

# Predicting Events based on Social Media Exposure: from the Arab Spring to Disease Outbreaks

Rishab Aiyer Ghosh  
Co-Founder & Chief Scientist

**TOPSY** LABS

# Headlines, early 2011

**The New York Times**  
Saturday, January 29, 2011 Last Update: 5:35 PM ET

Sponsored by **TOYOTA**

Search  electric/orange **ORANGE**

Follow Us [f](#) [t](#) [e](#) [v](#) | Subscribe to Home Delivery-Bay Area | Personalize Your Weather

## Egyptians Defiant as Military Stands By Intelligence Chief Is Mubarak's First Vice President

PHOTOGRAPHS VIDEO



Scott Nelson for the New York Times

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

Demonstrators prayed on Saturday afternoon.

### Some in Army Appear to Side With Demonstrators

By DAVID D. KIRKPATRICK 4:29 PM ET

As troops and protesters fraternized, Omar Suleiman, Egypt's military intelligence

THE LEDE BLOG  
**Latest Updates on Protests in Egypt**  
By ROBERT MACKEY Live  
Mohamed ElBaradei called on President Mubarak to step down, and residents helped guard the Egyptian museum.

**Egyptians Wonder What's Next**  
By ANTHONY SHADID 3:25 PM ET

OPINION »  
**The Wrath of Grapes**  
The author reckons with the time he drank all that scotch, and finds a measure of comfort in Lady Astor, Kingsley Amis and "Othello."  
• Collins: Don't Know Much About History | Comments  
• Blow: Obama and Poverty  
• Editorial: Washington and Mr. Mubarak  
• Betts: Boosting America, in Her Own Fashion  
• Op-Ed: Behaving Like Children

WHAT'S POPULAR NOW [f](#)  
• Don't Know Much About History  
• Yearning for Respect, Arabs Find a Voice

YOUR MONEY »  
**Finding Success, Followers in Tow**  
Dimensional Fund Advisors has a quirky approach that has endeared it to its clients, Ron Lieber writes.

1.30% HIGH-YIELD SAVINGS ACCOUNT  
LEARN MORE TAKE CHARGE

Learn how we're making a difference and what you can do to help.

Find Out More

EDITION: U.S. | INTERNATIONAL | MEXICO

Sign up | Log in

Set edition preference

**CNN** POWERED BY Google

Home Video NewsPulse U.S. World Politics Justice Entertainment Tech Health Living Travel Opinion IReport Money Sports

updated 5:18 p.m. EST, Sat January 29, 2011

Make CNN Your Homepage

## Without police, Cairo 'like Wild West'

Click to play

Protesters scoff at Mubarak's moves

- Tens of thousands defy curfew
- At least 38 dead in protests, state TV reports
- Intelligence chief appointed vice president
- Mubarak's government resigns FULL STORY

Live blog: Latest updates from Egypt  
Who is Mubarak's new deputy?  
On front lines of protest | Photos  
Protesters: "We need a new president"

More on Egyptian unrest

- Anti-Mubarak protests across U.S.
- Bedouins enter fray? Time
- Saudi king slams protesters
- Opinion: Obama faces critical test
- Who are the protesters? CNN
- Send your video, images | CNN in Arabic

Latest news

- Police: Mom kills 'mouthy' teens
- Accused pastor breaks silence
- Russian police identify airport bomber
- Sheen enters rehab; TV show on hiatus

Don't miss

- Sundance: 'Life' via YouTube lens EW
- 3-year-old calls 911, saves dad 1:34
- 125 years of Mercedes Benz Time
- World tensions rise with food prices CNNMoney
- Drinkable marijuana to hit shelves 1:48
- Flavor Flav opens chicken joint 1:09

THE BEST in SMART SUNDAY TALK

XYZ w/ Ali Velshi | State of the Union | Fareed's Take

SPONSORED BY Audi

Hi there! Log in | sign up

FRIENDS' ACTIVITY

Reese Jones shared Humans vs. automated search: Why people power is cool again - about 2 weeks ago

Good Samaritan describes chase that led to girl's freedom 11,911 people shared this.

**BBC** Mobile News Sport Weather Travel TV Radio More Search BBC News

**NEWS** 29 January 2011 Last updated at 17:49 ET

Home US & Canada Latin America UK Africa Asia-Pac Europe Mid-East South Asia Business Health Sci/Environment Tech Entertainment Video

In Pictures | Also in the News | Editors' Blog | Have Your Say | Special Reports

LATEST: Crucial Irish finance bill passes final hurdle in upper house of parliament

## World pressure on Mubarak grows

World leaders call on Egypt's President Hosni Mubarak to avoid violence and enact reforms as protests continue into a sixth day.

LIVE Egypt unrest  
Cairo 'like a war zone'  
In depth: Egypt unrest  
Flashpoints map  
In pictures: Egypt protests  
Analysis: Why Egypt matters

Watch/Listen

ElBaradei: The people have revolted  
Army on alert amid Suez unrest

Latest summary: Watch Listen  
LIVE BBC World Service

ADVERTISEMENT

**\$289: Bahamas 4-Star Trip w/Air**  
Travelzoo Deal Experts founds this Bahamas 4-Star Getaway for four nights including air! Sale ends Feb. 1st. Source: Travelzoo

**Dutch cut Iran links over hanging**  
The Dutch government freezes all contacts with Iran in protest over the hanging of a Dutch-Iranian woman for drug smuggling.

**Kandahar deputy governor killed**  
US demands release over shooting

**Moscow attacker 'is identified'**  
Canada 'to expel Tunisian tycoon'

**Key Pakistan tunnel hit by blasts**  
Goldman boss gets \$15m pay award

**US fast food giant defends beef**

**Irish senate passes finance bill**  
A crucial finance bill - a condition of an 85bn euro (€72bn) bailout package - is passed by the Republic of Ireland's upper house, the senate.

**Davos 2011**  
Day four, as it happened

Doha talks 'should end this year'

Web Images Videos Maps News Shopping Gmail more Web History Search settings

**Google** egypt Search Instant is on

About 688,000,000 results (0.07 seconds) Advanced search

Everything  
Images  
Videos  
News  
Shopping  
Realtime  
Books  
More

Palo Alto, CA  
Change location

Any time  
Latest  
Past 24 hours  
Past 3 days  
Past week  
Past month  
Past year  
Custom range...

All results  
Sites with images  
Wonder wheel  
Timeline  
More search tools

**Egypt - Wikipedia, the free encyclopedia**  
Egypt officially the Arab Republic of Egypt, is a country mainly in North Africa, with the Sinai Peninsula forming a land bridge in Southwest Asia. ...  
History of ancient Egypt - Religion in Egypt - Cairo - Egyptian language  
en.wikipedia.org/wiki/Egypt - Cached - Similar

**Egypt Travel, Tours, Vacations, Ancient Egypt from Tour Egypt**  
Information for travelers, resources on history, monuments and activities.  
www.touregypt.net/ - Cached - Similar

**Ancient Egypt**  
The British Museum gives information on Egyptian life, gods and goddesses, mummification, rulers, pyramids, temples, time, trade, and writing, ...  
www.ancientegypt.co.uk/ - Cached - Similar

**News for egypt**

**Egypt's Turmoil: The Army's OK with the Protesters, for Now**  
46 minutes ago  
Parts of Egypt's capital city seemed almost normal on Saturday as the embers of Friday's vandalism and carnage cooled. After a night wracked by gunfire and ...  
TIME - 18136 related articles - Shared by 20+  
Arab Executives Predict Regime Change in Egypt  
New York Times - 252 related articles - Shared by 20+  
Obama repeats call for restraint in Egypt  
USA Today - 3254 related articles - Shared by 10+  
Realtime updates for egypt (2024)

**The World Factbook: Egypt - CIA - The World Factbook**  
Jan 13, 2011 ... Features a map and brief descriptions of geography, economy, government, and people.  
https://www.cia.gov/library/publications/the-world.../eg.html - Cached - Similar

Ads  
Related to facts about egypt:  
**Facts About Egypt**  
Get Facts About Egypt  
Find Facts About Egypt  
ask.com  
See your ad here

# Google, Twitter search :-)

{ not realtime, not fresh - or not ranked, not relevant }



syria Search

About 230,000,000 results (0.08 seconds) [Advanced search](#)

## [Syria - Wikipedia, the free encyclopedia](#)

**Syria** officially the Syrian Arab Republic (Arabic: الجمهورية العربية السورية Al-Jumhūriyyah al-'Arabiyyah as-Sūriyyah About this sound ...

[en.wikipedia.org/wiki/Syria](http://en.wikipedia.org/wiki/Syria) - [Cached](#) - [Similar](#)

2011 Syrian uprising    List of cities in Syria  
History of Syria    Adyghe people  
Geography of Syria    Military of Syria  
Bashar al-Assad    Philip the Arab

[More results from wikipedia.org »](#)

## [Syria News - Protests \(2011\)](#)

World news about **Syria**. Breaking news and archival information about the 2011 protests, its people, politics and economy from The New York Times.

[topics.nytimes.com](http://topics.nytimes.com) > [World](#) > [Countries and Territories](#) - [Cached](#) - [Similar](#)

## [Syria - CIA - The World Factbook](#)

Jun 14, 2011 ... Features map and brief descriptions of the geography, people, government, economy, communications, transportation, military and ...

<https://www.cia.gov/library/publications/the-world.../sy.html> - [Cached](#) - [Similar](#)

## [Syria](#)

Facts about the land, people, history, government, political conditions, economy, foreign relations of **Syria**.

[www.state.gov](http://www.state.gov) > ... > [Background Notes](#) - [Cached](#) - [Similar](#)

## [BBC News - Syria country profile](#)

May 21, 2011 ... Provides overview, key facts and events, timelines and leader profiles along with current news.

[www.bbc.co.uk/2/hi/middle\\_east/.../801669.stm](http://www.bbc.co.uk/2/hi/middle_east/.../801669.stm) - [Cached](#) - [Add to iGoogle](#)

[Everything](#)

[Images](#)

[Videos](#)

[News](#)

[Shopping](#)

[Realtime](#)

[More](#)

**Palo Alto, CA**

[Change location](#)

**Any time**

[Latest](#)

[Past 24 hours](#)

[Past 3 days](#)

[Past week](#)

[Past month](#)

[Past year](#)

[Custom range...](#)

**All results**

[Sites with images](#)

[Related searches](#)

[Timeline](#)

[More search tools](#)

[Something different](#)  
[sudan](#)

twitter

#syria

[Home](#) [Profile](#) [Messages](#)



**avinunu** Ali Abunimah

Former [#Israel](#) Mossad chief wants Saudi-backed "Sunni regime" in [#Syria](#) in order to "destabilize" Hizbullah [ynetnews.com/articles/0,734...](http://ynetnews.com/articles/0,734...)

2 minutes ago



**LeShaque** Shakeeb Al-Jabri

Streets, Inc: [#Assad's](#) Speech: Armed Gangs and Germs will Persist as long as there are Living Syrians | <http://qvie.ws/m3tNu7> [#Syria](#) [Read&RT](#)

19 minutes ago



**ZainSyr** zain

About 300 mourners in the Safa cemetery are surrounded by security forces now n [#hama](#) [#syria](#)

26 minutes ago



**calamur** calamur

RT [@joshmull](#): Anyone have a source on Asma Al-Assad (wife of Bashar Al-Assad, president of [#Syria](#)) fleeing to London?

30 minutes ago



**Nervana\_1** NervanaM

The brave sue Lloyds-Roberts undercover in [#Syria](#) & reports from [#Damascus](#) <http://bbc.in/isuUZR>

1 hour ago



**RevolutionSyria** Syrian Revolution

In case you missed it, here is the segment on [#Syria](#) by [#Andersoncooper...](#) <http://fb.me/15iUFhZGU>

1 hour ago



**AJELive** AJELive

UN's Ban Ki-moon urges [#Assad](#) to make credible reforms "without delay" [aie.me/i1CoC11](http://aie.me/i1CoC11) [#Syria](#)

# Topsy search :-)

{ realtime, fresh *and* relevant }

TOPSY

syria

Search

Advanced Search

Search results 1-10 out of 3,246 about syria [Create email Alert](#)

Latest Results

Past 1 Hour 1,050

Past 3 Hour 3,246

Past 1 Day 14K

Past 7 Day 142K

Past 30 Day 570K

All Time 928K

Search

Web

Tweets

Photos

Videos

Experts

Network

Google Plus

Twitter

Sort

Relevance

Date

Language

All Languages

English

中文

## [Assassination of Syrian Kurdish leader a 'dangerous escalation' | Amnesty International USA](#)

[amnestyusa.org/news/news-item/assassination-of-syrian-kurdish-leader-a-%E2%80%98dangerous-escalation](#)

"Assassination of Syrian Kurdish leader a dangerous escalation [http://t.co/cY4QsADN](#) #Syria "



amnesty 2 hours ago [45 more](#)

## [At home with the Assads: Syria's ruthless ruling family | World news | The Guardian](#)

[guardian.co.uk/world/2011/oct/11/assads-syria-ruling-family?newsfeed=true](#)

"At home with the Assads: Syria's ruthless ruling family - The Guardian: The GuardianAt home with the Assads: Syr.. "



acarvin 2 hours ago [13 more](#)

## [Syria: China calls for Bashar al-Assad to reform - Telegraph](#)

[telegraph.co.uk/news/worldnews/middleeast/syria/8...a-China-calls-for-Bashar-al-Assad-to-reform.html](#)

"Syria: China calls for Bashar al-Assad to reform [http://t.co/iOs4O4Og](#) "



telegraphnews 52 minutes ago [10 more](#)



## [11 10 AL Herak, Daraa أوغارت الحراك حوران أبطال المدينة قاموا بعطب دبابة وكسر واحدة ثانية وهم عزل](#)

"AMAZING: Unarmed protesters in Hirak (Daraa) attack two military vehicles and take over one of them | [http://t.co/IIe8i4Lg](#) #Syria "



acarvin 3 hours ago [51 more](#) [share video](#)

## [Syrian opposition council wins recognition from Libya - latimes.com](#)

[latimesblogs.latimes.com/world\\_now/2011/10/syria-libya-opposition.html](#)

"Libya's provisional leaders become the first governmental body to formally recognize the Syrian National Council [http://t.co/szpWxUlr](#) "



latimes 3 hours ago [10 more](#)

## [Syria's opposition must face the regime alone | Fadwa al-Hatem | Comment is free | guardian.co.uk](#)

[guardian.co.uk/commentisfree/2011/oct/11/syria-opposition-assad-national-council?newsfeed=true](#)

"Syria's opposition must face the regime alone - The Guardian #Syria #fb [http://t.co/rjQVCjLw](#) "

{ validation : *real people!* }

# TOPSY

BETA

Search Experts

[Advanced Search](#)

## Experts who mention egypt

Search

[Web](#)

[Photos](#)

[Tweets](#)

**▶ Experts**

 <b>alaa</b>	I painted the air with doko	Pretoria, South Africa	1,714 Mentions
 <b>3arabawy</b>	Socialist Journalist صحفي اشتراكي	Cairo, Egypt	2,967 Mentions
 <b>zeinobia</b>	Egyptian blogger	Egypt	4,143 Mentions
 <b>dailynewsegypt</b>	Egypt's Only Independent Newspaper in English	Egypt	1,504 Mentions
 <b>monaeltahawy</b>	Columnist and public speaker on Arab and Muslim issues	The World	3,304 Mentions
 <b>bennu</b>	Delivering daily breaking news about Ancient Egypt as well as interesting videos, photos and links.	Heliopolis	1,711 Mentions
 <b>youm7</b>	—	—	4,747 Mentions
 <b>esocialists</b>	Center for Socialist Studies مركز الدراسات الاشتراكية	Giza, Egypt	1,041 Mentions
 <b>kimfoxwosu</b>	Radio Journalism Professor at The American University in Cairo/former reporter/host @WOSU	Cairo, Egypt	832 Mentions
 <b>mar3e</b>	Egyptian Labor Blogger / Human rights Activist	Egypt	2,022 Mentions
 <b>fustat</b>	—	ad Dunya	2,450 Mentions
 <b>mideastyouth</b>	Promoting a fierce but respectful dialogue among the	—	511 Mentions

{ validation : *shift* }

underlying *shift*

in *information dissemination*

{ *previously* }

Most intelligence historically was from open sources

For financial, business, brand, publishing, government use...

Previously open sources, public sources, were *published* sources: news in *publications*

{ *previously* }

*Public* conversations were *private information*

Human intelligence - inside information - insider trading

~~{ / shift }~~

*Public* conversations are *public information*

Publicly accessible

{ *public* conversations are *publicly accessible* }

*we can all be*

*in tahrir square*

*{ public conversations are publicly accessible }*

*we can all be*

*in #tahrir square*

# TOPSY

#bahrain

Search Photos

Advanced Search

Search results 1-20 out of 673 photos about #bahrain

Latest Results

- Past 1 Hour 57
- Past 1 Day 673**
- Past 2 Day 1,494
- Past 7 Day 3,099
- Past 30 Day 5,960
- All Time 5,960

Search

- Web
- Tweets
- Photos**
- Videos
- Experts

Sort

- Relevance**
- Date

Language

- All Languages**
- English
- 中文
- 日本語
- 한국어



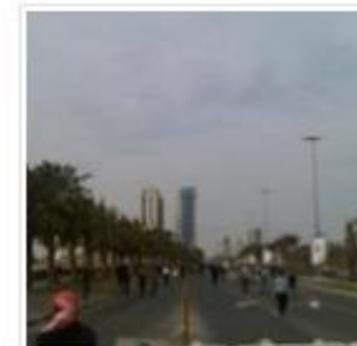
**hussainoo**  
3 hours ago 50



**naveenks**  
5 hours ago 8



**bahraini**  
6 hours ago 9



**acarvin**  
11 hours ago 18



**alahlawy29**  
3 hours ago 77



**perthtones**  
13 hours ago 24



**ahmedzainal**  
13 hours ago 35



**danmcquillan**  
18 hours ago 14



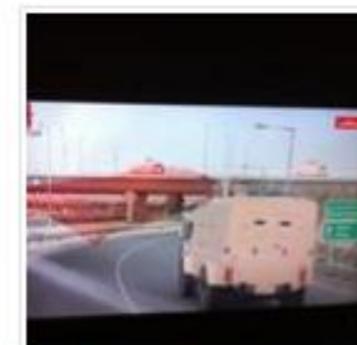
**bahraini**  
9 hours ago 43



**asteris**  
7 hours ago 9



**hussainoo**  
12 hours ago 27



**elizrael**  
2 hours ago 17

*{ public conversations are publicly accessible }*

*we can all have*

reporters

on the ground

{ *public* conversations are *publicly accessible* }

*we can all have*

reporters

on the ground

signal / noise

{ *public* conversations are *publicly accessible* }

*we can all have*

reporters

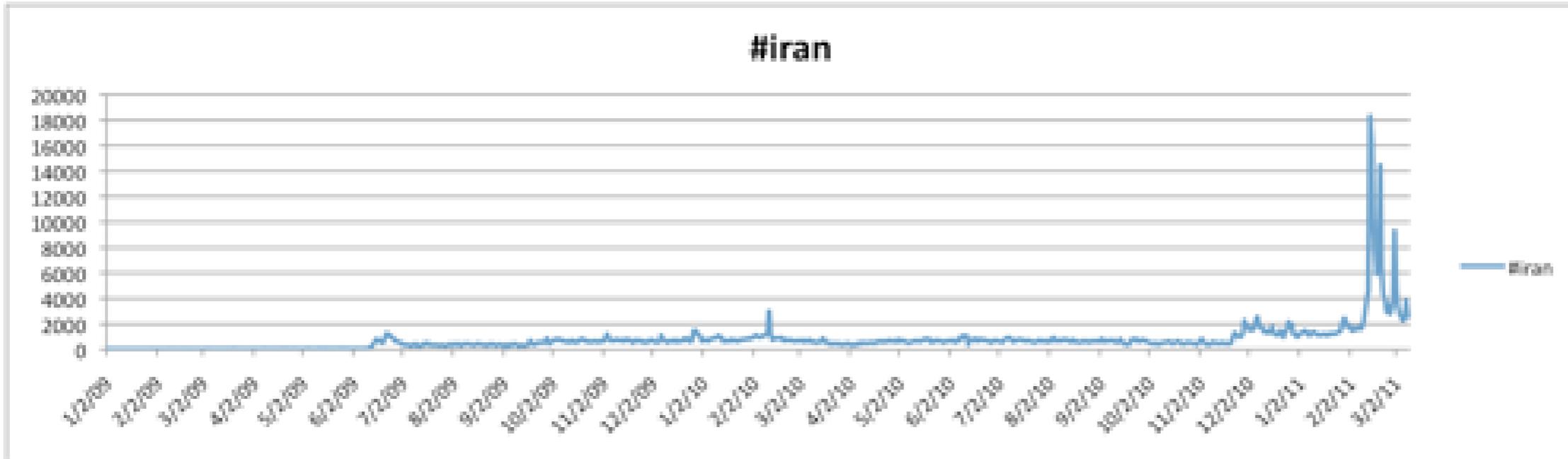
on the ground

*Topsy's platform provides  
editing, curation...*

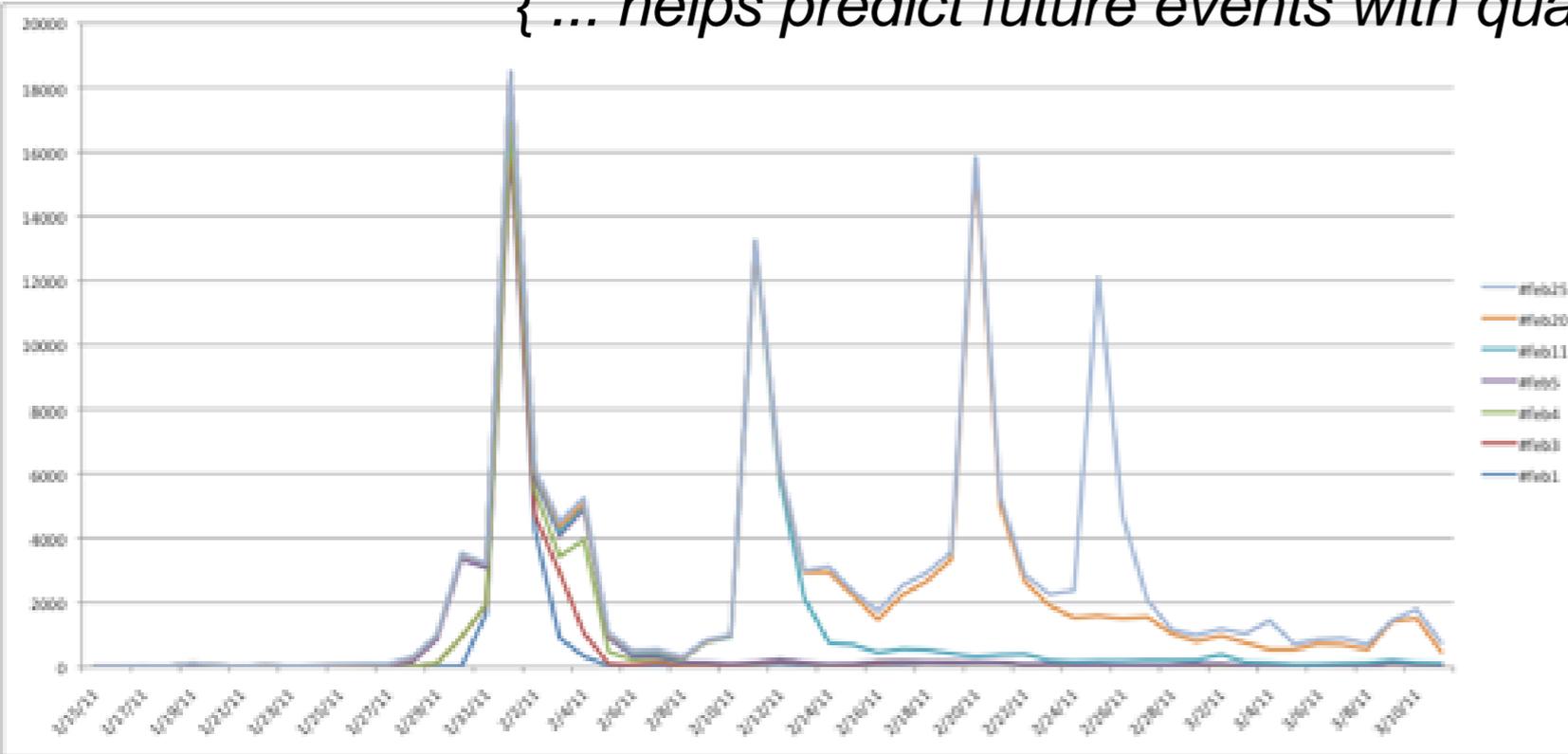
**signal** / noise

**TOPSY** LABS

{ historical context for back-testing... }

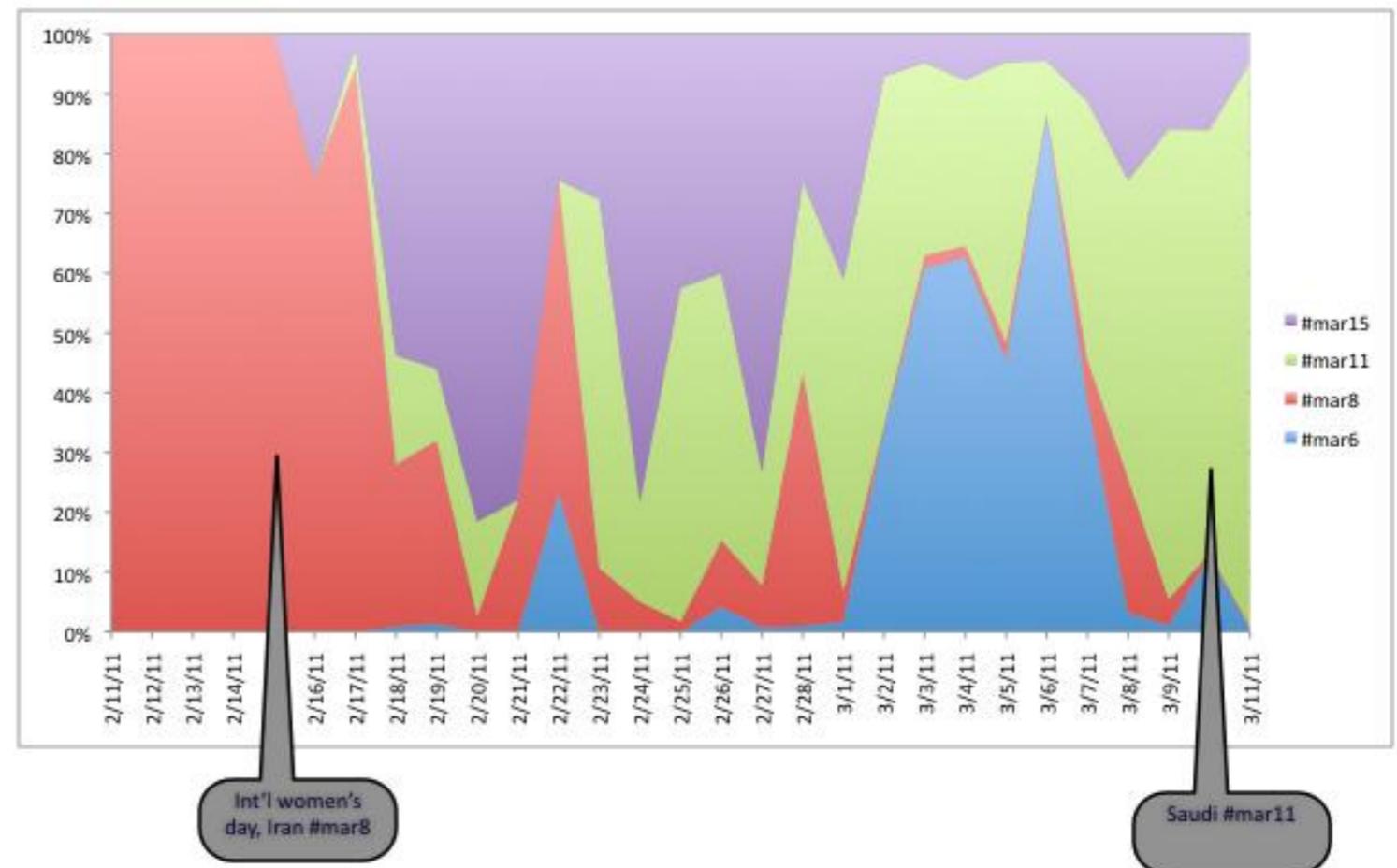


{ ... helps predict future events with quantified confidence }

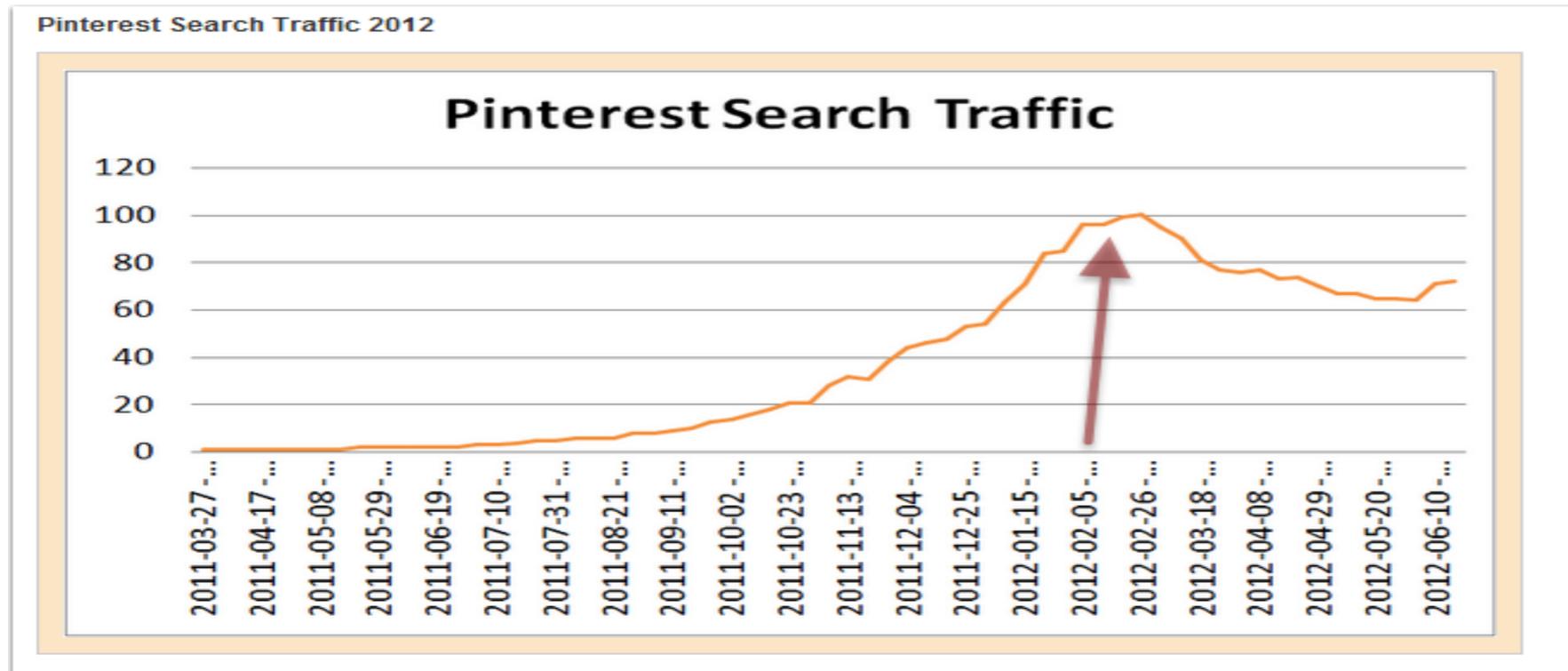


Share Of Voice Over Time  
Mar - Protest Dates

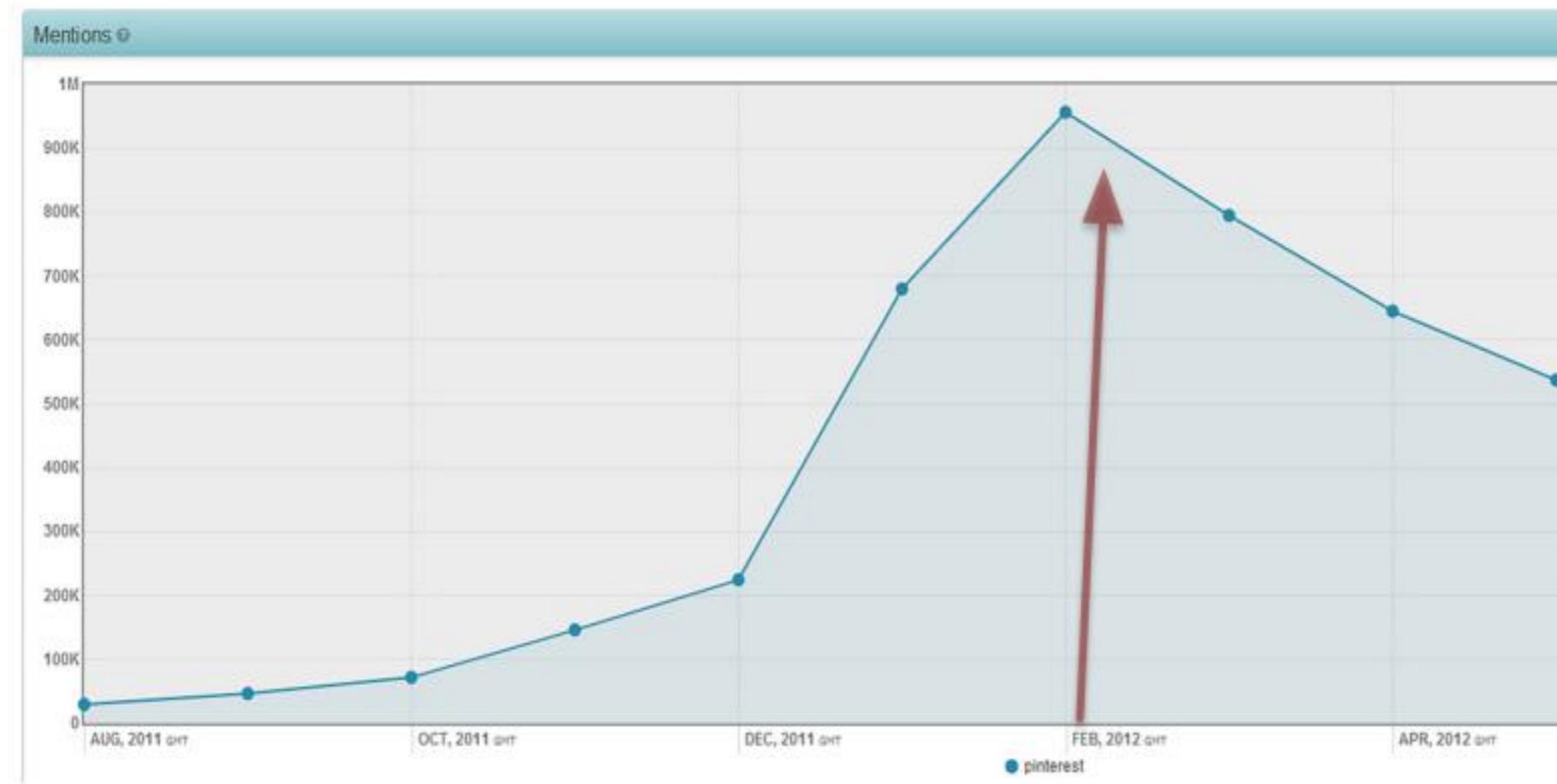
What *evidence* is there of failed planned protests?



# Compared to Google Flu Trends, etc...



What people search for...  
("Pinterest")



Mirrors their public conversations

(source: <http://adaptmedia.clarify-it.com/d/ngpjZj>)

*{ public conversations are publicly accessible }*

*Unlike search records, which are based on private IP addresses, private search query logs...*

*There are many more ways you can analyze public conversations*

Activity ?



Related terms: school sickness, gastrointestinal illness, reusable, ceredigion, laramie boomerang, respiratory syncytial virus, siu lam, reusable

Top Posts ?

More ...

POST	MENTIONS
<p><b>@healthranger HealthRanger</b> Public challenge to #vaccine zealots: Inject yourselves with all shots you say children should get! <a href="http://t.co/lkvpmsJv">http://t.co/lkvpmsJv</a> #health... Mar 24, 2012 12:34 AM UTC</p>	262
<p><b>@nancyshute Nancy Shute</b> RT @aphnews: Reusable grocery bag fingered in norovirus outbreak <a href="http://t.co/9qYFoVJF">http://t.co/9qYFoVJF</a> May 10, 2012 8:30 PM UTC</p>	22
<p><b>@bbcpallab Pallab Ghosh</b> Food Agency found three-quarters of British-grown oysters it tested contained the winter vomiting bug, norovirus. <a href="http://t.co/MoqV8m4k">http://t.co/MoqV8m4k</a> Nov 29, 2011 1:27 PM UTC</p>	235
<p><b>@lizszabo Liz Szabo</b> First, 1 case of measles in Indianapolis at Super Bowl. Now, 13 cases throughout Indiana. <a href="http://t.co/EpCvkTRj">http://t.co/EpCvkTRj</a> #vaccine Feb 15, 2012 3:59 AM UTC</p>	85

Top Links ?

More ...

TITLE	MENTIONS
Barfipelago: Using Twitter to Fight Virus Outbreak   Wired Science... Feb 22, 2012 4:00 AM UTC	434
Casi 500 personas de dos cruceros se contagiaron de Norovirus... Feb 5, 2012 9:24 PM UTC	206
Oregon norovirus traced to reusable grocery bag May 10, 2012 4:51 PM UTC	141
Norovirus Outbreak Caused by Snacks in a Grocery Bag May 9, 2012 4:55 PM UTC	114
Nearly 500 on 2 Princess cruise ships stricken by Norovirus - ... Feb 5, 2012 7:47 PM UTC	679
Virus strikes cruise ship out of New Orleans Feb 5, 2012 11:44 PM UTC	92
Outbreak sickens dozens at New Jersey university - CNN.com Feb 9, 2012 12:40 PM UTC	544
Más personas afectadas por norovirus en crucero de EEUU Mar 12, 2012 3:33 PM UTC	39

Top Media ?

More ...



Mar 5, 2012 12:40 AM UTC



Feb 11, 2012 11:07 AM UTC



Jan 24, 2012 3:34 AM UTC



Feb 9, 2012 11:25 AM UTC

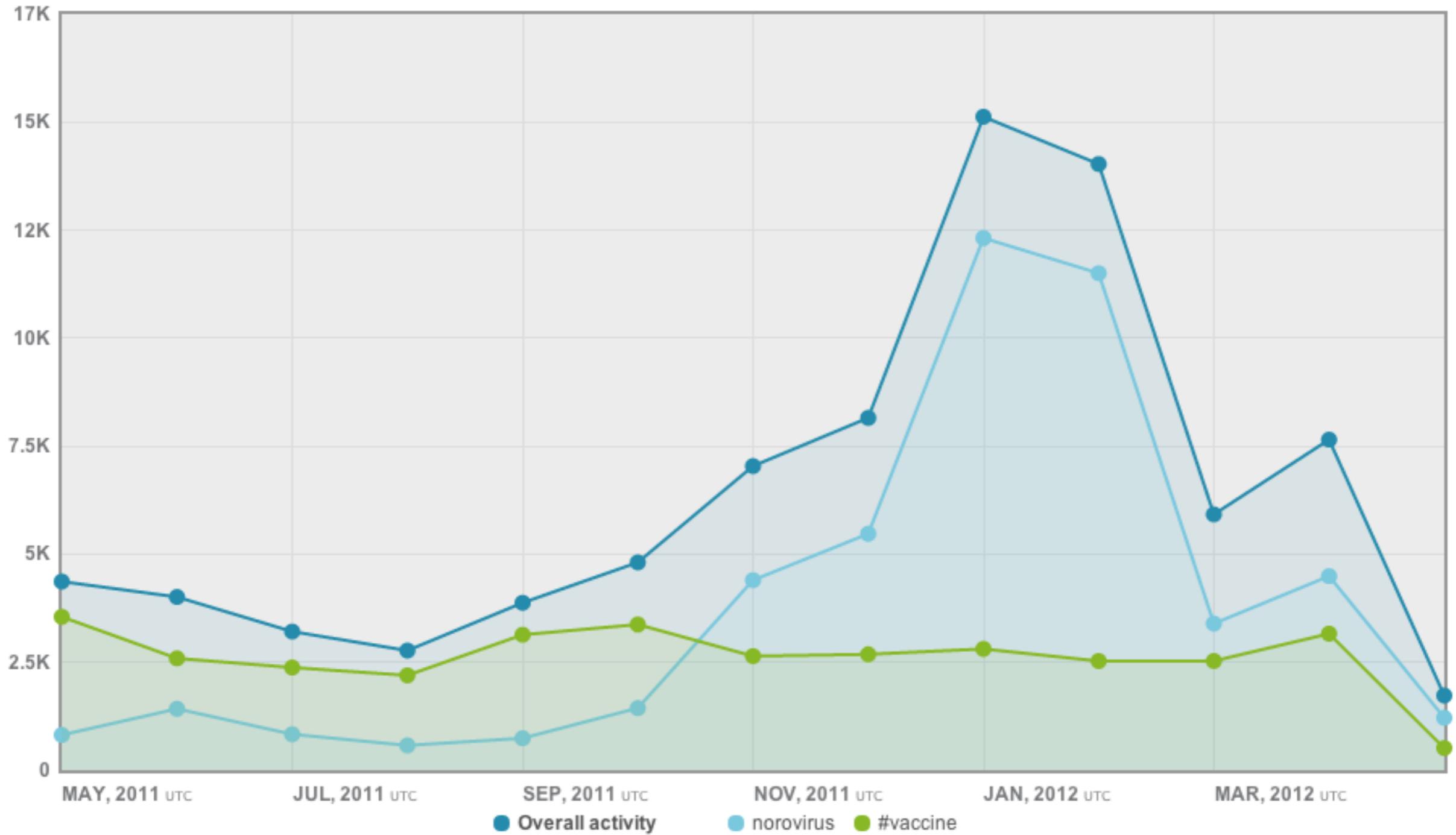


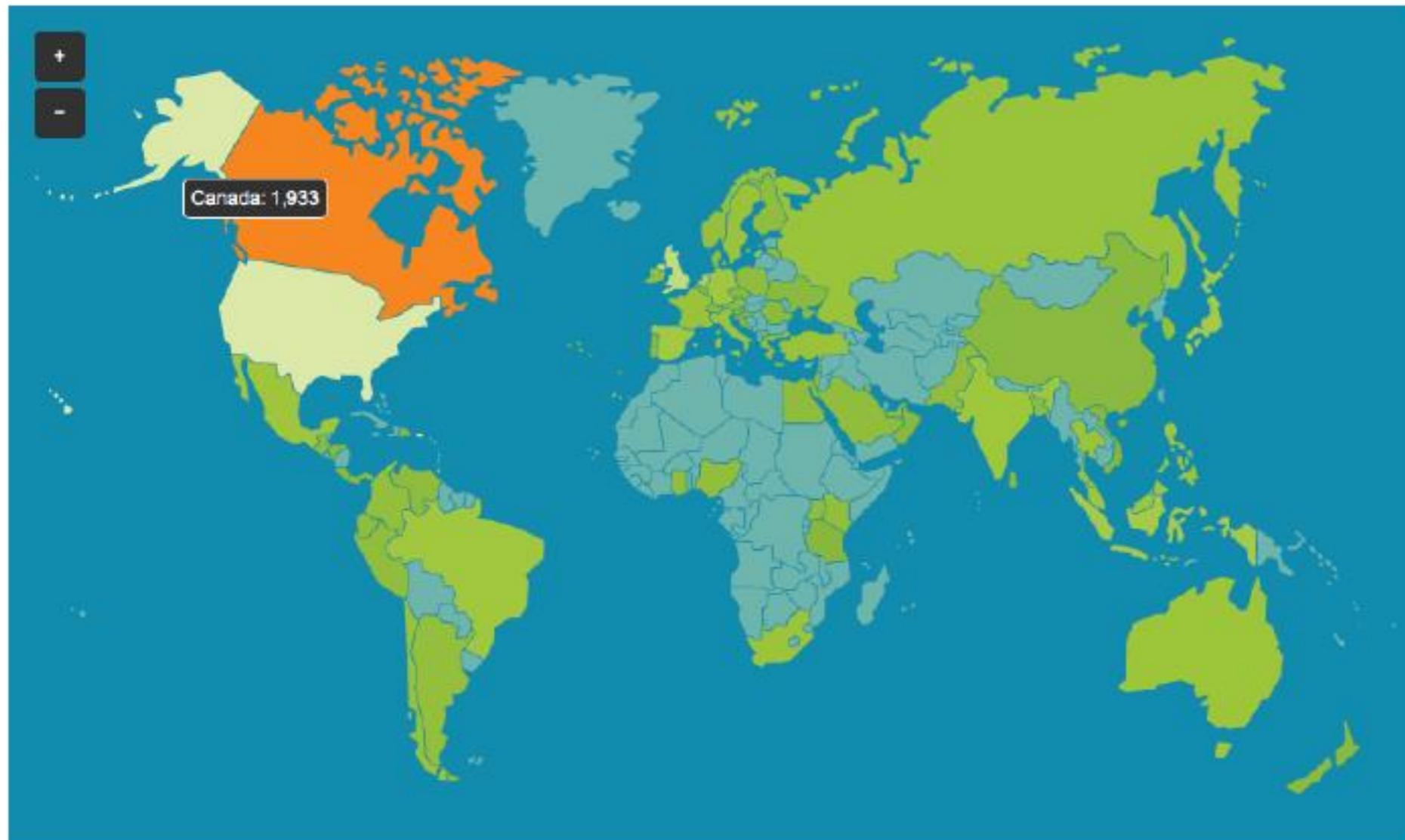
Jan 18, 2012 12:13 AM UTC

Track activity:  
Mentions  
Exposure  
Discover:  
Related new terms

Monitor conversations:  
Posts  
Articles shared  
Who is saying what?

See shared media ranked by influence



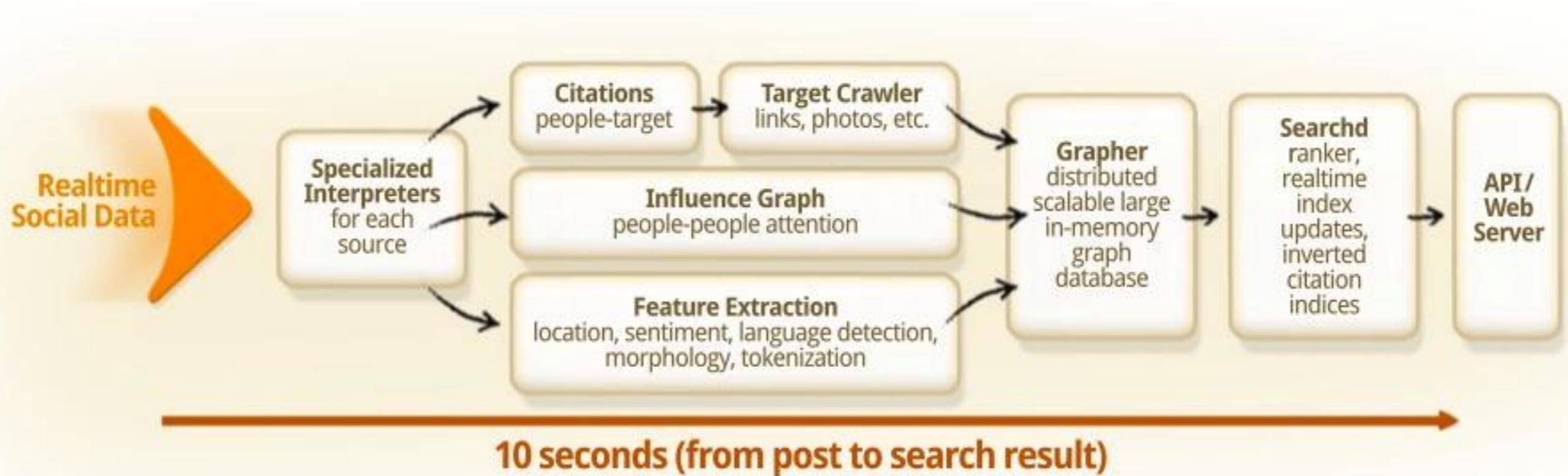


Map activity for terms:  
 Raw mentions  
 Share of all social mentions

Activity		Top Posts	
Top posts			
	<b>@barfblog Doug Powell</b> Norovirus spread through reusable grocery bag #foodsafety <a href="http://t.co/KR4dFgZw">http://t.co/KR4dFgZw</a> May 9, 2012 1:38 PM UTC	Mentions	<b>10</b>
	<b>@scatteredmom Karen Humphrey</b> RT @ctvnews: Reusable grocery bag blamed for helping spread nasty norovirus outbreak <a href="http://t.co/bUc2Vg7h">http://t.co/bUc2Vg7h</a> #Oregon May 10, 2012 3:47 PM UTC	Mentions	<b>1</b>
	<b>@tim_bousquet Tim Bousquet</b> I see the Princess Norovirus is pulling into Halifax Harbour. Apr 12, 2012 12:14 PM UTC	Mentions	<b>5</b>

See conversations from particular locations

{ tech built in-house, running on 2000 servers }



**Extensible to all types of social content** (Twitter, Facebook, blogs, etc.)  
Fast Indexing - pipeline architecture capable of indexing 1M documents per second

Live Ranking - new citations impact search results/ranking in realtime

Native multi-language support

*social media as*

human

intelligence

*Rishab Aiyer Ghosh Co-Founder & Chief Scientist: rishab@topsy.com*