



Q3
2017

**QUARTERLY
MOBILE INDEX**



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 the billions of digital impressions that flow each day through PubMatic's platform, SEVEN, 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. We are committed to providing best-in-class mobile tools and services, and we 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.

IN Q3 2017, THE FOLLOWING FIVE KEY TRENDS EMERGED:

KEY TREND

01

Header bidding proliferation remained strong as unique paths for adoption develop in different regions worldwide.

KEY TREND

02

Advertisers increased leveraging of private marketplaces (PMP) to enhance the quality of their mobile advertising investment.

KEY TREND

03

Mobile app monetization continued to provide the largest advertising opportunity as the volume split between the mobile web and app environments normalized after six quarters of market rebalancing.

KEY TREND

04

Video expanded globally, driven by strong volume expansion in APAC and EMEA and a growing portion of the format monetized through mobile.

KEY TREND

05

Retail publishers saw mobile web impressions rise at a double-digit clip during the 2017 Back-to-School season. Mobile web ad spending in retail publisher sites rose 48% year-over-year (YOY) in Q3 2017.

WHAT DOES THIS MEAN FOR PUBLISHERS AND ADVERTISERS?

1

Publishers are deepening their header bidding expertise as advertisers begin to realize the true potential of the technology on the buy-side.

Header bidding has upended programmatic advertising, allowing publishers to escape the waterfall and unify demand sources to increase competition on an impression-by-impression basis. Rapid growth in volume and eCPMs has been sustained over the past seven quarters. Publishers are increasing their expertise as the technology evolves beyond the header. Announcement of wrappers including PubMatic's OpenWrap, in-app integrations and server-side solutions will further optimize integration and monetization strategies while also improving user experience. On the buy-side, the benefits of header bidding are still scantily understood.¹ Only one quarter of US agency and marketing professionals say their grasp of the technology is good or great.² They stand to miss on the big opportunity header bidding offers to ad buyers: seamless competition with direct insertion orders within publishers' ad servers.

2

Private marketplaces are getting attention from advertisers keen on brand safety and transparency.

For better or worse, 2017 will go down as the year when fraud risks and price transparency came to the forefront. Finally. More than a quarter of programmatic decision-makers in North America say they will shift resources from open exchanges to PMPs to ensure their ad purchases appear across higher-quality publisher sites.³ Given the current state of affairs, publishers are embracing PMP to enhance price transparency and regain control over ad decisioning, which in turn increases the availability of premium inventory through this channel. While PMPs are unlikely to overtake the open exchanges in sheer volume any time soon, the revenue opportunities and control capabilities they offer are making them harder to pass on.

3

Video advertising is spreading globally and into mobile as major premium publishers pivot toward the highly engaging, highly valued format.

Programmatic video remains a developing opportunity, but top publishers in the US are betting on it, reshuffling editorial teams to focus on video content production. Publisher bets on the format seem justified as the use of video ads spreads globally while also growing its mobile footprint. More importantly, video ad eCPMs consistently outperform those of any other digital format, including social.⁴ As video consumption expands to become a truly multiscreen experience, opportunities will arise for publishers to add video ads to their existing mobile and desktop inventory as a way to strengthen consumer engagement and extend audience reach.

4

Back-to-School is the largest shopping period of the year outside of the holiday season, and brings a spike in advertising volume and spending.

Back-to-School campaigns appear to start sooner every year,⁵ but spending and volume ramp up between late July and early August. Retail publishers — those categorized by the Interactive Advertising Bureau (IAB) as being within the shopping category — are increasingly leveraging programmatic technology to manage the mass influx of advertising demand, particularly through the mobile web in the Americas. Retail publishers who diligently prepare for the Back-to-School season are best equipped to reap the benefits of a period during which US adults with children ages 18 and younger are 62% more likely to signal advertising as the important determining factor of their purchasing behavior.⁶

KEY TREND

01

Header bidding proliferation remained strong as unique paths for adoption develop in different regions worldwide.

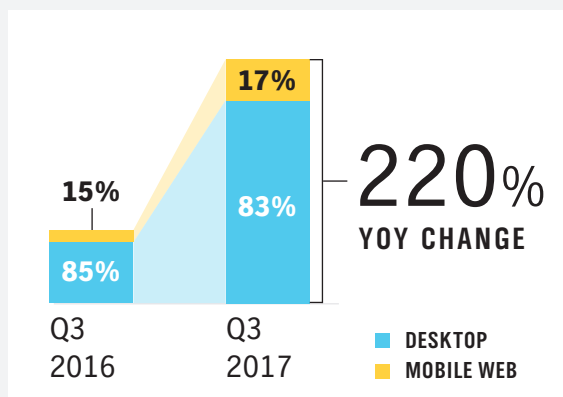
Publishers are deepening their header bidding expertise, becoming more strategic about implementation of the technology to allow ad buyers greater access to inventory.⁷ On the other hand, agency and marketing professionals remain largely passive about header bidding. Only 25% of that group assessed their own understanding of the technology as good or great, according to polling in the US.⁸ “It’s not abundantly clear that advertisers have yet adapted their strategy with regard to header bidding”, said Kyle Dozeman, Vice President of Advertiser Solutions at PubMatic.

Adding to an already significant expansion this year, the overall volume of header bidding impressions monetized through PubMatic rose 220% YOY globally in Q3 2017, including a 252% YOY improvement in mobile web impressions and 214% YOY through desktops. The similar growth

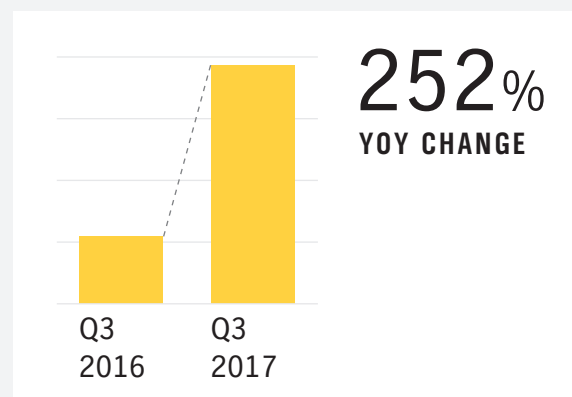
rates by channel meant their respective portions of header bidding volume remained practically unchanged with mobile rising only 2 percentage points to a 17% share of the total between Q3 2016 and Q3 2017.

Header bidding growth was widespread and robust, particularly in APAC, where the expansion came from a low base. Mobile web header bidding in the region was up 47X YOY in Q3, more than twice the 18X YOY growth rate via desktops. In the Americas, where the lion’s share of monetized header bidding impressions was served in Q3 2017, monetized mobile web header bidding impression growth reached 1.3X YOY or nearly double the 0.7X YOY expansion via desktops. EMEA was the sole region where desktop header bidding grew at a faster clip (7X YOY) than via mobile web (5X YOY) during the same period.

Monetized Header Bidding Impression Volume & Platform Share



Monetized Mobile Web Header Bidding Impression Volume



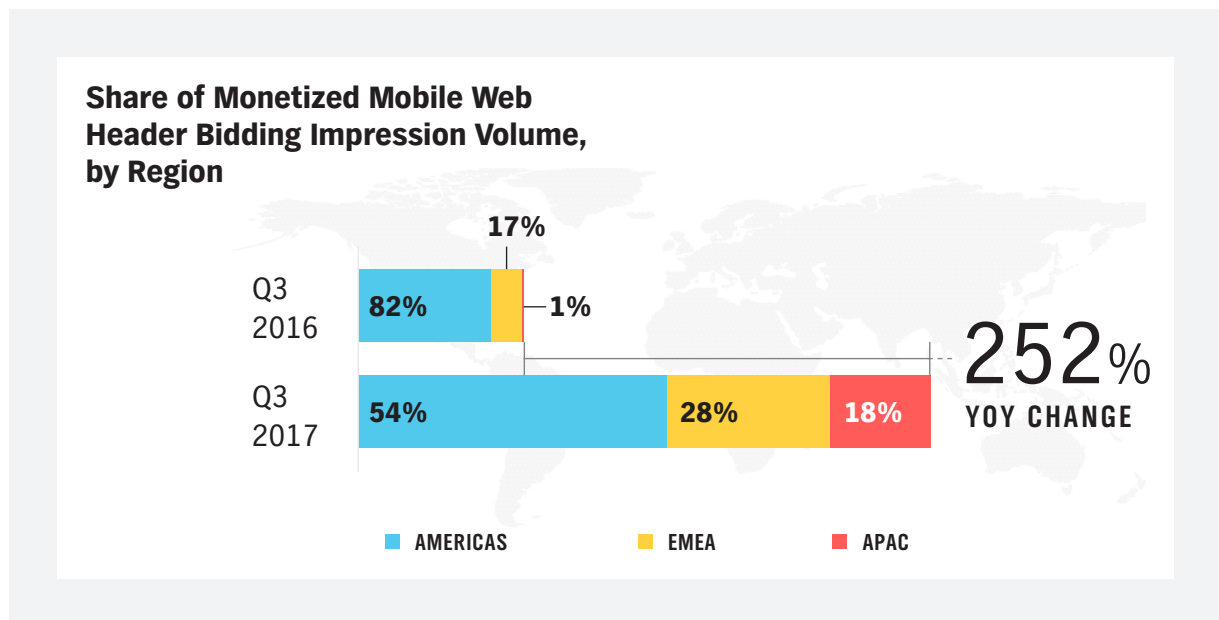
KEY TREND #1 CONT.

Differing regional growth dynamics reshaped the global header bidding footprint, particularly in the mobile space. Whereas mobile web header bidding volume had been concentrated in the Americas with an 82% share a year ago, this region represented just over half of the total in Q3 2017. During that period, EMEA and APAC each increased their shares more than 10 percentage points to reach 28% and 18%, respectively.

Mobile web header bidding eCPMs were up 10% YOY in EMEA and 6% YOY in the Americas in Q3 2017. These improvements were not enough to offset a 23% YOY drop in mobile web header

bidding eCPMs in APAC — a likely byproduct of breakneck volume expansion in that region. Hence, global mobile web header bidding eCPMs averaged a 4% reduction in annual terms.

As header bidding continues to boost volume and eCPM growth for publishers, advertisers who adapt their buying strategy stand to gain a competitive advantage. “The big opportunity at the advertiser level is that header bidding enables the advertiser or agency to more seamlessly compete with direct insertion orders (IO) within the publisher’s ad server,” Dozeman said.



KEY TREND

02

Advertisers increased leveraging of private marketplaces (PMP) to enhance the quality of their mobile advertising investment.

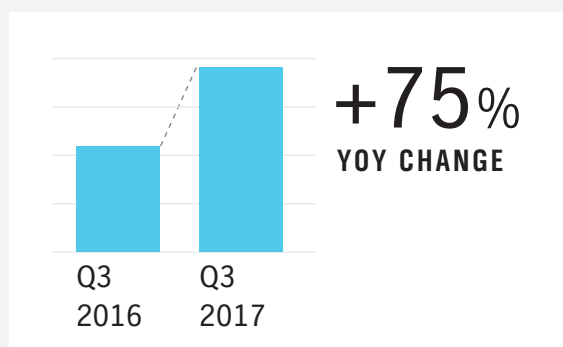
Increasing buy-side interest in PMP as a conduit to safe premium content and mobile audiences drove monetized mobile PMP impression volume up 75% YOY in Q3 2017. Monetized mobile PMP impression volume has expanded for seven quarters in a row with annual growth rates hovering in the high double-digit territory throughout 2017.

More than a quarter of programmatic decision-makers in North America polled in April 2017, said they will shift resources from open exchanges to PMP to ensure that their ads appear across higher-quality publishers' sites.⁹ With the mobile share of consumer time spent on the internet worldwide estimated to rise from 65% to 70% between 2016 and 2017,¹⁰ PMP remains one of the most robust tools ad buyers have to reach mass mobile audiences while also gaining enhanced transparency and control over their programmatic ad purchases.

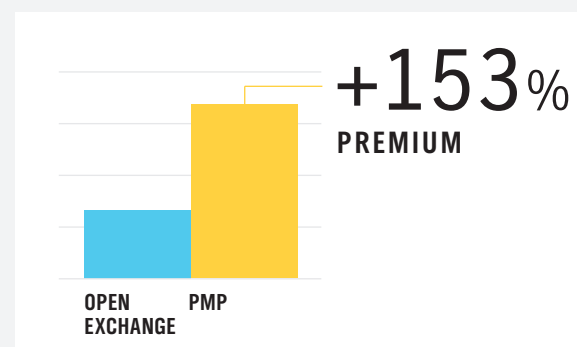
On the publisher side, one important incentive to implement mobile PMP is higher eCPMs. In Q3 2017, mobile PMP eCPMs earned a 153% premium over the average eCPMs paid for mobile open exchange impressions. Publishers are also interested in creating safe environments that enable quality advertising partners to bid for their programmatically transacted inventory with confidence. Research from Magna Global found that publishers who sell their inventory programmatically find greater comfort on invite-only auctions and deal IDs, which in turn results in increased inventory availability.¹¹

It is worth noting that advertisers are not opposed to paying higher eCPMs, so long as they deliver greater value, especially when it comes to mitigating fraud. Experts interviewed by eMarketer confided that advertisers are willing to invest on technologies that help prevent reputational risk and bolster the safety of the brand.¹²

Monetized Mobile PMP Impression Volume



Average Mobile eCPMs, by Channel, Q3 2017



KEY TREND

03

Mobile app monetization continued to provide the largest advertising opportunity as the volume split between the mobile web and app environments normalized after six quarters of market rebalancing.

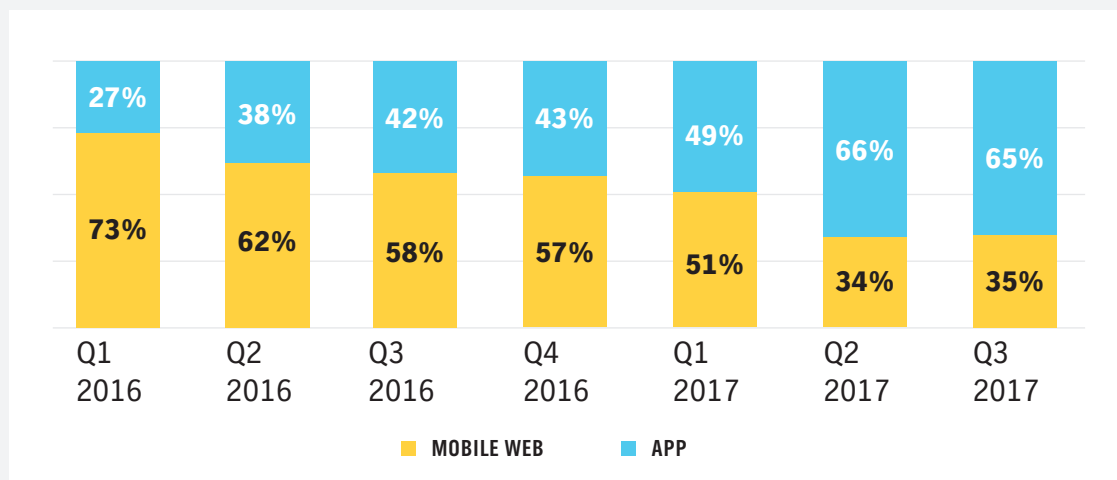
Overall, mobile programmatic opportunity has increased steadily over the past year as brand advertisers move dollars toward automated ad purchases. Magna Global estimates 48% of desktop and 52% of mobile display ad impressions, including banner display and video but excluding social media, will be transacted programmatically worldwide in 2017.¹³

The digital intelligence firm also estimates that mobile will represent 42% of global programmatic ad spending in 2017, with the

mobile share of the category reaching 52% in APAC, 43% in North America and 29% in EMEA.¹⁴

Much of the mobile opportunity is landing on app environments as consumer in-app activity in the US is expected to amount to 188 minutes per day in 2017, compared to a daily average of 33 minutes for the mobile web.¹⁵ Within the PubMatic platform, monetized impression volume has shifted decisively towards apps, going from 58%-42% split in Q3 2016 to 35%-65% in Q3 2017.

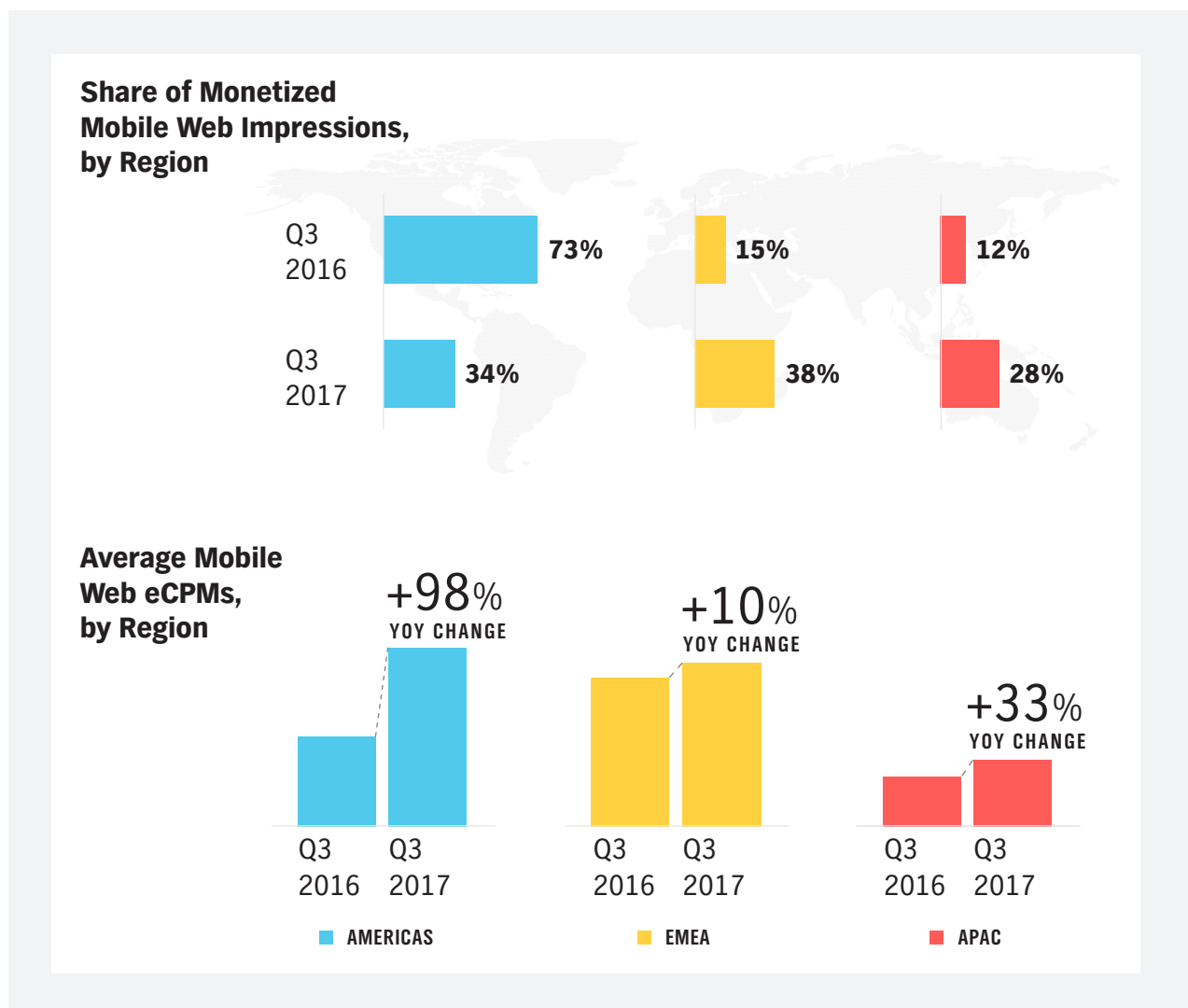
Share of Monetized Mobile Impressions, by Platform



KEY TREND #3 CONT.

Mobile web advertising on the PubMatic platform continued to gain traction in the regions outside the Americas nonetheless. APAC and EMEA saw their worldwide mobile web volume shares lift by 16 and 23 percentage points YOY, respectively, to represent a combined 66% of the category worldwide in Q3 2017. By contrast, the share in the Americas dropped from nearly three-quarters to about one-third as optimization efforts and reduction of long-tail inventory affected volume levels in the region.

Focusing on premium inventory for mobile web monetization had positive effects too, including solid eCPM gains across all regions. The Americas led the way with a 98% YOY growth rate and was followed by APAC and EMEA with respective rises of 33% YOY and 10% YOY in Q3 2017. Globally, average mobile web eCPMs rose 50% YOY during the same period.



KEY TREND

04

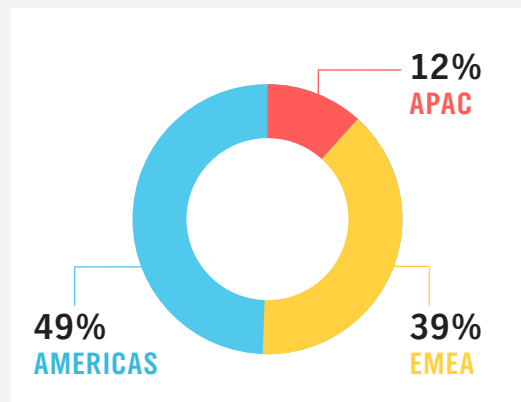
Video expanded globally, driven by strong volume expansion in APAC and EMEA and a growing portion of the format monetized through mobile.

Video remains a developing opportunity as far as programmatic advertising goes, especially as premium publishers pivot toward video content. Over half a dozen major US publishers laid off editorial staff this year to free up more resources for video. And 80% of publishing executives surveyed by Digiday earlier in 2017 disclosed that they'll be making more video next year.¹⁶

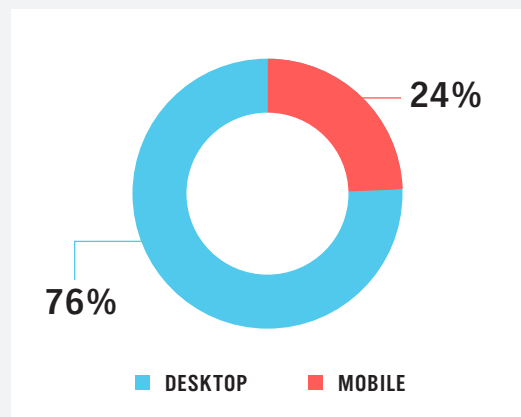
Giving plenty of reason for the pivot is the growing amount of time consumers are predicted to spend consuming video online. US adults are expected to dedicate 77 minutes per day to watch video content online, with mobile taking nearly half of that time.¹⁷

The increasingly mobile-first audience for video content online continued to push advertisers toward handheld devices. Monetized mobile ad impressions represented roughly one-quarter (24%) of the total video ad impressions served through the PubMatic platform worldwide in Q3 2017.

Share of Monetized Video Ad Impressions, by Region, Q3 2017



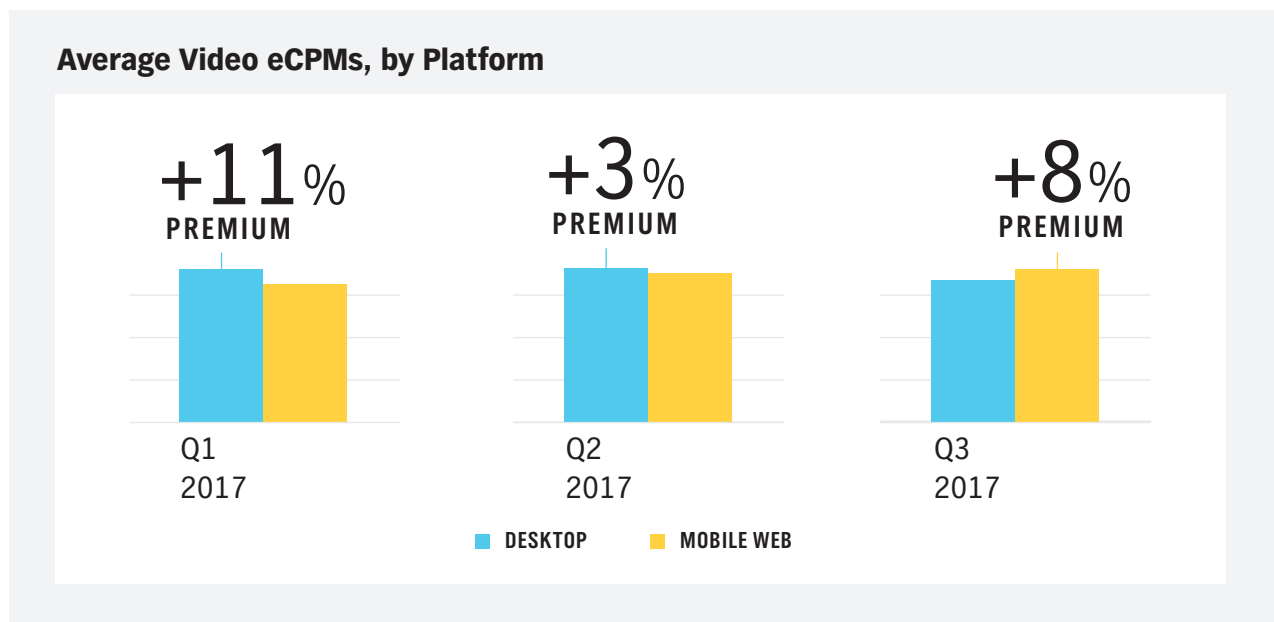
Share of Monetized Video Ad Impressions, by Device, Q3 2017



KEY TREND #4 CONT.

Crucially for publishers, mobile video monetization not only closed the eCPM gap with desktop inventory but gained the upper hand in Q3 2017. Desktop video earned 11% higher eCPMs than mobile in Q1 2017 — probably riding the remnants of strong holiday spending on desktop video ads fueled by retailers as noted in previous QMI reports.¹⁸ But the continued rise of mobile video value throughout this year has turned the tables as mobile video eCPMs earned an 8% premium over desktop in Q3 2017.

Digital video — including both desktop and mobile — is quickly spreading worldwide. In Q3 2017, the share of monetized video impressions served in the Americas stood at 49%, down from 72% the previous quarter.¹⁹ EMEA saw its share of the format grow by 14 percentage points to 39% while APAC improved from 3% to 12%, both in a single quarter.



KEY TREND

05

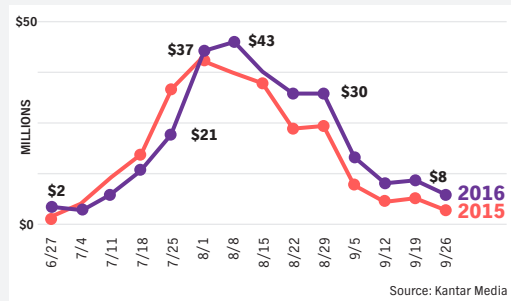
Retail publishers saw mobile web impressions rise at a double-digit clip during the 2017 Back-to-School season. Mobile web ad spending in retail publisher sites rose 48% YOY in Q3 2017.

During the 2017 Back-to-School season, mobile web impression volume rose 89% YOY among retail publishers – those categorized by the IAB as being within the shopping category – to outpace desktop’s 73% YOY expansion. APAC’s 129% YOY growth in the category was the strongest by region and was followed closely by EMEA’s 110% YOY rise. Volume remained essentially flat in the Americas, where 4% less mobile web impressions were monetized by retail publishers in Q3 2017 compared to a year earlier.

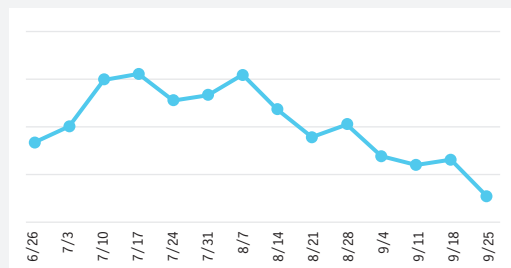
Weekly monetized mobile web impression volume among retail publishers in EMEA and the Americas closely aligned with Back-to-School spending patterns in previous years, peaking in the last week of July and the first week in August. Back-to-School ad spending is defined by Kantar Media as ad creative making direct mention of the event, having a clear school or college theme, promoting things like school supplies, dorm room furnishings or showing students in a school setting.²⁰

Ad spend for mobile web impressions also registered robust growth among retail publishers during the Back-to-School season, rising 48% YOY worldwide in Q3. Year-on-year ad spend growth in the category reached high double-digit rates in APAC (70%) and EMEA (66%), with the expansion in the Americas looking outright modest in comparison at 23% YOY in Q3 2017.

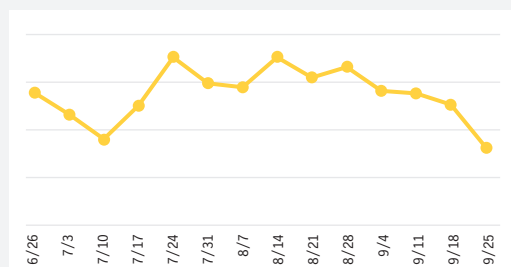
US Back-to-school Ad Spend, 2015 vs 2016



Weekly Monetized Mobile Web Impression Volume* in the Americas, Q3 2017



Weekly Monetized Mobile Web Impression Volume* in EMEA, Q3 2017



*among retail publishers only



QMI Methodology

PubMatic's yield and data analytics team analyzes billions of impressions on a daily basis, utilizing the company's best-in-class analytics capabilities. The Q3 2017 QMI incorporates impressions, revenue and eCPM data from these daily reports to provide a high-level analysis of key trends within the mobile advertising industry. Data is from the third quarter of 2017 (July 1, 2017 through September 30, 2017), as well as corresponding prior year periods. "Monetized impressions" or "paid impressions" are defined as impressions that were sold through the PubMatic platform, and "eCPM" is defined as the effective 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.

^{1, 7} "Header Bidding for Ad Buyers – What Brands, Agencies and Buy-Side Platforms Need to Know," Lauren Fisher, eMarketer, October 2017

^{2, 8} "Omnibus Study," Advertiser Perceptions, April 2017

^{3, 9} "Advertisers Want Programmatic Tech Players to Fight Fake News," Maria Minsker, eMarketer, August 2017

⁴ "Digital Ad Pricing Stat Pack," Catherine Boyle, eMarketer, March 2017

⁵ "Summer Bummer: Back-To-School Marketing Starts Earlier Than Ever," Adrienne Pasquarelli, AdAge, July 2017

^{6, 20} "Back-to-School – Advertisers Make the Grade," Kantar Media, July 2017

¹⁰ "Mobile Advertising Forecasts 2017," Zenith, October 2017

^{11, 13, 14} "Programmatic 2017 – Programmatic Supremacy," Luke Stillman, Magna Global, October 2017

¹² "Let's Talk About The Brand Safety Tax," Allison Schiff, AdExchanger, August 2017

^{15, 17} "US Time Spent With Media: eMarketer's Updated Estimates for 2017," Corey McNair, eMarketer, October 2017

¹⁶ "How The New York Times, BuzzFeed and others stack up in video," Max Willens, Digiday, October 2017

¹⁸ "Q1 2017 Quarterly Mobile Index," PubMatic, May 2017

¹⁹ "Q2 2017 Quarterly Mobile Index," PubMatic, August 2017



About PubMatic

PubMatic is a publisher-focused sell-side platform for an open digital media future. Featuring leading omni-channel revenue automation technology for publishers and enterprise-grade programmatic tools for media buyers, PubMatic's publisher-first approach enables advertisers to access premium inventory at scale. Processing over one trillion ad impressions per month, PubMatic has created a global infrastructure to drive publisher monetization and control over their ad inventory. Since 2006, PubMatic's focus on data and technology innovation has fueled the rise of the programmatic industry as a whole. Headquartered in Redwood City, California, PubMatic operates 13 offices and six data centers worldwide.

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