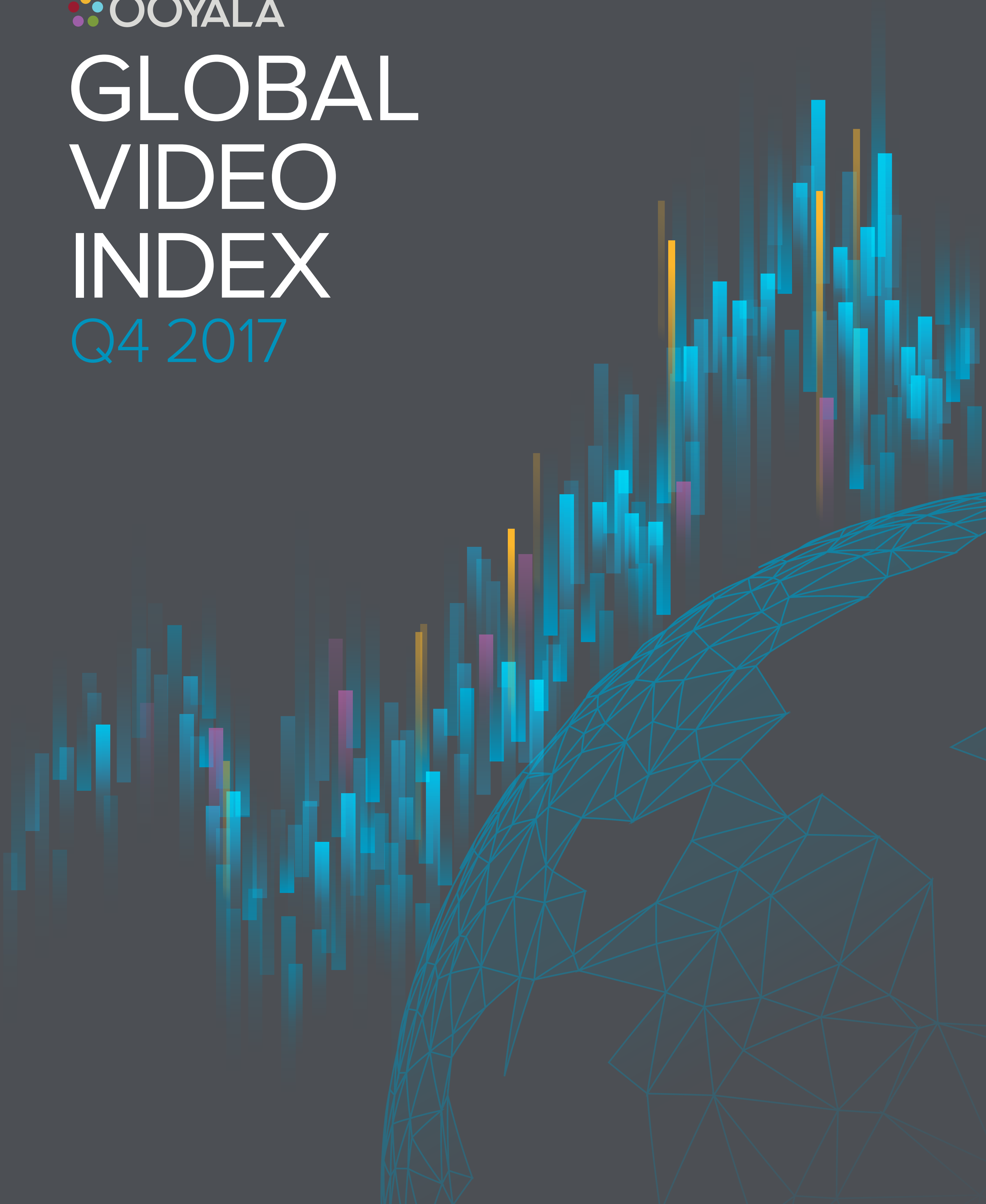
OOYALA®

GLOBAL VIDEO INDEX

Q4 2017



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POINT OF VIEW

JIM O'NEILL, PRINCIPAL ANALYST

It's unlikely anyone would argue with me that 2017 was a pivotal year in the media landscape.

U.S. pay-TV operators lost subscribers faster than I lose golf balls (I'm quickly becoming Titleist's best customer in North Carolina) and SVOD services and skinny bundle providers raked in customers like the roulette croupier at the Bellagio gathers players' chips after a 00.

That migration of subscribers is a global one, and analysts posit that it won't end anytime soon.

Subscribers to premium SVOD services are forecast to top 778 million by 2022, with global SVOD revenues topping $84 billion, compared to $35 billion last year.

In Europe, the SVOD market is expected to reach 60.8 million subscribers from the current 39.3 million. Revenues are forecast to hit $6.8 billion, up from $3.9 billion last year. Not surprisingly, SNL Kagan says the biggest drivers for SVOD growth in Europe will be Netflix and Amazon creating new, local content for the market, along with other international services — think HBO and Showtime — entering the market with their own original content. Increased streaming of premium content from local competitors like Maxdome, ProSiebenSat and NowTV is coming as well.

North America's market is also expected to see strong growth, despite already having more than 112 million subscribers. Digital TV Research expects the sector to add another 59 million subscribers by 2022. In a report from Sensor Tower, revenue for the top 10 SVOD apps (Netflix, YouTube, HBO NOW, Hulu, Starz, MLB.com At Bat, Showtime, Crunchyroll, CBS and UFC) grew 77% in 2017, to reach $781 million across the App Store and Google Play. Netflix was the world's highest-earning non-game app in 2017 at more than $290 million, up 113% Y/Y. CBS All Access revenue was up 128%, YouTube was up 154%, and Starz 147%.

The slowest gainer? The UFC's app at "just" 14%, rising to about $8.7 million from $7.7 million in 2016.

And what about APAC and LatAm?

Add another 58 million+ to the 2021 subscriber pot in Asia-Pacific, up from about 100 million today (from just 41.7 million in 2015!), according to Digital TV Research. And that's just 17.5% of the region's households. There'll be plenty of room to grow, especially on mobile devices as 5G begins to deploy in earnest.

Research firm Analysys Mason expects revenue in Latin America to be dominated by SVOD services generally, and Netflix in particular, and predicts the number of SVOD subscribers will grow to 55 million by 2022, more than double the current 20 million.

POINT OF VIEW

All of that growth, depending upon whom you ask, either has caused an explosion of content to help maintain viewer engagement and reduce churn, or it has been the result of an explosion of content that has fueled viewer adoption.

The constant?

That explosion of content. You all know the numbers: Netflix's $8 billion spend; Amazon's $4.5 billion spend; Apple's $2 billion, HBO's $2 billion, Facebook's $1 billion, and the billions spent by other content providers in increments of tens of thousands of dollars all the way up to multi-million dollar projects.

Analysts and journalists are taught to "follow the money" if they want to get to the bottom of any story.

This quarter, we took a look at the amount of content being processed by a representative sample of our longer-term customers — AVOD, SVOD, TVOD and enterprise — and found, not at all a surprise, that in terms of hours of content, as well as the pure number of assets, being processed their inflow had more than doubled. That, of course, includes a doubling of their entire supply chain: from ideation to creation, editing and production, as well as encoding and distribution.

Just the production budgets for typical cable and streaming dramas, **according to *Variety***, top $5 million an hour. A half-hour broadcast or cable show with one camera? About $1.5 million, often more. And that may not include the cost of talent. Last year, the number of scripted TV series in the U.S. increased to 487, up from just 266 in 2011. And that's just one segment; it doesn't include movies, sports or news.

Creating and getting content ready to distribute — especially apace — is an expensive proposition that isn't likely to be reined in soon. The consumer appetite for original content is just too strong.

That doesn't mean you can't corral costs, and even increase the value of content while it's in production. You can, by adding metadata, maximizing and automating the production process where possible and decreasing the time it takes to finalize content before distribution.

Here are the highlights you'll find in the Q4 report:

Rising tide of OTT content:

- OTT services are increasing the pace of their content supply chains as well as their content. On average, they doubled the hours of content online over the past 12 months.
- Long-form content supplies increased 159%.
- Medium-form content supplies increased 87%.
- Short-form content supplies increased 112%.

Mobile video trends:

- Mobile plays topped 60% for the first time, garnering a 60.3% share of all video starts.
- Smartphone plays were up 1.8% from a year ago, to 47.5%.
- Smartphone plays held a 3.1:1 ratio over tablet plays.
- Tablet plays rose to 12.8% of all video plays, a 68% increase from a year ago.

Regional mobile video trends:

- **APAC** saw mobile's share of all video plays top 60% for the third consecutive quarter (60.5%), up 12% Y/Y.
- **APAC** tablet plays were 12.7%, up 33% Y/Y.
- In **EMEA**, mobile share of video plays grew more 35% Y/Y to reach 63.5%.
- **EMEA** saw tablet share of plays increase to 15.8%, up 37%, and the highest share in the world.
- **North America** saw mobile plays surge during the holidays in November and December, topping 57.6% for the quarter, an increase of 11% from a year ago and the region's highest mobile share ever.
- **North American** tablet plays jumped 32% Y/Y to finish with a 10.8% share of all plays.
- **Latin America** saw mobile plays top 56.3%, up 9% from a year ago.

- **Latin America** has the lowest percent of plays on tablets (5.1%), but the highest percentage of plays on smartphones, 51.3%, in the world for the second consecutive quarter.

Time watched by device and video lengths:

- Smartphones, tablets and connected TVs and PCs all saw time watched for medium- and long-form content exceed 50%.
- About half of time watched on connected TVs, tablets and smartphones was long-form content.
- PCs' long-form content time watched was at its lowest point since Q1 2016 (35%): just 37% in Q4.
- PCs' short-form content time watched climbed to 50%, the most of any device.

Video advertising trends:

- Smartphones (55%) topped PCs (36%) for the percentage of pre-roll ad impressions shown on broadcaster platforms. Smartphone pre-roll impressions were highest (69%) on publisher platforms.
- Broadcasters saw increased mid-roll impressions on smartphones (28%) and a decline on PCs (40%). Publishers saw impressions soar on smartphones (51%).
- Broadcaster pre-roll ad completions were higher on all devices than were those on broadcaster platforms, with connected TVs best at 91%.
- Mid-roll ads saw the highest percentage of completions for broadcasters and publisher platforms. Broadcasters saw completion rates top 97% for all screens.

THE RISING TIDE OF ONLINE CONTENT

Netflix is spending $8 billion on original and licensed content in 2018, Amazon is rumored to have a $4 billion budget this year and is expected to escalate its content spend to $8.3 billion by 2022. Apple, which is expected to jump into the video battle in earnest by 2022 — with a projected spend of $4.2 billion — will make an initial foray into OTT with a $1 billion spend this year.

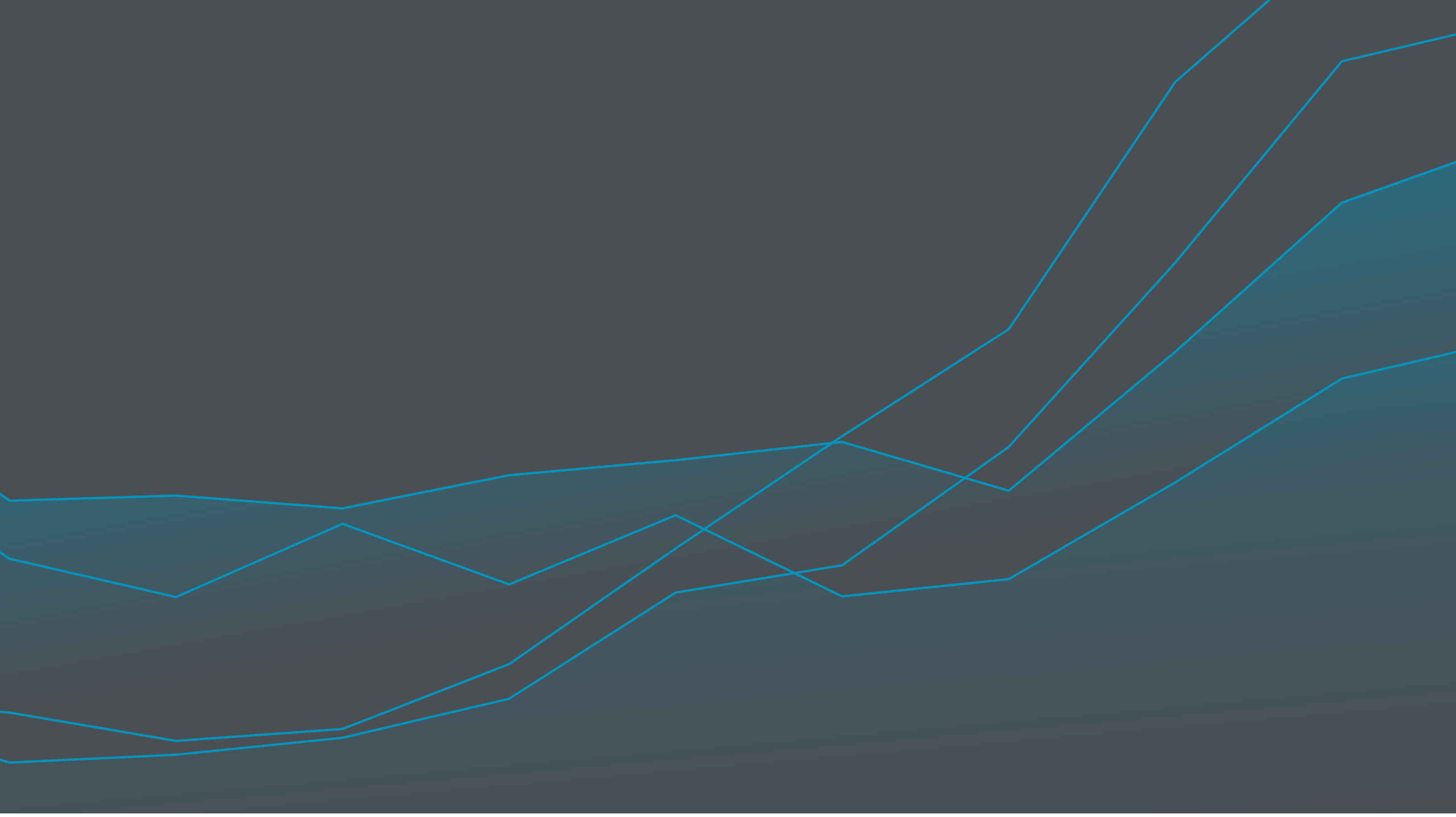
And, while HBO CEO Richard Plepler contends "more is not better, only better is better," the content company is spending more than $2 billion on its own this year to compete with the tech giants, and to flood all of its distribution outlets with content. Like Netflix and Amazon, HBO, studios and broadcasters all have opened the spending faucet on original content, hoping to attract the legions of subscribers they need to compete successfully in the online video space.

Simply put: Content is on a flood tide unlike any the industry has seen… and there is no end in sight.

As noted earlier, in 2012, there were just 288 scripted shows in the U.S.; In 2017, FX Networks reports, the number of original scripted shows across all platforms set a new record at 487 shows, an increase of nearly 70% over five years and a seven percent increase from the previous high of 455 in 2016. Not surprisingly, nearly one-quarter of those scripted series (117) were originals from streaming services.

While the biggest content providers and distributors generally get all the headlines, the more important story may be that smaller content creators — from enterprises to publishers to niche studios and local broadcasters — also are adding significantly to their libraries.

We looked at a representative selection of Ooyala customers — across news, sports, drama and enterprise — and found that their content supply — the total hours produced — in 2017 more than doubled, growing 110% over the 12-month period.



The biggest growth for most companies occurred during the first quarter, when the hours of content nearly tripled (up 194%). Second quarter content growth topped 150%, third quarter saw growth hit 116%, and the fourth quarter showed a significant 54% increase in content.

In terms of individual pieces of content, the growth was slightly higher at 111% for the year. Long-form content (20+ mins. in length) saw the biggest gains for the year, increasing 159%. The number of short-form assets (0–5 mins.) were up 112%. The supply of medium-form content (5–20 mins.) increased 87%.

THE BOTTOM LINE

Original content is the lifeblood of an over-the-top provider. Fresh content keeps users engaged and coming back for more, especially if you maintain regular contact with your customers, letting them know in advance that new content is on the way.

It's important to maintain a steady flow of fresh content throughout the year. But pushing more content out early in the year ensures you have enough content to achieve "critical mass," that point at which users won't get bored and churn away. Then you need to keep adding a steady stream to maintain your momentum, especially through the busy holiday season.

As we've seen over the past several quarters, long-form video is becoming a mainstay on screens of every size. The 159% growth of the category was in terms of actual assets, and shows long-form's increasing importance. But, short-form also saw a significant bounce, more than doubling during the year. Obviously, every asset has the potential to be a valuable one.

TABLET AND SMARTPHONE VIDEO TRENDS

Mobile video growth continued its double-digit growth in Q4, and now makes up 60.3% of all video plays. That's up from the previous high of 58.3% last quarter and from 54.3% a year ago. The 11% Y/Y increase was primarily due to a jump in tablet views, although smartphone views also increased from Q4 2016. It's the seventh consecutive quarter to see mobile video grab more than half of all video plays.

As more premium sports assets move online and are available for play on mobile devices, it's reasonable to believe that, globally, mobile plays could reach — and potentially exceed — a 70% market share, a number that would have seemed unreachable just two years ago.

In fact, a new survey of U.S. adults between 18 and 54 in December found that 30% said they had streamed sports to their mobile phones or tablets. The survey of sports fans also found that 80% said they used multiple screens while watching an event, searching for stats, connecting via social media or checking other scores. The **Google survey** also found that the search for football highlights increased 90% Y/Y, and pointed out a 60% increase in the amount of time spent watching interviews of sports figures.

The mobile push into sports is a game changer. Until this year, for example, Verizon carried exclusive mobile rights to NFL games. But starting this year, in-market NFL games will be available to stream to mobile devices from any carrier using the NFL Mobile App, Yahoo Sports or Verizon's streaming service go90. CEO Lowell McAdam said the move would help Verizon become "the mobile destination for live sports."

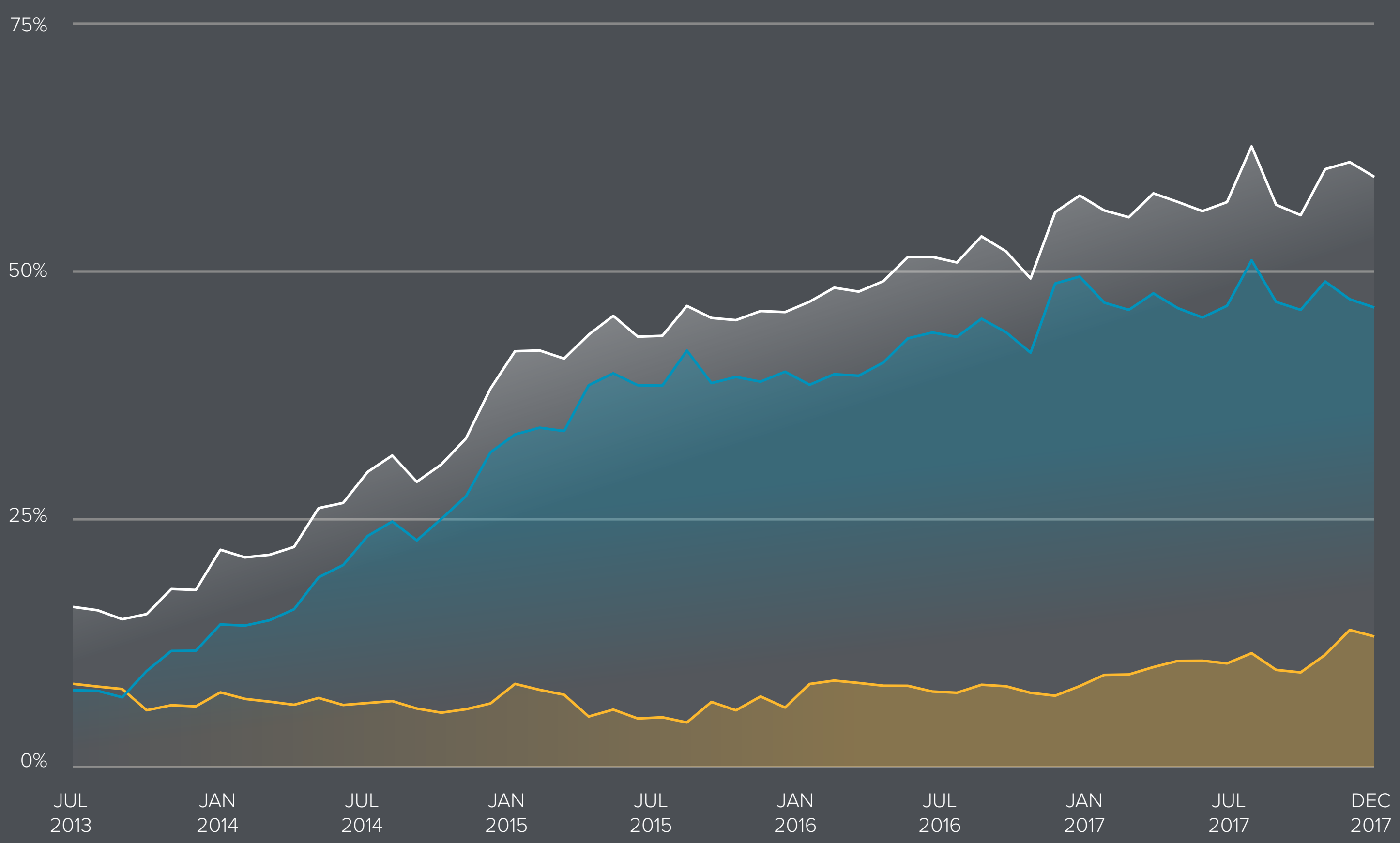
Even without the bump live sports are sure to provide, mobile video plays have seen solid growth for, well, ever. In Q4 2013, mobile video plays made up 17.14% of all plays. Here's what the Y/Y growth looks like since then:

- Q4 2014: 33.9%, +98.7% Y/Y
- Q4 2015: 45.6%, +34.5% Y/Y
- Q4 2016: 54.3%, +18.9% Y/Y
- Q4 2017: 60.3%, +11.0% Y/Y

In addition to more premium content — especially sports — being available to users, the demographics of mobile viewing have changed.

Younger users remain the most ardent mobile viewers, but an increasing range of other demographic groups also have come onboard. Nielsen, for instance, says three-quarters of Baby Boomers now watch online video on smartphones.

By mid-2020, carriers worldwide are expected to have rolled out 5G mobile networks — networks that have the capacity to stream at 10 gigabits a second and with dramatically reduced latency. Adoption of 5G is expected to be rapid, with more than 1 billion users expected to be using the technology by 2023, according to Ericsson.



THE RISE OF MOBILE VIDEO
Q4 2017

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SHARE OF PHONE VIDEO PLAYS
SHARE OF TABLET VIDEO PLAYS
SUM OF PHONE + TABLET VIDEO PLAYS

TABLET AND SMARTPHONE VIDEO TRENDS

SMARTPHONES

We are — to a very large extent — one with our smartphones. On average, users check their smartphones 85 times a day, according to a study in the *Harvard Business Review*, with most users checking just before they go to sleep, immediately upon waking up and, often, in the middle of the night. A study from German telco Deutsche Telekom found that 91% of smartphone owners said they never leave home without their device, and, as Pew Research found, nearly half (46%) of users say they simply couldn't live without them.

The share of video starts on smartphones increased 1.7% to 47.5% in Q4 2017, from 46.7% in Q4 2016.

Since 2013, when plays on smartphones hit a then-record 11.1% of all video plays, the segment has increased 328%.

Virtual reality and augmented reality — the use of which also is gaining traction — also are expected to contribute to higher mobile usage. Expect a step up in plays around the VR streaming from the Winter Olympics during Q1.

Two-thirds of consumers in the major markets of North America, EMEA, LatAm and Asia-Pacific will be smartphone users in 2018, up from 58% in 2016. By 2022, Forrester estimates that smartphone penetration globally will reach 3.8 billion users. As 5G networks begin to deploy — we've already seen them being used during the Winter Olympics in South Korea — and 5G-ready smartphones hit the market, it's clear smartphones' share of video starts will climb, likely to 55% or more.

TABLETS

While smartphone plays continue to make up the lion's share of video plays in Q4 — there were roughly 3.7 plays on smartphones for every tablet play — it actually was growth in plays on the larger device that helped move the mobile needle past 60% for the first time in Q4.

Views on tablets hit nearly 12.8% of all views in the quarter, the most we've ever seen for tablets. Views were up more than 24% from Q3 and 67.7% from a year ago. Over the past five years, tablet plays have increased more than 113%. For the quarter, tablets made up more than one-in-five (21%) mobile views.

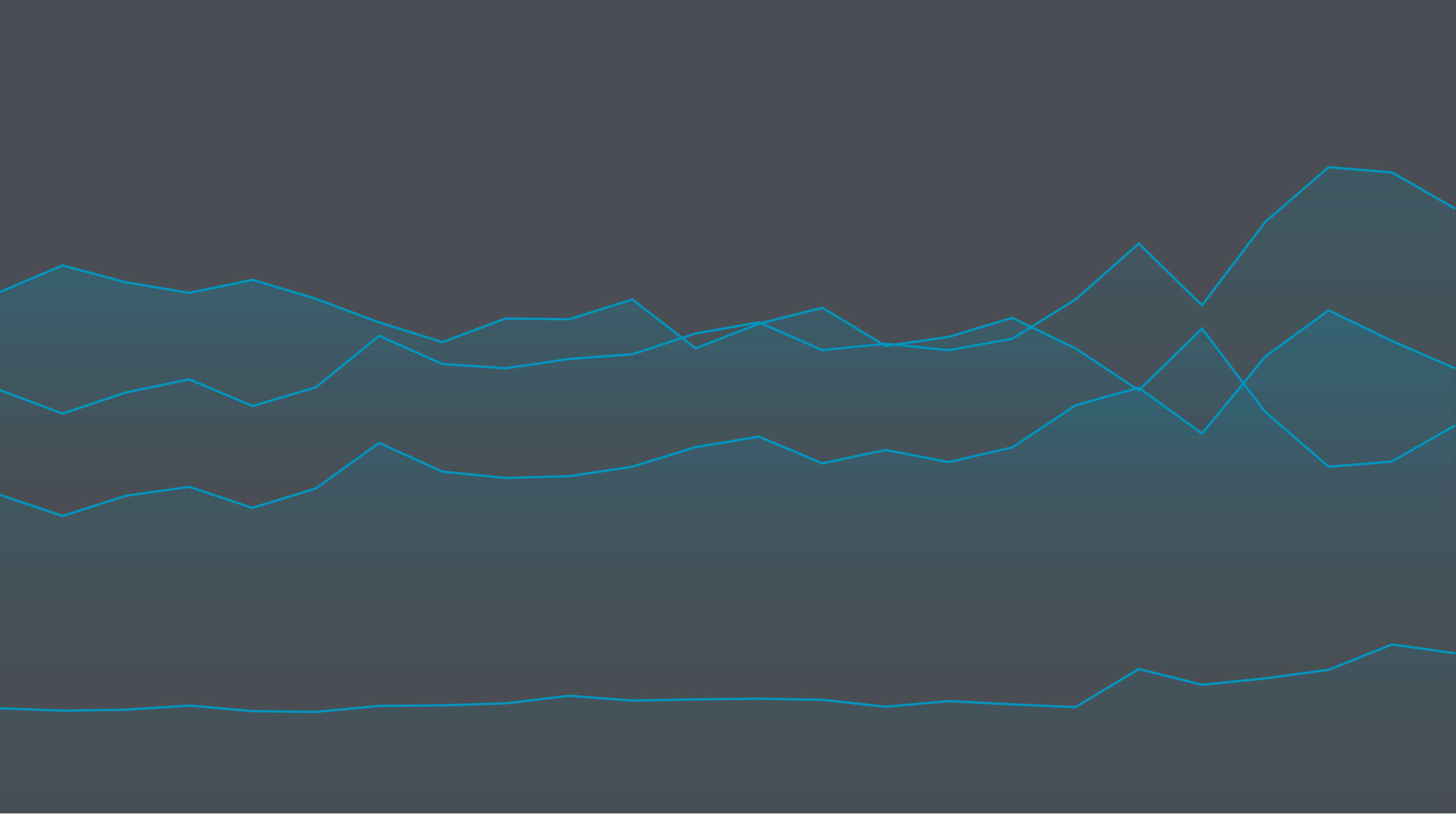
It was the first time since Q3 2014 that tablets had such a significant number of plays. Roughly one-third of Internet users globally used a tablet in 2017, down slightly since 2016. And, although penetration is expected to decline again this year, video consumption is expected to hold steady, a testament to the overall quality of the screen and it continuing value to users.

THE BOTTOM LINE

Mobile isn't the only screen seeing an increase in content coming to it, but it's gaining traction with all demographics at a steady, growing pace.

Companies streaming sports, whether live or on demand, have generally thought of mobile devices as second screens, assuming fans would always opt to watch on the biggest screen available. But, with 30% of sports fans saying they've streamed sports events — not just highlights, interviews and scores, but actual live events — to their smartphones and tablets, ignoring the need to optimize delivery to mobile devices carries significant risk.

Another risk? The rising cost of content. Whether you're a major player like Netflix or a provider of niche content, the increasing expense of acquiring, processing and delivering to multiple endpoints can be daunting (and painful) to your bottom line. Now, more than ever, the ability to control and optimize your content supply chain is crucial to business success.



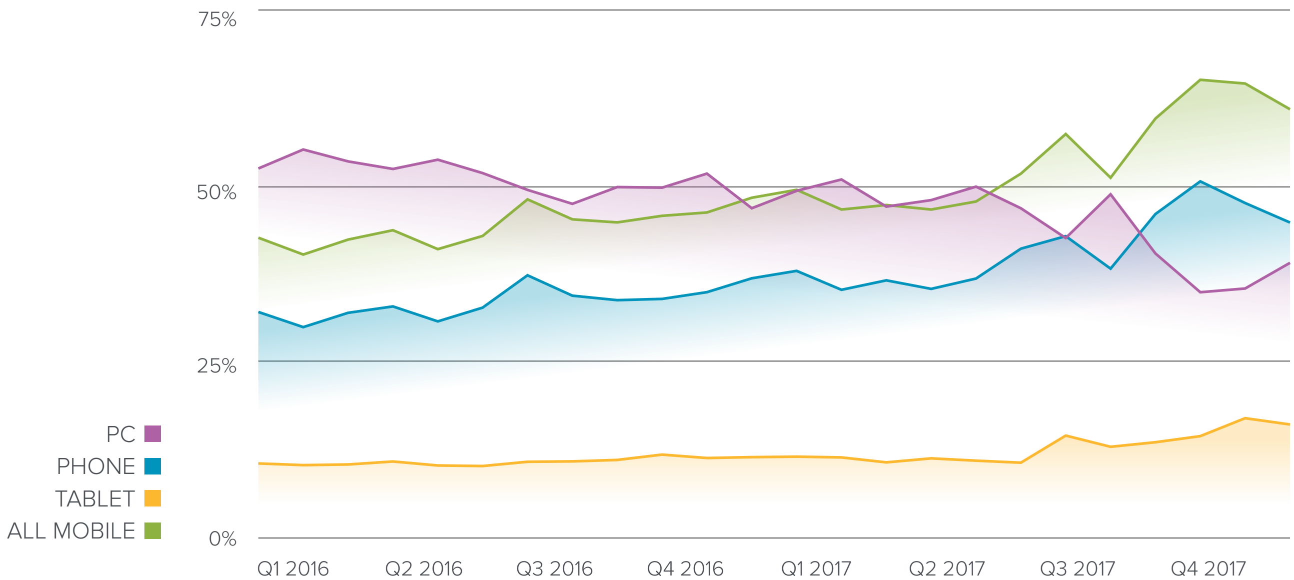
GLOBAL MOBILE CONSUMPTION TRENDS

We've seen how mobile video on a global scale is impacting the ways content is being watched and even is helping drive a spike in the amount of content online. Butis the same thing happening in all regions? In a word, "yes"… generally.

EMEA and APAC have been — and are expected to remain — the most mobile-penetrated regions in the world, and that trend is clear in both regions' consumption of mobile video over the past several quarters.

Smartphones are nearly ubiquitous in much of Europe, with the Netherlands, Norway and Ireland all expected to exceed 90% in 2018, according to a **report from Zenith**. The same report says Taiwan and Hong Kong also are expected to see smartphone penetration exceed 90%. In all, nearly a dozen countries are expected to have penetration between 80% and 90%, with only the United States near 90% (87.6%, according to Daniel Research Group) outside EMEA or APAC.

In a dozen European and Asia-Pac markets, meanwhile, tablet ownership exceeds 50%, with the Netherlands expected to show the highest penetration this year (74%), followed by Australia (66%) and Ireland (65%). Tablet penetration in the United States is estimated to be above 43%, according to Daniel Research.



SHARE OF PLAYS BY DEVICE EMEA Q4 2017

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GLOBAL MOBILE CONSUMPTION TRENDS

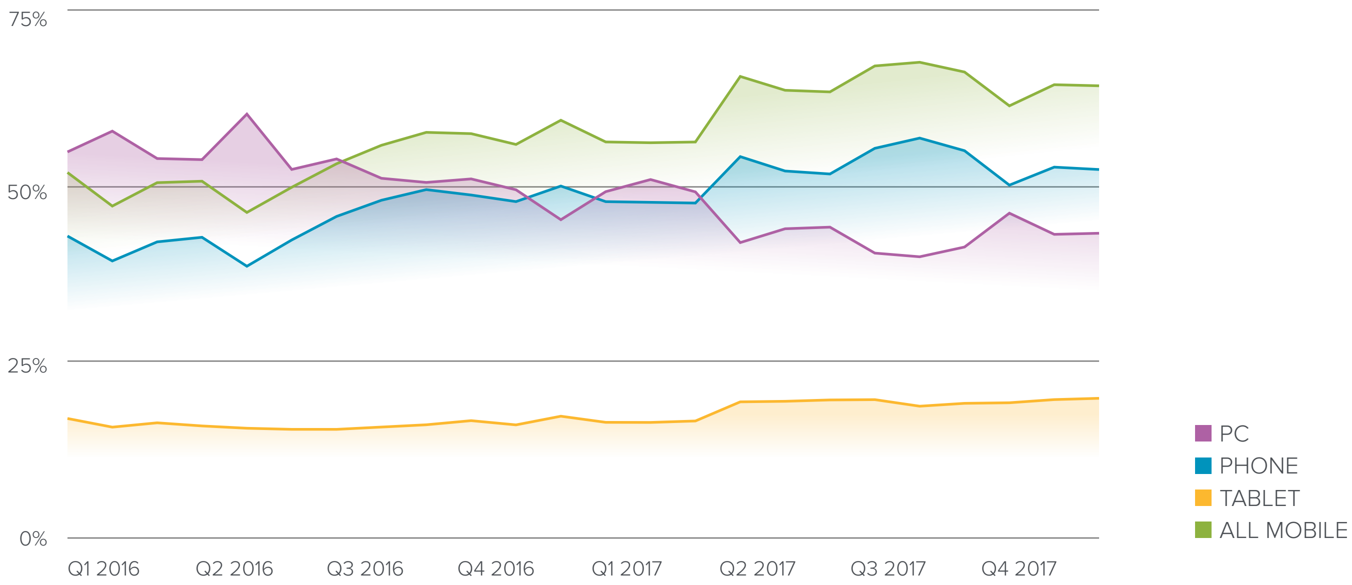
EMEA

EMEA saw its mobile share of plays rise to an all-time high for the region, exceeding 63.5% in Q4 2017. That's up from 46.8% a year ago. It was the second consecutive quarter of big growth for mobile plays in the region.

Growth occurred in both the smartphone and tablet categories. Smartphone plays hit 47.7% share, up nearly 13% Q/Q and more than 35% over Q4 2016. Growth in tablet plays was similar, reaching a 15.84% share, up nearly 16% from Q3 and 37% for the year.

Overall, tablets made up nearly one-quarter of mobile plays for the quarter, eclipsing last quarter's 24.4%, which had been the previous high.

With virtual reality and augmented reality becoming more common in EMEA, especially as the Winter Olympics brings a full schedule of VR opportunities to bear, the region is expected to see more mobile video growth.



SHARE OF PLAYS BY DEVICE APAC Q4 2017

APAC

Mobile video plays topped 60% (60.5%) for the third consecutive quarter, and increased nearly 12% from 54.2% a year ago. Smartphones (47.8%) saw nearly 4X as many video starts as did tablets (12.7%). Share of viewing on PCs fell to 39.57% from 44.3% a year ago.

Like EMEA, the Asia-Pacific region's adoption of tablets has helped boost overall mobile plays. Tablets saw 12.68% of all video plays during the quarter, up from 9.5% a year ago and the third consecutive quarter they've topped 12%.

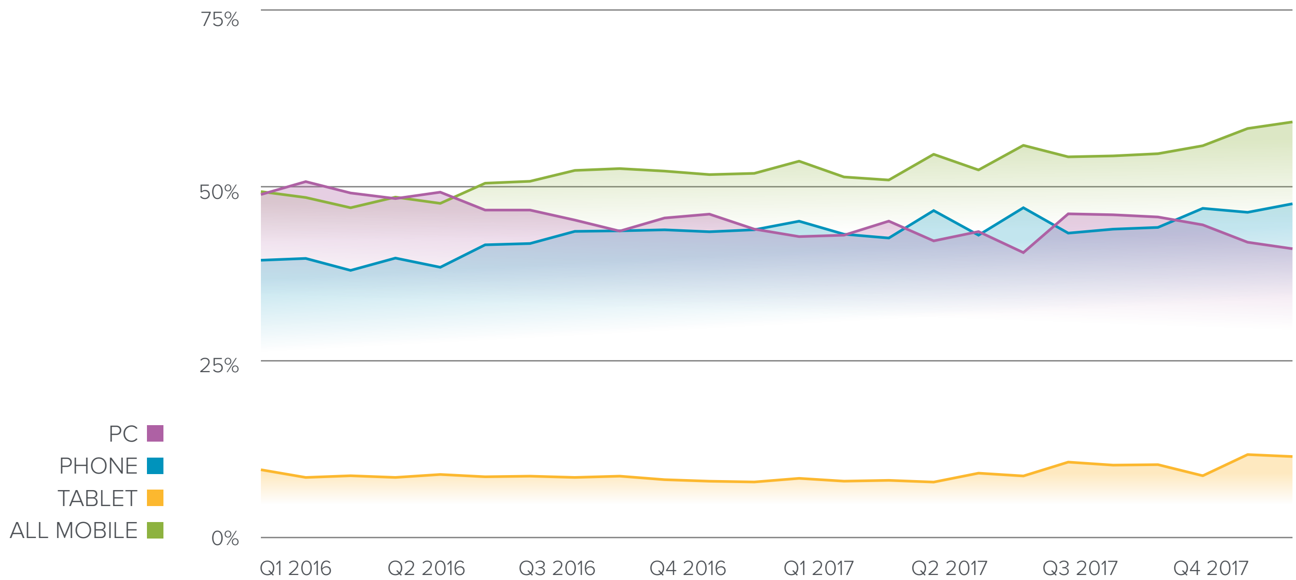
Personal computer video views saw a small improvement Q/Q, but maintained a downward trend. Views on PCs were 39.5%, down from 44.3% a year ago.

Mobile broadband networks already have won the battle with fixed broadband networks in most Asia-Pacific region countries, especially in more advanced markets. According to a report from industry group GSMA, mobile Internet penetration in APAC is 2X what it was just five years ago. The organization estimates nearly two-thirds of consumers in the region will use mobile Internet by 2020, up from about half today.

More than two billion consumers in APAC have access to mobile broadband services over a 3G or 4G network; roughly one-third currently access the Internet via mobile phones, a number that is likely to increase rapidly over the next several years, talking mobile video views with it. Thailand (66%), Malaysia (46%) and China (43%) currently have some of the highest percentages of consumers subscribing to a mobile broadband service, according to the Internet Society. (Internet Society, **Issue Paper: Asia-Pacific Bureau**)

Ericsson, in its most recent mobility report, forecasts that mobile traffic per device in APAC is expected to increase to 9.5GB in 2022 from the 1.6GB it saw in 2016. More than 70% is expected to be video, up from 50% in 2016. One hurdle, or at least a potential speed bump in mobile video's acceleration in growth, could be the cost of mobile data. Despite falling about 50% between 2013 and 2015, it could still inhibit growth.

An Internet Society study, meanwhile, found that 68% of consumers would use a mobile data connection more often if data costs were lower. 77% said faster speed would increase their mobile use. Both are possible with next-gen 5G services that are getting ready to roll out.



SHARE OF PLAYS BY DEVICE NORTH AMERICA Q4 2017

GLOBAL MOBILE CONSUMPTION TRENDS

NORTH AMERICA

After having one of the lowest shares of mobile plays in the world during Q3 (54.2%), North America has seen mobile share pick up, averaging 57.6% in the fourth quarter — thanks in large part to a significant bump in December, when the region's mobile share hit 59% for the month.

Over the past eight quarters, mobile plays in North America have increased nearly 20% as more carriers have moved to unlimited data plans to attract new users and have pitched mobile devices as primary screens, especially to younger users. It's a strategy that, obviously, has worked.

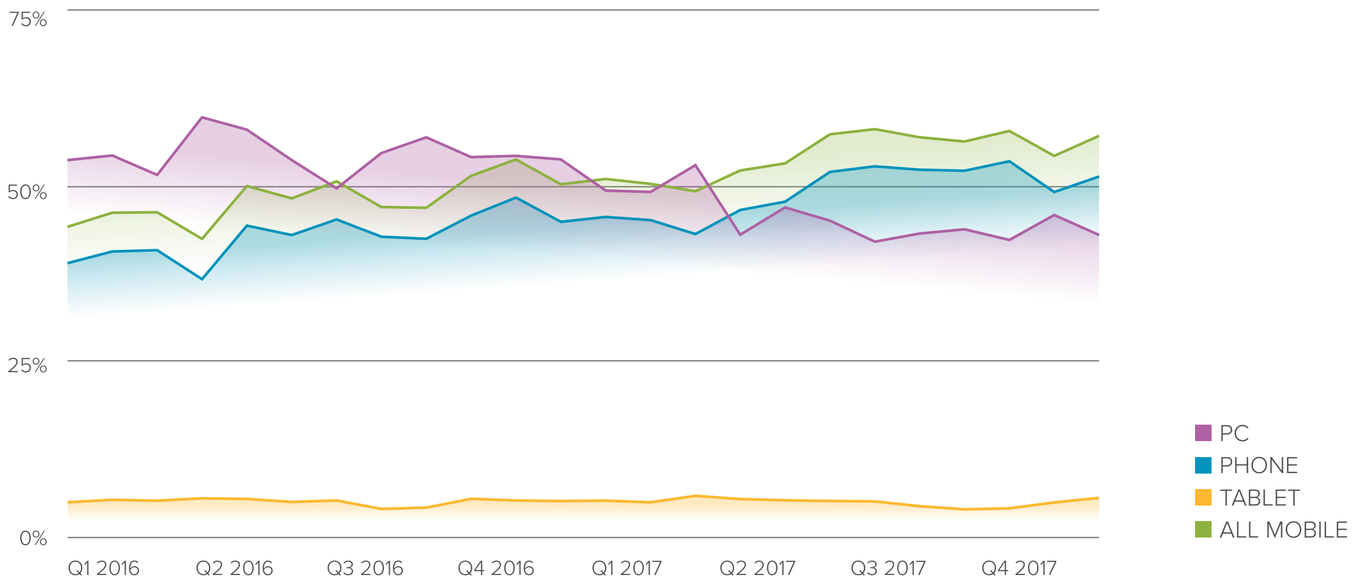
Both smartphone share (46.8%) and tablet share (10.8%) grew during the fourth quarter, but there is little doubt that smartphones continue to be the screen of choice. The introduction of new phone models from major players helped smartphone plays gain more than 7.2% in the past year, almost all of it in the fourth quarter.

Tablets, meanwhile, also saw a big jump Y/Y, increasing more than 32% from Q4 2016. Rather than reflecting a surge in tablet popularity, it's more likely that the surge in content availability we've seen in the past year is a bigger driver.

We could be in for four or five more big quarters of growth as more mainstream pay-TV operators — like AT&T, Comcast and Verizon — push even more customers toward mobile devices and away from traditional wired accounts. Wireless carriers — like T-Mobile and Sprint — also have designs on the space, as evidenced by T-Mobile's acquisition of next-gen cable pay-TV provider Layer3.

T-Mobile CEO John Legere put the pay-TV industry on notice (and grabbed some great headlines) late last year when he said: "We are going to redefine a stupid, broken, arrogant industry." T-Mobile has yet to bring its next-gen version of pay-TV entrée to the market and hasn't yet laid out a time frame for when it might.

Still, the next five quarters likely will usher in a new era of mobile video growth in North America as major operators push to expand wireless networks, making them faster and more affordable.



SHARE OF PLAYS BY DEVICE LATAM Q4 2017

LATIN AMERICA

Mobile plays in Latin America were at 56.3% in Q4, compared to 51.7% a year ago. That 9% Y/Y increase is half of what the region saw a quarter ago when mobile plays hit 57%, a 12-month increase of 18%, but it's an increase of nearly 28% since January 2016.

Virtually all of the growth in mobile plays has come from smartphones, which made up 91% of mobile plays in Latin America. A recent IMS/comScore study found that Latin American consumers spend more than 3X as much online time with their smartphones as with their tablets. More than 70% say they watch video clips on their phones, and about one-third stream full TV shows or movies.

Tablets remain a very small segment of mobile plays, and have made up about 5% of all video plays for the past eight quarters, the lowest level of any region. Still, more than half (52%) of tablet users say they stream full TV shows and movies to their devices.

THE BOTTOM LINE

Video traffic is forecast to make up 80% of all global mobile traffic by 2021, and, says Huawei, many 4G carriers already see video accounting for the bulk of their network traffic. Clearly, mobile video is here to stay.

The cost to produce higher-quality screens for smartphones continues to drop, and manufacturers are deploying better phones for less, especially in emerging markets. An increasing number of smartphones are being delivered with 2K screens, which quickly is becoming table stakes for carriers. The availability of better quality screens is, in return, raising consumer expectations for quality, premium content delivered flawlessly.

Near-instant start-up, consistent video stream quality and uninterrupted delivery — without any buffering — will be critical to end-user experience. Fail at any of those Quality of Experience (QoE) factors and customers will look for other options.

Recommendations and discovery driven by machine learning (ML) and artificial intelligence (AI) will also be crucial to extending engagement for viewers, so optimizing metadata-rich content will be critical.

ENGAGEMENT TRENDS

Q4 saw medium-form (5–20 mins.) and long-form content (20+ mins.) make up more than half of all time watched across every screen. Medium- and long-form content make up 99% of time watched on connected TVs, 71% on tablets, 56% on smartphones and just more than 50% on personal computers. It was the fifth straight quarter that has seen all devices go over 50% for time watched with content longer than five minutes.

The continuing reliance on OTT distribution of premium content in all categories by providers looking to connect across a range of demographics, the low-cost of data for mobile devices, and the consistently good quality of streamed video to all devices have together allowed consumers to make any video device their screen of choice, anytime and anywhere.

LONG-FORM CONTENT (20+ MINS.)

Long-form video continues to have a strong presence on all devices as consumers increasingly watch full length TV shows and movies on all screens, even smartphones.

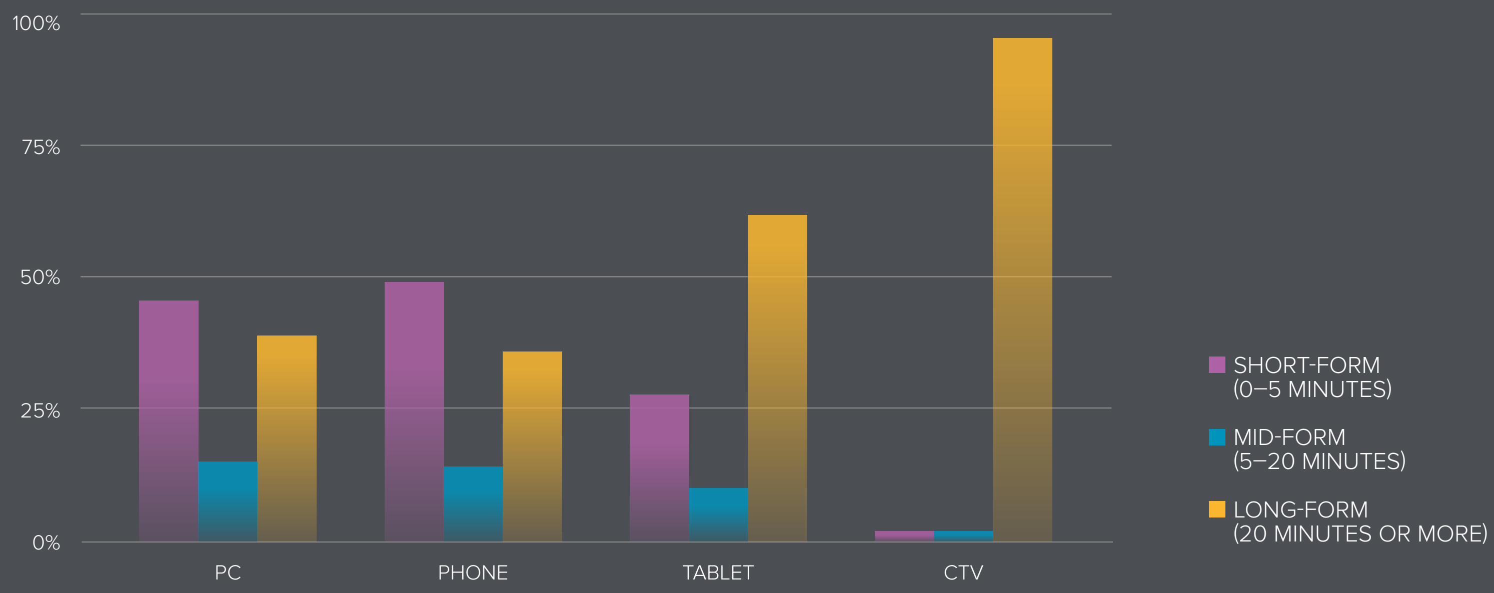
On connected TVs, long-form time watched in Q4 came in at 98.9%, a virtual dead heat with the 99.3% it put up a quarter ago and an improvement on Q4 2016's 96%. Tablets see the second most long-form time watched at 62%, basically flat from the 65% we saw a year ago. Long-form time watched on smartphones was just short of half, at 47%.

Personal computers continued to see a migration away from long form, with time watched at just 36.5%, down from 55% a year ago and 48% in Q3 2017.

MEDIUM-FORM CONTENT (5–20 MINS.)

Personal computers remained a hot spot for medium-form content in Q4, coming in at 13%, slightly ahead of tablets. It's the third consecutive quarter PCs have led the category, and an increase from Q4 2016 when PC time watched for medium-form video was 10%.

Medium-form time watched on tablets was 9%, up slightly from a quarter ago, but down from 13% in Q4 2016. Smartphones saw similar numbers, 9% for Q4, also up from last quarter and down from 10% a year ago.



SHARE OF TIME WATCHED BY DEVICE AND VIDEO LENGTH Q4 2017

Connected TV time watched for medium-form content was flat at 0.4%.

The modest decline in medium-form viewing is driven primarily by the increase in long-form time watched. As more consumers have access to long-form, premium content, the volume of that traffic erodes the time-watched numbers for medium — and short-form — content.

SHORT-FORM CONTENT (0-5 MINS.)

Personal computers saw an increase in the amount of time watched with short-form content coming in at 50%, its highest level since Q1 2016 when short-form content on PCs was at 51%. It's the third consecutive quarter that number has increased.

While there was some short-form growth on PCs, the trend on smartphones (44%), tablets, (26%), and connected TVs (0.7%) essentially were flat year-over-year. Short-form time watched likely will continue to decline as more longer-form content — especially sports — becomes easier to access.

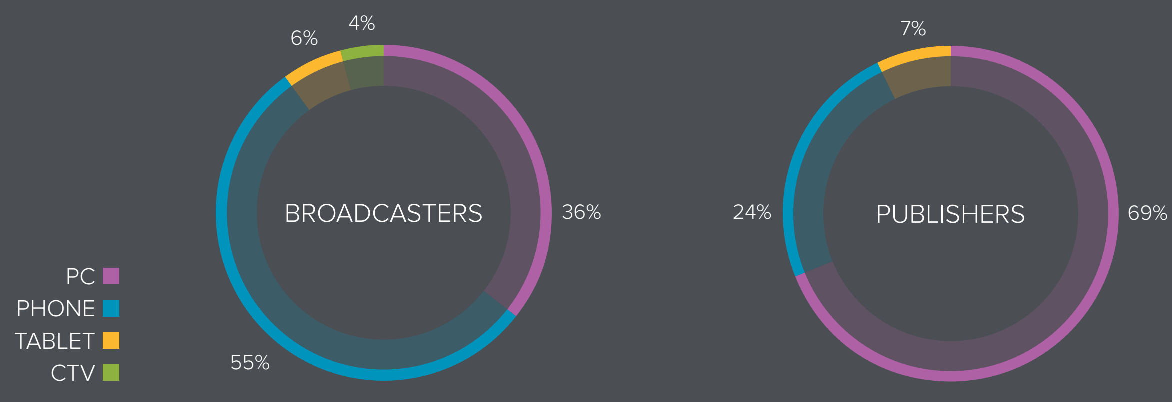
THE BOTTOM LINE

The days when any device was used exclusively for short — or long — content have come to an end. Consumers are as comfortable watching a sporting event, TV show or movie on a smartphone as they are on a connected TV.

And why not?

U.K. communications regulator Ofcom, in its annual **Communications Market report**, found that 80% of adults use streaming services and some 35% of viewers watch multiple episodes of a show at least weekly. Some 90% of viewers say they watch a show alone at least once a week. Binging has replaced prime-time TV viewing for families.

For content providers, that means establishing — and maintaining — one-on-one relationships with customers. It also underscores the need to be competent at delivering content on any device a consumer has, wherever and whenever they want.



PRE-ROLL AD IMPRESSIONS
Q4 2017

VIDEO ADVERTISING TRENDS

More than half of marketing executives in a recent global survey named video ads as the content with the best return on investment for brands. Three-quarters of them said online video ads were equally as, or more, effective than traditional TV ads.

As online video has become mainstream globally, so has video advertising.

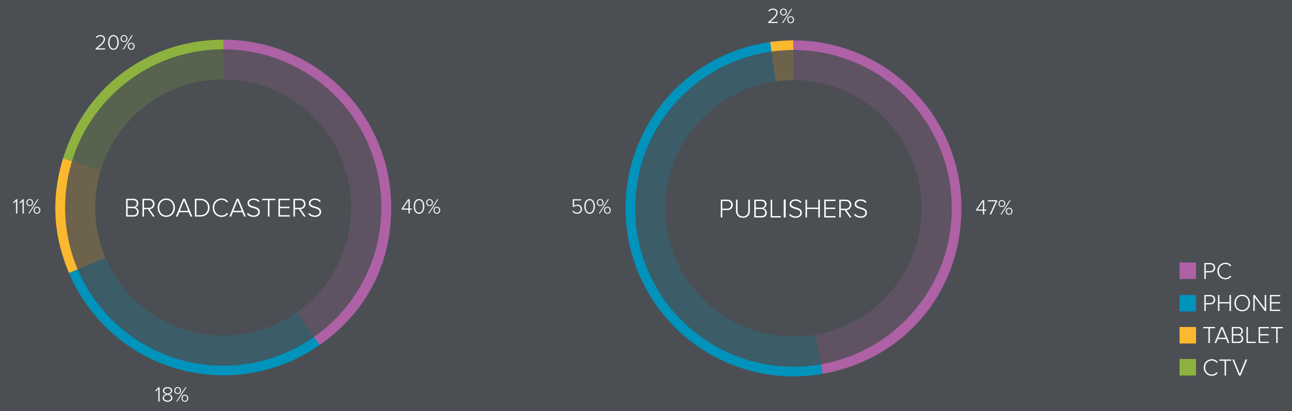
But, video advertising may be facing some stiff headwinds:

- Increasingly, consumers are using ad blockers on their personal computers and on their mobile devices.
- Starting in May, the European Union will begin to enforce privacy rules — the General Data Protection Regulations — that will limit data collection and make it more difficult for brands to leverage the potential of addressable advertising.
- Google and Facebook dealt with issues — objectionable content on YouTube and reporting errors on Facebook — that caused a backlash the two likely will continue to deal with this year.

But, the online video advertising industry continues to grow as brands look for ways to reach an audience that is becoming more fragmented as they embrace OTT video.

For the past several quarters, advertisers increasingly have focused on mobile, spending money where Millennials are concentrated. In 2017, mobile video advertising grew more than 35%, growth that will continue this year. Zenith predicts that viewing on mobile devices will jump 25% in 2018. And, it forecasts, 72% of all video ad viewing will be on smartphones and tablets, up from 61% a year ago.

Here's what we saw among our broadcasters and publishers in Q4:



MID-ROLL AD IMPRESSIONS Q4 2017

PRE-ROLL AD IMPRESSIONS

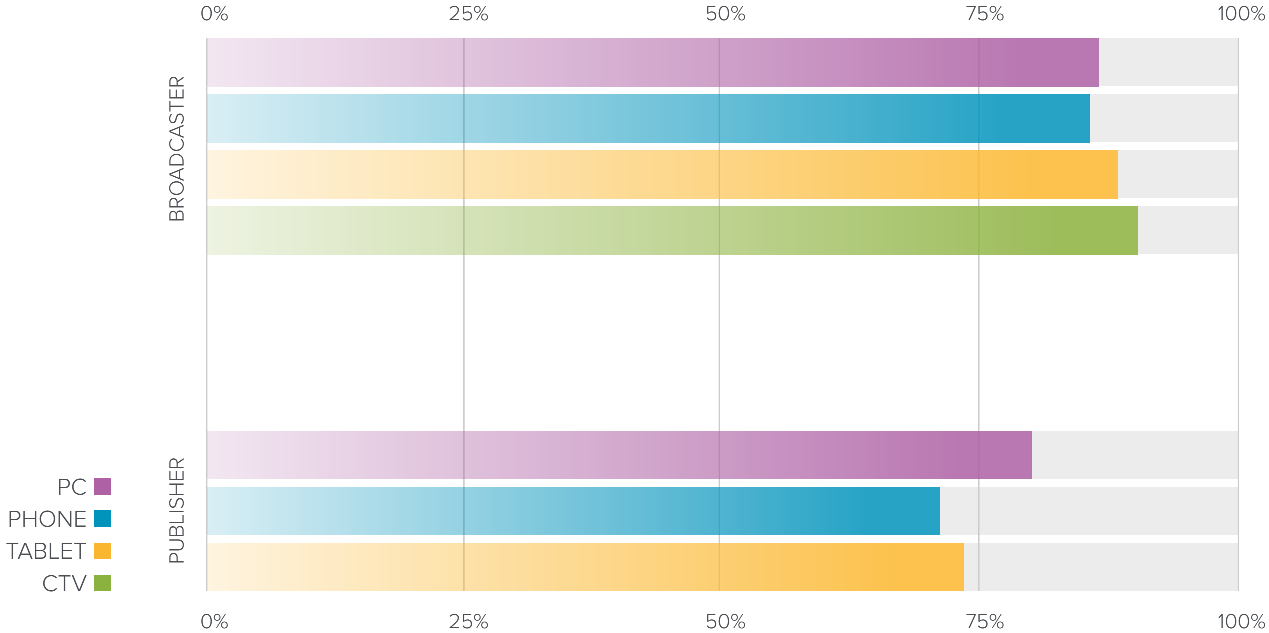
Broadcaster pre-roll ad impressions on smartphones topped 54% in the quarter, up from 39% in Q3 and 29% in Q2. Tablets saw a smaller piece of the pie, just 6%. Combined, the nearly 61% on mobile devices this quarter was a marked increase from Q3's 52% for mobile devices. Desktop and laptop computers saw 36% of pre-roll ad impressions on broadcaster platforms, down from a quarter ago. Impressions on connected TVs hit 4% in Q4, compared to 6% in Q3. Pre-rolls on the biggest screen against premium content have struggled for acceptance, although the shortest ad formats, less than six seconds in length, have seen some success.

Publishers saw a significant increase in pre-roll ad impressions on PCs, nearing 69% for the quarter, a 31% increase Q/Q from 52% in Q3, and taking share from all other screens in the process. Smartphone pre-roll ad impressions dropped to 24% in the quarter, down from 37% in Q3 and in Q2. Pre-roll ad impressions on tablets were at 7%, down from 10% in Q3 and Q2.

MID-ROLL AD IMPRESSIONS

Broadcasters saw mid-roll ad impressions on PCs decline to 40% from 46% a quarter ago, while impressions on smartphones jumped to 28% from 16% in Q3. Tablets tallied 11%, compared to 16% last quarter, and connected TVs were at 20%, down from 22% in Q3.

Publishers saw mid-rolls on PCs slip to 47% in Q4, from 54% in Q3, continuing a slide that began in Q2. For the first time, mid-rolls on smartphones topped 50% among publishers, hitting 51% for the quarter, up from 44% in Q3. Impressions on tablets stayed flat at 2% for the third quarter in a row.



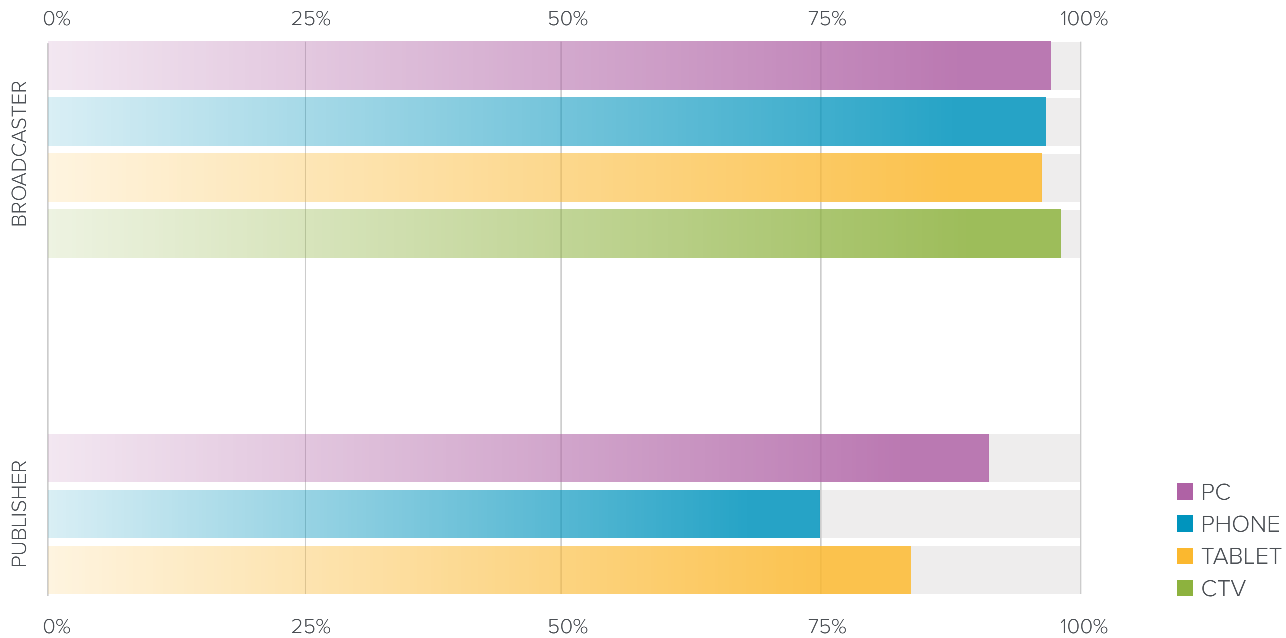
PRE-ROLL COMPLETION RATES BY MARKET SEGMENT Q4 2017

VIDEO ADVERTISING TRENDS

PRE-ROLL AD COMPLETIONS

Despite pre-roll ads' lack of appeal to consumers, broadcaster's premium content helped keep pre-roll ad completion rates higher than for publishers. For Q4, pre-roll ad completion rates on PCs were 87%, up slightly from Q3. Rates on connected TVs, 91%, have been flat for the past three quarters, while smartphones saw rates of 86%, up slightly from Q3's 84%. The 89% pre-roll completion rate on tablets was just 2% less than on connected TVs (91%), a slight improvement from the previous three quarters.

Publishers were less fortunate in pre-roll completion rates as consumers were more apt to graze away from content that — rightly or wrongly — was perceived as "less premium" than that on broadcaster platforms. The willingness to find similar content elsewhere rather than watch pre-rolls is an ongoing issue for publishers. PCs showed the highest pre-roll completion rates at 82%, flat over the past three quarters. Completion rates on smartphones fell significantly, with pre-rolls being watched until the end just 72% of the time during Q4 compared to 81% a quarter earlier. Tablets were up just slightly to 77% from 75% in the previous quarter.



MID-ROLL COMPLETION RATES BY MARKET SEGMENT Q4 2017

MID-ROLL AD COMPLETIONS

Broadcasters, when it comes to mid-roll completion rates, benefit from the nature of their content: premium entertainment, news or sports that is perceived to carry value from beginning to end. Connected TV mid-roll completion rates were 98%, a trend that stretched back through 2016. Smartphone rates were 97%, the highest rate in four quarter. Tablets also scored 97%, up from 92% in Q3 and another "best" since early 2016. PCs also saw mid-roll completion rates of 97%, a rate PCs have held since Q2 2016.

Mid-roll completion rates also are higher on publisher platforms, but they trail broadcasters' solid A-level rates on all screens, again due to viewer willingness to churn away to other platforms to escape ads.

For the quarter, PCs saw the highest completion rates: 92%, up from 88% in Q3. Tablets also saw slightly better completion rates — 84% — a modest bump from 82% in Q3 and 81% in Q2. Smartphones saw the lowest mid-roll completion rates at 75%, up from 73% in Q3 and flat against the rest of the year.

THE BOTTOM LINE

Consumers continue to push back against advertising, especially on publisher websites where there may be less "exclusive" content.

But, the industry is continuing to experiment with ad placement, length and content in an effort to find the right mix.

A crucial rule of thumb… watch your data closely to see when viewers abandon video or, worse, your platform. There is no standard calculus for the "right" ad load, but your data will tell a compelling story.

When in doubt, count on mid-rolls, they are far better received by viewers. And, as any number of studies have shown, shorter ads are far more tolerable than longer ones.

ABOUT OOYALA'S GLOBAL VIDEO INDEX

This report reflects the anonymized online video metrics of the vast majority of Ooyala's 500+ customers, whose collective audience of hundreds of millions of viewers spans nearly every country in the world. This report does not document the online video consumption patterns of the Internet as a whole. But the size of the Ooyala video and advertising footprint, along with the variety of our customers, results in a representative view of global consumption and engagement trends.

Ooyala is a leading provider of software and services that simplify the complexity of producing, streaming and monetizing video. Ooyala's comprehensive suite of offerings includes one of the world's largest premium video platforms, a leading ad decisioning platform and media logistics solution that improves video production workflows. Built with superior analytics capabilities for advanced business intelligence, Ooyala's solutions help broadcasters, operators, media and production companies get content to market faster, build more engaging and personalized experiences across every screen, and maximize return for any video business.

Vudu, Star India, Sky Sports (U.K.), ITV Studios (U.K.), RTL Group (Germany), TV4 (Sweden), Mediaset (Spain), America Television (Peru), and Media Prima (Malaysia): these are just a few of the hundreds of broadcasters and media companies who choose Ooyala.

Headquartered in Silicon Valley, Ooyala has offices in Chennai, Cologne, Dallas, Guadalajara, London, Madrid, New York, Paris, Singapore, Stockholm, Sydney, Tokyo, and sales operations in many other countries across the globe.

For more information, visit **www.ooyala.com**.