Marriage Equality as a polarizing driver?
The Costa Rican case

Data Driven Modeling of Complex Systems (DDMCS)

Professor Walter Quattrociocchi

Braulio Villalobos Quirós

1999250

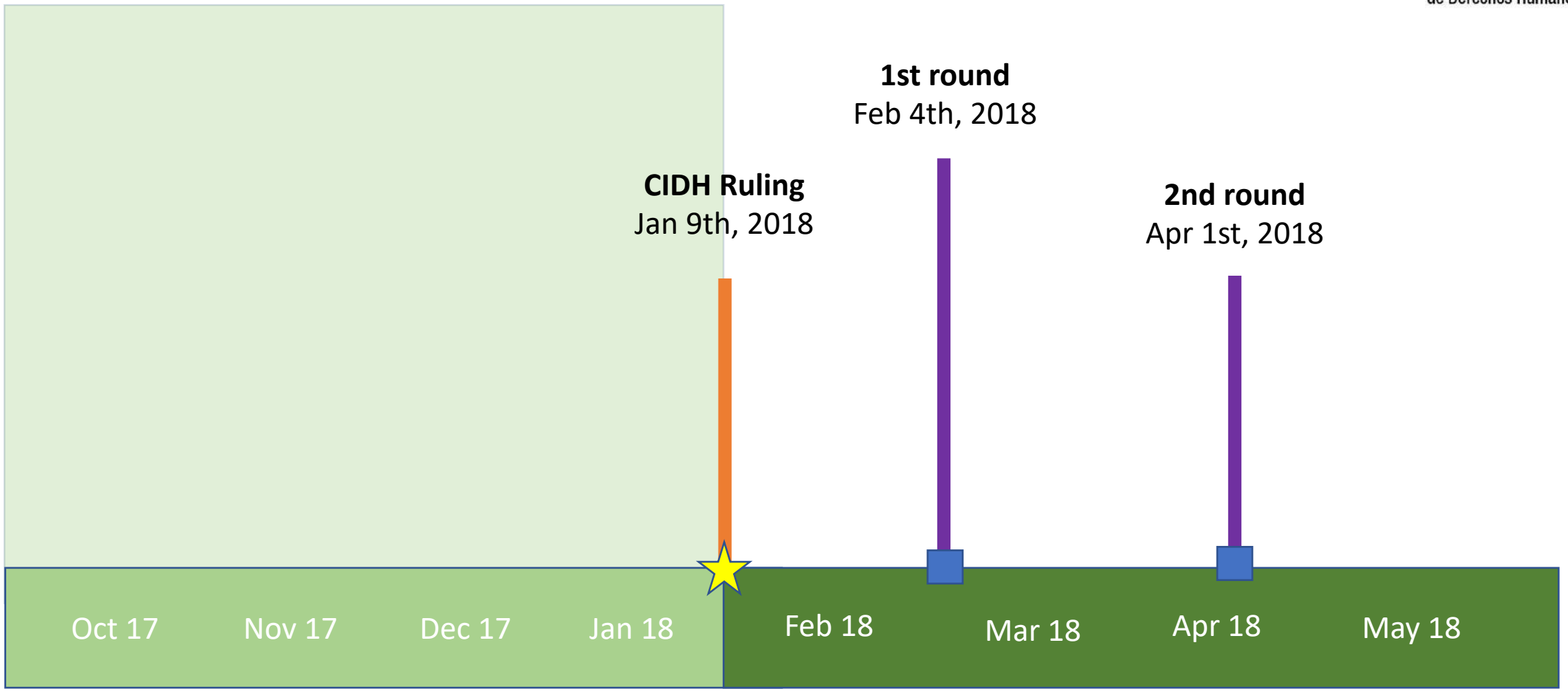
Why this topic?

Why is this so important? Why am I so interested and motivated on this topic, even though I might have not gotten the results I wanted?

- Studied economics
- Trend in the way politics is done
- Mix of religion with politics
- Rise of Pentecostalism: from “garage churches” to megachurches.

- Biggest limitation we had is not enough data from one candidate. This is crucial and we should expand the amount of data we have from the other side (FAM)
- Bring attention to the target electorate of each candidate (CAQ young, FAM older conservative) and how this might have affected the activity on twitter.

Timeline of Events



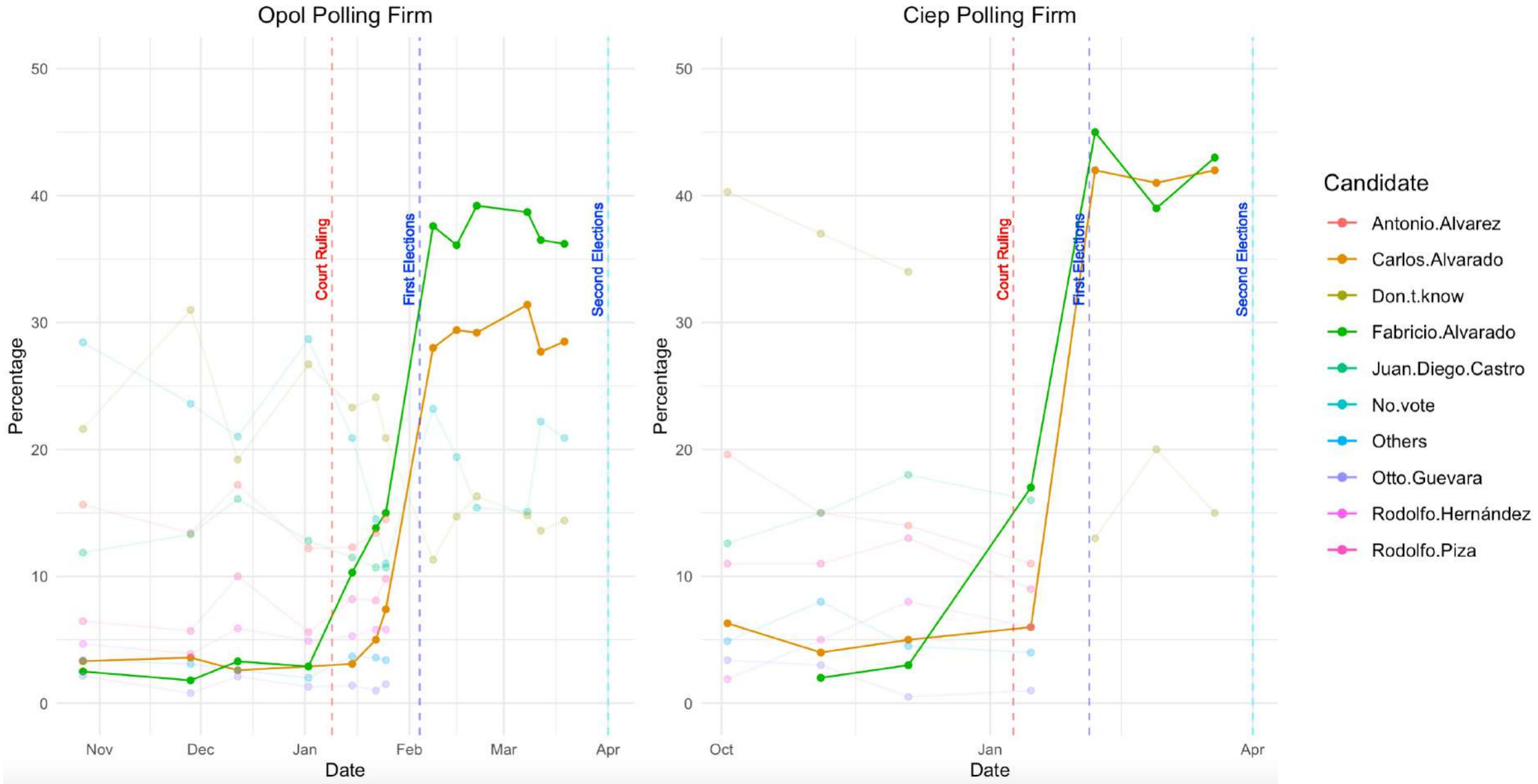
Carlos Alvarado Quesada (CAQ)

Partido Acción Ciudadana

Fabricio Alvarado Monge (FAM)

Partido Restauración Nacional

Progression of Vote Intention



UNA CAMPAGNA INCENTRATA SUL MATRIMONIO EGUALITARIO

FABRICIO ALVARADO, CANDIDATO OPOSITOR A LA PRESIDENCIA DE COSTA RICA

"El matrimonio no parece ser un derecho para homosexuales"

MUNDO

BBC NEWS MUNDO

Noticias América Latina Internacional Hay Festival Economía Ciencia Salud Centroamérica Cuenta BBC Extra

Matrimonio homosexual domina debate electoral en Costa Rica

En Profundidad > Agenda

El "shock religioso" que puso a Fabricio Alvarado, predicador de una iglesia evangélica, como favorito para las elecciones presidenciales de Costa Rica

Política

Fabricio Alvarado: la fe de la mano de la política

Abandonó sus orígenes católicos para abrazar la vida como cristiano evangélico. Presentador de televisión y cantante de música religiosa, ha repartido biblias en el Congreso y Casa Presidencial

Matrimonio gay trastoca elecciones presidenciales en Costa Rica

NATIONAL CATHOLIC REPORTER

THE INDEPENDENT NEWS SOURCE

≡ Menu NEWS / VATICAN / CULTURE / OPINION / SPIRITUALITY / EARTHBEAT / GLOBAL SISTERS REPORT

Quién es Fabricio Alvarado, el pastor que aspira al poder en Costa Rica

Nuevamente candidato en las elecciones costarricenses del domingo, este periodista y predicador evangelista, neoconservador en temas sociales y neoliberal en cuestiones económicas, había ganado la primera vuelta de las presidenciales de 2018. Sólo en el balotaje se vio derrotado por el actual presidente, el centroizquierdista Carlos Alvarado.

Religion vs rights splits Costa Rica in presidential vote

San José (AFP) –

Voto evangélico crece en América Latina

Gay marriage ruling boosts evangelical in Costa Rica vote

El matrimonio gay polariza las elecciones de Costa Rica

Costa Rica steuert auf Stichwahl zu

05.02.2018

Die Angst vor der möglichen Einführung einer Homo-Ehe hat dem evangelikalen Prediger Alvarado bei den Präsidentschaftswahlen hohen Zulauf beschert. Um das Land zu regieren, reicht sein

ANÁLISIS POLÍTICO

Costa Rica: ¿polarización social como estrategia electoral?

ELECCIONES COSTA RICA 2018

Fabricio Alvarado y el factor religioso en las presidenciales de Costa Rica

La respuesta de la CIDH sobre el acatamiento del matrimonio igualitario en sus países miembros ha movilizado a electorado religioso y ha forzado la intervención de Tribunal Supremo de Elecciones para mitigar el impacto de la religión en la campaña.

ELECCIONES EN COSTA RICA

Mismo apellido, programas opuestos: el matrimonio gay, la clave para Costa Rica

Fabricio Alvarado, líder evangélico del Partido Restauración Nacional (PRN), y Carlos Alvarado, del gobernante Partido Acción Ciudadana (PAC), pasan a la segunda vuelta de los comicios

Nacionales

Oposición a matrimonio gay catapulta a Fabricio Alvarado

Indecisos siguen liderando las encuestas

Fabricio Alvarado: "Abortar no es un derecho"

Nacionales

"Nunca más se metan con la familia, con la vida y nuestros hijos"

Costa Rica: big election surprises, increased polarisation and eroding governability?

Ataques religiosos contra la Virgen impulsaron el triunfo de Carlos Alvarado

Costa Rica's Rollercoaster Election Was About More Than Gay Marriage

The evangelical wave hits democracy in Costa Rica

Il Costa Rica preferisce il rock di Carlos al gospel di Fabricio

6 Aprile 2018 Readings on Star Politics Carlos Alvarado, Costa Rica, Fabricio Alvarado, politica-per-media, star politics Star Politics

NACIONALES

Empresas podrían negarse a dar servicios a parejas del mismo sexo

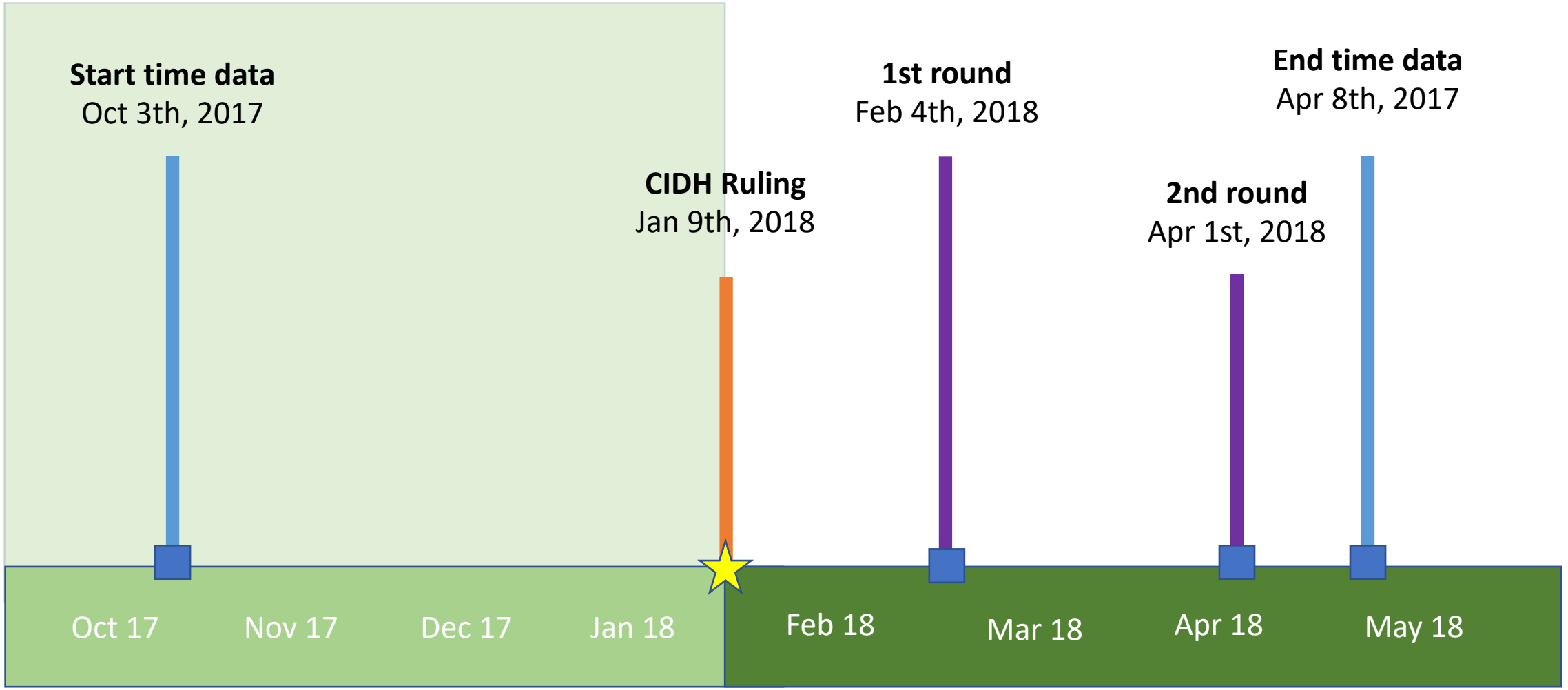
Fabricio Alvarado impulsará "objeción de conciencia" para pymes opuestas a matrimonio igualitario

Costa Rica vote halts march of religious conservatism

ARTÍCULO

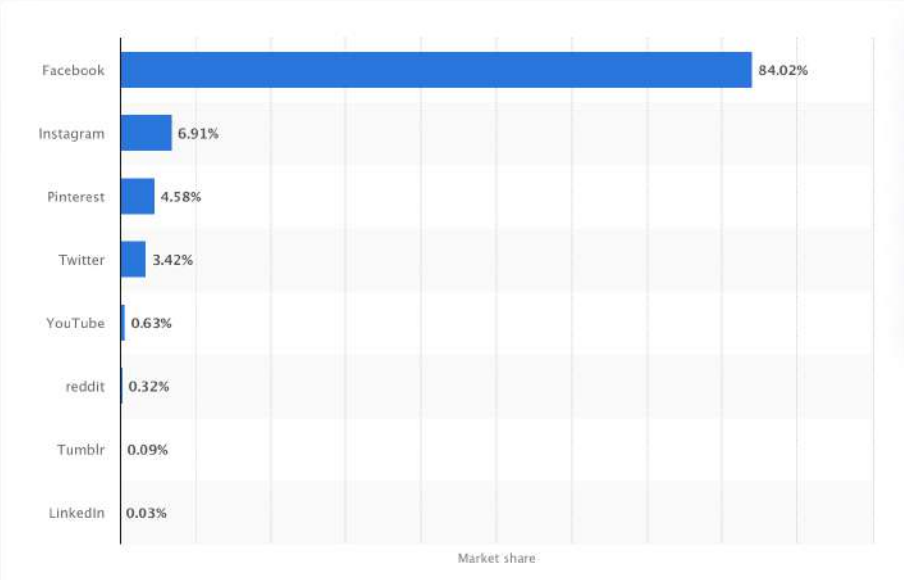
COSTA RICA'S 2018 ELECTIONS: THE TWO ALVARADOS, BETWEEN DEEPENING DIVISION AND DEMOCRATIC DEPENDABILITY

Timeline of Events



Challenges

1 Twitter’s popularity

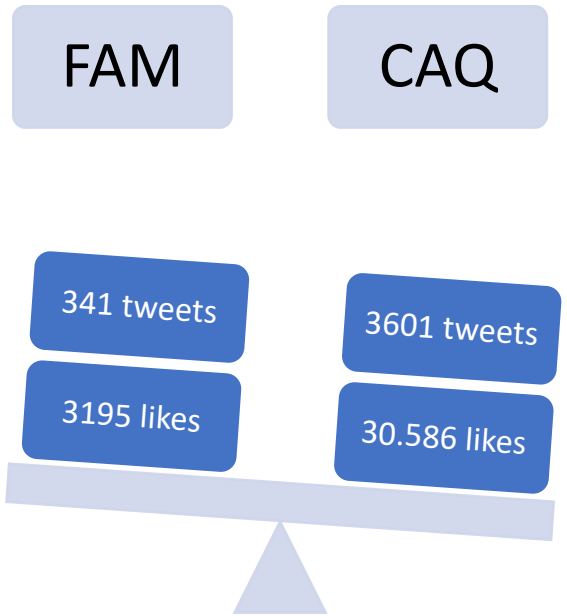


2 Twitter’s access & extraction quota

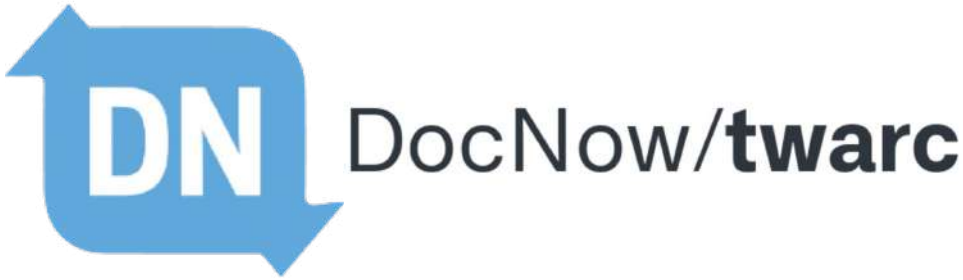
Challenges

3

Dissimilar amounts of data between candidates



Data Extraction - Tweets



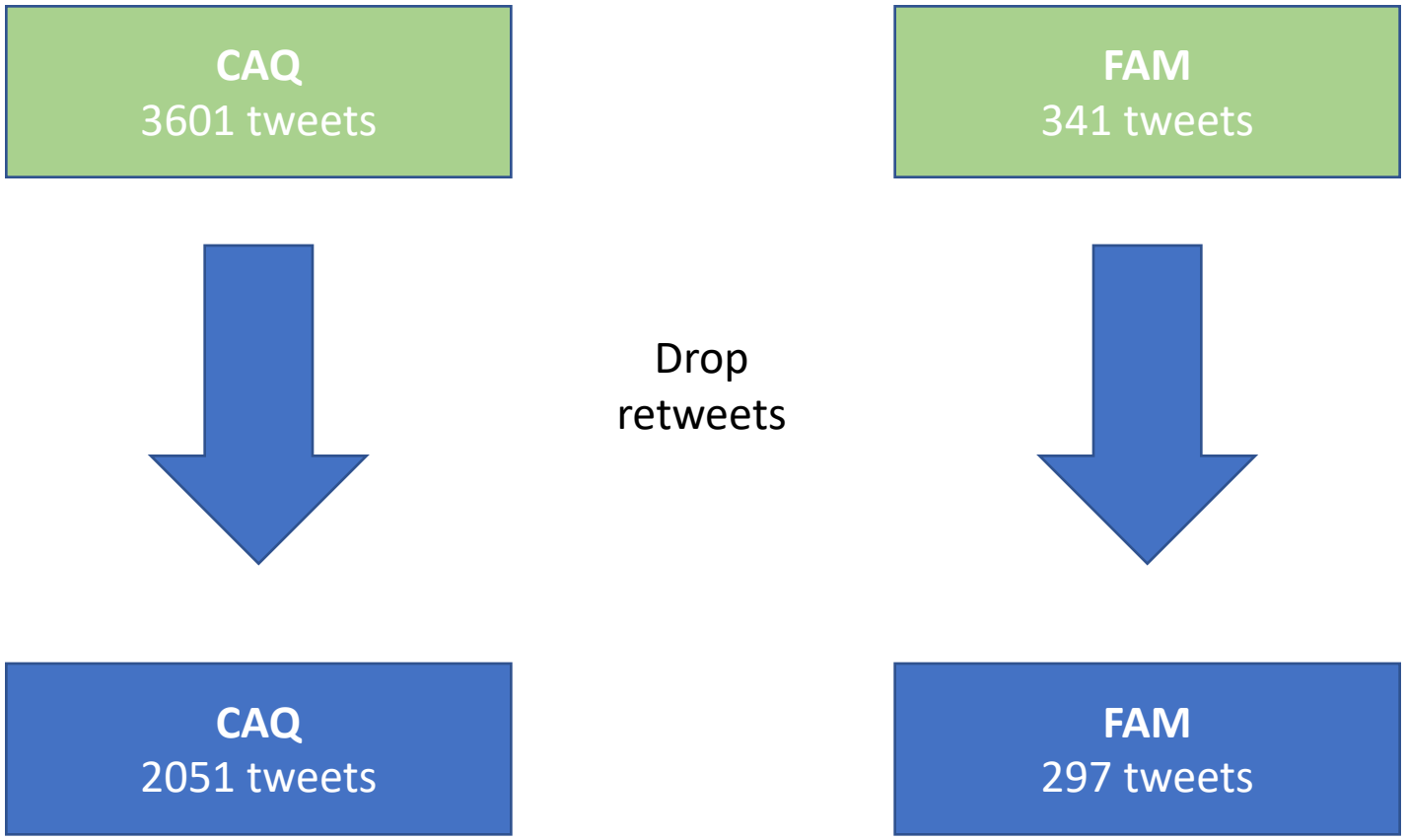
- We extracted tweets made by both candidates by means of the commands:

```
twarc2 timeline --use-search --start-time "2017-10-03T12:31:04"
--end-time "2018-04-08T12:31:04" 'fabrialvarado7' FabriAlvarado_filtered.jsonl
```

```
twarc2 timeline --use-search --start-time "2017-10-03T12:31:04"
--end-time "2018-04-08T12:31:04" 'CarlosAlvQ' CarlosAlvQ_filtered.jsonl
```

- Dropped retweeted tweets

Data Extraction - Tweets



Data Extraction – Liking users

```bash
#!/bin/bash

# loop through the list of user ids
while read tweet_id; do
  # replacing user_id and output filename
  twarc2 liking-users "$tweet_id" "${tweet_id}_liking_users.jsonl"
done < user_ids.txt
```

30.586 users liked **CAQ** tweets

3.195 users liked **FAM** tweets

Data Extraction – Network of users

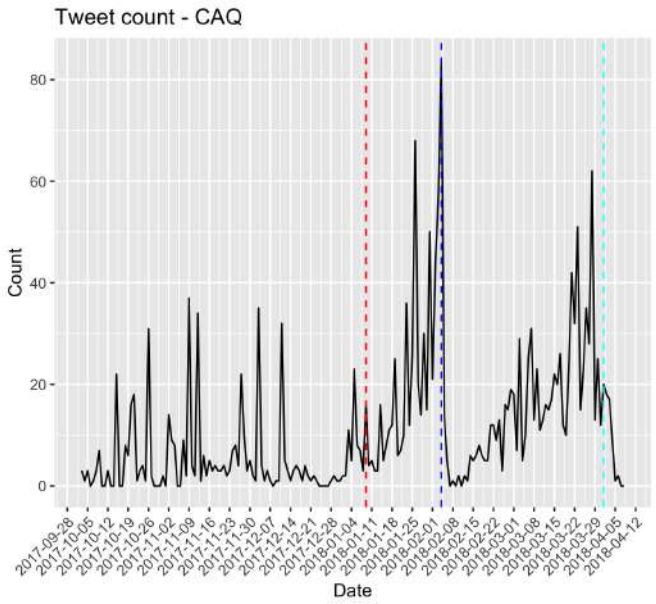
We extract the network of users that liked tweets from the candidates.
Define network as the accounts that are followed by those users

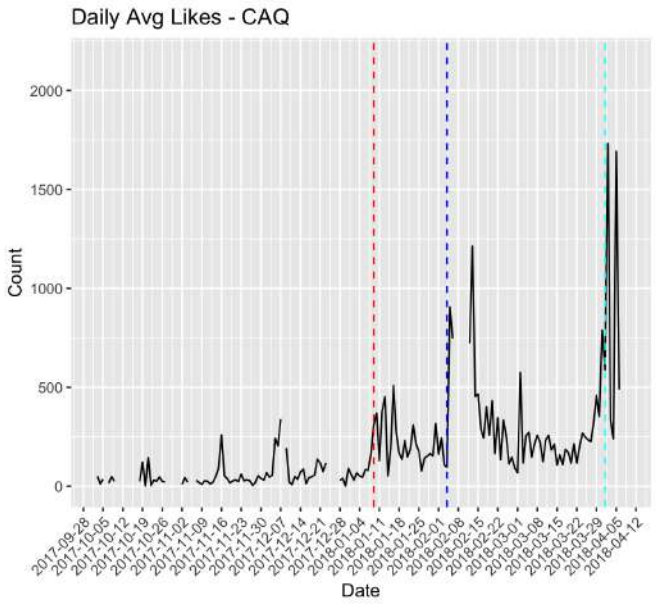
```
#!/bin/bash

# loop through the list of user ids
while read user_id; do
  # replacing user_id and output filename
  twarc2 following "$user_id" "${user_id}_user_following.jsonl"
done < user_ids.txt
```

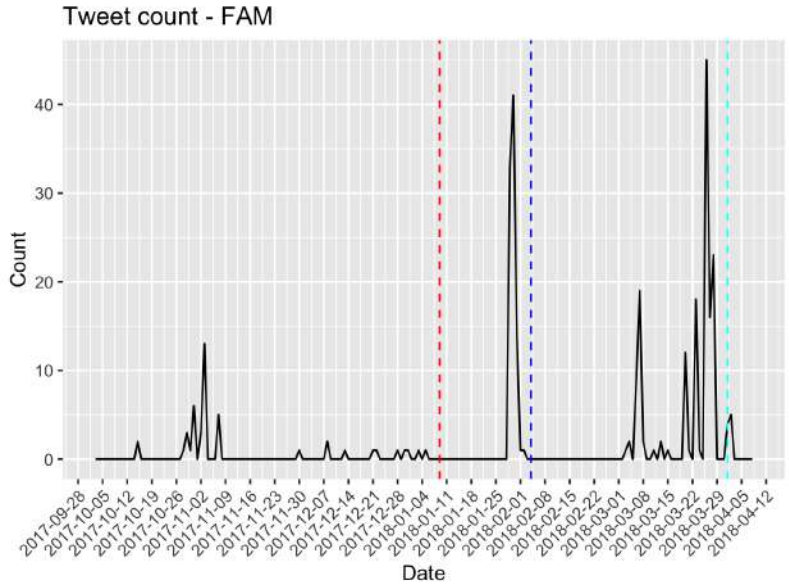
Users followed by those who liked CAQ tweets
450.563 unique users

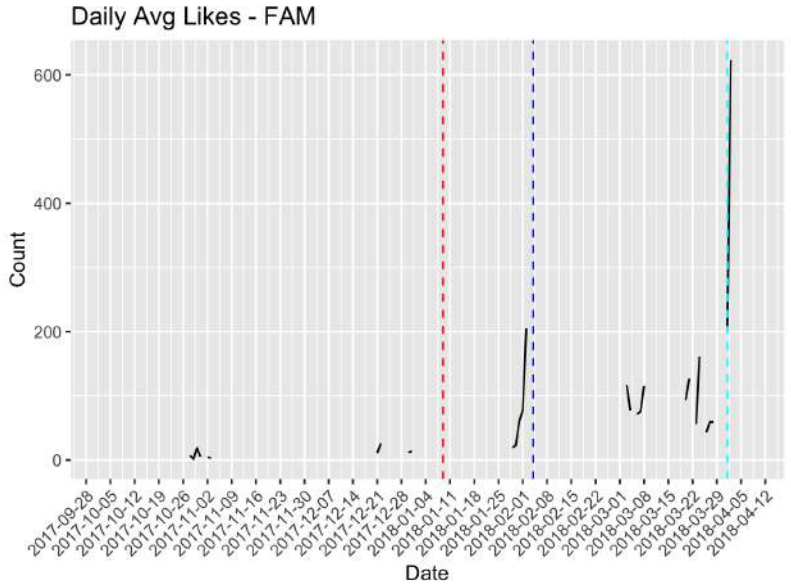
Users followed by those who liked FAM tweets
32.321

Activity time series







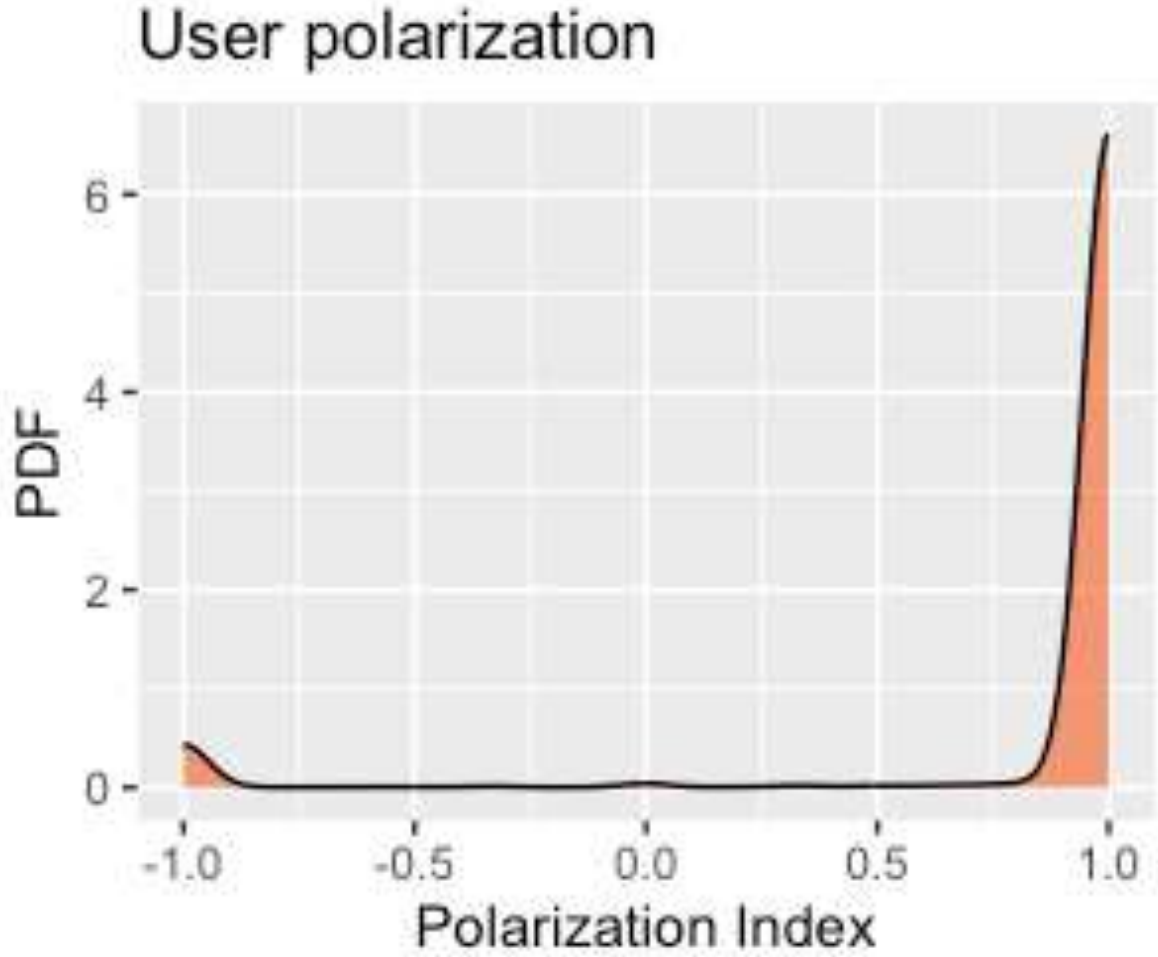


Polarization of Users

$$\rho(u) = \frac{x - y}{x + y}$$

$\rho(u) = 1$ User u is totally polarized towards CAQ

$\rho(u) = -1$ User u is totally polarized towards FAM



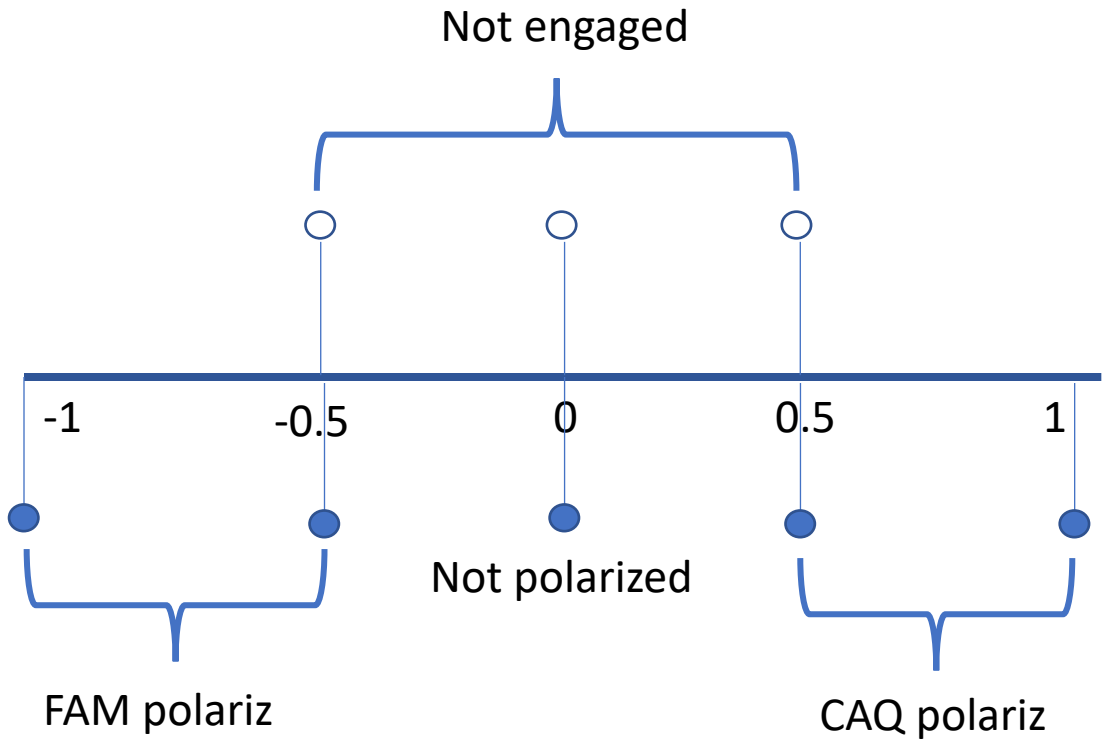
Network of Users

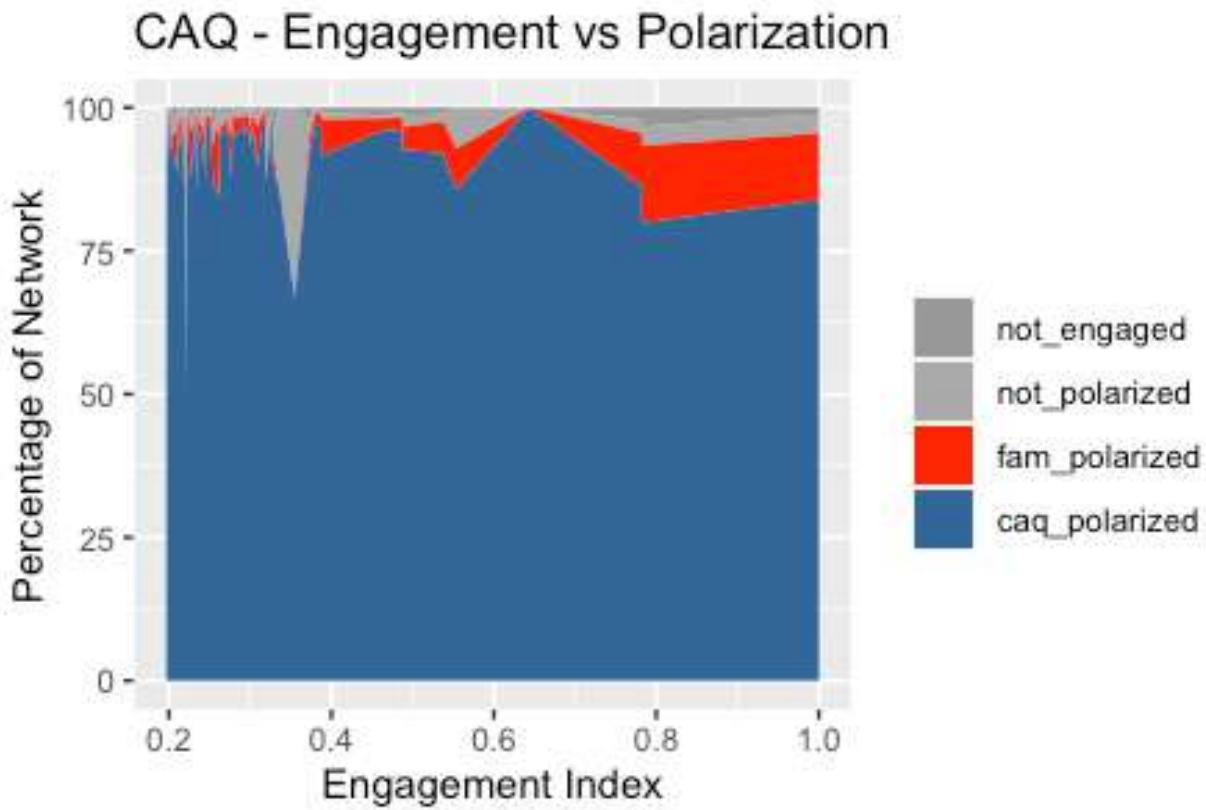
Analyzed only network of 20% of users that liked FAM
24 users

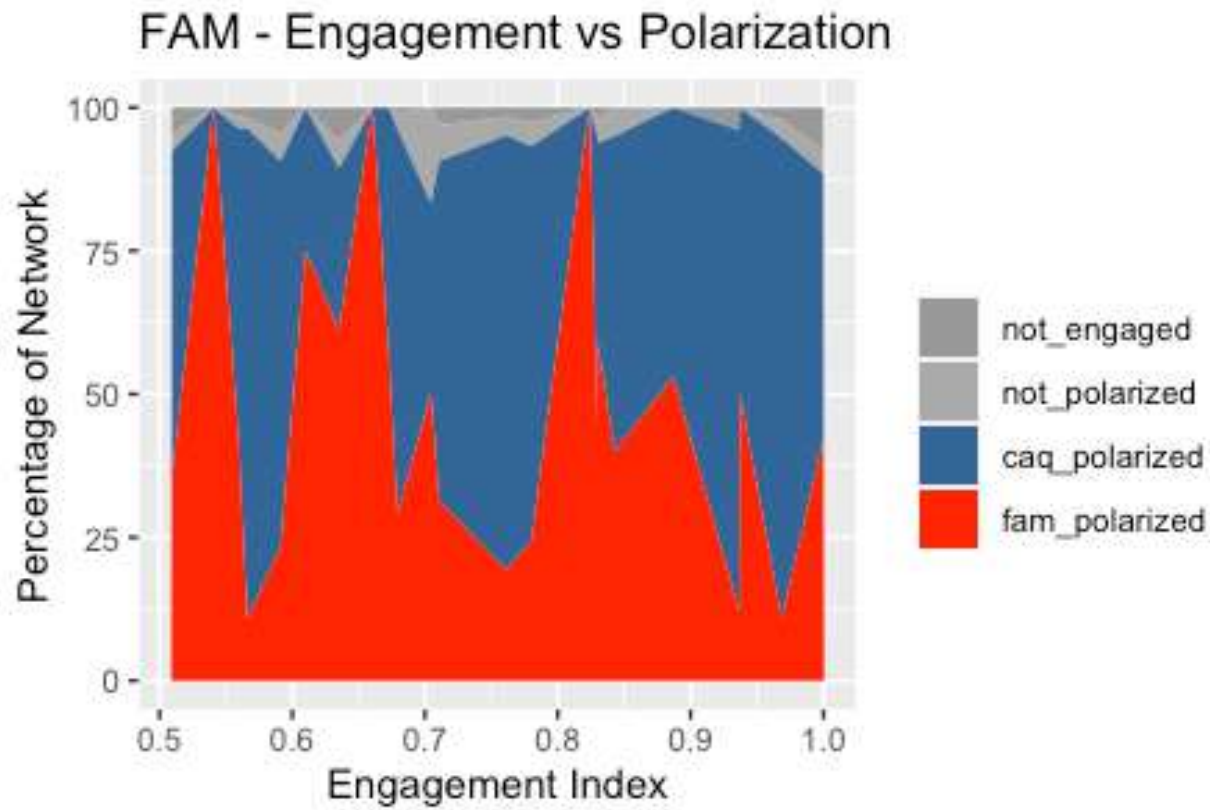
Analyzed only network of 10% of users that liked CAQ
85 users

Engagement

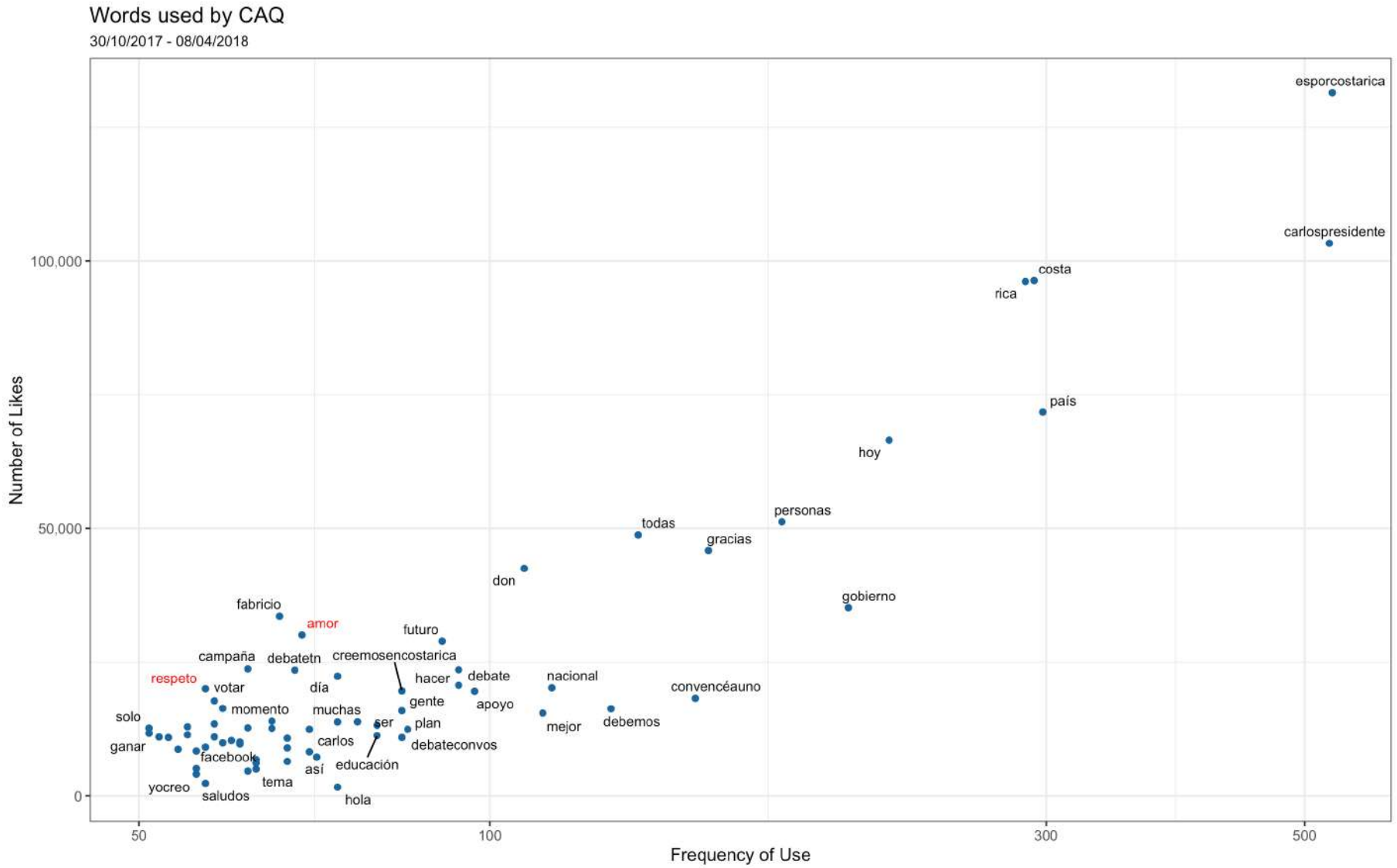
$$\psi = \frac{\theta(u)u}{v\left(\max(v)\right)}$$




CAQ - Engagement vs Polarization
Percentage of Network
100
75
50
25
0
0.2
0.4
0.6
0.8
1.0
Engagement Index
not_engaged
not_polarized
fam_polarized
caq_polarized


FAM - Engagement vs Polarization
Percentage of Network
100
75
50
25
0
0.5
0.6
0.7
0.8
0.9
1.0
Engagement Index
not_engaged
not_polarized
caq_polarized
fam_polarized

Change of speech?



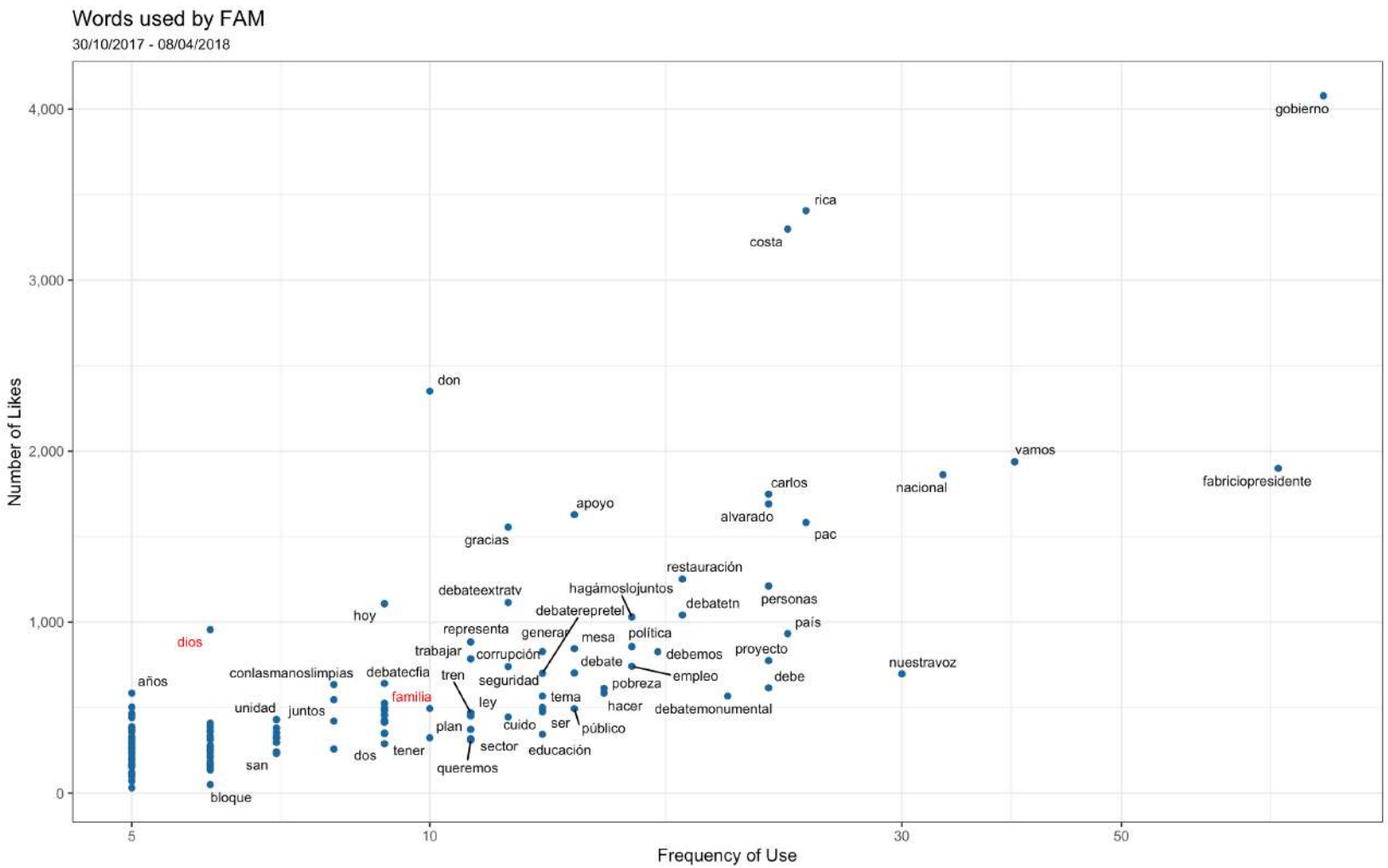

Words used by FAM
30/10/2017 - 08/04/2018
Number of Likes
Frequency of Use
4,000
3,000
2,000
1,000
0
5
10
30
50
gobierno
rica
costa
don
vamos
fabriciopresidente
nacional
carlos
alvarado
apoyo
pac
gracias
restauración
debateextratv
hagámoslojuntos
personas
debatetn
hoy
debaterepretel
país
representa
generar
mesa
política
dios
trabajar
corrupción
debemos
proyecto
nuestravoz
conlasmanoslimpias
debatecfia
tren
seguridad
debate
empleo
debe
años
pobreza
familia
tema
ley
hacer
debatemonumental
unidad
juntos
cuido
ser
público
plan
sector
educación
dos
tener
queremos
san
bloque

Table 1: Used words - CAQ

word	Freq Before	Freq After	Likes Before	Likes After
aborto	0	2	0	375
amor	3	66	316	29.763
familia	27	12	1.637	5.760
respeto	11	46	1.324	18.704
valores	1	7	1	1.678

Note: The word "dios" (God) was not mentioned by the candidate in any tweet.

Table 2: Used words - FAM

word	Freq Before	Freq After	Likes Before	Likes After
aborto	2	4	4	131
dios	3	3	39	917
familia	2	8	12	483
respeto	0	1	0	98
valores	1	4	4	288

Note: The word "amor" (love) was not mentioned by the candidate in any tweet.

Table 3: Used words relative to total tweets - CAQ

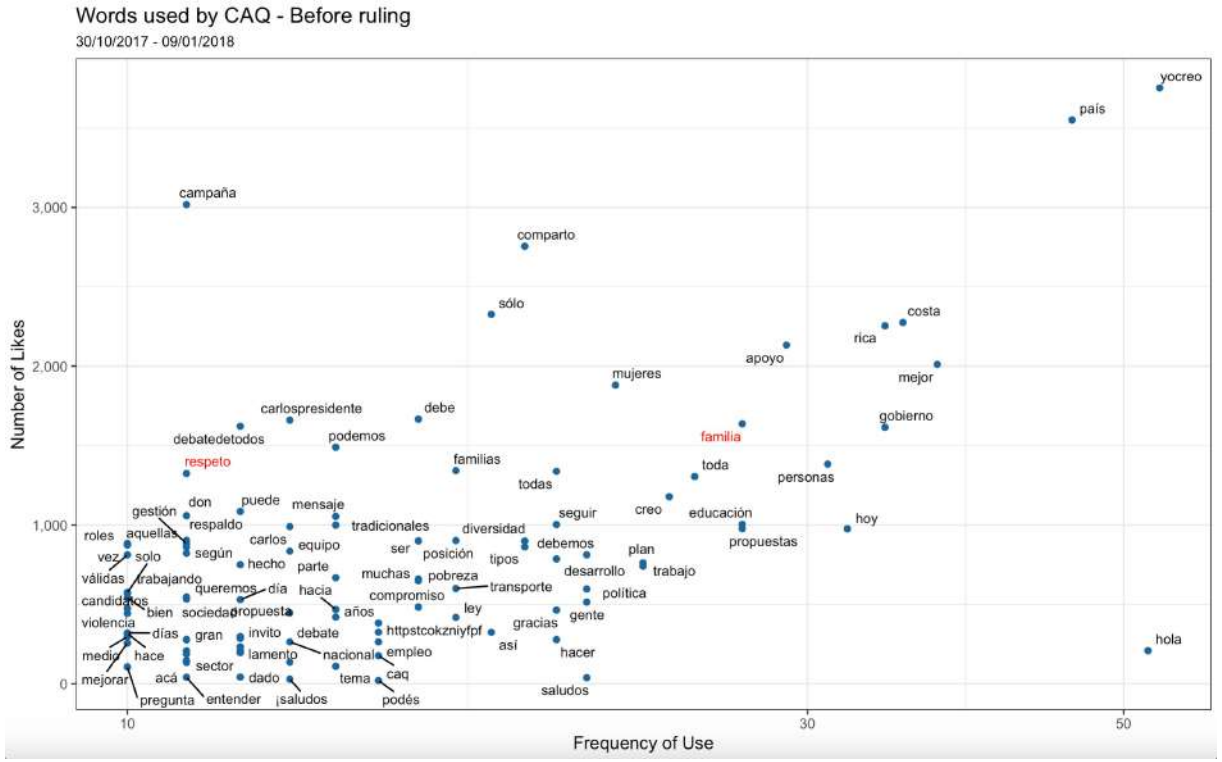
word	Freq Before (%)	Freq After (%)
aborto	0.0	0.1
amor	0.6	4.3
familia	5.0	0.8
respeto	2.0	3.0
valores	0.2	0.5

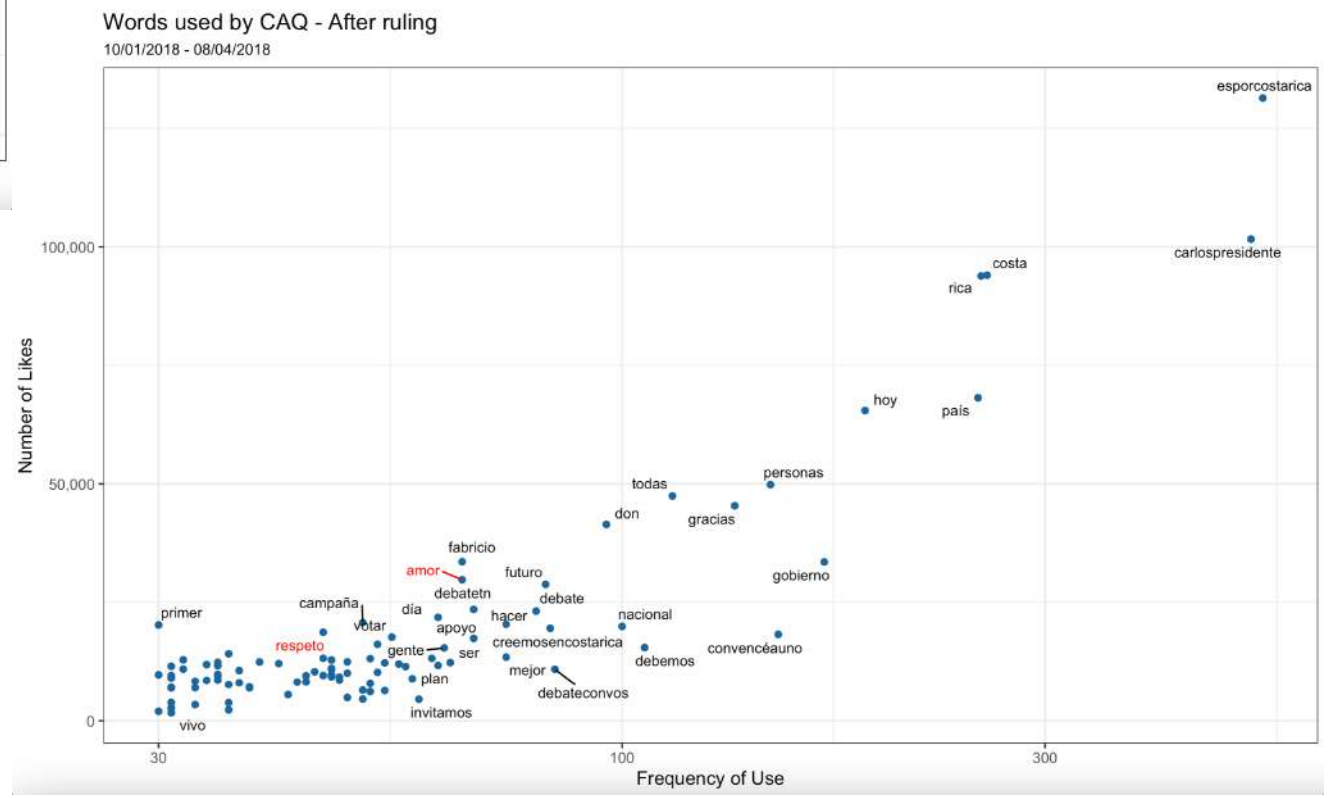
[1] The word "dios" (God) was not mentioned by the candidate in any tweet.
[2] Total tweets before and after, 542 and 1509, respectively.

Table 4: Used words relative to total tweets - FAM

word	Freq Before (%)	Freq After (%)
aborto	4.4	1.6
dios	6.7	1.2
familia	4.4	3.2
respeto	0.0	0.4
valores	2.2	1.6

Note: The word "amor" (love) was not mentioned by the candidate in any tweet.
[2] Total tweets before and after, 45 and 252, respectively.

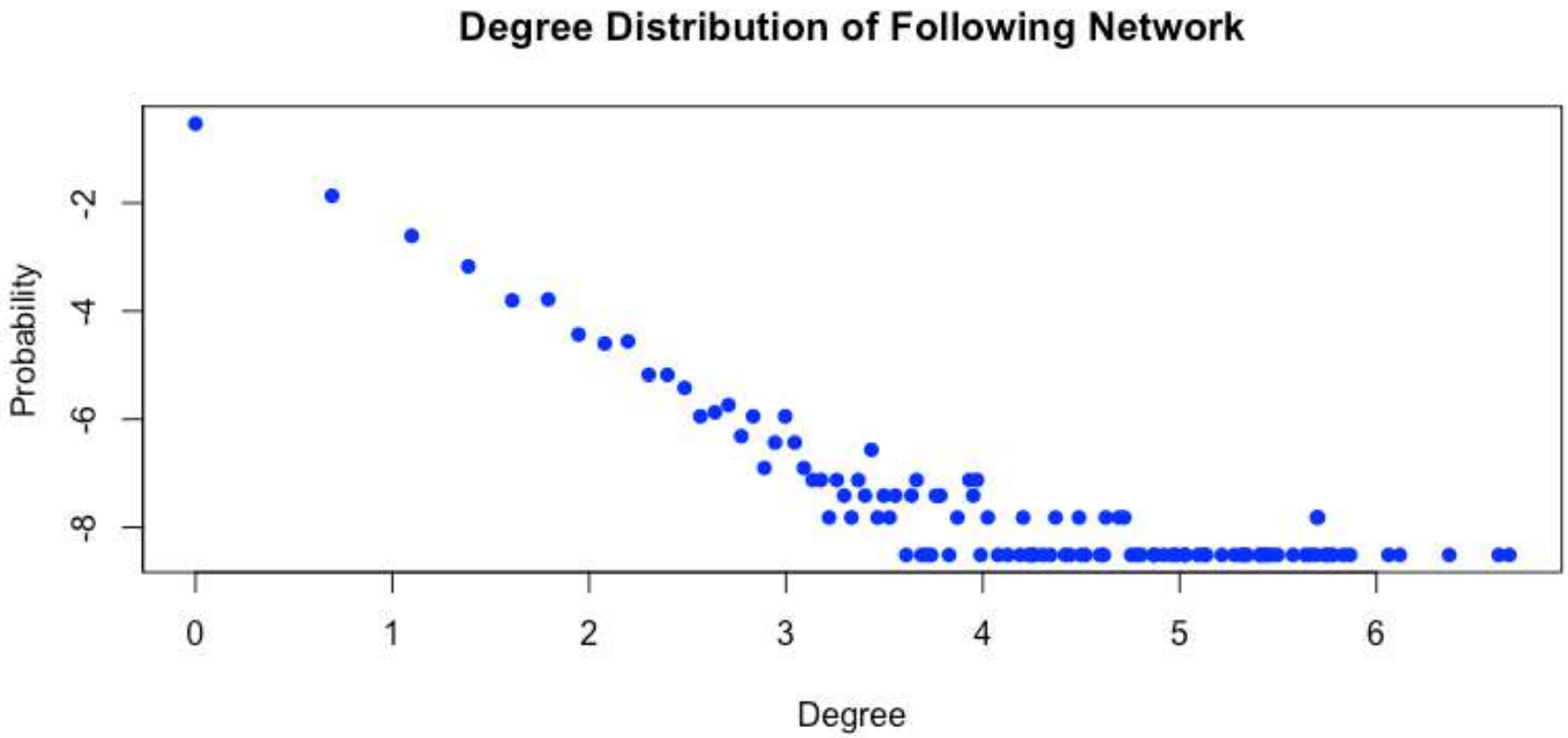

Words used by CAQ - Before ruling
30/10/2017 - 09/01/2018
Number of Likes
Frequency of Use
yocreo
país
campaña
comparto
sólo
costa
rica
apoyo
mujeres
mejor
carlospresidente
debe
gobierno
debatedetodos
podemos
familia
respeto
familias
toda
personas
todas
don
puede
mensaje
seguir
creo
educación
hoy
gestión
respaldo
tradicionales
diversidad
roles
aquellas
carlos
equipo
ser
posición
debemos
plan
propuestas
vez
solo
según
hecho
parte
tipos
desarrollo
trabajo
válidas
trabajando
queremos
día
hacia
muchas
pobreza
transporte
política
candidatos
compromiso
bien
sociedad
propuesta
años
ley
gente
violencia
días
gran
invito
debate
httpstcokzniyfpf
gracias
así
hacer
hola
medio
hace
lamento
nacional
empleo
sector
mejorar
acá
dado
tema
caq
pregunta
entender
¡saludos
podés
saludos


Words used by CAQ - After ruling
10/01/2018 - 08/04/2018
Number of Likes
Frequency of Use
esporcostarica
carlospresidente
costa
rica
hoy
país
personas
todas
don
gracias
fabricio
gobierno
amor
futuro
debatetn
debate
campaña
día
primer
votar
hacer
nacional
apoyo
creemosencostarica
convencéauno
respeto
gente
ser
debemos
mejor
plan
debateconvos
invitamos
vivo

Analyzing the Following Network

Clustering Coefficient
0.019

Average degree
5.58



Limitations & problems faced

- Liking-users doesn’t retrieve users that liked a retweeted tweet (several attempts with GET, academictwitterR, twarc and tweepy
- Numerical precision must be expanded to manage tweets ids.
- Following relationship doesn’t have timestamps. Therefore, we couldn’t analyze how the following relationships developed through the study period.

Recommendations

- Analyze the other candidates and their tweet activity, to better compare the effect of the polarizing event.
- Analyze not only candidates but political parties, media, etc. More data!!
- Extract “followed”instead of “following” relationship.