



# FROM TWEETS TO COMMUNICATION NETWORKS: EVIDENCE FROM THE MOVEMBER HEALTH CAMPAIGN ON TWITTER

NETWORKS MATCH MAKING EVENT

DOORN, MONDAY 20<sup>TH</sup> JANUARY 2020

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UNIVERSITY  
OF TWENTE.

# New Organizational Forms and ICTs



Collective Action



Crowdfunding



Digital Communities

Online

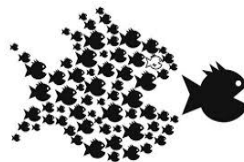
Interplay

Offline

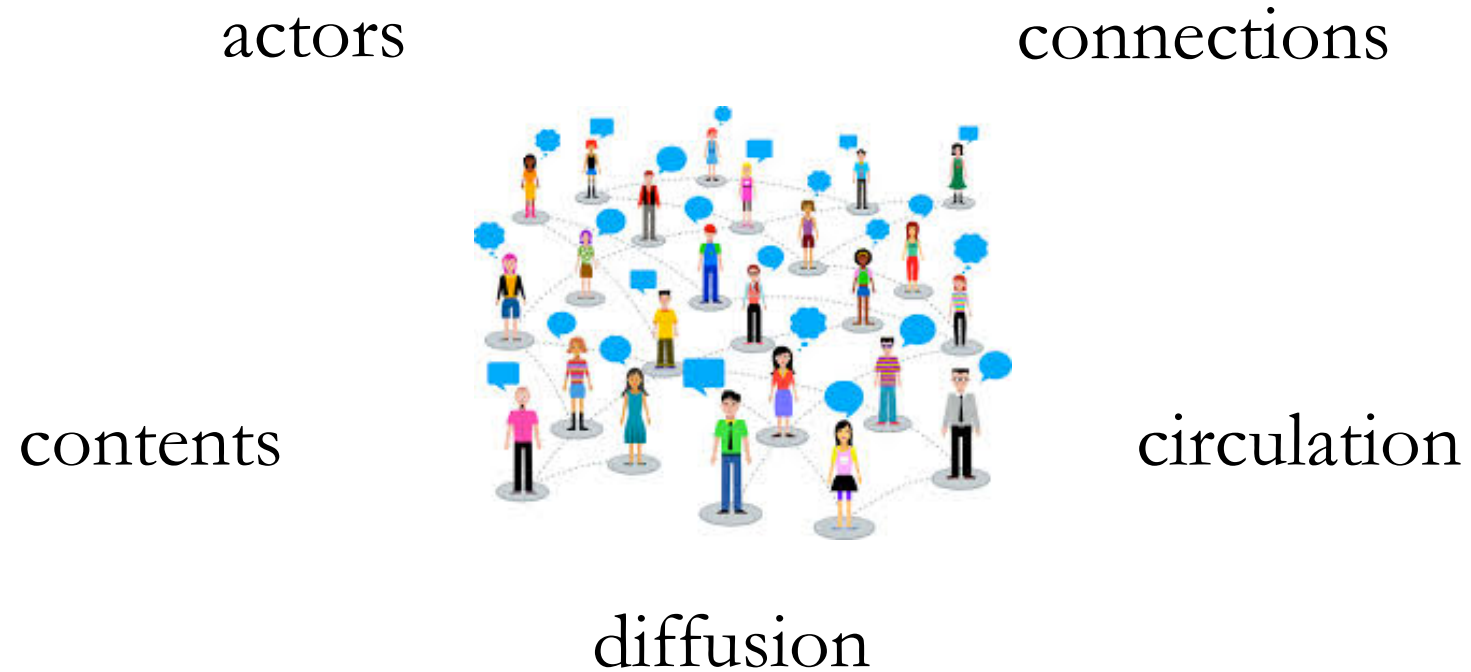
# Interactions, Social Structures & Systems



*How the structure of social relations develops and affects online and offline behaviors in new organizational forms*



# The Network Approach



# Network Questions

How do online and offline networks affect individual behaviors and outcomes that have a collective impact for organizations, businesses and, more broadly, our society?

Network evolution  
over time

Interplay between  
online & offline networks

# From tweets to communication networks



## Movember: A digital movement for men's health

- Raise awareness of **prostate and testicular cancer**
- Support **medical research** via **online peer-to-peer fundraising**

5 millions participants  
55 millions dollars in donations  
1,200 health projects



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# From tweets to communication networks

**MOVEMBER FOUNDATION** ANNA PRIANTE 0 DONEER

OVER ONS WERK DOE MEE MO HEROES AGENDA JE GEZONDHEID

## Anna Priante

OPZET FONDSSENWERVING 63% Ga naar openbare pagina

**Mijn motivatie**  
To raise awareness about the importance of healthy behaviors and early detection to prevent cancer

1 EERSTE JAAR MO SISTA!

MIJN MOSPACE-PAGINA TEAM NETWORK FONDSSENWERVING: DE TIPS TE DOWNLOADEN MEER

€ 30 / € 30 raised ✓ 17 / 30 MOVES € 500 Opgehaald bedrag team 1 Tweet

URL voor fondsenwerving <http://mosista.co/annapriante>

**MOVE-update**  
Ik heb gefietst 10 kilometer  
DELEN VIA FACEBOOK VERWUURDEN AANPASSEN VERSTOPPEN

**MOVE-update**  
Ik ben actief geweest gedurende 1 uur  
DELEN VIA FACEBOOK VERWUURDEN AANPASSEN VERSTOPPEN

**MOVE-update**  
Ik ben

Anna Priante @Annapriante

#MOVE DAY 2 Every day I go to work by bike. Just 10 km per day but it is good to move #movember #modatagrانتwente

Visualizza traduzione

Anna Priante ha Ritwittato

Member USA @Member - 2 nov 2015

Every Mo matters! It's not too late to sign up to Grow or MOVE this #Movember bit.ly/SignUpMovember...

Don't leave a MO Behind

Anna Priante ha Ritwittato

Member USA @Member - 31 ott 2015

Tomorrow is #Movember 1st! Time to #Shavethedate. Are you ready? bit.ly/SignUpMovember...



50 29



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# From tweets to communication networks



NETWORKS?





# From tweets to communication networks

## MENTION

@A: @B join me in Movember to raise awareness of prostate and testicular cancer!

## RETWEET

@A: RT @C Help me change the fce of men's health! Donate at the link: ...

## REPLY

@C: @D, sure I will join you in raising awareness for #Movember!

## TWEET

@E: I am raising funds for #Movember! Help me raise awareness of prostate and testicular cancer!

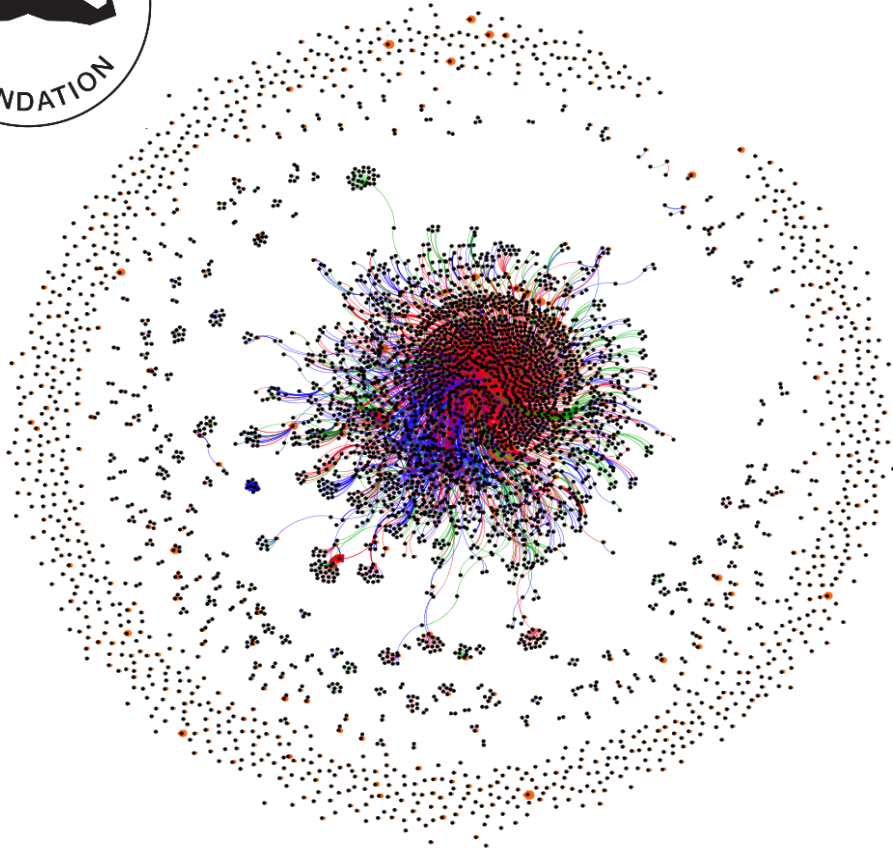


Source	Target
@A	@B
@A	@C
@C	@D
@E	@E



Gephi  
NetowrkX  
Etc.

# From tweets to communication networks

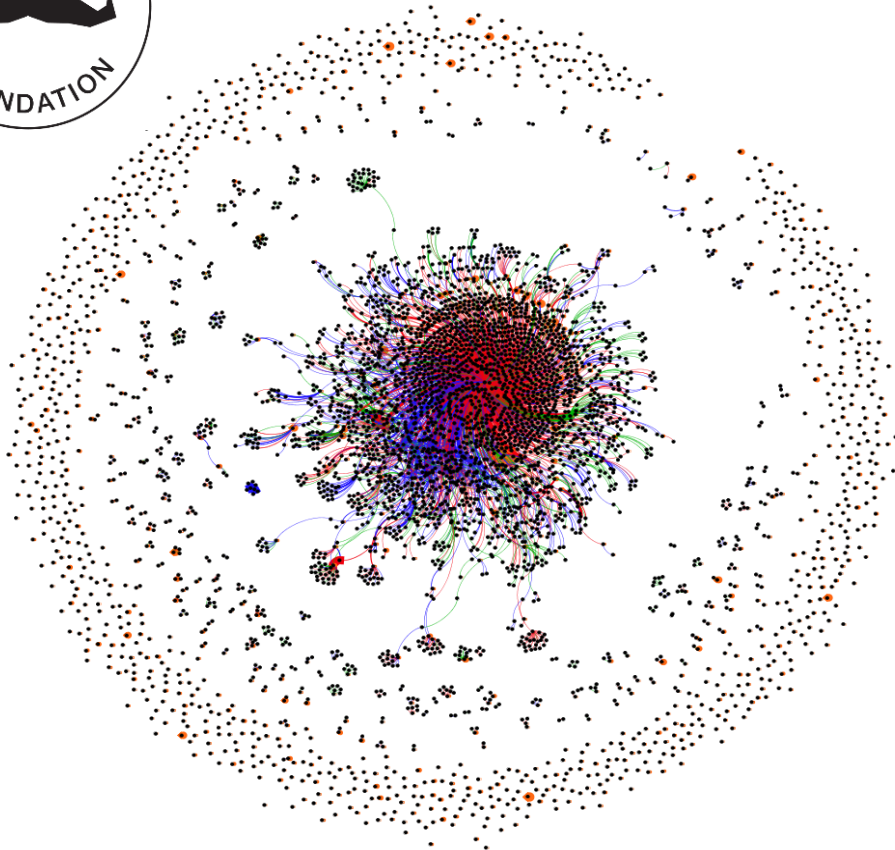


Network generated from Twitter activity (with #Movember-related) of **official Movember fundraisers** during the US 2014 campaign

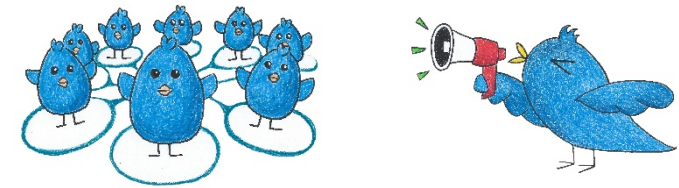
#Mo fundraisers are **nodes**  
Retweets, mentions and replies are **edges**  
Regular tweets are **self-loop** (*identifying isolates*)

#Movember Communication Network On Twitter

# From tweets to communication networks

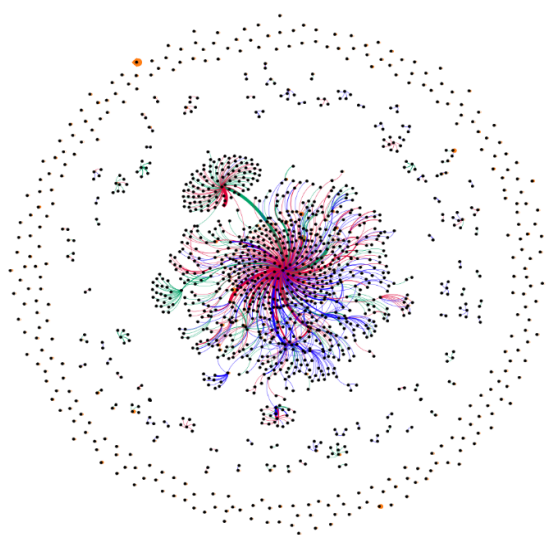


#Movember Communication Network On Twitter

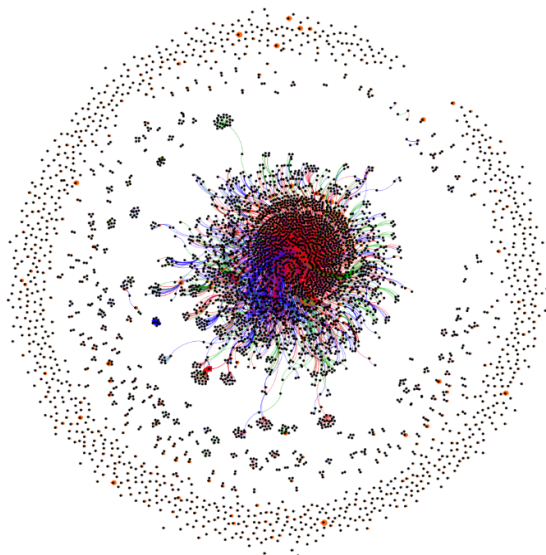


What is the impact of communication networks on mobilization outcomes, such as conversations?  
(MACRO/COLLECTIVE)

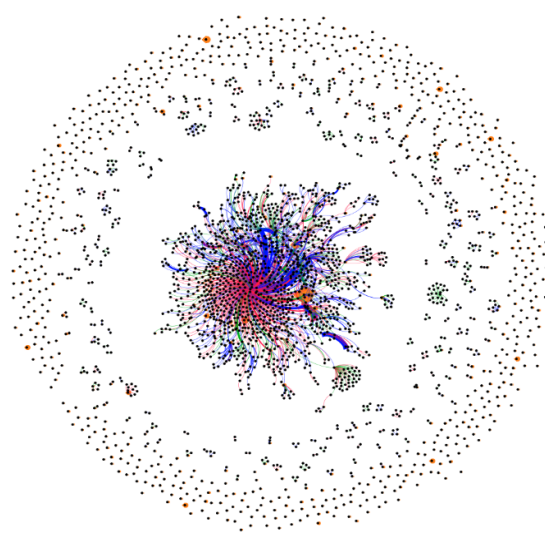
Pre-campaign



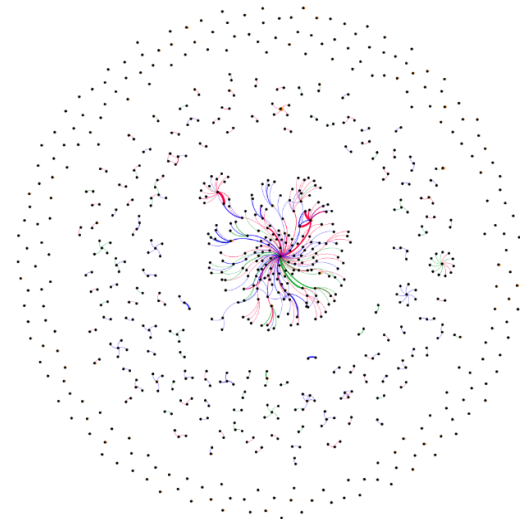
First 2 weeks



Second 2 weeks



Post-campaign



Volume of #Movember Tweets sent by Movember fundraisers during the 2014 US campaign



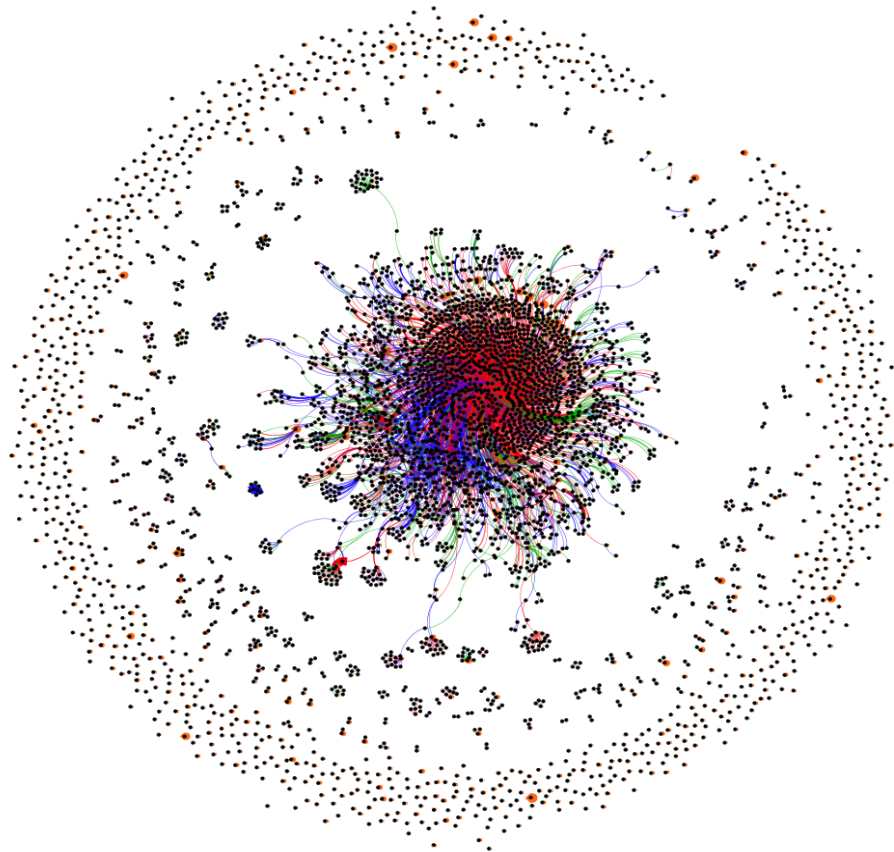
**Table 1. Macro network features at each phase (T) of the Movember campaign.**

	Phases			
	T1	T2	T3	T4
	<i>Pre-campaign</i>	<i>First two campaign weeks</i>	<i>Second two campaign weeks</i>	<i>Post-campaign</i>
Network size (number of nodes)	1,437	4,525	2,737	768
<i>Isolates (%)</i>	20.04%	22.87%	24.88%	28.26%
<i>In the giant component (%)</i>	61.93%	62.54%	50.71%	27.08%
<i>In smaller components (%)</i>	18.03%	14.59%	24.41%	44.66%
Number of edges	2,431	9,625	5,589	972
<i>Weighed (sum)</i>	1,666	5,637	3,208	745
<i>Interactive vs. self-loops (%)</i>	72.45%	66.9%	65.4%	60.94%
<i>Unimodal vs. bimodal (%)</i>	77.91%	71.67%	72.19%	83.22%
Density	0.001	0.000	0.000	0.002
Average (mean) weighted degree	1.135	1.177	1.161	0.767
<i>Max weighed degree</i>	586	2,248	1,037	145
Connected components (of at least 2 nodes)	90	225	225	130





# Why Communication Networks?

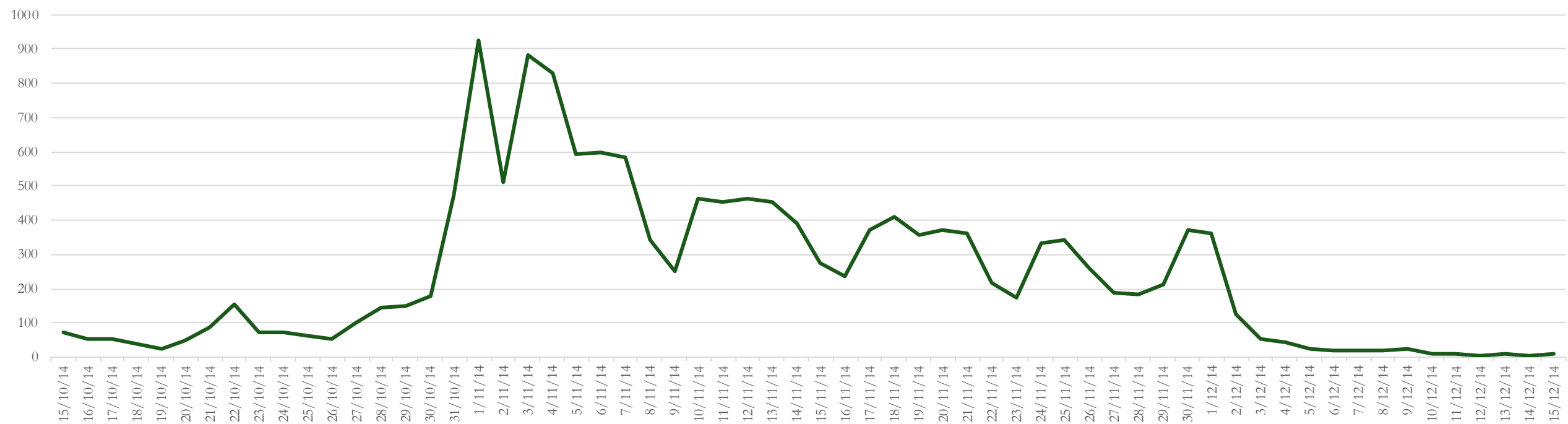


#Movember Communication Network On Twitter

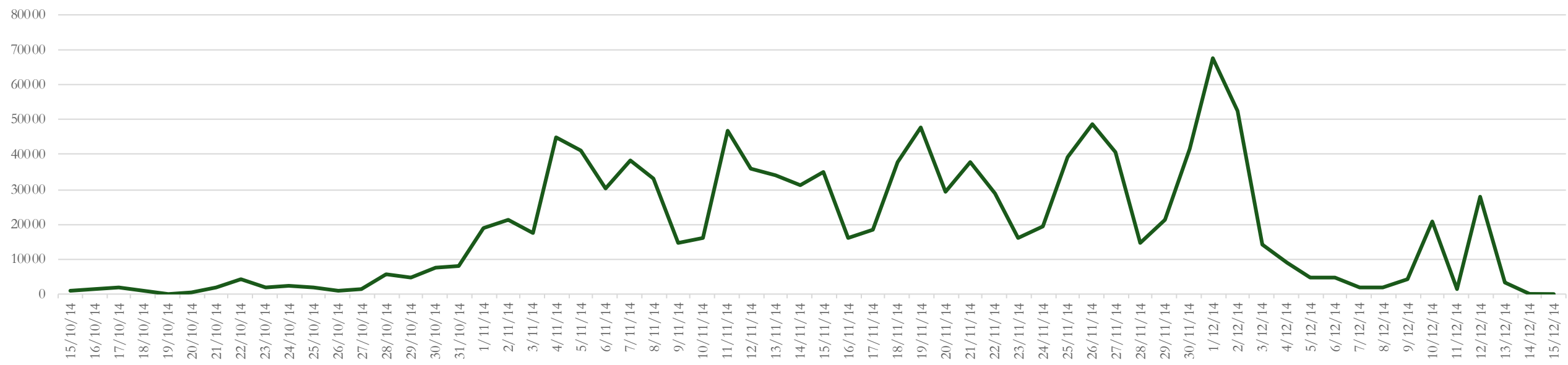


**What is the impact of online communication networks on individual and collective efforts in fundraising outcomes during the campaign?**

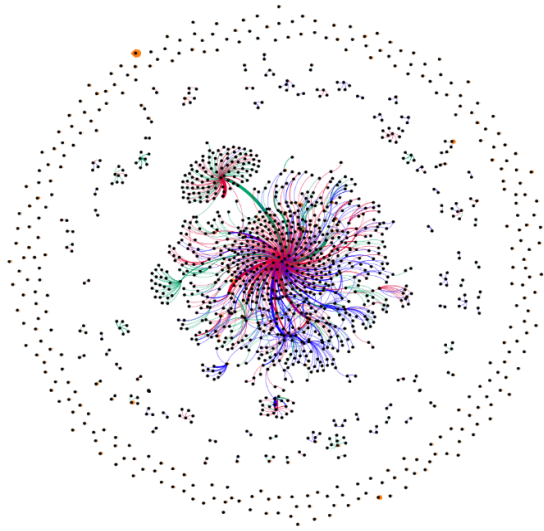
Volume of #Movember Tweets sent by Movember fundraisers during the 2014 US campaign



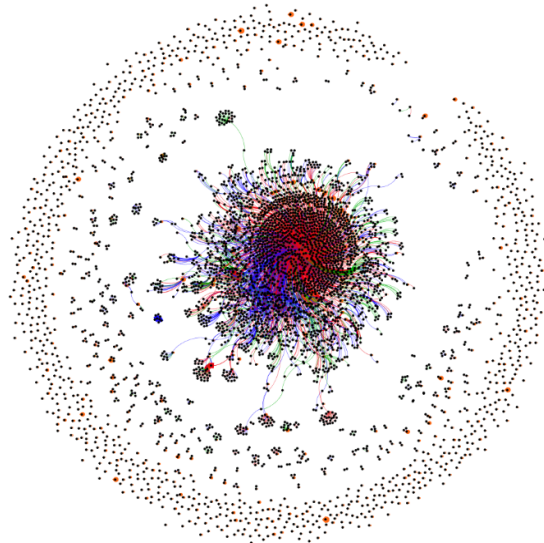
Donations (\$) raised by Movember fundraisers during the 2014 US campaign



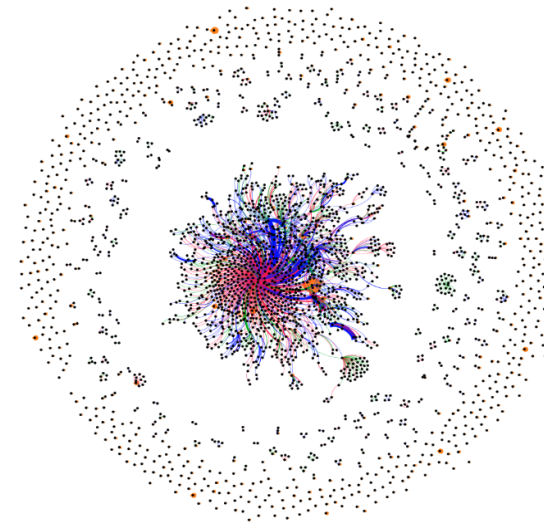
**Pre-campaign**



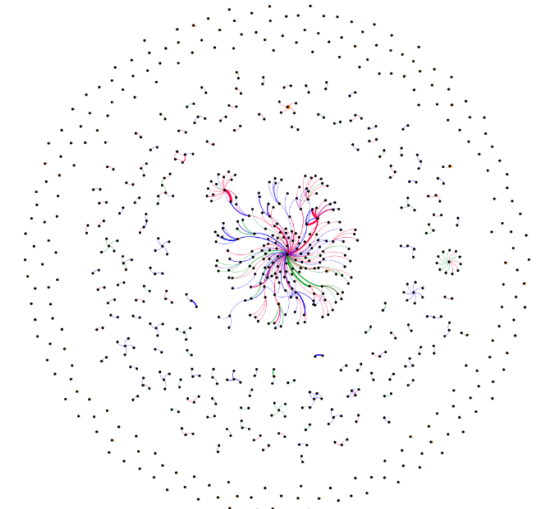
**First 2 weeks**



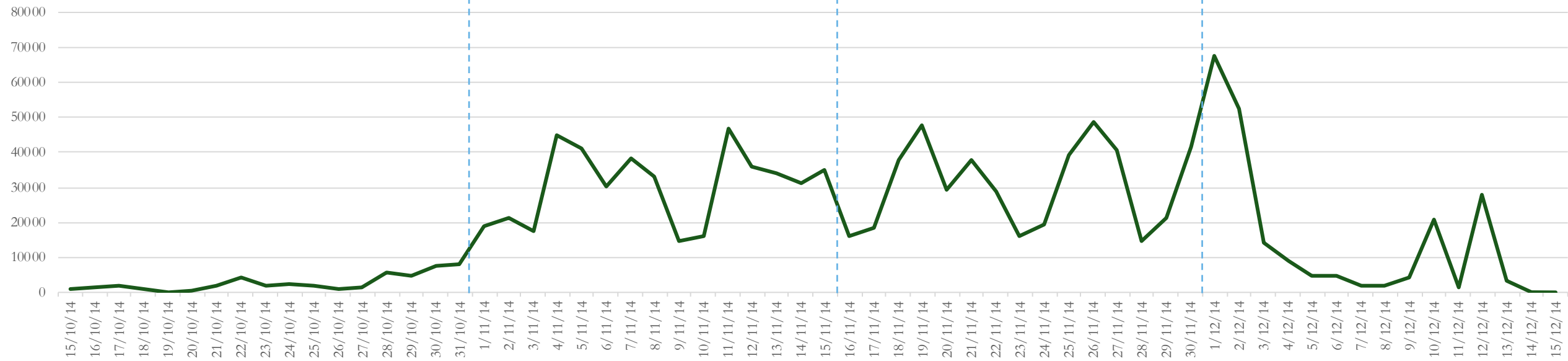
**Second 2 weeks**



**Post-campaign**



Donations (\$) raised by Movember fundraisers during the 2014 US campaign



# Communication Networks Evolution & Fundraising

**Table 4. Average and total amount of donations (US \$ and %) collected by official members per network layer at each phase (T) of the Movember campaign.** Average and total amount of donations collected by official members outside the network at each T, and final total amount collected at each T are also reported for comparison.

	Phases											
	T1			T2			T3			T4		
	<i>Pre-campaign</i>			<i>First two campaign weeks</i>			<i>Second two campaign weeks</i>			<i>Post-campaign</i>		
	Avg. (\$)	TOT (\$)	%	Avg. (\$)	TOT (\$)	%	Avg. (\$)	TOT (\$)	%	Avg. (\$)	TOT (\$)	%
Giant component	47.6	19,029.3	63.6	160.6	237,866.3	57.1	300.3	185,009.8	55.2	405.2	40,113.0	48.5
Smaller communities	12.4	1,218.1	4.1	202.9	51,935.8	12.5	207.0	52,169.7	15.6	89.7	10,224.3	12.4
Isolates	33.5	9,659.7	32.3	122.5	126,779.3	30.4	144.0	98,081.0	29.3	151.8	32,341.3	39.1
<b>TOT (inside)</b>	<b>38.0</b>	<b>29,907.1</b>	<b>64.9</b>	<b>150.3</b>	<b>416,581.4</b>	<b>91.2</b>	<b>216.4</b>	<b>335,260.4</b>	<b>74.6</b>	<b>194.1</b>	<b>82,678.6</b>	<b>48.5</b>
<i>TOT (outside)</i>	<i>6.5</i>	<i>16,202.7</i>	<i>35.1</i>	<i>76.7</i>	<i>40,117.0</i>	<i>8.8</i>	<i>65.4</i>	<i>114,165.8</i>	<i>25.4</i>	<i>31.0</i>	<i>87,700.1</i>	<i>51.5</i>
<i>TOT (final)</i>		<i>46,109.8</i>	<i>4.1</i>		<i>456,698.4</i>	<i>40.7</i>		<i>449,426.1</i>	<i>40.0</i>		<i>170,378.7</i>	<i>15.2</i>

Access to official members' donations data was granted by the US Movember Foundation.

# THANK YOU FOR YOUR ATTENTION! QUESTIONS?

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