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Politics on Twitter

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>> Professor Jen Golbeck.

>> Hi everybody. Thanks. So before I get started on the talk, I wanted to say that I'm the Director of HCIL, here the Human Computer International which was founded by Ben. And Ben is going to be taking you guys on your lunch time walk over to the lab today. So he'll walk you over to our space in Horn Bay and you can come, kind of tour around and I'll duck out of one of my meetings and say, "Hi" to everybody. So you'll get to come see our space. So go follow Ben around at lunch and you'll get to -- get to walk over and see the lab and probably some of the people who are there, and the cool space that we've got going. So yeah, so I'm a Computer Scientist by training and I still do a lot of Computer Science. But I've been sort of fortunate in being in the iSchool that I also get to use a lot of other methods that they don't really train you on in Computer Science, and so studying social networks has led me to study a lot of social media also, and looking at Twitter on politics has been a really fun space where we've done a bunch of different projects and obviously there are a few things coming up that are going to be some really interesting research areas. So what I'm going to talk to you about today are three studies that we've done and that's really like two and a half or two and a -- "Oh, haven't gone anywhere study." [Audience chuckle] So, you know, who knows? There's a great data set though, so there's maybe something you guys can help with on the third one. So I'm going to talk about a study that's now sort of outdated, looking at how the U.S. Congress uses Twitter. But what I would like you to take out of that are some of the methodology things and insights and you can't really do that paper anymore, because we've done it already. But there's a lot of things that -- I think you can take out of that in terms of just studying these things. I'm then going to talk about a study that I did with Derrick Hanson -- was he here at all this week? [Audience mumbling] No. But he is a great guy, now at Brigham Young; really awesome research in this space and he came out of Michigan. So we did this study on computing political preferences using people's following behavior on Twitter and that's something that I think there is a lot of promise in. It's a really fun piece of work, I think. And then the Canadian Parliamentary Elections is that stalled project [furniture being moved] -- but there's a great data set and so I'll -- I'll show you the things that we've got there and we can talk a little about it. So first Twitter used by the U.S. Congress -- this is work that I did with Justin Grimes who is a PHD student in the iSchool and in between graduates he's actually an undergraduate here, at the University of Maryland. So we started this study -- gosh it was like in 2009 and Twitter was, you know, a very different place at that point. It's sort of a very different place from day to day and Justin had come to me and he says, "You know is there anything about how people on Congress are using Twitter?" And I'm like, "We should totally do that [chuckle]," and so that's what we did [audience chuckle]. We went in at that point got every tweet that had ever been tweeted by any current member of Congress and they were about 6,000 of them which maybe tells you, you know, that's kind of a small number except you need to read every single one of them and we coded all of them and I'll talk a little bit more about that as I go on here. But what we really wanted to do was like no sampling, we're going to get everything that's been done ever by Congress on Twitter and just figure out what they're doing because nobody knew at that point and in fact a lot of people's intuitions were wrong. One of the first intuitions that was wrong, is that Democrats are way better at using the social media than Republicans, right? Because we -- this was -- the study was published in 2010, so we were sort of coming off Barack Obama's very good use of social media in his campaign. Everybody's like the Democrats totally have this social media thing and the Republicans don't know what they're doing. That's totally wrong. The Republicans are very good in the way that they use social media and at the time, they were a really

dominant force on Twitter, almost two-thirds of the people -- more than two-thirds of the U.S. Congressional members on Twitter were Republican. Now like I said, this is sort of an outdated study; those numbers have evened up a bit, and it's kind of unfair that these pie charts are the same size because there's about double the number of people on Twitter now. Its most of the Congress actually; at least has a Twitter account. A lot of them don't use them, John McCain is one of these guys; he's got a lot of followers on Twitter. He's got the most followers of any member of Congress because he ran for President and so everybody followed his Twitter account and he doesn't tweet at all really [audience chuckle] and there, you know, they're sort of staff written tweets, there's not a lot going on, on that. On the other hand, John Boehner and Claire McCaskill are both really excellent Twitter users on both sides of the political spectrum and they're tweeting all the time and they've got all sorts of personal things up there, they interact with their constituents. So -- and actually in the response to the crazy guy who was talking this week, is it Aiken? Is that his name? [Audience laughter] I've tried to block him completed out of my mind. The first response -- so you know he did his interview and the press, the first response from Claire McCaskill who he's running against for the Senate seat was from her Twitter feed, right? He did his interview and she immediately tweeted and they didn't even call her for a response first. They were just like "Her tweet said this." So she does a really nice job using Twitter and so now we are starting to see more parity, more people using it but, you know, it's not just the number of people that says if you're using it well and this is something else that surprises people. Now, these are older graphs made in Note Excel but the general pattern here is still representative. So this is everybody -- so the nodes represent members of Congress. They're obviously color coded by whether they're Republicans or Democrats and then the links are following links on Twitter. So immediately what you see out of this is that those red dots are really close together, right? And if we break those out, if we just look at the party, so we look at the Democrats, their social network looks like this. It's bigger than this now but it's still looks kind of like this and the Republican central network looks like that. The Republicans are all following each other. They've got sort of agreed upon hash tags that they use. They talk back and forth to each other, they retweet each other. There's really like a very well-organized and tight community among Republicans and Conservatives more broadly on Twitter. So they're very effective at communicating with their constituency, the people who are looking at their hash tags. Teapot is one of them, top Conservatives on Twitter, and you find that they very consistently use it on their tweets, their constituents, Tea Party people very consistently use that hash tag. So there's just a really active and wise community who understands what's going on, on Twitter, and they follow those conventions and so you get a really cohesive group working together on Twitter. So it's sort of busted this myth that Democrats totally were using Twitter in the right way and Republicans didn't know what they were doing. Not true -- Republicans definitely know what they're doing. But the point of us doing this study was really to figure out what are people saying? What are people saying on Twitter? So we wanted to get all the tweets we could and that was everybody's tweet that had ever been posted if they were a current member of Congress. So we excluded people like Barack Obama who had been a member of Congress but at the time we did this study was President, so we did not include his tweets. We only took current members of Congress. We got all of their tweets and we read them and we analyzed the content. So there were about 6,000 of these and we did a double-coding scheme. This is all exciting stuff for me as a quantitative person growing up, we did a lot -- we did quantitative research. It was pretty cool. So we read all those tweets and that was so boring, [audience laughter] oh, it was way -- you know three of us and so we each took like three-thirds, we each had 4,000 tweets, you know, but I had to read all of them because I had to go through and check all the coding on everything. So we did sort of a rounded theory, open coding, you know, it was being a grad student and we'd never done this before [chuckle]. But we ended up with these sorts of categories after a bunch of iterations through and the types of tweets that members of Congress were posting. So we had Informational tweets, locations in activities and official business, those were two categories. So informational tweets, is just me saying like, "I hate Bill743," or, "Hillary Clinton should be ran out of Washington," right? These are the sorts of informational posts that we got, so sort of statements of things. Locations and activities were people tweeting you know, "I had lunch here," or, "I just finished a workout in this place," or, "I'm going to meet with these people." Official business is sort of the parallel of locations in

activities, except its things officially happening like on the House or Senate floor so, "I'm voting on this bill," or, "I'm in this conference committee." So we tried to separate out the things that were actually happening in the Congress and then their locations and activities outside of that space. We have external and internal communications. So these were basically directed messages at specific people. So external communication would be messages sent mostly to constituents or media who had messaged these people on Twitter and these weren't private messages but direct messages on Twitter. Internal Communication would be messages between Congress people and their staff. There wasn't a lot of that, but we looked for it anyway and there was some of it. Requesting action and fundraising were two more categories. So requesting action would be asking people to come out to an event or to tune in to, you know, an interview that they were giving on press, to sign a petition. A fundraising is exactly that and this is what we thought we would find a lot of and everybody thought we would find a lot of because we had all the tweets from the 2008 election in this data set. So we thought we would find a lot of kind of fundraising, contribute to the campaign stuff so we looked for that. And finally personal messages which we kind of exempted from the communication stuff and that was like happy birthday wishes, you know, messages of condolence, anything that was really very personal kind of messages back and forth, we separated those out. So these are the categories of things that we were really looking for and -- and that pretty much captures everything. We coded all the tweets with these and we allowed the tweets to have two categories. So sometimes you would have informational posts that stated a position and then it would also refer to a bill that they were working on and so we coded it for both of those. I am completely -- it has been a long time so I don't remember our inner code of reliability but it was quite high, we were probably 85% on our code of reliability which was good for us. What do you think was the most common thing? I mean if you just think about, you know, "All right, so is people on Congress on Twitter what are the kinds of stuff that they're doing?" Like what would you expect that they were doing? If you were to read these 6,000 tweets, what do you think you would find a lot of?

>> PR.

>> PR is a good guess, yeah.

>> Self-promotion.

>> Fundraising self -- well thank you.

>> [Audience laughter] Snarking at their opponents.

>> What?

>> Snarking at opponents.

>> [Laughter] Snarking at opponents, right. Yeah so these are the sort of things that we thought and that everybody thought. So self promotion Mark is a great guess because I think that's in the name of the paper. That's a lot of what we found. [Audience laughter] So here's our breakdown of tweets by type. Information posts, so these are those kinds of statements of position, self-promotion were the majority of things that we found. So 53% just sort of saying, "I think this," or, "My opponent is awful on this." There were some snarking -- not a lot of direct back and forth like that, but yeah definitely criticism of other people's positions. Very self-promotional, I mean a lot of these tweets read like sound bites, right? They were very carefully engineered to -- to read like sound bites. So there was a lot of that, that's -- that's a majority of what we found. And then locations and activities -- so and that's non-official stuff. "So I'm going to meet with this company," or, "I'm going to this baseball game." There was a lot of stuff about the restaurants where people were eating at. Oh, so I've got some examples in here. So this is an example of an

informational post, "Why I voted against Hillary Clinton" and then a link. Congress people love links on Twitter, way more than the average person. There are links in most of these posts; a lot of them are links to media interviews, you know, when they were quoted in the newspapers but lots and lots of links. So that's an example of an information post, "Why I voted against Hillary Clinton." Locations and activities -- so here's one about lunch, the sort of the typical thing people say why Twitter is worthless. People just tweet about what they had for lunch. So we found some of that. External communication -- so that's sort of talking to people outside. This is actually an official business example out here, "So I'm voting for this bill on the floor." But we're starting to get down into really small percentages and if we look up here at the top, look fundraising; we found like two tweets that we're doing fundraising. Why Congress people? Are you not trying to fundraise on Twitter, right? [Audience laughter] I mean there's thousands and thousands of followers, all of these accounts even, you know, three years ago, had a lot of followers and they're doing absolutely no fundraising. I mean maybe it won't be effective but you're like not even trying two tweets over an election cycle on fundraising on Twitter? [Audience chuckle] And that means you need better people advising you on how to use social media, right?

>> Aren't there legal restrictions on asking for money?

>> That's a good question, I don't think so...

>> For example I think couldn't you set an office for fundraising?

>> So -- so all of those restrictions would still apply right? But most of these Twitter accounts were not run out of the office. Some people did have sort of staff that were doing the tweets for them. But a lot of was very personal, you know, personal kinds of interactions and things taking place so anyway, I think if you were to adhere to all of those regular rules you can still certainly still use Twitter for this because Twitter, you know, it's not a government function, so you can say whatever you want on Twitter as long as you're following all the other rules. There were examples of people getting themselves in trouble. John Boehner, I said he's a very good and active tweeter. He tweeted so the -- I don't know if you remember this but shortly after Barack Obama was inaugurated, he had a closed-door meeting with Congressional Republicans to kind of say, "Look here's the agenda I kind of want us to work together," but it was no press and Boehner tweeted the whole thing, he was just tweet, tweet, tweeting the whole time, everything coming out so he caught some flak for that. One Congress member -- and I'm not remembering who it was, went on a sort of Congressional visit to Iraq and he tweeted where they were [audience mumbling] which they were not supposed to do because it was secret [chuckle]. So -- so there are rules that they have to follow even on Twitter. But just using Twitter for fundraising by itself isn't anything that should be restricted if they follow those rules. So we actually found a lot of other really interesting stuff and there's some great conversations that we have excerpted in this paper. This was published in Jaycist [assumed spelling] in 2010. Very soon after we finished, they had a great quick turnaround. So like I said, the -- the sort of numbers and things are out of date, but the general impressions are still pretty accurate looking at -- at what people are doing on Twitter now. Lots and lots of self-promotion, a lot of soapbox style position statements, very much geared towards reading like sound bites. But we did find some stuff that has potential to really take advantage of all the things that you can do in social media. There was some really interesting back and forth debates where, you know, Republican and Democrat are tweeting back and forth about, this was drilling in the Arctic Wildlife Reserve -- back and forth about, you know, oil policy and the effect it will have and they're throwing statistics around. It was really interesting and like that's just the kind of thing you'd love to see on Twitter. Right, because there was a lot of substance to that. So we did find some of that, also some really nice communication between Representatives and their constituents, so constituents would tweet at their representative about a problem and the representative would say, you know, "Here's a general response to that and here's where can you know, you can reach my office and we can talk about it." So that it was a very interesting and useful channel for that kind of communication where like emailing a representative often

isn't anymore because they just get so much email. And there were some tweets that were geared towards improving transparency and you could say that Boehner's tweets during that closed-door meeting were one of those things. But there were tweets that we found you know really getting into these committee meetings where a lot of people don't go but explaining the politics of what were going on, and that's a really interesting thing that you can get out of these tweets potentially, right? You can start getting improved government transparency because everything is going out there on social media. So we weren't recommending that these are the things that Congress necessarily should do but it's the promise of what social media might hold if used in these ways and some of it is out there. So what we're hoping is to see more of that happening. We're not going to see any of it until after the election, right? But hopefully after the election we'll start seeing maybe some of this stuff happen. Okay, so to shift gears a little bit, I want to talk about the second -- Study Number Two on computing political preference on Twitter audiences. So that first paper is really looking at how people are generating content on Twitter and this is more about what kind of people -- what kind of content do people want to consume on Twitter, so we looked back at the audiences and this is a paper like I said that I did with Derrick Hanson and this was in [inaudible] 2011. So we actually started this work thinking that we might look at media bias and how are we going to understand the bias of the media and he said, "Well, you know, maybe we can look at the people who are following each of these media outlets and that will give us some insights into the bias of the media outlets." And -- and the more we talked about this the more I was like, "This is the worst idea ever -- like we are going to get in so much trouble talking about media bias." And the fact is that there are a couple good studies on media bias out there, but there are a lot of studies on social media bias and most of them are junk. They are funded by some extreme organization on one side or the other and the science in them is terrible. They're really just awful examples of research and so we didn't even want to even consider doing work that might be lumped with those even though ours would be well-grounded. So we said, "Media Bias? No." But the media is a good thing to look at. So what we decided to do is look at the people who are following these different media organizations on Twitter and try to understand their political leanings. Right? So if you have a very conservative group of people following you, it doesn't necessarily mean that you're biased. Right? But it means that you -- there's a particular political preference among your audience. So that's not saying anything about the media outlet necessarily but I'll show you some results and you can judge for yourself on that. So what we wanted to do is come up with a method for understanding the political meanings of a group of people who are following a particular account. [Furniture moving] And so here's how we did that, we started off with all those members of Congress who are on Twitter that I talked about in the previous study and there are a few different organizations that will rate members of Congress on a Liberal to Conservative scale. Americans for Democratic Action put out a study and they looked at -- they picked sort of 10 Representative bills that can -- they say, "If you voted for this it gives you a liberal vote and if you voted against it gives you a conservative vote." And they take these Representative bills and they look at the Congress people voting records and they give them a score. There are other ways that you could rate Liberal to Conservativeness, and -- and you could plug those in here in place. What we're really talking about is a method here. So we got those scores and then what we did was look at all the people who are following those members of Congress on Twitter. So we got everybody who followed at least one member of Congress on Twitter and then we wanted to come up with a Liberal to Conservative score for those people. [Hammering sounds] So we kind of estimated that by saying, "All right well, so let's take this person and we'll look at which members of Congress they follow on Twitter and then we're just going to average the Liberal to Conservative scores of those numbers of Congress to get a score for this person." Now, that is certainly not going to be right all the time, right? So I might follow the representatives in my state, just because they're in my state, and it may not at all - there is banging [chuckle], right? [Audience laughing] Yeah. So I may follow them because they're in my state but that may not mean that I have the same political means. I just want to see the people in my state. So we say, "Okay, this is going to have some fuzziness, but let's just go with it and we'll see how the results turn out." So we did this for everybody, anybody who followed at least one member of Congress, we got their score like this by averaging the scores of the Congressional people that they followed. So then we had our media organizations and we basically

repeated this process for one step. So we had this huge pool of people who followed members of Congress and that was our pool of people and for all of those people, we checked to see which of the media outlets we picked that they followed. So we would take a subset of our Congressional people and connect them to the media outlets they followed and then basically repeat the process. We would just average their scores to get a score for that media outlet and we did that for all the ones that we studied. So there's a bunch of assumptions in here, right? I mean we're doing some simple averaging. We're assuming that the people that you follow on Twitter are sort of representatives of your preferences and we said, "All right well, the method seems good but yeah, there's a lot of assumptions. So let's just look at the results, right? Let's look at what happened. So this is Conservative to Liberal, red to blue. The light marks indicate the quarters and -- and there's where our news outlets fell on this scale. So you get Fox News and the Georgia Report and The Washington Times, way, way down on the Conservative end. Most of these kind of mainstream media outlets in the middle, our most liberal was Morning Edition on MPR which may be a little sad that they came out looking Liberal. [Background laughter] But I think it's just that lots of smart Liberal people listen to Morning Edition [audience laughter]. But the thing is that they are nowhere near as high on the Liberal end as Fox News and the Georgia Report are on the Conservative end. Right? They're much closer to the middle [audience laughter]. An interesting thing that we found here, one of those studies, it seems to be pretty decent looking at media bias was by Effrin in 2004, and he took a bunch of media outlets and he actually looked at who they quoted and how they presented issues. And our ratings here match up very, very closely with the things that he came up with. So while we were trying to measure media bias, the scores that we ended up with here, [background talking] put these news outlets pretty close to the media bias that they were predicted to have in this other study which gives us an indication that okay, this study says that Fox News is very conservative. We found people that look Conservative on our scale tend to follow it and they sort of match up. So we take that as some evidence that we're doing a good job. So we wanted to extend this past media because the method is really what we're interested in here and we think you can replace Congress people with any kind of scoring mechanism at the top and you can replace media outlets with any kind of thing you want to understand in the middle and use this method. So we decided to do one step of that and instead of looking at media outlets, to look at applying this to government agencies. So we still would take all these people who are following members of Congress but then we would look at the government agencies that they were following on Twitter also and see how the distribution fell. So are there government agencies that tend to be followed by Conservatives than Liberals and how does that work out?

>> DOD versus education.

>> So DOD versus education [audience laughter] is Ben's guess, but actually it's really interesting. We looked at -- I want to say like 80 different government agencies. 10 of them had scores less than .4 so on our Liberal to Conservative scale, Conservative is zero and Liberal is one. So this is lower than .4 so down towards the Conservative end. We had 10 accounts with scores less than .4 and six of those 10 were Alaskan National Park service accounts [audience chuckle]. All right, well why is that? Because Alaska is a pretty conservative place overall, Sarah Palin from Alaska [audience mumbling] and so people in Alaska follow their national parks, right? And so it tends to be a more Conservative state and so we've got a lot of Conservative people following that. That's not that national parks are Conservative, but that it's just a geographic influence which we thought was pretty interesting. We also had a similar effect for parks in Liberal areas. So we've got some accounts here, so the Lowell National Park Service, D.C. parks; this one's in Hawaii, those there -- all three, those last two are in Hawaii. So Massachusetts, D.C. and Hawaii are pretty Liberal places and their national parks had scores above .6. So that was pretty interesting. This national park phenomenon matched up. We had 36 accounts with scores over .6, all right? So only 10 of them on the Conservative end, 36 on the Liberal end. Eleven of those are environmental agencies, okay? So Ben said DOD and Education. It turns out Environment was the issue that we found tends to have more Liberal followers and those are -- those are the 11 accounts there where we saw more Liberal followers. So it seems again to be matching with

these inclinations where you can look at these results and say, "Okay that makes sense. Like geographically I get why the service parks things happens, environmental issues." We say, "Okay, that tends to be a more Liberal issue. I see whether there's more Liberal followers." There's a lot more work to be done in this phase and this is why this is work I'm really excited about because we can validate these results at all these intermediate steps, right? I think that there's a great project to do and Derrick and I have sort of talked about it. But we both have been kind of busy, where we actually sit down and we do interviews and surveys. There are a few good survey instruments out there for measuring how Liberal or Conservative you actually are. Actually distribute those widely and compare it to the results we get on our method to validate, you know, is this sort of averaging and Twitter following working, plugging in different scores instead of Congressional members, Liberal Conservative scores? There's a green score for example that's given to companies. So maybe we can put companies in there and look at their green score which measures their environmental activism and look at how that works. So here's people who are following those companies. Some have great environmental records, some have poor ones. Here are other organizations that they're following so maybe it tells us something about the environmentalism of these organizations. There's a lot of ways that this can be used and a lot of really interesting validation that can be done on -- on different levels. So with that I'm excited about them, but I think there's a huge amount of new stuff that can be done there.

>> So here did DOD and [inaudible] fall?

>> Everything else fell right in the middle, between .4 and .6. So overall you've got a pretty wide range of followers and -- and so everything was really clustered around the middle which made it a little easier to give these results because we pull out those ones on the end, there's not that many of them, but everything else in the middle. Okay, so application areas, we talked about this. Okay, so I'm let me talk very briefly about that study that hasn't gone too far, because the data set here is so good. So Canada had a Parliamentary Election in May, 2001 and Canada has this interesting law that says you can - there's a start date for when you can begin campaigning for Parliamentary Elections. You can't start campaigning before then. So campaigning is allowed between March 25th and May 1st and then you have to stop on May 1st and then the election is on May 2nd. So we have every single tweet from every person -- there's Data Happy people in the back -- yeah. [Audience laughter] So we've -- so this is work that I started with Scott Duckett who was here in the iSchool and he's now up in Toronto. We -- he got a list of everybody running for Parliament everywhere in Canada and then I wrote the script that got every tweet that they tweeted in this period between March 25th and May 1st. So the data we've got, right? And that's the hard part I think. So we have every tweet that was tweeted in the Canadian Parliamentary Election, we've got parties and the candidates associated with all of that. Yeah, so we've gone like one step further than that, right? But I was so excited by this because there's so much cool stuff you can do with that data, because you've got the outcome of the election, you've got polls at the beginning, you can merge so many things together. The only step that we've really done with this is to do some automated text analysis which I think has -- indicates it has a few interesting differences here. We use this tool called LIWC, have you guys used LIWC? So that's a good thing for everybody to know. So it's L-I-W-C, the Language in Korean Word Count and this says automated cycle linguistics text analysis tool. You know, we feed in your text and it has a bunch of pre determined categories of words and it outputs what percentage of words in your corpus fall into each of those categories. So if you're -- even if you're doing very qualitative analysis and your reading things, you get all sorts of interesting insights by categorizing types of words with this tool. It's not free but it's like 20 bucks and I have used it in so many studies, it is really a wonderful and valuable thing, so...

>> How do you read it?

>> Yeah, so it's L-I-W-C, Language In Korean Word Count. You just Google it, so we pronounce it Luke but it's LIWC or yeah, Linguistic in Korean Word Count? [Audience comments] Linguistic in Korean Word Count.

Yeah, get that tool tried out, you can try it out for free online, you can like stick in a chunk of text and analyze it. So it's a great, great thing. So I did a quick analysis like wrote some code, dumped in our tweets there and grouped them by party and we found a couple statistically significant results. So the Conservative party tended to use more affective process words. So these are categories from Luke affective process words, emotion type words is what those are. So happy or cried or abandoned would be an example of words that fall in that category and positive emotion words like love, and nice, and sweet. So they were really using very emotional words and tended to be more positive in their campaign and they used significantly more of those words than all the other parties. The Green party -- the Green Party used more negative emotional words including, anxiety and anger words like hurt or ugly or nasty. They used significantly more of those than the NDP or the Conservative parties which were down on the Conservative end. You know, we looked at environmental words and family words, a lot of other things that you might have expected to see and we didn't get many other significant results. But this was sort of interesting and thinking about what's the type of language that these parties are using for their message but I think there's so much that you can do with this data. And so we sort of got going on it and then we both had other projects and so now it's just sitting there. So if this is in the space that any of you are interested, I would love to have a collaborator to come in and work on this project because I think that there is just a ton of interesting stuff and I'm a -- I'm a person who does -- like once I get a good data set, I'll do whatever kind of research goes with it, right? If it's qualitative, I'm in for coding and if it's quantitative that's great and computation linguistics and text analysis, awesome. I love doing cool stuff with social media data. So this is my project that I need a collaborator on. So you email me if you're interested in that. So overall conclusions for you guys, as you all know Twitter is a rich source of information. It's pretty easy to grab data from there. You just can't grab enough is the problem, but there's so much good stuff up there and what I try to do with it is to understand how it's used, who is it using it, and why can it help us or how can we improve the way people are using it. How can they use the tools more effectively, both if you're creating information or consuming it, and how can you present information more effectively and really that's what I do in all of my research life. But it's -- I think there are some nice examples specifically for using it on Twitter. So I'm hoping to take any questions and if you're one of those people who's interested in my data or if there's just stuff I can tell you, there's links, whatever, email me and I promise in September, I'll start responding to my email again because that's when my tenured documents are due [audience laughter] and anyhow, maybe I'll slip in a couple of emails at 4:00 in the morning before then. But definitely drop me a message if you're interested in any of this stuff and I'm happy to talk. But for now I'm happy to take questions.

[Applause]

>> I wonder if you considered using instead of just who people follow, higher levels of engagement like if they've tweeted Congressmen or something like that, that might show they support that message more than just they follow people from both parties because definitely they [inaudible]?

>> Right, yeah, so in this work -- no. In this work, you know, we did that initial study with the media outlets and we did some follow up work and we've got a journal article -- I think that's still out for review on that. And so we haven't pushed that a lot further. But I have done some work like that in another domain, so a lot of my research is actually at computing trust in social media. So how do you determine how much two people trust or might trust one another and there we have looked at a lot of these factors and we've got a big list of them. So not just re tweeting or hash tags or responses but how frequently are people are messaging back and forth? What's the response time? So if you message me on Twitter do I get back to you right away or do I wait awhile? And those it turns out have been pretty useful. We -- we've used them in some other prediction research I've done so we've done some stuff on predicting personality instead of predicting political preference. Those factors have worked pretty well to do that but there's still, you know, a lot to figure out. But I -- I think it's a great question and that you're exactly right; looking at some of these other behavioral factors often can give a lot of insight. So we're working on it, [clap] yeah. Yes.

>> Two quick questions. First, on fundraising -- is there a chance that some of those links that weren't obviously about fundraising pointed to things that were about fundraising? Did you follow all those links?

>> So we didn't follow every link, but if there was just a link or if it wasn't clear what the link was, we did follow it. So there weren't any hidden fundraising links in there, I guess, unless they were really hidden and they had some message and then there was a link that was fundraising that had nothing to do with the message.

>> Right.

>> So I guess it's possible but I think pretty unlikely. Most -- in most of the links we found were to media stuff and not like t.co hidden -- at that point, because it wasn't a t.co so we could see what most of them were.

>> The other quick question was do you have any sense of how many Congressional Twitter accounts were run by the actual Congress person?

>> That's a great question. So I don't have a sense of what it is now but back at study times a couple of years ago, half and half -- roughly half and half.

>> Is that how you break them up?

>> No, so there -- there wasn't a clear breakdown by party. Yeah they're some; I mean there were some of these accounts that were clearly automated. So like the Congress person would do a blog and then their Twitter account would just be like blog post, you know, blog post.

>> Most of these tweets are not authored by him but you know who puts the / B O when he's authoring his [inaudible], it's very explicit. Other one's, it's really unclear.

>> Yeah, yeah, we saw very few cases like that where there was a mix of staff posts and other people and the Congress people themselves actually posting. Yeah, it was a -- I mean you could tell sometimes that it was a Congress person like who was told you've got to do this Twitter thing, right? [Audience chuckle] And they're really weird awkward posts and then there's some, you know, very polished clearly staff things. But I would say probably about half and half. But it would be interesting to look again to see how that's changed.

>> I think Sarah Palin is a really good example of somebody who uses Twitter as a politician like people everyday Twitter users use Twitter. They appear conversational, they're spelling errors. There's no spelling errors in Barack Obama's Twitter account because she's clearly tweeting from her phone and I think that really changes the way people engage.

>> That -- that is absolutely true, yeah and I think I mean if I had to advise someone, I'd say that personal tweets are so much better. If you're -- even if you're doing less of it, if you're writing it yourself like people actually feel like it's a communication channel, right? There's some interaction there, as opposed to, just like a small version of your website. Yeah -- in the back?

>> Yeah, well first, for she can spell that's you know --. [Laughter] So two things came to mind when you -- you originally looked at the Conservative and Liberal representative interaction, I was kind of smiling, it was really fun to see because in understudy Mike and I work and we looked at the actual Conservative and Liberal users, we find the same patterns of larger and denser clusters.

>> That's true, yeah.

>> And then in your presentation, you mentioned all the affective characteristics of Conservative and I wonder, if it has something to do with it if you considered that it's something very in the personal nature of Twitter, if they expressed emotion. If our nature is to interact in a very emotional way, we end up being much more very, very [inaudible] going to be much more interconnected and dense community and whatever. So maybe something in the end of your presentation can explain something that [inaudible].

>> Yeah, that's really interesting. I hadn't thought about going back and looking at doing that sort of text analysis on the other tweets that we have. But yeah I think -- I think that's a really good insight that there could be some really interesting connections there comparing the sort of behavior and ways in which people interact which you can clearly see a structural difference.

>> Yeah.

>> And then looking in the text, yeah that would be really interesting studies. Any other questions?
[Laughter] Okay, thank you.

[Applause]