The State of Mobile Video (September 2018)

For years, OpenSignal has reported on the speed, availability and latency metrics of the world's mobile operators. But now, we're taking a look at aspects of the mobile user experience one step further. Keeping with our mission of measuring what real people care about, we've been measuring the quality of the video that people watch on their service on mobile networks today: video. OpenSignal analyzed the consumer mobile video experience in 88 countries around the world, and the results were definitely surprising. Countries with the most sophisticated networks and the fastest speeds aren't necessarily those providing the highest quality video viewing experience. In the case of mobile video, faster isn't always better.

Report Facts

87,011,812,678	8,000,357	May 14th - Aug 11th 2018	Global
Measurements	Test Devices	Sample Period	Report Location

Sample Period

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Highlights

Many countries provide a Very Good video experience

Eleven of the 88 countries we analyzed earned a Very Good rating on OpenSignal's video experience scale, meaning mobile users in those countries have a good chance at HD video resolution. But even among those eleven nations there is still room for improvement. No country achieved the highest video experience rating of Excellent.

European countries top our mobile video chart

European countries tended to outperform the rest of the world in mobile video experience. Nine of the top 20 nations top our list, but of the 11 countries that earned a Very Good score, nine of them were in Europe.

The fastest country doesn't offer the best mobile video quality

South Korea may be the fastest of the 88 countries we analyzed in this report, but 13 other countries ranked higher in video experience. The best video experiences we recorded was in the Czech Republic.

The relationship between speed and video experience is complicated

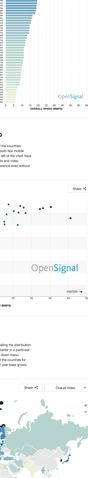
OpenSignal's analysis shows that video experience and connection speed are linked in countries where speeds are relatively slow, but once a country passes the 15 Mbps threshold in average overall download speed, the speed of connections has little bearing on streaming video quality.

Overall Video Experience

This chart shows the video experience scores for each country. OpenSignal's video experience score is a weighted average approach for determining video quality. The metric calculates latex picture quality, video loading time and video stalling events. We report on a country's video experience using a scale from 100, with scores falling into the following categories:

- 75-100 Excellent
- 65-75 Very Good
- 55-65 Good
- 45-55 Fair
- 0-45 Poor

Overall Video Experience Comparison

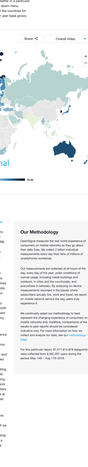


Overall Speed

This chart shows the overall download speed for each country and over 6 months of data. We define overall speed as the average download speed users experienced based on both the speeds and availability of a country's 3G and 4G networks.

Overall download speed measurements vary considerably from country to country depending on the availability of 3G and 4G deployments. For instance, a country with fast LTE speeds but limited 3G availability may still have overall speed that is comparable with moderate LTE speeds but a very high level of 3G availability.

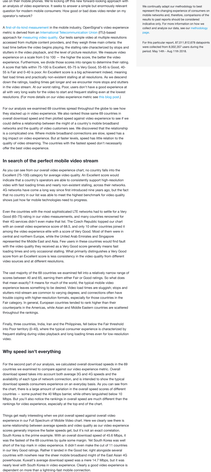
Overall Download Speed Comparison



The Full Spectrum of Mobile Video

This chart plots overall video experience against overall download speed for all of the countries covered in this report. Countries that fall in the upper right-hand corner have both fast mobile download speeds and good video experiences. Countries that fall in the lower left-hand corner have slower speeds and offer a poorer video experience. As the graph indicates, speeds and video experience are loosely related, but it is possible to offer a good mobile video experience even without fast download speeds.

Comparing Overall Video Experience and Download Speed



The Global Picture

All of the countries we analyzed in this report are shown on this interactive map, detailing the distribution of mobile networking capabilities across the world. Those countries that perform better in a particular metric are shaded darker, and you can select different metrics to view in the drop-down menu. Countries not included in this report are shaded in gray. Our sample only included the countries for which we collected a statistically significant amount of OpenSignal analysis. As our user base grows, we'll continue to add more countries to our reports.

Global Map

Analysis

At OpenSignal we have always prided ourselves on our ability to measure what the mobile user actually experiences. We've long been the app that consumers and companies use to test smartphones, rather than the highly optimized benchmarks typically reported. We track how often real users have access to 4G signals in the networks they use, and we measure how quickly users can download files and how long it takes mobile apps to especially load today, but to the person who uses a smartphone, the most important question is how good a mobile video experience they can get on their mobile network. We're kicking off this new forward-looking approach with an analysis of video experience. It seeks to answer a simple but enormously relevant question for modern mobile consumers: How good or bad does video render on my operator's network?

A first of its kind measurement for the mobile industry, OpenSignal's video experience score is a weighted average approach for measuring video quality. Our metric samples video of mobile-optimized videos streamed from multiple content providers, and they weigh three main criteria: the quality of the video that actually loads, how long it takes for videos to begin playing, and how many times users experience a long stoppage in the middle of a video. We measure video experience on a scale from 0 to 100 — the higher the score, the better the video experience. Furthermore, we divide those scores into ranges to determine their rating. A score that falls within 75-100 is Excellent, 65-75 is Very Good, 55-65 is Good, 45-55 is Fair, and 0-45 is Poor. We believe that this approach to measuring video experience is the most fair and practically non-existent stalling at all resolutions. We are devoted, down the settings, loading times get longer and we encounter more stops and stutters as users move down the scale. Our metric reflects that, but it also recognizes that buffering at with very long pauses for the video to start and frequent stalling even at the lowest resolutions. (For more details on our video experience metric see this blog post.)

For our analysis we examined 88 countries across the globe to see how well they stacked up in video experience. We also sorted those same 88 countries in overall download speed and then plotted overall video experience to see if we could define a relationship between the might of a country's mobile broadband network and the quality of video experience that users in those countries enjoy. It is a complicated one. Where mobile broadband connections are fast, speed has a big impact on video experience. But at faster levels, speed has little relation to the quality of video experience. Countries with the fastest speed don't necessarily offer the best video experience.

In search of the perfect mobile video stream

As you can see from our overall video experience chart, no country falls into the Excellent (75-100) category for average video quality. An Excellent score would indicate that a country's operators are able to consistently support high-resolution video streaming, and that users in those countries rarely experience long stoppages. HD networks have come a long way since first introduced nine years ago, but the fact that no country in our sample was able to meet the highest benchmark for video quality shows just how far mobile technologies need to progress.

Even the countries with the most sophisticated LTE networks had to settle for a Very Good (55-75) rating in our video measurements, and many countries received far less. Of 88 countries didn't even make that list. The Czech Republic topped our chart with a score of 64 out of a possible 100, and it was the only country that we found among the video experience elite with a score of Very Good. Most of them were in central and northern Europe, while the United Arab Emirates and Singapore represented Asia and Oceania. The rest of the top countries in our chart had fast LTE networks with the video quality they received are a Very Good score primarily made that leading times and only occasional stalling. What primarily distinguishes a Very Good video from a Good one is the consistency of the video quality from different video sources and at different resolutions.

The vast majority of the 88 countries we examined fell into a relatively narrow range of scores between 40 and 60, earning them either Fair or Good ratings. So what does that Fair or Good rating mean? It means that the video quality users experience leaves something to be desired. Video load times are sluggish, stops and stutters mid-stream are common to varying degrees, and connections often have difficulty streaming high-resolution videos. Countries in Southeast Asia, the Pacific Pacific Ocean, and the Caribbean, and Central and Eastern Europe, fell into this category. In general, European countries tended to rank higher than their counterparts in the Americas, while Middle and Middle Eastern countries are scattered throughout the rankings.

Finally, three countries, India, Iran and the Philippines, fell below the Fair threshold into Poor territory (0-45), where the typical consumer experience is characterized by frequent stalling during video playback and long loading times even for low-resolution video.

Why speed isn't everything

For the second part of our analysis, we calculated overall download speeds in the 88 countries we analyzed in this report. We combined each country's average 3G download speed (taken into account both average 3G and 4G speeds and the availability of each type of network connection), and is intended to show the typical download speeds consumers experience on an everyday basis. As you can see from the chart, there is a large amount of variation in the overall speed scores of different countries. Unsurprisingly, the countries with the most developed 3G and 4G networks tend to offer fast speeds, but even the most sophisticated nations vary in their rankings for video experience, especially at the top end of the chart.

Things get really interesting when we plot overall speed against video experience in our Full Spectrum of Mobile Video chart. Here we clearly see there is a relationship between speed and video experience, but it is not a simple one. Countries scores generally improve the faster speeds get, but it's not an exact correlation. South Korea is the prime example. With an overall download speed of 43.6 Mbps, it was the fastest of the 88 countries by quite some margin. Yet South Korea was well short of the top mark in video experience. It didn't even make the cut of 11 countries that earned a Very Good score. In South Korea, video experience was better than in countries with nowhere near the sheer mobile broadband might of the East Asian 4G powerhouse. Korea's average download speed was a mere 14.7 Mbps, but it was Czech Republic that offered the best video experience. Clearly, video experience is dependent on more than a lightning fast mobile connection.

Where we see the biggest correlation between speed and video quality is among the countries with slower mobile connections. Nearly all of the countries that had Fair video ratings fell within a tight cluster below the 14 Mbps overall speed mark, and in this group a small increase in overall speed often coincided with a sharp uptick in the video experience scale. At the lower end of the table, speed always is a big factor in video experience, and even a few Mbps can make the difference between a stall bound in speed can have a big impact on video experience.

But right around the 15 Mbps threshold, our plot curve starts leveling off and the distribution of countries along that curve becomes far more random. That marks the tight relationship between video experience and download speed becomes much looser. Countries with average download speeds of 15 Mbps can provide their users with a decent video experience, but they can also provide their users with a terrible one. In the middle of the pack, speed matters a little bit, but there are many other factors at play. Consumers in those countries may get a good video experience, but they may also get a terrible one. Speed is not the only factor determining the quality of video in these countries with sophisticated LTE networks. We would argue that it's time for the mobile industry to move beyond the simple narrative that faster always means better and focus on factors that go into ensuring a good mobile Internet experience. Video is the ideal place to start as it depends on so many elements: the availability of HD connections, latency, and the ability of mobile networks to maintain a steady, high-quality individual data-stalling pockets of operators.

Judged by the user experience rather than raw measurements, the mobile industry still has work to do when it comes to video. Countries with extremely powerful LTE networks and fast average download speeds don't always provide the best video experience. And no country yet has managed to achieve the highest level of video streaming quality. If operators want to ensure that their customers get the most out of their expensive, building faster and faster LTE-Advanced networks isn't necessarily the answer.

It might well be the case that the best quality video experience may not come from a 4G network. 5G is often touted for its gigabit speeds, but more important for video quality is the promise of lower latency and more bandwidth for busy areas. Operators respectively cut down on video load times and create the resident connections necessary for consistent video playback. There's no question that 4G revolutionized the mobile world, but in order for mobile video to reach its full potential, we may need to wait for 5G.

Our Methodology

OpenSignal measures the real world experience of consumers on mobile networks as they go about their daily lives. We collect 2 billion individual measurements from 80,000 different models of smartphones worldwide.

Our measurements are collected at all hours of the day, every day of the year, under conditions of normal usage, including mobile buildings and in the background while users are using other applications in between. By analyzing our raw data measurements recorded in the places where people actually use their phones, we can report on mobile network service the way users in the real world experience it.

We continually adapt our methodology to best represent the changing mobile experience on mobile networks and, therefore, comparisons of the results between different reports are indicative only. For more information on how we collect and analyze our data, see our methodology page.

For this particular report, 87,011,812,678 datapoints were collected by 8,000,357 devices during the period May 14th - Aug 11th 2018.

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