

# Wisdom and Manipulability of Threads

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joint work with  
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# Test experiments on Facebook



**Klaus Holsting**

October 15 ·

Nogle vil huske manden på Dyrehavsbakken der i 60'erne stod med sin badevægt og gættede på i hvilken grad tyngdekraften havde fat i folk. Ramte han rigtigt kostede det en femmer ellers var det gratis. Mogens og Hansi (th) fotograferet på Dyrskuet i Roskilde i sommer lige efter en vejning, der afslørede at særlig Hansi kan noget dér. Spørgsmålet er hvad de to vejer tilsammen, vi snakker hele kg uden decimaler. Der er en femmer på spil, nogen bud?

[See Translation](#)



Jens Harbæk 1300 kg

Like · Reply · 1 · October 15 at 2:36pm



Cecilie Schmidt 1.250 kg

Like · Reply · October 15 at 2:38pm



Anne Røby 850 kg

Like · Reply · October 15 at 2:40pm



Niels Fris 1.820

Like · Reply · 3 · October 15 at 2:44pm



Peter Mithers 1307 kg

Like · Reply · October 15 at 2:51pm



Jeppe Mithers 1654 kg

Like · Reply · 1 · October 15 at 3:01pm



Michael Bager 1502 kg?

Like · Reply · October 15 at 3:07pm



Susanne Søe Klausen Rytter 1000 kg

Like · Reply · October 15 at 3:18pm



Philip Kærku Anankwa Sampson 1405 kg

Like · Reply · October 15 at 3:25pm



Lars Flinck Pedersen 1134

Like · Reply · October 15 at 3:27pm



Anette Vulf Hansen Sjovt, vi gætte ca 1,45 ton, -as soon håndterer 3 briket såme årligt, på hver ca 1 ton, vi ved også lidt om vægt 🙄 -hvad vejer de 🙄

Like · Reply · October 15 at 3:31pm · Edited



Helene Pedersen 550 kilo,?

Like · Reply · 1 · October 15 at 3:31pm



Per Dyrland Arnoldt 1425

Like · Reply · 1 · October 15 at 3:57pm



Livik Winding replied · 1 Reply



Lars Kræbe 799 kg

Like · Reply · October 15 at 4:11pm



Troels Schwidt 1.750 kg (men jeg har snydt og kigget hvad sådan en tyr vejer, -den er ærlig... tung)

See Translation

Like · Reply · October 15 at 4:18pm · Edited



Charlotte Persæ 600 kg

Like · Reply · October 15 at 4:14pm

# Screenshot from Amazon Mechanical Turk

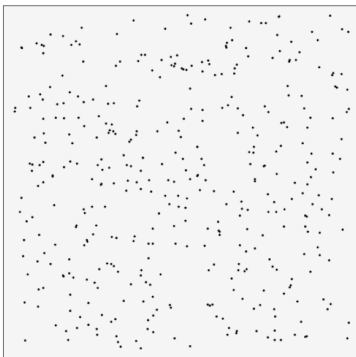
Guess the number of dots in the image. If your guess is within 10% of the right answer, you will get a bonus of \$1.00.

Number of dots:

Confirm guess

**Submit!**

Time left: **0:53**



Previous guesses:

300

540

200

469

275

345

900

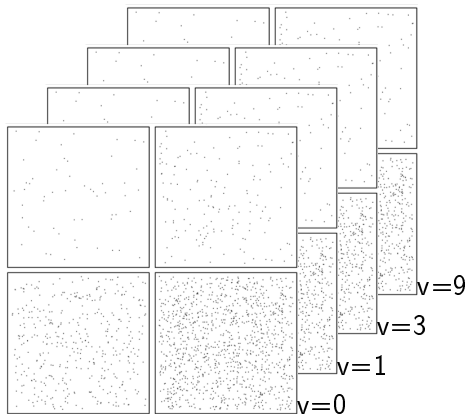
300

270

Remaining time for your guess: 0:53

# Experimental Design

- 11,748 estimates from 6,196 unique participants.
- 12 *historical* threads with  $d$  and  $v$  **preceding** estimates.
- 12 *manipulated* threads with  $d$  and  $v$  **highest** estimates so far.
- 4 control threads with  $d$  and  $v=0$ .
- Fixed participation fee.
- Variable waiting fee.
- \$1 bonus if estimation error  $< \pm 10\%$ .



# Aggregate Results

$M_{dv}$  denotes the median of a thread with  $d$  dots and  $v$  estimates:

$$d = \{55, 148, 403, 1097\}$$

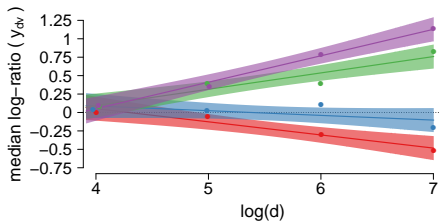
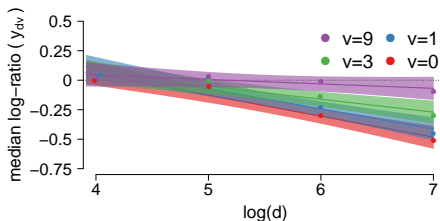
$$v = \{0, 1, 3, 9\}$$

$y_{dv} = \log(M_{dv}/d)$  is the **median log-ratio**, modeled with a linear normal model.

## Findings

The thread accuracy

- generally **declines** with large  $d$ .
- **improves** with increasing  $v$ , given pristine information.
- **declines** with increasing  $v$ , given folly information.



# Gaussian Mixture Models

GMMs are used to model the effects social information  $s_i$  on each estimate  $y_i$ , for  $v > 0$ :

$$\mu_i^w = \sum_{j=1}^k \delta_{ij} (\alpha_j + \beta_j s_i),$$

for  $i=1, \dots, n, j=1, \dots, k$ .

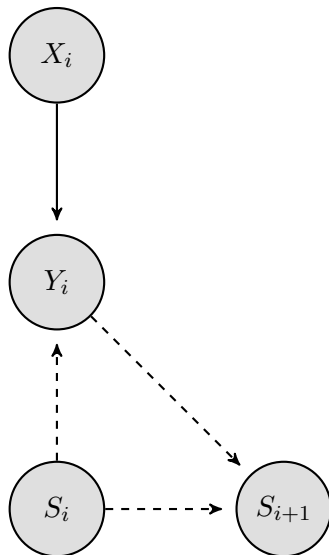
The model yields a **persuadability score**:

$$\beta_i^w = \sum_{j=1}^k \delta_{ij} \beta_j.$$

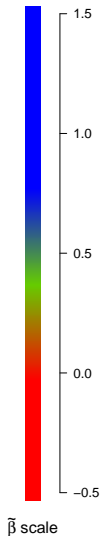
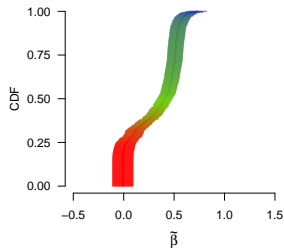
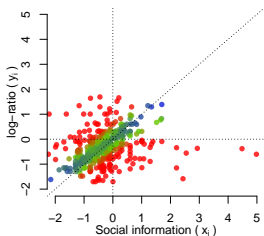
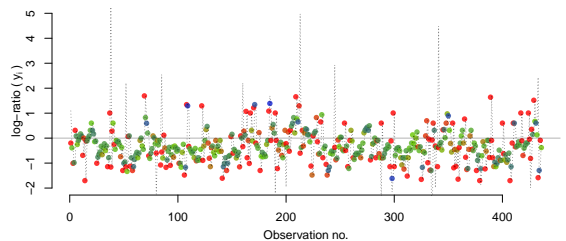
Thus,

Large  $\beta^w \Rightarrow$  persuadable

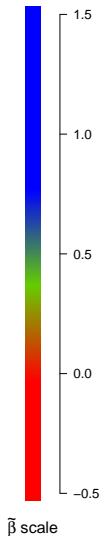
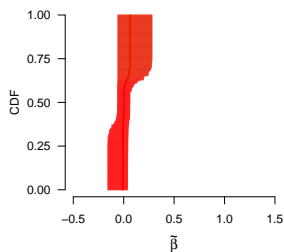
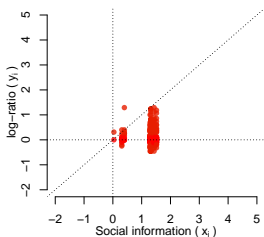
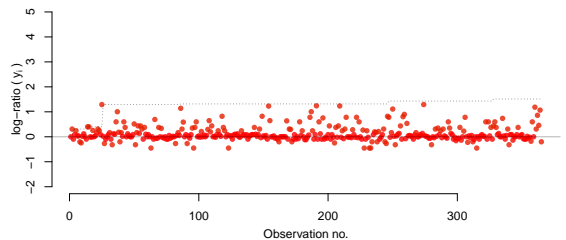
Small  $\beta^w \Rightarrow$  skeptic



# Historical thread: $d = 1097, v = 1$

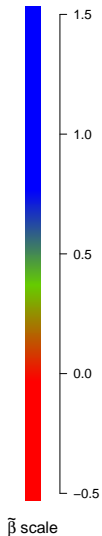
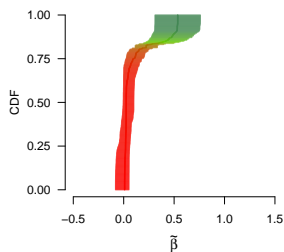
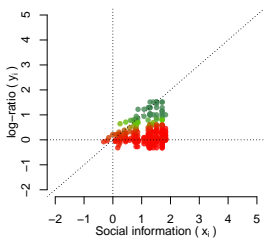
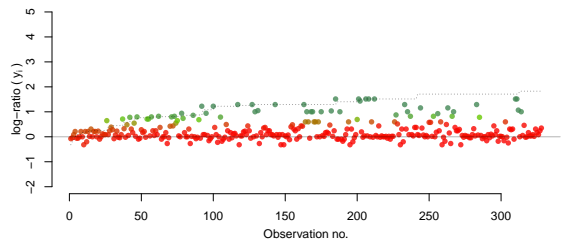


# Manipulated thread: $d = 55, v = 1$

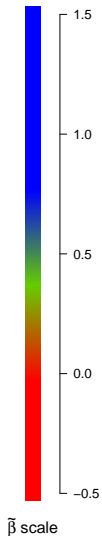
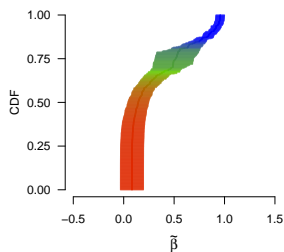
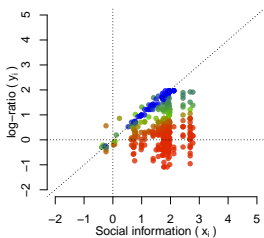
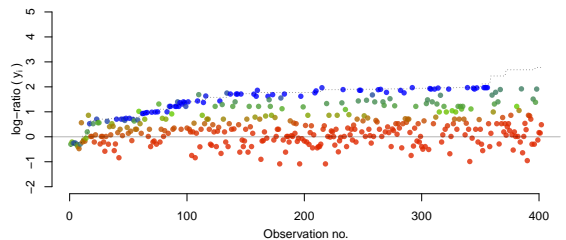




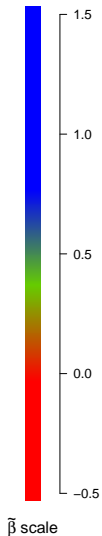
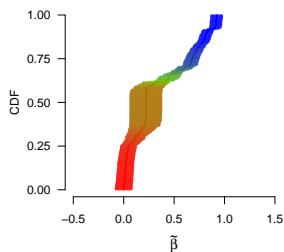
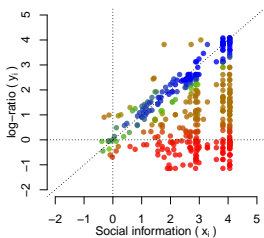
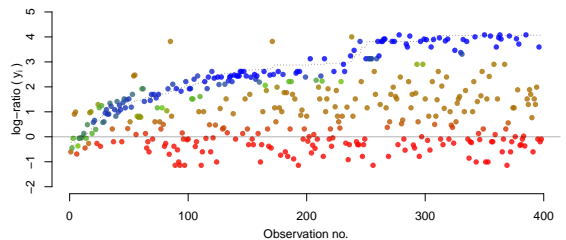
# Manipulated thread: $d = 55, v = 3$



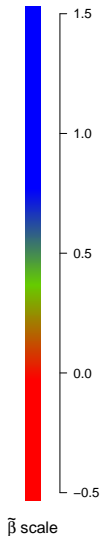
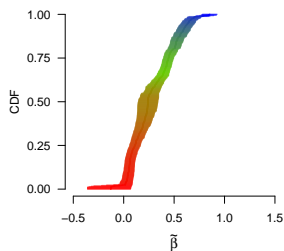
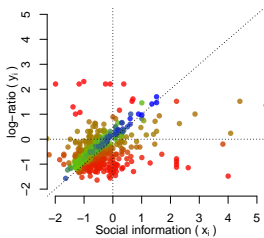
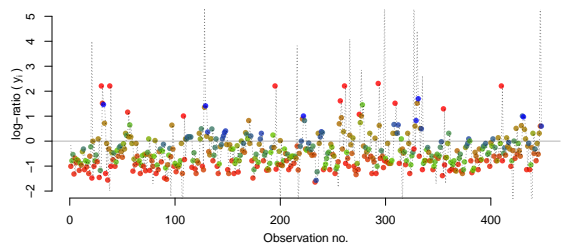
# Manipulated thread: $d = 148, v = 3$



# Manipulated thread: $d = 1097, v = 9$



# Historical thread: $d = 1097, v = 1$



## Key points

- **Pristine** social information improves thread accuracy when the task is difficult.

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- **Filtered** social information deteriorates thread accuracy when the task is difficult.

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- **Filtered** social information deteriorates thread accuracy when the task is difficult.
- **GMM's** assigns a persuadability score for each participant.

Thank you!

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