

**Rural Communication Systems Theory: Examining the Knowledge Gap Hypothesis  
in Rural America**

**Abstract**

More than 19% of America is defined as rural, yet there is a dearth of scholarly research on media and communication in rural contexts. Rural is a paradigm often misunderstood and misrepresented. The changing media and economic landscape hit rural America particularly hard, creating scarcity of traditional news outlets in most rural areas. Media organizations saw an opportunity to shrink the knowledge gap in rural populations with hyper-local news aggregators, but their attempts failed because they established the sites without first consulting the community. The purpose of this paper is to present the Rural Communication Systems theory based on elements of the Knowledge Gap Hypothesis and Gatekeeping theory. The Rural Communication Systems theory explains how rural communities, in spite of perceived disadvantages, rely on established communication systems while adapting new technologies to gather and share information to ultimately decrease knowledge gap. Key implications include: rural residents with Internet are seen as community gatekeepers; because of the increased affordability of mobile devices, lower socioeconomic status (SES) residents can be more information-rich than higher SES residents without mobile devices; and rural residents turn to social media—especially to women—for hyper-local news.

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## Introduction

From the most primitive civilizations, people have looked for accurate and timely sources of information (Kovach & Rosentiel, 2001). In *Elements of Journalism*, Kovach and Rosentiel (2001) note that across tribal societies, people valued the same kinds of information as news and sought out similar types of people as news sources. “They wanted people who could run swiftly over the next hill, accurately gather information, and engagingly retell it” (Kovach & Rosentiel, 2001, p. 1). As societies became more industrialized, technological advances enabled mediated communication, and scholars from social sciences began to study mass communication. One of the first to study mass communication was Wilbur Schramm, who published a textbook conceptualizing mass communication (DeFleur, 2010). Included in Schramm’s book is Lasswell’s (1948) definition of communication as:

Who

Says What

In What Channel

To Whom

With What Effect

The straightforward Lasswell model still provides a framework for studying mass communication, although scholars have built on or adapted it. For example, White (1950) noted the role of gatekeepers in filtering information. Katz and Lazarsfeld (1957) described a two-step flow of information from opinion leaders who follow mass media to those who do not. The proliferation of mass media available to those who had access to it

through location or financial resources created what Tichenor, Donohue, and Olien (1970) termed a Knowledge Gap.

One of the basic criteria of news is timeliness (Rich, 2015). In rural communities, many traditional news media lack resources and staff to provide timely information to local residents. According to the Rural Profile of Arkansas (2015) the rural U.S. population has declined 40% since 1900. As rural America's population decreases, newspapers have decreased publication frequency from daily to weekly, cut staff members, and outsourced ownership (Hindman, 2014). Arguably, these realities have led to a mistrust of local media. Increasingly, media consolidation, economic recession, and brain drain contribute to a perceived knowledge gap in rural areas (Hindman & Beam, 2014; Waldman, 2011).

The purpose of this paper is to present a theory to help explain how residents in rural communities utilize communication systems to offset knowledge gaps. The theory is based on the assumptions that in rural communities, hyper-local news is not available or timely through traditional media outlets, thus, not conducive to national hyper-local aggregators. Rural communities rely on established communication systems while adapting new technologies to gather and share information to ultimately decrease knowledge gap. Considering rural communication systems builds on the KGH and also touches on White's (1950) Gatekeeping theory. Gatekeeping is relevant to this study because it addresses how information is gathered and flows through individuals, mass, and social media in hyper-local contexts.

### **Justification**

Rural, as defined by the U.S. Census Bureau, are all areas not considered urban. That is, areas with population less than 2,500. These areas, according to the 2010 Census, account for 19.3% of the population in the United States. Additionally, according to the Rural Profile of Arkansas (2015), rural areas in the state experienced a net loss of roughly 12,000 jobs. All three rural regions in Arkansas, (Delta, Coastal Plains, and Highlands) had a net loss of manufacturing jobs from 2007-2015 and other job sectors did not compensate for lost jobs. Of Arkansas' 75 counties, in 2015, 11 have a child poverty rate higher than 40 percent. Carr and Kefalas (2009) have coined this migration to urban areas the rural brain drain. They argue that the significance of rural brain drain extends beyond the local communities:

We believe that it would be a mistake to abandon the region, because hollowing out has repercussions far beyond the boundaries of the small towns it affects. The health of the heartland is vital to the country as a whole. This is the place where most of our food comes from; it can be ground zero for the green economy and sustainable agriculture; it is the place that helps elect our presidents, and it sends more than its fair share of young men and women to fight for this country. (Carr & Kefalas, 2009, p. 9)

Along with job and population loss, these factors have contributed to loss of newspaper revenues, closure of regional newspapers, and radio news decline (Hindman & Beam, 2014). In light of the decrease of mass media coverage and rural brain drain, residents rely on multiple platforms for communicating hyper-local news. In many rural communities, traditional media have either disappeared or been replaced with less local coverage. Residents are then tasked with simultaneously seeking and sending information to verify news and decrease the knowledge gap.

### **Literature Review**

A familiar adage is “knowledge is power.” For centuries, newspapers were a primary medium of delivering knowledge and information. The Knowledge Gap Hypothesis identified that access to information through media could create a “knowledge gap” in favor of those with a higher socio-economic status. However, developments in journalism and the media industry have challenged the role of traditional media, perhaps especially in rural settings. A discussion of such developments as well as the Digital Divide and the emergence of hyper-local news trends is essential to establishing the KGH as a foundational theory for a better understanding of how rural communities rely on established communication systems while adapting new technologies to gather and share information to ultimately decrease knowledge gap.

#### **Developments in journalism and the media industry**

Defining news is not necessarily an easy task, as different people have different interests, but scholars and professionals have agreed on basic parameters as to what makes an item newsworthy. Kovach and Rosentiel (2001) advocated that, “The primary purpose of journalism is to provide citizens with the information they need to be free and self-governing” (p. 17). They also argued that even in the face of a rapidly changing media landscape - including a breakdown in the traditional media economic model - that the purpose of journalism had “remained remarkably constant” (p. 17). Similarly, while the delivery of news has changed from print to broadcast to instantaneous social media feeds, the qualities of news have not changed drastically. Rich (2015) listed the qualities of news as timeliness, proximity, unusual nature, human interest, conflict, and impact.

She also encouraged students to consider the qualities of helpfulness (such as “how to” stories), celebrities, entertainment, issues or problems in the community, and trends.

Fifteen years ago, Kovach and Rosentiel (2001) noted that for decades, questions about journalism were either not asked or ignored. “You owned a printing press or a broadcast license and you produced journalism. In the United States journalism has been reduced to a simple tautology: It was whatever journalists said it was” (Kovac & Rosentiel, 2001, p. 17). The consequences of the top-down approach would become evident in the face of technology and citizen journalists. Even before the age of Facebook and Twitter newsfeeds, Kovac and Rosentiel (2001) noted the challenges of evolving media. “Technology is shaping a new economic organization of information companies, which is subsuming journalism inside it” (Kovac & Rosentiel, 2001, p. 18). More recently, Rich (2015) outlined the impact of media convergence and noted how the delivery of news has changed. “The increasing popularity of smartphones and tablet computers like the iPad is creating new venues for news companies to deliver their products. Mobile news delivery is the fastest growing trend for the media industry,” (Rich, 2015, p. 3).

While traditional news sources have struggled in the digital age, they still remain an important source of information for many Americans. For example, around half of local newsreaders in America still rely on print newspapers alone, according to a Pew Research survey in 2014. Of particular importance to American is the news quality of proximity. According to the Pew Research Center, 72% of Americans follow local news closely. Princeton Survey Research Associates International interviewed 2,251 adults, age 18 and older from January 12 to 25, 2011. The results show that while many local



news gatherers rely on online sources, the primary sources of local news across all ages are local television news broadcast and word of mouth from friends, family, coworkers and neighbors. Of traditional media sources, 76% of local news enthusiasts, age 18-39; rely on local television broadcast, while 63% on word of mouth, and 53% on local radio broadcast. Approximately 83% of local news enthusiasts, age 40 and older, also rely on local television broadcast more than other traditional sources. These two age groups differ greatly with online local news. Adults 18-39 are much more likely to find local news through an Internet search engine (54%), on a local newspaper (33%) or television's website (32%), and from individuals or organization's social media networking site (21%). While only 18% of adults aged 40 and over find local news from newspaper websites, 14% from an online local television news site, and 7% from social networking sites.

Although Americans remain interested in news, the economic challenges discussed by Kovach and Rosentiel (2001) fifteen years ago manifested in a way few could imagine. As Rich (2015) has said, convergence and consolidation are now important terms for aspiring journalists to understand. "Definitions of news are also evolving, and economic factors such as mergers of media companies have changed the landscape of the news industry. Declining newspaper circulation, increased competition from cable television news stations and access to millions of sites on the Internet are forcing news organizations to expand ways to interest readers and viewers," (Rich, 2015, p. 3).

According to the Pew Research Center's State of the Media in 2015, print newspaper advertising revenue declined from \$47.4 billion in 2005 to \$16.4 billion in

2014 (Mitchell, 2015). The loss of revenue hit rural areas especially hard as small newspapers were closed or consolidated and reporters were left without jobs. As this shift occurred, local newsreaders in urban areas were able to turn to online sources for news. Sometimes those news sources were from established, traditional media, but there was also an increase in social networking, which Rich (2015) stated changed the industry, as people who once were the audience became news producers. However, as important as social networking was becoming to the flow of information, particularly in underserved areas, some of those same rural areas did not have the same level of technology advancements as their urban counterparts, leading to what came to be termed the “digital divide.”

### **Digital Divide**

In 1996 the *National Telecommunication and Information Administration* (NTIA) defined the digital divide as the chasm between those with access to the Internet and those without. The divide split neatly along socioeconomic lines, between the “haves” and “have-nots.” (Norris, 2001) With the popularization of the Internet in the early 1990s, the U.S. quickly emerged as the leader in the developing digital age. This homegrown Information Superhighway positioned the U.S. to dominate the digital world through computer access and what politicians and supporters saw as an opportunity for digital democracy. Norris (2001), one of the first scholars exploring the divide, asked if the diffusion of Internet throughout the world would close the gap identified in 1996, or if the divide would persist and expand.

NTIA defined the divide as access along socioeconomic lines: age, race, income, and education (NTIA, 2002). Scholars and politicians alike digested the research and

guided the direction of digital divide research. The access-based idea dominated popular opinion: that if more people had access to computers and the World Wide Web, then more people would have access to education, economic development, employment, etc. The more people connected the better. President Bill Clinton offered billions of dollars into closing this access-based divide. The access-based idea posited that if individuals were equipped with access to the Internet, the playing field would be leveled (Norris, 2001). When society has equal access, equal progress would result. However, high-income, Caucasian, married, well-educated individuals continue to have more access to IT compared to low-income, African American and Latino, unmarried, and less-educated individuals (NTIA, 2002).

As the divide surfaced in the mid-1990s, minorities and underserved populations stood on the “have-not” side of the divide. As many saw technology as the answer, and great equalizer, for these century-old divisions, access was quickly provided. During a presidential address in the Navajo Nation, President Clinton met a young girl who had recently won a computer in a competition, but lacked Internet access at home. This example provided context for how most addressed this issue of divide in the early 2000s. It also illuminates the incompleteness in the approach. Today, less than 10% of homes on tribal lands have direct access to Internet in homes (Smith, 2012). In the Navajo Nation, about 30% lack electricity in homes, while 40% live in poverty. Navajos are unemployed at rates nearly triple of the U.S. Research states without Internet access, division will deepen; gaps will be reinforced (Crawford, 2011).

Billions of dollars and nearly two decades later of attempting to make Internet access equal to all, the US currently ranks 16<sup>th</sup> in digital access (Crawford, 2011). The

definition of digital divide continues to change almost as quickly as technology itself.

The label of digital divide now encapsulates countless ideas: academic divide; quality of use divide; and a new access-based divide, defined by the current “monopoly” of

American providers offering old-fashioned technology; resulting in the rich being gouged and poor being left behind (Crawford, 2011). 19 million Americans are still without Internet access (Crawford, 2011).

**Tracing the divide: Access vs. preparedness.**

Talukdar and Gauri (2011) suggest while usage has increased, it does not ensure equitable distribution of access. Instead, research states that new digital behavior adopters consist of more people in the same socioeconomic class. The divide remains and grows based on key socioeconomic characteristics in the U.S. including: income, education, gender, race, age, and residential location. Based on random sampling in 2002 and 2008, Talukdar and Gauri (2011) provided evidence that the divide continues to grow along socioeconomic lines and widened from 2002 to 2008. Populations with college or higher education were seven times more likely to have access to Internet. Additionally, a wealthier person in 2008 was 60 percent more likely to have access at home, which increased from 40 percent in 2002. Urban residents were 40 percent more likely to have home Internet access than rural residents and urban residents’ usage increased from 30 percent in 2002 to 80 percent in 2008 higher than rural users. This research did not mention how the Internet is used, or what it is used for.

**Digital divide: Rural access.**

Navigating the ever-changing definitions of digital divide parallels the difficulty of adoption of digital behavior among low-income, rural populations. Crawford (2011)

defines a “new” digital divide citing the monopoly among wireless (AT&T and Verizon Wireless) and cable (Time Warner, Inc., and Comcast) providers in the U.S. Outside of the U.S. many other countries have faster, cheaper access; Internet access for all is possible. Crawford, author of *Captive Audience*, views no competition and no government oversight as price gouging of the rich, and furthering the divide between “haves” and “have-nots.” Only 40% of low-income (below \$25,000 annual income) homes in America have access at home; while 93% of homes with income above \$100,000 annually have access at home. Often rural towns have no options; broadband is not available as it is not profitable for companies to invest in infrastructure.

### **Hyper-Local News**

To reach rural populations without local traditional media, AOL, NBC and Gannett, Tribune and McClatchy’s Topix all introduced hyper-local news sites. Hyper-local news is information specific to a certain geographic area or shared interest. Based in Palo Alto, California, Topix was created to give every town in America a homepage with aggregated news from nearby online news, social media, and a place to discuss local news. Ultimately, Topix developed a bad reputation for gossip. Online readers can comment anonymously on the site’s discussion forums and often use the space to talk negatively about other community members. In 2011, *The New York Times* published an article titled, “In Small Towns, Gossip Moves to the Web, and Turns Vicious” (Sulzberger, 2011). The article interviewed residents in Mountain Grove, Missouri, a rural town of 5,000, where recent online gossip has disrupted lives of community members. The owner of a local diner, Jim Deverell referred to Topix as a “cesspool of character assassination” (Sulzberger, 2011, p. 1). Topix’s approach as an aggregator only

works best in communities with already established online media or heavy social media traffic, e.g., Twitter. This reality could explain its shift to an online gossip spot in rural communities—Topix cannot change the local media landscape if local media do not already exist. Topix cannot aggregate local news where communities do not have local news providers.

Kavanaugh et al, (2014) described a media landscape in which a growing number of local, rural communities do not have access to timely news coverage. They introduced their paper by stating, “This painstaking and often divisive civic process is especially difficult for the many towns, counties and rural areas that have little or no coverage in print media, such as a local newspaper. For these small cities, city neighborhoods and towns, most relevant local information is only available by word of mouth or through electronic communication disseminated by information gatekeepers (i.e., various stakeholder and interest groups)” (Kavanaugh et al, 2014, p. 30).

The authors proposed an algorithm called the Virtual Town Square in which the design would aggregate information from existing news sources based on tags and comments, essentially overcoming the need for the (non-existent) local reporter/gatekeeper. The paper makes an important contribution to an understanding of hyper-local and a rural community by pointing out the information is not readily available in traditional formats. However, by relying on social media “chatter” such as on trending Twitter hash tags in cities such as Blacksburg, VA, the proposed model still does not address the realities of communication in the vast number of small, isolated towns that dot the map of the United States. There are millions of Americans who will likely never see their towns trending on social media. The authors stated, “The goal of

aggregating information is to have a self-sustaining, self-organizing system with minimal oversight and maintenance” (Kavanaugh et al, 2014, p. 36). It remains to be seen if the VTS square model can work in extreme rural areas that, as the authors stated as a premise, rely on word of mouth. This study clearly defined a problem, but the proposed solution will arguably not reach all Americans in rural settings.

Baines (2012) studied Northumberland, the most sparsely populated county in England, and its implementation of online hyper-local news sites. The case study detailed county’s efforts to make “more sustainable communities, where people want to live and work” (p. 1). However, much like other imposed rural-specific solutions, Baines (2012) found that after training for the implementation of Northumberland’s hyper-local site, the media organizations inaccurately assumed community members would willingly generate content and discussions. Baines (2012) concluded, “The project was conceived, top-down, to meet institutional needs, not community needs” (p. 10). The media organizations saw an opportunity to reach rural populations without first consulting the community. The lead project coordinator suggested that, “I think this idea that everyone is a journalist now, isn’t true. (A), everyone doesn’t want to be a journalist and, (b) doesn’t have the skills.” Baines (2012) suggested that, “the company saw ‘collaboration’ purely in terms of community producing content for the site” (p. 11).

### **Theoretical Framework**

The history and economy of news, technological advancements, the Digital Divide, and hyper-local news developments can be addressed within the theoretical framework of the Knowledge Gap Hypothesis. The KGH is appropriate as a framework for discussing the flow of information in isolated, rural areas because it discusses the

impact access to media and socio-economic status have on knowledge. Considering rural communication systems builds on the KGH and also touches on White's (1950) Gatekeeping theory. Gatekeeping is relevant to this study because it addresses how information is gathered and flows through individuals, mass, and social media. KGH also helps examine the news vacuum in rural communities. In rural communities, residents, much like primitivists, have to seek and verify hyper-local news on their own. Rural communities rely on established communication systems while adapting new technologies to gather and share information to ultimately decrease knowledge gap.

### **Development of Knowledge Gap Hypothesis**

The Knowledge Gap Hypothesis was formalized by Tichenor, Donohue, and Olien in 1970 at the University of Minnesota. The Knowledge Gap Hypothesis (KGH) was primarily directed at print publications and posited that “as the infusion of mass media information into a social system increases, higher socioeconomic status segments tend to acquire this information faster than lower socioeconomic-status population segments so that the gap in knowledge between the two tends to increase rather than decrease” (Tichenor, Donohue, & Olien, 1970, p. 170). The authors clarified in the original study that the Knowledge Gap does not contribute to poor people becoming poorer, rather, the poor remaining uninformed; or, simply that those of higher socioeconomic status develop knowledge faster because of access to media (Tichenor, Donohue, & Olien, 1970). The article was published in *Public Opinion Quarterly* and noted the correlation between education and knowledge of current events including public affairs and agriculture.



Five years later, the KGH researchers presented modifications to their hypothesis. Incorporating a Reconsideration of the Knowledge Gap (Donohue, Tichenor, & Olien, 1975) is essential in discussing a theory of how technology affects Knowledge Gap in hyper-local, rural settings. In this paper, the researchers applied assumptions of social structure systems to Knowledge Gap and tested the assumption that mass media research had questioned - that “higher levels of information input lead to a general equalization of knowledge throughout the system” (Donohue, Tichenor, & Olien, 1975, p. 3). The key variables related to content – that the information has community relevance and is a source of conflict. While this proposed theory is not restricted to issues of conflict, community relevance is important in analyzing how information is disseminated through a community and what knowledge gaps are created and filled through the social structure systems. The reconsideration led to somewhat mixed results. In terms of national news, coverage did result in a larger Knowledge Gap. But, the opposite was true of relevant local news. The authors wrote, “These findings suggest that the original hypothesis, however well supported by previous data, may not hold for all situations. Under what conditions might the knowledge gap be lower in magnitude?” (Donohue, Tichenor, & Olien, 1975, p. 13). Tichenor, Donohue, and Olien (1970) based KGH on five factors: communication skills, stored information, relevant social contact, selection exposure, acceptance and retention; and the nature of mass media. The hypothesis has been refined and developed over the last 40 years. For example, the authors updated the hypothesis in 1975 to say that smaller communities may be less informed about national news, but they are still informed about local news particularly if the community is small, the community is all affected, and if the news is controversial or regarding social conflict.

### **Applications of Knowledge Gap Hypothesis**

In the past four plus decades, scholars have applied the Knowledge Gap Hypothesis to studies of information disparities related to rural and urban settings, media usage, ethnicity, and community constraints. Taken together, these studies indicate the value of the Knowledge Gap Hypothesis as a framework for considering the flow of information as well as its limitations in explaining the phenomenon.

#### **Rural vs. Urban.**

Comparisons of rural and metropolitan residents were not explicitly included in the original Knowledge Gap Hypothesis studies, but as the literature review showed, poverty is prevalent in rural settings. Additionally, the Digital Divide has been shown to have adverse effects in rural areas. These factors have led to scholars to consider the Knowledge Gap Hypothesis in rural settings.

For example, Hindman (2000) studied patterns of adoption and use of information technologies among residents of metropolitan versus nonmetropolitan communities. Hindman hypothesized that metropolitan residence was positively and closely associated with use of technologies (Hindman, 2000). The researcher found that metropolitan residents are closely linked to use of information technologies (Hindman, 2000). Hindman also concluded that many gaps among metropolitan and nonmetropolitan are in uses of technology – while more nonmetropolitan residence had access to Internet, they were not using it in the same ways, e.g. online shopping, online news gathering. Geographic location seemed to be less a factor of usage than income, age, and education. These factors expand the gap between higher and lower status groups (Hindman, 2000). Hindman's study provides further history of the widening gap of the digital divide in

rural areas. Additionally, it speaks to another important question of rural vs. urban technology use, i.e. *how* technology is being used and with what effect. Rural residents and urban residents have very different uses and these uses can be further studied.

Gilbert, Kavahalios, and Sandvig examined the use of Social Network Systems in both rural and urban communities (2010). They found data that supported four of their five hypotheses: Rural users have fewer friends, closer (geographic) friends, females make up higher number of users, and rural users set profiles to private more often. These results confirm previous studies that women are generally the keepers of online information in rural communities (Gilbert, Kavahalios, & Sandvig, 2010). However, no support was found for hypothesis five, “compared to that of urban users, rural users’ distribution of friends will reflect a preference for strong ties over weak ties” (Gilbert, Kavahalios, & Sandvig, 2010, p. 1372). Instead, both rural and urban people use Social Network Systems to communicate with a similar number of strong and weak ties. The affirmation of previous research stating women as rural, Internet gatekeepers is essential to exploring the hyper-local news flow in rural communities. Additionally, the research points to other studies of rural residents’ adoption of technology at a slower rate than urban resident and how rural residents use technology differently than urban residents.

Hindman and Beam (2014) compared rural and non-rural populations local news access and usage in Washington State. The study examined ease of online media use compared to five years ago, frequency of access, and civic engagement among rural and non-rural populations in Washington State and nationwide. The study found that while rural residents do not use online media as frequently as non-rural residents to access local news. The author concluded that rural residents sought news less frequently than non-

rural residents because of a lack of local news availability, not because of a lack of access, skill, or interest (Hindman & Beam, 2014). While respondents said accessing local media is now easier than five years ago, this answer might point to ease of online access rather than “quantity or quality of news” (Hindman & Beam, 2014, p. 37). The study points to the local news gathers and community stakeholders as a potential reason for this lack of quality local news. In small communities, local news is viewed, produced, accessed, and used differently than in non-rural areas. As the national media landscape continues to change, local news media face multiple issues—budget, technology adoption, and local news veracity.

#### **Media usage.**

As seen in the above study that explored media usage in rural areas, scholars have also been interested in how the use of media affects the knowledge gap. Goh (2015) studied differences in media use and its contribution to the knowledge gap in Singapore’s authoritarian press system. She hypothesized that those with higher education would be more educated about political topics than those with lower education. However, her findings showed the opposite. Goh also hypothesized that residents using alternative media would gain more knowledge than those using mainstream, or government sanctioned, media. The significance of Goh’s study is that her findings counter the Knowledge Gap Hypothesis in that higher educated citizens did not have more knowledge than those with lower education. In fact, lower educated voters gained more from increased alternative online media usage. Grassroots media, rather than government approved communication, empowered citizens to gain more knowledge of political issues. This study turns knowledge gap on its head, suggesting that lower educated

citizens were more informed than higher educated citizens. This is significant when studying rural areas and knowledge gap in the United States.

Jenssen (2012) used a quantitative index to test for knowledge gain as related to the Knowledge Gap Hypothesis of residents exposed to Norwegian newspapers and television. His findings were in line with the original KGH study, and he found the strongest predictor of knowledge gain was previous knowledge. He found that through education the knowledge gap was widening. He concluded newspapers had potential to close the knowledge gap. However, even though public television has raised the level of knowledge overall, “this does not necessarily lead to a closing of the knowledge gap” (Jenssen, 2012, p. 33). Although the study is limited to television and newspapers and Norway, the framing of the KGH in terms of knowledge gained that is relevant. For example, while there still might be a gap between certain socio-economic status residents or based on those in different geographic locations, that does not mean that knowledge has not been gained by those who have been exposed to certain media. In the case of this article, the knowledge gain was explored through newspaper and television, but it just as easily could be addressed through digital and mobile media such as the Internet and cell phones.

Paek, Yoon, and Shah (2005) examined “cross-level interactions of local media use with individual and community factors, in particular, local print news use, using a multi-level analysis of community participation” (p. 587). The researchers found data to support that home ownership is positively associated with community participation. “Apparently, the influence of individuals’ local print news use on community participation is even stronger in communities where average home ownership is higher

and social interactions are more prevalent” (Paek, Yoon, & Shah, 2005, p. 596). The authors conclude that, “results clearly demonstrate aggregate effects and cross-level interactions of community integration and newspaper consumption on community participation” (Paek, Yoon, & Shah, 2005, p. 597). Individuals who are socially active are more likely to engage in public life when living in communities with reliable local print news (Paek, Yoon, & Shah, 2005). The more active the local print news is, the greater number of socially active people in a community. This provides a lens to view communities without access to local news and measure less civic participation. Additionally, some rural communities without local news are under-resourced with a higher percentage of renters rather than homeowners.

Van Deursen and Van Dijk (2014) employed a quantitative study to examine the amount and type of Internet usage across demographics in the Netherlands. They found the average years of Internet experience was 11.8 years and the average amount of Internet use a day was 3.2 hours. While education, age, and gender can predict Internet usage, the researchers conclude that differences in education might be the most long-lasting determinant. Perhaps the most interesting conclusion is that, “Although, at least in the Netherlands, low educated Internet users spent more time online in their spare time, the findings reveal that those with higher social status use the Internet in more beneficial ways” (van Deursen & Van Dijk, 2014, p. 514). Another worthwhile take-away is that improving access or skills will not automatically overcome the digital divide because it is a complex set of issues. The primary reason reported to use the Internet was to find information. An important contribution concerns the complex nature of the digital divide. The authors argue that improving access or skills will not automatically overcome the

digital divide or address knowledge gap because the divide is a multifaceted issue. Additionally, the finding that there was not a significant difference in use by rural or urban users is relevant to a study of hyper-local news in rural areas.

### **Ethnicity.**

The original Knowledge Gap Hypothesis studies did not incorporate ethnicity, but similar to rural settings, ethnicity can be seen as an important variable in considering access to news and information. For example, Eastin, Cicchirillo, and Mabry (2015) conducted a quantitative online study in Texas to analyze media consumption across Caucasian, Hispanic, and African American ethnic subgroups. They found several significant differences of media usage and motivations even when controlling for factors such as age, income, and education. The authors provide a discussion of the relevance of their findings, most importantly that the KGH was extended to diverse groups. The breakdown of ethnicities is also important rather than looking at the digital divide as a monolithic phenomenon. Finally, the discussion points to the role of social capital which could be important in considering message seeking and sending by gatekeepers in a rural setting.

Additionally, Wertz and Kim (2015) utilized a KGH to conduct a quantitative content analysis to measure the quality of online health websites targeted to Hispanics compared to those targeted to the majority population. In five of eight areas based on criteria from the Health on the Net Foundation, they found that the “majority-targeted health sites revealed significantly higher mean scores” (Wertz & Kim, 2015, p. 31). Overall, the authors concluded that while the Internet could be used to promote access and information flow, “This study shows that valuable opportunities to reduce disparities

are currently being missed” (Wertz & Kim, 2015, p. 33) because the information provided to Hispanics is not as high of quality as that provided to the majority population. As one of the most recent KGH-based articles, the research is important in that it presents a new category of study into potential causes of the knowledge gap in addition to information flow, that being of quality. In this case, although there were websites targeted to both Hispanics and majority, the knowledge gap likely increased because of the lower quality of content available to the minority group.

### **Gatekeeping and Community Constraints**

While Knowledge Gap Hypothesis is the primary theoretical framework for addressing hyper-local news flow, it is not the only one. Gatekeeping (White, 1950) can also play a role in what information passes through channels and thus is accessible to audiences. Donohue, Olien, and Tichenor (1989), founders of the knowledge gap hypothesis, examined gatekeeping theory in Minnesota community newspapers. The researchers explored some of the ongoing community constraints and outcomes affecting gatekeeping. In 1985, the researchers interviewed 155 community newspaper editors by telephone. Newspaper types included 59 weekly papers in Minnesota and 96 daily papers in six Midwestern states. The community papers were limited to communities of 60,000 residents or less, or, non-metropolitan (Donohue, Olien, & Tichenor, 1989). To measure perceptions, first, editors were asked to “rank production, circulation, advertising, and news-editorial from most to least important as ‘concerns for decisions you make on your paper’” (Donohue, Olien, & Tichenor, 1989, p. 809). A second constraint was examined with an open-ended question, “In all of the decisions that you need to make as an editor, what kinds of decisions would you say are the toughest ones to make” (Donohue, Olien,



& Tichenor, 1989, p.809). The authors concluded that ultimately value of news information surpasses differences in newspaper structures. Although other constraints do change in various communities, e.g., small community editors rank advertising as higher constraint than larger newspaper editors. Profits in a small town change editor's role as gatekeepers. Advertising is essential to stay afloat in small communities—losing a single significant advertiser could negatively impact the paper's success. In the context of hyper-local news flow, gatekeeping and community structuralism is especially significant. Gatekeeping thus helps provide a baseline for exploration of how residents in small communities without consistent news coverage send and receive information about their community.

### **Summary of Theoretical Framework**

The Knowledge Gap Hypothesis has evolved from primarily addressing socio-economic status to also including rural areas, media usage, ethnicity, and community. Additionally, the fact that the KGH originators also studied gatekeeping shows that there is a need to also consider how information enters communication channels. The findings and conclusions of scholars who have studied KGH in the past four decades demonstrate that it is a complex, multi-faceted issue that cannot be addressed with one-dimensional solutions - including more access to news sources, particularly in rural areas.

Changes in media landscape and economic pressures caused news organizations to pursue hyper-local news aggregates in rural communities although research says rural residents are among the least likely to be online, least likely to have skills, adopt technology slower and use technology differently than their urban counterparts. However, the proposed theory suggests that hyper-local sites failed not simply because of a lack of

advertising and revenue, but because the hyper-local news flow of rural communities is often misunderstood. Despite media deserts and the digital divide, rural residents still find ways to gather and send information essential to their lives—though this information may not seem essential to those outside of their communities. The purpose of this paper is to present a theory to explain how rural communities rely on established communication systems while adapting new technologies to gather and share information to ultimately decrease knowledge gap.

### **Theory Building**

The original KGH suggests that more education, more social contact, and more media exposure equal more knowledge. However, in rural communities, residents continue to find ways to offset knowledge gaps—to make a silk purse of a sow’s ear—with adapting available technologies into a rural communication system that is unlike any other. Rural is more than a lack of people and resources. Rural is a paradigm often misunderstood and misrepresented. Billions of dollars and top-down approaches will not “fix” rural. The following implications outline Rural Communication System theory, which explains how rural communities rely on established communication systems while adapting new technologies to gather and share information to ultimately decrease knowledge gap.

### **Rural Communication Systems: A Scenario**

Alton, Missouri (pop. 879), is the county seat of Oregon County, a 789.9-square-mile area on the Arkansas-Missouri state line in the Ozark Mountains. According to the US Census, 27.7% of county residents live below the national poverty line, unemployment is 6.5%, and the per capita income is \$26,616. The newspaper, once a

locally owned and operated in Alton, consolidated to a regional publication and was later bought by a media publication in an adjacent state. This has contributed to decreased local readership by moving a once local newspaper to another state whose priorities do not always match that of Oregon County Missouri some 45 minutes away. The lack of geographic proximity of the editors to the community served by the newspaper is an example of how gatekeeping and KGH can affect the flow of timely, accurate information in rural communities.

*Scenario:* A native to Oregon County, Erman, who is also a retired teacher and local farmer, hears about Thursday music nights on the square during a recent stop at the feed store. The feed shop employee only knows about music night but doesn't remember all the details. Erman asks Jane, his wife, to search for any details on Facebook because he doesn't have an account—and that seems to be where all the women get their information these days, he says. Jane and Erman have Internet access at their house unlike many residents in Oregon County. Jane finds information about the previous music night but not about any upcoming events from the Oregon County Co-op's Facebook page, so she forgets about it. The following week when Jane picks up the weekly newspaper for the grocery ads, she sees a photo of last week's music night and it jogs her memory so she sends a text to her friend, Betsy, who occasionally volunteers at the Co-Op. Betsy lives on a farm 2 miles out of town and does not have cell phone service or Internet at her house, although she has a smart phone so she can take photos of her grandchildren. Betsy comes into town two days a week to shop and doesn't receive Jane's text for a few days. Meanwhile, Jane also reads in the weekly newspaper about an upcoming firework show for next Thursday night that is also sponsored by the same organization as the music

nights. Later that evening, Jane sees a post on Facebook from the local volunteer fire department chief, Jeff, who is an Oregon County native whose highest education is high school. Betsy knows Jeff is also interested in music so she sends him a Facebook message to ask if he knows anything about music nights. Because of Jeff's support of local music and his involvement with the local fire department, he knows that the Co-op's music night is cancelled because of the firework event but also tells Betsy the date and time for the next music night so she can inform Erman, her husband.

The above scenario helps provide a context for considering the three of the original factors Tichenor, Donohue, and Olien (1970) used as a basis for KGH as they apply to hyper-local, rural communication.

1. Socio-economic status factor:

**KGH:** there is a difference in communication skills between those with high and low socio-economic status.

**Rural Communication Systems:** While people of higher SES might have more refined communication skills, the difference is of little impact for communication in most hyper-local, rural situations. Rural residents have learned how to use communication and technology to find the information important and essential to their lives.

2. Stored-information factor

**KGH:** There is a difference in previously acquired knowledge between those with high and low socio-economic status.

**Rural Communication Systems:** The impact of the stored-information factor changes with the subject. While those of higher SES might learn about a topic through formal

education, or might have access to information through media exposure, this does not automatically affect knowledge gap across all subjects.

3. Social contact factor

**KGH:** People of higher SES might have more relevant social contact.

**Rural Communication Systems:** Social equity is not always defined by wealth in rural communities. The poorest resident could be the most information rich.

Additionally, one of the KHG refinements Donohue, Tichenor, and Olien presented in 1975 can be applied to the proposed theory. The researchers stated that knowledge gaps are more prevalent in diverse communities with multiple sources of information than in smaller, homogenous communities with informal communication channels. Furthermore, in 1989, the researchers incorporated gatekeeping and the role community constraints can play in what information enters traditional news channels. The proposed theory also recognizes the importance of how community gatekeepers—across all SES—influence rural life.

**Rural Communication Systems: Implications**

In light of these original KGH factors and refinements, the following implications are presented for the Rural Communication Systems theory.

1. **Rural residents want to know about news in community; be informed.**

Rural residents want to be informed just like non-rural residents. Hindman and Beam (2014) found that rural residents sought news less frequently than non-rural residents because of a lack of local news availability, not because of a lack of access, skill, or interest.

*Scenario: Erman wants to know about events in his community.*

2. **Quality, timely information is scarce in rural areas.**

Kavanuagh et al (2014) found that a growing number of local, rural communities do not have access to timely news coverage.

*Scenario: Jane saw coverage of the previous music night in the weekly paper, but it was more than a week after the event.*

3. **Many rural residents will never have access to broadband.**

Malecki (2003) tackled the myriad issues related to the rural/urban digital divide of broadband Internet. The article points out that there are no “easy fixes” and that rural residents will likely continue to be a generation behind urban centers in broadband access. The study also demonstrates that “rural” can have different complications in overcoming the digital divide due to access points.

*Scenario: Like most residents in Oregon County, Betsy lacks Internet access at home. High-speed broadband is not available through any service provider.*

4. **Rural residents with Internet are seen as community gatekeepers.**

Not to be confused with Opinion Leaders, rural residents who have access to the Internet are contacted for information, which they provide without attempts to persuade to their point of view.

*Scenario: People often contact Jane for information about community news and events because she has Internet access at home.*

5. **Rural residents use technology differently than urban counterparts.**

Hindman (2000) found that many gaps among metropolitan and nonmetropolitan are in uses of technology – while more nonmetropolitan residence have access to Internet, they are not using it in the same ways, e.g. online shopping, online news gathering. With

increased affordability of home computers, metropolitan and nonmetropolitan residences use and adopt technology differently.

*Scenario: Betsy has a smartphone, but primarily to use a camera, as she does not have Internet or cell service at home.*

**6. Rural residents turn to social media—especially to women—for hyper-local news.**

Rural residents may use social media differently than their urban counterparts, they still rely on Social Network Systems for information. Gilbert, Kavahlios, and Sandvig (2010) examined the use of Social Network Systems in both rural and urban communities and found that women are generally the keepers of online information in rural communities.

*Scenario: Erman turns to his wife, Jane, who is active on social media and knows how to find information on social media.*

**7. Because of increased affordability of mobile devices, lower SES residents can be more information-rich than higher SES residents without mobile devices.**

Campbell, Kwak, Choi, and Bae (2010) found data to support the use of cell phones displayed a positive relationship between exchange of information and civic engagement. This continued affordability of mobile technology and the positive relationship between usage and civic engagement suggests that the knowledge gap could actually shrink in communities that lack a local news source. As information travels through multiple channels and citizens utilize more affordable mobile technology, they find ways to send and receive hyper-local information not available through local traditional media.

*Scenario: Jeff, the local volunteer firefighter chief, lives below the poverty line, but values technology above other necessities. His ability to connect to the Internet makes him more information-rich in certain situations.*

**8. Rural residents who are trusted more—regardless of SES or technology skills—are sought out more.**

Just like primitive days when people looked for accurate and timely information (Kovach & Rosentiel, 2007), rural residents turn to people who are trustworthy. This trustworthiness is not defined by socioeconomic status or technology skills.

*Scenario: Jane contacts Betsy and Jeff because she trusts them both as community gatekeepers and information gatherers.*

**9. Rural residents—regardless of SES—in social networks have more information.**

In contrast to the original KGH, this theory hypothesizes that SES does not affect rural communication as much as being in social networks. That is, while some might perceive knowledge gaps along socioeconomic lines, in rural communities those lines are blurred and social networks—e.g., church, sports, community groups—influence the flow of information more.

*Scenario: Jane and Betsy attend church together; this is where they typically share information.*

**10. Different residents—regardless of SES—can be community gatekeepers for different subjects.**

In absence of a traditional media source, residents look to different local experts for information. Residents value experience over prominence.



*Scenario: Jane views both Betsy and Jeff as experts in different subjects in community news.*

### **Conclusion**

The changing media and economic landscape hit rural America particularly hard, creating scarcity of traditional news outlets in most rural areas. Media organizations saw an opportunity to shrink the knowledge gap in rural populations with hyper-local news aggregators, but their attempts failed because they established the sites without first consulting the community.

Limited literature offers a cultural-based application of systems theory to rural communication. In *Practicing Community Development*, systemic thinking is defined as “thinking about the community in terms of integrated systems that stimulate and limit each other.” Sector thinking avoids thinking how the community is connected (Littrell, 2006, p. 90). Rural communication issues must be approached systemically, not as isolated sectors. Media organizations should approach rural communications as bottom-up initiatives, rather than top-down.

Rural residents use technology differently than their urban counterparts, and in order for media organizations to be successful in rural communities, they must understand communication systems in rural contexts. The Rural Communication Systems theory provides a theoretical framework to re-think the way scholars view rural communication. While gaps are present, there are countless assets. A rural resident might visit an urban center and notice that urban residents have a “neighbor gap” despite their unlimited access to media. Rural residents could argue that this neighbor gap widens an urban residents knowledge gap.

To further examine the implications of the Rural Communication Systems theory, communication scholars should incorporate development communication theory and systems theory in rural contexts. Professional media organizations should also consider unique rural characteristics in their initiatives or continue to lose on nearly 20% of Americans.

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