.0355) | .0164 (.0337) | .0167 (.0338) |
| Temp_London (z) | -.0224 (.0138) | -.0225 (.0138) | -.0235* (.0138) | -.0221 (.0139) | -.0204 (.0135) | -.0203 (.0135) |
| Days ($\times 10^{-3}$) | | .343 (.885) | .907 (.893) | 1.1 (.909) | | .432 (2.56) |
| Days ² ($\times 10^{-6}$) | | | -.193*** (.0433) | -.389** (.179) | | .00917 (1.96) |

| | | | | | | |
|--|---------------------|---------------------|---------------------|---------------------|----------------------|----------------------|
| Days ³ ($\times 10^{-9}$) | | | | .0447 (.0397) | | -.0367 (.425) |
| Observations | 11140 | 11140 | 11140 | 11140 | 11140 | 11140 |
| R-square | 0.363 | 0.363 | 0.364 | 0.364 | 0.500 | 0.500 |
| Y-mean | 172.4 | 172.4 | 172.4 | 172.4 | 172.4 | 172.4 |
| Y-std.dev. | 699.2 | 699.2 | 699.2 | 699.2 | 699.2 | 699.2 |
| Y-mean Wave1 | 587.6 | 587.6 | 587.6 | 587.6 | 587.6 | 587.6 |
| Y-std.dev. Wave1 | 1301.6 | 1301.6 | 1301.6 | 1301.6 | 1301.6 | 1301.6 |
| Y-mean Wave2 | 96.13 | 96.13 | 96.13 | 96.13 | 96.13 | 96.13 |
| Y-std.dev. Wave2 | 160.7 | 160.7 | 160.7 | 160.7 | 160.7 | 160.7 |
| Y-mean Wave3 | 0.0011 | 0.0011 | 0.0011 | 0.0011 | 0.0011 | 0.0011 |
| Y-std.dev. Wave3 | 0.0424 | 0.0424 | 0.0424 | 0.0424 | 0.0424 | 0.0424 |
| Y-mean Wave4 | 5.971 | 5.971 | 5.971 | 5.971 | 5.971 | 5.971 |
| Y-std.dev. Wave4 | 19.72 | 19.72 | 19.72 | 19.72 | 19.72 | 19.72 |
| Panel B: #Original tweets (z) | | | | | | |
| Holiday_RU \times Wave=1 | -0.278** (0.114) | -0.275** (0.114) | -0.275** (0.114) | -0.276** (0.114) | -0.278*** (0.104) | -0.276*** (0.104) |
| Holiday_RU \times Wave=2 | -0.015 (0.114) | -0.013 (0.114) | -0.013 (0.114) | -0.013 (0.114) | -0.015 (0.104) | -0.013 (0.104) |
| Holiday_RU \times Wave=3 | -0.005 (0.114) | -0.002 (0.114) | -0.002 (0.114) | -0.003 (0.114) | -0.005 (0.104) | -0.003 (0.104) |
| Holiday_RU \times Wave=4 | -0.006 (0.114) | -0.004 (0.114) | -0.004 (0.114) | -0.004 (0.114) | -0.006 (0.104) | -0.005 (0.104) |
| Temp \times Wave=1 (z) | .103*** (.0353) | .103*** (.0353) | .102*** (.0353) | .0985*** (.0353) | .0248 (.037) | .0249 (.037) |
| Temp \times Wave=2 (z) | .0094 (.0353) | .00944 (.0353) | .00838 (.0353) | .00445 (.0353) | .00812 (.037) | .00824 (.037) |
| Temp \times Wave=3 (z) | .00354 (.0353) | .00358 (.0353) | .00252 (.0353) | -.00141 (.0353) | -.000678 (.037) | -.000565 (.037) |
| Temp \times Wave=4 (z) | .00131 (.0353) | .00134 (.0353) | .000287 (.0353) | -.00365 (.0353) | -.0024 (.037) | -.00229 (.037) |
| Holiday_US | .0552 (.055) | .056 (.0551) | .0562 (.055) | .0561 (.055) | .0581 (.0504) | .0586 (.0505) |
| Temp_LosAngeles (z) | .0148 (.0134) | .0148 (.0134) | .0176 (.0134) | .0147 (.0135) | .0244* (.0135) | .0245* (.0135) |
| Temp_NewYork (z) | -.0901** (.0387) | -.0905** (.0387) | -.0917** (.0387) | -.0838** (.0387) | -.0226 (.0374) | -.0229 (.0374) |
| Temp_WashingtonDC (z) | .059 (.0376) | .0595 (.0377) | .0614 (.0376) | .0618 (.0376) | .0297 (.0364) | .0302 (.0365) |
| Temp_London (z) | -.03** (.0147) | -.03** (.0147) | -.0307** (.0147) | -.0258* (.0147) | -.0118 (.0146) | -.0118 (.0146) |
| Days ($\times 10^{-3}$) | | .34 (.937) | .722 (.946) | 1.4 (.962) | | .696 (2.77) |
| Days ² ($\times 10^{-6}$) | | | -.131*** | -.827*** | | -.232 |

| | | | | | | |
|--|--------|--------|---------|---------|--------|--------|
| | | | (.0459) | (.19) | | (2.12) |
| Days ³ ($\times 10^{-9}$) | | | | .159*** | | .0228 |
| | | | | (.042) | | (.459) |
| Observations | 11140 | 11140 | 11140 | 11140 | 11140 | 11140 |
| R-square | 0.285 | 0.285 | 0.285 | 0.286 | 0.415 | 0.415 |
| Y-mean | 102.5 | 102.5 | 102.5 | 102.5 | 102.5 | 102.5 |
| Y-std.dev. | 573.8 | 573.8 | 573.8 | 573.8 | 573.8 | 573.8 |
| Y-mean Wave1 | 383.5 | 383.5 | 383.5 | 383.5 | 383.5 | 383.5 |
| Y-std.dev. Wave1 | 1099.2 | 1099.2 | 1099.2 | 1099.2 | 1099.2 | 1099.2 |
| Y-mean Wave2 | 21.76 | 21.76 | 21.76 | 21.76 | 21.76 | 21.76 |
| Y-std.dev. Wave2 | 55.92 | 55.92 | 55.92 | 55.92 | 55.92 | 55.92 |
| Y-mean Wave3 | 0.0011 | 0.0011 | 0.0011 | 0.0011 | 0.0011 | 0.0011 |
| Y-std.dev. Wave3 | 0.0424 | 0.0424 | 0.0424 | 0.0424 | 0.0424 | 0.0424 |
| Y-mean Wave4 | 4.575 | 4.575 | 4.575 | 4.575 | 4.575 | 4.575 |
| Y-std.dev. Wave4 | 19.26 | 19.26 | 19.26 | 19.26 | 19.26 | 19.26 |

| Panel C: #Retweeted tweets (z) | | | | | | |
|--------------------------------|-----------|-----------|----------|-----------|----------|----------|
| Holiday_RU \times Wave=1 | -0.195* | -0.194* | -0.193* | -0.192* | -0.187** | -0.188** |
| | (0.107) | (0.107) | (0.107) | (0.107) | (0.088) | (0.088) |
| Holiday_RU \times Wave=2 | -0.077 | -0.076 | -0.075 | -0.074 | -0.066 | -0.066 |
| | (0.107) | (0.107) | (0.107) | (0.107) | (0.088) | (0.088) |
| Holiday_RU \times Wave=3 | -0.014 | -0.013 | -0.012 | -0.011 | -0.004 | -0.005 |
| | (0.107) | (0.107) | (0.107) | (0.107) | (0.088) | (0.088) |
| Holiday_RU \times Wave=4 | -0.016 | -0.015 | -0.014 | -0.013 | -0.006 | -0.006 |
| | (0.107) | (0.107) | (0.107) | (0.107) | (0.088) | (0.088) |
| Temp \times Wave=1 (z) | -.0544 | -.0544 | -.0561* | -.051 | -.0507 | -.0508 |
| | (.0331) | (.0331) | (.0331) | (.0331) | (.0313) | (.0313) |
| Temp \times Wave=2 (z) | -.0456 | -.0456 | -.0473 | -.0421 | -.00542 | -.00554 |
| | (.0331) | (.0331) | (.0331) | (.0331) | (.0313) | (.0313) |
| Temp \times Wave=3 (z) | .00378 | .00379 | .00212 | .00725 | .0044 | .00428 |
| | (.0331) | (.0331) | (.0331) | (.0331) | (.0313) | (.0313) |
| Temp \times Wave=4 (z) | .00364 | .00365 | .00198 | .00711 | .00448 | .00436 |
| | (.0331) | (.0331) | (.0331) | (.0331) | (.0313) | (.0313) |
| Holiday_US | -.0235 | -.0232 | -.0228 | -.0226 | -.0143 | -.0145 |
| | (.0516) | (.0516) | (.0516) | (.0515) | (.0427) | (.0427) |
| Temp_LosAngeles (z) | -.0473*** | -.0473*** | -.043*** | -.0393*** | -.00154 | -.0018 |
| | (.0126) | (.0126) | (.0126) | (.0126) | (.0114) | (.0115) |
| Temp_NewYork (z) | -.0808** | -.081** | -.0828** | -.0932** | .0212 | .0214 |
| | (.0363) | (.0363) | (.0362) | (.0362) | (.0317) | (.0317) |
| Temp_WashingtonDC (z) | .114*** | .114*** | .117*** | .117*** | -.0194 | -.0196 |
| | (.0353) | (.0353) | (.0353) | (.0352) | (.0308) | (.0309) |
| Temp_London (z) | .0053 | .00526 | .00421 | -.00213 | -.0259** | -.0257** |
| | (.0137) | (.0138) | (.0137) | (.0138) | (.0124) | (.0124) |
| Days ($\times 10^{-3}$) | | .154 | .76 | -.125 | | -.337 |
| | | (.879) | (.887) | (.901) | | (2.34) |

| | | | | | | |
|--|-------|-------|-------|----------|----------|--------|
| Days ² ($\times 10^{-6}$) | | | | -.207*** | .701*** | .483 |
| | | | | (.043) | (.178) | (1.79) |
| Days ³ ($\times 10^{-9}$) | | | | | -.207*** | -.134 |
| | | | | | (.0394) | (.389) |
| Observations | 11140 | 11140 | 11140 | 11140 | 11140 | 11140 |
| R-square | 0.374 | 0.374 | 0.375 | 0.377 | 0.583 | 0.583 |
| Y-mean | 69.95 | 69.95 | 69.95 | 69.95 | 69.95 | 69.95 |
| Y-std.dev. | 298.8 | 298.8 | 298.8 | 298.8 | 298.8 | 298.8 |
| Y-mean Wave1 | 196.8 | 196.8 | 196.8 | 196.8 | 196.8 | 196.8 |
| Y-std.dev. Wave1 | 530.1 | 530.1 | 530.1 | 530.1 | 530.1 | 530.1 |
| Y-mean Wave2 | 74.37 | 74.37 | 74.37 | 74.37 | 74.37 | 74.37 |
| Y-std.dev. Wave2 | 129.5 | 129.5 | 129.5 | 129.5 | 129.5 | 129.5 |
| Y-mean Wave3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Y-std.dev. Wave3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Y-mean Wave4 | 1.396 | 1.396 | 1.396 | 1.396 | 1.396 | 1.396 |
| Y-std.dev. Wave4 | 2.700 | 2.700 | 2.700 | 2.700 | 2.700 | 2.700 |
| DOW FEs | Y | Y | Y | Y | Y | Y |
| Wave-Month FEs | Y | Y | Y | Y | | |
| Wave-Year FEs | Y | Y | Y | Y | | |
| Wave-Year-Month FEs | | | | | Y | Y |

Notes: The sample size is smaller than that in Table 1 is due to missing temperature data in newly added cities. * significant 10% level; ** significant at 5% level; *** significant at 1% level.

1.4 Shortening time period toward Wave 1 activity

Table S4: First stage 2012-2017

| | Panel A: #All tweets (z) | | | | | |
|----------------------------|--------------------------|-----------|-----------|-----------|-----------|-----------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Holiday_RU \times Wave=1 | -0.337*** | -0.335*** | -0.335*** | -0.335*** | -0.338*** | -0.337*** |
| | (0.119) | (0.120) | (0.119) | (0.119) | (0.108) | (0.108) |
| Holiday_RU \times Wave=2 | -0.034 | -0.033 | -0.032 | -0.032 | -0.034 | -0.034 |
| | (0.119) | (0.120) | (0.119) | (0.119) | (0.108) | (0.108) |
| Holiday_RU \times Wave=3 | -0.004 | -0.002 | -0.002 | -0.002 | -0.004 | -0.004 |
| | (0.119) | (0.120) | (0.119) | (0.119) | (0.108) | (0.108) |
| Holiday_RU \times Wave=4 | -0.004 | -0.003 | -0.002 | -0.002 | -0.004 | -0.004 |
| | (0.119) | (0.120) | (0.119) | (0.119) | (0.108) | (0.108) |
| Temp \times Wave=1 (z) | .0578 | .0578 | .0537 | .0592 | -.000184 | .000327 |
| | (.0372) | (.0372) | (.0371) | (.0371) | (.0384) | (.0384) |
| Temp \times Wave=2 (z) | -.00596 | -.00601 | -.01 | -.00457 | .00324 | .00375 |
| | (.0372) | (.0372) | (.0371) | (.0371) | (.0384) | (.0384) |
| Temp \times Wave=3 (z) | .000818 | .000768 | -.00328 | .0022 | .00134 | .00185 |

| | | | | | | |
|--|---------|---------|----------|----------|---------|---------|
| | (.0372) | (.0372) | (.0371) | (.0371) | (.0384) | (.0384) |
| Temp \times Wave=4 (z) | .000842 | .000792 | -.00325 | .00222 | .00173 | .00224 |
| | (.0372) | (.0372) | (.0371) | (.0371) | (.0384) | (.0384) |
| Holiday_US | .0174 | .0176 | .0185 | .018 | .0194 | .0193 |
| | (.0546) | (.0546) | (.0546) | (.0545) | (.0492) | (.0492) |
| Days ($\times 10^{-3}$) | | .197 | .983 | .0216 | | -.68 |
| | | (.99) | (.998) | (1.02) | | (2.65) |
| Days ² ($\times 10^{-6}$) | | | -.361*** | .965*** | | 1.27 |
| | | | (.0653) | (.273) | | (2.8) |
| Days ³ ($\times 10^{-9}$) | | | | -.403*** | | -.425 |
| | | | | (.0806) | | (.825) |
| Observations | 8684 | 8684 | 8684 | 8684 | 8684 | 8684 |
| R-square | 0.357 | 0.357 | 0.360 | 0.361 | 0.492 | 0.492 |
| Y-mean | 213.8 | 213.8 | 213.8 | 213.8 | 213.8 | 213.8 |
| Y-std.dev. | 785.9 | 785.9 | 785.9 | 785.9 | 785.9 | 785.9 |
| Y-mean Wave1 | 756.7 | 756.7 | 756.7 | 756.7 | 756.7 | 756.7 |
| Y-std.dev. Wave1 | 1431.5 | 1431.5 | 1431.5 | 1431.5 | 1431.5 | 1431.5 |
| Y-mean Wave2 | 92.58 | 92.58 | 92.58 | 92.58 | 92.58 | 92.58 |
| Y-std.dev. Wave2 | 154.0 | 154.0 | 154.0 | 154.0 | 154.0 | 154.0 |
| Y-mean Wave3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Y-std.dev. Wave3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Y-mean Wave4 | 5.891 | 5.891 | 5.891 | 5.891 | 5.891 | 5.891 |
| Y-std.dev. Wave4 | 8.448 | 8.448 | 8.448 | 8.448 | 8.448 | 8.448 |

Panel B: #Original tweets (z)

| | | | | | | |
|----------------------------|----------|----------|----------|----------|-----------|-----------|
| Holiday_RU \times Wave=1 | -0.306** | -0.305** | -0.305** | -0.305** | -0.307*** | -0.306*** |
| | (0.126) | (0.126) | (0.126) | (0.126) | (0.116) | (0.116) |
| Holiday_RU \times Wave=2 | -0.017 | -0.015 | -0.015 | -0.015 | -0.017 | -0.016 |
| | (0.126) | (0.126) | (0.126) | (0.126) | (0.116) | (0.116) |
| Holiday_RU \times Wave=3 | -0.005 | -0.004 | -0.004 | -0.004 | -0.005 | -0.005 |
| | (0.126) | (0.126) | (0.126) | (0.126) | (0.116) | (0.116) |
| Holiday_RU \times Wave=4 | -0.004 | -0.003 | -0.003 | -0.003 | -0.005 | -0.004 |
| | (0.126) | (0.126) | (0.126) | (0.126) | (0.116) | (0.116) |
| Temp \times Wave=1 (z) | .0995** | .0994** | .0955** | .0958** | .0329 | .0332 |
| | (.0393) | (.0393) | (.0392) | (.0392) | (.0413) | (.0414) |
| Temp \times Wave=2 (z) | .00724 | .0072 | .00324 | .0036 | .00962 | .00986 |
| | (.0393) | (.0393) | (.0392) | (.0392) | (.0413) | (.0414) |
| Temp \times Wave=3 (z) | .000278 | .000238 | -.00373 | -.00337 | .000643 | .000876 |
| | (.0393) | (.0393) | (.0392) | (.0392) | (.0413) | (.0414) |
| Temp \times Wave=4 (z) | .000139 | .0000985 | -.00387 | -.00351 | .000931 | .00116 |
| | (.0393) | (.0393) | (.0392) | (.0392) | (.0413) | (.0414) |
| Holiday_US | .0336 | .0337 | .0345 | .0345 | .0361 | .0361 |
| | (.0577) | (.0577) | (.0576) | (.0576) | (.053) | (.053) |
| Days ($\times 10^{-3}$) | | .158 | .929 | .865 | | -.167 |
| | | (1.04) | (1.05) | (1.07) | | (2.85) |

| | | | | | | |
|--|---------|---------|----------|----------|----------|----------|
| Days ² ($\times 10^{-6}$) | | | | -.354*** | -.266 | .509 |
| | | | | (.069) | (.289) | (3.01) |
| Days ³ ($\times 10^{-9}$) | | | | | -.0267 | -.18 |
| | | | | | (.0852) | (.887) |
| Observations | 8684 | 8684 | 8684 | 8684 | 8684 | 8684 |
| R-square | 0.281 | 0.281 | 0.284 | 0.284 | 0.410 | 0.410 |
| Y-mean | 129.6 | 129.6 | 129.6 | 129.6 | 129.6 | 129.6 |
| Y-std.dev. | 647.2 | 647.2 | 647.2 | 647.2 | 647.2 | 647.2 |
| Y-mean Wave1 | 493.0 | 493.0 | 493.0 | 493.0 | 493.0 | 493.0 |
| Y-std.dev. Wave1 | 1223.2 | 1223.2 | 1223.2 | 1223.2 | 1223.2 | 1223.2 |
| Y-mean Wave2 | 20.44 | 20.44 | 20.44 | 20.44 | 20.44 | 20.44 |
| Y-std.dev. Wave2 | 58.15 | 58.15 | 58.15 | 58.15 | 58.15 | 58.15 |
| Y-mean Wave3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Y-std.dev. Wave3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Y-mean Wave4 | 4.743 | 4.743 | 4.743 | 4.743 | 4.743 | 4.743 |
| Y-std.dev. Wave4 | 7.074 | 7.074 | 7.074 | 7.074 | 7.074 | 7.074 |
| Panel C: #Retweeted tweets (z) | | | | | | |
| Holiday_RU \times Wave=1 | -0.204* | -0.203* | -0.203* | -0.202* | -0.205** | -0.205** |
| | (0.119) | (0.119) | (0.119) | (0.118) | (0.099) | (0.099) |
| Holiday_RU \times Wave=2 | -0.049 | -0.048 | -0.048 | -0.048 | -0.049 | -0.049 |
| | (0.119) | (0.119) | (0.119) | (0.118) | (0.099) | (0.099) |
| Holiday_RU \times Wave=3 | 0.000 | 0.001 | 0.002 | 0.002 | 0.000 | 0.000 |
| | (0.119) | (0.119) | (0.119) | (0.118) | (0.099) | (0.099) |
| Holiday_RU \times Wave=4 | -0.001 | 0.000 | 0.000 | 0.001 | -0.001 | -0.001 |
| | (0.119) | (0.119) | (0.119) | (0.118) | (0.099) | (0.099) |
| Temp \times Wave=1 (z) | -.0589 | -.0589 | -.0608 | -.0482 | -.0664* | -.0656* |
| | (.037) | (.037) | (.037) | (.0367) | (.0352) | (.0352) |
| Temp \times Wave=2 (z) | -.029 | -.029 | -.0309 | -.0183 | -.0114 | -.0106 |
| | (.037) | (.037) | (.037) | (.0367) | (.0352) | (.0352) |
| Temp \times Wave=3 (z) | .00143 | .00139 | -.000486 | .0121 | .00197 | .00275 |
| | (.037) | (.037) | (.037) | (.0367) | (.0352) | (.0352) |
| Temp \times Wave=4 (z) | .00177 | .00172 | -.000148 | .0124 | .00234 | .00311 |
| | (.037) | (.037) | (.037) | (.0367) | (.0352) | (.0352) |
| Holiday_US | -.0249 | -.0247 | -.0244 | -.0254 | -.0253 | -.0255 |
| | (.0544) | (.0544) | (.0543) | (.0539) | (.0451) | (.0451) |
| Days ($\times 10^{-3}$) | | .161 | .525 | -1.68* | | -1.32 |
| | | (.985) | (.995) | (1.01) | | (2.43) |
| Days ² ($\times 10^{-6}$) | | | -.167** | 2.87*** | | 2.07 |
| | | | (.0651) | (.27) | | (2.57) |
| Days ³ ($\times 10^{-9}$) | | | | -.925*** | | -.67 |
| | | | | (.0798) | | (.756) |
| Observations | 8684 | 8684 | 8684 | 8684 | 8684 | 8684 |
| R-square | 0.369 | 0.369 | 0.369 | 0.379 | 0.577 | 0.577 |
| Y-mean | 84.22 | 84.22 | 84.22 | 84.22 | 84.22 | 84.22 |

| | | | | | | |
|---------------------|-------|-------|-------|-------|-------|-------|
| Y-std.dev. | 325.0 | 325.0 | 325.0 | 325.0 | 325.0 | 325.0 |
| Y-mean Wave1 | 263.6 | 263.6 | 263.6 | 263.6 | 263.6 | 263.6 |
| Y-std.dev. Wave1 | 600.5 | 600.5 | 600.5 | 600.5 | 600.5 | 600.5 |
| Y-mean Wave2 | 72.14 | 72.14 | 72.14 | 72.14 | 72.14 | 72.14 |
| Y-std.dev. Wave2 | 125.9 | 125.9 | 125.9 | 125.9 | 125.9 | 125.9 |
| Y-mean Wave3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Y-std.dev. Wave3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Y-mean Wave4 | 1.147 | 1.147 | 1.147 | 1.147 | 1.147 | 1.147 |
| Y-std.dev. Wave4 | 2.213 | 2.213 | 2.213 | 2.213 | 2.213 | 2.213 |
| DOW FEs | Y | Y | Y | Y | Y | Y |
| Wave-Month FEs | Y | Y | Y | Y | | |
| Wave-Year FEs | Y | Y | Y | Y | | |
| Wave-Year-Month FEs | | | | | Y | Y |

Notes: * significant 10% level; ** significant at 5% level; *** significant at 1% level.

Table S5: First stage Nov 14, 2016-2017

| | Panel A: #All tweets (z) | | | | | |
|--|--------------------------|-------------------|---------------------|--------------------|-------------------|--------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Holiday_RU \times Wave=1 | -0.134 (0.179) | -0.140 (0.180) | -0.142 (0.179) | -0.142 (0.179) | -0.140 (0.179) | -0.142 (0.180) |
| Holiday_RU \times Wave=2 | -0.102 (0.179) | -0.108 (0.180) | -0.110 (0.179) | -0.110 (0.179) | -0.105 (0.179) | -0.107 (0.180) |
| Holiday_RU \times Wave=3 | 0.020 (0.179) | 0.014 (0.180) | 0.012 (0.179) | 0.012 (0.179) | 0.020 (0.179) | 0.017 (0.180) |
| Holiday_RU \times Wave=4 | 0.017 (0.179) | 0.011 (0.180) | 0.009 (0.179) | 0.009 (0.179) | 0.017 (0.179) | 0.014 (0.180) |
| Temp \times Wave=1 (z) | -.0404 (.0563) | -.0383 (.0564) | -.0525 (.0568) | -.0525 (.0568) | -.0428 (.0564) | -.0631 (.0572) |
| Temp \times Wave=2 (z) | -.0242 (.0563) | -.0221 (.0564) | -.0363 (.0568) | -.0363 (.0568) | -.0253 (.0564) | -.0457 (.0572) |
| Temp \times Wave=3 (z) | .0127 (.0563) | .0149 (.0564) | .000608 (.0568) | .00064 (.0568) | .0126 (.0564) | -.00772 (.0572) |
| Temp \times Wave=4 (z) | .0122 (.0563) | .0143 (.0564) | .0000918 (.0568) | .000124 (.0568) | .0121 (.0564) | -.00825 (.0572) |
| Holiday_US | -.129* (.0744) | -.13* (.0744) | -.129* (.0743) | -.132* (.0744) | -.129* (.0744) | -.132* (.0744) |
| Days ($\times 10^{-3}$) | | -.837 (1.41) | 30.7* (16) | 466 (456) | | 528 (458) |
| Days ² ($\times 10^{-6}$) | | | -7.84** (3.96) | -228 (230) | | -252 (231) |
| Days ³ ($\times 10^{-9}$) | | | | 36.8 | | 39.7 |

| | | | | | | |
|--|----------|----------|----------|----------|----------|----------|
| | | | | (38.6) | | (38.6) |
| Observations | 1652 | 1652 | 1652 | 1652 | 1652 | 1652 |
| R-square | 0.769 | 0.769 | 0.769 | 0.769 | 0.769 | 0.770 |
| Y-mean | 310.3 | 310.3 | 310.3 | 310.3 | 310.3 | 310.3 |
| Y-std.dev. | 667.3 | 667.3 | 667.3 | 667.3 | 667.3 | 667.3 |
| Y-mean Wave1 | 1001.1 | 1001.1 | 1001.1 | 1001.1 | 1001.1 | 1001.1 |
| Y-std.dev. Wave1 | 1040.8 | 1040.8 | 1040.8 | 1040.8 | 1040.8 | 1040.8 |
| Y-mean Wave2 | 234.7 | 234.7 | 234.7 | 234.7 | 234.7 | 234.7 |
| Y-std.dev. Wave2 | 164.4 | 164.4 | 164.4 | 164.4 | 164.4 | 164.4 |
| Y-mean Wave3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Y-std.dev. Wave3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Y-mean Wave4 | 5.310 | 5.310 | 5.310 | 5.310 | 5.310 | 5.310 |
| Y-std.dev. Wave4 | 2.679 | 2.679 | 2.679 | 2.679 | 2.679 | 2.679 |
| Panel B: #Original tweets (z) | | | | | | |
| Holiday_RU \times Wave=1 | -0.358** | -0.356** | -0.358** | -0.358** | -0.358** | -0.353** |
| | (0.174) | (0.174) | (0.174) | (0.174) | (0.174) | (0.174) |
| Holiday_RU \times Wave=2 | -0.031 | -0.029 | -0.031 | -0.031 | -0.034 | -0.028 |
| | (0.174) | (0.174) | (0.174) | (0.174) | (0.174) | (0.174) |
| Holiday_RU \times Wave=3 | 0.054 | 0.056 | 0.054 | 0.054 | 0.054 | 0.060 |
| | (0.174) | (0.174) | (0.174) | (0.174) | (0.174) | (0.174) |
| Holiday_RU \times Wave=4 | 0.048 | 0.050 | 0.048 | 0.048 | 0.048 | 0.053 |
| | (0.174) | (0.174) | (0.174) | (0.174) | (0.174) | (0.174) |
| Temp \times Wave=1 (z) | .192*** | .191*** | .177*** | .177*** | .192*** | .163*** |
| | (.0545) | (.0547) | (.055) | (.055) | (.0546) | (.0554) |
| Temp \times Wave=2 (z) | .00754 | .00683 | -.00776 | -.00772 | .00631 | -.0224 |
| | (.0545) | (.0547) | (.055) | (.055) | (.0546) | (.0554) |
| Temp \times Wave=3 (z) | .0171 | .0163 | .00175 | .0018 | .0171 | -.0116 |
| | (.0545) | (.0547) | (.055) | (.055) | (.0546) | (.0554) |
| Temp \times Wave=4 (z) | .0159 | .0152 | .000626 | .000675 | .0159 | -.0128 |
| | (.0545) | (.0547) | (.055) | (.055) | (.0546) | (.0554) |
| Holiday_US | -.0817 | -.0816 | -.081 | -.0861 | -.0818 | -.0854 |
| | (.0721) | (.0721) | (.072) | (.0721) | (.0721) | (.072) |
| Days ($\times 10^{-3}$) | | .278 | 32.5** | 686 | | 779* |
| | | (1.37) | (15.5) | (442) | | (444) |
| Days ² ($\times 10^{-6}$) | | | -8.02** | -338 | | -374* |
| | | | (3.84) | (223) | | (223) |
| Days ³ ($\times 10^{-9}$) | | | | 55.3 | | 59.6 |
| | | | | (37.4) | | (37.4) |
| Observations | 1652 | 1652 | 1652 | 1652 | 1652 | 1652 |
| R-square | 0.783 | 0.783 | 0.783 | 0.784 | 0.783 | 0.784 |
| Y-mean | 106.7 | 106.7 | 106.7 | 106.7 | 106.7 | 106.7 |
| Y-std.dev. | 225.2 | 225.2 | 225.2 | 225.2 | 225.2 | 225.2 |
| Y-mean Wave1 | 377.6 | 377.6 | 377.6 | 377.6 | 377.6 | 377.6 |
| Y-std.dev. Wave1 | 319.2 | 319.2 | 319.2 | 319.2 | 319.2 | 319.2 |

| | | | | | | |
|--|--------------------|--------------------|---------------------|---------------------|-------------------|---------------------|
| Y-mean Wave2 | 44.75 | 44.75 | 44.75 | 44.75 | 44.75 | 44.75 |
| Y-std.dev. Wave2 | 44.60 | 44.60 | 44.60 | 44.60 | 44.60 | 44.60 |
| Y-mean Wave3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Y-std.dev. Wave3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Y-mean Wave4 | 4.513 | 4.513 | 4.513 | 4.513 | 4.513 | 4.513 |
| Y-std.dev. Wave4 | 2.415 | 2.415 | 2.415 | 2.415 | 2.415 | 2.415 |
| Panel C: #Retweeted tweets (z) | | | | | | |
| Holiday_RU \times Wave=1 | -0.018 (0.199) | -0.027 (0.199) | -0.029 (0.199) | -0.029 (0.199) | -0.026 (0.199) | -0.032 (0.200) |
| Holiday_RU \times Wave=2 | -0.128 (0.199) | -0.137 (0.199) | -0.139 (0.199) | -0.139 (0.199) | -0.130 (0.199) | -0.136 (0.200) |
| Holiday_RU \times Wave=3 | 0.003 (0.199) | -0.007 (0.199) | -0.009 (0.199) | -0.009 (0.199) | 0.002 (0.199) | -0.004 (0.200) |
| Holiday_RU \times Wave=4 | 0.001 (0.199) | -0.008 (0.199) | -0.010 (0.199) | -0.010 (0.199) | 0.001 (0.199) | -0.005 (0.200) |
| Temp \times Wave=1 (z) | -.147** (.0625) | -.144** (.0627) | -.157** (.0631) | -.157** (.0632) | -.15** (.0626) | -.165*** (.0636) |
| Temp \times Wave=2 (z) | -.0374 (.0625) | -.0341 (.0627) | -.0471 (.0631) | -.0471 (.0632) | -.0384 (.0626) | -.0532 (.0636) |
| Temp \times Wave=3 (z) | .00974 (.0625) | .0131 (.0627) | .000025 (.0631) | .0000474 (.0632) | .00956 (.0626) | -.0053 (.0636) |
| Temp \times Wave=4 (z) | .00955 (.0625) | .0129 (.0627) | -.000167 (.0631) | -.000145 (.0632) | .00938 (.0626) | -.00548 (.0636) |
| Holiday_US | -.142* (.0826) | -.143* (.0826) | -.142* (.0826) | -.144* (.0827) | -.142* (.0827) | -.144* (.0828) |
| Days ($\times 10^{-3}$) | | -1.3 (1.57) | 27.5 (17.8) | 328 (507) | | 370 (510) |
| Days ² ($\times 10^{-6}$) | | | -7.17 (4.4) | -159 (256) | | -175 (257) |
| Days ³ ($\times 10^{-9}$) | | | | 25.4 (42.9) | | 27.4 (43) |
| Observations | 1652 | 1652 | 1652 | 1652 | 1652 | 1652 |
| R-square | 0.714 | 0.714 | 0.715 | 0.715 | 0.715 | 0.715 |
| Y-mean | 203.6 | 203.6 | 203.6 | 203.6 | 203.6 | 203.6 |
| Y-std.dev. | 477.6 | 477.6 | 477.6 | 477.6 | 477.6 | 477.6 |
| Y-mean Wave1 | 623.5 | 623.5 | 623.5 | 623.5 | 623.5 | 623.5 |
| Y-std.dev. Wave1 | 797.3 | 797.3 | 797.3 | 797.3 | 797.3 | 797.3 |
| Y-mean Wave2 | 189.9 | 189.9 | 189.9 | 189.9 | 189.9 | 189.9 |
| Y-std.dev. Wave2 | 137.3 | 137.3 | 137.3 | 137.3 | 137.3 | 137.3 |
| Y-mean Wave3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Y-std.dev. Wave3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Y-mean Wave4 | 0.7966 | 0.7966 | 0.7966 | 0.7966 | 0.7966 | 0.7966 |
| Y-std.dev. Wave4 | 1.214 | 1.214 | 1.214 | 1.214 | 1.214 | 1.214 |
| DOW FEs | Y | Y | Y | Y | Y | Y |

| | | | | | | |
|---------------------|---|---|---|---|---|---|
| Wave-Month FEs | Y | Y | Y | Y | | |
| Wave-Year FEs | Y | Y | Y | Y | | |
| Wave-Year-Month FEs | | | | | Y | Y |

Notes: * significant 10% level; ** significant at 5% level; *** significant at 1% level.

2 Holiday Event Study (Regression Tables)

Here we focus on the 21 days around the Russian holiday. That is, we consider the subsample of 10 days prior to the holiday, the holiday itself, and 10 days after the holiday. As there are 11 days between Defender of the Fatherland Day (February 25) and International Women's Day (March 8), this is the maximal event study window that avoids overlap in these two holiday events. We use 5 days prior and after the holiday as robustness check to prevent overlap in any two holiday events.

2.1 First stage

Table S6: First stage, drop 10 busiest days, 42, 42, 44 events 2012-2017

| | Panel A: #All tweets (z) | | | | | |
|--|-------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Holiday_RU | -0.203*** (0.073) | -0.214*** (0.075) | -0.214*** (0.075) | -0.212*** (0.074) | -0.200*** (0.071) | -0.214*** (0.075) |
| Holiday_US | -0.097 (0.102) | -0.106 (0.105) | -0.108 (0.100) | -0.117 (0.098) | -0.131 (0.109) | -0.141 (0.110) |
| Days ($\times 10^{-3}$) | | -4.422 (7.032) | -2.708 (7.086) | -7.519 (6.802) | | -4.814 (10.186) |
| Days ² ($\times 10^{-6}$) | | | -0.774 (0.544) | 5.902*** (2.027) | | -0.168 (19.800) |
| Days ³ ($\times 10^{-9}$) | | | | -2.04*** (.613) | | .00514 (6.09) |
| Observations | 882 | 882 | 882 | 882 | 882 | 882 |
| R-square | 0.525 | 0.526 | 0.535 | 0.567 | 0.704 | 0.704 |
| Y-mean | 605.7 | 605.7 | 605.7 | 605.7 | 605.7 | 605.7 |
| Y-std.dev. | 839.6 | 839.6 | 839.6 | 839.6 | 839.6 | 839.6 |
| | Panel B: #Original tweets (z) | | | | | |
| Holiday_RU | -0.184** (0.074) | -0.187** (0.079) | -0.187** (0.079) | -0.185** (0.078) | -0.183** (0.074) | -0.185** (0.080) |
| Holiday_US | -0.038 (0.115) | -0.041 (0.114) | -0.045 (0.111) | -0.051 (0.108) | -0.047 (0.113) | -0.051 (0.111) |
| Days ($\times 10^{-3}$) | | -1.254 (4.896) | 1.501 (4.862) | -2.020 (5.359) | | -3.342 (7.905) |
| Days ² ($\times 10^{-6}$) | | | -1.244*** (0.385) | 3.642 (3.262) | | -0.455 (15.906) |
| Days ³ ($\times 10^{-9}$) | | | | -1.49 (1.03) | | .725 (4.89) |
| Observations | 882 | 882 | 882 | 882 | 882 | 882 |
| R-square | 0.495 | 0.495 | 0.520 | 0.537 | 0.655 | 0.656 |
| Y-mean | 323.2 | 323.2 | 323.2 | 323.2 | 323.2 | 323.2 |

| Y-std.dev. | 477.4 | 477.4 | 477.4 | 477.4 | 477.4 | 477.4 |
|--|---------|----------|----------|----------|---------|----------|
| Panel C: #Retweeted tweets (z) | | | | | | |
| Holiday_RU | -0.164* | -0.180* | -0.181* | -0.178* | -0.165* | -0.183* |
| | (0.091) | (0.100) | (0.100) | (0.100) | (0.091) | (0.100) |
| Holiday_US | -0.058 | -0.077 | -0.076 | -0.071 | -0.063 | -0.076 |
| | (0.085) | (0.090) | (0.090) | (0.090) | (0.090) | (0.097) |
| Days ($\times 10^{-3}$) | | -6.777 | -6.030 | -9.755 | | -5.211 |
| | | (13.293) | (13.191) | (13.213) | | (18.976) |
| Days ² ($\times 10^{-6}$) | | | -0.348 | 5.382*** | | 2.225 |
| | | | (0.814) | (1.729) | | (37.214) |
| Days ³ ($\times 10^{-9}$) | | | | -1.84*** | | -1.58 |
| | | | | (.594) | | (11.3) |
| Observations | 924 | 924 | 924 | 924 | 924 | 924 |
| R-square | 0.364 | 0.365 | 0.367 | 0.393 | 0.613 | 0.615 |
| Y-mean | 208.0 | 208.0 | 208.0 | 208.0 | 208.0 | 208.0 |
| Y-std.dev. | 434.8 | 434.8 | 434.8 | 434.8 | 434.8 | 434.8 |
| DOW FEs | Y | Y | Y | Y | Y | Y |
| Month FEs | Y | Y | Y | Y | | |
| Year FEs | Y | Y | Y | Y | | |
| Year-Month FEs | | | | | Y | Y |

Notes: We drop top 10 busiest days for each category (all, original, retweeted tweets) 2012-2017, and only keep holiday events with complete data over the 21-day window. This results in a smaller number of events than 48 (8 events per year over 6 years) and different number of events for each category, equal to #observations over 21. Standard errors are clustered at the event level. * significant 10% level; ** significant at 5% level; *** significant at 1% level.

Table S7: First stage, 46 events 2012-2017

| Panel A: #All tweets (z) | | | | | | |
|--|-----------|-----------|-----------|-----------|-----------|-----------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Holiday_RU | -0.191*** | -0.166*** | -0.166*** | -0.166*** | -0.192*** | -0.166*** |
| | (0.061) | (0.053) | (0.053) | (0.053) | (0.062) | (0.054) |
| Holiday_US | -0.215 | -0.191 | -0.193 | -0.194 | -0.218 | -0.174 |
| | (0.162) | (0.166) | (0.166) | (0.166) | (0.166) | (0.171) |
| Days ($\times 10^{-3}$) | | 10.197 | 11.338 | 10.379 | | -24.951 |
| | | (12.688) | (12.749) | (13.109) | | (21.420) |
| Days ² ($\times 10^{-6}$) | | | -0.522** | 0.813 | | 46.236 |
| | | | (0.254) | (1.568) | | (43.414) |
| Days ³ ($\times 10^{-9}$) | | | | -411 | | -14.1 |
| | | | | (.473) | | (13.2) |
| Observations | 966 | 966 | 966 | 966 | 966 | 966 |
| R-square | 0.250 | 0.252 | 0.256 | 0.257 | 0.391 | 0.397 |
| Y-mean | 832.7 | 832.7 | 832.7 | 832.7 | 832.7 | 832.7 |

| Y-std.dev. | 1672.5 | 1672.5 | 1672.5 | 1672.5 | 1672.5 | 1672.5 |
|--|---------------------|---------------------|----------------------|---------------------|---------------------|---------------------|
| Panel B: #Original tweets (z) | | | | | | |
| Holiday_RU | -0.150** (0.058) | -0.118** (0.048) | -0.118** (0.048) | -0.119** (0.048) | -0.152** (0.060) | -0.118** (0.048) |
| Holiday_US | -0.205 (0.175) | -0.175 (0.178) | -0.177 (0.178) | -0.176 (0.178) | -0.194 (0.178) | -0.143 (0.182) |
| Days ($\times 10^{-3}$) | | 12.718 (13.216) | 13.915 (13.292) | 14.258 (13.636) | | -24.887 (21.947) |
| Days ² ($\times 10^{-6}$) | | | -0.547*** (0.167) | -1.025 (1.575) | | 48.717 (44.620) |
| Days ³ ($\times 10^{-9}$) | | | | .147 (.478) | | -14.6 (13.5) |
| Observations | 966 | 966 | 966 | 966 | 966 | 966 |
| R-square | 0.205 | 0.208 | 0.212 | 0.213 | 0.359 | 0.367 |
| Y-mean | 572.9 | 572.9 | 572.9 | 572.9 | 572.9 | 572.9 |
| Y-std.dev. | 1571.5 | 1571.5 | 1571.5 | 1571.5 | 1571.5 | 1571.5 |
| Panel C: #Retweeted tweets (z) | | | | | | |
| Holiday_RU | -0.163** (0.075) | -0.177** (0.082) | -0.177** (0.082) | -0.174** (0.081) | -0.158** (0.073) | -0.175** (0.081) |
| Holiday_US | -0.072 (0.089) | -0.086 (0.094) | -0.086 (0.093) | -0.091 (0.089) | -0.115 (0.103) | -0.128 (0.107) |
| Days ($\times 10^{-3}$) | | -5.611 (10.823) | -5.559 (10.877) | -9.666 (10.949) | | -5.022 (15.846) |
| Days ² ($\times 10^{-6}$) | | | -0.024 (0.655) | 5.689*** (1.721) | | 1.485 (30.991) |
| Days ³ ($\times 10^{-9}$) | | | | -1.76*** (.538) | | -1.09 (9.36) |
| Observations | 966 | 966 | 966 | 966 | 966 | 966 |
| R-square | 0.389 | 0.390 | 0.390 | 0.417 | 0.643 | 0.644 |
| Y-mean | 259.7 | 259.7 | 259.7 | 259.7 | 259.7 | 259.7 |
| Y-std.dev. | 522.2 | 522.2 | 522.2 | 522.2 | 522.2 | 522.2 |
| DOW FEs | Y | Y | Y | Y | Y | Y |
| Month FEs | Y | Y | Y | Y | | |
| Year FEs | Y | Y | Y | Y | | |
| Year-Month FEs | | | | | Y | Y |

Notes: Standard errors are clustered at the event level. * significant 10% level; ** significant at 5% level; *** significant at 1% level.

2.2 Reduced form for Hedonometer and 2020 election odds

Table S8: Reduced form, 46 events 2012-2017 on hedonometer

| | Hedonometer | | | | | |
|--|---------------------|---------------------|----------------------|-----------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Holiday_RU | 0.001 (0.005) | 0.000 (0.005) | 0.000 (0.005) | 0.000 (0.005) | 0.001 (0.005) | 0.000 (0.005) |
| Holiday_US | 0.082*** (0.016) | 0.081*** (0.016) | 0.081*** (0.016) | 0.081*** (0.016) | 0.081*** (0.016) | 0.081*** (0.016) |
| Days ($\times 10^{-3}$) | | -0.245 (0.190) | -0.105 (0.206) | -0.330* (0.187) | | 0.197 (0.309) |
| Days ² ($\times 10^{-6}$) | | | -0.064*** (0.020) | 0.249*** (0.047) | | 0.120 (0.546) |
| Days ³ ($\times 10^{-9}$) | | | | -0.0967*** (.0149) | | -0.15 (.209) |
| Observations | 966 | 966 | 966 | 966 | 966 | 966 |
| R-square | 0.600 | 0.600 | 0.623 | 0.655 | 0.697 | 0.699 |
| Y-mean | 6.026 | 6.026 | 6.026 | 6.026 | 6.026 | 6.026 |
| Y-std.dev. | 0.051 | 0.051 | 0.051 | 0.051 | 0.051 | 0.051 |
| DOW FEs | Y | Y | Y | Y | Y | Y |
| Month FEs | Y | Y | Y | Y | | |
| Year FEs | Y | Y | Y | Y | | |
| Year-Month FEs | | | | | Y | Y |

Notes: Standard errors are clustered at the event level. * significant 10% level; ** significant at 5% level; *** significant at 1% level.

Table S9: Reduced form, 8 events Nov 14, 2016-2017 on 2020 betting odds

| | Panel A: Trump's odds | | | | | |
|--|-----------------------|-------------------|---------------------|-----------------------|-------------------|-----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Holiday_RU | 0.872 (0.744) | 0.702 (0.566) | 0.701 (0.465) | 0.417 (0.375) | 0.872 (0.744) | 0.417 (0.375) |
| Holiday_US | -0.455 (0.659) | -0.488 (0.662) | -0.904 (0.780) | -0.950 (0.687) | -0.455 (0.659) | -0.950 (0.687) |
| Days ($\times 10^{-2}$) | | -5.423 (8.721) | -26.851 (21.854) | -70.125** (26.847) | | -70.125** (26.847) |
| Days ² ($\times 10^{-4}$) | | | 6.923 (5.873) | 35.780** (12.630) | | 35.780** (12.630) |
| Days ³ ($\times 10^{-6}$) | | | | -5.13** (1.75) | | -5.13** (1.75) |
| Observations | 168 | 168 | 168 | 168 | 168 | 168 |

| | | | | | | |
|--|-------------------|----------------------|-----------------------|-----------------------|-------------------|-----------------------|
| R-square | 0.953 | 0.954 | 0.959 | 0.967 | 0.953 | 0.967 |
| Y-mean | 31.344 | 31.344 | 31.344 | 31.344 | 31.344 | 31.344 |
| Y-std.dev. | 7.057 | 7.057 | 7.057 | 7.057 | 7.057 | 7.057 |
| Panel B: Republican's odds | | | | | | |
| Holiday_RU | 0.845 (0.843) | 0.112 (0.529) | 0.110 (0.429) | -0.159 (0.431) | 0.845 (0.843) | -0.159 (0.431) |
| Holiday_US | 0.573 (0.630) | 0.428 (0.533) | -0.232 (0.546) | -0.276 (0.442) | 0.573 (0.630) | -0.276 (0.442) |
| Days ($\times 10^{-2}$) | | -23.353* (11.072) | -57.427** (23.689) | -98.515** (34.983) | | -98.515** (34.983) |
| Days ² ($\times 10^{-4}$) | | | 11.008 (6.171) | 38.408* (17.601) | | 38.408* (17.601) |
| Days ³ ($\times 10^{-6}$) | | | | -4.88* (2.46) | | -4.88* (2.46) |
| Observations | 168 | 168 | 168 | 168 | 168 | 168 |
| R-square | 0.839 | 0.872 | 0.890 | 0.900 | 0.839 | 0.900 |
| Y-mean | 45.204 | 45.204 | 45.204 | 45.204 | 45.204 | 45.204 |
| Y-std.dev. | 5.910 | 5.910 | 5.910 | 5.910 | 5.910 | 5.910 |
| Panel C: Democrat's odds | | | | | | |
| Holiday_RU | -0.230 (0.395) | -0.293 (0.535) | -0.292 (0.548) | -0.202 (0.511) | -0.230 (0.395) | -0.202 (0.511) |
| Holiday_US | -0.444 (0.499) | -0.456 (0.563) | -0.321 (0.747) | -0.307 (0.725) | -0.444 (0.499) | -0.307 (0.725) |
| Days ($\times 10^{-2}$) | | -2.009 (12.566) | 4.949 (25.124) | 18.696 (27.265) | | 18.696 (27.265) |
| Days ² ($\times 10^{-4}$) | | | -2.248 (4.561) | -11.415 (13.095) | | -11.415 (13.095) |
| Days ³ ($\times 10^{-6}$) | | | | 1.63 (2.13) | | 1.63 (2.13) |
| Observations | 168 | 168 | 168 | 168 | 168 | 168 |
| R-square | 0.785 | 0.786 | 0.787 | 0.789 | 0.785 | 0.789 |
| Y-mean | 33.282 | 33.282 | 33.282 | 33.282 | 33.282 | 33.282 |
| Y-std.dev. | 4.804 | 4.804 | 4.804 | 4.804 | 4.804 | 4.804 |
| DOW FEs | Y | Y | Y | Y | Y | Y |
| Month FEs | Y | Y | Y | Y | | |
| Year FEs | Y | Y | Y | Y | | |
| Year-Month FEs | | | | | Y | Y |

Notes: Standard errors are clustered at the event level. * significant 10% level; ** significant at 5% level; *** significant at 1% level.

2.3 Robustness of the first stage

Table S10: First stage, drop 10 busiest days, 11 days around 43, 43, 46 events 2012-2017

| | Panel A: #All tweets (z) | | | | | |
|--|--------------------------------|---------------------|----------------------|---------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Holiday_RU | -0.173** (0.069) | -0.176** (0.070) | -0.176** (0.069) | -0.172** (0.069) | -0.167** (0.071) | -0.171** (0.072) |
| Holiday_US | -0.211 (0.173) | -0.238 (0.165) | -0.256 (0.175) | -0.270 (0.162) | -0.288** (0.136) | -0.323** (0.145) |
| Days ($\times 10^{-3}$) | | -5.809 (7.523) | -3.615 (7.655) | -8.199 (7.293) | | -6.355 (8.461) |
| Days ² ($\times 10^{-6}$) | | | -0.872 (0.569) | 5.015*** (1.796) | | 2.010 (17.860) |
| Days ³ ($\times 10^{-9}$) | | | | -1.84*** (.548) | | -1.13 (6.16) |
| Observations | 473 | 473 | 473 | 473 | 473 | 473 |
| R-square | 0.570 | 0.570 | 0.583 | 0.611 | 0.747 | 0.747 |
| Y-mean | 587.6 | 587.6 | 587.6 | 587.6 | 587.6 | 587.6 |
| Y-std.dev. | 816.2 | 816.2 | 816.2 | 816.2 | 816.2 | 816.2 |
| | Panel B: #Original tweets (z) | | | | | |
| Holiday_RU | -0.158** (0.076) | -0.157** (0.076) | -0.158** (0.076) | -0.155** (0.075) | -0.159** (0.077) | -0.157** (0.078) |
| Holiday_US | -0.145 (0.114) | -0.138 (0.114) | -0.162 (0.133) | -0.172 (0.132) | -0.145 (0.112) | -0.133 (0.110) |
| Days ($\times 10^{-3}$) | | 1.378 (5.588) | 4.271 (5.806) | 0.916 (6.200) | | -0.832 (10.493) |
| Days ² ($\times 10^{-6}$) | | | -1.149*** (0.338) | 3.158 (2.833) | | -1.348 (19.358) |
| Days ³ ($\times 10^{-9}$) | | | | -1.34 (.914) | | 1.33 (5.91) |
| Observations | 473 | 473 | 473 | 473 | 473 | 473 |
| R-square | 0.570 | 0.570 | 0.592 | 0.607 | 0.717 | 0.717 |
| Y-mean | 312.3 | 312.3 | 312.3 | 312.3 | 312.3 | 312.3 |
| Y-std.dev. | 452.9 | 452.9 | 452.9 | 452.9 | 452.9 | 452.9 |
| | Panel C: #Retweeted tweets (z) | | | | | |
| Holiday_RU | -0.156** (0.078) | -0.160** (0.079) | -0.161** (0.079) | -0.156* (0.078) | -0.148* (0.078) | -0.153* (0.082) |
| Holiday_US | -0.237 (0.198) | -0.268 (0.196) | -0.269 (0.201) | -0.258 (0.196) | -0.229 (0.168) | -0.277 (0.184) |
| Days ($\times 10^{-3}$) | | -6.454 (13.178) | -5.040 (13.108) | -10.238 (13.142) | | -7.769 (16.910) |
| Days ² ($\times 10^{-6}$) | | | -0.757 (0.876) | 5.532*** (1.718) | | 2.922 (36.131) |

| | | | | | | |
|--|-------|-------|-------|----------|-------|--------|
| Days ³ ($\times 10^{-9}$) | | | | -2.02*** | | -2.21 |
| | | | | (.57) | | (11.6) |
| Observations | 506 | 506 | 506 | 506 | 506 | 506 |
| R-square | 0.432 | 0.432 | 0.440 | 0.478 | 0.687 | 0.688 |
| Y-mean | 226.9 | 226.9 | 226.9 | 226.9 | 226.9 | 226.9 |
| Y-std.dev. | 455.2 | 455.2 | 455.2 | 455.2 | 455.2 | 455.2 |
| DOW FEs | Y | Y | Y | Y | Y | Y |
| Month FEs | Y | Y | Y | Y | | |
| Year FEs | Y | Y | Y | Y | | |
| Year-Month FEs | | | | | Y | Y |

Notes: Standard errors are clustered at the event level. * significant 10% level; ** significant at 5% level; *** significant at 1% level.

3 Holiday Event Study Nov 2014-Nov 2016

3.1 First stage

Table S11: First stage, drop 10 busiest days 2012-2017, 11, 11, 15 events

| | Panel A: #All tweets (z) | | | | | |
|--|--------------------------------|---------------------|---------------------|-----------------------|----------------------|-----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Holiday_RU | -0.511** (0.176) | -0.515** (0.201) | -0.516** (0.201) | -0.515** (0.203) | -0.519** (0.178) | -0.561*** (0.168) |
| Holiday_US | -0.318 (0.271) | -0.323 (0.267) | -0.322 (0.267) | -0.252 (0.290) | -0.332 (0.258) | -0.290 (0.221) |
| Days ($\times 10^{-3}$) | | -1.437 (25.724) | -0.191 (25.845) | -85.119 (160.337) | | 186.738** (74.577) |
| Days ² ($\times 10^{-6}$) | | | 1.850 (7.389) | -283.111 (474.772) | | 402.415* (221.340) |
| Days ³ ($\times 10^{-9}$) | | | | -261 (437) | | 202 (196) |
| Observations | 231 | 231 | 231 | 231 | 231 | 231 |
| R-square | 0.324 | 0.324 | 0.325 | 0.328 | 0.362 | 0.431 |
| Y-mean | 1183.2 | 1183.2 | 1183.2 | 1183.2 | 1183.2 | 1183.2 |
| Y-std.dev. | 759.4 | 759.4 | 759.4 | 759.4 | 759.4 | 759.4 |
| | Panel B: #Original tweets (z) | | | | | |
| Holiday_RU | -0.345** (0.126) | -0.336* (0.156) | -0.339* (0.160) | -0.338* (0.166) | -0.354** (0.130) | -0.359* (0.179) |
| Holiday_US | -0.530** (0.170) | -0.518** (0.170) | -0.512** (0.169) | -0.377 (0.213) | -0.547*** (0.169) | -0.448** (0.194) |
| Days ($\times 10^{-3}$) | | 3.343 (18.746) | 12.667 (14.954) | -150.522 (128.561) | | 1.024 (52.759) |
| Days ² ($\times 10^{-6}$) | | | 13.847 (13.470) | -533.702 (401.847) | | -102.287 (183.873) |
| Days ³ ($\times 10^{-9}$) | | | | -501 (372) | | -163 (188) |
| Observations | 231 | 231 | 231 | 231 | 231 | 231 |
| R-square | 0.448 | 0.448 | 0.453 | 0.465 | 0.487 | 0.501 |
| Y-mean | 780.0 | 780.0 | 780.0 | 780.0 | 780.0 | 780.0 |
| Y-std.dev. | 447.3 | 447.3 | 447.3 | 447.3 | 447.3 | 447.3 |
| | Panel C: #Retweeted tweets (z) | | | | | |
| Holiday_RU | -0.419* (0.197) | -0.426* (0.228) | -0.425* (0.229) | -0.425* (0.229) | -0.419* (0.199) | -0.434** (0.201) |
| Holiday_US | 0.100 (0.173) | 0.087 (0.205) | 0.089 (0.205) | 0.088 (0.205) | 0.098 (0.172) | 0.057 (0.175) |
| Days ($\times 10^{-3}$) | | -3.049 | -4.171 | -6.865 | | 313.196* |

| | | | | | | |
|--|-------|----------|----------|----------|-------|-----------|
| | | (31.991) | (32.444) | (30.512) | | (152.742) |
| Days ² ($\times 10^{-6}$) | | | -1.634 | -9.487 | | 817.545 |
| | | | (1.909) | (12.711) | | (468.170) |
| Days ³ ($\times 10^{-9}$) | | | | -6.19 | | 581 |
| | | | | (10.6) | | (348) |
| Observations | 315 | 315 | 315 | 315 | 315 | 315 |
| R-square | 0.346 | 0.346 | 0.347 | 0.347 | 0.368 | 0.427 |
| Y-mean | 301.1 | 301.1 | 301.1 | 301.1 | 301.1 | 301.1 |
| Y-std.dev. | 513.4 | 513.4 | 513.4 | 513.4 | 513.4 | 513.4 |
| DOW FEs | Y | Y | Y | Y | Y | Y |
| Month FEs | Y | Y | Y | Y | | |
| Year FEs | Y | Y | Y | Y | | |
| Year-Month FEs | | | | | Y | Y |

Notes: Standard errors are clustered at the event level. * significant 10% level; ** significant at 5% level; *** significant at 1% level.

Table S12: First stage, 15 events

| Panel A: #All tweets (z) | | | | | | |
|--|----------|----------|-----------|----------|-----------|-----------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Holiday_RU | -0.322** | -0.266** | -0.268** | -0.267** | -0.321*** | -0.272** |
| | (0.108) | (0.099) | (0.096) | (0.099) | (0.106) | (0.093) |
| Holiday_US | -0.344 | -0.231 | -0.244 | -0.247 | -0.342 | -0.171 |
| | (0.257) | (0.306) | (0.306) | (0.310) | (0.260) | (0.317) |
| Days ($\times 10^{-3}$) | | 25.397 | 32.702 | 11.078 | | 89.518 |
| | | (25.165) | (24.686) | (35.291) | | (75.517) |
| Days ² ($\times 10^{-6}$) | | | 10.639*** | -52.405 | | 272.423 |
| | | | (2.200) | (40.996) | | (244.194) |
| Days ³ ($\times 10^{-9}$) | | | | -49.7 | | 259 |
| | | | | (32.5) | | (216) |
| Observations | 315 | 315 | 315 | 315 | 315 | 315 |
| R-square | 0.155 | 0.168 | 0.206 | 0.210 | 0.215 | 0.241 |
| Y-mean | 1725.2 | 1725.2 | 1725.2 | 1725.2 | 1725.2 | 1725.2 |
| Y-std.dev. | 2487.6 | 2487.6 | 2487.6 | 2487.6 | 2487.6 | 2487.6 |
| Panel B: #Original tweets (z) | | | | | | |
| Holiday_RU | -0.235** | -0.178* | -0.179* | -0.179* | -0.234** | -0.182* |
| | (0.106) | (0.093) | (0.091) | (0.093) | (0.104) | (0.086) |
| Holiday_US | -0.364 | -0.248 | -0.261 | -0.264 | -0.361 | -0.183 |
| | (0.260) | (0.306) | (0.307) | (0.310) | (0.262) | (0.318) |
| Days ($\times 10^{-3}$) | | 25.947 | 33.461 | 12.457 | | 24.807 |
| | | (24.230) | (23.784) | (34.341) | | (64.792) |
| Days ² ($\times 10^{-6}$) | | | 10.943*** | -50.293 | | 103.388 |

| | | | | | | |
|--|---------|----------|----------|----------|---------|-----------|
| | | | (1.997) | (39.880) | | (210.809) |
| Days ³ ($\times 10^{-9}$) | | | | -48.3 | | 139 |
| | | | | (31.6) | | (192) |
| Observations | 315 | 315 | 315 | 315 | 315 | 315 |
| R-square | 0.192 | 0.206 | 0.246 | 0.250 | 0.252 | 0.281 |
| Y-mean | 1424.1 | 1424.1 | 1424.1 | 1424.1 | 1424.1 | 1424.1 |
| Y-std.dev. | 2495.2 | 2495.2 | 2495.2 | 2495.2 | 2495.2 | 2495.2 |
| Panel C: #Retweeted tweets (z) | | | | | | |
| Holiday_RU | -0.419* | -0.426* | -0.425* | -0.425* | -0.419* | -0.434** |
| | (0.197) | (0.228) | (0.229) | (0.229) | (0.199) | (0.201) |
| Holiday_US | 0.100 | 0.087 | 0.089 | 0.088 | 0.098 | 0.057 |
| | (0.173) | (0.205) | (0.205) | (0.205) | (0.172) | (0.175) |
| Days ($\times 10^{-3}$) | | -3.049 | -4.171 | -6.865 | | 313.196* |
| | | (31.991) | (32.444) | (30.512) | | (152.742) |
| Days ² ($\times 10^{-6}$) | | | -1.634 | -9.487 | | 817.545 |
| | | | (1.909) | (12.711) | | (468.170) |
| Days ³ ($\times 10^{-9}$) | | | | -6.19 | | 581 |
| | | | | (10.6) | | (348) |
| Observations | 315 | 315 | 315 | 315 | 315 | 315 |
| R-square | 0.346 | 0.346 | 0.347 | 0.347 | 0.368 | 0.427 |
| Y-mean | 301.1 | 301.1 | 301.1 | 301.1 | 301.1 | 301.1 |
| Y-std.dev. | 513.4 | 513.4 | 513.4 | 513.4 | 513.4 | 513.4 |
| DOW FEs | Y | Y | Y | Y | Y | Y |
| Month FEs | Y | Y | Y | Y | | |
| Year FEs | Y | Y | Y | Y | | |
| Year-Month FEs | | | | | Y | Y |

Notes: Standard errors are clustered at the event level. * significant 10% level; ** significant at 5% level; *** significant at 1% level.

3.2 Reduced form for Iowa 2016 election odds

Table S13: Reduced form, 13 events

| Panel A: Republican's price | | | | | | |
|--|---------|----------|----------|------------|---------|----------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Holiday_RU | -0.012* | -0.012** | -0.012** | -0.012** | -0.012* | -0.012** |
| | (0.006) | (0.005) | (0.005) | (0.005) | (0.006) | (0.006) |
| Holiday_US | 0.013 | 0.013 | 0.014 | 0.014 | 0.012 | 0.013 |
| | (0.007) | (0.009) | (0.009) | (0.010) | (0.008) | (0.009) |
| Days ($\times 10^{-2}$) | | 0.013 | 0.029 | 0.091 | | -0.044 |
| | | (0.086) | (0.087) | (0.105) | | (0.168) |
| Days ² ($\times 10^{-4}$) | | | -0.002 | -0.031** | | 0.043 |
| | | | (0.001) | (0.012) | | (0.091) |
| Days ³ ($\times 10^{-6}$) | | | | .00313** | | -.00499 |
| | | | | (.00121) | | (.0115) |
| Observations | 273 | 273 | 273 | 273 | 273 | 273 |
| R-square | 0.907 | 0.907 | 0.910 | 0.913 | 0.921 | 0.921 |
| Y-mean | 0.399 | 0.399 | 0.399 | 0.399 | 0.399 | 0.399 |
| Y-std.dev. | 0.069 | 0.069 | 0.069 | 0.069 | 0.069 | 0.069 |
| Panel B: Democrat's price | | | | | | |
| Holiday_RU | 0.015** | 0.015** | 0.015** | 0.015** | 0.015** | 0.015** |
| | (0.006) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Holiday_US | -0.015 | -0.015 | -0.015 | -0.015 | -0.014 | -0.015 |
| | (0.009) | (0.010) | (0.010) | (0.010) | (0.010) | (0.011) |
| Days ($\times 10^{-2}$) | | 0.006 | -0.014 | -0.112 | | -0.013 |
| | | (0.089) | (0.091) | (0.109) | | (0.186) |
| Days ² ($\times 10^{-4}$) | | | 0.002 | 0.049*** | | -0.017 |
| | | | (0.001) | (0.013) | | (0.100) |
| Days ³ ($\times 10^{-6}$) | | | | -.00499*** | | .00272 |
| | | | | (.00133) | | (.0125) |
| Observations | 273 | 273 | 273 | 273 | 273 | 273 |
| R-square | 0.897 | 0.897 | 0.900 | 0.907 | 0.917 | 0.918 |
| Y-mean | 0.608 | 0.608 | 0.608 | 0.608 | 0.608 | 0.608 |
| Y-std.dev. | 0.071 | 0.071 | 0.071 | 0.071 | 0.071 | 0.071 |
| DOW FEs | Y | Y | Y | Y | Y | Y |
| Month FEs | Y | Y | Y | Y | | |
| Year FEs | Y | Y | Y | Y | | |
| Year-Month FEs | | | | | Y | Y |

Notes: Betting data is missing on Nov 1-Nov 2 2015 and Jan 16-Jan 18 2016, so #events is smaller than that in Table S12 by 2. Standard errors are clustered at the event level. * significant 10% level; ** significant at 5% level; *** significant at 1% level.

Table S14: Reduced form, 15 events

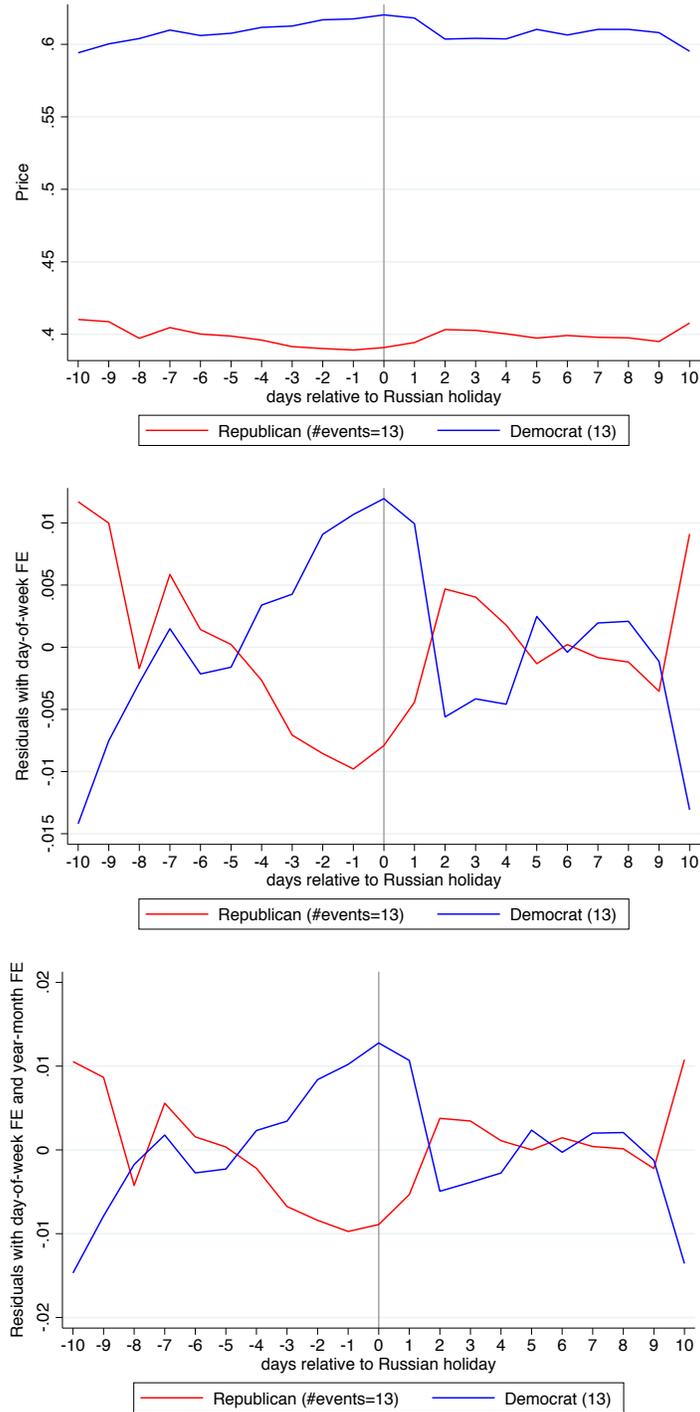
| Panel A: Republican's price | | | | | | |
|--|----------|----------|----------|------------|----------|---------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Holiday_RU | -0.011* | -0.011** | -0.011* | -0.011** | -0.011* | -0.011* |
| | (0.006) | (0.005) | (0.005) | (0.005) | (0.006) | (0.005) |
| Holiday_US | 0.008 | 0.009 | 0.009 | 0.009 | 0.008 | 0.009 |
| | (0.006) | (0.008) | (0.008) | (0.008) | (0.007) | (0.008) |
| Days ($\times 10^{-2}$) | | 0.016 | 0.034 | 0.093 | | -0.029 |
| | | (0.077) | (0.078) | (0.093) | | (0.165) |
| Days ² ($\times 10^{-4}$) | | | -0.002** | -0.032*** | | 0.033 |
| | | | (0.001) | (0.010) | | (0.090) |
| Days ³ ($\times 10^{-6}$) | | | | .00315** | | -.00384 |
| | | | | (.0011) | | (.0116) |
| Observations | 315 | 315 | 315 | 315 | 315 | 315 |
| R-square | 0.903 | 0.903 | 0.907 | 0.911 | 0.919 | 0.919 |
| Y-mean | 0.398 | 0.398 | 0.398 | 0.398 | 0.398 | 0.398 |
| Y-std.dev. | 0.064 | 0.064 | 0.064 | 0.064 | 0.064 | 0.064 |
| Panel B: Democrat's price | | | | | | |
| Holiday_RU | 0.015*** | 0.015** | 0.015** | 0.015** | 0.015*** | 0.015** |
| | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Holiday_US | -0.009 | -0.009 | -0.010 | -0.010 | -0.008 | -0.009 |
| | (0.008) | (0.008) | (0.008) | (0.008) | (0.008) | (0.009) |
| Days ($\times 10^{-2}$) | | -0.015 | -0.040 | -0.133 | | 0.051 |
| | | (0.081) | (0.084) | (0.100) | | (0.177) |
| Days ² ($\times 10^{-4}$) | | | 0.003** | 0.050*** | | -0.050 |
| | | | (0.001) | (0.012) | | (0.096) |
| Days ³ ($\times 10^{-6}$) | | | | -.00499*** | | .00591 |
| | | | | (.00127) | | (.0121) |
| Observations | 315 | 315 | 315 | 315 | 315 | 315 |
| R-square | 0.883 | 0.883 | 0.890 | 0.899 | 0.909 | 0.911 |
| Y-mean | 0.609 | 0.609 | 0.609 | 0.609 | 0.609 | 0.609 |
| Y-std.dev. | 0.067 | 0.067 | 0.067 | 0.067 | 0.067 | 0.067 |
| DOW FEs | Y | Y | Y | Y | Y | Y |
| Month FEs | Y | Y | Y | Y | | |
| Year FEs | Y | Y | Y | Y | | |
| Year-Month FEs | | | | | Y | Y |

Notes: We filled missing bet price on Nov 1-Nov 2 2015 and Jan 16-Jan 18 2016 with the last available price before the missing day, namely price on Oct 31 2015 and Jan 15 2016. Standard errors are clustered at the event level. * significant 10% level; ** significant at 5% level; *** significant at 1% level.

Figure S1: Event Study of Iowa betting odds around Russian holidays Nov 2014-Nov 2016:

- Raw data (top panel),
- Residuals with day-of-week FE (middle panel),
- Residuals with day-of-week and year by month FE (bottom panel).

(Betting data is missing on Nov 1-Nov 2 2015 and Jan 16-Jan 18 2016, so #events is smaller by 2.)



3.3 Reduced form for PredictIt 2016 election odds

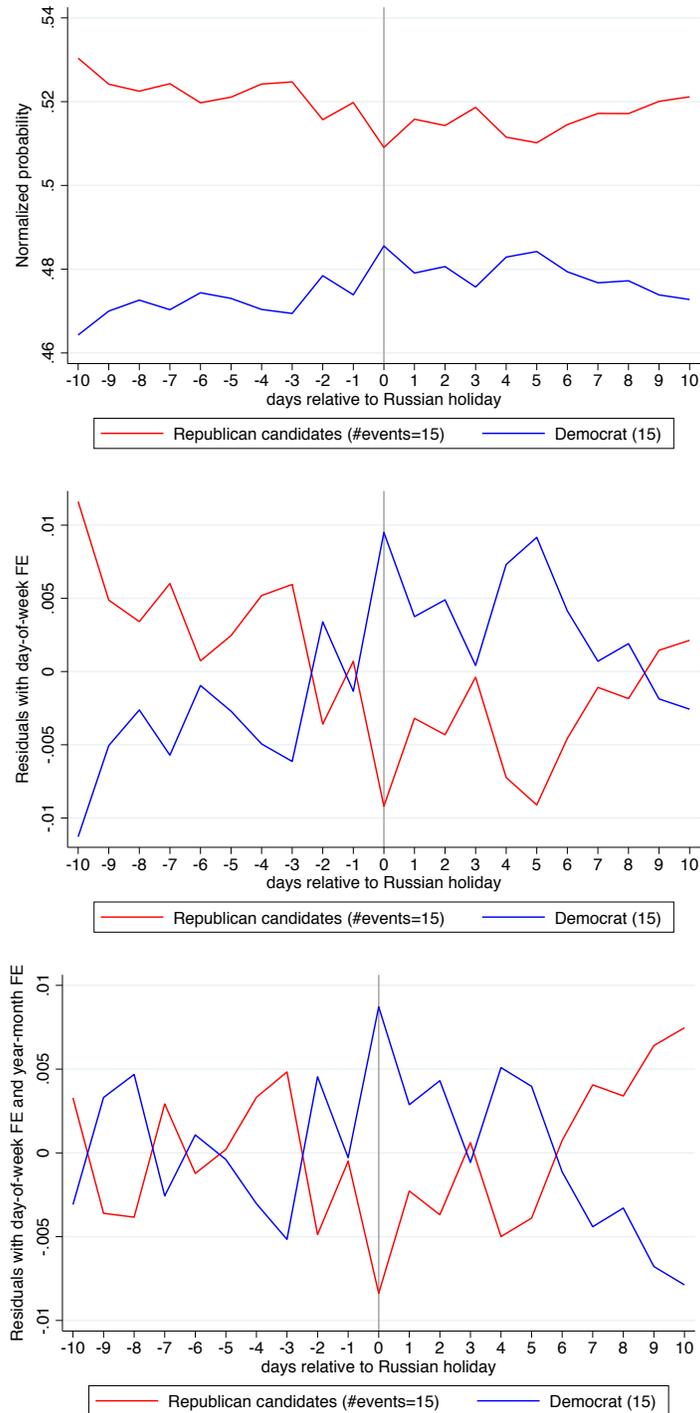
Table S15: Reduced form, 15 events

| | Panel A: Republican's probability | | | | | |
|--|-----------------------------------|---------------------|---------------------|---------------------|--------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Holiday_RU | -0.010** (0.004) | -0.009** (0.004) | -0.009** (0.004) | -0.009** (0.004) | -0.010* (0.005) | -0.009** (0.004) |
| Holiday_US | -0.003 (0.005) | -0.002 (0.005) | -0.002 (0.005) | -0.002 (0.005) | -0.003 (0.005) | 0.001 (0.004) |
| Days ($\times 10^{-2}$) | | 0.018 (0.052) | 0.052 (0.047) | 0.004 (0.072) | | 0.335*** (0.075) |
| Days ² ($\times 10^{-4}$) | | | -0.004** (0.002) | 0.017 (0.023) | | -0.058 (0.034) |
| Days ³ ($\times 10^{-6}$) | | | | -0.0022 (.00238) | | .00184 (.00357) |
| Observations | 315 | 315 | 315 | 315 | 315 | 315 |
| R-square | 0.935 | 0.935 | 0.943 | 0.945 | 0.959 | 0.967 |
| Y-mean | 0.519 | 0.519 | 0.519 | 0.519 | 0.519 | 0.519 |
| Y-std.dev. | 0.080 | 0.080 | 0.080 | 0.080 | 0.080 | 0.080 |
| | Panel B: Democrat's probability | | | | | |
| Holiday_RU | 0.010** (0.004) | 0.010** (0.004) | 0.010** (0.004) | 0.010** (0.004) | 0.010** (0.005) | 0.010** (0.004) |
| Holiday_US | 0.003 (0.005) | 0.002 (0.005) | 0.002 (0.005) | 0.002 (0.005) | 0.003 (0.005) | -0.001 (0.004) |
| Days ($\times 10^{-2}$) | | -0.025 (0.053) | -0.046 (0.050) | -0.040 (0.070) | | -0.349*** (0.080) |
| Days ² ($\times 10^{-4}$) | | | 0.003** (0.001) | -0.000 (0.020) | | 0.066* (0.037) |
| Days ³ ($\times 10^{-6}$) | | | | .00028 (.0021) | | -.00286 (.00405) |
| Observations | 315 | 315 | 315 | 315 | 315 | 315 |
| R-square | 0.935 | 0.936 | 0.940 | 0.940 | 0.952 | 0.961 |
| Y-mean | 0.475 | 0.475 | 0.475 | 0.475 | 0.475 | 0.475 |
| Y-std.dev. | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 |
| DOW FEs | Y | Y | Y | Y | Y | Y |
| Month FEs | Y | Y | Y | Y | | |
| Year FEs | Y | Y | Y | Y | | |
| Year-Month FEs | | | | | Y | Y |

Notes: Standard errors are clustered at the event level. * significant 10% level; ** significant at 5% level; *** significant at 1% level.

Figure S2: Event Study of PredictIt betting odds around Russian holidays Nov 2014-Nov 2016:

- Raw data (top panel),
- Residuals with day-of-week FE (middle panel),
- Residuals with day-of-week and year by month FE (bottom panel).



4 Regression Discontinuity Estimates of First Stage

As noted in the main text, Twitter announced suspicious Russian accounts in four separate waves. The announcement date is thought to follow the blocking date with a substantial lag. Unfortunately, Twitter does not disclose the date at which it blocked these suspicious tweets and accounts. Nevertheless, we can try and infer major blocking dates by discontinuous reductions in trolling activity.¹ Table S16 uses the reduction in tweets following May 6, 2017 as a threshold in an Regression Discontinuity Design analysis. Depending on the specification, tweets fall by 1,600-2,500 tweets per day after May 6, 2017. This is driven by a 1,600-2,000 reduction in retweets, with original tweets showing a less consistent response. We do not pursue this RD analysis further because:

1. As RD analyses go, this is not a particularly robust first stage estimate.
2. Twitter does not report May 6, 2017 as a major blocking date, we infer it.
3. Particularly given the previous point, other factors might drive some of the rapid education in trolling activity after May 6, 2017 that would not be exogenous to the Hedonometer or President Trump’s re-election odds.

Without additional information on blocking dates, we favor identifying variation in trolling from Russian holidays and ambient temperature in St. Petersburg.

Table S16: Wave 1, May 6, 2017 as cutoff

| | Panel A: #All tweets ($\times 10^{-2}$) | | | |
|--|--|-----------------------|-----------------------|-----------------------|
| | (1) | (2) | (3) | (4) |
| Post | -21.347*** (0.838) | -21.948*** (1.338) | -25.478*** (0.963) | -15.919*** (1.357) |
| Relative days ($\times 10^{-2}$) | | 1.112 (2.229) | | -4.192** (2.014) |
| Post \times Relative days ($\times 10^{-2}$) | | -1.188 (2.879) | | -4.222* (2.168) |
| Observations | 230 | 230 | 304 | 304 |
| R-square | 0.740 | 0.740 | 0.699 | 0.735 |
| Y-mean | 24.717 | 24.717 | 23.978 | 23.978 |
| Y-std.dev. | 12.436 | 12.436 | 15.266 | 15.266 |
| | Panel B: #Original tweets ($\times 10^{-2}$) | | | |
| Post | -5.383*** (0.474) | -0.219 (0.605) | -5.383*** (0.474) | -0.219 (0.605) |
| Relative days ($\times 10^{-2}$) | | -0.583 (0.617) | | -0.583 (0.617) |

¹We thank Joe Doyle (MIT) for a conversation that spurred this exercise.

| | | | | |
|--|------------|------------|------------|------------|
| Post \times Relative days ($\times 10^{-2}$) | | -5.666*** | | -5.666*** |
| | | (0.830) | | (0.830) |
| Observations | 304 | 304 | 304 | 304 |
| R-square | 0.299 | 0.456 | 0.299 | 0.456 |
| Y-mean | 10.405 | 10.405 | 10.405 | 10.405 |
| Y-std.dev. | 4.929 | 4.929 | 4.929 | 4.929 |
| Panel C: #Retweeted tweets ($\times 10^{-2}$) | | | | |
| Post | -18.088*** | -19.143*** | -20.094*** | -15.700*** |
| | (0.548) | (0.855) | (0.685) | (1.062) |
| Relative days ($\times 10^{-2}$) | | 1.869 | | -3.608** |
| | | (1.349) | | (1.720) |
| Post \times Relative days ($\times 10^{-2}$) | | -2.053 | | 1.444 |
| | | (1.496) | | (1.757) |
| Observations | 248 | 248 | 304 | 304 |
| R-square | 0.816 | 0.818 | 0.740 | 0.753 |
| Y-mean | 13.208 | 13.208 | 13.573 | 13.573 |
| Y-std.dev. | 10.032 | 10.032 | 11.698 | 11.698 |

Notes: We use CCT and IK bandwidths in Column (1)-(2) and Column (3)-(4). Robust standard errors are reported in parentheses. * significant 10% level; ** significant at 5% level; *** significant at 1% level.

5 Hedonometer's Response to US Events

Table S17: Hedonometer's responses to other events

| | Hedonometer | | | | | |
|-----------------|----------------------|----------------------|---------------------|---------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Brett Kavanaugh | -0.063** (0.030) | -0.061** (0.030) | -0.018 (0.030) | -0.007 (0.030) | 0.017 (0.030) | -0.014 (0.030) |
| Holiday_US | 0.056*** (0.004) | 0.056*** (0.004) | 0.056*** (0.004) | 0.056*** (0.004) | 0.056*** (0.004) | 0.056*** (0.004) |
| Observations | 2922 | 2922 | 2922 | 2922 | 2922 | 2922 |
| R-square | 0.616 | 0.616 | 0.616 | 0.616 | 0.616 | 0.616 |
| Dayton shooting | -0.206*** (0.030) | -0.116*** (0.030) | -0.054* (0.030) | -0.044 (0.030) | -0.022 (0.030) | -0.010 (0.030) |
| Holiday_US | 0.056*** (0.004) | 0.056*** (0.004) | 0.056*** (0.004) | 0.056*** (0.004) | 0.056*** (0.004) | 0.056*** (0.004) |
| Observations | 2922 | 2922 | 2922 | 2922 | 2922 | 2922 |
| R-square | 0.622 | 0.617 | 0.616 | 0.616 | 0.616 | 0.616 |
| DOW FEs | Y | Y | Y | Y | Y | Y |
| Month FEs | Y | Y | Y | Y | | |
| Year FEs | Y | Y | Y | Y | | |
| Year-Month FEs | | | | | Y | Y |

Notes: * significant 10% level; ** significant at 5% level; *** significant at 1% level.

6 Robustness with Blank Tweets

Table S18: First stage: Russian holiday and temperature on blocked tweets on the day shift

| | Panel A: #All tweets (z) | | | | | |
|--|--------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Holiday_RU \times Wave=1 | -0.292*** (0.103) | -0.292*** (0.103) | -0.291*** (0.103) | -0.291*** (0.103) | -0.294*** (0.092) | -0.294*** (0.093) |
| Holiday_RU \times Wave=2 | -0.040 (0.103) | -0.039 (0.103) | -0.039 (0.103) | -0.039 (0.103) | -0.039 (0.092) | -0.039 (0.093) |
| Holiday_RU \times Wave=3 | -0.007 (0.103) | -0.006 (0.103) | -0.006 (0.103) | -0.006 (0.103) | -0.007 (0.092) | -0.007 (0.093) |
| Holiday_RU \times Wave=4 | -0.009 (0.103) | -0.008 (0.103) | -0.008 (0.103) | -0.008 (0.103) | -0.009 (0.092) | -0.009 (0.093) |
| Temp \times Wave=1 (z) | .0565* (.0323) | .0565* (.0323) | .0556* (.0323) | .0545* (.0323) | .00129 (.0332) | .00124 (.0332) |
| Temp \times Wave=2 (z) | -.0147 (.0323) | -.0148 (.0323) | -.0157 (.0323) | -.0167 (.0323) | .00444 (.0332) | .00439 (.0332) |
| Temp \times Wave=3 (z) | .00115 (.0323) | .00115 (.0323) | .000223 (.0323) | -.000847 (.0323) | .00171 (.0332) | .00166 (.0332) |
| Temp \times Wave=4 (z) | -.000868 (.0323) | -.000872 (.0323) | -.00179 (.0323) | -.00287 (.0323) | .000361 (.0332) | .000308 (.0332) |
| Holiday_US | .0121 (.0474) | .0122 (.0474) | .012 (.0474) | .0121 (.0474) | .013 (.0426) | .0131 (.0426) |
| Days ($\times 10^{-3}$) | | .12 (.853) | .645 (.861) | .878 (.876) | | -.0149 (2.28) |
| Days ² ($\times 10^{-6}$) | | | -.186*** (.0421) | -.426** (.172) | | .305 (1.8) |
| Days ³ ($\times 10^{-9}$) | | | | .0547 (.0382) | | -.103 (.398) |
| Observations | 11560 | 11560 | 11560 | 11560 | 11560 | 11560 |
| R-square | 0.363 | 0.363 | 0.364 | 0.364 | 0.501 | 0.501 |
| Y-mean | 167.3 | 167.3 | 167.3 | 167.3 | 167.3 | 167.3 |
| Y-std.dev. | 689.1 | 689.1 | 689.1 | 689.1 | 689.1 | 689.1 |
| Y-mean Wave1 | 569.9 | 569.9 | 569.9 | 569.9 | 569.9 | 569.9 |
| Y-std.dev. Wave1 | 1285.5 | 1285.5 | 1285.5 | 1285.5 | 1285.5 | 1285.5 |
| Y-mean Wave2 | 93.30 | 93.30 | 93.30 | 93.30 | 93.30 | 93.30 |
| Y-std.dev. Wave2 | 159.3 | 159.3 | 159.3 | 159.3 | 159.3 | 159.3 |
| Y-mean Wave3 | 0.0010 | 0.0010 | 0.0010 | 0.0010 | 0.0010 | 0.0010 |
| Y-std.dev. Wave3 | 0.0416 | 0.0416 | 0.0416 | 0.0416 | 0.0416 | 0.0416 |
| Y-mean Wave4 | 5.816 | 5.816 | 5.816 | 5.816 | 5.816 | 5.816 |
| Y-std.dev. Wave4 | 19.39 | 19.39 | 19.39 | 19.39 | 19.39 | 19.39 |

| | Panel B: #Original tweets (z) | | | | | |
|--|-------------------------------|---------------------|----------------------|---------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Holiday_RU × Wave=1 | -0.267** (0.109) | -0.266** (0.110) | -0.266** (0.110) | -0.266** (0.110) | -0.268*** (0.100) | -0.267*** (0.100) |
| Holiday_RU × Wave=2 | -0.015 (0.109) | -0.015 (0.110) | -0.015 (0.110) | -0.014 (0.110) | -0.015 (0.100) | -0.015 (0.100) |
| Holiday_RU × Wave=3 | -0.006 (0.109) | -0.006 (0.110) | -0.006 (0.110) | -0.006 (0.110) | -0.007 (0.100) | -0.006 (0.100) |
| Holiday_RU × Wave=4 | -0.008 (0.109) | -0.007 (0.110) | -0.007 (0.110) | -0.007 (0.110) | -0.008 (0.100) | -0.008 (0.100) |
| Temp × Wave=1 (z) | .0988*** (.0343) | .0988*** (.0343) | .0982*** (.0343) | .0946*** (.0343) | .0324 (.036) | .0324 (.036) |
| Temp × Wave=2 (z) | .00841 (.0343) | .00841 (.0343) | .00786 (.0343) | .00424 (.0343) | .00992 (.036) | .0099 (.036) |
| Temp × Wave=3 (z) | .000484 (.0343) | .000482 (.0343) | -.0000624 (.0343) | -.00369 (.0343) | .000844 (.036) | .000829 (.036) |
| Temp × Wave=4 (z) | -.00191 (.0343) | -.00191 (.0343) | -.00245 (.0343) | -.00608 (.0343) | -.000871 (.036) | -.000886 (.036) |
| Holiday_US | .0291 (.0504) | .0292 (.0504) | .0291 (.0504) | .0297 (.0504) | .0315 (.0462) | .0316 (.0462) |
| Days (×10 ⁻³) | | .0949 (.907) | .404 (.915) | 1.19 (.931) | | .174 (2.47) |
| Days ² (×10 ⁻⁶) | | | -.11** (.0448) | -.921*** (.183) | | .0588 (1.95) |
| Days ³ (×10 ⁻⁹) | | | | .185*** (.0406) | | -.0359 (.432) |
| Observations | 11560 | 11560 | 11560 | 11560 | 11560 | 11560 |
| R-square | 0.277 | 0.277 | 0.278 | 0.279 | 0.410 | 0.410 |
| Y-mean | 94.01 | 94.01 | 94.01 | 94.01 | 94.01 | 94.01 |
| Y-std.dev. | 560.6 | 560.6 | 560.6 | 560.6 | 560.6 | 560.6 |
| Y-mean Wave1 | 356.8 | 356.8 | 356.8 | 356.8 | 356.8 | 356.8 |
| Y-std.dev. Wave1 | 1078.0 | 1078.0 | 1078.0 | 1078.0 | 1078.0 | 1078.0 |
| Y-mean Wave2 | 15.47 | 15.47 | 15.47 | 15.47 | 15.47 | 15.47 |
| Y-std.dev. Wave2 | 55.23 | 55.23 | 55.23 | 55.23 | 55.23 | 55.23 |
| Y-mean Wave3 | 0.0010 | 0.0010 | 0.0010 | 0.0010 | 0.0010 | 0.0010 |
| Y-std.dev. Wave3 | 0.0416 | 0.0416 | 0.0416 | 0.0416 | 0.0416 | 0.0416 |
| Y-mean Wave4 | 4.401 | 4.401 | 4.401 | 4.401 | 4.401 | 4.401 |
| Y-std.dev. Wave4 | 18.92 | 18.92 | 18.92 | 18.92 | 18.92 | 18.92 |

| | Panel C: #Retweeted tweets (z) | | | | | |
|--|--------------------------------|----------|----------|----------|----------|----------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Holiday_RU × Wave=1 | -0.170* | -0.169* | -0.169* | -0.169* | -0.171** | -0.171** |
| | (0.102) | (0.102) | (0.102) | (0.102) | (0.084) | (0.084) |
| Holiday_RU × Wave=2 | -0.063 | -0.062 | -0.062 | -0.062 | -0.061 | -0.061 |
| | (0.102) | (0.102) | (0.102) | (0.102) | (0.084) | (0.084) |
| Holiday_RU × Wave=3 | -0.004 | -0.004 | -0.004 | -0.004 | -0.004 | -0.005 |
| | (0.102) | (0.102) | (0.102) | (0.102) | (0.084) | (0.084) |
| Holiday_RU × Wave=4 | -0.006 | -0.005 | -0.005 | -0.005 | -0.006 | -0.006 |
| | (0.102) | (0.102) | (0.102) | (0.102) | (0.084) | (0.084) |
| Temp × Wave=1 (z) | -0.0541* | -0.0541* | -0.0552* | -0.0509 | -0.0567* | -0.0568* |
| | (.032) | (.032) | (.032) | (.032) | (.03) | (.03) |
| Temp × Wave=2 (z) | -0.0488 | -0.0488 | -0.0499 | -0.0456 | -0.00821 | -0.0083 |
| | (.032) | (.032) | (.032) | (.032) | (.03) | (.03) |
| Temp × Wave=3 (z) | .00171 | .0017 | .000619 | .00487 | .00231 | .00222 |
| | (.032) | (.032) | (.032) | (.032) | (.03) | (.03) |
| Temp × Wave=4 (z) | .00155 | .00154 | .000461 | .00472 | .00242 | .00232 |
| | (.032) | (.032) | (.032) | (.032) | (.03) | (.03) |
| Holiday_US | -.0263 | -.0263 | -.0265 | -.0273 | -.0285 | -.0285 |
| | (.0471) | (.0471) | (.047) | (.047) | (.0386) | (.0386) |
| Days (×10 ⁻³) | | .0965 | .712 | -.214 | | -.353 |
| | | (.846) | (.854) | (.867) | | (2.06) |
| Days ² (×10 ⁻⁶) | | | -.218*** | .734*** | | .581 |
| | | | (.0418) | (.171) | | (1.63) |
| Days ³ (×10 ⁻⁹) | | | | -.218*** | | -.166 |
| | | | | (.0378) | | (.36) |
| Observations | 11560 | 11560 | 11560 | 11560 | 11560 | 11560 |
| R-square | 0.378 | 0.378 | 0.379 | 0.381 | 0.593 | 0.593 |
| Y-mean | 73.25 | 73.25 | 73.25 | 73.25 | 73.25 | 73.25 |
| Y-std.dev. | 306.4 | 306.4 | 306.4 | 306.4 | 306.4 | 306.4 |
| Y-mean Wave1 | 213.1 | 213.1 | 213.1 | 213.1 | 213.1 | 213.1 |
| Y-std.dev. Wave1 | 571.1 | 571.1 | 571.1 | 571.1 | 571.1 | 571.1 |
| Y-mean Wave2 | 78.47 | 78.47 | 78.47 | 78.47 | 78.47 | 78.47 |
| Y-std.dev. Wave2 | 139.2 | 139.2 | 139.2 | 139.2 | 139.2 | 139.2 |
| Y-mean Wave3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 Y-std.dev. Wave3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 Y-mean Wave4 | 1.415 | 1.415 | 1.415 | 1.415 | 1.415 | 1.415 |
| Y-std.dev. Wave4 | 2.761 | 2.761 | 2.761 | 2.761 | 2.761 | 2.761 |
| DOW FEs | Y | Y | Y | Y | Y | Y |
| Wave-Month FEs | Y | Y | Y | Y | | |
| Wave-Year FEs | Y | Y | Y | Y | | |
| Wave-Year-Month FEs | | | | | Y | Y |

Notes: The smaller sample size than four times #days 2012-2019 is due to 32 days with no temperature data. * significant 10% level; ** significant at 5% level; *** significant at 1% level.

Table S19: First stage, drop 10 busiest days, 42, 42, 44 events 2012-2017

| | Panel A: #All tweets (z) | | | | | |
|--|--------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Holiday_RU | -0.203*** (0.073) | -0.215*** (0.075) | -0.215*** (0.075) | -0.212*** (0.074) | -0.201*** (0.071) | -0.214*** (0.075) |
| Holiday_US | -0.098 (0.102) | -0.106 (0.105) | -0.108 (0.101) | -0.117 (0.098) | -0.131 (0.109) | -0.141 (0.110) |
| Days ($\times 10^{-3}$) | | -4.330 (7.032) | -2.616 (7.086) | -7.432 (6.799) | | -4.853 (10.177) |
| Days ² ($\times 10^{-6}$) | | | -0.774 (0.544) | 5.909*** (2.025) | | -0.143 (19.778) |
| Days ³ ($\times 10^{-9}$) | | | | -2.04*** (.612) | | .0222 (6.08) |
| Observations | 882 | 882 | 882 | 882 | 882 | 882 |
| R-square | 0.525 | 0.525 | 0.535 | 0.566 | 0.703 | 0.704 |
| Y-mean | 607.4 | 607.4 | 607.4 | 607.4 | 607.4 | 607.4 |
| Y-std.dev. | 842.5 | 842.5 | 842.5 | 842.5 | 842.5 | 842.5 |
| | Panel B: #Original tweets (z) | | | | | |
| Holiday_RU | -0.182** (0.074) | -0.184** (0.080) | -0.184** (0.080) | -0.183** (0.079) | -0.182** (0.075) | -0.183** (0.081) |
| Holiday_US | -0.035 (0.116) | -0.037 (0.115) | -0.041 (0.113) | -0.046 (0.109) | -0.038 (0.114) | -0.043 (0.113) |
| Days ($\times 10^{-3}$) | | -0.970 (5.101) | 1.797 (5.025) | -1.287 (5.612) | | -2.753 (8.408) |
| Days ² ($\times 10^{-6}$) | | | -1.250*** (0.369) | 3.031 (3.439) | | -1.325 (16.965) |
| Days ³ ($\times 10^{-9}$) | | | | -1.31 (1.09) | | 1.09 (5.16) |
| Observations | 882 | 882 | 882 | 882 | 882 | 882 |
| R-square | 0.481 | 0.481 | 0.506 | 0.519 | 0.646 | 0.647 |
| Y-mean | 301.6 | 301.6 | 301.6 | 301.6 | 301.6 | 301.6 |
| Y-std.dev. | 466.8 | 466.8 | 466.8 | 466.8 | 466.8 | 466.8 |
| | Panel C: #Retweeted tweets (z) | | | | | |
| Holiday_RU | -0.156* (0.091) | -0.172* (0.099) | -0.173* (0.099) | -0.170* (0.099) | -0.157* (0.090) | -0.175* (0.099) |
| Holiday_US | -0.059 (0.085) | -0.077 (0.089) | -0.077 (0.090) | -0.071 (0.089) | -0.063 (0.090) | -0.076 (0.096) |
| Days ($\times 10^{-3}$) | | -6.659 (13.016) | -5.913 (12.905) | -9.698 (12.913) | | -5.627 (18.474) |
| Days ² ($\times 10^{-6}$) | | | -0.348 (0.840) | 5.476*** (1.766) | | 3.258 (36.237) |
| Days ³ ($\times 10^{-9}$) | | | | -1.87*** (.608) | | -1.96 (11) |

| | | | | | | |
|----------------|-------|-------|-------|-------|-------|-------|
| Observations | 924 | 924 | 924 | 924 | 924 | 924 |
| R-square | 0.371 | 0.372 | 0.373 | 0.401 | 0.624 | 0.625 |
| Y-mean | 224.5 | 224.5 | 224.5 | 224.5 | 224.5 | 224.5 |
| Y-std.dev. | 467.3 | 467.3 | 467.3 | 467.3 | 467.3 | 467.3 |
| DOW FEs | Y | Y | Y | Y | Y | Y |
| Month FEs | Y | Y | Y | Y | | |
| Year FEs | Y | Y | Y | Y | | |
| Year-Month FEs | | | | | Y | Y |

Notes: Standard errors are clustered at the event level. * significant 10% level; ** significant at 5% level; *** significant at 1% level.

Table S20: First stage, drop 10 busiest days 2012-2017, 11, 11, 15 events

| | Panel A: #All tweets (z) | | | | | |
|--|-------------------------------|----------------------|----------------------|-----------------------|----------------------|-----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Holiday_RU | -0.513** (0.176) | -0.516** (0.201) | -0.516** (0.201) | -0.516** (0.203) | -0.520** (0.178) | -0.562*** (0.168) |
| Holiday_US | -0.318 (0.271) | -0.323 (0.267) | -0.322 (0.267) | -0.253 (0.290) | -0.332 (0.258) | -0.290 (0.221) |
| Days ($\times 10^{-3}$) | | -1.308 (25.721) | -0.052 (25.837) | -84.038 (160.433) | | 187.449** (74.952) |
| Days ² ($\times 10^{-6}$) | | | 1.865 (7.363) | -279.935 (475.014) | | 404.600* (222.142) |
| Days ³ ($\times 10^{-9}$) | | | | -258 (437) | | 204 (197) |
| Observations | 231 | 231 | 231 | 231 | 231 | 231 |
| R-square | 0.324 | 0.324 | 0.324 | 0.328 | 0.362 | 0.430 |
| Y-mean | 1186.3 | 1186.3 | 1186.3 | 1186.3 | 1186.3 | 1186.3 |
| Y-std.dev. | 762.2 | 762.2 | 762.2 | 762.2 | 762.2 | 762.2 |
| | Panel B: #Original tweets (z) | | | | | |
| Holiday_RU | -0.333** (0.123) | -0.323* (0.155) | -0.326* (0.160) | -0.325* (0.165) | -0.341** (0.127) | -0.344* (0.180) |
| Holiday_US | -0.526*** (0.152) | -0.513*** (0.156) | -0.507*** (0.156) | -0.370* (0.203) | -0.543*** (0.154) | -0.441** (0.186) |
| Days ($\times 10^{-3}$) | | 3.736 (19.542) | 12.787 (15.543) | -152.376 (125.892) | | -12.450 (55.070) |
| Days ² ($\times 10^{-6}$) | | | 13.441 (13.586) | -540.729 (393.985) | | -136.944 (194.901) |
| Days ³ ($\times 10^{-9}$) | | | | -508 (365) | | -186 (200) |
| Observations | 231 | 231 | 231 | 231 | 231 | 231 |
| R-square | 0.465 | 0.466 | 0.471 | 0.483 | 0.503 | 0.514 |

| | | | | | | |
|--|---------|----------|----------|----------|---------|-----------|
| Y-mean | 759.6 | 759.6 | 759.6 | 759.6 | 759.6 | 759.6 |
| Y-std.dev. | 444.7 | 444.7 | 444.7 | 444.7 | 444.7 | 444.7 |
| Panel C: #Retweeted tweets (z) | | | | | | |
| Holiday_RU | -0.411* | -0.418* | -0.418* | -0.418* | -0.411* | -0.426* |
| | (0.199) | (0.230) | (0.231) | (0.231) | (0.201) | (0.202) |
| Holiday_US | 0.094 | 0.081 | 0.083 | 0.083 | 0.093 | 0.052 |
| | (0.176) | (0.205) | (0.205) | (0.206) | (0.175) | (0.177) |
| Days ($\times 10^{-3}$) | | -2.925 | -3.869 | -6.177 | | 310.826* |
| | | (31.641) | (32.059) | (30.157) | | (150.871) |
| Days ² ($\times 10^{-6}$) | | | -1.376 | -8.104 | | 811.238 |
| | | | (1.842) | (12.187) | | (461.448) |
| Days ³ ($\times 10^{-9}$) | | | | -5.31 | | 576 |
| | | | | (10.2) | | (343) |
| Observations | 315 | 315 | 315 | 315 | 315 | 315 |
| R-square | 0.347 | 0.347 | 0.348 | 0.348 | 0.367 | 0.426 |
| Y-mean | 318.6 | 318.6 | 318.6 | 318.6 | 318.6 | 318.6 |
| Y-std.dev. | 541.5 | 541.5 | 541.5 | 541.5 | 541.5 | 541.5 |
| DOW FEs | Y | Y | Y | Y | Y | Y |
| Month FEs | Y | Y | Y | Y | | |
| Year FEs | Y | Y | Y | Y | | |
| Year-Month FEs | | | | | Y | Y |

Notes: Standard errors are clustered at the event level. * significant 10% level; ** significant at 5% level; *** significant at 1% level.

7 Examples of Twitter-identified Troll Tweets

“We have over 40 million legal immigrants in our today. Why should we accept your criminals? #IllegalAmigoz” 2015-02-18 17:39 (UTC)

“We’ve already had 8 years of the disastrous Obama presidency. Enjoy 8 years of President Trump! #DrainTheSwamp #MAGA” 2017-07-20 01:23

“RT @WalshFreedom: Thought you might like this reminder: almost a year ago, #BLM protestors in TX calling for white Cops to be killed.” 2016-07-09 00:04