The Reddit Oasis: Analyzing the potential role of location-based subreddits in the alleviation of news deserts

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This mixed-method qualitative-quantitative content analysis examined if content posted to location-based pages on Reddit could alleviate the impact of news deserts. News deserts are areas where, due to newspaper closures and a lack of attention from television stations, a community has no regular news source. Six hundred posts across 20 location-based subreddits were coded based on FCC criteria for information needs. The results indicate content is primarily focused on emergencies and civic information.

Keywords: news desert, community news, social media, reddit

Many communities in the United States have been, and still are, experiencing a journalistic crisis in the form of news deserts (Abernathy, 2016). The term is used to define areas where, due to closures of newspapers and a lack of attention from television stations, a community is left with no regular publication of "credible and comprehensive news and information" as defined by the book *The Rise of a New Media Baron and the Emerging Threat of News Deserts* (Abernathy, 2016). The Southeastern U.S. has been hit the hardest by this phenomenon, with a total of 91 counties without any newspaper. The next-closest region is the Mountain West, with only 28 counties without a newspaper. No Southern state has been hit harder than Georgia. Georgia has 28 counties without a newspaper. That is more counties without a newspaper, either daily or weekly, than all of the West Coast, Mid-Atlantic, and New England states combined (Abernathy, 2018). From 2009 to 2018, the number of newspapers in Georgia decreased 21%, newspaper circulation declined 48%, all while the overall population of Georgia increased about 9.5%. The news deserts are often seen as the result of the chaotic, shifting nature of the modern news economy, one where newspapers have seen their traditional ways of making money shrink due to competition from the Internet and a changing reader base (Napoli et. al., 2019). As newspapers run out of money and close or become shells of their former selves, the areas they cover lose access to vital information.

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The Federal Communications Commission and the University of Southern California released a report called "Review of Literature Regarding Critical Information Needs of the American Public" (Friedland et. al., 2012). In the report, the FCC and USC detail eight key needs that communities have that are fulfilled by local news outlets. Those are: access to clear and credible information during emergencies; access to health information; information about local schools and educational possibilities; information about transportation; short-term and long-term information about the environment and planning; economic information concerning development and opportunities; information about local civic institutions and interaction; and information about the local impact of state and federal-level political decisions. As local newspapers close and news deserts form, those key eight needs are left unfulfilled for millions of Americans (Abernathy, 2016). This has left many mass communication researchers searching for a solution to the news desert problem.

This is where Reddit comes into play. Reddit is one of the biggest digital spaces in the United States. As of March 2020, it is the sixth most-visited website in the U.S. (Alexa, 2020). The site, which might be most-accurately called a "social link aggregator," is not one single thing, but rather a huge network of smaller topic-specific pages called "subreddits," where people can post content, comment on other people's content, and vote positively if they like that content and negatively if they do not (Widman, 2020). There are subreddits for any conceivable topic, from identifying insects to finding friends for table-top games to swimming pool maintenance. And, on Reddit, there are subreddits that have been made to represent geographic areas. Each of the 50 states within the U.S. has its own subreddit, many of which have more than 10 million subscribers. Within each state, there are anywhere from dozens to hundreds of subreddits made for cities, towns, and communities, and many of those subreddits are active hubs where users post about concerns they have in their local area, share stories, announce new restaurants, advertise garage sales, and post photos of lost pets. Within larger cities, there are subreddits dedicated just to specific neighborhoods. There is a ribbon of digital highway crossing the U.S. in the form of these location-based subreddits.

This study analyzed 30 of the top posts in 20 location-based subreddits in Georgia to see if the eight needs identified by the FCC and USC via Friedland et. al. (2012) are potentially being fulfilled by the content posted to those location-based subreddits. The study examined if the subreddits could organically create enough of the right kinds of information, not simply reposted from a local or regional newspapers, but original to the subreddit itself, to alleviate some of the lapses in critical information caused by news deserts.

Literature Review

Uses and Gratification Theory

From a theoretical standpoint, it is important to establish that there are specific needs associated with consuming local news. This study, which looks at the eight needs identified by the FCC and USC (Friedland, et. al., 2012), uses Uses and Gratifications Theory to support the concept of information as a human need. As it was articulated by Katz and Blumler (1974), Uses and Gratifications Theory outlines the reasons people consume media. Among the reasons are cognitive needs, affective needs, personal integrative needs, social integrative needs, and

tension-free or entertainment needs. This study focuses on the cognitive, or informational, needs that are associated with news media.

Key to Uses and Gratification Theory is the idea of the active audience (Kaye & Johnson, 2002). Understanding the audience as a self-aware consumer was a departure from the media-effects focus of the 1940s. At that time, a person's motivations were of less interest to researchers than the impact of media interaction. The shift to emphasizing individual's goals and needs makes the theory uniquely suited for internet-based research. Uses and Gratifications research is adapting to the changing media landscape. Sundar and Limperos (2013) argue that the not all gratifications are the direct result of need and that technology can change a person's needs. They point out that the type of engagement used with online media requires more active interaction and selection of content than traditional media. Ruggiero (2000) said that while the question remains the same - why do people use one form of communication over another - there are new concepts that need consideration in our understanding of Uses and Gratification. He introduced these additional concepts: interactivity, demassification, hypertextuality, asynchroneity and interpersonal aspects of mediated communication. He also pointed out that Uses and Gratifications Theory provided a "cutting edge" theoretical approach for new media (27). Use of the internet, and by extension a location-based subreddit, may therefore be best interpreted through a Uses and Gratifications lens.

News Deserts

News deserts are geographic areas where key issues and events are no longer covered journalistically in daily or weekly newspapers or via dedicated professional news websites (Abernathy, 2016). From 2008 to 2018, more than one in five newspapers ceased operation. The newspaper closures have disproportionately been in areas not typically serviced by either larger metro daily newspapers or local TV news stations.

As Abernathy (2018) describes it, the news deserts are expanding quickly in areas that may have vastly different demographics from one another, from inner-city neighborhoods to affluent suburbs on the periphery of metro areas to rural agricultural towns. Those areas were once serviced by smaller local publications, but since 2004, almost 1,800 local newspapers have shut down. The reasons for this sharp decline are primarily economic. Newspaper circulation over the last 15 years has decreased from 122 million to 73 million, and decreasing circulation means less advertising revenue. Demographically, people who live in the counties that are considered either total news deserts or emerging news deserts have a five percentage-point higher rate of poverty, have a medium income $14,000 lower, and have a 14 percentage-point lower rate of people with a college degree. The lower income also means less advertising revenue for a newspaper or news product wishing to operate within that area. The period of growth for news deserts also correlates with the trend of newspapers being purchased by larger and larger chains that consolidate, and to make up for the cost of consolidation, tend to cut reporters, editors and photographers, along with shutting down bureau offices and constricting coverage area (Fox, 2019).

The shutdown of thousands of local papers has left 3,143 counties in the U.S. without a single newspaper or dedicated news website devoted to specifically covering issues within that county (Abernathy, 2018). That is not to say that every area noted in the data on news deserts is without a newspaper. One of the newest areas of analysis in studying news deserts is that of the "ghost paper." A ghost paper is defined as a small weekly or daily newspaper that still publishes,

but whose budget is no longer big enough to perform proper journalistic coverage (Abernathy, 2018). Ghost papers often carry an excess of wire copy and may be limited to only one or two stories written by local reporters per edition.

Abernathy (2018) points out that television news does not combat the problem of news deserts. Although local television news does cover stories from news desert areas, there are two problems. One is that TV content from news desert areas tends to be limited to only one or two stories per broadcast, as TV news stations tend to keep their reporters close to their main metro area. The other is that the few stories they cover from news desert areas are almost always limited to four topics: crime, weather, sports, and soft features.

The way news deserts impact society is still being actively researched. The growth of news deserts is impacting the entire "news ecosystem" (Miller, 2018). Miller (2018), through a series of interviews with editors and journalists, notes that important investigative reporting often begins with otherwise mundane city council meetings, school board meetings, and zoning meetings. This is reflective of the role of journalists as watchdogs and journalism as having a key role in democracy (Roughton, 2019). News deserts tend to have lower voter turnout, leading to questions about the press and the long-term health of an informed electorate (Abernathy, 2016). Areas where news coverage declines tend to see an increase in government inefficiency and municipal borrowing (Gao, Lee & Murphy, 2018). Even physical health is affected. Health researchers and epidemiologists often study local news content when analyzing areas at risk of serious health outbreaks, which means those very same epidemiologists are less able to quickly target said outbreaks (Branswell, 2018).

There is compelling research on inventive ways to "fix" the problem of news deserts. Some work has focused on the need to better assess the nature of local journalism, focusing on infrastructure of news production, the output of news, and the quality of said news coverage (Napoli, et. al., 2016). Some researchers have attempted to more clearly understand the informational need gaps when news in an area is lacking by assessing different models of need (Watson & Cavanah, 2015). Dedicated online news sites have been a hopeful solution, but many are short-lived, and those that survive tend to be clustered close to metro areas already serviced by a larger daily newspaper or TV news (Abernathy, 2018; Nygren, Leckner & Tenor, 2018). This study is a continuation of the work into what options may exist to "fix" news deserts, as it examined the potential of Reddit, with its myriad location-based subreddits and democratic system of posting content, to act as a method of fulfillment of the needs of communities that were once filled by local newspapers.

This research also shares some commonalities with researching examining user-generated content, which is sometimes referred to as citizen journalism or participatory journalism. User-generated content is the processing and distribution of news-related content that was originally created not by a professional, trained journalist, but instead by someone from the audience (Paulussen & Ugille, 2008; Lewis, Kaufhold & Lasorsa, 2010). User-generated content could be anything from a photograph of storm damage posted to a news outlet's Facebook page to a full solicited article of a city council meeting. Professional reaction to user-generated content is inconsistent. Lewis et al. (2010) found that editors who disapprove of user-generated content did so on two differing grounds: theoretical and practical. For theoretical, the issue was a concern over amateurization of the industry, and for the practical, it would take too much work to make sure the content met professional standards.

However, one important distinction between this research, which looked at Reddit, and pure user-generated content, is that UGC involves a central, controlled organizational structure.

The question of community news publications relying on UGC, by default, involves a conversation about the centralized structure and what it chooses to distribute. With Reddit, there is no central authority beyond the moderators and site administrators, neither of which approach the centralized role of an editor.

Reddit

Reddit is neither a social media platform nor a forum, neither a news website nor a message board. There is no single, central "Reddit." Instead, the website is constructed out of more than 500,000 "subreddits," or smaller sites dedicated to specific topics (Widman, 2020). Each "subreddit" is identified in the URL of the website by the notation "/r/," which has led to the popular nomenclature of including the "/r/" in the name of the overall subreddit. Each subreddit can be subscribed to by people who have signed up and made an account with Reddit. Once they have subscribed to that subreddit, they will see content from that subreddit in their main feed, like the "wall" of a social media site. The subreddits range in size from the gigantic /r/funny, a very general subreddit made for posting funny photos with about 30 million subscribers as of April 2020, to /r/slowcooking, where people share Crock Pot recipes, with about 2 million subscribers, to smaller subreddits of increasingly niche topics with fewer subscribers.

The uniqueness of Reddit comes from the way users interact with it. Users have the option to post items to subreddits of their choosing, with the options being a text post, an image post, or a link. A text post is like a blog. The content will show up with a headline for others to read and a body of text written by whoever posted it. An image post is an uploaded photograph or video clip, or one linked from an independent hosting site like Imgur, where other users can click a small icon and make the image or video itself appear without having to go to another page. A link post is a hyperlink to another, outside website.

Reddit is very popular. According to Alexa (2020), Reddit is the sixth most-visited website in the U.S. based on unique page views. According to their own internal data, Reddit regularly averages 234 million unique users and 8 billion page views a month (Smith, 2018). The numbers alone indicate that Reddit has the potential to act as a powerful digital space. It has more people visiting, sharing, clicking, and reading than any news site. Yet there have been comparatively few academic studies examining Reddit, using it as a basis for an online, digital space in the same way sites like Facebook and Twitter have been examined.

Research Questions

The study progressed with two research questions:

RQ1: Do location-based subreddits contain user-created information in ways that fulfills the needs that community newspapers once did?

RQ2: What needs and sub-needs, as categorized by the FCC and USC (Friedland, 2012), are being fulfilled by location-based subreddits?

Methods

  This study was conducted as a mixed-method quantitative and qualitative content analysis. First, a sample was formed. This study focused on Georgia because of the research that shows the Peach State has more news deserts than any other state both in raw number and per-capita (Abernathy, 2018). A list of all location-based subreddits was found on the subreddit called "/r/LocationReddits." Each subreddit listed as being in Georgia was checked, and if there had been at least one post made to the subreddit within the last week, the Georgian subreddit was included in the sample. Having at least one new post within a week showed that the subreddit was at least somewhat active. Twenty subreddits qualified to be included. They are: /r/Alpharetta, /r/Athens, /r/Augusta, /r/CarrolltonGeorgia, /r/Cartersville, /r/CherokeeCountyGA, /r/ColumbusGA, /r/DaltonGA, /r/DecaturGA, /r/Gwinnett, /r/JohnsCreek, /r/Macon, /r/Marietta, /r/Pooler, /r/Newnan, /r/RomeGA, /r/Roswell, /r/Savannah, /r/Smyrna, and /r/Valdosta. The number of posts made in the last week during the period of time where these subreddits were evaluated on their activity level ranged from a single post on five of the subreddits, to Savannah, with 37 new posts in the previous week.

  There was one large subreddit that was not used in this study: /r/Atlanta. When examined, /r/Atlanta had more than 300 posts in the previous week, making it quite active. But the intention of this study is to examine the potential for geographically based subreddits to potentially alleviate the problem of news deserts. Atlanta, as a major metropolitan hub, is the center of a large TV market, and has plenty of available news media. It was therefore excluded from the sample. The Atlanta subreddit lists other neighborhood-specific subreddits like /r/Midtown and /r/BuckheadGA, but none of them except /r/DecaturGA met the criteria of having at least one new post in the previous week.

  Once the 20 subreddits were picked, the top-30 most-upvoted posts in the history of the subreddit were screen-captured in order to save and analyze. One post was considered one unit of measure. The screen-capturing occurred in January 2020. It is important to note that while coding and analysis was occurring in March and April 2020, a cursory look at the subreddits in the sample revealed that some posts about that city or county's response to COVID-19 had made their way into the top-30 posts by upvote. If analyzed in April 2020, the sample would likely result in more items coded in the "health" category. The top-30 all-time posts were picked instead of the 30 most-recent posts in order to get a better sense of the kinds of content that the subreddit values the most and potentially sees the most importance in. It also helps avoid issues where a single recent news event dominates the entire subreddit. Each of the 20 subreddits in the sample were assigned a "desert score." This was based on the UNC county-by-county data and was a number of how many newspapers, both daily and weekly, exist in the county (Abernathy, 2018). Five of the subreddits scored a 1 on the "desert score," indicating they had only one newspaper left serving the whole county, something the UNC data notes as being high risk for becoming a total news desert. Three of the subreddits in the sample, /r/Alpharetta, /r/JohnsCreek, and /r/Roswell, had a desert score of 11, meaning there are 11 different newspapers within that county, the highest in the entire state of Georgia. That was because they are geographically within Fulton County, which is also one of the main counties Atlanta is in, and most of those 11 publications within the data are based in Atlanta.

  Another important distinction with the sample involves the geography of Atlanta's suburban sprawl. The Atlanta Regional Commission (2021) recognizes 10 counties that together compose the Atlanta metropolitan area: Cherokee, Clayton, Cobb, DeKalb, Douglas, Fayette,

Fulton, Gwinnett, Henry, and Rockdale. Some subreddits in the sample come from areas that are designated as existing within the Atlanta metro area, such as /r/Gwinnett in Gwinnett County, and /r/Marietta and /r/Smyrna in Cobb County. Those areas are within the coverage area of the *Atlanta Journal Constitution*, however because the AJC is not located within Cobb County, it does not register as a news outlet in the news desert data.

Information about the subreddits in the sample, as well as their desert scores and population, can be found in Table 1.

Table 1

Subreddits used in the sample of this study and information about the real-world location and subreddit activity.

Subreddit name	Real-world county	News desert status	Subreddit subscribers	County population	Posts to subreddit in week before data collection
/r/Alpharetta	Fulton	11	1,696	57,551	6
/r/Athens	Clarke	2	6,511	125,964	25
/r/Augusta	Richmond	3	3,471	195,844	18
/r/Carrollton	Carroll	2	205	24,388	1
/r/Catersville	Bartow	3	244	19,731	2
/r/CherokeeCountyGA	Cherokee	2	465	254,149	1
/r/Columbus	Muscogee	2	1,376	189,885	6
/r/DaltonGA	Whitfield	1	369	33,500	2
/r/DecaturGA	DeKalb	1	1,230	19,335	1
/r/Gwinnett	Gwinnett	1	3,547	927,781	14
/r/JohnsCreek	Fulton	11	238	76,738	2
/r/Macon	Bibb	1	1,030	153,095	3
/r/Marietta	Cobb	1	1,983	60,806	3
/r/Pooler	Chatham	4	208	19,414	3
/r/Newnan	Coweta	2	428	33,039	1
/r/RomeGA	Floyd	1	448	36,303	2
/r/Roswell	Fulton	11	1,227	88,346	1
/r/Savannah	Chatham	4	7,100	136,286	37
/r/Smyrna	Cobb	1	677	51,265	2
/r/Valdosta	Lowndes	1	460	54,518	2

It is important to note that the *Columbia Journalism Review* has collected their own data on how many newspapers exist in each county, but they only have data on daily newspapers, not weekly newspapers (Applegate & Hoffman, 2017). Since smaller rural communities are disproportionately impacted by expanding news deserts (Abernathy, 2014), and many of the subreddits in the sample are for smaller rural areas, data on the number of weekly newspapers that often operate in these areas was needed for comparison. Another important note is that there are recorded criticisms of Abernathy's (2008) news desert data. One of the more prominent

concerns shared by the Georgia Press Association is that Abernathy (2008) does not include newspapers that exist to publish government-mandated legal notices (Williams, 2020). Abernathy has responded that those publications do not meet the FCC's criteria for a newspaper. This study used the same FCC criteria, and as such, would not have included those publications as functioning news outlets.

Next, a codebook was developed to help shape the qualitative assessment at the individual post level. First, it was noted if each post on the given subreddit was a text post, an image post, or a hyperlink. If the post was a hyperlink, it was noted if the hyperlink went to a news website or not. If the post went to a news website, it was noted what kind of news was being linked, namely to determine if the news outlet being linked to the subreddit was from a local source, a regional source, or a national source. This determination was important, because if a geographical subreddit is only acting as a conduit for what a local newspaper is publishing, it is not really acting to alleviate the problem of news deserts. This study was fundamentally examining if these subreddits were acting as their own generators of news and information that could fulfill the needs noted by the Friedland et. al., (2012) study. Finally, the needs and sub-needs from that report were noted. Coders were asked to identify if the post contained information pertaining to: emergencies and public safety, health, education, transportation, environment and planning, economic development, civic information, or political life. Each one of those eight needs also had a list of sub-needs as noted in the FCC and USC research (Friedland et. al., 2012), and coders were asked to pick the sub-need that best applied or note "other" when necessary. Coders were told they could select more than one need being fulfilled by the same post, but they were asked to explain their decision in the codebook. Coders were asked to write a short description explaining the topic of the post and how it fit within the sub-need, or if it did not fit within a listed sub-need, why it still should be considered as fulfilling a need.

Intercoder reliability was tested using two trained independent coders who cross-coded three posts from each subreddit, for a total of 60 posts. First, the numeric overlap was scored as if it were a quantitative content analysis. Those numbers indicated agreement at 93%. The justifications for noting a sub-need were also compared. Although this qualitative component was not calculated mathematically, the coders agreed in their justifications in 56 of the 60 tested posts.

Results

A total of 600 posts were coded, 30 from each of the 20 subreddits. Of the 600 coded posts, 201 (33.5%) were text posts, 224 (37.3%) were image posts, and 175 (29.1%) were hyperlinks. Although the proportion of type of post appears even when looking at the dataset as a whole, once broken down into individual location-based subreddit, differences do appear. Of the 30 coded posts from /r/Savannah, 27 (90%) were image posts. And, of those image posts, most fulfilled no informational need. Almost all of them were either memes containing inside jokes about the area or were simple photographs showing off the beauty of the historic areas of the city. The same trend is seen is some of the other location-based subreddits in more populated areas. In /r/Augusta, 24 (80%) of the posts were image posts, and in /r/Athens, 21 (70%) were image posts. In general, the more populated subreddits relied more on image posts, while smaller subreddits had an even split, and the smallest subreddits tended to have more text posts. This appears to be more connected to the given location being one with a higher volume of tourism in

a more tightly centered metro area than any other variable, as Savannah is known for its history and architecture, Augusta for the Masters Tournament, and Athens for the University of Georgia and its music scene.

First, some of the quantitative components of the content analysis will be addressed. Of the eight needs examined from Friedland et al. (2012), there was a divide between four needs that were popular on the subreddits, and four that were not. Of the 600 total coded posts, 338 were identified as fulfilling the eight needs. Breaking that down, 101 posts (16.8%) contained information that could be identified as fulfilling the need for information on emergencies and public safety, followed by 69 (11.5%) that fulfilled the need for civic information, 48 (8%) that fulfilled the need for economic information, and 40 (6.6%) that fulfilled the need for political information. Those four needs represent the most popular. The four needs that were less fulfilled were transportation information with 24 posts (4%), information on education and schools with 20 posts (3.3%), health information with 19 posts (3.1%), and environmental information with 17 posts (2.8%).

However, it is important to note that some of those posts which were coded as fulfilling one of Friedland et. al.'s (2012) needs were posts that were hyperlinks back to existing news websites. For the purposes of this study, those must be accounted for, as they do not represent a subreddit organically fulfilling the role that either a closed community newspaper or a ghost newspaper once filled. At that point, the subreddit is acting as a conduit for existing news coverage, meaning they are not alleviating the problem of news deserts. Of the 600 coded posts, 163 (27%) were identified as coming from existing news sites. Of the 163 linked news sites 40 (24.5%) went to local newspapers, 30 (18.4%) went to local news websites, 37 (22.6%) went to local TV stations, 25 (15.3%) went to regional newspapers, 19 (11.6%) went to regional news websites, and 12 (7.3%) went to national news websites. None of the 600 coded posts linked to national newspapers or national TV news outlets. The most prominent single news source was the *Atlanta Journal Constitution*, even in southern areas of the state such as Valdosta and Macon, which are 228 miles and 83 miles from the Atlanta metropolitan area respectively.

The goal of this study was not just to count how many posts qualified as fulfilling the needs defined by Friedland et. al. (2012), but to qualitatively examine how qualifying posts are potentially fulfilling the sub-topics of those needs defined in the same research. To do this, the results will now be broken up by need, with sub-needs analyzed within. They will be ordered from most-fulfilled need to least-fulfilled need.

Emergencies and Public Safety. Information on emergencies and public safety was by-far the most-posted form of information fulfillment. Of the 101 coded posts, 49 were posted organically from non-news sources. Breaking the sub-topics down further, of the 101 posts that fulfilled the need for information on emergencies and public safety, 53 (52.4%) involved policing and crime, 11 (10.8%) involved outbreaks, 7 (6.9%) involved Amber Alerts, 6 (5.9%) involved dangerous weather, 1 (0.9%) involved terrorism, and 21 (20.7%) were counted as "other." Many of the reported "others" were people upset over a run-away pet, often posting photos and contact information and asking if anyone has seen it to let them know.

The most common context for policing and crime was people reporting crimes or posting evidence of crimes. The nature of these crimes ranged from car burglaries to shootings. This follows one of the norms of traditional journalistic coverage, where crime is often disproportionately covered. Ironically, the subreddits, despite not being traditional news, followed those same trends. There was also an element of breaking news and usefulness to the

reader in some of the posts, as can be seen below in Figure 1, where a user is warning others who might live in the Blanton Street neighborhood of Valdosta to stay indoors because of a shooting.

Figure 1

This is the same kind of content, with the same applicability, that one might find on the website of a local news website, however the information was reported organically by a Reddit user. The language is less professional, as a trained professional reporter would not likely say victims are "probably dead," but if the end goal is to keep people away from a dangerous area, then the post is fulfilling that need.

Civic Information. Of the 69 posts that fulfilled the need for civic information, 50 (72.4%) were posted organically from non-news sources, making it one of the most organic categories in information sharing. Of the 69 posts, 42 (60.8%) were coded as recreational opportunities, 8 (11.5%) were coded as culture and arts, 4 (5.7%) involved non-profit organizations, 4 (5.7%) involved social service programs, and 10 (14.4%) were coded as "other." There were no posts about libraries, churches, or other religious institutions. The vast majority of information fulfillment in this was people posting things to do, and most of that involved real-world meet-ups or events of some kind. And along with that, most of the coded "others" were people inquiring about non-specific recreational opportunities, which was not enough to qualify it as describing a recreational activity but is still similar. An example of a recreational opportunity post can be seen below in Figure 2.

Figure 2

Although there are clear holes in how location-based subreddits are conveying civic information, the kinds of content that is being posted in regard to recreational opportunities mimics the kinds of coverage one might see in an "events calendar" section of a community or newspaper. The posts contained information about who will be there, what the event is, where it is, and when it will start.

Economic Development. Economic development was the first of the coded Friedland et. al. (2012) topics to be diverse in the qualification of sub-needs. Of the 48 posts that fulfilled the need for information on economic development, 22 (45.8%) were posted organically from non-news sources. Of the 48 posts, 24 (50%) were coded as "other," 15 (31.2%) were coded as economic development, 5 (10.4%) were coded as job opportunities, and 3 (6.2%) were coded as small business information. None were coded as information on job training or retraining. The

"other" categorization required a deeper look. There were two distinct themes in the posts coded "other." The first were announcements of new businesses opening that did not specify that they were hiring, because if they were hiring, they would have been coded as "job opportunities." The second were posts about local established vendors who set up during art festivals, parades, farmer's markets, etc. An example of this can be seen in Figure 3 below.
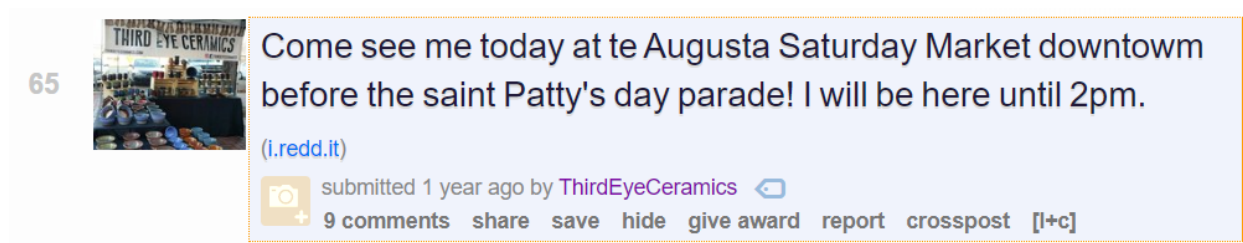

Figure 3

Political Life. The political information category was also diverse. Of the 40 posts that fulfilled the need for information about political life, 20 (50%) were posted organically from non-news sources. Of the 40 posts, 10 (25%) were coded as being about voting and elections, 7 (17.5%) were about public meetings and outcomes, 6 (15%) were about city council or council elections, 3 (7.5%) were about state-level issues, 2 (5%) were about county government, 1 (2.5%) was about neighborhood councils, 1 (2.5%) was about political regions within a city, and 9 (22.5%) were coded "other."

One of the most popular topics posted about in this sub-need that were not from existing news sources was how to register to vote, where to look up your voting location, and where to check if your voter's registration is still valid. This represents a utility use, users of these location-based subreddits posting this information are providing crucial information to potential voters. There may likely be people who have participated in elections for the first time because they saw information on how to register, or were reminded about upcoming elections. This can be seen in Figure 4 below.
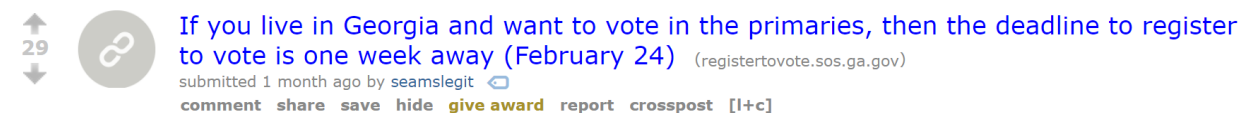

Figure 4

Transportation Systems. Of the 24 posts that fulfilled the need for information on transportation systems, 19 (79.1%) were posted organically from non-news sources. Of those 24 posts, 9 (37.5%) were coded as traffic and road conditions, 4 (16.6%) were coded as mass transportation, 3 (12.5%) were coded as debate over growth, and 7 (29.1%) were coded as "other."

The most common topic in this sub-need was complaining about traffic backups, potholes, speeders, and flooding roadways. There were more posts about these complaints than were officially coded as such, because many of the posts were memes joking about falling into potholes or people who ignore riders in bike lanes. These posts that were purely jokes and memes were not coded as information fulfillment, as they are not informative. However, if they contained either some form of geographic-based warning, such as a joke about how much longer it will take someone to get to work now that so-and-so road is closed for repair, then it was included. Figure 5 represents one of these posts. The language of the headline is pointed and

joking, implying that drivers in Alpharetta do not know how to properly use a roundabout. However, the linked image itself is a non-joking informational graphic about the etiquette of entering and exiting a roundabout. Despite the joking headline, this could clearly be seen as fulfilling an informational need for some.

Figure 5

Education. One of the most difficult categories to code was the education category. Of the 20 posts that fulfilled the need for information on education, 6 (30%) were posted organically from non-news sources. Of the 20 posts, 5 (25%) were coded on the quality of schools, and each of the following were coded with 1 (5%) post each: teacher performance, student academic achievement, school curricula, job training, and higher education. The criteria of school funding and school choice were not selected, and 9 (45%) posts were coded "other." This represents one of the highest percentages of "other" within the sample.

All five of the posts on school quality came from existing local news sources, and all five were simple news stories about the "grades" of local high schools. Despite Reddit being popular with college-aged people, there was almost nothing about higher education. This is interesting, as the sample included subreddits with prominent universities within their geographic area, such as the University of Georgia, Augusta University, Georgia Southern University, the Savannah College of Art and Design, the University of West Georgia, and Valdosta State University, among others. One interpretation of this is that those universities have their own subreddits dedicated to them. The kinds of content organically posted was scattered and hard to find any useful commonalities besides posting about training sessions and community classes. This can be seen below in Figure 6.

Figure 6

Health. Health, despite not coming up very often, was also one of the more diverse categories. Of the 19 posts that fulfilled the need for information on health, 7 (36.8%) were posted organically from non-news sources. Of the 19 posts, 5 (26.3%) were coded as the spread of disease and vaccinations, 4 (21%) were coded as local health campaigns, 2 (10%) were coded as health programs and services, 2 (10%) were coded as availability of care, 1 (5.2%) was coded as family and public health, and 5 (26.3%) were coded as "other."

Although information about diseases and vaccinations was the most-coded sub-need, all of the posts in that category went back to existing news websites. It was the "other" where this category showed its potential as a form of information spread. The "others" were often in the

form of warnings, such as someone eating at a restaurant and falling ill. One example of useful organic information in this category can be seen in Figure 7 below, where a Reddit user has gone to the Cherokee County's department of health website, collected public data on restaurants with failing health inspection grades, compiled it into a single document, converted that document into an image, and posted it to /r/CherokeeCountyGA. This is important, as it represents a user of this subreddit's willingness to take action to share crucial information that otherwise sits on a government website. It is this user acting almost as a journalist.

Figure 7

Environment and Planning. Information on the environment and planning was the least-posted form of information fulfillment. Of the 17 posts that fulfilled the need for information on the environment and planning, 7 (41.1%) were posted organically from non-news sources. Of the 17 posts, 5 (29.4%) were coded as environmental problems, 5 (29.4%) were coded as natural habitats for recreation, 2 (11.7%) were coded as natural resource development, 1 (5.8%) was coded as water and air quality, and 1 (5.8%) was coded as environmental hazards, while only 2 (11.7%) were coded as "other."

The categorization of these sub-needs posed a similar challenge to the sub-need of transportation. Many of the organic posts were photographs of walking trails or parks with a headline talking about how nice of a day it was. Those were not coded as being informative. However, if a post contained a photo of a walking trail and had information about where to access the trial, or how much access costs, or the conditions of the trail, that was coded as fulfilling a need. An important example of this information fulfillment can be seen in Figure 8, where someone has posted a video on how to maneuver hydraulic currents in a kayak after two kayakers died at a popular area known as "Redneck Beach" in Athens.
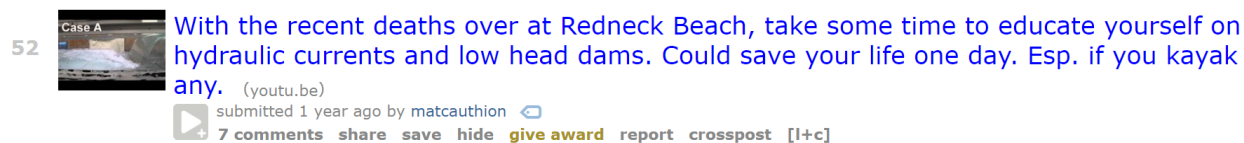

Figure 8

Discussion and Conclusions

R1: Do location-based subreddits contain user-created information in ways that fulfills the needs that community newspapers once did?

The results of this study indicate that although location-based subreddits are not functioning in a way to act as a one-for-one replacement for local newspapers, they do show potential to serve as a way for people to share important information about happenings in their communities, and some people are already using them in this way. There was a particular emphasis on utility. From health information about which restaurants to avoid, to how to

properly maneuver a roundabout, to warnings about avoid an area after a shooting, there was content posted that a reporter for a local newspaper could easily have crafted into a news story, vetted through sources and written in newswriting style. However, the subreddits also have an issue of over-emphasis on certain topics. This will be discussed with R2.

R2: What needs and sub-needs, as categorized by the FCC and USC (Friedland, 2012), are being fulfilled by location-based subreddits?

In the same way that television news has been identified as not alleviating news deserts because they focus on crime, weather, sports and soft stories too often, perhaps the same criticism can be leveled at these location-based subreddits for focusing so much on two main topics – emergencies and civic information. And within those needs, there were very clear trends in the sub-needs. For emergencies, it was crime. What constitutes "crime" coverage was more nuanced, however. The content ranged from someone asking for help finding a stolen bike, to warning others that people are breaking into cars on a specific street, to something as serious as warning others to stay away from an area where a shooting has occurred and an armed suspect is still on the loose. The latter was likely covered by journalists in the area, but the timing on the post in Figure 1 indicates that this was a breaking event, and the post was made before journalists had the time to report on it. For civic information, it was recreational opportunities – things to do around the community. Although some may see this as "soft news," as our society grows more and more alienated, location-based subreddits acting as the events calendar in place of a shuttered or ghost local newspaper can possibly help alleviate at least some of that problem.

Some needs and sub-needs are clearly not being met by these location-based subreddits. Environmental issues were barely discussed, and the ones that were tended to be lighthearted information about local outdoors recreation. As our society faces the impact of climate change and global warming, people in smaller communities are going to need access to credible, vetted information. Health was also barely covered. One common element of both health and environment as topics that perhaps explains why they were posted about less is that they are difficult topics that require some scientific knowledge to be able to convey the seriousness of the issues. Although this was stated earlier, the researchers would like to reiterate that the data for this study was collected prior to the COVID-19 pandemic taking full hold in the United States, and they recognize that if the data were collected today, coronavirus alone would likely be enough to increase the number of health articles.

The topic areas that were lacking in the sample also represent one of the issues that other researchers have found with user-generated content: some journalism requires access or knowledge that tends to only be bestowed to journalists (Lewis, Kaufhold & Lasorsa, 2010). Although Georgia's robust public record laws allow all citizens access to government records, few are trained in the procedure to procure them in the way journalists are taught. That means that someone might post that a shooting has just occurred down the street and people should stay away from that area on a community subreddit, but that person is less likely to go and request an arrest report, or record interviews with police or neighbors about what happened, or go cover the ensuing criminal trial. The results indicate that community Reddit have enormous potential for fulfilling an overall "witness," role of journalism, but less potential for the "watchdog" role without training or incentive for follow-up. The content that was the most prevalent tended to be the content that could be obtained and posted with little effort. However, there was one post that bucked that trend: the post by the individual in /r/CherokeeCountyGA who collected the failed

health inspection reports of local restaurants and posted them together as one homemade database.

This research area needs to be continued in two directions. One is on the audience side. A survey should be conducted of the users of these location-based subreddits to better understand how and why they use them. That would not only help people studying news deserts get a better sense of what people are doing in areas of emerging news deserts, but would also help expand our understanding of Uses and Gratification Theory in the wider world of mass communication. The second is using the setup for this study and applying it to larger cities with established media environments to be able to compare and contrast the differences in location-based subreddits in areas with plentiful media versus areas without.

There are several important limitations that should be noted aside from the standard limitations of content analysis – the sample could always be larger. One important limitation to the long-term implication of the findings is that the researchers did not attempt to vet the information in the sample. Whereas a professional journalist working for a local newspaper will assumedly be working under professional norms and ethical guidelines, someone posting information to the location-based subreddits might be plagiarizing or fabricating the information they post. Such actions would mean that the location-based subreddits are not actually fulfilling the duty needed to act as replacement form of news within a news desert.

As news deserts continue to expand, mass communication researchers must get ahead of the problem and be able to not just assess the impact they have on communities, but also understand ways of reversing and healing those impacts. The results of this study could very well help guide the development of a training program for citizen journalists to use location-based subreddits as a platform for their work.

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