

Final Report

A Survey to Support “Evidence-Based Practice” in Special Libraries Serving Fire Service Personnel and Researchers in Public Safety and Homeland Security Areas

Funded by 2003 SLA Steven I. Goldspiel Memorial Research Grant
Special Libraries Association
331 South Patrick Street
Alexandria, VA 22314-3501
sla@sla.org
Phone: 703-647-4900
Fax: 703-647-4901

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University of Illinois at Urbana-Champaign*

Submitted by
Lian Ruan
Director/Head Librarian
Illinois Fire Service Institute
University of Illinois at Urbana-Champaign
11 Gerty Drive
Champaign, IL 61820
lruan@fsi.uiuc.edu
<http://www.fsi.uiuc.edu>
Phone: 217 265-6107
Fax: 217 333-8379

Linda C. Smith
Professor and Associate Dean
Graduate School of Library and Information Science
University of Illinois at Urbana-Champaign
501 E. Daniel Street
Champaign, IL 61820
lcsmith@uiuc.edu
<http://www.lis.uiuc.edu>
Phone: 217 333-7742
Fax: 217 244-3302

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EXECUTIVE SUMMARY

The terrorist attacks of September 11, 2001 demonstrate the crucial roles local fire service personnel play in rescuing citizens and saving their lives. They also demonstrate that today's fire service personnel are responsible for a wide range of duties in fire fighting, emergency medical care, hazardous materials, terrorism (e.g. biological, nuclear, incendiary, chemical, explosive terrorism) and other emergency responses for public safety and homeland security. Efficient management of information is an important component of public safety, homeland security and President Bush's National Strategy of Homeland Security. Special librarians understand the vital role of credible information with respect to national security and possess the best competencies to serve those needs, and to support homeland security efforts.

Funded by the 2003 SLA Steven I. Goldspiel Memorial research grant and the 2004 Campus Research Board award, University of Illinois at Urbana-Champaign, the project was a survey of practices in six selected libraries that represent significant contributors of information services to fire professionals (including fire service personnel as first responders and researchers) in the United States. The study answered the following questions: How do special libraries serving fire professionals fit into this component? Are they used? Valued? Are they efficiently organized to give maximum access to their resource collections? What impact have special libraries made on information use by fire professionals in their decision-making? Focusing on evidence-based research, the study achieved the goal to expand our knowledge about the value and impact of information services provided by special libraries and the special librarians who manage them for fire service personnel and researchers in the fire service.

In addition to three research assistants working at different phases of the project, the main project team consisted of a practitioner from a special library in the fire service and a professor from a graduate school of library and information science. This collaboration made a unique contribution to evidence-based practice in special librarianship in a problem-centered and research-oriented manner.

The study used the Chicago, Rochester and SLA study instruments as the basis for designing questionnaires to measure the impact of library-supplied information on practical decision-making and applied research. 343 users of six libraries, representing both training and research institutions in fire service, responded to the survey. By providing new evidence, the study built the knowledge base of special librarianship, particularly demonstrating the library's critical roles in public safety and homeland security.

Between February and August 2004, fire service personnel and researchers from six major fire organizations were asked to participate in the study. Only library users were included. The participants were asked to evaluate the impact of the information received in response to a request for some information from their special library related to a recent decision-making situation. Librarians in each of the six institutions acted as study facilitators and coordinators by enlisting and following up with their users to participate.

97% of the fire service personnel and researchers (n=343) who returned their questionnaires said that the information received was relevant to their work. 97% (n=343) reported that the information was of practical value and 81% (n=343) said that the information was of research value. The special libraries were effective in supplying information in decision-making situations because 94% of respondents (n=343) reported the information they received led to better-informed decisions, and in increasing their level of confidence as reported by 89% of respondents (n=343) in the decisions being made. In over 65% of the cases (n=343), the participants indicated that the information made them think of a dimension that they had not thought of before.

The information also allowed fire service personnel and researchers (n=278) to avoid, to a considerable or great extent, the following negative outcomes:

Loss of their own time or other's time	23%
Delay/wasting time	18%
Death	17%
Injury	15%

Poor emergency response	10%
Poor training decision	9%
Wasting resources – e.g., equipment and supplies	8%

According to the fire service personnel and researchers (n=318), the information contributed to their ability to do the following:

Proceed to the next step in a project or task	39%
Decide upon a course of action in training	24%
Decide upon a course of action in research	24%
Decide upon a course of action in emergency response	13%

While fire service personnel and researchers used information from a variety of sources in a decision-making situation, the library (mean=4.12, n=335) was considered as important as other major sources, such as the individual's own files (mean=3.45, n=330), their own experience (mean=3.59, n=330), and colleagues inside the organization (mean=3.75, n=328), outside the organization (mean=3.48, n=324) and Internet (mean=3.62, n=326).

As the survey results demonstrated, information has helped fire service personnel and researchers feel more confident about making a decision or recommendation, refresh their memories of details or facts, and introduce them to new data and ideas. Information also has enabled the fire service personnel and researchers to get on with their jobs in the most efficient and effective way possible. It has empowered the fire service personnel and researchers to make quality improvements, such as improving a policy or procedure, even avoiding death and injury during emergency response and training. The study findings showed that when special libraries are used in decision-making situations, a significant impact could be made on the actions of users. In the current climate of homeland security and public safety, the rapid delivery of accurate and up-to-date information has been seen as more important than ever. Based on the study findings, special librarians can develop new services that target particular types of impacts and user groups, as well as work toward improving the level of impact in various identified areas.

About two-thirds of the fire service personnel and researchers (n=240) wrote comments that are useful for continuous quality improvement and further study. Some respondents felt their library was underused and that users were unaware of library services, suggesting the continuing need for proactive marketing from special libraries. The importance of an easily accessible location was stressed as one factor affecting library use, even in an increasingly electronic work environment. 27% of respondents (n=207) noted that facilities, location and hours are the weakness for their libraries. However, 34% of respondents (n=207) reported no weakness and 98% (n=340) of respondents were pleased with the overall performance of the library in providing information-on-demand. Apparently, participating librarians consistently had gone to great lengths to provide the best services to their patrons and they demonstrated a high standard of professionalism by exceeding users' expectations and meeting their changing needs.

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We would like to thank all those who participated in the study, especially six inFIRE member libraries. Five of them made arrangements for the research director's site visits. The site visits enriched our understanding of how these libraries provide information and how they have made an impact on their users' decision-making. The participating special libraries are listed below, including the librarians and staff who acted as study facilitators and project coordinators, and provided assistance and support. They offered feedback on the grant proposal and questionnaire design. Their insight and practical suggestions ensured that the study could be incorporated in their library settings. They played an essential role by gaining the support of the administration within their organizations, distributing the study package to user participants, following up with them, and mailing responses to research directors.

Participating Fire Libraries

Name	Library Staff
1) New York State Department of State's Office of Fire Prevention and Control, Academy of Fire Science (NYFS)	Diana C. Robinson
2) Illinois Fire Service Institute, University of Illinois at Urbana-Champaign (IFSI)	Diane Richardson
3) Fire/EMS/ Safety Center-Minnesota State Colleges and Universities (MTCS)	Gwen Schagrín Linda Vieira
4) National Fire Protection Association (NFPA)	Sue Marsh Stephanie Naoum
5) Fire Protection Publications/Oklahoma State University (IFSTA)	Susan F. Walker
6) Oklahoma City National Memorial Institute for the Prevention of Terrorism (MIPT)	Brad Robison

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Final Report

Background of the Study

September 11, 2001's Terrorist Attacks and Homeland Security Act

The September 11, 2001's terrorist attacks on the World Trade Center in New York and the Pentagon in Washington, DC shocked the nation. All Americans, regardless of geographic location, were affected by the terrorist attacks. For the first time in many Americans' lives, the world that we now inhabit is not as free from danger as it used to be.

While Americans wonder what chaos, destruction, death and injury another attack might bring, Congress has allocated funding to support the nation's first responders as they prepare for another incident. The bulk of homeland security funding affects the fire, law enforcement, Emergency Medical Services (EMS) and emergency management communities. In FY 2000, Congress authorized \$100 million for FY 2001 for a new federal grant program, the Firefighters Investment and Response Enhancement Act (FIRE Act), also known as the Assistance to Firefighters Grant Program. At that time, it was the first federal grant program of its size for the nation's fire service. Funding did increase, primarily as a result of the September 11 attacks. For FY 2002, the FIRE Act received \$150 million; another \$210 million was gained from the FY 2002 Department of Defense appropriations bill, bringing the total for FY 2002 to \$360 million. Through the Assistance to Firefighters Grant Program, the Federal Emergency Management Agency (FEMA) and the U.S. Fire Administration (USFA) provided more resources in 2002 to state and local communities to help prepare and protect fire service personnel than had ever been provided in a single year in the history of the United States. The president proposed to spend \$3.5 billion in FY 2003 for the First Responder Initiative, a new program administered by FEMA. This new program included approximately \$1.1 billion in financial support, which would allow state and local governments to train fire service personnel, police officers and emergency medical technicians (EMTs) to respond to and operate in a chemical or biological emergency. In October 2004, Congress passed the U.S. Department of Homeland Security (DHS)

appropriations bill for fiscal year 2005. This bill funds several important fire service grant programs, most notably the Assistance to Firefighters Grant Program (FIRE Act) and the Staffing for Adequate Fire and Emergency Response Program (SAFER). Congress provided \$650 million in funding for the FIRE Act to improve the “all-hazards” mission of local fire departments. In addition, Congress funded SAFER at \$65 million. It is the first time it has received an appropriation. The cut to FIRE Act funding was expected in light of the overall federal budget and the increasing deficit. The Federal Funding to the Local Fire Service over a five-year period is as follows:

FY 2001: FIRE Act, \$100 million; SAFER, \$0;

FY 2002: FIRE Act, \$360 million; SAFER, \$0;

FY 2003: FIRE Act, \$750 million; SAFER, \$0;

FY 2004: FIRE Act, \$750 million; SAFER, \$0;

FY 2005: FIRE Act, \$650 million; SAFER, \$65 million.*

*Fiscal year 2005 is the first year SAFER is eligible for funding.

On November 25, 2002, President Bush signed the Homeland Security Act of 2002 into law, creating the cabinet-level Department of Homeland Security, the largest reorganization of federal government resources since the creation of the Department of Defense more than 55 years ago. The Act restructures and strengthens the executive branch of the federal government to better meet the threat to the U.S. homeland posed by terrorism. In establishing a new Department of Homeland Security, the Act creates a federal department whose primary mission will be to help prevent, protect against, and respond to acts of terrorism on American soil.

Traditionally, fire departments respond to isolated, local incidents. For the occasional, large-scale response, mutual aid from a neighboring jurisdiction often provides the necessary additional resources. In the aftermath of September 11, 2001, it is no longer sufficient for fire departments to plan for these limited events. In the midst of the ongoing fight against terrorism attack, local fire departments must be prepared for coordinated, well-orchestrated attacks aimed at American citizens on American soil. These

attacks require the emergency response system to have significant surge capacity of manpower, information, and equipment.

The terrorist attacks of September 11, 2001 demonstrate the crucial roles local fire service personnel play in rescuing citizens and saving their lives. They also demonstrate that today's fire service personnel are responsible for a wide range of duties in fire fighting, emergency medical care, hazardous materials, terrorism (e.g. biological, nuclear, incendiary, chemical, explosive terrorism) and other emergency responses for public safety and homeland security.

In light of these developments, it is clear that the efficient management of information would be an important component of President Bush's National Strategy of Homeland Security. Special librarians understand the vital role of credible information with respect to national security and possess the best competencies to serve those needs, as the SLA's Homeland Security Initiative emphasized. As Lynn K. Smith, Acting Executive Director of SLA in 2002, wrote in her letter to the organization's members and Tom Ridge, Director of Homeland Security, "It is our obligation – our necessity – our national responsibility" to make homeland security successful.

Library Program Evaluation, Measurement and Quality Management

Curtis and Abram (1983) argued, "A library's output has to be measured...in terms of how, and to what extent, the actions of others are made more productive or their decisions successful. Following this line of reasoning, a library must measure value in user terms." Shedlock (1988) pointed out the difficulties of defining "quality" in service professions such as librarianship. As the measurement of quality and impact became primary concerns in organizations of the '90s, personal, subjective approaches to evaluation were less likely to be considered adequate (Marshall 1993). As Ann W. Talcott (1991) (SLA) stated, "Information professionals are undervalued in our society...We must seize every opportunity to promote the value of the information professional and create understanding among business, government and academic leaders...We must meet the challenge of quality—living up to our customers' expectations. Excellence in customer service, library education, and management are critically important to our success." In her response to President Bush's new strategy titled "National

Strategy for Homeland Security,” Lynn K. Smith (2002), SLA Acting Executive Director, wrote, “It is imperative that we communicate our agenda and promote our value to government.” This study measured the impact of information use by fire service personnel and researchers for both practical decision-making and applied fire science research as well as for personal education and professional growth. The study findings show that special libraries, particularly those in the fire service, can demonstrate their direct contribution to public safety and homeland security,

Review of Literature

Development of library and information service standards, another approach to evaluation, has focused on providing quantitative guidelines for different aspects of library services such as collection size, space requirements, and number of personnel. But they do not address the more critical and difficult issue of “output” (Marshall 1993). Approaches have stressed output measures for special libraries that evaluate the efficiency and effectiveness of library activities, such as the reference delivery rate or cost per cataloged item (McClure and Reifsnnyder 1984). Value studies of library services conducted by the SLA have measured time saved and actual monetary savings for organizations, and provided anecdotal evidence of the value of library services (Matarazzo et al 1987). Basch (1990) emphasizes that further research, building on the efforts of the SLA President’s Task Force, is required to design and document approaches to measuring value. Hardy, Yeoh, and Crawford (1985) discussed the issues involved in evaluating the impact of hospital library services in particular. Urquhart and Hepworth (1996) discussed the Value project, which assessed the value to clinical decision-making of information supplied by National Health Service (NHS) library and information services. Abels et al. (2002) presented a preliminary taxonomy of the contributions of library and information services in hospitals and academic health science centers. There have been important reports in the literature that show the impact of specialized services, such as those provided by clinical librarians (Barbour and Young 1986; Cimpl 1985 and Halsted et al 1989), use of MEDLINE by physicians for clinical problem

solving (Lindberg et al. 1993), and the critical incident technique in library and information management research (Fisher and Oulton, 1999). Measuring the impact of any information service is difficult. Urquhart (2004) provided guidelines on how to measure the impact of library service, with an emphasis on impact studies from the health sector.

This study was built upon earlier Chicago (King 1987) and Rochester (Marshall 1992) studies of the contribution of the hospital library to clinical care and the SLA research study of the impact of the special library on corporate decision-making (Marshall 1993). King examined the contribution to patient care of a group of hospital libraries in Chicago, and Marshall (1992, 1993) examined a group of hospital libraries in Rochester, New York, and a group of bank libraries in Toronto. All three studies focused on corporate libraries in the private sector. In the Chicago study, 310 randomly selected health professionals from eight hospitals were asked to request information related to a current clinical case from their hospital library. After receiving the information, the health professionals were asked to complete a two-page questionnaire and mail it back to the research director at the University of Illinois. King's methodology and data collection instruments were later revised and expanded by Marshall (1992, 1993) in her studies. The Chicago and Rochester studies found that information provided by hospital libraries to physicians had a significant impact on clinical decision-making and on the physicians' assessments of the clinical value of the information, which included measures of quality, cognitive value, and contribution to patient care. The Rochester study further documented changes in patient care in specific areas such as diagnosis, choice of medical tests, choice of drugs, reduced length of hospital stay, and physician advice to the patient (Marshall 1992). The 1993 study findings revealed that the special libraries were particularly effective in supplying new knowledge in decision-making situations and in increasing the level of confidence of managers and executives in the decisions being made.

The nature of special libraries – the fact that their existence is based on demonstrated need rather than on social custom or expectations – means that special librarians should consider extending the boundaries of their research efforts (Marshall 1993). Special librarians need to get more data about

how people in their organizations use the information provided by the library. In other words, special librarians need to find out more about what *impact* the information they provide has on what the people in their organizations do.

The Chicago, Rochester and SLA studies were used as the basis of this study for several reasons. The Chicago and Rochester studies found that information provided by hospital libraries to physicians had a significant impact on clinical decision-making and on the physicians' assessments of the clinical value of the information, which included measures of quality, cognitive value, and contribution to patient care. The earlier studies focused on the impact of hospital library services on patient care, which can be applied and expanded to practical decision-making and applied research in the fire service for public safety and homeland security. The research methodologies used in the earlier studies had many desirable characteristics of scientific validity and reliability using a measurement instrument. The challenge was to transfer the methodology used in the private sector to the public sector since the types of organizations involved and the types of impacts expected in health care and corporate environments are very different from the fire service.

2. Statement of the Problem

Efficient management of information is an important component of public safety and homeland security. This study attempted to answer the following questions: How do special libraries serving fire professionals fit into this component? Are they used? Valued? Are they efficiently organized to give maximum access to their resource collections? What impact have special libraries made on information use by fire professionals in their decision-making?

According to inFIRE (the international network for Fire Information and Reference Exchange, an international fire library consortium, <http://www.infire.org>), there are approximately eighteen fire libraries in the United States. Some of them are affiliated with government agencies and universities. These fire libraries represent, for fire service personnel and researchers, the most accessible and professionally organized resource for library programs and information services.

Unfortunately, the ability of fire librarians to meet users' changing needs and the impact of information use by fire service personnel and researchers on public safety and homeland security have *not* been systematically examined and studied.

A sampling of reference requests made by survey respondents (Appendix E, Question 1) with subjects highlighted provides a good indication of why fire service personnel and researchers used their libraries (see Table 1).

1) Research information for classes I was teaching .
2) Training information to present to a college class on the chemistry and physics of fire.
3) I had a list of books needed for a[n] upcoming Lt. Test .
4) A literature review for a project designed to mitigate behaviors associated with fatal smoking fires.
5) Information on the heat stress study.
6) Requested use of emergency response to terrorism instructor materials.
7) Materials on copyright laws and standard forms used.
8) What programs are out there on confined space training ?
9) Information regarding volunteer fire department retention and recruitment .
10) How does the fire/EMS distinction in career fire departments affect labor-management relations?
11) Material for search & rescue for interior fire operations .
12) Sources on the pros and cons of Quint apparatus .
13) Physical fitness for firefighters. Different examples and exercises specifically for the fire service.
14) Information linking CAD (Computer Aided Dispatch and Firehouse) software.
15) Materials on the subject of structural fire fighting ?
16) Historical data on fires in places of assembly .
17) Information on protecting firefighters working on the road at a traffic crash .
18) Looking for firefighter fatalities information .

19) Research material on the ethics in a fire department.
20) Information dealing with citizen fire academies.
21) I asked for information on obtaining grants for my department.
22) Reports on high-piled storage fire testing.
23) Which organizations are working with health and safety problems in rural areas in the U.S.?
24) Test reports and publications on suppression systems.
25) Requested training videos on pop-up roll bars and RIT [Rapid Intervention Team].
26) Video case studies and material related to FAST/RIT [Fire Attack Suppression Training/Rapid Intervention Team] evolutions?
27) Information on fire station construction.
28) Biomechanics of firefighting (the effect of wearing SCBA [Self-Contained Breathing Apparatus] on biomechanics). Statistics on firefighter injuries were required.
29) Information on policies and procedures related to performing fire station tours for civilians.
30) information on the current threat of domestic right-wings extremist (Neo-Nazis, skinheads, Christian identity, etc.)
31) Reference materials on fire department budget development.

Table 1. Selected Questions Survey Respondents Asked in the Current and Previous 12 Months

Determining whether and how much fire libraries contribute to homeland security and public safety is not easy. Most fire libraries have solo librarians and do not routinely conduct evaluations of their services due to time and staff constraints. There are no established quality assurance procedures in fire libraries either. Assessment techniques used in other library settings are either inappropriate when applied to fire libraries or provide little insight into the effect of library services on fire professionals. As a result, evaluations of fire libraries are uncommon and no such multi-institution study has been done before. This research study to fill this gap is timely and important and provides an approach for measuring outcomes and program evaluation.

3. Goals and Objectives of the Study

The primary goals and objectives for this study, as they relate to the SLA Research Agenda, focused on seeking to determine aspects of “a system for measuring outcomes and program evaluation” and “questionnaires to measure the impact of library-supplied information on practical decision-making and applied research.” The research activity expanded knowledge about the value and impact of information services provided by special libraries and the special librarians who manage them for fire service personnel and researchers in the fire service. The study explored the critical roles in public safety and homeland security played by special librarians. The evidence of value and impact as applied to information use by fire service personnel and researchers in the fire service was gathered. The study encouraged fire libraries to develop methods of assessing user services. The study also aimed to demonstrate how the methodology can be extended from the private sector of medical libraries to the public sector setting, thus building a generalized approach that other special libraries can use.

As professionals with the major responsibility for maintaining our own competencies and planning our own careers, special librarians are in a position to play the major role in building our own evidence-based practice. The project, consisting of a practitioner and researcher, assisted special librarians in playing the major role in the following ways:

The practitioner in the project demonstrated a personal commitment to consciously and consistently making decisions on the basis of the best available evidence; discussed the concept of evidence-based practice with colleagues (i.e. participant librarians and other special librarians); helped assess professional and personal competencies in a new environment; contributed to the evidence base of the profession by making presentations at conferences and other information sharing forums; helped develop and maintain the habit of regularly scanning the professional literature; participated in evaluation and quality improvement efforts that involve data collection both inside and outside the

organization; shared useful literature with other special librarians both inside and outside the organization; and contributed to the peer-reviewed literature in the field.

The full-time researcher in this project contributed to the notion of evidence-based practice by incorporating the notion of evidence-based practice in the research methods courses that she teaches students; evaluating how her own research can contribute to evidence-based practice in the profession and pointing out these applications in her communications with practitioners; encouraging fellow researchers to support the concept of evidence-based practice; sharing her knowledge of research methods both formally and informally with practitioners who are engaged in evidence-based practice; taking initiatives that will build the broader evidence base of professional practice such as research collaboration; disseminating research publications through presenting papers and panels at professional association meetings; supporting and legitimating the notion of applied research both inside and outside the academic community.

4. Methodology

4.1 Questionnaire Development

While designing the questionnaire to measure the impact of information provided by the special library on fire emergency responses related to homeland security and public safety, the research directors decided to focus specifically on the impact of information on decision-making behavior rather than specific time or monetary savings. They also decided to collect a combination of quantitative and qualitative data. Several drafts of the questionnaire were circulated to potential library participants before the final version was agreed upon. The research directors and participating fire librarians jointly developed the questionnaires and conducted a pre-test at some participating libraries. The research directors revised the questionnaires to incorporate recommended improvements.

The research directors used the Chicago, Rochester and SLA study instruments as the basis for designing questionnaires to measure the impact of library-supplied information on practical decision-making and applied research. They made numerous changes to the earlier study questionnaires in order to tailor them to this new domain of information seeking. A copy of the questionnaire is included in the appendix to this report (Appendix E) and question numbers in the following discussion refer to individual questions.

1) In the public safety and homeland security area, information requests may relate to security concerns and librarians must take care to ensure the confidentiality of the data. This aspect of the data collection was especially sensitive. In this study, the research directors decided to ask what general types of information were provided by the special library in response to the request rather than asking any direct questions about the origin or nature of the request itself. Since there was little research being done in this field, the research directors created the first question and the only mandatory field to ask respondents to state the question they asked. Participants were asked to base their questionnaire responses on a previous request to the library made in the past 12 months or they can choose to make a new request (**Question 1**).

2) Participants were asked to record the date of the request on the questionnaire so that the research directors could determine whether the response was based on a current or previous library encounter (**Question 2**).

3) Questions about the practical value of the information were used but modified from the previous instruments (**Question 21**).

4) A question about how often the user had used the library in the last twelve months (e.g., once a week or more often; at least once a month but not weekly; at least once last year but not monthly; not at all last year) was included (**Question 26**).

5) Questions used in the earlier study about the types of publications sought and received from the library (**Question 23**) and the importance of information received from different sources, including the library, were also adapted (**Question 25**).

Pursuant to the goals and objectives of assessing the performance and impact of fire library information services on public safety and homeland security, the following research areas have been identified. Within each area, specific questions answered provided additional focus for the study. These areas were:

1) Quality of the information: Was the information received relevant to the public safety and homeland security needs of fire professionals (**Question 8**)? Was the information accurate and current (**Question 9**)?

2) Value for decision-making and significant impact on the action: Did the information received lead to better-informed decisions (**Question 10**)? Did the information enable the users to take a course of action (**Question 11**)? Was the information of value in a decision-making situation (**Question 21, 22**)? Did the information make the user think of a dimension that they had not thought of before (**Question 12**)? If a decision was not changed, did the information make the user more confident about making a decision or recommendation (**Question 13**)? Did users change their behavior as a result of the information they received from their libraries (**Question 14**)? If yes, explain how information affected respondent's behavior (e.g. budget, training). Did they make different types of decisions (**Question 15**)?

3) Cognitive value of the information – that is, its contribution to the knowledge of fire professionals: Did the information received refresh the user's memory of pertinent details or facts (**Question 16**)? Did the users obtain new knowledge from the information (**Question 17**)?

4) Impact of the information on negative outcomes: Did the information contribute toward improvement of the respondent's work in several areas: career advancement (e.g. promotion), administrative decision-making (e.g. a policy or procedure), research, training program, personal growth, personal interest and education (e.g. degree study, term paper) (**Question 18**)? Did the information allow users to avoid, to a considerable or great extent, the following negative outcomes: loss of their own time or other's time; a poor emergency response or training decision; wasting resources – e.g., equipment, manpower, supplies, money, injury, death, delay/wasting time (**Question**

19) Did the information contribute to the user's ability to do the following as an action-oriented question in a more specific type of fire service setting: proceed to the next step in a project or task; decide upon a course of action in training or emergency response or research (**Question 20**)?

5) General impact of the information on the quality of fire service: Was the information of practical value (**Question 21**)? Did it lead to better-informed practical decisions, contributing to higher quality public safety and homeland security (**Question 10, 24**)?

6) Respondents' perceptions of the relative value of different sources they had used in the particular situation: Did users use information from a variety of sources in decision-making situations and consider the library just as important as other major sources, such as the individual's own files, experience, Internet, colleagues inside and outside the organization (**Question 25**)? A question used in the earlier study about the types of publications sought was also adapted (**Question 23**). In what situation does the respondent use the library (**Question 27**)? Was the library underused? Were users unaware of library services (**Question 28**)?

7) Respondents' perceptions of the relative value of different sources based on their rankings and titles (**Question 6**). Because many different fire service professionals make decisions that directly affect public safety and homeland security, besides researchers, the study included instructors, training officers, chiefs, firefighters and other members of the fire service team. As the chief executive officer of the fire department, the fire chief is ultimately responsible for all operations within the fire department. He/she is also responsible to the city manager, mayor, council, district board members, and the members of the fire department. The training officer's responsibilities involve the administration of all fire department training activities. Of primary importance to most departments is the intradepartmental training they establish and conduct. Firefighters are required to learn and participate in operating apparatus and performing hazardous tasks under emergency conditions, all of which require strenuous exertion with handicaps such as smoke and cramped surroundings. Considering this, the survey needs to determine if fire chiefs, training officers, and firefighters differ in the types of information needed for practical purposes and decision-making

processes. Do different groups of users place different value on the information? Does the information affect their decisions and practices in different ways? Do they differ in their use of the library and their judgments about library performance? Are there any relationships between the number of years in professional practice (**Question 4**) and either the value placed on published information or judgments about the contribution of library information service? Do respondents' rankings and titles reflect different information needs related to personal growth, education and promotion?

8) Performance of the library in providing the information. The participating library is likely to be only one of several information sources that users would use in a given practical or research situation. Was the information provided quickly enough to be of value for practical decision-making and applied research (**Question 29**)? Did library staff demonstrate the knowledge and ability required to meet practical information needs (**Question 30**)? Was library staff cooperative in relationships with fire professionals (**Question 31**)? What was the overall performance of the library in providing information-on-demand for fire service (**Question 32**)? What were strengths and weaknesses in the management of library and information services (**Question 33**)? Were the special libraries particularly effective in supplying new knowledge in decision-making situations (**Question 17**) and in increasing the level of confidence of fire service personnel and researchers in the decisions being made (**Question 13**)?

The remaining questions dealt with the educational level of the respondents (**Question 7**), as well as the length of time the respondent has worked for the organization and fire service in general (**Question 4**). A question on the age of the respondent was added (not in the previous studies, **Question 5**) to determine whether younger users are more likely to prefer electronic sources to print. A question on the organizational type of the respondent was also added (**Question 3**) to identify who are emergency responders and who are researchers. Since the study included only library users, a question about frequency of library use was included (**Question 26**). No demographic questions regarding ethnic origin or gender were considered necessary for the study.

In the fire service community, each individual was in a position to make life and death decisions during fire fighting and terrorism responses. The research directors added a note in the “Instruction for Participants” page to address the problem “ONLY YOU, as the person who requested the information, can JUDGE the value of the information in your particular situation.” (Appendix D.1.b)

4.2 Conduct of the Study

The research directors sought approval for the use of human subjects in this study from the Institutional Review Board of their parent institution (University of Illinois at Urbana-Champaign) when the grant was awarded.

As the proposal was developed, the research directors talked to potential participating libraries to determine their interests in the study. The research directors sent final confirmation letters describing the requirements for the study to all interested libraries, asking that potential participants carefully consider the commitment that would be required if the grant was awarded and the feasibility of conducting the study in their organizations. Prior to agreeing to participate, librarians participated in a general orientation by phone and e-mail to discuss the purpose of the study, its conduct, its potential usefulness and the role of research assistants involved with the study. Besides the research director's site visits to all participating libraries during April and May 2004, a telephone conference was scheduled in June 2004 to keep the project participants focused and informed (Appendix I).

During the development of the proposal, the research directors sought the advice and support of the inFIRE consortium. The consensus of the group consulted was that the study should be limited to fire libraries in the United States with strong similarities in training by local, state, and federal fire organizations and in research by involvement with researchers, engineers and professors in government- or university-based organizations. Also, given a strong tradition in fire training and research, the United States has a good selection of fire libraries that have shown interest in participating in the study (Table 2).

Fire Library-Training	Fire Library-Research
1) New York State Department of State's Office of Fire Prevention and Control, Academy of Fire Science	1) National Fire Protection Association (NFPA)
2) Illinois Fire Service Institute, University of Illinois at Urbana-Champaign	2) Fire Protection Publications/Oklahoma State University
3) Fire/EMS/ Safety Center-Minnesota State Colleges and Universities	3) Oklahoma City National Memorial Institute for the Prevention of Terrorism

Table 2. Participating Fire Libraries

The fact that six fire libraries throughout the United States participated in the study also added to the generalizability of the findings. The research directors established the following characteristics for the study group:

1) Libraries in several fire organizations throughout the United States were involved, not just in a single organization.

2) Based on a pool of regular library users, potential survey respondents from the fire libraries were recruited by the participating organizations with instruction and assistance from the research directors and research assistants. Adequate sample sizes for statistical purposes were calculated based on information about the total population of regular library users in the participating organizations. The organizations vary substantially in the number of users and the libraries vary in staff size and resources. Thus actual sample sizes in individual institutions ranged from a small number to a large number within the total sample size.

3) The participating organizations helped the research directors and research assistants distribute packets of materials to participants.

4) Data collection was performed by research assistants who were not connected with the organizations or libraries involved in the study. This guaranteed anonymity and confidentiality of the data and encouraged respondents to be frank and open in their responses.

5) To avoid low response rate (a problem reported in earlier studies), the research directors and assistants contacted the participating organizations in advance to ask them to participate and cooperate. Identification numbers were placed on the questionnaires, a log system was created, and a web site was tailored to participating libraries' needs, which made it easier and convenient to do follow-

up through the participating organizations to nonrespondents. Site visits and a telephone conference were also scheduled to ensure the smooth progress of the project.

6) Extensive follow-up procedures for nonrespondents, as recommended in the research literature, were used to increase the response rate. If participants who received the study packages declined to participate, the sampling continued and replacement participants were identified. The next individual named on the appropriate list replaced persons who declined to participate. The research assistants worked closely with the participating organizations to determine a reason for the refusal and then continued to work with the librarian to reach the required number of users for each library.

7) Because of strong support received from participating librarians, there was no need to ask administrators in each organization to write a support letter encouraging their users to participate.

Participating librarians were invited to assist in designing the questionnaire. The study was very demanding of the participating librarians and required them to help obtain the following:

- 1) Permission from the appropriate authorities in their organization for the study to take place;
- 2) Cooperation to create a master list of regular library users from which to sample respondents in the user population, following instructions from the research directors. This information was used to set up the target respondent numbers for the study. The participating libraries kept the list and did not share it with the research assistants due to restricted patron confidentiality policy;
- 3) Prepare a minimum of two weeks prior to the start of the study in each organization;
- 4) Cooperation to assign a unique identifying number to the master list of regular library users and help the research assistants match it to the identification code of the survey questionnaire;
- 5) Assistance in contacting those selected and asking for their participation, distributing the study packets, and reminding nonrespondents to return their questionnaires to the research assistants;
- 6) Cooperation from librarians and staff, who were required to subject their library services to evaluation;
- 7) Assurance of the confidentiality and anonymity of the respondents and the quality of data collection.

Once the study began, any questions about the study were referred to librarians, the research directors and research assistants as appropriate.

This study excluded non-library users. Any individual who used the library at least once was counted and defined as a user by the research directors. Since each of the organizations varied in staff size and resources, as well as in the number of eligible participants, selecting comparable populations from each institution proved to be a major challenge. Fortunately, all participating librarians offered invaluable assistance and advice to the research directors. The research directors were able to collect user population information from the library profile at the beginning of the study (see Appendix B).

None of the participating organizations allowed the research directors to obtain the name and address lists of patrons. To maintain the confidentiality and anonymity of the respondents, alternative arrangements for distributing the study package had to be made. The research assistant helped prepare study packages in print and online format, and created a customized website for each institution (see Appendix G). Participating librarians were fully responsible for helping make a list of patrons from which they could collect survey data. They also had to make follow-up efforts. One library dropped out right at the beginning of the data collection stage due to shortage of staff and tight training schedule, leaving six libraries in the study. The challenges of gaining cooperation from multiple participating organizations in remote locations and the care required for adjustments in study procedures should be anticipated and not underestimated.

The research directors will send a summary of the results to each of the participating librarians along with confidential reports of the results for their own organizations. This provides the librarians with a means to compare their statistical results with those of the study as a whole for benchmarking purposes. For the special library community, the combined results for all of the sites are of greatest interest, and it is the combined results that are discussed in this final report. The organizations are not identified by name in the report. An overview of the context and purpose of the study, its methods, findings, limitations, and conclusions is presented in this final report to SLA.

During sixteen months, the project had three phases, starting in September 2003, and ending in December 2004.

Considerable time and effort were required to obtain an adequate response rate. In the study, three research assistants were hired and distributed the time to reflect level of effort and demands of the project at different phases. They had a great deal of responsibility to carry out many tasks. The research directors hired the first research assistant at the beginning of the project to focus on preparation and set up; this assistant ended employment at the data collection stage. The second research assistant was able to start the data collection period to overlap the first research assistant's work. While keeping the second research assistant, a third student was hired to help complete data analysis and finish the final stage of the project on time.

The Phase I – Preparation and Set Up lasted about three months. The research directors hired and trained one research assistant with basic knowledge about the fire service discipline and survey research. Her main duties were to confirm participation of the selected libraries; assist in designing the final version of the questionnaires for fire service personnel and fire researchers (see Appendix E); pretest the questionnaires; provide necessary assistance to the participating organizations while they were compiling the potential user participant lists; prepare the Study Packet and Information Sheet in electronic and print versions (see Appendix A, C, D, E, G); and design and build the online database for data collection and analysis.

The research assistant also helped prepare a professional looking packet of materials for participants (see Appendix D-F). The packet contained a copy of the questionnaire, an Information Sheet about the study including the names, e-mail addresses, and telephone numbers of the research directors and other contact information, instructions to the participants, and a postage-paid pre-addressed envelope. Each packet was assigned a unique identifying number corresponding to the identification code of the enclosed questionnaire. Instructions for participants were developed. Additional information was provided in the Information Sheet.

The data collection period took place in Phase II, which was the longest and most challenging. Remote distance, multiple organizations, and direct follow-up only by participating librarians due to patron confidentiality policy contributed to the slow start, low response rate and difficulties at the beginning of this period. The research directors and research assistants kept close and open communication with participating librarians. By working with them, the research directors identified several detailed strategies to help participating librarians increase the response rate effectively. Here are a few strategies reported during the project: a) participated in other units' and all-staff meetings to promote the survey project directly to users; b) offered discount in fee-based services to give users more incentives to respond to the survey; c) used relationship marketing to attract more respondents; d) asked the user to fill out the survey questionnaire while providing him/her services; e) looked up the library files to see who used the library in the past 12 months; f) teamed up with instructors and asked their students to answer the questionnaires while doing homework in the library; g) followed up with those who did not return the survey by phone, e-mail, and in person. In addition, the research director's site visits made a tremendous difference by enhancing relationships between research directors and participating librarians and helping identify strategies. The site visits yielded more understanding and fruitful results.

Actual start dates varied at the six sites; however, all data were collected between February and August 2004. Data collection was only from *regular patrons* – fire service personnel and researchers served by each participating library. They provided first-hand and in-depth insights into the impact of information received from the library on their professional duties. The approach used in this research study enabled the fire service personnel and researchers to make their judgments in terms of a single use of the services for a specific purpose, resulting in a more realistic assessment of performance than would be provided by general opinion surveys. The participation of a variety of fire organizations differing in size and resources permitted comparison of the information services available to fire service personnel and researchers in different settings.

During this phase, the research assistant's main duties were changed to: offer orientation training with the research directors to participating organizations; provide instruction and assistance to the participating organizations on selecting samples from the lists of users; send out Study Packets and Information Sheets by e-mail, or fax, or U.S. mail to the participating organizations based on sample user population size; answer questions and follow up; enter data into the database.

The process of recruiting participants and distributing packets was spread over a period of weeks to minimize the impact of the project on the libraries. Each survey participant was instructed to select a situation in the past twelve months for which information was requested from the library. After receiving a response from the library, participants completed their questionnaires and sent them directly to their librarians in a sealed envelope or to research assistants. The research assistant periodically notified the research directors and the participating organizations of the questionnaires received. The participating organizations helped follow up with those who did not respond.

The research assistant avoided sending out packages immediately prior to or during holiday periods. One month after the initial study packages were distributed, a follow-up e-mail was sent to the participating organizations to remind them to follow up with nonrespondents. A third and more follow-up e-mails and phone calls were sent to the participating organizations for nonrespondents after the second month with more periodic reminders. A new web site was created for participating libraries per their request (see Appendix G). The research assistants continued follow-up activities with the participating organizations until August. Responses were accepted through August 2004.

To ensure the progress and quality of the project, additional funding for the research assistant was sought and obtained from the Campus Research Board, University of Illinois at Urbana-Champaign, to expand the appointment from quarter time to part time. This allowed continuity of staffing to support more complete data collection and analysis. Travel support enabled one research director to supplement surveys with on-site observation and interviews at the participating library sites. From April

to May, the research director visited all participating libraries, interviewed librarians, met administrators and users, and observed the library operations in person.

In addition to regular e-mail updates about the project progress, a follow-up and well-received telephone conference with all participating librarians was also scheduled and conducted in June 2004 to keep the group informed about the project and discuss any issues related to the project, especially data collection. The meeting was well received and librarians requested to have another meeting after the final report was completed in December 2004 (see Appendix I).

The shortage of staff and lack of time in the special library environment should be taken into account in this type of research. Respondents in all institutions were generally cooperative about completing the study. Only I.D. number identified returned questionnaires and all respondent lists were to be destroyed at the end of the data collection period by participating librarians.

During phase III – Data Analysis and Research Report (September to December 2004), two research assistants helped analyze data and generate graphics. The research directors summarized and interpreted the findings and sent a report to participating libraries. The research directors sent a final report to SLA and will disseminate the research findings through publications and presentations, e.g., at the 2005 SLA Annual Conference in Toronto, Canada, and 2005 inFIRE Annual Conference, Norwood, Massachusetts. The Planning Committee for the Symposium entitled “The Role of Information Services in Emergency Preparedness Planning” sponsored by the Medical Library Association invited the research directors to participate in the symposium’s Information Needs Panel to speak about 30 minutes on this study with other panelists. The symposium will occur at the Medical Library Association Annual Meeting in San Antonio, Texas, May 14, 2005.

5. Study Findings and Interpretation

A. Participating Libraries and Survey Respondents

Six different fire libraries across the nation were involved in the study. Although the results differed somewhat by site, they were remarkably consistent in many areas. Three of them are state fire academy libraries (the only three in the nation). They support statewide training in many areas, including hazardous materials, arson and fire investigation, firefighting operations, technical rescue, incident command, fire instructor and officer development, emergency medical technician, unified command, Environmental Health and Safety training and education leadership, and state sponsored National Fire Academy (NFA) courses. The remaining three libraries have unique collections on research. One houses the archives and resources on fire research, prevention, and suppression and the promotion of life and building safety. Another supports production and distribution of fire and emergency services training materials. The last one, which was in transition of moving to a new building in order to open it officially to the general public, supports research to discover equipment, training and procedures for emergency responders to prevent terrorism and respond to it. Among six libraries, four house archives collections. In addition to serving fire service personnel, two libraries in the study are located on a university campus. Two libraries are national or international in scope. For these libraries, the selected statistics reported in the following tables and figures reflect service to the users in the United States and not to international users.

5.1 Characteristics of Participating Libraries and Library Staff

Each participating library's profile was built during the study by asking questions in the following areas: collections, library use in one month (reference, database searches, circulation, photocopying, interlibrary loan), staff (number of professional librarians; number of support staff), budget (total operating budget for the current fiscal year), facilities (total number of square feet occupied by the library or information center). A copy of the profile form is also included in Appendix B.1. The libraries

range in size from a fire library with one professional to a library with two professionals and over 7,000 titles. The characteristics of the libraries are shown in Tables 3 and 4.

Organization	Number of Titles					FTE staff		Facilities	
	Monographs	Serials	Non-print ¹	E-resources	Archives	Librarians	Support staff	Square feet	Budget
A	5,100	95	3,070	No Answer	No Answer	1	0	3,000	10,517
B	4,165	385	3,115	307	218	2	4	1,193	55,763
C	4,065	153	648	8,077 ²	202	1	1	1,500	20,000
D	10,923	230	334	No Answer	Historical archives	1	2	2,412	141,500
E	9,000	150	3,000	No Answer	Manuscripts & photographs	1	1	5,000	36,000
F	2,724	22	93	494	No Answer	1	4	285	No Answer

Note: 1. Non-print materials include videotapes, CD-ROMs, DVDs, slides, and transparencies. 2. Netlibrary ebooks.

Table 3 Characteristics of Participating Libraries

Organization	Reference	Circulation	Interloans Requested	Interloans Supplied	Library services
A	2,262	2,867	5	47	No Answer
B	1,530	1,468	81	421	Current awareness, OPAC training, listserv, reference, electronic document delivery
C	500	726	81	113	Online Fire Admin courses
D	1,500	Data not available	2	2	Document fulfillment, research
E	152	1,520	Data not available	Data not available	No Answer
F	45	120	12	12	No Answer

Table 4 Statistics of Participating Libraries for 2003

A short survey for library staff was also developed and filled out by all staff in participating libraries (see the Survey Questionnaire, Appendix H). The survey findings indicated the following attributes in common (see Table 5):

- 1) Most librarians are over 40 years old.
- 2) Most of them are female.
- 3) They hold multiple degrees.
- 4) They have more than 5 years experience in various libraries, including special libraries and current positions.
- 5) Most worked in a variety of library settings.
- 6) They play multi-roles in the current position.

- 7) They are active members in more than one professional association, including SLA. Several of them are active in local SLA chapters.
- 8) Most read professional magazines, including *Information Outlook*, an SLA official publication.
- 9) All use PC.

Apparently, more young librarians need to be recruited to this field to keep the field developing.

	A		B		C	D	E	F
Age	>40	>40	>40	20-29	>40	20-29	>40	>40
Gender	F	F	F	F	F	F	F	M
Education	BA, MLIS	BA, MA, MLS	BS, MLS	BA, MLS	BFA, MLS	BA	BS, MLS	BA, MLS, MA, EdD
Years in Library	>5yrs	>5yrs	3-5yrs	3-5yrs	>5yrs	1-2yrs	>5yrs	>5yrs
Years in Special Library	>5yrs	>5yrs	<1yr	<1yr	>5yrs	1-2yrs	>5yrs	>5yrs
Types of Libraries Worked in	Public, Academic, Special, School	Special	Public, Academic, Special	Public, Academic, Special	Public, Academic, Special	Special	Academic	Academic, Special
Years in Current Library	>5yrs	>5yrs	<1yr	<1yr	>5yrs	1-2yrs	>5yrs	>5yrs
Defined Role	Library manager, Cataloger, Reference, Archivist	Library manager	Reference librarian	Cataloger, Reference	Library manager, Reference	Library Archives RM Assistant	Library manager, Cataloger, Reference, Archivist	Library manager, Reference, Archivist
Professional Journals Read Regularly		Information Outlook, American Libraries Journal	American Libraries, Information Outlook, Journal of the Medical Library Assn.	Library Journal, American Libraries	College and Research libraries, American Libraries	Information Management Journal, NFPA Journal, Wall Street Journal		Library Journal, American Libraries
Professional Organization Memberships	Regional lib Council (inFIRE)	Special Libraries Association, inFire, [State] Library Association	Association of Christian librarians (inFIRE)	ALA (inFIRE)	inFire, [State] Library Association, ALA	ARMA, NEA, inFire	inFire, SLA, ACRL	[State] Library association, Special Libraries Association, Medical Library Association
Computer	PC-Dell	PC-Dell	PC-Dell	PC-Dell	PC	PC- Compaq	PC-Dell	PC

Table 5. Characteristics of Participating Library Staff

While describing their professional goals in the next five years, including the settings in which participating librarians hope to work, they expressed their desire and passion to build the best library to serve first emergency responders and continue developing their own professional skills. One staff

wants to obtain a MLIS degree and continue in special libraries. When asked why they took a position in the library where they currently work, most of them got into the field by the opportunity for special library experience. One librarian pointed out, “The rewards of my current position are serving a group of patrons involved in life-saving work, growing professionally, and working with a good staff.” The positive and exciting atmosphere at her organization impressed another librarian. The challenges they face include isolation from the rest of the field; understaffing, lack of funding, “building a library from scratch as well as being a resource of great importance to a variety of people,” and “overwhelming amount of work.”

5.2 Response Rate

Based on data gathered from the participating libraries, of the 343 returned questionnaires, 343 were usable. None of the questionnaires were returned completely blank. Response rates vary by organization, as shown in the Table 6. Almost 62% (n=343) of the returns were from print copies and 38% from online input. The user population is defined as someone who used the library at least once in the current previous twelve months.

Organization	User Population	Total Response	Format	
			Hardcopy	Online
A	2000	59	39	20
B	2300	143	63	80
C	250	47	36	11
D	1440	53	43	10
E	152	28	26	2
F*	10	8	5	3
Unspecified (through Web Responses)		5	-	5
Summary Total		343	212	131

Note: *The Library F only has a few walk-in patrons. There are about 40,000 hits on the library website each month. Even though the survey questionnaire was linked to the website, no response was received from this channel.

Table 6. Study Sample and Usable Returns

5.3 Subject Areas Asked by Respondents

To gather more concrete and in-depth qualitative information, the research directors designed the first survey question as the only mandatory field to require that survey respondents briefly state the question they asked. The research directors categorized the answers by subject areas to reflect information needs expressed by fire service personnel and researchers in public safety and homeland security. As shown in Figure 1, fire service was by far the most common subject (167) respondents sought information from the library, followed by research information (63), although information in a wide range of other areas was also provided. Table 7 gives examples of specific questions from each subject area.

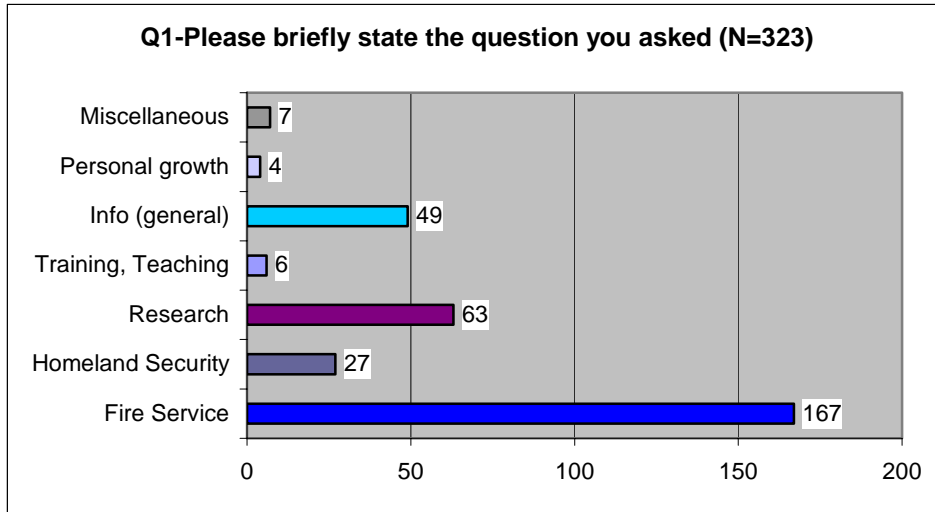


Figure 1. Subject Areas Asked by the Respondents

Subject Areas	Sample Questions
Personal Growth	1. Books to be used with the promotional process. 2. Books/video tapes for a promotional exam.
Info (General)	1. Information on copyright laws and standard forms used. 2. Assistance with overhead transparencies.
Training, Teaching	1. Reference books to students to use for classes. 2. Videos for a class. Research information for classes I was teaching.
Research	1. I need to research the history of the NFPA Standards Council. 2. What are various service levels for pedestrian movement as presented in J. Fruins research?
Homeland Security	1. Requested use of emergency response to terrorism instructor materials. 2. Information on how EMS [Emergency Medical Services] providers should respond to terrorism.
Fire Service	1. Information on arson. 2. Videotapes showing live fires.

Table 7. Sample Questions on Subject Areas

The research directors went further to ask respondents what types of materials they sought and received from the library. About half of the requests (52%, n=343) made by survey respondents were for print format; non-print and e-resources are 26% and 19% respectively. Fire publishers may lag in electronic publishing, which may be the main reason for the low percentage of e-resources being sought (see Figure 2). 26% of respondents favored nonprint materials over other training formats. Although nonprint materials are reported as the most widely used teaching aids for fire emergency service training (Ruan 2001), for individual fire service personnel and researcher, they are extremely expensive to

purchase and difficult to maintain, citing price and security reasons. For example, a six-videotape series, *Fire Investigation* (National Fire Protection Association, <http://www.nfpa.org>), costs non-members \$1,203 and members \$1,083 in 2001 (non-members \$ 1,626 and members \$1463.40 in 2004). A single videotape *Introduction to Hazardous Chemicals* (Emergency Film Groups, <http://www.efilmgroup.com>), costs \$395 in 2001 (no price change in 2004). A CD-Rom with curriculum called *Essentials of Firefighting* (International Fire Service Training Association, <http://www.ifsta.org>) costs \$820 in 2001 (\$1,500 in 2004).

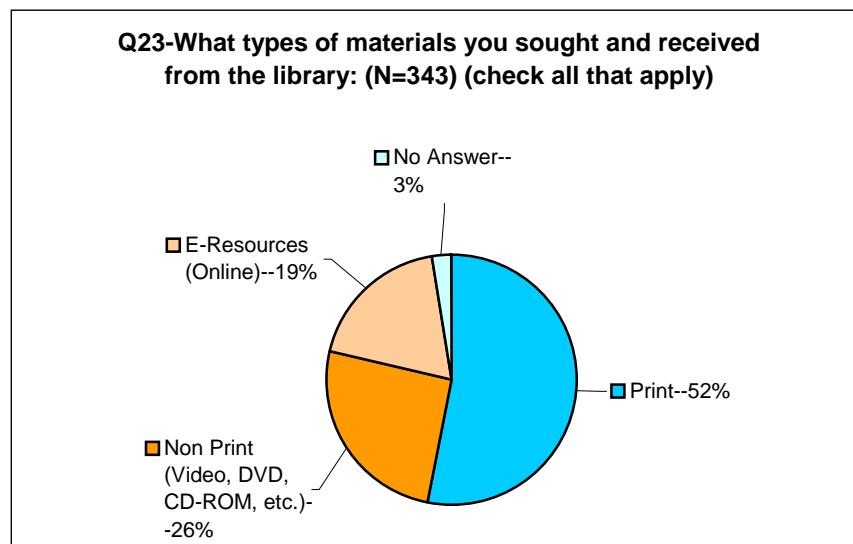


Figure 2. Types of Materials Sought and Received by Respondents

The request was either current or from the last twelve months, so fire service personnel and researchers based their responses on a recent situation. In response to Question 2, participants indicated that 39% (n=343) based their responses on a current request, while 59% indicated that their request had been in the previous twelve months and another 2% did not specify.

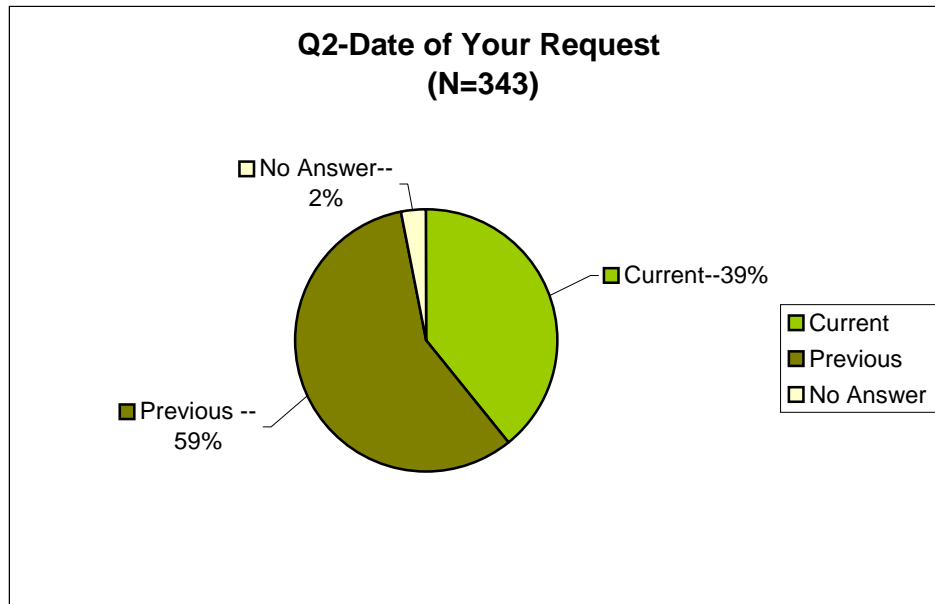


Figure 3. Date of Respondent's Requests

In question 27, the research directors asked in what situations the respondents used the Library. 24% of respondents (n=304) said for research purpose, 18% for education, personal growth and interest, 18% for training and teaching, 17% to ask specific materials, 11% for library resources, 8% due to lack of local resources, and 2% seldom used the library (see Figure 4).

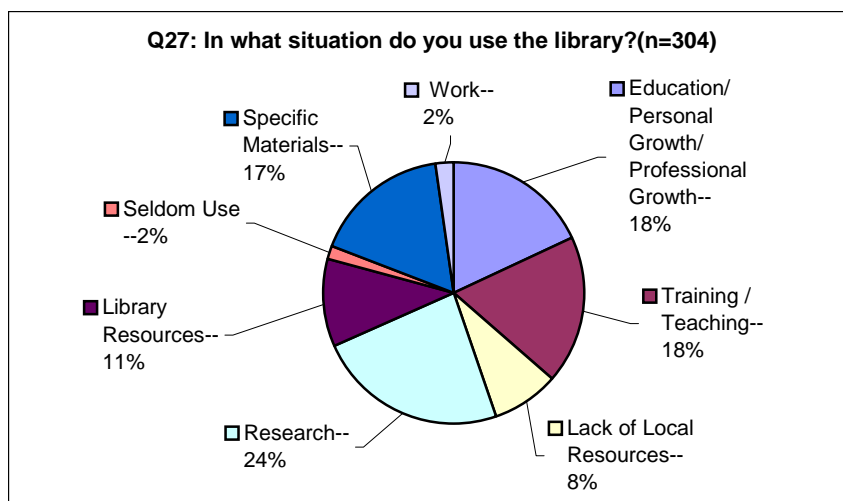


Figure 4. Why Used the Library

5.4 Characteristics of Survey Respondents

To capture the characteristics of survey respondents, specific questions were created and data were collected and analyzed.

As Figure 5 indicates, the majority (67%, n=338) of the respondents were from fire service, 31% were from other organizations, and 2% did not answer. This means that the libraries serve primarily fire service but go beyond the fire service community.

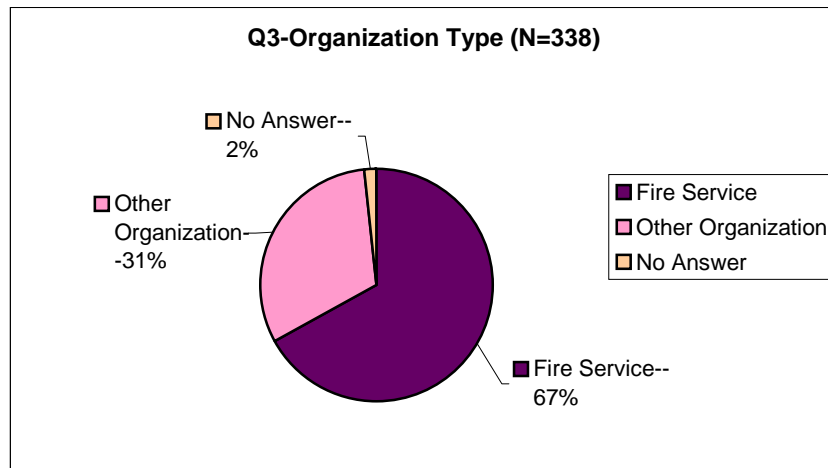


Figure 5. Organization Type

Figure 6 shows that the majority of respondents (80%, n=333) have worked for fire service or fire related organization for more than 5 years. 8% of them were in three to five years, and another 8% of them were newcomers for one to two years. 4% were brand new, less than a year (see Figure 6). This shows the majority of respondents have a long relationship with fire service.

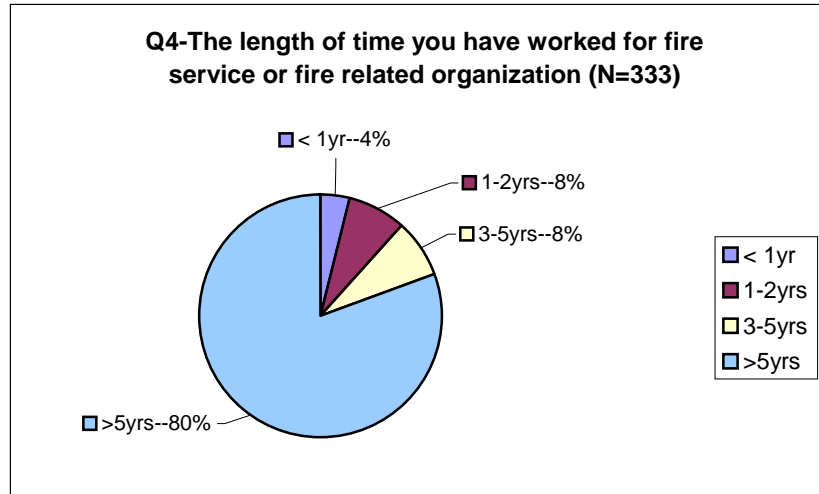


Figure 6. Work Years

A question on the age of the respondent was added (not in the previous studies) to determine whether younger users are more likely to prefer electronic sources to print. Among 343 respondents, 30% were 50 years old or older; 29% were in 40-49 years old range, 26% 30-39, and the lowest percentage of 15% were from 20-29 (see Figure 7). If combined 50 years old or older group with 40-49 years old, more than half (59%) was 40 or older. The libraries seem more successful to attract baby boomer generation than any other younger generations (millennium and X-generations).

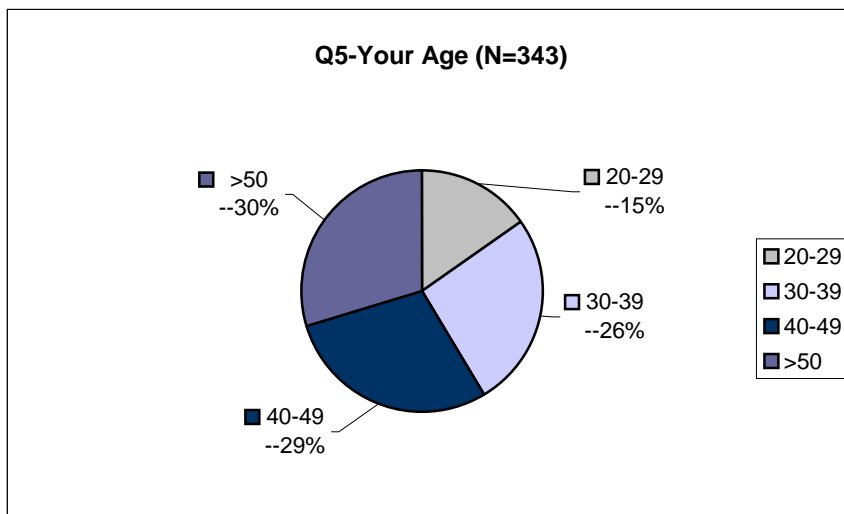


Figure 7. Age Groups

Question 7 dealt with the educational level of the respondents. Figure 8 shows that the educational degree obtained the most was bachelor's degree (48%, n=337). Next is high school diploma (25%), followed by Master's (13%), and doctorate (4%). Respondents consisted of more practitioners than researchers. With management positions in fire service starting to require a Master's degree and with more young people joining the force, we anticipate this may change in the near future.

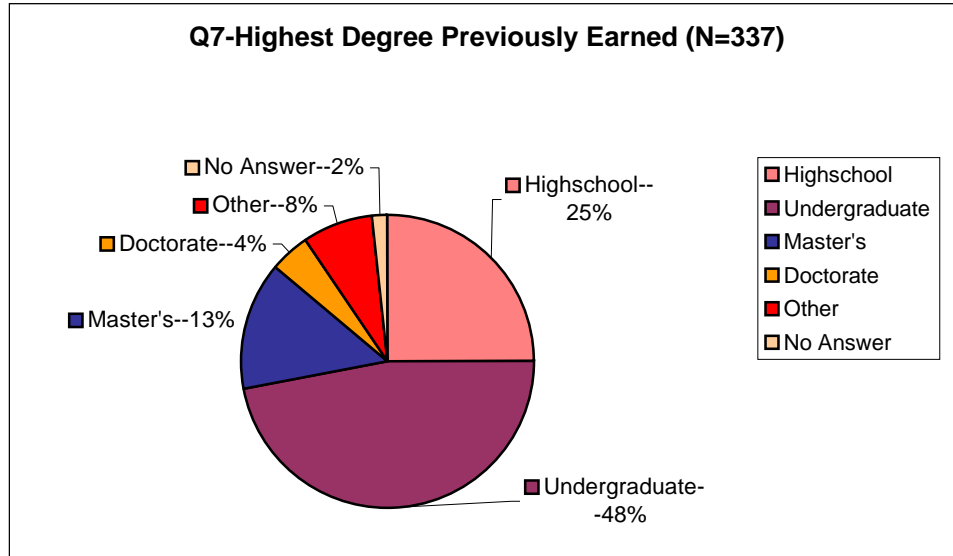


Figure 8. Degrees Obtained

When asked who they were, among 328 respondents, 27% of them said they were firefighters, 19% training officers, 13% fire chiefs, 17% researchers, 13% administrative staff, and other 7%. 4% did not answer the question (see Figure 9). This matched with findings found in Figure 1 that more respondents were from the fire service community and sought information on fire service.

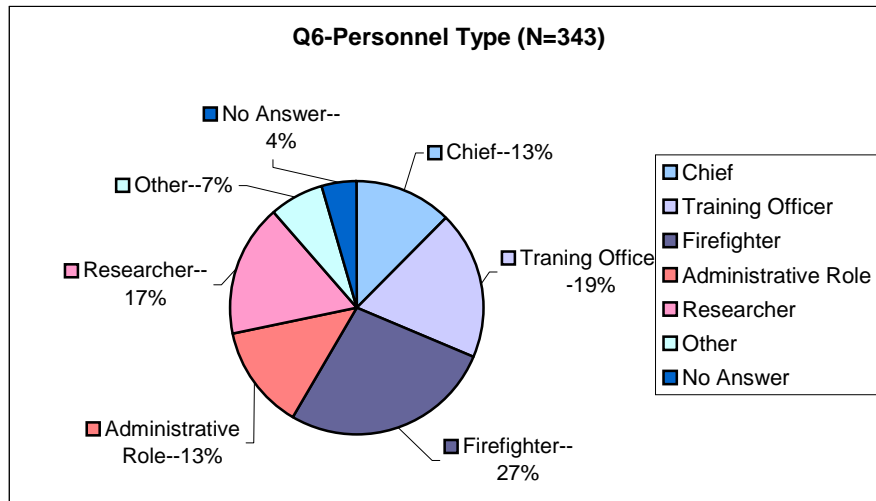


Figure 9. Personnel Type

This study only included library users, which were defined by the research directors and agreed by the participating libraries as a patron who had used the library at least once. To understand the survey respondents' information seeking behavior, the research directors had a question (Question 26) on the usage of the library in the past twelve months. Over 57% (n=340) of the respondents used the library at least once a month but not weekly. Only 9% of them reported that they were frequent library users and they used the library once a week or more often. 24% of them had used the library at least once but not monthly during the previous twelve months. 10% said they did not use the library at all (before they made the current request).

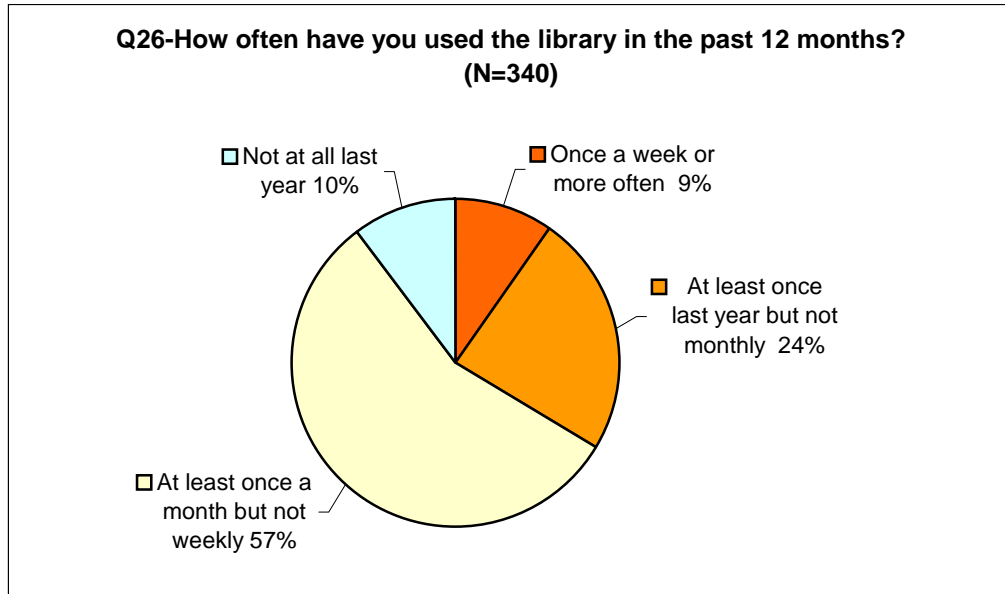


Figure 10. Usage of the Library

Pursuant to the goals and objectives of assessing the performance and impact of fire library information services on public safety and homeland security, several research areas have been identified. Within each area, specific questions provided additional focus for the study.

B. The Library’s Critical Roles and Impact on Users

5.5 Significant Impact of the Library on the Action

The key question in an impact study is whether the information allowed the requester to handle some aspect of a decision-making situation differently from how it would have been handled otherwise (Marshall 1993). The research directors used several questions assessing impact of the library on fire service personnel’s and researchers’ decision-making and what the information enabled them to do. In Question 10, respondents were asked if the information they received led them to better-informed decisions. A high percentage, 94% of respondents (n=343) said yes, 5% no and 1% with no answer (see Figure 11). Clearly, the information enabled most of them to make better decisions.

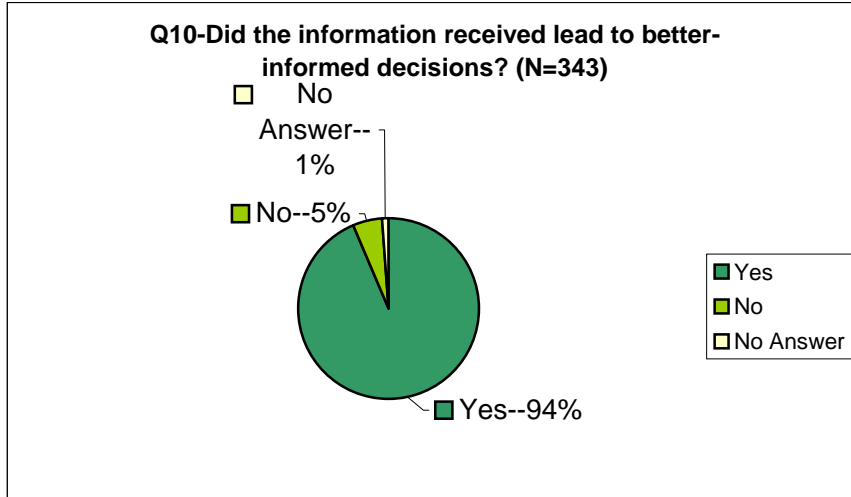


Figure 11. Better-Informed Decisions

How did the information enable the respondents in decision-making? For Question 11, 89% of them reported that the information enabled them to take a course of action. 9% of them said no, and 2% did not respond (see Figure 14). The library's direct impact on the majority of them was obvious.

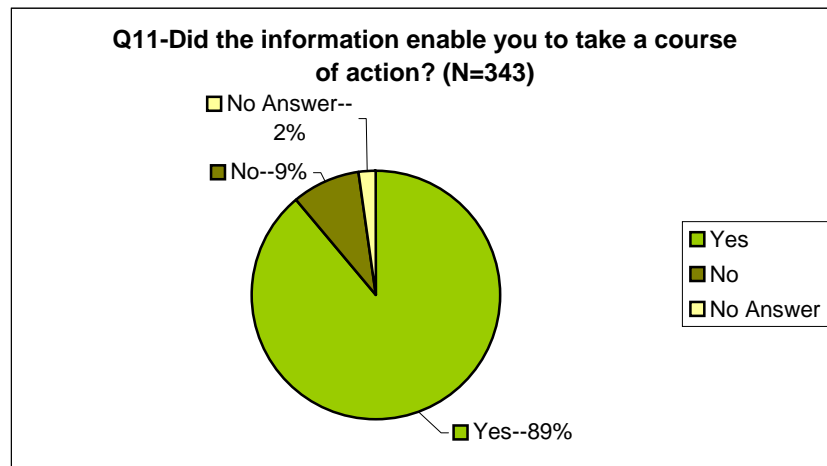


Figure 12. A Course of Action Taken

The research directors adapted an additional question for the study to reflect the specific types of decision-making situations encountered in fire emergency settings. Question 20 was to gather action-oriented data – i.e., it asked the fire service personnel and researchers about the extent to which the information enabled them or their organizations to take action or move forward on a task. The research directors intended to identify specific areas in which information provided by the library enabled the

respondents to take action and to measure the extent of the enabling effect. Figure 13 shows the number and percentage of respondents who indicated that the information contributed to their ability to take action. The library's strongest contribution was in enabling fire service personnel and researchers to proceed to the next step in a project or task (39%, n=318). A second strong contribution, reported by the respondents (24%, n=318), was that the information allowed the firefighter or researcher to decide upon a course of action in research or training or emergency response. It also appears that information provided by the library often contributed toward the ability of fire service personnel and researchers to decide upon a course of action in emergency response (13%, n=318).

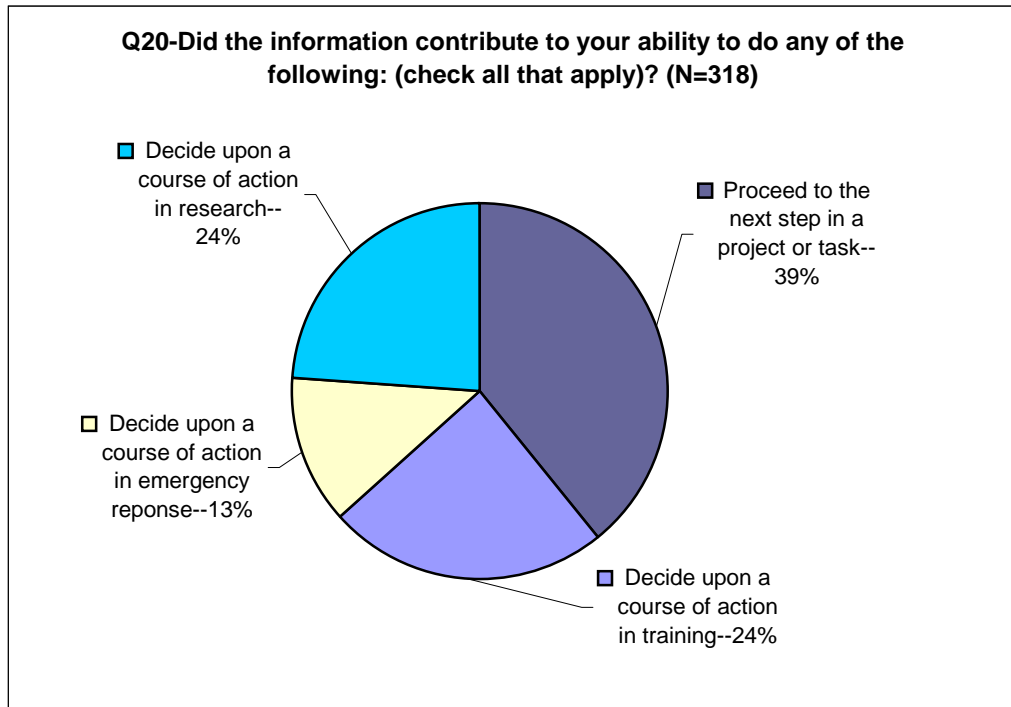


Figure 13. Specific Types of Decision-Making Situations

5.6 Impact on Decision-Making: Was the Situation Handled Differently?

In Question 14, respondents were asked whether they changed their behavior as a result of the information they received from the Library. 60% of them reported they did not. 3% of them did not answer the question. But 37% of them said that they did (Figure 14).

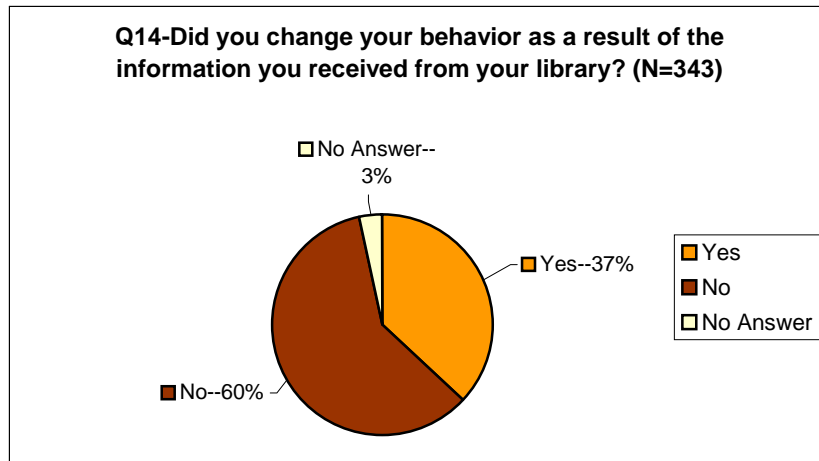


Figure 14. Change of Behavior

Those who reported a change behavior as a result of the information they received from their libraries identified a range of impacts:

Training/Teaching:

"I had to develop other visual aids for my speech."

"Gave a wealth of examples to use to complete training."

"I presented a tactics class on firefighter safety and made recommendations to increase our officer training."

"Better training."

"Enhanced training."

"Increased effectiveness of training."

"Helped me better inform my firefighters about structural failures in fire conditions. Changed all of their behaviors and mine as well."

"Better training for our firemen."

"[Changed] training procedures."

"More fully understand High-rise Operations."

"Development of PowerPoint CD for thesis and teaching."

"It modified the course material."

"[The information received] changed training program information."

"[The information received] changed perspective of current threat and [made] presentations with different recommendations."

"Developing/ promoting health & fitness programs."

"[It provided] more training materials."

"Training knowledge."

"Expanded training."

"Added more to my teaching."

"I am now including both videos suggested [by my library] in all fire related curriculum."

"Education."

"[It] informed script development."

"Training."

"Helped to better prepare and train for Mass Casualty Incidents."

"Provided a better training session."

"Better training."

"Training."

"Newest information for training."

"Training/Safety."

"Redesigned training schedule."

"I was able to give current/available information to the members of my Dept. for purposes of proper and up-dated in service training."

Research:

"Used [the information] to supplement academics."

"Research planning was changed"

"Better informed about complexity of various issues."

"[It helped] understand intent behind codes."

"[It provided] adjustment in research question asked."

"[It led to] reevaluate method of smoke detection for warehouses."

"Able to draft more relevant proposals."

Emergency Response:

"I'm better able to handle water supplies on scene."

"On scene decision-making."

"Improved decision-making process and execution of on-scene tactics."

Changed Procedures and Policies:

"Helped develop a new SOG [Standard Operating Guidelines] on operating procedures at traffic crashes."

"[The information received] changed the way that our dept. trains and looks for the hidden hazards."

"[I made] procedural change."

"Better decisions at fires."

"Change in Policy."

"[Made a] new policy."

"Changed training procedures."

"Pursue improving standard or SOG [Standard Operating Guidelines]."

"Change SOPs [Standard Operating Procedures] and protocols."

Budget Decisions:

"We remodeled an old building instead of building new."

"It altered how we approached and prepared a better document outlining [the] procedures [for] budget, purchase, programs."

"We were able to ascertain the goals of the grant program and more closely align our application for funds based on this information."

"[The information received] changed budget, billing fees."

"Degree of liability-case, money expense."

"Provides readers for budget and more funding."

"Financial."

"FEMA [Federal Emergency Management Agency] grant."

Personnel Management:

"Based in part on the information obtained, our community elected to increase staffing."

"Better educated employees."

"[I] was able to provide personnel with information they needed."

"Are informed, better to help customer."

"Information helped establish budget for paid on call system."

"Management functions."

Changed Approaches:

"[The information received] changed my approach to the problem at hand."

"I needed to ask two organizations instead of one."

"Direction of dissertation."

"I tried to have more of an open mind when it comes to dealing with different personalities and attitudes in the fire service."

"Made more fire service personnel aware of what is out there."

"[The information received] made me look at these areas differently."

"[I] use library more."

"[I] will use this resource in the future."

"More aware, more knowledgeable in training."

"It made me go back and re-examine what I had already completed and make changes."

"Better informed outlook and decision making."

“More intensity in importance of material.”

“What and how we need to document the different things we do.”

“Would not consider using assessment center format [if I did not receive the information from the library].”

Personnel Growth

“Obtained a higher professional certification.”

“[I]mproved education & knowledge level.”

“[Improved] Physical fitness.”

“Unknown became known”

“Made me broaden my subject to include many things I did not think about.”

”The information made my co-workers more aware of hazards in our work environment.”

General

“Developed a program.”

“Provided assurance that data was available.”

“Expanded my scope of knowledge.”

“Decide to make argument to agency.”

“Was affected to provide information to requesters.”

”Wording of correspondence.”

“Attitude.”

“I have used the information gained through the research and applied it in daily operations and decision making.”

“I was able to focus more.”

”[Gave] motivation.”

“Increased safety, reduced injury rates”

“Operations.”

The research directors went further and asked respondents if they made different types of decisions. As a result of the information received from the library, of the fire service personnel and researchers, 47% of them (n=343) reported that they handled the decision-making situation differently from the way in which they would have handled it otherwise. 48% of them said “no.” 5% did not answer (see Figure 15). There are some problems and limitations in conducting this type of research in the fire emergency environment because some decisions are long-term in nature and the respondents may not have been sure of the outcome at the time of the study. However, it is notable that as shown in Figure 15, the information was influential in changing decisions in almost half the cases (47%).

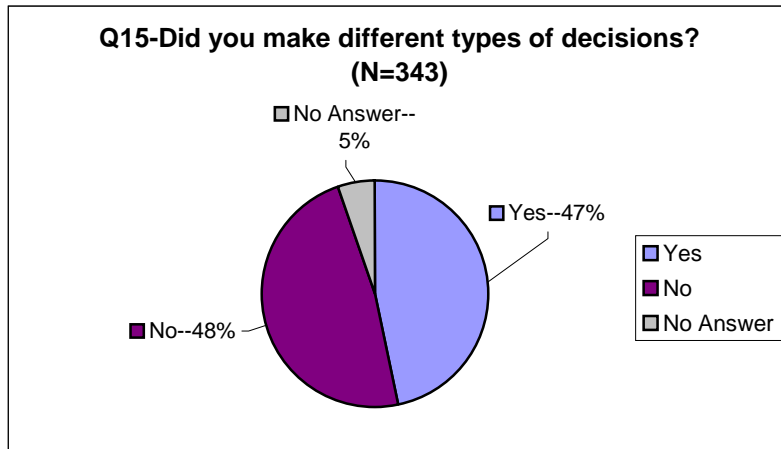


Figure 15. Different Types of Decisions

If a decision was not changed, was the situation handled differently? A key question in an impact study is whether the respondents handled any aspect of their decision-making situation differently from how they would have handled it otherwise. Information may be nice to have and it may make the respondent feel more informed and confident, but does it really make a difference in what the person does (Marshall 1993)? The research directors adapted the question in the previous study and asked the respondents if the information received made them think of a dimension that they had not thought of before (Question 12). Figure 16 indicates that 65% of respondents (n=343) said yes, 33% no, 2% no answer.

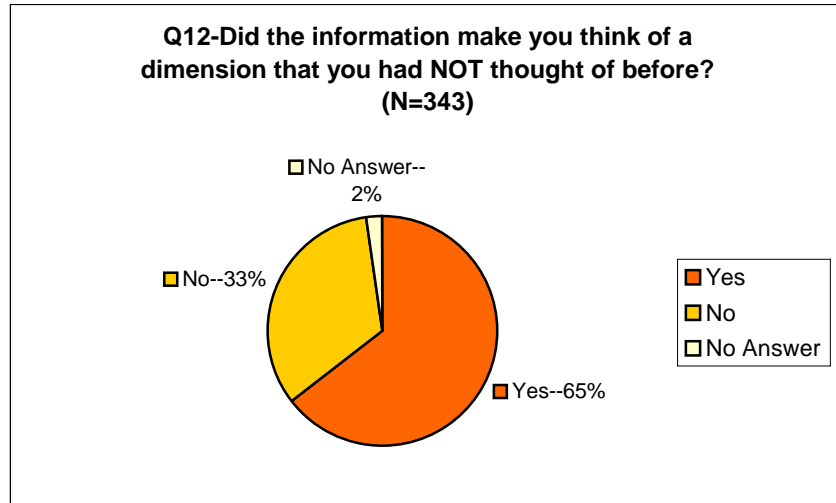


Figure 16. New Dimension

The respondents were also asked if the information received made them more confident about making a decision or recommendation (Question 13). Figure 17 shows that 89% of them (n=343) said yes, 10% no and 1% with no answer.

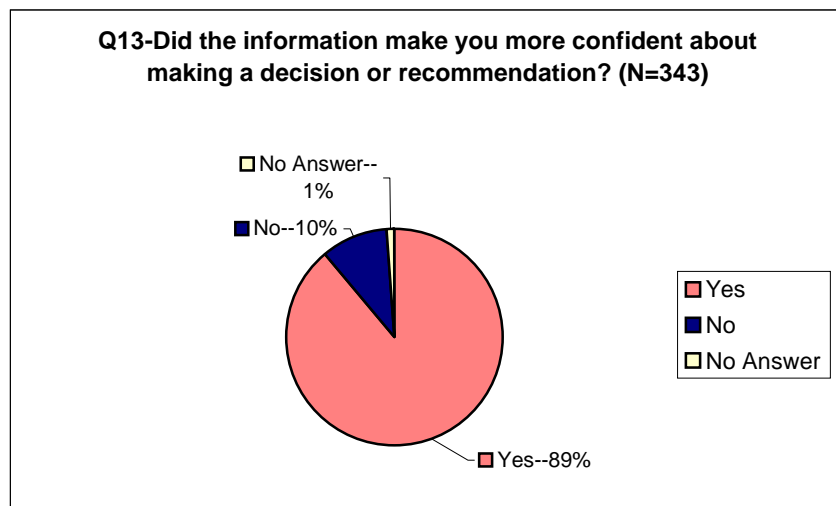


Figure 17. More Confidence Gained

The respondents were asked if the information led them to better-informed practical decisions, contributing to their work (Question 24). 80% of them (n=343) reported yes, 16% no and 4% no answer as shown in Figure 18.

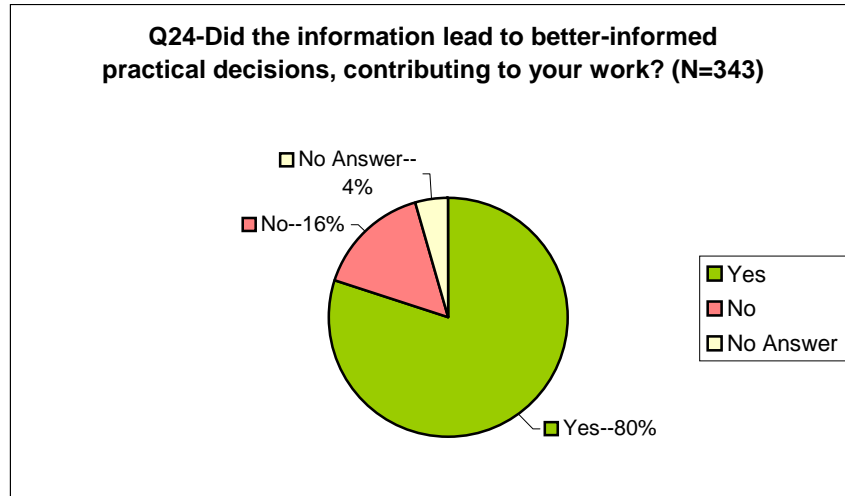


Figure 18. Better-Informed Practical Decisions

A supplementary question was used to examine in what areas the information contributed toward improvements. Improvements in personal interest were reported by 25% (n=328) of the respondents, in training by 21%, in education by 18%, in personal growth by 14%, in research by 11%, in administrative decision-making by 7%, and in career advancement by 4% (see Figure 19).

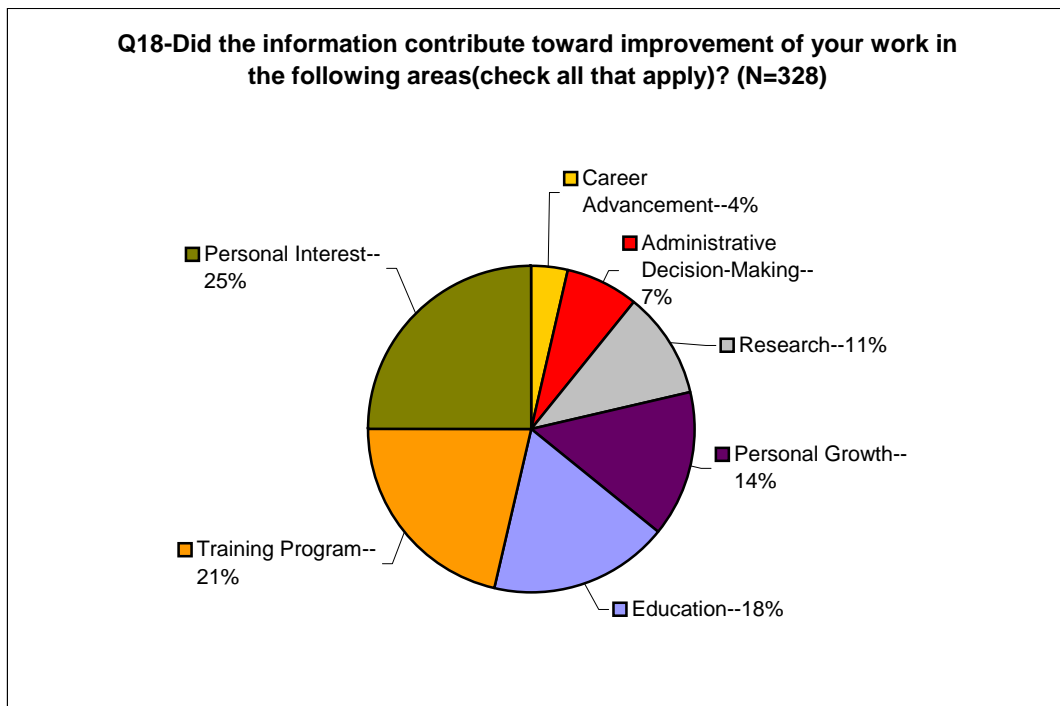


Figure 19. Work Improvement

5.7 Impact of the Information on Negative Outcomes

To determine whether the information provided by the library changed some aspects of emergency response, additional questions were created as to whether the information contributed to the fire professional's ability to avoid negative outcomes, e.g., injury and death, delay/wasted time. The data examined indicates that the information allowed respondents to avoid, to a considerable or great extent, the following negative outcomes. As shown in Figure 22, the greatest impact of the information was in avoiding what fire service personnel and researchers considered being the loss of their time or loss of the time of other staff in the organization (23%, n=278). There are comments throughout the questionnaires about the time saved by library services. The next ranking negative consequences avoided were delay/wasting time of the firefighter or researcher (18%), followed by death 17% and injury 15%. Related to the loss of time is the waste of organizational resources such as equipment or supplies as 8% of them reported. A smaller proportion of fire service personnel reported that the information affected their ability to avoid poor emergency response (10%), and poor training decision (9%) (see Figure 22). This finding is significant because it clearly demonstrates the libraries' close involvement with the respondents' daily work and decision-making process. It also demonstrates how crucially important library and information services are to the fire service personnel and researchers in the emergency response field. The libraries are essential to their communities. Special librarians may consider targeting some of these areas for further improvement.

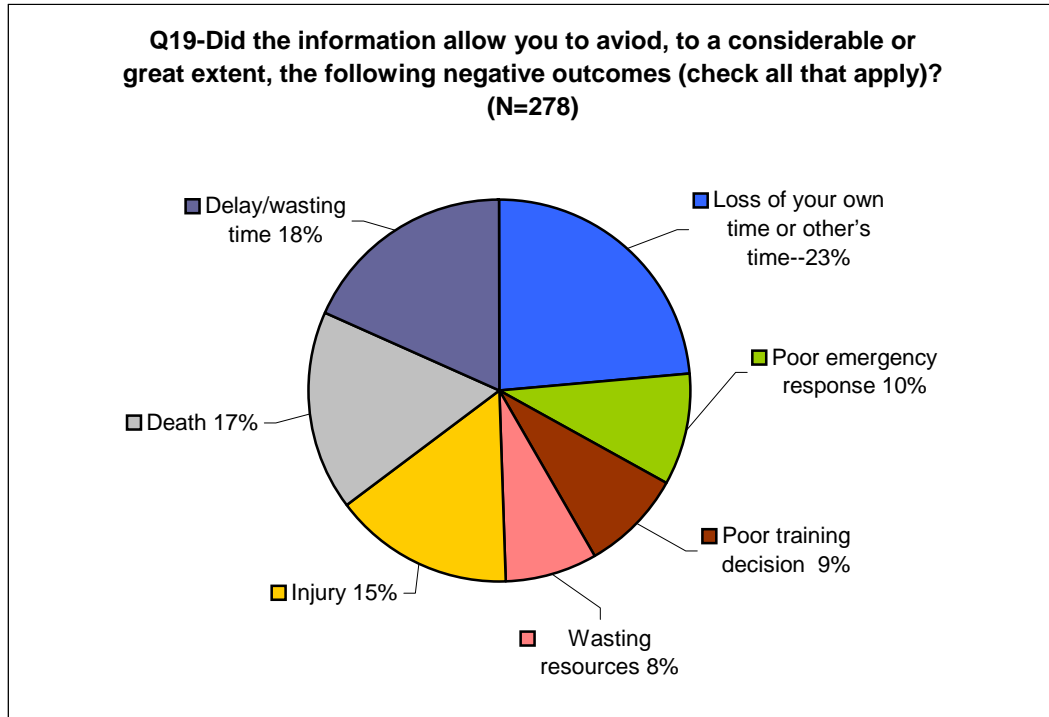


Figure 20. Negative Outcomes Avoided

The assessments of value of the information were based on three specific areas: quality of the information and the information service provided; cognitive value to the firefighter or researchers – i.e., its contribution to the knowledge of the firefighter or researcher; and value of the information for decision-making. These categories were revised and expanded for the study, using the earlier work of King (1987), and Marshall (1992 and 1993) as a starting point.

5.8 Quality of the Information and the Information Service

In Question 8, the respondents were asked whether the information received was relevant to the public safety and homeland security needs of fire professionals. The substantial proportion of the respondents (97%, n=340) said yes (see Figure 21). This indicates that the libraries were highly relevant to their work and essential to their user communities.

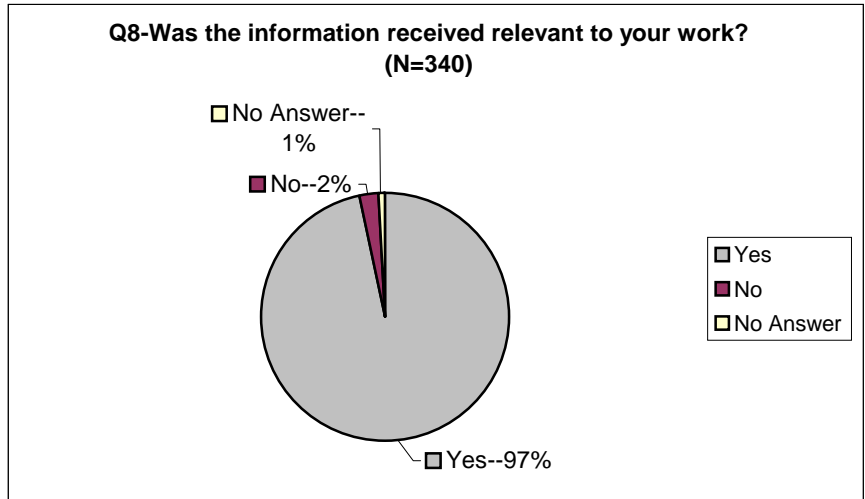


Figure 21. Relevant Information

The respondents were also asked if the information received was accurate and current (Question 9). 96% of them (n=343) said yes, 2% said no, and 2% did not provide any answer (see Figure 22). This shows that most of respondents were pleased with the quality of information they received.

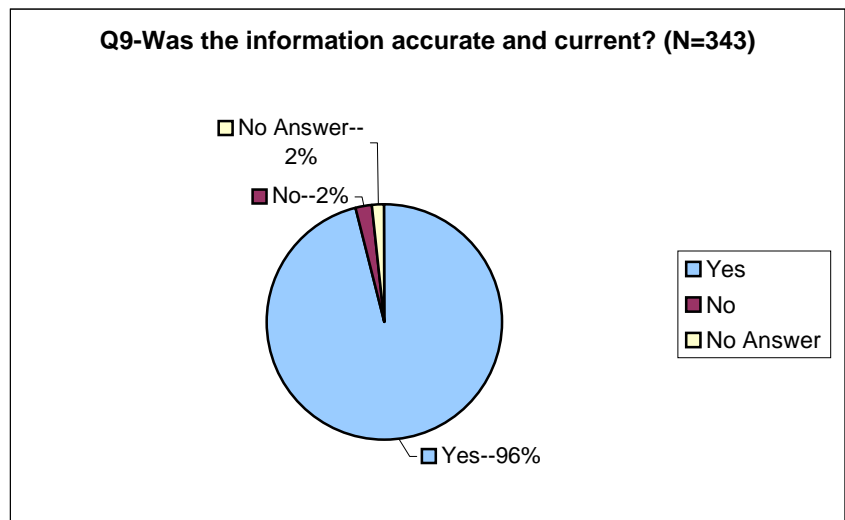


Figure 22. Accurate and Current Information

Both question 8 and 9 examined quality of information reflecting the respondents' agreement or disagreement with statements about the relevance, accuracy and currency, and timeliness of the information service. An examination of the data in Figure 21 and 22 shows that the participating

libraries performed very well on the accuracy and currency dimensions, also well on the relevance dimension (97%).

5.9 The Cognitive Value of the Information

Cognitive value of the information refers to its contribution to the knowledge of fire service personnel and researchers. The research directors adapted two specific questions in the study. In question 16, the respondents were asked if the information received refreshed the user's memory of pertinent details or facts. Refreshing the individual's memory of details or facts could have made this contribution or substantiated what the patron already knew or suspected. 78% of respondents (n=343) said yes, 19% said no and 3% provided no answer as shown in Figure 23.

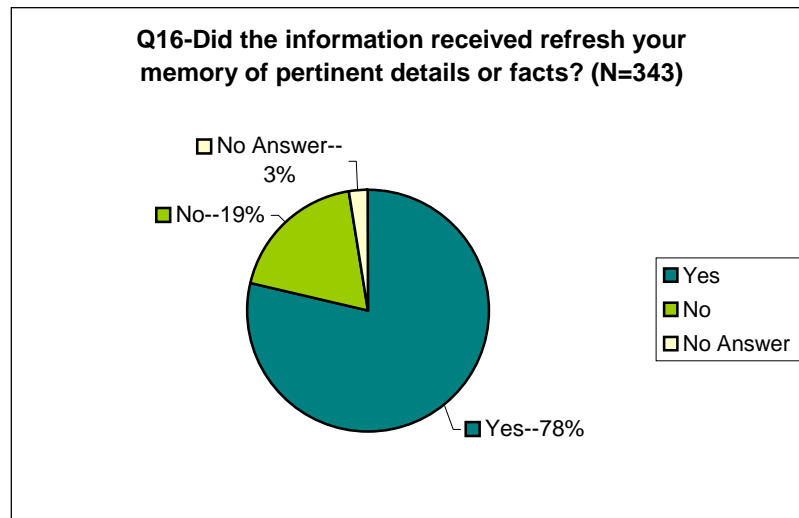


Figure 23. Memories Refreshed

The research directors are more interested in whether the information provided the firefighter or researcher with new knowledge in the decision-making situation. Shown in Figure 24, 92% (n=343) of the respondents indicated that at least some of the information was new to them and a small proportion of them said no new knowledge was gained and 2% did not answer the question. In a substantial proportion of cases, it even made the users think of a dimension they had not thought of before (65%, n=343) as indicated in Figure 16.

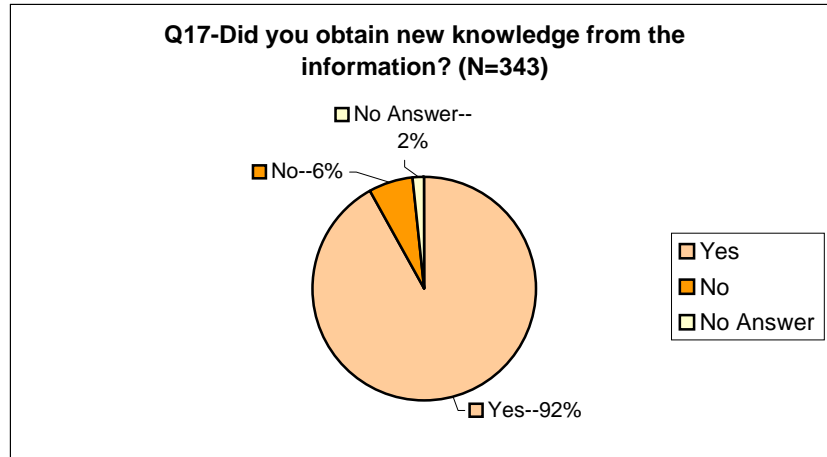


Figure 24. New Knowledge Gained

The growing amount of information available and the rapidly changing nature of information in today's world make it essential for decision-makers in homeland security and public safety to have a source they can use to refresh their memories and to make sure that their existing knowledge is still current. The findings in this study demonstrate that the participating libraries have essential parts to play.

5.10 Value of the Information for Decision-Making

Questions about the practical value of the information were used but modified from the previous instruments. The value for decision-making area included three items: whether the information led to better-informed decisions (Question 10); whether the information was seen as valuable in the particular decision-making situation (Question 21); and whether the information made the firefighter or researcher more confident about making a decision or recommendation (Question 13).

As we discussed in an earlier section, a high proportion of the respondents, 94% (n=343), agreed that the information received led to better-informed decisions (see Figure 11). Also of importance, more than three-quarters (89%, n=343) of the respondents said that the information had made them more confident about making a decision or recommendation (see Figure 17). 80% of the respondents (n=343) agreed that the information led them to better-informed practical decisions, contributing to their work (see Figure 18). 97% of the respondents (n=343) reported that the information was of value in

their particular situation (see Figure 25) and 81% said the information was of research value (81%, n=343) (see Figure 26).

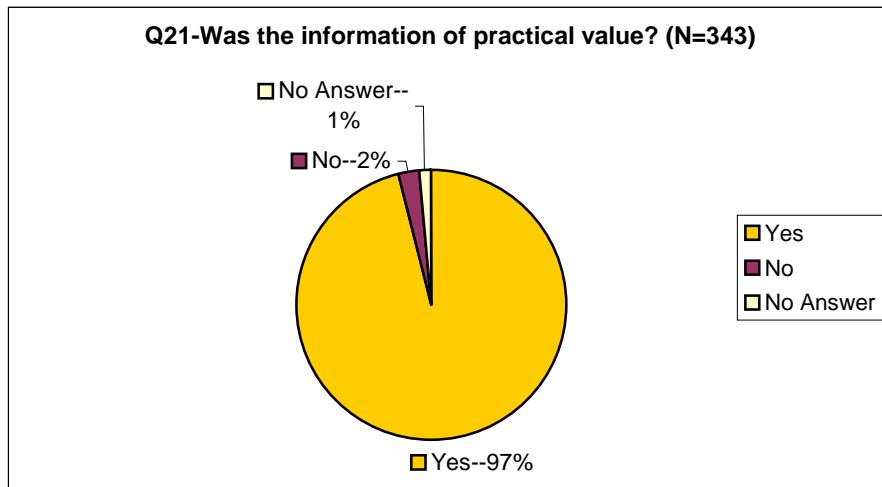


Figure 25. Practical Value

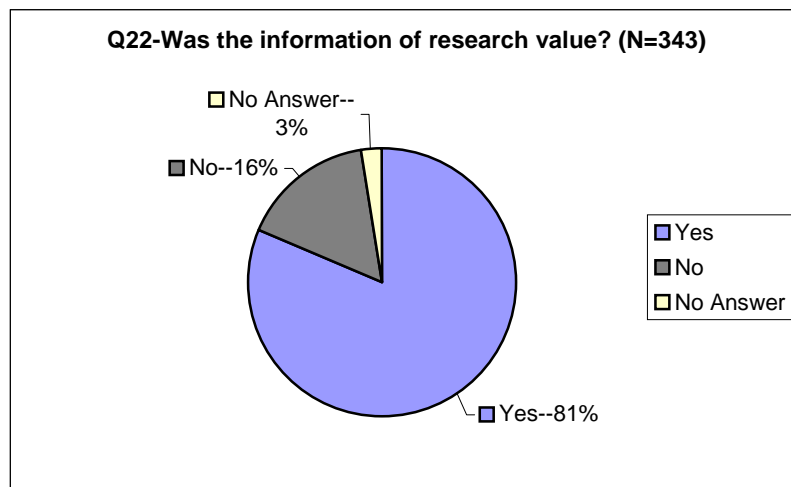


Figure 26. Research Value

5.11 Importance of Different Information Sources to Determine Respondents' Perceptions of the Library

In a decision-making situation, it is most likely that fire service personnel and researchers use information from a variety of sources as a basis for their actions and research. In this study, the research directors were interested in determining respondents' perceptions of the relative value of the

different sources they had used in the particular situation. They were especially interested in knowing how the information provided by the library rated in comparison to other sources, such as the person's own files and colleagues both inside and outside the organization. To examine the relative value of different sources and how important the library was when the respondents sought and used information in decision-making situations, the respondents were asked to rate the importance of the information received from each source used on a scale of 1 to 5 where 1=not very important at all; 2=of some importance; 3=of considerable importance; 4=of great; 5=of greatest importance. The types of sources include the individual's own files, experience, Internet, colleagues inside and outside the organization (Question 25).

An examination of the mean in Table 8 shows that the library was rated highest (4.12, S.D. 1.03), followed by the colleagues inside the organization (3.75, S.D. 1.07.), Internet (3.62, S.D. 1.04), the respondents' own experience (3.59, S.D. 1.24), their own files (3.45, S.D. 1.27), and colleagues outside the organization (3.48, S.D.1.20). The median rankings for the information sources show that the library tended to be rated as 4, or "of considerable importance," as the colleagues inside the organization, Internet, the respondents' own experience, their own files, and colleagues outside the organization.

Sources	1	2	3	4	5	Number	Mean	Standard Deviation	Median
Your own files	30	47	84	81	88	330	3.45	1.27	4
Your own experience	29	28	88	88	97	330	3.59	1.24	4
Internet	15	28	88	131	64	326	3.62	1.04	4
Colleagues Inside the organization	14	25	79	121	89	328	3.75	1.07	4
Colleagues Outside the organization	25	48	70	110	71	324	3.48	1.20	4
Library	10	15	55	101	154	335	4.12	1.03	4

Table 8. Importance of Different Information Sources

However, when the research directors examined the median rankings in histograms (see Figure 27), the library received more 5 (5=of greatest importance) than other sources, which indicates that more respondents view the library as the most important source.

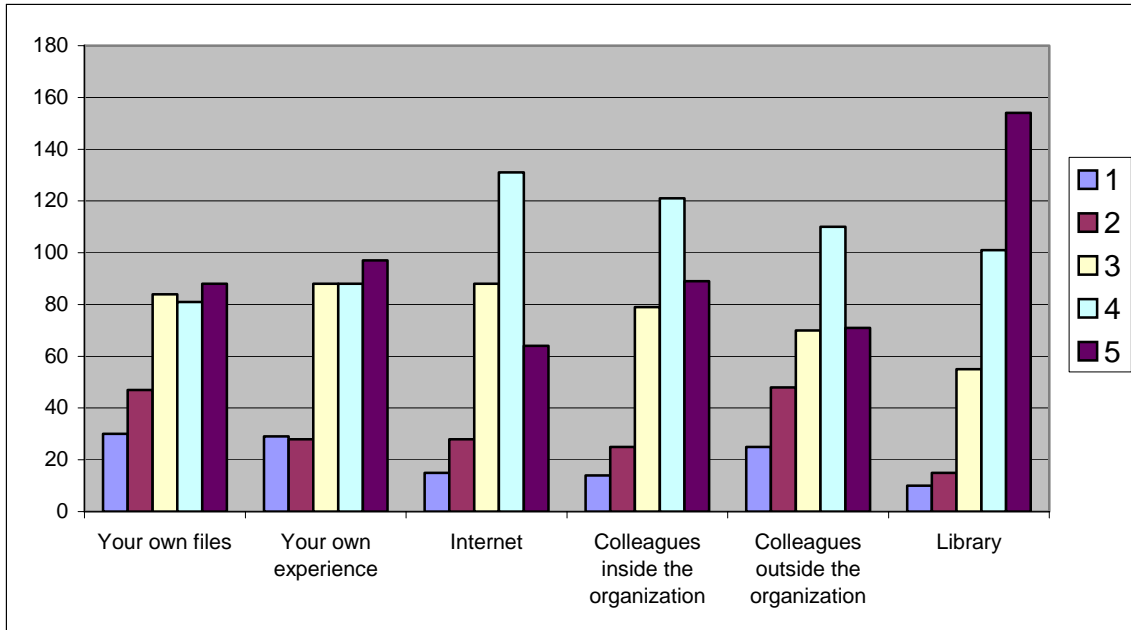


Figure 27. Importance of Different Information Sources

5.12 Different Information Needs of Different User Groups

The research directors believe that it is important for the library to determine respondents' perceptions of the relative value based on user type. Do different user groups have different information needs? Because many different fire service professionals make decisions that directly affect public safety and homeland security, besides researchers, the study included instructors, training officers, chiefs, firefighters and other members of the fire service team. As the chief executive officer of the fire department, the fire chief is ultimately responsible for all operations within the fire department. He/she is also responsible to the city manager, mayor, council, district board members, and the members of the fire department. The training officer's responsibilities involve the administration of all fire department training activities. Of primary importance to most departments is the intradepartmental training they establish and conduct. Firefighters are required to learn and participate in operating apparatus and performing hazardous tasks under emergency conditions, all of which require strenuous exertion with handicaps such as smoke and cramped surroundings.

Considering this and to better market the library services to different groups, the research directors are interested in determining if fire chiefs, training officers, and firefighters differ in the types of information needed for practical purposes and decision-making processes. Do different groups of users place different value on the information? Shown in Figure 28 with combined data in Question 6 and Question 21, every training officer respondent said yes for practical value on the information with the highest 100% value, and more than 80% respondents from other three groups (chief, firefighter and researchers) said yes.

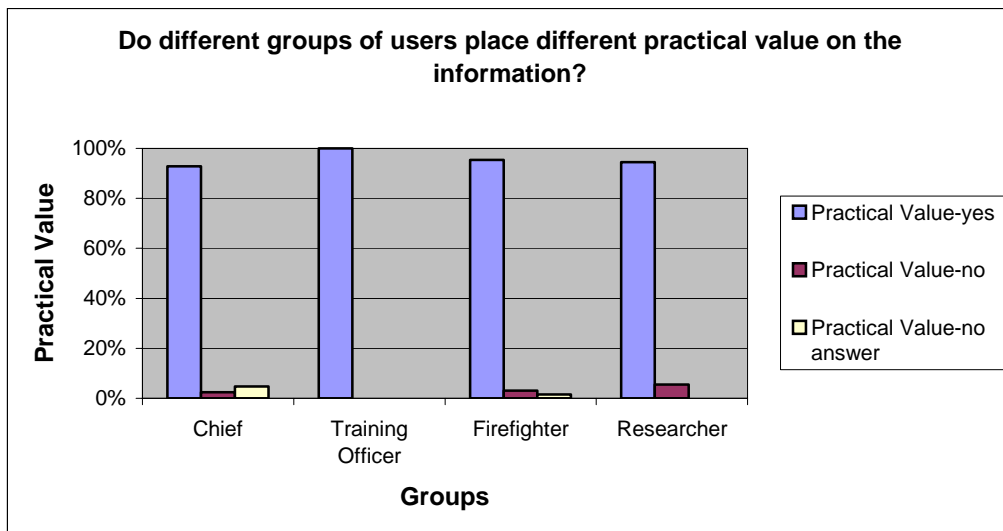


Figure 28. Different Groups on Practical Value

Figure 29 (combined question 6 and 22) indicates that every researcher (100%) said that the information they received was of research value. About 80% of the other three groups of respondents said yes.

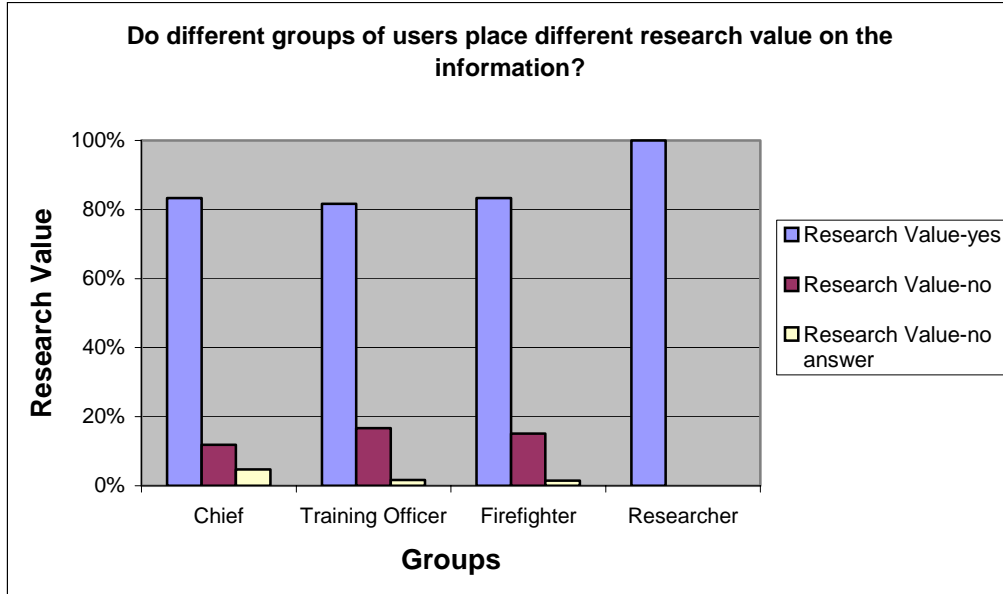


Figure 29. Different Groups on Research Value

Again, every researcher said the information received led to better-informed decisions and more than 90% of other groups of respondents also had the same conclusion as shown in Figure 30 (combined question 6 and 10).

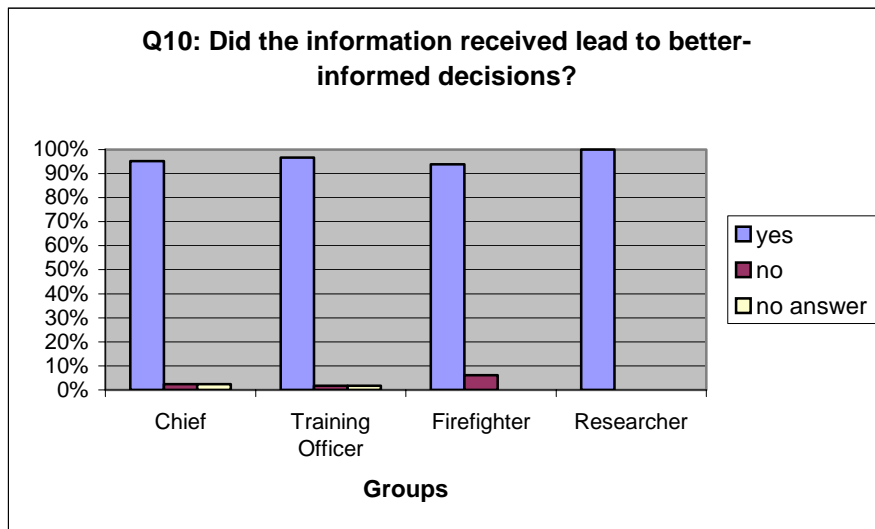


Figure 30. Different Groups on Better-In 1

Figure 31 (combined question 6 and 11) indicates that the information enabled training officers more often to take a course of action than the other three groups. It shows some difference on different groups' decisions and practices.

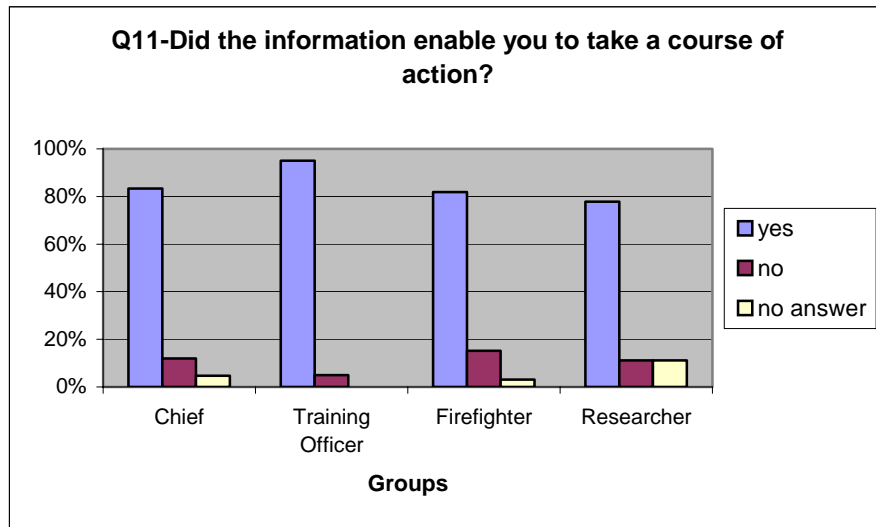


Figure 31. Different Groups and A Course 1

As shown in Figure 32 (combined question 6 and 14), as a result of the information they received from their libraries, more than 60% of researchers did not change their behavior and only slightly higher than 20% said yes. More training officers (close to 60%) and chiefs (more than 40%) did not either. But 40% of training officers and chiefs said they did. Firefighters were pretty equally divided.

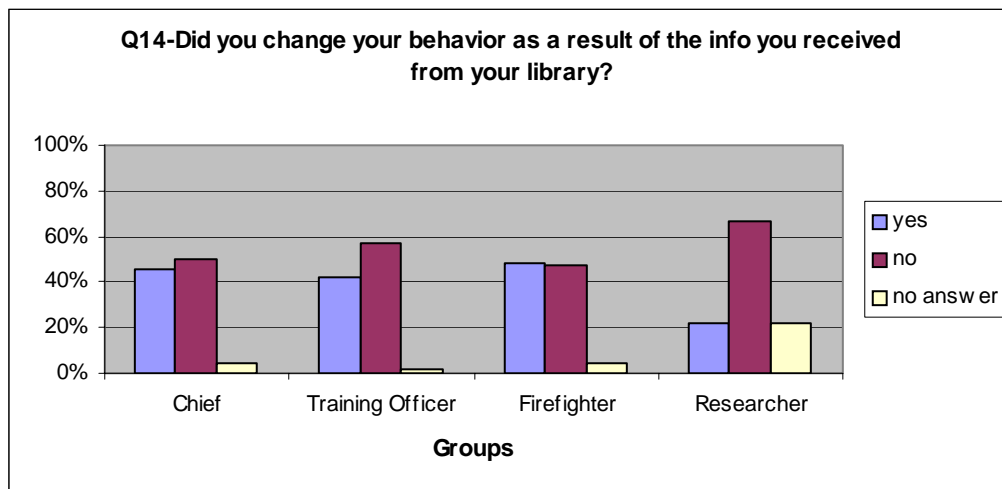


Figure 32. Different Groups and Change of Behavior

Figure 33 (combined question 6 and 15), pointed out firefighters and training officers are two groups who made different types of decisions based on information they received. Chief group was close to half and half. 60% of researchers said no. This indicates this type of study may be unable to capture long-term impact because the respondents answered questions based on a particular situation.

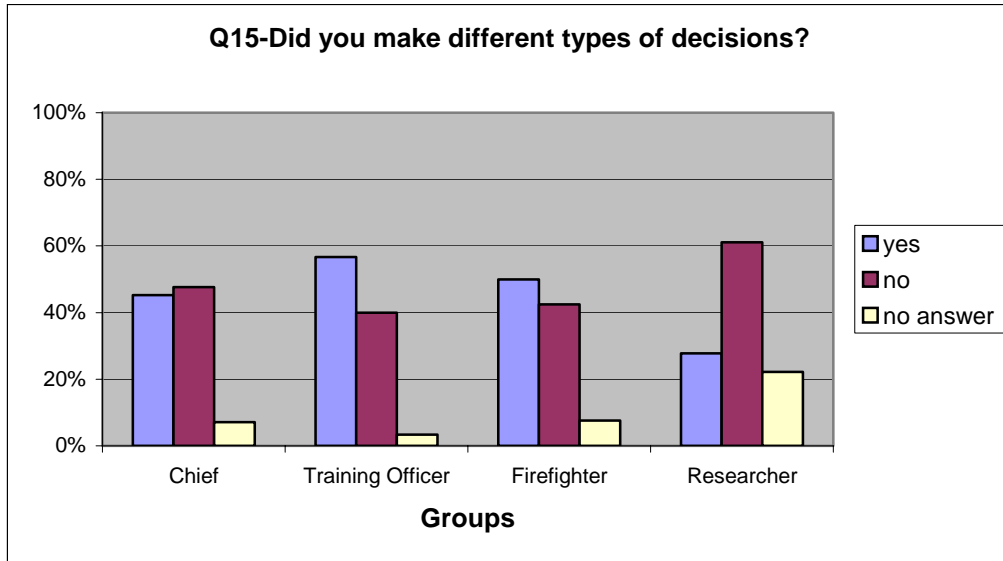


Figure 33. Different Groups and Different Types of Decisions

When examining the cognitive value of the information, the patterns in the following three figures (Figure 34,35,36, combined question 6 and 16,17,13 respectively), clearly matched with the general group results (see Figure 17,23,24).

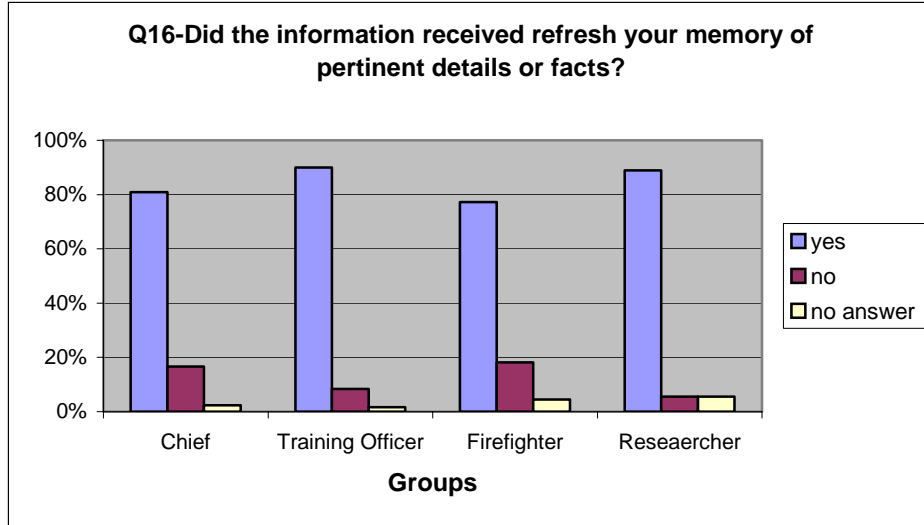


Figure 34. Different Groups and Memories Refreshed

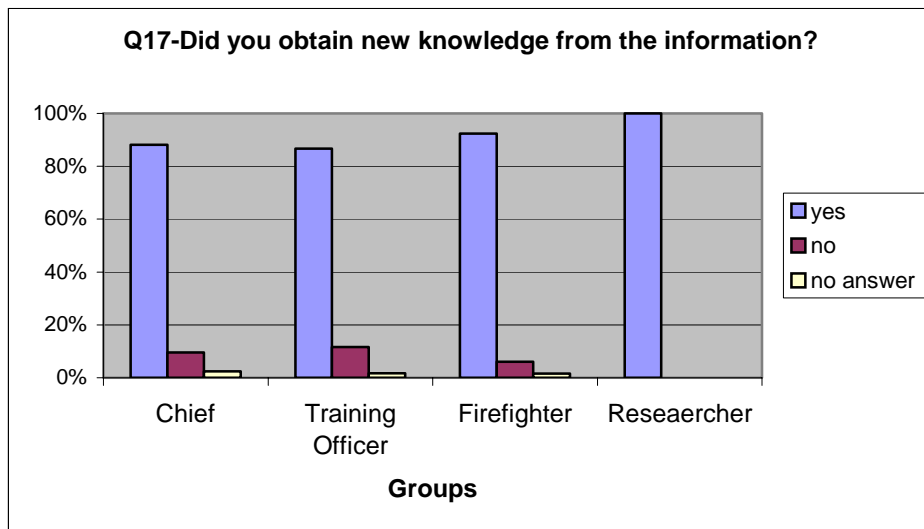


Figure 35. Different Groups and New Knowledge Obtained



Figure 36. Different Groups and More Confidence Gained

Figure 37 (combined question 6 and 18), indicates that the information contributed toward improvement of their work with different impact. Personal growth was emphasized more by researchers than any other groups. For training officers, improvement was made in administrative decision-making area.

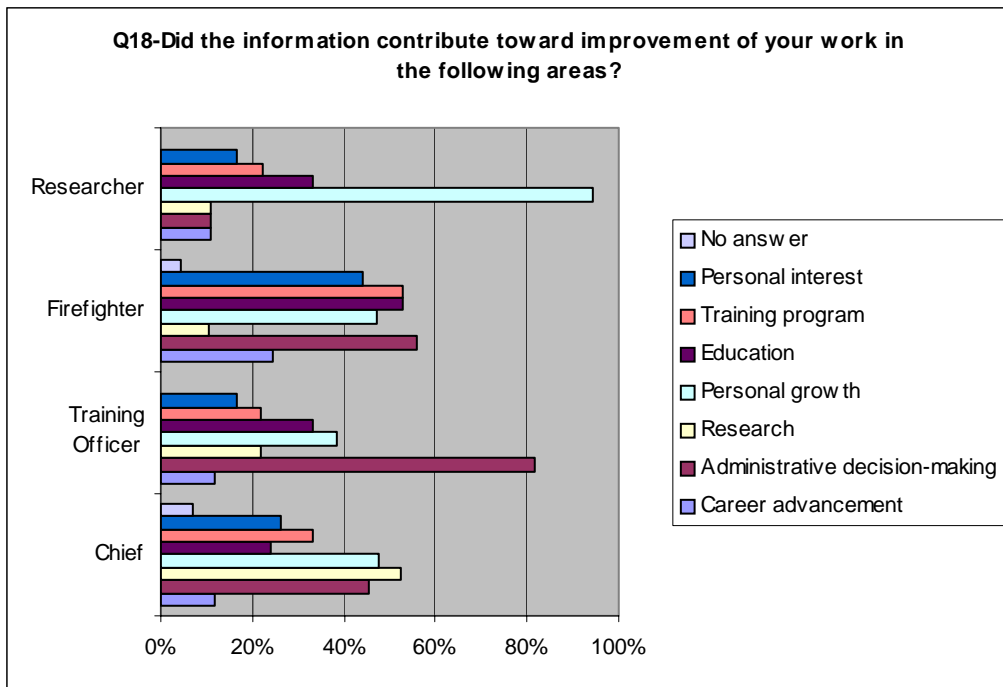


Figure 37. Different Groups and Work Improvement

C. Overall Performance of the Library

5.13 Performance of the Library in Providing the Information

As discussed in the previous section, the participating library is one of several information sources that users consulted in a given practical or research situation. In Figure 38, an extremely high proportion, 97% of respondents (n=343) said that the information was provided quickly enough to be of value for practical decision-making and applied research. Only 1% said no and 2% with no answer.

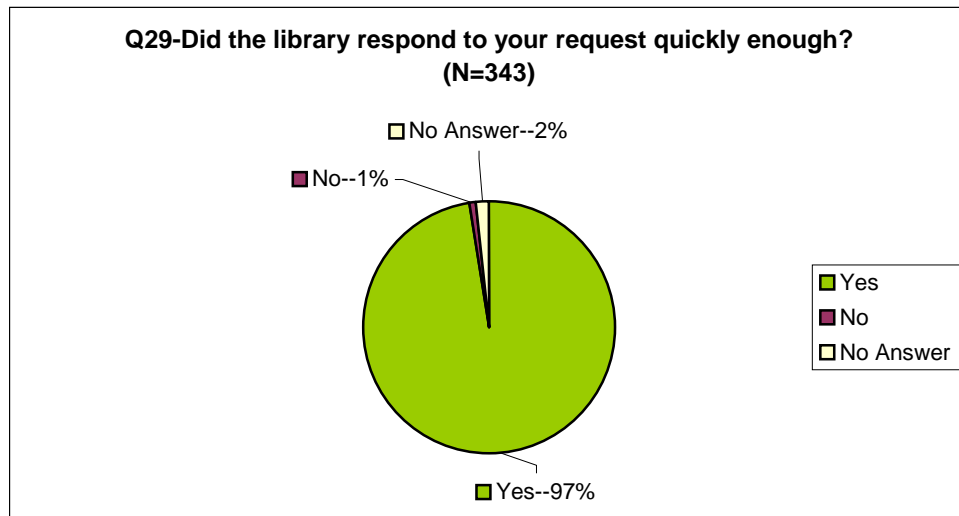


Figure 38. Library's Quick Response

Figure 39 shows that a large proportion of respondents (98%, n=341) reported that library staff demonstrated the knowledge and ability required to meet practical information needs, 1% said no and 1% with no answer. Figure 40 shows that all groups were in agreement.

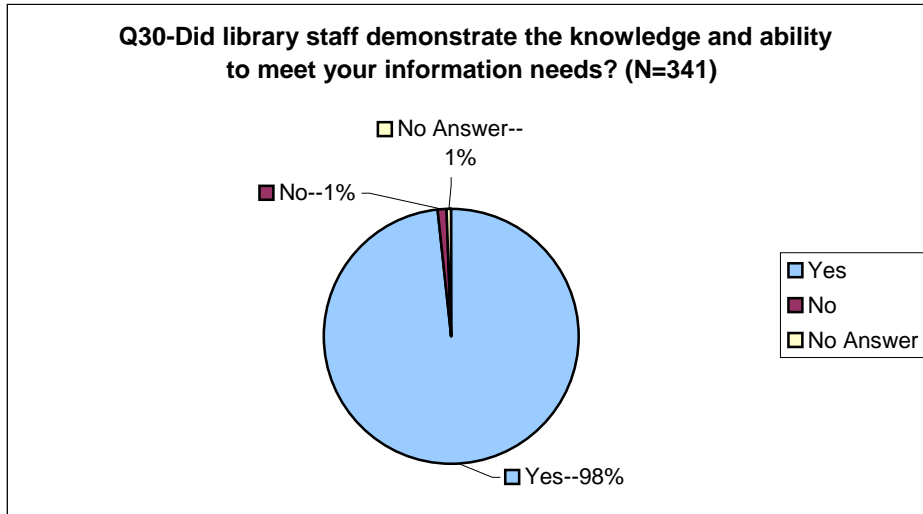


Figure 39. Library Staff’s Knowledge and Ability

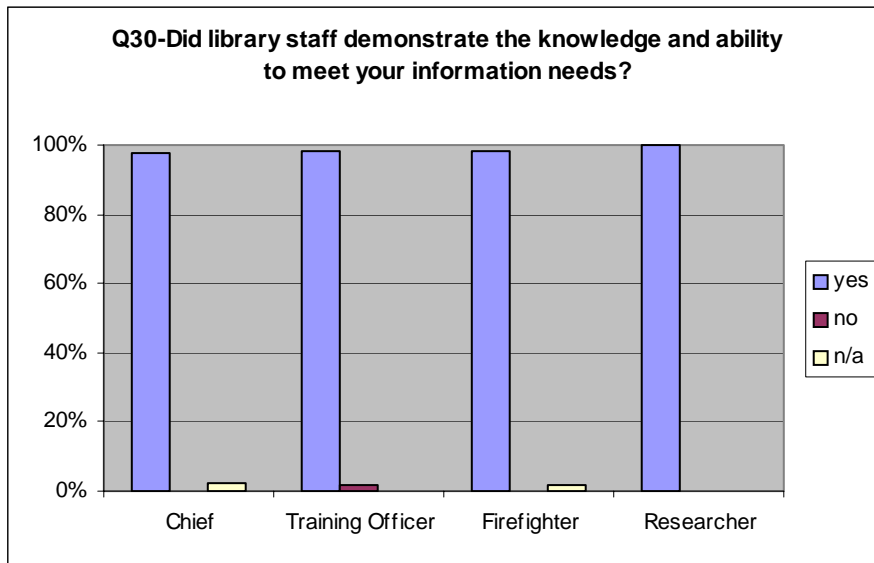


Figure 40. Different Groups and Library Staff’s Knowledge and Ability

Consistently, an extremely high proportion, 99% of respondents (n=339) judged the library staff to be cooperative in relationships with fire service professionals, and nobody (0%) said no (see Figure 41), and 1% provided no answer.

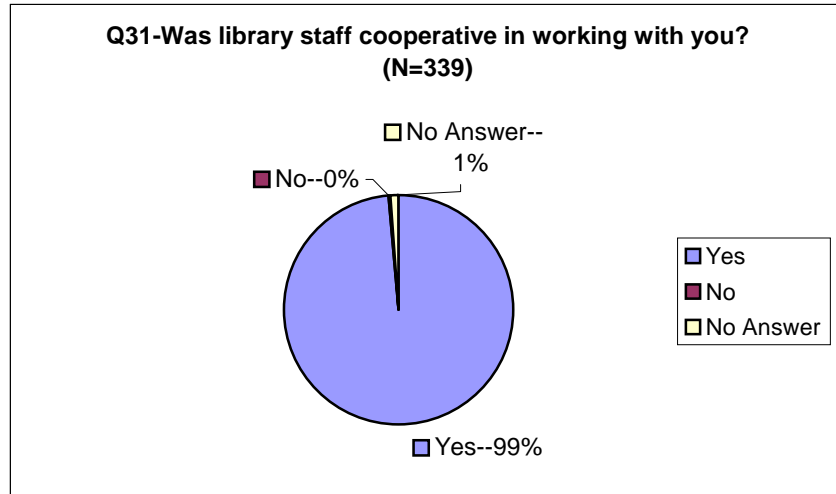


Figure 41. Cooperative Library Staff

It was the same positive finding when asked to evaluate whether the overall performance of the library in providing information-on-demand was satisfactory. 98% of respondents (n=340) judged the overall performance of the library in providing information-on-demand for fire service to be satisfactory (see Figure 42). 1% said no and 1% with no answer. The feedback also clearly reflects the participating libraries' strengths in their staff and services.

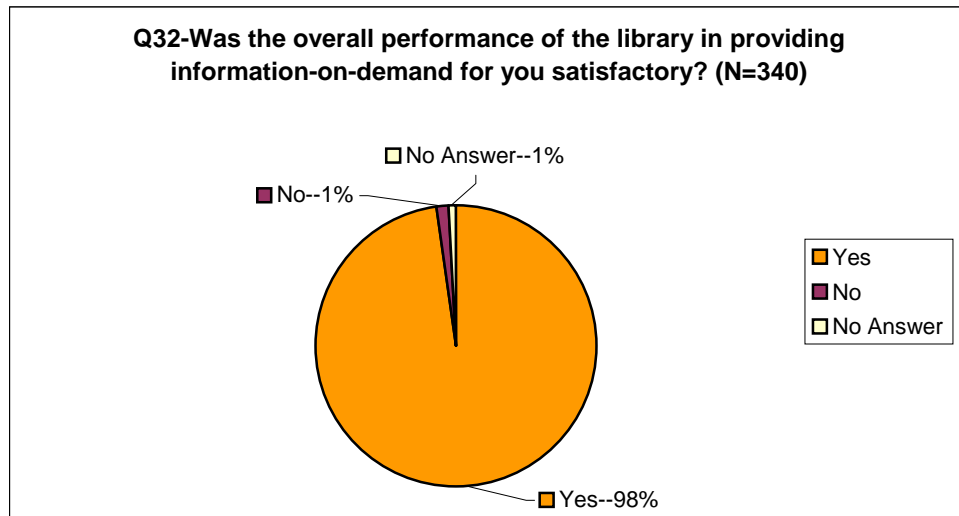


Figure 42. Library's Overall Performance

However, not everyone was judged to be aware of the full range of library services. 63% of them reported that users were unaware of library services (see Figure 43). Only 36% of them, less than half

of the respondents previously knew about the full range of library services. Continuing marketing of library services to non-library users deserves more attention. This finding demonstrates that the SLA's *Competencies for Information Professionals of the 21st Century* are applicable and needed in special libraries serving public safety and homeland security, in particular A. 7: market information services and products, both formally and informally.

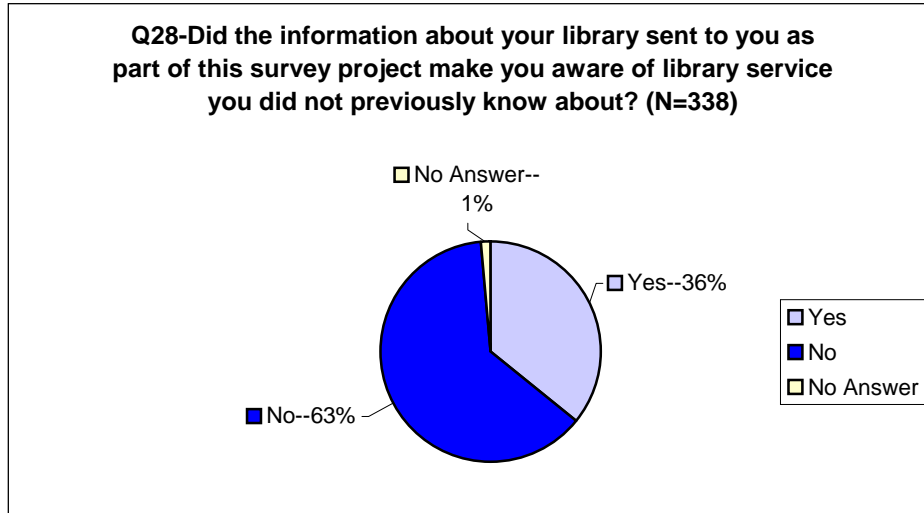


Figure 43. Unaware of Library Services

Summarizing the comments on weaknesses of the library in response to Question 33, 34% of respondents (n=207) said none, which indicates 1/3 of respondents were highly satisfied with their library services; 27% cited library hours, facilities, and location as a weakness. As documented in the library profile, all libraries have small facilities and hours vary due to staff shortage. 18% of respondents reported limited, outdated materials as one of the weaknesses indicating budget shortfall; 8% online access and search capability; 7% other, 6% staff shortage (see Figure 44).

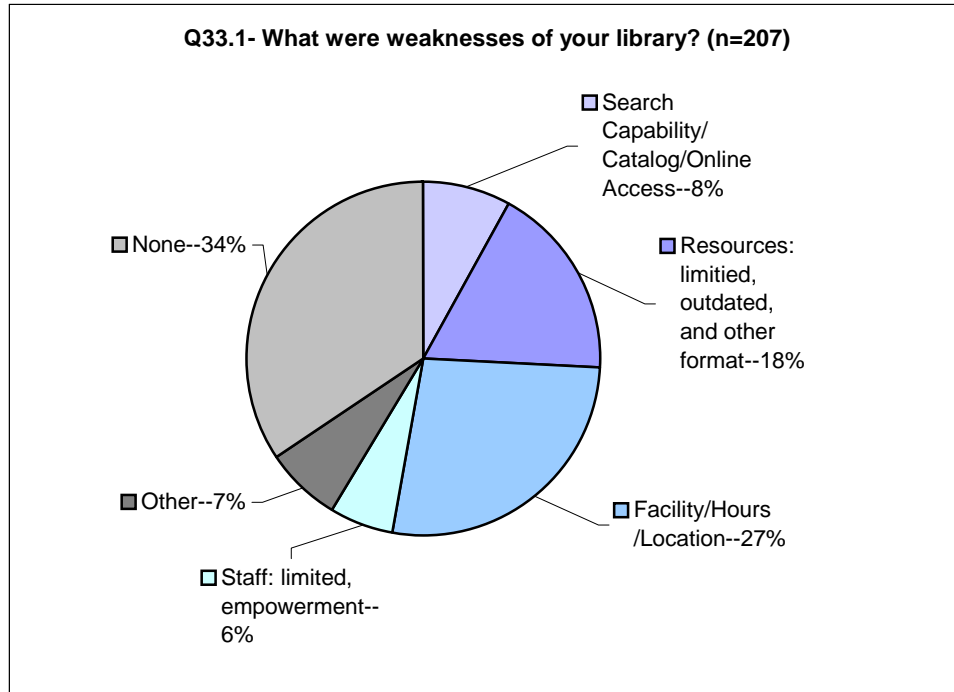


Figure 44. Weaknesses of the Library

For strengths, among other things, 50% of respondents (n=274) reported personnel (knowledgeable and their attitudes). 28% of them praised the library as resources with a variety of materials and quality. 16% noted quality of library services (see Figure 45).

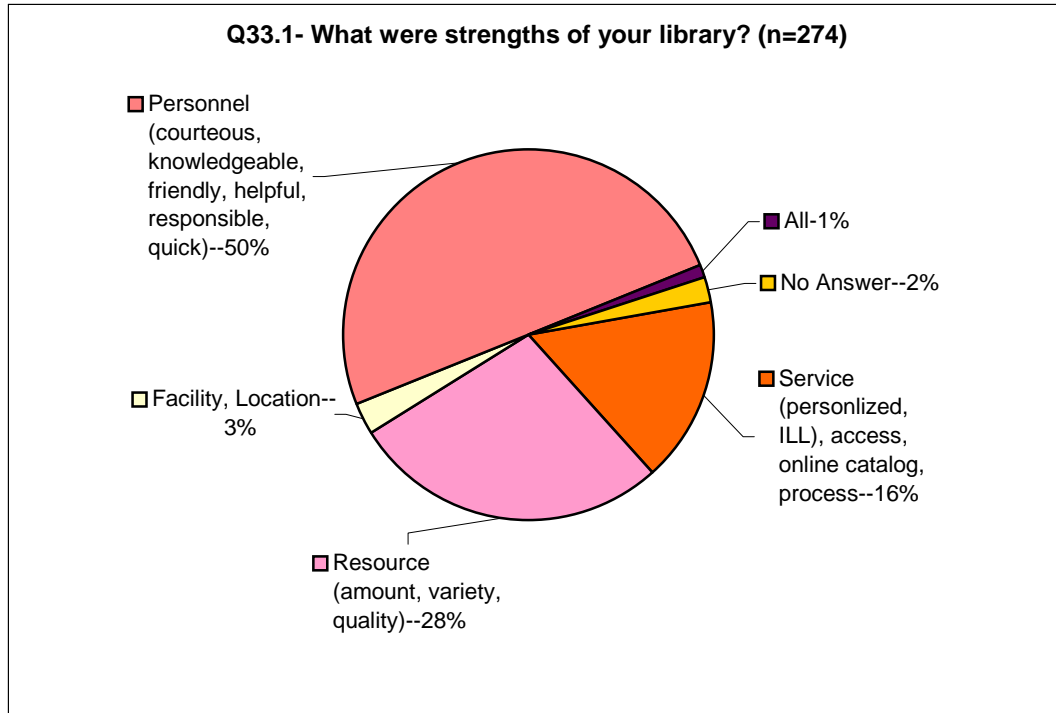


Figure 45. Strengths of the Library

As the last question (Question 34), the research directors asked the respondents to specify the library role in their work to determine further the ways in which special libraries were particularly effective in supplying new knowledge in decision-making situations and in increasing the level of confidence of fire service personnel and researchers in the decisions being made.

Among 240 respondents, many of them reported that their library excelled in information services. They also indicated librarians' ability to handle questions and to provide information not found elsewhere. Here are some selected answers:

"[The library] [h]elps in training and finding information to make the fire ground safer and more efficient."

"The library plays a large role in my work."

"They are an excellent resource for verification of facts or information. They provide an excellent sounding board for topics and ideas (neutral party). They have provided valuable time saving by having information compiled and correlated for review."

Many respondents praised the library's supporting and assisting role, for example, "the role of our library [is] to support the staff of our organization as well as be a clearing house of information geared to the emergency response community. Also, hope to assist archives, policy makers and the public at large."

"It is our primary research source."

"Invaluable! I could not have done my thesis without it."

"Our library is the best resource of our organization. It has a variety of resource material and if it does not have what is needed, we get it."

"Our office library provides valuable resources without which we could not provide our professional service."

"To assist and make available state of the art resources to assist the fire service in educating itself."

"A very important resource in making and planning emergency response decision process. The fire service has been given a new mandate by society to be prepared. The information found in the library as well as the Internet [is] invaluable."

"The library is a very important resource in my studies and my job." Some respondents mentioned how libraries helped them pursue their degrees. "A wealth of information for research projects" as a researcher claimed.

"This library is a tremendous resource. I know that this facility has helped not only me but many other people in the fire service."

"Our library serves a link to knowledge that is often overlooked by emergency services because of the time constraints that decisions must be made, it is a great service to have a one-stop-shop to come to aid the Fire Service."

"I am a full time firefighter trying to achieve my Bachelors in Fire Service. This library has made the difference for me in the areas I study. The staff [is] always so helpful that you feel like there's nothing they can't help you with."

"The primary role of the library to me is to keep me abreast of developments in my field."

“My best resource for any fire related information.”

“The Library is a critical component to my success as a fire chief, a consultant to fire departments, and international seminar presenter and author.”

“They [library] provide access to information and materials that would otherwise be unavailable to me. They are also a resource for materials that may be out of print or not necessarily available to the general public.” “They provided resources not found at local libraries.” “Library is a great source.”

“To allow members in and out of the fire service to have a better understanding, a better wealth of resources, a better place to go to if they ever need to know something, anything and everything about the fire service, its members, supports and its function.”

“One big room filled with wealth of knowledge, information and of course a great librarian.” “They do help!”

6. Limitations of the Study

The limitations of this study should not be overlooked:

- 1) The methodology emphasized outcomes related to meeting specific information needs.
- 2) The study findings and interpretation looked only at library users with their specific requests in particular situations. No attempt was made to gather feedback from non-library and virtual users. The study had difficulties in collecting virtual users' data for Library F, which only had a few walk-in patrons but 40,000 hits on the library website each month. No survey data was received from the library website where the survey questionnaire was posted.
- 3) Other contributions of these six U.S. public sector libraries to the work of fire service personnel and researchers were not considered. The contribution of fire-related libraries in the U.S. private sector is beyond the scope of this study.
- 4) The challenge of reaching sufficient respondents in solo libraries due to limited staff and confidentiality concerns should also not be underestimated.
- 5) Figure 3 indicates 39% of respondents based their responses on a current request, and 59% on previous twelve months. Allowing the study time frame to include requests that were from the current or

previous twelve months increased the number of potential respondents. A longer time frame also meant that respondents had more time to apply and make use of the information they received, leading to a more complete understanding of outcomes. However, the long time frame may introduce the possibility of incomplete and inaccurate recollections by respondents.

7. Conclusion

7.1 Significance of the Study

The primary reasons for enhancing fire information services are simple but crucial: to enhance efficiency in fire fighting and emergency response; to increase safety, both for fire service professional and the victims they are assisting; and to enhance planning and training to protect both fire service professional and the communities they serve.

This study impacts all three areas. The findings of this study help build a useful linkage between the requirements for public safety and homeland security and the information professionals who can help assist with information resources and problem solving. Since participants focus on a recent or current decision-making situation, they personally benefited from the information provided by the librarian. The participating organizations also benefited from the evaluation of their libraries. The overall study results will assist librarians in many different settings who can benefit from greater awareness of information needs related to public safety and homeland security and strategies for addressing them. This study has potential significance to the field of special librarianship and fire librarianship. It is different from many other attempts to evaluate the impact of library services because it focuses on measuring the impact of information provided by special libraries on users in the public sector rather than the private sector. Evaluations of library services and programs to address public safety and homeland security information need to be done systematically. This study offers just a beginning by providing both quantitative and qualitative data analysis. Based on the results of the study, special librarians can develop services that target particular types of impacts, as well as improving the level of impact in various areas.

Methods used for an impact study should be sensitive to variations in organizational culture. In obtaining the cooperation for the study and during the study, the research directors became aware of some difficulties due to staff shortages. One library had to drop out before data collection began. In general, most libraries are understaffed and they only have time for activities that are of greatest benefit to the library and the organization. Research studies, although they can produce useful knowledge, are not necessarily seen as directly beneficial. The findings reflect in part the fact that the study was conducted primarily in the fire emergency community; it also indicates the substantial responsibilities involved in the decisions being made. The research directors hope that this particular study will have a beneficial effect on the organization and the library, since the information provided by the library led to better-informed decision-making for fire service personnel and researchers. The study results show that when libraries are used in decision-making situations, fire service personnel and researchers report the information frequently having a significant impact on their actions. The study also provides some initial benchmarks for measuring impact. Based on the results, special librarians can develop services that target particular types of impacts, as well as work toward improving the level of impact in various areas. For example, specific marketing plans addressed to different user groups can be developed to ensure their awareness and effective use of library services. Initial or further partnerships can be created or strengthened through close involvement with the users' work, such as classroom teaching, curriculum development, training programs, research projects, personal development and career advancement, etc.

From a research perspective, the study results increased our store of empirical knowledge about the nature and extent of the special library's impact in the following ways:

- By measuring the importance **of changes that were made**, as a result of the information provided by the library;
- By estimating the **value of information involved** in the decision-making situations;

- By pinpointing the **specific aspects of decision-making** that were affected by the information provided by the library;
- By identifying situations in which the information provided by the library contributed to the **avoidance of negative outcomes** for the organization; and
- By establishing the relative value of the information provided by the special library in comparison to other information sources.

About two-thirds (n=240) of fire service personnel and researchers included comments that are useful for continuous quality improvement purposes. In the current homeland security climate, the rapid delivery of accurate and up-to-date information was seen as more important than ever. A number of respondents felt their library was underused and that users were often unaware of the library and its services. This suggests the continuing need to market library and information services, especially in the American fire service community where 70% are volunteer firefighters, who are mobile and scattered in different areas.

Respondents stressed the importance of an easily accessible location for the library as a factor affecting library services, visibility and reputation. The comments suggest that the location of the library is still important, even in an increasingly digital work environment.

Situations in which the librarians had gone “above and beyond” the stated request were seen very positively. There were examples in which fire service personnel and researchers expressed gratitude for the excellent services they received. In general, a proactive approach, in which the libraries exceeded expectations or anticipated the needs of their users before a direct request was made, characterized the most highly regarded special library services and proved once again that the library is essential to its community. Participating librarians in six organizations consistently provided this level of service and demonstrated their great value to the organizations, fire service and homeland security communities. The study findings demonstrate what excellent special library service is all about and the importance of the people – the special librarians – who provide it.

7.2 Relevance to the Field of Special Librarianship

The project has potential significance to the field of special librarianship and fire librarianship. This SLA research study is different from many other attempts to evaluate the impact of library services because it focuses on measuring the impact of information provided by special libraries on users in the public sector rather than the private sector. The accumulation of this knowledge through a variety of research approaches and its effective dissemination to special librarians and government communities has the potential to be a key contributor toward Talcott's goal for SLA – to help special librarians become valued information managers.

There is no standard for fire libraries in the United States. After the tragic events of September 11, 2001, there has been growing interest in information management in the fire service discipline. As of October 2002, an archives consulting firm hired by the United States Fire Administration (USFA), a division of FEMA, is studying the feasibility of establishing a national fire service discipline archives, or "Heritage Hall." The USFA engaged a consulting firm to survey fire-related libraries, archives and other institutions, and 1,000 individuals. Although there has been fire safety information available on the Internet, it is poorly organized. Potentially, the findings of this research can serve as a basis for further development, collaboration, and enhancement of fire libraries in the United States. One suggestion from this study is that the research directors can make presentations of this study at the North American Fire Training Directors (NAFTD) Conferences to promote and advocate fire emergency libraries and librarianship. There are fire training academies across the 50 states, but only three of these states have libraries managed by professional librarians (in Minnesota, New York and Illinois), to the research directors' knowledge and based on inFIRE. All three libraries participated in this study. The fire training academies, linking to state fire marshals' offices and state university systems, have provided training to fire emergency service for many years. They also work closely with the U.S. Fire Administration's National Fire Academy (which has a library) to develop specialized courses, including counter-terrorism courses.

In December 2002, a survey study conducted by FEMA, USFA, and NFPA was published (<http://www.nfpa.org/assets/files/PDF/needsassessment.pdf>). Entitled “A Needs Assessment of the U.S. Fire Service, a Cooperative Study: Authorized by U.S. Public Law 106-398,” the study provides a needs assessment to identify service gaps in the United States fire departments, covering areas in personnel and their capabilities, fire prevention and code enforcement, facilities, apparatus and equipment, communications and communications equipment, ability to handle unusually challenging incidents, and new and emerging technology. But it did not ask any questions about library and information services in the fire departments.

Evaluations of library services and programs to address public safety and homeland security information need to be done systematically. This study offers just a beginning by providing both quantitative and qualitative data analysis. Based on the results of the project, special librarians can develop services that target particular types of impacts, as well as improving the level of impact in various areas.

Gathering quantifiable and qualitative evidence of the seemingly intangible benefits of information use by fire service personnel and researchers is only the first step to communicate and promote library and information value to government and policy makers. The “customers,” in this case, fire professionals, must still be convinced that their needs and expectations are being met sufficiently by the library programs and information services to justify their libraries’ existence.

The study provides a picture of the ability of fire libraries and their partnership with fire professionals to respond effectively to information requests in key public safety and homeland security situations. It recognizes different roles in fire emergency service – training, research as well as emergency response. Without training and preparedness, emergency response will not be effective. This study further demonstrates the vital and integrated roles libraries can play in their organizations and the direct impact on training, research and emergency response with information services to meet users’ changing needs. The study findings can be used as a tangible example to help promote the profession and information service to those users in the fire service who are not aware of the resources available

to them. The study also clearly indicates that fire libraries need to consider different approaches to evaluating their services, and the library profession needs to pay more attention to professional development in this area. The benefit and impact of information use by fire service personnel and researchers in the fire service need ongoing measurement and studies. There is an urgent need to enhance the information infrastructure and library professional work force to support the great demand of informational needs in public safety and homeland security. The findings may provide an important opportunity for library professionals and interested organizations to discuss the need and seek support to enhance information services in public safety and homeland security.

An impact study should not just demonstrate an impact but also provide clues on how service improvements might enhance the impact (Urquhart 2004). Librarians may be more important than the collection in the contribution of the library to public safety and homeland security. Among all fifty state fire academies, only a few of them have professional librarians managing the library. Serious steps will be required to assure that quality information services are available to the majority of fire professionals with more local, state and federal level collaboration and support. The efforts of librarians, the refinement of information services to better meet the information needs of diverse constituencies, and more research upon which planning for fire information services is based will help secure the place of libraries in practical emergency response decision-making and improve the quality of public safety and homeland security.

For other special librarians who would like to adopt the instruments used in this study, most questions, such as on respondents' background information, impact on a course of action, better-informed decisions, cognitive value of the information, the value of the information for decision-making, and overall performance of library staff, etc., can be carried over with modest modifications. For questions on improvement of respondents' work in certain areas and avoidance of negative outcomes, special librarians need to individualize the questions based on a particular sector's situation so they can assess effectively how information received by respondents can make a difference and impact.

7.3 Future Research

The study examines the critical roles fire libraries contributed to homeland security and public safety. The answers to the open-ended questions merit further and in-depth content analysis and study. Comparisons of data across all six participating libraries may increase understanding of user communities in a way to create specific services targeting particular needs. More questions will need to be formulated and investigated in this field. Further studies can include non-users (including those eligible to access services but who do not know how, and others who would not have access at all because there is no library providing such specialized services, for example in the states of California and Florida), virtual users accessing services via a library's web site, and others involved in public safety, such as emergency medical responders. Other studies can examine and identify skills, attributes and subject knowledge for librarians and information professionals working in fire emergency services and homeland security. Given the care the research directors took in instrument design and data collection, this study provides a foundation upon which others can build.

8. References

- Abels, E.G., Cogdill, K.W., Zach, L. The contributions of library and information services to hospitals and academic health sciences centers: a preliminary taxonomy. *Journal of the Medical Library Association* 2002; 90(3): 276-283.
- Barbour, G.L., Young M.N. Morning report. Role of the clinical librarian. *JAMA* 1986; 255(14):1921-1922.
- Basch, N.B. The President's Task Force on the Value of the Information Professional: an update, highlights and conclusion. *Special Libraries* 1990; 81(2):97-101.
- Cimpl, K. Clinical medical librarianship: a review of the literature. *Bulletin of the Medical Library Association* 1985; 73(1):21-28.
- Curtis, J., Abram, S. Special and corporate libraries: planning for survival and success. *Canadian Library Journal* 1983; 40(4):225-228.
- FEMA, USFA, NFPA International. *A Needs Assessment of the U.S. Fire Service, a Cooperative Study: Authorized by U.S. Public Law 106-398, December 2002.*
<http://www.nfpa.org/assets/files/PDF/needsassessment.pdf>
- Fisher, S., Oulton, T. The critical incident technique in library and information management research. *Education for Information* 1999; 17: 113-125.
- Halsted, D.D. et al. The evolving role of clinical medical librarians. *Bulletin of the Medical Library Association* 1989; 77(3): 299-301.
- Hardy, M.C. et al. Evaluating the impact of library services on the quality and cost of medical care. *Bulletin of the Medical Library Association* 1985; 73(1):43-46.
- King, D.N. The contribution of hospital library services to patient care. *Bulletin of the Medical Library Association* 1987; 75(4):291-301.
- Lindberg, D.A.B., et al. Use of MEDLINE by physicians for clinical problem solving. *JAMA* 1993; 269(24): 3124-3129.
- Marshall, J.G. The impact of the hospital library on clinical decision-making: the Rochester Study. *Bulletin of the Medical Library Association* 1992; 80(2): 169-178.
- Marshall, J.G. *The Impact of the Special Library on Corporate Decision-Making. Final Report.* Washington, D.C.: Special Libraries Association, 1993.
- Matarazzo, J.M. et al. *SLATask Force on the Value of the Information Professional.* Washington, D.C.: Special Libraries Association, 1987.
- McClure, C.R., Reifsnyder, B. Performance measures for corporate information centers. *Special Libraries* 1984; 75:193-204.

Ruan, L. Providing better subject access to non-print fire emergency materials for Illinois firefighters. *Cataloging & Classification Quarterly* 2001; 31(3/4): 213-235.

Shedlock, J. Defining the quality of medical reference service. *Medical Reference Services Quarterly* 1988; 7(1):49-53.

SLA Competencies for Information Professionals of the 21st Century.
<http://www.sla.org/content/learn/comp2003/index.cfm>

SLA Homeland Security Resources.
<http://www.sla.org/content/SLA/advocacy/PATRIOTAct/Homeland.cfm>

SLA Research Statement – June 2001.
<http://www.sla.org/content/resources/research/rsrchstatement.cfm>

Talcott, A.W. *SpeciaList* February 1991; 5.

Urquhart, C.J., Hepworth, J.B. Comparing and using assessments of the value of information to clinical decision-making. *Bulletin of the Medical Library Association* 1996; 84(4): 482-489.

Urquhart, C. How do I measure the impact of my service? (Guideline) in *Evidence-based Practice for Information Professionals, a Handbook*, 2004: 210-222.