

Q1
2018

**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 over ten trillion 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. 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.

KEY TREND

01

FAST PACED HEADER BIDDING GROWTH PERSISTS, FUELED BY MOBILE

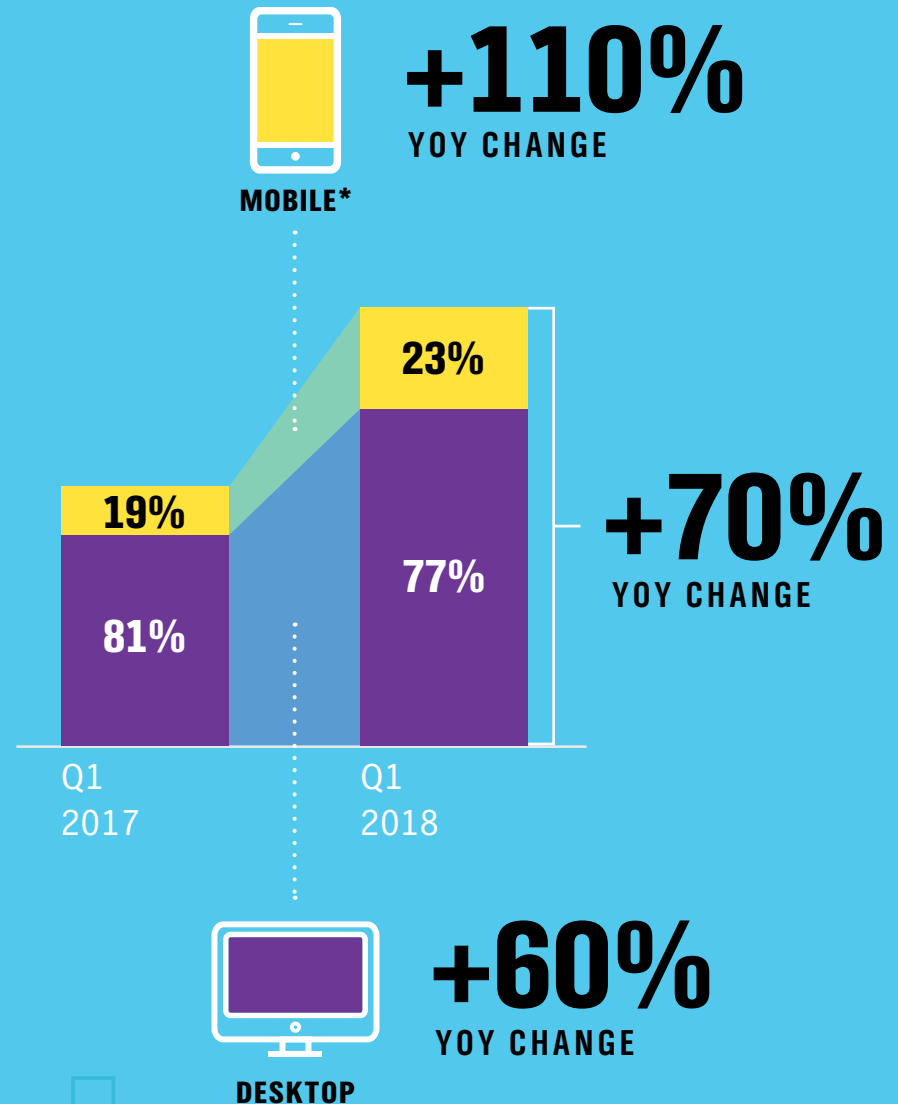
While header bidding is now mainstream, strong growth rates remain the norm as impression volume and ad spend rise on mobile devices. In-app header bidding is already boosting monetization opportunities as publishers seek to optimize yield.



HEADER BIDDING IMPRESSION VOLUME ROSE 70% YOY IN Q1 2018

Mobile drove the majority of the growth, with volume rising at nearly twice the rate of desktop. Mobile web header bidding saw significant increases and the introduction of mobile app header bidding further expanded the monetization opportunities for publishers.

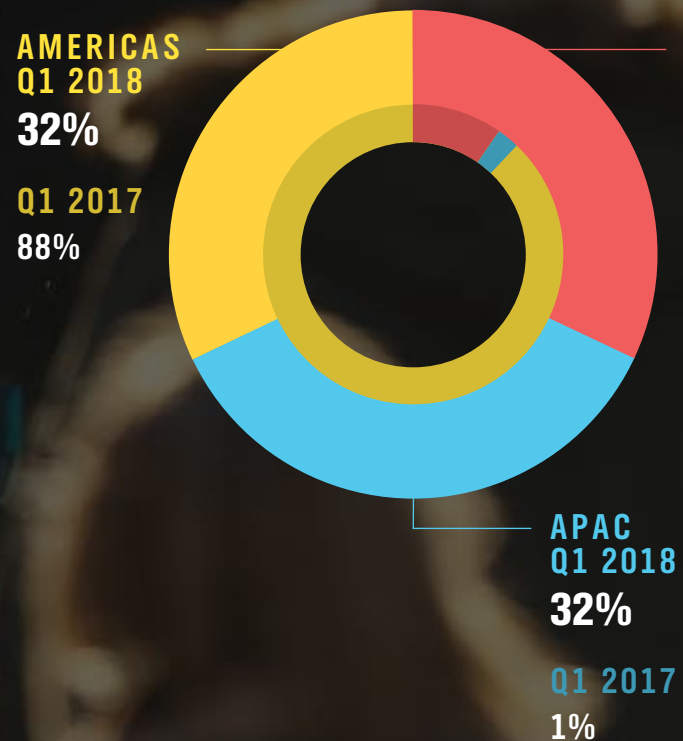
*Includes mobile app and web



EXPONENTIAL MOBILE WEB HEADER BIDDING GROWTH IN APAC AND EMEA

APAC's +1395% YOY growth and EMEA's +849% YOY growth drove a 106% YOY mobile web header bidding volume expansion worldwide; each global region now represents near equal share of header bidding impression volumes.

MOBILE WEB HEADER BIDDING VOLUME WORLDWIDE

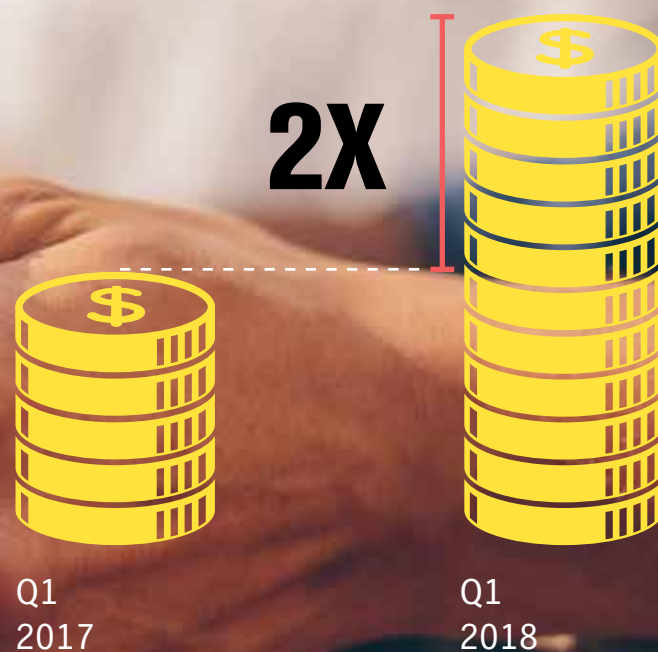


EMEA
+849%
YOY CHANGE

APAC
+1,395%
YOY CHANGE

HEADER BIDDING-ENABLED MOBILE AD SPEND DOUBLED

In all, header bidding-enabled mobile ad spend rose 102% between Q1 2017 and Q1 2018.



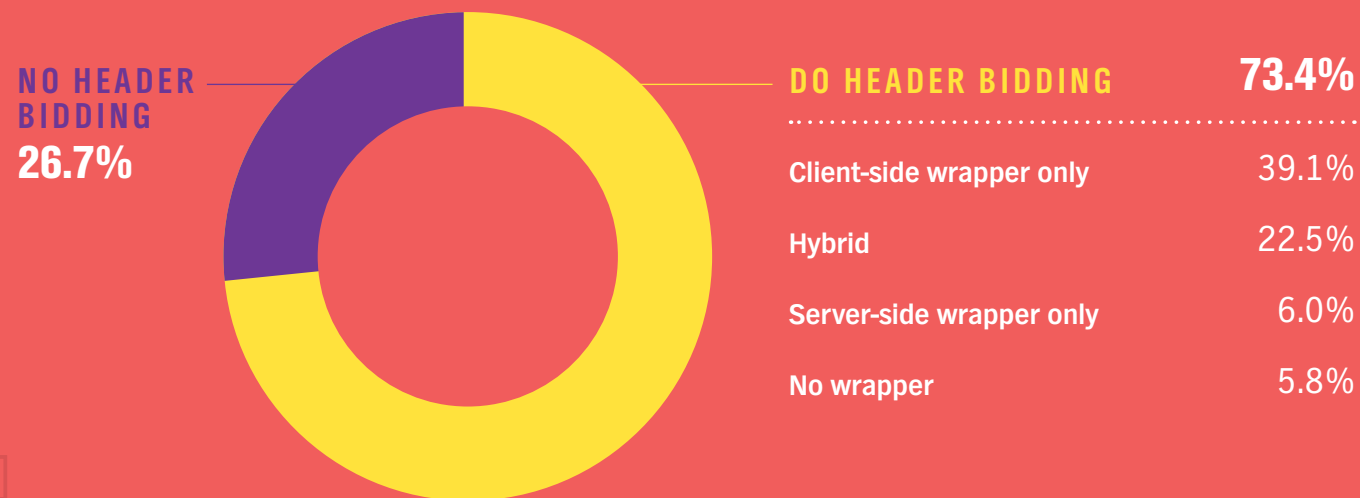
TOP FIVE VERTICALS BY MOBILE HEADER BIDDING SPEND

Mobile—including mobile web and app—ad spend through header bidding technology was highest in the news and entertainment & leisure verticals.



HEADER BIDDING IS THE NORM FOR TOP US PUBLISHERS

Header bidding penetration among the top 1,000 US publishers that monetize inventory programmatically reached 73.4% in March 2018. Adoption of wrapper solutions that enable hybrid client- and server-side integrations, such as PubMatic's OpenWrap, rose at the fastest rate and reached 22.5% penetration the same month.



Source: "Header Bidding Index (HBIX)," ServerBid, March 2018

KEY TREND

02

APPS DROVE MOBILE GROWTH WORLDWIDE, WHILE MOBILE WEB IN APAC OFFERED ADDITIONAL BOOST

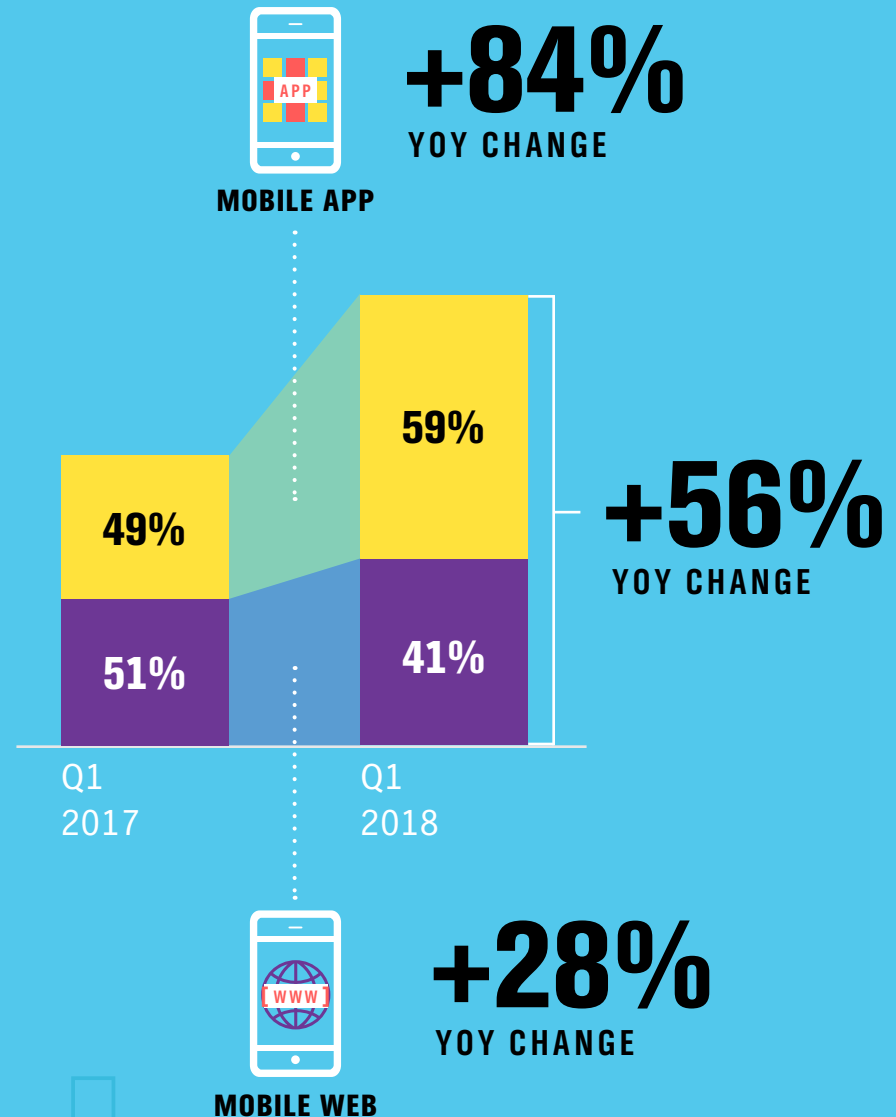
The app share of monetized mobile impressions continues to inch up, while strong demand for mobile web inventory outside the Americas is keeping the latter as relevant as ever.



MOBILE APP IMPRESSION VOLUME SURGE WORLDWIDE

Monetized mobile ad impression volume through the PubMatic platform expanded annually for the fourth quarter in a row, rising 56% YOY in Q1 2018.

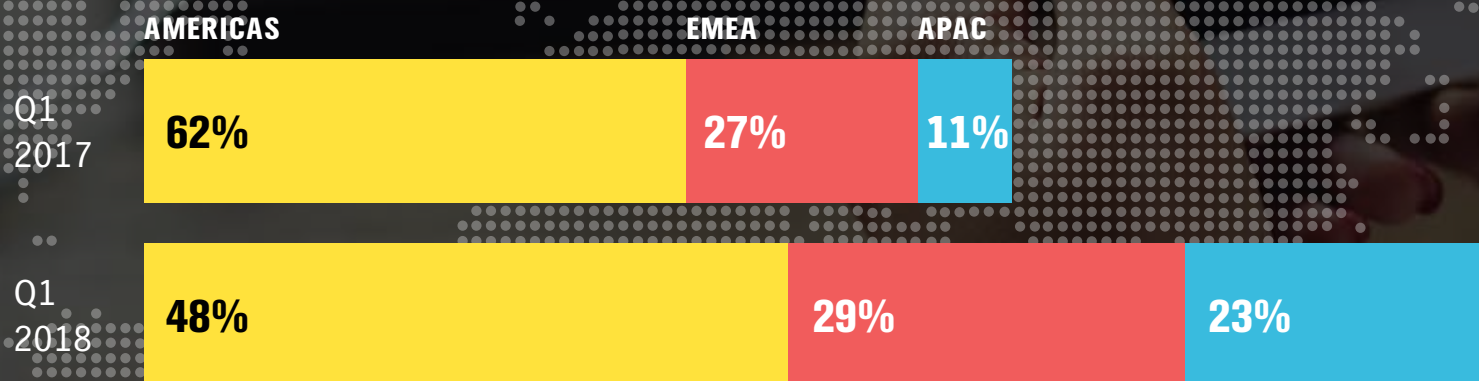
Global app impression volume rose 84% YOY to outpace the 28% YOY increase via mobile web, lifting the app share of monetized mobile impressions from 49% to 59% between Q1 2017 and Q1 2018.



MOBILE VOLUME MAINTAINS SOLID UPWARD TREND

The Americas still takes the lion's share of mobile volume globally, but APAC and EMEA grew faster in the past year.

MONETIZED MOBILE IMPRESSION VOLUME



MOBILE VOLUME GROWTH TRENDS AND DRIVERS IN Q1 2018

AMERICAS

+19%

Mobile*†

GROWTH DRIVERS

+90%

App*

Top three verticals by mobile*† volume registered strong app impression expansion



Technology

+247%



News

+216%



Entertainment & Leisure

+128%

EMEA

+72%

Mobile*†

GROWTH DRIVERS

+82%

Mobile Web*

+64%

App*

Two largest verticals by mobile*† volume registered triple-digit mobile impression volume growth rate



Entertainment & Leisure

+531%



News

+103%

APAC

+232%

Mobile*†

GROWTH DRIVERS

+290%

Mobile Web*

Top verticals by mobile web impression volume growth rate



Real Estate

+2,272%



Parenting & Family

+1,947%



Business & Finance

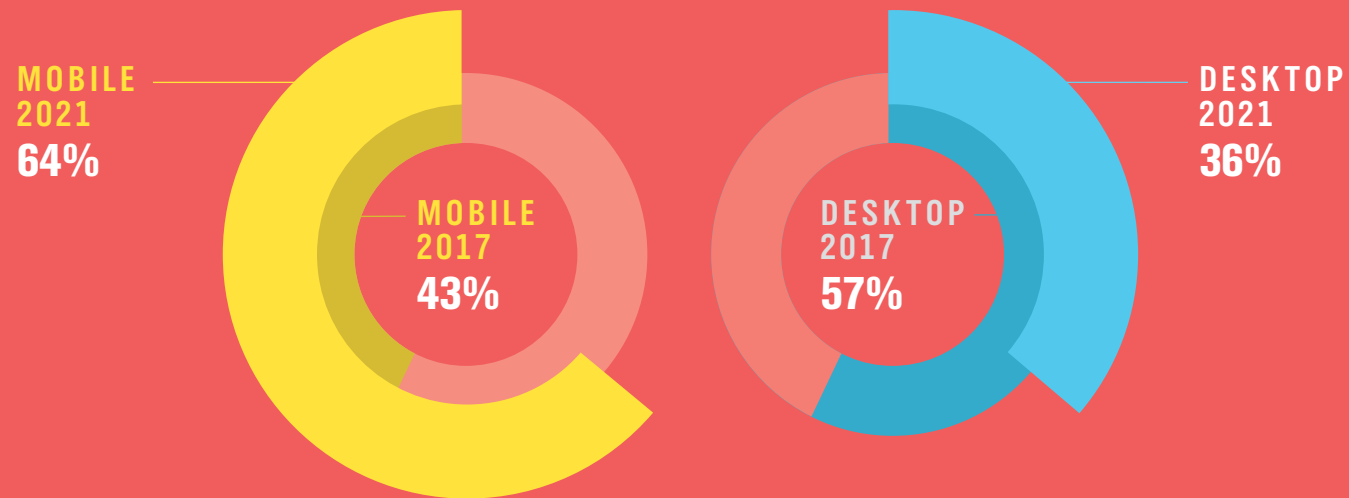
+1,780%

*YOY monetized impression volume change

† includes mobile web and app

THE MATURITY OF MOBILE

Mobile has become a mainstream programmatic advertising opportunity with a 43% share of ad spend in 2017 expected to rise to 64% by 2021.



Source: "Programmatic 2017 – Programmatic Supremacy," Magna Global, November 2017

KEY TREND

03

ROBUST EXPANSION EMPHASIZES THE IMPORTANCE OF MOBILE OPEN EXCHANGE

Publishers continue to invest in open auctions as they seek to maximize competition for each impression, partnering with technology providers offering cross-screen and cross-format solutions. Leveraging these solutions, publishers are able to optimize their monetization strategies while maintaining tight controls of their inventory.



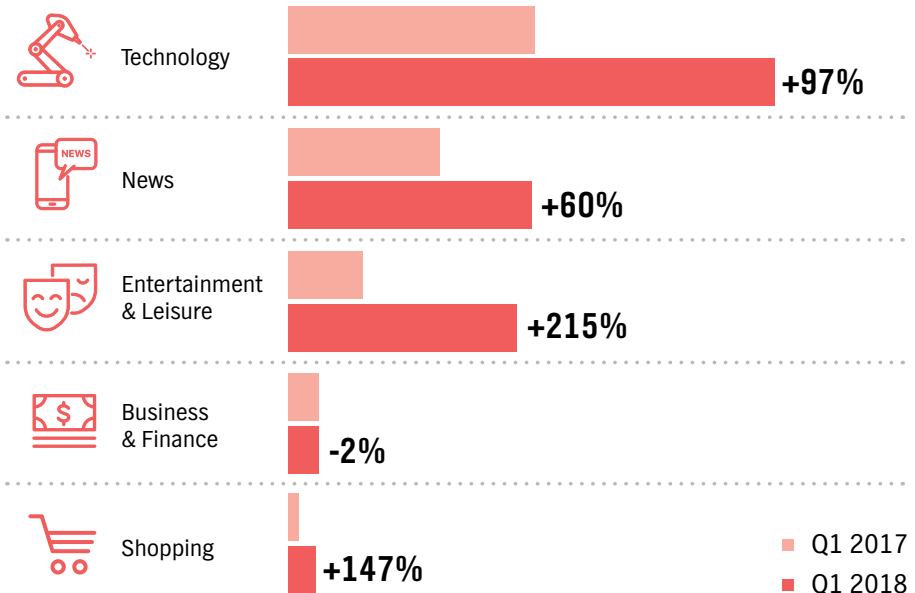
OPEN EXCHANGES LIFTED MOBILE IMPRESSION VOLUME

Mobile impression volume monetized through open exchanges rose 56% YOY in Q1 2018. The channel's volume expansion outpaced mobile private marketplaces for the past two quarters as it maintained steady double-digit growth rates for the past 12 months. The expansion in mobile impressions transacted through open exchanges was supported by annual gains across four of the top five verticals by volume in Q1 2018.

MOBILE
IMPRESSION
VOLUME

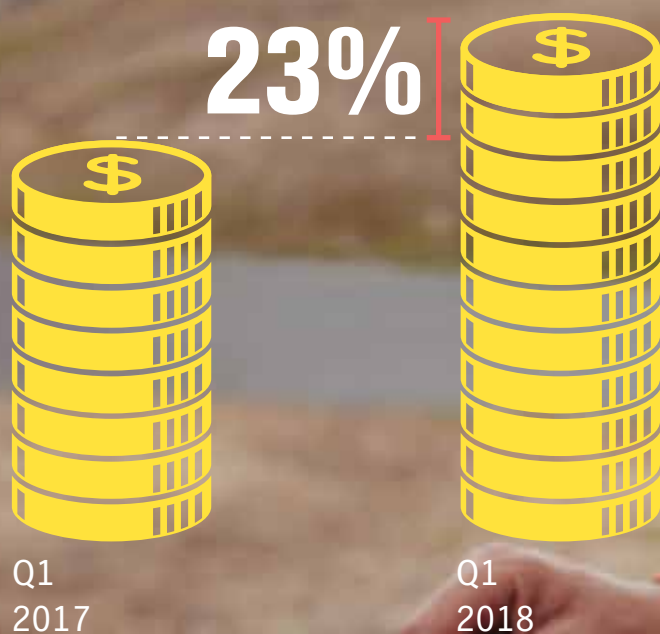
+56%
OPEN EXCHANGES
YOY CHANGE

YOY CHANGE IN TOP FIVE VERTICALS BY VOLUME



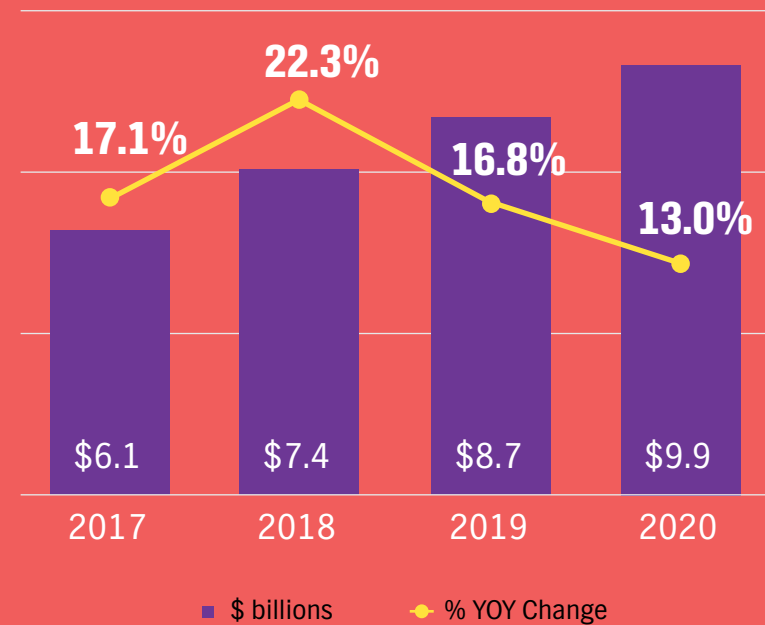
MOBILE OPEN EXCHANGE AD SPEND REMAINED STRONG

Mobile ad spend growth through open exchanges also remained in double-digit territory with a 23% YOY increase in Q1 2018.



US MOBILE OPEN EXCHANGE AD SPEND WILL MAINTAIN DOUBLE-DIGIT GROWTH

Even though mobile open exchanges are a mature programmatic advertising channel, they will remain a growing monetization opportunity through this decade. US mobile programmatic ad spend through open exchanges is expected to rise 22.3% YOY to reach \$7.4 billion in 2018.



Source: eMarketer, March 2018

KEY TREND

04

MOBILE PRIVATE MARKETPLACES CONTINUED TO EXPAND AS ADVERTISERS SOUGHT CLOSER PARTNERSHIPS WITH PUBLISHERS

Private marketplace (PMP) deals remain on an upswing, giving publishers control over who buys their inventory and allowing them to set a minimum price. Ad buyers gain visibility into and control over which sites their creatives will appear on. Both sides benefit from quality, viewability and anti-fraud tools provided by SSPs and other advertising technology providers.



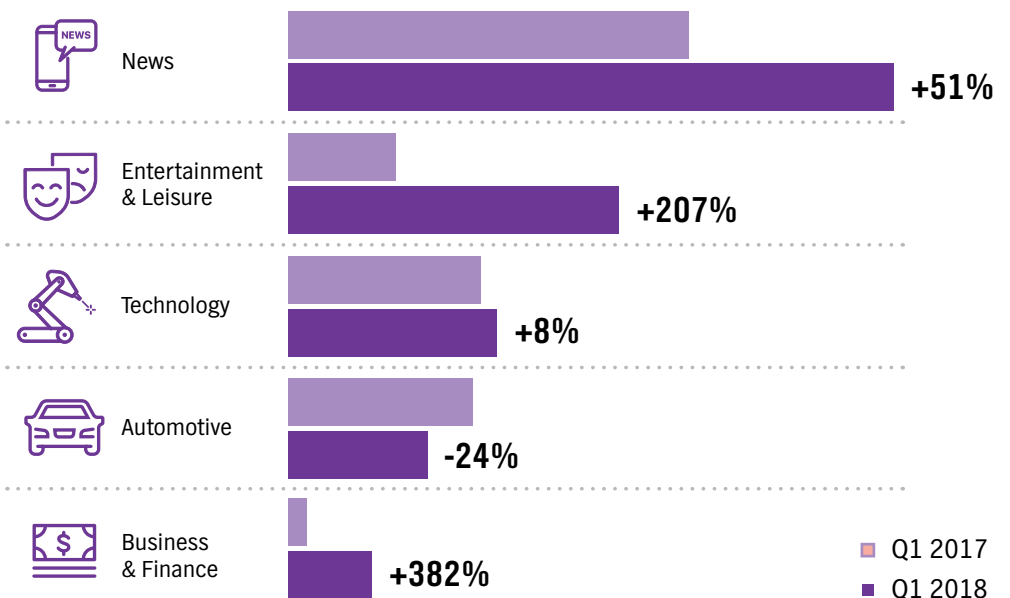
MOBILE PMP IMPRESSION VOLUME CONTINUED TO EXPAND

Mobile PMP impression volume expanded 43% YOY in Q1 2018, driven by annual gains in four of the top five verticals for the channel by volume.

MOBILE
IMPRESSION
VOLUME

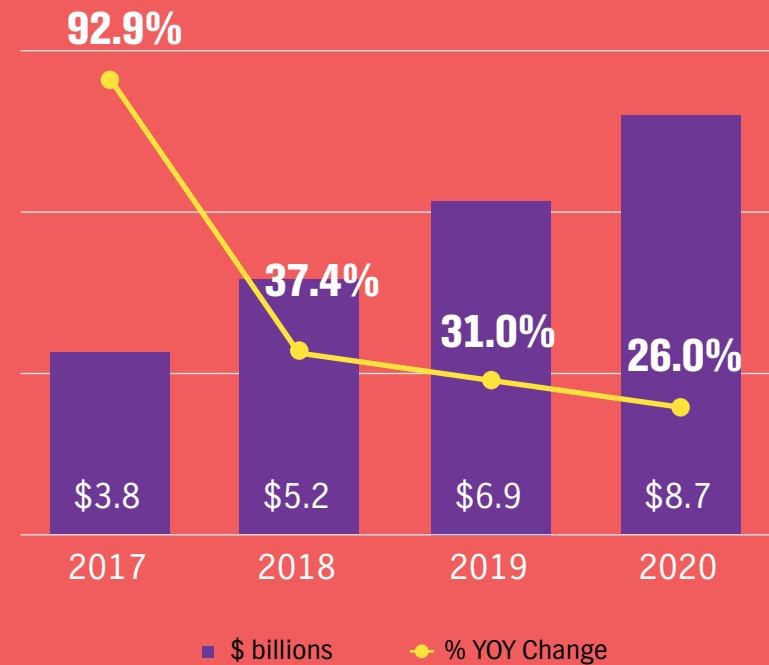
43%
PMP YOY CHANGE

YOY CHANGE IN TOP FIVE VERTICALS BY VOLUME



US MOBILE PMP MARKET TO MATURE

Broader market forecasts estimate mobile PMP ad spend is beginning to mature in the US as exponential growth rates become a thing of the past. However, they are expected to remain in robust double-digit territory, rising 37.4% YOY by the end of 2018.



Source: eMarketer, March 2018

MOBILE ECPMS WORLDWIDE

Average mobile PMP eCPMs worldwide continued to exceed those paid for impressions transacted through open exchanges, earning a 170% premium in Q1 2018.





PMP BEST PRACTICES FOR PUBLISHERS

To take advantage of the PMP opportunity, publishers should start by looking at which advertisers are spending the most on open market as well as direct IOs today.

1. These are the brands you should expand your PMP and PMP-Guaranteed relationships with
2. Be aware that some agencies may have not yet unified their direct and indirect buying teams
3. Develop a strategy for what you want to offer buyers who are choosing to work with you and want to bring more of their budgets to you



PMP BEST PRACTICES FOR BUYERS

To leverage this channel, buyers should start by discussing the objectives you're trying to reach.

1. Decide what's the most important to you and what you can give a little on
2. Is viewability the most important metric or is it targeting a specific audience list?
3. What is the context you would like your brand to be associated with or not?
4. Remember, it takes two to tango — be good partners and understand what each side needs to be successful

KEY TREND

05

SHARP RISE IN MOBILE SHARE OF VIDEO IMPRESSION VOLUME

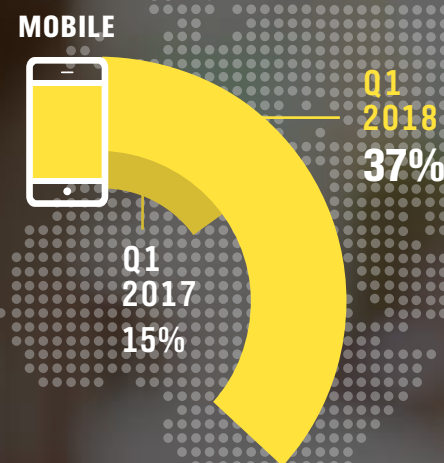
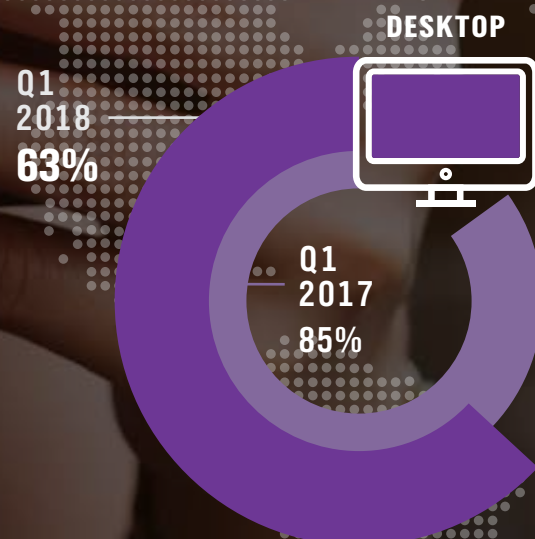
Nearly four-in-ten video impressions monetized through PubMatic technology in Q1 were served on mobile devices. Although brand advertisers continue to voice concerns about the quality of programmatic video inventory, their growing investment on this format acknowledges that the benefits outweigh the risks. Nevertheless, publishers large and small must continue to provide ever greater inventory quality and fraud protections to retain their trusted status with advertisers.



MOBILE VIDEO IMPRESSION VOLUMES MORE THAN DOUBLED

Mobile reached a 37% share of video impressions worldwide in Q1 2018, more than doubling from 15% share a year prior. India registered the highest growth rate for mobile video ad spend, rising almost 10X YOY. More established video markets, like Spain and Australia, posted double-digit growth rates.

SHARE OF MONETIZED VIDEO IMPRESSIONS, BY DEVICE



TOP FOUR MARKETS, BY YOY MOBILE VIDEO AD SPENDING GROWTH

| | | |
|---|-----------|-------|
|  | INDIA | +945% |
|  | ISRAEL | +169% |
|  | SPAIN | +74% |
|  | AUSTRALIA | +41% |

VIDEO AD FRAUD AND ROI MEASUREMENT ARE TOP CONCERNS

Challenges lie ahead as 48% of digital advertisers polled worldwide in February 2018 expressed concerns about video ad fraud, and 45% said it is difficult to measure ROI. Nevertheless, the vast majority of that group (84%) said they expect to increase mobile video ad spend in 2018. Mobile programmatic video ad spend is expected to grow 33.5% to reach \$7.14 billion in the US alone this year.

EXPECTED CHANGE IN INVESTMENT IN MOBILE VIDEO MARKETING



\$7.14 B

2018 US MOBILE
VIDEO AD SPEND

33.5%

GROWTH IN MOBILE
VIDEO AD SPEND

Source: "2018 CMO Mobile Marketing Guide," YouAppi and Dimension Research, February 2018; eMarketer, March 2018

QMI Methodology

PubMatic's yield and data analytics team analyzes over ten trillion advertiser bids on a monthly basis, utilizing the company's best-in-class analytics capabilities. The Q1 2018 QMI incorporates impressions, revenue and eCPM data from these reports to provide a high-level analysis of key trends within the mobile advertising industry. Data is from the first quarter of 2018 (i.e., January 1, 2018 to March 31, 2018), and calendar year 2017 (January 1, 2017 through December 31, 2017). 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.



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 ten trillion advertiser bids 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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