Behavior Patterns of *Engineering Design Graphics Journal* Visitors

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Abstract

Google Analytics reports on selected visitor and visitor interaction data were produced and examined for their potential to improve Engineering Design Graphics Journal visitor and visitor interaction experiences. While the literature continues to cite limitations on the use of summary statistics collected by GA, and encourages journal managers and editors to augment GA statistics with data collected by other means, GA statistics can provide insights and assist journal managers and editors in their development of initiatives to improve visitor interaction experiences.

Introduction

On September 28, 2010, the *Engineering Design Graphics Journal (EDGJ)* began collecting visitor and visitor interaction data with the aid of Google Analytics (GA). In April 2011, findings on selected high level statistics for the first month and a half of visits to the *Journal* were published (Chin, 2011a). In June 2011, findings on article visit statistics or what GA refers to as Portable Document Format Page Titles for the first three months of visitor interaction was published (Chin, 2011b). Needless-to-say, the publication of a more current report is in order in light of the more stable—as a result of the passing of time—visitor and visitor interaction statistics, the publication of additional of articles including issues of the *Journal* published before the *Journal* migrated to an online only format, and upgrades and changes to GA.

Method

The problem of this study was to identify *EDGJ* improvement opportunities based on *EDGJ* visitor and visitor interaction data collected by GA. The purpose of this study was to examine the high level GA statistics associated with visits and visitor interaction with *EDGJ* from when GA began collecting visitor data on the *Journal* until a month after the Engineering Design Graphics Division's 2017 annual conference. In response, GA was launched and the date range for the extraction of reports was set to Sep 27, 2010 - Jul 26, 2017. Two Audience reports were extracted—Overview and Active Users, or reports that provided insight into the characteristics of *EDGJ* users. In addition, two Behavior reports were extracted—Overview and Site Content along with four Site Content reports, or reports that include but were not limited to the number of users interacting with *EDGJ*, the number of sessions those users created, and the pages they visited.

Results

Audience, Overview

The Audience Overview report (see Figure 1) provides statistics on visitor characteristics. With the aid of Cookies, GA compiles data on whether a visitor had already viewed a page or if they are a new visitor. Hey (2016) cautions that the results may not be particularly accurate. Cookies can sometimes be deleted by visitors or they might have already viewed pages using a different computer. The trend is, however, what matters most. If there are a large number of returning visitors, it can be concluded that the site is interesting for the visitors and provides them with useful content. If quite a large number of new visitors visit your site, this could mean that the branding campaign is doing quite well. The relationship between the ratio of new/returning visitors and the various measures must be ascertained along with a review of the page content. The ratio of returning users to new users was 11% to 89% during the first 1.5 month of data collection by GA (Chin, 2011a). For the first three months of data collection by GA, the ratio of returning users to new users was 13% to 89%, which is where it currently stood when the most recent reports were produced.
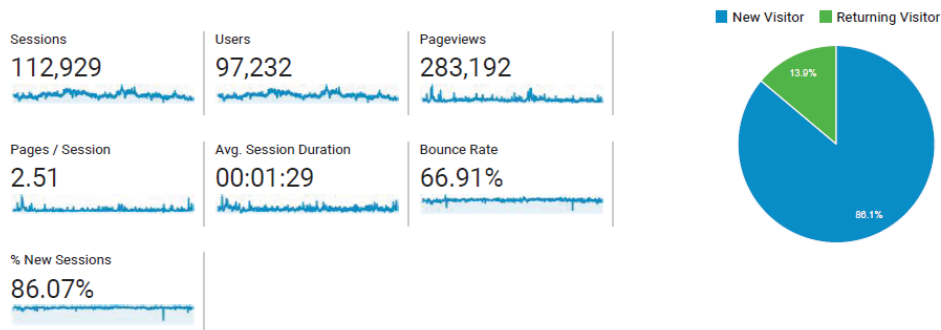

Figure 1. Audience, Overview statistics.

Audience, Active Users

The Active Users report (see Figure 2) provides statistics on what GA refers to as 1-Day, 7-Day, 14-Day, and 30-Day Active Users, relative to the last day in the date range of the report. For this study, it was Jul 26, 2017. In cases where there are a lot of 1-Day Active Users but the numbers drop off for the longer term, the data may suggest that the initial enthusiasm isn't translating into long-term engagement. As an example, users might be visiting but are finding that site doesn't really meet a need they have or that it doesn't capture their interest. For *EDGJ*, just the opposite appears to be the case for the duration of data collection.
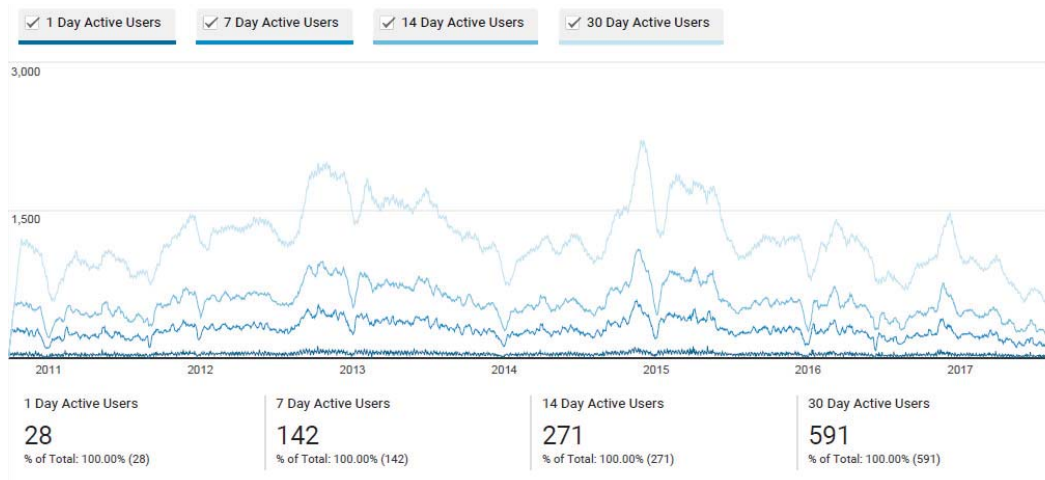
Figure 2. Audience, Active Users statistics: 1-day, the lowermost line; 30-day, the uppermost.

Behavior, Overview

The Behavior Overview report provides a sense for the traffic *EDGJ* receives and numerous other metrics, including Page views or the total number of pages viewed, Unique Pageviews or the number of individual visitors who have viewed a specific page at least once during a visit, Avg. Time on Page or the average amount of time visitors spend viewing a specific page or set of pages, Bounce Rate or the proportion of single-page visits or the number of visits in which visitors left *EDGJ* from the same page on which they entered, and % Exit or the proportion of visitors who exit from a page or set of pages.

Behavior, Site Content, Pages

The Site Content, Pages report (see Figure 3) identifies the most frequently visited sites along with their associated data—pageviews, unique pageviews, average time on page, entrances,
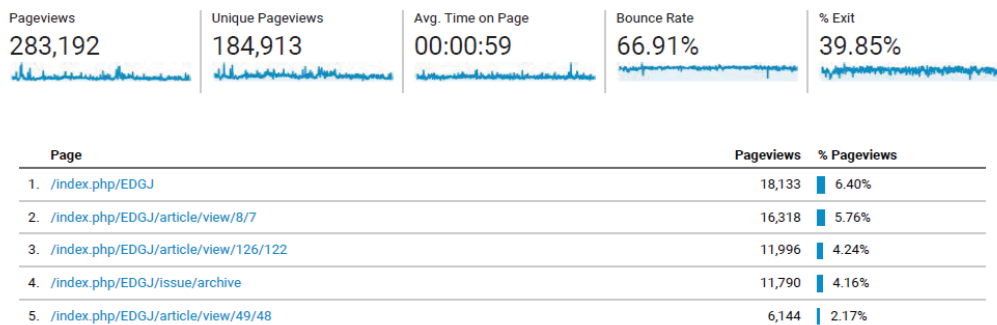

Figure 3. Behavior, Overview statistics.

bounce rate, % exit and page value top content along with the average amount of revenue each page generates, if applicable. Bounce rate as an example refers to the proportion of visitors who don't take any action and leave from the same page on which they landed. In contrast, exit rate refers to the proportion of visitors who browse more than one site page before leaving.

Page	Pageviews	Unique Pageviews	Avg. Time on Page	Entrances	Bounce Rate	% Exit	Page Value
	283,192 % of Total: 100.00% (283,192)	184,913 % of Total: 100.00% (184,913)	00:00:59 Avg for View: 00:00:59 (0.00%)	112,847 % of Total: 100.00% (112,847)	66.91% Avg for View: 66.91% (0.00%)	39.85% Avg for View: 39.85% (0.00%)	$0.00 % of Total: 0.00% ($0.00)
1. /index.php/EDGJ	18,133 (6.40%)	14,081 (7.61%)	00:01:00	13,219 (11.71%)	46.49%	43.09%	$0.00 (0.00%)
2. /index.php/EDGJ/article/view/8/7	16,318 (5.76%)	11,519 (6.23%)	00:01:44	11,431 (10.13%)	68.19%	70.03%	$0.00 (0.00%)
3. /index.php/EDGJ/article/view/126/122	11,996 (4.24%)	8,994 (4.86%)	00:02:50	8,251 (7.31%)	72.56%	70.51%	$0.00 (0.00%)
4. /index.php/EDGJ/issue/archive	11,790 (4.16%)	5,603 (3.03%)	00:00:24	2,639 (2.34%)	39.67%	14.88%	$0.00 (0.00%)
5. /index.php/EDGJ/article/view/49/48	6,144 (2.17%)	4,611 (2.49%)	00:02:46	4,363 (3.87%)	73.46%	71.78%	$0.00 (0.00%)

Figure 3. Site Content, Pages statistics.

Behavior, Site Content, Content Drill Down

The Site Content, Content Drill Down report (see Figure 4) contains information about the page views, unique page views, bounce rate and % exit for each site page. By clicking each page link in the report, more detailed information on the particular page can be retrieve to help determine how visitors are finding the site's content. A drill down was completed on second through the tenth sites. None were relevant to *EDGJ*. As well, the relevance of the remaining 407 could be called into question and need to be examined further.

Page path level 1	Pageviews	Unique Pageviews	Avg. Time on Page	Bounce Rate	% Exit
	283,192 % of Total: 100.00% (283,192)	184,913 % of Total: 100.00% (184,913)	00:00:59 Avg for View: 00:00:59 (0.00%)	66.91% Avg for View: 66.91% (0.00%)	39.85% Avg for View: 39.85% (0.00%)
1. /index.php/	280,548 (99.07%)	182,934 (98.93%)	00:00:59	66.85%	39.56%
2. /	1,346 (0.48%)	1,203 (0.65%)	00:04:38	77.19%	84.84%
3. /sharebutton.to	349 (0.12%)	121 (0.07%)	00:00:00	4.13%	34.67%
4. /www1.free-share-buttons.top	80 (0.03%)	27 (0.01%)	00:00:00	0.00%	33.75%
5. /?from=http://www.traffic2cash.xyz/	64 (0.02%)	64 (0.03%)	00:00:00	100.00%	100.00%

Figure 4. Site Content, Content Drill Down statistics.

Behavior, Site Content, Landing Pages

The Site Content, Landing Pages report (see Figure 5) shows on what pages visitors landed/started. Visitors will access *EDGJ* and its associated pages by numerous means. Some will type in the URL directly, some will access the *Journal* through search engines, while others may

click on a link shared on a Twitter feed. This report will help identify the pages on which visitors are landing/starting when they first enter *EDGJ* site. Based on data from this report, the *Journal* can determine how users are interacting with the site. As an example, if the report shows that some pages have a substantially higher bounce rate than others, the *Journal* can pursue steps to make high bounce rate pages more engaging.

Landing Page	Acquisition			Behavior			Conversions		
	Sessions	% New Sessions	New Users	Bounce Rate	Pages / Session	Avg. Session Duration	Goal Conversion Rate	Goal Completions	Goal Value
	112,929 % of Total: 100.00% (112,929)	86.11% Avg for View: 86.07% (0.04%)	97,242 % of Total: 100.04% (97,200)	66.91% Avg for View: 66.91% (0.00%)	2.51 Avg for View: 2.51 (0.00%)	00:01:29 Avg for View: 00:01:29 (0.00%)	0.00% Avg for View: 0.00% (0.00%)	0 % of Total: 0.00% (0)	$0.00 % of Total: 0.00% ($0.00)
1. /index.php/EDGJ	13,219 (11.71%)	71.96%	9,512 (9.78%)	46.49%	7.11	00:03:49	0.00%	0 (0.00%)	$0.00 (0.00%)
2. /index.php/EDGJ/article/view/8/7	11,431 (10.12%)	96.79%	11,064 (11.38%)	68.19%	1.43	00:00:44	0.00%	0 (0.00%)	$0.00 (0.00%)
3. /index.php/EDGJ/article/view/12 6/122	8,251 (7.31%)	88.92%	7,337 (7.55%)	72.56%	1.40	00:01:05	0.00%	0 (0.00%)	$0.00 (0.00%)
4. /index.php/EDGJ/article/view/4 9/48	4,363 (3.86%)	84.30%	3,678 (3.78%)	73.46%	1.42	00:01:05	0.00%	0 (0.00%)	$0.00 (0.00%)
5. /index.php/EDGJ/article/view/11 9/115	4,361 (3.86%)	94.31%	4,113 (4.23%)	80.55%	1.27	00:00:39	0.00%	0 (0.00%)	$0.00 (0.00%)

Figure 5. Site Content, Landing Pages statistics.

Behavior, Site Content, Exit Pages

The Site Content, Exit Pages report (see Figure 6) shows where visitors are exiting the site. Purely Branded (2017) suggests that pages might have a high proportion of exits if the information on them are not deemed relevant or valuable. Some pages are expected to have higher exit rates based on where they fall in the desired visitor path. The pages may have high exit rates because visitors found what they wanted. Nevertheless, high exit rate sites need to be identified along with the reason behind why visitors are leaving.

Page	Exits	Pageviews	% Exit
	112,847 % of Total: 100.00% (112,847)	283,192 % of Total: 100.00% (283,192)	39.85% Avg for View: 39.85% (0.00%)
1. /index.php/EDGJ/article/view/8/7	11,428 (10.13%)	16,318 (5.76%)	70.03%
2. /index.php/EDGJ/article/view/126/122	8,458 (7.50%)	11,996 (4.24%)	70.51%
3. /index.php/EDGJ	7,813 (6.92%)	18,133 (6.40%)	43.09%
4. /index.php/EDGJ/article/view/49/48	4,410 (3.91%)	6,144 (2.17%)	71.78%
5. /index.php/EDGJ/article/view/119/115	4,351 (3.86%)	5,481 (1.94%)	79.38%

Figure 6. Site Content, Exit Pages statistics.

Discussion

Google Analytics generates a plethora of descriptive statistics *EDGJ* can use to make improvements to their site: improvements that can result in improved visitor interaction experiences. New visits and return visits as an example: getting visitors to the site helps to validate and sustain the site and its research agenda. Getting them to revisit, again and again, and to become followers, helps to further validate the site and its research agenda. The Content Drill Down report is helpful for websites that have subfolders or something similar. This report permits *EDGJ* to see the site's top folders of content and the top content within that folder. Metrics for landing pages include Acquisition (sessions, % new sessions and new users), Behavior (bounce rate, pages per session and average session duration) and Conversions based on site goals. With these data, *EDGJ* can determine which pages are most likely to convert visitors. Exit Pages reports show the last pages with which visitors interacted before exiting the site. These pages may be the ones *EDGJ* may want to look at to see what can be done to keep visitors engaged. One of the best ways to keep visitors engaged is to add more links to other page on the *Journal* site. Key now is for *EDGJ* to identify its improvement priorities and to capitalize on what the Google Analytics reports have to suggest.

Ultimately the division will need to identify the balance it wishes to maintain between new and returning visitors. Related and while not limited to, pursuit of that which follows, which are not in any order of importance, need to be prioritized, their metrics specified, and the resources need to be allocated to sustain the metrics: (a) which feature articles attract the greatest attention and how consistent are they with the Division and the Journal's mission, (b) which feature articles do visitors spend most of their time, (c) from which feature articles do visitors exit the EDGJ site, and (d) are the high bounce rates for feature articles a result of visitors finding what they want or are the exiting because they article isn't relevant.

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