

Lib-Value Report: Australian National University Academic Staff



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Fall 2013

Funding by Institute of Museum and Library Services (IMLS)



Executive Summary

The Lib-Value project measures the value, outcomes, and return on investment of academic library collections and services. This study reports on the value of scholarly reading from the collections of the Australian National University by examining academic staff (faculty) members' scholarly reading patterns and comparing their use of the library with other sources for scholarly materials.

In August 2013, approximately 1,612 Australian National University academic staff members were invited to participate in a survey of their scholarly reading behavior. We received only 79 responses for a response rate of 4.9%. We decided to go ahead with the analysis, but any conclusions must be made cautiously due to this low response rate. In published studies the ANU responses will be included with those from other Australian universities. The survey asked questions about reading of articles, books, and other scholarly materials from all sources (library-provided, other sources, and social media), and focused on use value (outcomes of reading) and exchange value (time spent obtaining and reading).

Important findings are consistent with findings from other universities and include:

- Half (53%) of article readings by Australian National University academic staff respondents are obtained from a library subscription, and 94% of those obtained through the library are from electronic collections.
- Academic staff who published 5-10 items in the last two years read the most books and other publications.
- Academic staff obtain books from the library more often than they purchase them.
- The majority of article and book readings are for the principle purposes of research and writing; other publications are read more for current awareness and research.
- Academic staff members participate in social media more than they create it; however, their use and creation is more often occasional rather than on a regular basis.
- Social media has not replaced traditional articles and books, though academic staff members recognize their value in inspiring new ideas.
- Australian National University academic staff members on average spend 133 hours per year of their work time with library-provided material, or the equivalent of 16.6 eight-hour days annually.

Introduction

In an age of continually growing digitization, globalization, and abundant information, the value of scholarly information remains high to support the work of academic staff members. Scholarly material adds value to the quality of their work and guides their future research. Academics now have many choices of where and how to access scholarly articles, books, or other materials. Time, cost, and electronic availability are all factors in their decisions of which materials to select, and by providing the highest-quality material in a convenient manner, we can ensure they are receiving the best material. In order to determine the best method to provide academic staff members with scholarly material, we need to determine: Why do academic staff members read scholarly materials and do reading patterns vary according to purpose of reading, source of reading, or individual characteristics of readers such as academic discipline, status, or age? What, then, is the role and value of the college and university library in providing access to scholarly content in this changing digital landscape?

The Value, Outcome, and Return on Investment of Academic Libraries project (Lib-Value) is a three-year study funded by the U.S. Institute of Museum and Library Services (IMLS). Part of the project seeks to measure the value of the library's provision of access to scholarly materials by examining scholarly reading patterns and comparing use patterns of the library-provided resources with the use of scholarly materials accessed from other sources. Academic staff members, postgraduate students, and undergraduate students were studied at several universities. This report focuses on the results from the survey of academic staff members at the Australian National University.

The Lib-Value project is led by a research team at the University of Tennessee, the University of Illinois at Urbana-Champaign (UIUC), Syracuse University, and the Association of Research Libraries (ARL).

Previous Studies

Scholarly reading patterns and information-seeking behavior have been examined through surveys over the past thirty-five years. In 1977 and 1984, national surveys of scientists in the United States were conducted (King et al. 1981). The surveys have been conducted regularly in non-university settings since 1984. The first readership survey to be conducted solely in a university setting was completed in 1993 (Belefant-Miller and King 2001). In 2000, the surveys shifted to focus on changing patterns of journal use, due to e-journal publishing, and have been repeated in the U.S., Australia, Japan, and Finland (Tenopir et al. 2010). The surveys found that the increasing prevalence and availability of e-articles encouraged academics to read more articles, though the time spent reading each publication decreased. In the case of the United States and Finland, academics who read more articles published more works. However, although Australian academics reported the most e-reading, their reading patterns did not demonstrate a correlation between e-reading amounts and publication. In addition, researchers noted that all academics reported several reasons for readings and varied methods for discovering articles. In 2011, a reading survey was conducted at six United Kingdom higher learning institutions, which includes sections on reading from books and other publications and questions on use of social media (Tenopir et al. 2012). Surveys conducted at two universities in Australia in

2012 demonstrated that academic staff still favor electronic formats for obtaining information, but that while the academic staff who publish least report reading the most, otherwise reported reading and publishing show a positive correlation (Tenopir et al. 2013).

Tenopir and King (2000) and King and Tenopir (2001) summarize reading patterns of science and non-science academic staff members through the 1990s. They provide extensive literature reviews and serve as background for the data presented in this report. Other multi-university studies focus on how academic staff uses electronic journals, online resources, and libraries (Healy et al. 2002). Further studies show that access and convenience, especially electronic access, are important to academic staff (Maughan 1999). Other studies show the huge impact subject discipline has on reading patterns (Talja and Maula 2003), and different disciplines have varying traditions of the importance of journals compared to other types of information (Fry and Talja 2004). In addition, academic staff members in the sciences prefer and read more electronic journal articles than in humanities or social science disciplines (Brown 2003). The results from the US and Australia in 2012 tend to confirm the earlier findings. A 2011 study by the Research Information Network (RIN) found a link between the library and the institution's research performance.

Many recent studies have reported on the future of e-books in academia. A report by CIBER (2009) found that nearly two-thirds of teaching staff and students in the United Kingdom have used an e-book to support their work or study or for leisure purposes and more than half of users said the last e-book they used was provided by their university

library. A study at the Health Sciences Library System at Pittsburgh University discovered that over half the surveyed academic staff, graduate students, and undergraduate students used library provided e-books for their job duties, and it concluded that respondents are willing to use alternative formats (Folb et al. 2011). Another study at the University of Illinois in 2008 shows that academic staff, graduate students, and undergraduate students value the convenience and time saving capabilities this format offers them, as well as the ability to search full-text content of e-books but there are still disadvantages with its format on the screen (Shelburne 2009). Many other studies have reported similar findings, showing that e-books are becoming a valuable library resource (Chrzastowski 2011; Tenopir et al. 2012).

A report by CIBER on the use of social media in the research environment found that social media have found applications in the research process, and the most popular tools are those for collaborative authoring, conferencing, and scheduling meetings (Rowlands et al. 2011). The report did not find age to be a good predictor on social media use, but humanists and social scientists used more social media. It concludes social media do not replace traditional material.

Methodology

Earlier surveys examined just the reading of scholarly articles, but for this survey we expanded it to examine the reading of scholarly books and book chapters and the use and creation of social media. The survey maintained a consistent core of questions and maintained similar questions in each section in order to compare the survey results over

time. The questions are based on two principal sections—reader-related (demographics) and reading-related. Reader-related questions are based on the background of the respondent; the questions include age, gender, percentage of work time spent on various activities, number of personal subscriptions, and two measures of recent academic success—publication record and record of recent awards.

The reading-related questions are based on the *critical incident technique* first developed by Flanagan (1954). The critical incident technique has since been applied to many contexts, including libraries and readings (Radford 2006; Andrews 1991). The survey used the last scholarly reading as the “critical” incident of reading (Griffiths and King 1991). By asking about a specific most recent reading, respondents should have a better memory of that reading, rather than having to reflect back on multiple readings over a longer period of time. While the last reading may not be representative of a typical reading, it allows us to find details and patterns of reading and use. The questions cover many details of that reading, including time spent on the reading, source of reading, purpose of reading, and value of the reading to the purpose. A complete survey instrument is found in the appendix of this report.

In August 2013, an Australian National University librarian sent an e-mail message to the academic staff population of approximately 1,612. The message included an embedded link to a survey housed on the University of Tennessee’s server. We received just 79 responses for a response rate of 4.90%. The low response rate makes it difficult to generalize across the population, if there had been a greater response rate, weighting the results may help improve the generalizability of the responses. Since respondents were

allowed to leave the survey at any time, skip questions, or were timed out automatically if they began the questionnaire and did not complete it, most of the questions have a lower number of responses. All respondents for a particular question equal 100% for that question. In published studies the ANU responses will be included with those from other Australian universities.

Demographics of Respondents

Work Responsibilities

Academics at Australian National University spend the most work time on research and writing, followed by teaching. Table 1 reflects this, showing half of respondents spend 57.5% of their work time on research and writing and 15% on teaching. Administrative duties and service to the community also take up large percentages of work time (10.32% and 10.98% on average, respectively).

Table 1. Percentage of Work Time Spent by ANU Academic Staff

		Teaching	Research & writing	Administrative	Service	Consulting /advising	Other
Mean		18.75	55.63	10.32	10.98	3.88	0.45
Median		15.0	57.5	10.0	10.0	0.0	0.0
Mode		0.0	60.0	0.0	10.0	0.0	0.0
Percentiles	25	5.0	36.25	0.75	5.0	0.0	0.0
	50	15.0	57.5	10.0	10.0	0.0	0.0
	75	30.0	75.0	15.0	13.75	5.0	0.0

Academic Discipline

Forty-seven percent of the respondents are in the humanities or social science, and 35.1% of the respondents are in the physical, life, or medical sciences (Table 2). The remaining respondents are in computer sciences, mathematics, psychology, education, fine arts, and law. We collapsed the disciplines into five categories for analysis (Table 3). We combined the disciplines based on similarities in their fields. Law, psychology, and education were combined with social sciences. There were no engineering, business, architecture, or “other” responses.

Table 2. Academic Disciplines of ANU Academic Staff Respondents

	Frequency	Percent
Life sciences	9	15.8
Physical sciences	5	8.8
Medical science	6	10.5
Computer science	1	1.8
Mathematics	4	7.0
Social sciences	16	28.1
Psychology	1	1.8
Education	1	1.8
Humanities	11	19.3
Fine arts	1	1.8
Law	2	3.5
Total	57	100.0

Table 3. Academic Disciplines of ANU Academic Staff Respondents (Grouped)

	Frequency	Percent
Sciences	14	24.6
Medical Science	6	10.5
Mathematics/Technology	5	8.8
Social Sciences	20	35.1
Humanities	12	21.1
Total	57	100.0

Position, Age, and Gender

Twenty-nine percent of the respondents are professors and 14.3% are associate professors (Table 4). Over a quarter of respondents are lecturers and senior lecturers. The other 28.6% of respondents include Adjunct/Visiting, Post Doctoral Researcher, Conjoint, Research Associate, and Research Assistant, and Emeritus professor.

Table 4. Job Title of ANU Academic Staff

	Frequency	Percent
Professor	16	28.6
Associate Professor	8	14.3
Senior Lecturer	8	14.3
Lecturer	8	14.3
Adjunct/Visiting	2	3.6
Post Doctoral Researcher	10	17.9
Conjoint	1	1.8
Other	3	5.4
• Research Associate	(1)	(33.3%)
• Emeritus Professor	(1)	(33.3%)
• Research Assistant	(1)	(33.3%)
Total	56	100.0

The majority of respondents who chose to identify their age are 51 to 60 years of age (32.1%, 18 of 56). For analysis, we grouped the ages by decade (Table 5). The second largest age group was respondents in their 40s (28.6%, 16 of 56). Twenty percent of the respondents who identified their age are in their 30s, and 5.4% are in their 20s. Fourteen percent are over 60 years old.

Table 5. Range of ages of ANU Academic Staff

	Frequency	Percent
21-30	3	5.4
31-40	11	19.6
41-50	16	28.6
51-60	18	32.1
Over 60 years	8	14.3
Total	56	100.0

The age range within each discipline has a similar distribution to the total respondents. More social scientists than any other discipline responded, and most of these respondents fell into the “41-50” age range (35.0%, 7 of 20) or “51-60” age range (30.0%, 6 of 20). However, medical scientists tended to be youngest group with 16.7% under 30. One third of medical scientists (2) and 21% of scientists are over 60 years old. One engineering/technology/math academic staff, one social scientist, and one humanist are over 60 years.

Sixty-three percent of professors (10 of 16) are in their fifties and 38% are over 60 years of age (6). Sixty-three percent of associate professors are also in their forties (5 of 8) and 38% are in their fifties (3). Three-quarters of assistant professors are in their forties (6 of 8) and one quarter (2) are in their thirties. Lecturers are the youngest group with 63% (5 of 8) in their thirties, one-quarter in their forties (2). The majority of post-doctoral researchers are in their thirties (40.0%, 4 of 10).

The majority of the respondents (53.6%) were female (Table 6).

Table 6. Gender of ANU Academic Staff

	Frequency	Percent
Male	26	46.4
Female	30	53.6
Total	56	100.0

Although the majority of respondents were female, only 43.8% of respondents identifying as professors (7 of 16) and 37.5% of associate professors (3 of 8) are female. On the other hand, 62.5% of senior lecturers (5 of 8) and 75% of lecturers (6 of 8) were female. Seventy percent of post-doctoral researchers were female (7 of 10).

The majority of respondents under 60 are female. Two-thirds of respondents under 30 years of age are female (2 of 3). Of the 19.6% of respondents that are in their 30s (11 of 56), 72.7% are female (8 of 11), and of the 28.6% of respondents that are in their 40s (16 of 56) 56.3% are female (9 of 16). Of the 32.1% of those in their 50s (18 of 56), 55.6% are female (10 of 18). However, 87.5% of those over 60 years are male (7 of 8), and only one is female.

Three quarters of the respondents in social sciences (15 of 20) and 83.3% of the respondents in the medical sciences (5 of 6) are female. Half of respondents in the humanities are female (6 of 12). Male respondents account for 71.4% of sciences (10 of 14) and 100.0% of mathematics/technology (4 of 4).

Productivity as Measured by Authorship and Awards

Authorship has been used as a measure of productivity in past surveys of research universities and in non-university research settings. Over the years, it has been shown that

academic staff who publish more journal articles tend to read more (King et al. 2003). Ninety-three percent of the respondents published at least one refereed scholarly journal article in the past two years (Table 7). Fewer have published an entire book (25%), but 51.8% have published a book chapter and/or conference proceeding. Taking all methods of publication together, the average academic staff member published two items in the past two years (M=8.52, SD=6.36). Ninety-five percent of the respondents have published at least one scholarly item in the past two years (Table 8).

Table 7. Number of Items Published in the Last 2 Years by ANU Academic Staff

	Frequency	Percentage
Refereed Scholarly Journals	56	100.0
0	4	7.1
1 ~ 2	20	35.7
3 ~ 4	16	28.5
> 4	16	28.5
Non-Refereed Journals	56	100.0
0	31	55.4
1 ~ 2	15	26.7
> 2	10	17.9
Entire Books	56	100.0
0	42	75.0
≥1	14	25.0
Book Chapters, Proceedings	56	100.0
0	27	48.2
1 ~ 2	15	26.7
3 ~ 4	6	10.7
> 4	8	14.3
Other	56	100.0
0	44	78.6
1 ~ 2	6	10.7
3 ~ 4	1	1.8
> 4	5	9.0

Table 8. Total Numbers of Publications in the Last 2 Years by ANU Academic Staff

	Frequency	Percent
0	3	5.4
1-2	5	8.9
3-4	7	12.5
5-10	23	41.1
Over 10	18	32.1
Total	56	100.0

Academic staff in the medical sciences (12.3) and sciences (10.8) publish more on average than those in social sciences (8.5), mathematics/technology (6.4), and humanities (4.8) ($F=2.341$, $p=.067$). There is a slight association between gender and publishing: females publish slightly more (9.4) than males (7.4) ($F=1.389$, $p=.244$). The total number of publications is also slightly associated with the respondent's age ($F=1.150$, $p=.344$). On average, respondents in their 50s ($M=10.3$) publish the most material, followed by respondents in their 40s ($M=8.5$), 30s ($M=7.8$), and over 60 years ($M=7.4$). Academic staff in their 20s publish the least amount ($M=2.3$).

Associate professors publish the most ($M=12.6$), followed by senior lecturers ($M=10.8$) and professors ($M=9.8$) ($F=2.113$, $p=.060$). Adjunct/visiting academic staff ($M=5.5$), lecturers ($M=6.1$), and post-doctoral researchers ($M=6.4$) publish least. The single conjoint respondent did not report any publications.

Another measure of productivity is whether a respondent has received awards or recognition for their work. We asked respondents whether they received any awards or recognition in the past two years, and then prompted them to describe their award. One quarter of respondents received an award (14 of 56). The awards and recognitions

included seven awards for research and three for teaching. The other four awards included: best poster prize at a conference, an inspiring woman award, a postgraduate supervision award, and a conference presentation award.

Personal Subscriptions

We asked respondents how many personal subscriptions to professional journals (in print or electronic form) they receive, including those paid by him or herself, received free, or purchased by a grant or other source for personal or shared use. One third of respondents (32.7%, 18 of 55) do not have a personal subscription, and the average number of personal subscriptions is 2 (M=2.45, SD=2.91).

Our findings support earlier findings showing that print is still the predominant form for personal subscriptions (Tenopir et al. 2009). Forty-four percent of respondents (24 of 55) have a print subscription, while 28.6% of respondents (16 of 56) have an electronic subscription (Table 9). Twenty-nine percent of respondents (28.6%, 16 of 56) also have a subscription that includes a print and electronic version.

Table 9. Number of Personal Subscriptions for ANU Academic Staff

	Frequency	Percentage
Print-only Subscriptions	55	100.0
0	31	56.4
1	9	16.4
2	4	7.3
3	4	7.3
4	3	5.5
5	2	3.6
≥ 6	2	3.6
Electronic-only subscriptions	56	100.0
0	40	71.4
1	5	8.9
2	5	8.9
3	2	3.6
>3	4	7.1
Print and Electronic Subscriptions	56	100.0
0	40	71.4
1	9	16.1
2	2	3.6
3	4	7.1
4	1	1.8
5	0	0.0
>5	0	0.0

The number of personal subscriptions has been declining steadily in surveys over the past thirty-five years among U.S. academics, and our findings in 2011 among U.K. academics follows this trend (Tenopir et al. 2009, 2012). The decrease over the past thirty-five years may be a result of an increase in free web and open access material or a decline in membership to professional societies, which often include subscriptions as part of the membership benefits. Nearly a third (32.7%) of respondents did not have a personal subscription of any kind.

The age of the respondent has a slight influence on the number of personal subscriptions, with older respondents having more subscriptions ($F=1.062$, $p=.385$). Academic staff in their 20s have, on average, less than one subscription each ($M=.33$), while those in their 30s have just over one ($M=1.64$). Academic staff in their 40s ($M=2.33$) and 50s ($M=2.94$) have more. However, academics over 60 years of age report the most personal subscriptions ($M=3.71$). Medical science respondents have the most personal subscriptions ($M=3.50$), and humanists average 3.17 subscriptions, while social science respondents average 2.42 and mathematics/technology respondents average 2.25. Science respondents average just 1.50 subscriptions ($F=.740$, $p=.569$).

Last Information Source Used

When we asked respondents, “*What source did you use for the last substantive piece of information in your work?*”, we found that journal articles (56.1%) were the most frequent source (Table 10). A book or book chapter was the second most frequent source (28.1%). Other sources include archives, field notes, and “purchased data from a private company.”

Table 10. Last Information Source Used by ANU Academic Staff

	Frequency	Percent
Journal article	32	56.1
Conference proceeding	1	1.8
Web site	3	5.3
Book or book chapter	16	28.1
Personal contact	2	3.5
Other	3	5.3
Total	57	100.0

Journal articles are the most frequently used source of information in nearly all disciplines, with the exception of humanities and mathematics/technology academic staff members. Forty percent of mathematics/technology academic staff last used journal articles (2 of 5), while another 40% used books or book chapters (2). However, forty-two percent (5 of 12) of the last information sources used by humanists are books or book chapters, followed by 33.3% journal articles (4) and 16.7% other sources (2). All of the last information sources by respondents in the medical science discipline are journal articles (100.0%); 64.3% by scientists; and 55.0% by social scientists.

Article Reading

Total Amount of Article Reading

One of the questions in all of the Tenopir and King surveys from 1977 to the present is an estimate of the total number of articles read in the last month by each respondent. The results provide an approximation of how many articles a respondent reads in a year and allows us to compare over time and across populations.

Since the question relies on personal recollection, we asked for a relatively short period of time (one month) rather than asking the respondents to reflect back over a longer period of time. We also assume the last month is an accurate representation of a typical month of reading. The first question asked, "*In the **past month (30 days)**, approximately how many scholarly articles have you read? (Articles can include those found in journal issues, Web sites, or separate copies such as preprints, reprints, and other electronic or paper copies. Reading is defined as going beyond the table of contents, title, and abstract to the body of the*

article)." The actual number is not as important as the relative amounts among types of respondents and over time. For convenience, we often report results as readings per year by taking the monthly number reported by the respondent and multiplying it by 12.

In the last month, the academic staff members at Australian National University read an average of 24 (M=24.42, SD=16.637).¹ Extrapolated to an entire year, the average academic staff member reads 293 articles. Excluding humanities respondents (in order to compare over time with other Tenopir & King surveys which did not include humanities staff), the average is 24.93 readings per month.

Last Incident of Reading and Date of Publication

The next set of questions asked the respondents to focus on the last scholarly article they read. This variation of the *critical incident* technique assumes the last article reading is random and provides detailed information on a random sample of the readings by academic staff members. We asked, "*The following questions in this section refer to the SCHOLARLY ARTICLE YOU READ MOST RECENTLY, even if you had read the article previously. Note that this last reading may not be typical, but will help us establish the range of reading patterns across a range of academic staff, disciplines, and institutions.*" We then asked for the title or topic of the journal article from which the last reading took place in order to focus their minds on the article for the rest of the critical incident questions.

The next question asked for the publication or posting date of the last article reading. In the surveys in the U.S. from 1977 to 2005, we have seen an increase in reading

¹ Excludes outliers over 80. Including outliers the mean is 29.37.

of articles older than the first year of publication, though reading is still skewed to the most recent articles (King et al. 2009). In the surveys in the U.S. and Australia in 2005, we found an increase in the reading of older articles, with just half of readings within the first year of publication, and in the U.K. in 2011, nearly half of the readings are from articles in their first eighteen months of publication (Tenopir et al. 2012). This differs from older studies, which found about two-thirds of reading within the first year of publication (Tenopir et al. 2005). The change may be a result of availability of electronic back files, an increase in the respondent's searching capabilities to identify older articles, and/or search system features such as relevance ranking that allows older articles to be more accessible. There are, of course, some differences based on subject discipline, with medical staff reading a higher proportion of current articles.

Nearly half of article readings (49.2%) are in their first eighteen months of publication (Table 11). Since the survey concluded in the fall of 2013, we only included the first six months of 2013 in our analysis. The year of publication ranges from as early as 1932, with 11.1% published before 1998. While there is a range of dates, the concentration is still within five years of publication (82.5%). These findings are similar to our findings in 2004, in which 53% of article readings were within their first year of publication and 24% were between two and five years old (Tenopir et al. 2006).

Table 11. Age of Article Read by ANU Academic Staff Arranged by Date Groupings

Year	Frequency	Percentage
Over 15 years (Before 1998)	7	11.1
11 ~ 15 years (1998-2002)	3	4.8
6 ~ 10 years (2003-2007)	1	1.6
2 ~ 5 years (2008-2011)	21	33.3
Less than 2 years (2012-2013)	31	49.2
Total	63	100.0

Academic staff members at the Australian National University report more article readings in the first eighteen months of publication (49.2%, 31 of 63) than postgraduate students (36.4%, 8 of 22). Only 40.9% of readings by postgraduate students and 17.5% of the readings by academic staff members are over five-years-old.

Studies done by Guthrie (2000), Odlyzko (2000), and Herman (2004) provide further research on the life of a journal article and its half-life. They found many older articles are heavily used when they are conveniently accessible; however, academics tend to cite more recent articles in order to seem current and up-to-date in their field. Their research further suggests that back files are a key investment in addition to current subscriptions.

Novelty of Information in the Reading

Since this is a random sample of article readings, the article may have been previously read. In this study, 8.6% of the article readings are re-readings (18 of 63). We also wanted to find out the reader's knowledge of the article content before this reading

(i.e., was the information familiar to them before the reading). Together, these questions indicate if articles are often used as sources of new information. Sixty-two percent of the respondents say they knew parts of the information in the article prior to this reading (61.9%, 39 of 63), but none of the respondents knew all (or a majority) of the information.

To further determine the novelty and value of articles as sources of new information, we asked those who knew about all or part of the information in the article reading where they originally found it. Another journal article and informal discussions with colleagues are the main sources of information found in articles (Table 12). Only one of the respondents first found the information in a conference or workshop, or in a listserv or blog. There is a wide-range of “other” sources not listed in our answer selection. They include: “Taught at medschool,” “read that journal regularly,” “discussion with student,” “own archival research,” “book,” “this article is a follow-up to one of my papers,” “knowledge of history,” “pubmed,” “other article by same authors,” and “sent by author for comments,” as well as searches in databases and the free web including Google (7).

Table 12. Source of Information Not Obtained Through Last Article Reading by ANU Academic Staff

	Frequency	Percent
Conference or workshop	1	1.6
Informal discussion with colleagues	14	22.6
Listserv or blog	1	1.6
Journal article	18	29.0
E-mail from colleague	6	9.7
Pre-print / e-print service	4	6.5
Other	18	29.0
Total	62	100.0

Here we find another significant difference from our 2004 findings. Scholars are increasingly relying on journal articles as sources of information. Previously, we found that only 23% of information not obtained through the last article reading was found through a journal article, but in 2013, 29% of respondents report finding that information in a journal article.

Thoroughness of Last Article Reading and Time Spent Reading

Economist Fritz Machlup (1979) described two types of value in the information context: *purchase or exchange* value and *use* value. Time spent represents an *exchange value*, assuming academic staff members spend a large portion of their work time on reading because they consider it valuable. In order to get an indication of the “exchange value” of reading, we asked respondents to describe the thoroughness of their last scholarly article reading and how much time they spent on the reading.

Over half (57.1%, 36 of 63) of the readings are read with great care and attention to all or parts of the article. Nearly a third read with attention to the main points, and 11.1% of respondents read only specific sections. Likewise, 3.2% of the readings are only skimmed (Table 13). There is some difference between whether a reading is a first time reading or re-reading and thoroughness of the reading ($\chi^2=3.063$, $p=.554$). Most of the re-readings are read with great care to all or parts of the article (72.2%, 13 of 18). While the majority of first-time readings are also read with great care to all or parts of the article (51.1%, 23 of 45), a third are read with attention to the main points (33.3%, 15), 11.1% (5) are read with attention only to specific sections, and 4.4% (2) are skimmed.

Table 13. Thoroughness of Last Article Reading by ANU Academic Staff

	Frequency	Percent
I read all of it with great care	17	27.0
I read parts of it with great care	19	30.2
I read it with attention to the main points	18	28.6
I read only specific sections	7	11.1
I skimmed it just to get the idea	2	3.2
Total	63	100.0

Another aspect of the thoroughness of the article reading is the amount of time spent per reading. The average time spent per reading is 28 minutes ($M=27.70$, $SD=19.55$)² with a range of 5 minutes to 1.5 hours. Eight percent of readings are over an hour (Table 14). In previous surveys in the U.S., we had seen a declining trend in the time spent reading. In 1977, U.S. scientists reported spending 48 minutes per reading, while in 2005 in the U.S., the average time per article reading had declined to 31 minutes (Tenopir et al. 2009). This study demonstrates that academic staff at Australian National University contribute to the continuation of the declining trend.

Table 14. Average Time Spent Per Article Reading by ANU Academic Staff

Minutes	Frequency	Percent
1-10	14	22.6
11-30	30	48.4
31-60	13	21.0
61-90	2	3.2
91-120	3	4.8
Total	62	100.0

² Excludes outliers over 90. Including outliers the mean is 32.16.

Source of Article

An important part of our analysis of academic staff reading patterns is determining how they become aware of articles. In the survey we asked, “*How did you or someone on your behalf become aware of this last article you read?*” There are many means of becoming aware of information, and their answers reflect their myriad options (Table 15). We followed up the question by asking what source they searched or browsed, indicating whether it was a print or electronic source. For the purposes of the survey, we defined browsing as “without a specific objective in mind” and searching as having some sort of starting point such as author’s name or by subject. We included a “don’t know/don’t remember” option for academic staff who may have had someone on their behalf seek out the information or who may not remember how they became aware of the article.

Almost a quarter (23.8%) of the articles are found through searching, and 17.5% of articles are found through browsing. Over half of the articles (58.8%) are found through one of the other listed methods, including a citation and another person. The other sources used to become aware of the last article reading include the author’s home page, email from the journal, and a copy from the author.

Table 15. How ANU Academic Staff Initially Become Aware of Articles

	Frequency	Percent
Browsing	11	17.5 (100.0)
1. Electronic library subscription	(5)	(45.5)
2. Print personal subscription	(0)	(0)
3. Electronic personal subscription	(1)	(9.1)
4. Web site	(3)	(27.3)
5. Other	(2)	(18.2)
Searching	15	23.8 (100.0)
1. Electronic indexing/abstracting service	(5)	(33.3)
2. Web search engine	(7)	(46.7)
3. Online journal collection	(1)	(6.7)
4. Other	(1)	(6.7)
Other	37	58.8 (100.0)
1. Cited in another publication	(10)	(27.0)
2. Another person told me about it	(17)	(46.0)
3. Don't know /don't remember	(1)	(2.7)
4. Other	(9)	(24.3)
Total	63	100.0

Of the articles found through browsing, 45.5% came from an electronic library subscription, 27.3% came from a website, and only one came from a personal electronic subscription. The other sources of browsing are Google Scholar and a respondent who was “sent hard copy of journal by author of another article in the same journal.” Eighty-seven percent of the articles found through searching came from an electronic source (86.7%), including 33.3% from an electronic indexing/abstracting service, 46.7% from a web search engine, and only one from an online journal collection. Over a third of the articles found through browsing came from an electronic personal subscription or a website (36.4%). The single respondent that selected an “other” source of searching specified that they “don't remember, but it's a topic related to my main research so I regularly search / keep

an eye out for material on this topic.” Overall, electronic sources seem to be the primary means of becoming aware of the last article reading, and while the library still plays a role in helping respondents become aware of the last article, it is mainly in an electronic form (e.g., online journal collection, electronic library subscription).

Influence of Source of Article

Electronic methods of becoming aware of articles provide academic staff members with access to more articles beyond their current information need. Many searching or browsing queries identify multiple articles, and we wondered how that influences their total readings. We asked, “*As a result of searching or browsing for this article, how many other articles have you read or plan to read?*” Including all browsing and searching methods of becoming aware of the last article reading, respondents plan to read, on average, five articles ($M=4.7$, $SD=7.434$)³. Respondents that found an article through another person planned on reading seven additional articles ($M=6.94$), followed by those found through a citation ($M=5.22$), those who searched ($M=4.33$), and those who browsed for the last article ($M=3.5$).

We asked respondents how much time they spent browsing or searching for the last article reading. On average, searching for an article takes less time ($M=18.7$) than browsing for an article ($M=21.8$). Browsing for the last article reading took from 10 minutes to one hour. Searching for the last article took two minutes to one hour.

³ Excludes outlier of 100. Including outlier, mean is 6.26.

Obtaining the Article

Once the respondent became aware of the article, we asked them where they obtained it. Over half of the last article readings were obtained from a library subscription (Table 16). Many respondents praised the importance of library sources, including one respondent who says “Scholarly articles are critical to my research. The university library subscriptions to online journals (and books) is of huge importance to the rigorous conduct of my work. (I never cease to be amazed by what I can access through the university system, and am most grateful for this support.)” Of the articles obtained from the library, 93.9% are from the electronic collections (31 of 33). A copy from a colleague is the second most frequent response (17.7%), and 81.8% of the articles obtained from a colleague are electronic copies (9 of 11). Only 11.3% of readings are from a free web journal or website. None of the article readings came from an institutional repository. Academic staff members also used other sources to obtain the last article reading, including a hard copy of a journal given by colleague for another article and a preprint copy on arxiv.org. Including all sources, 88.7% of the articles are obtained from an electronic source (55 of 62).

Table 16. How ANU Academic Staff Obtain Articles

	Frequency	Percent
Personal subscription	2	3.2 (100.0)
• Print	(1)	(50.0)
• Electronic	(1)	(50.0)
Library subscription	33	53.2 (100.0)
• Print	(2)	(6.1)
• Electronic	(31)	(93.9)
Department/school (electronic)	1	1.6
Free Web journal	4	6.5
Preprint copy (electronic)	3	4.8
Copy from a colleague, author, etc.	11	17.7 (100.0)
• Print	(2)	(18.2)
• Electronic	(9)	(81.8)
Interlibrary loan	2	3.2 (100.0)
• Print	(1)	(50.0)
• Electronic	(1)	(50.0)
An author's website	3	4.8
Other website	1	1.6
Other source	2	3.2 (100.0)
• Print	(1)	(50.0)
• Electronic	(1)	(50.0)
Total	62	100.0

Articles found by searching (66.7%), citations (80.0%), or browsing (50.0%) are most likely to be obtained from a library subscription. Articles found through a colleague are most likely to be obtained from another person (63.6%).

In addition to the time spent becoming aware of an article, academic staff members also spend time to obtain an article. We asked, *“After you identified this article, about how much time (in minutes) did you and/or someone else on your behalf spend in each of the following activities?: to obtain, request, receive, or downloaded and display, to photocopy or print, and other.”* On average, respondents in this study spend more time obtaining articles

from electronic sources than print sources. The average time to obtain, request, receive, or download and display an article is four minutes ($M=4.4$, $SD=4.747$)⁴, with a range of 1 to 26 minutes. Respondents spend an average of five minutes ($M=4.6$, $SD=5.791$) to photocopy or print the article, with a range of 1 to 25 minutes. One respondent spent four minutes on additional activities ($M=4.0$, $SD=0.0$).

Use of Article Source

We also examined how the source they used to obtain readings influences their total reading and whether academics are using the same source for multiple articles. We asked, “*From this same source (e.g., journal, author’s Web site, preprint archive), approximately how many articles did you read in the last twelve months (1 year)?*” Academic staff members read an average of 21 articles ($M=20.9$)⁵ in the past year from the same source they obtained their last reading. Only one quarter of readings come from a source from which they read no additional articles (15 of 60), and 46.7% of readings are from sources from which ten or more articles were read from the same source in the past year (Table 17).

⁴ Excludes outliers of 60. Including outliers mean is 6.9 ($SD=12.361$).

⁵ Excludes outlier over 1000. Including outlier, mean is 45.15.

Table 17. Article Readings from the Same Source in the Last 12 Months by ANU Academic Staff

	Frequency	Percent
0	15	25.0
1-5	13	21.7
6-10	6	10.0
11-20	6	10.0
21-30	4	6.7
Over 30	16	26.7
Total	60	100.0

There was not a significant association between numbers of articles read from the same source and where the article is obtained ($F=.357, p=.950$).

Alternative Source to Obtain Article

Another measure of value is contingent valuation, which measures value on whether the respondent would obtain the information from another source if the original source was not available (Imholz and Arns 2007). This method assumes if the information is important the respondent will try multiple methods to obtain the information, but their initial source is the most convenient, either due to speed or low cost. We asked, “*Thinking back to the source of the article (e.g., library collection, department collection, interlibrary loan, etc.), where would you obtain the information if that source were not available?*”

Seventy-eight percent of the readings would be obtained from another source (47 of 60).

Another library is the most likely alternative source of article readings (Table 18). Thirteen percent of the readings would be obtained from a colleague. Academic staff members would also use alternative sources not listed, including web searches, publisher or author websites, Google Scholar, and interlibrary loan.

Table 18. Alternate Source of Article by ANU Academic Staff

	Frequency	Percent
I would not obtain the information	13	21.7
From a colleague	8	13.3
Use/visit another library	24	40.0
Purchase copy	1	1.7
From another source	14	23.3 (100.0)
• Interlibrary loan	(6)	(42.9)
• Other	(8)	(57.1)
Total	60	100.0

Regardless of the initial source, the majority of articles would be obtained from a library if the original source were not available. Articles originally obtained from a library would be obtained from another library (62.5%, 15 of 24) or interlibrary loan (8.3%, 2 of 24).

Obtaining the article from another source would cause many respondents to spend more time and/or money. We asked respondents, *“In order to obtain the same information, if this source was not available, you would expect to spend how many minutes and/or money?”* On average, respondents expect the alternative source to take 29 minutes (M=29.2, SD=30.758)⁶ and cost \$2.50 (M=2.5, SD=8.758). Forty-one percent of the respondents expect it will take at least 30 minutes to obtain the same information from an alternative source. Since respondents expect it will take only four minutes, on average, to obtain the article from the original source, having to obtain the information from a different source will take significantly longer.

⁶ Excludes three outliers over 120. Including the outliers, the mean is 477.5.

Format of Article and Location of Reading

Although 88.7% of the article readings were obtained from an electronic source, this does not mean the articles were read on a computer screen. Forty-seven percent (46.7%) of the readings are read on a computer or mobile/tablets screen and half are read as print-on-paper, either from a print journal or downloaded and printed from an electronic source. While academic staff members prefer electronic sources to obtain information, there is still a slight preference for print for final reading. Postgraduate students at Australian National University are more likely to read from a computer screen (63.6%). Thirty-seven percent of the readings by academic staff are from a downloaded and printed article (36.7%), and 8.3% of the readings are from a print article in a print journal (Table 19). Other formats of reading included readings done in multiple formats (e.g., part read on a computer or mobile reader, and part printed).

Table 19. Final Format of Last Article Reading by ANU Academic Staff

	Frequency	Percent
Print article in a print journal	5	8.3
Photocopy or fax copy	3	5.0
Online computer screen	16	26.7
Previously downloaded/saved and read on computer screen	10	16.7
On a mobile, e-reader, or tablet screen	2	3.3
Downloaded and printed on paper	22	36.7
Other	2	3.3
Total	60	100.0

Since academic staff members are typically interacting with the library's electronic subscriptions, 38.7% of the readings obtained from the library are downloaded and printed (12 of 31) and 48.4% are read on a computer screen (15). Another 6.5% of readings

obtained from the library are photocopy or fax copies (2), and 3.2% are read on mobile readers (1). In contrast, half (50.0%) of the readings obtained from a personal subscription are read from a print journal (1 of 2), while the other half are on an online computer screen (1).

In past surveys, we found a majority of readings are done in the office or lab of academic staff members (Tenopir et al. 2009). While academics are using the library's resources, they are often accessing the library's resources remotely and are rarely reading in the library. Similarly, academic staff members at Australian National University do nearly all their readings in their office/lab (58.3%) or home (30.0%). Only one article reading is read in the library, and 6.7% are read while traveling or commuting (Table 20). Other locations in which readings took place include a split between the office and home, and a café. Location is no longer a major factor in an academic staff member's access to academic sources because the scholarly articles can be accessed and read from a variety of locations.

Table 20. Location of Article Reading by ANU Academic Staff

	Frequency	Percent
Office or lab	35	58.3
Library	1	1.7
Home	18	30.0
Traveling or commuting	4	6.7
Elsewhere	2	3.3
Total	60	100.0

None of the articles obtained from the library are read in the physical library. Most are read in the office or lab (61.3%, 19 of 31) and 32.3% are read at home (10 of 31). Half of articles obtained through a personal subscription (1 of 2) are read in the office or lab, as

are all of those obtained as a preprint copy (3 of 3). Sixty-four percent of copies from colleagues (7 of 11) and 25.0% of articles from free web journals (1 of 4) are also read in the office/lab. Twenty-seven percent of the articles (3 of 11) obtained from a colleague or another person and 50.0% of the articles obtained from a personal subscription are read at home (1 of 2).

Since articles can be read in a variety of formats, academics are able to read in a variety of locations. Twenty-five percent of the readings that occurred while traveling/commuting are from a downloaded and printed on paper article (1 of 4) and 50.0% are read from a mobile, e-reader or tablet screen (2 of 4). Readings that occur in the home slightly favor an electronic format (55.5%, 10 of 18), while those that occur in the office or lab slightly favor a print format (54.3%, 19 of 35). Fourteen percent of the readings that occur in the lab/office are from a print article in a print journal (5 of 35), and 34.3% are from a downloaded and printed copy (12). Forty-three percent of the readings in an office or lab are read on a computer screen (15). In the home, none of the readings are from a print journal; 55.5% are from a computer screen (10), and 44.4% are downloaded and printed (8).

Purpose and Value of Article Reading

Survey data provides a picture of the purpose, value, and outcomes of article readings, which usage data cannot provide. The first question in this series of questions was, *“For what principal purpose did you use, or do you plan to use, the information obtained*

from the article you last read?" Nearly three quarters of the readings are for the principal purpose of research (Table 21). The other principal purpose was research for a book.

Table 21. Principal Purpose of Article Reading by ANU Academic Staff

	Frequency	Percent
Research	44	73.3
Teaching	4	6.7
Current awareness/keeping up	5	8.3
Writing proposals, reports, articles, etc.	2	3.3
Consulting, advising others	2	3.3
Internal or external presentations	1	1.7
Continuing education for self	1	1.7
Other	1	1.7
Total	60	100.0

Most of the readings for current awareness are in their first two years of publication (80.0%, 4 of 5) ($\chi^2=28.825$, $p=.065$)⁷. Readings for research span a wide range of publication years. Half of the readings for research and writing are in their first two years of publication (50.0%, 23 of 46); 32.6% are two to five years old (15); and 4.4% are between six and fifteen years (2), and 13.0% are over fifteen years old (6). The majority of readings for teaching are two to five years old (75.0%, 3 of 4). All readings for consulting, presentations, and continuing education are five years old or less (4 of 4).

There is also some difference between the principal purpose of reading and the format of reading ($\chi^2=31.035$, $p=.434$). Forty-six percent of the readings for research (20 of 44) and 80.0% of reading for current awareness (4 of 5) are read on a computer screen, as well as half of those for consulting (1 of 2). Thirty percent of the readings for research are downloaded and printed (13 of 44), and 11.4% are print articles in print journals (5). All of

⁷ The Likelihood Ratio is use here because 92.5% of cells have expected count less than 5. Likelihood Ratio will be used for all following significance calculations unless otherwise noted.

the readings for teaching are downloaded and printed (4). Twenty percent of readings for current awareness (1 of 5) and both for writing and the single reading for continuing education are downloaded and printed.

We found some association between principal purpose and time spent per reading ($F=1.580$, $p=.164$). Readings for writing take the most time ($M=52.5$), followed by research ($M=29.9$), consulting/advising ($M=25.0$), teaching ($M=21.3$), and current awareness ($M=14.8$). The single reading for presentations takes five minutes ($M=5.0$) continuing education takes 20 minutes ($M=20.0$), and the “other” purpose takes one hour ($M=60.0$).

There was no significant association between principal purpose and how respondents became aware of article readings, where they are obtained, where they are read, .

After establishing the principal purpose, we asked respondents to describe the value of the article reading by ranking the article’s importance to the principal purpose and the outcome the reading has on their work. Respondents ranked the article reading on a five-point scale from “absolutely essential” to “not at all important.” All but one of the readings are considered at least “somewhat important” (98.3%, 59 of 60). Forty-three percent are considered “important” (43.3%, 26 of 60) and 28.3% are considered “absolutely essential” or “very important” to the principal purpose (17 of 60) (Table 22).

We received many comments on the importance of article reading. Many respondents consider article readings “vital,” “essential,” and “critical” to their work

activities. It is clear from their comments that scholarly articles are important to academic work beyond the principal purpose of reading.

Table 22. Importance of Article Reading to Principal Purpose to ANU Academic Staff

	Frequency	Percent
Absolutely essential	8	13.3
Very important	9	15.0
Important	26	43.3
Somewhat important	16	26.7
Not at all important	1	1.7
Total	60	100.0

We did not find any associations between principle purpose of readings and the importance of the reading to the principal purpose.

The majority of readings of which respondents became aware through browsing (70.0%, 7 of 10), searching (80.0%, 12 of 15), citations (60.0%, 6 of 10), and another person (52.9%, 9 of 17) are considered “important” or “somewhat important” ($\chi^2=26.432$, $p=.059$). Only 10.0% of readings found through browsing are considered “not at all important” (1 of 10), however 20.0% are considered “very important” (2 of 10). Twenty percent of readings found through searching (3 of 15) are considered “very important” or “absolutely essential,” as well as 40.0% of readings found through citations (4 of 10) and 47.0% of readings found through another person (8 of 17).

All of the readings obtained from the library are considered at least “somewhat important” ($\chi^2=52.440$, $p=.038$). Just over half (51.6%) are considered “important,” 35.5% considered “very important” or “absolutely essential,” and 12.9% are considered only “somewhat important.” One third of preprints, one third of author websites, 27.3% of articles obtained through a colleague or other person and one quarter of the readings from

a free web journal are considered “absolutely essential” or “very important.” Half of free web journals readings are considered “important” and one quarter are “somewhat important.” All the readings from personal subscriptions, school/department subscriptions, and other websites are considered “somewhat important.” Of the two article readings obtained through “other” means, one is considered “important” and one considered “not at all important.”

Outcomes of Article Reading

In order to establish how the article was important to the principal purpose, we asked respondents to select one or more outcomes of the reading. Over half of the readings improved the result or inspired new thinking, while 26.7% of readings narrowed, broadened, or changed the focus (Table 23). In the open-ended comments, one respondent says that articles are “Essential for placing my work in context, developing new ideas/hypotheses, and for my own track record and productivity (to win grants, etc.).” None of the readings are considered a “waste of time,” but 10.0% of the readings made the respondent question his or her work. The other outcomes include “it was a reading I set for my class to read, so I had to refamiliarise myself with it before our class discussion,” “add to personal knowledge base,” “it answered questions about available techniques,” “plan future research,” “it made me understand the background better,” and “provided a critical new reference to a MS that must be submitted this weekend.”

Table 23. Outcomes of Article Reading for ANU Academic Staff*

	Frequency	Percent
Inspired new thinking/ideas	35	58.3
Improved the result	32	53.3
Narrowed/broadened/changed the focus	16	26.7
Saved time or other resources	10	16.7
Resulted in faster completion	6	10.0
Made me question my work	6	10.0
Other	6	10.0
Resolved technical problems	5	8.3
Resulted in collaboration/joint research	4	6.7
Wasted my time	0	0.0
Total	120	

*Respondents could select more than one outcome.

Over half of the article readings have been or will be cited (Table 24). Just 13.3% will not be cited. As the article reading's importance to the principal purpose increases, so does the chance it will be cited ($p=.263$).

Table 24. Article Citation by ANU Academic Staff

	Frequency	Percent
No	8	13.3
Maybe	20	33.3
Already did	15	25.0
Will in the future	17	28.3
Total	60	100.0

There were some differences between principle purpose of reading and whether it will be cited ($\chi^2=28.377$, $p=.130$). Both readings for writing, and 61% for research (27 of 44) have been or will be cited, while 25.0% of readings for teaching (1 of 4) have been cited and 25.0% (1 of 4) may be cited. One of the two readings for consulting will be cited. Half of the readings for teaching (2 of 4), 20% for current awareness (1 of 5), and only 9.1% of readings for research (4 of 44) will not be cited.

Differences of Article Reading Patterns by Demographics

Differences of Article Reading Patterns by Discipline

The academic staff member's discipline slightly influences the number of article readings ($F=2.408$, $p=.062$).⁸ On average, academic staff in the medical sciences ($M=17.0$) report fewer article readings per month than academic staff in other disciplines. Academic staff in the sciences read, on average, from 34 articles per month ($M=33.9$), followed by mathematics/technology academic staff ($M=25.0$), humanities ($M=22.3$), and social sciences academic staff ($M=20.6$). However, humanities and social sciences academic staff spend the most time per article reading ($F=.885$, $p=.480$). Academic staff in the humanities and social sciences spend, on average, 33 minutes per article reading (humanities $M=33.4$, social sciences $M=33.3$), followed by sciences academic staff ($M=25.8$), mathematics/technology academic staff ($M=22.0$), and medical sciences academic staff ($M=19.2$).

Mathematics/technology academic staff read more articles older than five years than respondents in other disciplines, especially those in the social sciences and the medical sciences ($\chi^2=21.316$, $p=.051$). Forty percent of the readings by mathematics/technology academic staff are from articles over five years old; all of these are over fifteen years old (2 of 5). All readings by medical scientists (6 of 6), 85.7% of readings by scientists, 60.0% of readings by mathematics/technology academic staff,

⁸ Calculations exclude outliers excluded previously.

90.0% of readings by social scientists, and 81.9% of readings by academic staff in the humanities are from articles within five years of publication (Table 25).

Table 25. Age of Article Read by ANU Academic Staff Arranged by Date Groupings

Year	Sciences	Medical Sciences	Engineering/ Technology/ Mathematics	Social Sciences	Humanities	Row Total
Over 15 years (Before 1998)	1 7.1%	0 0%	2 40.0%	2 10.0%	1 9.1%	6 10.7%
11 ~ 15 years (1998-2002)	1 7.1%	0 0%	0 0%	0 0%	1 9.1%	2 3.6%
6 ~ 10 years (2003-2007)	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%
2 ~ 5 years (2008-2011)	1 7.1%	3 50.0%	0 0%	11 55.0%	5 45.5%	20 35.7%
Less than 2 years (2012-2013)	11 78.6%	3 50.0%	3 60.0%	7 35.0%	4 36.4%	28 50.0%
Column Total	14 100.0%	6 100.0%	5 100.0%	20 100.0%	11 100.0%	56 100.0%

Article readings by medical scientists and social scientists are considered more important to the principal purpose than readings by academic staff in other disciplines ($\chi^2=26.663$, $p=.050$). Sixty-seven percent of the readings by medical scientists (4 of 6), and 30.0% by social scientists (6 of 20) are considered “very important” or “absolutely essential.” However, only 18.2% of the readings by humanists (2 of 11), 20.0% by mathematics/technology (1 of 5) and 21.4% of readings by scientists are considered “very important” or “absolutely essential.” On the other hand over a third of the readings by scientists (35.7%, 5 of 14) are considered “important” to the principal purpose, as are 20.0% of readings by mathematics/technology academic staff (1 of 5) and 27.3% of readings by humanists (3 of 11).

Seventy-five percent of the readings by social science academic staff, 42.9% of those by science academic staff, 40.0% of those by mathematics/technology academic staff, and 36.4% of those by humanities academic staff already have been or are planned to be cited ($\chi^2=15.103$, $p=.390$). Only 16.7% of the article readings by medical science academic staff have been or will be cited. A third of the readings by medical science academic staff and 40.0% of the readings by mathematics/technology academic staff will not be cited.

There is no association between respondents' discipline and how they became aware of the article.

Differences of Article Reading Patterns by Position, Age, Gender, and Productivity

There is a slight association between the academic status of the respondents and how they became aware of the article ($\chi^2=35.597$, $p=.232$). Readings by professors are most often discovered through a colleague (50.0%, 8 of 16), while readings by lecturers (50.0%, 4 of 8) and post-doctoral researchers are most discovered through searching (40.0%, 4 of 10). Article readings by adjuncts/visitors are found through citations (50.0%, 1 of 2) and colleagues (50.0%, 1). Readings by associate professors are equally discovered through browsing, searching, and citations (each 25.0%, 2 of 8), and readings by senior lecturers are found through browsing, searching, and a colleague (each 25.0%, 2 of 8).

We found a significant association between academic status and the principal purpose of article reading ($\chi^2=43.852$, $p=.062$). Readings by post-doctoral researchers are read primarily for research (90.0%, 9 of 10). Eighty-one percent of the readings by professors also read for research (13 of 16), as are 75.0% of the readings by senior

lecturers (6 of 8), 62.5% by lecturers (5 of 8), and the majority of the readings by associate professors (4 of 8). One quarter of the readings by lecturers are for teaching (25.0%, 2 of 8), and a quarter by associate professors are read to keep current (25.0%, 2 of 8).

There was no significant association between academic status and the number of articles read, time spent reading, where articles were obtained, the number of articles read from the same source, the format of the reading, location of reading, importance of reading, or whether the reading has been or will be cited.

The three of the readings by respondents in their 20s are read exclusively on a computer screen (3 of 3) ($\chi^2=32.441$, $p=.116$). However, readings by respondents in their 50s, 60s, and over 60 years read primarily on paper (Table 26).

Table 26. Format of Article by ANU Academic Staff Age

	Print Journal	Photo-copy	Online Computer Screen	Downloaded & Read Onscreen	e-Reader	Downloaded & Printed	Other	Row Total
21 ~ 30 years	0 0%	0 0%	2 66.7%	1 33.3%	0 0%	0 0%	0 0%	3 100%
31~40 years	1 11.1%	1 11.1%	2 18.2%	0 0%	2 18.2%	3 27.3%	2 18.2%	9 100%
41 ~ 50 years	0 0%	0 0%	5 31.3%	4 25.0%	0 0%	7 43.8%	0 0%	16 100%
51 ~ 60 years	2 11.8%	0 0%	5 29.4%	2 11.8%	0 0%	8 47.1%	0 0%	17 100%
Over 60 years	2 25.0%	1 12.5%	1 12.5%	1 12.5%	0 0%	3 37.5%	0 0%	21 38.2%
Column Total	5 9.4%	2 3.6%	15 27.3%	8 14.5%	2 3.6%	21 38.2%	2 3.6%	53 100%

We found no significant association between the age of academic staff and the number of article readings per month, the time spent reading, how they became aware of the article, where the article was obtained, the number of articles they read from the same

source, the location of the reading, principal purpose of reading, importance of reading, or whether the reading has been or will be cited.

We found that male respondents, on average, read more articles per month than female respondents ($F=4.472$, $p=.039$). Men read approximately 29 article readings ($M=29.25$), while women read 21 ($M=21.0$). However, we also found that female respondents, on average, spend more time per article reading than male respondents ($F=1.002$, $p=.322$). Women spend approximately 32 minutes readings ($M=31.7$), while men spend 26 minutes per reading ($M=25.96$).

Readings by male respondents are more likely to be in an electronic format than readings by female respondents ($\chi^2=14.756$, $p=.040$). Over half of the article readings by male respondents are read in electronic format (52%, 13 of 25), while 40% of the readings by women read in an electronic format (12 of 30). However, only women report using mobile, e-reader, or tablet screens for article readings (6.7%, 2 of 30), and readings by women are more frequently downloaded and read on screen (20.0%, 6 of 30) than readings by men (8.0%, 2 of 25). Eight percent of the readings by men are photo or fax copies (2 of 25); no women report photo or fax copies.

We found a slight association between gender and location of reading ($\chi^2=5.100$, $p=.457$). Both men and women read in a variety of locations, and just over half of both the readings by men and women read in their office or lab. Slightly more readings by men are in the library (4.0%, 1 of 25) and home (36.0%, 9 of 25) than women, of whom none read in the library and only 26.7% of readings occur at home (8 of 30). Slightly more readings by

women are read while travelling (10.0%, 3 of 30) than readings by men (4.0%, 1 of 25). Seven percent of the readings by women are reported as reading “elsewhere” (2 of 30).

Women report their article readings to be more important to the principal purpose of reading than men ($\chi^2=5.115$, $p=.325$). Over a third (36.7%, 11 of 30) of the readings by women are “very important” or “absolutely essential,” but only 20.0% of the readings by men are deemed “very important” or “absolutely essential” (5 of 25). However, 44.0% of the readings by men (11 of 25) and 40.0% of the readings by women (12 of 30) are reported as being “important.” Twenty-three percent of readings by women were “somewhat important” (23.3%, 7 of 30), and none were “not at all important,” but 32.0% of readings by men were “somewhat important” (8 of 25) and 4.0% were “not at all important” (1 of 25).

Women are much more likely to cite their readings than men ($\chi^2=4.328$, $p=.250$). Just over half of the readings by women have cited or will be cited (53.4%, 16 of 30), while just under half of the readings by men have or will be cited (48.0%, 12 of 25). Nearly one quarter (24%, 6 of 25) of the readings by men will *not* be cited, but only 7% of the readings by women will not be cited.

We did not find a significant association between the gender of respondents and how they became aware of the last article they read, where it was obtained, or principal purpose of the reading.

We looked at the number of publications by academic staff and the number of articles read, but we did not find a significant association between the number of article readings and the number of items published in the past two years. We also looked at how

the respondents spend their work time and how their work activities influence publication amounts, but we found no significant difference. Academics who spend half of their work time on research and writing do not appear to publish more ($F = .016, p = .900$). Despite being “research intensive,” these academics report, on average, five scholarly works published in the last two years ($M = 4.7$), while academics who spend less than half their time on research and writing also report an average of five publications in the last two years ($M = 4.5$).

Book Reading

In other Tenopir & King studies, the *critical incident* of reading focused only on the last scholarly article reading. A 2011 study in the United Kingdom expanded the survey to examine the last book/book chapter and other publication readings. For this study, we also included readings from books, book chapters, and other publications. In this section of the report, we focus on book or book chapter readings.

Total Amount of Book Reading and Last Incident of Reading

As in the section on scholarly article reading, we started the section by carefully defining book reading and focusing the respondent on the books they recently read or read from. We asked, “*In the past month (30 days) approximately from how many books or parts of books did you read for work? Include reading from a portion of the book such as skimming or reading a chapter. Include classroom text, scholarly, or review books read in print or*

electronic format.” We are more concerned with the relative amounts than the actual number, and for convenience, we often report readings per year by multiplying the monthly total by 12. Academic staff members at Australian National University report an average of seven book or book chapter readings per month or approximately 84 per year ($M=7.2$, $SD=8.108$).

We followed the same variation of *critical incident* technique we used in the article section by asking respondents to focus on the last scholarly book reading. We explicitly stated, “*The following questions in this section refer to the BOOK FROM WHICH YOU READ MOST RECENTLY. Note that this last reading may not be typical, but will help us establish the range of reading patterns across a range of academic staff, disciplines, and institutions.*” We assume the book readings will be a random sample of readings and will give us detailed information on a wide range of scholarly book readings. We asked the respondents to list the title or topic of the last book or book chapter they read, in order to help the respondent focus on the last reading from a book, book chapter, or part of a book.

Total Time of Book Reading

To get an indication of “exchange value” we asked, “*On how many occasions did you read from this book in the past month (30 days)*” and “*About how much total time (in minutes) did you spend reading this book in the past month (30 days)?*” We did not define what constitutes an occasion, and so an occasion could be any length of time. On average, academic staff members read from a book or book chapter on four occasions ($M=4.4$,

SD=3.67)⁹. Thirty-nine percent of book or book chapter readings occurred on only one or two occasions (39.2%), while 37.3% were read on five or more occasions (Table 27).

Table 27. Occasions of Last Book Reading by ANU Academic Staff Respondents

	Frequency	Percent
0	1	2.0
1-2	20	39.2
3-4	11	21.6
5-10	18	35.3
Over 10	1	2.0
Total	51	100.0

The average time spent reading, including on all occasions of reading, is 85 minutes (M=85.2 , SD=82.68).¹⁰ Over 40% of book readings take over one hour (Table 28). Only 16.3% of book or book chapter readings are less than fifteen minutes.

Table 28. Time Spent on Last Book Reading by ANU Academic Staff Respondents

Minutes	Frequency	Percent
0-15	8	16.3
16-30	8	16.3
31-45	1	2.0
46-60	12	24.5
61-90	7	14.3
91-120	6	12.2
Over 120	7	14.3
Total	49	100.0

⁹ Excludes one outlier of 120. Including outlier, mean is 6.6 (SD=16.44).

¹⁰ Excludes outliers over 500. Including outliers, mean is 129.9 (SD=211.08).

Source of Book and Time to Become Aware

We asked, “*How did you or someone on your behalf become aware of this last book from which you read?*” We kept the question and answers similar to the last article reading and maintained the same definitions of browsing and searching. The last book or book chapter readings are found through a variety of methods: 9.6% through browsing; 15.4% through searching; 21.2% through a citation; 26.9% through another person, and 5.8% through a promotional email (Table 29). Fifteen percent are found through a source we did not list in our answer choices. Some “other” ways the respondent became aware of the book are the book’s being recommended reading for students, co-authoring the book or co-authoring the book in which the book was cited, receiving it as a gift, and “It’s famous.” We did not ask the respondents to tell us what sources they browse or search. Six percent of respondents did not know or remember how they became aware of the book reading.

Table 29. How ANU Academic Staff Initially Become Aware of Books

	Frequency	Percent
Found while browsing	5	9.6
Found while searching	8	15.4
Cited in another publication.	11	21.2
Another person told me about it	14	26.9
Promotional email	3	5.8
Do not know/Do not remember	3	5.8
Other	8	15.4
Total	52	100.0

Respondents spend an average of 11 minutes becoming aware of a book or book chapter reading ($M=10.6, SD=10.62$),¹¹ with a range of less than a minute to thirty minutes.

¹¹ Excludes two outliers of an hour or more. Including outlier the mean is 16.02.

Readings found by browsing (M=16.7) or searching (M=14.4) take, on average, more time to become aware of than those found through a colleague (M=9.0), through a citation (M=10.5), or through a promotional email (M=2.0).

Obtaining the Book

We asked, “*After you became aware of this book, from where did you obtain it?*” The wording was kept similar to the other sections for comparison, but the answer choices were modified to reflect the different sources for books. Thirty-seven percent of the books are obtained from the library collection and only one is obtained from interlibrary loan (Table 30). Twenty-eight percent of the last book readings are purchased, 11.8% are from the publisher, and 9.8% were from a colleague. The other sources to obtain the last book reading include a gift, an order of a complimentary copy, another library, Google Books, and a PDF.

Table 30. How ANU Academic Staff Obtain Books

	Frequency	Percent
I bought it for myself (print)	14	27.5
The library or archives collection	19	37.3 (100.0)
• Print	(19)	(94.7)
• Electronic	(1)	(5.3)
Interlibrary loan or document delivery service (print)	1	2.0
School or department collection	0	0
A colleague, author or other person provided it to me	5	9.8 (100.0)
• Print	(4)	(80.0)
• Electronic	(1)	(20.0)
A free, advance, or purchased copy from the publisher	6	11.8 (100.0)
• Print	(4)	(66.7)
• Electronic	(2)	(33.3)
Other source	6	11.8 (100.0)
• Print	(4)	(66.7)
• Electronic	(2)	(33.3)
Total	51	100.0

Much has been discussed recently about the future of electronic books. A 2009 CIBER report in the U.K. found that 65% of staff and students have read an e-book for work, study, or leisure, and over half of those readings were obtained through the library (51.9%). Similar studies in the U.S. have also shown that e-books are gaining in popularity and are a valuable library resource (Shelburne 2009; Folb et al. 2011). In our study, we found 11.8% of the book readings are obtained from an electronic source. Twenty-nine percent of the books obtained from a colleague, a free advanced copy, and other sources are electronic copies (5 of 17). However, all personal purchased copies (14 of 14) and 94.7% of books (18 of 19) obtained through the library are print monographs. Not all academics support the growth of e-books. One respondent says, “Don't get rid of paper

books! Rather than try and access a difficult e-book which I don't have time to look at work (I would usually borrow print books and take home for reading/taking notes for my research) I tend to buy my own print copies. I don't want this to impact on my university library but it will. E-books are not convenient for research purposes when you can't download." However, other academic staff members are starting to read from e-books. While electronic resources for books have yet to reach the popularity as journals, e-books are becoming a part of academic culture.

Alternative to Obtain Book

Contingent valuation determines values by assuming if the information is important the respondent will try multiple methods to obtain the information, but their initial source is the most convenient. We asked, "*Thinking back to where you obtained the book (e.g., library collection, department collection, interlibrary loan, etc.), where would you obtain the information if that source were not available?*" Only 9.8% of respondents would not bother getting the information from another source and 90.2% of respondents would obtain the information from another source (5 and 46 of 51). We did not specify what alternative source they would use.

Five percent of the readings (1 of 19) obtained from the library would be obtained from another source. Seven percent of the readings obtained through purchase and 40.0% of the readings obtained from a colleague (2 of 5) would not be obtained from an alternative source.

Purpose and Value of Book Reading

The last set of questions focuses on the principal purpose of the last book reading and the value and importance of the reading. We asked, “*For what principal purpose did you use, or do you plan to use, the information obtained from the book you last read?*” As with article readings, respondents listed research (60.8%, 31 of 51) as the most frequent principal purpose for book readings. Teaching (15.7%, 8 of 51) is the next most frequent purpose for book reading, followed by writing (7.8%, 4 of 51) (Table 31). Current awareness, presentations, and continuing education each represent 3.9% of book readings. The other purpose is, “I am preparing a book.”

Table 31. Principal Purpose of Book Reading by ANU Academic Staff

	Frequency	Percent
Research	31	60.8
Teaching	8	15.7
Current awareness/keeping up	2	3.9
Writing proposals, reports, articles, etc.	4	7.8
Consulting/advising	1	2.0
Internal/external presentations	2	3.9
Continuing education for self	2	3.9
Other	1	2.0
Total	51	100.0

When a respondent becomes aware of a book through a citation, it is most likely to be for research (90.0%, 9 of 10). Those found through another person (64.3%, 9 of 14) and a promotional email (66.7%, 2 of 3) are most likely to be for research as well. Readings found through searching are for research (37.5%, 3 of 8) or teaching (37.5%, 3 of 8).

Readings found through browsing are for research (40.0%, 2 of 5) and continuing education (40.0%, 4 of 5).

The majority of books obtained through the library (84.2%, 16 of 19), purchase (50.0%, 7 of 14), or another person (60.0%, 3 of 5) are for research ($\chi^2=37.412$, $p=.359$). Teaching is the second most common purpose; 20% of books obtained through another person (1 of 5), 16.7% of books obtained through a publisher (1 of 6), 15.8% of books obtained through the library (3 of 19), and 14.3% of books obtained by purchase (2 of 14) are for teaching (Table 32).

Table 32. Association of Principal Purpose of Book Reading by How ANU Academic Staff Obtains Book Readings

	Purchased	Library	ILL	Another person	Publisher	Other	Row Total
Research	7 50.0%	16 84.2%	3 60.0%	2 33.3%	2 33.3%	3 50.0%	31 60.8%
Teaching	2 14.3%	3 15.8%	0 0%	1 20.0%	1 16.7%	1 16.7%	8 15.7%
Current awareness/keeping up	0 0%	0 0%	0 0%	1 20.0%	1 16.7%	0 0%	2 3.9%
Writing proposals, reports, articles, etc.	2 14.3%	0 0%	0 0%	0 0%	1 16.7%	1 16.7%	4 7.8%
Consulting/advising	0 0%	0 0%	1 100.0%	0 0%	0 0%	0 0%	1 2.0%
Internal/external presentations	1 7.1%	0 0%	0 0%	0 0%	1 16.7%	0 0%	2 3.9%
Continuing education for self	2 14.3%	0 0%	0 0%	0 0%	0 0%	0 0%	2 3.9%
Other	0 0%	0 0%	0 0%	0 0%	0 0%	1 16.7%	1 2.0%
Column Total	14 100.0%	19 100.0%	1 100.0%	5 100.0%	6 100.0%	6 100.0%	51 100.0%

We found a slight association between purpose of reading and time spent reading ($\chi^2=33.661$, $p=.393$). Over a third of readings for teaching (37.5%, 3 of 9) and a third for

writing (33.3%, 1 of 3) take less than 15 minutes. Both readings for continuing education (2 of 2), 50% of readings for current awareness (1 of 2), 40.0% of readings for research (12 of 30), 37.5% of readings for teaching (3 of 8), and a third of readings for writing (33.3%, 1 of 3) take over an hour.

Most readings would be obtained from another source if the original source was not available; however, half of readings for current awareness (1 of 2) would not be obtained from another source ($\chi^2=9.084$, $p=.144$).

Readings for research, teaching, writing, and presentations are considered more important than other readings ($\chi^2=33.154$, $p=.068$). Fifty-seven percent of reading for research (17 of 30), 62.5% of readings for teaching (5 of 8), all reading for writing (4 of 4), and both for presentations (2 of 2) are considered “very important” or “absolutely essential.” Both readings for current awareness and continuing education are considered “important” or “somewhat important.” Only one reading is considered “not at all important,” and it is for research (3.3%, 1 of 30).

We did not find a significant difference between principal purpose of reading and the format of the reading.

In relation to the respondent’s principal purpose we asked, “*How important is the information contained in this book to achieving your principal purpose?*” Nearly all (98.0%) of the book or book chapter readings are considered at least “somewhat important” (Table 33). Over half (58.0%) of the readings are considered “absolutely essential” or “very important” to the principal purpose (29 of 50).

Table 33. Importance of Book Reading to Principal Purpose of ANU Academic Staff

	Frequency	Percent
Absolutely essential	9	18.0
Very Important	20	40.0
Important	11	22.0
Somewhat important	9	18.0
Not at all important	1	2.0
Total	50	100.0

Readings from the library and from the publisher are considered more important to the principal purpose than readings obtained from other sources ($\chi^2=22.591$, $p=.309$). Two thirds of the book readings obtained from the library (12 of 18) and two thirds from a publisher (4 of 6) are considered “absolutely essential” or “very important,” followed by 60% obtained through another person (3 of 5) and half of the readings obtained through personal purchases (3 of 6). Only 7% of those obtained through personal purchases are considered “not at all important.” No other readings are considered “not at all important.”

All of the book readings that respondents would not bother obtaining from another source if it was unavailable from its original source were considered “somewhat important” ($\chi^2=20.143$, $p<.0001$). All other readings (90.0%, 45 of 50) would be obtained from another source, including the reading considered “not at all important” (2.0%, 1 of 50).

Outcomes of Book Reading

To better understand what influenced the book reading’s importance to the principal purpose, we asked, “*In what ways did the reading of the book affect the principal purpose?*” The most frequent outcomes are: “inspired new thinking,” “improved the result,”

and “narrowed/broadened/changed the focus” (Table 34). Only one book reading is considered a waste of time, and only 8 (16%) made the respondent question his or her work. Most book readings “improved the result” (46%) and “inspired new thinking” (52%). The other outcomes include: “added to personal knowledge base,” “it helped me better understand the background,” “I could not have proceeded without it,” “it helped me prepare my course,” and “don’t know yet.” One respondent said, “I was speaking about the book so needed to check some things in it.”

Table 34. Outcome of Book Reading for ANU Academic Staff*

	Frequency	Percent
Inspired new thinking	26	52.0
Improved the result	23	46.0
Narrowed/broadened/changed the focus	15	30.0
Resolved technical problems	11	22.0
Made me question my work	8	16.0
Saved time or resources	6	12.0
Other	6	12.0
Resulted in faster completion	5	10.0
Wasted my time	1	2.0
Resulted in collaboration/joint research	0	0.0
Total	50	

*Respondents could select more than one outcome.

Nearly half of the book or book chapter readings have been or will be cited (Table 35). Nearly a quarter of the readings will not be cited. As the book reading’s importance to the principal purpose increased, so does the chance it will be cited ($p=.077$).

Table 35. Citation of Last Book Reading by ANU Academic Staff

	Frequency	Percent
No	12	23.5
Maybe	14	27.5
Already cited	14	27.5
Will in the future	11	21.6
Total	51	100.0

Readings for research and writing are more likely to be cited than readings for other purposes ($\chi^2=29.747$, $p=.097$). Fifty-eight percent of book readings for research have been or will be cited (18 of 31). Seventy-five percent of readings for writing have been or will be cited (3 of 4). One quarter of readings for teaching (2 of 8) have been cited but 75% will *not* be cited (6 of 8).

Differences of Book Reading Patterns by Demographics

Differences of Reading Patterns by Discipline

There is a significant association between discipline and number of book readings ($F=3.756$, $p=.009$). By far, humanists ($M=14.7$) report the most book readings per month. Scientists report 7 book readings per month ($M=7.1$), followed by social scientists ($M=5.6$), mathematics/technology academic staff ($M=4.8$), and medical scientists ($M=2.8$).

We found a significant difference between discipline and how respondents become aware of book readings ($\chi^2=33.956$, $p=.085$). Readings by scientists are discovered primarily through citations (27.3%), another person (36.4%), and other sources (27.3%). Three quarters of the readings by mathematics/technology academic staff are found

through another person, and one quarter through searching (Table 36). Readings by humanists are discovered primarily through searching (25%) and citations (33.3%).

Table 36. How ANU Academic Staff Become Aware of Book Readings by Discipline

	Sciences	Medical Sciences	Engineering/ Technology/ Mathematics	Social Sciences	Humanities	Row Total
Found by browsing	1 9.1%	1 25.0%	0 0%	2 10.5%	1 8.3%	5 10.0%
Found while searching	0 0%	0 0%	1 25.0%	4 21.1%	3 25.0%	8 16.0%
Cited in another publication	3 27.3%	0 0%	0 0%	3 15.8%	4 33.3%	10 20.0%
Another person	4 36.4%	0 0%	3 75.0%	4 21.1%	2 16.7%	13 26.0%
Promotional email or advertisement	0 0%	0 0%	0 0%	1 5.3%	2 16.7%	3 6.0%
Don't know or don't remember	0 0%	1 25.0%	0 0%	2 10.5%	0 0%	3 6.0%
Other	3 27.3%	2 50.0%	0 0%	3 15.8%	0 0%	8 16.0%
Column Total	11 100.0%	4 100.0%	4 100.0%	19 100.0%	12 100.0%	50 100.0%

We found some differences between disciplines and where the book is obtained ($\chi^2=29.942$, $p=.071$). The library collection is the primary source of book readings for most disciplines (Table 37). Three quarters of the readings by mathematics/technology respondents, half by humanists, 39% of the readings by social scientists, and 18% by scientists are obtained from the library. No medical science respondent reports obtaining books from the library. On the other hand, three quarters of the readings by medical scientists are purchased, followed by 36% by scientists, one quarter by humanists, and 21% by social scientists.

Table 37. How ANU Academic Staff Obtain Book Readings by Discipline

	Sciences	Medical Sciences	Engineering/ Technology/ Mathematics	Social Sciences	Humanities	Row Total
Purchased	4 36.4%	3 75.0%	0 0%	4 21.1%	3 25.0%	14 28.0%
Library	2 18.2%	0 0%	3 75.0%	7 36.8%	6 50.0%	18 36.0%
Interlibrary loan	0 0%	0 0%	0 0%	0 0%	1 8.3%	1 2.0%
Another person	2 18.2%	0 0%	1 25.0%	2 10.5%	0 0%	5 10.0%
Publisher	3 27.3%	1 25.0%	0 0%	2 10.5%	0 0%	6 12.0%
Other	0 0%	0 0%	0 0%	4 21.1%	2 16.7%	6 12.0%
Column Total	11 100.0%	4 100.0%	4 100.0%	19 100.0%	12 100.0%	50 100.0%

Scientists, social scientists, and humanists read for the primary purpose of research, and teaching is the secondary purpose of book reading ($\chi^2=33.578$, $p=.215$). Seventy-three percent of readings by scientists are for the purpose of research (72.7%, 8 of 11), followed by writing (18.2%, 2). Sixty-three percent of readings by social scientists are for research (63.2%, 12 of 19), followed by 10.5% for teaching (2), 10.5% for current awareness (2). Two thirds of humanists read for research (66.7%, 8 of 12) and 16.7% for teaching (2).

All of the readings by humanists, medical scientists, and mathematics/technology academic staff are from print books, and 81.8% of readings by scientists and 78.9% of readings by social scientists are from print books. Twenty-one percent of readings by social scientists (21.1%) are from e-books.

We also found a slight association between the respondent's discipline and whether it will be cited, with social scientists and humanists being more likely to cite book readings

($\chi^2=16.420$, $p=.173$). Fifty-eight percent of the readings by social scientists (57.9%, 11 of 19) have been or will be cited. Half of the readings by humanists, too, have been or will be cited. Seventeen percent of the readings by humanists will not be cited.

Differences of Reading Patterns by Position, Age, Gender, and Productivity

We found a slight association between the respondent's academic status and how s/he became aware of the book reading ($\chi^2=45.720$, $p=.320$). Readings by professors and associate professors are primarily found through citations (33.3%, 5 of 15; 25%, 2 of 8) and another person (26.7%, 4 of 15; 37.5%, 3 of 8). Book readings by lecturers are also discovered through citations (25%, 2 of 8) and another person (25%, 2 of 8). However, most readings by lecturers are discovered through searching (37.5%, 3 of 8). Most readings by post-doctoral researchers are found through another person (33.3%, 3 of 9). A third of the readings by senior lecturers are found by browsing (33.3%, 2 of 6) and a third through other means not listed (33.3%, 2 of 6).

We found a significant association between the respondent's academic status and how s/he obtains the book reading ($\chi^2=42.419$, $p=.182$). Most book readings by professors (40%, 6 of 15), lecturers (50%, 4 of 8), and post-doctoral researchers (66.7%, 6 of 9) are obtained through the library. A further 40% of the book readings by professors are obtained through purchases. Book readings by associate professors are obtained through purchase (37.5%, 3 of 8) and through other means not listed (25%, 2 of 8). Book readings by senior lecturers are obtained primarily through a publisher (50%, 3 of 6) and by purchase (33.3%, 2).

Adjunct/visiting academic staff consider their book readings to be more important to their principal purpose of reading than other academics ($\chi^2=27.275$, $p=.503$). 80.0% of the readings by professors (12 of 15), half of those by senior lecturers (3 of 6), half by lecturers (4 of 8), and 55.5% by post-doctoral researchers (5 of 9) are considered “very important” or “absolutely essential”.

We found a slight association between academic status and whether book readings are cited ($\chi^2=23.490$, $p=.318$). Professors (66.7%, 10 of 15), post-doctoral researchers (55.5%, 5 of 9), and lecturers (50%, 4 of 8) already have cited or will cite book readings. Half of associate professors may cite book readings (50%, 4 of 8).

We did not find an association between academic status and the number of book readings or purpose of readings.

Academic staff in their twenties spent more time per book reading than older academic staff ($F=1.535$, $p=.210$). Academic staff in their 20s read for three hours, on average ($M=180.0$). Those in their 30s and 50s read for just over an hour and a half ($M=100.5$ and $M=103.7$). Academic staff in their 40s ($M=54.6$) and over 60 years ($M=63.3$) read for about an hour.

We found a slight association between respondents’ age and the importance of book reading ($\chi^2=15.856$, $p=.408$). Eighty-one percent of the book readings by academic staff in their 50s consider readings “very important” or “absolutely essential.” Half of the readings by staff in their 20s, half over 60 years, 46% by those in their 30s, and 43% by those in their 40s are considered “very important” or “absolutely essential” as well. Forty-six percent of the readings by those in their 30s are also considered “important.” Only 7% of

the readings by those in their 40s are considered “not at all important.” No other respondent in any other age group considers a book reading to be “not at all important.”

Respondents in their 30s report more book readings that are cited ($\chi^2=14.491$, $p=.270$). Nearly three quarters (73%) of the book readings by respondents in their 30s have been or will be cited. Only 52% of those by in their 50s, 36% by those in their 40s and one third by those over 60 years have been or will be cited. Over one third (36%) of the readings by those in their 40s, 29% by those in their 50s, 17% by those over 60 years, and 9% by those in their 30s will not be cited. All respondents in their 20s report that they *may* cite these book readings.

We did not find any other significant associations between age and patterns of book readings.

On average, women spend more time on book readings than men do ($F=1.883$, $p=.177$). On average, females spend just over an hour and a half on book readings ($M=103.5$), while males spend just over an hour ($M=70.2$).

We found a slight association between respondents' gender and how they became aware of book readings ($\chi^2=7.953$, $p=.242$). More book readings by women are found through citations (23.1%), versus 16.7% by men. More readings by men are discovered through another person (33.3%), as opposed to just 19.2% by women (Table 38).

Table 38. How ANU Academic Staff Become Aware of Book Readings by Gender

	Male	Female	Row Total
Found by browsing	1 4.2%	4 15.4%	5 10.0%
Found while searching	3 12.5%	5 19.2%	8 16.0%
Cited in another publication	4 16.7%	6 23.1%	10 20.0%
Another person	8 33.3%	5 19.2%	13 26.0%
Promotional email or advertisement	3 12.5%	0 0%	3 6.0%
Don't know or don't remember	1 4.2%	2 7.7%	3 6.0%
Other	4 16.7%	4 15.4%	8 16.0%
Column Total	24 100.0%	26 100.0%	50 100.0%

We found a slight association between gender and whether respondents would obtain the information from another source if their original source were unavailable ($\chi^2=2.404$, $p=.121$). Females are more likely to obtain the information from another source (96.2%, 25 of 26) than males (83.3%, 20 of 24).

Women consider book readings more important than do men ($\chi^2=4.664$, $p=.324$). Nearly three quarters of the book readings by female respondents are considered “very important” or “absolutely essential” (69.3%, 18 of 26), but less than half of the readings by male respondents are considered the same (43.4%, 10 of 23). One male respondent considers book reading “not at all important” (4.3%, 1 of 23) but no female respondent does.

We found a significant association between the respondent's gender and whether a book reading will be cited ($\chi^2=4.861$, $p=.182$)¹². Only 37.5% of the book readings by men have been or will be cited (9 of 24); however, 57.7% of the readings by women have been or will be cited. More readings by male academic staff members are reported *not* to be cited (33.3%) versus female academic staff members (15.4%).

We did not find significant differences between gender and the number of book readings, occasions of book reading, where book readings are obtained, format of book readings, or principal purpose of reading.

While we did not find an association between award-winning academic staff and number of book readings, those who published more tended to read more books ($F=3.405$, $p=.015$). Academic staff who published between five and ten items read approximately 12 books ($M=11.96$), followed by those who published 3-4 items ($M=6.29$), 1-2 items ($M=4.60$), and those who published over 10 items ($M=3.44$). Those who did not publish any items read about seven books per month ($M=7.00$).

Overall, the largest influence on book reading patterns is an academic staff member's discipline, and while we cannot claim a cause-and-effect relationship, academic staff members who received a certain level of success read more books and as we determined earlier also read more articles. Other demographic characteristics have little influence on the purpose, value, and outcomes of reading.

Other Publication Reading

¹² Likelihood ratio is not used for this calculation; only 1 cell (12.5%) has expected cell count less than 5.

This section focuses on the other types of publications that may inform academic work but which are not journal article or book readings. We left the definition relatively broad, and the “other publications” encompass a wide range of items, including government documents, trade journals, and conference proceedings. The 2011 study in the United Kingdom is the first time the Tenopir and King surveys have included other publication readings (Tenopir et al. 2012).

Total Amount of Other Publication Reading

As in the previous sections, we started the section by defining terms and asking respondents to estimate total readings in the past month. We asked, “*In the past month (30 days), approximately how many other publications or parts of publications (non-article or book readings) have you read for your work? Include conference proceedings, government documents, technical reports, magazines, trade journals, etc.*” Academic staff members at Australian National University read, on average, eight other publications per month or 94 per year if multiplied by 12 for an approximation of the annual total ($M=7.8$, $SD=12.114$). Thirty-five percent of the respondents did not read any other publications in the past month, and therefore, the responses for this section are lower than earlier sections. Zero readings are included in the average number of other publication readings.

Type of Other Publication Read and Total Time of Reading

As in the article and book reading sections, we used the “critical incident” technique to focus the questions on the other publication most recently read, regardless if it is typical.

Since the type of publication could vary, we asked the respondents what type of other publication they most recently read. Over a third (34.2%, 13 of 38) of the last other publication readings are from government documents or other technical reports (Table 39). Respondents also read from magazines/trade journals (18.4%), conference proceedings (15.8%), and news sources (7.9%). Respondents also reported readings from other publications not listed in our answer choices; these include websites, email discussion lists, newsletters, editorials, academic bulletins, dictionaries, works of fiction, and “Electronic access to contemporary Journals.”

Table 39. Type of Last Other Publication Reading by ANU Academic Staff

	Frequency	Percent
Conference proceeding	6	15.8
Government document or other technical report	13	34.2
Magazine/trade journal	7	18.4
News source	3	7.9
Other	9	23.7
Total	38	100.0

The average time spent per other publication reading is 30 minutes (M=30.1, SD=30.017).¹³ Sixty percent of the readings are between six and 30 minutes (Table 40).

¹³ Excludes outliers over 120. Including outlier the mean is 74.5.

Table 40. Time Spent on Last Other Publication Reading by ANU Academic Staff

Minutes	Frequency	Percent
1-5	5	14.3
6-10	6	17.1
11-20	10	28.6
21-30	5	14.3
31-60	6	17.1
Over 60	3	8.6
Total	35	100.0

Readings from magazines/trade journals take slightly more time on average than readings from other types of “other publications” ($F=.265$, $p=.898$). Magazines/trade journals take an average of 36 minutes per reading ($M=36.4$), followed by conference proceedings ($M=32.8$), government document ($M=30.0$), and news sources ($M=15.0$).

Time to Become Aware of and Obtain Other Publication

While we did not ask the respondents what source they used to become aware of the last other publication reading, we did ask, “*About how much time did you or someone on your behalf spend becoming aware of this publication?*” On average, academic staff members spend less time becoming aware of other publications than articles or books. The average time to become aware of the other publication is 5 minutes ($M=4.7$, $SD=5.722$)¹⁴. Nearly three quarters (71.4%) of the other publication readings took five minutes or less, and just 8.6% of the readings take at least fifteen minutes for respondents to become aware of them. Though respondents spend the least amount of time news sources, they take longer to find ($F=1.052$, $p=.397$). On average, the respondents spent the most time

¹⁴ Excluding outliers over 30 minutes. Including outliers, mean is 10.6 minutes.

becoming aware of news sources (M=10.0), followed by government documents/technical reports (M=5.6), conference proceedings (M=5.5), and magazine/trade journals (M=1.6).

We then asked, “*After you became aware of the publication, from where did you obtain it?*” The majority of other publications are obtained from an electronic source (75.7%, 28 of 37). Nearly a quarter (24.3%, 9 of 37) of the last other publication readings are obtained from the library (Table 41). Fourteen percent are obtained through purchase (13.5%, 5). Other publications are also frequently obtained from another person (10.8%, 4). However, other publications are most frequently obtained through other means not listed (40.5%, 15).

Table 41. How ANU Academic Staff Obtain Other Publications

	Frequency	Percent
I bought it for myself (print)	5	13.5
The library or archives	9	24.3 (100.0)
• Print	(1)	(11.1)
• Electronic	(8)	(88.9)
Interlibrary loan or document delivery service (electronic)	1	2.7
School or department collection (electronic)	1	2.7
A colleague, author or other person provided it to me (electronic)	4	10.8
A free, advanced, or purchased copy from the publisher (electronic)	2	5.4
Other	15	43.2 (100.0)
• Print	(3)	(20.0)
• Electronic	(12)	(80.0)
Total	37	100.0

Twenty-three percent of government documents and 66.7% of conference proceedings are obtained from the library. The majority of magazine/trade journals (42.9%) are purchased. Seventeen percent of conference proceedings (16.7%), 15.4% of

government document/technical reports, and 14.3% of magazine/trade journals were obtained from another person. All news sources, 46.2% of government documents/technical reports, 44.4% of other types of other publications, 28.6% of magazines/trade journals, and 16.7% of conference proceedings were obtained through other means. The other means include free or open access websites online (66.7%, 10 of 15), a conference (6.7%, 1 of 15), email (13.3%, 2 of 15), and through a membership (13.3%, 2 of 15).

Alternative Source to Obtain Other Publication

Based on the *contingent valuation*, value can also be measured based on whether the respondent would obtain the reading from another source (Imholz and Arns 2007). To help gauge value, we asked, "*Thinking back to where you obtained the publication, where would you obtain the information if that source were not available?*" Sixty-one percent of the other publications would be obtained from another source (22 of 36). There are some differences between the original source of the publication and whether it would be obtained from an alternative source ($\chi^2=8.832$, $p=.116$). Eighty-nine percent (8 of 9) of other publications obtained from a library would be obtained from an alternative source if the library were no longer available collection; however, 53.3% of the publications obtained from other sources, including a website, would not be obtained from an alternative source (8 of 15). Half of other publications obtained from a colleague would be obtained from another source (2 of 4). All other publications from a publisher (100%)

would be obtained from an alternative source if the original source were no longer available, but only 40% of purchased other publications would be obtained.

We also found some differences between type of publication and whether it would be obtained from an alternative source ($\chi^2=6.467$, $p=.167$). Both news sources would be obtained from an alternative source if the original source was not available. Three quarters of government documents/technical reports (9 of 12), two thirds of “other” other publications (6 of 9), and half of conference proceedings (3 of 6) would also be obtained. However, 71.4% of magazines/trade journals would not be obtained from an alternative source. If the library were unavailable, value to academic work would be lost as 11.1% of the information obtained from the library would not be obtained from another source; in addition, academic staff would suffer additional costs in time and money in order to obtain the 88.9% of other publications that they would obtain from another source if the library was not available.

Purpose and Value of Other Publication Reading

The principal purpose of the information in the reading provides a picture of the purpose, value and outcomes from the reading, which usage data cannot provide. Other publication readings are most likely to be for research (40.5%), followed by current awareness (29.7%) and teaching (10.8%) (Table 42). Only 8,1% are read for writing. None of the other publication readings are read for internal or external presentations, or for consulting/advising. Other purposes include: managing a grant, and preparing a glossary for a book.

Table 42. Principal Purpose of Other Publication Reading by ANU Academic Staff

	Frequency	Percent
Research	15	40.5
Teaching	4	10.8
Current awareness/keeping up	11	29.7
Writing proposals, reports, articles, etc.	3	8.1
Internal or external presentations	0	0
Consulting/advising	0	0
Continuing education for self	1	2.7
Other	3	8.1
Total	37	100.0

We found some differences between the principal purpose of other publication reading and where the reading was obtained ($\chi^2=37.799$, $p=.155$). The majority of readings for current awareness (54.5%, 6 of 11) and teaching (50.0%, 2 of 4) are obtained through means not listed. Forty-seven percent of readings for research are also obtained through other means not listed (46.7%, 7 of 15); however, 40.0% of readings for research are obtained through the library (6 of 15). One third of readings for writing (1 of 3) are obtained through the library, a third through another person, and a third through a publisher.

We found some differences between the type of other publication and the principal purpose of reading ($\chi^2=30.368$, $p=.064$). The majority of conference proceedings support research (50.0%, 3 of 6), as do most government documents (61.5%, 8 of 13) (Table 43). The vast majority of magazine / trade journal readings (71.4%, 5 of 7) support current awareness. Of the two news sources, one is for research and one supports teaching.

Table 43. Type of Other Publication and Principal Purpose of Reading by ANU Academic Staff

	Conference proceeding	Government document / technical report	Magazine/ trade journal	News source	Other	Row Total
Research	3 50.0%	8 61.5%	0 0%	1 50.0%	3 33.3%	15 40.5%
Teaching	1 16.7%	1 7.7%	1 14.3%	1 50.0%	0 0%	4 10.8%
Current awareness/keeping up	1 16.7%	1 7.7%	5 71.4%	0 0%	4 44.4%	11 29.7%
Writing proposals, reports, articles, etc.	1 16.7%	2 15.4%	0 0%	0 0%	0 0%	3 8.1%
Continuing education for self	0 0%	0 0%	1 14.3%	0 0%	0 0%	1 2.7%
Other	0 0%	1 7.7%	0 0%	0 0%	2 22.2%	3 8.1%
Column Total	6 100.0%	13 100.0%	7 100.0%	2 100.0%	9 100.0%	37 100.0%

To learn how the reading affects the principal purpose, we posed a series of questions starting with, “*How important is the information contained in this publication to achieving your principal purpose?*” Other publication readings are not considered more important to the principal purpose of reading than book readings or article readings. Most are considered “somewhat important” to the principal purpose, though a significant number are also considered “important” and “very important” (Table 44). Over two thirds of the other publications are considered “somewhat important” or “important” (67.5%, 25 of 37). Only 13.5% are considered “absolutely essential” (5 of 37), and 10.8% are considered “not at all important” (4 of 37).

Table 44. Importance of Other Publication Reading to Principal Purpose of ANU Academic Staff

	Frequency	Percent
Absolutely essential	5	13.5
Very important	3	8.1
Important	11	29.7
Somewhat important	14	37.8
Not at all important	4	10.8
Total	37	100.0

We found a significant difference based on the type of other publication ($\chi^2=29.260$, $p=.022$). About a third of readings of government documents (38.5%, 5 of 13) and other types of other publications (33.3%, 3 of 9) are considered “very important” or “absolutely essential.” However, all conference proceedings (6 of 6) and both news sources are considered “somewhat important” or “important.” The majority of magazines/trade journals are considered “not at all important” (42.9%, 3 of 7), but 28.6% are considered “somewhat important” (2 of 7) and 28.6% are considered “important” (2 of 7).

We also found a slight association between the principal purpose of reading and the importance to the purpose ($\chi^2=22.660$, $p=.306$). Two thirds of readings for other purposes not listed are considered “very important” or “absolutely essential” (66.7%, 2 of 3), as are one third of readings for writing (33.3%, 1 of 3), 26.6% of readings for research (4 of 15), and 9.1% of readings for current awareness (1 of 11). Only one third of reading for other purposes not listed are considered “important” or “somewhat important” (33.3%, 1 of 3), but three quarters of readings for teaching were (75%, 3 of 4), 73.3% of readings for research (11 of 15), 72.8% of readings for current awareness (8 of 11), and 66.6% of

readings for writing (2 of 3). Twenty-five percent of readings for teaching (1 of 4) and 18.2% of readings for current awareness (2 of 11) are considered “not at all important.”

The specific outcomes of the reading also provide insight into its importance and value. Other publications often “inspired new thinking,” “improved the result,” and “narrowed/broadened/changed the focus,” (Table 45). Eight percent of the readings made a respondent questioned his or her work. The other outcomes of the other publication reading are “broadened my education,” “it provided background information which may be useful in the future,” “useful information,” “none,” “it helped me check my results,” and “made sure I wasn’t missing anything interesting.” One respondent stated that “work could not have been done satisfactorily without it,” and another that “I liked the book’s use of English language.”

Table 45. Outcomes of Other Publication Reading for ANU Academic Staff*

	Frequency	Percent
Improved the result	12	32.4
Inspired new thinking	10	27.0
Narrowed/broadened/changed the focus	9	24.3
Other	8	21.6
Saved time or other resources	5	13.5
Resulted in faster completion	4	10.8
Resolved technical problems	4	10.8
Made me question my work	3	8.1
Resulted in collaboration/joint research	0	0.0
Wasted my time	0	0.0
Total	37	

*Respondents could select more than one.

Also unlike article or book readings, other publications are less likely to be cited. Only 30.5% of the other publication readings have been cited or will be cited (Table 46). A quarter of the readings may be cited (25%), though the majority (44.4%) will not be cited. Readings for writing and research are most likely to be cited: two thirds of readings for writing (2 of 3) and half of the readings for research (7 of 14) have been or will be cited ($\chi^2=20.972$, $p=.138$).

Table 46. Citation of Last Other Publication Reading by ANU Academic Staff

	Frequency	Percent
No	16	44.4
Maybe	9	25.0
Already cited	8	22.2
Will in the future	3	8.3
Total	36	100.0

Government documents are the most likely to be cited ($\chi^2=19.266$, $p=.082$) with 58.3% (7 of 12) having been or intended to be cited in the future. Only one of the two news sources has been cited. Twenty-two percent (2 of 9) of other sources of other publications has been cited (i.e., article from a professional agency, non-peer-reviewed article). Seventeen percent (1 of 6) of conference proceedings has been cited. No magazines/trade journals have been or will be cited (3 of 7).

Differences of Other Publication Reading Patterns by Demographics

Differences of Reading Patterns by Discipline

Humanities academic staff read the most other publications per month ($F=2.305$, $p=.071$). Humanists read, on average, 15 other publications per month ($M=15.1$), followed

by medical scientists (M=12.5), social scientists (M=6.3), mathematics/technology academic staff (M=6.0), and scientists (M=2.3). Scientists, however, spend the most time per reading (F=.837, p=.513). Sciences academic staff spend, on average, 44 minutes per other publication reading (M=43.7), followed by humanities academic staff (M=36.5), social sciences academic staff (M=24.6), medical sciences academic staff (M=17.5), and mathematics/technology academic staff (M=5.0).

We found some differences between respondents' discipline and type of other publication ($\chi^2=18.289$, $p=.307$). Other publication readings by scientists are primarily conference proceedings (66.7%, 4 of 6), while readings by medical scientists (50%, 2 of 4) and social scientists (46.7%, 7 of 15) tend to be primarily government documents/technical reports. Over a third of the readings by humanists are magazines/trade journals (36.4%, 4 of 11), and another quarter are government documents/technical reports (27.3%, 3 of 11). Readings by academic staff members in every discipline are split between being purchased and obtained from websites. Of the nine readings obtained from the library, the majority are read by scientists (50%, 3 of 6) and humanists (36.4%, 4 of 11). The majority of other publication readings by medical sciences (50%, 2 of 4) and social sciences academic staff (46.7%, 7 of 15) are obtained through other means, including websites.

Engineering/technology/math and social science academic staff consider their other publication readings to be more important to the principal purpose than other disciplines ($\chi^2=18.760$, $p=.281$). Twenty-seven percent of the readings by social scientists (4 of 15) and 25% (1 of 4) by medical scientists are considered "very important" or "absolutely

essential.” However, 83.4% of readings by scientists (5 of 6), 63.6% of readings by humanists (7 of 11) are considered “important” or “somewhat important.”

We did not find any other significant associations between discipline and patterns of other publication readings.

Differences of Reading Patterns by Position, Age, Gender, and Productivity

We found a slight association between respondents’ academic status and the type of other publication read ($\chi^2=31.463$, $p=.297$). The majority of the readings by professors (50%, 5 of 10), senior lecturers (40%, 2 of 5), and post-doctoral researchers (57.1%, 4 of 7) are government documents or technical reports. Readings by lecturers are conference proceedings (42.9%, 3 of 7). Readings by associate professors are conference proceedings, magazines/trade journals, new sources, and other types of publications not listed (25% each, 1 of 4).

Senior lecturers are less likely to obtain readings of other publications in electronic format than other academic staff ($\chi^2=11.129$, $p=.133$). Nearly all of the readings by professors (90%, 9 of 10) and nearly three quarters by lecturers (71.4%, 5 of 7) are read in electronic format. Readings by post-doctoral researchers (7) are also in electronic format, as well as 40% by senior lecturers (2 of 5), and half by associate professors. The single adjunct/visiting academic staff member and conjoint are in electronic format as well.

Senior lecturers are also less likely to obtain other publications from another source if the original source was not available ($\chi^2=12.080$, $p=.098$). Eighty-six percent of the readings by post-doctoral researchers (6 of 7) and three quarters by associate professors (3

of 4) would be obtained from another source. The majority of readings by professors (60%, 6 of 10) and lecturers (57.1%, 4 of 7) would also be obtained from another source. However, no senior lecturers would bother getting the information (4 of 4).

We found some differences between academic status and principal purpose of reading ($\chi^2=33.584$, $p=.536$). Sixty percent of the readings by professors (6 of 10) and 43% by post-doctoral researchers (3 of 7) are read for research. Forty-three percent of the readings by lecturers are read for teaching (3 of 7), while 60% by senior lecturers (3 of 5) are read for current awareness. Readings by associate professors are read equally for research, current awareness, writing, and other purposes (25%, 1 of 4).

There was also a slight association between academic status and whether readings of other publications will be cited ($\chi^2=24.025$, $p=.292$). Nearly half of the readings by post-doctoral researchers have been or will be cited (42.9%, 3 of 7). A quarter of readings by associate professors has already been cited (1 of 4), and another quarter may be cited (1 of 4). Nearly a third of readings by professors have been or will be cited (30%, 3 of 10), and a further 10% may be cited (1 of 10); however, 60% will not be cited (6 of 10). Likewise, 75% of readings by senior lecturers will not be cited (3 of 4). The single reading by a conjoint will not be cited.

We did not find any other associations between respondents' academic status and other publication reading patterns.

Most academic staff do not report citing other publication readings ($\chi^2=18.087$, $p=.113$). Thirty-six percent of the readings by staff in their 50s, 30% by those in their 30s, 22% by those in their 40s, and 20% by those over 60 years have been or will be cited. On

the other hand, 64% of the readings by staff in their 50s, 56% by those in their 40s, 40% by those over 60 years, and 20% by those in their 30s will not be cited. No other publication reading by a respondent in their 20s will definitely *not* be cited.

We did not find any other associations between respondents' age and other publication reading patterns.

As with article and book readings, males report reading more other publications than females ($F=3.277$, $p=.076$). Men read an average of 11 other publications per month ($M=11.0$), while women read an average of 5 other publications per month ($M=5.2$). However, women report more time spent reading, averaging 35 minutes ($M=35.0$) compared to the 25 minutes reported by men ($M=24.5$) ($F=1.006$, $p=.323$). Women also spend more time becoming aware of other publications ($F=0.995$, $p=.326$). Women spend about six minutes becoming aware ($M=5.6$), and men just 4 minutes ($M=3.6$).

We found little association between gender and the type of other publication ($\chi^2=3.643$, $p=.456$), however, the majority of the other publication readings by male respondents are magazines/trade journals (31.3%, 5 of 16), while the majority of the readings by females are government documents or other technical reports (42.9%, 9 of 21). Table 47 shows the breakdown between gender and different types of other publication reading.

Table 47. Type of Last Other Publication Reading and Gender of ANU Academic Staff

	Male	Female	Column Total
Conference proceeding	3 18.8%	3 14.3	6 16.2
Government document or other technical report	4 25%	9 42.9%	13 35.1%
Magazine/trade journal	5 31.3%	2 9.5%	7 18.9%
News source	1 6.3%	1 4.8%	2 5.4%
Other	3 18.8%	6 28.6%	9 24.3%
Row Total	16 100.0%	21 100.0%	37 100.0%

Male respondents are more likely to purchase an other publication than females ($\chi^2=14.194$, $p=.028$). A quarter of readings of other publications by men were purchased (4 of 16), as opposed to just 4.8% of reading by women (1 of 21). Readings by men are also more likely to come from the library (31.3%, 5 of 16) than those by women (19%, 4 of 21), or to come from another person (18.8%, 3 of 16) than those by women (4.8%, 1 of 21). However, women are much more likely to obtain readings of other publications through other means not listed (61.9%, 13 of 21), including a website, than men (12.5%, 2 of 16).

We did not find any other associations between gender and other publication reading patterns. We also did not find any association between award-winning academic staff and numbers of other publications read. However, academic staff who published at least five items in the last two years tended to read more other publications ($F=2.465$, $p=.057$). Those who published between five and ten items read about 14 other publications ($M=13.52$), followed by those who published 1-2 items ($M=4.40$), those who published over 10 items ($M=4.28$), and those who published 3-4 items ($M=1.14$). Those

who did not publish any items read approximately 8 other publications per month (M=8.33).

Social Media: Participation and Creation

The use of social media has increased in the last few years in both the academic and non-academic world. In this study, we examined the influence of social media on the reading of traditional materials. Social media or Web 2.0 technologies are collaborative, innovated user-generated content. According to the JISC website (2010), social media or Web 2.0 technologies are “innovative online tools designed to enhance communication and collaboration.” Social media includes blogs, twitter, online videos, and social networks.

A 2010 study by the Research Information Network (RIN) found that social media tools (blogs, wikis, file-sharing services) are being used as supplements to the traditional forms of information (monographs, journal articles, etc.). Academics place value on the traditional publications because they receive recognition and rewards for their work. In the RIN study, only 13% of the respondents used social media tools frequently, and 39% did not use them at all. The study found that academics are supportive of social media because it allows them to freely share ideas and collaborate with a broader scholarly community. While they found a few slight associations between social media use and demographics, for the most part, age, discipline, and position are not key factors. They concluded that while social media will continue as a supplement to traditional publications, academics’ lack of trust and quality will keep it from creating a radical change in scholarly communications (RIN 2010). Our findings support the 2010 RIN findings.

Participation and Creation of Social Media

We asked, “*How often do you read, view, or access each of the following for work related purposes (Teaching, research, etc.)?*” and “*How often do you create each of the following for work related purposes (teaching, research, etc.)?*” We specified ten social media tools—blogging (e.g., WordPress, Blogster), microblogging (e.g., Twitter), RSS feeds, social networking (e.g., LinkedIn), social tagging (e.g., Delicious), collaborative authoring (e.g., Google docs, CiteULike), user comments in articles, image sharing (e.g., Flickr), audio sharing (e.g., podcasts), and video sharing (e.g., YouTube). Their responses ranged from daily, weekly, monthly, occasionally, or never.

Academic staff members participate in social media more than they create it; however, their use and creation is more often occasional rather than on a regular basis. Nearly a quarter of academic staff members at Australian National University never participated in social media (22.8%, 13 of 57). However, other academic staff members confirmed the idea that social media may help spread some ideas and provoke thoughts but are not as valuable as traditional scholarly material.

Video sharing (e.g., YouTube), blogging (e.g., Wordpress), and social networking (e.g., Facebook) are the most frequently used; however, their use tends to be on the occasional rather than regular basis (Table 48). Thirteen percent participate in video sharing; 19.6% participate in social networking; and 24.1% participate in blogging on a daily or weekly basis. Social tagging (e.g., Delicious), microblogging (e.g., Twitter), and RSS feeds are the least frequently used.

Table 48. Participation in Social Media by ANU Academic Staff

	Daily	Weekly	Monthly	Occasionally	Never	Total
Blogging	3 5.6%	10 18.5%	2 3.7%	13 24.1%	26 48.1%	54 100.0%
Microblogging	2 3.8%	2 3.8%	0 0%	4 7.5%	45 84.9%	53 100.0%
RSS Feeds	4 7.5%	2 3.8%	1 1.9%	4 7.5%	42 79.2%	53 100.0%
Social Networking	6 10.7%	5 8.9%	2 3.6%	10 17.9%	33 58.9%	56 100.0%
Social Tagging	0 0%	0 0%	1 1.9%	1 1.9%	51 96.2%	53 100.0%
Collaborative Authoring	0 0%	5 9.3%	2 3.7%	9 16.7%	38 70.4%	54 100.0%
Comments in articles	0 0%	3 5.6%	2 3.7%	14 25.9%	35 64.8%	54 100.0%
Image sharing	0 0%	2 3.6%	4 7.3%	8 14.5%	41 74.5%	55 100.0%
Audio sharing	1 1.8%	3 5.5%	4 7.3%	11 20.0%	36 65.5%	55 100.0%
Video sharing	4 7.4%	3 5.6%	6 11.1%	16 29.6%	25 46.3%	54 100.0%

Fewer academic staff members report that they create social media, but their creation is on an occasional rather than regular basis. Forty-five percent of respondents do not create any of the social media tools we listed (25 of 56). Blogging, collaborative authoring (e.g., Goggle Docs), and social networking are the most frequently created (Table 49). Social tagging, RSS feeds, and microblogging are the least frequently created tools.

Table 49. Creation of Social Media by ANU Academic Staff

	Daily	Weekly	Monthly	Occasionally	Never	Total
Blogging	0 0%	2 3.6%	5 9.1%	6 10.9%	42 76.4%	55 100.0%
Microblogging	1 1.8%	3 5.5%	1 1.8%	1 1.8%	49 89.1%	55 100.0%
RSS Feeds	0 0%	1 1.8%	0 0%	4 7.3%	50 90.9%	55 100.0%
Social Networking	2 3.6%	5 8.9%	1 1.8%	11 19.6%	37 66.1%	56 100.0%
Social Tagging	0 0%	0 0%	0 0%	1 1.8%	54 98.2%	55 100.0%
Collaborative Authoring	0 0%	4 7.3%	3 5.5%	6 10.9%	42 76.4%	55 100.0%
Comments in articles	0 0%	1 1.8%	3 5.5%	7 12.7%	44 80.0%	55 100.0%
Image sharing	0 0%	2 3.6%	2 3.6%	5 8.9%	47 83.9%	56 100.0%
Audio sharing	0 0%	2 3.6%	3 5.5%	5 9.1%	45 81.8%	55 100.0%
Video sharing	0 0%	1 1.8%	0 0%	6 10.9%	48 87.3%	55 100.0%

Scholarly Reading and Participation and Creation of Social Media

One reason we examined the use and creation of social media was to see how it influenced the use of traditional scholarly material. Are academics using social media for information instead of journal articles? Are academics using and creating social media as a form of collaboration and to share ideas? Is social media replacing traditional material? Do academics who participate and create social media read fewer articles, books, and other publications? By comparing the respondent's reading patterns with his or her use and creation of social media, we hope to address these questions.

We found that academic staff members who are participating with up to five social media are reading more "other" publications ($p=.141$). Academic staff who participate in

one or two social media tools read an average of six other publications, and those who use between three and five tools read approximately 12 other publications per month. Academic staff who use six or more social media tools read fewer other publications, an average of just six other publications per month. However, academic staff who do not participate in any of the social media tools that we listed read just three other publications per month on average. We did not find a significant association between academic staff use of social media and number of articles or books read.

We found a similar association between creation of social media and the number of other publication readings, with those creating social media using between one and five tools read more than those creating no social media at all or on six or more social media tools ($p=.531$). Academic staff who create social media on one or two tools read an average of 10 other publications per month, while those who create on three to five tools read an average of 11 other publications per month. However, those who do not create any social media read just six other publications per month, while those who create using six or more social media tools read an average of five other publications per month.

We did not find any associations between award-winning academic staff and numbers of social media tools used or content created for social media, or numbers of publications by staff and social media usage and creation.

Participation in Social Media and Demographics

For our analysis we define participation and use of social media as using the tool occasionally to monthly, weekly, or daily. We found a significant association between discipline and the participation/viewing/reading of blogs ($\chi^2=13.349$, $p=.010$). Eighty percent of humanities respondents, 65% of social sciences, and 60% of mathematics/technology academic staff respondents participated in blogging, but only 15.4% of scientists and 33.3% of medical scientists participate in blogs. We also found a significant association between discipline and participation in microblogging ($\chi^2=6.678$, $p=.154$), RSS feeds ($\chi^2=10.486$, $p=.033$), collaborative authoring ($\chi^2=6.062$, $p=.195$), user comments ($\chi^2=5.644$, $p=.227$), image sharing ($\chi^2=4.562$, $p=.335$), audio sharing ($\chi^2=12.645$, $p=.013$), and video sharing ($\chi^2=6.749$, $p=.150$). Overall, humanists and social scientists tend to participate the most frequently in each of the tools (Table 50). Video sharing, social networking, and blogging are the most popular tools in each discipline.

Table 50. Percentage of ANU Academic Staff Who Participate in Social Media by Discipline

	Sciences	Medical/ Health	Mathematics/ Technology	Social Sciences	Humanities
Blogging	2 15.4%	2 33.3%	3 60.0%	13 65.0%	8 80.0%
Microblogging	1 7.7%	0 0%	1 20.0%	2 10.5%	4 40.0%
RSS Feeds	0 0%	1 16.7%	2 40.0%	7 36.8%	1 10.0%
Social Networking	4 30.8%	2 33.3%	1 20.0%	9 45.0%	7 58.3%
Social Tagging	0 0%	0 0%	0 0%	2 10.6%	0 0%
Collaborative Authoring	1 7.7%	1 16.7%	2 40.0%	8 40.0%	4 40.0%
Comments in articles	2 14.3%	2 40.0%	1 20.0%	10 50.0%	4 40.0%
Image sharing	3 23.1%	0 0%	1 20.0%	7 35.0%	3 27.3%
Audio sharing	2 14.3%	2 33.3%	0 0%	12 60.0%	3 30.0%
Video sharing	7 50.0%	2 33.3%	1 20.0%	14 73.7%	5 50.0%

The respondent's academic status influences the use of blogging ($\chi^2=16.471$, $p=.021$), microblogging ($\chi^2=14.770$, $p=.039$), RSS feeds ($\chi^2=15.213$, $p=.033$), social networking ($\chi^2=17.116$, $p=.017$), collaborative authoring ($\chi^2=6.861$, $p=.444$), and user comments ($\chi^2=17.006$, $p=.017$). Over all, senior lecturers seem to participate more in these social media tools, while post-doctoral researchers participate the least (Table 51).

Table 51. Percentage of ANU Academic Staff Who Participate in Social Media by Academic Status

	Blogging	Microblogging	RSS Feeds	Social Networking	Collaborative Authoring	Comments in Articles
Professors	6 42.9%	1 7.7%	0 0%	4 25.0%	3 21.4%	2 14.3%
Associate Professors	4 50.0%	0 0%	1 12.5%	2 25.0%	3 37.5%	1 12.5%
Senior Lecturers	2 28.6%	1 14.3%	3 42.9%	4 57.1%	2 28.6%	2 28.6%
Lecturers	7 87.5%	5 62.5%	2 25.0%	4 50.0%	4 50.0%	6 75.0%
Adjunct / Visiting	2 100.0%	0 0%	0 0%	0 0%	0 0%	0 0%
Post doctoral researchers	7 70.0%	1 10.0%	5 50.0%	8 80.0%	4 40.0%	6 60.0%
Conjoints	0 0%	0 0%	0 0%	1 100.0%	0 0%	1 100.0%

Age influences nearly every social tool in which respondents participate, except social tagging (Table 52). Respondents in their 30s generally participate most and in more different social media tools.

Table 52. Percentage of ANU Academic Staff Who Participate in Social Media by Age

	30 Years and Younger	31-40	41-50	51-60	Over 60 Years
Blogging	1 33.3%	9 90.0%	6 37.5%	8 50.0%	4 50.0%
Microblogging	0 0%	4 40.0%	2 12.5%	2 13.3%	0 0%
RSS Feeds	0 0%	4 40.0%	4 25.0%	3 20.0%	0 0%
Social Networking	2 66.7%	8 80.0%	6 37.5%	7 38.9%	0 0%
Collaborative authoring	0 0%	7 70.0%	5 25.0%	4 25.0%	1 12.5%
Comments in articles	2 66.7%	10 90.9%	2 13.3%	5 31.3%	0 0%
Image Sharing	0 0%	5 50.0%	5 31.3%	3 17.6%	1 12.5%
Audio Sharing	1 33.3%	6 54.5%	7 43.8%	4 25.0%	1 12.5%
Video Sharing	2 66.7%	7 63.6%	10 66.7%	8 100.0%	2 25.0%

Female academic staff members participate more frequently in all forms of social media than male academic staff members. In particular, female academic staff members participate in RSS feeds (28.6%, $\chi^2=2.001$, $p=.157$), social tagging (7.1%, $\chi^2=1.783$, $p=.182$), user comments (42.9%, $\chi^2=1.286$, $p=.260$), audio sharing (55.2%, $\chi^2=10.973$, $p=.001$), and video sharing (67.9%, $\chi^2=4.137$, $p=.042$). Only 12.5% of men participate in RSS feeds, 25.0% participate in collaborative authoring, 28.0% participate in user comments, 12.0% participate in audio sharing, and 40.0% participate in video sharing. No male respondent reports participating in social tagging tools.

Creation of Social Media and Demographics

For our analysis, we defined the *creation* of social media as daily, weekly, monthly, or occasionally. We found significant differences between the respondent's discipline and the creation of content for blogs ($\chi^2=13.105$, $p=.011$), RSS feeds ($\chi^2=8.087$, $p=.088$), user comments ($\chi^2=7.536$, $p=.110$), image sharing ($\chi^2=6.335$, $p=.175$), and audio sharing ($\chi^2=10.420$, $p=.034$). Unlike participation in social media, medical scientists rather than humanists join social scientists in their tendency to create social media more frequently than the other disciplines; however, humanists do create image sharing and blog content more frequently than do medical scientists. Interestingly, a relatively high percentage of mathematics/technology academic staff also create blog content. User comments in articles and blogging are the most frequently created in each discipline; however, their creation is still more occasional than frequent.

Forty percent of mathematics/technology academic staff create content for blogs at least occasionally, followed by 36.4% of humanists and 35% of social scientists; no scientists or medical scientists report creating blog content. Only 20% of social scientists and 16.7% of medical scientists report creating content for RSS feeds. A third of medical scientists (33.3%) and nearly a third of social scientists (30%) create user comments, followed by 20% of mathematics/technology academic staff and 18.2% of humanists, but no scientists report creating user comments. Over a third of social scientists create audio sharing content (35%), but only 16.7% of medical scientists and 18.2% of humanists report creating audio sharing content, and no scientists or mathematics/technology academic staff create audio sharing content. However, no medical scientists or mathematics/technology

academic staff report creating image sharing content, while 7.7% of scientists do report creating image sharing content, as do a quarter of social scientists and humanists.

Academic status influences the creation of content for microblogs ($\chi^2=14.340$, $p=.045$), social networking ($\chi^2=9.801$, $p=.200$), and user comments ($\chi^2=8.854$, $p=.263$). More lecturers create content for the social media tools listed than any other academic staff status, followed by post-doctoral researchers (Table 53). Conjoint academic staff only create content for comments in articles, and adjunct/visiting academic staff do not create content for any of the listed tools.

Table 53. Percentage of ANU Academic Staff Who Create Social Media Content by Academic Status

	Microblogging	Social Networking	Comments in Articles
Professors	0 0%	4 25.0%	1 6.7%
Associate Professors	0 0%	2 25.0%	1 12.5%
Senior Lecturers	1 14.3%	3 42.9%	1 14.3%
Lecturers	4 50.0%	4 50.0%	3 37.5%
Adjunct / Visiting	0 0%	0 0%	0 0%
Post doctoral researchers	1 10.0%	6 60.0%	3 30.0%
Conjoints	0 0%	0 0%	1 100.0%

The age of academic staff influences the creation of social media content for microblogging ($\chi^2=9.126$, $p=.058$), social networking ($\chi^2=12.817$, $p=.012$), and user comments ($\chi^2=9.011$, $p=.061$). Again, more respondents report creating content for these social media tools than any other age group (Table 54).

Table 54. Percentage of ANU Academic Staff Who Create Social Media Content by Age

	Microblogging	Social Networking	Comments in Articles
30 Years and Younger	0 0%	1 33.3%	1 33.3%
31 ~ 40 Years	4 40.0%	7 70.0%	5 50.0%
41 ~ 50 Years	1 6.3%	4 25.0%	2 12.5%
51 ~ 60 Years	1 5.9%	7 38.9%	3 17.6%
Over 60 Years	0 0%	0 0%	0 0%

More females create content using social media tools than male respondents (Table 55). Female respondents report creating content for RSS feeds ($\chi^2=1.333$, $p=.248$), user comments ($\chi^2=3.859$, $p=.049$), and audio sharing ($\chi^2=2.970$, $p=.085$).

Table 55. Percentage of ANU Academic Staff Who Create Social Media Content by Gender

	Male	Female
RSS Feeds	1 4.2%	4 13.3%
Comments in articles	2 8.3%	9 30.0%
Audio Sharing	2 8.3%	8 26.7%

Open-Ended Questions

At the end of the survey, we asked, “*What role do scholarly articles play in your research, teaching, or other scholarly activities?*” and “*Final Comments.*” We hoped the open-ended questions would provide a forum for the respondents to address any issues or topics

that were not addressed in the survey. In addition, the open-ended comments provide another dimension to understand the value of scholarly reading and library resources. We received 48 comments to the first question.

The following are responses we received for “*What role do scholarly articles play in your research, teaching, or other scholarly activities?*” The majority of the comments describe the importance of articles in their work. We separated the comments into three categories—descriptive only, role in research and teaching, and role in work beyond research and teaching.

Descriptive Only

- *a big one*
- *essential* (4 responses)
- *Essential* (2 responses)
- *Absolutely essential.*
- *Vital*
- *Critical*
- *Extremely important.*
- *Absolutely Critical*
- *Absolutely vital.*
- *Essential every day*
- *They are essential.*
- *Vital; indispensable*
- *A vital role*

Role in Research and Teaching

- *I am a historian, so articles are primary importance - as much or more than books*
- *As I aim to publish in peer reviewed journals they are key to my research and information gathering.*
- *Fundamental medium of communication between researchers.*
- *They comprise a fundamental aspect of any research I do*

- *Very important in teaching as we encourage students to seek source material. Vital in my clinical practice. Important in research, but other sources like conferences, personal communication are much more important there.*
- *Scholarly articles play a role in my research as background literature and data sources.*
- *Absolutely essential for research and teaching.*
- *Vital context for my empirical work, develops my ideas*
- *They are key to my research, teaching and scholarly activities*
- *Central to all research scholarship. Important for teaching.*
- *Important for keeping up with new developments.*
- *Scholarly articles underpin everything I do as a researcher. The first port of call when considering a study is a scan of the literature and reading key articles to position new work. Articles provide context for work in proposals, reports and articles arising.*
- *They are essential - it is how I get the information on which I then base/develop my own research. For teaching, it depends on the level - at 1st/2nd year undergrad scholarly articles supplement/expand information in textbooks, for later years I use articles entirely instead of a textbook.*
- *Articles are vital in my research. So are books. I need to trace back the genesis of a mathematical idea, to see how it was created and used, and how it has changed over time.*
- *A very central role. I draw on them for background, ideas and to shape my research projects, read in stacks (20-30) when it comes to polishing, consolidating and writing up my research, and read articles to keep abreast of my field and project. On the occasions when I teach, I generally return to rereading or skimming between 2-5 articles to shape my teaching.*
- *They can play a very important role in my research from time to time, depending on the topic.*
- *Use to provide new ideas and examples for teaching, and as the basis of in-class readings and exercises; provide background to topics and data for analysis for own research*
- *Essential for placing my work in context, developing new ideas/hypotheses, and for my own track record and productivity (to win grants, etc).*
- *They play a central role in research, teaching and in my various roles on policy advisory bodies. The production and consumption of these is what the job revolves around.*
- *Extremely important. I use journal databases (ef Project Muse) for looking for teaching resources and for research. I consult scholarly articles on a regular basis. I also try to keep up with new scholarship in journals.*

- *Scholarly articles are critical to my research. The university library subscriptions to online journals (and books) is of huge importance to the rigorous conduct of my work. (I never cease to be amazed by what I can access through the university system, and am most grateful for this support.)*
- *scholarly articles are an essential aspect of my research and teaching*
- *They are a great source of information and analysis*
- *One of the key means of access to current research*
- *Scholarly articles play an integral role in disseminating ideas and research findings. They are an essential part of research, teaching and other scholarly activities.*
- *It is, still, how we communicate research to other researchers.*

Role in work outside Research and Teaching

- *They're very important. I read them all the time. I keep files of relevant electronic copies on my computers.*
- *Critical. They are the foundation of everything I do.*
- *Scholarly articles are essential for providing information and inspiring new ideas.*
- *keeps me in touch with the work of others in my field.*
- *I read articles in both a targeted way (when searching for previous work done on a topic I am writing on myself) and, less frequently, in a broader way, as I subscribe to the email announcements for a handful of journals, so I get table of contents of every new issue, and read at least the abstracts of whatever new papers interest me. I would say I read many more abstracts than articles - maybe four or five abstracts most days, but only one article or so a week in full. For teaching I used articles in a much more targeted manner: I will search for articles on specific topics to recommend to students.*
- *They are essential to all my activities. I depend fully on the subscriptions provided by my university library.*

The following are final comments we received from Australian National University academic staff members:

- *Electronic resources are increasingly important, but print versions are still easier to use. Particularly with books. I have some e-books, but prefer print versions. With articles electronic versions are often easier to obtain and use.*
- *The ANU book collection is fantastically useful.*
- *You caught me in the middle of preparing for a major teaching block next month, response not typical*
- *I couldn't understand a couple of the questions, including the first one I answered '0' to. You might want to discount that answer. Your gender categories should be*

- more inclusive - not everyone identifies as 'female' or 'male' (and besides, female is alphabetically before male - you should consider reordering).*
- *It is depressing to realise how little time I spend reading. An area not touched on in this survey is "Google-reading" - reading the chapters available for free on Google, and so restricting how much of a book is actually read.*
 - *This month was quite unusual for me as I was sick for nearly two full weeks and travelling for another 10 days. My reading practices were therefore not typical.*
 - *Some of these questions were difficult to answer - you assume that we remember a lot about the last article/book/proceedings we read. In my case I read a lot of articles so the most recent one I read today, but for books, chapters, proceedings and technical reports I read those less frequently and can't remember specifics of how I found them (often months/years ago!), how long I spent reading, etc. And it was difficult to find an option for "I read this because it just came out" - with no specific immediate contribution in mind.*
 - *I make rather more use of the University's electronic journal subscriptions than my reply to this survey makes clear because of the accident of the last journal I used (one sent to me in hard copy which contained a very useful article that I did not know about and written by a person other than the sender).*
 - *Thanks*
 - *Nowadays, there is a continuum between web pages and "published articles". Preprints are more common. I put 5 preprints under*
 - *Books are very important to my work, and I borrow significant numbers from the university library system.*
 - *Your survey is WAY TOO LONG.*
 - *Thanks for this opportunity.*
 - *Don't get rid of paper books! Rather than try and access a difficult e-book which I don't have time to look at at work (I would usually borrow print books and take home for reading/taking notes for my research) I tend to buy my own print copies. I don't want this to impact on my university library but it will. E-books are not convenient for research purposes when you can't download.*
 - *Note: In filling out this survey, I treat "paper in a conference proceedings" as synonymous with "article". I make no distinction between journal and conference papers.*
 - *Don't get rid of actual books from the library - they are absolutely vital too*

The majority of the comments praised the role of scholarly articles in their work activities and especially noted the importance of the library's electronic collections. Nearly

all respondents noted their importance to researching and teaching roles, with many academic staff members calling them “essential.” Others stressed their importance in keeping up-to-date with developments in their field. Academic staff appreciate the convenience and accessibility of e-resources as fundamental to their work.

Role of Library Collections

We re-categorized how someone obtains scholarly reading material into three basic categories: library-provided, personal subscription/purchase, and other. We included interlibrary loan, library collections/subscriptions, and school/department collections with the library-provided material. Personal sources include purchased copies and personal subscriptions. The other sources include websites, institutional repository, free web journals, colleagues, and publishers.

Since 1977 we have found an increasing reliance on library-provided articles and a decrease in personal journal subscriptions in the United States (King et al. 2003). A majority of scholarly article readings are obtained from the library (58.1%), a finding that is consistent with previous studies (King et al. 2003). Three percent of article readings are from a personal subscription (Table 56). Book readings are also more likely to be obtained through the library, though 27.5% are also likely to be from a personal source. The majority of other publications are from an “other” source (56.8%); these include a colleague (10.8%), or publisher (5.4%).

Table 56. Source of Reading by ANU Academic Staff

	Article		Book		Other Publication	
	N	%	N	%	N	%
Library-provided	36	58.1	20	39.2	11	29.7
Personal source	2	3.2	14	27.5	5	13.5
Others	24	38.7	17	33.3	21	56.8
Total	62	100.0	51	100.0	42	100.0

A 2011 RIN study found a relationship between the institution’s library and its research performance. The RIN study concludes that easy access to high-quality content is a key foundation for good research, and when the library works in partnership with researchers it enables better library services and creates top researchers. We did not find a significant association between the library’s resources and its support of research, however 76.4% of articles obtained from the library are read for the principal purpose of research and writing (Table 57). All articles obtained from a personal subscription and 75% of articles from other sources are also for the principal purpose of research and writing.

Table 57. Association between Principal Purpose of Reading and Source of Article for ANU Academic Staff

		Library Provided	Personal Subscription	Others	Row Total
Principal Purpose	Research & Writing	26 76.4%	2 100.0%	18 75.0%	46 76.6%
	Teaching	3 8.8%	0 0%	1 4.2%	4 6.7%
	Current awareness	2 5.9%	0 0%	3 12.5%	5 8.3%
	Others	3 8.8%	0 0%	2 8.4%	5 8.4%
	Column Total	34 100.0%	2 100.0%	24 100.0%	60 100.0%

We did find some differences between where book readings were obtained and the principal purpose of book readings ($\chi^2=6.992$, $p=.464$). Eighty percent of books obtained from the library are for the principal purpose of research and writing. The majority of books obtained from a personal source (64.3%) and other sources (58.8%) are also for the principal purpose of writing and research.

Other publications obtained from the library are more likely to be for research and writing than readings from other sources ($\chi^2=14.024$, $p=.045$). While 72.7% of library-provided other publications are for the principal purpose of research and writing, only 47.6% of other publications obtained from other sources are for research and writing. No purchased other publications are read for research and writing. Sixty percent (3 of 5) of purchased and 33.3% (7 of 21) other publications obtained from other sources are read for current awareness. Only 9.1% (1 of 11) library-obtained other publications are read for current awareness. One respondent proves the importance of library-provided research material, "They are essential to all my activities. I depend fully on the subscriptions provided by my university library." A well-stocked library can be an incentive to attract academic staff members.

The library's collection also benefits the academic staff members because it provides a wide range of materials. The library's collections provide access to older articles in addition to the current collections (Table 58). Regardless of the age of the publication, the majority of library-provided articles are from its electronic collections. Seventy-one percent of the articles published over fifteen years ago are from a library subscription (5 of 7). All of the readings from a personal subscription are in their first two

years of publication. Many respondents commented on the importance of older articles, one saying, “I am a historian, so articles are primary importance - as much or more than books.” Our findings show the library’s back files in addition to current subscriptions are a key investment.

Table 58. Association between Source of Article and Year of Publication for ANU Academic Staff

	Library Provided	Personal Subscription	Others	Row Total
Over 15 years (Before 1998)	5 13.9%	0 0%	2 8.3%	7 11.3%
11 ~ 15 years (1998-2002)	3 8.3%	0 0%	0 0%	3 4.8%
6 ~ 10 years (2003-2007)	0 0%	0 0%	1 4.2%	1 1.6%
2 ~ 5 years (2008-2011)	16 44.4%	0 0%	5 20.8%	21 33.9%
Less than 2 years (2012 of 2013)	12 33.3%	2 100.0%	16 66.7%	30 48.4%
Column Total	36 100.0%	2 100.0%	24 100.0%	62 100.0%

Value of the library for scholarly work and research can be represented by how many hours per year each academic staff member dedicates to library-provided reading. Based on past methodology that creates a formula to measure academic staff output based on library input, we measured the library’s value by the time spent using library reading material, assuming that scholarly readings are important for quality research, teaching, and other work activities (Luther 2008). We can illustrate the total amount of reading by each academic staff member by using a simple formula of time spent reading each material multiplied by the number of each material read per month multiplied by 12 to calculate an

annual total.¹⁵ We then multiply the total amount by the percent obtained from the library and divide by 60 minutes to determine the number of hours per year each academic staff member devotes to library-based work (Table 59).

Table 59. Value of Library Resources to ANU Academic Staff

	Time per reading (in minutes)	Number read per month	Multiplied by 12 months	Percent from library	TOTAL
Article	27.7	24.4	12	58.1	78.5 hours
Book	85.2	7.2	12	39.2	40.1 hours
Other Publication	30.1	7.8	12	29.7	14.0 hours

Academic staff members spend the most time on library-provided article readings, approximately 79 hours each year. They spend approximately 40 hours on library-provided book readings, and approximately 14 hours on library-provided other publication readings. Annually, academic staff members spend 133 hours of their work time with library-provided material, or the equivalent of 16.6 eight-hour days. Clearly, the amount of time spent reading library-provided material has a profound impact on the quality and focus of academic work and research.

Academics at Australian National University read a variety of scholarly materials on a monthly basis. Their readings have a profound impact on their research and other work duties, often improving the quality and results. We see a connection between the success of academic staff members and article and book reading. While the academic staff's discipline influences reading patterns, each discipline believes scholarly reading is important to research and other work activities. Academics have nearly instant access to

¹⁵ Excludes outliers.

the library's collections, e-mails with colleagues, social media, and other websites. The problem now is how to weed through all the material and figure out what is the most relevant and highest quality. Time becomes a major deciding factor.

Currently, the library's e-collections and discovery tools provide a convenient source of scholarly articles, and as a result, are the most likely source of articles. On the other hand, academics are not using the library as often for books and other publications, most likely because the other sources are more convenient. The library should use its electronic journal collections as a model for the future of its book and other publication collections. Academics are responding well to electronic sources, from e-books to social media, and furthering the library's use of those mediums will only improve the value of the library.

The value of scholarly material is apparent from our study and continuing to improve the academic staff's access to scholarly material will only help to improve the quality of research and work.

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Copy of Survey

International and National Academic Staff Reading Survey

You are invited to participate in an international study that examines scholarly reading. Gaining a better understanding of how academics and post graduate students use journal collections will aid in decision making processes as well as assisting in understanding the evolving nature of scholarly reading. This survey will take approximately 20 to 30 minutes to complete. It consists of five sections: scholarly/academic article reading, book reading, other publication reading, social media engagement, and a short section about you. You may skip any question or exit the survey at any time. All answers are anonymous.

Please read the attached participant information sheet (LINK) for information for further information including background on the study, Confidentiality, Data Storage, Queries and Concerns and Ethics Committee Clearance." With "For more [information including the participant information sheet see http://anulib.anu.edu.au/news/academic-readingsurvey/index.html](http://anulib.anu.edu.au/news/academic-readingsurvey/index.html)

Any papers or conference presentations based on the collected data will contain only summary data without direct links to an individual survey response. If you have questions at any time about the study or the procedures, you may contact the ANU contact, Roxanne Missingham on (02) 6125 2003 or email Roxanne.missingham@anu.edu.au. Thank you for taking the time to complete the survey.

By clicking on NEXT, you give permission to gather and analyse the answers you give to the questions that follow.

Section 1: Scholarly Article Reading (print and online)

1. In the past month (30 days), approximately how many scholarly articles have you read? Articles can include those found in journal issues, websites, or separate copies such as preprints, reprints, and other electronic or paper copies. Reading is defined as going beyond the table of contents, title, and abstract to the body of the article. Number of articles read (including skimmed) in the past month:

The following questions in this section refer to the SCHOLARLY ARTICLE YOU READ MOST RECENTLY, even if you had previously read this article. Note that while this last

reading may not be typical, it will help us establish the range of patterns in reading behavior.

2. What is the title of the journal from which this last article was read or, if not from a journal, what is the topic of the article?

3. What year was the last article you read published/posted?

4. How thoroughly did you read this article?

- I read all of it with great care
- I read parts of it with great care
- I read with attention to the main points
- I read only specific sections (e.g., figures, conclusions)
- I skimmed it just to get the idea

5. How long (in minutes) did you spend reading this last article?

In minutes: _____

6. Had you previously read this article, i.e., is this a re-reading?

- Yes
- No

7. Prior to your first reading of this article, did you know the information reported or discussed in this article?

- Yes, all of it
- Yes, some of it
- No

8. How did you first find out about the information?
- Conference or workshop
 - Informal discussion with colleagues
 - Listserv or blog
 - Journal article
 - E-mail from colleague
 - Preprint / e-print service (e.g., arXiv.org)
 - Website of author
 - Institutional Repository
 - Other (please specify): _____
9. How did you become aware of the last article you read?
- Found while browsing (without a specific objective in mind)
 - Found while I (or someone on my behalf) was searching (e.g., by subject or author's name)
 - Cited in another publication
 - Another person (e.g., a colleague) told me about it
 - Do not know / Do not remember
 - Other (please specify): _____
10. Found while browsing:
- Personal print subscription
 - Personal online subscription
 - Library print subscription
 - Library online subscription
 - School, department, etc. print subscription
 - School, department, etc. online subscription
 - Website
 - Other (please specify): _____
11. Approximately how much time did you spend browsing:
In minutes: _____

12. Found while I (or someone on my behalf) was searching:
- Web search engine (e.g., Google or Google Scholar)
 - Electronic indexing / abstracting service (e.g., Medline, Web of Science / Knowledge, Proquest)
 - Print index or abstract
 - Online journal collection (e.g., HighWire, JSTOR)
 - Online current awareness service (e.g., Current Contents)
 - Preprint / e-print service (e.g., arXiv.org)
 - Other (please specify): _____
13. Approximately how much time (in minutes) did you (or someone on your behalf) spend searching
In minutes: _____
14. As a result, how many articles did you read and/or plan to read?

15. After you became aware of this article, from where did you obtain it?
- Personal subscription
 - Library subscription
 - School, department, etc. subscription
 - Institutional Repository
 - Free web journal
 - Preprint copy
 - Copy of the article from a colleague, , author, etc.
 - Interlibrary loan / document delivery service
 - An author's website
 - Other website
 - Other (please specify): _____
16. This source was:
- Print
 - Electronic
17. From this same source (e.g., journal, author's website, preprint archive), how many articles did you read in the last twelve months? (If the answer is zero, please enter "0" instead of leaving the box blank).

18. After you identified this article, approximately how much time (in minutes) did you and/or someone else on your behalf (e.g., graduate student, lab assistant, librarian) spend in each of the following activities (If no time was spent, please enter "0")?

In minutes

Obtain, request, receive or download and display the article _____

Photocopy or print out the article: _____

Other: _____

19. Thinking back to the source of the article, where would you obtain the information if that source were not available (e.g., library or personal subscription, archive, etc.)?

- I would not bother getting the information
- I would obtain the information from another source

20. Please specify source here:

- I would obtain the information from a colleague
- I would obtain the information by using/visiting another library
- I would obtain the information by purchasing my own copy
- I would obtain the information from another source (Please specify):

21. In order to obtain the same information, if this source were not available, I would expect to spend (If the answer is zero, please enter "0" instead of leaving the box blank)?

- In minutes: _____
- In dollars: _____

22. In what format was the article when you read it?

- Print article in a print journal
- Photocopy or fax copy
- Online computer screen
- Previously downloaded / saved and read on computer screen
- On a mobile, e-reader, or tablet screen
- Downloaded and printed on paper
- Other (please specify): _____

23. Where were you when you read this article?

- Office or lab
- Library
- Home
- Traveling or commuting
- Elsewhere (please specify): _____

24. For what principal purpose was this article read? (Choose only the best answer)

- Research
- Teaching
- Administration
- Current awareness / keeping up
- Writing proposals, reports, articles, etc.
- Consulting, advising others
- Internal or external presentations (e.g., lecture or conference paper)
- Continuing education for self
- Other (please specify): _____

25. How important is the information contained in this article to achieving your principal purpose?

- Not at all important
- Somewhat important
- Important
- Very important
- Absolutely essential

26. In what ways did the reading of the article affect the principal purpose? (Choose all that apply)

- It improved the result
- It narrowed / broadened / changed the tone
- It inspired new thinking / ideas
- It resulted in collaboration / joint research
- It wasted my time
- It resulted in faster completion
- It resolved technical problems
- It made me question my work
- It saved time or other resources
- Other (please specify): _____

27. Did you cite this article or do you plan to cite it in a paper or report?

- No
- Maybe
- Already did
- Will in the future

Section 2: Book Reading (print and online)

28. In the past month (30 days) approximately how many books or parts of books did you read for school work? Include reading from a portion of the book such as skimming or reading a chapter. Include books read in print or electronic format. (If none, please enter "0" instead of leaving a blank.)

The following questions in this section refer to the **BOOK FROM WHICH YOU READ MOST RECENTLY**. Note that this last reading may not be typical, but will help establish the range of patterns in reading behavior.

29. What is the approximate title or topic of the book from which you last read?

30. On how many occasions did you read from this book in the past month (30 days)?

31. About how much total time (in minutes) did you spend reading this book in the past month?

32. How did you become aware of this last book from which you read?
- Found while browsing (without a specific objective in mind)
 - Found while I (or someone on my behalf) was searching (e.g., by subject or author's name)
 - Cited in another publication
 - Another person (e.g., a colleague) told me about it
 - Promotional email or web advertisement
 - Do not know / Do not remember
 - Other (please specify): _____
33. Approximately how much time (in minutes) did you or someone on your behalf spend becoming aware of this publication? (e.g., browsing, searching)
- _____
34. After you became aware of this book, from where did you obtain it?
- I bought it for myself
 - The library or archive collections (including main or branch)
 - Interlibrary loan or document delivery service
 - School or department collection (e.g., not managed by library)
 - A colleague, author, or other person provided it to me
 - A free, advanced, or purchased copy from the publisher
 - Other (please specify): _____
35. In what format was the book when you obtained it?
- Print
 - Electronic
36. Thinking back to where you obtained the book (e.g., library collection, department collection, interlibrary loan), where would you obtain the information if that source were not available?
- I would not bother getting the information
 - I would obtain the information from another source

37. For what principal purpose did you use, or do you plan to use, the information obtained from the book you read? (Choose only the best answer)

- Research
- Teaching
- Administration
- Current awareness / keeping up
- Writing proposals, reports, articles, etc. (e.g., funding / grant proposals)
- Consulting / advising others
- Internal or external presentations (e.g., lecture or conference paper)
- Continuing education for self
- Other (please specify): _____

38. How important is the information contained in this book to achieving your principal purpose?

- Not at all important
- Somewhat important
- Important
- Very important
- Absolutely essential

39. In what ways did the reading of the book affect the principal purpose? (Choose all that apply)

- It improved the result
- It narrowed / broadened / changed the tone
- It inspired new thinking / ideas
- It resulted in collaboration / joint research
- It wasted my time
- It resulted in faster completion
- It resolved technical problems
- It made me question my work
- It saved time or other resources
- Other (please specify): _____

40. Did you cite this book or do you plan to cite it in another publication (e.g., article, report, book, published proceeding)?
- No
 - Maybe
 - Already did
 - Will in the future

Section 3: Other Publication Reading (print and online)

41. In the past month (30 days) approximately how many other publications (non-article and book readings) have you read for your work? Include conference proceedings, government documents, technical reports, magazines, trade journals, etc. (If none, please enter "0" instead of leaving a blank).
-

The following questions in this section refer to the OTHER PUBLICATION FROM WHICH YOU MOST RECENTLY READ. Note that this last reading may not be typical, but will help establish the range of patterns in reading behavior.

42. What type of publication did you most recently read?
- Conference proceedings
 - Government document or other technical report
 - Magazine / trade journal
 - News source
 - Other (please specify): _____
43. About how much total time (in minutes) did you spend reading this last publication?
-
44. Approximately how much time (in minutes) did you or someone on your behalf spend becoming aware of this publication? (e.g., browsing, searching)
-

45. After you became aware of this book, from where did you obtain it?
- I bought it for myself
 - The library or archive collections (including main or branch)
 - Interlibrary loan or document delivery service
 - School or department collection (e.g., not managed by library)
 - A colleague, author, or other person provided it to me
 - A free, advanced, or purchased copy from the publisher
 - Other (please specify): _____
46. In what format was the publication when you obtained it?
- Print
 - Electronic
47. Thinking back to where you obtained the publication (e.g., library collection, department collection, interlibrary loan), where would you obtain the information if that source were not available?
- I would not bother getting the information
 - I would obtain the information from another source
48. For what principal purpose did you use, or do you plan to use, the information obtained from the other publication you last read? (Choose only the best answer)
- Research
 - Teaching
 - Administration
 - Current awareness / keeping up
 - Writing proposals, reports, articles, etc. (e.g., funding / grant proposals)
 - Consulting / advising others
 - Internal or external presentations (e.g., lecture or conference paper)
 - Continuing education for self
 - Other (please specify): _____
49. How important is the information contained in this publication to achieving your principal purpose?
- Not at all important
 - Somewhat important
 - Important
 - Very important
 - Absolutely essential

50. In what ways did the reading of the publication affect the principal purpose?

(Choose all that apply)

- It improved the result
- It narrowed / broadened / changed the tone
- It inspired new thinking / ideas
- It resulted in collaboration / joint research
- It wasted my time
- It resulted in faster completion
- It resolved technical problems
- It made me question my work
- It saved time or other resources
- Other (please specify): _____

51. Did you cite this publication or do you plan to cite it in another publication (e.g., article, report, book, published proceeding)?

- No
- Maybe
- Already did
- Will in the future

Section 4: Social Media

52. How often do you read / view / participate in each of the following electronic / social media for *work related purposes* (e.g., teaching, research, etc.)?

	Daily	Weekly	Monthly	Occasionally	Never
Blogging (e.g., WordPress, Blogster)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Microblogging (e.g., Twitter)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
RSS feeds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social networking (e.g., Facebook)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social tagging (e.g., Delicious)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collaborative authoring (e.g., Google docs, CiteULike)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
User comments in articles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Image sharing (e.g., Flickr)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Audio sharing (e.g., Podcasts)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Video sharing (e.g., YouTube)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

53. How often do you create each of the following electronic / social media tools for work related purposes (e.g., teaching, research, etc.)?

	Daily	Weekly	Monthly	Occasionally	Never
Blogging (e.g., WordPress, Blogster)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Microblogging (e.g., Twitter)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
RSS feeds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social networking (e.g., Facebook)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social tagging (e.g., Delicious)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collaborative authoring (e.g., Google docs, CiteULike)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
User comments in articles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Image sharing (e.g., Flickr)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Audio sharing (e.g., Podcasts)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Video sharing (e.g., YouTube)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Section 4: Demographics

You are almost finished!

54. Which of the following best describes your academic discipline?

- Life sciences
- Physical sciences
- Medical sciences
- Computer science
- Mathematics
- Engineering
- Social sciences
- Business
- Psychology
- Education
- Humanities
- Fine Arts
- Law
- Architecture / Built Environment
- Other (please specify): _____

55. What is your academic status?

- Professor
- Associate Professor
- Senior Lecturer
- Lecturer
- Adjunct / Visiting
- Post Doctoral Researcher
- Conjoint
- Other (please specify): _____

56. What is your age?

57. Are you:

- Male
- Female

58. What source did you use for the last substantive piece of information in your work?

- Journal article
- Conference proceeding
- Web site
- Magazine article
- Book or book chapter
- Personal contact
- Other (please specify): _____

59. What percentage of your work time do you spend doing the following? (The total should equal 100%. If the answer is zero, please enter "0" instead of leaving a blank.)

- % Teaching _____
- % Research and Writing _____
- % Administration _____
- % Service (to department, college, wider community) _____
- % Consulting / advising _____
- % Other _____

60. In the past two years, how many of the following have you published? (If the answer is zero, please enter "0" instead of leaving a blank.)

- Articles in refereed scholarly journals _____
- Non-refereed articles _____
- Scholarly books _____
- Chapters in scholarly books, proceedings, etc. _____
- Other _____

61. In the past two years, have you received any awards or special recognition for your research or other profession-related contributions?

- Yes
- No

62. Briefly describe your awards:

63. How many personal subscriptions to professional journals do you receive, including those obtained as a member of a professional society? (Personal subscriptions are those that are personally addressed to you at your home, office, or lab.) If the answer is zero, please enter "0" instead of leaving a blank.

Print-only subscriptions _____

Electronic-only subscriptions _____

Subscriptions that include both print and electronic versions

64. What role do scholarly articles play in your research, teaching, or other scholarly activities? Please comment.

65. Final comments:

You've reached the end of the survey. We appreciate your participation. Thank you!