University of California Libraries

UC Libraries Academic e-Book Usage Survey

Springer e-Book Pilot Project

Springer e-Book Pilot Project
Reader Assessment Subcommittee

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Executive Summary

In 2008, the University of California Libraries initiated the Springer e-Book Pilot Project with the goal of developing appropriate systemwide processes for acquiring and managing licensed e-books, as well as informing future licensing activities. Evaluation of the UC academic community's experience utilizing the Springer e-book collection began in 2010, and a UC systemwide survey was launched by the UC Libraries in October 2010 for the purpose of assessing the user experience. The primary objectives of the survey were to determine:

➢ Respondents' general preference for print books as compared to e-books.
➢ How respondents interact with e-books and barriers to e-book adoption and use.
➢ How users of Springer e-books discover their availability.
➢ Satisfaction level with Springer content and features, including the "MyCopy" service.

The initial survey question, designed to identify academic e-book users versus non-users, received 2569 responses. Respondents who indicated the use of e-books in their academic work (58%, n=1591) became the core target for the remaining survey questions. Those identifying themselves as not having used – or being uncertain about having used – e-books (42%; n=1078) were directed to a single open-ended question designed to explore their attitude toward e-books.

Findings related to the frequency of use of academic e-books:

➢ When asked about the use of e-books in their academic work, 58% of survey respondents reported using e-books; 38% reported not using e-books; and 4% were not sure of their e-book usage. Of those reporting not using e-books, the majority report utilizing digital resources, such as e-journals.

➢ Variations in e-book usage in academic work are found in both university status and area of study or research. Postdoctoral researchers reported the highest usage (68%), followed closely by graduate students (67%), undergraduate students (55%), and faculty and lecturers (57%). Respondents in the physical sciences and engineering reported the highest rate of academic e-book usage (68%), followed by those in the arts and humanities (57%), life and health sciences (57%), social sciences (54%), and business and law (47%).

Findings related to preference for print books as compared to e-books:

➢ Of the survey respondents who indicated a preference (n=2410), 49% prefer print books, 34% prefer e-books, and 17% had no preference or described a preference that is usage-dependent.

➢ Variations in preference for print books as compared to e-books are found in both university status and area of research. Postdoctoral researchers reported the highest preference for e-books over print books (49%), followed by graduate students (35%), faculty and lecturers (33%), and undergraduate students (27%). Respondents in business and law reported the highest preference for e-books (54%), followed by life and health sciences (44%), physical sciences and engineering (32%), social sciences (31%), and arts and humanities (17%).

➤ Undergraduate students indicated the highest preference for print books (53%); many undergraduate respondents commented on the difficulty they have learning, retaining, and concentrating while in front of a computer.

Findings related to specific e-book functionalities:

➤ The ability to search within and across e-book content is identified as the primary advantage of e-books, regardless of whether a respondent prefers print book or e-books.

➤ Annotating and highlighting within the e-book environment is perceived as vital to the majority of respondents who use academic e-books. For those indicating a preference for print books, dissatisfaction with e-book annotation tools is frequently mentioned as a stumbling block to e-book adoption.

➤ The ability to download the entire e-book to a device for later use is a highly valued feature. Respondents expressed frustration with those e-book vendors that restrict downloading or printing to chapters or other pre-defined sections.

➤ The dedicated e-book reader, such as the Kindle, and mobile devices, such as the iPhone, offer significant advantage over the personal computer as well as the print book for a noteworthy number of respondents.

Findings related to the relationship between e-books and corresponding print copies:

➤ Borrowing or purchasing a print copy of an e-book is not uncommon. In explaining the nuanced relationship between digital and corresponding print copies, respondents describe using digital copies of a title for search and discovery tasks, then moving to corresponding paper copies for reading, note taking, text comparison, and deep study.

➤ Undergraduate students express the strongest desire for a corresponding print copy of an academic e-book for borrowing from a UC library, with 66% rating it as important.

➤ A surprising 41% of respondents rate the option to purchase a "print-on-demand" copy of an e-book as an important feature, implying that utilization of the service should witness an upward trend.

Findings related to Springer e-book users:

➤ Of the survey respondents who indicated having used e-books before the survey, 39% report using Springer e-books.

➤ Springer e-book usage is impacted by both university status and area of study or research. Postdoctoral researchers were most likely to have used Springer e-books (51%), followed closely by graduate students (49%), faculty and lecturers (32%), and undergraduate students (20%). Respondents in the physical sciences and engineering reported the highest use of Springer e-books (62%), followed by life and health sciences (39%), social sciences (32%), business and law (18%), and arts and humanities (17%).

Findings related to how users discover Springer and other academic e-books:

➢ Both Springer e-book users and general (non-Springer) academic e-book users are most likely to discover e-books through 1) the library catalog, 2) a general Internet search engine, or 3) the library website.

Findings related to user satisfaction with Springer e-book content and functionality:

➢ Survey respondents report an impressively high level of overall satisfaction with Springer e-books, indicating satisfaction with the quality of Springer content and with subject scope, i.e., the breadth and depth of content. In comparison to general (non-Springer) academic e-book users, Springer e-book users report higher levels of satisfaction in the areas of quality of content, subject scope, ease of use, and overall satisfaction.

➢ Although the satisfaction level with most aspects of Springer e-books is robust, respondents report frustration with issues pertaining to downloading on the chapter-by-chapter (versus complete volume) level and the quality of some PDFs.

➢ Of the respondents who indicated having used Springer e-books, 8% (n=48) also utilized the Springer MyCopy print-on-demand service. Users of the MyCopy service report a high level of satisfaction with the delivery time, cost and quality associated with MyCopy volumes. Concerns about the quality of the MyCopy text and images, expressed by both users and potential users of the service, indicate a barrier to service adoption.

I.   Survey Background and Methodology

In 2008, the University of California Libraries initiated the Springer e-Book Pilot Project and organized a task force to oversee the effort. Springer was chosen for the UC Libraries' first major systemwide e-book pilot because its e-book licensing terms are consistent with principles established by UC, including broad academic use rights, support for interlibrary lending, perpetual ownership, unlimited concurrent users, and a digital rights management-free format.

Work proceeded in three phases: Phase 1 consisted of developing recommendations concerning the scope and duration of the pilot; Phase 2 consisted of implementing the pilot; and Phase 3 consisted of evaluating the pilot's impact on library operations and services, including assessing the experience of Springer e-book users. The pilot's overarching goals were to develop appropriate systemwide processes for acquiring and managing licensed e-books and to inform future licensing activities.

Beginning late 2008, UC campuses obtained perpetual access to nearly every Springer e-book published in English and German from 2005 to 2009, including almost 20,000 titles from every scientific discipline, many social sciences and some arts and humanities.[1] Catalog records and SFX links to the e-books were fully implemented by March 2009, supporting user discovery via the University of California Libraries union catalog, Melvyl, local campus catalogs, the SpringerLink website, and Google Scholar.

Information about the Springer e-Book Pilot project was released to both UC library staff and the public in February 2009. UC librarians were encouraged to publicize the availability of the Springer titles to their users, and the project roll-out team provided campus libraries with promotional material for distribution, including a poster, a general staff release document, and a public release document.

Evaluation of the UC academic community's experience utilizing the Springer e-book collection began in 2010, and a UC systemwide survey was launched by the UC Libraries in October 2010 for the purpose of assessing the user experience. The primary objectives of the survey were to determine:

- Respondents' general preference for print books as compared to e-books.
- How respondents interact with e-books and barriers to e-book adoption and use.
- How users of Springer e-books discover their availability.
- Satisfaction level with Springer content and features, including the "MyCopy" service.

The "University of California Libraries Academic e-Book Usage Study" survey ran from October 11, 2010 through November 2, 2010. The survey was constructed using commercial survey software; depending on the answer to specific conditional questions, respondents were presented from two to ten questions about their e-book use, plus three demographic questions.[2] Responses were submitted by 2569 individuals, including representation from each of the ten UC campuses. As an incentive for participation, respondents were invited to enter a drawing, held at the close of the survey, in which five participants were awarded a $50.00 gift certificate to the UC campus bookstore of their choice.

UC campus libraries employed multiple approaches to outreach to their campus communities with the goal of encouraging maximum student and faculty participation. Outreach activities included notices of the

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[1] See Appendix 2 for subject breakdown of Springer e-book titles included in pilot project.
[2] See Appendix 1 for survey design and questions.

survey on library websites, paper and electronic newsletter articles, postings to faculty/academic campus email lists, one-to-one outreach, blog postings, library signage, and Facebook page notices. Working with Springer, links to the survey were also made available on SpringerLink e-journal and e-book web pages throughout the course of the survey.

Respondent Demographics

The survey response rate was significant, with a total of 2569 respondents. The majority of respondents were graduate students, followed by faculty, undergraduate students, and postdoctoral scholars and researchers. Respondents were asked to identify their area of study or research, and the majority indicated life and health sciences, followed by physical sciences and engineering. UC affiliation included all ten campuses, though a disproportionate number of respondents indicated affiliation with UC San Francisco, including 40% of all faculty and 60% of all postdoctoral scholar / researchers.

University status	Count	%
Graduate student	817	32%
Faculty / lecturer	533	21%
Undergraduate student	498	19%
Staff	315	12%
Postdoctoral scholar / researcher	249	10%
Other (please specify)	85	3%
Librarian / library staff	64	2%
Total Count	2561	100%

Figure 1: (Q15) University status of all survey respondents

Area of study or research	Count	%
Life & Health Sciences	955	38%
Physical Sciences & Engineering	566	22%
Arts & Humanities	362	14%
Social Sciences	340	13%
Other	159	6%
Business or Law	124	5%
Undeclared	44	2%
Total Count	2550	100%

Figure 2: (Q14) Area of study or research of all survey respondents

UC affiliation	Count	%
UC San Francisco	557	22%
UC Berkeley	433	17%
UCLA	292	11%
UC Irvine	280	11%
UC San Diego	279	11%
UC Riverside	218	9%
UC Santa Cruz	159	6%
UC Davis	150	6%
UC Merced	140	5%
UC Santa Barbara	40	2%
Not affiliated with UC	6	< 1%
LBNL or LLNL	4	< 1%
UC Office of the President	2	< 1%
Total Count	2560	100%

Figure 3: (Q16) UC affiliation of all survey respondents

Respondent's Area of Study or Research Cross-Tabulated with University Status							
	Arts & Humanities	Business or Law	Life & Health Sciences	Physical Sciences & Engineering	Social Sciences	Undeclared	Other
Undergraduate student	21%	30%	14%	20%	31%	39%	14%
Graduate student	28%	41%	29%	40%	32%	0	31%
Postdoctoral scholar / researcher	<1%	1%	18%	11%	3%	0	<1%
Faculty / lecturer	31%	6%	25%	20%	16%	0	9%
Librarian / library staff	5%	1%	1%	1%	5%	0	10%
Staff	13%	19%	9%	7%	12%	61%	28%
Other	2%	2%	5%	2%	1%	0	8%
Total	100%	100%	100%	100%	100%	100%	100%

Figure 4: (Q14, Q15) Area of study or research cross-tabulated with university status of all survey respondents

II.   Academic e-Book Users: Overview

The initial survey question, designed to identify academic e-book users versus non-users, received 2569 responses. Of the total respondents, 58% reported using e-books in their academic work; 38% reported not using e-books in their academic work; and 4% were not sure of their e-book usage. Those identifying themselves as not having used – or being uncertain about having used – e-books were directed to a single open-ended question designed to explore their attitude toward e-books.

Respondents who indicated the use of e-books in their academic work (58%, n=1591) became the core target for the remaining survey questions. For the purpose of survey analysis, only subsets of the core respondents were considered, depending on area of study or research (Q14) and university status (Q15). Those who identified their area of study or research as "undeclared" or "other" were not considered in the analysis; those who identified themselves as "librarian / library staff", "staff", or "other" were also not considered in the analysis. The decision to include in the survey analysis only those respondents who identified themselves as undergraduate students, graduate students, postdoctoral researchers, lecturers, and faculty was based on the focus of UC library e-book acquisition, i.e., content that is used in academic research, study, and teaching.
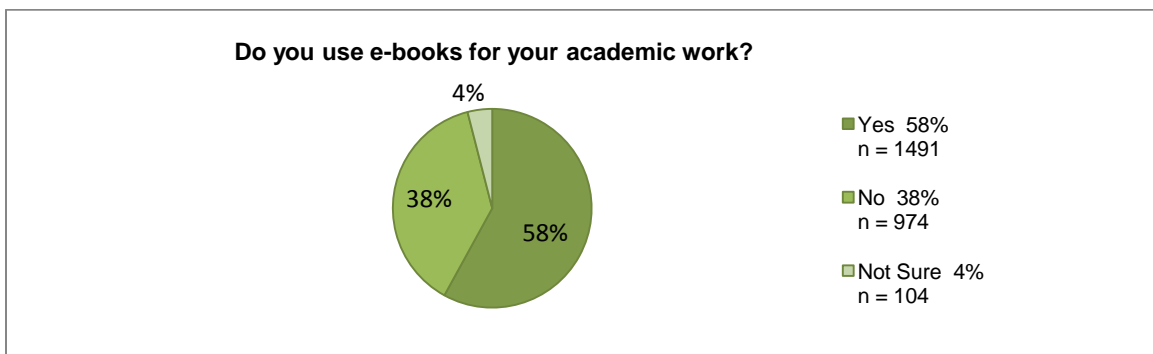
Figure 5: (Q1) Use of e-books: users and non-users; n = 2569

Variations in e-book usage in academic work are found in both university status and area of study or research. Postdoctoral researchers were the most likely to have used e-books in their academic work, with 68% reporting usage, followed closely by 67% of graduate students, 55% of undergraduates, and 51% of faculty and lecturer respondents. Respondents in the physical sciences and engineering reported the highest rate of academic e-book usage, and those in business and law reported the lowest rate of usage.
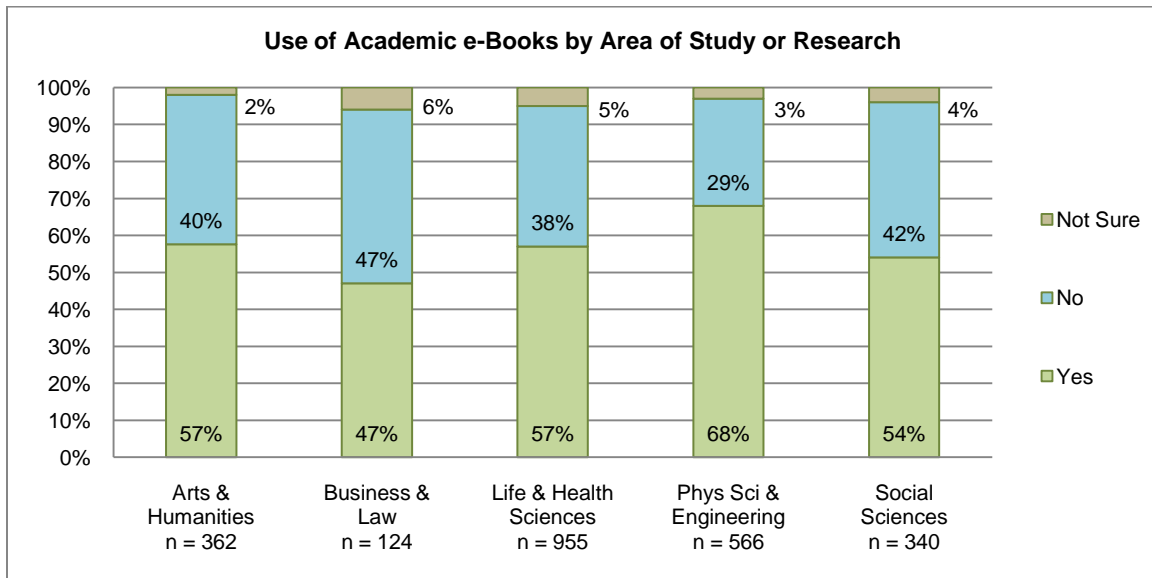
Figure 6: (Q1) Use of academic e-books cross-tabulated with area of study or research
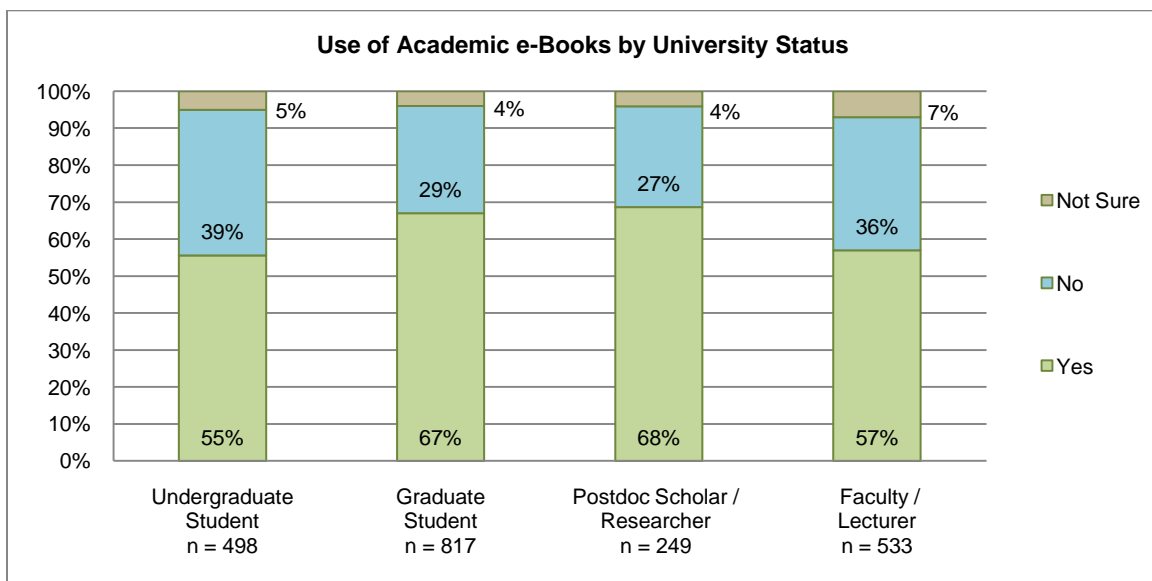
Figure 7: (Q1) Use of academic e-books cross-tabulated with university status

Preference for Print Books as Compared to e-Books

The initial survey question, designed to identify e-book users versus non-users, indicated 58% of the respondents identified themselves as using e-books in their academic work. These respondents were then asked, "When doing your academic work, do you generally prefer print books or e-books?"

Undergraduate students indicated the highest preference for print books, followed by graduate students, faculty and lecturers, and postdoctoral researchers. A possible factor influencing the preference for print books expressed by undergraduates is the challenge of reading online for long periods of time. Many undergraduate respondents commented on the difficulty they have learning, retaining, and concentrating while in front of a computer.

➤ Preference? "Paper because it keeps me focused and away from distractions that may arise from computer usage." *(Undergraduate, Life & Health Sciences)*

➤ Preference? "Paper. I have some difficulty paying careful attention to long passages on my computer." *(Undergraduate, Physical Sciences & Engineering)*

➤ Preference? "Paper, e-books divide my concentration." *(Undergraduate, Life and Health Sciences)*

➤ Preference? "If they were the same cost I would prefer the paper version because reading on the computer makes it harder for me to understand the information." *(Undergraduate, Arts & Humanities)*

A respondent's area of study or research impacts their preference for print books over e-books. Respondents who indicated their area of study to be arts and humanities reported the highest preference for print books over e-books, followed by the social sciences, physical sciences and engineering, life and health sciences, and business and law.

➤ "I answered that I prefer print books, generally. However, the better answer would be that print books are better in some situations, while e-books are better in others. Each have their role – e-books are great for assessing the book, relatively quick searches, like encyclopedias or fact checking, checking bibliography for citations, and reading selected chapters or the introduction. If I want to read the entire book, I prefer print. If I want to interact extensively with the text, I would buy the book to mark up with my annotations; if I want to read for background (not as intensively) I will check out a print book from the library if possible. All options have their place. I am in humanities/social sciences, so print is still very much a part of my research life at this point." *(Graduate Student, Humanities, Social Sciences)*

➤ "I have worked with e-books (downloadable from the library and purchased from Kindle). Let me put this as plainly as possible: they are completely unsatisfactory to work with for those of us in the humanities. They do not permit easy access to endnotes, have unsatisfactory mechanisms for annotation, and do not facilitate random access to text. We must have printed books." *(Faculty, Arts & Humanities)*
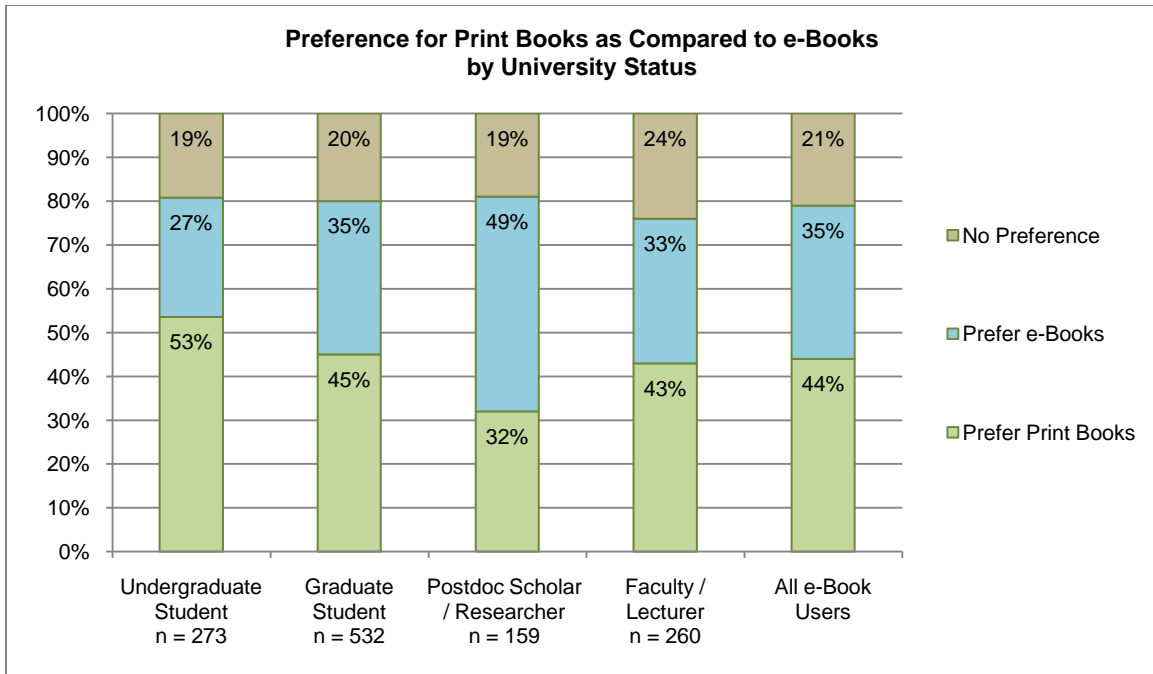
Figure 8: (Q2) Preference for print books as compared to e-books cross-tabulated with university status; asked of respondents indicating use of academic e-books before this survey (Q1)
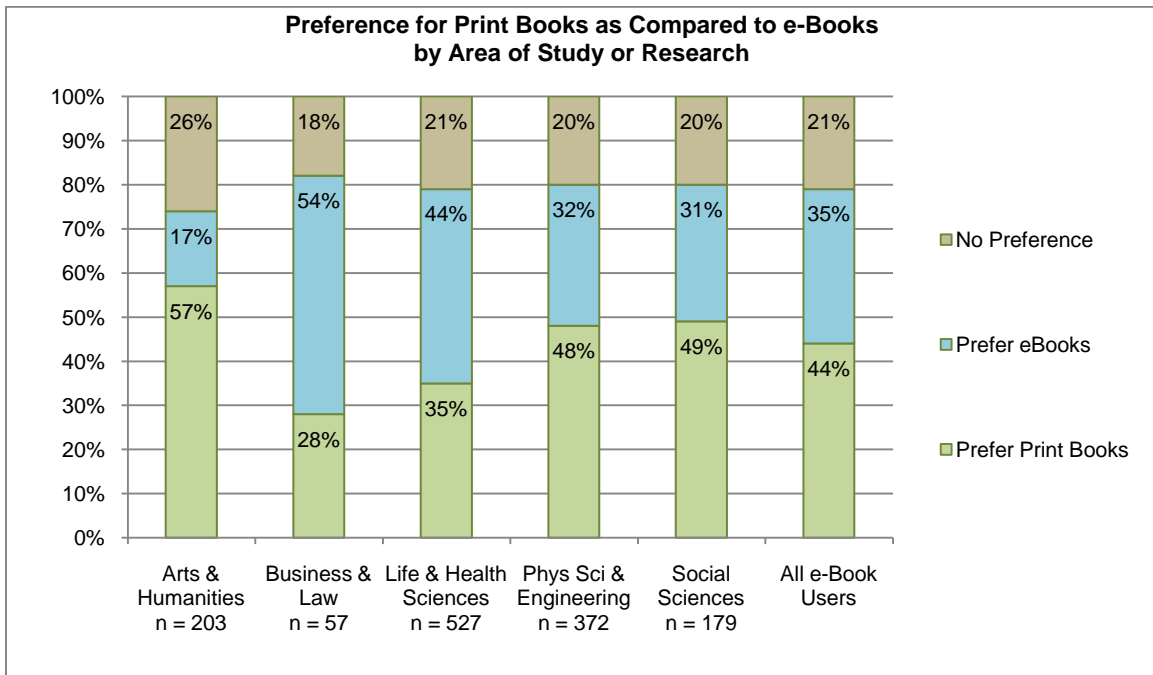
Figure 9: (Q2) Preference for print books as compared to e-books cross-tabulated with area of study or research; asked of respondents indicating use of academic e-books before this survey (Q1)

Influence of Use on Preference for Print Books as Compared to e-Books

The initial survey question, "Do you use e-books for your academic work?", was designed to identify academic e-book users versus non-users. Those respondents identifying themselves as using e-books in their academic work by answering "Yes" (58%) were then asked: "When doing your academic work, do you generally prefer print books or e-books?" The expressed preference for print books as compared to e-books for those identifying themselves as using e-books in their academic work is presented in the section above. (See figure 7 and figure 8.)

Respondents who answered "No" (38%) or "Not Sure" (4%) to the initial survey question were asked one final, open-ended question (Q13): "When doing your academic work, if a book you wanted were available in both paper and e-book format, which would you choose? Why?" Objectives of the question included 1) to determine preference, and 2) to glean insight into barriers to adoption and attitudes toward e-books by non-users. Answers to the open-ended question (Q13) were analyzed using a method that coded and categorized preference. In total, 1078 respondents answered Q13, and preference was able to be determined for 964 (89%).

Intriguingly, the percentage of both e-book users and e-book non-users who prefer e-books over print books is similar, 35% and 33% respectively. Analysis of the comments offered by e-book non-users indicates that the vast majority of them frequently utilize digital resources in their academic work, though they use e-journals, not e-books. When reflecting on their stated preference for e-books, their reasons are similar to experienced e-book users: perceived advantages in regards to availability, convenience, cost, search, and linking.

> ➤ "Prefer e-book, because I already read most research papers in e-format. They are more portable, easy to get and use less natural resources to produce." *(Graduate Student, Life & Health Sciences, e-book non-user)*

> ➤ Preference? "Assuming I could 'keep' the e-book that would be handy because I could mark-up the relevant sections and be able to search it in the future or return to it. Also, I assume that the e-book would be immediately available as opposed to going to the library to get it." *(Graduate Student, Life & Health Sciences, e-book non-user)*

> ➤ "Prefer e-books. Why? 1) Copy/paste data and references, 2) probably has hyperlinks to references, and 3) can be accessed anywhere." *(Faculty, Physical Sciences & Engineering, e-book non-user)*

Differences can be seen in preference for print, with 44% of e-book users preferring print as compared to 57% of e-book non-users. Overall, of the survey respondents who indicated a preference, 49% prefer print books over e-books. A significant number of respondents (overall 17%) indicated that they either had no preference for print books versus e-books, that their preference was usage-dependant, or that they "preferred both".

Preference for Print Books as Compared to e-Books
All Survey Respondents
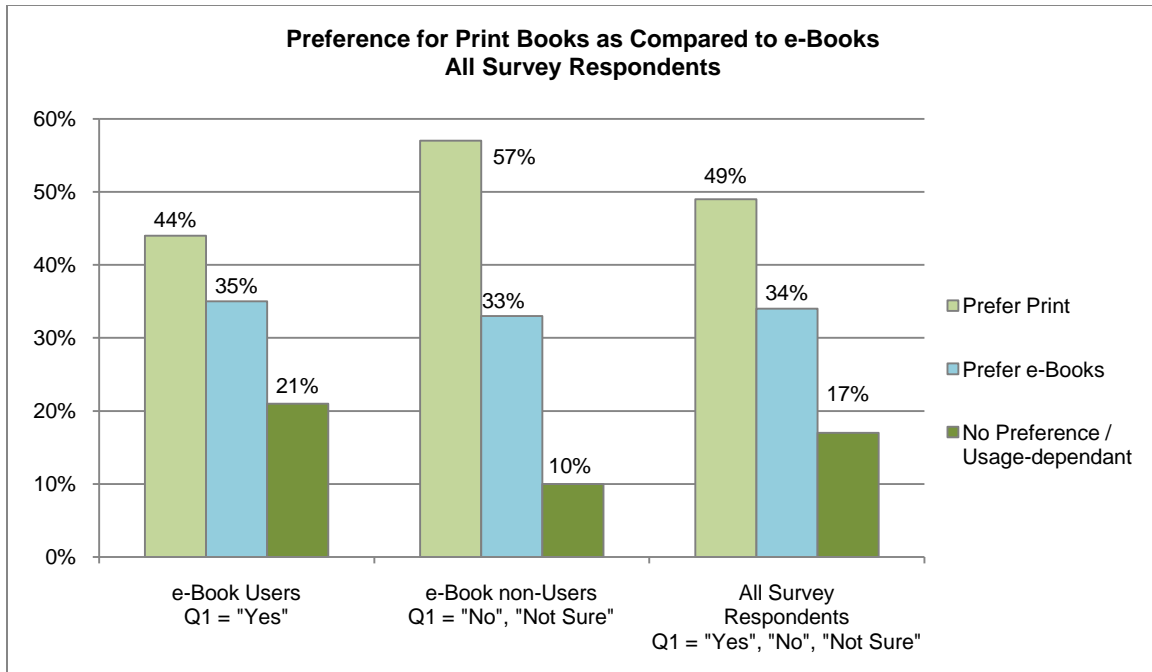
Figure 10: (Q2, Q13) Preference for print books as compared to e-books, including all survey respondents (e-book users and non-users) indicating preference; n = 2410

III.   Valued e-Book Features

Academic users approach e-books with a range of needs, expectations, and workflows. Understanding how the academic user interacts with e-books and uncovering useful e-book functionalities are essential to providing library services to the academic community. Convenience, access, and availability are perceived as primary attributes of both print books and e-books, depending on a user's preference. Respondents who prefer print books over e-books frequently mention the convenience, portability, and mobility associated with the print copy. Likewise, respondents with a preference for e-books over print books mention just as frequently the same attributes relative to e-books.

When doing your academic work, how important are the following e-book features?			
	Very / Somewhat Important	Neutral	Not Very / Not at All Important
Annotate, bookmark or make notes	68%	18%	14%
Search within the full text of items	95%	4%	1%
Download chapters or portions of the e-book to computer or laptop for later use	93%	5%	2%
Read on a mobile device (e.g., iPhone, Blackberry)	36%	24%	40%
Read on a dedicated e-book reader, (e.g., Kindle, Sony Reader)	32%	27%	41%

Figure 11: (Q4) Selected e-book features rated by importance

Annotation and Highlighting

Annotating, bookmarking, highlighting and making notes within the e-book environment is perceived as very or somewhat important to 68% of those respondents who utilize academic e-books. For those indicating a preference for print books, dissatisfaction with e-book annotation tools is frequently mentioned as a stumbling block to e-book adoption.

➢ "Prefer paper format, which allows me to write on the pages (only in my books, of course; not the library copies!) and use a highliter pen to make notes, etc." *(Graduate Student, Arts & Humanities)*

➢ "Paper formats are preferable because it is easier to memorize things that are in my hand and that I am physically underlining, highlighting, etc. However, making legible, organized notes is easier with an electronic version of the book or chapter, e.g., using FoxIt Reader to make side notes on a PDF." *(Undergraduate, Social Sciences)*

➢ Preference? "Paper. It is easy to annotate with notes, I can organize my library by theme and quickly pick out the relevant text." *(Faculty, Arts & Humanities)*

➢ "I prefer electronic, as long as I am able to annotate and comment the copy." *(Graduate Student, Social Sciences)*

Searching within e-Books

The ability to search within and across e-book content is identified as a primary advantage of e-books, regardless of whether a respondent prefers print books or e-books. Essentially, the power and convenience associated with search within the e-book environment is highly valued, reflected by an overwhelming 95% of respondents who identify themselves as having used e-books rating the ability to search within the full text of items to be very or somewhat important.

➢ "Being able to search the book for keywords is fantastic. It has changed how I read. Especially when looking for secondary sources that lie further outside my field, but might be appropriate." (Graduate Student, Arts & Humanities)

➢ "I think e-books reduce the amount of search needed by the students or researchers. A benefit not available via hard copies." (Graduate Student, Business or Law)

➢ "In my case I think I haven't given the time to learn to use e-books well. I LOVE print books, but e-books are really helpful for getting down excerpts and finding specific information without leafing through the entire book." (Undergraduate, Social Sciences)

➢ Preference? "Paper, it's easier on the eyes and easy to carry and flip the pages. For the e-book the advantage is that you search the content." (Graduate, Life & Health Sciences)

Downloading Content

The ability to download chapters or portions of the e-book to a device for later use is a highly valued feature, with 93% of respondents rating it as very or somewhat important. However, respondents expressed frustration with those e-books that restricted downloading or printing to chapters or other defined sections.

> ➢ "It is quite critical to have e-books that are in PDF format and that are fully downloadable. Searches, indexing, etc. can be easily done once you have fully downloaded the book in PDF format." *(Faculty, Physical Sciences & Engineering)*

> ➢ "I really wish I could print out more sections of e-books. It's really annoying and tedious to have to go page by page. And you can just close the browser / clear cache to get past the print limits, so why not just make it easier?" *(Graduate Student, Social Sciences)*

> ➢ "One of the e-books I used had chapters divided into sections, which you could only print out separately. That was a huge hassle." *(Postdoctoral Researcher, Life & Health Science)*

Mobile Devices

The dedicated e-book reader, such as the Kindle, and mobile devices, such as the iPhone, offer significant advantage over the personal computer as well as the print book for a noteworthy number of respondents. The ability to read an e-book on a dedicated e-book reader was ranked as very or somewhat important by 32% of respondents; 36% rank the ability to read on a mobile device as very or somewhat important. The use of mobile platforms by those conducting academic research is a practice worth noting as there is a high probability that the trend toward their use will continue an upward movement, particularly with the increasing popularity of the iPad and tablet PCs.

> ➢ "Many e-books are restricted to be read only within a web browser - this is not convenient." *(Undergraduate, Physical Sciences & Engineering)*

> ➢ "It would be nice if they were available in EPUB format (Kindle) rather than in PDF format (difficult to read on the Kindle)." *(Postdoctoral Researcher, Physical Sciences & Engineering)*

> ➢ "Need to be able to read, copy/paste, search, and highlight in Windows and Android devices." *(Graduate Student, Business or Law)*

IV. The Relationship between e-Books and Corresponding Print Copies

Of interest to the UC Library community is how student and faculty adoption of academic e-books impacts local and consortial purchasing decisions. In an effort to understand how users interact with e-books – including when and why they pursue a corresponding paper copy of an e-book title – respondents were asked about their borrowing and purchasing behavior. The practice of borrowing or purchasing a print copy of an e-book is not uncommon, and variations in these activities are reflected in the user's area of study or research. Several respondents offered descriptions of the nuanced relationship between digital

and corresponding print copies of books used in their academic workflow, including utilizing digital copies of a title for search and discovery tasks, and moving to corresponding paper copies for reading, note taking, text comparison, and deep study.

Borrowing Practices of Academic e-Book Users

Respondents in the arts and humanities are most likely to borrow a print copy from the library after locating an e-book of interest, with 75% reporting they do this often or sometimes; followed by those in the social sciences (60%), physical sciences and engineering (60%), business and law (53%), and finally, health sciences (40%).

Several respondents described the primary value of e-books as a way to identify whether a publication will be useful; after a relevant text has been located, they prefer to interact with it in paper format. The difficulty of reading online for long periods, as well as issues pertaining to concentration and comprehension, are also mentioned as reasons for borrowing or purchasing print copies.

> ➤ "I use e-books primarily to determine if the content is going to be helpful to me – table of contents, index, or perhaps skimming a chapter or two. I dislike reading on a screen, and so if I conclude that I want to read the book, I borrow it through our library or ILL."
> *(Faculty, Arts & Humanities)*

> ➤ "E-books are a convenience to see if I need that book. Once I have figured out that I do indeed need the book, I either go purchase it or borrow it from the library."
> *(Undergraduate, Life & Health Sciences)*

> ➤ "I find that e-books are most useful when I need to find a bit of text quickly for a citation or to check whether or not a book will be useful to my work. E-books save me a trip to the library in these cases. But, I rarely read books online. The interface is clunky, my Internet is slow, and I am a better reader when I have the print copy in front of me. For me, e-books are another research tool but not a replacement for the print copy." *(Graduate Student, Arts & Humanities)*

For those respondents indicating a preference for e-books, several expressed value in eliminating the need to visit and borrow a print copy from the library. For these individuals, e-books are perceived as superior to print books because of their perceived convenience, availability, and portability.

> ➤ "Using an e-book is easier [compared to print] if I could access it on my computer - this way I wouldn't have to physically leave my lab and go to the library to get it."
> *(Postdoctoral Researcher, Life & Health Sciences)*

> ➤ Preference? "An e-book, if it meant that I could have it without going to the library, or having to recall it from circulation." *(Postdoctoral Researcher, Physical Sciences)*

Respondents who use e-books in their academic work were asked not only to state how often they borrow a corresponding print copy, but also to rate the importance of the "availability of a corresponding print copy for borrowing from a UC library." Somewhat surprisingly, undergraduate students indicated the strongest desire for a corresponding print copy, with 66% rating it as very or somewhat important. Faculty and lecturers assign the least importance to a corresponding print copy.

Less surprising than the influence of university status on the desire for a corresponding print copy is the role of the respondent's area of study or research. Those in the arts and humanities, as well as the social sciences, assign the highest importance to the availability of a corresponding print copy for borrowing from a UC library.
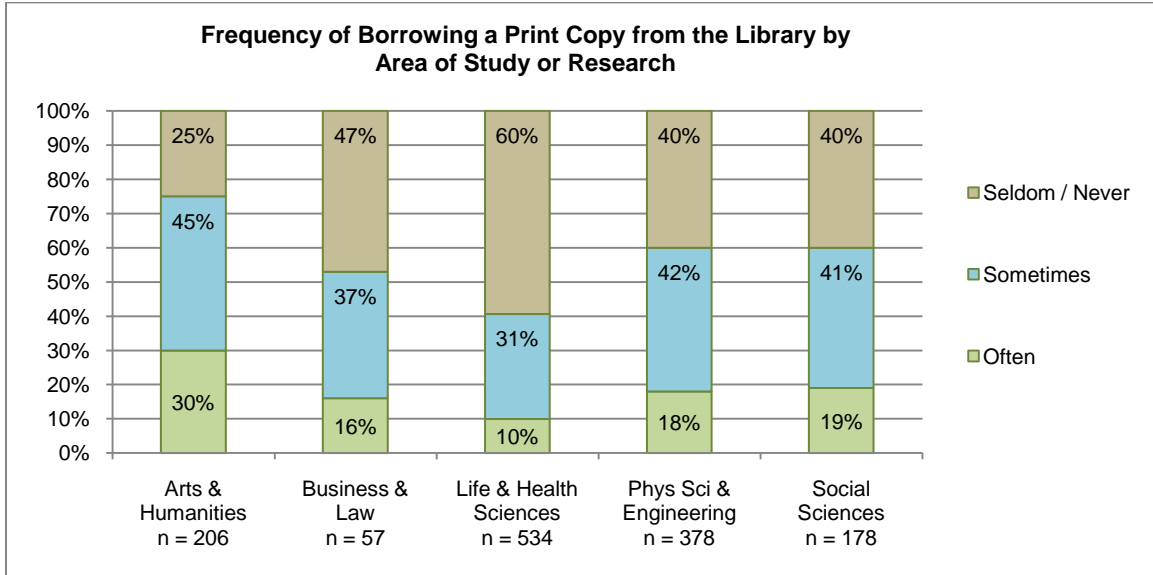
Figure 12: (Q3) "What do you do after you have found an e-book you are interested in?"
"Borrow a print copy from the library" cross-tabulated with area of study or research
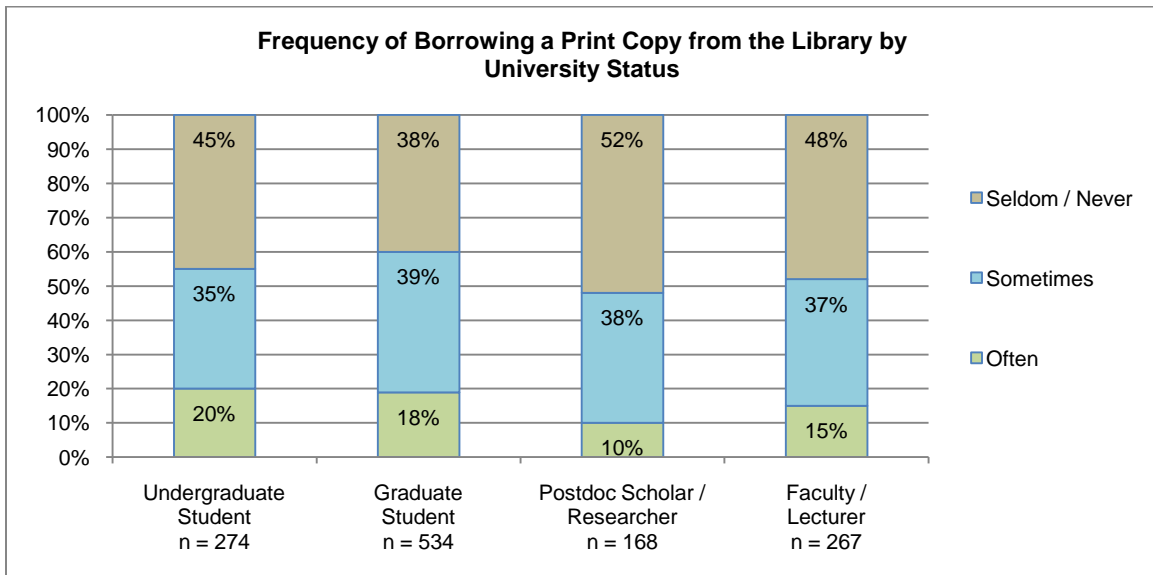
Figure 13: (Q3) "What do you do after you have found an e-book you are interested in?"
"Borrow a print copy from the library" cross-tabulated with university status

Importance of Availability of a Print Copy for Borrowing from UC Library by Area of Study or Research

Area	Very / Somewhat Important	Neutral	Not Very / Not at All Important
Art & Humanities (n = 205)	75%	16%	9%
Business / Law (n = 58)	53%	24%	23%
Life & Health Sciences (n = 538)	46%	26%	28%
Phys Sci & Engineering (n = 383)	60%	20%	20%
Social Sciences (n = 179)	66%	18%	16%
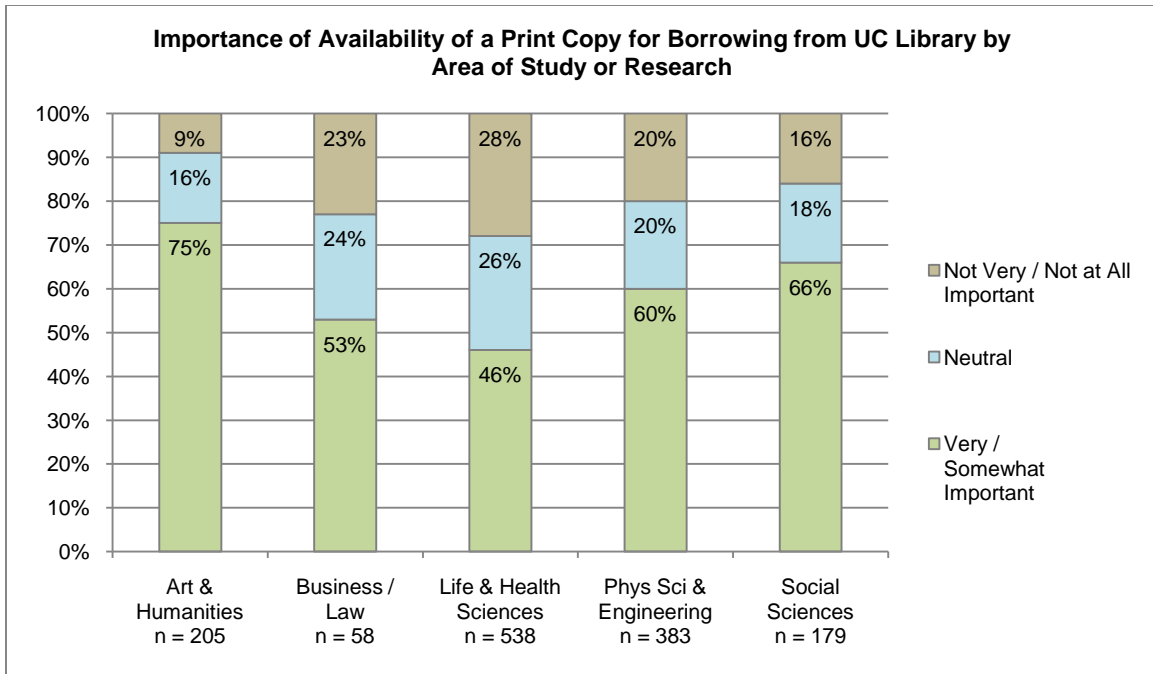
Figure 14: (Q4) Importance of availability of a print copy for borrowing from a UC library cross-tabulated with area of study or research

Importance of Availability of a Print Copy for Borrowing from UC Library by University Status

Status	Very / Somewhat Important	Neutral	Not Very / Not at All Important
Undergraduate Student (n = 274)	66%	20%	14%
Graduate Student (n = 536)	58%	21%	21%
Postdoc Scholar / Researcher (n = 169)	56%	21%	23%
Faculty / Lecturer (n = 267)	51%	24%	25%

Figure 15: (Q4) Importance of availability of a print copy for borrowing from a UC library cross-tabulated with university status

Print Purchasing Practices of Academic e-Book Users

Purchasing a print copy of an e-book is reported as occurring less often than borrowing a print copy. Respondents in the arts and humanities are the most likely to purchase a print copy often or sometimes (38%), and those in the health sciences are the least likely (22%). Faculty are the most likely to purchase a print copy often or sometimes (36%), and undergraduates are the least likely (23%).

> ➢ "Electronic availability of books enables me to complete my literature surveys more rapidly and to access materials in a timely fashion. Several times I have found that access to the e-book led me to purchase my own hard copy, knowing that the text contained information important to my research." *(Faculty, Music)*

> ➢ "My primary use of this resource is to find relevant chapter sections via full text search of the full bookshelf, and then read the content online. In cases where this identifies a useful book, I will often buy a print copy for personal use." *(Postdoctoral Researcher, Life & Health Sciences)*

Several respondents expressed the opinion that transferring the cost of textbooks from the student to the institution through the availability of digital textbooks is a positive development. Others who perceived that the cost of e-books would likely be absorbed by the user expressed nuance regarding their preferences.

> ➢ Preference? "It depends on the format of the e-book and how long I would be allowed to keep the file. If the e-file goes away, I would want the price to be substantially lowered compared to the book version, which is usually re-sellable." *(Graduate Student, Humanities)*

> ➢ Preference? "I might choose paper because I can sell back a hardcopy at a later date, whereas you can't really do much with an e-book, even if it was cheaper to begin with." *(Undergraduate Student, Social Sciences)*
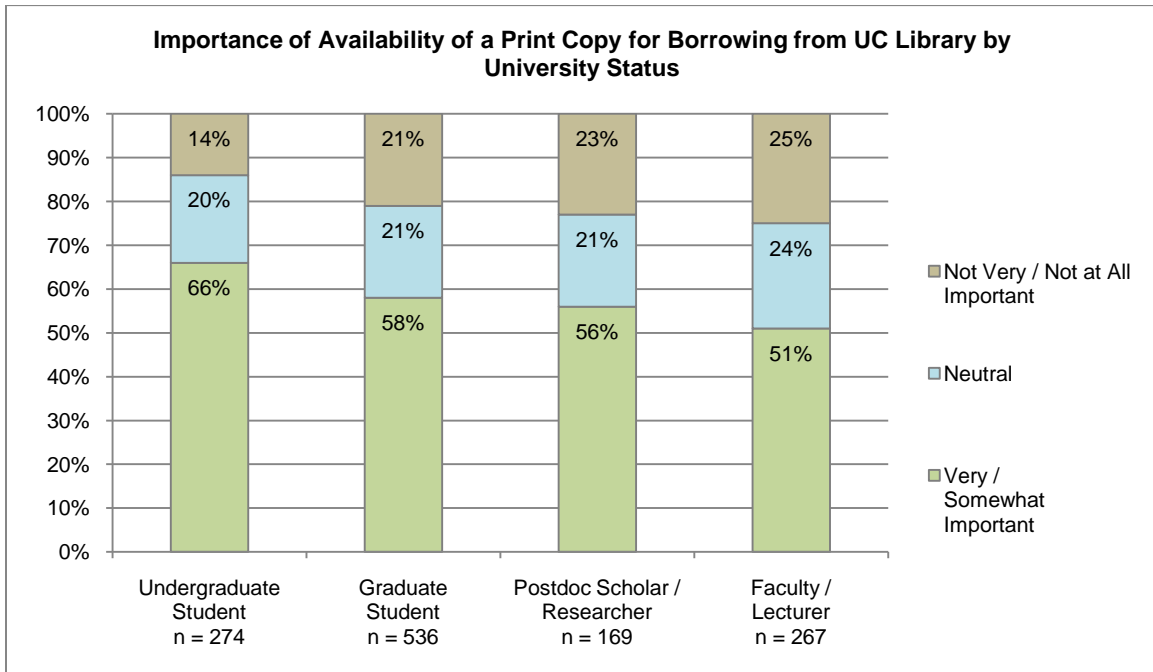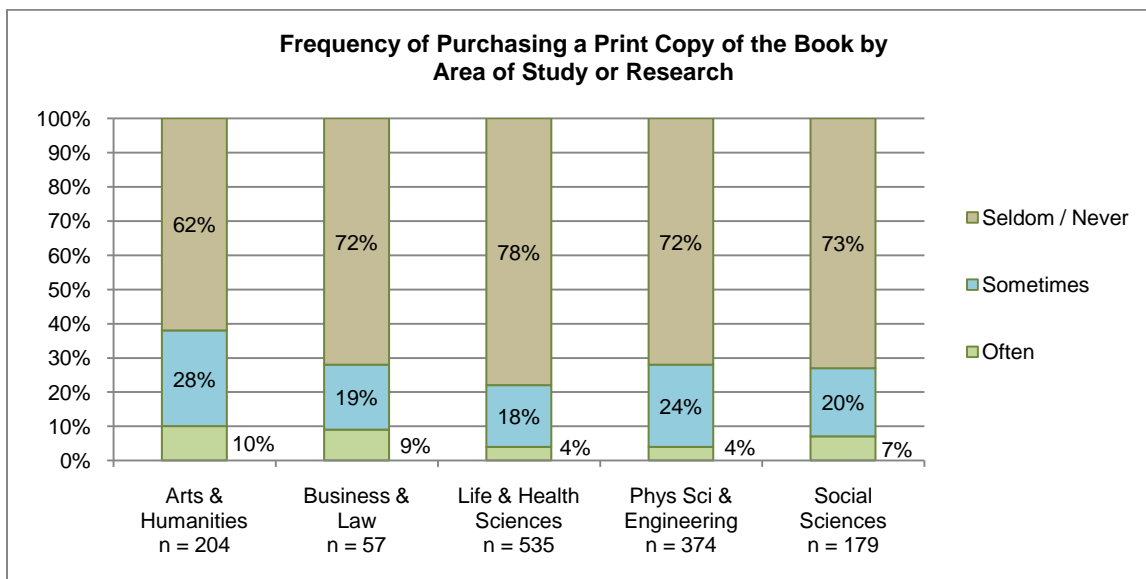

Figure 16: (Q3) "What do you do after you have found an e-book you are interested in?"
"Purchase a print copy of the book" cross-tabulated with area of study or research

Frequency of Purchasing a Print Copy of the Book by University Status

	Often	Sometimes	Seldom / Never
Undergraduate Student (n = 273)	8%	15%	77%
Graduate Student (n = 532)	4%	22%	74%
Postdoc Scholar / Researcher (n = 166)	3%	22%	75%
Faculty / Lecturer (n = 269)	8%	28%	64%
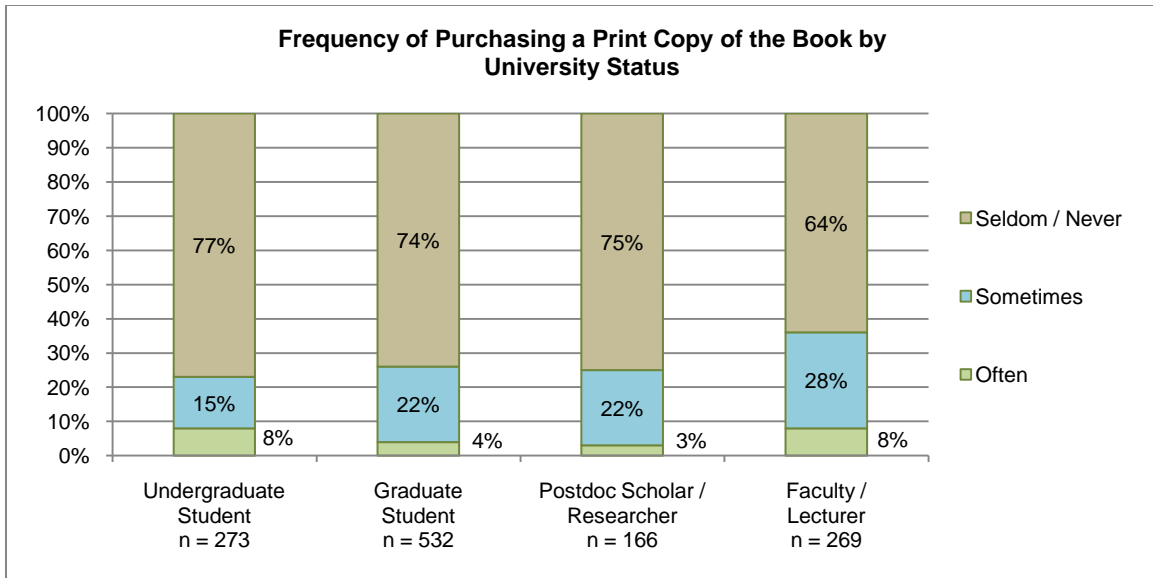
Figure 17: (Q3) "What do you do after you have found an e-book you are interested in?" "Purchase a print copy of the book" cross-tabulated with university status

"Print-on-Demand" and Academic e-Book Users

In an effort to ascertain the importance of the option to purchase a print-on-demand copy of academic e-books, respondents were asked to rate the importance of the feature. Given that the introduction of print-on-demand is fairly new in both the academic and general e-book market, the somewhat significant level of importance assigned to this feature is surprising. Assuming that a fair number of respondents understood the concept of print-on-demand, which was not defined in the survey, then utilization of this feature should be on an upward trend in the near future.

Importance of Ability to Purchase a "Print-on-Demand" Print Copy by Area of Study or Research

	Very / Somewhat Important	Neutral	Not Very / Not at All Important
Art & Humanities (n = 203)	41%	31%	28%
Business / Law (n = 58)	55%	24%	21%
Life & Health Sciences (n = 542)	32%	30%	38%
Phys Sci & Engineering (n = 382)	37%	30%	33%
Social Sciences (n = 180)	41%	29%	31%
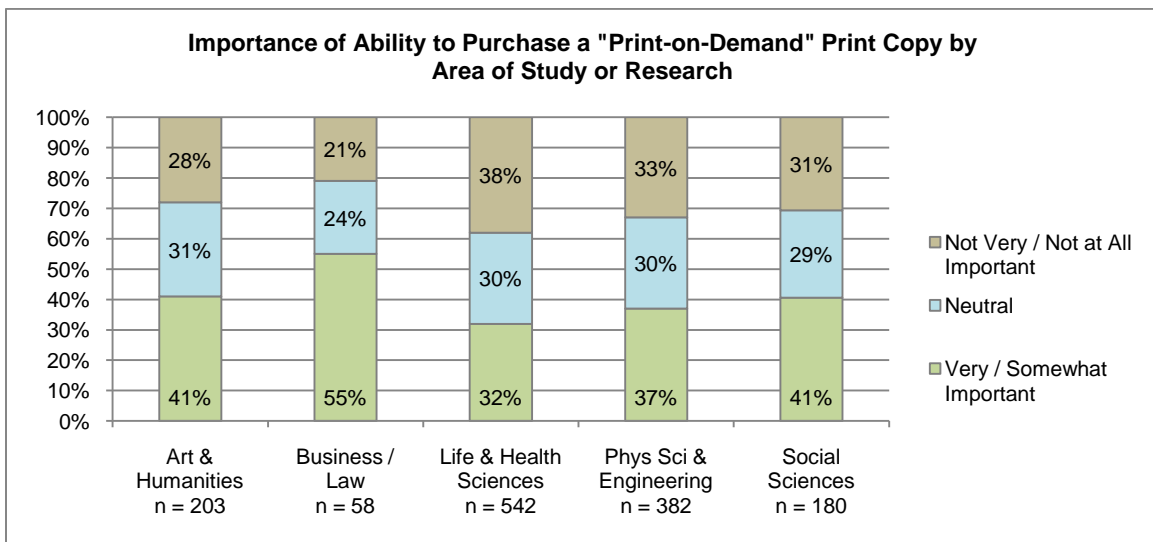
Figure 18: (Q4) Importance of ability to purchase a "print-on-demand" print copy cross-tabulated with area of study or research
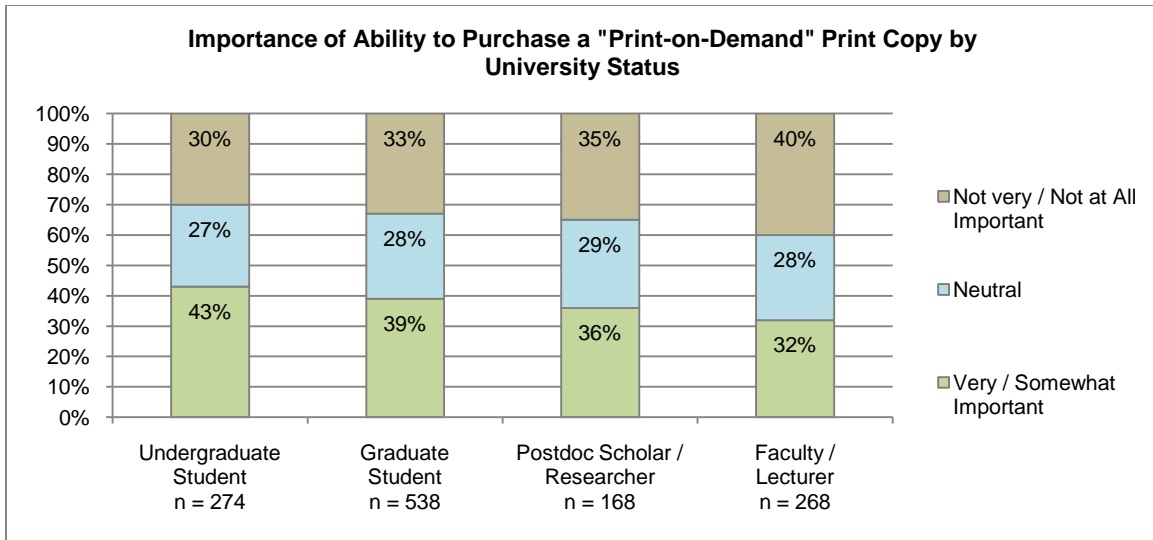
Figure 19: (Q4) Importance of ability to purchase a "print-on-demand" print copy cross-tabulated with university status

V.   The Springer e-Book User Experience

The initial survey question, designed to identify e-book users versus non-users, received 2569 responses. Those individuals who indicated having used e-books generally in their academic work (58%) were led through three questions before being asked whether they had used Springer e-books before this survey. Those respondents indicating Springer e-book usage (39%; n = 584) were asked a series of questions pertaining specifically to Springer e-books. The objectives of the Springer-specific survey questions were to determine:

  ➢ How users of Springer e-books discover their availability.
  ➢ Effect of library promotional material on awareness of Springer e-book availability.
  ➢ Satisfaction level with Springer content and functionality, including the MyCopy service.
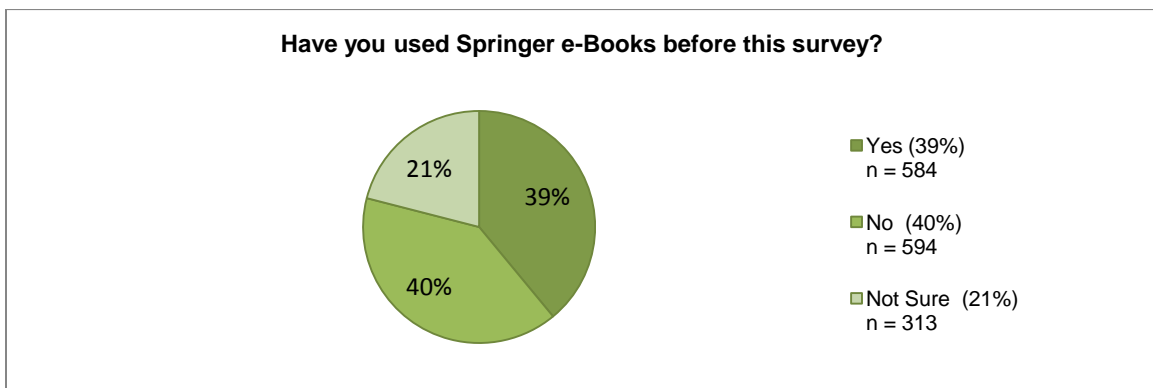
Figure 20: (Q5) Use of Springer e-books: users and non-users; n = 1491; asked of respondents indicating use of academic e-books before this survey (Q1)

Springer e-book usage is impacted by both university status and area of study or research. Postdoctoral researchers were most likely to have used Springer e-books in their academic work, with 51% reporting usage, followed by 49% of graduate students, 32% of faculty, and only 20% of undergraduates. A respondent's area of study or research had significant impact on whether they used Springer e-books, with those in the physical sciences and engineering most likely to report usage (62%), and those in the arts and humanities the least likely to report usage (17%). The usage pattern by subject matter reported by respondents corresponds closely to the number of titles currently available in the Springer e-book collection category groupings.[3]

Use of Springer e-Books by Area of Study or Research

	Arts & Humanities n = 208	Business & Law n = 54	Life & Health Sciences n = 545	Phys Sci & Engineering n = 387	Social Sciences n = 183
Not Sure	20%	19%	26%	11%	26%
No	63%	65%	35%	27%	43%
Yes	17%	18%	39%	62%	32%
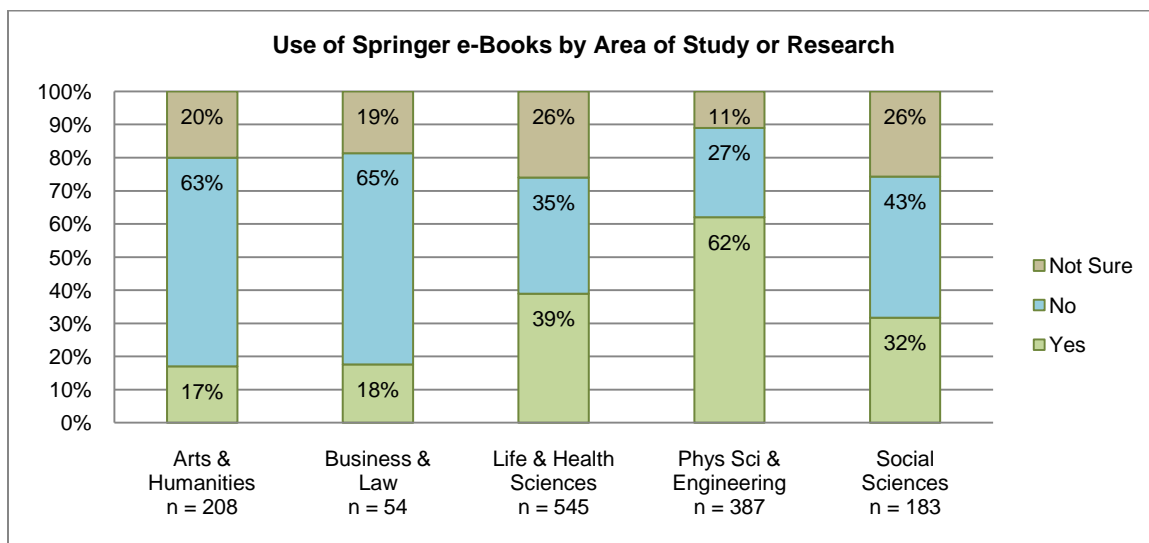
Figure 21: (Q5) Use of Springer e-books cross-tabulated with area of study or research

Use of Springer e-Books by University Status

	Undergraduate Student n = 276	Graduate Student n = 544	Postdoc Scholar / Researcher n = 170	Faculty / Lecturer n = 272
Not Sure	19%	20%	21%	24%
No	61%	31%	28%	44%
Yes	20%	49%	51%	32%
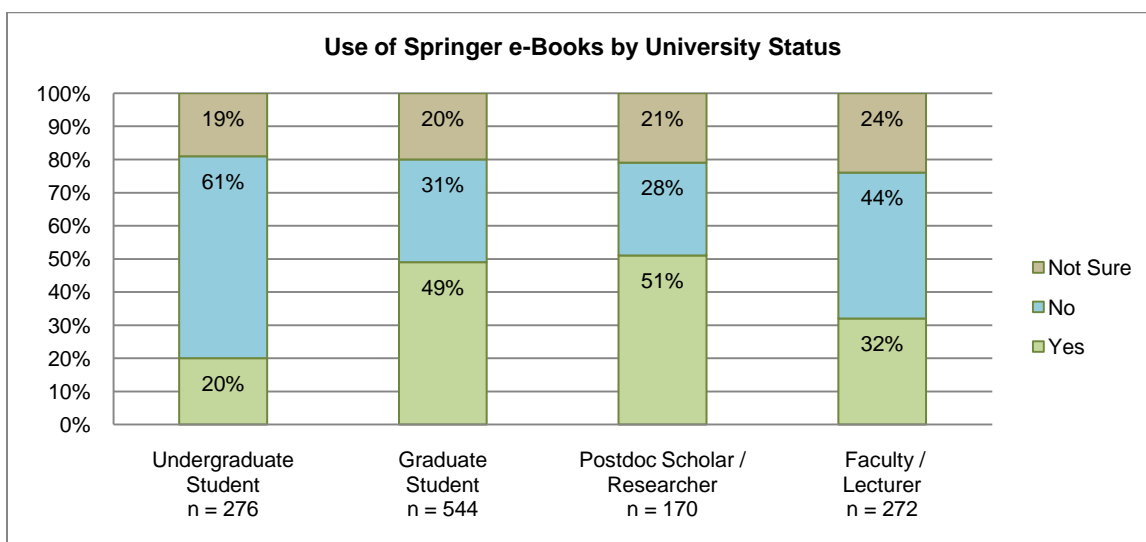
Figure 22: (Q5) Use of Springer e-books cross-tabulated with university status

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[3] See Appendix 2 for subject breakdown of Springer e-book titles included in pilot project.

How Users Discover Springer and Other Academic e-Books

Information about the Springer e-Book Pilot project was released to both UC library staff and the public in February 2009. UC librarians were encouraged to publicize the availability of the Springer titles to their users, and the project roll-out team provided campus libraries with promotional material for distribution, including a poster, a general staff release document, and a public release document.

In an effort to determine the efficacy of library promotional materials on students and faculty relative to their awareness of Springer e-books, survey respondents identifying themselves as Springer e-book users (n=584) were asked how they discovered they had access to the titles. Respondents who indicated they had not used Springer e-books before the survey (n=907) were asked similar questions pertaining to general academic e-book discovery. A comparison of the two sets of respondents indicate that both sets were most likely to discover academic e-books through 1) the library catalog, 2) a general Internet search engine, or 3) the library website.
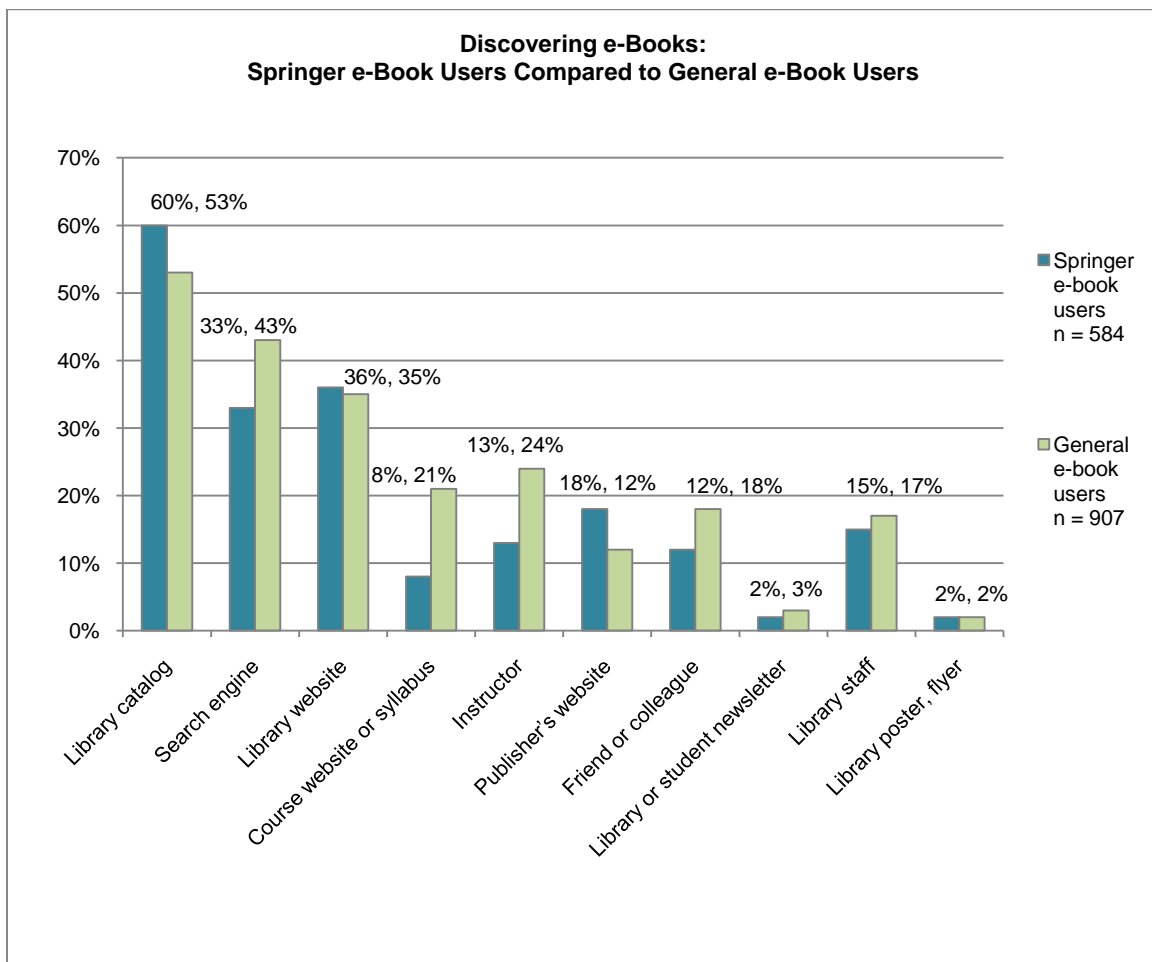
Figure 23: (Q6, Q10) Methods for discovering access to e-books: Springer e-book users compared to general (non-Springer) academic e-book users

How did you discover that you had access to e-books for your academic work? (select all that apply)						
	Springer e-Book Users (n = 584)			General Academic e-Book Users (n = 907)		
Method of discovery…	Count	%	Rank	Count	%	Rank
Library catalog	350	60%	1	481	53%	1
General Internet search engine (e.g., Google, Yahoo)	194	33%	3	388	43%	2
Course website or syllabus	49	8%	8	190	21%	5
An instructor	75	13%	6	218	24%	4
Library website	208	36%	2	313	35%	3
Library staff (in person, email or chat)	85	15%	5	153	17%	7
Library or student newsletter	12	2%	10	23	3%	9
Library poster, flyer or bookmark	14	2%	9	16	2%	10
Publisher's website	108	18%	4	113	12%	8
Friend or colleague	70	12%	7	161	18%	6
I don't remember	14	2%	n/a	57	6%	n/a
Other (please specify)	21	4%	n/a	41	5%	n/a

Figure 24: (Q6, Q10) Methods for discovering access to e-books: Springer e-book users compared to general (non-Springer) academic e-book users, including ranking

The library catalog is essential in the discovery of e-books, with 60% of Springer e-book users and 53% of general academic e-book users identifying it as a tool for e-book discovery. The library website was identified as a discovery tool by 36% of Springer e-book users and 35% of general academic e-book users.

For both sets of users, the library catalog and the library website are vital e-book discovery tools; resources invested in maintaining both are well spent relative to e-book discovery. The third critical e-book discovery tool – Internet search engines such as Google and Yahoo – were identified as a point of access by 33% of Springer e-book users and 43% of general academic e-book users. Efforts to ensure the inclusion of academic e-books in aggregations such as Google Scholar are vital.

➢ "It is extremely useful when the e-books are free and complete through the campus library website." *(Undergraduate, Life & Health Sciences)*

➢ "Make them easier to find on the library website! I just found one by complete chance." *(Faculty, Life & Health Sciences)*

➢ "Google Books is my usual gateway to e-books though. Not the library." *(Undergraduate, Arts & Humanities)*

➢ "It would be better if all the e-books available in the library could be searched within one search engine, e.g. Google Scholar." *(Undergraduate, Social Sciences)*

Instructors and course websites or syllabi are an important source of information about the availability of e-books, though differences between Springer e-book users and general academic e-book users indicate that the availability of the Springer e-book collection is not necessarily promoted by instructors. For

Springer e-book users, 13% indicated learning of their availability through an instructor, and only 8% through a course website or syllabus. For general academic e-book users, 24% indicated learning of their availability through an instructor, and 21% through a course website or syllabus.

Library staff are an important source of information about e-books, with 15% of Springer e-book users and 17% of general academic e-book users indicating having discovered access to e-books via interactions such as in-person conversation, email or chat. However, the impact of library promotional material such as library posters, flyers and newsletters are significantly less effective, with no more than 3% of both Springer and general academic e-book users indicating they had discovered access to e-books via a library poster, flyer or newsletter. Nonetheless, several respondents commented that they would like more publicity about the availability of e-books.

> ➢ "There should be more publicity that e-books are available from UC so that we don't have to buy them out of our personal funds. Methods manuals would be very useful as an e-book that can be downloaded and saved." *(Faculty, Life & Health Sciences)*

> ➢ "I would have liked to have been notified sooner that we had this access. Maybe I didn't get the email since I'm a postdoc." *(Postdoctoral Researcher, Life & Health Sciences)*

> ➢ "Although I enjoy and appreciate e-books, I find that information regarding them is difficult to find. I only happened to find out that we had access to Springer because of a chance conversation with a very helpful librarian." *(Faculty, Social Sciences)*

User Satisfaction with Springer e-Book Content and Functionality

Survey respondents who use Springer e-books report an impressively high level of overall satisfaction with the service. They indicate particularly high levels of satisfaction with the quality of Springer content and with subject scope, i.e., the breadth and depth of content. In comparison to general (non-Springer) academic e-book users, Springer e-book users report higher levels of satisfaction in the areas of quality of content, subject scope, ease of use, and overall satisfaction.

> ➢ "These Springer e-books have been my lifeline for my independent research class. I like that I can access them without any hassles. " *(Undergraduate, Physical Sciences & Engineering)*

> ➢ "I wish I had known the Springer e-books were readily available – I used them during a trial period, but did not know that they were available in an ongoing way. It would be excellent to have even more books available this way. I request quite a few books from ILL and the time lag is a problem." *(Faculty, Social Sciences)*

> ➢ "I strongly prefer using printed books (for aesthetic, practical, archival/historical, and political reasons), but for highly specialized topics in rapidly-changing fields (e.g. Springer's book on RNA helicases), the e-book is an acceptable alternative." *(Graduate Student, Life & Health Sciences)*
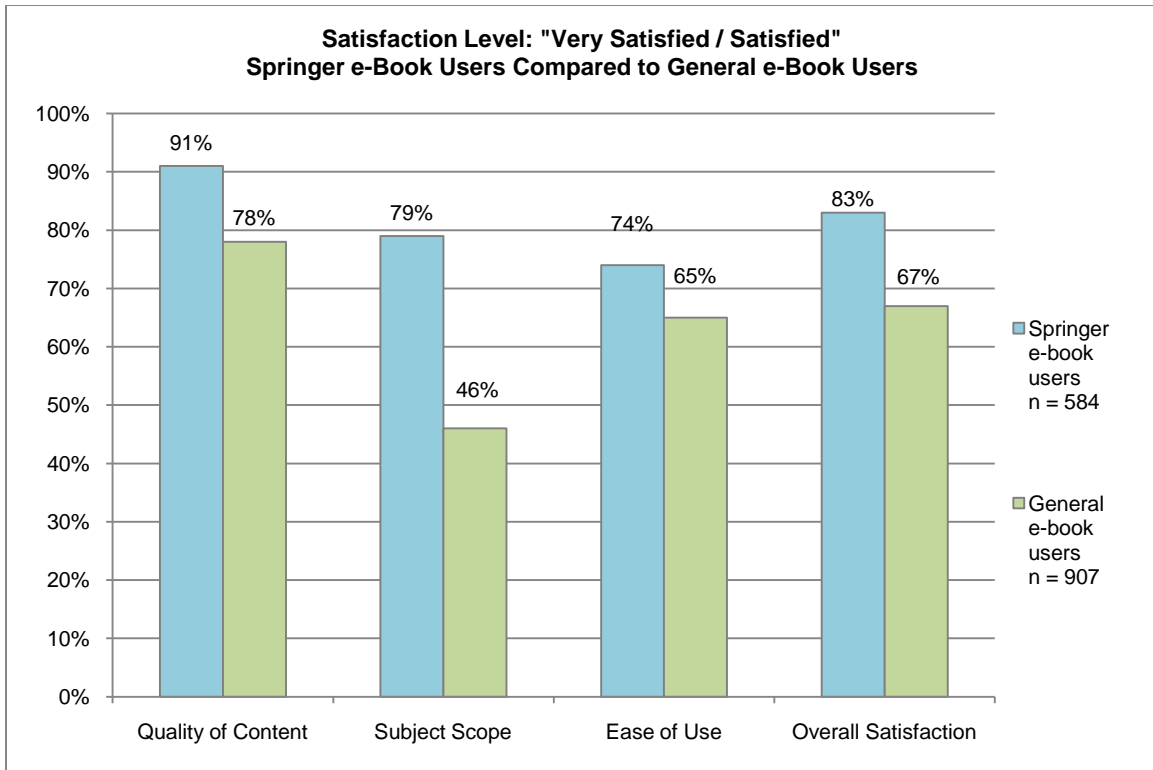
Figure 25: (Q7, Q11) Satisfaction level with e-book content and features: users indicating "Very Satisfied / Satisfied"; Springer e-book users compared to general (non-Springer) academic e-books users

How satisfied are you with the following aspects of Springer e-books?			
	Very satisfied / Satisfied	Neutral	Dissatisfied / Very dissatisfied
Ability to find in search engines, catalogs, etc.	68%	24%	7%
Access at the chapter-by-chapter level	73%	20%	6%
PDF format	86%	11%	3%
Ability to search within the text	80%	16%	5%
Ability to browse lists of books by subject	62%	29%	8%

Figure 26: (Q7) Satisfaction level with Springer e-book content and functionalities; asked of respondents indicating use of Springer e-books before this survey (Q5)

Although the satisfaction level with most aspects of Springer e-books is robust, e.g., the ability to search within the text, respondents report frustration with issues pertaining to downloading on the chapter-by-chapter (versus complete volume) level and the quality of some PDFs.

➢ "I would like the possibility of downloading a complete book, without chapter division, in order to put it in my electronic shelf (iBooks in iPhone or iPad). Perhaps a utility from Springer to organize the books that you have in your PC or in the "Cloud", so that you can read them on any device or computer just using a user name and password." *(Graduate Student, Life & Health Sciences)*

> "One thing I've found moderately annoying about Springer e-books is that the quality of illustrations (esp. photographs) in the online PDFs and print-on-demand copies is lower than in the original printing or in PDFs obtained from authors or editors. That is really the only drawback to the e-book format." *(Graduate Student, Life & Health Sciences)*

> "It's just sometimes I cannot download or view all the content of the e-books even when I am directed to the corresponding Springer's webpage." *(Graduate Student, Engineering)*

User Satisfaction with the Springer MyCopy Service

The Springer "MyCopy" service allows users to order their own personal edition of Springer e-books for $24.95. Print books purchased through the MyCopy service are soft cover and printed in black and white (no color). Of the 584 respondents who identified themselves as having used Springer e-books, 48 indicated using the Springer MyCopy service.

Did you order any personal print copies through the Springer "MyCopy" Service?

2%   8%

90%

■ Yes (8%) n = 48

■ No (90%) n = 527

□ Not Sure (2%) n = 9
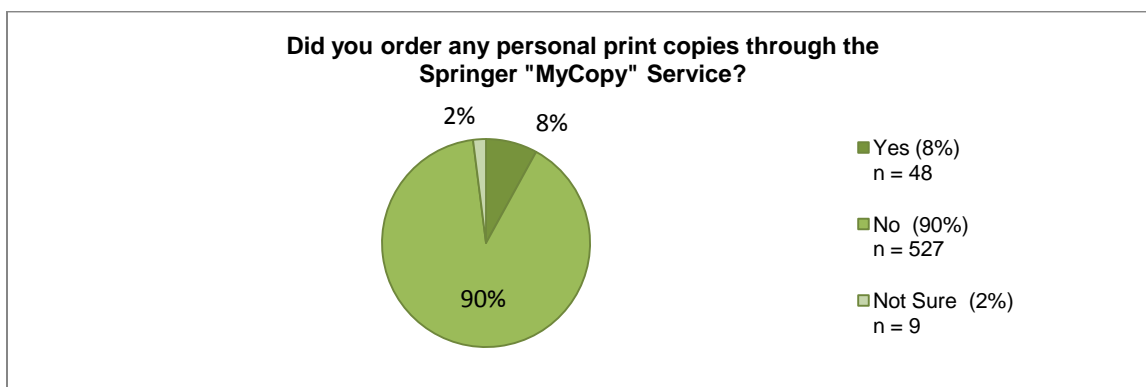
Figure 27: (Q8) Use of Springer MyCopy Service: users and non-users; asked of respondents indicating use of Springer e-books before this survey (Q5)

Users of the Springer MyCopy service report a high level of satisfaction with the delivery time, cost and quality associated with MyCopy volumes. Concerns about the quality of the MyCopy text and images, expressed by both users and potential users of the service, indicate a barrier to service adoption. Nonetheless, given the importance assigned to the ability to purchase a "print-on-demand" copy generally, we can expect an uptake in the MyCopy service in the future. (See figure 16 and figure 17)

> "E-books are nice, but I prefer hardcopy books. Often, I use e-books to decide which ones to purchase and have bought several Springer books through MyCopy – a great resource!" *(Graduate Student, Life & Health Sciences)*

> "One request is to improve the printing quality of some hard copies from Springer. Some of them are obviously printed using scanned images, despite the fact that vector PDF files are available as an e-book. It is really disappointing to get copies when print quality is much worse than printouts of the e-books by lower-end laser printers." *(Postdoctoral Researcher, Physical Sciences & Engineering)*

➢ "Springer e-books are much better than many of the other e-books out there in that you can actually download PDFs or order your own copy for relatively low cost." (*Faculty, Social Sciences*)

➢ "I have not ordered MyCopy because I'm unsure of the quality of the print, and whether or not color images will also be in color." *(Graduate Student, Life & Health Sciences)*

How satisfied were you with the Springer "MyCopy" service?			
	Very satisfied / Satisfied	Neutral	Dissatisfied / Very dissatisfied
Delivery time	81%	15%	4%
Cost of MyCopy volume	85%	9%	6%
Quality of MyCopy volume	85%	11%	4%
Overall satisfaction	87%	9%	4%

Figure 28: (Q9) Satisfaction level with the Springer MyCopy service; asked of respondents indicating use of the Springer MyCopy service before this survey (Q8)

VI.   Conclusion

Academic users approach e-books with a range of needs, expectations, and workflows. Understanding how users interact with e-books and uncovering useful e-book functionalities are essential to providing library services to the academic community and help inform future purchasing decisions. Respondents to this survey offer a valuable window into the nuances of utilizing e-books for academic work. The consequences of the transition from a print- to a digital-based study environment are not always predictable – witness the undergraduate who prefers print books for reading and deep study because the computer presents too many distractions or the faculty member who uses a digital copy of a title for search and discovery tasks, then moves to a corresponding paper copy for note taking and text comparison.

Adoption of academic e-books and the movement away from print books remains a complex dynamic that is significantly influenced by one's area of study or research. Comments by survey respondents who both use and prefer academic e-books over print books remind us that the transition is far from easy. Users need e-books that present usable interfaces, quality content, high resolution illustrations, access at the chapter and book level, and importantly, that are easily discoverable through both the library catalog and commercial search engines. As academic e-books become more broadly available and sophisticated in presentation and functionality, users' expectations and acceptance of them will necessarily evolve. It is essential that those providing library and information services to the academic community continue to monitor and develop innovative services in support of the changing patterns of e-book use.

Appendix I

Survey Design: Conditional Structure and Survey Questions

Q1 -> Create condition				Q5 -> Create condition				Q8 -> Create condition			Q12 and Q13 Open comments		Q14-17 Common			
Branch Users / Non-users				Springer e-Book Users				Non-Springer e-Book Users			Final comment	Final comment	Demographics / Name / email			
Q1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Yes	x	x	x	Yes	x	x	Yes	x	→	→	x	→	x	x	x	x
Yes	x	x	x	Yes	x	x	No	→	→	→	x	→	x	x	x	x
Yes	x	x	x	Yes	x	x	Not Sure	→	→	→	x	→	x	x	x	x
Yes	x	x	x	No	→	→	→	x		x	x	→	x	x	x	x
Yes	x	x	x	Not Sure	→	→	→	x		x	x	→	x	x	x	x
No	→	→	→	→	→	→	→	→	→	→	x		x	x	x	x
Not sure	→	→	→	→	→	→	→	→	→	→	x		x	x	x	x

Survey Questions: University of California Libraries Academic e-Book Usage Study

[Q1. Create condition: academic e-book users]

1. Do you use e-books for your academic work? (Select one)
    a. Yes (proceed to Q2)
    b. No (branch to 13)
    c. I'm not sure (branch to 13)

2. When doing your academic work, do you generally prefer print books or e-books? (Select one)
    a. Prefer print books
    b. Prefer e-books
    c. No preference

3. When doing your academic work, what do you do after you have found an e-book you are interested in?
   (Frequency scale: Often, Sometimes, Seldom, Never)
    a. Read it from a screen
    b. Print out relevant pages or chapters
    c. Email it to myself
    d. Bookmark or save the URL for future use
    e. Save it or download it
    f. Copy and paste the portions I want into a document

g. Purchase a print copy of the book
h. Borrow a print copy from the library
i. Borrow a print copy from a library not on my campus (interlibrary loan)

4. When doing your academic work, how important are the following e-book features?
   (Likert scale: Very Important,Somewhat Important, Neutral, Not Very Important, Not at All Important)
   a. Ability to find e-books in the library catalog
   b. Ability to find e-books in search engines (e.g., Google, Yahoo)
   c. Ability to download chapters or portions of the e-book to computer or laptop for later use
   d. Ability to annotate, bookmark or make notes
   e. Ability to search within the full-text of items
   f. Ability to link to a particular chapter
   g. Ability to read on a mobile device (e.g., iPhone, Blackberry)
   h. Ability to read on a dedicated e-book reader, (e.g., Kindle, Sony Reader)
   i. Availability of a print copy for borrowing from a UC library
   j. Ability to purchase a "print-on-demand" print copy

[Q5. Create condition: Springer e-book users]

The UC libraries, faculty, and students have access to the Springer e-Book Collection 2005-2010, which includes books published by Springer and associated publishers (Apress, Birkhäuser, Humana Press, Praxis, Vieweg, and more). Examples of Springer e-books can be found at: *Ecopolis: architecture and cities for a changing climate* *-or- Undergraduate algebra* .

5. Have you used Springer e-books before this survey? (Select one)
   a. Yes (proceed to Q6)
   b. No (branch to Q10)
   c. I'm not sure (branch to Q10)

6. How did you discover that you had access to Springer e-books for your academic work?
   (Select all that apply)
   a. Library catalog
   b. General Internet search engine (e.g., Google, Yahoo)
   c. Course website or syllabus
   d. An instructor
   e. Library website
   f. Library staff (in person, email or chat)
   g. Library or student newsletter
   h. Library poster, flyer or bookmark
   i. Publisher's website (SpringerLink)
   j. Friend or colleague
   k. Other
   l. I don't remember

7. How satisfied are you with the following aspects of Springer e-books?
   (Likert scale: Very Satisfied, Satisfied, Neutral, Dissatisfied, Very Dissatisfied)
   a. Quality of content
   b. Subject scope, i.e., breadth and depth of content
   c. Ability to find in search engines, catalogs, etc.
   d. Ease of use
   e. Access at the chapter-by-chapter level
   f. PDF format
   g. Ability to search within the text
   h. Ability to browse lists of books by subject
   i. Overall satisfaction

[Q8. Create condition: Springer MyCopy users]

8. "MyCopy" is a service that allows you to order your own personal soft cover edition of Springer e-books for $24.95. Did you order any personal print copies through the "MyCopy" service?
   (Select one)
   a. Yes
   b. No
   c. I'm not sure

9. If you answered yes to the above question, how satisfied were you with the "MyCopy" service?
   (Likert scale: Very Satisfied, Satisfied, Neutral, Dissatisfied, Very Dissatisfied)
   a. Delivery time
   b. Cost of MyCopy volume
   c. Quality of MyCopy volume
   d. Overall satisfaction

Note: Q6 and Q10 are equivalent but not exactly the same; Q7 and Q11 are equivalent but not exactly the same.

10. How did you discover that you had access to e-books for your academic work?
    (Select all that apply)
    a. Library catalog
    b. General Internet search engine (e.g., Google, Yahoo)
    c. Course website or syllabus
    d. An instructor
    e. Library website
    f. Library staff (in person, email or chat)
    g. Library or student newsletter
    h. Library poster, flyer or bookmark
    i. Publisher's website (e.g., ScienceDirect, Safari Tech Books Online)
    j. Friend or colleague
    k. Other
    l. I don't remember

11. How satisfied are you with the following aspects of e-books for your academic work?
    (Likert scale: Very Satisfied, Satisfied, Neutral, Dissatisfied, Very Dissatisfied)
    a. Quality of content
    b. Subject scope, i.e., breadth and depth of content
    c. Ease of use
    d. Overall satisfaction

12. Do you have any further comments on the availability or use of e-books for your academic work?
    (Open)

13. When doing your academic work, if a book you wanted were available in both paper and e-book
    format, which would you choose? Why? (Open)

14. What is your area of study or research? (select one)
    a. Arts & Humanities (e.g., architecture, history, music)
    b. Business or Law
    c. Life & Health Sciences (e.g., agriculture, biology, medicine)
    d. Physical Sciences & Engineering (e.g., chemistry, geology, mathematics)
    e. Social Sciences (e.g., education, psychology)
    f. Undeclared
    g. Other

15. What is your university status? (select one)
    a. Undergraduate student
    b. Graduate student
    c. Postdoctoral scholar / researcher
    d. Lecturer
    e. Faculty
    f. Librarian / library staff
    g. Staff
    h. Other

16. What is your UC affiliation? (select one)
    a. UC Berkeley
    b. UC Davis
    c. UC Irvine
    d. UCLA
    e. UC Merced
    f. UC Riverside
    g. UC San Diego
    h. UC San Francisco
    i. UC Santa Barbara
    j. UC Santa Cruz
    k. UC Office of the President
    l. Lawrence Berkeley or Lawrence Livermore National Laboratory
    m. Not affiliated with UC

Appendix II

Springer e-Book Titles by Subject Collection (2010)

Springer e-Book Titles by Subject Collection (2010)		
Subject Collection	**Titles**	
Behavioral Science	279	1%
Biomedical and Life Sciences	2218	10%
Business and Economics	1414	6%
Chemistry and Materials Science	1041	5%
Computer Science	4987	22%
Earth and Environmental Science	1184	5%
Engineering	2959	13%
Humanities, Social Science and Law	1742	8%
Mathematics and Statistics	2110	9%
Medicine	2303	10%
Physics and Astronomy	1551	7%
Professional and Applied Computing	703	3%
Total	22,491	100%