

Information Shared by Municipal Governments*

Analysis of Multi-Level Government Content

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This paper evaluates the bias of government websites regarding safe injection sites using sentiment analysis. We analyzed website content and identified patterns of sentiment, categorizing them as positive, negative, or neutral. Our findings show varying degrees of bias, with some sites presenting a positive sentiment and others a negative sentiment, using emotionally charged language and negative framing. Biased information can influence public perception and policy decisions, highlighting the importance of accurate and unbiased information. We recommend that government websites provide unbiased information to promote informed decision-making and reduce harm caused by opioid addiction.

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*Code and data are available at: https://github.com/korolodf/drug_gov_sent.

1 Introduction

In recent years, there has been a growing awareness of the public health crisis associated with the opioid epidemic in North America. One approach to mitigate the harm caused by opioid addiction is the establishment of safe injection sites, which provide a medically supervised environment for individuals to use drugs. These sites have been shown to reduce the risk of overdose, decrease the transmission of infectious diseases, and connect individuals with healthcare and social services. Despite their proven effectiveness, safe injection sites remain a controversial and politicized topic in many jurisdictions.

Government websites are a primary source of information for citizens seeking information about safe injection sites. However, it is unclear whether these websites provide unbiased and accurate information. This paper aims to evaluate the bias of government websites regarding safe injection sites using natural language processing techniques, primarily through sentiment analysis.

Due to the varying influence of each level of government on the creation and facilitation of safe injection sites, content from governments at the municipal, provincial and federal levels will be studied. These will be the government of Canada, province of Ontario, and the city of Toronto. While the war on drugs has had a substantial impact on culture of the entire North American continent, the scope of this study will remain in the Canadian context.

The use of natural language processing in analyzing text data has become increasingly popular in recent years due to its ability to quickly and accurately process large amounts of text data. Sentiment analysis, in particular, is a widely used method for identifying the underlying emotional tone of text, which can be used to evaluate the positivity or negativity of a particular message or viewpoint. In the context of government websites, sentiment analysis can help identify whether the content is presented in a positive, negative, or neutral manner.

By analyzing the sentiment of government website content related to safe injection sites, this paper aims to shed light on the potential biases that may exist in the information presented to the public. Such biases can have a significant impact on public perception and policy decisions regarding safe injection sites. Therefore, understanding the extent of bias in government websites is essential for informed decision-making and public health policy.

2 Data

2.1 Data visualisation

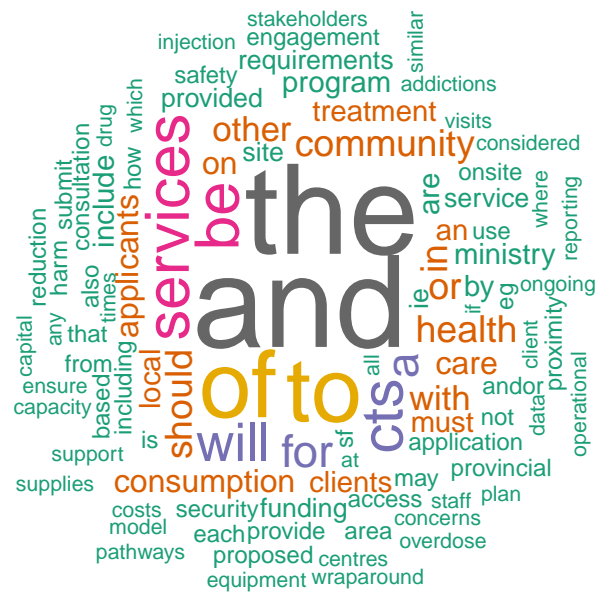
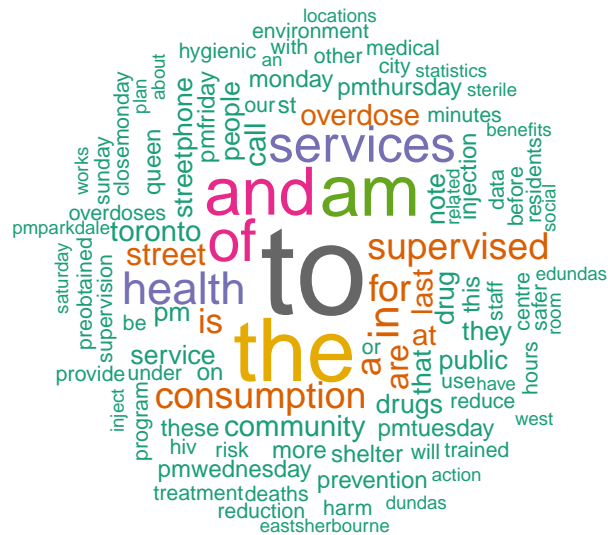




Table 1: Sentiments Across All Levels of Government

Level of Origin	Sentiment Score
Toronto	11.95
Ontario	31.55
Canada	15.20

3 Model

Table 2: Top 10 words for each topic

Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6
services	consumption	overdose	street	toronto	health
community	drugs	call	staff	services	drug
people	last	centre	will	pmthursday	supervised
supervised	pmwednesday	prevention	data	streetphone	injection
pmfriday	service	safer	public	use	closemonday
reduce	risk	they	medical	deaths	street
preobtained	note	iphare	city	note	benefits
harm	pmtuesday	lives	clients	users	provide

Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6
minutes treatment	program supervision	opioid practices	dundas environment	works inject	saturday shelter

Table 3: Top 10 words for each topic

Topic 1	Topic 2
services	health
will	cts
cts	consumption
community	local
the	must
care	clients
applicants	program
treatment	include
site	funding
provided	service

Table 4: Top 10 words for each topic

Topic 1	Topic 2	Topic 3	Topic 4
uphns	services	illegal	health
minister	exemption	consumption	overdose
substances	drug	may	means
provincial	the	need	substance
staff	sites	urgent	community
health	territorial	checking	members
public	holder	responsible	treatment
clients	substance	subsection	administration
provide	supervised	client	applicable
regulations	within	hours	use

4 Results

5 Discussion

5.1 First discussion point

5.2 Findings

5.3 Weaknesses

-lack of provincial data (sympolic of lack of)

5.4 Next steps

-apply model to future content on safe injection -apply context-specific lexicon for sentiment analysis -

6 Appendix

#toronto model optimization

topics	CaoJuan2009	Deveaud2014
20	0.1755674	0.7715197
19	0.1785334	0.7796329
18	0.1752744	0.7794694
17	0.1669828	0.8572167
16	0.1700758	0.8593863
15	0.1601185	0.8755447
14	0.1449512	0.9385367
13	0.1441014	0.9778194
12	0.1483344	0.9987254
11	0.1508316	1.0668794
10	0.1347947	1.1135168
9	0.1361260	1.1569931
8	0.1268668	1.2107909
7	0.0929003	1.3046493
6	0.0984893	1.3367652
5	0.1050836	1.3733984
4	0.1078580	1.4098031
3	0.1091201	1.4575311
2	0.1090383	1.5356177

topics	CaoJuan2009	Deveaud2014
20	0.1998366	0.6500101
19	0.1950242	0.6738425
18	0.1865549	0.7032067
17	0.1746502	0.7461683
16	0.1786575	0.7512475
15	0.1611234	0.8144619
14	0.1657940	0.8152898
13	0.1600138	0.8594299
12	0.1475022	0.9009598
11	0.1303379	0.9747933
10	0.1275075	1.0168412
9	0.1145948	1.1006002
8	0.1155441	1.1455266
7	0.1013386	1.2219972

topics	CaoJuan2009	Deveaud2014
6	0.0921233	1.3228473
5	0.0934574	1.3991338
4	0.0740100	1.4963244
3	0.0655188	1.5673877
2	0.0523067	1.6654106

topics	CaoJuan2009	Deveaud2014
20	0.2043437	0.6557433
19	0.1880086	0.6936370
18	0.1728755	0.7478458
17	0.1855159	0.7323248
16	0.1659653	0.7803579
15	0.1736817	0.8094403
14	0.1717787	0.8213332
13	0.1666347	0.8860136
12	0.1405035	0.9473498
11	0.1483070	0.9516155
10	0.1473401	1.0155421
9	0.1263029	1.1882482
8	0.1148571	1.1567647
7	0.1115937	1.2232419
6	0.1150523	1.2645895
5	0.1241868	1.3499766
4	0.1357102	1.3846018
3	0.1203308	1.4895360
2	0.1094343	1.6159443

7 References