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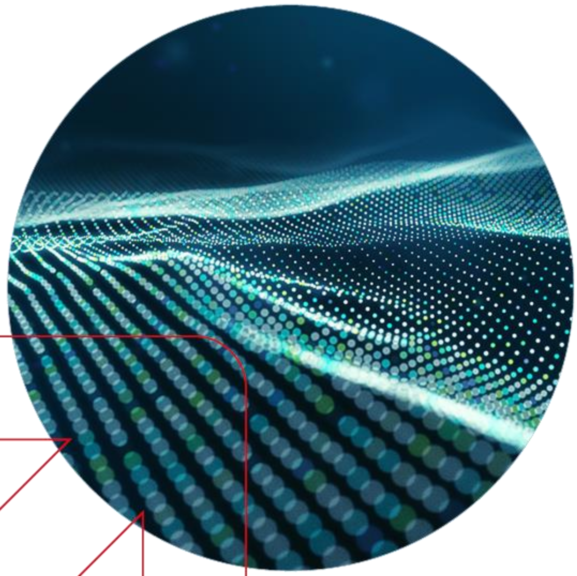

A first analysis of the Audio and Video streaming markets in Germany

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1 Executive summary

Listening to music, audio books and radio over the internet (audio streaming) and viewing video, linear TV, sport and other content over the internet (video streaming) has become a part of our daily life. For this study we have analysed the usage of audio and video streaming in Germany from Q1 2020 until Q3 2021. The main questions beforehand were whether we would see a continued increase of usage due to Covid and whether developments in audio and video streaming would be similar.

Audio streaming

In 2021, each month we observed around 45 million active users of audio streaming apps in Germany, resulting in an aggregated total of 58 billion minutes per month of streaming music, web radio, podcasts and other audio. On average, each active user listened at least 25 minutes per day per app but this time can go up to 60 minutes per day for certain apps. Especially users of radio streaming and Spotify had the longest listening time. As most people use on average almost 3 different audio streaming apps, the total listening time per day increases further.[1]

Usually, consumers start with downloading an app on their smartphone or tablet, trying out a free version and thereafter possibly subscribing to a premium variant of the respective service. In 2021, the three most downloaded audio streaming apps were Spotify (30% of all downloads), Amazon Music (14%) and YouTube Music (11%), with each between 300,000 to 800,000 downloads each month. Overall, in 2021, the aggregated number of downloaded apps decreased with 5%.

However, downloading an audio streaming app does not automatically mean that one becomes an active user. This is illustrated by the differences between downloads and the number of monthly active users. Long-time established apps like Spotify have more active users (46% of all users of audio streaming apps) than downloads (30%) most likely due to an existing customer base. On the other side, new or specialised apps could have more downloads than usage due to consumers trying the app, but thereafter deciding not to use it further.

Eventually, customers will start using certain services regularly resulting in minutes of listening time per month. Due to the large number of Android devices in the German market, 70% of all aggregated audio streaming originates from Android and only 30% from Apple's iOS based devices. As this mimics the market shares of Android versus iOS devices in Germany, the amount of audio streaming seems to be similar for both ecosystems. Furthermore, it is observed that the use of certain apps for audio streaming is quite concentrated in Germany with Spotify as undisputed market leader with 59% of the sum of all monthly minutes, followed on distance by Amazon Music (15%), YouTube Music (15%) and Samsung Music (5%). Usage of audio streaming platforms via browsing occurs, but is very limited (maximum 3% of the aggregated monthly usage).

Looking at the trends, more people in 2021 consumed audio streaming, as the number of monthly active users increased by 8% compared to 2020. However, the total aggregated usage of audio streaming still decreased with 3% as the average active user spent less listening time per app (up to -30% for certain apps). Despite this general trend, Spotify and Amazon Music maintained their pole positions in total usage, but if we look also at the other aspects (downloads and active users), then YouTube Music and Audible are the most consistent winners in the top 5 audio streaming platforms in Germany for 2021.

1 WIK annual survey among German consumers, 2022

Video streaming

Video streaming apps in Germany in 2021 had around 70 million active users each month, watching on-demand content like (uploaded) video and sports but also live streams like linear TV or sports events over the internet. This is considerably more than the 45 million active users for audio streaming apps. However, this is because people who stream video, use on average up to 5 different apps versus 3 for audio streaming.[2] This is due to the more fragmented (content) market for video compared to music. Hence, this results in around 14 million unique users of video streaming, which is less than the 16 million for audio streaming.

On average, German active users watched around 30 minutes per day per app, but this varied between 10 minutes for the least popular app to more than an hour for the most popular video streaming apps like Netflix and YouTube. As users of video streaming use on average around 5 different apps, the total watching time per day increases further.

In 2021, the most downloaded video streaming apps in Germany were Amazon Prime Video (16% of all downloads), Netflix (16%), Disney+ (13%), Joyn (11%) and YouTube (8%) with roughly 300,000 to 650,000 downloads each month. This picture is distorted as Google's YouTube comes pre-installed on Android devices. As a consequence, this app had the highest download numbers in 2021 on Apple's iOS devices (26% of all downloads) versus only 1% on Android devices. When assuming the same proportion of downloading of YouTube on Android (i.e. assuming no pre-installation on Android devices), then this would most likely be the most downloaded application.

In general, the subscription model of video on demand prevails but the combinations with free video on demand is also popular both on Android and iOS. Overall, and comparable with audio streaming, the number of app downloads decreased for video streaming (-2%).

Also for video streaming, downloads do not automatically convert into active usage. Long time established app YouTube had 59% of all monthly active users, but only an estimated 26% of all monthly downloads in 2021 even after correction of pre-installation on Android.[3] This is most likely due to a loyal customer base. On the other end, there are also apps with proportionally more downloads than active users like Disney+ (10% versus 3%) and Joyn (8% versus 2%), which could be due to new customers.

Active usage of the app results in viewing times in minutes per month. In respect to usage, in Germany, video streaming via Android devices plays an even larger role than for audio streaming; 82% of all monthly aggregated video streaming originates from Android devices versus only 18% from Apple iOS devices. Considering the market share of Android mobile devices (71% in 2021) in Germany, this suggests that Android devices are linked to more active usage of video streaming apps compared to iOS devices.

The total aggregated usage of video streaming apps in Germany was in 2021 also more concentrated than for audio streaming. The YouTube app captured 59% of all monthly usage, followed by Netflix (19%) and Amazon Prime Video (13%). In addition, there was significant (additional) usage of YouTube via a web browser (almost 24% of all YouTube video usage via the app). This is exceptional as usage via a browser for other video (but also audio) streaming platforms is at maximum around 4% of all usage. This could have different

2 WIK annual survey among German consumers, 2022

3 The original % for proportional downloads in an average month in 2021 have been amended by extracting the effect of pre-installing the YouTube video streaming app on Android devices. The original data on downloads showed higher % for all other apps than YouTube. Correcting the effect of pre-installation of YouTube on Android devices, was done by assuming that it would proportionally be downloaded the same on Android as on iOS (26%) as there is no pre-installation on iOS of YouTube.

reasons; because of history (YouTube started as a website) but also because browsing YouTube enables more functions compared to using the app (for example background usage, picture in picture but also the use of plug-ins to block ads on YouTube while viewing the freemium version).

Looking at the trends in 2021, usage of video streaming has grown in 2021 with 11%, not only due to the growing popularity in terms of monthly active users (+6%) but also due to a slightly increased viewing time (+1%). This differentiated the video streaming market from the audio streaming market where listening time decreased up to 30% for certain apps. We conclude that 2021 has been a good year for the large video streaming platforms in Germany, but YouTube seems to be the winner as it performed consistently better overall on number of active users, viewing time per active user and total usage. The relevance of each indicator however depends on the business model. Subscription video on demand platforms are benefitting from a higher number of active users where free video on demand providers (or combined with subscription) mostly benefit from longer usage, and hence more possible advertising time.

Overall, we conclude that the trends on the markets for audio and video streaming are not similar. Despite Covid, there was less listening time for audio apps overall where viewing time for video streaming grew. While 2 out of the top 3 providers on both markets are the same (YouTube, Amazon), their ranking differs. The fact that the top 4 players solidified their position is similar in both markets.

2 Audio streaming in Germany

2.1 General picture of audio streaming

On average, in Germany, there are more than 45 million monthly active users of audio streaming applications listening to music, web radio or audio books. Considering that people who stream audio, use on average almost 3 audio apps, either with subscription and/or for free, this results in around 16 million unique users each month or around 20% of the whole population in Germany.[4]

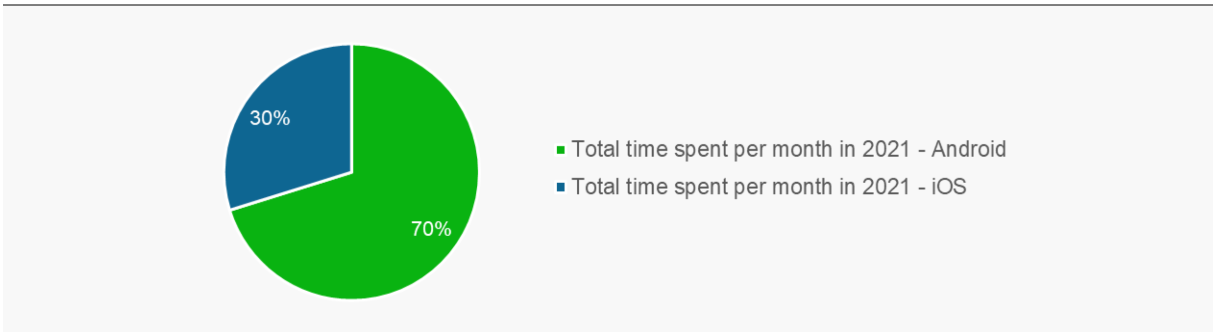
Looking at the streamed audio content (see also later Table 2), music was the most popular content in 2021, followed by podcasts, e-books and web radio. In the top 20, only SoundCloud offered user generated audio content.

The number of monthly active users has grown in 2021 by 8% while the overall monthly usage of audio streaming apps has decreased by 3% due to less time spent per app per month. Also the downloads (updates excluded) saw a 5% decrease in 2021.

Overall, in Germany in 2021, people spent 58 billion minutes in an average month on apps listening to music, audio books, podcasts or e-books. Each active user listened on average at least 25 minutes per day per app but this time can go up to 60 minutes per day for certain apps, which makes clear how much audio streaming has become part of their lives. As noted above, people are using on average almost 3 audio streaming apps, so the total listening time per day for active users increases further.

The following diagram shows, due to the high number of devices with the Android operating system in the German market, that 70% of all aggregated usage of audio streaming apps for an average month in 2021 came from Android devices versus 30% from iOS devices. As the app usage distribution over Android and iOS mimics roughly the market shares of Android and iOS devices in Germany, the amount of audio streaming usage seems to be similar for both ecosystems.[5]

Figure 1 Audio streaming apps – distribution of usage per operating system in Germany – 2021



Source: WIK, based on Statista

4 A 2022 WIK survey among German customers revealed that on average 2,8 audio streaming apps have been used in the previous 4 weeks. Furthermore, there were 82 million citizens in German in 2021. Source: www.populationof.net/germany/

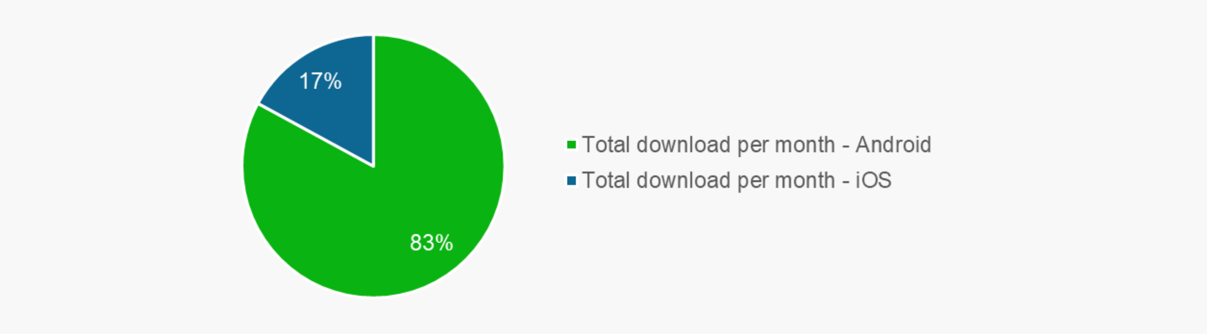
5 Share android operating system versus iOS is for smartphones in 2021 (70/30%) and for tablets (60/39). Source Statista.

2.2 Downloading of audio streaming apps

Usually, consumers start with downloading an app on their smartphone or tablet, trying out a free version and thereafter possibly subscribing to a premium variant of the respective service. Therefore, downloading an app does not necessarily mean that someone is going to use it. Furthermore, certain apps from Google and Apple are pre-installed on respectively Android and iOS devices, which distorts the picture. Nevertheless, the download figures can be a good indication for (future) popularity of a service. Therefore, in this section we compare the download behaviour and thereafter analyse the actual usage of audio streaming services in Germany.

To describe the dimension of downloading in 2021, the three most popular audio streaming apps in Germany across all Android and iOS devices were Spotify (30%), Amazon Music (14%) and YouTube Music (11%).[6] These apps were downloaded roughly 300,000 to 800,000 times per month, where apps outside the top 10 are downloaded less than 50,000 times per month. The following figure shows the distribution of all monthly downloads of audio streaming apps across Android and iOS devices.

Figure 2 Distribution of downloads for audio streaming apps over Android and iOS devices – 2021



Source: WIK, based on Statista

This means that there are roughly 5 x more downloads of audio streaming apps on Android devices than on Apple iOS devices. Even considering the high market share of Android versus iOS devices in Germany (71/28)[7], there are still proportionally more downloads from Android devices than from iOS devices.

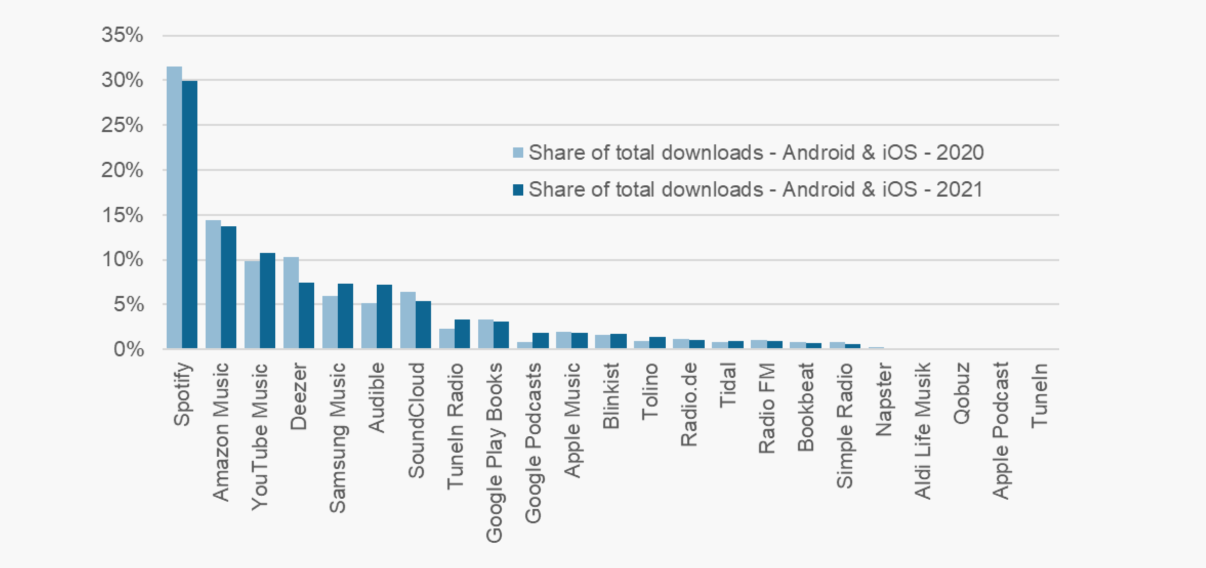
Furthermore, the relevance of the Android platform (in terms of downloads) has increased in 2021 as this factor was 4,5 in 2020. This is due to the stronger downward trend for downloads on iOS devices. In 2021, looking at the number of downloaded apps across all devices, downloading decreased with 5% compared to 2020, but this trend applied even more to the iOS platform (-10%) compared to the Android platform (-4%).

The next figure shows the most downloaded audio streaming apps in Germany for Android and iOS based devices together for two consecutive years to capture the development at application level. The percentages show the proportional share of all downloads of a specific app both on Android and on iOS devices in Germany.

6 This is without considering the pre-installation of YouTube Music on newer Android devices since it has become Google's default music player in 2020.

7 For 2021 in Germany: 71% Android mobile devices versus 28% ioS mobile devices and 1% other. Source: Kantar via Statista 2022.

Figure 3 Most downloaded audio streaming apps in Germany for 2020/2021



Source: WIK, based on Statista

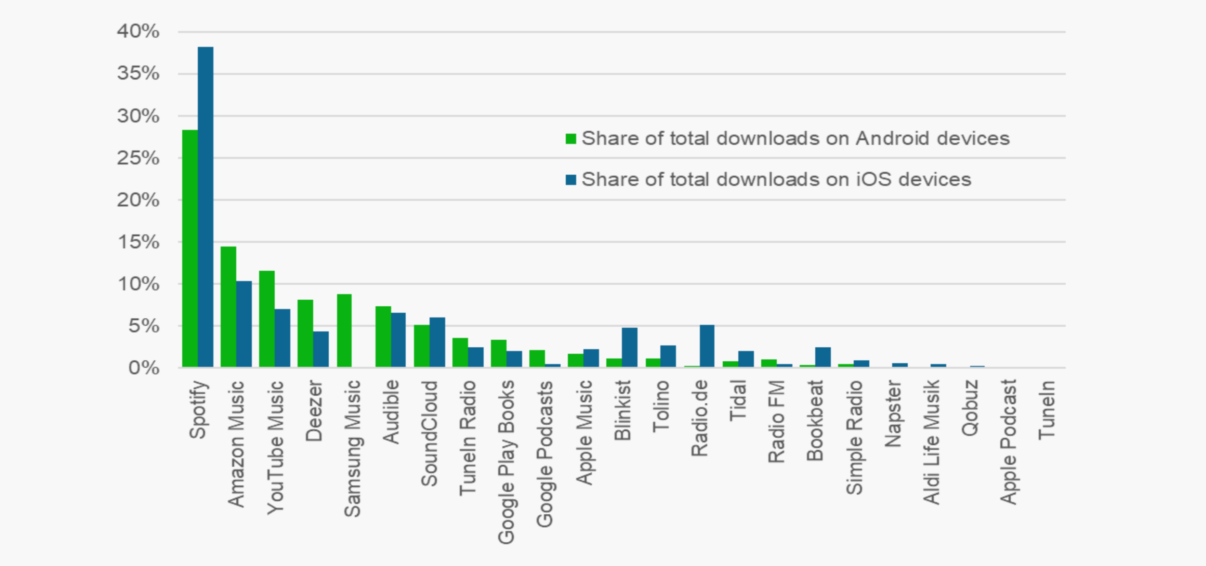
The general 5% decrease in downloads in 2021 is reflected in decreased downloads for Spotify and Amazon Music, Deezer and SoundCloud. However, the number of downloads did increase for YouTube Music, Samsung Music and especially Audible.

What this graph however is not showing, is that download behaviour can vary between Android and (Apple) iOS devices due to customer preferences but also the pre-installation of certain apps on Android and iOS devices. This is analysed further in the next paragraph.

2.2.1 Differences in download behaviour between Android and iOS

In order to see whether there are different patterns for Android versus iOS devices, the following figure compares the most downloaded audio streaming apps in 2021 for Android and iOS in separate colours. The percentages show the proportional share of all downloads for either Android or iOS devices. Due to the higher market share of Android devices in Germany (around 70%) versus iOS devices, this implies that the same proportional share for Android as for iOS in the graph represents a higher absolute number of downloads.

Figure 4 Most downloaded audio streaming apps in Germany for 2021 (Android vs iOS)



Source: WIK, based on Statista

Before we discuss the differences between downloading on Android versus iOS devices, we note that there are also common aspects. Both on Android and on iOS, the download behaviour is quite concentrated, The top 5 downloaded apps constitute around 70% of all monthly downloads. Furthermore, the top 3 on both ecosystems are the same (Spotify, Amazon Music and YouTube Music), however popularity (in terms of downloading behaviour) for the same app can be significantly different between the two ecosystems. This can be due to customer preferences, but could also be due to pre-installation of Google and Apple audio streaming apps, which will be discussed in the next paragraph.

In respect to the differences, we start with the 'third party' audio streaming apps, which are not linked to either Google or Apple and hence are not pre-installed on any device. Therefore, differences in downloading would mainly show a difference in consumer preference. The most downloaded audio streaming app Spotify has for example many more downloads proportionally on iOS devices compared to Android and number 2, Amazon Music, is on the other hand proportionally less downloaded on iOS. This makes the position of Spotify versus Amazon Music (in terms of downloads) almost twice as strong on iOS compared to Android (larger by factor 4 versus factor 2). Furthermore, apart from SoundCloud and some apps outside the top10, also the other main competitors of Spotify, Amazon Music and Deezer, are much smaller (in terms of proportional downloads) on iOS than on Android.

Other differences between the two ecosystems are the popular free service Samsung Music on Android, the stronger positions of Deezer on Android versus iOS (8% vs 4%) and vice versa the stronger positions of Blinkist (5% vs 1%) and Radio DE (5% vs 0.3%) on iOS compared to Android. Other third party audio streaming apps like Audible or TuneIn Radio, show a more comparable popularity being downloaded either from Android or from iOS devices.

2.2.2 Pre-installation of Google and Apple audio streaming apps

Certain apps are pre-installed on Android and iOS devices. This concerns Google's YouTube Music, Google Play Books, Google Podcasts on Android devices and Apple Music and Apple Podcast on iOS devices. If customer preference for audio streaming applications would be similar across Android and iOS devices, then pre-installation of apps would lead to a lower amount of (manual) downloading on these devices. However, below table shows that the current data does not support this presumption.

Table 1 Comparison of pre-installed audio streaming apps for 2021

Audio streaming	% of all DL in 2021 - Android	% of all DL in 2021 - iOS
YouTube Music	11,5%	7,0%
Google Play Books	3,4%	2,0%
Google Podcasts	2,2%	0,5%
Apple Music	1,7%	2,2%
Apple Podcast	na	0,2%

Source: WIK based on Statista data

The amount of (proportional) downloading is not less on Android devices for the pre-installed apps of YouTube music, Google Play Books and Podcasts. The same applies for the pre-installed Apple apps on iOS devices. It seems that customers using an Android device have a preference for Google apps and customers using Apple devices a slightly higher preference for the Apple Music apps.

However, one has to acknowledge that there are also other factors contributing to this picture in 2021. Android devices in the market being shipped before September 2019 do not have YouTube Music pre-installed. Owner Google repositioned YouTube Music in May 2018 and YouTube Music replaced from September 2019 onwards the less successful service Google's Play Music in the core Google Mobile Services bundle, which comes pre-installed on new Android devices. Hence, customers using in 2021 an Android device, which was shipped from the manufacturer before September 2019, still had to download the app themselves. As older Android devices are replaced by newer ones (with YouTube Music pre-installed), the effect thereof will become more clear.

Furthermore, as seen in Figure 4, on iOS devices, there is a much stronger download preference for competing audio streaming apps Spotify and partly SoundCloud, which also could explain partly why YouTube Music, despite no pre-installation on iOS, is still less downloaded on iOS devices compared to Android users.

2.2.3 No indication for lower spending on Android

Historically, the spending on apps was higher for iOS users. According to Chan (2022), in 2021, 74% of the global consumer spending on non-gaming subscription apps still comes from the Apple App Store and only 26% from the Google App store despite the much larger customer/device base of Android. However, the spending from the Google platform increased in 2021 with 78% versus only 31% increase from Apple's, which indicates the growing willingness globally to pay in the Android ecosystem.[8]

Based on the above, one would expect that the subscription only audio apps (e.g. Amazon Music and Audible, see also Table 2) would be more present in terms of downloading on iOS than on Android, but this is not the case in Germany. In fact Amazon Music is relatively more downloaded on Android than on iOS devices. On the other side, Spotify and SoundCloud are

8 Chan (2022), Stephanie, SensorTower, February 2022. See https://sensortower.com/blog/subscription-apps-revenue-2021/

more downloaded on iOS devices, but this could also be due to the available combination of free and paid subscription.

2.2.4 Combined subscription model prevalent

Chan (2022) noted also that in 2021 the subscription model for apps in general was still prevalent (86% of all top 100 apps). The following table shows that for the most downloaded audio streaming apps in Germany a combined subscription model is prevalent in the sense that a free and a paid subscription service is offered by the audio streaming provider.

Samsung Music is the only free audio streaming app, all other apps are either offered as a combination of a free and paid premium subscription (5), subscription only (2) or a free version with transaction fees (2). Only Amazon Music and Audible offer a premium version only.

Table 2 Business model top-10 downloaded audio streaming apps in Germany

	Business model	category	user generated content
Spotify	FoD/SoD	music	no
Amazon Music	SoD	music	no
YouTube Music	FoD/SoD	video portal	no
Samsung Music	FoD	music	no
Deezer	FoD/SoD	music / podcasts	no
Audible	SoD	audio books / podcasts	no
SoundCloud	FoD/SoD	music	yes
TuneIn Radio	FoD/SoD	web radio	no
Google Play Books	ToD	e-books	no
Google Podcasts	FoD/ToD	podcasts	no

Source: WIK based on public data

The business model influences which parameter is most important for the commercial success. For the free audio streaming apps (Free on Demand - FoD), advertisement is the main source of income and hence viewing time drives the (advertising) revenue. Premium versions of these apps are then offered with a subscription (Subscription on Demand - SoD), without advertisement and/or more content and higher sound quality. Hence, for SoD based services the number of monthly active users indicate the revenue development. For providers offering both a free and a paid subscription version of their service, it is the combination of monthly active users and the usage in minutes, which drive their revenue.

For the transaction based business models, there are purchases in the app when a certain title, book or podcasts is selected. Hence for these Transactional on Demand (ToD) services like Google Play Books and Google Podcasts, usage time is an indicator for their revenue. However, this business model seems less popular than the (combined) subscription model.

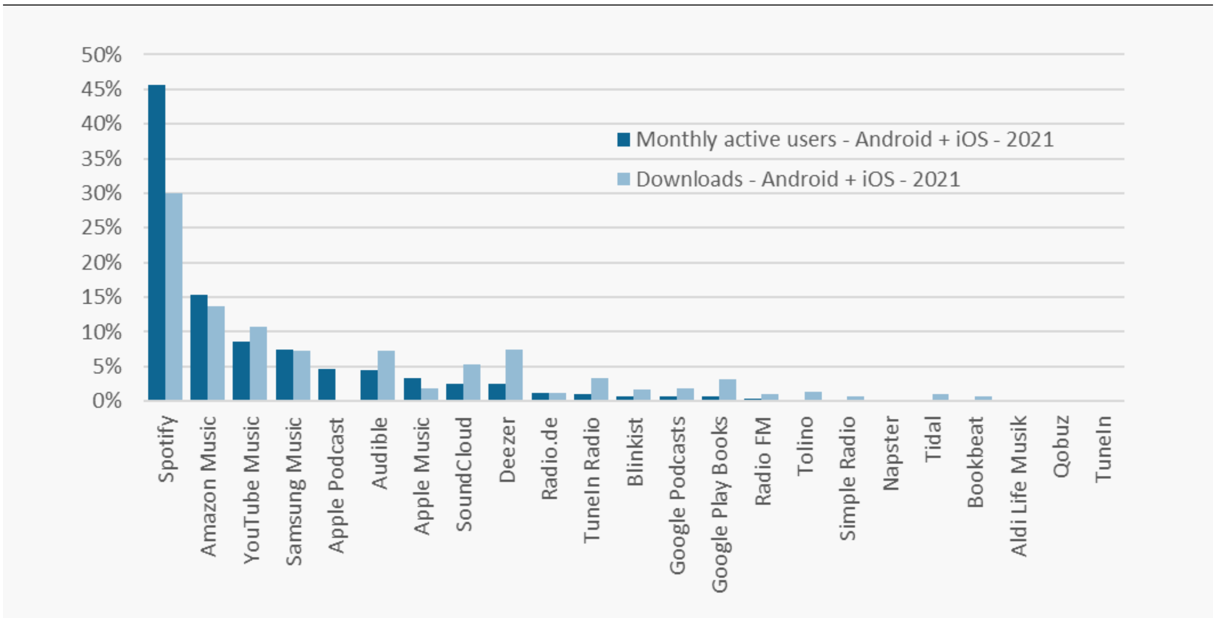
2.3 Usage of audio streaming apps

Downloading, as discussed in the previous paragraphs, does not necessarily mean that one becomes an active user listening for a certain amount of time. In this paragraph we therefore look at the following parameters; 'monthly active users', 'daily active users', 'time spent per active user' and the resulting 'usage' of certain apps in minutes.[9]

2.3.1 Monthly active users of audio streaming apps

Apps can be downloaded, superficially tried and deleted again without subscribing if they are not what the customer is looking for. Reversely, one can be an active user of an existing app on your device without downloading it in a particular month. However, it appears that in Germany for most apps, consumers do try them at least once after downloading. This can be observed in the following figure by comparing the share of all monthly downloaded app on average in 2021 with the share of all monthly active users per app.

Figure 5 Comparison of downloading distribution versus monthly active usage distribution



Source: WIK, based on Statista

For most of the audio streaming apps, the share of downloading (light blue) is around the share of monthly active users (dark blue). There are some exceptions, like Spotify and Apple Podcast with a much lower share of downloads versus monthly active users, but this is most likely due an existing customer base. On the other hand, new or specialised apps could have substantially more downloads than usage due to consumers intending to try the app, but thereafter deciding not to use it and/or not to subscribe to it. Deezer and SoundCloud could be examples of this.

Overall, in 2021, the number of monthly active users for all monitored audio streaming apps increased with 8% to almost 46 million. However, simultaneously, the number of 'heavy' daily users decreased with 9%.

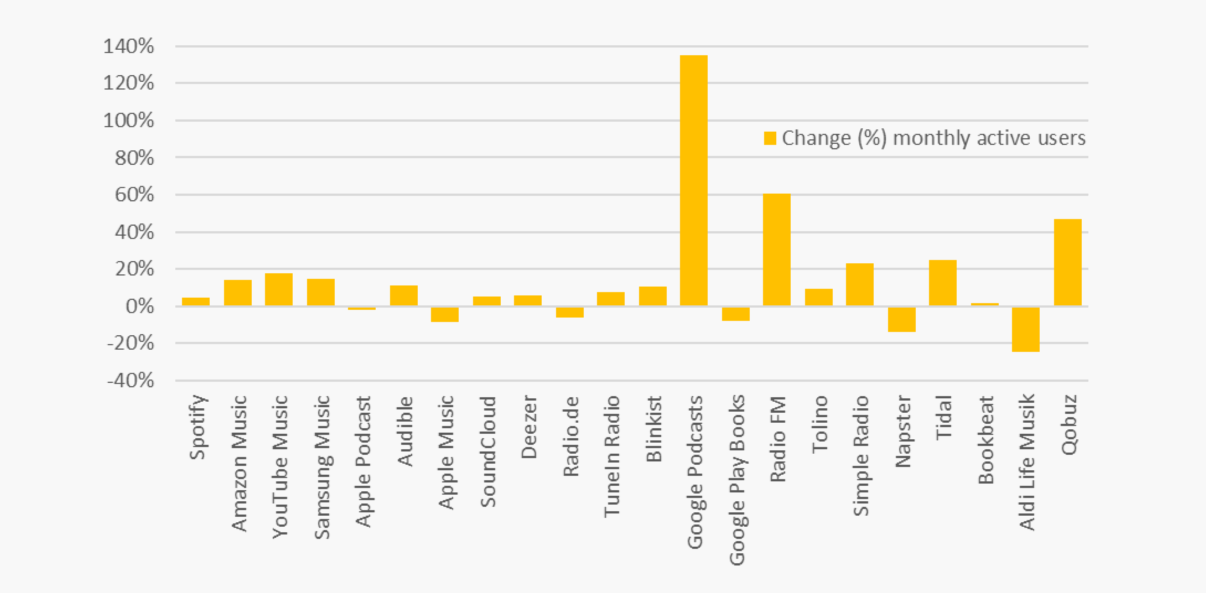
It can also be observed from the last figure that Spotify dominated in 2021 in the German audio streaming market not only in terms of monthly downloads but also in terms of monthly

9 A monthly active user is defined as someone who at least has used the app once in the respective month. Furthermore, a daily active user is defined as someone who at least has used the respective app once per day.

active users. It leads with a share of 46% followed by 15% for Amazon Music and 9% for YouTube Music.

The trend from 2020 to 2021 is reflected in the following figure, showing that most of the Top 5 audio streaming apps solidified their position in Germany as they gained 5% to 18% more monthly active users. Only Apple Podcast (and also Apple Music) lost up to 9% of their active users. Although the absolute number of Google Podcasts is low, it has relatively gained the most active subscribers.

Figure 6 Trend 2021– monthly active users of audio streaming apps in Germany



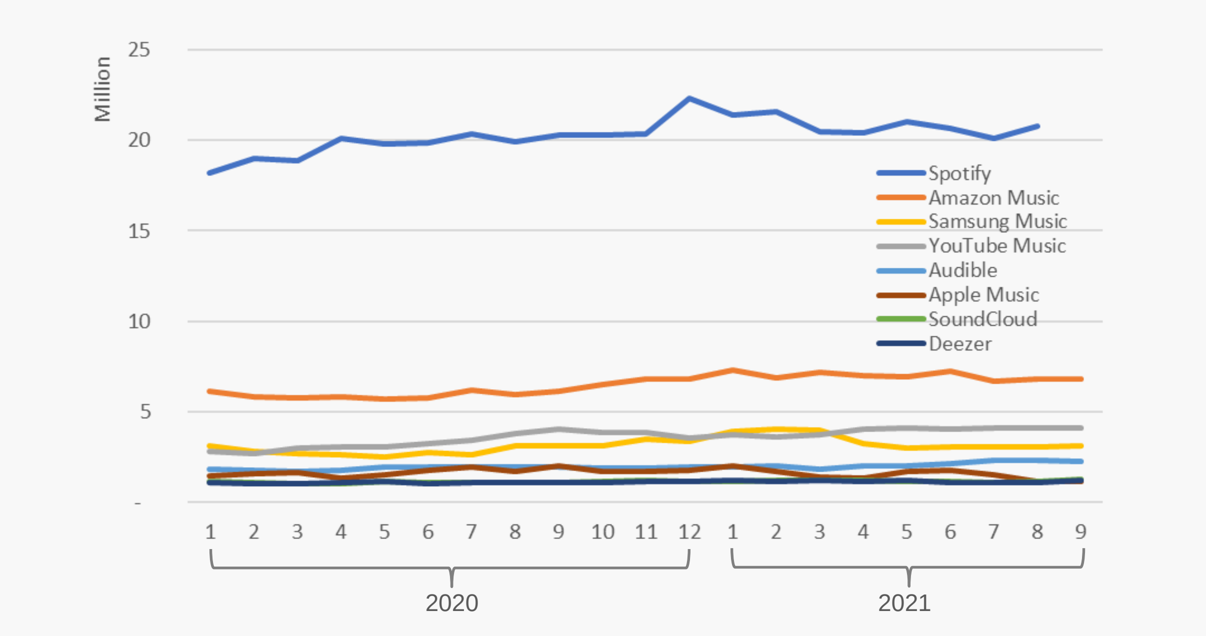
Source: WIK, based on Statista

2.3.2 Detailed monthly developments in active users in Germany

The next graph shows the development of monthly active users in more detail from January 2020 until September 2021. Still striking is the enormous difference between frontrunner Spotify and all other competitors. Furthermore, it shows that, in regard to monthly active users, the top 5 audio streaming apps in Germany seem to maintain their solid position. From March 2021 onwards, Samsung Music has lost its third position to YouTube Music and Deezer came in at the same level of monthly users as Apple Music in August 2021.

Furthermore, it is not clear if users of one particular app, switch to another app as monthly movements in active users do not seem to be related.

Figure 7 Audio streaming apps in Germany – monthly active users- 2020-2021



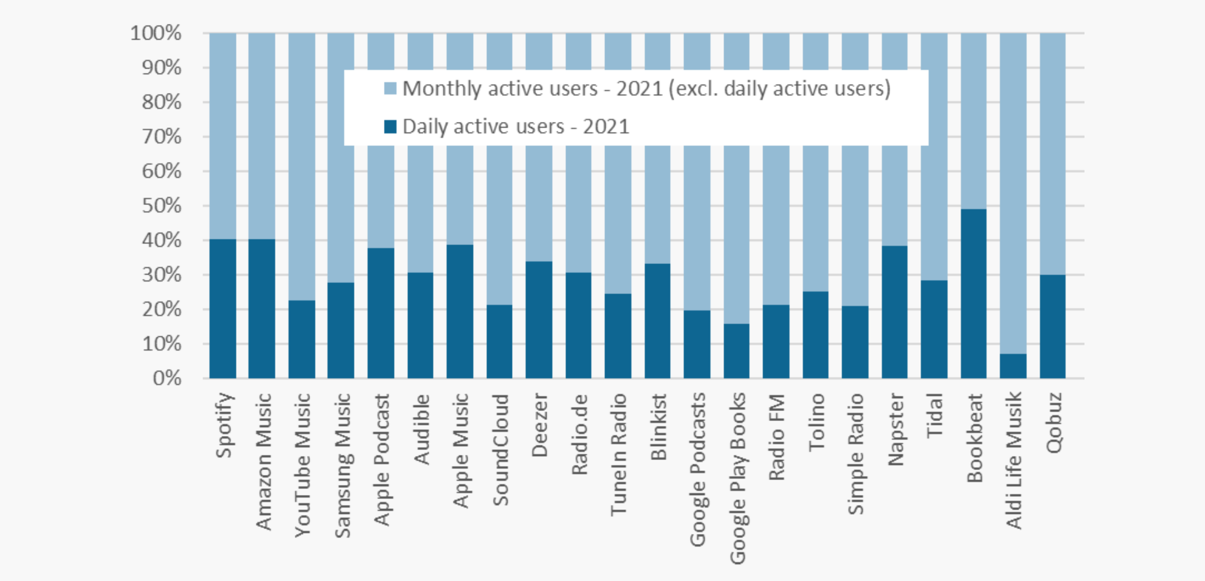
Source: WIK, based on Statista

2.3.3 Daily active users of audio streaming apps

In 2021, there were a bit over 16 million daily active users per month for all monitored audio streaming apps in Germany. Contrary to the growing number of monthly active users, this decreased by 9% compared to 2020. Later on, we will discuss the possible linkage with the reduced time spent per active user per month in 2021.

In order to show which part of the monthly active users are in fact 'heavy' users, which stream audio on a daily basis, the following figure compares the amount of monthly active users versus daily active users per app. The following figure has expressed the amount of daily active users as % of the encompassing group of monthly active users.

Figure 8 Comparison of monthly active users versus daily active users per app



Source: WIK, based on Statista

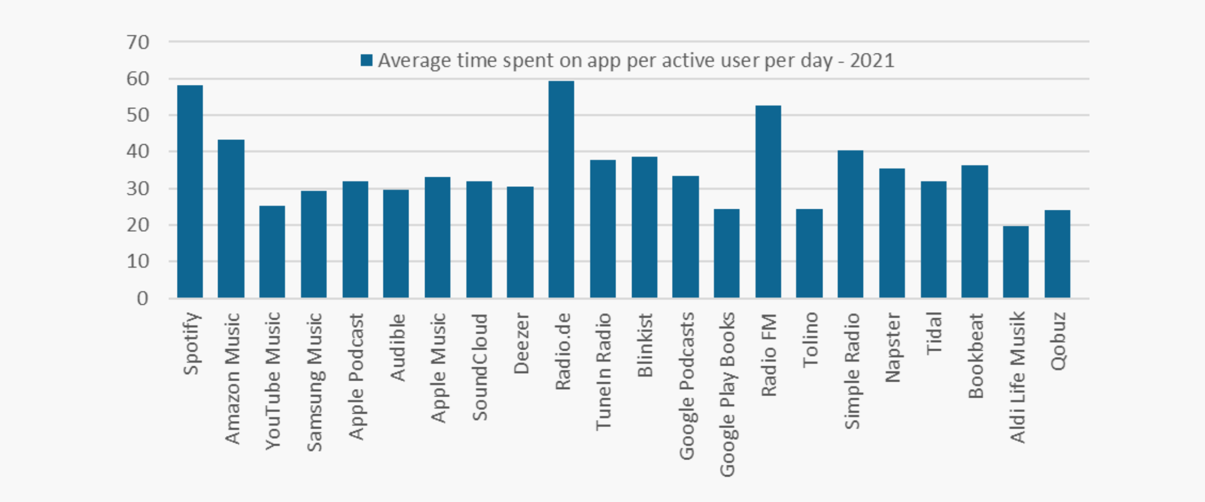
Overall, across Android and iOS devices, around a third of all monthly active users in fact use the respective audio streaming app on a daily basis. This varies per app, as can be seen above, but is roughly between 20% and 40% with 2 outliers: Aldi Life Music with 7% and Bookbeat with 49%.

Furthermore, there is some variation for the same app between Android and iOS users, but there is no specific pattern and overall the relation across Android and iOS devices between daily active users and monthly active users is almost the same, 35% versus 36%.

2.3.4 Time spent per active user on audio streaming apps

In order to go from active users to listening time in minutes, one needs to know the average time spent per active user per app. The monitoring in Germany showed that, in general, users of audio streaming apps listened in 2021 at least 25 minutes per day per app, but this can go up to 60 minutes per day per app. For more details per app see the following figure.

Figure 9 Average time spent on app per active user per day in 2021

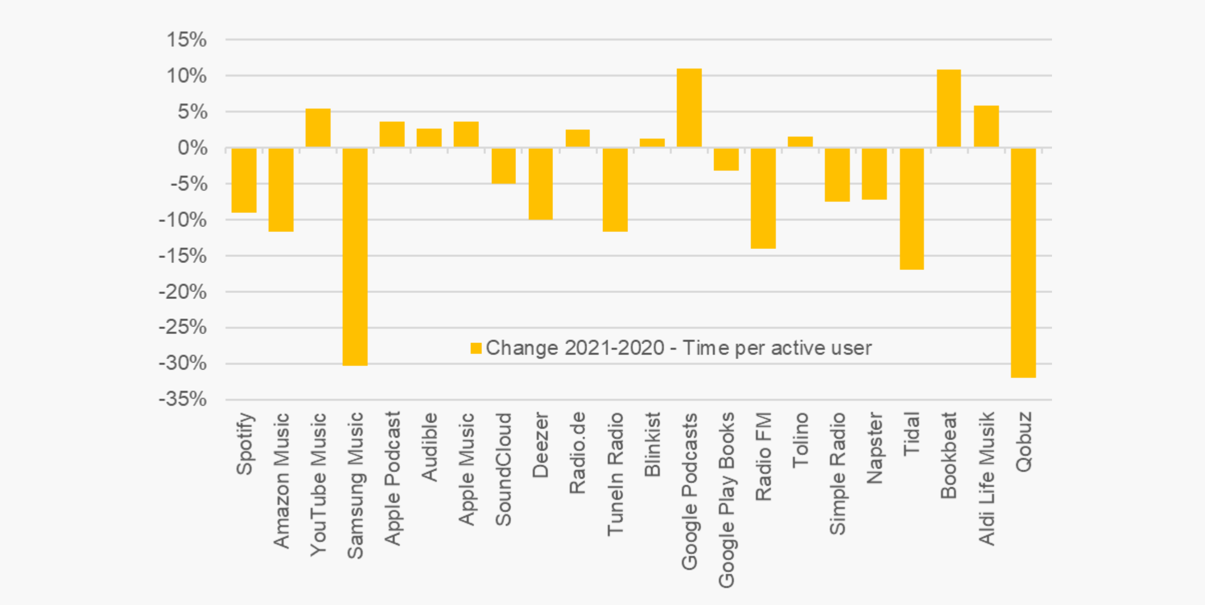


Source: WIK, based on Statista

Categorising the streamed audio content, one can say that listeners to streamed radio spend most time on average listening to the modern equivalent of traditional radio (40-60 minutes per day). All other audio streaming (music, podcast and e-books) seem to vary between 20-40 minutes per day. Only Spotify and Amazon Music, as non-Radio content, have achieved that its active users listen to it as long as to 'radio' audio streaming.

In respect to the trend from 2021 compared to 2020, below figure shows the relative change in time spent per active user. Overall, active users have reduced their listening time in 2021 with 5%. As noted above, despite the increased number of monthly active users (+8%), the number of heavy (daily) users reduced by 9%, which might explain the overall reduction of listening time. Hence, users seem to not have cut the number of audio stream apps used but rather the time spent on them.

Figure 10 Trend 2021-2020 – Sum of all minutes per active user per service (%)



Source: WIK, based on Statista

YouTube Music, Audible and the Apple services have achieved an increased time spent per monthly active user in 2021, where the other market leaders clearly lose. Samsung Music has lost the most time per active user, which might relate to negative user experiences due to decreased functionality quoted on forums.

If one considers the different categories of audio apps, one could picture a more differentiated image. Time spent on music apps and web radio apps have gone down in general (respectively -9% and -6%) and time spent on e-book apps has been stable in 2021 and listening to podcasts increased with 6%.

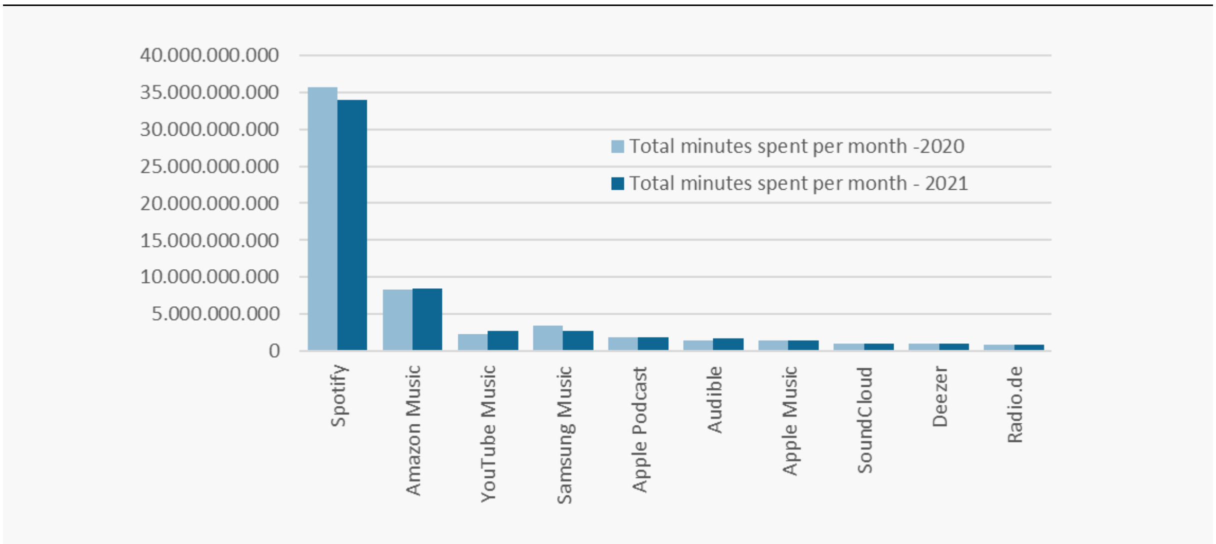
Obviously, there are always exceptions. YouTube Music, Apple Music, Aldi Life Music and Radio.de saw a slightly increased usage per user in contradiction to the others in the music and radio segment. Google Play still decreased in the stable e-book segment in contradiction to Google Podcasts which saw the highest increase in the growing podcast segment.

2.3.5 Usage in minutes of audio streaming apps

The number of monthly active users combined with the monthly time spent per app per active user enables us to calculate the amount of minutes of monthly listening time per app generated by all active users in the German market. This results overall in almost 58 billion minutes listening time per month in Germany for all monitored audio streaming apps.

Due to the large number of Android devices in the German market, 70% of all aggregated monthly audio streaming originates from apps on Android devices and 30% from apps on Apple’s iOS based devices. As this mimics the market shares of Android versus iOS devices in Germany, the amount of audio streaming seems to be similar for both ecosystems. The following figure shows this aggregated monthly usage per app.

Figure 11 Sum of all monthly usage for all active users in Germany per audio streaming app



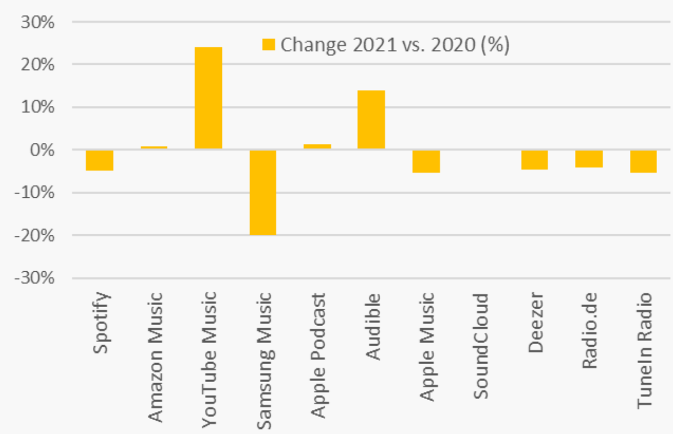
Source: WIK, based on Statista

Overall, 2021 (in dark blue) saw a decreased usage of audio streaming apps in Germany in terms of minutes (-3%). This was mainly due to a decrease in the average monthly time spent per app (-6.5%), most likely caused by the decrease in daily active users (-9%).

Spotify is still by far the largest audio streaming provider capturing on average almost 60% of the time people streamed audio content in Germany. Thereafter, it is Amazon with a 15% share, and all other competitors have at max a share of 5% of the total monthly usage. The top 4 providers capture 83% of the sum of all monthly usage, which is even more concentrated than the download behaviour (where the top 4 captured 70% of all downloads).

The following figure shows the change in the sum of all monthly usage of audio streaming apps from 2020 to 2021 and makes it clear why Spotify and Amazon Music maintained overall their pole positions in terms of total usage. However, usage of Spotify decreased with 5% in 2021. Other 'losers' in 2021 were Samsung Music (-20%), Apple Music and Deezer (both -5%). Amazon realised a stable usage in 2021. 'Winners' were YouTube Music (24% more usage) and Audible (+14%).

Figure 12 Trend 2021-2020 (%) – sum of all monthly usage of audio streaming apps in Germany



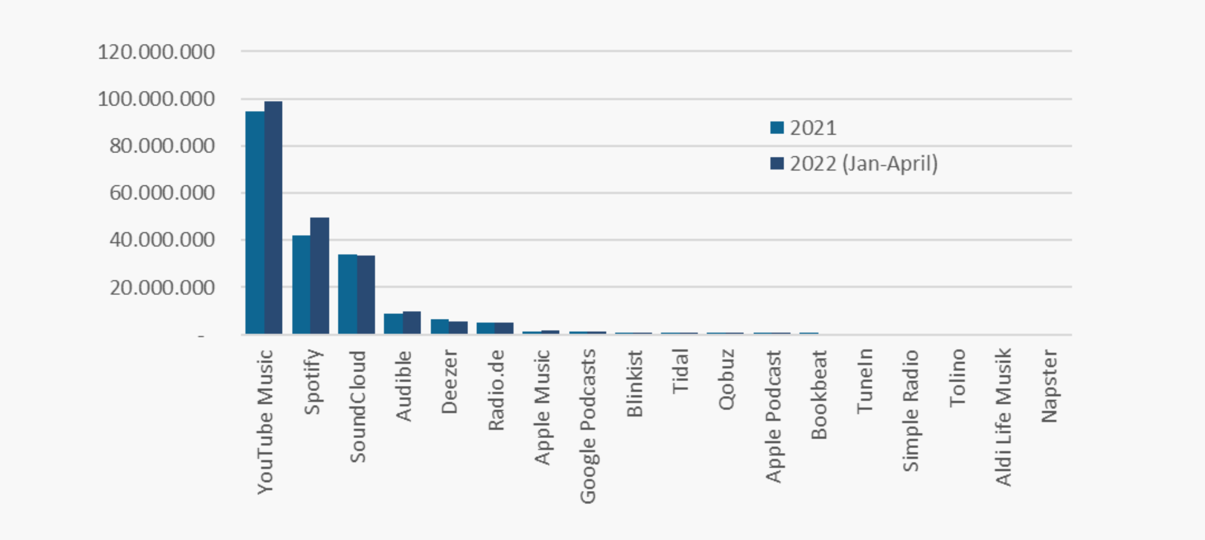
Source: WIK, based on Statista

2.3.6 Usage of audio streaming via browsers instead of apps

Most people in Germany access audio streaming platforms via apps on their mobile phone and/or tablets, but there are also those, which access this content as well via their browser either on their desktop but also on their mobile phone.

The following graph shows which audio streaming platforms are still being accessed by browsing either via a desktop (main portion) but also via mobile browsing. Interesting to see is that the most used audio apps are not automatically the most browsed audio streaming applications. YouTube Music seems to have a historical advantage, but Amazon Music seems not to be streamed via browsing and SoundCloud is also more prominent.

Figure 13 Average monthly usage of audio streaming apps (minutes) via browsing



Source: WIK, based on Statista

However, to put this in perspective, we have to compare the absolute browsing figures with the monthly usage of related apps (see also Figure 11) as done in below table. For example, YouTube Music has a monthly usage of almost 2.8 billion minutes via apps, so only 3,3 % of all usage is created by browsing. For market leader Spotify and second party Amazon Music this share is neglectable.

Furthermore, the table below shows that between 80-90% of the browsing usage originates from a desktop. This adds to the assumption that browsing of audio streaming is either taking place when there is no reliable mobile internet connection (but still a fixed line internet connection) or used as background music while working on the desktop/laptop PC.

Table 3 Audio streaming usage via browsing and apps in 2021

(x 100,000 minutes)	Monthly usage via apps -2021	Monthly usage via browsing	% browsing of total usage	% desktop origin of browsing
Spotify	33,964	42	0.1%	78%
YouTube Music	2,793	95	3.3%	90%
SoundCloud	1,044	34	3.2%	85%
Audible	1,719	9	0.5%	78%
Deezer	980	6	0.6%	89%

Source: WIK, based on Statista and Similar Web

2.4 Conclusions on audio streaming

Audio streaming apps are widely used in Germany. Each month there are more than 45 million monthly active users of these apps, either with subscription or for free. Considering that people who stream audio, use on average almost 3 audio apps, this results in around 16 million unique users or around 20% of the whole population in Germany.

Usage of audio streaming occurs mainly via apps as browsing is very limited (maximum 3% of the sum of all monthly usage). Music was the most popular content in 2021, followed by podcasts, e-books and web radio.

The audio streaming market in Germany is quite concentrated; Spotify was undisputed market leader in 2021 with 59% of the sum of all monthly minutes, followed on distance by Amazon Music (15%), YouTube Music (15%) and Samsung Music (5%).

Each active user listened on average at least 25 minutes per day per app but this time can go up to 60 minutes per day for certain apps, which makes clear how much audio streaming has become part of their lives. Especially users of radio streaming and Spotify had the longest listening time.

Due to the high number of devices with the Android operating system in the German market, 70% of the sum of all usage of audio streaming apps in 2021 came from Android devices versus 30% from iOS devices. As this mimics roughly the market shares of Android and iOS devices in Germany, the amount of audio streaming usage seems to be similar for both ecosystems. What differs between Android and iOS is download behaviour of certain apps; Spotify has many more downloads proportionally on iOS devices compared to Android and number 2, Amazon Music, is on the other hand proportionally less downloaded on iOS. Pre-installation of apps on either Android or iOS devices has not led to (proportional) less downloading.

Overall, in 2021, more people streamed audio content, as the number of monthly active users increased by 8% compared to 2020. However, the total sum of all usage of audio streaming still decreased with 3% as the average user spent less listening time per app (up to -30% for certain apps). Despite this general trend, Spotify and Amazon Music maintained their pole positions in total usage, but if we consider also at the other aspects (downloads and active users), then YouTube Music and Audible are the most consistent winners in the top 5 audio streaming platforms in Germany for 2021.

3 Video streaming in Germany

3.1 General picture of video streaming

On average, in Germany, there are 70 million active users of video streaming services each month watching either linear TV or other content like videos and sports over the internet. This is significantly more than the 45 million active user for audio streaming, however this is because people who stream video, use on average up to 5 different apps versus 3 for audio streaming. Hence, this results in around 14 million unique users of video streaming, which is less than the 16 million for audio streaming.

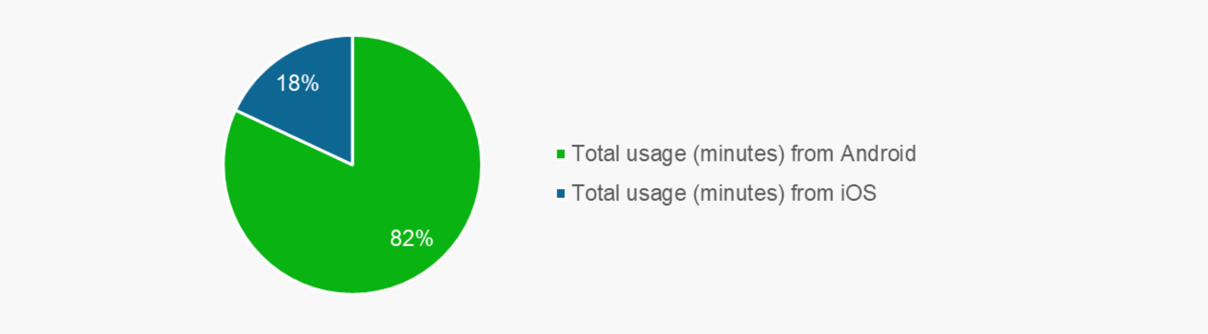
Looking at the streamed video content, it is mostly either user uploaded video (YouTube) or video on demand via Netflix and Amazon, so user generated content plays a prominent role in contrast to audio streaming.

In 2021, the number of monthly active users of video streaming has grown by 6% together with the overall monthly usage (+4%). This contradicts with the decreased monthly usage of audio streaming in Germany and is caused by the increased average time spent per month per active user. For video streaming this slightly increased (+1%) where this decreased for audio streaming (-3%). The number of downloads of video streaming apps did see a decrease of 2% in 2021.

Overall, in Germany in 2021, people spent 116 billion minutes in an average month on apps streaming video, user generated content and other content, which is twice the amount of audio streaming. However, the average viewing time per app per active user is similar with audio streaming, with on average around 30 minutes per day up to 60 minutes per day. The difference in volume can be partly explained as active users have on average up to 5 apps for streaming video versus 3 for streaming audio.

The following figure shows that the majority of usage of video streaming services comes from Android devices (82% versus 18% from iOS devices). As the market shares of Android and iOS devices in Germany are around 70/30%, also the relative amount of video streaming seems to be higher from Android devices. This is another difference with audio streaming, which had the same distribution between streaming and device usage.

Figure 14 Platform origin – usage video streaming apps 2021 in Germany



Source: WIK, based on Statista

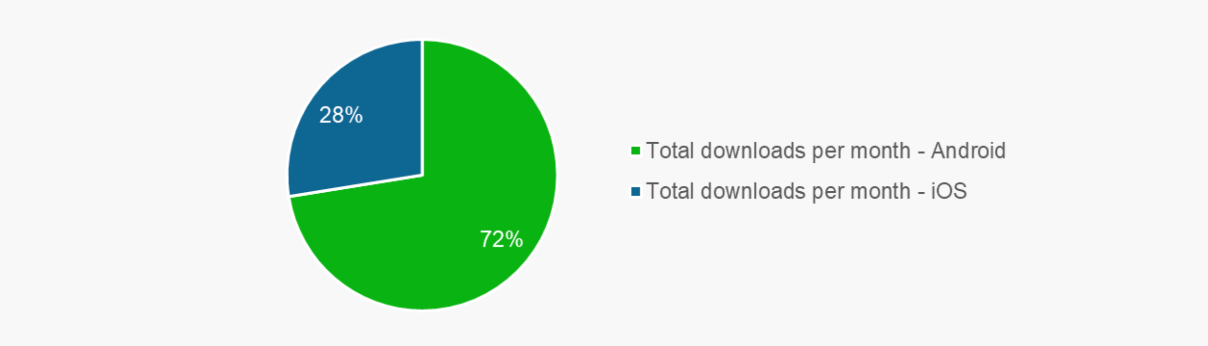
3.2 Downloading of video streaming apps

Equal to audio streaming, we start with looking at download behaviour as an indication for (future) popularity of the service and thereafter at the number of active users and eventually usage in minutes of video streaming platforms in Germany.

To describe the dimension of downloading in 2021, the three most downloaded video streaming apps in Germany across all Android and iOS devices were Amazon Prime Video (16%), Netflix (16%) and Disney+ (13%). These apps were downloaded roughly 500 to 650,000 times per month, where apps outside the top 10 are downloaded less than 100,000 times per month.

The following figure shows the share of total downloads between Android and iOS devices for 2021.

Figure 15 Distribution of downloads for video streaming apps over Android and iOS devices – 2021



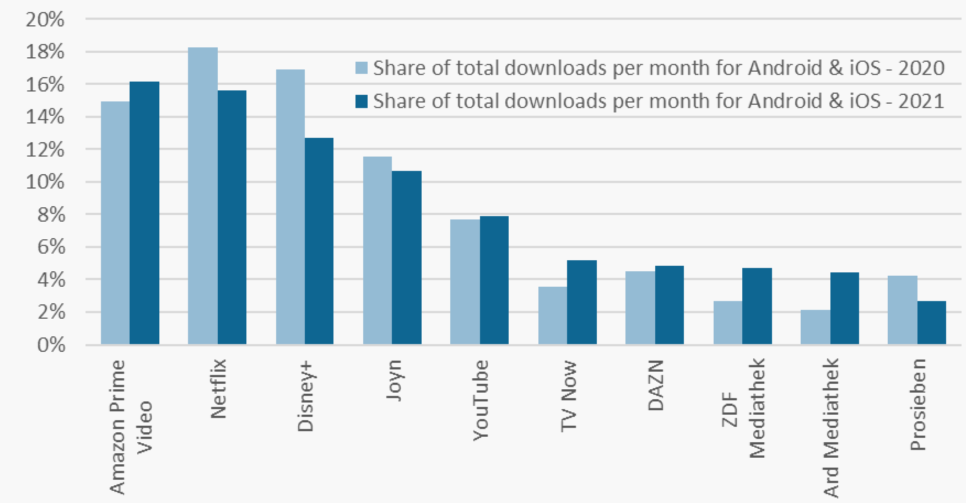
Source: WIK, based on Statista

This figure implies that roughly 2,5 x more downloads are occurring from Android compared to iOS devices. This factor remained stable from 2020 to 2021. This distribution mimics the market shares of Android and iOS devices in Germany, hence the download behaviour seems to be comparable in both ecosystems.

Overall, 2021 saw 2% less downloads of video streaming apps in Germany across Android and iOS devices. This downward trend applied more for the iOS platform (-3.3%) compared to Android (-1,7%).

The next figure shows the most downloaded video streaming apps in Germany for Android and iOS devices together for two consecutive years to capture the overall development. The percentages show the proportional share of all downloads per specific app both on Android and iOS devices.

Figure 16 Most downloaded video streaming apps in Germany for 2020/2021



Source: WIK, based on Statista

Compared to audio streaming, there is a more gradual difference in terms of download numbers between the market players. Amazon and Netflix had almost the same amount of downloads in 2021 and this decreased stepwise for the other parties. In comparison, for audio streaming, rank 1 Spotify has double the amount of download numbers compared to rank 2, Amazon Music. Furthermore, it is interesting to see that the number of monthly downloads decreased for Netflix, Disney+ and Joyn in 2021, but not for Amazon Prime Video, which resulted in the number 1 position for Amazon Prime Video in 2021.

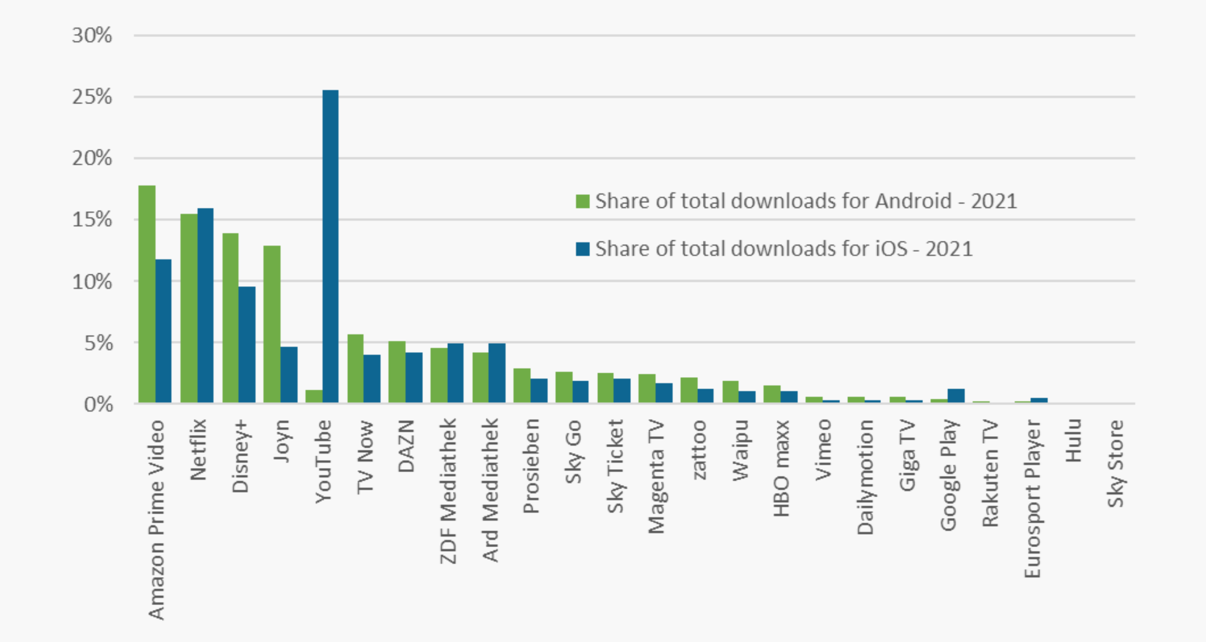
What this graph however is not showing, is that download behaviour can vary between Android and (Apple) iOS devices due to customer preferences but also the pre-installation of certain apps on Android and iOS devices. This is analysed further in the next paragraph

3.2.1 Differences in download behaviour between Android and iOS

In order to see whether there is a different pattern for Android versus iOS devices, the following figure compares the most downloaded video streaming apps for Android and iOS in 2021. The order is based on total downloads across both eco systems. The percentages show the proportional share of all downloads for either Android or iOS.

Due to the higher market share of Android devices in Germany (around 70%) versus iOS devices, this implies that an equal proportional share for Android as for iOS in the graph represents a higher absolute number of downloads.

Figure 17 Most downloaded video streaming apps in Germany for 2021 (Android vs iOS)



Source: WIK, based on Statista

Before discussing the differences between download behaviour on Android versus iOS, we note that there are also common aspects. Both in Android and the iOS environment, the download behaviour is quite concentrated. Similar to audio streaming, the top 5 video streaming apps capture almost 70% of all monthly downloads. Furthermore, three out of the top 5 apps are the same for Android and iOS, i.e. Netflix, Amazon Prime Video and Disney+.

Due to the fact that more than 70% of all downloads of video apps occur on Android devices, it is not surprising that the ranking for Android only almost matches the overall ranking. However, there are significant differences in the top 5. Amazon Prime Video, Disney+ and Joyn have significantly more proportional downloads on Android than on iOS, which indicates a higher customer preference from Android devices. There are also video streaming apps, which are slightly more downloaded from iOS devices, but apart from YouTube, the differences are within 2% points.

The enormous difference in downloading the YouTube app between Android and iOS is most likely due to pre-installation on Android devices, which will be discussed in the next paragraph.

3.2.2 Pre-installation of Google and Apple video streaming apps

On Android devices, Google's YouTube (from 2019 onwards) and Google Play come pre-installed. On iOS devices there are no pre-installed video streaming apps as Apple's TV+ app does not come pre-installed. If customer preference for video streaming applications would be similar across Android and iOS devices, then pre-installation of apps would lead to a lower amount of (manual) downloading on these devices compared to devices without pre-installation.

The following table shows that the current data does support this assumption for YouTube, which had the highest download numbers in 2021 on iOS devices (26% of all downloads) versus only 1% on Android devices, where it usually comes pre-installed. For Google Play, there is a minor difference, which is also insignificant in absolute numbers showing no customer preference on Android devices for Google Play.

Table 4 Comparison of pre-installed video streaming apps for 2021

Video streaming	% of total downloads on Android - 2021	% of total downloads on iOS - 2021
YouTube	1,2%	25,6%
Google Play	0,4%	1,3%

Source: WIK, based on Statista

As observed in Figure 17, there are some video streaming apps for which the download behaviour has significant differences between Android and iOS, but this would deviate at maximum by 8%[10] points. For most of the video streaming apps the difference in download behaviour remains within 1%. Hence, if we would assume that YouTube does not come pre-installed on Android devices, and that the amount of downloads would be at maximum 8% point less than for iOS devices, then it would amount to around 18% of all downloads on Android devices.

Simulating this download behaviour for Android devices would make YouTube overall (including the existing 26% of all downloads on iOS) the highest downloaded audio streaming app in Germany well before the current number 1, Amazon Prime, which has only 16% of all monthly downloads.

When making this assumption for YouTube in regards to the effect of the pre-installation on Android devices, it also impacts the distribution of downloading for other apps (their download shares become less) and as consequence the differences between the download shares of Android and iOS devices become smaller. However, as noted before, the significant differences for third party video streaming apps like Amazon Prime Video, Disney+ and Joyn (more downloaded on Android) and vice versa Netflix and the public media libraries (more downloaded on iOS) do remain. So for these video streaming apps there seems to be a different customer preference between Android and iOS users.

3.2.3 No indication for lower spending on Android

As noted before in the audio streaming section, globally there was a higher spending in 2021 from iOS devices on non-gaming subscriptions. If this would apply in Germany, then one would suspect that the major video streaming services with either full, partial subscription and/or transaction based business models (Disney+, Netflix, Amazon Prime, see Table 5 below) would be more downloaded from iOS than Android devices.

However, this is not the case as can be seen in Figure 17. In terms of downloads in 2021, only Netflix was proportionally slightly more downloaded on iOS than on Android, but Amazon Prime, Disney+ and also the smaller providers Joyn, HBO Max and DAZN were all proportionally significantly more downloaded from Android devices. The same image results when considering the effect of pre-installation of YouTube, where we simulate the addition of downloads for YouTube from Android devices, which increases the total downloads from Android and by doing so also the proportional shares of downloads for each app. Netflix remains the only video streaming app which is proportionally more downloaded from iOS than from Android.

10 For Joyn; 12,9% share of all downloads on Android devices and 4,7% of all downloads on iOS devices.

Hence, similar to audio streaming, there is more of an indication for equal or even higher spending in Germany from Android devices compared to iOS based devices.

3.2.4 Subscription based and combined business models popular

Looking at below table, which lists the top 10 most downloaded apps in 2021, it appears that apart from the public media libraries all other video streaming content is paid for either via subscription Video on Demand (SVoD) or transaction based (TVoD). Apart from YouTube and Joyn, the top 5 make their content available for subscription and transaction fees. This is a difference with audio streaming where market leader Spotify combines the Free (Video) on Demand (FVoD) business model with S(V)oD.

Table 5 Business models of video streaming apps in Germany for 2021

Video streaming	Business model	category	user generated content
Amazon Prime Video	SVoD/TvoD	on demand video	no
Netflix	SVoD / AVoD	on demand video	no
Disney+	SVoD	on demand video	no
Joyn	FVoD/SVoD	mediathek/ on demand video	no
YouTube	FVoD/SVoD	videoportal (SVoD	yes
TV Now	FVoD/SVoD	mediathek/ on demand video	no
DAZN	FVoD/SVoD	mediathek/ on demand video	no
ZDF Mediathek	FVoD	mediathek	no
Ard Mediathek	FVoD	mediathek	no
Prosieben	FVoD	mediathek	no

*Netflix from November 2022 onwards also supports Ad supported VoD, being a lower priced version with advertisement

However, there might be a shift to more 'free' advertising based VoD in Germany. Netflix has started in November 2021 with an ad-supported 'base' subscription, which combines a low-price subscription (4,99 € monthly versus 7,99 € of the normal base package) with advertisement. This is called ad-supported VoD (AVoD) and practically combines the SVoD and FVoD business model in a service.

Related to this development, is that subscription fees of video streaming services have increased steadily over time, not only in Germany, but globally. This seems to have a combined cause. On the one hand, there is increased competitive pressure in the market with companies like Disney+, Hulu and HBO coming into the market. As a consequence, providers need to either produce more original content (read increasing production costs) or buy content (read increased licensing costs). Second, it appears that video streaming has become a mature market after most of the customers have been captured, hence return on investment becomes more important for stakeholders after years of investing.[11]

As a consequence of these price increases, existing customers have been switching to cheaper subscription offers in the market and/or to ad-supported subscription offers. Not only Netflix is offering these, but also Hulu, Paramount+ and HBO Max.

11 Teltarif.de, 10 October 2022, Björn König. Streaming: Werbung rettet Netflix nicht, https://www.teltarif.de/streaming-netflix-business/news/89693.html and Teltarif.de, 19 October 2022, Alexander Emunds. Negativtrend gestoppt: Netflix gewinnt wieder Nutzer dazu, https://www.teltarif.de/netflix-quartalszahlen-q3-2022-nutzerzahlen/news/89682.html

This is also confirmed by a 2022 Survey by Deloitte, which shows that 65% of consumers, who use video streaming, have a paid subscription, but that the interest for free or reduced price subscriptions with advertisement is hig.; 30% of surveyed customers are interested in either ad-supported Video on Demand or a free ad-supported Streaming TV. In the age group between 18-24 years, this interest is the highest with 44%.[12]

3.3 Usage of video streaming apps

Also for video streaming, downloads do not automatically convert into active usage. Long-time established apps can capture proportionally more monthly active users (and thereby resulting usage) than monthly downloads. Vice versa, new video streaming apps could capture proportionally more monthly downloads than monthly active users.

In this paragraph we review the following parameters, 'monthly active users', 'daily active users', 'time spent per active user' and the resulting 'usage' of certain apps in minutes.[13]

3.3.1 Monthly active users of video streaming apps

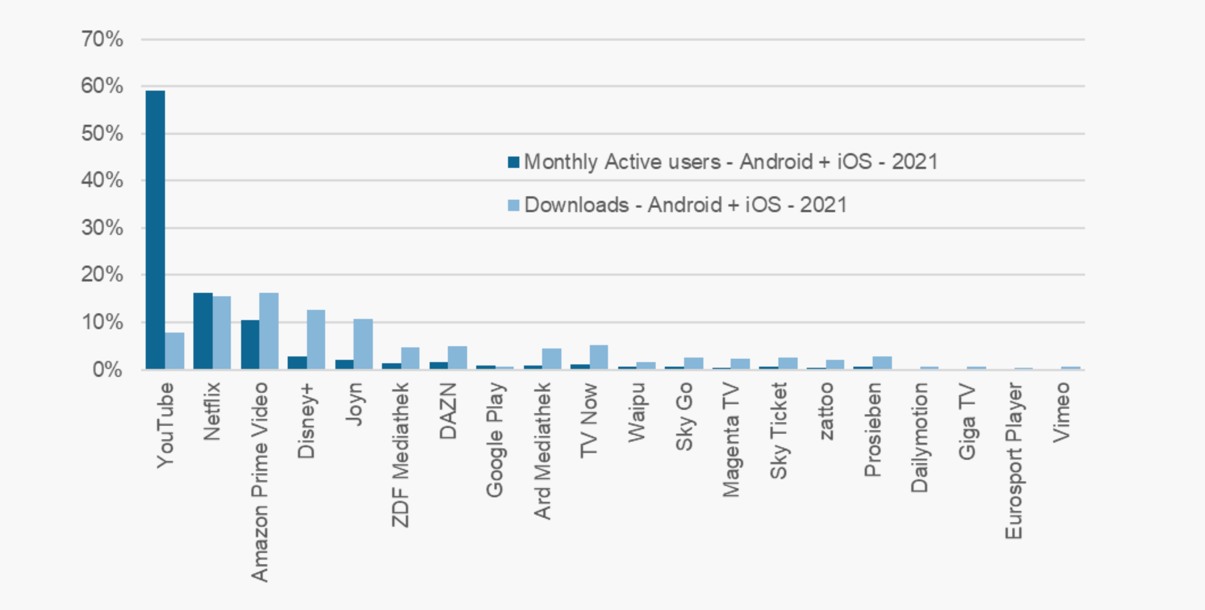
Similar to audio streaming apps, the total number of monthly active users of video streaming apps has grown in 2021 (+6%). Furthermore, we note that the concentration of monthly active users on a few apps is even higher in the video streaming market than in the audio streaming market. YouTube still dwarfs its competitors with 59% of all monthly active users compared to the number 1, Spotify, in audio streaming with 'only' 46% of all monthly active users.

The following graph compares the proportion of monthly active users and monthly downloads per video streaming app for 2021.

12 Deloitte's Digital Consumer Trends Survey 2022, which was implemented in June and July 2022 across 22 countries including Germany, where 2000 persons participated. See https://www2.deloitte.com/de/de/pages/technology-media-and-telecommunications/articles/digital-consumer-trends-survey-2022.html

13 A monthly active user is defined as someone who at least has used the app once in the respective month. Furthermore, a daily active user is defined as someone who at least has used the respective app once per day.

Figure 18 Comparison of downloading distribution versus monthly active user distribution

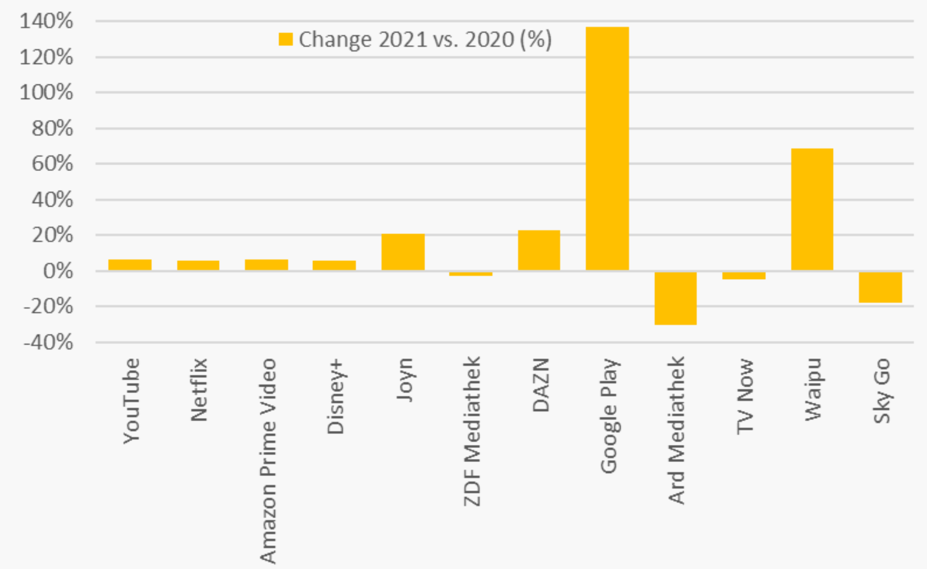


Source: WIK, based on Statista

We see a differentiated view here. Only established video streaming app YouTube seems to have way more monthly active users than downloads which might be explained by an installed base, but can also indicate stagnation of new future users. Newcomer Disney+, but also Amazon Prime and other smaller parties like Joyn or DAZN have significantly more downloads than active user per month, which indicates that new customers are trying the app, but this has not yet reflected in the number of active users. However, this might be an indication for future growth. And lastly, there is Netflix with an almost equal proportion of downloads compared to active users, which indicates a certain stability.

These indications are confirmed if we look at the trend from 2020 to 2021 regarding monthly active users in the following graph.

Figure 19 Trend 2021-2020 – monthly active users of video streaming (% change)



Source: WIK, based on Statista

Overall, in 2021, the 4 largest video platforms have further solidified their position by growing along with the market (+6%). This implies that the already high market concentration in terms of active users for video streaming remains in Germany. However, it is clear that the largest growth in active users lies with smaller challengers like Joyn and DAZN. Although Google Play achieved the highest % growth in active users, its market share is too low to have any impact.

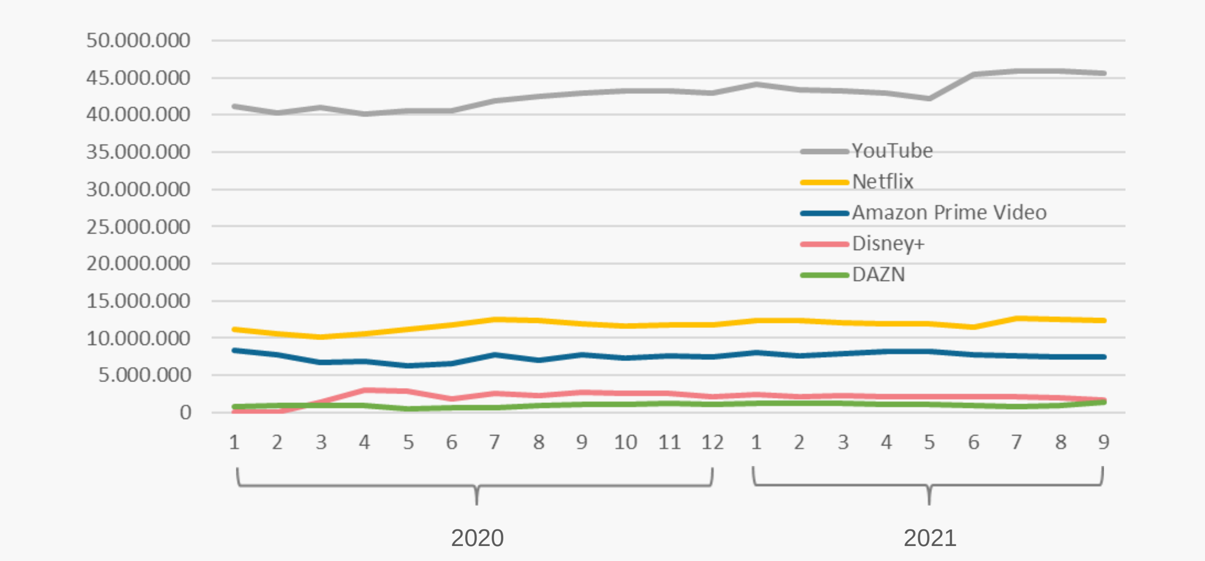
3.3.2 Detailed monthly developments in active users in Germany

The next graph shows the more detailed development of all monthly active users of video streaming platforms across Android and iOS from January 2020 until September 2021 to capture certain developments.

Similar to the audio streaming market, there is a clear number 1, in this case YouTube. It has achieved a stable growth of active users from 2020 onwards. Around May/June 2021 there was a decline noticeable for YouTube but also for Netflix and Amazon. Following spikes for YouTube and Netflix might be due to promotional campaigns. Disney's number of active users has not changed significantly despite their announcement in the summer of 2021 that they would gradually withdraw their content from other video platforms and make it exclusively available on their platform.

Also there are no particular trends which seem to be related to another, which might indicate customers switching. So overall, German customers seem to be quite loyal to their existing video streaming platform, hence do not switch a lot and/or not take on many additional subscriptions of other video streaming platforms.

Figure 20 Detailed trend – video streaming in Germany – total monthly active users



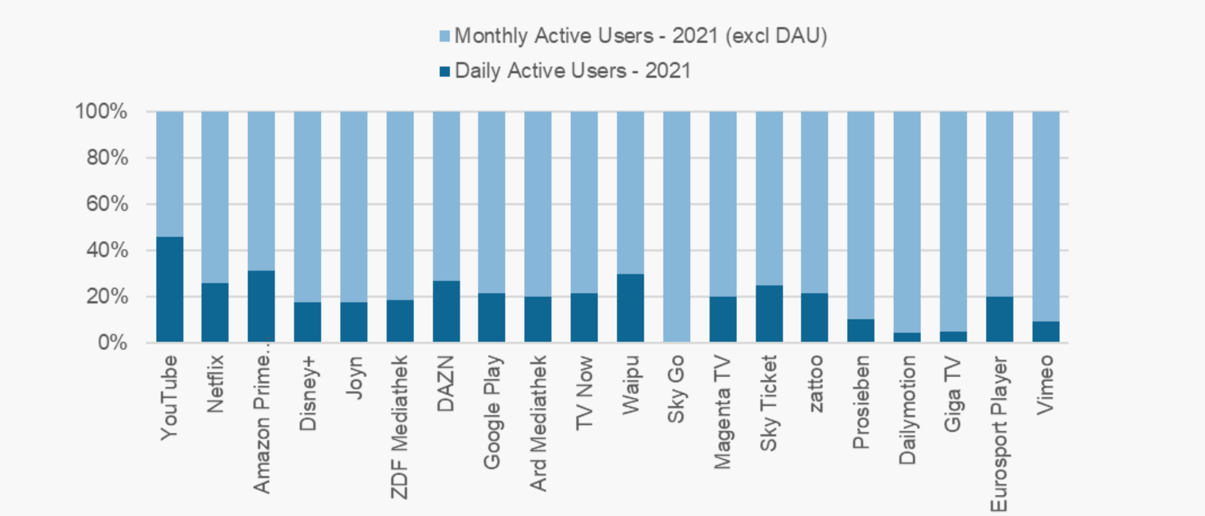
Source: WIK, based on Statista

3.3.3 Daily active users of video streaming apps

Monthly usage can cover a wide spectrum of users, from consumers using the app a couple of times per month to those using it on a regular or even daily basis. Therefore, the indicator 'daily active users' complements the view above.

The following graph shows which part of the monthly active users are in fact 'heavy' users, which stream audio on a daily basis. The figure has expressed the amount of daily active users as % of the encompassing group of monthly active users. The higher the % of daily active users the more a certain video streaming app is used, which will result in a higher number of minutes of monthly usage, which we will discuss later.

Figure 21 Comparison of monthly active users versus daily active users per app – video streaming



Source: WIK, based on Statista

In 2021, there were 27 million daily active users in an average month streaming video via apps in Germany, which is slightly more than in 2020. On average across Android and iOS devices, in Germany 37% of all monthly active users are using these apps on a daily basis.

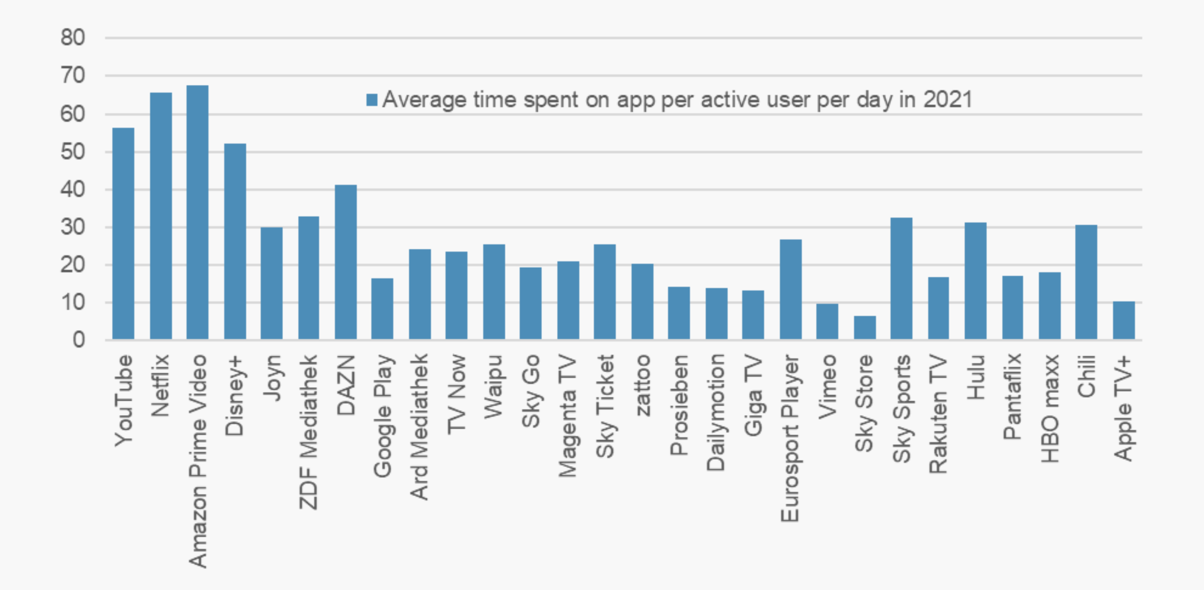
As can be seen from above graph, this varies mainly between 10 and 25% but there are outliers like YouTube, Amazon and Waipu with higher % (respectively 46,31 and 30%) on the one end and Dailymotion and Giga TV on the other end with only 4 and 5%.

There are some differences between Android and iOS , but no specific pattern and the overall % in both segments is similar, 38 vs. 33%.

3.3.4 Time spent per active user on video streaming apps

To translate active users into viewing time in minutes, one needs to know the average time spent per active user per app. The monitoring in Germany showed that, in general, users of video streaming apps in 2021 viewed at least 10 minutes per day per app, but this can go up to almost 70 minutes per day per app. For more details per app see the following figure.

Figure 22 Average time spent on app per active user per day in 2021 – video streaming



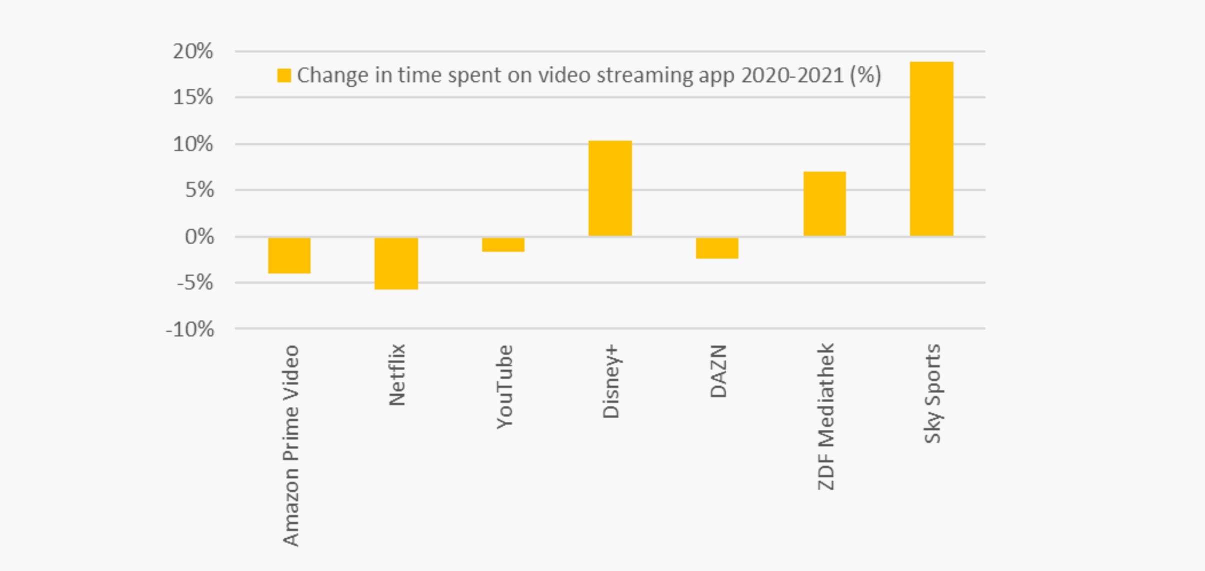
Source: WIK, based on Statista

On average, active users in Germany have been watching video streaming in 2021 for around half an hour per day per app, but this may vary between 10 minutes for the least popular to almost 70 minutes per day for the most popular ones.

Looking at the content category, we note that active users spend most time viewing video on demand (between 50-70 minutes per day per app). Furthermore, among paid content such as Netflix, Amazon and Disney+, the appeal of non-paid user uploaded content of YouTube is still remarkable (56 minutes). Media libraries and paid sport content is viewed for only half the time, compared with video and YouTube (between 20 and 30 minutes per day).

Looking at the trend from 2020 to 2021, below figure shows the relative change in time spent per active user per app. Overall, the time spent per active user per app remained stable and did not decrease as was the case for audio streaming. However the top 3 faced a small decrease in time spent from its active users, where Disney+ saw a 10% increase of viewing time. Outside the top 10, there are some video platforms which have succeeded in growing their viewing time per active user even stronger: HBO Maxx, Rakuten TV, Google Play and Apple TV+. However, in terms of market share, these smaller parties do not really play a role.

Figure 23 Trend 2021-2020 – Time spent per active use on video streaming

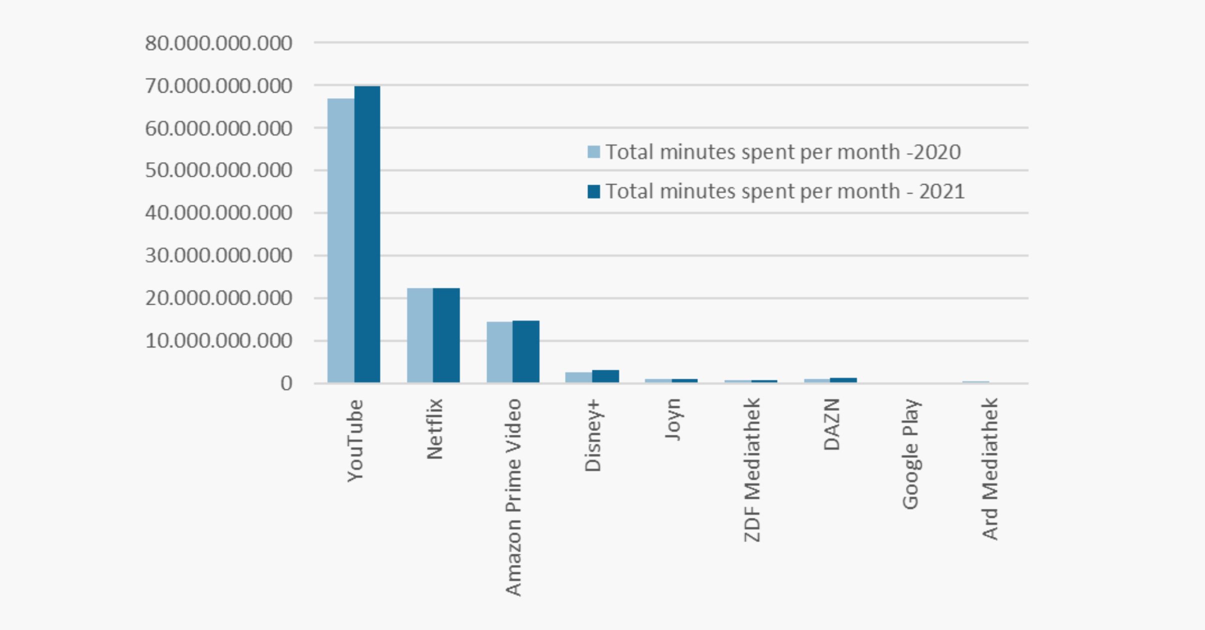


Source: WIK, based on Statista

3.3.5 Usage in minutes of video streaming apps

Ultimately, the number of monthly active users combined with the monthly time spent per app results in minutes of usage per month per app, which is presented in the following graph. Overall, German active users in 2021 streamed well over 113 billion of minutes of video, TV or other content each month, which is 11% more than in 2020. This growth is due to the slightly increased time spent per month per active user (+1%) combined with a growing number of monthly active users of video streaming apps (+6%) and stable daily active usage.

Figure 24 Total usage of video streaming apps per month in Germany



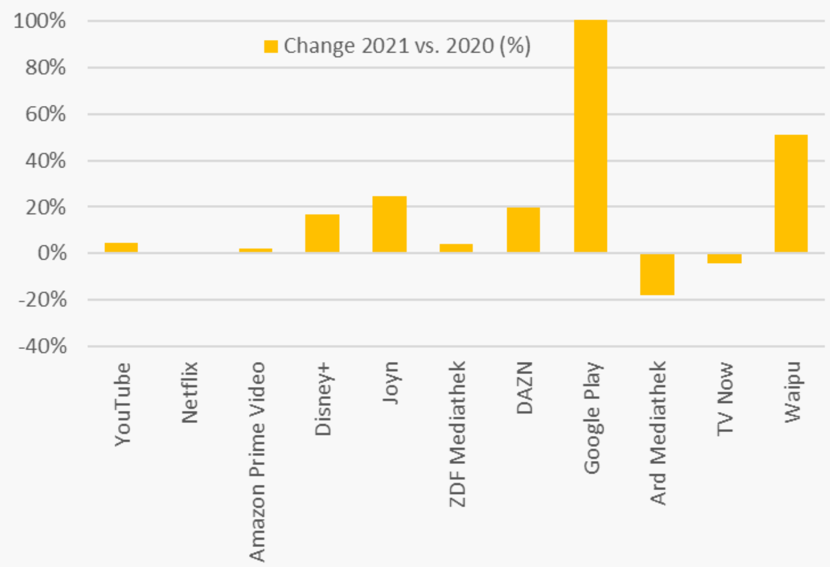
Source: WIK, based on Statista

With respect to usage, video streaming via Android devices plays an even larger role than for audio streaming. 82% of all monthly aggregated video streaming originates from Android devices versus only 18% from Apple iOS devices. Considering the market share of Android mobile devices (71% in 2021) in Germany, this suggests that Android devices are linked to more active usage of video streaming apps compared to iOS devices.

The total aggregated usage of video streaming apps in Germany in 2021 was even more concentrated than for audio streaming. The YouTube app captured 60% of all monthly usage, followed by Netflix (19%) and Amazon Prime Video (13%). The high share of YouTube can also be interpreted as the negative effect of bundling of a vertically integrated (Android) ecosystem.

The following figure shows the change in the sum of all monthly usage of video streaming apps from 2020 to 2021 and makes it clear why the top 4 providers maintained their pole positions in terms of total usage.

Figure 25 Trend 2021-2020 (%) – sum of all monthly usage of video streaming apps in Germany



Source: WIK, based on Statista

Fastest growers in the whole video streaming market were to be found with the smallest parties with market shares below 1%, i.e. newcomer HBO Maxx (+3230%), followed by Sky Sports (+446%) and Google play (+198%).

In conclusion, we can say that the small growth in using video streaming platforms in Germany (+4%) is mainly due to growing numbers of active users (+6%) but also due to a slightly increased viewing time (+1%). This differentiated the video streaming market from the audio streaming where listening time decreased up to 30% for certain apps. Especially, the largest market player YouTube is still seeing a small growth in active users, where all the other large platforms are stable. Interestingly, there does not seem to be much switching between the large video platforms either. The other component, viewing time per active user, is overall stable.

We conclude that 2021 has been a good year for the large video streaming platforms in Germany, but YouTube seems to be the winner as it performed consistently overall better on number of active users, viewing time per active user and total usage.

3.3.6 Usage of video streaming via browser instead of apps

Most users of video streaming in Germany use their apps on their mobile and/or their tablets, but one can also access video streaming platform via a browser from either desktop PC, laptop or mobile.

If we look at the top 5 browsed video streaming platforms in Germany, there are familiar names like YouTube, Netflix and Disney+, but also the media libraries of ZDF and ARD are browsed. However, when putting the amount of minutes via browsing in relation to the amount of minutes via app usage, it is only YouTube with a significant amount (23%). All other providers lay with a browsing usage below 5% as can be seen in below table.

Table 6 Browsing of video platforms in Germany in 2021

(x 100,000 minutes)	Monthly usage via apps - 2021	Monthly usage via browsing - 2021	% browsing of total usage	% of browsing via desktop
YouTube	684.862	213.390	23,8%	90%
Netflix	213.381	9.282	4,2%	99%
Amazon Prime Video	147.513	2,0	0,0%	100%
Disney+	30.491	950	3,0%	95%
Joyn	11.051	37	0,3%	80%

Source: WIK, based on Statista

The large amount of YouTube browsing could have different reasons; from historic usage (YouTube started as a website) but also because browsing YouTube enables more functions compared to using the app (for example background usage, picture in picture but also the use of plug-ins to block adds on YouTube while viewing the freemium version).

Comparable with audio streaming in Germany, most of the browsing of video streaming platforms takes place from desktop PC or laptops and not from mobile phones.

3.4 Conclusions on video streaming

In Germany, there are 70 million active users of video streaming services watching either linear TV or other content like videos and sports over the internet. This is significantly more than the 45 million active user for audio streaming, however this is because the video streaming market is more fragmented. People who stream video, use on average up to 5 different apps versus 3 for audio streaming. Hence, this results in around 14 million unique users of video streaming, which is less than the 16 million unique users for audio streaming.

The usage of video streaming apps in Germany was in 2021 even more concentrated than for audio streaming. The YouTube app captured 59% of all monthly usage, followed by Netflix (19%) and Amazon Prime Video (13%). Due to YouTube user generated content plays a more prominent role in contrast to audio streaming. In addition to streaming via apps, there was significant (additional) usage of YouTube via web browsing (almost 24% of all YouTube video usage via the app). This is exceptional as usage via a browser for other video (but also audio) streaming platforms is at maximum around 4% of all usage.

The average viewing time per app per active user is around 30 minutes per day per app, but varied between 10 minutes for the least popular app to more than an hour for the most popular apps like Netflix and YouTube. As users of video streaming use on average around 5 different apps, the total watching time per day increases further. Overall, the time spent by consumers streaming video in Germany was almost twice the time spent on audio streaming (116 billion minutes in an average month versus 58 billion for audio streaming).

More than 80% of the usage of video streaming apps comes from Android devices, which is higher than the market shares of Android and iOS devices in Germany (70/30%). Therefore, the relative amount of video streaming seems to be higher from Android devices, which is another difference with audio streaming, which had the same distribution between Android and iOS.

Overall, in 2021, usage of video streaming has grown with 11%, not only due to the growing popularity in terms of monthly active users (+6%) but also due to a slightly increased viewing time (+1%). This differentiated the video streaming market from the audio streaming market where listening time decreased up to 30% for certain apps. We conclude that 2021 has been a good year for the large video streaming platforms in Germany, but YouTube seems to be the winner as it performed consistently better overall on number of active users, viewing time per active user and total usage. The relevance of each indicator however depends on the business model. Subscription video on demand platforms are benefitting from a higher number of active users where free video on demand providers (or combined with subscription) mostly benefit from longer usage, and hence more possible advertising time.

Overall, we conclude that the trends on the markets for audio and video streaming are not similar. Despite Covid, there was less listening time for audio apps overall where viewing time for video streaming grew. While 2 out of the top 3 providers on both markets are the same (YouTube, Amazon), their ranking differs between the audio and video streaming market. The fact that the top 4 players solidified their positions is similar in both markets.