INFORMED OPINIONS

GENDER GAP TRACKER

Using Big Data Analytics to Incentivize Behaviour Change in how Canadian Journalists Represent Women

Impact & Accountability Report

Submitted to Women and Gender Equality Canada
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Contents:

Introduction

This report describes the impetus for, and preliminary impact of, the Gender Gap Tracker, an analytics tool that seeks to measure, in real time, the gender of those quoted and featured in Canada's most influential news media.

The focus of some news stories dictates who must be quoted – the government minister or CEO making the announcement, the person accused of or victimized by a crime. At the same time, journalists often have discretion over the people they ask to provide context or analysis. Yet those people remain overwhelmingly male and white, despite the fact that women's post-secondary enrolment has surpassed men's for more than 20 years, and members of visible minority groups are far more likely to have completed a university degree.[1] The narrow representation of sources is especially troubling considering the role journalism plays in a democracy and the fact that those whose voices are least reflected are often the most affected by the decisions and circumstances being covered in the news.

The Gender Gap Tracker – made possible through significant in-kind research provided by Simon Fraser University, and through contract with Women and Gender Equality Canada – seeks to influence journalism practice to stimulate greater inclusion of women's voices. First, some context:

Informed Opinions was established as a project of the long-established women's organization, Media Action in 2010. Its explicit mandate is to amplify women's voices to bridge the gender gap in Canadian public discourse by 2025. We do this by:
- Training and motivating women with subject matter expertise who are able, by virtue of their position or role, to speak publicly to engage with media;
- Making it easier for journalists to find qualified sources by featuring them in a free, online database, and promoting their availability and engagement activities through targeted emails and social media posts;
- Encouraging journalists to pursue more equitable representation practices by quoting and featuring more women;
- Conducting research to measure and incentivize progress.

Trends In Higher Education Volume 1 Enrolment, Universities Canada 2011 p. 12 (women), and p. 32 (minority groups) https://www.univcan.ca/wp-content/uploads/2015/11/trends-vol1-enrolment-june-2011.pdf

Two studies in 2009 and 2010 found that only 20% of the opinion or comment pieces published by Canada's most influential newspapers were by female authors. [2] Recognizing that this kind of thought leadership is one way that people with subject matter expertise become recognized as qualified sources, we began partnering with universities and non-profit organizations to train and motivate women capable of adding value to public conversations through media engagement.

Many hundreds of our workshop participants have since published commentaries, positioning themselves as go-to sources in their fields. As a result of our training, many more have also said "yes" to media interview requests they previously would have turned down.

Nevertheless, we continued to hear from journalists that women sources were difficult to find. That's why in 2015, we began building a database featuring women experts to make it easier for journalists to find them. Participation in the database is free to the experts and access is also free to journalists. Over the past four years, we have recruited and created profiles for more than 1100 anglophone women, who we actively promote through emails to journalists and on social media. In 2019 we also launched FemmesExpertes.ca, a French language version of the database, which features more than 500 francophone sources.

Barriers and Incentives to Women's Media Engagement

At a time of diminishing newsroom resources and a 24-hour news cycle, the historical dominance of male sources is self-perpetuating.

Although there does not appear to be any substantive academic literature on the tendency of women to decline media interviews more often than male colleagues, many journalists report finding this to be true. When the national women's organization, MediaWatch (Informed Opinions' predecessor) contacted journalists in the 1990s to ask them why they were quoting men by a ratio of four to one, even in disciplines like health care and education, where women experts were available, the most frequent responses were,

"Most of my reliable sources are male.
Women are harder to find, and when I do contact one, she's much more likely to say 'no'."

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[2] Sarah Marinelli, Philip Savage, "Sticking to their knitting?" A content analysis of gender in Canadian newspaper op eds, August 2011, Journal of Professional Communication
https://www.researchgate.net/publication/254625675_Sticking_to_their_knitting_A_content_analysis_of_gender_in_Canadian_newspaper_op-eds;
Women's perspectives MIA in influential Canadian news media – Informed Opinions' research
https://informedopinions.org/about/research/#2010

This observation was reinforced by subsequent interaction with producers at CBC Radio's *The Current* in 2010, and senior journalists at four roundtables Informed Opinions convened in Ottawa, Montreal, Toronto and Vancouver in the fall of 2015.

Relevant sections of the report[3] produced out of the latter consultations, quoting journalists directly, are excerpted below:

Getting women's voices to air or into print is much more of a challenge:
While most media participants agreed on the importance of including women's voices in their newspapers and on their programs, they confirmed our own research findings that women are much more likely than men to turn down interview requests.
- *"Women downplay themselves so quickly. It's way easier to get a man to come and be an 'expert' than it is to get a woman."*
- *"Too often the women I reach out to say 'sorry, I'm not the right person'. They don't seem to understand that I'm just looking for a conversation… not a book chapter."*

Many women say they've previously had a bad experience with media:
- *"Many women experts have had experiences with the media that make them mistrustful of doing more."*

They feel judged more harshly than their male counterparts:
- *"Many women feel they have to be agreeable in the media or they will be critiqued."*
- *"When I did TV, people only commented on my looks and clothes, not what I said."*
- *"I've noticed that women who do media can be judged for being shrill, old, too pretty. They're damned if they do, and damned if they don't."*
- *"Online abuse is a massive disincentive for women wanting to participate in media."*

And they face unique time pressures:
- *"With parenting, a lot of women have two full-time jobs. They don't see doing media as a priority."*
- *"Sometimes women will say things like 'I can't do an interview, I have to pick up the kids from daycare'. No man has never come back to me with that answer."*

Calling on women experts can take a lot more effort:
Limited resources and tight timelines mean journalists default to sources they know will provide them with good, reliable interviews. More often than not, that means turning to men:
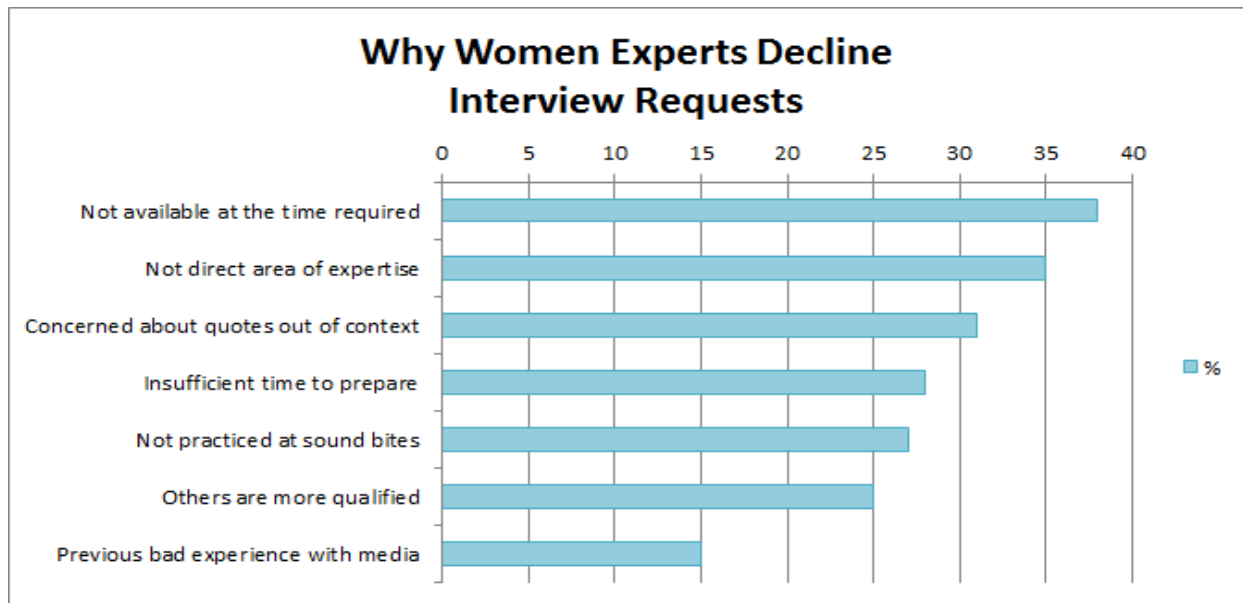- *"While we're concerned about the lack of women's voices on a daily basis, we're under pressure to file quickly with great insight."*
- *"There are fewer people involved in the daily chase and it can take longer to get certain people to come on the air. When you're on a short deadline, it's easier to go to people you know will say yes."*

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[3] This report, although not published, was forwarded electronically to the approximately 75 journalists who participated in the roundtables.

- *"We tend to use women and minorities who are well known to us, relying on the same people repeatedly."*
- *"The time factor is our biggest problem. It's so easy to go out and get a guy. It's a daily struggle (to find women); we're very conscious of it, but at the end of the day, you still need someone to put on the air."*
- *"My biggest task is separating idiots from non-idiots. I haven't spent any time thinking (about gender)."*

Through our ongoing interaction with women in the context of almost 300 media engagement workshops over the past 10 years, we have heard the reasons for women's reluctance cited above many times.

In advance of the workshops we deliver to train women to translate their knowledge into written commentary, and/or become more effective in media interviews, we survey participants to ask what currently stops them from contributing op eds or saying yes to media interviews. The bar graph below reflects an aggregate summary of survey responses between 2014 and 2016, which remain representative.

Why Women Experts Decline Interview Requests

Category	%
Not available at the time required	~38
Not direct area of expertise	~35
Concerned about quotes out of context	~31
Insufficient time to prepare	~28
Not practiced at sound bites	~27
Others are more qualified	~25
Previous bad experience with media	~15

Additional context for this summary of the data comes up in almost every workshop we deliver, as women discuss in often very personal terms, their hesitations and/or previous experiences. This is summarized below:

They have little time: Women academics, NGO leaders, and corporate executives have demanding jobs, and their time is highly scheduled (meetings, carpools, kids' activities…) They're often reluctant to shoe-horn another appointment into their already crammed calendar without being convinced that doing so is going to be worth the collateral damage to rest of their day.

Impact is more important than profile: Although ambitious, many women appear to be less motivated by public profile than they are by having an impact. If they can make a difference behind the scenes, that's fine, especially if it's more efficient.

Some women are uncomfortable with the "expert" label – even if they hold a PhD, have many years of experience, and have published well-regarded books on an issue. Although this response has lessened over the past ten years, many women in our workshops – especially in academia – are highly conscious of who else in their field has more precisely specialized expertise on a particular topic.

TV is especially unappealing: Television is a visual medium, and women are acutely conscious of the degree to which our culture has schooled everyone to judge women especially on the basis of their ability to live up to unattainable beauty ideals. [4]

Many advocates don't trust the media: Because expert women pay attention to the news, they notice and object to sensationalist headlines, irresponsible reporting, de-contextualized data or misleading quotes. And they're not interested in risking their reputation in a high stakes game where they have no control over the end product.

In addition to our own field and anecdotal research, in 2018 we collaborated with University of Waterloo professor Nancy Worth on a SSHRC-funded study on why women chose to participate in our database, notwithstanding the above factors. This research included a literature review which reinforced our own findings described above, and offered additional context, summarized below.[5]

Pipeline problem: Gender parity remains elusive at the highest ranks of most organizations, including newsrooms and academia. Under time pressure, journalists default to known sources and these tend to be those in leadership roles who already have a public profile, and/or who are in their personal and professional networks.

Intersectional identities compound reluctance: Women who are young, racialized, gay, transgender and/or living with a disability are even less likely to see themselves represented in the news as sources and more likely to expect that their views will be heavily scrutinized and that they will become a target on social media. This increases hesitancy.

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[4] "Where oh where are all the female guests" blog post by Steve Paikin, TVO
https://www.tvo.org/article/where-oh-where-are-all-the-female-guests

[5] *Counting Ourselves In: Understanding why women decide to engage with the media* by Nancy Worth et al, October 2018 https://informedopinions.org/wp-content/uploads/2018/10/Counting-Ourselves-In-Final-Report-Oct-2018.pdf
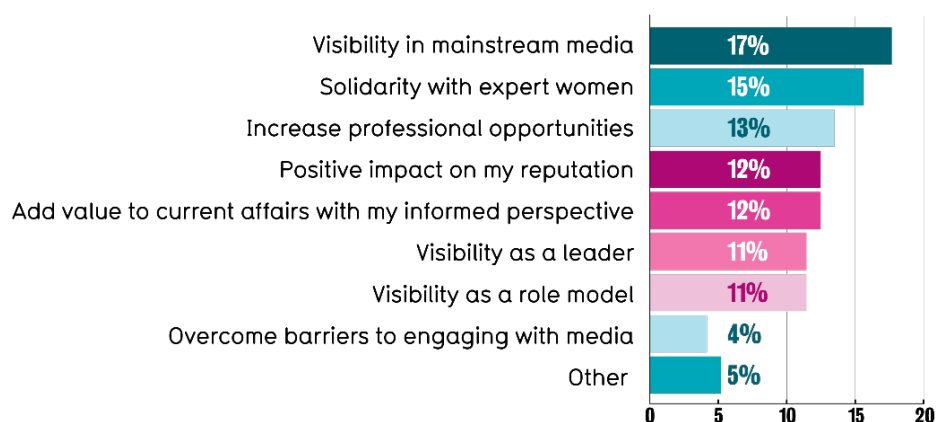
Social media and the prospect of being trolled raises the stakes: Experts who are active on social media have all witnessed others being targeted and trolled, and the risks of attracting negative attention and online harassment are especially high for those representing or advocating for marginalized populations.

The concerns articulated by the women we train and summarized above are further echoed by research conducted by former journalist, Anne Sérode in 2017 for her master's thesis while at the French business school, INSEAD.[6]

The 2018 *Counting Ourselves In* study explicitly focused on what motivates women to overcome the barriers listed above and make time to do media interviews and/or write op eds or commentaries. In the summer of 2018, the 550 women who had agreed to be listed in our database at the time were sent a survey designed to explore their incentives. The 193 women who responded (a 35% response rate), identified a range of overlapping reasons for being willing to join a database designed to make it easier for journalists to find them. Most cited multiple reasons, as reflected in the graph below.[7] Generally their incentives were not tied to material gain such as promotion or increased compensation, but rather reflected the belief that media engagement increased their ability to make a difference to others.

WHAT MOTIVATED YOU TO JOIN THE EXPERT WOMEN DATABASE?
Participants could choose all that applied

Reason	%
Visibility in mainstream media	17%
Solidarity with expert women	15%
Increase professional opportunities	13%
Positive impact on my reputation	12%
Add value to current affairs with my informed perspective	12%
Visibility as a leader	11%
Visibility as a role model	11%
Overcome barriers to engaging with media	4%
Other	5%

These reasons correspond to the anecdotal reports we've gleaned through surveying close to 3,000 participants in our commentary writing and media interview skills workshops over the past 10 years.

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[6] *The Discreet Expertise: The reasons that distance female experts from the media,* by Anne Sérode, 2018
[7] *Counting Ourselves In* https://informedopinions.org/wp-content/uploads/2018/10/Counting-Ourselves-In-Final-Report-Oct-2018.pdf

The women we've trained from academic and advocacy backgrounds have overwhelmingly expressed an interest in using media to broaden public understanding about and shift attitudes on issues they know and care about.

Many are also acutely conscious of how under-represented women's voices are, especially those of women affected by intersectional identities. When asked if it ever occurs to them in their consumption of news that their informed perspective is not being represented but would add value if it were, 85% said that they "sometimes" (46%) or "often" (39%) had such perceptions.

Some academics also cited the sense of duty they feel about "giving back", recognizing the privileged positions they occupy and the necessity of speaking up to help give voice to those without the education, title and/or affiliation that would allow them to do so themselves. The quotes in the infographic below effectively reflect and summarize the most common trends that emerged from the in-depth interviews.

Context from Previous Content Analysis Research

Prior to conceiving of the Gender Gap Tracker, in 2015, Informed Opinions commissioned manual content analysis research measuring the ratio of male and female experts and sources quoted or featured in a cross-section of seven Canadian news media outlets. (These included online versions of *the Globe and Mail, Toronto Star, National Post, La Presse,* CTV's National News, CBC Radio's *The Current* and Radio Canada's *ICI Tout le monde en parle.*)

Only news sections of the online versions of the print publications were reviewed, excluding sports, regional or local news, entertainment, unless stories from these sections appeared in the top headlines. During three monitoring periods from October to December 2015, the study collected 15 days of data quoting 3,213 persons who had an identifiable gender.

This research required a number of researchers who committed to reading or viewing the selected media on a daily basis and manually recording the details onto spreadsheets. This data gathering and recording took three months, and the analysis and publication of the report another two.[8] We found that men's perspectives outranked women's by more than two to one. However, closer examination revealed that public broadcast talk shows performed much better (40% plus) than print media and private broadcasters (all under 30%).
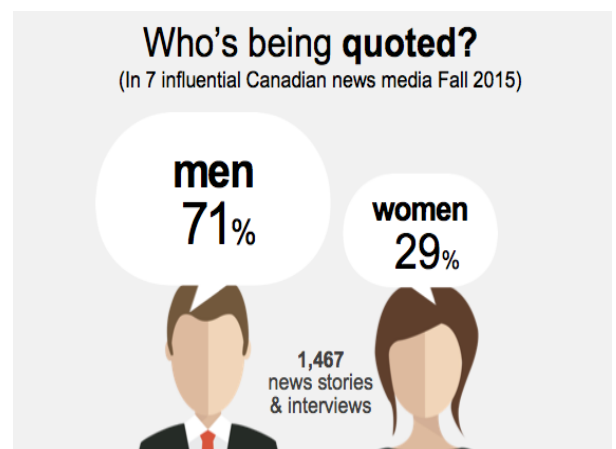
Journalists had told us during the roundtable consultations that although they knew they needed to do a better job of quoting and featuring women, they were busy and preoccupied. They suggested that as advocates, we needed to "stay in their faces".

We needed a means of shortening the research and reporting time frame and drawing both public and media attention to the persistent gender gap.

Gender Gap Tracker

The Gender Gap Tracker was our answer to that, made possible through the generous sponsorship of Simon Fraser University. We worked with an international research team directed by computational linguist, Dr. Maite Taboada to develop a sophisticated big data tool to analyze vast amounts of text scraped from seven of Canada's most influential news sites. These include: CBC News, CTV News, Global News, *The Globe and Mail, The Toronto Star, The National Post* and *Huffington Post Canada.*

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[8] *Gender of sources used in major Canadian media* by Marika Morris, January 2016
https://informedopinions.org/wp-content/uploads/2017/08/Gender-of-sources-in-Canadian-media-.pdf

Methodology and Limitations

The Gender Gap Tracker scrapes text and metadata of each news article from the daily web content of the seven news outlets. The scraping occurs continuously in real time, although the site displaying the results has a built-in three-day delay that increases the researchers' ability to troubleshoot if some part of the system fails. This allows us to display within a few days of collection the gender breakdown of quoted sources.

We then process the text using a variety of Natural Language Processing (NLP) and Machine Learning techniques in order to identify quoted people and their genders. This process includes syntactic parsing, named entity recognition, quotation extraction, and gender identification, all of which happen in real time. The entire data and annotations are maintained on SFU database servers. The dashboard shows the proportion of men and women quoted daily.

The Gender Gap Tracker is a work in progress. Since the first release of the software in February 2019, Simon Fraser University researchers have continued to work to improve its coverage and accuracy. Identifying the people mentioned in news articles, unifying these mentions to accurately label multiple quotes by the same person as one source, and tagging their gender appropriately are all complex tasks. The NLP tools sometimes miss a quotation or tag a person with the wrong gender. For example, in an analysis of the top 100 most often quoted sources conducted in July, GGT algorithms misidentified eight names; these have now been manually tagged to avoid future errors.

To identify the gender of the speakers, we rely on online services that provide databases of names. These databases have their own limitations. Nevertheless, our evaluations show that, on a sufficiently large sample of manually annotated text, the ratio of male and female sources calculated by the system is close to the actual numbers within a 5% error margin.

Researchers are continuing to work to minimize such errors in our new updates, but it's important to note that accuracy checks have determined that the errors within the system are unlikely to unfairly affect one media organization over others.

Because the Gender Gap Tracker is scraping and analyzing textual data, as opposed to photos or video footage, it does not have the capacity to measure racial, religious, sexual orientation or identity or disability metrics. Most of these characteristics are only mentioned in the news if they're central to the story being reported. And many people who belong to one or more marginalized groups choose not to self-identify.

At the end of the report we identify additional refinements and analyses we would like to make to enhance the value of the GGT, resources permitting.

Data Analysis

When launched in February, the Gender Gap Tracker site displayed the data collected in two graphs. A bar graph shows the volume and gender of sources quoted by each newsroom; an adjacent circle graph shows the aggregate percentage of male and female sources being quoted by all. A slider bar above the two graphs permits site visitors to select a period of time (days, months), and hovering one's cursor over the graphs reveals the details regarding the sources quoted by each outlet both numerically and as a percentage of the total.

When we first began gathering data in October 2018, the aggregate share of women's voices in the monitored media was 26%.[9] (This was lower than the percentage found in our 2015 research because the earlier data was disproportionately weighted to talk shows, vs news.) For the four months before launch, women's voices ranged between 26% and 27.7%, averaging out at 27% with a 1% unknown rate.

In the first eight months following the Gender Gap Tracker's launch, women's share of the quoted voices increased by 1.3%, registering at 28.3% for the month of August, with zero unknowns. However, that gain has since eroded, with September and October showing an aggregate of 27%, which appeared coincident with increased media attention on the federal election, which was formally called on September 11th.

Hovering your cursor over components of the two graphs will show the number and percentage of sources counted during the selected date range.

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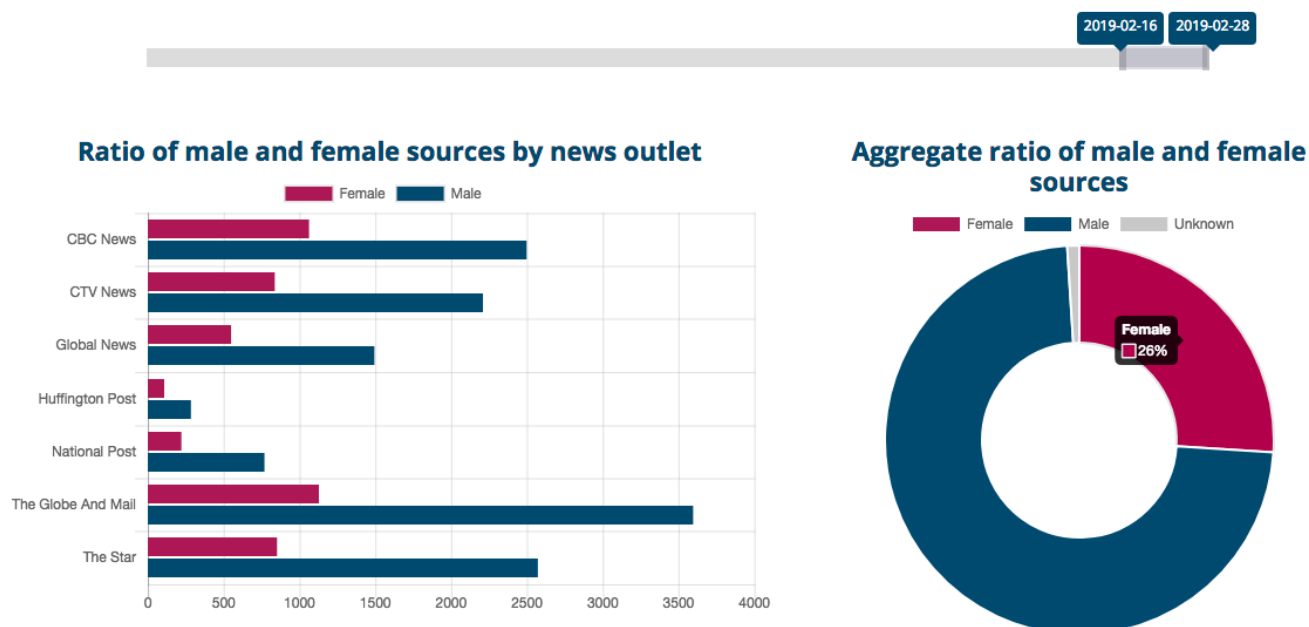
[9] When we launched the Gender Gap Tracker, we were initially showing women's voices at 25.3%, but as the researchers continued to refine the tool, the tool's data collection has become more accurate.

Percentage of Women Quoted in Canadian Online News Media

Informed Opinions' Gender Gap Tracker 2019
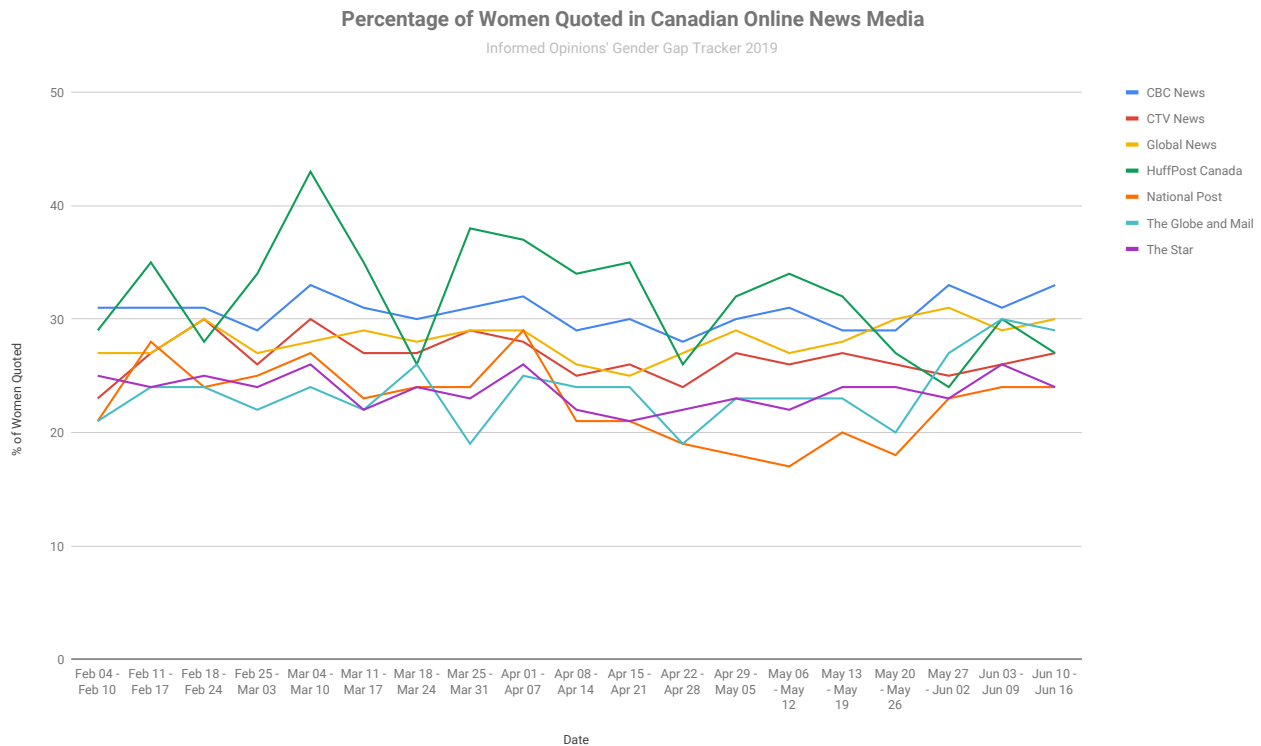
In August 2019, we added a comparative line graph to the Gender Gap Tracker site. This makes it easier for visitors to assess an individual news outlet's representation of women's voices against their competitors, and to notice trends over time.

As expected, the gender ratio of sources reflected on all platforms fluctuates from week to week, affected by a wide range of factors related to which stories are dominating. For example, many of the news outlets achieved their highest ratio of women sources during the week of International Women's Day in March. During the federal election campaign, in which four of the five major party leaders were male, the average aggregate slipped two full points to 26.3%, from 28.3% where it had been the month prior to the election being called.
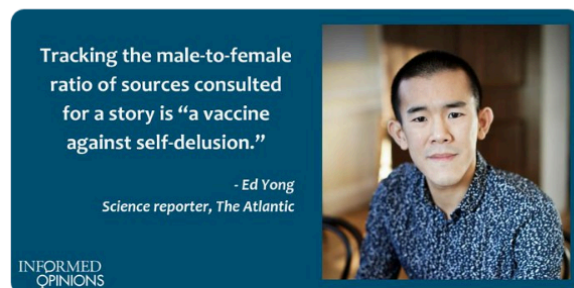
Promotion and Publicity

Minister for Women and Gender Equality Canada Maryam Monsef and Simon Fraser University's Vice President of Research, Joy Johnson, joined us for a conversation about the critical difference women's voices make at the launch of the Gender Gap Tracker in Ottawa in February. We also introduced the tool to an audience of 300 businesspeople at a 30% Club event in Toronto on International Women's Day. The diverse team of scientists who created the Gender Gap Tracker spoke about their work at a research event in Vancouver in March.

These public events were supplemented with thought leadership through the placement of four op eds in the weeks leading up to and following the launch, generating an earned media reach through print, online and broadcast media of approximately 21 million. In addition, we made strategic investments in raising awareness on social media, leveraging our network and those of our board members and allies on Twitter and Facebook.

Informed Opinions @InformedOps

When #journalists track the gender of their sources, they quote more women. The #GenderGapTracker lets them know how they're doing. Try it at gendergaptracker.informedopinions.org #genderequity #cdnmedia

Tracking the male-to-female ratio of sources consulted for a story is "a vaccine against self-delusion."
- Ed Yong
Science reporter, The Atlantic

INFORMED OPINIONS

👤 SFU Research

7:14 AM · Feb 13, 2019 · Twitter Web Client

View Tweet activity

29 Retweets **54** Likes

Informed Opinions @InformedOps

Diversity of sources is a hallmark of quality #journalism. Quoting men 72% of the time? Not so much. Let your news source know you expect better by visiting gendergaptracker.informedopinions.org #GenderGapTracker #cdnmedia @SFUResearch

"Diversity of sources is a hallmark of quality journalism."
- Kathy English
Public Editor, Toronto Star

INFORMED OPINIONS

12:02 PM · Feb 26, 2019 · TweetDeck

View Tweet activity

4 Retweets **12** Likes

Appreciating the importance of nurturing relationships with news media decision-makers, we have deliberately focused social media attention on good news, reflected in the tweets below.

It is important to note that the spikes reflected in these congratulatory posts are not captured in the data and description above because they generally reflected only one day's numbers, rather than demonstrating increases sustained over the course of a week or more.
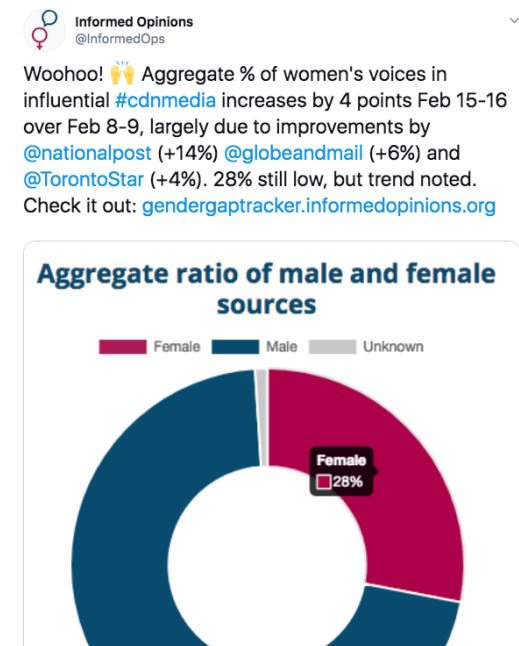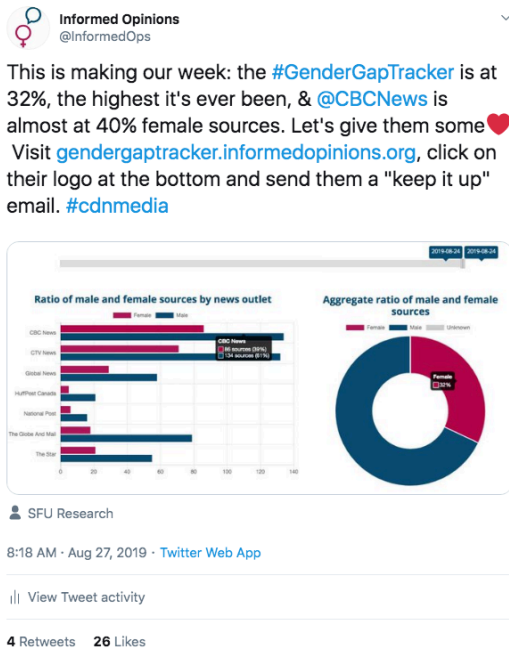
We have also shared hundreds of print postcards with news consumers at conferences of researchers, advocates, STEM professionals, credit union executives, entrepreneurs, lawyers, corporate directors, and journalists across the country.

Impact on Public Engagement

The Gender Gap Tracker has received 6,052 visitors to date, and the news outlets featured have been encouraged to track the gender of their sources by 517 visitors. Although a common assumption in media circles has been that one complaint reflects 100 others who haven't taken the time to weigh in, this represents a very superficial penetration. We believe that much greater investment in promotion is necessary to obtain a full assessment of the tool's capacity to feed sustained change in media practice.

PHASE II – Future Research and Development

Feature French language news outlets

We are working to adapt the Gender Gap Tracker's computational linguistics and machine learning into French so we can monitor Canada's five most influential francophone news media. This is more complicated than anticipated due to an absence of open source French software tools, and because of the gendered nature of the language itself. We are currently dependent on volunteer labour, and so this is proceeding much more slowly than we had hoped.

Differentiate between content generated by news outlets vs wire services

The ability to distinguish between newsroom-written and -produced stories and wire copy that is generated by external news services will both give us a better sense of how Canadian journalists are doing and increase the credibility of the tracker among Canadian newsrooms. Breaking down authors and creators by gender will offer additional insight into what difference the storyteller makes.

Conduct more in-depth data analysis exploring:

- Research on tone and authority in quotes - *Are there differences between men and women?*
- Personal context - *Are women still defined more frequently in terms of their appearance and/or relationships to men?*
- Titles and experts - *How are experts referred to? Are they clearly identified as experts?*
- Topic areas - *Which areas of the news feature the highest and lowest numbers of female experts? (e.g. business, sports, health, entertainment)*
- Authors - *Do female journalists quote more women than male journalists? What relationships exist between authors and quotes?*

The capacity to do deeper analysis will point us to new strategies and partnerships. For example, discovering that fully 60% of the most frequently quoted sources were elected officials inspired us to collaborate with Equal Voice and the makers of the *No Second Chances* podcast.

Distinguish between types of sources

A woman quoted because of her professional expertise is perceived much differently, and has greater potential impact as a role model, than a woman quoted because she has been the victim of or witness to a crime. An additional layer of computational analysis will permit us to differentiate between these.

Engage in ongoing outreach with the media outlets being measured

The meetings we've had with journalists have been instructive for both us and them. Reporters, producers and editors at *Huffington Post Canada*, Global News and the *Toronto Star*, in particular expressed appreciation for the opportunity to discuss obstacles to recruiting more women sources, and strategies to overcome them. In the process, they've also identified the kinds of expertise they've had most difficulty finding diverse sources for, giving us valuable insight into how we can continue to add value to our database.

Issue and promote attention to quarterly reports highlighting:

- Current aggregate ratio of women's voices relative to original baseline
- Statistical trends from one quarter to the next since project launch
- Number of Informed Opinions' experts quoted by monitored media
- Comparison of English and French language media, once the latter is added
- Best performers, both over the quarter and in terms of highest ratio reached
- Relevant insights from deeper analysis

Create annual "report card" event to celebrate best performers and reinforce importance

Releasing an annual report card that celebrates best performers, highlights best practices and draws attention to the consequences of under-representing women's voices would help to raise and reinforce awareness among news organizations and the public they serve and on whom they depend.

For more information, please contact:
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613-882-6810

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Sarah Marinelli, Philip Savage, "Sticking to their knitting?" A content analysis of gender in Canadian newspaper op eds, August 2011, Journal of Professional Communication https://www.researchgate.net/publication/254625675_Sticking_to_their_knitting_A_content_analysis_of_gender_in_Canadian_newspaper_op-eds;
Women's perspectives MIA in influential Canadian news media – Informed Opinions' research https://informedopinions.org/about/research/#2010

"Where oh where are all the female guests" blog post by Steve Paikin, TVO https://www.tvo.org/article/where-oh-where-are-all-the-female-guests

Counting Ourselves In: Understanding why women decide to engage with the media by Nancy Worth et al, October 2018 https://informedopinions.org/wp-content/uploads/2018/10/Counting-Ourselves-In-Final-Report-Oct-2018.pdf

The Discreet Expertise: The reasons that distance female experts from the media, by Anne Sérode, 2018

Gender of sources used in major Canadian media by Marika Morris, January 2016 https://informedopinions.org/wp-content/uploads/2017/08/Gender-of-sources-in-Canadian-media-.pdf

Longtime publisher, Joseph Atkinson's editorial principles included his belief that "a progressive newspaper should contribute to the advancement of society through pursuit of social, economic and political reforms." https://www.thestar.com/about/atkinson.html

Immigration and Ethnocultural Diversity in Canada, Statistics Canada https://www12.statcan.gc.ca/nhs-enm/2011/as-sa/99-010-x/99-010-x2011001-eng.cfm

ADDITIONAL RESOURCES

The following resources offer additional context for the issues discussed in this report:

"I analyzed a Year of My Reporting for Bias (Again)" by Adrienne Lafrance, The Atlantic, 17 February 2016 https://www.theatlantic.com/technology/archive/2016/02/gender-diversity-journalism/463023/

"Women are Seen More than Heard in Online Newspapers" by Sen Jia, Thomas Lansdall-Welfare Saatviga Sudhahar, Cynthia Carter, Nello Cristianini, 3 February 2016, PLOS ONE https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0148434

The Global Media Monitoring Project 2015 http://cdn.agilitycms.com/who-makes-the-news/Imported/reports_2015/highlights/highlights_en.pdf