A First Look at Cookies Having Independent Partitioned State

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Abstract. The introduction of Cookies Having Independent Partitioned State (CHIPS) marks a significant step toward balancing user privacy with essential web functionalities. CHIPS isolates data within specific contexts, preventing cross-site tracking while maintaining the functionality of websites. However, the adoption of CHIPS in real-world web usage remains largely unexplored. In this paper, we investigate the state of CHIPS deployment, providing an overview of how CHIPS has been integrated into web ecosystems since its introduction. Leveraging the HTTP Archive dataset, we first find that the adoption of partitioned cookies remains slow, with most domains still relying on non-partitioned cookies, though a slight increase in both types is observed starting in early 2024, coinciding with Google's phase-out of third-party cookies for 1% of users. This sudden onset of the third-party cookie phase-out has resulted in a haphazard way of adoption for some domains, which caused them to overlook important configuration requirements, resulting in improper settings due to limited awareness of the specific guidelines such as *SameSite=None* and *Secure*. In addition, we observe a positive signal for privacy as third-party trackers begin adopting partitioned cookies, with a noticeable increase starting in early 2024. However, as of September 2024, only a small number of trackers have fully transitioned to using partitioned cookies (up to 0.5% of tracking domains), while some continue to rely on both partitioned and non-partitioned cookies (up to 3.1% of tracking domains), highlighting that the shift is still in its early stages, especially for tracking domains. Finally, we observe stark asymmetry among the early adopter tracking domains: some have already added *some* partitioned cookies to all sites with a presence, while others, notably Google's *doubleclick.com* has only deployed partitioned cookies to around 5% of pages where it is present.

Keywords: CHIPS · partitioned state · CHIPS adoption · web tracking · tracker · privacy.

1 Introduction

Targeted advertisement, the dominant business model of the modern Internet, is fundamentally at odds with privacy concerns of the users. Internet users often express fear and distrust regarding the potential loss of personal privacy

in the online environment [21]. In response to these concerns, browser vendors have started implementing or planning various restrictions on third-party tracking technologies, such as third-party cookies, which are sent in requests to sites other than the top-level domain. These cookies enable cross-site tracking, allowing servers to track users' behavior across different websites. To counteract these privacy risks, browsers are now considering blocking third-party cookies and implementing technologies like Cookies Having Independent Partitioned State (CHIPS) [7]. CHIPS is an opt-in technology that isolates third-party cookies from different first-party contexts. In essence, CHIPS is a less drastic version of Firefox' Enhanced Tracking Protection strict mode [16], which imposes the CHIPS-behavior on all third-party cookies, which has led to broken webpages in the past. Still, Google has almost phased out third-party cookies in Chrome and Google does in fact have a track record of first introducing a new web technology where not using it conforms to the previous behaviour and then later setting a more aggressive standard. For example, there is the *SameSite* attribute, which governs whether a cookie may be attached to third-party requests. *SameSite=None*, the behaviour all browsers had before the introduction of the attribute, is no longer the standard in Chrome, instead defaulting to *SameSite=Lax* [17], which prevents the cookie from being attached to third-party requests. With that in mind, it is not unreasonable to expect further development against unrestricted third-party cookies, and, at least for Chrome, seeing CHIPS at the center of that. As CHIPS is rather new, there remains a significant gap in research regarding the real-world adoption and impact of partitioned cookies. Understanding how domains adopt CHIPS and the implications for both privacy and functionality remains critical in the current landscape.

In this paper, we uncover the state of deployment for CHIPS to provide a comprehensive overview of how CHIPS has been integrated into web ecosystems since its introduction. Our main findings can be summarized as follows:

- Using the HTTP Archive dataset, we track the longitudinal behavior of CHIPS adoption over time, from its start in May 2022 until September 2024 (§ 3). We highlight a slow adoption of partitioned cookies in both first-party and third-party contexts, with the majority of domains still relying on non-partitioned cookies. This indicates that the web ecosystem continues to depend heavily on non-partitioned cookies, with only a slight shift toward partitioned cookie usage emerging in 2024, though they remain in the early stages of deployment (§ 4.1.
- By evaluating the *misconfigured* partitioned cookie settings based on the CHIPS design principles, we find a significant number of *misconfigured* cookie headers among partitioned cookies, with misconfigurations being more common in first-party usage. These *misconfigurations* often involve missing key attributes such as *Secure* and *SameSite=None*, which are essential for partitioned cookies to function correctly in third-party contexts and provide their intended privacy benefits (§ 4.2).

- We find that whereas CHIPS were designed to enhance privacy by isolating cookies in specific partitions, adoption by third-party tracking domains has been slow, with most trackers continuing to rely on non-partitioned cookies. We observe a small, slowly increasing number of domains (2-3%) have started using partitioned cookies at the beginning of 2024 before the start of the third-party cookie phaseout by Google. The overwhelming majority of those domains are using non-partitioned cookies simultaneously. Interestingly, some early adopters, e.g., *doubleclick.net*, which belongs to Google, are still in the early phase of partitioned cookie adoption, as their cookies use both partitioned and non-partitioned types, and they are only using partitioned cookies on a small subset of pages (§ 4.3).

Finally, we address the implications of our analysis, outline the limitations, and discuss the ethical considerations of our study (§ 5).

2 Background and related work

2.1 Cross-site tracking and cookie mechanisms

Despite the growing commercialization of the Internet, paying for access was never seen as a dominant business model for large parts of the Internet. Instead, the usual method of monetization is advertisement, in many cases, targeted advertisement as targeted ads are commonly regarded as more valuable [4].

For targeted advertisement, user profiles must be built [3,6,19]. Traditionally, this is done using cookies, one of the first extensions to the formerly stateless HTTP protocol. Cookies can be set by a webserver using a *Set-Cookie* header and will be stored by the web browser, and be attached as a request header on subsequent requests to appropriate domains. Cookies have a variety of uses, such as session management or storing user preferences across multiple visits [5]. This already allows website operators to create usage profiles by storing a unique identifier in a cookie and then logging which parts of the website are accessed. While a static text webpage can be fetched with a single HTTP request, modern webpages make excessive use of embedded content, such as images, scripts, and videos. They can result in the total number of HTTP requests that constitute a site reaching triple digits. These embeds need not be hosted on the same domain as the main site, and those third-party embeds are indeed very common. In this ecosystem, website operators typically no longer manually insert advertisements into the site. Instead, they rely on third-party providers, whose embeds provide the advertisements. As advertising service providers are present on a multitude of content sites, they are in a position to correlate users if their embeds set cookies. A mere understanding of the embedding context on a select few sites can already be sufficient to construct interest profiles. If the tracker companies are in a direct relationship with the site visitor, e.g., because they also operate a social network where the user happens to be logged in, the profiles can become very detailed.

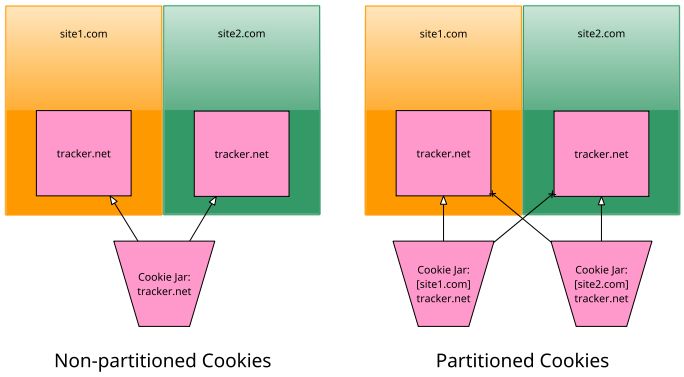

Fig. 1: Comparison of third-party cookies with and without partitioning.

2.2 Cookies Having Independent Partitioned State (CHIPS)

CHIPS introduces a new attribute called *partitioned* into the *Set-Cookie* header. This attribute can be attached to embeds (that have the SameSite attribute set to None) and will instruct the browser to involve the embedding context in the decision of whether the cookie should be attached to a request. If the same embed is used on two different sites with the Partitioned attributes, the browser will assign different states to them. The embeds can still have state, but it will not be shared across sites. Figure 1 illustrates the difference between non-partitioned (*normal*) and partitioned third-party cookies. For non-partitioned cookies, the cookie jar is assigned by origin only, so an embed to the same origin (*tracker.net* in this example) will have access to the cookies irrespective of the embedding context. Partitioning changes this - now, for embeds, the cookie jar assignment uses both the embed origin as well as the embedding context as criteria. Since in this example, *site1.com* and *site2.com* are different embedding contexts, *tracker.net* will be assigned two different cookie jars.

3 Methodology

3.1 Data collection

In order to analyze the adoption of CHIPS, we leveraged the publicly available crawling data from the HTTP Archive [1]. This dataset originates from visiting the home page of all origins included in the Chrome User Experience Report (CrUX), which lists websites frequently visited by Chrome users. CrUX includes a popularity ranking, so the crawl data in essence spans the most popular websites of that particular month. The data used in this study is based on desktop crawls, focusing on HTTP requests that include the *Set-Cookie* header. We collected data from January 2022, but we only retained data starting from May 2022, as this marks the first occurrence of the CHIPS attribute in our dataset.

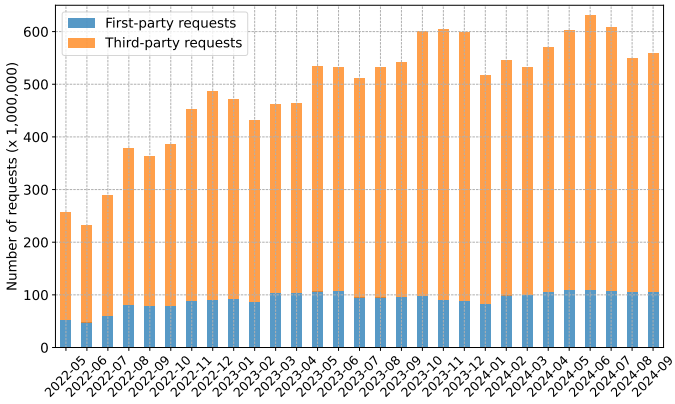

Fig. 2: Dataset overview.

The data spans until September 2024, covering a period during which the adoption of CHIPS was observed across multiple domains. The dataset consists of 86,143,446 webpages from 18,130,717 unique eTLD+1 domains. All request and response headers, including those with the *set-cookie* header, were analyzed to track the implementation of CHIPS. The dataset overview is in Figure 2. While both first-party and third-party requests increase over time, third-party requests consistently make up the majority of interactions, indicating the pervasive presence of third-party tracking and services on the web. This underscores the importance of analyzing third-party behavior, particularly in the context of cookie deployment and privacy-related developments like CHIPS.

3.2 Cookie classification

To categorize cookies as first-party and third-party, we utilize the public suffix list [15] to determine the domains of the webpage and the cookies based on their `host` attribute. We then compare each cookie's domain to its webpage's domain (i.e., it's embedder). If they match, the cookie is classified as first-party; if not, it is deemed third-party. To identify third-party tracking cookies, following the approach from Ref. [12,18], we utilize the *justdomains* blocklist [13]. This list, updated in March 2024, comprises entries from various popular tracking blocklists, including *EasyList* [9], *EasyPrivacy* [10], *AdGuard* [2], and *adservers* [14] blocklists. These blocklists are designed to target advertising and tracking resources and are commonly used by browser extensions that aim to safeguard user privacy while browsing. If a cookie's domain matches any domain in the *justdomains* list, it is classified as a tracking cookie.

4 Results

4.1 Overview

We present the adoption of partitioned and non-partitioned cookies between May 2022 and September 2024 in Figure 3. We show that first-party domains largely rely on non-partitioned cookies throughout this period, with minimal adoption of partitioned cookies. A slight increase in the use of both partitioned and non-partitioned cookies begins in early 2024. Similarly, third-party domains primarily use non-partitioned cookies, with only a small number of domains adopting both partitioned and non-partitioned cookies during the same period. Non-partitioned cookies are consistently more prevalent across both first-party and third-party domains throughout the observation period, indicating that partitioned cookies have not yet gained significant traction. The small increase in domains adopting both partitioned and non-partitioned cookies beginning in early 2024 coincides with Google's decision to phase out third-party cookies for 1% of users, suggesting an emerging trend toward partitioned cookie usage. However, this shift remains limited to a small fraction of domains.

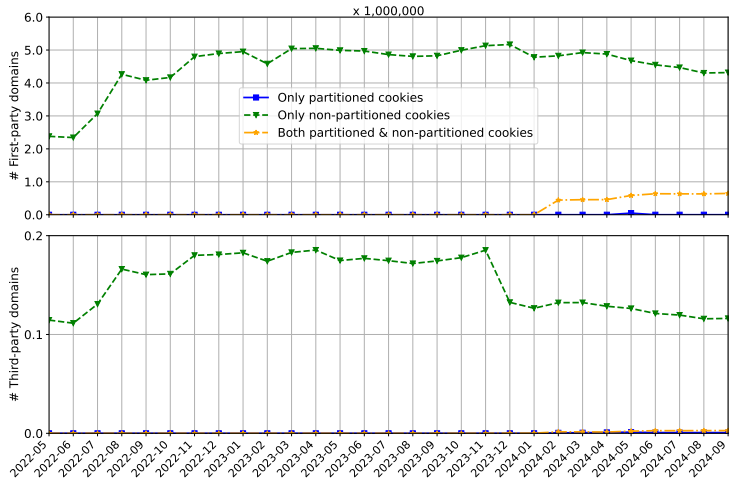

Fig. 3: Adoption of partitioned and non-partitioned cookies in first-party and third-party domains over time.

4.2 *Misconfigured* partitioned cookie settings

According to the CHIPS design principles [7], user agents must reject any partitioned cookie that does not include the *Secure* attribute, ensuring that these cookies are only sent over secure channels. Additionally, user agents may only

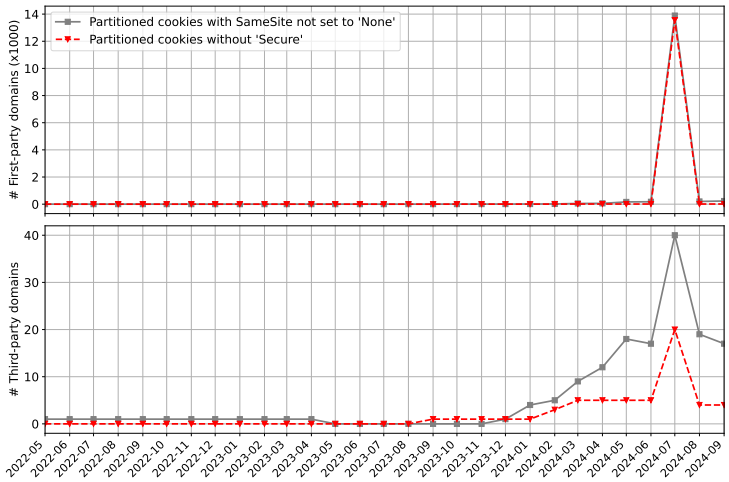

Fig. 4: *Misconfigured* partitioned cookie settings in first-party and third-party domains over time.

accept partitioned cookies if their *SameSite* attribute is set to *None*, allowing the cookie to function in a third-party context. A partitioned cookie without *SameSite=None* is effectively just a same-site cookie, meaning it cannot be sent across different sites. In this section, we analyze any *misconfiguration* of partitioned cookies across both first-party and third-party domains over time in Figure 4. The most obvious feature of the data is an extreme spike in misconfigurations in July 2024. While the uptick is noticeable for third-party domains too, it is most pronounced for first-party domains. These misconfigured embeds were distributed across a large number of different domains. It may indicate a phase where a large number of domains attempted to adopt partitioned cookies quickly, possibly due to external pressures such as evolving privacy standards or the gradual phase-out of third-party cookies by major browsers like Google. In their haste, many domains may have overlooked key configuration requirements, leading to improper settings. July is the month Google canceled their plans of the third-party cookie phaseout, which may contribute to the rapid reduction in the month after. In addition, given that partitioned cookies are still in their early stages, many developers may not yet be fully aware of the specific requirements, e.g., *SameSite=None and Secure*, to ensure compliance with CHIPS guidelines.

4.3 Have trackers adopted CHIPS?

Since CHIPS is designed to enhance user privacy by isolating cookies within specific browser partitions and preventing cross-site tracking, here, we explore how third-party tracking domains have responded to this mechanism. We show the percentage distribution of third-party tracking domains based on their use of partitioned and non-partitioned tracking cookies over time in Figure 5. The

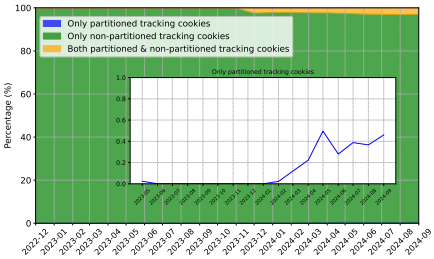

Fig. 5: Distribution of partitioned and non-partitioned tracking cookies.

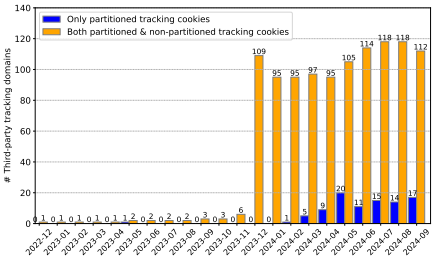

Fig. 6: Number of trackers that set partitioned cookies.

green area represents domains that use only non-partitioned tracking cookies, while the blue (imperceptibly small) and orange areas represent those that use only partitioned tracking cookies and both partitioned and non-partitioned cookies, respectively. We first show that most tracking domains rely solely on non-partitioned cookies, with a small percentage adopting partitioned cookies or both types in early 2024. We observe that CHIPS adoption does not gain any traction until just before the start of the third-party cookie phaseout by Google. This indicates that in a vacuum most trackers are unwilling to use partitioned cookies. Most (around 80%) of the trackers that use partitioned cookies, also use non-partitioned ones. In this state, the privacy benefit of partitioned cookies is dubious, because the non-partitioned ones can be used to link cookies from different partitions. We also observe a slight drop in CHIPS-using domains in August and September 2024, suggesting that the end of the third-party cookie phaseout may have discouraged some trackers from continuing to use partitioned cookies. This shift indicates that, despite the earlier increase of CHIPS, the changing landscape around third-party cookies could be influencing their adoption.

We also show the absolute number of third-party tracking domains implementing partitioned, non-partitioned, or both types of tracking cookies in Figure 6. We reveal a slow initial uptick of partitioned cookies, with only isolated occurrences in late 2022 and 2023. However, starting in late 2023, we observe a noticeable increase, particularly in domains using both partitioned and non-partitioned cookies (orange bars). This may be explained by the beginning of the trial run of the third-party cookie phaseout that was also starting in 2024. The number of tracking domains setting only partitioned cookies (blue bar) also shows a significant upward trend, indicating a growing shift in cookie deployment strategies. This number remains relatively small, however, especially if compared to the ones using both partitioned and non-partitioned cookies. This sharp rise post-December 2023 suggests that partitioned cookies have become an integral part of the tracking ecosystem, albeit still in the early stages of adoption. Towards the end of the dataset, there are around 100 different tracking domains using partitioned cookies (up to 3.1% of tracking domains) alongside non-partitioned ones and around 15 different ones using exclusively partitioned

cookies (up to 0.5% of tracking domains). The third-party tracking domains that consistently deploy partitioned cookies are listed in Table 1 in the Appendix, categorized by the date of their first observed appearance. Some tracking domains have transitioned to only using partitioned cookies, likely influenced by evolving privacy standards and the phase-out of third-party cookies. These trackers do have an overall very small presence, however. Notably, *doubleclick.net*, which belongs to Google, is still in the early phase of partitioned cookie adoption, as its cookies use both partitioned and non-partitioned types.

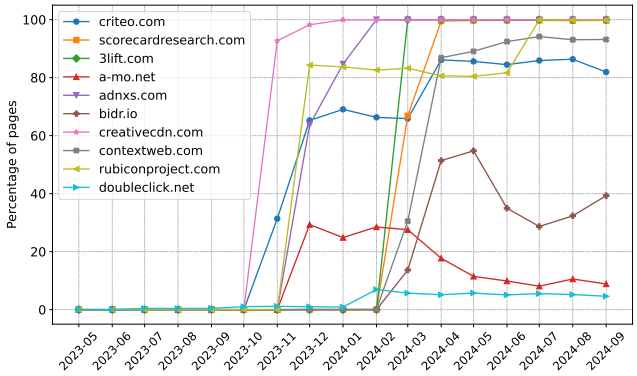

Fig. 7: CHIPS usage of top 10 CHIPS tracking domains (present in the highest amount of pages) as a percentage of all sites where they are present.

Finally, in Figure 7 we show the development of the ten domains that have, over the entire dataset, most usages of partitioned cookies. In particular, we show how many different webpages they are present with partitioned cookies, as a percentage of the total number of different webpages on which they are present. We can see large differences in deployment strategy here. Firstly, all ten domains were deploying partitioned and non-partitioned tracking cookies over time. Some domains, namely *rubiconproject.com*, *creativecdn.com*, *scorecardresearch.com*, *3lift.com* and *adnxs.com* are using partitioned cookies on almost all webpages. Others, like for example *doubleclick.net* which have a very high absolute number of CHIPS-usage, still only use partitioned cookies in about $\tilde{5}$% of the pages where they are present (embedded in 37% of webpages as of September 2024).

5 Discussion

In this section, we discuss the implications of our findings on the adoption and effectiveness of CHIPS. We also address the limitations of our methodology and the ethical considerations of using publicly available data in our study.

5.1 Implications

Our findings provide important insights into the early-stage adoption of CHIPS and its implications for the broader web ecosystem. The slow uptake of partitioned cookies, despite their design to enhance privacy, suggests that the web continues to rely heavily on non-partitioned cookies, limiting the privacy benefits that CHIPS aims to deliver. As CHIPS adoption remains in its infancy, its long-term impact on cross-site tracking and user privacy is still unclear. The presence of misconfigured partitioned cookies, particularly among first-party domains, highlights the need for increased awareness and better implementation practices. Some domains have yet to fully comply with the CHIPS design principles, such as ensuring the *Secure* and *SameSite=None* attributes are correctly applied. This has practical implications for both developers and browser vendors, as improper configurations will cause breakage that might be conflated with a problem with CHIPS. Furthermore, while we observe a small but growing number of third-party trackers adopting partitioned cookies, the fact that most continue to use non-partitioned cookies raises concerns about the effectiveness of CHIPS in reducing cross-site tracking. The use of both partitioned and non-partitioned cookies suggests that the privacy advantages of CHIPS are not fully realized, as non-partitioned cookies can still facilitate tracking across domains and, consequently, link the partitioned cookies. Our research indicates that the biggest push for adoption coincided with the beginning of Chrome's third-party cookie phaseout, suggesting that trackers lack an intrinsic motivation to use partitioned cookies and only did so in the face of breakage. In addition, further research and industry guidance will be critical to ensure that privacy mechanisms like CHIPS are effectively implemented and used as intended. To speed up adoption, revisiting the policy to generally block unrestricted third-party cookies at a later date may be prudent. Since this change adversely affects the same industry, advertisement, Google is majorly engaged in, we acknowledge Google's difficult position in implementing this change.

5.2 Limitations

Firstly, our tracking cookie detection approach may be incomplete. We rely on *EasyList* [9], *EasyPrivacy* [10], *AdGuard* [2], and *adservers* [14] blocklists to detect tracking cookies and CHIPS adoption. These lists are widely recognized and used both by end-users and as ground-truth in academic studies [20,11,8]. While these blocklists provide strong coverage of well-known trackers, they may not comprehensively capture all third-party trackers or CHIPS adopters, potentially leading to underreporting in our analysis. Nevertheless, we believe that this limitation does not significantly impact our overall measurements and that the work still provides an in-depth view of the various aspects of online tracking, including CHIPS adoption. Secondly, while our detection methodology focuses on analyzing cookies through HTTP requests, it may overlook certain cookies set through alternative mechanisms. Cookies that are deployed via server-side operations or asynchronous JavaScript requests outside the browser's immediate

view may not be captured in the HTTP Archive. As a result, this limitation could lead to underestimating the prevalence of CHIPS, particularly for domains using more sophisticated or indirect cookie-setting techniques. Despite this, we believe that the majority of tracking cookies, including those adopting CHIPS, are set through detectable client-side interactions, minimizing the overall impact of this limitation on our findings. Finally, user interaction with cookie consent banners can also affect the accuracy of our tracking cookie detection. Many websites set tracking cookies, including CHIPS, only after a user consents via cookie banners. Since the HTTP Archive does not simulate user interaction with these banners, cookies that are conditionally set after consent may not be captured in our analysis. This could lead to incomplete insights into CHIPS adoption, especially for websites that implement stricter privacy practices. Nonetheless, we believe our methodology still captures a significant portion of the cookie-setting behavior and provides meaningful insights into the broader trends of CHIPS adoption.

5.3 Ethical consideration

Our work does not involve active measurements and relies entirely on data provided by third parties, specifically the HTTP Archive dataset. We do not process the data in a way that focuses on personally identifiable information (PII), and we only extract and aggregate data related to the technical functioning of the Internet. Therefore, we conclude that no specific ethical considerations apply to our measurements.

6 Conclusion

In this paper, we provided a comprehensive analysis of the adoption of CHIPS over time. By examining data collected from January 2022 to September 2024, we identified key trends in first-party and third-party domains, highlighting the shift in cookie-setting practices since May 2022 when the CHIPS attribute was first observed. We noted that significant adoption coincides with the start of Chrome's trial run of the third-party cookie phaseout, suggesting a causal connection here. In addition, the rate of the rollout has slowed down even before the third-party cookie phase-out was canceled. Finally, some select trackers opted for a comprehensive approach and partitioned all their cookies, but these represent a small overall share of the trackers. We observe a significant heterogeneity as to how different trackers approach partitioning their cookies, with some limiting CHIPS to a number of select pages and others using partitioned cookies on almost all the pages where they are present, albeit mostly alongside non-partitioned cookies. Our findings contribute to a deeper understanding of how CHIPS is being integrated into the ecosystem, offering valuable insights into its adoption and the evolving landscape of web tracking. As major browsers phase out third-party cookies, it is important to conduct further research and provide industry guidance to ensure that privacy mechanisms like CHIPS are properly implemented and used as designed. To encourage reproducibility, we release our analysis scripts at [22].

Table 1: List of tracking domains deploying partitioned cookies consistently over time. The red line represents domains that set only partitioned tracking cookies.

First appearance	Domains
2022-12	ladsp.com
2023-05	doubleclick.net
2023-09	taboola.com
2023-11	openx.net, creativecdn.com, criteo.com
2023-12	onetag-sys.com, casalemedia.com, omnitagjs.com, smaato.net, adnxs.com, media.net, minutemedia-prebid.com, technoratimedia.com, 33across.com, contextweb.com, a-mo.net, adroll.com, ingage.tech, cootlogix.com, the-ozone-project.com, blismedia.com, rubiconproject.com, pubnation.com, 4dex.io, richaudience.com, t13.io, serverbid.com, yellowblue.io, aniview.com, servenobid.com, intentiq.com, 1rx.io, mediavine.com, logly.co.jp, bidr.io, smilewanted.com, yieldmo.com, advertserve.com, bidswitch.net, lwadm.com, pubmatic.com, undertone.com, nexx360.io, adingo.jp, servebom.com, connatix.com, sharethrough.com, adsrvr.org, seedtag.com, dotomi.com, lijit.com, kargo.com, nextmillmedia.com, wknd.ai, mgid.com
2024-01	rlcdn.com, ew3.io, 3lift.com, dable.io
2024-02	livenza-il.com, bagly.co.il, leadlife.com, skcrtxr.com, mmstat.com, adtdp.com, 50bang.org, sonobi.com, userreport.com, tadpull.com, berp.com, im-apps.net, rpofsweden.se
2024-03	lead.im, scorecardresearch.com, digitalthrottle.com, cpxinteractive.com, mmondi.com, 0cf.io, googleadservices.com
2024-04	q1media.com, prnx.net, brealtime.com, playgirl.com, ymetrica1.com, springserve.com, gayadnetwork.com
2024-05	kaizenplatform.net, coinminerz.com, shrinktheweb.com, sundaysky.com, indoleads.com, groundtruth.com, bridge.link, filetarget.com, liveintent.com, adzbazar.com, camghosts.com, scarlet-clicks.info, involve.asia, avantlink.com, shareasale.com, maropost.com, woomio.com, flashtalking.com, mediafuse.com, ninjacat.io, neobux.com, adsvert.com, gixmo.dk, webeyez.com, aerserv.com, wts.one, runetki.com, qashbits.com, demandbase.com, hotjar.com, profitshare.ro, clickguard.com, clickbank.com, revive-adserver.net, upsales.com, kms-tool.com, bright-sdk.com, avapartner.com, vfreecams.com, piano.io, diskaa.com, ongsono.com, danbo.org, bongacams7.com, roirocket.com, webstats1.com, commissionkings.ag, uii.io, joinads.me, xlivesex.com, permutive.com, moengage.com, nicequest.com, appnext.com, pushwoosh.com, smallseotools.com, comscore.com, inspectlet.com, chartbeat.com, acclienquan365.com, vietnamfb.com, rotate5url.com, optimizely.com, juicyads.com, iceprogs.ru, find-ip-address.org, getintopc.today, nakamasweb.com, blueconic.com, leadspace.com, fout.jp, zeotap.com, sleeknote.com, mediaz.vn, cameraprive.com, nicklienquan247.com, retentionscience.com, crazyegg.com, funnelytics.io, sitest.jp, jango.com, bidvertiser.com, supercounters.com, primeleech.com, pollster.pl, fullstory.com, clickcease.com, partnerstack.com, contactmonkey.com, ru.net, noibu.com, appsflyer.com, ardalio.com, wts2.one, brightedge.com, thecounter.com, madkudu.com, abtasty.com, dz4ad.com, mutinyhq.com, adcryp.to, ometria.com, ergadx.com, iplogger.org, getlasso.co, cision.com, ec-concier.com, vungle.com, ip-tracker.org, sheeme.com, sumome.com, feathr.co, sizmek.com, adespresso.com, adshnk.com, star-clicks.com, callrail.com, sendwebpush.com, snitcher.com, admitad.com
2024-06	kameleoon.com, admatic.com.tr, visitorqueue.com, bongacash.com
2024-07	youvisit.com, askfollow.us, synerise.com, cpx.to, ipnoid.com, tracemyip.org, zigzag.vn, ad.gt
2024-08	calltrackingmetrics.com, samuraiclick.com, exitbee.com, clickz.com, tctm.co, liadm.com, getstat.net, wowpornlist.xyz, ay.delivery, mixpanel.com
2024-09	adblock-pro.org, amp.vg, pornearn.com, baremetrics.com, authanalysis.com, icorp.ro, coinadster.com, agkn.com

Appendix

Table 1 details third-party tracking domains that consistently deploy partitioned cookies, categorized by their first observed appearance. The domains are organized by month, to showcase the development of CHIPS-using domains over time. Domains highlighted in red represent those that exclusively rely on partitioned cookies, underscoring a specific subset of trackers that have committed to this cookie technology alone. Early adopters, such as *ladsp.com* in December 2022, *doubleclick.net* in May 2023, and *taboola.com* in September 2023, demonstrate the initial, slow uptake of partitioned cookies. Notably, *doubleclick.net*, which belongs to Google, is still in the early phase of partitioned cookie adoption, as its cookies use both partitioned and non-partitioned types. From early 2024, some domains—highlighted in red, such as *digitalthrottle.com* and *mmondi.com* in March, and *gayadnetwork.com* in April were observed setting only partitioned cookies. However, as of September, no other trackers continue this trend.

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