Who's Producing Local Journalism?

Assessing Journalistic Output Across Different Outlet Types

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EXECUTIVE SUMMARY

The economic challenges facing local journalism and the associated declines in revenues and newsroom staffs have generated great interest in understanding the composition and dynamics of local news ecosystems. Much of this research has focused on case studies of individual communities while other research has focused either on the content produced by local news outlets in the face of these challenges or on the consumption of local news by the American public.

However, despite what we know about the challenges faced by local journalism, the content of local news outlets, and Americans' preferences for local news sources, we don't know a great deal about how different types of outlets are serving the information needs of their communities. This paper addresses this question through an analysis of 100 randomly selected communities across the U.S. Across these 100 communities, this study analyzes over 16,000 stories provided by 663 local media outlets. For this analysis, local media outlets fall into one of four categories (radio stations, TV stations, newspapers, and online-only outlets). Each story in the sample was content analyzed to determine whether the story was original, local, and addressed a critical information need.

To understand the journalistic performance of different outlet types, this study analyzes each the story output of each outlet type *relative to the outlet type's numeric frequency.* Doing this allows us to assess each outlet type's news production relative to that outlet type's prominence in the news ecosystem. To examine production in this way, ratios were calculated comparing the share of total stories, original stories, local stories, and stories addressing a critical information from each outlet type to each outlet type's share of outlets.

Key findings of this study include:

- **Local newspapers significantly outperform local TV, radio, and online-only outlets in news production**, both in overall story output and in terms of stories that are original, local, or address a critical information need. For instance:

  o Local newspapers account for roughly 25 percent of the outlets in our sample, but nearly 50 percent of the original news stories.

  o Local newspapers account for nearly 60 percent of the Local news stories in our sample – more than all of the other outlet types combined – despite accounting for only 25 percent of the outlets in our sample.

  o Local newspapers account for nearly 60 percent of the stories that meet all three criteria (original, local, addresses a critical information need), with the other outlet categories each accounting for only 10 to 15 percent of the stories that meet all three criteria.

- **Online-only media outlets remain a relatively small component of local media ecosystems**, accounting for about 10 percent of the local outlets in the sample and generally producing only about 10 percent of the news stories in the sample, across the various content categories (original, local, addresses a critical information need).

  - Online-only outlets do perform well in terms of the *proportion* of their story output that addresses critical information needs (over 80 percent).

- **Radio stations represent the most common type of local media outlet** in our sample, but generally are the weakest in terms of the extent to which their story output is original, local, and addresses critical information needs.

Overall, these findings suggest that newspapers are the most important producers of local news in terms of the volume of journalistic output being produced for local communities. The relative paucity of online-only local media outlets, and the relatively limited (compared with newspapers) journalistic output of these outlets suggest that online-only outlets have yet to come close to matching local newspapers as significant sources of reporting that is original, local, and addresses critical information needs.

These findings support the continued importance of public policy and philanthropic efforts to support the viability of local newspapers. These findings also suggest that commercial and philanthropic efforts to establish online-only outlets as comparable alternatives to local newspapers remain far from this goal.

INTRODUCTION

In May 2019, GateHouse, one of the largest publishers in the United States, merged 50 of its weekly newspapers into 18 regional publications following its early nationwide layoffs that were reported to affect about 200 journalistic positions.[1] This is just one of the most recent examples highlighting consolidation of local newspapers – and trend that has contributed to the acceleration of the decline of local journalism in terms of readership, personnel, and ad revenue. According to the University of North Carolina's Center for Innovation and Sustainability in Media, nearly 1,800 newspapers closed in the United States between 2004 and 2018, leaving almost 200 counties with no newspaper at all and half of the 3,143 counties with only one newspaper.[2] Even in communities where local newspapers are available, resources were cut to a point where there was minimal local coverage — a situation that researchers have described as "news deserts."[3]

The decline of local news outlets, even small newspapers, has a profound impact on democratic development and public life at both the individual and community levels.[4] For example, acquisitions of and ownership changes at local TV stations and newspapers led to the nationalization and polarization of political news, having real consequences in citizens' political knowledge, participation, and voting decisions.[5] And the loss of government monitoring due to local newspaper closures lead to increases in municipal borrowing costs.[6]

The declines in local journalism and the associated impacts have led to a handful of policy proposals at the state and federal levels. The New Jersey Civic Information Consortium was established by state legislature in 2018 and funded in 2019.[7] In Massachusetts, House Bill 181 proposes a 17-member panel to research the status of local journalism in underserved communities and review possible policy solutions.[8] In the U.S. House of Representatives, legislators have proposed the Saving Local News Act to make it easier for local news organizations to obtain nonprofit status and the Journalism Competition and Preservation Act to allow news organizations to negotiate collectively with large tech companies by creating a four-year exemption period from antitrust regulations.[9] None of these proposals have been enacted; nevertheless, each of these legislative acts highlights a different set of policy solutions to address change in the industry.

Both the economic challenges facing local journalism as well as the policy-related efforts addressing these challenges require systematic empirical data and thorough accounting of local journalism to measure and assess the state of local journalism in the United States. Much of the existing research into local news ecosystems has tended to examine local journalism by focusing on a single community or a limited number of local communities, such as Pew Research Center's 2010 study of local news in Baltimore[10] or their later study of the news ecosystem in Macon, Georgia, Boulder, Colorado, and Sioux City, Iowa.[11] This study analyzed local media outlets across 100 U.S. communities.

In an effort to inform these discussions about the future of local journalism, this study focuses on the question of which types of media outlets are making the most significant

contributions to local news ecosystems. Specifically, this research focused on the following questions:

■ Are local newspapers, despite their economic hardships, still the most prominent originators of local journalism? Previous research has suggested that this is the case;[12] however, a more recent evaluation is needed.

■ Have digital native local news outlets emerged as significant contributors of local reporting? This has been the hope of many observers of the evolution of local news ecosystems, but systematic data have, to this point, been sparse.

This study builds on previous research that provided a comprehensive analysis of local journalistic output on a large scale, analyzing 100 randomly selected U.S. communities.[13] While that study focused on overall levels of journalistic output, and the question of how community characteristics factor into the health of local news ecosystems, this study focuses on the types of outlets available in these communities; and how these different types of outlets (TV, radio, newspaper, online-only) differ in terms of their production of news.

METHOD

Research on local journalism has tended to focus on large metropolitan areas.[14] Our goal was to look outside of this context, to the smaller, more vulnerable communities across the U.S. First, our focus was on communities with populations ranging from 20,000 to 300,000 residents. Using U.S. Census data, these parameters resulted in a list of 493 communities. From this list, we selected a random sample of 100 communities. Then, we verified that sample and approximated the population based on population, income, demographic composition.

Identifying Local Media Outlets

Our next step was to generate a complete inventory of all of the local media outlets in each of these communities. Thus, our search criteria included local newspapers, as well as local radio stations, local television stations and local online-only news sources. Our inventory of local news sources was limited to those sources geographically located within each sampled community. Therefore, we excluded news sources that might produce news of relevance to the community but that were geographically located outside of the community. Clearly then, we employed a very strict geographic notion of local in our process for identifying local media outlets.

This inventory was created through a systematic process of consulting multiple media databases and directories – 11 in total (see Appendix A) and supplementing these database and directory scans with a multi-stage online keyword search protocol (see Appendix B). This multi-pronged approach reflects the fact that a comprehensive portrait of the media outlets serving local communities today can only be achieved via combining information from a broad array of sources. Even large-scale commercial media directories

(e.g., Cision) had coverage gaps when compared to the manual multi-database/directory search process that we employed.

Although our search criteria included print, radio, television, and online media, the content gathering and archiving was conducted exclusively online. Thus, the corresponding URL for each media outlet's home page was located and recorded for use in the archiving process described below. In this way, the journalistic outputs of daily and weekly newspapers, magazines, radio stations, television stations, and local cable channels all were assessed via their online content offerings in the same way as outputs of online news sources such as community journalism sites were assessed.

The research approach used in this work (which is a reflection of the effort to create a realistically scalable methodology) runs counter to the common assertion that certain types of legacy media (e.g., local weekly print publications, ethnic media outlets) remain slow to utilize the internet as a means of disseminating their content. Our searches indicated that we are now at a point in the evolution of legacy media at which this generalization no longer holds true. The economic and strategic pressures and incentives to have an online presence, combined with the inherent economic imperative to distribute content production costs across as broad an audience base as possible,[15] suggest that the content available online can serve as a reliable indicator of the relative journalistic output across individual outlets, regardless of their "native" platform.

The key term here is *indicator:* we are not seeking to produce a comprehensive inventory of journalistic output, only a set of indicators that are conceptually and methodologically robust and that can be employed in comparative analyses across communities or over time. In support of this position, the data gathered on the 100 selected communities show that only 37 out of 791 (5%) media outlets that did not have a corresponding online presence, with the bulk of these being low-power and translator radio stations.[16]

Categorizing Outlets

For this analysis, each outlet identified was placed into one of four broad outlet type categories: 1) newspapers; 2) television stations; 3) radio stations; and 4) online only outlets. Categorization was accomplished through a combination of online research (e.g., consulting outlet home pages) and consultation with the relevant media databases described in Appendix A.

Content Archiving

Our content data gathering relied on a partnership with the Internet Archive.[17] We used the Archive-IT community archiving platform to create our own web archive, as the locally-oriented web sites that are central to this study generally are not part of the Internet Archive's routine archiving work. Moreover, custom archiving allowed the team to specify the frequency of crawling, further enhancing the reliability of the data. The Archive-IT platform allows users to specify the websites for collection and to set parameters including the frequency and depth of crawling. In this case, we had 733 distinct URLs that we

identified for content archiving.[18] In cases where a media outlet's content was behind a paywall, subscriptions to those sites were obtained.

In terms of the depth of the content crawl, we focused on the home-page coverage of each media outlet and crawled to a depth of one. This means that in addition to archiving the home page, we archived each web page that was one hyperlink (or one click) from the home page. This approach draws from the premise in the journalism studies literature that news source front pages/home pages represent a meaningful indicator of the most important news events and issues affecting a community and thus represent a useful means of assessing media outlet performance.[19]

The last methodological question to address was the sampling used to create the web archive. For this project, we created a constructed week sample, selecting a Monday, Tuesday, Wednesday, Thursday, Friday, Saturday and Sunday at random over a two-month period during the summer of 2016. Websites were crawled on July 27, August 2, August 6, August 28, September 9, September 21 and September 26 of 2016.

Using this methodology, we created a robust record of the home-page presentation of local news in 100 communities. The web crawl across the sample week generated a collection containing 1.6 million documents (html files, pdfs, images, audio files, etc.), 2.2 terabytes of total data, and, an archive of over 16,000 news stories.[20]

Content Analysis

The primary goal of our content analysis was to determine the extent to which journalistic output was serving the information needs of local communities. To do this in a way that could be reliably and efficiently accomplished at the scale at which we were operating, we focused on three criteria:

1. Whether the story was *original;*

2. Whether the story was *about the local community;*

3. Whether the story addressed a *critical information need.*

These criteria can be seen as fairly superficial – but fundamental – indicators of the complex notion of the "quality" of the journalism being produced within communities.[21] These criteria provide a relatively simple, economical, straightforward, and replicable set of indicators of journalistic performance that address the fundamental concern about whether journalistic sources are addressing communities' information needs.

The notion of critical information needs has been central to the ongoing discourse about the performance of local journalism.[22] This approach draws upon this discourse, and the research it has inspired.[23] Specifically, each story was content analyzed to determine whether it fit into one or more of the critical information needs categories identified in the

literature review by Friedland et al. that was prepared for the Federal Communications Commission.[24] Friedland et al. provide eight categories of critical information needs. These categories are as follows:[25]

1. Emergencies and risks
2. Health
3. Education
4. Transportation systems
5. Environment and planning
6. Economic development
7. Civic information
8. Political life.

Descriptions for each of these categories can be found in Appendix C. Stories that did not address one of these categories were coded as a 9. This category is intended to capture less substantive story types (celebrity news, sports reports, etc.). For the purpose of the analyses presented here, categories 1-8 are collapsed in order to create a dichotomous variable (i.e., story does/does not address a critical information need) that reflects the frequently-employed distinction between "hard" and "soft" news.

Each story also was coded for whether it was *original* (i.e., produced by the media outlet rather than reprinted, linked, retweeted, or shared from elsewhere) and whether it was *about the local community.*

The emphasis here on original stories is intended to separate aggregation, linking, sharing, retweeting, and re-publication activities from original reporting.[26] This originality measure seeks to discern the robustness of local journalism sources by determining how active they are in *producing* news stories. A story was considered "original" if it included a byline by an outlet's reporter as well as if it had no indicators that it was a reposting of, or hyperlink to, content produced elsewhere.

The emphasis on locality is employed to capture the extent to which the output of local journalism sources focuses on the local community. This measure is intended to address the extent to which local journalism is truly local, providing community members with news and information about, and directly relevant to, their communities. This measure reflects the long-standing localism principle, which has featured prominently in democratic theory perspectives on media, and in media policymaking. From this perspective, the extent to which citizens are able to engage in informed democratic participation in their communities is a function of the availability of local news and information about their communities.[27] In order to assess locality, we opted for a strict geographic definition of community, where we identified an item as about the community only if the subject was an issue/event oriented around the specific municipality.

Together, these three variables reflect some of the primary concerns raised in ongoing critiques and analyses of the state of local journalism today:

1. That the economic pressures on local journalism create overwhelming incentives to aggregate and repurpose existing content rather than engage in original reporting[28]

2. That the changing technological and economic dynamics for news distribution and consumption are exacerbating the extent to which large-market or out-of-market news can infiltrate local communities, thereby undermining local journalism[29]

3. That the increasing challenges associated with attracting and retaining an audience for news are compelling local news outlets to neglect substantive topics in favor of an emphasis on "soft" news, celebrity, and sensationalism.[30]

For these reasons, we think these particular variables of focus represent a useful set of top-level indicators of how well local journalism is fulfilling its central purpose of facilitating informed participation and engagement in local community affairs.

Content analysis of the online news stories was conducted by a team of trained coders.[31]
    From these data, four measures were constructed:

1. *Stories:* (the total number of news stories produced for the community)

2. *Original:* (the total number of original news stories produced for the community)

3. *Local:* (the total number of local news stories produced for the community)

4. *CIN:* (the total number of news stories addressing a critical information need produced for the community)

In addition, measures were created for each combination of measures 2-4 (i.e., counts of stories meeting two or more of the robustness criteria), leading to:

5. *Original + Local*

6. *Original + CIN*

7. *Local + CIN*

9

8. *Original + Local + CIN*

Community Characteristic Variables

In order to get a sense of the characteristics of the communities in our sample, a number of municipality characteristics were gathered from 2010 census data. From the census reports, we gathered data on the size of the population (POPULATION) in each community. We also gathered data on the population density (DENSITY) of each community, median household income (INCOME), the percentage of the population that is African-American (AA%), and the percentage of the population that is Hispanic/Latino (HL%). Descriptive statistics for these community characteristics are presented in Appendix D.

RESULTS

As a starting point for this analysis, Table 1 presents an overview of the journalistic output for each outlet type, in terms of how story output fared across the various content categories that we created (described above). So, for instance, in Table 1 we see that almost 53 percent of the stories produced by local newspapers were original, compared with 32 percent for TV and radio, and 48 percent for online-only sources.

When it comes to local stories, roughly 26 percent of the newspaper stories we analyzed were local, compared with less than 9 percent for TV, less than eight percent for radio, and roughly 25 percent for online-only outlets.

When it comes to stories that address a critical information need, 63 percent of newspaper stories met this criterion, compared with 72 percent for TV, 50 percent for radio, and almost 82 percent for online-only.

Table 1: Comparing Outlet Type Story Output

	Original	Local	CIN	O&L	O&C	L&C	O&L&C
Newspaper Stories (n = 6,129)	52.92%	25.75%	63.38%	24.80%	33.32%	17.43%	16.71%
TV Stories (n = 2,521)	32.41%	8.70%	72.08%	8.06%	26.21%	7.47%	6.83%
Radio Stories (n = 8,002)	32.36%	7.48%	49.62%	6.29%	17.16%	4.46%	3.90%
Online-Only Stories (n = 1,697)	47.65%	24.82%	81.57%	23.86%	36.20%	19.97%	19.24%

The remainder of Table 1 presents the proportion of stories from each outlet type that met multiple criteria (i.e., Original and Local [O&L]; Original and addresses a Critical Information Need [O&C]; Local and addressed a Critical Information Need [L&C]; and stories that met all three criteria [O&L&C]). So, for instance, we can see that newspapers (16.71 percent) and online-only outlets (19.24 percent) performed best in terms of

producing stories that met all three criteria; with television stations (6.83 percent) and radio stations (3.90 percent) performing substantially worse.

As the numbers indicate, generally, newspapers and online-only outlets perform best when looked at based on serving critical information needs. This is not surprising given that, unlike TV and radio stations, newspapers and online-only outlets are generally more narrowly focused on providing news. Local television stations and radio stations (and their associated home pages), on the other hand, tend to have broader – or (in the case of radio stations focused on specific music genres) different areas of focus.

In addition, relatively few communities of the size analyzed in this study have local television stations. And for those communities that do have local television stations, the low percentage of stories that are local in focus indicates that these stations are not particularly focused on providing news coverage of their communities of license.
Rather, local television stations are more broadly focused in their news coverage from a geographical standpoint.

Nonetheless, this analytical approach gives a sense of how the different outlet types compare in terms of the composition of their story output. What this analysis does not tell us, however, is the relative magnitude of the journalistic contribution that each outlet type is making to their local communities.

To address this question, we next we examined each outlet type's contribution in terms of the share of the stories that they account for. The first component our findings is presented in Table 2. So, for instance, in column 3 of Table 2, we see that newspapers account for just over 36 percent of the news stories produced across the 100 communities; TV stations account for 15 percent; radio 40 percent; and online-only outlets eight percent.

These percentages give us a sense of the relative prominence of each outlet type in terms of the journalistic output the outlet provides. We see, for instance, from these numbers that newspapers and radio stations are providing the bulk of the journalistic output in the communities we studied. Online-only outlets provide a relatively small proportion of the totality of news reporting available.

Table 2: Share of Journalistic Output by Outlet Type: Total Stories

|	% of outlets (N = 663)	% of stories (N = 16,763)
Newspaper	25.27%	36.52%
TV	13.62%	15.08%
Radio	51.14%	40.25%
Online only	9.99%	8.16%

However, these percentages don't take into consideration variation in the number of outlets of different types available across the communities analyzed. As column two of Table 2 indicates, there are significant differences across outlet types in terms of their

prominence in our sample. As the table indicates, radio stations account for over 50 percent of the local media outlets in our sample, followed by newspapers (27 percent); TV stations (almost 15 percent); and then finally online-only outlets (10 percent).

We can get a better sense of the journalistic performance of different outlet types by taking into account their story output *relative to each outlet type's numeric frequency.* Doing this allows us to assess each outlet type's news production relative to that outlet type's prominence in the news ecosystem.

To examine production in this way, ratios were calculated comparing the share of content to the share of outlets by category. And so, returning to the total number of stories, Figure 1 illustrates that radio has an output ratio of 0.79. This ratio of less than 1 means that radio produces a share of the total news output that is substantially less than radio's share of the total number of outlets in our sample. In fact, radio produces fewer news stories relative to its proportion of outlets than does any other outlet type in our sample, followed by online news sources with a ratio of 0.82. Newspapers, with a ratio of 1.45, produce more content relative to their share of outlets than any other outlet type; while TV stations produce stories nearly even to their share of outlets, with a ratio of 1.11.

Figure 1: Ratio of Stories to Outlets: Total Stories.
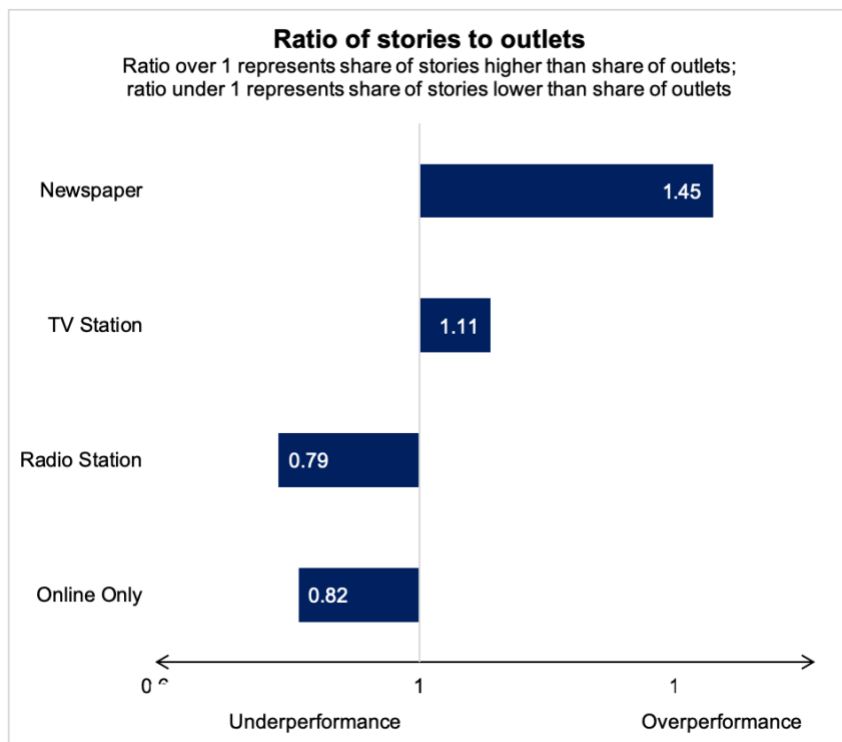
We continue this analytical approach of looking first at total output, and then at relative output, for each of the three primary content criteria that we applied.
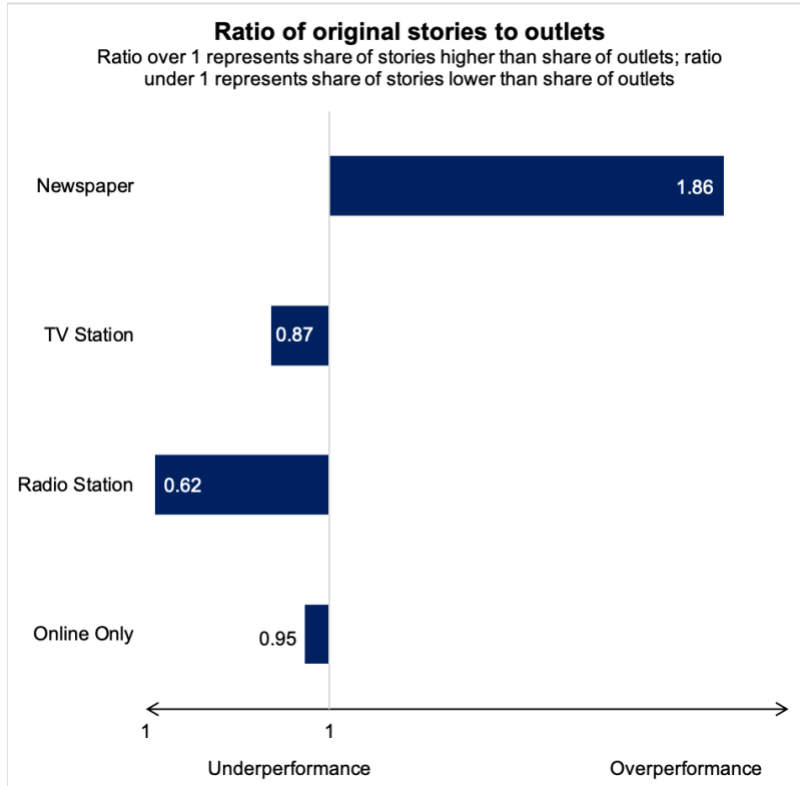
First, we look at original stories (i.e., stories actually produced by the media outlet, rather than repurposed from elsewhere). As Table 3 indicates, a similar pattern emerges with original stories that we saw with total stories. As we can see in Table 3, newspapers produced nearly half of original stories in our sample, even though newspapers make up roughly a quarter of the outlets in our sample. As Figure 2 indicates, this results in a ratio of 1.86 for newspapers, meaning that newspapers are significantly overproducing original stories relative to their share of the outlets in our sample.

In what will prove to be a recurring theme, online-only news outlets produced original stories roughly in proportion with the prominence of online-only outlets in our sample (about 10 percent) (see Table 3); for a ratio of .95 (see Figure 2). Both TV and radio stations underperformed in the production of original stories relative to their share of outlets. TV stations produced a slightly lower share of original stories (about 12 percent) than their share of outlets (almost 14 percent). Radio, with a ratio of 0.62, produced just over 30% of the original stories in our sample, despite accounting for half of the outlets in the sample.

Table 3: Share of Journalistic Output by Outlet Type: Original Stories.

	% of outlets (N = 663)	% of original stories (N = 6,949)
Newspaper	25.27%	46.99%
TV	13.62%	11.88%
Radio	51.14%	31.67%
Online only	9.99%	9.45%

Ratio of original stories to outlets
Ratio over 1 represents share of stories higher than share of outlets; ratio under 1 represents share of stories lower than share of outlets

Focusing next on local stories (i.e., stories that are about the local community), newspapers and online news sources perform even stronger in terms of local content while TV and radio stations perform worse. In fact, the share of local stories produced by newspapers (almost 60 percent) was more than double their share of outlets, resulting in a ratio of 2.36. As Table 4 indicates, *newspapers produced more local stories in our sample than all of the other outlet types combined.*

Online news outlets produced a slightly larger share of local stories than their share of outlets (10 percent v. 13 percent), for a ratio of 1.29, continuing the trend of story output being roughly proportional to outlet frequency. Finally, although radio stations make up roughly half of the outlets in our sample, radio stations produced only 19% of local stories, resulting in a ratio of 0.37 (see Figure 3).

Table 4: Share of Journalistic Output by Outlet Type: Local Stories.

	% of outlets (N = 663)	% of local stories (N = 2,646)
Newspaper	25.27%	59.7%
TV	13.62%	8.33%
Radio	51.14%	19.13%
Online only	9.99%	12.85%

Figure 3: Ratio of Stories to Outlets: Local Stories.
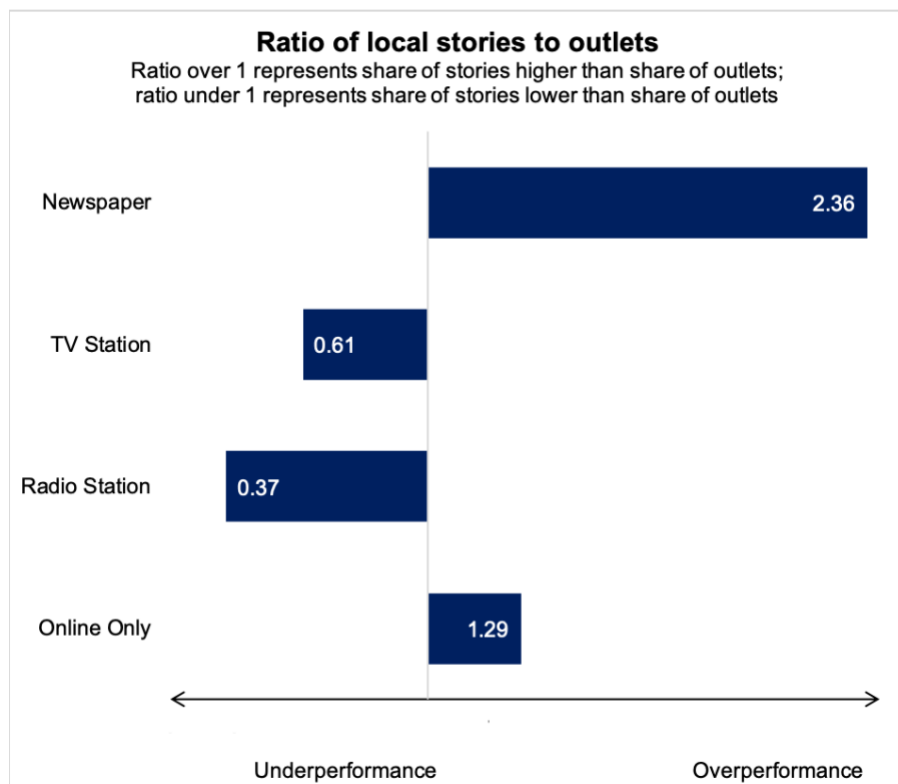
Turning next to stories that addressed a critical information need (CIN), newspapers' story output far exceeded their outlet frequency, producing 38 percent of the CIN stories while accounting for 25 percent of the outlets (see Table 5), for a ratio of 1.51 (see Figure 4). TV stations performed comparably, accounting for almost 18 percent of CIN stories against roughly 15 percent of outlets, for a ratio of 1.32. Online-only news sources, with a ratio of 1.1, provide a share of CIN stories that is roughly equal to their share of local media outlets. Radio stations are the only outlet type that makes up a smaller share of CIN stories than their share of outlets, with a ratio of 0.64 (see Figure 4).

Table 5: Share of Journalistic Output by Outlet Type: CIN Stories.

	% of outlets (N = 663)	% of CIN stories (N = 10,927)
Newspaper	25.27%	38.17%
TV	13.62%	17.92%
Radio	51.14%	32.94%
Online only	9.99%	10.97%

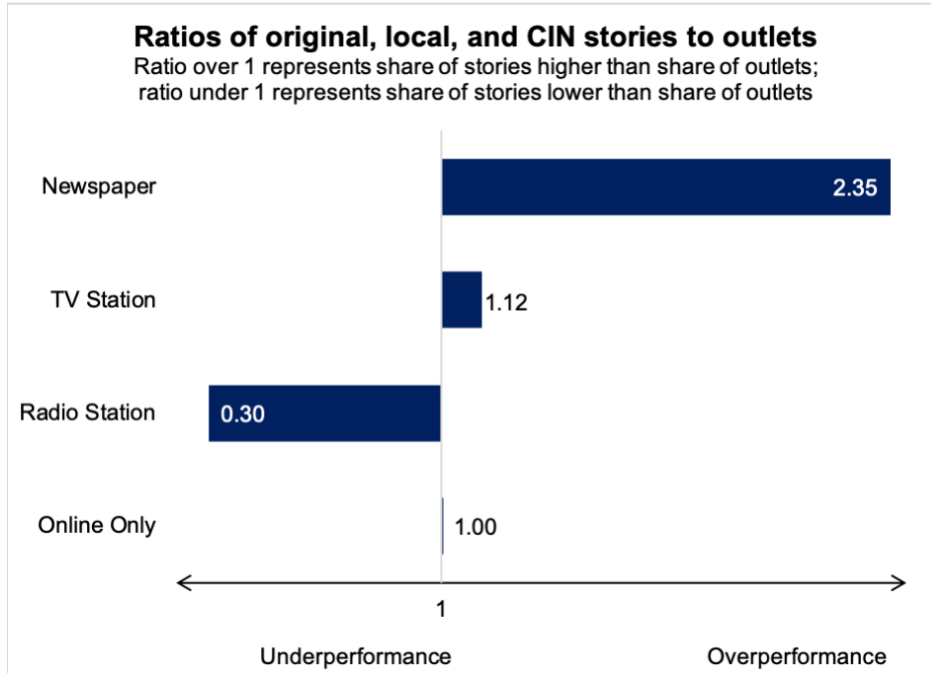Figure 4: Ratio of Stories to Outlets: CIN Stories.
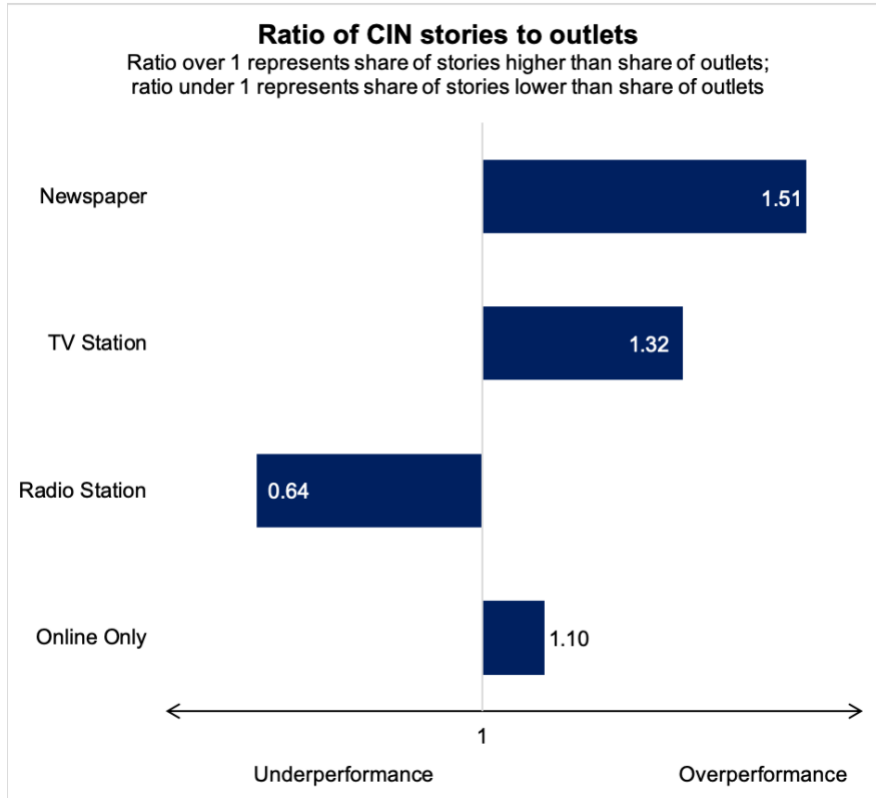
With this approach, we are also able to focus more narrowly on stories that meet multiple criteria. We have included most of these in Appendix E. However, below we present the distribution of the production of stories that meet *all three criteria* (original, local, and addresses a critical information need). These stories, it could be argued, represent the highest quality journalism in our sample.

When we focus on stories that meet all three of these criteria, we see that newspaper performance far exceeds that of other outlet categories (see Table 6). Newspapers produced nearly 60% of the stories meeting these criteria, while accounting for roughly 25 percent of outlets, for a ratio of 2.35 (see Figure 4). TV and online-only outlets had ratios at or near 1. Radio, once again, performed the worst, with a .3 ratio.

Table 6: Share of Journalistic Output by Outlet Type: Original/Local/CIN Stories.

	% of outlets (N = 663)	% of O, L, & CIN stories (N = 1,726)
Newspaper	25.27%	59.41%
TV	13.62%	15.28%
Radio	51.14%	15.28%
Online only	9.99%	10.03%

Figure 5: Ratio of Stories to Outlets: Original/Local/CIN Stories.

Ratios of original, local, and CIN stories to outlets
Ratio over 1 represents share of stories higher than share of outlets;
ratio under 1 represents share of stories lower than share of outlets

Newspaper: 2.35
TV Station: 1.12
Radio Station: 0.30
Online Only: 1.00

1
Underperformance   Overperformance

DISCUSSION

Newspapers remain most important source of local journalism in communities
As this analysis makes clear, as much as newspapers may represent a dwindling presence in the local news ecosystem of many communities, they still provide nearly half of the original reporting to be found in our sample; more than half of the locally oriented reporting in our sample, and almost 40% of the stories that addressed a critical information need. Newspapers provide the largest proportion of the stories meeting these criteria amongst the four categories of outlet types that we analyzed.

These numbers take on added significance when we take into account the fact that newspapers accounted for only 25% of the media outlets located within the 100 communities that we analyzed. Essentially, newspapers provide a share of the reporting meeting our analytical criteria that was 1.5x to 2.5x larger than newspapers' share of the total outlets in our sample.

In combination, these numbers suggest that newspapers remain by far the most important source of local journalism serving local communities.

This finding is magnified when we look at the performance of other types of local media outlets. Radio, for instance, consistently underperformed according to our metrics. That is, while radio stations are quite numerous in the communities we analyzed, the reporting found on their home pages seldom met the original, local, and critical information need criteria that we applied.

Online-only outlets are still a small presence in local news ecosystems
More important, however, may be the findings related to online-only media outlets. One of the key points of contention within the journalism field is whether, or to what extent, newer online news sources have been able to meaningfully compensate for the declines that have been affecting local newspapers. The data presented here suggest that online-only news outlets remain a relatively small presence in local news ecosystems, accounting for about ten percent of the outlets in our sample.

In addition, these online-only outlets generally provide news output that is in proportion with their share of the total outlets in the community. That is, online only news outlets represent about 10 percent of the media outlets in the 100 communities that we analyzed – and produced about 10 percent of the stories in our data set. When we focused on specific story criteria (original, local, critical information needs), online only news outlets generally accounted for about 10 to 15 percent of the stories that met these criteria.

There are a number of key takeaways from these findings regarding online-only outlets. The first, obviously, is that online-only outlets, from a numerical standpoint, still represent a fairly small chunk of the local media ecosystem. The second is that, unlike newspapers, online-only media outlets do not over-perform relative to their frequency. They have not taken on the characteristics of local newspapers in this regard, in terms of their overall journalistic productivity. This was consistently the case across all of the evaluate criteria that we applied to each story. The journalistic output for online-only news sources remains quite modest in relation to the journalistic output being provided by local newspapers.

It would be particularly useful to be able to place these findings into a larger historical context. That is, how different might these numbers have looked five years ago or ten years ago? How might they look five years down the line? While archival data are not available to replicate this analysis, moving forward it is possible to apply our methodological approach in order to track future trends.

In terms of the broader implications of these findings, the results of this research provide compelling support for public policy and philanthropic initiatives directed at preserving the viability of local newspapers in the face of the economic hardships that they are enduring. These findings would also seem to suggest that all of the commercial and philanthropic efforts and resources that have, to this point, been directed at developing online-only news sources that can compensate for the declines of local newspapers have a long way to go before these outlets are performing in a way that is comparable to local newspapers.

ENDNOTES

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[17] https://archive.org/.

[18] It is worth noting that, in some instances, more than one outlet shared the same URL. This typically occurred in relation to radio stations. Because radio stations often are part of large ownership groups, it was sometimes the case that an individual radio station's home page would be (or would redirect to) the home page for the entire station group. In such instances, the home page was analyzed each time it arose in connection with an individual community. It is also important to note that some of the sites that were archived produced no stories during the sampled days, which is why our content analysis encompasses 663 total outlets.

[19] For a more detailed discussion, see Napoli, et al. (2018).

[20] The complete archive is available online at https://archive-it.org/collections/7520. Note that the actual archive today is larger than described in the text. The archive was created with specific boundaries for the purposes of this research, but the Internet Archive decided to continue to data collection effort on a monthly basis to maintain the record of local news websites.

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[31] Prior to training, two pilot tests on a sample of data were conducted by the researchers in order to identify data-gathering challenges and difficulties interpreting or applying the coding categories. These pilots refined the training and content analysis protocols. Coders underwent two trial sessions using data samples (followed by assessment and debriefings) in order to identify any challenges or uncertainties associated with the content analysis protocol and code book. In identifying and coding individual news stories, coders were instructed and trained to exclude social media feeds, widgets, photo galleries, event calendars, outlet promotional announcements, and advertisements from their coding activity. Coders also coded only those stories with publication dates that matched the dates in the constructed week sample. Google Translate was used to facilitate coding of foreign-language content. A dedicated communication channel facilitated with the app Slack was established and maintained during the entirety of the coding process, so that coders could share questions or

challenges that emerged during the coding process and obtain immediate feedback and guidance.

Using Riffe, et al.'s (2013) formula for determining an intercoder reliability sample, a random sample of cases was selected for an intercoder reliability check by an additional trained coder. Using Krippendorff's alpha, intercoder reliability was .81 for the Original variable, .84 for the Local variable, and .73 for the Critical Information Needs variable. See Riffe, D., Lacy, S., & Fico, F. (2014). *Analyzing Media Messages: Using Quantitative Content Analysis in Research (3rd ed.).* New York: Routledge.

APPENDIX A:
MEDIA DATABASES/DIRECTORIES CONSULTED

The following were the key sources consulted in searching for news outlets within a given community.

Television
1. Association of Public Television Stations' Station Directory
2. FCC Broadcast Television License Database
3. NPR Labs Mapping and Population System

Radio
4. FCC AM and FM Broadcast License Database
5. Radio Locator

Newspapers
6. Library of Congress Directory of Newspapers

Online News Sites
7. Knight Foundation's Directory of Community News Sites
8. Columbia Journalism Review's Guide to Online News Startups
9. Online Newspaper Directory for the World
10. Michelle's List

Alternative Sources
11. Mondotimes

APPENDIX B:
MANUAL SEARCH PROTOCOL

In order to identify additional sources missed in the online search, a manual search protocol was developed in order to search for additional sources that were not readily accessible via traditional search.

1. Start with Wikipedia and search for each community
    a. May list community's media
    b. May provide community nickname(s) to utilize in search engine queries
    c. May describe large minority populations that could be useful in search for minority/foreign language media outlets

2. Go to Patch.com
    d. Enter community name into Find Your Patch pulldown menu

3. Google Search
    a. Key terms:
        i. "[Community Name][Community Nickname] News"
        ii. "[Community Name][Community Nickname] Journalism"
        iii. "[Community Name][Community Nickname] Hyperlocal"
        iv. "[Community Name][Community Nickname] Blog"
    b. Repeat in Spanish
        i. News = Noticias
        ii. Journalism = Periodismo

CRITICAL INFORMATION NEEDS CATEGORIES

1. Emergencies and risks
Individuals, neighborhoods, and communities need access to emergency information on platforms that are universally accessible and in languages understood by the large majority of the local population, including information on dangerous weather; environmental and other biohazardous outbreaks; and public safety threats, including terrorism, amber alerts, and other threats to public order and safety. Further, all citizens need access to local (including neighborhood) information on policing and public safety.

2. *Health*
All members of local communities need access to information on local health and healthcare, including information on family and public health in accessible languages and platforms; information on the availability, quality, and cost of local health care for accessibility, lowering costs, and ensuring that markets function properly, including variations by neighborhood and city region; the availability of local public health information, programs, and services, including wellness care and local clinics and hospitals; timely information in accessible language on the spread of disease and vaccination; timely access to information about local health campaigns and interventions.

3. *Education*
Local communities need access to information on all aspects of the local educational system, particularly during a period when local education is a central matter for public debate, decision-making, and resource allocation, including: the quality and administration of local school systems at a community-wide level; the quality of schools within specific neighborhoods and geographic regions; information about educational opportunities, including school performance assessments, enrichment, tutoring, afterschool care and programs; information about school alternatives, including charters; information about adult education, including language courses, job training, and GED programs, as well as local opportunities for higher education.

4. *Transportation Systems*
All members need timely information about local transportation across multiple accessible platforms, including: information about essential transportation services including mass transit at the neighborhood, city, and regional levels; traffic and road conditions, including those related to weather and closings; timely access to public debate on transportation at all layers of the local community, including roads and mass transit.

5. *Environment and Planning*:
Local communities need access to both short and long-term information on the local environment, as well as planning issues that may affect the quality of lives in neighborhoods, cities, and metropolitan regions, including; the quality of local and regional water and air, timely alerts of hazards, and longer term issues of sustainability; the distribution of actual and potential environmental hazards by neighborhood, city region, and metropolitan area, including toxic hazards and brownfields; natural resource

development issues that affect the health and quality of life and economic development of local communities; information on access to environmental regions, including activity for restoration of watersheds and habitat, and opportunities for recreation.

6. *Economic Development*
Individuals, neighborhoods, and communities need access to a broad range of economic information, including: employment information and opportunities within the local region; job training and retraining, apprenticeship, and other sources of reskilling and advancement; information on small business opportunities, including startup assistance and capital resources; information on major economic development initiatives affecting all local levels.

7. *Civic Information*
Communities need information about major civic institutions, nonprofit organizations, and associations, including their services, accessibility, and opportunities for participation in: libraries and community-based information services; cultural and arts information; recreational opportunities; nonprofit groups and associations; community-based social services and programs; and religious institutions and programs.

8. *Political Life*
In a federal democracy, citizens need information on local, regional, and county candidates at all units of governance, including: information on elected and voluntary neighborhood councils; school boards; city council and alder elections; city regions; and county elections; timely information on public meetings and issues, including outcomes; information on where and how to register to vote, including requirements for identification and absentee ballots; information on state-level issues where they impact local policy formation and decisions.

APPENDIX D:
DESCRIPTIVE STATISTICS

DESCRIPTIVE STATISTICS FOR COMMUNITY VARIABLES (N=100)				
Variable	**Minimum**	**Maximum**	**Mean**	**SD**
POPULATION	20256	291707	59408.05	50797.90
DENSITY	628.5	17346.30	3258.92	2830.43
INCOME	21301	156439	68775.30	25586.94
AA%	0	86	10.78	15.28
HL%	1.0	96.0	15.73	19.05

APPENDIX E:
ANALYSES OF COMBINATION CONTENT CATEGORIES

	% of outlets (N = 663)	% of original & local stories (N = 2,476)	Ratio
Newspaper	25.27%	61.39%	2.43
TV	13.62%	8.24%	.6
Radio	51.14%	17.17%	.34
Online only	9.99%	13.2%	1.32

	% of outlets (N = 663)	% of original & CIN stories (N = 4,394)	Ratio
Newspaper	25.27%	46.84%	1.85
TV	13.62%	15.21%	1.17
Radio	51.14%	26.58%	.52
Online only	9.99%	11.36%	1.14

Local and CIN Stories			
	% of outlets (N = 663)	% of local & CIN stories (N = 1,837)	Ratio
Newspaper	25.27%	58.31%	2.31
TV	13.62%	10.31%	.76
Radio	51.14%	16.46%	.32
Online only	9.99%	14.92%	1.49

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