

SEO to SWI (a progression)

Improving the visibility of
libraries and their collections

Kenning Arlitsch, Dean of the Library

OCLC-RLP, London, UK

Theme

Achieving machine comprehension of library products, services, and the organizations, themselves

- SEO = Search Engine Optimization
- SWI = Semantic Web Identity

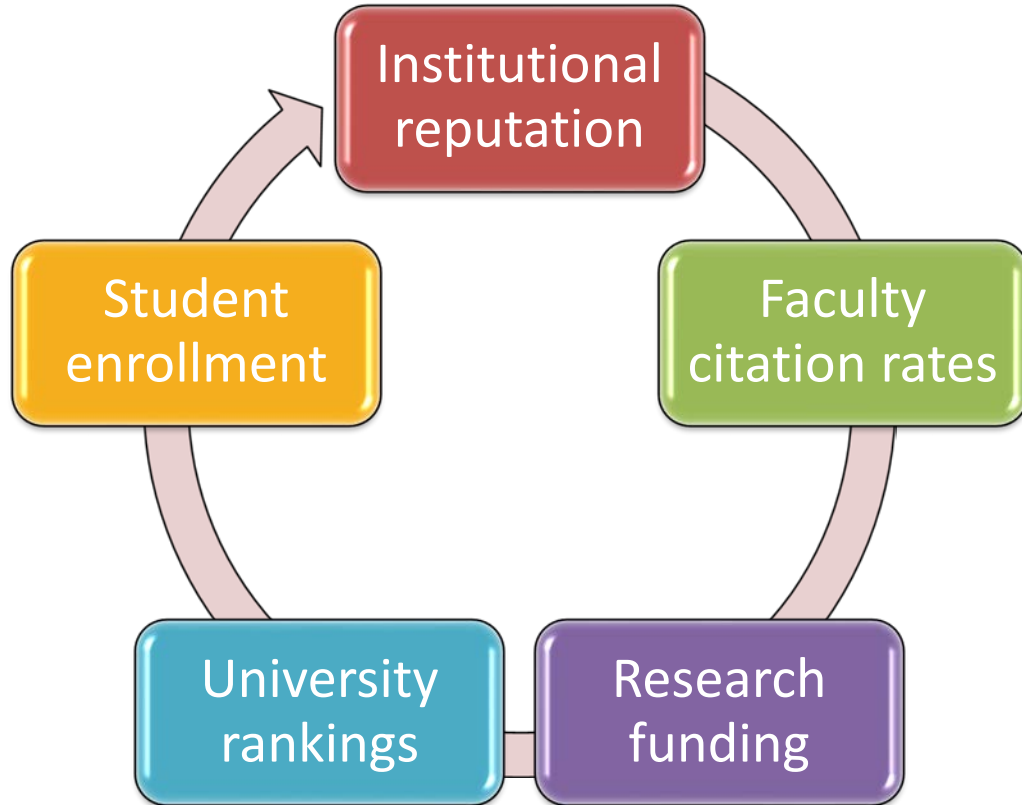
A Short Poll, Please

What is SEO?

Does your library have
a formal SEO program?

Is your SEO program driven by
administration?

Why SEO/SWI Matters



If a digital library is not indexed by Internet search engines then it will suffer from low visitation and use.

A digital library that is machine comprehensible is by definition also accessible to disabled users.

The dominance of search engines

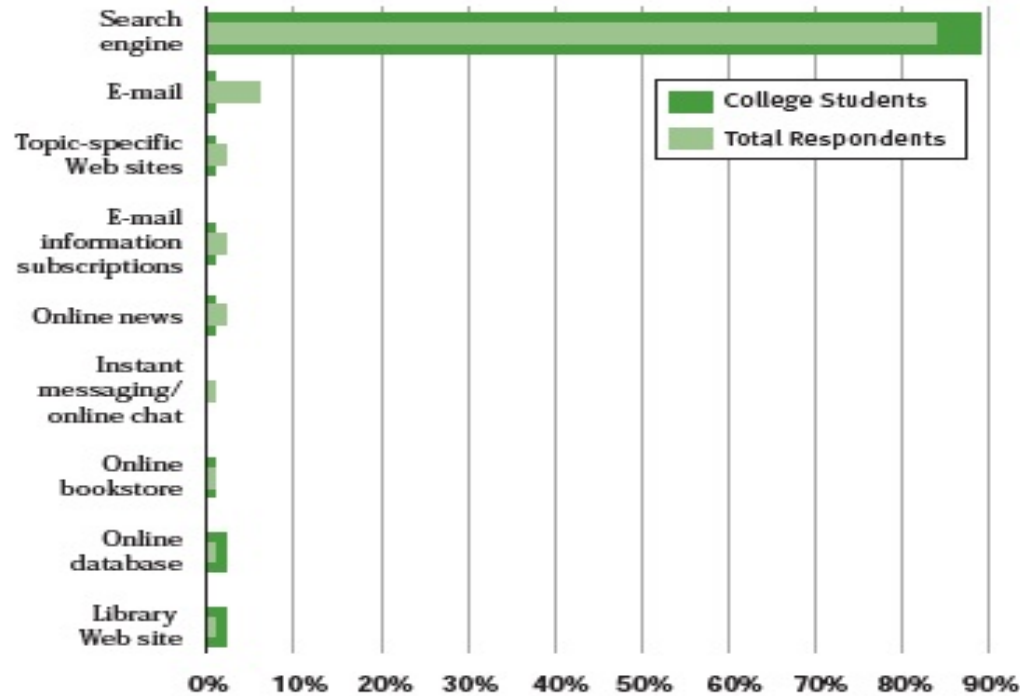
- Americans submit 18 billion queries to SE each month*
 - 12 billion to Google sites (67%)
 - 3.5 billion to Microsoft sites (19%)
 - 1.8 billion to Yahoo! Sites (10%)
- Google market share in EU is 90+% **

* <http://www.comscore.com/Insights/Market-Rankings/comScore-Releases-November-2014-U.S.-Desktop-Search-Engine-Rankings>

**Robinson, Meyer. "Europeans use Google way, way more than Americans do," *The Atlantic*, April 15, 2015, <http://www.theatlantic.com/technology/archive/2015/04/europeans-use-google-way-way-more-than-americans-do/390612/>

2005 OCLC Study

Where College Students Begin Research

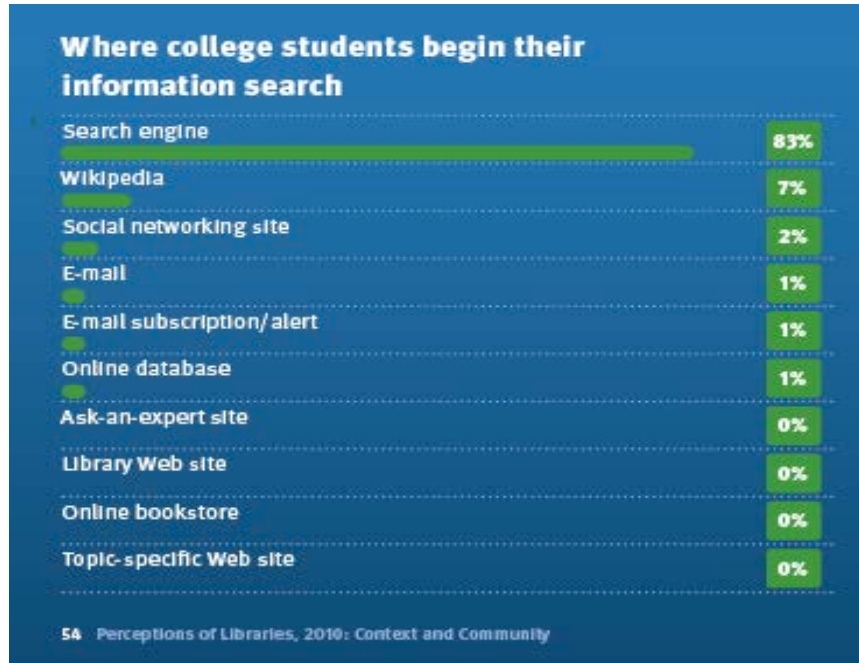


Source: *Perceptions of Libraries and Information Resources*, OCLC, 2005, question 520.

Note: Only electronic resources with usage rates of 1 percent or more are represented on this graph.

2010 OCLC Update

Where College Students Begin Research



DeRosa, Cathy, et al. "Perceptions of Libraries, 2010: Context and Community: A Report to the OCLC Membership", OCLC, 2010.

SEO Research Inspiration

- Decade building digital library @ University of Utah
 - Mountain West Digital Library
 - Utah Digital Newspapers
 - Western Waters Digital Library
 - Western Soundscape Archive
- Were they being used...?

Well, not really...

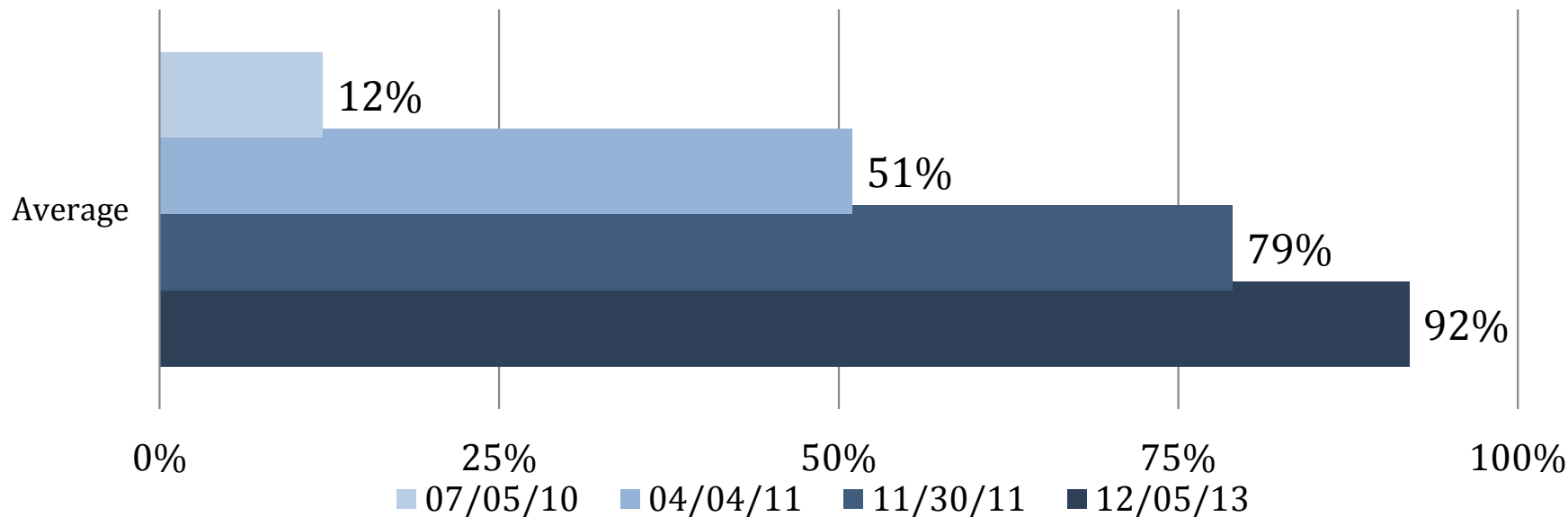
- University of Utah in 2010
 - Only 12% of digital collections were indexed by Google
 - 0.5% of Utah's IR scholarly papers were indexed by Google Scholar
- Spot checks revealed similar problems in most academic libraries



Patrick O'Brien

Basic SEO improved indexing ratio in Google...

Google Index Ratio - All Collections*



* Google Index Ratio = URLs submitted / URLs Indexed by Google

** ~150 collections containing ~170,00 URLs (07/2010) and ~170 collections containing ~282,000 URLs (12/2013)

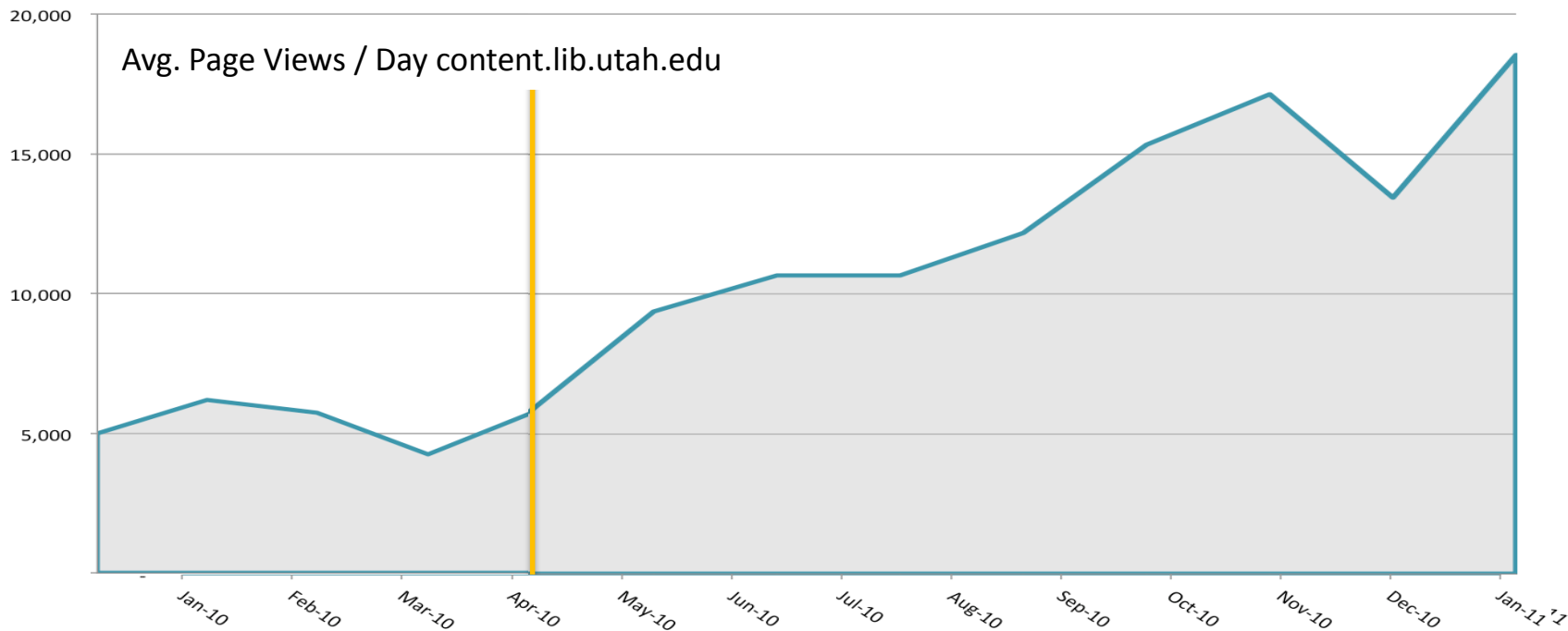
...resulting in more referrals and visitors

12 week comparison 2010 vs. 2012

Referring Domain: Search Results For google

Items Per Page: 10					
Domain	Custom View: 2/6/12 - 4/29/12 Visits	Custom View: 2/1/10 - 4/25/10 Visits	% Change Visits	% Change	
1. google.com	51,694	8,959	477.01%	135.90%	▲
2. google.co.uk	1,284	182	605.49%	145.77%	▲
3. google.ca	1,203	415	189.88%	51.36%	▲
4. google.it	670	38	1,663.16%	-8.87%	▼
5. google.co.in	602	68	785.29%		
6. google.fr	475	35	1,257.14%		
7. google.es	466	26	1,692.31%		
8. google.com.au	463	95	387.37%		
9. google.de	441	88	401.14%		
10. google.com.br	408	29	1,300.00%		
Total	63,637	10,559	Increase 502.68%		

...and significant increases in the average number of page views per day.



THE PROBLEM OF INSTITUTIONAL REPOSITORIES

Almost 100% USpace IR content indexed in Google

Google Scholar Index Ratio



*October 16, 2011 Weighted Average Google Index Ratio = 97.82% (10,306/10,536).

Structured data SE can identify, parse and digest

Human Readable Citation

Wolfinger, N. H., & McKeever, M. (2006, July). Thanks for nothing: changes in income and labor force participation for never-married mothers since 1982. In *101st American Sociological Association (ASA) Annual Meeting; 2006 Aug 11-14; Montreal, Canada* (No. 2006-07-04, pp. 1-42). Institute of Public & International Affairs (IPIA), University of Utah.

Citation for Google Scholar

```
1 <meta name="citation_title" content="Thanks for nothing: changes in income and lab
2 <meta name="citation_author" content="Wolfinger, Nicholas H." />
3 <meta name="citation_author" content="McKeever, Matthew" />
4 <meta name="citation_date" content="2006-07-26" />
5 <meta name="citation_firstpage" content="1" />
6 <meta name="citation_lastpage" content="42" />
7 <meta name="citation_keywords" content="Motherhood; Single Mothers; Income; Popula
8 <meta name="citation_technical_report_institution" content="Institute of Public &
9 <meta name="citation_technical_report_number" content="2006-07-04" />
10 <meta name="citation_language" content="en" />
11 <meta name="citation_conference_title" content="101st American Sociological Assoc:
12 <meta name="citation_pdf_url" content="http://cdm6gs.lib.utah.edu/utis/getfile/cc
```


Google Scholar can read and understand!

Google Scholar

Scholar

About 1,470 results (0.04 sec)

Any time ▾

1 ▾

[PDF] [Thanks for nothing: changes in income and labor force participation for never-married mothers since 1982](#) [utah.edu \[PDF\]](#)

NH Wolfinger, M McKeever - ... Annual Meeting; 2006 Aug 11-14 ... 2006 - cdm6gs.lib.utah.edu

Abstract This study examines whether the changing social and economic characteristics of women who give birth out of wedlock have led to higher family incomes. Using Current Population Survey data collected between **1982** and 2002, we find that **never-married** .

[Related articles](#) [All 2 versions](#) [Cite](#) [More ▾](#)

[PDF] [Thanks for Nothing: Changes in Income and Labor Force Participation for Never-Married Mothers since 1982](#)

M McKeever, NH Wolfinger - 2007 - [archiv.soc.cas.cz](#)

ABSTRACT This study examines whether the changing social and economic characteristics of women who give birth out of wedlock have led to higher family incomes. Using Current Population Survey data collected between **1982** and 2002, we find that **never-married** .

[Related articles](#) [All 2 versions](#) [Cite](#) [More ▾](#)

[Thanks for nothing: Income and labor force participation for never-married mothers since 1982](#)

M McKeever, NH Wolfinger - [Social Science Research](#), 2011 - Elsevier

... Volume 40, Issue 1, January 2011, Pages 63–76. **Thanks for nothing: Income and labor force participation for never-married mothers since 1982**. In this way, the modest economic gains achieved by the women in our sample are entirely attributable to **changes** in education, employment, SEI, and other independent variables. ...

[Cited by 3](#) [Related articles](#) [All 2 versions](#) [Cite](#)

Cite

Copy and paste a formatted citation or use one of the links to import into your citation manager.

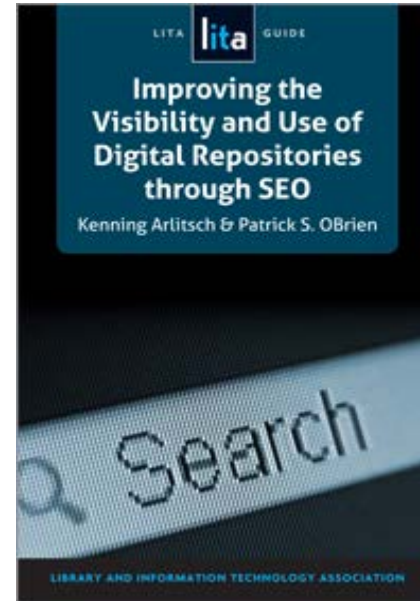
MLA Wolfinger, Nicholas H., and Matthew McKeever. "Thanks for nothing: changes in income and labor force participation for never-married mothers since 1982." *101st American Sociological Association (ASA) Annual Meeting*. 14: Montreal, Canada. No. 2006-07-04. Institute of Public and International Affairs (IPIA), University of Utah, 2006.

APA Wolfinger, N. H., & McKeever, M. (2006, July). Thanks for nothing: income and labor force participation for never-married mothers since 1982. *101st American Sociological Association (ASA) Annual Meeting*. 14: Montreal, Canada (No. 2006-07-04, pp. 1-42). Institute of Public and International Affairs (IPIA), University of Utah.

SEO Deficiencies in Libraries

BOTH organizational and technical issues

Arlitsch, Kenning, and Patrick S. OBrien. (2013). Improving the visibility and use of digital repositories through SEO. Chicago: ALA TechSource.



SEO Deficiency Themes (Organizational)

- Administration and Strategy:
 - SEO is rarely driven from the top of the organization; usually considered a technical issue and is left to IT with little consideration of strategy, goals or reporting.
- Communication:
 - Administrators don't communicate the reasons for an SEO program and its impact to the rest of the organization. Communication among the staff involved in SEO programs can also be poor.
- Ineffective Analytics Reporting:
 - Web Analytics software is often incorrectly configured, diminishing the ability to report use of a digital library or monitor the effects of change to the repository.

SEO Deficiency Themes (Technical)

- Website Design
 - Graphics
 - Confusing site hierarchies and paths
- Poor experience for search engine customers
 - Slow servers
 - Incorrect use of redirects
- CMS/DAM often lack canonical links
- Metadata
 - Schema not understood by search engines
 - Not unique
 - Inconsistent/inaccurate

SEO Building Block Priority

1. Increase Reach

- Get objects indexed by search engines

2. Increase Visibility in SERP

- Provide robust descriptive content

3. Get Relevant

- Increase click-through rates (CTR)

“Getting Found” SEO Cookbook

- Measure digital library performance
 - Monitor and diagnose problems
- Structure
 - Five video tutorials
 - Supporting documentation
 - Case studies
 - Deep dives
- <http://www.clir.org/pubs/reports/pub165>



Publications

Reports

[Ruminations](#)[CLIR Issues](#)[Annual Report](#)[Archives](#)[Other Resources](#)[Ordering Report Prints](#)[Home](#) / [Publications](#) / [Reports](#) / pub165

Getting Found: SEO Cookbook

by Patrick O'Brien and Kenning Arlitsch

May 2015

CLIR pub 165

This is a web-only report—it is not available in print

At a time when Internet search engines have become the default discovery layer for most users, libraries need to report that their websites and digital repositories are discoverable through those search engines as well. *The Getting Found (GF) Cookbook* provides a step-by-step video guide to help libraries measure and monitor the search engine optimization (SEO) performance of their digital repositories. The *Cookbook* includes everything necessary to implement a preconfigured Google Analytics dashboard that continuously monitors SEO performance metrics relevant to digital repositories.

The *Cookbook* was supported by a grant from the Institute of Museum and Library Services.



Phase I: Institutionalizing SEO

1. **Justifying the Need—Video**
2. **Strategic Planning—Video**
 - Review **Case Study: MSU Library Strategic Planning**
 - Read **Recommended References**

Phase II: Prep Work

1. **Prepping for Inventory—Video**
 - Identify **Stakeholder Roles and Conduct Survey of Web Properties**
 - Use **Web Metrics and Analytics**—Survey Template
 - Review **Analytics Stakeholders**—Graphic Overview

We are gathering and consolidating information about the library's website homepages and accounts used to gather web metrics or communicate with users through social media outlets. This information is needed to improve our library's Website(s) search engine optimization (SEO) and web analytics. Please provide as much information as you can about the entire library's web presence.

***1. What is the Library's public homepage web address? (e.g. www.lib.montana.edu)**

***2. List ALL the public "home page(s)" for accessing your library's services, content, and information via the Internet. Please separate responses containing multiple URLs with commas. See link for "[homepage](#)" examples or click on the section titles below.**

[Digital Collections](#)

[Institutional Repository \(IR\)](#)

[Library Services](#)

3. Does your institution have any other domains or sub-domains not listed above? (e.g. scholarworks.montana.edu or etd.live.montana.edu) If so, please list them below.

4. Please list ALL the web address(es) for your library's social media sites? (Please cut and paste the addresses and separate multiple URLs with commas).

Facebook

Google+

Twitter

LinkedIn

YouTube

Pinterest

Instagram

Flickr

Tumblr

Contact Information

List the name, title, and email address for the person currently performing each of the roles below? See [roles description](#) for more information. Please provide the single most pertinent contact for each role.

***8. [IT Manager Role](#)**

Name

Title

Email Address

***9. [System Administrator Role](#)**

Name

Title

Email Address

***10. [Applications Administrator Role](#)**

Name

Title

Email Address

***11. [Google Analytics Administrator Role](#)**

Name

Title

Email Address

***12. [Administration Contact Role](#) (e.g. Dean of the Library)**

Name

Title

Email Address

Search Console

M scholarworks.montana.edu

Help



Dashboard

Messages (22)

Search Appearance ⓘ

Search Traffic

Google Index

Crawl

Security Issues

Other Resources

New and important

Fix mobile usability issues found on <http://scholarworks.montana.edu/>

Mar 2, 2015

[View all](#)

Current Status

Crawl Errors >>

Site Errors

DNS



Server connectivity



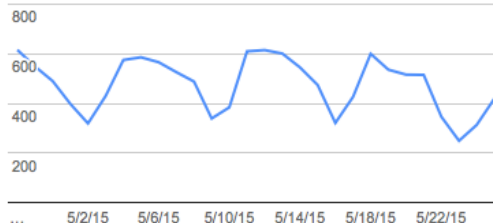
Robots.txt fetch



URL Errors

0 Server error
454 Not found

Search Analytics >>

13,352
Total Clicks

Sitemaps All (1) >>

8,594 URLs submitted
8,045 URLs indexed**286** warnings

Monitor SE crawlers

Find reports & more

Audience Overview

Apr 1, 2015 - May 26, 2015

Email Export Add to Dashboard Shortcut

All Sessions
100.00%

+ Add Segment

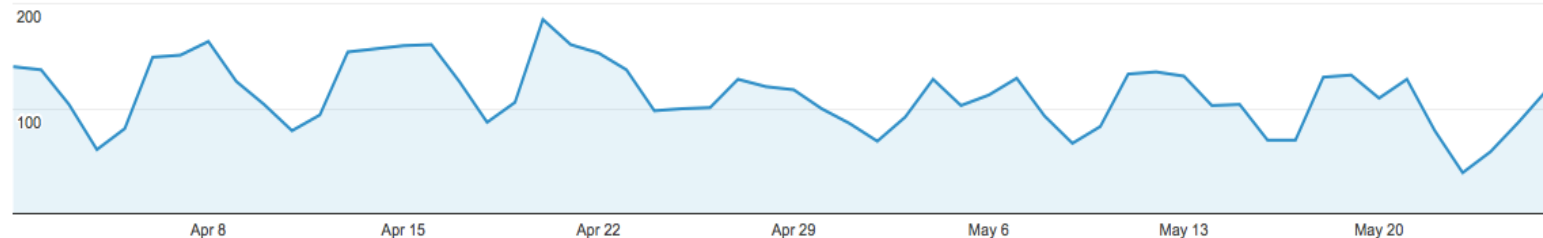
Overview

Sessions vs. Select a metric

Monitor Users

Hourly Day Week Month

Sessions



Sessions

6,333



Users

5,109



Pageviews

22,763



Pages / Session

3.59



Avg. Session Duration

00:02:40

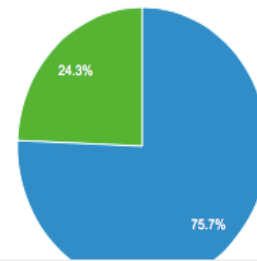


Bounce Rate

50.10%



New Visitor Returning Visitor



Dashboards

Shortcuts

Intelligence Events

Real-Time

Audience

Overview

Cohort Analysis **BETA**

Demographics

Interests

Geo

Behavior

Technology

Mobile

Custom

Benchmarking



Getting Found SEO Dashboard

Feb 24, 2015 - Mar 26, 2015

+ Add Widget | Share | Email | Export

Customize Dashboard | Delete Dashboard

All Sessions
100.00%

+ Add Segment

Daily Sessions



External Keyword Search

Keyword	Sessions	Pages / Session
marriott library	354	1.64
http://www.lib.utah.edu/collections/photo-exhibits/japanese-american-internment.php	261	4.64
j willard marriott library	140	1.48
university of utah library	127	1.48
marriot library	117	1.79
university of utah marriott library	79	2.15
u of u library	64	1.48
japanese internment camps	48	1.73
utah library	42	1.76
lib.utah.edu	41	1.41

Referral Traffic

Source	Sessions
google	43,790
lib.utah.edu	20,844
utah.edu	5,694
utah-primoprod.hosted.exlibrisgroup.com	4,341
gsa.search.utah.edu	2,943
lib.utah.edu.ezproxy.lib.utah.edu	2,247
bing	2,192
yahoo	1,674
novel.utah.edu	1,272
heritage.utah.gov	1,173

Pageviews & Server Performance by Hostname

Hostname	Pageviews	Avg. Page Download Time (sec)
content.lib.utah.edu	224,426	0.47
www.lib.utah.edu	163,820	0.11
lib.utah.edu	132,641	0.03
databases.tools.lib.utah.edu	29,685	0.13
lib.utah.edu.ezproxy.lib.utah.edu	8,751	0.34
tools.lib.utah.edu.ezproxy.lib.utah.edu	5,532	0.32
databases.tools.lib.utah.edu.ezproxy.lib.utah.edu	3,031	0.37
tools.lib.utah.edu	2,597	0.07
content.lib.utah.edu.ezproxy.lib.utah.edu	1,420	0.60
uspace.utah.edu	1,254	0.03

Site Landing Page

Landing Page	Sessions	Pageviews
lib.utah.edu/index.php	104,407	108,383
www.lib.utah.edu/index.php	40,419	68,611
tools.lib.utah.edu.ezproxy.lib.utah.edu/databases/index.php	1,253	3,333
tools.lib.utah.edu/databases/index.php	421	1,075
www.lib.utah.edu/services/interlibrary-loan.php	358	474
www.lib.utah.edu/info/hours.php	296	339
www.lib.utah.edu/collections/photo-exhibits/japanese-american-internment.php	195	490
www.lib.utah.edu/services/knowledge-comm ons/index.php	168	478
lib.utah.edu/collections/utah-artists/UAP-Greg-Frehner.php	167	395
www.lib.utah.edu/services/knowledge-comm ons/classrooms/equipment.php	149	202

Pageviews and Exits by Page Title

Page Title	Pageviews	Exits
Home - Marriott Library - The University of Utah	261,098	183,648
Marriott Library - The University of Utah	40,618	17,568
CONTENTdm Title	35,832	3,533
CONTENTdm Collection : Browse	6,492	382
Murray Museum	5,110	162

Avg. Page Download Time (sec)

0.29

Avg for View: 0.39 (0.00%)

Total Sessions

260,688

% of Total: 100.00% (260,688)

Pages/Visit

2.21

Avg for View: 2.21 (0.00%)

Originating Social Network

Social Network	Sessions
Facebook	722
Blogger	137
reddit	76
tinyURL	49
Twitter	25
Pinterest	24
Google+	8
Tumblr	6
Weebly	6
LinkedIn	5

Visits Per City

Region	Sessions
Utah	211,619
Virginia	9,362
California	4,919
Texas	1,618
Colorado	1,475
New York	1,468
England	1,208
Arizona	1,163
Washington	903
Illinois	845

Search engine comprehension (of organizations)

SEMANTIC WEB IDENTITY (SWI)



Library of Congress



[All](#) [Maps](#) [News](#) [Books](#) [Images](#) [More](#) [Settings](#) [Tools](#)

About 182,000,000 results (0.76 seconds)

Library of Congress: Home

<https://www.loc.gov/>

The Library of Congress is the nation's oldest federal cultural institution, and it serves as the research arm of Congress. It is also the largest library in the world, ...

Results from loc.gov



LC Classification Outline

Outline of the Library of Congress Classification (Cataloging ...)

Digital Collections

Building digital collections at the Library of Congress.

Prints and Photographs

The Prints and Photographs Online Catalog (PPOC ...)

Discover

Books - Audio Recordings - Notated Music - ...

Map Collections

The online map collections represents only a small fraction ...

Researchers

Main Reading Room - Getting Started - Reading Room Hours

Library of Congress - Wikipedia

https://en.wikipedia.org/wiki/Library_of_Congress

The Library of Congress ("LOC") is the research library that officially serves the United States Congress and is the de facto national library of the United States.

Congress.gov | Library of Congress

<https://www.congress.gov/>

Details the U.S. legislative process maintained by the Library of Congress. Search bills and laws by number or keyword, find links to members of the House and ...

The Library of Congress | Flickr

<https://www.flickr.com/photos/8623220@N02/>

Explore The Library of Congress's 27834 photos on Flickr!

Why the Library of Congress's Twitter Archive Can't Get Off the Ground ...

www.theatlantic.com/technology/archive/2016/08/can...library-of-congress/494339/

In 2010, the Library of Congress and Twitter announced a historic and incongruous partnership: Together, they would archive and preserve ...

The Library of Last Resort | Online Only | n+1

<https://nplusonemag.com/online-only/online-only/the-library-of-last-resort/>

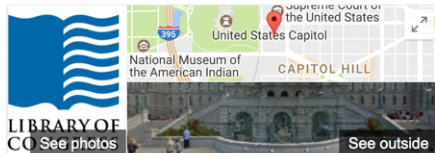
The job Carla Hayden has before her is to prepare the Library of Congress to serve another century of US citizens where we've become most ...

America's 'national library' is lacking in leadership, yet another report ...

https://www.washingtonpost.com.../library.../fad54c3a-d3fd-11e4-a62f-ee745911a4ff_st...

The Government Accountability Office says the Library of Congress lacks the leadership to remedy its problems.

The Library of Congress | Facebook



Library of Congress ★

[Website](#)

[Directions](#)

4.5 ★★★★★ 403 Google reviews

Federal institution · Capitol Hill

The Library of Congress is the research library that officially serves the United States Congress and is the de facto national library of the United States. It is the oldest federal cultural institution in the United States.
[Wikipedia](#)

Address: 101 Independence Ave SE, Washington, DC 20540

Hours: Open today · 8:30AM–5PM ▾

Director: Carla Hayden (Librarian of Congress)

Founder: John Adams

Founded: 1800, Washington, D.C.

[Suggest an edit](#)

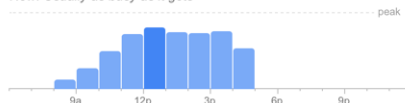
Reviews from the web

4.7/5 [Facebook](#) · 1,081 votes

Popular times

[Fridays](#) ↕

Now: Usually as busy as it gets



Plan your visit: People typically spend up to 1.5 hours here

Reviews

[Write a review](#)

[Add a photo](#)

This federal cultural institution is the world's biggest library & features tours, talks & concerts. - Google



"This is hands-down the most beautiful location in the entire D.C. area."



Knowledge Graph Card

"Knowledge Panel"

"Knowledge Card"

"Information Card"

"KC"

All Maps Images Books News More Search tools

About 628,000 results (0.67 seconds)

Welcome to the UCLA Library

www.library.ucla.edu/ University of California, Los Angeles Library
Research affiliations: Association of Research Libraries, Center for Research Libraries.

Search

Search Ulrichsweb to see where a journal ... search several ...

Library Hours

Library Hours ... CA 90095-1392.
(310) 206-5425. arts-ref ...

Databases by Subject

Social Sciences - Life & Health Sciences - Humanities - ...

Charles E. Young

Study Rooms - At This Location - About - CLICC Laptop Lending

AZ Databases

The Library's online subscription resources can always be ...

Locations

Accessible Computers Apply
Accessible Computers filter ...

[More results from ucla.edu »](#)

Libraries | UCLA

www.ucla.edu/academics/libraries University of California, Los Angeles
Reinvention and innovative research are at the core of the UCLA identity. And it's evident in the caliber of our libraries. They are not only reading reference ...

University of California, Los Angeles Library - Wikipedia, the ...

https://en.wikipedia.org/wiki/University_of_California_Los_Angeles_Library Wikipedia
Jump to [Images of UCLA libraries](#) - [edit]. College (undergraduate) Library/ Powell Library · Charles E. Young Research Library, Eugene and Maxine ...

Size: 9,000,000 (books); 70,000 (serials) **Established:** 1883
Budget: \$34,000,000 annually **Population served:** 65,612 UCLA faculty, ...

Eli Broad gives five decades of personal photographs, videos

www.latimes.com/la-et-cm-eli-broad-papers-archiv... Los Angeles Times
Sep 30, 2015 - The UCLA library couldn't cite the number of pieces but said the first installment alone -- those 19 cartons -- was equivalent in size to "17 linear ...

UCLA Library - YouTube

<https://www.youtube.com/user/TheUCLALibrary>
A Collection of videos produced by UCLA Library staff, this channel contains events held in the UCLA Library such as author talks and musical performances, L...

UCLA Library Special Collections : LA as Subject

www.laassubject.org/university_of_california_los_angeles_young_res...
Address: A1713 Charles E. Young Research Library Box 951575 ... Center/Institution.
Web site: <http://www.library.ucla.edu/location/library-special-collections>

Thief Swipes Dozens of Laptops from UCLA Library - NBC ...

www.nbcdosangeles.com/55-Laptops-Stolen-From-UCLA-Libra... KNBC
Nov 10, 2014 - Surveillance video shows a burglar stealing dozens of Apple laptops from a research library at UCLA. Gadi Schwartz reports from Westwood for ...

About 519,000 results (0.95 seconds)

UNC Chapel Hill Libraries

library.unc.edu/ ▾ University of North Carolina at Chapel Hill ▾
Specialized collections include academic affairs, health sciences, law, and North Carolina authors, and Southern studies research. Research affiliations: ...

Library Hours

Home · Library Hours ... Health Sciences Library Friends Café ...

Contact Us

Home · Contact Us. Contact Us ... and one of our subject ...

Articles+

What is Articles+? Discover information on any topic from ...

[More results from unc.edu »](#)

E-Journal Finder

E-journals. By Title: contains starts with is. 0-9 A B C D E F G H I J K ...

E-Research by Discipline

Education · Business · Info · Web of Science (ISI) · ...

Wilson Library

Search Our Collections · Use Wilson Library · Wilson Library

UNC-Chapel Hill Libraries Catalog

search.lib.unc.edu/ ▾ University of North Carolina at Chapel Hill ▾
In the Library · Borrowing & Circulation · Course Reserves ... UNC-Chapel Hill Libraries Catalog. Search · Browse New Titles · Browse by Call Number.

UNC Chapel Hill Libraries Catalog

www2.lib.unc.edu/webcat/ ▾ University of North Carolina at Chapel Hill ▾
UNC-Chapel Hill Libraries Catalog. Title · Journal Title · E-Journals · E-Books · Author · Keyword · Advanced Search · Subject Headings · Call Numbers · ISBN ...

Carolina BLU Logon

<https://illiad.lib.unc.edu/noc/> ▾ University of North Carolina at Chapel Hill ▾
Items waiting to be delivered to a closed library can be picked up at Davis Library ... and are not affiliated with UNC-Chapel Hill, please contact your local library.

University of North Carolina, Chapel Hill


<https://webcat.lib.unc.edu/> ▾ University of North Carolina at Chapel Hill ▾
Library Home · Libraries & Hours · Do Your Research · In the ... Renew Books: My Library. UNC-Chapel Hill Libraries Catalog. Title · Journal Title · E-Journals ...

Health Sciences Library - The University of North Carolina at ...

hsl.lib.unc.edu/ ▾ University of North Carolina at Chapel Hill ▾
335 S. Columbia Street CB 7585 Chapel Hill, NC 27599-7585 (919) 962-0800 ... The Health Sciences Library (HSL) serves the instructional, clinical, and ...

North Carolina State University (NCSU) Libraries

<https://www.lib.ncsu.edu/> ▾ North Carolina State University ▾
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SWI Research Began in 2012

Google

Web Images Maps Shopping More Search tools

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Address: 1500 University Dr, Billings, Mt 59101

Phone: (406) 657-1662

Hours: Wednesday hours 7:30 am–10:00 pm - [See all](#)

Feedback

From which sources does Google gather facts?

Google My Business



WIKIPEDIA
The Free Encyclopedia



Google+

Semantic Web

- Latest extension of the WWW (Web 3.0)
 - “Data and information that can be processed automatically”*
 - “Computers must have access to structured collection of information”*
 - Every entity must have a Universal Resource Identifier (address)
- Implications for search engines
 - Change: matching strings of text to matching entities and their relationships
 - Promise more accurate and relevant results
 - Answers rather than lists of websites where answers might reside

*Berners-Lee, Tim, James Hendler, Ora Lassila (2001). “The Semantic Web,” *Scientific American*, v284no5, pp. 34-43.

Semantic Web Identity (SWI)

- The condition in which Internet search engines recognize the existence and nature of entities
 - Important for semantic technologies such as mapping applications
- Characterized as a search engine having gathered enough verifiable facts about an entity for a formal display of that entity in SERP
- Display of KC is an indicator of SWI

Research Goals

- What is the state of SWI among Association of Research Libraries (ARL) members (and other academic organizations)?
- Can SWI be established or improved by engaging with certain knowledge bases on the Semantic Web?

RESEARCH METHODS

ARL: The problem of Names

- 125 ARL member libraries
- Every library has a primary (official) name
 - <http://www.arl.org/membership/list-of-arl-members>
- 94 libraries also have alternate names
- Example:
 - Yale University Library = primary name
 - Sterling Memorial Library = alternate name

Data Collection

- Searched Google for evidence of KC for ARL libraries
 - 125 primary names of libraries
 - 94 alternate names of libraries
 - Total names = 219
- Searched 5 knowledge bases for evidence of records for all 219 names
 - Google My Business
 - Google+ (recorded verified/unverified profiles)
 - Wikipedia (recorded articles w/infobox, w/o infobox)
 - DBpedia
 - Wikidata

Data Analysis

- 1,400+ screen capture files
- Excel spreadsheet
- R statistical computing software for analysis
- Data set available in MSU ScholarWorks repository
 - <http://doi.org/10.15788/M2F590>

Case Studies

- Documented intervention to improve SWI of three organizations
 - Montana State University Library
 - McMaster University Library
 - Coalition for Networked Information (CNI)

RQ1: What is the current state of SWI of ARL libraries, as indicated by the presence of accurate KC in Google search results when the primary and alternate names of those libraries are searched?

FINDINGS

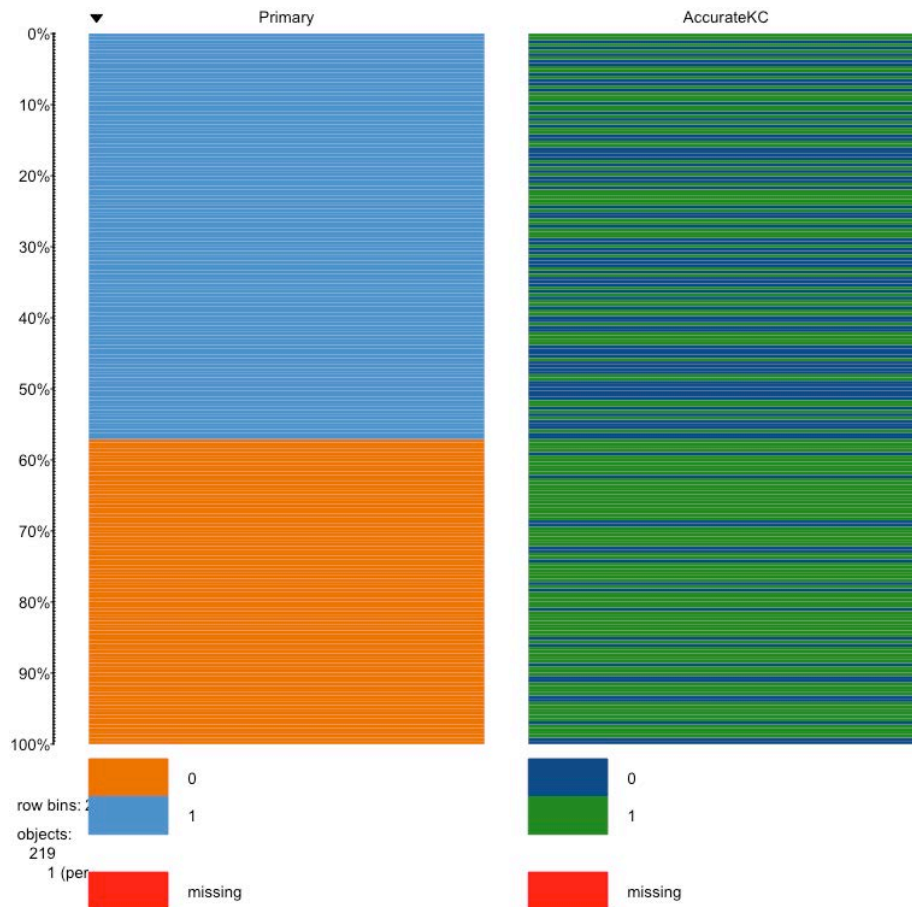


Table plot showing that ARL library alternate names (column 1, orange rows) were more likely to display an accurate KC (column 2, green rows)

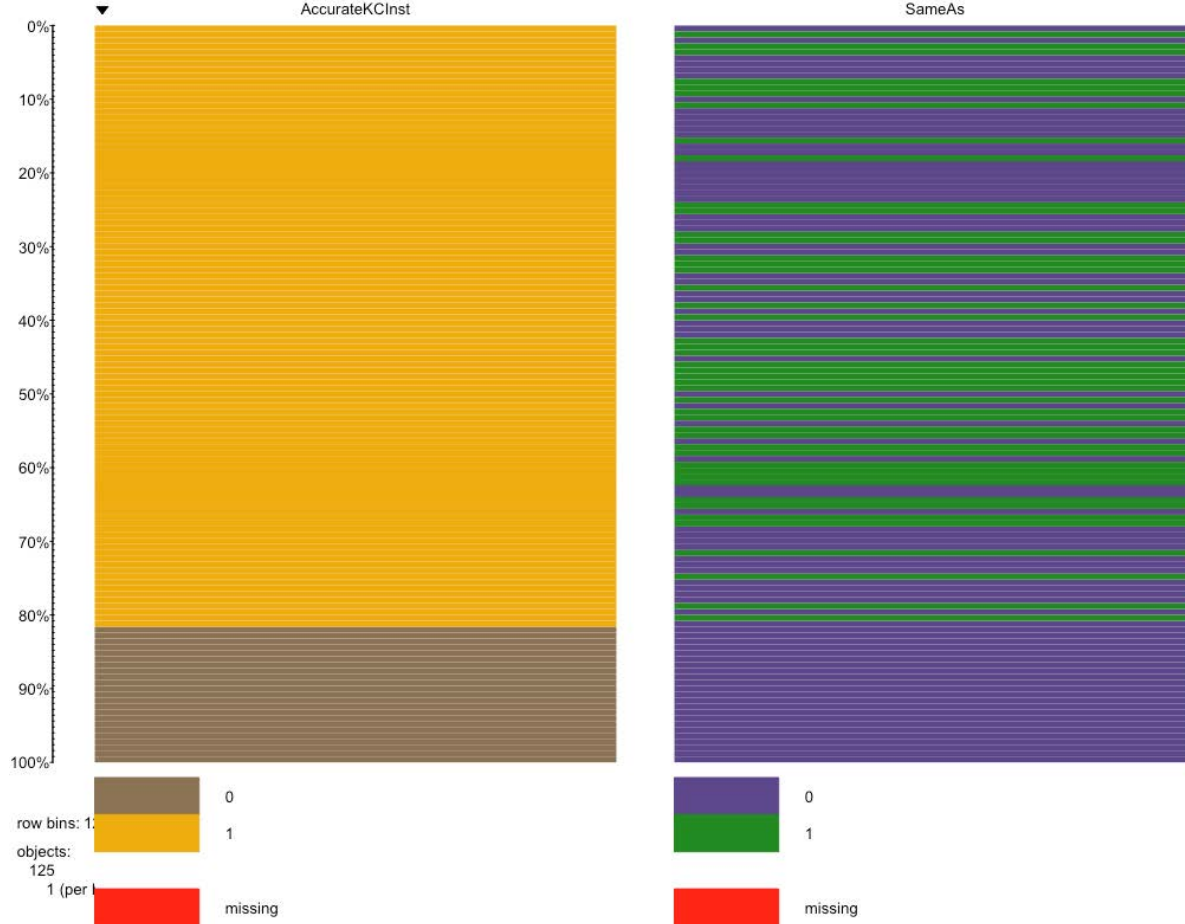


Table plot showing that 82% of ARL libraries displayed an accurate KC (Column 1, yellow rows), but that many of the KC were not the same for the primary and alternate names of the libraries (Column 2, purple rows).

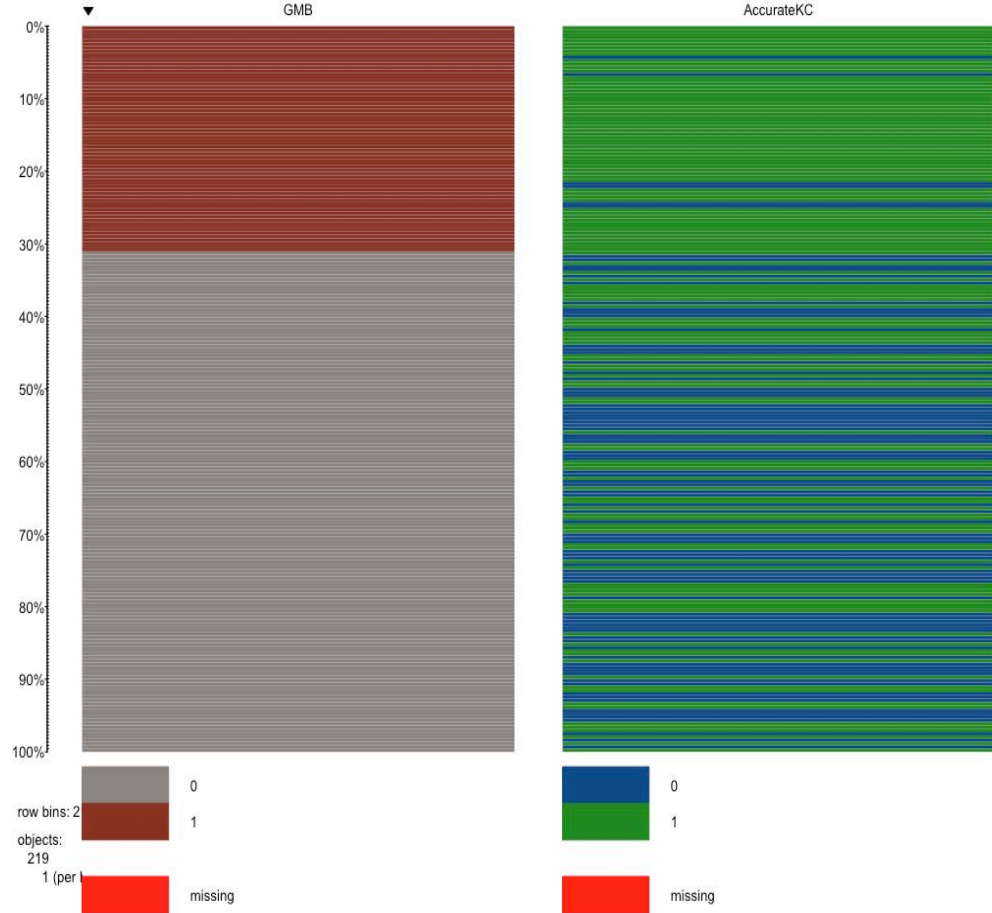
RQ2: Are records or profiles present for ARL primary and alternate library names in the five knowledge bases?

FINDINGS

Records for ARL members in Knowledge Bases

Knowledge Base	Primary (% of 125)	Alternate (% of 94)	Total (% of 219)
Google My Business	22%	43%	31%
Google Plus (verified)	18%	20%	19%
Wikipedia (w/infobox)	24%	28%	26%
DBpedia	24%	41%	32%
Wikidata	21%	39%	29%

RQ2, Sub-question 1





Library of Congress

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Library of Congress: Home

<https://www.loc.gov/>

The Library of Congress is the nation's oldest federal cultural institution, and it serves as the research arm of Congress. It is also the largest library in the world, ...

Results from loc.gov



LC Classification Outline

Outline of the Library of Congress Classification (Cataloging ...

Digital Collections

Building digital collections at the Library of Congress.

Prints and Photographs

The Prints and Photographs Online Catalog (PPOC ...

Discover

Books - Audio Recordings - Notated Music - ...

Map Collections

The online map collections represents only a small fraction ...

Researchers

Main Reading Room - Getting Started - Reading Room Hours

Library of Congress - Wikipedia

https://en.wikipedia.org/wiki/Library_of_Congress

The Library of Congress ("LOC") is the research library that officially serves the United States Congress and is the de facto national library of the United States.

Congress.gov | Library of Congress

<https://www.congress.gov/>

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Why the Library of Congress's Twitter Archive Can't Get Off the Ground ...

www.theatlantic.com/technology/archive/2016/08/can...library-of-congress/494339/

In 2010, the Library of Congress and Twitter announced a historic and incongruous partnership: Together, they would archive and preserve ...

The Library of Last Resort | Online Only | n+1

<https://nplusonemag.com/online-only/online-only/the-library-of-last-resort/>

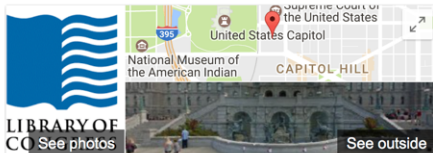
The job Carla Hayden has before her is to prepare the Library of Congress to serve another century of US citizens where we've become most ...

America's 'national library' is lacking in leadership, yet another report ...

https://www.washingtonpost.com/...library.../fad54c3a-d3fd-11e4-a62f-ee745911a4ff_st...

The Government Accountability Office says the Library of Congress lacks the leadership to remedy its problems.

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Library of Congress ★

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4.5 ★★★★★ 403 Google reviews

Federal institution · Capitol Hill

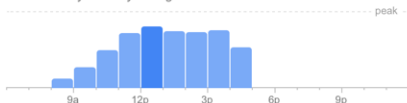
The Library of Congress is the research library that officially serves the United States Congress and is the de facto national library of the United States. It is the oldest federal cultural institution in the United States.

[Wikipedia](#)**Address:** 101 Independence Ave SE, Washington, DC 20540**Hours:** Open today · 8:30AM–5PM ▾**Director:** Carla Hayden (Librarian of Congress)**Founder:** John Adams**Founded:** 1800, Washington, D.C.[Suggest an edit](#)

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Popular times

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Reviews

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This federal cultural institution is the world's biggest library & features tours, talks & concerts. - Google



"This is hands-down the most beautiful location in the entire D.C. area."



Description field

RQ2, Sub-question 2:

Is a KC likely to display a description field if no Wikipedia article exists for the primary or alternate name of the library

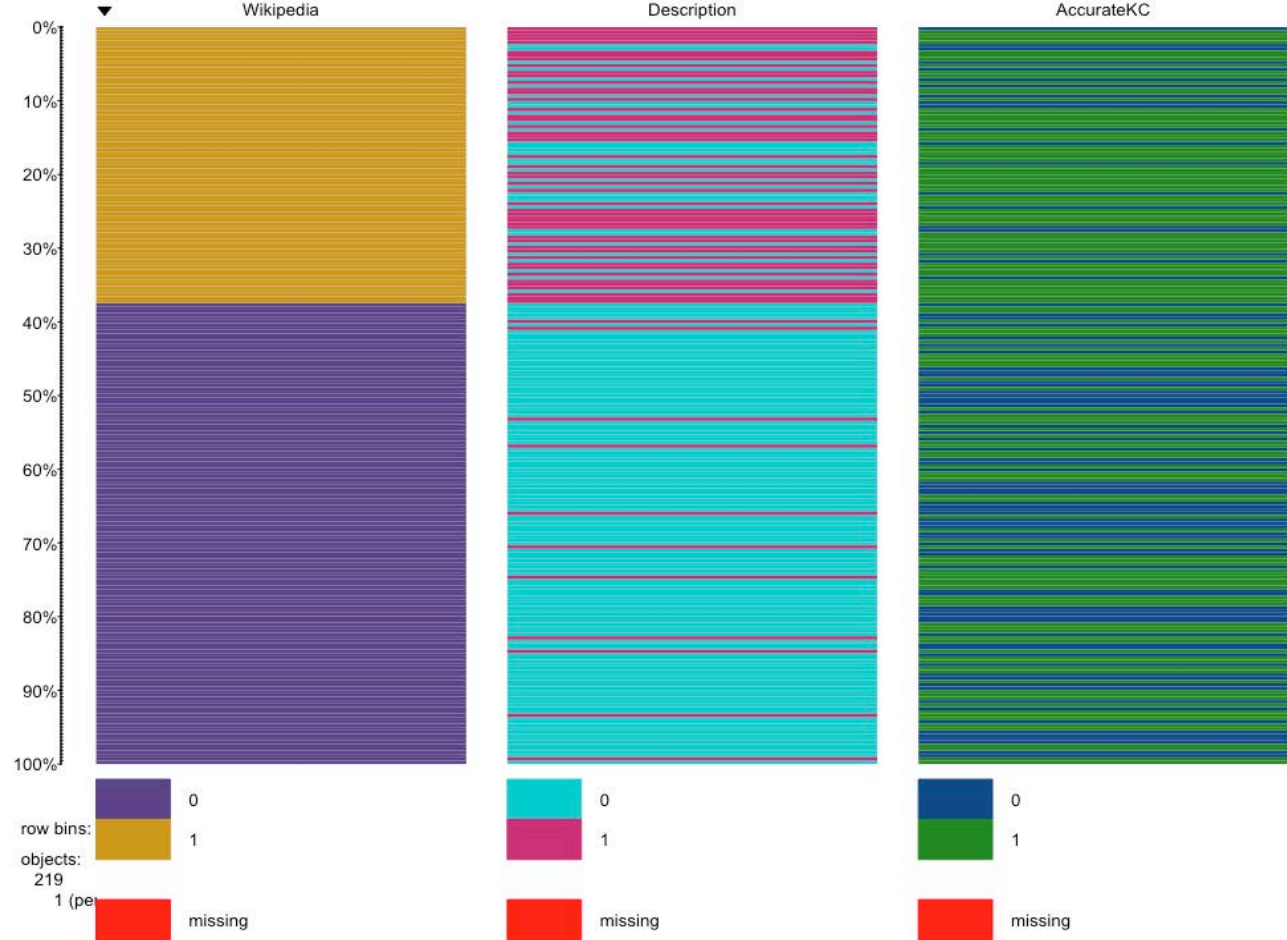


Table plot showing that Wikipedia articles (column 1, yellow rows) tend to result in descriptions (column 2, pink rows) on accurate KC (column 3, green rows).

FINDINGS – GOOGLE+



M.D. Anderson Library

University Dr Houston, TX 77204
(713) 743-1050
info.lib.uh.edu

Library
Today 7AM-9:45PM



University of Houston Libraries

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17 people



Contact Information

Contact info

Phone 713-743-1050
Address 114 University Libraries
Houston, TX 77204-2000



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The M.D. Anderson is the main library on the University of Houston's main campus.

Category

Library

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Monday	12:00 am-12:45 am
Tuesday	7:00 am-12:00 am
Wednesday	7:00 am-12:00 am
Thursday	7:00 am-12:00 am
Friday	12:00 am-12:45 am
Saturday	7:00 am-9:45 pm

Links

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M.D. Anderson Library

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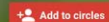
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114 University Libraries



University of Houston Libraries

Lives in Houston, TX



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Other names UH Libraries

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Currently
Houston, TX

FINDINGS – CASE STUDIES

Basic SWI Process



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Find and use articles & research databases from Montana State ...

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Herman Melville had a whale of a time picking the title for his books
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Montana State University Library - Wikipedia

https://en.wikipedia.org/wiki/Montana_State_University_Library Wikipedia
The Montana State University Library (MSU Library) is the academic library of Montana State University, Montana's land-grant university, in Bozeman, Montana, ...
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Montana State University Library, PO Box 173320. Bozeman, MT 59717.



Logo/Image and Map

Montana State University Library

Academic library

The Montana State University Library is the academic library of Montana State University, Montana's land-grant university, in Bozeman, Montana, United States. It is the flagship library for all of the Montana State University System's campuses. [Wikipedia](#)

Description

Address: Renne Library, Bozeman, MT 59717

Hours: Open today · 10AM–5PM

Phone: (406) 994-3139

Address, Hours, Phone

Founded: 1894

Staff: 56

Parent organization: Montana State University

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Us - ...

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17th and 18th Century Burney Collection Newspapers. The ...

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hsl.mcmaster.ca | Health Sciences Library | Search

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Google Scholar - Health Sciences Library - McMaster ...

hsl.mcmaster.ca | ... | Resources & Collections | Guides and Tutorials

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digitalarchive.mcmaster.ca/

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McMaster University Library - Wikipedia, the free encyclopedia


https://en.wikipedia.org/wiki/McMaster_University_Library

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McMaster University LIBRARY



McMaster University Library

Website Directions

Library

McMaster University Library is the academic library system for the faculties of Humanities, Social Sciences, Engineering, Science, as well as the Michael DeGroote School of Business at McMaster University in Hamilton, Ontario, Canada. Wikipedia

Address: L206, 1280 Main St W, Hamilton, ON L8S 4L8

Hours: Open today - 8AM-10:45PM

Province: Ontario

Phone: (905) 525-9140

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Institute for Applied Health Sciences

Feedback

Results of SWI Study

- Lack of records in knowledge bases corresponds to lack of KC
- Proposed process to improve SWI is successful
- Library-related concepts and entities are poorly defined on SW

dbo:thumbnail

- wiki-commons:Special:FilePath/Melk_-_Abbey_-_Library.jpg?width=300

dbo:WikiPageExternalLink

- <http://www.lib-web.org/>
- <http://www.gutenberg.org/etext/15327>
- <http://www.hss.ed.ac.uk/chb/>
- <http://www.ibiblio.org/librariesfaq/>

dbo:WikiPageID

- 17727 (xsd:integer)

dbo:WikiPageRevisionID

- 708089041 (xsd:integer)

dct:subject

- [dbc:Book_promotion](#)
- [dbc:Libraries](#)
- [dbc:Library_science](#)

rdf:type

- [owl:Thing](#)
- [yago:Area102735688](#)
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- [yago:Structure104341686](#)
- [yago:Whole100003553](#)
- [yago:YagoGeoEntity](#)
- [yago:YagoPermanentlyLocatedEntity](#)
- [yago:WikicatResearchLibraries](#)

CONCLUSIONS

Librarians struggle with SEO/SWI

- Lack of awareness/formal strategies
- Traditional outreach/marketing practices don't work on the SW
 - Inconsistent use of names
 - Lack of explicit “same as” declarations for machine comprehension
- Disregard/disdain for Semantic Web opportunities
 - Are not proactively creating and maintaining records in knowledge bases
 - Absence of formal strategy results in independent efforts by employees
 - Creates confusion for search engines

Broader Impact

- More than the tactical approach
- Opportunities
 - Develop cohesive marketing strategies and consistent processes
 - Expand skill sets of library faculty and staff
 - Offer SWI services to campus constituents

References

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