

# Dark Patterns at Scale:

Findings from a Crawl of 11K Shopping Websites

**Gunes Acar**

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Jonathan Mayer, Marshini Chetty,  
Arvind Narayanan



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INFORMATION  
TECHNOLOGY  
POLICY  
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# Overview

- 1. What is a dark pattern?**  
Definitions & examples
- 2. How do we identify dark patterns on the web at scale?**  
Automated measurements & prevalence
- 3. What can we do about dark patterns?**  
Legal / technical solutions, and future work

What is a Dark Pattern?

# Example #1: Instagram Ad



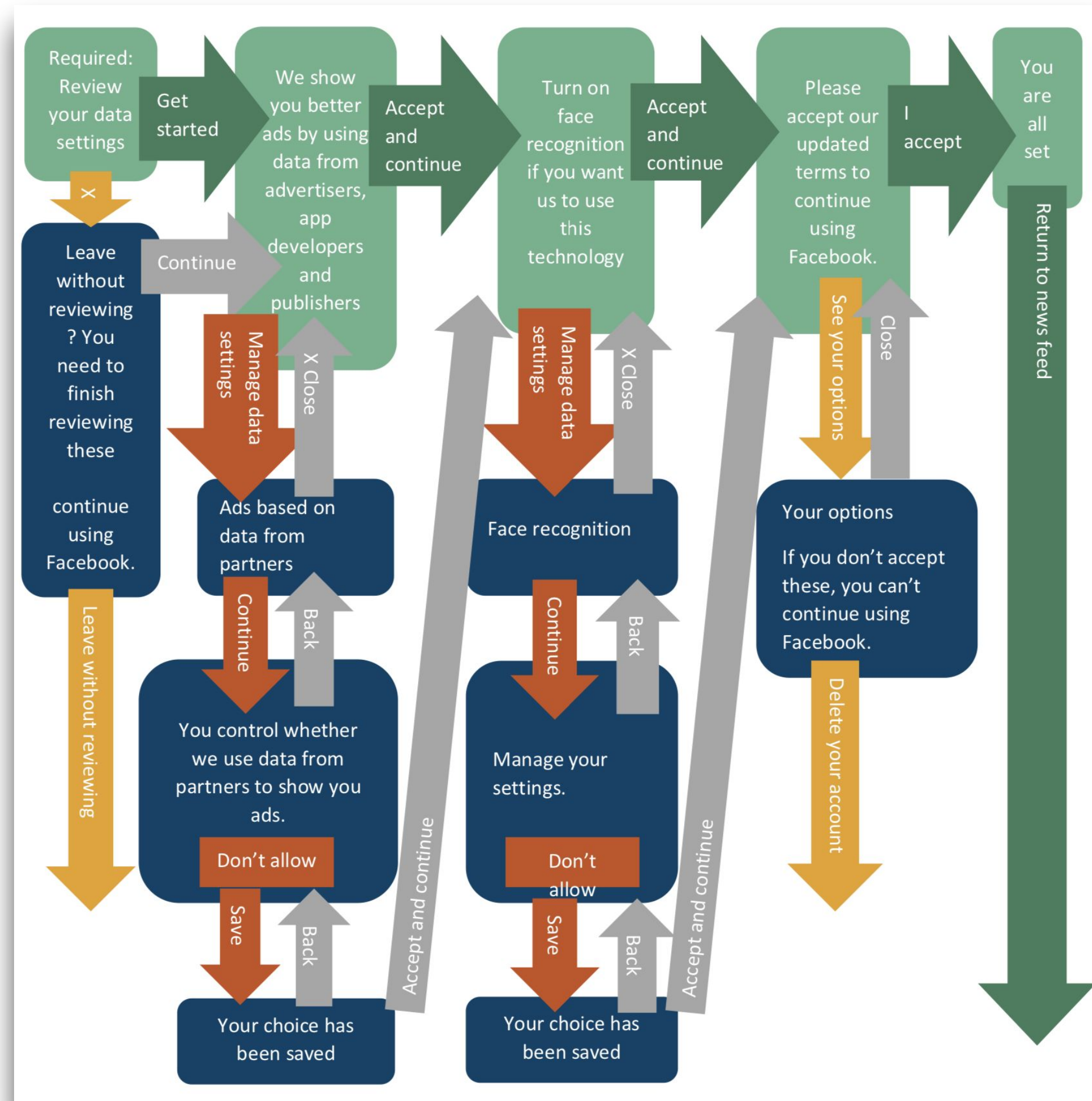


# Example #1: Instagram Ad



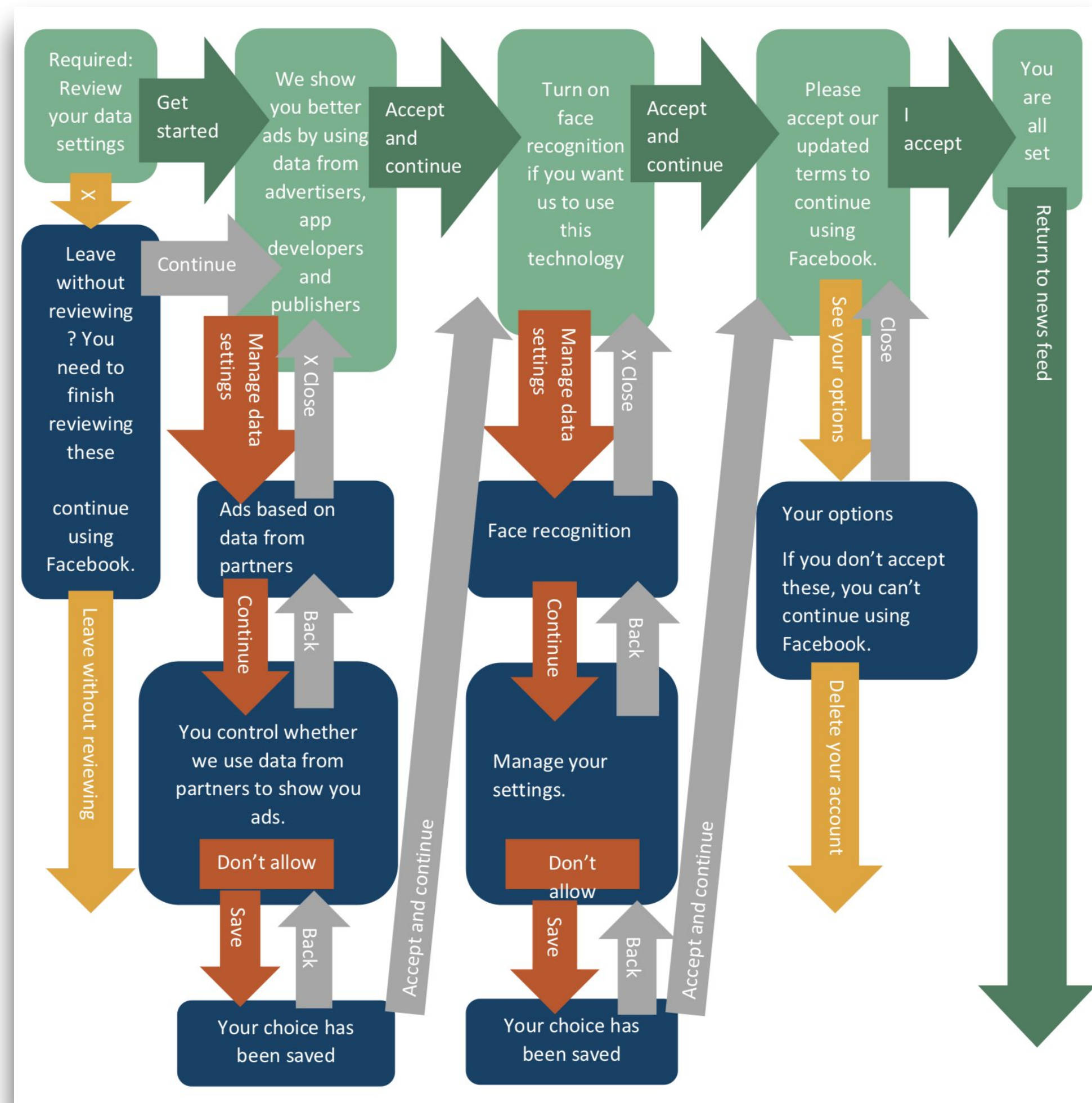
Not a real  
strand of hair

# Example #2: Facebook Consent





# Example #2: Facebook Consent



3 clicks to accept  
14 clicks to reject



# Example #3: Virgin Active Marketing

## HOW WE CONTACT YOU

By providing your details you agree that we can contact you (including by electronic means such as email, SMS and MMS) about promotions, special offers and discounts from Virgin Active. If you would prefer not to hear about these please untick this box.



We would also like to share your information with other Virgin companies and other carefully selected organisations so that they may contact you from time to time (including by electronic means such as email, SMS and MMS) about promotions, special offers and discounts we think may be of interest to you. Please untick this box if you would like to hear about these.





# Example #3: Virgin Active Marketing

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Untick to opt-out



# Example #3: Virgin Active Marketing

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Tick to opt-out

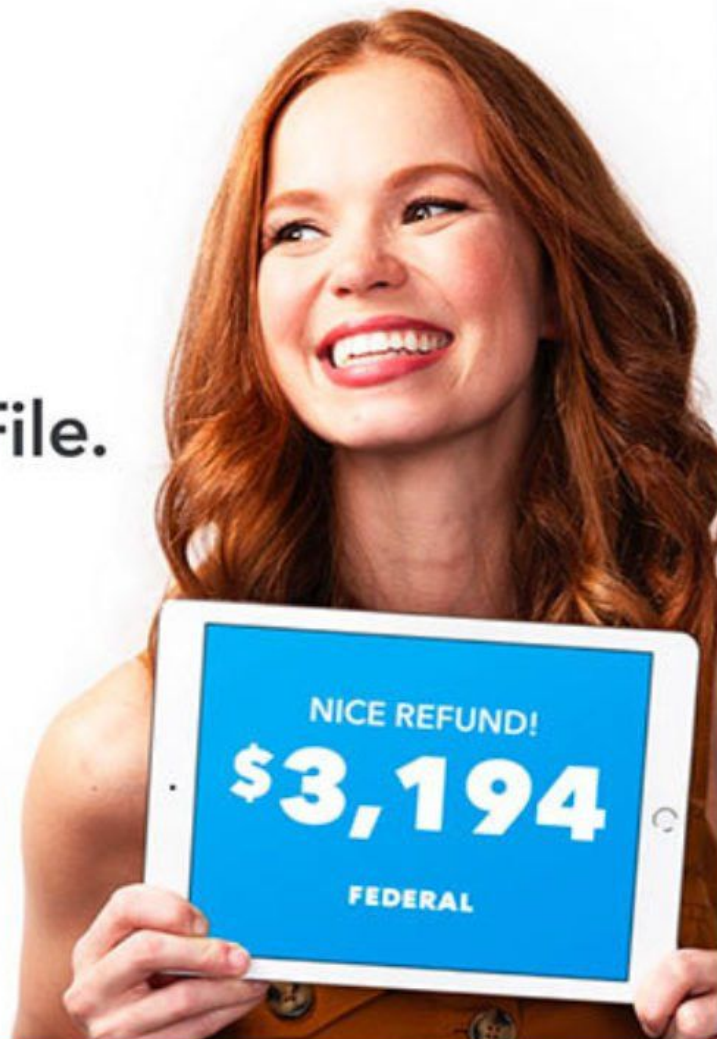


# Example #4: TurboTax Pricing

Maine and Massachusetts residents: Taxes are due 4/17. [File now!](#)

**intuit**  
**turbotax.** Products & Pricing Tools & Tips After You File Help Security Tax Reform [Sign In](#) [En Español](#)

**FREE**  
**Guaranteed.**  
**\$0 Fed. \$0 State. \$0 To File.**  
Easily and accurately file your simple tax returns for FREE. [See why it's free](#)



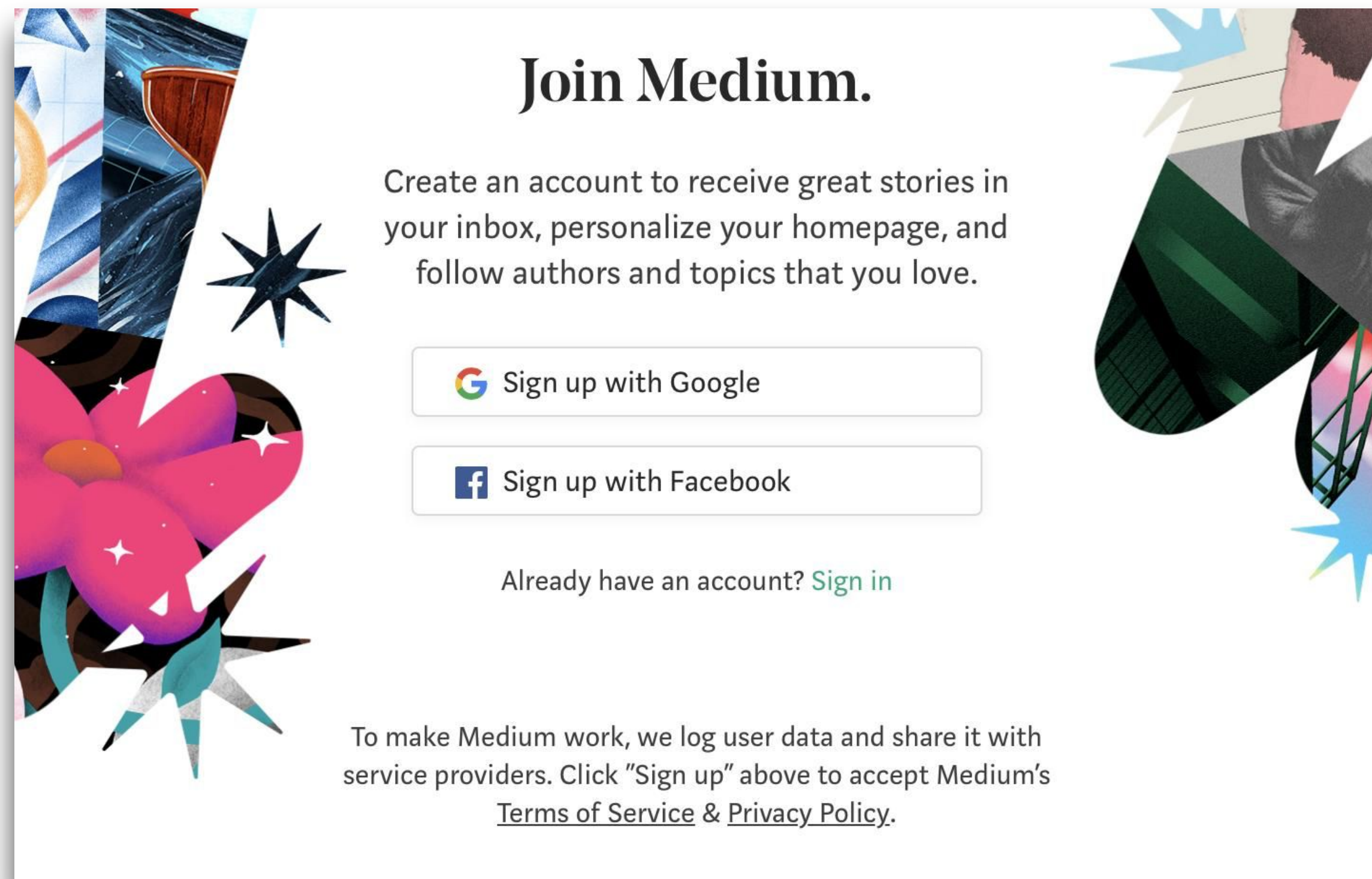
**intuit.**  
turbotax quickbooks mint  
One account. Everything Intuit.  
[Learn more](#)

User ID  
Password  
 Remember me  
[Sign In](#)  
By clicking Sign In, you agree to the TurboTax Terms of Service, Turbo Terms of Use and have read and acknowledge our Privacy Statement.  
[Forgot user ID or password?](#) | [Create an account](#)

✓ [Maximum refund, guaranteed](#) | ✓ [100% accurate calculations](#)





# Example #5: Medium Account Creation



**Join Medium.**

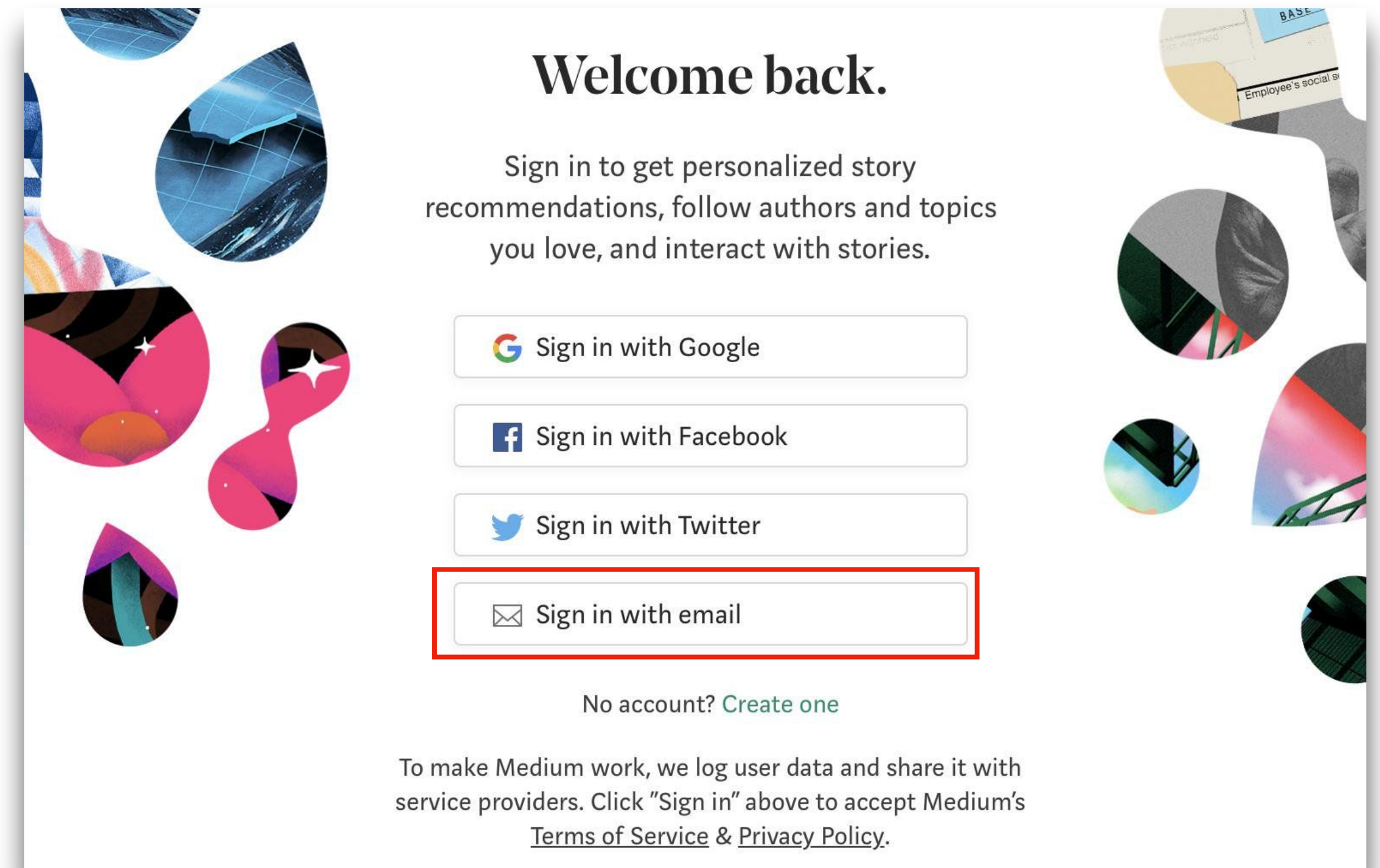
Create an account to receive great stories in your inbox, personalize your homepage, and follow authors and topics that you love.

 Sign up with Google

 Sign up with Facebook


Already have an account? [Sign in](#)


To make Medium work, we log user data and share it with service providers. Click "Sign up" above to accept Medium's [Terms of Service](#) & [Privacy Policy](#).





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To make Medium work, we log user data and share it with service providers. Click "Sign in" above to accept Medium's [Terms of Service](#) & [Privacy Policy](#).

“

Dark patterns are tricks used in websites and apps that make you do things that you didn't mean to, like buying or signing up for something.

”

— Brignull, 2010

# More Broadly ...

Dark patterns are user interface design choices that benefit an online service by **coercing**, **steering**, or **deceiving** users into making decisions that — if fully informed and capable of selecting alternatives — they might not make.

# How do Dark Patterns Work?

Asymmetric

Covert

Deceptive

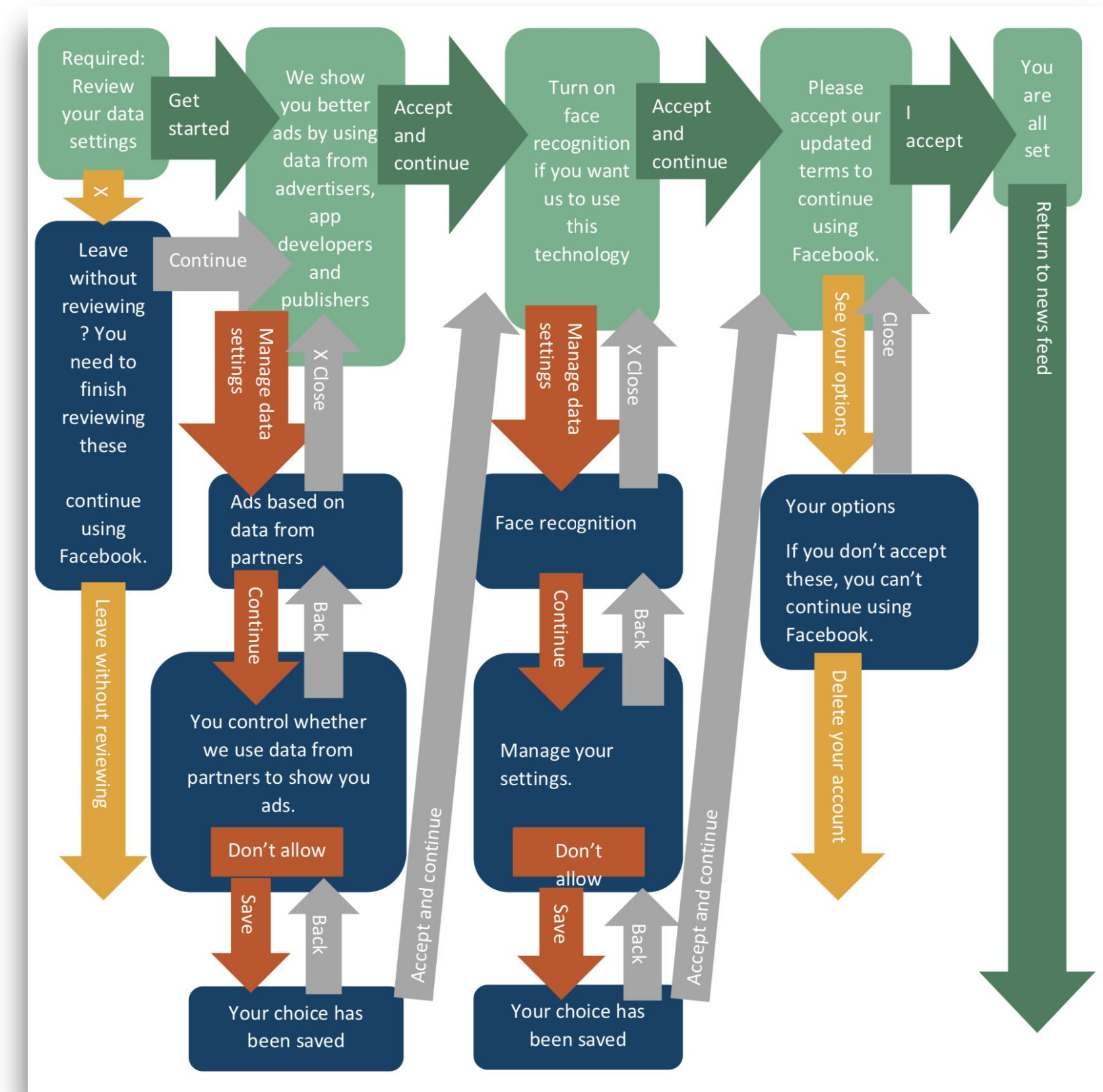
Hides Information

Restrictive



# How do Dark Patterns Work?

Asymmetric  
Covert  
Deceptive  
Hides Information  
Restrictive



# How do Dark Patterns Work?

Asymmetric

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Deceptive

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## HOW WE CONTACT YOU

By providing your details you agree that we can contact you (including by electronic means such as email, SMS and MMS) about promotions, special offers and discounts from Virgin Active. If you would prefer not to hear about these please untick this box.

We would also like to share your information with other Virgin companies and other carefully selected organisations so that they may contact you from time to time (including by electronic means such as email, SMS and MMS) about promotions, special offers and discounts we think may be of interest to you. Please untick this box if you would like to hear about these.

# How do Dark Patterns Work?

Asymmetric

Covert

Deceptive

Hides Information

Restrictive





# How do Dark Patterns Work?

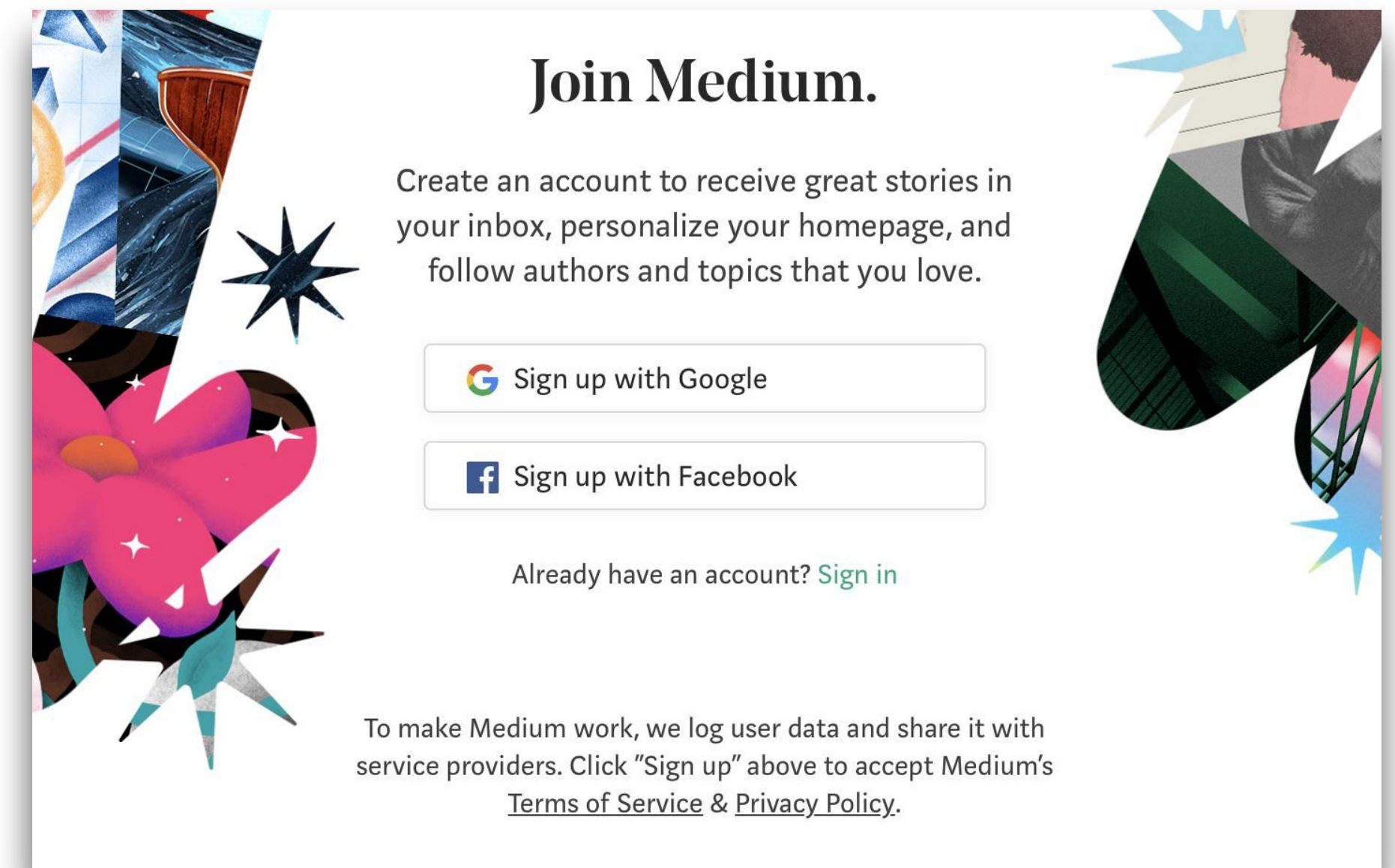
Asymmetric

Covert

Deceptive

Hides Information

Restrictive



# How do Dark Patterns Work?

Asymmetric

Covert

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Hides Information

Restrictive



# Why Use Dark Patterns?

<b>Money</b>	Nudging you to buy more
<b>Data</b>	Getting around privacy protections
<b>Time</b>	Making apps addictive

How can we identify and measure  
dark patterns on the web at scale?

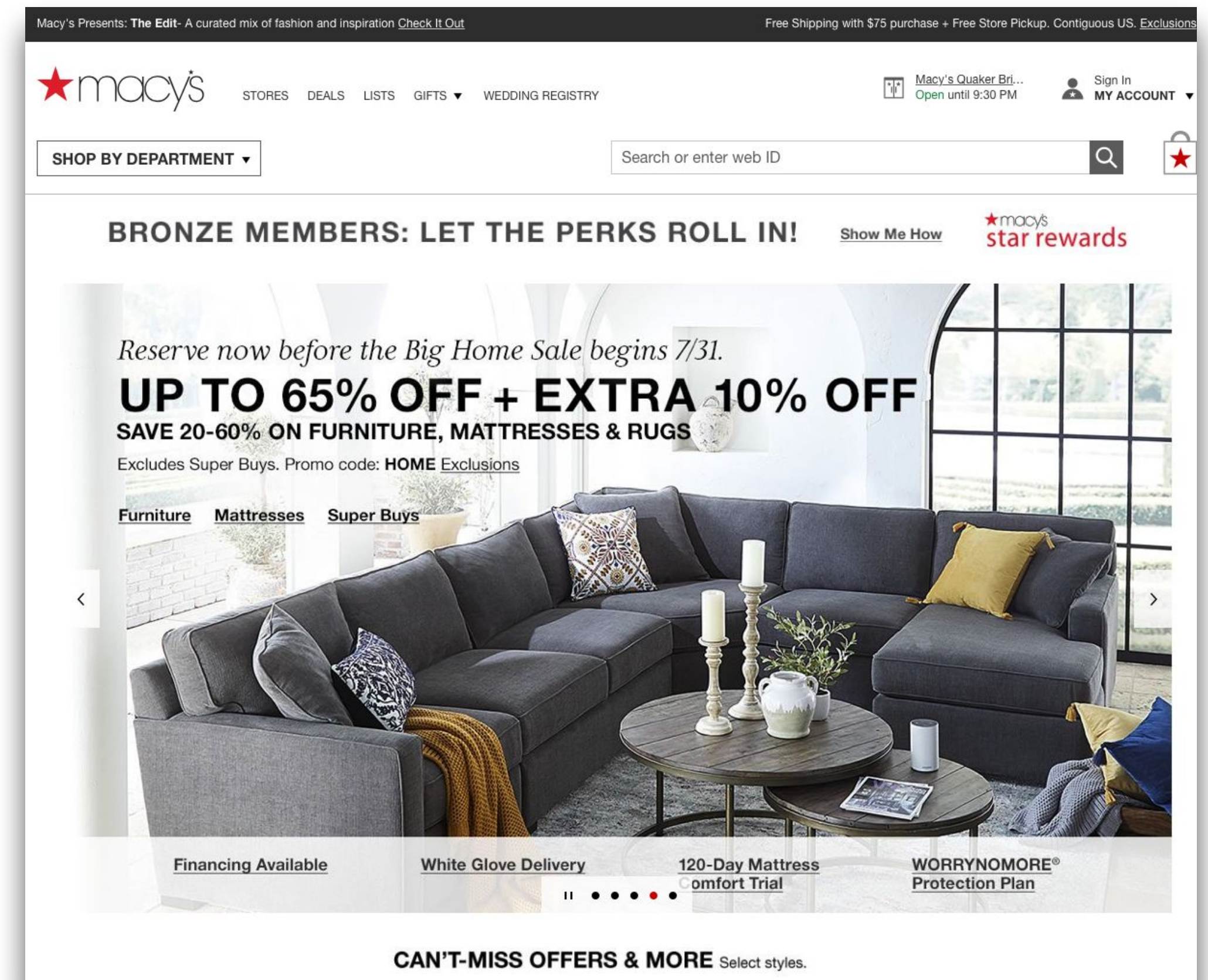
# Why Measurement?

1. Document various forms of user-facing patterns.
2. Measurement can be the basis of building defenses.
3. Companies respond to public pressure. Precedents include privacy & security measurement studies.

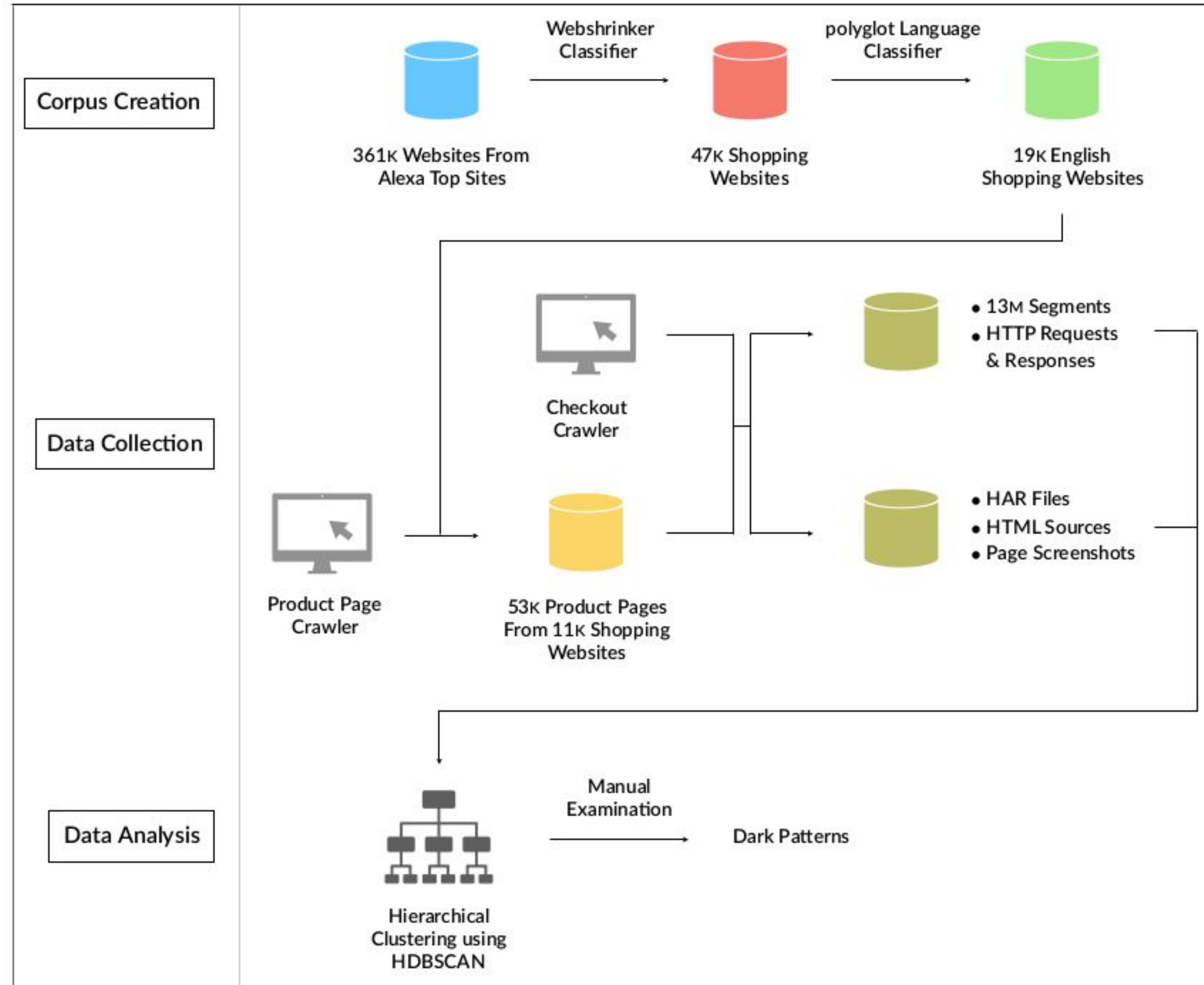


# Our study: Shopping Websites

1. Several anecdotal examples of dark patterns.
2. Gathered a corpus of 11K of the most popular shopping websites worldwide.

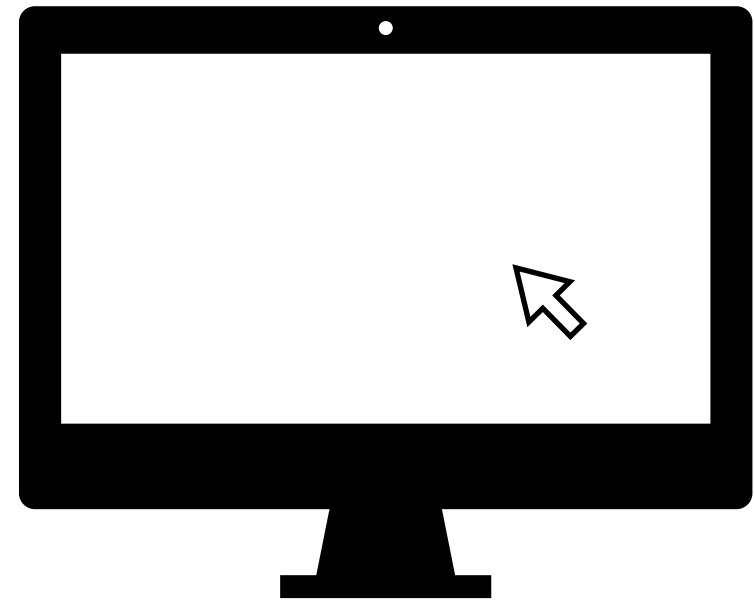


# Data collection and analysis pipeline





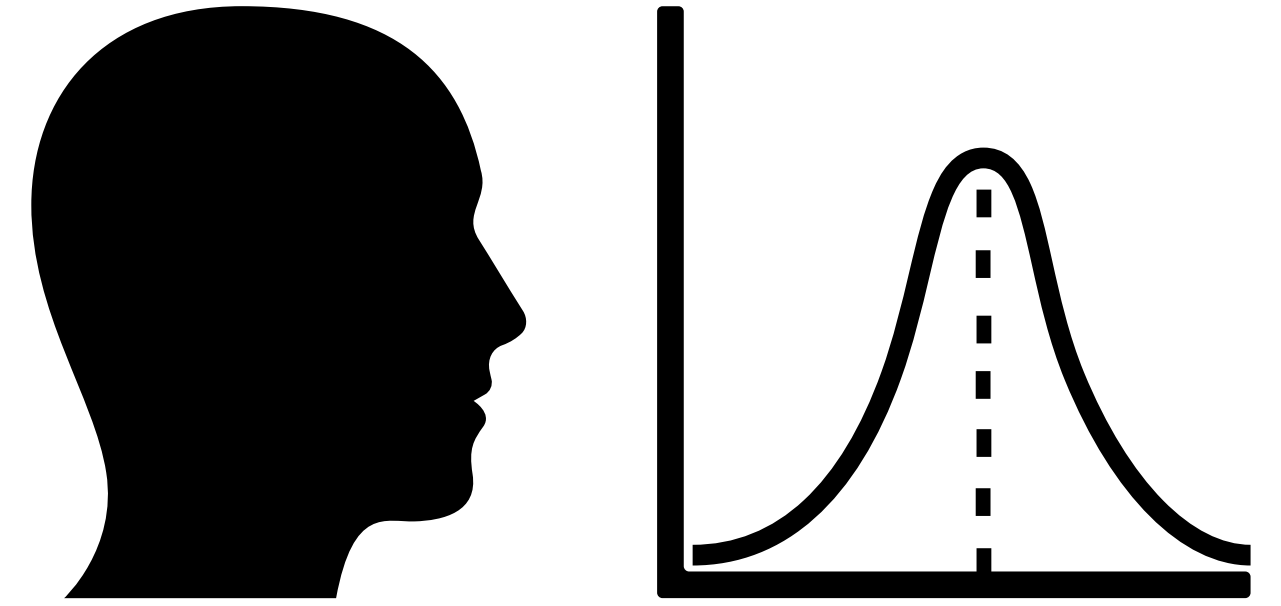
# Three Key Challenges



Mimicking a real user  
browsing websites

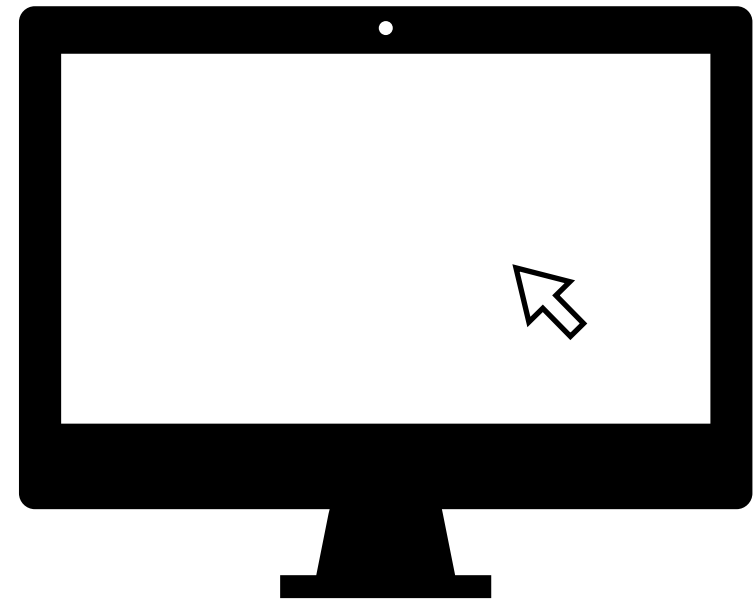


Collecting and storing  
data from websites

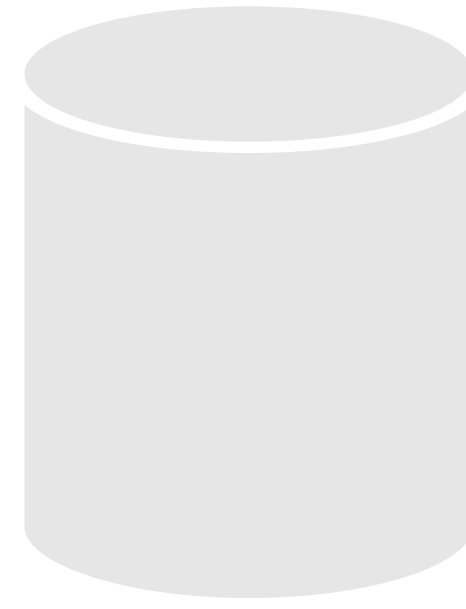


Analyzing collected  
data

# Three Key Challenges



Mimicking a real user  
browsing websites



Collecting and storing  
data from websites



Analyzing collected  
data

# Shopping Bot

American Rag Jamie T-Strap Platform Dress Sandals, Created for Macy's

★★★★★ 105 Reviews      2 Questions & 6 Answers

Limited-Time Special  
\$59.50  
Sale \$29.75 (50% off) Sale ends 7/30/19

Color: **Tan**

Find Your True Fit

Size: **Please select** | [Size Chart](#)

5M 5.5M 6M 6.5M 7M      See All Sizes

Qty: 1      -      +

**ADD TO BAG**      ADD TO LIST

**Availability**  
Select a size above in order to view availability.

**Product Details**

American Rag's Jamie dress sandals take your style up a notch with a platform heel and T-strap design for a look that wows!

- 4-1/2" block heel, 1-1/4" platform

**customers also shopped**

G by GUESS Shelli Sandals  
\$59.00  
★★★★★ (2)

Jessica Simpson Jakayla We...  
Orig. \$79.00  
Now \$36.13  
★★★★★ (1)

Call It Spring Acaviel Wed...  
Reg. \$50.00  
Sale \$25.00



# Shopping Bot

Macy's / Shoes / Sandals & Flip Flops

**American Rag**  
Jamie T-Strap Platform Dress Sandals, Created for Macy's  
★★★★★ 105 Reviews      2 Questions & 6 Answers  
**Limited-Time Special**  
\$59.50  
**Sale \$29.75 (50% off)** Sale ends 7/30/19

Color: **Red**  
See All Colors

Find Your True Fit

Size: **Please select** | Size Chart  
5M 5.5M 6M 6.5M 7M See All Sizes

Qty: 1

**ADD TO BAG**    ADD TO LIST

**Availability**  
Select a size above in order to view availability.

**Product Details**

American Rag's Jamie dress sandals take your style up a notch with a platform heel and T-strap design for a look that wows!

- 4-1/2" block heel, 1-1/4" platform

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\$59.00  
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Orig. \$79.00  
Now \$36.13  
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Call It Spring Acaviel Wed...  
Reg. \$50.00  
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# Shopping Bot

Macy's / Shoes / Sandals & Flip Flops

**American Rag**  
Jamie T-Strap Platform Dress Sandals, Created for Macy's  
★★★★★ 105 Reviews      2 Questions & 6 Answers  
**Limited-Time Special**  
\$59.50  
**Sale \$29.75 (50% off)** Sale ends 7/30/19

Color: **Black Micro**  
See All Colors

Find Your True Fit

Size: **Please select** | [Size Chart](#)  
See All Sizes

Qty: 1

**ADD TO BAG**    **ADD TO LIST**

**Availability**  
Select a size above in order to view availability.

**Product Details**

American Rag's Jamie dress sandals take your style up a notch with a platform heel and T-strap design for a look that wows!

- 4-1/2" block heel, 1-1/4" platform

**customers also shopped**

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\$59.00  
★★★★★ (2)

Jessica Simpson Jakayla We...  
Orig. \$79.00  
Now \$36.13  
★★★★★ (1)

Call It Spring Acaviel Wed...  
Reg. \$50.00  
Sale \$25.00



# Shopping Bot

Macy's / Shoes / Sandals & Flip Flops

**American Rag**  
Jamie T-Strap Platform Dress Sandals, Created for Macy's  
★★★★★ 105 Reviews      2 Questions & 6 Answers  
**Limited-Time Special**  
\$59.50  
**Sale \$29.75** (50% off) Sale ends 7/30/19

Color: **Black Micro**  
See All Colors

Find Your True Fit  
Size: **7M** | Size Chart  
See All Sizes

Qty: 1

**ADD TO BAG**    ADD TO LIST

**Ship It**  
In stock: Usually ships within 3 business days.

**Free Pickup In Store**  
Check Availability In Stores

**Product Details**

American Rag's Jamie dress sandals take your style up a notch with a platform heel and T-strap

**customers also shopped**

- G by GUESS Shelli Sandals  
\$59.00  
★★★★★ (2)
- Jessica Simpson Jakayla We...  
Orig. \$79.00  
Now \$36.13  
★★★★★ (1)
- Call It Spring Acaviel Wed...  
Reg. \$50.00  
Sale \$25.00

# Shopping Bot

American Rag Jamie T-Strap Platform Dress Sandals, Created for Macy's

★★★★★ 105 Reviews      2 Questions & 6 Answers

Limited-Time Special  
\$59.50  
**Sale \$29.75** (50% off) Sale ends 7/30/19

Color: **Black Micro**

Find Your True Fit

Size: **6.5M** | Size Chart

Qty: 1

**ADD TO BAG**    ADD TO LIST

**Ship It**  
In stock: Usually ships within 3 business days.

**Free Pickup In Store**  
[Check Availability In Stores](#)

**Product Details**

American Rag's Jamie dress sandals take your style up a notch with a platform heel and T-strap

**customers also shopped**

- G by GUESS Shelli Sandals  
\$59.00  
★★★★★ (2)
- Jessica Simpson Jakayla We...  
Orig. \$79.00  
**Now \$36.13**  
★★★★★ (1)
- Call It Spring Acaviel Wed...  
Reg. \$50.00  
**Sale \$25.00**



# Shopping Bot

A screenshot of a web browser showing a shopping cart notification on the Macy's website. The notification is a white modal box with a close button (X) in the top right corner. It displays the following information:

- 1 item added to your bag**
- Item:** American Rag Jamie T-Strap Platform Dress Sandals, Created for Macy's. Color: Black Micro. Size: 6.5M.
- Price:** Original price \$59.50, Sale price \$29.75. You just saved \$29.75!
- Bag Summary:** 1 item(s) in bag, subtotal: \$29.75, you saved: \$29.75.
- Buttons:** VIEW BAG & CHECKOUT (red button), CONTINUE SHOPPING (grey button).
- Shipping:** You're \$45.25 away from Free Shipping. Excludes furniture, mattresses & other exclusions apply.
- Customers who bought this also shopped...:** A carousel of six recommended products with their names, prices, and ratings.

Product Name	Price	Special Offer	Rating
G by GUESS Shelli Sandals	\$59.00		★★★★★ (2)
Call It Spring Acaviel Wed...	Reg. \$50.00, Sale \$25.00	Limited-Time Special	
American Rag Charelize Perf...	Reg. \$59.50, Sale \$29.75	Limited-Time Special	★★★★★ (44)
Material Girl Bretta Wedge...	Orig. \$59.50, Now \$29.63	LAST ACT	coupon excluded, ★★★★★ (36)
Material Girl Bretta Wedge...	Orig. \$59.50, Now \$29.63	LAST ACT	coupon excluded, ★★★★★ (4)
American Rag Reeta Block-H...	Reg. \$59.50, Sale \$49.99		★★★★★ (141)

# Shopping Bot

The screenshot shows a web browser window with the URL <https://www.macys.com/my-bag>. The page features the Macy's logo and navigation links for STORES, DEALS, LISTS, GIFTS, and WEDDING REGISTRY. A search bar and a shopping bag icon with a '1' are visible. The main content area is titled 'Shopping Bag' and includes a section for 'Your Pickup Store' (Macy's Dulles) and 'Offers' (none available). A single item is listed: American Rag Jamie T-Strap Platform Dress Sandals, with a quantity of 1. The item's price is shown as a sale price of \$29.75, down from a regular price of \$59.50. Shipping options are provided, with 'Ship It' selected. A checkout summary on the right shows a subtotal of \$29.75, shipping of \$10.95, and a pre-tax order total of \$40.70. A 'PROCEED TO CHECKOUT' button is prominently displayed.

Macy's Shopping Bag

https://www.macys.com/my-bag

Macy's Presents: **The Edit** - A curated mix of fashion and inspiration [Check It Out](#) Free Shipping with \$75 purchase + Free Store Pickup. Contiguous US. [Exclusions](#)

★ macys STORES DEALS LISTS GIFTS ▼ WEDDING REGISTRY

Macy's Dulles Closed until 10 AM Sign In MY ACCOUNT ▼

SHOP BY DEPARTMENT Search or enter web ID

★ Shopping Bag

**Your Pickup Store**  
Macy's Dulles [Change Store](#)

**Offers**  
Sorry, there are no offers that apply to the items in your bag. To see if you have other offers, [sign in](#).

**Enter Promo Code.** Limit Of 1 Offer Per Order.

You're **\$45.25** away from **Free Shipping!**  
Excludes furniture, mattresses, and other items. [See Exclusions](#)

Subtotal	\$29.75
Shipping ⓘ	\$10.95
<b>Pre-Tax Order Total</b>	<b>\$40.70</b>
You saved ⓘ	\$29.75

**Ship It.**  
In Stock: Usually Ships Within 3 Business Days.

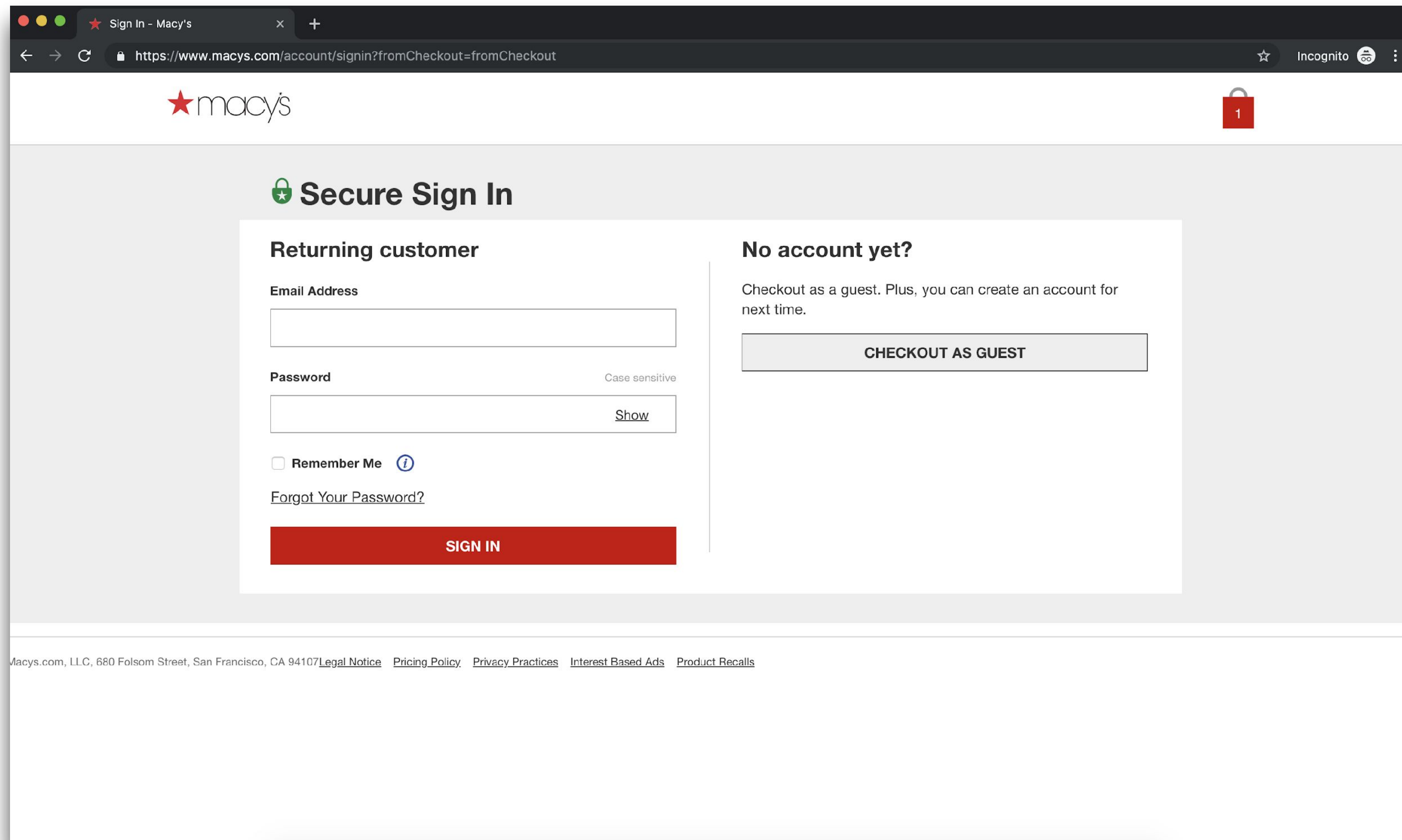
**Pick Up In Store.**  
We Will Ship Your Item(S) To Macy's Dulles.  
Ready In **6-9 BUSINESS DAYS**

[Move To List](#) [Remove](#)

★ macys star rewards Get Better Benefits When You Shop With Star Rewards!

PayPal Check out

# Shopping Bot





# Shopping Bot

The screenshot shows a web browser window with the title "Macy's Checkout" and the URL <https://www.macys.com/chkout/rc?perfectProxy=true&segment=256-24,327-21,392-21>. The browser is in Incognito mode. The page content is divided into two main sections: a shipping address form and a summary table.

**Shipping address**

First name

Last name

Address line 1

Address line 2 (optional)

ZIP code  State

City

Phone number

**CONTINUE**

**Shipping options**

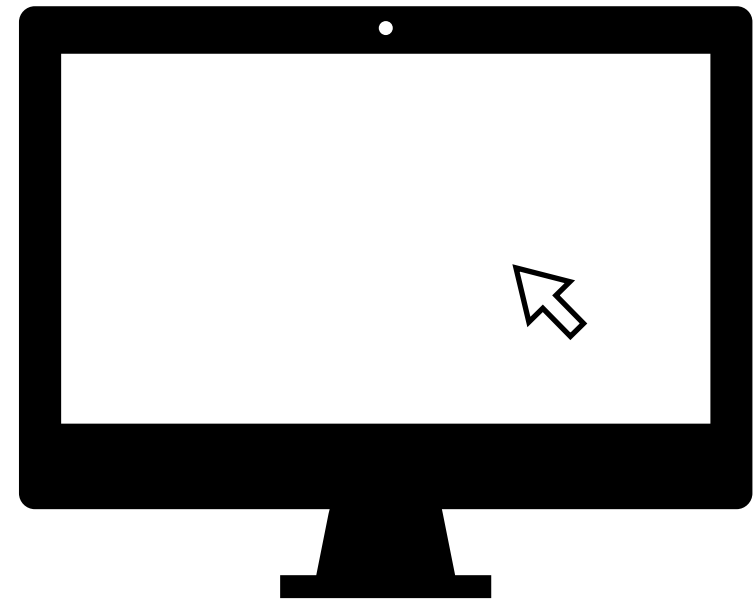
**Summary Table:**

<b>Subtotal</b>	<b>\$29.75</b>
Shipping	\$10.95
Estimated tax ⓘ	\$1.79
<b>Order total</b>	<b>\$42.49</b>
You saved	\$29.75

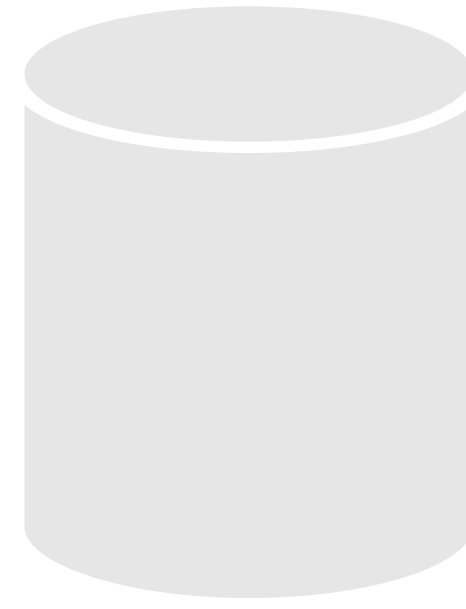
**PLACE ORDER**

[https://www.macys.com/chkout/startguestcheckout?bypass\\_redirect=true](https://www.macys.com/chkout/startguestcheckout?bypass_redirect=true)

# Three Key Challenges



Mimicking a real user  
browsing websites



Collecting and storing  
data from websites

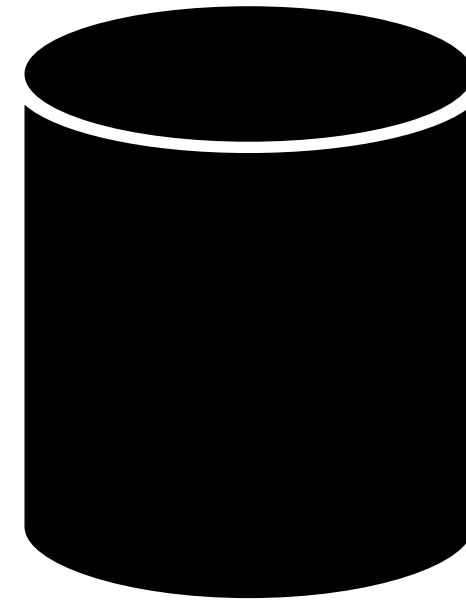


Analyzing collected  
data

# Three Key Challenges



Mimicking a real user  
browsing websites



Collecting and storing  
data from websites




Analyzing collected  
data



# Page Segments

Macy's / Shoes / Boots



**Sporto**  
Dana Boots  
★★★★★ 76 Reviews  
**LAST ACT**  
\$79.00  
**Now \$39.13** (50% off)  
coupon excluded [Details](#)

Color: **Black**

\$39.13

\$25.03

Size: **Please select** | [Size Chart](#)

6M 6.5M 9.5M


Qty: 1

**Availability**  
Select a size above in order to view availability.


**Product Details** —

Eastman Sporto's Dana boots feature modern lines with a hint of retro inspiration and plush faux fur for a


**customers also shopped**



Sporto Jenny Water-Resista...  
Orig. \$79.00  
**Now \$39.13**  
★★★★★ (45)



Style & Co Angiee Lace-Up ...  
Orig. \$79.50  
**Now \$37.93**  
★★★★★ (29)



Baretraps Arlow Winter Boo...  
Orig. \$99.00  
**Now \$34.13**  
★★★★★ (54)

# Page Segments

The image shows a product page for Sporto Dana Boots with several annotations and callouts. The main product is a black leather boot with a fur lining. The page includes a breadcrumb trail 'Macy's / Shoes / Boots', a product title 'Sporto Dana Boots', a star rating of 4.5 stars (76 Reviews), and a price of \$39.13 (50% off from \$79.00). The page also features a 'customers also shopped' section with three other boot products: Sporto Jenny Water-Resistant Boots, Style & Co Angiee Lace-Up Boots, and Baretraps Arlow Winter Boots. Each product in the 'customers also shopped' section has its own price, original price, and star rating. The page also includes a size selection dropdown, a quantity selector, and 'ADD TO BAG' and 'ADD TO LIST' buttons. Annotations include 'Macy's / Shoes / Boots' at the top left, '\$25.03' and '\$39.13' near the price, 'Color: Black' near the color selector, 'LAST ACT \$79.00 Now \$39.13 (50% off)' near the price, 'coupon excluded Details' near the price, 'customers also shopped' near the 'customers also shopped' section, 'Sporto Dana Boots' near the product title, 'Sporto Jenny Water-Resista...' near the first product in the 'customers also shopped' section, 'Style & Co Angiee Lace-Up ...' near the second product, 'Baretraps Arlow Winter Boo...' near the third product, 'ADD TO BAG' near the quantity selector, 'ADD TO LIST' near the 'ADD TO LIST' button, 'Availability Select a size above in order to view availability.' near the availability message, and 'Product Details Eastman Sporto's Dana boots feature modern lines with a hint of retro inspiration and plush faux fur for a' near the product details.

Macy's / Shoes / Boots

Macy's / Shoes / Boots

Sporto Dana Boots

★★★★★ 76 Reviews

LAST ACT \$79.00 Now \$39.13 (50% off)

coupon excluded Details

customers also shopped

customers also shopped

Sporto Jenny Water-Resista...

Orig. \$79.00 Now \$39.13

★★★★★ (45)

Style & Co Angiee Lace-Up ...

Orig. \$79.50 Now \$37.93

★★★★★ (29)

Baretraps Arlow Winter Boo...

Orig. \$99.00 Now \$34.13

★★★★★ (54)

Size: Please select | Size Chart

6M 6.5M 9.5M

Qty: 1

ADD TO BAG

ADD TO LIST

Availability Select a size above in order to view availability.

Product Details

Eastman Sporto's Dana boots feature modern lines with a hint of retro inspiration and plush faux fur for a

ADD TO LIST

ADD TO BAG

ADD TO LIST

ADD TO LIST



# Page Segments

- HTML Sources
- HAR files
- Screenshots
- HTTP Requests
- HTTP Responses

The image shows a product page for 'Sporto Dana Boots' with several annotations and callouts. The main product is a black, high-top boot with laces and a fur lining. The page includes a breadcrumb trail 'Macy's / Shoes / Boots', a price of '\$39.13' (50% off from '\$79.00'), and a 'LAST ACT' badge. There are also callouts for 'Color: Black', '76 Reviews', and 'coupon excluded Details'. The 'customers also shopped' section features three other boot products: 'Sporto Jenny Water-Resista...', 'Style & Co Angiee Lace-Up ...', and 'Baretraps Arlow Winter Boo...'. Each of these products has its own price, original price, and review count callouts. The main product page also has a size selection dropdown (6M, 6.5M, 9.5M), a quantity selector (Qty: 1), and 'ADD TO BAG' and 'ADD TO LIST' buttons. The 'Availability' section states 'Select a size above in order to view availability.' and the 'Product Details' section is partially visible, showing 'Eastman Sporto's Dana boots feature modern lines with a hint of retro inspiration and plush faux fur for a...'. The breadcrumb trail is also annotated with 'Macy's / Shoes / Boots'.



A JavaScript library that makes observing changes to the DOM easy

82 commits

1 branch

0 releases

4 contributors

Apache-2.0

Branch: master

New pull request

Create new file

Upload files

Find file

Clone or download

rafaelw Update APIReference.md

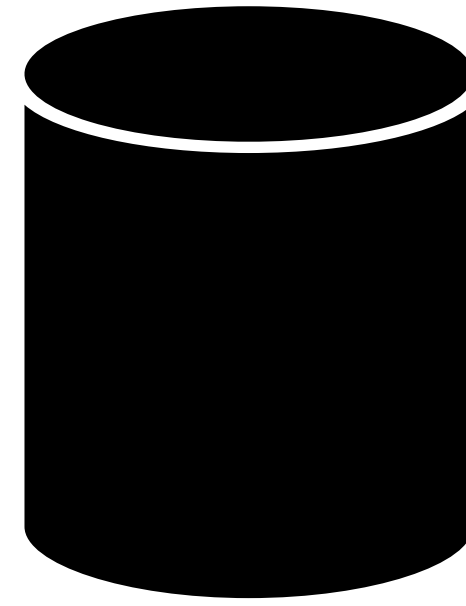
Latest commit 421110f on Apr 12, 2015

docs	Update ObserversVsEvents.md	6 years ago
examples	Updated to latest typescript	5 years ago
src	added reparented to characterData query	5 years ago
tests	added reparented to characterData query	5 years ago
util	Updated to latest typescript	5 years ago
.gitignore	update TypeScript	6 years ago

# Three Key Challenges



Mimicking a real user  
browsing websites



Collecting and storing  
data from websites

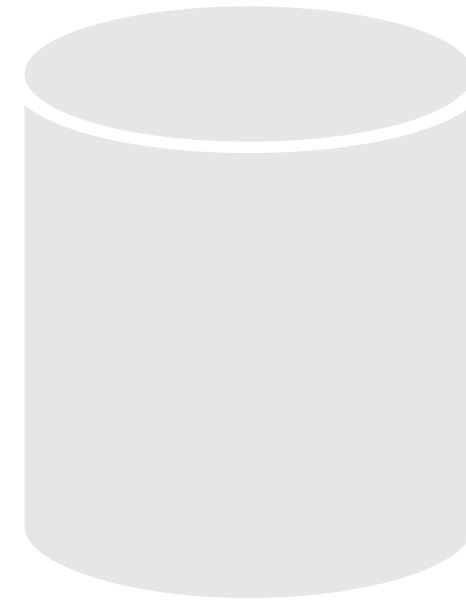


Analyzing collected  
data

# Three Key Challenges



Mimicking a real user  
browsing websites



Collecting and storing  
data from websites



Analyzing collected  
data



# Clustering Segments

coupon excluded [Details](#)

Macy's / Shoes / Boots

Orig. \$79.50  
**Now \$37.93** ★★★★★ (54)

**Sporto** Dana Boots **LAST ACT**  
\$79.00  
**Now \$39.13** (50% off)

★★★★★ (45)

Size: **Please select** | [Size Chart](#)

6M 6.5M 9.5M

**ADD TO BAG**

Orig. \$79.00  
**Now \$39.13** ★★★★★ 76 Reviews

**customers also shopped** ★★★★★ (29)  
Sporto Jenny Water-Resista...

Color: **Black** Qty: 1 [Style & Co Angiee Lace-Up ...](#)

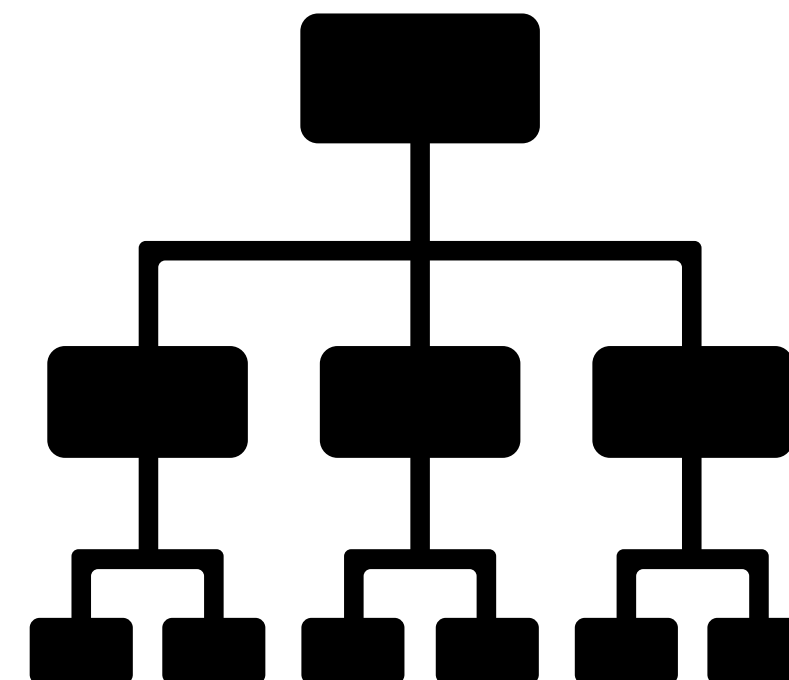
Orig. \$99.00  
**Now \$34.13** **\$39.13** Baretraps Arlow Winter Boo...

**Availability**  
Select a size above in order to view availability.

**ADD TO LIST** **\$25.03**

**Product Details** —

Eastman Sporto's Dana boots feature modern lines with a hint of retro inspiration and plush faux fur for a



Hierarchical Clustering



Examine clusters for dark patterns

1,818 dark patterns on 1,254  
shopping websites

# 15 Types, 7 Categories

## Sneaking

1. Sneak into Basket
2. Hidden Costs
3. Hidden Subscription

## Urgency

1. Countdown Timer
2. Limited-time Message

## Scarcity

1. Low-stock Message
2. High-demand Message

## Misdirection

1. Confirmshaming
2. Visual Interference
3. Trick Questions
4. Pressured Selling

## Social Proof

1. Activity Messages
2. Testimonials of Uncertain Origin

## Obstruction

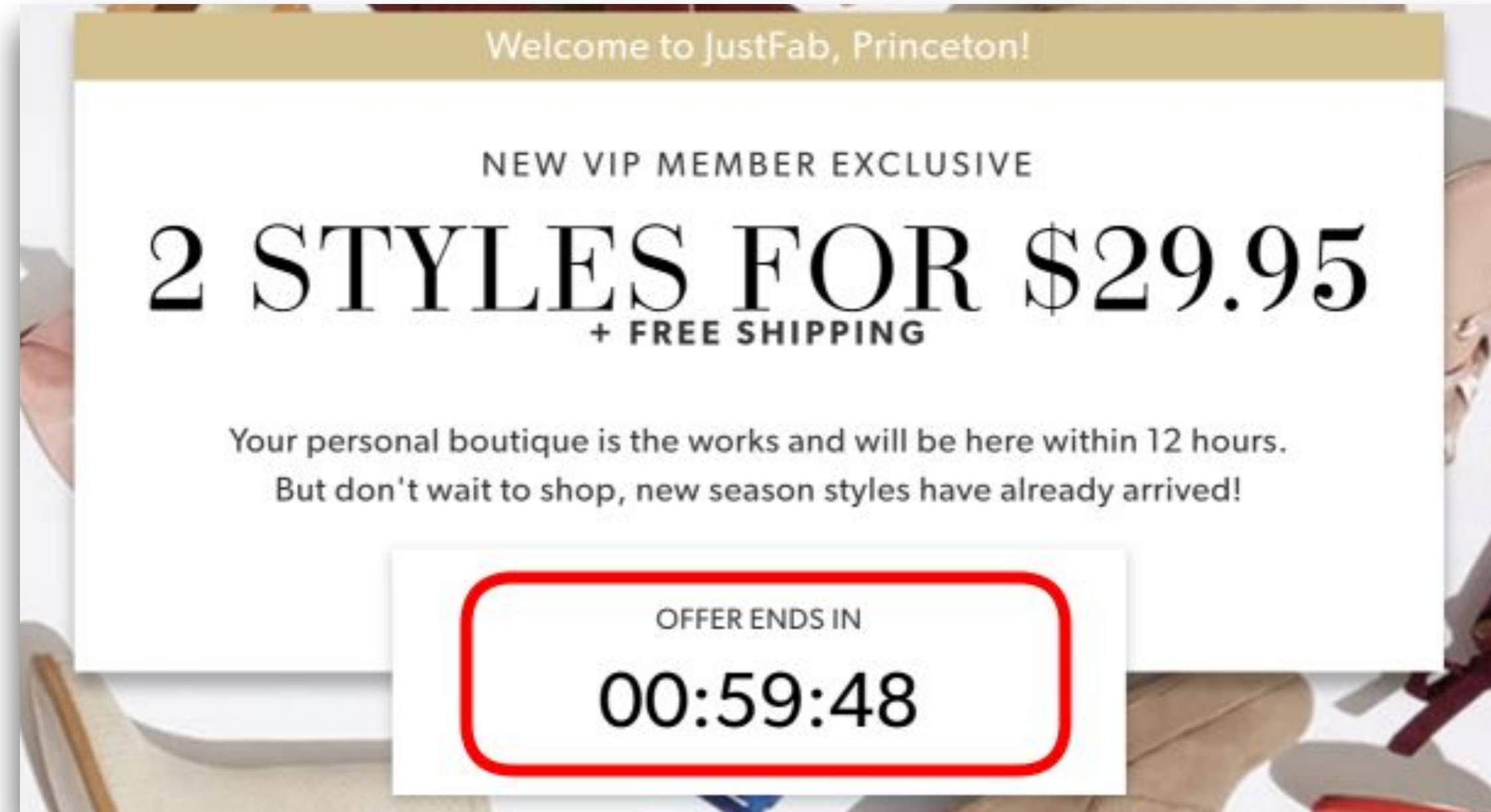
1. Hard to Cancel

## Forced Action

1. Forced Enrollment



# DP #1: Urgency – Timers



- 393 instances across 361 websites.
- 157 deceptive instances.

# DP #2: Urgency — Limited Time

XE800ZBA-HC1US 

## HMD Odyssey+ - Windows Mixed Reality Headset

★★★★☆ 3.6 (48) [Write a review](#)

Windows Mixed Reality

Dual 3.5" AMOLED (1440x1600 dots)

 Price includes \$200 instant savings - 40% off. Limited time only.


**\$299.99** ~~\$499.99~~  
You Save \$200

SKU: T181129005

In stock

**Only 3 left**

~~\$119.00~~ **\$99.00**

Save: 17% off **Sale ends soon:** 

SIZE \*

- 88 instances across 84 websites.



# DP #3: Sneaking – Sneak into Basket



TODAY'S SALE!- VALID ONLINE ONLY- \*Up To 45% Off + Free Local Delivery

① Delivery Info — ② Billing Info — ③ Review & Place Order

Need assistance? We are here to help! Call us any time at 877-638-3303

[Log in](#) to apply your points or discounts and earn even more points towards future purchases

### SHOPPING CART


Item	Qty	Price	Subtotal
 <b>Dreaming of Tuscany</b> Selected: "As Shown" 2nd choice: similar as possible, same look and feel	1	\$52.99	\$52.99
 <b>Greeting Card Service</b> Selected: "STANDARD"	1	\$3.99	\$3.99

✓ In stock: [Ships today if ordered by 2pm EST!](#)

QTY: 1 **ADD TO MY CART**

LIFETIME Quality Assurance Warranty | 90 Day Return Policy | 110% Low Price Guarantee

Send me purchase updates on Messenger  
 Send to Messenger

 **LG V40 ThinQ - Full Edge Tempered Glass Screen Protector, Black**  
~~\$19.99~~ **\$4.99**  
 Add to my cart

- 7 instances across 7 websites.




# DP #4: Sneaking — Hidden Subscription

Case – **SAVE over \$100** SALE

Collection

Average bottle rating i



15 bottles for **JUST \$13.29 each**

**\$199.35**

Reg. ~~\$306.35~~

**SAVE \$107.00**

**Shipping Rates**


Enjoy **FREE shipping** with WSJwine Advantage [Learn More](#)

**Add to Cart**

Item No. A07897

**VIP** ✦ *rewards*

**YOU DESERVE OUR SPECIAL TREATMENT!**



Start saving with the Ross-Simons VIP Rewards Club! Annual benefits include:

- Three \$50 gift coupons (\$150 total) to use on three distinct purchases – it more than pays for itself!
- Free 2-business-day domestic shipping.
- Free shipping on jewelry returns.
- Exclusive invitation-only savings events that you'll receive several times a year.
- Priority phone line answered by a dedicated VIP consultant to assist you.

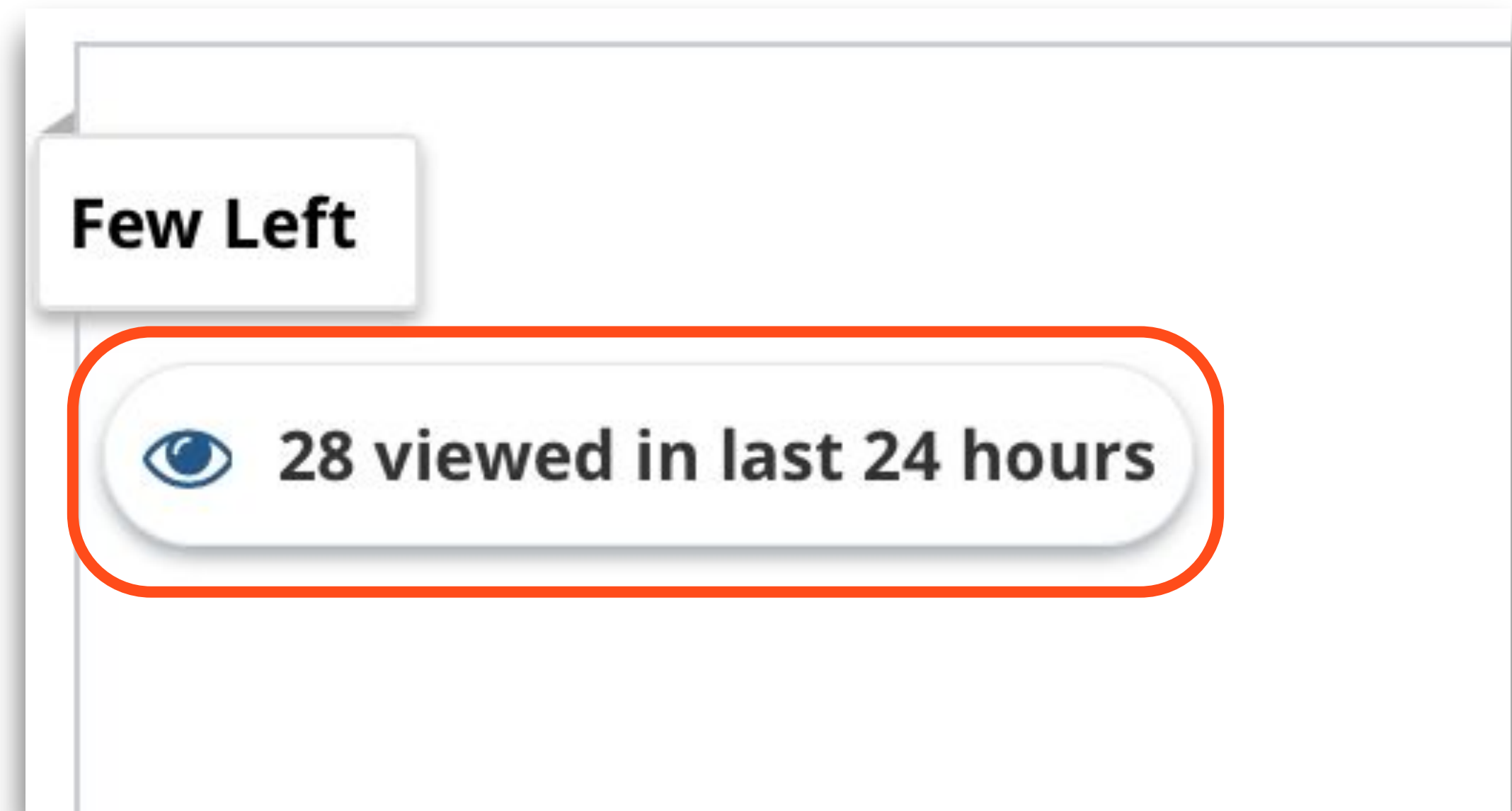
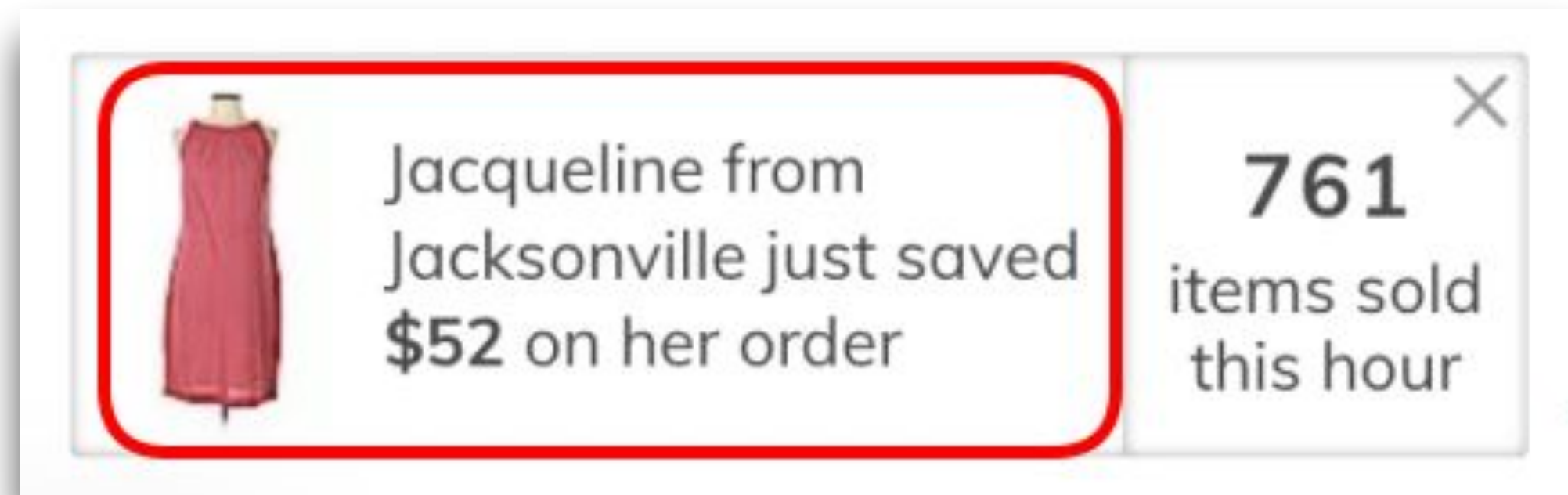
**Just \$95.00**

**JOIN TODAY**

Already a member? [Sign In.](#) [Terms and conditions](#)

- 14 instances across 13 websites.

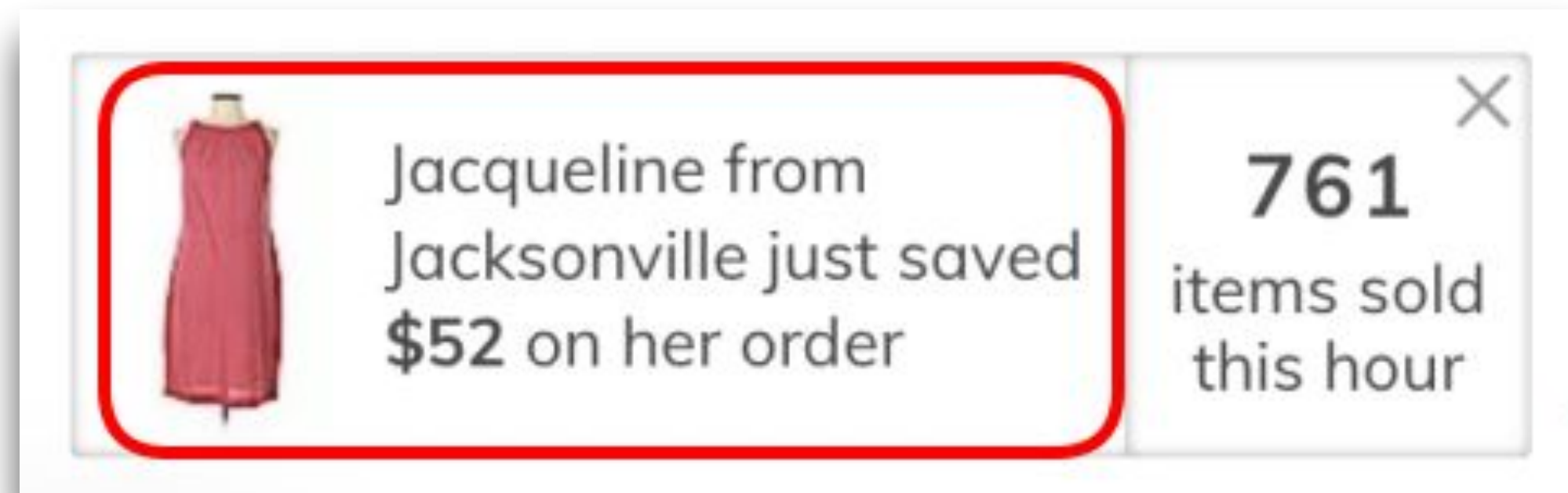
# DP #5: Social Proof – Activity Notification



- 313 instances across 264 websites.
- 29 deceptive instances.



# DP #5: Social Proof — Activity Notification



```
Ms = ["Abigail", "Alexandra", "Alexis", "Alicia", "Allison",  
      "Alyssa", "Amanda", "Amber", "Amy", "Andrea", "Angela", "Anna",  
      "April", "Ashley", "Brianna", "Brittany", "Brittney", "Brooke",  
      "Caitlin", "Caroline", "Cassandra", "Catherine", "Chelsea",  
      "Christina", "Christine", "Courtney", "Crystal", "Danielle",  
      "Destiny", "Diana", "Elizabeth", "Emily", "Emma", "Erica",  
      "Erika", "Erin", "Gabrielle", "Grace", "Hailey", "Haley",  
      "Hannah", "Heather", "Isabella", "Jacqueline", "Jamie", "Jasmine",  
      "Jenna", "Jennifer", "Jessica", "Jordan", "Julia", "Julie",  
      "Kaitlyn", "Katelyn", "Katherine", "Kathryn", "Katie", "Kayla",  
      "Kelly", "Kelsey", "Kimberly", "Kristen", "Kristin", "Laura",  
      "Lauren", "Leah", "Lindsay", "Lindsey", "Lisa", "Madison",  
      "Maria", "Marissa", "Mary", "Megan", "Melissa", "Michelle",  
      "Molly", "Monica", "Morgan", "Natalie", "Nicole", "Olivia",  
      "Paige", "Rachel", "Rebecca", "Samantha", "Sara", "Sarah",  
      "Savannah", "Shannon", "Shelby", "Sierra", "Sophia", "Stephanie",  
      "Sydney", "Taylor", "Tiffany", "Vanessa", "Victoria", "Whitney"  
],  
As = ["Albuquerque", "Anaheim", "Arlington", "Atlanta", "Aurora",  
      "Austin", "Bakersfield", "Baltimore", "Boston", "Charlotte",  
      "Chicago", "Cleveland", "Colorado", "Columbus", "Dallas",  
      "Denver", "Detroit", "El Paso", "Fort Worth", "Fresno",  
      "Honolulu", "Houston", "Indianapolis", "Jacksonville", "Kansas ",  
      "Las Vegas", "Long Beach", "Los Angeles", "Louisville", "Memphis",  
      "Mesa", "Miami", "Milwaukee", "Minneapolis", "Nashville",  
      "New Orleans", "New York City", "Oakland", "Oklahoma ", "Omaha",  
      "Philadelphia", "Phoenix", "Portland", "Raleigh", "Riverside",  
      "Sacramento", "San Antonio", "San Diego", "San Francisco",  
      "San Jose", "Santa Ana", "Seattle", "St. Louis", "Tampa",  
      "Tucson", "Tulsa", "Virginia", "Washington", "Wichita"  
],
```





# BXN Premium Pre-Roll (Hybrid Mix) – 3 Pack

3 users have looked at this product in the past 2 minutes

\$15

\$12

★★★★★ 4.53 (17)

Limited time only! \$11.99 for 3 Pre-Rolls!

Each Sativa Pre-Roll contains approximately 0.8 gram of lab-tested Hybrid flower mix.

This product is excluded from cart discount codes.

Image for reference only

Quantity: – 1 +

ADD TO CART

```
probability: .5,
pattern: "{X} have {Y} this product in the past {Z} {W}",
variables: {
  X: [2, 3, 4, 5, 6, 7, 8, 9, 10],
  Y: ["purchased", "looked at"],
  Z: [2, 3, 4, 5, 6, 7, 8, 9, 10],
  W: ["minutes", "hours"]
}
```

# Social Proof Third parties

Third-party Entity	Prevalence		Additional Dark Patterns
	# Shopping Websites	# Alexa Top Million	
Beeketing	406	4,151	Pressured Selling, Urgency, Scarcity
Dynamic Yield	114	416	Urgency
Yieldify	111	323	Urgency, Scarcity
Fomo	91	663	–
Fresh Relevance	86	208	Urgency
Insider	52	484	Scarcity, Urgency
Bizzy	33	213	–
ConvertCart	31	62	–
Taggstar	27	4	Scarcity, Urgency
Qubit	25	73	Pressured Selling, Scarcity, Urgency
Exponea	18	180	Urgency, Scarcity
Recently	14	66	–
Proof	11	508	–
Fera	11	132	Pressured Selling, Scarcity, Urgency
Nice	10	80	–
Woocommerce Notification	10	61	–
Bunting	5	17	Urgency, Scarcity
Credibly	4	67	–
Convertize	3	58	Scarcity, Urgency
LeanConvert	2	0	–
Boost	1	3	–
Amasty	1	0	Pressured Selling, Scarcity, Urgency



## Hush it's a secret! If you are just starting, you can use *fake boosts*.

If you just started, it can be hard for you to show real boosts right from the very beginning. Fake Boosts can be used until some genuine interactions data gets piled up.

It's the perfect feature for a fresh start-up

**B** Roberto from Roma, IT  
Bought [The Boost Plugin](#)  
Recently

Verified by: **boost**

Name your Boost

1 Boost Type 2 **Configure** 3 Message 4 Display 5 Review & Publish

### Lead Boost

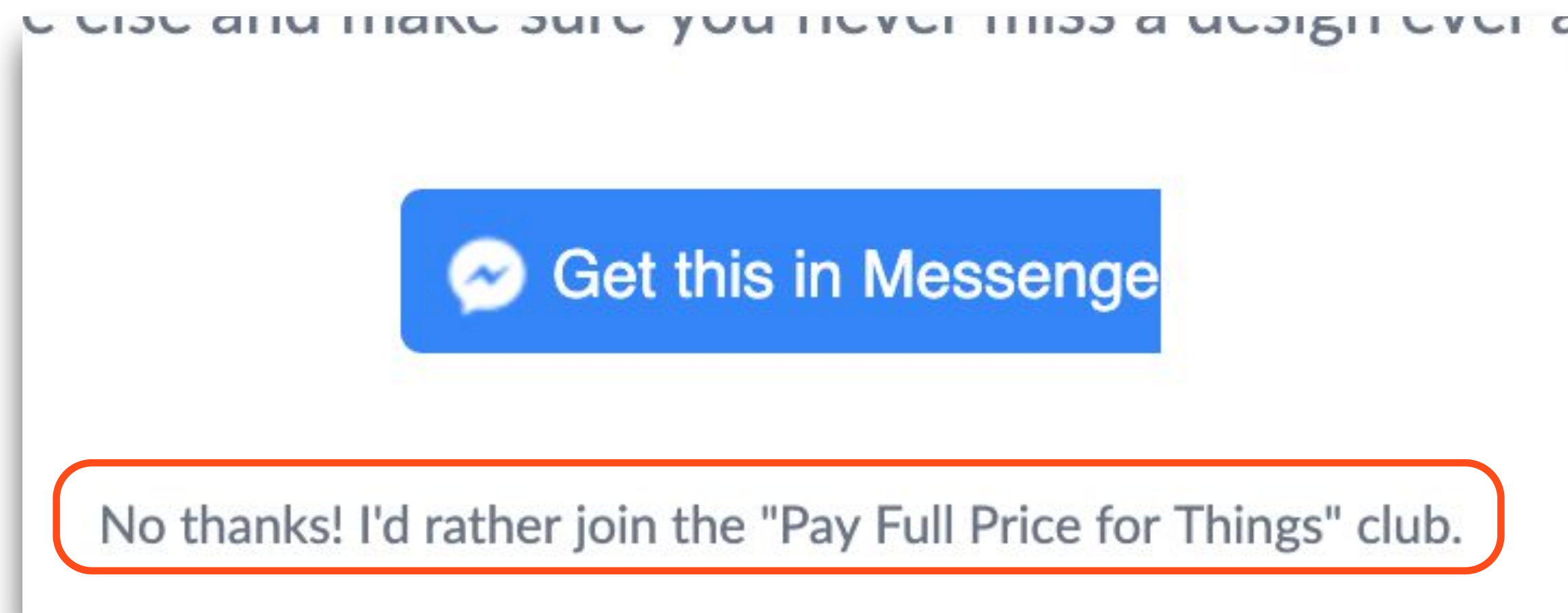
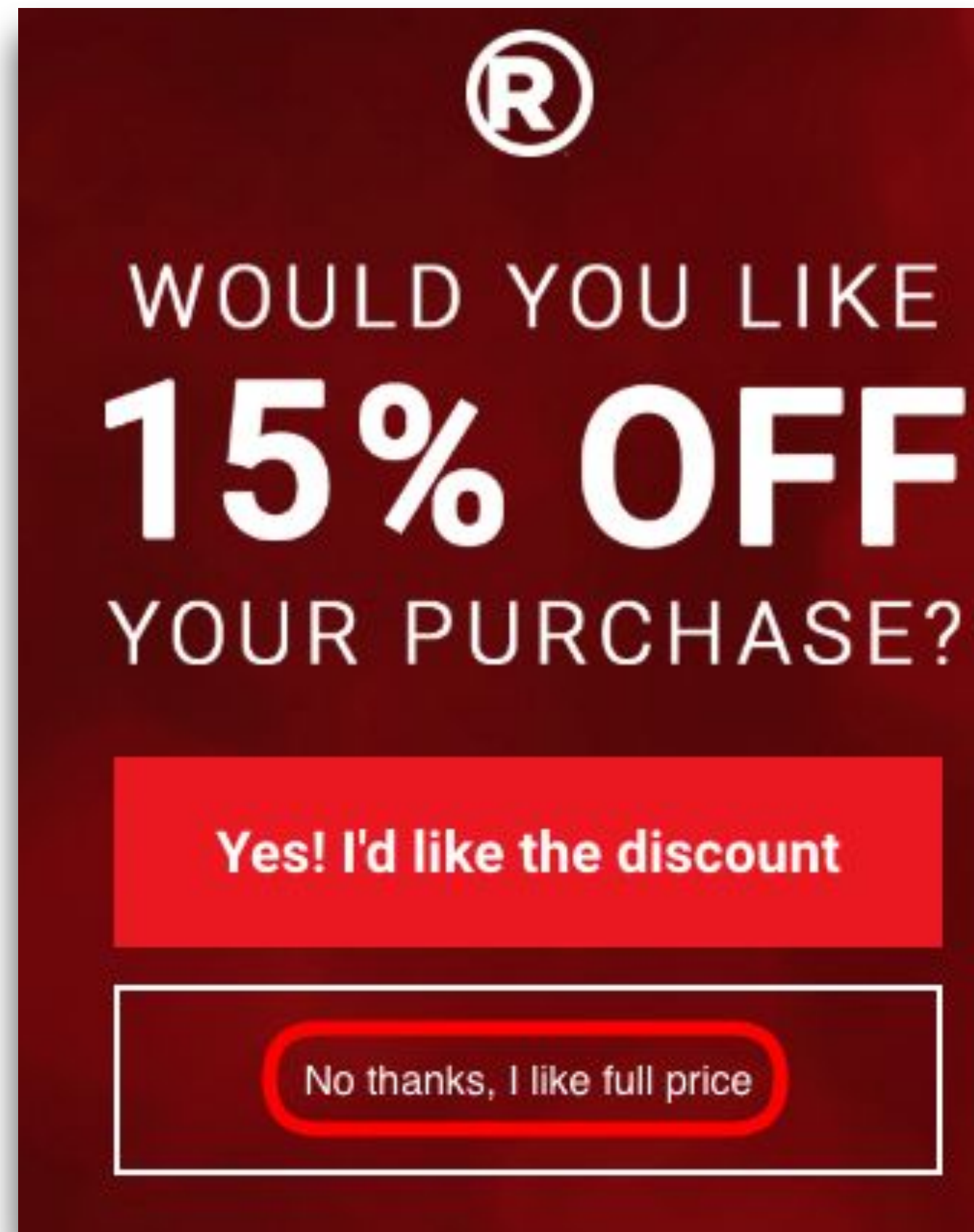
Capture leads when a form is completed. Works with most forms and popups.

A lead will be captured when the form found on this URL is completed

**ENABLE FAKE PROOFS UNTILL SUFFICIENT REAL LEADS ARE CAPTURED**  
MIX FAKE BOOSTS UNTIL AT LEAST  REAL LEADS ARE CAPTURED



# DP #6: Misdirection — Confirmshaming



- 169 instances across 164 websites.



## AAF special bonus!

You have a chance to win a big fat discount. Are you ready, patriot?

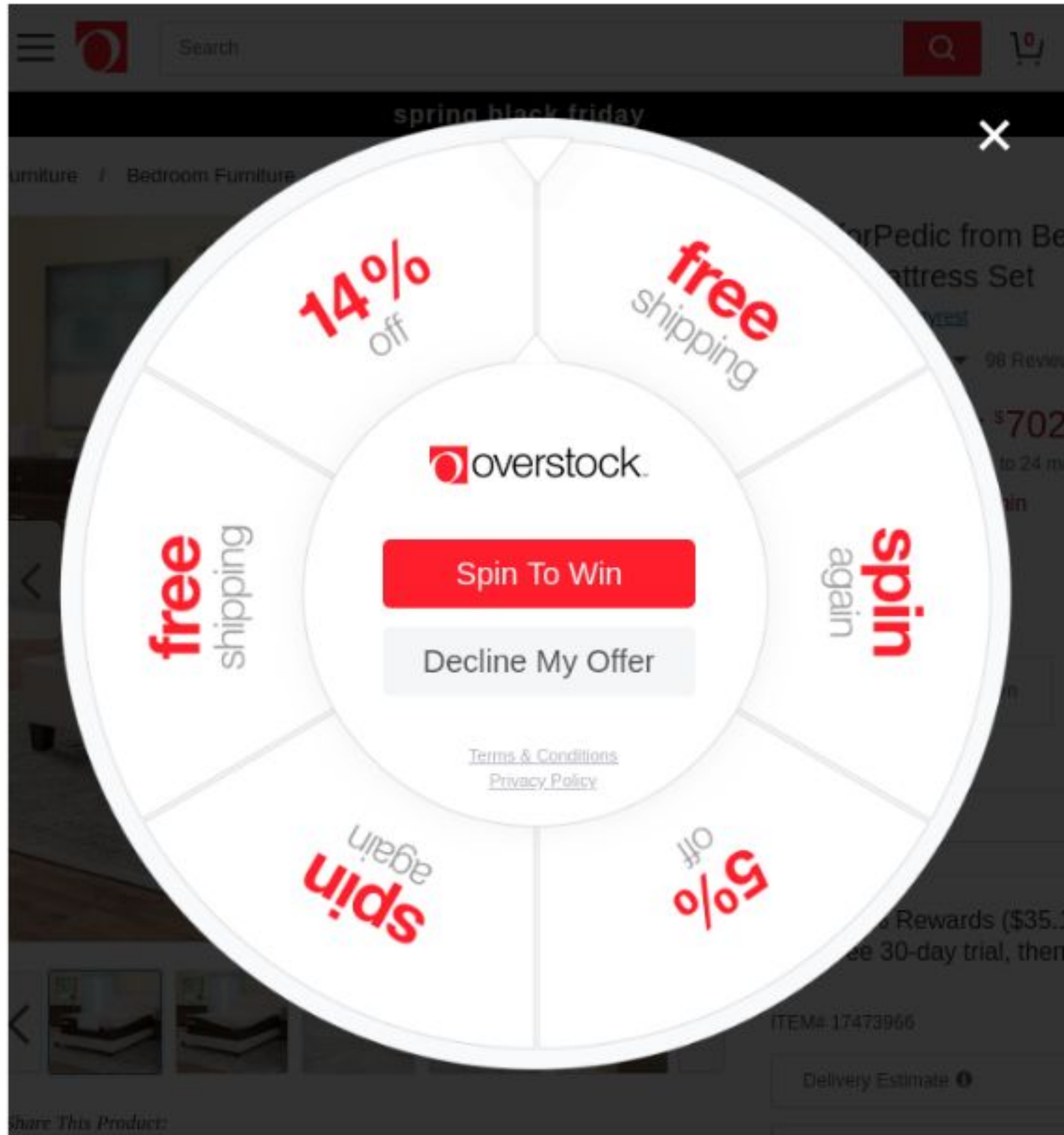
\* You can spin the wheel once.  
\* If you win, you can claim your coupon for 10 mins only!

TRY YOUR LUCK

No, I don't feel lucky







```
Elements Network Console Sources Performance
spage.html?grou...5804&coupon=12 x
331     document.getElementById('_spin_spinner').src = "r
332     }, 3400);
333     setTimeout(spinSignUp, 5400);
334 }
335
336 function onClick() {
337     var img = document.getElementById('_spin_spinner');
338     img.removeAttribute('style');
339     var css = 'transform: rotate(750deg);';
340     img.setAttribute(
341         'style', css
342     );
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Line 339, Column 1

Scope Watch

Call Stack

Not paused

Breakpoints

No breakpoints

XHR/fetch Breakpoints

DOM Breakpoints

Global Listeners

Event Listener Breakpoints

Console Remote devices Sensors What's New Network c

Aa .\* rotate(750deg

spage.html?groupid=5804&coupon=12 — www.overstock.com/98813/spage.f

339 ...sform: rotate(750deg);;



# DP #7: Misdirection — Trick Questions

\* Phone  ?

\* Email

We'd love to send you emails with offers and new products from New Balance Athletics, Inc. but **if you do not wish to receive** these updates, please tick this box. [View Privacy Policy.](#)

**CONTINUE TO BILLING**

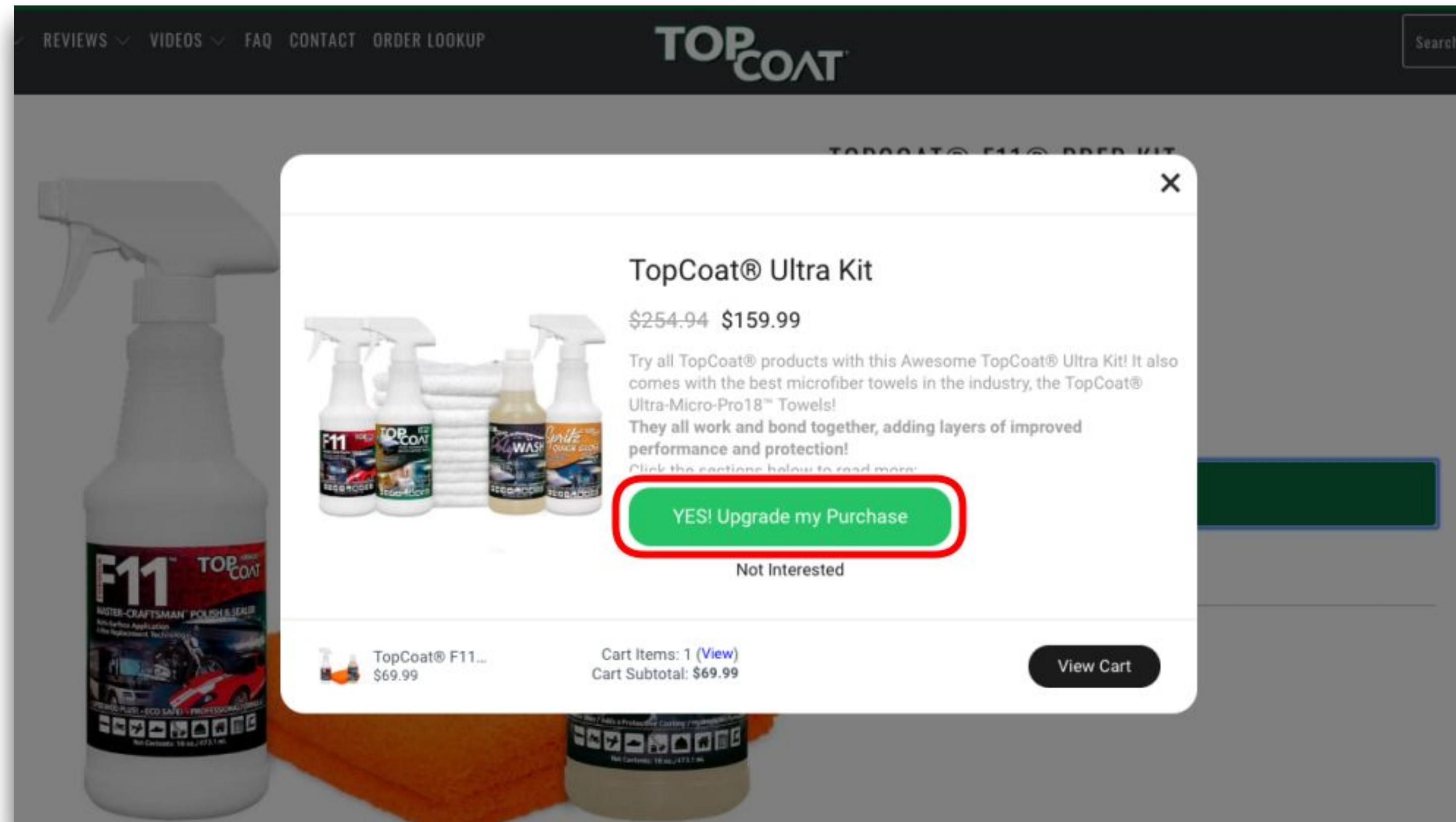
Email address

If you click continue below we will be happy to tell you about discounts, money off and new products from Very by e-mail and text, unless you tell us you **DO NOT want to hear about them, by ticking here.**

If you would like to receive offers from carefully selected 3rd parties, **please tick here.**

- 32 instances across 32 websites.

# DP #8: Misdirection — Upselling



- 67 instances across 62 websites.

# DP #9: Misdirection – Visual Interference




CONTACT PREFERENCES

Please select **Yes** below if you are happy to receive email notifications of **exclusive member offers** from M8 Group companies. You will always have the option to unsubscribe from any emails you decide you would rather not receive.

<input type="checkbox"/> <b>YES</b> I do want to hear about exclusive offers & discounts	<input type="checkbox"/> <b>NO</b> I'd rather NOT hear about exclusive offers & discounts
--	---

Don't worry, we will never sell or rent your personal information, it's part of our [privacy policy](#). Also, you can update your preferences and unsubscribe from 'My Account' at any time.

ORDER SUMMARY

	HARRIETT SLOUCH BOOT SIZE: 8.5 <a href="#">Remove</a>   <a href="#">Save for Later</a>	QTY: 1	2 FOR \$29.95: \$19.98 \$39.95 VIP \$59.95 REG
	SLEEK SOPHISTICATED BELT BAG <a href="#">Remove</a>   <a href="#">Save for Later</a>	QTY: 1	2 FOR \$29.95: \$9.97 \$19.95 VIP \$29.95 REG
	PARENTS 2 YEAR SUBSCRIPTION You will not be billed for this offer (24 Issue)		INCLUDED <a href="#">View offer &amp; refund details</a> <a href="#">Remove</a>   <a href="#">Pick Another One</a>

ADD PROMO CODE / GIFT CARD +

SUBTOTAL:	\$59.90
PROMO CODE: 2 for \$29.95	-\$29.95
SHIPPING: Classic Fab (7-10 days) <a href="#">Change</a>	\$4.95
TAX: ⓘ	\$0.77
TOTAL:	\$35.67
<b>YOU ARE SAVING</b>	<b>\$69.95</b>

CONTINUE CHECKOUT

- 25 instances across 24 websites.



Is any of this new?



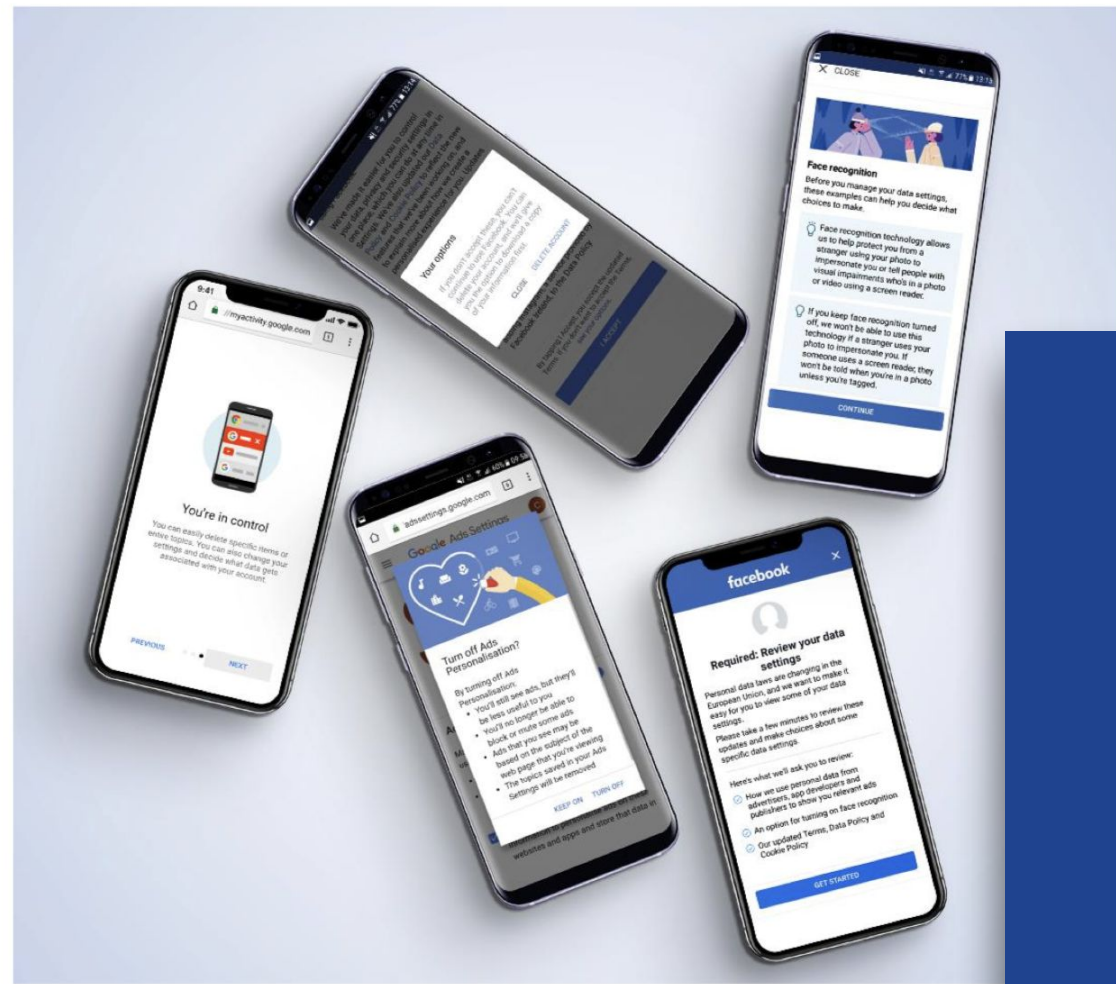




- Scale
- Sophistication
- Variety



What can we do about dark  
patterns?



## DECEIVED BY DESIGN

How tech companies use dark patterns to discourage us from exercising our rights to privacy

27.06.2018



IP REPORTS  
INNOVATION AND FORESIGHT  
N°06

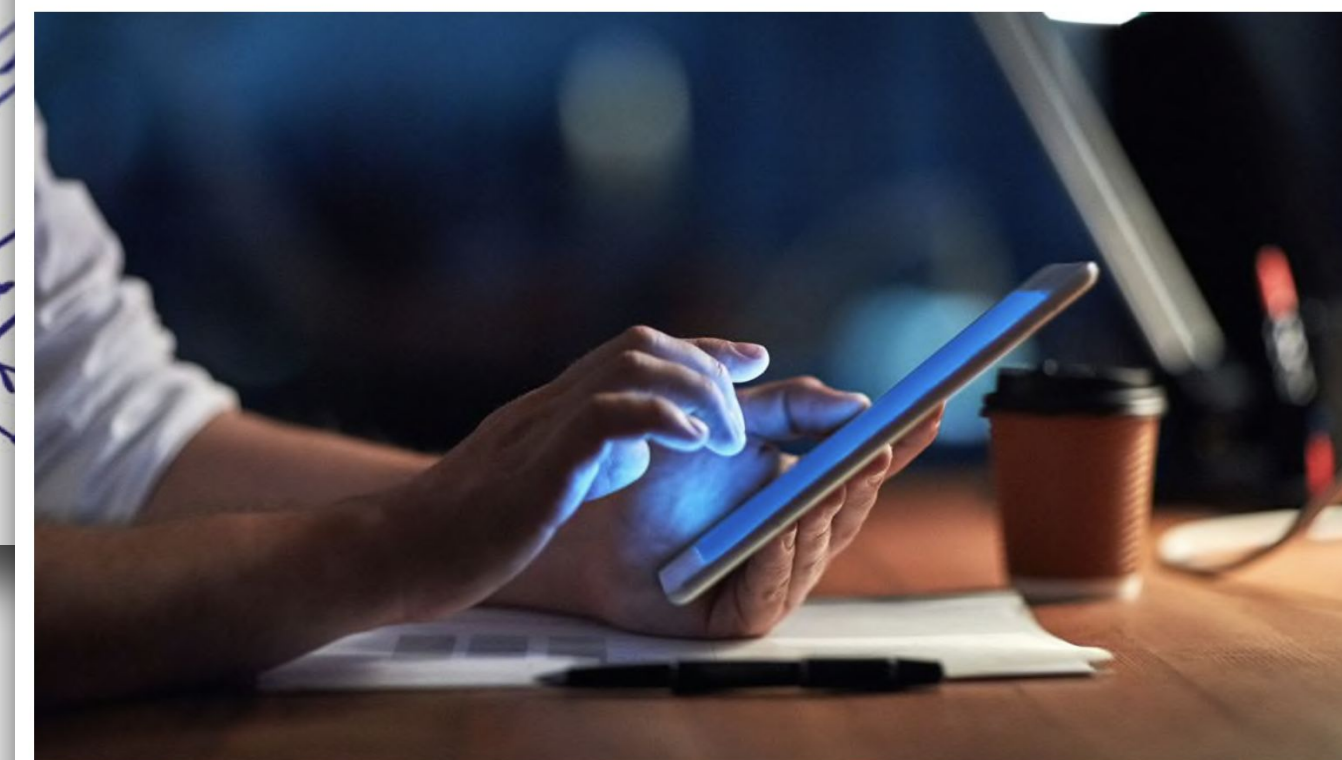
# Shaping Choices in the Digital World

From dark patterns to data protection:  
the influence of UX/UI design on user empowerment

## How to Spot Manipulative 'Dark Patterns' Online

Hard-to-find settings and confusing language can lead you to buy, share, or receive more than you want. This guide can help.

By Thomas Germain  
January 30, 2019



Anyone who's tried to close an Amazon account knows that breaking up is hard to do. The instructions are convoluted and cumbersome, and users

# Legal Solutions



# Legal Solutions

1. Many deceptive dark patterns violate Section 5 of the FTC Act.

# Legal Solutions

1. Many deceptive dark patterns violate Section 5 of the FTC Act.
2. “Sneaking” and “aggressive” dark patterns violate the Consumer Rights Directive in the UK.

# Legal Solutions

1. Many deceptive dark patterns violate Section 5 of the FTC Act.
2. “Sneaking” and “aggressive” dark patterns violate the Consumer Rights Directive in the UK.
3. Industry specific rules in the United States: ROSCA, Funeral Rule, Used Car Rule.



# Legal Solutions

 **Mark Warner** ✓  
@MarkWarner

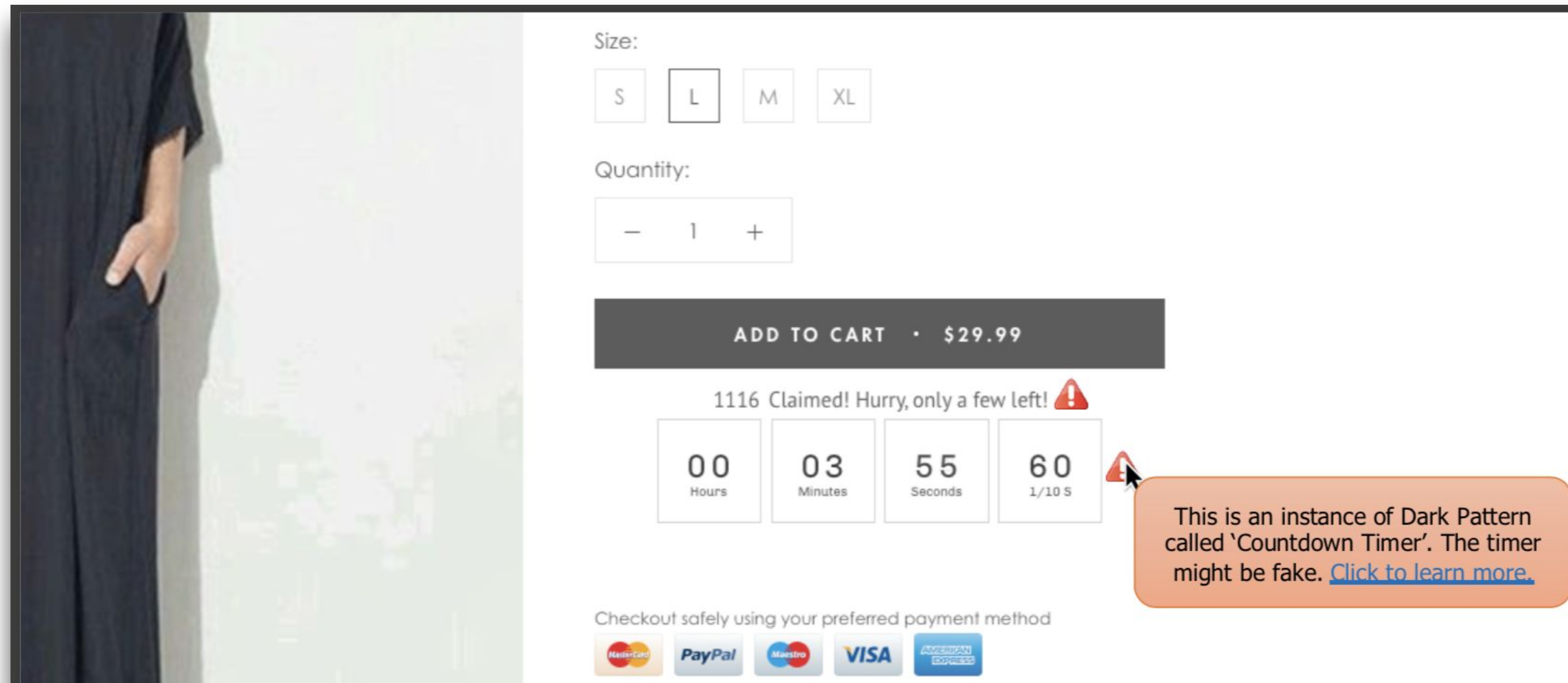
You might not have heard of a “dark pattern,” but chances are you’ve seen these annoying, manipulative designs trying to trick you into clicking, buying, or signing up for something you don’t want. Today I introduced the DETOUR Act with [@SenatorFischer](#) to do something about them.



1:00 PM · Apr 9, 2019 · [Twitter Web Client](#)

Proposed DETOUR act reins in more broadly against design that “obscures, subverts, or impairs user autonomy and decision-making”.

# Technical Solutions



Browser extension to alert users about dark patterns, or block third-parties that enable dark patterns

# Thank you for listening

**Gunes Acar**

✉ [gunes.acar@kuleuven.be](mailto:gunes.acar@kuleuven.be)

<https://webtransparency.cs.princeton.edu/dark-patterns>

