University of Amsterdam

Amsterdam School of Communication Research

Algorithmic Microtargeting?

How ad delivery algorithms influence distribution of political ads

Fabio Votta, Tom Dobber, Natali Helberger, Claes de Vreese

2022-10-20

Political Microtargeting

> Targeting and tailoring of political campaign messages to specific groups based on (large-scale) data collection

- Discourse on (online) political microtargeting is often focused on the "bad actor" story
  - Russian election interference campaign (IRA)
  - Cambridge Analytica
  - Social media company allowing all this to happen

- The explicit assumption here is that the advertisers have strong control over who sees which ad

Who decides who sees which ad on Meta?

> There is more than just targeting criteria that decides who sees political ads:

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

Who decides who sees which ad on Meta?

> There is more than just targeting criteria that decides who sees political ads:

- **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

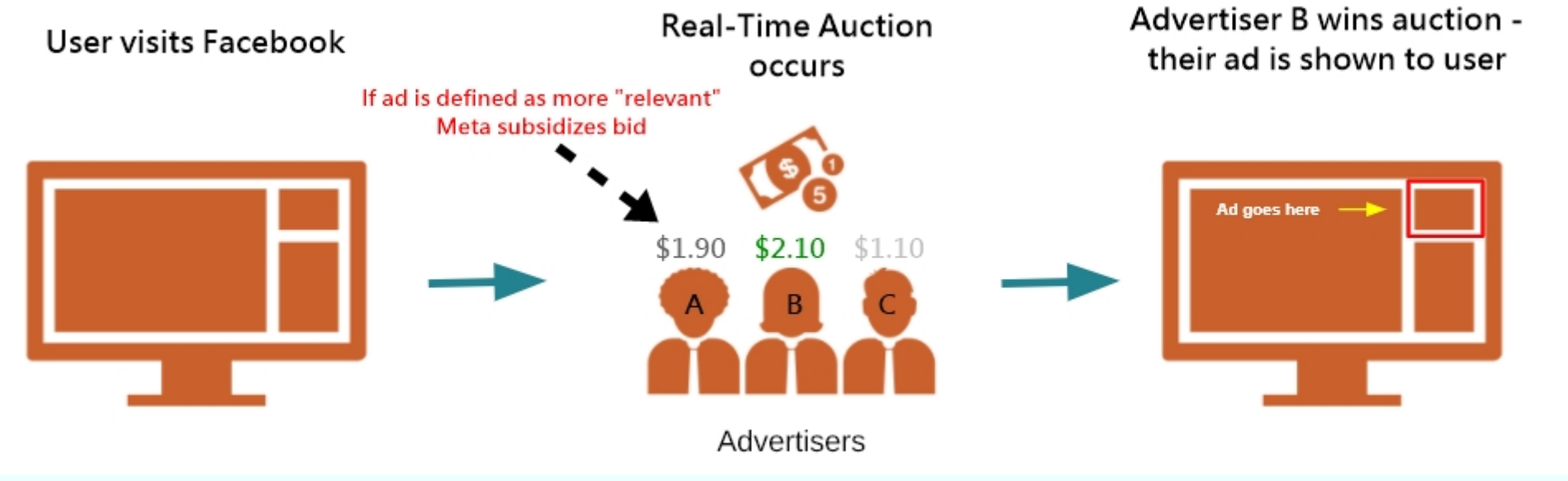
In fact, we subsidize relevant ads in auctions, so more relevant ads often cost less and see more results. In other words, an ad that's relevant to a person could win an auction against ads with higher bids.

(Meta Business Help Center, 2022)

Who decides who sees which ad on Meta?

> There is more than just targeting criteria that decides who sees political ads:

- **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



The process of finding *relevant* audiences is done by ad delivery algorithms

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 (osf.io/xmc7g)

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

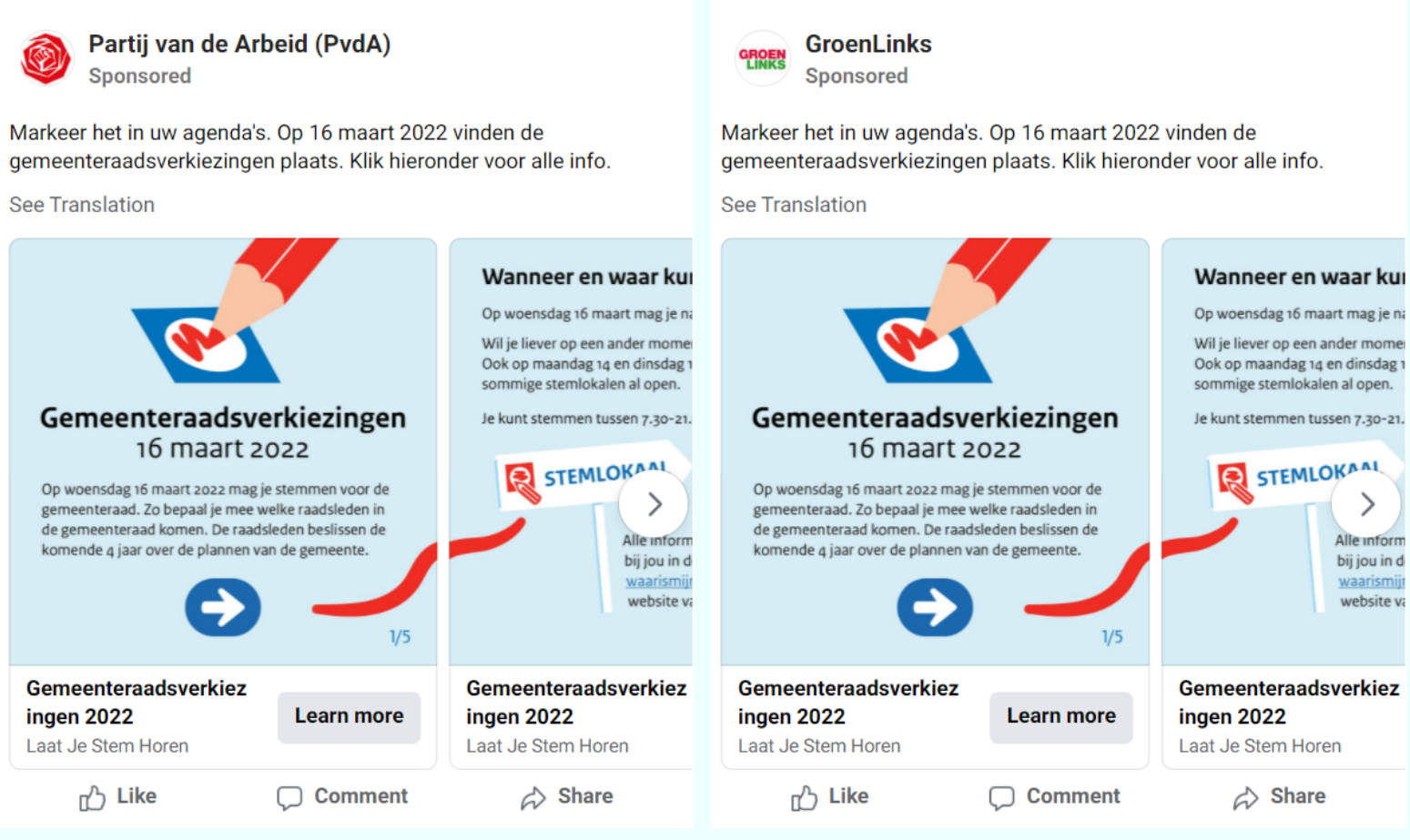
5. Environmental interests
6. Excluding environmental interests

7. Economic interests
8. Excluding Economic interests

9. No Targeting

Ad Creative and Setup

How the ad looked like on Desktop



How the ad looked like on Desktop

Results

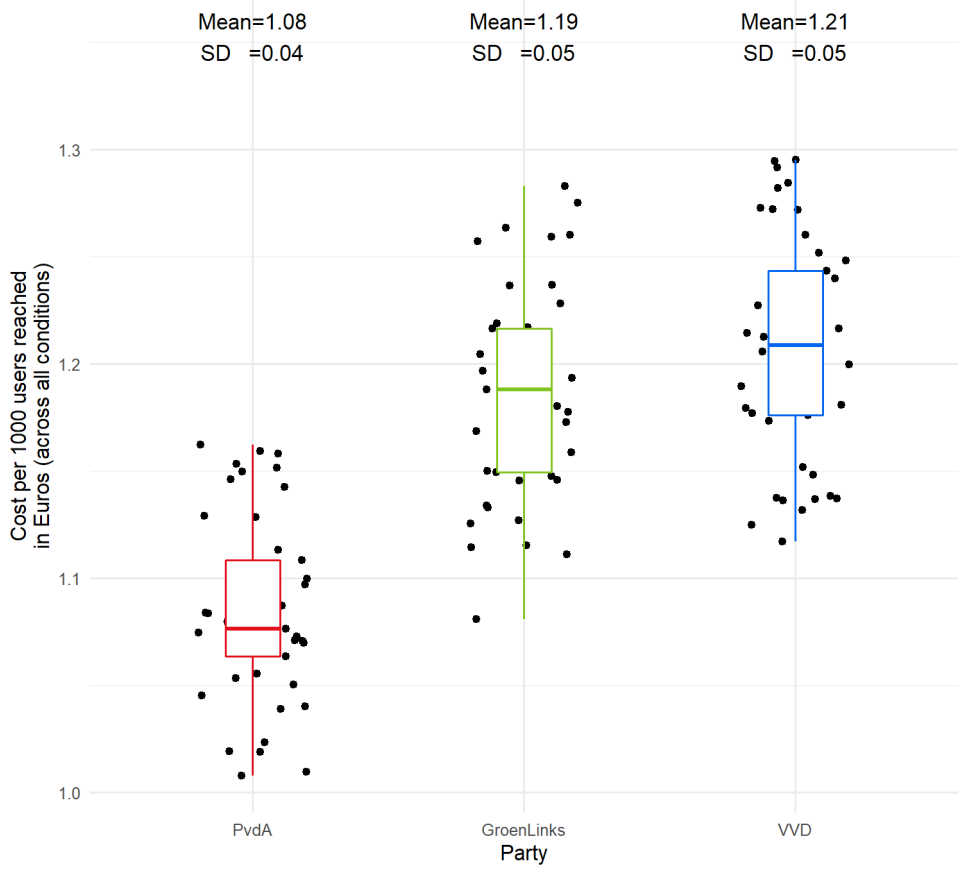
Between-party differences

$\rightarrow$ we consistently find one party that pays less and reaches more people

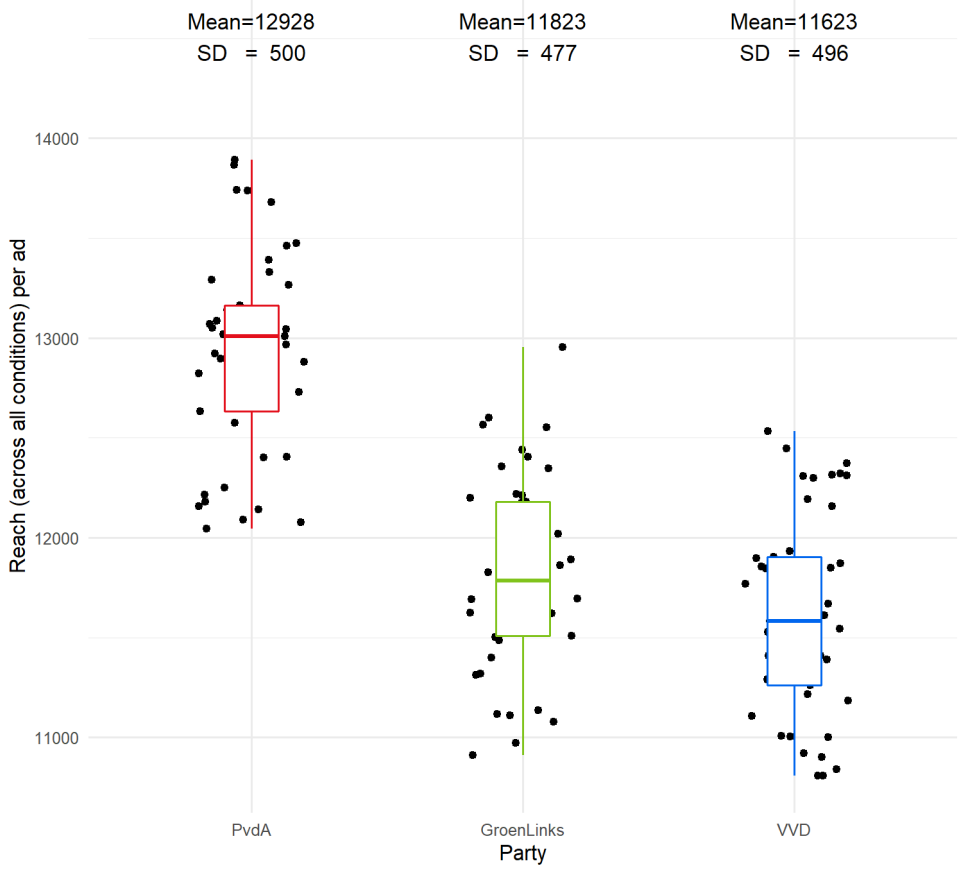
Between-party differences (per individual ad)

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

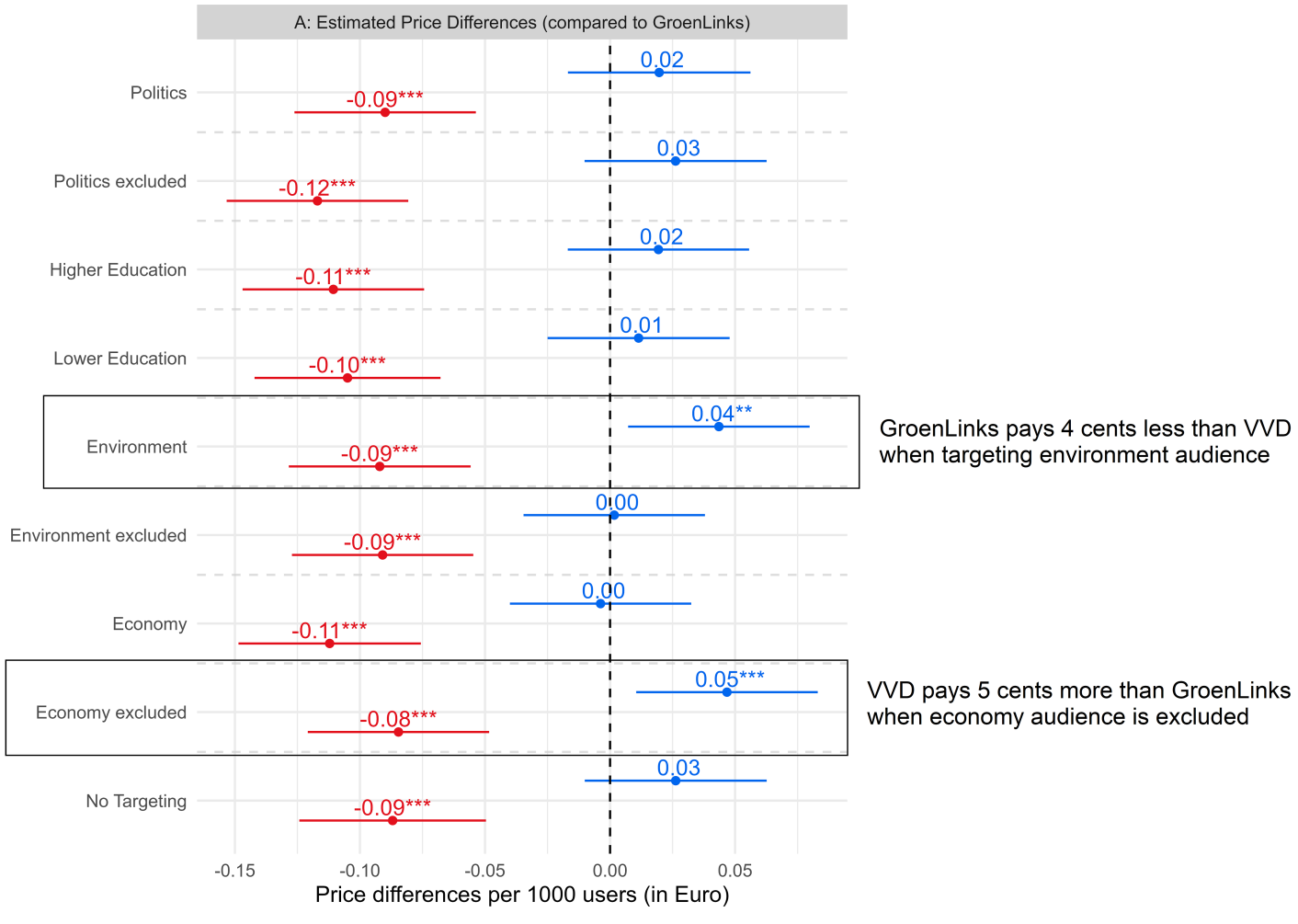
Cost per 1000 users per ad



Reach (unique people)



Between-party differences (per target audience)



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**:

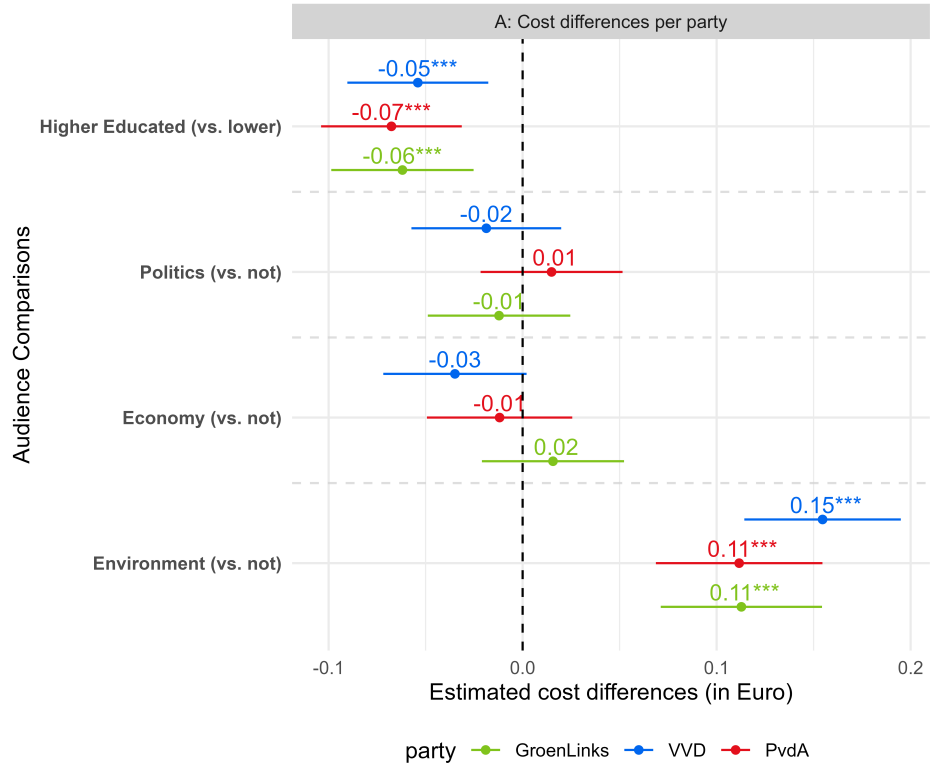
- *higher-educated* vs. *lower-educated audience*

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*



Summary

Summary

Our findings do not always align with expectations.

However:

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

- Compared to GroenLinks and VVD:
  - PvdA pays the least (**10-12 cents less** or: 8-10%)
  - PvdA reaches more people (~**1.1 - 1.3k more** per ad, in total: 14-17k more)
- Higher-educated people (vs. lower-educated people)
  - cheaper to reach (~-5%)
  - deliver more (~2.6% higher share)
- People interested in environment (vs. not)
  - more expensive to reach (~+10%)
  - deliver less (~-5.11% lower share)

Age, gender and regional biases

Even after controlling for Meta user breakdown:

- Men systematically receive more ads than women
- 18-24 year olds systematically receive less ads
- Certain Dutch provinces systematically receive less ads than others

Implications

- 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
  - Unequal playing field
- 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
  - may deepen political, social and geographical inequalities
- 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!

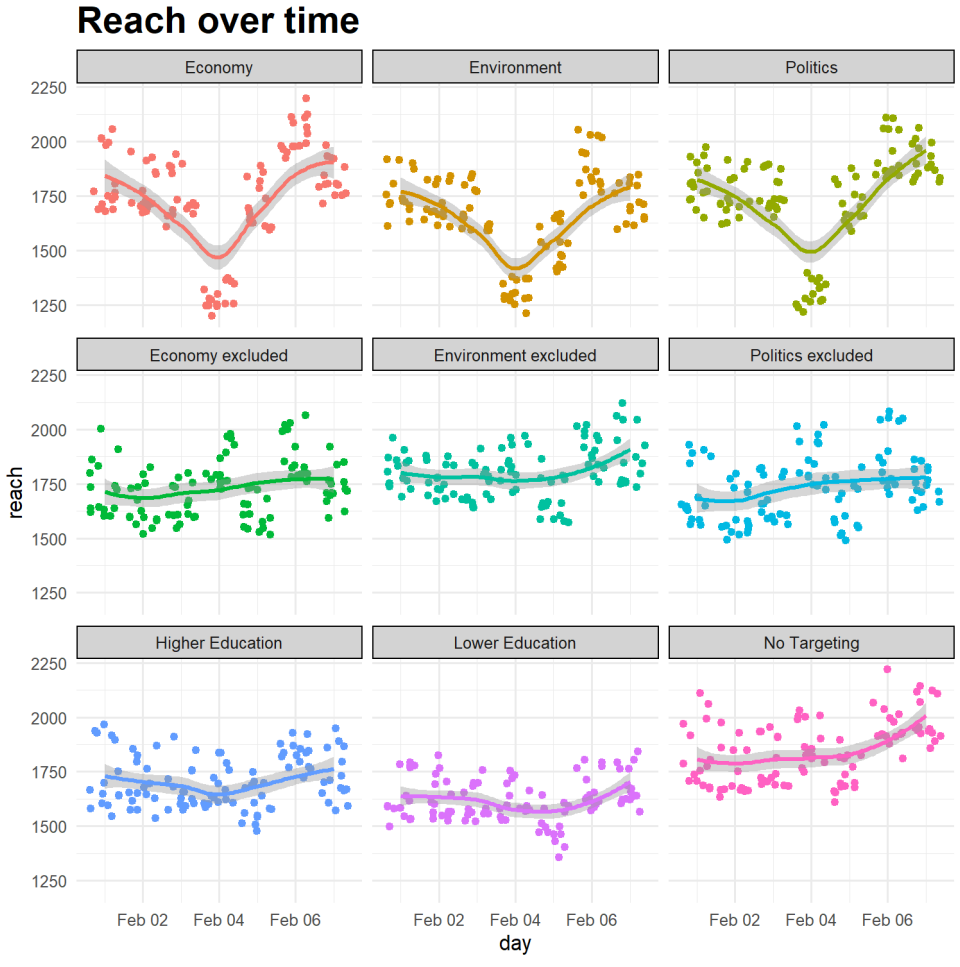
Appendix

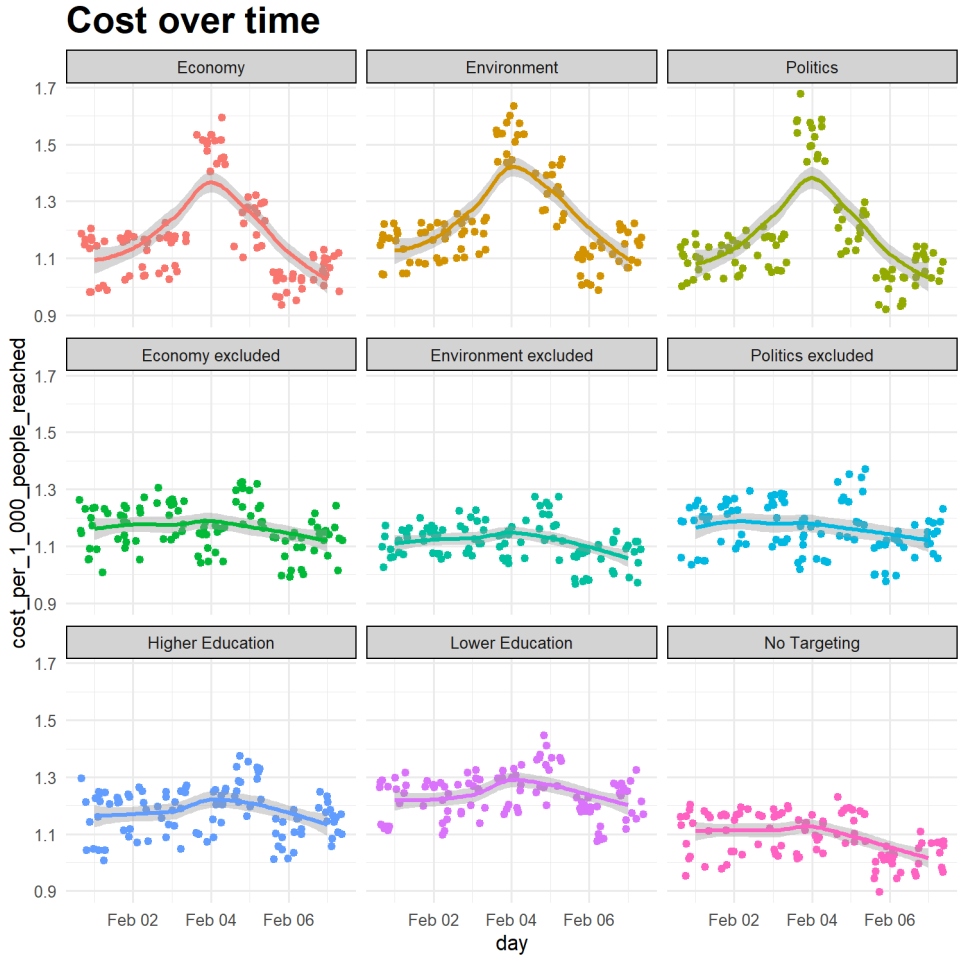
Within-party differences

Reach and cost **over time**

Potential *market shock* on February 4th?

Within-party differences per day - Reach and Cost





Within-party differences

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

$\rightarrow$ party differences remain constant despite *"shock"*

Price differences per day

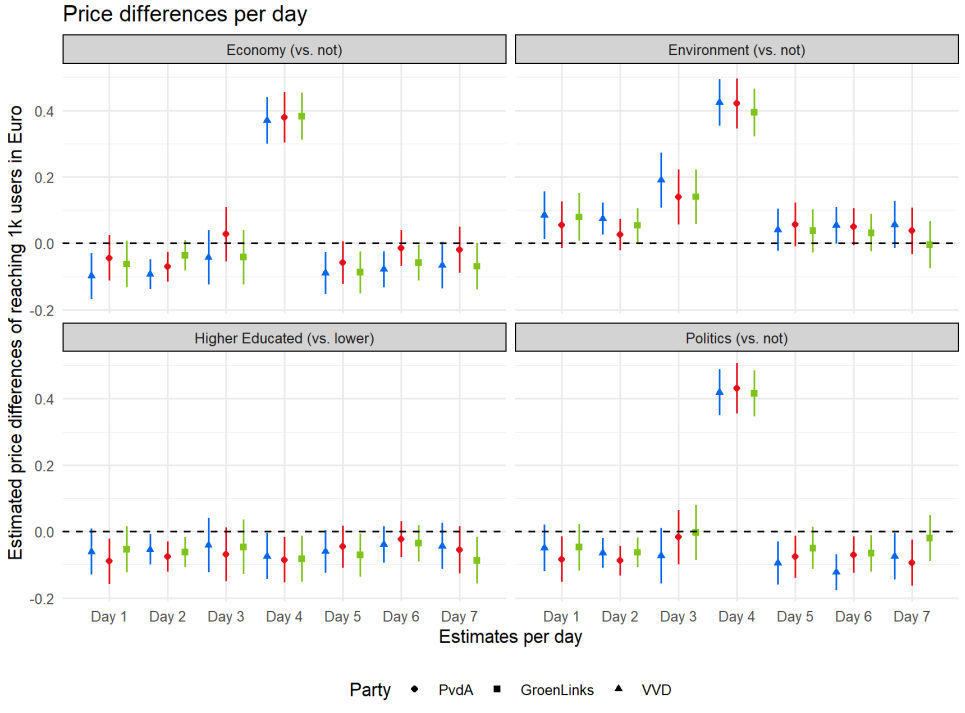
We observe:

Consistent results

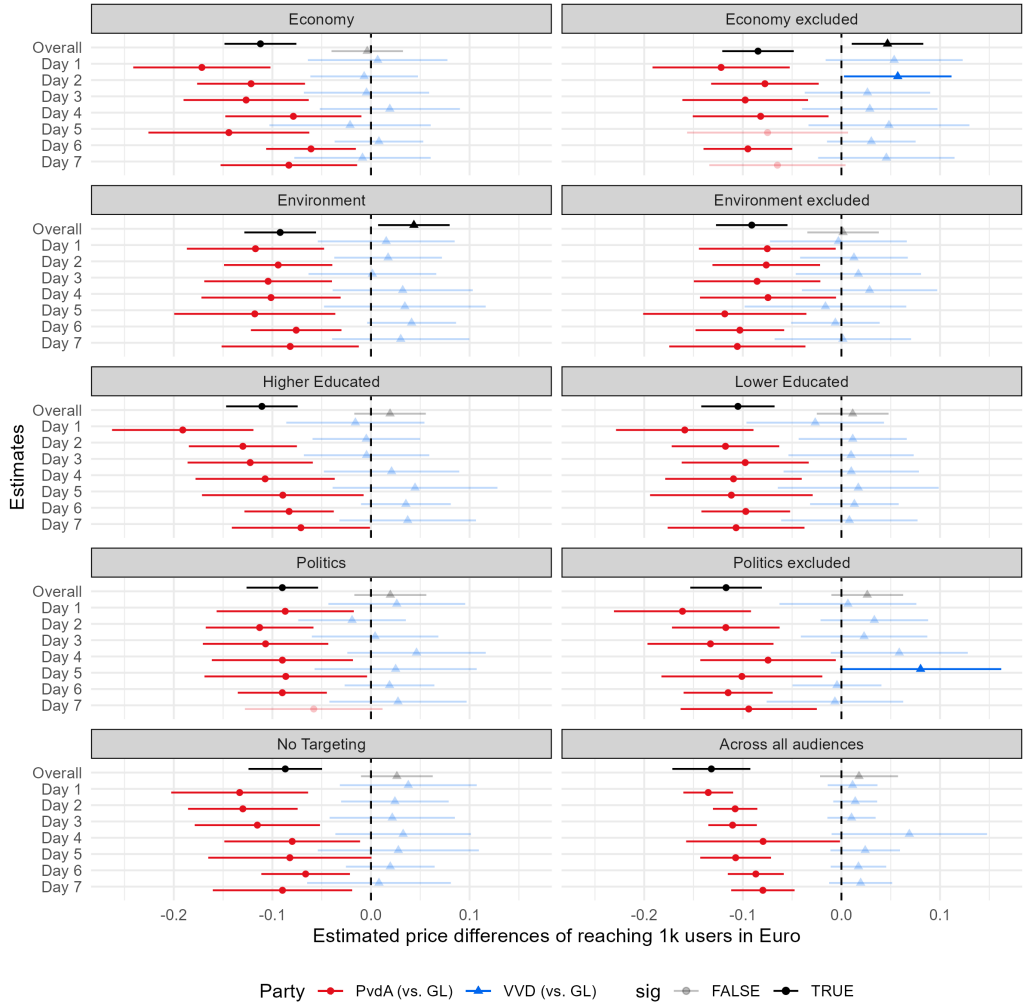
- "Market shock" **hits all parties equally**
- Environment audience consistently *more expensive*
- Higher educated audience consistently *less expensive*

Inconsistent results

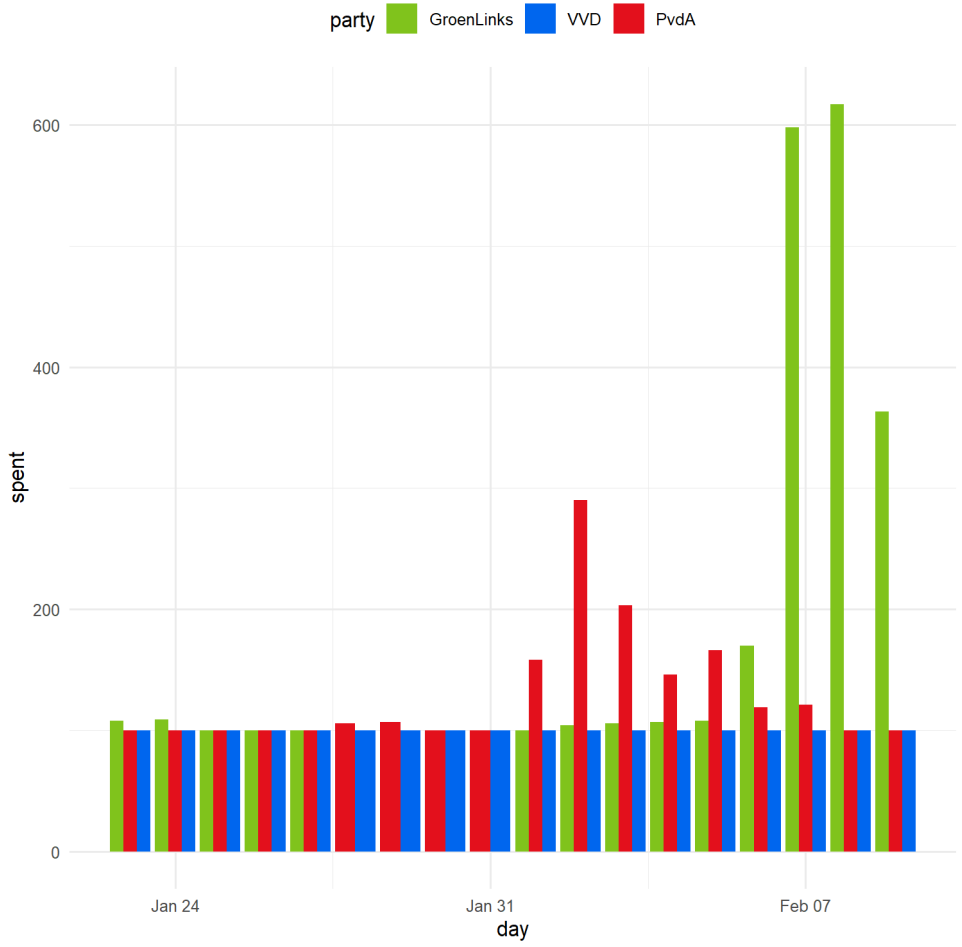
- Audiences interested in economy & politics are typically cheaper except on the day of the spike

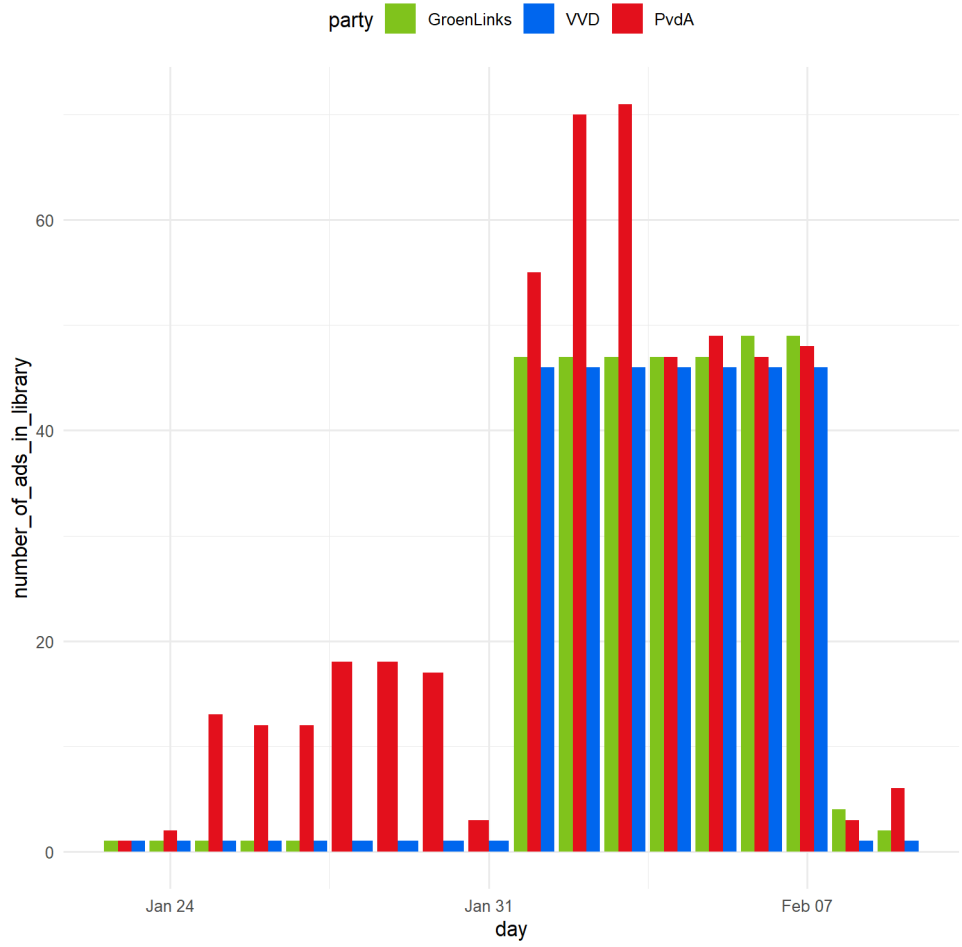


Price differences per day



Bulk Discount?



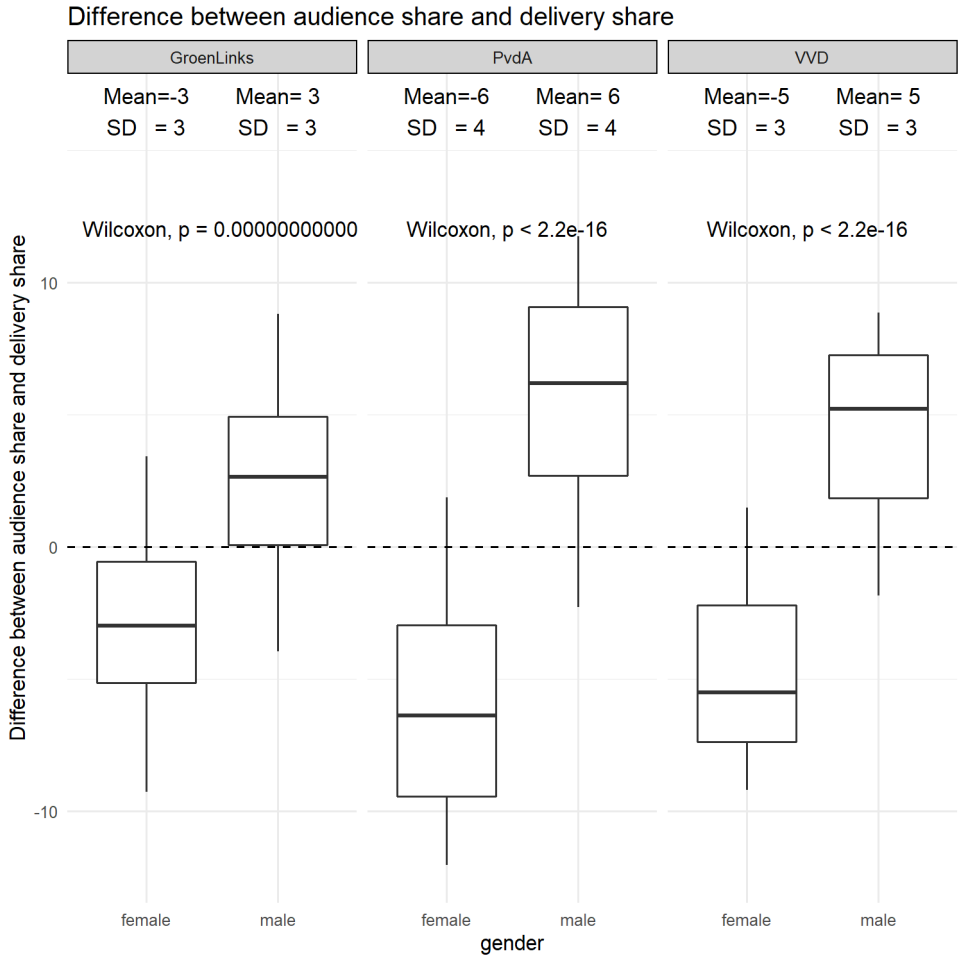


Skewed delivery

in terms of gender, age and region

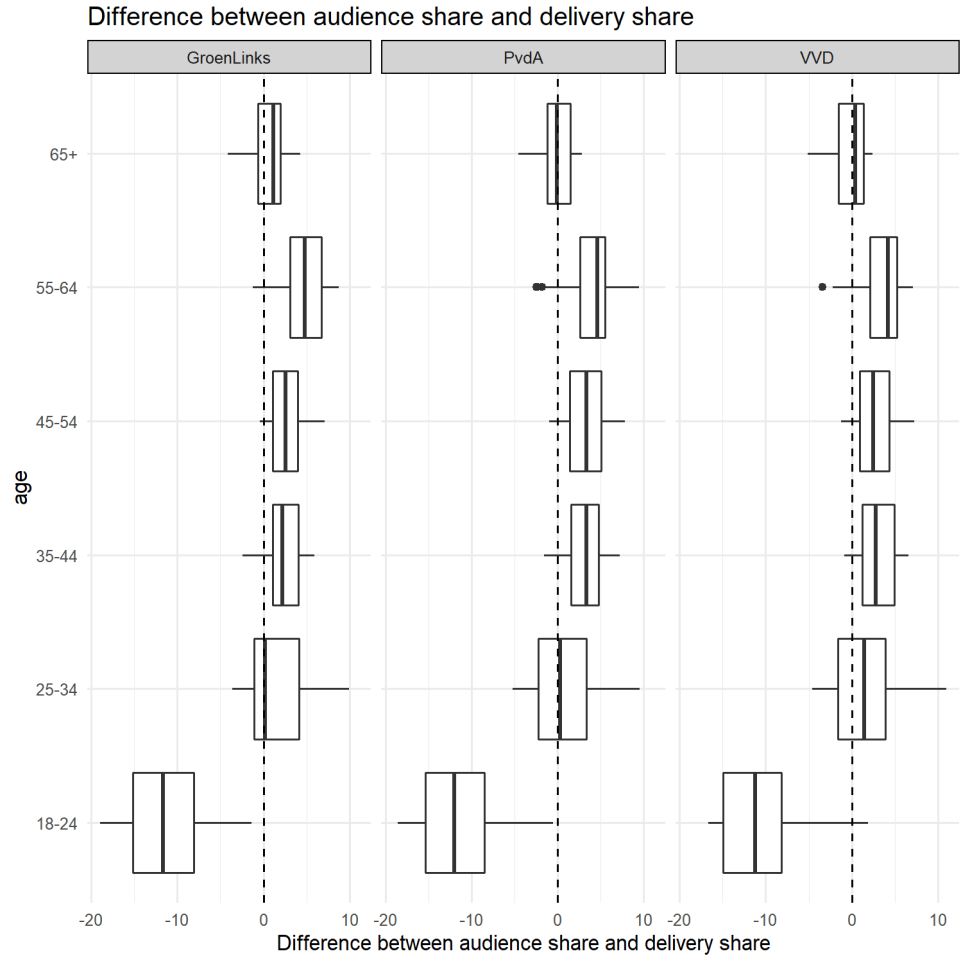
Differences in delivery by gender

- *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



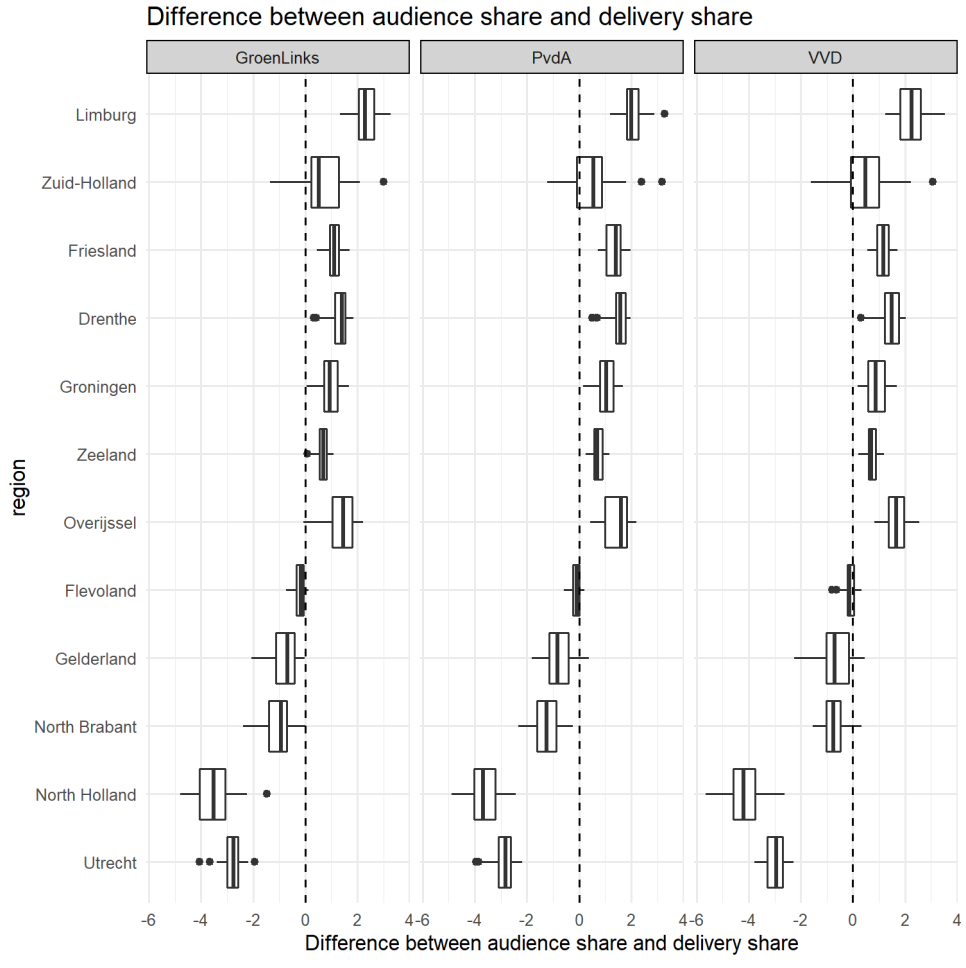
Differences in delivery by age group

- 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