Using Google Forms to Track Library Space Usage

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Abstract

This article is a response to the excellent "Using Mobile Technology to Observe Student Study Behaviors and Track Library Space Usage" by Susan Thompson (2015). Thompson reviews the literature regarding user counts on mobile devices, and describes the California State University San Marcos (CSUSM) Library's evaluation of SUMA, Counter+ and CloudOn. After trialing these mobile technologies, CSUSM selected CloudOn. At New York University Abu Dhabi (NYUAD), we use Google Forms to conduct user counts on an iPad and Google Sheets to evaluate this data. We find that Google Forms are easy to set up, modify as necessary, and present the data in easy-to-manipulate spreadsheets.

Keywords: space usage, tablets, library space assessment, library building use, observation methodology, mobile technology

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Background

New York University Abu Dhabi (NYUAD) is a small university located in the United Arab Emirates' capital city of Abu Dhabi. Founded in 2010 as the second degree-granting campus of New York University, our enrollment for 2015-16 is 880 undergraduates and a handful of graduate students ("By the numbers," n.d.). Our faculty and staff number approximately 800. In addition to students, faculty and staff, a number of faculty and staff families live on campus and use the library. The 42,000 square foot library includes over 50,000 volumes and is open over 100 hours per week, with longer hours on school nights and shorter hours on the weekend. We have 10 librarians and 22 staff members, including desktop and classroom IT support.

We have grown significantly from our inception. Our original library in downtown Abu Dhabi was less than one-fifth the size of our current library, and our staff numbered 11, including 6 librarians. Although we had gate counters, like many other libraries, we felt that they did not accurately reflect the number of people actually using the library. In our second year of operation, we began taking user counts using Google Sheets, every hour on the hour, for one week each month during the academic year. It took 5 minutes or less to conduct the user count, regardless of the number of users present, because our library was small. We came to the same conclusion as library staff at California State University San Marcos (CSUSM): a tablet provides the most flexibility. We repurposed an iPad for this use.

In August 2014, we moved from our temporary location to our current campus on Saadiyat Island. The first few months after the move were consumed with settling in and providing service to our users, who were also adjusting to the new spaces.

Starting in November 2014, we began to take user counts again. However, to better learn our new space we decided to conduct user counts throughout the academic year at approximately two-hour intervals. The library was open for an additional 30 hours per week on the new campus and we were very interested to see how our new extended hours met the needs of our users.

Google Forms

Another change we implemented on the new campus was the introduction of Google Forms. We had previously used Google Sheets to capture and evaluate user count data, but this approach occasionally resulted in operator error. Google Sheets has many of the same features as Microsoft Excel and a similar interface. Because staff could view the entire Sheet, sometimes the wrong table would be completed (e.g. the count at 10 AM would accidentally be recorded where the count for 12 PM should have been). Each entry required a double touch on the iPad to activate the ability to edit the cell, which was tedious. Also, because each count was recorded in its own table, it was not possible to easily and quickly synthesize counts based on time, day of the week, or location within the library. Instead, the supervisor had to time-consumingly total the columns, copy the data to a new Sheet, and then total the rows (for a grand total for that time) into simpler tables before the data could be translated into charts or graphs.

Now we use Google Forms to collect user count data. The Form we created is simple, user-friendly, requires little to no instruction for completion, and requires a single rather than double touch to enter data. The Form asks for the number of users in each group study room, carrels and single seaters outside the group study rooms, silent study room, library main hall, the

Center for Digital Scholarship, our Instruction Room, the Campus Technology Center, and the

Advanced Media Studio. For the first headcount of the day, we record whether any users are

waiting to enter the library. Essentially, we count users separately in each space inside the

library. The order of completion of the form follows a logical pathway through the library:

spaces that are next to each other in real life are listed next to each other on the form. If the space is not in use, staff record nothing (in other words, they don't have to input zero if there are no users in a given space). We count only the number of users; we do not record their activity or chosen seating location because at this time we are most interested in the number of people using the library at different times of day, not necessarily how they are using the space. We do not count library staff. To date, staff and students who use the Form are happy with it and have not had problems completing it. See figure 1.

Figure 1

Silent Study Room

Library Main Hall

360 (on the main floor beside CDS)

Center for Digital Scholarship (CDS)

Instruction Room 303

Campus Technology Center

Advanced Media Studio

☐ Send me a copy of my responses.

Submit

Never submit passwords through Google Forms.

Unfortunately, wifi access in our library can be spotty in places. Happily though, Google Forms only requires network access to initially load the Form and to submit it, which can easily be done from a location with stable wifi.

Working with the data

We continue to use Google Sheets to evaluate user count data. After staff click submit, the responses are automatically entered in the "responses" Google Sheet, including the date and time that the headcount was taken. A supervisor must manually total the count on the sheet (column C). However, this is straightforward; it involves copying the formula from the row above and dragging to fill the completed rows. We generally do this about once per week. See figure 2.

Figure 2

Timestamp	TOTAL	441	360 (on the main floor beside CDS)	Carrels and Single seaters	Silent Study Room	Library Main Hall	Instruc Room 303	Campus Technolo Center	Advanced Media Studio
Tuesday, December 8, 2015, 12:08:20 AM	89				10	49			
Tuesday, December 8, 2015, 1:08:01 AM	74	2			9	36		5	
Tuesday, December 8, 2015, 1:51:28 AM	51				9	22		6	
Tuesday, December 8, 2015, 9:06:44 AM	14					11		3	
Tuesday, December 8, 2015, 11:06:33 AM	44			2	5	28		4	1
Tuesday, December 8, 2015, 2:56:16 PM	96			1	1	62		8	3
Tuesday, December 8, 2015, 5:08:41 PM	95		1	2	6	51		10	1
Tuesday, December 8, 2015, 7:15:01 PM	95	2			15	39		7	
Tuesday, December 8, 2015, 9:31:16 PM	101	1		1	4	67		3	
Tuesday, December 8, 2015, 11:15:20 PM	119	1			16	84		4	
Wednesday, December 9, 2015, 12:05:32 AM	130	4			12	77		7	
Wednesday, December 9, 2015, 1:20:00 AM	89	2			10	51		2	
Wednesday, December 9, 2015, 2:03:20 AM	70				6	37		2	
Wednesday, December 9, 2015, 11:07:09 AM	82	1			4	48		7	9
Wednesday, December 9, 2015, 5:16:26 PM	95	1		1	7	52		11	
Wednesday, December 9, 2015, 7:44:29 PM	77	1				51		6	
Wednesday, December 9, 2015, 9:20:14 PM	109				16	47		13	
Wednesday, December 9, 2015, 11:11:30 PM	122	1			17	61		14	

Next, a supervisor copies the total for the corresponding count to a second Google Sheet. While this could be automated by linking the cells, we prefer to do this manually for quality control. We aim to count library users every two hours, plus an extra count at 1 AM while we evaluate additional extended hours, and a count near closing time. If staff inadvertently count users twice during the same two-hour window, conduct the headcount but forget to submit the Form in a timely manner, or do not conduct the headcount, we can adjust accordingly. We also add notes on irregular days on the Sheet (for example, holidays, special events in the library, and exams), which may cause an abnormal number of patrons. See figure 3.

Figure 3

WEEK 16				Finals			
December	13	14 *	15	16	17	18	19
	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Before opening	1						
8am-10am	6	8	14	8	9		4**
10:01-noon	72	69	73	65	77	15**	37
12:01-2pm	96	85		79	78	40	35
2:01-4pm	102	103	154	150	132	90	49
4:01-6pm	133	122	186	170	100	102	51
6:01-8pm	121	124	186	137	69	81	24
8:01-10pm	153	167	232	143	45**	60**	19
10:01-24:00	163	152	198	154			17
24:00:00	138	148	125	124			11
1:00 AM	89	104	103	95			7
2:00:00	59	77	56	76			5
		*Last day of classes			**Extended hours		

At this time, we are most interested in the total number of users present in the library at particular times throughout the day as we evaluate our hours and staffing, including student workers, who are new to our library. However, the beauty of Google Forms is that if/when we

become interested in, for example, the number of users of our group study rooms in general, or in

specific rooms, we can easily evaluate this data.

Strengths and challenges of Google Forms

NYU is a subscriber to Google Apps for Education, however, the Google Forms and

Sheets functionality are available to anyone who registers for a (free) Google account. Since

NYU subscribes to Google Apps, everyone on staff, as well as our student workers, have Google

accounts. We do not need to set up any separate or dedicated account for this purpose. Libraries

who do not subscribe to Google Apps would need to create Google account(s) in order to use

Google Forms (although it is not necessary to have a Google account in order to complete the

Form, depending on the Form settings).

Additionally, Google permissions allow separate management of Form completion and

data manipulation. Thus, all staff who conduct user counts may access and submit the Form, but

only supervisors may edit the data. This is key for maintaining data integrity and perhaps the

greatest gain we've noticed since moving from using Google Sheets exclusively. However,

during a recent break, we discovered that we had restricted the permissions a bit too much and

had to have numerous email exchanges with the only supervisor with access to allow others to

edit the document.

Another strength of Google Forms is the ability to modify the form without corrupting

data. During preparation of this manuscript, the author noticed that the Form did not follow a

logical sequence and required staff to scroll up and down while walking around the library to

complete the Form. It's possible to reorder questions (or even add questions) on the Form and

the Sheet with the data will automatically update such that data remains in the appropriate

column.

We include data validation for each question so that the numeric keypad displays by default on the iPad rather than letters. We set the validation for each field to number, whole number. This step is important as it eliminates the need for the user to select the numeric keypad for each entry in the Form, a tedious step. During the writing of this article, Google Forms came out with a new version, which we tried, but found that we preferred the "old" version, since it was easier to click on the fields and the text was smaller, though still legible.

Google Forms is an excellent tool for collecting user data on a tablet. We have no intention of changing course and using other software. That said, it is not perfect. Now that we have been taking user counts this way for over a year, the sheet with the results is growing unwieldy. Going forward, we will create a new Form each academic year to limit the length of the results.

While we are fortunate to have an iPad dedicated to this purpose, with the Form set as the homepage of every installed browser, libraries that are unable to devote a device will need to ensure that staff have easy access to the Form. This could be accomplished by using a URL-shortener such as bit.ly to create an easy-to-remember address that staff can type in to bring up the Form.

Google Forms compared to other tools

Suma is a robust assessment toolkit for analyzing and collecting data. According to Thompson (2015), the primary benefit of Suma is the ability to "specify multiple characteristics for each type of count" (p. 7). However, Thompson found that for their library, selecting each characteristic for each count was labor intensive, particularly when only one or two users were in a given space (p. 7). Additionally, Suma is "a PHP-based application that will need to be installed on a web server with a MySQL database." (NCSU Libraries, n.d., p. 2) Thus, for our

purposes, where most spaces contain only a handful of users, plus the author's unfamiliarity with

MySQL databases, Suma seemed to be overly complex. Google Sheets may not be as powerful

at data evaluation and manipulation, but it is simpler to set up a Form and use Google Sheets.

Thompson (2015) found Counter+ to be the easiest-to-use app she evaluated, requiring a

simple click to count users, but it had its limitations. Notably, Counter+ would only allow eight

counters, and the data had to be uploaded via email after each count (p. 7). Today, Counter+ can

include up to ten counters (Leung 2016), but for our purposes this is still not enough (and we are

a small library). Google Forms, on the other hand, can be expanded or contracted as necessary.

CloudOn, the tool selected by CSUSM and described by Thompson (2015), is quite

similar to our previous model of using Google Sheets both to collect and analyze data.

Thompson used CloudOn to access an Excel spreadsheet stored in Dropbox, a cloud-based

storage site (p. 7). Because CloudOn allowed access to the final, full-featured Excel spreadsheet,

they could make changes or "add comments on the fly" (p. 8). In our experience, this ability to

access the final spreadsheet by anyone collecting data was a negative because it occasionally

resulted in operator error. Because CloudOn is cloud based, Thompson discovered that it

required constant connectivity to the internet to function, and a slow connection impeded data

entry (p. 9). As mentioned above, Google Forms only requires connectivity to load and submit

the Form. The tablet does not need to be constantly connected to wifi, allowing staff to move

about the library without concern for connectivity. Additionally, Thompson (2015) found that

they had to create their "data entry spreadsheet with the tablet environment in mind. For

instance, we prefilled all the data cells with zeros so that no data entry was needed for library

spaces with no users" (p. 11). Google Forms addresses both of these concerns by automatically

adjusting for the size of the screen and assuming zero when nothing is entered.

Conclusion

Google Forms are an easy-to-use and create system for collecting user count data on a mobile device such as an iPad. Libraries interested in gathering data on space usage in their libraries should investigate whether Google Forms and Google Sheets are an appropriate solution to their needs. For NYUAD, the addition of Google Forms to our use of Google Sheets was a good one. It has streamlined data collection and manipulation, resulted in far fewer errors, and saved significant time, particularly in evaluating results. It also allows library administration to use hard data to back up our assertions regarding space usage and staffing. Our intention is to continue using Google Forms and Sheets for the foreseeable future.

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