

“HOW I LEARNED TO STOP WORRYING AND LOVE THE INTERWEBS”

ANALYSIS OF SELF-REPORTED HEALTH OUTCOMES DATA FROM WEB BASED MEDIA SOURCES



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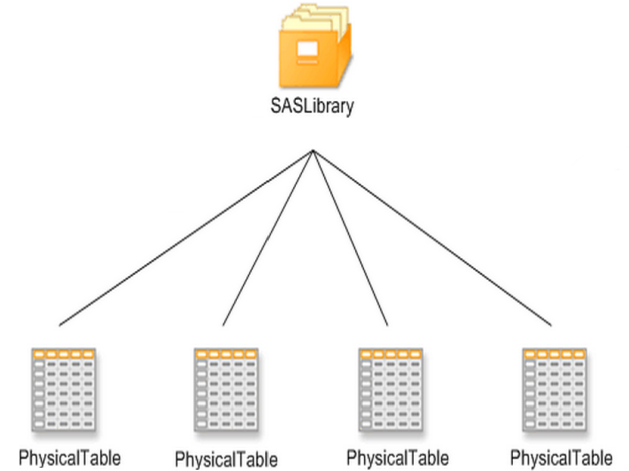
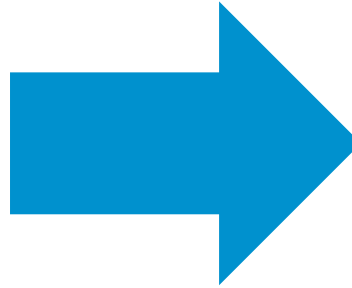
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PROMS PATIENT REPORTED OUTCOMES MEASURES

- Tremendous interest in accessing and using unstructured data to enhance data driven decision making related to patient safety, quality and outcomes.
- Interest not limited to internal/formal data



OBJECTIVE FROM INFINITY TO SAS TABLES



EXAMPLE

“TWITTER DOTH PROTEST TOO MUCH, METHINKS”

MARCH 4, 2013

Twitter Reaction to Events Often at Odds with Overall Public Opinion

By Amy Mitchell and Paul Hitlin



THE PEW RESEARCH CENTER
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TWITTER RECENTLY PUBLISHED RESEARCH

Drug Safety

Digital Drug Safety Surveillance: Monitoring Pharmaceutical Products in Twitter

Published online: 29 April 2014



"The resulting dataset contained a high volume of irrelevant information, but provided a useful starting point."

"We did not seek to verify each individual report as truthful, but rather to identify overall associations between Twitter and official spontaneous report data as a preliminary proof of concept."

CONSUMERS

...IT'S SILLY, BUT I BELIEVE.



Social Media: Study Shows the Most Trusted Product Reviewer is YOU

Posted by [Ken Krause](#) on Tue, Jan 29, 2013

According to a September 2012 study of consumers who had recently made electronic purchases, those surveyed said [they paid more attention to customer reviews](#) than professional critics in every category.

<http://www.techimage.com>



GOOGLE TREND ...RUN AWAY, RUN AWAY, RUN AWAY



Trends

Web Search Interest: "vagus nerve stimulation", Worldwide, 2004 - present.



Explore trends

Hot searches

Search terms

"vagus nerve sti

+ Add term

Other comparisons

Limit to

Web Search

Worldwide

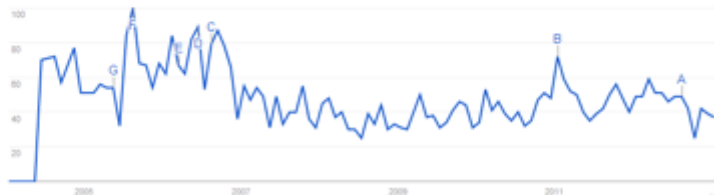
2004 - present

All Categories

Interest over time

The number 100 represents the peak search volume

☒ News headlines ☐ Forecast



Embed

Regional interest



0 100

Region | City

View change over time

Embed

Related terms

Top Rising



Embed



Trends

Web Search Interest: gastric band, Worldwide, 2004 - present.



Explore trends

Hot searches

Search terms

gastric band

+ Add term

Other comparisons

Limit to

Web Search

Worldwide

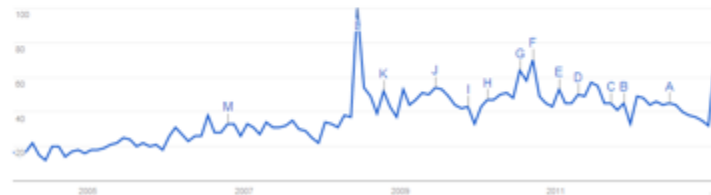
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Related terms

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Embed



OBJECTIVE SAS TEXT ANALYTICS AND DEVICE SAFETY MONITORING

- 1) Identify websites where individuals are posting publicly available comments on their experience with the device of interest
- 2) Collect, processes and analyze comments
 - a. Identify documents that;
 - i. Refer specifically to the device of interest
 - ii. Comments that are part of a thread related to the device of interest
 - iii. Contain terms identified as known “Adverse Events” (AEs)
 1. AE terms consistent with the product label
 2. Specific AE terms not on the product label
 3. Terms that identify other drugs, substances or devices
 - b. Perform document author “Veracity/Integrity analysis
- 3) Identify relevant scientific literature PubMed abstracts
- 4) Identify relevant reports as collected on the MAUDE database



DATA ON LINE DATA SOURCES

The HealthyPlace website features a clean layout with navigation tabs for Home, Communities, About Us, and more. A prominent video player displays a clip by Becky Oberg titled 'More than Borderline'. Below the video, there's a section for 'Flashbacks and Intrusive Memories'. The site also includes a 'Mental Health Newsletter' sign-up and social media links.

This screenshot shows a PubMed search results page. The search criteria are 'Vagus Nerve Stimulation' and 'Cardiac Vagal Tone'. The results list several articles, with the first one being 'Effect of vagus nerve stimulation on cardiac vagal tone in the dog' by Langley et al. The page includes filters for publication type, date, and relevance.

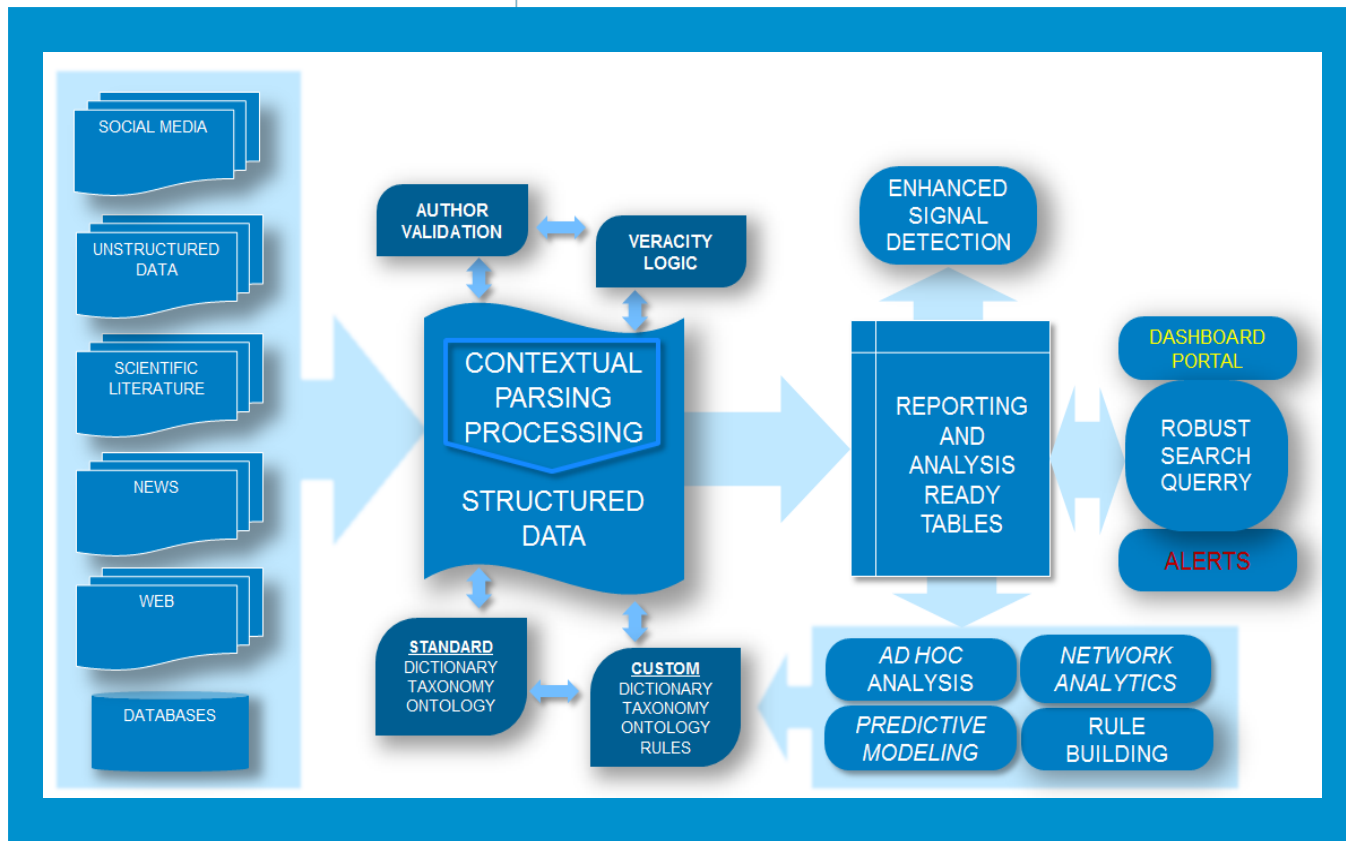
The Epilepsy Foundation website features a large banner for the 'Stronger Together' campaign. It includes statistics such as '2+ Million Americans have epilepsy' and '1 in 26 Americans will develop epilepsy at some point in their lifetime'. The site also has sections for 'About Epilepsy', 'Living With Epilepsy', and 'Resources'.

The Epilepsy.com website has a banner for a weekly e-newsletter. It includes a search bar, navigation tabs, and a 'Community' section with a 'Together We Are Stronger' message. The site also features a 'Deficiency of Selenium and Zinc as a Potential Factor in Drug-resistant Epilepsy' article.

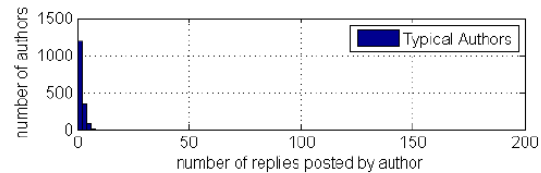
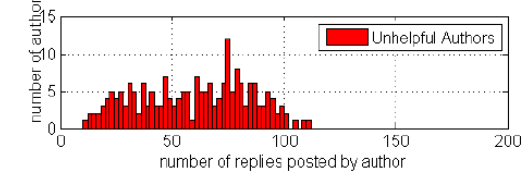
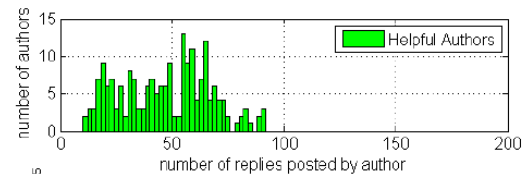
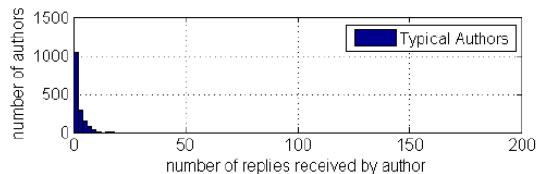
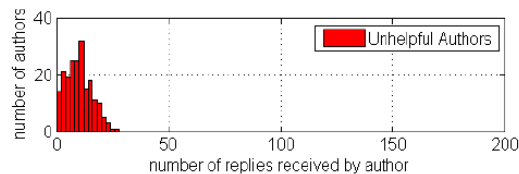
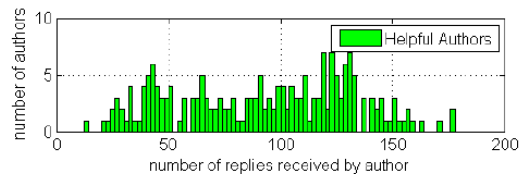
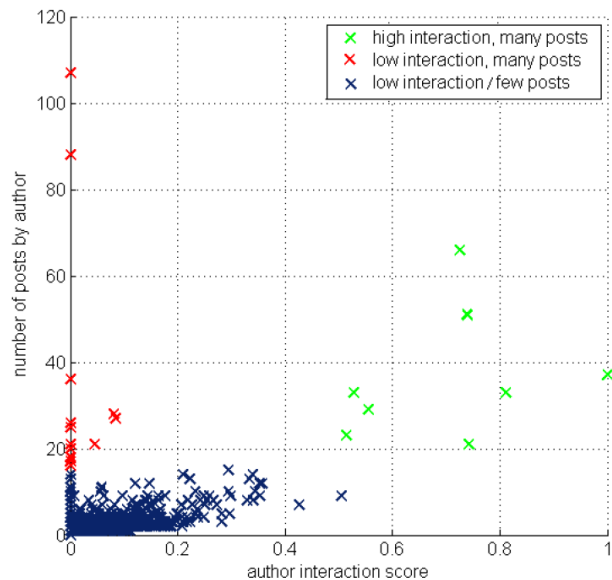
This screenshot shows the FDA MAUDE database search results. The search criteria are 'MAUDE - Manufacturer and User Facility Device Experience'. The results list several devices, with the first one being 'MAUDE - Manufacturer and User Facility Device Experience' by Medtronic.

The VNS Message Board website features a banner for 'Welcome to the VNS Message Board!'. It includes a search bar, navigation tabs, and a 'VNS Discussions' section with a 'General VNS Discussion' thread. The site also has a 'VNS Studies/Reports/Links' section.

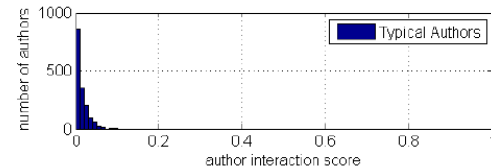
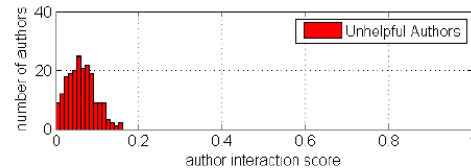
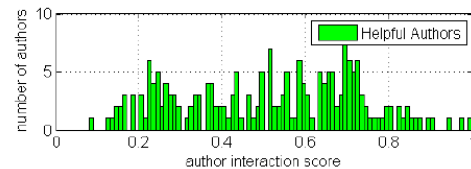
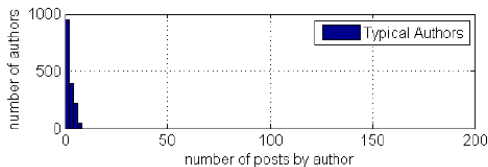
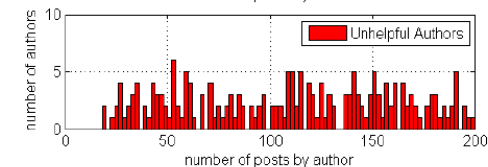
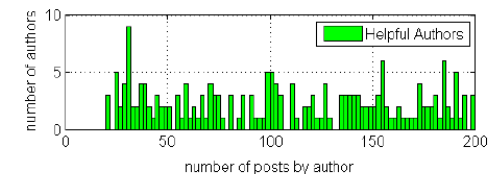
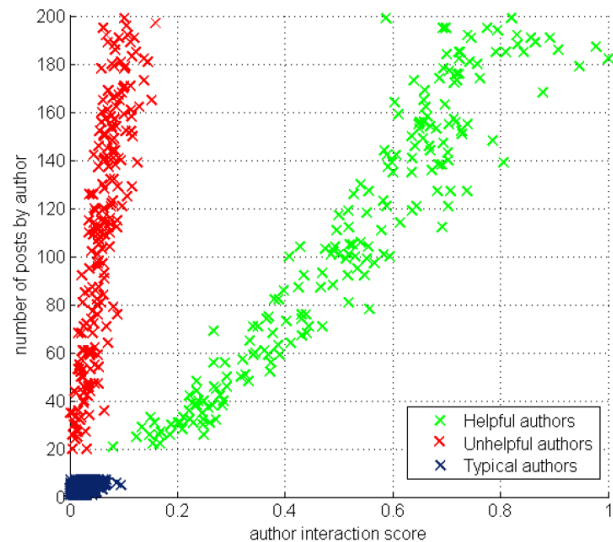




SEGMENTATION COMMENT CLUSTERING

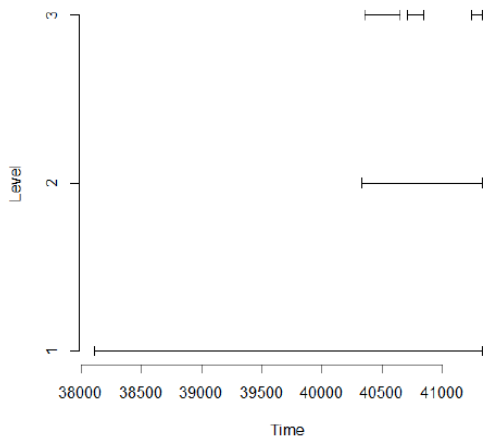


SEGMENTATION SUBJECT CLUSTERING

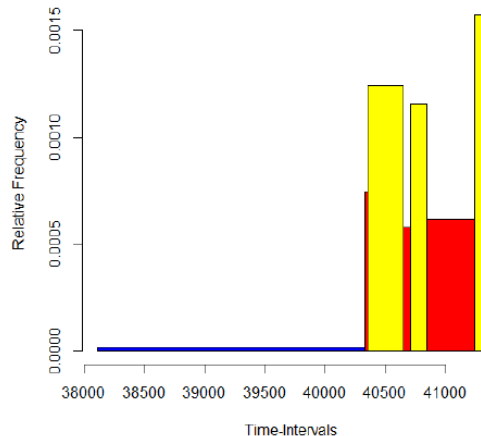


NEW APPROACHES BURST DETECTION

Hierarchical Structure of Bursts For Topic 6



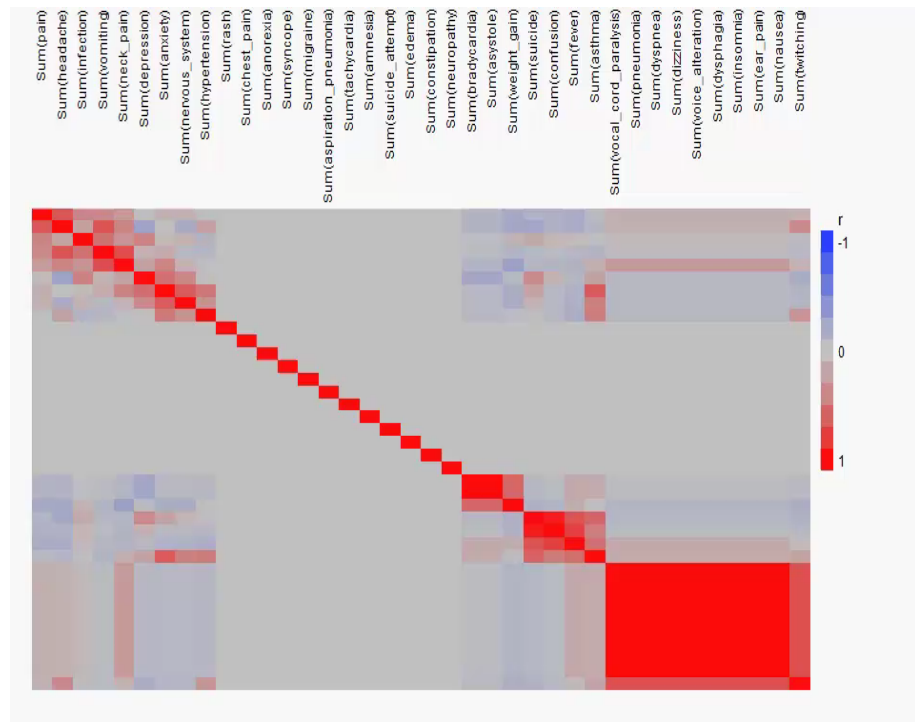
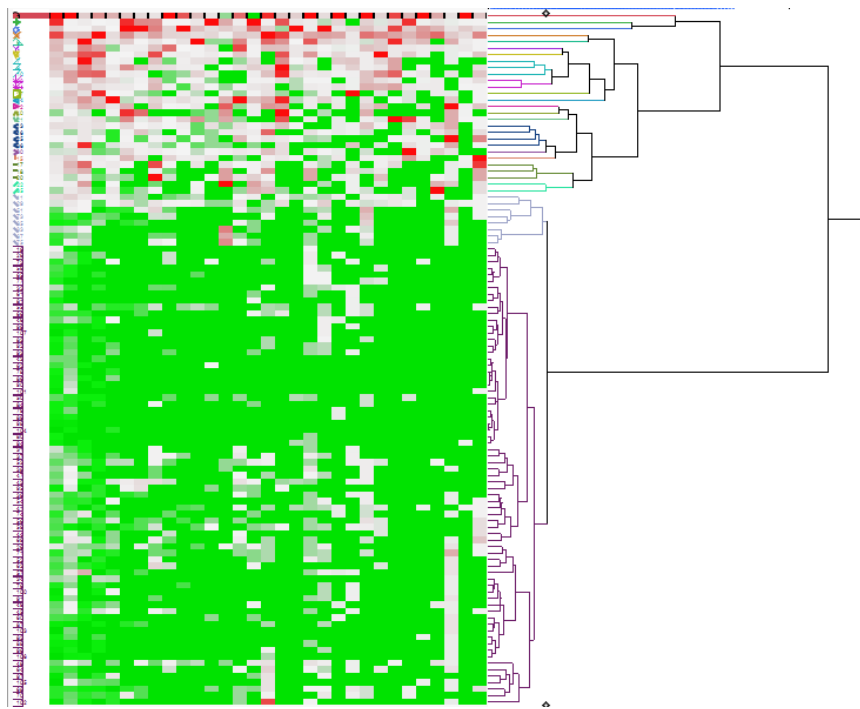
Distribution of posts over time intervals



(a) Normalized frequency by class width for topic 6

Time intervals	Frequency normalized by class width
38111, 40329	0.0077
40329, 40352	0.3913
40352, 40646	0.6531
40646, 40702	0.3036
40702, 40842	0.6071
40842, 41239	0.3224
41239, 41331	0.8261

VISUALIZATION ...THIS GOES TO 11



Project Description

FDA is responsible for communicating about the risks and benefits inherent in all the products it regulates.

- The rise of social media on the Internet, including especially user-generated content such as blogs, forums, message boards, wikis and podcasts, has created new opportunities to interface with the public with respect to emerging hazard situations involving FDA-regulated products.
- The increasing presence of social media promises new capabilities to monitor the effectiveness of FDA's ongoing risk communication efforts. FDA is in need of both historical and "real-time" monitoring and analyses of a representative sample of social media web sites.

The objective of this requirement is to provide FDA with the resources needed to use social media to inform and evaluate FDA risk communications. Specifically, the objective is to provide FDA with:

- Analyses of social media that provide baselines on consumer sentiment prior to FDA communication and that depict changes in social media buzz following FDA communications
- In-house capability for social media monitoring; and Surveillance through social media listening for early detection of adverse events and food-borne illness.
- The scope of work includes social media buzz reports, a social media dashboard, and quarterly surveillance reports related to specific product classes.



“While the individual man is an insoluble puzzle, in the aggregate he becomes a mathematical certainty”

Sherlock Holmes

