

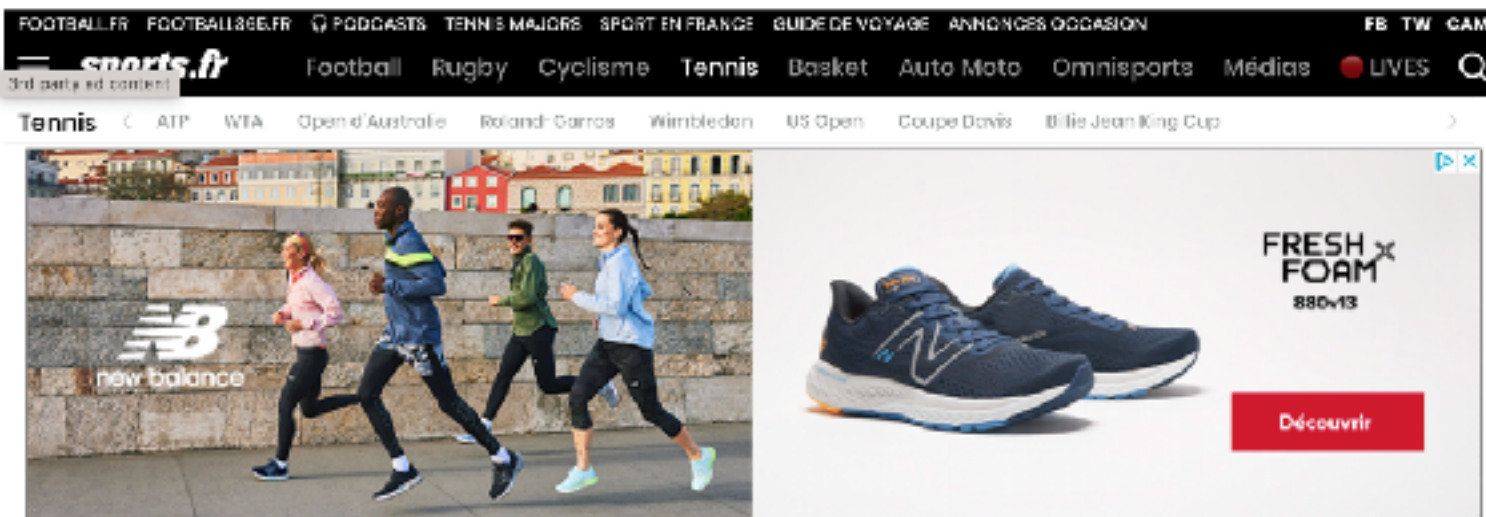


Influence mechanisms in online advertising and micro-targeting

Oana Goga (CR CNRS, Inria CEDAR team, LIX—École Polytechnique)

Traditional view of online advertising

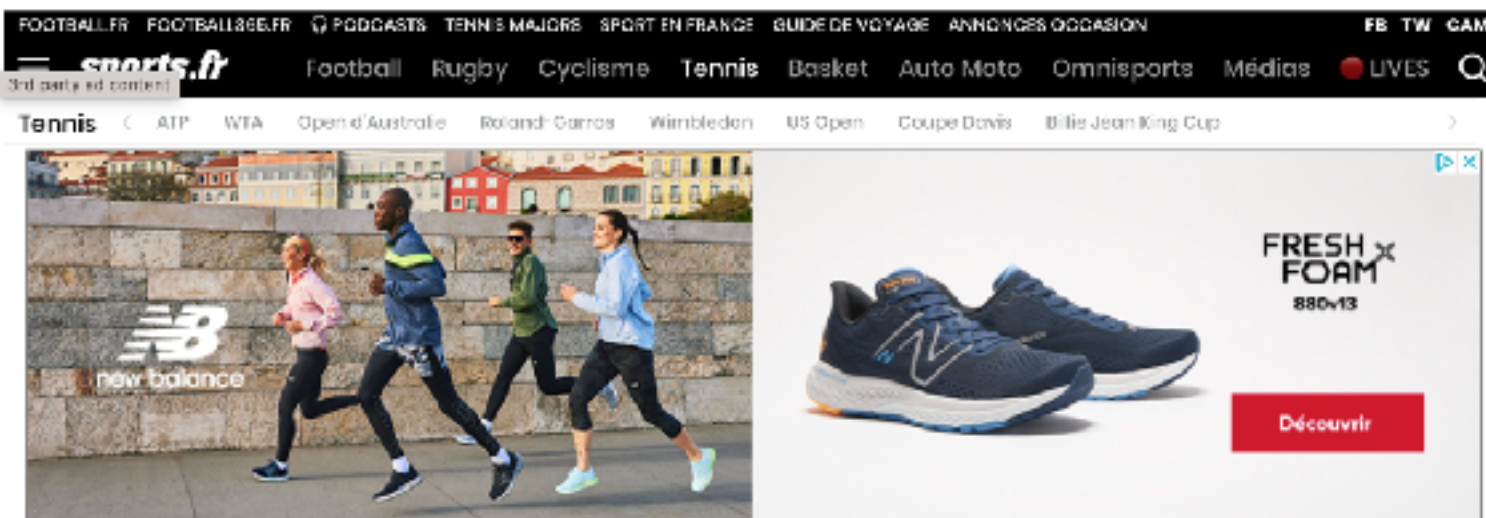
Contextual



Running shoes ad
on sports website

Traditional view of online advertising

Contextual



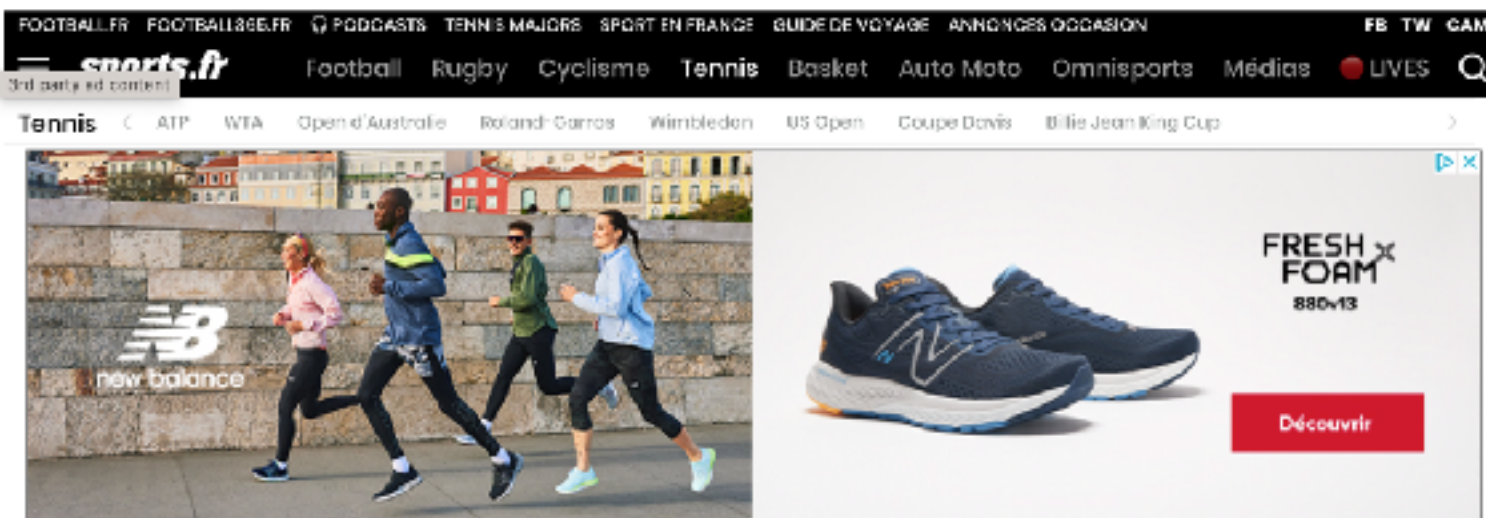
Running shoes ad
on sports website

No user tracking
needed

Traditional view of online advertising

Contextual

Re-targeting



Running shoes ad on sports website

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Le spécialiste américain des bureaux partagés, lancé en 2010 en fanfare et avec de grandes ambitions, n'a cessé d'engouffrer l'argent des investisseurs sans jamais approcher la rentabilité.

Par Arnaud Leparmentier (New York, correspondant)
Publié aujourd'hui à 02h30, modifié à 12h41 - Lecture 4 min

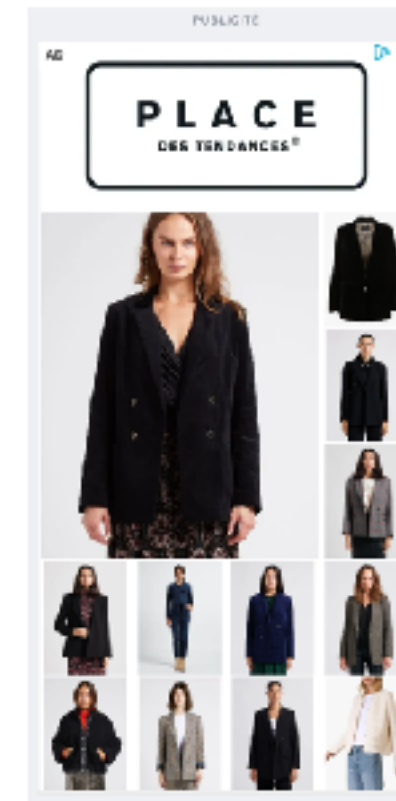
Ajouter à vos sélections

Article réservé aux abonnés



Devant l'entrée des bureaux de WeWork, à New York, le 7 novembre 2022. F. LUCI / MORGAN / AP

Il y a quelques années, un concept innovant avait été imaginé: travailler dans un espace de bureaux partagés, en ville, en apportant son ordinateur. C'était avant la pandémie de Covid-19, qui a généralisé l'usage du travail à domicile. L'entreprise américaine de location d'espaces de bureaux WeWork espérait alors «ubériser»

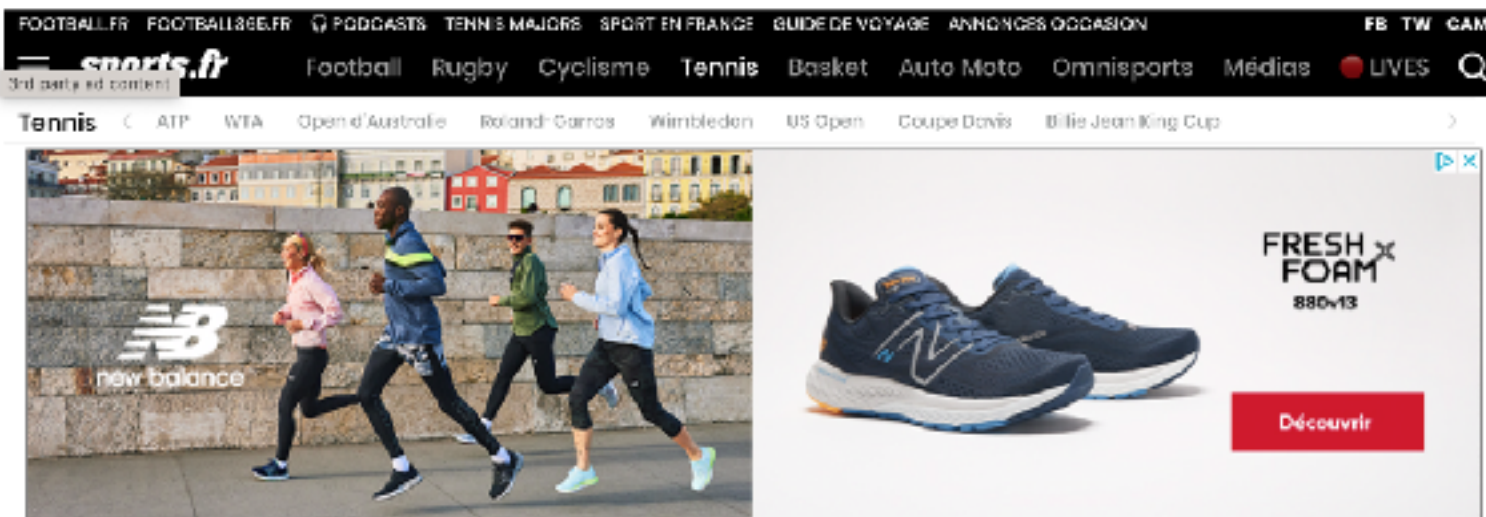


Blazer ad everywhere on the Internet

Traditional view of online advertising

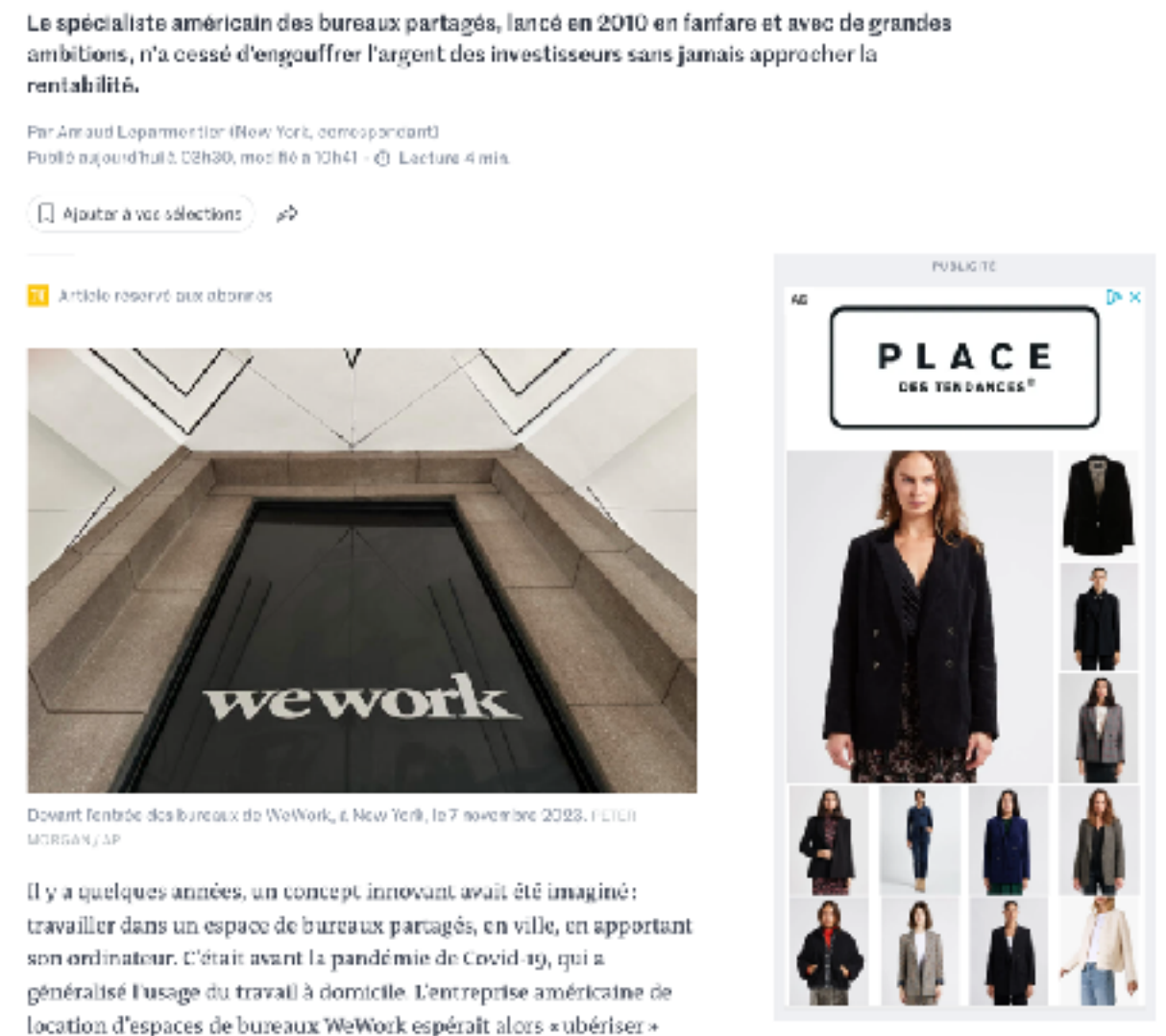
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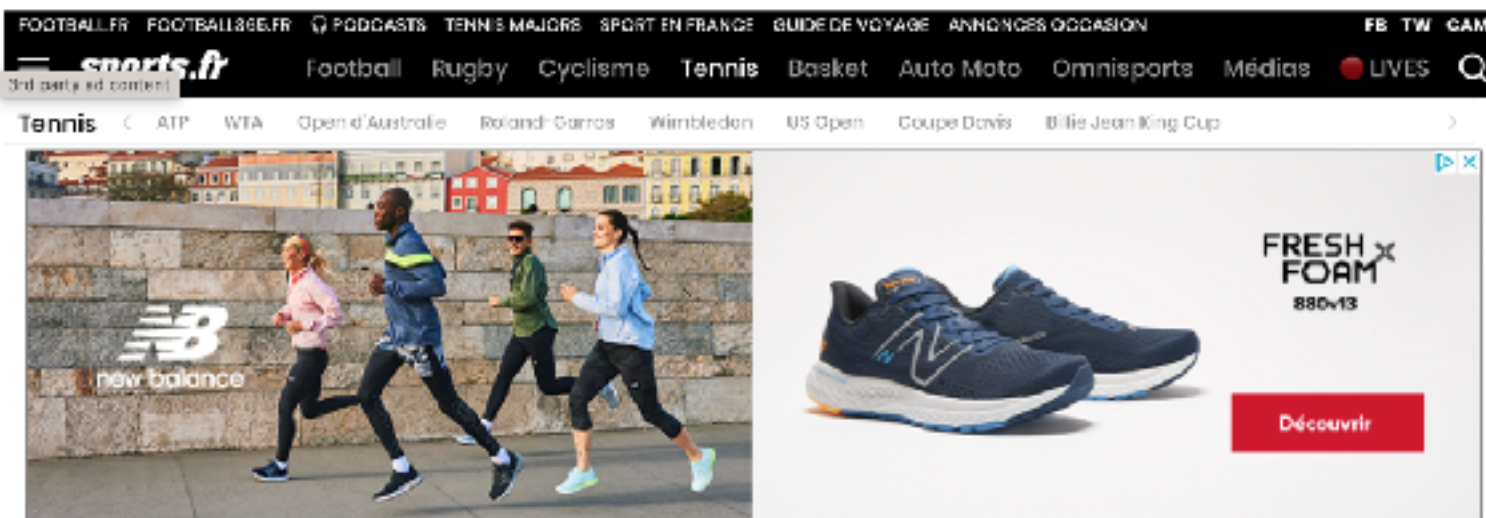
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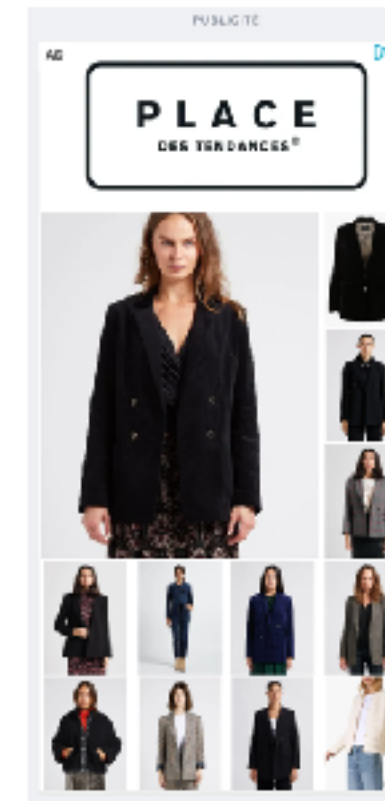
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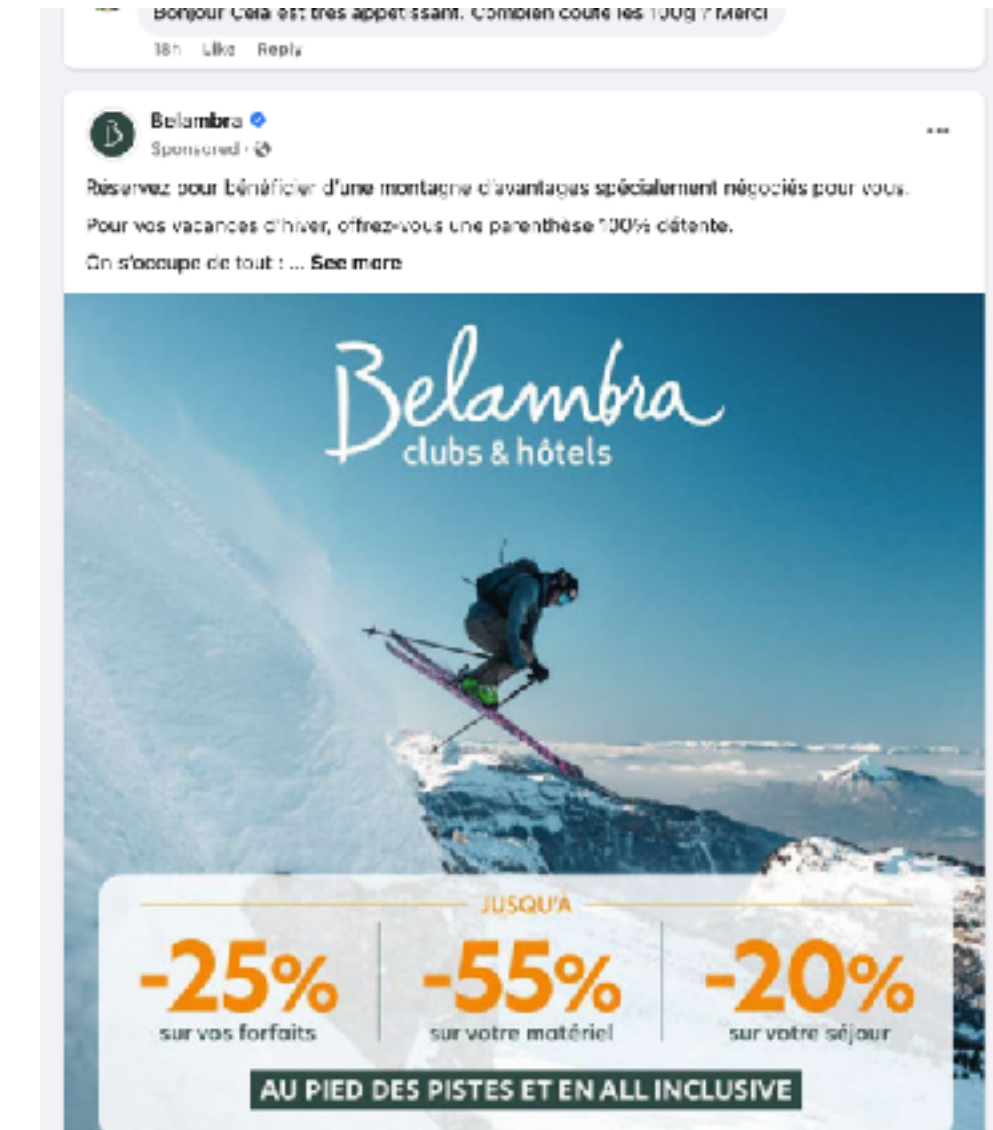
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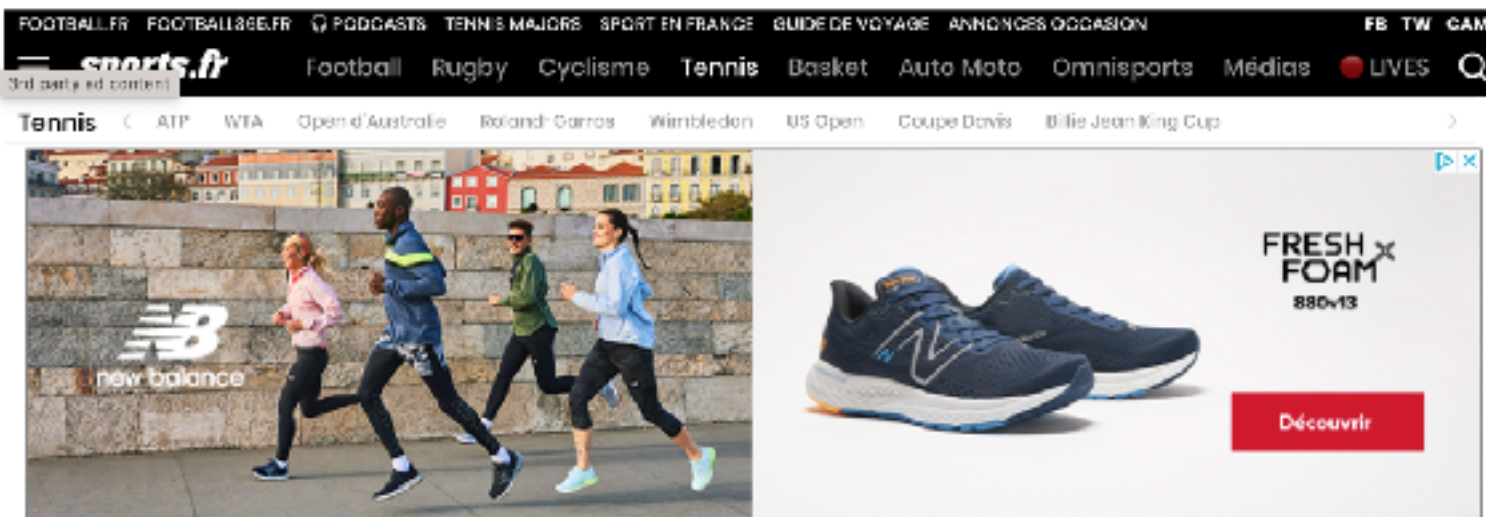
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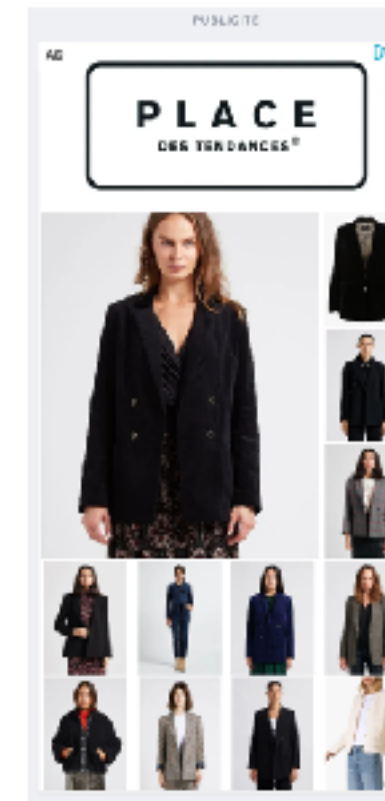
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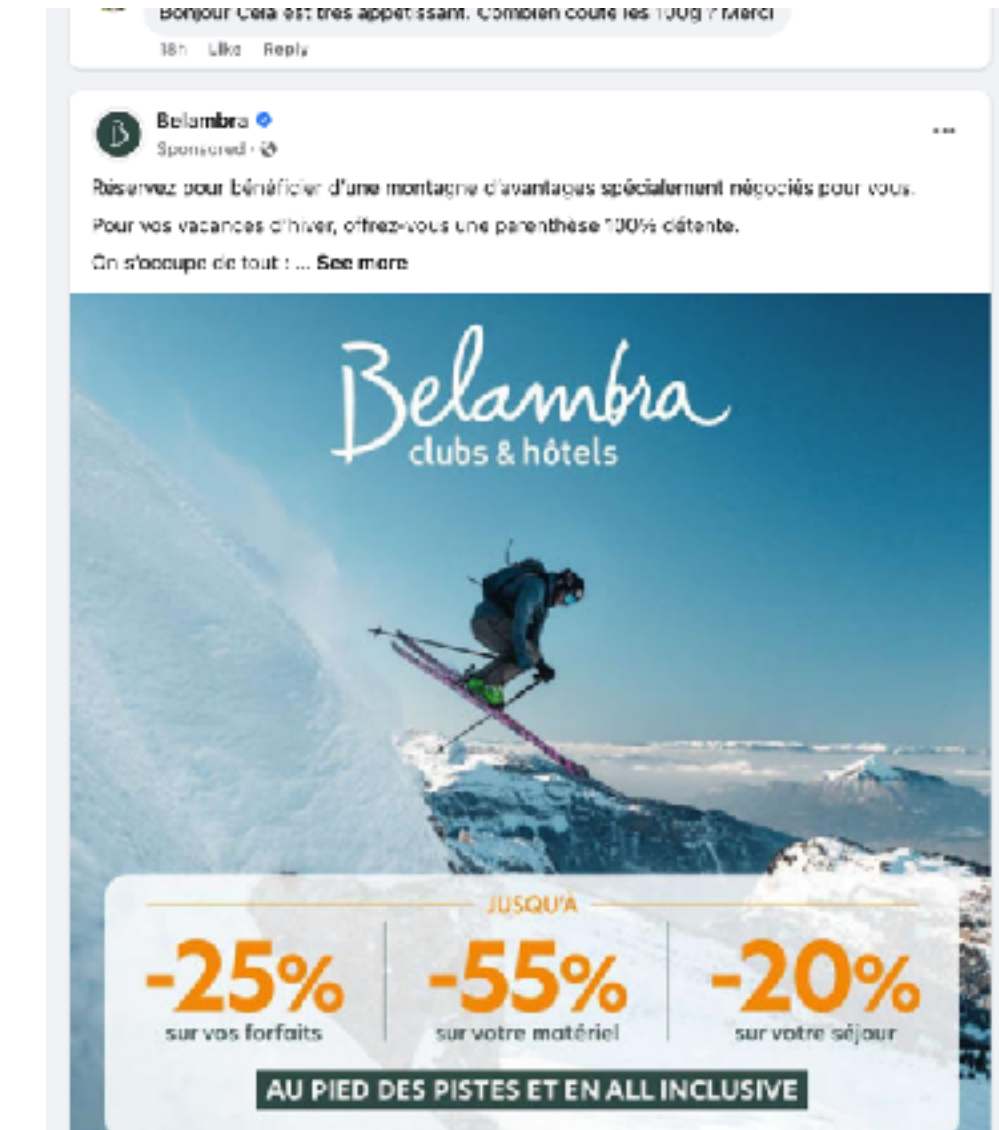
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User tracking needed



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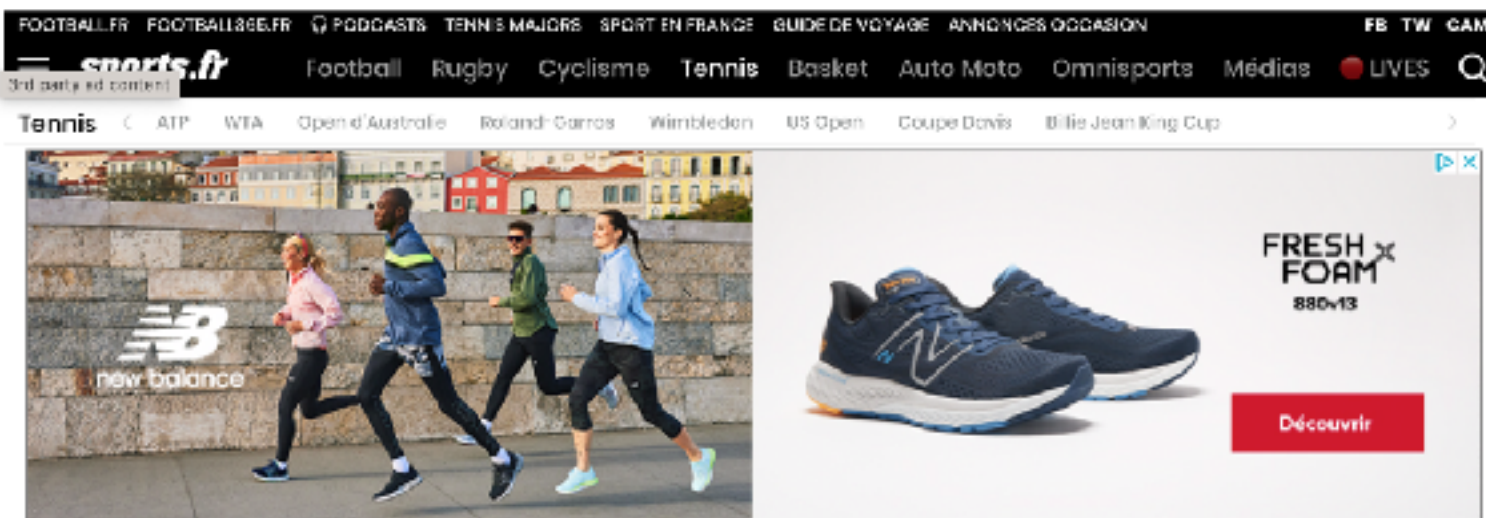
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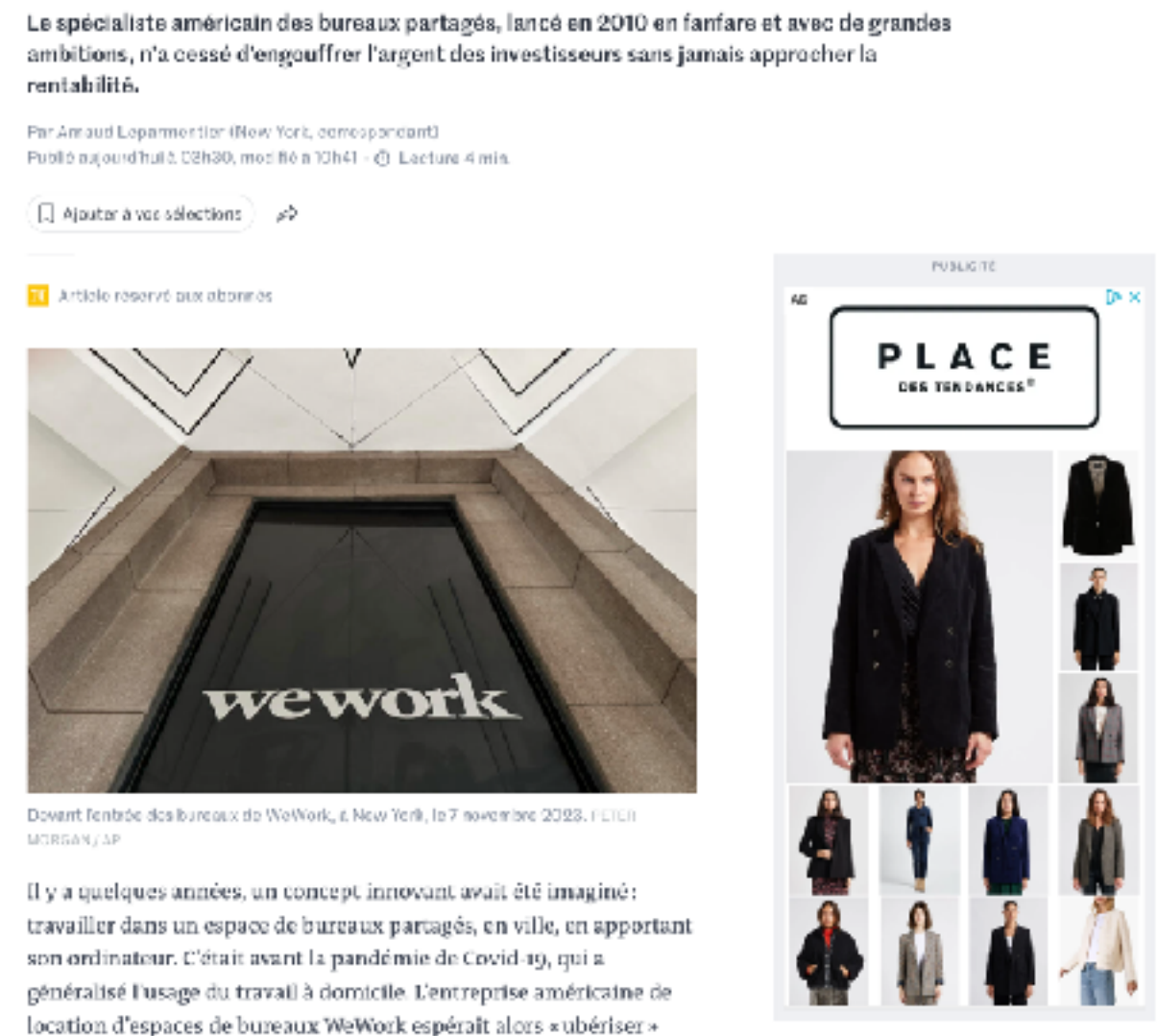
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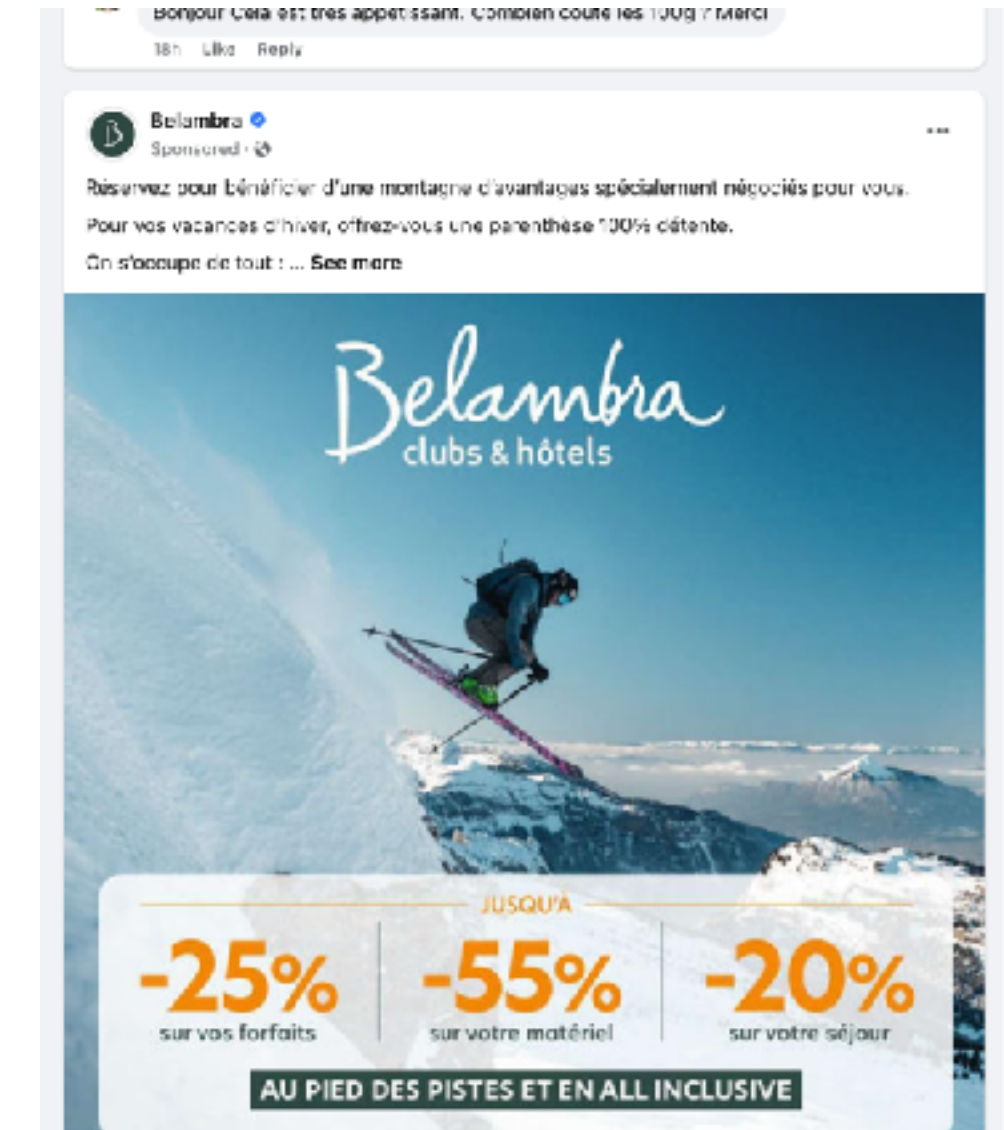
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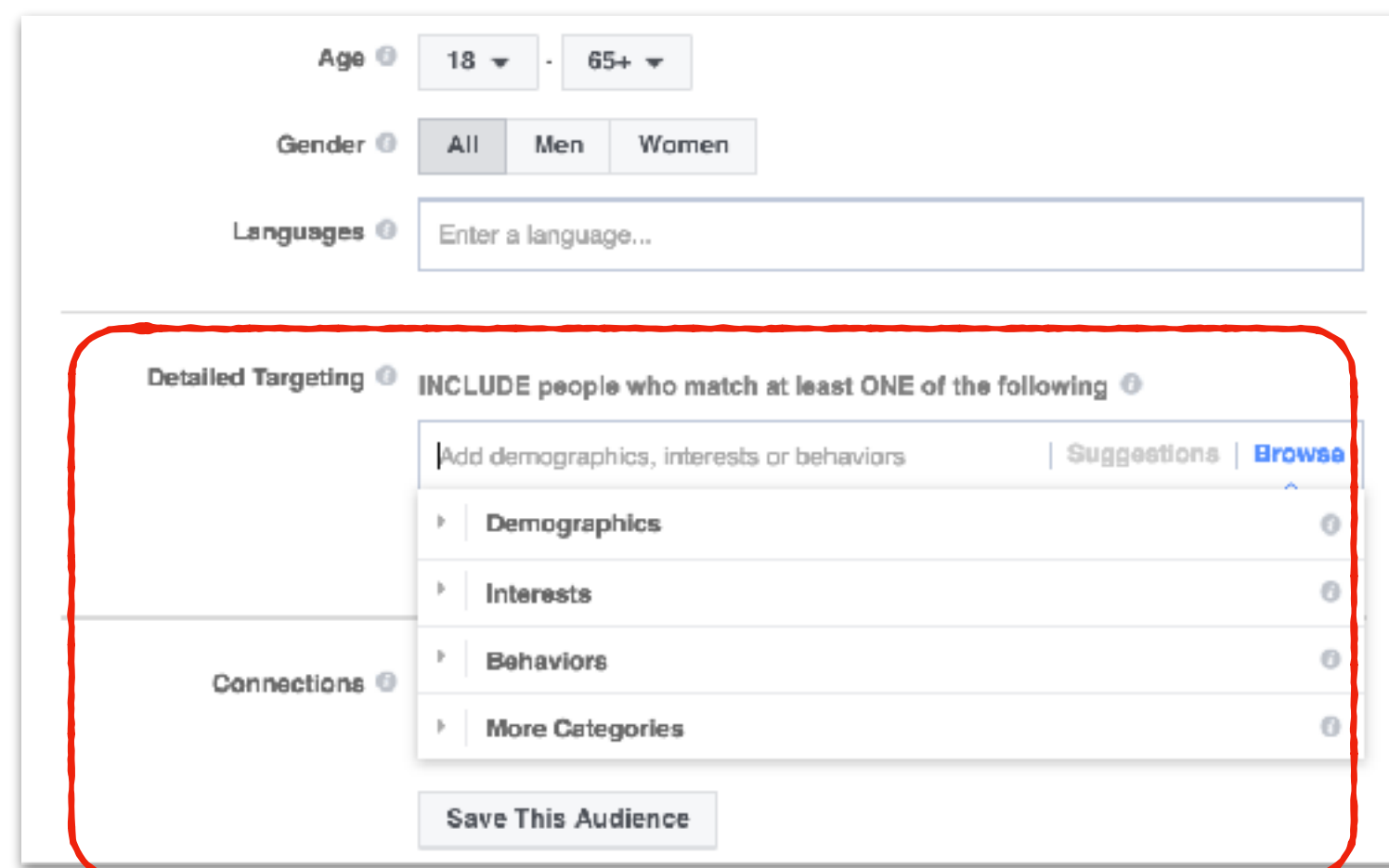
What is generally viewed as micro-targeting



Mistake 1:
Regulate only advertiser-driven micro-
targeting

Advertiser driven vs. algorithmic driven targeting

Advertiser driven micro-targeting



The screenshot displays a targeting interface with the following elements:

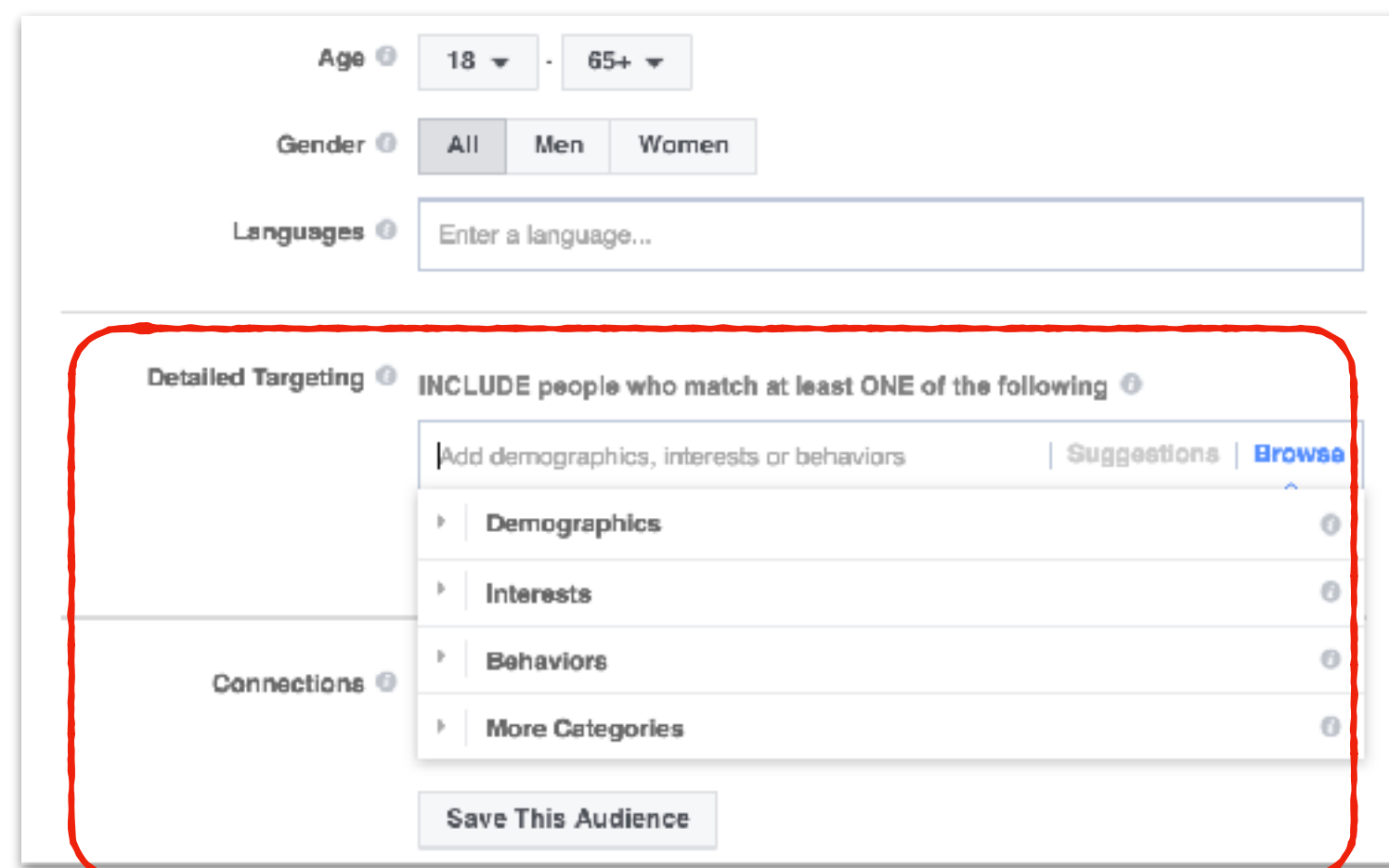
- Age:** Two dropdown menus set to "18" and "65+".
- Gender:** Three buttons labeled "All", "Men", and "Women".
- Languages:** A text input field with the placeholder "Enter a language...".
- Detailed Targeting:** A section titled "Detailed Targeting" with a sub-header "INCLUDE people who match at least ONE of the following". It contains a search bar "Add demographics, interests or behaviors" and a list of categories: "Demographics", "Interests", "Behaviors", and "More Categories".
- Connections:** A label "Connections" is positioned to the left of the "Behaviors" and "More Categories" items.
- Save This Audience:** A button located at the bottom of the "Detailed Targeting" section.

A red rectangular box highlights the "Detailed Targeting" section and the "Connections" label.

The advertiser specifies the characteristics of its audience

Advertiser driven vs. algorithmic driven targeting

Advertiser driven micro-targeting



The image shows a screenshot of a social media targeting interface. At the top, there are dropdown menus for 'Age' (18 to 65+) and 'Gender' (All, Men, Women), and a text input for 'Languages'. Below these is a 'Detailed Targeting' section, which is highlighted with a red border. This section includes a search bar for demographics, interests, or behaviors, and a list of categories: Demographics, Interests, Behaviors, and More Categories. A 'Save This Audience' button is at the bottom.

The advertiser specifies the characteristics of its audience

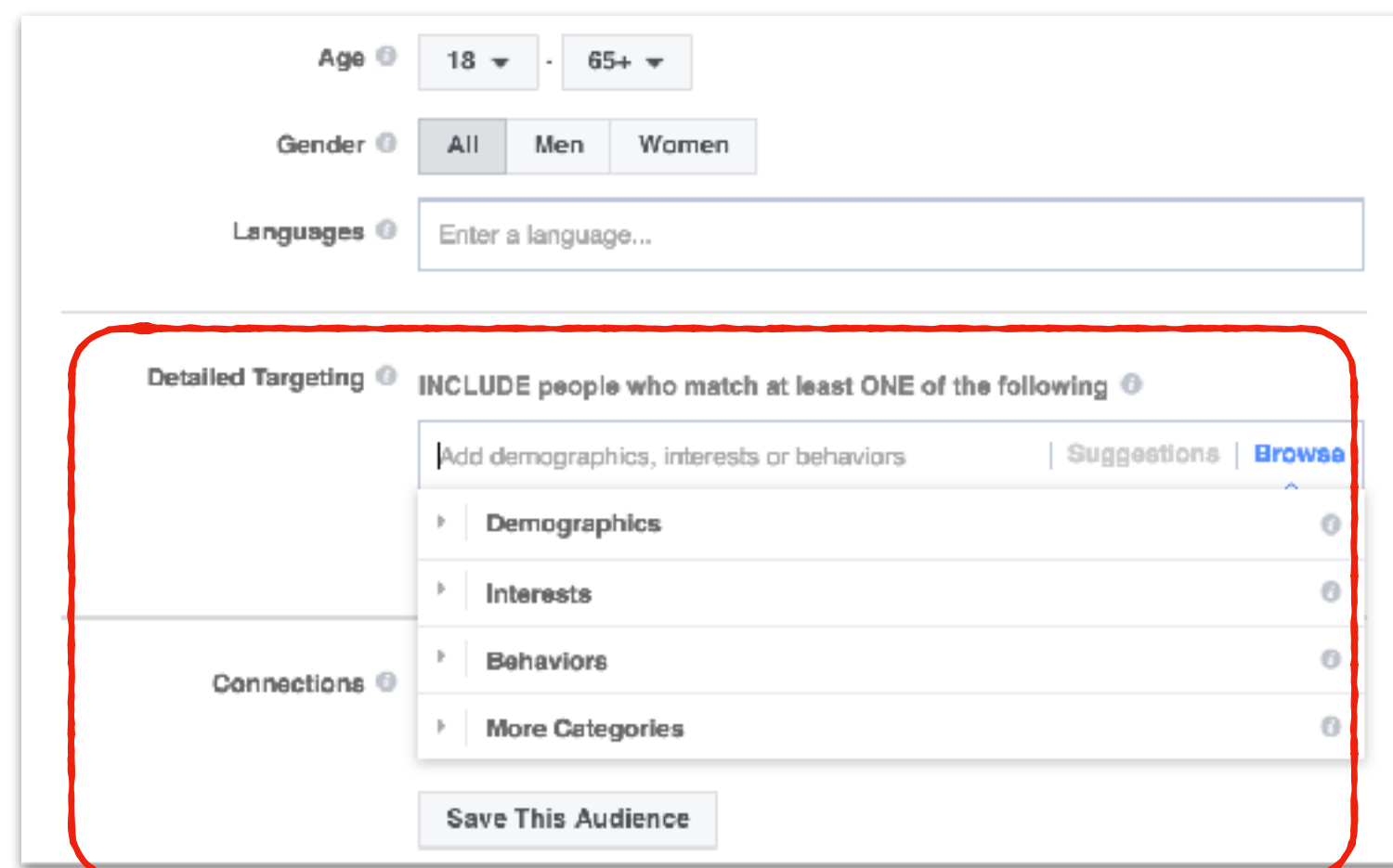
Algorithmic driven micro-targeting/ ad optimization



The advertiser lets the ad platform choose the right audience

Advertiser driven vs. algorithmic driven targeting

Advertiser driven micro-targeting



The image shows a screenshot of a social media targeting interface. At the top, there are filters for Age (18 to 65+), Gender (All, Men, Women), and Languages (Enter a language...). Below this is a 'Detailed Targeting' section, which is highlighted with a red border. It includes a search bar for 'Add demographics, interests or behaviors' and a list of categories: Demographics, Interests, Behaviors, and More Categories. A 'Save This Audience' button is at the bottom.

The advertiser specifies the characteristics of its audience

Explicit user profiling

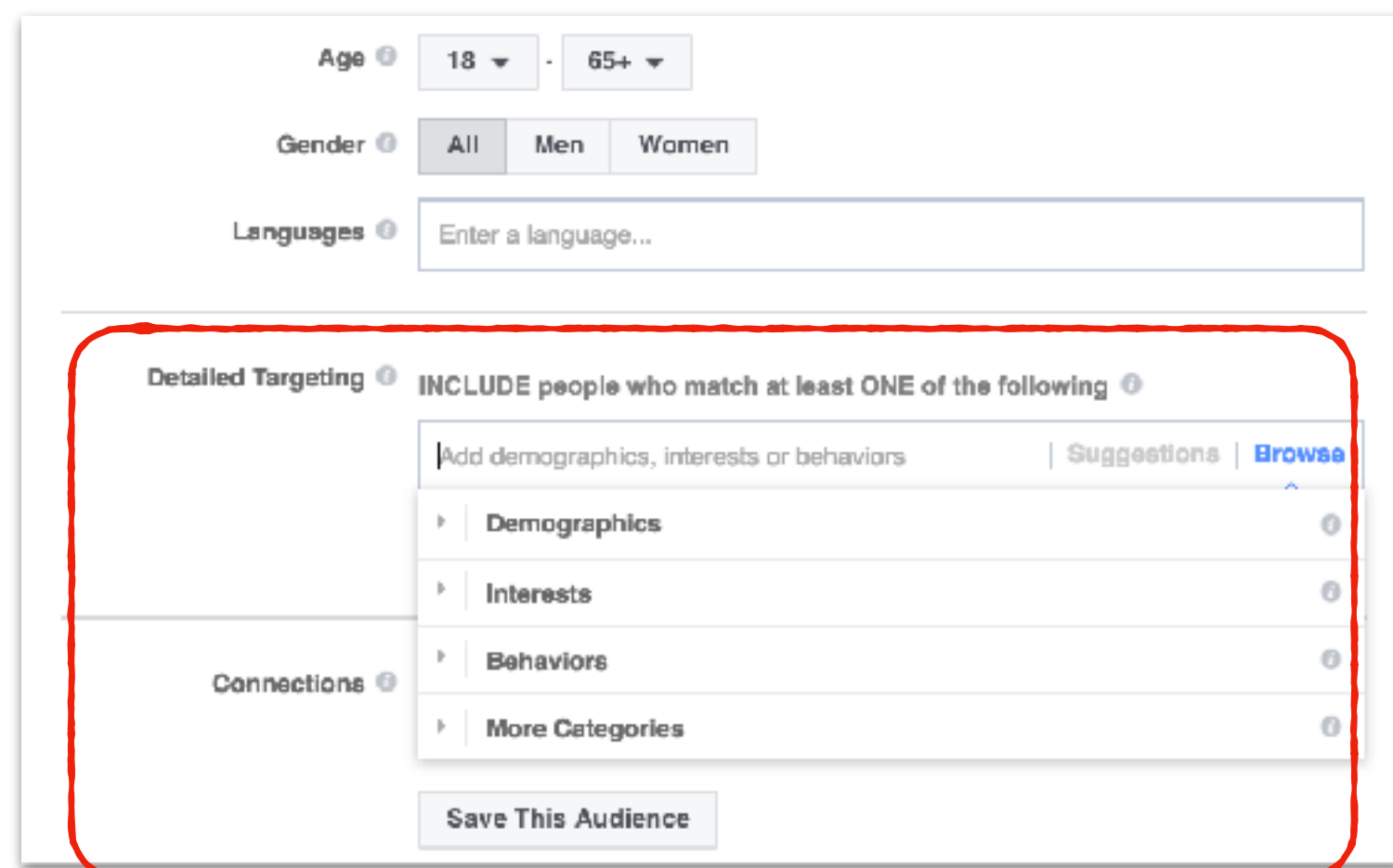
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Advertiser driven vs. algorithmic driven targeting

Advertiser driven micro-targeting



The image shows a screenshot of the Facebook Ad targeting interface. At the top, there are dropdown menus for 'Age' (18 to 65+) and 'Gender' (All, Men, Women). Below that is a text input field for 'Languages'. The main section is 'Detailed Targeting', which is highlighted with a red border. It includes a search bar 'Add demographics, interests or behaviors' and a list of categories: Demographics, Interests, Behaviors, and More Categories. A 'Save This Audience' button is at the bottom.

The advertiser specifies the characteristics of its audience

Explicit user profiling

Algorithmic driven micro-targeting/ ad optimization



The advertiser lets the ad platform choose the right audience

Implicit user profiling

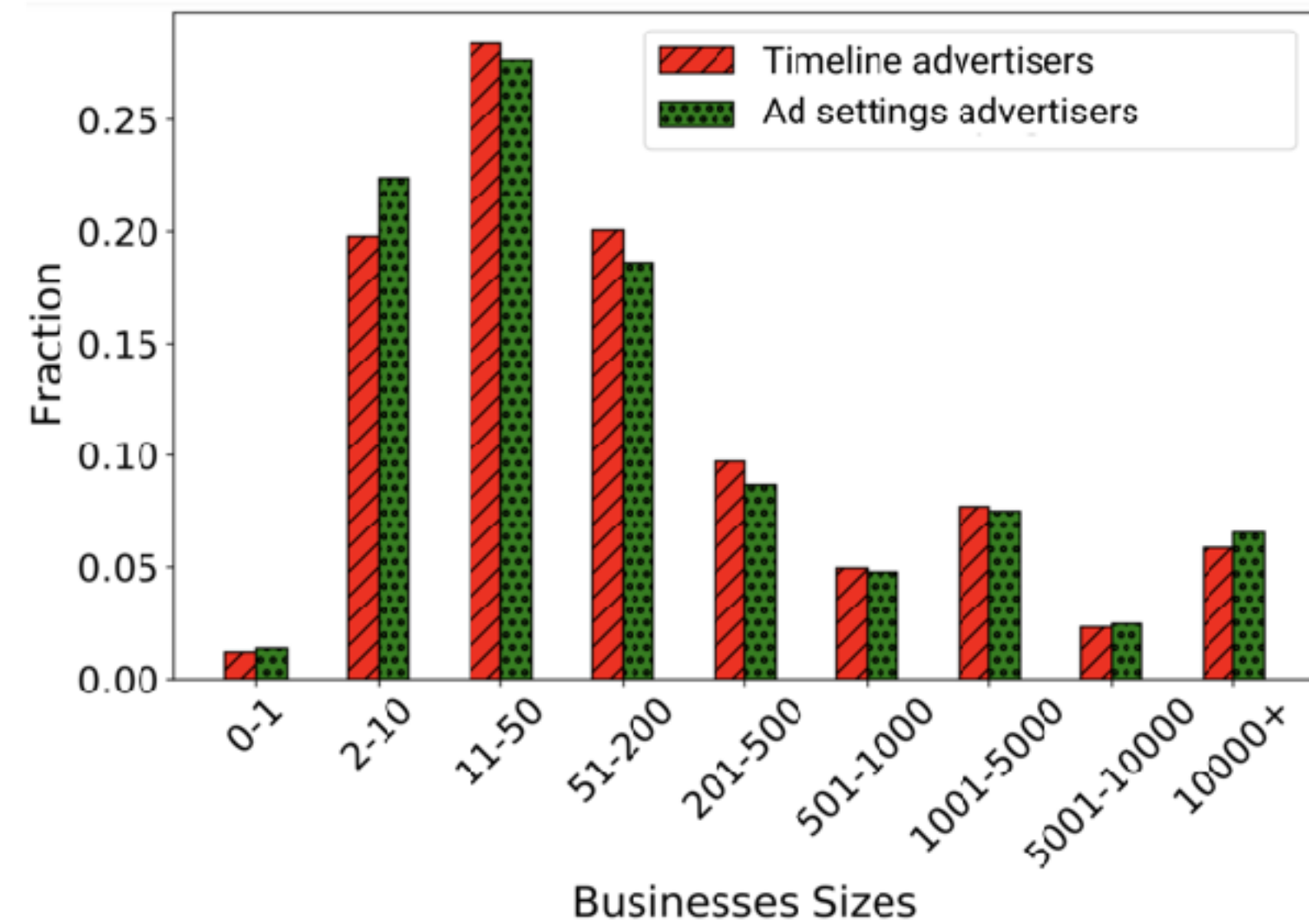
Options to regulate (political) advertising

Considered by the European Commission (2020)

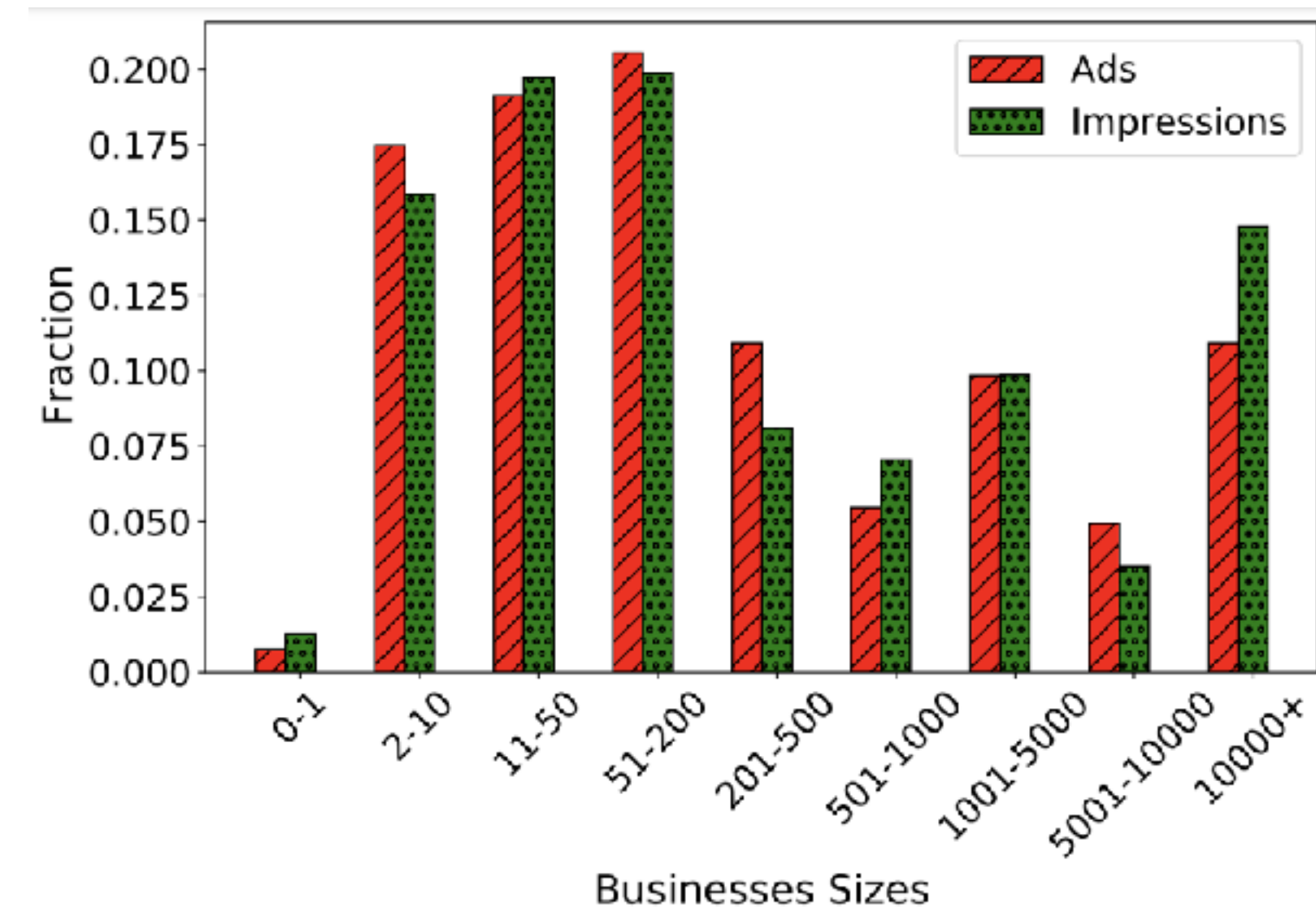
- Ban or restrict **micro-targeting**
 - But what is the economic impact on the ecosystem?
 - To which extent small and medium-sized businesses use micro-targeting?

To which extent small businesses advertise on Fb?

Fraction of advertisers

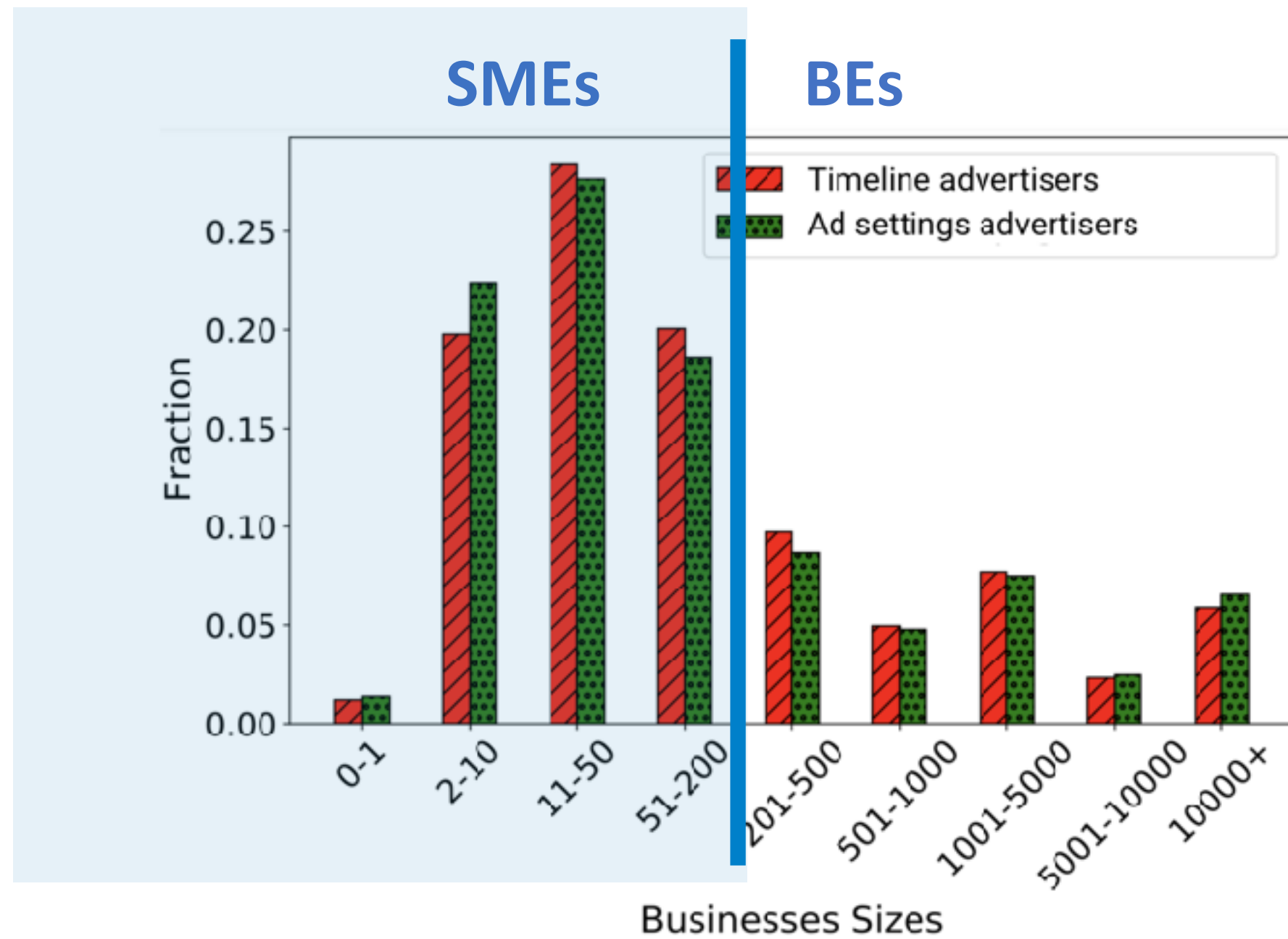


Fraction of ad impression

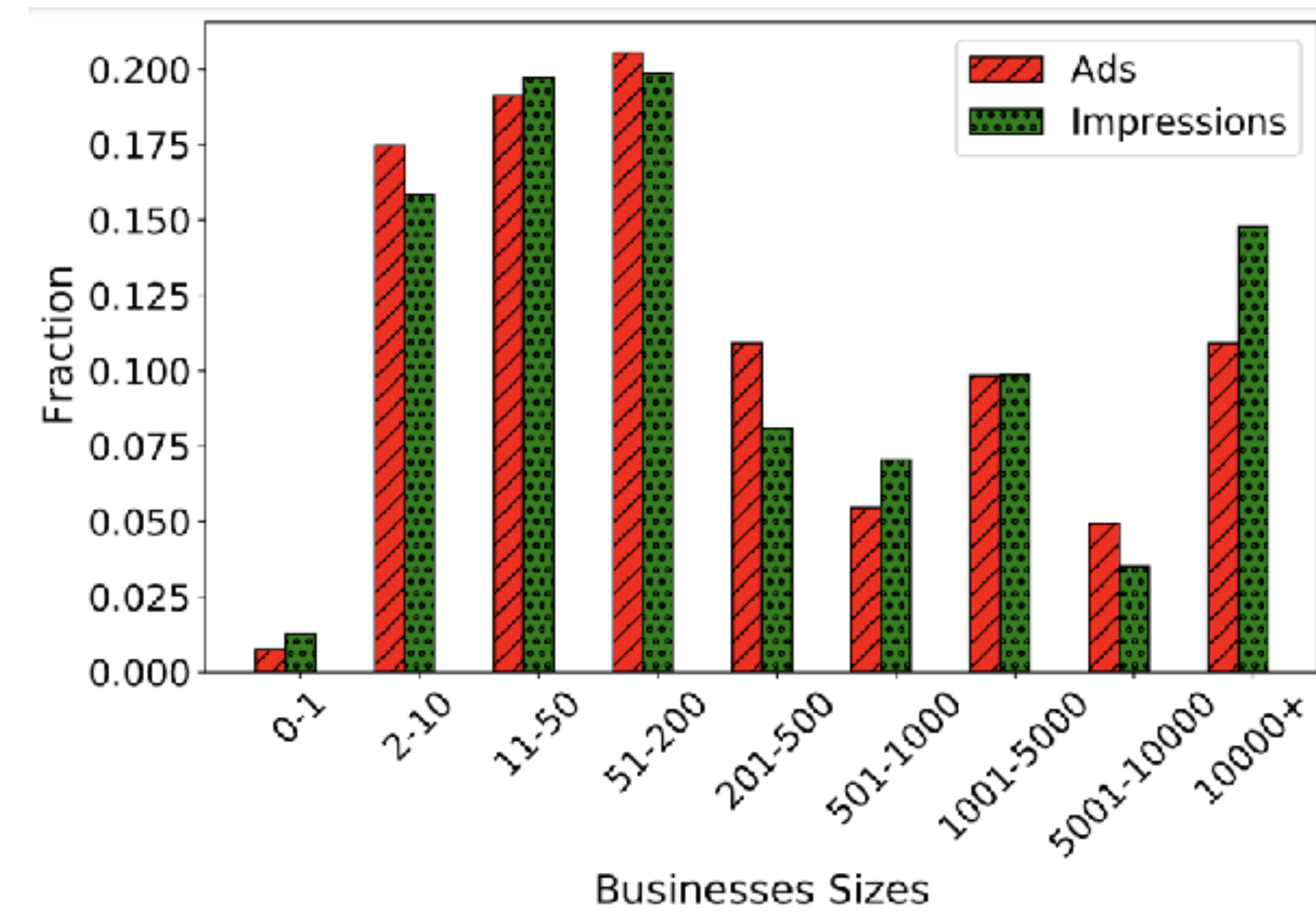


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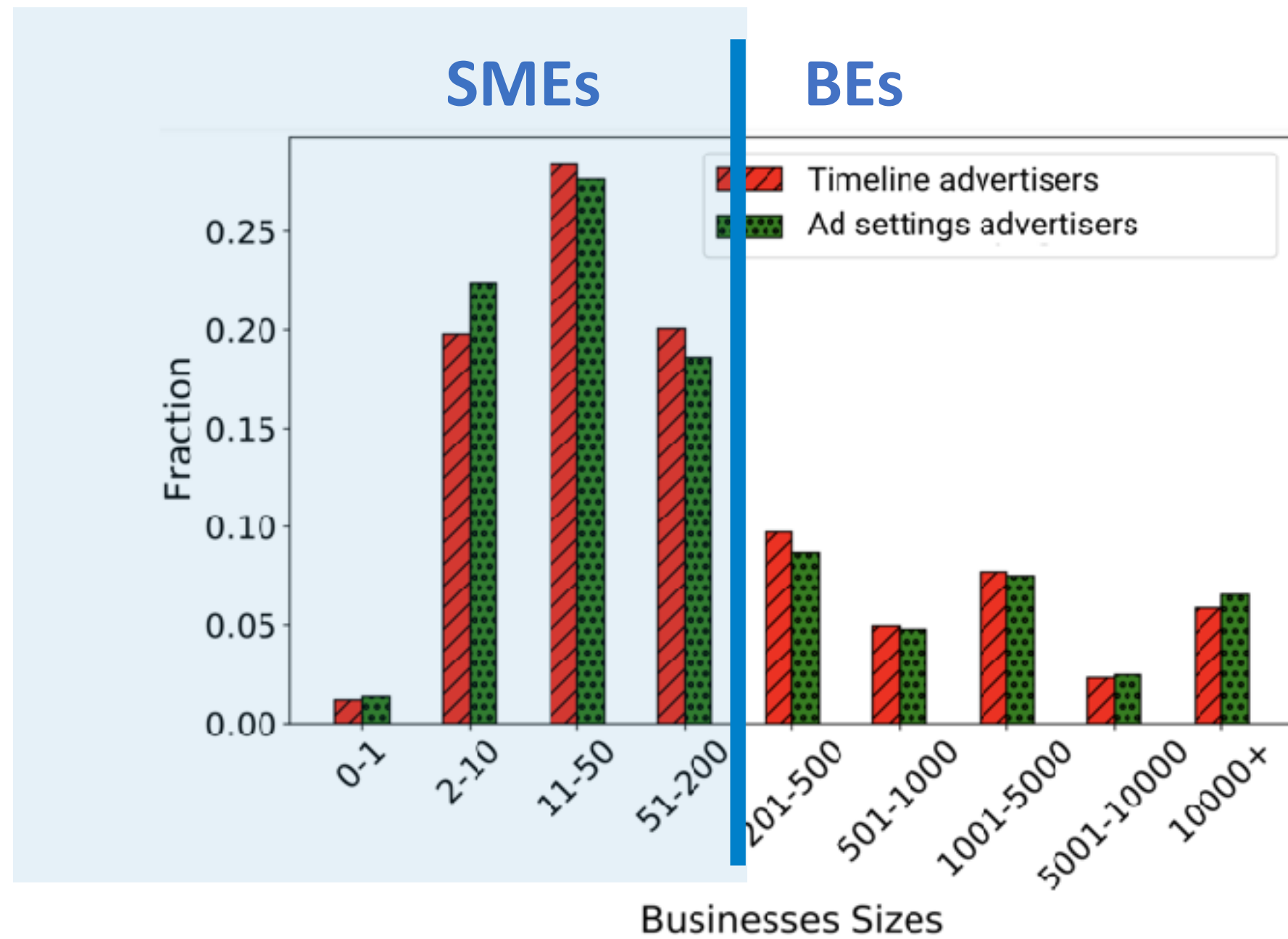
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Over 70% of advertisers are SMEs

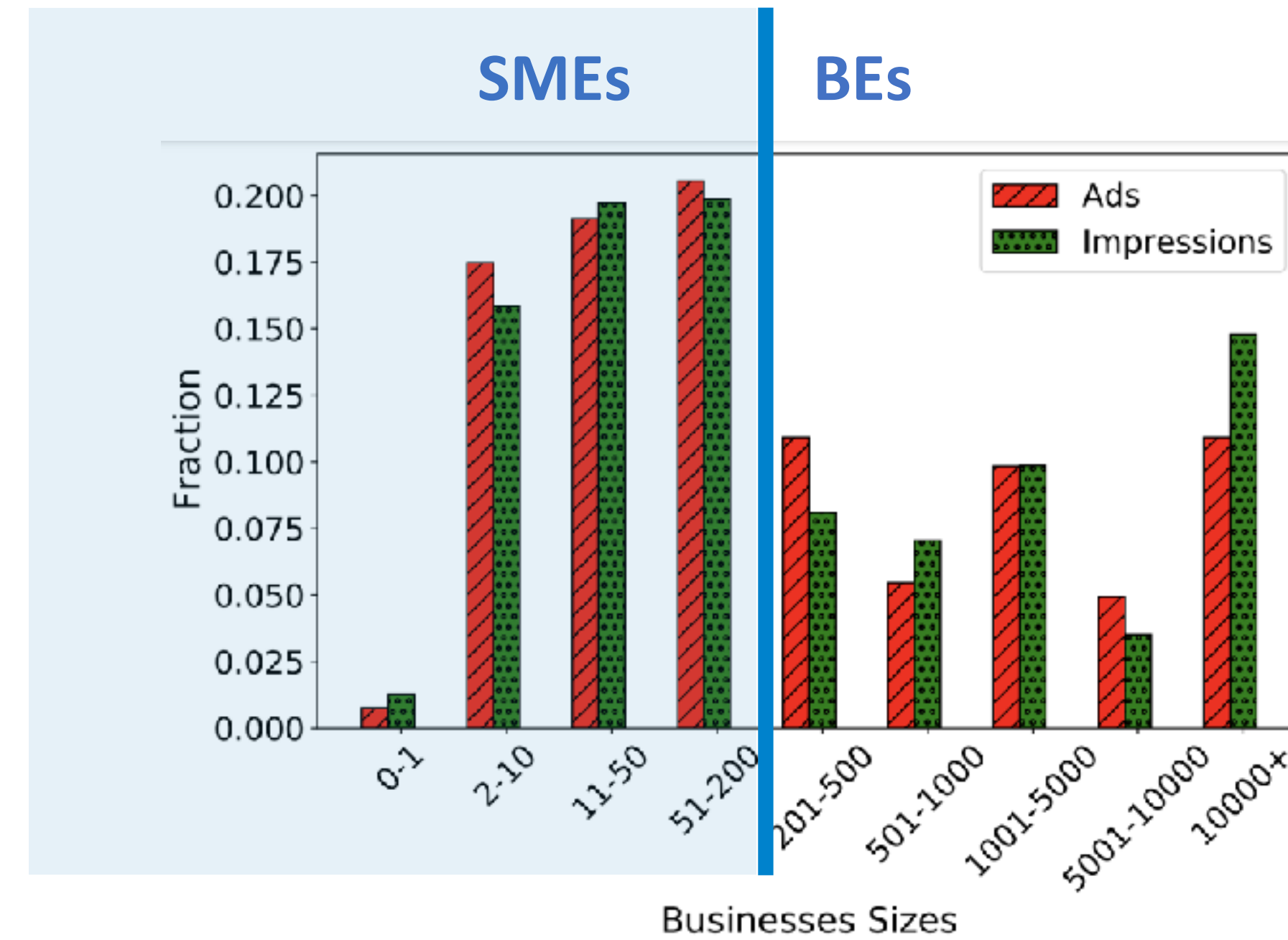
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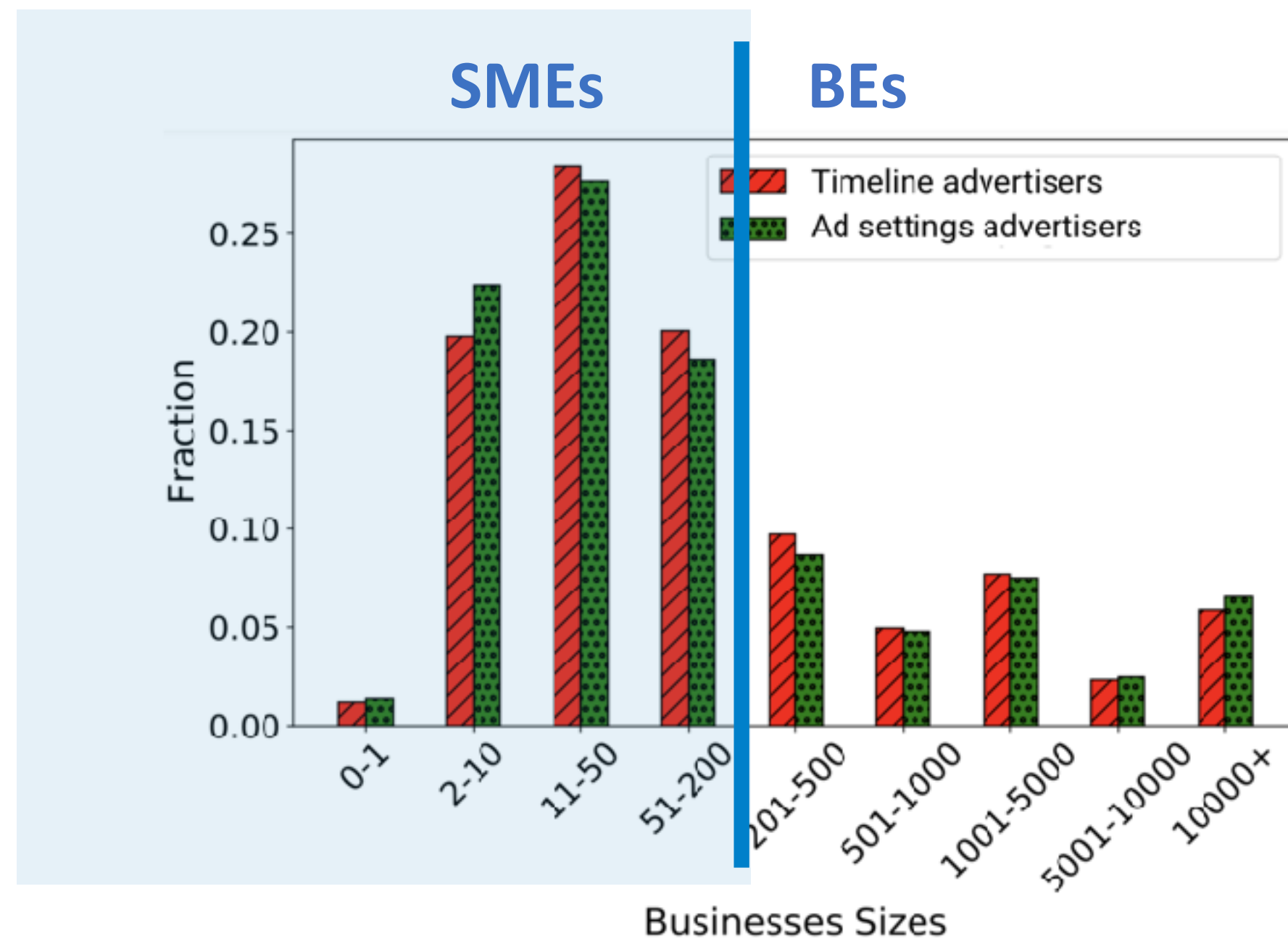
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57% of ad impressions are from SMEs

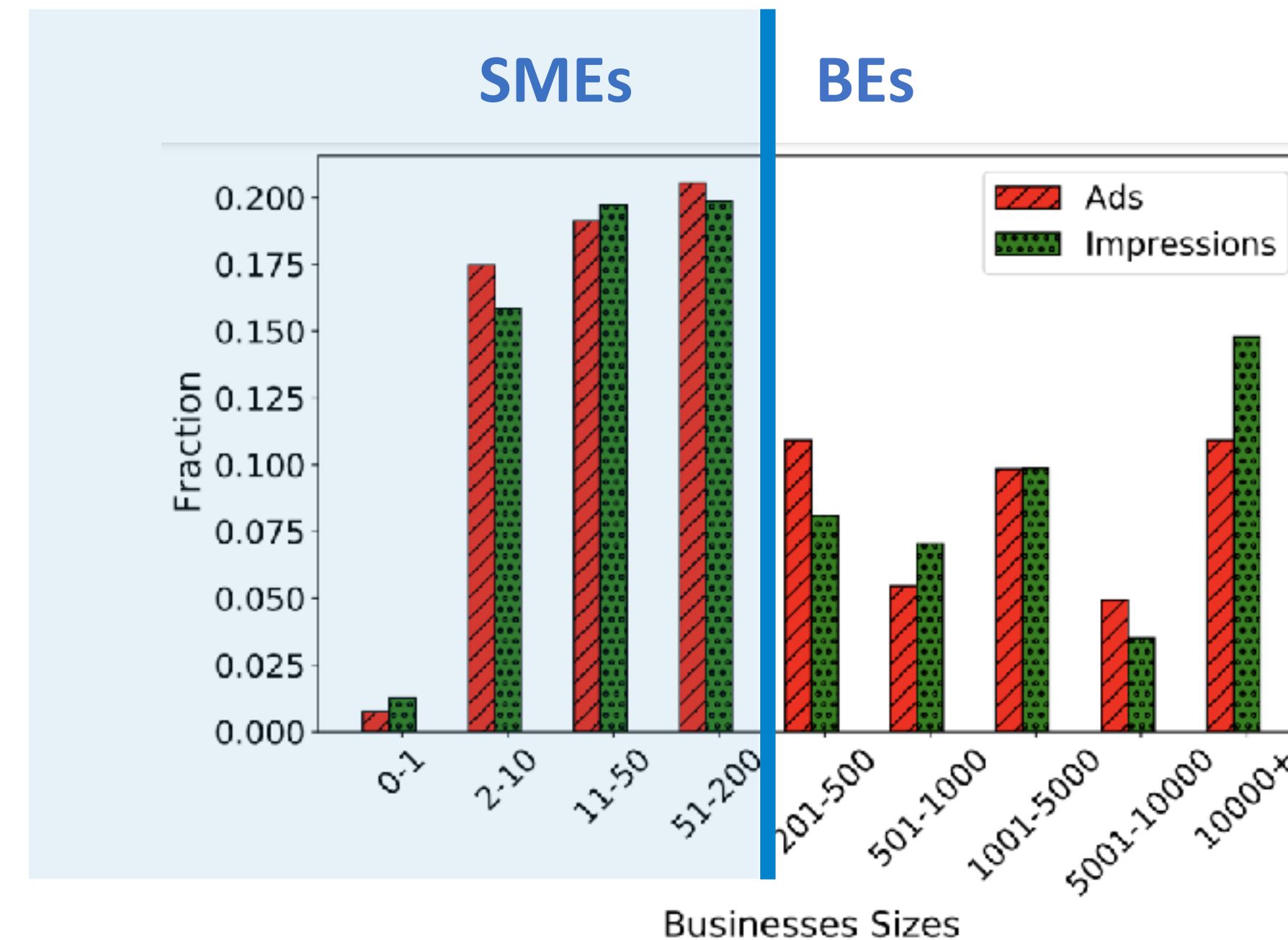
To which extent small businesses advertise on Fb?

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Over 70% of advertisers are SMEs

Fraction of ad impression



57% of ad impressions are from SMEs

Takeaway: Small and medium sized businesses do account for the majority of advertisers and are responsible for the majority of ad impression

- ▶ Important to assess the economic impact regulations would had on them

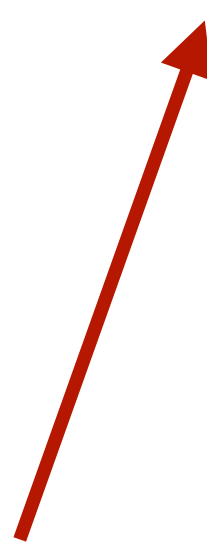
Do businesses use micro-targeting?

	SME (%)	BE (%)
Advertiser-driven micro-targeting	27.7%	30.5%
Algorithmic-driven micro-targeting	72.3%	69.5%

Do businesses use micro-targeting?

Advertiser-driven micro-targeting was only 79% in [NDSS'2019]!

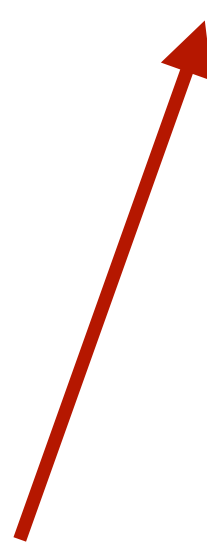
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Takeaway: advertiser driven micro-targeting is being replaced by algorithmic driven micro-targeting

- ▶ How should we regulate algorithmic driven micro-targeting?

Mistake 2:
Contextual advertising is safe

Can we target children with ads?




Placements

Select your placement targeting ⓘ

Browse Enter

Swan and neo X

← YouTube channels

<input type="checkbox"/>	 Swan & Néo 2.19K videos · 6.13M subscribers
<input type="checkbox"/>	 Swan et Néo Shorts 124 videos · 220K subscribers
<input type="checkbox"/>	 Néo The One 421 videos · 2.27M subscribers

None selected

Your ad can appear on any YouTube or Display Network placements that match your other targeting. Add specific placements to narrow your targeting. If a specific website you target has an equivalent app, your ads can also show there.

Note: Google's policy doesn't allow you to target placements that promote hatred, intolerance, discrimination, or violence towards an individual or group. All campaigns are subject to the Google Ads advertising policies. [Learn more](#)

YouTube allows
advertisers to place ads
on precise videos

Can we target children with ads?



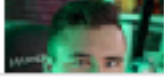
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To target children
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To target children
advertisers can place
their ads on children-
focused videos

Placement-based advertising is a form of contextual advertising

Regulations on children advertising

- The COPPA Act does not prohibit advertising to children
 - But data collection (e.g., tracking) is restricted from children under 13 years old without verifiable parental consent.
 - ▶ COPPA restricts online platforms' capabilities to serve profile-based ads to children but does not restrict contextual-based advertising.
- The DSA forbids targeting children with ads based on profiling

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Takeaway: Targeting children through contextual/placement-based advertising is legal

- ▶ Should this be allowed?
- ▶ Placement-based advertising can also be used in other contexts (health, misinformation) — placement-based advertising might be more problematic than profiling-based advertising

Mistake 3:
Consider advertising only in a
commercial settings

Advertising technology enables AI-driven information targeting

- **Shift** from using ad tech for **promoting products to potentially interested people**
- to **target** (well chosen) **information to specific groups of people** (likely to accept it)

Advertising technology enables AI-driven information targeting

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Online advertising platforms



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Target people *interested in alternative medicine*

Online advertising platforms



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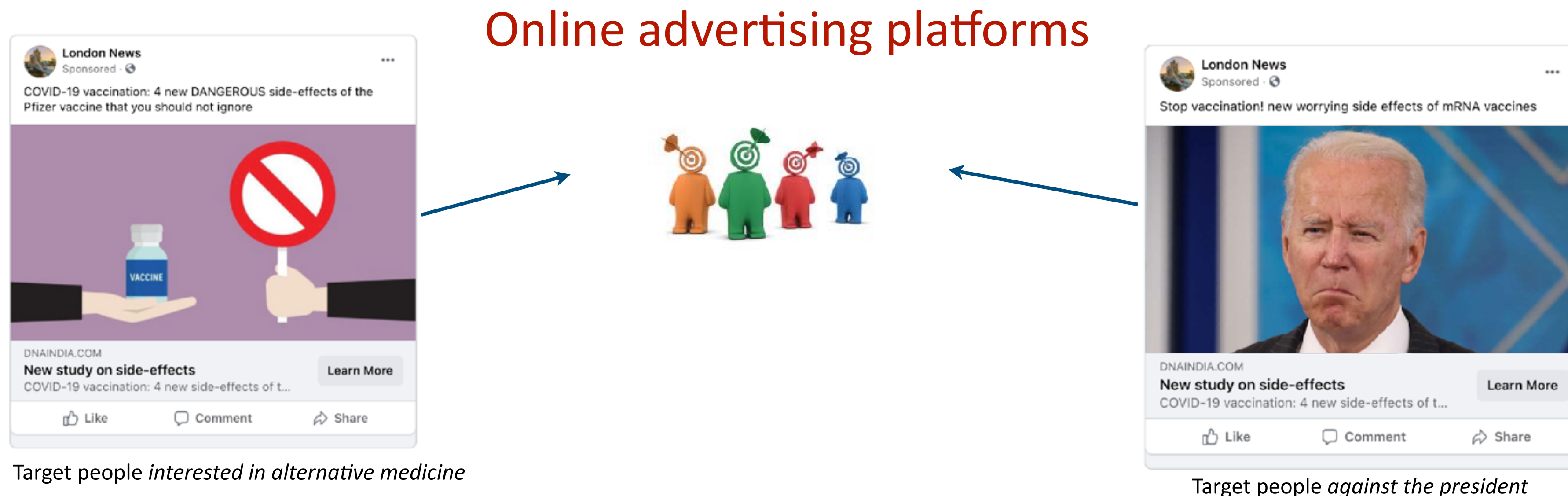
Target people *interested in alternative medicine*



Target people *against the president*

Advertising technology enables AI-driven information targeting

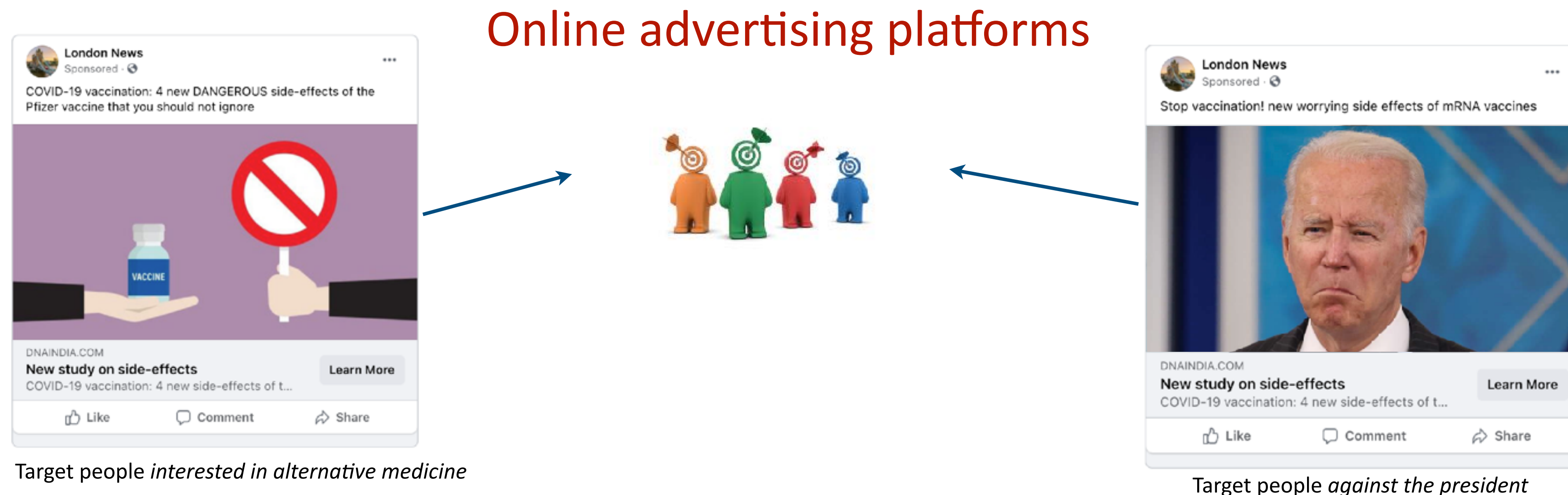
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This technology gives (everyone) the ability to use users' personal data to manipulate them!

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Danger of weaponizing ad tech to engineer polarization, voter disengagement, voter manipulation (e.g., Cambridge Analytica, Russian Internet Research Agency)

Mistake 4:

Ignore translation between legal concepts
and operationalizable definitions

Increased transparency and restrictions on political ads



Ad platforms:

- [Ad Libraries for political ads + restrictions](#) (same-country policy, disclaimers, verification for advertisers or political content, restrictions on targeting)

Increased transparency and restrictions on political ads



Ad platforms:

- [Ad Libraries for political ads + restrictions](#) (same-country policy, disclaimers, verification for advertisers or political content, restrictions on targeting)



Governments are working on legislation to regulate online platforms (e.g., *Digital Services Act, European Democracy Action Plan*)

with the rules for political advertising, where we are seriously considering to limit the microtargeting as a method which is used for the promotion of political powers, political parties or political individuals,” she added.

Vera Jourova (European Commission vice-president), Dec 2020

Increased transparency and restrictions on political ads



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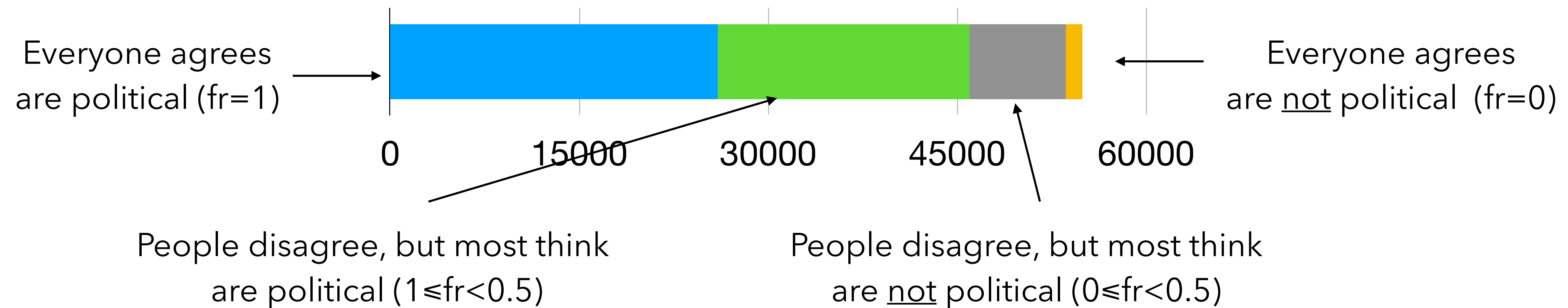
Underlying assumption: we can differentiate political ads from the rest

Do people agree what ads are political?

- We analyze a dataset from ProPublica/Quartz — 55k ads labeled as political by at least one user or an advertiser; each ad has 3 labels

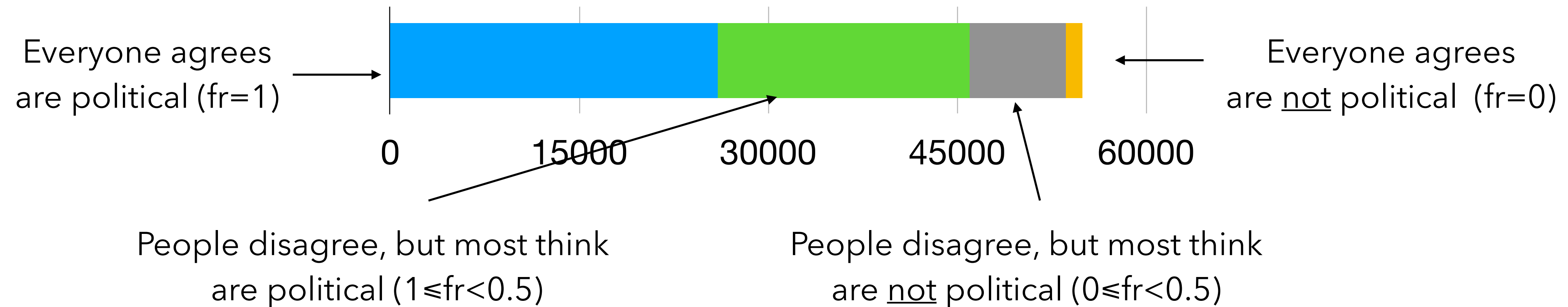
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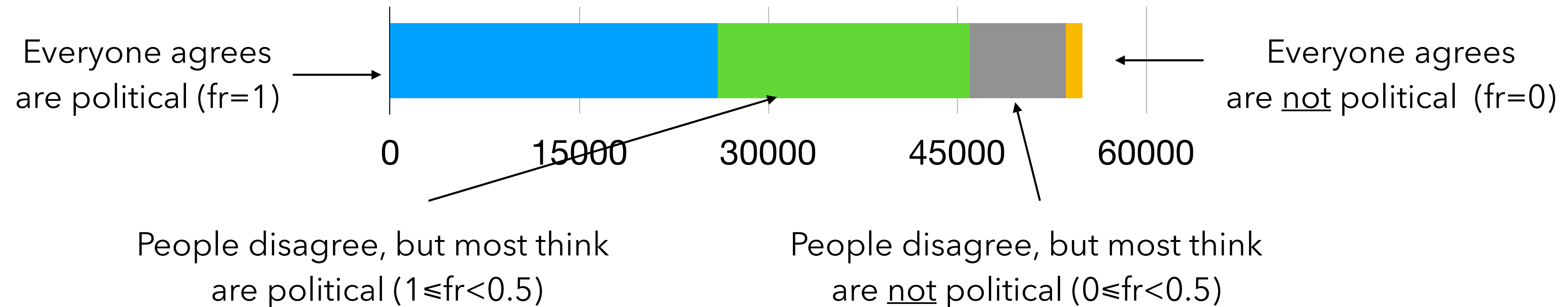
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People disagree on more than 50% of ads!

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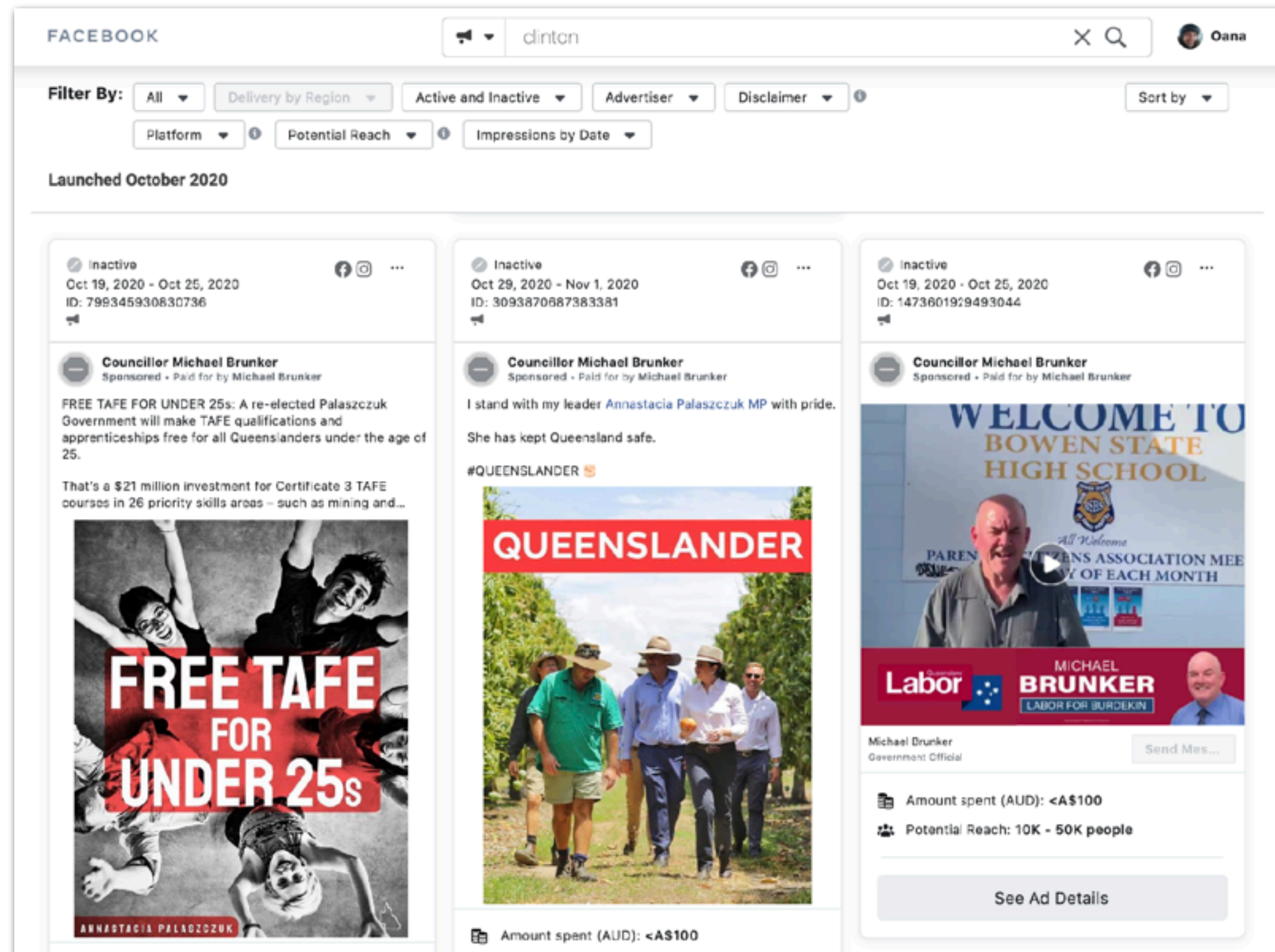
Takeaway: Ads about social issues are confusing

- ▶ Can we draw a line between political and humanitarian?
- ▶ Can we regulate political advertising if we do not agree what ads are political?

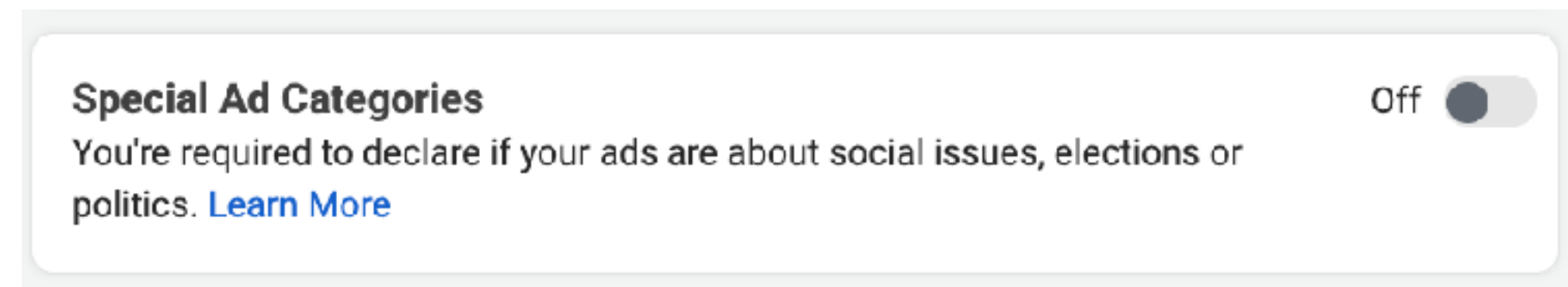


Mistake 5: Not auditing transparency

The Facebook Ad Library

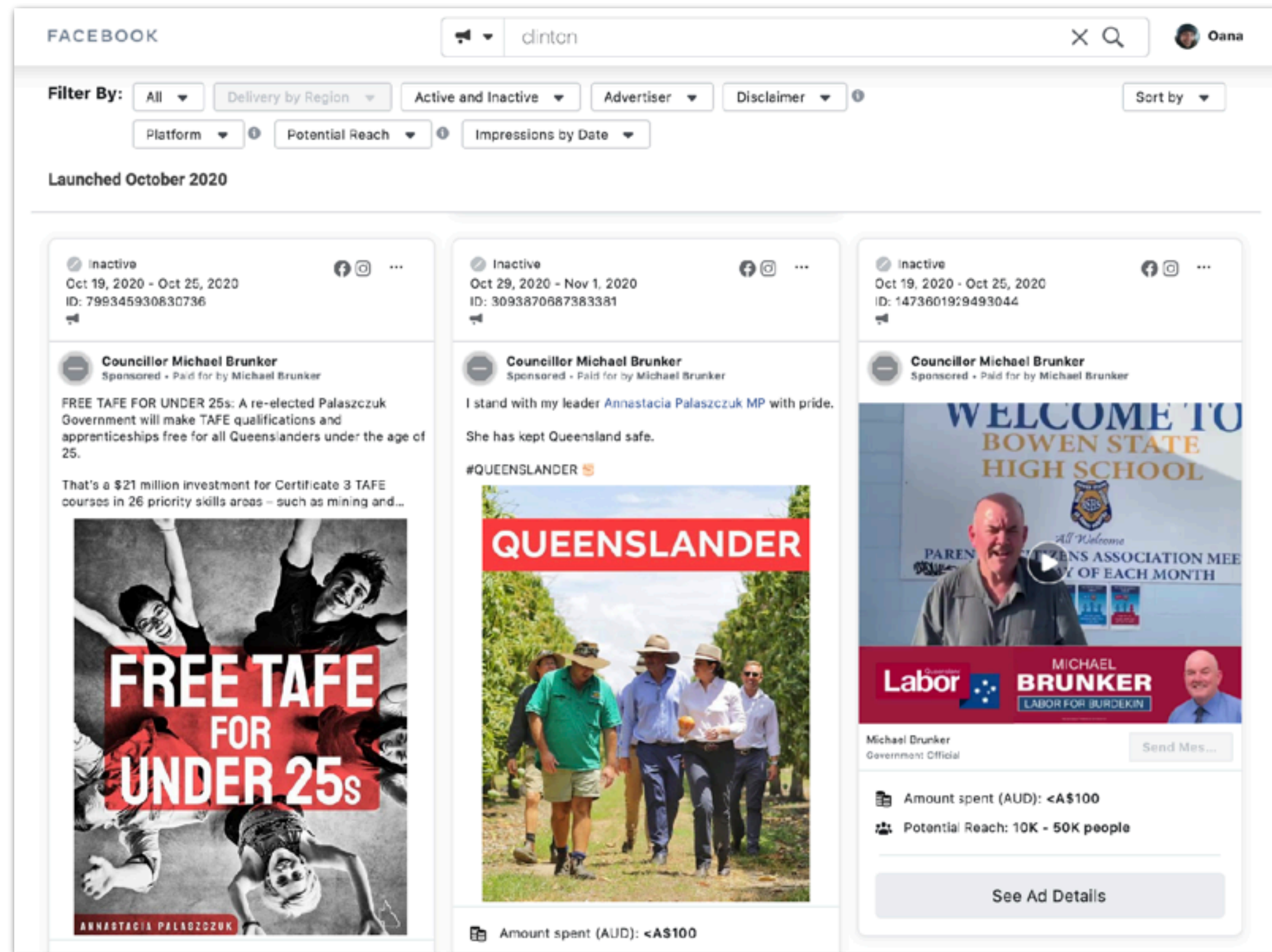


- Central repository of political ads running on the platform
- Advertisers need to declare on a voluntary basis if they are sending political ads



- No public info about if and how Fb enforces this policy!

The Facebook Ad Library



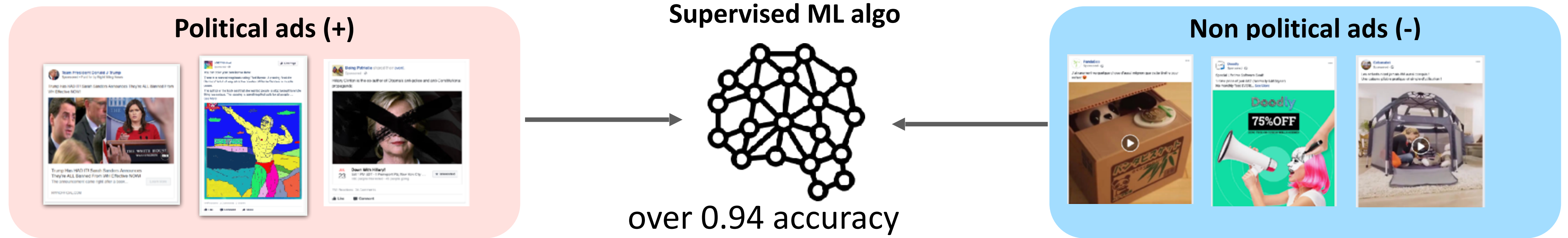
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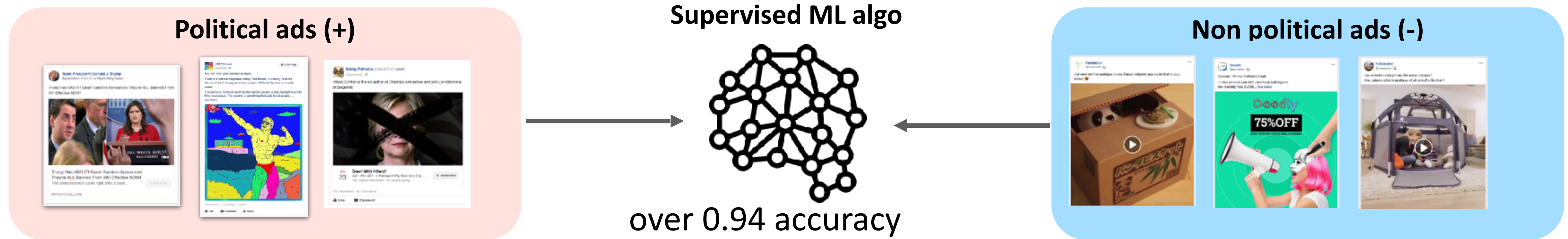
How many political ads are missed by the Ad Library?

“Facebook Ads Monitor: An Independent Auditing System for Political Ads on Facebook.” M. Silva, L. Santos de Oliveira, A. Andreou, P. Vaz de Melo, O. Goga, F. Benevenuto. **The Web Conference (WWW)**, April 2020.

Political ad detection

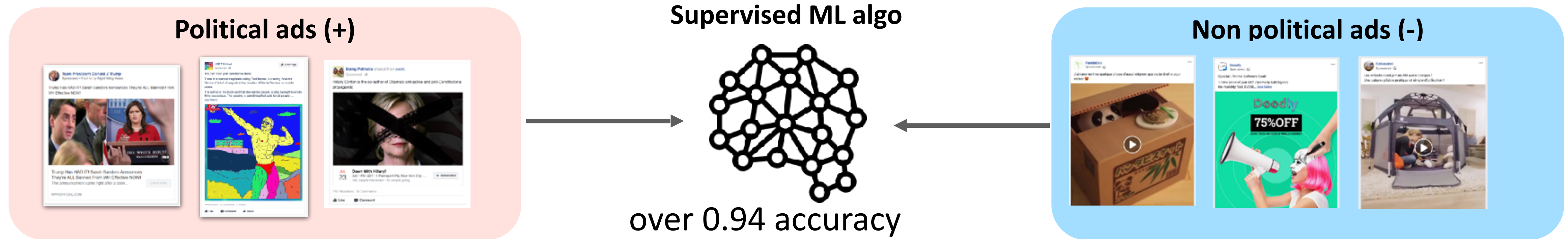


Political ad detection



Fb timelines: 2% undeclared + 2% declared political ads — half of political ads we detected were missing from the Ad Library (in Brazil during the 2018 presidential election)

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+ 20% of undeclared political ads were illegal

Mistake 6:
Ignore access to data

Platform provided data and alternate data access

- Platform provided APIs: CrowdTangle API, Facebook Ad Library, FORT API, Twitter API, Twitter Ad Library, YouTube API, TikTok API
 - Only access to public data, problems with data completeness, rate limits, vetting process
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- Alternate data sources
 - Mainly based on **scraping** and **data donations**
 - They are against the ToS of platforms, researchers have been pursued in justice
 - ▶ Alternate data sources are necessary for auditing platforms, they should not be forbidden

Thank you & Summary

1. There is a shift toward algorithmic-driven advertising — new risks
2. Contextual advertising at the granularity of a precise content is dangerous — needs more focus
3. Advertising technologies are increasingly being used to target information — risks of manipulation
4. Some regulations are impossible to implement because definitions are not operationalizable in practice
5. We need to audit what transparency platforms provide
6. We need access to data to understand risks

Thank you!

Summary of contributions on online targeted ads

Political advertising

1. **(Behavior)** Analysis of malicious political advertisers [FAT*'19]
2. **(Audit)** Audit platforms' political ad detection algorithms [WWW'20]
3. **(Solution)** Can we reliably split political from non-political ads? [WWW'21]
4. **(Solution)** Detecting policy-related political ads [WWW'23]
5. **(Solution)** EU online advertising regulations

Supporting software: AdAnalyst, CheckMyNews, Elections2022, PolAds



Micro-targeting

1. **(Audit)** Does Facebook provide good ad explanations? [NDSS'18]
2. **(Attacks)** De-anonymize users through micro-targeting [S&P'18]
3. **(Behavior)** Characterization of Facebook advertisers [NDSS'19]
4. **(Audit)** Assess the quality of data supplied by data brokers [WWW'19]
5. **(Behavior)** Micro-targeting usage [CSCW'22]
6. **(Solution)** Collaborative ad transparency [S&P'23]



PET Award

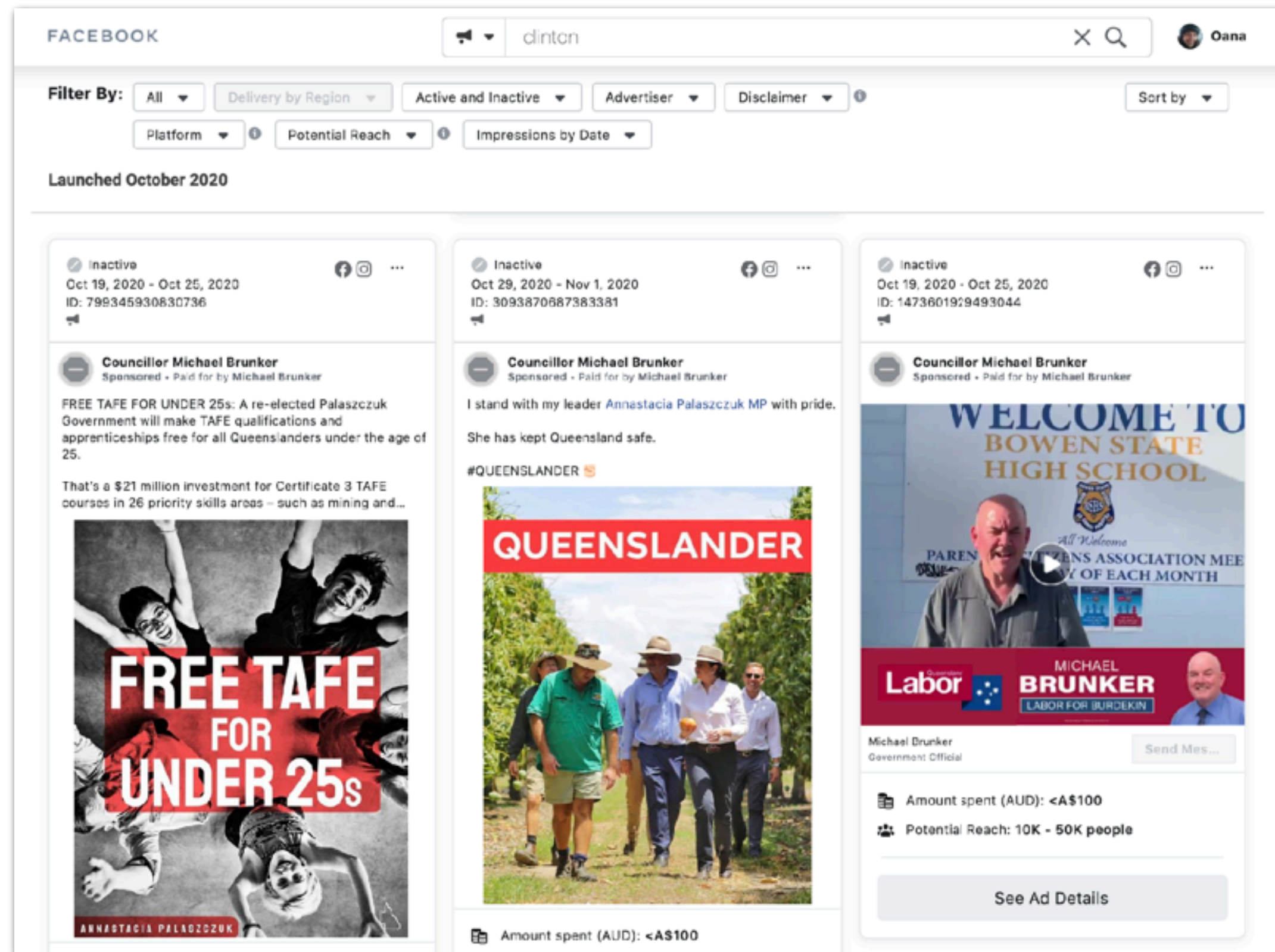
The Caspar Bowden Award for Outstanding Research in Privacy

Backup slides

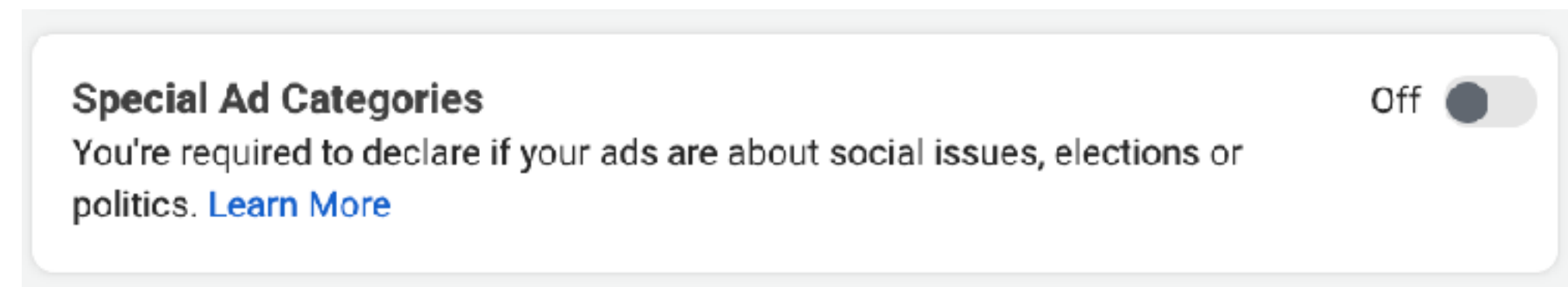
Audit: Audit platforms' political ad detection algorithms

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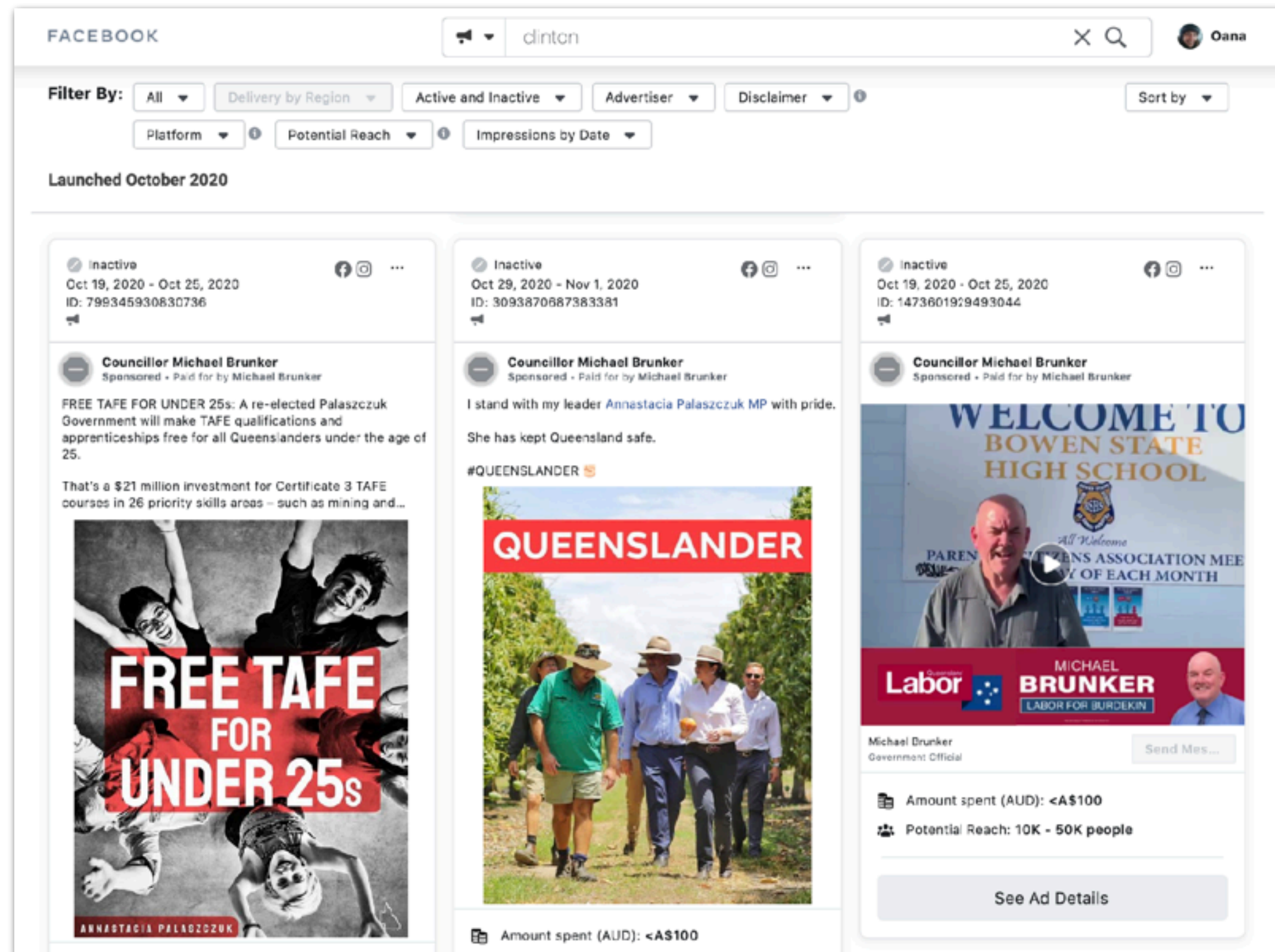


- Central repository of political ads running on the platform
- Advertisers need to declare on a voluntary basis if they are sending political ads

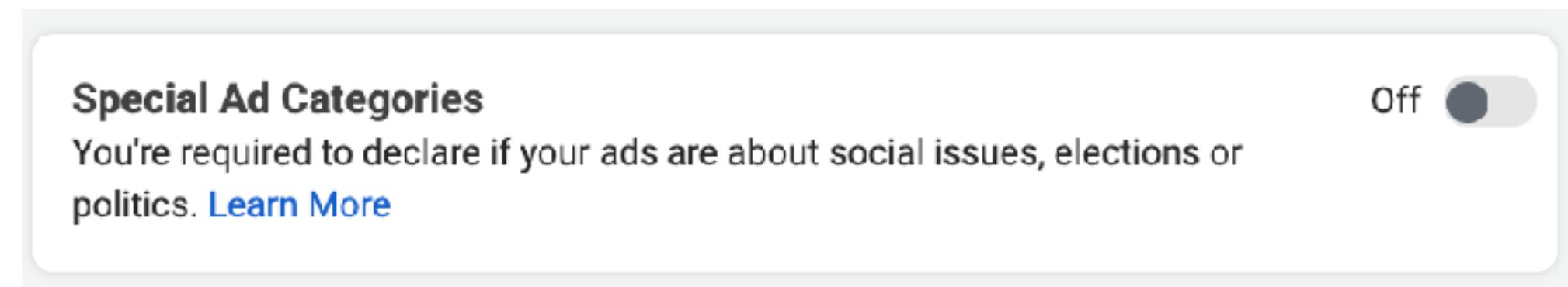


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Measurement methodology

Challenge: **Limited access to data** due to the closed nature of ad platforms — no access to **what ads** people see on Facebook

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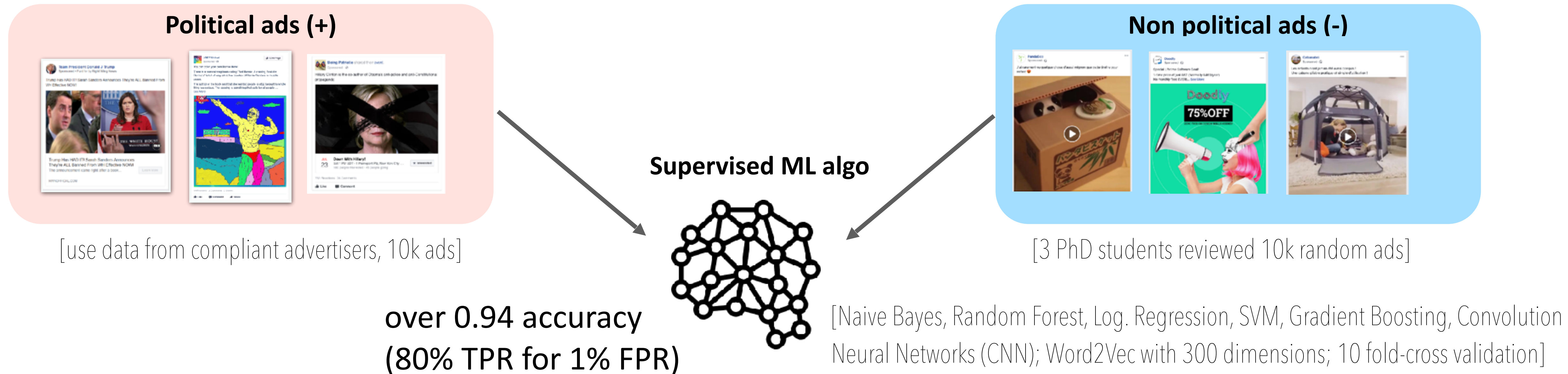
opinião
Ricardo R. Campos, Juliano Maranhão e Fabrício Benevenuto: Fake news e a crônica do caixa 2 anunciado

FOLHA DE S.PAULO  UOL
o melhor conteúdo

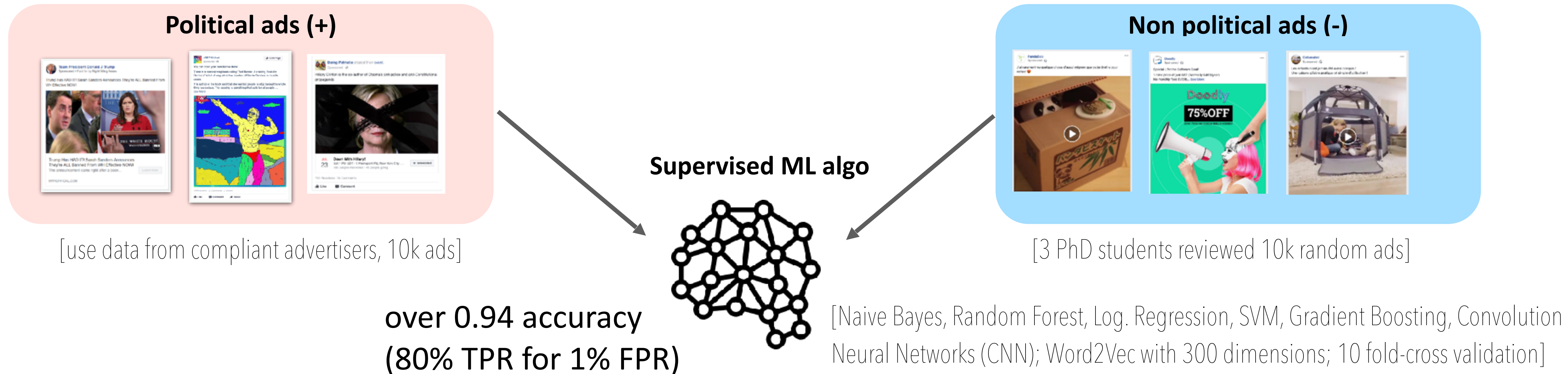


In 2018, over **2,000 Brazilian users** volunteered to install our tool (239k ads from 40k advertisers)

Political ad detector

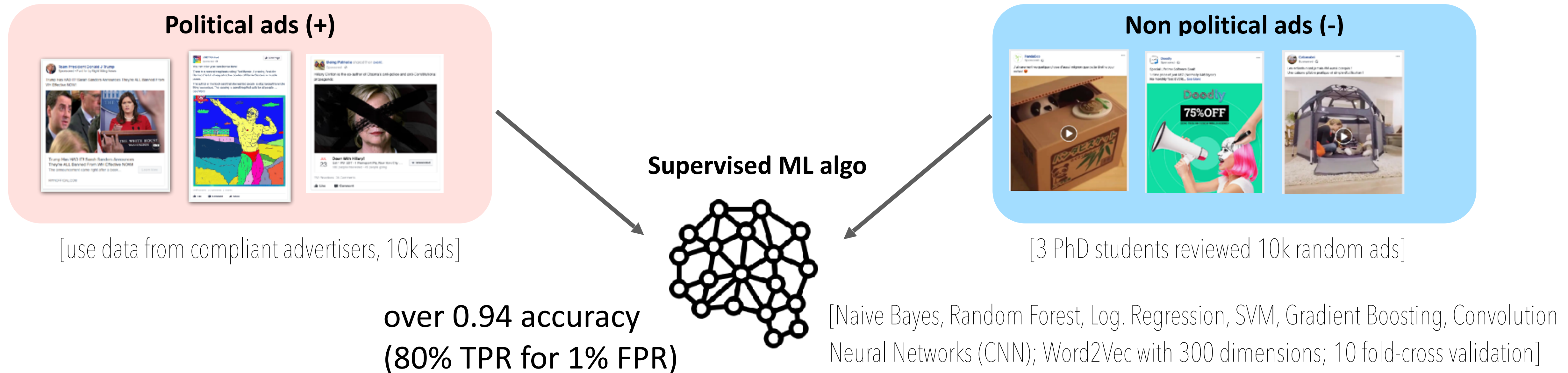


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+ 20% of undeclared political ads were illegal — How can countries ensure their sovereignty and enforce their legislation?

Solution/design: Can we reliably
detect political ads?

“Understanding the Complexity of Detecting Political Ads.” V. Sosnovik , O. Goga. The Web Conference (WWW), April 2021.

What is a political ad?

- Made by, on behalf of, or about a candidate for public office, a political figure, a political party or advocates for the outcome of an election to public office; or
- About any election, referendum, or ballot initiative, including "go out and vote" or election campaigns; or
- **About social issues** in any place where the ad is being placed; or
- Regulated as political advertising.

facebook

Social issues: civil and social rights, crime, economy, education, environmental politics, guns, health, immigration, political values and government, security and foreign policy

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Political actors ads

Election ads

Issue ads

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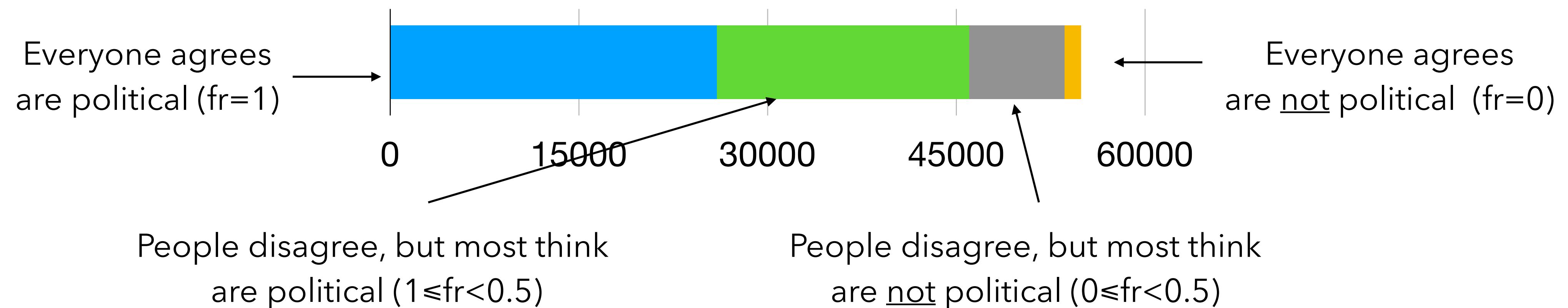
Most current **legislations only regulate ads from politicians!** (except EU Code on Disinformation)

Do people agree what ads are political?

- We analyze a dataset from ProPublica/Quartz — 55k ads labeled as political by at least one user or an advertiser; each ad has 3 labels

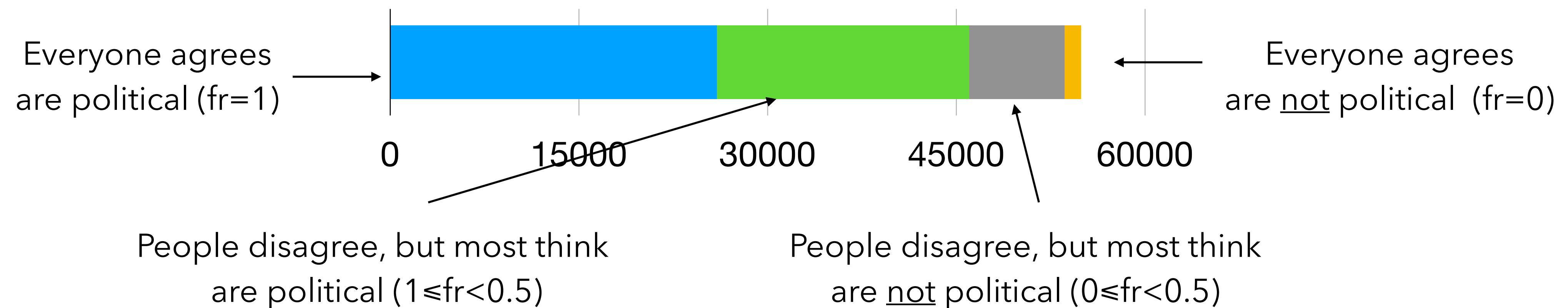
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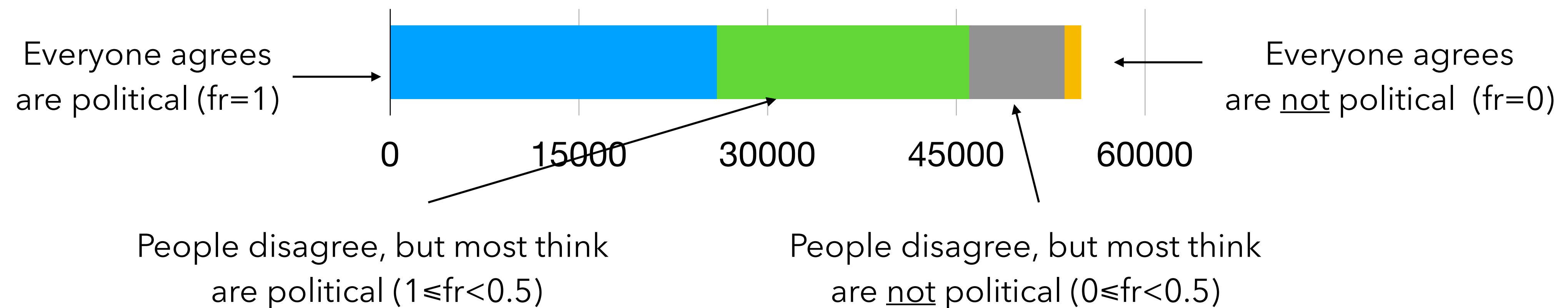
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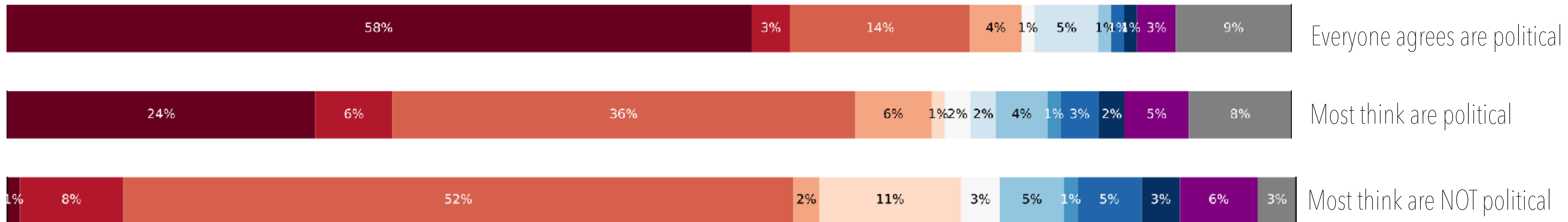
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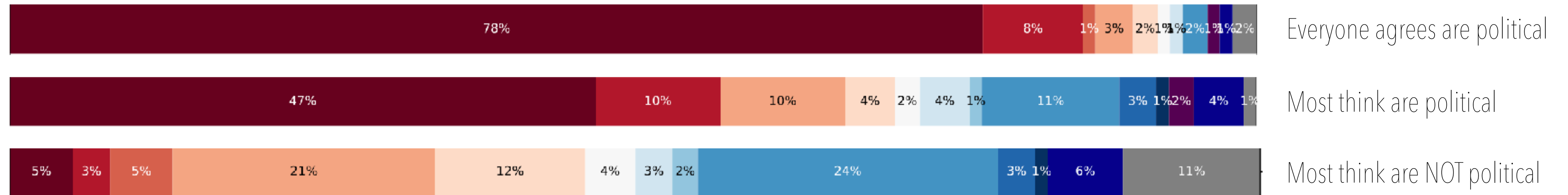
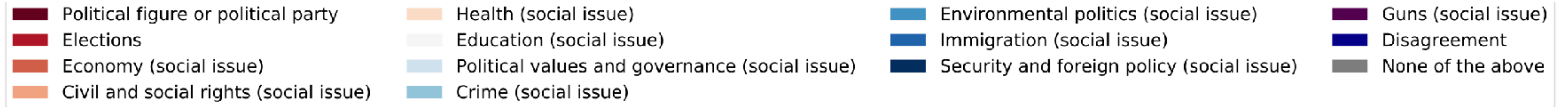
What are the characteristics of the ads on which users agree and the ones on which they disagree?

Analysis of advertisers



- People agree that ads from NGOs and Businesses can be political
 - ▶ Electoral legislation should not regulate ads only from political actors

Analysis of ad content



- Users agree that some social issue ads are political
 - Definitions of political ads should include them
- But issue ads also lead to disagreement! ... why?

The problem with social issue ads

- Some issue ads have highly political content
- Some issue ads are non-political and address humanitarian issues
 - ▶ Can we draw a line between political and humanitarian?
Understandable by both humans and algorithms?
 - ▶ Restrictions on political ads can harm humanitarian ads;
should they be subject to the same restrictions?

<https://facebookads.imag.fr/>



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<https://facebookads.imag.fr/>

What about definitions based on intent and consequences?
What metrics can capture the goodness?



Behavior: How do malicious advertisers behave?


On Microtargeting Socially Divisive Ads: A Case Study of Russia-Linked Ad Campaigns on Facebook F. Ribeiro, K. Saha, M. Babaei, L. Henrique, J. Messias, O. Goga, F. Benevenuto, K. P. Gummadi, E. M. Redmiles **ACM Conference on Fairness, Accountability, and Transparency (ACM FAT*, now FAccT), January 2019**

The Internet Research Agency ad campaigns

Background

ISSIE LAPOWSKY BUSINESS 05.10.18 10:00 AM

HOUSE DEMOCRATS RELEASE 3,500 RUSSIA-LINKED FACEBOOK ADS



WIN MCNAMEE/GETTY IMAGES

ON THURSDAY, DEMOCRATS on the House Intelligence Committee published more than 3,500 Facebook and

Ad ID 664

Ad Text "People can tolerate two homosexuals they see leaving together, but the next day they're smiling, holding hands, tenderly embracing one another, then they cannot be forgiven. It is not the departure for pleasure that is unacceptable, it is waking up happy."

~Michel Foucault, philosopher and social critic.

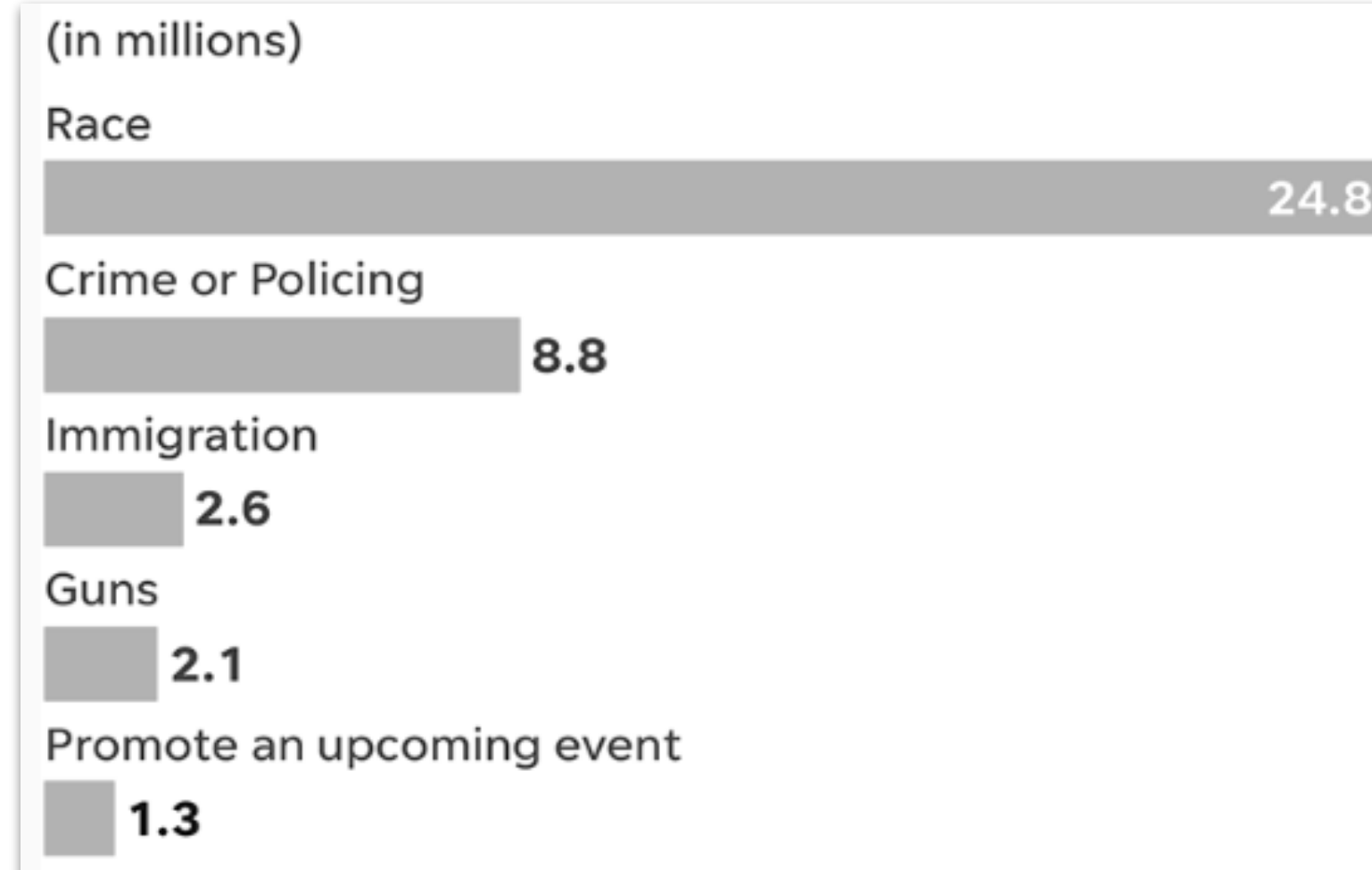
#lgbt #homophobia #Foucault #society #queerquote

Ad Landing Page <https://www.facebook.com/LGBT-United-839497472793277/>

Ad Targeting Location - Living In: United States
Age: 18 - 65+
Placements: News Feed on desktop computers or News Feed on mobile devices
People Who Match: People who like LGBT United, Friends of connections: Friends of people who are connected to LGBT United

Ad Impressions 374
Ad Clicks 26
Ad Spend 99.95 RUB
Ad Creation Date 06/23/15 07:02:40 AM PDT
Ad End Date 06/24/15 07:02:39 AM PDT

Detailed ad information

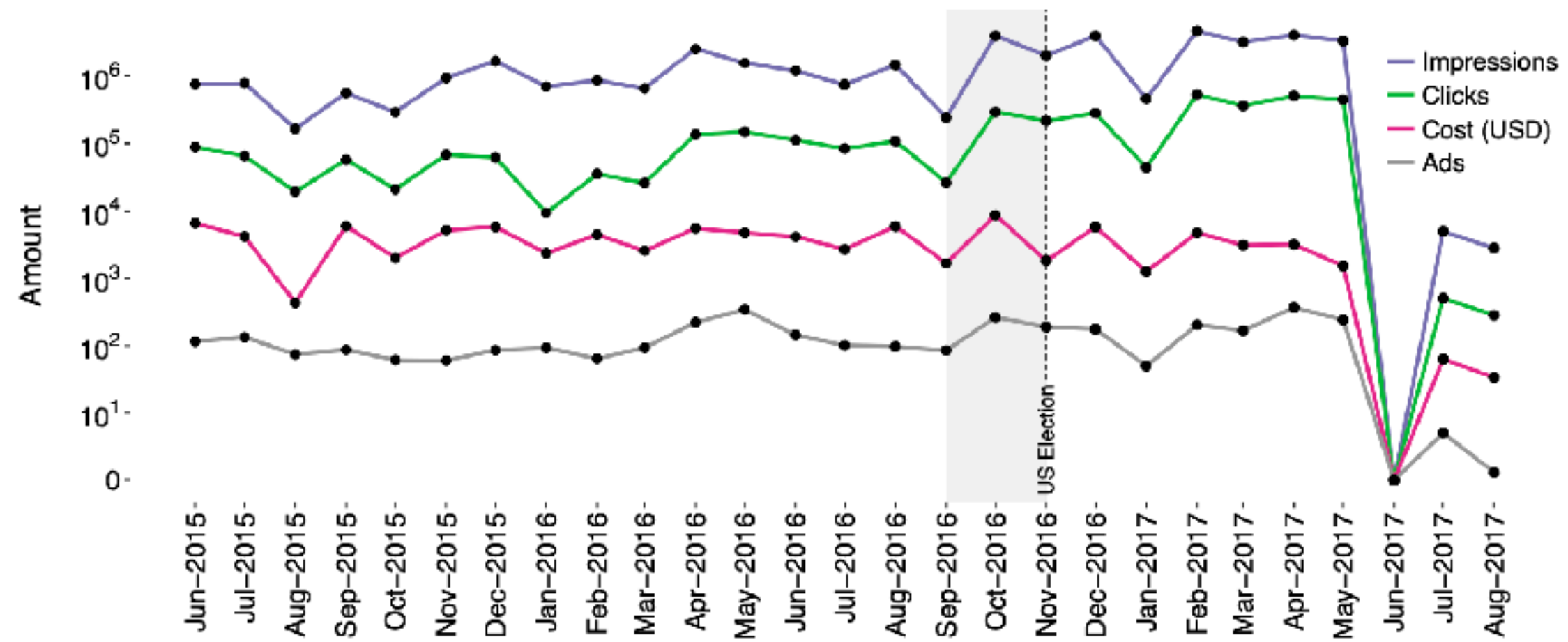


Sensitive issues

<https://eu.usatoday.com/story/news/2018/05/11/what-we-found-facebook-ads-russians-accused-election-meddling/602319002/>

Characteristics

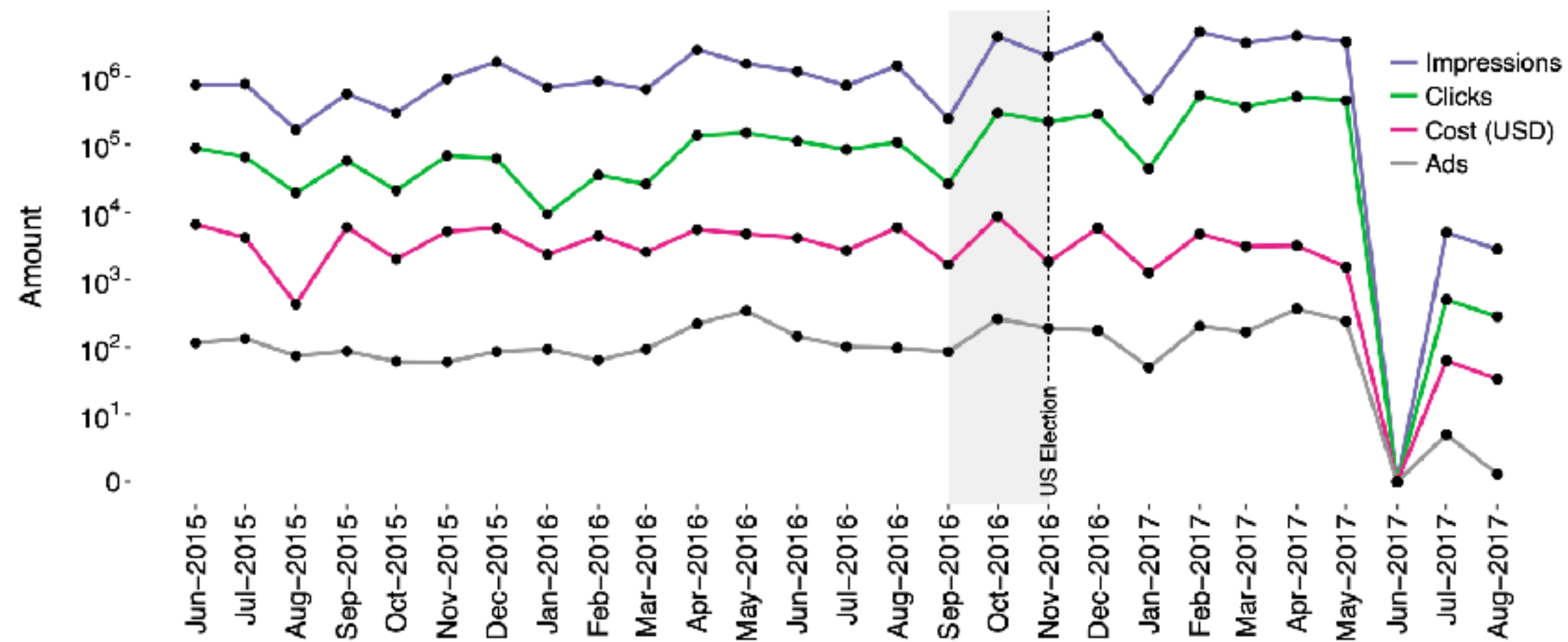
Timeline



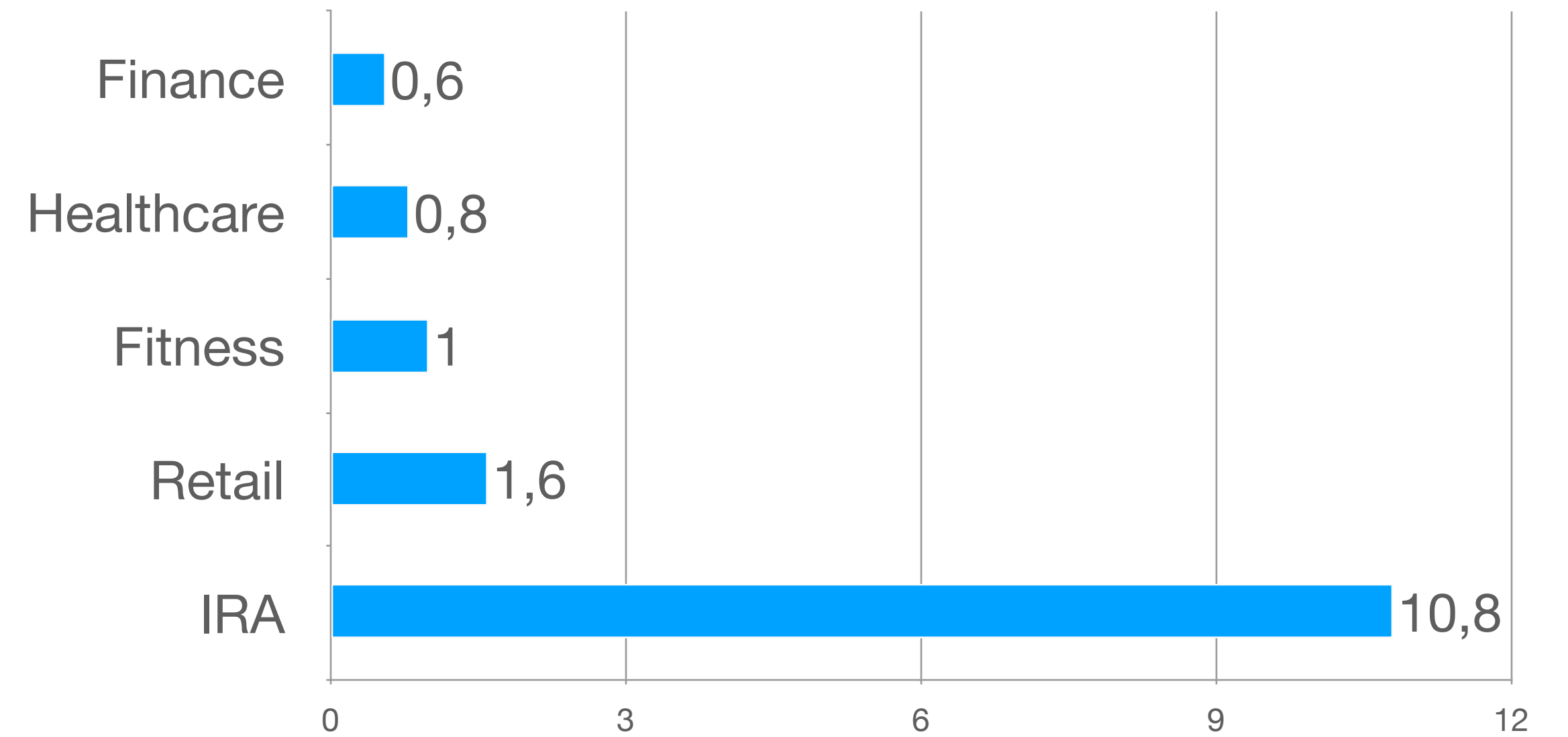
Campaign run over 2 years
(relevant for definitions of political ads)

Characteristics

Timeline



Click through rate

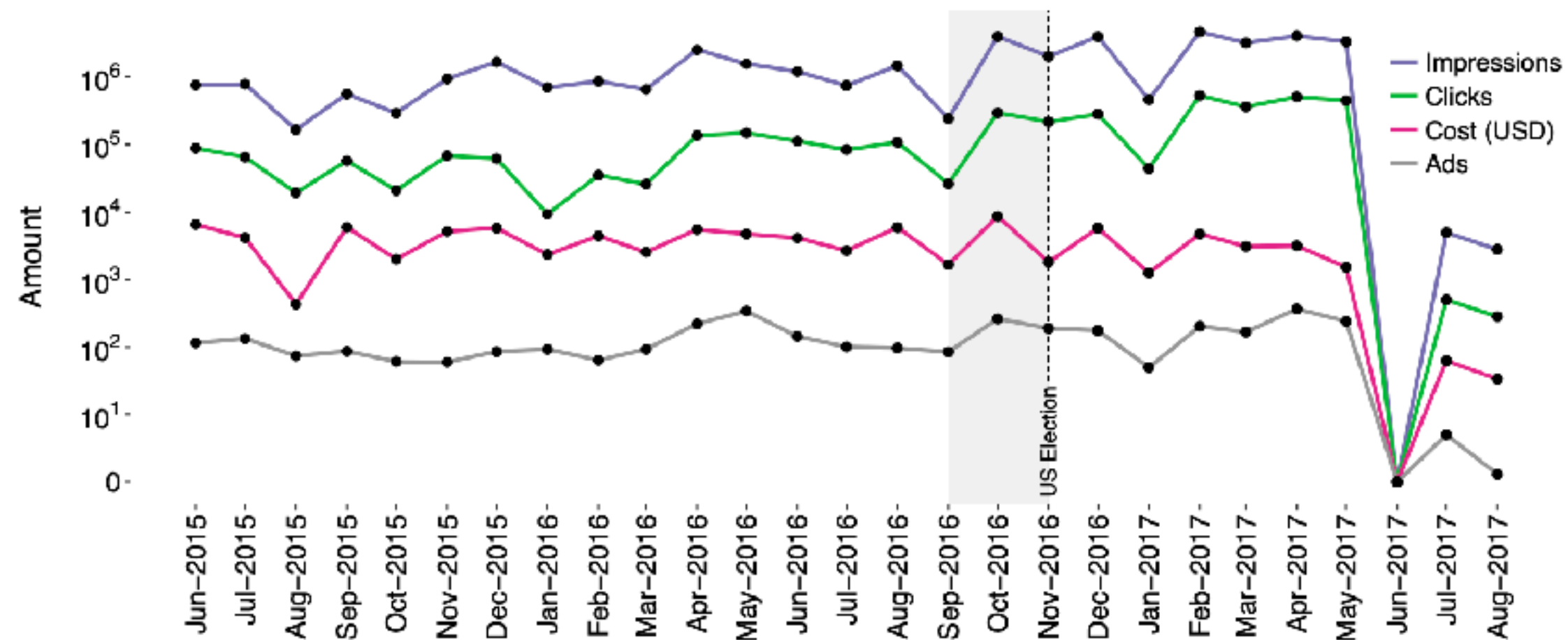


10-20 times higher CTR than industry average!

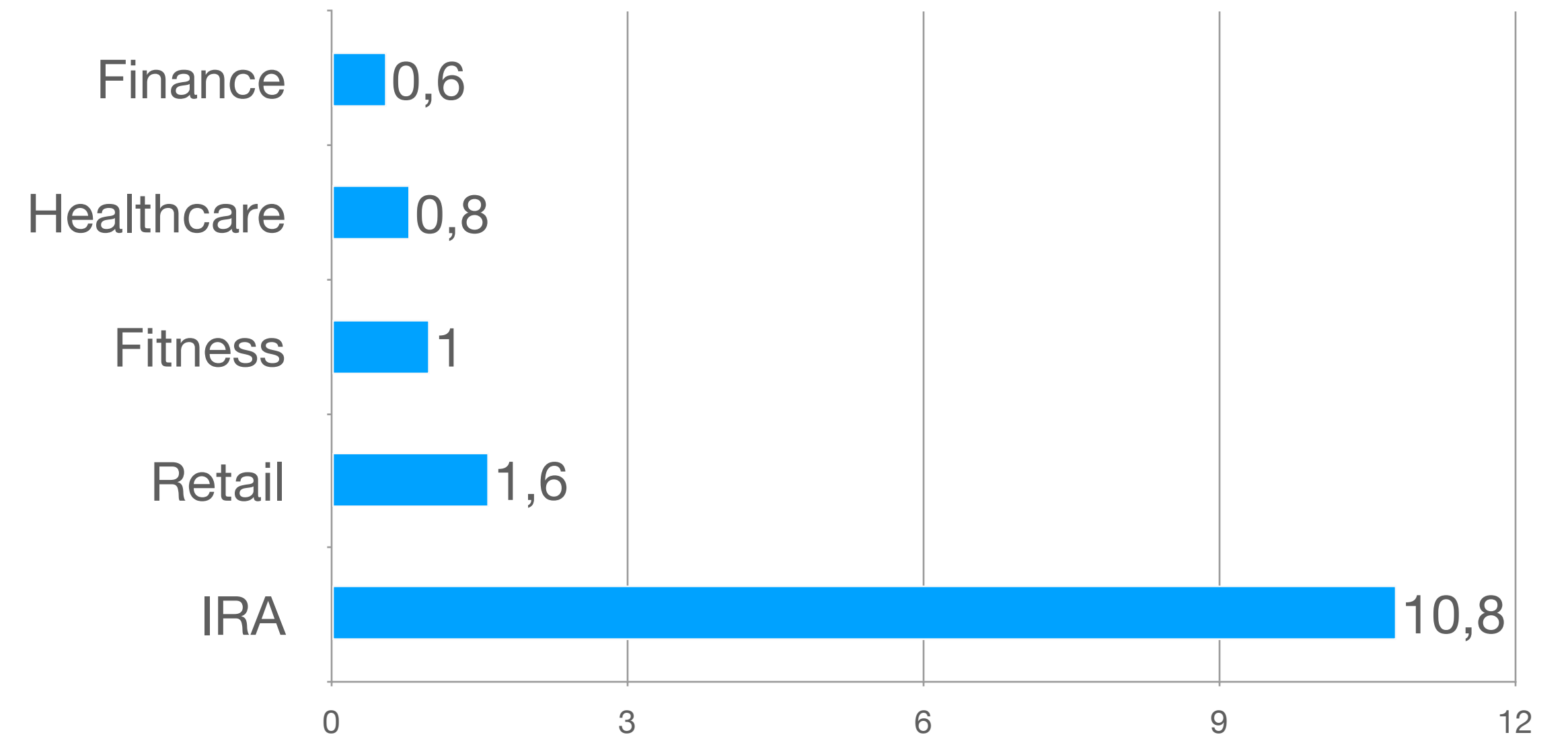
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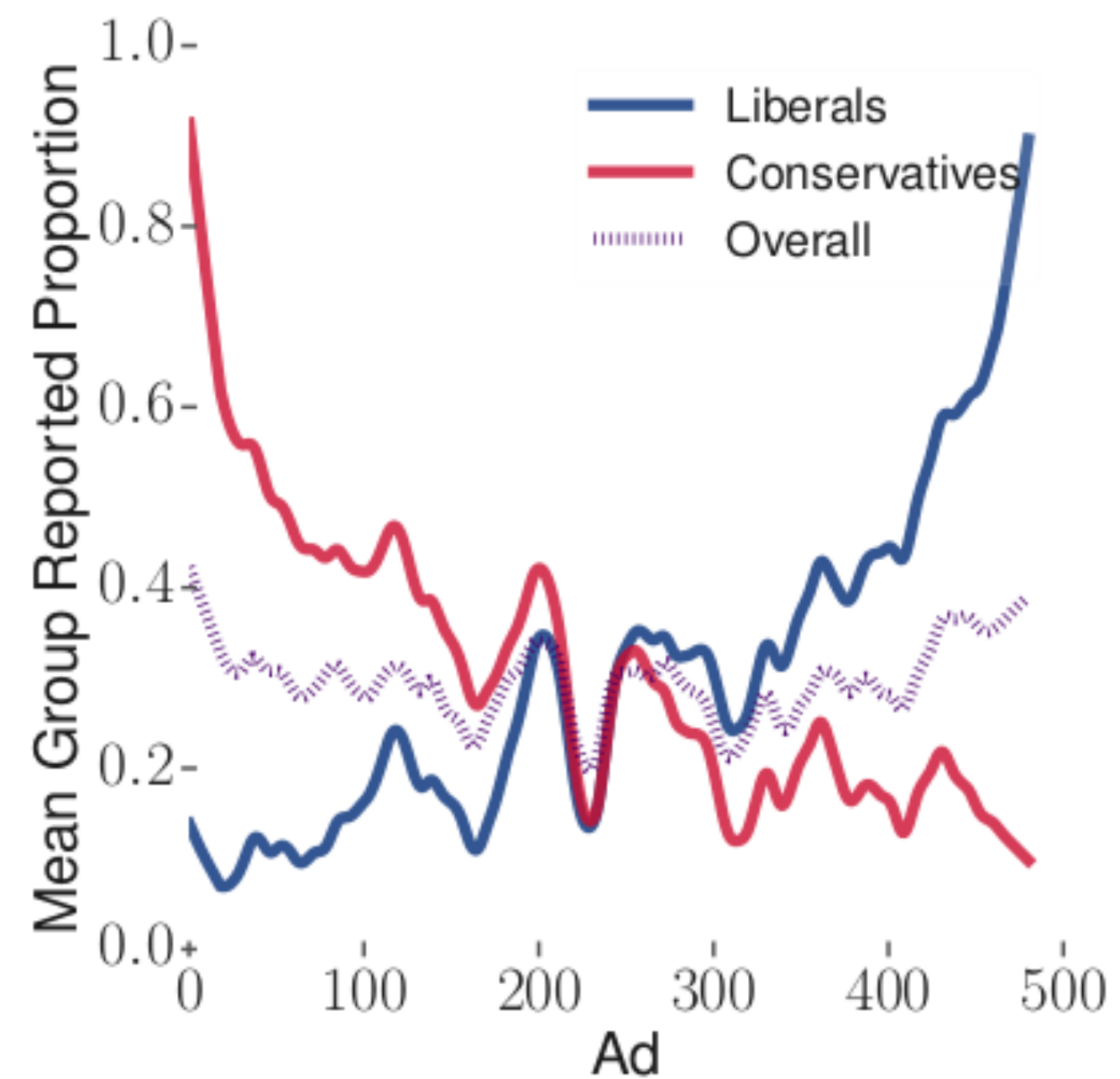
Efficient micro-targeting

CTR as a proxy to determine malicious advertising?

Can we rely on crowd reports?

Reporting

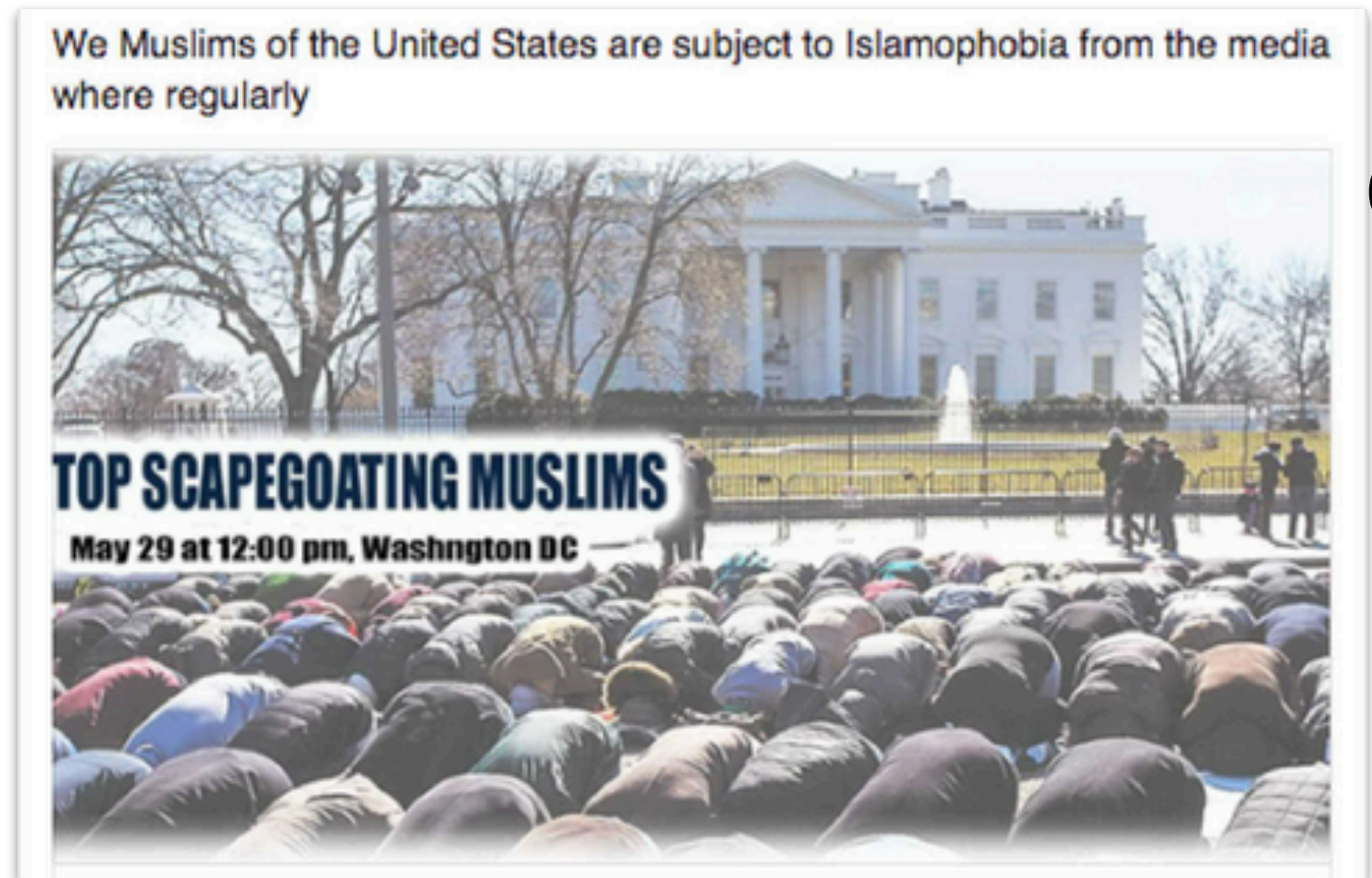
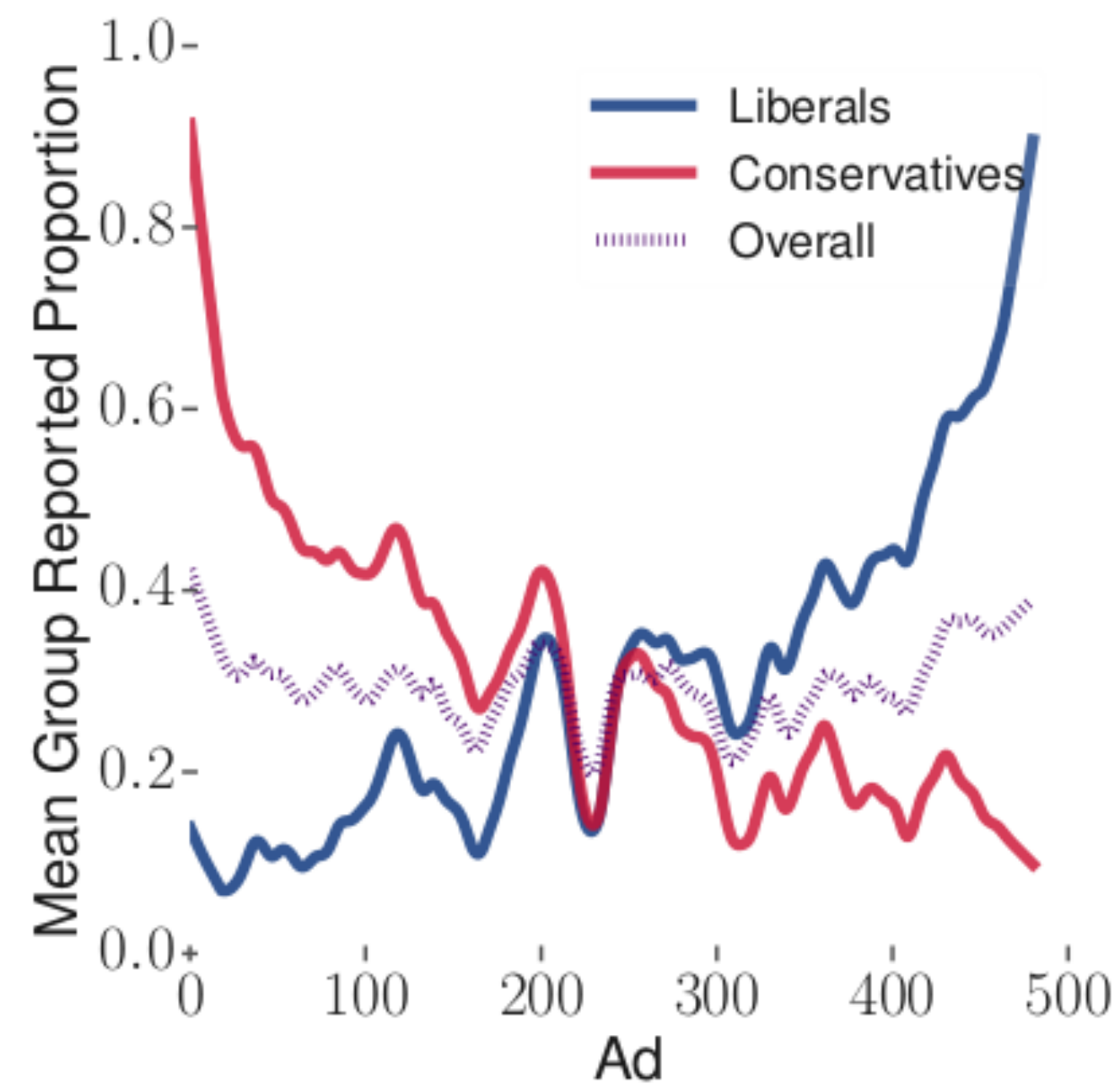
Some social media platforms allow you to report content by clicking “report”. Would you report this ad (e.g., mark it as inappropriate or offensive). Yes, No, I don’t know



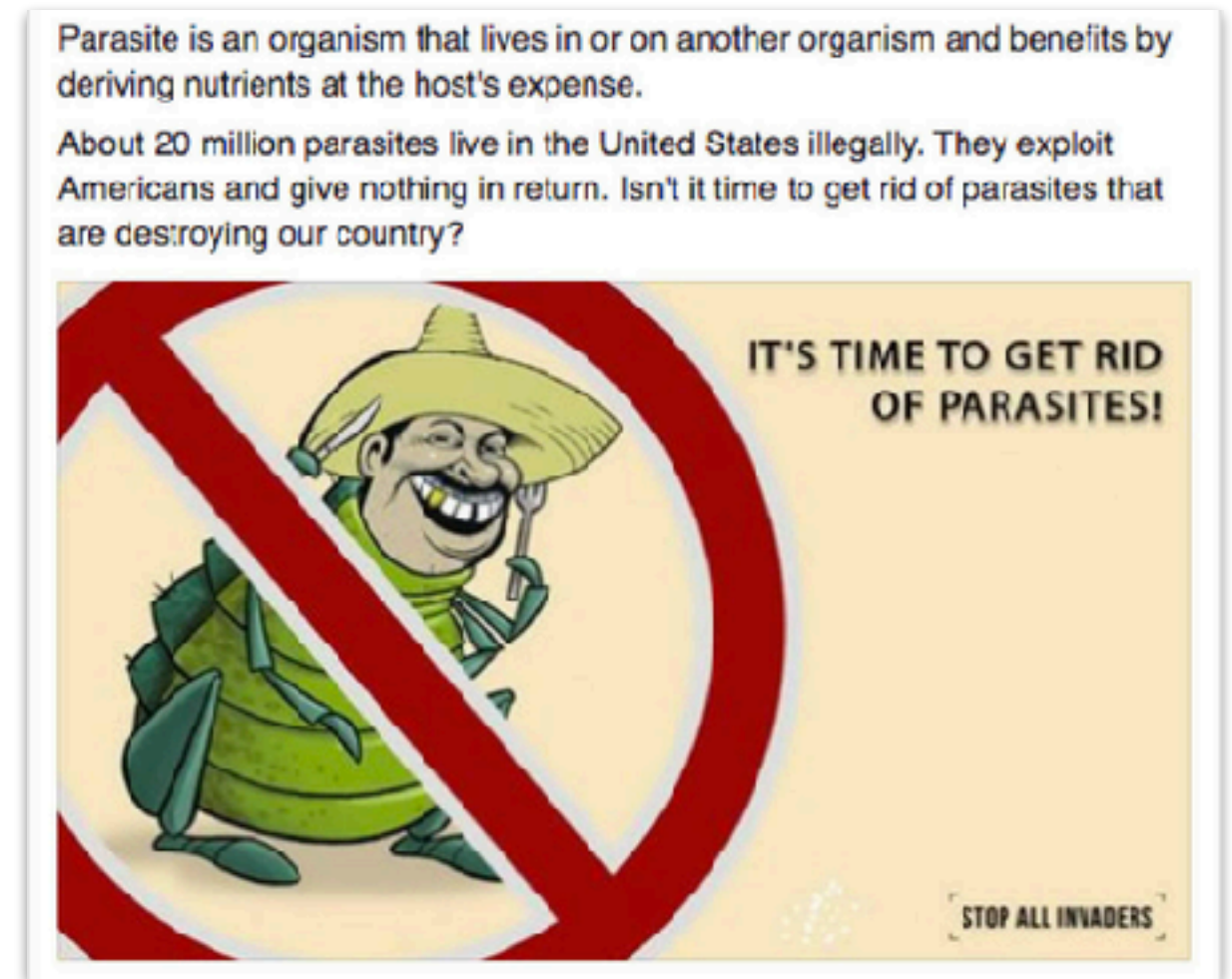
Can we rely on crowd reports?

Reporting

Some social media platforms allow you to report content by clicking “report”. Would you report this ad (e.g., mark it as inappropriate or offensive). Yes, No, I don’t know



Conservatives would report but not Liberals



Liberals would report, but not Conservatives

Learning from past malicious ad campaigns

To detect malicious ad campaigns

- We **cannot rely on crowd reports** — ads well targeted are less likely to be reported
- **Click through rate** and divisiveness could be useful proxies
 - What other dimensions we could consider?

Solution: EU online advertising
regulation

European law



European law



1. Digital Services Act (DSA)

“Universal advertising transparency by default” statement written together with civil societies and submitted to Digital Services Act (DSA) consultation 2020

- ▶ increase the transparency and accountability for all users
- ▶ access to data to the whole research community

UNIVERSAL ADVERTISING TRANSPARENCY BY DEFAULT

The political campaigning landscape has changed significantly with the digitalisation of our public sphere, which has created new opportunities for politics participation, but also poses significant integrity of elections and political debate. Unlike broadcast political ads shown to the whole audience, in specific homogeneous groups of people, which can segment and target based on their political beliefs. Advertisers can purchase political content on various social media feeds, thereby buying themselves space in public policy and political debate. Transparency of which ads are shown to whom, why, and who has paid for them, further empowers citizens from a political party and its signatories to design advertising. This empowers citizens to scrutinise political debate and easily conduct public interest scrutiny. This empowers the electoral process, and ultimately the legitimacy and representativeness of our democracy.

As the result of these problems (the lack of transparency offered by digital advertising, social media ads, video ads and search engines). While some platforms have found a way to increase transparency on political ads (partly due to pressure by the European Commission), many measures fall short of providing meaningful transparency. One crucial issue is that it leaves platforms to decide what is and is not political advertising. Advertising will and will not be subjected to platform transparency regimes. To avoid to recognize the end of behavioural targeting and algorithmic delivery the end of social media advertising, it is necessary to require meaningful default transparency.

WHY TRANSPARENCY BY DEFAULT FOR ALL ADS?

To allow for public interest scrutiny: Transparency is necessary, first and foremost, to a scrutiny of advertising. As many studies on the implementation of the EU Code of Practice on Disinformation have shown, false negatives and false positives were rife in the political ad signatories of the code. Non-political advertisements were erroneously included in the many political ads were excluded? The lack of a comprehensive necessity of all ads used to verify whether all political ads were included in the libraries, and the political ad libraries missed a lot of sponsored content. In a situation where it is difficult to police the libraries, it is ultimately necessary to ensure the transparency of all ads.

To overcome diverging definitions of political ads: EU member states have diverging definitions of political advertising, and some have no definition at all. The EU Code of Practice distinguishes between political and issue-based advertising, which introduces distinction that uniformly across member states' electoral laws. Introducing mandatory transparency of helps to address the difficulty of adopting and applying one common definition of political advertising.

1. European Commission (2018) Digital Advertising and the EU Code of Practice on Disinformation. Available at: <https://ec.europa.eu/digital-single-market/en/digital-advertising-and-eu-code-practice-disinformation>

2. European Commission (2018) Digital Advertising and the EU Code of Practice on Disinformation. Available at: <https://ec.europa.eu/digital-single-market/en/digital-advertising-and-eu-code-practice-disinformation>

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5. European Commission (2018) Digital Advertising and the EU Code of Practice on Disinformation. Available at: <https://ec.europa.eu/digital-single-market/en/digital-advertising-and-eu-code-practice-disinformation>

Signatories	
Access Now	Irish Council for Civil Liberties
Algorithm Watch	IKMonitor
AMO - Association for International Affairs	Lie Detectors
Civil Liberties Union for Europe	Oana Goga (Centre National de la Recherche Scientifique — CNRS)
Defend Democracy	Open Rights Group
Demos	Penetration Foundation
ePensio Foundation	Privacy International
EU DigitalLab	Ranking Digital Rights
European Citizens Action Service	Right to Internet and Social
European Association for Liberal Democracy (EALD)	Staring News Verification (SNV)
European Digital Rights (EDRi)	The Democracy Society
European Partnership for Democracy	Transparency International
European Women's Lobby	Unifichr.it
Global Forum for Media Development (GFM)	Who Targets Me
Global Witness	World Leadership Alliance - Club de Madrid
Human Digital	

This joint statement was coordinated by the European Partnership for Democracy. For more information, please contact Ruth-Marie Heredia at info@epd.eu.

European law



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At the source of these problems lies the lack of transparency offered by digital ads.

Signatories

Access Now	Irish Council for Civil Liberties
Algorithm Watch	K-Monitor

Article 30
Additional online advertising transparency

1. Very large online platforms that display advertising on their online interfaces shall compile and make publicly available through application programming interfaces a repository containing the information referred to in paragraph 2, until one year after the advertisement was displayed for the last time on their online interfaces. They shall ensure that the repository does not contain any personal data of the recipients of the service to whom the advertisement was or could have been displayed.
2. The repository shall include at least all of the following information:
 - (a) the content of the advertisement;
 - (b) the natural or legal person on whose behalf the advertisement is displayed;
 - (c) the period during which the advertisement was displayed;
 - (d) whether the advertisement was intended to be displayed specifically to one or more particular groups of recipients of the service and if so, the main parameters used for that purpose;
 - (e) the total number of recipients of the service reached and, where applicable, aggregate numbers for the group or groups of recipients to whom the advertisement was targeted specifically.

1. This article is based on Article 17 of the Digital Services Act (DSA), which is part of the European Union's Digital Services Act (DSA) framework. The text is a summary of the key provisions of the article, which are intended to be displayed on the website of the European Commission. The text is a summary of the key provisions of the article, which are intended to be displayed on the website of the European Commission. The text is a summary of the key provisions of the article, which are intended to be displayed on the website of the European Commission.

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European Women's Lobby	Unitech IT
Global Forum for Media Development (GFM)	Who Targets Me
Globe Witness	World Leadership Alliance - Club de Madrid
Human Digital	

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- ▶ increase the transparency and accountability for all users
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2. European Democracy Action Plan (EDAP)

- ▶ Definition of political ads
- ▶ Click through rate

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1. This article is based on Article 17(1) of the Digital Services Act (DSA), which is part of the European Commission's Digital Services Act (DSA) proposal. The text is a simplified version of the original text and does not constitute legal advice. For more information, please contact the authors of this document at info@accessnow.org.

This joint statement was coordinated by the European Partnership for Democracy. For more information, please contact Ruth-Marie Heredia at ruth.marie.heredia@epd.eu.

Summary of my contributions on online targeted ads

Political advertising

1. **(Behavior)** Analysis of malicious political advertisers [FAT*'19]
2. **(Audit)** Audit platforms' political ad detection algorithms [WWW'20]
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Supporting software: AdAnalyst, CheckMyNews, Elections2022, PolAds

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PET Award

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Behavior: Regulations and Micro-targeting usage

"Exploring the Online Micro-targeting Practices of Small, Medium, and Large Businesses"

Salim Chouaki, Islem Bouzenia, Oana Goga, Beatrice Roussillon, **ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW), 2022**

Options to regulate (political) advertising

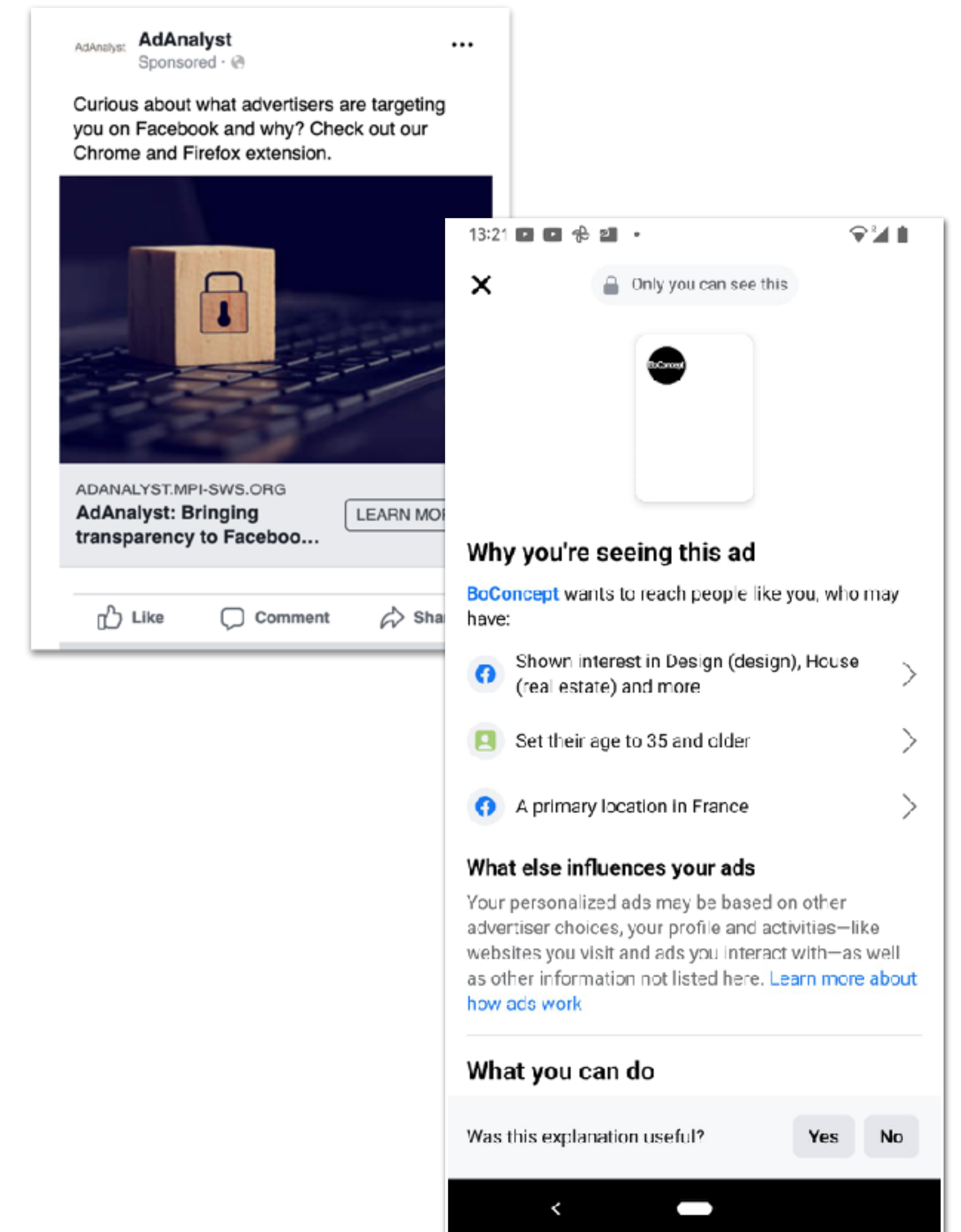
Considered by the European Commission

- Ban or restrict **micro-targeting**
 - But what is the economic impact on the ecosystem?
 - To which extent small and medium-sized businesses use micro-targeting?
- Ban or restrict **web tracking**

Measurement methodology

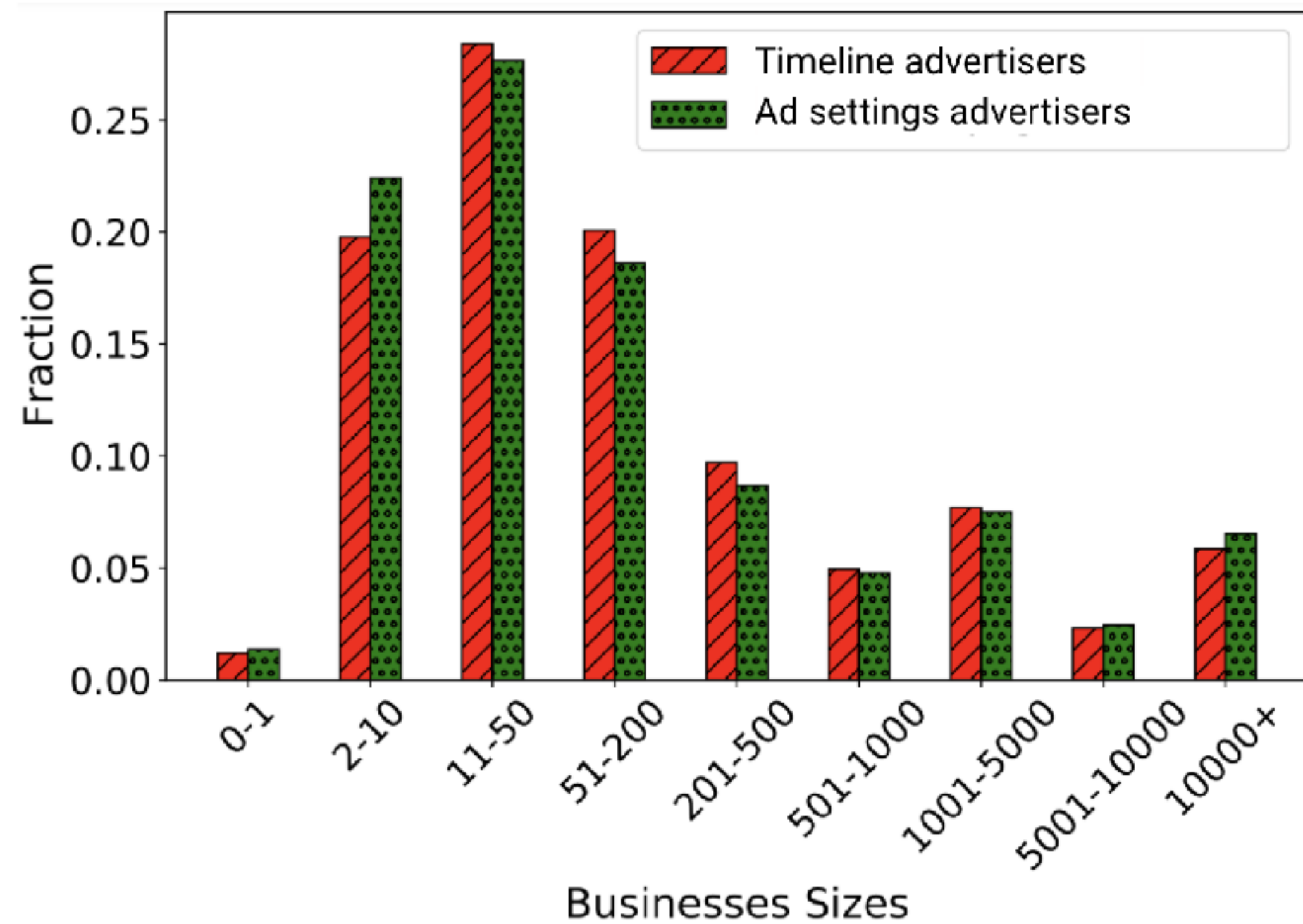
- Use AdAnalyst to collect a **set of ads + how ads were targeted**
 - ▶ Recruited 890 US users on Prolific to install it
 - ▶ 102k ads
- Information about the **business size of advertisers**
 - ▶ Method to match Fb advertisers with LinkedIn businesses

Info about **79k advertisers**

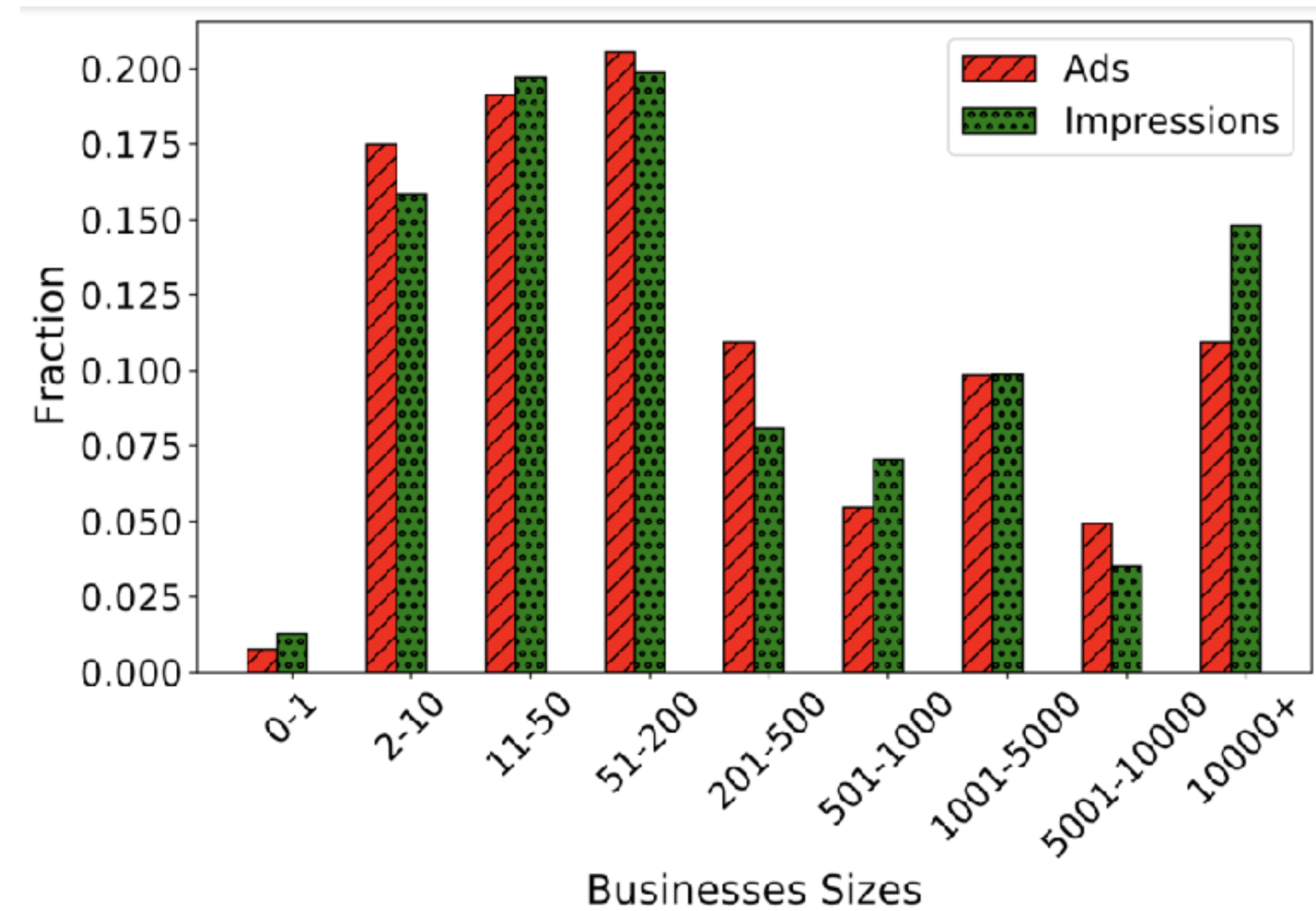


To which extent small businesses advertise on Fb?

Fraction of advertisers

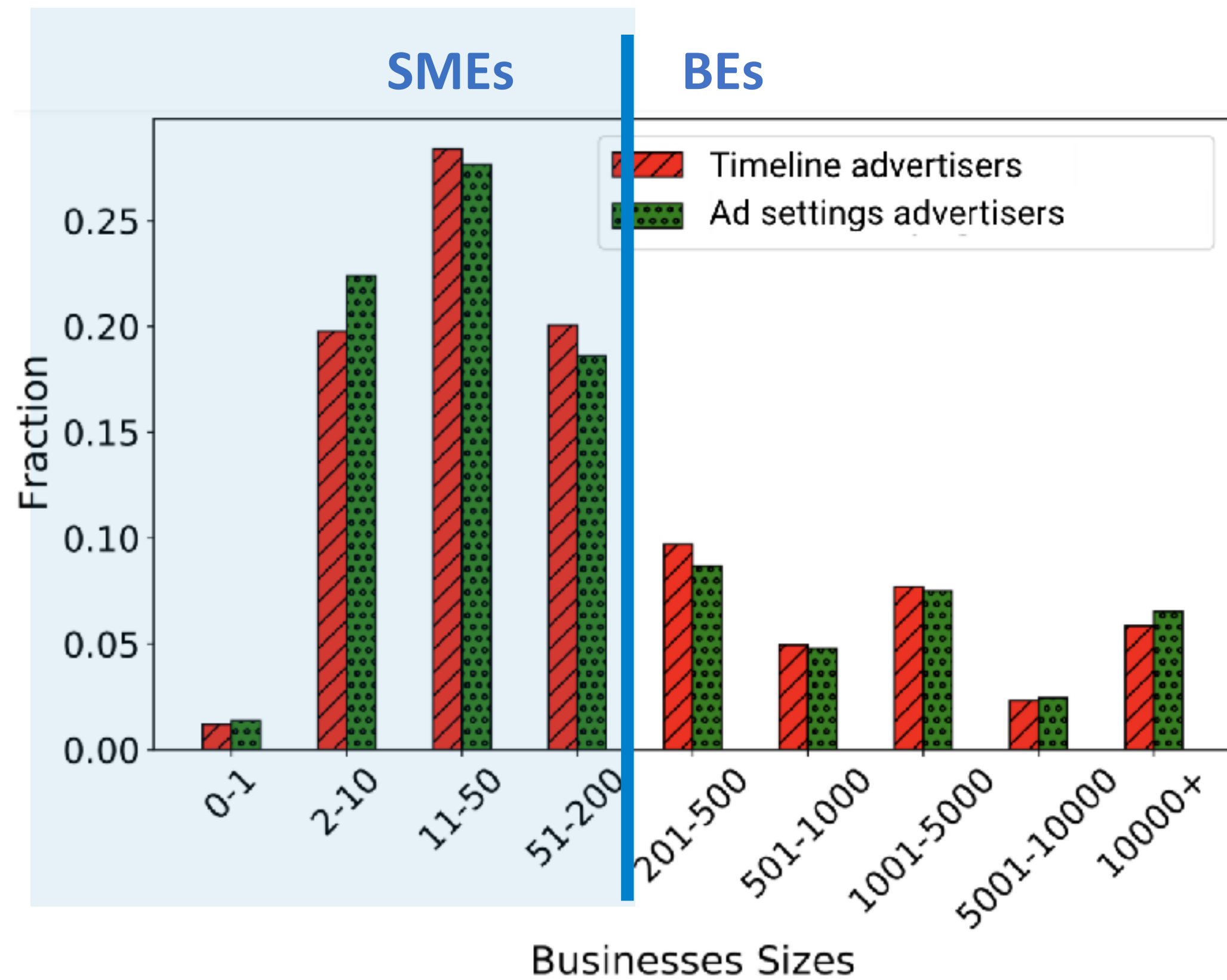


Fraction of ad impression

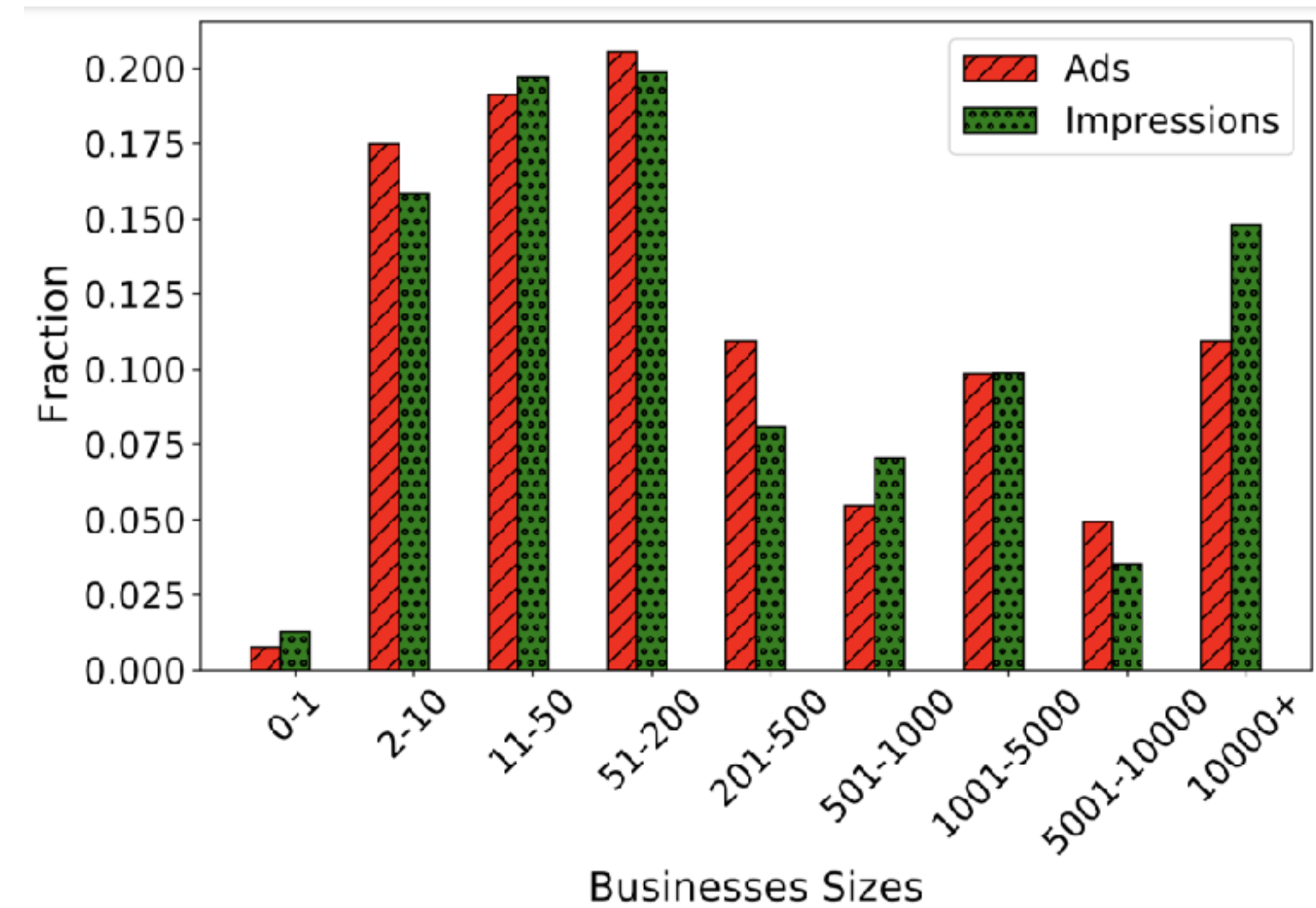


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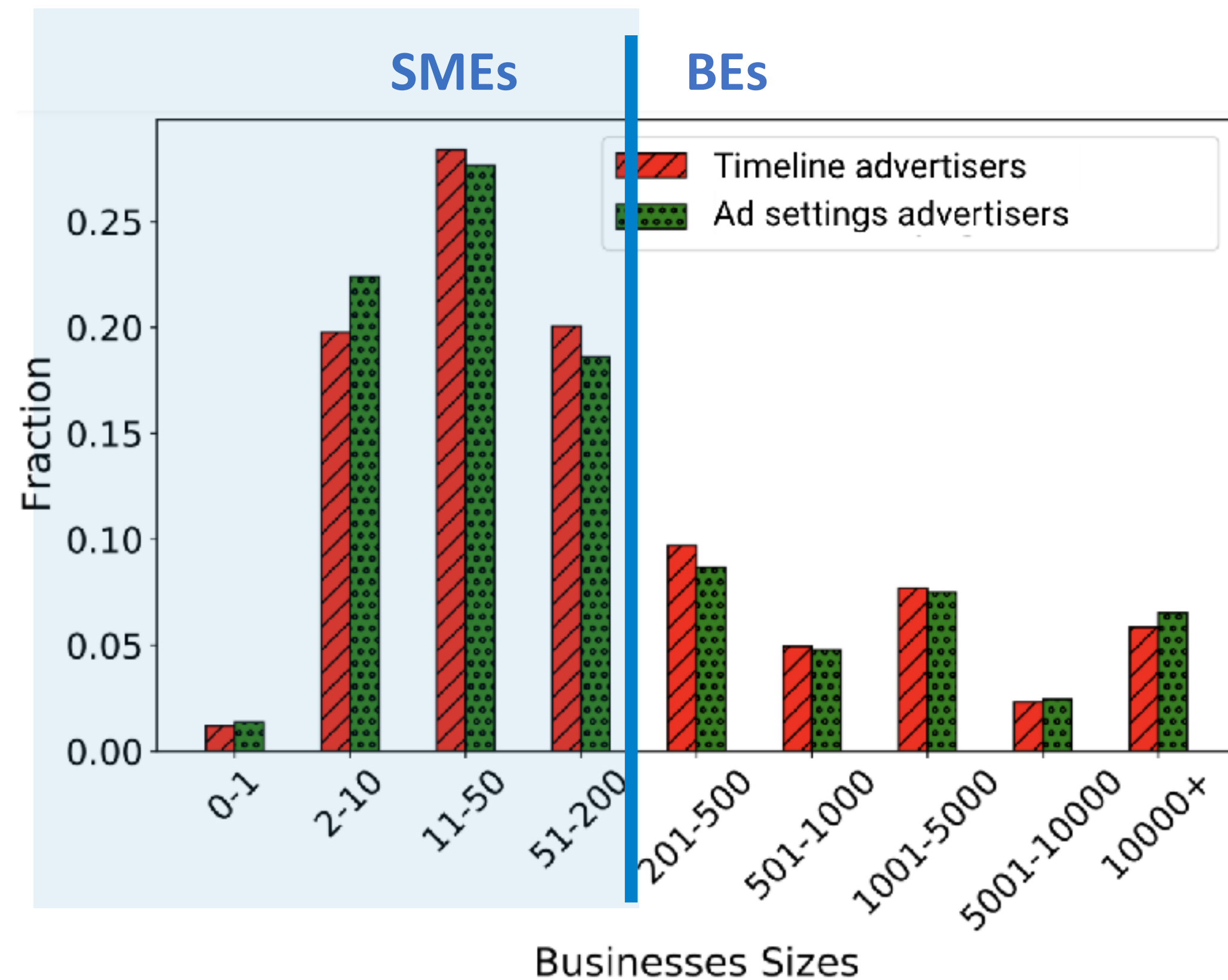
Fraction of ad impression



Over 70% of advertisers are SMEs

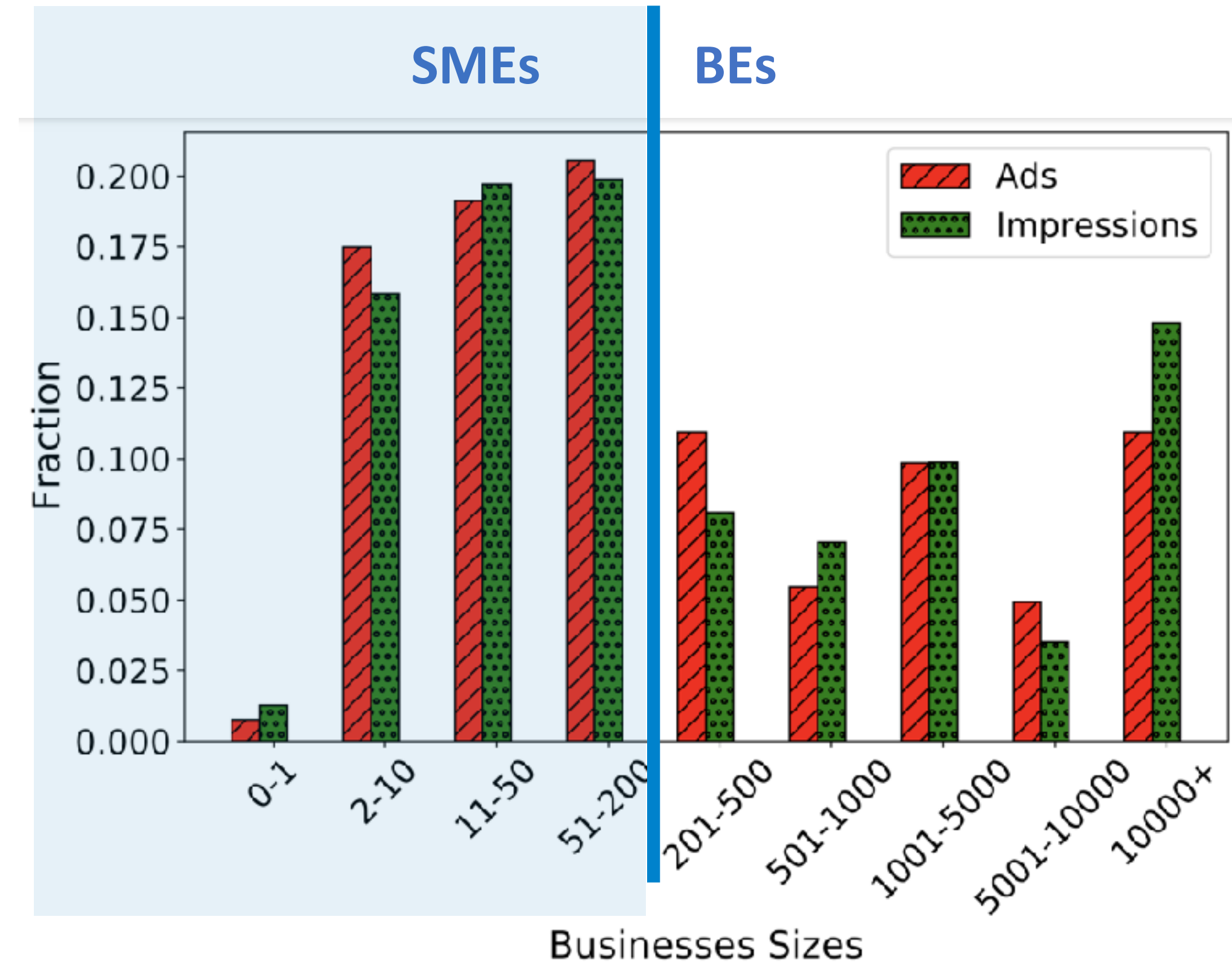
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Fraction of advertisers



Over 70% of advertisers are SMEs

Fraction of ad impression



57% of ad impressions are from SMEs

Do businesses use micro-targeting?

	Targeting type	SME (%)	BE (%)
Generic targeting	Generic targeting only	72.3%	69.5%
Advertiser-driven micro-targeting	Attribute based micro-targeting	12.0%	15.1%
	Custom audience-based micro-targeting	6.9%	6.8%
	Lookalike audiences	8.8%	8.6%

Do businesses use micro-targeting?

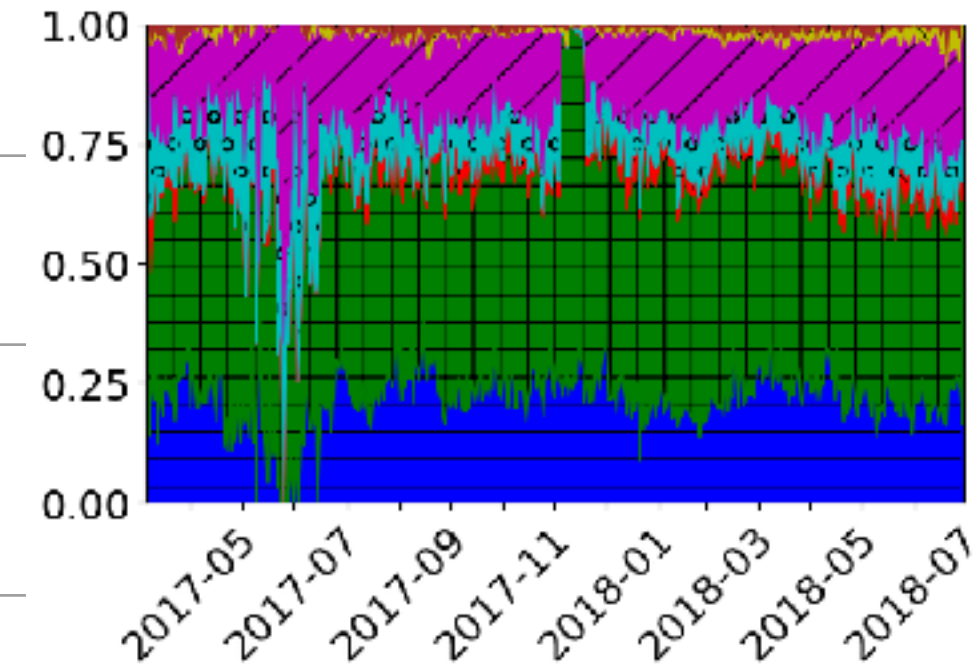
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Most of the ads are not micro-targeted by advertisers!

Do businesses use micro-targeting?

Generic targeting was only 19% in [NDSS'2019] !

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Does this mean that micro-targeting is not useful?

... NO ...

... advertiser driven micro-targeting is being replaced by algorithmic driven micro-targeting

“During ad set creation, you chose a target audience ... and an optimization event ... We show your ad to people in that target audience who are likely to get you that optimization event”.

“Each time there’s an opportunity to show an ad to someone, an ad auction takes place to determine which ad to show”.

Facebook terms of services

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How should we regulate algorithmic driven micro-targeting?

Options to regulate (political) advertising

Considered by the European Commission

- Ban or restrict **micro-targeting**
 - But what is the economic impact on the ecosystem?
 - To which extent small and medium-sized businesses use micro-targeting?
- Ban or restrict **web tracking**
 - Where is web tracking used in advertising on Facebook?

The role of web tracking in Facebook's micro-targeting

- Not used for attribute-based micro-targeting

“Ads they click; Pages they engage with; Activities people engage in on Facebook related to things like their device usage, and travel preferences; Demographics like age, gender and location; The mobile device they use and the speed of their network connection.”

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Facebook terms of services

- Used only for the pixel-based custom-audience micro-targeting technique

- Only 2.6% of the ads sent by SMEs and 2.7% of the ones sent by BEs used the Facebook pixel

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Facebook terms of services

- Used only for the pixel-based custom-audience micro-targeting technique

- Only 2.6% of the ads sent by SMEs and 2.7% of the ones sent by BEs used the Facebook pixel



- Used for algorithmic ad optimization

“Interests are determined based on activity on Facebook, such as Pages or posts that people like, posts or comments they make and activity off Facebook from apps they use and websites they visit.”


Facebook terms of services



Usage of Facebook pixel

	Total	SME (%)	BE (%)
Checked websites	600	61	39
Websites with Facebook pixels	458 (76%)	81	69

 **Facebook Pixel Helper**
[Learn More](#) 

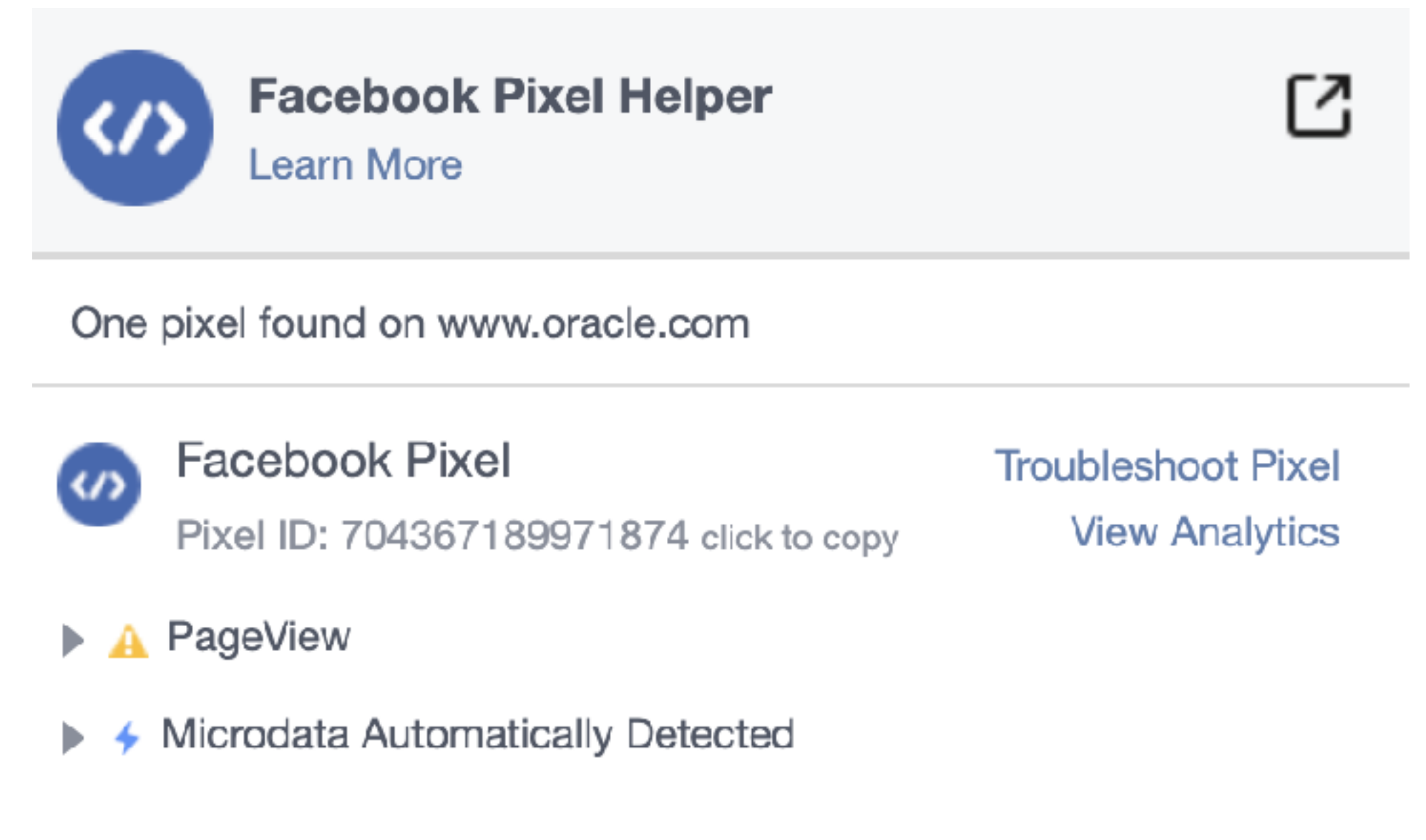
One pixel found on www.oracle.com

 **Facebook Pixel**
Pixel ID: 704367189971874 [click to copy](#) [Troubleshoot Pixel](#)
[View Analytics](#)

- ▶  PageView
- ▶  Microdata Automatically Detected

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The screenshot shows the Facebook Pixel Helper interface. At the top, there is a header with the Facebook Pixel Helper logo (a blue circle with white code symbols) and the text "Facebook Pixel Helper" and "Learn More". To the right of the header is a share icon. Below the header, it says "One pixel found on www.oracle.com". Underneath, there is a section for the detected pixel, labeled "Facebook Pixel" with a blue icon. It shows the Pixel ID: 704367189971874 and a "click to copy" link. To the right of the Pixel ID are links for "Troubleshoot Pixel" and "View Analytics". Below this, there are two expandable items: "PageView" with a warning icon and "Microdata Automatically Detected" with a lightning bolt icon.

Advertisers allow Fb to track their users, but do not directly exploit it (<7%).

Implications

- Small and medium sized businesses do account for the majority of advertisers and are responsible for the majority of ad impression
 - ▶ Important to assess the economic impact regulations would had on them
- Shift from advertiser-driven to algorithmic-driven advertising
 - ▶ New risks?
- A majority of advertisers we checked allow Facebook to track users that visit their websites without exploiting it
 - ▶ Does this lead to market unfairness?

Takeaways

- For safer online platforms **we need access to data**
 - Use the **law to get access to data** — Article 40 of DSA
 - Build systems that **ask citizens to donate data** about what they see online
- Lawmakers developing new regulations
 - ▶ **We need data on the effectiveness and economic impact of restrictions**
- Crucial need for assessing **systemic risks** with online platforms

Thank you! Questions?

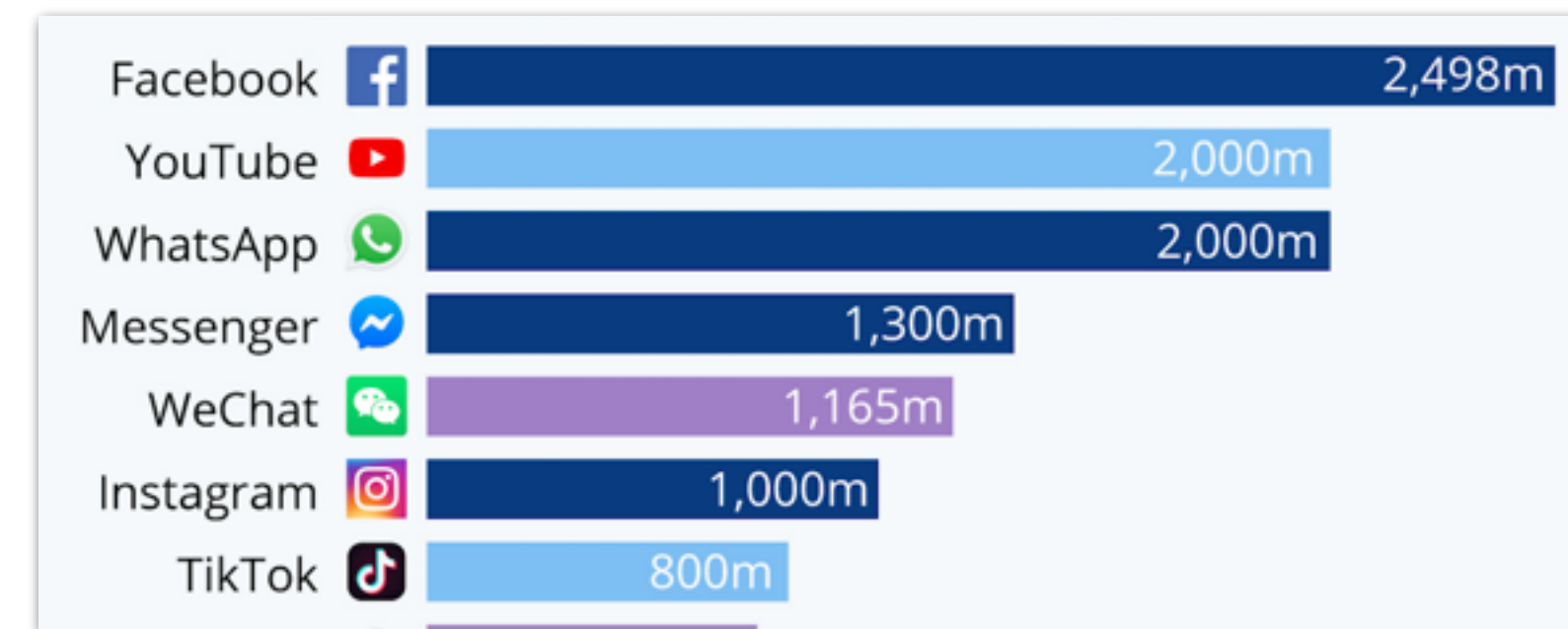
(Research) Perspectives

- Universal ad libraries is the first step
 - ... but we still need to reliably detect political ads (restrictions from countries legislation); identify malicious ad campaigns; and decide what kind of transparency we need for algorithmic driven micro-targeting?
- Can we measure the impact of information targeting? In which conditions a targeted message can change the opinion, preferences, voting behavior of a person?

Background on online advertising

The basics:

- **Anyone** (with a credit card) can be an **advertiser**
- Fb has over **250k attributes** available to **micro-target** users
 - “anti-abortion movements” , “cancer awareness”
- Facebook has 2.5 billion users, Youtube has 2 billion users



The observation:

- **Shift** from using ad tech for **promoting products to potentially interested people**
- to **target** (well chosen) **information to specific groups of people** (likely to accept it)