

# Business Analytics and Data Driven Decision Making

## Session#10: Lecture#19: Text Analytics: Domain-Specific Classifiers

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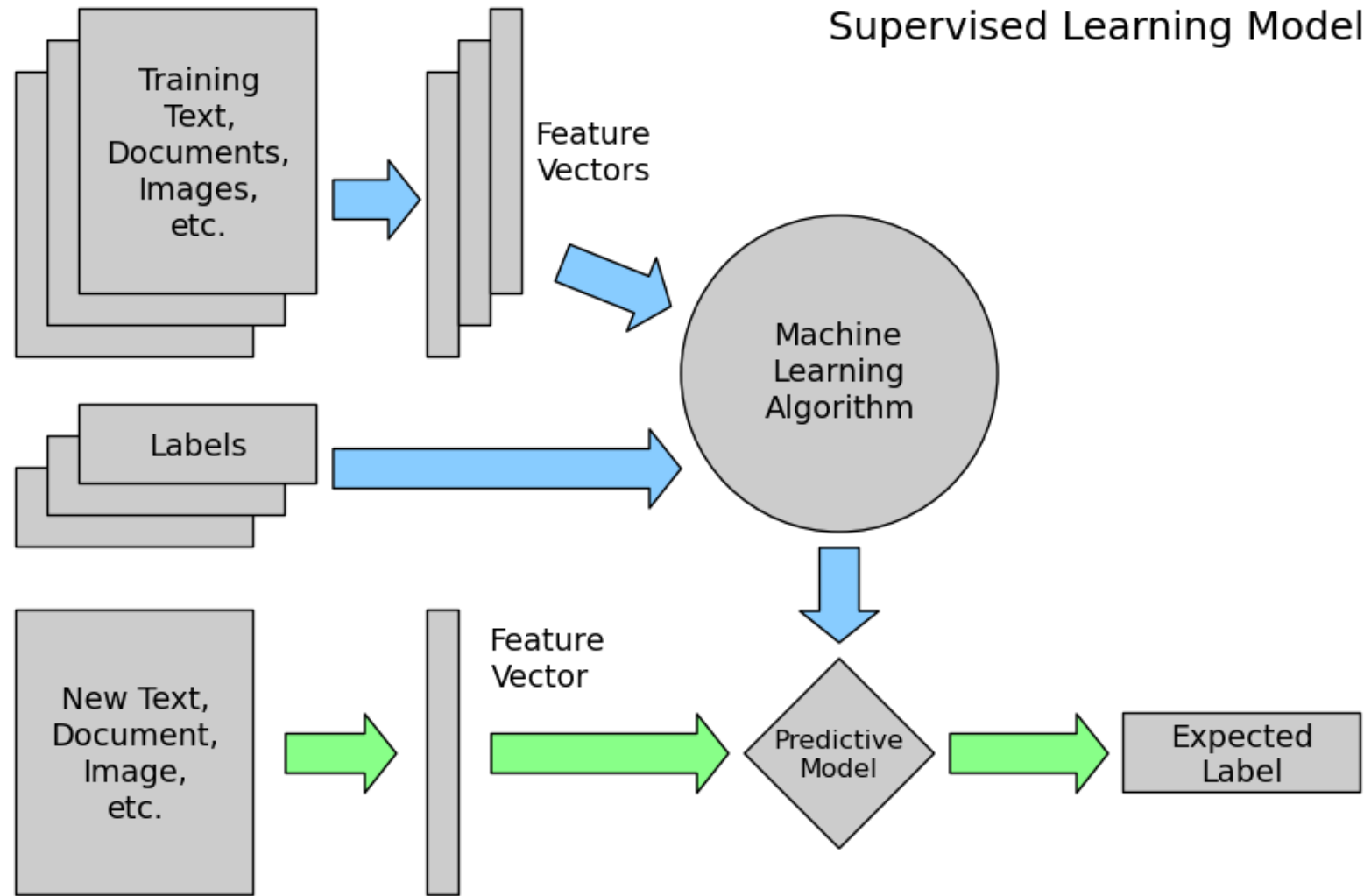
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# Supervised Learning



# iPhone: tweets: Topsy

The screenshot shows the Topsy search interface for the query 'iphone'. At the top, the Topsy logo is on the left, followed by a search bar containing 'iphone', a search icon, and a dropdown menu set to 'Sort by relevance'. Below the search bar, there are three summary boxes: 'Latest Results' on the left with a list of time ranges (Past 1 Hour: 31K, Past 1 Day: 563K, Past 7 Days: 4.5M, Past 30 Days: 23M, All Time, Specific Range); 'Past 1 Hour' in the middle showing '31,283 TWEETS' and a 'Topsy Sentiment Score: 60'; and 'Tweets Over Past 30 Days' on the right with a line graph and a link to 'View trends on Topsy Analytics'. The main content area displays a list of tweets. The first tweet is from SEAN KINGSTON (@seankingston) about Gold Lux iPhone 6. The second is also from SEAN KINGSTON (@seankingston) about Gold iPhone 6 Plus. The third is from TechCrunch (@techcrunch) about the iPhone 6 Plus for gamers. The fourth is from GregGutfeld (@greggutfeld) about Windows 10. The fifth is from MattG124 (@mattg124) about iPhone 6 bending. The sixth is from Wassup Solo (@solodahsystem) comparing iPhone 6 to Note 4. The seventh is from CHRIS VOSS (@chrisvoss) about Samsung Galaxy S5. On the left side, there are filters for 'Everything', 'Links', 'Tweets', 'Photos', 'Videos', and 'Influencers'. Below that, there are filters for 'All Languages', with 'English' selected and other options like Chinese, Japanese, Korean, Russian, German, Spanish, French, Portuguese, and Turkish.

# Model #1: Emotions

## Six Basic Emotions

Source: <http://www.beinghuman.org/article/basic-emotions>

## Introduction

Basic emotions regulate us in response to environmental challenges and opportunities. While there is no definitive list of basic emotions, one popular one (from emotion expert Paul Ekman) contains six: fear, anger, sadness, disgust, surprise, and joy. These six have been found in every culture worldwide, and have also been shown to be identifiable by people crossculturally. This suggests that they are evolved responses rather than cultural expressions. Looking at each emotion in turn, it's easy to gain an understanding of their evolutionary function:

<https://textmining.cbs.dk/TextClassification/Content/guides/Guide-Model-Basic6Emotions.pdf>

# Classify this!

Model #1: Six Basic Emotions: User(Emotions)



**SEAN KINGSTON** @seankingston

All gold everything.. 1st with the Gold Lux iPhone 6 from brikkusa check them out!!! [instagram.com/p/toqWZICR8T/](https://www.instagram.com/p/toqWZICR8T/)

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## Model #1: Six Basic Emotions: User(Emotions)

▶ Start Menti

0	0	0	0	0	0
Anger	Disgust	Fear	Joy	Sadness	Surprise



# Model #2: Personality

## Big 5 Personality Traits

Source: [https://en.wikipedia.org/wiki/Big\\_Five\\_personality\\_traits](https://en.wikipedia.org/wiki/Big_Five_personality_traits)

In [psychology](#), the **Big Five personality traits** are five broad domains or dimensions of [personality](#) that are used to describe human personality. The five factors are [openness](#), [conscientiousness](#), [extraversion](#), [agreeableness](#), and [neuroticism](#). Acronyms commonly used to refer to the five traits collectively are OCEAN, NEOAC, or CANOE.

The Big Five model is able to account for different traits in personality without overlapping. [Empirical research](#) has shown that the Big Five personality traits show consistency in interviews, self-descriptions and observations. Moreover, this five-factor structure seems to be found across a wide range of participants of different ages and of different cultures.<sup>[3]</sup>

<https://textmining.cbs.dk/TextClassification/Content/guides/Guide-Model-Big5PersonalityTraits.pdf>

# Classify this!

## Model #2: Big 5 Personality: User(Personality)



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## Model #2: Big 5 Personality: User(Personality)

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0%

Openness

0%

Conscientiousness

0%

Extraversion

0%

Agreeableness

0%

Neuroticism



# Model #3: Consumer Decision-Making Stage

## Hierarchy of Effects Model

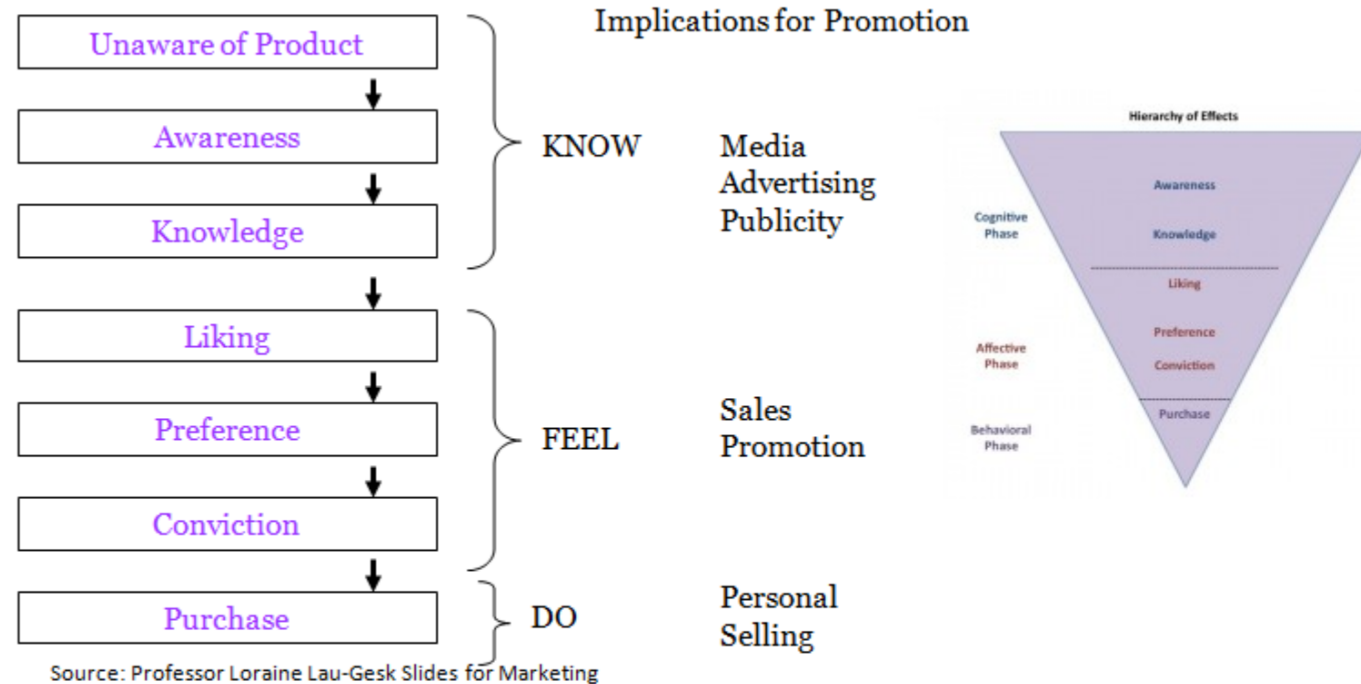


Image Source: <http://edbus.saschina.wikispaces.net/InNoChandler1>

# Classify this!

## Model #3: HoE: User(Consumer Psychology)



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# Model #3: HoE: User(Consumer Psychology)

▶ Start Menti

0	0	0	0	0	0
Awareness	Knowledge	Liking	Preference	Conviction	Purchase



# Model #4: Brand Sentiment

## Brand Parameters: Brand Sentiment

Source: [https://en.wikipedia.org/wiki/Sentiment\\_analysis](https://en.wikipedia.org/wiki/Sentiment_analysis)

### Introduction

**Sentiment analysis** (also known as **opinion mining**) refers to the use of [natural language processing](#), [text analysis](#) and [computational linguistics](#) to identify and extract subjective information in source materials. Sentiment analysis is widely applied to reviews and social media for a variety of applications, ranging from [marketing](#) to [customer service](#).

Generally speaking, sentiment analysis aims to determine the attitude of a speaker or a writer with respect to some topic or the overall contextual polarity of a document. The attitude may be his or her judgment or evaluation (see [appraisal theory](#)), affective state (that is to say, the emotional state of the author when writing), or the intended emotional communication (that is to say, the emotional effect the author wishes to have on the reader).

### Brand Sentiment Analysis

A basic task in Brand sentiment analysis is classifying the *polarity* of a given text. Your task is to classify whether the text is positive, negative, or neutral.

[https://textmining.cbs.dk/TextClassification/Content/guides/Guide-Model-BrandParameters\\_Sentiment.pdf](https://textmining.cbs.dk/TextClassification/Content/guides/Guide-Model-BrandParameters_Sentiment.pdf)

# Classify this!

## Model #4: Brand Parameters: User(Brand Sentiment)



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## Model #4: Brand Parameters: User(Brand Sentiment)

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0                      0                      0  
Positive              Negative              Neutral



## Model #5: Social Influence

### Cialdini's Six Weapons of Persuasion

[http://en.wikipedia.org/wiki/Social\\_influence](http://en.wikipedia.org/wiki/Social_influence)

- **Reciprocity:** People tend to return a favour.
- **Commitment and Consistency:** People do not like to be self-contradictory. Once they commit to an idea or behaviour, they are averse to changing their minds without good reason
- **Social Proof:** People will be more open to things they see others doing.
- **Authority:** People will tend to obey authority figures
- **Liking:** People are more easily swayed by people they like
- **Scarcity:** A perceived limitation of resources will generate demand

# On a scale of 1-10 how engaging is this post?

Model #5: Social Influence: User(Engagement by Others)



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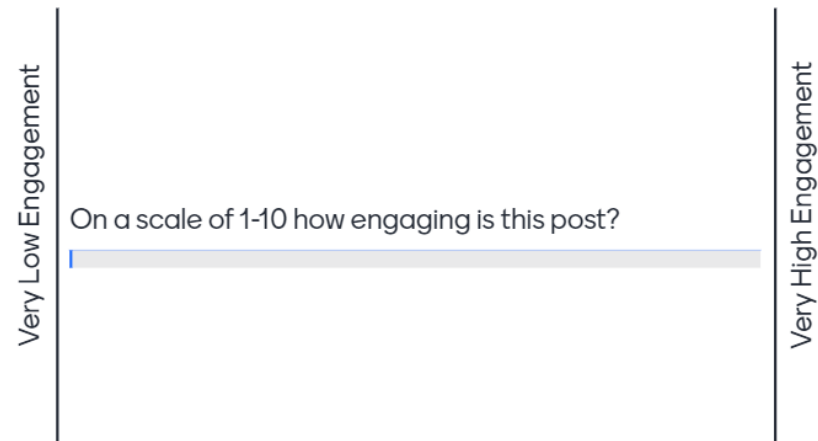
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## Model #5: Social Influence: User(Engagement by Others)



Text Analytics:  
Examples: Domain-Specific Classifiers

# Domain-Specific Classifier #01: Marketing

“Heres an idea. If you like their food eat there. If you dont like their food eat somewhere else or make your own meal. I really dont understand what the big deal is.”

## Model: Basic Emotions [\(Guide\)](#)

- Anger
- Disgust
- Fear
- Joy
- Sadness
- Surprise

## Model: Personality Traits [\(Guide\)](#)

- Openness
- Conscientiousness
- Extraversion
- Agreeableness
- Neuroticism

User

## Model: Consumer Decision-Making Stage [\(Guide\)](#)

- Awareness
- Knowledge
- Liking
- Preference
- Conviction
- Purchase

Consumer

Organisation

## Model: Brand Sentiment [\(Guide\)](#)

- Positive
- Negative
- Neutral

## Model: Social Engagement Potential

How do you rate the engagement of the text in terms of likes, shares and comments.

Scale: 1-low engagement; 5-medium engagement; 10-high engagement

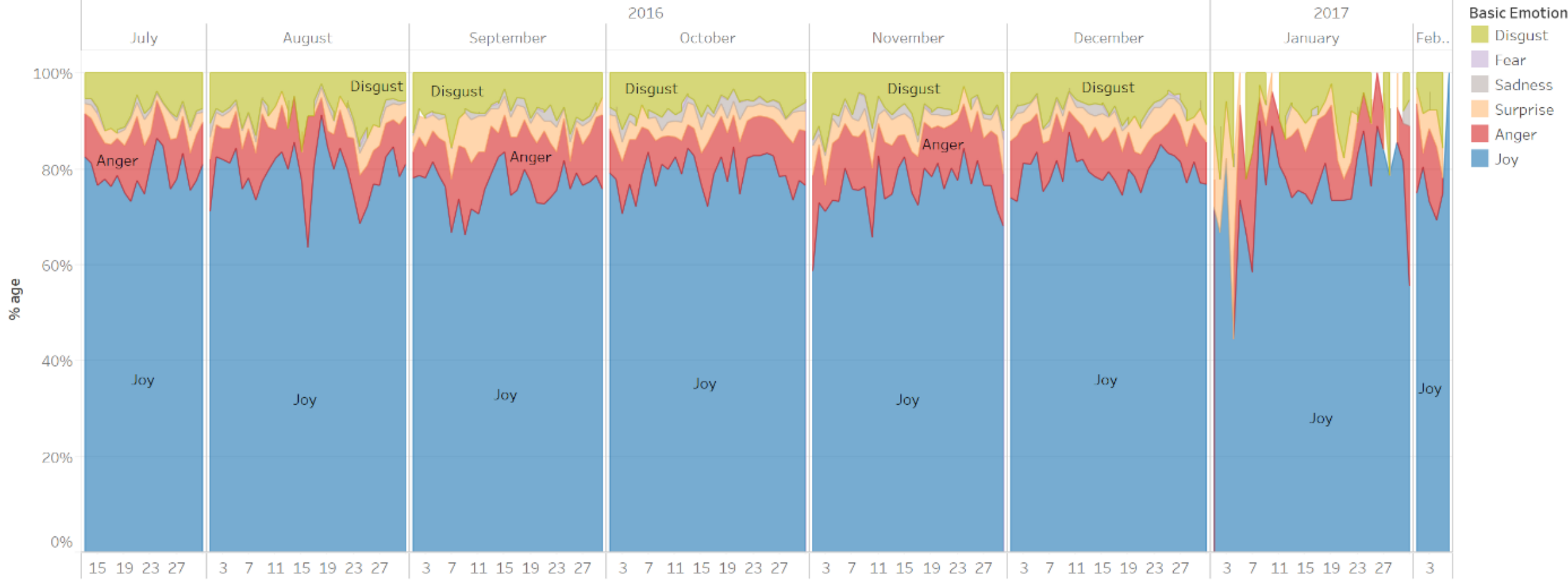
1  2  3  4  5  6  7  8  9  10

Label the type of engagement

Social Influence

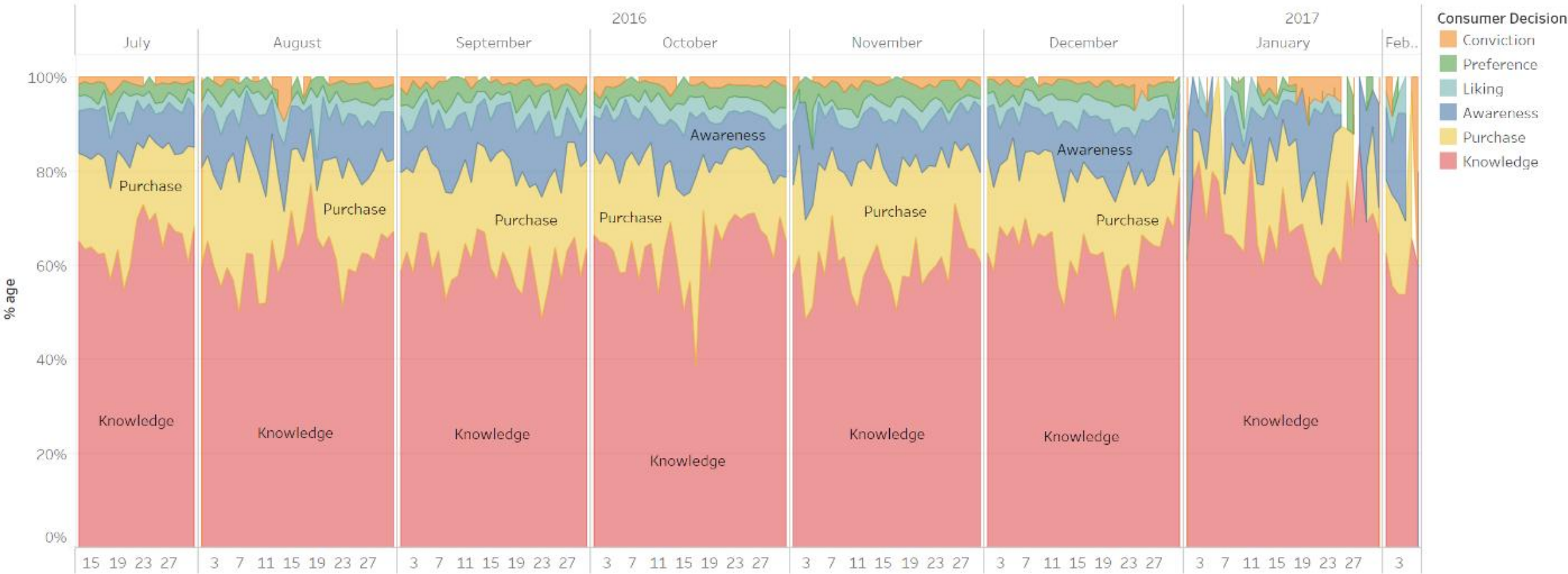
# Conversation Analysis – Basic Emotion

## Brand Emotion



# Conversation Analysis – Consumer Decision

Consumer Decision



# Domain-Specific Classifier #02: Operations Research

“Brazilian highway transport showcases a series of positive features such as flexibility, availability, and speed. However, when compared to other modes, it bears limitations such as low productivity, low energy efficiency, and low safety indices.

## Model: Decision Factors

- Geographical Location
- Roadways
- Railways
- Waterways
- Airways
- Intermodal
- Public Warehousing
- Customs
- Logistics/SCM HR
- Telecom
- Use and Adoption in EDI
- Financial Institutions & Services
- Electronic Banking & Commerce
- Economic Structure
- Economic Policy
- Business Legislation
- Political Climate
- No Decision Factor

## Model: Environmental Complexity

- High Complexity
- Medium Complexity
- Low Complexity
- Unsure

## Model: Information Quality

- High
- Medium
- Low

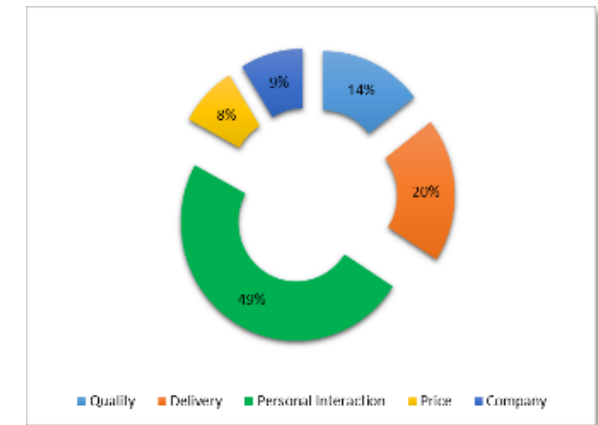
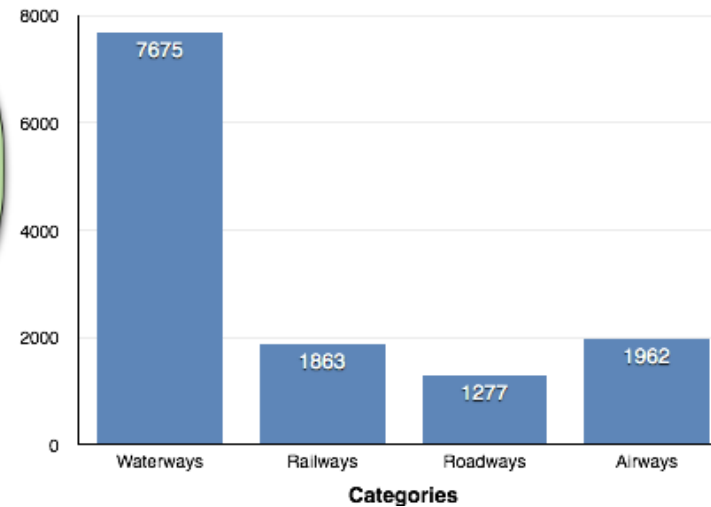
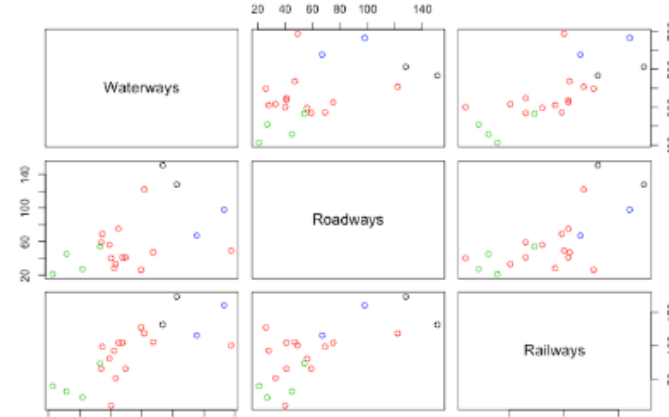
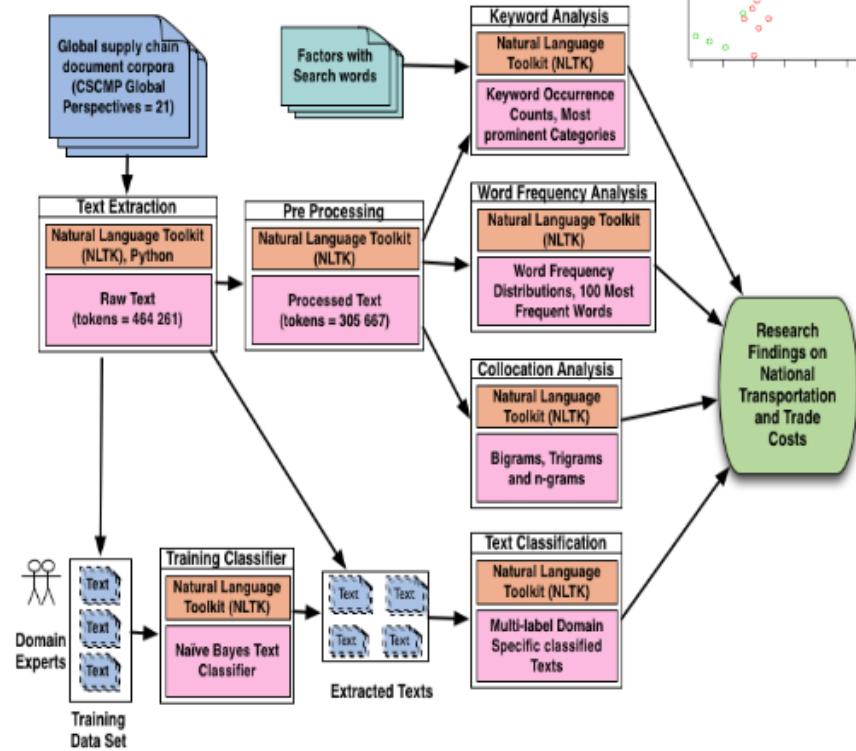
## Model: Sentiment

- Positive
- Neutral
- Negative
- Unsure

## Model: Data Type

- Hard Data
- Perceptual Data
- Enacted Data
- Unsure

# Business Value: Decision Support System for Logistics Complexity Assessment



# Domain-Specific Classifier #03: Public Health

“What this post is saying: Some obese people don't suffer from Type 2 Diabetes.. What this post isn't saying: Obesity doesn't cause Type 2 Diabetes.. You can be healthy and obese.”

## Model: Patient Journey

- Undiagnosed
- Relatives of diabetes patients
- Diagnosis
- Clinical Treatment
- Alternative Treatment
- Living with diabetes - Lifestyle; Social and Psychological
- Living with diabetes - Nutrition
- Living with diabetes - Exercise

## Model: Emotions

- Joy
- Sadness
- Trust
- Disgust
- Fear
- Anger
- Anticipation
- Surprise

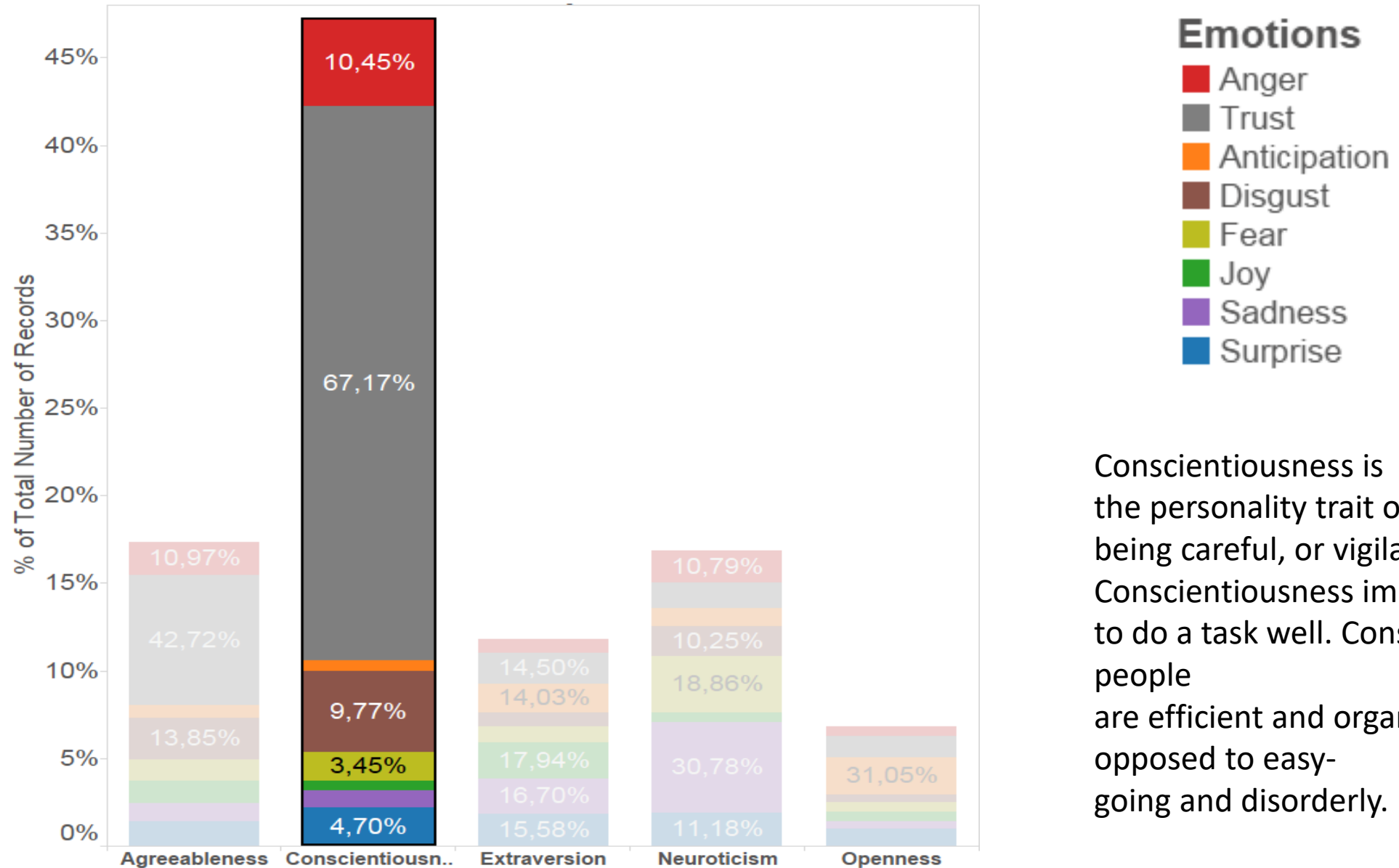
## Model: Big 5 personality traits (OCEAN)

- Openness
- Conscientiousness
- Extraversion
- Agreeableness
- Neuroticism

## Model: Sentiment

- Positive
- Negative
- Neutral

# Domain-Specific Classifiers: Public Health



Conscientiousness is the personality trait of being careful, or vigilant. Conscientiousness implies a desire to do a task well. Conscientious people are efficient and organized as opposed to easy-going and disorderly.

# Discussion