The Inventory is Dark and Full of Misinformation:

Understanding Ad Inventory Pooling in the Ad-Tech Supply Chain

Paper: https://tinyurl.com/darkpooling
Code & Data: https://tinyurl.com/darkpooling-code-data

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The Democrats' War on Guns is continuing, with the newest battlegrounds being Minnesota and Pennsylvania.

U.S.A. – After pushing through gun control measures in Michigan and Washington, Democrats—dropping any pretense of being anything other than the "party of gun control"—are busy in Minnesota, where, according to the Twin Cities Pioneer Press, they moved a bill on a "party line vote" to expand background checks and a red flag law.

The newspaper notes in its coverage that "Democratic backers of these changes say they will help keep guns out of the hands of criminals and dangerous people. They say the new restrictions are 'common sense' measures that have broad support among voters and have been implemented in both liberal and conservative states."

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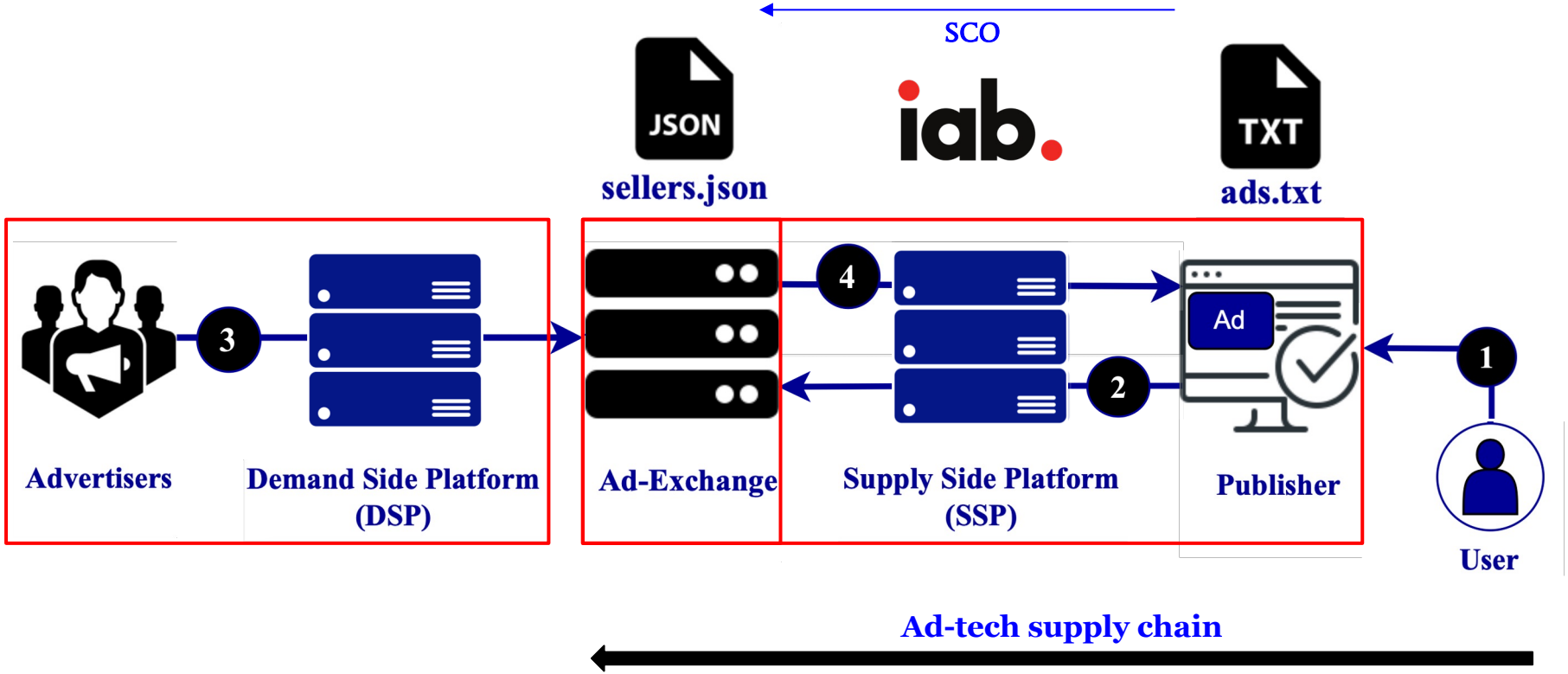
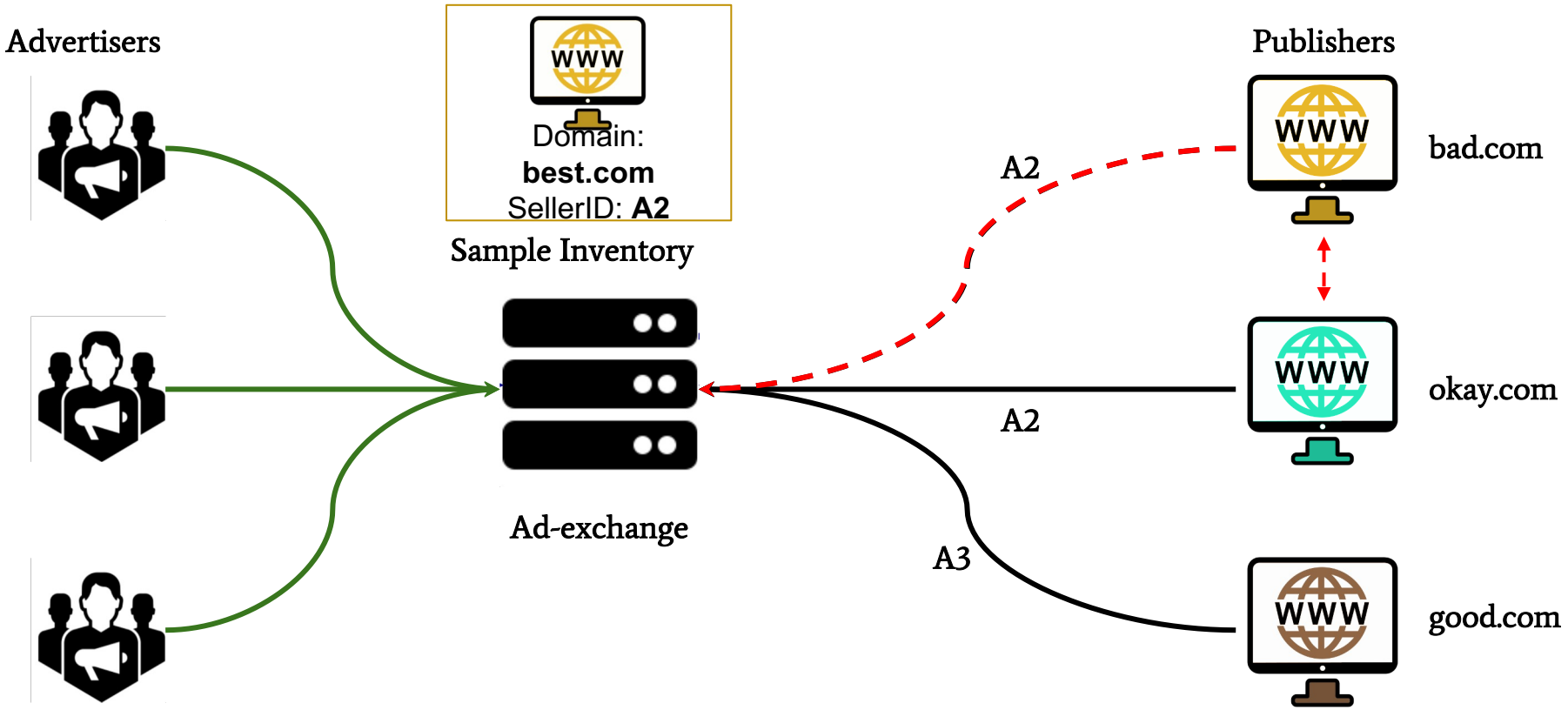


How does an ad for a reputed brand end up on a misinformation site?



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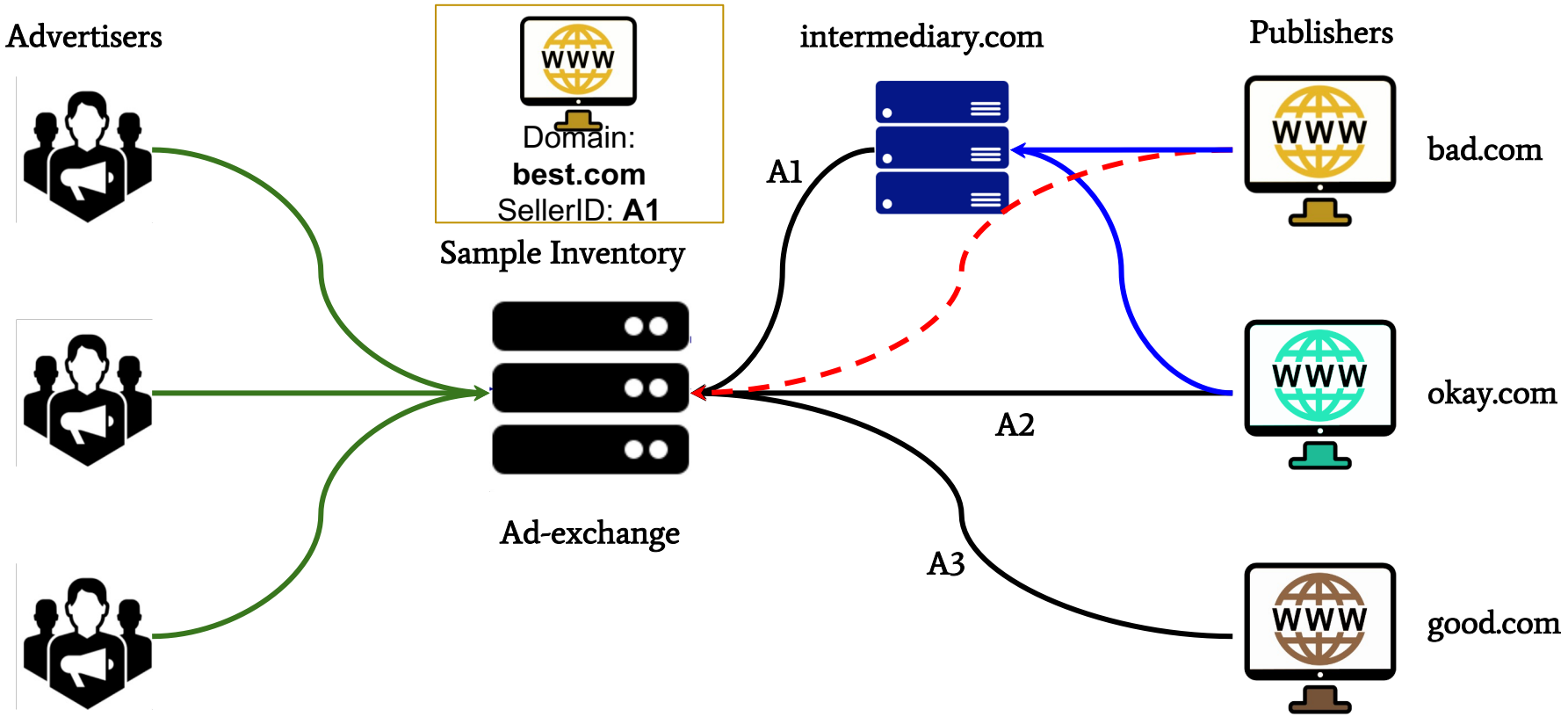
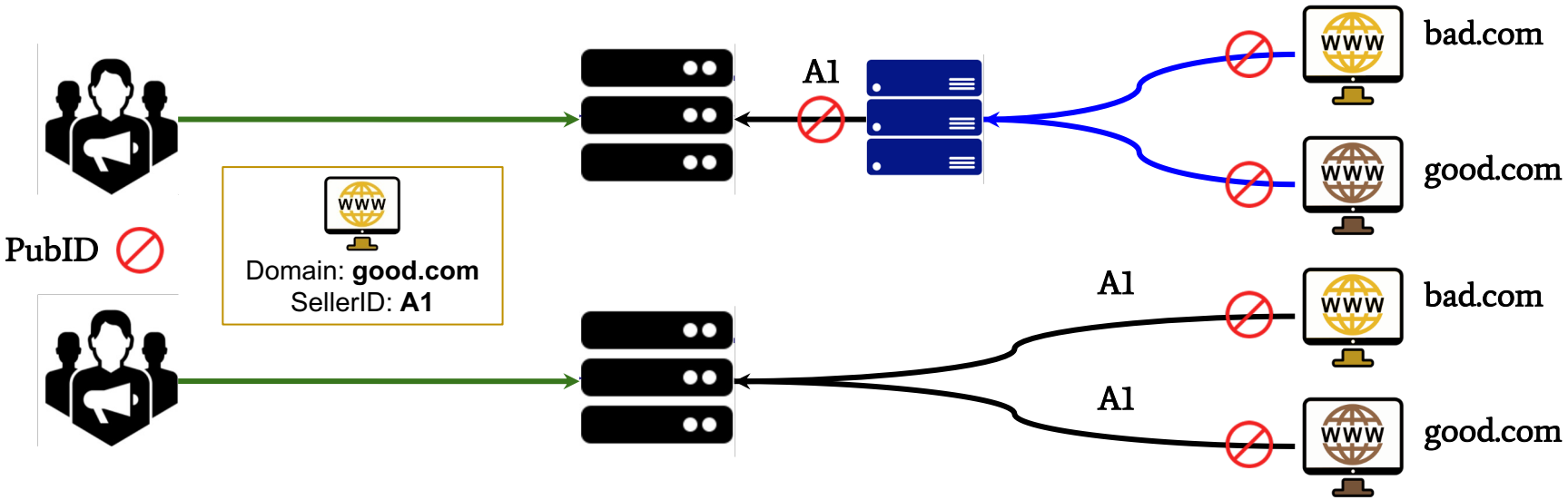


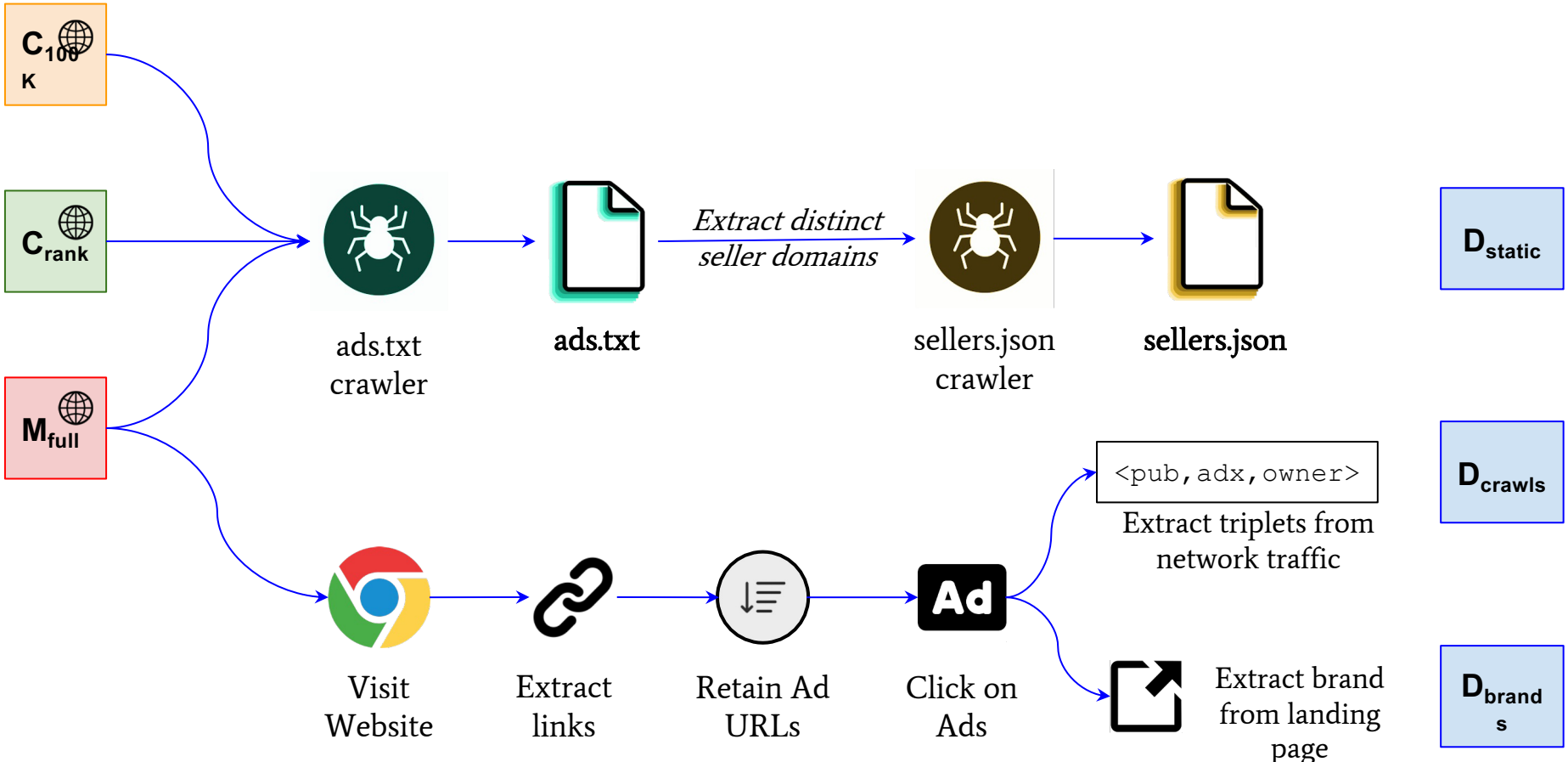
Is brand safety effective against dark pooling?



Research Questions

- Compliance of ads.txt and sellers.json transparency standards
- Prevalence of dark pooling
- Effectiveness of brand safety in the face of dark pooling

Data Collection



Results (RQ1) : Compliance

Misrepresentations amongst our data:

ads.txt Misrepresentation	Misinformation	Control
Misrepresented direct relationships	64%	51%
Fabricated publisher/seller IDs	83%	65%
Conflicting relationships	49%	33%

sellers.json Misrepresentation	>= 1 Misinformation Site	0 Misinformation Site
Invalid Seller Type	0%	0.7%
Invalid Domain names	54.8%	0.8%
Confidential Sellers	46.1%	0.1%
INT w/o sellers.json	49.8%	13.3%
Non-unique IDs	95.3%	62.6%

RQ2: Dark Pooling

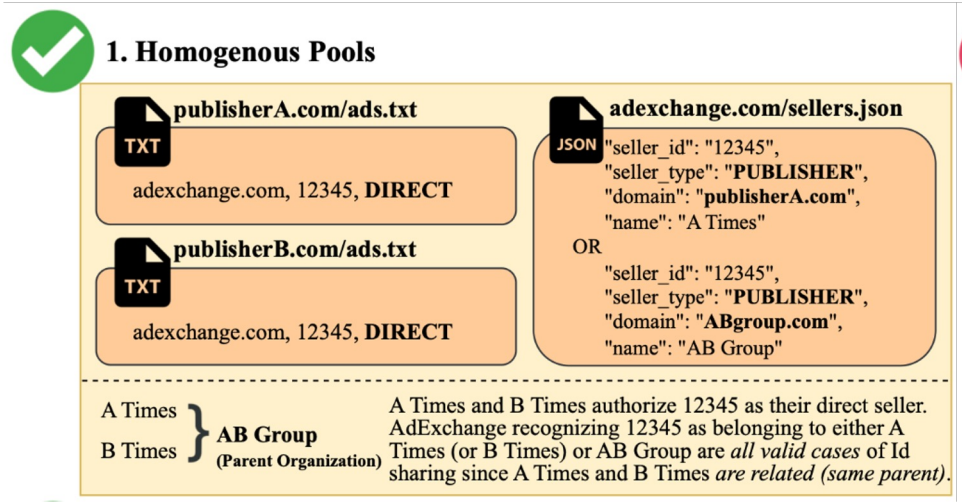
Publisher IDs are shared by organizationally-unrelated publishers

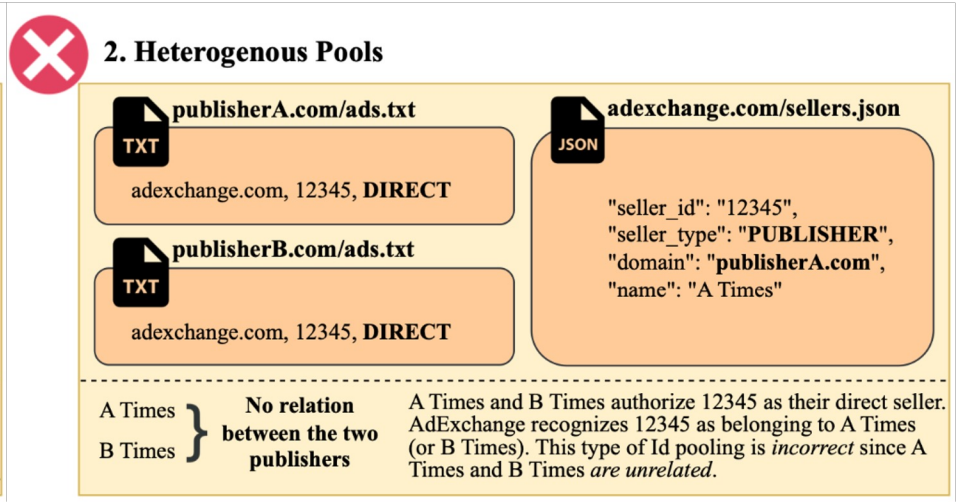
✓ publisherA & publisherB owned by the same Parent Company

✗ publisherA & publisherB are NOT owned by the same Parent Company

RQ2: Classifying Dark Pools

Based on Parent Organization of pooled publishers





Results (RQ2) : Static Pooling

	Pools w/ Misinformation Sites		Pools w/o Misinformation Sites	
Pool Type	**# Pools**	**Pool Size**	**# Pools**	**Pool Size**
Homogenous	0.4%	2.6	9.6%	2.6
Potential Homogenous	9.1%	18.8	26.6%	7.0
Heterogenous	**85.0%**	**482.5**	**41.0%**	**42.2**
Unknown	5.6%	4.3	22.7%	3.9

Results (RQ2) : Dynamic Pooling

- Unique misinformation pools: 297
- Majorly we observed syndication based ad-networks involved in pooling
- Pools with highest misinfo. sites sharing the same PubID
  - PubID owner: 33Across (30 Misinfo Domains) (issuer: Pubmatic)
    - Principia-scientific.org
    - ....
  - PubID owner: Gourmet Ads (23 Misinfo Domains) (issuer: Pubmatic)
    - Principia-scientific.org
    - ....

PubID owner domains*:

- *confidential_seller: 198*
- *33across.com: 39*
- *gourmetads.com: 33*

PubID issuers*:

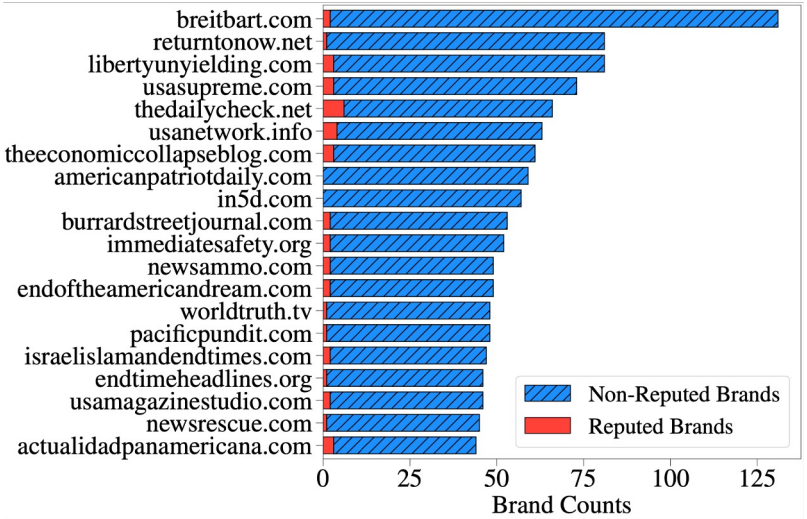
- *pubmatic.com: 279*
- *google.com: 243*
- *rubiconproject.com: 54*

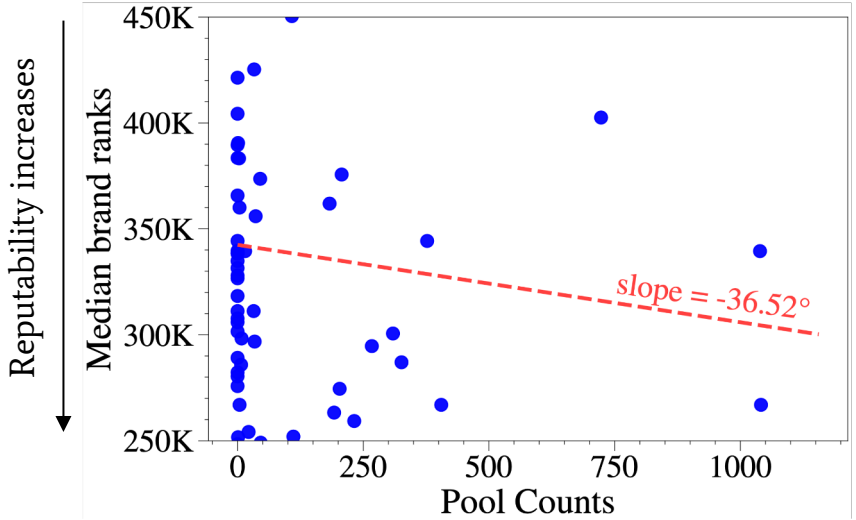
*****common across multiple pools (*total across 2 crawls*)

Results (RQ3) : Brand Analysis

We collected a total of 4246 (2068 distinct brands) ads from 669 Misinformation websites.

- Most prevalent brands were: Amazon, Alibaba, Yahoo
- Top advertiser categories: business, shopping, computers, health, & finance
- *We observed that reputable brands advertised more on the misinformation sites which were part of more pools.*





Recommendations

1. Better standards and compliance

2. Trust delegation: Better *vetting* of publishers in ad syndication networks

3. Regulation
    a. Digital Services Act (DSA)
    b. Digital Services Oversight and Safety Act (DSOSA)

Research Paper
https://tinyurl.com/darkpooling

Code & Data
https://tinyurl.com/darkpooling-code-data

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