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# A Week in the Life of Popular YouTube Channels

*An analysis of every video posted by high-subscriber channels in the first week of 2019 finds that children’s content – as well as content featuring children – received more views than other videos*

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## A Week in the Life of Popular YouTube Channels

*An analysis of every video posted by high-subscriber channels in the first week of 2019 finds that children’s content – as well as content featuring children – received more views than other videos*


The media landscape was upended more than a decade ago when the video-sharing site YouTube was launched. The volume and variety of content posted on the site is staggering. The site’s popularity makes it a launchpad for performers, businesses and commentators on every conceivable subject. And like many platforms in the modern digital ecosystem, YouTube has in recent years become a flashpoint in ongoing debates over issues such as [online harassment](#), [misinformation](#) and the impact of technology on [children](#).


Amid this growing focus, and in an effort to continue demystifying the content of this popular source of information, Pew Research Center used its own custom [mapping technique](#) to assemble a list of popular YouTube channels (those with at least 250,000 subscribers) that existed as of late 2018, then conducted a large-scale analysis of the videos those channels produced in the first week of 2019. The Center identified a total of 43,770 of these high-subscriber channels using a process similar to the one used in our [study of the YouTube recommendation algorithm](#). This data collection produced a variety of insights into the nature of content on the platform:

**The YouTube ecosystem produces a vast quantity of content.** These popular channels alone posted nearly a quarter-million videos in the first seven days of 2019, totaling 48,486 hours of content. To put this figure in context, a single person watching videos for eight hours a day (with no breaks or days off) would need more than 16 years to watch all the content posted by just the most popular channels on the platform during a single week. The average video posted by these channels during this time period was roughly 12 minutes long and received 58,358 views during its first week on the site.


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### A week in the life of popular YouTube channels


 **43,770** channels with at least **250,000** subscribers

 **56%** posted a video during the first week of 2019

 **243,254** videos

 Just **17%** were in English

 Over **48,000** total hours

 Over **14 billion** views in one week

Source: Analysis of videos posted Jan. 1-7, 2019, by YouTube channels with at least 250,000 subscribers, collected using the YouTube Data API.

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Altogether, these videos were viewed over 14.2 billion times in their first seven days on the platform.<sup>1</sup>

**YouTube is a global phenomenon, and its most popular channels posted a substantial amount of content in languages other than English.** Using a combination of hand-labeling and machine learning, the Center categorized videos based on whether or not they contained any text or audio in a language other than English. The results of this analysis illustrate the global nature of the YouTube platform. Just over half of these channels (56%) posted a video during the first week of 2019, and the majority of these active channels (72%) posted at least one video that was partially or completely in a language other than English. Overall, just 17% of the nearly quarter-million videos included in this analysis were fully in English.

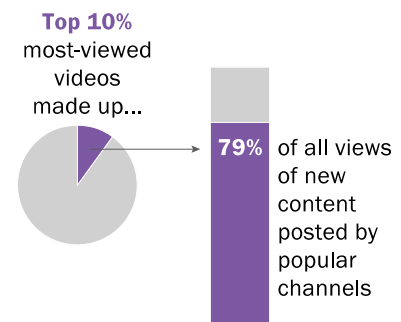
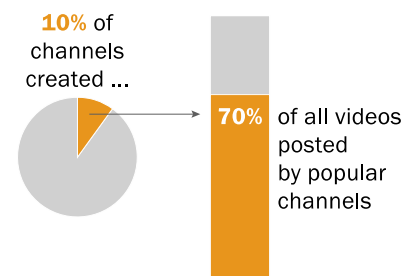
**A small share of highly active creators produced a majority of the content posted by these popular channels.** As is the case with many online platforms (such as [Twitter](#)) a relatively small share of channels were responsible for a majority of the content posted during the study period. Just 10% of the popular channels identified in the Center’s mapping produced 70% of all the videos posted by these channels during the first week of 2019. Similarly, the 10% of popular-channel videos that had the most views in this period were responsible for 79% of all the views that went to new content posted by these channels.

**The total number of high-subscriber channels increased dramatically in the second half of 2018.** The Center’s mapping process identified 9,689 channels that crossed the 250,000-subscriber threshold between July 2018, when the Center last conducted [an analysis of YouTube data](#), and December 2018, when the data was updated for this analysis. That represents a 32% increase in the total number of popular channels over that period. By the same token, the number of

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### Large majority of videos from popular YouTube channels came from a small share of producers

*Of YouTube videos produced by popular channels during the first week of 2019 ...*



Source: Analysis of videos posted Jan. 1-7, 2019, by YouTube channels with at least 250,000 subscribers, collected using the YouTube Data API.

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<sup>1</sup>YouTube uses a proprietary algorithm to determine how many times a video has been watched by actual humans, as opposed to computer programs. While it has not released an official threshold, a [number of third parties](#) report that “views” do not appear to be counted unless a user watches at least 30 seconds of a video.

subscribers to existing popular channels that had already been identified as of July 2018 increased by an average of 27% over the same period.

In addition to this broader data collection, Pew Research Center also conducted a separate content analysis of the English-language videos posted by these popular channels over the first week of 2019 (in total, 37,079 videos met this description). The Center used human coders to identify the primary category or theme of each video (such as video games, consumer technology or current events and politics), and also examined the keywords used in video titles and descriptions to identify words that were widely used and associated with higher view counts relative to other videos. Some of the key findings from this analysis include:

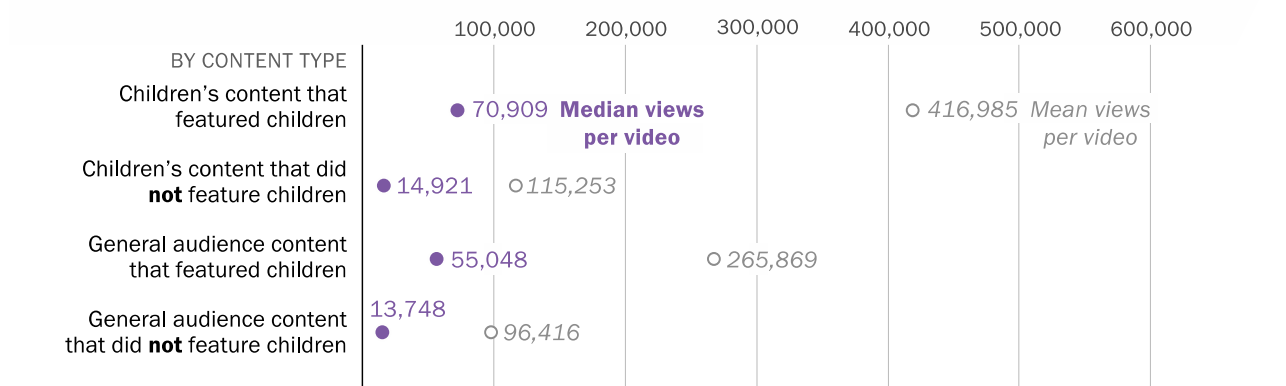
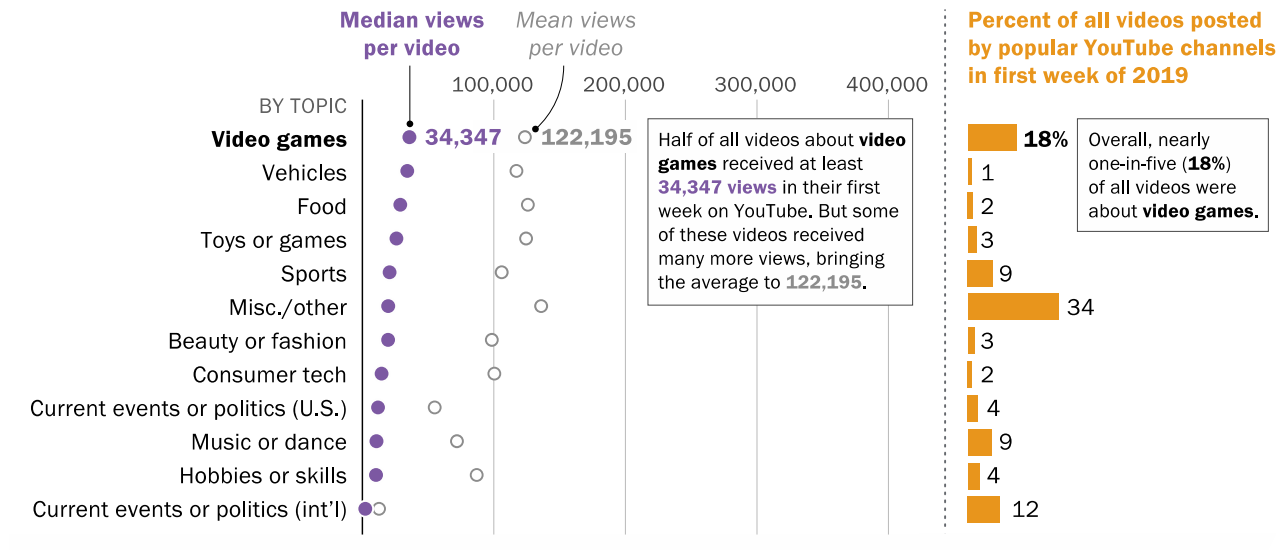
**Videos aimed at children were highly popular, as were those that featured children under the age of 13 – regardless of their intended audience.** Only a small share of English-language videos posted by these popular channels during the study period were explicitly intended for children (based on a consensus of human coders). But those that were tended to be longer, received more views, and came from channels with a larger number of subscribers relative to general-audience videos. More broadly, videos featuring a child or children who appeared to be under the age of 13 – regardless of whether the video in question was aimed exclusively at children or not – received nearly three times as many views on average as other types of videos. And the very small subset of videos that were directly aimed at a young audience and *also* featured a child under the age of 13 were more popular than any other type of content identified in this analysis as measured by view counts.

It should be noted that YouTube explicitly states that the platform is not intended for children under the age of 13. YouTube provides a [YouTube Kids](#) platform with enhanced parental controls and curated video playlists, but the analysis in this report focuses on YouTube as a whole.

**English-language videos related to current events or politics posted by these popular channels tended to have an international (rather than U.S.) focus.** Videos explicitly related to current events or politics were relatively common, comprising 16% of all English-language videos uploaded during the study period. However, the majority of these videos were international in focus and did not mention events, issues or opinions related to the United States. While channels that posted one or more U.S. current events or politics videos were particularly active – posting an average of 63 total videos during the week – U.S. current events or politics videos comprised just 4% of all of the videos that were posted by popular channels overall.

## Videos for children – as well as those featuring children – received a large number of views during the study period relative to other topical categories

Median/mean views among English-language videos about \_\_\_\_ posted by popular YouTube channels during the first week of 2019



Note: Topics developed by Pew Research Center researchers and assigned to individual videos by human coders.  
 Source: Analysis of English-language videos posted Jan. 1-7, 2019, by YouTube channels with at least 250,000 subscribers, collected using the YouTube Data API. View totals calculated based on each video's first seven days on the site.  
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### Content involving video games was a fixture of popular channels on YouTube.

Meanwhile, some 18% of English-language videos posted by popular channels during the study period related to video games or gaming. Content about video games was one of the most popular genres of content as measured by total views during the seven days of the study period, and these videos also tended to be much longer than other types of videos.

**Certain video title keywords were associated with increased view counts.** An analysis of the titles of English-language videos finds that certain keywords were associated with much higher view counts relative to other videos over the course of the study period. Some of these point to the platform’s orientation toward entertainment. For instance, videos mentioning words like “Fortnite,” “prank” or “worst” received more than five times as many views at the median as videos not mentioning those words. Others were more substantive in nature. For example, the use of the word “Trump” in video titles was associated with a significant increase in median views among videos about American current events or politics. Indeed, some 36% of videos about American current events or politics posted by these popular channels during the study period mentioned the words “president” or “Trump” in their titles.

**Cross-promotion of videos with other social media channels was both widespread and associated with an increase in views.** Seven-in-ten of these videos mentioned other prominent social media platforms such as Instagram or Twitter in their description (either in links or in the text itself), and those that did received more views than videos that did not link to other platforms.

The above findings are based on an analysis of YouTube channels with at least 250,000 subscribers and the videos they posted over the week of Jan. 1-7, 2019, building on the Center’s [previous study of the YouTube recommendation algorithm](#). Using several recursive and randomized methods, we traversed millions of video recommendations made available through the YouTube API and identified as many unique channels as possible. As of January 2019, 1,525,690 total channels had been found, 43,770 of which had at least 250,000 subscribers. For the purposes of this study, these are defined as “popular channels.” Using this list of popular channels, researchers collected every video published on these channels during the first week of 2019 and tracked each of them for the seven days following their publication.

### **A note on interpreting the findings in this study**

In the same way that survey research involves a certain degree of uncertainty and error, “big data” projects are also subject to potential error as well. While Pew Research Center made every attempt to conduct this analysis with rigor and accuracy, there are several different ways a modest amount of error may have been introduced. The findings presented here should be considered with this potential for error in mind.

- **Definition of popular channels.** The Center chose a minimum threshold of 250,000 subscribers for the channels included in this analysis. This cutoff ensured that the analysis was focused on the most popular channels on the site while also limiting the analysis to a

manageable number of channels that could be monitored and tracked in a timely manner. However, it is possible that the use of a lower (or higher) threshold and the inclusion of more (or fewer) channels would have yielded different results.

- **Missing popular channels.** Because there is no official, comprehensive list of YouTube channels (popular or otherwise), the Center used its own mapping technique to search for and identify channels. This process involved repeatedly following video recommendations from one channel to another for nearly a year until we could no longer identify any additional channels with more than 250,000 subscribers. It is possible that this process failed to identify all the popular channels on YouTube, but evidence suggests that the number of missing channels is likely to be negligible. During the final six months of channel mapping between July and December 2018, the list of popular channels that we had identified expanded by 44% – from 30,481 channels to 43,770. However, the bulk of these additions comprised known channels that had added new subscribers during that period. Just 12% of the new channels had not been previously identified by our mapping process.
- **Problems with the YouTube API.** During the data collection process, requests to the YouTube Application Programming Interface (API) occasionally failed for a variety of reasons. As a result, we were unable to capture 4% of the video time stamps we had intended to collect. Such hiccups are not uncommon when working with APIs, and can be due to bugs, issues with internet connectivity, changes to privacy settings made by channel owners, or simply because some videos were removed during the week. Because these errors were sporadic and appeared to occur at random, the Center was able to use estimation methods to fill in most of the missing values. While this introduced a small amount of approximation error, its impact on the findings presented here should be negligible.
- **Language misclassification.** Because it was unrealistic for humans to directly examine the nearly quarter-million videos posted by these channels, the Center trained a custom machine learning model to automate the process of classifying whether or not a video was in English. When compared with a sample of videos that had been coded by Center researchers, the classification model achieved 97% to 98% accuracy during various tests. However, 4% to 9% of the videos that it labeled as “English” contained content in other languages, and the model also misclassified 7% to 8% of the videos that human coders had identified as being in English. Videos that were incorrectly labeled as English by the model were later removed by human coders during content analysis, but it is likely that a small set of English videos were excluded from the analysis due to classification error.



- **Coder misclassification.** Pew Research Center used human coders to classify the content of the English-language videos examined in this study. Center researchers labeled a small sample of videos themselves, while the remaining thousands were each coded by three separate coders on [Amazon’s Mechanical Turk crowdsourcing platform](#). For each video, we then reconciled the results from the three coders using thresholds that maximized how much the crowdsourced results agreed with the Center’s researchers. While agreement was generally high, a modest number of disagreements and misclassifications are still likely to have occurred because the concepts studied here – such what qualifies as “children’s content” – inherently involve a certain degree of subjectivity.
- **YouTube is constantly changing.** The videos analyzed in this report represent those posted by channels with a certain number of subscribers over a particular period of time. Since then, many channels may have gained or lost subscribers, the publishing habits of popular channels may have changed, and the viewing habits of their subscribers may have as well. YouTube has also since [made changes to its policies](#) about the kinds of content that are acceptable to publish. Because of these and many other constantly shifting factors, the findings presented here may or may not represent the activity of popular channels at other times in the past, present or future.

## **1. Popular YouTube channels produced a vast amount of content, much of it in languages other than English**

YouTube is vast and constantly changing. In order to craft a manageable and meaningful research project, Pew Research Center limited the scope of data collection to only the most popular channels on the site. These popular channels alone produced a total of 243,254 videos during the first week of 2019, totaling 48,486 hours of content. The average video was 12 minutes long, although the length of videos posted during this period varied widely: Some 3% of the videos lasted longer than 60 minutes.

These findings also hint at the scale of how many hours people around the globe watch videos on the platform. Collectively, the videos produced by these popular channels were viewed over 14.2 billion times worldwide after one week on the site. Of course, these views were spread across a vast number of videos – each individual video received an average of 58,358 views in its first week, although 50% received fewer than 3,860 views. Conversely, a small fraction of these videos received substantial engagement: The 10% most-viewed videos were responsible for 79% of all the views that went to new content posted by popular channels during the week.

Videos generally received the most engagement during their first day on the platform, with engagement tapering off over the course of the week following their publication. Collectively, two-thirds (64%) of the total views that these videos received in their first week on the platform came on the day they were posted – as did 79% of their likes, 73% of their dislikes and 80% of their comments.

### **A majority of channels that posted a video in the first week of 2019 did so in a language other than English, and a small number of channels produced the majority of videos**

Just over half of the popular channels on YouTube posted at least one video on the platform during the first week of 2019, and a majority of them posted content that contained segments in a language other than English.<sup>2</sup> Of the 43,770 popular channels that the Center identified

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<sup>2</sup> Videos were classified using a supervised machine learning model trained on a dataset of 3,900 human-labeled videos. Videos containing any prominent content in another language (spoken or written) were marked as such, unless the video contained complete English subtitles. Videos that contained no spoken language were considered to qualify as English. The classifier achieved a high degree of accuracy (98%), precision (96%) and recall (92%), but a minority of videos may have been misclassified. All videos flagged as English were examined and false positives were corrected. However, the set of videos that have been labeled as containing content in another language – which was too large to examine and correct – may contain a small number of English videos. Findings presented here should accordingly be treated as estimates.

as of December 2018, 56% posted a video in the first week of the new year. And within this subset of active channels, 28% posted videos exclusively in English. Meanwhile, 67% posted videos exclusively in languages other than English, and 5% posted videos in multiple languages including English.

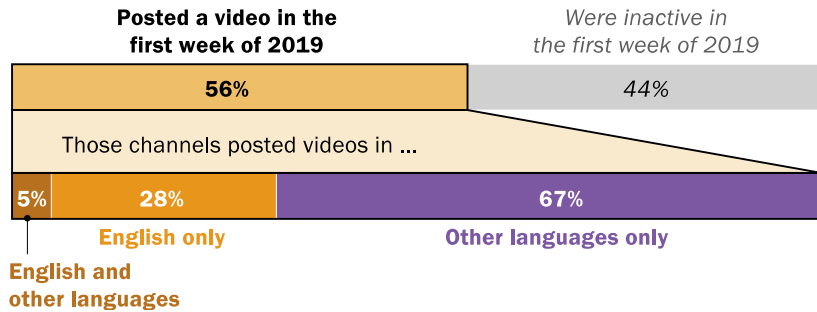
“Active” channels (those that posted at least one video in the first week of 2019) ranged widely in the quantity

of content they produced during the first week of 2019. Three-in-ten (31%) of these active popular channels posted exactly one video, while 55% posted more than one video but fewer than 10. Just 14% posted 10 or more videos during the study period, but this subset of channels was responsible for publishing 75% of all of the videos uploaded by popular channels during the week.

Channels that posted in both English and another language were especially likely to be part of this highly active group. Just 7% of English-only channels posted 10 or more videos, but that share increased to 16% among channels that posted exclusively in other languages, and to 36% among channels that posted videos in both English and other languages.

## More than half of popular YouTube channels posted a video in first week of 2019, but majority produced content in languages other than English

*% of YouTube channels with at least 250,000 subscribers that ...*

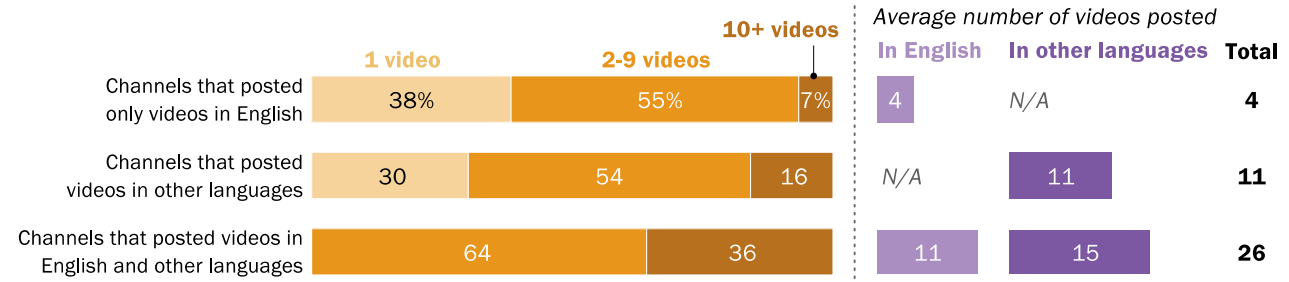


Source: Analysis of videos posted Jan. 1-7, 2019, by YouTube channels with at least 250,000 subscribers, collected using the YouTube Data API. Videos were classified by language using a supervised machine learning model trained on a dataset of human-labeled videos. “A Week in the Life of Popular YouTube Channels”

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## Popular channels that posted in English and other languages created more content during the study period

Among popular YouTube channels that posted at least one video during the first week of 2019, the % that posted ...



Source: Analysis of videos posted Jan. 1-7, 2019, by YouTube channels with at least 250,000 subscribers, collected using the YouTube Data API. Videos were classified by language using a supervised machine learning model trained on a dataset of human-labeled videos.

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To some extent, high levels of activity among channels that posted in both English and other languages are to be expected, because these channels by definition had to post at least two videos (one in English and one in another language) in order to belong to this group. At the same time, channels that posted in English and other languages posted more non-English videos than did channels that posted exclusively in other languages (15 videos in other languages vs. 11, on average), and also posted more English-language videos (an average of 11) than did channels that posted exclusively in English (average of 4).

Across all three groups (channels that posted exclusively in English, those that posted exclusively in languages other than English, and those that posted a mix of English and other languages) the 10 individual channels that posted the largest number of videos during the week were dominated by those offering news and sports content. For lists of the 10 most-active channels in each of these groups, [see Appendix A](#).

## Fewer than one-in-five videos from popular YouTube channels were in English, but these videos received more views than videos in other languages

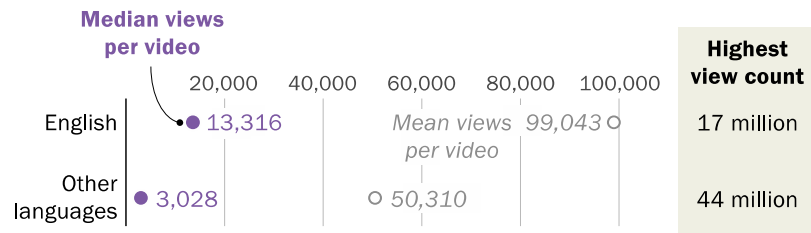
Thanks to these high levels of posting activity by non-English and multilingual channels, the majority of the individual videos posted by all popular channels were in a language other than English. This analysis finds that more than four out of every five videos uploaded to the site during the week contained content in a language other than English, while 17% of all the videos posted by popular channels during the week were in English. But despite being less common than videos in other languages, English-language videos tended to be more popular, generating a median of

13,316 views (99,043 on average) in their first week, compared with a median of just 3,028 (50,310 on average) for videos in other languages.

Put differently, English-language videos comprised just 17% of the videos that were published by popular channels during the week, but they received 28% of all of the views received by popular-channel videos during their first week after being published. English-language videos also received more likes (298 median vs. 42), dislikes (16 median vs. 5) and comments (47 median vs. 6) and were longer than videos with content in other languages (a median of 7 minutes vs. 4).

### English-language videos received more views during the week relative to content in other languages

Total views in the first seven days for \_\_\_ videos posted by popular channels on YouTube during the first week of 2019



Source: Analysis of videos posted Jan. 1-7, 2019, by YouTube channels with at least 250,000 subscribers, collected using the YouTube Data API. Videos were classified by language using a supervised machine learning model trained on a dataset of human-labeled videos. "A Week in the Life of Popular YouTube Channels"

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### Do popular channels produce the most popular videos?

To place the videos posted by popular channels in the context of all of the content posted to YouTube overall, the Center used the YouTube API to compile a separate list of the most-viewed videos that were published during the week, then compared this list of videos with those posted by popular channels during the same period. For reasons that are unclear, the results that were returned by the API do not appear to be complete, but they nonetheless provide an interesting point of comparison and suggest that popular channels are responsible for many of the most-viewed videos on YouTube.<sup>1</sup>

Of the top 500 videos collected from the API, 76% were present in our list of videos produced by popular channels. Of these, the majority (60%) were in English, while 16% contained content in another language.<sup>2</sup>

Just 21% of the videos in the top-500 list were published by channels that had fewer than 250,000 subscribers. According to the API, the most popular such video was a foreign language short film that had received over 33 million views as of Jan. 22, 2019. However, this channel soon crossed the 250,000-subscriber threshold and by June 2019 had reached nearly 1.5 million subscribers.

<sup>1</sup>This list was collected on Jan. 22, 2019, based on view counts as of that date, and was restricted to videos that were available to view in the United States (the default filter for the API). According to the results returned, the most viewed video published during the first week of 2019 had received 111 million views by Jan. 22, but the video that the API reported to be the 500th most-viewed video of the week had received just under 67,000 views (66,752). In comparing our list of videos published by popular channels against the API's list of the top 500 videos overall, we found 36,272 videos that were published by popular channels during the week that received more views than the video the API ranked as 500th. The YouTube API documentation does not provide enough information to explain this discrepancy, but these findings suggest that this list is incomplete and represents only a sample of popular videos that were published in the first week of 2019.

<sup>2</sup>An additional 15 videos were uploaded from channels that passed the 250,000-subscriber threshold after we had completed scanning for popular channels in December 2018, and one video was published by a channel that had been popular at the time but was not correctly identified by the scanning process that the Center used to identify popular channels.

## 2. Children’s content, content featuring children and video games were among the most-viewed videos genres

Along with examining the number of videos posted and languages used by these popular channels, this analysis also sought to gain a deeper understanding of the actual content of the videos these channels produce. However, there are limits to how much information can be gleaned from the categories and descriptions attached to YouTube videos themselves. The YouTube Data API provides topic tags for videos and channels, but these topics are often too general (“TV shows”) or too specific (“Music of Latin America”) to be useful for a broad analysis of video content. These topic tags have also not been validated for accuracy, and in some cases were not available: 8% of the videos and 3% of the channels included in this analysis did not have any topic tags assigned to them.

To address these limitations and more fully categorize the English-language content produced by popular YouTube channels, Pew Research Center commissioned human coders on [Amazon’s Mechanical Turk crowdsourcing platform](#) to watch these videos and categorize them into topical areas. After accounting for videos that had been removed or deleted at the time the coding took place, as well as videos that had been misclassified as being in English by our automatic language detection software, a total of 37,079 videos were included in this analysis.<sup>3</sup>

The human coders were instructed to classify videos into 11 broad categories. These categories, along with examples of the specific types of content that might be included in each, are highlighted in the table below:

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<sup>3</sup> Videos were initially determined to either be in English or in another language using a supervised machine learning model that may have resulted in a modest amount of error. [See Methodology](#) for details.

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## How we categorized YouTube videos by topic

CATEGORY	EXAMPLES OF VIDEOS MEETING THIS DEFINITION
Video games	Fortnite, PUBG, Xbox, PlayStation, Nintendo, Minecraft, sports/vehicle video games, e-sports, footage of mobile games for kids, video game animations
Current events or politics	Government, political debates, world events, social issues, business/science news, local news, political conspiracies (Note: does NOT include celebrity news)
Sports, fitness, or physical activities	Football, basketball, soccer, martial arts, golf, WWE, yoga, bodybuilding, biking, surfing, skateboarding, archery, shooting, athlete interviews
Music or dance	Music videos, nursery rhymes, sing-alongs, soundtracks, instrument tutorials, performances/concerts/competitions, musician interviews
Creativity, skills, or learning	Arts, crafts, design, life hacks, DIY, home experiments, language/math/science lessons, photography, home improvement, gardening, programming lessons, software tutorials
Toys or games	Physical toys, Lego, Nerf, Play-Doh, slime, figurines, kids playing with toys, stop-motion animation with toys (Note: does NOT include video games)
Beauty or fashion	Makeup, cosmetics, clothes, shoes, jewelry, hairstyling, nails
Food or nutrition	Recipes, cooking, healthy eating, diet, weight loss, bartending, restaurants, meals
Consumer tech	Tech products like phones, computers, miscellaneous apps and gadgets that don't clearly pertain to a specific category above
Vehicles	Cars, racing and motorsports, motorcycles, aircraft, trains, boats and sailing, RC vehicles (Note: does NOT include vehicle-related video games)
Miscellaneous or other	Any content not included in categories above. Includes – but is not limited to – general entertainment, vlogs, celebrity news, skits, movies, talk shows, pop culture, human interest pieces, cartoons, comics, religion, astrology, paranormal, animals, pets, ASMR, etc.

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Along with coding videos into these general topical categories, the Center also coded videos along three other metrics:

- Videos with content about politics or current events were further subdivided based on whether the video mentioned issues pertaining to the United States.
- Coders were instructed to identify content (regardless of topic) that appeared to be intended for an audience of children under the age of 13. In identifying videos with children as their primary audience, the coders were asked to identify videos that they believed were *clearly and*



*exclusively* aimed at children. Videos that might appeal to children as well as teenagers or adults were intentionally excluded from this category.

- Coders were also asked to identify content in which a child who appeared to be under the age of 13 participated in the video, regardless of whether the video was directly intended for children or young people.

Each video was coded by three different individuals to ensure there was adequate agreement on the content of the video. The coders' responses were then reconciled using various thresholds designed to maximize agreement with Center researchers.<sup>4</sup>

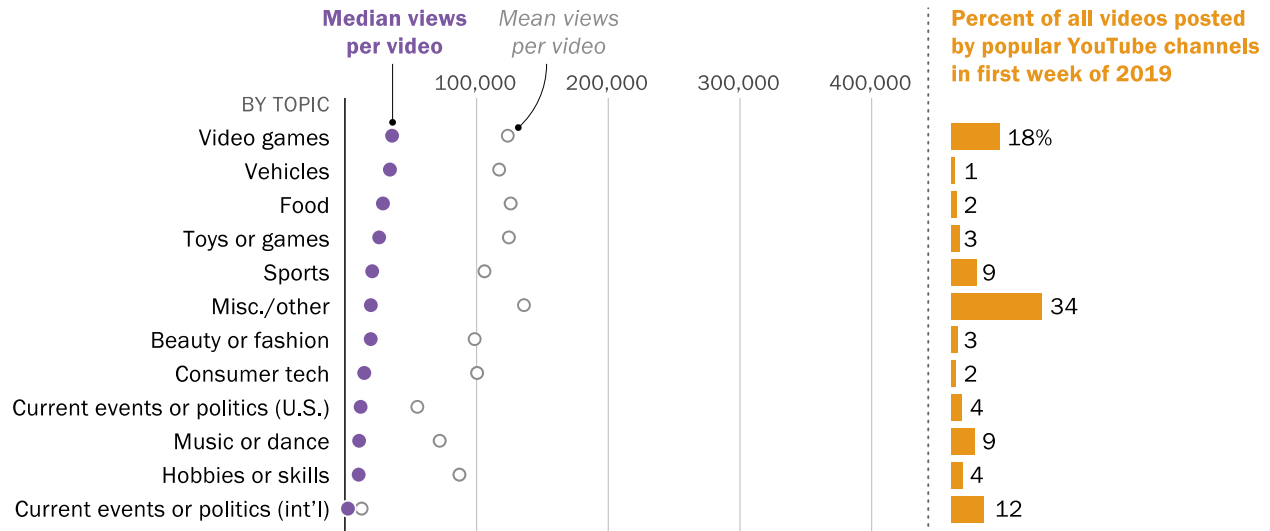
Overall, one-third of the videos uploaded by popular channels during the week consisted of miscellaneous videos pertaining to general entertainment and other topics, such as vlogs (video blogs), celebrity news, movies, pop culture, pranks and pet videos. Of the more specific content categories, video games (accounting for 18% of the coded videos) were the most common. Videos related to international current events or politics (12% of coded videos), as well as those relating to sports or fitness (9%) and music/dance (9%), were also among the more common topics posted during the week. In terms of overall views, videos about video games, vehicles (1% of coded videos), food (2%), and toys or games (3%) were among the most-viewed categories on average. For a list of the most-viewed individual videos in each category during the week, [see Appendix B](#).

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<sup>4</sup> For example, Mechanical Turk coder results most closely agreed with Center experts when all three coders indicated that a video was intended for children, while agreement was highest when any one of the three Mechanical Turk coders indicated that a video contained content in a language other than English (which was often present in just a portion of a video and therefore easy to miss).

## Videos about video games among the most common, most-viewed of those posted by popular channels in first week of 2019

Total views in the first seven days on the site for English-language videos about \_\_\_\_ posted by popular channels on YouTube during the first week of 2019



Note: Topics developed by Pew Research Center researchers and assigned to individual videos by human coders.

Source: Analysis of English-language videos posted Jan. 1-7, 2019, by YouTube channels with at least 250,000 subscribers, collected using the YouTube Data API.

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## Children's videos tended to be longer and received more views than many other types of content; large share of these videos focused on toys or games

In total, just 4% of all English-language videos posted by popular YouTube channels in the first week of 2019 appeared to be aimed at children under the age of 13. But despite comprising a relatively small share of the total, children's videos tended to be longer, received more views, and came from channels with a greater number of subscribers relative to content aimed at a general (teen or adult) audience. Videos that appeared to be intended for children averaged 153,227 views (median of 17,540), compared with an average of 99,713 views (14,187 median) for other videos. Channels that posted children's videos also had many more subscribers: 1.9 million on average (872,188 median) vs. 1.2 million (586,588 median) among channels that did not post a video aimed at children during the week. And half of all children's videos lasted at least 11 minutes, compared with a median of 7 for other videos.

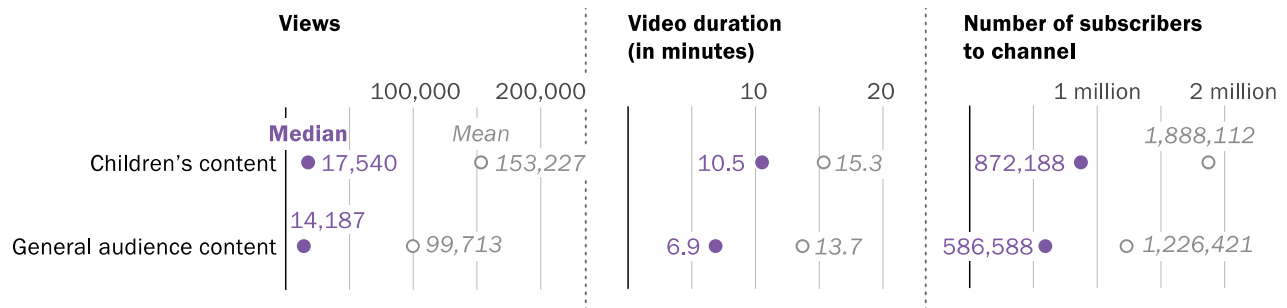
As noted above, children's content could belong to any of the other topical categories in this analysis, and children's content related to toys or games (excluding video games) was both highly

common and tended to receive many views. Some 28% of children’s videos were related to toys or games, and these videos received an average of 147,923 views (30,929 median), compared with 109,585 views (22,871 median) for toys or games videos aimed at a general audience.

Channels that produced videos about toys or games – especially those that appeared to target children – also had more subscribers than average. Channels that produced at least one video during this week about toys or games that was aimed at children had, on average, 2.1 million subscribers (median of 1.1 million), compared with 1.2 million (586,126 median) for channels that did not produce any videos meeting this description.

### Content aimed at children tended to be longer, received more views, and came from channels with more subscribers relative to general-audience videos

Median/mean number of \_\_\_\_ for children’s or general-audience videos posted to popular YouTube channels in first week of 2019



Note: Videos identified as intended for children by human coders.

Source: Analysis of English-language videos posted Jan. 1-7, 2019, by YouTube channels with at least 250,000 subscribers, collected using the YouTube Data API.

"A Week in the Life of Popular YouTube Channels"

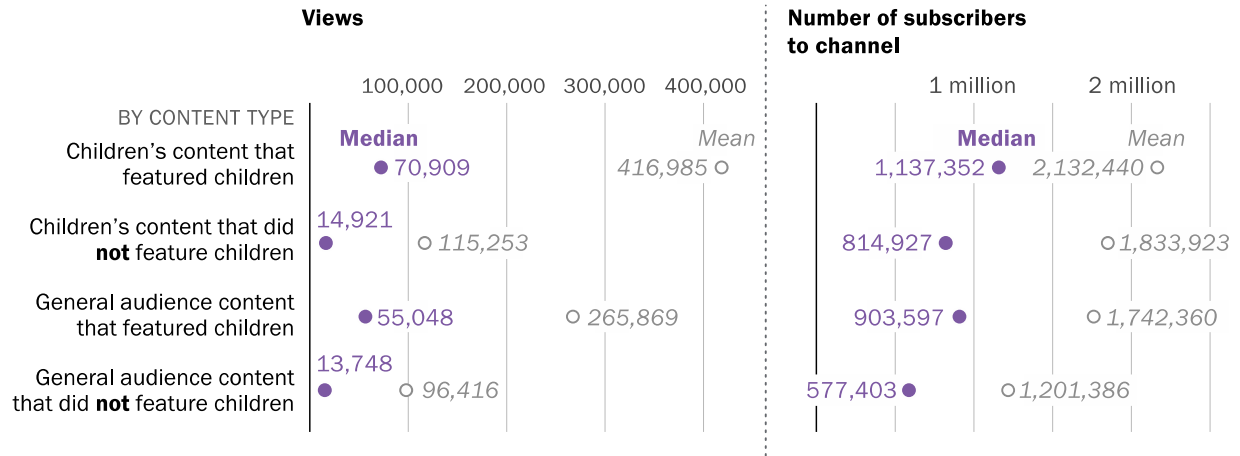
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### Videos featuring a child or children under the age of 13 were substantially more popular than other types of content during the study period

Beyond this specific subset of videos targeted to a young audience, the broader set of videos that included a child or children similarly stood out from other types of content. In total, the Center’s analysis estimates that just 2% of videos posted by popular channels during the first week of 2019 featured a child or children that appeared to be under the age of 13. However, this small subset of videos averaged three times as many views as did other types of videos: Videos that featured a young child received an average of 297,574 views (median 56,527) compared with an average of 97,081 views (median 13,794) for those that did not. Furthermore, channels that produced at least one video that featured a child averaged 1.8 million subscribers, compared with 1.2 million for those that did not (913,769 vs. 592,057 median).

## Videos featuring children under the age of 13 were associated with more views and more channel subscribers, regardless of target audience

Median/mean number of \_\_\_\_ for English-language videos in each category posted to popular YouTube channels in first week of 2019



Note: Videos identified as being intended for children and/or including a child under the age of 13 by human coders.

Source: Analysis of English-language videos posted Jan. 1-7, 2019, by YouTube channels with at least 250,000 subscribers, collected using the YouTube Data API.

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Notably, a large majority of the videos that featured children were not intended exclusively for a young audience. This analysis estimates that just 21% of videos featuring children were directed toward young children to the exclusion of other audiences. Similarly, only a minority of children's videos (13% of those posted) contained footage of a child that appeared to be under the age of 13. But the small share of videos at the intersection of these two categories – that is, videos that were both aimed at children and featured a child under the age of 13 – were one of the single-most popular video categories captured in this analysis, averaging four times as many views (416,985 vs. 96,416) as general-audience videos that did not feature a child (70,909 vs. 13,748 median).

The majority of videos that included a child (79%) were oriented toward a general audience rather than children specifically. And while these videos were somewhat less popular than videos featuring a child that were aimed specifically to young viewers, they also received substantially more views than either children's or general-audience content that did not feature children.

The five most-viewed individual videos intended for children that did not contain a child consisted largely of animated content, songs or nursery rhymes. As was true in the Center’s [study of videos recommended by the YouTube recommendation engine](#), several of these videos had titles containing strings of seemingly random words that may be designed to appeal to the recommendation engine or the search terms that users typically use when looking for children’s content (e.g., “SUPERHERO BABIES MAKE A GINGERBREAD HOUSE SUPERHERO BABIES PLAY DOH CARTOONS FOR KIDS”).

Meanwhile, the five videos intended for a general audience and featuring a child that received the most views during the week of the study period were largely posted by parenting and family vlogs and included baby name reveals or new baby introduction videos. And the five most-viewed videos that were both intended for children and featured a child tended to involve children dressing up, singing or engaging in make-believe activities either alone or with adults.

## Examples of popular YouTube videos intended for (or featuring) children

Top five most-viewed English-language videos posted by popular YouTube channels during the first week of 2019 in the following categories

Intended for children (not featuring a child)		Intended for children (featuring a child)		General audience (featuring a child)	
TITLE	VEWS	TITLE	VEWS	TITLE	VEWS
SUPERHERO BABIES MAKE A GINGERBREAD HOUSE SUPERHERO BABIES PLAY DOH CARTOONS FOR KIDS	13,936,031	Jannie Pretend Play w/ Kids Make Up Toys & Dress Up as Cute Disney Princesses	8,181,990	Our Baby's Official NAME REVEAL !!!	7,641,126
Learn Colors Kinetic Sand Coffee Box Animals Baby Boong Toys Nursery Rhymes For Kids	9,476,262	Funny Uncle John Pretend Play w/ Pizza Food Kitchen Restaurant Cooking Kids Toys	6,110,694	Everleigh meets her New Baby Sister for the Very First Time!!!	7,184,316
The Car Color Song + More Nursery Rhymes - CoComelon	8,071,925	Vlad and Nikita build colored Playhouses	5,627,725	WELCOMING A NEW MEMBER OF THE FAMILY!!	6,004,365
No No, Baby Rides the Scooter!  No No Song +More Nursery Rhymes by Little Angel	6,313,603	Stacy pretend play with magical toy food	4,264,347	Bringing Baby Posie Home From The Hospital!!!!	5,547,407
Traffic Safety Song   CoComelon Nursery Rhymes	5,311,461	Wendy Pretend Play w/ Guitar Toy as Disney Princess Elena & Sings Nursery Rhymes Kids Songs	3,199,749	REAL vs PRANK SLIME CHALLENGE!!!	4,761,212

Note: Videos identified as being intended for children and/or including a child under the age of 13 by human coders.

Source: Analysis of English-language videos posted Jan. 1-7, 2019, by YouTube channels with at least 250,000 subscribers, collected using the YouTube Data API.

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## Videos about video games among the most common, most-viewed and lengthiest videos posted by popular channels on YouTube during this period

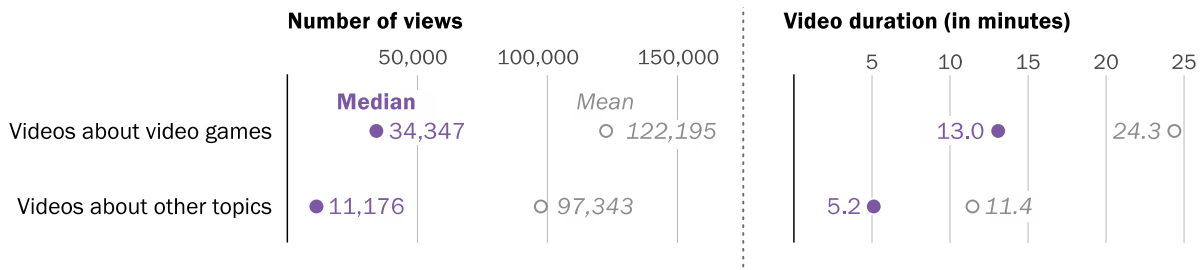
Video games were a frequent and highly watched topic on popular YouTube channels during the week, comprising the most common (non-miscellaneous) topic on the platform in this study.

Many of these videos consisted of people using social gaming platforms like Twitch and Discord to

stream a webcast of themselves playing video games such as Fortnite and Minecraft while they talked with their online friends. Other videos consisted of trailers for upcoming video games, as well as compilations of “fails” and other exciting or amusing moments drawn from captured video game footage.

## Videos about video games were longer, received substantial number of views relative to other types of content

Median/mean \_\_\_\_ for English-language videos in each category posted to popular YouTube channels in first week of 2019



Note: Videos categorized by human coders.

Source: Analysis of English-language videos posted Jan. 1-7, 2019, by YouTube channels with at least 250,000 subscribers, collected using the YouTube Data API.

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Nearly one-in-five (18%) videos uploaded by popular channels during the week pertained to video games, and these videos received an average of 122,195 views, compared with 97,343 for other types of videos. The median video game video – more representative of the typical video uploaded in the category – received nearly three times as many views as the median video for all other categories collectively (34,347 vs. 11,176). Gaming videos were also typically much longer than videos pertaining to other topics, averaging 24 minutes long (median of 13 minutes) compared with 11 minutes (median of 5 minutes) for non-gaming videos.

## English-language videos relating to current events or politics tended to have an international focus, received fewer views than videos on other topics

A recent study by the Center found that the [share of YouTube users who get news there](#) nearly doubled between 2013 (20%) and 2018 (38%). This new analysis finds that videos related to current events or politics were one of the most common categories posted by these popular channels. Such videos – which include any videos with a focus on a broad set of topical issues such as government, world events, social issues, politics and local news – comprised 16% of all English-

language videos uploaded during the week.<sup>5</sup> However, just 4% of English-language videos posted by these popular channels contained content related to *American* current events or politics. In other words, three-quarters (76%) of English-language videos posted by popular YouTube channels that related to current events or politics did *not* mention events, issues, or opinions related to the United States (in either a domestic or international context).

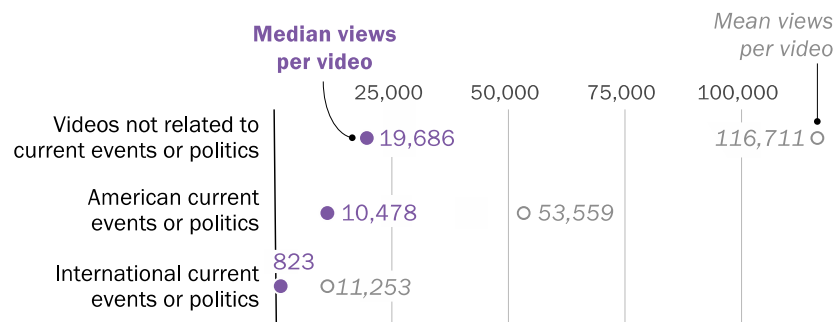
Channels that posted videos related to current events or politics during the first week of 2019 tended to upload much more content than other channels overall. Channels that posted one or more videos relating to American current events or politics uploaded an average of 63 total videos during the week (median of 36), while comparable channels with an international focus uploaded an average of 43 videos (15 median). In contrast, channels that did not post any content related to current events or politics during the week uploaded an average of just four new videos (2 median).

Although a large number of English-language videos related to current events or politics were posted by popular channels during the first week of 2019, these videos received on average only about one-fifth of the views that other types of videos received during that

time. However, this is largely due to extremely low viewership numbers for English-language content with a focus on international events: Current events or politics videos with a U.S. focus posted by these channels received several times as many views as their international counterparts (mean of 53,559 with a U.S. focus vs. 11,253 international; medians of 10,478 and 823, respectively). Videos related to current events or politics also appeared to draw less interest over

### Videos focused on international current events received relatively few views during study period

*Median/mean views for English-language videos in each category posted to popular YouTube channels in first week of 2019*



Note: Videos categorized by human coders.

Source: Analysis of English-language videos posted Jan. 1-7, 2019, by YouTube channels with at least 250,000 subscribers, collected using the YouTube Data API.

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<sup>5</sup> "Current events or politics" videos only included discussion of nonpolitical public figures if the subject being discussed was itself political. For example, an update about a Hollywood star announcing a new movie would not be included, but a clip of her engaging in a political debate would be. Similarly, a broadcast of anchors on a local morning show cooking a new recipe would not count as "current events or politics," but a clip from the same show discussing local business news or the weather forecast would count.



time and received fewer additional views after their initial day of publication than other types of videos, and this was especially true of videos with an international focus.

### 3. Certain keywords in video titles and descriptions were associated with more views

Many YouTube videos are uploaded with attention-grabbing titles – and also with detailed descriptions that contain information about the content of the video, the video creator, and external references to related materials such as news articles or other social media accounts. In addition to the human coding content analysis described in detail in Chapter 2, Pew Research Center also conducted an exploratory analysis of these text snippets to gain additional insight into the content of videos that were posted by popular channels in the first week of 2019.<sup>6</sup>

To focus on words that represented widespread and general topics, rather than names or terms specific to particular channels, researchers collected words that were mentioned in the titles of at least 100 different videos published by at least 10 different channels (353 words met this threshold).<sup>7</sup> From this set of words, researchers identified those terms that were associated with much higher view counts by comparing the median number of views for videos that mentioned a particular word in their titles to the median for videos that didn't mention the word.<sup>8</sup> This analysis reveals that videos mentioning specific keywords like “Fortnite” and “ASMR” (Autonomous Sensory Meridian Response – a popular genre on YouTube) in their titles tended to receive more views than those that did not mention those words. Similar patterns also emerged in the topical subsets of videos identified in the Center's coding process.

#### Videos received more views when they mentioned certain keywords in their title

Examining the 20 terms most strongly associated with greater view counts reveals a variety of patterns (for a full list of these 20 keywords, [see Appendix C](#)). Some of these keywords appear to be related to particular topics that performed well during the week, including video games (“Fortnite,” “PUBG,” “FIFA,” “Roblox”), toys and children's content (“slime,” “rainbow”), sports (“NFL,” “NBA”), and food (“eating”). Other keywords appear to represent popular video genres (“ASMR,” “moment,” “prank,” “hack,” “mystery”) and attempts to grab the attention of would-be viewers (“worst,” “ultimate,” “insane”).

The word “Fortnite” – referring to the popular online video game – was associated with the largest increase in views out of all of the words examined, and it was also by far the most common of the top 20 most-viewed words. Videos with

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<sup>6</sup> This keyword analysis was conducted on the same subset of coded English videos analyzed in Chapter 2.

<sup>7</sup> Some relatively uninformative or ambiguous words were excluded from this analysis; [see Methodology](#) for details.

<sup>8</sup> All reported differences are statistically significant ( $p < 0.05$ ).

“Fortnite” in their title comprised 15% of all video game-related videos uploaded by popular channels during the week.

**Within topical categories, certain title keywords were associated with greater number of views**

In addition to examining the top keywords associated with higher view counts overall, this analysis also highlights how certain keywords are linked with greater viewership within topical areas.

In some instances, these keywords appear to highlight specific subtopics that perform especially well but that do not have broader appeal outside of that topic. For example, beauty or fashion videos were not notably more popular than other video topics overall, but videos

**Title keywords associated with increase in view counts varied by video category**

*Title keywords associated with the largest increase in median view counts among English-language videos about \_\_\_\_ posted to popular YouTube channels in the first week of 2019*

CATEGORY	KEYWORD	NUMBER OF VIDEOS	% DIFFERENCE IN MEDIAN VIEWS
Miscellaneous or other	ASMR	115	+484
	Challenge	281	+351
	Prank	113	+332
	Superhero	113	+196
	Box	133	+161
Beauty or fashion	Makeup	142	+401
Current events or politics (international)	China	130	+349
	Woman	153	+163
	Police	107	+76
Video games	Moment	248	+330
	Funny	214	+320
	Fortnite	778	+165
	Team	166	+124
	FIFA	151	+55
Music or dance	Lyric	150	+238
	Song	215	+231
	Cover	105	+192
	Feat.	100	+108
	Remix	127	+77
Toys or games (apart from video games)	Kid	241	+161
	Play	155	+142
	Learn	146	+101
Current events or politics (U.S.)	Trump	475	+93
	President	114	+89
Creativity, skills, or learning	Easy	105	+46
	DIY	134	+39
	Kid	102	+24

Note: Videos were categorized into topics by human coders. For the topical categories food or nutrition; consumer tech; vehicles; and sports, fitness or physical activities, no terms were used frequently enough or were associated with statistically significant differences in views. The word “Trump” was associated with higher view counts for international current events or politics videos, but researchers determined this was due to measurement error in about 2% of the videos in this category.

Source: Analysis of 353 common terms found in the titles of English-language videos posted Jan. 1-7, 2019, by YouTube channels with at least 250,000 subscribers, collected using the YouTube Data API.

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within this topic that mentioned the word “makeup” in their titles performed especially well compared with other videos in that topic.

In other cases, specific words appear among the top keywords for videos in multiple topical areas. The word “kid,” for example, is associated with greater viewership among videos pertaining to both toys or games, as well as creativity, skills or learning.

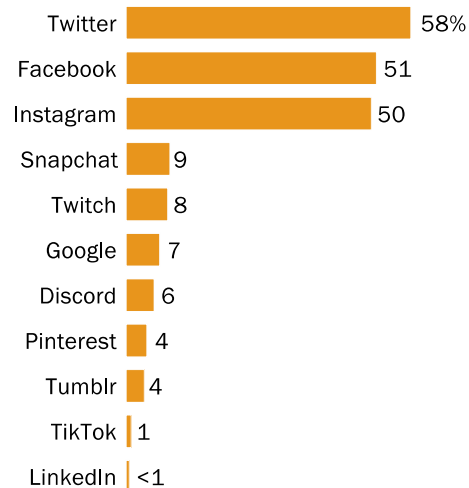
Similarly, the word “Trump” appears as a popular keyword for videos focused on U.S. politics or current events. Within the subset of English-language videos pertaining to U.S. current events or politics, just two of the 353 popular keywords examined were associated with significantly higher view counts relative to videos in this category that did not use those terms: “Trump” and “president.” Of the 1,405 English-language videos related American current events or politics posted by these popular channels during the first week of 2019, over a third (36%) mentioned one of these two words in their title, and these videos received nearly twice as many views at the median as did comparable videos posted during the same time period that did not mention Trump.<sup>9</sup>

### Seven-in-ten videos cross-linked to other social media platforms

YouTube producers often include in their video descriptions not just information about the video itself, but also links to additional online content – including their social media accounts and personal websites. Across all English-language videos uploaded by popular channels during the first week of 2019, fully 70% mentioned another prominent social media platform in their description.<sup>10</sup> The most commonly referenced social platforms were Twitter (58% of all videos), Facebook (51%) and Instagram (50%), followed by Snapchat (9%). Social gaming services Twitch

### Sizable shares of video descriptions mentioned other social platforms

*% of English-language videos posted by popular YouTube channels that mentioned keywords related to \_\_\_\_\_ in their descriptions*



Source: Analysis of keywords found in the descriptions of English-language videos posted Jan. 1-7, 2019, by YouTube channels with at least 250,000 subscribers, collected using the YouTube Data API. “A Week in the Life of Popular YouTube Channels”

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<sup>9</sup> Human coders hand-labeled a random sample of 200 American news and politics videos as mentioning the president or not, then compared their decisions to a simple search using the keywords “Trump” and “president.” Agreement was nearly perfect, with a Krippendorff’s alpha score of 0.97.

<sup>10</sup> Two Center coders labeled a sample of 200 random video descriptions and categorized them based on whether or not they mentioned another social media platform. Agreement between the coders and the regular expression pattern was high, with Krippendorff’s alpha between 0.76 and 0.92. Agreement between the coders themselves was 0.85.

and Discord were also mentioned in the descriptions of 8% and 6% of all videos, and 34% and 21% of all video game-related videos, respectively.

Mentioning other social media platforms appears to be associated with higher view counts overall: Videos that did this received an average of 111,912 views (19,962 median), compared with 78,757 (6,295 median) for videos that did not mention an external social media platform.

## Acknowledgments

This report is a collaborative effort based on the input and analysis of the following individuals. Find related reports online at [pewresearch.org/internet](http://pewresearch.org/internet).

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## Methodology

The analysis in this report is based on an examination of videos published the first week of 2019 on YouTube channels with at least 250,000 subscribers. Because there is no exhaustive or officially sanctioned list of all videos or channels (of any size) on YouTube, Pew Research Center developed its own custom list of 43,770 channels that had at least 250,000 subscribers.

### How we mapped channels

This Pew Research Center analysis is based on a [previous study](#) of YouTube. Using several recursive and randomized methods, we traversed millions of video recommendations made available through the YouTube API, searching for previously unidentified channels. As of July 2018, 915,122 channels had been found, 30,481 of which had at least 250,000 subscribers – defined, for the purposes of this study, as “popular channels.” Between July and December 2018, we continued to search for new channels, and by Dec. 25, 2018, a total of 1,525,690 channels had been identified, 43,770 of which were considered popular based on the criteria of this study. Of the 13,289 new popular channels that had been identified, just 3,600 had not been previously observed, while 9,689 had already been identified but had not yet passed the 250,000 subscribers threshold in July. In other words, the list of popular channels was expanded by 12% during this period through additional mapping efforts, while it grew an additional 32% naturally through increasing channel subscription rates. That an additional six months of mapping yielded only a 12% increase in coverage suggests that the Center had already successfully found the overwhelming majority of popular channels on YouTube.<sup>11</sup>

Starting on Jan. 1, 2019, we began scanning the 43,770 popular channels to identify all the videos that each channel had published the previous day. Because of variation in when a video was posted and when we identified it, each video was observed between 0 and 48 hours after it was first published; the average video was observed 22 hours after being uploaded. Once a video was identified, we tracked it for a week, capturing its engagement statistics every day at the same hour of its original publication.

The video data collected includes:

- Video ID
- Title and description
- View count

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<sup>11</sup> Furthermore, the 3,600 popular channels that were newly identified between July and December 2018 produced just 808 English-language videos in the first week of 2019. All other English-language videos analyzed in this study were produced by channels that had already been identified by July 2018.

- Number of comments
- Top 10 comments
- Number of likes and dislikes
- YouTube categories and topics
- Duration
- Date/time published (UTC)
- Channel ID
- Channel subscriber count

### **Filtering to English videos**

After the video collection process was complete, we examined and classified the subset of videos that were in English. The YouTube API can provide information on the language and country associated with any given channel and/or video, but this information is often missing. Of the 24,632 channels that uploaded a video in the first week of 2019, 73% had available information on their country of origin, and 8% had information on the channel's primary language. Across the 243,254 videos published by popular channels during the week, 61% had information on the language of their default audio track, and just 26% had information on their default language. (YouTube's API documentation does not make clear the difference in these values, but one may be self-reported and the other automatically detected by YouTube.) Since some of these values may be self-reported, unverified and/or contradictory, we needed to develop a way to fill in the missing information and correctly determine whether a video contained content in another language or not.

First, the Center coded a sample of videos for (a) whether the video's title was in English and (b) whether the audio was in English, had English subtitles, or had no spoken language at all. Two different Center coders viewed 102 videos and achieved a 0.94 Krippendorff's alpha, indicating strong agreement. A single coder then classified a sample of 3,900 videos, and this larger sample was used to train a language classification model.

We trained an [XGBoost](#) classifier to run through the entire database of videos to categorize each one's language using the following parameters:

- Maximum depth of 7
- 250 estimators
- Minimum child weight of 0.5
- Balanced class weights (not used for scoring)
- Evaluation metric: binary classification error



The classifier used a variety of features based on each video’s title, description, channel attributes, and other metadata when making predictions.

#### *Language detection features*

The Center used the [langdetect](#) Python package to predict the language of different text attributes associated with each video, with each video represented as a list of probabilities for each possible language. These probabilities were computed based on the following text attributes:

- The channel’s title
- The channel’s description
- The video’s title
- The video’s description
- The channel and video’s titles and descriptions all combined into one document
- The concatenated text of the video’s first 10 comments

#### *Country and language codes*

Videos were assigned binary dummy variables representing the following country and language codes based on metadata returned by the YouTube API:

- The country code associated with the video’s channel
- The language code associated with the video’s channel
- The video’s “language” code
- The video’s “audioLanguage” code

Additional features were added to represent the overall proportion of videos with each language code across all videos that the channel had produced in the first week of 2019. Each video’s language was represented by the video’s “audioLanguage” code where available; otherwise the “language” code was used. This was based on the hypothesis that information about the other videos produced by a given channel may help predict the language of videos from that channel with missing language information (e.g., if a channel produced 100 videos, 90 of which were labeled as being in Armenian, and 10 of which were missing language information, it is likely that those 10 videos were also in Armenian.)

#### *English word features*

We also computed additional language features based on whether or not words present in the text associated with each video could be found in lists of known English words. Six different text representations were used:

- The channel's title
- The channel's description
- The video's title
- The video's description
- The channel and video's titles and descriptions all combined into one document
- The concatenated text of the video's first 10 comments<sup>12</sup>

For each text representation, the text was split apart on white space (i.e., words were identified as sets of characters surrounded by white space-like spaces and tabs) and the following three features were computed:

- Proportion of words found in WordNet's English dictionary
- Proportion of words found in NLTK's words corpus
- Proportion of words found in either WordNet or NLTK

#### *Text features*

Additional features were extracted in the form of TF-IDF (term frequency, inverse document frequency) matrices. Each video was represented by the concatenation of its title and description, as well as the title and description of its channel.

Two matrices were extracted, one consisting of unigrams and bigrams, and another representing 1-6 character ngrams, both using the following parameters:

- Minimum document frequency of 5
- Maximum document proportion of 50%
- L2 normalization
- 75,000 maximum features

#### *Time of publication*

Finally, researchers added an additional feature, an integer representing the hour in which the video was published (UTC), on the assumption that English videos may be more likely to be published during certain times of the day due to geographic differences in the distribution of English and non-English YouTube publishers.

The classifier achieved 98% accuracy, 0.96 precision and 0.92 recall on a 10% hold-out set, and an average of 97% accuracy, 0.91 precision, and 0.93 recall using 10-fold cross-validation. To achieve

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<sup>12</sup> The first 10 comments for each video were collected using the YouTube API between Feb. 7-13, 2019.

a better balance between precision and recall, a prediction probability threshold of 40% was used to determine whether or not a video was in English, rather than the default 50%.

### Codebook

To assess the content of videos that were uploaded by popular channels, we developed a codebook to classify videos by their main topic and other attributes. The full codebook can be found in [Appendix D](#). Coders were first instructed to indicate whether they could view the video. Then, to filter out any false positives from the supervised classification model, coders were asked to indicate whether the video contained any prominent foreign language audio or text. If a video was fully in English, coders then recorded the video’s main topic, whether or not it appeared to be targeted exclusively toward children, whether it appeared to feature a child under the age of 13, and for news content, whether or not the video mentioned U.S. current events. In-house coders used the codebook to label a random sample of 250 videos and computed agreement using [Krippendorff’s alpha](#). All codebook items surpassed a minimum agreement threshold of 0.7.

The Center then ran a pilot test of the same 250 videos on Amazon Mechanical Turk, in which three separate Mechanical Turk workers were asked to code each video. Their responses were then reconciled into a single value for each item, using a threshold that maximized agreement with the in-house coders.<sup>13</sup> In-house coders resolved their disagreements to produce a single benchmark for comparison with Mechanical Turk.

Agreement thresholds varied for each item, depending on the difficulty of the task. For example, identifying videos with content in another language required close attention, since those that were missed by the automated classification were often lengthy and appeared to be in English. Coders had to search for non-English content carefully, and in-house coders were more likely to notice it than were Mechanical Turk workers. Accordingly, the Mechanical Turk results agreed most closely with the in-house results when a video was marked as containing content in another language if just one of the three Turk workers marked it as such. In contrast, identifying

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### Agreement between Center coders

CODEBOOK ITEM	KRIPPENDORF’S ALPHA
Viewable	0.95
Foreign language	0.72
Video topic	0.80
Children’s content	0.86
Features child	0.76
American news	0.91

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<sup>13</sup> For categories that were dependent on other classifications (i.e., a video being viewable, being in English, or pertaining to news or politics), researchers compared the subset of videos where both coders agreed on the dependency.

children’s content involves a lot of subjective judgment, and in-house researchers only marked videos that were clear and obvious. Mechanical Turk workers were less discerning, so in this case, in-house judgments were most closely approximated by marking videos as children’s content only when all three Mechanical Turk workers did so. Across all items, this process produced high rates of agreement.

After determining the thresholds that produced results that closely approximated in-house coders, we selected all videos that had been classified as English content, filtered out those that had been removed, and sent the remaining 42,558 videos to Mechanical Turk for coding.<sup>14</sup> Coding took place between April 12-14, 2019.

### Data processing

Across the full set of 243,254 videos for which data were collected, we intended to capture seven snapshots consisting of each video’s engagement statistics (and those of its authoring channel). The first of the seven

snapshots was taken at the time each video was first identified, and the six additional snapshots were each taken during the hour of initial publication for the next six days. To this dataset, we also added rows representing each video’s time of publication, with engagement statistics set to zero. Altogether, we expected each video to produce eight rows of data, totaling 1,946,032 time stamps. However, due to infrequent API errors and videos being removed, 78,273 time stamps (4%) were

### Agreement between Center and Mechanical Turk coders

*Krippendorff’s alpha, expert consensus vs. Mechanical Turk workers at different thresholds*

CODEBOOK ITEM	1 OUT OF 3	2 OUT OF 3	3 OUT OF 3
Viewable	1.00*	0.97	0.88
Foreign language	0.82*	0.69	0.54
Video topic	0.82	0.86*	0.65
Children’s content	0.69	0.91	0.93*
Features child	0.61	0.83*	0.75
American news	0.75	0.84*	0.18

\*indicates the threshold that was used to maximize agreement

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### Agreement between Center and Mechanical Turk coders

CODEBOOK ITEM	MECHANICAL TURK THRESHOLD	KRIPPENDORF’S ALPHA
Viewable	1 out of 3	1.00
Foreign language	1 out of 3	0.82
Video topic	2 out of 3 (otherwise mark as “general”)	0.86
Children’s content	3 out of 3	0.93
Features child	2 out of 3	0.83
American news	2 out of 3	0.84

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<sup>14</sup> Researchers checked the API for removed videos on April 10, 2019.

not captured successfully. Of the 243,254 unique videos, 17% (41,883) were missing information for a single time stamp during the week, and 6% (13,704) were missing more than one day.

Fortunately, many of the missing time stamps occurred between the first and last day of the week, allowing us to interpolate the missing values. In cases where there was data available before and after a missing time stamp, missing values for continuous variables (e.g. time and view count) were interpolated using linear approximation. After this process, less than 2% of all videos (4,262) were missing any time stamps, most likely because they were removed during the week. The same method was used to fill in 354 time stamps where videos' channel statistics were missing, and 13, 22 and 26,351 rows where the YouTube API had erroneously returned zero-value channel video, view, and subscriber counts, respectively.

### **Keyword analysis**

To focus on words that represented widespread and general topics – rather than names or terms specific to particular channels – the Center examined 353 words that were mentioned in the titles of at least 100 different videos published by at least 10 different channels. To a standard set of 318 stop words, researchers added a few additional words to ignore – some pertaining to links (“YouTube”, “www”, “http”, “https”, “com”), others that ambiguously represented the names of multiple content creators and/or public figures (“James”, “Kelly”, “John”), and the word “got,” which was relatively uninformative. The remaining set of 353 words was examined across all videos, as well as within topical subsets of videos.

The Center compared the median number of views for videos that mentioned each word in their titles to the median number of views for videos that didn't mention the word, then identified those associated with positive differences in median views. To confirm these differences, the Center ran linear regressions on the logged view count of the videos in each subset, using the presence or absence of each word in videos' titles as independent variables. All words that appeared in the titles of at least 100 videos in each subset (and published by at least 10 unique channels) were included in this set of independent variables. All reported keyword view count differences were significant at the  $p \leq 0.05$  level.

The Center also examined words in videos' descriptions associated with links to external social media platforms. Researchers examined several random samples of videos and developed a list of keywords related to social platforms that appeared commonly in the videos' descriptions. This list was then used to build a regular expression designed to match any descriptions that contained one or more the keywords:

```
facebook|(fb\W)|twitter|tweet|(tw\W)|instagram|(ig\W)|(insta\W)|snapchat|(snap\W)|twitch|discord|tiktok|(tik tok)|pinterest|linkedin|tumblr|(google \+)|(google\+)|(g\+)
```

Two Center coders then examined a sample of 200 random video descriptions and coded them based on whether or not each video linked to one of the following social media platforms: Facebook, Twitter, Instagram, Snapchat, Twitch, Discord, TikTok, Pinterest, LinkedIn, Tumblr and Google+. The two Center coders achieved a high level of agreement between themselves (Krippendorff's alpha of 0.85), as well as with the regular expression pattern (Krippendorff's alphas of 0.76 and 0.92).

## Appendix A: Most active popular channels by language

### Most active channels that produced videos ...

Exclusively in English		Exclusively in other languages		In both English and other languages			
CHANNEL	TOTAL VIDEOS	CHANNEL	TOTAL VIDEOS	CHANNEL	VIDEOS IN ENGLISH	VIDEOS IN OTHER LANGUAGES	TOTAL VIDEOS
ESPN	161	YTN News	1,103	KBS News	6	693	699
Fox Business	153	Polimer News	887	News18 Odia	1	472	473
NHL	145	Manorama News	878	PTV	36	437	473
Access	144	DesiFeed Video	817	AP Archive	259	210	469
FreeDawkins	140	Ennahar tv	797	TEDx Talks	282	161	443
Sarah and Melanie Live	133	GMA News	785	Newsfirst Sri Lanka	82	354	436
CBS News	123	dmc	726	MediaoneTV Live	1	434	435
MLG Highlights	106	Thairath	724	NewsX	247	170	417
MSNBC	106	Pressnews tv	723	24 News HD	1	409	410
NBA	91	News7 Tamil	689	Channels Television	367	41	408

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## Appendix B: Most popular videos in first week of 2019, by category

### Most popular video in each category from first week of 2019

CATEGORY	TITLE	VIEWS
General	Famous Cars	17,381,128
Music or dance	Chris Brown - Undecided (Official Video)	12,968,205
Sports	India take stranglehold on SCG contest   Fourth Domain Test	11,245,492
Hobbies or skills	Learn Colors Kinetic Sand Coffee Box Animals Baby Boong Toys Nursery Rhymes For Kids	9,476,262
Toys aor games	3 Colors Play Doh Ice Cream Cups LOL Surprise Shopkins Kinetic Sand Yowie Kinder Surprise Eggs	9,209,026
Video games	33 KILLS in Solo Squads...	8,081,452
Beauty or fashion	Drive-Thru Does Our Makeup feat. Trisha Paytas	5,863,408
Current events or politics (U.S.)	CNN reporter presses Trump: You promised Mexico would pay for wall	4,525,881
Consumer tech	2019 Tech I'm Ready For!	3,172,721
Food	KFC Bargain Feast - Fills the stomach without feeling the pinch	3,154,568
Vehicles	Picking Up Uber Riders In A Lamborghini Huracan!!!	1,678,688
Current events or politics (international)	China Lands on FAR SIDE of Moon - Alien Base Photos Imminent?	1,531,569

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## Appendix C: 20 title keywords associated with largest increase in median views

### 'Fortnite,' 'ASMR,' 'slime' top list of title keywords associated with more views

*Among English-language videos posted to popular YouTube channels in the first week of 2019, the 20 title keywords associated with the largest increase in median view counts*

KEYWORD	NUMBER OF VIDEOS	DIFFERENCE IN MEDIAN VIEWS RELATIVE TO VIDEOS NOT USING KEYWORD
Fortnite	808	496%
ASMR	157	454%
Slime	177	440%
Rainbow	103	435%
Prank	134	416%
Worst	139	405%
NFL	107	381%
Makeup	184	377%
Moment	435	360%
Wrong	159	314%
Eating	121	314%
PubG	126	311%
NBA	333	308%
Ultimate	325	285%
Hack	183	279%
FIFA	180	271%
Player	236	269%
Mystery	104	264%
Insane	120	264%
Roblox	340	264%

Source: Analysis of 353 common terms found in the titles of English-language videos posted Jan. 1-7, 2019, by YouTube channels with at least 250,000 subscribers, collected using the YouTube Data API. "A Week in the Life of Popular YouTube Channels"

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## Appendix D: Content analysis codebook

### Instructions

Please examine the following video. You are not expected to watch the entire video, but you need to click through it and watch enough that you can answer the questions below with confidence. Make sure that you have Google Translate or similar tools disabled. As you make your selections for this video, make sure you have first reviewed and familiarize yourself with all of the possible options. Remember that some videos may look like they have been removed, but they can still be viewed on YouTube if you click on them. When deciding whether a video is in English, be especially careful to click through to different parts of the video – some videos start in English but have prominent segments (like news interviews) that switch to a different language.

#### 1. Are you able to view the video here or on YouTube.com?

- A) Yes
- B) No

- Some videos may have restricted playback and can only be viewed on the YouTube website – but they have NOT been removed.

#### 2. Skip this video if it contains prominent non-English text without translation OR a segment in a foreign language without subtitles.

- A) Continue
- B) Skip (contains untranslated foreign language)

- Skip if the video has segments where a foreign language is spoken with no English translation or subtitles present. If there are any parts of the video where viewers are expected to understand a foreign language, skip it. If non-English text can be seen in the video preview screenshot, this is a good indication it is intended for a non-English audience.

Example	Explanation
A video that's in English but important text on the screen (headlines, etc.) is not in English	Skip
A video that's mostly in English but some parts are in a foreign language	Skip
A video that's in English but the video's title is completely in a foreign language	Skip
A music video in a foreign language	Skip
A video that does not have direct dialogue but people in the background can be heard speaking in a foreign language	Skip

A video that's in English but the video's title has foreign language text in addition to a meaningful title in English	Continue
A video that's in a foreign language but the entire video is subtitled in English and the subtitles were NOT auto-generated by YouTube	Continue

### 3. What is this video about?

- A) Miscellaneous or Other (general entertainment, vlogs, celebrity news, skits, movies, talk shows, pop culture, human interest pieces, cartoons, comics, religion, astrology, paranormal, animals, pets, ASMR, etc)
  - B) Video Games (fortnite, pubg, xbox, playstation, nintendo, minecraft, sports/vehicle video games, esports, footage of mobile games for kids, video game animations)
  - C) Toys or Games (physical toys, not video games – lego, nerf, playdoh, slime, figurines, kids playing with toys, stop-motion animation with toys)
  - D) Music or Dance (music videos, nursery rhymes, sing-alongs, soundtracks, instrument tutorials, performances/concerts/competitions, musician interviews)
  - E) News or Politics (government, political debates, world events, social issues, business/science news, local news, political conspiracies (NOT celebrity news))
  - F) Sports, Fitness, or Physical Activities (football, basketball, soccer, martial arts, golf, WWE, yoga, bodybuilding, biking, surfing, skateboarding, archery, shooting, athlete interviews)
  - G) Vehicles (cars, racing and motorsports, motorcycles, aircraft, trains, boats and sailing, RC vehicles (NOT vehicle video games))
  - H) Food or Nutrition (recipes, cooking, healthy eating, diet, weight loss, bartending, restaurants, meals)
  - I) Beauty or Fashion (makeup, cosmetics, clothes, shoes, jewelry, hairstyling, nails)
  - J) Creativity, Skills, or Learning (arts, crafts, design, life hacks, DIY, home experiments, language/math/science lessons, photography, home improvement, gardening, programming lessons, software tutorials)
  - K) Consumer Tech (tech products like phones, computers, miscellaneous apps and gadgets that don't clearly pertain to a specific category above)
- Select the category that describes what the people are talking about or doing. MISCELLANEOUS OR OTHER will probably be the most common category. If the video does not clearly fit in any of the more specific categories, select OTHER. Some videos may fall in multiple categories; pick the best fit.

Example	Explanation
A musician talking about politics	NEWS OR POLITICS – focus on what the people are talking about
Someone playing a soccer video game	VIDEO GAMES – don't get tricked by a specific genre of video game
Footage of a mobile game for kids that features cartoons	VIDEO GAMES – if it were just a cartoon, you would pick OTHER, but since it's from a video game, mark it that way
Someone talking about their favorite comic book characters	OTHER

Someone drawing their favorite comic book characters	CREATIVITY, SKILLS, OR LEARNING – because the video is about their artwork
A family/kids video on how to make slime at home	CREATIVITY, SKILLS, OR LEARNING – because the video is about how to MAKE slime; if instead the video mainly consists of kids playing with it, then mark it as TOYS OR GAMES
TV show about a dance competition	MUSIC OR DANCE – you might be inclined to mark it as OTHER or SPORTS, FITNESS, OR PHYSICAL ACTIVITIES but dance is an exception and belongs with MUSIC AND DANCE
Conspiracy theories about bigfoot's existence	OTHER
Conspiracy theories about the government covering up bigfoot's existence	NEWS OR POLITICS – because the video discusses a conspiracy about a government cover-up
News or conspiracy about a video game company	VIDEO GAMES – if news story in the video pertains to a specific category, pick the more specific category instead of NEWS OR POLITICS. Same goes for news about fashion companies, cars, sports, and so on.
News about a celebrity getting divorced	OTHER – celebrity news and pop culture don't count as NEWS OR POLITICS, but if the focus is on a celebrity making a political statement or expressing an opinion about a prominent social issue, then it would count as NEWS OR POLITICS in that case.
Trailer for an upcoming movie	OTHER
A video of a children's coloring book app	CREATIVITY, SKILLS, OR LEARNING – because it's not really a video game, and the focus is on coloring rather than 'playing' something

#### 4. CHILDREN'S CONTENT: The video is clearly intended for young children under 13

- A) Yes  
B) No

- Do NOT mark if it's a video that parents might enjoy too. Tends to be very obvious – animations, toys, nursery rhymes and sing-alongs, extremely simple kids video games, etc. Things that adults or teenagers would definitely not watch or be interested in – you know it when you see it.

Example	Explanation
Nursery rhymes or sing-alongs	Yes
Animated children's cartoons	Yes
Toy 'unboxing' videos	Yes
An extremely simple video game clip with cartoons	Yes – probably. In some cases it's obvious – it's a simple and flashy video game, no one's narrating, it's something that a young child would watch but not an older child or adult. However, in other cases, some

	kid-oriented video games are still popular among adults and older children (like Pokemon). Usually you can tell the difference based on whether there's an adult or teenager talking about the game. If not, its target audience is probably children – but always pause to consider the possibility that an older audience might also find the video interesting or entertaining.
An teenager or adult doing or talking about something that's popular among children (video games, comic books, figurines, collectables)	No (usually). Videos sometimes feature content that may appeal to both younger children as well as older children or adults. You can often tell whether the video is clearly aimed at kids based on the language and tone of the speaker(s).
A family video where both the children and parents are talking	It depends. Some videos are aimed at family audiences (both kids and their parents) rather than children exclusively. If it's a video of a parent filming their kids playing with toys and the kids are the main focus, then it probably counts. If at some point the parent turns the camera and begins talking about their thoughts on parenting, then it probably doesn't count.

**5. FEATURES CHILD: Clearly features a young child under 13 directly participating in the video (excluding certain professional performances)**

- A) Yes
- B) No

- The child must be visible. News footage and professional performance coverage (e.g. sports broadcasts, awards shows) does NOT count.

<b>Example</b>	<b>Explanation</b>
A children's video featuring kids playing, singing, etc.	Yes
Non-professional recording of a child performing in a non-professional manner	Yes
A home video of a parent filming their kids	Yes
A children's cartoon where you can hear what sounds like kids talking or giggling	No
Footage of a TV news interview with a child	No
A televised performance of a child at a concert, pageant, talent show, or sports event	No

**6. AMERICAN NEWS: Does the video mention U.S. current events, U.S. politicians, or the U.S. government?**

- A) Yes
- B) No

- Does the video contain news or opinions about things happening in the U.S., or the U.S. government's actions internationally?

<b>Example</b>	<b>Explanation</b>
News broadcast about a local event in a specific U.S. city or state	Yes
News broadcast about a new bill in Congress	Yes
The president making a speech	Yes
Political campaign ads	Yes
News broadcast about trends or events outside of the U.S.	No, unless the broadcast highlights relevant U.S. involvement
A foreign politician discussing their country's relationship with the U.S.	Yes
A foreign citizen's vlog where they talk about things happening in the U.S.	Yes