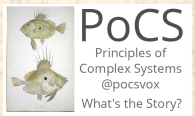
Computational History

Last updated: 2022/08/29, 07:53:24 EDT

Principles of Complex Systems, Vols. 1, 2, & 3D
CSYS/MATH 300, 303, & 394, 2022–2023| @pocsvox

Prof. Peter Sheridan Dodds | @peterdodds

Computational Story Lab | Vermont Complex Systems Center
Santa Fe Institute | University of Vermont



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Statistics of Surprise

Stories

Mechanics of Fame

Superspreading

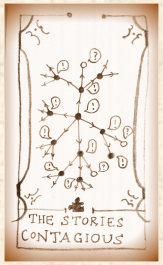
Lexical Ultrafame

Turbulent times

Extras
- Sociotechnical time series
- Adjacent Narratives

Extras
- Memory & Turbulence

References



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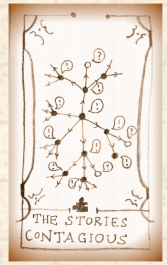

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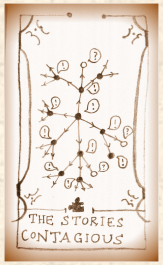

Outline

- Statistics of Surprise
- Stories
- Mechanics of Fame
- Superspreading
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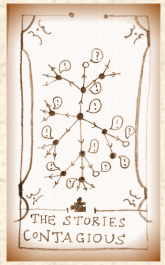

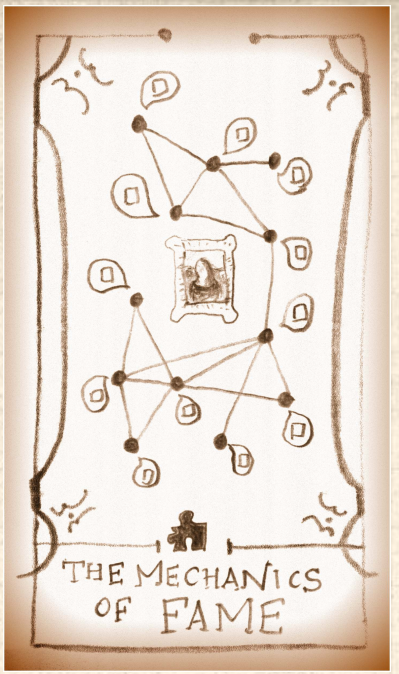

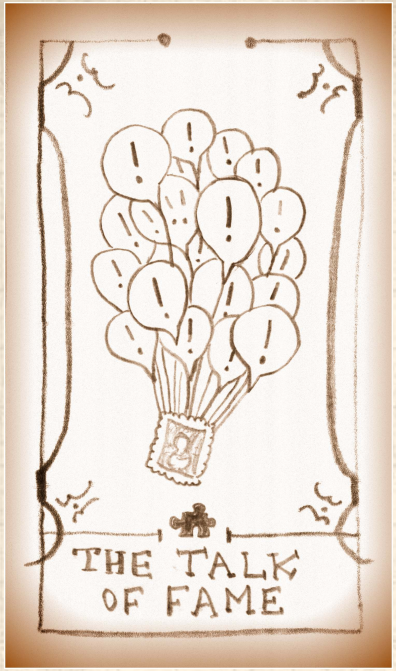

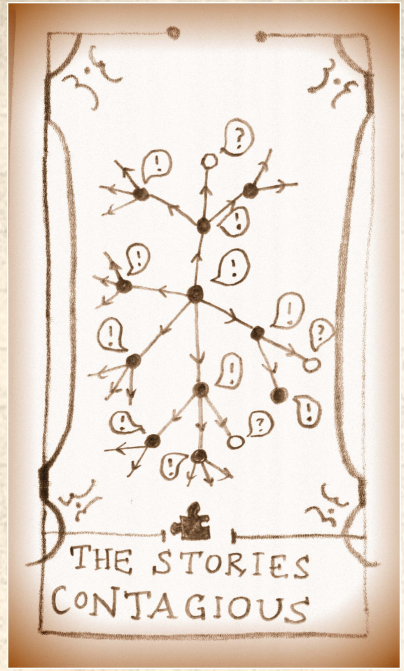

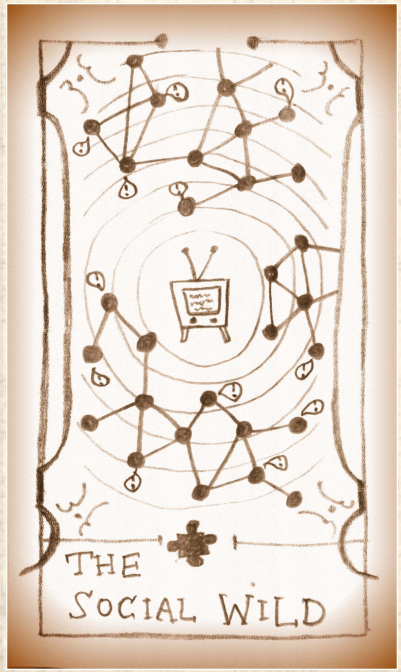

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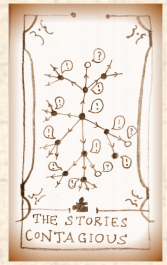
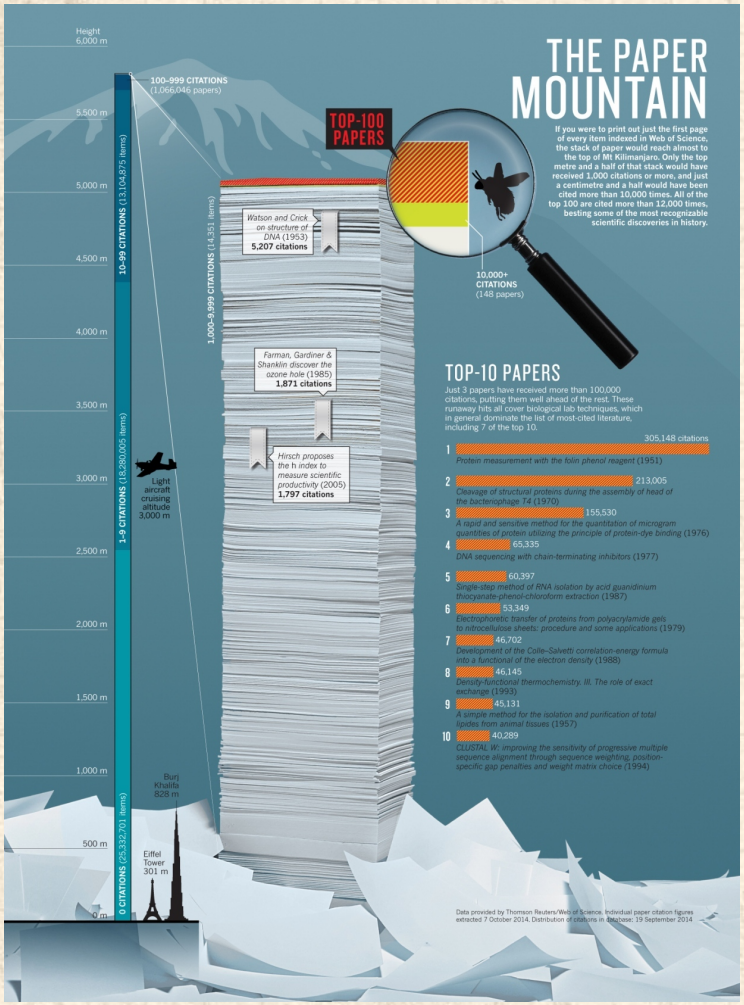


Fame by rank



Nature (2014): Most cited papers of all time

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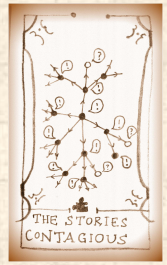
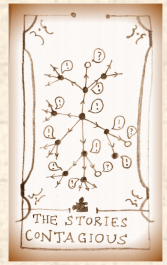


Word frequency:

Brown Corpus (~ 10^6 words):

rank	word	% q
1.	the	6.8872
2.	of	3.5839
3.	and	2.8401
4.	to	2.5744
5.	a	2.2996
6.	in	2.1010
7.	that	1.0428
8.	is	0.9943
9.	was	0.9661
10.	he	0.9392
11.	for	0.9340
12.	it	0.8623
13.	with	0.7176
14.	as	0.7137
15.	his	0.6886

rank	word	% q
1945.	apply	0.0055
1946.	vital	0.0055
1947.	September	0.0055
1948.	review	0.0055
1949.	wage	0.0055
1950.	motor	0.0055
1951.	fifteen	0.0055
1952.	regarded	0.0055
1953.	draw	0.0055
1954.	wheel	0.0055
1955.	organized	0.0055
1956.	vision	0.0055
1957.	wild	0.0055
1958.	Palmer	0.0055
1959.	intensity	0.0055



Jonathan Harris's Wordcount:

A word frequency distribution explorer:

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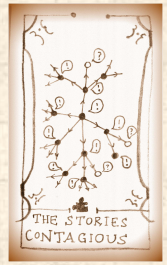
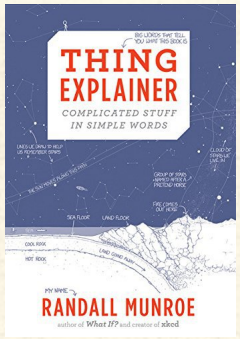
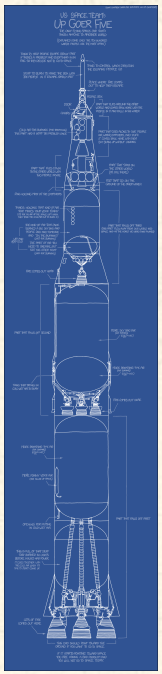
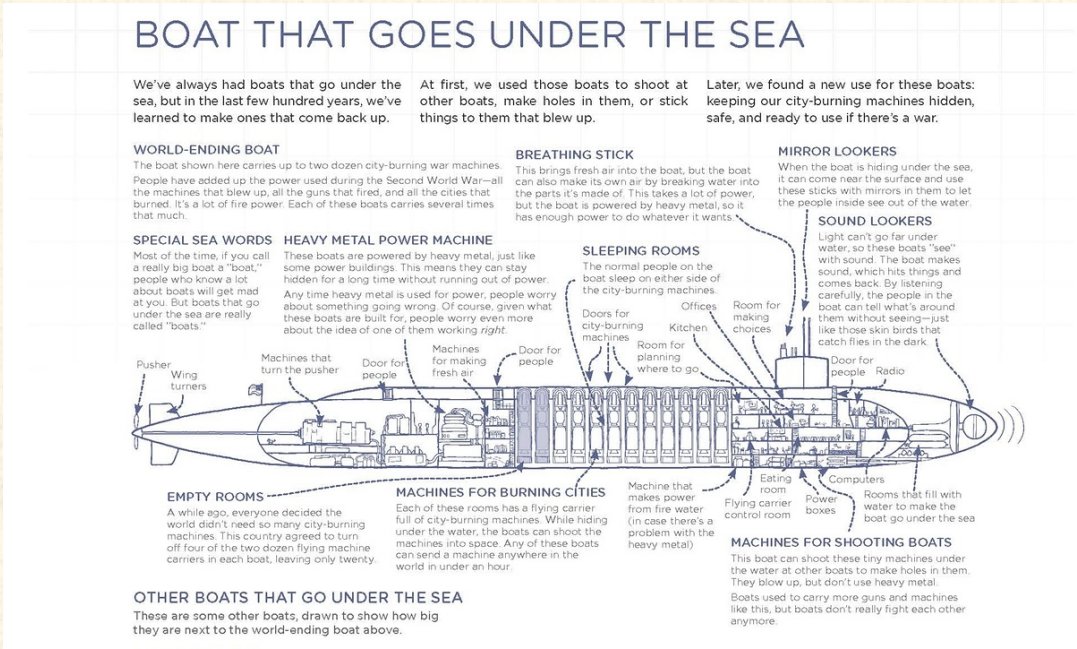




"Thing Explainer: Complicated Stuff in Simple Words" by Randall Munroe (2015). [14]





BOAT THAT GOES UNDER THE SEA

We've always had boats that go under the sea, but in the last few hundred years, we've learned to make ones that come back up.

At first, we used those boats to shoot at other boats, make holes in them, or stick things to them that blew up.

Later, we found a new use for these boats: keeping our city-burning machines hidden, safe, and ready to use if there's a war.

WORLD-ENDING BOAT
The boat shown here carries up to two dozen city-burning war machines. People have added up the power used during the Second World War—all the machines that blew up, all the guns that fired, and all the cities that burned. It's a lot of fire power. Each of these boats carries several times that much.

BREATHING STICK
This brings fresh air into the boat, but the boat can also make its own air by breaking water into the parts it's made of. This takes a lot of power, but the boat is powered by heavy metal, so it has enough power to do whatever it wants.

MIRROR LOOKERS
When the boat is hiding under the sea, it can come near the surface and use these sticks with mirrors in them to let the people inside see out of the water.

SOUND LOOKERS
Light can't go far under water, so these boats "see" with sound. The boat makes sound, which hits things and comes back. By listening carefully, the people in the boat can tell what's around them without seeing—just like those skin birds that catch flies in the dark.

SPECIAL SEA WORDS
Most of the time, if you call a really big boat a "boat," people who know a lot about boats will get mad at you. But boats that go under the sea are really called "boats."

HEAVY METAL POWER MACHINE
These boats are powered by heavy metal, just like some power buildings. This means they can stay hidden for a long time without running out of power.
Any time heavy metal is used for power, people worry about something going wrong. Of course, given what these boats are built for, people worry even more about the idea of one of them working *right*.

SLEEPING ROOMS
The normal people on the boat sleep on either side of the city-burning machines.

Pusher
Wing turners
Machines that turn the pusher
Door for people
Machines for making fresh air
Door for people
Doors for city-burning machines
Offices
Kitchen
Room for making choices
Room for planning where to go
Door for people
Radio

EMPTY ROOMS
A while ago, everyone decided the world didn't need so many city-burning machines. This country agreed to turn off four of the two dozen flying machine carriers in each boat, leaving only twenty.

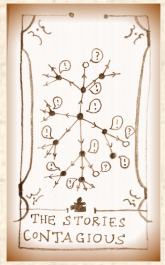
MACHINES FOR BURNING CITIES
Each of these rooms has a flying carrier full of city-burning machines. While hiding under the water, the boats can shoot the machines into space. Any of these boats can send a machine anywhere in the world in under an hour.

Machine that makes power from fire water (in case there's a problem with the heavy metal)
Eating room
Flying carrier control room
Computers
Power boxes
Rooms that fill with water to make the boat go under the sea

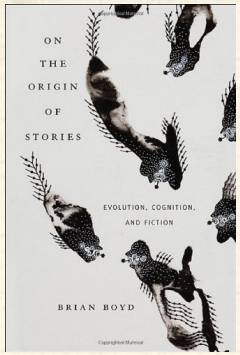
MACHINES FOR SHOOTING BOATS
This boat can shoot these tiny machines under the water at other boats to make holes in them. They blow up, but don't use heavy metal.
Boats used to carry more guns and machines like this, but boats don't really fight each other anymore.

OTHER BOATS THAT GO UNDER THE SEA
These are some other boats, drawn to show how big they are next to the world-ending boat above.

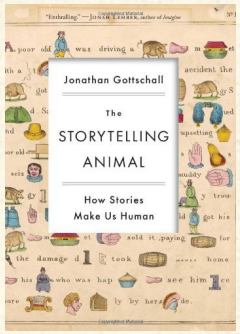
Up goer five



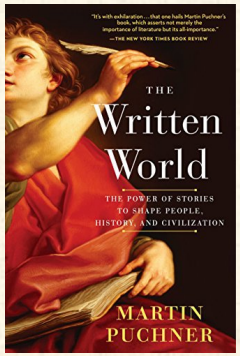
The everywhereness of algorithms and stories:



"On the Origin of Stories: Evolution, Cognition, and Fiction" by Brian Boyd (2010). [3]



"The Storytelling Animal: How Stories Make Us Human" by Jonathan Gottschall (2013). [10]



"The Written World: How Literature Shaped Civilization" by Martin Puchner (2017). [17]

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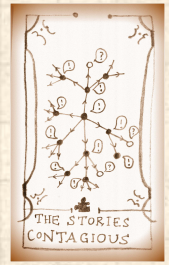
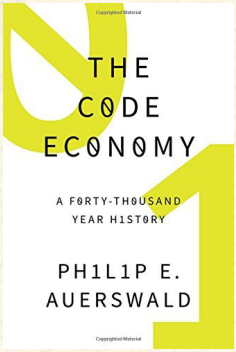
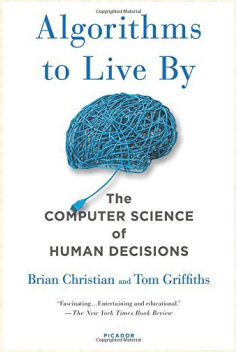


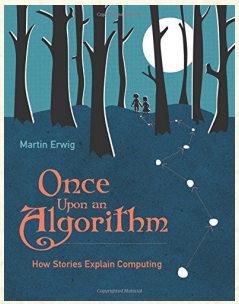
Algorithms, recipes, stories, ...



"The Code Economy: A Forty-Thousand Year History" by Philip E Auerswald (2017). [1]



"Algorithms to Live By" by Christian and Griffiths (2016). [6]



"Once Upon an Algorithm" by Martin Erwig (2017). [9]

Also: Numerical Recipes in C [16] and How to Bake π [4]

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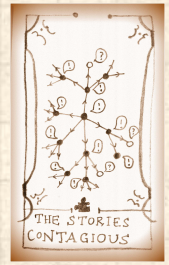
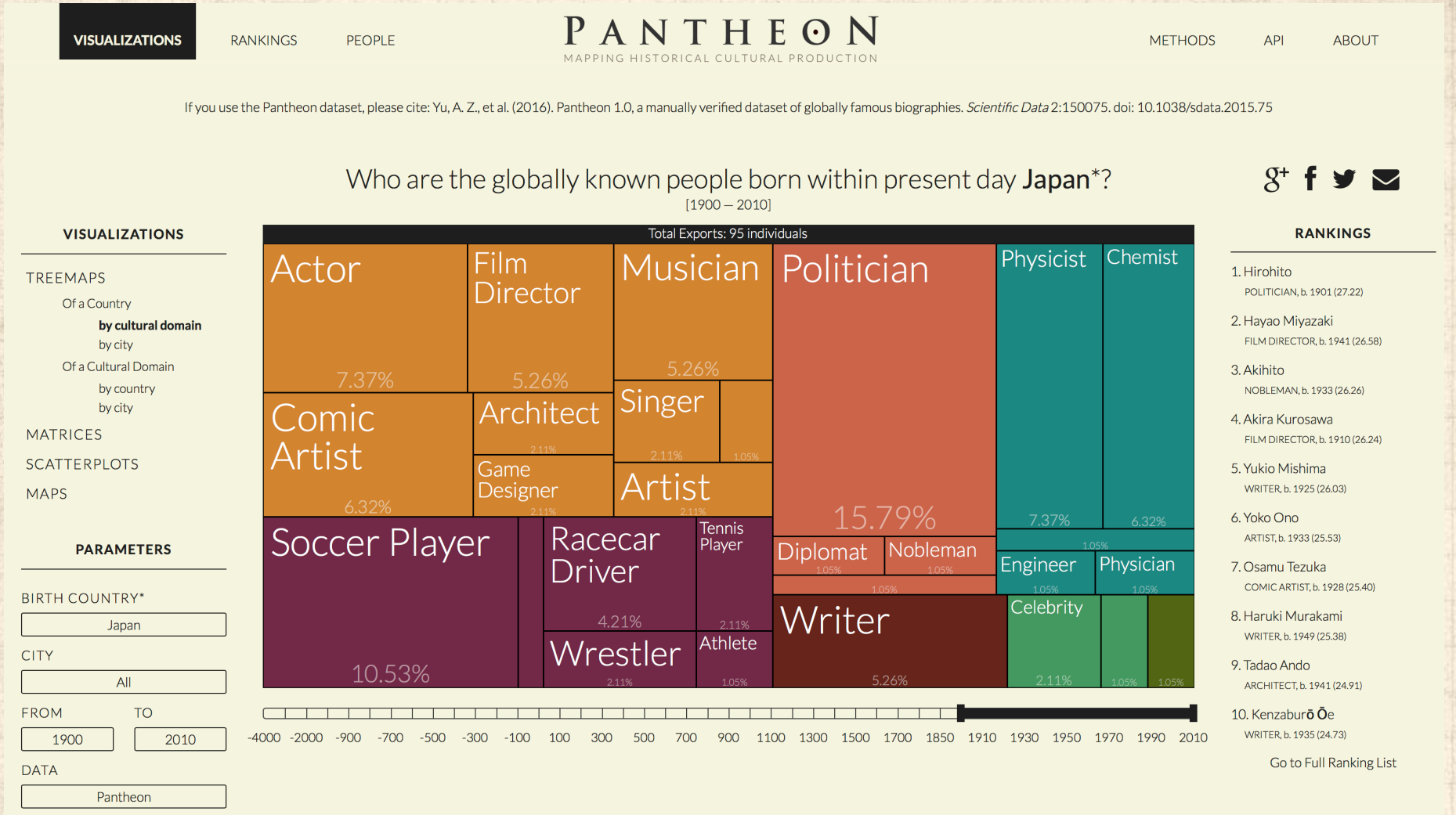
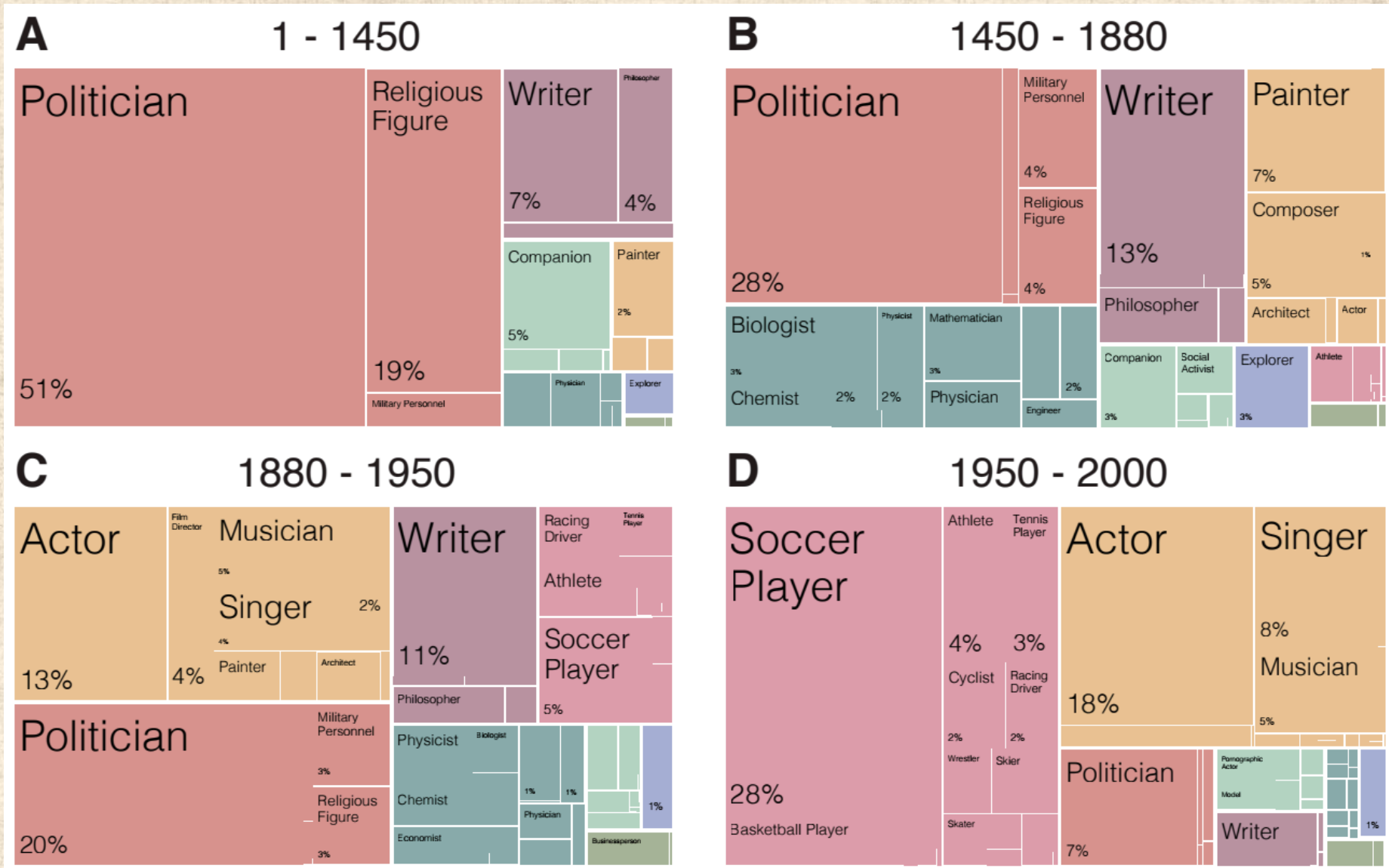


The famous are storytellers—Japan:



For people born 1950–

http://pantheon.media.mit.edu/treemap/country_exports/JP/all/1900/2010/H15/pantheon



https://www.media.mit.edu/projects/pantheon-new/overview/

Super Survival of the Stories:

The Desirability of Storytellers, The Atlantic, Ed Yong, 2017-12-05.

- Study of Agta, Filipino hunter-gatherers.
- Storytelling valued well above all other skills including hunting.
- Stories encode prosocial norms such as cooperation.

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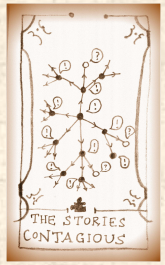

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- Storytelling valued well above all other skills including hunting.
- Stories encode prosocial norms such as cooperation.
- Like the best stories, the best storytellers reproduce more successfully.

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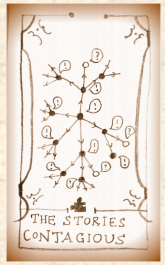
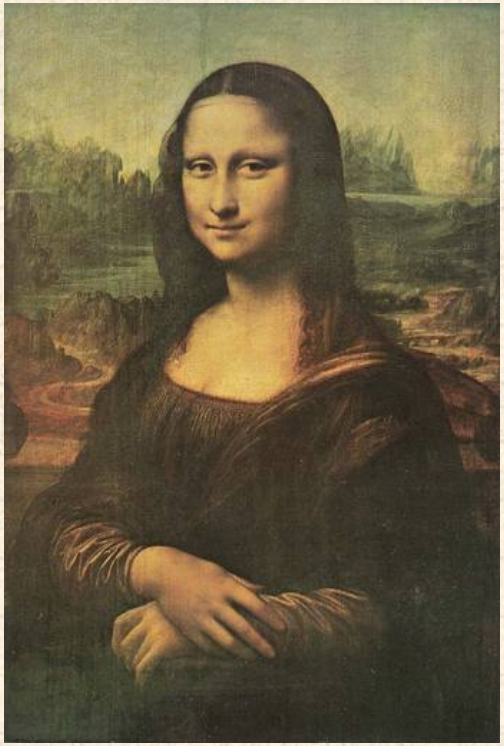


The most famous painting in the world:



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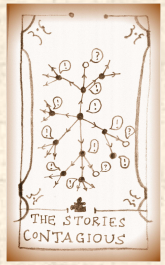

The dismal predictive powers of editors .....

Twelve ...

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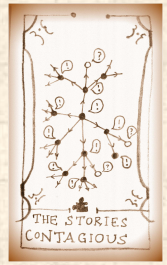

The completely unpredicted fall of Eastern Europe:

Timur Kuran: [12] “Now Out of Never: The Element of Surprise in the East European Revolution of 1989”

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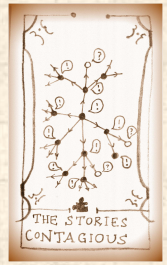

We understand bushfire stories:

1. Sparks start fires.

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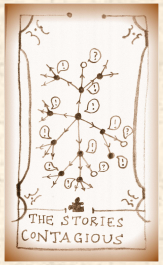

We understand bushfire stories:

1. Sparks start fires.
2. System properties control a fire's spread.

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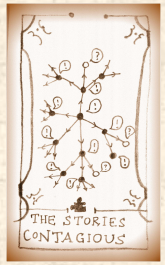

We understand bushfire stories:

1. Sparks start fires.
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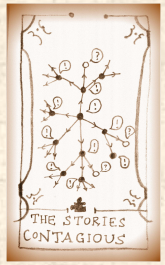

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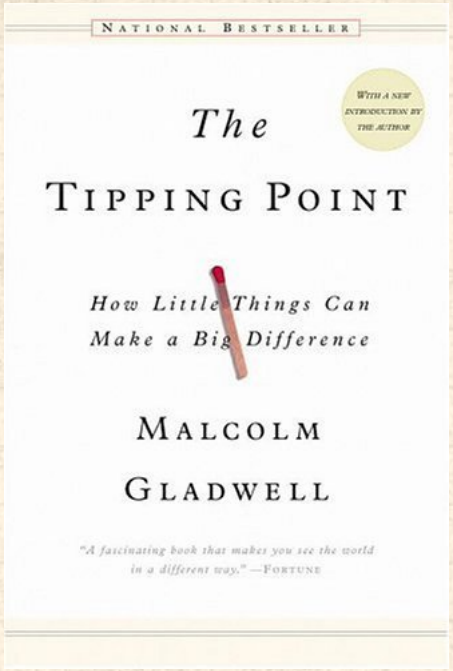

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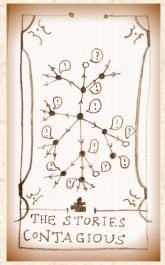
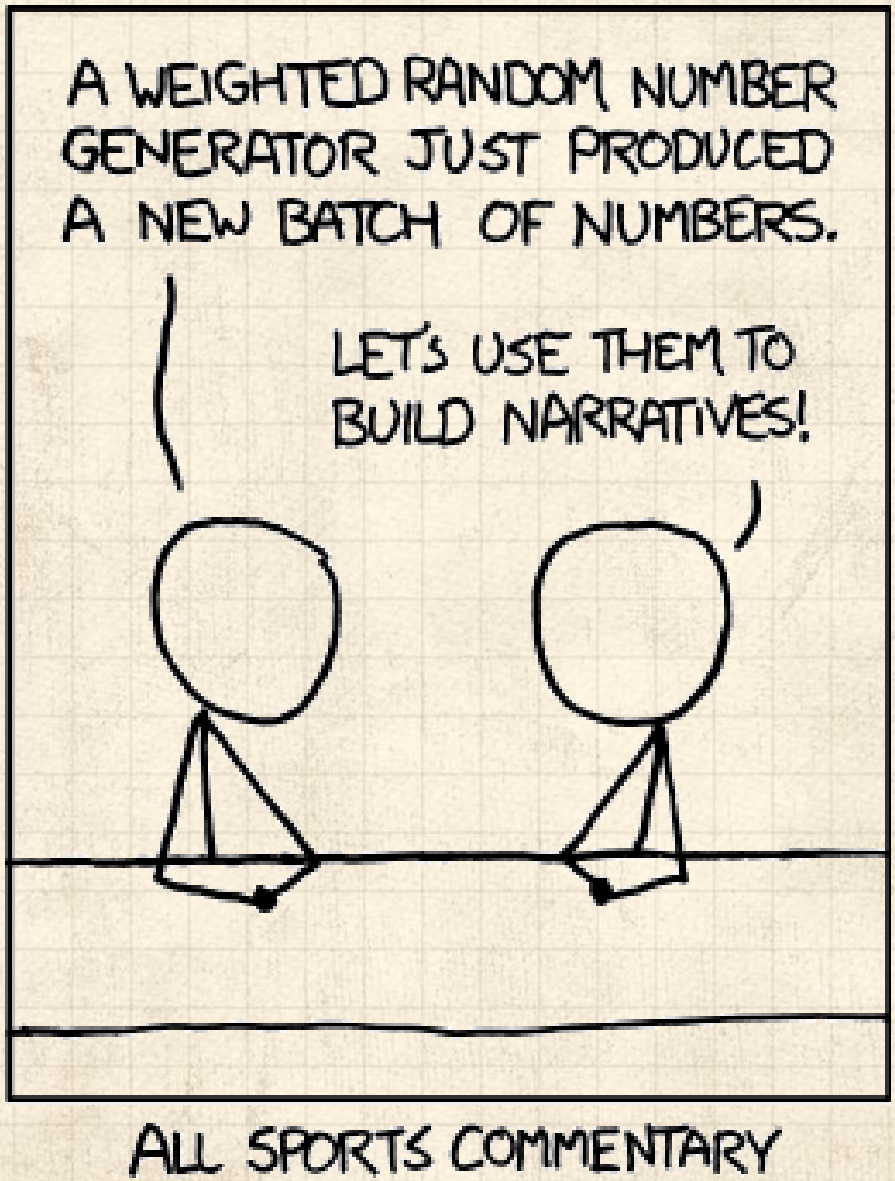


Reason 1—We are Homo Narrativus.



http://xkcd.com/904/

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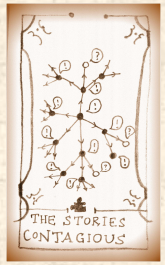

Reason 2—"We are all individuals."

Archival footage:

- Individual narratives are not enough to understand distributed, networked minds.

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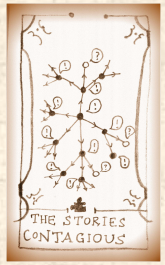
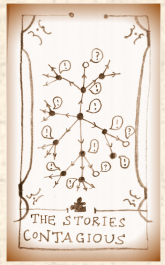
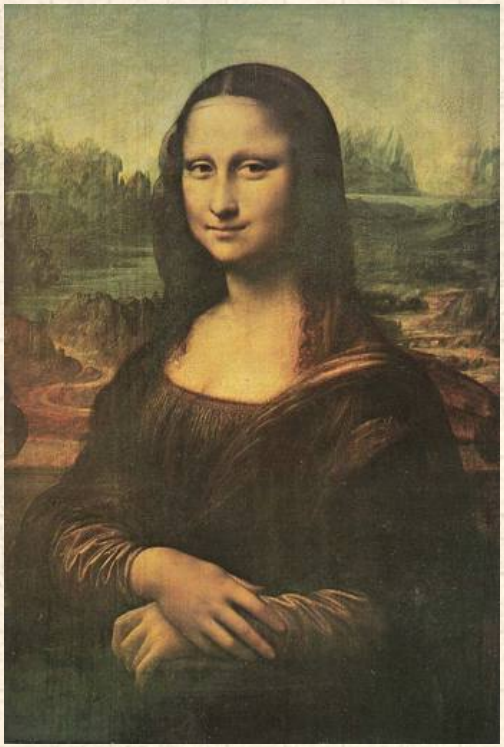


Reason 3—We are spectacular imitators.

BBC/David Attenborough.



Mistake 1:
Success is due to intrinsic properties



See “Becoming Mona Lisa” by David Sassoon

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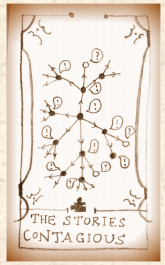

Mistake 1:
Success is due to intrinsic properties

it's just so disappointingly small

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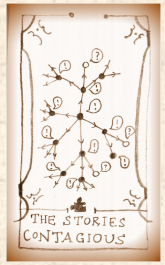

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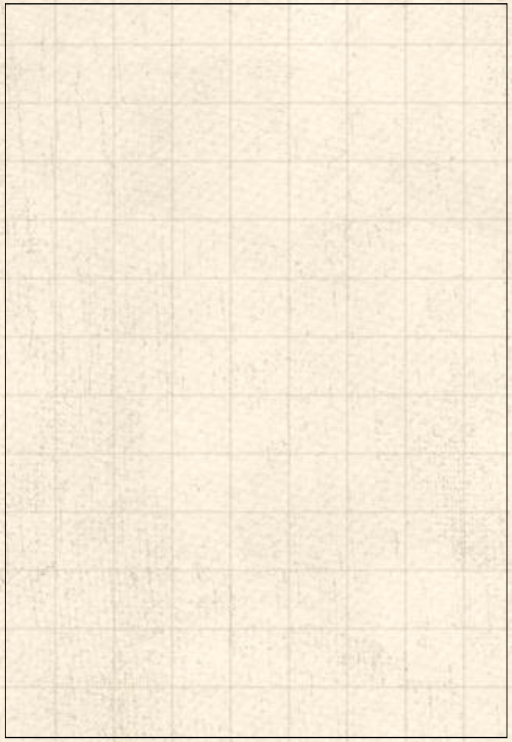

Stolen in 1913, recovered in 1915.

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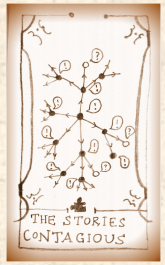

Mistake 1:
Success is due to intrinsic properties

Hidden during WWII.

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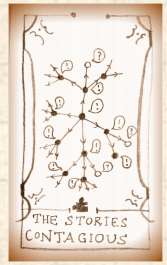

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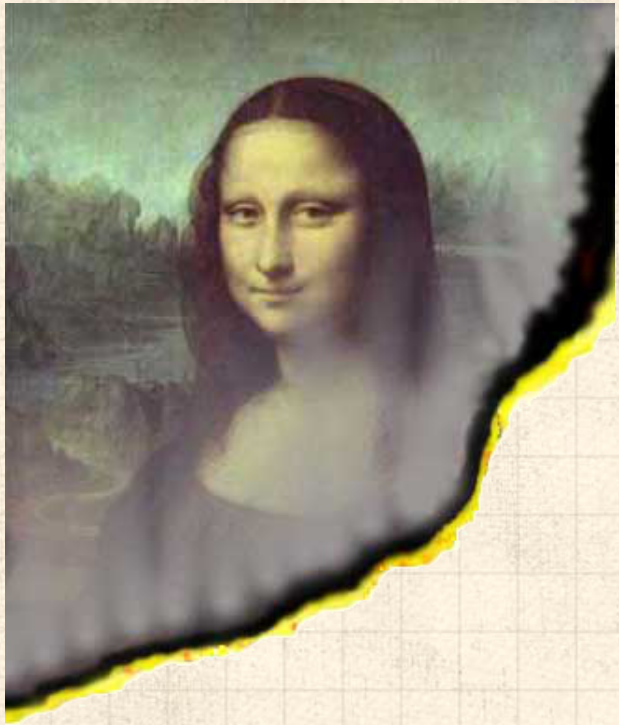

Repeatedly vandalised and attacked.

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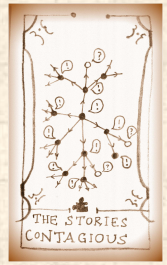
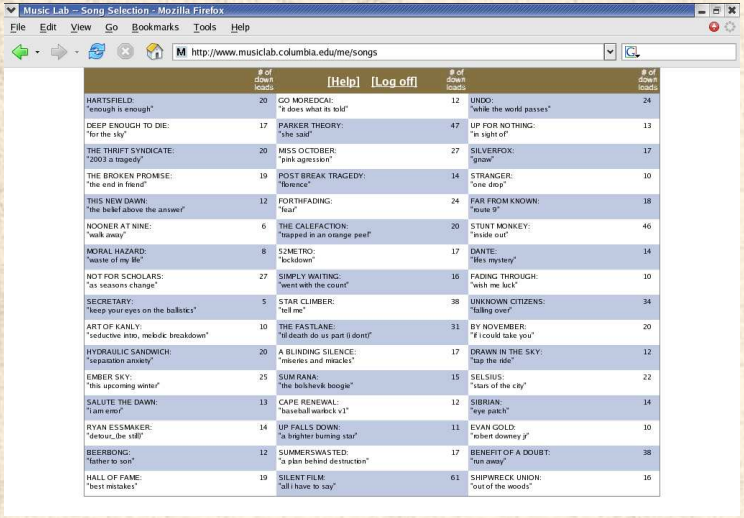
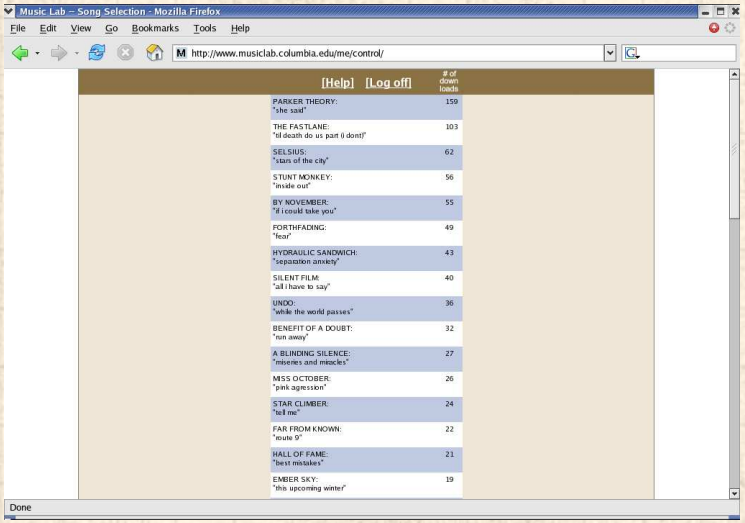


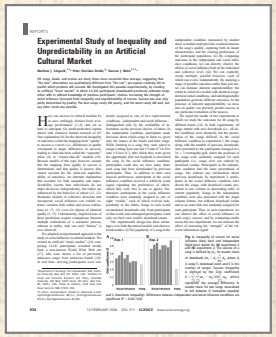
48 songs
30k participants

Exp 1— weak social



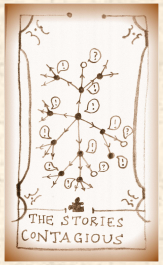
Exp. 2—strong social



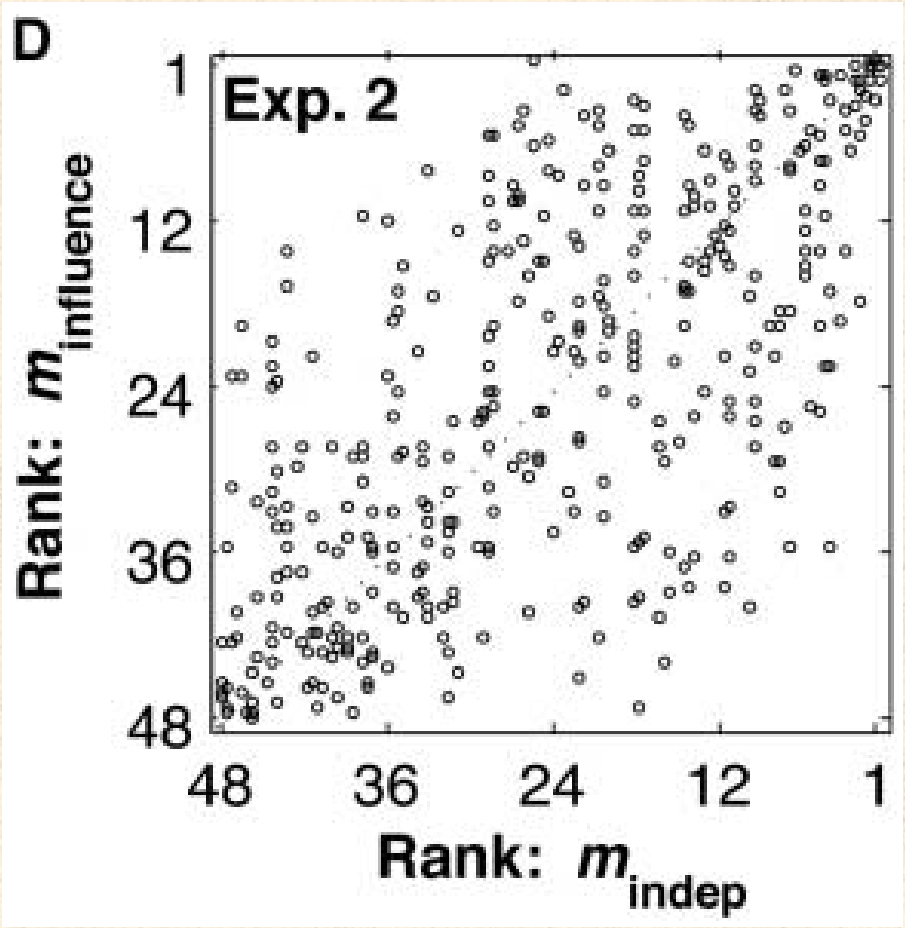

Experimental Study of Inequality and Unpredictability in an Artificial Cultural Market

"An experimental study of inequality and unpredictability in an artificial cultural market"

Salganik, Dodds, and Watts, Science, **311**, 854–856, 2006. [18]



Resolving the paradox:



Increased social awareness leads to
Stronger inequality + Less predictability.

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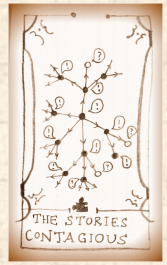
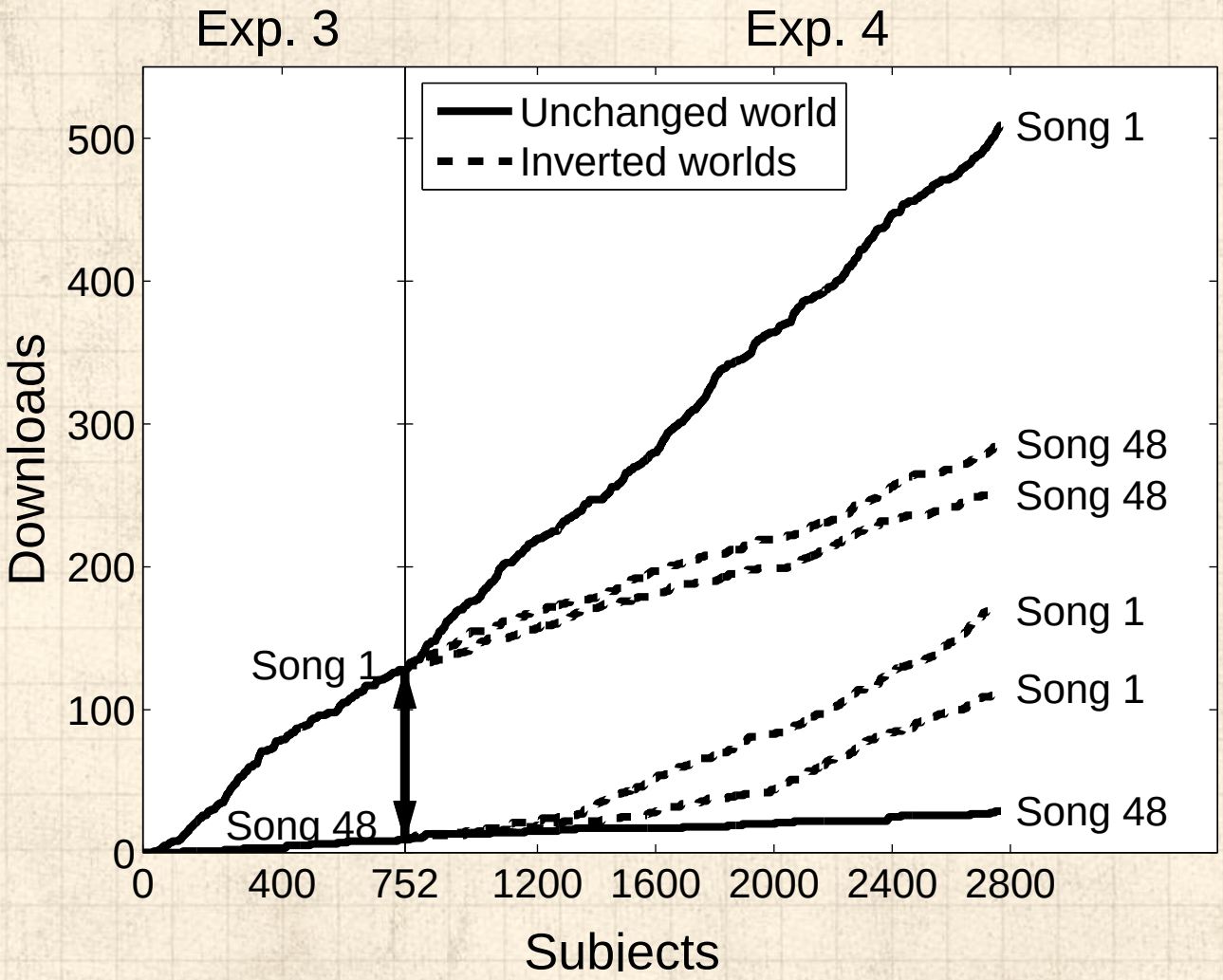


Payola/Deceptive advertising hurts us all:



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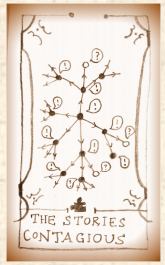

“Mistake” 2:
Seeing success is ‘due to social’ and wanting to say ‘all your interactions are belong to us’

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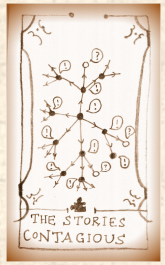

“This is truly the last time, believe me”

The Washington Post

Business • Analysis

14 years of Mark Zuckerberg saying sorry, not sorry

By Geoffrey A. Fowler and Chiqui Esteban April 9, 2018

Do you trust Mark Zuckerberg?

From the moment the Facebook founder entered the public eye in 2003 for creating a Harvard student hot-or-not rating site, he’s been apologizing. So we collected this abbreviated history of his public mea culpas.

It reads like a record on repeat. Zuckerberg, who made “move fast and break things” his slogan, says sorry for being naive, and then promises solutions such as privacy “controls,” “transparency” and better policy “enforcement.” And then he promises it again the next time. You can track his sorries in orange and promises in blue in the timeline below.

All the while, Facebook’s access to our personal data increases and little changes about the way Zuckerberg handles it. So as Zuckerberg prepares to apologize for the first time in front of Congress, the question that lingers is: What will be different this time?

Robert Godwin Sr.

“ Our hearts go out to the family and friends of Robert Godwin Sr., and we have a lot of work — and we will keep doing all we can to prevent tragedies like this from happening. ”

September 2017

While revealing a nine-step plan to stop nations from using Facebook to interfere in one another’s elections, noting that the amount of “problematic content” found so far is “relatively small.”

“ I care deeply about the democratic process and protecting its integrity. ... It is a new challenge for internet communities to deal with

December 2007

After launching Beacon, which opted-in everyone to sharing with advertisers what they were doing in outside websites and apps.

“ We simply did a bad job with this release, and I apologize for it. ... People need to be able to explicitly choose what they share. ”

February 2009

After unveiling new terms of service that angered users.

“ Over the past couple of days, we received a lot of questions and comments. ... Based on this feedback, we have decided to return to our previous terms of use while we resolve the issues. ”

“ We won’t prevent all mistakes or abuse, but we currently make too many errors enforcing our policies and preventing misuse of our tools. ... This will be a serious year of self-improvement and I’m looking forward to learning from working to fix our issues together. ”

March 2018

After details emerged about Cambridge Analytica taking user data.

“ We have a responsibility to protect your data, and if we can’t then we don’t deserve to serve you. ... We will learn from this experience to secure our platform further and make our community safer for everyone going forward. ”

Commission for deceiving consumers about privacy.

“ I’m the first to admit that we’ve made a bunch of mistakes. ... Facebook has always been committed to being transparent about the information you have stored with us — and we have led the internet in building tools to give people the ability to see and control what they share. ”

July 2014

After an academic paper exposed that Facebook conducted psychological tests on nearly 700,000 users without their knowledge.

(Apology by Facebook COO Sheryl Sandberg)

“ It was my mistake, and I’m sorry. ... There’s more we can do here to limit the information developers can access and put more safeguards in place to prevent abuse. ”

Related stories

Facebook: Most users may have had publica data ‘scraped’

Facebook COO Sheryl Sandberg on data leak: ‘I am really sorry, we are late’

As Facebook confronts data misuse, foreign governments might force real change

What if we paid for Facebook — instead of letting it spy on us for free?

About this story

Photoillustrations based on photos by Tony Avelar/Bloomberg News, Drew Angerer/Getty Images, Jeff Roberson/AP, Jim Watson/Getty Images, Craig Ruttle/AP, Paul Sakuma/AP, Stephen Lam/Reuters, Jose Gomez/Reuters, Richard Drew/AP.

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The Facebook ads Russians showed to different groups

Facebook has said these ads were created by the Internet

WaPo article

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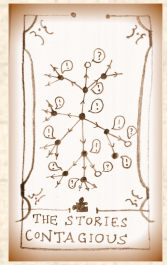
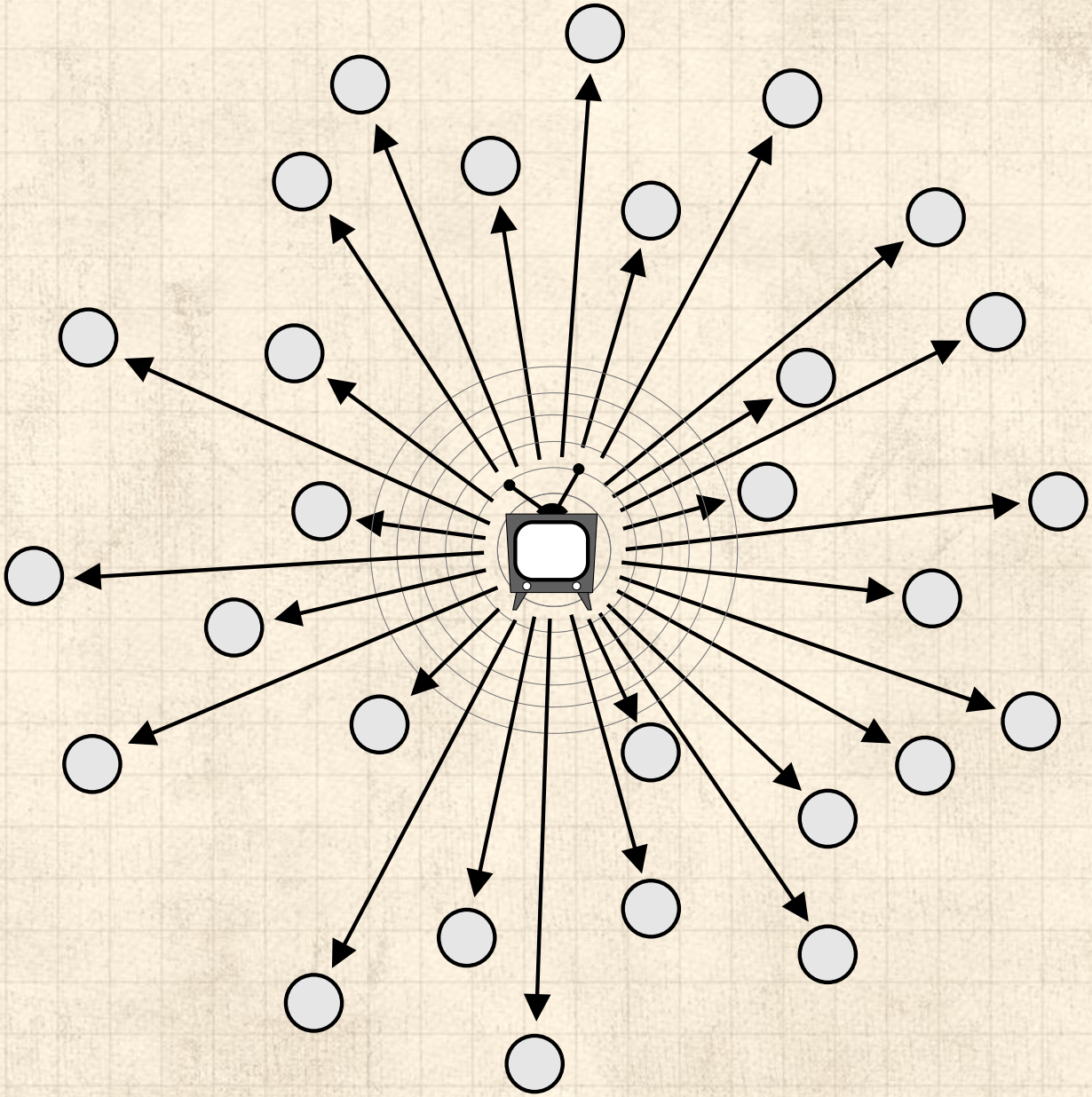


The hypodermic model of influence:



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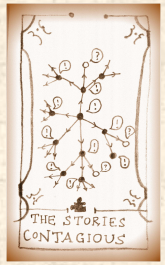
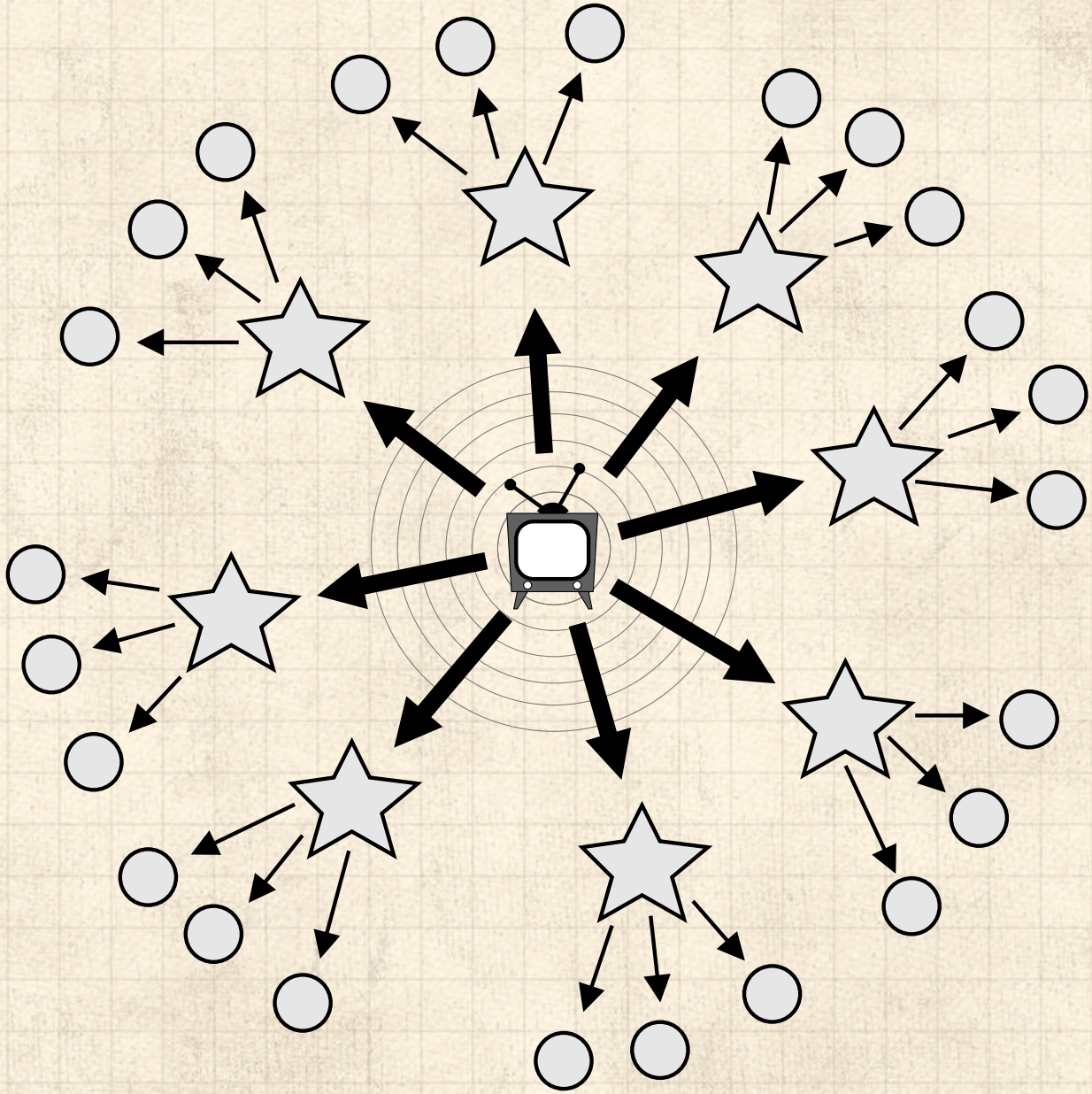


The two step model of influence: [11]



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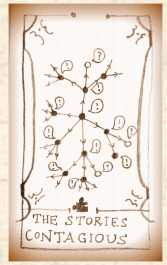
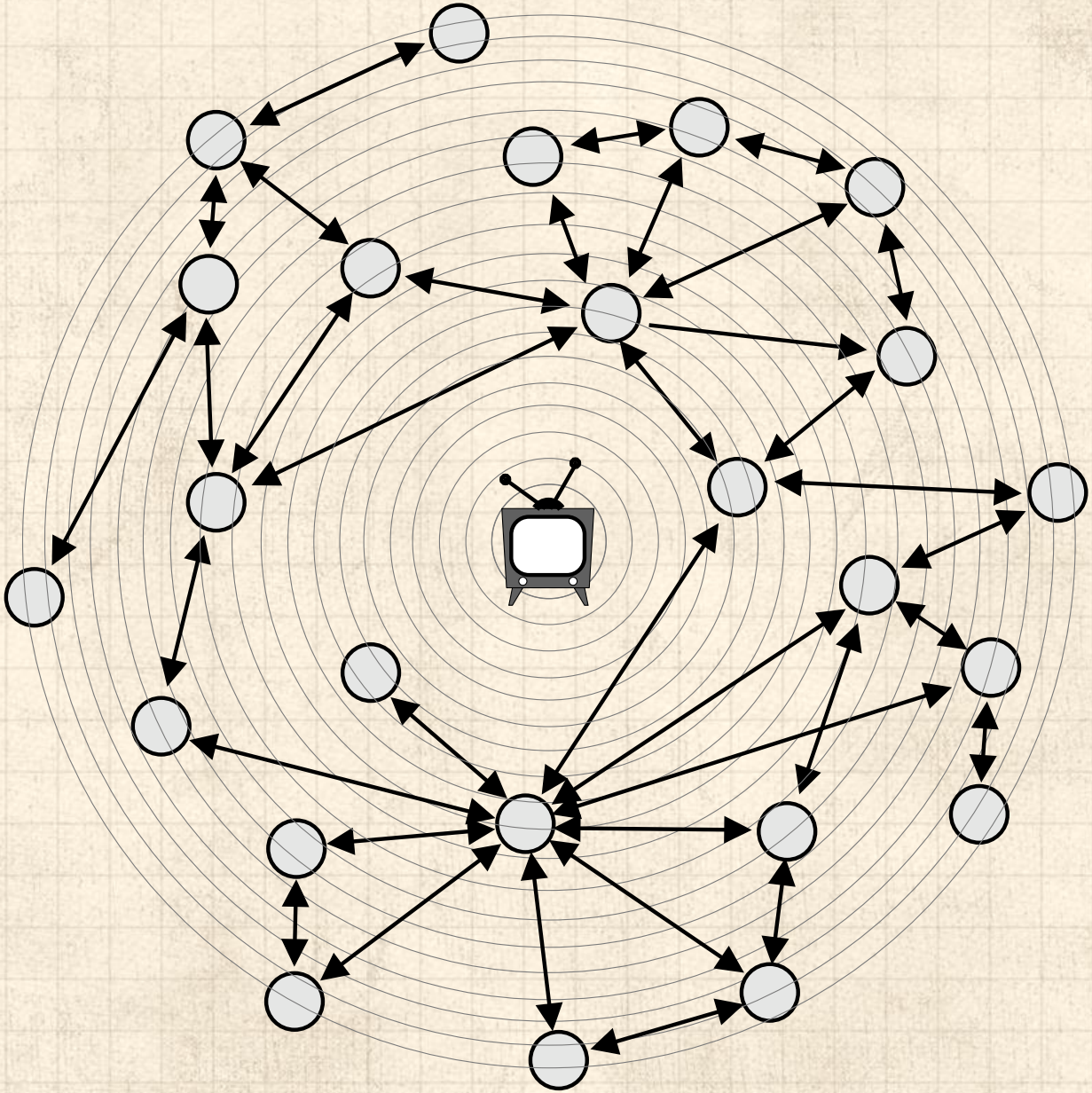


The network model of influence:



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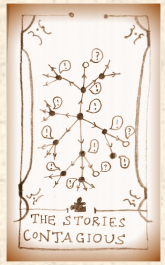

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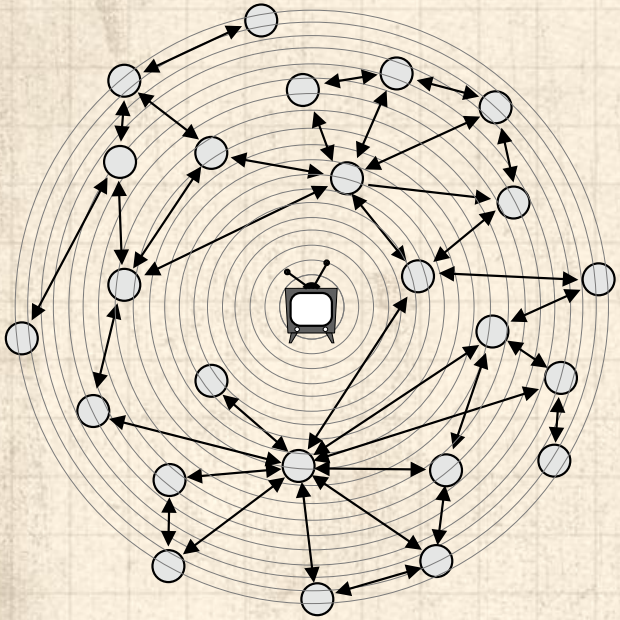
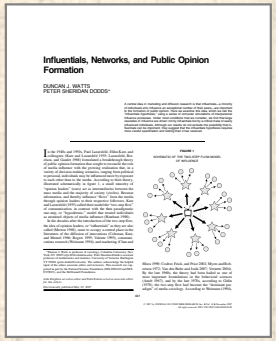


How superspreading works:

Many interconnected, average, trusting people
must benefit from both
receiving and sharing a message
far from its source.


Influentials, Networks, and Public Opinion Formation

DUNCAN J. WATTS
PETER SHERIDAN DODDS*

"Influentials, Networks, and Public Opinion Formation"

Watts and Dodds,
J. Consum. Res., **34**, 441–458, 2007. [19]

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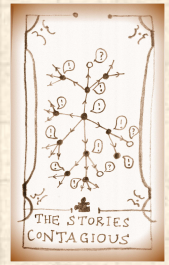

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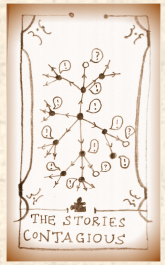

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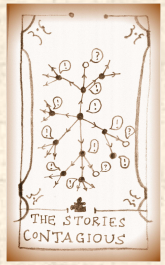

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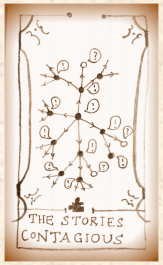

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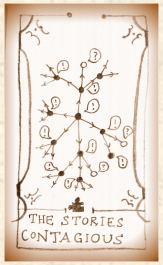

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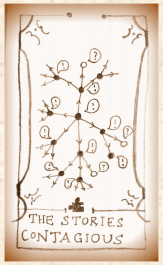

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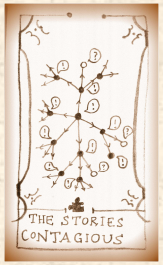

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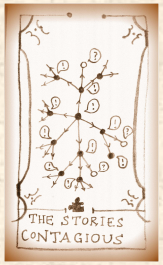

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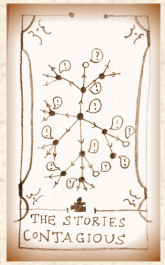

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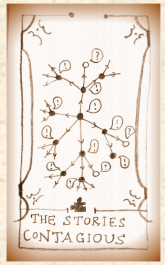

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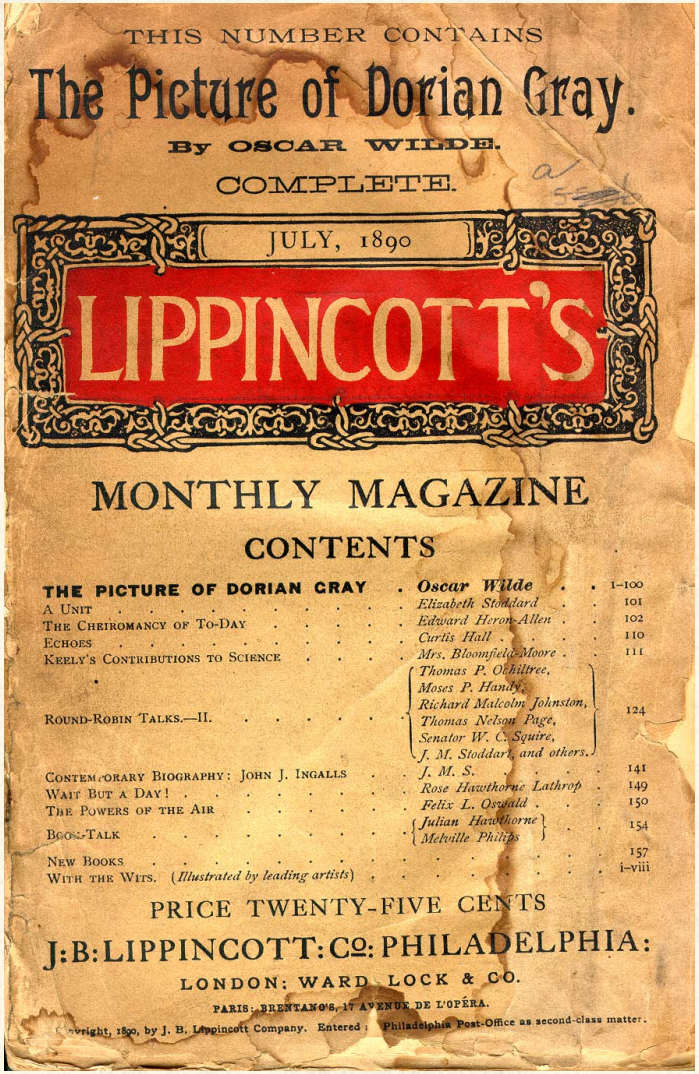

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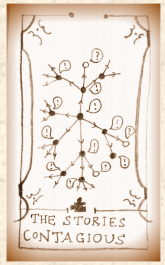

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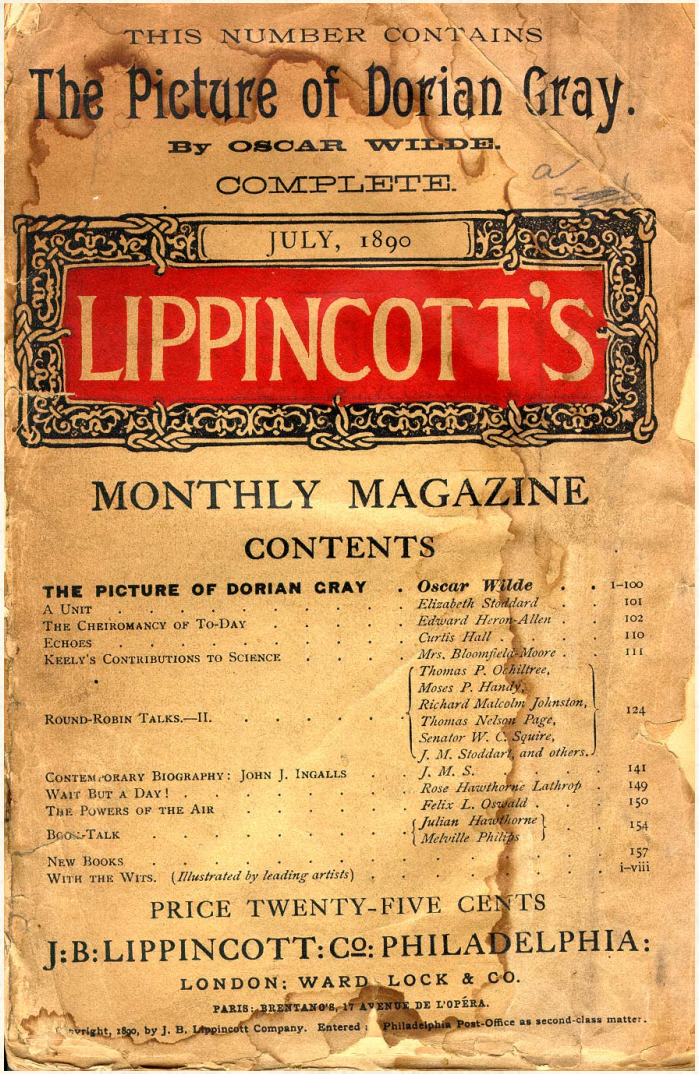

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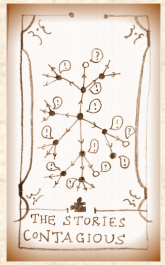

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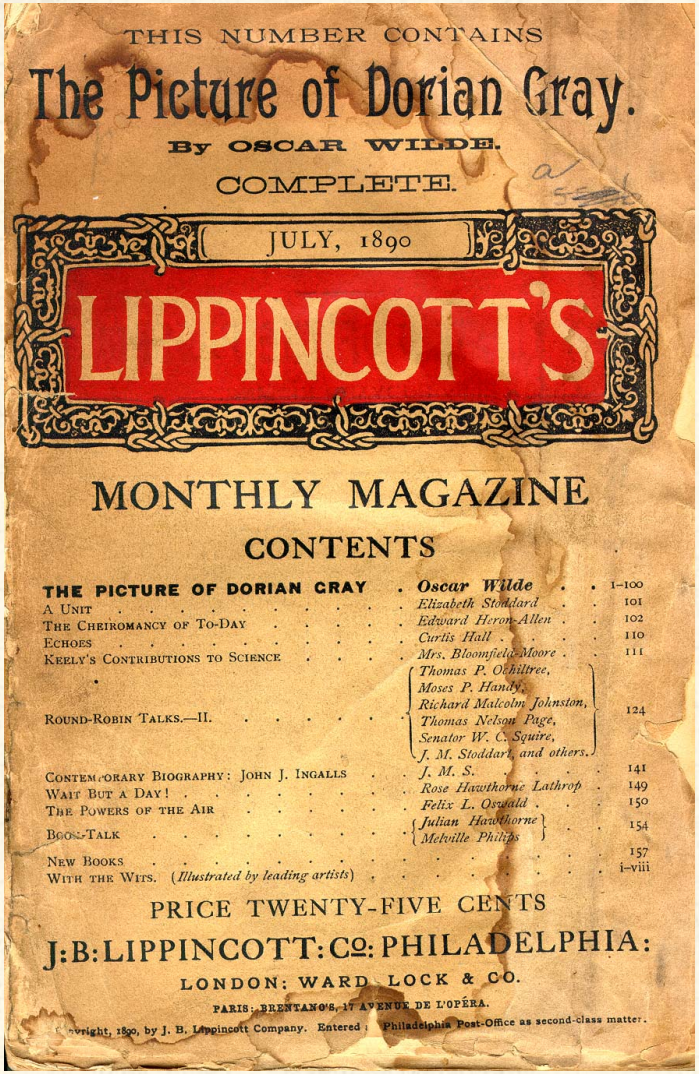

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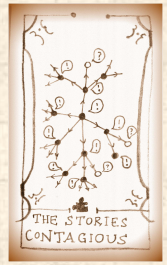

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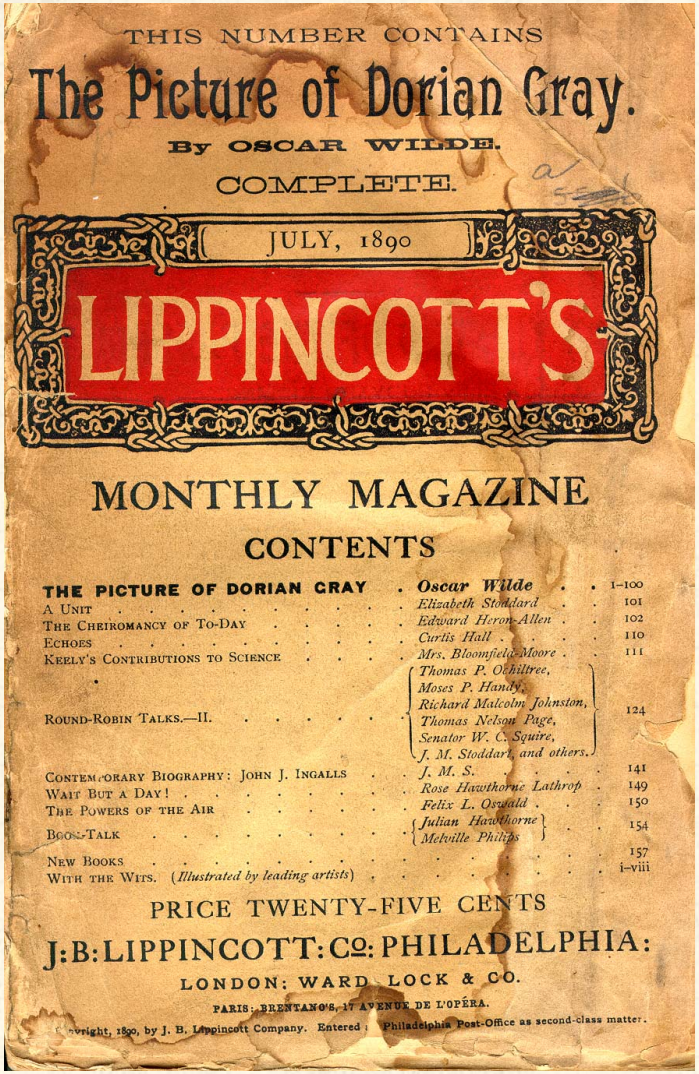

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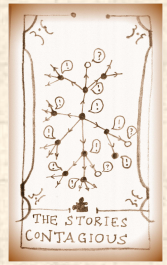

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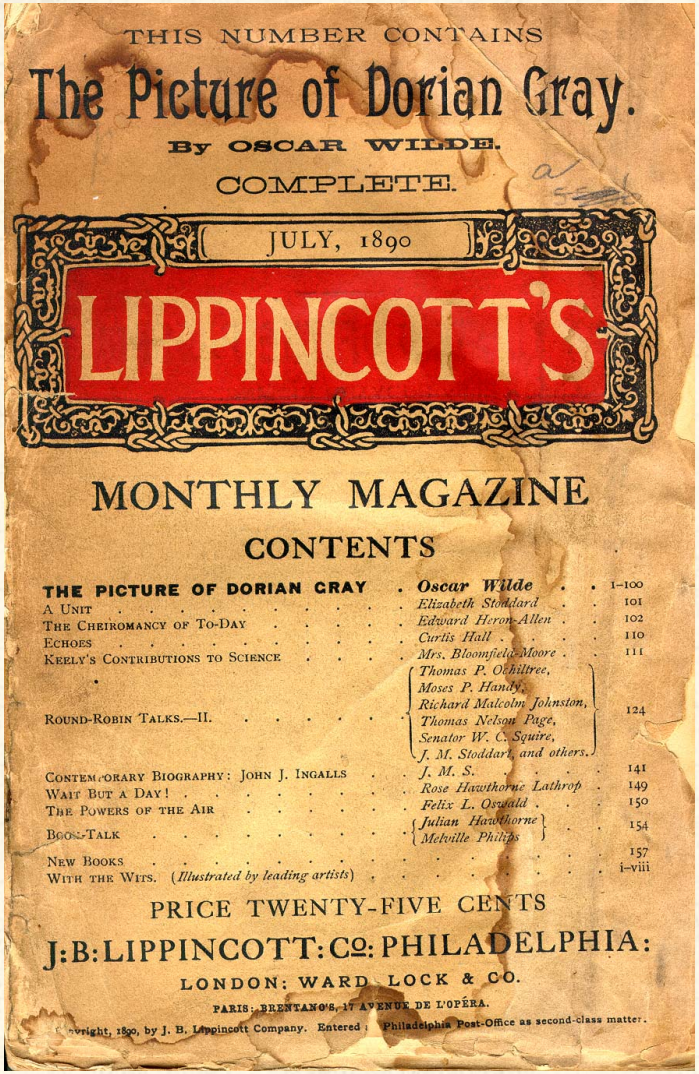

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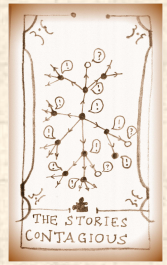

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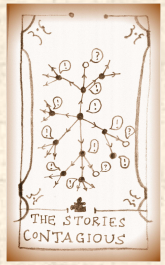

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- Stories surrounding Trump: http://compstorylab.org/trumpstoryturbulence/

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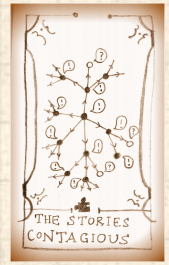

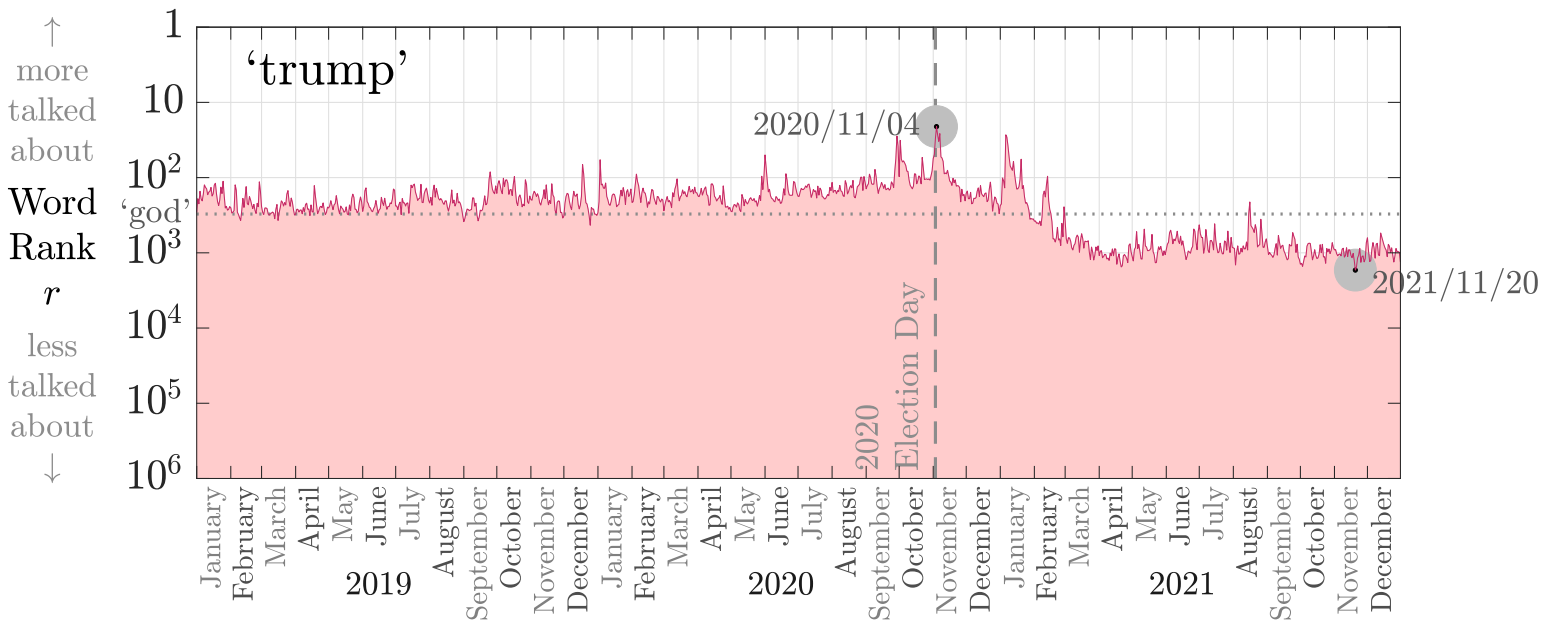

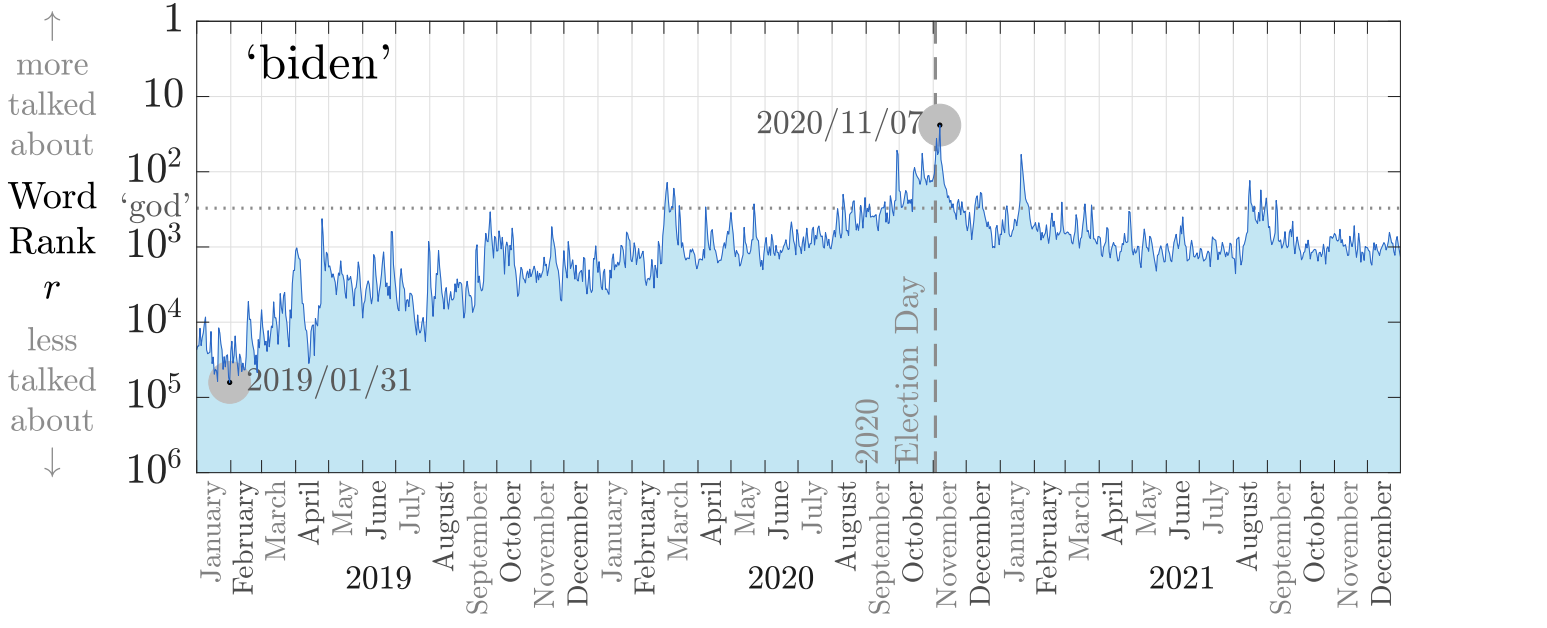

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Adjacent Narratives
Extras
Memory & Turbulence
References

Ultrafame:
Nobody expects ~~the Spanish Inquisition~~ K-pop:

Vox (2019-04-17):

BTS, the band that changed K-pop, explained

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Stories

Mechanics of Fame

Superspreading

Lexical Ultrafame

Turbulent times

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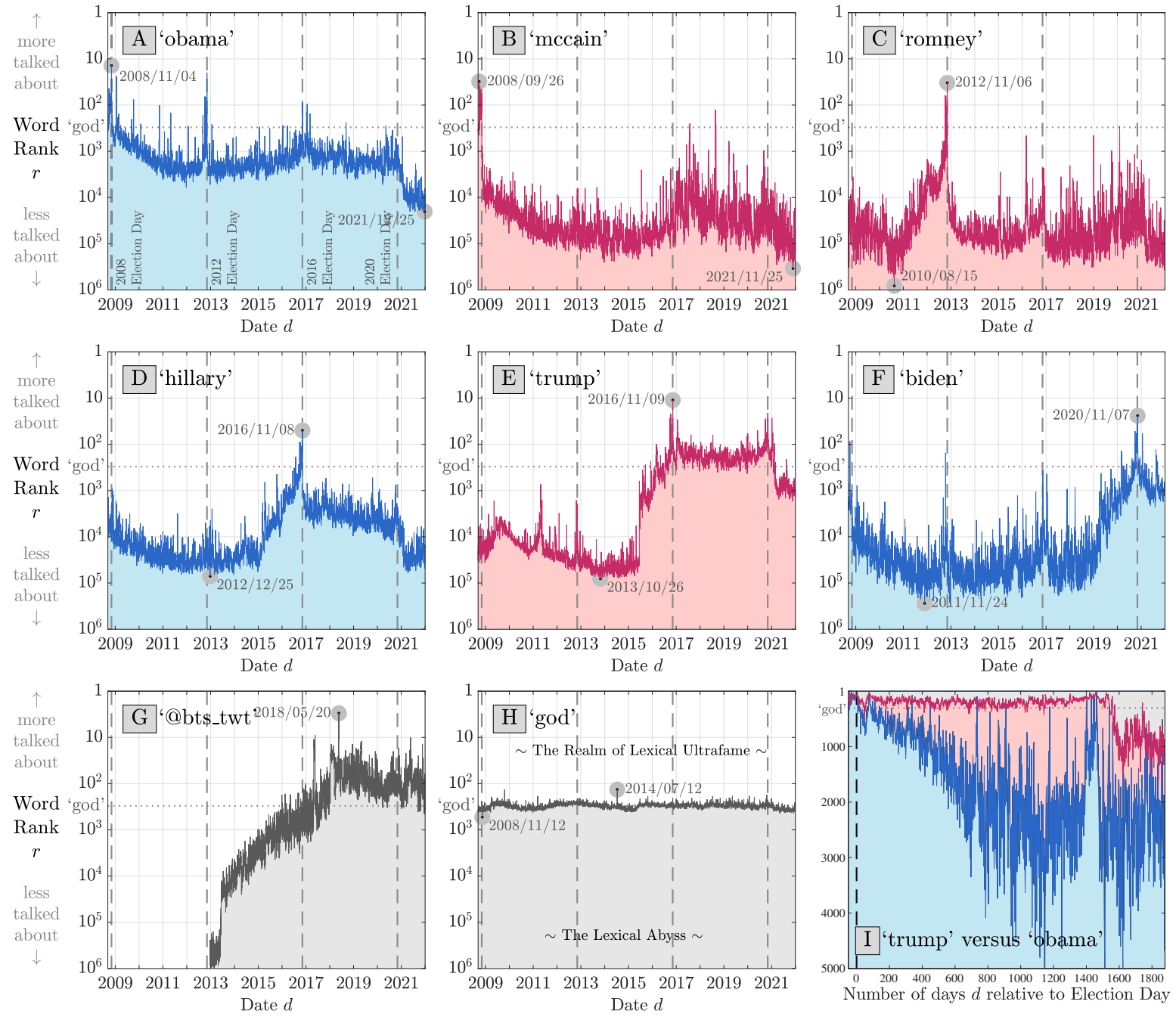
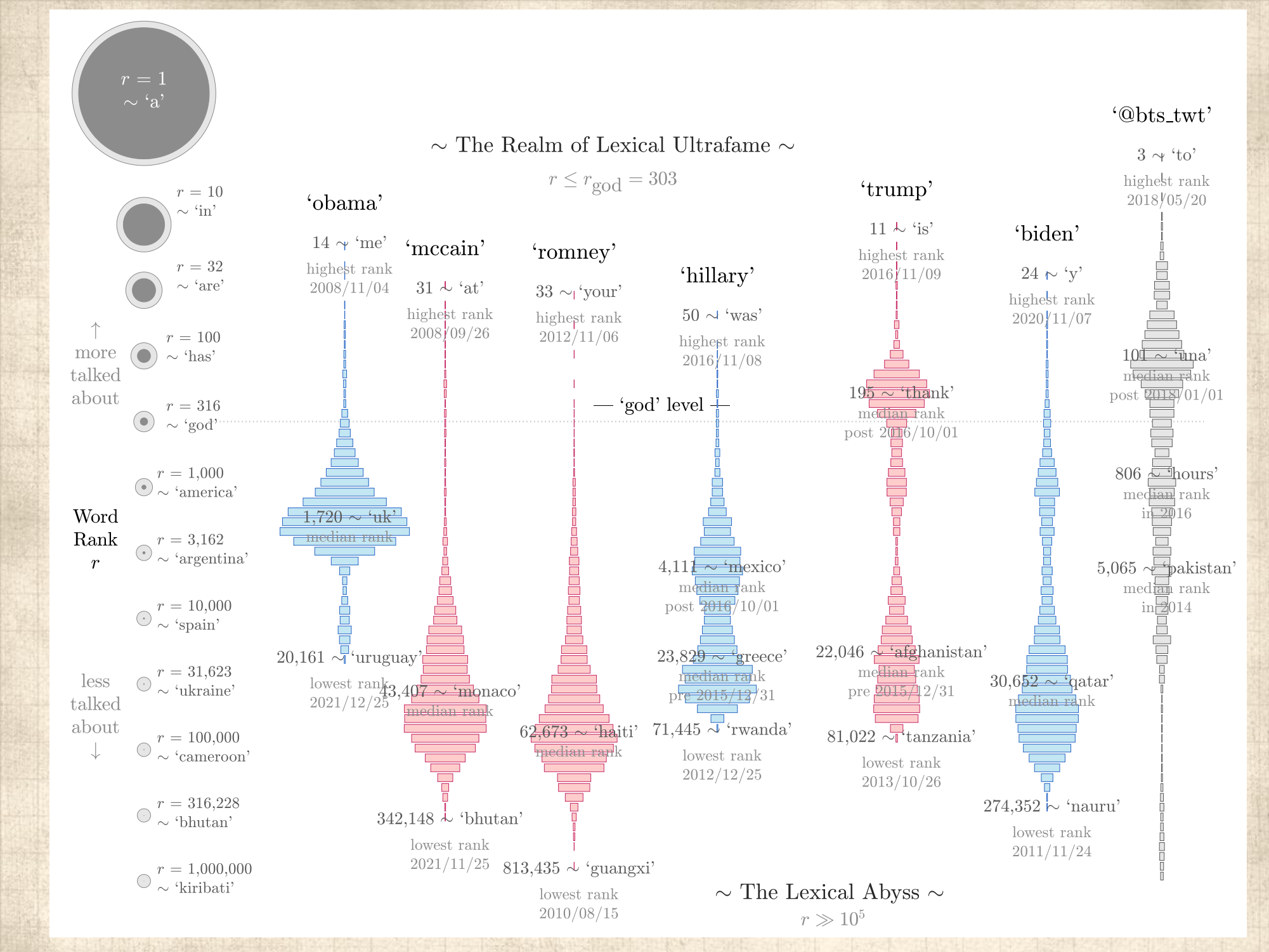
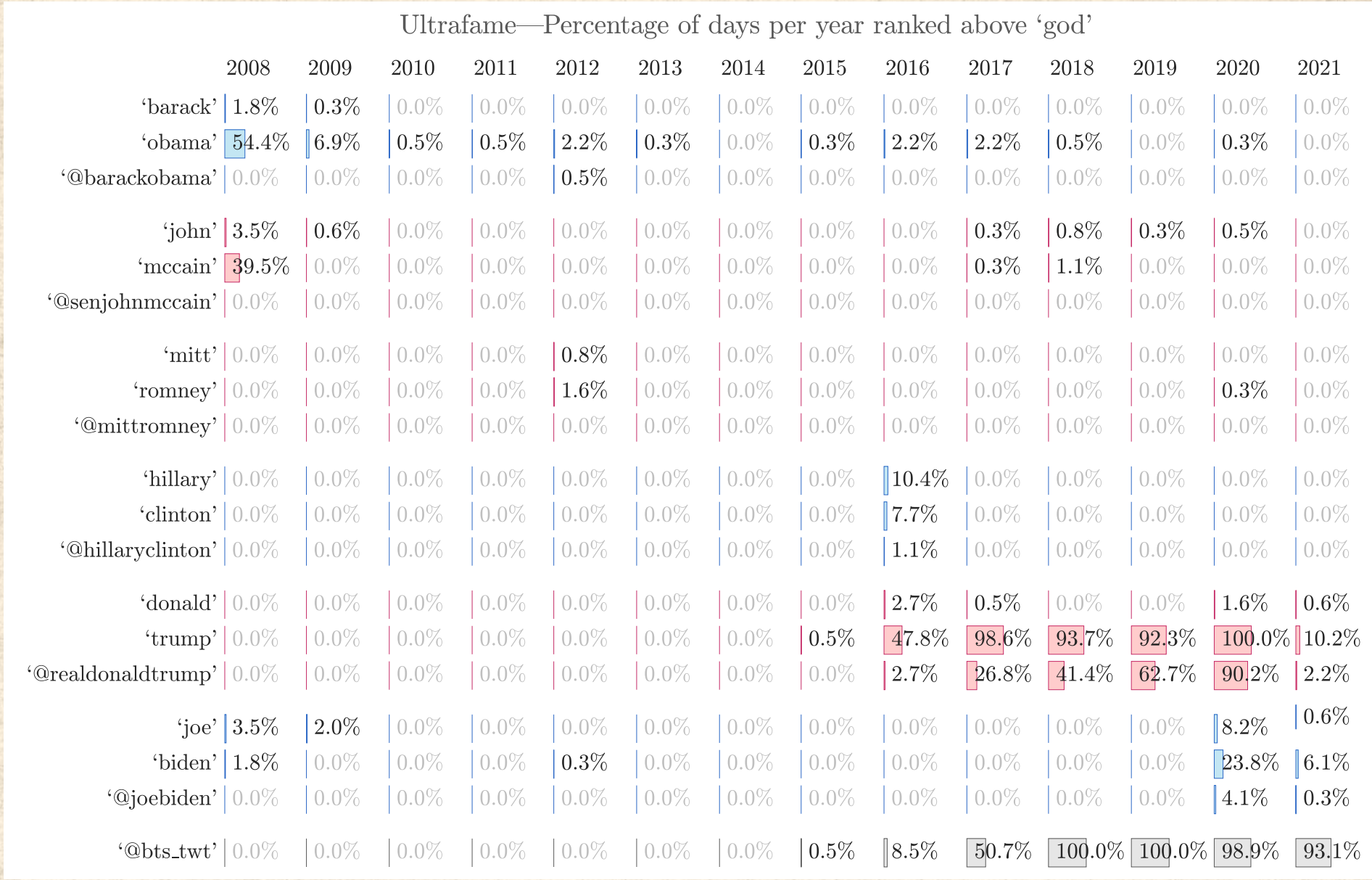
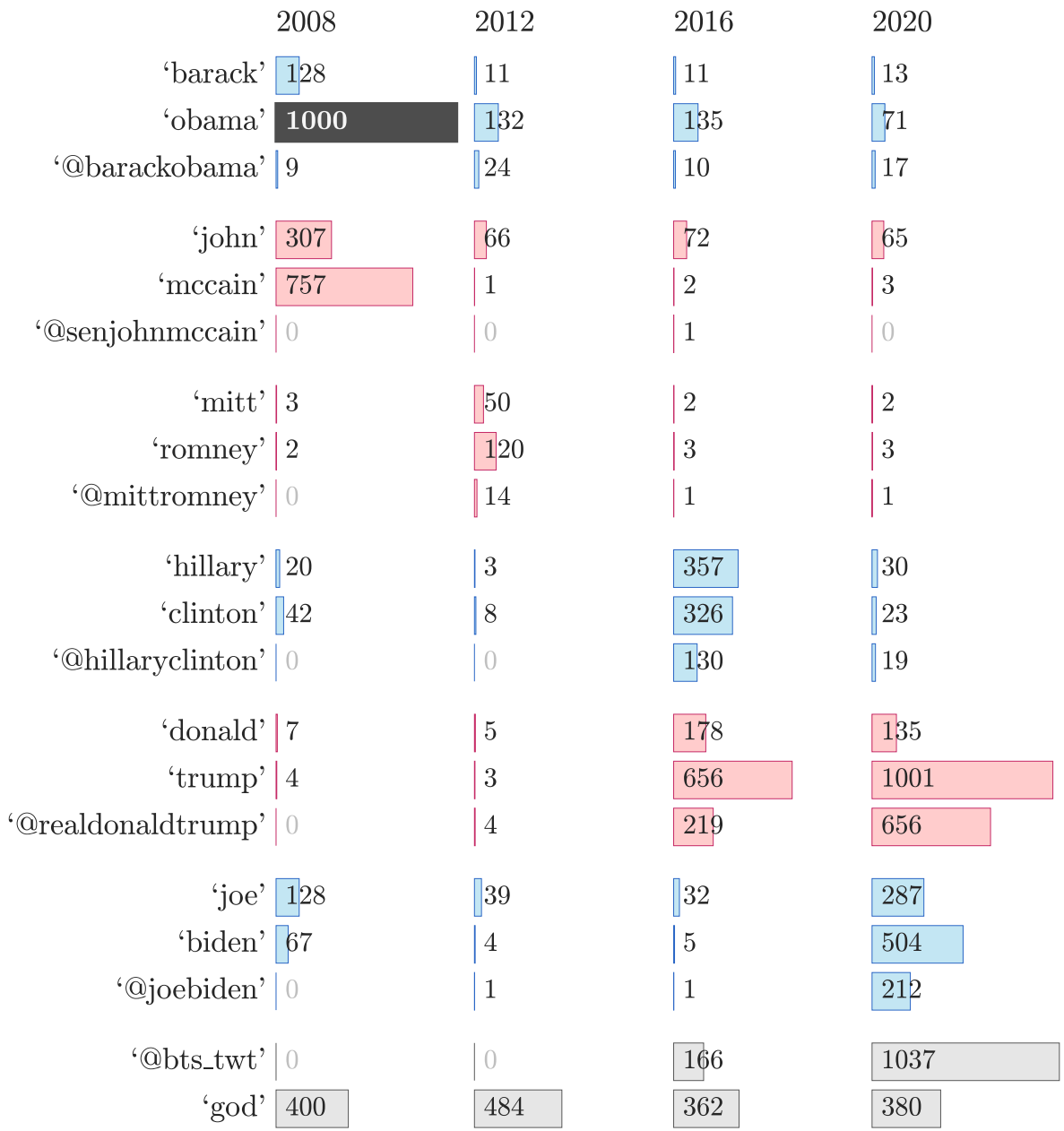


2011 Whitehouse Correspondents' Dinner


$r = 1$
~ 'a'
~ The Realm of Lexical Ultrafame ~
$r \leq r_{\text{god}} = 303$
'@bts_twt'
3 ~ 'to'
highest rank
2018/05/20
'obama'
14 ~ 'me'
highest rank
2008/11/04
'mccain'
31 ~ 'at'
highest rank
2008/09/26
'romney'
33 ~ 'your'
highest rank
2012/11/06
'hillary'
50 ~ 'was'
highest rank
2016/11/08
'trump'
11 ~ 'is'
highest rank
2016/11/09
'biden'
24 ~ 'y'
highest rank
2020/11/07
$r = 10$
~ 'in'
$r = 32$
~ 'are'
$r = 100$
~ 'has'
$r = 316$
~ 'god'
$r = 1{,}000$
~ 'america'
$r = 3{,}162$
~ 'argentina'
$r = 10{,}000$
~ 'spain'
$r = 31{,}623$
~ 'ukraine'
$r = 100{,}000$
~ 'cameroon'
$r = 316{,}228$
~ 'bhutan'
$r = 1{,}000{,}000$
~ 'kiribati'
↑ more talked about
Word Rank r
less talked about ↓
— 'god' level —
101 ~ 'una'
median rank
post 2018/01/01
806 ~ 'hours'
median rank
in 2016
5,065 ~ 'pakistan'
median rank
in 2014
195 ~ 'thank'
median rank
post 2016/10/01
1,720 ~ 'uk'
median rank
4,111 ~ 'mexico'
median rank
post 2016/10/01
20,161 ~ 'uruguay'
lowest rank
2021/12/25
13,407 ~ 'monaco'
median rank
23,829 ~ 'greece'
median rank
pre 2015/12/31
22,046 ~ 'afghanistan'
median rank
pre 2015/12/31
30,652 ~ 'qatar'
median rank
62,673 ~ 'haiti'
median rank
71,445 ~ 'rwanda'
lowest rank
2012/12/25
81,022 ~ 'tanzania'
lowest rank
2013/10/26
274,352 ~ 'nauru'
lowest rank
2011/11/24
342,148 ~ 'bhutan'
lowest rank
2021/11/25
813,435 ~ 'guangxi'
lowest rank
2010/08/15
~ The Lexical Abyss ~
$r \gg 10^5$


Ultrafame—Percentage of days per year ranked above ‘god’
2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021
‘barack’ 1.8% 0.3% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
‘obama’ 54.4% 6.9% 0.5% 0.5% 2.2% 0.3% 0.0% 0.3% 2.2% 2.2% 0.5% 0.0% 0.3% 0.0%
‘@barackobama’ 0.0% 0.0% 0.0% 0.0% 0.5% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
‘john’ 3.5% 0.6% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.3% 0.8% 0.3% 0.5% 0.0%
‘mccain’ 39.5% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.3% 1.1% 0.0% 0.0% 0.0%
‘@senjohnmccain’ 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
‘mitt’ 0.0% 0.0% 0.0% 0.0% 0.8% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
‘romney’ 0.0% 0.0% 0.0% 0.0% 1.6% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.3% 0.0%
‘@mittromney’ 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
‘hillary’ 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 10.4% 0.0% 0.0% 0.0% 0.0% 0.0%
‘clinton’ 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 7.7% 0.0% 0.0% 0.0% 0.0% 0.0%
‘@hillaryclinton’ 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 1.1% 0.0% 0.0% 0.0% 0.0% 0.0%
‘donald’ 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 2.7% 0.5% 0.0% 0.0% 1.6% 0.6%
‘trump’ 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.5% 47.8% 98.6% 93.7% 92.3% 100.0% 10.2%
‘@realdonaldtrump’ 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 2.7% 26.8% 41.4% 62.7% 90.2% 2.2%
‘joe’ 3.5% 2.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 8.2% 0.6%
‘biden’ 1.8% 0.0% 0.0% 0.0% 0.3% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 23.8% 6.1%
‘@joebiden’ 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 4.1% 0.3%
‘@bts_twt’ 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.5% 8.5% 50.7% 100.0% 100.0% 98.9% 93.1%

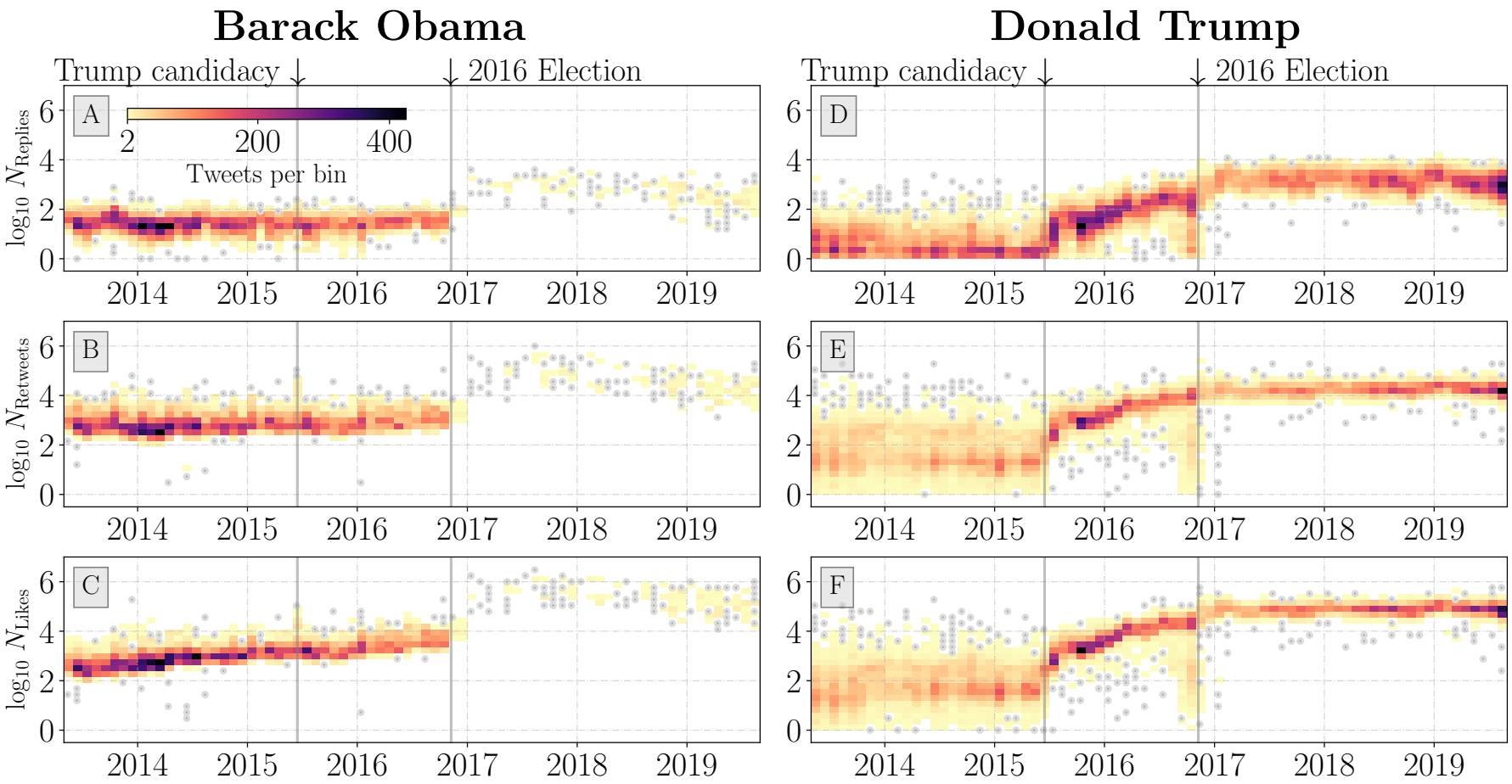
Relative median rates of ‘being talked about’
in the 8 weeks (56 days) pre-election day:



Relative median rates of ‘being talked about’ per year:

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
‘barack’	150	38	17	9	10	7	8	11	14	15	14	14	19	3
‘obama’	897	379	152	87	97	79	91	103	156	160	129	106	104	17
‘@barackobama’	10	8	11	10	17	15	16	13	13	17	17	13	24	5
‘john’	405	274	188	126	117	104	113	121	118	129	128	114	108	82
‘mccain’	579	11	4	2	2	2	1	1	3	15	7	5	3	2
‘@senjohnmccain’	0	2	1	0	0	1	1	1	1	9	2	0	0	0
‘mitt’	5	8	5	6	25	6	5	4	4	2	2	3	3	2
‘romney’	3	1	1	4	42	2	1	1	4	1	1	3	4	1
‘@mittromney’	0	0	0	0	5	0	0	0	1	0	0	1	1	0
‘hillary’	28	10	5	3	3	4	6	30	169	72	61	43	33	6
‘clinton’	62	25	16	10	8	6	8	27	140	65	62	45	32	8
‘@hillaryclinton’	0	0	0	0	0	0	1	11	71	22	19	21	23	3
‘donald’	11	17	11	11	8	6	7	44	166	145	114	104	143	43
‘trump’	7	20	10	7	4	3	3	77	583	1000	865	808	1134	229
‘@realdonaldtrump’	0	0	0	1	2	3	2	32	219	468	555	652	888	1
‘joe’	157	187	138	87	66	58	44	46	50	48	44	78	197	117
‘biden’	72	7	3	1	2	2	2	3	5	3	4	52	284	221
‘@joebiden’	0	0	0	0	0	0	0	0	1	1	2	18	162	28
‘@bts_twt’	0	0	0	0	0	5	36	123	242	595	2487	1802	1440	1437
‘god’	666	851	687	694	791	719	607	616	601	590	612	611	612	510

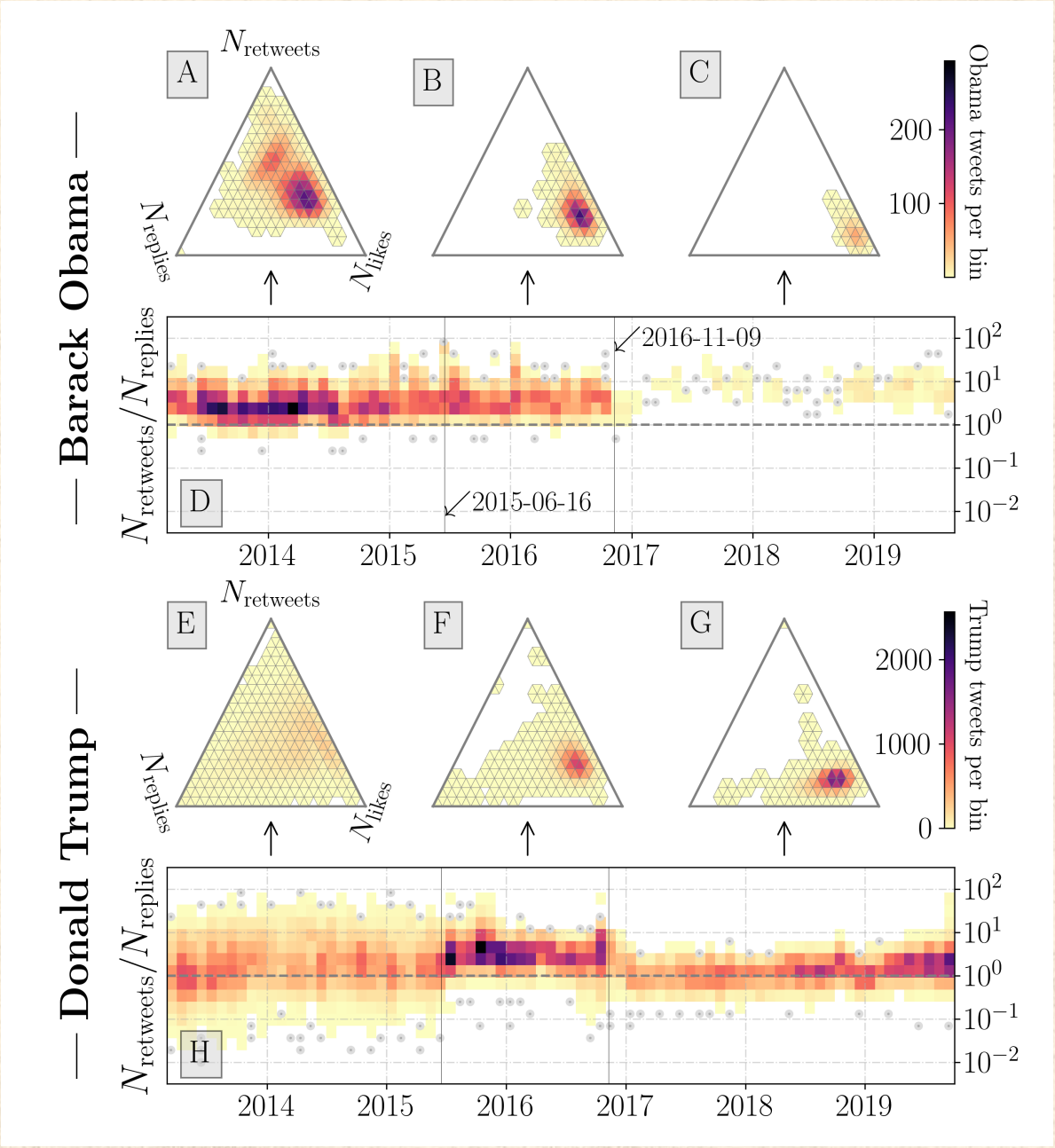
Ratiometrics:



"Ratioing the President: An exploration of public engagement with Obama and Trump on Twitter,"

Minot et al., 2020 [13]

Ratiometrics:



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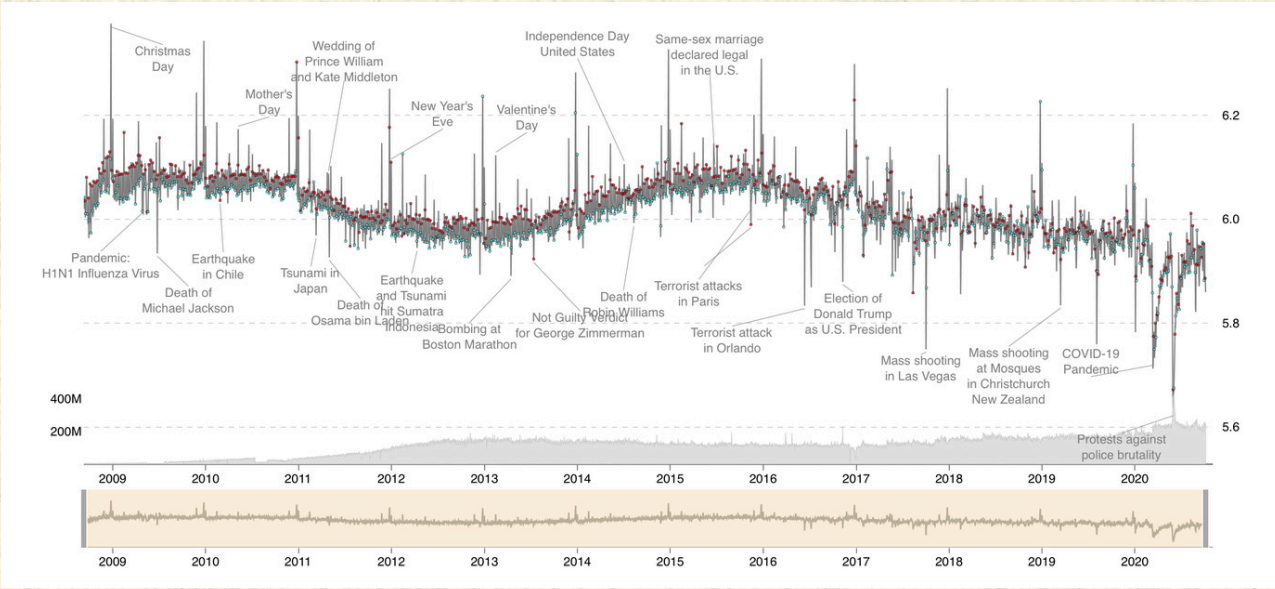
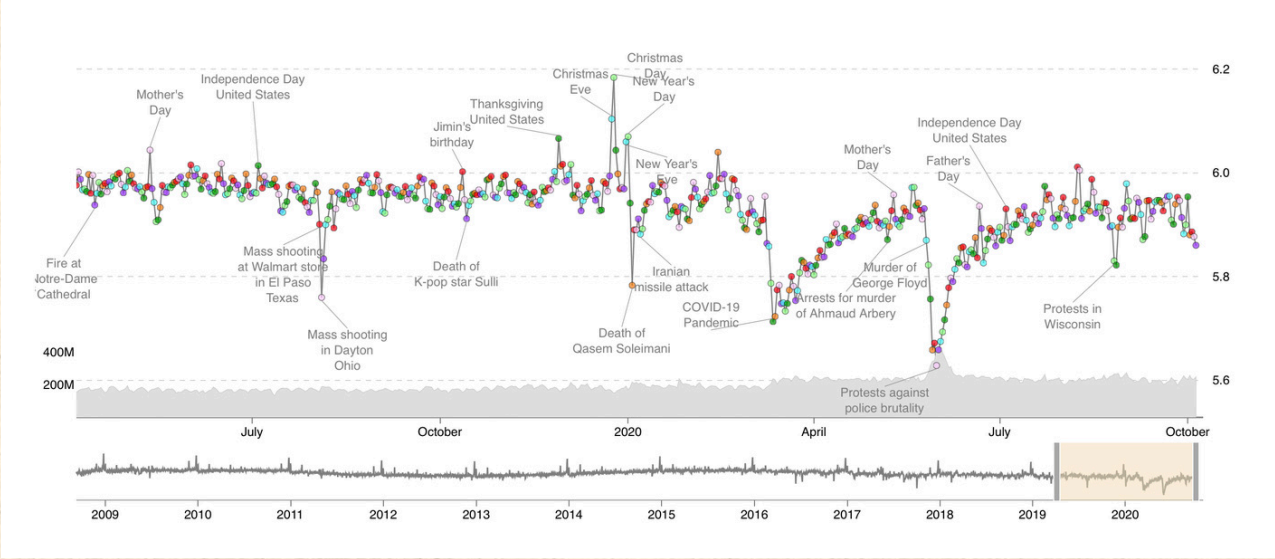
Emotional turbulence:





http://hedonometer.org/

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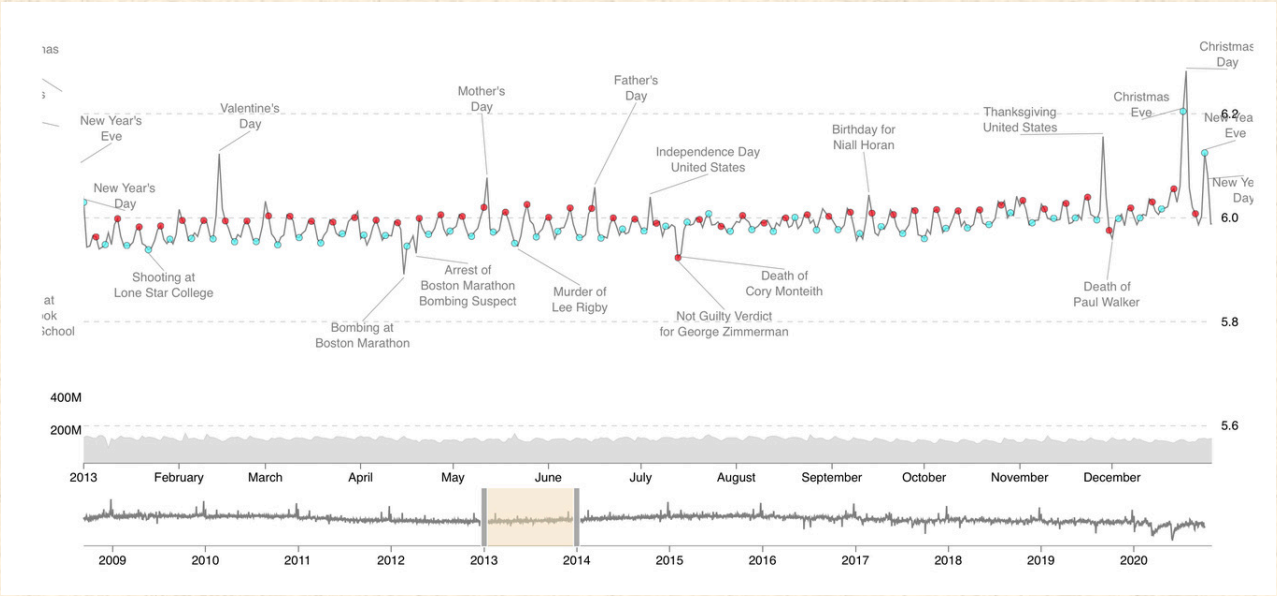

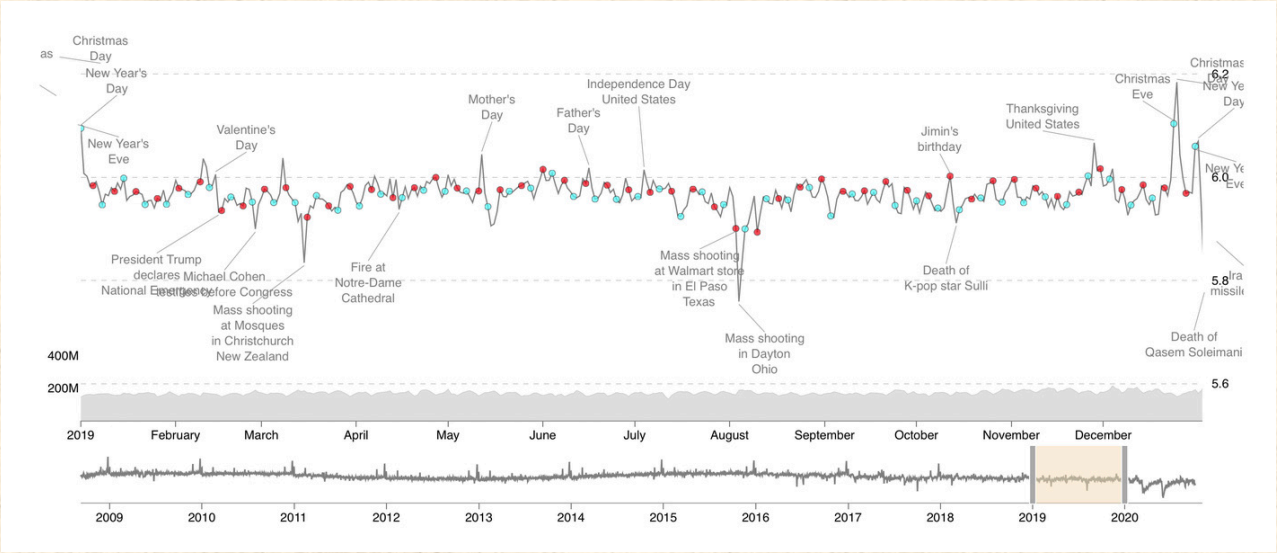

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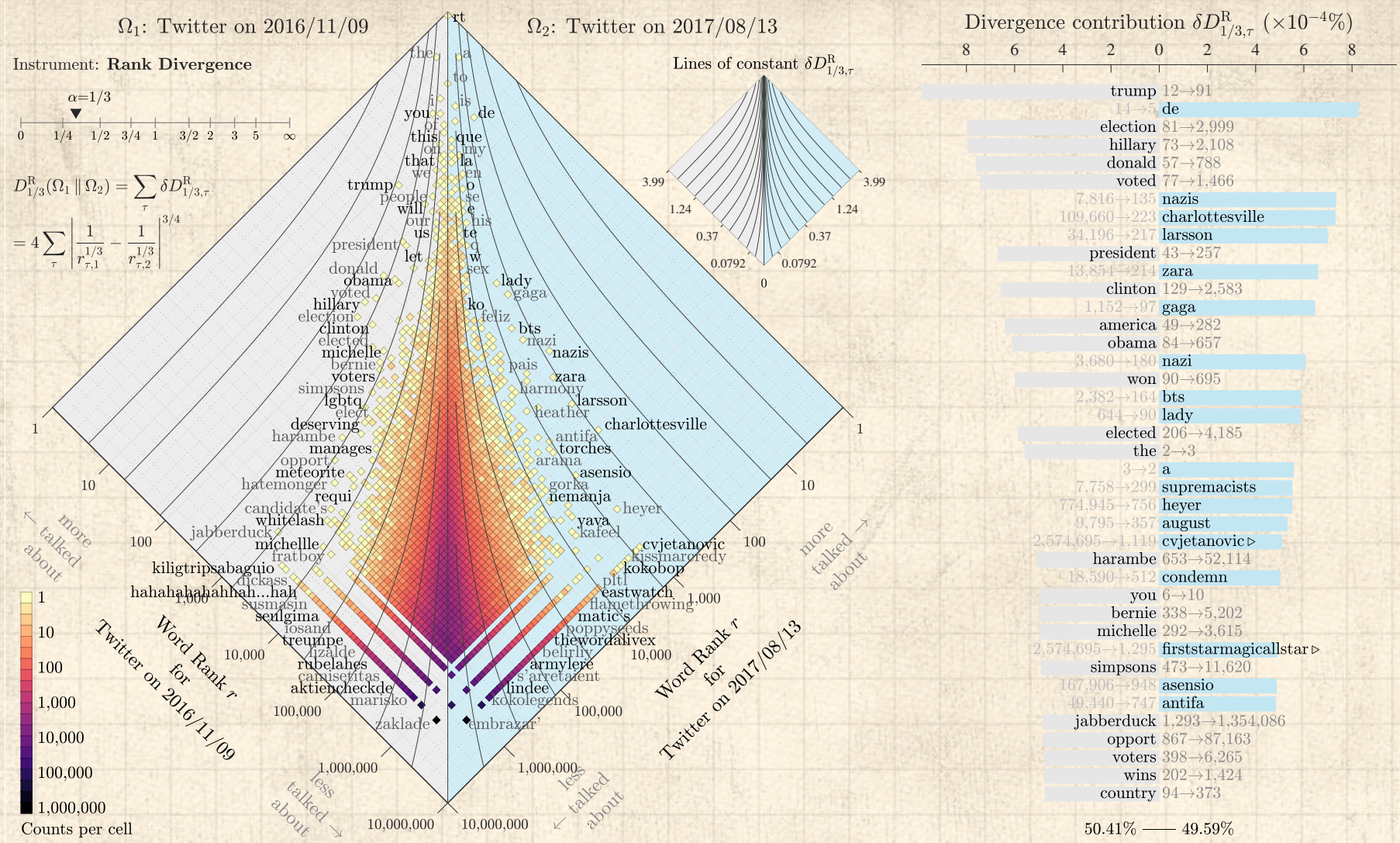
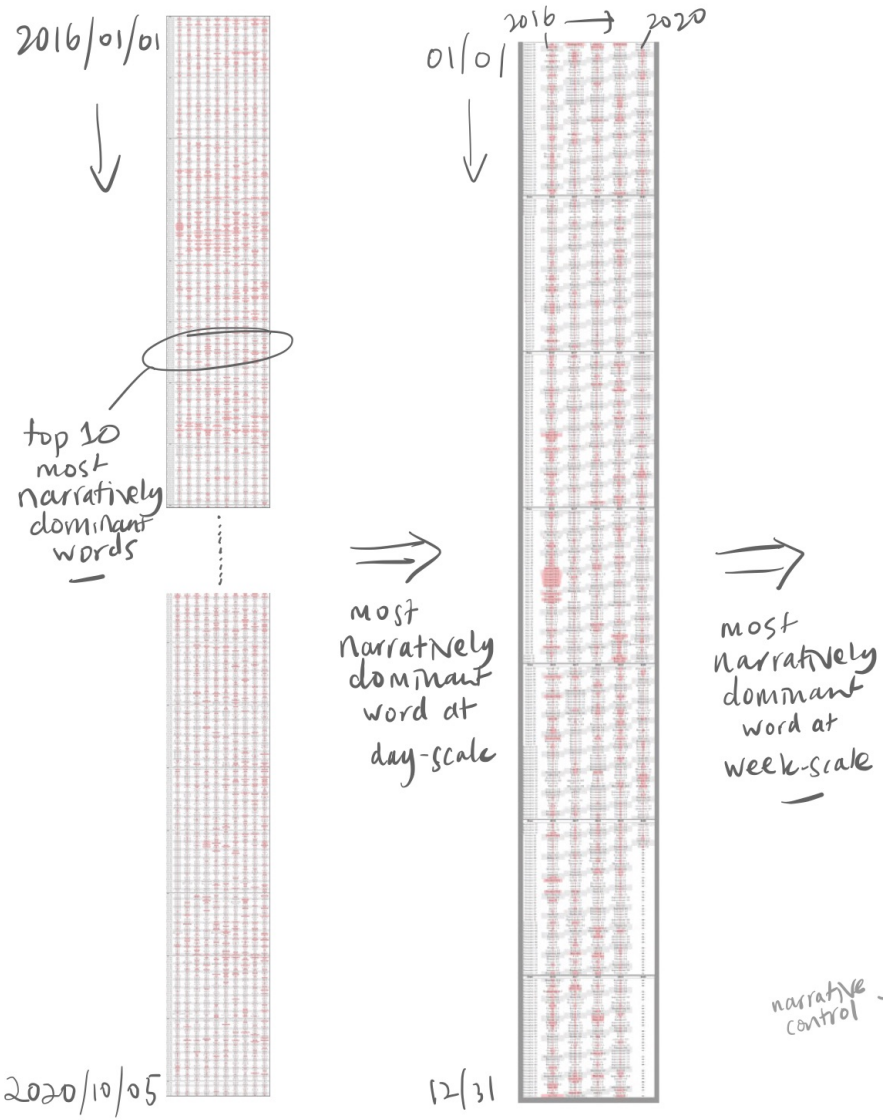


Allotaxonometry—
the comparison of complex systems:

http://compstorylab.org/allotaxonometry/



Week	2016	2017	2018	2019	2020
1. 01/01–01/07	Hillary 34.7	hacking 28.6	Bannon 2.2	shutdown 0.0	Iran 9.6
2. 01/08–01/14	Cruz 1.0	Meryl 5.0	Mueller 0.0	shutdown 0.0	Soleimani 5.9
3. 01/15–01/21	Cruz 10.7	inauguration 0.6	DACA 6.7	Pelosi 6.8	Parnas 0.0
4. 01/22–01/28	Cruz 10.6	inauguration 3.1	Mueller 0.0	Pelosi 2.6	Ukraine 5.5
5. 01/29–02/04	Cruz 11.2	ban 2.1	Mueller 0.0	border 0.0	impeachment 0.0
6. 02/05–02/11	Cruz 5.1	Bannon 0.0	memo 2.3	Whitaker 0.0	Vindman 2.5
7. 02/12–02/18	Cruz 6.9	Flynn 0.0	Mueller 0.0	emergency 0.0	Barr 2.2
8. 02/19–02/25	Rubio 3.8	Sweden 4.9	Parkland 0.3	Jussie 0.0	Bloomberg 6.3
9. 02/26–03/04	Rubio 9.2	Russia 6.4	Mueller 0.0	Cohen 3.7	coronavirus 0.0
10. 03/05–03/11	Cruz 1.0	Russian 4.8	Mueller 0.0	Nadler 13.7	coronavirus 0.0
11. 03/12–03/18	Cruz 5.7	tax 1.8	Mueller 2.2	emergency 1.6	coronavirus 0.0
12. 03/19–03/25	Arizona 16.8	Nunes 0.0	Mueller 2.2	Barr 0.0	coronavirus 0.0
13. 03/26–04/01	women 8.3	Russia 9.9	Stormy 0.0	Schiff 5.2	coronavirus 0.5
14. 04/02–04/08	Cruz 1.5	Russia 2.8	Mueller 0.0	returns 0.0	coronavirus 0.0
15. 04/09–04/15	Cruz 1.7	Syria 0.4	Mueller 2.0	Barr 2.4	coronavirus 0.0
16. 04/16–04/22	Cruz 10.5	Russia 0.5	Mueller 0.1	Barr 0.1	coronavirus 0.0
17. 04/23–04/29	Cruz 3.0	days 0.1	Kanye 8.0	Biden 6.0	coronavirus 0.0
18. 04/30–05/06	Indiana 11.5	Trumpcare 0.0	Mueller 0.0	Barr 0.0	coronavirus 0.0
19. 05/07–05/13	Ryan 2.5	Comey 2.8	Iran 6.6	Barr 0.0	coronavirus 0.0
20. 05/14–05/20	Bernie 25.3	Comey 1.0	ZTE 4.5	Barr 0.0	coronavirus 0.0
21. 05/21–05/27	Clinton 9.5	budget 0.0	Korea 18.2	Barr 0.0	pandemic 0.0
22. 05/28–06/03	Hillary 11.9	Kathy 4.4	Roseanne 4.0	USS 3.0	Minneapolis 32.1
23. 06/04–06/10	Clinton 11.1	Comey 0.8	pardon 0.0	Mexico 27.6	police 4.2
24. 06/11–06/17	Orlando 12.4	Mueller 0.0	Kim 4.1	foreign 2.0	Tulsa 4.5
25. 06/18–06/24	Hillary 23.9	Trumpcare 0.0	children 1.0	Iran 12.9	Tulsa 2.1
26. 06/25–07/01	Clinton 13.0	Russia 5.8	Justice 8.3	Moon 29.9	bounties 0.0
27. 07/02–07/08	Crooked 80.6	CNN 0.7	toddlers 0.0	parade 0.0	Rushmore 2.3
28. 07/09–07/15	Crooked 71.5	Russian 1.2	NATO 13.0	Epstein 0.0	coronavirus 0.0
29. 07/16–07/22	Pence 2.9	Mueller 0.0	Helsinki 3.1	racist 0.8	coronavirus 0.0
30. 07/23–07/29	DNC 6.1	Scouts 0.0	Cohen 0.0	Baltimore 13.6	Portland 11.8
31. 07/30–08/05	Khan 6.5	Mueller 0.0	LeBron 0.7	Baltimore 9.4	pandemic 0.0
32. 08/06–08/12	Crooked 55.2	Korea 5.8	Omarosa 0.4	Paso 7.6	USPS 0.0
33. 08/13–08/19	Manafort 0.0	Charlottesville 1.5	Omarosa 9.5	Greenland 6.9	USPS 0.0
34. 08/20–08/26	Clinton 7.6	Charlottesville 3.8	Cohen 2.7	Greenland 8.0	Biden 6.6
35. 08/27–09/02	Crooked 57.4	Harvey 0.0	Ohr 14.0	Dorian 12.2	Kenosha 9.5
36. 09/03–09/09	Bondi 0.0	DACA 2.4	Kavanaugh 2.1	Dorian 12.6	Atlantic 4.8
37. 09/10–09/16	deplorable 0.0	ESPN 2.7	Puerto 7.5	flavored 0.0	Woodward 2.6
38. 09/17–09/23	Clinton 6.5	Kim 4.9	Kavanaugh 1.7	Ukraine 4.5	coronavirus 0.0
39. 09/24–09/30	debate 4.9	Puerto 4.7	Kavanaugh 9.5	Ukraine 6.8	ballots 0.7
40. 10/01–10/07	Pence 4.9	Puerto 2.1	Kavanaugh 6.8	Ukraine 5.1	Covid 0.0
41. 10/08–10/14	sexual 0.3	Puerto 1.8	Kavanaugh 4.3	Kurds 8.2	
42. 10/15–10/21	rigged 10.1	Puerto 0.2	Saudi 5.3	Kurds 3.7	
43. 10/22–10/28	star 0.0	Mueller 0.0	caravan 0.0	impeachment 0.0	
44. 10/29–11/04	FBI 5.9	Mueller 0.0	caravan 0.0	impeachment 0.0	
45. 11/05–11/11	Clinton 0.9	Gillespie 12.0	Whitaker 6.2	Ukraine 6.2	
46. 11/12–11/18	Bannon 0.0	sexual 1.7	caravan 0.0	Ukraine 5.2	
47. 11/19–11/25	Hamilton 12.4	LaVar 21.3	Saudi 1.6	Ukraine 3.5	
48. 11/26–12/02	recount 0.0	Moore 0.0	Moscow 0.1	impeachment 3.1	
49. 12/03–12/09	Taiwan 7.8	Mueller 0.0	Cohen 2.1	impeachment 0.0	
50. 12/10–12/16	Russia 2.9	Mueller 0.0	Cohen 6.9	impeachment 0.0	
51. 12/17–12/23	inauguration 11.8	Mueller 0.0	wall 9.8	impeachment 1.4	
52. 12/24–12/31	inauguration 3.2	Mueller 0.0	wall 20.4	impeachment 7.6	

http://compstorylab.org/trumpstoryturbulence/

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1. 01/01–01/07	Hillary 34.7	hacking 28.6	Bannon 2.2	shutdown 0.0	Iran 9.6	Georgia 14.7
2. 01/08–01/14	Cruz 1.0	Meryl 5.0	Mueller 0.0	shutdown 0.0	Soleimani 5.9	Capitol 0.1
3. 01/15–01/21	Cruz 10.7	inauguration 0.6	DACA 6.7	Pelosi 6.8	Parnas 0.0	Capitol 0.0
4. 01/22–01/28	Cruz 10.6	inauguration 3.1	Mueller 0.0	Pelosi 2.6	Ukraine 5.5	insurrection 0.0
5. 01/29–02/04	Cruz 11.2	ban 2.1	Mueller 0.0	border 0.0	impeachment 0.0	Greene 0.0
6. 02/05–02/11	Cruz 5.1	Bannon 0.0	memo 2.3	Whitaker 0.0	Vindman 2.5	insurrection 0.0
7. 02/12–02/18	Cruz 6.9	Flynn 0.0	Mueller 0.0	emergency 0.0	Barr 2.2	Capitol 0.0
8. 02/19–02/25	Rubio 3.8	Sweden 4.9	Parkland 0.3	Jussie 0.0	Bloomberg 6.3	Capitol 0.0
9. 02/26–03/04	Rubio 9.2	Russia 6.4	Mueller 0.0	Cohen 3.7	coronavirus 0.0	Capitol 0.0
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12. 03/19–03/25	Arizona 16.8	Nunes 0.0	Mueller 2.2	Barr 0.0	coronavirus 0.0	Biden 0.0
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14. 04/02–04/08	Cruz 1.5	Russia 2.8	Mueller 0.0	returns 0.0	coronavirus 0.0	Matt 0.0
15. 04/09–04/15	Cruz 1.7	Syria 0.4	Mueller 2.0	Barr 2.4	coronavirus 0.0	Capitol 0.0
16. 04/16–04/22	Cruz 10.5	Russia 0.5	Mueller 0.1	Barr 0.1	coronavirus 0.0	Capitol 0.0
17. 04/23–04/29	Cruz 3.0	days 0.1	Kanye 8.0	Biden 6.0	coronavirus 0.0	audit 0.0
18. 04/30–05/06	Indiana 11.5	Trumpcare 0.0	Mueller 0.0	Barr 0.0	coronavirus 0.0	Cheney 0.0
19. 05/07–05/13	Ryan 2.5	Comey 2.8	Iran 6.6	Barr 0.0	coronavirus 0.0	Cheney 0.0
20. 05/14–05/20	Bernie 25.3	Comey 1.0	ZTE 4.5	Barr 0.0	coronavirus 0.0	Cheney 0.0
21. 05/21–05/27	Clinton 9.5	budget 0.0	Korea 18.2	Barr 0.0	pandemic 0.0	Weisselberg 0.0
22. 05/28–06/03	Hillary 11.9	Kathy 4.4	Roseanne 4.0	USS 3.0	Minneapolis 32.1	reinstated 0.0
23. 06/04–06/10	Clinton 11.1	Comey 0.8	pardon 0.0	Mexico 27.6	police 4.2	McGahn 0.0
24. 06/11–06/17	Orlando 12.4	Mueller 0.0	Kim 4.1	foreign 2.0	Tulsa 4.5	DOJ 0.0
25. 06/18–06/24	Hillary 23.9	Trumpcare 0.0	children 1.0	Iran 12.9	Tulsa 2.1	Capitol 0.0
26. 06/25–07/01	Clinton 13.0	Russia 5.8	Justice 8.3	Moon 29.9	bounties 0.0	Organization 0.0
27. 07/02–07/08	Crooked 80.6	CNN 0.7	toddlers 0.0	parade 0.0	Rushmore 2.3	Weisselberg 0.0
28. 07/09–07/15	Crooked 71.5	Russian 1.2	NATO 13.0	Epstein 0.0	coronavirus 0.0	CPAC 0.0
29. 07/16–07/22	Pence 2.9	Mueller 0.0	Helsinki 3.1	racist 0.8	coronavirus 0.0	vaccinated 0.0
30. 07/23–07/29	DNC 6.1	Scouts 0.0	Cohen 0.0	Baltimore 13.6	Portland 11.8	Jan 0.0
31. 07/30–08/05	Khan 6.5	Mueller 0.0	LeBron 0.7	Baltimore 9.4	pandemic 0.0	Capitol 0.0
32. 08/06–08/12	Crooked 55.2	Korea 5.8	Omarosa 0.4	Paso 7.6	USPS 0.0	Rosen 0.0
33. 08/13–08/19	Manafort 0.0	Charlottesville 1.5	Omarosa 9.5	Greenland 6.9	USPS 0.0	Taliban 0.0
34. 08/20–08/26	Clinton 7.6	Charlottesville 3.8	Cohen 2.7	Greenland 8.0	Biden 6.6	Taliban 0.0
35. 08/27–09/02	Crooked 57.4	Harvey 0.0	Ohr 14.0	Dorian 12.2	Kenosha 9.5	Taliban 0.0
36. 09/03–09/09	Bondi 0.0	DACA 2.4	Kavanaugh 2.1	Dorian 12.6	Atlantic 4.8	Afghanistan 0.0
37. 09/10–09/16	deplorable 0.0	ESPN 2.7	Puerto 7.5	flavored 0.0	Woodward 2.6	Milley 0.0
38. 09/17–09/23	Clinton 6.5	Kim 4.9	Kavanaugh 1.7	Ukraine 4.5	coronavirus 0.0	Eastman 0.0
39. 09/24–09/30	debate 4.9	Puerto 4.7	Kavanaugh 9.5	Ukraine 6.8	ballots 0.7	audit 0.0
40. 10/01–10/07	Pence 4.9	Puerto 2.1	Kavanaugh 6.8	Ukraine 5.1	Covid 1.4	Bannon 0.0
41. 10/08–10/14	sexual 0.3	Puerto 1.8	Kavanaugh 4.3	Kurds 8.2	COVID 1.4	Jan 0.0
42. 10/15–10/21	rigged 10.1	Puerto 0.2	Saudi 5.3	Kurds 3.7	Biden 8.2	Powell 0.0
43. 10/22–10/28	star 0.0	Mueller 0.0	caravan 0.0	impeachment 0.0	Biden 9.2	Jan 0.0
44. 10/29–11/04	FBI 5.9	Mueller 0.0	caravan 0.0	impeachment 0.0	Biden 10.0	Youngkin 0.0
45. 11/05–11/11	Clinton 0.9	Gillespie 12.0	Whitaker 6.2	Ukraine 6.2	votes 3.4	infrastructure 0.0
46. 11/12–11/18	Bannon 0.0	sexual 1.7	caravan 0.0	Ukraine 5.2	Dominion 23.2	Christie 0.0
47. 11/19–11/25	Hamilton 12.4	LaVar 21.3	Saudi 1.6	Ukraine 3.5	Sidney 0.1	Rittenhouse 0.0
48. 11/26–12/02	recount 0.0	Moore 0.0	Moscow 0.1	impeachment 3.1	votes 24.1	Waukesha 0.0
49. 12/03–12/09	Taiwan 7.8	Mueller 0.0	Cohen 2.1	impeachment 0.0	Georgia 20.2	Meadows 0.0
50. 12/10–12/16	Russia 2.9	Mueller 0.0	Cohen 6.9	impeachment 0.0	vaccine 11.1	Meadows 0.0
51. 12/17–12/23	inauguration 11.8	Mueller 0.0	wall 9.8	impeachment 1.4	vaccine 15.4	Manchin 0.0
52. 12/24–12/31	inauguration 3.2	Mueller 0.0	wall 20.4	impeachment 7.6	Election 60.2	Brandon 0.0

Week	2016	2017	2018	2019	2020	2021
1. 01/01–01/07	Hillary Clinton 32.7	plant in 85.1	Steve Bannon 5.7	the government 0.0	a war 6.6	in Georgia 20.2
2. 01/08–01/14	Trump rally 0.0	Meryl Streep 6.6	shithole countries 0.0	the border 1.0	impeachment trial 0.0	the Capitol 0.0
3. 01/15–01/21	Ted Cruz 26.0	Trump's inauguration 0.0	the government 1.4	Cohen to 0.0	impeachment trial 0.0	the Capitol 0.0
4. 01/22–01/28	Megyn Kelly 4.9	executive order 0.0	the FBI 5.6	the government 0.0	impeachment trial 0.0	the Capitol 0.0
5. 01/29–02/04	Ted Cruz 19.7	travel ban 1.6	the FBI 9.4	Ralph Northam 26.0	impeachment trial 0.0	the Capitol 0.0
6. 02/05–02/11	New Hampshire 19.5	travel ban 1.1	military parade 0.0	El Paso 4.7	Alexander Vindman 0.0	the Capitol 0.0
7. 02/12–02/18	Ted Cruz 15.7	Michael Flynn 0.0	school shooting 3.1	national emergency 0.0	Roger Stone 4.0	the Capitol 0.0
8. 02/19–02/25	Ted Cruz 30.1	Trump administration 0.0	the NRA 0.0	Jussie Smollett 0.0	Bernie Sanders 13.6	the Capitol 0.0
9. 02/26–03/04	vote for 4.4	to Russia 22.0	Hope Hicks 0.0	Michael Cohen 5.3	the coronavirus 0.0	the Capitol 0.0
10. 03/05–03/11	Ted Cruz 2.4	travel ban 0.0	Stormy Daniels 0.0	Tim Apple 0.0	the coronavirus 0.0	voted for 0.0
11. 03/12–03/18	Trump is 0.1	Meals on 0.0	Stormy Daniels 0.0	New Zealand 17.9	the coronavirus 0.0	Lara Trump 0.0
12. 03/19–03/25	Lyin' Ted 66.2	health care 0.0	Cambridge Analytica 0.0	Mueller report 0.0	the coronavirus 0.0	the border 0.0
13. 03/26–04/01	Trump is 0.0	Freedom Caucus 20.8	Stormy Daniels 0.0	Mueller report 0.0	the coronavirus 0.0	Matt Gaetz 0.0
14. 04/02–04/08	Ted Cruz 3.9	Susan Rice 0.3	National Guard 0.0	tax returns 0.0	the coronavirus 0.0	Matt Gaetz 0.0
15. 04/09–04/15	New York 19.3	in Syria 0.2	Michael Cohen 0.0	sanctuary cities 5.3	the coronavirus 0.0	Matt Gaetz 0.0
16. 04/16–04/22	Ted Cruz 28.1	turnout for 0.0	Michael Cohen 2.4	Mueller report 0.0	the coronavirus 0.0	Maxine Waters 0.0
17. 04/23–04/29	Trump rally 0.0	tax plan 0.0	the Korean 0.0	Mueller report 0.0	the coronavirus 0.0	Liz Cheney 0.0
18. 04/30–05/06	Ted Cruz 5.5	health care 0.0	Stormy Daniels 0.0	Mueller report 0.0	treated worse 0.0	Liz Cheney 0.0
19. 05/07–05/13	Paul Ryan 2.0	James Comey 6.7	the Iran 9.0	tax returns 0.0	tested positive 0.0	Liz Cheney 0.0
20. 05/14–05/20	Hillary Clinton 26.5	Saudi Arabia 12.5	are animals 0.0	Lindsey Graham 0.0	the pandemic 0.0	Kevin McCarthy 0.0
21. 05/21–05/27	Hillary Clinton 24.8	Saudi Arabia 8.2	the FBI 23.3	Nancy Pelosi 12.5	a mask 6.3	the January 0.0
22. 05/28–06/03	Trump University 3.4	Kathy Griffin 5.7	Samantha Bee 4.4	John McCain 0.0	photo op 0.0	Memorial Day 0.0
23. 06/04–06/10	Hillary Clinton 18.6	James Comey 0.2	Justin Trudeau 8.5	with Mexico 39.2	Left Democrats 75.1	Jean Carroll 0.0
24. 06/11–06/17	Trump is 0.0	obstruction of 12.6	their parents 0.0	the FBI 8.5	in Tulsa 7.4	Trump DOJ 0.0
25. 06/18–06/24	Hillary Clinton 20.6	Karen Handel 16.6	their parents 3.4	need soap 0.0	in Tulsa 2.2	the Capitol 0.0
26. 06/25–07/01	Hillary Clinton 20.5	Fake News 37.6	Supreme Court 3.7	Jean Carroll 0.0	American soldiers 0.0	Trump Organization 0.0
27. 07/02–07/08	Crooked Hillary 82.8	North Korea 28.6	Trump administration 0.0	Jeffrey Epstein 0.0	Mount Rushmore 3.9	Ashli Babbitt 0.0
28. 07/09–07/15	Crooked Hillary 73.3	Trump Jr 0.0	Supreme Court 7.9	Jeffrey Epstein 0.0	Roger Stone 0.0	the Capitol 0.0
29. 07/16–07/22	Mike Pence 6.8	Secret Service 0.0	in Helsinki 1.7	a racist 0.0	in Portland 0.0	Tom Barrack 0.0
30. 07/23–07/29	Crooked Hillary 79.6	Boy Scouts 0.0	Walk of 0.0	Elijah Cummings 27.2	in Portland 8.9	the Capitol 0.0
31. 07/30–08/05	Khizr Khan 0.0	Maxine Waters 0.0	enemy of 22.2	El Paso 11.1	the election 3.4	the Capitol 0.0
32. 08/06–08/12	Hillary Clinton 10.5	North Korea 5.7	Space Force 11.1	El Paso 7.7	Social Security 0.0	overturn the 0.0
33. 08/13–08/19	Trump campaign 0.0	white supremacists 0.0	security clearance 0.0	New Hampshire 26.5	the USPS 0.0	the Taliban 0.0
34. 08/20–08/26	Hillary Clinton 19.1	Joe Arpaio 3.5	Michael Cohen 4.3	Prime Minister 28.7	Joe Biden 5.9	the Taliban 0.0
35. 08/27–09/02	Crooked Hillary 61.8	Hurricane Harvey 0.1	John McCain 0.2	Hurricane Dorian 9.6	Joe Biden 2.7	the Taliban 0.0
36. 09/03–09/09	in Detroit 0.0	to end 0.0	Brett Kavanaugh 7.6	the Taliban 3.0	Joe Biden 3.4	Robert E 0.0
37. 09/10–09/16	tax returns 0.0	white supremacist 0.0	Puerto Rico 8.4	Dan Bishop 37.7	Joe Biden 13.3	the Taliban 0.0
38. 09/17–09/23	Trump Jr 0.0	North Korea 12.8	Blasey Ford 0.0	a foreign 6.4	Supreme Court 7.3	to overturn 0.0
39. 09/24–09/30	Hillary Clinton 7.5	Puerto Rico 5.2	Brett Kavanaugh 15.7	impeachment inquiry 0.0	Supreme Court 5.7	debt ceiling 0.0
40. 10/01–10/07	Mike Pence 8.9	Puerto Rico 2.6	Supreme Court 6.9	Adam Schiff 13.3	Walter Reed 5.7	the debt 0.0
41. 10/08–10/14	sexual assault 0.0	Puerto Rico 2.2	Kanye West 0.0	the Kurds 11.3	Biden is 26.5	the January 0.0
42. 10/15–10/21	Hillary Clinton 19.9	families of 0.0	Saudi Arabia 6.6	the Kurds 3.8	Joe Biden 12.1	the January 0.0
43. 10/22–10/28	Hillary Clinton 11.7	Myeshia Johnson 0.0	the bombs 0.0	World Series 0.0	Joe Biden 10.1	Alec Baldwin 0.0
44. 10/29–11/04	Hillary Clinton 6.5	Twitter employee 0.0	birthright citizenship 0.0	the impeachment 0.0	Joe Biden 12.6	in Virginia 0.0
45. 11/05–11/11	Trump wins 0.0	mental health 0.0	Jim Acosta 0.0	pro quo 8.1	the election 2.2	infrastructure bill 0.0
46. 11/12–11/18	Steve Bannon 0.0	ban on 0.0	president who 0.0	impeachment inquiry 0.0	the election 7.5	Chris Christie 0.0
47. 11/19–11/25	Mike Pence 24.3	Roy Moore 0.0	Saudi Arabia 2.5	quid pro 1.3	the election 6.7	Kyle Rittenhouse 0.0
48. 11/26–12/02	popular vote 17.4	Native American 0.1	Trump Tower 2.5	Hong Kong 0.0	voter fraud 32.2	Donald Trump 0.0
49. 12/03–12/09	Air Force 18.2	Roy Moore 3.5	campaign finance 0.0	to impeach 7.7	in Georgia 12.9	Donald Trump 0.0
50. 12/10–12/16	of State 7.6	of sexual 0.0	Michael Cohen 7.8	articles of 0.0	the election 9.0	Mark Meadows 0.0
51. 12/17–12/23	Electoral College 5.8	tax bill 0.0	the wall 13.7	Christianity Today 8.1	election fraud 13.9	the Capitol 0.0

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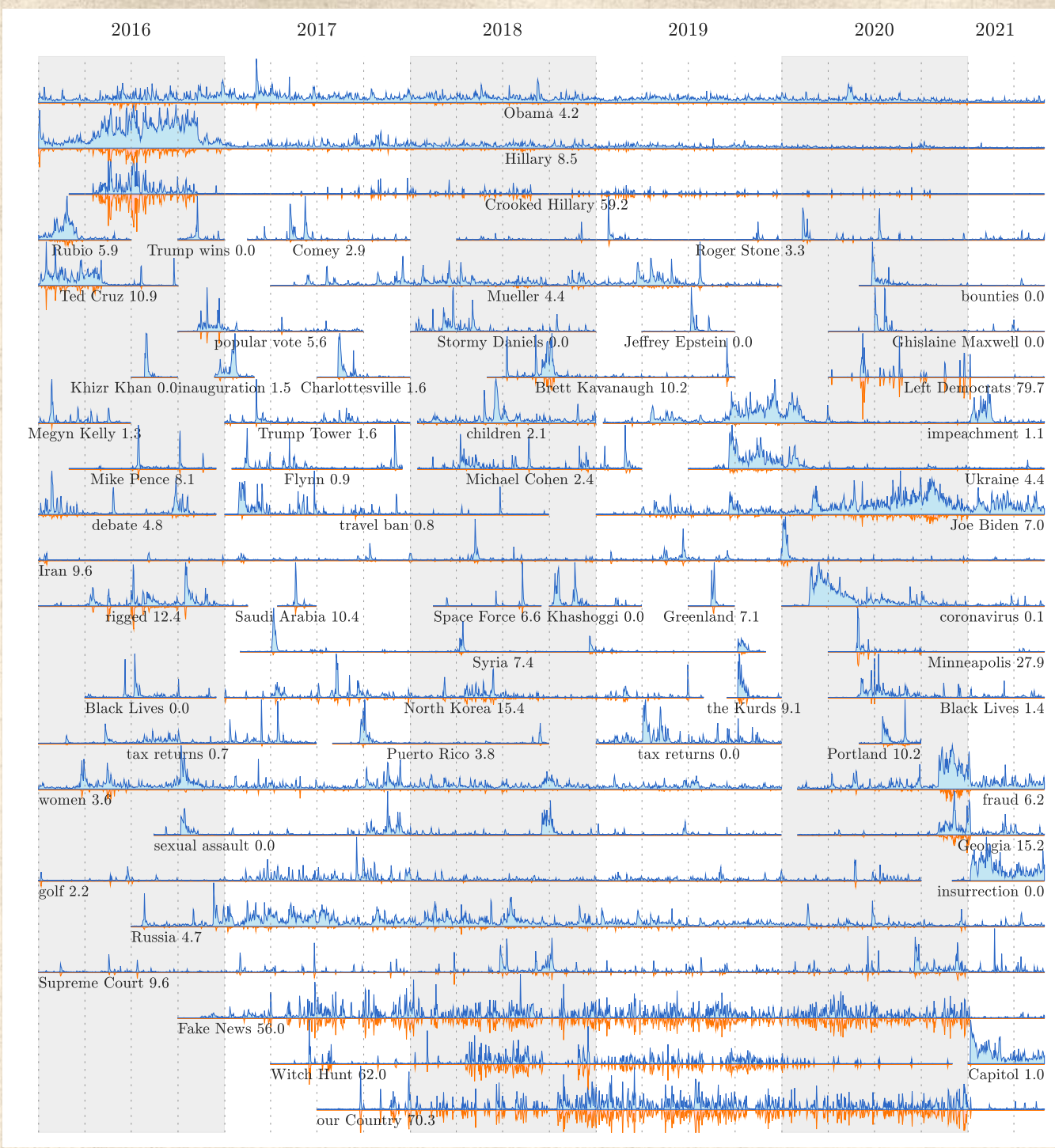

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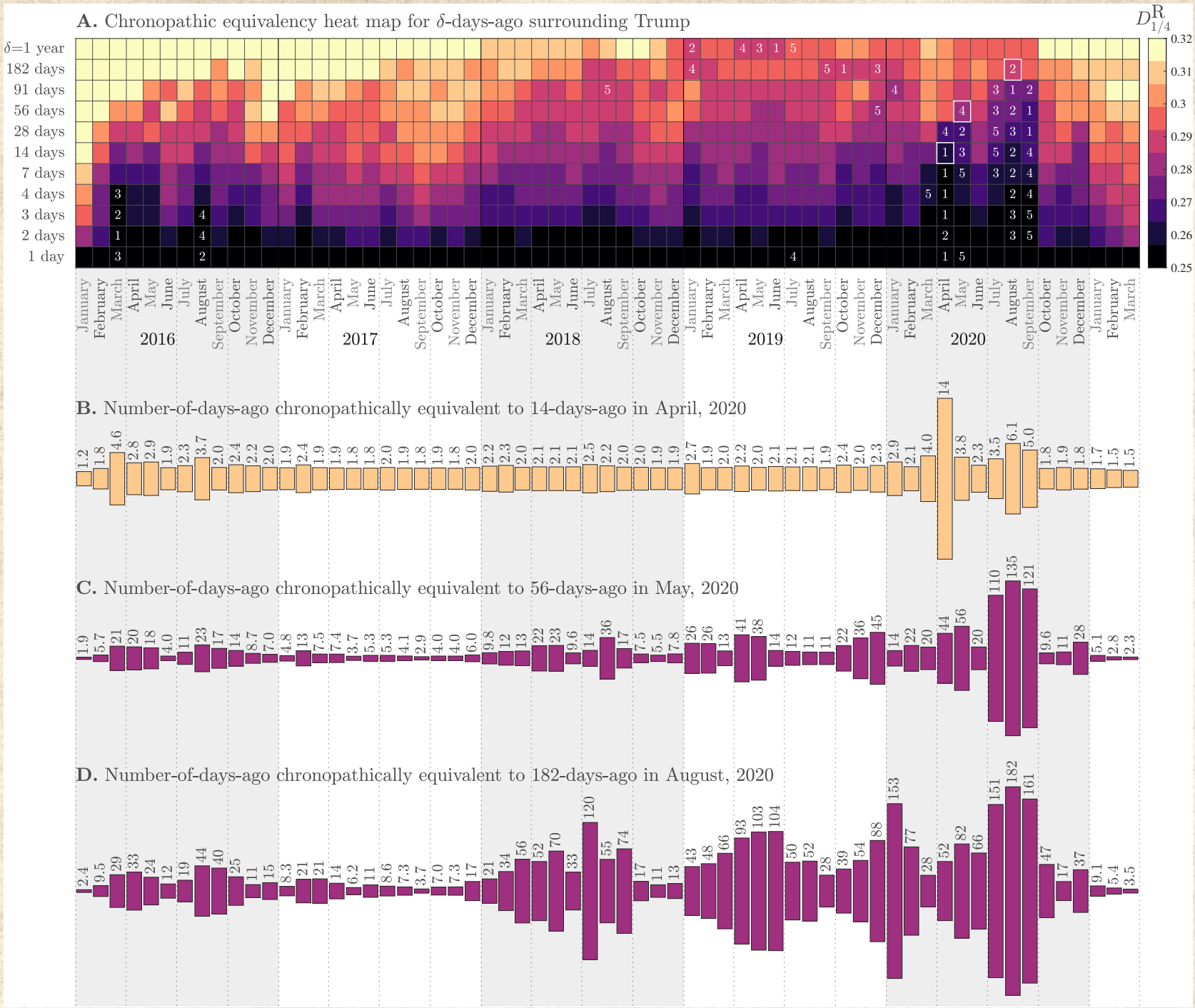
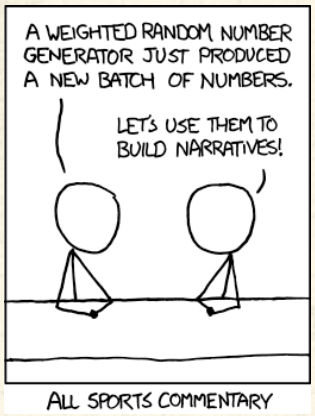

A. Chronopathic equivalency heat map for δ-days-ago surrounding Trump
$D^{R}_{1/4}$
0.32
0.31
0.3
0.29
0.28
0.27
0.26
0.25
δ=1 year
182 days
91 days
56 days
28 days
14 days
7 days
4 days
3 days
2 days
1 day
January February March April May June July August September October November December
2016
2017
2018
2019
2020
B. Number-of-days-ago chronopathically equivalent to 14-days-ago in April, 2020
C. Number-of-days-ago chronopathically equivalent to 56-days-ago in May, 2020
D. Number-of-days-ago chronopathically equivalent to 182-days-ago in August, 2020

Understanding the Sociotechnocene—Stories:



xkcd.com/904/

- Toward a Science of Stories.
- Claim: Homo narrativus—we run on stories.
- "What's the John Dory?"
- "They've lost the plot/thread"
- Narrative hierarchies and scalability of stories.
- Research: Real-time and offline extraction of metaphors, frames, plots, narratives, conspiracy theories, and stories from large-scale text.
- Research: The taxonomy of human stories.
- To be built: Storyscopes—improvable, online, interactive instruments.

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ding!

On Instagram at pratchett_the_cat

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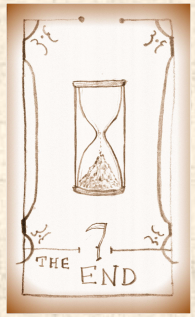
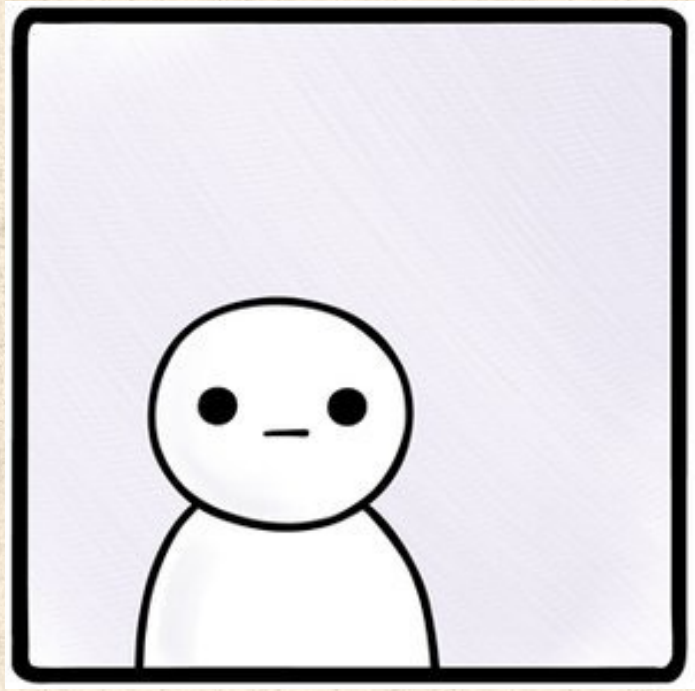


Theories bloom in darkness



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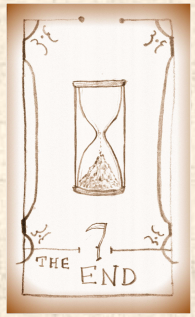

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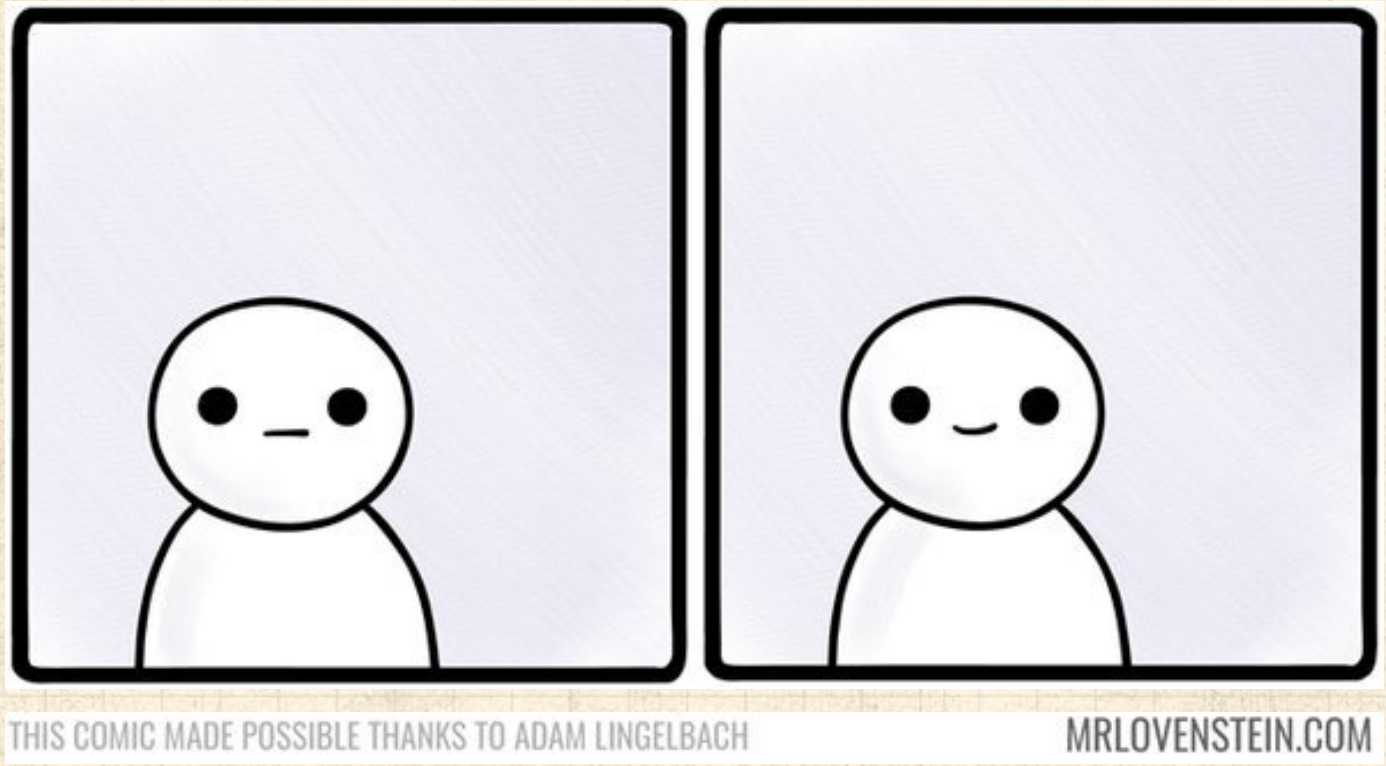

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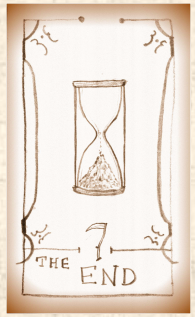

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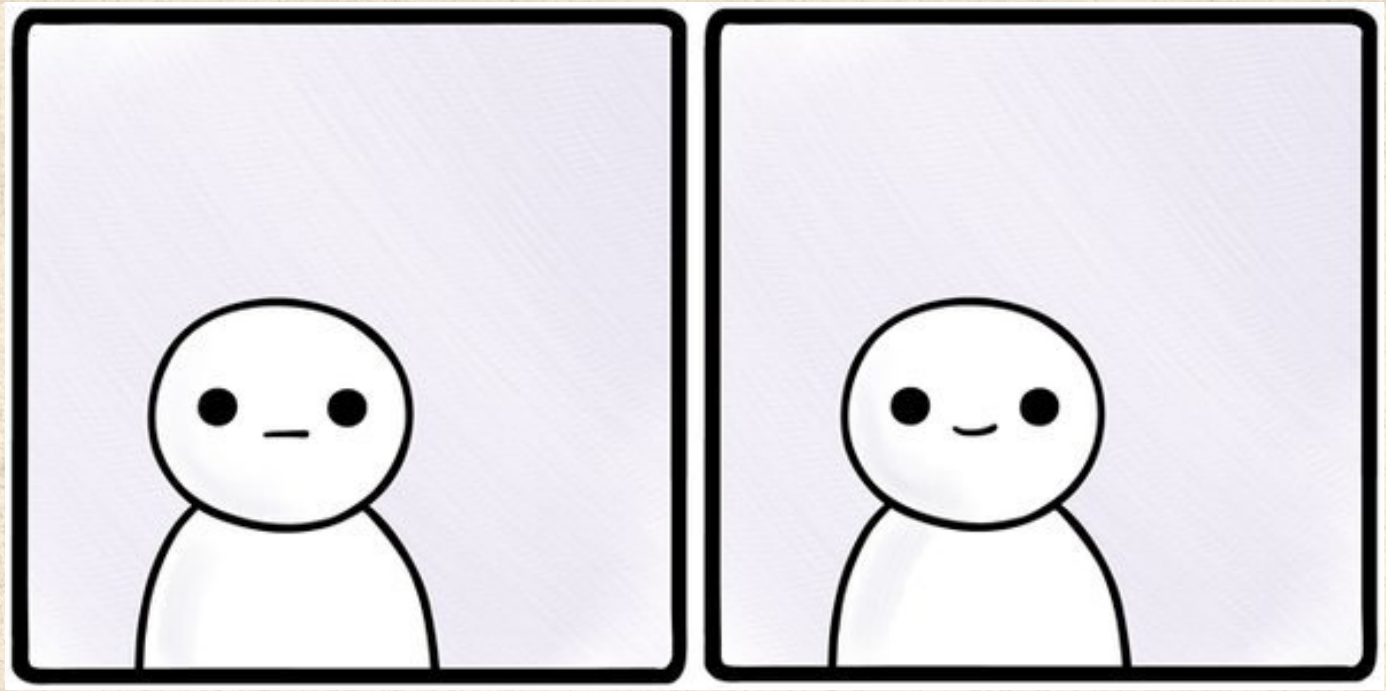

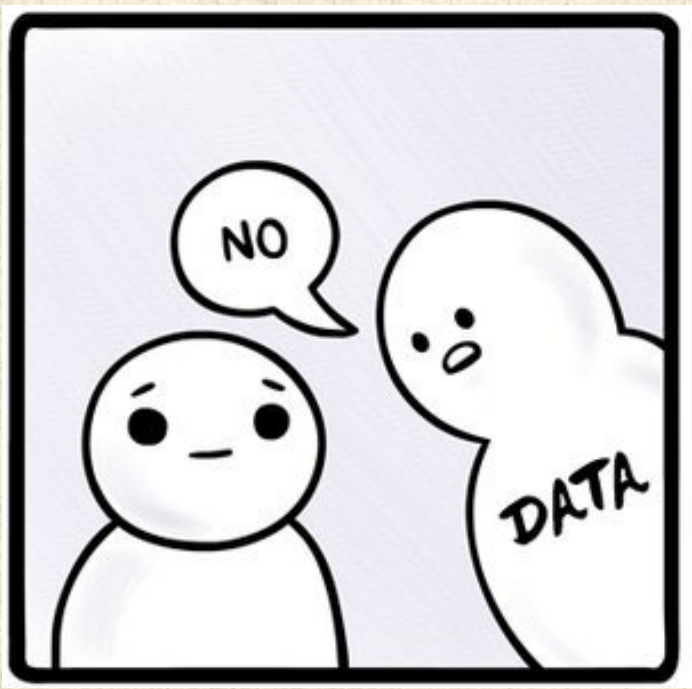

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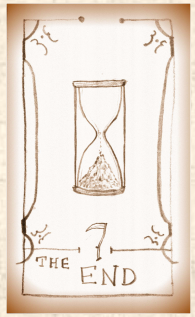

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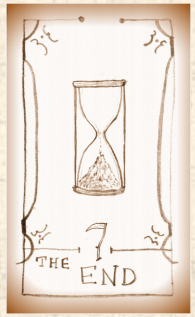

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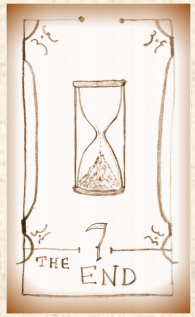
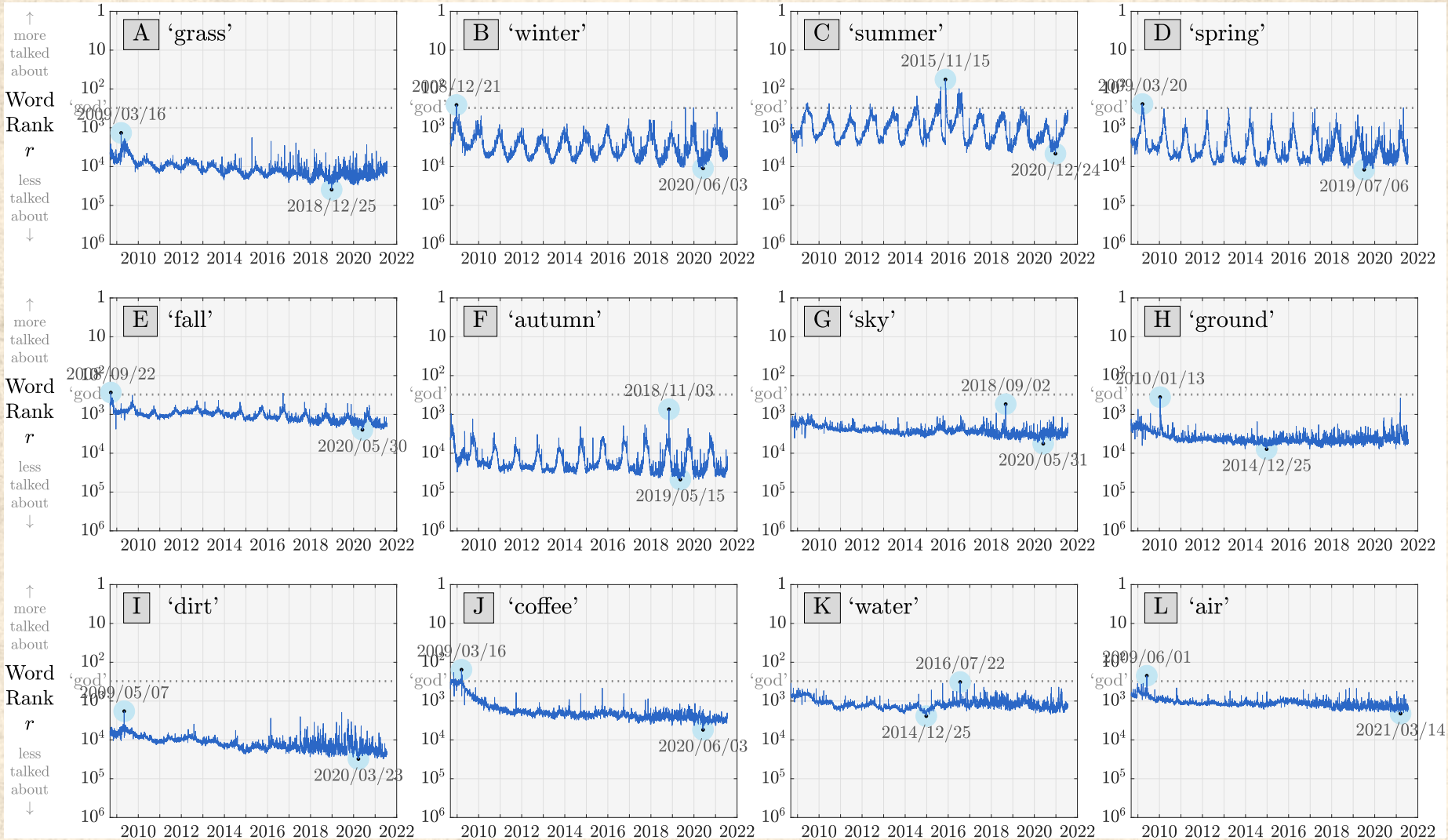
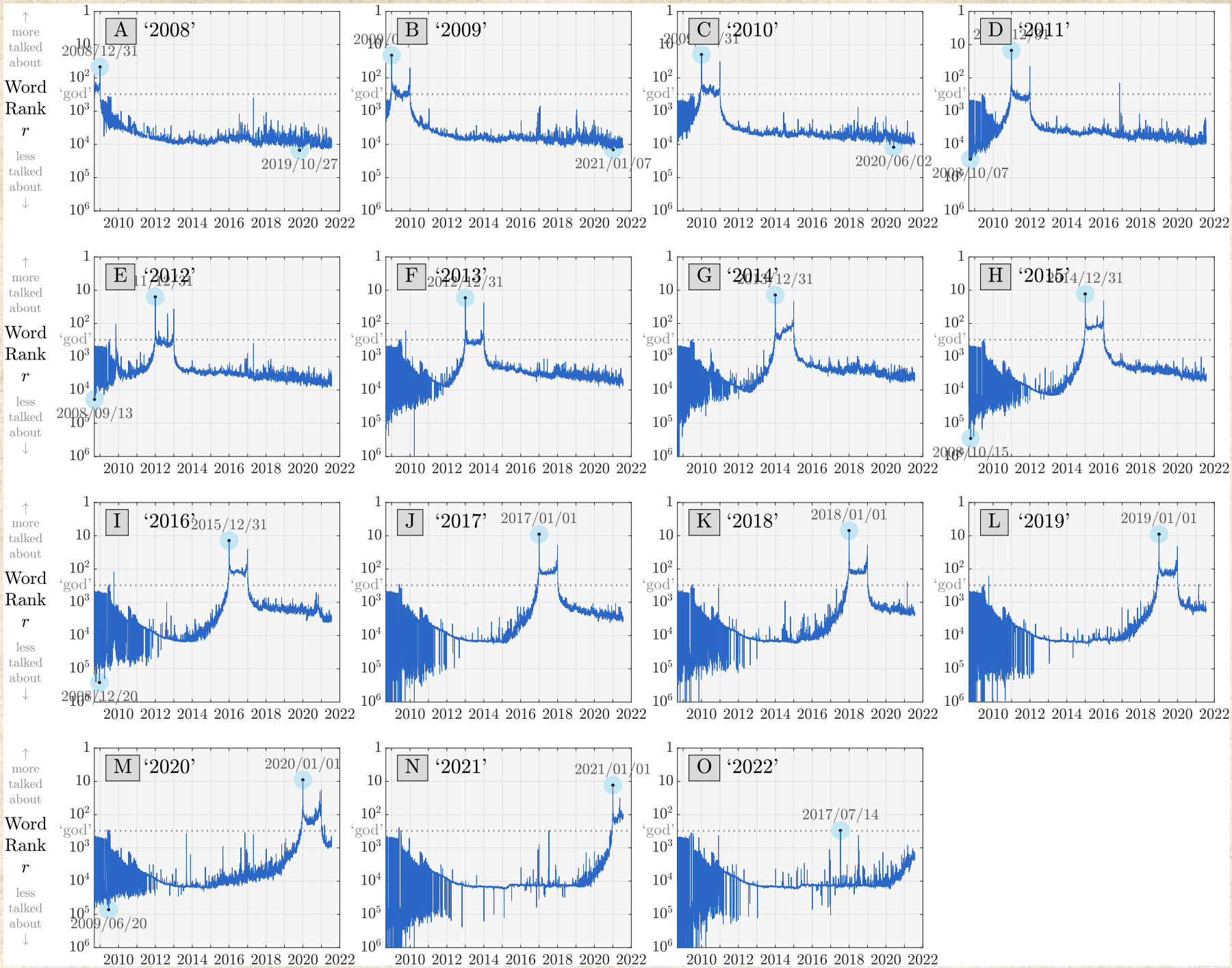
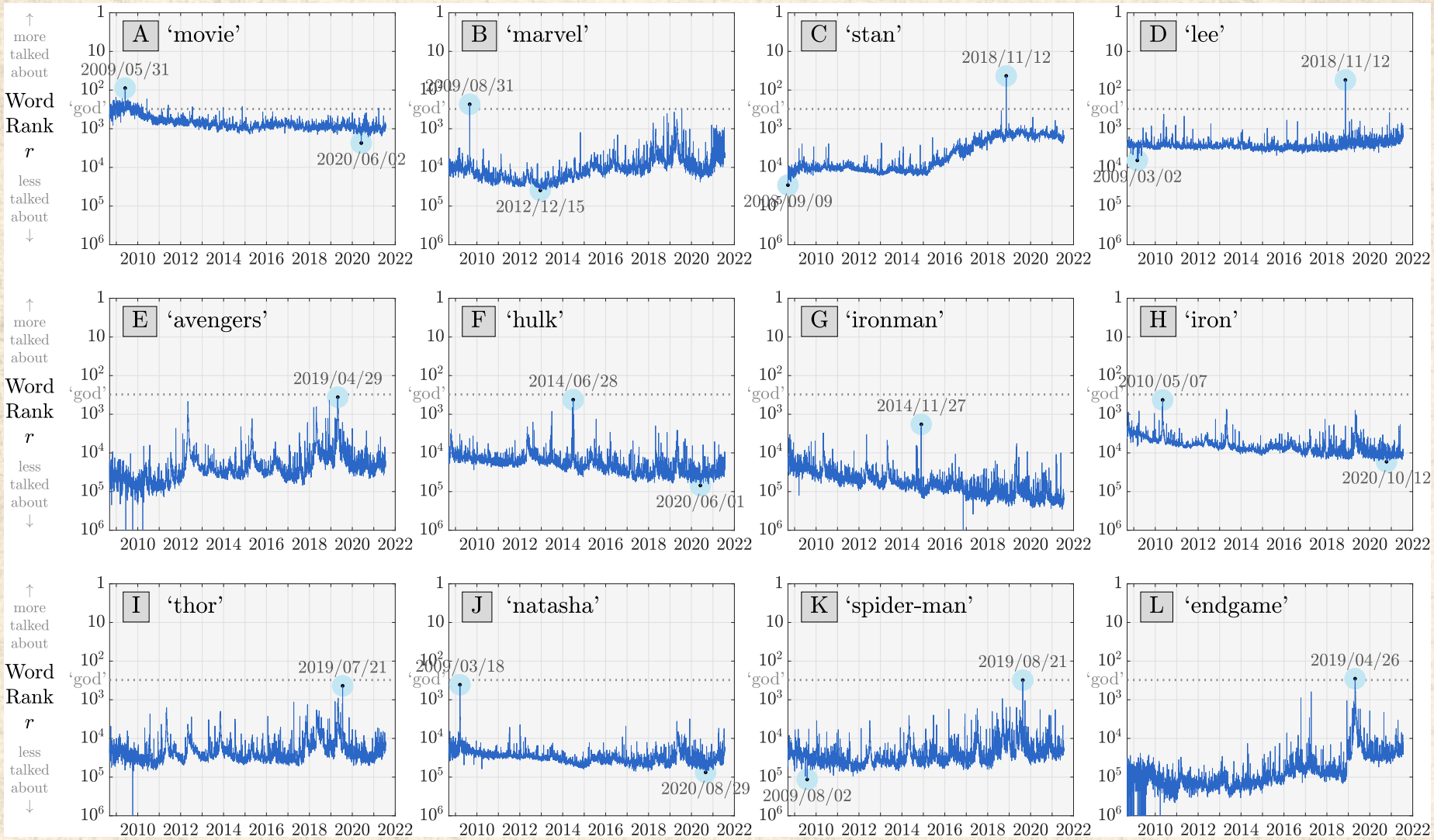



↑ more talked about
Word Rank r
less talked about ↓
A ‘grass’
2009/03/16
2018/12/25
B ‘winter’
2018/12/21
2020/06/03
C ‘summer’
2015/11/15
2020/12/24
D ‘spring’
2009/03/20
2019/07/06
E ‘fall’
2009/09/22
2020/05/30
F ‘autumn’
2018/11/03
2019/05/15
G ‘sky’
2018/09/02
2020/05/31
H ‘ground’
2010/01/13
2014/12/25
I ‘dirt’
2009/05/07
2020/03/23
J ‘coffee’
2009/03/16
2020/06/03
K ‘water’
2016/07/22
2014/12/25
L ‘air’
2009/06/01
2021/03/14
‘god’
1
10
10^2
10^3
10^4
10^5
10^6
2010 2012 2014 2016 2018 2020 2022


A ‘2008’
2008/12/31
2019/10/27
B ‘2009’
2021/01/07
C ‘2010’
2020/06/02
D ‘2011’
2008/10/07
E ‘2012’
2008/09/13
F ‘2013’
2012/12/31
G ‘2014’
2014/12/31
H ‘2015’
2008/10/15
I ‘2016’
2015/12/31
2008/12/20
J ‘2017’
2017/01/01
K ‘2018’
2018/01/01
L ‘2019’
2019/01/01
M ‘2020’
2020/01/01
2009/06/20
N ‘2021’
2021/01/01
O ‘2022’
2017/07/14
‘god’
Word Rank r
↑ more talked about
↓ less talked about
2010 2012 2014 2016 2018 2020 2022


↑ more talked about
Word Rank r
less talked about ↓
A ‘movie’
2009/05/31
2020/06/02
B ‘marvel’
2009/08/31
2012/12/15
C ‘stan’
2018/11/12
2005/09/09
D ‘lee’
2018/11/12
2009/03/02
E ‘avengers’
2019/04/29
F ‘hulk’
2014/06/28
2020/06/01
G ‘ironman’
2014/11/27
H ‘iron’
2010/05/07
2020/10/12
I ‘thor’
2019/07/21
J ‘natasha’
2009/03/18
2020/08/29
K ‘spider-man’
2019/08/21
2009/08/02
L ‘endgame’
2019/04/26
‘god’
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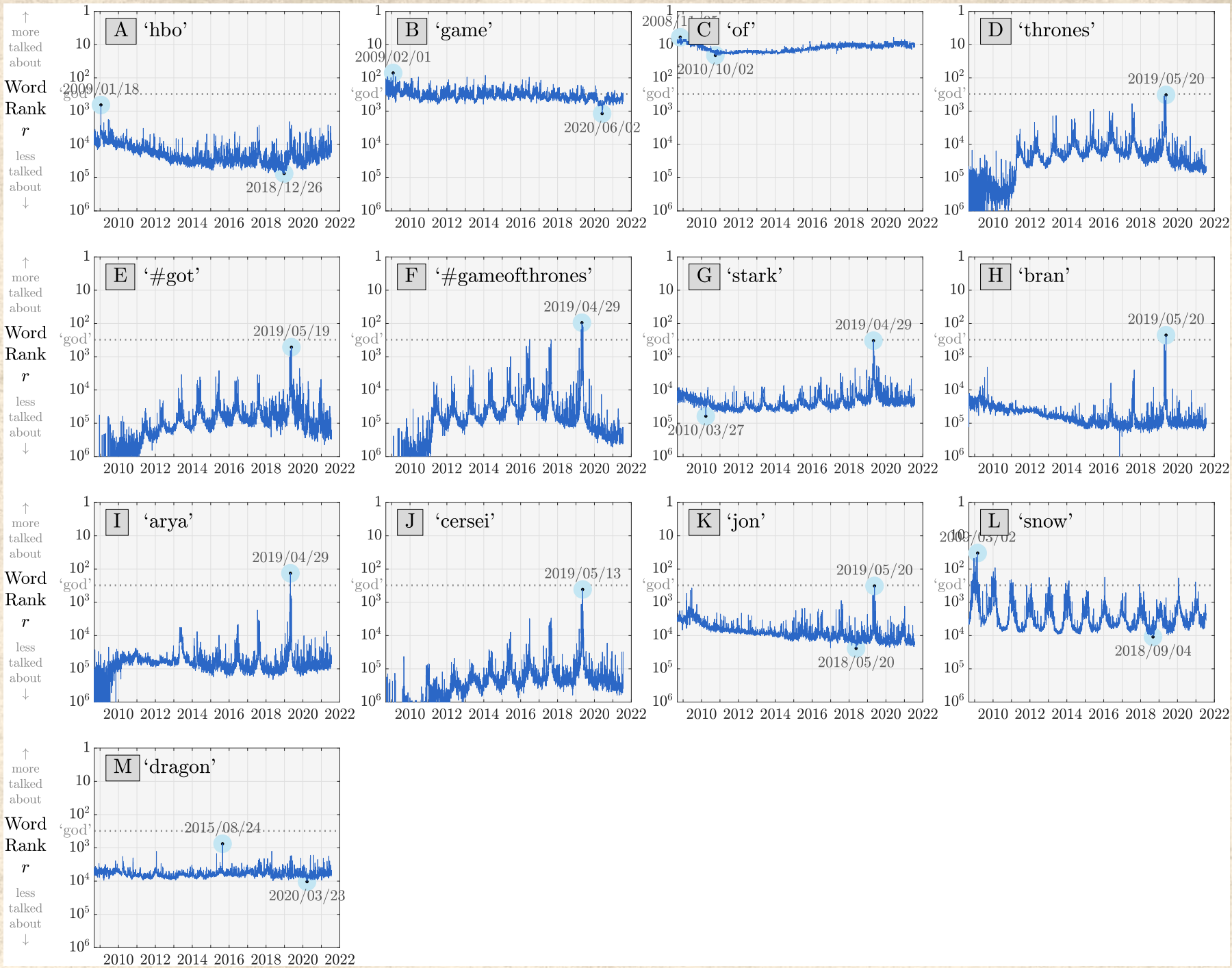
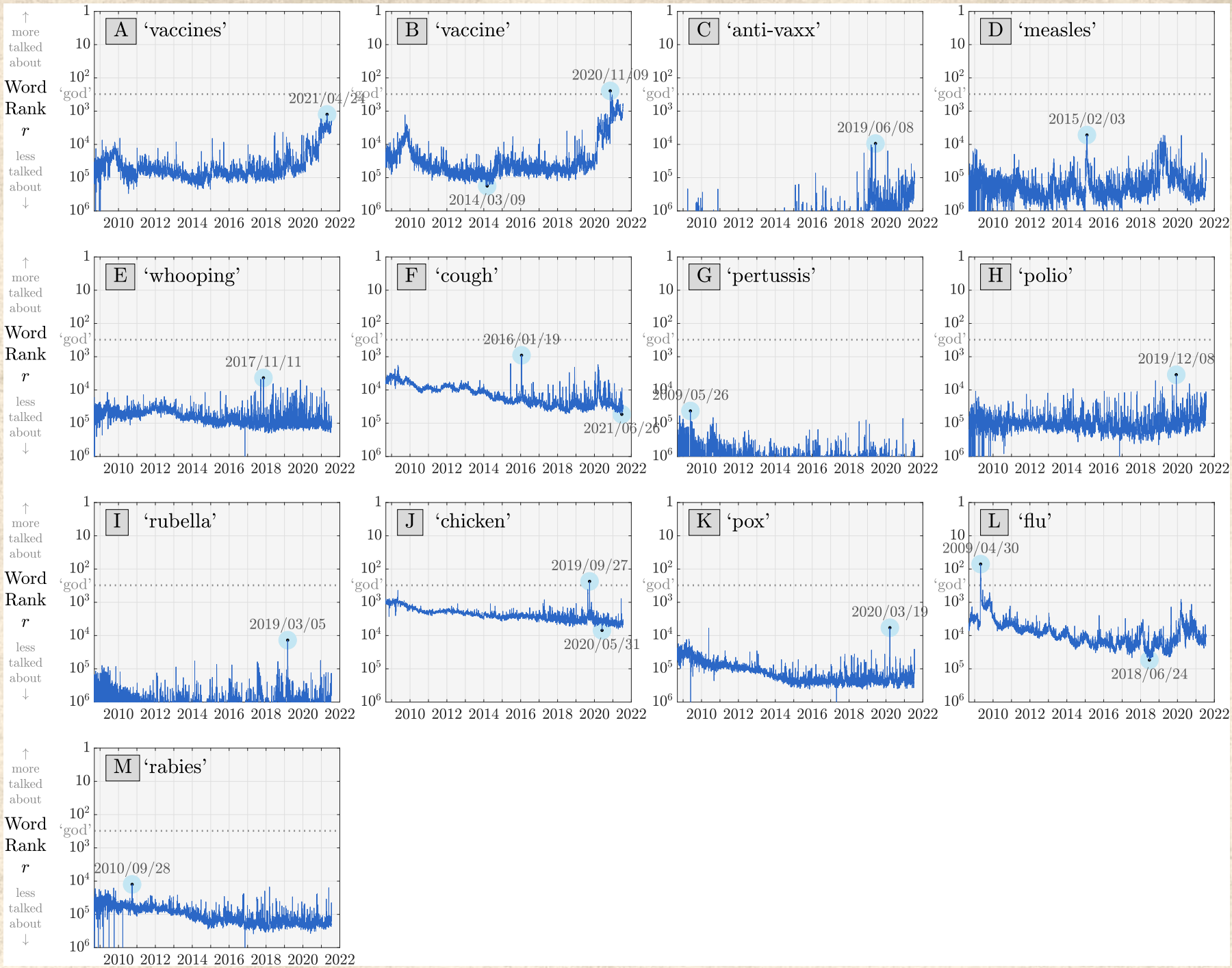
2010 2012 2014 2016 2018 2020 2022


↑ more talked about
Word Rank r
less talked about ↓
A ‘hbo’
2009/01/18
2018/12/26
B ‘game’
2009/02/01
2020/06/02
C ‘of’
2010/10/02
D ‘thrones’
2019/05/20
E ‘#got’
2019/05/19
F ‘#gameofthrones’
2019/04/29
G ‘stark’
2019/04/29
2010/03/27
H ‘bran’
2019/05/20
I ‘arya’
2019/04/29
J ‘cersei’
2019/05/13
K ‘jon’
2019/05/20
2018/05/20
L ‘snow’
2018/09/04
M ‘dragon’
2015/08/24
2020/03/23
‘god’
1 10 10^2 10^3 10^4 10^5 10^6
2010 2012 2014 2016 2018 2020 2022


↑ more talked about
Word Rank r
less talked about ↓
A ‘vaccines’
B ‘vaccine’
C ‘anti-vaxx’
D ‘measles’
E ‘whooping’
F ‘cough’
G ‘pertussis’
H ‘polio’
I ‘rubella’
J ‘chicken’
K ‘pox’
L ‘flu’
M ‘rabies’
‘god’
2021/04/24
2020/11/09
2014/03/09
2019/06/08
2015/02/03
2017/11/11
2016/01/19
2021/05/26
2009/05/26
2019/12/08
2019/03/05
2019/09/27
2020/05/31
2020/03/19
2009/04/30
2018/06/24
2010/09/28
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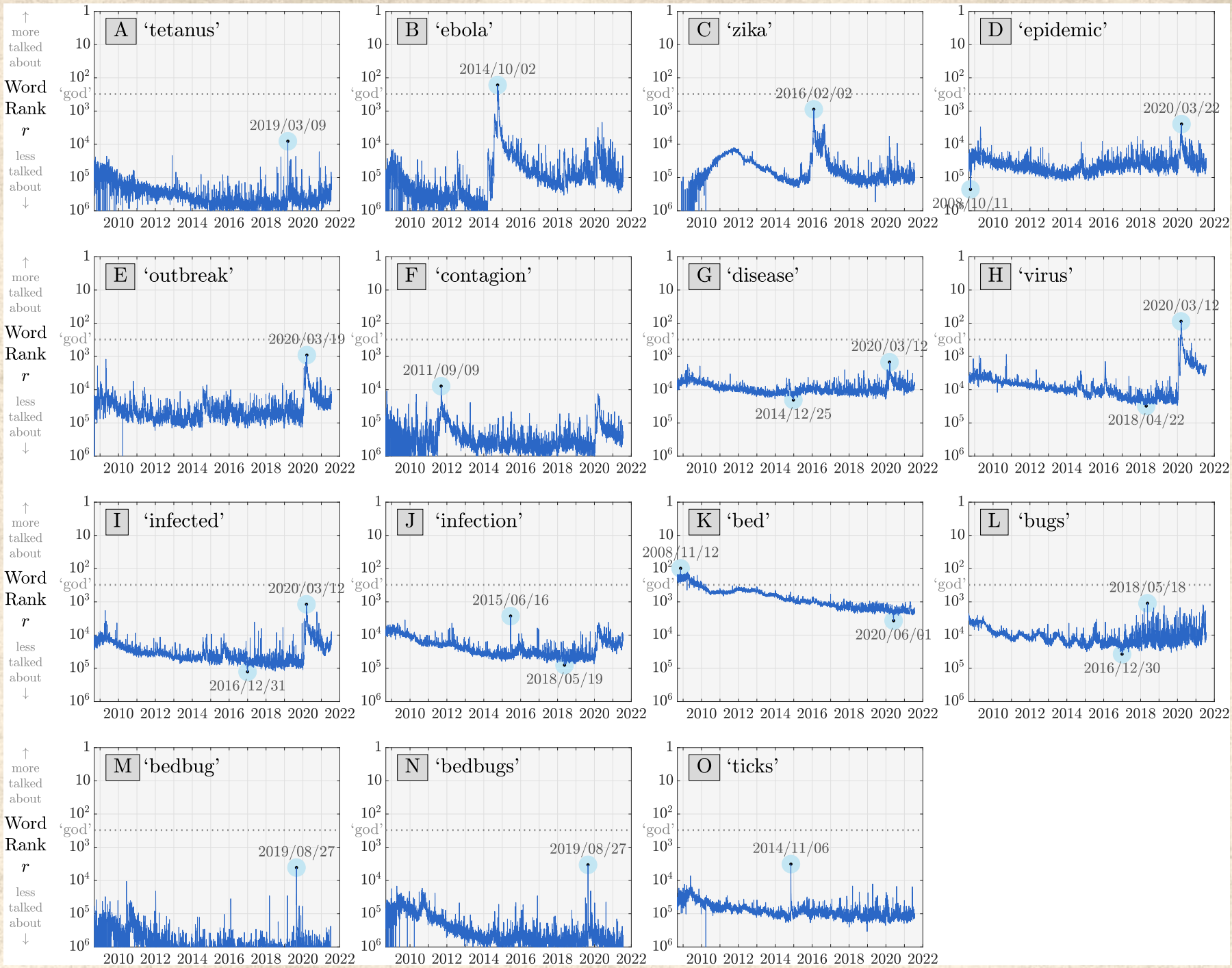
2010 2012 2014 2016 2018 2020 2022


↑ more talked about
Word Rank r
↓ less talked about
A ‘tetanus’
2019/03/09
B ‘ebola’
2014/10/02
C ‘zika’
2016/02/02
D ‘epidemic’
2020/03/22
2008/10/11
E ‘outbreak’
2020/03/19
F ‘contagion’
2011/09/09
G ‘disease’
2020/03/12
2014/12/25
H ‘virus’
2020/03/12
2018/04/22
I ‘infected’
2020/03/12
2016/12/31
J ‘infection’
2015/06/16
2018/05/19
K ‘bed’
2008/11/12
2020/06/01
L ‘bugs’
2018/05/18
2016/12/30
M ‘bedbug’
2019/08/27
N ‘bedbugs’
2019/08/27
O ‘ticks’
2014/11/06
‘god’
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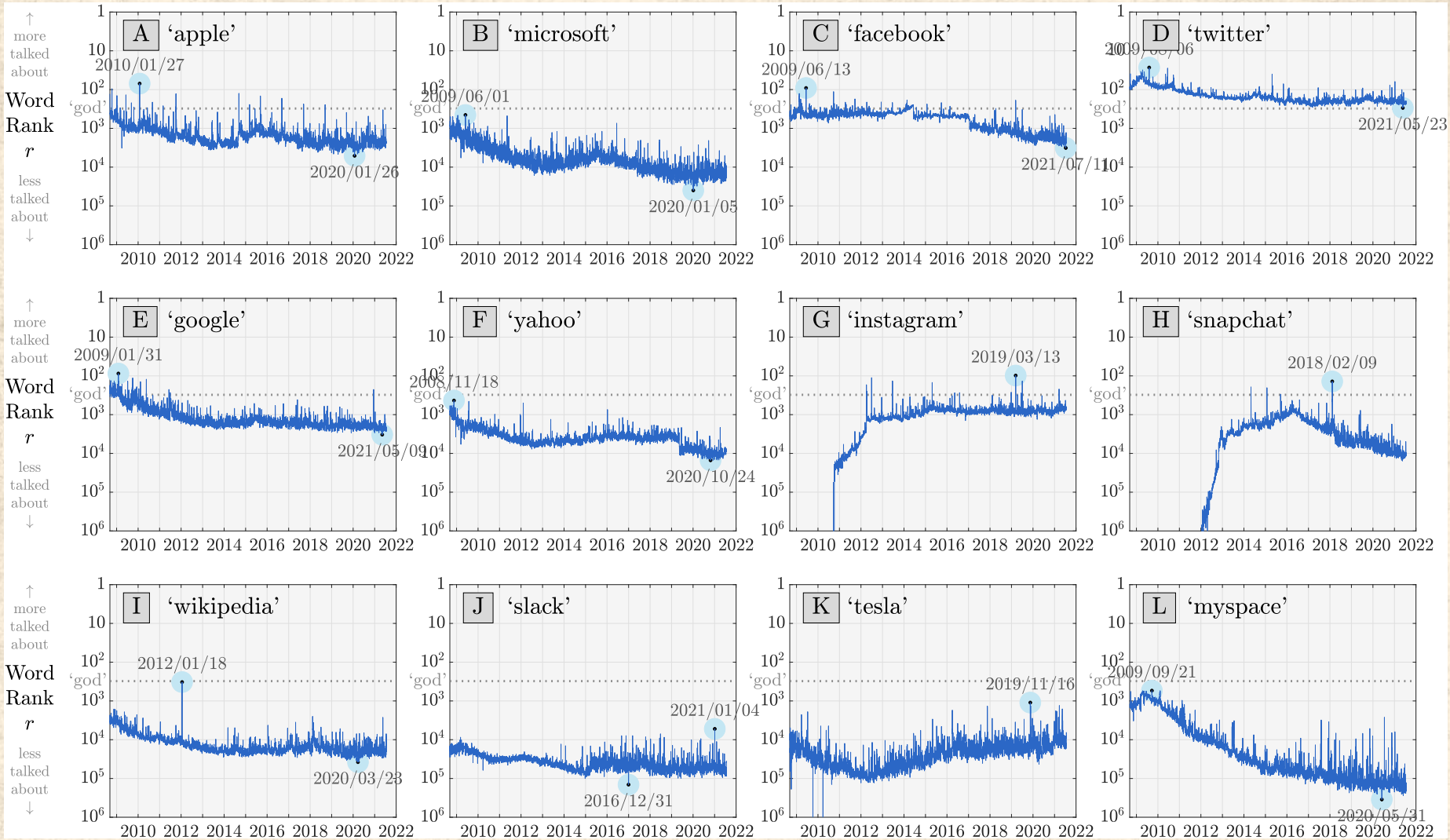
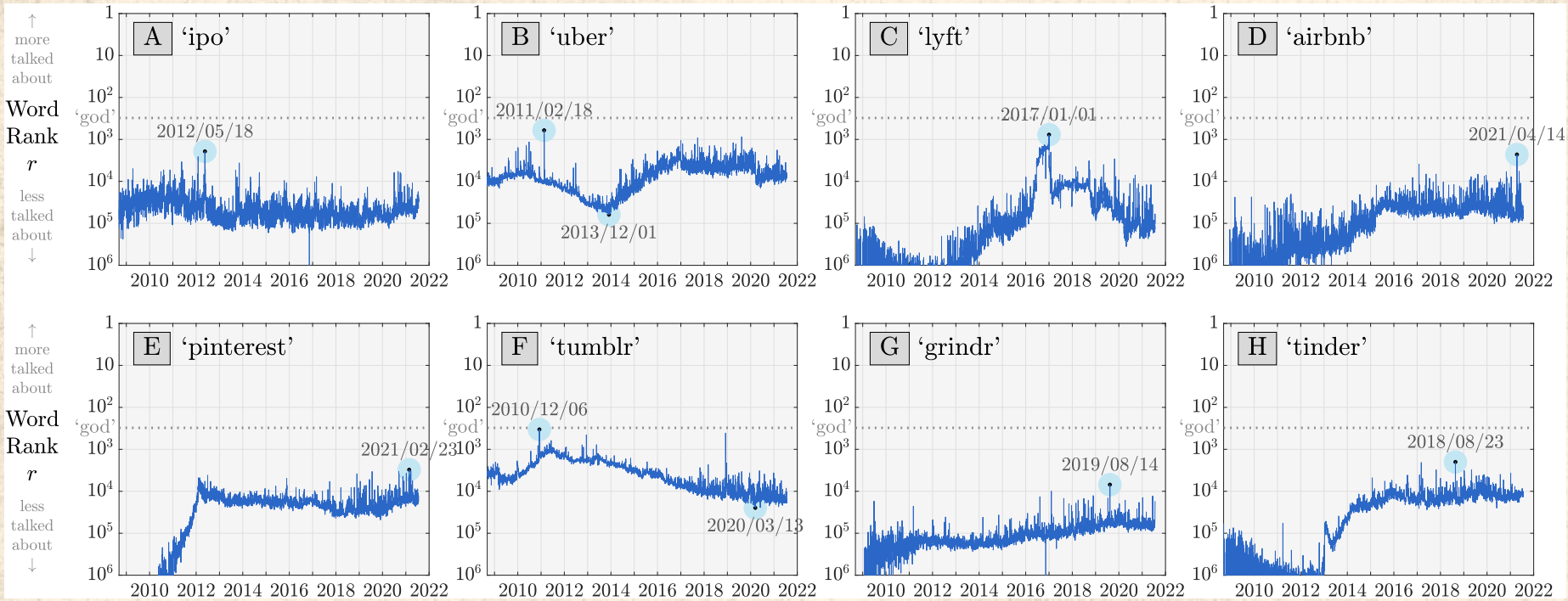
10^5
10^6
2010 2012 2014 2016 2018 2020 2022


↑ more talked about
Word Rank r
less talked about ↓
A ‘apple’
2010/01/27
2020/01/26
B ‘microsoft’
2009/06/01
2020/01/05
C ‘facebook’
2009/06/13
2021/07/11
D ‘twitter’
2009/03/06
2021/05/23
E ‘google’
2009/01/31
2021/05/09
F ‘yahoo’
2008/11/18
2020/10/24
G ‘instagram’
2019/03/13
H ‘snapchat’
2018/02/09
I ‘wikipedia’
2012/01/18
2020/03/23
J ‘slack’
2021/01/04
2016/12/31
K ‘tesla’
2019/11/16
L ‘myspace’
2009/09/21
2020/05/31
‘god’
2010 2012 2014 2016 2018 2020 2022


↑ more talked about
Word Rank r
less talked about ↓
A ‘ipo’
2012/05/18
B ‘uber’
2011/02/18
2013/12/01
C ‘lyft’
2017/01/01
D ‘airbnb’
2021/04/14
E ‘pinterest’
2021/02/23
F ‘tumblr’
2010/12/06
2020/03/13
G ‘grindr’
2019/08/14
H ‘tinder’
2018/08/23
‘god’
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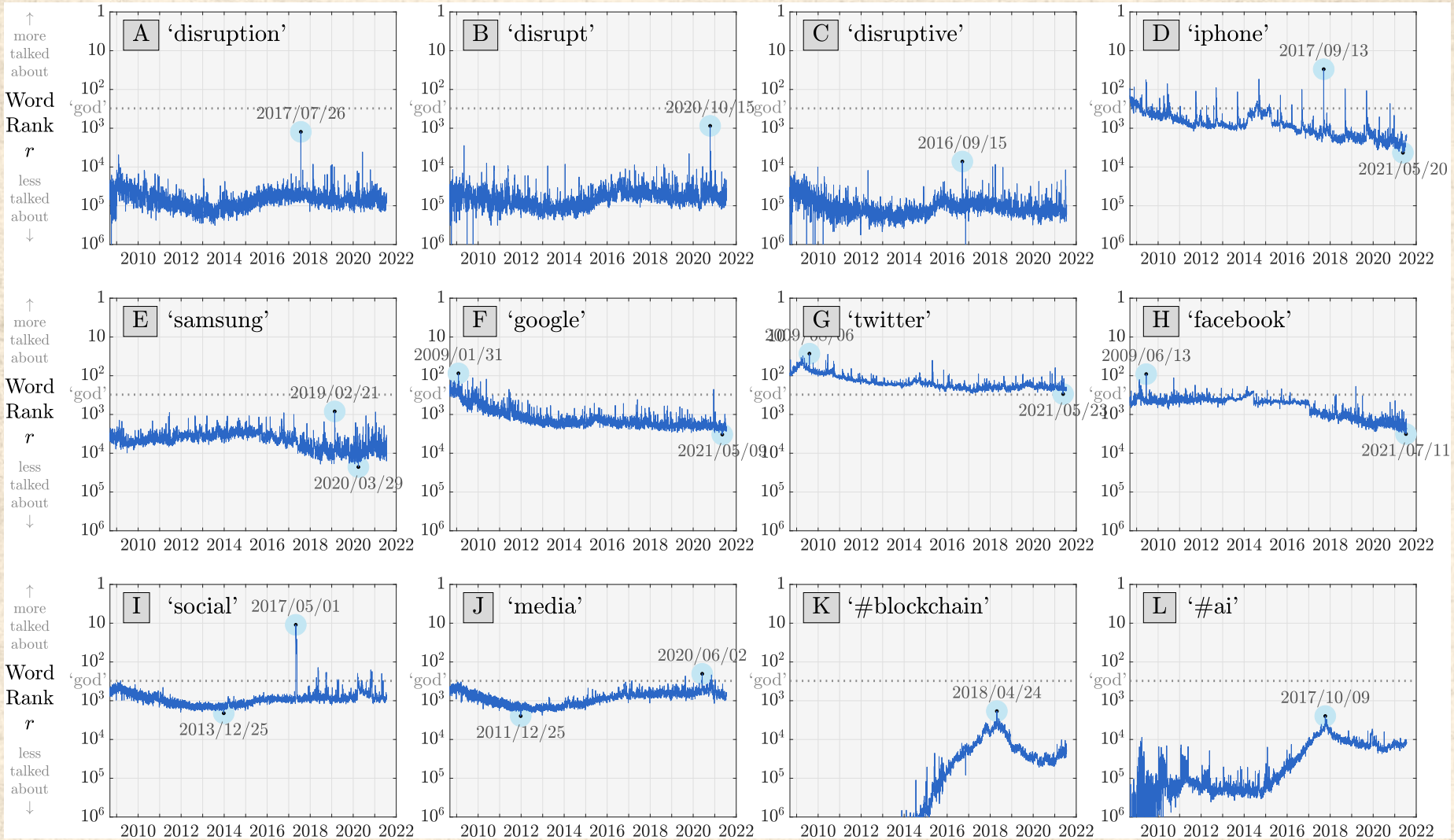
10^5
10^6
2010 2012 2014 2016 2018 2020 2022


↑ more talked about
Word Rank r
less talked about ↓
A ‘disruption’
2017/07/26
B ‘disrupt’
2020/10/15
C ‘disruptive’
2016/09/15
D ‘iphone’
2017/09/13
2021/05/20
E ‘samsung’
2019/02/21
2020/03/29
F ‘google’
2009/01/31
2021/05/09
G ‘twitter’
2021/05/23
H ‘facebook’
2009/06/13
2021/07/11
I ‘social’
2017/05/01
2013/12/25
J ‘media’
2020/06/02
2011/12/25
K ‘#blockchain’
2018/04/24
L ‘#ai’
2017/10/09
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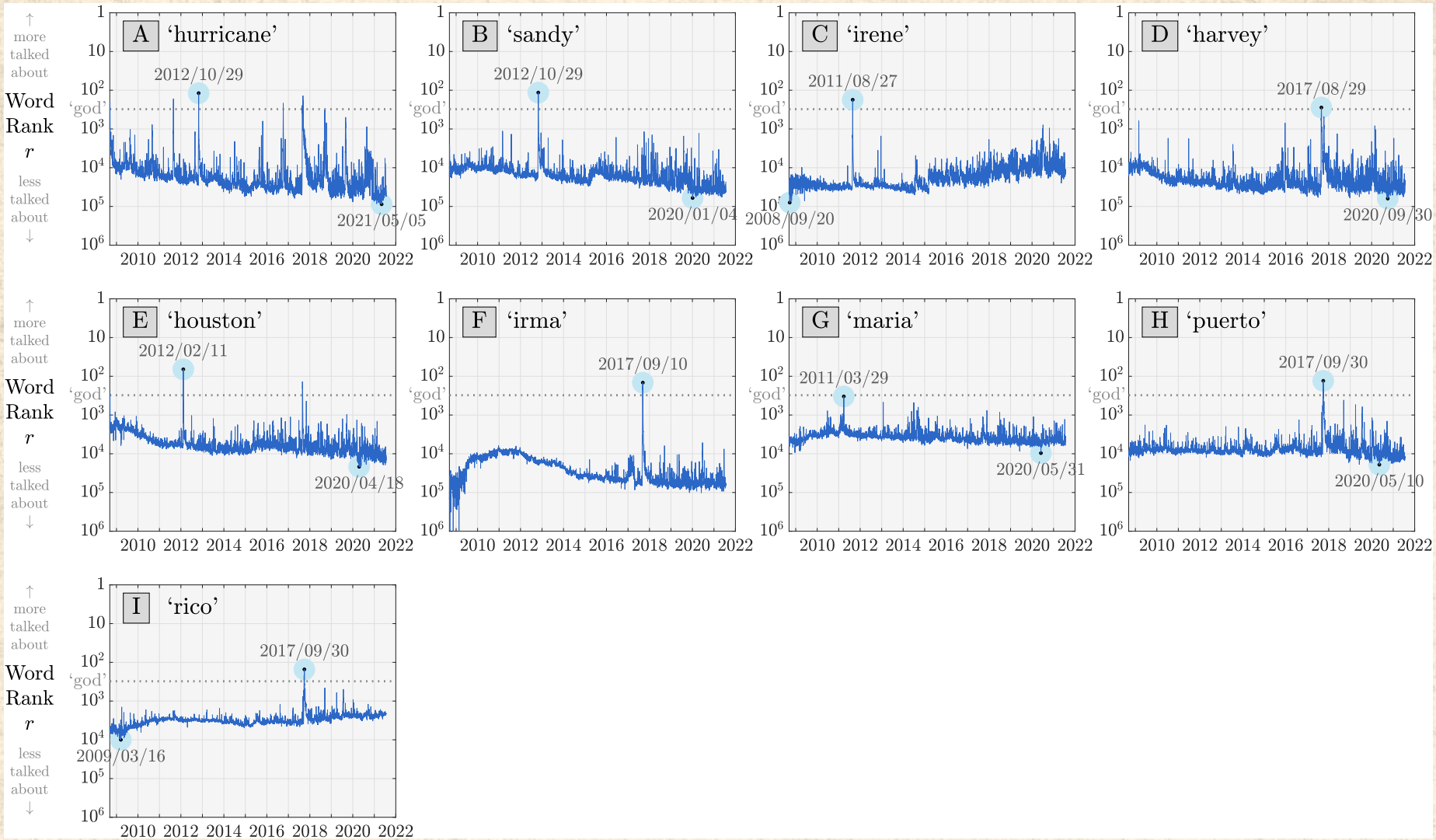
10^6
2010 2012 2014 2016 2018 2020 2022


↑ more talked about
Word Rank r
less talked about ↓
A ‘hurricane’
2012/10/29
2021/05/05
B ‘sandy’
2012/10/29
2020/01/04
C ‘irene’
2011/08/27
2008/09/20
D ‘harvey’
2017/08/29
2020/09/30
E ‘houston’
2012/02/11
2020/04/18
F ‘irma’
2017/09/10
G ‘maria’
2011/03/29
2020/05/31
H ‘puerto’
2017/09/30
2020/05/10
I ‘rico’
2017/09/30
2009/03/16
‘god’
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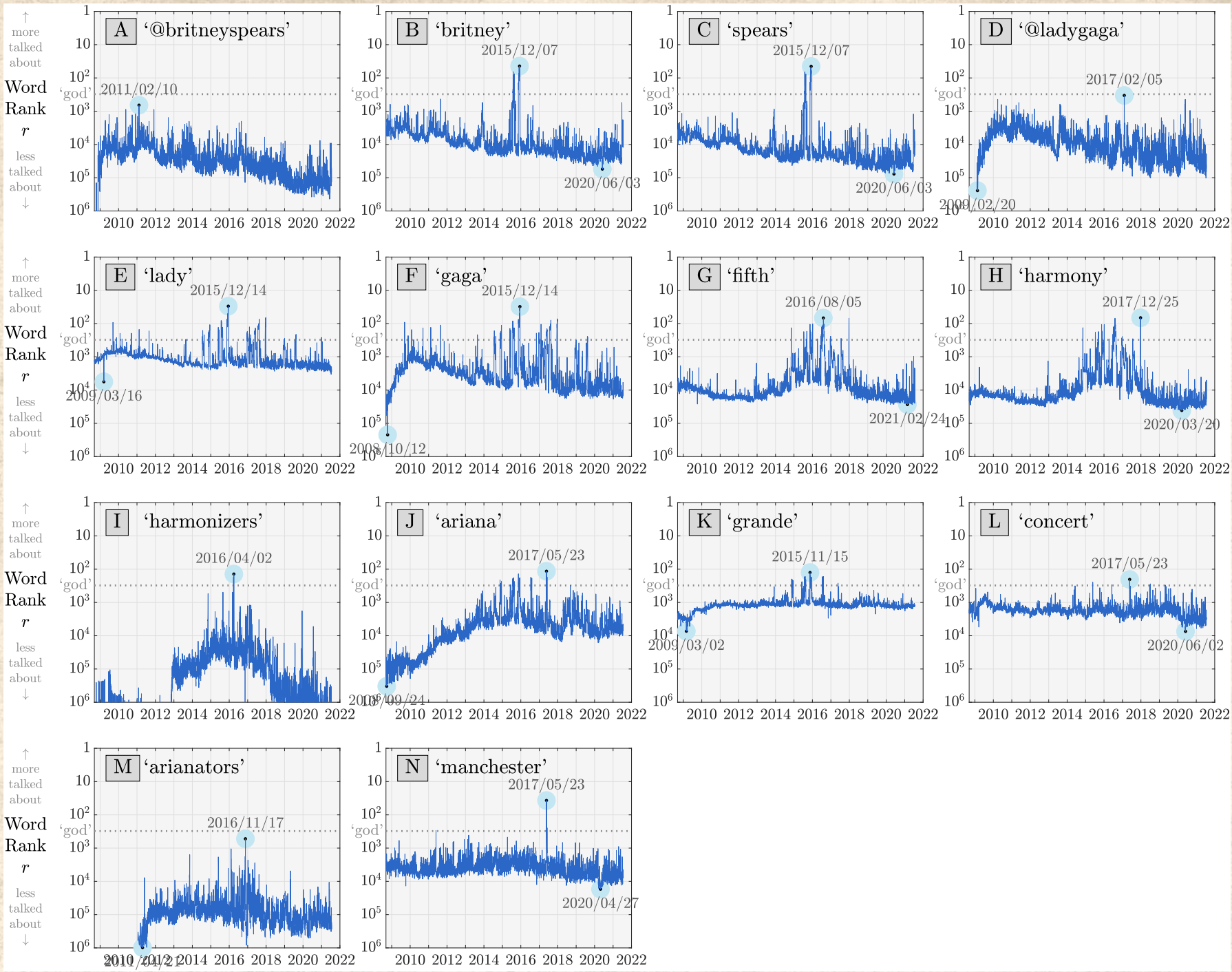
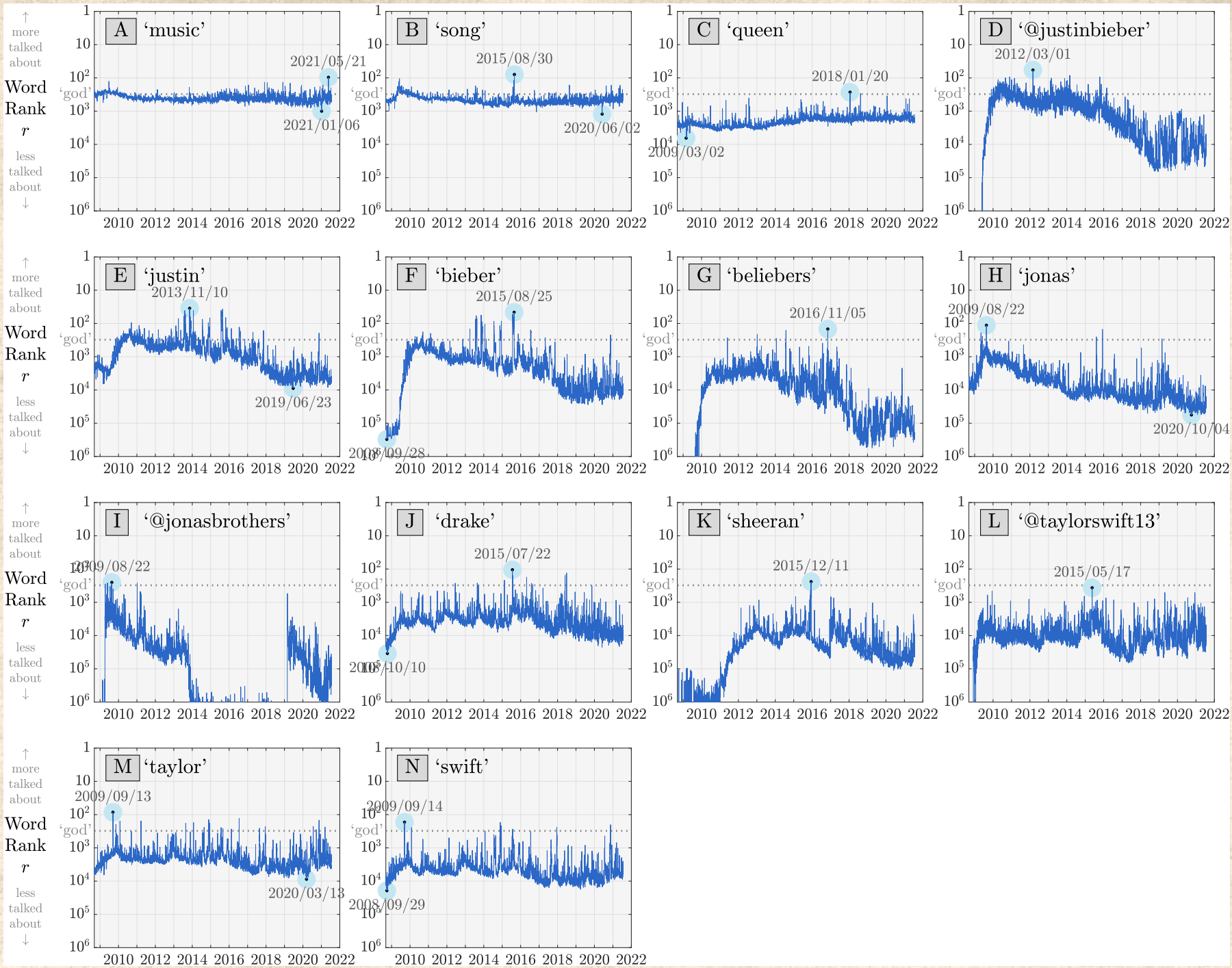
10^5
10^6
2010 2012 2014 2016 2018 2020 2022


↑ more talked about
Word Rank r
less talked about ↓
A ‘@britneyspears’
2011/02/10
B ‘britney’
2015/12/07
2020/06/03
C ‘spears’
2015/12/07
2020/06/03
D ‘@ladygaga’
2017/02/05
2009/02/20
E ‘lady’
2015/12/14
2009/03/16
F ‘gaga’
2015/12/14
2008/10/12
G ‘fifth’
2016/08/05
2021/02/24
H ‘harmony’
2017/12/25
2020/03/20
I ‘harmonizers’
2016/04/02
J ‘ariana’
2017/05/23
2008/09/24
K ‘grande’
2015/11/15
2009/03/02
L ‘concert’
2017/05/23
2020/06/02
M ‘arianators’
2016/11/17
N ‘manchester’
2017/05/23
2020/04/27
‘god’
1 10 10^2 10^3 10^4 10^5 10^6
2010 2012 2014 2016 2018 2020 2022


↑ more talked about
Word Rank r
↓ less talked about
A ‘music’
2021/05/21
2021/01/06
B ‘song’
2015/08/30
2020/06/02
C ‘queen’
2018/01/20
2009/03/02
D ‘@justinbieber’
2012/03/01
E ‘justin’
2013/11/10
2019/06/23
F ‘bieber’
2015/08/25
2008/09/28
G ‘beliebers’
2016/11/05
H ‘jonas’
2009/08/22
2020/10/04
I ‘@jonasbrothers’
2009/08/22
J ‘drake’
2015/07/22
2008/10/10
K ‘sheeran’
2015/12/11
L ‘@taylorswift13’
2015/05/17
M ‘taylor’
2009/09/13
2020/03/13
N ‘swift’
2009/09/14
2008/09/29
‘god’
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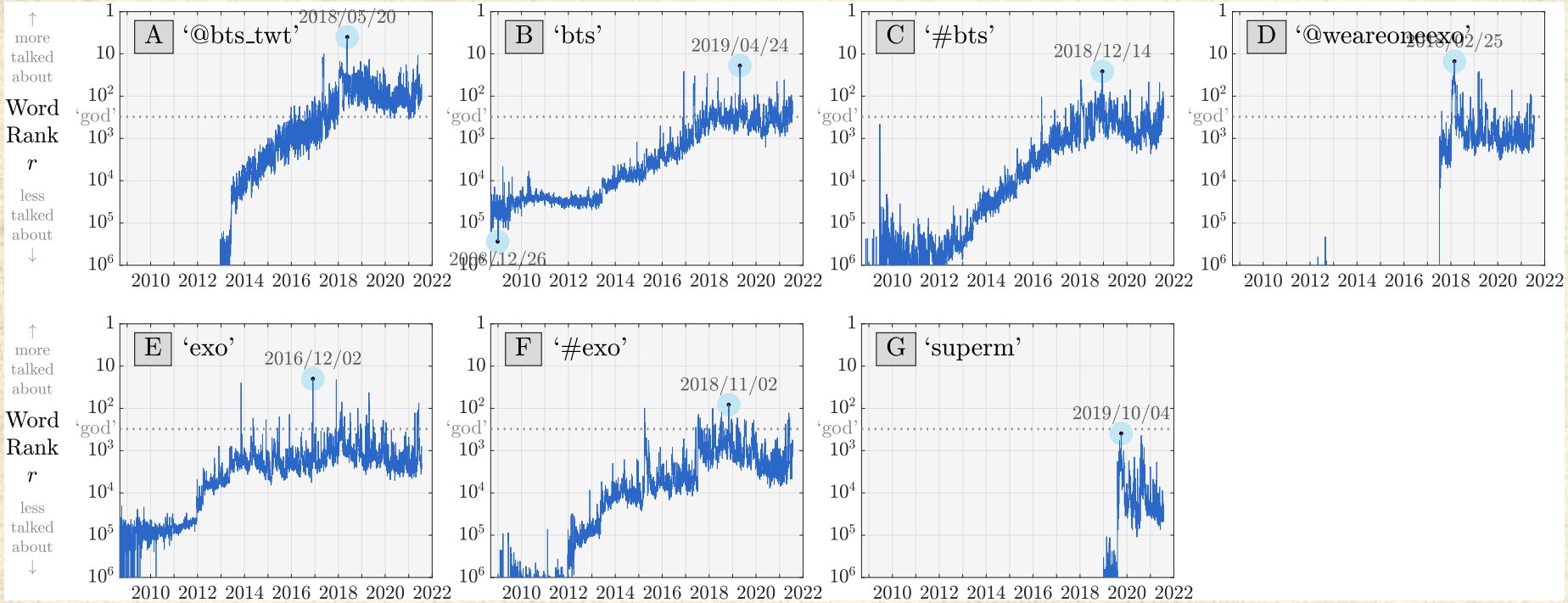
2010 2012 2014 2016 2018 2020 2022


↑ more talked about
Word Rank r
less talked about ↓
A ‘@bts_twt’
2018/05/20
B ‘bts’
2019/04/24
2008/12/26
C ‘#bts’
2018/12/14
D ‘@weareoneexo’
2018/02/25
E ‘exo’
2016/12/02
F ‘#exo’
2018/11/02
G ‘superm’
2019/10/04
‘god’
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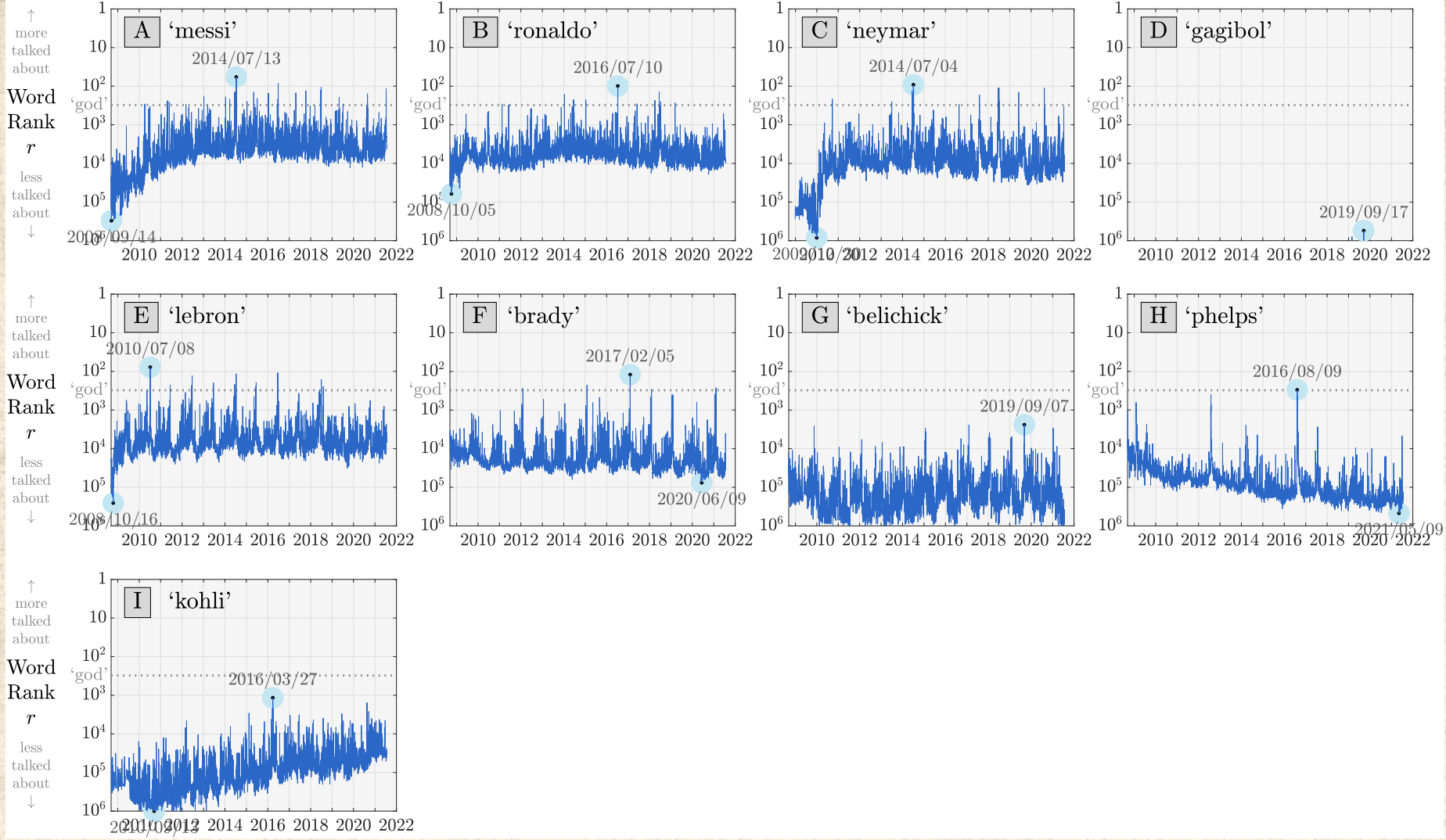
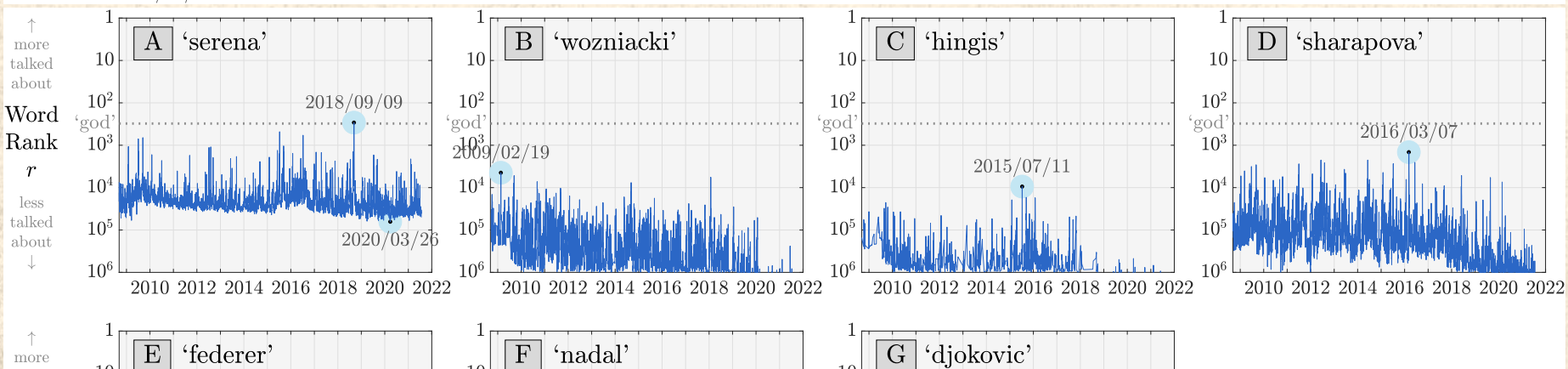
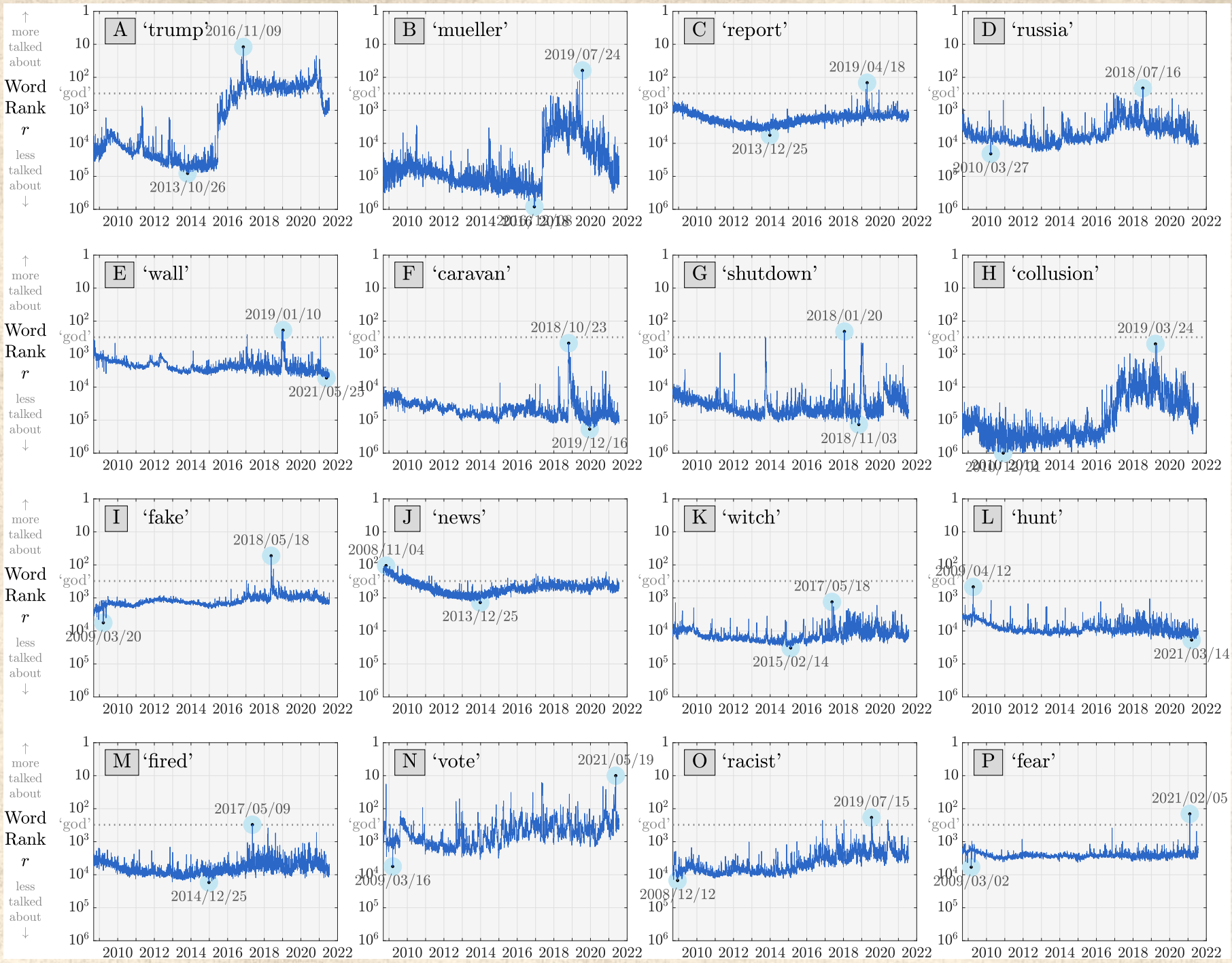
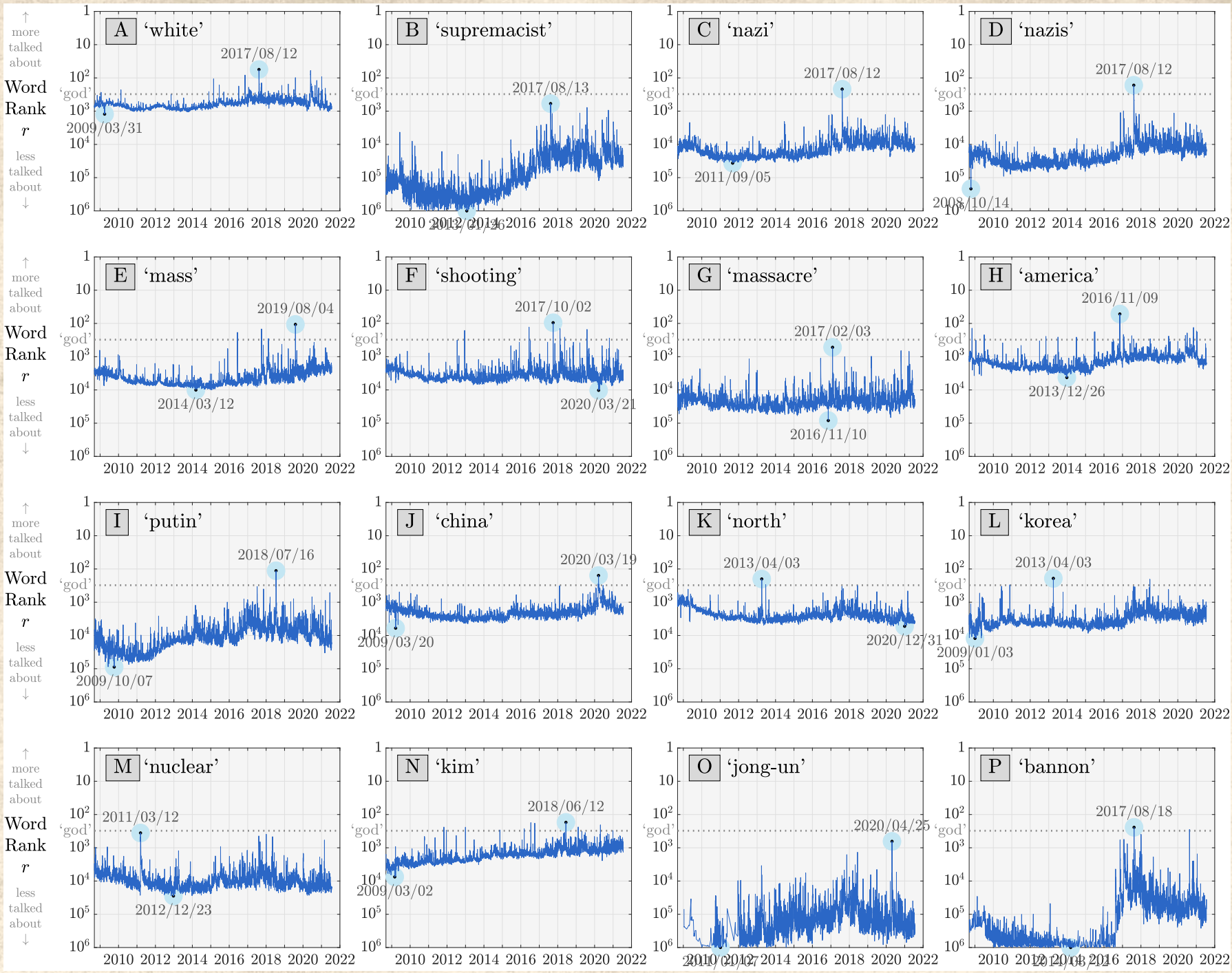
2010 2012 2014 2016 2018 2020 2022


↑ more talked about
Word Rank r
↓ less talked about
A ‘messi’
2014/07/13
2006/09/14
B ‘ronaldo’
2016/07/10
2008/10/05
C ‘neymar’
2014/07/04
2009/10/30
D ‘gagibol’
2019/09/17
E ‘lebron’
2010/07/08
2008/10/16
F ‘brady’
2017/02/05
2020/06/09
G ‘belichick’
2019/09/07
H ‘phelps’
2016/08/09
2021/05/09
I ‘kohli’
2016/03/27
2010/03/13
‘god’
2010 2012 2014 2016 2018 2020 2022


↑ more talked about
Word Rank r
↓ less talked about
A ‘serena’
2018/09/09
2020/03/26
B ‘wozniacki’
2009/02/19
C ‘hingis’
2015/07/11
D ‘sharapova’
2016/03/07
E ‘federer’
F ‘nadal’
G ‘djokovic’
‘god’
2010 2012 2014 2016 2018 2020 2022


↑ more talked about
Word Rank r
less talked about ↓
A ‘trump’
2016/11/09
2013/10/26
B ‘mueller’
2019/07/24
C ‘report’
2019/04/18
2013/12/25
D ‘russia’
2018/07/16
2010/03/27
E ‘wall’
2019/01/10
2021/05/25
F ‘caravan’
2018/10/23
2019/12/16
G ‘shutdown’
2018/01/20
2018/11/03
H ‘collusion’
2019/03/24
I ‘fake’
2018/05/18
2009/03/20
J ‘news’
2008/11/04
2013/12/25
K ‘witch’
2017/05/18
2015/02/14
L ‘hunt’
2009/04/12
2021/03/14
M ‘fired’
2017/05/09
2014/12/25
N ‘vote’
2021/05/19
2009/03/16
O ‘racist’
2019/07/15
2008/12/12
P ‘fear’
2021/02/05
2009/03/02
‘god’
2010 2012 2014 2016 2018 2020 2022


↑ more talked about
Word Rank r
less talked about ↓
A ‘white’
2017/08/12
2009/03/31
B ‘supremacist’
2017/08/13
2012/01/26
C ‘nazi’
2017/08/12
2011/09/05
D ‘nazis’
2017/08/12
2008/10/14
E ‘mass’
2019/08/04
2014/03/12
F ‘shooting’
2017/10/02
2020/03/21
G ‘massacre’
2017/02/03
2016/11/10
H ‘america’
2016/11/09
2013/12/26
I ‘putin’
2018/07/16
2009/10/07
J ‘china’
2020/03/19
2009/03/20
K ‘north’
2013/04/03
2020/12/31
L ‘korea’
2013/04/03
2009/01/03
M ‘nuclear’
2011/03/12
2012/12/23
N ‘kim’
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O ‘jong-un’
2020/04/25
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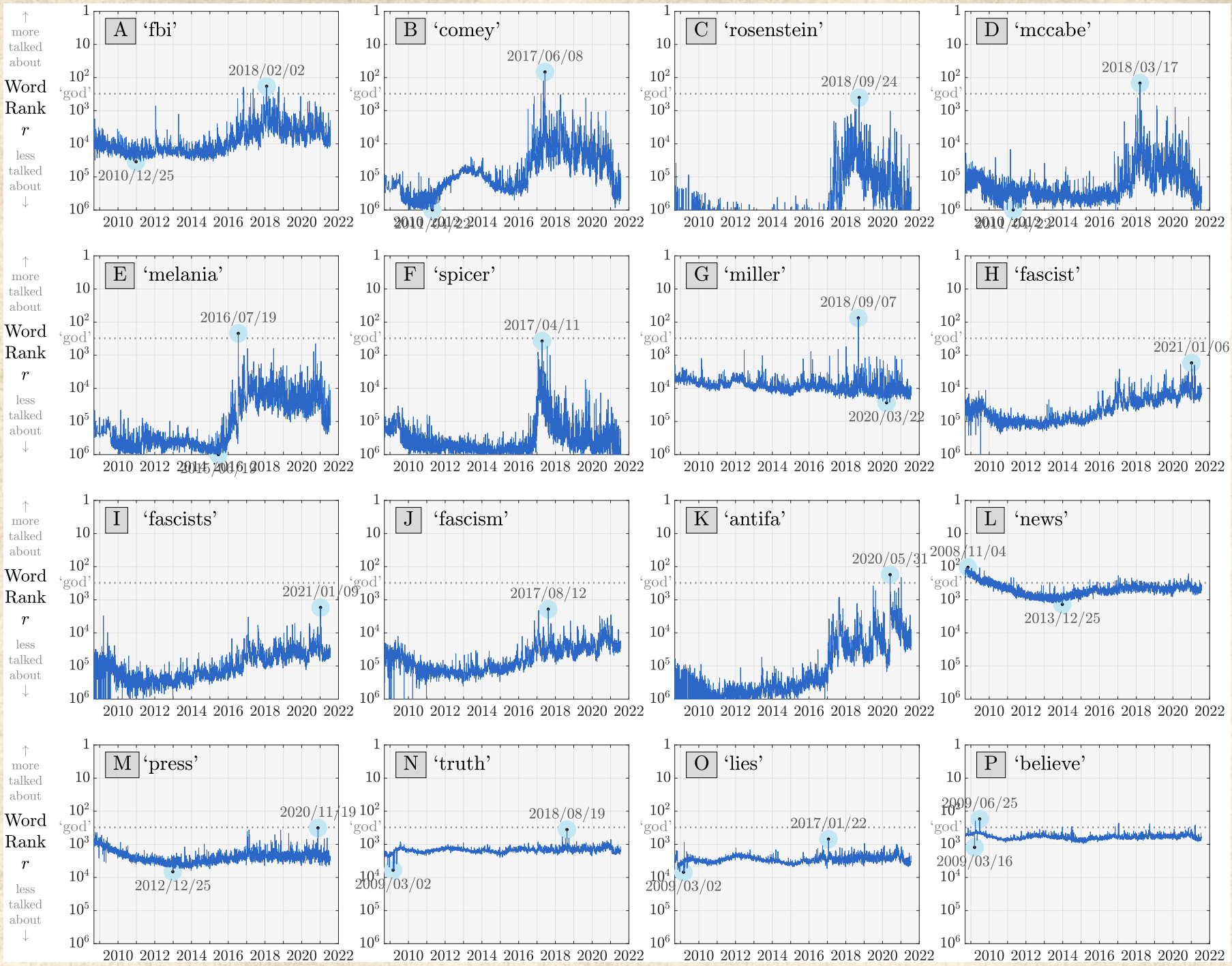
2017/08/18
‘god’
2010 2012 2014 2016 2018 2020 2022


↑ more talked about
Word Rank r
↓ less talked about
A ‘fbi’
2018/02/02
2010/12/25
B ‘comey’
2017/06/08
2010/01/22
C ‘rosenstein’
2018/09/24
D ‘mccabe’
2018/03/17
2010/01/22
E ‘melania’
2016/07/19
2015/01/12
F ‘spicer’
2017/04/11
G ‘miller’
2018/09/07
2020/03/22
H ‘fascist’
2021/01/06
I ‘fascists’
2021/01/09
J ‘fascism’
2017/08/12
K ‘antifa’
2020/05/31
L ‘news’
2008/11/04
2013/12/25
M ‘press’
2020/11/19
2012/12/25
N ‘truth’
2018/08/19
2009/03/02
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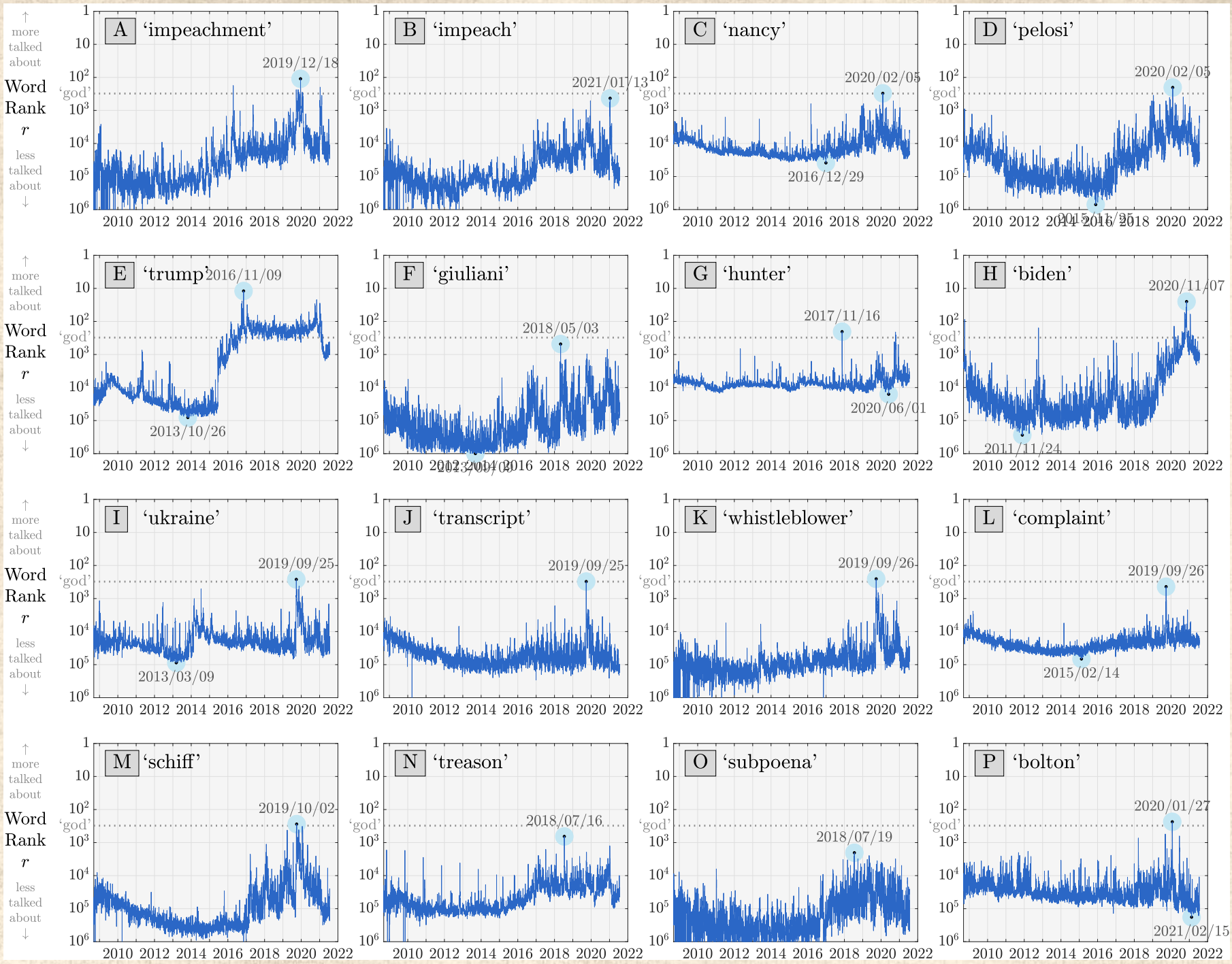
2017/01/22
2009/03/02
P ‘believe’
2009/06/25
2009/03/16
‘god’
2010 2012 2014 2016 2018 2020 2022


↑ more talked about
Word Rank r
↓ less talked about
A ‘impeachment’
2019/12/18
B ‘impeach’
2021/01/13
C ‘nancy’
2020/02/05
2016/12/29
D ‘pelosi’
2020/02/05
2015/11/25
E ‘trump’
2016/11/09
2013/10/26
F ‘giuliani’
2018/05/03
G ‘hunter’
2017/11/16
2020/06/01
H ‘biden’
2020/11/07
2011/11/24
I ‘ukraine’
2019/09/25
2013/03/09
J ‘transcript’
2019/09/25
K ‘whistleblower’
2019/09/26
L ‘complaint’
2019/09/26
2015/02/14
M ‘schiff’
2019/10/02
N ‘treason’
2018/07/16
O ‘subpoena’
2018/07/19
P ‘bolton’
2020/01/27
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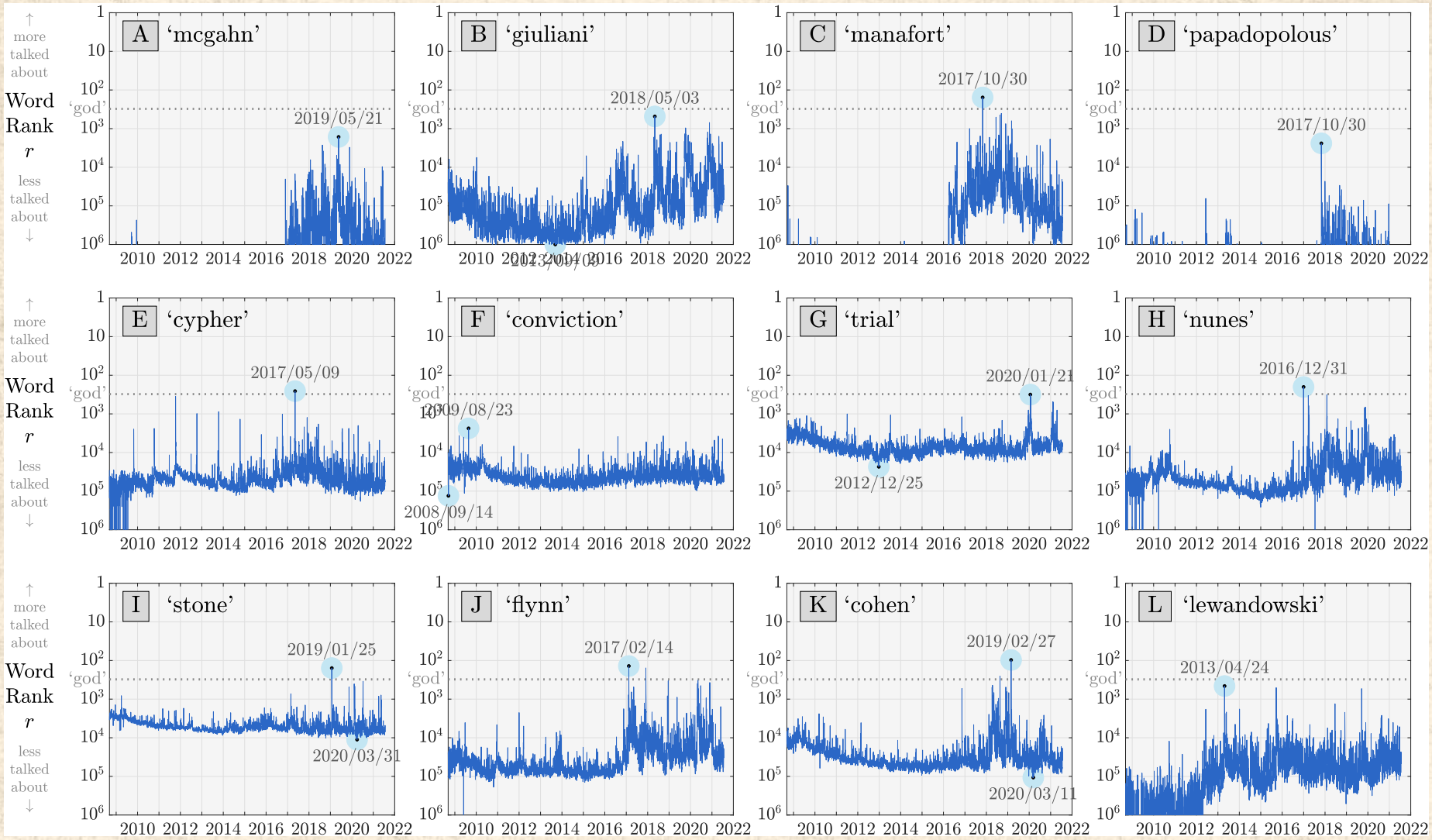
2010 2012 2014 2016 2018 2020 2022


↑ more talked about
Word Rank r
less talked about ↓
A ‘mcgahn’
2019/05/21
B ‘giuliani’
2018/05/03
C ‘manafort’
2017/10/30
D ‘papadopolous’
2017/10/30
E ‘cypher’
2017/05/09
F ‘conviction’
2009/08/23
2008/09/14
G ‘trial’
2020/01/21
2012/12/25
H ‘nunes’
2016/12/31
I ‘stone’
2019/01/25
2020/03/31
J ‘flynn’
2017/02/14
K ‘cohen’
2019/02/27
2020/03/11
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2013/04/24
‘god’
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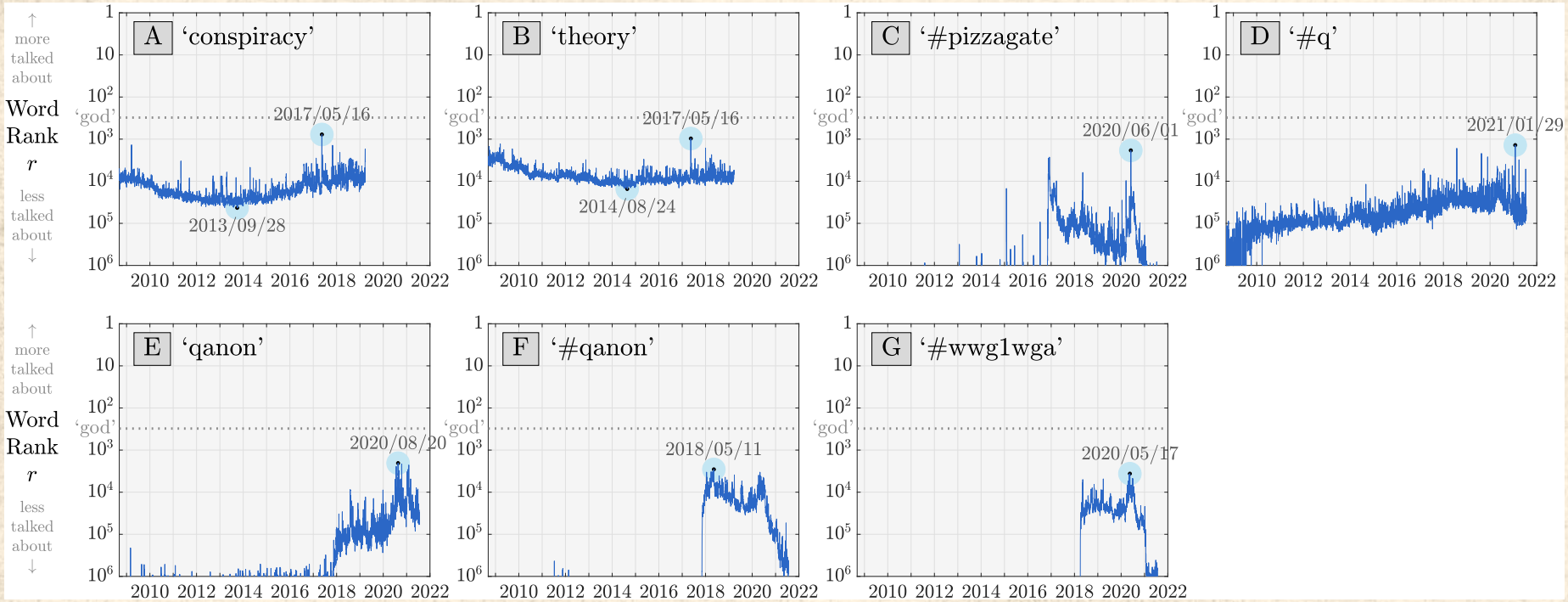
10^6
2010 2012 2014 2016 2018 2020 2022


↑ more talked about
Word Rank r
less talked about ↓
A ‘conspiracy’
B ‘theory’
C ‘#pizzagate’
D ‘#q’
E ‘qanon’
F ‘#qanon’
G ‘#wwg1wga’
‘god’
2017/05/16
2013/09/28
2014/08/24
2020/06/01
2021/01/29
2020/08/20
2018/05/11
2020/05/17
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10^2
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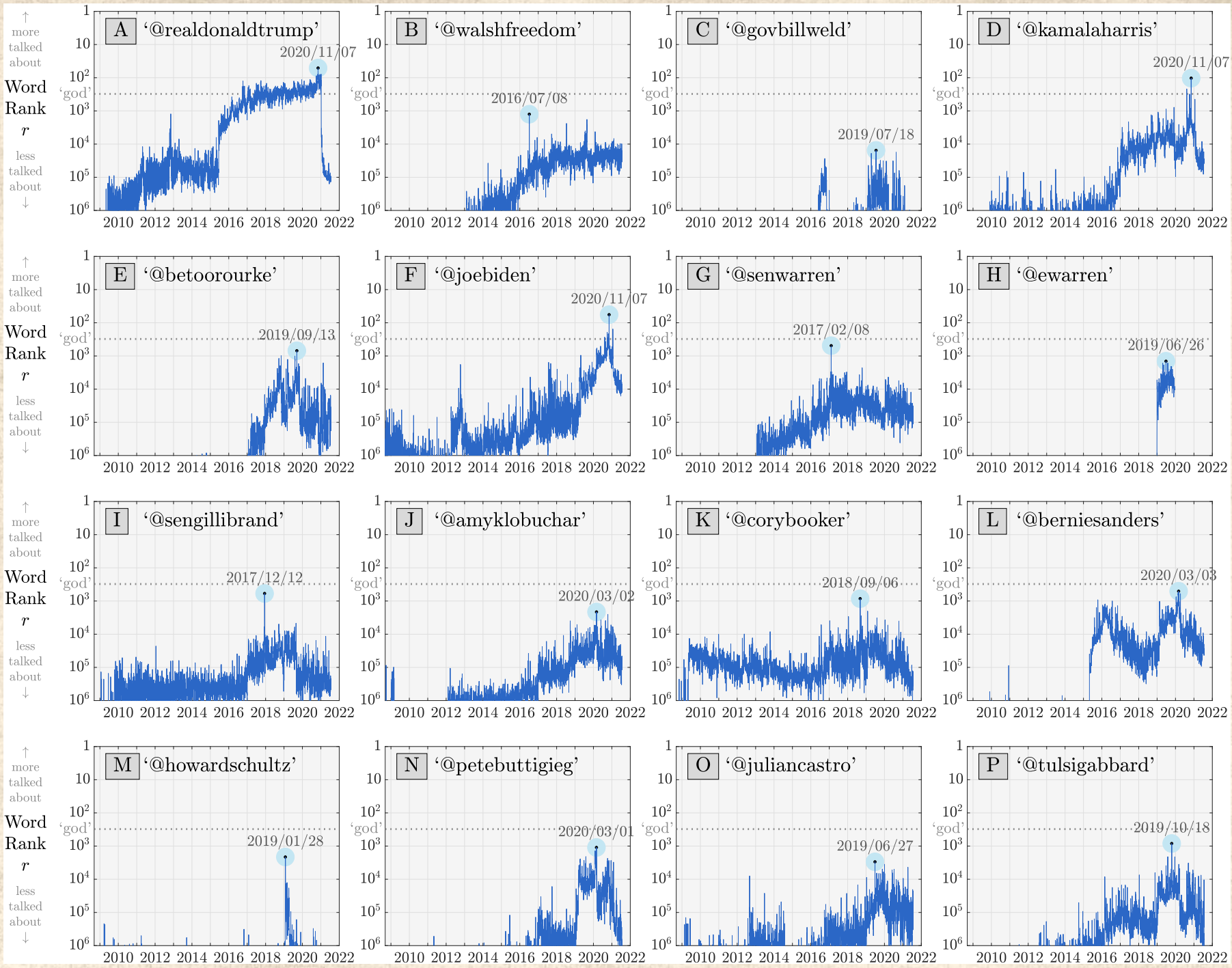
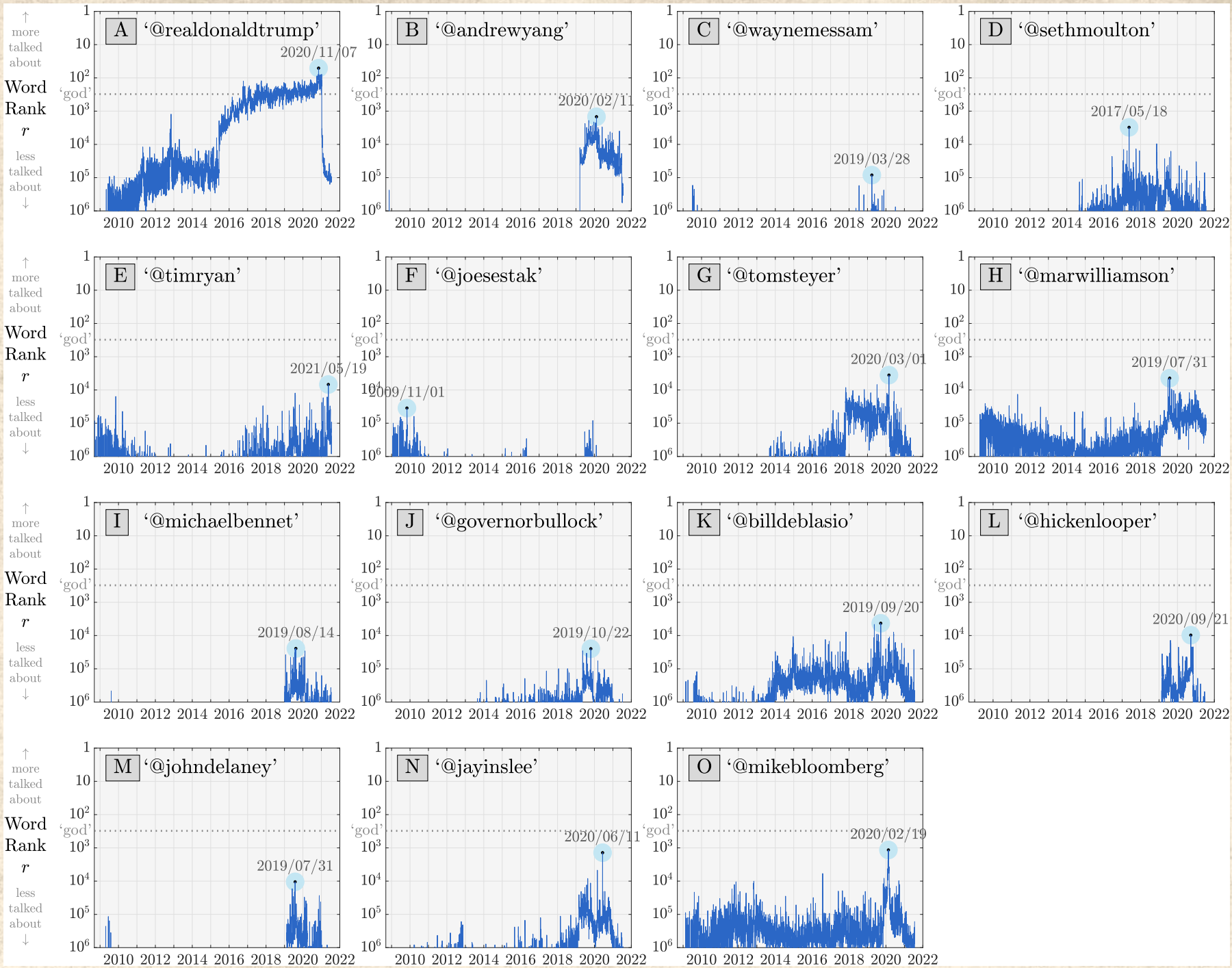
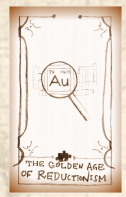
2010 2012 2014 2016 2018 2020 2022


A '@realdonaldtrump'
2020/11/07
B '@walshfreedom'
2016/07/08
C '@govbillweld'
2019/07/18
D '@kamalaharris'
2020/11/07
E '@betoorourke'
2019/09/13
F '@joebiden'
2020/11/07
G '@senwarren'
2017/02/08
H '@ewarren'
2019/06/26
I '@sengillibrand'
2017/12/12
J '@amyklobuchar'
2020/03/02
K '@corybooker'
2018/09/06
L '@berniesanders'
2020/03/03
M '@howardschultz'
2019/01/28
N '@petebuttigieg'
2020/03/01
O '@juliancastro'
2019/06/27
P '@tulsigabbard'
2019/10/18
'god'
Word Rank r
↑ more talked about
↓ less talked about
1
10
10^2
10^3
10^4
10^5
10^6
2010 2012 2014 2016 2018 2020 2022


A ‘@realdonaldtrump’
2020/11/07
B ‘@andrewyang’
2020/02/11
C ‘@waynemessam’
2019/03/28
D ‘@sethmoulton’
2017/05/18
E ‘@timryan’
2021/05/19
2009/11/01
F ‘@joesestak’
G ‘@tomsteyer’
2020/03/01
H ‘@marwilliamson’
2019/07/31
I ‘@michaelbennet’
2019/08/14
J ‘@governorbullock’
2019/10/22
K ‘@billdeblasio’
2019/09/20
L ‘@hickenlooper’
2020/09/21
M ‘@johndelaney’
2019/07/31
N ‘@jayinslee’
2020/06/11
O ‘@mikebloomberg’
2020/02/19
‘god’
Word Rank r
more talked about
less talked about
2010 2012 2014 2016 2018 2020 2022

THE SUN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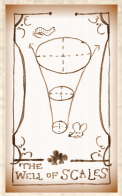
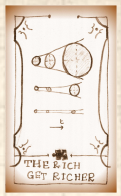
THE GOLDEN AGE OF REDUCTIONISM

THE MANIFESTO


THE WELL OF SCALES

y=x^n
THE UNEXPECTED TRANSFIGURATION

MINISTRY OF RANDOM WALKS


THE RICH GET RICHER

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1 2
5 4 3
6 7 8
THE LAW OF DIGITS FIRST

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THE EMERGENCE OF STRUCTURE

THE EMERGENCE OF DESTRUCTION

THE EMERGENCE OF THINKING

It was the best of times,
it was the worst of times
THE EMERGENCE OF STORIES

THE MECHANICS STATISTICAL

TWO THRESHOLDS OF PERCOLATION

THE NETWORKS COMPLEX

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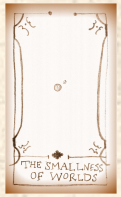
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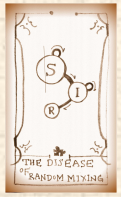
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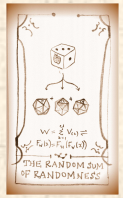
THE RANDOM SUM OF RANDOMNESS

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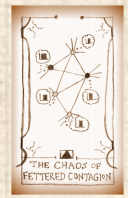
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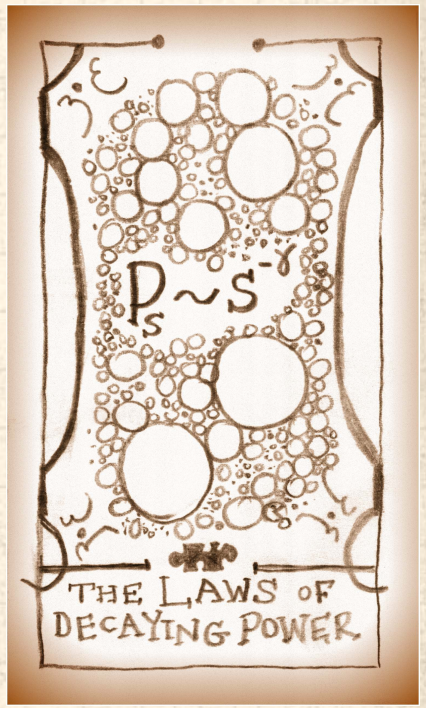
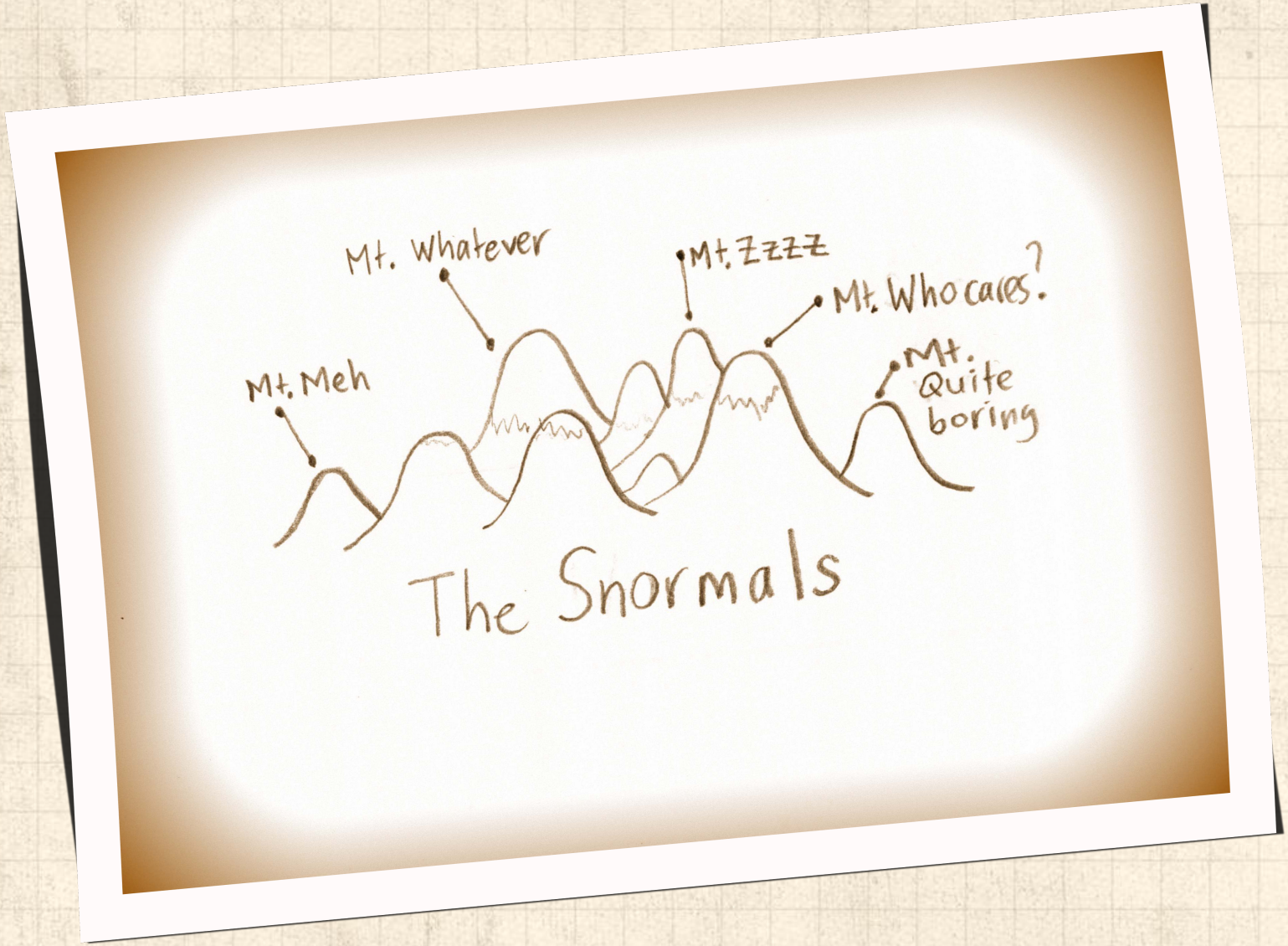

Ps ~ S^-γ
THE LAWS OF DECAYING POWER



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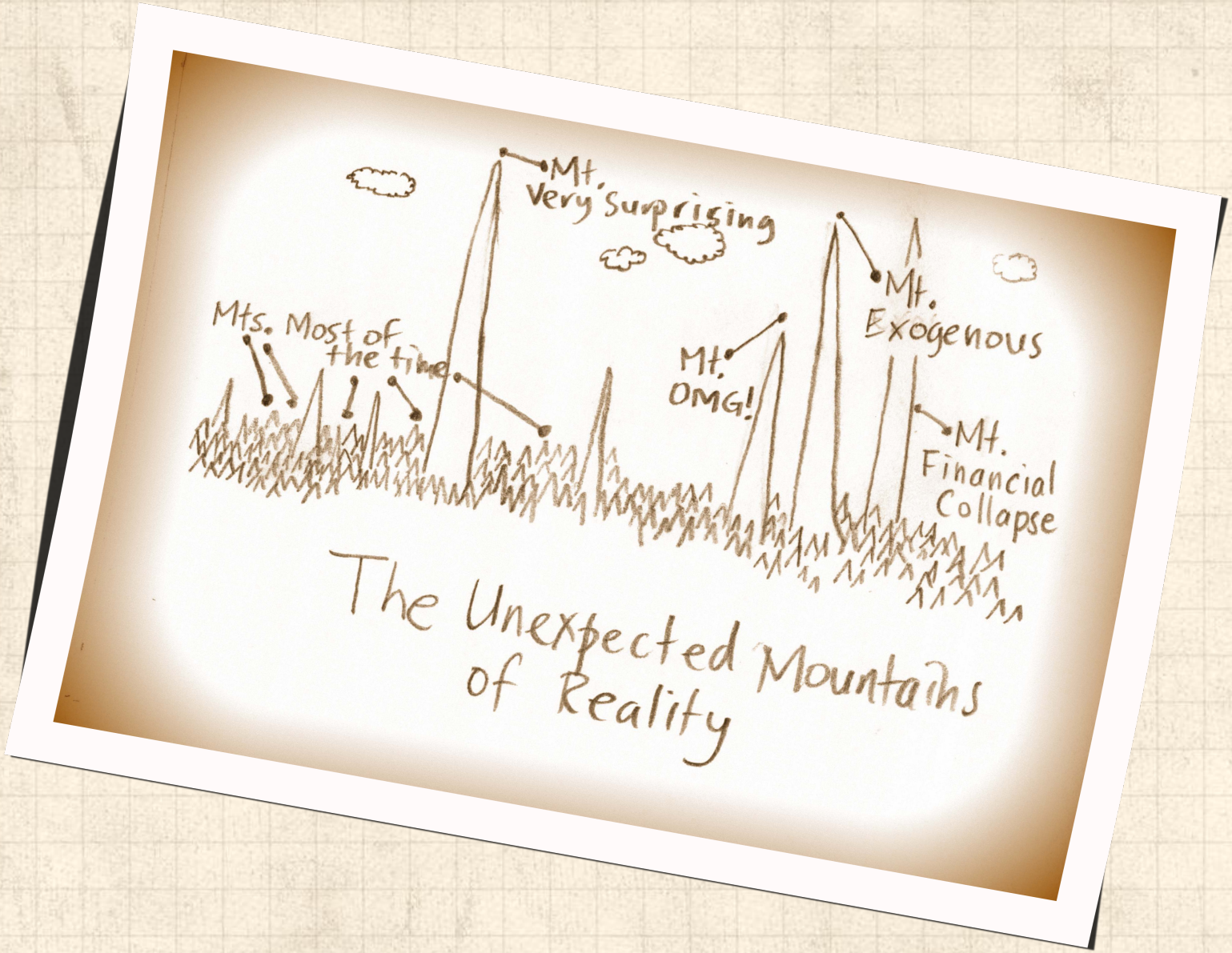

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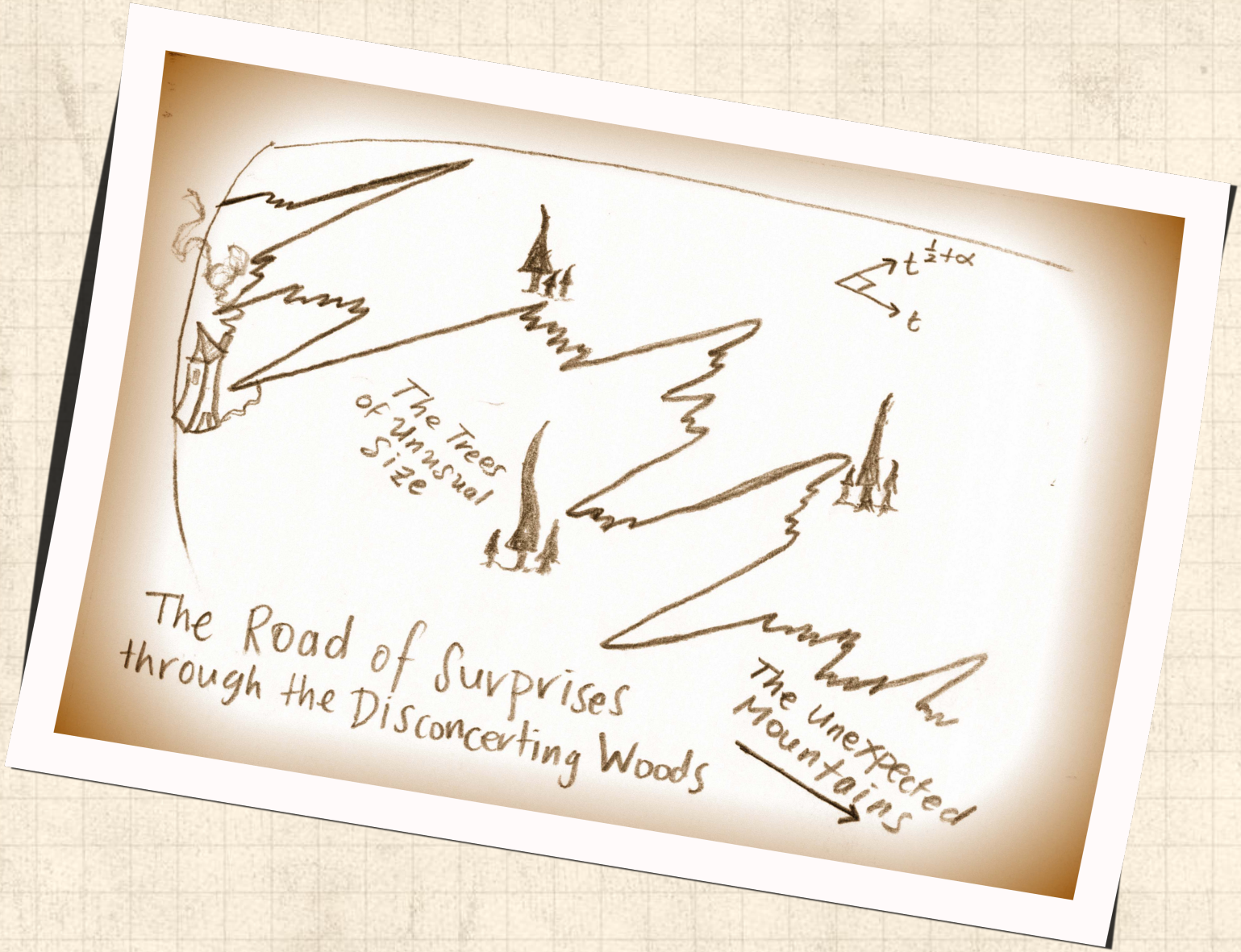

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The long tail:

Money

≡

Belief

"Building a better America—One wealth quintile at a time"
Norton and Ariely, 2011. [15]

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1. Estimate the percentage of all wealth owned by individuals when grouped into quintiles.

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2. Estimate what you believe each quintile should own, ideally.

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Belief

Two questions about wealth distribution in the United States:

1. Estimate the percentage of all wealth owned by individuals when grouped into quintiles.
2. Estimate what you believe each quintile should own, ideally.
3. Extremes: 100, 0, 0, 0, 0 and 20, 20, 20, 20, 20

"Building a better America—One wealth quintile at a time" Norton and Ariely, 2011. [15]

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Wealth distribution in the United States: [15]

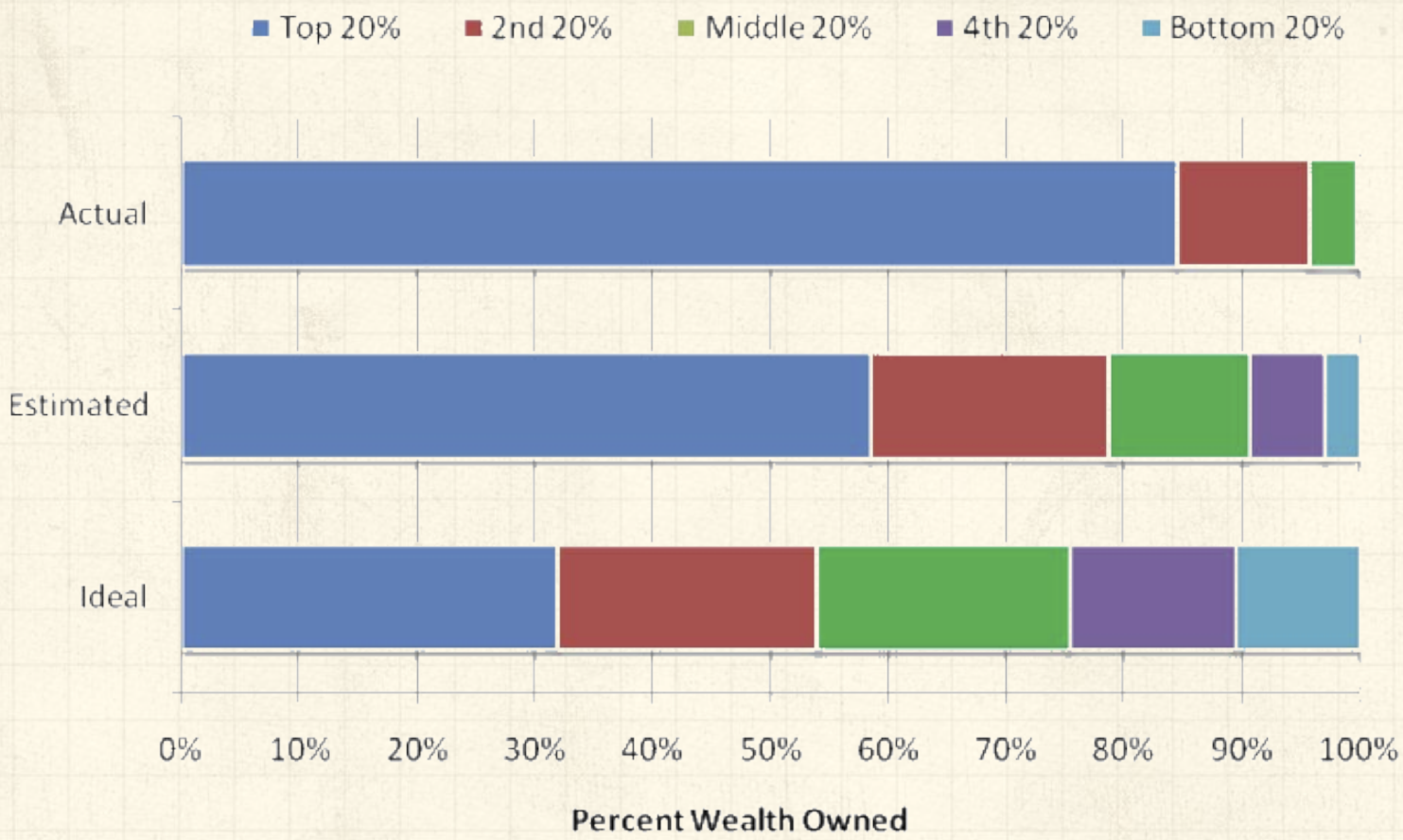

Fig. 2. The actual United States wealth distribution plotted against the estimated and ideal distributions across all respondents. Because of their small percentage share of total wealth, both the "4th 20%" value (0.2%) and the "Bottom 20%" value (0.1%) are not visible in the "Actual" distribution.

"Building a better America—One wealth quintile at a time" Norton and Ariely, 2011. [15]

Wealth distribution in the United States: [15]

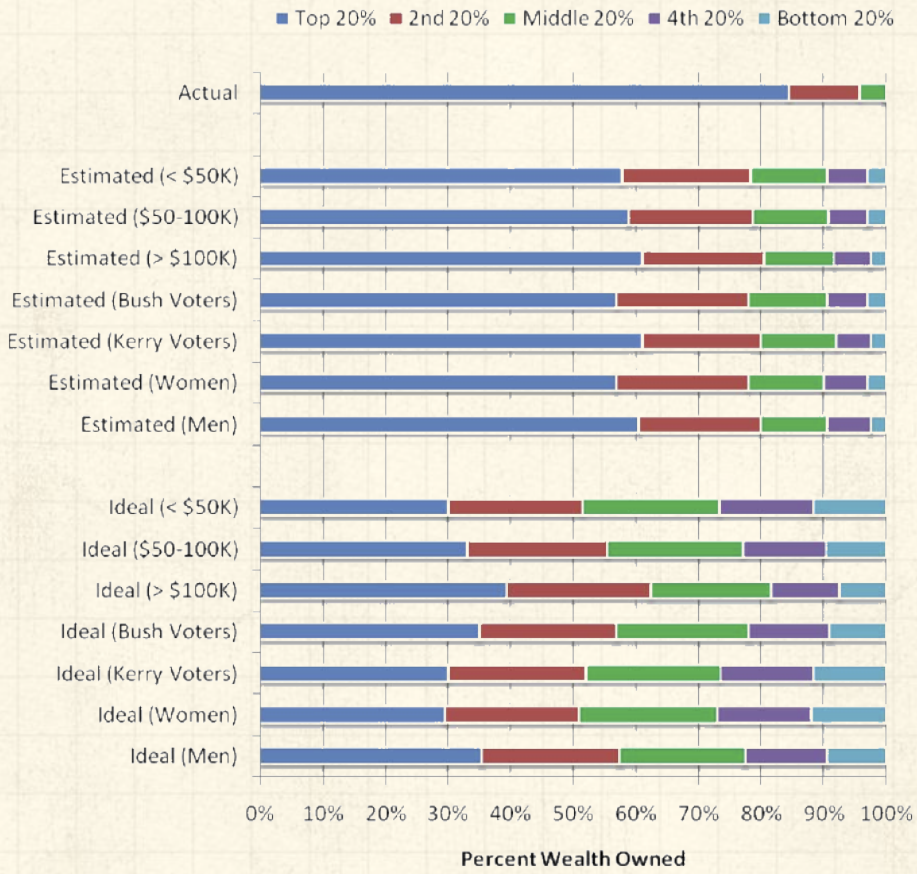

Fig. 3. The actual United States wealth distribution plotted against the estimated and ideal distributions of respondents of different income levels, political affiliations, and genders. Because of their small percentage share of total wealth, both the "4th 20%" value (0.2%) and the "Bottom 20%" value (0.1%) are not visible in the "Actual" distribution.

Aside: The 1% framing may be effective but makes no sense.

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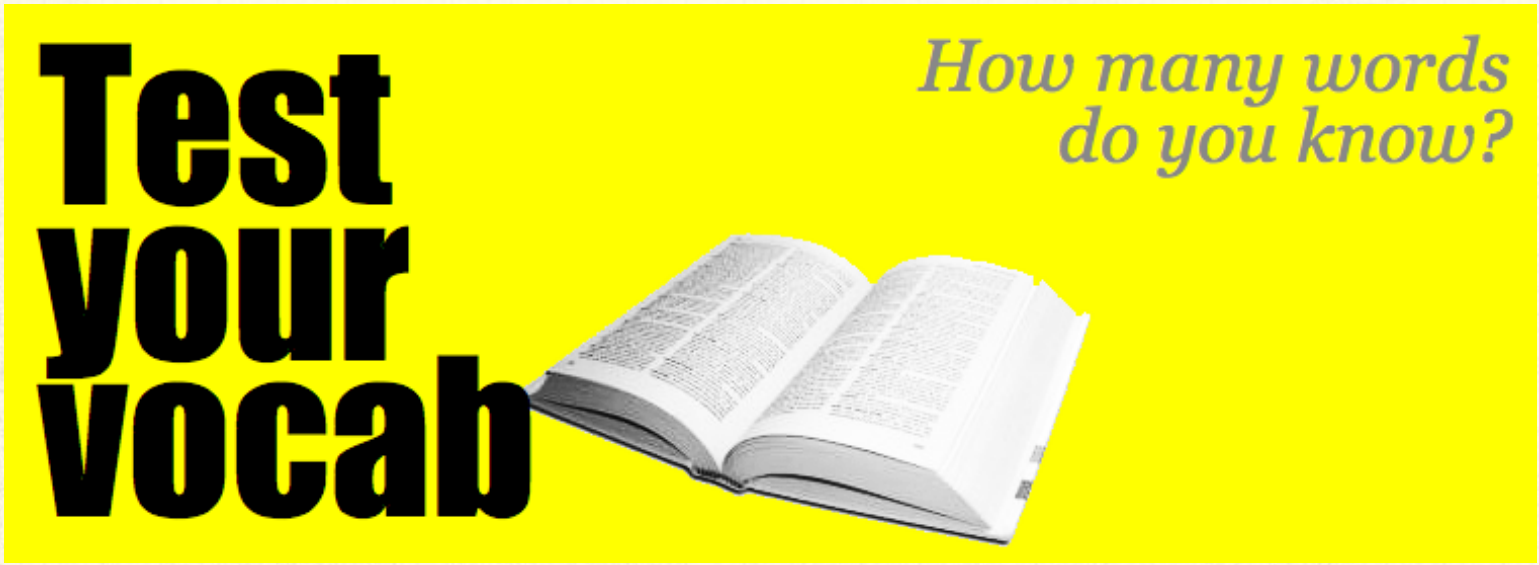
My, what big words you have ...



- Test capitalizes on word frequency following a heavily skewed frequency distribution with a decaying power-law tail.

- This Man Can Pronounce Every Word in the Dictionary (story here)
- Best of Dr. Bailly

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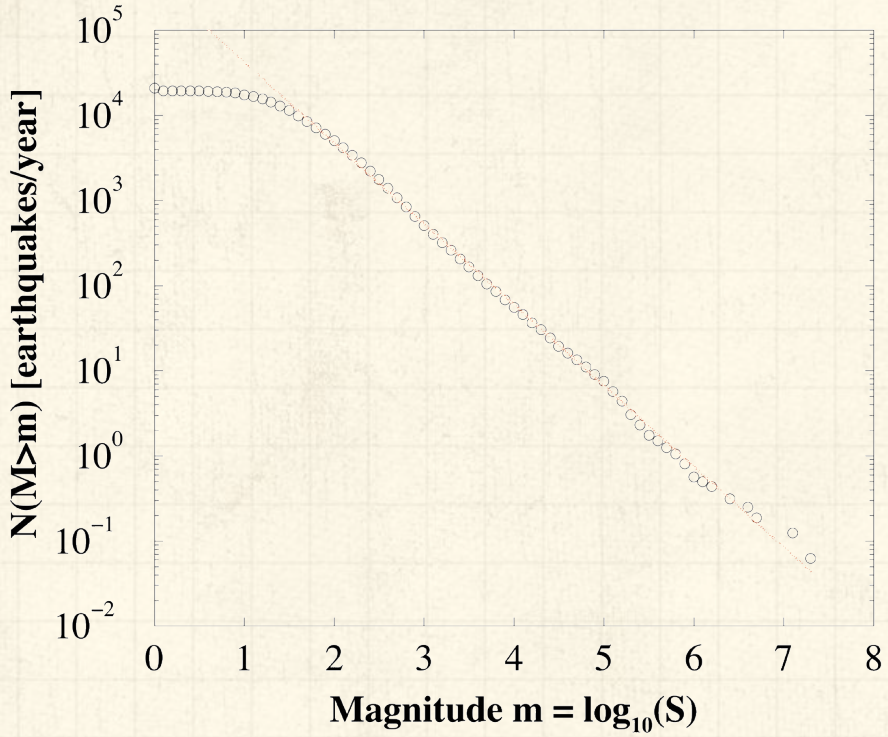
The statistics of surprise:

Gutenberg-Richter law



- Log-log plot
- Base 10
- Slope = -1

$$N(M > m) \propto m^{-1}$$

- From both the very awkwardly similar Christensen et al. and Bak et al.:
  “Unified scaling law for earthquakes” [5, 2]

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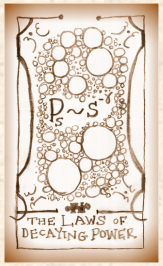

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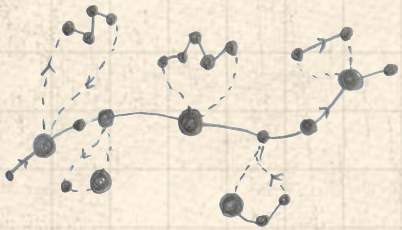
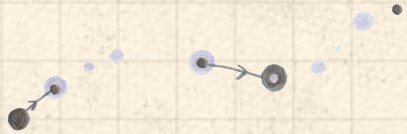
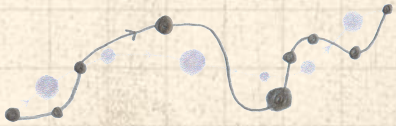
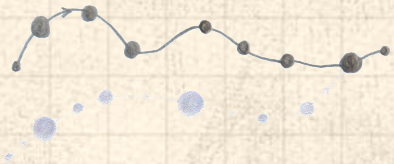
THE ADJACENT NARRATIVES

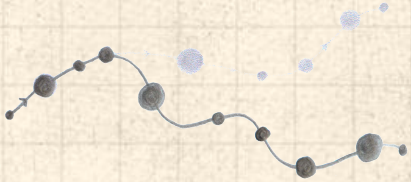
Adjacent narratives—why mistruths and conspiracy theories exist and flourish:

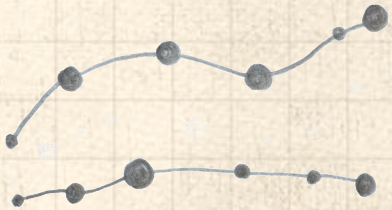


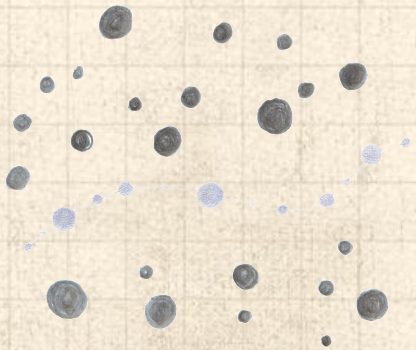












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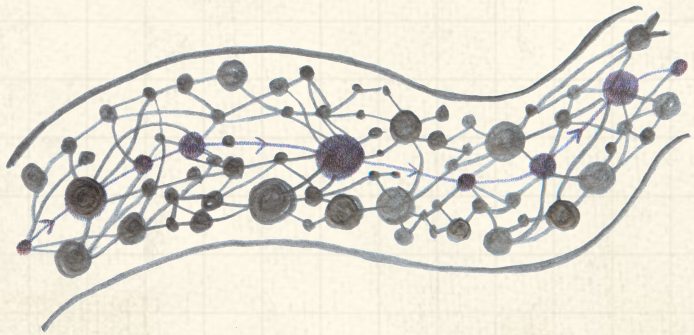
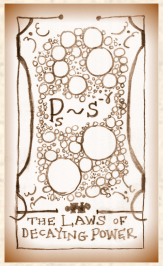
Why adjacent narratives exist and untrue stories flourish:

1/4. A real story is never recorded and retold completely





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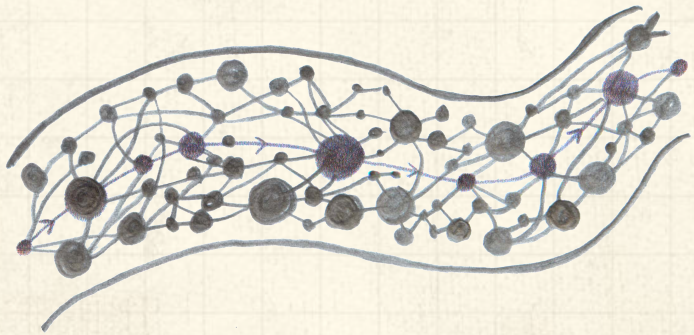
1/4. A real story is never recorded and retold completely

- Impossible to record every detail.



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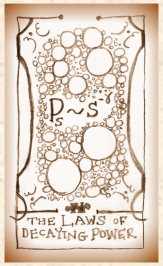

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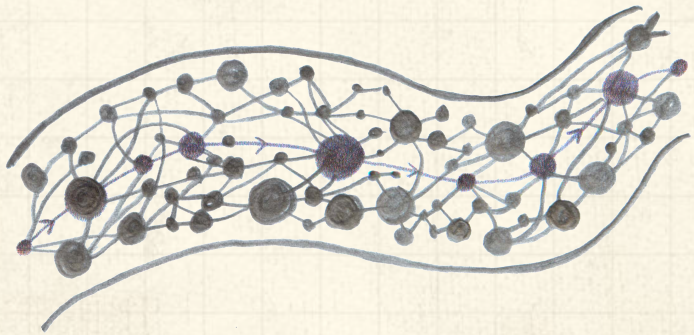
1/4. A real story is never recorded and retold completely

- Impossible to record every detail.
- Recording entails compression to scale of medium (narrative hierarchy).



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Why adjacent narratives exist and untrue stories flourish:

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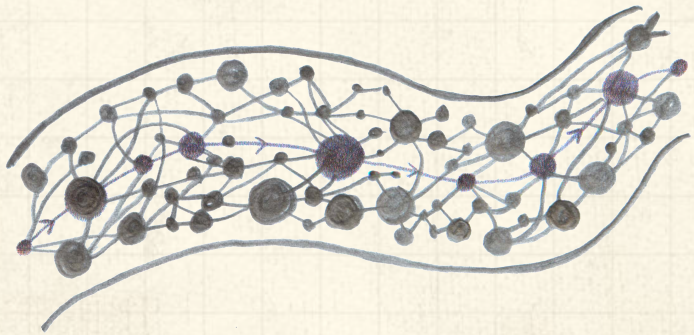
- Story logic will be favored, and seemingly irrelevant aspects discarded.



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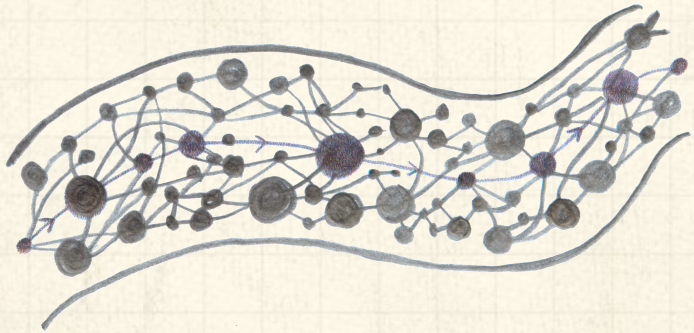
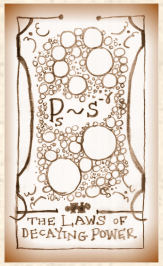
Why adjacent narratives exist and untrue stories flourish:

2/4. The infinitude of adjacent stories will afford “better” stories





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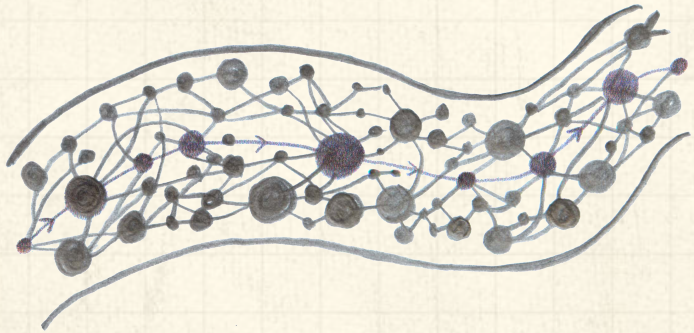

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Why adjacent narratives exist and untrue stories flourish:

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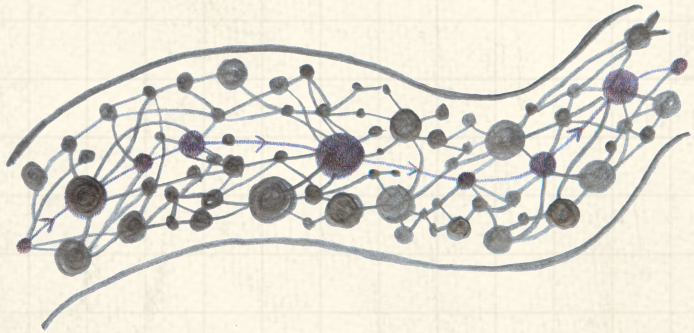
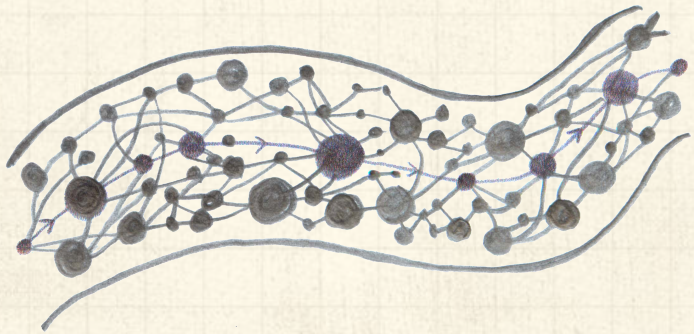
- Better = More engaging, more motivating to spread, more durable under spreading.
- Better stories exist for truthful recorders and retellers (journalists).



Why adjacent narratives exist and untrue stories flourish:

3/4. The infinitude of adjacent stories means “better” stories exist for those who would disinform



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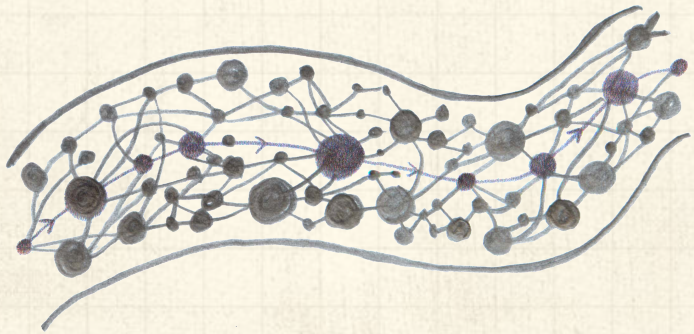

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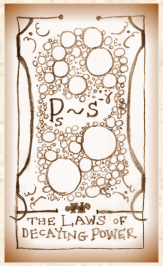

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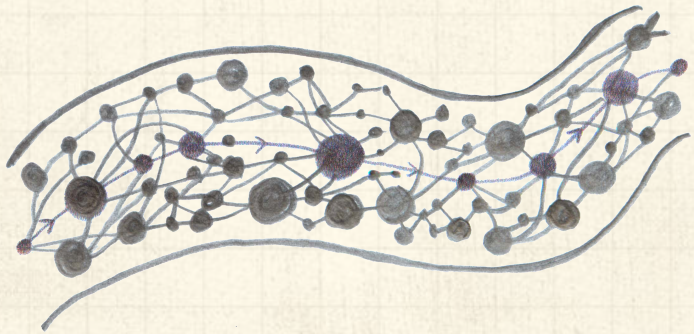

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- Adjacent stories may be truth-limited and/or falsehood-bearing.
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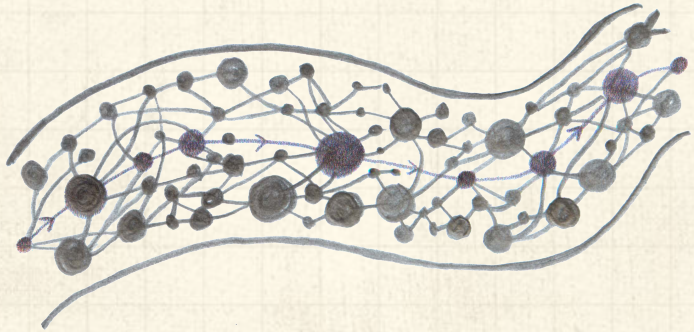
- Even the seemingly non-adjacent must have some plausibility (Pizzagate).



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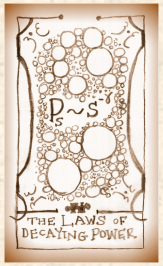
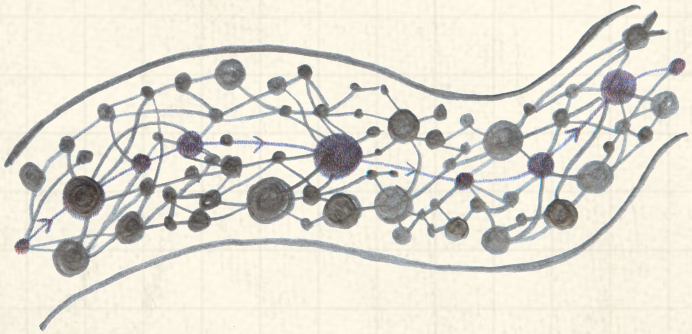


Why adjacent narratives exist and untrue stories flourish:

4/4. Character is the short cut to story



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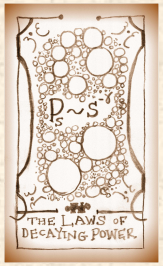

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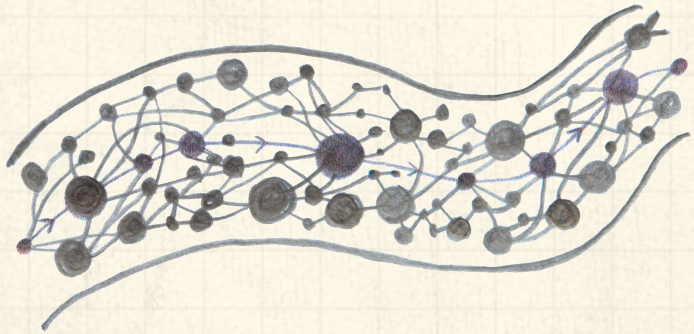

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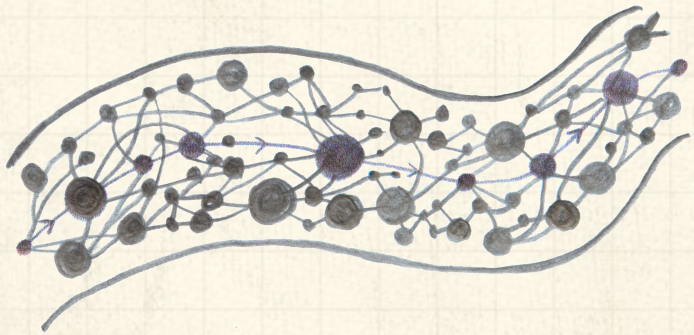

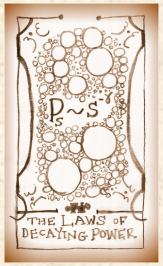

Why adjacent narratives exist and untrue stories flourish:

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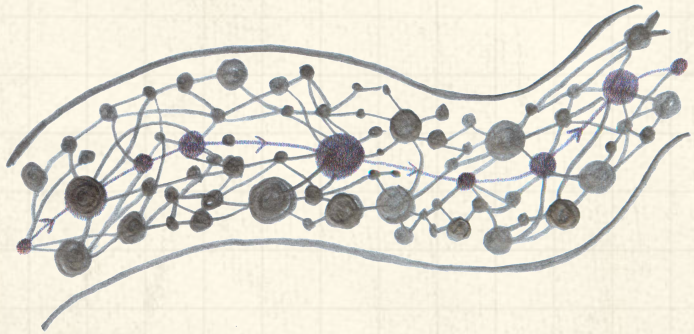
- A believe-to-be evil character can do anything.
- Iterate between character and story to make the character fixed.



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Things that spread quickly:

+ News + Conspiracy Theories ...

buzzfeed.com:

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The boiled-down essence of stories:

The three fundamental events of (non-clone) life:

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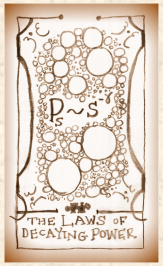
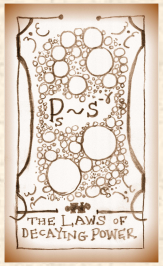


The boiled-down essence of stories:

The three fundamental events of (non-clone) life:

- Hatchings, Matchings, and Dispatchings.



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- Stories encode survival algorithms.

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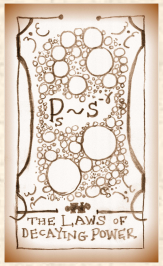

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- Stories encode survival algorithms.
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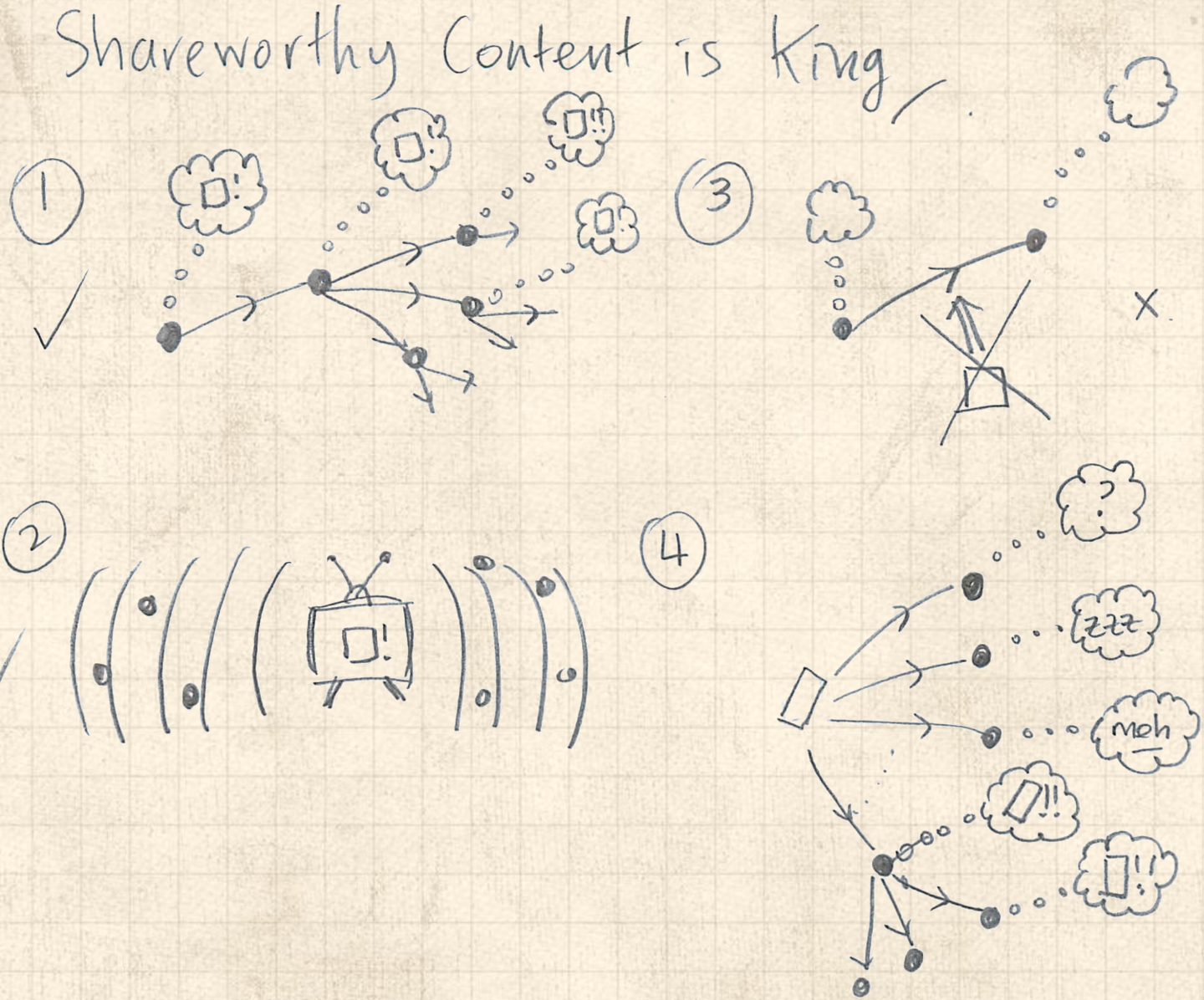
- Stories are dynamic paths of the true, the possible, the unlikely.
- The unifying theme of existence is existence.

Deep fame:



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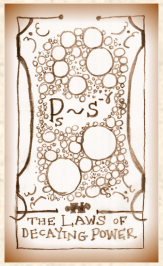
Shareworthy Content is “King”:

1. Build entities/messages/stories that have intrinsic and social value out in the Social Wild.



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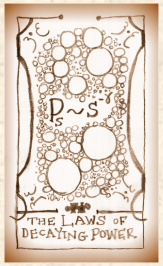

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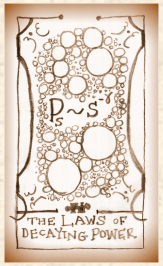

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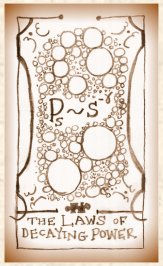

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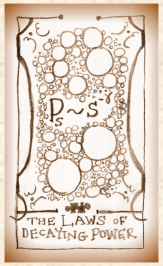

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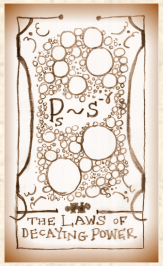

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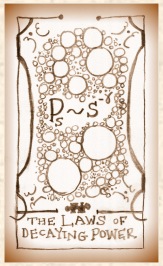
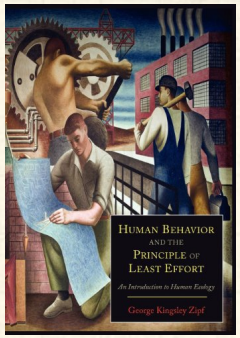
7. Challenge: What's the societal vaccine for conspiracy theories?



Fame: Zipfian rank-frequency plots

George Kingsley Zipf:

- Noted various rank distributions
  have power-law tails, often with exponent near -1
  (word frequency, city sizes, species numbers, ...)
- Zipf's 1949 Magnum Opus:



"Human Behaviour and the Principle of Least-Effort"
by G. K. Zipf (1949). [20]

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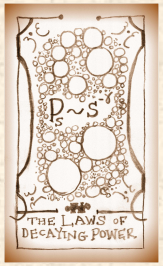
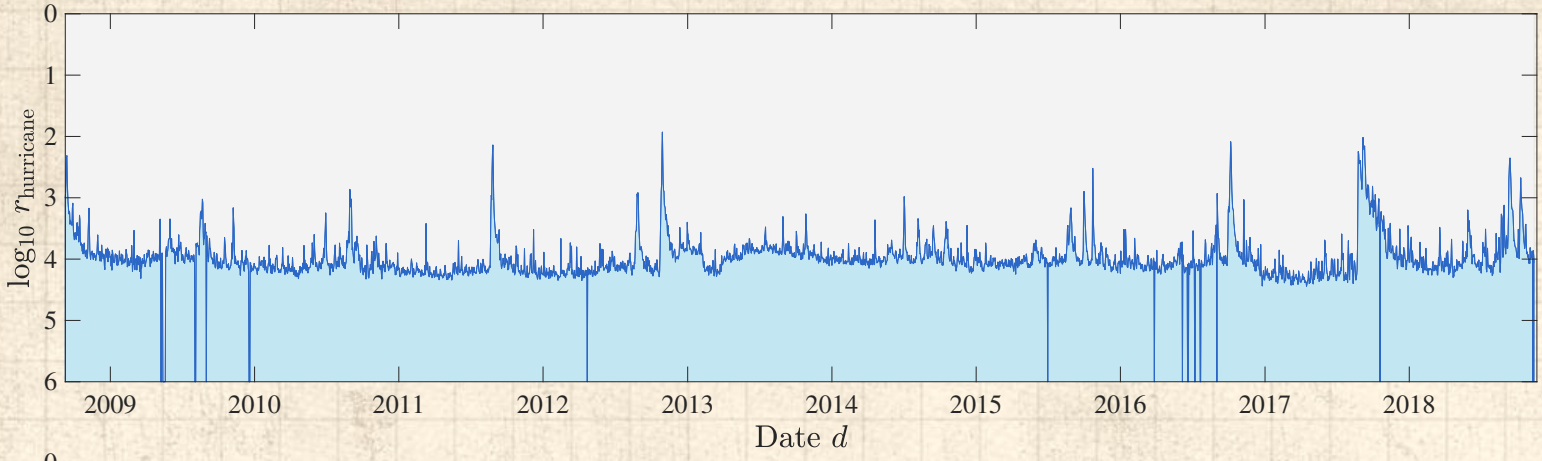
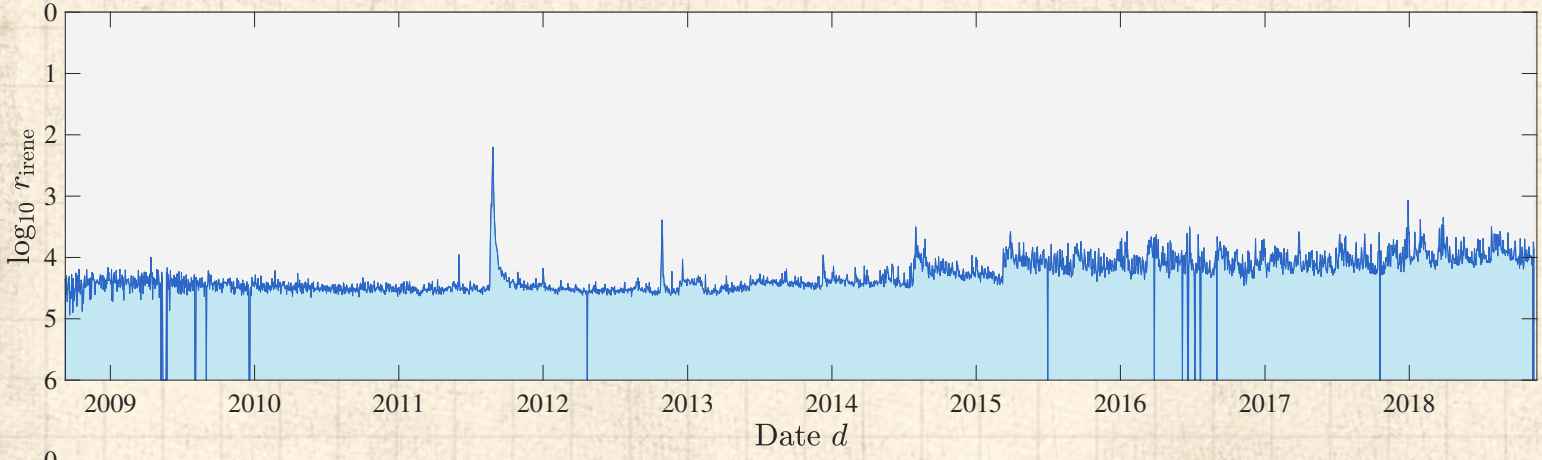
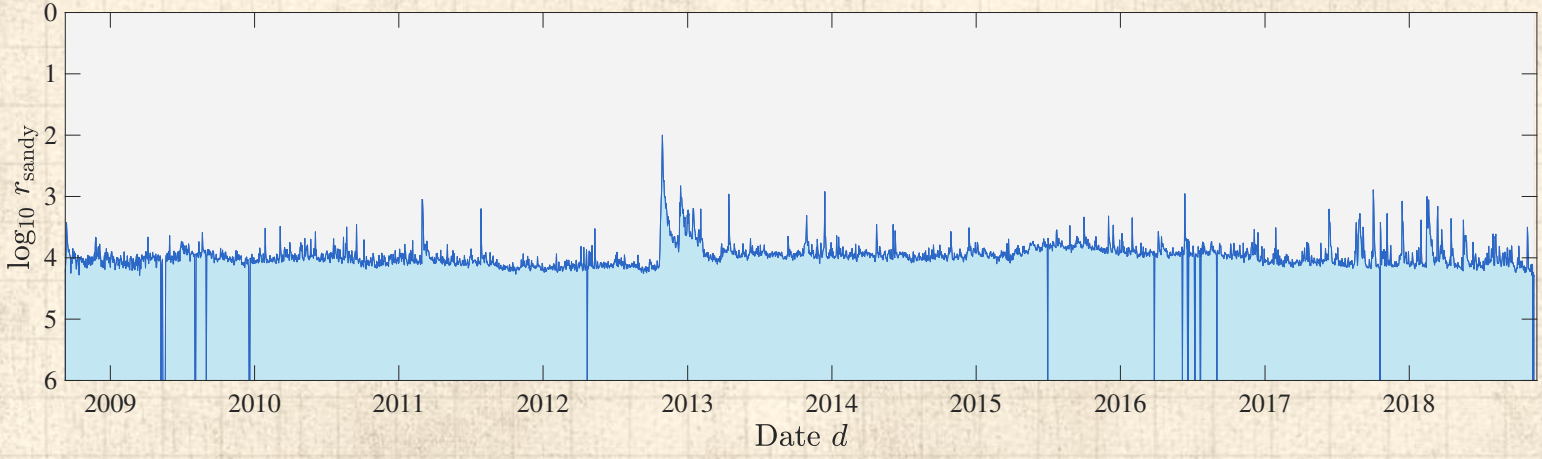


Awareness and Memory: Hurricanes







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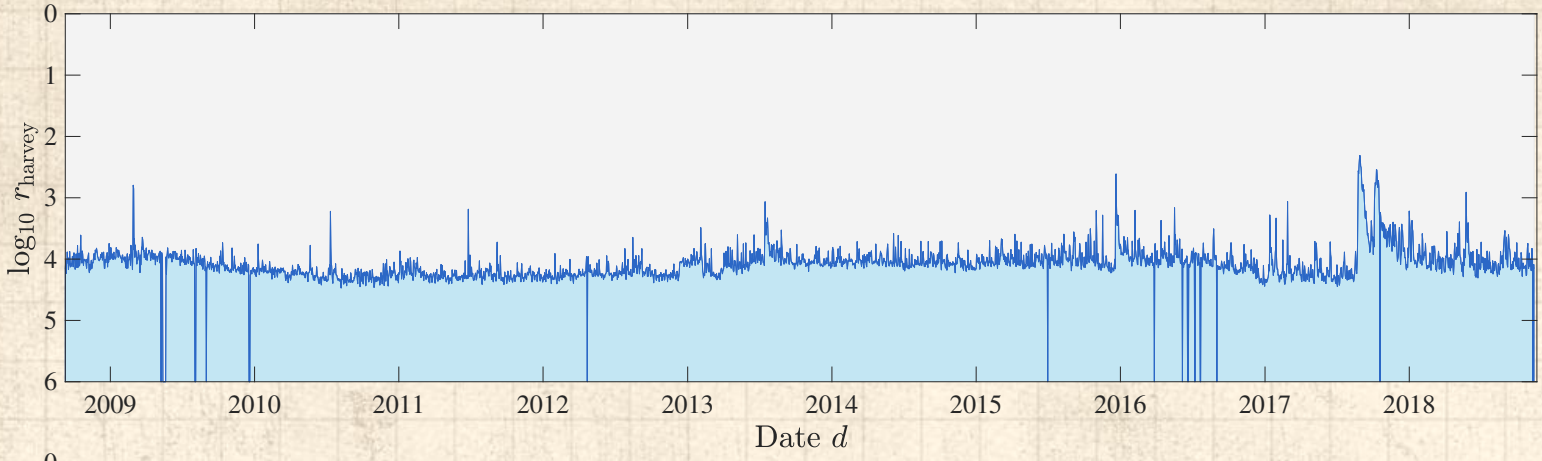

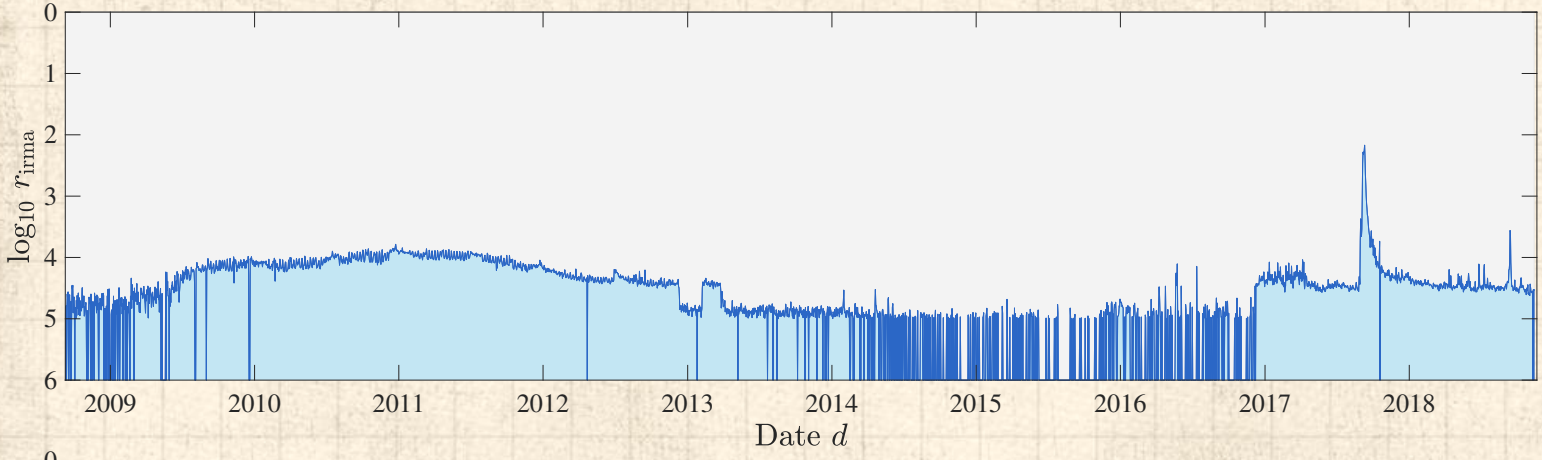

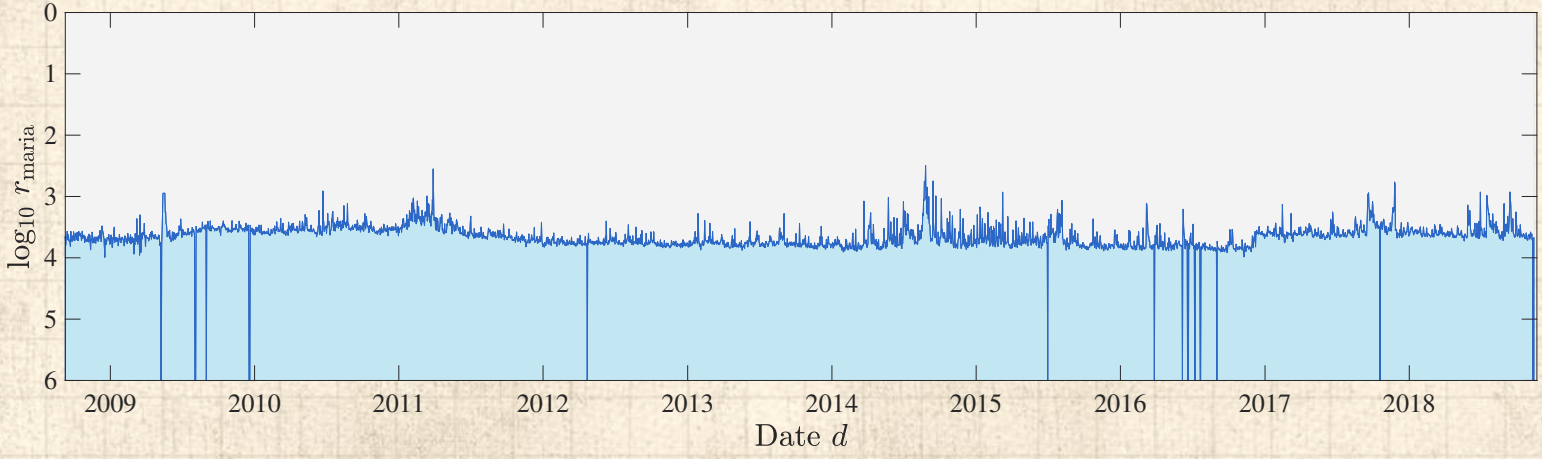

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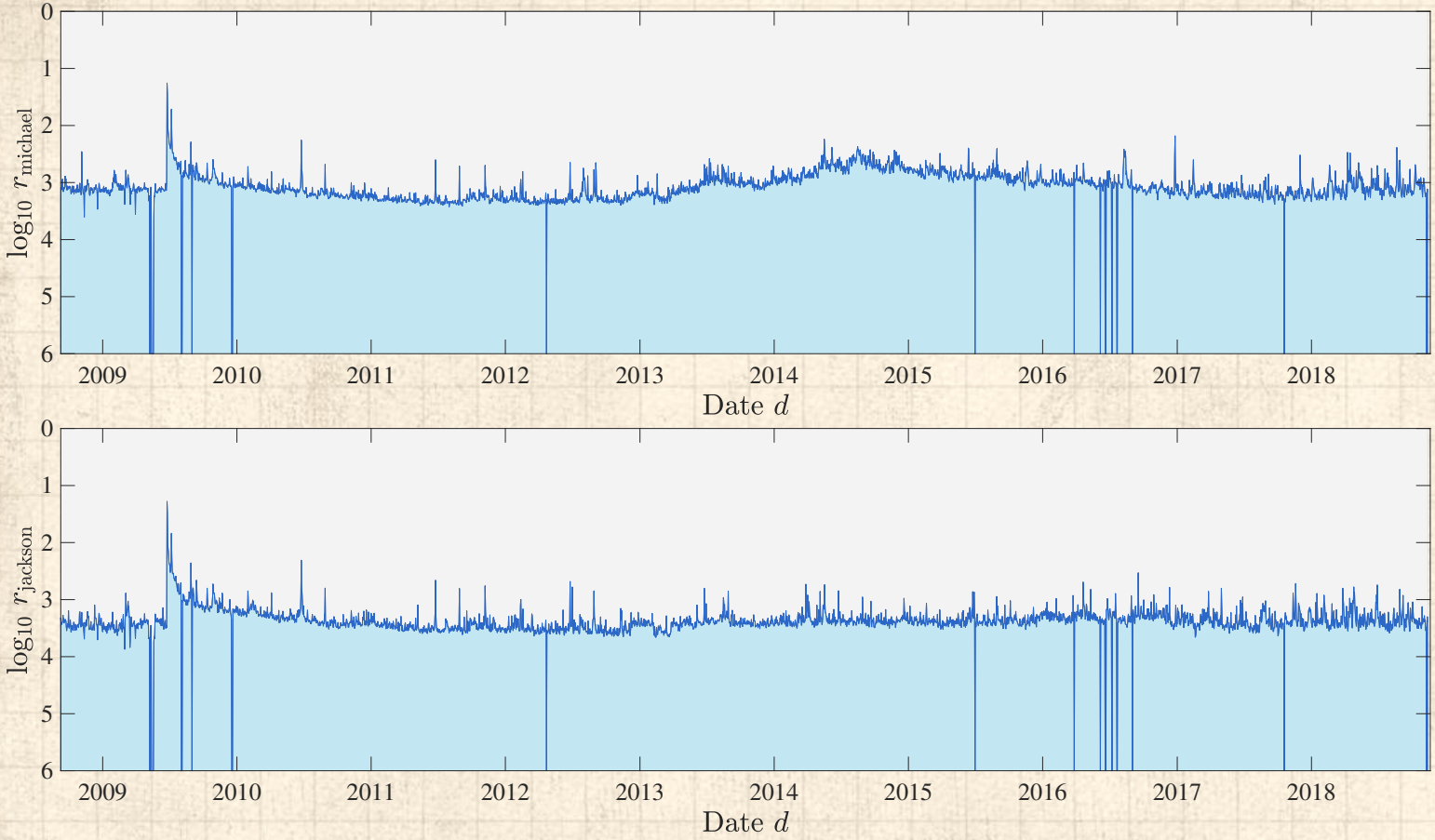
Michael Jackson



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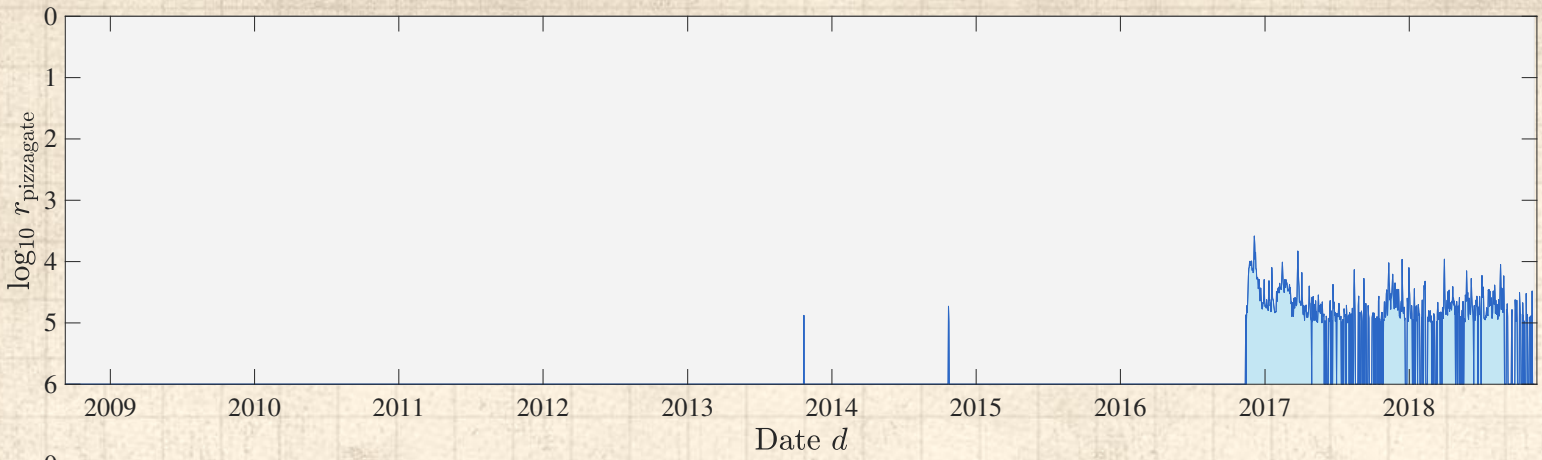

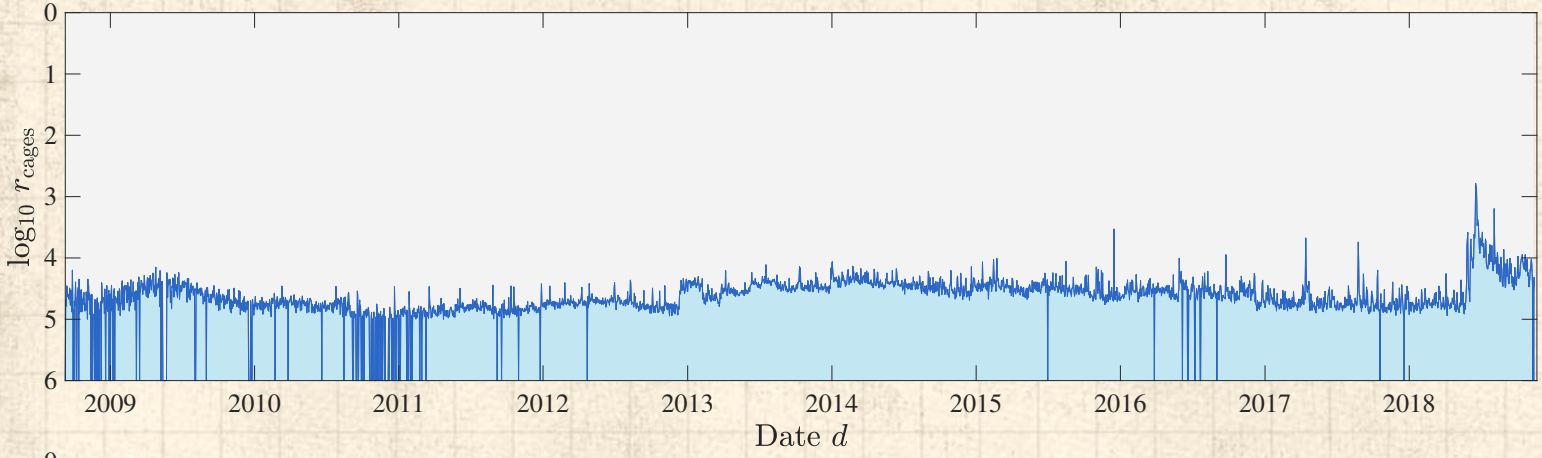

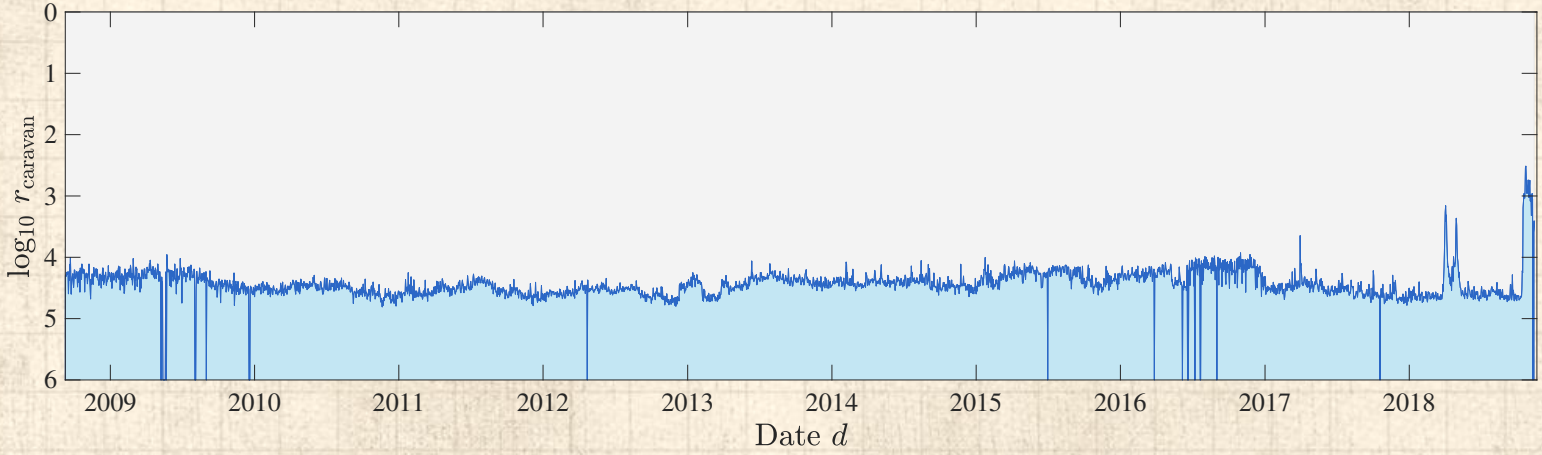

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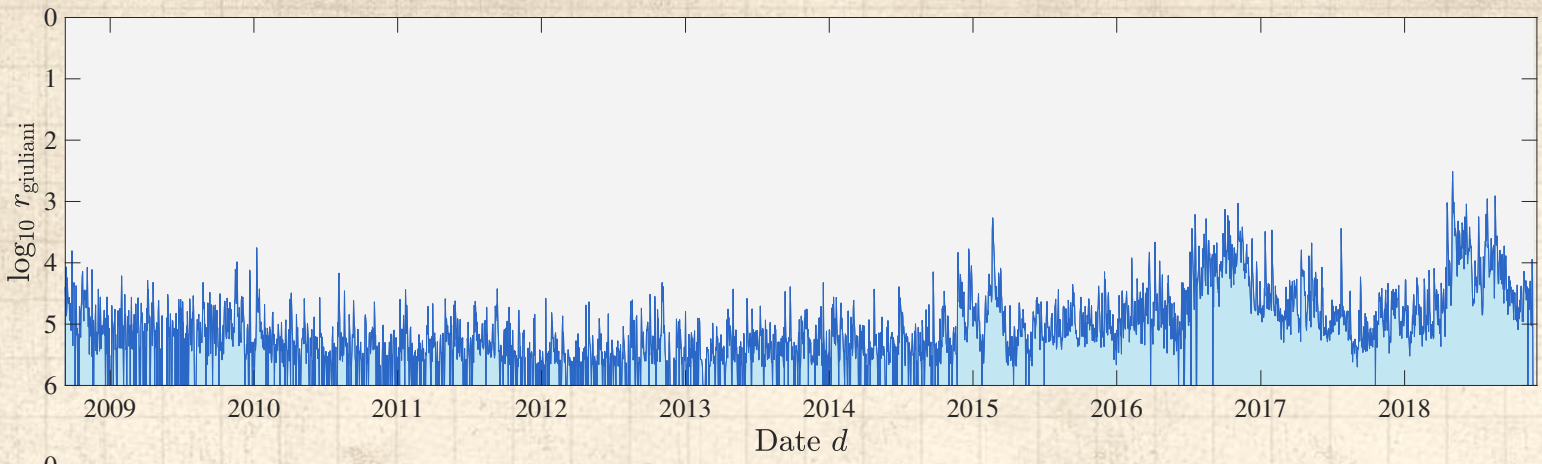

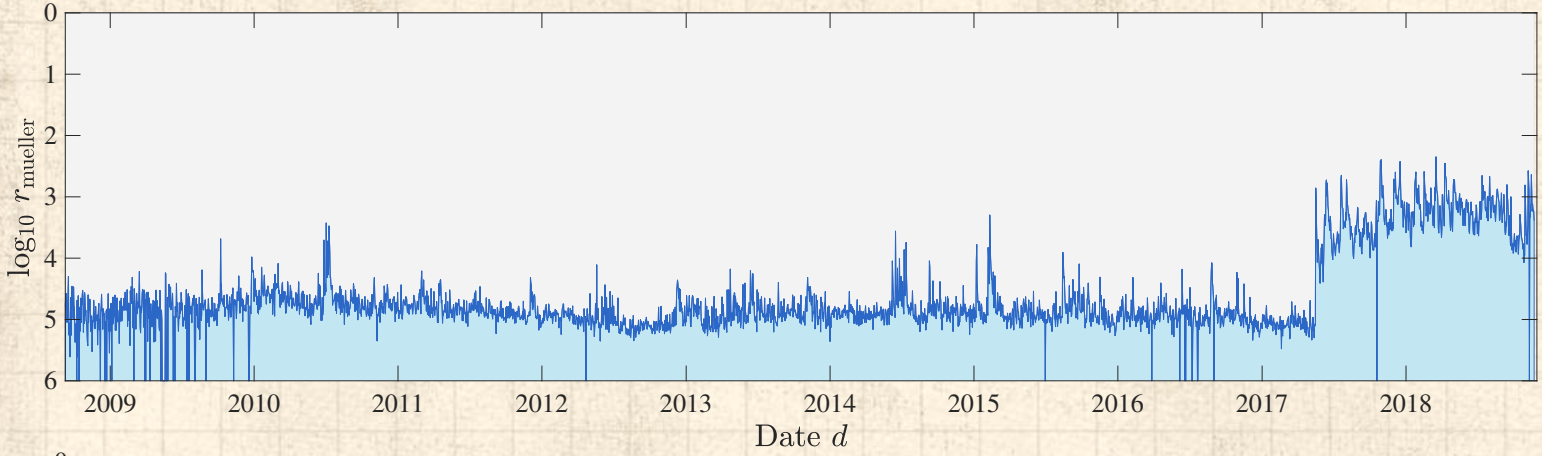

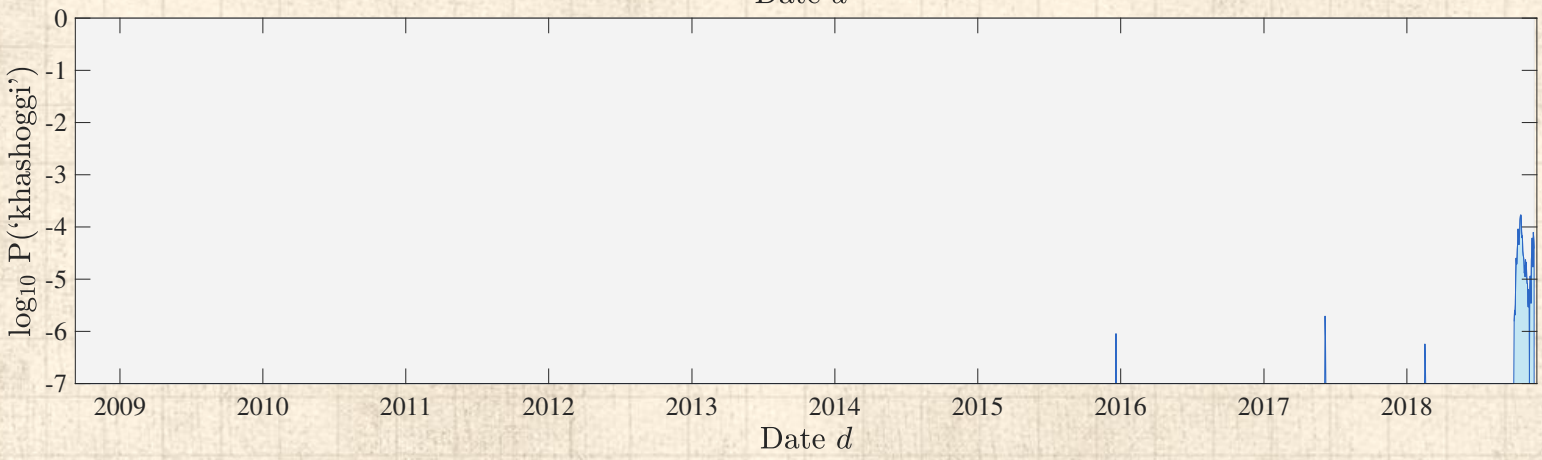

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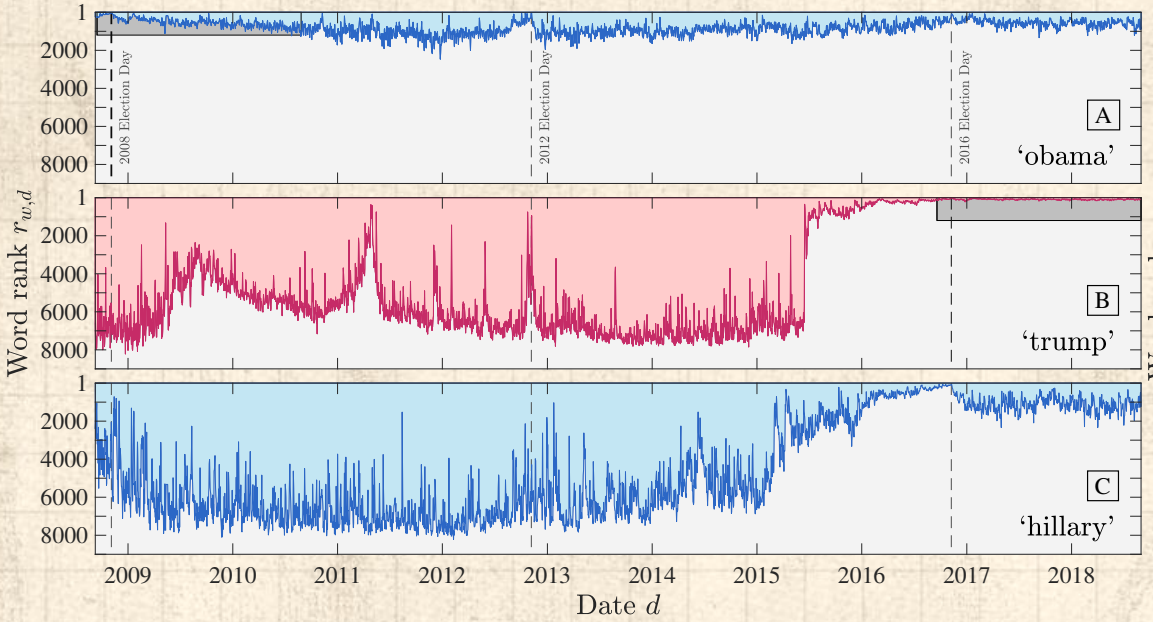

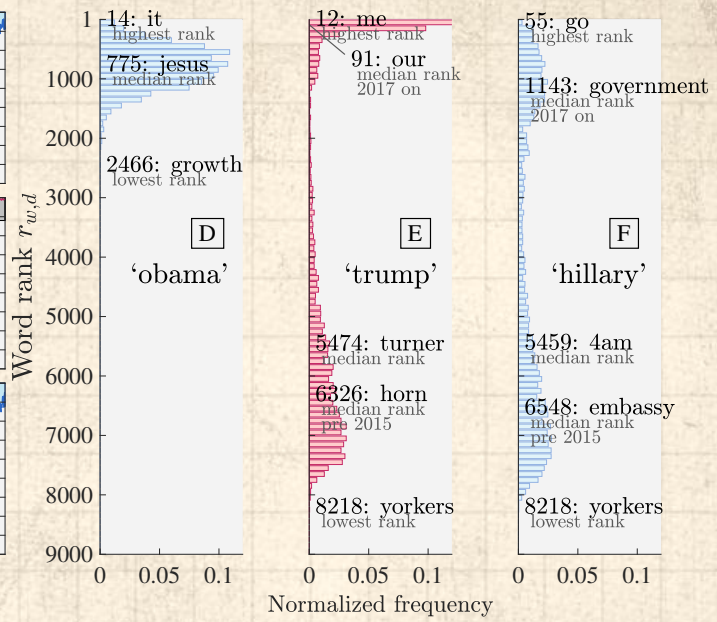

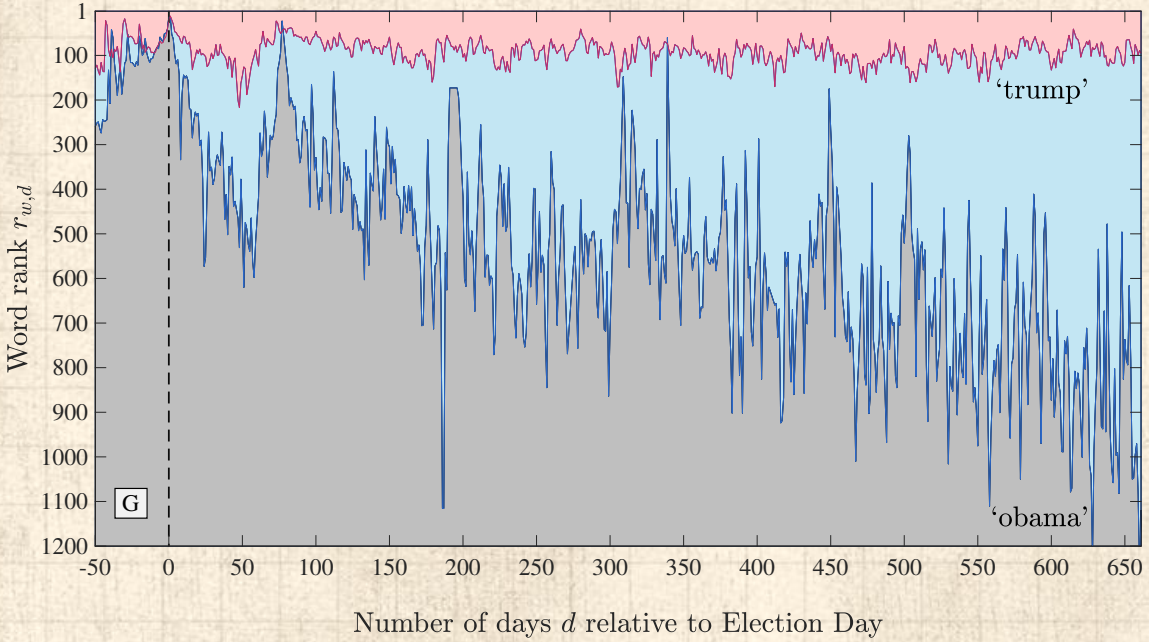

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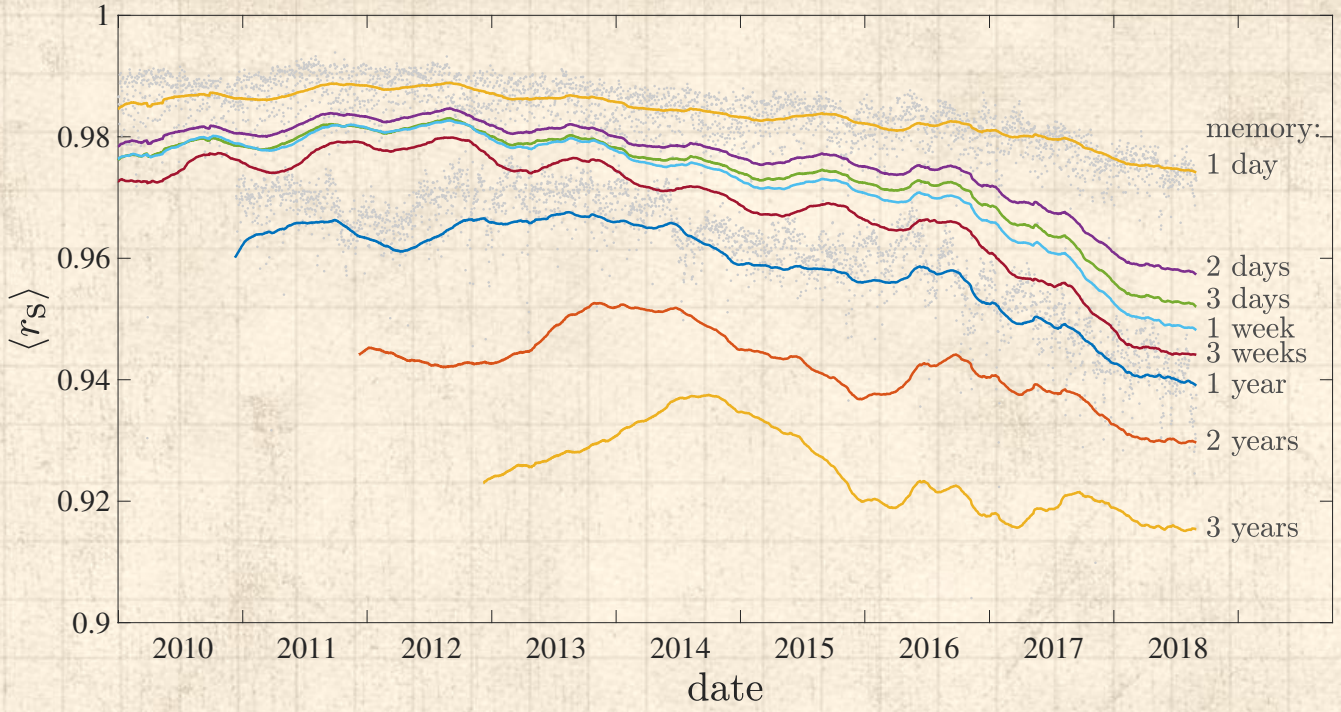
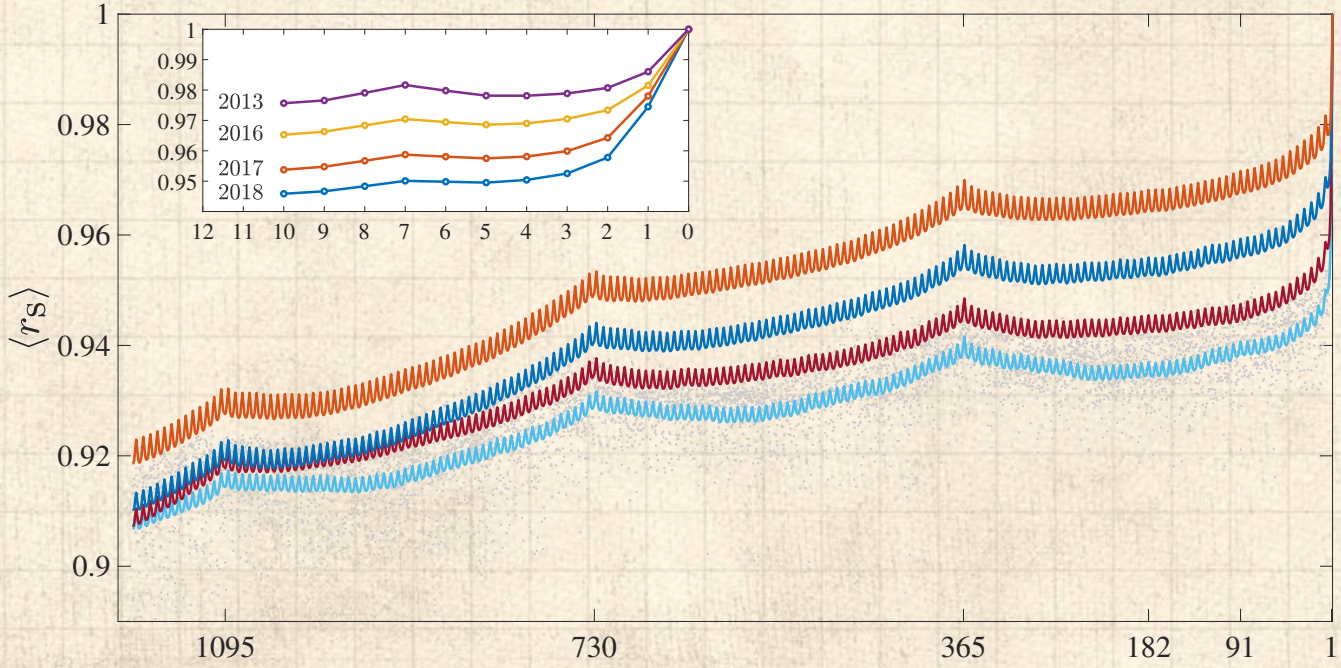
50–59: will, as, by, good, they, go, know, it's, he, who
100–109: been, its, am, off, you're, via, twitter, us, shit, had
150–155: everyone, could, where, tonight, hate, year
200–205: followers, birthday, yeah, guys, before, dont
250–255: mean, black, nothing, house, put, money
300–305: own, bed, remember, though, soon, stay
350–355: hell, sex, talking, youtube, we're, seen
400–405: place, sometimes, saw, don, gone, christmas
450–457: co, they're, join, early, lady, smile, red, book
500–507: half, young, wit, words, heard, sick, fast, send
550–555: pls, state, worth, pic, everybody, during
600–605: ill, pay, relationship, problem, president, month
650–655: case, photos, gay, account, knew, mood
700–705: click, fact, takes, knows, ones, crying
750–757: sister, st, pm, sound, inside, shot, lunch, answer
800–807: pain, dreams, lord, huge, kiss, child, movies, card
850–855: drunk, wife, killed, forgot, happens, hoe
900–905: united, lots, simple, watched, review, brown
950–956: absolutely, laughing, price, walking, sense, bar, taken
1000–1005: meant, chicken, aww, four, soo, asking
1050–1057: near, space, earth, piece, writing, kno, hurts, xxx
1100–1105: train, india, award, camera, awkward, stories
1150–1154: supposed, especially, training, broken, players
1200–1205: trending, race, dying, mobile, putting, winter

Story turbulence:





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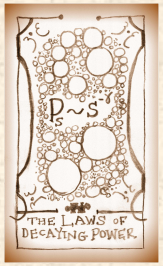

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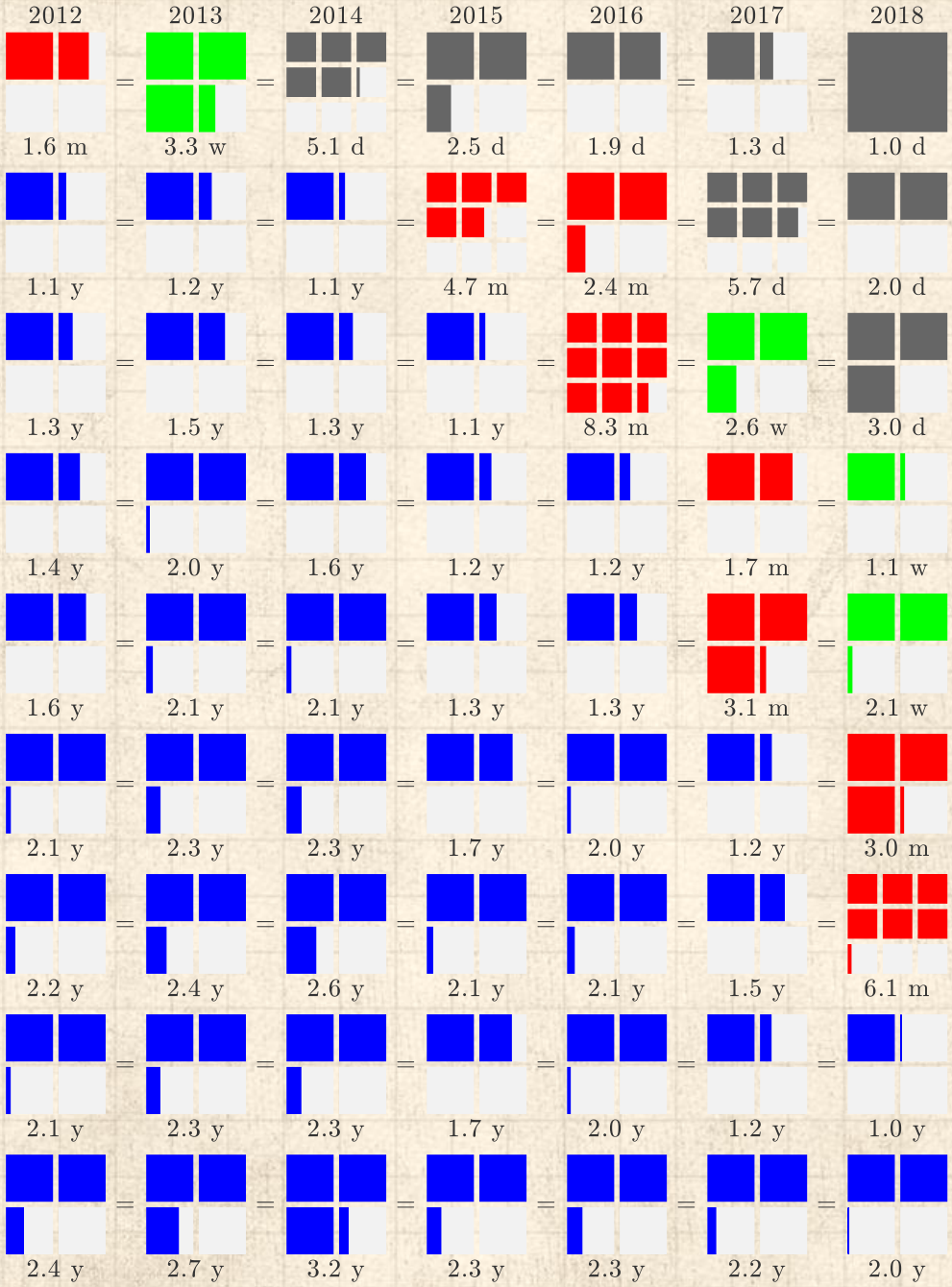

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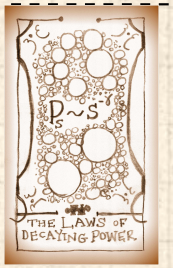
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