

# Measuring Value and Outcomes of Reading

**Dr. Carol Tenopir**  
University of Tennessee  
ctenopir@utk.edu



# Ongoing studies of scientists...

*(Audiences=librarians, funders, publishers, scientists)*

What information they need and use



How many articles they read



Changes in behavior, formats, needs



Purpose and outcome of readings



Value of libraries and publishers



# Methods for measuring value

*Usage*

Experiments

Citations

Critical incident

**FOCUS GROUPS**

Contingent valuation

Observations

Return on Investment

Conjoint measurement

**Perceptions**

Interviews



# Critical Incident Technique

- Surveys by Tenopir and King (1977-present)
- Ask respondents about most recent reading
- Ask questions on purpose, motivation and outcomes of specific reading
- In-depth picture of complexity of readings

# Critical Incident

“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 patterns in reading.”

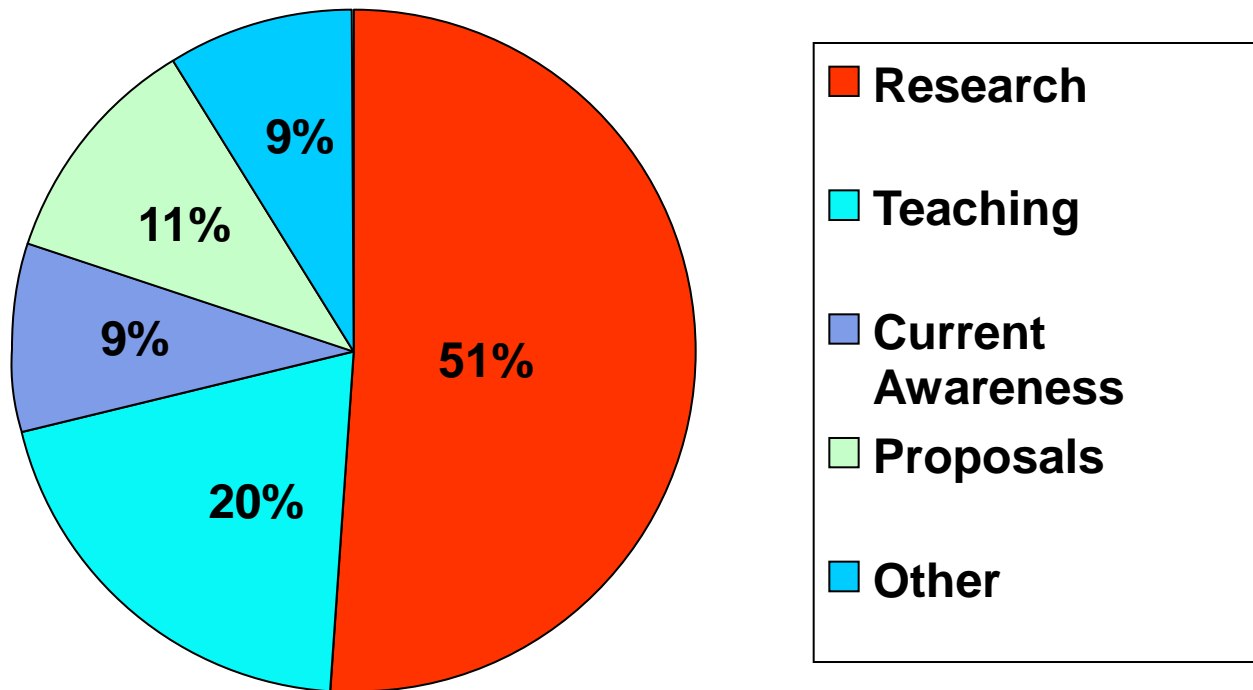
# Definitions

“**Articles** can include those found in [e] 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.”

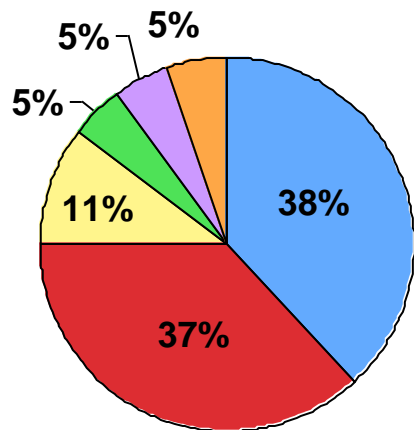
# Principal Purpose of Reading

(Faculty in U.S. and Australia, 2004-2006, n=1433)

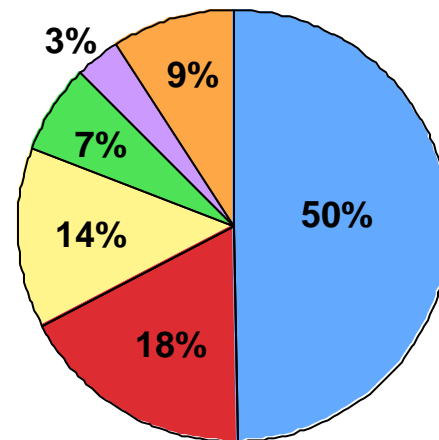


# Source of reading by purpose of reading by faculty

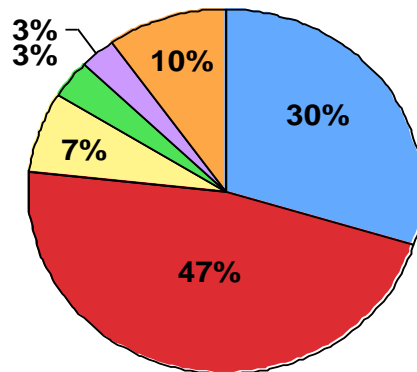
(Faculty in U.S. and Australia, 2004-2005, n=1412)



Teaching



Research

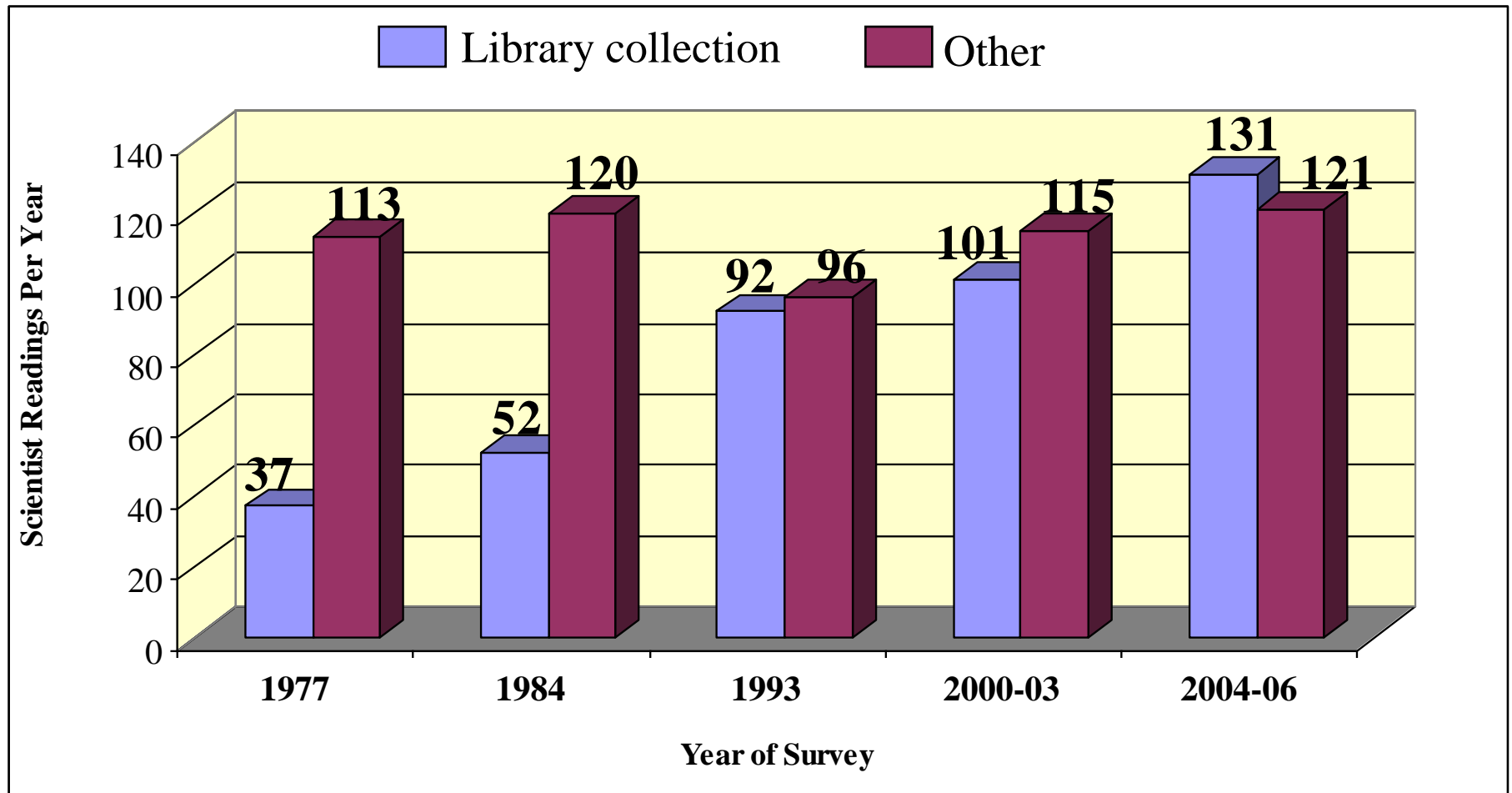


Current Awareness

- Library provided
- Personal subscription
- Open Web
- Colleagues
- School department subscription
- Other



# Library E-Collections are Most Common Source of Additional Readings



# Readings for Research

- More likely to be rated “absolutely essential”
- More likely to be found by searching
- More likely to be from e-sources
- More likely to be from the library

# Comments (2008) tell us that E-Collections improve...

- Efficiency and productivity

*“[e-access] saves me a lot of time which can be used for more extensive reading.”*

- Writing and proposals

*“[E-access] is essential for scientific writing.”*

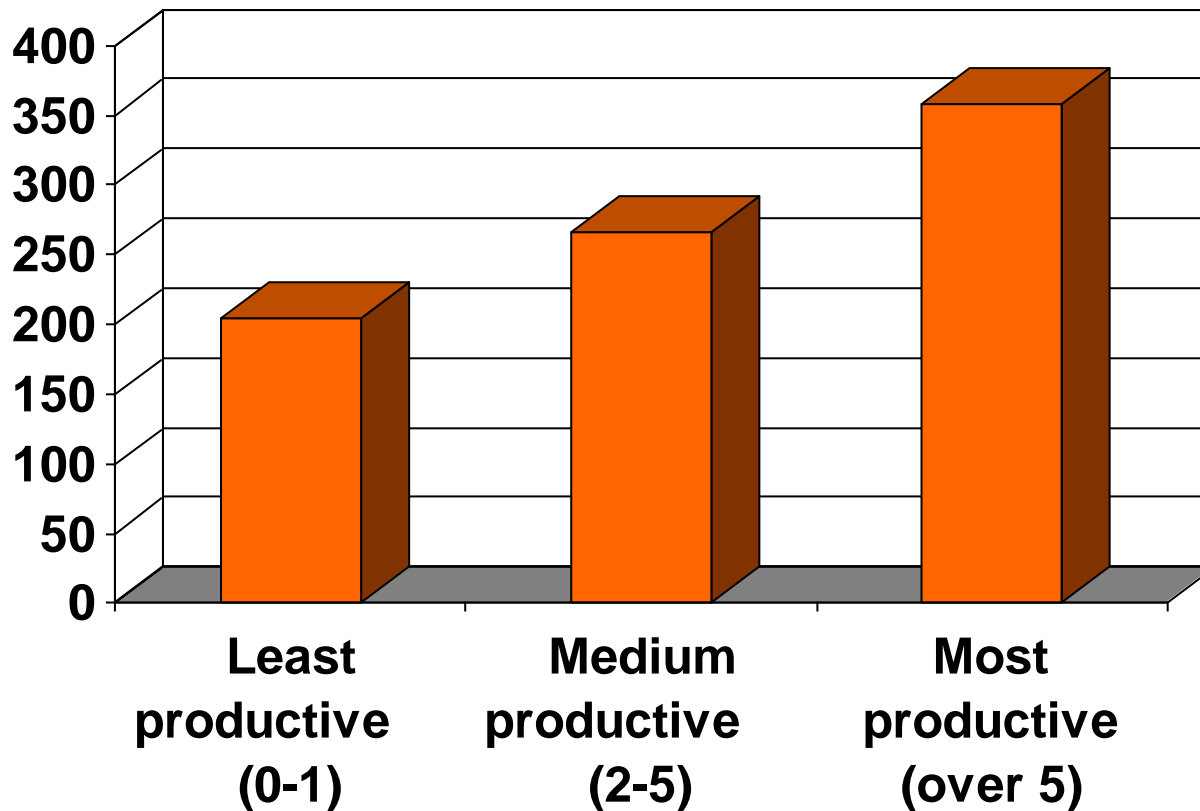
- Research and teaching

*“I could not do the kind of research or teaching I do without these resources.”*

# Average number of articles read annually by publishing productivity

(number of articles published in the past 2 years)

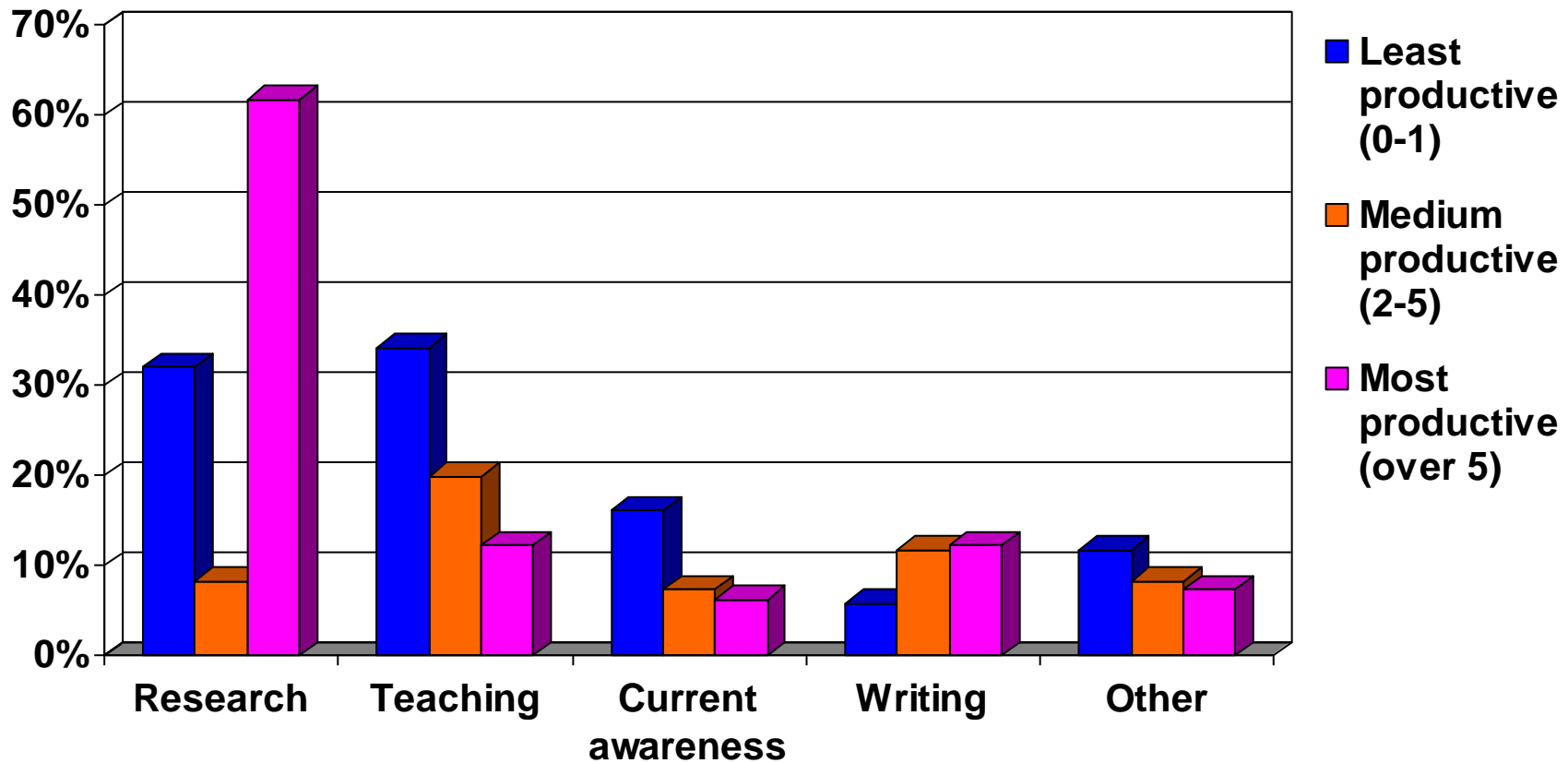
(Faculty in U.S. and Australia, 2004-2005, n=1364)



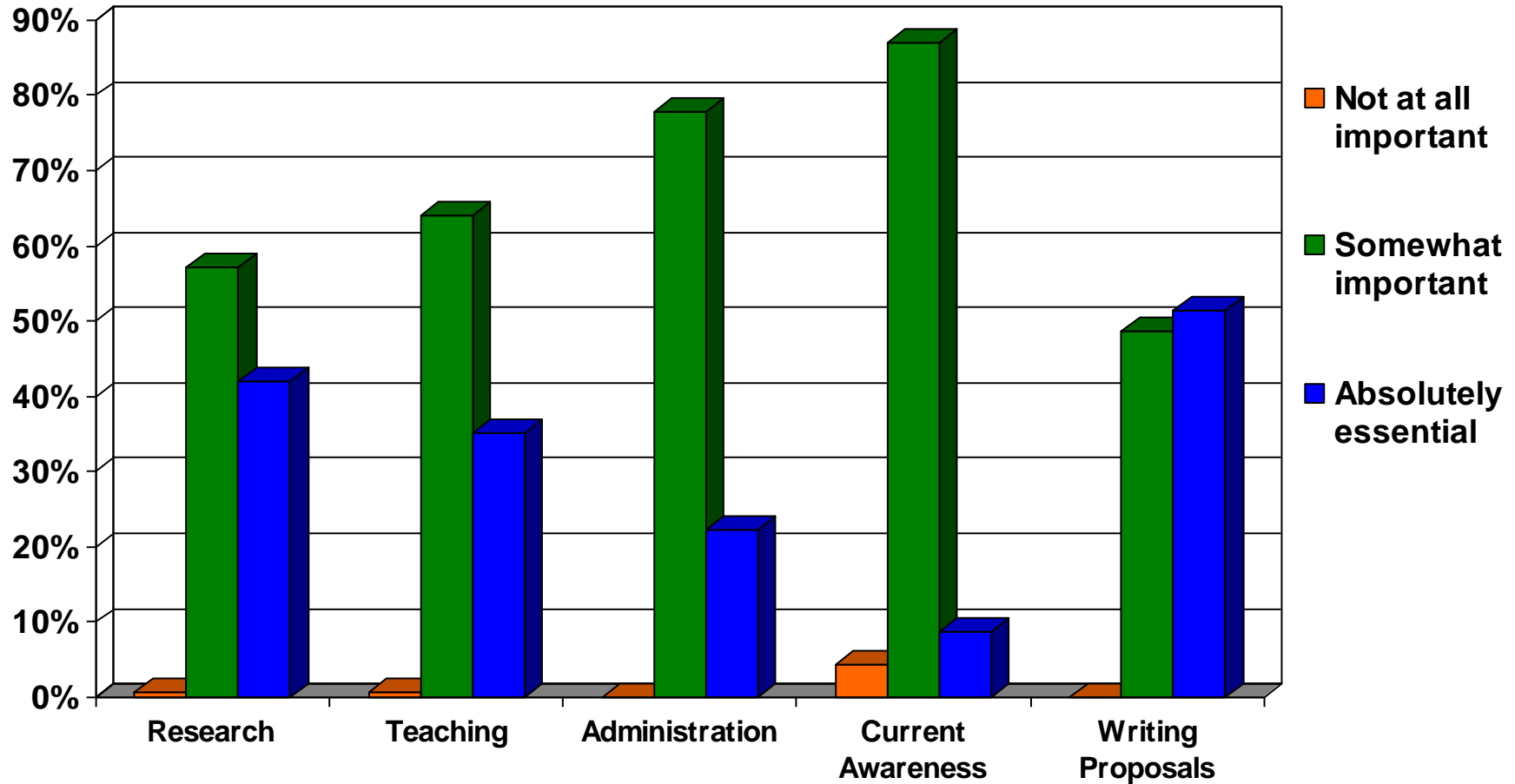
# Principal purpose of reading by publishing productivity

(number of articles published in the past 2 years)

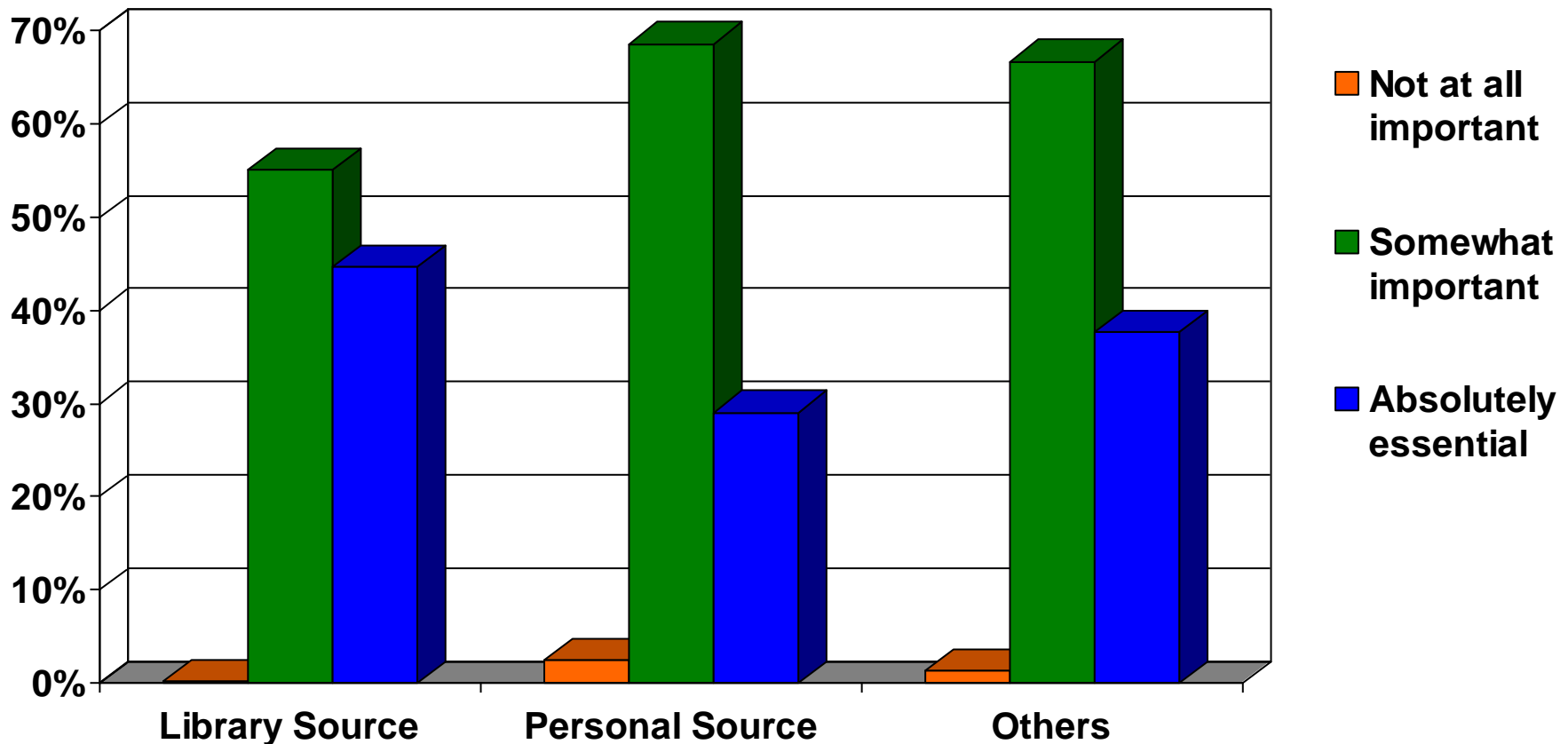
(Faculty in U.S. and Australia, 2004-2005, n=1366)



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



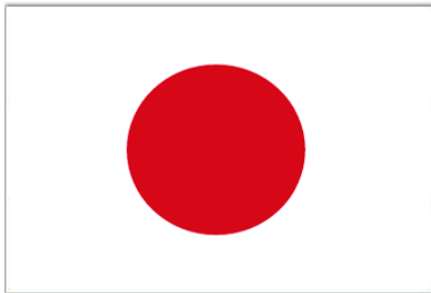
# How important is the information contained in this article to achieving your principal purpose?



# National differences

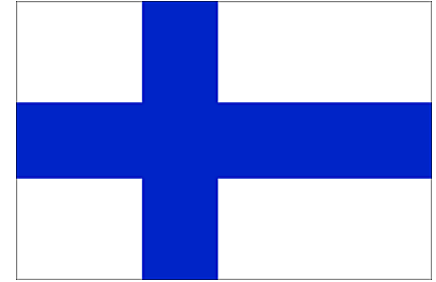


- Faculty in Australia have the highest amounts of e-reading and report a significant amount (6.7%) of readings done while travelling

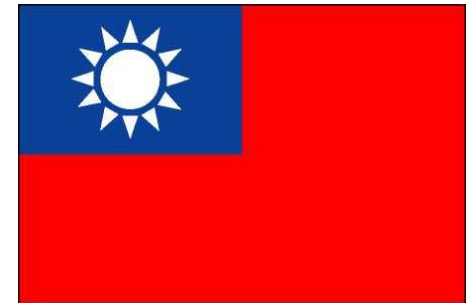


- Faculty in Taiwan, Japan and Finland have a higher percentage of readings from the library

- Faculty in Finland access articles more at the office or lab, less at home



- Finnish scholars report a higher use of searching in locating e-articles





# Return on Investment (ROI)

ROI is a quantitative measure expressed as a ratio of the value returned to the institution for each monetary unit invested in the library.

**For every \$/€/¥ spent on the library,  
the university received 'X' \$/€/¥ in return.**

Demonstrate that library collections  
contribute to income-generating activities

# Study in 3 Phases

- **Phase 1:** ROI in grants, case study at a U.S. University (completed 2008)
- **Phase 2:** ROI in grants, expanded to 8 countries (completed 2010)
- **Phase 3:** ROI for grants/research, teaching, student engagement (in progress now)

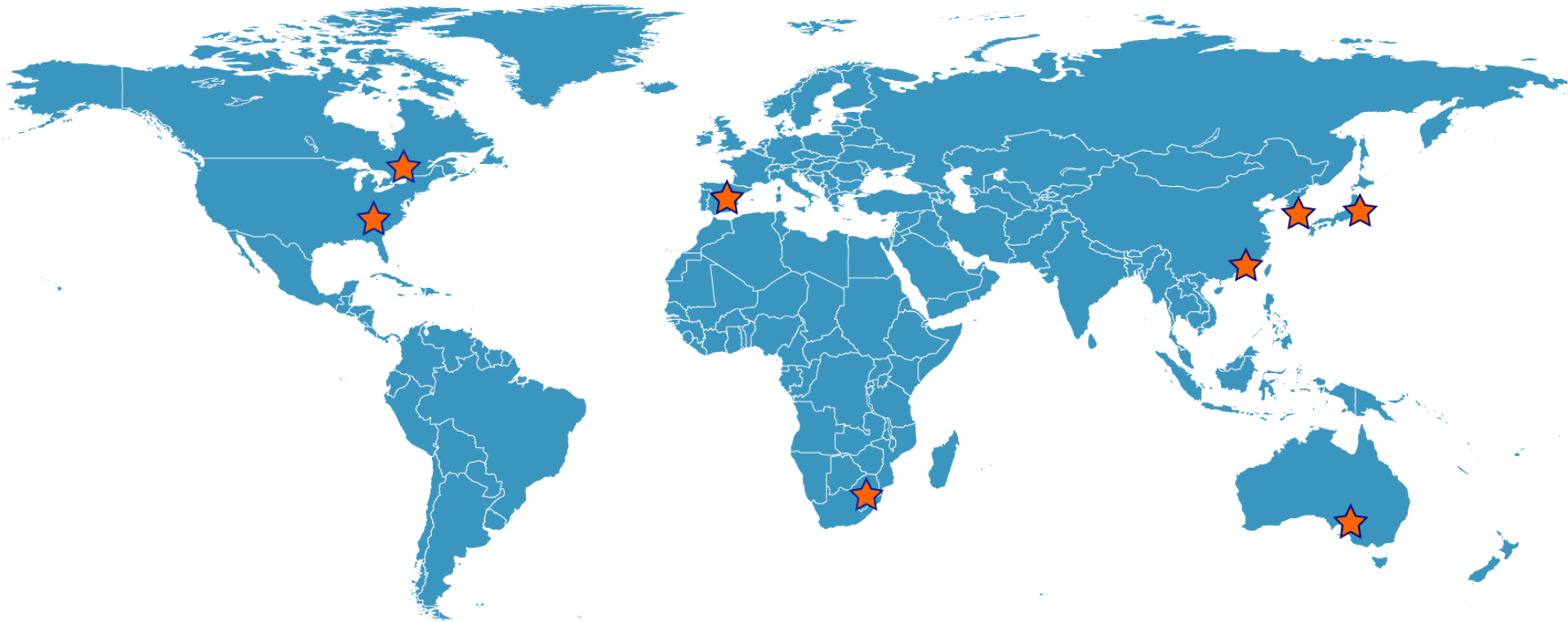


# Types of Data Collected

Data sources	Method
Research Faculty	Survey; quantitative and qualitative
Grant Proposals	Univ research data; survey
Grant Income	Univ research office data
Library	Total budget (including collection, facilities, personnel, etc.)
Administrators' priorities	Interviews (with library, university, and research administrators)

# Phase 2

## 8 institutions in 8 countries



# Phase 2: ROI for Grants

Research  
STM

- 13.2:1 to 15.5:1

Research and  
Teaching  
STM/Hum/SS

- 1.3:1 to 5:1

Research and  
Teaching

- Under 1:1

# Phase 2: Why Does ROI for Grants Vary?

- ROI depends on institutional mission
- Research institutes have very large grants
- Teaching universities have smaller and fewer grants
- ROI varies depending on methods of government funding
- Be cautious comparing ROI across institutions

# Ranking and Conjoint Analysis

When faced with numerous articles on their topic, how do scholars make the decision of which articles to read?

A study funded by:



# Methodology

- International online survey of scholars
- Ranking and conjoint analysis provide relative importance of various article characteristics
- Additional questions to help identify differences: amount of reading, subject discipline, age, and location





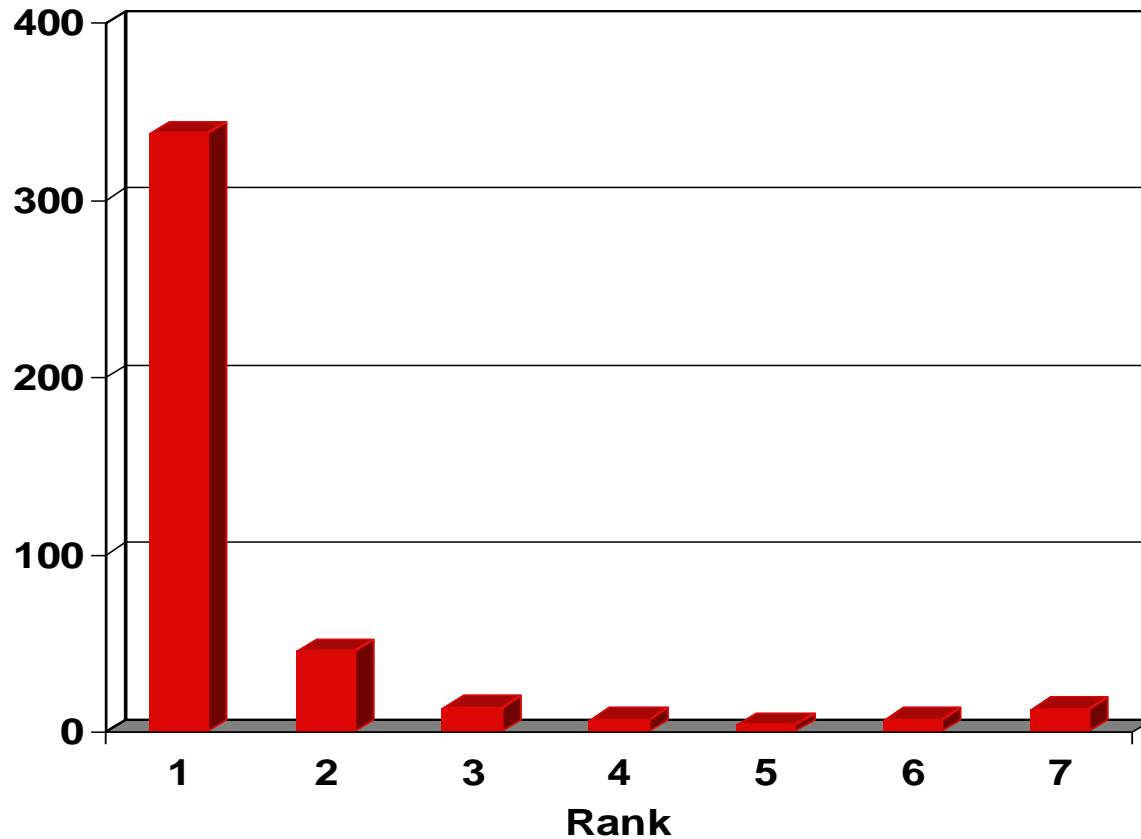
The survey yielded 442 responses from 12 countries



# Ranking Article Characteristics

Respondents were asked to rank the importance of seven article characteristics from 1-7 where 1 is “most important” and 7 “least important.”

## Top Choice: Article Topic



# Next most important were:

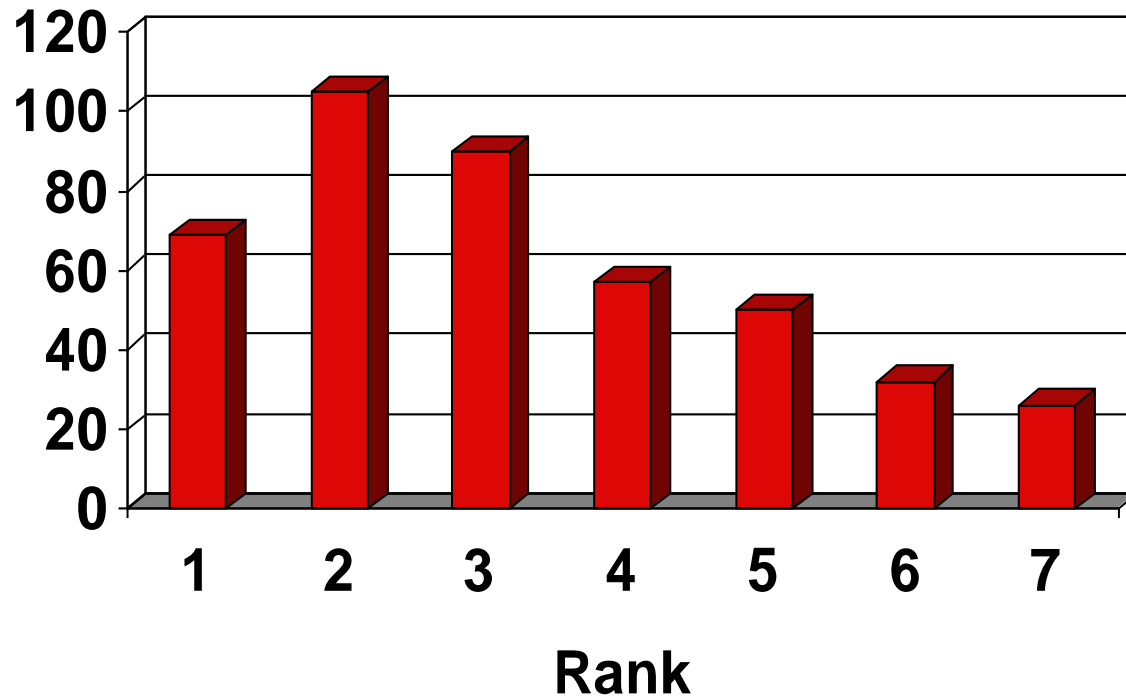
Online accessibility (3.27)

Source of article (3.46)

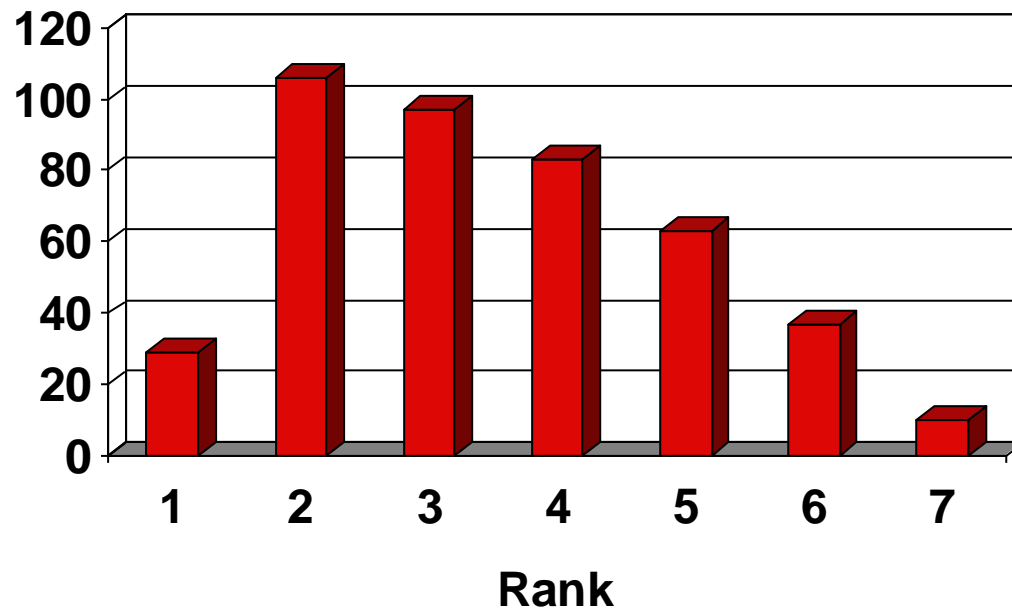
Journal Title (3.58)

Author(s) (4.07)

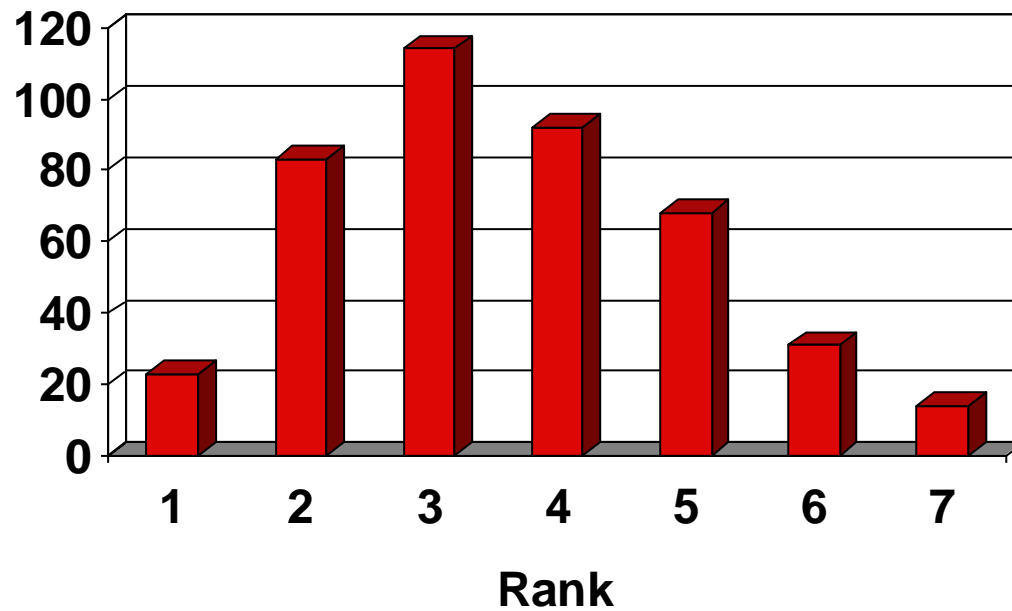
## Online Accessibility (Score 3.27)



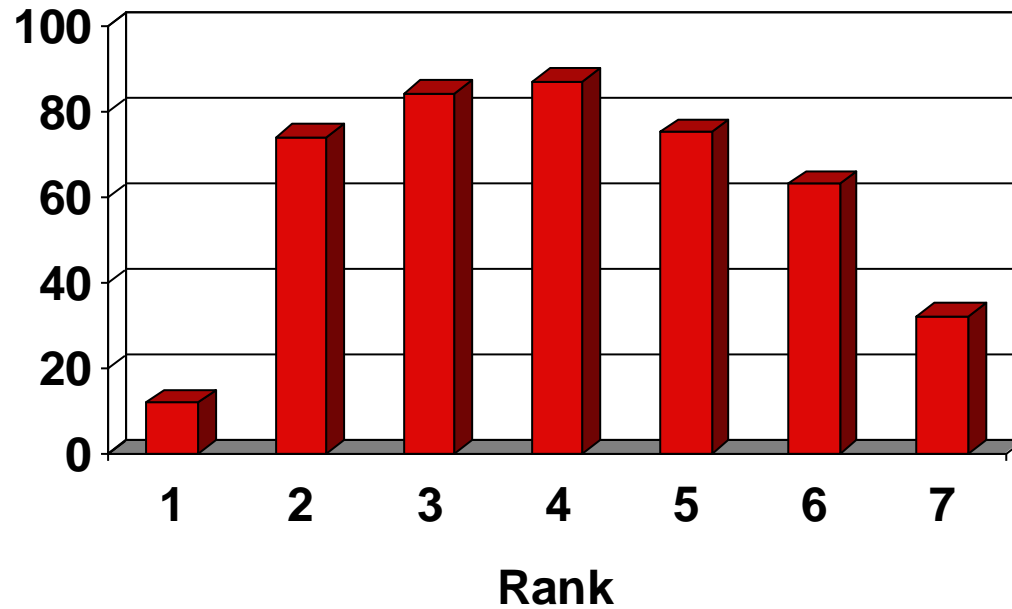
## Source of Article (Score 3.46)



## Journal Title: (Score 3.58)



## Author(s): (Score 4.07)



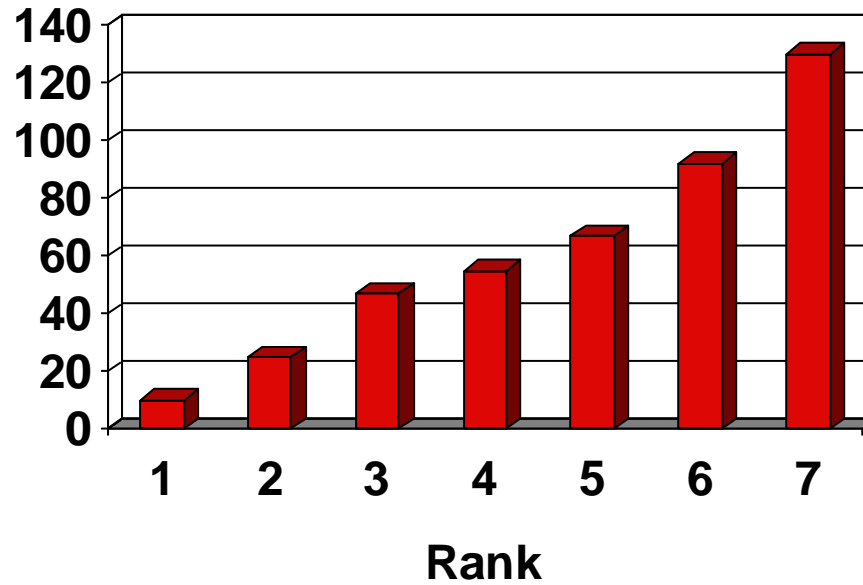


# The least important:

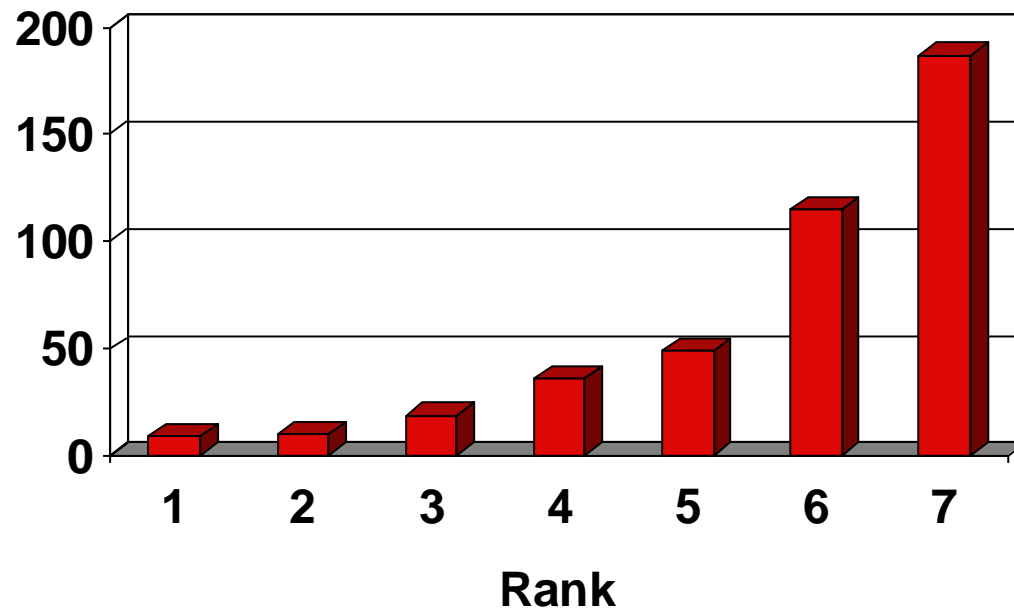
Type of Publisher (5.21)

Author's Institution (5.82)

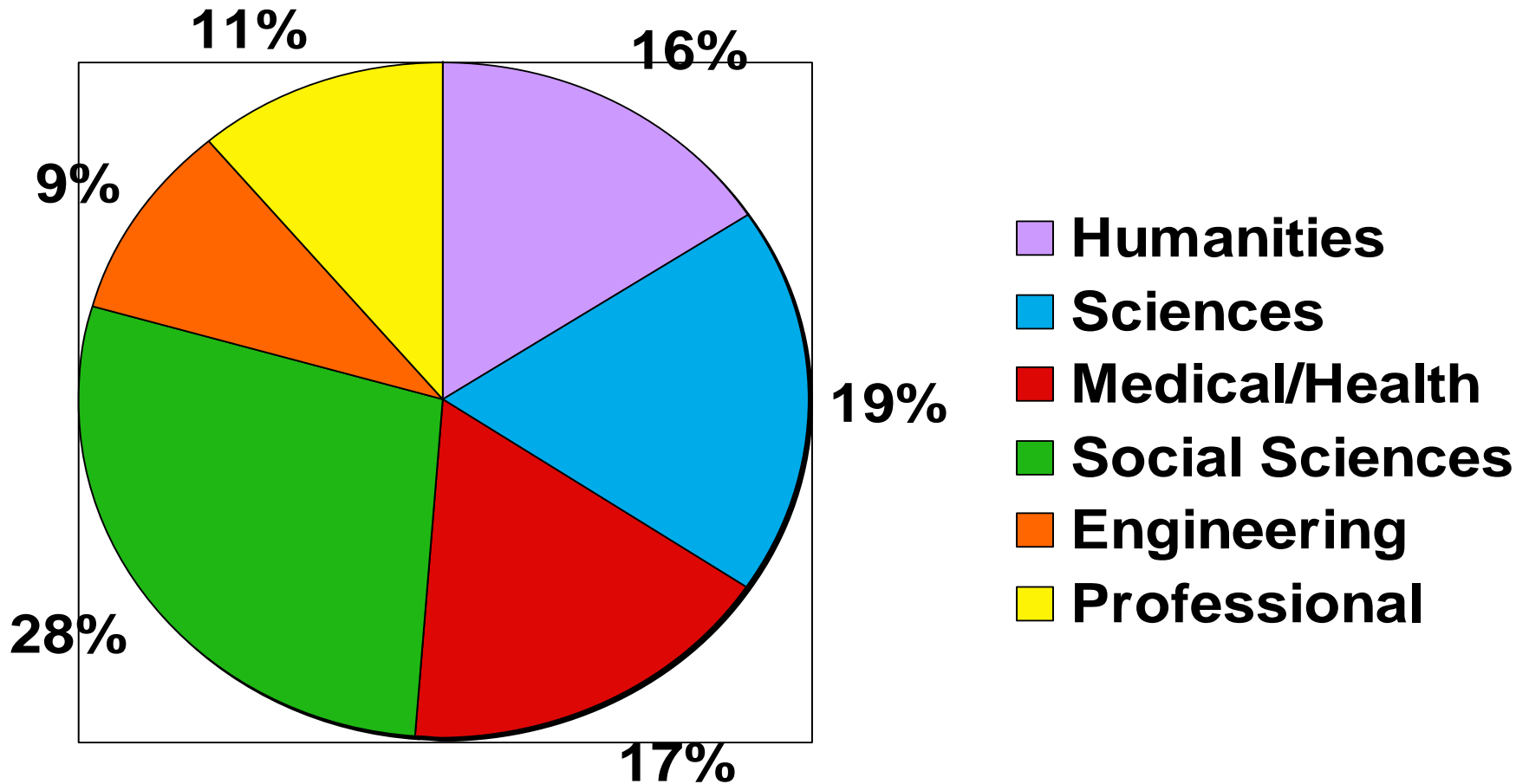
## Type of Publisher: (Score 5.21)



## Author(s)' Institution: (Score 5.82)



# Academic Disciplines



n=412



# Ranking of Article Characteristics by Discipline

	Humanities	Sciences	Medical	Social Sciences	Engineering	Professional
Topic	1	1	1	1	1	1
Online Accessibility	3	2	2	2	2	4
Authors	5	5	5	5	5	5
Institution	7	7	7	7	7	7
Source (journal)	2	4	3	3	4	2
Type of Publisher	6	6	6	6	6	6
Journal Title	4	3	4	4	3	3



## Conjoint Analysis Methodology

- Respondents considered 16 article profiles with each consisting of a different permutation of article characteristics.
- They rated how likely they were to read an article with that profile on a scale of 1-10 ( 1 is “absolutely would not read” and 10 is “absolutely would read.”)
- For conjoint analysis, the 16 profiles explored three characteristics: Author, Journal Type, and Accessibility.

## Profile 1

How likely are you (on a scale of 1 to 10) to read an article with these characteristics?

**Written by an author I recognize as a good (but not top) scholar, in a peer-reviewed journal outside the top tier, and available online at no personal cost [to reader].**

Absolutely would not read→1...2...3...4...5...6...7...8...9...10←-Absolutely would read


## Profile 13

How likely are you (on a scale of 1 to 10) to read an article with these characteristics?

**Written by an author I recognize as a good (but not top) scholar, from a source other than a journal, and available online at no personal cost.**

Absolutely would not read→ 1...2...3...4...5...6...7...8...9...10 ←-Absolutely would read

## Author Utility Estimate

Top Tier	1.412	
Good	.386	
Weak	-1.193	
Unknown	-.605	



## Journal Utility Estimate

Top Peer	1.113
Other Peer	.376
Not Peer	-.971
Not Journal	-.519

## **Access** Utility Estimate

Online no personal Cost	1.604
Online personal Cost	-1.107
Print Only	-.497

# Some Final Thoughts on Measuring Value

- Measure motivations, purposes, outcomes
- Variations by purpose and discipline
- No one method stands alone