

TECH

YouTube Tops 1 Billion Hours of Video a Day, on Pace to Eclipse TV

Google unit posts 10-fold increase in viewership since 2012, boosted by algorithms personalizing user lineups

By Jack Nicas

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YouTube viewers world-wide are now watching more than 1 billion hours of videos a day, threatening to eclipse U.S. television viewership, a milestone fueled by the Google unit's aggressive embrace of artificial intelligence to recommend videos.

YouTube surpassed the figure, which is far larger than previously reported, late last year. It represents a 10-fold increase since 2012, YouTube said, when it started building algorithms that tap user data to give each user personalized video lineups designed to keep them watching longer.

Feeding those recommendations is an unmatched collection of content: 400 hours of video are uploaded to YouTube each minute, or 65 years of video a day.

“The corpus of content continues to get richer and richer by the minute, and machine-learning algorithms do a better and better job of surfacing the content that an individual user likes,” YouTube Chief Product Officer Neal Mohan said.

YouTube's billion-hour mark underscores the wide lead of the 12-year-old platform in online video—threatening traditional television, which lacks similarly sophisticated tools.

Facebook Inc. and Netflix Inc. said in January 2016 that users watch 100 million hours and 116 million hours, respectively, of video daily on their platforms. Nielsen data suggest Americans watch on average roughly 1.25 billion hours of live and recorded TV a day, a figure steadily dropping in recent years.

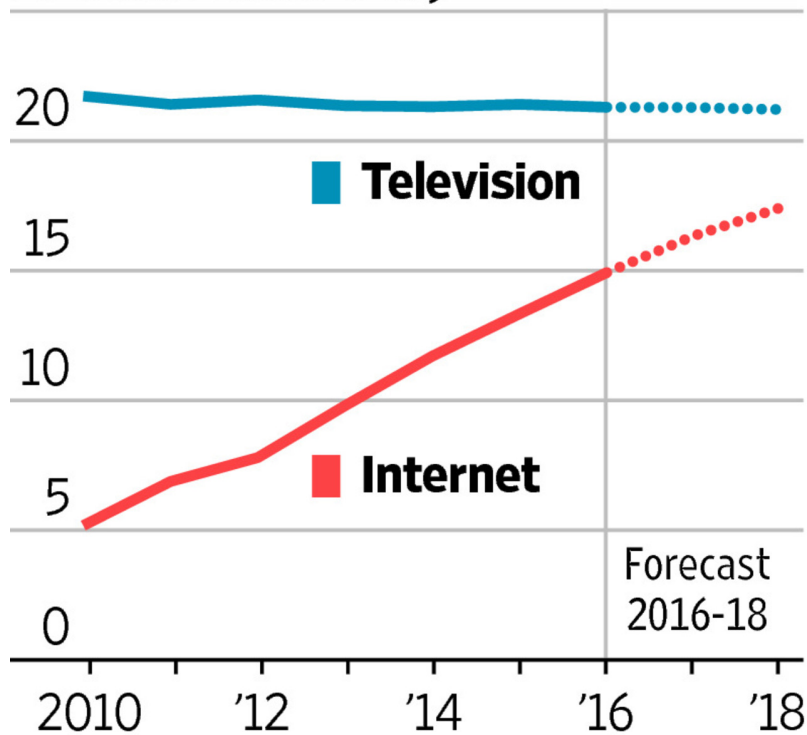
Despite its size, it is unclear if YouTube is making money. Google parent Alphabet Inc.

GOOG **1.31%** ▲ doesn't disclose YouTube's performance, but people familiar with its financials said it took in about \$4 billion in revenue in 2014 and roughly broke even.

Tube Time

Estimated global time spent
by medium a day

25 billion hours a day



Source: Zenith

THE WALL STREET JOURNAL.

MERRILL SHERMAN

YouTube makes most of its money on running ads before videos but it also spends big on technology and rights to content, including deals with TV networks for a planned web-TV service. When asked about profits last year, YouTube Chief Executive Susan Wojcicki said, “Growth is the priority.”

YouTube’s success using tailor-made video lineups illustrates how technology companies can reshape media consumption into narrow categories of interests, a trend some observers find worrying.

“If I only watch heavy-metal videos, of course it’s serving me more of those. But then I’m missing out on the diversity of culture that exists,” said Christo Wilson, a Northeastern University

computer-science professor who studies the impact of algorithms. “The blessing and curse of cable and broadcast TV is it was a shared experience....But that goes away if we each have personalized ecosystems.”

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YouTube benefits from the enormous reach of Google, which handles about 93% of internet searches, according to market researcher StatCounter. Google embeds

YouTube videos in search results and pre-installs the YouTube app on its Android software, which runs 88% of smartphones, according to Strategy Analytics.

That has helped drive new users to its platform. About 2 billion unique users now watch a YouTube video every 90 days, according to a former manager. In 2013, the last time YouTube disclosed its user base, it said it surpassed 1 billion monthly users. YouTube is now likely larger than the world’s biggest TV network, China Central Television, which has more than 1.2 billion viewers.

YouTube long configured video recommendations to boost total views, but that approach rewarded videos with misleading titles or preview images. To increase user engagement and retention, the company in early 2012 changed its algorithms to boost watch time instead. Immediately, clicks dropped nearly 20% partly because users stuck with videos longer. Some executives and video creators objected.

Months later, YouTube executives unveiled a goal of 1 billion hours of watch time daily by the end of 2016. At the time, optimistic forecasts projected it would reach 400 million hours by then.

YouTube retooled its algorithms using a field of artificial intelligence called machine learning to parse massive databases of user history to improve video recommendations.

Previously, the algorithms recommended content largely based on what other users clicked after watching a particular video, the former manager said. Now their “understanding of what is in a video [and] what a person or group of people would like to watch has grown dramatically,” he said.

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—Northeastern University computer-science professor Christo Wilson

Engineers tested each change on a control group, and only kept the change if those users spent more time on YouTube.

One strategy was to find new areas of user interest. For instance, YouTube could suggest a soccer video to users watching a lot of football, and then flood the lineup with more soccer if the first clip was a hit. “Once you realize there’s an additional preference, exploit that,” the former manager said.

But the algorithm didn’t always deliver. For instance, when Ms. Wojcicki joined as CEO in 2014, YouTube recommended videos to her about eczema because she had recently watched a clip about skin rashes after suspecting one of her children had one, said Cristos Goodrow, YouTube’s video-recommendation chief.

That made the video-recommendation team realize there were certain “single-use videos” to ignore as signals of user interest. But to mark them, they had to think of each example, such as certain health and how-to videos.

Then last year YouTube partnered with Google Brain, which develops advanced machine-learning software called deep neural networks, which have led to dramatic improvements in other fields, such as language translation. The Google Brain system was able to identify single-use video categories on its own.

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