Preliminary Results

Group 3

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We calculate two types of time fixed effect models that use differently specified tweet dummies. In table 1, the dummies are switched on on the day the user receives a tweet and stay on. In table 2, they are switched on as before, but switched off when the user receives a subsequent tweet.

We test the joint significance of all negative tweets (tweets 2,5,6 and 7).

We model the effects of the tweet dummies for a list of dependent variables such that

$$y_{it} = \beta_1 T1_{it} + \beta_2 T2_{it} + \beta_3 T3_{it} + \beta_4 T4_{it} + \beta_5 T5_{it} + \beta_6 T6_{it} + \beta_7 T7_{it} + \alpha_t + u_{it}$$

Table 1:

	Dependent variable:					
	y					
	likes	tweets	retweets	mentions	MAGA	keywords
	(1)	(2)	(3)	(4)	(5)	(6)
tweet1	0.051	0.107	0.020	−0.072	0.082^{**}	0.148
	(0.049)	(0.540)	(0.049)	(0.116)	(0.038)	(0.278)
tweet2	0.118	−0.214	0.040	0.107	0.113^{*}	0.288
	(0.080)	(0.884)	(0.081)	(0.191)	(0.063)	(0.456)
tweet3	-0.227^{***}	1.196	−0.068	0.051	-0.133^{**}	0.580
	(0.083)	(0.920)	(0.084)	(0.198)	(0.065)	(0.474)
tweet4	0.019	−0.710	−0.045	−0.128	−0.045	−0.463
	(0.085)	(0.938)	(0.086)	(0.202)	(0.066)	(0.483)
tweet5	−0.056	−0.345	0.041	0.038	0.032	−0.067
	(0.093)	(1.029)	(0.094)	(0.222)	(0.073)	(0.530)
tweet6	0.131	−2.030	0.015	0.009	−0.006	−0.451
	(0.117)	(1.294)	(0.118)	(0.279)	(0.092)	(0.667)
tweet7	−0.046	2.304^{**}	−0.003	0.057	0.012	0.471
	(0.104)	(1.151)	(0.105)	(0.248)	(0.082)	(0.594)
F-Test (Negative Tweets)	0.988	1.047	0.186	0.184	0.921	0.27
Pr(>F) (Negative Tweets)	0.412	0.381	0.946	0.947	0.451	0.898
Observations	119,968	119,968	119,968	119,968	119,968	119,968
R^2	0.0001	0.0001	0.00001	0.00001	0.0002	0.0002
Adjusted R^2	0.0001	0.0001	0.00001	0.00001	0.0002	0.0002
F Statistic (df = 7; 119929)	1.653	1.103	0.233	0.230	3.702^{***}	3.263^{***}
Note:						$^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

Table 2:

	Dependent variable:					
	y					
	likes	tweets	retweets	mentions	MAGA	keywords
	(1)	(2)	(3)	(4)	(5)	(6)
temptweet1	0.042	0.257	0.015	−0.020	0.080**	0.226
	(0.049)	(0.542)	(0.049)	(0.117)	(0.038)	(0.279)
temptweet2	0.169***	−0.100	0.059	0.038	0.195***	0.440
	(0.065)	(0.720)	(0.066)	(0.155)	(0.051)	(0.371)
temptweet3	−0.058	1.089*	−0.008	0.086	0.062	1.016***
	(0.054)	(0.596)	(0.054)	(0.129)	(0.042)	(0.307)
temptweet4	−0.039	0.379	−0.054	−0.041	0.017	0.553
	(0.067)	(0.743)	(0.068)	(0.160)	(0.053)	(0.383)
temptweet5	−0.095	0.034	−0.013	−0.004	0.048	0.486
	(0.067)	(0.737)	(0.067)	(0.159)	(0.052)	(0.380)
temptweet6	0.036	−1.996*	0.002	0.006	0.042	0.035
	(0.100)	(1.101)	(0.101)	(0.237)	(0.078)	(0.568)
temptweet7	−0.010	0.308	−0.001	0.063	0.054**	0.506***
	(0.033)	(0.363)	(0.033)	(0.078)	(0.026)	(0.187)
F-Test (Negative Tweets)	2.259	1.029	0.212	0.176	5.011	2.578
Pr(>F) (Negative Tweets)	0.06	0.39	0.932	0.951	0	0.035
Observations	119,968	119,968	119,968	119,968	119,968	119,968
R^2	0.0001	0.0001	0.00001	0.00001	0.0002	0.0002
Adjusted R^2	0.0001	0.0001	0.00001	0.00001	0.0002	0.0002
F Statistic (df = 7; 119929)	1.603	1.129	0.224	0.179	3.675***	3.317***
Note:						*p<0.1; **p<0.05; ***p<0.01

For simplicity, we also run t-tests comparing the means of the treatment and control groups during the time when tweets were being sent out

```
## [1] "like_n"
##
##  Welch Two Sample t-test
##
## data:  treatment_period[treatment_period$t_group == "T", y] and treatment_period[treatment_period$t_
## t = -0.083947, df = 27203, p-value = 0.9331
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.04863419  0.04463938
## sample estimates:
## mean of x mean of y
##  1.500419  1.502417
##
## [1] "tweet_n"
##
##  Welch Two Sample t-test
##
## data:  treatment_period[treatment_period$t_group == "T", y] and treatment_period[treatment_period$t_
## t = 1.0303, df = 26145, p-value = 0.3029
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.2477424  0.7967770
## sample estimates:
## mean of x mean of y
##  11.91413  11.63961
##
## [1] "trump_rt_n"
##
##  Welch Two Sample t-test
##
## data:  treatment_period[treatment_period$t_group == "T", y] and treatment_period[treatment_period$t_
## t = 0.48883, df = 26195, p-value = 0.625
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.03418874  0.05690758
## sample estimates:
## mean of x mean of y
## 0.8425216 0.8311622
##
## [1] "trump_mention_n"
##
##  Welch Two Sample t-test
##
## data:  treatment_period[treatment_period$t_group == "T", y] and treatment_period[treatment_period$t_
## t = 1.0549, df = 30253, p-value = 0.2915
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.04738074  0.15781026
## sample estimates:
## mean of x mean of y
##  2.290748  2.235533
```

```
##
## [1] "MAGA_n"
##
##  Welch Two Sample t-test
##
## data:  treatment_period[treatment_period$t_group == "T", y] and treatment_period[treatment_period$t_
## t = 2.0278, df = 18488, p-value = 0.0426
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  0.002042893 0.120324163
## sample estimates:
## mean of x mean of y
## 0.5007790 0.4395955
##
## [1] "trump_keyword_n"
##
##  Welch Two Sample t-test
##
## data:  treatment_period[treatment_period$t_group == "T", y] and treatment_period[treatment_period$t_
## t = 3.3522, df = 24227, p-value = 0.000803
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  0.2065765 0.7882761
## sample estimates:
## mean of x mean of y
##  5.869847  5.372420
```