RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

Inria

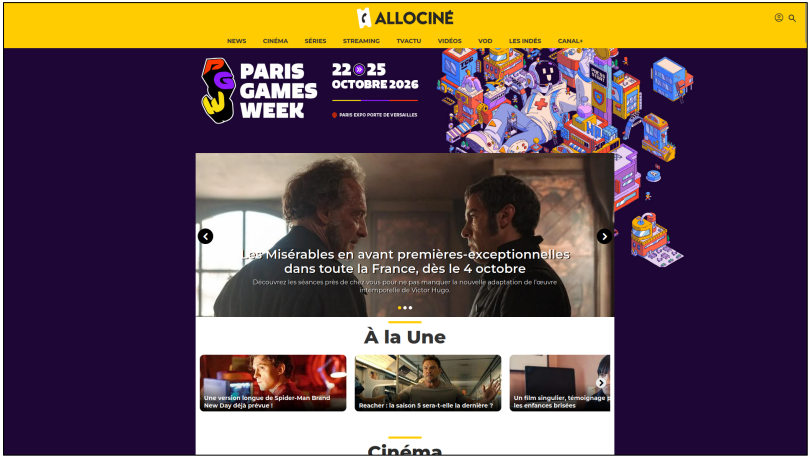
The Many Faces of Ads on Smartphones: When a global perception can change practices

IPoP 2026 plenary meeting

Sara Caballero, Paul Retourne, Mohamed Bechorfa, Antoine Boutet, **Rémy Raes**

01
Context

Ads


ALLOCINÉ
NEWS
CINÉMA
SÉRIES
STREAMING
TVACTU
VIDÉOS
VOD
LES INDÉS
CANAL+
PARIS GAMES WEEK
22 25 OCTOBRE 2026
PARIS EXPO PORTE DE VERSAILLES
Les Misérables en avant premières-exceptionnelles dans toute la France, dès le 4 octobre
Découvrez les séances près de chez vous pour ne pas manquer la nouvelle adaptation de l'œuvre intemporelle de Victor Hugo.
À la Une
Une version longue de Spider-Man Brand New Day déjà prévue !
Reacher : la saison 5 sera-t-elle la dernière ?
Un film singulier, témoignage s les enfances brisées
Cinéma

Ads


Bitdefender
Bloquez les arnaques et les fraudes.
-50%
J'EN PROFITE
UK Home Last updated: 10:16 BST, 1 October 2026
UK Edition
Login
Daily Mail
Daily Mail+ Subscribe
Home News Royals U.S. Sport Showbiz Lifestyle Money Crime Desk Games Travel Buyline
Latest Headlines Deep Dive Video Podcasts Columnists University Guide
Se connecter à dailymail.com avec Google
Continuer
LE KG
2€95
ROUELLE DE JAMBON AVECOS
J'en profite
Auchan
Le choix, le bon.
EXCLUSIVE Hijack hero who pulled jet out of death plunge learned how to fly by watching plane documentary and describes how he put 'terrorist' in a headlock
ring

Recap

Many faces

- Privacy issues
- Hidden costs (battery, latency, data usage, quality of experience)
- User perception



Research questions

RQ1 What are users' perceptions regarding the overall impact of advertisements on their device and their experience?

RQ2 Could knowledge of this overall impact serve as a lever to change user practices?

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Test samples

Ad-blocking solutions

- No protection (Baseline)
- ADBlock+
  - Strict
  - Acceptable ads
- ADGuard

Domain	Category	Subset
bleacherreport.com	Sports	$S1$
huffingtonpost.co.uk	News	$S1$
allocine.fr	Entertainment	$S1, S2$
leparisien.fr	News	$S1$
dailymail.co.uk	News	$S1, S2$
20minutes.fr	News	$S1, S2$
programme-tv.net	Entertainment	$S1, S2$
usatoday.com	News	$S1$
numerama.com	Technology	$S1$
autoexpress.co.uk	Automotive	$S1$
thesun.co.uk	News	$S2, S3$
rottentomatoes.com	Entertainment	$S2, S3$

Table: Website corpus used in the experiments.

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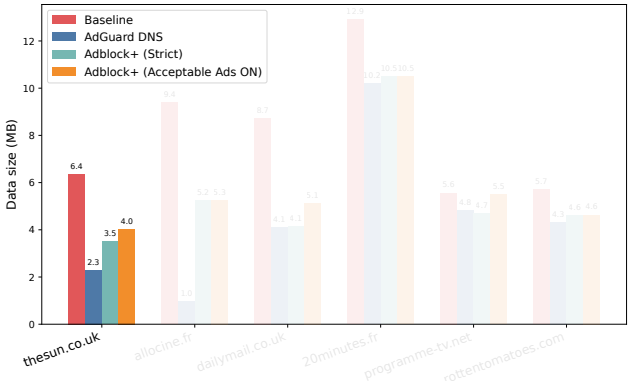
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02

Quantifying the impact of advertisement on smartphones

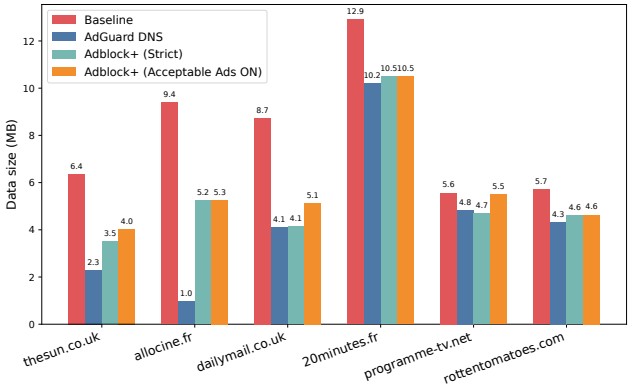
Data consumption



(a) Data consumption depending on websites ($S2$)

(b) Data consumption on average

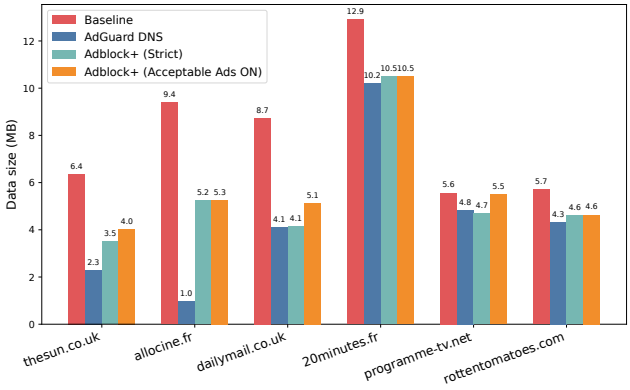
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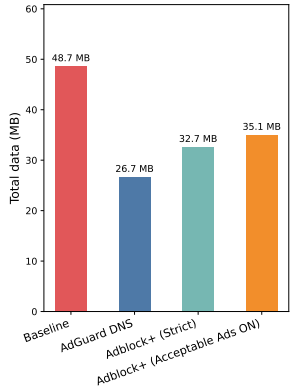
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(b) Data consumption on average

Data consumption



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(b) Data consumption on average

Loading time

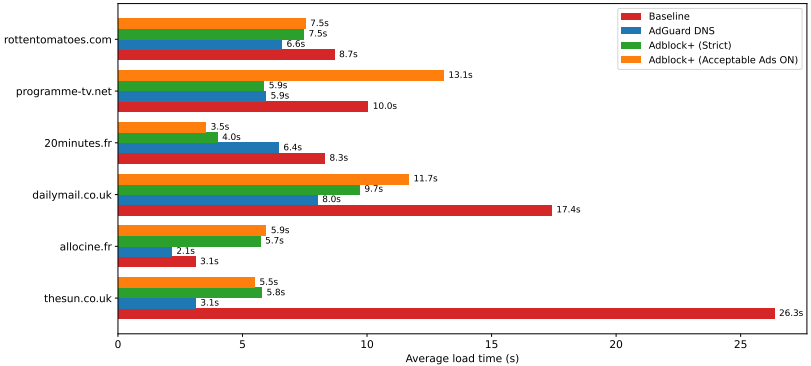


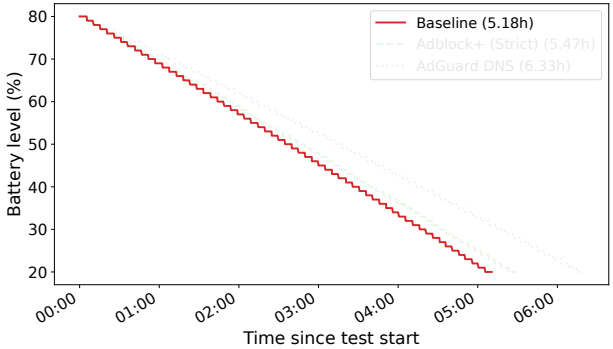
Figure: Overall, loading time without adblocker takes longer than loading the page with ADBlock+ (47.93%) and ADGuard (56.38%).

Battery consumption

- Battery duration when browsing websites
- Ad blockers preserve battery life
  - Up to one hour for ADGuard

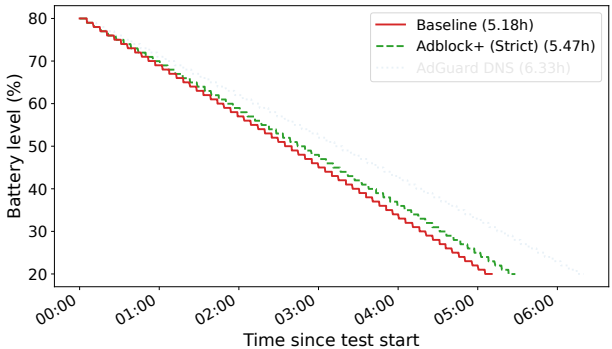
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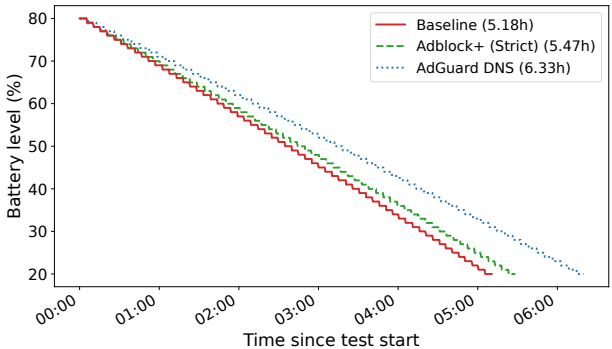
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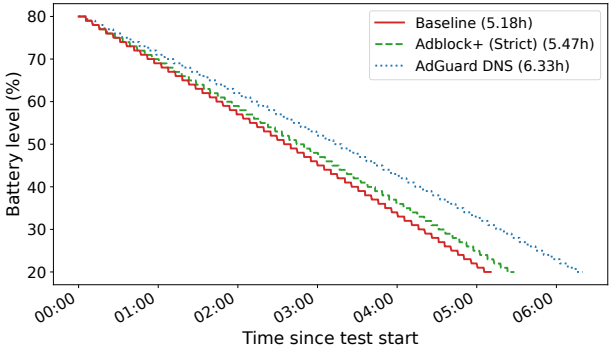
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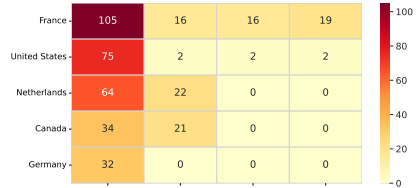
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03
Privacy analysis

Cookies origin

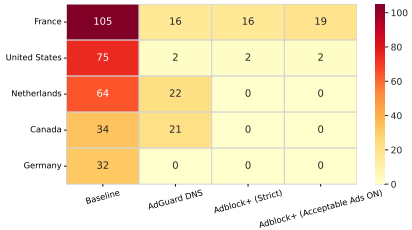


(a) allocine.fr

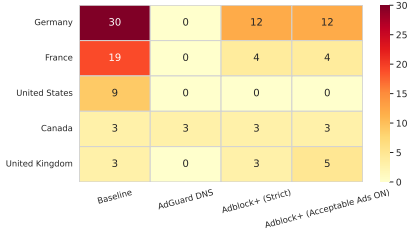
(b) thesun.co.uk

Figure: With the adoption of ad blockers, the number of cookies is significantly reduced, but residual cookies are still exchanged with servers located in many countries.

Cookies origin



(a) allocine.fr



(b) thesun.co.uk

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Tracker requests

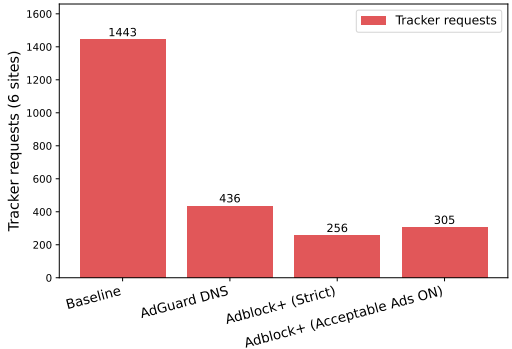
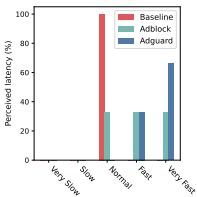


Figure: Ad blockers also reduce the number of resources (e.g., tracking pixels) used for tracking.

04
User Perceived Experience Quality

User Perceived Experience Quality



(a) Perceived latency

(b) Intrusive

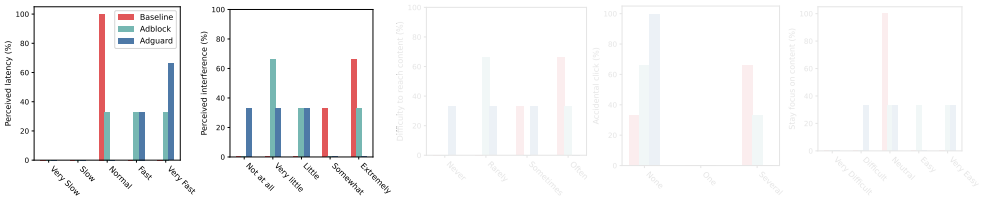
(c) Trouble to reach content

(d) Accidental clicks

(e) Difficulty to stay focus

Figure: Without ad-blocker, users generally find navigation slower, more intrusive, more difficult to find content, more prone to accidental clicks, and harder to stay focused on the content.

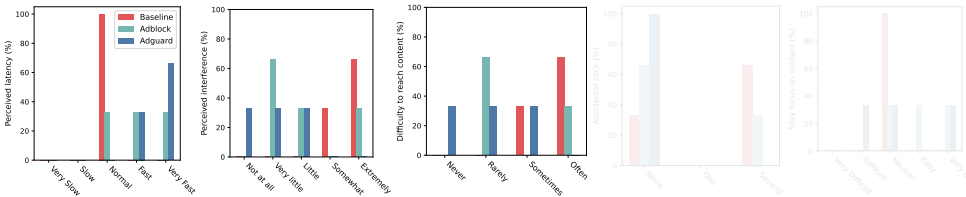
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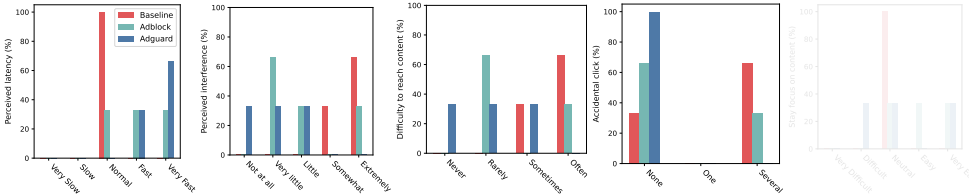
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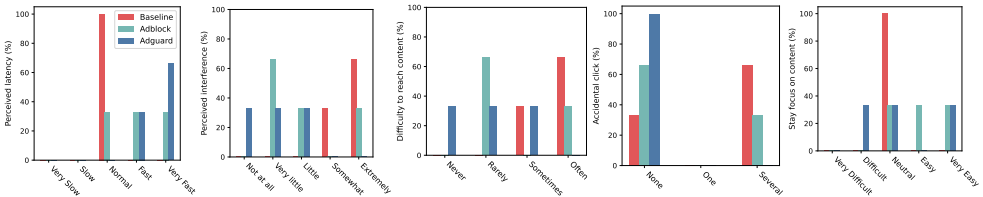
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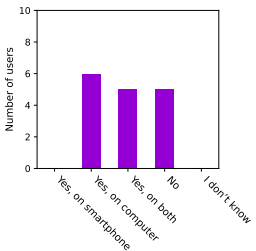


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05
User survey

Current state



(a) Ad-blocker adoption

(b) Accept cookies

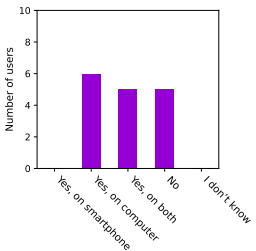
Figure: Current practice.

(a) Degraded experience

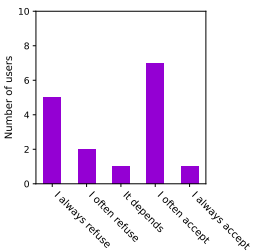
(b) Impacts

Figure: Preconceived impacts of ads.

Current state



(a) Ad-blocker adoption



(b) Accept cookies

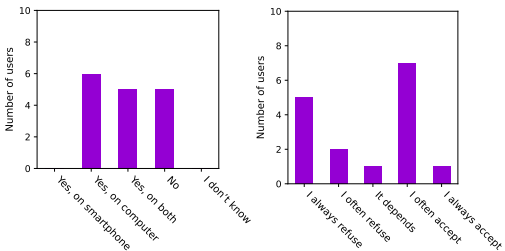
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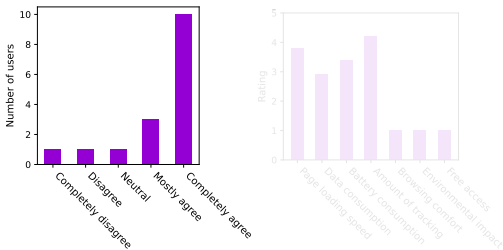
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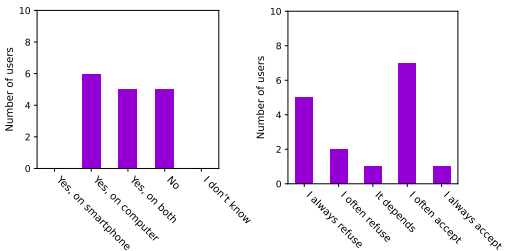
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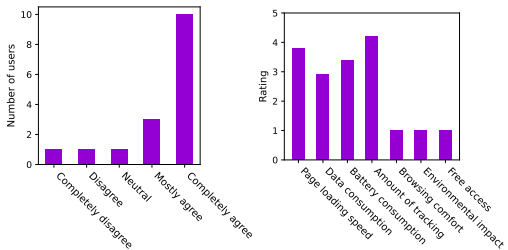
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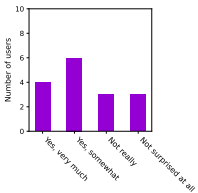
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Figure: Preconceived impacts of ads.

Raising awareness: impacts



(a) Surprised

(b) Concerns

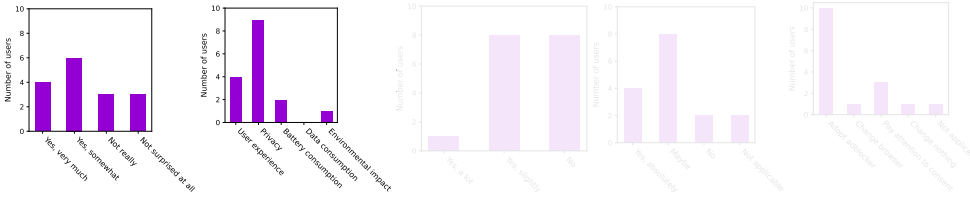
(c) Change of perception

(d) Change of habit

(e) Actions envisaged

Figure: Impact of raising awareness on the overall cost of online advertising.

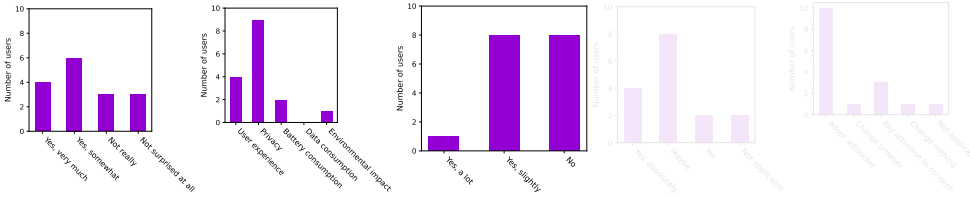
Raising awareness: impacts



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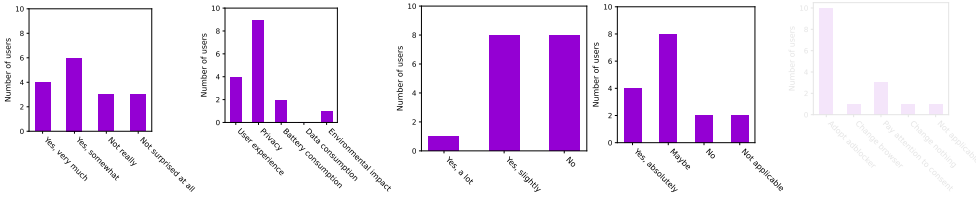
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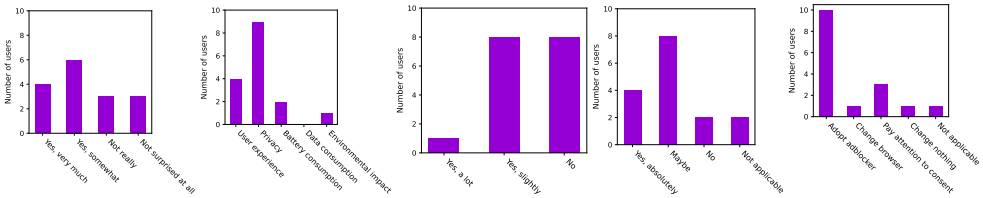
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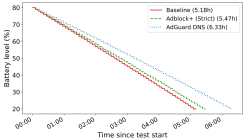
Take away

Ads

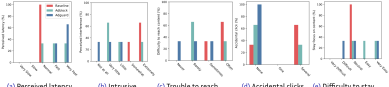


Battery consumption

- Battery duration when browsing websites
- Ad blockers preserve battery life
  - Up to one hour for ADGuard



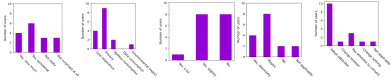
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Raising awareness: impacts

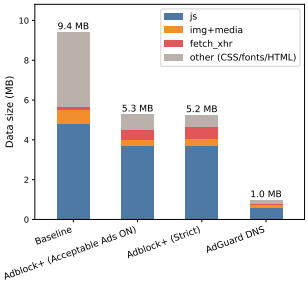


(a) Surprised (b) Concerns (c) Change of perception (d) Change of habit (e) Actions envisaged

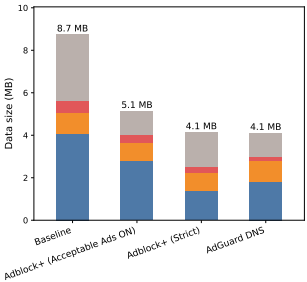
Figure: Impact of raising awareness on the overall cost of online advertising.

Merci.

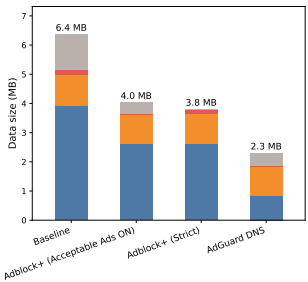
Data consumption (detailed)



(a) allocine.fr



(b) dailymail.co.uk



(c) thesun.co.uk

Figure: Ad filtering primarily impacts downloaded resources such as script and CSS/fonts/HTML.