NPAW

REPORT
2021

Video Streaming Industry Report 2021

Providers face increased competition and evolving viewer behavior in a booming market

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What's next for video? Dive into the future with NPAW

On behalf of the entire NPAW team, thank you for your ongoing trust in our video analytics expertise and tools. We look forward to continuing to evolve the NPAW Suite of Apps so that you can make the most of your streaming business with data on your side.

The global streaming industry experienced further expansion in 2021 as consumers consolidated the new behavior patterns that emerged with the pandemic. Yet competition is becoming increasingly fiercer, with established providers and newcomers alike bidding for the viewers' attention and experimenting with new monetization models.

In this hypercompetitive market landscape, it is critical for providers to prioritize Quality of Experience and Quality of Service if they want to stay ahead of the game. Access to real-time data and video analytics insights is the key to creating better user journeys, increasing viewer loyalty, and reducing churn.

That's why, at NPAW, we work every day to provide streaming businesses with cutting-edge video business intelligence through a holistic, end-to-end analytics solution that delivers reliable insights in real time. But we don't stop there.

Our reports are an industry standard and one of the many NPAW resources available to video businesses ready for digital transformation. Join us as we examine major industry drivers and how they are shaping streaming strategies around the globe.

Ferran G. Vilaró
CEO & Co-founder of NPAW

1.1 Key takeaways

Marked by continued growth and increased competition, 2021 was a year of both consolidation and change for the video streaming industry. In this report, we look into the main trends affecting the video ecosystem and analyze their impact from a user engagement and streaming quality perspective.

But first, here is a snapshot with the key takeaways from our data:

1. Although consumers are watching more hours of VOD content overall, consumption for each streaming provider went down in 2021 as **services compete for viewers**

2. Linear TV consumption increased globally but varied from one region to another, confirming **Linear TV is a local business** that escapes global trends

3. Providers continue optimizing video quality for VOD but seem to **have gotten the hang of Linear TV**, as tweaks in the various quality metrics for this type of content stabilize

4. With live sporting events back at full speed, **sports streaming is booming** for both VOD and Linear TV, both from a consumption and video quality standpoint

5. Big screens still reign supreme, and **smartphones show the biggest decrease in consumption** of all devices as streaming faces competition from social and gaming

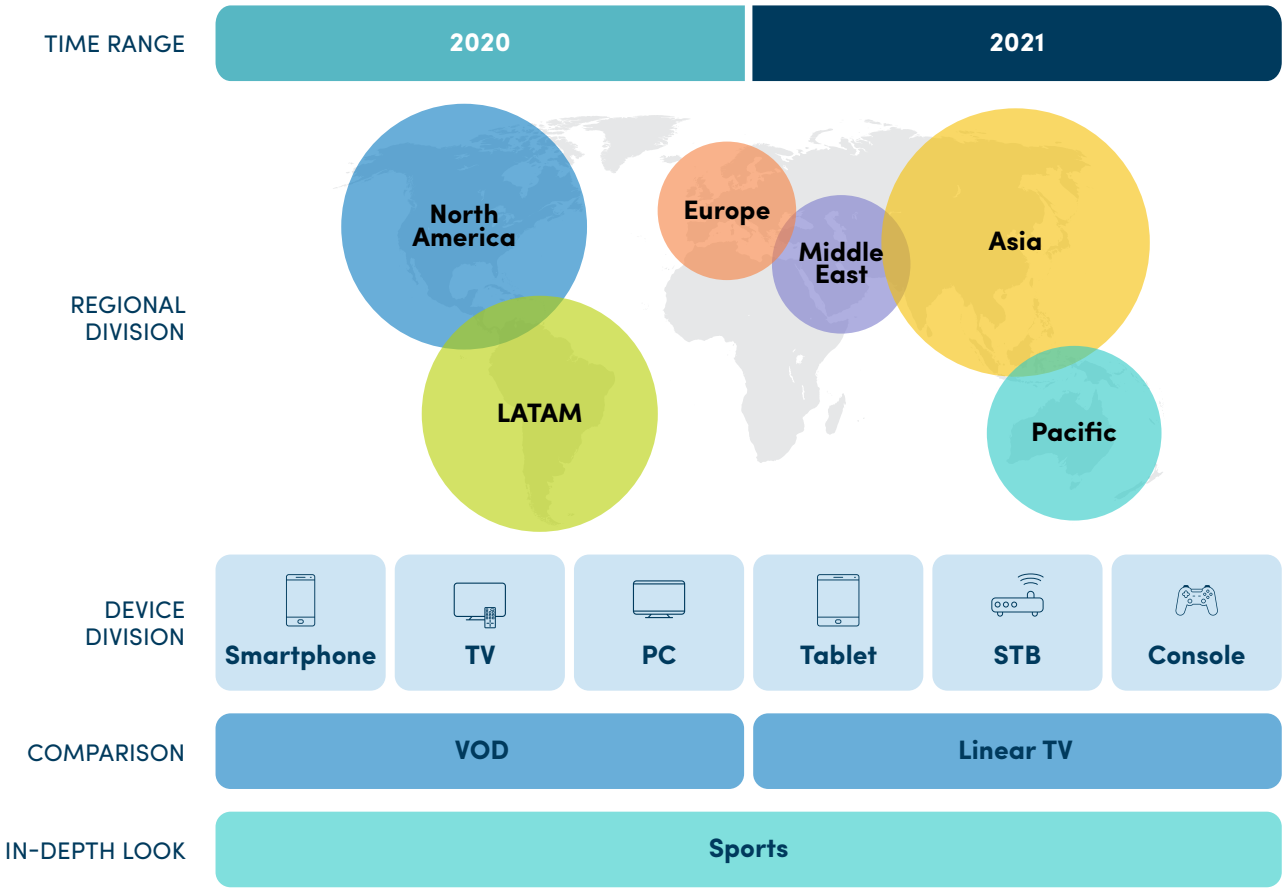
Keep reading for an in-depth examination of these trends as well as a look at what's ahead for the streaming industry in 2022.

1.2 About this report

This NPAW report examines the state of the video streaming industry on a global scale, diving deep into 2021 data and comparing it with 2020's findings. The featured data was gathered via the NPAW Suite from January 1, 2021, to December 31, 2021. Insights were divided by content type (VOD and Linear TV), regions and devices, with key metrics showing general trends in consumption and streaming quality. We round out core data by correlating them with industry voices, quality patterns, and device performance to understand what lessons from 2021 can be applied in 2022.

Additionally, during January 2022, NPAW surveyed 110 industry members and asked them for their take on the future of streaming. The data collected from that survey is also displayed across this report to complement and give context to the findings.

Our data sample



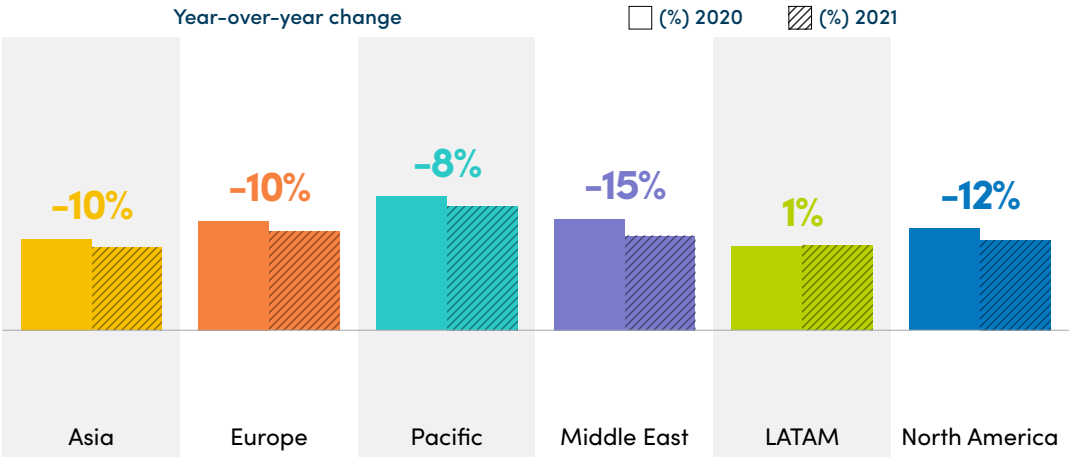
2. Report Findings

2.1 VOD - Global Insights

Audience fragmentation, service competition on the rise

Overall, our data show that viewer engagement for each streaming service — measured in **Avg. Daily Playtime** per user, in hours — was down for all devices and almost all regions in 2021 compared with 2020. Only Latin America saw a small increase in daily consumption vs. the previous year.

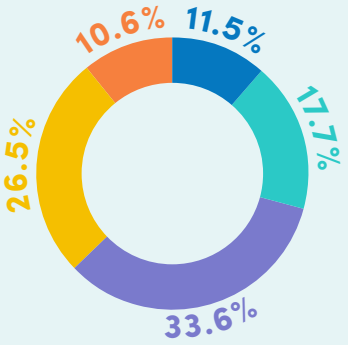
AVG. DAILY CONSUMPTION PER USER & SERVICE



Rather than this downward trend reflecting a loss of appetite for video on demand among consumers, it shows the effects of increasingly fierce industry competition and an abundance of content. More and more services are being launched as traditional content providers and newcomers alike move to capitalize on the post-pandemic streaming boom.

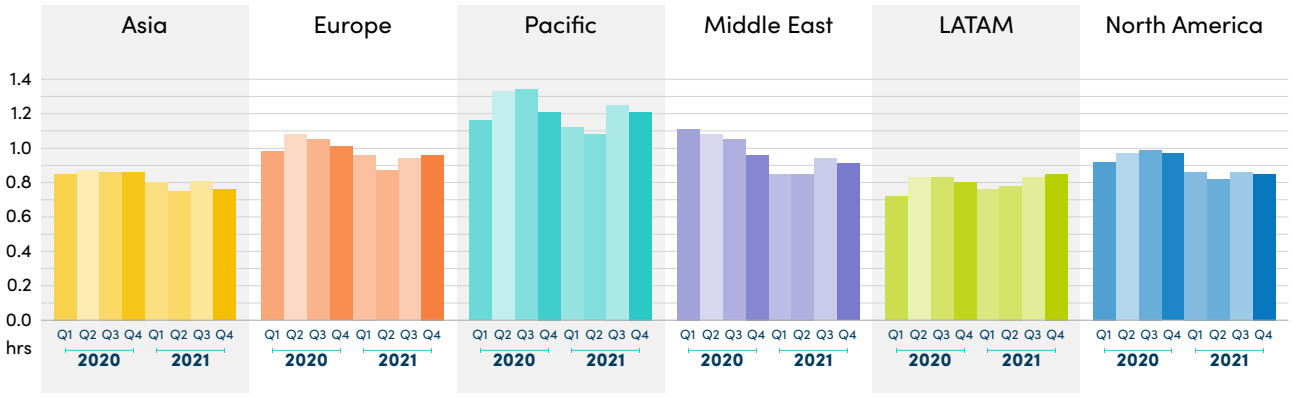
As a result, consumers continue stacking up subscriptions to access all the content they want to watch. In the U.S., for example, the average household now uses about 5 different streaming services — almost double compared with pre-pandemic numbers. While the total amount of attention given to VOD content per household is on the rise, each individual service is getting less of it.

Seeing the impact the pandemic had on streaming consumption, do you think the following consumption trend is here to stay? Total streaming hours will increase, although avg. effective playtime per service will decrease (more users, less engagement)



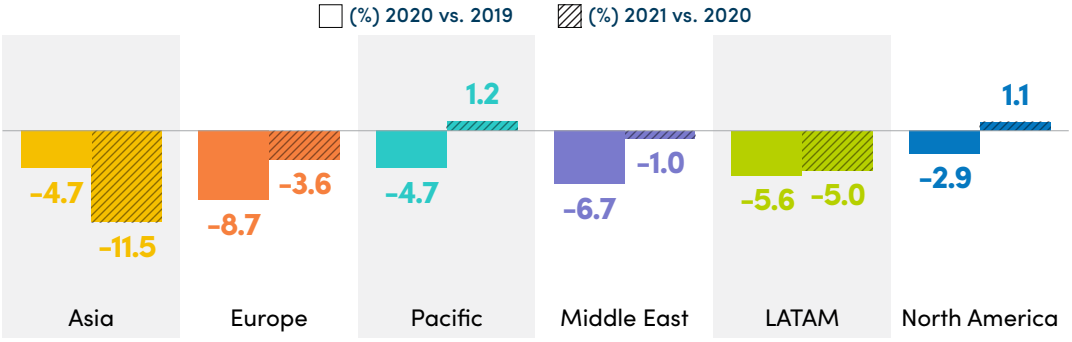
But there may be reason for hope for VOD providers. Engagement picked up across all regions in the second half of 2021, which could signal an upward trend for VOD consumption per user and service in 2022. This would make sense in a context of content and services saturation that leaves consumers wanting for fewer options from which to choose, but it's still too soon to tell.

VOD ENGAGEMENT BY REGION (AVG. DAILY PLAYTIME PER USER & SERVICE)

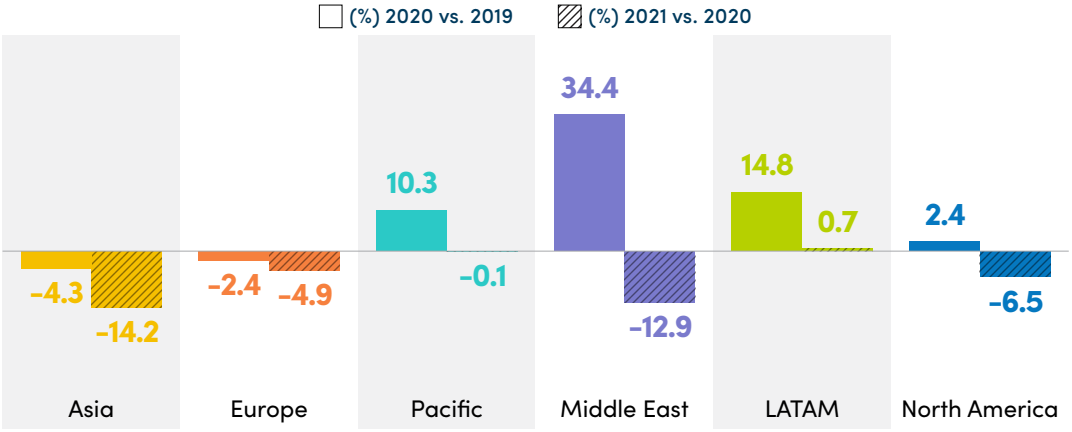


When looking at the metrics for each **Play**, we see the **Completion Rate** continuing to drop in nearly all regions except for the Pacific and North America. Meanwhile, **Avg. Effective Playtime** has stayed more or less the same or is going down across regions, which shows zapping-like user behavior — viewers tend to explore new content and change to other options when what they settled on does not suit their taste.

COMPLETION RATE



AVG. EFFECTIVE PLAYTIME



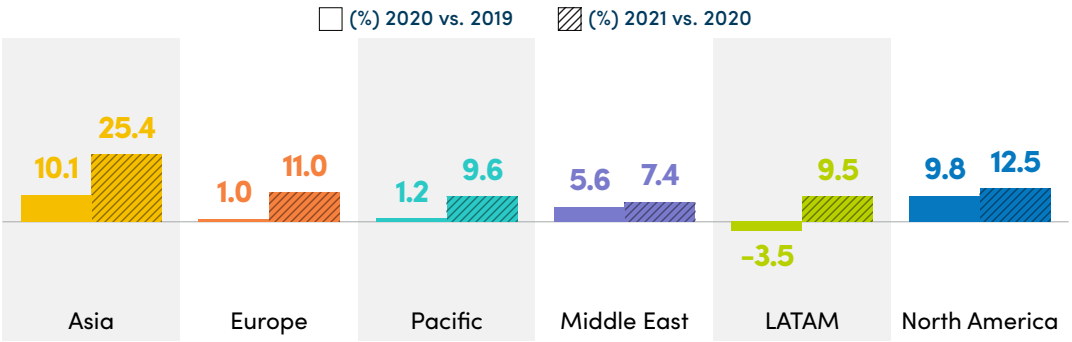
Video quality tweaking can only go so far

In 2021, streaming providers kept pushing for a higher **Avg. Bitrate** across regions, managing to boost the metric year-over-year globally by 7.9 more percentage points than they did in 2020 vs. 2019. Significant advances were made in almost all regions and in Asia in particular, which saw a yearly increase 15.3 points higher than that of 2020.

Global change in Avg. Bitrate - VOD	2020 vs. 2019	2021 vs. 2020
	+3.2%	**+11.1%**

However, regions like the Pacific and the Middle East experienced more moderate increases in 2021, as, together with North America, they had a high bitrate to start with. North America and the Middle East were also the regions that increased video quality the most in the previous year along with Asia, which signals they are now getting closer to their target Avg. Bitrate levels.

AVG. BITRATE - VOD

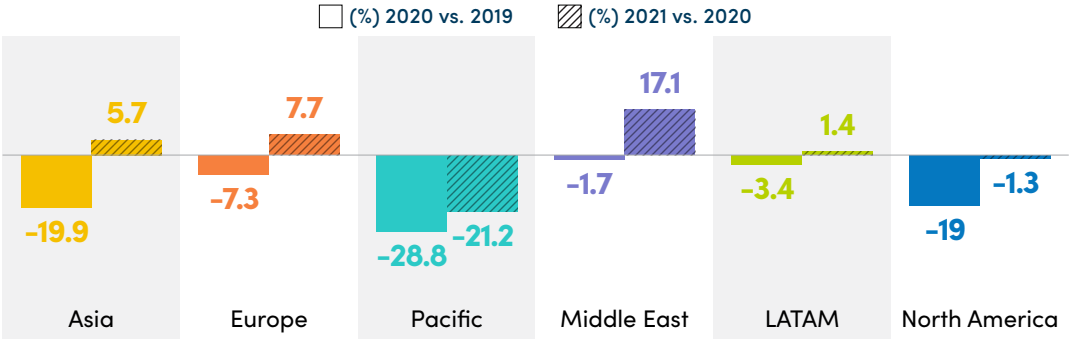


However, services changed their strategy to render higher streaming quality, increasing **Join Time** to allow for the video to load. Whereas globally, providers decreased Join Time by 8.8% in 2020 vs. 2019, 2021 saw an increase of 5% over the previous year.

Global change in Join Time - VOD	2020 vs. 2019	2021 vs. 2020
	-8.8%	+5.0%

All regions except for the Pacific and North America opted for a longer Join Time, especially the Middle East (+17.1%) and Europe (+7.7%).

JOIN TIME - VOD

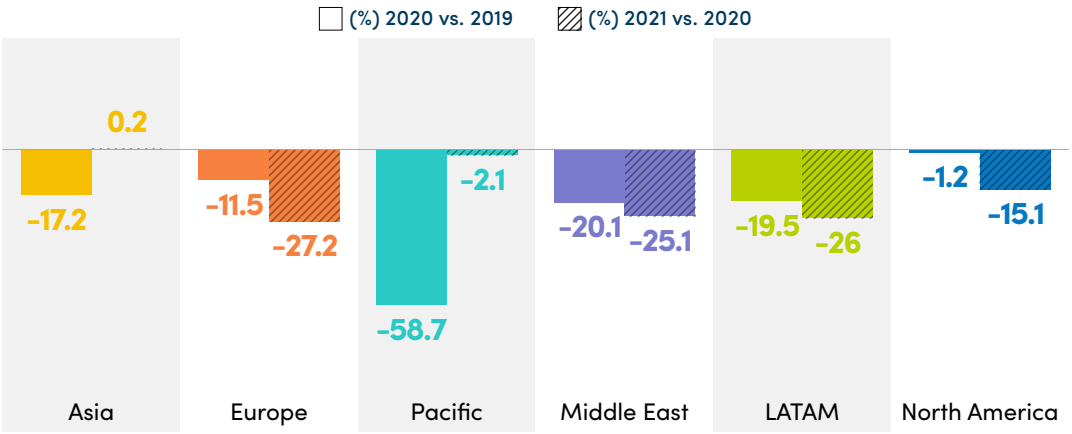


Accordingly, **Buffer Ratio** dropped by 22.4% on a global level and particularly in Europe (-27.2%), Latin America (-26%), and the Middle East (-25.2%).

Global change in Buffer Ratio - VOD	2020 vs. 2019	2021 vs. 2020
	-15.6%	-22.4%

North America experienced a more moderate decrease after reducing **Join Time** by 1.3% in 2021 vs. 2020. The Pacific region saw the lowest improvement in Buffer Ratio (-2.1%) after reducing Join Time by 21.2% in 2021.

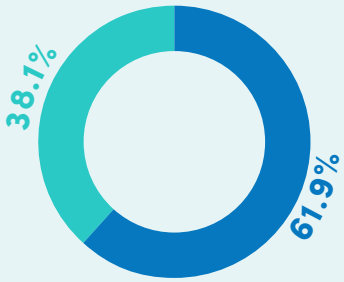
BUFFER RATIO - VOD



But services can only keep increasing **Join Time** so much until they reach the limit of user tolerance. The more users have to wait for the video to start, the higher the chance they exit the video player in search of something else to watch.

Therefore, we expect to see some consolidation sooner than later. Companies will have to balance the three metrics (**Bitrate**, **Join Time**, and **Buffer Ratio**) much more subtly to find the sweet spot.

What do you think viewers value more when it comes to the wait times/quality of content balance?

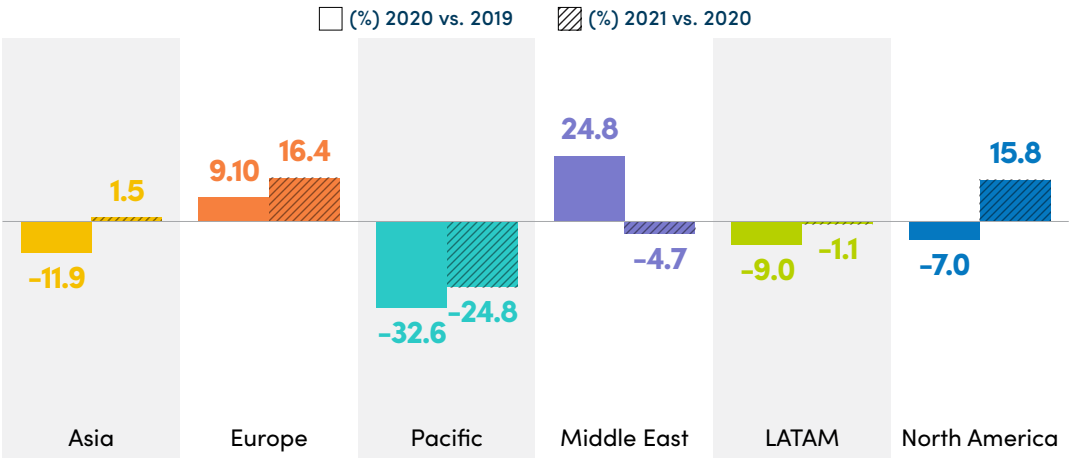


- Wait longer until the video start to get better quality content
- Sacrifice content quality to get the video started faster

How changes in Join Time impact user tolerance: the case of the Pacific

The effect that changes in **Join Time** have on viewer behavior can be clearly seen in the case of the Pacific region — the only one to experience significant drops in both Join Time and **Exit Before Video Starts (EBVS)** in 2021 vs. 2020. Our data demonstrate the link between the two metrics and illustrate how a lower Join Time results in fewer chances for the user to engage in zapping-like behavior.

EBVS - VOD



PACIFIC VOD

EBVS		Join Time	
2020 vs 2019	2021 vs 2020	2020 vs 2019	2021 vs 2020
-32.6%	**-24.8%**	**-28.8%**	**-21.2%**

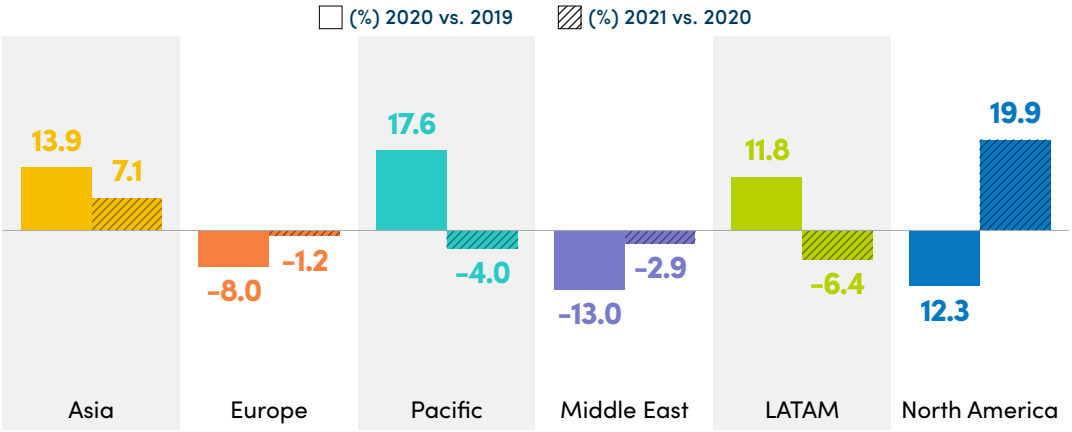
2.2 Linear TV - Global Insights

When it comes to consumption, Linear TV is a local business

In 2021, **Avg. Effective Playtime** per **Play** and service for Linear TV was up 3% on a global level. However, this upward trend is exclusively driven by Asia and, in particular, North America, with 7.4% and 19.9% increases respectively. Avg. Effective Playtime per Play fell the most in Latin America (-6.4%).

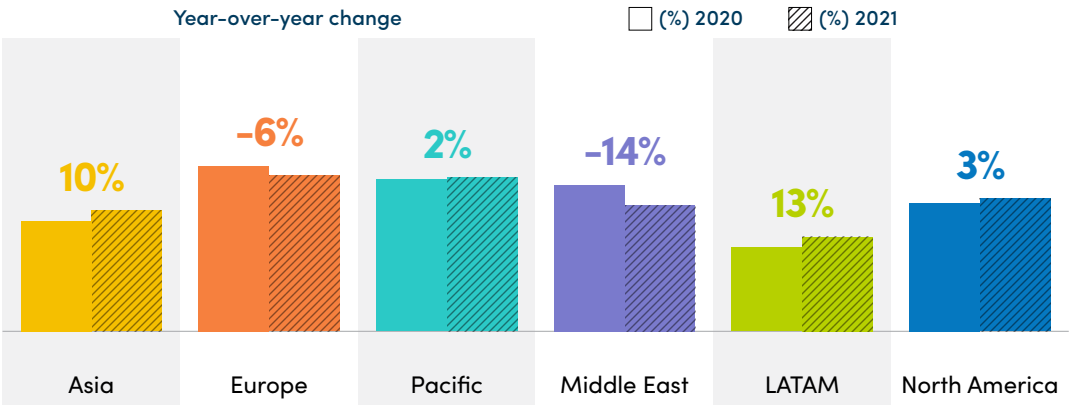
Global change in Avg. Effective Playtime - Linear TV	2020 vs. 2019	2021 vs. 2020
	-3.4%	**+3.0%**

AVG. EFFECTIVE PLAYTIME - LINEAR TV



Meanwhile, the **Avg. Daily Consumption** per user and service went up in every region except for Europe and the Middle East.

AVG. DAILY CONSUMPTION - LINEAR TV

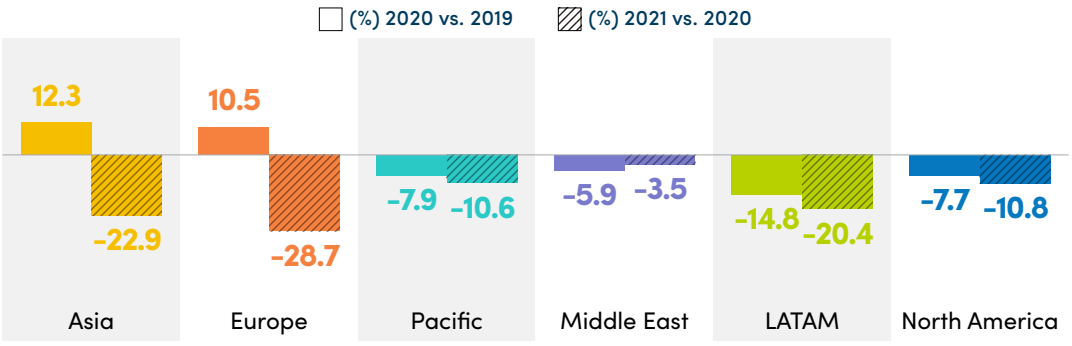


This mixed picture makes it hard to draw conclusions on global Linear TV consumption trends — a reflection of the local nature of Linear TV and how its consumption depends much more on local preferences and trends than VOD does.

Getting the hang of Linear TV quality

When it comes to quality, streaming providers seem to be getting the hang of Linear TV. **Buffer Ratio** fell in every region in 2021 vs. 2020, dropping by a global average of 21.5%.

BUFFER RATIO - LINEAR TV



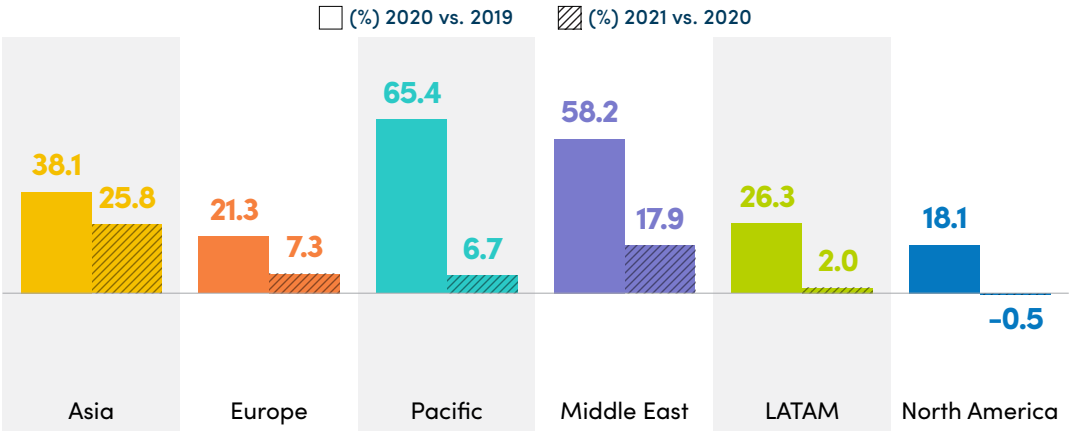
Europe, Asia, and Latin America were the regions that experienced the steepest decline in Buffer Ratio, with 28.7%, 22.9%, and 20.4% reductions respectively.

Global change in Buffer Ratio - Linear TV	2020 vs. 2019	2021 vs. 2020
	-1.3%	-21.5%

At the same time, the year-over-year increase in **Join Time** across all regions was not as pronounced as in the previous year. It increased 7.2% on a global level in 2021 vs. 2020, whereas it grew by 24.6% in 2020 vs. 2019. Asia and the Middle East were the only regions to show a significant increase in Join Time in 2021, experiencing 25.8% and 17.9% spikes respectively.

Global change in Join Time - Linear TV	2020 vs. 2019	2021 vs. 2020
	+24.6%	+7.2%

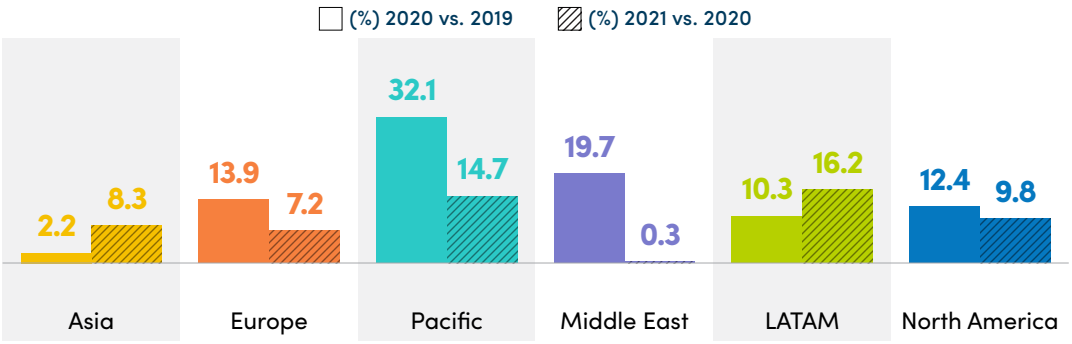
JOIN TIME - LINEAR TV



The **Avg. Bitrate** also grew at a slower pace in 2021, increasing by a global average of 8.8% when compared with the previous year.

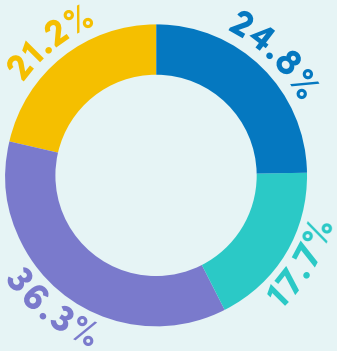
Global change in Avg. Bitrate - Linear TV	2020 vs. 2019	2021 vs. 2020
	+12.7%	+8.8%

AVG. BITRATE - LINEAR TV



All in all, this trend toward more moderate changes in quality-related metrics reveals that streaming providers are getting closer to figuring out the right formula for streaming linear video content. Whereas in 2020, providers tried various strategies to cope with the new situation, things are stabilizing now when it comes to improving the Quality of Experience for Linear TV streaming.

Have you changed your bitrate strategy during the last 12 months?



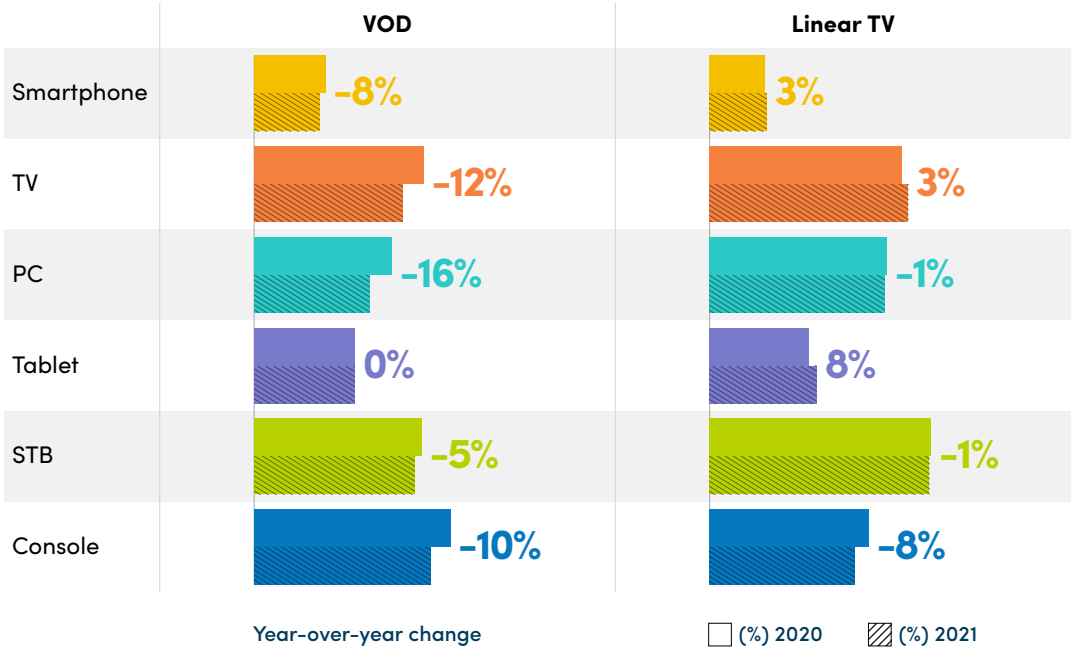
- Yes, increase the bitrate
- Yes, decrease the bitrate
- We haven't changed our strategy
- Don't know

2.3 Device Insights

Fiercer competition, especially on smartphones

In 2021, smartphones remained the device where users showed the lowest **Avg. Daily Consumption** per user and service for both Linear TV and VOD. They also experienced the sharpest decline in terms of **Avg. Effective Playtime** for VOD (-74%) and Linear TV (-61.9%) — all while remaining the most popular device in terms of user reach with 5.31 billion unique users globally (67.1% of the world's population).

AVG. DAILY CONSUMPTION PER USER & SERVICE

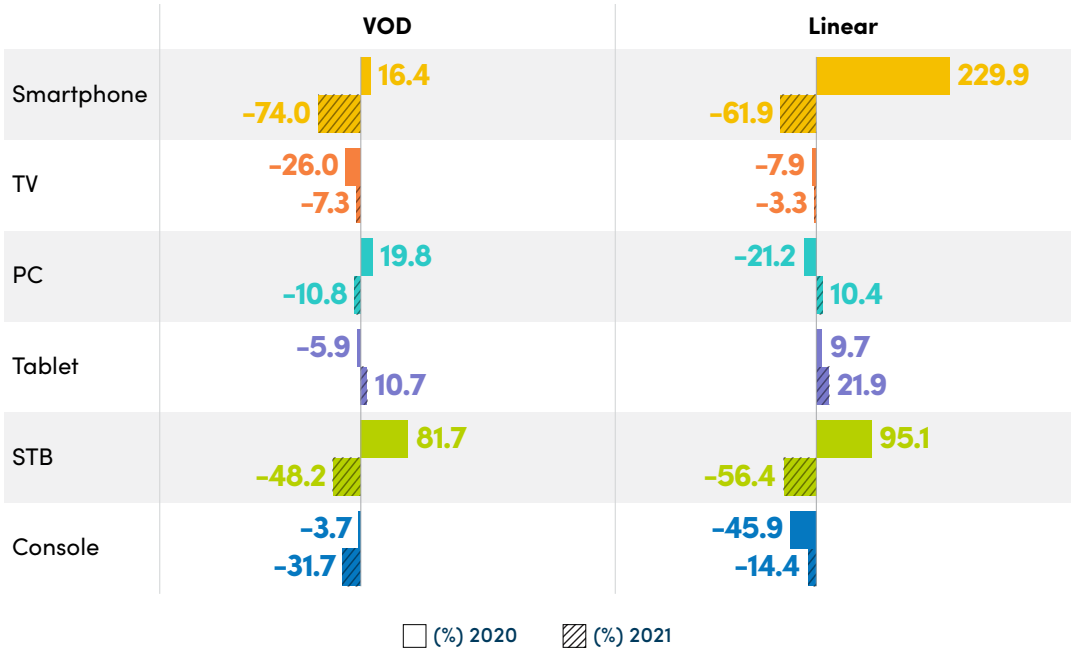


Altogether, these numbers indicate widespread, sporadic use of smartphones for streaming video in short sessions. This can be explained by the fact that video streaming is competing with many other forms of entertainment on mobile phones.

Social media, gaming, and live streaming platforms are all keeping viewers away from Linear TV and VOD content. Even Netflix admits that TikTok is one of its biggest competitors.

Also at play here is the fact that consumers are spending more time at home and therefore have no need to use their smartphones to stream video on the go.

AVG. EFFECTIVE PLAYTIME (MINS)



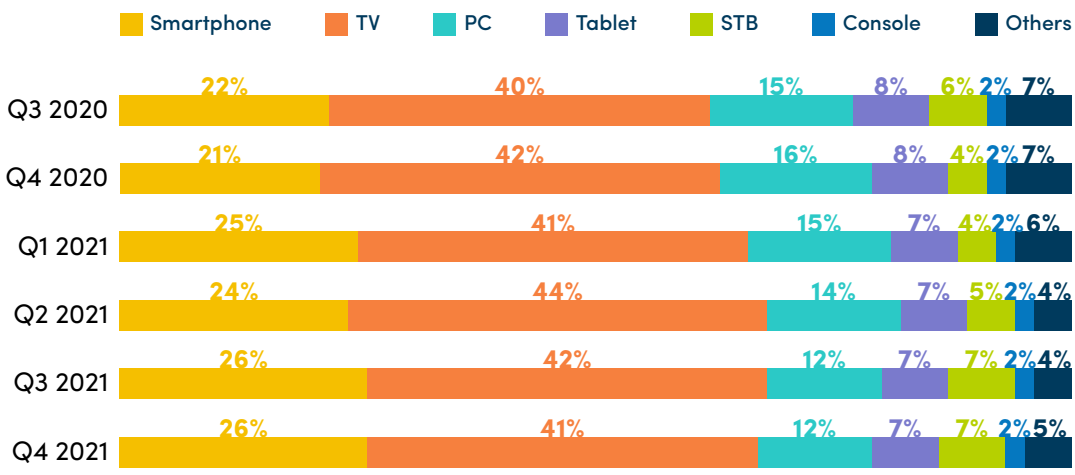
When looking at VOD vs. Linear streaming, smartphones and consoles are the only two devices to show a higher increase in **Avg. Daily Consumption** per user and service for VOD than for Linear TV. This suggests that the Linear viewing experience is not preferred by users interacting with these devices. Enter the big screen.

Big screens still reign supreme

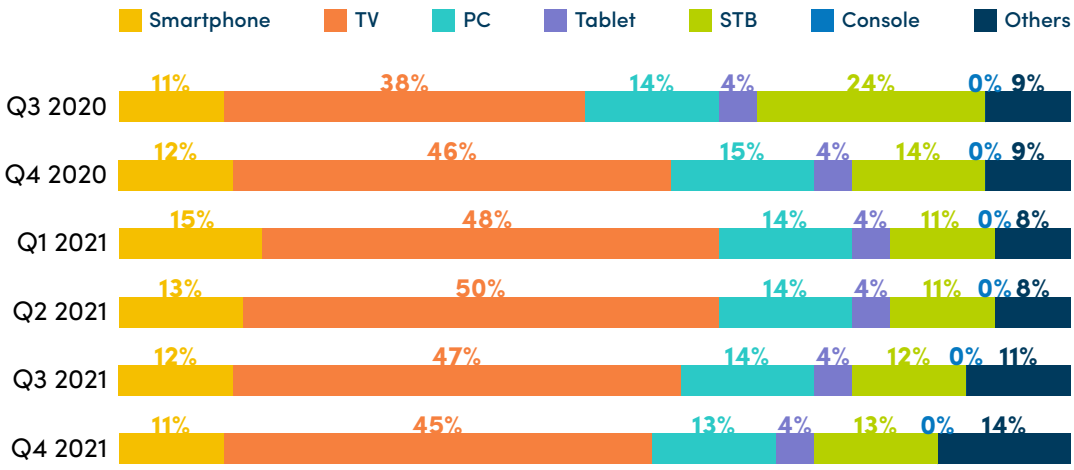
Streaming on the go had been on the rise until the advent of Covid-19 launched a full-blown TV renaissance to the detriment of mobile devices. Left stuck at home, consumers decided to upgrade their TV sets to enjoy the big-screen experience. And it looks like things are staying like that for the time being, with 51% of the world's households expected to own a smart TV by 2026.

TVs, PCs, and set-top boxes show consistently higher **Avg. Daily Consumption** per user and service compared with handheld devices (Tablets and Smartphones) — for Linear in particular, but also for VOD. This implies that, when users tune in to watch content on these devices, they are watching for longer sessions.

VOD - DEVICE SHARE (HOURS)



LINEAR TV - DEVICE SHARE (HOURS)



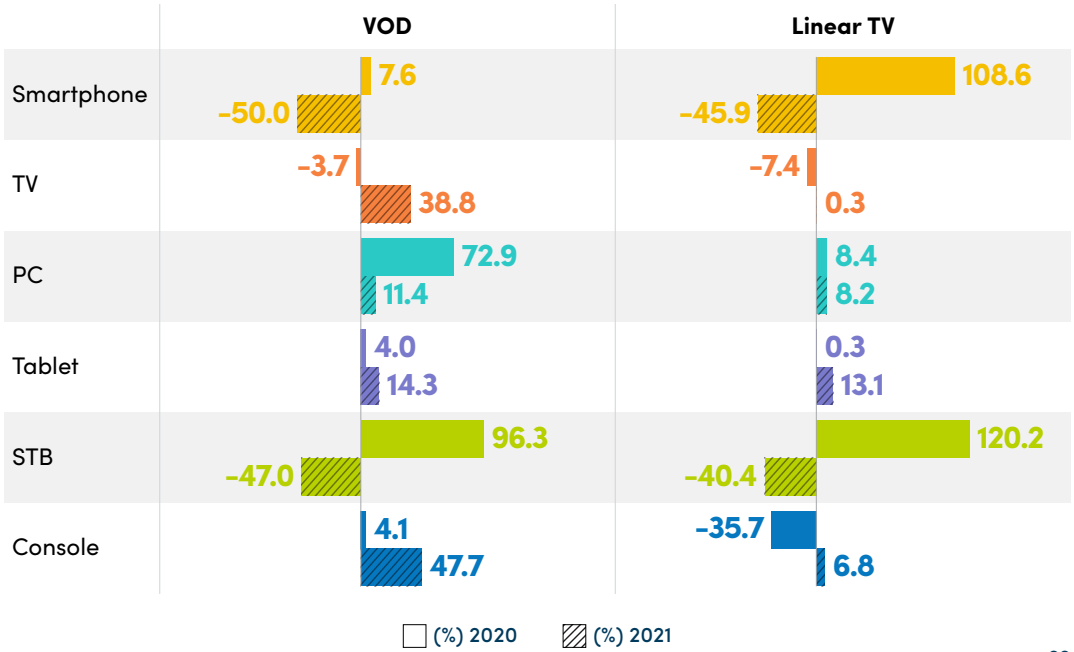
When looking at the share in hours that each device represents, TVs reigned undisputed throughout 2021, ending with a 45% share in the last quarter. They are followed by set-top boxes and PCs, both of which finished the year with a 13% device share, and smartphones, with an 11% share.

Quality across devices

In 2021, smartphones and set-top boxes saw the biggest year-over-year decrease in **Avg. Bitrate** of all devices for both VOD and Linear TV. Smartphones saw a decrease of 50% in Avg. Bitrate for VOD and one of 45.9% for Linear, while set-top boxes saw their Avg. Bitrate for VOD fall down by 47% and that of Linear TV by 40.4%. These changes mean that services are prioritizing continuity rather than quality on these devices.

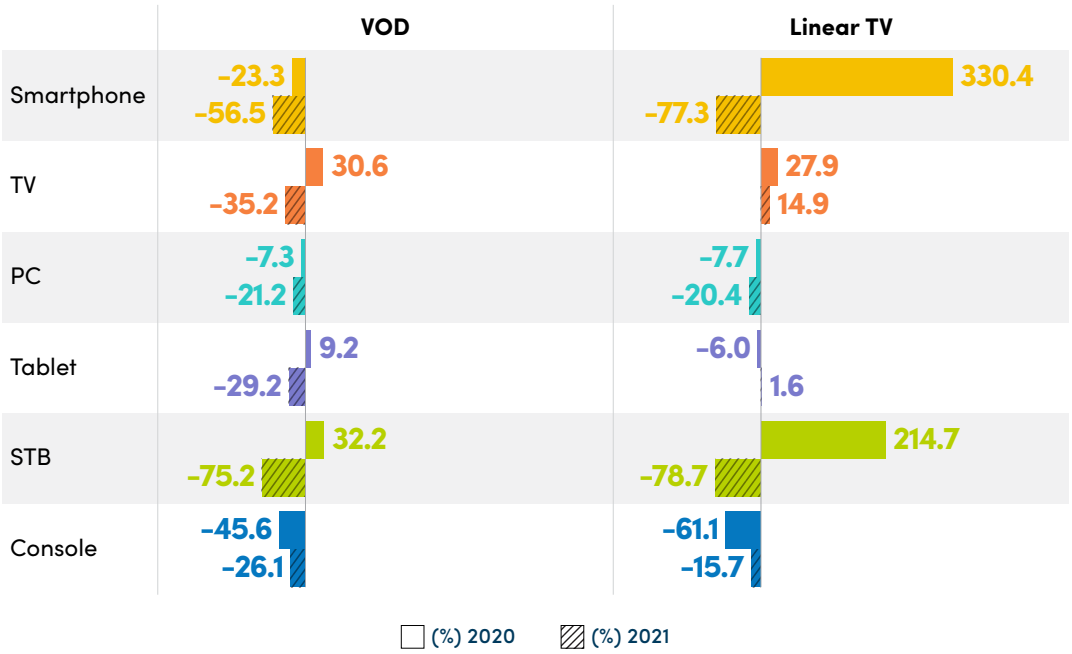
Meanwhile, TVs and consoles experienced an increase in **Avg. Bitrate** of 38.8% and 47.7% respectively for VOD. This signals the prioritization of quality for these devices and this content type.

AVG. BITRATE



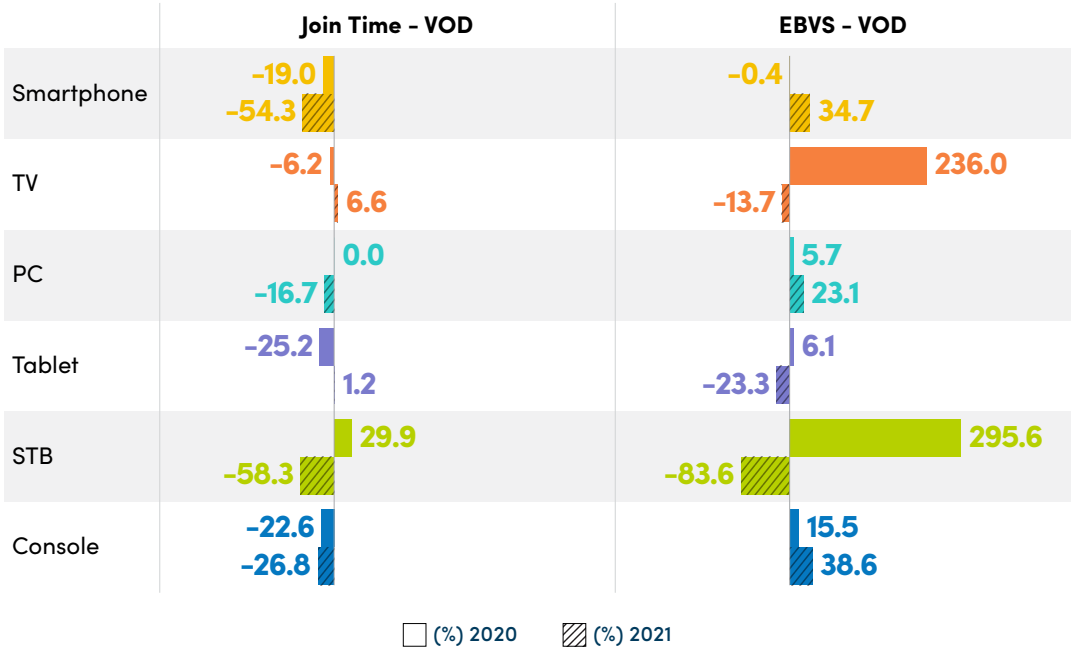
Buffer Ratio decreased across all devices for both VOD and Linear. For VOD, set-top boxes experienced the biggest decrease (75.2%), followed by smartphones (56.5%), and TVs (35.2%). For Linear, smartphones and set-top boxes were the only devices that saw a substantial drop in Buffer Ratio in 2021 vs. 2020, with 77.3% and 78.7% decreases respectively.

BUFFER RATIO



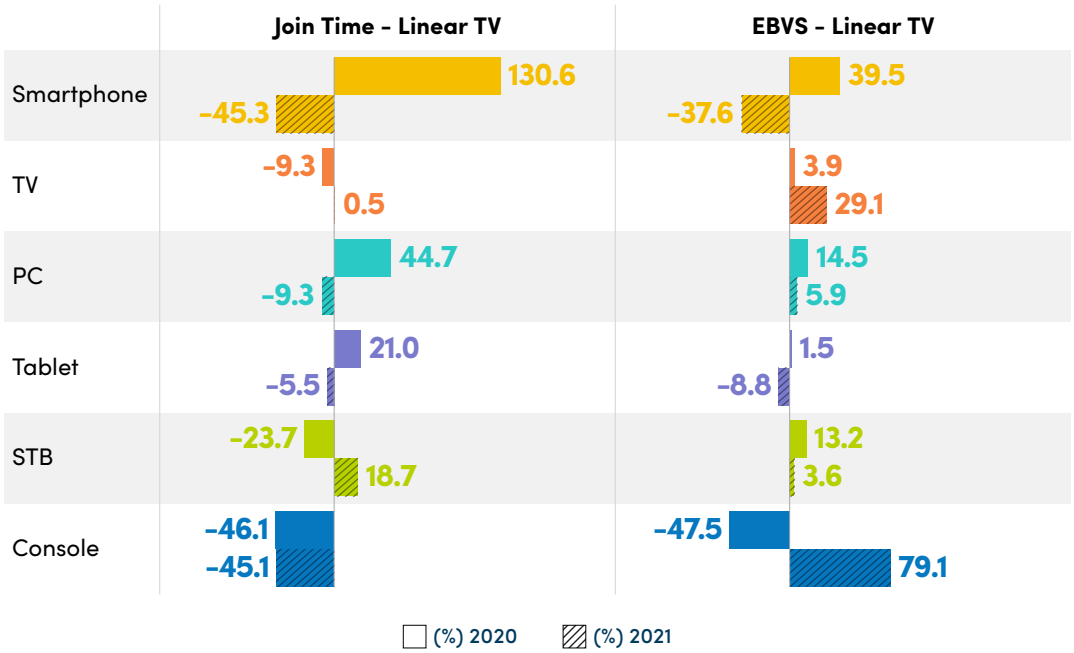
For VOD, set-top boxes experienced the biggest decrease in **Join Time** (-58.3%) and **Exit Before Video Starts or EBVS** (-83.6%). Smartphones also saw a considerable drop in Join Time (-54.3%) in the same time period.

JOIN TIME & EBVS - VOD



For Linear TV, smartphones experienced the biggest decrease in **Join Time** and the biggest decrease in EBVS. This means providers are optimizing quality for these devices. It could also be a reflection of improvements made on wireless Internet speeds and the deployment of 5G networks.

JOIN TIME & EBVS - LINEAR TV



2.4 The rise of sports streaming

Let the games begin (and never end)

Sports streaming continued its rise in 2021. Sporting events were back at full throttle after the initial phases of the pandemic, and audiences were eager to partake in the collective experience from the comfort of their homes – whether it was through Linear TV or on-demand services. Accordingly, **Avg. Effective Playtime** for each **Play** increased for both VOD (+12.3%) and Linear (+23%) in 2021 compared with 2020.

	VOD - 2021 vs 2020	LINEAR - 2021 vs 2020
Avg. Effective Playtime (mins)	**+12.3%**	**+23.0%**

A winning quality lineup

But it was not only consumption that received a boost when it comes to sports. The most relevant quality metrics (**Avg. Bitrate**, **Buffer Ratio**, **Join Time**, and **EBVS**) all showed significant improvements for both VOD and Linear TV.

Avg. Bitrate went up 4.8% for VOD in 2021 vs. 2021, while it increased 6.2% for Linear TV.

	VOD - 2021 vs 2020	LINEAR - 2021 vs 2020
Avg. Bitrate (mbps)	**+4.8%**	**+6.2%**

Join Time dropped 21.3% for VOD year over year, while Linear TV saw it reduced by 14.6%.

	VOD - 2021 vs 2020	LINEAR - 2021 vs 2020
Join Time (s)	**-21.3%**	**-14.6%**

In turn, the drop in **Join Time** had a beneficial impact on **Exit Before Video Starts (EBVS)**, lowering the metric by 15.5% for VOD and 1.3%n for Linear TV.

EBVS (%)	VOD - 2021 vs 2020	LINEAR - 2021 vs 2020
	-15.5%	**-1.3%**

All in all, these quality tweaks helped **Buffer Ratio** improve by 14.2% and 24.6% for VOD and Linear TV respectively.

Buffer Ratio	VOD - 2021 vs 2020	LINEAR - 2021 vs 2020
	-14.2%	**-22.6%**

We expect sports streaming consumption and quality to continue rising in 2022 as providers put a greater focus on this type of content. It will be interesting to keep a close eye on the space to see if these upward trends reach some sort of peak in the months to come.

3. The year ahead

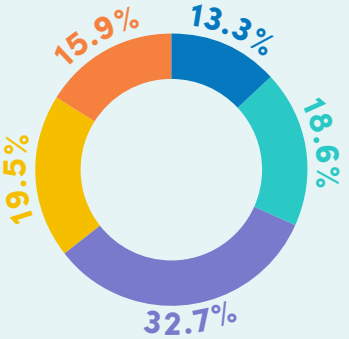
3.1 Back to the old normal?

The advent of Covid-19 changed viewer behavior across the globe. Two years into the pandemic, these video streaming trends persist — even as live events returned and lockdowns were lifted with the end of each consecutive Covid wave. Yet there is no telling if this situation will last as we dive deeper into the year.

Some countries are lifting most restrictions as new Covid variants are no longer considered a threat to society. Yet consumers might end up spending more time at home in the long term if remote work becomes the norm.

Will the new normal revert to the old as the world re-opens?

Seeing the impact the pandemic had on streaming consumption, do you think the following consumption trend is here to stay? Users prefer to stream video on big screen devices (TV/Smart TV) rather than on handheld devices (Smartphones and phablets).



Online video providers will have to closely monitor evolving viewer behavior and act proactively if they want to maximize user engagement in the post-pandemic world.

3.2 The year of sports

Live sporting events are back at full speed, and TV remains the best option to enjoy them in Covid-related restrictions on the number of spectators. That's why some of the biggest players in the online video streaming space can't wait to join the party. In the U.S., for instance, behemoths including Disney, Hulu, and Amazon have expanded their streaming deals with the National Football League – with Amazon having obtained exclusive rights to Thursday Night football.

Starting with last month's Winter Olympics, 2022 is a big year for sports. In addition to yearly classics such as the Super Bowl or the UEFA Champions League, sports fans will have plenty to look forward to with major global events like the Commonwealth Games or the FIFA World Cup – the latter taking place in Winter instead of its traditional Summer dates so that players and spectators can avoid the blazing heat of Qatar.

To reap the rewards of this surge in live sports, content and service providers must tackle head-first the challenges of streaming live sports to meet viewers' quality expectations. Chief amongst these challenges is ensuring low latency, which can be achieved by implementing a smart multi-CDN strategy.

3.3 Multi-CDN and smart content distribution

Video streaming providers leverage at least one content delivery network (CDN) to optimize content distribution, ensure a good Quality of Service, and avoid blackouts.

However, relying on a single CDN provider is not always the best option considering these services experience regular outages — a no go in such a big year for sports as is 2022 — and don't offer optimal coverage for all regions. Hence, industry players are increasingly moving toward a multi-CDN strategy that allows them to switch between CDNs to avoid failures and optimize the quality of their streaming.

Yet most CDN balancing solutions available today were not designed with video

streaming in mind and are fairly limited when it comes to letting providers choose the criteria under which to balance their loads.

The need emerges for providers to consider a smart content distribution tool that combines automation and deep customization to maximize Quality of Service and efficiencies — from ensuring they meet their monthly quota for each CDN to balancing CDNs based on regional and business requirements.

3.4 New paths to monetization

Faced with an overwhelming amount of subscription-based VOD services (SVOD), consumers are beginning to experience subscription fatigue — so much that Deloitte predicts 150 million subscriptions cancellations in 2022.

In parallel, long-established players are reaching peak user levels as they consolidate their market share and lose viewers to the competition. Netflix just added the lowest number of subscribers since 2015 and is hiking prices to safeguard revenue growth. And it's not the only one.

Content providers are exploring new ways of monetizing their content, and streaming advertising seems to hold the key. The industry is turning toward advertising-based video on-demand (AVOD) models, and free ad-supported streaming TV services (FAST channels) keep popping up. Global AVOD revenue alone is expected to grow by 144% between 2020 and 2026, while tripling in the US during the same period.

In this context, understanding how users engage with advertising and their tolerance to ads is critical. So is ensuring proper ad insertion and the fulfillment of the target ad fill rate. Resorting to the right advertising analytics tool will be a decisive factor as providers test their monetization model in search of the winning strategy.

3.5 Data is key, but so is compliance

Content is king, but experience is queen. And only real-time data insights can guarantee a good experience.

However, tightening data privacy regulations in Europe are forcing US software vendors and their buyers to re-think their data collection and processing for the region. Austria's data regulator recently ruled the use of Google Analytics illegal, and other European countries may soon follow.

At the heart of the problem lie US surveillance laws and the fact that U.S. intelligence agencies could theoretically access any EU consumer data that is moved into the country. In the case of Google Analytics, Austria's data regulator found that the company was not doing enough to anonymize and protect Austrian citizens' data against potential access by US intelligence actors.

As long as the EU and the US don't agree on a new data flow pact to replace Privacy Shield, video streaming providers will have to be extremely careful when choosing their video analytics solution. Ensuring that your analytics software vendor is fully compliant with GDPR and is taking the right measures to safeguard European consumer data has become an absolute priority. That can be done by, for example, conducting due diligence or seeking vendors with information security certifications such as ISO/IEC 27001.

3.6 AI to play a pivotal role

Like in many other sectors, Artificial intelligence is set to play an increasingly important and transformative role in the streaming industry in the years to come.

From automated audience segmentation and content recommendations to delivery network optimization, AI offers countless benefits and opportunities for video streaming providers looking to increase efficiencies and gain a competitive advantage.

But when it comes to video analytics, AI is transforming the way we monitor and analyze Quality of Experience and Quality of Service data. Smart alerting is becoming key to detect any issues as or even before they arise, while natural language processing and voice control are changing how data insights can be searched.

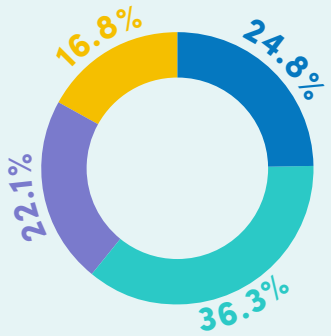
3.7 Adjusting to new entertainment preferences

Entertainment users are no longer fully satisfied with linear, one-way content experiences. Whether it is by chatting in real-time with other viewers during a live stream, or choosing what should happen next in a TV show, consumers increasingly want to interact with their content and personalize their experiences. That explains the gaming industry's growing share of the entertainment market.

On top of these new developments, traditional streaming providers are also undergoing massive changes. The irruption of new streaming verticals like documentaries and children's content are becoming more and more important — especially in regional markets. Additionally, the surge in M&A deals that started last year is expected to continue swiping through the space in 2022.

Video streaming providers will have to keep a close eye on these video streaming trends and understand what consumers want from their content and services if they want to stay relevant.

How important is the following factor in your customer retention strategy? "Providing content that is relevant for the target audience"



4. About NPAW

NPAW is the leading video intelligence company helping online streaming services grow. A global leader in its space, NPAW has over a decade of experience developing groundbreaking and scalable analytics solutions to optimize full service performance and user engagement to build media experiences that maximize revenue. Its suite of integrated analytics provides advanced, correlated visibility of platform performance, audience behavior and navigation, advertising and content efficiency in real-time to support data-driven decisions.

NPAW serves more than 150 video-based services and processes over 100 billion plays per year worldwide. Established in 2008 by co-founders of video streaming service Wuaki TV (later sold to Rakuten), NPAW has offices in Barcelona and New York with teams throughout the world. For more information, visit www.npaw.com.

For more information about the measurements you can make with NPAW, contact us here to set up a free consultation with a streaming video expert.

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