NPAW
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REPORT
H2 2019

Global Streaming and Broadcasting Report from NPAW, the Video Intelligence Company

The Global Streaming and Broadcasting Industry is in non-stop growth and undergoing significant transformations at speed. As both online Live streaming and VOD solutions with sky-high customer quality expectations proliferate, a flawless quality of experience is essential for retaining an increasingly fickle user-base.

In this report, we have dug deep into our quality streaming data to uncover the state of the video streaming ecosystem. From over 100 billion annual plays from all over the world and over 150 video services, we have collated the most notable and high-impact developments defining the state of the industry today.

Industry leaders trust NPAW to understand consumption trends, improve their platform, and create reliable streaming experiences that delight and retain users.

Data for this report was collected between July and December 2019 using YOUBORA.

From emerging trends in user behavior to must-have streaming quality data that contributes directly to your business KPIs, here are some highlights of the H2 2019 report:

Though **Smartphones were used to stream nearly half the Plays in H2 2019,** they also registered the shortest Avg Playtime of all devices.

With 57% of the total Plays recorded, **VOD content is marginally more popular than Live content.**

Although TV devices experienced the highest Join Times of all, **users are still twice as likely to wait for content to load on a TV than on a Smartphone.**

SmartPhone users are the most likely to leave a stream before the video loads, but the least likely to suffer from an error in playback caused by player faults, crashes, or network issues.

Users are **5 times more likely to receive an in-stream error during Live Plays** compared to VOD.

Consoles lead the way on user engagement. **People streaming on a Console are likely to watch for the longest time** and are most likely to watch content they stream in its entirety.

I can only stress how important it is for us to look from the perspective of the customer, from outside of the errors. That's what YOUBORA does for us.

Henrik Loop
Chief Technical Officer at Blockbuster

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How are users consuming content?

Online content is eating into traditional linear TV and, whether it is ad-supported, subscriptions, or transaction-based, VOD is the primary format in which online users are now consuming content. NPAW's data for H2 2019 shows that Playtime for VOD hit 55%, compared to 45% for Live content across all devices.

VOD PLAYTIME	LIVE PLAYTIME
55%	**45%**

As users become accustomed to rapidly improving technology, the norm heads further towards full multi-device content consumption. **In terms of Playback Hours, the top devices were Smartphones (23%) and TV (23%), while Set-Top Boxes (16%), outperformed PC (15%), and Tablets (7%)**. Although Consoles accounted for just 1% of the total view time, they also returned the highest value for Avg Completion Rate (an impressive 60% for VOD playback).

PLAYBACK HOURS

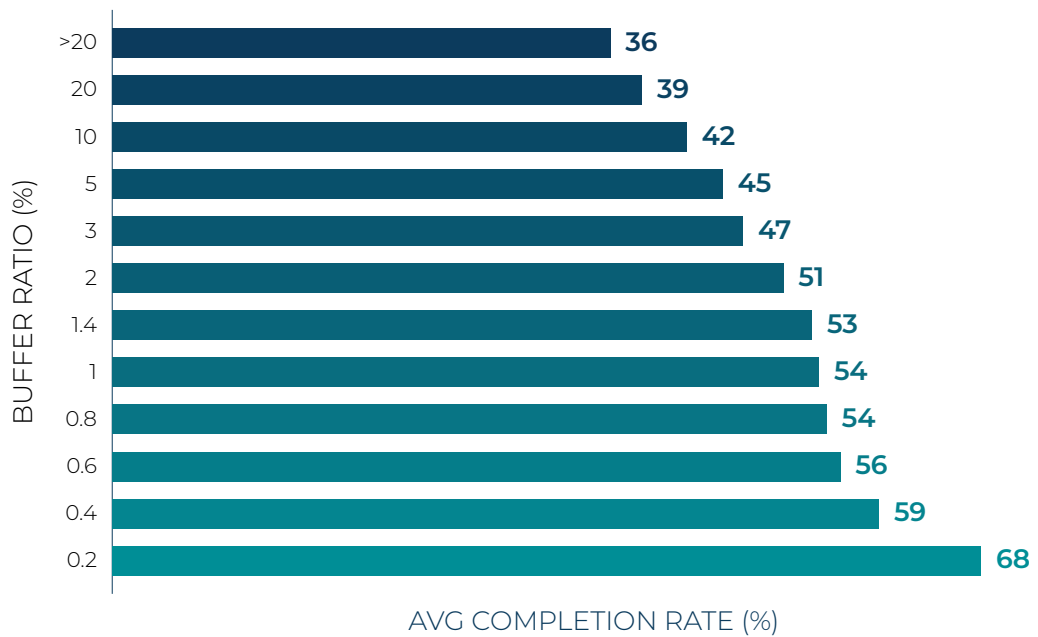| 23%	23%	16%	15%	7%
SMARTPHONE	TV	STB	PC	TABLET
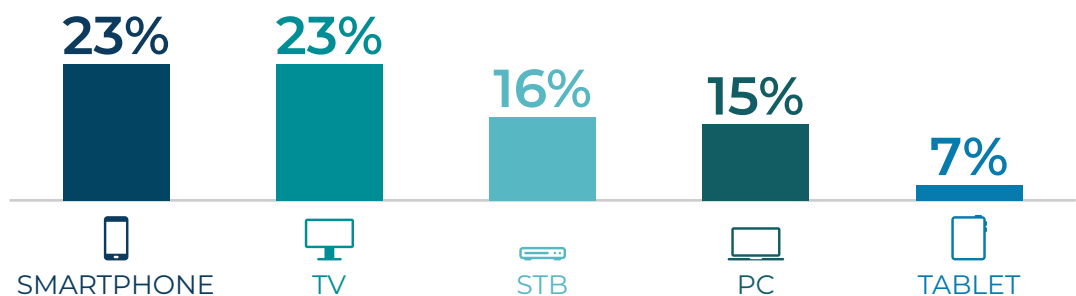
While Smartphones were the most used device to stream VOD content (30%), Set-Top Boxes were the most used device for Live streaming, registering 28% of all viewing hours, ahead of TV with 21%, and Smartphones at 13%.

What's driving user frustration?

For any business interested in maintaining a high QoE, the Exit Before Video Starts rate (EBVS), is the key metric to watch as a warning sign of user frustration. Although the overall quality of streaming is improving globally, user tolerance to delays and inconveniences is trending downward. It is also important to closely monitor Buffer Ratio and Join Time, as these are closely related to engagement levels. As shown in the graph below, we can observe a clear relationship between Buffer Ratio and Average Completion Rate; **the more buffering a viewer experiences during a session, the less likely that viewer is to continue watching the video.**

BUFFER RATIO VS AVG COMPLETION RATE (VOD)

BUFFER RATIO (%)

Buffer Ratio (%)	Avg Completion Rate (%)
>20	36
20	39
10	42
5	45
3	47
2	51
1.4	53
1	54
0.8	54
0.6	56
0.4	59
0.2	68

AVG COMPLETION RATE (%)

It's worth noting that **the Buffer Ratio is almost double for VOD (0.38%) compared to Live (0.2%),** however, as expert Marc Maycas explains (below), this can be explained in part by streaming platforms prioritizing lack of interruptions over quality when streaming Live content.

> *For Live content companies often include lower bitrates in their manifest files to ensure uninterrupted streaming. It makes sense because, due to the 'here and now effect' of Live streaming, users tend to care more about uninterrupted viewing than image quality. That is why VOD appears to have a higher Buffer Ratio overall. Some users even force players to start Live streams in the lowest possible rendition, which also reduces the Join Time.*

Marc Maycas
VP of Product Solutions, NPAW

While the EBVS rate is similar between Live (19%) and VOD (17%), the breakdown by device reveals interesting insights into different levels of user expectations depending on how they are watching. **TV devices experience the highest Join Times, not deterred by this, users are still twice as likely to wait for content than Smartphone users** (as shown in the graph below).

## JOIN TIME VS EXIT BEFORE VIDEO STARTS (EBVS)
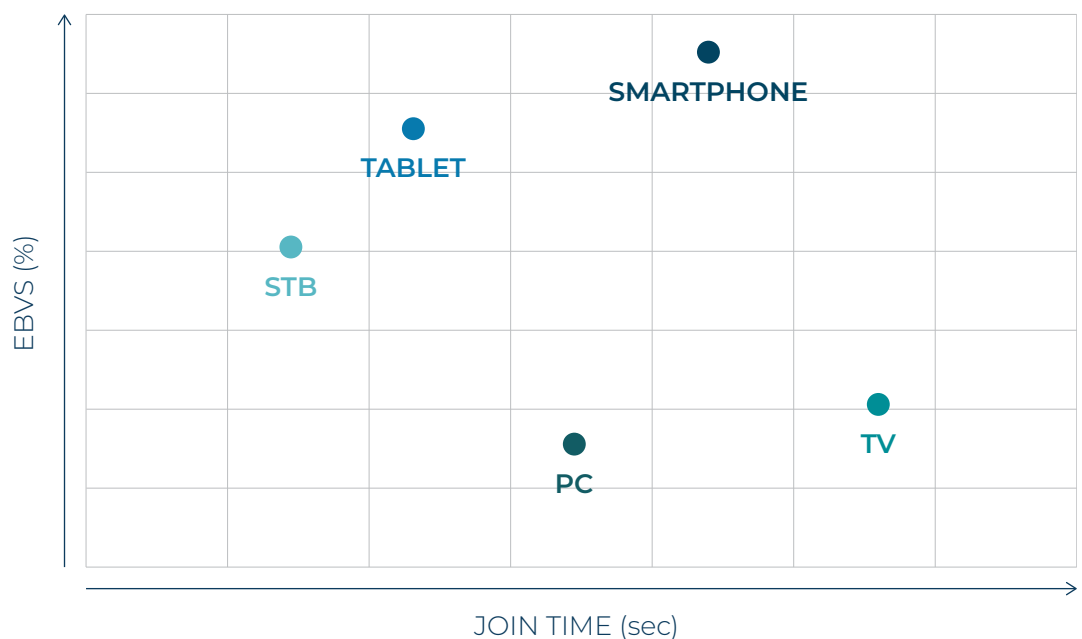
Where are the errors?

Of course beyond buffering issues, a smooth streaming experience also depends on a lack of serious errors - that is to say, faults within your video delivery system that can lead to a crash during startup or even in-stream. It should go without saying that a business committed to reducing user churn needs to be closely monitoring their errors in real-time so as to identify their cause and rectify them as soon as possible.

Notable error-based insights from the H2 2019 data show that **users are 5 times more likely to receive an error during Live playback than they are compared to VOD.** This can be attributed to large spikes in traffic due to a live sporting event for example, but doesn't appear to affect the commitment to consuming this type of content, as Average Effective Playtime is still higher overall for Live (11.5 minutes) vs VOD content (9.8 minutes). It is also valuable to consider the breakdown by error type; **although Live users are more likely to experience an in-stream error, only half those errors result in a crash.**

ERRORS PER PLAY

TYPES OF ERRORS

InStream Errors

InStream Errors Crash

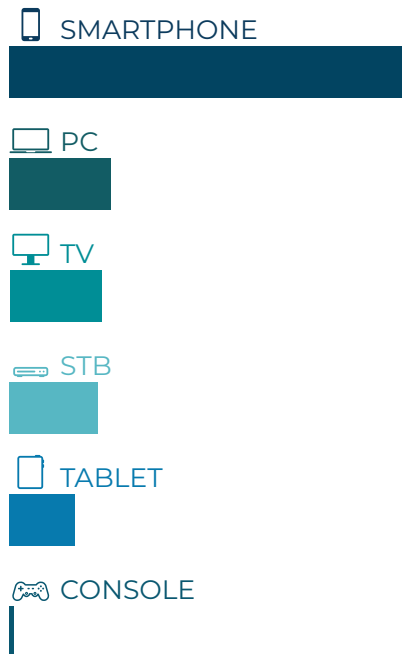Startup Errors

Startup Errors Crash
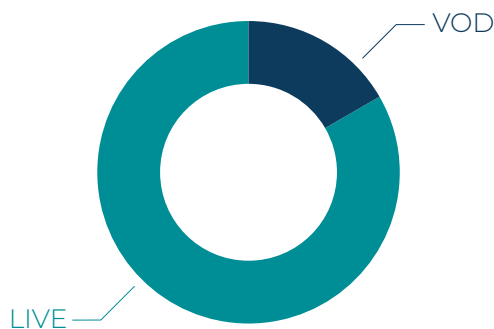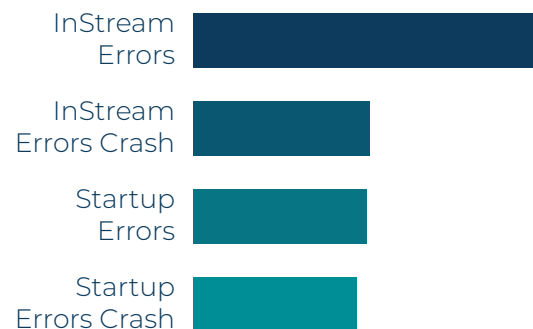
Despite high usage, Smartphones and Smart TVs are ahead of the pack in terms of errors, registering approximately 50% fewer Errors per Play compared to STBs and PCs, which show the highest error rates across all the device types.
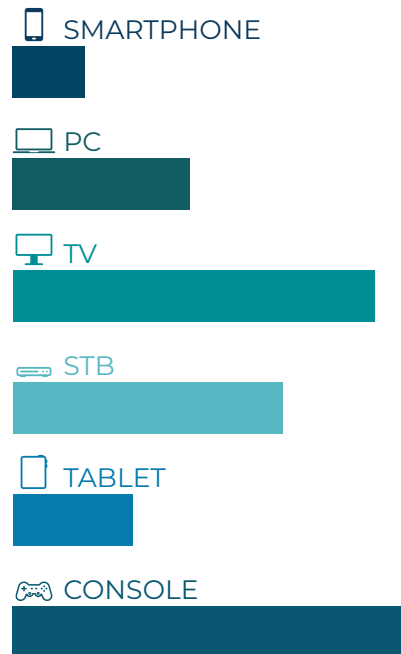
Smartphones change the game

A clear insight from the data on Smartphones can be obtained by comparing the amount of usage - Plays - with Average Effective Playtime, which is view time calculated without including Join Time, Buffering, Ads, Pause Time, or similar delays. **Smartphone users have the most Plays, but the lowest Average Effective Playtime of all the devices, tending to consume large amounts of shorter views.** Due to the high volume of total view time, we can hold this 'Mobile-Hopping' trend responsible for driving the overall Average Playtime down for H2. This does not necessarily signify a lower Quality of Experience, as it is also the device with the lowest amount of Errors per Play, but it could be read as implying reduced levels of engagement with the content being consumed.

PLAYS

AVG EFFECTIVE PLAYTIME (min)

SMARTPHONE

SMARTPHONE

PC

PC

TV

TV

STB

STB

TABLET

TABLET

CONSOLE

CONSOLE

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In contrast, the longest content is reserved for Consoles and TVs, while the highest Completion Rates for VOD were achieved by Consoles (60%) and PCs (60%), indicating higher user commitment to invest time on these devices.

COMPLETION RATES (VOD)

60%	60%	59%	52%	52%
PC	CONSOLE	STB	TV	SMART TV
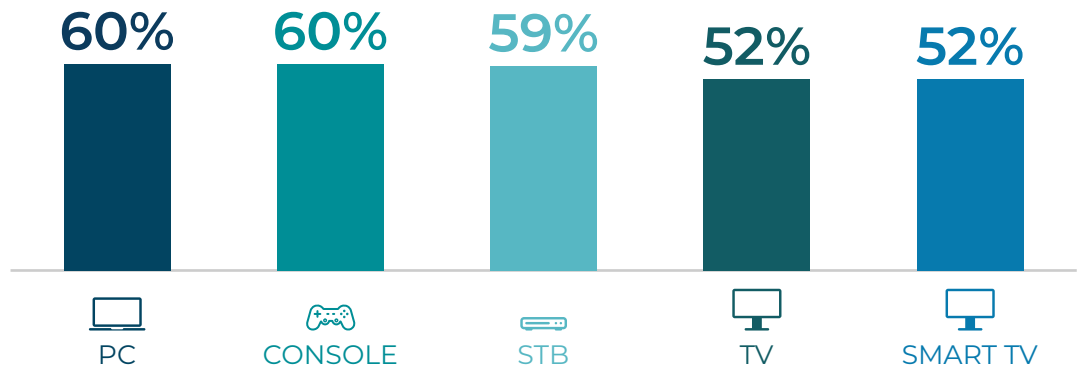
In Conclusion

Overall, the report shows an H2 of strong growth for the video streaming industry, marked by varying levels of Quality of Experience caused by a rapidly evolving diversification of content usage by device type. **While Consoles and TVs register impressive levels of user retention once in-session, Smartphones and Smart TVs are leading the field in terms of error-free experience** - a measure that looks set to gain even more relevance in the future.

It is evident that online streaming is becoming more and more ingrained in user behavior. The businesses that are able to react to user habits and navigate the difficulties of this developing tech ecosystem will come out on top. Keep an eye out for our future reports to stay up to date on the latest of the video streaming industry.

For more video intelligence insights head to nicepeopleatwork.com

BUFFER RATIO

Download the White Paper →

FOX+

Download the Case Study →

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About NPAW

NPAW — **Nice People At Work** — is a video intelligence company helping online streaming services grow. A global leader in its space, NPAW has a decade of experience developing groundbreaking and scalable analytics solutions to optimize performance and user engagement to build media experiences that maximize revenue. NPAW serves more than 150 video services and processes 100 billion plays per year worldwide.

YOUBORA, NPAW's flagship solution, provides OTT, broadcasters, telcos, and media groups with advanced visibility of platform performance, audience behavior, advertising and content efficiency in real-time to support informed, data-driven decisions.