

# Algorithmic Microtargeting?

## How ad delivery algorithms influence distribution of political ads

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[favstats.github.io/algomicro/epsa2023](https://favstats.github.io/algomicro/epsa2023) (Slides)

 @favstats

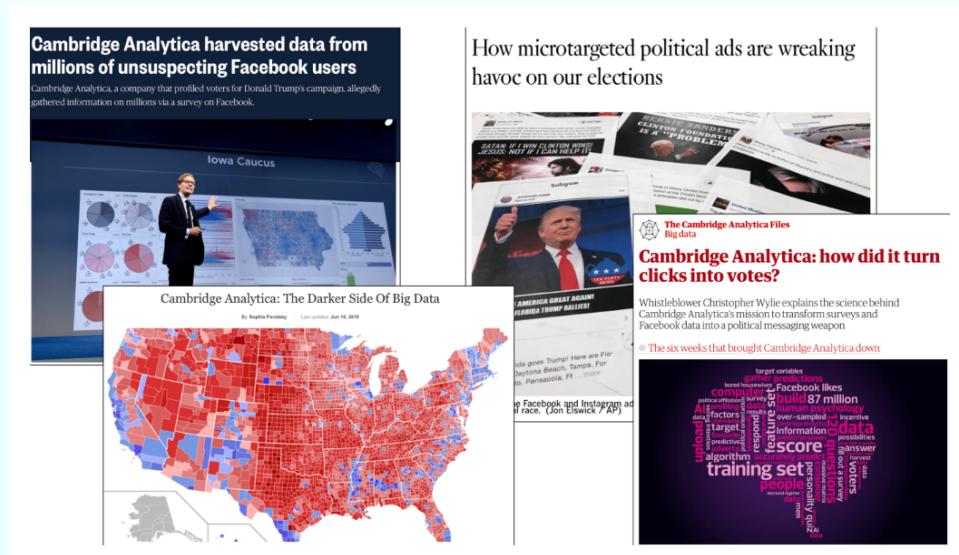
 [@favstats@fosstodon.org](mailto:@favstats@fosstodon.org)

24th June 2023 - EPSA 2023

# Online Political Microtargeting of Political Ads - the "bad actors"-story



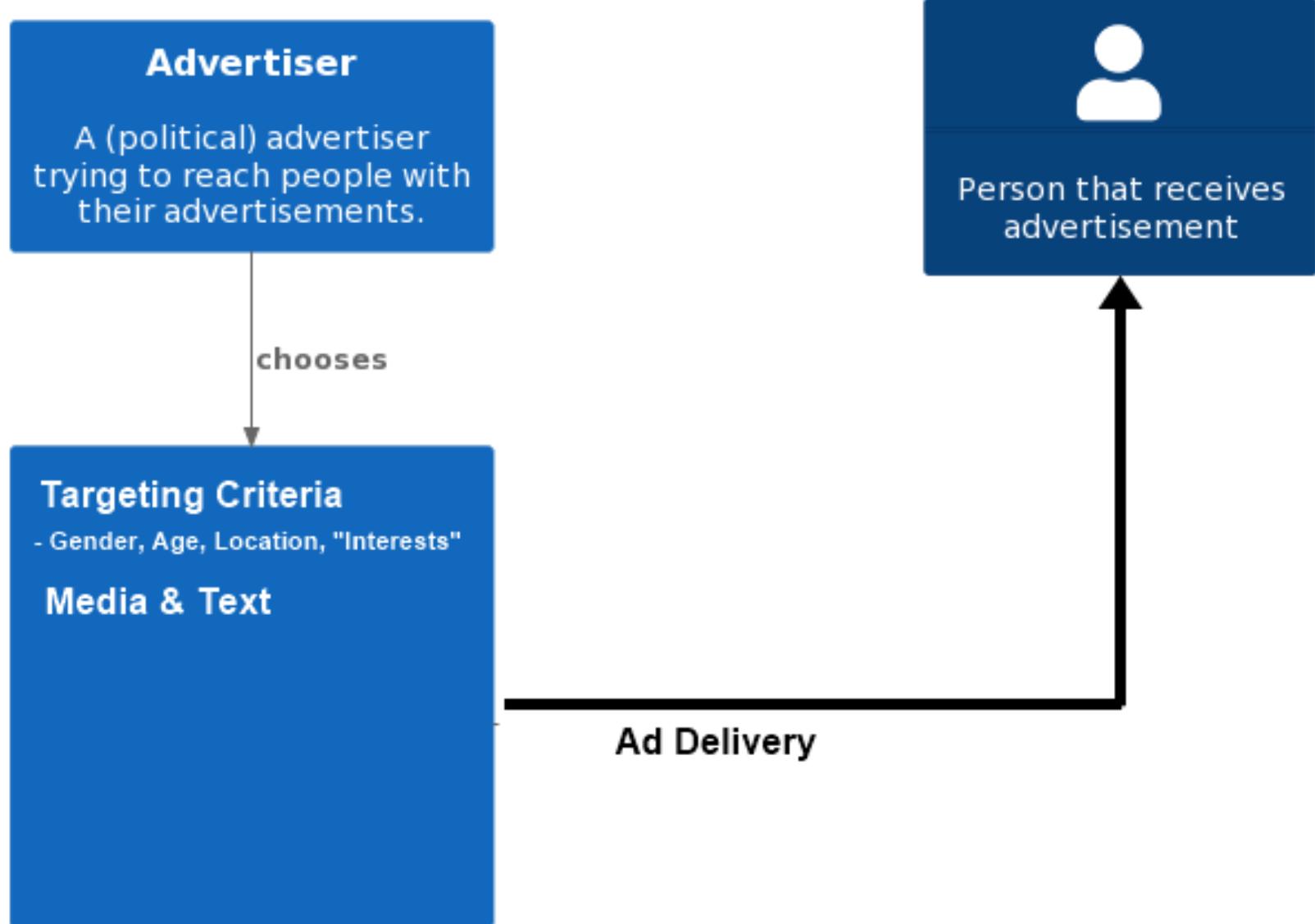
## Online Political Microtargeting of Political Ads - the "bad actors"-story

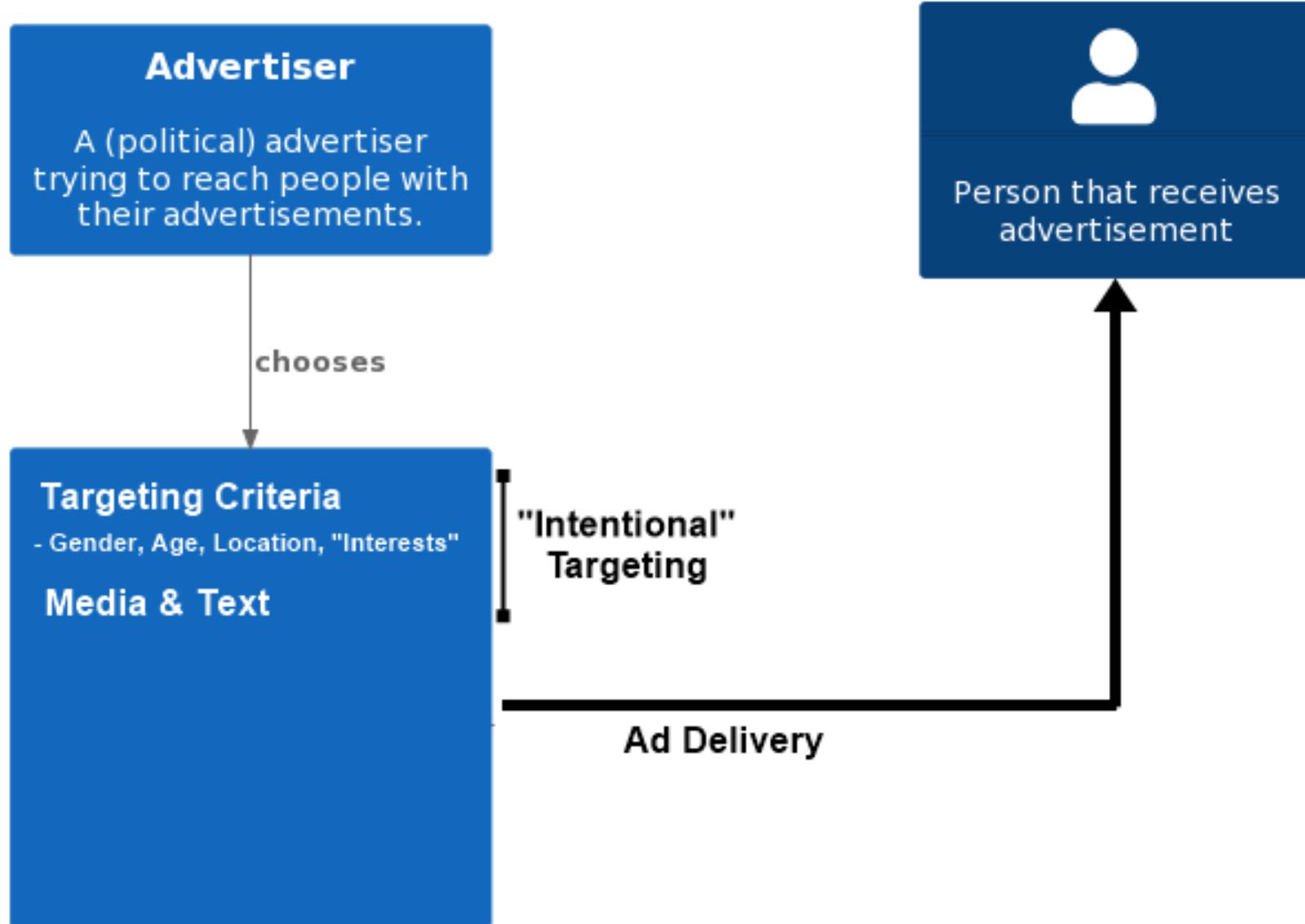


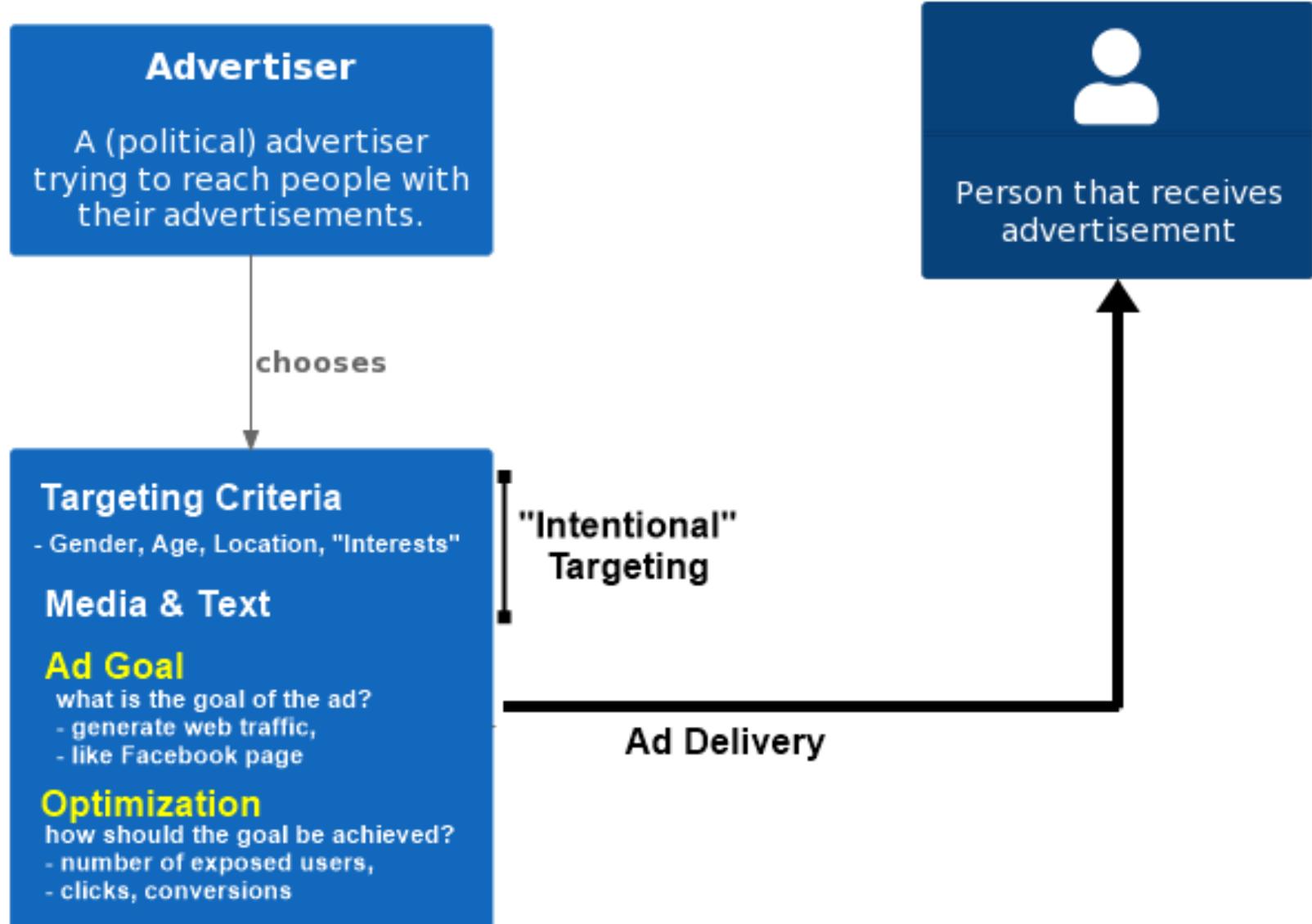
*The explicit assumption here that advertisers typically have strong control over who sees which ad*

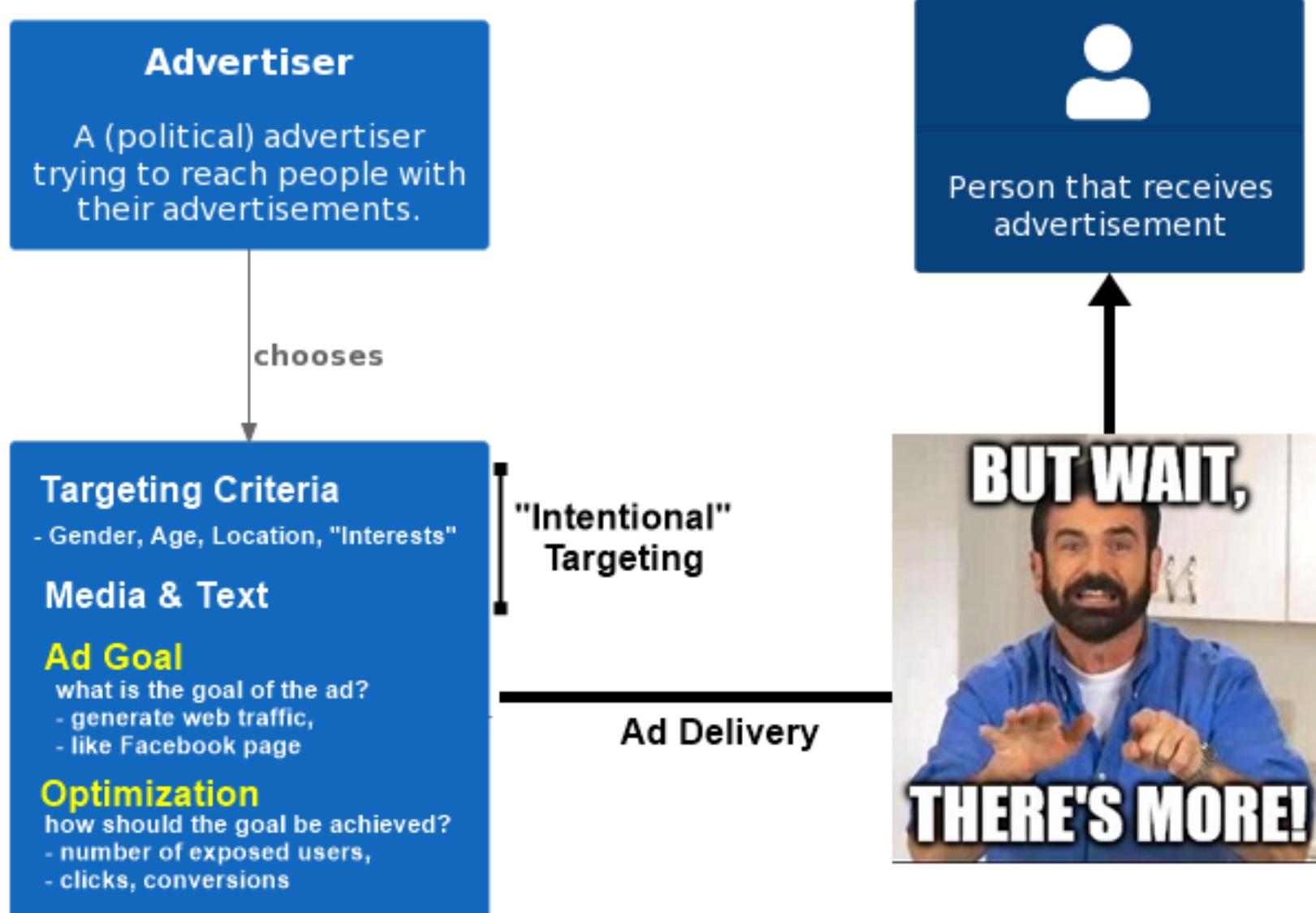
**But there is more than *just* targeting criteria that decides who sees political ads:**

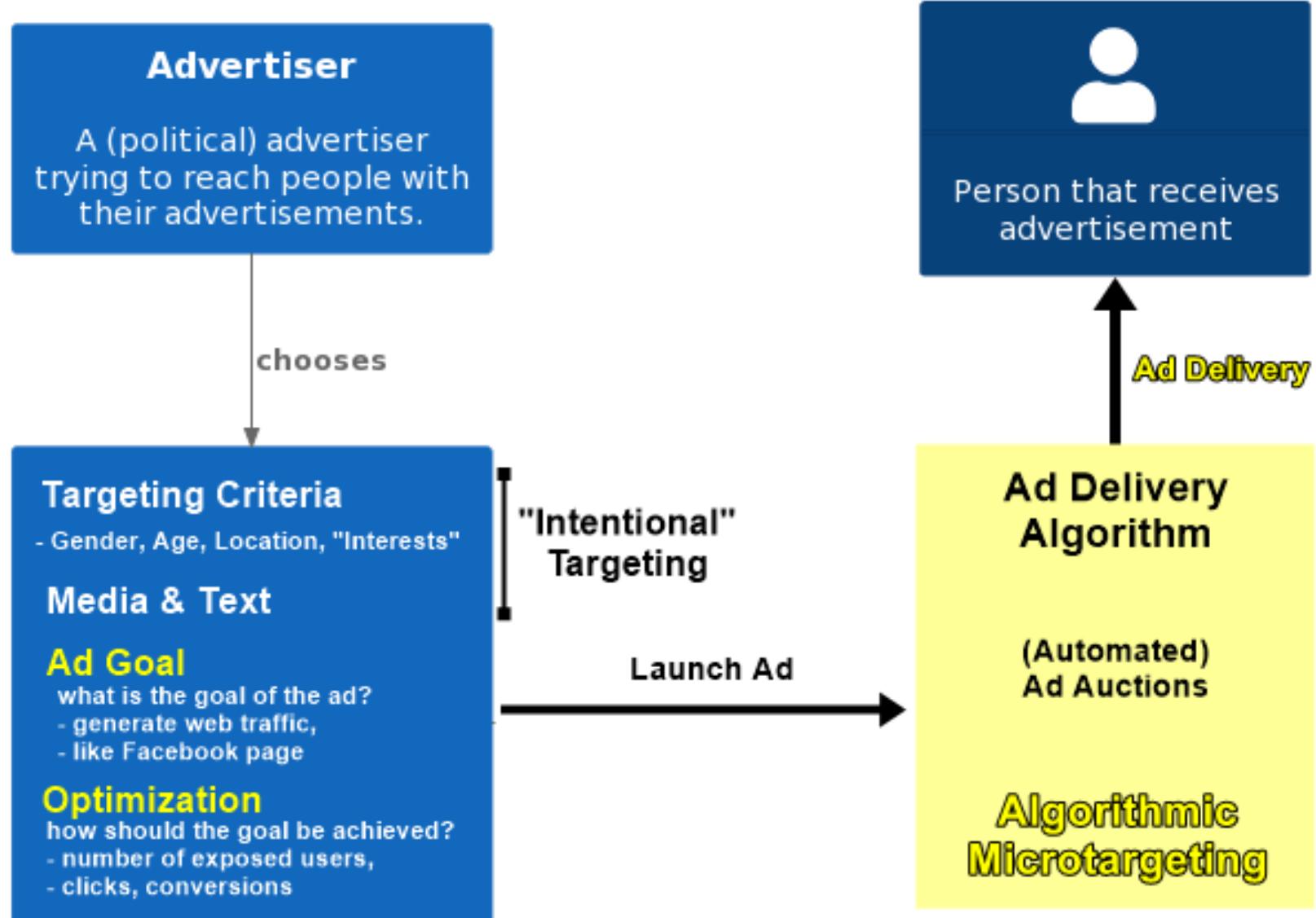
- advertisers can set targeting *boundaries*
  - *ad delivery algorithms* "decide" which individual users get ads from which advertiser





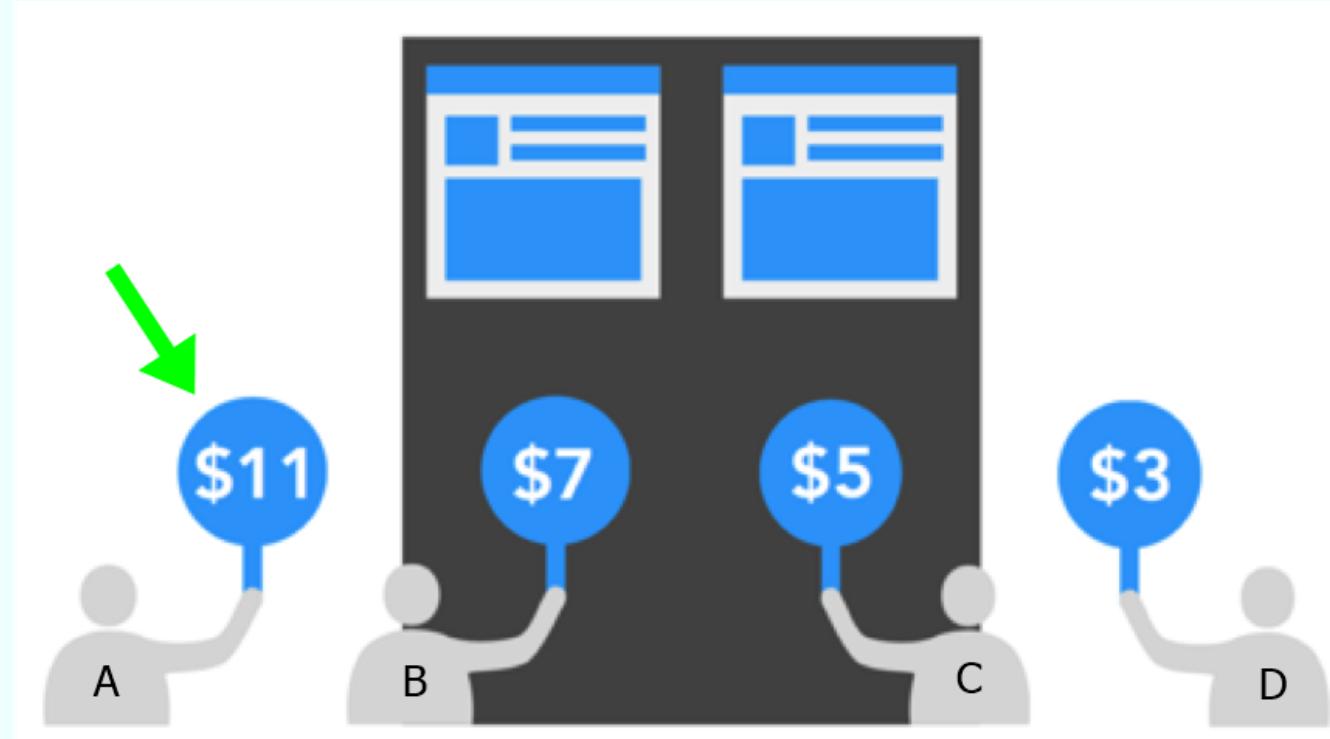






# Who decides who sees which ad on Meta?

- **Ad auctions** = an auction takes place that determines which ad by whom is shown



# Who decides who sees which ad on Meta?

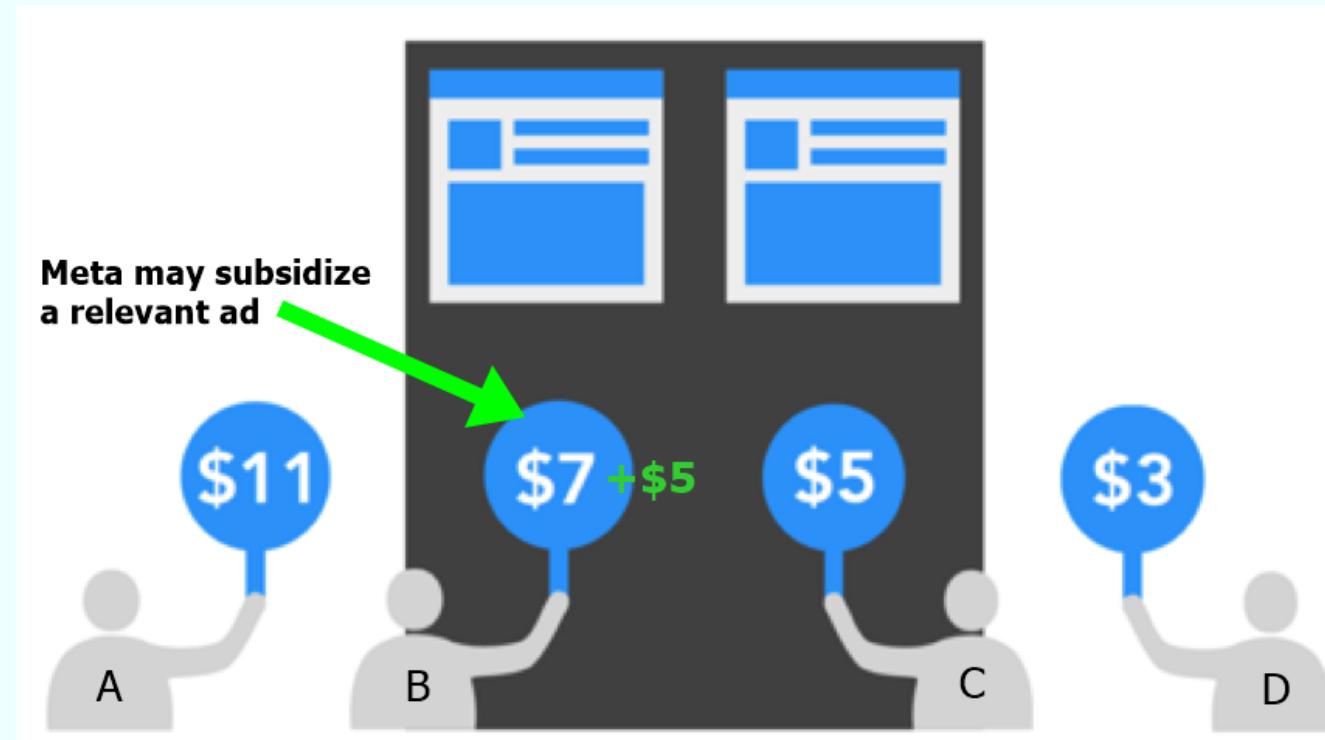
- **Relevance** = how relevant is the ad to the user

In fact, we subsidize relevant ads in auctions, so more relevant ads often cost less and see more results. In other words, an ad that's relevant to a person could win an auction against ads with higher bids.

(Meta Business Help Center, 2022)

# Who decides who sees which ad on Meta?

- **Ad auctions** = an auction takes place that determines which ad by whom is shown: based on *budget*
- **Relevance** = how relevant is the ad to the user



**Ad delivery algorithms** finding *relevant* audiences for ads: we term this algorithmic microtargeting

# Who decides who sees which ad on Meta?

When targeting the same audience, at the same time, with the same budget:

- Ad delivery is heavily skewed along gendered and racial stereotypes
  - even without the intent of the advertiser (Ali et al., 2020)

Regarding political ads (Ali et al., 2021):

- **Skewed delivery**
  - Political ads more often delivered to ideologically congruent audience
    - Bernie ads → higher % D;
    - Trump ads → higher % R
- **Increased cost**
  - Liberal ad to a liberal audience: *21 Dollar per 1000 users*;
  - Conservative ad delivered to liberal audience: *40 Dollar per 1000 users*.

# Research Question

How does the Meta ad delivery algorithm  
influence the pricing & distribution of political ads  
in the Netherlands?

# Research Design

# Research Design

- Algorithm audit study
- Place the same ads targeting the same audiences (9 different ones)
- Collaborate with Dutch parties to place political ads
- Final collaboration with 3:
  1. GroenLinks (Green party)
  2. VVD (centre-right party of PM Rutte)
  3. PvdA (social democrats)
- Place ads before nationwide local elections on March 16th 2022
  - 1st to 7th February 2022
- Spend 2 Euros a day on 45 ad copies
  - in total: 630 Euro per party
- Pre-registered research design and hypotheses

# Dependent Variables

- Price per 1k users reached
  - this measure is an industry standard
- Ad delivery share
  - Audience shares measured by % of ads delivered to specific group
  - "How many people were reached in Audience A vs. Audience B"
  - Pairwise setup which allows us to observe presence and absence of target audience
    - e.g. ~60% of audience was interested in politics vs. 40% was not

# Within- and between-party comparisons

The study design incorporates two *levels of comparisons*

Observing differences of **pricing and delivery**:

1. *between parties*
  - i.e. we expect pricing and delivery to differ by party
2. *within a party*
  - i.e. we expect pricing and delivery to differ by audience

# Ad Relevance

We theorize two different levels of (predicted) relevance:

1. Relevant audience for party (i.e. source of ad)
  - Ads from an environmentalist party more likely to be relevant for audience interested in environmentalism.
  
2. Relevant audience for ad content (e.g. political message)
  - Political message likely to be relevant for people interested in politics

# Hypotheses

In fact, we subsidize relevant ads in auctions, so more relevant ads often cost less and see more results. In other words, an ad that's relevant to a person could win an auction against ads with higher bids.

(Meta Business Help Center, 2022)

**H1: The more relevant** an audience is for an ad, **the cheaper is the cost** for reaching 1000 users in that audience.

**H2: The more relevant** an audience is for an ad, **the more are ads delivered** to that audience.

We expect that ads by party with a greater share of supporters are less expensive (H3a) and reach more people (H3b)

**H3a:** Parties with a greater share of supporters pay less for reaching 1000 users.

**H3b:** Parties with a greater share of supporters reach more people than smaller parties.

# Targeting criteria (Sub-hypotheses for H1 & H2)

We used 9 different (paired) targeting criteria for our advertisements

1. Political interests
2. Excluding political interest
3. Higher educated audience
4. Lower educated audience

## Relevant audiences for ad content

Targeting political ads to **politically interested** and **higher-educated** audiences

*is less expensive*

*deliver more*

than targeting politically uninterested and lower-educated audiences.

# Targeting criteria (Sub-hypotheses for H1 & H2)

We used 9 different (paired) targeting criteria for our advertisements

1. Political interests
2. Excluding political interest
  
3. Higher educated audience
4. Lower educated audience
  
5. Environmental interests
6. Excluding environmental interests
  
7. Economic interests
8. Excluding Economic interests

## Relevant audience for party

Targeting political ads to issues that party has issue ownership over

*is less expensive*

*delivers more*

compared to other parties

# Targeting criteria (Sub-hypotheses for H1 & H2)

We used 9 different (paired) targeting criteria for our advertisements

1. Political interests
2. Excluding political interest
  
3. Higher educated audience
4. Lower educated audience
  
5. Environmental interests
6. Excluding environmental interests
  
7. Economic interests
8. Excluding Economic interests
  
9. No Targeting



A|S  
CoR

# Ad Creative and Setup

# How the ad looked like on Desktop

 **Partij van de Arbeid (PvdA)**  
Sponsored

Markeer het in uw agenda's. Op 16 maart 2022 vinden de gemeenteraadsverkiezingen plaats. Klik hieronder voor alle info.

[See Translation](#)



### Gemeenteraadsverkiezingen 16 maart 2022

Op woensdag 16 maart 2022 mag je stemmen voor de gemeenteraad. Zo bepaal je mee welke raadsleden in de gemeenteraad komen. De raadsleden beslissen de komende 4 jaar over de plannen van de gemeente.

[Learn more](#)

Laat Je Stem Horen

1/5



### Wanneer en waar kunt u stemmen?

Op woensdag 16 maart mag je na...

Wil je liever op een ander moment stemmen? Ook op maandag 14 en dinsdag 15 maart zijn sommige stemlokalen al open.

Je kunt stemmen tussen 7.30-21.00.

[Alle informatie](#) bij jou in de [waarismij](#) website van...

 **GroenLinks**  
Sponsored

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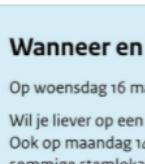
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# How the ad looked like on Desktop

 VVD  
Sponsored

Markeer het in uw agenda's. Op 16 maart 2022 vinden de gemeenteraadsverkiezingen plaats. Klik hieronder voor alle info.

See Translation



The image shows a Facebook post from the VVD page. The post features a blue header with the VVD logo and the word 'Sponsored'. The main text reads: 'Markeer het in uw agenda's. Op 16 maart 2022 vinden de gemeenteraadsverkiezingen plaats. Klik hieronder voor alle info.' Below this, there is a link 'See Translation'. The post contains two images: one showing a hand holding a red pen over a white circle with a blue 'W' on a blue square, and another showing a red arrow pointing to a 'STEMLOKAAL' sign. The text 'Gemeenteraadsverkiezingen 16 maart 2022' is overlaid on both images. The post ends with a 'Learn more' button and social sharing options for Like, Comment, and Share.

# Results

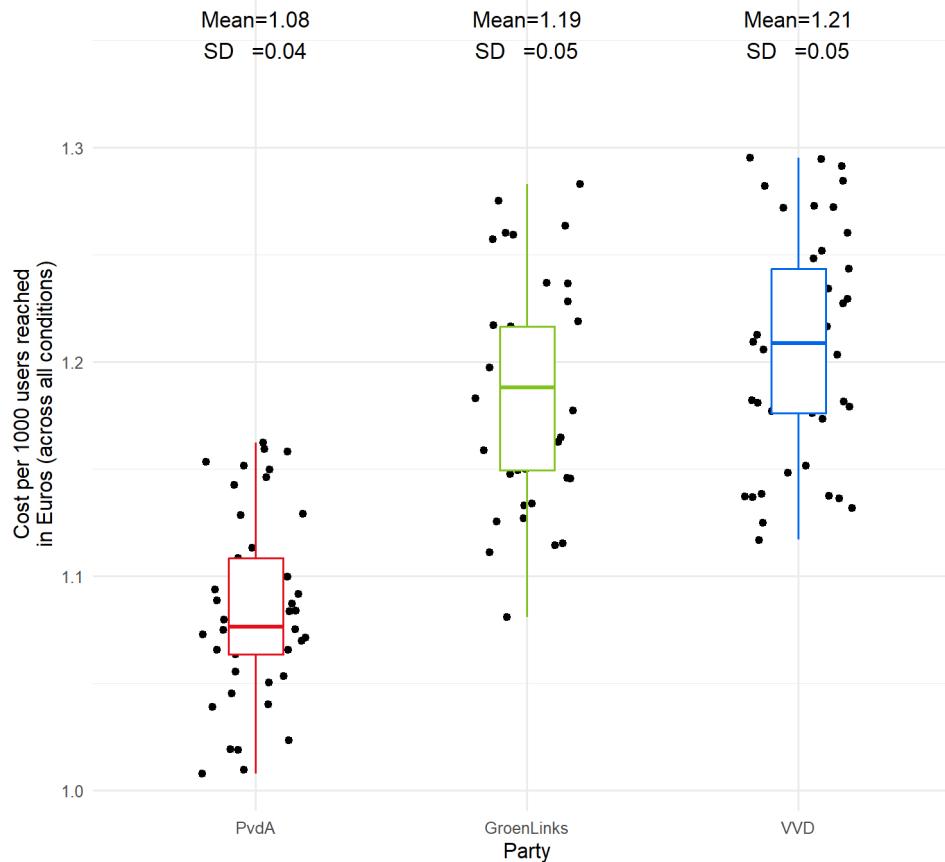
## Between-party differences

→ we consistently find one party that pays less and reaches more people

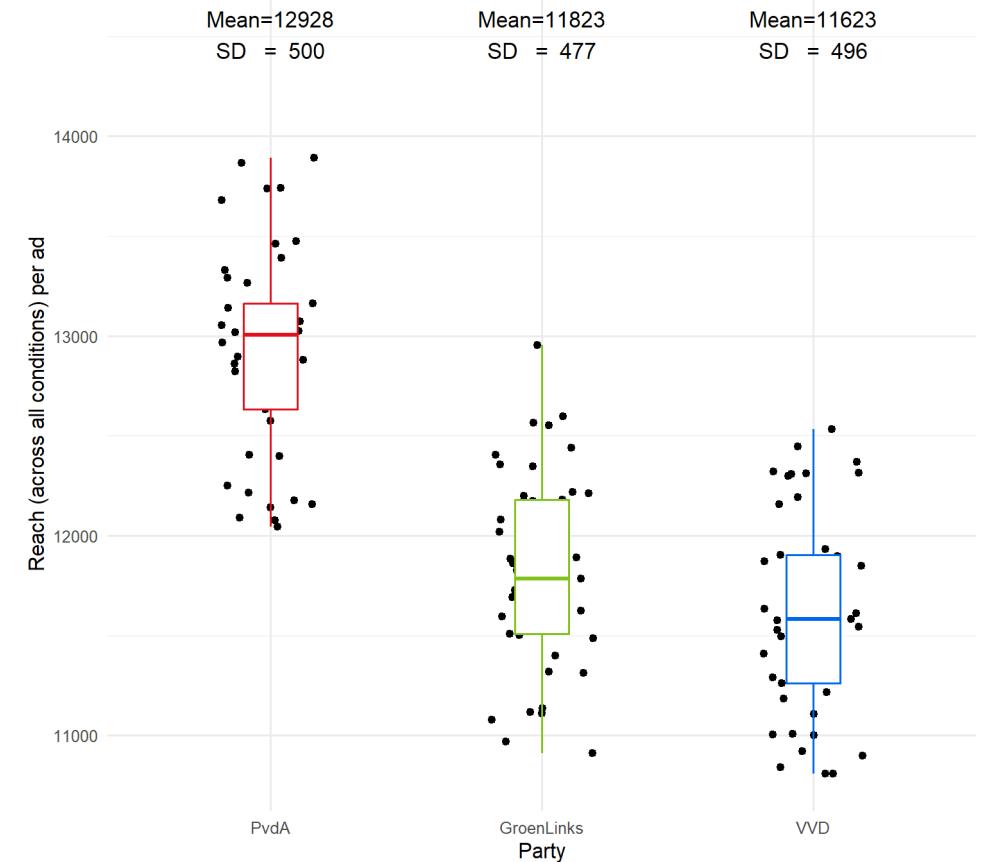
## Between-party differences (per individual ad)

PvdA pays the least (**10-12 cents less** or: 8-10%) & reaches more people (~**1.1 - 1.3k more** per ad)

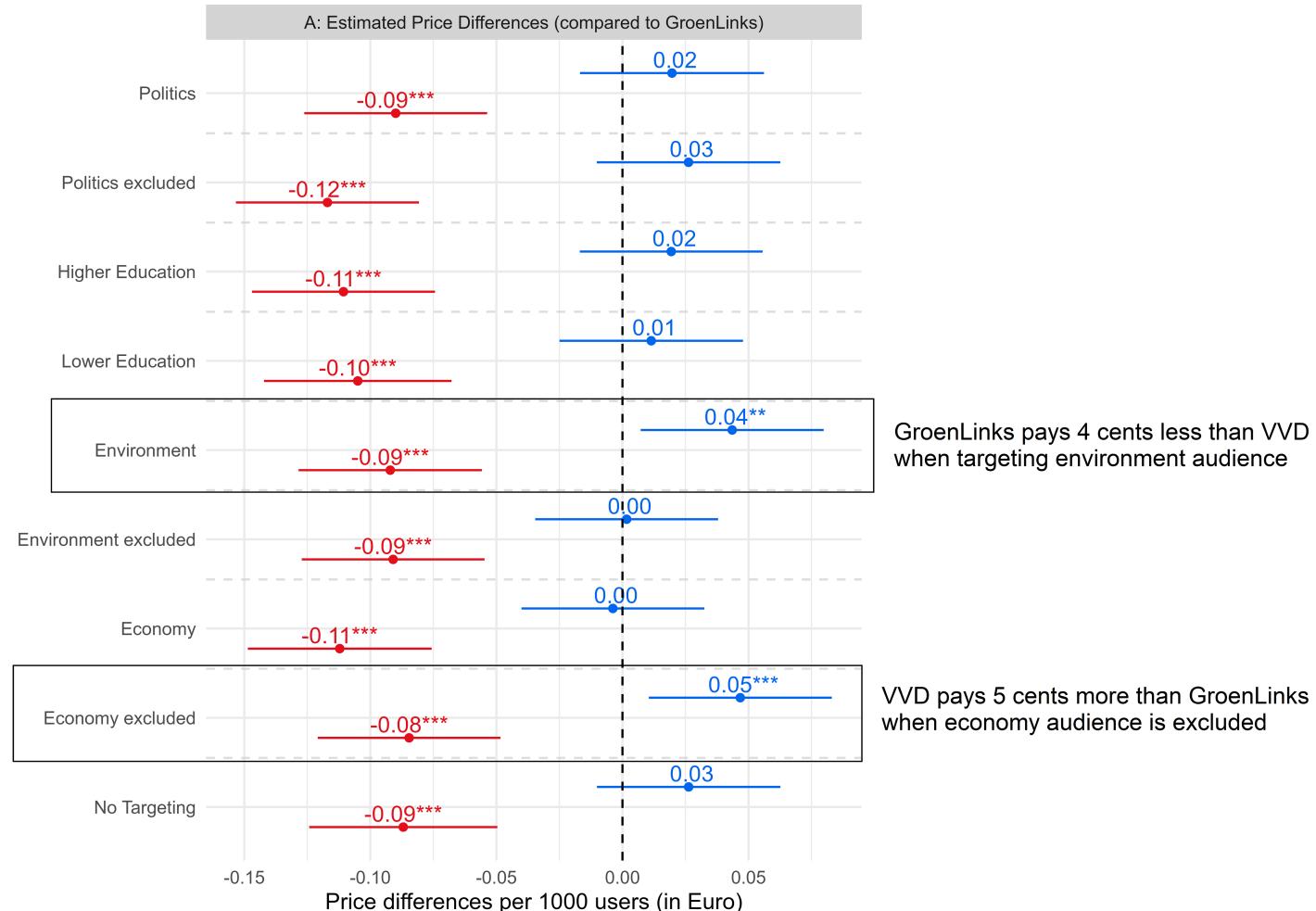
**Cost per 1000 users per ad**



**Reach (unique people)**



## Between-party differences (per target audience)

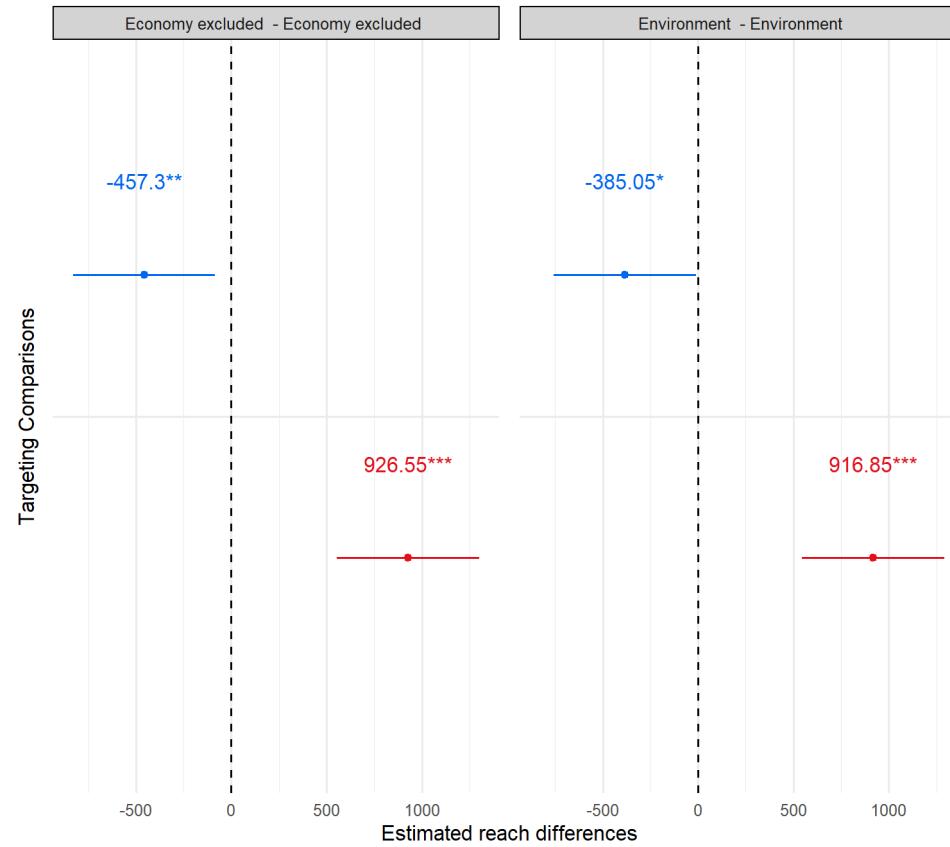


## Between-party differences (zoomed in)

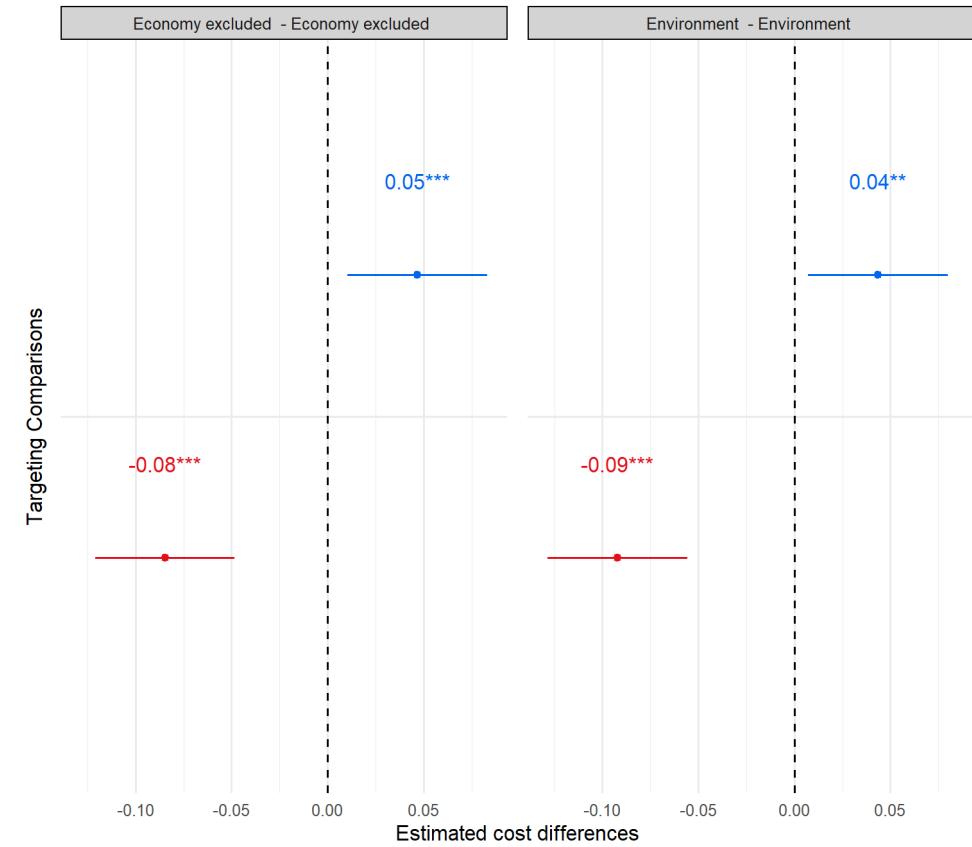
*Exclude economic interests or target environmental interests:*

VVD reaches fewer people per ad than GL (**~380-450 fewer people**) and pay more (**4-5 cents more**)

Reach (compared to GroenLinks)



Cost (compared to GroenLinks)



# Within-party differences

# Within-party differences

Let's compare now:

Ad price and ad delivery share of

- **higher-educated vs. lower-educated** audience
- Audience **interested in the economy** vs. **not interested**
- Audience **interested in politics** vs. **not interested**
- Audience **interested in the environment** vs. **not interested**

# Within-party differences - Price per 1k

Ads **cost less for:**

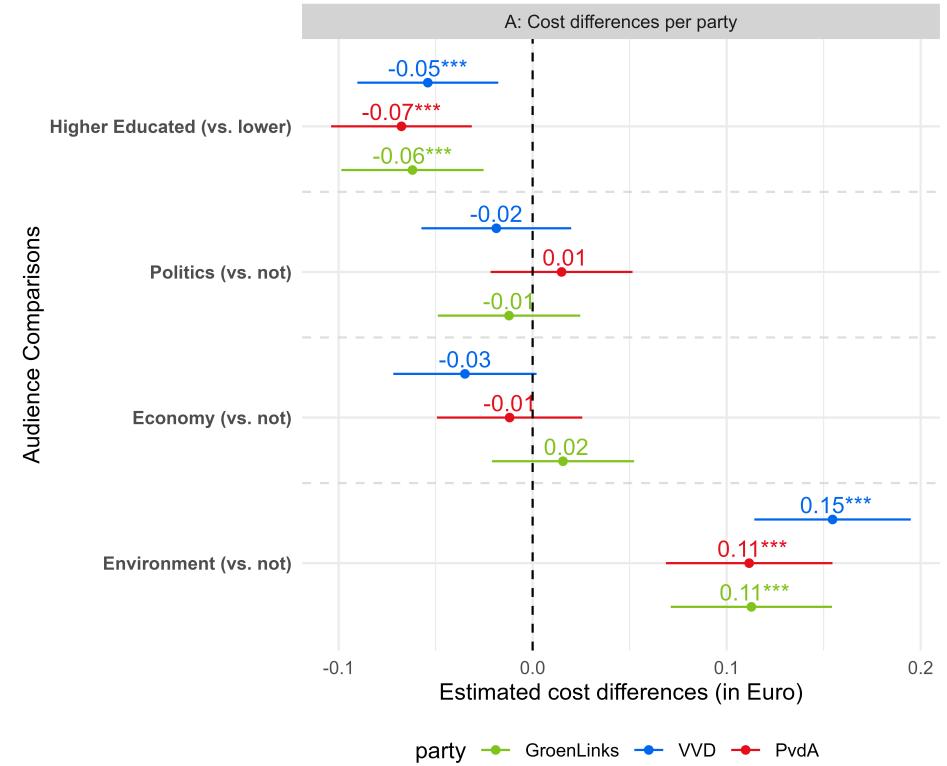
- *higher-educated vs. lower-educated audience*

Ad price **does not statistically differ for:**

- Audience *interested in the economy* vs. *not interested*
- Audience *interested in politics* vs. *not interested*

Ads **cost more for:**

- Audience *interested in the environment* vs. *not interested*



# Skewed delivery

in terms of gender, age and region:

→ women, and 18-24 year olds cost more to reach and are reached less

# Summary

# Summary

Our findings do not always align with expectations.

H1: More "relevant" audiences were not always cheaper

H2: More "relevant" audiences were not always reached more

H3: Party with greatest audience did not reach more or get cheaper prices

## However:

We **still** find that Meta ad delivery algorithm prioritizes certain parties and audiences for political advertising

1. PvdA pays least and reach most
2. Lower-educated, people interested in environment, women and younger people more expensive to reach

# Implications

- Unequal playing field
  - Meta (dis-)advantages certain parties
  - the findings presented in this paper show that political parties were not charged the same price for the same service
- Potential for deepening political, social and geographical inequalities
  - Some groups of people and regions are **systematically** less likely to receive political advertisements and more expensive to reach
  - isolating these groups from receiving election-related information
- Little to no transparency by Meta about these systematic biases
  - difficult to research and make visible instances of unequal treatment and price discrimination
  - highlighting importance of access to data
- Simply "banning" microtargeting would be inadequate
  - more power to the black box algorithm

# Thank you for your attention!

Link to presentation: [favstats.github.io/algomicro/epsa2024](https://favstats.github.io/algomicro/epsa2024)



# Appendix

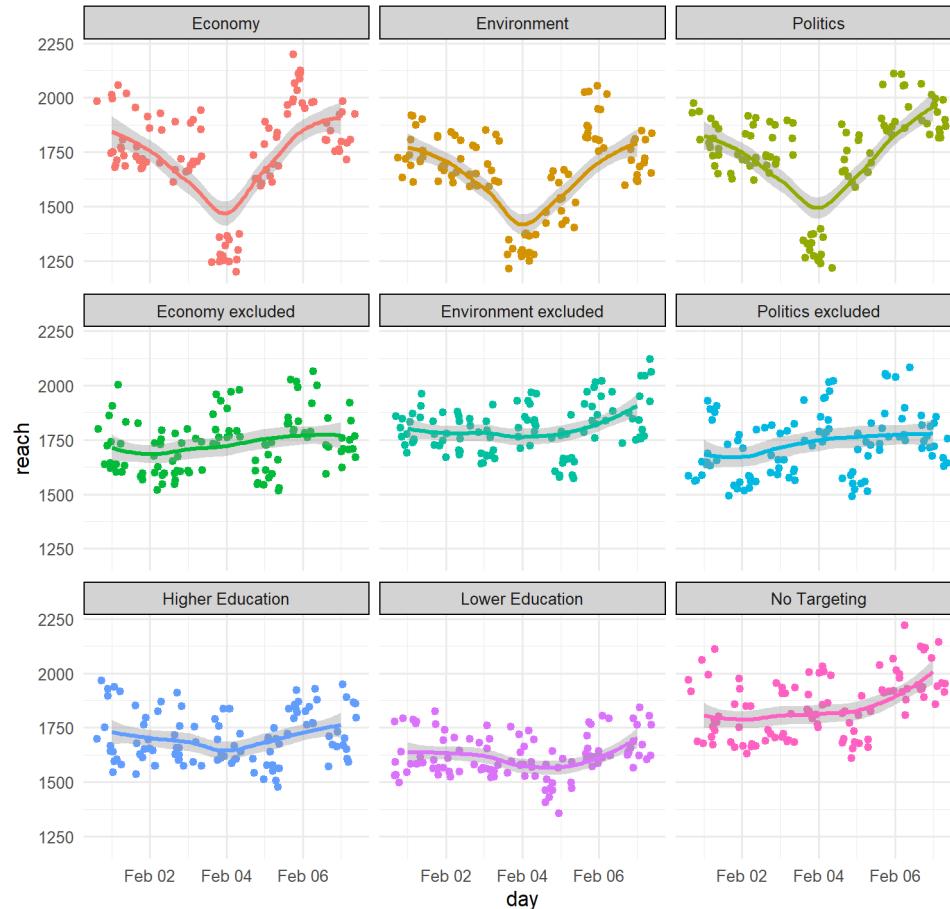
# Within-party differences

Reach and cost **over time**

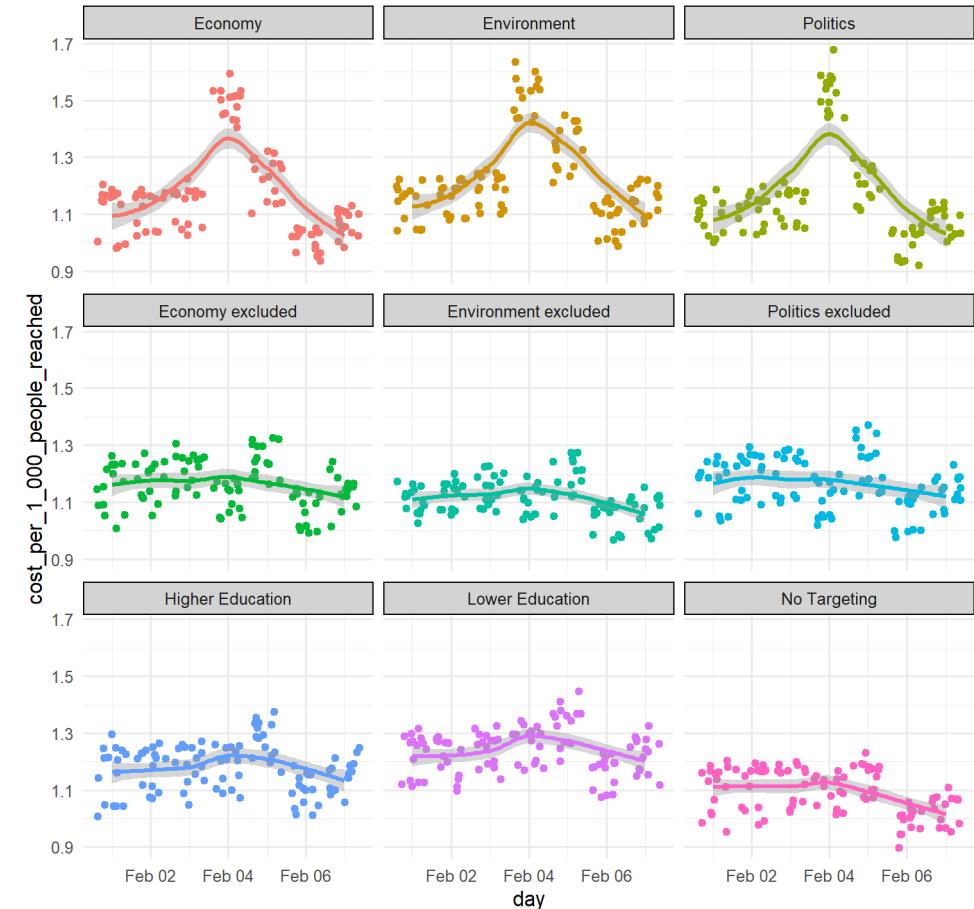
Potential *market shock* on February 4th?

# Within-party differences per day - Reach and Cost

**Reach over time**



**Cost over time**



## Within-party differences

Reach and cost **over time** and **per party**

→ party differences remain constant despite "shock"

# Price differences per day

We observe:

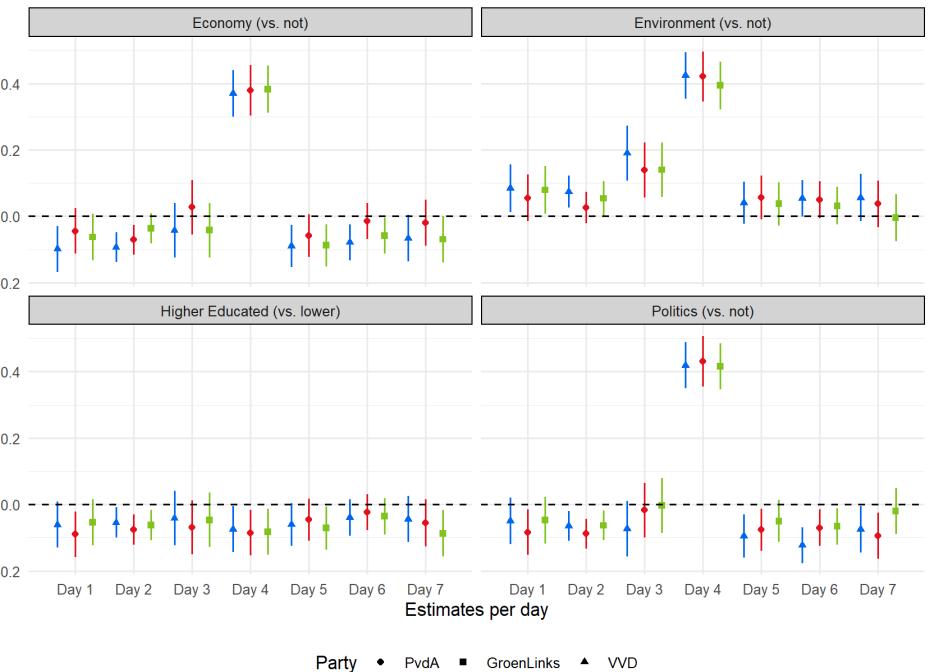
*Consistent results*

- "Market shock" **hits all parties equally**
- Environment audience consistently *more expensive*
- Higher educated audience consistently *less expensive*

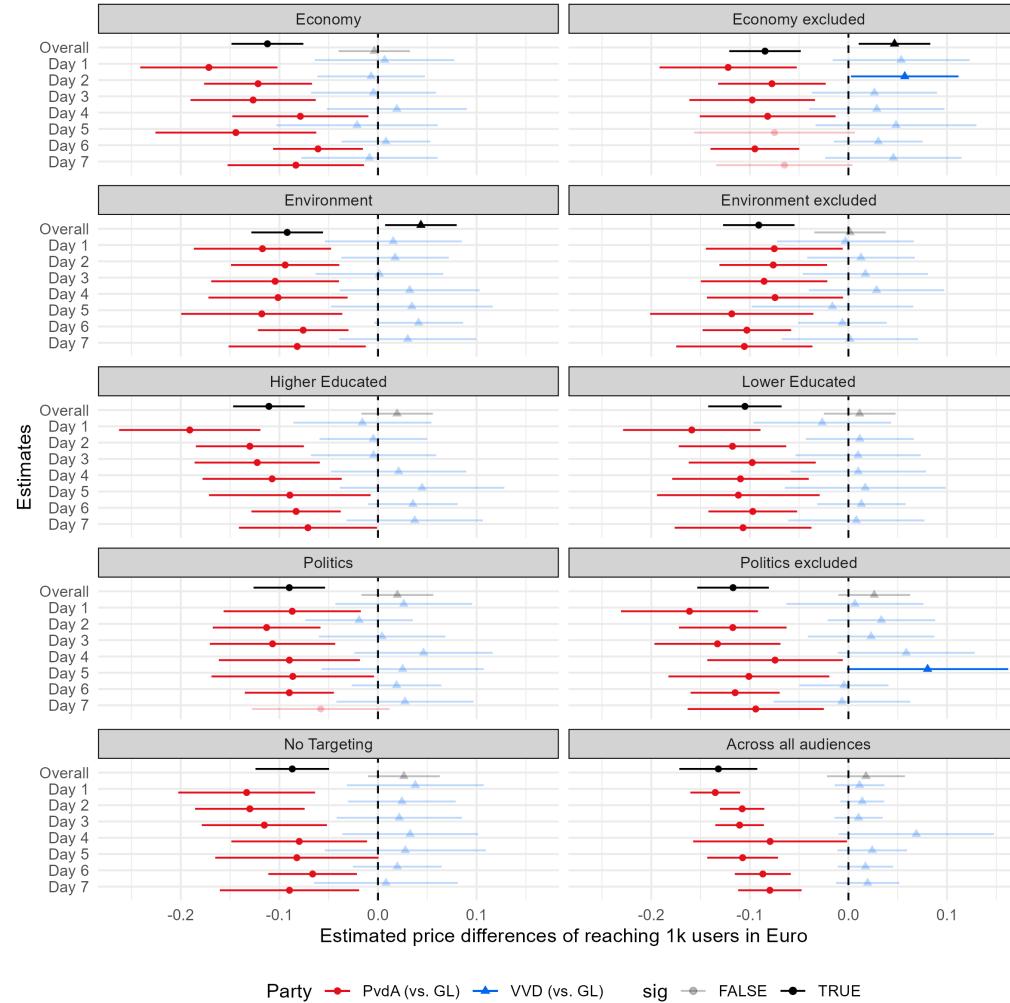
*Inconsistent results*

- Audiences interested in economy & politics are typically cheaper except on the day of the spike

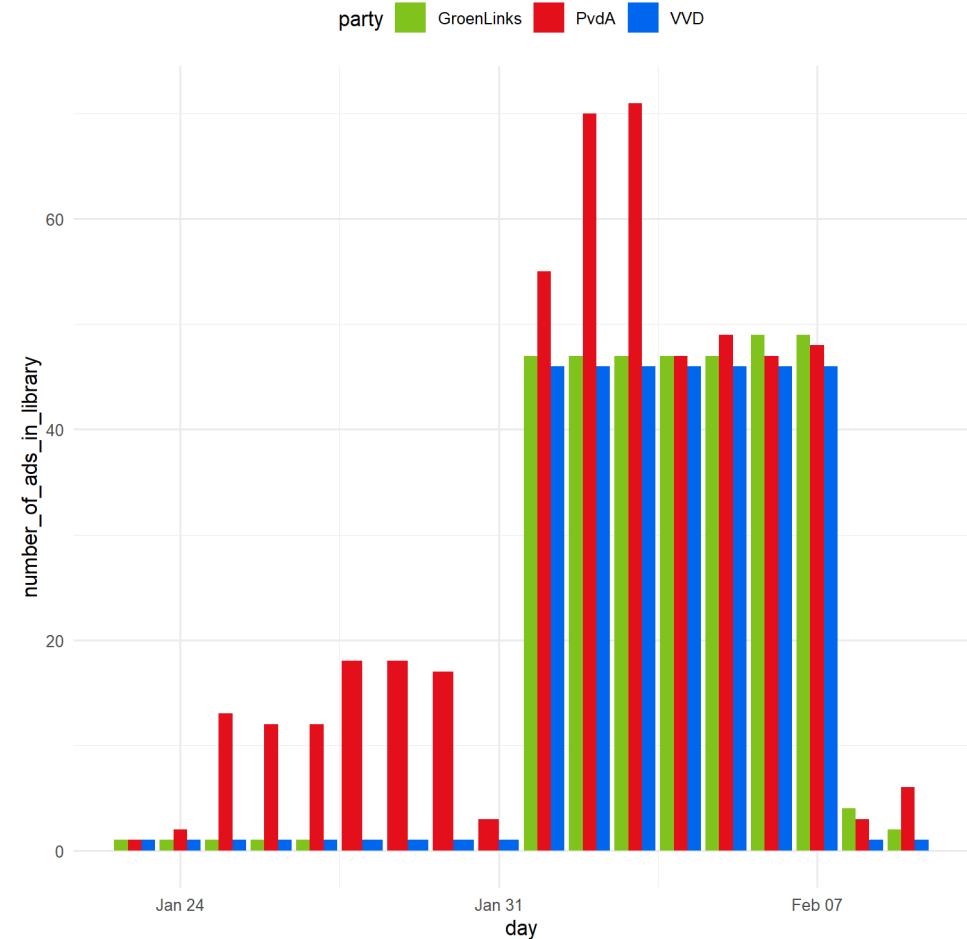
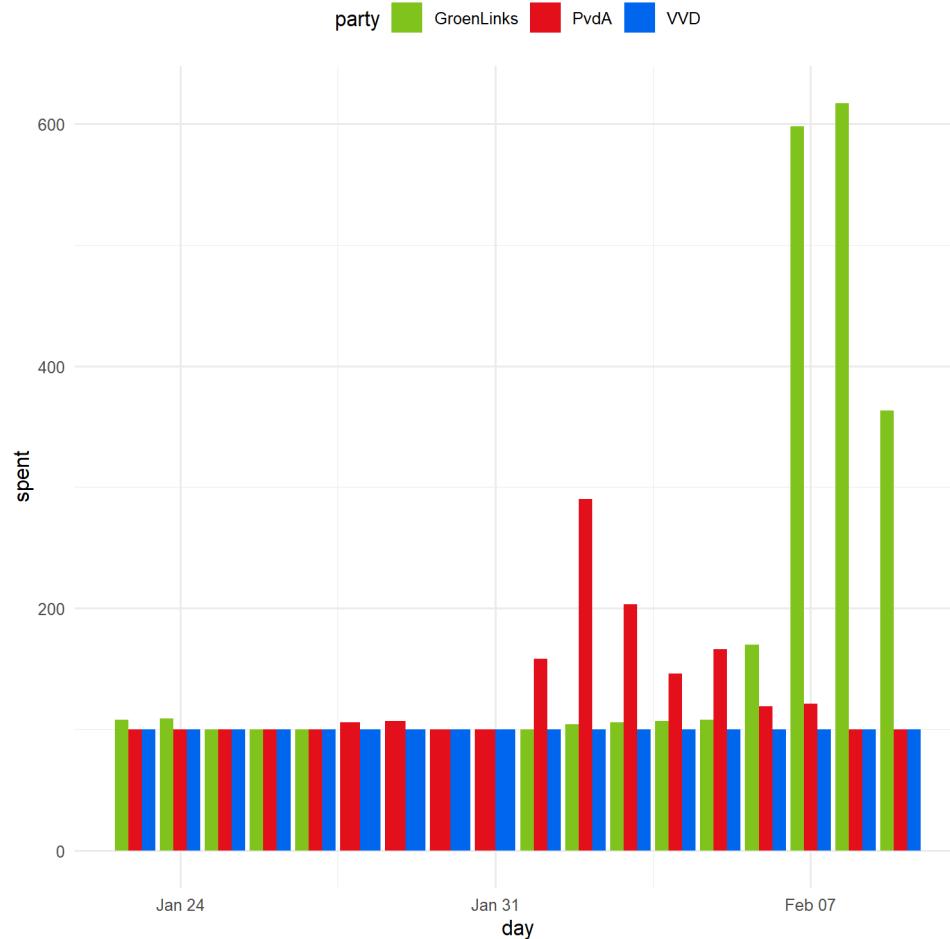
Price differences per day



# Price differences per day



# Bulk Discount?





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# Skewed delivery

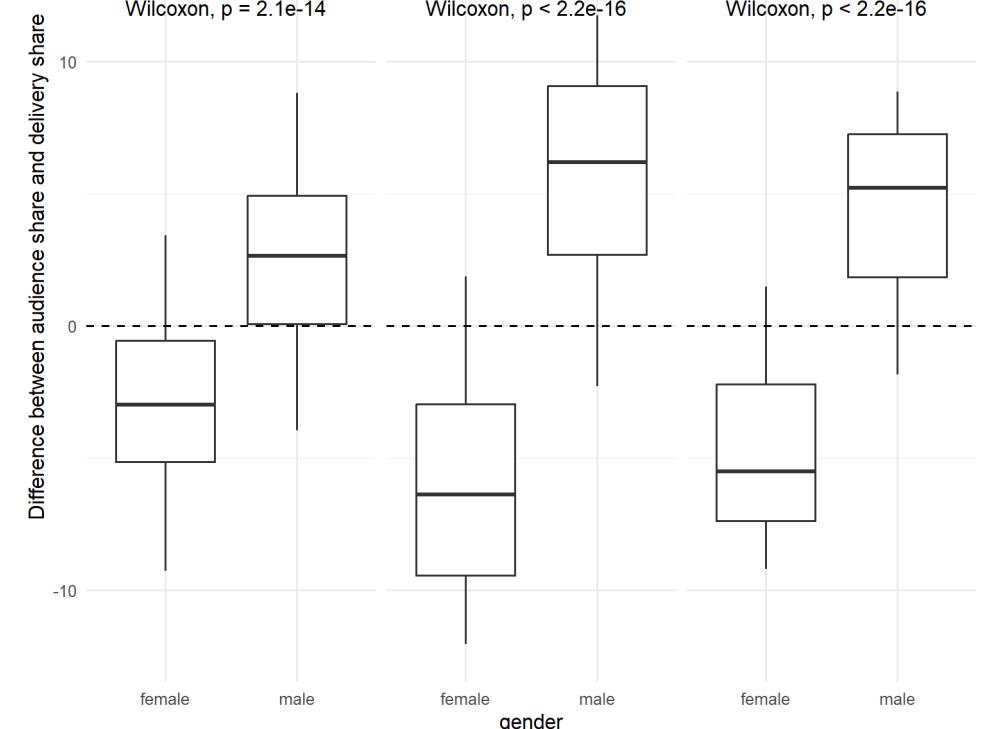
in terms of gender, age and region

# Differences in delivery by gender

- Line at zero shows empirical equilibrium of target audiences (i.e. the observed share of men and women in target audience)
- Deviation from zero are algorithmic biases
  - above zero: prioritization
  - below zero: de-prioritization
- Ads *deliver to more men* for every party
- However: bias towards men seems smaller for GroenLinks

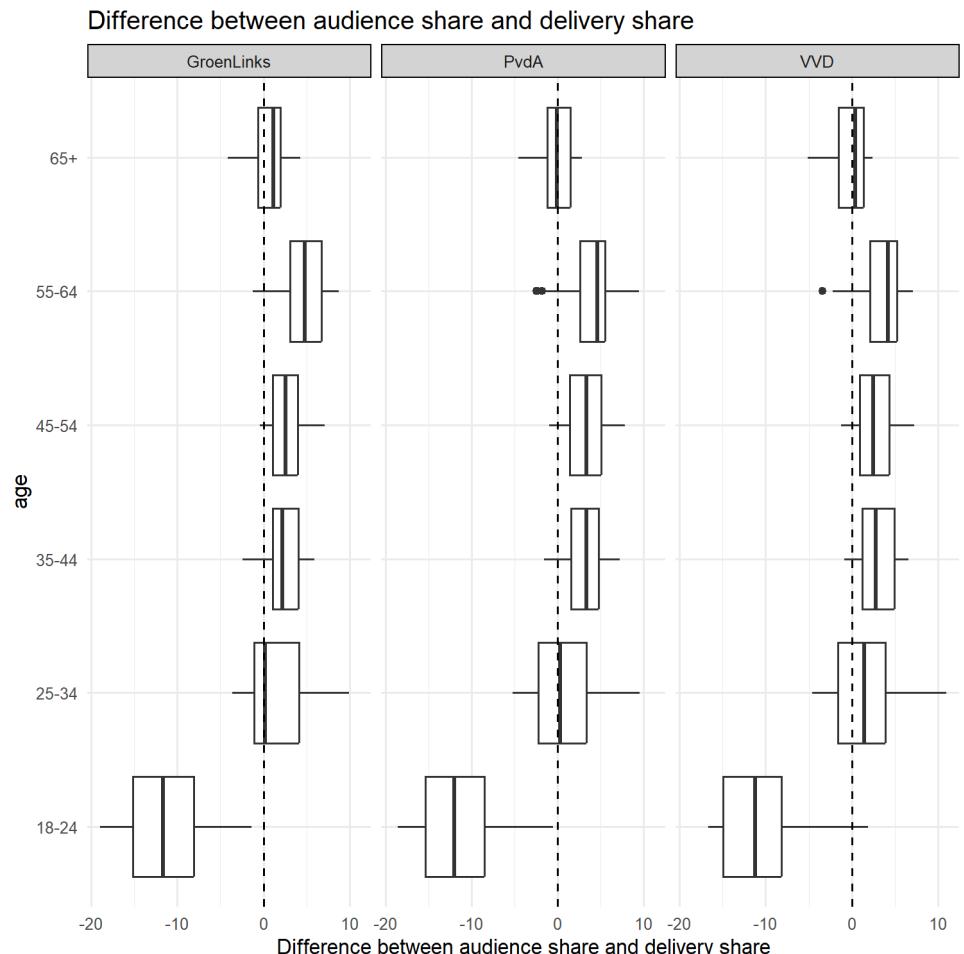
Difference between audience share and delivery share

GroenLinks		PvdA		VVD	
Mean=-3	SD = 3	Mean= 3	SD = 3	Mean=-6	SD = 4
Mean= 6	SD = 4	Mean= 6	SD = 4	Mean=-5	SD = 3



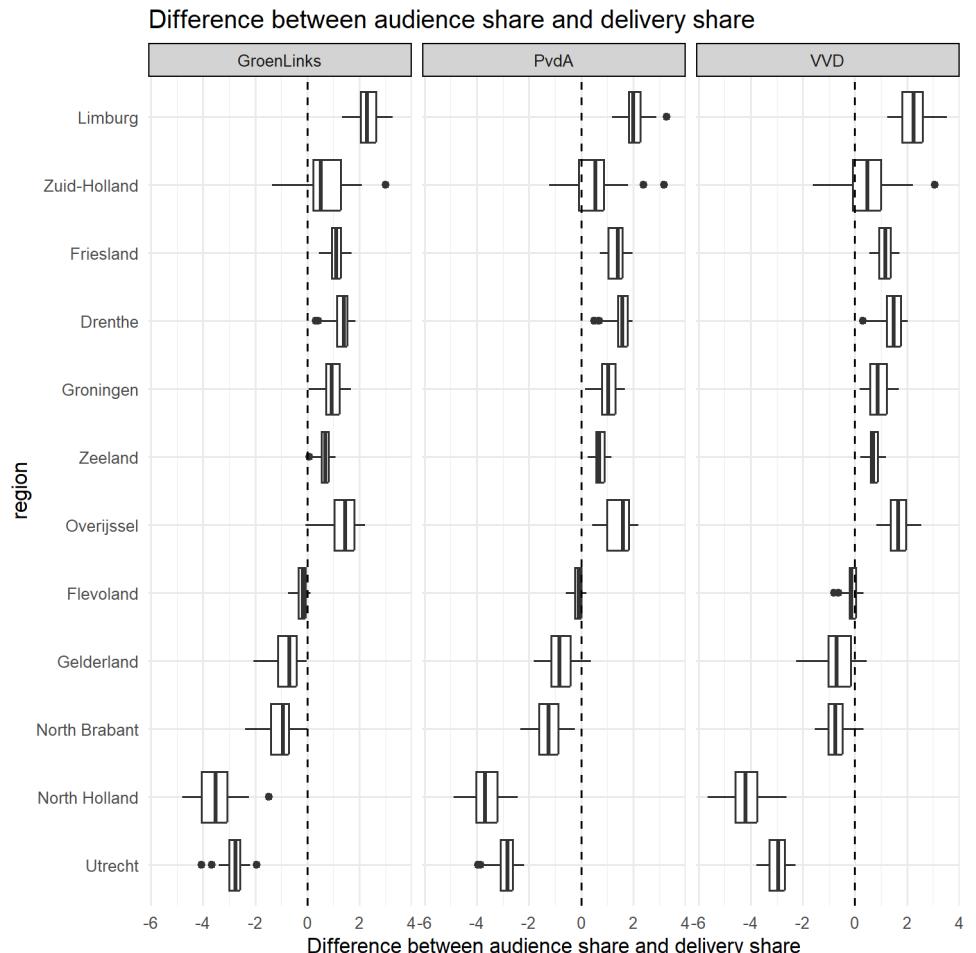
# Differences in delivery by age group

- Ads *deliver less to young people*
    - aged 18-24
  - Consistent for each party



# Region differences

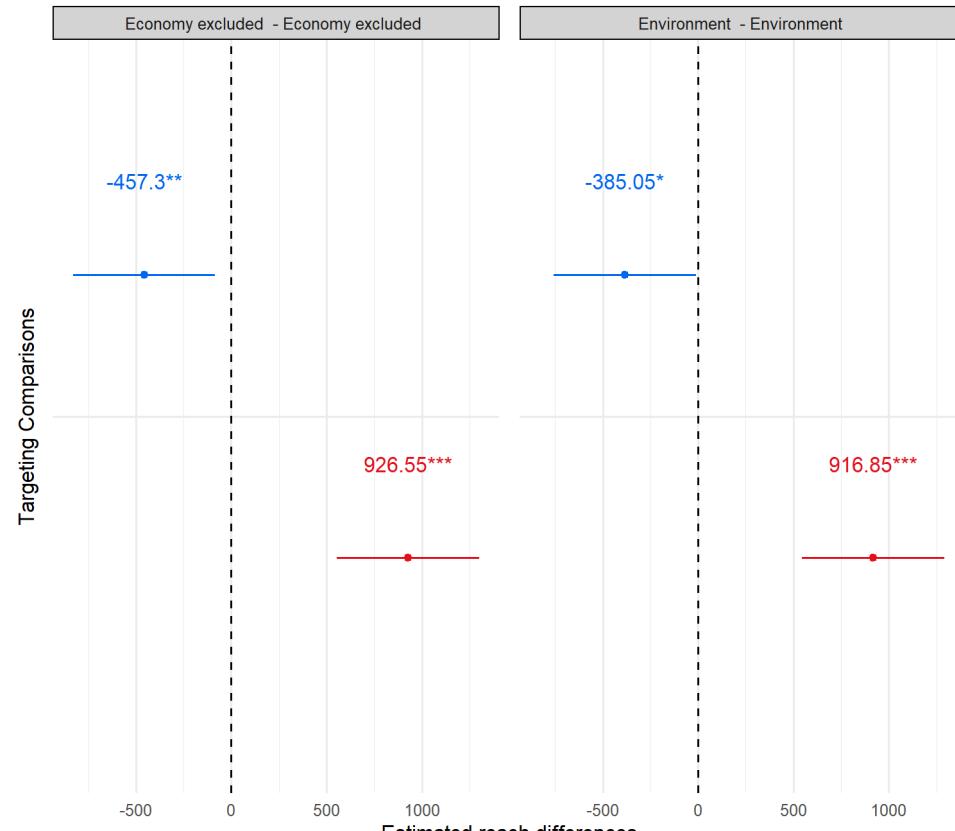
- Ads deliver more to some regions
  - for example: Limburg, Friesland, Drenthe
- Ads deliver less to other regions
  - Utrecht, North Holland, North Brabant
- Consistent for each party



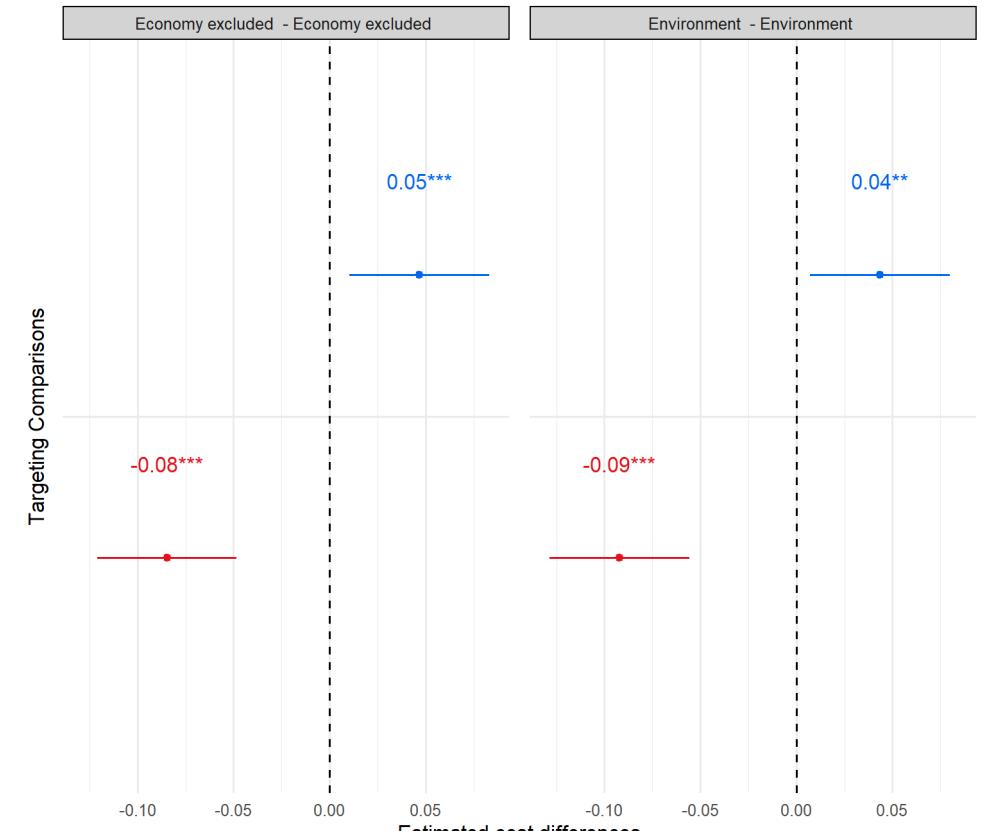
## Between-party differences

If we exclude economic interests/target environmental interests: VVD reaches less people and cheaper than GL

Reach (compared to GroenLinks)



Cost (compared to GroenLinks)



party ● PvdA ● VVD

party ● PvdA ● VVD