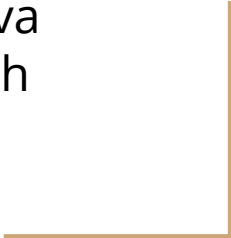




Analysis of Valentine Twitter Data

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Introduction

Problem: how can businesses utilize Valentine's Twitter data in their practices

Research questions: Look into people's attitudes towards Valentine's Day and what does Valentine's Day mean to people.

Why: Draw insights that can help businesses make informed decisions.

Relevant research:

- Netbase performed sentiment analysis in February 2016
- Bollen et al. investigate whether public mood as measured from large-scale collection of tweets is correlated or even predictive of DJIA values.

Use cases for Twitter data

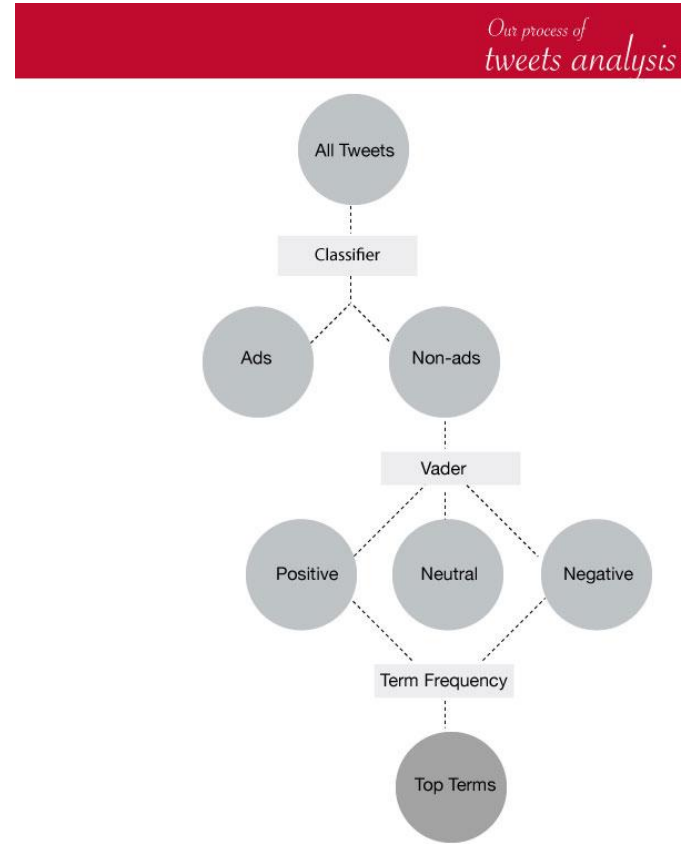
- **Our Question From Businesses:**
 - We asked a financial analyst with the Seattle-based consultancy Rainier Group LLC catering to the needs of various businesses (bakeries, grocery stores, wineries) and a data analyst with Zulily how they would utilize Twitter data?
- **Their Answers:**
 - “We would totally care about how many people supported which retailer and also their location like country or city.” (Zulily)
 - “Also we would care what they ordered.” (Zulily)
 - “If I was a card company, I would want to know at what time, how many times, people are tweeting **Sarcastic** tweets v. **Romantic** tweets so as to make cards in different parts of the season.” (Rainier Group LLC)

Data Collection

- **Python**
 - Modified HCDE module
- **Database**
 - MySQL
- **Duration**
 - February 11th, 12:00AM CMT
 - February 18, 12:00AM CMT
- **Collected**
 - Tweets
 - Users
 - Place IDs and geolocations

Preparing Data

- **Separate Ads from Non-ads**
 - Binary classifier
 - Manual coded training set
- **Sentiment Analysis**
 - Vader
 - Positive and Negative
 - Intensity
- **Filter by US Time Zones**
- **Term Frequency**
 - Top 100 by sentiment
 - Custom list



Final Dataset

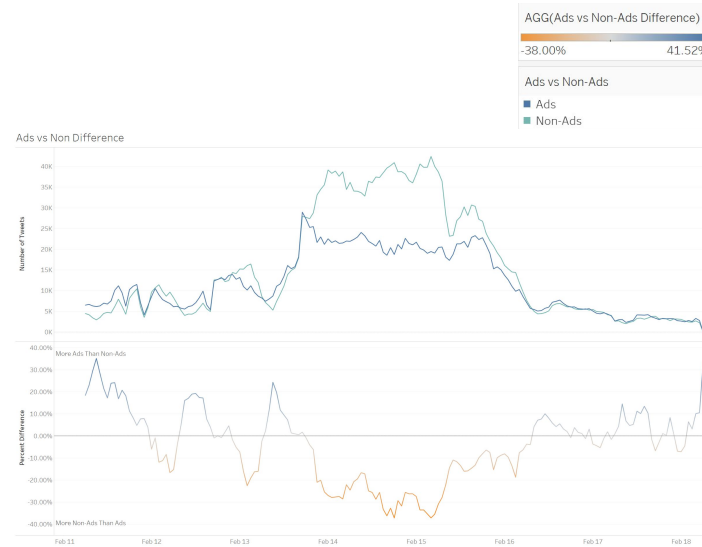
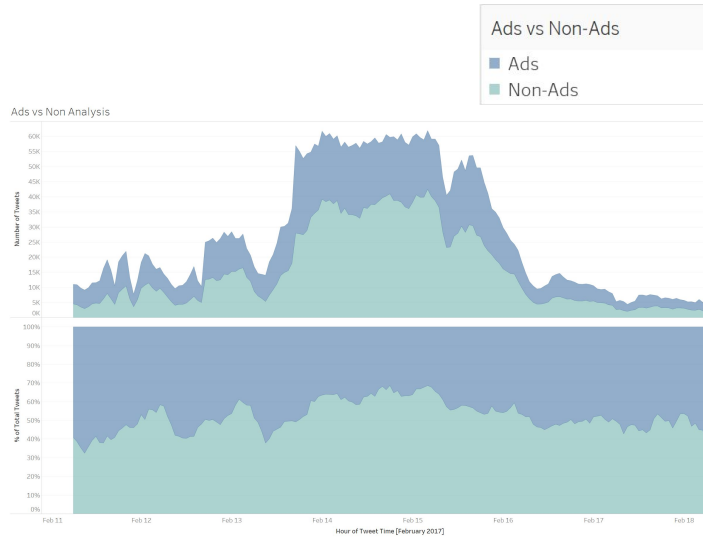
Ad Tweets	Ads vs Non-Ads	All Tweets	Compound (bin)	Created At (Twitter Users)	Id	is_ad	Lang	Name	Negative Tweets	Neutral Tweets	Non-Ad Tweets	Positive Tweets	Screen Name	Sentiment (pos, neg, neither)	Source
Null	Non-Ads	830295302133338113	1	12/18/2008 2:22:40 AM	18206547	0	en	El Paso Times	Null	Null	830295302133338113	830295302133338113	elasotimes	Positive	Null
830295302653505536	Ads	830295302653505536	0	11/18/2011 3:35:40 AM	415266269	1	en	sonin's #H121911	Null	Null	Null	830295302653505536	bvunsoinn	Positive	Null
830295302477328388	Ads	830295302477328388	0	6/8/2013 9:54:11 AM	1492465008	1	en	Lil Wayne WEEZY F	Null	830295302477328388	Null	Null	LilWayne0	Neither	Null
Null	Non-Ads	830295302640955393	1	4/14/2014 12:21:39 PM	2443811197	0	en	Classic105Kenva	Null	Null	830295302640955393	830295302640955393	Classic105Kenva	Positive	Null
Null	Non-Ads	830295302435278848	0	7/2/2014 3:37:34 AM	2599034498	0	en	queen	Null	Null	830295302435278848	830295302435278848	harmfulhalev	Neither	Null
Null	Non-Ads	83029530686699136	0	1/1/2000 12:00:00 AM	6049909355	0	Null	claire raub □	Null	Null	83029530686699136	83029530686699136	ClaireStwiles	Neither	Null
830295303672586240	Ads	830295303672586240	1	2/28/2009 8:31:32 AM	22240612	1	en	Al Arabiya English	Null	Null	830295303672586240	830295303672586240	AlArabiya_Eng	Positive	Null
830295304310173696	Ads	830295304310173696	0	5/4/2010 2:51:53 PM	140087931	1	en	DebtSafe	Null	Null	830295304310173696	830295304310173696	DebtSafe	Positive	Null
Null	Non-Ads	830295304385728512	0	3/24/2011 11:54:12 AM	271383486	0	en	PANDORA Jewellery UK	Null	Null	830295304385728512	830295304385728512	PANDORA_UK	Positive	Null
Null	Non-Ads	830295305056706561	-1	9/26/2012 3:49:48 AM	846716456	0	en	Christian Cancilla	830295305056706561	Null	Null	830295305056706561	ChristianNH2	Negative	Null
83029530530834949	Ads	83029530530834949	0	1/9/2015 2:14:45 AM	2968976661	1	en	ana banana	Null	Null	83029530530834949	83029530530834949	muchoemo	Positive	Null
830295305321078784	Ads	830295305321078784	0	2/1/2017 10:21:27 AM	826737216114266112	1	ru	Caroline Cornish	Null	830295305321078784	Null	Null	sRncvzvovvblOM	Neither	Null
Null	Non-Ads	830295309532147713	0	1/1/2000 12:00:00 AM	1881653964	0	Null	Madison McKinlev	Null	Null	830295309532147713	830295309532147713	MadisonnmM	Positive	Null
830295309020438528	Ads	830295309020438528	0	1/1/2000 12:00:00 AM	2410922013	1	Null	Ethan	Null	Null	830295309020438528	830295309020438528	ewillis515	Positive	Null
830295310207422464	Ads	830295310207422464	0	3/14/2009 3:42:22 AM	24322323	1	en	ELLE Canada	Null	830295310207422464	Null	Null	ELLECanada	Neither	Null
830295309783822336	Ads	830295309783822336	0	4/20/2011 6:45:45 AM	284930036	1	en	Basco Paints	Null	Null	830295309783822336	830295309783822336	BascoPaints	Positive	Null
Null	Non-Ads	830295308785512448	0	8/2/2012 6:09:12 AM	732266065	0	en	Morgan Flood	Null	Null	830295308785512448	830295308785512448	morgan_flood	Positive	Null
830295310849052672	Ads	830295310849052672	0	9/17/2012 10:43:22 AM	828813271	1	ta	JAZZ 入声の力	Null	Null	830295310849052672	830295310849052672	imoot_tazz	Positive	Null

Time Zone	Time Zone (group)	Tweet Id	Tweet Text	Tweet Time
Mountain Time (US & Canada)	US & Canada	830295302133338113	10 great Valentine's trips for solo travelers.https://t.co/SBXoFvZu97	2/11/2017 6:00:00 AM
Central Time (US & Canada)	US & Canada	830295302653505536	RT @pettyblackajr1: With everything that's happening involving immigration & ICE raids. pls support your local Mexican street vendors this...	2/11/2017 6:00:00 AM
Hanoi	Other	830295302477328388	16 Things New Couples Shouldn't Do on a Valentine's Day Date.https://t.co/0APoXN0GW	2/11/2017 6:00:00 AM
Nairobi	Other	830295302640955393	HEADS UP SINGLE LADIES! Here's How 'Forever Single' Girls Can Actually Win On Valentine's Day This Year... https://t.co/GvUnfWGVd9	2/11/2017 6:00:00 AM
Pacific Time (US & Canada)	US & Canada	830295302435278848	RT @lmao: will u be mv valentine https://t.co/7DSfSeay	2/11/2017 6:00:00 AM
Null	Other	83029530686699136	RT @WashingtonTV: When you remember you're not getting a dang thing for Valentine's Day https://t.co/nehjOEd3j	2/11/2017 6:00:01 AM
Muscat	Other	830295303672586240	8 inspiring beauty ideas to look your best this #ValentinesDay https://t.co/Fa29GN041 https://t.co/DL8UC5HBfb	2/11/2017 6:00:01 AM
Harare	Other	830295304310173696	Broke, but still want to do something special of your Valentine? Here's an idea...[Source: https://t.co/r9jkPvawVc... https://t.co/VtJYrAAHe	2/11/2017 6:00:01 AM
London	Other	830295304385728512	There's still time to be a #ValentinesHero... Order Express before midnight to make sure her airts arrive in time... https://t.co/ocumwHaYj	2/11/2017 6:00:01 AM
Null	Other	830295305056706561	@ChristianNH2 and it gets here on Valentine's Day. I'm about to get pampered as fuck.	2/11/2017 6:00:01 AM
Eastern Time (US & Canada)	US & Canada	83029530530834949	RT @pettyblackajr1: With everything that's happening involving immigration & ICE raids. pls support your local Mexican street vendors this...	2/11/2017 6:00:01 AM
Null	Other	830295305321078784	RT @CTV: ... https://t.co/0G6vRUT7	2/11/2017 6:00:01 AM

Tweet Time	Ads vs Non-Ads Difference	Compound	Pos	Neg	Neu	Number of Tweets	Pos	Pos vs Neg Difference	Retweet Count
2/11/2017 6:00:00 AM	-1.00000	0.62490	0.000000	0.631000	0.631000	1	0.369000	1.00000	Null
2/11/2017 6:00:00 AM	1.00000	0.45880	0.000000	0.810000	0.810000	1	0.190000	1.00000	Null
2/11/2017 6:00:00 AM	1.00000	0.00000	0.000000	1.000000	1.000000	1	0.000000	Null	Null
2/11/2017 6:00:00 AM	-1.00000	0.62390	0.000000	0.806000	0.806000	1	0.194000	1.00000	Null
2/11/2017 6:00:00 AM	-1.00000	0.00000	0.000000	1.000000	1.000000	1	0.000000	Null	Null
2/11/2017 6:00:01 AM	-1.00000	0.00000	0.000000	1.000000	1.000000	1	0.000000	Null	Null
2/11/2017 6:00:01 AM	1.00000	0.89570	0.000000	1.426000	1.426000	1	0.574000	1.00000	Null
2/11/2017 6:00:01 AM	1.00000	0.47670	0.091000	0.670000	0.670000	1	0.239000	1.00000	Null
2/11/2017 6:00:01 AM	-1.00000	0.31820	0.000000	0.887000	0.887000	1	0.113000	1.00000	Null
2/11/2017 6:00:01 AM	-1.00000	-0.54230	0.200000	0.800000	0.800000	1	0.000000	-1.00000	Null

Data Analysis

Advertisement Vs Actual Tweets



Ads vs Non-Ads

- (All)
- Ads
- Non-Ads

Sentiment

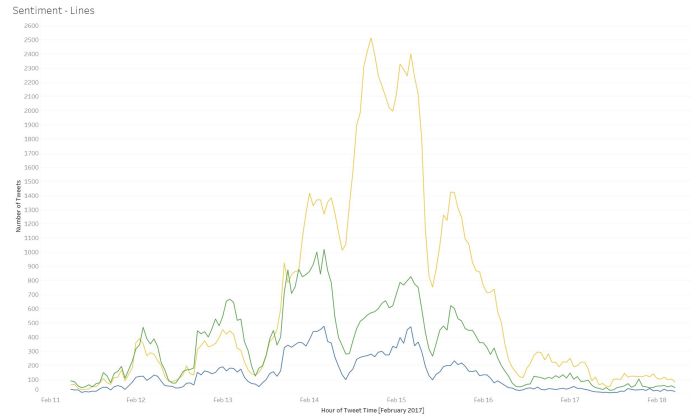
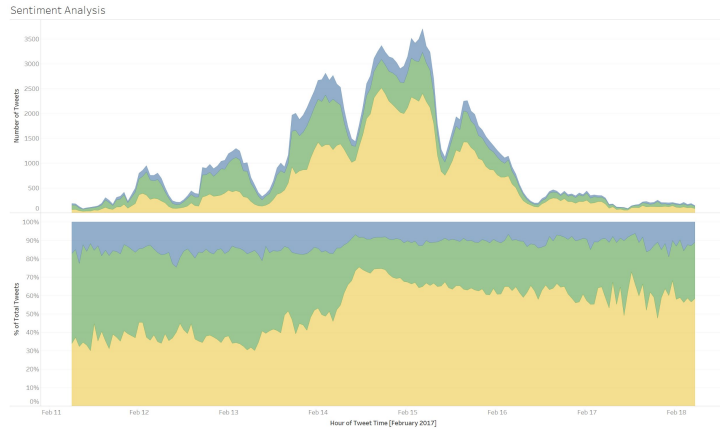
- (All)
- Neither
- Positive
- Negative

Time Zone (group)

- (All)
- Africa
- Asia
- Europe
- US & Canada
- Other

Data Analysis

Sentiment Analysis of All Tweets



Sentiment (pos, neg, neither)

- Negative
- Neither
- Positive

Sentiment

- (All)
- Neither
- Positive
- Negative

Time Zone (group)

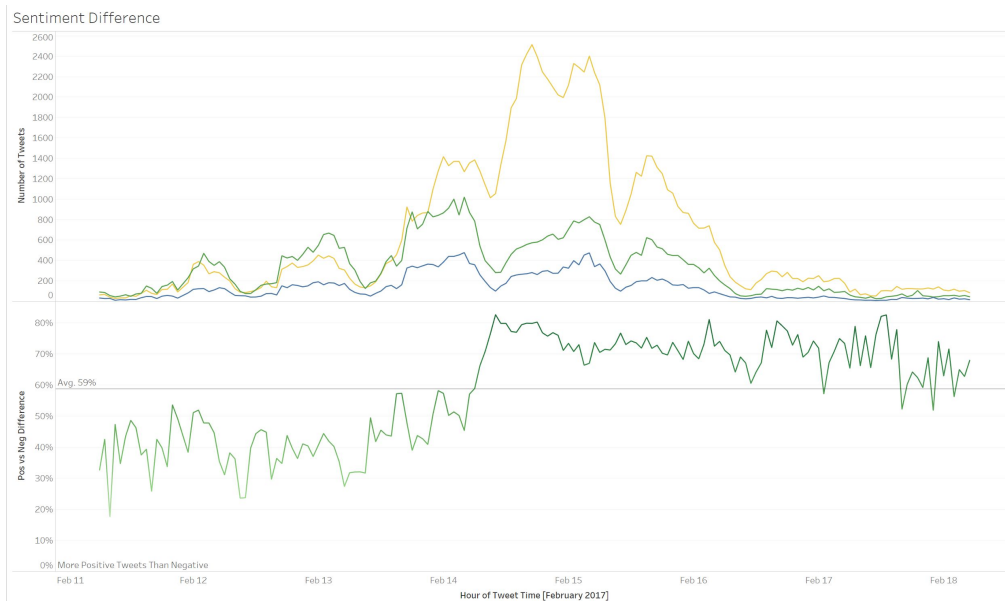
- (All)
- Africa
- Asia
- Europe
- US & Canada
- Other

Ads vs Non-Ads

- (All)
- Ads
- Non-Ads

Changing Sentiments

Sentiment Analysis of All Tweets (Difference)



Sentiment (pos, neg, neither)

■ Negative

■ Neither

■ Positive

AGG(Pos vs Neg Difference)

18%

83%

What Valentine's Day Means

Top Most 100 Frequent **Positive** Terms



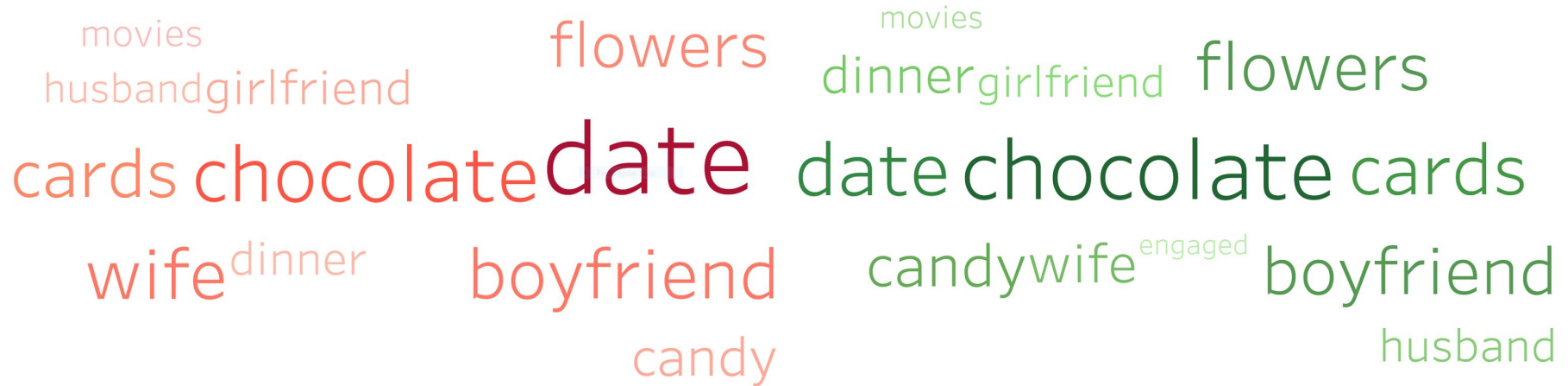
Analyzing Data

Top Most 100 Frequent **Negative** Terms

friend
eat excited boyfriend dead baby mom guys little nice smh thanks candy
cute wife love bad ass sad time loves flowers real hate gift
happy gonna tomorrow seen people single
♡ ❌ lol y'all lonely fucking feel damn secretly getting
you, sweet loved ❌ ❌ celebrate bitch tuesday tell care trying spend crying gifts
sister left late night finally hope girl life wish favorite post girls wait cards special woman

Valentine's Day meaning

Top Most 10 Frequent **Positive** and **Negative** Terms





Thank you

Questions?

