

The Library's "New" Website: A Web Usability Study

Purpose

In October and November of 2013, the User Experience (UX) Team conducted a usability study on the Library's website. Based on recommendations from this study, the Library's website was redesigned in 2014. As the "new website" has now been live for almost a full school year, a web usability test was requested and the 2013 study was reprised.

This web usability study took place in March and April of 2015. A total of 11 participants (10 undergraduates and 1 graduate student) were asked 17 task-based questions relating to the Library's website. The 2013 script asked participants to complete 9 tasks that were identified as the primary functions of the Library's website. Hypothetical questions were avoided and instead real Library examples were presented to mimic the actual motivation of website users. To provide a more comprehensive understanding of the new website's usability, 8 questions were added to the 9 original tasks; thus the 2015 script has a total of 17 questions (see Appendix A for the Study Script).

Again Morae was selected as the usability testing software of the study. Morae recorded the participants' website navigation including their pathways, number of mouse clicks per task and time per task. Each screen recording was re-watched and then sectioned into the 17 tasks. "Markers" were then applied to each screen recording which denoted researcher observations, wrong paths, or instances where the participant was prompted. Participants' comments were also captured using a separate audio recorder.

For comparative purposes, this report compiles findings from both the 2013 and 2015 web usability studies. The first section, "Limitations", addresses the shortcomings of the study. "The Results in Numbers" section presents the findings from Morae and the audio recordings. For each topic within this section, the 2015 study results are presented first with a short analysis and then a graph followed by the 2013 graph and a comparative analysis. The General Observations section interprets and further analyzes the findings in a broader context and provides suggestions for future action.

Limitations

1. Different Scripts: The scripts from 2013 and 2015 were not the same. The script of the 2015 study contained the same 9 questions as the 2013 study with an additional 8 new questions.

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- a. There was a slight change in one of the questions from the 2013 script. The 4th question asked participants to find one of the following databases: JStor, Web of Science or Pubmed. The graphs presented from 2013 label this task as “JSTOR”. For the 2015 study, participants were not given a choice of databases. They were asked to find Web of Science.
2. Order of Study Questions: Participants could complete the first 4 tasks by scanning the Library’s Homepage. After the first few questions, participants would automatically begin the following tasks by looking at the Homepage. This may have influenced the speed at which these tasks were completed and may not necessarily represent how users actually use the Homepage. For instance, the Workshops & Events task may have been so easily completed because in the previous tasks participants noticed the Workshops & Events box while searching for the Library Hours. The Newspapers task was the first task where a link was not on the Homepage. Participants spent some time considering which tab to try first (after looking on the Homepage) because they were unsure where to start which may have added to the completion time. This is all to say that the order of questions may have influenced the results.
3. Number of Participants: The 2013 study tested 17 participants compared to the 11 respondents tested in the 2015 study.
4. Different Researchers: Although in each study the testing was conducted by the same researcher, which ensured consistency in that manner, the researcher was different for the 2015 and 2013 studies. The implication is that the subjective aspects of leading a usability test like deciding when to prompt a participant or when to consider a task failed may have been inconsistent across the two studies.

The Results in Numbers

1. Time on Task: The mouse movements of each session were recorded by Morae. The recordings were then spliced by the researcher into the 17 tasks; defining a beginning and endpoint for each task. The below graphs show the average time per task (in seconds) based on these task divisions. The graphs essentially measure efficiency by determining how quickly participants were able to complete a task.

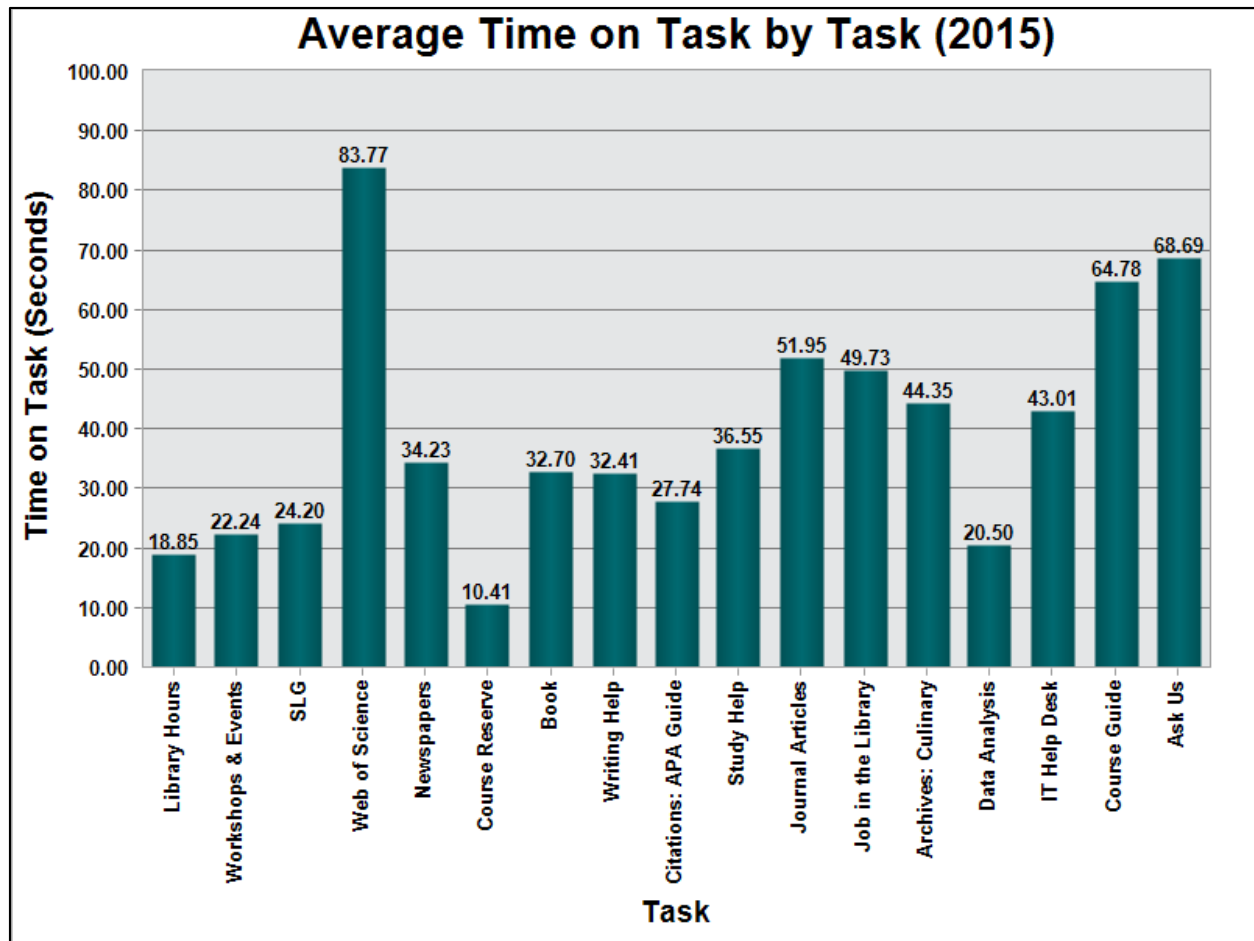
- **2015 Results**

- The Course Reserves task was the quickest task to complete. All participants commented that they have done this before which could have attributed to the completion time.

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- An interesting note, 4 of the 5 tasks with the shortest average time are located on the Library's homepage under Top Pages.
- The Web of Science task took participants the longest to complete. 2 of 11 respondents indicated that they had used Web of Science before. The other respondents made assumptions about what type of resource Web of Science was which dictated how they looked for it. For instance, one student said "I'm assuming that is a form of journal article, so I will just type it into Primo".
- The Ask Us task was the second most time-consuming; taking participants over a minute to complete. The wording of this question (see Appendix A question #17) may have added time to this task. We wanted to uncover if participants would recognize that they could click on Ask Us, as the single point of contact, for help. Designing this question was tricky because we could not ask participants to simply find the Ask Us button, we had to take a more practical approach. 9 of 11 participants said that in this scenario they would go into the Library and ask at the main desk. One person said, "I think you can just go to the Help Desk because I know that I have heard them helping people with that type of stuff before". In these situations participants were prompted to imagine a scenario where the desk was closed or they were off campus. As a result of participant prompting and the ensuing conversations the average time participants took to complete this task increased.
- The Course Guides task was another time-consuming task. A UX study was recently undertaken on Library Guides. The most relevant finding of that study was that students not only didn't understand the term Library Guides, but they also didn't recognize that Course, Topic and Subject guides were contained within Library Guides. This study verified that finding. None of the participants used either of the two links labelled "Library Guides" to find the Course Guide. The task asked participants to find a specific Course Guide, so participants could simply look for the terms "course" or "guide" which is found in two different links. It reasons then, that if the question were changed to find a Subject or Topic Guide, neither of which are terms used in any of the Library Guides links, the time to complete the task would be dramatically increased.
- A note on the average time of the Journal Articles task. The Journal Articles task required participants to select 3 journal articles. Although participants were quick to use Primo, the average time to complete the task increased when participants had to deliberate on (often providing an explanation) which limiters to use to narrow their returned results and then select the 3 articles.

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- **Time on Task: Comparison of Studies**

- Locating a database remains by far the most time-consuming task. Although the time has decreased by about 3 seconds on the new website, this task also represents the smallest positive change in average completion times (see Table 1 below).
- The new website decreased the amount of time to complete 7 of the 9 tasks by an average of 13.30 seconds. The time to complete the Newspapers task was the biggest decrease with a difference of 30.43 seconds!
- The average time to complete the task increased for 2 of the 9 tasks: (1) the Book task - increase of 11.31 seconds; and (2) the Writing Help task - increase of 10.82 seconds.

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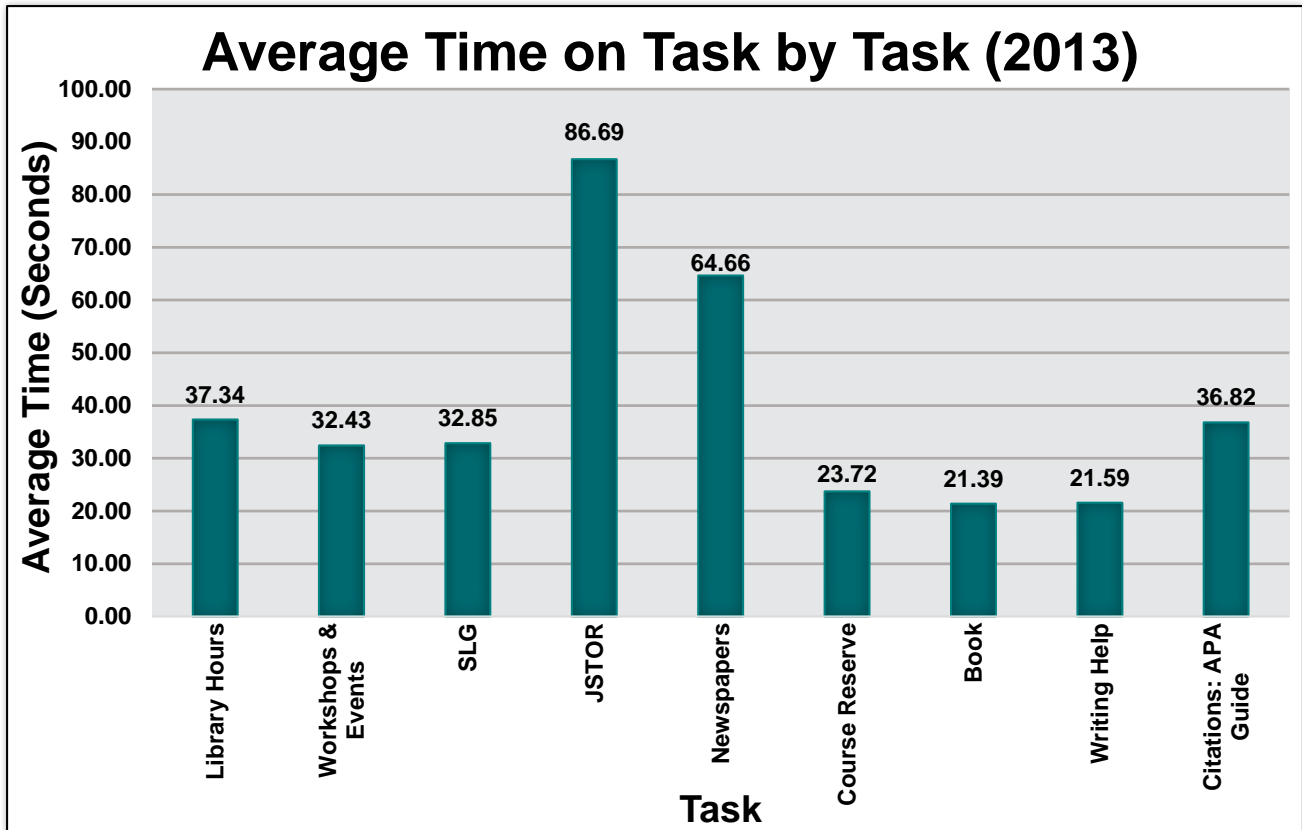


Table 1: Difference Between 2013 and 2015 Average Time on Task

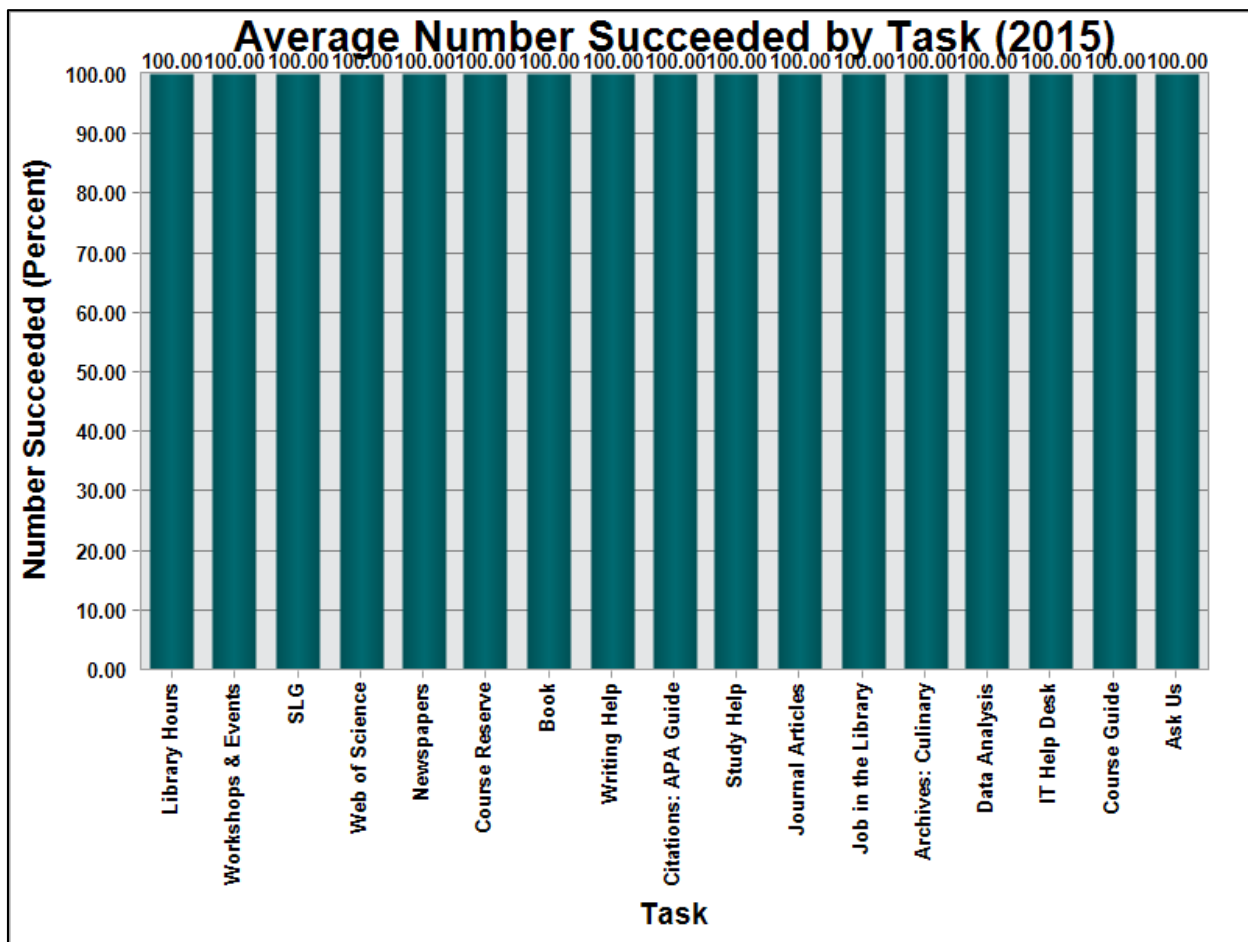
Task	2013 (seconds)	2015 (seconds)	Difference (seconds)
Library Hours	37.34	18.85	18.49
Workshops & Events	32.43	22.24	10.19
SLG	32.85	24.20	8.65
Web of Science/JSTOR	86.69	83.77	2.92
Newspapers	64.66	34.23	30.43
Course Reserve	23.72	10.41	13.31
Book	21.39	32.70	- 11.31
Writing Help	21.59	32.41	- 10.82
Citations: APA Guide	36.82	27.74	9.08

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2. Success Rates: Using Morae each task from every session was labelled by the researcher using one of the following markers (1) failed to complete; (2) completed with difficulty; (3) completed with ease; and (4) score not set. The success rate graphs compare completed tasks (grouping together the “completed with difficulty” and “completed with ease” markers) and the failed tasks.

• **2015 Results**

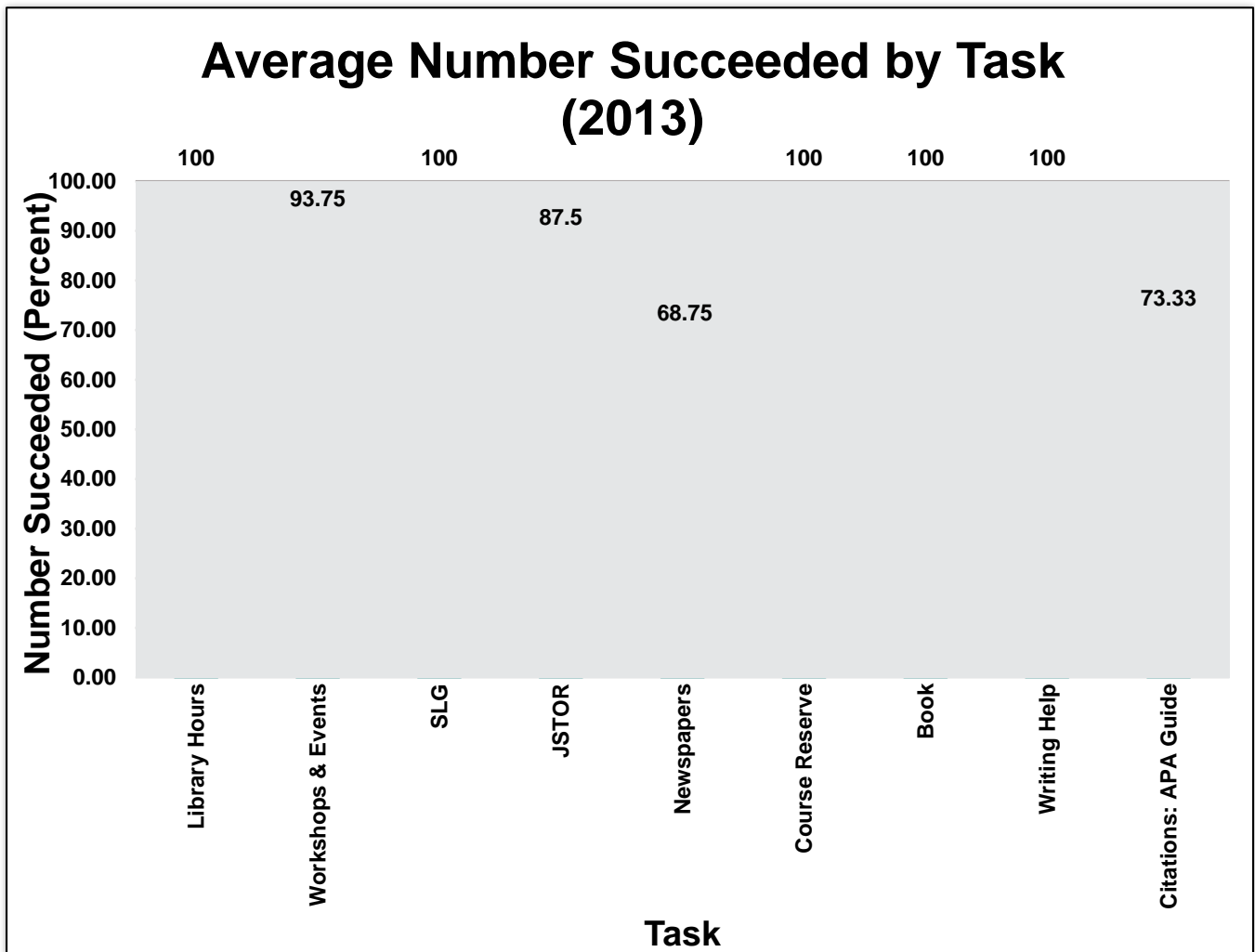
- For the sake of consistency the below graph was created. The results are clear; all of the tasks were completed by all of the participants!
- It is important to note that on 8 occasions participants were prompted by the researcher. Prompts ranged from clarifying the task to posing more specific task-related questions to subtly directing participants to the correct path(s). The Web of Science task had the most total prompts with 3. The Archives and Newspaper tasks had 2 prompts each. The largest number of prompts a participant received was 2. 4 participants were never prompted.



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- **Success Rates: Comparison of Studies**

- As stated in the Limitations section, the 2013 and 2015 study were conducted by different researchers which may have influenced how the markers were defined.
- The 4 tasks that participants failed in the 2013 study (Workshops & Events, JSTOR, Newspapers and Citations: APA Guide) were completed in 2015.

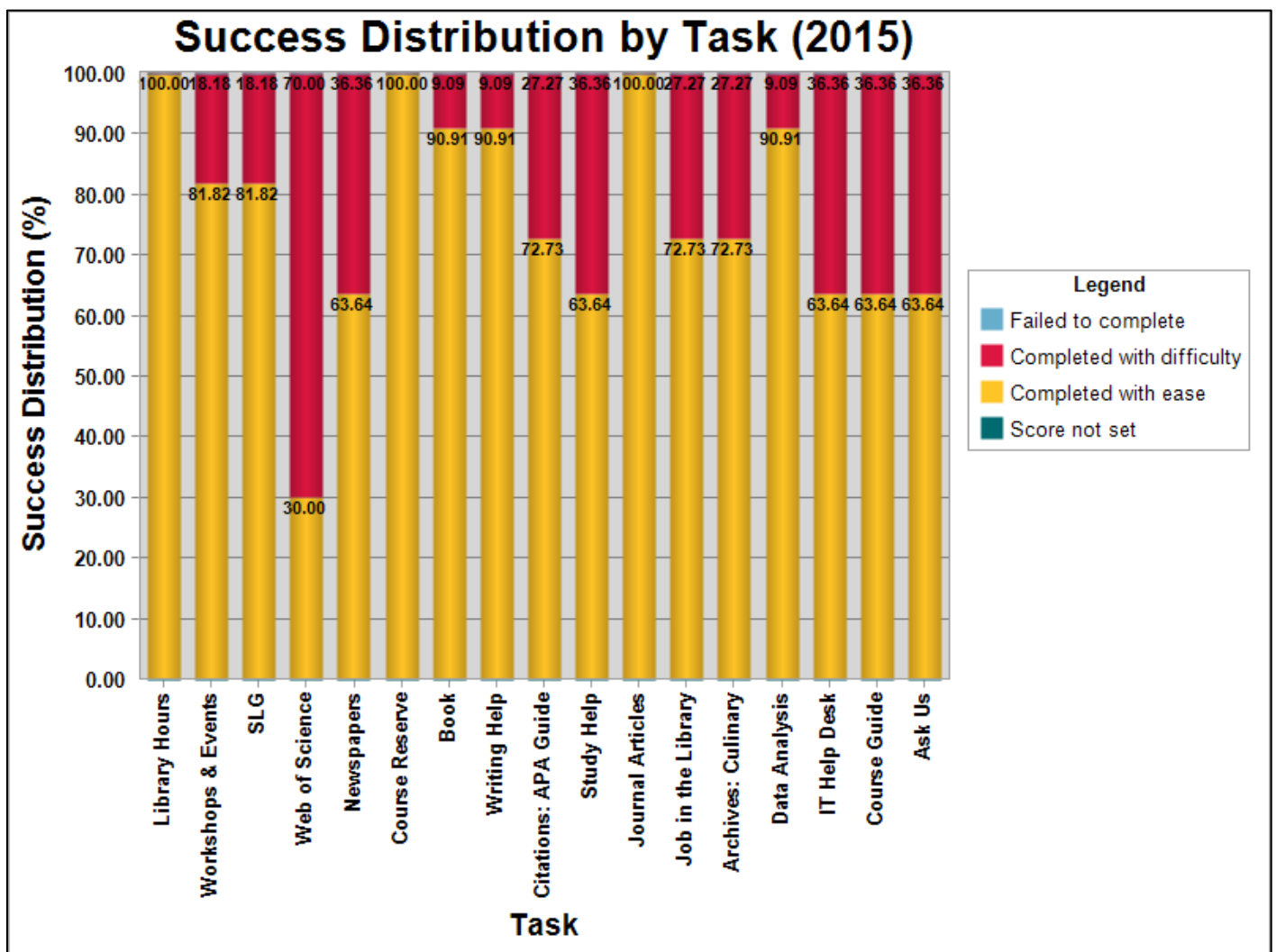


3. Success Distribution by Task: Instead of representing the tasks as either failed or completed, as the Success Rate graphs above do, Success Distribution by Task presents all of the markers as defined by the researcher (failed to complete, completed with difficulty, completed with ease, and score not set). Success Distribution by Task is similar to the Average Time on Task graphs as it demonstrates the difficulty of each task.

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1. 2015 Results

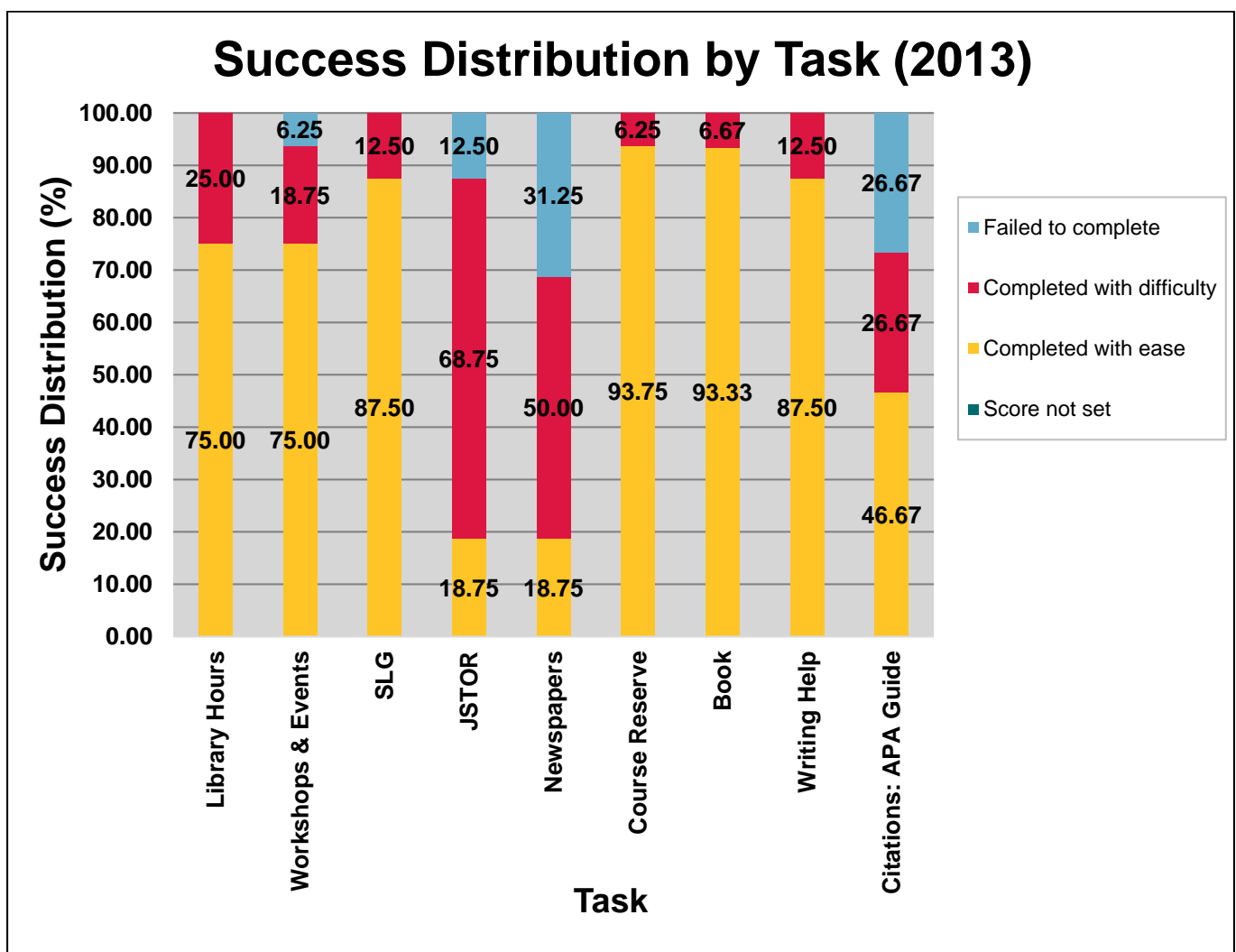
- All tasks were completed therefore only “completed with ease” or “completed with difficulty” markers are presented below.
- The Library Hours, Course Reserves and Journal Articles tasks were “completed with ease” for 100% of the participants.
- Consistent with other data, the Web of Science task was the most difficult; 70% of participants completed it with difficulty.
- The Newspapers, IT Help Desk, Course Guides and Ask Us tasks were tied for the second most difficult task; 36.36% of participants completed the tasks with difficulty.



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2. Success Distribution by Task: Comparison of Studies

- Again, the obvious difference is that the 2015 study did not have any tasks marked “failed to complete”, whereas the Workshops & Events, JSTOR, Newspapers and Citations tasks were failed by a percentage of participants in 2013.
- All of the tasks except the SLG and the Book tasks have a higher percentage of “completed with ease” markers in the new study compared to the 2013 results.
- From 2013 to 2015, the SLG and Book tasks have decreased in the percentage of “completed with ease” markers; SLG going from 87.5% to 81.82% (a difference of 5.68%) and Book going from 93.33% to 90.91% (a difference of 1.42%).

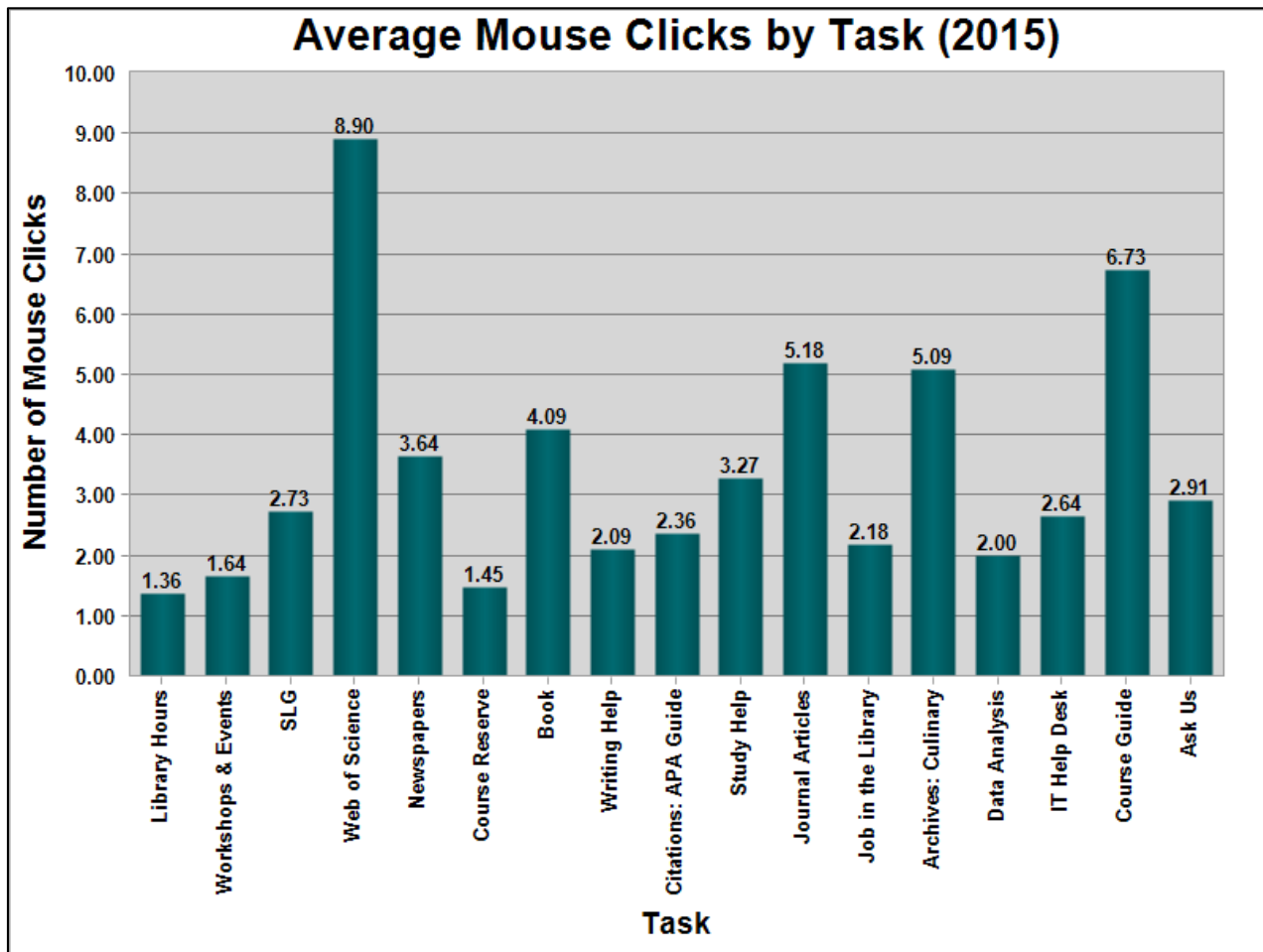


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4. Mouse Clicks: The graphs show the number of mouse clicks required to complete each task.

3. 2015 Results

- The Web of Science task required the highest average number of mouse clicks (8.90) to complete. Course Guides was second highest at 6.73 with a difference of over 2 clicks between the two tasks.
- The Library Hours, Course Reserves, Workshops & Events and Data Analysis tasks required the least number of clicks to complete with an average of 2 or less.

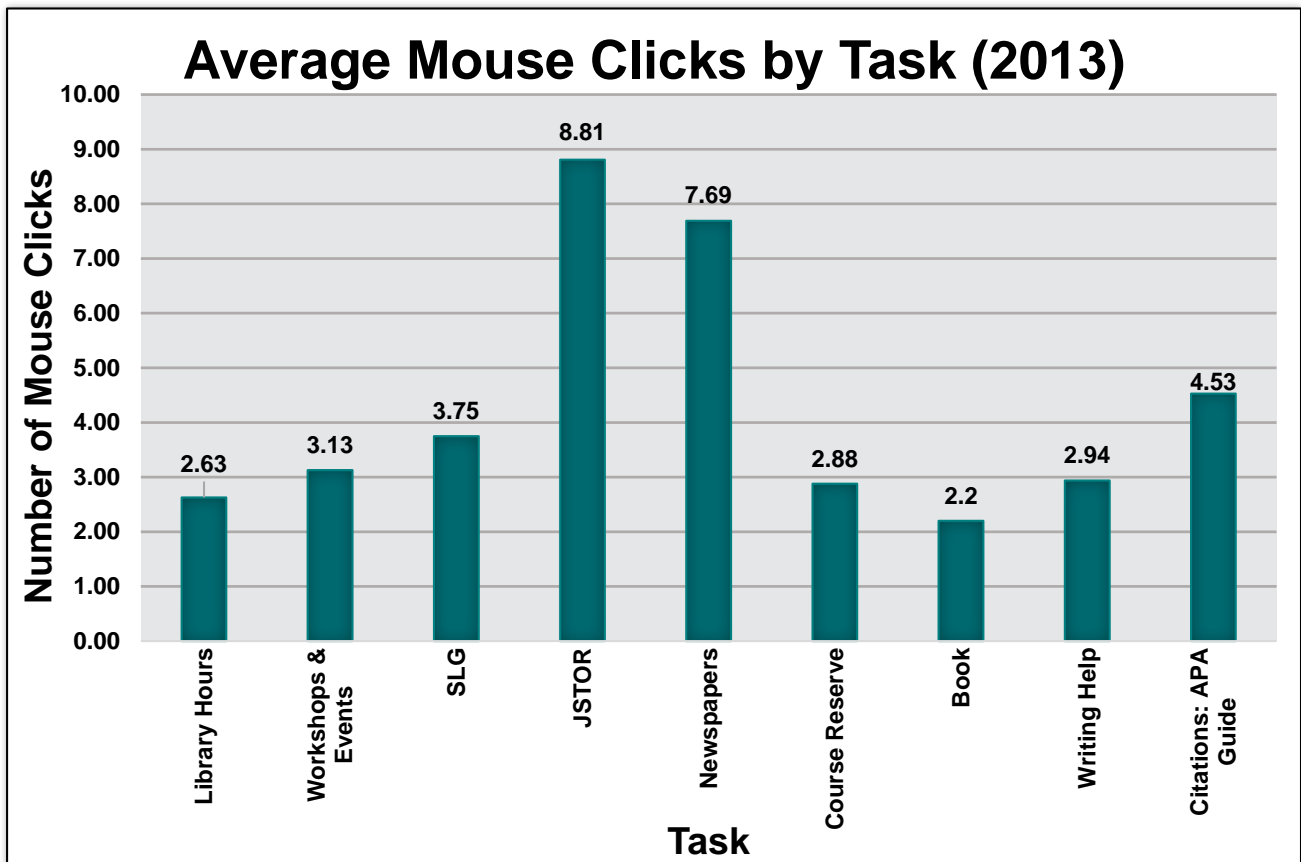


4. Average Mouse Clicks by Task: Comparison of Studies

- The average number of mouse clicks decreased from 2013 to 2015 for every task except the JSTOR/Web of Science and Book tasks. The average number of mouse clicks essentially stayed the same for the Database task, but the Book task increased by almost 2 mouse clicks. Participants were asked to open the book online which may have contributed to the increase in mouse clicks.

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- The biggest difference was in the Newspapers task which decreased by about 4 mouse clicks (from 7.69 to 3.64).



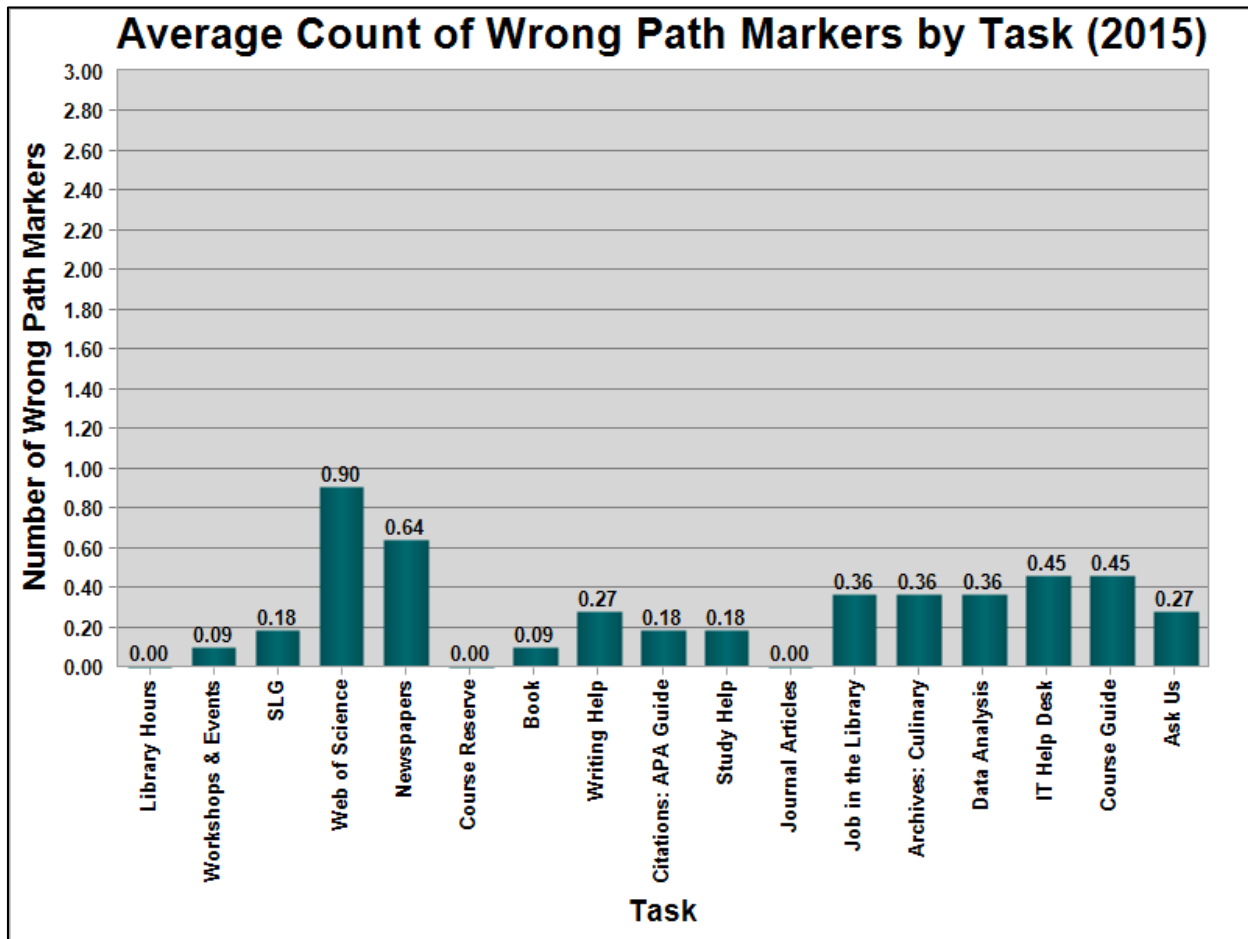
5. Wrong Path Counts: The graphs analyze the total wrong path markers as defined by the researcher using Morae. In defining a wrong path, the researcher considered all of the potential correct paths for a given task and upon a participant's selection of an incorrect path a marker was added to the screen recording. So when a participant simply hovered over, but did not click on, an incorrect path it was not marked a wrong path. Participants could have multiple wrong path markers for a given task.

5. 2015 Results

- The total number of wrong path markers for all 11 respondents was 46. The highest number for a given respondent for all of the tasks was 9 wrong path markers. Two participants had 0 wrong path markers; the average number being 4.2 per participant.

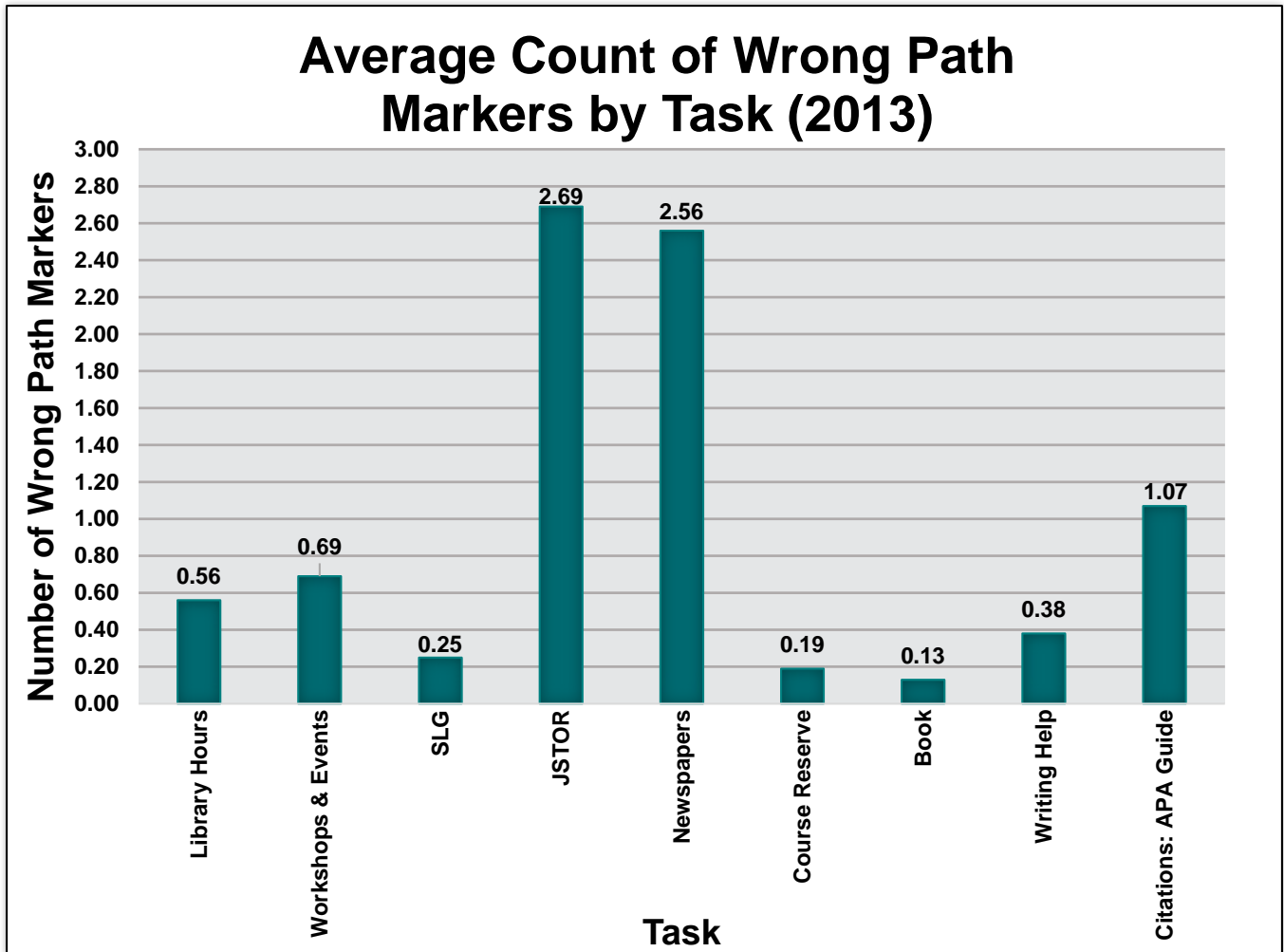
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- The Library Hours, Course Reserve and Journal Articles tasks had the lowest number of wrong path markers with 0!
 - It is interesting to contrast this statistic with the average number of time spent per task. The Journal Articles task was one of the longest tasks to complete yet there were not any wrong path markers for the task.
- The Web of Science task had the highest average number of wrong path markers with almost 1. The Newspapers task was second highest at 0.64.



6. Wrong Path Counts: Comparison of Studies

- The 2015 results show a decrease in the average amount of wrong path markers for all of the tasks compared to 2013. The 2013 study had 3 tasks with an average wrong path marker of over 1 (the highest at 2.69) whereas the 2015 study does not have any over 1.
- The biggest difference was in the Newspapers task that decreased from an average of 2.56 to 0.64 wrong path markers (a difference of 1.92).



General Observations

- Finding Resources:** The 2013 study found that the tasks related to finding resources, JSTOR and Newspapers, were by far the most time consuming and resulted in wrong path situations 300% higher than other tasks. The 2015 results suggest the new website has mitigated some of these issues. The ease of completing the Newspaper task has been dramatically improved. Although Web of Science was still the most difficult task to complete across the different analyzes, the results are much improved when compared to the 2013 results!
 - Journal articles:** In the 2015 results, participants went straight to Primo to search for journal articles. This task was also quite illuminating in terms of participants' search techniques. Often participants would limit their results by peer-reviewed immediately,

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followed by a date limiter; assuming that more recent articles are preferable to older ones. Several students had some more advanced techniques like using the Advanced Search option or selecting the Articles+ tab. This sharply contrasts with the 2013 study that found that participants commonly did not know that Primo included journal articles.

- **Books:** In the 2015 study, all except one participant typed the title of the book directly into the Primo search bar on the Homepage. The other participant used Primo but took a longer path; Find---Find by Type of Resource---Book---Primo---Books+.
- **Web of Science:** In the 2015 study, most participants were unfamiliar with Web of Science. One participant who knew Web of Science went to a Course Guide for a class she had been in to get to the Web of Science link. She found this pathway much quicker than searching the Library's website. Often participants were prompted that Web of Science was a database which ultimately did not seem to help them. The following are the most common paths that the 2015 participants tried to find Web of Science:
 - **Primo:** Several participants typed "web of science" into Primo because, as one participant said, "Yes, I just type everything into Primo". Because participants did not really know what Web of Science was, they were overwhelmed with the over 27 million returned results. It also confused participants when the "web of science" record was itemized as a journal. Most went back to the Homepage and tried another method of searching.
Suggestion: If possible, itemize Web of Science as a database in Primo.
 - **Journal Articles Page:** Participants got to this page by either the "Journal Articles" link on the Homepage or the "Database List" under the "Find" tab. Most commonly participants would use the "Search Databases by Title" option which returns over 30 alphabetically listed results. Often participants did not realize to scroll down.
Suggestion: A more curated results list with the most relevant returned results at the top of the page would be ideal.
 - **Search Box on the Homepage:** This often led participants to Web of Science.
 - **E-journals:** This is an incorrect path so participants would try another method.

2. **Course Guides:** In the 2015 study, participants did not find Course Guides by looking under the "Library Guides" links. Instead they used the "Find by Course" link under the "Find" tab or the "Course Guides" link under the "Teaching Support" heading. Students usually scanned over "Library

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Guides” from the tabs but did not associate that term with Course Guides. A more difficult task, with seemingly longer completion times, would have been finding Subject or Topic guides because there are no links on the Library’s website that contains those terms.

Suggestion: Change the Library Guides link to “Library Guides: Course, Subject and Topic Information” so students understand that Library Guides is an umbrella term.

Suggestion: On the Course Guides webpage (Under Get Assistance --- Teaching Support --- Course Guides) include a link in the right side bar that takes users to LibGuides.

3. **Ask Us:** The Ask Us task was interpreted differently by participants and this may have influenced the completion statistics. Every participant indicated that their preferred method of help was coming into the Library and asking in-person at the Help Desk. A few participants indicated that at that point they would “probably just give up”. When further prompted to search the website for support, most participants looked under the “Research Help” heading.

Suggestion: Include an Ask Us link under the “Research Help” heading under “Get Assistance”. In this way it will be clearer to users that there is Library support for research-related questions.

4. **Homepage Tabs:** Participants often discussed the tabs on the Library’s Homepage.
 - a. **Amount of Information:** In the 2015 study, a general feeling from participants was that they did not feel overwhelmed by the amount of information under each tab. In fact they preferred that all of the information was presented rather than having to click multiple times to get to the desired information. In this way users were deciding which tab made sense for the task and then reading each heading before clicking. This is verified when the Time on Task is compared to the Average Number of Mouse Clicks. For instance, the Ask Us task has a high average completion time but only an average of 3 clicks. This is because participants were reading the headings and pondering where to click before making a selection. This seems to be a major change from the 2013 study results that found “users often moved the mouse around randomly (seemingly) while scanning possible links. Non-systematic scanning was far more common than any type of systematic searching for a correct link”.
 - b. **Aptly named headings:** The good news from the 2015 study is that even if participants were unfamiliar with the task, they commonly selected the correct tab to look under. This suggests that the headings are both intuitive to our users and aptly named. A concern

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stemming from the 2013 study which stated that “subjects were not able to guess which links should be placed under each heading” has been addressed in the new website.

- 5. Search Results:** The 2013 study observed that “the accuracy of search box results is crucial” because “Many of our users go directly to the search box and use it to find anything”. This remains a concern in the 2015 study. Several participants would attempt to complete the task first by scanning the Homepage and quickly reading through a tab or two but would resort to searching using the Library’s search box. For some tasks (like the Web of Science task) the search box worked well, but for most other tasks (like the Course Guides and the Job tasks) the results were seemingly unrelated.

Suggestion: If possible, add a feature to the search box so that results could be limited to Library webpages.

- 6. Importance of Homepage:** As previously stated, many participants’ first plan of attack is to read the Homepage. One participant said, “The bottom box [Top Pages] is really the first place I always look”. A participant admitted, “I have never really used these tabs [on the Homepage] before so I just didn’t think to go there”. Another said, “Honestly, I didn’t even notice the tab bars, I know it is kind of obvious”. It goes without saying that the Homepage is extremely crucial to users. These students reiterated, “I like that everything important is on the homepage” and “it seems like everything is just right at your fingertips”.

Suggestion: Perhaps some larger conversations need to occur around what resources the Library and our users consider are the most important and valuable and add those links to the Homepage if they are not already there.

- 7. Participants’ Comments:** There was a general sense from participants who remembered the old website that the new website is “easier to find things on” and “less segmented”. For those new to the University, the new website was considered “really user friendly”, “very convenient”, “pretty good for finding stuff” and “pretty well organized”.

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Appendix A: 2015 Web Usability Study Script

1. What are the Library's hours?
2. You want to attend the event in the Library called *Depositing your Thesis (ETD): A Hands-on Submission Workshop* but you are unsure of the exact time and location of the event. How do you find out when and where you're supposed to be?
3. You're going to begin attending the SLG (Supported Learning Group) for *Math 1080: Elements of Calculus* that you're told takes place in the Library. How will you find out where you're supposed to go and when?
4. Your prof has told you that Web of Science is a great resource. You want to use it for an assignment. How do you approach this?
5. You need to consult newspapers for an assignment. How will you approach that?
6. You have some course readings that you're been told are "On Reserve" in the Library. How would you go about finding these readings?
7. You know that you need the book with the title *Designing Interactions* by Bill Moggridge (2007). How will you find the book?
8. Now that you have your resources, you realize that you need some help with writing your assignment. You have been told that writing help is available in the Library. How will you find that?
9. Citing your resources can be tricky, you want to get it right. You'd like some advice on citing using APA Style. Where do you find it?
10. You're an undergraduate with an upcoming exam and need some help learning how to study for a multiple choice exam.
11. You're working on an assignment that requires you to find 3 journal articles on colour psychology. Where will you look?
12. You're an undergraduate student looking for a job in the Library. Where do you go?
13. You're looking for information about the Culinary Collection that is a part of the Library's Archives.
14. You're looking for some help with data analysis. What do you do now?
15. Your laptop is not working and you've heard that there is a service in the Library that can help you. What do you do now?
16. You are looking for the course guide for your *CLAS 2000: Classical Mythology* class.
17. You can't find a specific journal article you need for an assignment. You searched the Library's databases, Google Scholar and still cannot find it. Where would you look for help?

*** **NOTE:** Questions 1 – 9 were the questions used in the 2013 Web Usability Study.