

Analyzing Virtual Reference Data to Improve Services: Practical Methods and Strategies

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GLA Carterette Webinar

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What is virtual reference?

Virtual reference is **reference service** initiated electronically for which patrons **employ technology** to communicate with public services staff **without being physically present**. Communication channels used frequently in virtual reference include **chat**, videoconferencing, Voice-over-IP, co-browsing, e-mail, instant messaging, and text.

Virtual Reference (VR) Data

- Automatically captured – no manual input
- Quantitative and qualitative data source
 - Chat counts by date and time
 - Word counts
 - Question content
 - Full transcript
 - Metadata – patron affiliation, browser, referral source

Virtual Reference Insights

- How to best staff chat services (department, hours)
- Improve staff training
- Increase quality of reference services
- Meet patrons where they are
- Better understand library spaces
- Understand patron language and behavior

RUSA Guidelines for Implementing and Maintaining Virtual Reference Services, Section 5.6

- Plan for **regular assessment** of the virtual reference program's **effectiveness** by library staff and administration.
- Assessment should include both **metrics and methods** applicable across reference services (e.g. **usage counts, patron demographics**, “secret shoppers,” READ scale analysis, etc.) as well as features unique to the medium, such as **transcript review**.
- Assessments should address **service quality improvement** for patrons as well as professional development opportunities for reference staff.
- Use evaluation to **improve the service** as needed through **adjustment of staffing, levels of staffing, service parameters, training**, or other improvements as indicated by evaluation and assessment results.
- Follow-through with the commitment to **implement adjustments** as needed when identified in the assessment process.

Research Methods

1 | Beginner

- Literature review
- **Heat map**

2 | Intermediate

- **Grounded theory**
- Surveys

3 | Advanced

- Topic modeling
- **Sentiment analysis**

LibChat Administration

- Canned Messages
- Statistics
- Chat Ratings
- Transcripts
- Missed Chats
- Coverage
- Chat Widgets
- Export

This page provides statistics breakdowns for all chats that originated in this LibAnswers system (i.e. chats that started in widgets that belong to this LibAnswers site).

Email/Phone ⓘ

Department

Owner

Tag ⓘ

Rating

Widget ⓘ

Asked from ⓘ to

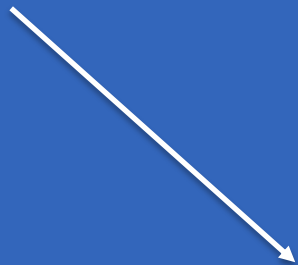
Status ⓘ

Screensharing

Filter (clear)

- Distributions
- Browser/OS & Referrer
- Operator/Patron Distribution
- Export Statistics

Heat Map



	M	T	W	T	F
9am	7	7	8	9	10
10am	18	12	11	11	13
11am	31	15	26	21	17
12pm	25	16	13	26	13
1pm	20	13	11	19	18
2pm	20	20	17	21	11
3pm	20	26	14	24	10
4pm	13	15	11	16	11
5pm	4	4	11	8	0
6pm	5	7	10	12	0
7pm	6	7	4	7	0
8pm	9	2	2	1	0
9pm	0	0	2	0	0

Grounded theory

- Popular qualitative research method across a wide range of disciplines and subject areas
- “The steps the researcher takes to identify, arrange, and systematize the ideas, concepts, and categories uncovered in the data” (Givens, 2008, p. 86).

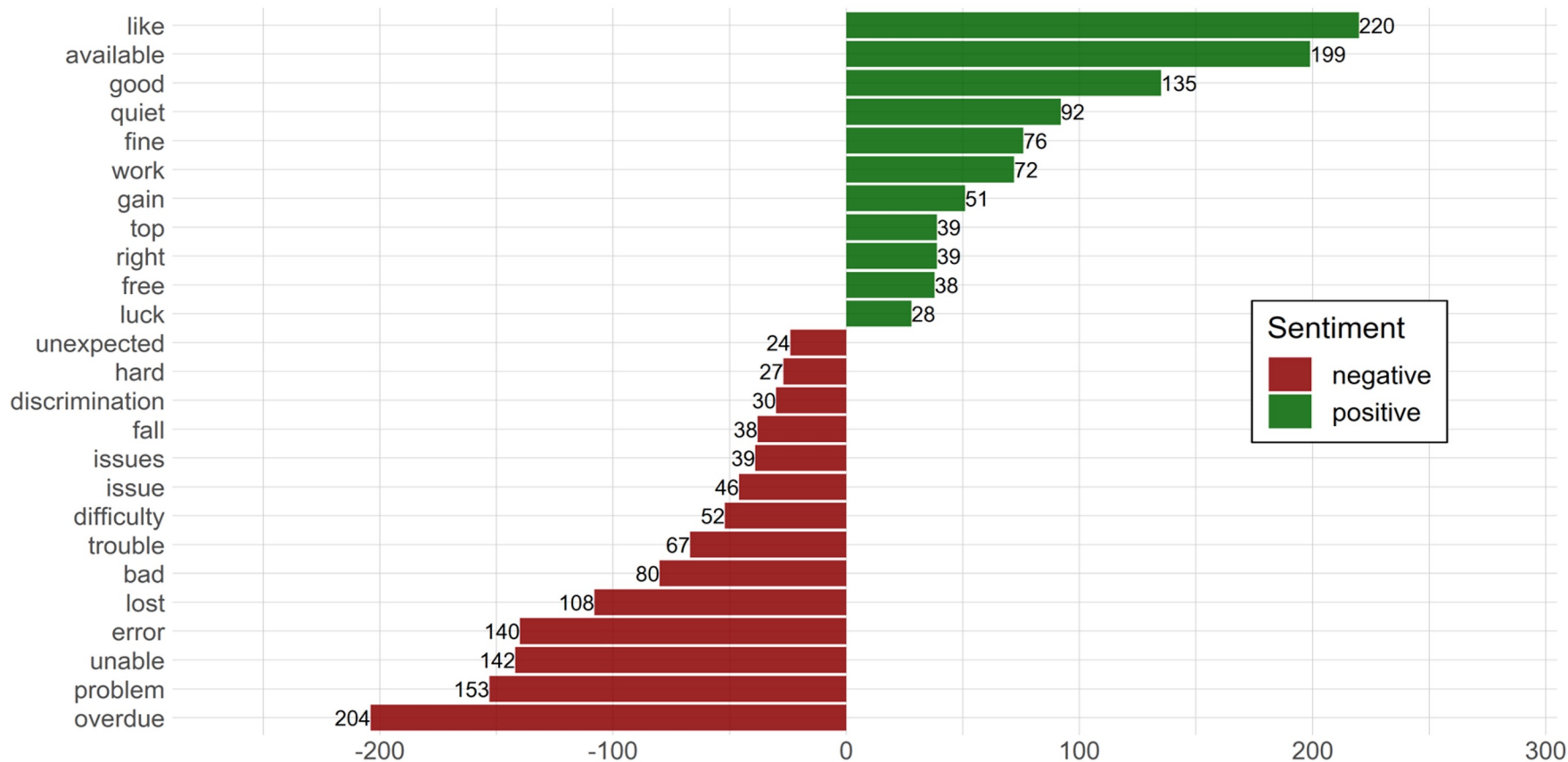
tags	tags	tags	Final tag
book search	textbook	Known book	known book search
reference question	topic search	reference lookup	topic search
fine	late fee	circulation help	finest / fees / library account
book search	find book on shelf	building help	known title search
library access	library hours	library open	library hours
library building	lockers	building features	library building / department
citation help	software help	zotero	citation help
book mail	circulation help	book access	physical collection access / return
library hours	library availability	building hours	library hours
database access	reference question	research question	database access
book search	topic search	reference question	topic search

Sentiment Analysis

- Sentiment analysis can be defined as the ability to “extract subjective information from texts in natural language, such as opinions and sentiments, so as to create structured and actionable knowledge” (Pozzi, Fersini, Messina, & Liu, 2016, p. 1).

Sentiments of 25 Most Frequent Words

Sentiment coded using method from Bing (2005)



Assessment Projects involving Virtual Reference

Caveat!

**All of these studies were conducted using Springshare's
LibAnswers/LibChat**

How can VR inform website redesign?

Website Redesign Project @ Mississippi State University
Libraries

Overview

- Two parts
 - Full transcript analyzed to find most prevalent types of questions and frequently consulted sources for response
 - Database (Online Catalog, Subject Database, E-Journals List)
 - Service (Subject Specialist, Thesis Office, Interlibrary Loan, etc.)
 - Referral
 - Chat and email analyzed by word frequency to look at preferred language use by patron
- Analysis and findings helped inform redesigning the library homepage

Findings

- Redesigned “Ask-A-Librarian” button and made more omnipresent
 - Justified addition of EBSCO Discovery to homepage
 - More prominent placement of circulation policies, citation information, and thesis office links on homepage
-
- Update at Mississippi University for Women Library in 2022...

Is Twitter a Virtual Reference Service?

Twitter and Virtual Reference @ Mississippi State
University Libraries



Mississippi State University Libraries

@msu_libraries

Mississippi State University Libraries' official tweets. You can also find us at [@USGrantLibrary](#).

📍 Starkville, MS 🌐 [library.msstate.edu](#) 📅 Joined July 2009

3,950 Following 5,224 Followers

👤 Followed by DistanceLibServicesConference2020, 🇺🇸🇧🇪🇮 Courtney E. Thompson 🇺🇸🇧🇪🇮, and 20 others you follow

Tweets

Tweets & replies

Media

Likes



Mississippi State University Libraries @msu_libraries · 21h

Did you know the MSU Libraries offer well over 100 workshops a semester? That we have 2.3 million books and over 211,000 electronic journals? That we are only one of six universities that are home to a Presidential Library? 1/2 [scholarsjunction.msstate.edu/cgi/viewconten...](#)

MISSISSIPPI STATE

LibAnswers ▾

10 Dashboard

Answers ▾

Stats ▾

Ref. Analytics ▾

LibChat ▾

Status Mgmt

⚙ Admin ▾

🔗 Help

Id	Status	Question	Owner
146053	Open	@msu_libraries Thank you for the support! #HailState 👁 MSU W. Basketball (@HailStateWBK) Asked via Twitter	---
145273	Open	You need to put a vending machine in here @msu_libraries 👁 Ashleigh Ausburn (@ashaurn12) Asked via Twitter	---
143131	Open	@msu_libraries too turnt 👁 Gerardo (@gerdss) Asked via Twitter	---
142492	Open	Any volunteers want to bring me a donut from @msu_libraries? 👁 #ClubMitchell Bradley Wilcher (@bwilcher_36) Asked via Twitter	---
173141	Open	@msu_libraries I have a book due the 30th that I tried to renew but it wouldn't let me. What should I do? 👁 Morgan Horn (@moraeanhorn) Asked via Twitter	---
173875	Open	@msu_libraries Not a single library in the GT Consortium has E. O. Wilson's National Book Award nominated .The Meaning of Human Existence-. 👁 bej (@Messier45) Asked via Twitter	---
366395	New	Reference to an event in Scottish history 👁 Richmond Adams (richmondadams2004@gmail.com) Asked via System	---

Overview

- 1,277 tweets analyzed from 2014-2015
- Research question: Why are patrons contacting us on Twitter? Should it be considered a virtual reference service?
- Methods: Staff survey and grounded theory analysis

Findings – Grounded Theory Analysis

n=1,277 tweets

Tweet	Code
We need more outlets! @msu_libraries	Complaint / Suggestion
Dear new MSU students, I would highly suggest you start following @msu_libraries immediately. You will thank me later.	Compliment
@msu_libraries I will be there around 330 to make a sign	Conversation
Monday night study time at @msu_libraries	Engagement
Sunday night writing frenzy? Work out that idea with the writing center @msu_libraries in the IMC! #msuwrites http://t.co/TO9SiVmzyK	External promotion
Mark your calendars now for the #BannedBooksWeek activities next week @msu_libraries! http://t.co/eN5CTamMwV	Library promotion
In @_nickoal_'s workshop learning how to effectively share research online! #socialresearcher @msu_libraries http://t.co/yL8hdS1iM9	Library Tweet
@msu_libraries I want to print off a poster for GameDay but idk what size to print. What size is best?	Question
yo @msu_libraries "Have you seen @Braddy478 ""Money In The Air"" viral video? #RT lemme know what you think http://t.co/TyioLpnP9v "	Spam

Topic

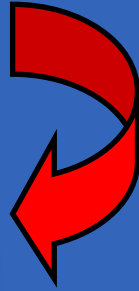
Select One

Select One
Online Catalog
Topic Search
Known Article Search
Known Book Search
ILL
Theses & Dissertations
Special Collections
Library Employment
Hours
Compliments
Complaints / Suggestions
Access Services / Circulation Policies
Website
Instructional Media Center

Twitter Topic

Select One

Select One
Complaint / Suggestion
Compliment
Conversation
Engagement
External Promotion
Library Promotion
Library Tweet
Question
Spam



Staff Survey

Personal Twitter Usage

- Did you use Twitter before Fall 2014?
- Do you have a personal Twitter account?
- Do you follow the MSU Libraries' Twitter account?
- If you do use Twitter, check all the following Twitter abbreviations you have used: [check as many as apply]
- In what situation would you "Favorite" a tweet?
- In what situation would you "Retweet" a tweet?
- When is a reply visible to all your followers, versus only to the followers you and the account you are replying to have in common?

Twitter Experience with Virtual Reference Duties

- Did you respond to a Twitter question through LibAnswers in Fall 2014?
- If so, can you describe the procedure you used (i.e. did you consult the MSU Libraries Twitter page?)
- Do you feel confident speaking on behalf of the library when publicly posting on Twitter?
- Did you assign a Topic or Question Type from RefAnalytics to any Twitter question, mention, retweet, etc?

Reflections on Twitter and Virtual Reference Program

- What was your comfort level with adding Twitter into the Libraries Virtual Reference program?
- Do you feel you need additional training on Twitter through LibAnswers?
- If yes, what kind of training would be helpful?

Findings – Staff Survey

When to “Retweet” a Tweet

I have never done so. Not sure when I would.

When I find something very compelling, and I feel the way original author worded the tweet is the best way of saying it...

If I want to share the opinion or news and feel it was worded by the original “Tweeter” well...

What Kind of Additional Training is Needed?

Basically from scratch—I never use Twitter.

General best practices for Twitter.

I feel comfortable with Twitter itself, but I need to learn more about the workflow for closing tweets on the Dashboard; the workflow for answering tweets as they come in; and adding statistical information for both circumstances for different use cases.

General overview of best practices (i.e. what comments and questions should be responded to). And the use of tweet abbreviations like MT etc.

Takeaways

- It's important to meet and engage where the patrons are
- Social media can qualify as a virtual reference
- Train your staff accordingly
 - “Micro-Interventions”

How did COVID impact virtual reference questions and sentiment?

COVID Project @ Georgia State University Library

Overview

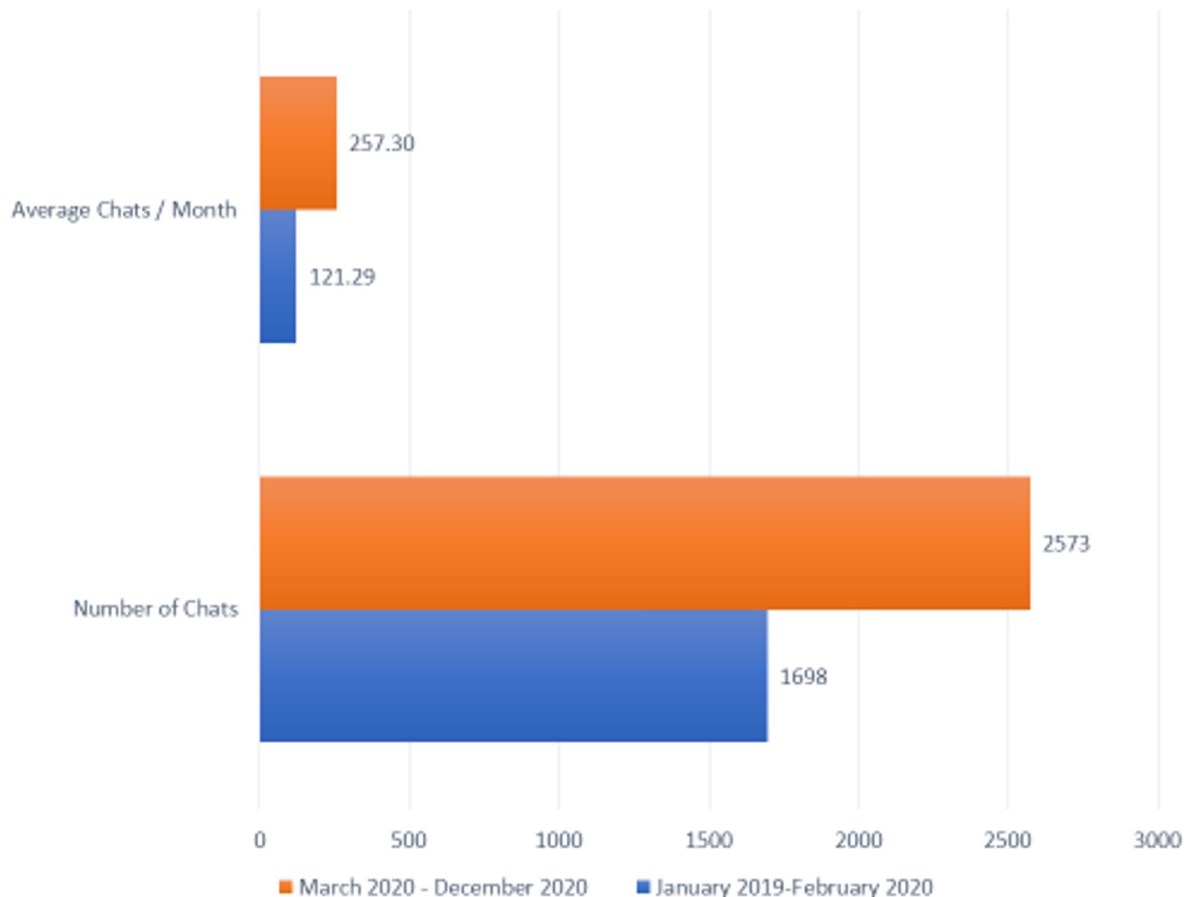
- 4,000 chat questions analyzed January 1, 2019–December 31, 2020
- Research question: Did nature and sentiment of chat questions change at the start of COVID?
- Methods: Grounded theory analysis and sentiment analysis



4,271

Chats 2019-2020

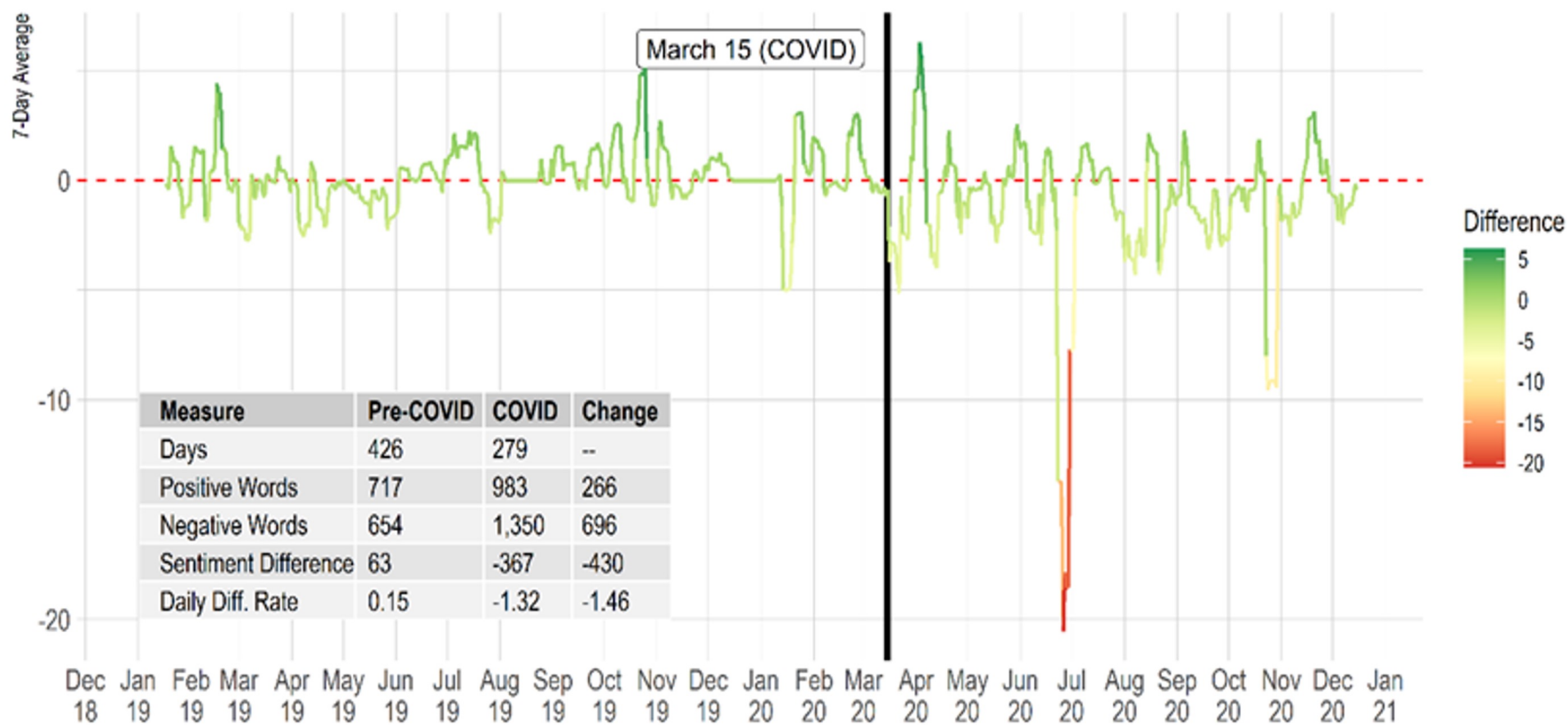
Chat Traffic Comparison



Chat Tag Topic	Pre-COVID	During COVID	% Change
noise complaint	70	6	-1067%
printing / scanning	30	14	-114%
employment	4	3	-33%
spam / sales	4	3	-33%
library building / department	130	123	-6%
university help	61	69	+12%
unclear / no question	113	129	+12%
database access	155	181	+14%
topic search	333	393	+15%
technology / software support	100	120	+17%
known title search	204	259	+21%
visitor / alumni support / access	53	70	+24%
citation help	33	48	+31%
course support	58	102	+43%
website troubleshooting	105	245	+57%
reconnect	25	61	+59%
library hours	17	52	+67%
finer / fees / library account	53	159	+67%
physical collection access / return	150	536	+72%
Total	1698	2573	

Frequency Difference Between Positive and Negative Sentiment Words

Line depicts 7-day moving average of the difference in frequency between positive and negative words.



Takeaways

- Different staffing model may be needed
- Change in patron outlook due to historical event
- How patrons feel (and how we react) is important
- Beyond lockdown; follow-up needed as COVID stays around

Other sources of data

- Other VR Services
 - Tickets
 - SMS
 - FAQ (Votes, QuerySpy)
 - Virtual research appointments transcripts
- Patron ratings and comments
- Demographics of users
- Referrals
 - Where are they coming from?
 - What are they being referred to?

Issues to consider

- Confidentiality of patrons
- Staff training sensitivities
- Learning curve – rely on your fellow experts!
 - GLA Research and Assessment Interest Group (RAIG)

Publications

Kathuria, S. (2020). Library support in times of crisis: An analysis of chat transcripts during COVID. *Internet Reference Services Quarterly*, 25(3), 107–119. <https://doi.org/10.1080/10875301.2021.1960669>

Kathuria, S. and Powers, A.C. What do you do when they start talking back? Training librarians for next-level Twitter engagement using Springshare's LibAnswers. In Verishagen, N. (Ed.). (2018), *Social media : The academic library perspective* (pp. 136–146). Elsevier Science & Technology.

Powers, A. C., Shedd, J., & Hill, C. (2011). The role of virtual reference in library web site design: A qualitative source for usage data. *Journal of Web Librarianship*, 5(2), 96–113. <https://doi.org/10.1080/19322909.2011.573279>

Thank you GLA Distance Learning Interest Group!

<https://gla.georgialibraries.org/interest-groups/>

Questions?

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