



UNIVERSITY OF MINNESOTA
LIBRARIES

Bio-Medical Library

PRIMARY, SECONDARY AND TERTIARY SOURCES IN THE HEALTH SCIENCES

TYPES OF SOURCES

Sources are considered primary, secondary, or tertiary depending on the **originality** of the information presented and their **proximity** or how close they are to the source of information. This distinction can differ between subjects and disciplines. In the sciences, research findings may be communicated informally between researchers through email, presented at conferences (primary source), and then, possibly, published as a journal article or technical report (primary source). Once published, the information may be commented on by other researchers (secondary sources), and/or professionally indexed in a database (secondary sources). Later the information may be summarized into an encyclopedic or reference book format (tertiary sources).

Primary Sources

Primary sources are original materials/information on which other research is based. It includes journal articles of original research, conference papers, dissertations, technical reports, and patents. Primary sources are also sets of data, such as health statistics, which have been tabulated, but not interpreted.

- *Journals or periodicals*: main type of publication in which scientific research is reported. May be published by learned societies or by commercial publishers. A researcher(s) submits an article to a journal. It is then refereed by a editorial board of experts in that field before being accepted/rejected for publication.
- *Theses*: detailed accounts of research conducted for the awarding of higher academic degrees. The research is assessed by external examiners before the degree is awarded. In many cases, it will also be later reported in a condensed form as a journal article.
- *Conferences*: an important avenue for reporting new research or developments. Papers presented may or may not be subject to editorial scrutiny. Conference papers can be: not published at all, published only in abstract form, published in advance of the conference as a preprint, published in book form, or as a special issue of a journal.
- *Reports*: individual publications reporting research. They may report internal research within an organization, or research done by an individual or organization under contract to a client. They can be: freely available, available only to members of an organization, only available by purchase. Sometimes the information from the report will also be published in a journal article, but more often, the report is the only source of the information. Many governmental reports (full-text) are now being made available via the Internet.
- *Patents*: provides research information on new products or processes. Once published, patent information is freely available, but rarely republished in journal articles.

Secondary Sources

Secondary sources analyses, evaluates, interprets, re-packages, summarizes or reorganizes information reported by researchers in the primary literature. These include:

- *Review Journals*: These generally start with *Annual Review of ...*, *Advances in ...*, *Current Opinion in ...*
- *Article Reviews*: Articles that summarize the current literature on a specific topic.
- *Textbooks*: These can be either specialized to a narrow topic or a more boarder overview.
- *Data compilations*: Statistical databases (SEERS), *Vital & Health Statistics*, etc.
- *Article indexes/databases*: These can be abstracting or citation (e.g. Biological Abstracts/MEDLINE).

Tertiary Sources

Tertiary sources consist of primary and secondary source information which has been collected and distilled. They present summaries of or an introduction to the current state of research on a topic, summarize or condense information from primary and secondary sources, or provide a list of primary and secondary sources of more extensive information. Examples are:

- *Encyclopedias*
- *Fact books*
- *Almanacs*
- *Research Quickstarts/CourseLib/Pathfinders*

Research Information Timeline

(adapted from the International University of Bremen)

PRIMARY	<p>Research and Development A researcher makes a discovery, develops a product or a new methodology, etc.</p>
	<p>Invisible College, Email, Colleagues Information about the research goes out to the “invisible college”; results/discussion is shared with the colleagues who work with the researcher, individuals in contact with the researcher via email, etc.</p>
	<p>Conference (Proceedings/ Preprint), Research/Technical Report The researcher presents findings at a conference or writes a research report</p>
SECONDARY	<p>Journal Article The finding is published in a scholarly/peer-reviewed journal. Journal articles become secondary sources when they are <u>review</u> articles</p>
	<p>Indexing (e.g., MEDLINE) With the growing availability of electronic publishing, the indexing of some scholarly journals and conference proceedings can occur before the article is published in print, though there are some that may take longer to be indexed (e.g. foreign publications).</p>
	<p>Book/Textbook The research finding may be published later in book form</p>
TERTIARY	<p>Summarization: Encyclopedia, Almanacs, Bibliographies After several years, the finding could be summarized for an encyclopedia, manual or almanac</p>