Streaming Availability and Library Circulation: An Exploratory Study

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ABSTRACT
The contents of a popular film and television video collection at a mid-sized university totaling 2,242 items were examined for availability and total number of checkouts on three major streaming services: Netflix, Hulu and Amazon Prime. A total of 1026 titles were coded for availability on Netflix and Hulu. Then, 454 items were coded for availability on Amazon Instant. It was found that total circulation counts changed depending on the streaming services used. Specifically only Hulu was found to correlate negatively. Library titles available on Netflix Streaming had more charges on average then titles not available on Netflix streaming. Titles available on Amazon Instant were twice as likely to circulate then items not available on Amazon Instant. This leads to the possibility that Amazon Instant might be used as collection development tool in order to gauge how often certain DVD title could circulate. In addition it can be concluded that availability over subscription streaming services, such as Netflix and Amazon Instant, actually points to items that may circulate more frequently.

INTRODUCTION
The past year has been momentous for home consumption of movies and television programming. 2013 saw the venerable video rental chain Blockbuster cease rental operations and liquidate all holdings, it also saw Netflix grow from 29.2 million subscribers in April 2013 to 40.4 million in September 2013 (Selter 2013). At the same time, libraries are increasingly recognizing the value of maintaining healthy popular video collections. The Simsbury Library Director Susan Bullock said “Friday nights, the hour before we close, it’s like a video store… People are running to get their movies before the weekend” (Velsey, 2010) demonstrates the high demand for popular video collections in public libraries. Seeing the success of popular video collections at public libraries many academic libraries have started to develop or reorganize existing collections to make popular materials more easily identified and located.
As libraries struggle to find creative collection development solutions in the face of flat budgets and fashionable hostility toward certain types of government spending, the impact that video streaming services will have on physical DVD collection use should be considered. While Netflix has said that its subscription service, in its present form, is not fit for libraries to use as an alternative to existing DVD collections, that does not mean that the service has no impact on the use of physical items in a library. Many items that are requested or ordered for physical DVD collections are available over subscription based streaming services, like Netflix and Amazon Instant, or on free streaming services, such as Free Hulu.

It is only prudent, then, to look at these streaming services in the context of library collections to better understand how the two interact in terms of a larger popular material ecosystem. Once this information is known a discussion can begin about whether DVD purchases should be made in the context of availability over different streaming services. In addition, as DVDs fade in use, institutional subscription streaming services should be available for libraries to provide popular videos. As a first step toward any popular video institutional subscription streaming service data about the affect of streaming availability and any correlation with popularity of items in academic library video collections needs to be researched. Such knowledge is a necessary precursor to a discussion of whether the viability of offering popular streaming services in lieu of conventional physical video collections.

If it were found that the higher circulating items in a collection were not available for streaming, then a library might surmise that adding streaming services would add little value to patrons. Conversely, if streaming availability correlated strongly with high circulation, then streaming would offer a way to make already popular items available to an even larger number of patrons. It is also conceivable that such information could be useful for collection development purposes. If streaming were found to have a profound negative impact on circulation, libraries could use that data to better utilize limited funds.

**LITERATURE REVIEW**

Research to date regarding streaming video services and libraries has focused on the use and consequences of Netflix as an alternative to lending. Harris (2010) notes that for many libraries, given “the widespread practice of excluding audiovisual materials from interlibrary loan, acquiring a Netflix subscription appears to be the perfect solution” (p. 212). Modern libraries are faced with collection development challenges that are not easily resolved through traditional librarianship practices. As budgets continue to remain flat in the face of inflation, such interest in using Netflix physical DVDs as a way to offset DVD collections was inevitable. Additionally, academic libraries are increasingly recognizing the utility of popular reading and audiovisual collections as ways to address patron demand and increase gate counts (Rathe & Blankenship, 2006; Sanders, 2009). This, coupled with the transformation of physical space to accommodate growing online collections has created opportunities for new resources and uses previously not available to academic libraries (Begg, 2009; Miller, 2012).

Dewan (2010) points out that these resources are not only good for popularity but are a response to the changing physical needs of libraries. Writing about the need for greater attention to popular fiction, Dewan remarks that, faced with increasing student demand, one comes to the conclusion that “the Library of Congress classification is not an effective scheme for browsing fiction” (p. 44). The expansion of physical resources for browsing purposes goes hand in hand with the development of better tools and services to meet the needs of
users. Nagy (2011) suggests that active investment in such tools is essential to the survival of the institution.

From a collections perspective streaming video could present a new, cost-effective development tool, provided the licenses were in order. Ayre (2007) highlights that personal customization features of Netflix create a unique user experience which easily facilitates access to the large number of streaming titles on the site while providing an unencumbered browsing experience (Ayer, 2007). This impact of this innovation in video browsing has placed a great reliance on Netflix as a service provider, as Smith notes (Smith, 2011).

Ayre’s finding that libraries could be improved by incorporating the Netflix browsing experience is supported by Chuttar’s findings on video collection browsing at academic libraries. Specifically, Chuttar suggests that patrons look for specific videos or browse based on a predetermined starting point. In addition, patrons were found to be more frequently dissatisfied with unsuccessful browsing of physical video collections than book collections (Chuttur, 2011). The video browsing collection of an academic library has been shown to be one of the fastest growing sections of collection development nationwide. Bergman’s analysis of trends in patron use discovered that the decreasing cost of collections combined with increasing demand had transformed the video collection policies from closed stacks to open stacks. The lifting of restrictions has made the library resources more appealing to all patron communities, and usage statistics should only increase with time (Bergman, 2010).

However, legal barriers exist. Netflix’s license specifies that the service is intended for home use, only. Fair use of videos by universities and libraries would only cover films screened or streamed for educational purposes, not for entertainment. The quality of the Netflix’s service has created an unusual situation in which some libraries now implement the service as a just in case collection supplement, in direct violation of the company’s license (Healy, 2010; Kaya, 2010).

The combination of a service that is difficult to monitor with a fiscal climate that leaves librarians clamoring for alternative solutions could “hurt library legitimacy” (Harris, 2010). Hoek (2013), writing in American Libraries, bemoans the limitations of these term of service agreements, writing that “if libraries continue only to work within the narrower and narrower range of what licenses allow, we may just be abiding ourselves into obsolescence, while also submitting to the diminution of the very freedoms that are in our care.” (Hoek, 2013).

However, until libraries begin negotiating new licenses for streaming, any potential court ruling would likely fall on the side of the company offering the streaming service. In the meantime, however, we can continue to research the suitability of streaming services for library collections and the best utilization of funds for a physical collection.

Several researchers have examined how availability of titles from other sources or in other formats have affected book sales and library usage. Travis (2010) found that the mass digitization done by Google did not, as publishers at the time feared, hurt book sales. Hemmeter (2006) found that the presence of large bookstores near public libraries does affect library usage among certain patron populations. For example, middle income patrons are more likely to use the large bookstore than a nearby public library. However, Hemmeter found that certain services such as Children’s programming were found to be unaffected by the proximity of a large inexpensive bookstore. A large study by The Pew Research Center (2012, October) looked at a number of book borrowing and purchasing behaviors. It was found that after college individuals’ purchase of books increases while borrowing decreases. High-school aged readers were most likely to have borrowed their most recent book from a library, while older adults were most likely to have purchased the book. College age readers were the most likely to have borrowed a book from a friend. Another study by The Pew
Research Center (2012, June) found that library card holders are more likely to purchase print and ebooks than non-library card holders.

METHODS

The feature film collection at University of Wisconsin-Whitewater Andersen Library was selected for study. UW-Whitewater is Carnegie classified as medium four-year, primarily residential, with a student population of 11,139. Consisting of 2,242 feature film and television titles, the collection was selected because items are kept in open browsing near the entrance of the library, which had a gate count of 406,932 during FY 2012, and has a non-Library of Congress classification system to encourage browsing. Total circulation counts for all items in the collection over a year until Oct 1, 2013 were pulled. The circulation statistics for videos are collected from the moment the item enters the collection. The oldest DVD in the collection dates from October 2001.

After pulling circulation counts, a search was undertaken to determine if items were also available for streaming online. The decision was made to check for availability on Netflix and Hulu, the two most popular streaming video on demand (SVOD) services. While Hulu viewership declined from a height of 43.5 million in May of 2010 to 12 million in August 2012 (Gruenwedel 2012), as of March 2013 that number had recovered to some 24 million users (Mar 2013). Netflix and Hulu, while both SVOD services, operate much differently. Whereas much of Hulu is free and focuses on television shows, additional content can be accessed via Hulu Plus, which airs some episodes of popular television shows as they are being released. Netflix’s streaming service is entirely behind a paywall and features a much higher proportion of movies. In addition, television shows are streamed on Netflix as entire seasons, not an episode at a time.

Titles were coded by searching using the website Can I Stream.it?, and assigned the category *Available* or *Unavailable* (as defined in Table 1). The site offers users the service of searching for streaming availability via a number of services. To ensure random sampling, a random number generator was utilized, with an input range of 1 to 2,242. Initially, 400 items were searched, which yielded only 120 streamable titles. The sample was therefore increased until a statistically significant number of “yes” codes could be applied during streaming. A total of 1026 titles were ultimately coded. After coding, it was decided to include Amazon Prime as well, as the company confirmed on in January 2014 that it had reached 20 million subscribers (Yarow, 2014).

<table>
<thead>
<tr>
<th>Category</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available</td>
<td>Item is part of the collection and can be accessed via a streaming service</td>
</tr>
<tr>
<td>Unavailable</td>
<td>Item is part of the collection and cannot be accessed via a streaming service</td>
</tr>
<tr>
<td>Uncoded</td>
<td>Item is part of the collection but not verified if it could be accessed via a streaming service</td>
</tr>
</tbody>
</table>

Table 1. Categories used to code titles
Amazon Prime is a premium membership package offered by Amazon that offers, in addition to reduced shipping rates, a streaming service called Amazon Instant Video. Amazon Prime subscribers may access a number of videos at no additional cost, while others are behind another paywall. Amazon also offers users the option of purchasing movies digitally, a format rapidly increasing in popularity. According to the Wall Street Journal (Fritz 2014), digital movie purchases increased 47% in 2013 to $1.19 billion. While physical DVD sales still dwarf digital-only content, with $7.78 billion in sales last year, that figure decreased by 8% during the same period in which digital purchases doubled. Via Amazon, some items are available for download and others for a rental period. A total of 454 items were coded for Amazon prime streaming availability during the second round.

LIMITATIONS

Some items in the video collection at UW-Whitewater have been in circulation longer than others, and therefore may have a greater number of charges. Due to at times incomplete data, we were not able to undertake an examination of recency at this time. Using Voyager, the library’s integrated library system there is no way to pull circulation figures for a constricted time frame, so all items were counted by number of charges over their circulating lifetime. This may have skewed some titles higher, while more recently added titles may present as lower-circulating. Additionally, many of the older DVD’s were in the collection before the browsing area was created. One must also consider the fact that items are sometimes added to a major streaming service and sometimes removed. So an item unavailable at the time of this study may have been available at some point, and vice versa. Lastly Netflix, Amazon and Hulu are very secretive about individual title usage and that information is not available.

RESULTS

The majority of titles were not available for streaming on Hulu or Netflix. Of the 1026 titles initially coded for availability to stream on Netflix or Hulu, 313, or 30.6 percent, were found to be available and 713 unavailable (see Table 2). The Amazon Prime survey, conducted after the initial survey, will be discussed in a separate section. Of the items in the first survey, those available for streaming were found to have a lower average circulation than those unavailable for streaming. Items available for streaming had an average of 19.06 charges, while those unavailable for streaming had an average of 21.182 charges. The average for all coded items was 20.54, while the average for the collection as a whole, including un-coded, was slightly less at 19.97.

When compared, Netflix availability was found to associate positively with library circulation, while Hulu availability was found to associate negatively. Items were also more likely to be available on Netflix than Hulu. Of the 1026 coded titles, 251 were available for streaming on Netflix, while 141 were available for streaming on Hulu (see Table 3). Collection items which were available for streaming on Netflix were found to have an average circulation count of 21.37, higher than the average for the coded titles as a whole. Items unavailable on Netflix had an average circulation count of 20.27. That both of these figures are higher than the average for all video titles, coded and un-coded, is due to the higher average circulation count for coded items displayed in Table 2. Far more striking were the results of the analysis of the Hulu coding. Items available for streaming via Hulu had an average charge of 16.52, a full 3.5 charges fewer than the average for the entire video collection. Items unavailable for streaming on Hulu had an average charge of 21.75, or 5.27 more than the Hulu streaming titles. More stark was the difference between items available on
Netflix but not on Hulu (21.23) and those available on Hulu but not Netflix (11.08). However, the total number of items in the second group (Hulu but not Netflix) was only 62, and as such possibly susceptible to skewing.

The examination of titles for availability on Amazon Instant Video was similarly striking. Of the 454 items coded, 362 were available in some format from Amazon Instant, with by far the best coverage at 79.7 percent (see Table 4). However, many of these titles were either available for digital purchase or rental only, meaning the cost to view them all would be orders of magnitude higher than viewing a similar number of titles on either Netflix or Hulu. Items available on Amazon Instant Video had an average charge count of 20.41. Those items that were not available, however, had an average circulation count of just 10.4, nearly half of the available titles. Again, the population of the second group (Amazon Instant

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**Table 2. Average charges for all items, coded for streaming availability**

<table>
<thead>
<tr>
<th>Titles</th>
<th>N</th>
<th>Average charges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>2242</td>
<td>19.97</td>
</tr>
<tr>
<td>Coded</td>
<td>1026</td>
<td>20.54</td>
</tr>
<tr>
<td>Available streaming</td>
<td>313</td>
<td>19.06</td>
</tr>
<tr>
<td>Unavailable</td>
<td>713</td>
<td>21.18</td>
</tr>
</tbody>
</table>

**Table 3. Comparison of average charges for items available on Netflix and Hulu streaming**

<table>
<thead>
<tr>
<th>Titles</th>
<th>N</th>
<th>Average Charges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total coded</td>
<td>1026</td>
<td>20.54</td>
</tr>
<tr>
<td>Unavailable on Netflix Streaming</td>
<td>775</td>
<td>20.272</td>
</tr>
<tr>
<td>Available on Netflix Streaming</td>
<td>251</td>
<td>21.37</td>
</tr>
<tr>
<td>Unavailable on Hulu</td>
<td>885</td>
<td>21.75</td>
</tr>
<tr>
<td>Available on Hulu</td>
<td>141</td>
<td>16.52</td>
</tr>
</tbody>
</table>

**Table 4. Amazon Instant video**

<table>
<thead>
<tr>
<th>Titles</th>
<th>N</th>
<th>Average Charges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Coded</td>
<td>454</td>
<td>18.37</td>
</tr>
<tr>
<td>Available via Amazon Instant</td>
<td>362</td>
<td>20.41</td>
</tr>
<tr>
<td>Unavailable via Amazon Instant</td>
<td>93</td>
<td>10.46</td>
</tr>
</tbody>
</table>
Unavailable), was only 93, and thus possibly susceptible to some skewing, but the difference is still striking.

DISCUSSION

It is important to consider the motives of individuals and the trade-off that they face in using Netflix or Hulu over library collections. UW-Whitewater students, faculty, and staff are able to use the library without cost or registration. Community members with a Wisconsin Drivers License or State ID are assessed a 10 dollar per year fee (or 20 dollars for 3 years) for use of the library. Even for those who are not assessed a fee, the opportunity costs of coming to the physical library (gas, potential damage to cars and bikes, weather concerns, etc) often make the online option a more appealing alternative. In addition the library cannot guarantee newer items because in general only one copy of each item is purchased. The results show that if content is available on Hulu it does lower the number of checkouts for that title in the library, which is evidence of the trade-off that the ease of access of free online content affords. Patrons still checking out items that are available on Hulu may have other contributing factors such as slow internet, poor technology access, or lack of awareness of the website’s services.

In addition, another interesting factor is that of the coded sample of 1026 items, only 313 were available over any streaming service. That means 69% of the coded items could only be retrieved in a physical format. This result makes a strong argument that physical collections are still valuable because of the limited selection on commercial streaming services for people who are willing to pay for them. Even though Netflix reached 40.4 million in September 2013 (Selter 2013), the total estimated population of the USA in 2013 was 316.1 million (U.S. Census Bureau, Quickfacts). That means of a random sample of USA residents only 12.8% of them have Netflix, which is a small minority of the population. It can be assumed that a similar percentage of university students have access to Netflix or other subscription streaming services because of lack of funds.

While cost is not always a factor when comparing the library collections and Hulu, it is for Netflix since 100% of Netflix streaming titles are behind a paywall. Perhaps this informs the finding that items available on Netflix are circulated more often (21.37 vs. 20.27). The items are not freely and readily available and therefore do not compete in the same way as Hulu’s titles, many of which are free and ad-supported. In addition, items unavailable on Netflix circulate less frequently than the average total coded films. This may be explained by the popularity driven collection development strategy that Netflix employs. Netflix purchases streaming rights of titles that are popular, which results in higher circulation numbers just because those titles are popular. While items that are unavailable on Netflix circulate less frequently, items unavailable on Hulu will circulate on average 1 more time than the total coded dataset.

What is the takeaway from this? Generally, we can state that if an item is available through a major free streaming service, patrons are more likely to watch the title online than they are to check out the item from a library. For all items, streaming availability resulted in, on average, two fewer charges (19.06) than those for which there was no availability (21.18). This result was quite pronounced for Hulu--with unavailable items circulating five times more often (21.75 versus 16.52). It may be postulated that free access to many of Hulu’s titles makes it a more attractive option than travelling to the library.

However, if an item is behind a paywall, then the cost of travelling to the library becomes more attractive. As for the striking difference between circulation charges for those titles available on Amazon Instant (20.41) versus those unavailable (10.46), it might be
postulated that, like Netflix, Amazon has targeted popular and high-selling items for streaming availability. This result could also imply that part of the reason that Hulu items had lower circulation numbers was because those titles are less popular to begin with and naturally would have fewer checkouts.

This conclusion leads to the interesting proposition of using availability of titles on Amazon Instant as a collection development tool for popular browsing – if it is available on Amazon Instant, it will likely be in higher demand. This could be a useful collection development tool for librarians with limited time. Check for availability for streaming on subscription streaming providers and if the title is available purchase the physical DVD; Allowing market researchers at subscription streaming providers to do the legwork of researching titles for purchase.

CONCLUSION

The growth of popular materials in libraries has expanded greatly in the last decade. These collections have changed from closed-door VHS collections to massive open DVD browsing areas including video games. As the expectations of patrons change the collection must change to meet the new expectations. The growth of popular culture programs and video game design programs have led to the creation of collections that support those programs while also providing a new service to other patrons.

This study was a first step in order to see how popular browsing DVD collections interacted with the larger ecosystem of subscription streaming services. The conclusions are quite interesting. The fact that titles available on certain services, such as Netflix and Amazon Instant, actually have a higher circulation rate shows that the library is not competing with those services. If anything there is a possible that being available in both places encourages more use.

The expansion to streaming is growing at a very fast rate and could supplement or possibly even replace physical collections in the future. The main barriers at this point are not technological but legal and licensing agreements with companies that want to control the market (Seigel, 2013). As more streaming video options become available libraries will need good data in order to make the proper decisions for their collections. A study could be conducted to survey students about which subscription and free video streaming services they use, why and who pays for it. In addition, another student survey could be conducted about why they use library popular video collections instead of streaming services, and the criteria for choosing their preferred format for popular videos: DVD, streaming service, streaming purchase, streaming rental, illegal streaming or illegal download.

More data could be collected about the titles students want from an academic library popular video collection. That study could also be expanded to determine preferences for the physical location of the collection in order to increase use. Circulation could also be examined in the context of genre – which would require creation of an agreed upon classification standard but could yield interesting data. Additionally, future studies should also include an examination of recency of acquisition.

Lastly, data could be collected on the possible demand for a limited popular streaming collection. As the nature of the physical campus and academic programs change, the collection of a library too must change to meet those demands. Knowing how that collection interacts with similar services either provided by the university or from a different entity allows the library to know how best to use limited resources. At the present time it could be concluded from this sample that subscription video streaming services do not negatively
impact checkout counts from a popular DVD video browsing collection at an academic library.

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