

Qualitative Insights from Social Media Data: Seeing the Forest and the Trees

AAPOR, 2022

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Frederick Conrad, University of Michigan

Michael Schober, The New School

Robyn Ferg, Westat

Juejue Wang, University of Michigan

Rebecca Dolgin, The New School

Mao Li, University of Michigan

Paul Beatty, US Census Bureau

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Our Team

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(U. Michigan)



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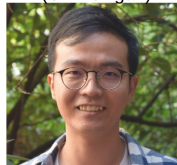
Juejue Wang
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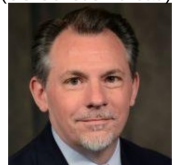
Rebecca Dolgin
(New School)



Mao Li
(U. Michigan)



Paul Beatty
(US Census Bureau)



Friday, 1:15pm

Session 7: Using Google Searches and Tweets for Social Research

New Thinking About When Social Media and Survey Responses May Align

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³Westat

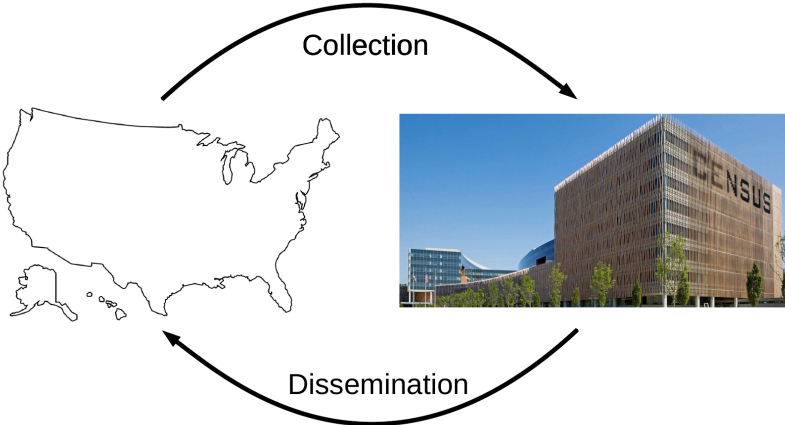
⁴US Census Bureau

Note: Views and ideas expressed here are those of the authors and not of the US Census Bureau

Our Goal

Use social media data to improve Census Bureau activities, broadly considered

Our Goal



Collection

Examples of how insights from social media may improve data collection:

- ▶ Improve outreach, reduce non-response, e.g., by addressing trust concerns

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 - ▶ Questions not asked
- ▶ Sampling strategies
 - ▶ Oversample demographic groups or geographical regions where responses may be rapidly changing

Dissemination

Examples of how insights from social media may improve data analysis and dissemination:

- ▶ Understand how data is used, and by whom

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- ▶ Understand how data is used, and by whom
- ▶ Discover unmet needs
- ▶ Improve data quality, e.g., survey precision

Background (from our point of view)

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- ▶ Further investigation revealed that some of the reported associations may have been spurious
 - ▶ Conrad, et al. (2019)
- ▶ Open question: When and how can social media data be used for public opinion research?

Paradigms

- ▶ Social media as analogous to a survey

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- ▶ Social media as analogous to a focus group

This talk: Qualitative insights

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- ▶ Who is citing Census data, and how?

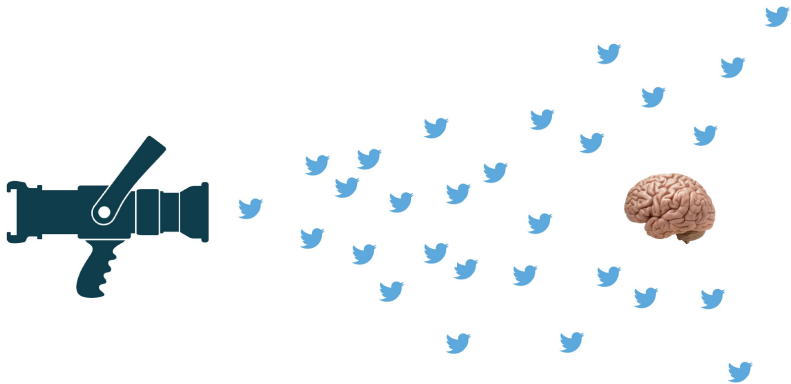
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- ▶ More generally: **What is being said?**

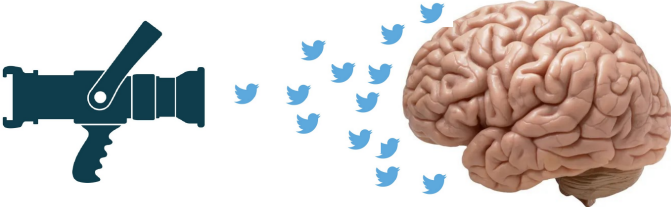
This talk: Qualitative insights

- ▶ What concerns are expressed?
- ▶ What misinformation is present?
- ▶ Who is citing Census data, and how?
- ▶ More generally: **What is being said?**
- ▶ Just read the tweets!

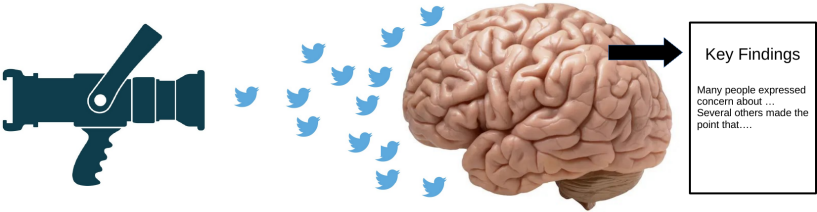
Key Challenge



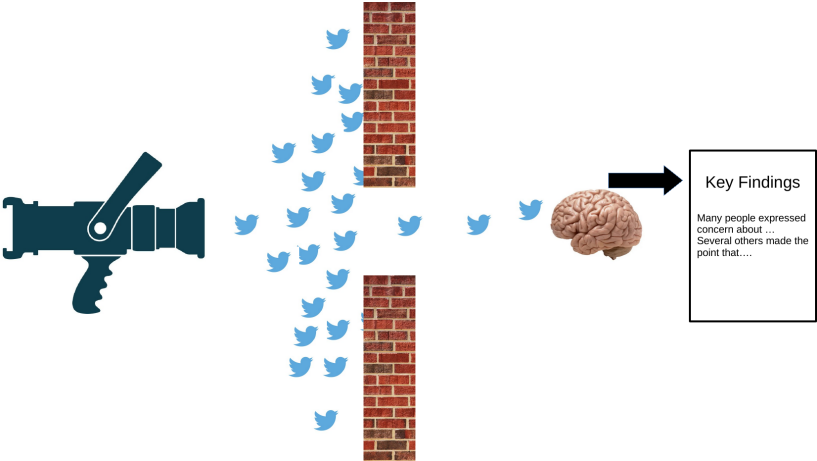
Ideal Solution



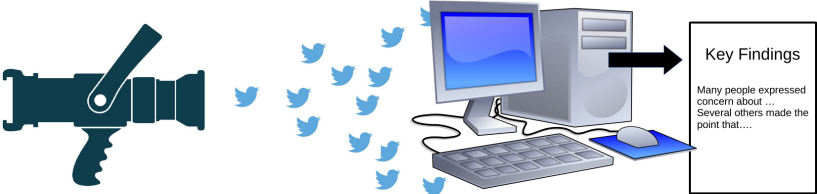
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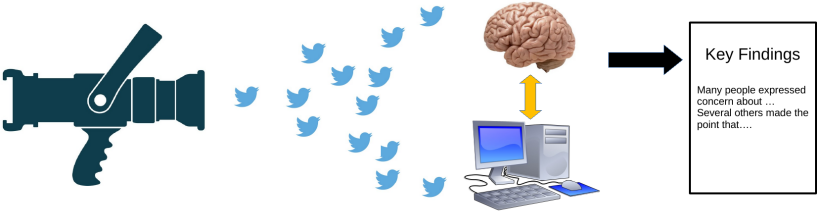
Random Sampling



Computer Analysis



Interactive Analysis



Questions

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1. What is the optimal level and type of automation to allow a human analyst to obtain novel, timely, and credible insights?
2. To what extent do the insights obtained from social media posts reproduce those obtained from traditional focus groups?
3. To what extent do social media posts provide insights that complement or are entirely distinct from those obtained from traditional focus groups?

Question 1

What is the optimal level and type of automation to allow a human analyst to obtain novel, timely, and credible insights?

Tweet Browser:

- ▶ Interactive tool to allow a human to explore and digest a large social media corpus.
- ▶ Goal is to see *“both the forest and the trees.”*

Tweet Browser

- ▶ Top down:

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 - ▶ Random subsets of tweets

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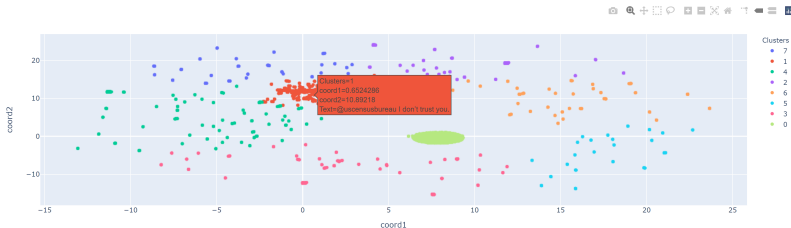
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 - ▶ Random subsets of tweets
 - ▶ Graphical depictions, e.g., of important words
 - ▶ Distribution of tweets over time, geography

Tweet Browser

The plot below contains 26311 total tweets.



Most common words in each cluster:

@Cluster	@Proportion of Tweets	@Number of Tweets	@Top 5 Stemmed Words
0	0.557	14644	but californian questionnaires republikoport struggl
4	0.053	1397	bug debt jimmyrayn trust unionist
6	0.023	617	com news theguardian trust us
3	0.043	1124	case judg mail probe trust
1	0.241	6346	2020census count mail trust uscensusbureau
5	0.019	511	crise given wiggao26 propens trust
2	0.037	983	cel good mail sun trust
7	0.026	689	haddcomani hansilowang right st trust



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 - ▶ Consistent format for reporting insights

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 - ▶ Hypothesis driven?
 - ▶ Spend time reading many tweets, or glance at summaries?
- ▶ Requires systematic evaluation of insights
 - ▶ Consistent format for reporting insights
 - ▶ Scoring for quality, novelty, credibility

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- ▶ Two approaches:
 - ▶ Read a random sample of “census” tweets from 2020
 - ▶ “Search” for tweets using BERT-derived distance metrics

Similar content

Quote from CBAMS:

"The government has always been intrusive as it is, and it's probably a level of intrusion. That's why people are like, 'Hold on, what you want to know what's in my bed, at my house, and who's using my toilet? You should go mind your business."

Tweets:

- ▶ *"@Mededitor A surprisingly lean census. I recall in other years being asked to report the number of toilets in my home!"*
- ▶ *"The census is full of questions that I'm not sure I'd want a government to know about me."*

Similar content

- ▶ We explored several other quotes from CBAMS
- ▶ In all cases, we were able to find tweets expressing similar concerns / opinions
- ▶ We conclude that, *at least on this topic*, attitudes and opinions revealed in the focus group can also be discovered on Twitter
- ▶ Still an open question:
 - ▶ Would the *insights* derived from an analysis of social media replicate those from a focus group?
 - ▶ For example, would a “blind” analysis have also highlighted the same trust concerns?

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 - ▶ Example: Refusal to participate in the Census if it did *not* contain a citizenship question

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 - ▶ Sampled in various ways; several hundred tweets
- ▶ Findings:
 - ▶ Several opinions were prominent on Twitter that did not appear in CBAMS
 - ▶ Example: Refusal to participate in the Census if it did *not* contain a citizenship question
 - ▶ Highlights ability of social media to provide insights on opinions of otherwise hard-to-reach populations

Thank You

We gratefully acknowledge support from the US Census Bureau through a cooperative agreement with the University of Michigan and the New School, “New Approaches to Analyzing Social Media Content for Enhancing Census Bureau Data” (award #CB20ADR0160002)