

Talk Bursts

Pre-release Word-of-Mouth Dynamics: The role of Spikes

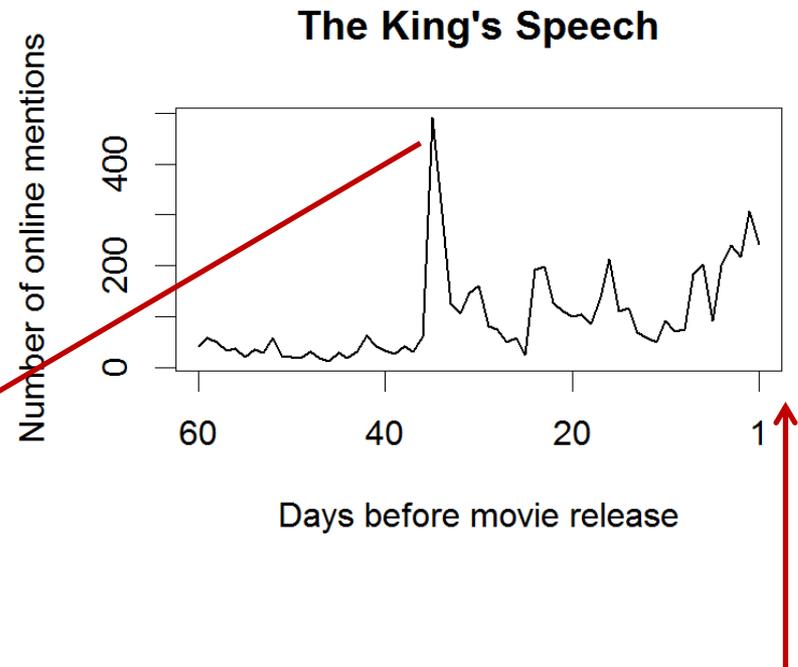
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Session on Innovation and Social Interactions

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Spikes in Pre-release WOM



88 – The King's Speech

— OCTOBER 22, 2010

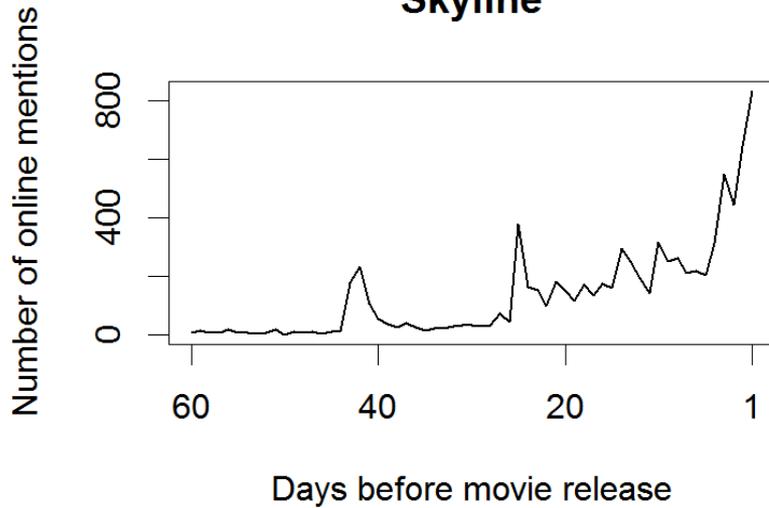
I haven't seen the movie yet but the trailer is so promising and I don't think Colin can do wrong. I can't remember seeing him in a bad movie and lately he seems to get amazing roles. So I for an example can't wait to see this one - I love myself some Colin as a king!

**Release date:
November 26, 2010**

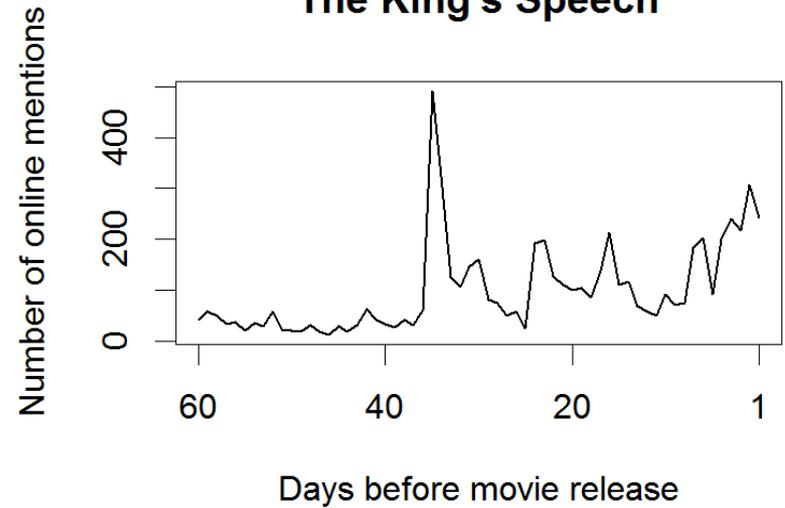
Spikes in Pre-release WOM

Increasing trend towards release + WOM spikes

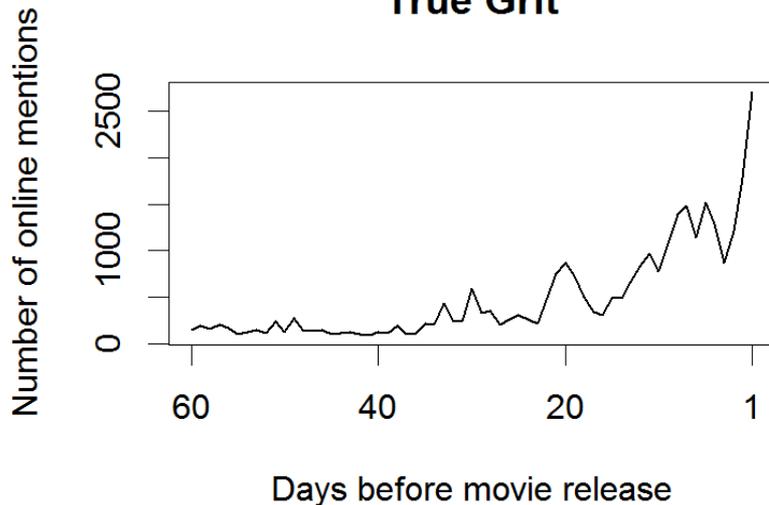
Skylane



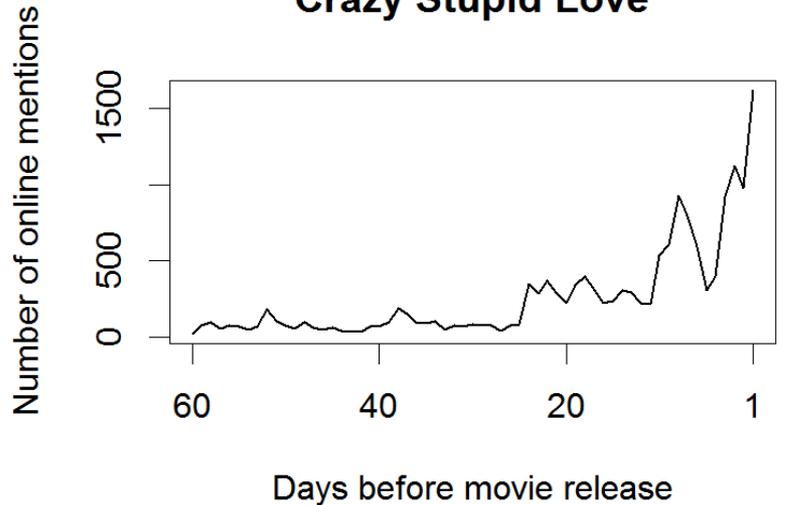
The King's Speech



True Grit



Crazy Stupid Love

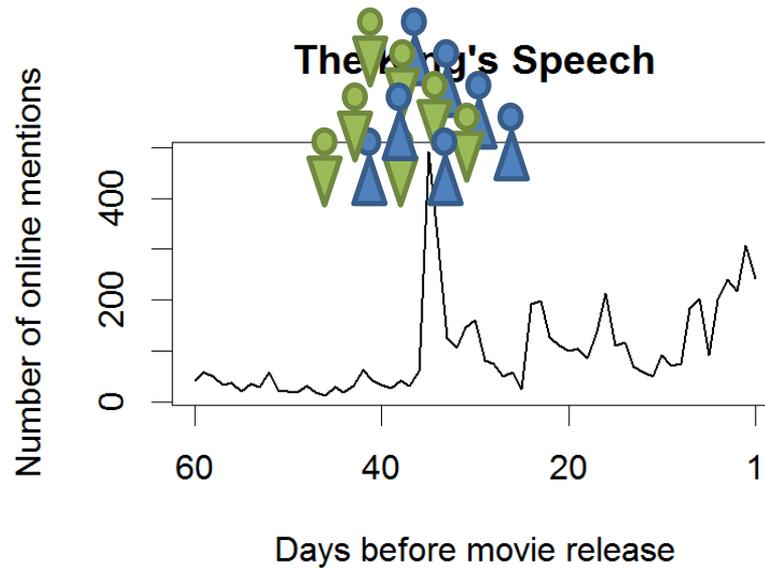


Why are spikes interesting?

A focused burst of interest and communication among consumers.

Associated with sales.

Dynamical aspects of WOM are hardly studied.



Our goal – Shed some light on WOM spikes

Suggest why spikes are generated?

Identify spikes using a robust Kalman filter

Content Analysis on spikes vs non spike WOM

Box office model to see whether pre-release spikes are an indicator of future success

Social systems are spiky!

Granovetter (1978)

“A very small change in the distribution of preferences generates a large difference in the outcome.”

“Suggested applications are to riot behavior, innovation and rumor diffusion, strikes, voting, and migration.”

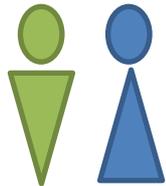
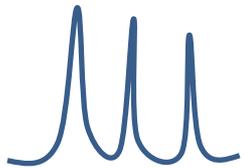
Meme tracking: Leskovec, Backstrom, Kleinberg (2009)



Figure 5: Temporal dynamics of top threads as generated by our model. Only two ingredients, namely imitation and a preference to recent threads, are enough to qualitatively reproduce the observed dynamics of the news cycle.

Spikes are generated through prioritization and repetition

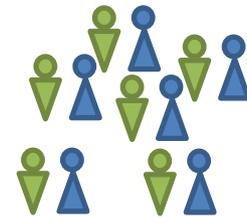
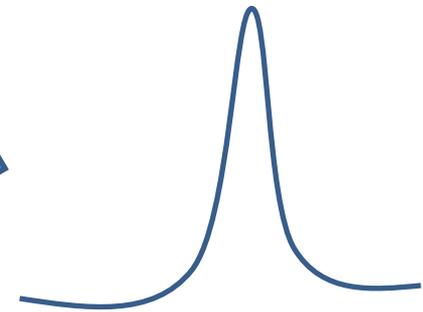
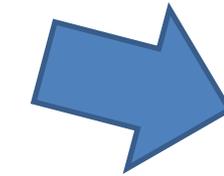
Spontaneous internal activity.
Enhanced due to the repetition effect,
(Cacioppo and Petty 1979; Campbell and Keller 2003)
but short term (Singh et al. 1994)



Barabasi (2005)
Individual time dynamics in
performing tasks is spiky

Oliviera and Vazquez (2009)
especially in interactive tasks

External event
(trailer, press conference)

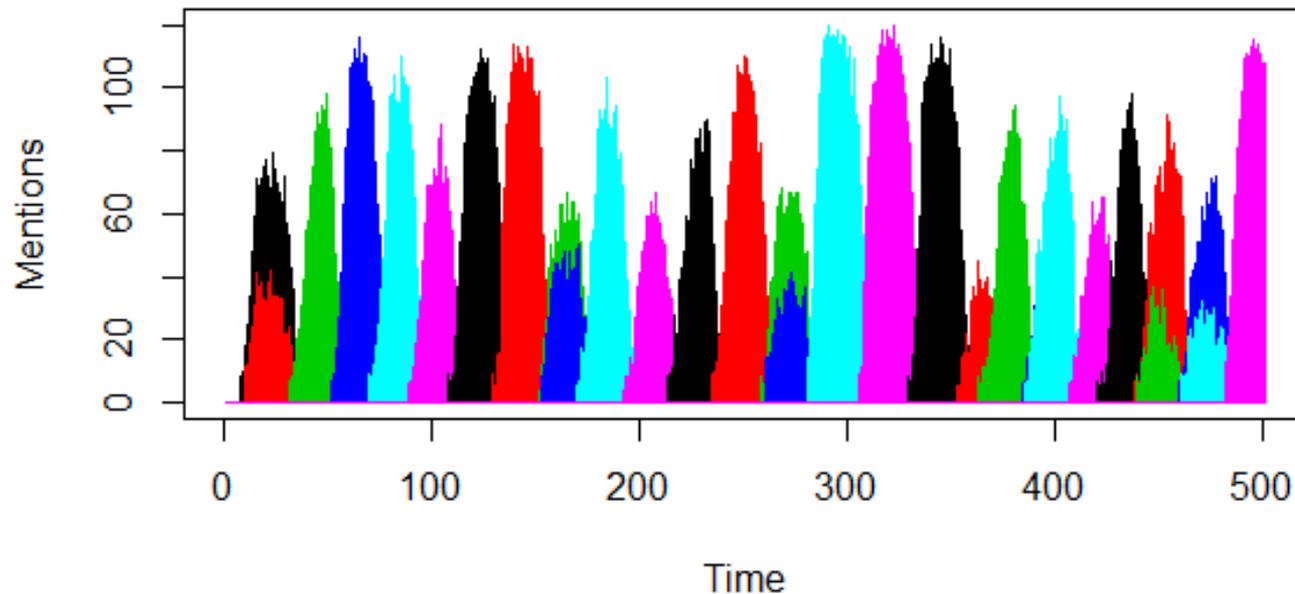


A spike in aggregate WOM –
A high priority task for many individuals

A simple agent based model

Pr. communicate=

$f(\text{number of messages } \uparrow, \text{ wearout } \downarrow)$



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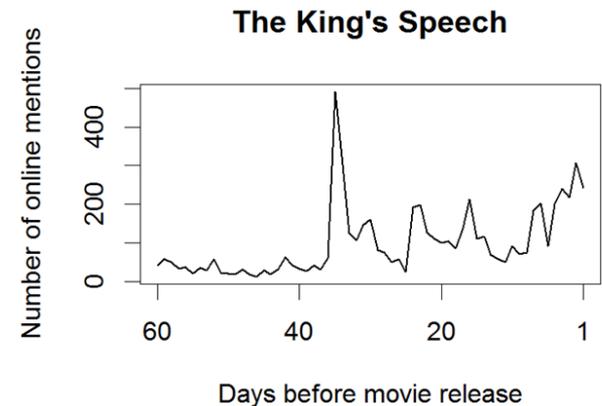
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A Model of Spiky WOM

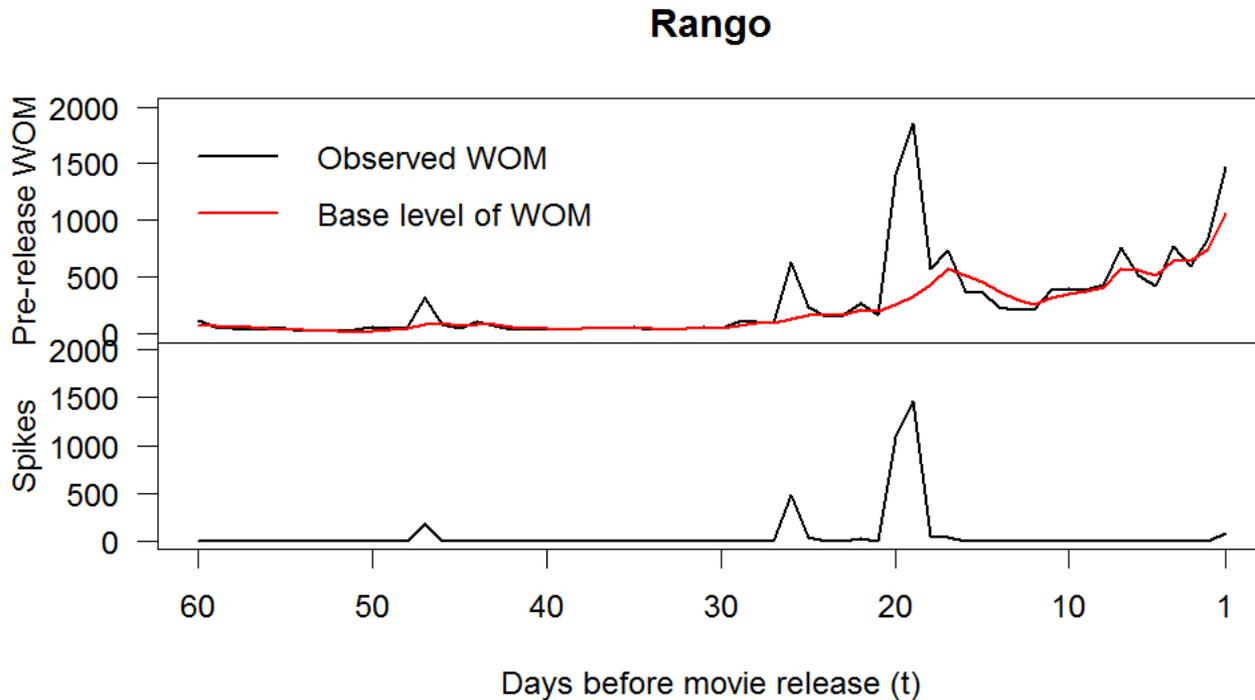
$$WOM_t = Level_t + Spike_t + e_t$$

$$Level_t = Level_{t-1} + Trend_{t-1} + \eta_{Lt}$$

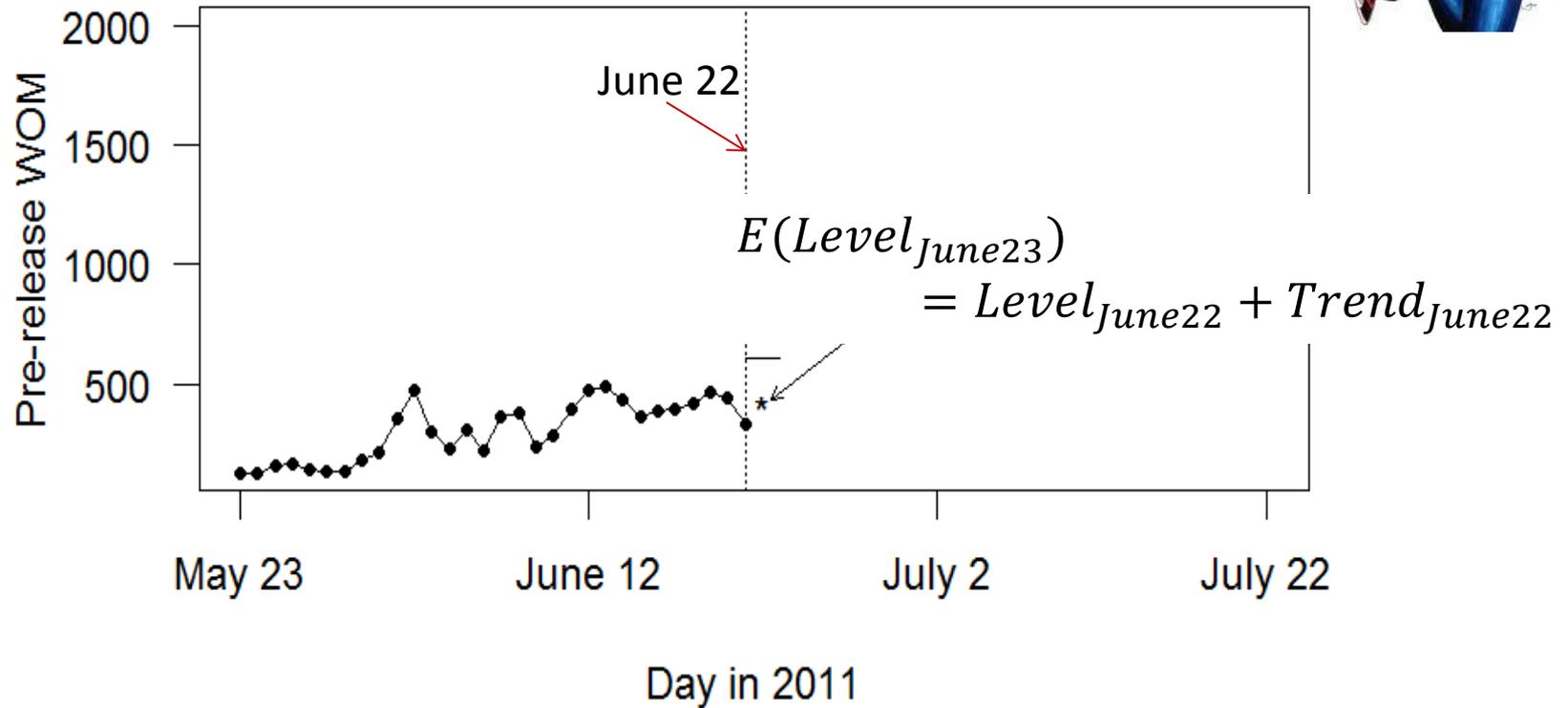
$$Trend_t = Trend_{t-1} + \eta_{Tt}$$

$$\varepsilon_t \sim N(0, \sigma_t^2)$$

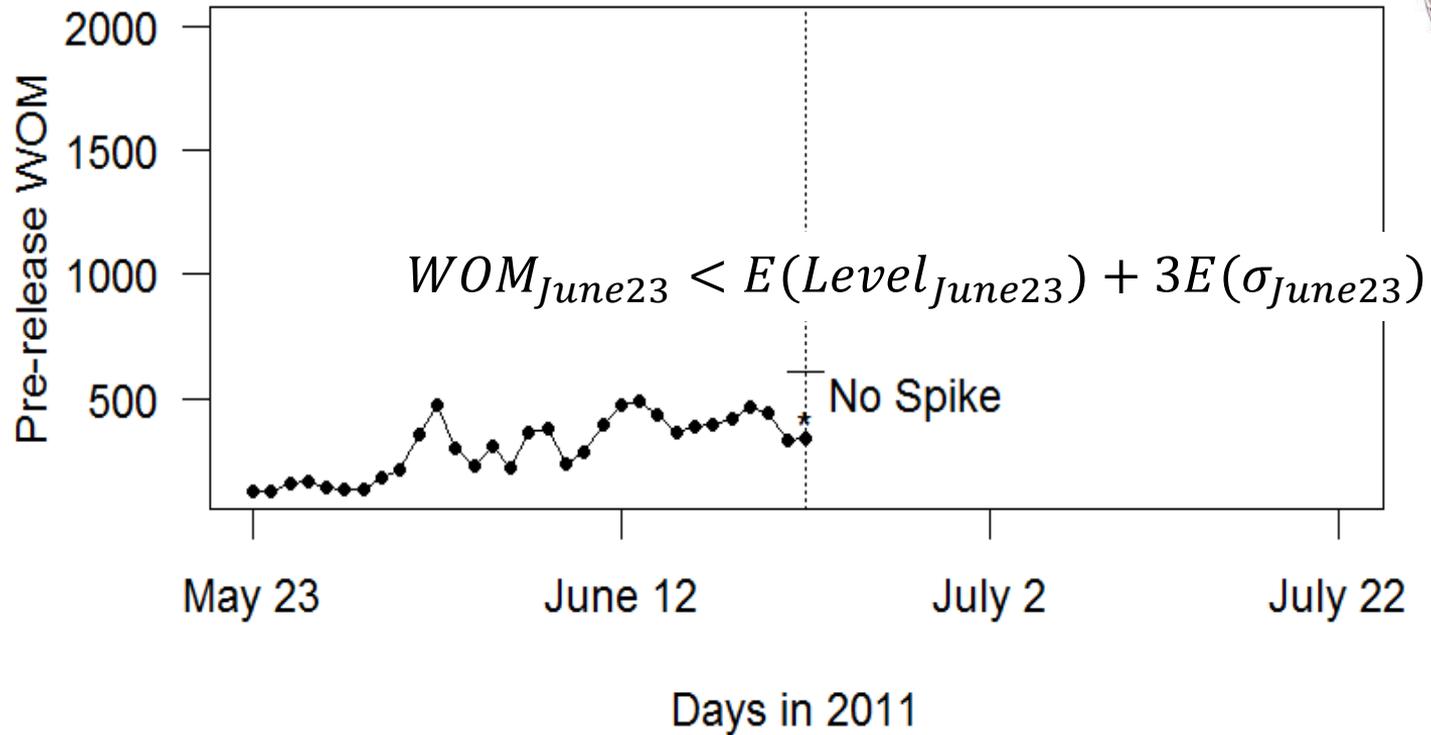
$$\sigma_t = \sigma_{t-1} + \eta_{Vt}$$



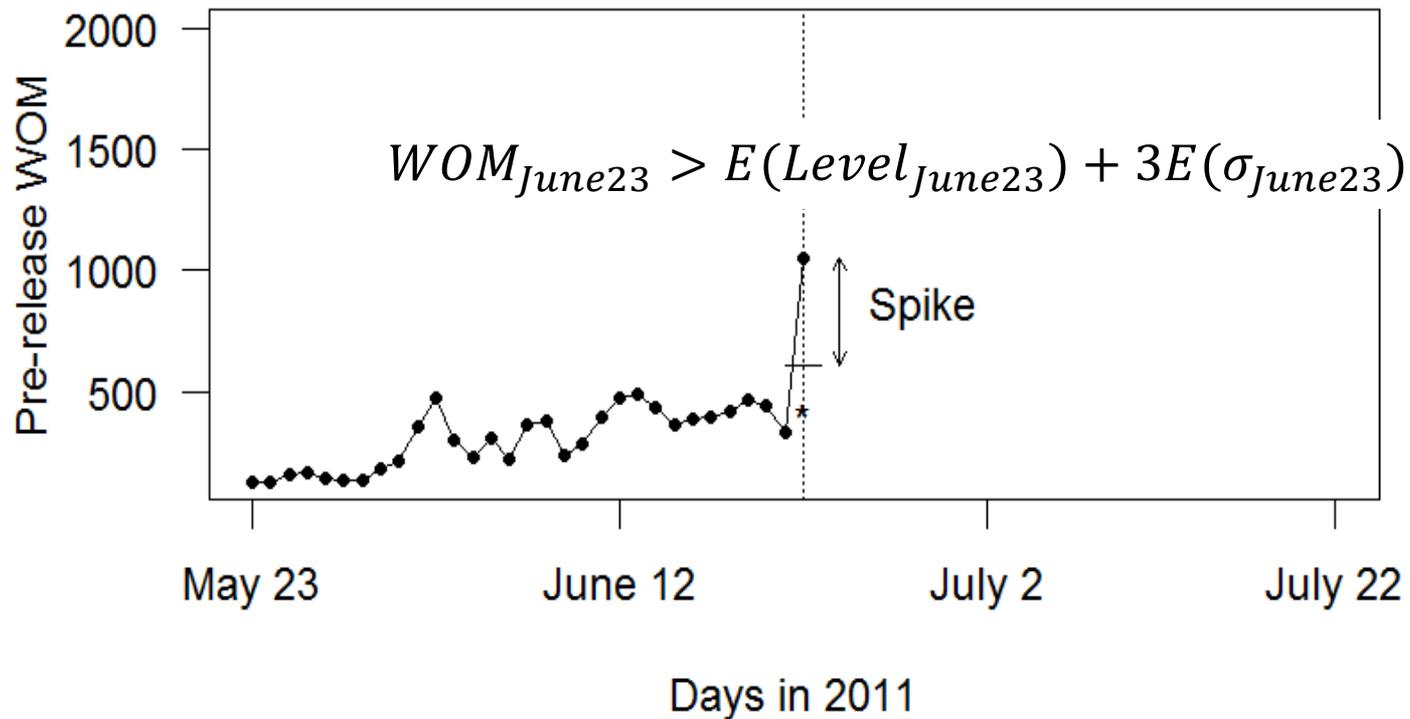
Identifying Spikes



Identifying Spikes



Identifying Spikes

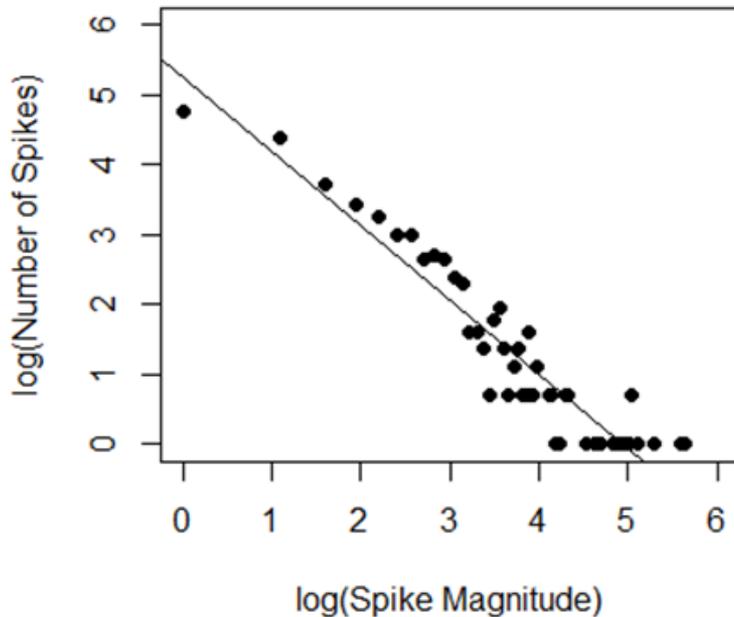


The level, trend, and volatility (σ) for each time t are estimated using Robust Kalman Filter (Gelper, Croux & Fried 2010)

Spike Magnitude

Data: 157 movies released between August 2010 to August 2011

WOM: Number of mentions + content, from Nielsen McKinsey Buzzmetrics tool, 60 days before release, blogs, user forums and Twitter.



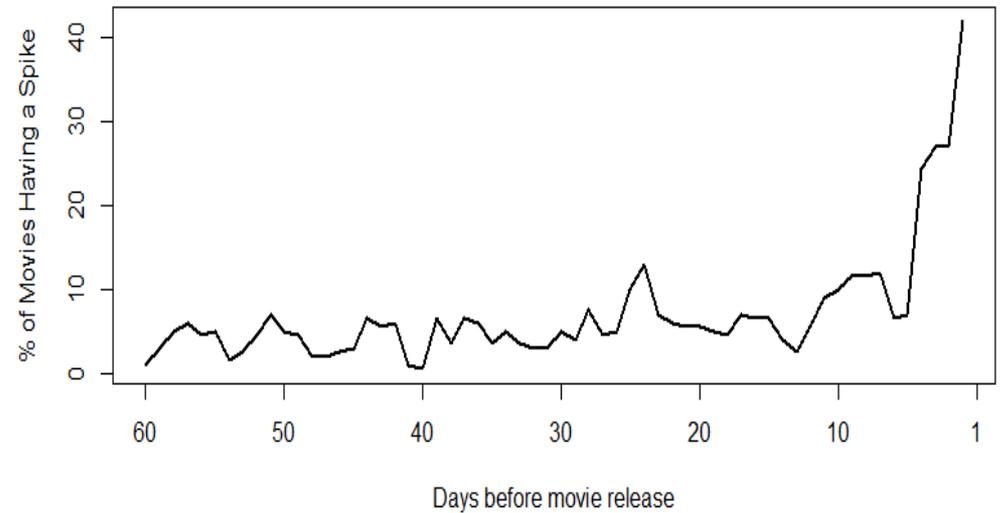
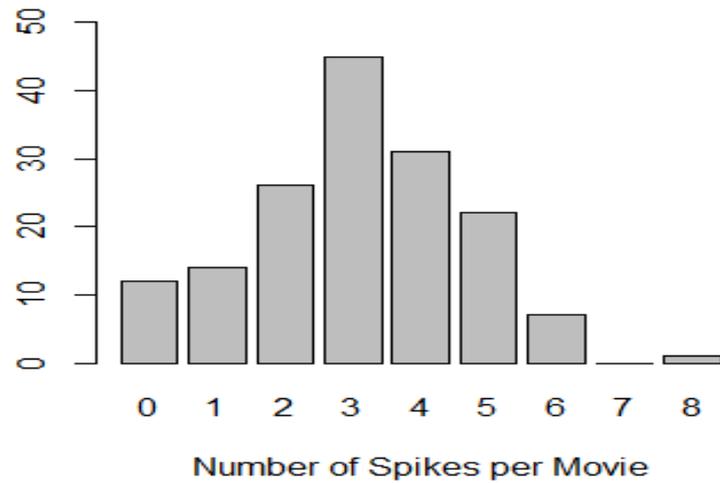
Biggs (2005)

“Natural events like wildfires, landslides, and epidemics are characterized by a *power-law* distribution of event sizes.”

“Just like wildfires, landslides, and epidemics, strikes follow a power law.”

Pre-release WOM spikes follow a power law.

Typology of Spikes



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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 #random

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

Word Frequency distribution + manual classification

Altogether – 19,939 spike posts, 12,727 non spike posts

Content Analysis

Topic –actor, director, storyline, another movie, the genre, a trailer, reviews, and movie listing

Valence – positive, negative, mixed, neutral

External Event –No external event, trailer, early release, press event, and movie premiere.

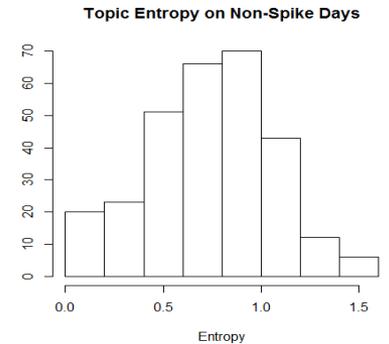
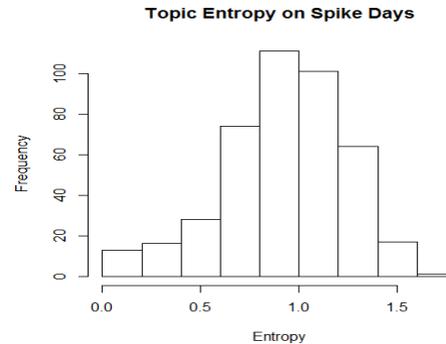
Content Analysis

Spikes span more topics

They are more positive

More internally ignited

Spikes in which people talk a lot about external events decay faster.



As release approaches...

- more spikes occur
- less spike messages deal with external events
- more spike messages deal with the storyline
- more spike messages are opinionated

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Box office Model

Movie characteristics

$$\log(BO_i) = \alpha + \beta_1 MC_i + \beta_2 \log(WOM_i) + \beta_3 \log(SpikeCount_i) + \varepsilon_i,$$

Movie

Total level of WOM
mentions on movie i (60 days)

Total no. of spikes in the
pre-release WOM (60 days)

Spikes are important

	Model 1	Model 2	Model 3
	Estimate	Estimate	Estimate
Intercept	-7.00	-7.21*	-7.69**
log(budget)	0.85**	0.62**	0.62**
MPAAOrdinal	-0.28	-0.19	-0.2
log(StarPower)	0.48**	0.42*	0.45**
Genre Dummies	-	-	-
log(WOM volume)		0.53**	0.49**
log(SpikesCount)			0.5*
R ^2	0.43	0.49	0.5

Conclusion

Spikes matter.



A theoretical and technical framework for studying WOM spikes

1. They are not noise but an integral part of WOM.
2. They are created by external events and internal enhancement and repetition.
3. Spikes span more topics than non spikes, internal spikes decay slower.
4. As release approaches, spikes become more opinionated, are more driven by internal dynamics, and are more dedicated to storyline.
5. Spikes are associated box office revenues.

Practice – Managing pre-release strategy

Research – Celebrate the wonderful world of irregularities