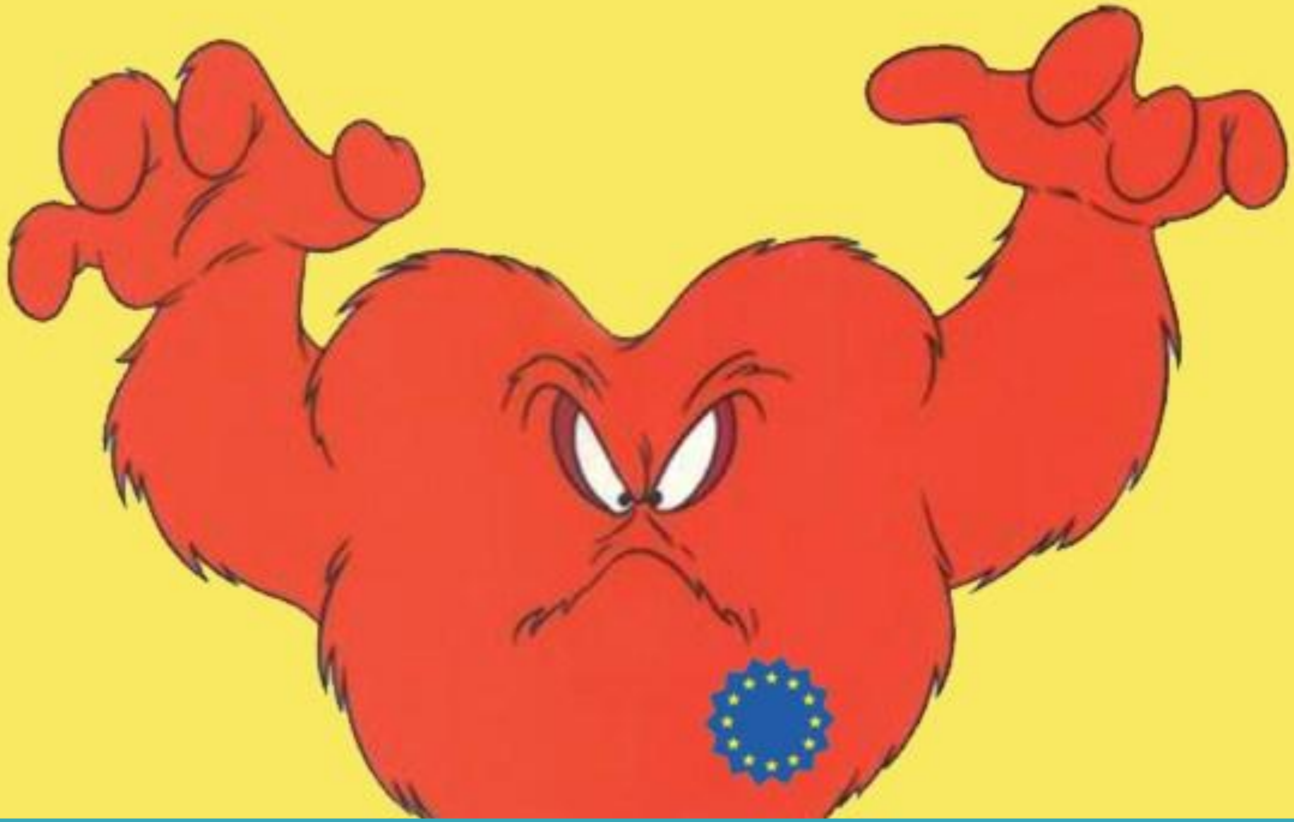
garjoh_canuck

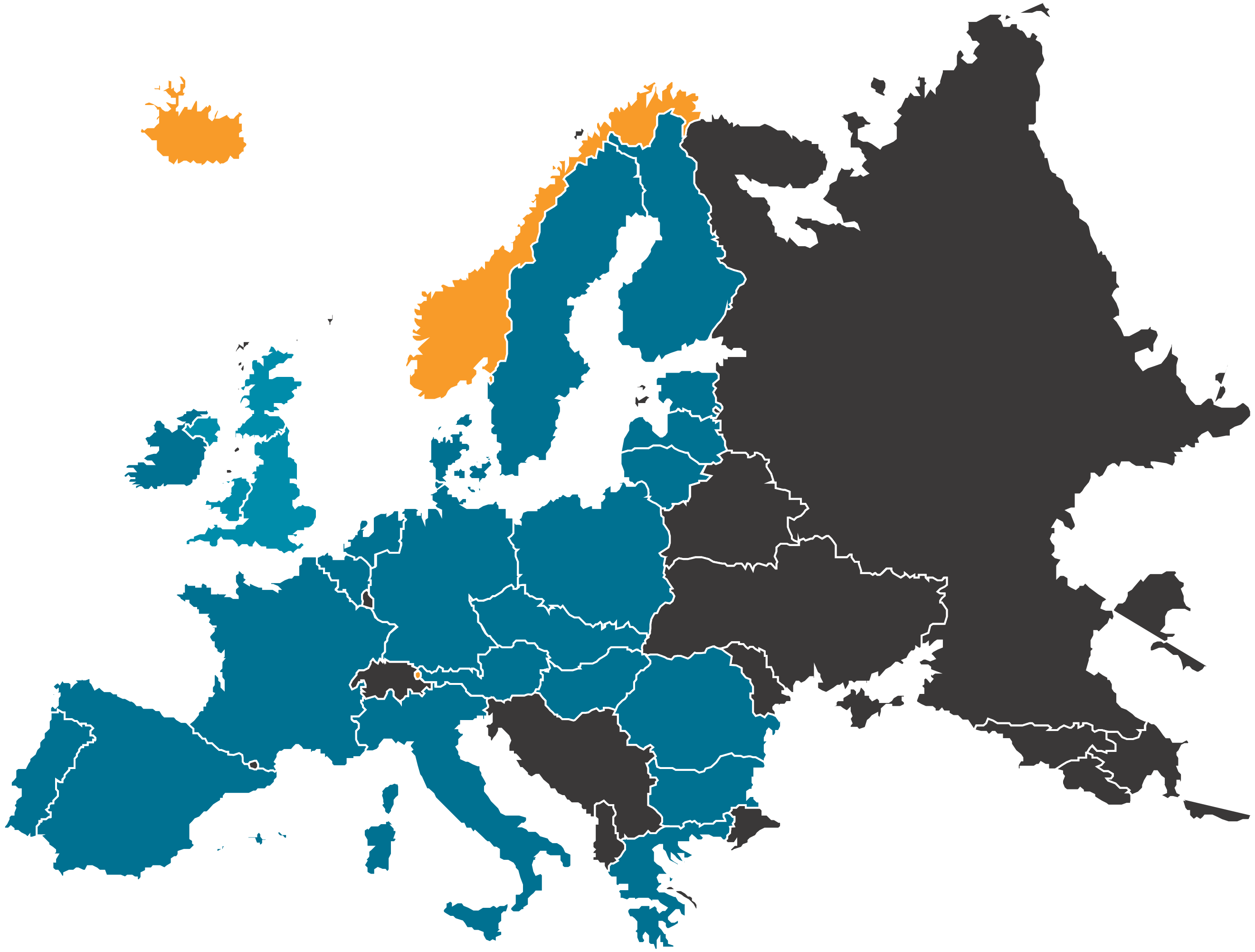


Data minimization & concentration:
Intended and unintended consequences of the GDPR

Garrett Johnson (Boston U)
Scott Shriver (U Colorado Boulder)

GDPR

General Data Protection Regulation



EU
EEA
Brexit

GDPR Impact


GDPR
SAFET
MANU
GDPR Impact

⬆️ cost

processing personal data

⬇️ data collection

⬇️ data sharing

How could GDPR impact competition?

Consent	Economies of scale	B2B vendor choices
Easier for fewer firms & recognizable firms	Larger firms have more resources for compliance	Large vendors may have: • Better products • Better regulatory compliance

Consumer-driven: Consent

Firm-driven: Economies of scale; B2B vendor choices

May 25 '18

GDPR Enforcement deadline

Data: web tech vendors

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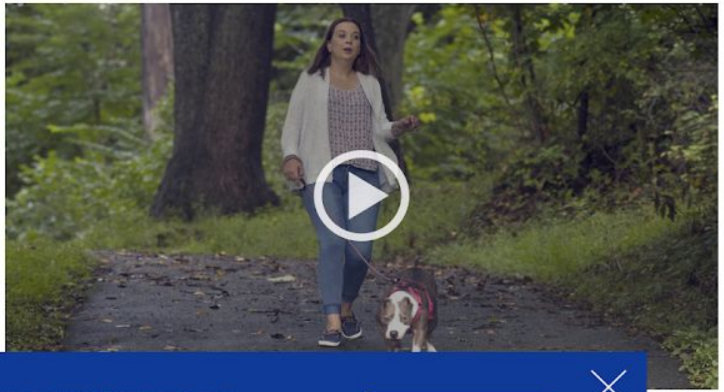

OPIOID CRISIS 4:00 PM

Voices of Recovery: I know that it gets better

Jordan Scott knows what you see when you look at her now. You see a professional. A polished, punctual, well-dressed brunette strolling with her dog, Teaberry, who sports a pink collar. Scott knows that, if you saw her walking along Bethlehem's Broad Street, you would never guess she spent years...

THE MORNING CALL

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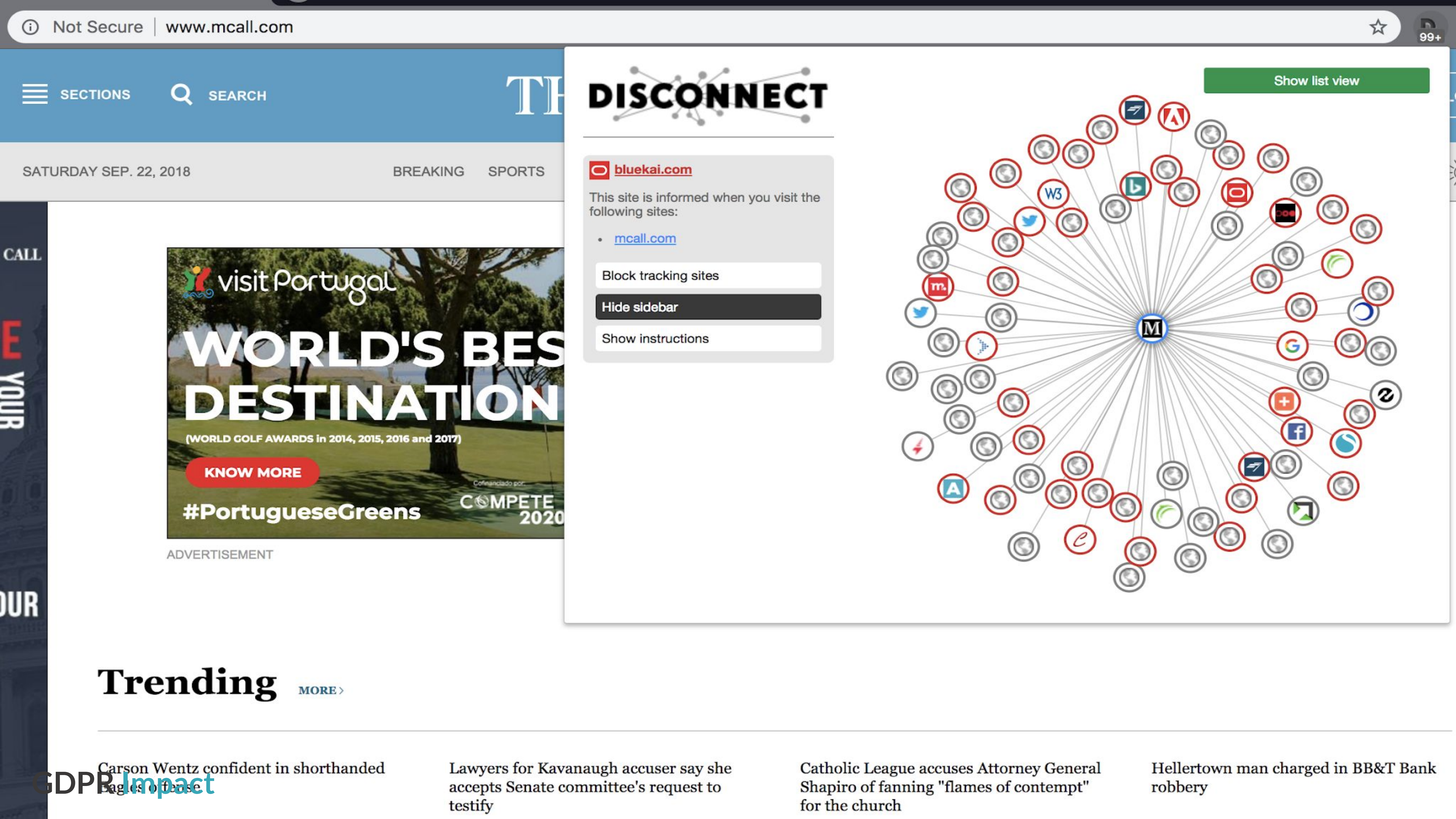
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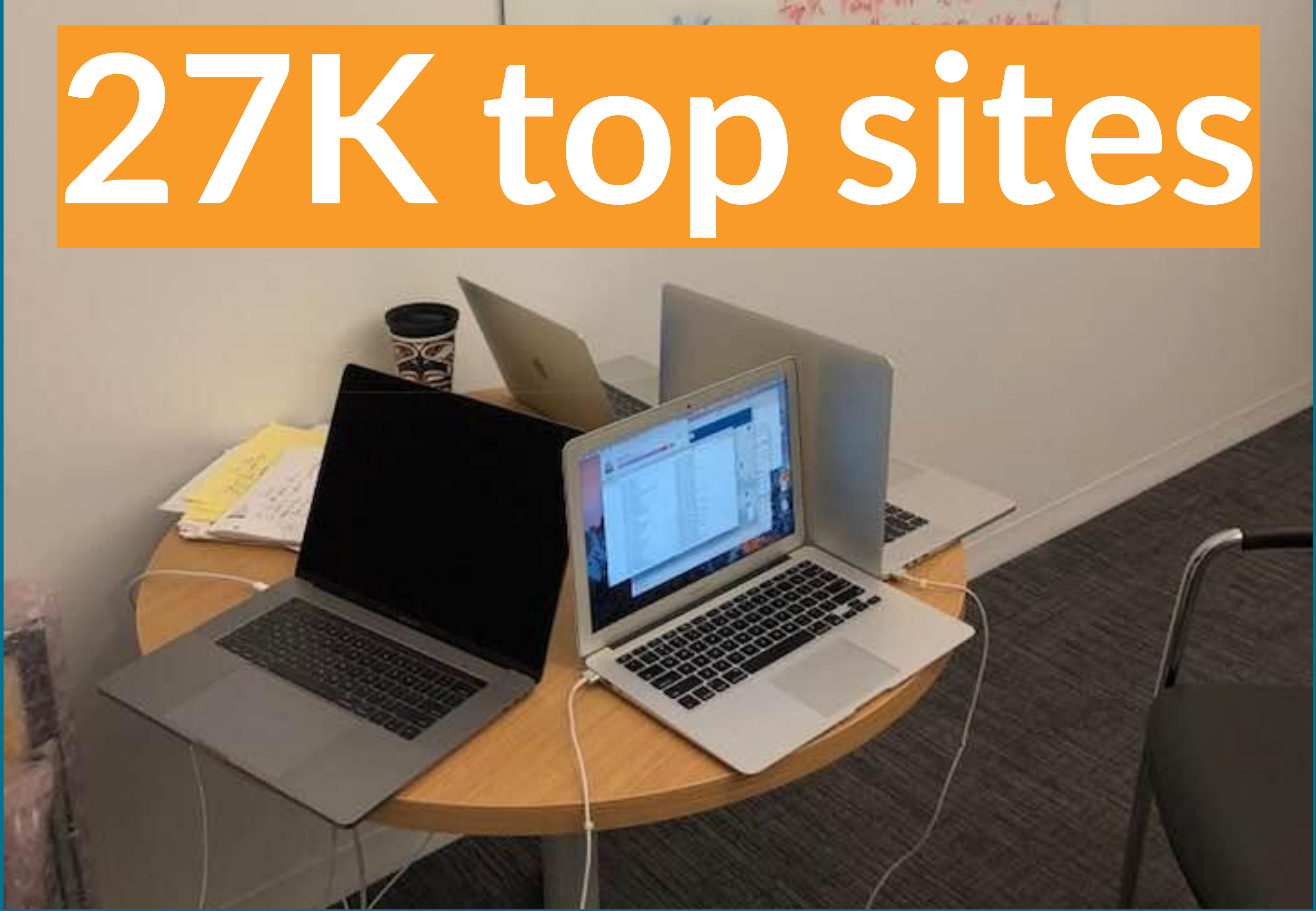
GDPR Impact

27K top sites



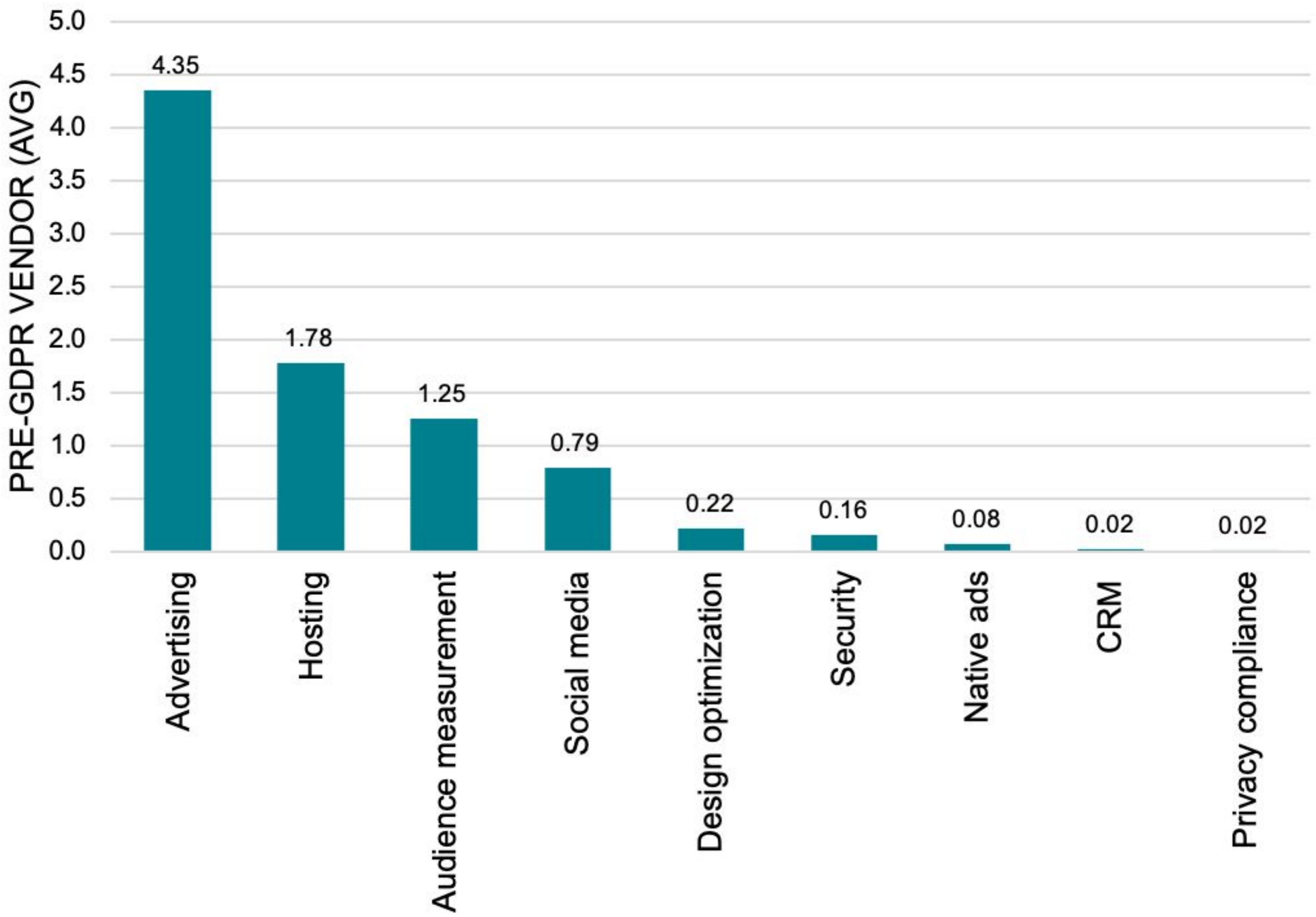
Data: 3rd party domains on top websites

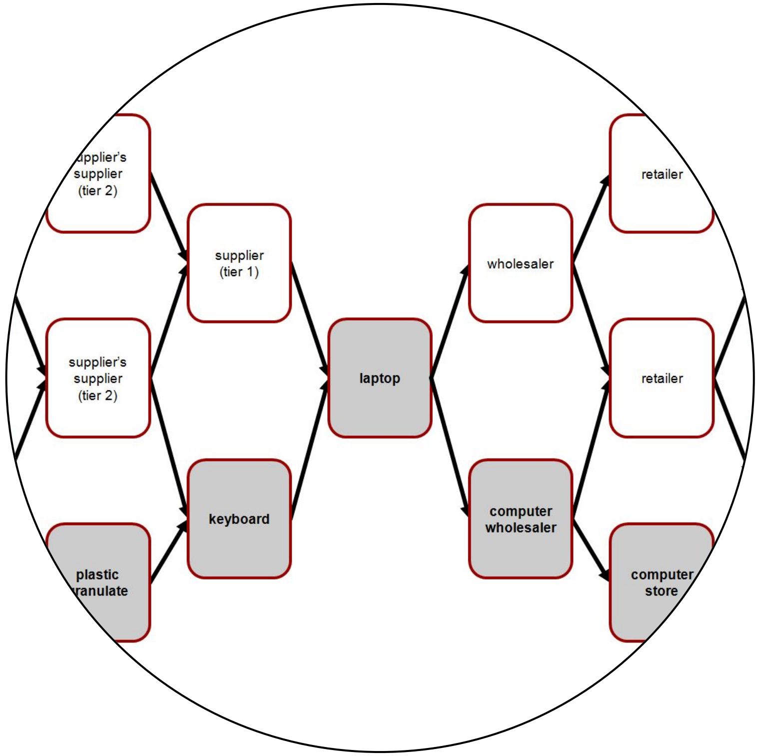
- Method: Libert (2015) "webxray" python program
  - Records all 3rd party domains when visiting website
  - VPN service simulates EU user (France)
  - No interaction with site: no consent given
- Panel: Top 2,000 websites in each of 28 EU countries, US, Canada, and globally according to Alexa (28.2K unique sites)
  - Pre-GDPR: Days before May 25, 2018
  - Post-GDPR: Weekly for six weeks, biweekly for the next six weeks, every four weeks through 2018
  - **27.3K** sites ever scan & remaining panel is 96.4% complete

Collection procedure

Vendors by category (pre-GDPR)

Categorized using the Libert (2019) third party domain database

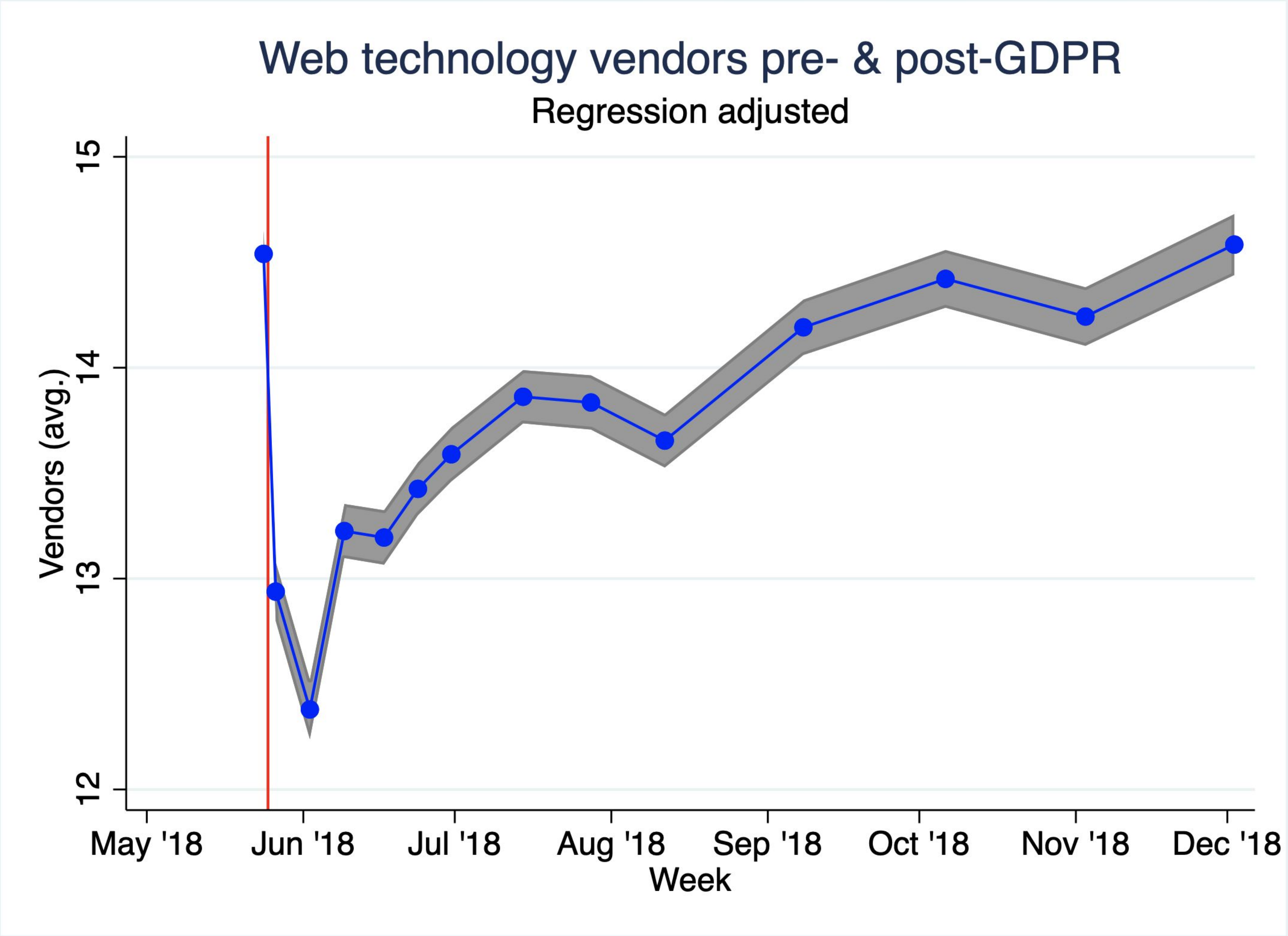




GDPR impact on webtech vendors

Short run: webtech vendors fall 15% post-GDPR

Short run = full week after enforcement deadline vs pre-deadline baseline



Fewer vendors in all categories but compliance

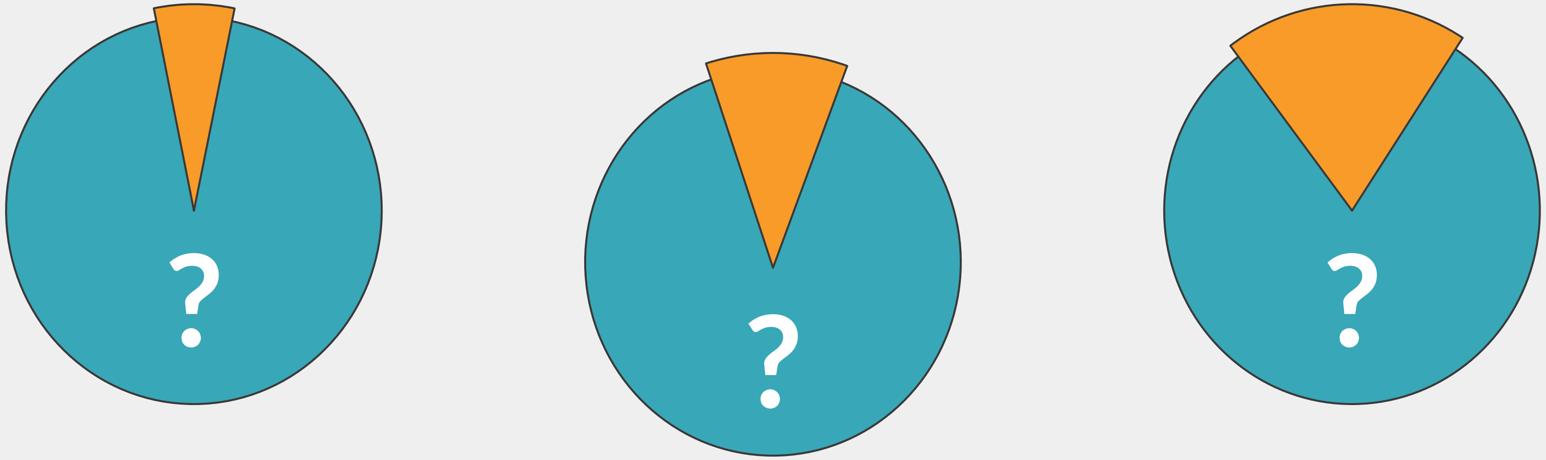
Short run estimates: 1 week post-GDPR

	Avg. Vendors		
Category	Pre	Post	Diff. (%)
All vendors	14.44	12.35	-14.5%
All categorized vendors	8.40	6.91	-17.7%
Advertising	4.35	3.29	-24.3%
Hosting	1.78	1.61	-9.7%
Audience measurement	1.25	1.11	-10.9%
Social media	0.79	0.70	-11.5%
Design optimization	0.22	0.20	-10.5%
Security	0.15	0.12	-17.8%
Native ads	0.078	0.066	-14.8%
CRM	0.022	0.019	-9.6%
Privacy compliance	0.017	0.021	23.2%

Do larger vendors get a larger share of the smaller pie?

Pre-GDPR

Post-GDPR



Defining relative market concentration

- **Reach**: # of websites using vendor
- **Vendor's relative market share**:

$$market\ share = own\text{-}reach \,/\, \sum reach$$

- **Herfindahl–Hirschman Index (HHI)**:

$$\sum market\ share^2$$

  - HHI varies from 0 (perfect competition) to 10,000 points (monopoly)
  - Note: If all vendors fall by same %, relative HHI is invariant

↑ concentration in top 4 categories (94.3% of vendors)

Category	Vendor Share (Pre)	HHI		
		Pre	Post	Diff. (%)
All vendors		146	171	17.3%
All categorized vendors		308	363	17.8%
Advertising	50.2%	348	436	25.3%
Hosting	20.5%	1,892	1,936	2.3%
Audience measurement	14.4%	4,116	4,355	5.8%
Social media	9.2%	4,251	4,412	3.8%
Design optimization	2.6%	2,874	2,861	-0.5%
Security	1.8%	8,926	9,722	8.9%
Native ads	0.9%	4,229	4,024	-4.8%
CRM	0.2%	6,408	6,119	-4.5%
Privacy compliance	0.2%	3,925	4,116	4.9%

Extension: Personal data concentrated in top vendors

Data samples	HHI Pre	HHI Post	Diff.	Diff. (%)
		Role of personal data		
Likely personal data	187.0	231.5	44.5	23.8%
Unlikely personal data	360.0	378.1	18.1	5.0%

Extension: Consent does not drive ↑ concentration

Less surprising because most consent popovers bury vendor list

Data samples	HHI Pre	HHI Post	Diff.	Diff. (%)
Role of personal data				
Likely personal data	187.0	231.5	44.5	23.8%
Unlikely personal data	360.0	378.1	18.1	5.0%
Role of consent				
Sites using consent platform	100.1	117.9	17.8	17.8%
Sites without consent platform	153.6	179.4	25.8	16.8%

Extension: Google & Facebook drive ↑ concentration

Data samples	HHI Pre	HHI Post	Diff.	Diff. (%)
Role of personal data				
Likely personal data	187.0	231.5	44.5	23.8%
Unlikely personal data	360.0	378.1	18.1	5.0%
Role of consent				
Sites with privacy extension	100.1	117.9	17.8	17.8%
Sites without privacy extension	153.6	179.4	25.8	16.8%
Role of top 2 companies (Google & Facebook)				
All vendors	145.7	171.0	25.2	17.3%
All but top 2 companies	46.0	43.2	-2.8	-6.2%

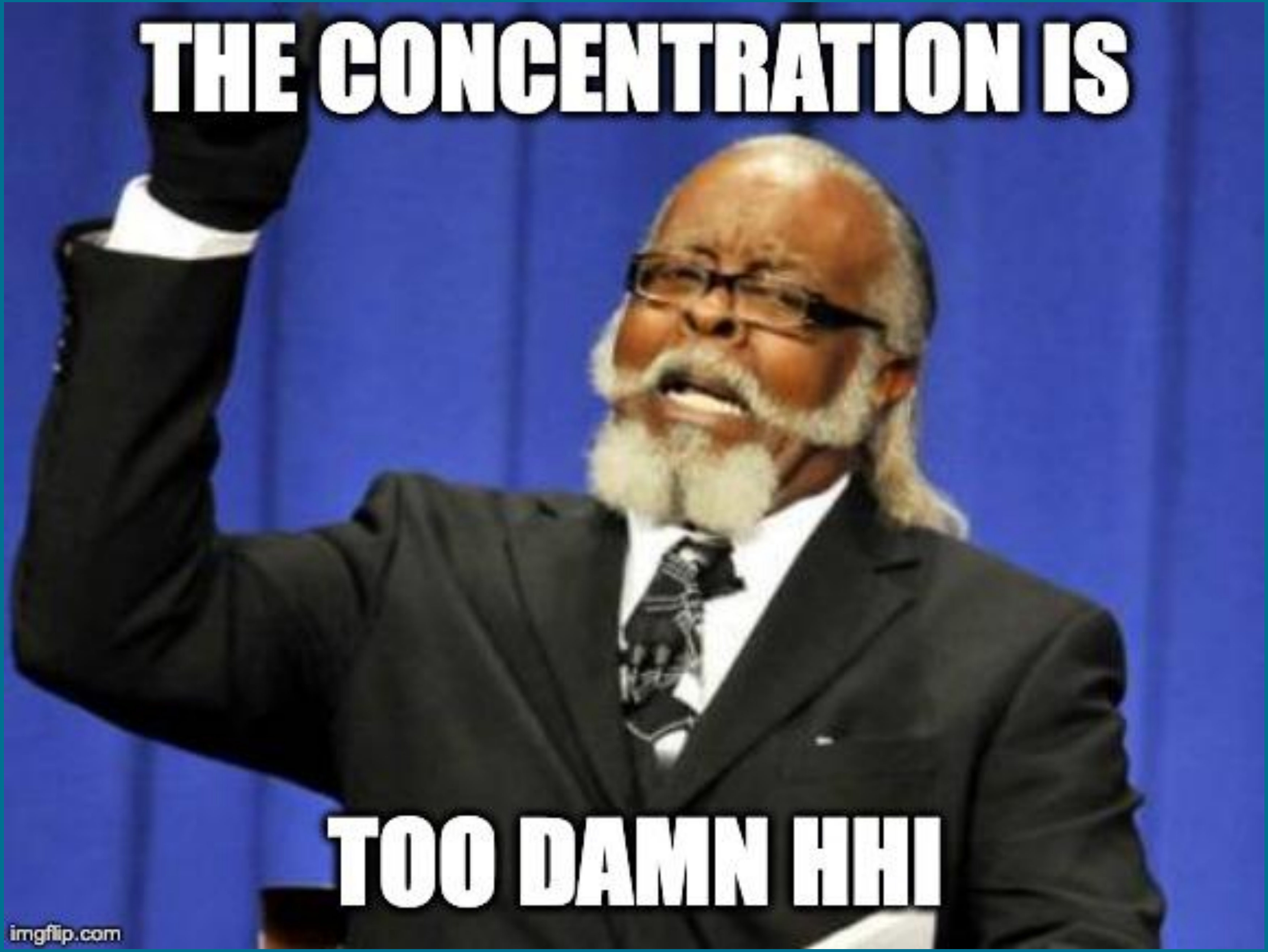
"Nobody gets fired for choosing IBM"

"Nobody gets fired for choosing ~~IBM~~"

Google facebook

Summary: GDPR often ↑ market concentration

- **Intended consequence**: ↓ web tech data sharing
- **Unintended consequences**: ↑ web tech concentration
  - ↑ concentration of online personal data pool
- Novel empirical evidence of **privacy-competition tension**
  - GDPR does not *always* ↑ concentration
  - But, **↑concentration in top 4 categories** (94.3% of vendors)
- **Mechanism**:
  - ✅ Big 2: Google & Facebook
  - ✅ Vendors (likely) processing personal data
  - ✘ User consent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