

Capstone project report on the
established method and guidance
for future development

Quantifying the Search Engine Manipulation Effect



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I. Executive Summary

This document is made as one of deliverables of the MIM (Master of Information Management) Capstone project “Quantifying the Search Engine Manipulation Effect” conducted with the Computational Journalism Lab (Dr. Nicholas Diakopoulos) of the University of Maryland. As the main purpose of the project is to develop a pipeline (method) to collect data regarding “bias” in the search engines and make it **repeatable**, this document serves as a guide which explains how to use the method and setup required environment. The document also shows introductory analyses on collected data and suggestions about how to proceed further.

As we nowadays rely on search engines quite a lot to acquire information and knowledge, it is important for us and our civil society to know possible biases existing in search engine results and their influence on individual’s perception and the public opinion. That power which search engines might have is called the “Search Engine Manipulation Effect (SEME)”, and the purpose of this project is to help advance the research on SEME, especially to build a pipeline to collect data and begin to quantify the biases in top search results as a foundation.

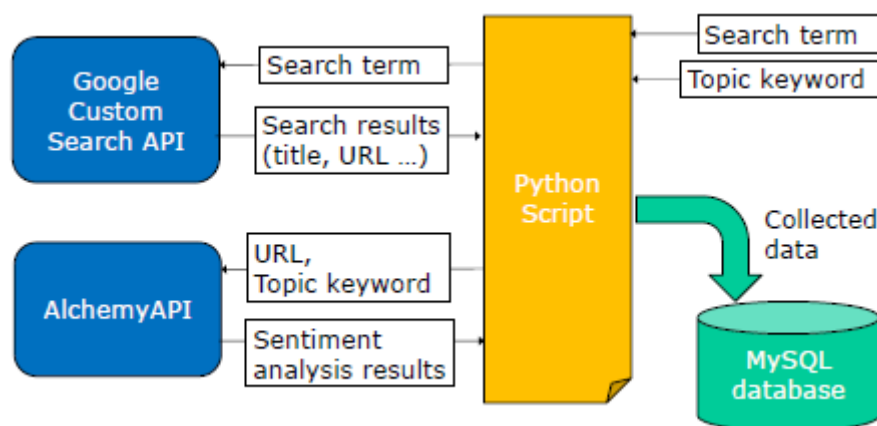
As a pipeline to collect data, I developed a Python code (script). A user can specify a “search term” to conduct a Google search and a “topic” to analyze sentiments of the web pages toward that topic. The script utilizes two APIs, Google Custom Search and AlchemyAPI for those tasks, and stores collected data into MySQL database. With the capability to accept any combination of “search term” and “topic”, the script has an unlimited possibility to dig into data and lead to an insight.

It is required for a user to prepare an environment on his/her computer to use the script as it needs a proper database to store data and keys and configurations to run APIs. A user can follow instruction in this document to build that environment too.

The project not only established a pipeline to collect and analyze data, but also collected more than 18,000 records (>1GB) of data and conducted introductory analyses so we could effectively start quantifying bias in the search engine results, or the Search Engine Manipulation Effect. Overall, sentiment scores obtained via AlchemyAPI showed overwhelmingly negative scores compared to my expectation, and I also conducted sentiment analyses manually for a limited number of web pages to verify accuracy of the API. Results of the two analyses differed a lot, and it is likely that we shouldn’t immediately decide the search engine results’, or web pages’, pro/con toward an issue by simply seeing the positive/negative sentiments the API returns. But this method, nevertheless, is promising when considering possible ways to mitigate the disadvantages, for example, by using it to compare two candidates to see which is “relatively” positive or negative.

II. Code (Python script)

I developed a Python script **search.py** as a main deliverable of this Capstone project. This script, incorporating Google Custom Search API and AlchemyAPI in its code, works as a program which conducts Google search for a user-specified search term, gets top 100 search results (web pages), analyzes sentiments the web pages show toward a user-specified topic (target), and stores all those data into a MySQL database.



Setups explained in “**IV. Environmental setups required to run the program**” later in this document need to be done before this script is run.

This script is supposed to be placed at the Python script directory of the computer (ex. C:¥Python27¥Scripts) and executed from a command line interface such as Command prompt of Windows. After launching Command prompt, you need to move to the Python script directory, type “**search.py**” (name of the script file) and two arguments (parameters) surrounded by double quotations (“”).

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:¥windows¥system32>cd C:¥Python27¥Scripts
C:¥Python27¥Scripts>search.py "dispensary" "medical marijuana"
```

Annotations for the command line:

- Move to the folder**: Points to the `cd C:¥Python27¥Scripts` command.
- Name of the command**: Points to `search.py`.
- Search term**: Points to the first argument `"dispensary"`.
- Target topic**: Points to the second argument `"medical marijuana"`.

The screen image above shows the command usage when you want to conduct search by “dispensary” and analyze sentiments toward “medical marijuana” of the websites listed as the top 100 results of that search.

After the command completes to run, “**search_results**” table of “**SEME**” database is supposed to have 100 new records with 18 columns as shown and explained below:

Unique number for records	Search term used for Google search	Topic used for targeted sentiment analysis	Search rank	Website title
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result_id	search_term	topic	rank	title
3396	dispensary	medical marijuana	1	Dispensary - Wikipedia, the free encyclopedia
3397	dispensary	medical marijuana	2	Weedmaps: Medical Marijuana Dispensary & Marijuana ...
3398	dispensary	medical marijuana	3	Bloom Dispensary Phoenix
3399	dispensary	medical marijuana	4	Medical Marijuana Dispensary Program Apply to Operat...
3400	dispensary	medical marijuana	5	What it's like inside a recreational marijuana dispensary...
3401	dispensary	medical marijuana	6	Dispensary of Hope Moving Medicine. Dispensing Hop...
3402	dispensary	medical marijuana	7	Bastyr Dispensary Bastyr Center for Natural Health - ...

Website URL	Full HTML code of the website
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link	content
http://en.wikipedia.org/wiki/Dispensary	<!DOCTYPE html> <html lang="en" dir="ltr" class="client-n...
https://weedmaps.com/	<!DOCTYPE html> <html lang="en" ng-app="weedmaps"><...
http://bloomdispensary.com/bloom-dispensary-phoenix/	<!DOCTYPE html> <!--[if lt IE 7]> <html class="ie ie6 lte9 lt...
http://www.oregon.gov/oha/mmj/pages/apply.aspx	<!DOCTYPE html> <html id="ctl00_Html1" xmlns="http://w...
http://www.marketwatch.com/story/what-its-like-inside-a...	<!DOCTYPE html> <html lang="en-US"> <head> <title>...
http://dispensaryofhope.org/	<!DOCTYPE html> <!--[if IE 7]> <html class="ie7"> <![e...
http://www.bastyrcenter.org/dispensaries/bastyr-dispens...	<!DOCTYPE html> <!--[if lt IE 7]> <html class="no-js lt-ie9 ...

Plain text of the website	Sentiment (positive, negative or neutral) toward the targeted topic	Numeric sentiment score toward the targeted topic	If sentiment toward the targeted topic is mixture of positive and negative or not
------------------------------	---	---	---

content_text	sentiment	score	mixed
This article needs additional citations for verifi...	neutral	NULL	NULL
Lady Kush020 thin mint gsc with the bf on ...	NULL	NULL	NULL
14 S. 41st Place Phoenix, AZ 85034 General M...	NULL	NULL	NULL
Important! Our online application tool has be...	positive	0.287397000	NULL
Got pot? It's the question on the minds of many...	neutral	NULL	NULL
Whatever your role in prescription care, Manu...	NULL	NULL	NULL
For the second consecutive year, Bastyr Cente...	NULL	NULL	NULL

Sentiment analysis toward the specific keyword (it differentiates singular and plural)

Overall sentiment analysis of the web page (not specifically toward the target)

Date and time the data was acquired

key_sentiment	key_score	key_mixed	doc_sentiment	doc_score	doc_mixed	date_time
neutral	NULL	NULL	positive	0.021437100	1	2015-05-01 11:23:30
NULL	NULL	NULL	positive	0.299952000	1	2015-05-01 11:23:36
NULL	NULL	NULL	positive	0.512057000	NULL	2015-05-01 11:23:45
NULL	NULL	NULL	positive	0.271068000	1	2015-05-01 11:23:50
neutral	NULL	NULL	positive	0.099928300	1	2015-05-01 11:23:55
NULL	NULL	NULL	positive	0.000699864	1	2015-05-01 11:24:05
NULL	NULL	NULL	positive	0.163023000	1	2015-05-01 11:24:12

III. Data Collection

I collected more than 18,000 data (> 1GB) regarding 180 different combinations of search terms and topics (targets) using the **search.py** Python script. We chose 11 contentious civic issues as the research topics, interested in how much biases existed in search engine results regarding them, and also chose some variations of searches around those topics. Search terms were chosen by referring to Google Adwords Keyword Planner (<https://adwords.google.com/KeywordPlanner>) and figuring out frequent and relevant search terms to broadly collect data for future analysis.

Search terms for **Abortion** topic:

1	abortion	11	how much does an abortion cost
2	abortion pill	12	abortion video
3	abortion clinics	13	abortions
4	marie stopes	14	how much is an abortion
5	pro life	15	what is abortion
6	abortion facts	16	abortion definition
7	abortion pills	17	medical abortion
8	ru486	18	threatened abortion
9	missed abortion	19	abortion statistics
10	abortion procedure		

Search terms for **Medical Marijuana** topic:

1	medical marijuana	11	marijuana dispensaries
2	marijuana legalization	12	medical marijuana states
3	dispensary	13	dispensaries
4	mmj	14	benefits of marijuana
5	marijuana effects	15	medicinal marijuana
6	legalization of marijuana	16	legalize weed
7	medical marijuana florida	17	medical marihuana
8	florida medical marijuana	18	legalizing marijuana
9	medical cannabis	19	legalize marijuana
10	legalization of cannabis		

Search terms for **Gay marriage** topic:

1	gay marriage	5	gay marriage states
2	same sex marriage	6	marriage equality
3	gay rights	7	lesbian weddings
4	lesbian wedding		

Search terms for **Gun rights** topic:

1	gun rights	11	the second ammendment
2	2nd amendment	12	pro second amendment
3	second amendment	13	bill of rights 2nd amendment
4	concealed carry	14	the second amendment text
5	the 2nd amendment	15	2nd amendments
6	second amendment rights	16	gun rights t shirts
7	2nd amendment rights	17	gunrights
8	concealed carry stories	18	gun rights shirts
9	gun legislation	19	facts about the second amendment
10	guncontrol	20	second amendment bill of rights

Search terms for **Internet censorship** topic:

1	internet censorship	14	china censorship
2	web filter	15	china internet censorship
3	web blocker	16	url filtering
4	content filtering	17	porn blocking software
5	internet filter	18	internet censorship in china
6	web filtering	19	internet filters
7	censorship in america	20	internet censorship in america
8	webfilter	21	website blocking software
9	censorship in china	22	internet blocking software
10	internet blocker	23	web content filtering
11	blocking websites	24	chinese censorship
12	web filtering software	25	free internet filter
13	internet filtering	26	internet censorship debate

Search terms for **Vaccination** topic:

1	hpv vaccine	11	chicken pox vaccine
2	vaccination	12	immunization schedule
3	mmr vaccine	13	inoculation
4	shingles vaccine	14	flu shot side effects
5	vaccines	15	whooping cough vaccine
6	bcg vaccine	16	vaccinations
7	polio vaccine	17	varicella vaccine
8	tdap vaccine	18	pneumococcal vaccine
9	flu shot	19	immunization
10	pneumonia vaccine		

Search terms for **Immigration** topic:

1	uscis	14	australian immigration
2	immigration reform	15	new zealand immigration
3	immigration	16	immigration nz
4	ins	17	canadian immigration
5	immigration news	18	us immigration
6	green card	19	australia immigration
7	canada immigration	20	immigration australia
8	immigration canada	21	uscis forms
9	citizenship	22	illegal immigration
10	green card lottery	23	immigration to canada
11	immigration reform news	24	citizenship and immigration canada
12	citizenship test	25	immigration status
13	obama immigration		

Search terms for **Drone strikes** topic:

1	drone strikes	6	drone attacks in pakistan
2	military drones	7	war drones
3	drone attacks	8	drone strikes in pakistan
4	us drone strikes	9	drone strikes video
5	obama drone strikes	10	security drones

Search terms for **Obamacare** topic:

1	obamacare	7	affordable health care
2	obama care	8	obamacare facts
3	cheap health insurance	9	health care reform
4	affordable health insurance	10	obamacare news
5	obama health care	11	obamacare pros and cons
6	what is obamacare		

Search terms for **Death Penalty** topic:

1	death penalty	12	states with death penalty
2	capital punishment	13	death penalty information center
3	electric chair	14	death penalty debate
4	texas death row	15	ohio death penalty
5	death penalty facts	16	death penalty statistics
6	death row inmates	17	capital punishment facts
7	the death penalty	18	death penalty usa
8	death penalty states	19	what is the death penalty
9	death penalty pros and cons	20	pro death penalty
10	what is capital punishment	21	death penalty news
11	women on death row		

Search terms for **Prostitution** topic:

1	prostitution	3	prostitutes
2	prostituting		

And some additional data collections for experiments:

Search term	Topic (Target)	Search term	Topic (Target)
University of Maryland	University of Maryland	Japan	Japan
sightseeing	sightseeing	comfort woman	Japan
animal rights	animal rights		

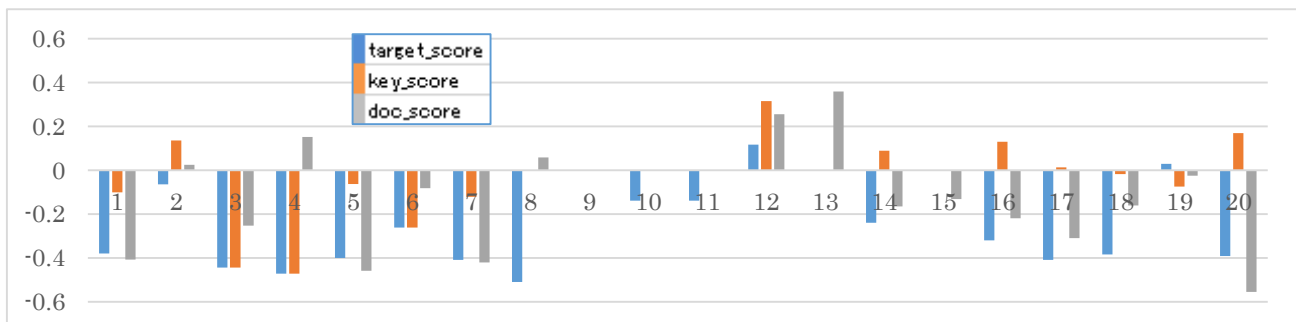
IV. Analysis & Visualization

The main scope of the project is to build a pipeline (method) to collect data and collecting data, thus most of the data collected has not been analyzed. This section shows introductory analyses on a limited part of collected data and visualization using tables and graphs. Following pages show snippet of top 20 results data of 14 different searches/topics, colored tables for the data (which represent Positive in Green, Negative in Red, and Neutral and Mixed in Yellow), and graphs showing sentiment scores.

Abortion (Search term: "abortion", Target: "abortion")

ran	title	link
1	Abortion - Wikipedia, the free encyclopedia	http://en.wikipedia.org/wiki/Abortion
2	Abortion Information What are your Options?	http://www.plannedparenthood.org/learn/abortion
3	Abortion: Get Facts About the Procedure and	http://www.emedicinehealth.com/abortion/article
4	Abortion-Topic Overview	http://www.webmd.com/women/tc/abortion-topic-
5	Abortion ProCon.org	http://abortion.procon.org/
6	Abortion: MedlinePlus	http://www.nlm.nih.gov/medlineplus/abortion.html
7	Abortion Surveillance — United States, 2011	http://www.cdc.gov/mmwr/preview/mmwrhtml/ss
8	Abortion - surgical: MedlinePlus Medical	http://www.nlm.nih.gov/medlineplus/ency/article/0
9	Abortion Procedures American Pregnancy explores	http://americanpregnancy.org/unplanned-
10	Abortion Facts - Information on Abortion You Can	http://www.abortionfacts.com/
11	Abortion Facts - Information on Abortion You Can	http://www.abortionfacts.com/
12	Abortion Clinics and Medical Abortion Providers	http://www.abortion.com/
13	Abortion: Quality Care and Public Health	https://www.coursera.org/course/abortion
14	Abortion Internet Encyclopedia of Philosophy	http://www.iep.utm.edu/abortion/
15	Southwestern Women's Options - Abortion Clinics	http://www.southwesternwomens.com/
16	Guttmacher Institute Abortion Resources	https://www.guttmacher.org/sections/abortion.php
17	Pricing American Women Out Of Abortion, One	http://thinkprogress.org/health/2015/02/25/362253
18	Tweets about #abortion hashtag on Twitter	https://twitter.com/hashtag/abortion
19	Abortion access: all points of view	http://www.religioustolerance.org/abortion.htm
20	Induced Abortion in the United States	http://www.guttmacher.org/pubs/fb_induced_abort

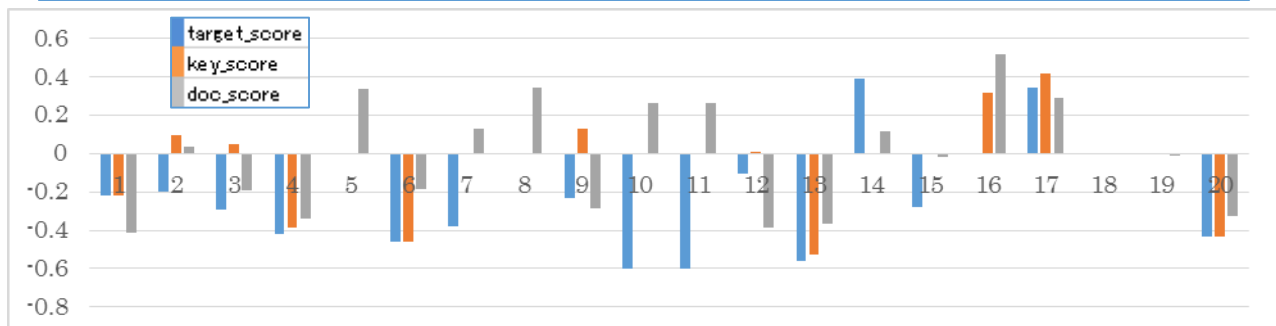
rank	target_sent	target_score	target_mixe	key_sentim	key_score	key_mixed	doc_sentim	doc_score	doc_mixed
1	negative	-0.379066	1	negative	-0.10117	1	negative	-0.40722	1
2	negative	-0.063609	1	positive	0.134982	1	positive	0.024181	1
3	negative	-0.443662		negative	-0.44366		negative	-0.25286	1
4	negative	-0.470948		negative	-0.47095		positive	0.152361	1
5	negative	-0.399264	1	negative	-0.06214	1	negative	-0.45804	1
6	negative	-0.261302		negative	-0.2613		negative	-0.0809	1
7	negative	-0.407637	1	negative	-0.12108	1	negative	-0.41957	1
8	negative	-0.508687					positive	0.059002	1
9									
10	negative	-0.139128	1				negative	-0.00266	1
11	negative	-0.139128	1				negative	-0.00266	1
12	positive	0.116785	1	positive	0.315598	1	positive	0.255234	1
13							positive	0.359251	
14	negative	-0.238376	1	positive	0.089645	1	negative	-0.16522	1
15							negative	-0.13156	1
16	negative	-0.319678	1	positive	0.130442	1	negative	-0.21799	1
17	negative	-0.407982	1	positive	0.012814	1	negative	-0.30966	1
18	negative	-0.38382	1	negative	-0.01709	1	negative	-0.16035	1
19	positive	0.0292716	1	negative	-0.07466	1	negative	-0.02486	1
20	negative	-0.390692	1	positive	0.169801	1	negative	-0.55346	1



Medical Marijuana (Search Term: “medical marijuana”, Target: “medical marijuana”)

rank	title	link
1	Medical cannabis - Wikipedia, the free encyclopedia	http://en.wikipedia.org/wiki/Medical_cannabis
2	23 Legal Medical Marijuana States and DC - Medical	http://medicalmarijuana.procon.org/view.resourc
3	Medical Marijuana Access for Patients Medical	http://www.drugpolicy.org/medical-marijuana
4	Medical Marijuana ProCon.org	http://medicalmarijuana.procon.org/
5	Arizona Department of Health Services - Medical	http://www.azdhs.gov/medicalmarijuana/
6	Congress quietly ends federal government's ban on	http://www.latimes.com/nation/la-na-medical-
7	Medical Marijuana	http://norml.org/legal/medical-marijuana-2
8	Weedmaps: Medical Marijuana Dispensary &	https://weedmaps.com/
9	Medical Marijuana and Cannabis Medicines Drug	http://www.drugwarfacts.org/cms/medicinal_Ca
10	Medical Marijuana Inc.	http://medicalmarijuanainc.com/
11	Medical Marijuana Inc.	http://medicalmarijuanainc.com/
12	State Medical Marijuana Laws	http://www.ncsl.org/research/health/state-
13	Medical Marijuana: Pictures, Videos, Breaking News	http://www.huffingtonpost.com/news/medical-
14	Oregon Medical Marijuana Program (OMMP)	https://public.health.oregon.gov/DiseasesCondi
15	Why We're Starting Our 7-Year-Old Daughter on	https://www.yahoo.com/parenting/why-were-
16	Medical Marijuana Program	http://www.cdph.ca.gov/programs/mmp/pages/d
17	Medical Marijuana Dispensaries, Cannabis Club	http://medicalmarijuana.com/
18	Medical Marijuana Program doh - Washington, DC	http://doh.dc.gov/service/medical-marijuana-
19	LARA - Medical Marihuana Program	http://www.michigan.gov/lara/0,4601,7-154-
20	Washington State Revisits Rules on Use of Marijuana	http://www.nytimes.com/2015/04/26/us/washing

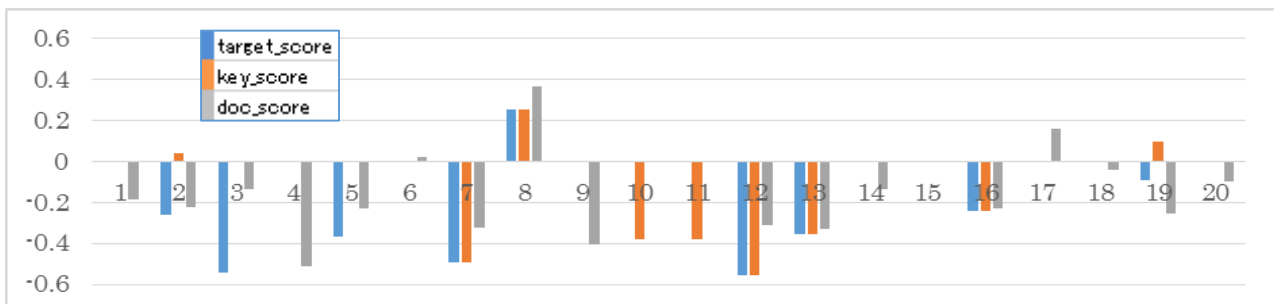
rank	target_sent	target_score	target_mixed	key_sentim	key_score	key_mixed	doc_sentim	doc_score	doc_mixed
1	negative	-0.219545		negative	-0.21955		negative	-0.41466	1
2	negative	-0.19657	1	positive	0.097187	1	positive	0.035961	1
3	negative	-0.290809	1	positive	0.048862	1	negative	-0.19455	1
4	negative	-0.418899		negative	-0.38411		negative	-0.34223	1
5							positive	0.336073	1
6	negative	-0.462273		negative	-0.46227		negative	-0.18575	1
7	negative	-0.376155					positive	0.130144	1
8							positive	0.341961	1
9	negative	-0.22945	1	positive	0.129756	1	negative	-0.28693	1
10	negative	-0.600173					positive	0.266176	1
11	negative	-0.600173					positive	0.266176	1
12	negative	-0.104974	1	positive	6.06E-05	1	negative	-0.38357	1
13	negative	-0.560631		negative	-0.52916		negative	-0.36541	1
14	positive	0.389034					positive	0.116489	1
15	negative	-0.275871	1	negative	-0.0055	1	negative	-0.0188	1
16	neutral			positive	0.315153		positive	0.51907	
17	positive	0.347269	1	positive	0.418212	1	positive	0.294087	1
18									
19							negative	-0.01147	1
20	negative	-0.43618		negative	-0.43618		negative	-0.32803	1



Gay Marriage (Search Term: "gay marriage", Target: "gay marriage")

rank	title	link
1	Same-sex marriage - Wikipedia, the	http://en.wikipedia.org/wiki/Same-sex_marriage
2	Gay Marriage ProCon.org	http://gaymarriage.procon.org/
3	Same-sex marriage in the United States	http://en.wikipedia.org/wiki/Same-
4	Marriage Equality – LGBTQ Nation	http://www.lgbtqnation.com/tag/gay-marriage/
5	37 States with Legal Gay Marriage and	http://gaymarriage.procon.org/view.resource.php?resourceID=0
6	States Freedom to Marry	http://www.freedomtomarry.org/states/
7	High court ruling may lead to gay	http://www.usatoday.com/story/news/nation/2014/10/06/supre
8	Supreme Court Agrees to Decide On	http://www.nbcnews.com/news/us-news/supreme-court-agrees-
9	First Take: Handwriting on the wall for	http://www.usatoday.com/story/news/nation/2015/02/09/supre
10	Gay Marriage and Homosexuality	http://www.pewforum.org/topics/gay-marriage-and-
11	Gay Marriage and Homosexuality	http://www.pewforum.org/topics/gay-marriage-and-
12	gay marriage : NPR	http://www.npr.org/tags/125937703/gay-marriage
13	Supreme Court paves way for gay	http://www.foxnews.com/politics/2014/10/06/supreme-court-
14	Rubio: No constitutional right to 'gay'	http://www.wnd.com/2015/04/rubio-no-constitutional-right-to-
15	Same-Sex Marriage : SCOTUSblog	http://www.scotusblog.com/category/special-features/same-
16	Historic day: Gay marriage is legal in	http://myfox8.com/2014/10/10/historic-day-gay-marriage-is-
17	Did Supreme Court Telegraph Its	http://www.forbes.com/sites/ilvashapiro/2015/01/17/did-
18	10 Reasons Why Homosexual	http://www.tfpstudentaction.org/politically-
19	In Iowa, GOP field stresses opposition	http://www.politico.com/story/2015/04/iowa-faith-freedom-
20	G.O.P. Struggling With Shifts on Gay	http://www.nytimes.com/2015/04/27/us/politics/gop-

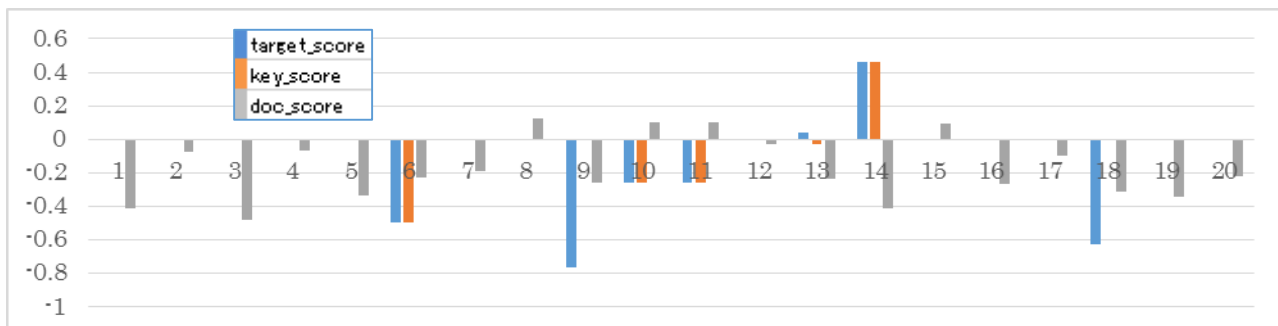
rank	target_sent	target_score	target_mixed	key_sentim	key_score	key_mixed	doc_sentim	doc_score	doc_mixed
1	neutral	0		neutral	0		negative	-0.18413	1
2	negative	-0.260025	1	positive	0.039512	1	negative	-0.22269	1
3	negative	-0.538512					negative	-0.13604	1
4							negative	-0.50673	
5	negative	-0.364491					negative	-0.23007	1
6							positive	0.022537	1
7	negative	-0.492569		negative	-0.49257		negative	-0.3204	1
8	positive	0.255961		positive	0.255961		positive	0.368057	
9	neutral			neutral			negative	-0.40096	1
10	neutral			negative	-0.37621		positive	0.007296	1
11	neutral			negative	-0.37621		positive	0.007296	1
12	negative	-0.553495		negative	-0.5535		negative	-0.30995	1
13	negative	-0.353835		negative	-0.35384		negative	-0.32437	1
14							negative	-0.13373	1
15							neutral		
16	negative	-0.236967		negative	-0.23697		negative	-0.2279	1
17	neutral			neutral			positive	0.162695	1
18							negative	-0.03985	1
19	negative	-0.090909	1	positive	0.100959	1	negative	-0.24999	1
20	neutral			neutral			negative	-0.09256	1



Gun Rights (Search Term: "gun rights", Target: "gun rights")

rank	title	link
1	Gun Control - Just Facts	https://www.justfacts.com/guncontrol.asp
2	Gun Control and Gun Rights	http://www.usnews.com/topics/subjects/gun-
3	Gun control - Wikipedia, the free encyclopedia	http://en.wikipedia.org/wiki/Gun_control
4	National Association for Gun Rights	http://www.nationalgunrights.org/
5	Background on Gun Control	http://www.ontheissues.org/background_gun_c
6	How Gun Rights Harm the Rule of Law - The Atlantic	http://www.theatlantic.com/politics/archive/20
7	Gun Control: Pictures, Videos, Breaking News	http://www.huffingtonpost.com/news/gun-
8	Gun Rights OpenSecrets	https://www.opensecrets.org/industries/indus.p
9	gun rights Examiner.com	http://www.examiner.com/topic/gun-rights
10	Gun Rights vs. Gun Control Pew Research Center for	http://www.people-press.org/2014/12/07/gun-
11	Gun Rights vs. Gun Control Pew Research Center for	http://www.people-press.org/2014/12/07/gun-
12	Gun Rights Facebook	https://www.facebook.com/WeLikeGunRights
13	Growing Public Support for Gun Rights Pew	http://www.people-
14	App Lets Gun Enthusiasts Track Down Gun Control	http://thinkprogress.org/justice/2015/04/03/364
15	Gun Control Pew Research Center	http://www.pewresearch.org/topics/gun-
16	One Nation, Under the Gun - The New Yorker	http://www.newyorker.com/magazine/2012/04/
17	Death by "Gun Control"	http://jpfo.org/filegen-a-m/deathgc.htm
18	Fight on Guns Is Being Taken to State Ballots -	http://www.nytimes.com/2015/01/03/us/gun-
19	Gun Control: Myths and Realities Cato Institute	http://www.cato.org/publications/commentary/
20	Bloomberg group launches midterm campaign for gun	http://www.usatoday.com/story/news/politics/2

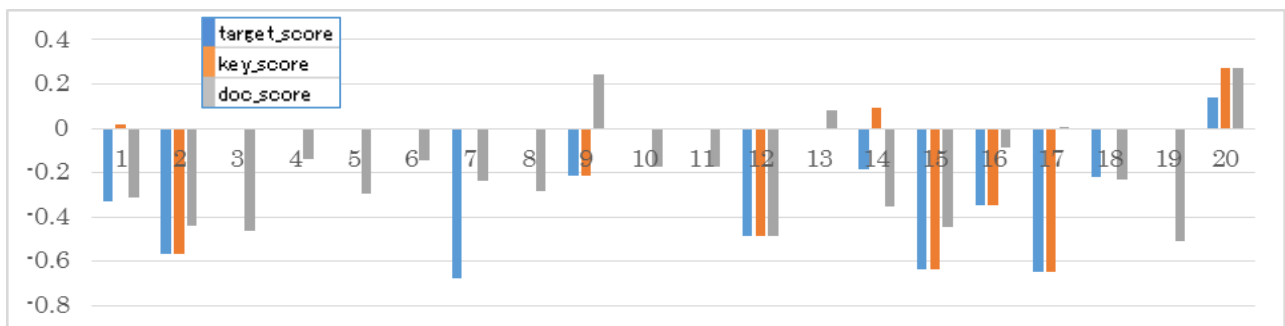
rank	target_sent	target_score	target_mixed	key_sentim	key_score	key_mixed	doc_sentim	doc_score	doc_mixed
1		0			0		negative	-0.41266	1
2							negative	-0.07568	1
3							negative	-0.47741	1
4	neutral			neutral			negative	-0.07089	1
5	neutral			neutral			negative	-0.33728	1
6	negative	-0.498656		negative	-0.49866		negative	-0.2297	1
7							negative	-0.19337	1
8	neutral						positive	0.121975	1
9	negative	-0.76349					negative	-0.25921	1
10	negative	-0.257777		negative	-0.25778		positive	0.104286	1
11	negative	-0.257777		negative	-0.25778		positive	0.104286	1
12	neutral						negative	-0.02935	1
13	positive	0.0413264	1	negative	-0.02967	1	negative	-0.23431	1
14	positive	0.462523		positive	0.462523		negative	-0.41053	1
15	neutral			neutral			positive	0.091577	1
16							negative	-0.2673	1
17							negative	-0.10045	1
18	negative	-0.627181					negative	-0.31182	1
19							negative	-0.34192	1
20							negative	-0.22285	1



Internet Censorship (Search Term: "internet censorship", Target: "internet censorship")

rank	Title	link
1	Internet censorship - Wikipedia, the free encyclopedia	http://en.wikipedia.org/wiki/Internet_censorshi
2	How Internet Censorship Works - HowStuffWorks	http://computer.howstuffworks.com/internet-
3	Internet Censorship	http://www.huffingtonpost.com/news/internet-
4	Internet Censorship in China - Breaking World	http://topics.nytimes.com/top/news/internation
5	Internet censorship: Plugging the holes The	http://www.economist.com/news/china/216422
6	Internet Censorship Amnesty International USA	http://www.amnestyusa.org/our-
7	Study of Internet censorship reveals the deepest fears	http://news.sciencemag.org/asiapacific/2014/0
8	Iran expands 'smart' Internet censorship Reuters	http://www.reuters.com/article/2014/12/26/us-
9	Internet Censorship and Control	https://cyber.law.harvard.edu/pubrelease/intern
10	Top 10 Internet-censored countries	http://www.usatoday.com/story/news/world/20
11	Top 10 Internet-censored countries	http://www.usatoday.com/story/news/world/20
12	Global Internet Censorship Map: Map shows	http://bgr.com/2014/08/26/global-internet-
13	Internet Speech American Civil Liberties Union	https://www.aclu.org/issues/free-
14	Internet Censorship	http://rense.com/general69/intercens.htm
15	Arab IP Centre: What is internet censorship and how	http://www.arabipcentre.com/
16	Internet Censorship Around The World IVPN	https://www.ivpn.net/internet-censorship/
17	Say No to Online Censorship! Electronic Frontier	https://www.eff.org/pages/say-no-to-online-
18	Internet censorship: The worst offenders	http://betanews.com/2015/01/28/internet-
19	SOPA/PIPA: Internet Blacklist Legislation Electronic	https://www.eff.org/issues/coica-internet-
20	Listen To "Cyberspace Spirit," China's Anthem To	http://gizmodo.com/listen-to-cyberspace-spirit-

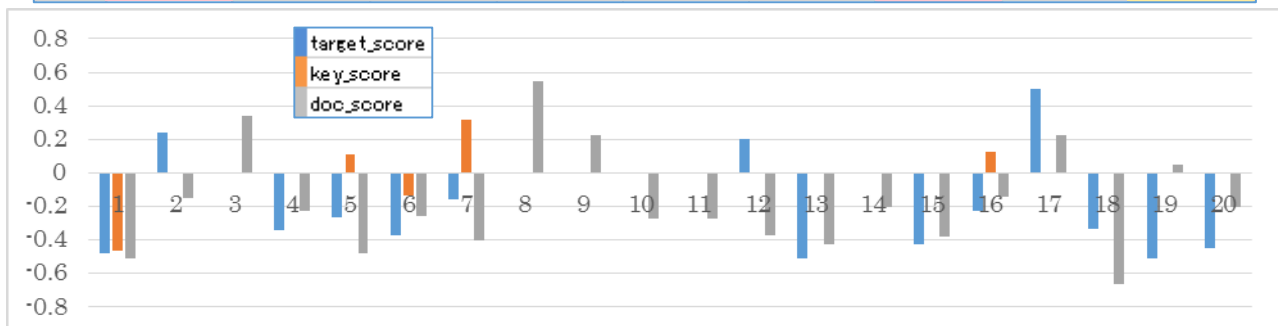
rank	target_sent	target_score	target_mixed	key_sentim	key_score	key_mixed	doc_sentim	doc_score	doc_mixed
1	negative	-0.331461	1	positive	0.015947	1	negative	-0.3153	1
2	negative	-0.567753		negative	-0.56775		negative	-0.43939	1
3							negative	-0.46544	
4							negative	-0.14131	1
5							negative	-0.2947	1
6	neutral			neutral			negative	-0.14215	1
7	negative	-0.679635					negative	-0.23635	1
8							negative	-0.28508	1
9	negative	-0.215631		negative	-0.21563		positive	0.240361	1
10							negative	-0.17593	1
11							negative	-0.17593	1
12	negative	-0.486302		negative	-0.4863		negative	-0.48877	1
13							positive	0.083904	1
14	negative	-0.186176	1	positive	0.092167	1	negative	-0.35432	1
15	negative	-0.634605		negative	-0.63461		negative	-0.44778	1
16	negative	-0.346501		negative	-0.3465		negative	-0.08615	1
17	negative	-0.64776		negative	-0.64776		positive	0.002739	1
18	negative	-0.217683					negative	-0.23016	1
19							negative	-0.50937	
20	positive	0.13686	1	positive	0.273719	1	positive	0.271098	1



Vaccination (Search Term: “vaccination”, Target: “vaccination”)

rank	title	link
1	Vaccination - Wikipedia, the free encyclopedia	http://en.wikipedia.org/wiki/Vaccination
2	Vaccines: HOME page for Vaccines and Immunizations	http://www.cdc.gov/vaccines/
3	Vaccines.gov: Home	http://www.vaccines.gov/
4	Seasonal Influenza Vaccination Resources for Health	http://www.cdc.gov/flu/professionals/vacci
5	Vaccines ProCon.org	http://vaccines.procon.org/
6	Vaccination news, articles and information:	http://www.naturalnews.com/vaccination.ht
7	Vaccination & Vaccine Safety Flu.gov	http://www.flu.gov/prevention-
8	Vaccines news, articles and information:	http://www.naturalnews.com/vaccines.html
9	WebMD Vaccines Center – Adult Vaccination	http://www.webmd.com/vaccines/
10	WHO Vaccines	http://www.who.int/ith/vaccines/en/
11	WHO Vaccines	http://www.who.int/ith/vaccines/en/
12	Vaccines (Immunizations) - Overview Health Information	http://www.nytimes.com/health/guides/spec
13	THE VACCINATION RACKET	http://www.whale.to/vaccines.html
14	History of Vaccines — A Vaccine History Project of The	http://www.historyofvaccines.org/
15	Your Child's Immunizations	http://kidshealth.org/parent/general/body/va
16	Vaccination: Defending Your Right to Know and	http://www.nvic.org/nvic-vaccine-
17	Vaccine Delivery - Bill & Melinda Gates Foundation	http://www.gatesfoundation.org/What-We-
18	California Lawmaker To Revive Bill Requiring	http://www.huffingtonpost.com/2015/04/21
19	Vaccines - Scientific American	http://www.scientificamerican.com/topic/va
20	No more vaccination waivers - California lawmakers —	http://rt.com/usa/229715-california-

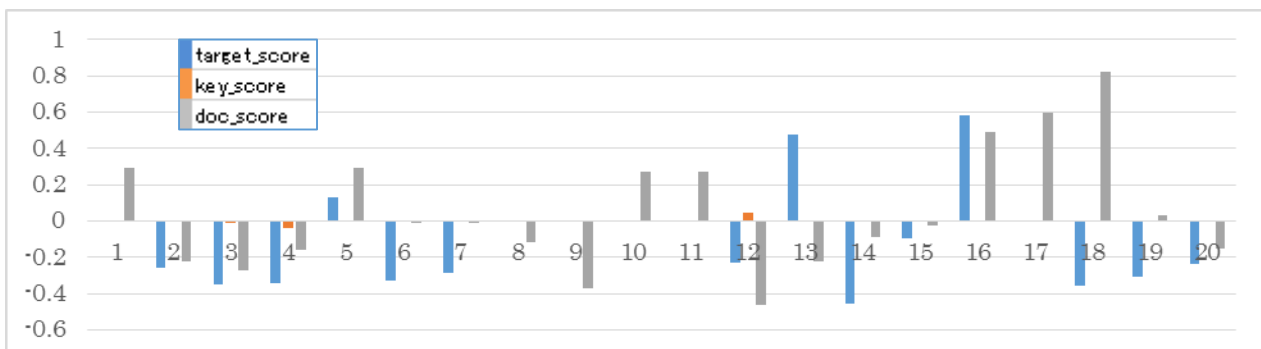
rank	target_sent	target_score	target_mixed	key_sentim	key_score	key_mixed	doc_sentim	doc_score	doc_mixed
1	negative	-0.480928		negative	-0.46748		negative	-0.51404	1
2	positive	0.240327					negative	-0.14841	1
3							positive	0.340774	1
4	negative	-0.338866	1				negative	-0.22555	1
5	negative	-0.265597	1	positive	0.109057	1	negative	-0.48244	1
6	negative	-0.373514	1	negative	-0.13263	1	negative	-0.26083	1
7	negative	-0.15709	1	positive	0.315513	1	negative	-0.3996	1
8							positive	0.546795	1
9							positive	0.226517	1
10							negative	-0.27555	
11							negative	-0.27555	
12	positive	0.203086					negative	-0.3732	1
13	negative	-0.508856					negative	-0.42861	1
14							negative	-0.20365	1
15	negative	-0.426486					negative	-0.37716	1
16	negative	-0.226638	1	positive	0.123212	1	negative	-0.14297	1
17	positive	0.499388					positive	0.224291	1
18	negative	-0.33689					negative	-0.66012	1
19	negative	-0.510306					positive	0.049151	1
20	negative	-0.448597					negative	-0.20104	1



Immigration (Search Term: "immigration", Target: "immigration")

rank	Title	link
1	USCIS: Homepage	http://www.uscis.gov/
2	Immigration The White House	https://www.whitehouse.gov/issues/immigr
3	Immigration - Wikipedia, the free encyclopedia	http://en.wikipedia.org/wiki/Immigration
4	Immigration: Stories of Yesterday and Today and Ellis	http://teacher.scholastic.com/activities/immi
5	US Immigration Lawyer, Law Offices of Rajiv S.	http://www.immigration.com/
6	Tweets about #immigration hashtag on Twitter	https://twitter.com/hashtag/immigration
7	U.S. Immigration and Customs Enforcement (ICE)	http://www.ice.gov/
8	Immigration: Pictures, Videos, Breaking News	http://www.huffingtonpost.com/news/immi
9	More Immigration Articles Page 1	http://www.washingtonexaminer.com/sectio
10	Home - History of Immigration- Classroom Presentation	http://www.loc.gov/teachers/classroommate
11	Home - History of Immigration- Classroom Presentation	http://www.loc.gov/teachers/classroommate
12	Immigration Wex Legal Dictionary / Encyclopedia LII /	http://www.law.cornell.edu/wex/immigratio
13	Immigration	http://thinkprogress.org/immigration/issue/
14	Immigration U.S. Fox News	http://www.foxnews.com/us/immigration/
15	A Closer Look At Obama's Immigration Plan: What's In	http://www.npr.org/blogs/thetwo-
16	KUCK IMMIGRATION // REAL PEOPLE. REAL	http://www.immigration.net/
17	myUSCIS - Case Status Search	https://egov.uscis.gov/casestatus/
18	Immigration Brookings Institution	http://www.brookings.edu/research/topics/i
19	Federation for American Immigration Reform: Home	http://www.fairus.org/
20	Immigration Reform 2014: Latest News, Bills, Photos &	http://www.politico.com/p/pages/immigrati

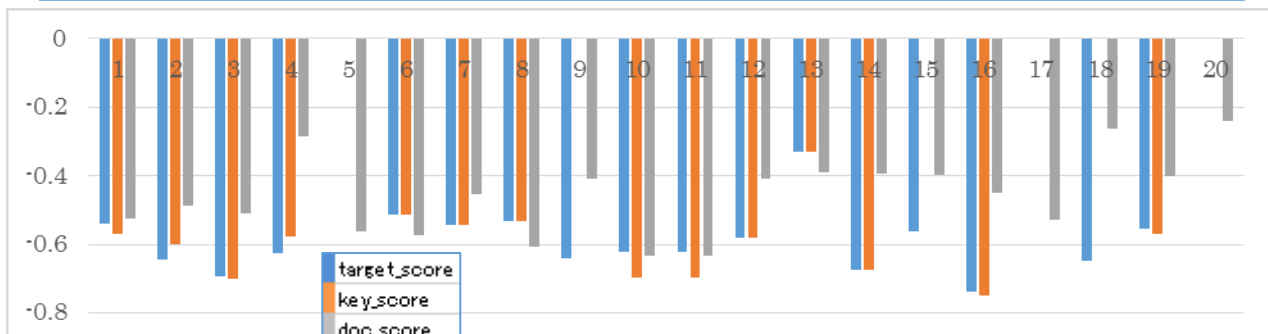
rank	target_sent	target_score	target_mixed	key_sentim	key_score	key_mixed	doc_sentim	doc_score	doc_mixed
1	neutral	0			0		positive	0.296812	1
2	negative	-0.256514	1				negative	-0.22151	1
3	negative	-0.352273	1	negative	-0.00153	1	negative	-0.27375	1
4	negative	-0.341163	1	negative	-0.0356	1	negative	-0.15621	1
5	positive	0.133422	1				positive	0.294115	1
6	negative	-0.328523					negative	-0.00956	1
7	negative	-0.286806					negative	-0.0076	1
8	neutral						negative	-0.11241	1
9							negative	-0.36748	
10	neutral			neutral			positive	0.270569	1
11	neutral			neutral			positive	0.270569	1
12	negative	-0.232312	1	positive	0.049863	1	negative	-0.46358	1
13	positive	0.477601					negative	-0.22526	1
14	negative	-0.456834					negative	-0.08521	1
15	negative	-0.096989	1				negative	-0.02116	1
16	positive	0.580573					positive	0.49329	1
17							positive	0.598148	
18	negative	-0.356985					positive	0.82018	
19	negative	-0.304807	1				positive	0.030406	1
20	negative	-0.234276					negative	-0.14806	1



Drone strikes (Search Term: "drone strikes", Target: "drone strikes")

rank	Title	link
1	Drone strikes in Pakistan - Wikipedia, the free	http://en.wikipedia.org/wiki/Drone_strikes
2	41 men targeted but 1,147 people killed: US drone	http://www.theguardian.com/us-
3	Covert Drone War The Bureau of Investigative	http://www.thebureauinvestigates.com/cate
4	Drone Attacks Democracy Now!	http://www.democracynow.org/topics/dron
5	DRONE STRIKES: Top Secret Confessions of a Drone	http://www.youtube.com/watch?v=z_x-
6	Drone Strikes Reveal Uncomfortable Truth: U.S. Is	http://www.nvtimes.com/2015/04/24/world
7	when will obama apologize for all the other innocent	https://firstlook.org/theintercept/2015/04/2
8	Killing of Americans Deepens Debate Over Use of	http://www.nvtimes.com/2015/04/24/world
9	U.S. drone strike accidentally killed 2 hostages -	http://www.cnn.com/2015/04/23/politics/w
10	Living Under Drones	http://www.livingunderdrones.org/
11	Living Under Drones	http://www.livingunderdrones.org/
12	Obama: 2 hostages accidentally killed in drone strike	http://www.usatoday.com/story/news/politi
13	Rand Paul defends Obama, drone strikes - CBS News	http://www.cbsnews.com/news/rand-paul-
14	Theologians Cast Doubt on Morality of Drone Strikes	http://www.voanews.com/content/theologia
15	Drone Strikes Kill Two Western Hostages - The Atlantic	http://www.theatlantic.com/international/ar
16	U.S. government's refusal to discuss drone attacks	http://www.washingtonpost.com/world/nati
17	Yemen al-Qaeda Leader Who Claimed Credit for	http://time.com/3851330/charlie-hebdo-al-
18	Drone strike 'kills Yemen al-Qaeda officials' - Al	http://www.aljazeera.com/news/middleeast/
19	Obama's Drone War - The New Yorker	http://www.newyorker.com/magazine/2014
20	Out of Sight, Out of Mind: A visualization of drone	http://drones.pitchinteractive.com/

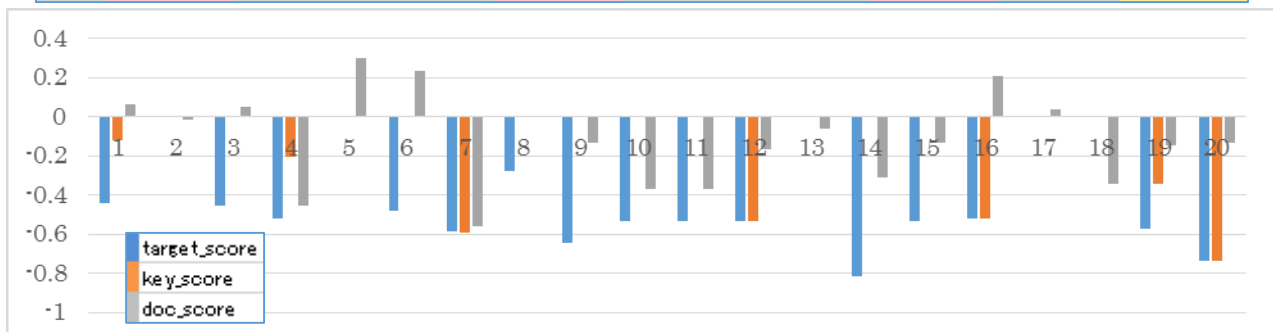
rank	target_sent	target_score	target_mixed	key_sentim	key_score	key_mixed	doc_sentim	doc_score	doc_mixed
1	negative	-0.537939	1	negative	-0.57085		negative	-0.52522	1
2	negative	-0.643657		negative	-0.59997		negative	-0.48852	1
3	negative	-0.69284		negative	-0.70039		negative	-0.50859	1
4	negative	-0.625116		negative	-0.57548		negative	-0.28499	1
5							negative	-0.56058	
6	negative	-0.512161		negative	-0.51216		negative	-0.57185	1
7	negative	-0.545082		negative	-0.54508		negative	-0.4549	1
8	negative	-0.531035		negative	-0.53104		negative	-0.60875	1
9	negative	-0.642695					negative	-0.41029	1
10	negative	-0.621297		negative	-0.69542		negative	-0.63452	1
11	negative	-0.621297		negative	-0.69542		negative	-0.63452	1
12	negative	-0.582205		negative	-0.58221		negative	-0.41039	1
13	negative	-0.331846		negative	-0.33185		negative	-0.39147	1
14	negative	-0.675421		negative	-0.67542		negative	-0.39307	1
15	negative	-0.562977					negative	-0.39624	1
16	negative	-0.73667		negative	-0.75099		negative	-0.45025	1
17							negative	-0.52922	
18	negative	-0.647461					negative	-0.2625	1
19	negative	-0.554363		negative	-0.57027		negative	-0.401	1
20							negative	-0.2389	1



Obamacare (Search Term: "obamacare", Target: "obamacare")

rank	Title	link
1	ObamaCare Facts: Facts on the Affordable Care Act	http://obamacarefacts.com/obamacare-facts/
2	HealthCare.gov: Get 2015 health coverage now. Health	https://www.healthcare.gov/
3	Patient Protection and Affordable Care Act - Wikipedia,	http://en.wikipedia.org/wiki/Patient_Protection_and_Affordable_Care_Act
4	Other - Public Approval of Health Care Law	http://www.realclearpolitics.com/epolls/other
5	Health Care Law - Rasmussen Reports™	http://www.rasmussenreports.com/public_content/health_care
6	What Will Obamacare Cost You? - Forbes	http://www.forbes.com/special-
7	Obamacare	http://www.cnn.com/id/101068119
8	Affordable Care Act (Obamacare) Articles, Photos, and	http://www.latimes.com/topic/health/healthcare
9	More Obamacare Articles Page 1	http://www.washingtonexaminer.com/section
10	Cruz unveils ObamaCare alternative TheHill	http://thehill.com/policy/healthcare/234499-
11	Cruz unveils ObamaCare alternative TheHill	http://thehill.com/policy/healthcare/234499-
12	SEAN PARNELL: Obamacare flying machine begins a	http://www.washingtontimes.com/news/2015
13	Obamacare	http://www.huffingtonpost.com/news/obamacare
14	Gruber: Stupidity of Americans Would Have Killed	http://dailycaller.com/2014/11/09/obamacare-
15	Obamacare premiums to spike, but law is cheaper than	http://www.washingtontimes.com/news/2015
16	Obamacare The Affordable Care Act Washington	http://www.washingtonexaminer.com/politics
17	Gruber In 2009: Obamacare Will NOT Be Affordable	http://dailycaller.com/2014/12/30/obama-
18	Burke Beu: This Democrat Is Giving Up on ObamaCare	http://www.wsj.com/articles/burke-beu-this-
19	ObamaCare Facts, News & Updates - Investors.com	http://news.investors.com/politics/obamacare
20	Obamacare Facebook	https://www.facebook.com/ilikeobamacare

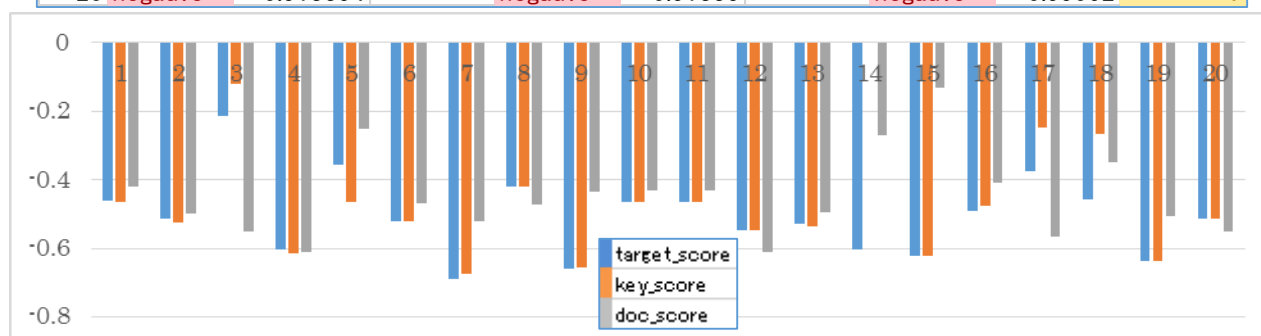
rank	target_sent	target_score	target_mixed	key_sentim	key_score	key_mixed	doc_sentim	doc_score	doc_mixed
1	negative	-0.439035	1	negative	-0.11768	1	positive	0.063939	1
2							negative	-0.01188	1
3	negative	-0.450938					positive	0.055185	1
4	negative	-0.516331	1	negative	-0.20223	1	negative	-0.45194	1
5	neutral			neutral			positive	0.301578	1
6	negative	-0.4809					positive	0.236586	1
7	negative	-0.583938		negative	-0.5873		negative	-0.55542	1
8	negative	-0.275965	1				positive	0.002011	1
9	negative	-0.640158					negative	-0.13219	1
10	negative	-0.531982					negative	-0.36676	1
11	negative	-0.531982					negative	-0.36676	1
12	negative	-0.534754		negative	-0.53475		negative	-0.16466	1
13							negative	-0.06034	1
14	negative	-0.811992					negative	-0.30552	1
15	negative	-0.531637					negative	-0.13062	1
16	negative	-0.520628		negative	-0.52063		positive	0.207662	1
17	neutral			neutral			positive	0.037022	1
18							negative	-0.34337	
19	negative	-0.567813	1	negative	-0.34211	1	negative	-0.14583	1
20	negative	-0.732233		negative	-0.73223		negative	-0.12976	1



Death penalty (Search Term: "death penalty", Target: "death penalty")

rank	Title	link
1	Death Penalty Information Center: DPIC	http://www.deathpenaltyinfo.org/
2	Capital punishment - Wikipedia, the free encyclopedia	http://en.wikipedia.org/wiki/Capital_punishm
3	Death Penalty ProCon.org	http://deathpenalty.procon.org/
4	Death Penalty Wex Legal Dictionary / Encyclopedia	http://www.law.cornell.edu/topics/death_pena
5	Death Penalty Focus	http://deathpenalty.org/
6	Death Penalty Gallup Historical Trends	http://www.gallup.com/poll/1606/death-
7	Death Penalty Amnesty International USA	http://www.amnestyusa.org/our-
8	Shifting Politics on the Death Penalty - NYTimes.com	http://www.nytimes.com/2015/01/05/opinion/
9	Abolish the Death Penalty Amnesty International USA	http://www.amnestyusa.org/our-
10	Human Rights and the Death Penalty American Civil	https://www.aclu.org/issues/human-
11	Human Rights and the Death Penalty American Civil	https://www.aclu.org/issues/human-
12	Federal judge rules California death penalty is	http://www.latimes.com/local/lanow/la-me-
13	Readings - History Of The Death Penalty The	http://www.pbs.org/wgbh/pages/frontline/sho
14	Tweets about #deathpenalty hashtag on Twitter	https://twitter.com/hashtag/deathpenalty
15	National Coalition to Abolish the Death Penalty	http://www.ncadp.org/
16	California death penalty ruled unconstitutional - SFGate	http://www.sfgate.com/crime/article/Federal-
17	Expert: 5 ways to improve the U.S. death penalty	http://www.cnn.com/2014/07/03/opinion/blec
18	Capital punishment; the death penalty: all points of	http://www.religioustolerance.org/execute.ht
19	Pennsylvania's governor suspends the death penalty -	http://www.washingtonpost.com/news/post-
20	Federal Judge Rules Death Penalty Unconstitutional in	http://www.nbcavarea.com/news/local/Fede

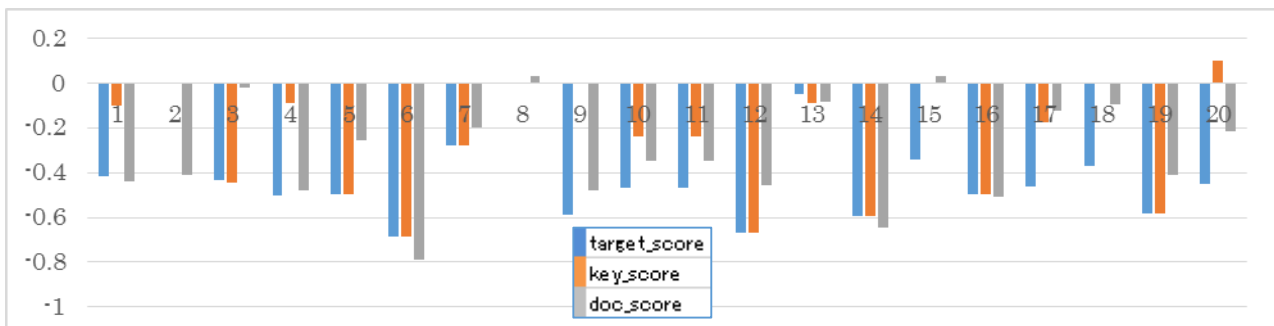
rank	target_sent	target_score	target_mixed	key_sentim	key_score	key_mixed	doc_sentim	doc_score	doc_mixed
1	negative	-0.46195		negative	-0.46521		negative	-0.41881	1
2	negative	-0.514346		negative	-0.52336		negative	-0.50035	1
3	negative	-0.21413	1	negative	-0.12111	1	negative	-0.55065	1
4	negative	-0.603637		negative	-0.61418		negative	-0.61167	1
5	negative	-0.35619		negative	-0.4638		negative	-0.25081	1
6	negative	-0.521595		negative	-0.5216		negative	-0.46833	1
7	negative	-0.688629		negative	-0.67423		negative	-0.52195	1
8	negative	-0.418675		negative	-0.41868		negative	-0.47116	1
9	negative	-0.661447		negative	-0.65654		negative	-0.43624	1
10	negative	-0.466286		negative	-0.46629		negative	-0.4311	1
11	negative	-0.466286		negative	-0.46629		negative	-0.4311	1
12	negative	-0.547952		negative	-0.54795		negative	-0.61203	1
13	negative	-0.530223		negative	-0.53429		negative	-0.49415	1
14	negative	-0.604449					negative	-0.26891	1
15	negative	-0.62122		negative	-0.62122		negative	-0.13111	1
16	negative	-0.490661		negative	-0.477		negative	-0.40901	1
17	negative	-0.375505	1	negative	-0.24604	1	negative	-0.56737	1
18	negative	-0.457774	1	negative	-0.26495	1	negative	-0.34873	1
19	negative	-0.637752		negative	-0.63775		negative	-0.50641	1
20	negative	-0.513354		negative	-0.51335		negative	-0.55062	1



Prostitution (Search Term: "prostitution", Target: "prostitution")

rank	Title	link
1	Prostitution - Wikipedia, the free encyclopedia	http://en.wikipedia.org/wiki/Prostitution
2	Prostitution Research & Education	http://prostitutionresearch.com/
3	Prostitution Economist - World News, Politics,	http://www.economist.com/topics/prostitution
4	100 Countries and Their Prostitution Policies - Legal	http://prostitution.procon.org/view.resource.ph
5	Fort Collins prostitution sting jails 10	http://www.coloradoan.com/story/news/crime/
6	Prostitution ProCon.org -- Should prostitution be	http://prostitution.procon.org/
7	Prostitution Definition of prostitution by Merriam-	http://www.merriam-
8	Animated Prostitution - Skyrim - WIP at Skyrim	http://www.nexusmods.com/skyrim/mods/1074
9	More than 60 men charged in HPD prostitution	http://www.click2houston.com/news/64-
10	Prostitution - FindLaw	http://criminal.findlaw.com/criminal-
11	Prostitution - FindLaw	http://criminal.findlaw.com/criminal-
12	Bikini Barista-stand owner charged with prostitution -	http://www.cbsnews.com/news/seattle-area-
13	Prostitution Drugs and Hiv Documentary 2014 -	http://www.youtube.com/watch?v=14NY4Umf
14	RCW 9A.88.030: Prostitution.	http://apps.leg.wa.gov/rcw/default.aspx?cite=9
15	PROSTITUTION:LEAVING THE LIFE - YouTube	http://www.youtube.com/watch?v=I4mv9QxTz
16	Alaska's Prostitution Law Isn't Working - The Atlantic	http://www.theatlantic.com/health/archive/201
17	Tweets about #prostitution hashtag on Twitter	https://twitter.com/hashtag/prostitution
18	64 men charged in HPD prostitution investigation	http://abc13.com/news/64-men-charged-in-
19	Think Again: Prostitution Foreign Policy	http://foreignpolicy.com/2014/01/19/think-
20	Uber for prostitution: Could better apps make the	http://www.slate.com/blogs/moneybox/2015/0

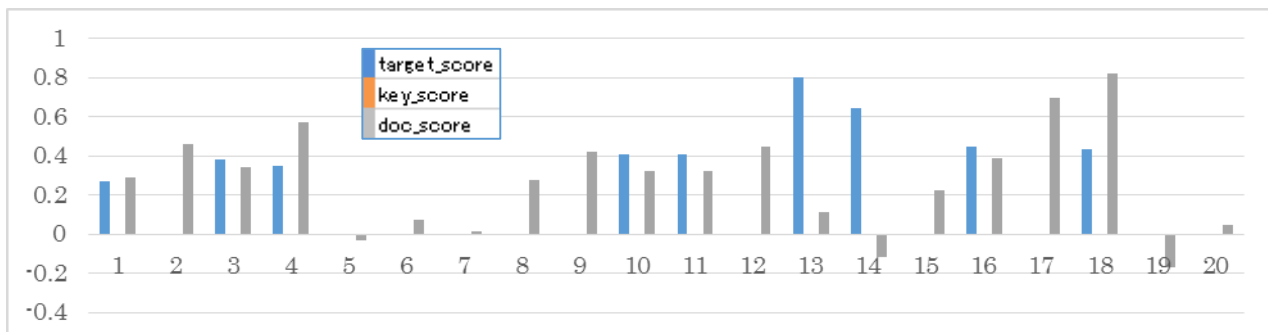
rank	target_sent	target_score	target_mixed	key_sentim	key_score	key_mixed	doc_sentim	doc_score	doc_mixed
1	negative	-0.414709	1	negative	-0.09884	1	negative	-0.43696	1
2							negative	-0.40746	1
3	negative	-0.432099		negative	-0.44314		negative	-0.02098	1
4	negative	-0.50289	1	negative	-0.08515	1	negative	-0.4786	1
5	negative	-0.495439		negative	-0.49544		negative	-0.25406	1
6	negative	-0.684036		negative	-0.68404		negative	-0.78634	1
7	negative	-0.276298		negative	-0.2763		negative	-0.19751	1
8							positive	0.033408	1
9	negative	-0.589408					negative	-0.47867	
10	negative	-0.46965	1	negative	-0.23606	1	negative	-0.34428	1
11	negative	-0.46965	1	negative	-0.23606	1	negative	-0.34428	1
12	negative	-0.666858		negative	-0.66686		negative	-0.45326	1
13	negative	-0.044812	1	negative	-0.08962	1	negative	-0.07994	1
14	negative	-0.596215		negative	-0.59622		negative	-0.64764	
15	negative	-0.342409					positive	0.034838	1
16	negative	-0.495662		negative	-0.49566		negative	-0.50527	1
17	negative	-0.463486		negative	-0.173	1	negative	-0.12052	1
18	negative	-0.36762	1				negative	-0.09194	1
19	negative	-0.58379		negative	-0.58379		negative	-0.41069	1
20	negative	-0.451462	1	positive	0.102742	1	negative	-0.21548	1



University of Maryland (Search Term: "University of Maryland", Target: "University of Maryland")

rank	Title	link
1	The University of Maryland :: A Public Research	http://www.umd.edu/
2	UMUC: Accredited Online College	http://www.umuc.edu/
3	University of Maryland, College Park - Wikipedia, the	http://en.wikipedia.org/wiki/University_of_Ma
4	University of Maryland, Baltimore: Home	http://www.umaryland.edu/
5	University of Maryland Facebook	https://www.facebook.com/UnivofMaryland
6	Maryland Terrapins Athletics - University of	http://www.umterps.com/
7	University of Maryland Medical Center: Home	http://umm.edu/
8	Office of Undergraduate Admissions · University of	https://www.admissions.umd.edu/
9	UMBC: An Honors University In Maryland	http://www.umbc.edu/
10	UMD Right Now :: University of Maryland	http://www.umdrightnow.umd.edu/
11	UMD Right Now :: University of Maryland	http://www.umdrightnow.umd.edu/
12	University of Maryland Libraries	http://www.lib.umd.edu/
13	UMD Department of Computer Science	https://www.cs.umd.edu/
14	University of Maryland School of Medicine	http://medschool.umaryland.edu/
15	Department of Astronomy: University of Maryland	https://www.astro.umd.edu/
16	University of Maryland--College Park University of	http://colleges.usnews.rankingsandreviews.co
17	University of Maryland School of Architecture	http://www.arch.umd.edu/
18	The University of Maryland Graduate School	http://www.gradschool.umd.edu/
19	The University of Maryland Francis King Carey	http://www.law.umaryland.edu/
20	UMD Department of Physics - UMD Physics	http://umdphysics.umd.edu/

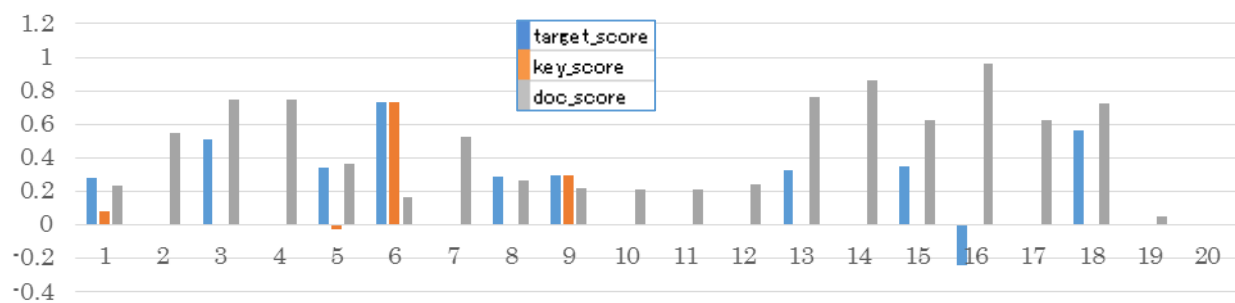
rank	target_sent	target_score	target_mixed	key_sentim	key_score	key_mixed	doc_sentim	doc_score	doc_mixed
1	positive	0.269136			0		positive	0.288786	1
2							positive	0.461912	1
3	positive	0.380524					positive	0.345918	1
4	positive	0.35183					positive	0.571032	1
5	neutral						negative	-0.02935	1
6	neutral						positive	0.076365	1
7	neutral						positive	0.014731	1
8	neutral						positive	0.27766	1
9	neutral						positive	0.420221	1
10	positive	0.411732	1				positive	0.323611	1
11	positive	0.411732	1				positive	0.323611	1
12							positive	0.449596	
13	positive	0.80085					positive	0.117486	1
14	positive	0.647798					negative	-0.11491	1
15							positive	0.226058	1
16	positive	0.451642					positive	0.390142	1
17							positive	0.699429	
18	positive	0.436223					positive	0.820031	
19	neutral						negative	-0.17027	1
20	neutral						positive	0.050913	1



Sightseeing (Search Term: "sightseeing", Target: "sightseeing")

rank	Title	link
1	sightseeing - definition of sightseeing by The Free	http://www.thefreedictionary.com/sightseei
2	Sightseeing.com Directory of Local Tours and	http://www.sightseeing.com/
3	Google Sightseeing — Discover the world via Google	http://googlesightseeing.com/
4	City Sightseeing - World's Leading Open Top Bus Tour	http://www.city-sightseeing.com/
5	Sightseeing Define Sightseeing at Dictionary.com	http://dictionary.reference.com/browse/sigh
6	Sightseeing: Rattawut Lapcharoensap: 9780802142344:	http://www.amazon.com/Sightseeing-
7	Sightseeing - VIENNA – NOW OR NEVER - Wien	http://www.wien.info/en/sightseeing
8	WESTCOAST Sightseeing: Home	https://westcoastsightseeing.com/
9	Sightseeing Definition of sightseeing by Merriam-	http://www.merriam-
10	sightseeing - English-Spanish Dictionary -	http://www.wordreference.com/es/translatio
11	sightseeing - English-Spanish Dictionary -	http://www.wordreference.com/es/translatio
12	Buy Tickets	https://tickets.shorelinesightseeing.com/we
13	The Original London Sightseeing Tour - London's Best	http://www.theoriginaltour.com/
14	Circle Line Sightseeing Cruises: Home	https://www.circleline42.com/
15	The Original Tour routes - London	http://www.theoriginaltour.com/tour-
16	The best sightseeing tours, activities and things to do in	http://www.lonelyplanet.com/sightseeing-
17	Sightseeing and guided tours in Oslo, Norway - Activities	http://www.visitoslo.com/en/activities-and-
18	Hop-On Hop-Off Stockholm Bus and boat sightseeing	https://www.redsightseeing.com/
19	sightseeing - Wiktionary	http://en.wiktionary.org/wiki/sightseeing
20	City Sightseeing Amsterdam - tickets	http://www.citysightseeingamsterdam.nl/tic

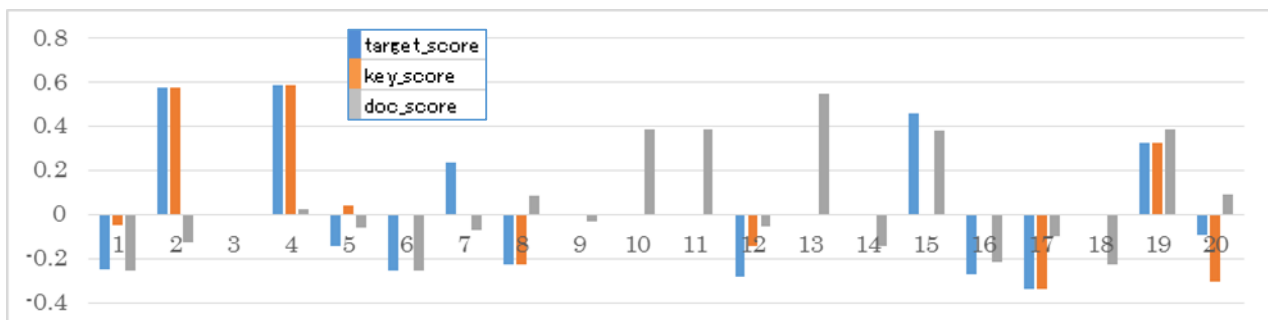
rank	target_sent	target_score	target_mixed	key_sentim	key_score	key_mixed	doc_sentim	doc_score	doc_mixed
1	positive	0.276731	1	positive	0.078341	1	positive	0.23679	1
2							positive	0.547483	1
3	positive	0.506226					positive	0.745932	
4	neutral			neutral			positive	0.744732	
5	positive	0.338846	1	negative	-0.02336	1	positive	0.362521	1
6	positive	0.729856		positive	0.729856		positive	0.162504	1
7	neutral						positive	0.528558	1
8	positive	0.285101					positive	0.266767	1
9	positive	0.291778		positive	0.291778		positive	0.2223	1
10	neutral						positive	0.213246	1
11	neutral						positive	0.213246	1
12							positive	0.243627	
13	positive	0.328292					positive	0.765784	
14							positive	0.862018	
15	positive	0.347671					positive	0.627429	1
16	negative	-0.242682					positive	0.962121	1
17							positive	0.626701	1
18	positive	0.561579					positive	0.722038	1
19							positive	0.051877	1
20							neutral		



Animal rights (Search Term: "animal rights", Target: "animal rights")

rank	Title	link
1	Animal rights - Wikipedia, the free encyclopedia	http://en.wikipedia.org/wiki/Animal_rights
2	Why Animal Rights? Uncompromising Stands on	http://www.peta.org/about-peta/why-peta/why-
3	Animal Rights National Conference	http://www.arconference.org/
4	Animal Rights: The Abolitionist Approach - ...and	http://www.abolitionistapproach.com/
5	BBC - Ethics - Animal ethics: Animal rights	http://www.bbc.co.uk/ethics/animals/rights/right
6	The Animal Rights FAO	http://www.animal-rights.com/
7	Animal Concerns Community	http://www.animalconcerns.org/
8	animal rights Encyclopedia Britannica	http://www.britannica.com/EBchecked/topic/257
9	Animal Rights Facebook	https://www.facebook.com/HelpAnimals
10	Amazon.com: Moby: Animal Rights: Music	http://www.amazon.com/Animal-Rights-
11	Amazon.com: Moby: Animal Rights: Music	http://www.amazon.com/Animal-Rights-
12	Animal Rights by Roger Scruton, City Journal	http://www.city-
13	Amazon Best Sellers: Best Animal Rights	http://www.amazon.com/Best-Sellers-Books-
14	Animal Rights on About.com: Laws, Facts and	http://animalrights.about.com/
15	Animal Rights Coalition	http://animalrightscoalition.com/
16	U.S. Lawyers Left Guessing At Argentine Animal	http://www.fastcompany.com/3040302/us-
17	Primer on Animal Rights -- The Vegetarian Resource	https://www.vrg.org/nutshell/animalrights.htm
18	AnimalRights	https://www.reddit.com/r/AnimalRights/
19	Farm Animal Rights Movement	http://www.farmusa.org/
20	AP's Pro Animal Rights Style Bias	http://www.nationalreview.com/human-

rank	target_sent	target_score	target_mixed	key_sentim	key_score	key_mixed	doc_sentim	doc_score	doc_mixed
1	negative	-0.250649	1	negative	-0.04827	1	negative	-0.25609	1
2	positive	0.575125		positive	0.575125		negative	-0.12608	1
3									
4	positive	0.590113		positive	0.590113		positive	0.025359	1
5	negative	-0.143265	1	positive	0.041004	1	negative	-0.06226	1
6	negative	-0.252293					negative	-0.25229	
7	positive	0.2341					negative	-0.07218	1
8	negative	-0.227742		negative	-0.22774		positive	0.084121	1
9	neutral						negative	-0.02935	1
10	neutral			neutral			positive	0.389268	1
11	neutral			neutral			positive	0.389268	1
12	negative	-0.283736	1	negative	-0.1441	1	negative	-0.05199	1
13	neutral						positive	0.549556	
14	neutral			neutral			negative	-0.14323	1
15	positive	0.456452					positive	0.379785	1
16	negative	-0.270375					negative	-0.21354	1
17	negative	-0.336277		negative	-0.33628		negative	-0.09869	1
18							negative	-0.22472	1
19	positive	0.324298		positive	0.324298		positive	0.384933	1
20	negative	-0.09229	1	negative	-0.30374		positive	0.088691	1



Top 20 and top 100 counts

I tallied total numbers of positive and negative targeted sentiments and average score regarding top 20 and top 100 of each topic. The rightmost column shows percentages of pro or con shown in www.debate.org website where site users can vote their opinion.

Topics	Top 20			Top 100			www.debate.org
	positive	negative	score	positive	negative	score	
medical marijuana	2	13	-0.269	23	60	-0.1568	79% PRO
abortion	2	15	-0.2828	7	84	-0.3169	52% PRO
gay marriage	1	8	-0.2928	5	61	-0.2938	72% PRO
gun rights	2	5	-0.2716	10	32	-0.2288	68% PRO
internet censorship	1	10	-0.3797	4	48	-0.3521	87% CON
vaccination	3	11	-0.2236	11	54	-0.2811	
immigration	3	11	-0.1468	12	66	-0.1954	
drone strikes	0	17	-0.5920	0	74	-0.5717	
obamacare	0	15	-0.5434	2	84	-0.489	
death penalty	0	20	-0.5076	1	94	-0.5323	51% PRO
prostitution	0	18	-0.4637	5	82	-0.431	

One notable characteristic seen in the previous pages is that those websites collected as top 20 or top 100 search engine results show overwhelmingly negative targeted sentiment as a whole while public opinions are not necessarily that negative.

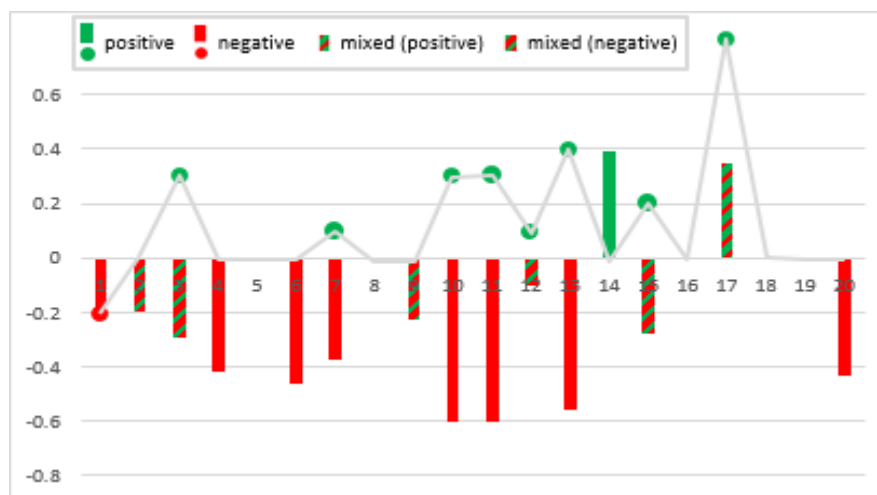
Manual rating

I rated targeted sentiments of top 20 results of “medical marijuana” (how much positive or negative is the website toward “medical marijuana”) manually by reading the whole pages to compare with AlchemyAPI results to assess reliability of the sentiment score AlchemyAPI returns. (ex. 0: neutral, -0.2: slightly negative, 0.8: quite positive)

rank	Alchemy	manual	link
1	-0.21955	-0.2	http://en.wikipedia.org/wiki/Medical_cannabis
2	-0.19657	0	http://medicalmarijuana.procon.org/view.resource.php?resourceID=000881
3	-0.29081	0.3	http://www.drugpolicy.org/medical-marijuana
4	-0.4189	0	http://medicalmarijuana.procon.org/
5		0	http://www.azdhs.gov/medicalmarijuana/
6	-0.46227	0	http://www.latimes.com/nation/la-na-medical-pot-20141216-story.html
7	-0.37616	0.1	http://norml.org/legal/medical-marijuana-2

8		0	https://weedmaps.com/
9	-0.22945	0	http://www.drugwarfacts.org/cms/medicinal_Cannabis
10	-0.60017	0.3	http://medicalmarijuanainc.com/
11	-0.60017	0.3	http://medicalmarijuanainc.com/
12	-0.10497	0.1	http://www.ncsl.org/research/health/state-medical-marijuana-laws.aspx
13	-0.56063	0.4	http://www.huffingtonpost.com/news/medical-marijuana/
14	0.389034	0	https://public.health.oregon.gov/DiseasesConditions/ChronicDisease/MedicalMari
15	-0.27587	0.2	https://www.yahoo.com/parenting/why-were-starting-our-7-year-old-daughter-on-
16		0	http://www.cdph.ca.gov/programs/mmp/pages/default.aspx
17	0.347269	0.8	http://medicalmarijuana.com/
18		0	http://doh.dc.gov/service/medical-marijuana-program
19		0	http://www.michigan.gov/lara/0,4601,7-154-35299_63294_63303_51869--
20	-0.43618	0	http://www.nytimes.com/2015/04/26/us/washington-state-tightens-its-law-on-

Below is a graph which plots AlchemyAPI score (bars) and manual rating scores (lines and dots). While there may be some level of synchronization, many websites which were seen as positive from my (human) perception are rated as negative by AlchemyAPI.



Discussion

Although my assessments have been limited at this point, I am going to suggest some possible ways to understand these results to connect to future research.

All 11 contentious topics chosen for this project have overall negative targeted sentiment scores returned by AlchemyAPI, regardless of positive or negative public opinion toward the topic. Document sentiments (overall sentiment of the web page, not toward a specific topic) for those searches were also overwhelmingly negative, which is understandable considering the contentious nature of the topics which normally include many negative facts. Some

additional analyses conducted for topics such as “University of Maryland” or “sightseeing” to see what kind of sentiment scores AlchemyAPI returns toward those “non-contentious” topics showed overall positive sentiment scores. These could imply that AlchemyAPI has a tendency to return a negative sentiment whenever the topic is contentious, influenced quite a lot by the negative document sentiment. That means using this research method to judge if the search engine results are positive or negative toward certain topics, relying on the absolute scores, may be difficult.

Another thing to keep in mind is “pro/con” and “positive/negative sentiments” are not exactly the same thing; it is possible that someone support a certain policy even if he/she has a negative “sentiment” toward it.

However, there is still a possibility that this method can be applied to examine the Search Engine Manipulation Effect, or if there is a bias in a certain search result. Although their absolute sentiment scores may not be quite reliable, there are differences in levels of positive/negative between chosen topics, and comparing two topics (targets) in one search, or comparing the same topic in different searches, may explicit the difference in sentiment levels in those two things. For example, searching “2016 presidential election”, examining sentiments toward “Hillary Clinton” and “Ted Cruz”, and comparing which candidate has “more” positive score, instead of examining if individual candidates are seen positively or negatively, may be an interesting analysis.

Another important thing to be considered in future research on the Search Engine Manipulation Effect is how to “weight” when quantifying the manipulation effect, or influence, of the search engine results. Although I tallied sentiment scores of top 20 or top 100 by calculating average score as introductory analyses, No. 1 result and No. 100 result actually have significantly different influence on search engine users’ perception because of their significantly different visibilities, thus their scores should not be treated equally.

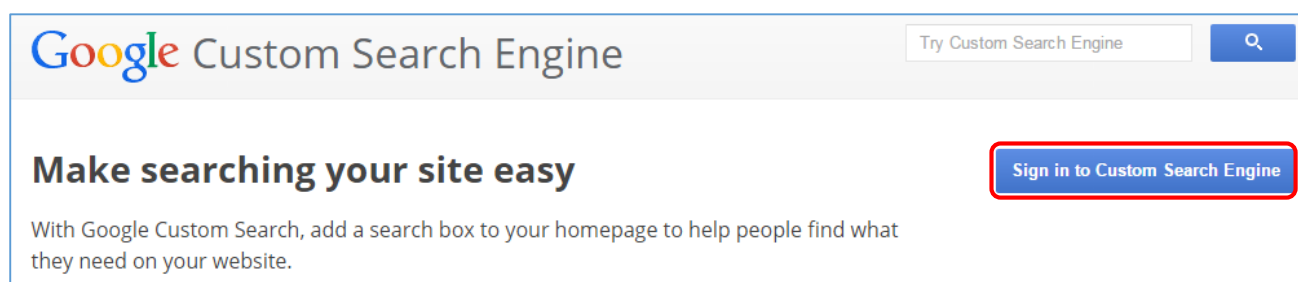
V. Environmental setups required to run the program

1. Google Custom Search API

Google Custom Search API (<https://developers.google.com/custom-search/>) is used to conduct searches and retrieve the results in the Python script. Steps to get a key to use this API for your project is explained below.

You can skip this section if you use the “searchenginebiasseme” Google account.

- (1) Open the **Google Custom Search Engine** website (<https://cse.google.com/cse/>) with a browser, and click “Sign in to Custom Search Engine” button. Sign in with your Google account.



- (2) Input any URL you like (※You will delete this in Step.4) for “Sites to search” textbox, input any name you like for “Name of the search engine” textbox, and click “CREATE” button.

The screenshot shows the Google Custom Search Engine creation form. It has several sections. The first section is "Sites to search" with a text input field containing "http://www.merrill.umd.edu/". Below this is another input field with "www.example.com". The next section is "You can add any of the following:" followed by a list of examples: "Individual pages: www.example.com/page.html", "Entire site: www.mysite.com/*", "Parts of site: www.example.com/docs/* or www.example.com/docs/", and "Entire domain: *.example.com". Below this is a note: "If you want to search pages over entire web containing specific schema.org markups, click on 'advanced' below." Then there's a red text: "New Use the CSE creation from keywords tool to get URL suggestions." The next section is "Language" with a dropdown menu showing "English". Below this is a section "Name of the search engine" with a text input field containing "UMDCompJournalism". Below that is a section "Advanced Options" with a collapsed arrow. At the bottom, there's a line of text: "By clicking 'Create', you agree with the Terms of Service ." and a blue button with white text that says "CREATE".

(3) Click “Control Panel” button.

Congratulations!
You've successfully created your Custom search engine.

Add it to your site Get code

View it on the web Public URL

Modify your search engine Control Panel

(4) Select “**Search the entire web but emphasize included sites**” at the “Sites to search” section, check the checkbox for the URL you entered in Step.2, and click “Delete” button.

Basics Make money Admin Indexing Advanced

:


Sites to search Search the entire web but emphasize included sites

Add Delete Filter Label 1- 1 of 1 < >

<input type="checkbox"/> Site	Label
<input checked="" type="checkbox"/> http://www.merrill.umd.edu/	

Advanced

(5) Open the Google Developers Console web page (<https://console.developers.google.com/project>) with a browser, and click “Create Project” button.




Projects are used to group resources.
To get started, create your first project.


Create Project


- (6) Enter a project name as you like to the textbox, click the checkbox for the agreement with Terms of Service, and click “Create” button.

New Project

Project name 

UMD-SEME

Project ID 

long-state-94017 

[Show advanced options...](#)

☒ I agree that my use of any [services and related APIs](#) is subject to my compliance with the applicable [Terms of Service](#).

CreateCancel

- (7) Click “APIs & auth” in the side bar, then “APIs”. Click “Custom Search API” in the APIs list.

Google Developers Console

UMD-SEME

Overview

Permissions

APIs & auth

APIs

Credentials

Consent screen

Push

Monitoring

Source Code

Compute

Deploy & Manage

Networking


Storage

Big Data

API Library

Enabled APIs (6)

Popular APIs



Google Cloud APIs

Compute Engine API

BigQuery API


Cloud Storage API

Cloud Datastore API

Cloud Deployment Manager API

Cloud DNS API

More




Mobile APIs

Cloud Messaging for Android

Google Play Game Services

Google Play Developer API

Google Places API for Android



Advertising APIs

AdSense Management API


DCM/DFA Reporting And Trafficking API

Ad Exchange Seller API

Ad Exchange Buyer API

DoubleClick Search API

Analytics API



Google Maps APIs

Google Maps Android API

Google Maps SDK for iOS


Google Maps JavaScript API

Google Maps Embed API

Google Places API for Android

Geocoding API

More




Social APIs

Google+ API

Blogger API

Google+ Pages API

Google+ Domains API



Other popular APIs

Translate API

Custom Search API

URL Shortener API

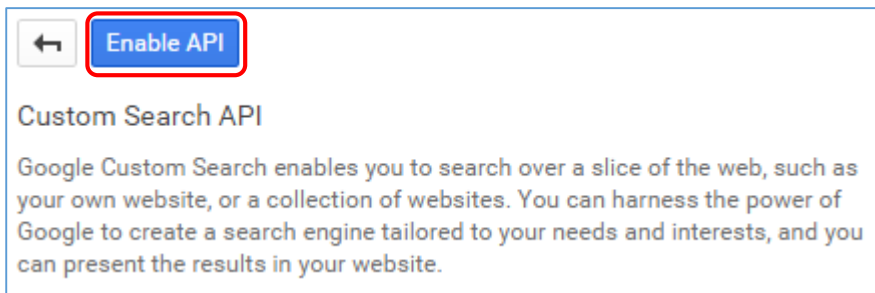
PageSpeed Insights API

Fusion Tables API

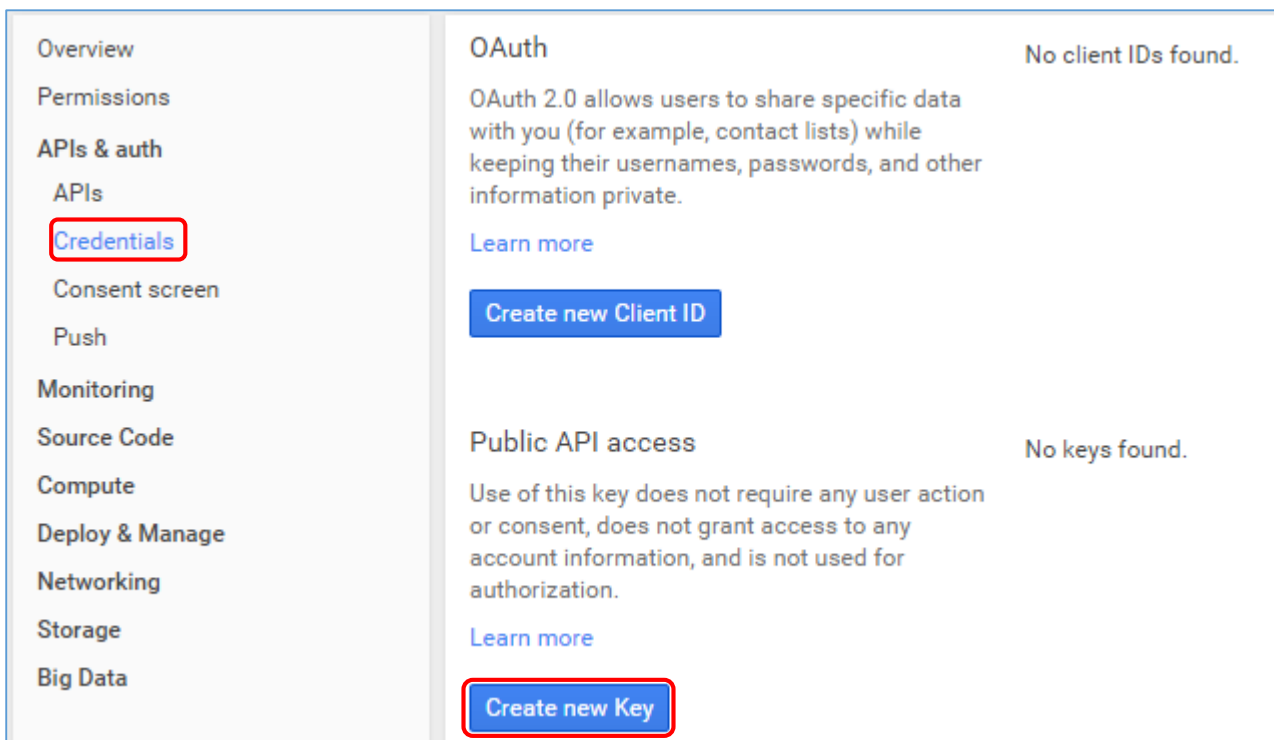
Web Fonts Developer API

Page 28 of 31

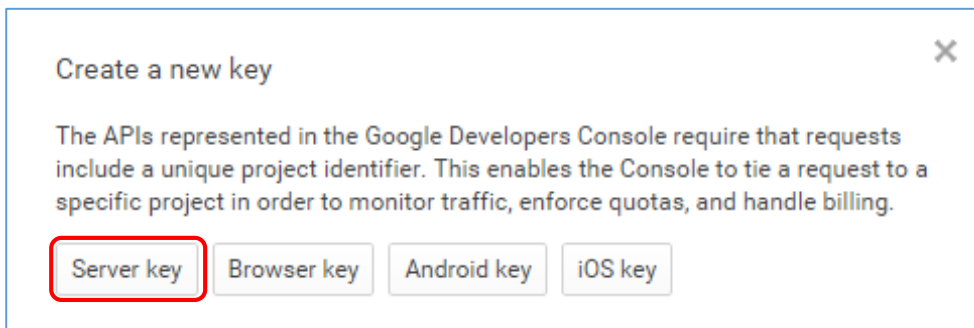
(8) Click “Enable API” button.



(9) Click “Credentials” in the left pane. Click “Create new Key” under the “Public API access” area.



(10) Click “Server key”.



(11)Click “Create”.

Create a server key and configure allowed IPs

This key should be kept secret on your server.

Every API request is generated by software running on a machine that you control. Per-user limits will be enforced using the address found in each request's `userIp` parameter, (if specified). If the `userIp` parameter is missing, your machine's IP address will be used instead. [Learn more](#)

Accept requests from these server IP addresses (Optional)
One IP address or subnet per line. Example: 192.168.0.1, 172.16.0.0/16, 2001:db8::1 or 2001:db8::/64
Or if you leave this blank, requests will be accepted from any address. Be sure to add IP addresses before using this key in production.

Create

Cancel

(12)You will use this “API key” appearing in this page as a credential to run the program.

Public API access

Use of this key does not require any user action or consent, does not grant access to any account information, and is not used for authorization.

[Learn more](#)

Create new Key

Key for server applications

API key	
IPs	Any IP allowed
Activation date	May 9, 2015, 6:33:00 AM
Activated by	searchenginebiasseme@gmail.com (you)

Edit allowed IPs

Regenerate key

Delete

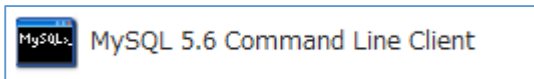
2. AlchemyAPI

The Python script uses AlchemyAPI to conduct sentiment analyses, thus to run the script, your computer needs to have AlchemyAPI's Python SDK (software development kit). Please refer to this website to get an API Key and set up the environment: <http://www.alchemyapi.com/developers/getting-started-guide/using-alchemyapi-with-python>

3. MySQL database

The Python script stores collected data into MySQL database. Here are steps to create a database and a table required to run the script, assuming your computer already has MySQL installed.

(1) Launch “MySQL 5.6 Command Line Client” (if your MySQL version is 5.6) from the Windows Start Menu.



(2) Execute below command to create a database named “SEME”.

```
CREATE DATABASE SEME;
```

(3) Execute below command to tell MySQL to use SEME database.

```
USE SEME;
```

(4) Execute below command to create a table named “search_results”.

```
CREATE TABLE search_results (  
  result_id INT NOT NULL AUTO_INCREMENT,  
  search_term VARCHAR(100) NOT NULL,  
  topic VARCHAR(100) NOT NULL,  
  rank INT NOT NULL,  
  title VARCHAR(100) NOT NULL CHARACTER SET utf8mb4,  
  link TEXT NOT NULL,  
  content LONGTEXT CHARACTER SET utf8mb4,  
  content_text LONGTEXT CHARACTER SET utf8mb4,  
  sentiment VARCHAR(100),  
  score DEC(10,9),  
  mixed INT,  
  key_sentiment VARCHAR(100),  
  key_score DEC(10,9),  
  key_mixed INT,  
  doc_sentiment VARCHAR(100),  
  doc_score DEC(10,9),  
  doc_mixed INT,  
  date_time DATETIME,  
  PRIMARY KEY (result_id)  
);
```