

Auditing for Racial Discrimination in the Delivery of Education Ads

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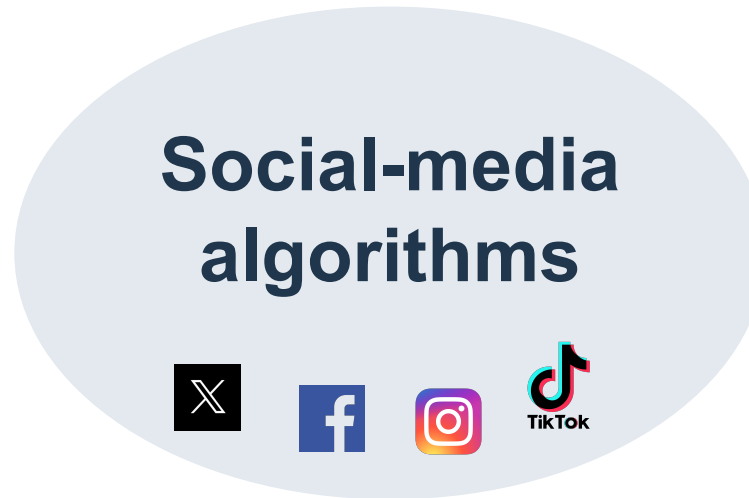
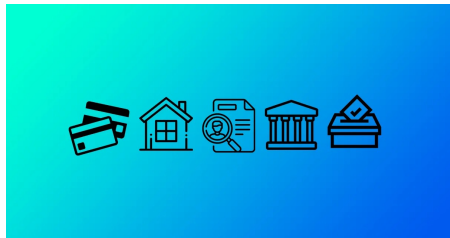
ACM FAccT Conference

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Harms of AI Adoption in Social-media Algorithms

Shape **access** to information and **economic opportunities** for **billions** of users



Facebook Algorithm Shows Gender Bias in Job Ads, Study Finds

Researchers found the platform's algorithms promoted roles to certain users; company pledges to continue work in removing bias from recommendations

POLITICS / STUDENTNATION / JANUARY 11, 2024

Can the EU's Digital Services Act Inspire US Tech Regulation?



Ad Delivery Algorithms Can be Biased

- **Evidence of discrimination by legally protected demographic attributes**
 - Not due to targeting choices by advertiser
 - Platform-induced bias: optimization for “relevance”
 - For economic opportunities such as housing and employment
- **Meta sued by DOJ for discriminatory ad delivery**
 - Deployed Variance Reduction System for housing, employment and credit ads

Prior audits and solutions limited to only housing, employment, and credit!

Our Contributions: Auditing Education Ad Delivery for Racial Bias

- **A method for testing racial discrimination in education ad delivery**
 - We use a black-box approach
- **We find racially biased delivery of education ads caused by platform-driven choices**
 - We apply the method to Meta
 - Racially balanced audience (in), but skewed delivery audience (out)



Why Study Education: Concerns of Discrimination

- **30+ for-profit schools investigated for their marketing practices**
 - Over-promised job prospects, lead to high debt, ...
- **Historically targeted racial minorities** [Body '19]
 - Legal protections against discrimination
- **Education is one of the largest advertising verticals** [Wernerfelt et al. '22]

Do ad delivery algorithms propagate the historical racial bias among for-profit universities?



Challenge of Extending Prior Audits to Education

- **No method that controls for legitimate sources of skew for education**
- **We extend a prior auditing method: paired ads**
 - Tied to underlying de-facto skew in society
 - Run at the same time, audience, budget, ... [Ali and Sapiezynski et al. '19, Imana et al. '21]
 - Look at **relative difference** in delivery

How to identify such a pair of opportunities **for education?**



Methodology: Isolating the Role of Ad Delivery Algorithm for Education

- Similar opportunities but one is of inferior quality (for-profit)
- Pick schools with de-facto racial skew in enrollment

Hypothesis: the for-profit school ad will be shown to relatively more Black individuals

For-profit University



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Enroll in an online degree program at Strayer University



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Strayer University
79% Black

Public University



Education Path
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Enroll in an online degree program at Colorado State University



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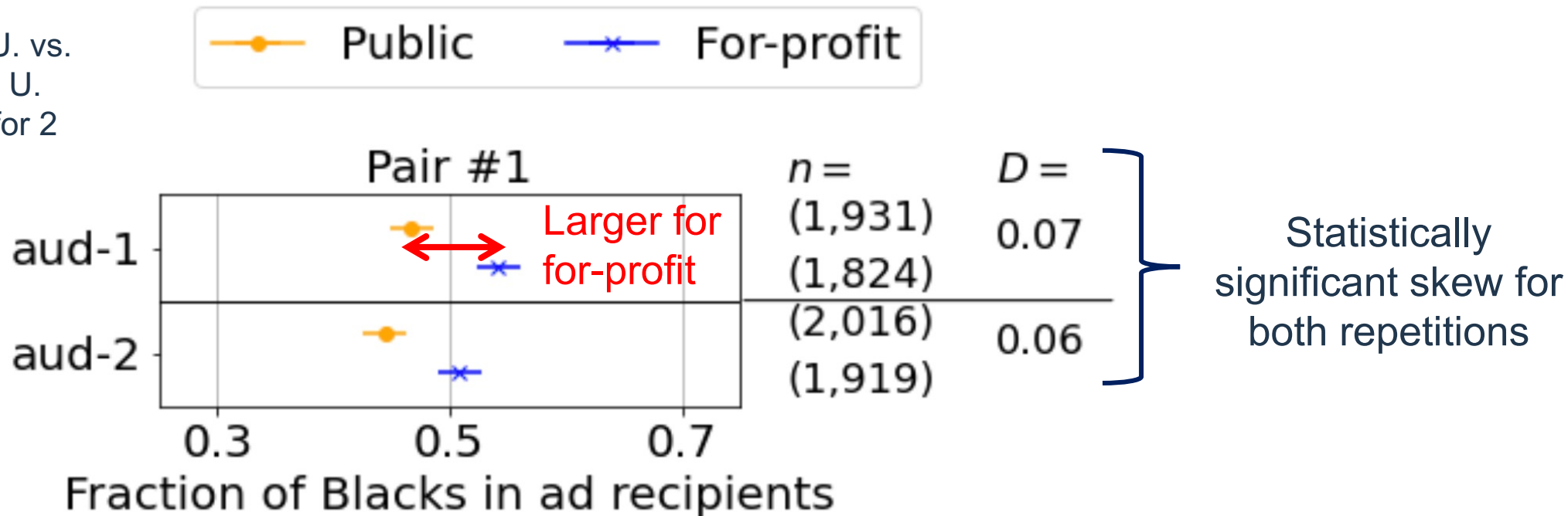
Learn more

Colorado State University
3% Black



Experiment: Racially Biased Delivery

Pair #1: Strayer U. vs. Colorado State U.
(Similar results for 2 other pairs)



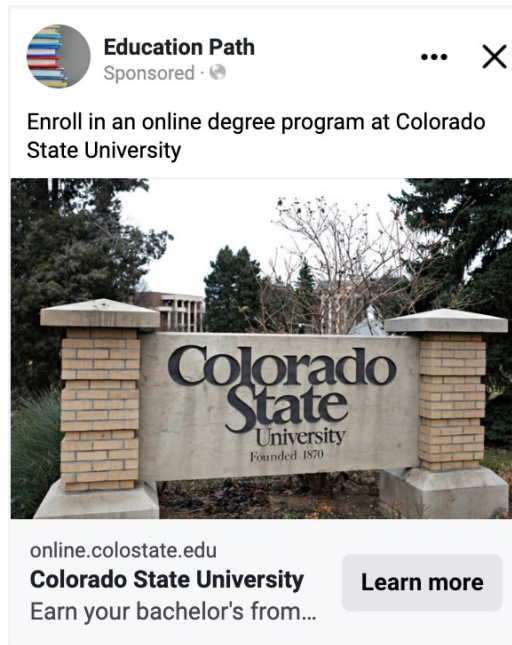
- ⇒ Meta's algorithms *racially* discriminate in education ad delivery
- ⇒ Meta may be in violation of education anti-discrimination law
- ⇒ Not limited to housing, employment, and credit



Compare Neutral and Realistic Ad Creatives

Neutral ad creative

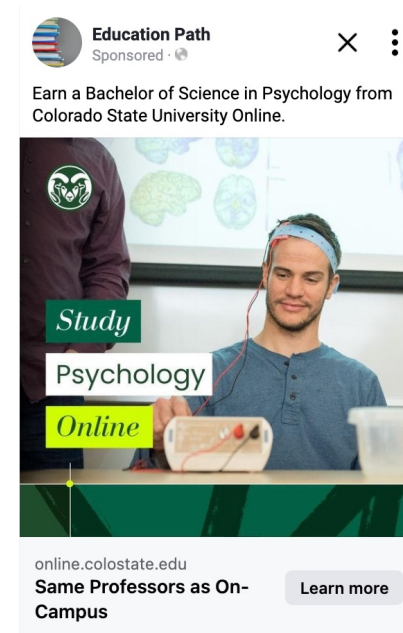
(Built by us)



Fairer: avoid potential text- or image-based skew

Realistic ad creative

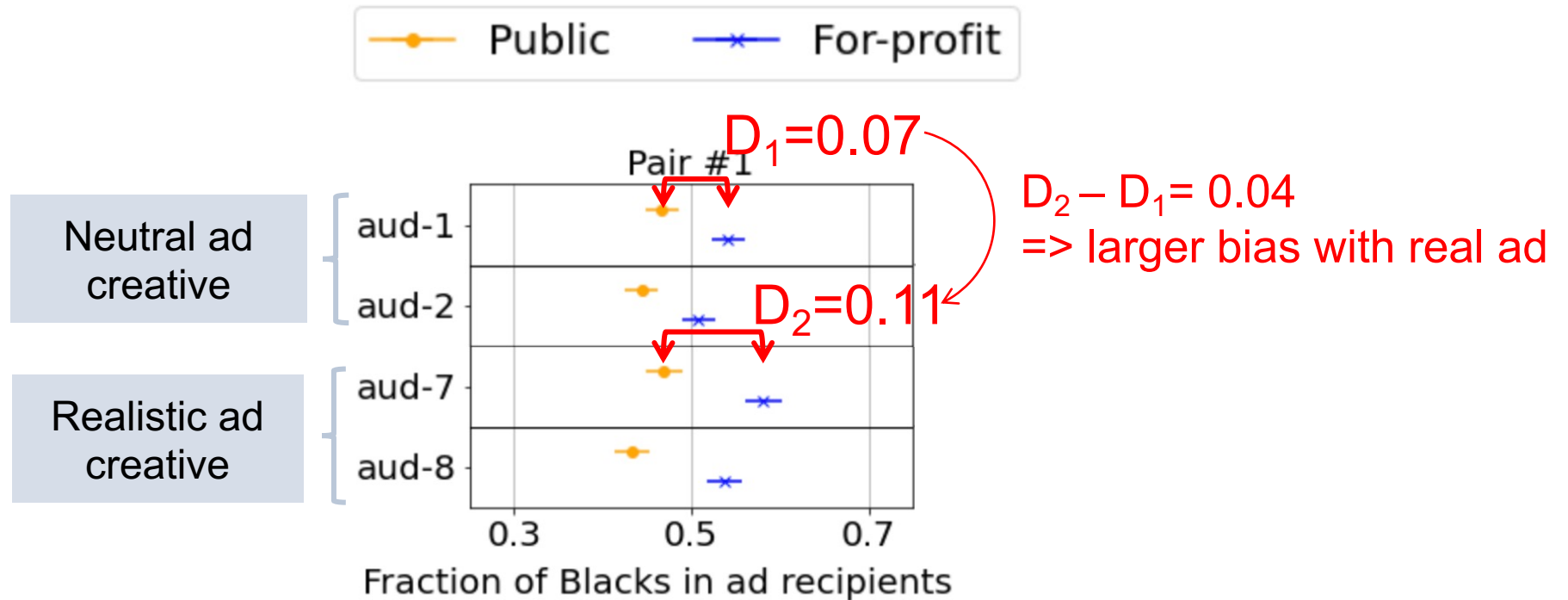
(From school's Ad Library page)



Realer: captures additional effects of real-world ads

Experiment: Larger Bias with Realistic Ad Creatives

Pair #1: Strayer U. vs. Colorado State U.
(Similar results for 2 other pairs)



\Rightarrow Platforms amplify implicit cues in ad creatives used by schools
 \Rightarrow Bias in ad delivery is larger with real ads



Evaluate Delivery Using Schools with Prior Legal Scrutiny

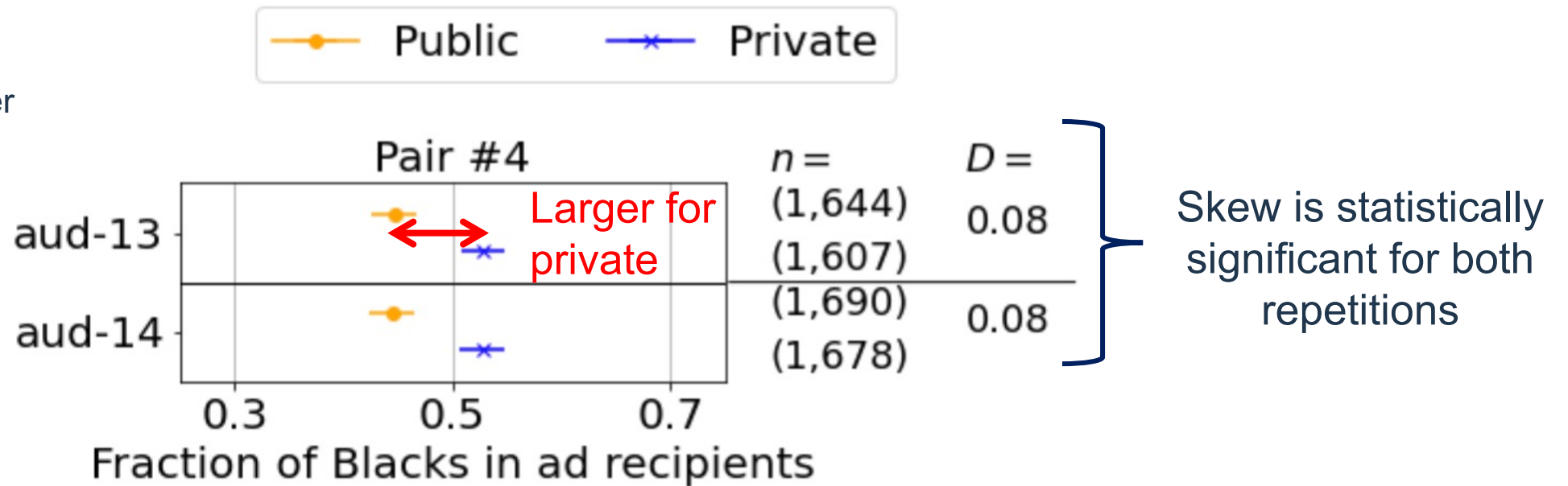
- **Modify our method: use schools with prior legal scrutiny for their marketing/recruiting practices**

Does Meta's ad delivery algorithm promote opportunities at such schools disproportionately by race?

- **Identify three private schools**
 - Private: DeVry University, Grand Canyon University, Keiser University
 - Compare with same public schools as before

Experiments: Biased Delivery of Ads for Private Schools with Prior Legal Scrutiny

Pair #4: DeVry U. vs. Colorado State U.
(Similar result for 2 other pairs)



- ⇒ Racially disproportionate delivery of potentially low-quality opportunities
- ⇒ Meta can perpetuate skew even if schools improve marketing practices



Conclusion

- Platforms need to conduct impact assessment of education ad delivery algorithms
- Broader auditing/regulation needed beyond housing, employment, credit ads
- Researchers can apply our method to new domains
- Paper: <https://doi.org/10.1145/3630106.3659041>
- Data: <https://ant.isi.edu/datasets/addelivery-education/>
- Contact: imana@princeton.edu

