

Using Exact Sciences Models for Understanding Social Phenomena Session 7 – On Bursts and Outliers

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Table 2. Frequency Distributions of Descriptive Characteristics of 154 Race Riots with			Levels of Police Response			
Predominantly Black Participants in 55 SMSAs: 1960 to 1993		nts in 55	Small numbers arrive after riot begins		1.9	
Riot Characteristic	Frequency	Percent	Local police officers present at riot	62	40.3	
Number of Participants Less than 50	9	5.8	Police from local and neighboring towns	49	31.8	
50 to 499	87	56.5	Local and state police	5	3.3	
500 to 1,000	28	18.0	Local, state police and National Guard	30	19.5	
More than 1,000 Levels of Violence in Riots	30	19.5	Local police, Army, and National Guard units	5	3.3	
No weapons nor injuries	3	1.9	Targets of Riot			
Riss sticks ours or bottle	. 17	11.0	The "system" or racism	85	55.2	
reported	5 17	11.0	Police actions or police property	41	26.6	
Sniping, firebombs, gunsho reported	ots 69	44.8	White Groups or storeowners	21	13.6	
Property damage and/or	31	20.0	Local community event or issue	4	2.6	
personal injuries			Group of Jews or Jewish leaders	2	1.3	
Participants, bystanders, or police killed	34	22.0	Mixed ethnic group target	1	.6	





A Strike wave

A year when the number of striking workers and the frequency of strikes both exceed the average of the preceding five years by at least 50%, all within the boundaries of a national state.

Shorter and Tilly (1974, pp. 106–7)

















Spikes are generated through prioritization and repetition













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Our goal – Shed some light on WOM spikes Suggest why spikes are generated? Identify spikes using a robust Kalman filter Describe the characteristics of spikes on a movies prerelease WOM dataset Content Analysis on spikes vs non spike WOM Box office model to see whether pre-release spikes are an indicator of future success

Content analysis



Omg I want to see Judy moody and the not so bummer summer! #dontjudgeme

Your Invited to a Pajama Party with Judy Moody!

Can't wait for Judy Moody! yay! :DDD My friend and I love you, Camryn! :)

Cant wait to go see Judy Moody on The 10th(: My little cousins r soo excited lol((:

Watching Switched at Birth. Judy Moody commercials are pissing me off. Bay is a bitch so far. Daphne is so sweet.

Is it weird i wanna go see judy moody lol that name is so funny to me $\#\ensuremath{\mathsf{random}}$

Our site GiantHello is featured in the new Judy Moody Movie!!!! Ya gotta check it out!





Content Analysis

TOPIC		TONE	
Actor	12.36%	Call For Action	7.84%
Director	2.26%	Watching Intentions	22.92%
Storyline or film-making	57.35%	Opinion	20.37%
Trailer	9.41%	Gossip	7.98%
Critics	4.18%	Non-Opinionated Description	5.58%
Genre	1.43%	Mere Mention	31.85%
Another Movie	2.48%	Other or no response	3.46%
Movie Listing	3.55%	EXTERNAL DRIVER	
Other or no response	6.98%	Trailer	13.82%
SENTIMENT		Press Event	12.89%
Positive	43.92%	Early Release	3.57%
Negative	6.96%	Movie Premiere	7.94%
Mixed	4.26%	Another Movie Event	11.46%
Neutral	44.79%	No External Event	45.33%
No response	0.07%	Other or no response	4.98%

Spike WOM differs in content from non-spike WOM

Category for message i, movie j, channel I, and time t.

$$Log\left(\frac{\Pr(C_{ijlt} \neq k)}{\Pr(C_{ijlt} = k_0)}\right) = \beta_{kjl} + \beta_{k1}t + \beta_{k2}Spike_{ijt} + \beta_{k3}Trailer_{ijt} +$$

 β_{k4} PressEvent_{ijt} + β_{k5} EarlyRelease_{ijt} + β_{k6} Premiere_{ijt}

Relative to non-spikes days, messages on spike days are more likely to be:

Dedicated to specific aspects of the movie, Opinionated Express sentiment (either positive or negative),

Spikes and External Events				
31% of the spikes - on the same 69% of the spikes - do not co-occ	31% of the spikes - on the same day of an external ev 69% of the spikes - do not co-occur with an external e			
DV: Probability of a spike to occur	s t days before release			
Days before release (t)	-0.02*			
Release of the Trailer	0.83*			
Early Release	1.57*			
Press Event	0.70*			
Premiere	0.88*			
Movie Fixed Effects	Included			
Relative to non spike messages refer more to external events as	, messages on spike c their drivers.			





Box office model

	Model 1
Intercept	6.905 **
log(Production Budget)	0.205
log(Ad Spending)	0.746 **
log(Star Power)	0.079
MPAA Ordinal	-0.410 **
Genre Dummies	**
log(WOM volume)	
log(# Spikes)	
log(# Internal Spikes)	
log(# Event Spikes)	
# Premieres	-0.047
F-statistic	31.08 **
R ²	0.704
Adjusted R ²	0.681

Box office model

	Model 1	Model 2
Intercept	6.905 **	3.890 **
log(Production Budget)	0.205	0.022
log(Ad Spending)	0.746 **	0.659 **
log(Star Power)	0.079	0.034
MPAA Ordinal	-0.410 **	-0.369 **
Genre Dummies	**	**
log(WOM volume)		0.580 **
log(# Spikes)		
log(# Internal Spikes)		
log(# Event Spikes)		
# Premieres	-0.047	
F-statistic	31.08 **	41.36 **
R ²	0.704	0.778
Adjusted R ²	0.681	0.759

Box office model

	Model 1	Model 2	Model 3
Intercept	6.905 **	3.890 **	2.790 *
log(Production Budget)	0.205	0.022	0.078
log(Ad Spending)	0.746 **	0.659 **	0.635 **
log(Star Power)	0.079	0.034	0.052
MPAA Ordinal	-0.410 **	-0.369 **	-0.325 *
Genre Dummies	**	**	**
log(WOM volume)		0.580 **	0.525 **
log(# Spikes)			0.641 **
log(# Internal Spikes)			
log(# Event Spikes)			
# Premieres	-0.047		
F-statistic	31.08 **	41.36 **	40.56 **
R ²	0.704	0.778	0.789
Adjusted R ²	0.681	0.759	0.770

Box office model

	Model 1	Model 2	Model 3	Model 4
Intercept	6.905 **	3.890 **	2.790 *	2.675 *
log(Production Budget)	0.205	0.022	0.078	0.082
log(Ad Spending)	0.746 **	0.659 **	0.635 **	0.642 **
log(Star Power)	0.079	0.034	0.052	0.060
MPAA Ordinal	-0.410 **	-0.369 **	-0.325 *	-0.315 *
Genre Dummies	**	**	**	**
log(WOM volume)		0.580 **	0.525 **	0.548 **
log(# Spikes)			0.641 **	
log(# Internal Spikes)				0.612 **
log(# Event Spikes)				-0.123
# Premieres	-0.047			
F-statistic	31.08 **	41.36 **	40.56 **	37.96 **
R ²	0.704	0.778	0.789	0.792
Adjusted R ²	0.681	0.759	0.770	0.771





Practice – Managing pre-release strategy Research – Celebrate the wonderful world of irregularities



