Innovations in Health Care Management and Patient Centered Care

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If they give you lined paper, write the other way.

William Carlos Williams
American poet and pediatrician
The New Science of Sentiment Analysis

“When dealing with people, remember that you are not dealing with creatures of logic, but creatures of emotion.”

Dale Carnegie

“I’ve learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel.”

Maya Angelou
August 24, 2009

Mining the Web for Feelings, Not Facts

By ALEX WRIGHT

Computers may be good at crunching numbers, but can they crunch feelings?

The rise of blogs and social networks has fueled a bull market in personal opinion: reviews, ratings, recommendations and other forms of online expression. For computer scientists, this fast-growing mountain of data is opening a tantalizing window onto the collective consciousness of Internet users.

An emerging field known as sentiment analysis is taking shape around one of the computer world's unexplored frontiers: translating the vagaries of human emotion into hard data.

This is more than just an interesting programming exercise. For many businesses, online opinion has turned into a kind of virtual currency that can make or break a product in the marketplace.

Yet many companies struggle to make sense of the caterwaul of complaints and compliments that now swirl around their products online. As sentiment analysis tools begin to take shape, they could not only help businesses improve their bottom lines, but also eventually transform the experience of searching for information online.
Industries Using Sentiment Analysis

Retail

Hospitality

Financial

Restaurant

Airline

Image Source: Wikimedia
Uniqueness of Healthcare Sentiment

- Patient satisfaction surveys are largest and most meaningful database of human emotion regarding healthcare
- Much more than just room, food and products - about traumatic experiences, if not life and death
- Stronger and deeper emotions than non-healthcare - what could be more personal?
- More complex human interactions - patients, doctors, nurses, technicians
- More complex interactions with technology
- Degree of sentiment may be more meaningful and actionable indicator than traditional satisfaction ratings
Nurse Communication

Behavioral Rating: Always communicated well

Attitudinal Rating: Very Good

Comment Classification: Positive

Verbatim Comment #1: I never had more than a moments wait for a nurse after a call. Also, nurses were very organized and efficient.

Verbatim Comment #2: Stacie, Kathy & Melissa stood out above the rest - very helpful, patient and kind. Great info when I needed it; great sense of humor from each; punctual - really made me feel comfortable during an uncomfortable recovery.
Sentiment Analysis as the Solution

- Provides insights by converting large volumes of unstructured data (comments) into structured data for analysis
- Based on “Natural Language Processing” software
- Assigns comments to meaningful categories/themes
- Scores comments based on emotional strength from -5 to +5
- Benchmarks against national and regional norms
- Tracks sentiment trends over time
Comment Sentiment and HCAHPS Overall

![Bar graph showing the sentiment score against HCAHPS Overall rating (0 to 10). The sentiment score ranges from -1.5 to 1.5. The higher the HCAHPS score, the higher the sentiment score.](image)
Comment Sentiment and HCAHPS LTR

![Bar chart with sentiment scores for HCAHPS Likelihood to Recommend]

- Never: -0.5
- Sometimes: 0
- Usually: 0.5
- Always: 1

Sentiment Score vs. HCAHPS Likelihood to Recommend
PATIENT PERSPECTIVES: Executive Summary
Comment Categorization and Sentiment Analysis
General Hospital (Inpatient) - Monthly Report
Survey Received Date Range - July 2011 through September 2011

Sentiment Trend by Month

Sentiment Score Distribution by Category

- People
- Process
- Place
- Special Concerns

Legend:
- Very Negative (< -2.5)
- Negative (-2.5 to -0.5)
- Neutral (-0.5 to 0.5)
- Positive (0.5 to 2.5)
- Very Positive (> 2.5)
People who have strong positive or negative sentiments are much more likely to express those feelings to others and influence their perceptions.

Degree of sentiment matters and traditional ranks don’t fully capture that distinction - always or very good rating doesn’t necessarily mean strong sentiment.

Comments drive the scores rather than vice versa.

Traditional satisfaction scores will continue to be the driving force for evaluation/reimbursement - sentiment analysis is a complementary perspective that can drive new insights and competitive advantage.
Family Member Communication
Family Member Communication

- Communication of current status of patient to designated family members via text messages
- Communication by nurse or unit coordinator through stock messages or custom messages
- Messages can be received in English, Spanish or any other language
- Patient privacy compliant
- Collection of feedback from family members about value of communications and likelihood to recommend the hospital
Send Message to Patient’s Family Members

REBECCA JARVIS
Department / Unit: Surgery (OR)

Stock Messages

- Surgery is in progress. Your (Relationship Name) is doing well.
- Your (Relationship Name) is awake and is in good spirits.
- Your (Relationship Name) is resting comfortably.
- Please come to the patient’s room.
- Your (Relationship Name) will be ready to be discharged in 2 hours.
- Your (Relationship Name) is ready to be discharged. Please call.

Send Message

- Surgery is in progress. Your (Relationship Name) is doing well.
- Send To: Only the Primary Patient Contact
- Your PIN: 

Send Message

OUTGOING MESSAGES

John Jarvis
Welcome to FamilyTouch at Memorial Hospital. Please reply with your 4 digit verification code. (4:25 PM)

John Jarvis
Surgery is in progress. Your Wife is doing well. (4:25 PM)

Patient Contacts

- John Jarvis (Primary)
  - Husband / English
- María Sanchez
  - Mother / Spanish
- Richard Jarvis
  - Son / English
Welcome to FamilyTouch at Memorial Hospital. Please reply with your 4 digit verification code. (4:25 PM)

Your Wife is in progress. Your Wife is doing well. (4:25 PM)

Your Wife will be ready to be discharged in 2 hours. (4:31 PM)

2450

Bienvenido a FamilyTouch en Memorial Hospital. Por favor, responda con su código de 4 dígitos de verificación. (4:36 PM)

La cirugía está en curso. Su Hijah está bien. (4:36 PM)

Please remind Your Wife to take the medications according to the discharge instructions. (4:33 PM)

1541
Benefits of Communication to Family

- Lessening of family members’ anxiety regarding loved one’s current status
- Improved family member satisfaction and ultimately patient satisfaction
- Increased patient and family member loyalty to the hospital
- Potential to reduce length of stay and readmission rate and increase patient compliance
- Lowering of communication burden of nurses and doctors regarding routine status updates
Family Member Comments

- "It gave us comfort knowing we would be getting updates. Loved it!" (wife of patient)

- "A wonderful service. Very helpful to someone waiting in the waiting room." (wife)

- "I think it's a quality service. It gives us response from the medical procedure and more interaction with the medical associates." (son)

- "What a great idea, especially for those of us who are out of town and are in need of that info. Excellent idea." (daughter)

- "It was a great help during a stressful time." (daughter)
Shared Medical Appointments
What is a Shared Medical Appointment?

- 90 minute appointment with 8 to 14 people
- Doctor, nurse/MA, behaviorist/health coach, documenter as the core team
- Follow-up appointments, physicals or initial appointments
- Homogeneous or heterogeneous or mixed
- Primary or specialty care
- Privacy addressed
- Pioneers – Harvard Vanguard, Cleveland Clinic, Kaiser, Dartmouth, VA, UVA
What are the Benefits of SMAs?

**Patients**
- More time with the physician
- More timely assessment to care
- Benefit of interaction with others
- Increased education about conditions
- Greater engagement and satisfaction

**Providers**
- More time with patients
- Increased productivity/reduced backlog
- Decreased repetition and burnout
- Improved patient compliance
- Documentation done end of visit
Typical Patient Comments

- I don’t feel so alone.
- The doctor didn’t have to rush to the next patient. I felt I was listened to.
- It gave me the time to remember my questions.
- I particularly liked the input from other patients.
- I appreciate the improved relationship with my physician and nurse.

Source: Schmucker, D., Group Medical Appointments, 2006
Typical Physician Comments

- The patients love it! They seem to enjoy sharing and really help each other.

- I enjoyed seeing patients more.

- I have learned more about my patients in one GMA than in all of the prior interactions I have had with them in individual visits.

- I was better able to handled complicated patients.

- I love doing groups. I was ready to quit medicine because of the tread-mill I felt like I was on until I began doing groups. I now feel like I can practice the medicine I envisioned in my training.

Source: Schmucker, D., Group Medical Appointments, 2006
Recent Introduction – UCSD:

- Where Launched
  - HIV/AIDS Clinic
  - Diabetes
  - Hepatology

- Provider View
  
  It's been really great watching patients be a source of strength for other patients, especially those who are non-adherent. It's the camaraderie of, "I've been in your shoes and felt that way. I've had the same trouble, and here's how I got through it.” - Amy Sitapati, MD

- Facilitator View

  I wasn't too sure SMAs were such a good idea, but since being a part of it I am very impressed. My whole mindset is changed. I think it's great, and the patients love it. - Suzanne Lohnes, RN
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