



GLOBAL TRENDS IN EBOOK USAGE: PATTERNS FROM 10,000 LIBRARIES

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Ebooks for libraries have now been around for over fifteen years, and EBL and ebrary have been there for most of that history. Together they have compiled years of ebook usage data across thousands of libraries. Their merger allowed a single study of the largest accumulation of such data in existence; data that can help libraries better understand the needs of their users.

Libraries vary tremendously – in terms of collection size and scope; the institutional curricular and research focus; the type of library; and the size and makeup of user populations. These variations mean that no two libraries will see the same usage patterns. A library at an institution with a heavy emphasis on the social sciences will see high usage of titles that might go unused at an engineering school. And a library with a relatively small collection may see greater use of any ebooks added to the mix than a library with extensive monographic holdings.

Given those variations, it may seem odd to study usage patterns at a global scale. A particular institution will likely see variations from the general trends shown in this study, just as that library would likely see variations from the usage patterns at another library, but across all libraries, patterns and trends do begin to emerge. Those patterns and trends can be used to better understand disciplinary differences in use, variations in how different regions of the world use ebooks, and even to better understand monograph use in general, something that was never possible when comparing local circulation trends.

This sort of study also allows us to test some commonly held assumptions about ebooks, such as:

1. **Ebooks are better for some subjects than others; and**
2. **Ebooks are an inadequate format for immersive reading**

It also allows us to answer some broad, but important questions:

1. **What can we learn from worldwide usage data?**
2. **Do trends across a large data set matter?**
3. **Is every institution so unique – with various resources competing for users' time and ebooks comprising different aspects of a library's collection – that only local data are valuable?**

While this study sheds light on monograph usage patterns broadly and ebook trends more specifically, hopefully it also suggests models for conducting usage studies at the local level.

THE DATA

This paper examines a set of worldwide usage data in order to explore patterns, trends, and opportunities in ebook usage on a global scale. Combined, ebrary and EBL serve thousands of libraries and institutions of all types and sizes, making these two industry leaders an obvious source of data of this magnitude.

This study examines usage for two years – 2013 for EBL and 2014 for ebrary. At the time of this study, ebrary and EBL had not yet completely merged, so the study examines usage from each separately. Usage data from all libraries were aggregated at the title level, with all bibliographic information and a variety of types of usage data represented in title-level rows in a massive spreadsheet. In addition to basic bibliographic information, this spreadsheet included Library of Congress (LC) Call Number, Class, and Subclass; BISAC; copyright year; number of libraries with the title available; number of libraries with usage; and multiple layers of usage (sessions, page views, book downloads, chapter downloads; usage time; pages copied; and pages printed).

The subject analysis for the study was based on LC Classes and Subclasses derived from LC Call Numbers, yet call numbers in the original data set were imperfect. To the extent that there were patterns in the flawed call numbers, it was possible to clean them up and assign correct LC Classes and Subclasses. But many call numbers contained errors that could not be easily corrected, and many other titles lacked call numbers entirely. When a logical LC

Class or Subclass could not easily be assigned, those titles were excluded from a subject analysis of usage or holdings.

In addition to analysis at the LC Class level, this study makes use of broad categorizations into major academic divisions – Arts & Humanities; Social Sciences; Science, Technology, Engineering, and Medicine (STEM) – derived from the LC Classes and used for higher-level subject analysis. *See Figure 1.*

Another difficulty in building this data set was that identifying library access retroactively was impossible. Assumptions about library access to titles before the current year are educated guesses. If an institution had any indicator of use, then it was clear that the title was available to that library. To identify titles visible to a library's users, but with no recorded use, we counted any ebook that was still available to that library today and was generally available during the study year. This means that titles removed from a library's pool, but still available today in ebrary or EBL generally as well as titles that were added to that library's pool after the period of this study would falsely be counted as available to that library in this study. This is likely a very small number of library/title combinations in the overall data set and almost certainly does not change the results in any significant way, but analyses that rely on comparisons of usage vs. availability are therefore inexact. In addition, while the ebrary data set includes library availability broken out at the regional level, the EBL set only includes that information globally.

CATEGORIES OF ANALYSIS

There are multiple elements within the data that can be grouped together to provide useful high level categories of analysis:

- LC Class and subclass
 - Broad academic division (humanities, social sciences, STEM)
 - Subject
- BISAC
- Publication date
- Region (Africa, Asia Pacific, etc.)
- Publisher or publisher type

ACADEMIC DIVISIONS

Using the LC Classes and Subclasses, we grouped all titles into broad academic divisions as shown below.

■ Arts & Humanities

B (Philosophy, Religion) excluding BF (Psychology)
C, D, E, F (History)
M (Music)
N (Fine Arts)
P (Language & Literature)
TR (Photography)

■ Other

A (General)
G (Geography, Anthropology, Recreation)
Z (Bibliography, LIS)

■ Social Sciences

BF (Psychology)
H (Social Sciences)
J (Political Science)
K (Law)
L (Education)
U, V (Military, Naval Sciences)

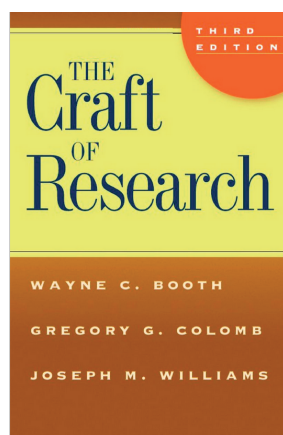
■ STEM

Q (Science)
R (Medicine)
S (Agriculture)
T (Technology) (excluding TR)

Figure 1

ONE TITLE, WORLDWIDE DATA

This study explores usage in relation to availability of titles, different types of usage per session, usage of the ten percent of titles with the most sessions, and intensive vs. extensive use. This title, which is the most highly used ebook on the ebrary platform, is an example of the data available for each title.



Craft of Research

(3rd Edition)
by Booth, Wayne C.
Colomb, Gregory G.
Williams, Joseph M

For every title in the study, the combined usage data from every library have been compiled into a single row on a spreadsheet. While the numbers for the title in this example are huge, they are illustrative of the type of information available at the title level in this massive data set.

BOOTH, CRAFT OF RESEARCH

ebrary

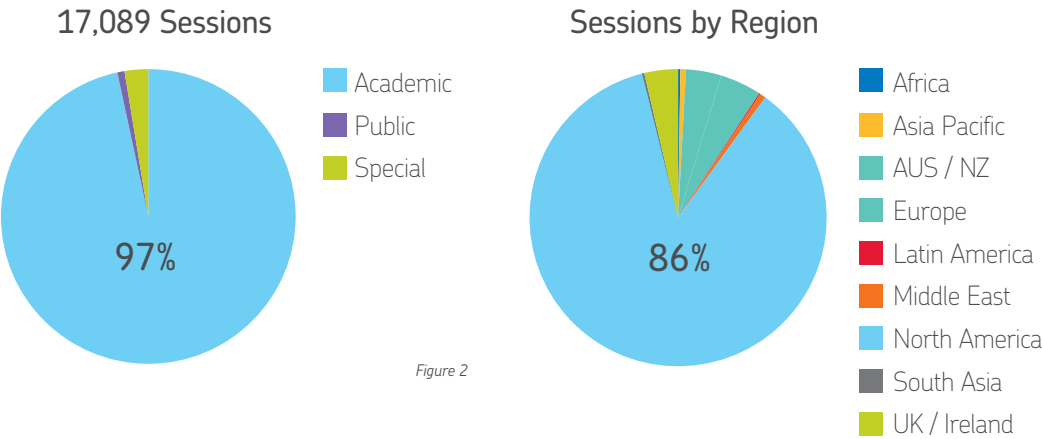
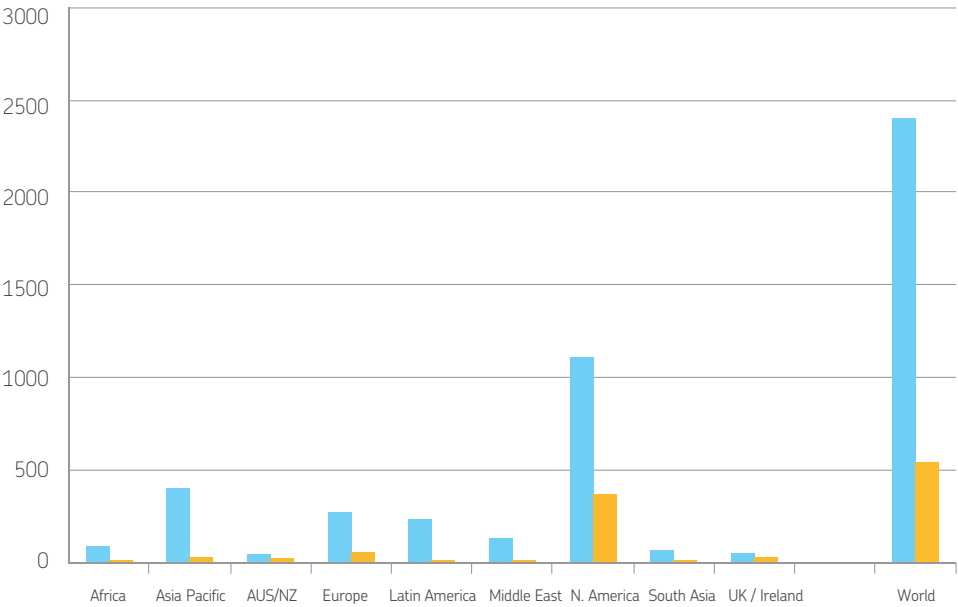


Figure 2



Additional Measures of Usage

- 368,879 page views
- 1,162 pages copied
- 62,009 pages printed
- 0 downloads*
- 2,323 chapter downloads
- Used 17,453,759 seconds (4,848 hours)

Figure 3

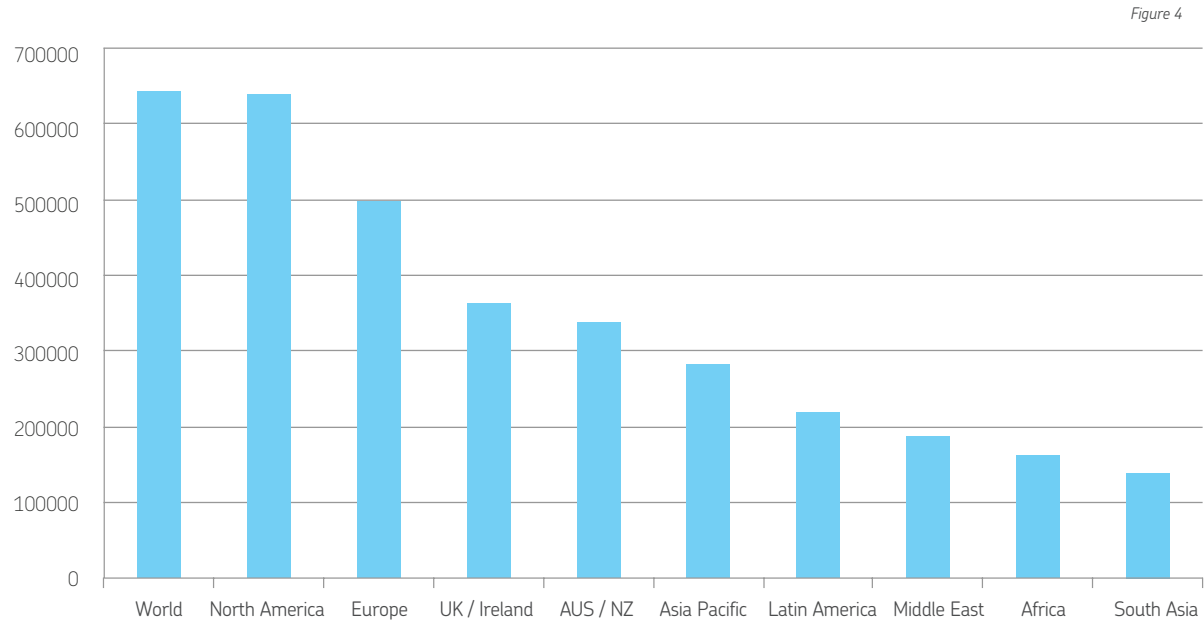
- Libraries with availability
- Libraries with usage

* This title was only available for a chapter download.

TITLES AVAILABLE

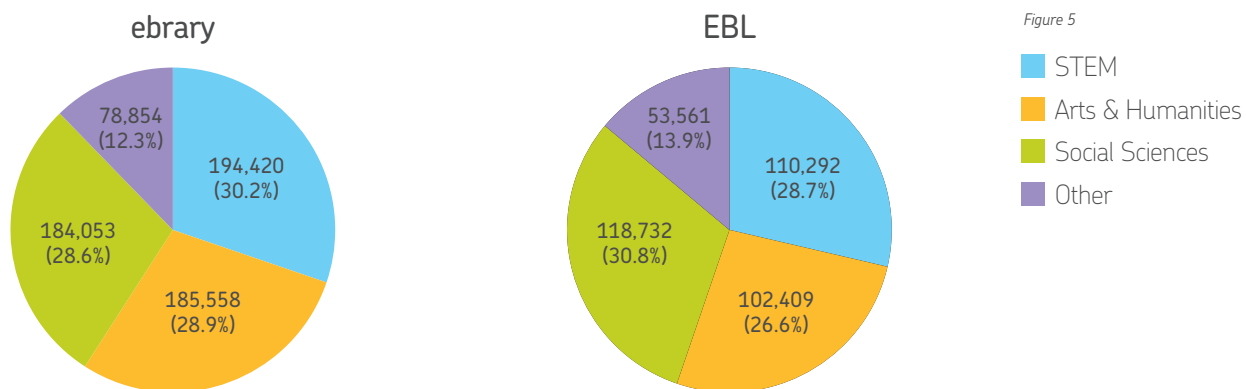
With over 630,000 titles available on the ebrary platform and around 375,000 on EBL, this study constitutes a vast data set covering libraries of all types from countries around the world. Though ebrary and EBL include primarily English-language titles, the large number of titles available even in areas of the world where English is not generally spoken indicates broad value.

ebrary Titles Available Worldwide, by Region



A SUBJECT BREAKDOWN OF TITLES AVAILABLE WORLDWIDE

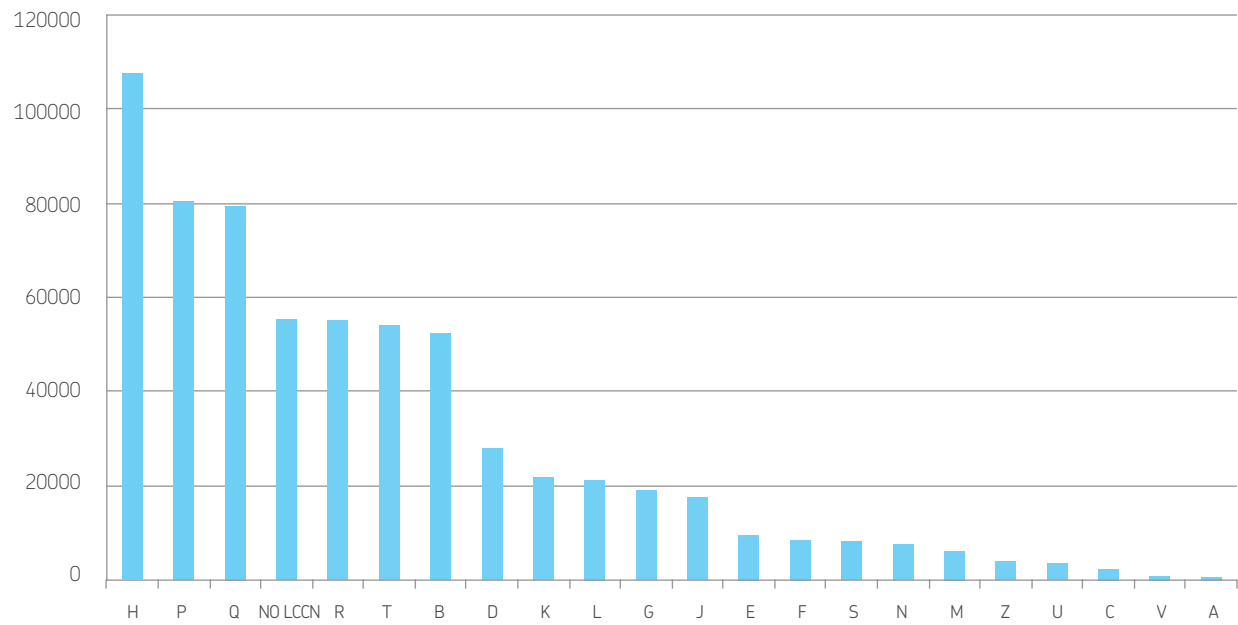
ebrary and EBL ebook collections have a similar breakdown in terms of subject coverage, with a roughly even split between the Arts & Humanities, Social Sciences, and STEM. EBL is more heavily weighted toward the Social Sciences than ebrary.



Not surprisingly, given subject patterns in libraries generally, the LC Class with the most titles available from both ebrary and EBL is H (Social Sciences). As in libraries generally, the largest subject categories make up a disproportionately large section of the overall collection. While there are some minor variations, the subject breakdown within ebrary and EBL is fairly similar.

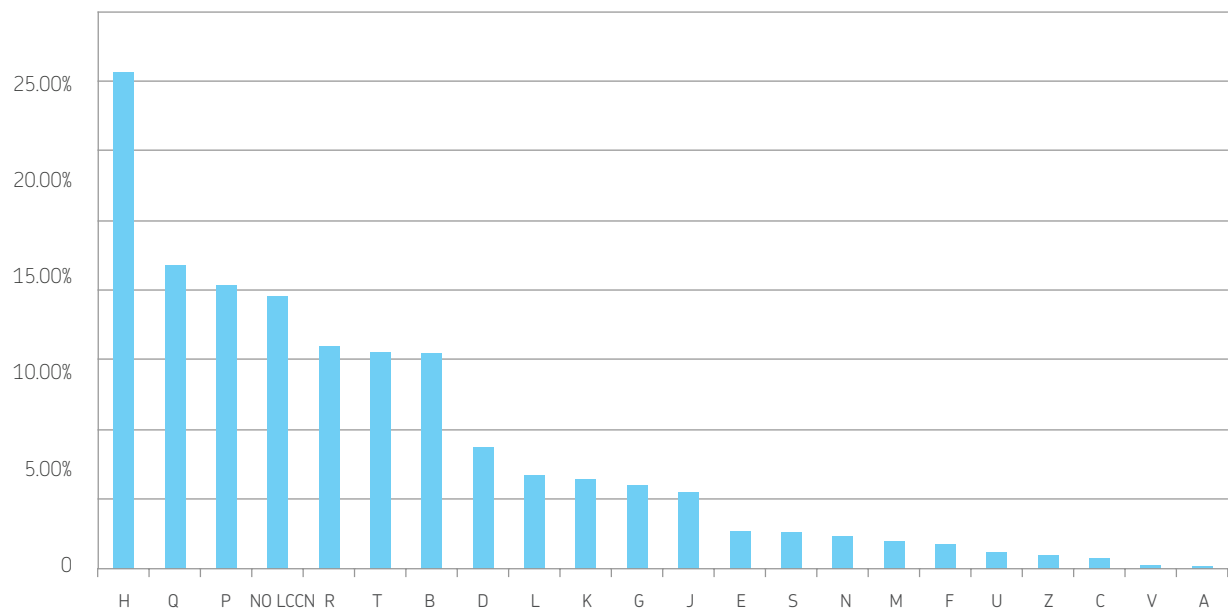
ebrary Titles Available Worldwide by LC Class

Figure 6



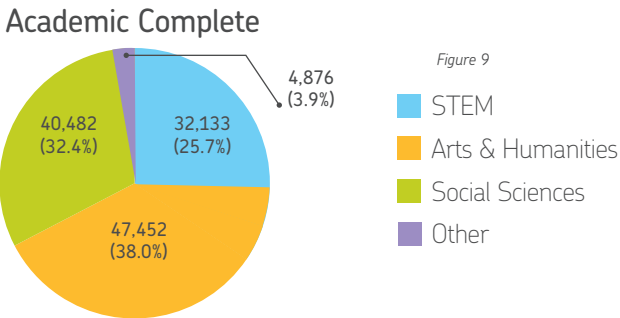
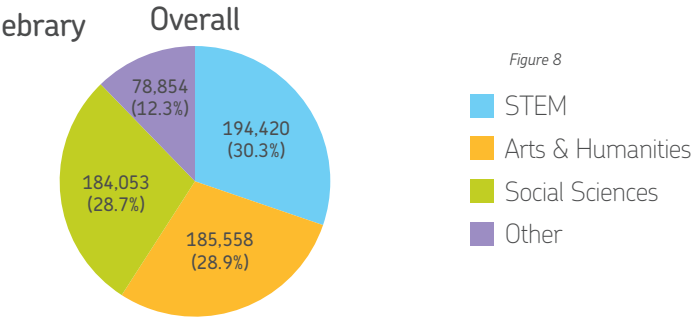
EBL Titles Available Worldwide by LC Class

Figure 7

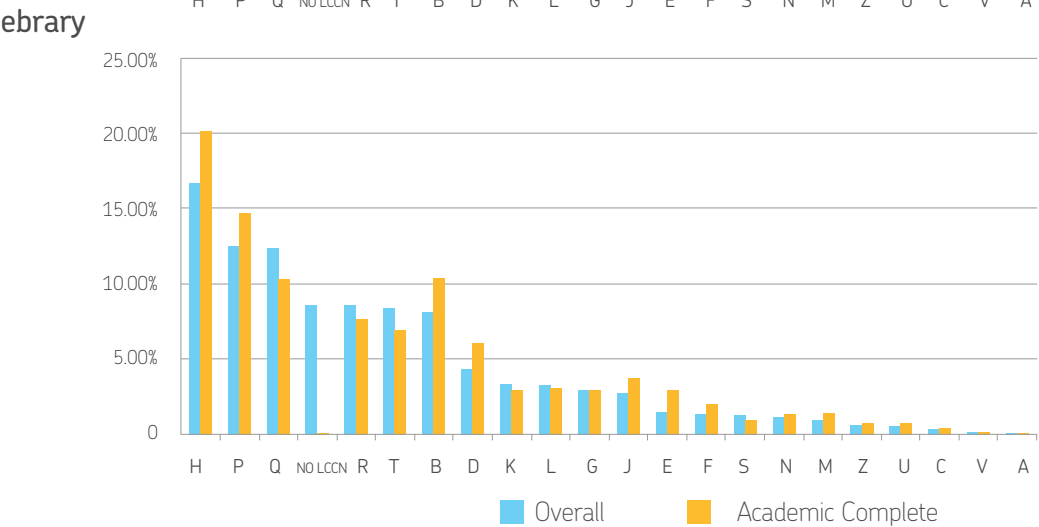
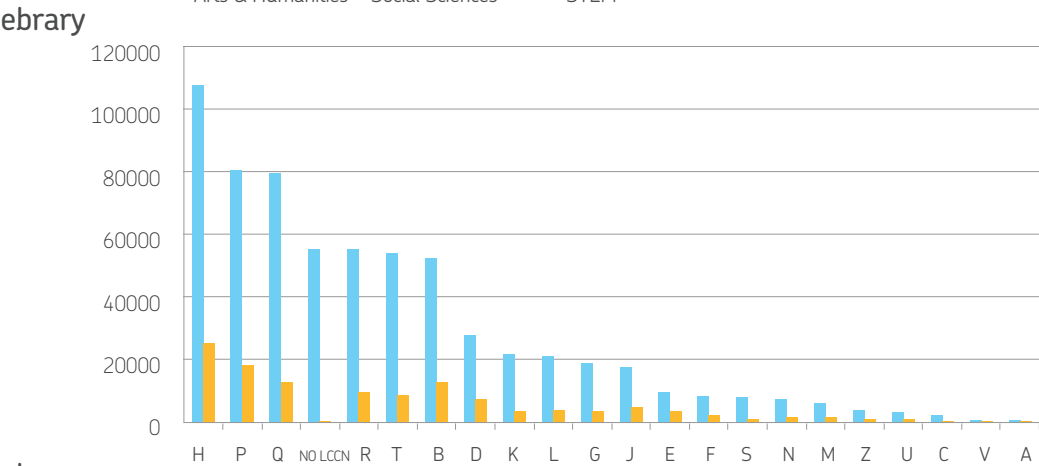
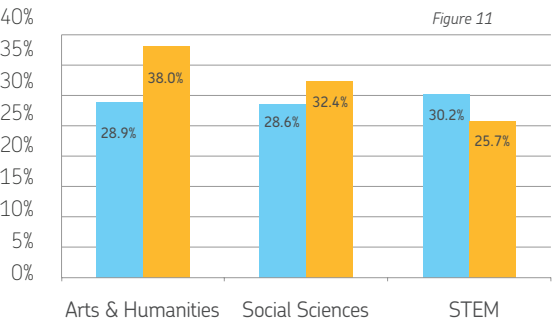
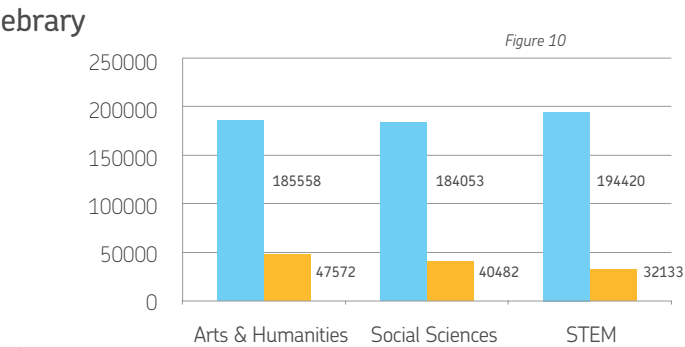


ACADEMIC COMPLETE

ebrary's Academic Complete subscription package weighs heavily on the ebrary data. A package of over 125,000 titles available in its entirety to over 2,000 libraries worldwide, Academic Complete has a different subject makeup than the ebrary set as a whole. While the overall ebrary title set is roughly evenly divided between arts & humanities, social sciences, and STEM, Academic Complete, as shown in the figures below, is more heavily weighted toward the arts & humanities and the social sciences.



The figures below are paired to show the absolute and percentage representation of subjects within ebrary as a whole and Academic Complete.



AVERAGE NUMBER OF LIBRARIES WITH TITLES AVAILABLE

While the overall subject breakdown described above indicates the general makeup of the ebrary and EBL collections available in libraries, it does not show the degree to which libraries have followed similar patterns in building these collections. At the extreme end, the count of titles available weighs a title available to one library equally with a title available to 2,500 libraries. Looking at the average number of libraries with titles available gives a better sense of how widely libraries have opted to make these titles available to their users.

On average, worldwide, ebrary titles were available in 412.3 libraries. Titles were available most often in North American libraries, and least in libraries in Australia and New Zealand (partly because of the lower number of libraries generally in those regions and partially because far more Australian and New Zealand libraries were EBL customers.)

Average Number of Libraries With ebrary Titles Available by Global Region

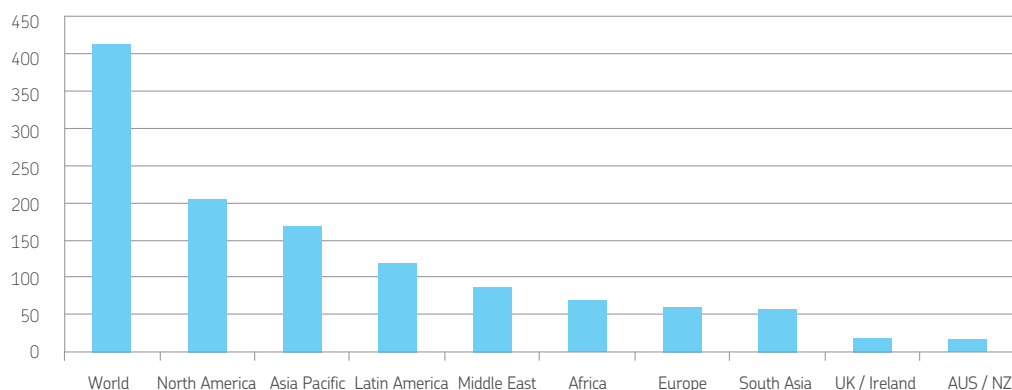


Figure 14

AVERAGE NUMBER OF LIBRARIES WITH TITLES AVAILABLE – ACADEMIC DIVISIONS

On average more ebrary libraries had arts & humanities titles available to their users than one would expect given the general breakdown of arts & humanities titles in the ebrary pool, but not at all surprising given the heavy weight placed on those titles in the heavily-subscribed Academic Complete collection. STEM titles, a disproportionately small part of Academic Complete, are available in fewer ebrary libraries than one might otherwise expect. With EBL, STEM titles are available at about the average rate, with social sciences titles appearing in the most libraries overall.

ebrary

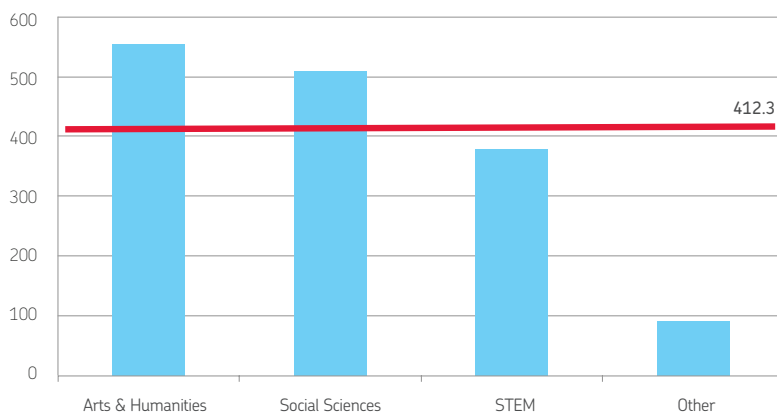


Figure 15

EBL

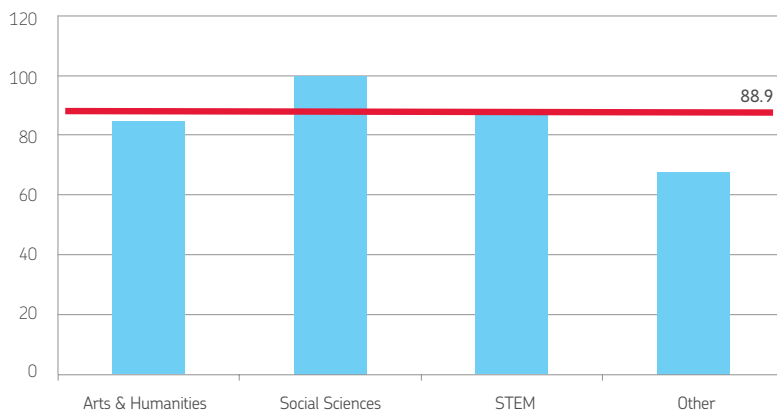
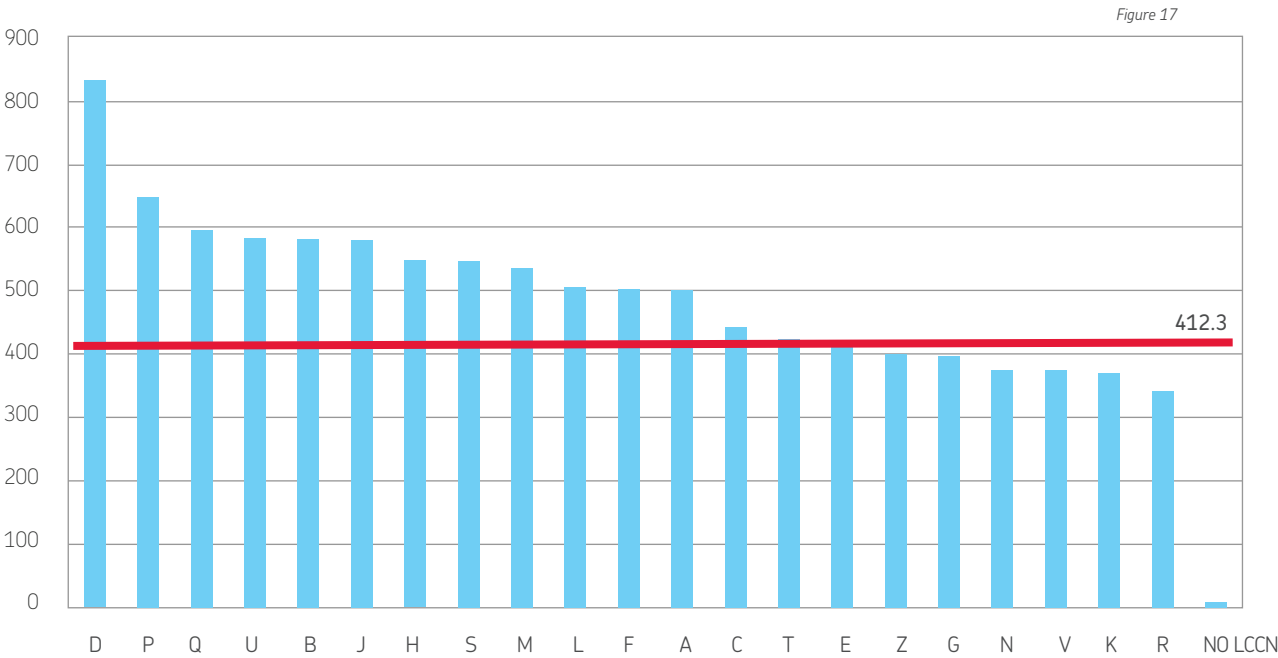


Figure 16

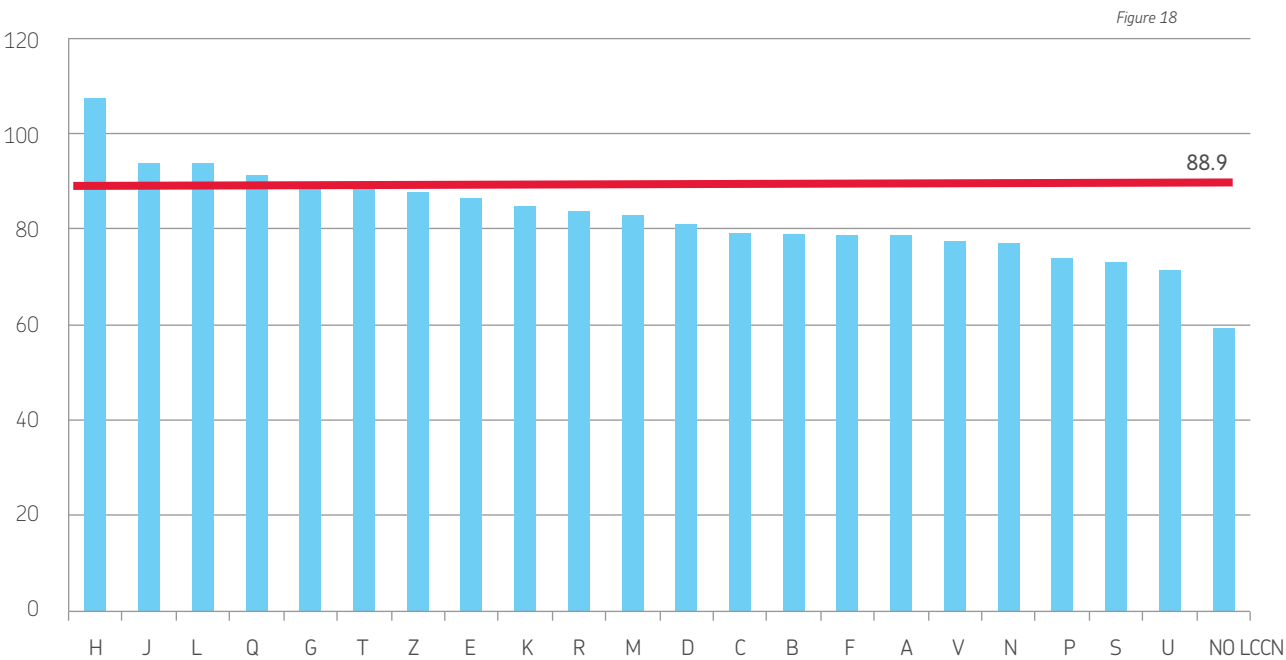
AVERAGE NUMBER OF LIBRARIES WITH TITLES AVAILABLE - LC CLASS

At a narrower subject breakdown, the average number of libraries with titles available varies dramatically between EBL and ebrary, due very likely to the subject spread within Academic Complete.

ebrary



EBL



USAGE

AVERAGE NUMBER OF LIBRARIES WITH TITLES AVAILABLE BY SUBJECT

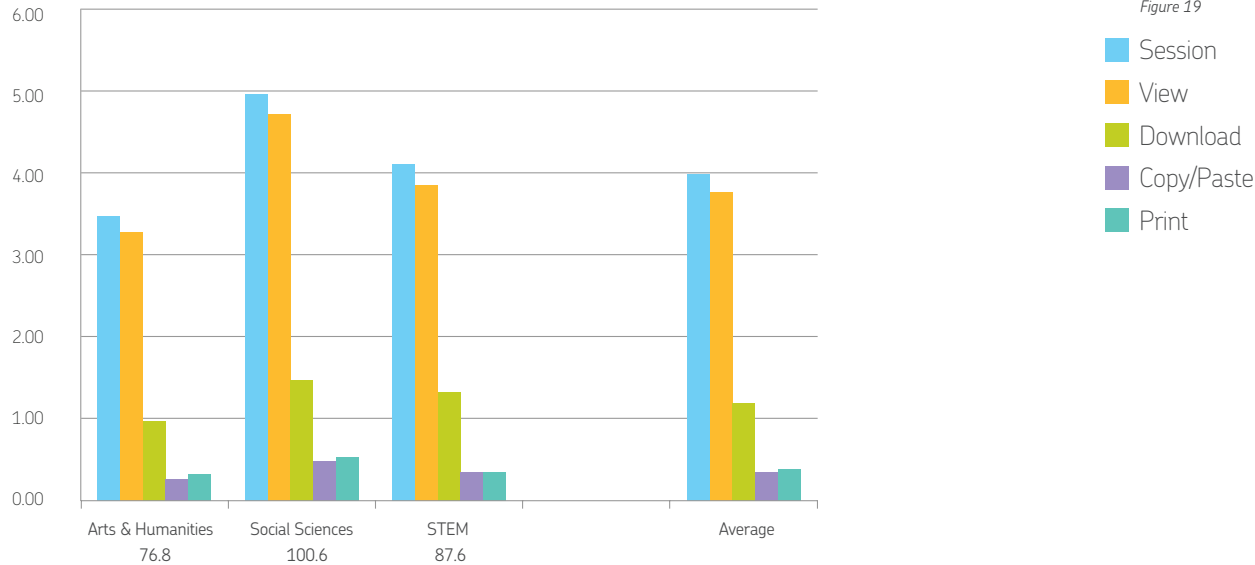
There are many ways of measuring usage, and taken together these six broad categories tell a more complete story than one alone:

- 1. Percentage of libraries using a title – a measure of the number of libraries with usage relative to the number of libraries where a title is available
- 2. Usage compared to availability – the percentage of titles visible across the entire data set that were used by at least one library
- 3. Usage patterns per session – the level of usage of different types for every session that occurs
- 4. Usage of the most popular titles – the level of usage for the ten percent of titles with most sessions
- 5. Broad vs. deep use – a comparison of the percentage of titles in a given LC Class that are used with the number of times they are used
- 6. Usage by copyright year – an analysis of usage compared to availability by the date of original publication of the ebook

PERCENTAGE OF LIBRARIES WITH TITLES AVAILABLE BY SUBJECT

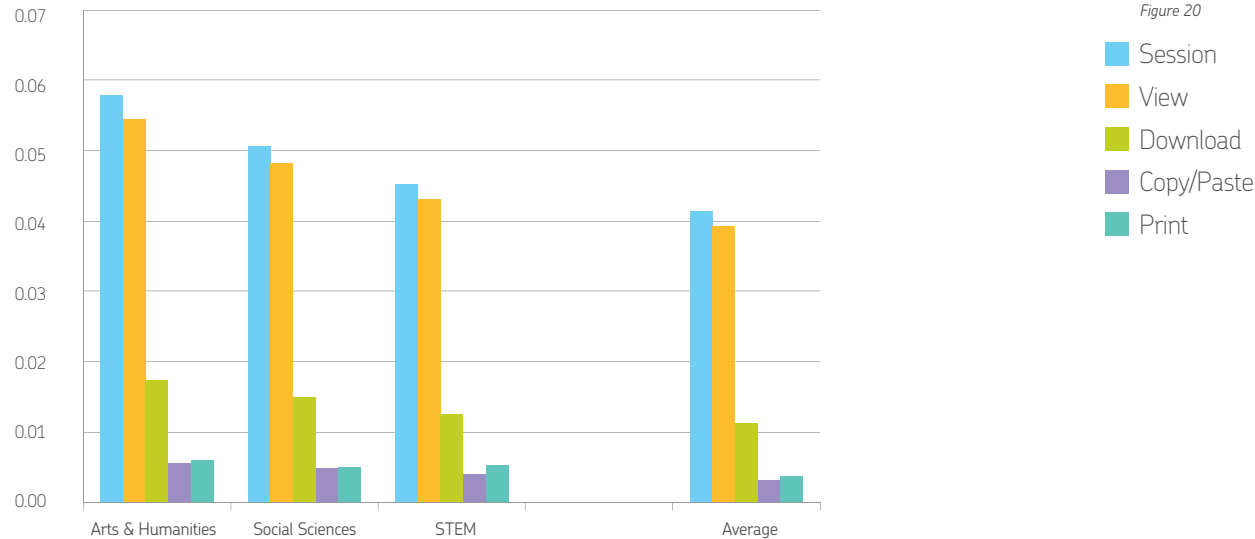
One measure of value of a title is whether it gets used or not. Ignoring for now whether titles are used heavily, the following figures illustrate the number of libraries with different types of use on EBL relative to title availability. For instance, arts & humanities titles are available on average in 76.8 libraries, but on average 3.5 libraries have a session for any one of these titles. In terms of raw figures, social sciences titles are used in more libraries, but they are also available in the most libraries.

Average Number of Libraries With Usage, EBL



A better way of measuring likelihood of usage at the library level is calculating the percentage of libraries with the title available to them that have the various types of use. By this measure, arts & humanities titles perform the best in all five measures of usage.

Percentage of Libraries With Usage, EBL



LIKELIHOOD THAT A LIBRARY WILL SEE USAGE OF A TITLE

AVERAGE NUMBER OF LIBRARIES USING A TITLE

This measure of percentage of use at the regional level for ebrary shows that titles are used across the greatest range of English-language libraries, with the highest percentages in the United Kingdom and Ireland, followed by Australia and New Zealand and North America.

Number and Percentage of Libraries Using a Title, by Region, ebrary

Figure 21

REGION	AVERAGE # OF LIBRARIES WITH TITLE	AVERAGE # OF LIBRARIES WITH USE OF TITLE	% OF LIBRARIES USING TITLE
UK/Ireland	19.0	2.2	11.3%
Australia/NZ	16.9	1.4	8.2%
North America	204.7	5.3	2.6%
Europe	60.4	1.5	2.5%
Asia Pacific	170.0	1.8	1.0%
South Asia	58.0	0.6	1.0%
Middle East	87.5	0.7	0.8%
Africa	69.1	0.5	0.8%
Latin America	119.4	0.9	0.7%
World	412.3	9.3	2.2%

PERCENTAGE OF LIBRARIES USING A TITLE BY DISCIPLINE

Worldwide, the highest percentage of libraries using a title occurs in the social sciences, followed by STEM titles, with a much lower percentage of libraries using arts & humanities titles. This is in contrast to EBL, for which the highest percentage of libraries uses titles in the arts & humanities.

Percentage of Libraries Using a title, by Discipline and Region, ebrary

Figure 22

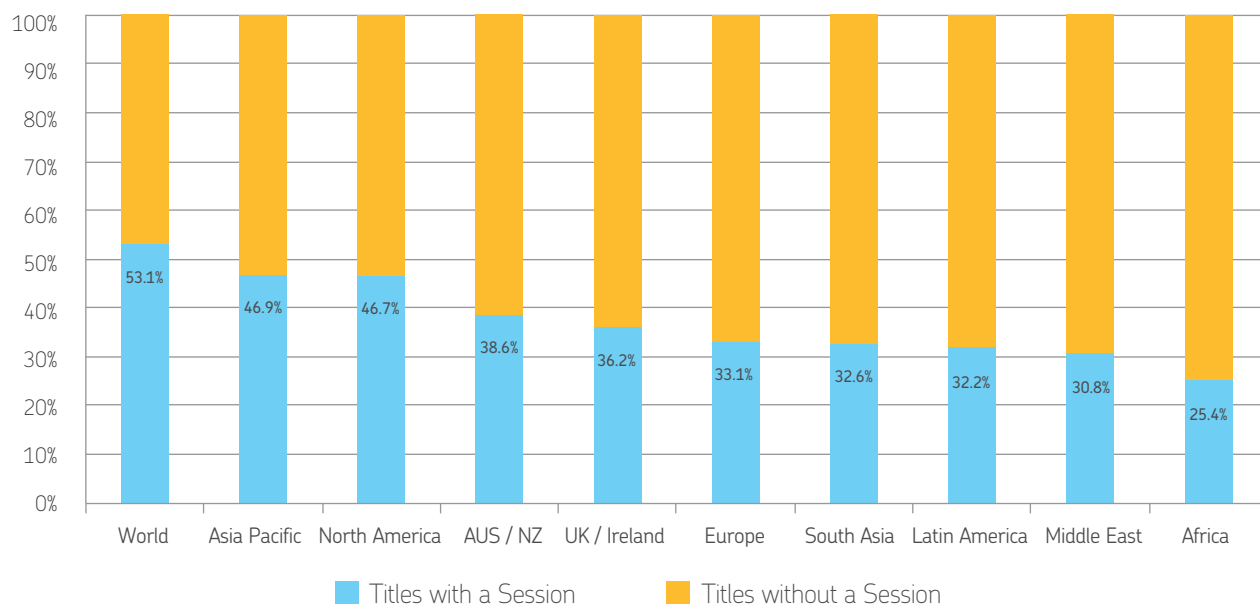
REGION	ARTS & HUMANITIES	SOCIAL SCIENCES	STEM
Africa	0.3%	1.0%	0.9%
Asia Pacific	0.7%	1.2%	1.3%
Australia/NZ	6.2%	9.4%	9.3%
Europe	2.0%	2.8%	2.5%
Latin America	0.4%	0.8%	1.2%
Middle East	0.5%	0.9%	1.1%
North America	2.4%	2.7%	2.6%
South Asia	0.6%	1.0%	1.3%
UK/Ireland	9.8%	13.2%	11.0%
World	1.9%	2.5%	2.4%

USAGE COMPARED TO AVAILABILITY

The analysis above looks at the number of libraries using titles relative to the number of libraries at which they are available. Another way of measuring usage relative to availability is to simply calculate the number of titles used at least once and compare that to the number of titles available anywhere. By this measure, a title available at 1,000 libraries but used once is counted the same way as a title available at one library but used a thousand times. Worldwide, 53.1% of ebrary titles were used at least once in 2014, with regional usage varying from 46.9% down to 25.4%.

Percentage of Titles Used by LC Class, ebrary

Figure 23

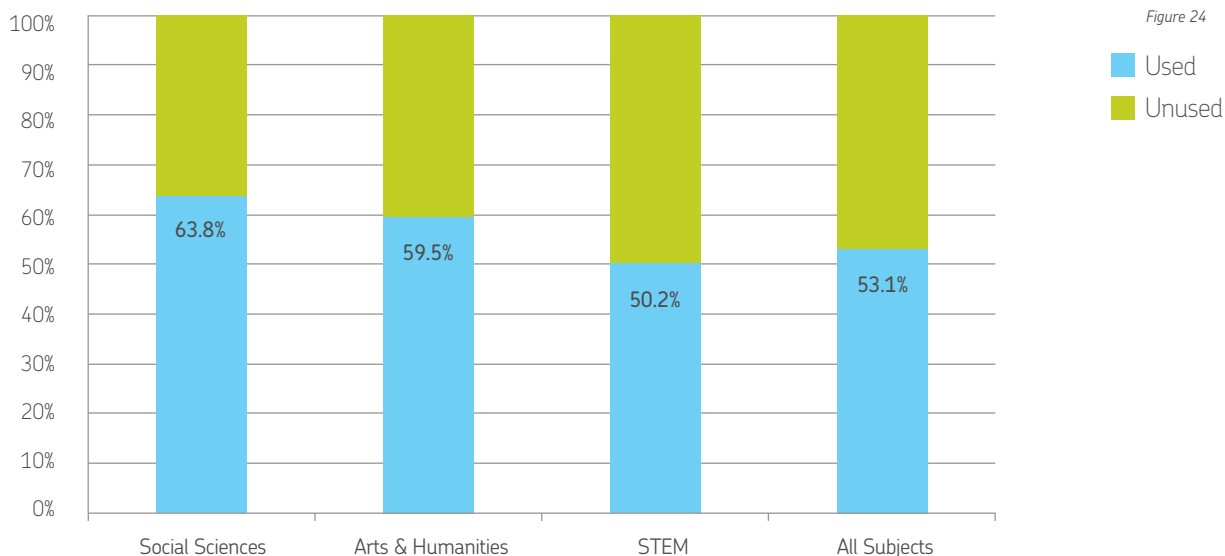


PERCENTAGE OF TITLES USED BY DISCIPLINE

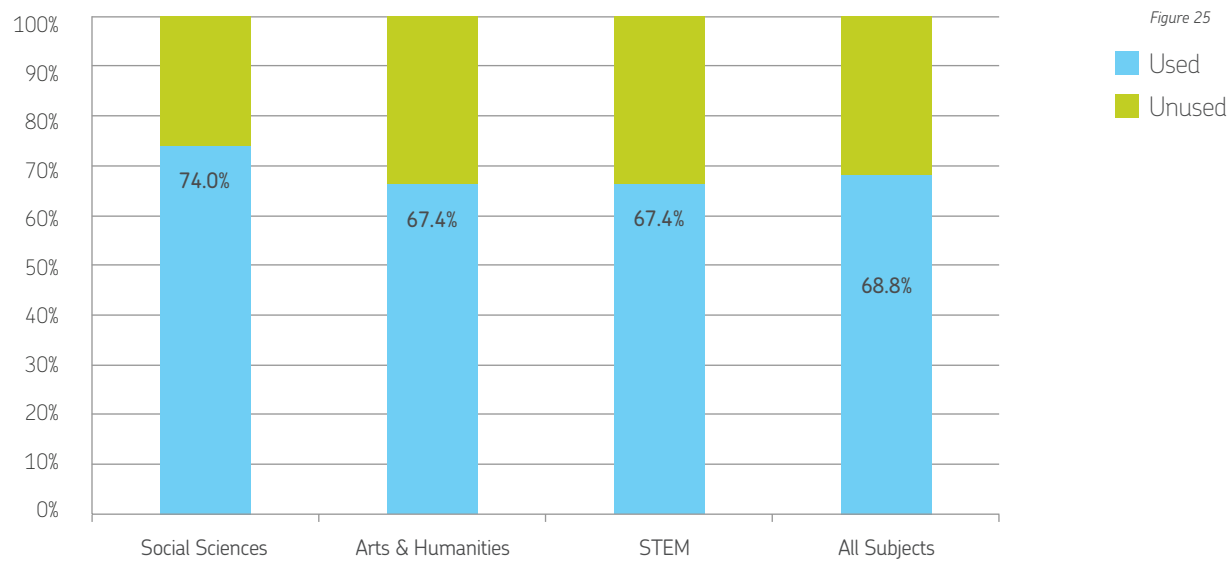
For both ebrary and EBL, the highest percentage of titles used is in the social sciences, though EBL sees a higher percentage of titles used overall, most likely because libraries typically have smaller and more carefully curated collections of EBL titles. Interestingly, though EBL libraries tend to focus their efforts on social sciences and STEM titles, arts & humanities titles are used at exactly the same rate as STEM titles.

Percentage of Titles Used by Discipline, ebrary

Figure 24



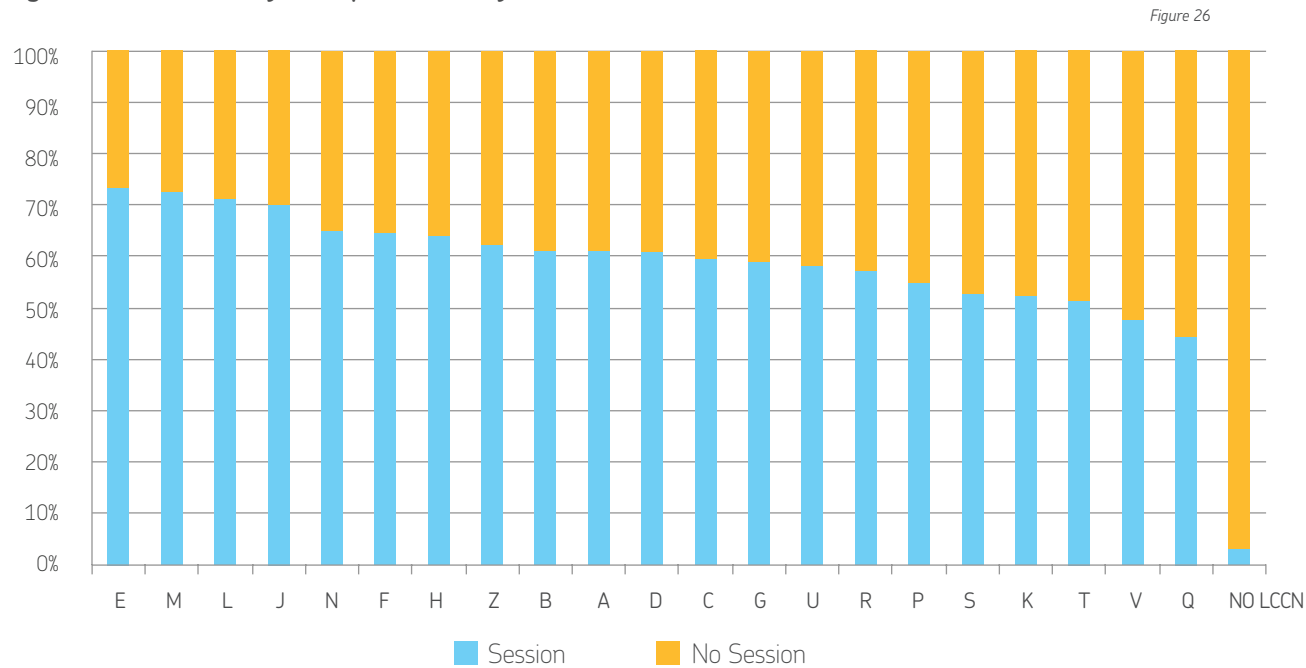
Percentage of Titles Used by Discipline, EBL



PERCENTAGE OF TITLES USED BY LC CLASS

Looking a bit deeper into the percentage of titles with at least one use, three of the top five LC Classes for ebrary are in the arts & humanities (E – History of the Americas, M – Music, and N – Fine Arts) with the other two in the Social Sciences (L – Education, J – Political Science).

Percentage of Titles Used by Discipline, ebrary

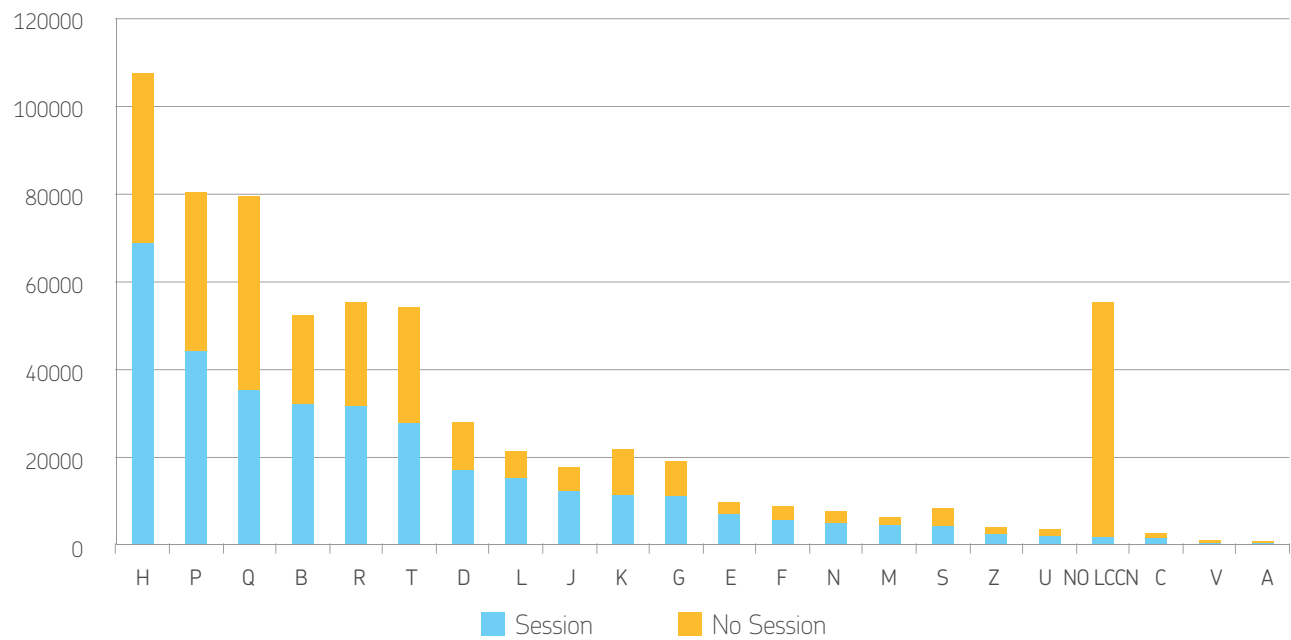


TITLES USED BY LC CLASS

Sorting the same chart by the number of titles available shows that these areas with high percentages of use are subjects with relatively few titles available.

Number of Titles Used by LC Class, ebrary

Figure 27



PERCENTAGE OF TITLES USED, BY DIVISION

Finally, looking at regional variations of the percentage of titles used by broad academic division shows that social science titles have the highest percentage of use in five regions of the world and STEM in four.

Percentage of Titles Used, by Academic Division and Region, ebrary

Figure 28

REGION	ARTS & HUMANITIES	SOCIAL SCIENCES	STEM
Africa	15.0%	30.7%	34.0%
Asia Pacific	45.8%	49.0%	46.5%
Australia/NZ	35.6%	40.2%	40.7%
Europe	36.8%	38.0%	25.4%
Latin America	26.8%	35.7%	34.1%
Middle East	25.7%	29.6%	41.6%
North America	54.2%	54.7%	43.9%
South Asia	24.0%	32.3%	43.9%
UK/Ireland	38.2%	38.5%	31.7%
World	59.5%	63.8%	50.2%

Another way to consider usage relative to availability is to compare the percentage of titles with different types of use (page views, downloads, copies, pages printed) with the percentage of those uses overall. For example, a subject might account for 40% of all titles with a download but only 20% of all downloads. In general, across these comparisons, STEM titles account for a lower percentage of titles with one of these actions than one would expect and an even lower percentage of those actions.

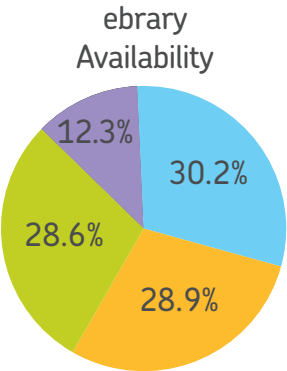


Figure 29

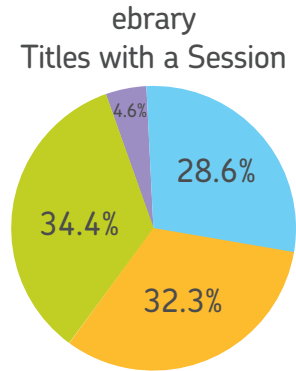


Figure 30

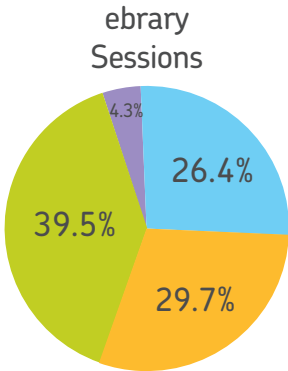


Figure 31

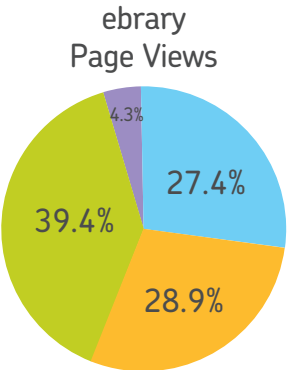
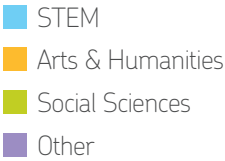


Figure 32

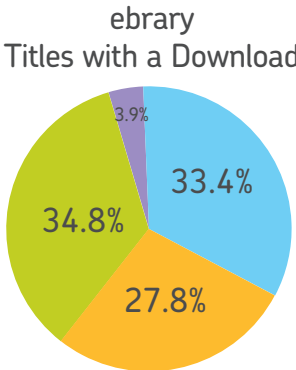


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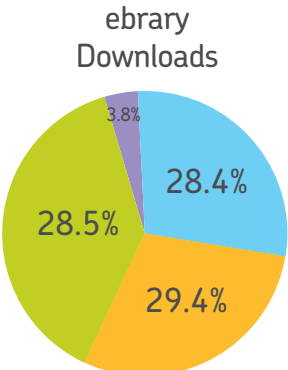


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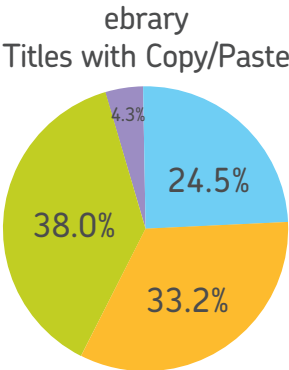


Figure 35

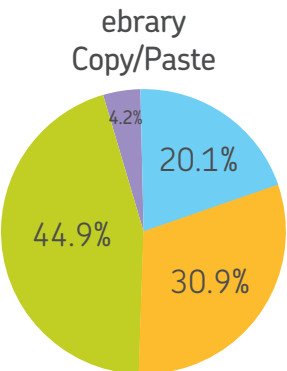


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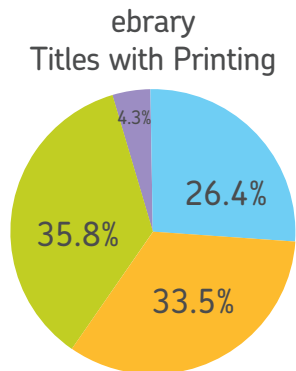


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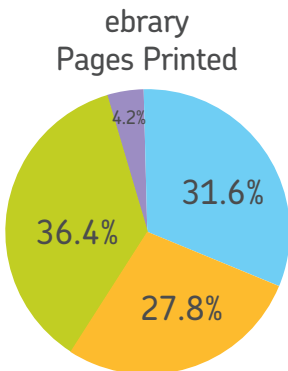


Figure 38

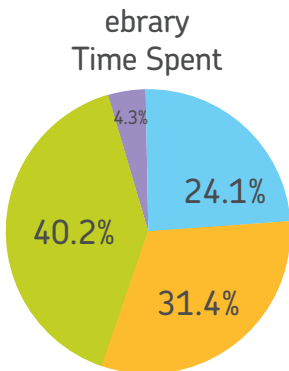


Figure 39

USAGE PATTERNS PER SESSION

Analyzing usage in terms of the types and volume of activity per session gives a view of how average users interact with ebooks during any given session. There are multiple measures of use – page views, pages copied, pages printed, downloads, and amount of time spent interacting with the book – and in some disciplines and regions of the world, readers do more during a session than in others. For instance, users typically view more pages per session and download more times per session in STEM disciplines than in others, but spend less time doing so than those examining books in the arts & humanities or social sciences.

PAGE VIEWS PER SESSION

In most sessions, there is a view of at least one page (the exception being the relatively few times when a session leads directly to a download). Measuring the number of pages viewed in a session is a way of determining how much of a book is typically examined.

PAGE VIEWS PER SESSION – REGIONAL VARIATIONS

Worldwide, for ebrary, there are just under 16 pages viewed per session, with the most in North America, the UK/Ireland, and Europe. Readers in these regions are looking at more of the book, and doing so while online, than readers in the developing world regions of South Asia, Latin America, the Middle East, and Africa.

ebrary

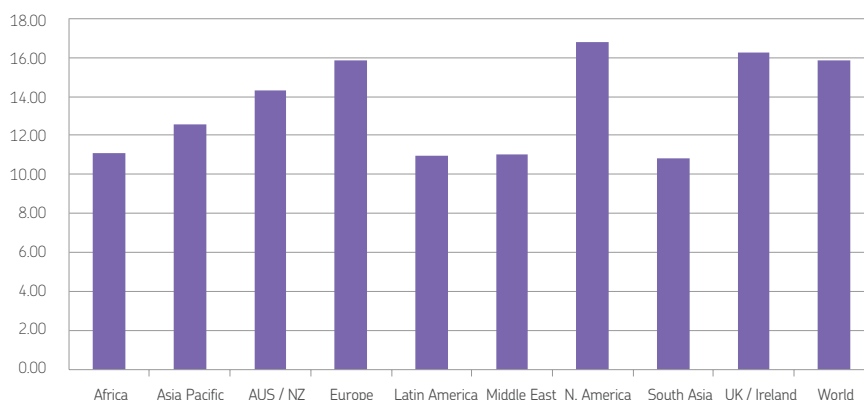


Figure 40

PAGE VIEWS PER SESSION – BY ACADEMIC DIVISION AND REGION

Worldwide, STEM titles have the most pages viewed per session, followed by the social sciences and arts & humanities. In most regions of the world these patterns hold true, with the exceptions of Africa (where social sciences titles see the most pages viewed) and South Asia (where arts & humanities titles have the most pages viewed).

ebrary

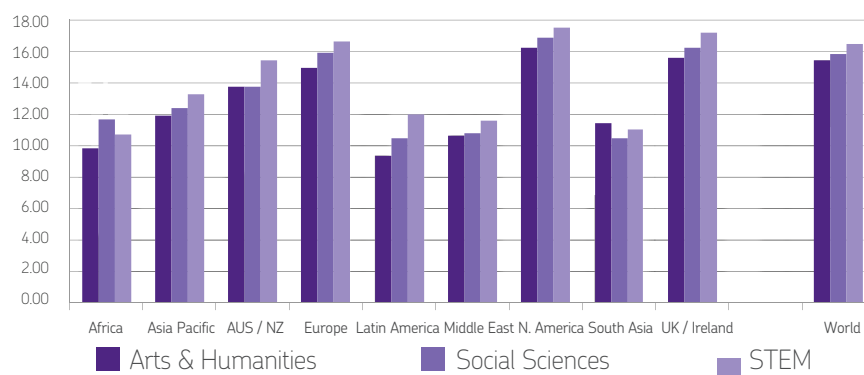


Figure 41

PAGE VIEWS PER SESSION – BY LC CLASS

At the subject level, titles with no LC Call Number (LCCN) have the most page views per session, but these titles have so few sessions compared to other subjects that they can be excluded from the analysis. The five subjects with the most pages viewed per session are F (History of the Americas), T (Technology), N (Fine Arts), E (History of the Americas), and R (Medicine).

ebrary

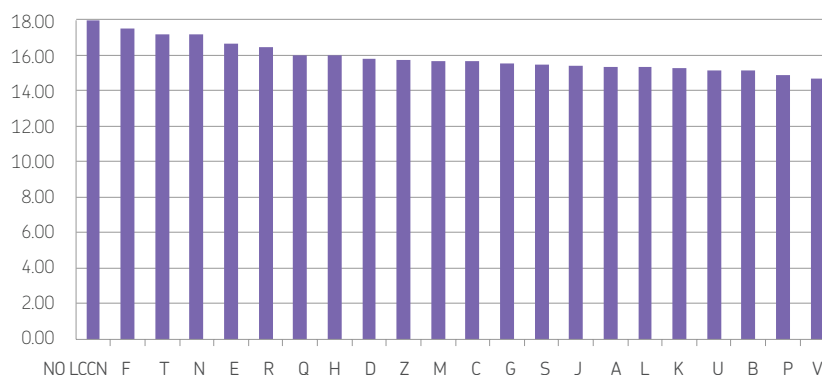


Figure 42

DOWNLOADS PER SESSION

Downloads per session, unlike page views per session, do not measure level of use. Just as with print circulation data, a download simply tells us that someone decided a book was worth “borrowing” from the collection. There is no way of knowing how many pages are viewed during a download. But, downloads, which take a few more steps than simply looking at a page, are a valuable indicator that someone felt that the book was of interest to them. Downloads also allow for reading offline, so may be an indicator of stability of Internet access.

DOWNLOADS PER SESSION – REGIONAL VARIATIONS

The regional variations for downloads per session are almost a reverse image of the patterns for page views per session, with the fewest in North America and the most in South Asia. The high level of downloads per session in the developing world may be due to cost or availability of Internet access, with a higher degree of downloading for later than in North America, Europe, Australia/New Zealand, or the UK/Ireland.

ebrary

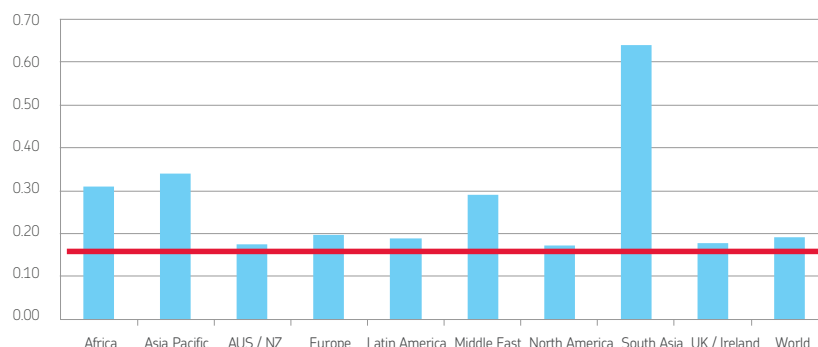


Figure 43

DOWNLOADS PER SESSION – BY ACADEMIC DIVISION AND REGION

Just as with page views per session, STEM titles have the most downloads per session, followed by the social sciences and the arts & humanities. And, similarly, most regions of the world follow the same pattern, with Africa (social sciences) and South Asia (arts & humanities) being the exceptions. It is worth noting that these broad patterns are almost identical to page views per session, and suggests similar rates of downloading relative to page views at the regional level.

ebrary

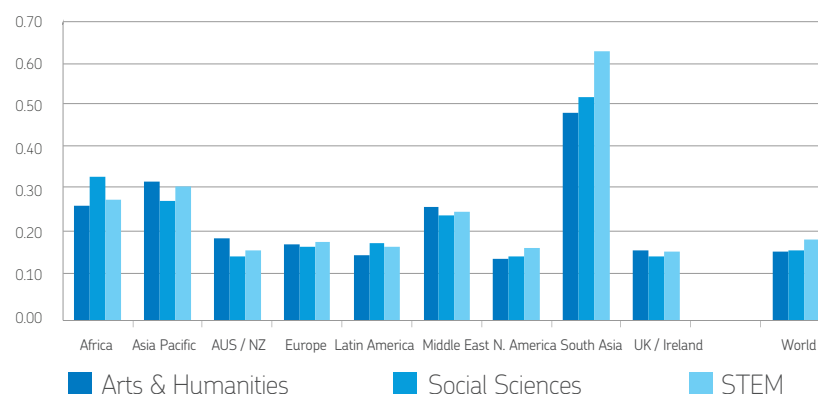


Figure 44

DOWNLOADS PER SESSION – BY LC CLASS

The subject breakdown is different than it is for page views per session. T (Technology), which is near the top of the page views per session chart, is also at the top for downloads per session. The other categories (No LCCN, F – History of the Americas, E – History of the Americas, R – Medicine, and N – Fine Arts) that are near the top in page views per session are at or near the bottom of downloads per session. Readers seem to examine a lot of pages of these subjects but to download them relatively rarely. These are subjects that appear to have more appeal for readers for onscreen reading.

ebrary

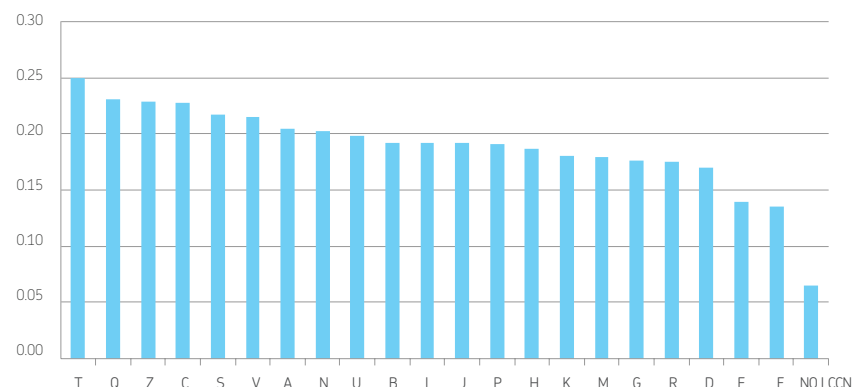


Figure 45

COPIES/PASTES PER SESSION

Copying/pasting per session, which measures the number of pages copied, indicates relative value of material to users. While pages viewed and downloaded measure a simple level of interaction, copying/pasting suggests a higher level of interaction, and that users have found something that meets a particular information need.

COPIES/PASTES PER SESSION – REGIONAL VARIATIONS

While there are clear regional variations, these do not seem to follow any obvious patterns.

ebrary

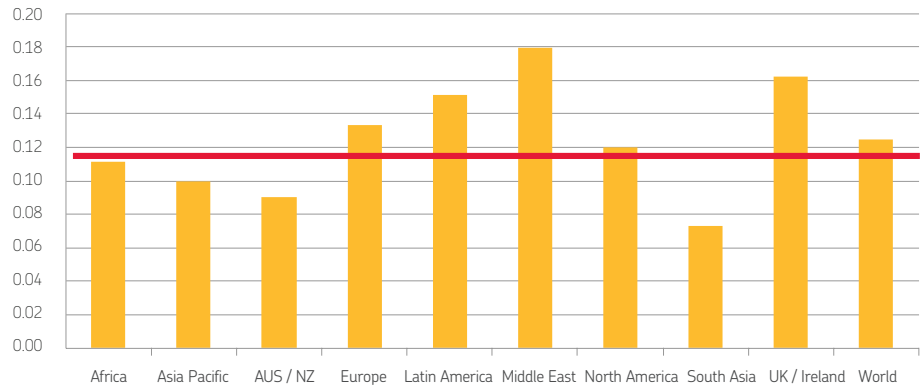


Figure 46

COPIES/PASTES PER SESSION – BY ACADEMIC DIVISION AND REGION

Unlike pages viewed and downloaded, STEM titles have the fewest instances of copying and pasting, while social sciences titles have the most. Worldwide, these patterns hold true, except in Australia/New Zealand and UK/Ireland, where arts & humanities titles have the most pages copied per session.

ebrary

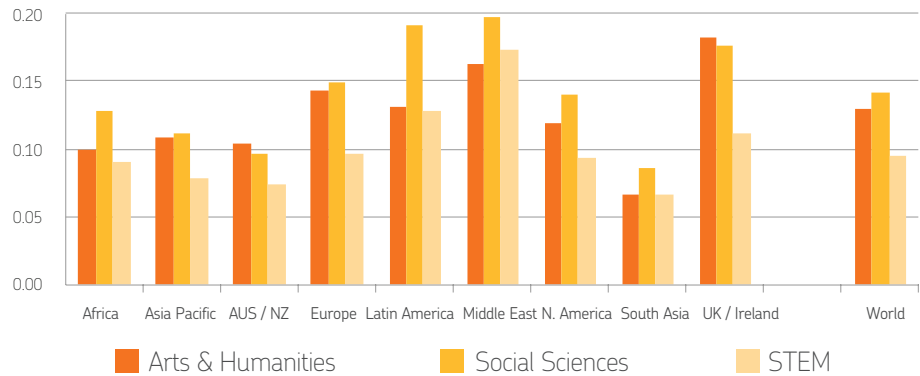


Figure 47

COPIES/PASTES PER SESSION – BY LC CLASS

K (Law), J (Political Science), and H (Social Sciences) are the subjects with the most pages copied per session. T (Technology), which has many pages viewed and many downloads per session, has very few pages copied per session.

ebrary

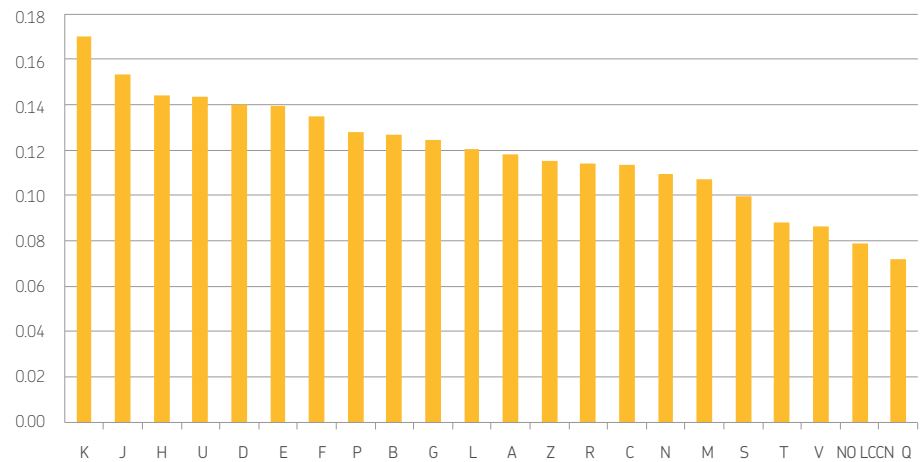


Figure 48

PAGES PRINTED PER SESSION

Like pages copied/pasted per session, the number of pages printed in a session is a measure of relative value, since printing often involves an extra cost to the user and presumably also indicates that the content is of some value.

PAGES PRINTED PER SESSION – REGIONAL VARIATIONS

As with copies/pastes per session, there are wide regional variations, but these do not appear to follow any obvious patterns.

ebrary

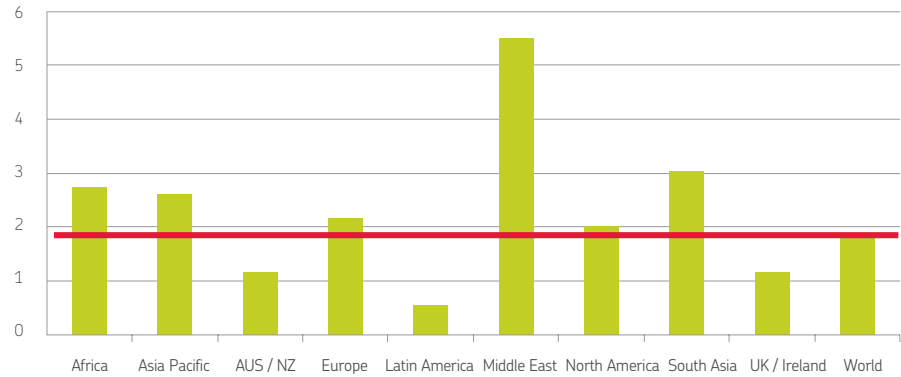


Figure 49

PAGES PRINTED PER SESSION – BY ACADEMIC DIVISION AND REGION

Worldwide, STEM titles have the most pages printed per session, and that pattern holds true for five of the nine regions of the world. There is more variation here than in the other measures of usage per session.

ebrary

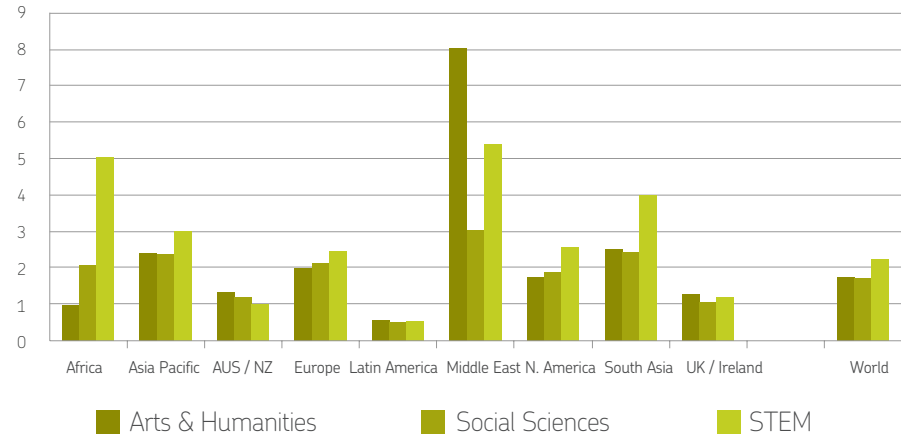


Figure 50

PAGES PRINTED PER SESSION BY LC CLASS

T (Technology), which is at the top of the page views per session and downloads per session lists, is also near the top of this category. Users look at a lot of pages of technology books, download them a lot, and print a lot of pages. E and F (History of the Americas), which are near the top of the page views per session and near the bottom of downloads per session, are at the bottom of this chart. Readers look at a lot of pages of these history books online, but do not download them as often for reading later and do not print very many pages, suggesting that they are doing more reading online.

ebrary

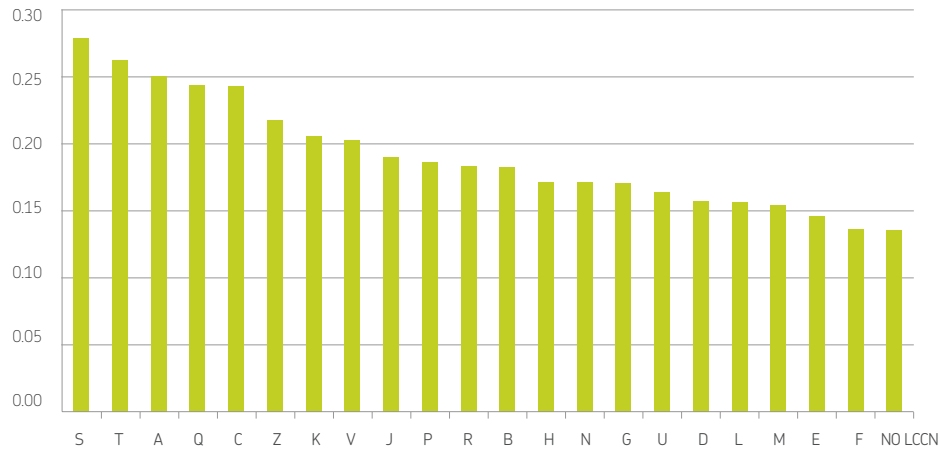


Figure 51

TIME PER SESSION

While the other measures of actions per session measure something done during a session, time per session measures how long those actions take. As such it is perhaps the best measure we have of immersive reading. To the extent that printing and downloading allow the user to read offline, heavy amounts of either of those could lead to less time per session.

TIME PER SESSION – REGIONAL VARIATIONS

The regions of the world with fewer downloads and more pages viewed per session have the most time on average per session.

ebrary

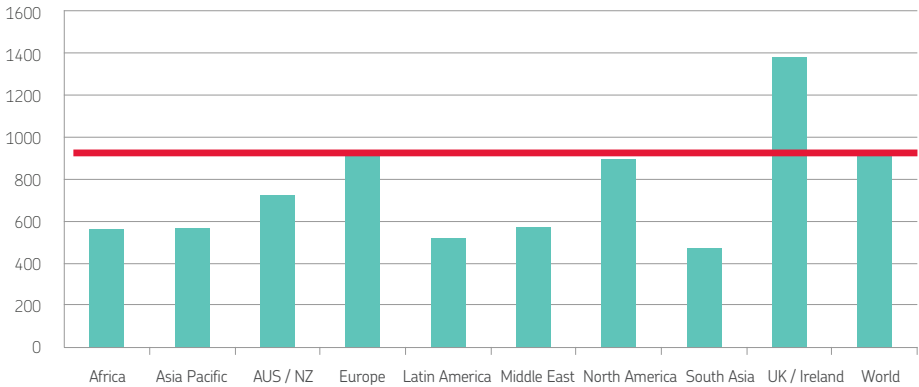


Figure 52

TIME PER SESSION – BY ACADEMIC DIVISION AND REGION

Users spend the most time per session in arts & humanities books and the least in STEM titles. This reverses the patterns for both page views per session and downloads per session. Readers look at a lot of pages of STEM titles, download those titles frequently, print more pages, but spend the least amount of time doing so. STEM titles are last or close to a tie for last in eight of the nine regions of the world.

ebrary

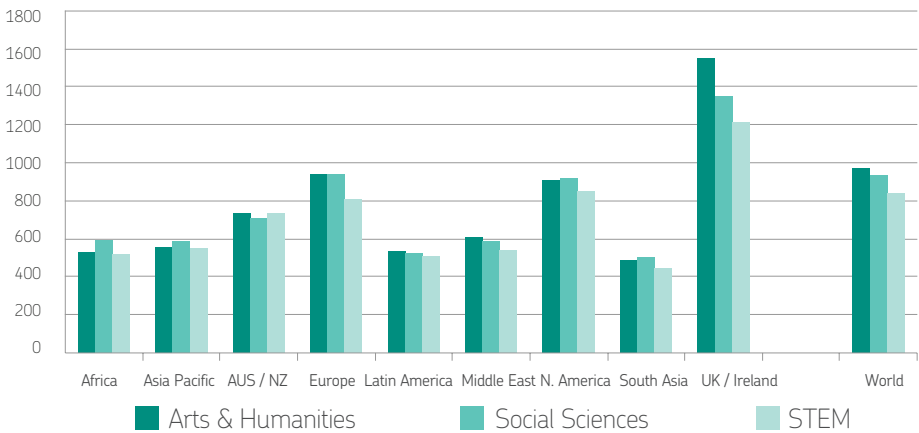


Figure 53

TIME PER SESSION BY LC CLASS

T (Technology), the subject that is at or near the top of the lists for pages viewed, downloads, and pages printed per session, is near the bottom in terms of time per session. As with STEM titles in general, readers look at many pages and download or print a lot, but spend only a little bit of time doing so. D, F, and E, three history subjects, which account for many pages viewed but not much printing or downloading per session, have the most time spent per session, suggesting that readers are immersing themselves in these titles while online.

ebrary

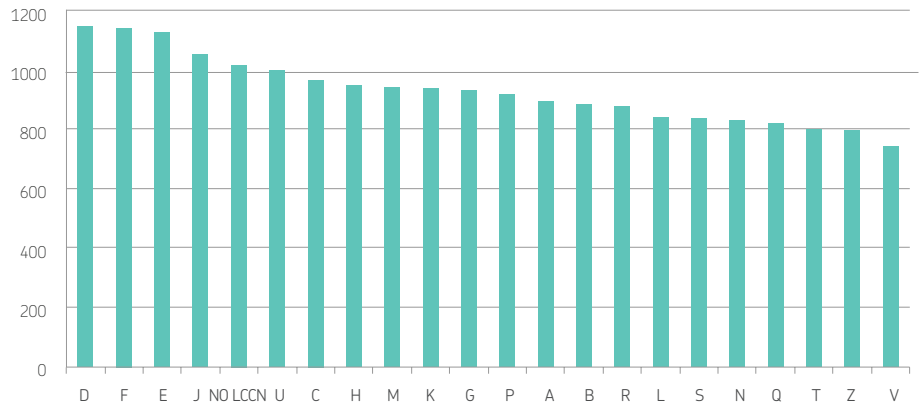


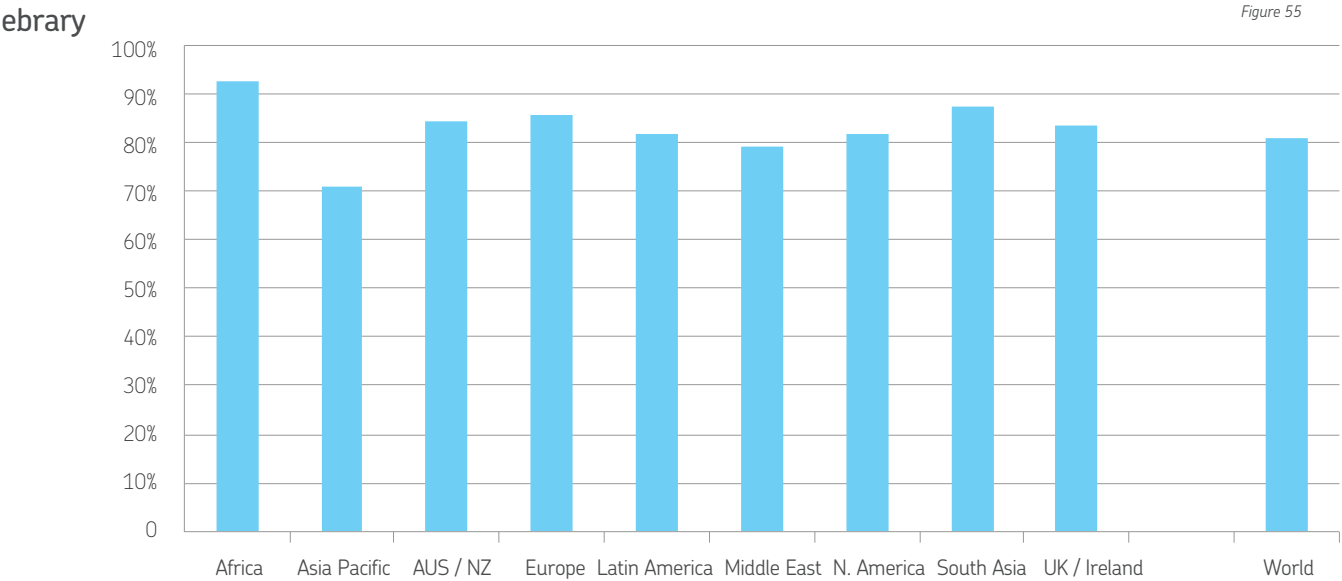
Figure 54

USAGE OF THE MOST POPULAR TITLES

In most libraries, the most heavily used titles account for a disproportionately high amount of use overall, and the “80/20 rule” assumes that twenty percent of the titles account for eighty percent of the use. Taking the ten percent of titles with the most sessions worldwide allows us to test whether this assumption is true beyond the local level.

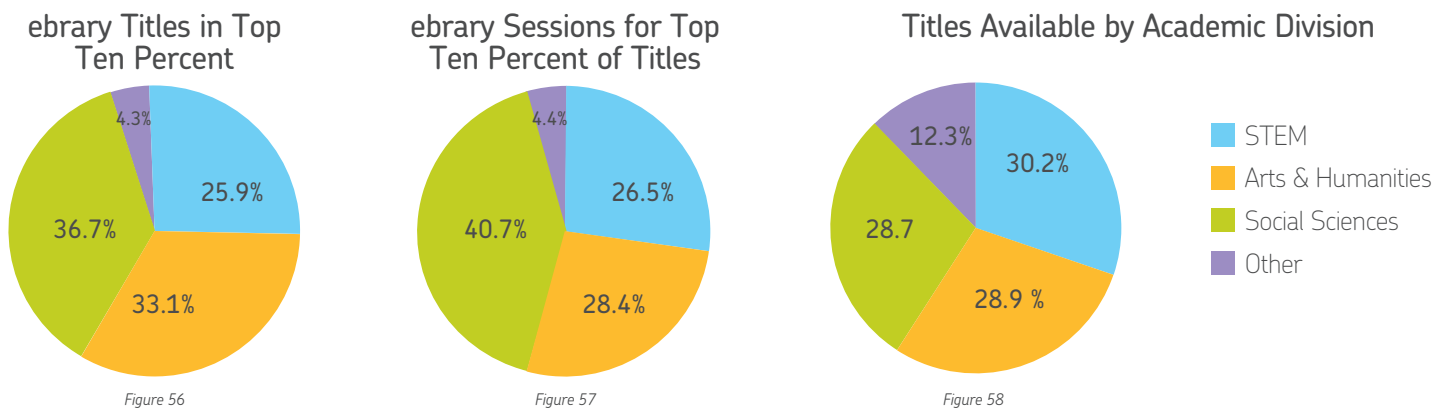
PERCENT OF SESSIONS REPRESENTED BY THE TOP TEN PERCENT OF TITLES

Worldwide, for ebrary, the top ten percent of titles accounted for 15,755,652 sessions, or 80.7% of all sessions. These titles were available on average in 1,821 libraries, and used in 68 (3.8%). In all regions of the world, the top ten percent of titles accounted for 70% or more of all sessions, with the most heavily used ten percent of titles in Africa accounting for 92.6% of sessions. The top titles account for an extremely high percentage of use, even when spread across thousands of libraries.



DISCIPLINARY REPRESENTATION WITHIN THE TOP TEN PERCENT OF TITLES

Comparing the general availability of titles with their representation within the ten percent of titles with the most sessions shows that social science titles are more highly represented than one would expect. While they account for 28.7% of the titles available in ebrary overall, they account for 36.7% of the titles in the top ten percent and 40.7% of sessions for the top ten percent of titles. Titles outside of these broad academic divisions entirely account for 12.3% of all titles available, but only 4.3% of the titles in the top ten percent and only 4.4% of sessions in the top ten percent. Arts & humanities titles account for a higher percentage of titles in the top ten percent than would be expected given their overall availability, but a lower percentage of sessions. STEM titles are less represented by either measure in the top ten percent of titles than would be expected.



Disciplinary Representation Within the Top Ten Percent of Titles – Regional Variations

There is a very wide regional variation of usage at the broad disciplinary level within the top ten percent of titles, with the most notable difference being a higher percentage of STEM titles in the top ten percent in five regions of the world than would be expected.

Disciplinary Breakdown of Titles in the Top Ten Percent, by Region

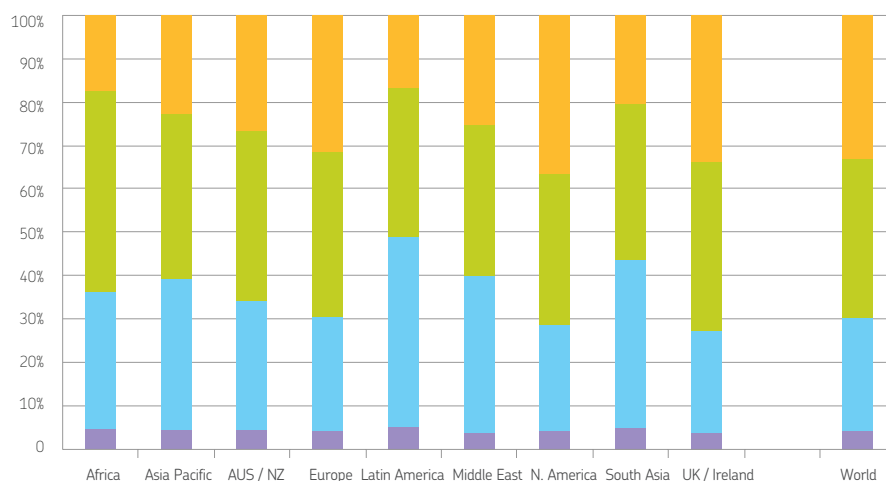


Figure 59

Disciplinary Breakdown of Sessions in the Top Ten Percent, by Region

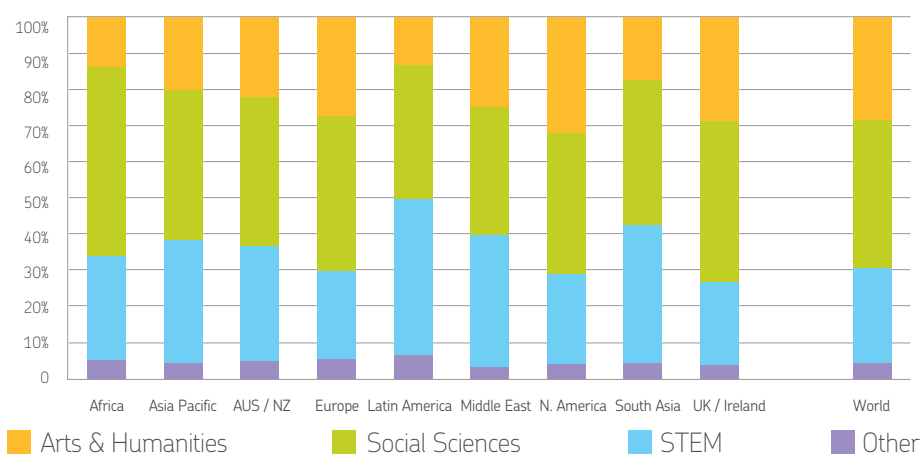


Figure 60

PERCENTAGE OF SESSIONS REPRESENTED BY TOP TEN PERCENT OF TITLES

More sessions for the social sciences occur within the top ten percent of titles than for the other disciplines. Arts & humanities has the widest spread of usage outside the top ten percent. The ten percent of titles with the most sessions account for 83.1% of all social sciences sessions, 81.0% of all STEM sessions, and 77.2% of arts & humanities sessions.

ebrary

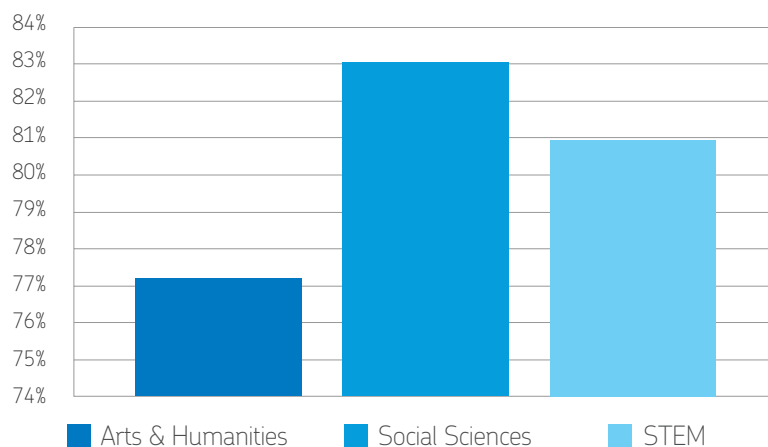


Figure 61

Percentage of Sessions Represented By Top Ten Percent of Titles – Regional Variations

In six of the nine regions, the same pattern holds true, with more sessions for the social sciences occurring within the top ten percent of titles than for other disciplines.

ebrary

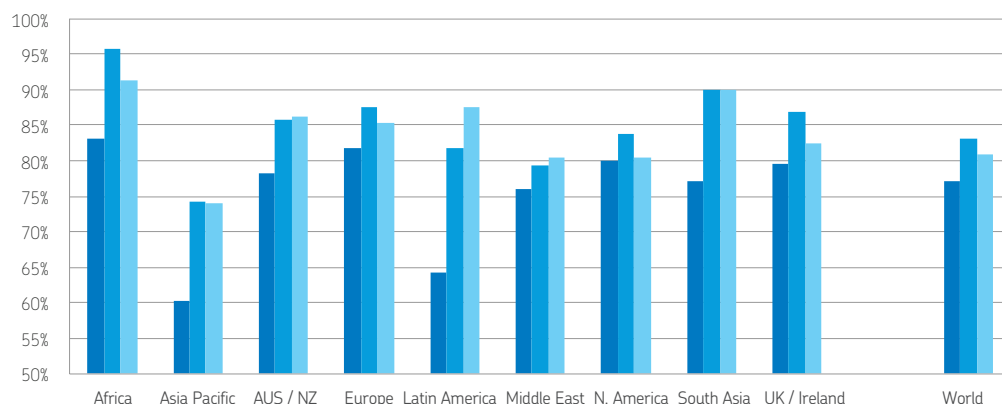


Figure 62

BROAD VS. DEEP USE

Looking at both the breadth of use (the percentage of titles used) and the depth of use (the amount that those titles are used) allows for a general measure of usage at the subject level, which takes into account two different measures of value. The following charts show each LC Class mapped onto a matrix comparing intensive and extensive use. The horizontal X-axis shows percentage of use (extensive use) and the vertical Y-axis shows average amount of use (intensive use). The upper right quadrant includes subjects with both intensive and extensive use (a high average rate of use and a high percentage of titles used). In the lower right are those with extensive but not intensive use. The upper left quadrant includes subjects with intensive but not extensive use. And the lower left includes subjects with neither.

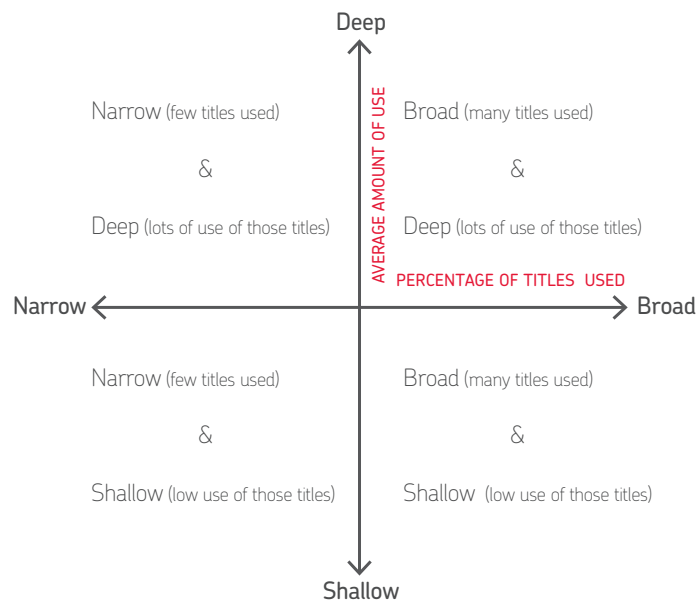
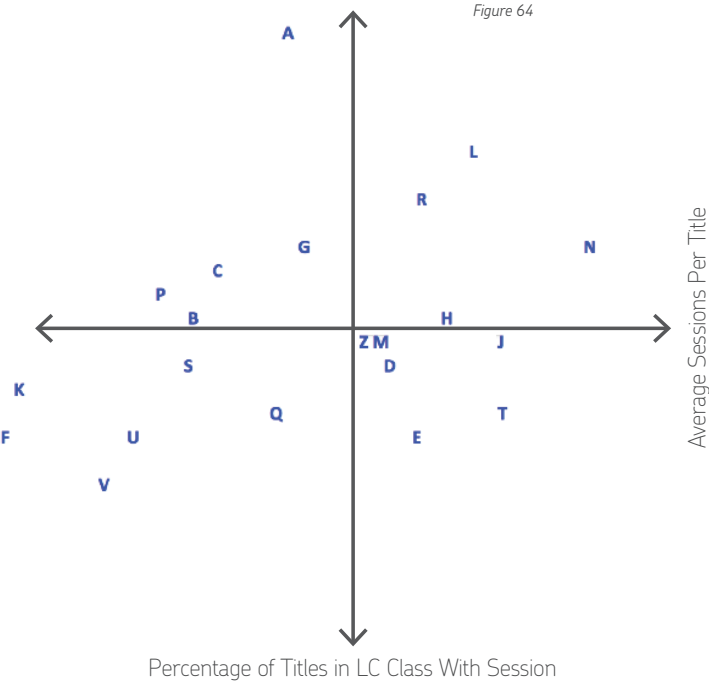


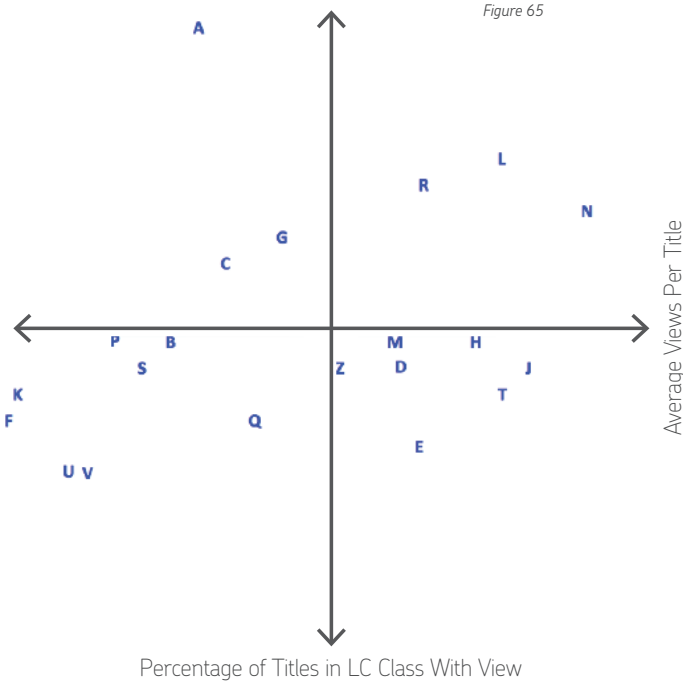
Figure 63

Though degree of usage varies between the EBL and ebrary charts, the relative trends by subject are similar. L (Education) and N (Fine Arts) are the two subjects that are most consistently used both intensively and extensively. Books in both of those subject areas tend to be in the middle of the pack in the measures of actions per session, suggesting that multiple measures of use are important for assessing the value of library resources.

EBL SESSIONS

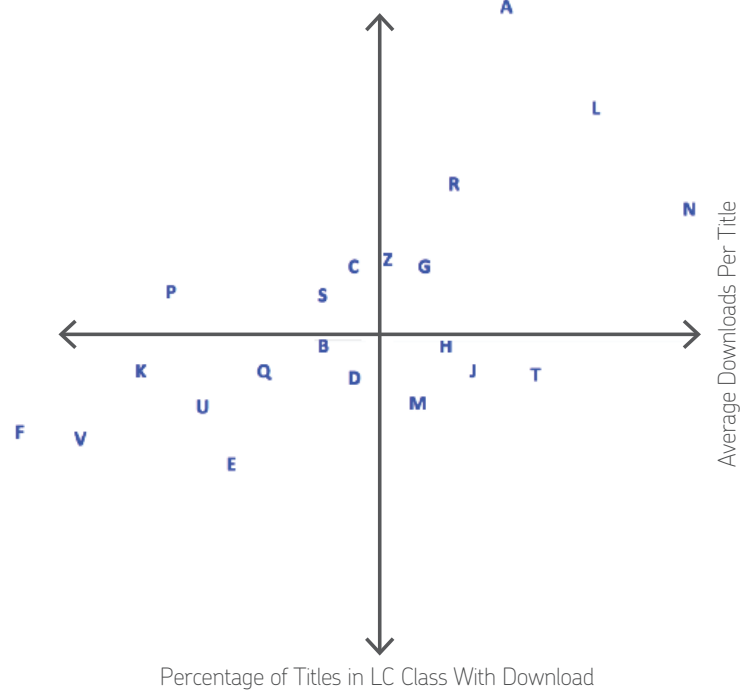


EBL VIEWS



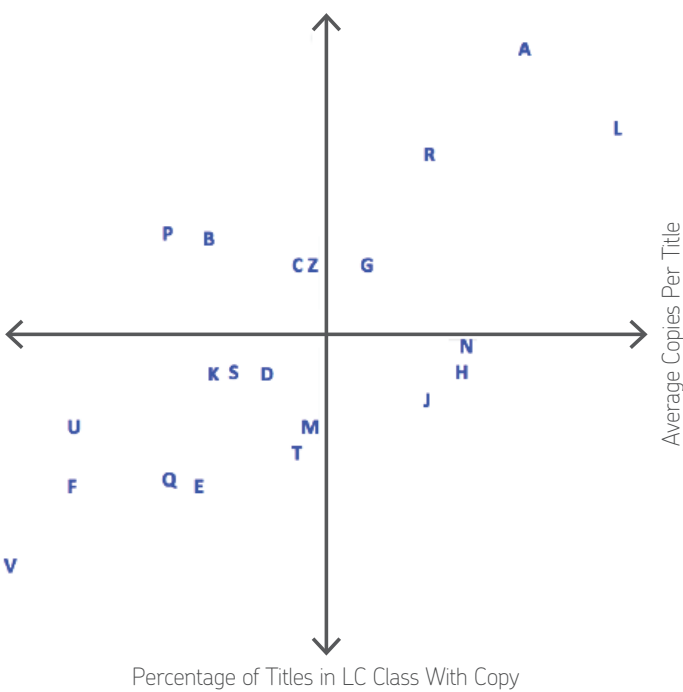
EBL
DOWNLOADS

Figure 66



EBL
COPIES/PASTES

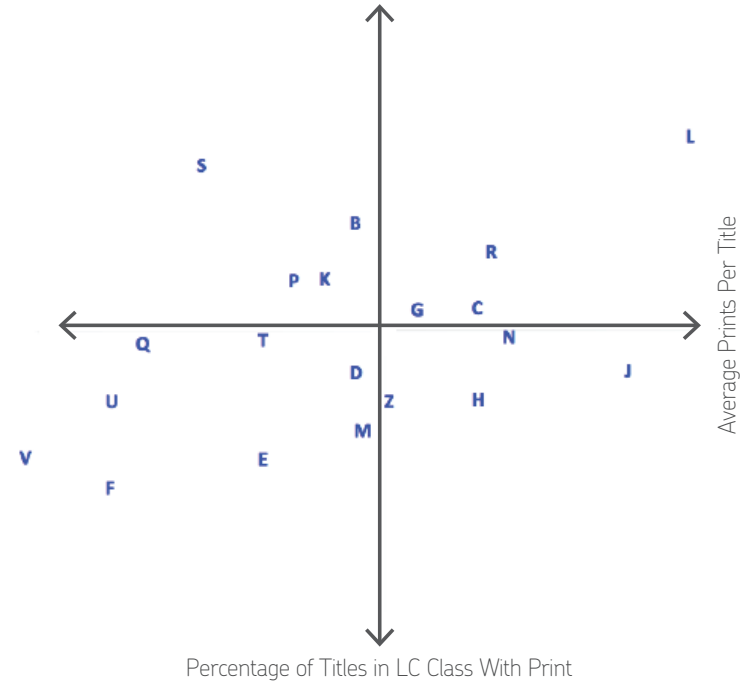
Figure 67



Though degree of usage varies between ebrary and EBL, L (Education) and N (Fine Arts) are the two subjects that are most consistently used both intensively and extensively. Books in both of these subjects tend to be in the middle of the pack in the measures of actions per session, suggesting that multiple measures of use are important for assessing the value of library resources.

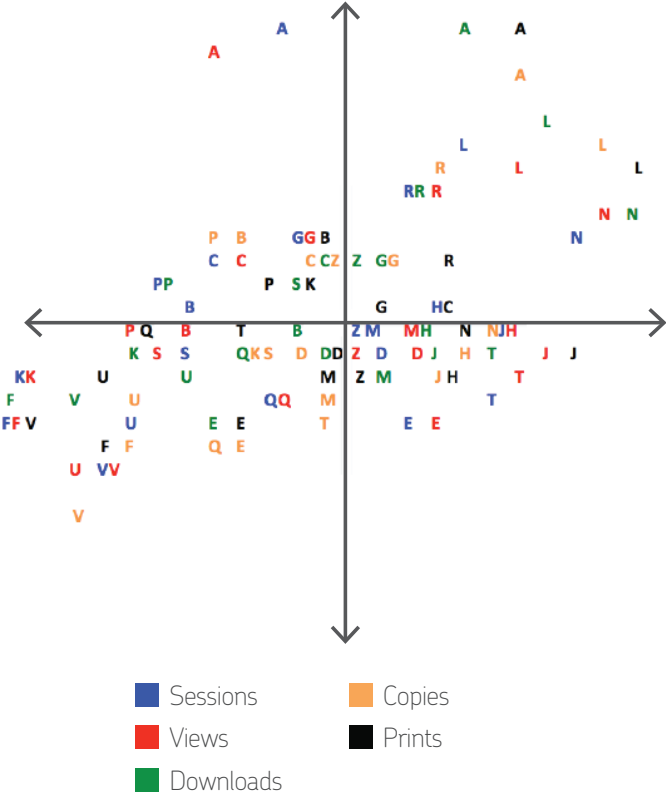
EBL
PRINTS

Figure 68



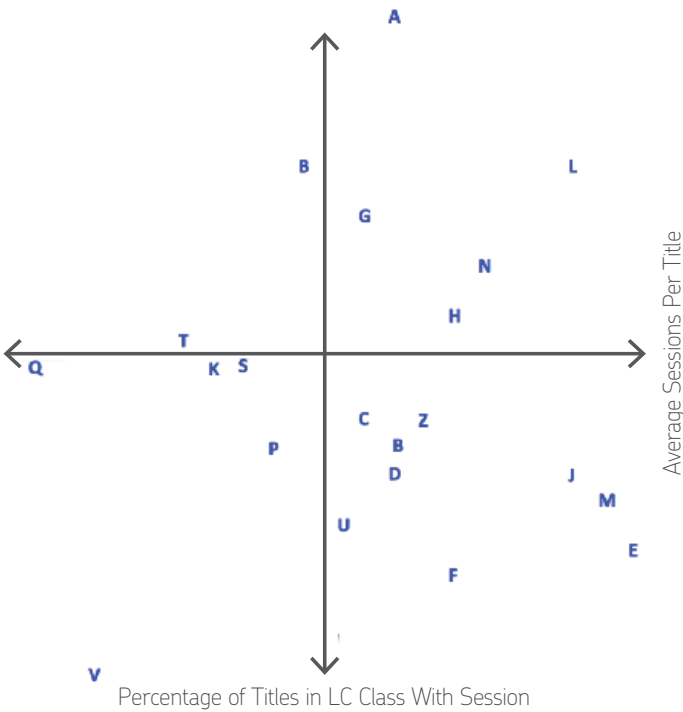
EBL
COMBINED

Figure 69



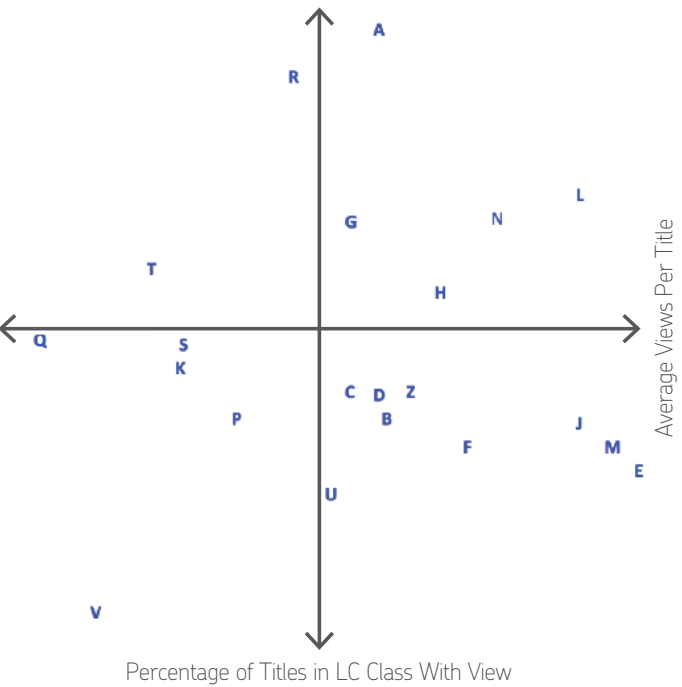
ebrary
SESSIONS

Figure 70



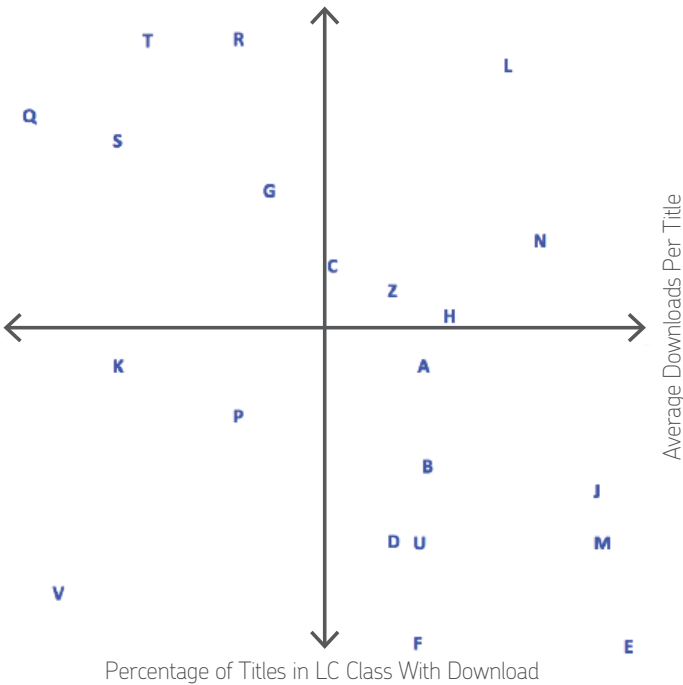
ebrary
VIEWS

Figure 71



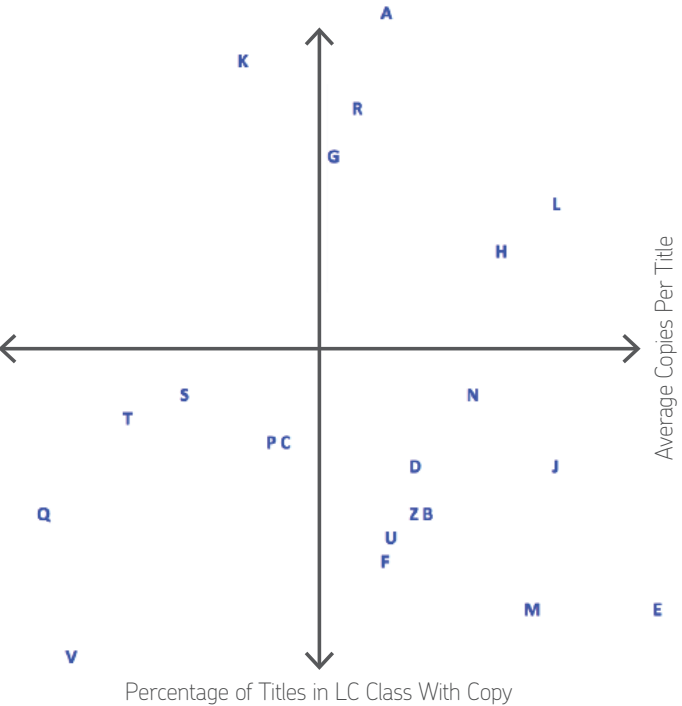
ebrary
DOWNLOADS

Figure 72



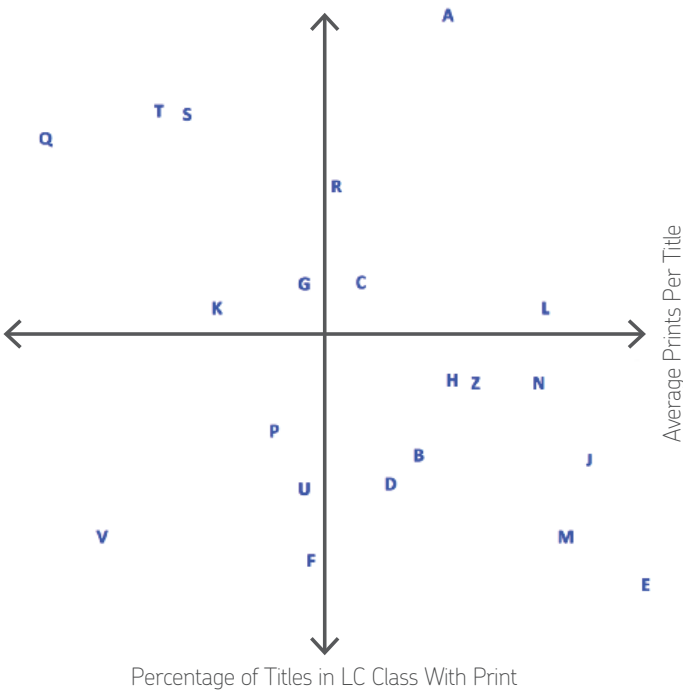
ebrary
COPIES/PASTES

Figure 73



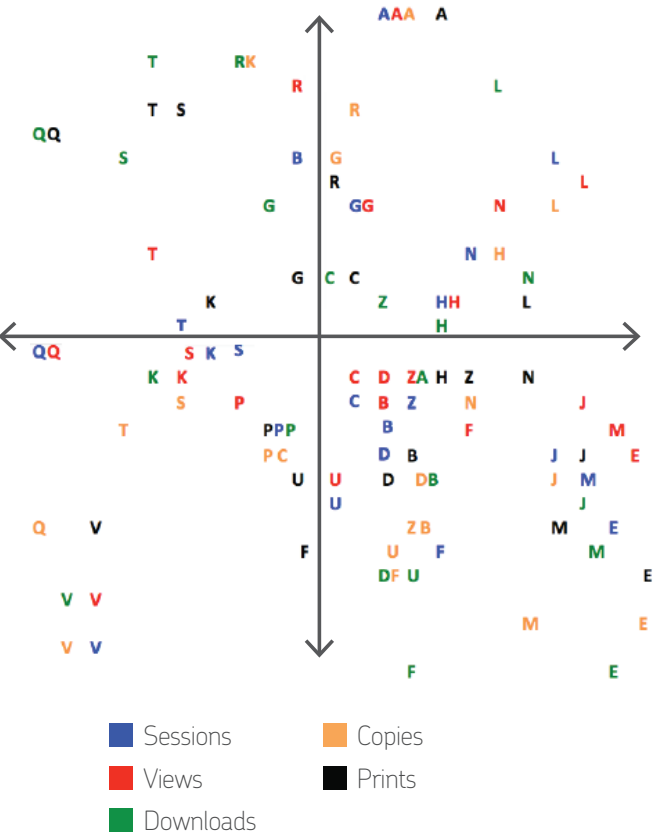
ebrary
PRINTS

Figure 74



ebrary
COMBINED

Figure 75

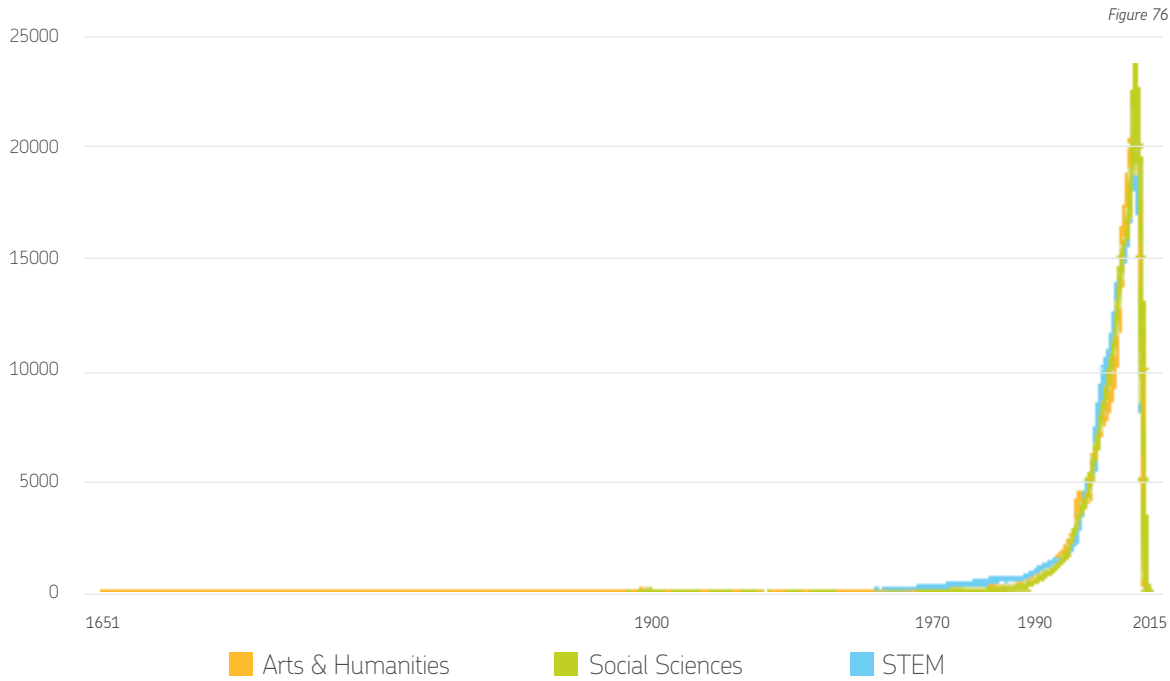


USAGE BY COPYRIGHT YEAR

Libraries make a set of assumptions about usage based on the publication date of books, assuming that relatively recently published books will be used more than older books and that when older books are used they will more likely be arts & humanities titles. The data show that there is usage over time is relatively similar to availability over time. For recent copyright years, STEM titles are used more than their availability would suggest.

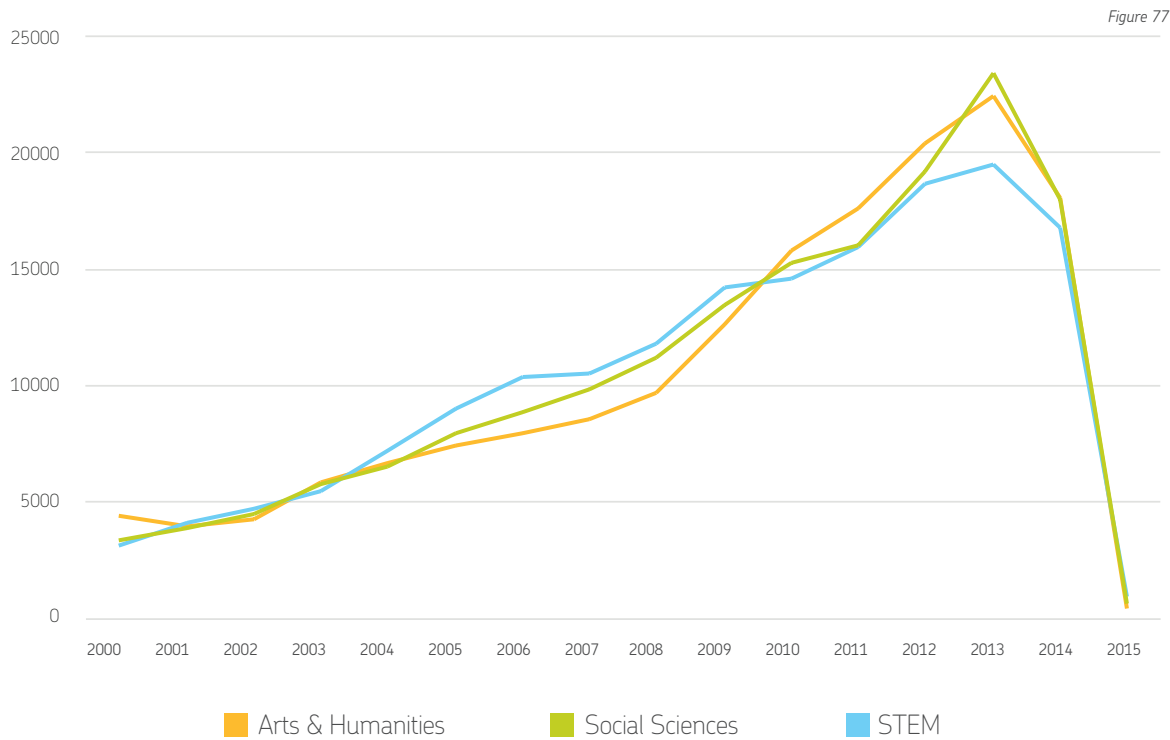
AVAILABILITY BY COPYRIGHT YEAR

The vast majority of the titles available on the ebrary platform were originally published in the most recent fifteen years, with more titles from 2013 available than any other year. Across all three academic divisions there is a relatively even spread of titles across the years, with the most significant difference being in the 1970s and 1980s, when there are more STEM titles available than arts & humanities or social sciences.



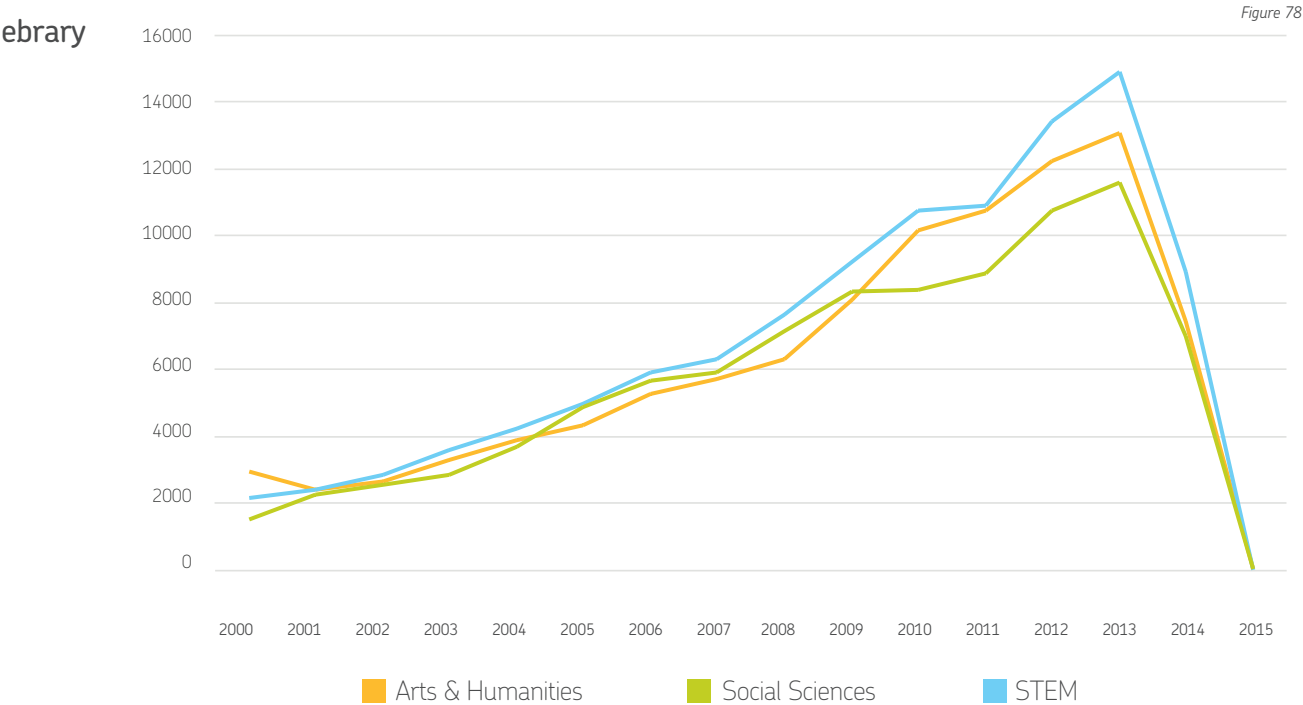
Looking at just the titles with a copyright year of 2000 or later shows that there is some fluctuation of titles available by academic division from year to year.

ebrary



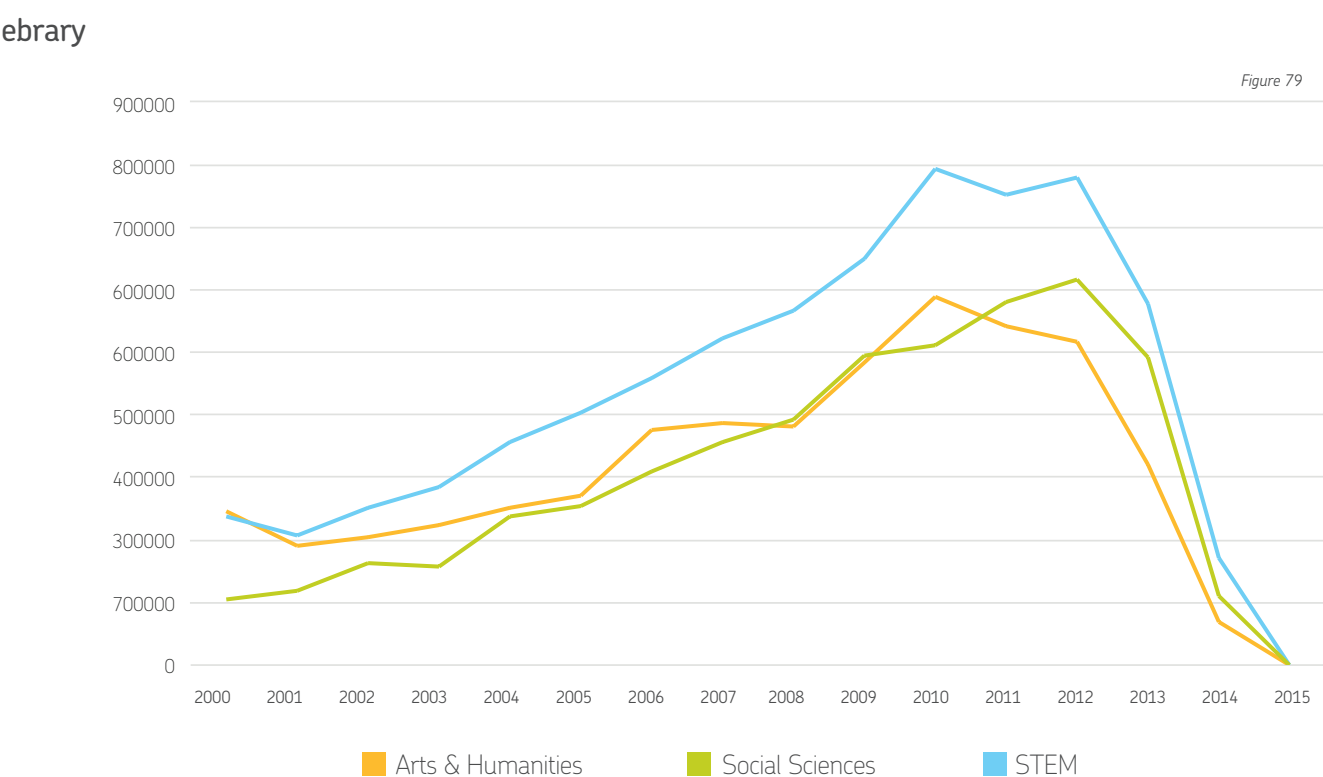
TITLES WITH A SESSION BY COPYRIGHT YEAR

For titles published 2000-2015, even though there is some variability in terms of which academic division has the most titles available, there are consistently more Social Sciences titles with a session.



NUMBER OF SESSIONS BY COPYRIGHT YEAR

Over the same set of titles, social sciences titles have more sessions by far than arts & humanities or social sciences titles.



CONCLUSIONS

When analyzing ebook usage data on such a large scale, it is clear that one size does not fit all. Different measures of use suggest that different subjects or academic divisions have the most value. In the arts & humanities there is the highest likelihood that a library with access to a title will make use of it. In the social sciences, the highest percentage of available titles is used and social sciences titles count for an even higher percentage of overall sessions. Meanwhile STEM titles account for the most page views and downloads per session. By any of these measures alone it would be easy to say that ebooks in that subject area provide a library with better value than do others. But the reality is much more complex, as the usage data in this study show.

It is clear from this study that there are wide variations in usage patterns across subjects. But those wide variations suggest that ebooks are not inherently better for some subjects than others. Books on history and technology are used very differently, but both see heavy use depending on how usage is measured. It appears that users from a wide range of disciplines are finding ways to make ebooks meet their disciplinary preferences. Readers of ebooks on technology are able to look up information quickly while historians are reading immersively. The fact that ebooks are meeting both types of need suggests that they are more broadly useful than is often believed.

Hopefully the data presented here give a more nuanced view of ebook usage patterns than has been available before. These patterns, which pertain across all libraries, can be used for benchmarking an individual library's collection use. And the methodology can be adapted for local needs.

ACKNOWLEDGMENTS

The author would like to thank Merisa Bissinger and Christopher C. Brown, colleagues at the University of Denver, for technical support in working with the data.

