

PubMatic's Quarterly Mobile Index (QMI) report was created to provide both publishers and advertisers with key insights into the mobile advertising industry.

ABOUT PUBMATIC'S QUARTERLY MOBILE INDEX

By analyzing over 15 trillion global advertiser bids flowing each month through PubMatic's platform, we can observe real-time developments in the mobile space that may allude to broader digital industry trends. We can then compare this information to other published data to further understand changes in the mobile landscape. At PubMatic, we are committed to providing best-in-class mobile tools and services, and believe that information sharing is crucial in aligning the digital industry towards best practices and, ultimately, growth in mobile advertising.

Note that directional data might not be comparable with prior reports.

THE FOLLOWING THREE KEY TRENDS EMERGED IN Q2 2020

KEY TREND

01

Mobile advertising takes the spotlight amid budget cuts

KEY TREND

02

App publishers embrace programmatic as in-app engagement deepens

KEY TREND

03

Mobile video proves to be a dynamic format during a downturn

WHAT DOES THIS MEAN FOR PUBLISHERS AND ADVERTISERS?

As marketers invest in mobile as part of their omnichannel strategies, publishers must adapt best-in-class programmatic strategies for in-app inventory.

For marketers, while some advertising investments may make sense only for mobile as a standalone, fanning out their ad strategies extends their reach, especially when trying to anticipate changing digital behaviors during an economic downturn. For publishers, addressing quality concerns and improving buyer transparency is pivotal to honing relationships and also maximizing revenues. Since mobile in-app takes the lion's share in programmatic ad spend, it is also a target for fraud, inhibiting its growth potential. An increase in programmatic monetization is reliant on creating a cleaner marketplace by adopting industry standards like app-ads.txt, or creating more efficient auction environments through in-app header bidding.

With the convergence of OTT and digital video buying, publishers must prioritize delivering a TV-like ad experience across all platforms.

Better end user viewing experiences produce better inventory monetization for publishers. With the accelerated shift of budgets from traditional ad-serving on TV to server-to-server based digital formats, ad inventory that alleviates latency, repetitive ads, and the lack of competitive separation are firmly positioned to follow revenue growth. It is imperative to focus efforts on the environments in which users consume OTT content, including mobile, while addressing the growing revenue opportunity.

KEY TREND

01

MOBILE ADVERTISING TAKES THE SPOTLIGHT AMID BUDGET CUTS

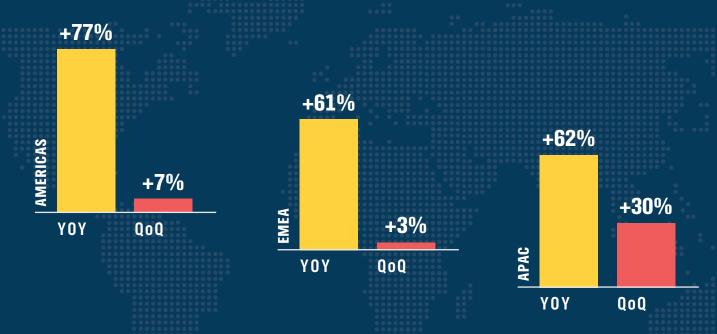
Publishers and advertisers are focusing their efforts and investments on mobile more than ever. With increased mobile usage, advertisers are turning to mobile audiences as part of their omnichannel strategies to maximize return on ad spend. Publishers, meanwhile, are adopting industry quality safeguards to optimize mobile revenues.



MOBILE AD SPEND INTENSIFIES AND REACHES NEW HEIGHTS

Total mobile ad spending flowing through PubMatic's platform continued to soar in Q2, rising 71% over last year and 8% over Q1, despite the impact of Covid-19 on the global economy. While growth is robust across all regions, APAC saw sharper increases over last quarter than the Americas and EMEA. This is likely due to the continual rise in cost of advertising in APAC, and the earlier timing of the pandemic-related recovery in the region.¹





¹ "APAC Media Expected to Have Fastest Recovery; S4 Updates Q1 Trading Report," Grace Dillon, ExchangeWire, May 7, 2020

PUBLISHERS LEAN ON ANTI-FRAUD INITIATIVES TO BOOST REVENUES

44% of the top 1000 industry apps published app-ads.txt files as of mid-July 2020, largely driven by Android transactions.² There was a notable spike in adoption during the early pandemic months, before a return to its original, steady trajectory. App publishers and developers continue to rely on these mobile industry standards to protect inventory quality and maximize revenues.









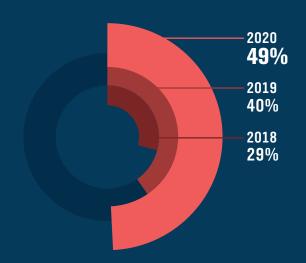


1/1 1/13 1/13 1/20 1/27 2/17 2/17 2/17 2/17 3/30 3/30 3/16 5/14 5/11 5/13 5/25 5/25 5/27

MARKETERS ALLOCATE MORE BUDGET TO MOBILE

Marketers continue to regard mobile as an effective channel to reach audiences. With increased mobile media consumption during the pandemic, mobile ad engagement rose 15%.3 39% of marketers plan to increase their mobile marketing budgets this year and nearly half (49%) plan to allocate more than a quarter of their budget to mobile, up from 40% last year.4 Mobile is a key lever within an omnichannel strategy.5

MARKETERS ALLOCATING MORE THAN 25% OF BUDGET TO MOBILE ADVERTISING⁴



³ "Mobile ad engagement rises 15% during pandemic, study says," Robert Williams, Mobile Marketer, June 9, 2020

⁴ "State of the Industry: Mobile Marketing in EMEA 2020," WARC, May 2020

⁵ "US Mobile Ad Spending Update Q3 2020," Yoram Wurmser, July 16, 2020

KEY TREND

02

APP PUBLISHERS EMBRACE PROGRAMMATIC AS IN-APP ENGAGEMENT DEEPENS

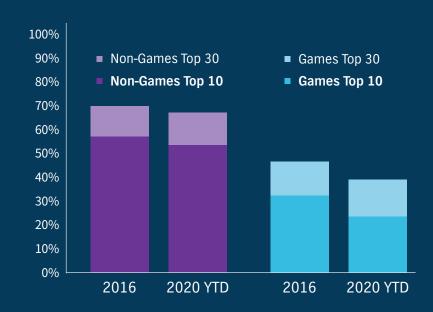
Incremental time spent on mobile devices is expanding the competitive set of app publishers. With header bidding adoption and private market-place (PMP) usage, app publishers are increasingly flattening the waterfall through increased unique demand sources and ensuring high quality, transparent transactions — all validated programmatic tactics to maximize revenues.

USERS ARE ENGAGING WITH A MORE DIVERSE SET OF APPS

Mobile users are spending time with more apps in 2020 — including the pandemic months — than they did 4 years ago. Therefore, the share of time spent with the top mobile apps (dominated by the walled gardens) is declining, and these apps are facing increasing competition with a greater pool of app publishers.⁶ Advertisers consider open web programmatic ads to be more effective since 77% of people "trust articles in the open web more" than Facebook, Instagram, and YouTube.⁷

SHARE OF TOTAL TIME BY TOP APPS⁶

United States

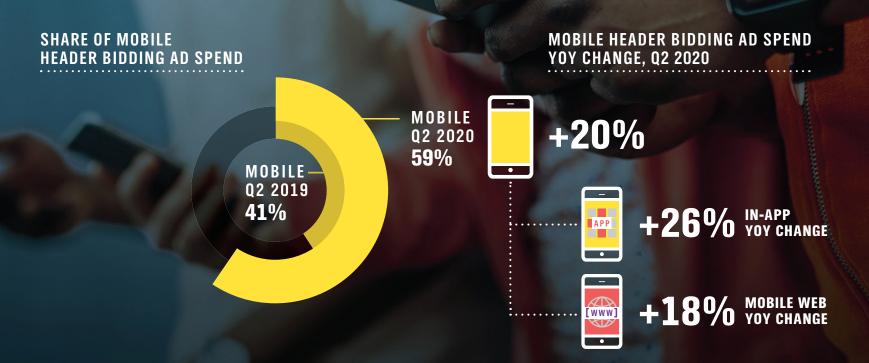


⁶ "Mobile app evolution," App Annie, July 2020

⁷ "Changing Attitudes Towards Walled Gardens vs. Open Web; Record TAG Recertifications," Mathew Broughton, May 2020

IN-APP DRIVES MOBILE HEADER BIDDING GROWTH

Mobile header bidding ad spend grew 20% over last year, pushing the mobile share of total header bidding to 59% in Q2. In-app is largely driving the increase, rising 26% over last year, and is outpacing mobile web which grew 18%. The growth in in-app header bidding is due in part to new SDK based technologies, including PubMatic's OpenWrap SDK, which was launched earlier in 2020.



PMP SPENDING SURGES IN-APP DURING GLOBAL ECONOMIC RECOVERY

Private marketplaces (PMPs), which provide publishers better control over ad inventories, gained momentum after platform spending began rising again in April. While PMP ad spend grew across all platforms, in-app grew almost 5 times over pre-impact levels, while mobile web and desktop rose 52% and 2%, respectively. Analysts expect PMPs to surpass open exchange spending this year, accounting for 51% of total open RTB spend.⁸



⁸ "US Real-Time Bidding (RTB) Ad Spending," eMarketer, July 2020

KEY TREND

03

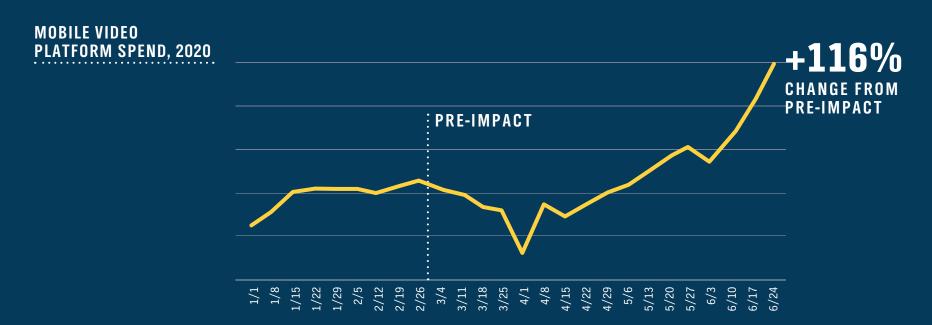
MOBILE VIDEO PROVES TO BE A DYNAMIC FORMAT **DURING A DOWNTURN**

Although video ads were steeply impacted at the initial onset of the pandemic, they made a consistent and robust recovery towards the end of Q2 thanks to linear TV budget reductions, a rise in performance campaigns and in-app viewership. All three of these events gave mobile video ads a lift in ad spending, following the natural trajectory of the market.



SHIFTS IN CAMPAIGN GOALS PROPEL MOBILE VIDEO AD SPENDING

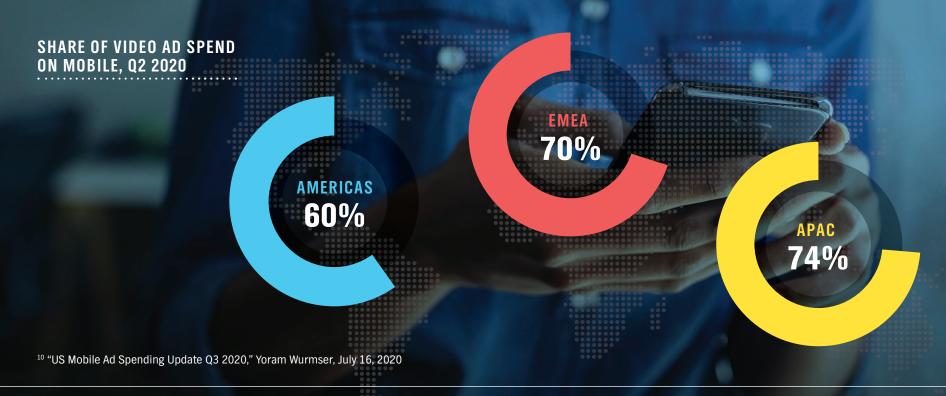
Mobile video ads were hit hard during the early months of the pandemic, contracting more than half at the lowest point. However, a reshuffling in campaign types underpins its reduction and recovery trends; a drop in branding-focused mobile video ads shifted CPMs down roughly 50%, but performance video ads continued to do well — linked to a boost within the gaming sector.⁹



⁹ "US Mobile Ad Spending Update Q3 2020," Yoram Wurmser, July 16, 2020

MOBILE SERVES AS A BOON FOR VIDEO ADS ACROSS ALL REGIONS

Over two-thirds of digital video ad spending worldwide is now through a mobile device. Mobile video ad spend rose across all regions over last year and last quarter. While the mobile video penetration gap is narrowing between APAC and the rest of the regions, APAC still commands the lead with 74% of all video spending occurring on mobile. In-app viewing was a primary driver of mobile's leadership in video; 40% of incremental time spent on an app is from video in 2020.¹⁰

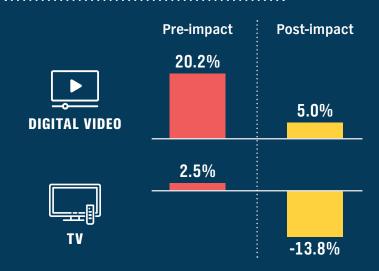


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ADVERTISERS REDEPLOY TV BUDGETS INTO DIGITAL PROGRAMMATIC CHANNELS

People sheltering in place are watching more TV than ever, but advertiser demand for upfront ads, where inventory is sold at a discount in exchange for early commitments, is shrinking.¹¹ The primary beneficiary of this budget shift is programmatic mobile, where experts estimate a 32% increase in video ad spend next year in the US.12

CORONAVIRUS IMPACT: WORLDWIDE AD SPEND CHANGE ESTIMATES, 202013



^{11 &}quot;Q2 2020 Digital Video Trends," Ross Benes, eMarketer, May 28, 2020

US PROGRAMMATIC DIGITAL VIDEO AD SPENDING. BY DEVICE, 2019-202014

billions, % change and % of programmatic digital video ad spending

	2019	2020	2021	2022
Mobile	\$17.05	\$19.10	\$24.26	\$30.40
% programmatic digital video ad spending	69.5%	69.8%	70.3%	70.8%
Connected TV	\$3.24	\$4.38	\$6.98	\$8.67
% programmatic digital video ad spending	13.2%	16.0%	19.4%	20.2%
Desktop	\$4.24	\$3.88	\$3.69	\$3.87
% programmatic digital video ad spending	17.3%	14.2%	10.3%	9.0%

¹² "US Digital Video Ad Spending By Device, 2019-2024," eMarketer, June 2020

^{13 &}quot;Global Ad Trends: The Impact of COVID-19 on Ad Investment," WARC, May 26, 2020

¹⁴ eMarketer, July 2020

QMI Methodology

PubMatic's yield and data analytics team analyzes over 15 trillion advertiser bids on a monthly basis, utilizing the company's best-in-class analytics capabilities. The Q2 2020 QMI incorporates impressions, revenue and eCPM data from these reports to provide a high-level analysis of key trends within the mobile advertising industry. Analysis is based on PubMatic-sourced data except as noted. Percentages in some figures may not sum to 100% due to rounding. "Monetized impressions" or "paid impressions" are defined as impressions that were sold through the PubMatic platform, and "eCPM" is defined as the cost per one thousand impressions.

Disclaimer: This QMI may include inaccuracies or typographical errors, and is based on operational data that has not been audited or reviewed by a third party. It may contain forward-looking statements about future results and other events that have not yet occurred. Actual results may differ materially from PubMatic's expressed expectations due to future risks and uncertainties, and past performance or trends are no guarantee of future results. PubMatic does not intend to update the information contained in this QMI if any information or statement contained herein later turns out to be inaccurate.



PubMatic delivers superior revenue to publishers by being the sell-side platform of choice for agencies and advertisers. The PubMatic platform empowers independent app developers and publishers to maximize their digital advertising monetization while enabling advertisers to increase ROI by reaching and engaging their target audiences in brand-safe, premium environments across ad formats and devices. Since 2006, PubMatic has created an efficient, global infrastructure

and remains at the forefront of programmatic innovation. Headquartered in Redwood City, California, PubMatic operates 14 offices and nine data centers worldwide.

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