

Statistics and Data Science Outreach Using Twitter: Communicating the Power of Statistics in 280 Characters

Nicholas J. Horton

Department of Mathematics and Statistics
Amherst College, Amherst, MA, USA

JSM, July 31, 2019

nhorton@amherst.edu

<https://github.com/Amherst-Statistics/JSM2019>

Introduction and motivation

- what is twitter?
- why should we care?
- examples and case studies
- sound practices
- closing thoughts

What is twitter?

Pinned Tweet



NASA ✅ @NASA · Jul 21

Named for the mythological Greek Moon goddess and twin of Apollo, #Artemis will carry humanity back to the Moon — this time, for good — before we launch to Mars and to the unexplored beyond. Get the latest updates and more, straight to your inbox: go.nasa.gov/2M4UJH9



What is twitter?



NASA

@NASA

Explore the universe and discover our home planet with [@NASA](#). We usually post in EDT (UTC-4)

nasa.gov Born October 1, 1958 Joined December 2007

297 Following **32M** Followers



Followed by David Grubbs, steven t. piantadosi, and 190 others you follow



What is twitter?

 **Regina Nuzzo** @ReginaNuzzo · Jun 27

New role! First-ever Senior Advisor for Statistics Communication & Media Innovation at the American Statistical Association. It will soon be a joint appointment with a local university to focus on stats, journalism & communication--details still under negotiation, so stay tuned!



13 21 206

What is twitter?



Following

Regina Nuzzo

@ReginaNuzzo Follows you

Journalist, stats prof, and Senior Advisor for Statistics Communication & Media Innovation at the American Statistical Association. Opinions are my own.

⌚ Washington, DC 🔗 reginanuzzo.com 📅 Joined July 2010

2,593 Following **3,614** Followers

Followed by David Grubbs, Maria Tackett, and 149 others you follow

What is twitter?

- Twitter is a networking service where users can post highly constrained short updates (called "tweets")
- Tweets can contain text, images, links, and/or hashtags
- Hashtags can reference subjects such as #JSM2019 or #DataScience
- Tweets can 'tag' other twitter users (such as @hadleywickham, @visnut, or @NateSilver538).
- Limited to 280 characters (was formerly 140)
- As noted Architect Frank Gehry remarked, great creativity can be found in constraints

Tags



Kirk Borne ✅ @KirkDBorne · Jul 21

What Are The Differences Between #Econometrics, #Statistics, And Machine Learning? forbes.com/sites/quora/20...



#MachineLearning #BigData #DataScience #AI



What Are The Differences Between Econometrics, Statistics, And Mac...

What are the differences between econometrics, statistics, and machine learning? This question was originally answered on Quora by Josh ...



Tags



#Statistics

...
...

Top

Latest

People

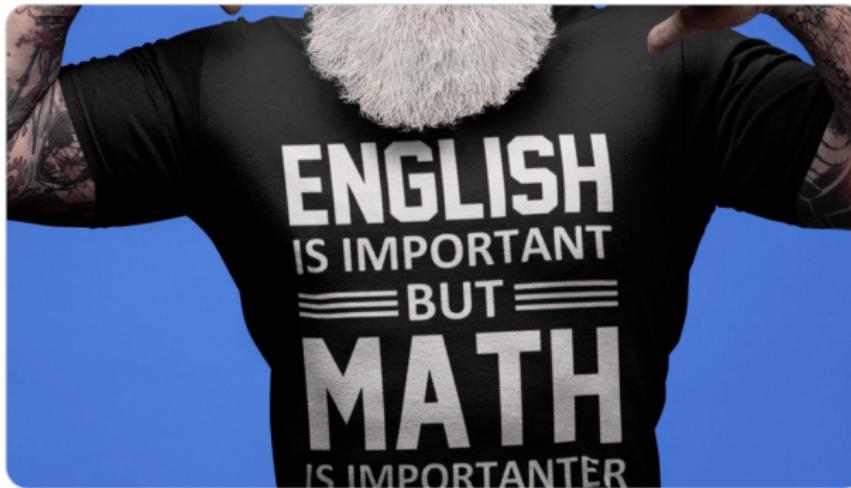
Photos

Videos

**Termeh Kousha** @TermehKousha · 1m

Happy Sunday everyone!

#mathematics #Physics #DataScience #statistics #rstats #fraction
#probability #science #QuantumComputing #STEM #mathfun
#PictureOfTheDay #funny #English #educacion #HappySunday #math
#PhotosWithoutLimits



Likes and Retweets



Kirk Borne ✅ @KirkDBorne · Jul 21

What Are The Differences Between #Econometrics, #Statistics, And Machine Learning? forbes.com/sites/quora/20...

#MachineLearning #BigData #DataScience #AI



What Are The Differences Between Econometrics, Statistics, And Mac...

What are the differences between econometrics, statistics, and machine learning? This question was originally answered on Quora by Josh ...

🔗 forbes.com

1

93

120

↑





Retweeted by



Jim Sabogal

@jimsabogal

[Follow](#)

Advising clients in using IT to improve Healthcare & Life Sciences business via #strategy #Pharma #MedicalDevice #HealthIT #cloudcomputing #IoT #Blockchain



KAWEEESA RODNEY

@rodney_kaweesa

[Follow](#)

Data scientist, Systems developer, BI consultant, I chill with SSDT, SSMS, scikit-learn, pandas, numpy, matplotlib, D3. Contact me.



香港でsake and rain2

@Rain2And

[Follow](#)

香港でSake and rainの続編でござる 🌎☀️⭐️ 芸術と科学と金融の融合→多言語化 🎉 ツイート内容とツイート言語のdiversity 🌐🌸 AI祝 Pragmatic Ninja 🎉 IOT 🌎🌐

Likes and Retweets

Search LTE

9:20 AM

75%

All

Mentions



Limbu M. Limbu Retweeted your Tweet

18 years ago, Leo Breiman published "Statistical modeling: the two cultures" in Statistical Science. In today's blog entry (teachdatascience.com/twocultures) we discuss the implications of the paper for data science education

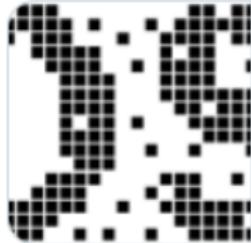
Tags

↳ Stephanie Hicks Retweeted



francesca dominici
@francescadomin8

We are excited to announce the inaugural issue of the new
@mitpress journal "Harvard Data Science Review"! Thank
you Xiao-Li Meng for your leadership
@harvard_data @Harvard @HarvardBiostats
@HarvardGSAS @hseas @HPDSLab
(link: hdsr.mitpress.mit.edu)



Harvard Data Science Review
hdsr.mitpress.mit.edu





Rafael Irizarry
@rafalab



A Guide to Teaching **#DataScience** paper with
@stephaniehicks is now published:
amstat.tandfonline.com/doi/abs/10.108...
The arXiv version still available.



Rafael Irizarry @rafalab · Dec 21, 2016

A Guide to Teaching Data Science: show students how to create, connect and compute with data. With @stephaniehicks arxiv.org/abs/1612.07140

Principles of Teaching Data Science

Followers



Following

Sherri Rose

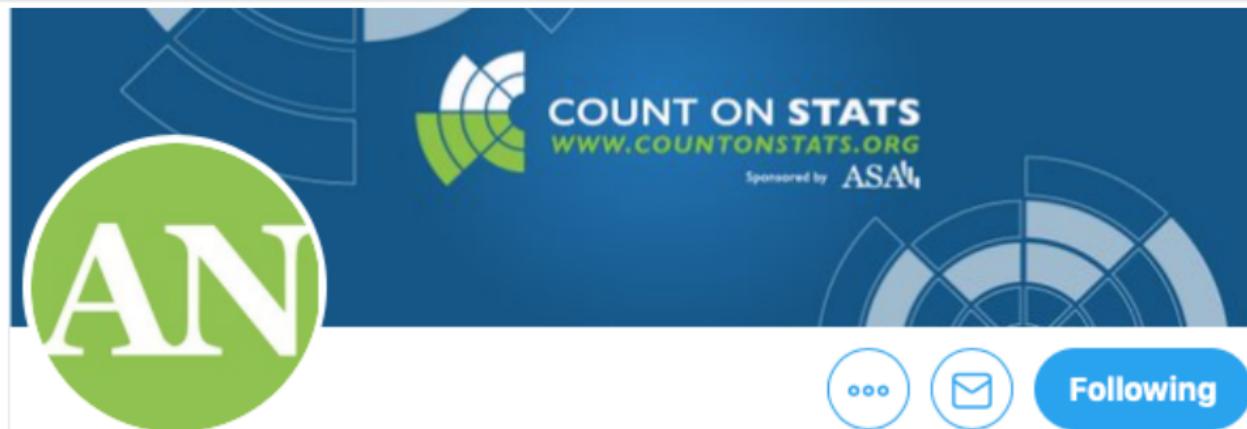
@sherrirose Follows you

Associate Professor, Department of Health Care Policy, [@HarvardMed](#). Co-Director [@HPDSLab](#). Co-Editor [@biostatistics](#). Computational Health Economics & Outcomes.

📍 Boston, MA 🌐 drsherrirose.org 📅 Joined June 2008

291 Following **6,311** Followers

Followers



ASA

@AmstatNews Follows you

The American Statistical Association, the world's largest community of statisticians and second oldest, continuously operating professional society in the US.

⌚ Washington, DC 📅 Joined December 2009

1,067 Following 15.1K Followers



Followed by David Grubbs, WNAR, and 367 others you follow

Followers



Following

Neil deGrasse Tyson

@neiltyson

Astrophysicist

© New York City haydenplanetarium.org/tynson/ Joined January 2009

39 Following **13.4M** Followers



Followed by Dr. Kim Flagg Sellers, F. Javier Rubio, and 227 others you follow



Followers



ED SHEERHAN
I DON'T CARE
JUSTIN BIEBER

...

Follow

Justin Bieber

@justinbieber

Let's make the world better.

atlanti.cr/IDontCare Joined March 2009

297.6K Following **106.1M** Followers

Followed by Romeo Power, Girls Who Code, and 6 others you follow

The Most Followed Accounts on Twitter

1. Katy Perry (107.7m **followers**) ...
2. Barack Obama (107.2m **followers**) ...
3. Justin Bieber (106m **followers**) ...
4. Rihanna (92.2m **followers**) ...
5. Taylor Swift (83.9m **followers**) ...
6. Lady Gaga (78.9m **followers**) ...
7. Cristiano Ronaldo (78.8m **followers**) ...
8. Ellen DeGeneres (78.1m **followers**) ...

[More items...](#) • 6 days ago

The 20 Most Followed Accounts on Twitter | Brandwatch

<https://www.brandwatch.com/blog/most-twitter-followers/>

Connection to science outreach

- raise public awareness of science
- work to leverage formal and informal science education
- raise profile of the discipline

Science outreach



Neil deGrasse Tyson @neiltyson · Jul 22

The opening scene to @Disney's #Frozen portrays Ice Harvesters hauling blocks of ice, afloat with about 10% of their volume above water. Just like icebergs.

So somebody at Disney does, in fact, care about physics — not to mention all the shit they got right in #TheLionKing.



Science outreach



Neil deGrasse Tyson @neiltyson · Jul 21

Dear [@NASA](#),

▼

[An Open Letter: 900 words]

[facebook.com/notes/neil-deg...](https://facebook.com/notes/neil-degrasse-tyson/an-open-letter-to-nasa/)



Science outreach



AAAS ✅ @aaas · 23h

"Together, we must take urgent action to stop the deadly Ebola epidemic that is destroying lives and livelihoods in the Democratic Republic of Congo," World Bank CEO Kristalina Georgieva said in a statement.

@NewsfromScience



World Bank dedicates \$300 million to Ebola response

One week after international public health emergency declared, financial



AAAS ✅ @aaas · Jul 25

Alaska's LeConte Glacier is melting underwater at rates nearly a hundred times greater than previously estimated, according to a sonar survey published in [@ScienceMagazine](#) today.



Tidewater Glaciers Melting Faster Than Expected | A...

Alaska's LeConte Glacier is melting underwater at rates nearly a hundred times greater than what is ...

[aaas.org](#)



4

1



Science outreach



...

Following

Bill Nye

@BillNye

Science Rules! Podcast Out Now

📍 Los Angeles, CA billnyepodcast.com Joined May 2009

118 Following **5.9M Followers**



Followed by Mindy Domb, Laura B. Balzer, and 134 others you follow



Science outreach

rt Regina Nuzzo Retweeted



ASA Science Policy @ASA_SciPol · Jul 19

To Fix the Reproducibility Crisis, Rethink How We Do Experiments
[and engage statisticians!]



To Fix the Reproducibility Crisis, Rethink How We Do Experiments
Scientists are taught to vary one factor at a time, but a so-called
multifactorial approach could be more reliable

@blogs.scientificamerican.com

Nicholas J. Horton

Outreach using twitter



- New developments and announcements
- Crowd-sourcing ideas
- Supporting a conference
- Promoting an organization

Tweeting about statistics and data science



Following

This is Statistics

@ThisisStats Follows you

Think you know statistics? Think again! Statistician is the best job in business and STEM (@USNews), and one of the fastest growing careers (@BLS_gov).

 ThisisStatistics.org  Joined May 2014

955 Following **7,781** Followers



Followed by David Grubbs, WNAR, and 249 others you follow

Tweeting about statistics and data science



This is Statistics
@ThisisStats

#Statistics is the "sexy" major



Kelsey Warsinske: Why Statistics is the 'Sexy Major' | This is ...
Statisticians are passionate about what they do, and for Kelsey Warsinske, a data scientist at a Silicon Valley tech company, ...
thisisstatistics.org

11:30 AM · Jul 23, 2019 · [TweetDeck](#)

2 Retweets **9 Likes**

Tweeting about statistics and data science



Kelsey Warsinske: Why Statistics is the ‘Sexy Major’

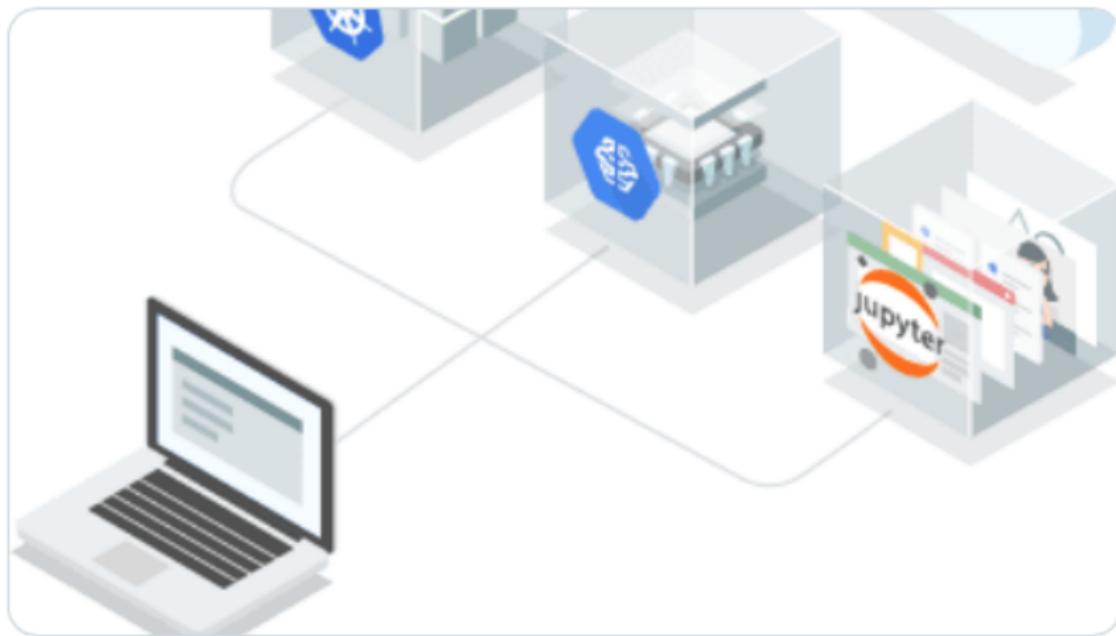


New developments and announcements



Open Data Science @odsc · 16h

Google Cloud launches Deep Learning Containers in beta. **#DataScience**
#DeepLearning hubs.ly/H0jRDwn0



New developments and announcements

You Retweeted



Rafael Irizarry
@rafalab

We updated the dslabs package with seven new datasets related to climate change, astronomy, life expectancy, and breast cancer diagnosis. This R markdown blog post, written by [@biochemnerd](#), describes the new datasets and how they can be used for teaching:

[simplystatistics.org/2019/07/19/mor...](https://simplystatistics.org/2019/07/19/more-datasets/)

2:30 PM · Jul 19, 2019 · Twitter Web App

50 Retweets 180 Likes



New developments and announcements

StatFest 2018 Retweeted



Letisha Smith @LetishaAudrey · Oct 6, 2018

Overjoyed to announce "Cooking Up Stats" is now available to read in
@signmagazine!!

bit.ly/2NsnLgK

The past month has been a whirlwind from presenting at the
@RSSAnnualConf and now this 😊 special thanks once again to @statsyss &
@RoyalStatSoc



New developments and announcements

ASA Retweeted



Sherri Rose @sherrirose · Jul 17

Important shift in the clinical literature. **@NEJM** releases new guidelines for statistical reporting of p-values. nejm.org/doi/full/10.10...



The NEW ENGLAND
JOURNAL of MEDICINE

EDITORIAL

New Guidelines for Statistical Reporting in the Journal

David Harrington, Ph.D., Ralph B. D'Agostino, Sr., Ph.D., Constantine Gatsonis, Ph.D., Joseph W. Hogan, Sc.D., David J. Hunter, M.B., B.S., M.P.H., Sc.D., Sharon-Lise T. Normand, Ph.D., Jeffrey M. Drazen, M.D., and Mary Beth Hamel, M.D., M.P.H

The Journal's revised policies on P values rest on three premises: it is important to adhere to a prespecified analysis plan if one exists; the use of statistical thresholds for claiming an effect or association should be limited to analyses for which the analysis plan outlined a method for controlling type I error; and the evidence about the benefits and harms of a treatment or exposure should include both point estimates and their margins of error.

New developments and announcements



Sherri Rose @sherrirose · Jun 13

Congratulations @daniela_witten on receiving the 2019 Mortimer Spiegelman Award for statistical contributions in public health!
biostat.washington.edu/news-events/pr...

Professor Daniela Witten receives 2019 Mortimer Spiegelman Award

The American Public Health Association (APHA) has named Daniela Witten, a professor in statistics and biostatistics at the University of Washington and the Dorothy Gilford Endowed Chair in Mathematical Statistics, the winner of the 2019 Mortimer Spiegelman Award. This award honors a statistician who has made outstanding contributions to statistical



APHA and 2 others

New developments and announcements

📌 Pinned Tweet



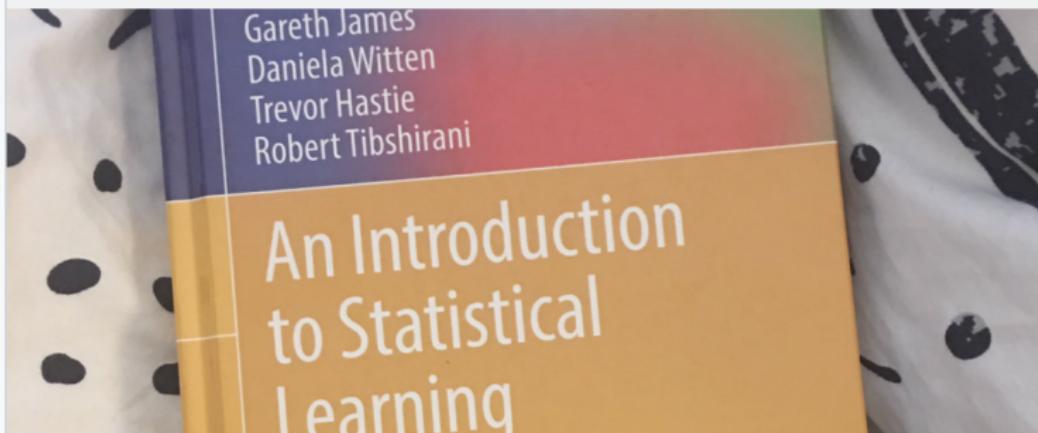
Daniela Witten @daniela_witten · Jun 9

Hi @reneegenn , we've never met but you seem remarkably well-adjusted & you have great hobbies. This book is light enough to stick in your carry on and it pairs well with basically all wine



Renee Lynn @reneegenn · Jun 6

Why yes I am the psycho who is bringing this book on her two week vacation to Italy. What better way to get started with machine learning?



Conferences (New Researchers Conference 2019)



#NRC2019

...
...[Top](#)[Latest](#)[People](#)[Photos](#)[Videos](#)

Claire McKay Bowen @ClaireMKBowen · Jul 26

#NRC2019 Funding Panel moderated by @ander_wilson with panelists Xiao-Li Meng, @sallycmorton, Mevin Hooten, and @SusanMurphylab1.

@Harvard @VT_Science

@ColoradoStateU

#statistics #datascience #scientificfunding



Conferences (New Researchers Conference 2019)



Claire McKay Bowen @ClaireMKBowen · Jul 26

#NRC2019 Seeking Mentoring and Promotion Panel with panelists @donestep1, Xiao-Li Meng, @SusanMurphyLab1, and @sallycmorton.

#statistics #phdchat #datascience #academia #AcademicTwitter
#AcademicChatter

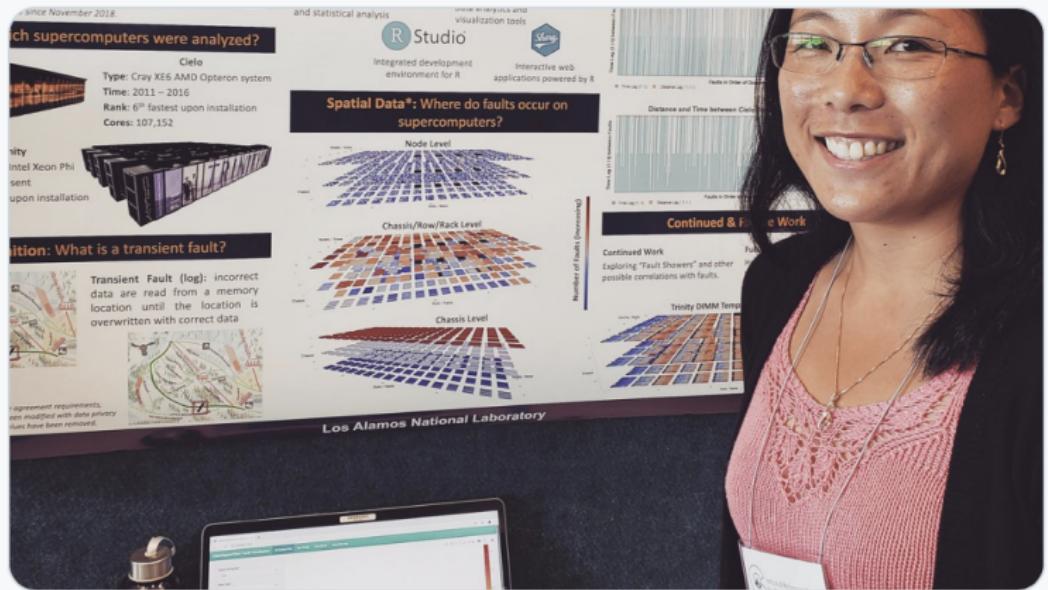


Conferences (New Researchers Conference 2019)



Claire McKay Bowen @ClaireMKBowen · Jul 26

Day 3 of #NRC2019. Here I am with my poster! Also, wearing my #knitted tank top!
#statistics



Conferences (JSM 2019)



Claire McKay Bowen @ClaireMKBowen · 11h

BEST #STATISTICS CONFERENCE EVER! I met my all time favorite #TopChef Contestant, @Chefcarriebaird! I ate #fancytoast! We are also both from #Idaho (best state)! She's from Pokie.

#idahome #JSM2019 #datascience #WomeninSTEAM #WomeninSTEM



Conferences (JSM 2019)

⌚ Women in Statistics Retweeted



Leslie McClure
@StatGirlLAM

Will you be **#JSM2019**? Come hear the report from the
@AmstatNews Task Force on Sexual Misconduct on
Monday, July 29, 2-3:50 in CC-Four Seasons 1.
@EKTBenn **@sallycmorton** Read ahead - our report is
here: bit.ly/TaskForceFinal...

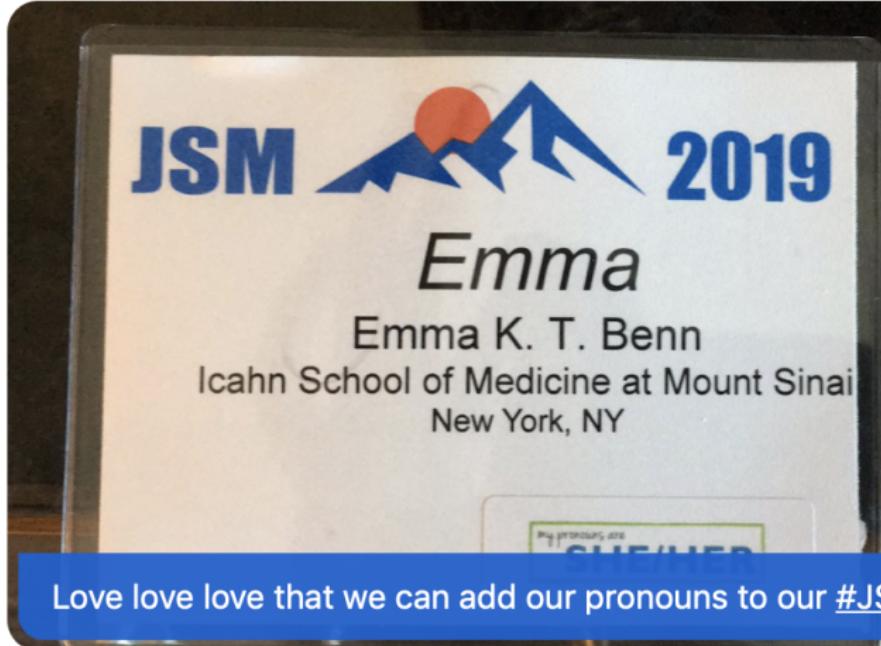
8:33 AM · Jul 23, 2019 · [Twitter Web App](#)

8 Retweets **22** Likes

Conferences (JSM 2019)



Emma Benn @EKTBenn · 1h



Conferences (JSM 2019)



#JSM2019

...

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Latest

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**Nicholas Horton** @askdrstats · 1m

Today's blog, contributed by [@AmeliaMN](#), describes a creative way that she tackled a problem in one of her upper level [#datascience](#) courses with an assist from [@CVWickham](#) & purrr. Read more at teachdatascience.com/countingcommits [@hglanz](#) [@jo_hardin47](#) [@github](#) [#JSM2019](#) [#rstats](#) [@RLadiesGlobal](#)

AmeliaMN (Amelia McNamara) · +
GitHub, Inc. [US] | https://github.com/AmeliaMN/
TomatoTimer | Facebook | Everyday | Google | 89.3 | StatCounter | Scholar | WriteNow | ACM Data Science... | Other Bookmarks

Overview Repositories 89 Projects 0 Stars 10 Followers 223 Following 1

Pinned

data-science-in-tidyverse Materials for Data Science in the Tidyverse, a two-day workshop @rstudioconf(2019) ★ 77 746	ropensci/skimmer A fricetless, pipeable approach to dealing with summary statistics ● R ★ 636 755
SpatialPolygons Materials for 2017 OpenGeoConf talk, How Spatial Polygons Shape Our World ★ 51 78	DS_for_S Materials for March 12 ENAR short course on Data Science for Statisticians ● HTML ★ 48 77

PRO

Crowdsourcing advice

ASA Retweeted



Elizabeth Stuart
@Lizstuartdc

Given movements away from p-values, etc., inc. by
[@AmstatNews](#) and [@NEJM](#) does anyone have examples
of applied (ideally medicine or public health) papers they
think do a nice job presenting and discussing results?
Would be great to assemble a listing of some good
examples.

1:22 PM · Jul 22, 2019 · Twitter Web Client

18 Retweets 85 Likes

Crowdsourcing advice



Michael Schomaker @mf_schomaker · Jul 23

Replies to [@Lizstuartdc](#) [@AmstatNews](#) and [@NEJM](#)

1/ There are many medical/epi articles which discuss missing data, unmeasured confounding and selection into the study, focus on confidence intervals and use p-values only for pre-specified hypothesis (including ours, doi.org/10.1093/ije/dy... or ncbi.nlm.nih.gov/pubmed/30063542).



Optimal timing of antiretroviral treatment initiation in...

Abstract. Background: There is limited knowledge about the optimal timing of antiretroviral treatment ...

[academic.oup.com](#)



Elizabeth Stuart @Lizstuartdc · Jul 23

Thanks; I was hoping to just get some specific examples where people feel like the paper was done well in regard to the reporting. Some are coming in!



Crowdsourcing advice



Nicholas Horton
@askdrstats



Crowdsource request to statisticians out there: to make room for modern topics in intro stats what topics might you drop or de-emphasize? I welcome your ideas #JSM2019
@BaumerBen @AmeliaMN @jo_hardin47 @StatGarrett
@minebocek @MineDogucu @hglanz @jtleek @rafalab
@JennyBryan

8:12 AM · Jul 13, 2019 from Northampton, MA · Twitter for iPhone

| | | View Tweet activity

13 Retweets 51 Likes



Crowdsourcing advice



Mine CetinkayaRundel @minebocek · Jul 16

Replying to @askdrstats @ReginaNuzzo and 9 others

Is there a blog post in the works that uses {rtweet} and {tidytext} to collect and analyze responses to this tweet?

1



5



Jo Hardin @jo_hardin47 · Jul 16

are you volunteering @minebocek ?

1



2



Mine CetinkayaRundel @minebocek · Jul 16

No, I'm just full of great ideas 😊

Joking aside, I could do it, but I was honestly asking if that was the plan. I remember it being not the simplest thing to grab replies to replies, but last time I tried was a while ago and I know {rtweet} has evolved a lot since then.

1



1



Crowdsourcing advice



annmariastat @annmariastat · Jul 13

Replying to [@askdrstats](#) @BaumerBen and 9 others

Looking up a p-value in a table seems a waste of time. I've never done that outside of a stat class, ever.



11



Joe Blitzstein @stat110 · Jul 13

Replying to [@askdrstats](#) @BaumerBen and 9 others

Less: ways of computing p-values, hypothesis testing, fuss over whether to divide by n or n-1 in sample var, tedious calculations

More: thinking about data quality, sampling, likelihood, bias-variance tradeoff, simulation, visualization, discussion of common misconceptions



2



8



88



[1 more reply](#)



James Curran @ProfJamesCurran · Jul 14

Replying to [@askdrstats](#) @BaumerBen and 9 others

Univariate analyses. As Chris Wild says "it's not interesting unless there is a



Sparkling discussions



Jen Heemstra @jenheemstra · Jul 6

"when I should have been looking over my slides, skimming key papers, or even relaxing a bit, I was standing numbly in front of the lab coffee maker"

I vote that faculty bring coffee and snacks for the student to enjoy (in quiet) after their presentation!



Committee members shouldn't expect Ph.D. students to serve coffee a...
Thesis defenses and committee meetings are stressful enough without



Jen Heemstra
@jenheemstra

For real, how did this tradition start and how do we end it?

Faculty, if you need coffee, get yourself a cup before the meeting. If you need a pastry...well, do any of us *really* need a pastry?

1:29 PM · Jul 6, 2019 · [Twitter for iPhone](#)

Sparking discussions



Abigail Swann, PhD @ecoclimatelab · Jul 6

Replying to [@jenheemstra](#)

It's a hard norm to break. In [@UWBiology](#) we tried explicitly telling students that they are *not allowed* to bring food for committee meetings. Some students still bring food anyway.



Rob Peterson @Robert_Peterson · Jul 6

Replying to [@jenheemstra](#)

This didn't exist when I was a grad student. PI should provide coffee and snacks.



Alan Underhill @AUnderhillUA · Jul 6

Replying to [@jenheemstra](#)

It's completely on the PI to supply food and beverage for their trainee's meetings. Just let the trainees focus on the task at hand without the hostess requirement.



Sparkling discussions



Sarah Romanes @sarah_romanes · Jul 17

As a statistician - I was pleasantly surprised to see Iranian bottles of Cola providing measurement errors! #iran #statistics



69

913

5.1K



Sparkling discussions



Sarah Romanes @sarah_romanesh Jul 19

Replies to @sarah_romanesh

Update - I've come across Iranian Pepsi now. More variability in the Pepsi!
Perhaps this can settle Coke vs Pepsi debate... #iran



7



42



Sparkling discussions



Hadi Papei @HadiPapei · Jul 18

I guess it is a legal imposition. We have it on most of the products.



2

3

25



Nicholas Horton @askdrstats

Crowdsource request to statisticians our there: to make room for modern topics in intro stats what topics might you drop or de-emphasize? I welcome your ideas #JSM2019
@BaumerBen @AmeliaMN @jo_hardin47 @StatGarrett @minebocek @MineDogucu
@hglanz @jtleek @rafalab @JennyBryan

Impressions	21,310
times people saw this Tweet on Twitter	
Total engagements	356
times people interacted with this Tweet	



Nicholas Horton @askdrstats

In 2017 **@JennyBryan** and **@hadleywickham** published the “Practical Data Science for Stats” **@PeerJCompSci** collection. Today's blog entry

<https://teachdatascience.com/peerj> encourages you to read these short papers focused on data science workflows and analysis pic.twitter.com/EkdTImZGqr



Reach a bigger audience

Get more engagements by promoting this Tweet!

Impressions	32,783
Total engagements	960
Link clicks	433
Likes	156
Media engagements	140
Detail expands	123
Profile clicks	59
Retweets	48
Follows	1

Analytics



Account home

Nicholas Horton @askdrstats



28 day summary with change over previous period

Tweets

18 ↓37.9%



Tweet impressions

71.4K ↓25.8%



Profile visits

981 ↓24.8%



Mentions

109 ↑75.8%



Followers

3,270 ↑9%



Jul 2019 • 23 days so far...

TWEET HIGHLIGHTS

Top Tweet earned 21.2K impressions

Crowdsource request to statisticians out there: to make room for modern topics in intro stats what topics might you drop or de-emphasize? I welcome your ideas
#JSM2019 @BaumerBen @AmeliaMN @jo_hardin47 @StatGarrett @minebocek @MineDogucu @hglanz @jtleek @rafalab @JennyBryan

423 13 51

[View Tweet activity](#)

[View all Tweet activity](#)

Nicholas J. Horton

Top mention earned 1,915 engagements



(((.) .)))

@steveirwin__ Jul 16

@bburkeESPN @StatsbyLopez

@askdrstats good graphic from **@rlmcleath** demonstrating this (in the context of published research)
pic.twitter.com/Z80JNUXrmD



Outreach using twitter

ADVERTISE ON TWITTER

Get your Twitter message in front of more people

Promoted Tweets reach on Twitter

[Get started](#)

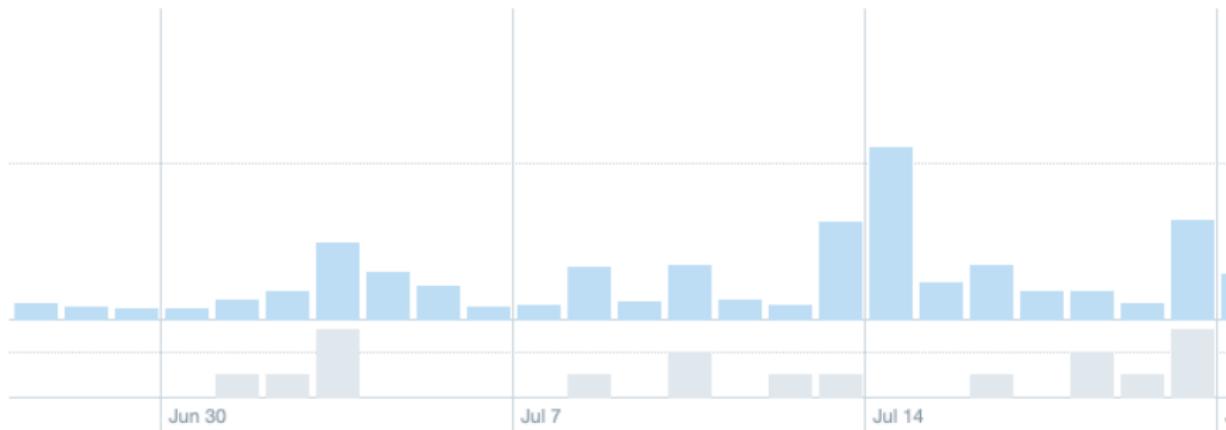
JUL 2019 SUMMARY

Tweets

17

Analytics

Your Tweets earned **71.4K impressions** over this **28 day** period



Tweets

Top Tweets

Tweets and replies

Promoted

Impressions

Engagements



Nicholas Horton @askdrstats · Jul 13

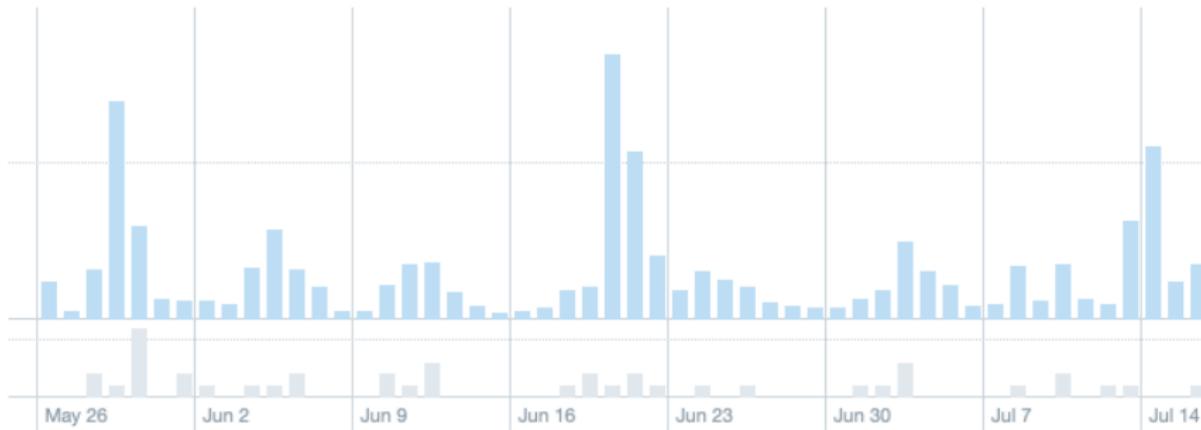
Crowdsource request to statisticians our there: to make room for modern topics in intro stats what topics might you drop or de-emphasize? I welcome your ideas

#JSM2019 @BaumerBen @AmeliaMN @jo_hardin47
@StatGarrett @minebocek @MineDogucu @hglanz
@itleek @rafaelab @lennyBryan

21,286

356

Your Tweets earned **174.1K impressions** over this **60 day** period



Tweets

Top Tweets

Tweets and replies

Promoted

Impressions

Engagements



Nicholas Horton @askdrstats · Jun 20

In 2017 @JennyBryan and @hadleywickham published the “Practical Data Science for Stats” @PeerJCompSci collection. Today’s blog entry teachdatascience.com/peerj encourages you to read these short papers focused on data science workflows and analysis

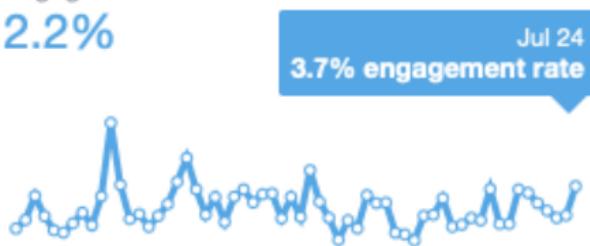
32,783

960

Analytics

Engagement rate

2.2%



Jul 24
3.7% engagement rate

Link clicks

1.9K



Jul 24
47 link clicks

On average, you earned **32 link clicks**
per day

Analytics

Retweets

270

Jul 24
13 Retweets



On average, you earned **5 Retweets** per day

Likes

883

Jul 24
21 likes



On average, you earned **15 likes** per day

Analytics

OVERVIEW	DEMOGRAPHICS	LIFESTYLE	CONSUMPTION
Top interest Science news	Top language English	Top lifestyle type Online buyers	Top buying category Premium



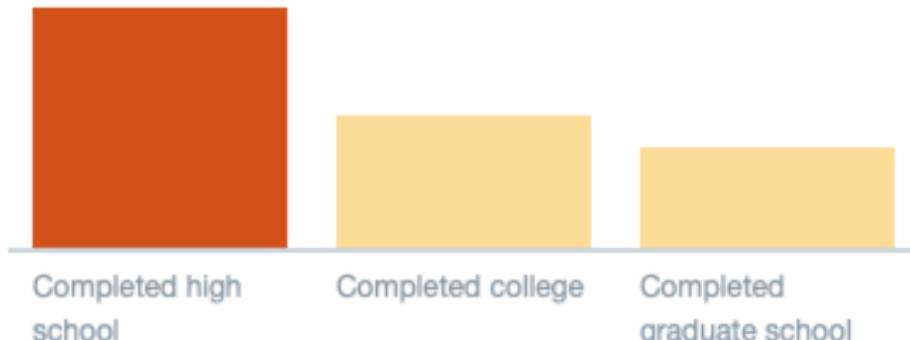
Interests

Marital status

Marital status	% of audience
Single	56%  
Married	45%  

Values based on 8.5% match rate from Twitter partners

Education (highest level completed)



Consumer buying styles

Consumer style name % of audience



Values based on 17.5% match rate from Twitter partners

Analytics

Your organic audience ▾

Reached

+Add comparison audience

OVERVIEW

Top interest
Dogs

DEMOGRAPHICS

Top language
English

LIFESTYLE

Top lifestyle type
Online buyers

CONSUMER BEHAVIOR

Top buying style
Premium brands

Interests

Interest name	% of audience
Dogs	98%
Science news	96%
Technology	90%
Weather	87%
Sports news	87%
Space and astronomy	86%
Tech news	84%
Sporting events	80%

Analytics: Events (alas no JSM)

OTHER

Back to School 2019

August 1 – 31

Tweets

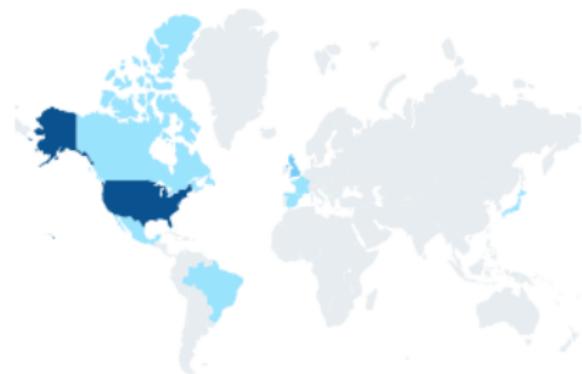
4.2M

Total Reach

31M

Impressions

343M



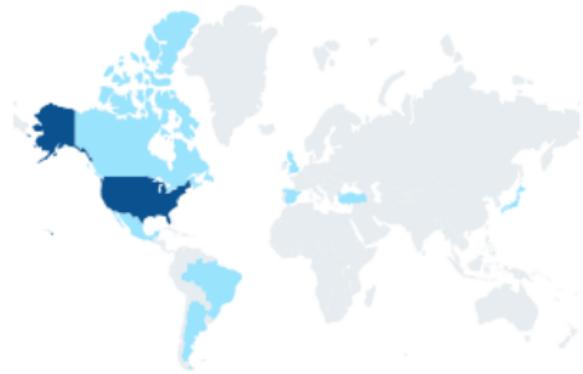
People in the United States talk about this event **4.9 times more** than anywhere else.

ENTERTAINMENT

MTV Video Music Awards 2019

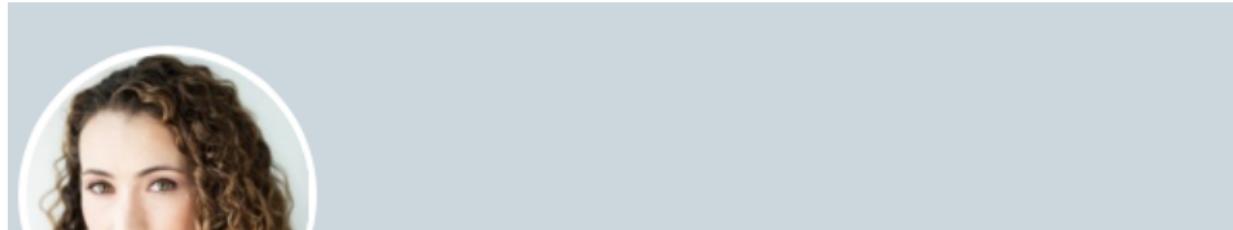
August 26

Tweets	Total Reach	Impressions
6.3M	29M	559M



People in the United States talk about this event **7.2 times more** than anywhere else.

A selection of notable tweeters



Following

Daniela Witten

@daniela_witten Follows you

professor of statistics and biostatistics [@uw](#). dorothy gilford endowed chair.
statistical learning, with applications. all views my own.

⌚ Seattle, WA 🔍 [danielawitten.com](#) 📅 Joined July 2017

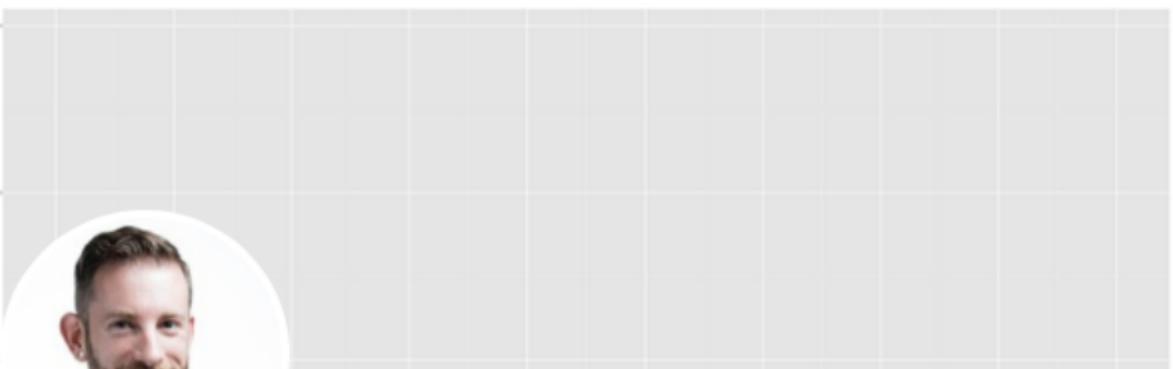
262 Following **4,522 Followers**



Followed by David Grubbs, WNAR, and 133 others you follow

A selection of notable tweeters

[←](#) **Hadley Wickham** 
36.6K Tweets



A circular profile picture of a man with short brown hair and a beard, wearing a light-colored shirt and a purple bow tie.

  **Following**

Hadley Wickham 

@hadleywickham Follows you

R, data, visualisation, , , . He/him

 Houston, TX  hadley.nz  Born October 14  Joined August 2009

259 Following 89.2K Followers



A selection of notable tweeters



Jenny Bryan

12.1K Tweets



The image is a composite of two photographs. On the left, there is a circular profile picture of a woman with blonde hair, smiling. On the right, a man is standing on a longboard in shallow water at a beach. He is shirtless, wearing patterned swim trunks, and has his arms raised in a balancing pose. In the background, there are hills and some industrial structures like ships or large tanks under a clear blue sky.

Following

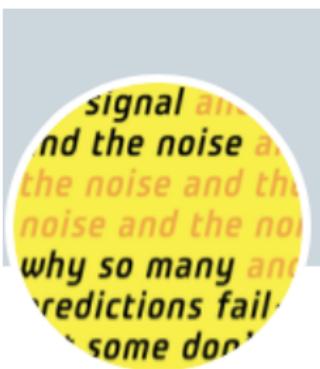
Jenny Bryan

@JennyBryan Follows you

Software engineer @rstudio, humane #rstats, adjunct prof @UBC where I created @STAT545, part of @ropensci

⌚ Vancouver, BC ⚡ jennybryan.org 🗓 Joined October 2013

A selection of notable tweeters

A circular profile picture of Nate Silver. The background is yellow with a repeating pattern of the words "the noise and the noise". Overlaid on this are several lines of text in different colors: "signal and the noise", "why so many and", "predictions fail", and "some don't".

Nate Silver

@NateSilver538 Follows you

Editor-in-Chief, [@FiveThirtyEight](#). Author, *The Signal and the Noise* (amzn.to/QdyFYV). Sports/politics/food geek.

◎ New York fivethirtyeight.com Joined August 2008

1,184 Following **3.2M** Followers

Followed by David Grubbs, ALCarriquiry, and 390 others you follow

Nicholas J. Horton

Outreach using twitter

A selection of notable tweeters



Hilary Parker

@hspter Follows you

Data Scientist @StitchFix, co-host of @NSSDeviations #rstats #rcatladies

⌚ San Francisco 💬 hilaryparker.com 🎂 Born May 20 📅 Joined March 2009

1,895 Following 23.8K Followers



Followed by David Grubbs, Forrest W. Crawford, and 322 others you follow



Following

simplystats



Following

Simply Statistics

@simplystats Follows you

Simply Statistics blog by Jeff Leek, Roger Peng, and Rafael Irizarry. Home to statistics; data; science; and Rafa's Rants.

📍 Baltimore, MD 🔗 simplystatistics.org 📅 Joined November 2011

322 Following **60.2K** Followers

 Followed by Maria Tackett, Tyler Vu, and 380 others you follow



A selection of notable tweeters



Following

Amelia McNamara

@AmeliaMN Follows you

Stats/data science professor at [@UofStThomasMN](#), formerly [@smithcollegeSDS](#).
[@UCLA](#)/[@Macalester](#) alumna. Into data visualization and open science, obsessed with R.

📍 Minneapolis, MN 🌐 [amelia.mn](#) 🎂 Born April 17 📅 Joined January 2009

652 Following **8,723** Followers

A selection of notable tweeters



Following

Jemar Bather

@jemarbather Follows you

Harvard Biostatistics PhD Student applying statistical methods in health disparities, HIV/AIDS, & sample surveys. Penn State alumnus who loves self-help books.

📍 Boston, MA 🔗 jemarbather.com 📅 Joined January 2010

A selection of notable tweeters



Following

Kay Endriss

@ekendriss Follows you

AP Statistics. Systems Modeling. Standby Task Force. CERT. You can lead or you can follow, but if you don't connect, your data won't matter.

⌚ Winston-Salem, North Carolina 📅 Joined April 2009

4,999 Following **1,145** Followers

 Followed by David Grubbs, StatFest 2019, and 65 others you follow

A selection of notable tweeters



Mara Averick

37.7K Tweets



Following

Mara Averick

@dataandme

tidyverse 🥑 @rstudio, 🏀 hoop head, gnashgab, blatherskite, lesser ½ of
@batpigandme 🐷🐶

◎ Massachusetts ⚡ maraaverick.rbind.io 🗓 Joined May 2015



A selection of notable tweeters



UNStats

@UNStats

Official Twitter account of the Statistics Division of the United Nations Department of Economic and Social Affairs.

📍 New York ⚡ unstats.un.org 📅 Joined June 2013

146 Following **16.2K Followers**

A selection of notable tweeters



Following

R-Ladies Global

@RLadiesGlobal

Promoting diversity in the [#rstats](#) community via meetups, mentorship & global collaboration! 140+ groups worldwide. [#RLadies](#)

⌚ The World 🌐 rladies.org 📅 Joined August 2016

2,734 Following **12.7K** Followers



Followed by David Grubbs, useR! 2020, and 189 others you follow



A selection of notable tweeters



Following

StatFest 2018

@Statfest Follows you

A one day conference aimed at encouraging undergraduate students from historically underrepresented groups to consider careers and graduate studies in Stats!

⌚ Amherst, MA 🔗 nhorton.people.amherst.edu/statfest/ 📅 Joined March 2018

415 Following 154 Followers

A selection of notable tweeters



Women in Statistics
@WomenInStat Follows you

Enticing, Elevating and Empowering the Careers of Women in the Statistical Sciences

📍 USA 🌐 women-in-stats.org 📅 Joined February 2013

286 Following 1,710 Followers

 Followed by WNAR, ALCarriquiry, and 145 others you follow

More options: ⋮, Email, Following

With Twitter, Statistics 101 Takes Flight

By *Mark E. Ferris* | APRIL 20, 2015

What do Katy Perry, LeBron James, the terrorist group known as ISIS, Pope Francis, and the students in my introductory course on business statistics have in common? All are Twitter users.

Katy Perry has over 67 million followers, while my statistics students are barely out of single digits. Yet their goal is the same: to share their interests and establish their "brand" in 140-character bites.

Much like a museum that carefully chooses its exhibits and preserves its collections, Twitter users also have a curating role, choosing what to share and establishing a presence through their tweets and followers. Many Twitter users also take on educational missions, producing news, reporting on research, and attempting to influence the conversations of the day through their arguments and supporting evidence. With that latter goal in mind, in 2013 I began requiring my students in introductory statistics to engage with the Twittersphere.

Using Twitter for Education: Tang and Hew (Computers and Education, 2017)

- ① Provide information and technological training sessions, as well as interaction opportunities prior to class
- ② Provide clear description of Twitter-related educational activities
- ③ Consider making Twitter mandatory
- ④ Provide regular academic and personal support
- ⑤ Provide access to broader learning communities

Blogging and tweeting checklist (Sciencemag.org)

- Is my research solid?
- Is the broad dissemination of my results under any restrictions?
- Is my writing accurate and sufficiently substantiated?
- Did I reach out to collaborators or the authors before writing about their work?
- Have I differentiated my own comments from those of the speaker or author?
- Are my comments likely to offend anyone?
- Have I obtained copyright permission to reproduce content?

Using social media for outreach and advocacy

- Connect with partners and allies
- Offer useful information and add new ideas
- Draw attention to your issues
- Be transparent about who you are
- Avoid jargon

See more at the Union of Concerned Scientists website

Using social media for outreach and advocacy (Weiditch)



How Social Media Made Me A Better Scientist | Sasha Weiditch | TEDxUofT

Other recommended practices

Great list curated by Hootsuite (<https://blog.hootsuite.com/how-to-get-twitter-followers/>)

- ① pin your best tweet
- ② perfect your bio
- ③ have a human face
- ④ leverage other feeds
- ⑤ embed tweets in your blog
- ⑥ tweet consistently
- ⑦ follow people
- ⑧ ask good questions
- ⑨ be generous

Closing thoughts

- Statistics and data science play integral roles in our society and continue to receive increased public attention
- With this increased interest, statisticians have a rich opportunity to communicate with and educate the public about the power and potential of our discipline
- Social media has the potential to augment and complement other outreach efforts

Statistics and Data Science Outreach Using Twitter: Communicating the Power of Statistics in 280 Characters

Nicholas J. Horton

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JSM, July 31, 2019

nhorton@amherst.edu

<https://github.com/Amherst-Statistics/JSM2019>