

facebook

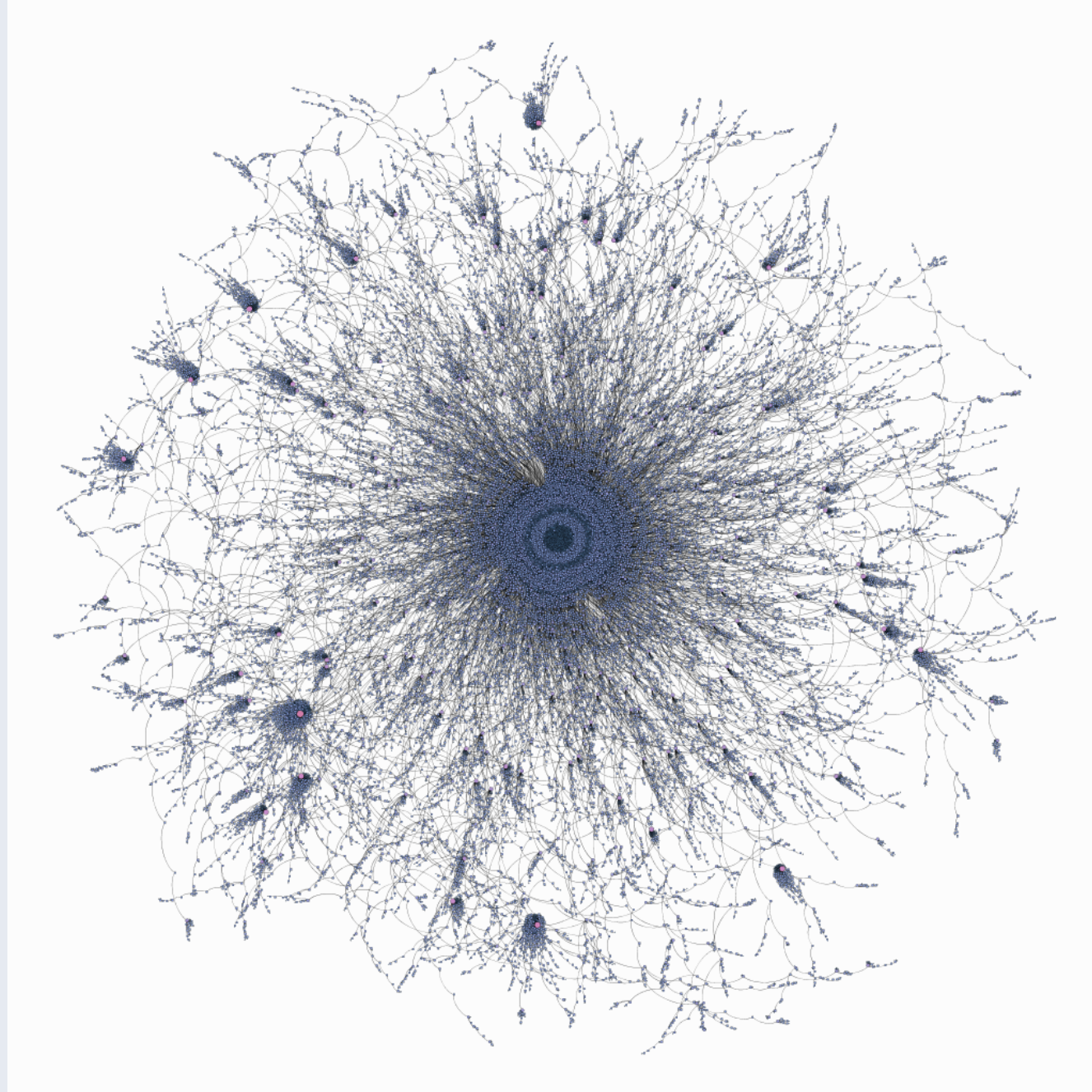
The Anatomy of Large Facebook Cascades

Alex Dow

(Joint work with Lada Adamic and Adrien Friggeri)

July 8, 2013

Information Cascades

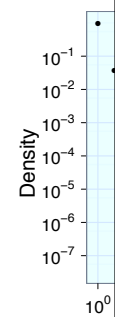


Recent research

Leskovec, J.; Singh, A.; and Kleinberg, J. 2006.
Patterns of influence in a recommendation network.

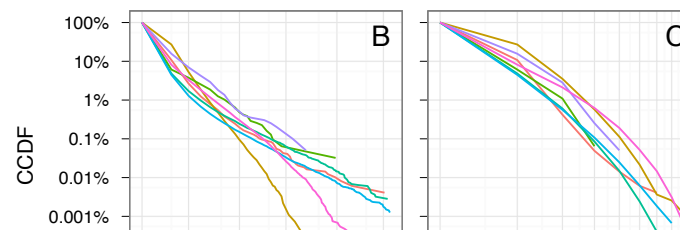
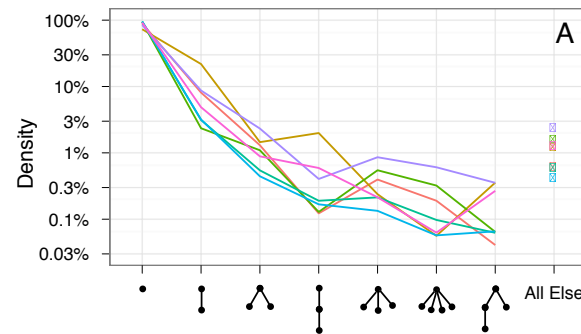
Bakshy, E.; Hofman, J. M.; Mason, W. A.; and Watts, D. J. 2011.
Everyone's an influencer: Quantifying influence on Twitter.

Goel, S.; Watts, D.; and Goldstein, D. 2012.
The structure of online diffusion networks.



(a)
Figure 4 sizes. (b)

we study
most even
cascades a
To iden
gated all
influence a
for which
tree mode



- Y! Kindness
- Zync
- Secretary Game
- Twitter News
- Twitter Videos
- Friendsense
- Y! Voice

Experience suggests otherwise

The screenshot shows a Facebook interface. At the top, there is a search bar and navigation links for Home and Post. The main content area displays a post from 'The Animal Rescue Site' shared by a user. The post features a photograph of a baby and a dog. The text 'don't cry' is overlaid at the top of the photo, and 'ugly bald puppy' is overlaid at the bottom. Below the photo, there are interaction buttons for Like, Comment, and Share, and a notification that 5 people liked the post. A comment from another user is visible below the post. On the right side, there is a sidebar with sections for News Feed, Following, Add Friend, Suggested Groups, and a sponsored advertisement for 'Change what you give'.

Search for people, places and things

Home Post

shared The Animal Rescue Site's photo.

The Animal Rescue Site
LIKE if Rescue if your favorite breed!... See More

don't cry

ugly bald puppy

last Thursday

Like Comment Share

5 people like this.

I don't even like dogs... but this is adorable!
June 27 at 10:37pm via mobile · Like

Write a comment...

News Feed

Following 20+

Add Friend

SUGGESTED GROUPS See All

+ Join

SPONSORED Create Ad

Change what you give
You can help make the world a better place, one gift at a time!

English (US) · Privacy · Terms · Cookies · More · Facebook © 2013

Photo Reshare Cascades

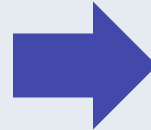
 **The Animal Rescue Site**
June 27

LIKE if Rescue if your favorite breed!
SHARE if your dog rescued you!



Like · Comment · Share 40,787

76,606 people like this Top Comments



 [redacted] shared The Animal Rescue Site's photo.
June 27

LIKE if Rescue if your favorite breed!
SHARE if your dog rescued you!



Like · Comment · Share



 **Alex Dow** shared The Animal Rescue Site's photo.
2 hours ago Only Me

LIKE if Rescue if your favorite breed!
SHARE if your dog rescued you!



Like · Comment · Promote · Share

Data description

- 1 million photos uploaded and reshared in January
- All reshares within two weeks of upload
- Two additional photos for detailed investigation (more later)

Cascade construction

- Direct parent attribution: Where was “share” clicked?

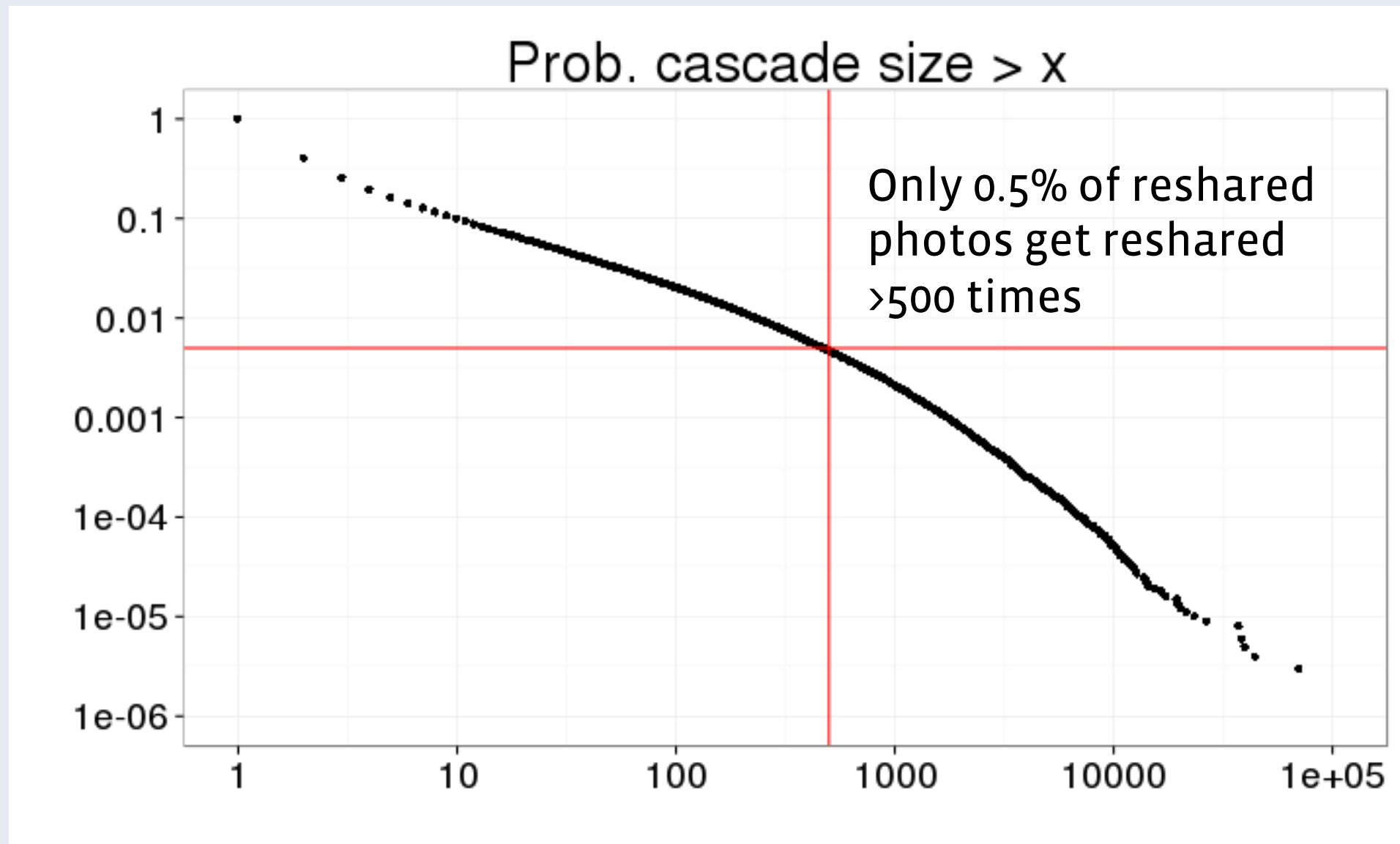
Click on friend's reshare \longrightarrow Share the original



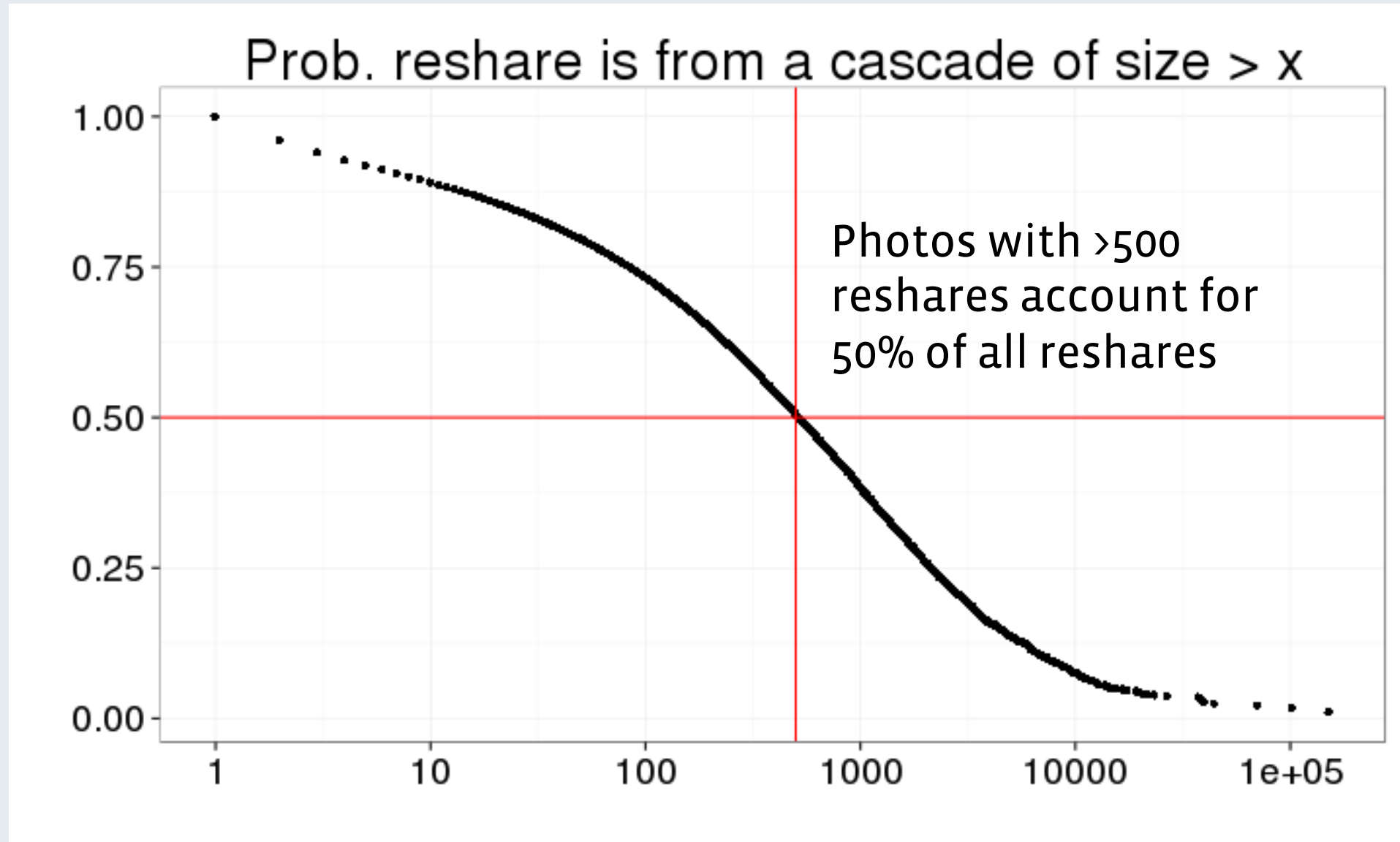
- Inferred parent attribution: What led to the reshare?

How many cascades are large?

- Only 5% of photos get reshared at all

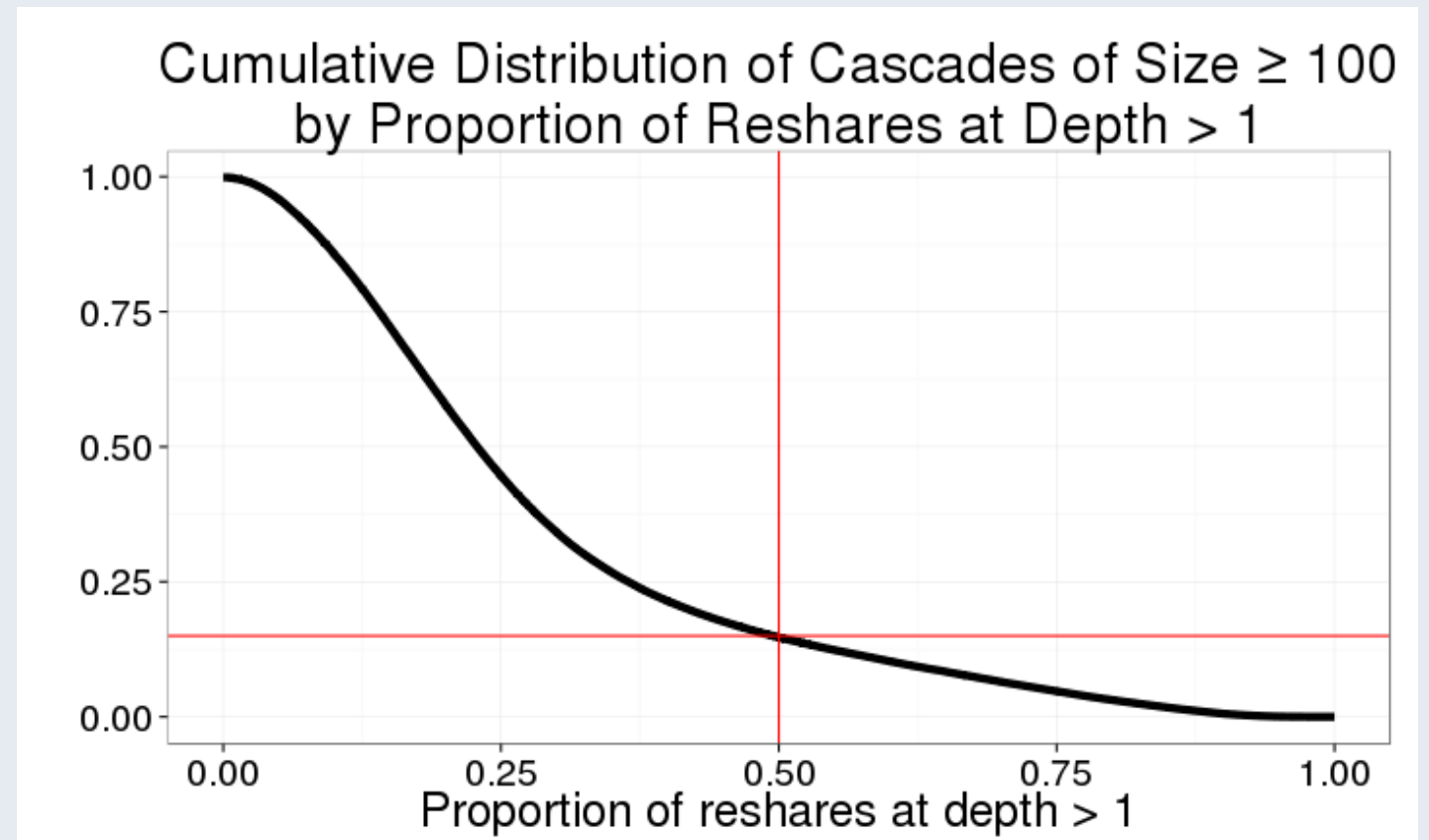


How many reshares are in large cascades?



Do cascades go deep?

- Vast majority of cascades are very small and shallow
- Even among cascades of size >100 , most have most of their reshares at depth 1
- But, of those cascades, 15% have more than half of their reshares at depth >1



Two specific large cascades

Obama Victory Photo (OVP)

- > 7 million likes
- > 500,000 comments
- > 600,000 reshares



Million Like Meme – Origin Story



More at KnowYourMeme.com:

<http://knowyourmeme.com/memes/one-million-facebook-likes-pleas>

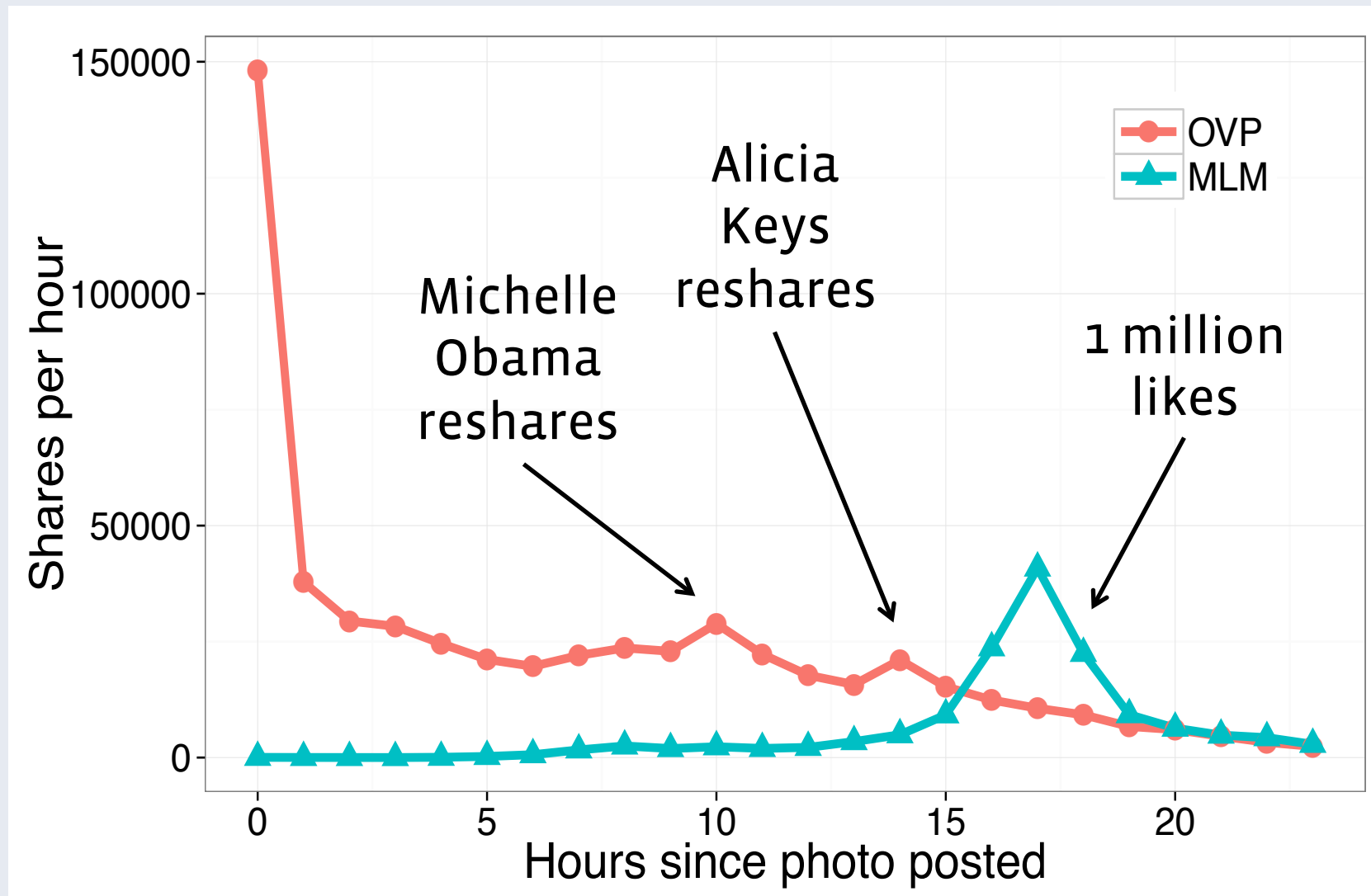
The inevitable evolution

- Almost 2 million likes
- > 150,000 comments
- > 150,000 reshares
- MLM (Million Like Meme)

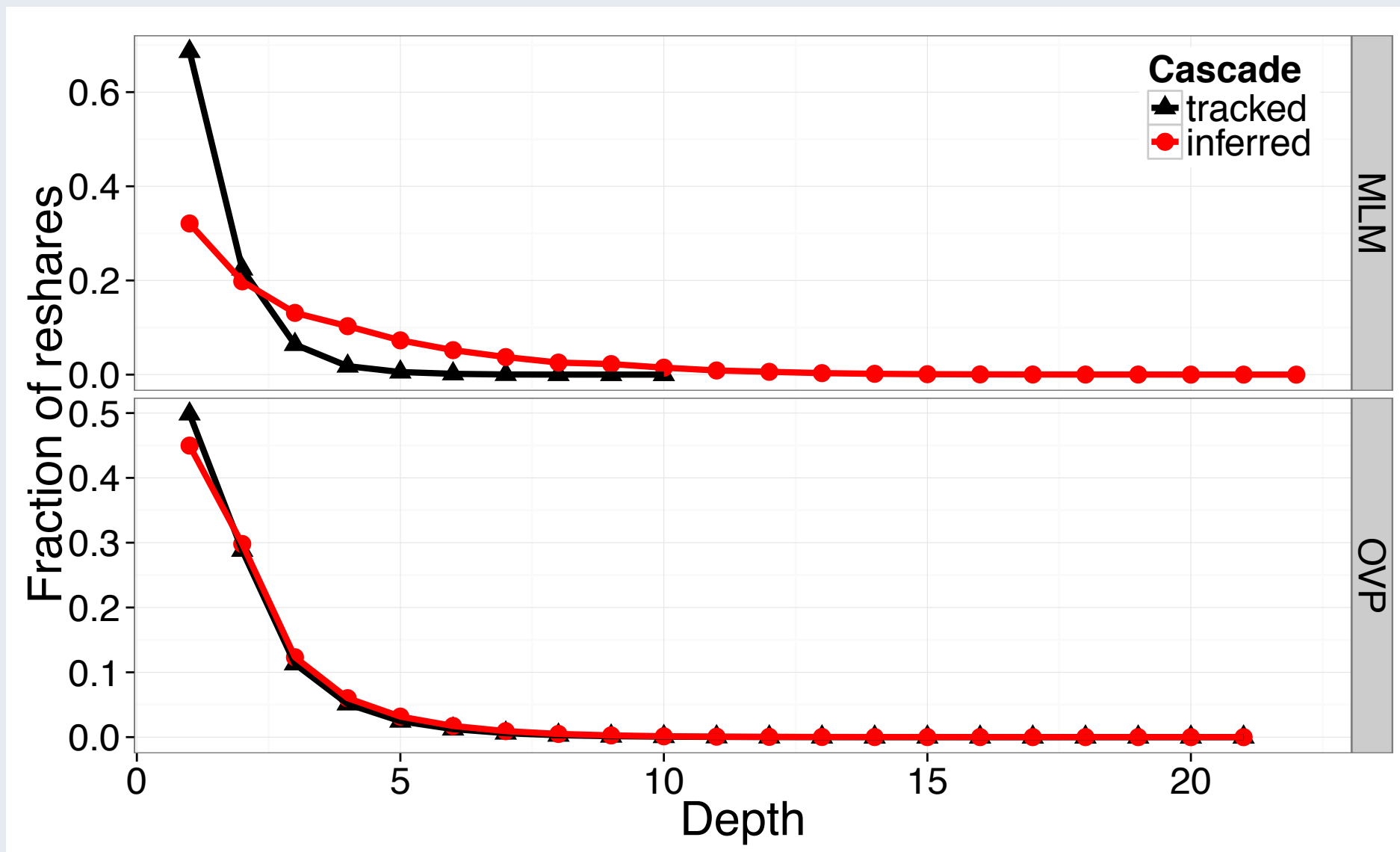


Temporal dynamics

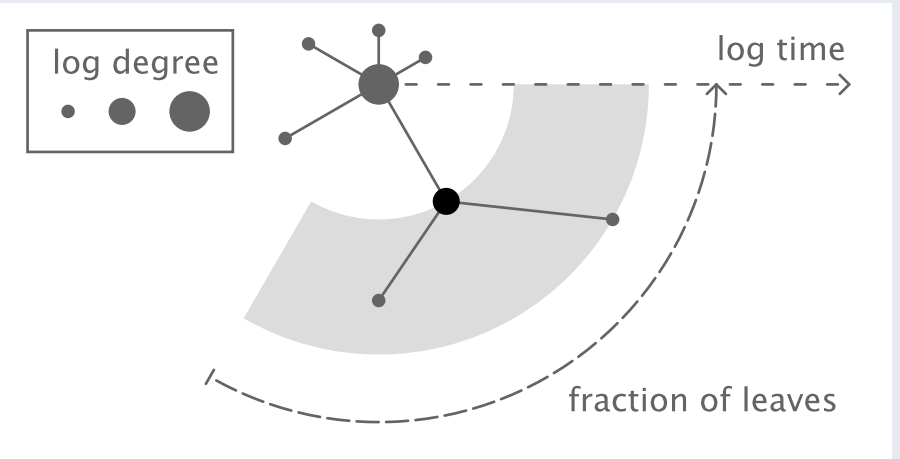
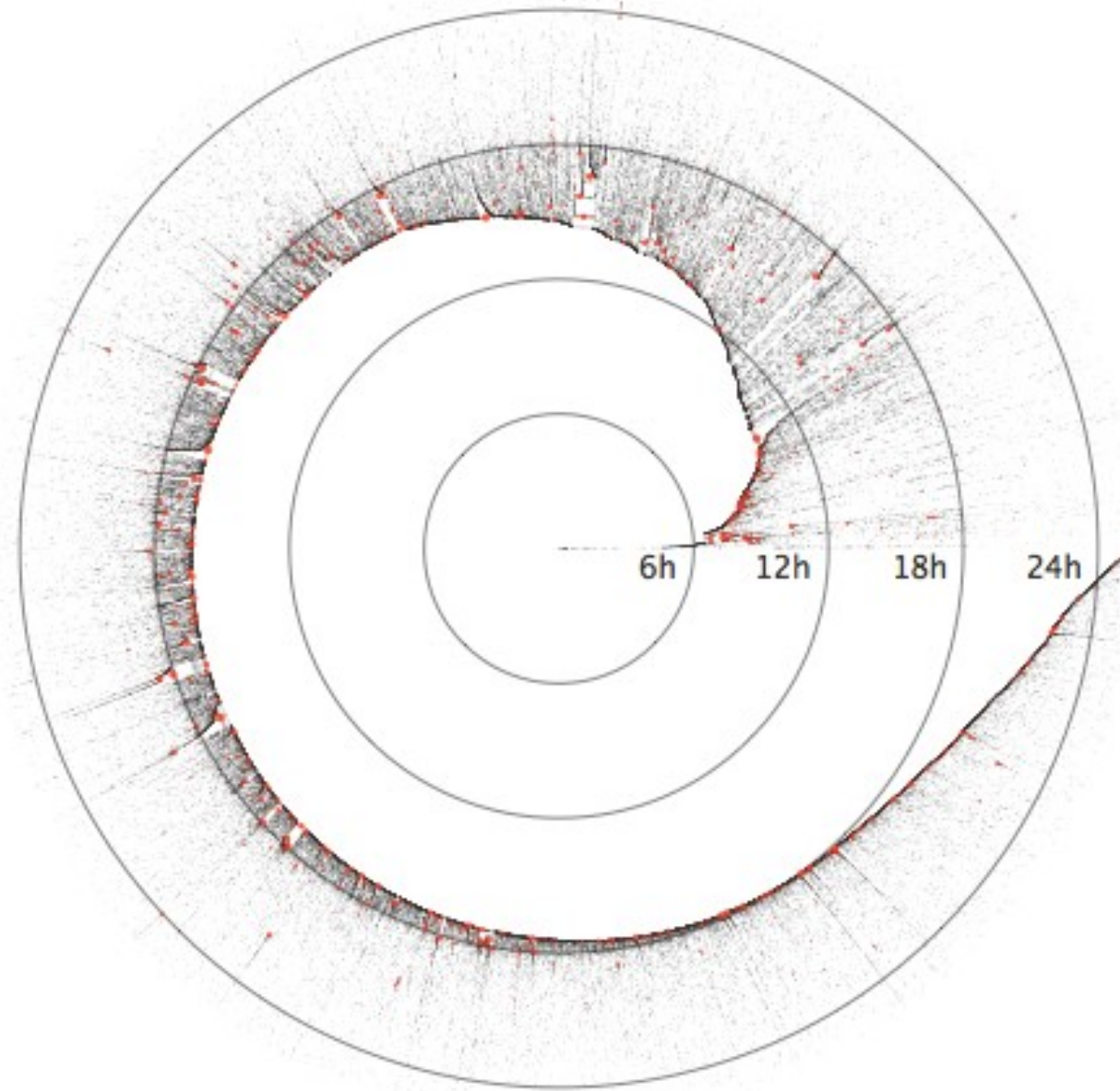
In first 24 hours -- 96% of MLM shares -- 90% of OVP shares



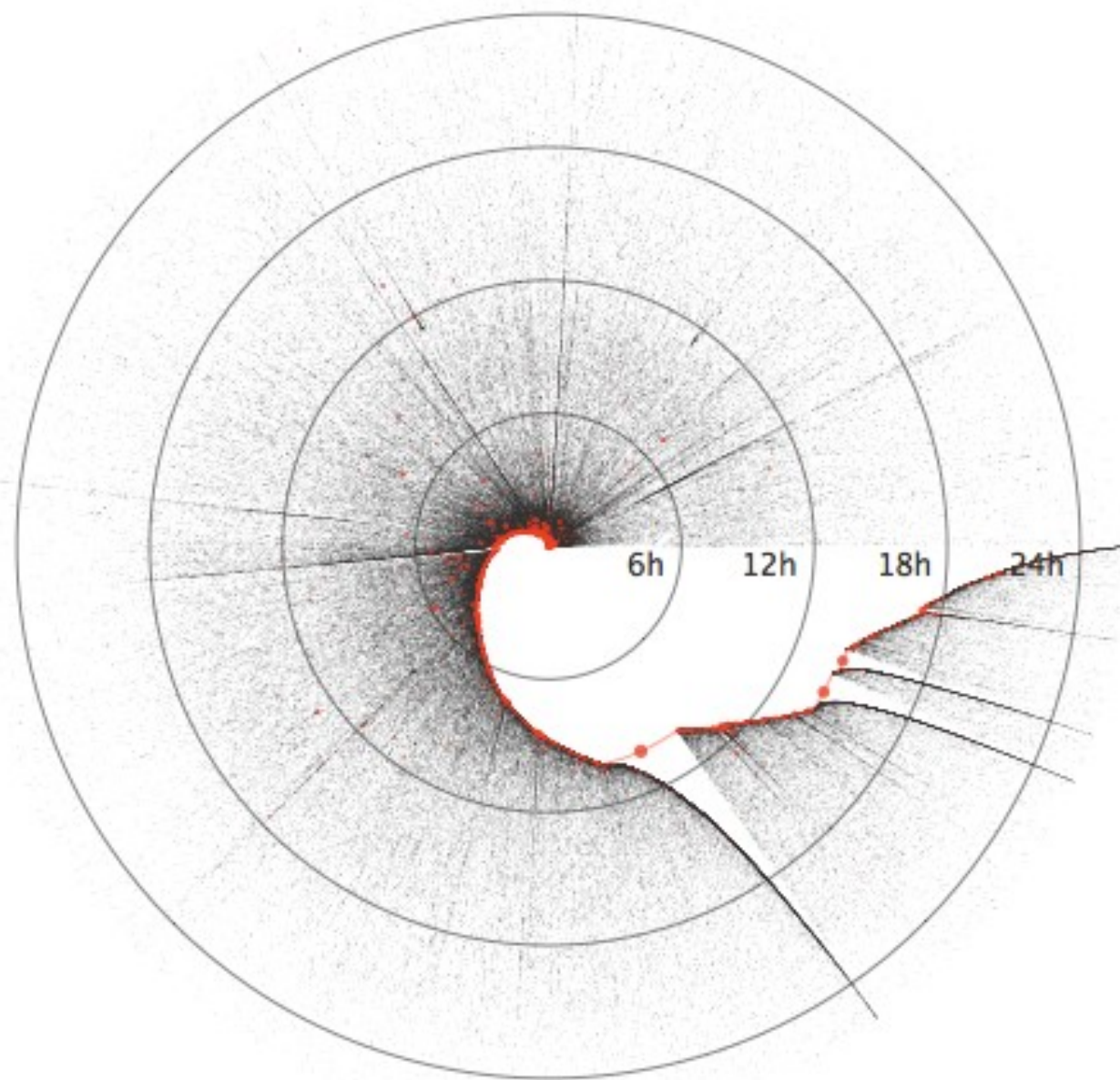
Depth and rechainning



Cascade visualization

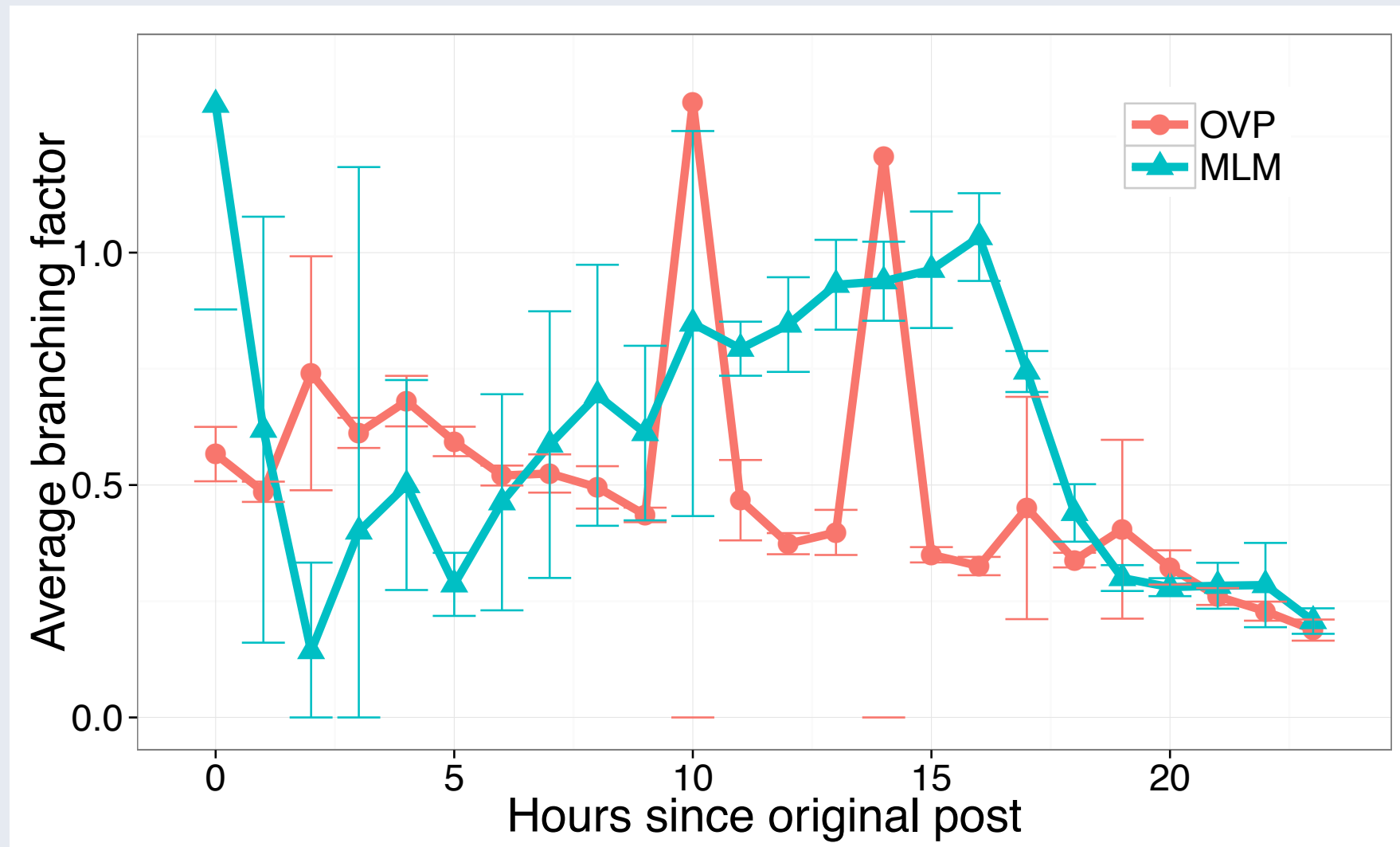


Rechaining with little effect

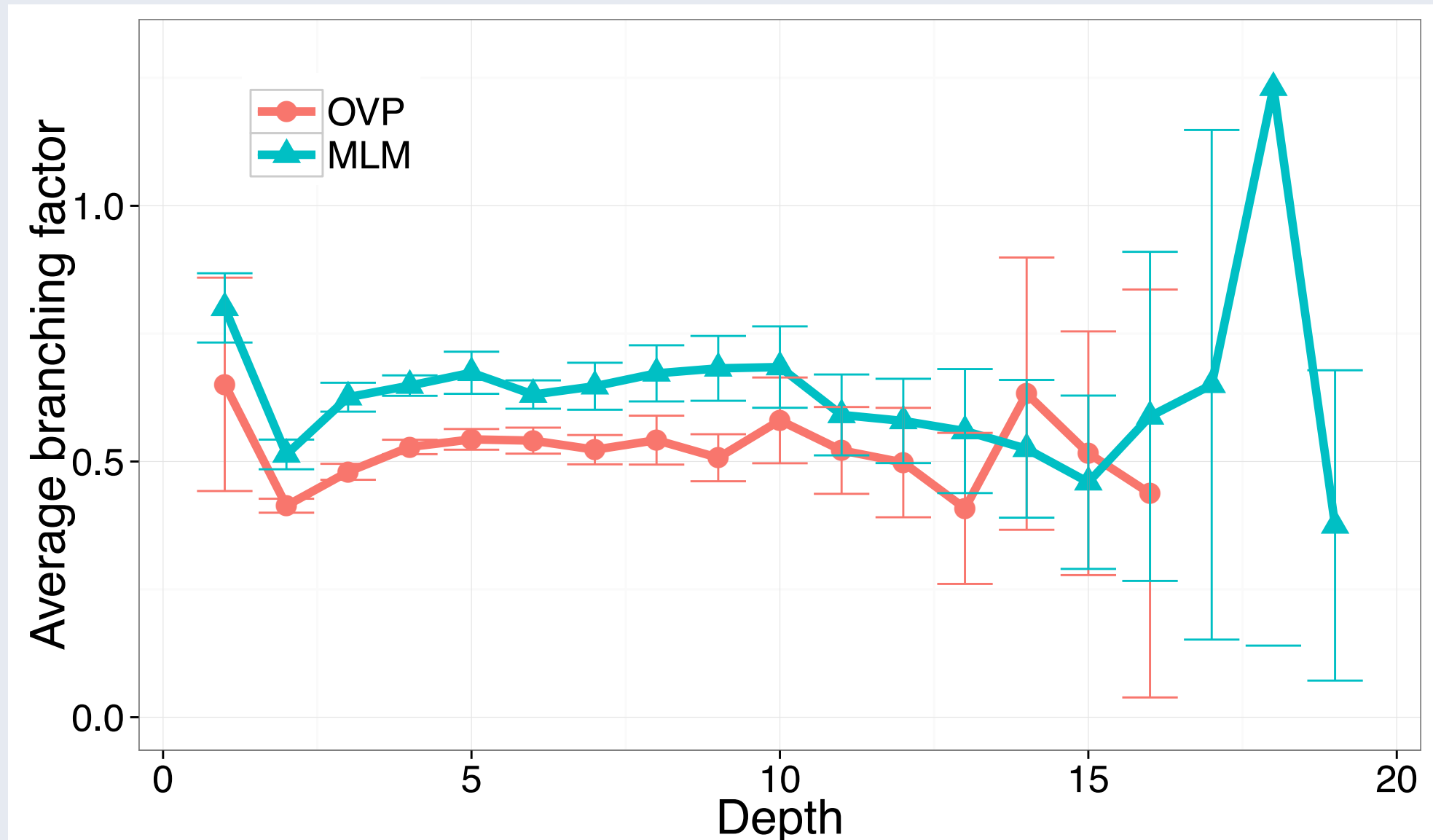


Subcascade branching factor

- Average reshares that followed directly from a single reshare

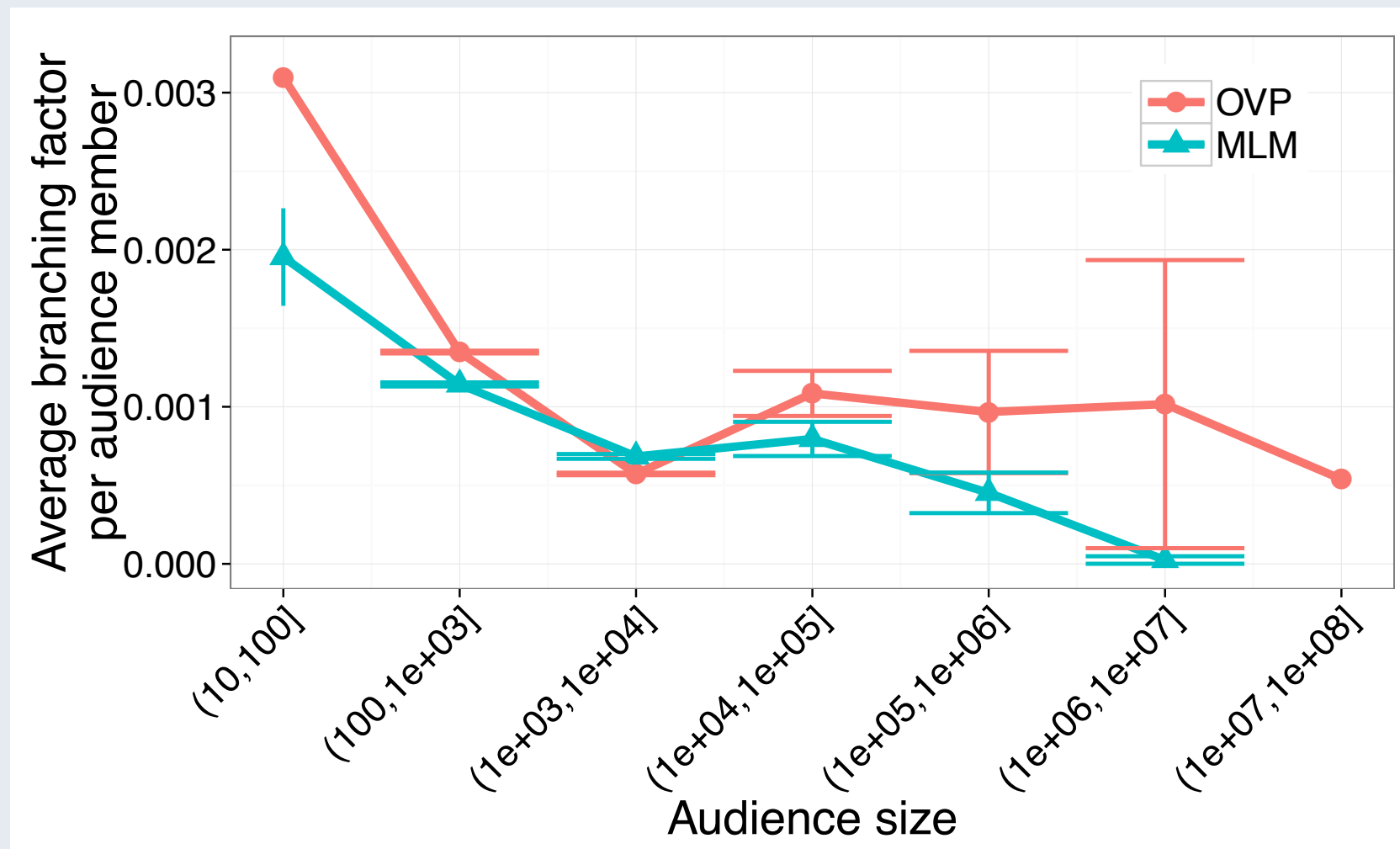


Branching factor by depth



Branching factor per audience member

- Avg bf increases with size of audience
- Each additional audience member contributes same or less to bf



Modeling reshares

- Direct influence (bf) vs. Indirect influence (subcascade size)
- Demographics, depth, and time had little explanatory power
- It all comes down to audience size:

Influence	Cascade	R ²
branching factor	OVP	0.49
	MLM	0.30
subcascade	OVP	0.45
	MLM	0.10

Take aways

- Cascades are small and shallow
- But, large cascades exist, and a majority of reshares belong to them
- There is a significant number of cascades where most distribution is deeper than 1
- Inferred parent attribution (rechaining) can have a significant impact on cascade structure
- Audience size is important in explaining spread, but not the whole picture

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