

Rally or Fracture? An Interrupted Time Series Analysis of Elite Communication During Terrorism Events

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Context

Attack Timeline

Wednesday, 22 March, 2018

- 2:40pm - Attacker jumps the curb, drives towards Parliament, is shot by police
- 2:46pm - Prime Minister May rushed from Parliament to # 10
- 3:50pm - Security cordon widened beyond Parliament Sq.
- 5:00pm - MPs and staff evacuated from Parliament
- 11:00pm - Police raid attacker's flat

Thursday

- 6:03am - Seven arrested in police raids
- 12:00pm - PM May confirms attacker lone wolf
- 12:39pm - ISIS claims responsibility for attack

Friday

- Morning - News reports surface about attacker's background, names of victims

April 18 - Prime Minister May calls an early election

June 8 - Conservative Party net loss of 13, Labour net gain of 30

Data

529 MP Twitter Handles

- Party
- Leadership Position
- Gender
- Military Experience
- Age
- Time in office

33,000 Tweets (+/- 115 Hours of attack)

Literature and Hypothesis

Test mechanisms in social-psychology that are often applied to the public opinion and national security literature.

Hypothesis 1a: One-sided Rally, opposition members signal support for party in power, whether due to agreement or fear of public backlash (Mueller 1970, Parker 1995).

Hypothesis 1b: Ingroup Solidarity, both sides exhibit bipartisan behavior in response to external threat (Moskalenko et al. 2006, Morrison & Ybarra 2008)

Hypothesis 1c: No Detectable Effect, rally is caused by a vacuum of criticism, rather than overt signs of bipartisanship (Shapiro & Page 1988)

Hypothesis 2a: Ephemeral Rally, elite signals degrade quickly (Brody 1991, Meernik & Waterman 1996)

Hypothesis 2b: Durable Rally, elite signals are detected into future

Analysis: An Interrupted Time Series

Methods Challenge

Originally intended to run RD with binary outcome, however:

- 1 Tweets are not at even intervals
- 2 Retweets will be conditional on the number of tweets in the environment
- 3 Seasonality due to the time of day
- 4 Heterogeneous effects
- 5 Time as a running variable breaks RD assumptions

Solution: Reshape data into time-series cross-sectional

Variables

Dependent Variable:

- Y_i : Count of cross party retweets

Independent Variables:

- X_i : Hour relative to the intervention centered at 0 (-115,115)
- T_i : A dummy indication pre-intervention (0) or post-intervention (1)
- F_i : Fourier pair $\cos(2k\pi t)$, $\sin(2k\pi t)$
- u_i : Exposure variable, number of tweets originating in hour t from members in other parties

Model Specification

$$y_i = pois(u_i\theta_i, \omega)$$
$$\theta_i = exp(\beta_0 + \beta_1 T_i + \beta_2 X_i + \beta_3 X_i^2 + \beta_4 X_i T_i + \beta_5 X_i^2 T_i + \beta_6 F_i)$$

Run for 1) All all parties with # > 1, 2) subset of three largest parties

Robustness Checks

- Seasonality: Augmented Dickey Fuller tests confirm that series is stationary
- Model Specification: Similar results with poisson, negative binomial, zero-inflated models, GAM models
- Running Variable: Similar results with natural cubic splines, base splines

Results

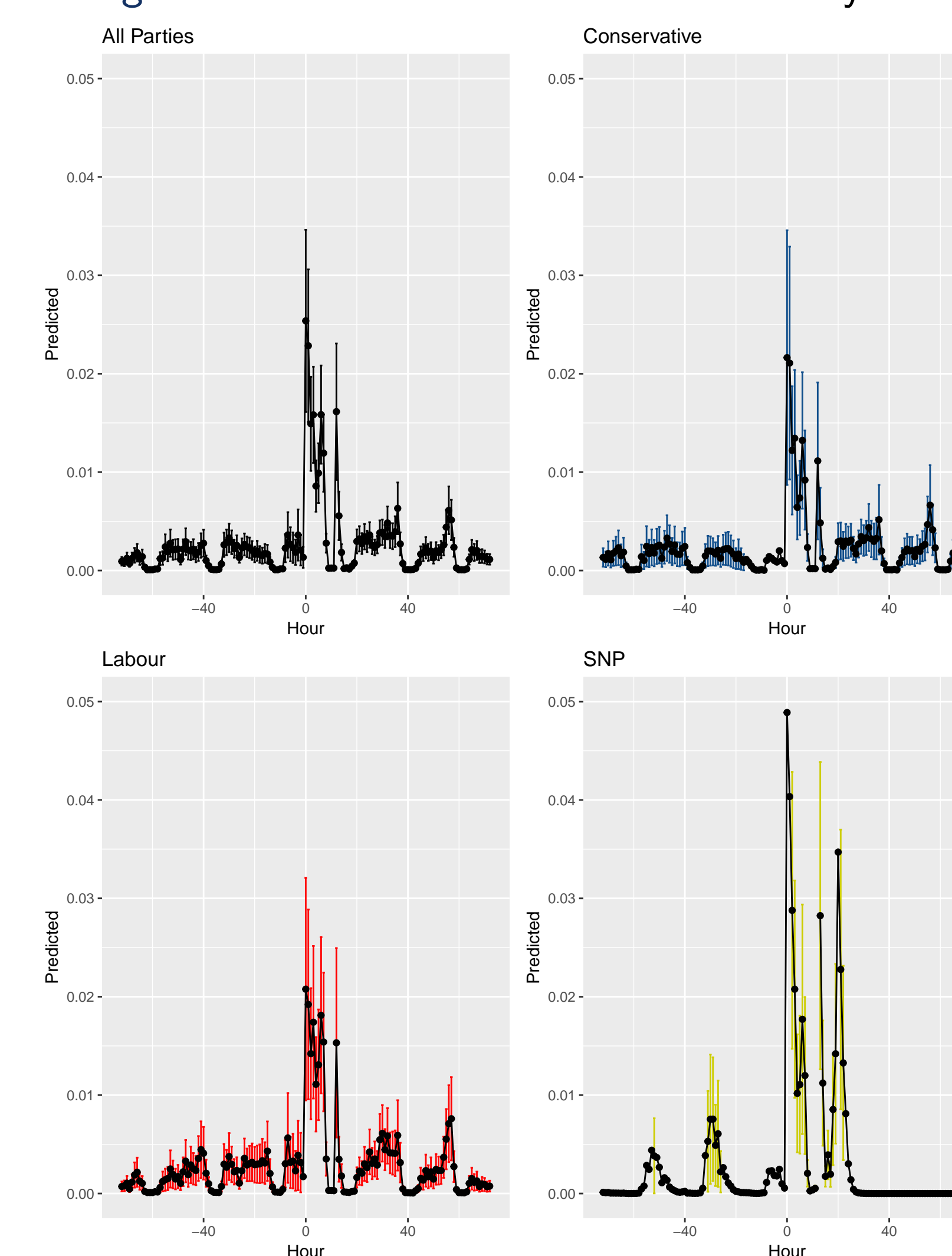
Table 1: Quasipoisson Models

	Dependent variable:			
	Cross Party RTs			
	All Parties	Conservative	Labour	SNP
Post	1.681*** (0.442)	2.386*** (0.837)	2.386*** (0.545)	3.851** (1.820)
Hour	-0.012 (0.014)	-0.039 (0.028)	-0.039** (0.018)	-0.092 (0.062)
Hour ²	-0.0002 (0.0001)	-0.0003* (0.0002)	-0.0003** (0.0002)	-0.001** (0.001)
Post*Hour	-0.023 (0.018)	0.004 (0.036)	0.004 (0.022)	0.429* (0.243)
Post*Hour ²	0.0003*** (0.0001)	0.001*** (0.0002)	0.001** (0.0003)	-0.015* (0.009)
Harmonic 1	0.233* (0.119)	0.102 (0.158)	0.102 (0.163)	1.278** (0.500)
Harmonic 2	0.422*** (0.122)	0.306 (0.225)	0.306** (0.145)	-0.989* (0.564)
Constant	-10.067*** (0.396)	-10.960*** (0.926)	-10.960*** (0.438)	-12.476*** (1.556)

Note: SEs Clustered at the MP Level

*p<0.1; **p<0.05; ***p<0.01

Figure 1: Predicted Values for Cross Party RTs



Contributions

- All major parties, including the party in power, significantly increased cross-party retweeting conditional on the number of original content produced by opposition parties.
- Demonstrates important but previously unexplored aspects of inter-party elite behavior and narrative formation using observed data during security events
- Applied interrupted time series and event analysis methods to social media
- Original dataset of UK MP accounts and characteristics

Future Work

- Text: Currently this project does not incorporate the content, I plan to use dictionary methods to understand whether the time degradation is due to less Tweeting about the event itself
- Other Events: There were three terrorist events in the UK in 2017, I would like to purchase portions of the Twitter corpus for these events to see if this pattern holds
- Multilevel: Considering Bayesian multilevel modeling for this project, hope to present those results

References

- Brody, R. A. (1991), *Assessing the President: The Media, Elite Opinion, and Public Support*, Stanford Univ. Press, Stanford, Calif. OCLC: 243714817.
- Meernik, J. & Waterman, P. (1996), 'The Myth of the Diversionsary Use of Force by American Presidents', *Political Research Quarterly* **49**(3), 573-590.
- Morrison, K. R. & Ybarra, O. (2008), 'The effects of realistic threat and group identification on social dominance orientation', *Journal of Experimental Social Psychology* **44**(1), 156-163.
- Moskalenko, S., McCauley, C. & Rozin, P. (2006), 'Group Identification under Conditions of Threat: College Students' Attachment to Country, Family, Ethnicity, Religion, and University before and after September 11, 2001', *Political Psychology* **27**(1), 77-97.
- Mueller, J. E. (1970), 'Presidential Popularity from Truman to Johnson', *The American Political Science Review* **64**(1), 18-34.
- Parker, S. L. (1995), 'TOWARDS AN UNDERSTANDING OF "RALLY" EFFECTS: PUBLIC OPINION IN THE PERSIAN GULF WAR', *Public Opinion Quarterly* **59**(4), 526-546.
- Shapiro, R. Y. & Page, B. I. (1988), 'Foreign Policy and the Rational Public', *Journal of Conflict Resolution* **32**(2), 211-247.