Regulation *of* and *with* Digital Platforms: An Empirical Perspective

Chiara Farronato (Harvard, CEPR, NBER)

NBER Economics of AI/Digitization Tutorial Toronto, September 2023

https://www.ebayinc.com/stories/news/meet-the-buyer-of-the-broken-laser-pointer/



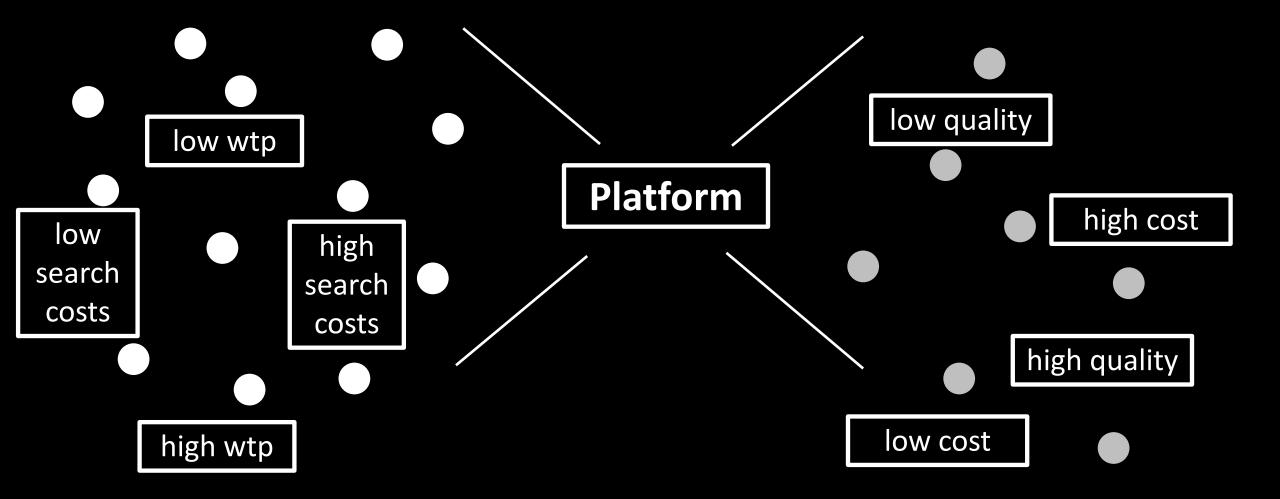
Regulating Digital Platforms

Definitions:

- Regulating:
 - Consumer protection: ensure consumers are protected from risky transactions.
 - Antitrust: protect consumers from abuses of dominant positions.
- Digital Platforms (very loose definition):
 - Enable interactions between two or more side of users (multi-sided platforms).
 - Facilitate search, matching (incl. payment), trust.
 - They are not all MAAMA.



Digital Platforms as Information Aggregators



Many Stakeholders Involved

- Policymakers, Journalists, Regulators, Legal Scholars,...
- Why us?
 - Identify (for the theorists in the room) and quantify (empiricists) trade-offs.
- As we go through this talk, we will show a variety of:
 - Research Questions
 - Methodologies
 - Data sources



Regulating Consumer Protection With the Help of Digital Platforms.

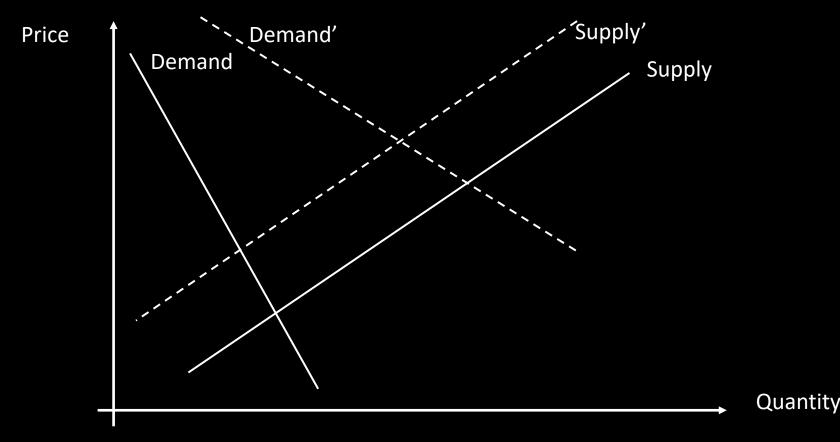
Consumer Protection

- Most digital platforms enter existing markets, which are already subject to regulation...
 - Occupational Licensing.
 - Certifications.
 - Health and Safety Inspections.



Consumer Protection

• Most digital platforms enter existing markets, which are already subject to regulation... designed to address asymmetric information.



Consumer Protection

- Given it already exists, we could simply extend existing regulation to "online providers." E.g.:
 - Extend safety/accessibility regulation for hotels to Airbnb hosts.
 - Extend taxi medallion requirements for taxis to Uber/Lyft drivers.
- 1. Is existing regulation justified in the first place?
- 2. Does fundamentally different supply warrant different regulation?
- 3. What other options are available to address asymmetric information?

1.Is Existing Regulation Justified in the First Place?

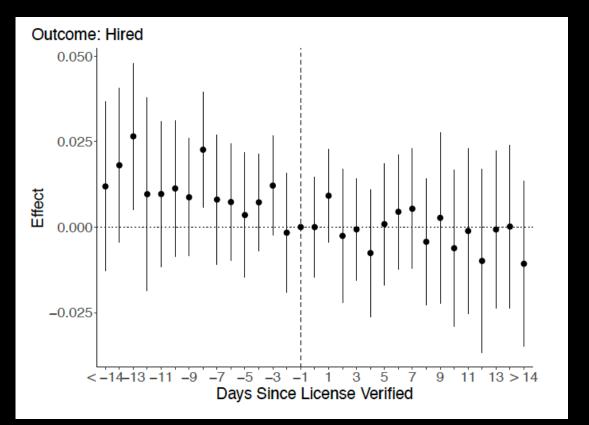
- Online platforms are becoming the primary way of finding professionals in many industries:
 - Platforms track transactions and reviews.
 - Platforms provide a new way to measure the effects of existing regulation.

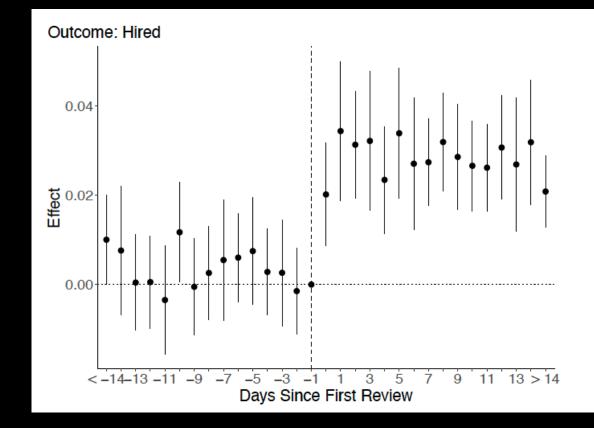
<u>Consumer Protection in an Online World: An Analysis of Occupational</u> <u>Licensing ('23, joint work with Fradkin, Larsen, and Brynjolfsson)</u>

Platform for Home Improvement Services

| Interiors by Farronato | Interiors By Farronato |
|---|---|
| \$324 | Liseneed in CA Chiara Farronato |
| Fradkin Design LLC ****** 25 Reviews \$303 | Licensed in CA View Profile View Photos Website View Credential |
| Larsen Renovations ***** 7 Reviews \$212 | Chiara Farronato 3 Days Ago |
| Al Interior Design by Erik B. 3 Reviews \$95 | Hi Buyer, My price is \$324. I have availability in the next few days. References can be provided at your request. Thank you, Chiara Farronato |
| | Reply Hire Decline |

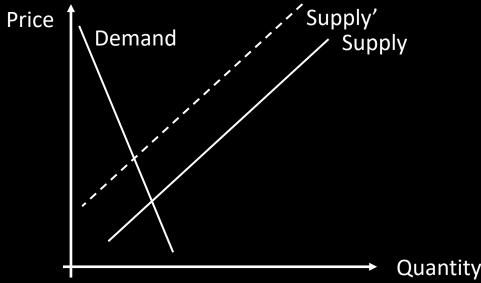
Signaling Value of Licenses v. Reviews





Equilibrium Effects of Licensing Stringency

- Exploit variation in licensing laws across US states and home improvement occupations.
- Effect of more stringent licensing regulation on:
 - Demand:
 - No change in aggregate demand
 - No change in customer satisfaction
 - Supply:
 - Reduction in number of options
 - Increase in price



Equilibrium Effects of Licensing Stringency

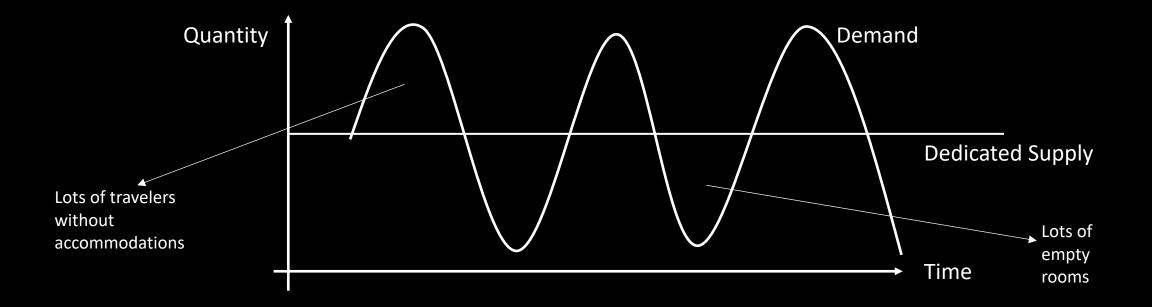
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- Effect of more stringent licensing regulation on:
 - Demand:
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 - Supply:
 - Reduction in number of options
 - Increase in price
- Open Q:
 - How can we better measure quality dimensions we should care about?
 - Which requirements (school, on job training) have largest net benefits?

2.Does Fundamentally Different Supply Warrant Different Regulation?

- Existing regulation is designed for "professional providers."
- This tends to generate "dedicated supply:"
 - Hotels whose rooms are available ~365 days a year;
 - Taxis who are available in ~8-hour shifts.

<u>The Welfare Effects of Peer Entry: The Case of Airbnb and the</u> <u>Accommodation Industry ('22, joint with Fradkin)</u>

The Accommodations Market Before Airbnb



Airbnb Facilitates Entry of "Flexible Supply"

 Flexible supply is responsive to demand fluctuations, by entering when demand is high and contracting when demand is low.

• Large welfare benefits for consumers, by expanding choice set and reducing prices in periods when demand is highest and dedicated capacity is sold out.

Open Q: How to Adapt Regulation to a Mix of Flexible & Dedicated Supply?

- How should we design a two-part regulatory system while maintaining fair competition?
- How do we distinguish between "flexible" and "dedicated" supply?
 - In some cities, home-sharing hosts are subject to fewer restrictions than hotels but cannot rent to travelers for more than a few nights a year.
 - In others, ridesharing drivers are subject to fewer restrictions than taxi drivers, but also cannot perform the same pick-up/drop-offs as taxis (e.g., airports).

3. Other Options to Address Asymmetric Information?

- Existing regulation often relies on *experts' evaluations* of providers' quality.
- Can digital traces/online reputation substitute experts (Shapiro, 1986)?

<u>Consumer Reviews and Regulation: Evidence from NYC Restaurants ('23,</u> joint with Zervas)

Role of Online Reviews in Informing Consumers about Restaurant Hygiene



★ ★ ★ ★ 1/3/2013

halfway finishing my pho, FOUND COCKROACH inside the pho broth and had big fight with server(seems like one of the owner) after he insist on me paying for the pho.. not even apologying, told me I still have to pay for other pho which I can almost guess that it was made from same dirty pot..

WILL DEFINITELY CALL HEALTH DEPT. and most DEFINITELY they wont see me again!

freakin, disgusting S#\$&!







Role of Online Reviews in Informing Consumers about Restaurant Hygiene

- On one hand:
 - Online reviews contain informative signals of restaurant hygiene.
 - These signals are effective at driving demand away from dirty restaurants.
- On the other hand:
 - Online reviews can be informative about some hygiene dimensions (pests and food handling practices) but not others (worker hygiene).
- Open Q:
 - How can we leverage useful quality information to improve regulatory monitoring (i.e., achieve same quality with less expert effort or increasing quality with same expert effort)?

ANTITRUST

- Part 2:
- Antitrust Regulation Of Digital Platforms.

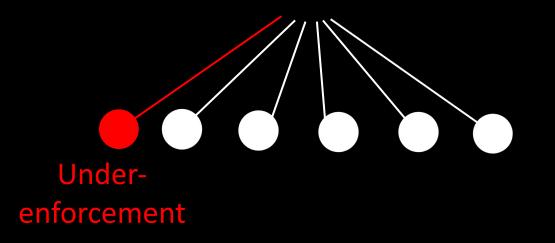
What Makes Digital Platforms Different?

Confluence of:

- Marginal and distribution costs ~ 0.
- Strong economies of scale and scope.
- Increasing marginal returns to data.
- Strong network effects.
 - Outside of the Big 5, unlikely to be strong enough to justify concentration of activity on a single platform ("Dog Eat Dog: Balancing Network Effects and Differentiation in a Digital Platform Merger," '22, with Fong and Fradkin).
 - Treat the Big 5 as "public utilities" (Tirole, '14)

Taken from Scott-Morton et al., 2019, "Committee for the Study of Digital Platforms," Report, Stigler Center for the Study of of the Economy and the State. (<u>Stigler report</u>)

Antitrust Regulation of Digital Platforms going Forward



Incredibly Exciting Time to Study Platform Antitrust, but How?

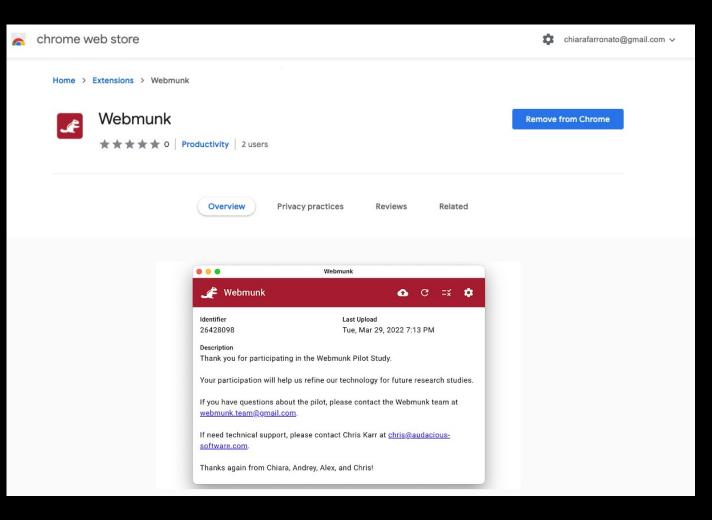
- We need more work quantifying the trade-offs of various policy recommendations.
- Platforms are information aggregators, so they have plenty of data to look at.

 Try knocking on Amazon's door: "I'd like to use your data to study whether you give priority to your products..."

Webmunk: A New Tool for Studying Online Behavior and Digital Platforms

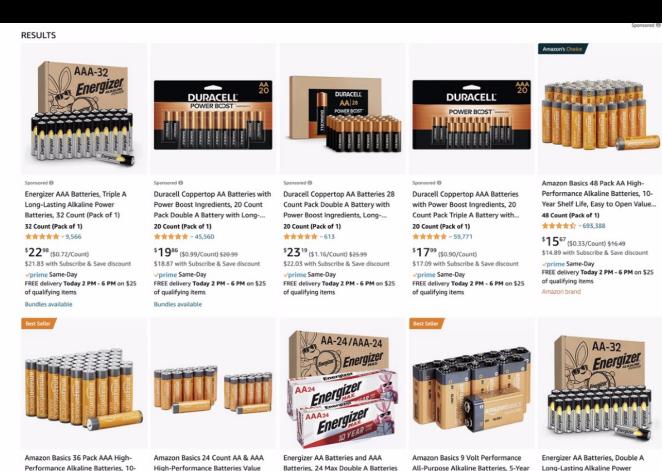
A browser extension that can:

- Manipulate your browsing experience;
- Track your browsing behavior;
- Prompt you to complete additional tasks.



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- Manipulate your browsing experience;
- Track your browsing behavior;
- Prompt you to complete additional tasks.



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\$1370 (\$0.38/Count) \$13.02 with Subscribe & Save discount

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Batteries, 24 Max Double A Batteries and 24 Max Triple A Batteries Comb... 48 Count (Pack of 1) **** ~ 54,646

\$3275 (\$0.68/Count) \$39.98 \$31.11 with Subscribe & Save discount

Vprime Same-Day FREE delivery Today 2 PM - 6 PM More Buying Choices \$31.42 (13 new offers)

All-Purpose Alkaline Batteries, 5-Year Shelf Life, Easy to Open, Packaging 8 Count (Pack of 1) ***** ~ 146,964

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Amazon brand

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Batteries, 32 Count (Pack of 1)

32 Count (Pack of 1)

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A browser extension that can:

- Manipulate your browsing experience;
- Track your browsing behavior;
- Prompt you to complete additional tasks.

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| Please complete these tasks to get paid. | | | | | | |
| Complete intake survey | | | | | | |
| Upload your Amazon order history | | | | | | |

Tasks will be removed after confirmation of completion.

A browser extension that can:

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webmunk.org

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First Application of Webmunk: <u>Self-Preferencing at Amazon:</u> Evidence from Search Rankings ('23, with Fradkin and MacKay)

Recruited participants through Facebook:

- Ask them to install Webmunk and keep it installed for a few weeks.
- ~3k Amazon searches by ~180 users (currently expanded to ~1,200).

Descriptives highlight how search results and their position are key for product discovery:

- 46% of product pages are reached through a search results page (11% of product pages are reached from outside Amazon);
- In 72% of searches, consumers do not click past the first page;
- (based on scroll position data) half of the products on a full results page are actually seen.

How Does Amazon Rank Products?

- Strongest predictors of higher position:
 - Prime eligibility Prime
 - Number of ratings
 - Best Seller badge
 - Sponsored
 - ... and Amazon Brand ar



Best Seller

| | Rank (3) | In Top 10 (6) |
|---------------------|-------------|------------------|
| Amazon Brand | -3.87*** | 0.028** |
| | (0.975) | (0.010) |
| Sponsored | -6.55*** | 0.098*** |
| | (0.282) | (0.003) |
| Major Brand | -0.662 | |
| | (0.602) | |
| | | |
| Search Spell FE | Yes | Yes |
| Additional Controls | Yes | Yes |
| 2 | | |
| \mathbb{R}^2 | 0.516 | 0.148 |
| Observations | 228,281 | 228,281 |
| Mean of Y | 38.9 | 0.179 |
| | | |
| Sample | All | All |

Why do we care how Amazon Ranks Products?

Digital Markets Act:

- Applies to large "gatekeepers" who operate one or more "core platform services" (e.g. search, social networks, os,...).
- *Ex-ante* obligations based on 2 principles:
 - **Contestability** (give market a chance at competition): e.g., interoperability
 - Fairness (competition based on merits): e.g., no self-preferencing, no combining data across services.

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 - **Contestability** (give market a chance at competition): e.g., interoperability
 - Fairness (competition based on merits): e.g., no self-preferencing, no combining data across services.
- Is the priority given to Amazon brands evidence of self-preferencing?
 - Not necessarily.

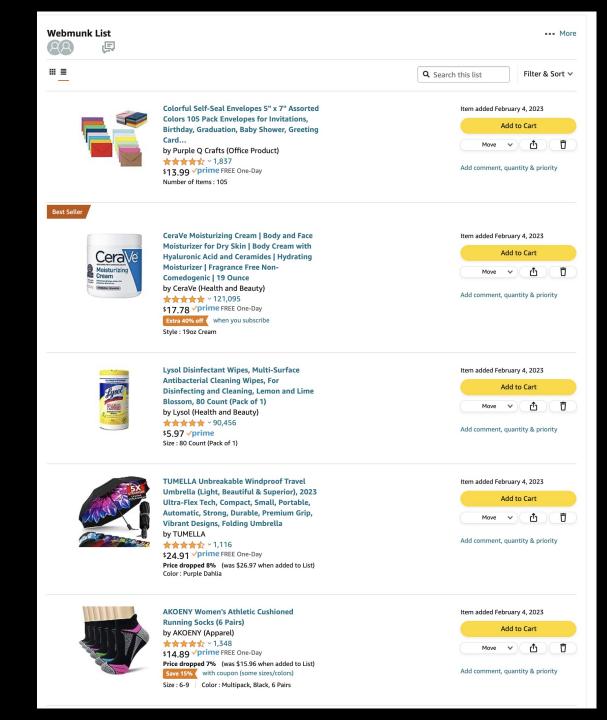
How Do We Test for Self-Preferencing?

- Aguiar et al. ('21) and Reimers et al. ('23): A platform is biased in favor of a product if the product attains <u>smaller success</u> conditional on <u>ex-</u> <u>ante assessment.</u>
 - **Ex-ante assessment:** product rank
 - <u>Success</u>: demand

Back to Webmunk (in progress, with Fradkin and MacKay)

Ask participants to perform incentivized shopping tasks:

- Search for products in pre-specified categories;
- Pick one product to add to "Webmunk Wishlist;"
- With high probability:
 - We buy a product on their wishlist;
 - Give them \$50-price as additional compensation.
- Amazon branded products are ~4% of the products listed and ~8% of the products chosen.



Testing for Self-Preferencing (prelim results)

| | Is Product Selected? | | | |
|----------------------------|----------------------|-----------|--|--|
| | (1) | (2) | | |
| Rank | -0.002*** | -0.002*** | | |
| | (0.000) | (0.000) | | |
| Amazon Brand | 0.008 | 0.031** | | |
| | (0.004) | (0.010) | | |
| Rank \times Amazon Brand | | -0.001*** | | |
| | | (0.000) | | |
| | | | | |
| \mathbb{R}^2 | 0.031 | 0.031 | | |
| Observations | 55,032 | 55,032 | | |
| | | | | |
| URL fixed effects | Yes | Yes | | |

Test suggests that platform is neutral or even biased against Amazon brands.

Is that enough?

• Dynamic "self-preferencing" could be difficult to detect in a crosssection (e.g., strategies allowing Amazon brands to accumulate more reviews than comparably similar third-party products).





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1 Count (Pack of 1)

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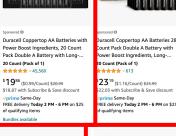
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Energizer AA Batteries and AAA

48 Count (Pack of 1)

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and 24 Max Triple A Batteries Comb...

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Count (Pack of 1)

++++++ ~ 146 964

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POWER BCOST



azon Basics 9 Volt Performance Energizer AA Batteries, Double A All-Purpose Alkaline Batteries, 5-Year Long-Lasting Alkaline Power helf Life, Easy to Open, Packaging... Batteries, 32 Count (Pack of 1) 32 Count (Pack of 1) +++++ ~ 18 424 \$23⁰⁶ (\$0.72/Count) 12.34 with Subscribe & Save discount

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Energizer AAA Batteries, Triple A

Long-Lasting Alkaline Power

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FREE delivery Today 2 PM - 6 PM on \$25

32 Count (Pack of 1)

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of qualifying items

FREE delivery Today 2 PM - 6 PM on \$2 of qualifying items





Duracell Coppertop AA Batteries with

Power Boost Ingredients, 20 Count

Pack Double A Battery with Long-...

20 Count (Pack of 1)

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prime Same-Day

of qualifying items

Bundles available

rating and number of customer ratings

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32 Count (Pack of 1)

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Power Boost Ingredients, 20 Count

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\$18.87 with Subscribe & Save discount

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20 Count (Pack of 1)

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\$19⁸⁶ (\$0.99/Count) \$20.99

Duracell Coppertop AA Batteries 28

Count Pack Double A Battery with

Power Boost Ingredients, Long-...

\$23¹⁹ (\$1.16/Count) \$25.99

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REE delivery Today 2 PM - 6 PM on \$25

20 Count (Pack of 1)

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Duracell Coppertop AAA Batterie

with Power Boost Ingredients, 20

Count Pack Triple A Battery with...

\$17.09 with Subscribe & Save discou

FREE delivery Today 2 PM - 6 PM on \$25

20 Count (Pack of 1)

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\$17⁹⁹ (\$0.90/Count)

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AA-24/AAA-24

Energizer AA Batteries and AAA

48 Count (Pack of 1)

***** - 54,646

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and 24 Max Triple A Batteries Comb.

Lasting Alkaline Power Batteries 12 with Power Boost Ingredients, 20 Count Pack Triple A Battery with. 20 Count (Pack of 1) ***** ~ 59.771 \$17⁹⁹ (\$0.90/Count) \$17.09 with Subscribe & Save discourt (prime Same Day FREE delivery Today 2 PM - 6 PM on \$25 of qualifying items







Energizer AAA Batteries, Triple A Duracell Coppertop AA Batteries 28 Long-Lasting Alkaline Power Count Pack Double A Battery with Batteries, 32 Count (Pack of 1) Power Boost Ingredients, Long-... 32 Count (Pack of 1) 20 Count (Pack of 1) ***** ~ 613 \$23¹⁹ (\$1.16/Count) \$25.99

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Amazon Basics 48 Pack AA High-Amazon Basics 36 Pack AAA High-Performance Alkaline Batteries, 10-Performance Alkaline Batteries, 10-Year Shelf Life, Easy to Open Value ... Year Shelf Life, Easy to Open Value ... 48 Count (Pack of 1) 36 Count (Pack of 1) ****** ~ 693.388

\$15⁶⁷ (\$0.33/Count) \$16.49 \$13⁷⁰ (\$0.38/Count) \$14.89 with Subscribe & Save discour \$13.02 with Subscribe & Save disc Anrime Same-Day prime Same-Day FREE delivery Today 2 PM - 6 PM on \$25 FREE delivery Today 2 PM - 6 PM on \$25 of qualifying items of qualifying items

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1 Count (Pack of 1) ***** ~ 2,641

Amazon Basics 24 Count AA & AAA

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Pack - 12 Double AA Batteries and 1.



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Energizer AA Batteries, Double A

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Count(Pack of 1)

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Energizer D Batteries, D Cell Long-Duracell Coppertop AAA Batteries Lasting Alkaline Power Batteries 12 with Power Boost Ingredients, 20 Count Pack Triple A Battery with

20 Count (Pack of 1) ***** ~ 59,771

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Energizer AAA Batteries, Triple A

Batteries 32 Count (Pack of 1)

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Long-Lasting Alkaline Powe

32 Count (Pack of 1)

***** ~ 9,566

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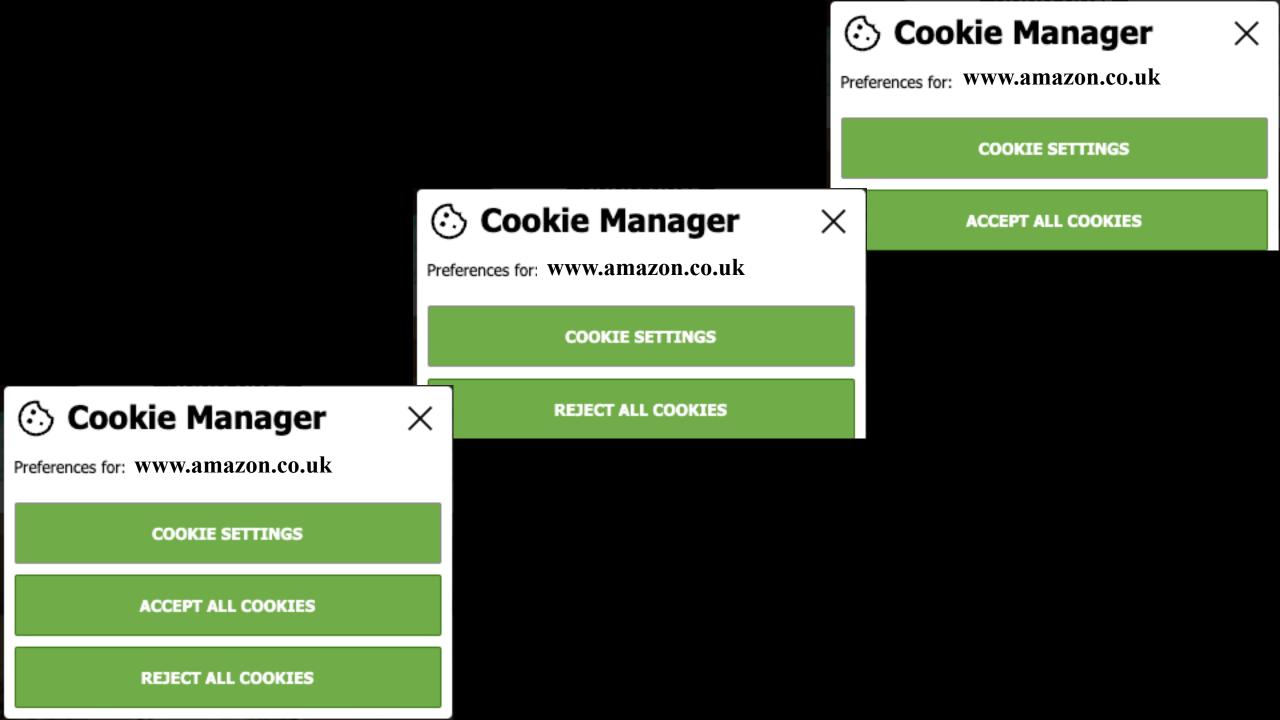
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Concluding Thoughts

- Incredibly exciting time to study regulation of digital platforms.
- Increasingly difficult to get companies to collaborate on some of these topics.
- Must be creative in data collection methods:
 - Freedom of Information Act (FOIA) requests;
 - Enroll study participants and track their digital behavior (but make it as realistic as possible);
 - Combine actual and hypothetical (surveys) choices;
 - Scraping (when allowed by journals and websites);
 - Access data from third parties/intermediaries (e.g., AirDNA).
- Look out for policy changes (e.g., GDPR in 2018, DMA in 2022, more to come in the US) → and don't just focus on the unintended consequences ☺