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For Global Legislators on Twitter, an Engaged Minority Creates Outsize Share of Content

Although most national officials use the platform, their posts receive only a small number of likes and retweets

BY *Kat Devlin, Regina Widjaya and Jeremiah Cha*

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How we did this

This analysis examines more than 1.3 million tweets from 2,180 national-level officials in the United States Congress and parliaments in the United Kingdom, Canada, Australia and New Zealand. It excludes heads of government but includes both upper and lower legislative chambers, where applicable. The research team collected every tweet posted by these legislators between Jan. 1 and June 30, 2019, using the Twitter API.

Researchers at the Center created legislative rosters by hand, manually identifying all sitting members in each country's national legislatures and then searching for their Twitter accounts. These lists were continually updated to account for elections, resignations, legislators changing parties and other events. Legislator accounts in the database include official, verified legislator accounts as well as any unofficial accounts that belong to the legislator, such as personal or campaign accounts. See the [full methodology](#) for more detail.

For Global Legislators on Twitter, an Engaged Minority Creates Outsize Share of Content

Although most national officials use the platform, their posts tend to receive a small number of likes and retweets

Social media has become a key element of political discourse in many countries, allowing legislators to express their opinions, share information and connect with constituents online. Twitter is one prominent platform that enables this exchange, and many national leaders – both domestically and outside the U.S. – tweet regularly.

Indeed, a majority of members of the national legislative bodies in five predominantly English-speaking countries have a Twitter account. But as is true among other types of Twitter users, a modest number of active tweeters produce an outsize share of legislative tweets. A new analysis by Pew Research Center finds that the one-quarter of legislators who are most active on the site produce a majority of all tweets from this group – both overall and within each individual country.

Some of these tweets produce tens of thousands of likes and retweets from the broader Twitter public. But in the majority of cases, tweets from these legislators simply pass from view into the internet void. Across all five countries, the median tweet garners fewer than 20 likes and five or fewer retweets from other users on the platform.

A majority of tweets come from a minority of legislators

% of all tweets from national-level legislators created by the ...
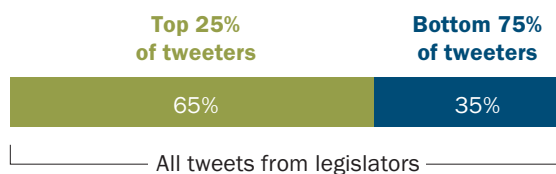
Top 25% of tweeters	Bottom 75% of tweeters
65%	35%

All tweets from legislators

Source: Analysis of tweets from national-level legislators in the United States, United Kingdom, Canada, Australia and New Zealand, posted Jan. 1-June 30, 2019. N=2,180 legislators with Twitter accounts, including 2,056 who tweeted at least once.
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The Center examined more than 1.3 million tweets posted between Jan. 1, 2019, and June 30, 2019, by national-level legislators representing the United States, the United Kingdom, Canada, Australia and New Zealand.

Here are some of the key findings from this analysis:

▪ **Most legislators across these five countries maintain Twitter accounts**: A majority of members (ranging from 61% to 100%, depending on the country) have an account on Twitter, and 73% tweeted at least once in the first six months of 2019.

▪ **A minority of active users produce an outsize share of legislative tweets**: A majority of tweets from national legislators come from the 25% most prolific tweeters – both overall and within each country.

▪ **Among those who tweet, legislators in the U.S. and UK do so most frequently**: Twitter-using legislators in these two countries post a median of 79 and 70 tweets per month respectively, while those in Canada (a median of 48 tweets per month), Australia (33) and New Zealand (15) tend to be less active on the site. But even in countries like the United States, tweeting tends to be a fairly sporadic activity. Just 4% of U.S. legislators posted a tweet every day they were in office during the study period.

Most legislators in five countries are on Twitter

% of legislators who …

Have a Twitter account	77%
Tweeted during study period	73

Source: Analysis of tweets from national-level legislators in the United States, United Kingdom, Canada, Australia and New Zealand, posted Jan. 1-June 30, 2019. N=2,180 legislators with Twitter accounts, including 2,056 who tweeted at least once.
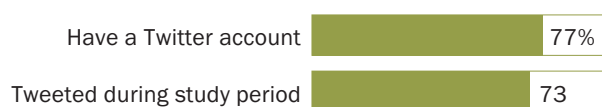"For Global Legislators on Twitter, an Engaged Minority Creates Outsize Share of Content"

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▪ **The typical tweet draws little attention from the Twitter audience**: The median number of retweets for Twitter posts from legislators in these countries ranges from a low of zero (in New Zealand) to a high of just five (in the U.S.), while the median number of likes ranges from five to 18.

▪ **Many legislators have adopted the vernacular of the platform in their tweets**: Online conventions such as hashtags and emojis let social media users experiment with language and express their personalities in unique ways. And many legislators are taking advantage of this new tech-centric vernacular: 97% of legislators across these countries who are on Twitter have used a hashtag, and 70% have used an emoji in their tweets.

▪ **In countries with elected and appointed officials, elected officials tend to be more active on Twitter**: In the UK, 28% of House of Lords members tweeted at least once over the study period, compared with 90% of those in the House of Commons. And in Canada, 67% of Senate members (who are appointed) used the site, compared with 94% of House members. By

contrast, nearly identical shares of U.S. House and Senate members (each of whose members are elected) posted at least one tweet in the first six months of 2019.

Most legislators maintain active Twitter accounts

In four of the five countries studied, at least three-quarters of all national legislators had a Twitter account during the first half of 2019. And of those with accounts, the vast majority were active on the site during the study period. In the U.S., for example, every serving legislator (541 in total across both houses of Congress) had at least one Twitter account. And of these 541 legislators, all but three tweeted at least once over these six months.[1]

The UK stands out for its relatively low share of members (55%) who maintained a Twitter account and tweeted at least once during the first half of 2019. This is largely because 526 members of the House of Lords (or 36% of the total) were not on Twitter at all in the first half of 2019. Among UK legislators who do have Twitter accounts, overall use of the platform is comparable to legislators in the other countries in the study: 91% of members with accounts tweeted at least once from January 2019 through June 2019.

In most countries, vast majority of legislators tweeted during study period

Legislators by country who …

	Total that served in govt. during study	Had a Twitter account	Tweeted during study period	% of total that tweeted during study period
Australia	257	230	212	83%
Canada	445	409	391	88%
New Zealand	123	114	105	85%
UK	1,461	886	810	55%
U.S.	541	541	538	99%
TOTAL	**2,827**	**2,180**	**2,056**	**73%**

Source: Analysis of tweets from national-level legislators in the United States, United Kingdom, Canada, Australia and New Zealand, posted Jan. 1-June 30, 2019. N=2,180 legislators with Twitter accounts, including 2,056 who tweeted at least once.
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[1] There are no more than 535 members of Congress with full voting rights at any given time. This analysis also includes the six nonvoting members of the House of Representatives and a congressional seat replaced during the study period but excludes a seat that remained vacant during the entirety of the study period, leading to 541 total legislators from the U.S. included.

The typical legislative tweet receives a small number of likes and retweets; the majority of tweets come from the most prolific quartile of accounts

Although most legislators in these countries have Twitter accounts and posted at least one tweet over the study period, they have taken to the platform with varying degrees of zeal.

Across all five countries, it was extremely rare to find legislators who tweeted on a daily basis over the course of the study period. Just 4% of members of the U.S. Congress who were active on Twitter during the first six months of

Most legislators tweet at least once a month, although very few do so on a daily basis

Share of legislators who tweeted ___ among those who tweeted at least once from January-June 2019 ...
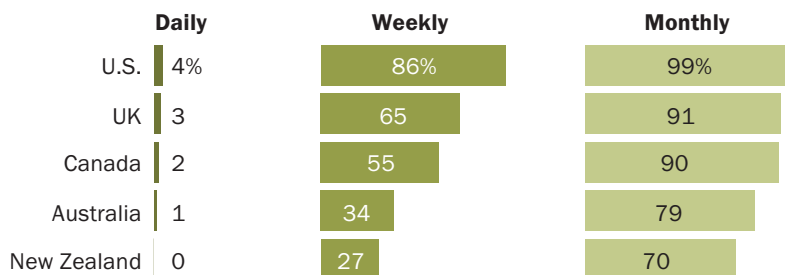
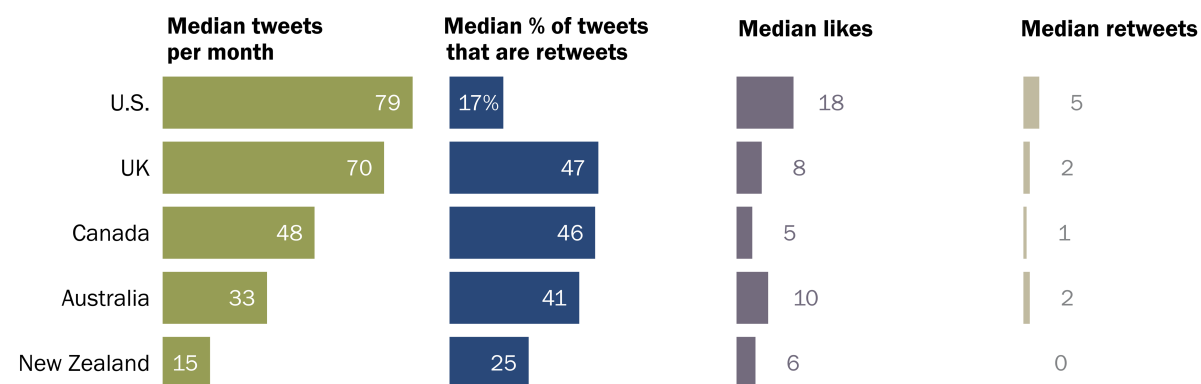|	Daily	Weekly	Monthly
U.S.	4%	86%	99%
UK	3	65	91
Canada	2	55	90
Australia	1	34	79
New Zealand	0	27	70

Source: Analysis of tweets from national-level legislators in the United States, United Kingdom, Canada, Australia and New Zealand, posted Jan. 1-June 30, 2019. N=2,180 legislators with Twitter accounts, including 2,056 who tweeted at least once.
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2019 tweeted every day they were in office during that time, and an even smaller share of legislators in the other countries met this criterion.

Instead, it is more common to see these legislators tweeting on a weekly – or even monthly – basis. Among lawmakers who posted at least one tweet during this six-month period, 86% of those in the U.S. posted at least one tweet per week, but that share falls to just 27% for those in New Zealand. In fact, nearly one-third of such legislators in New Zealand posted less than one tweet per month.

These country-level differences in regular Twitter activity are also clearly visible in the median number of tweets produced across the six months of the study. By this measure, U.S. and UK lawmakers are more active tweeters compared with their peers, posting a median of 79 and 70 monthly tweets per legislator, respectively. Those in New Zealand tweet the least, with just 15 monthly tweets per legislator at the median.

U.S. and UK legislators are the most prolific tweeters, but the typical tweet from national lawmakers receives small number of likes and retweets

Among legislators who tweeted at least once from January-June 2019 …

	Median tweets per month	Median % of tweets that are retweets	Median likes	Median retweets
U.S.	79	17%	18	5
UK	70	47	8	2
Canada	48	46	5	1
Australia	33	41	10	2
New Zealand	15	25	6	0

Source: Analysis of tweets from national-level legislators in the United States, United Kingdom, Canada, Australia and New Zealand, posted Jan. 1-June 30, 2019. N=2,180 legislators with Twitter accounts, including 2,056 who tweeted at least once. Engagement analysis excludes retweets.
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But despite these differences in tweet volume, audience engagement with legislator tweets through likes (also known as "favorites") and retweets are relatively low across the board.[2] UK lawmakers (the second most active tweeters) received a median of just two retweets and eight likes per tweet (excluding tweets from the legislators that were themselves retweets).[3] And U.S. lawmakers – who receive the highest levels of engagement in all of the countries studied – only receive a median of five retweets and 18 likes per tweet.

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[2] Due to limitations in the data collection process, other engagement measures such as number of followers or number of accounts one follows, as well as number of public replies to tweets, are not included in this report.

[3] When a legislator retweets a tweet from another account, the Twitter API only provides the original tweet's number of retweets, and a user retweeting the original author's tweet counts the same as a user retweeting the legislator's retweeted version of the original tweet. Accordingly, the engagement analysis examines only original tweets produced by the legislators themselves, as well as "quoted tweets" where a legislator retweeted something but added their own commentary, which is treated as an original tweet.

The Center's [prior research of Twitter use](#) by the American public found that a small portion of highly prolific tweeters produce the vast majority of tweets from U.S. adults. Similarly, this analysis finds that a majority of legislative tweets are created by a relatively small share of lawmakers. When looking at all tweets across countries, a quarter of legislators produced nearly two-thirds of all tweets (65%) during the study period.

To varying degrees, the same pattern also holds true across these five countries. The disparity is most pronounced in New Zealand, where the top quartile of most active legislative tweeters produced 76% of all legislative tweets. The conversation is least concentrated in the U.S., where the top quarter of legislative tweeters only posted 58% of total tweets from members of Congress.
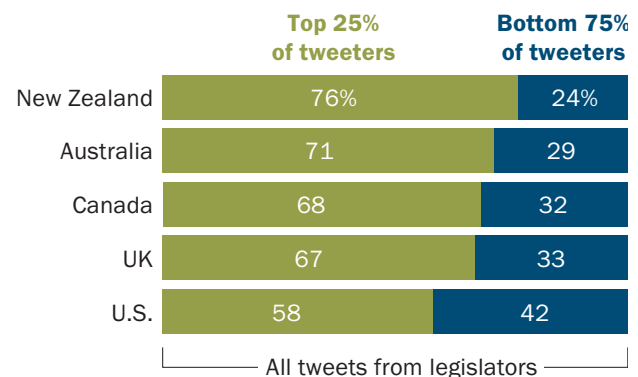
Along with creating the bulk of legislative tweets, the most-active tweeters tend to receive the majority of audience engagement with legislative Twitter accounts. The top quartile of Canadian tweeters produced 68% of all tweets over the time period but amassed more than 80% of all likes and retweets. Meanwhile, the top quartile of tweeters among U.S. members of Congress created 58% of all tweets but received around 70% of all likes and retweets.

A subset of legislators dominates the Twitter conversation

% of all tweets from legislators created by the …

	Top 25% of tweeters	Bottom 75% of tweeters
New Zealand	76%	24%
Australia	71	29
Canada	68	32
UK	67	33
U.S.	58	42

All tweets from legislators

Source: Analysis of tweets from national-level legislators in the United States, United Kingdom, Canada, Australia and New Zealand, posted Jan. 1-June 30, 2019. N=2,180 legislators with Twitter accounts, including 2,056 who tweeted at least once.
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However, prolific tweeting does not necessarily equate to amassing audience engagement in all the countries studied. The top tweeters in New Zealand and the UK, for instance, receive similar levels of engagement compared with their colleagues who tweet less frequently.

This analysis also finds sharp divergences in the shares of tweets that were retweets across these countries. For instance, a median of 47% of posts from UK legislators over the study period were retweets. But among U.S. legislators, just 17% of tweets over the same time period were retweets. The remaining 83% of their tweets were original content authored by the legislators themselves.

Hashtags tend to be a domestic affair

Across active Twitter users in these five countries, some 90% of legislators have used a hashtag in at least one tweet. And the most-used hashtags are typically linked to domestic political discussions, elections and policies rather than cross-national issues or movements. The most-used hashtag in Australia, #auspol, is a generic catchall for anything related to Australian politics being discussed on Twitter. Similar tags appear in the top 10 hashtag lists in Canada (#cdnpoli, #polcan) and New Zealand (#nzpol). Top hashtags in the UK center around Brexit (#brexit, #peoplesvote) and some notable events, such as Holocaust Memorial Day and the European Union elections.

Domestic elections and political issues dominate the most widely used legislator hashtags

% of national legislators in each country who tweeted at least once using each hashtag [#] at least once (top 10 shown)

Australia	Canada	New Zealand	UK	U.S.
86% auspol	92% cdnpoli	53% nzpol	77% brexit	85% sotu
61 ausvotes	55 canada	37 budget2019	53 pmqs	63 memorialday
52 budget2019	53 budget2019	34 wellbeingbudget	43 iwd2019	56 hr1
50 ausvotes19	51 bellletstalk	30 newzealand	40 climatechange	53 mlkday
47 ausvotes2019	48 polcan	20 christchurch	39 dday75	49 equalityact
38 qanda	46 wethenorth	18 nzqt	39 marr	48 internationalwomensday
37 iwd2019	46 onpoli	16 iwd2019	38 internationalwomensday	48 dday75
35 insiders	44 dday75	15 nz	35 euelection2019	48 forthepeople
32 7news	41 iwd2019	15 watch	34 holocaustmemorialday	47 blackhistorymonth
30 qt	41 cndpoli	14 climatechange	34 peoplesvote	45 earthday

Source: Analysis of tweets from national-level legislators in the United States, United Kingdom, Canada, Australia and New Zealand, posted Jan. 1-June 30, 2019. N=2,180 legislators with Twitter accounts, including 2,056 who tweeted at least once.
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The annual State of the Union speech (#sotu) was a widely popular hashtag among U.S. legislators, with 85% of tweeters mentioning it at least once. American legislators also used hashtags to bring attention to the For the People Act of 2019 (also known as H.R. 1), which proposes expanding voting rights and campaign finance reform, and the Equality Act, which amends the Civil Rights Act to incorporate and expand protections towards minority groups. U.S.-specific occasions that occur in the first half of the calendar year also top the list, including hashtags related to Memorial Day (May), Martin Luther King Jr. Day (January) and Black History Month (February).

Some themes, however, appear as top hashtag topics across multiple countries. Hashtags related to the March 8 celebration of International Women's Day (such as #iwd2019 and
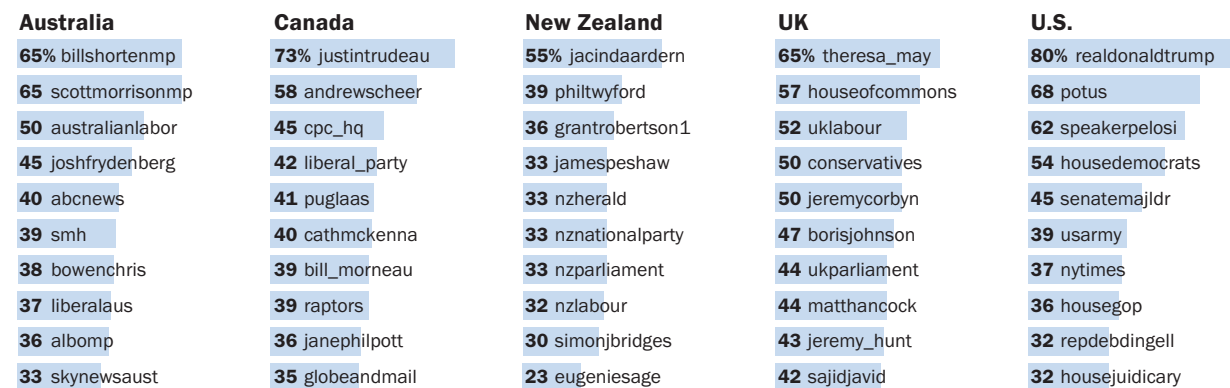
#internationalwomensday) were universally popular across all five countries. The 75th anniversary of D-Day (#dday75) appeared in the top hashtags list of the three nations that sent troops to Normandy to fight on that day in June 1944 – Canada, the U.S. and the UK. Climate and environmental activism also make the top counts in New Zealand (#climatechange), the UK (#climatechange) and the U.S. (#earthday).

Legislators frequently mention other politicians in their tweets

Legislators who use Twitter across the five countries often mention or "tag" other policymakers and government officials in their tweets. Accounts held by heads of state tend to be a focal point of these interactions: Legislators in Canada, the UK and New Zealand mentioned Prime Ministers Justin Trudeau (@justintrudeau), Theresa May (@theresa_may) and Jacinda Ardern (@jacindaardern), respectively, more than any other individual account. And in the U.S., eight-in-ten legislators on Twitter mentioned president Donald Trump (@realdonaldtrump) during the study period.

Heads of state and party leaders are among the most mentioned accounts by legislators in English-speaking countries

% of legislators in each country who tweeted at least once mentioning these accounts [@] at least once (top 10 shown)

Australia	Canada	New Zealand	UK	U.S.
65% billshortenmp	73% justintrudeau	55% jacindaardern	65% theresa_may	80% realdonaldtrump
65 scottmorrisonmp	58 andrewscheer	39 philtwyford	57 houseofcommons	68 potus
50 australianlabor	45 cpc_hq	36 grantrobertson1	52 uklabour	62 speakerpelosi
45 joshfrydenberg	42 liberal_party	33 jamespeshaw	50 conservatives	54 housedemocrats
40 abcnews	41 puglaas	33 nzherald	50 jeremycorbyn	45 senatemajldr
39 smh	40 cathmckenna	33 nznationalparty	47 borisjohnson	39 usarmy
38 bowenchris	39 bill_morneau	33 nzparliament	44 ukparliament	37 nytimes
37 liberalaus	39 raptors	32 nzlabour	44 matthancock	36 housegop
36 albomp	36 janephilpott	30 simonjbridges	43 jeremy_hunt	32 repdebdingell
33 skynewsaust	35 globeandmail	23 eugeniesage	42 sajidjavid	32 housejuidicary

Source: Analysis of tweets from national-level legislators in the United States, United Kingdom, Canada, Australia and New Zealand, posted Jan. 1-June 30, 2019. N=2,180 legislators with Twitter accounts, including 2,056 who tweeted at least once.
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Political parties and official government accounts are also prominent features of legislator tweets. Legislators in the UK tagged the Labour Party (@uklabour) the most out of these official government accounts, followed by the Conservatives (@conservatives) and the official UK Parliament account (@ukparliament). While Conservatives were the governing party in the House of Commons during the study period, a larger share of legislators mentioned the Labour Party. Similarly, the New Zealand National Party received a larger share of mentions than the New Zealand Labour Party, even though the latter party was the governing party at the time the study was conducted.

Other highly mentioned accounts are those of major party leaders and key policymakers on salient issues. Labour Party leader Jeremy Corbyn (@jeremycorbyn) in the UK, Speaker of the House Nancy Pelosi (@speakerpelosi) in the U.S., Treasurer of Australia Josh Frydenberg (@joshfrydenberg), Opposition leader Andrew Scheer (@andrewscheer) in Canada, and Opposition leader Simon Bridges (@simonjbridges) in New Zealand are among the most-mentioned accounts by legislators in their respective countries.

Media networks appear among the top 10 most mentioned accounts in all countries but the UK. In Australia, three of the most mentioned accounts are Australian Broadcasting Corporation (@abcnews), Sydney Morning Herald (@smh) and Sky News Australia (@skynewsaust).

Notable individual tweets cover issues ranging from tragedies to world records

Across the five predominantly English-speaking countries, the tweet that was retweeted by the most legislators was sent by New Zealand Prime Minister Jacinda Arden in response to the March 2019 Christchurch shootings. This tweet was retweeted by 71 legislators, including 20 from the New Zealand Parliament. Another 38 legislators from the United Kingdom also shared the tweet, including Labour Party leader Jeremy Corbyn. In the United States, Rep. Alexandria Ocasio-Cortez was the only legislator to retweet the post.

<embed https://twitter.com/jacindaardern/status/1106397870628847617?lang=en>

The tweet with the most likes was a video sent by Ocasio-Cortez featuring her dancing outside her office. The post was a response to the release of a video of her dancing while an undergraduate at Boston University. Ocasio-Cortez had nearly 6.8 million followers at the time this study was published and averaged 32,233 likes on her tweets from Jan. 1 to June 30, 2019.

<embed https://twitter.com/aoc/status/1081234130841600000?lang=en>

Ocasio-Cortez also created the most liked reply in our dataset. In response to an article about the location of her primary residence, she tweeted out concerns over her safety if she revealed the location of her apartment. The tweet sent in late February 2019 had more than 95,000 likes at the time of publication.

<embed https://twitter.com/aoc/status/1099854063196352512?lang=en>

With over 9,000 retweets, the most retweeted reply was a self-reply by Sen. Lindsey Graham about President Donald Trump's declaration of a national emergency on the U.S. southern border.
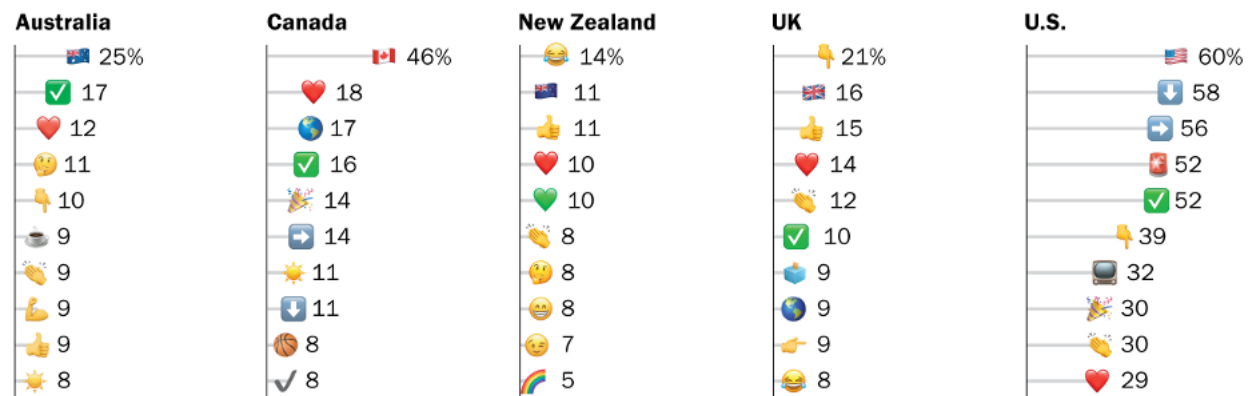
<embed https://twitter.com/lindseygrahamsc/status/1106647596074971139?lang=en>

Emoji use is common among legislators across the globe

Legislators' tweets contain more than just text: emoji icons are a popular part of the Twitter vernacular, and the majority of the legislators included in this analysis used them. Overall, 70% of legislators that were active on Twitter used an emoji at least once in their tweets during the first half of 2019. Emoji use is especially popular with U.S. officials: 95% of American legislators have used emojis in their tweets, compared with 61% of legislators across all other countries. However, only a small proportion of all tweets – no more than 6% in any country – contain these special characters.

Flag emojis prove popular with legislators on Twitter

% of legislators in each country who tweeted at least once using the following emojis at least once (top 10 shown)

Australia	Canada	New Zealand	UK	U.S.
🇦🇺 25%	🇨🇦 46%	😂 14%	👎 21%	🇺🇸 60%
✅ 17	❤️ 18	🇳🇿 11	🇬🇧 16	⬇️ 58
❤️ 12	🌍 17	👍 11	👍 15	➡️ 56
🤔 11	✅ 16	❤️ 10	❤️ 14	📕 52
👎 10	🎉 14	💚 10	👏 12	✅ 52
☕ 9	➡️ 14	👏 8	✅ 10	👎 39
👏 9	☀️ 11	😀 8	📦 9	📺 32
👍 9	⬇️ 11	😁 8	🌍 9	🎉 30
👍 9	🏀 8	😔 7	👉 9	👏 30
☀️ 8	✔️ 8	🌈 5	😂 8	❤️ 29

Source: Analysis of tweets from national-level legislators in the United States, United Kingdom, Canada, Australia and New Zealand, posted Jan. 1-June 30, 2019. N=2,180 legislators with Twitter accounts, including 2,056 who tweeted at least once.
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Legislators appear to use emojis as a way to showcase their national identity. National flag emojis are popular with legislators around the world and consistently appear in the top 10 ranking of emojis by country – a pattern consistent with other research on the topic. Pointers – in both finger and arrow forms – also appear across several nations, and the clapping hands emoji makes the top list across all five nations except Canada. New Zealand legislators appear uniquely likely to use facial expression emojis: four of the top 10 most broadly used emojis were faces, compared with one or zero for each of the other countries.

Acknowledgments

Methodology

To analyze legislators' activity on Twitter, researchers obtained 1,366,349 public tweets from each of the 2,056 members of the national legislative bodies in Australia, Canada, New Zealand, the UK and U.S. who had a Twitter account and posted at least once between Jan. 1 and June 30, 2019. The study includes legislators who were in office for just part of the six-month period. Tweets are only included in the analysis if they were produced while a legislator was in office. Researchers used the public Twitter Application Programming Interface (API) to collect the tweets and stored them in a database. Of the 2,180 legislators with a Twitter account, 2,056 legislators tweeted at least once during the time period analyzed here.

Researchers at the Center created legislator rosters by hand, manually identifying all sitting members in each country's national legislatures and then searching for their Twitter accounts. These lists were continuously updated to account for elections, resignations, legislators changing parties and other events. Legislator accounts in the database include official, verified legislator accounts as well as any unofficial accounts that belong to the legislator, such as personal or campaign accounts. Accounts for honorary and non-voting members, such as Congressional representatives of U.S. territories and hereditary members of the British House of Lords, are also included.

Activity and engagement analysis

This report analyzes both legislator and audience behavior on Twitter. To measure activity, researchers took two separate approaches. First, they identified the share of all legislators in each country who tweeted at least one time on a daily, weekly or monthly basis. Second, they calculated the total number of tweets from each account during the study timeframe and then took the median across all legislators' monthly totals. These measures are calculated separately for each of the five countries. Using the median helps to account for a small number of very active users of the platform, whose frequent tweeting skews the data. In both cases, the measures aggregate across both original tweets and retweets.

Original tweets are those that an official creates directly. This category includes quoted tweets (in which a user simultaneously retweets and adds their commentary to a tweet posted by someone else), reply tweets (in which a user takes part in a threaded conversation stemming from an initial tweet) and tweets that do not include any links to other tweets. Original tweets make up 46% to 74% of legislative tweets across the five countries in this study. The Twitter API provides engagement data, such as numbers of likes and retweets, for these original tweet types.

Retweets are tweets that come from other Twitter users and are retweeted by a legislator with no additional edits or comments added. We do not examine engagement data for these posts, but we do include retweets when examining each legislator's total number of tweets, the percent of their tweets that are retweets, and each legislator's overall mentions, hashtags and emoji use.

Engagement – the number of likes and retweets that legislators' Twitter audiences provide – is also measured at the median. The main text of this analysis shows the median number of likes and retweets for original tweets from legislators in each of the five countries who have Twitter accounts and who have tweeted at least once during the study period. Researchers identified each legislator's median original tweet, in terms of both likes and retweets, and then identified the median legislator based on these measures for each country, which provides the estimates shown here.

The analysis of likes and retweets excludes tweets that were retweets. It only includes original tweets, as researchers could not determine how much of the engagement for a particular retweet could be attributed to the legislator who retweeted it.

Defining the 'engaged' or 'heavy' Twitter user among legislators

Examining a small group of high-volume tweeters – a technique used in the body of this report – does not capture the broader set of activities that may define highly engaged users, such as following, liking and being followed by others. Still, understanding those who produce more tweets provides us with useful insight. For this report, we used the top 25% of tweeters by median total volume across the periods in which legislators were in office as a measure for users with the highest levels of engagement and compared them with less prolific legislators.

Counting hashtags, mentions and emojis

This analysis also includes counts of mentions, hashtags and emojis. Because mentions and hashtags are offset from normal text via punctuation ("@" and "#," respectively), researchers used regular expressions to extract these from the tweet text and build term frequency matrices. Researchers also excluded forms of text that might contribute noise to the data, such as contractions (e.g. "'s" in "@realdonaldtrumps's" or "#canada's") and emails (e.g. "access@fringeworld.com.au"). Since a prolific tweeter repeatedly using a hashtag or mention could inflate the count, these measures are normalized to reflect the percentage of legislators by country who have used each of the top hashtags or mentions in that country.

To count emojis, the research team used an additional Unicode emoji v13.0 (2020) lookup file from Kaggle to extract emojis from tweets, again using term frequency matrices and normalizing by legislator.