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## **Dynamics of Agriculture Subject Guides Access at Kansas State University Libraries**

Mohan Ramaswamy and Mike Haddock

### **Abstract**

The Internet has profoundly altered the way library users access information. Academic libraries have responded by creating library instruction tools and subject guides as web pages. Much effort has been invested in the development of web-based library guides. It has thus become increasingly important to study the level of subject guide access. Library website usage including subject guides access, forms a valuable output measure in contemporary library service evaluation. Accordingly, this study uses server statistics to analyze subject guide access in an academic science library. The potential use of this study is discussed.

**KEYWORDS.** Academic libraries, webliographies, subject guides, agriculture, data logging, web server log, access, usage, statistics, use studies/Internet.

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## Introduction

In the early 1990s, academic librarians began to use the Internet as a medium of communication with their users. A primary cause of this shift is the overwhelming majority of students depended on the web for homework research (Sax et al., 1998). Albanese and Oder (2002) reported that about 80 percent of students and faculty utilized the Internet for school-related purposes. Academic library users prefer information available online to that in print library resources (Morse and Clintworth, 2000). At the same time, changes occurred in academic library instruction programs. Library reference guides that had erstwhile been available in print could now be accessed online via the Internet. Academic science librarians began to publish their subject guides on their libraries' websites (Welborn and Kanar, 2000). Jackson and Pellack (2004) provide an account of Internet subject guides based on their survey of many academic libraries websites.

There are many advantages of placing subject guides online. The change of medium from print to the Internet expanded the accessibility of subject guides both spatially and temporally. Web pages can be changed and updated easily without discarding superseded versions. The web addresses of subject guides can be linked to other web pages and passed on to users and peers via email. Unlike print subject guides, web pages have live links that take patrons to relevant websites. The size of subject guides is no longer a constraint. Each subject guide can be organized by sub-dividing the content into additional web pages built around relevant categories. Edwards (2000) observed that web based library guides were not only viable, but also self-paced alternatives to traditional library instruction.

Though online subject guides have many advantages, tracking their usage has been difficult (Alimohammadi, 2004). Web pages are not confined to the library building, so librarians

cannot directly observe and measure subject guide usage. However, server statistics and web logs can provide objective web page usage data (Mudrock, 2002; Jana & Chatterjee, 2003). Cohen (2003a; 2003b) offers a detailed account of web server logs and analyzing log files for effective results.

Kansas State University (K-State) Libraries offer via the Internet a host of library instruction tools and subject guides. Much effort and financial investment has been devoted over an extended period of time to develop such web-based aids. To sustain these valuable resources, it is imperative that the level of access of the subject guides be evaluated. In this study, we analyzed the access levels of five agricultural subject guides at K-State Libraries. We used web server log statistics as an index of subject guide web page access. Analyzing the data collected from three years, this paper discusses the access trends both between subject guides and at different times during the year.

### **Method**

The subject guide web pages that were selected for this study were those dealing with General Agriculture, Agronomy, Animal Sciences, Entomology, and Plant Pathology. Web page access data was collected using “The Webalizer,” a free web server log file analysis program ([www.mrunix.net/webalizer/](http://www.mrunix.net/webalizer/)). The program automatically recorded web page access data and created access reports. The web page access reports were in HTML format and accessible with a web browser via the Internet. The reports included the monthly frequency of hits per web page. A hit, also called a page hit, is the retrieval of any file, like a web page or a graphic, from a web server. The reports were ranked according to the number of hits the web pages received.

In this study we considered the hits data as an index of the level of web page access. The monthly frequency of hits for each of the five subject guide web pages was collected for three

academic years (August 2000 to July 2003). The data were tabulated in an MS Excel<sup>®</sup> spreadsheet. Two-factor analysis of variance (ANOVA) was performed using SPSS (SPSS, 2004) to determine if there was any significant variation between usage and years and usage and months.

### Results

The results showed apparent variation in hits data of different subject guides from various months and years. Figure 1 illustrates the dynamics of mean monthly hits of all the five subject guides over three years. Monthly usage variation was compared using a pie chart. Figure 2 illustrates the proportion of monthly hits of all the five subject guides during the three years studied. The month of October shared the maximum (13%) hits followed by November (11%) and September (10%). Put another way, the three years of data showed that the subject guides were accessed more often in the middle of the fall semester. The lowest number of monthly hits was observed in July (4%) and August (5%). The rest of the months showed moderate subject guide access (7%-9%). According to the results of a two-way ANOVA between the months and subject guides, the effect of the months on subject guide hits was highly significant,  $F(11, 44) = 12.81, p < 10^{-10}$ . The effect of subject guides on the number of hits was also highly significant,  $F(4, 44) = 62.37, p < 10^{-17}$ .

The annual variations in individual subject guide access are illustrated in Figure 3. There was apparent numerical annual variation in hits of different subject guides. However, the error bars drawn using standard deviations of corresponding data groups indicated that the annual variations were weak. This observation was supported by a two-way ANOVA between the years and subject guides. The ANOVA test pointed out that the effect of years on hits was not

significant,  $F(2, 8) < 1$ . At the same time, the effect of subject guides on the number of hits was found to be significant,  $F(4, 8) = 5.7, p < 0.05$ .

### **Discussion**

As Janes (2003) pointed out, libraries should consider every output measure to evaluate their services. Janes observes that website log analysis can help identify the access levels of different electronic resources and web pages offered by libraries. In the present study, server logs served as an index of web resource access, as direct user feedback was rarely available.

The overall dynamics of subject guide access at K-State Libraries indicated periods of peak, moderate and low hits. The peaks of the subject guide hits shown on the line plot graph (Fig. 1) coincided with periods of peak gate counts of visitors at Hale Library (unpublished data). Thus, high academic activity might have been a cause of high subject guide access. The ANOVA results demonstrated significant difference in subject guide access between various months of the year. The above finding might help subject librarians and website maintainers plan and schedule subject guide content and web maintenance at the appropriate periods of the year. The months of July and August recorded significantly lower hits (Fig. 2). Thus, any major content changes or website redesign might be planned for these months.

One of the reasons for the significant variation among the hits of the five subject guides (Fig. 3) could be due to the differences in their target audience. Though it is hard to accurately identify the users of each of the subject guides, the significant low hits of entomology and plant pathology subject guides can likely be attributed to student enrollment. The numbers of students enrolled in classes that relate to the five subjects were different. At K-State, entomology and plant pathology are not undergraduate majors (K-State, 2004), so these subjects register relatively lower student hours (K-State, 2003). Accordingly, the subject guides for these two

subjects may have recorded relatively fewer hits when compared to the other three subjects that relate to undergraduate and graduate majors. Apart from the audience population, the audience's information needs and seeking behavior could be other potential reasons for the differential access between subject guides. This opens scope for a study on the factors that affect subject guide access. Collecting and analyzing feedback from current and potential users of the subject guides would be useful to validate such factors. Knowledge of those factors would help subject librarians respond to user needs that relate to subject guide content and interface, and to create future marketing strategies for the web pages.

One of the limitations of reliance on hits data as an index of web page access is that hits data are magnified by any files (like graphic files) associated with the web page in question (Mariner, 2002, Utah, 2004). The authors suggest that "page view" will be a more viable alternative. With our current server log report system, only hits data were available. However, the subject guides we have studied were simple web pages and thus the hits data represented the page views.

User feedback is another area that might warrant study in the future. Many studies (e.g. Crowley et al, 2002; Mack et al, 2004) have used sociological research methods to collect user feedback to analyze website usability. Such qualitative methods will provide added value to the findings from quantitative web access analysis.

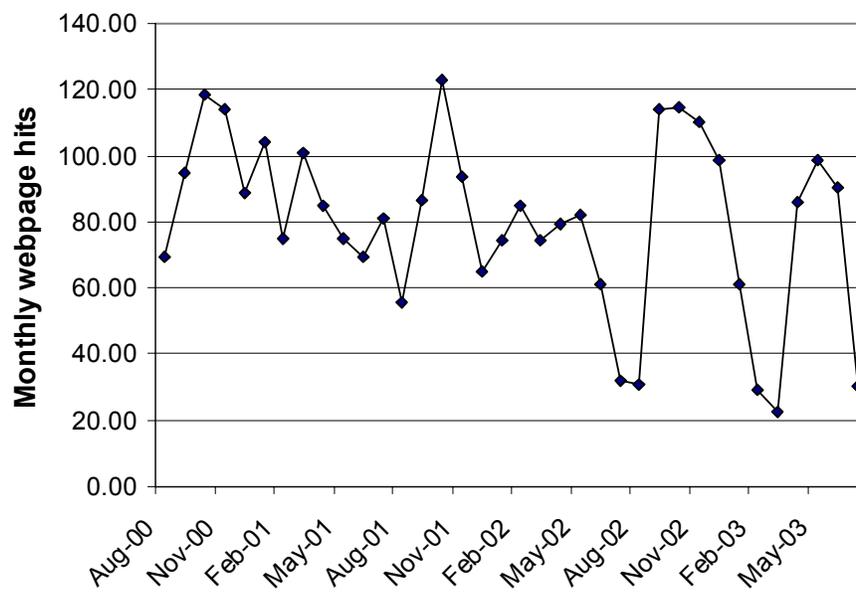
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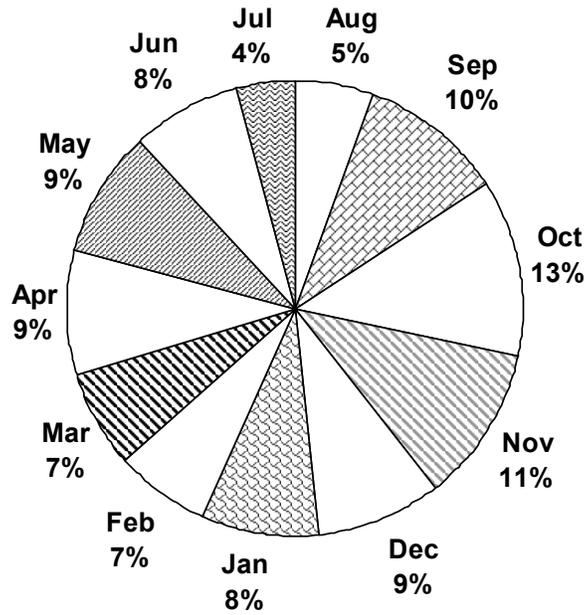
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**FIGURE 1. Agriculture Subject Guides Access at K-State Libraries**



**FIGURE 2. Monthly Variation in Subject Guides Access (3 years' data)**



**FIGURE 3. Annual Variation in Subject Guide Access**

