

Google Analytics 3

RaleighNC.gov Power BI Dashboard

Brianna Hayes

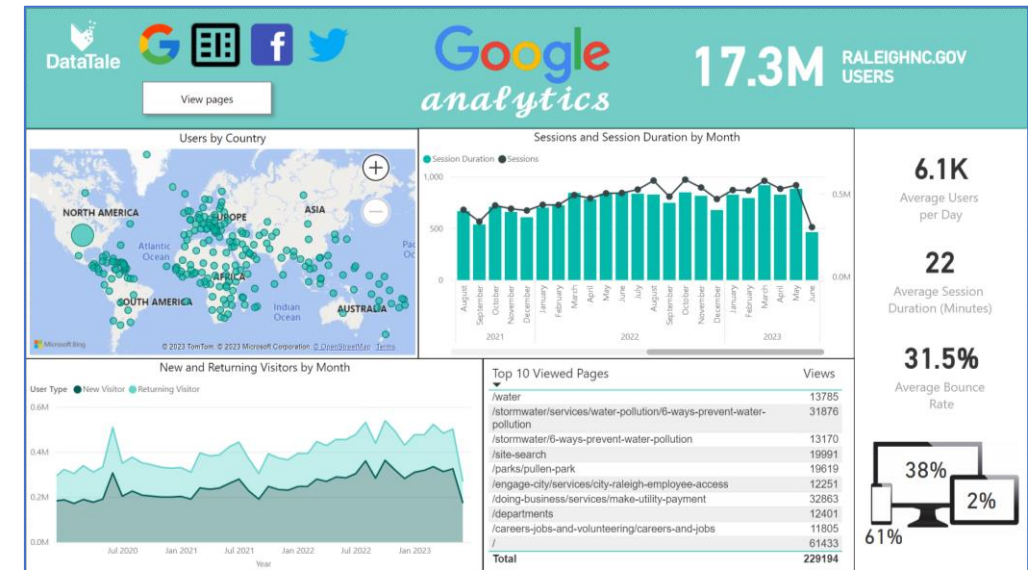
Information Technology Intern – Enterprise Applications and Data
City of Raleigh Municipal Government

Inquiry:

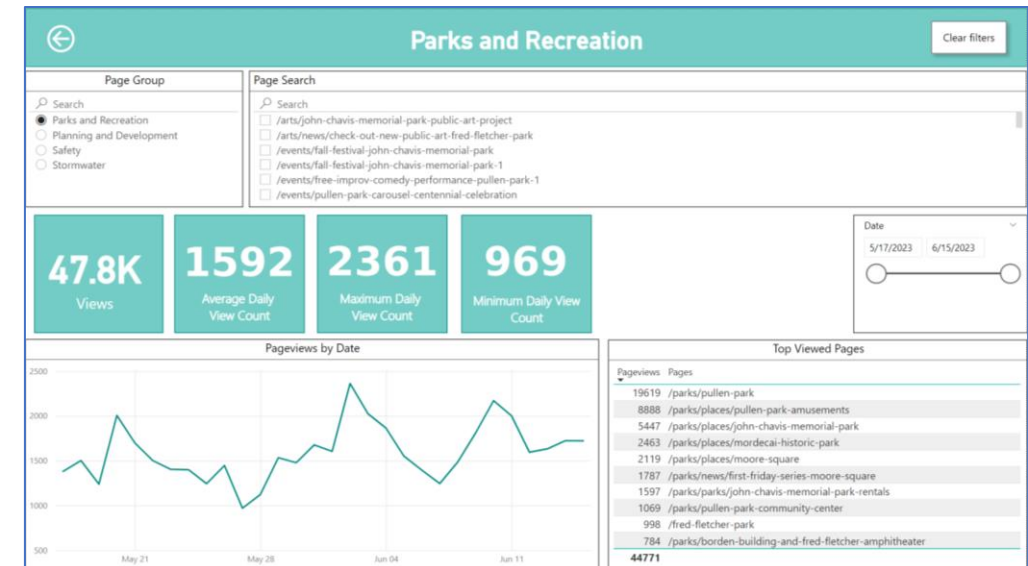
There are thousands of unique pages across the city government's website – sometimes hundreds belonging to one department. So, what kind of sustainable technology solution can be developed so departmental staff can effectively sift through them and gain insights about pages that are important to them?

Applications:

- Microsoft Power BI
- Microsoft Excel
- Google Analytics 3

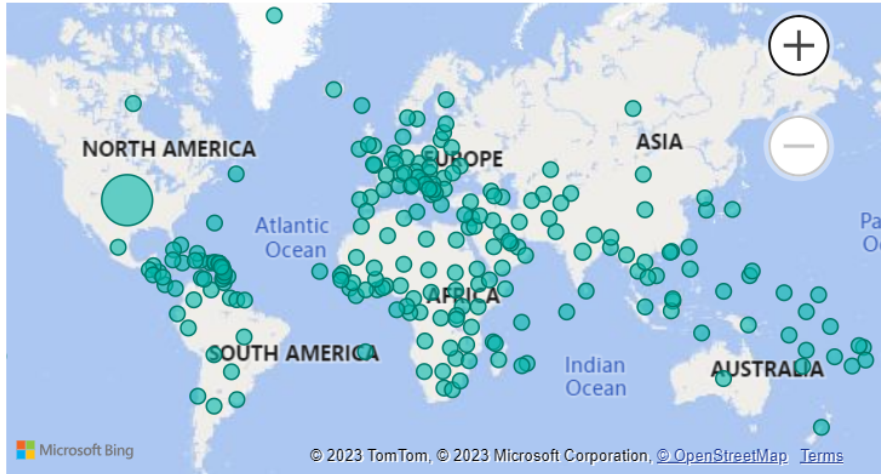


Site Analytics: Metrics for site-wide insights, all pages

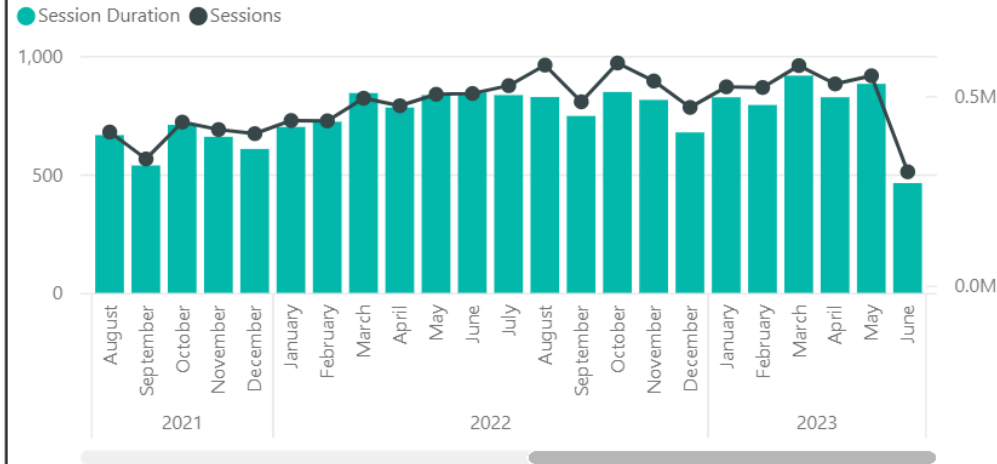


Page Analytics: Metrics for groups of pages or individual pages

Users by Country



Sessions and Session Duration by Month



6.1K

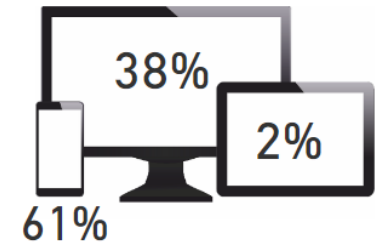
Average Users
per Day

22

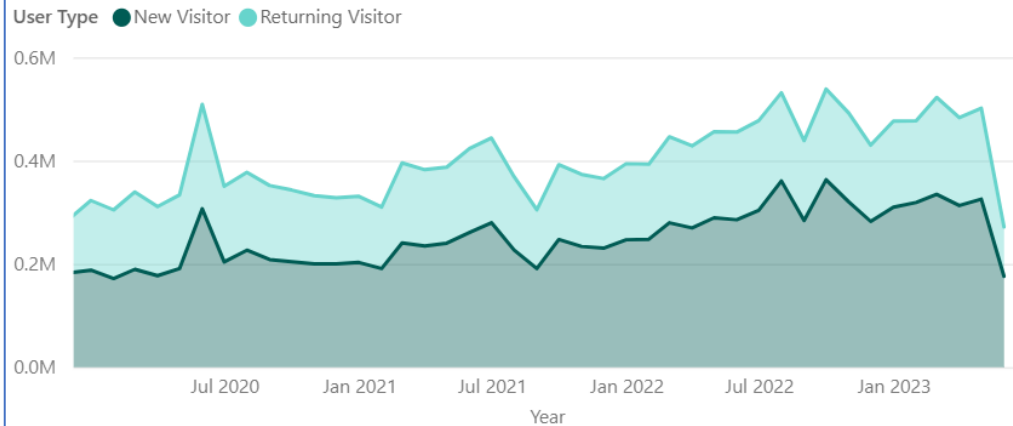
Average Session
Duration (Minutes)

31.5%

Average Bounce
Rate



New and Returning Visitors by Month

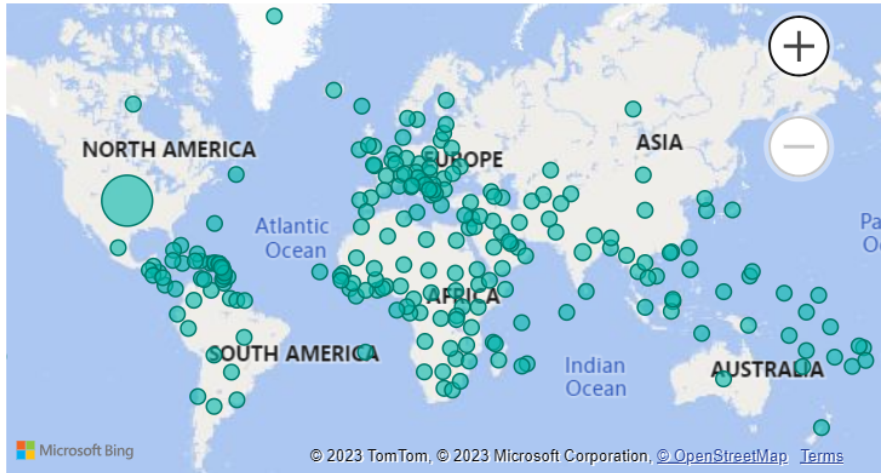


Top 10 Viewed Pages

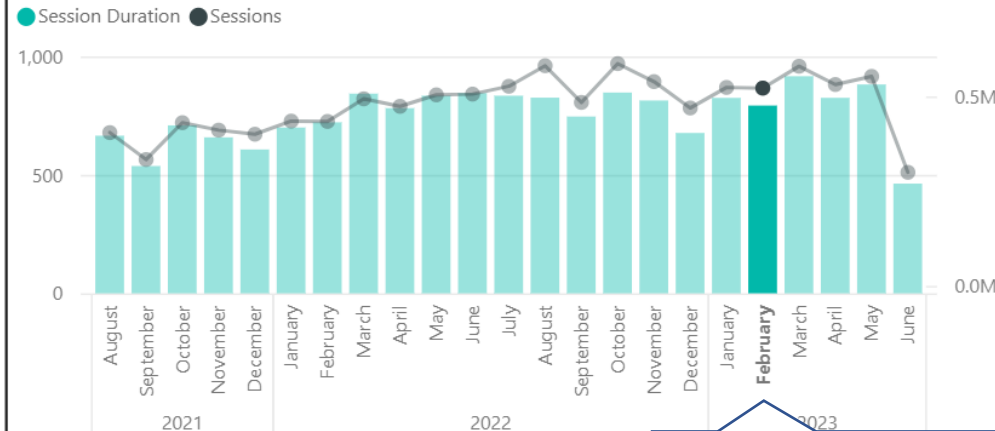
	Views
/	61433
/doing-business/services/make-utility-payment	32863
/stormwater/services/water-pollution/6-ways-prevent-water-pollution	31876
/site-search	19991
/parks/pullen-park	19619
/water	13785
/stormwater/6-ways-prevent-water-pollution	13170
/departments	12401
/engage-city/services/city-raleigh-employee-access	12251
/careers-jobs-and-volunteering/careers-and-jobs	11805
Total	229194

[View pages](#)

Users by Country



Sessions and Session Duration by Month



8.5K

Average Users
per Day

28

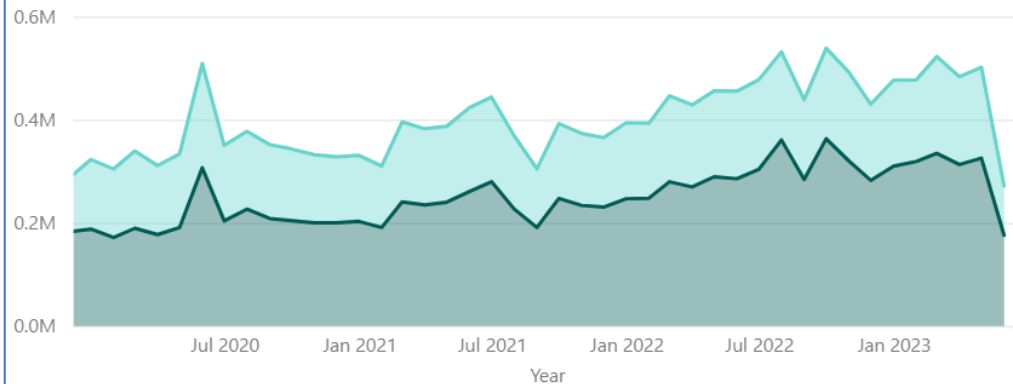
Average Session
Duration (Minutes)

38.9%

Average Bounce
Rate

New and Returning Visitors by Month

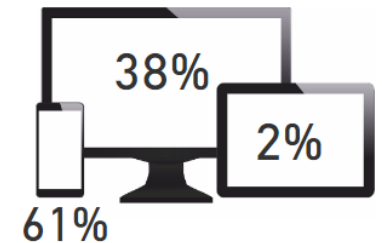
User Type ● New Visitor ● Returning Visitor



Top 10 Viewed Pages

/	32888
/doing-business/services/make-utility-payments	32888
/stormwater/services/water-pollution/6-ways-prevent-water-pollution	31876
/site-search	19991
/parks/pullen-park	19619
/water	13785
/stormwater/6-ways-prevent-water-pollution	13170
/departments	12401
/engage-city/services/city-raleigh-employee-access	12251
/careers-jobs-and-volunteering/careers-and-jobs	11805
Total	229194

When users click on a column in this visual, the showcard metrics to the right will change to only that of the selected month.





Users select the desired page group to display metrics about all pages within it.

Parks and Recreation

Clear filters

Page Group

Search

- ☒ Parks and Recreation
- ☐ Planning and Development
- ☐ Safety
- ☐ Stormwater

Page Search

Search

- ☐ /arts/john-chavis-memorial-park-public-art-project
- ☐ /arts/news/check-out-new-public-art-fred-fletcher-park
- ☐ /events/fall-festival-john-chavis-memorial-park
- ☐ /events/fall-festival-john-chavis-memorial-park-1
- ☐ /events/free-improv-comedy-performance-pullen-park-1
- ☐ /events/pullen-park-carousel-centennial-celebration

47.8K

Views

1592

Average Daily
View Count

2361

Maximum Daily
View Count

969

Minimum Daily View
Count

This slicer allows users to view metrics about individual pages within the selected group, if desired.

Date

5/17/2023

6/15/2023



Pageviews by Date



Top Viewed Pages

Pageviews	Pages
19619	/parks/pullen-park
8888	/parks/places/pullen-park-amusements
5447	/parks/places/john-chavis-memorial-park
2463	/parks/places/mordecai-historic-park
2119	/parks/places/moore-square
1787	/parks/news/first-friday-series-moore-square
1597	/parks/parks/john-chavis-memorial-park-rentals
1069	/parks/pullen-park-community-center
998	/fred-fletcher-park
784	/parks/borden-building-and-fred-fletcher-amphitheater
44771	



This slicer has a search bar and multi-select feature if users want to view metrics only about specific pages.

Parks and Recreation

Clear filters

Page Group



Search

- ☒ Parks and Recreation
- ☐ Planning and Development
- ☐ Safety
- ☐ Stormwater

Page Search



pullen

- ☐ /events/free-improv-comedy-performance-pullen-park-1
- ☐ /events/pullen-park-carousel-centennial-celebration
- ☐ /parks/luminocity-festival-pullen-park
- ☐ /parks/news/luminocity-festival-pullen-park
- ☐ /parks/places/pullen-park-amusements
- ☒ /parks/pullen-park

Users can easily remove any selections they have made in the slicers with this button.

19.6K

Views

654

Average Daily View Count

1004

Maximum Daily View Count

370

Minimum Daily View Count

Date

5/17/2023

6/15/2023



Pageviews by Date



Top Viewed Pages

Pageviews	Pages
19619	/parks/pullen-park
8888	/parks/places/pullen-park-amusements
5447	/parks/places/john-chavis-memorial-park
2463	/parks/places/mordecai-historic-park
2119	/parks/places/moore-square
1787	/parks/news/first-friday-series-moore-square
1597	/parks/parks/john-chavis-memorial-park-rentals
1069	/parks/pullen-park-community-center
998	/fred-fletcher-park
784	/parks/borden-building-and-fred-fletcher-amphitheater

44771



Parks and Recreation

[Clear filters](#)

Page Group

Search

- ☒ Parks and Recreation
- ☐ Planning and Development
- ☐ Safety
- ☐ Stormwater

Page Search

Search

- ☐ /arts/john-chavis-memorial-park-public-art-project
- ☐ /arts/news/check-out-new-public-art-fred-fletcher-park
- ☐ /events/fall-festival-john-chavis-memorial-park
- ☐ /events/fall-festival-john-chavis-memorial-park-1
- ☐ /events/free-improv-comedy-performance-pullen-park-1
- ☐ /events/pullen-park-carousel-centennial-celebration

2361

Views

1592

Average Daily
View Count

2361

Maximum Daily
View Count

969

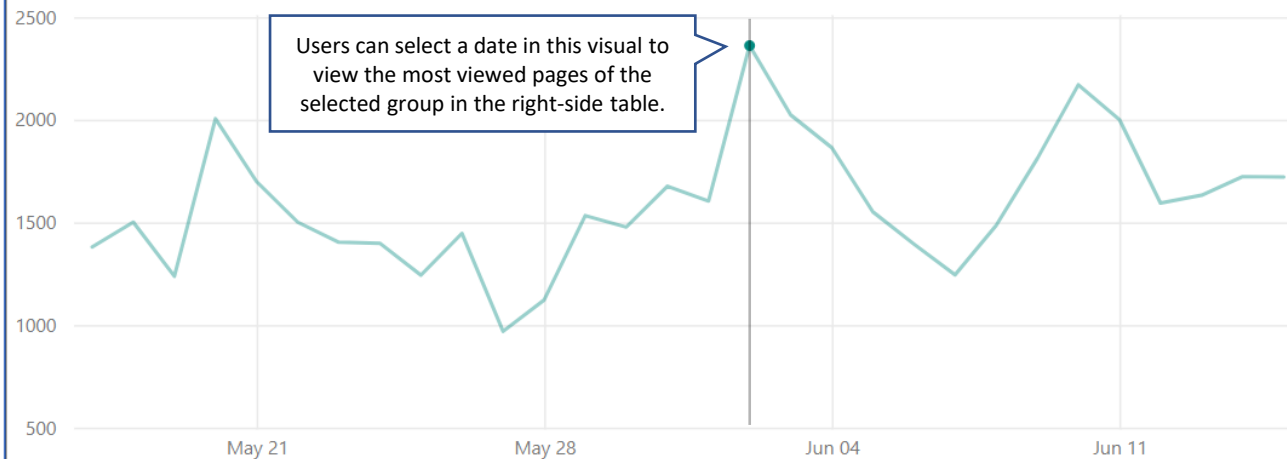
Minimum Daily View
Count

Date

5/17/2023

6/15/2023

Pageviews by Date



Top Viewed Pages

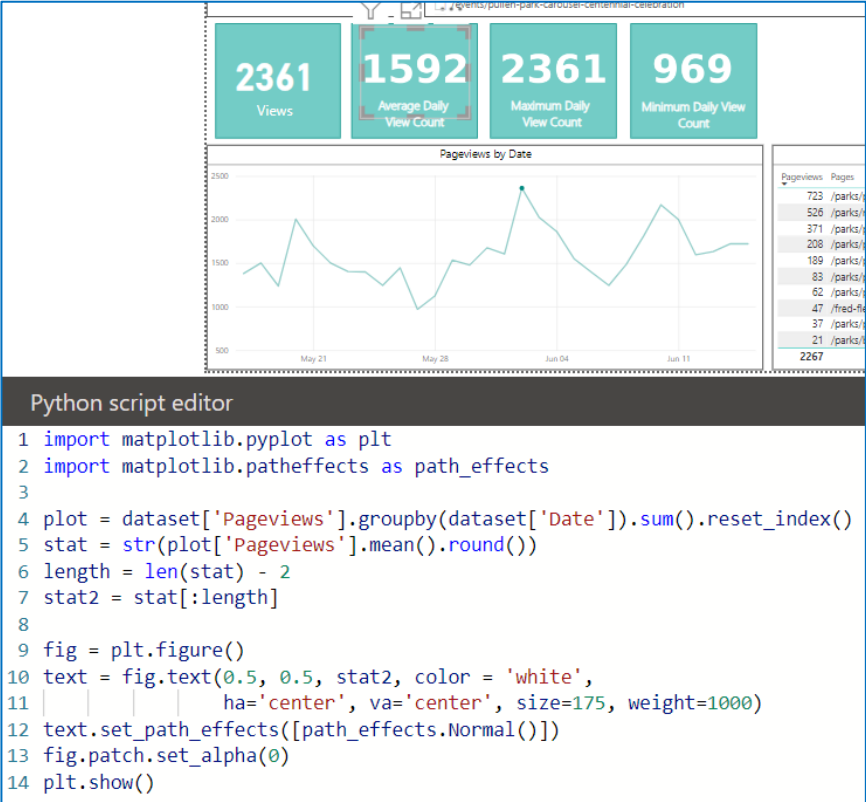
Pageviews	Pages
723	/parks/pullen-park
526	/parks/news/first-friday-series-moore-square
371	/parks/places/pullen-park-amusements
208	/parks/places/john-chavis-memorial-park
189	/parks/places/moore-square
83	/parks/places/mordecai-historic-park
62	/parks/parks/john-chavis-memorial-park-rentals
47	/fred-fletcher-park
37	/parks/pullen-park-community-center
21	/parks/borden-building-and-fred-fletcher-amphitheater
2267	

Data Methods

Python scripts

The ‘pages’ table lists a record for each page every day it was viewed at least once, along with it’s view count for that day, as seen in screen captures on the far-right. Before implementing python scripts, I displayed the average daily view count by simply finding the average of the view count field. However, I realized this was inaccurate as it needs to be grouped by day.

Python scripts were then implemented for the average, minimum, and maximum view counts, making sure to group by date. The script features the matplotlib library, translating the target statistic into a showcard-type visual.



Page	Date	Pageviews
/parks/community-after-school-program-caps	Thursday, May 23, 2023	0
/parks/greenway-safety-and-rules	Thursday, May 25, 2023	6
/parks/news/2023-acc-womens-rowing-championships	Thursday, May 25, 2023	6
/parks/news/cinema-and-dessert-rodeo	Thursday, May 25, 2023	6
/parks/outdoor-recreation	Thursday, May 25, 2023	6
/parks/parks/wildlife-and-pollinator-program	Thursday, May 25, 2023	6
/parks/places/leesville-community-park	Thursday, May 25, 2023	6
/parks/raleigh-rockets-track-club-2023	Thursday, May 25, 2023	6
/parks/roanoke-park	Thursday, May 25, 2023	6
/parks/services/play-anywhere-raleigh-parks/raleigh-4th-jul	Thursday, May 25, 2023	6
/parks/tree-impact-permit	Thursday, May 25, 2023	6
/parks/tree-planting	Thursday, May 25, 2023	6
/permits/commercial-building-review-information	Thursday, May 25, 2023	6
/permits/filming-and-photography-requests	Thursday, May 25, 2023	6
/permits/front-yard-parking	Thursday, May 25, 2023	6
/permits/residential-building-code-adus	Thursday, May 25, 2023	6
/places/rocky-branch-greenway	Thursday, May 25, 2023	6
/planning/services/community-gardens	Thursday, May 25, 2023	6
/projects?page=4	Thursday, May 25, 2023	6
/projects/baileywick-park-improvements	Thursday, May 25, 2023	6

Page	Date	Pageviews
/safety/fire-department-ranks	Monday, May 29, 2023	12
/safety/fire-department-ranks	Thursday, May 18, 2023	13
/safety/fire-department-ranks	Saturday, June 3, 2023	14
/safety/fire-departments-diversity-statement	Monday, May 22, 2023	2
/safety/fire-departments-diversity-statement	Tuesday, June 6, 2023	1
/safety/fire-departments-diversity-statement	Tuesday, May 23, 2023	1
/safety/fire-departments-diversity-statement	Wednesday, May 24, 2023	1
/safety/fire-departments-diversity-statement	Thursday, May 18, 2023	1
/safety/fire-departments-diversity-statement	Wednesday, June 7, 2023	3
/safety/fire-education/fire-newsletter-december-2022-edition	Thursday, June 8, 2023	2
/safety/fire-education/fire-newsletter-december-2022-edition	Monday, May 29, 2023	3
/safety/fire-education/raleighs-hazmat-team	Wednesday, May 17, 2023	1
/safety/fire-education/raleighs-hazmat-team	Tuesday, May 30, 2023	1
/safety/fire-education/raleighs-hazmat-team	Thursday, June 1, 2023	1
/safety/fire-education/raleighs-hazmat-team	Sunday, June 11, 2023	1
/safety/fire-education/raleighs-hazmat-team	Saturday, May 20, 2023	1
/safety/fire-education/raleighs-hazmat-team	Monday, May 29, 2023	2
/safety/fire-education/raleighs-hazmat-team	Friday, May 19, 2023	2
/safety/fire-education/raleighs-hazmat-team	Thursday, June 8, 2023	2
/safety/fire-education/raleighs-hazmat-team	Monday, May 22, 2023	2
/safety/fire-education/raleighs-hazmat-team	Sunday, May 21, 2023	3
/safety/fire-education/raleighs-hazmat-team	Wednesday, June 14, 2023	3
/safety/fire-education/raleighs-hazmat-team	Monday, June 12, 2023	1
/safety/fire-education/rfd-installs-smoke-alarms	Wednesday, June 14, 2023	1
/safety/fire-education/rfd-installs-smoke-alarms	Wednesday, June 7, 2023	1
/safety/fire-education/rfd-installs-smoke-alarms	Friday, May 26, 2023	2
/safety/fire-education/rfd-installs-smoke-alarms	Tuesday, May 23, 2023	4
/safety/fire-education/rfd-installs-smoke-alarms	Monday, May 29, 2023	4
/safety/fire-inspections	Wednesday, May 17, 2023	17
/safety/fire-newsletter-fall-2022-edition	Monday, May 29, 2023	4

Page grouping

Different departments routinely request a Google Analytics report of their desired web pages each month. Each month, someone has to select the desired pages for each group in Google Analytics and send out the updated reports. To solve this, a Power BI dashboard was developed to give departmental leaders access to the data without requests having to be made. However, the grouping of web pages does not have official documentation in the dataset, making it difficult to simply categorize the web pages in Power BI. Thus, the Power BI dashboard was not acting a sustainable replacement to the monthly reports since it couldn't display insights about a pre-set group of pages.

To solve this problem, I obtained lists of pages being reported to different groups and put them in an excel spreadsheet. I then created unique IDs for each group, and for each page within the groups. This report only contains 4 of many groups, but it is a demonstration of a potential or temporary solution involving groups that the insights are most important to.

The new table was then imported into Power BI, and a relationship was created between the pages listed in the new table and the 'pageviews' table. Now, managers can filter for their group in the dashboard and view insights about their desired group.

GroupID	Group	PageID	Page
1	Parks and Recreation	1008	/fred-fletcher-park
1	Parks and Recreation	1009	/parks/borden-building-and-fred-fletcher-amphitheater
1	Parks and Recreation	1010	/parks/city-raleigh-museum
1	Parks and Recreation	1011	/parks/tucker-house
1	Parks and Recreation	1012	/transit-streets-and-sidewalks/places/moore-square-parking-deck
1	Parks and Recreation	1013	/parks/places/fred-fletcher-park
1	Parks and Recreation	1014	/parks/places/city-raleigh-museum
1	Parks and Recreation	1015	/services/parks/historic-resources-museum
1	Parks and Recreation	1016	/projects/john-chavis-memorial-park
1	Parks and Recreation	1017	/parks/theatre-park-pullen-park
1	Parks and Recreation	1018	/parks/history-john-chavis-memorial-park
1	Parks and Recreation	1019	/parks/news/juneteenth-tours-pope-house-museum
1	Parks and Recreation	1020	/latta-university-historic-park
1	Parks and Recreation	1021	/parks/events/moore-square-market-series
1	Parks and Recreation	1022	/parks/news/moore-square-market-returns-may
1	Parks and Recreation	1023	/historical-resources-and-museum-advisory-board

Edit relationship

Select tables and columns that are related.

Pages

Page	Date	Pageviews
/?fbclid=IwAR0SyQXVGMHFESxBe8p58_AYdtB5L3jx5IF-...	Tuesday, June 13, 2023	1
/?fbclid=IwAR1plesqJir26j9WL1HRDFJuCRzgZd50t0HXgl...	Tuesday, June 13, 2023	1
/?fbclid=IwAR1T_k3GGv10IIRQ6hHjBkOdLAJFCWsg2eyr...	Tuesday, June 13, 2023	1

PageGroups

GroupID	Group	PageID	Page
4	Safety	4000	/safety/update-your-fire-contact-information
4	Safety	4001	/safety/staying-safe-while-staying-warm-fireplaces
4	Safety	4002	/safety/services/survey-911-raleigh-wake-emergency-c...

Cardinality

Many to one (*:1)

Cross filter direction

Single

☒ Make this relationship active

☐ Assume referential integrity

☐ Apply security filter in both directions

OK Cancel