The online impact of privacy regulation: An early look at Europe’s GDPR

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GDPR
General Data Protection Regulation

EU
EEA
Brexit
↑ cost
processing personal data
Downward arrows pointing to "marketing" and "data collection".
May 25 '18
GDPR Enforcement deadline
GDPR impact on web outcomes
1,508 analytics dashboards
How does GDPR impact recorded EU web outcomes?

Recorded web outcomes = Total web outcomes * % recorded

<table>
<thead>
<tr>
<th>Total web outcomes</th>
<th>% recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Marketing</strong></td>
<td><strong>Data minimization</strong></td>
</tr>
<tr>
<td>increased cost of</td>
<td>sites may restrict</td>
</tr>
<tr>
<td>personalized marketing</td>
<td>site data collection or block EU users</td>
</tr>
<tr>
<td>• Inbound marketing: e-mail</td>
<td>• We drop known cases where data</td>
</tr>
<tr>
<td>(7%), display ads (3%)</td>
<td>collection stops</td>
</tr>
<tr>
<td>(Budak et al. 2016)</td>
<td></td>
</tr>
<tr>
<td><strong>Privacy salience</strong></td>
<td><strong>Consent</strong></td>
</tr>
<tr>
<td>privacy notices change</td>
<td>non-consenting users (may) not be</td>
</tr>
<tr>
<td>consumer browsing</td>
<td>recorded</td>
</tr>
<tr>
<td></td>
<td>• GDPR consent rates reported as &gt;90%</td>
</tr>
<tr>
<td></td>
<td>(Quantcast)</td>
</tr>
</tbody>
</table>
Data: On-site analytics via Adobe Analytics

- **Panel**: 1,508 analytics dashboards (RSID)
- Includes: e-commerce, corporate & content-based sites
- 421 dashboards with revenue outcome

<table>
<thead>
<tr>
<th>Alexa top sites</th>
<th>Sample representation</th>
</tr>
</thead>
<tbody>
<tr>
<td>top 1K</td>
<td>128</td>
</tr>
<tr>
<td>top 10K</td>
<td>595</td>
</tr>
<tr>
<td>top 1M</td>
<td>2,594</td>
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</tbody>
</table>
EU pageviews fall after May 25, 2018
EU user site outcomes 2018 vs. 2017

Legend: 2018 — 2017
All recorded web outcomes fall below difference-in-differences estimates:

- **Pageviews**: ↓9.7% (st.err. 2.7%)
- **Visits**: ↓9.9% (2.5%)
- **Orders**: ↓5.6% (2.5%)
- **Revenue**: ↓8.3% (2.9%)

Revenue at the median: $8,000 weekly revenue.
Synthetic controls 2017 vs. 2018 EU users

Pageviews
↓11.6%

Visits
↓10.0%

Orders
↓6.7%

Revenue
↓3.3%

Legend: --- 2018  --- 2017 (synthetic control)
# Mechanism: Why do recorded EU web outcomes fall?

\[
\text{Recorded web outcomes} = \text{Total web outcomes} \times \% \text{ recorded}
\]

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<thead>
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<tr>
<td><strong>Marketing</strong>: Inbound traffic should fall for channels using personal information (e.g. e-mail)</td>
<td><strong>Data minimization</strong>: We already drop known cases where data collection stops</td>
</tr>
<tr>
<td><strong>User-driven</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Privacy salience</strong>: Self-selection may change user quality measures</td>
<td><strong>Consent</strong>: Self-selection may change user quality measures</td>
</tr>
<tr>
<td><strong>Site-driven</strong></td>
<td></td>
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</tbody>
</table>
But, no change in user quality metrics

Views per visit (logs)

Timespent per visit (logs)
Recorded EU web outcomes fall ~10%

Recorded web outcomes = Total web outcomes * % recorded

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<td>Bad for health of website &amp; e-commerce serving EU users</td>
<td>Bad for data-driven decision-making of website &amp; e-commerce serving EU users</td>
</tr>
</tbody>
</table>
GDPR impact on third party domains
"The GDPR's early impact on Martech"*
(work-in-progress)

- Data: **3rd party domains** across 28K top EU+ websites
- ↓**14%** 3rd party domains 1 week after May 25, rolled back 6 months later
  - Largest drop on sites with **least EU users** (<20%)
- Market shrinks, but is **less competitive** in top martech categories (ads, hosting, web analytics, social media)
  - Sites usually choose **dominant firm over other vendor**: DoubleClick (99%), Google APIs (75%), Google Analytics (94%), Facebook (88%)

*joint with Scott Shriver & Samuel Goldberg*
Value of a cookie
"Consumer privacy choice in online advertising: Who opts out and at what cost to industry?"
(conditional accept, *Marketing Science*)

- Study AdChoices self-regulatory program
  - User *opt-out* for online behavioral advertising
- Ad exchange data: 63M ad transactions
  - 10K+ advertisers, publishers
- Only **0.23% opt-out users** in US impressions (1 in 441)
- Opt-out users fetch **52% lower prices**, all else equal
- Publishers get **40% less revenue** from opt-out users

*joint with Scott Shriver & Shaoyin Du*