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CO-VIEWING ON OTT DEVICES: SIMILARITIES AND DIFFERENCES

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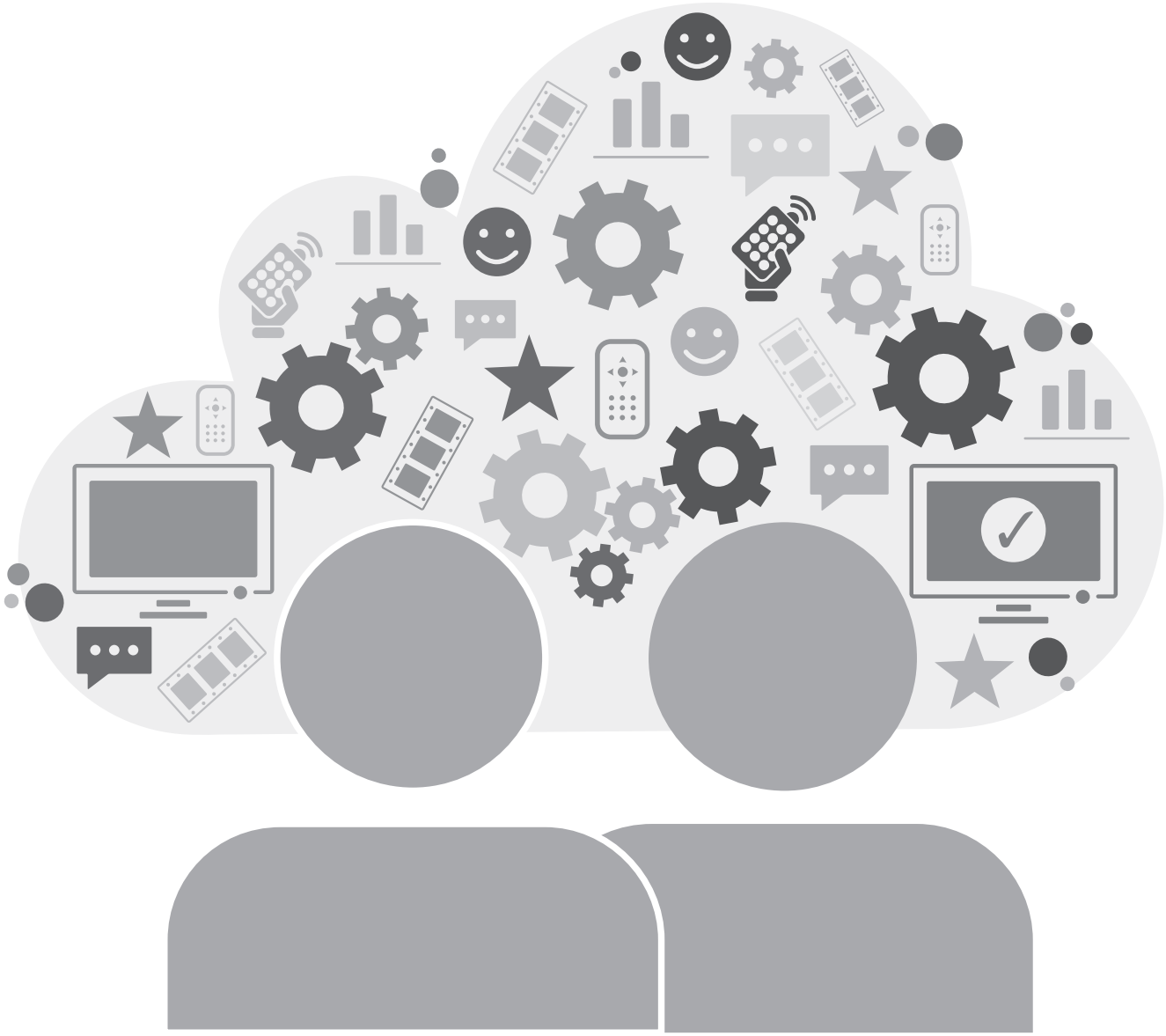

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CO-VIEWING ON OTT DEVICES: SIMILARITIES AND DIFFERENCES

BY KUMAR RAO, KAMER YILDIZ AND MOLLY POPPIE *Data Science Methods, Nielsen*

INTRODUCTION

When we watch television, we often have someone else in our household watching with us: a spouse, a child, a roommate, even a family guest. That behavior is called 'co-viewing,' and it's been a topic of intense social research for as long as television has been around.

Co-viewing has been a topic of commercial interest as well ever since it was discovered that joint media attention could improve learning[1], engage memory, and thus by extension stimulate brand recall. Today, co-viewing is not limited to traditional television viewing—what we refer to in the industry as linear TV. With the emergence of digital technologies and increased content streaming over the Internet, it's become vital for media companies to understand consumers' co-viewing patterns across different platforms.

While co-viewing trends on tablets and smartphones have been studied[2], co-viewing activity using over-the-top (OTT) capabilities (connected devices like Roku and Apple TV, Smart TVs, and game consoles) has received limited attention due to a lack of accurate measurement solutions. However, with programming content typically displayed on a regular-size

[1]See for instance the research conducted as early as 1967 by the Children's Television Network to launch and run the landmark TV series Sesame Street.
[2]Dan, O. (2014). M Marks the Spot: Audience Behaviors Across Mobile. Paper presented at the Advertising Research Foundation: Audience Measurement, New York, NY.

television screen and in a familiar household setting—the hallmarks of traditional co-viewing activity—OTT devices are probably the digital platform that should intuitively invite the most immediate scrutiny.

Co-viewing of OTT content (programming content as well as ads) presents an interesting challenge for audience measurement. The viewing environment might be familiar (the living room, the bedroom, the kitchen, etc.), yet the OTT ecosystem has some unique characteristics (content distribution, access, choice, viewer identification, etc.), and measuring streaming activity in that new ecosystem involves a few adjustments to traditional media research solutions.

In this paper, we present research on the dynamics of co-viewing activity on OTT devices, and how they compare to co-viewing benchmarks for standard television. The preliminary findings from this study should be of interest to researchers looking to better understand the media habits of the population of viewers behind these devices, and to media companies looking to make the most of OTT platforms for programming and advertising applications.

BACKGROUND

Early co-viewing studies examined the effect of VCRs (in their ability to facilitate family movie nights, for instance) when they were first introduced, and the educational effects of having a parent watch TV with their child (e.g., mentoring, mediation, etc.). More recent studies have explored how people are expanding the co-viewing experience via social media (by tweeting about a live TV event, for instance). While there are a few exceptions, the body of literature on the topic leaves little doubt that the outcome is generally very positive: Co-viewing adds context to the viewing experience, enhances social interactions, and creates a stronger bond between viewers and the content (programs and ads) they're watching. But today's new technology is inviting a re-examination.

Programming options are proliferating and people are consuming more media content than ever before[3]. Digital video recorders (DVR), video-on-demand (VOD) services and online streaming capabilities are empowering consumers to watch television programming on their own schedule. This means that in theory, people are increasingly watching content that's more aligned with their own individual tastes—and thus quite possibly less aligned with the tastes of other members of their family. In this new ecosystem, the media industry sees an opportunity to target ads that are more directly suited to those individuals, but is it worth the trade-off if it comes at the expense of co-viewing?

Before we can answer that question, we need to size up the problem: Is today's streaming technology affecting co-viewing, and if so, to what extent? Video streaming can take place on a smartphone or a tablet, and it's not difficult to imagine that the size of those devices can be a physical impediment to co-viewing. But video streaming via an over-the-top device gets displayed on a 'regular' television screen. How does co-viewing in that type of environment compare to co-viewing on traditional television?

This is what we set out to find out in this paper. The view in the industry is that co-viewing on OTT devices must be largely similar to that observed on linear TV. This hypothesis is reassuring for the media industry, of course, but we felt it was important to validate it against statistically representative data and use the industry-standard Nielsen ratings service as the benchmark. This would not just allow us to accurately quantify the key differences, but also examine more closely the idiosyncratic behavior of certain demographic groups.

Nielsen recently partnered with Roku to deliver audience measurement solutions on TV-connected devices. For this paper, we used detailed campaign-level data from this new service to take a closer look at OTT co-viewing behavior and compare it to co-viewing incidence levels on traditional television. Specifically, we conducted a post-facto examination of a large volume of OTT campaign data in order to understand the nuances and patterns in co-viewing of OTT impressions. The combination of big data from Roku and nationally-representative panel data from Nielsen gave us the opportunity to develop a robust methodology to conduct this research exploration.

[3]See The Nielsen Total Audience Report: Q3 2016

STUDY DESIGN

Data capture and calibration

To measure advertising audiences on digital platforms (like Roku), Nielsen developed a census-based system that leverages software plug-ins that are directly embedded in the media player apps of those providers[4].

Data used in this study

The empirical analysis in this study is based on OTT campaigns measured during two different time periods. The first dataset was a six-month dataset (Nov 2015 – May 2016) comprising 15 campaigns and involving 18 million impressions. The second was a three-month dataset (May – July 2016) comprising 36 campaigns and involving 112 million impressions. The second dataset was simply a temporal extension of the first one and was used to drill down into data cross-sections in a way that wasn't possible with the first dataset.

The TV viewing data was based on six months (Dec 2015 – May 2016) of live TV viewing from active Nielsen National People Meter (NPM) panel households (N=34, 831). Among these households, around half (51%, N=17, 817) viewed live TV on sets connected to an OTT device. In this study, we used TV viewing from that subset of panel households, as opposed to viewing from all households in the panel.

A side-by-side comparison of TV and OTT viewing in a sample can only be meaningful if the sampled units have access to both TV and OTT. The presence of an OTT device in the home implies certain distinct characteristics: age, income, access to broadband internet service, etc. Figure 1 illustrates the marginal distributions of demographic characteristics across all NPM and OTT households. Limiting our TV data to that coming from OTT-capable households allows us to minimize that demographic bias and offer a fair comparison of co-viewing activity between OTT and linear TV among people living in similar types of households.

FIGURE 1: MARGINAL DISTRIBUTIONS OF DEMOGRAPHICS ACROSS ALL AND OTT NPM HOUSEHOLDS

		(A) OTT NPM HHs (n=17,817) (%)	(B) ALL NPM HHs (n=34,831) (%)	Index (A/B)
Head-of-Household (HOH) Age	Age 16 - 24	2.5%	2.4%	1.0
	Age 25 - 34	17.9%	15.0%	1.2
	Age 35 - 44	21.0%	17.2%	1.2
	Age 45 - 54	22.8%	20.7%	1.1
	Age 55 +	35.7%	44.7%	0.8
Household Size	HH Size: 1	11.5%	17.7%	0.7
	HH Size: 2	28.5%	30.3%	0.9
	HH Size: 3	19.0%	17.7%	1.1
	HH Size: 4	20.0%	16.6%	1.2
	HH Size: 5+	21.0%	17.7%	1.2
Number of Kids	No. of Kids: 0	56.3%	61.4%	0.9
	No. of Kids: 1	19.9%	16.6%	1.2
	No. of Kids: 2	17.0%	13.4%	1.3
	No. of Kids: 3 +	6.8%	8.6%	0.8
Hispanic HOH	Yes	85.0%	85.8%	1.0
	No	15.0%	14.2%	1.1
Household Income	< $25,000	11.5%	18.2%	0.6
	$25,000 - <$50,000	21.9%	24.7%	0.9
	$50,000 - <$75,000	21.3%	20.5%	1.0
	$75,000 - <$100,000	16.9%	14.4%	1.2
	$100,000+	28.5%	22.3%	1.3

[4]For its ability to capture impressions from all devices, not just a sample, this measurement approach is referred to as 'census measurement.' See a full description of this method in: The big picture: technology to meet the challenges of media fragmentation in this issue of the Nielsen Journal of Measurement.

Definition of co-viewing metrics

In this study, we define the OTT co-viewing rate as the proportion of impressions that were viewed by two or more viewers. That is, for a dimension "d," the co-viewing rate is expressed as:

$$OTT\ Coviewing\ Rate_d = \frac{Impressions\ with\ 2+\ Viewers_d}{Total\ Impressions_d}$$

The dimensions are demographic groups, defined for instance by age and gender combinations (e.g., Males 18-24), or by time periods (e.g., weekday, weekend, daytime, evening). In the census data, each OTT ad impression is recorded as a viewing transaction with a particular daypart and the genre of the program that contained the ad.

Similarly, we define the TV co-viewing rate as the proportion of viewing events that were viewed by two or more viewers[5]:

$$TV\ Coviewing\ Rate_d = \frac{Viewing\ event\ with\ 2+\ Viewers_d}{Total\ Viewing\ events_d}$$

Here, TV viewing events are aggregates of minute-level TV data collected via meters in the NPM panel. The aggregation is based on program, originator, household, viewing date, daypart, and the age and gender of household members. Each viewing event therefore corresponds to the viewing of a program at the daypart level by a member in the panel household for a particular program that aired live in the last 7 days.

The following limitations should be considered when comparing the OTT and TV co-viewing rates: First, the OTT data is based on ad exposures, whereas the TV data is based on viewership of TV programs; second, the time periods selected for OTT and TV are largely overlapping, but they're not an exact match; third, we did not control for the moderating effects of content type, timing, and genre; and finally, the OTT data we used in this study is restricted to Roku data, and to a limited number of campaigns run on the Roku platform. Still, we believe that the data and metrics are sufficiently well aligned to provide a good basis of comparison for this exploratory analysis into the common viewing patterns and behaviors of U.S. media consumers.

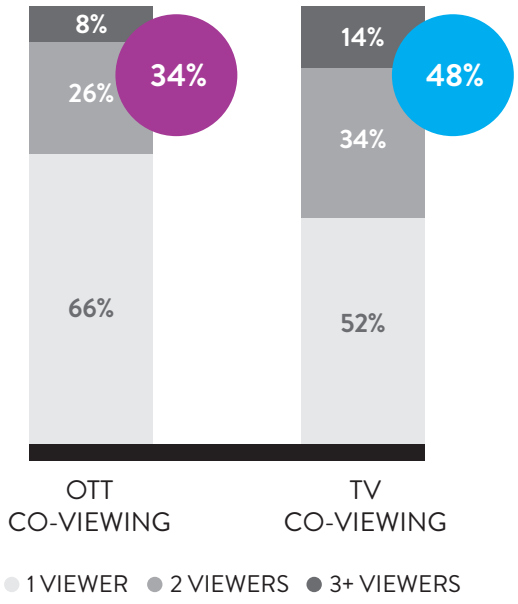
RESULTS

Overall co-viewing rate on OTT and linear TV

We measured an overall OTT co-viewing rate of 34%, compared to 48% for linear TV. This difference isn't entirely surprising. OTT devices offer consumers many more viewing options than linear TV does, and while that diversity gives people a chance to find a program they can enjoy as a group, it also gives them the option to pick a program that's uniquely tailored to them—and no one else in the household. Linear TV also has the edge when it comes to live television events (e.g., sports, awards shows, political debates, etc.) that tend to be viewed with others.

Whether on TV or OTT, most of the co-viewing activity (70% for TV and 76% for OTT) involves only two persons.

FIGURE 2: OTT AND TV CO-VIEWING DISTRIBUTION



Source: Nielsen Roku OTT measurement (15 campaigns; 18M impressions; Nov 2015 – April 2016)
Source: TV co-viewing rates are from Nielsen TV measurement data from any OTT connected TV sets; Dec 2015 – May 2016

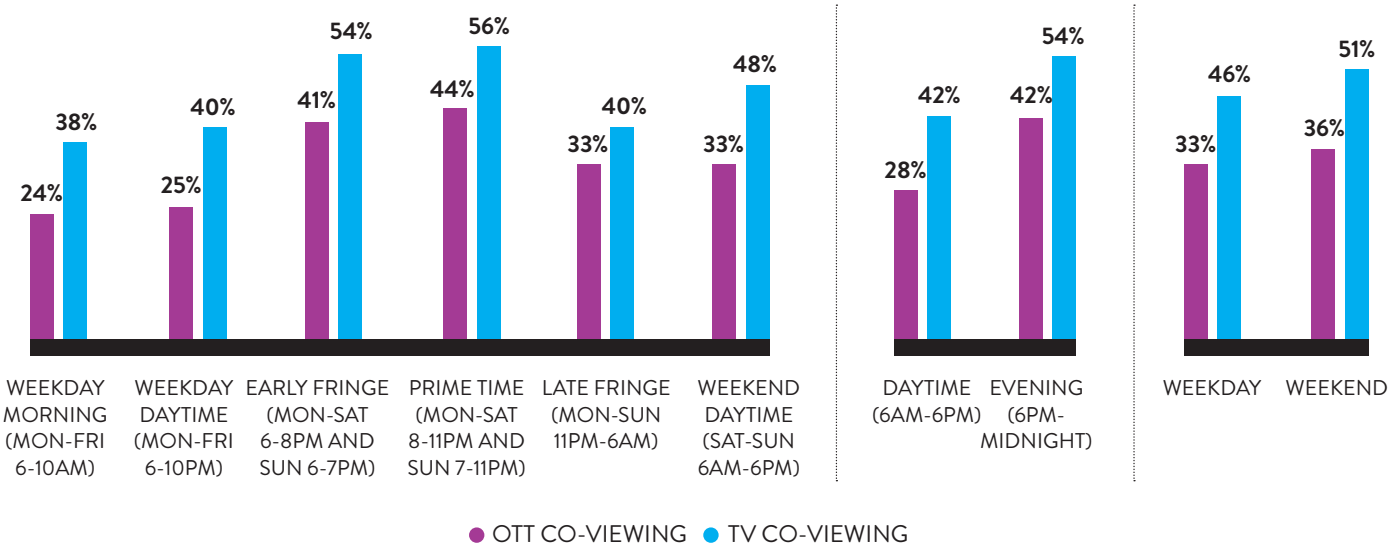
[5]Note that this definition of co-viewing for TV was created specifically for this research in order to closely align with the OTT definition. It is different from the definition of co-viewing used by Nielsen's traditional reporting systems (such as NPOWER).

Co-viewing by daypart

There are certain parts of the day (and the week) that are more conducive to co-viewing for linear television: prime time and weekend daytime are good examples. Early fringe leads up to prime time with solid co-viewing activity, but co-viewing drops substantially in late fringe (night owls tend to watch TV alone). Finally, co-viewing is at its lowest during the week (both in the morning and afternoon) when one or more members of the household are likely to be away at work or at school.

Co-viewing activity for OTT follows the same patterns for each daypart. The gaps between OTT and linear TV is at its widest during the day (both weekdays and weekends), which seems to be a time when people are more likely to stream alone. The narrowest gap between OTT and TV co-viewing is during late fringe (33% for OTT vs. 40% for TV). Night owls might watch regular TV alone, but an OTT device boosts their chances to have some company.

FIGURE 3: OTT AND TV CO-VIEWING BY DAYPART, TIME OF DAY AND DAY OF WEEK



Source: Nielsen Roku OTT measurement (15 campaigns; 18M impressions; Nov 2015 – April 2016)
Source: TV co-viewing rates are from Nielsen TV measurement data from any OTT connected TV sets; Dec 2015 – May 2016

Co-viewing by age

Children co-view much more than the rest of the population (see figure 4). In fact, 70% of all the viewing done by children of age 2-12 is done with someone else (a friend, a parent), regardless of whether the viewing is done on an OTT device or not. The co-viewing rate (OTT or not) is still well above 50% for teenagers (age 13-17). After a slight drop for people of age 18-20, the linear TV co-viewing rate climbs back up progressively for people in their 20s, and then starts to drop regularly until it reaches the 40% mark around 45 years old.

For OTT, the drop is much more substantial at age 18, and co-viewing continues to drop for people in their 20s. It then stabilizes and gets reasonably close to TV levels for people who are 45 or older. At its widest (for people in their late 20s), the gap between TV and OTT is 26 percentage points—in fact, viewers in that age group are only half as likely to co-view on OTT as they are for regular television.

The 'bulge' between the curves between the ages of 18 and 45 is particularly interesting. These are the ages when people are most likely to be active (in school and in the workforce), and thus have schedules that are more individualized. But these are the years when people are at their most social too. It would seem that people in that age range are using their OTT devices for some 'me-time,' and that with age, their OTT behavior comes back in line with how they're watching linear television.

FIGURE 4: CO-VIEWING RATES BY AGE AND PLATFORM

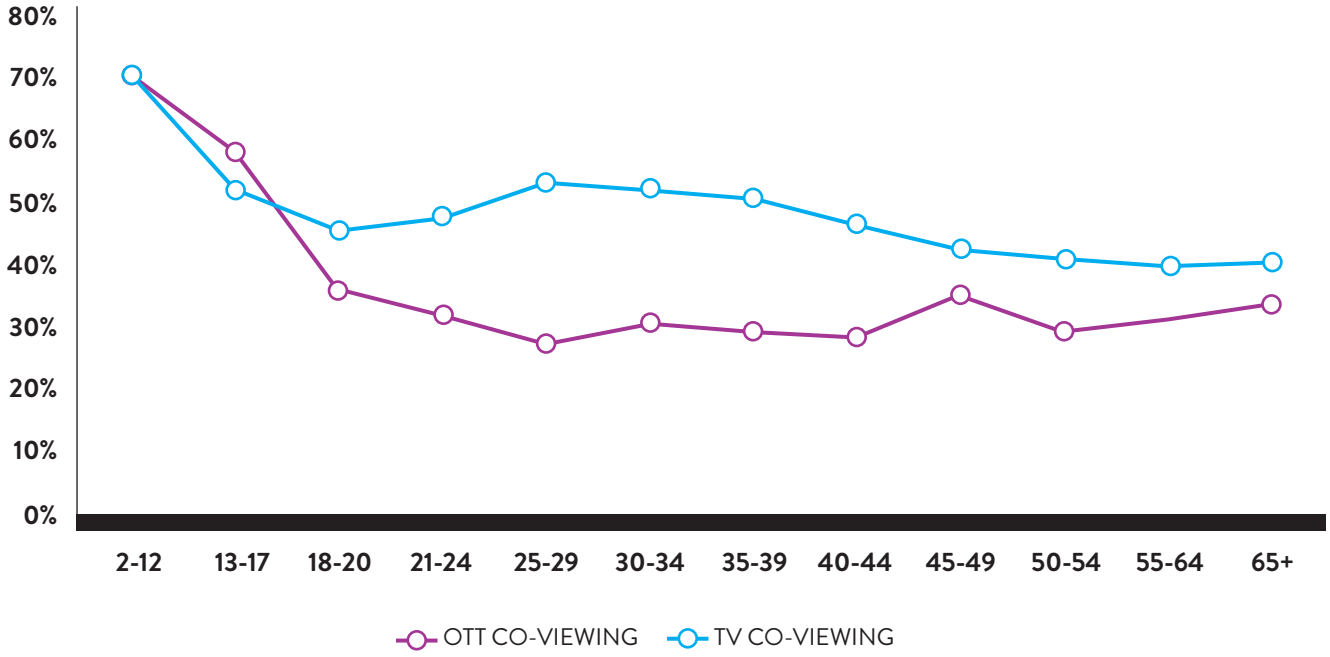
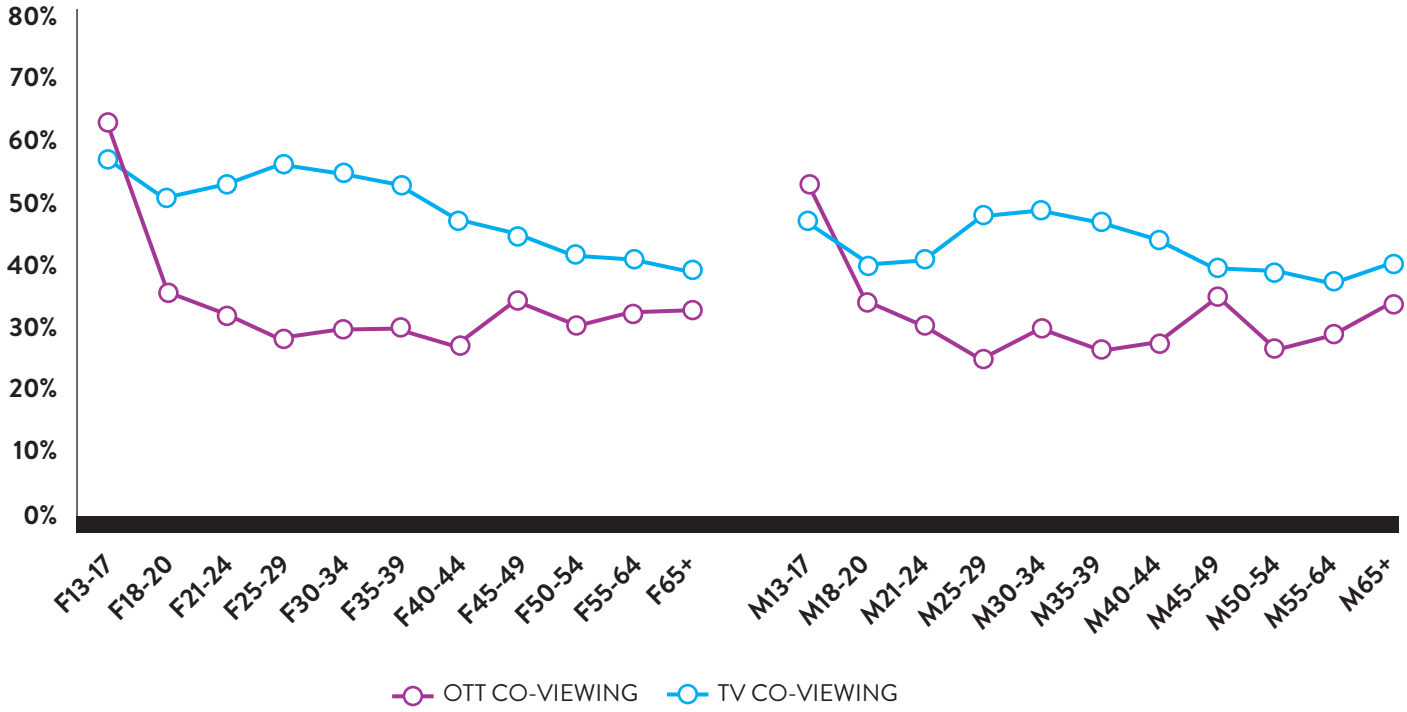


FIGURE 5: CO-VIEWING RATES BY AGE AND GENDER



Source: Nielsen Roku OTT measurement (15 campaigns; 18M impressions; Nov 2015 – April 2016)
Source: TV co-viewing rates are from Nielsen TV measurement data from any OTT connected TV sets; Dec 2015 – May 2016

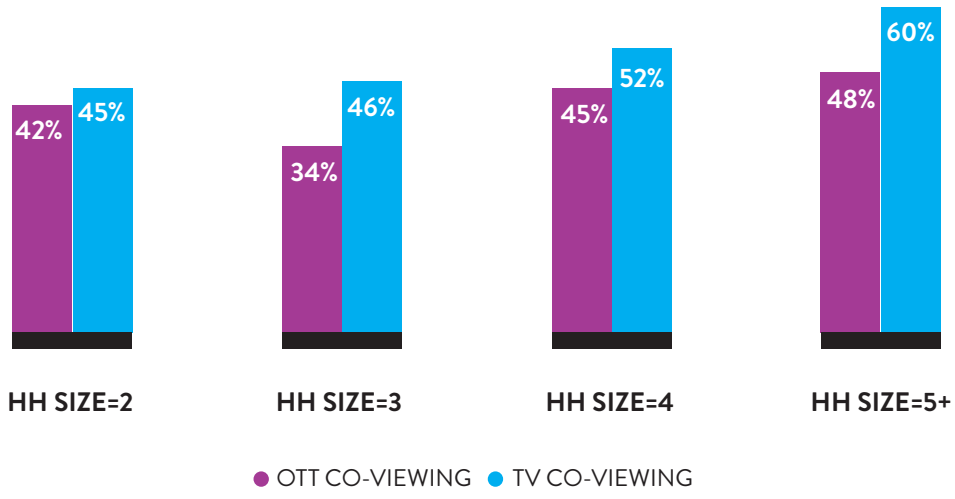
When we take that analysis one step further and examine age groups by gender (see figure 5), we notice that women in general tend to co-view regular TV more than men, but that's not necessarily the case with OTT. Women co-view OTT as much as men across all age groups, and perhaps even more so among teenagers.

Co-viewing by household size

The more, the merrier: It would seem natural for co-viewing to increase as a function of household size. After all, a person living alone isn't likely to have as many co-viewing opportunities as someone living in a household with two parents, three kids and two grandparents.

There is, however, a dip in co-viewing for people living in households of size 3. It's not so much a dip for regular TV as it is an absence of what might have been expected to be an increase, but for OTT it's a discernible dip, from 42% (for viewers in households of size 2) down to 34%. We looked at these households more closely and found that they are mostly single parent (mom/dad) households with two kids. One potential theory for a lower overall co-viewing rate for these households is that it's simply due to an absence of adult co-viewing. Another theory stems from previous findings that media consumption for single parent homes is different from that in two-parent homes[6]. It's possible that viewing in these homes is more individualized in nature due to less parental mediation and involvement. As a result, viewers in these homes are more likely to watch content that's more aligned with their own individual tastes. The fact that the dip is more pronounced for OTT than linear TV seems to reinforce that hypothesis.

FIGURE 6: CO-VIEWING RATES BY HOUSEHOLD SIZE



Source: Nielsen Roku OTT measurement (36 campaigns; 112M impressions; May 2016 – July 2016)
Source: TV co-viewing rates are from Nielsen TV measurement data from any OTT connected TV sets; Dec 2015 – May 2016

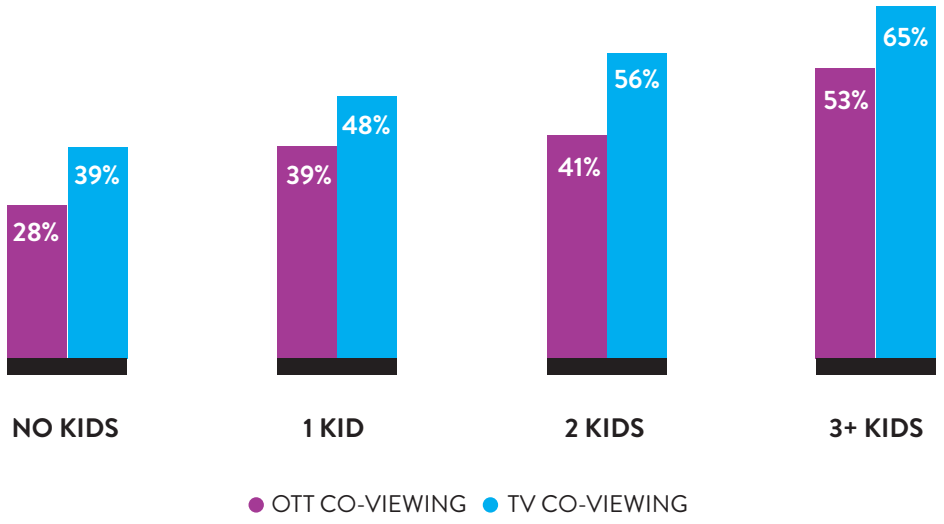
[6]Gentile, D. A., & Walsh, D. A. (2002). A normative study of family media habits. Applied Developmental Psychology, 23, 157–178.

Co-viewing by number of kids in the household

Co-viewing is a direct function of the number of children in the house. For linear TV, the rate increases by nearly ten points with each child: from 39% in households with no kids to 48% in household with one kid, 56% if there are two kids around the house and 65% for three or more kids.

As with most comparative analyses in this paper, the OTT rates are below their TV counterparts, but there's a noticeable difference here: the OTT co-viewing rate for households with two kids is only marginally better than that for households where only one kid is present (41% vs. 39%)—and a full 15 percentage points lower than the 56% TV benchmark for that group. This is in line with the observation we made earlier that single-parent households with two kids seem to exhibit more personal viewing patterns.

FIGURE 7: CO-VIEWING RATES BY NUMBER OF KIDS



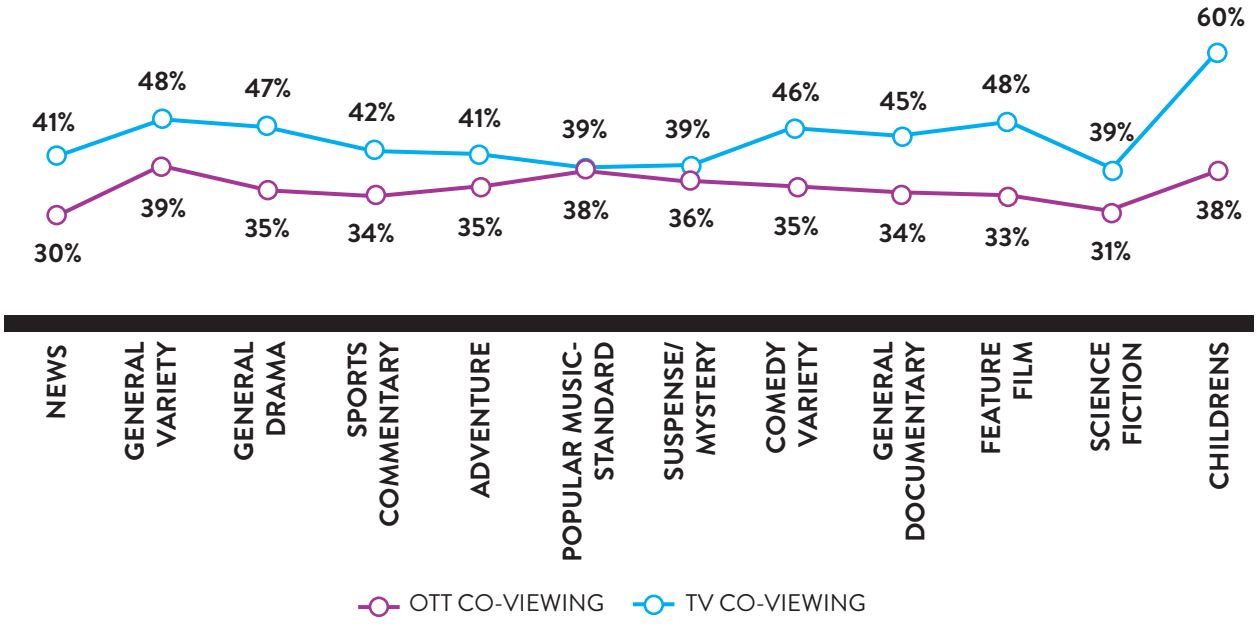
Source: Nielsen Roku OTT measurement (36 campaigns; 112M impressions; May 2016 – July 2016)
Source: TV co-viewing rates are from Nielsen TV measurement data from any OTT connected TV sets; Dec 2015 – May 2016

Co-viewing by content type

In figure 8, we illustrate co-viewing rates for a number of popular programming genres. Notice that for the most part, co-viewing remains in a 40-50% range for TV and a 30-40% range for OTT, regardless of program genre. With one notable exception: children's programming, for which TV co-viewing hits a high mark of 60% while OTT co-viewing stands at 38%—one of the highest co-viewing rates for OTT, but far behind its TV counterpart.

Since children co-view more than adults, it's not surprising to see children's programming be one of the most co-viewed genres on television, but we were expecting a higher OTT co-viewing rate. It is possible that kids are still watching children's programming together when that programming is on linear TV (e.g., on Saturday mornings), but are using the OTT devices in their homes to watch different content. This is an area for further exploration.

FIGURE 8: CO-VIEWING RATES BY PROGRAMMING GENRE



Source: Nielsen Roku OTT measurement (15 campaigns; 18M impressions; Nov 2015 – April 2016)
Source: TV co-viewing rates are from Nielsen TV measurement data from any OTT connected TV sets; Dec 2015 – May 2016

IS OTT HELPING OR HURTING CO-VIEWING?

The impact of OTT devices on co-viewing behavior is complex. On one hand, those devices offer many new opportunities for people to find content that they can watch together. But they also make it very easy to isolate oneself. It wouldn't be wrong to summarize our findings this way: OTT co-viewing is generally lower than TV co-viewing, and it follows the same patterns (kids do it more, it increases with household size, it's larger in the evening than in the daytime, etc.).

But we also found evidence that points to measurable differences: certain household dynamics (e.g., a single parent with two children) have a peculiar co-viewing profile that might be exaggerated by OTT activity; some age groups (18 to 45) seem to use OTT devices disproportionately for individual viewing; children's programming isn't co-viewed on OTT as much as one might expect; and OTT activity during daytime hours appears to be more personal.

The methods we developed for this research are allowing us to study co-viewing, but more fundamentally they're allowing us to put a face on OTT viewers, whether they're co-viewing or not, and compare their behavior to that of regular TV viewers. This is of particular importance to advertisers eager to use the OTT ecosystem to reach new and existing market segments as efficiently as possible. Is OTT helping or hurting co-viewing? We have some preliminary answers but not the full picture yet. As OTT usage continues to grow, we're looking forward to building on the research and methodology developed for this paper to improve our understanding of OTT's impact on society.

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