

Scientific and amateur analysis of Facebook Algorithm

<https://facebook.tracking.exposed>

Claudio Agosti, HOPE

 @_vecna

These slides are full of references and you can download them at
<https://facebook.tracking.exposed/initiatives>

In the information age
You are what you know
(or what you are **exposed** to?)

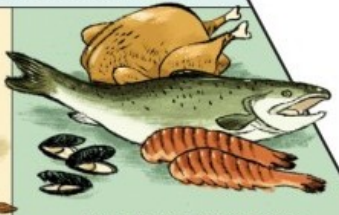
It is a bit like saying
Check your diet, because
you are what you eat



DAIRY (1-2 servings a day) OR
VITAMIN D/CALCIUM SUPPLEMENTS



NUTS, SEEDS, BEANS & TOFU



FISH, POULTRY & EGGS



VEGETABLES & FRUITS



HEALTHY FATS/OILS



WHOLE GRAINS



DAILY EXERCISE & WEIGHT CONTROL



DAIRY (1-2 servings a day) OR
VITAMIN D/CALCIUM SUPPLEMENTS



NUTS, SEEDS, BEANS & TOFU



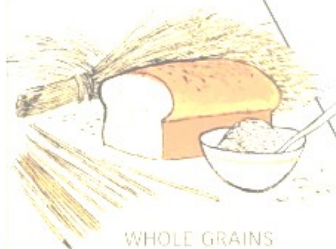
FISH, POULTRY & EGGS



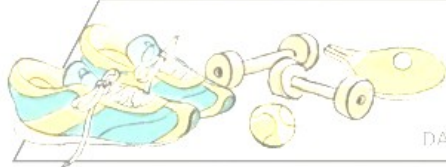
VEGETABLES & FRUITS



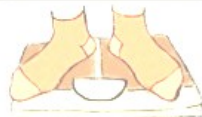
HEALTHY FATS/OILS



WHOLE GRAINS



DAILY EXERCISE & WEIGHT CONTROL





We address
Facebook because
is the biggest actor
in the field

*But you should apply the same thought to any platform
which uses the algorithm to personalize experiences*

Experimental evidence of massive-scale emotional contagion through social networks

Adam D. I. Kramer, Jamie E. Guillory, and Jeffrey T. Hancock

PNAS June 17, 2014. 111 (24) 8788-8790; published ahead of print June 2, 2014. <https://doi.org/10.1073/pnas.1320040111>

Edited by Susan T. Fiske, Princeton University, Princeton, NJ, and approved March 25, 2014 (received for review October 23, 2013)

This article has corrections. Please see:

Editorial Expression of Concern: Experimental evidence of massive-scale emotional contagion through social networks



What Happens to #Ferguson Affects Ferguson:

Net Neutrality, Algorithmic Filtering and Ferguson

FB algorithm is a conflict space



Caryn Vainio
@Hellchick

Follow

For those of you who work in social media, I need to share the story of my friend who died, and I didn't know because algorithms.

1:05 PM - 18 Dec 2017

12,522 Retweets 16,532 Likes



431 13K 17K



Caryn Vainio @Hellchick · 18 Dec 2017

A friend I've known mostly online for 15+ years died this weekend. Our friendship started on an old gaming forum, but continued on Facebook.

9 173 1.6K



Claudio Almir

Feed de Notícias ...

Messenger

Marketplace

Atalhos

Artificial Intelligenc... 20+

Tecnologia da Infor... 20+

Explorar

Páginas

Grupos

Eventos

Listas de amigos

Lembranças

Feed de Páginas 20+

Encontrar amigos

Jogos

Fotos

LIVE Vídeo ao vivo

Ver mais...

Criar

Anúncio · Página · Grupo

Evento · Campanha de

arrecadação de fundos

Criar publicação · Álbum de fotos/vídeos · Vídeo ao vivo



No que você está pensando, Claudio?

Foto/vídeo

Sentimento/atividade



This post will be kept private

Your data



Stories

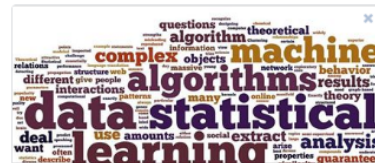


Adicionar ao seu story

Compartilhe uma foto, vídeo ou escreva algo

Grupos sugeridos

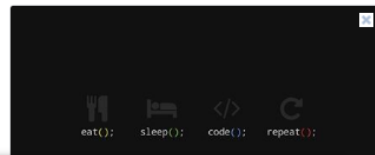
ver tudo



Deep Learning & A.I.

2.325 membros

+ Participar



Yay!! Welcome to facebook.tracking.exposed!

To let FbTREX work, you should opt-in in the forms of data-reuse you want us to enable. A more extensive explanation can be found at the page [privacy statement](#)

Give us the right to process a copy of your Facebook timeline (public data only).

The data you provide, could be reused, anonymized and not linked to any of your activity, to collectively understand the society connected to Facebook and how the algorithm has influence. All the tests are [documented and transparent](#).

Join the collective analysis of social network phenomena, please note: people are protected, you, and anyone else

[Close and Continue](#) →

(You should opt-in at least at the first button to get rid of this box)

public figures,
media, high
visibility pages

others (individual)

Public posts

Collected
& shared

Collected

Friends-only posts

Not collected

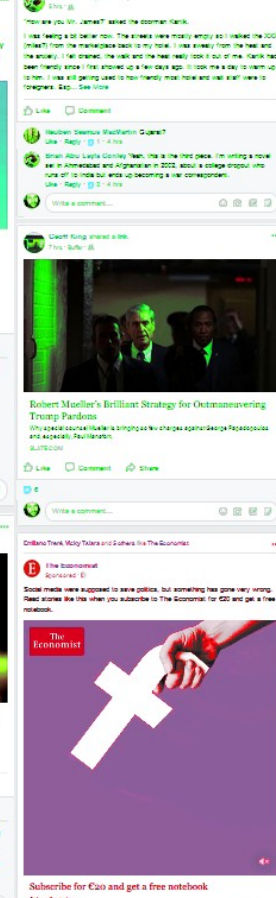
Not collected

Custom audience

Not collected

Not collected

are posts + a



The timelines are the product of four variables

- The user's profiles
- *The NewsFeed algorithm*
- What the users follow, (a.k.a. friends)
- How many posts they get (duration, frequency)

Our is black-box test, we should reduce these variables

How to start?

Italian general election, 2018



← 2013

4 March 2018

Next →

All 630 seats in the [Chamber of Deputies](#)
and 315 (out of 321) seats in the [Senate of the Republic](#)

Opinion polls

Turnout

72.93%^[1]







Leader	Matteo Salvini ^[3]	Luigi Di Maio	Matteo Renzi
Alliance	Centre-right coalition	Five Star Movement	Centre-left coalition
Leader since	15 December 2013	23 September 2017	7 May 2017 ^[a]
Leader's seat	Calabria (S) ^[b]	Acerra (C) ^[5]	Florence (S) ^[2]
Seats won	265 C / 137 S	227 C / 112 S	122 C / 60 S
Seat change	▲ 138 C / ▲ 20 S	▲ 114 C / ▲ 58 S	▼ 227 C / ▼ 65 S
Popular vote	12,152,345 (C) 11,327,549 (S)	10,732,066 (C) 9,733,928 (S)	7,506,723 (C) 6,947,199 (S)
Percentage	37.0% (C) 37.5% (S)	32.7% (C) 32.2% (S)	22.9% (C) 23.0% (S)

We defined a scope, and pick 30 pages/political figures

Methodology

An abstract graphic featuring several overlapping, irregular shapes. At the top, a light blue shape and a light green shape overlap. Below them, a light orange shape stretches horizontally across the middle. At the bottom, another light blue shape and a light green shape overlap, mirroring the top section.

Antonietta

Britta

Michele

Oliviero

Andrea

Santiago

Follow the
30 pages

Follow the
30 pages

Follow the
30 pages

Follow the
30 pages

Follow the
30 pages

Follow the
30 pages

We made six users

Methodology

Antonietta

Britta

Michele

Oliviero

Andrea

Santiago

Follow the
30 pages

Follow the
30 pages

Follow the
30 pages

Follow the
30 pages

Follow the
30 pages

Follow the
30 pages

left

*Movement
5 Stars*

far-right

Right

Center-Left

made the profiles diverge,
they *liked* different content and affiliated pages.

Methodology

			Profile Name / Profile Align							
Month	Day	Hour	Andrea right	Antonietta left	Britta MSS	Michele far-right	Oliviero undecided	Santiago center-left		
January	25	7	■ 39	■ 41	■ 42	■ 43	■ 42	■ 39		
		8	■ 44	■ 42	■ 40	■ 39	■ 46	■ 47		
		9	■ 44	■ 39	■ 40	■ 46	■ 46	■ 56		
		10	■ 52	■ 48	■ 46	■ 40	■ 47	■ 47		
		11	■ 52	■ 27	■ 52	■ 51	■ 41	■ 44		
		12	■ 52	■ 43	■ 49	■ 46	■ 41	■ 56		
		13	■ 42	■ 43	■ 50	■ 49	■ 44	■ 44		
		14	■ 44	■ 46	■ 50	■ 49	■ 43	■ 49		
		15	■ 47	■ 50	■ 53	■ 46	■ 41	■ 48		
		16	■ 42	■ 45	■ 51	■ 45	■ 47	■ 45		
		17	■ 47	■ 39	■ 46	■ 46	■ 43	■ 47		
		18	■ 50	■ 43	■ 47	■ 52	■ 46	■ 51		
		19	■ 44	■ 44	■ 46	■ 50	■ 38	■ 45		

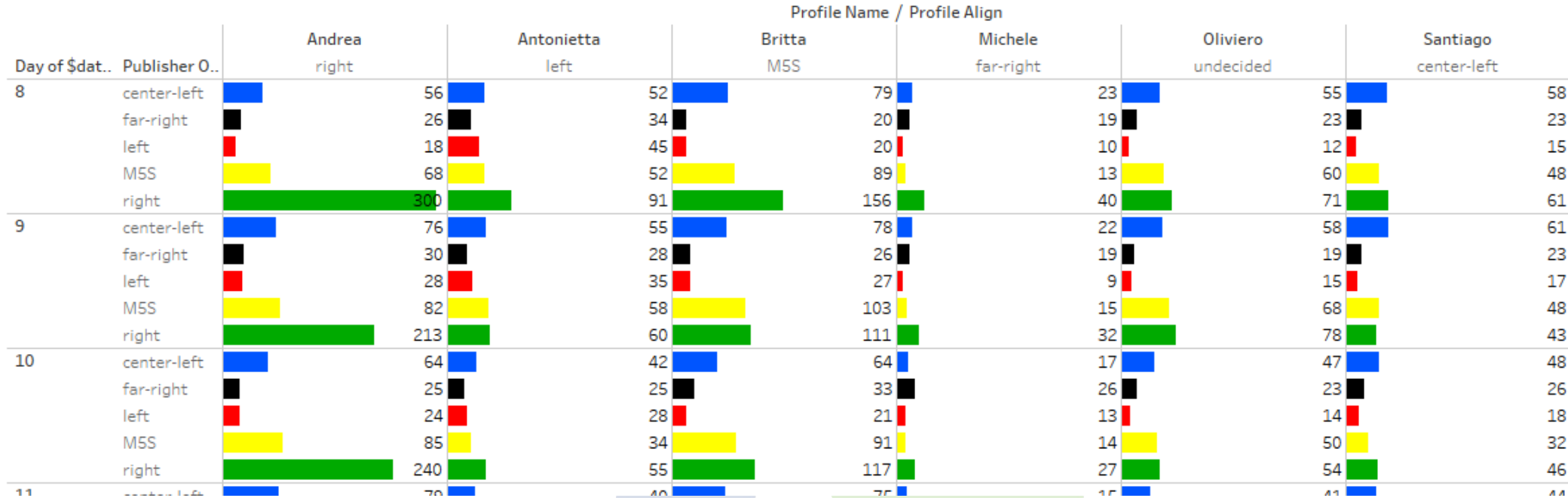
They were accessing at the same time, *auto-scrolling*

Now we can run comparisons!

			Profile Name / Profile Align									
Month of \$...	Day of \$dat...	Utype	Andrea right	Antonietta left	Britta MSS	Michele far-right	Oliviero undecided	Santiago center-left				
February	8	photo	<div><div></div></div> 21.62%	<div><div></div></div> 33.45%	<div><div></div></div> 25.85%	<div><div></div></div> 53.80%	<div><div></div></div> 30.18%	<div><div></div></div> 39.10%				
		post	<div><div></div></div> 74.49%	<div><div></div></div> 64.92%	<div><div></div></div> 69.88%	<div><div></div></div> 38.19%	<div><div></div></div> 59.17%	<div><div></div></div> 57.90%				
		video	<div><div></div></div> 3.89%	<div><div></div></div> 1.63%	<div><div></div></div> 4.28%	<div><div></div></div> 8.01%	<div><div></div></div> 10.65%	<div><div></div></div> 3.00%				
	9	photo	<div><div></div></div> 23.22%	<div><div></div></div> 38.29%	<div><div></div></div> 27.76%	<div><div></div></div> 62.03%	<div><div></div></div> 21.76%	<div><div></div></div> 36.70%				
		post	<div><div></div></div> 69.15%	<div><div></div></div> 60.98%	<div><div></div></div> 67.41%	<div><div></div></div> 32.70%	<div><div></div></div> 60.88%	<div><div></div></div> 58.61%				
		video	<div><div></div></div> 7.63%	<div><div></div></div> 0.73%	<div><div></div></div> 4.83%	<div><div></div></div> 5.27%	<div><div></div></div> 17.37%	<div><div></div></div> 4.70%				
	10	photo	<div><div></div></div> 18.34%	<div><div></div></div> 36.25%	<div><div></div></div> 28.79%	<div><div></div></div> 63.02%	<div><div></div></div> 29.06%	<div><div></div></div> 38.81%				
		post	<div><div></div></div> 75.24%	<div><div></div></div> 61.07%	<div><div></div></div> 66.72%	<div><div></div></div> 29.42%	<div><div></div></div> 58.11%	<div><div></div></div> 57.52%				
		video	<div><div></div></div> 6.43%	<div><div></div></div> 2.68%	<div><div></div></div> 4.48%	<div><div></div></div> 7.55%	<div><div></div></div> 12.83%	<div><div></div></div> 3.67%				
	11	photo	<div><div></div></div> 18.99%	<div><div></div></div> 34.87%	<div><div></div></div> 27.12%	<div><div></div></div> 58.47%	<div><div></div></div> 29.16%	<div><div></div></div> 33.93%				
		post	<div><div></div></div> 73.60%	<div><div></div></div> 62.74%	<div><div></div></div> 69.26%	<div><div></div></div> 33.33%	<div><div></div></div> 56.45%	<div><div></div></div> 62.84%				
		video	<div><div></div></div> 7.40%	<div><div></div></div> 2.39%	<div><div></div></div> 3.63%	<div><div></div></div> 8.19%	<div><div></div></div> 14.39%	<div><div></div></div> 3.23%				
	12	photo	<div><div></div></div> 17.22%	<div><div></div></div> 38.62%	<div><div></div></div> 34.36%	<div><div></div></div> 61.91%	<div><div></div></div> 29.66%	<div><div></div></div> 36.25%				
		post	<div><div></div></div> 78.04%	<div><div></div></div> 59.20%	<div><div></div></div> 63.09%	<div><div></div></div> 30.86%	<div><div></div></div> 58.23%	<div><div></div></div> 60.25%				
		video	<div><div></div></div> 4.74%	<div><div></div></div> 2.19%	<div><div></div></div> 2.55%	<div><div></div></div> 7.23%	<div><div></div></div> 12.12%	<div><div></div></div> 3.50%				
	13	photo	<div><div></div></div> 22.62%	<div><div></div></div> 42.06%	<div><div></div></div> 34.00%	<div><div></div></div> 63.24%	<div><div></div></div> 31.65%	<div><div></div></div> 44.76%				
		post	<div><div></div></div> 71.45%	<div><div></div></div> 56.45%	<div><div></div></div> 63.80%	<div><div></div></div> 33.00%	<div><div></div></div> 55.92%	<div><div></div></div> 52.22%				
		video	<div><div></div></div> 5.93%	<div><div></div></div> 1.50%	<div><div></div></div> 2.19%	<div><div></div></div> 3.75%	<div><div></div></div> 12.43%	<div><div></div></div> 3.02%				
	14	photo	<div><div></div></div> 29.07%	<div><div></div></div> 38.49%	<div><div></div></div> 36.28%	<div><div></div></div> 53.78%	<div><div></div></div> 28.65%	<div><div></div></div> 44.72%				
		post	<div><div></div></div> 62.30%	<div><div></div></div> 58.61%	<div><div></div></div> 60.53%	<div><div></div></div> 41.63%	<div><div></div></div> 58.00%	<div><div></div></div> 51.16%				
		video	<div><div></div></div> 8.63%	<div><div></div></div> 2.90%	<div><div></div></div> 3.19%	<div><div></div></div> 4.58%	<div><div></div></div> 13.36%	<div><div></div></div> 4.11%				

Size proportional to the amount of evidence collected

filter bubble is not a simple concept



Size proportional the amount of unique posts

How many posts have already been seen?

Observed	Profile Name / Profile Align									
	Andrea right	Antonietta left	Britta M5S	Michele far-right	Oliviero undecided	Santiago center-left				
1	2,922	1,395	2,171	420	1,177	1,092				
2	1,080	1,129	1,192	425	1,101	1,090				
3	317	755	414	431	789	997				
4	97	321	130	435	404	519				
5	43	136	43	442	164	216				
6	18	64	9	426	58	78				
7	10	21	3	328	24	31				
8	5	9		219	13	15				
9	3	6		128	8	8				
10	2	3		78	7	3				
11	1	2		54	6	3				
12	1	2		40	2	3				
13	1	2		33	1	3				
14		2		30	1	1				
15		2		20	1	1				
16		1		6						
17				2						
18				2						
19				1						
20				1						

Investigate on specific event

Italy

Attacks on immigrants highlight rise of fascist groups in Italy

Antifascists say authorities have no will to stop 'unconstitutional' far-right parties

Lorenzo Tondo in Palermo

🐦 @lorenzo_tondo

Tue 6 Feb 2018 14.06 GMT

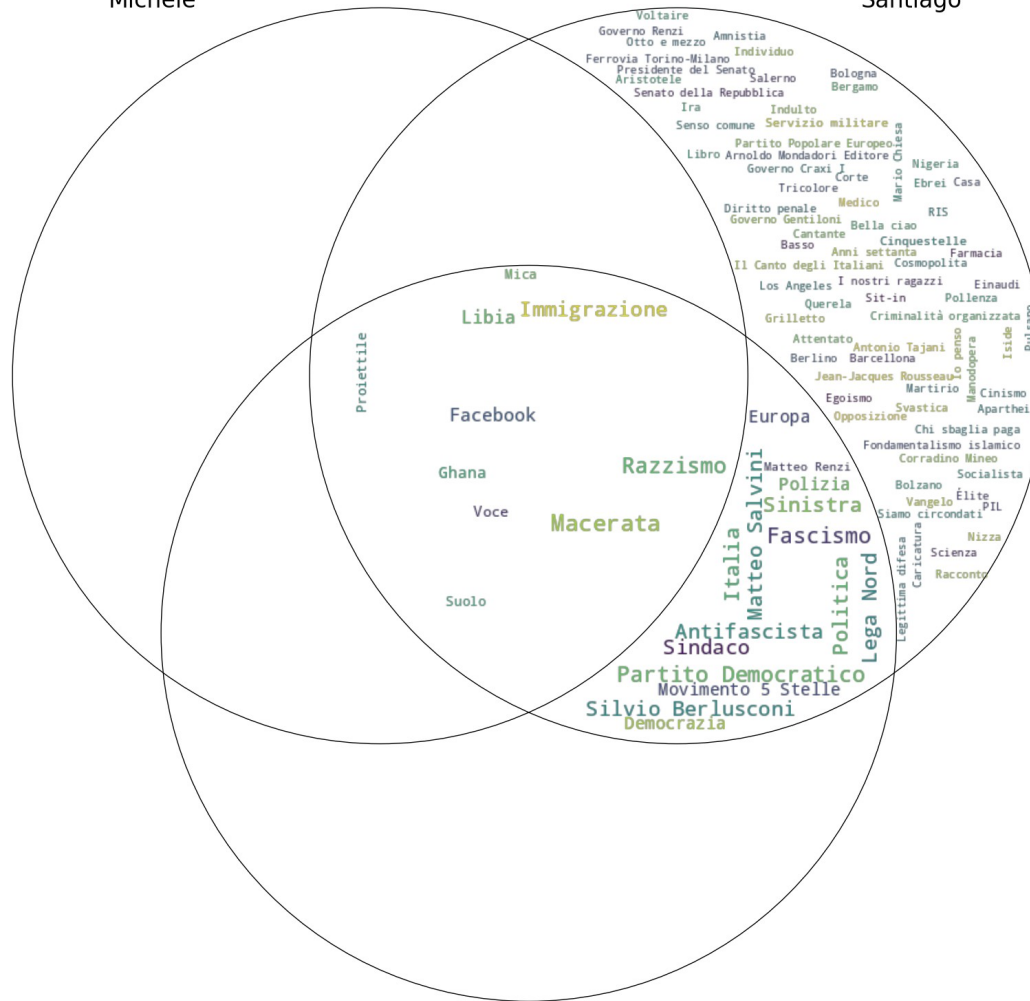


<
21,253



Michele

Santiago



Antonietta



WORLD WIDE WEB
FOUNDATION



THE INVISIBLE CURATION OF CONTENT:

Facebook's News Feed and our
Information Diets

April 2018

Facebook
API

Hidden from all 6 profiles
9,532 posts

Seen by Andrea (M)
& Lucía (K)
640 posts

Seen by Andrea (M)
but not by Lucía (K)
552 posts

Seen by others but
not by Andrea (M)
or Lucía (K)
450 posts

Seen by Lucía (K)
but not by Andrea
(M)
429 posts

FbTREX

The public square as seen by Facebook

The public square
as seen by each of
our users

What about fair competition?



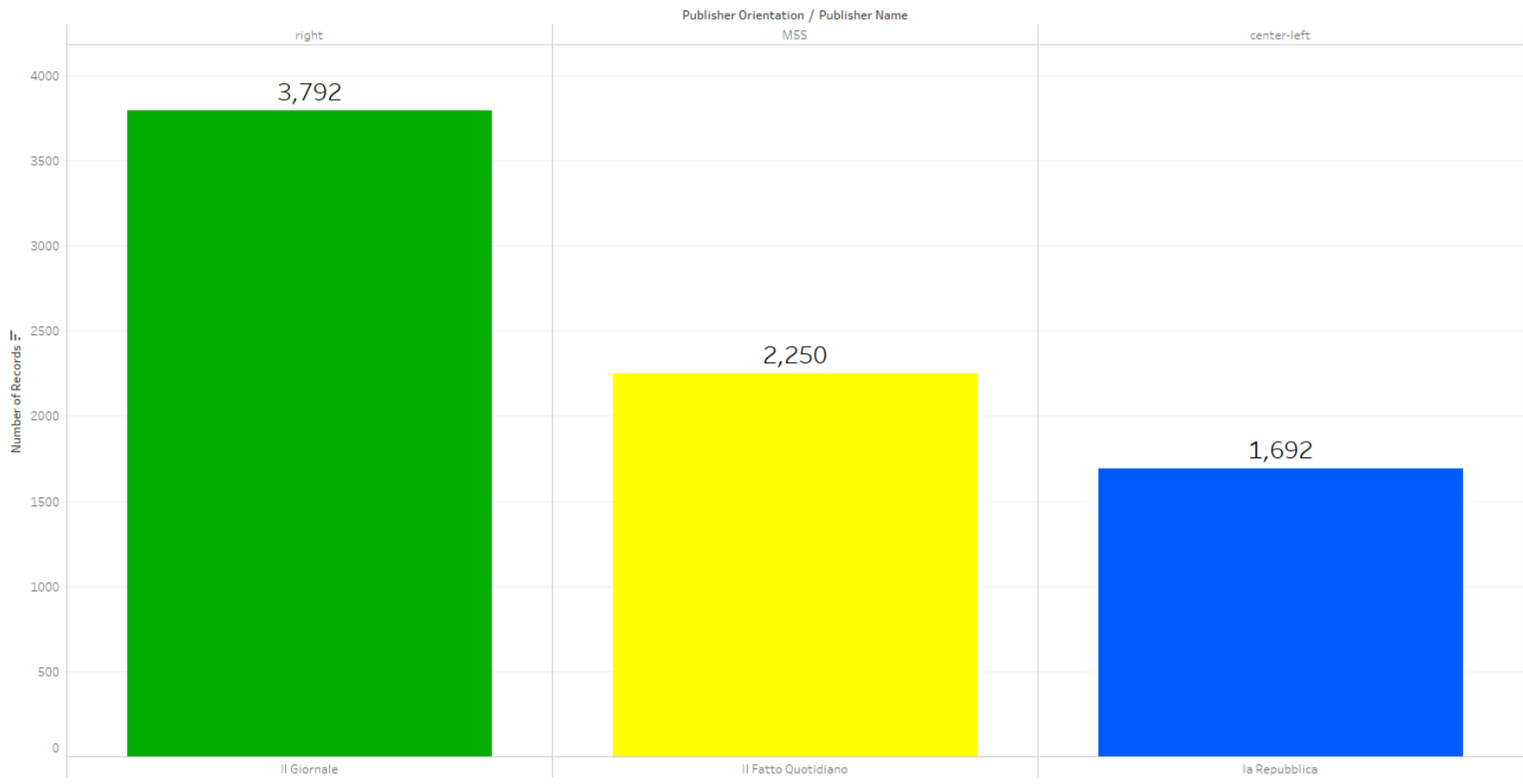
European Commission - Press release

Antitrust: Commission fines Google €2.42 billion for abusing dominance as search engine by giving illegal advantage to own comparison shopping service

Brussels, 27 June 2017

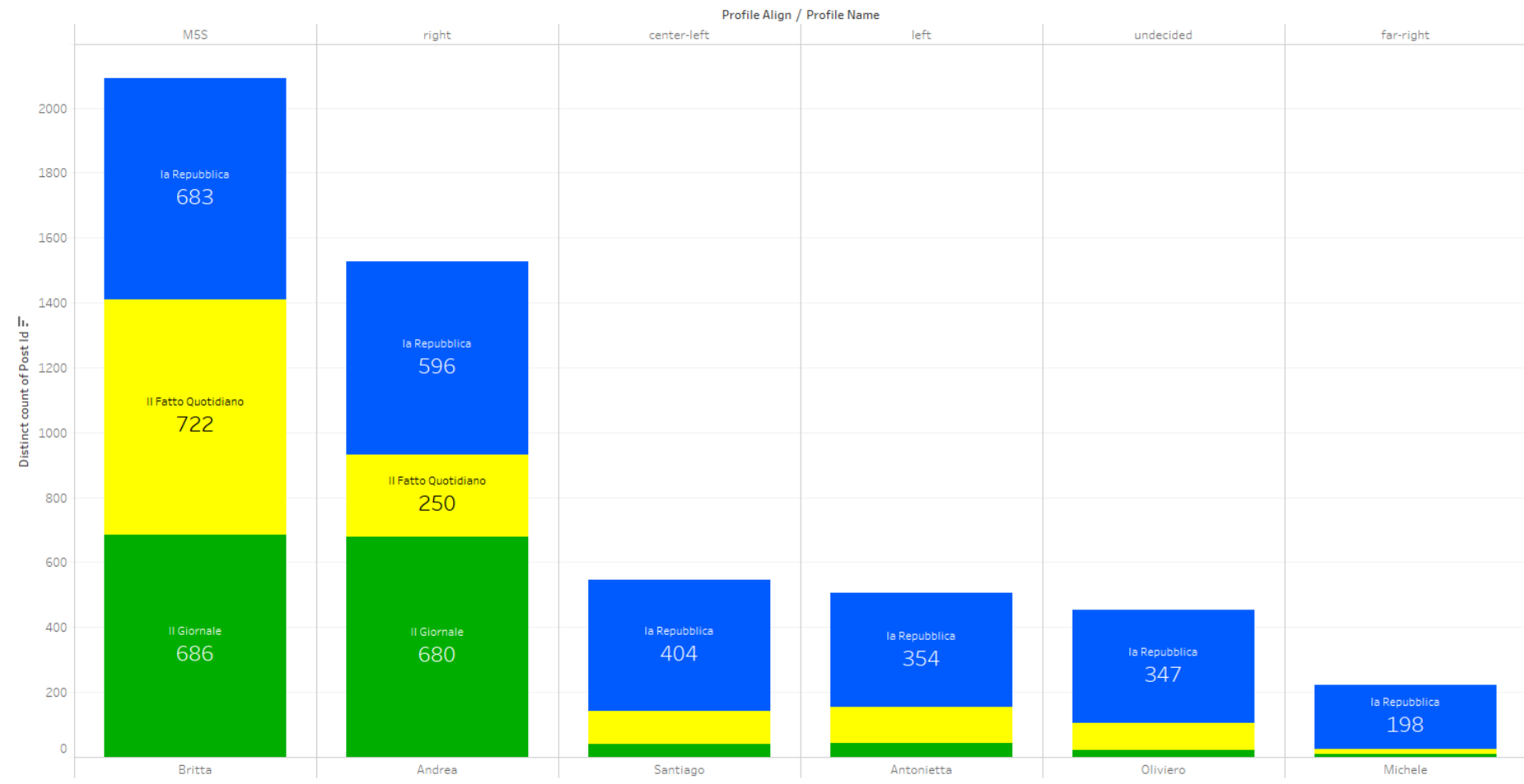
Using the API, we compared media productivity

Published posts by three selected media



How they have been treated on surfaced posts?

Surfaced posts by three selected media



Time to wrap up =)

<https://tracking.exposed> goal is to
foster *algorithm diversity*

If algorithms decide your priorities,
you **deserve to run** your own
algorithm.

Strategy

- Address misinformation ^{*}, ^{**}
 - Use different metrics than SM
 - Show how algorithms have impact
 - Implement priorities of people/cultures *distant* from Palo Alto
- done. If the imaginary change, we won.

Join us?

data analysts - UX - backend developer -
advocate - journalist - fundraiser -
privacy/security analyst

Check the repositories

<https://github.com/tracking-exposed>

Fell something in common with this
manifesto

<https://tracking.exposed>

References

When the NewsFeed changed (or at least, the only time has been announced) in January 2018
<https://eu.usatoday.com/story/tech/2018/01/11/facebook-newsfeed-big-change/1023331001/>

Facebook Manipulated User News Feeds To Create Emotional Responses
<https://www.forbes.com/sites/gregorymcneal/2014/06/28/facebook-manipulated-user-news-feeds-to-create-emotional-contagion/#66a1275739dc>

Report by Fabio Chiusi and Claudio Agosti on Italian political campaign
<https://ourdataourselves.tacticaltech.org/posts/overview-italy/>

```
@unpublished{FacebookFairness,  
author = {Hargreaves, Eduardo and Agosti, Claudio and Menasch{'{e}}, Daniel and Neglia, Giovanni and Reiffers-masson, Alexandre and Altman, Eitan},  
booktitle = {to appear in the 36th International Symposium on Computer Performance, Modeling, Measurements and Evaluation 2018},  
title = {{Fairness in Online Social Network Timelines : Measurements , Models and Mechanism Design}}  
}
```

Our data <http://github.com/tracking-exposed/experiments-data/>

Previous slides <https://github.com/tracking-exposed/presentation/>

<https://www.opendemocracy.net/digitaliberties/claudio-agosti/could-populism-be-side-effect-of-personalized-algorithm>

On Repetition <https://medium.com/@trackingexposed/the-iron-bubble-or-how-the-facebook-algorithm-insulates-fascists-from-reality-d36739b0758b>

WebFoundation report <https://webfoundation.org/research/the-invisible-curation-of-content-facebooks-news-feed-and-our-information-diets/>