

A Large-Scale Characterization of User Behaviour in Cable TV

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Problem

- Today, there are many services from which to choose contents to watch:
 - Live TV
 - Video on Demand (VOD)
 - Catch-up TV
 - Over-the-top (OTT) from 3rd parties (e.g. Netflix)
- Understanding how users interact with such services is important to increase:
 - user satisfaction
 - user engagement
 - user consumption

(this knowledge helps to enhance the recommendation systems of Cable TV providers)
- We didn't find any study comparing usage patterns between Live TV, VOD and Catch-up TV in an integrated way from a large scale Cable TV operator.

3 Types of TV Services Studied

- Live-TV
 - a client can watch any video content that is being broadcast live (e.g. a live soccer game).
- VOD (video-on-demand)
 - a client can watch any video content anytime that was pre-recorded and made available, usually a movie or series.
- Catch-up TV
 - is a type of VOD, where a client can watch any video content that was broadcast live up to a few days before (e.g. up to 7 days).

Contents are delivered via Set-Top Boxes (STB) installed in users' homes.

Dataset Statistics

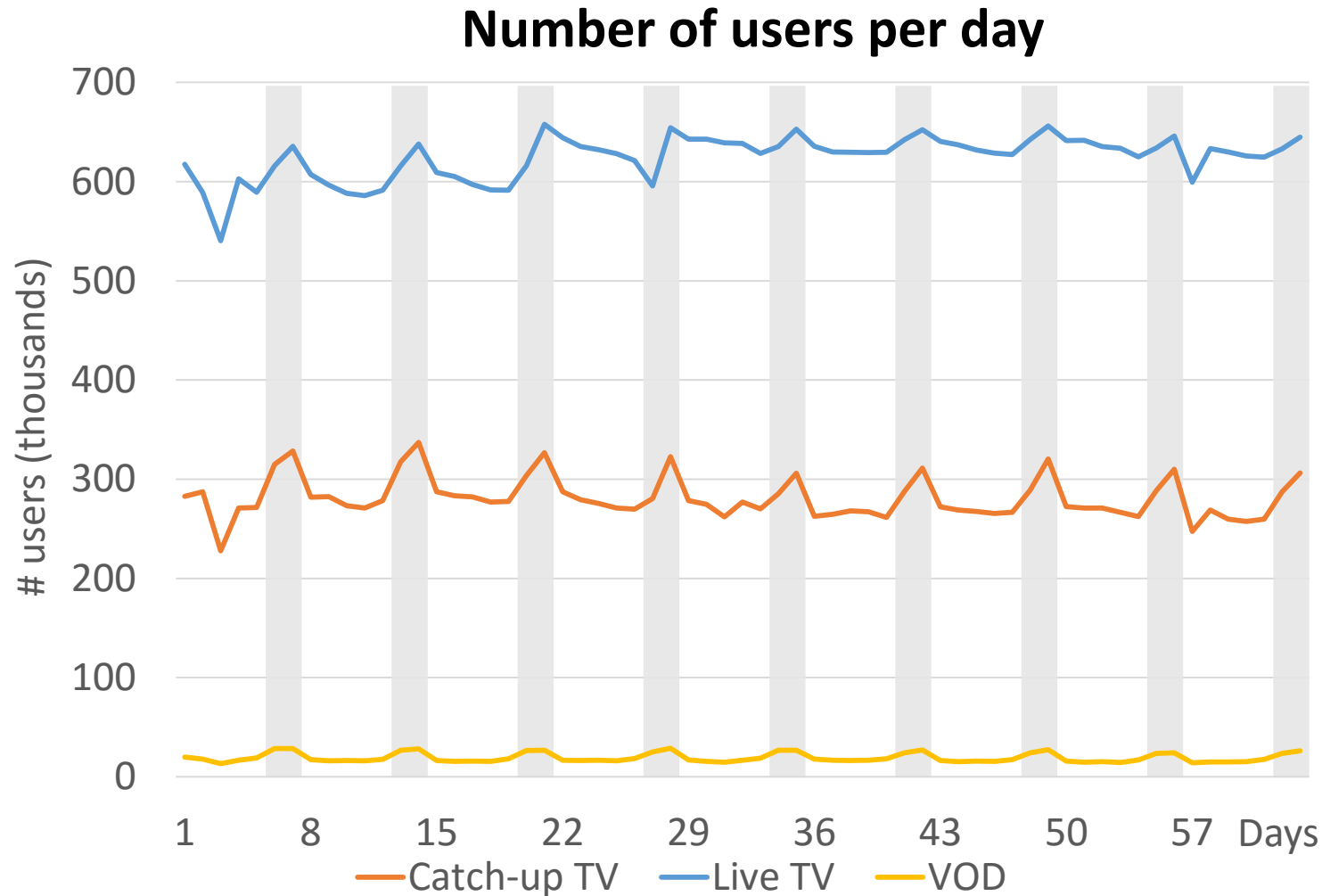
	Live	Catch-up	VOD	Total
Users	896,000	806,000	220,000	897,000
Programs	24,000	24,000	15,000	39,000
Episodes	330,000	330,000	15,000	345,000
Programs per moment (avg.)	160	6,000	15,000	21,000
Episodes per moment (avg.)	160	35,000	15,000	50,000
Views (>10 min)	617,000,000	56,000,000	9,000,000	682,000,000
User views (avg.)	688	70	40	758
User views per month (avg.)	327	33	19	360

October to December 2015 (9 weeks)

160 channels available to the user

Some Results

Client Distribution

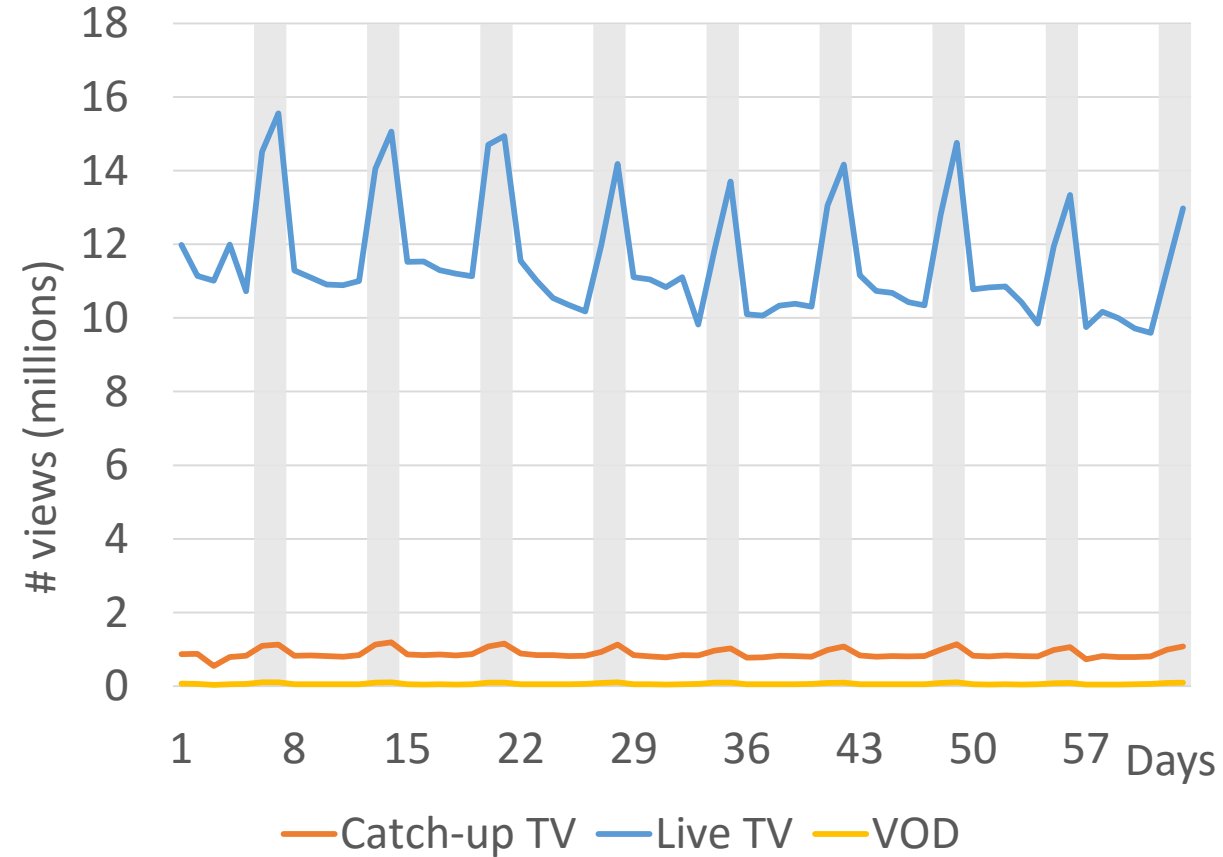


Live TV has much more users than Catch-up and VOD together, but less research.

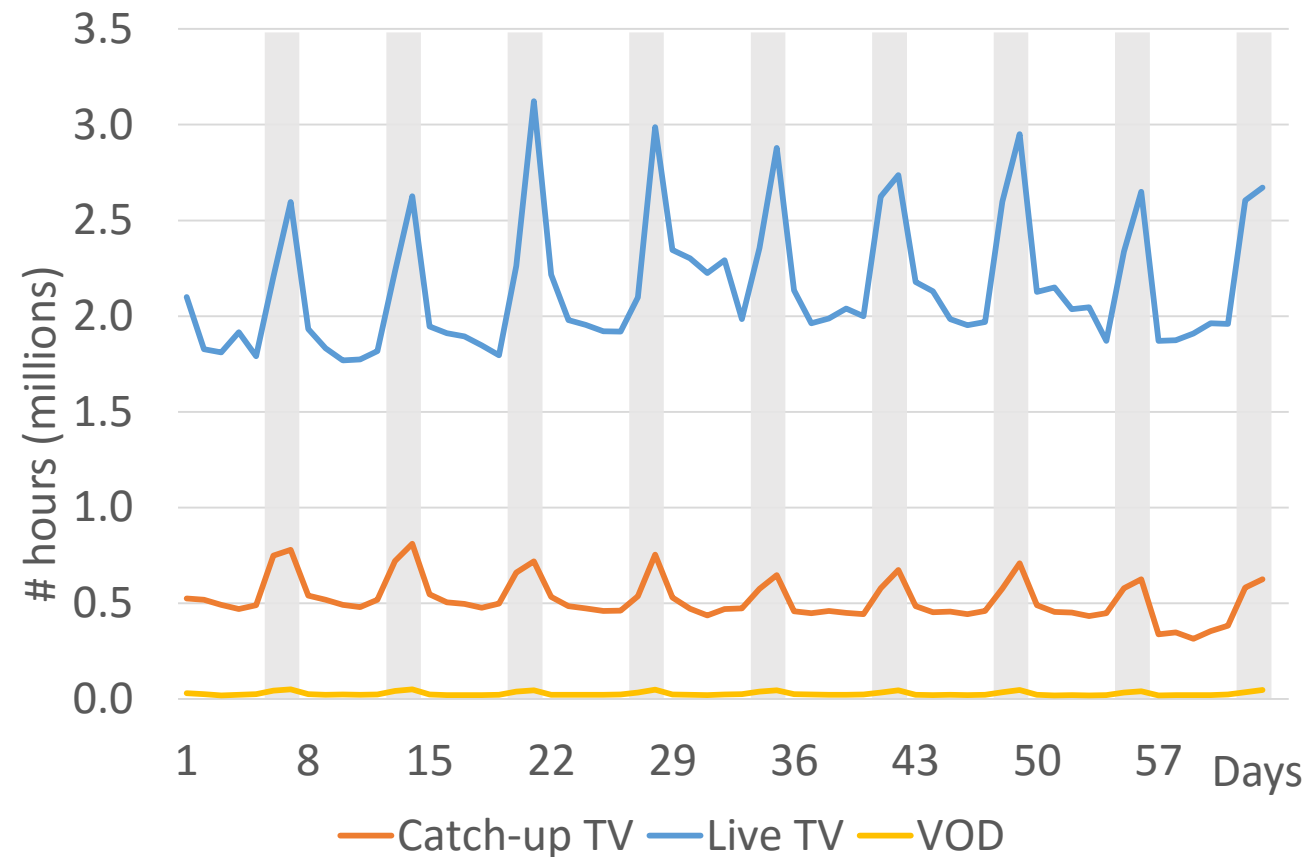
Should we focus more in improving the user experience for Live TV?

TV Watching Distribution

Number of views per day

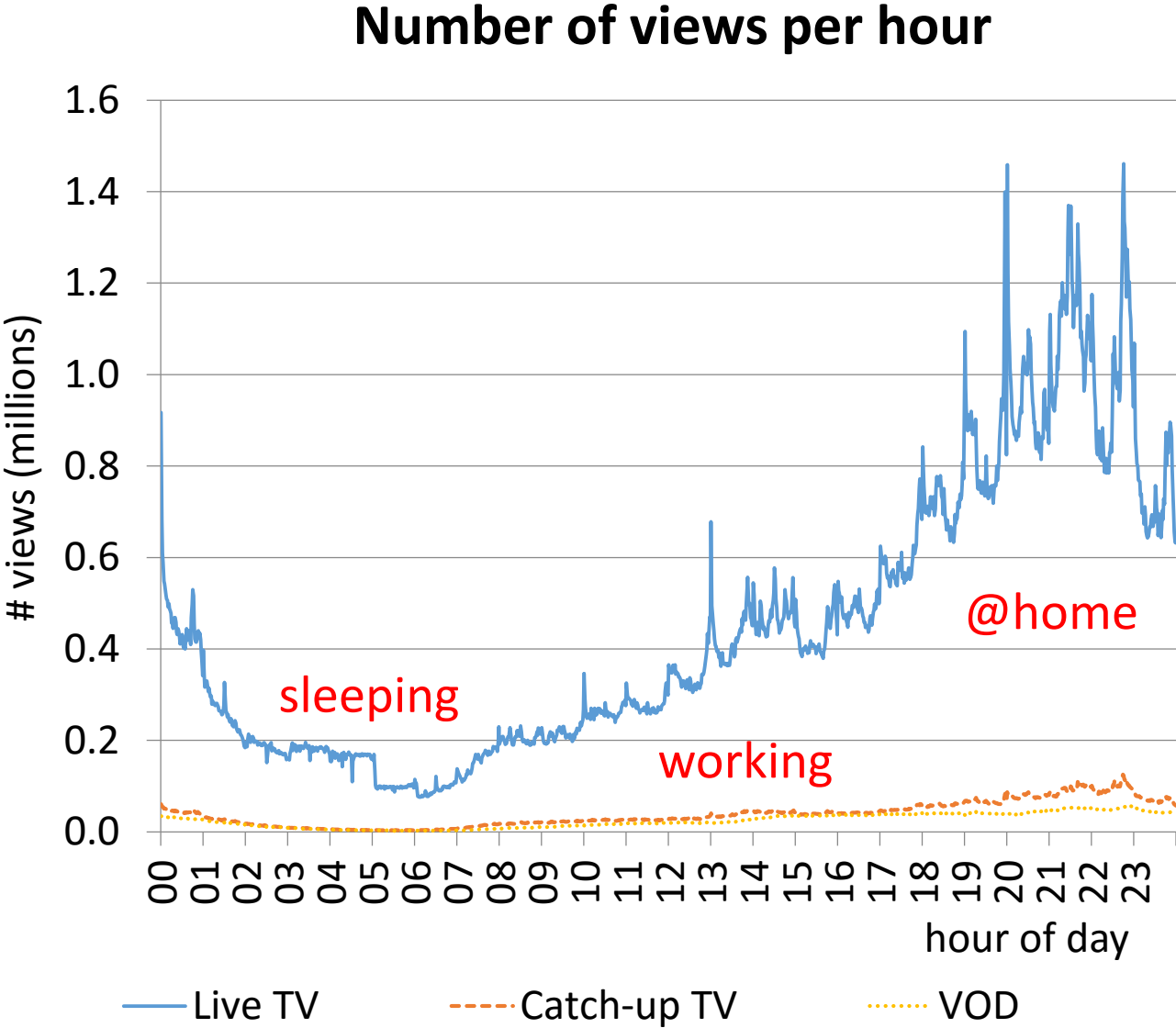


Number of watched hours per day



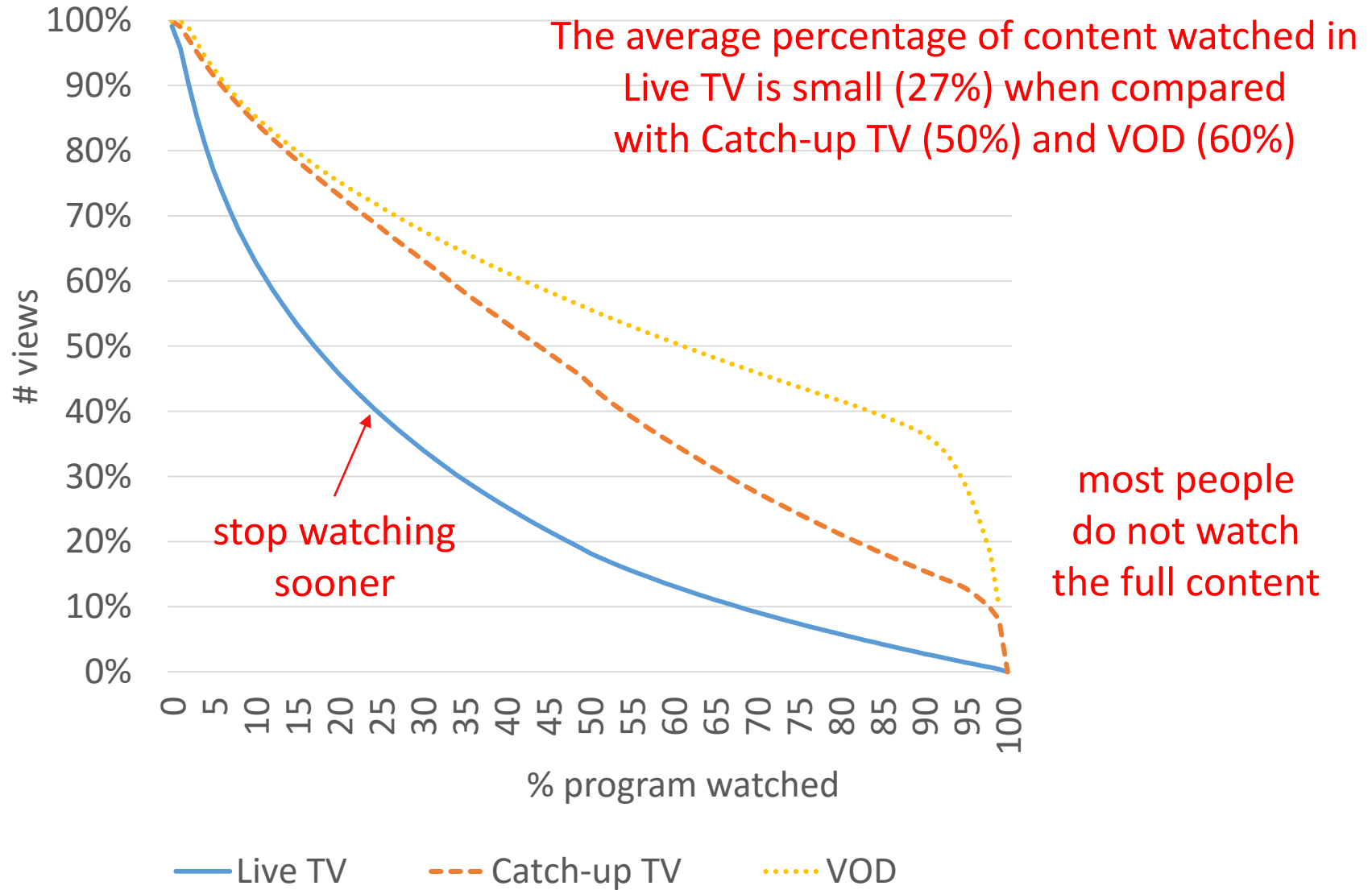
Live TV has much more views and watched hours than VOD & Catch-up

TV Watching Distribution per Hour

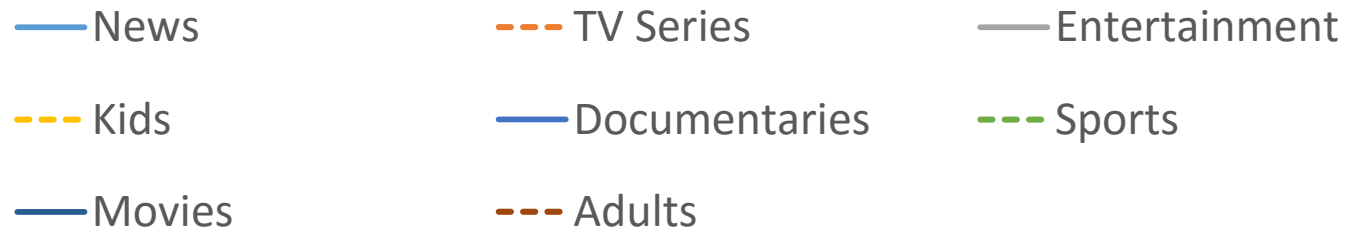
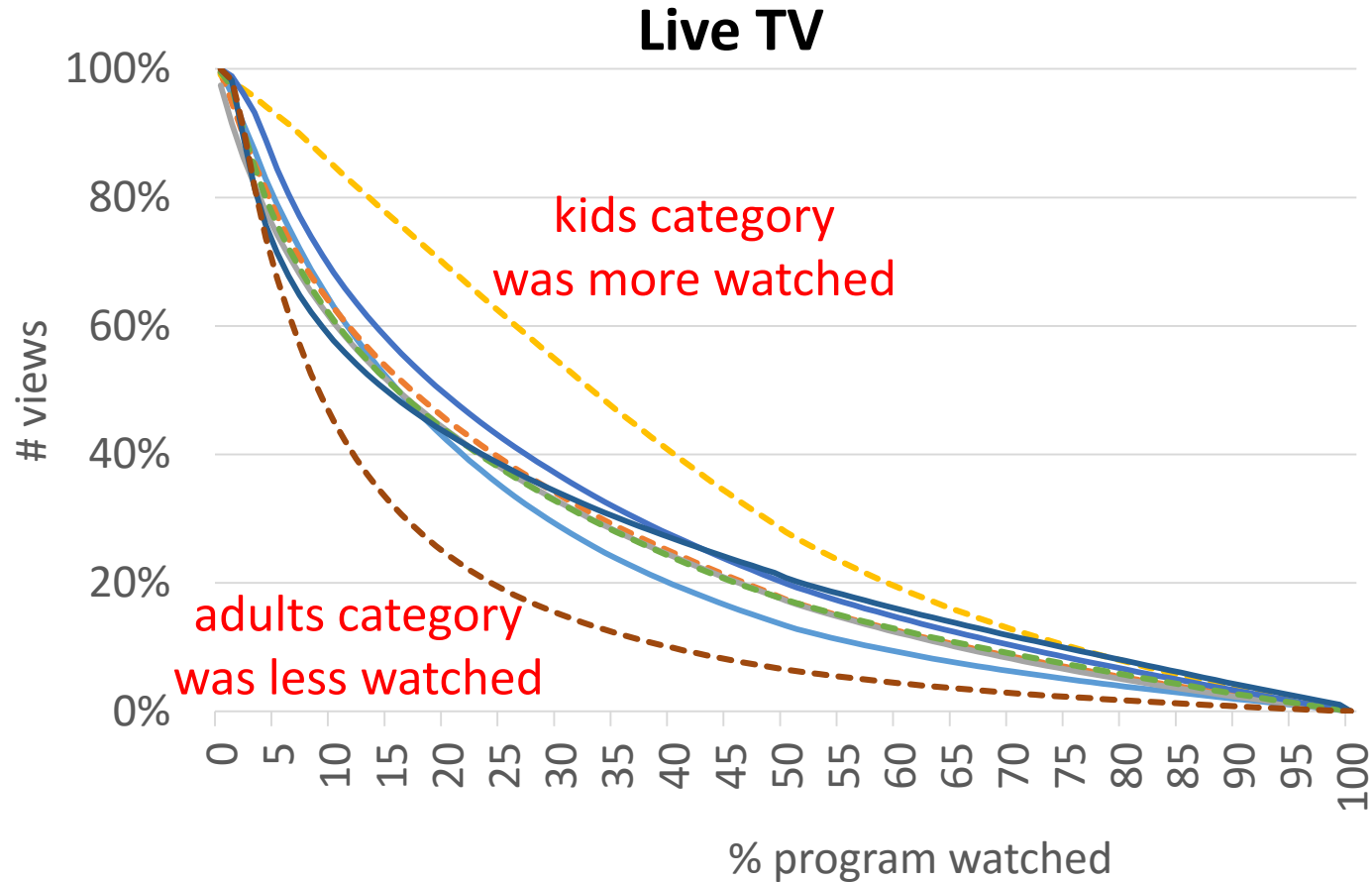


The graph shows the typical work/rest cycle of users for the 3 TV services.

Percentage of Content Watched



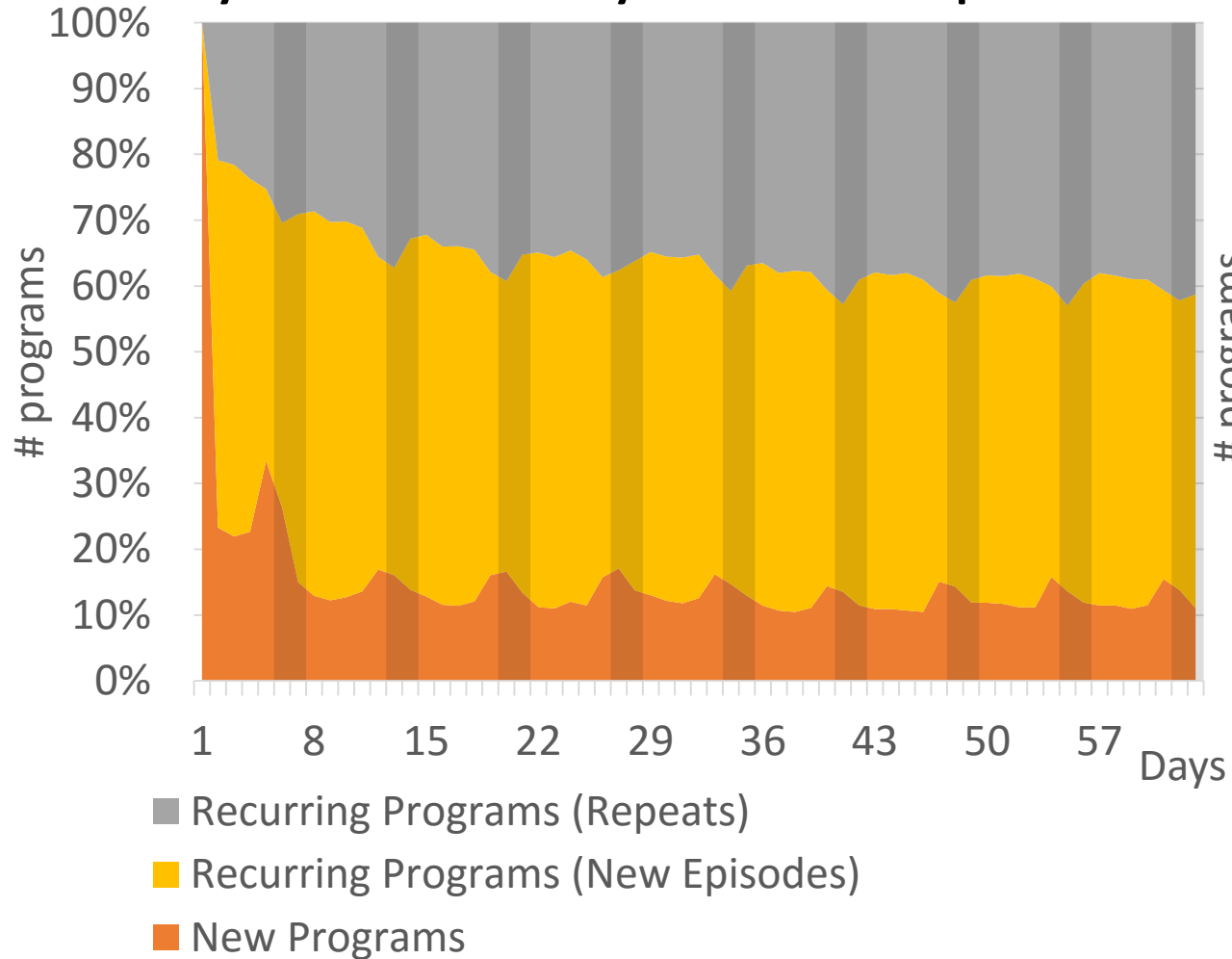
Percentage of Content Watched per Category



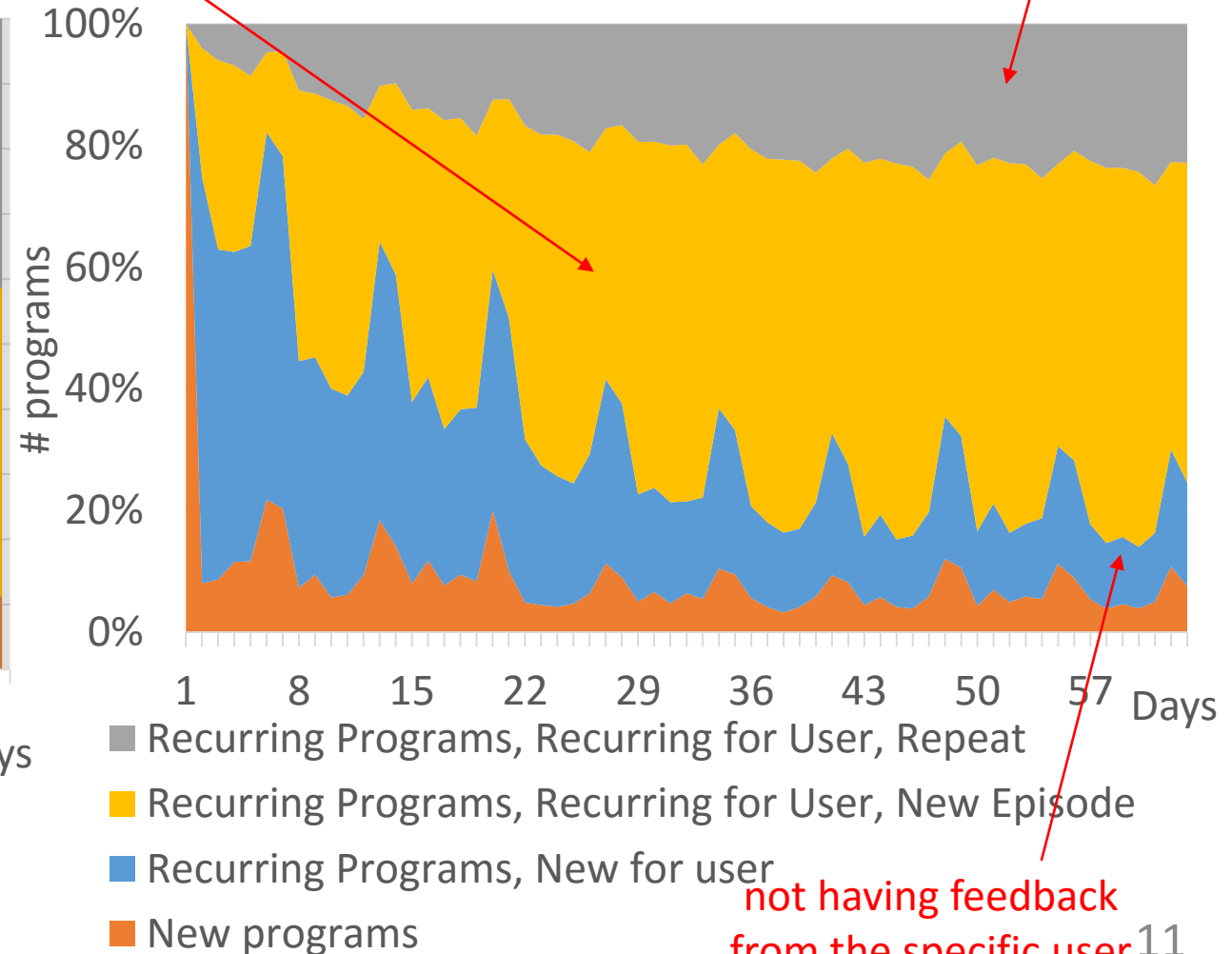
Program Type Distribution

~20% of watched episodes are repeated.
These are mostly kids programs.

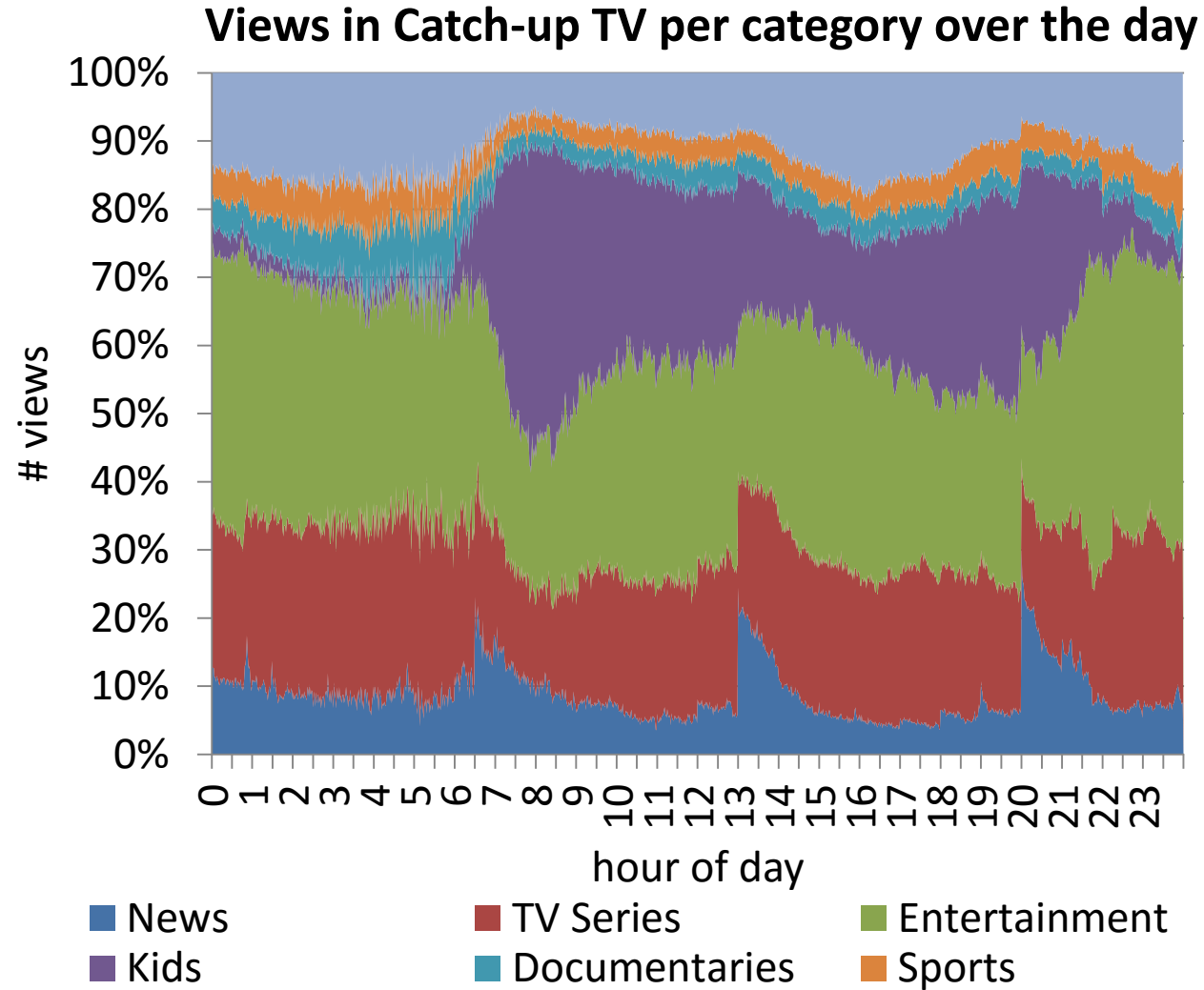
Distribution of program types per day made available by the Cable TV operator



Distribution of program types watched by users on live and catch-up TV

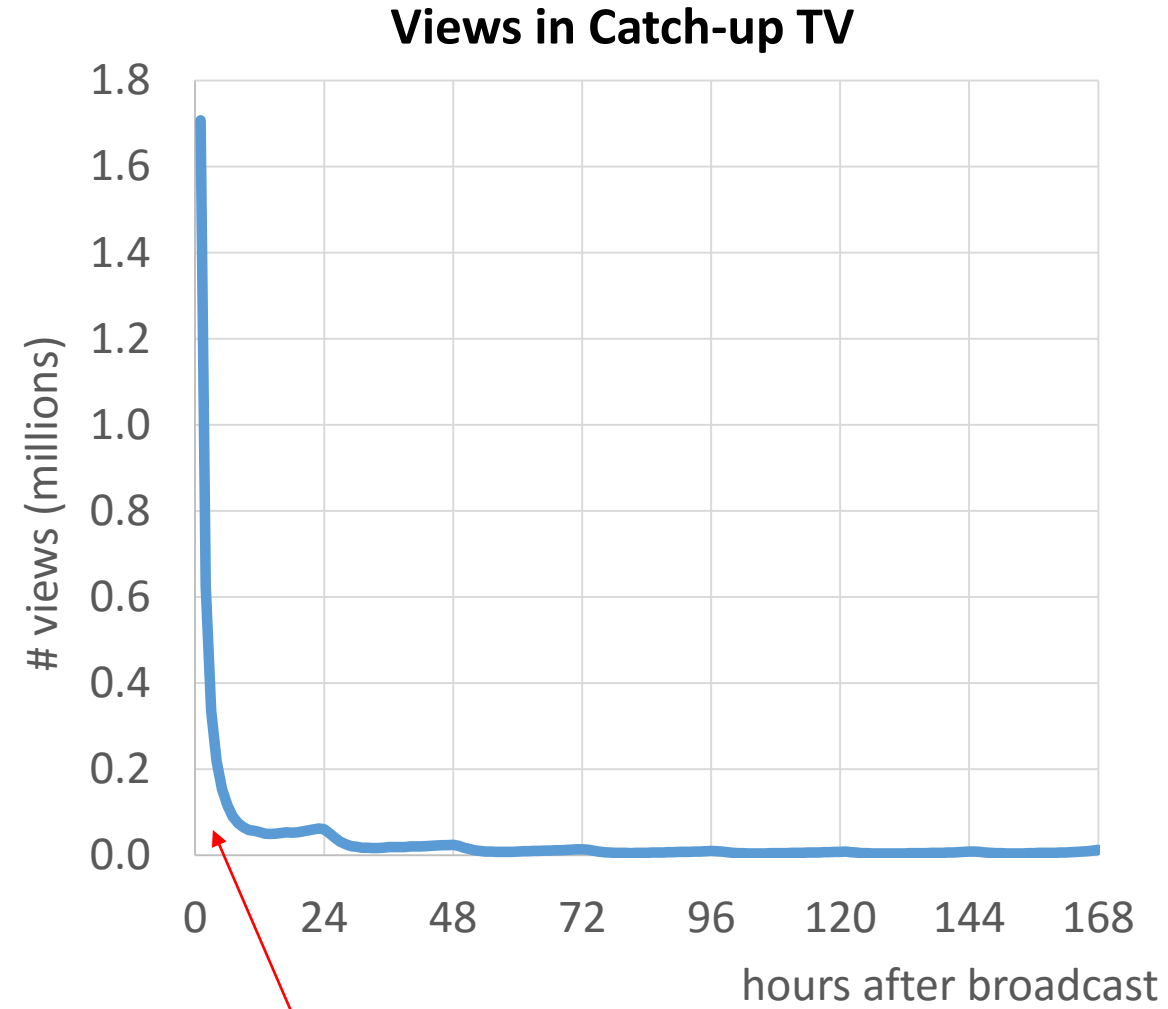


Watched Categories per Hour



users watch different categories in different hours

Time passed since Broadcast



most users watch contents
from the last hour

Conclusions

- The characterization of Live TV, Catch-up TV and VOD on a large-scale Cable TV provider shows usage differences between these 3 services. **These insights enable to adapt and create better recommendation algorithms depending on the TV service.**
- Live TV receives the majority of views. Still, Catch-up TV and VOD accumulate a large amount of views and hours watched. **The 3 services should have recommendations.**
- Users tend to watch Catch-up TV and VOD programs for longer, when compared to Live TV. **The implicit feedback provided by the program views should be adjusted to the TV service.**
- Users tend to watch some categories (e.g. Kids) for longer than others (e.g. Adults). **The implicit feedback provided by the program views should be adjusted to the content categories.**
- Users prefer to watch different types of programs depending on the hour of day. **We should adjust the recommendations for the time period.**
- Users prefer to watch new episodes of programs previously watched by them. **Should we recommend the programs that users usually watch or should we suggest new programs?**
- Users prefer to watch programs recently broadcast in Catch-up TV. **Should we recommend the most recent contents first?**

Questions?

Thank you.

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