INFORMATION POVERTY AND PUBLICLY FUNDED NEWS ORGANIZATIONS

By

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Submitted in Partial Fulfillment
of the Requirements for
Graduation with Honors from the
South Carolina Honors College

May 2014

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Thesis Summary

Information, especially digitally delivered information, has become increasingly more valuable in our 24/7 global economy. However, information has also become increasingly commoditized because of its value, making information another good to be bought and sold. While many people do have resources to consume this information, billions do not enjoy such resources and also lose the political, economic, and social agency having such information bestows. These people are the information impoverished. Information poverty, also known as the digital divide, refers to a lack of access to information and communications technologies (ICT), most importantly the internet, and the inability to use them. Information poverty prevents people from participating economically and politically within larger society and leads to feelings of helplessness and detachment from the larger society; it is also correlated with low information processing ability. Information poverty hurts historically disadvantaged groups: poor people in rural areas and in developing countries, especially racial and gender minorities.[1]

The persistence of information poverty can be considered through the microeconomic lens of media economics. Media firms, including news organizations, are traditionally profit-seeking private companies. They sell two products—programming and advertisement slots. This paradigm is referred to as the dual-product marketplace. These firms must satisfy the demands of advertisers and shareholders while keeping consumers happy. Poor people are usually deemed unprofitable by private media organizations that assume that they cannot or will not buy media services in high enough numbers to justify capital investments. Thus, they become information impoverished.

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[1] Britz, "To Know or Not to Know," 192–193; Epstein, Nisbet, and Gillespie, "Who's Responsible for the Digital Divide?," 92.

Publicly funded news organizations have a unique ability to alleviate the issue of information poverty. These organizations can create financially unprofitable yet culturally valuable materials and reach information impoverished audiences because they do not have advertisers demanding wildly popular content or shareholders demanding high profits to satisfy. They have the flexibility to make the investments in infrastructure, personnel, and content to deliver accessible information to the information impoverished, perhaps even to those outside of their nations.

This paper studies empirically the extent to which publicly funded media organizations address the global digital divide for linguistic minorities. If it is the case that publicly funded media such as the British Broadcasting Corporation caters to traditionally disadvantaged people, then the composition of stories targeted towards them should be different from those catering to the linguistic majority. To this end, top news headlines were collected from the British Broadcasting Corporation homepages in Hindi, Urdu, and English via the Wayback Machine. Data was collected every twenty days, as this interval provided enough scope and detail while still being manageable. BBC was chosen because it is publicly funded via a television license fee, because it has all three languages so as to minimize idiosyncrasies between different papers, and because it features data in an easy to collect format for all three languages. Data was analyzed using R and Google Fusion Tables. All graphics are presented below in the analysis section. Occurrences of particular countries and regions within the dataset were examined as were occurrences of particular categories.

Comparisons of these geospatial and topical data suggest that BBC does in fact address the needs of information impoverished readers as they are provided content that

appears designed especially for them in a language they can read and understand. Although we see significant overlap in the geospatial data, we also see important differences: The Hindi paper covers many stories related to India, its "domestic" market while the Urdu paper covers many stories related to Pakistan, India, and Afghanistan, the constituents of its "domestic" market. The English paper has more stories related to the United States than any other country, but its coverage is more evenly distributed yet more geographically concentrated than the other papers. The United States is prominent in all languages. We also see different content categories emphasized across time in these newspapers, again suggesting that the BBC creates different content for these language papers. Conflict stories about Syria and Libya and Politics stories about the American fiscal cliff figure prominently into the English paper; International stories abound in the Urdu paper; the Hindi paper covers many Indian—domestic— Politics and Law stories. There are also differences in the regional composition of the languages. As evidenced by different emphases in different language papers published by the same entity, publicly funded media organizations such as the BBC do reach out to underserved, information impoverished communities.

This paper is organized into three main parts: the literature review, the research design, and the analysis. The literature review section covers theories about information poverty and media from economics and political science. The research design section describes rationales and procedures for data collection and analysis. The analysis section details the results of this project, considering whether global public media such as the BBC does cater specifically to information impoverished people who do not speak English.

Literature Review

Although the world has made great strides in eliminating material poverty, information poverty is still a barrier to economic and civic agency for billions of people around the world. Information poverty is a lack of access to information and communication technology (ICT) and the inability to use ICT.[2] Information poverty is a result of a phenomenon known as the "digital divide", which the Organization for Economic Cooperation and Development (OECD) defines

> the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard both to their opportunities to access information and communication technologies (ICTs) and to their use of the Internet for a wide variety of activities.[3]

Information poverty is seen largely in already disadvantaged populations: There continue to be "persistent gaps between developed and developing nations as well as gaps domestically along socioeconomic, geographic, educational, racial, and gender lines".[4] People suffering from information poverty tend to suffer from low information processing abilities, detachment from larger society, and feelings of helplessness.[5] Information poverty violates humans' rights to information and communication, effectively shutting them out from economic and political participation. One-way data flows from information rich demographics, which tend to be advantaged in other ways as well, to information poor demographics may also be irrelevant to the information poor people and may further propagate a homogenous global culture at the expense of local cultures.[6]

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[2] Britz, "To Know or Not to Know," 192–193.
[3] Organization for Economic Cooperation and Development, "Understanding the Digital Divide," 5.
[4] Epstein, Nisbet, and Gillespie, "Who's Responsible for the Digital Divide?," 92.
[5] Childers and Post, *The Information-poor in America*, 32–34.
[6] Britz, "To Know or Not to Know," 197.

ICT, the salient differentiator between information rich and information poor people, has revolutionized mass media, especially online media. The academic study of this revolutionized cultural phenomenon is still very new. Linguists and media scientists say that "there is a serious lack of systematic research available on language and the media in multilingual settings". Concerns regarding access and representation have remained constant. Wodak and Busch explain that

> Access to media is another relevant factor. Who are the decision makers; who are the journalists, producers, and investigators; and who is represented and how? And who watches, listens, and reads what? The problem of media literacy and of the comprehensibility of media poses big questions for participation in democratic societies.[7]

Although access is increasing dramatically around the globe, historically disadvantaged people—the rural poor with lower education, especially females--still suffer from information poverty as private infrastructure providers assume that these people do not have a high enough willingness to pay and demand to make such a venture profitable.[8] Although news stories in particular languages reveal the desired content of people who are literate in a particular language and choose to consume media in those languages, they also index access because language serves as an index of power, especially wealth and education.[9]

Many salient trends are creating structural changes in media markets, some of which exacerbate information poverty and some of which alleviate it. Deregulation of markets, especially in the United States, is creating larger conglomerates who serve increasingly diverse markets with increasingly diverse multimedia products. This means that news media is increasingly likely to be owned by a multimedia company. However,

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[7] Wodak and Busch, "Approaches to Media Texts," 109–117.
[8] Hudson, "Universal Access to the New Information Infrastructure," 311.
[9] Wodak and Busch, "Approaches to Media Texts," 109.

these companies also have fewer competitors, meaning they have less incentive to serve information impoverished people. Globalization along with domestic market saturation is driving media firms to cater to international audiences as well; sociocultural and economic development is leading to stronger developing economies that continue to demand more attention. News media must cater to these international markets, many of which have high information poverty rates, for continued growth. Technology is making the creation, storage, and distribution of media far more efficient, making it far cheaper to deliver programming to previously underserved communities. Digital media is also changing media creation and consumption patterns: Hyperlinked multimedia is supplanting traditional discrete media in linear formats. Nowhere is this more evident than in online news where hyperlinks and multimedia presentations live next to traditional journalism.

Political conceptualizations of media globalization abound. Perhaps the most significant debate is whether globalization is facilitating cultural imperialism or a global village—cultural homogenization or multiple strong cultures. Research indicates that the latter is occurring as developing countries become increasingly economically powerful. Sinclair et al argue that the rise of non-Western papers and more complex information flows and the weakening of the nation-state challenge cultural imperialism models. Ien Yeng claims that "local cultures everywhere tend to reproduce themselves … through the appropriation of global flows of mass-mediated forms and technologies". There is also evidence that local programming is catalyzed by and eventually supplants US programming. However, "reterritorialization", in which diasporas are strongly connected to their originating communities, is also becoming a greater possibility with faster

information networks, further strengthening the global village and driving demand for content in foreign languages.[10] While globalization has driven increased programming for foreign consumers, private news organizations have little incentive to serve information impoverished consumers perceived to be unprofitable.

Media economists generally use microeconomic frameworks similar to that used to analyze infrastructure providers. Firms seek to maximize profit by selling products to consumers. The products of most media firms can be categorized as information or entertainment; sometimes, they may be both. However, media firms' consumers are unique in that the products must appeal to both viewers and advertisers, as both parties buy the product. This phenomenon is referred to as the dual-product marketplace.[11] The extent to which either is accommodated is still a subject of research. Because publicly funded media does not have to turn a profit or attract advertisements, it can create programming for underserved populations unlike private corporations.

Publicly funded media may address the information poverty gap, as it is generally not bound by the dictates of shareholders or advertisers. The purpose of publicly funded media, as well as other publicly funded goods and services, is to address market failures—situations in which the market fails to provide a socially valuable good because it is not profitable enough for individual firms to provide.[12] The United States Federal Communications Commission says,

> Public media plays a vital and unique role in our democracy, informing individuals and leading our public conversation as well as building cohesion and participation in our communities. This strength comes from its ability to create connected and informed communities, empower

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[10] Flew and McElhinney, "Globalization and the Structure of New Media Industries," 296–300.
[11] Downing et al., "Media Economics," 299–300.
[12] Goodman and Price, "Public Television and Pluralistic Ideals," 190–191.

citizens to hold their government accountable and enable people to actively participate in government processes and decision-making.[13]

The purpose of public media is to provide information to everyone, including those the private sector will not serve such as the information impoverished. A well-informed citizenry builds a better democracy. Global public media like the British Broadcasting Corporation World Service may further close the digital divide between developed countries and emerging countries by providing crucial information services.

Although many nations have their own public broadcasting, few have services as globalized as the British Broadcasting Corporation (BBC). BBC creates some of the world's most popular media. It works to improve access by partnering with over 2,000 local organizations, by "encouraging the development of politically independent, financially sustainable public service broadcasters", and by hiring bilingual journalists and producing news in 27 different languages.[14] Additionally, the BBC is unique in that it is publicly funded by a TV license fee rather than by advertisements that would introduce commercial pressures. The practice of not selling advertisements on public services "guarantees that a wide range of high-quality programs can be made available, unrestricted, to everyone".[15] However, BBC, especially BBC World Services, is not immune to the forces operating on other media companies. As far as regulation goes, the UK Government's Spending Review has cut funding. In the realm of technology, BBC journalists are expected to operate in a multimedia environment encompassing radio, television, and web. Globalization has led to increased international partnerships and

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[13] Federal Communications Commission, "Connecting America," 321.
[14] "Peter Horrocks Speech April 2011."
[15] "Advertising."

international competition while sociocultural developments have led to stronger demand for news services and stronger local competition.[16]

Information poverty is effectively a lack of information, usually related to access issues. While publicly funded news entities have the resources to tackle this problem, they may still choose to invest their limited resources into more popular ventures. News organizations that serve multiple language communities may also elect to translate stories for minority language groups rather than writing stories specifically for these groups. While translated stories help alleviate some of the problems associated with the digital divide, they accomplish very little in remedying the endemic lack of agency. We can examine if publicly funded entities, which are most likely to cater to information impoverished population due to the lack of profit motive and advertisers, write stories that cater specifically to these people or if they simply recycle material written for communities that do not suffer from information poverty.

Research Design

The data necessary to determine whether public media addresses information poverty is a collection of public media resources preferably over some period of time. To additionally consider if public media alleviates information poverty globally, foreign language resources are also necessary. To this end, top news headlines were collected using the Wayback Machine, an online archive of websites: This website allowed historical British Broadcasting Corporation (BBC) homepages in various languages to be accessed for trend analysis. Temporal and geospatial data trends were analyzed. BBC was chosen for reasons outlined earlier in the paper.

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[16] "Peter Horrocks Speech April 2011."

Collecting Data

Top news headlines were collected every twenty days from June 2011 through December 2013; the twenty-day interval provided a sample with enough scope and detail to consider temporal and linguistic trends. These stories were then categorized into eight buckets: Natural Disaster, Sport, International, Conflict, Law, Entertainment, Politics, and Miscellaneous. These buckets are described later. For the Hindi and Urdu papers, the top headlines were the ones above the line demarcating the switch to separate topical sections For the English paper, the Top News Story in the slideshow was collected so as to capture the same type of data as in the other papers because all the sections after the slideshow were topical. However, other slides were omitted because the slideshow feature was inaccessible for large periods of time. The number of stories was normalized across language.

Data irregularities occurred occasionally. Sometimes, the date on the archived webpage did not match the date on the Wayback Machine. In these cases, the data on the webpage was used, and the date twenty days out from that date was used as the next data point. Other times, data was missing; in these cases, the data was marked as missing and omitted in the analysis. There is no reason to believe that the missing dates are correlated with the headline data. However, for the English section, the sports story will be underreported because the inaccessible second slide of the slideshow covered the Top Sport Story.

This project uses data only from BBC. Although BBC is a foreign paper in both the Hindi and Urdu markets, its home market consists of an English audience. Nevertheless, there are many competing news sources in each of these markets. These

sources, published in many different languages, offer different perspectives, but it is impractical to consider each of them. BBC was chosen because BBC provides readily accessible online news in an easily analyzed Unicode format in all three of these languages, thus minimizing idiosyncratic differences due to different editorial perspectives.

Categorizing Stories

The following flowchart was used to categorize each of the newspaper stories. The categories were chosen to be broad enough to apply to multiple stories in each language yet still narrow enough that each category is well-defined. Categories were chosen after collecting headlines to ensure that these requirements were met. The flowchart was arranged so that stories that could belong in multiple categories were sorted into the narrower category. Each story is categorized under the first category it fits. Each language was given the same treatment to maintain category consistency through time. Examples of each category are provided below.

1. If a natural disaster such as floods, typhoons, and droughts is involved, categorize as *Natural Disaster*.

    Example: "Philippines defends storm response" (English)

2. If sports matches or sports teams are involved, categorize as *Sports*.

    Example: "The first century of the fifth IPL belongs to Rahane" (Hindi)

3. If foreign countries or intergovernmental organizations are involved, categorize as *International*.

    Example: "19 deaths in Syria, Arab League pressure" (Hindi)

4. If explosives, arson, or widespread firing are involved, categorize as *Conflict*.

   Example: "15 die in Quetta bomb blast" (Urdu)

5. If alleged criminals, crimes, criminal sentences, or courts and judges are involved, categorize as *Law.*

   Example: "Omar Abdullah: Not hanging Afzal would have been better" (Hindi)

6. If popular entertainers are involved, categorize as *Entertainment.*

7. If any political figures such as politicians and political parties are involved, categorize as *Politics.*

   Example: "Counting starts in Kenyan election" (English)

8. If the story does not fit any of the above, categorize as *Miscellaneous.*

   Example: "Who tweets from the planet Mars?" (Hindi)

Analysis

We have assumed that publicly funded entities are better able to alleviate information poverty because they do not have to answer to shareholders or advertisers. The data has been analyzed both topically and geospatially. The topical analysis aggregates the data by month to smooth variations created by the intervals; the geospatial data similarly aggregates the entire language datasets—thirty months per language.

The most striking element of Figures 1 is the strong overlap: Asia, the United States, and the Middle East figure prominently in all of these. However, the English map has the fewest countries mentioned: This suggests that BBC English stories are more geographically concentrated than the other papers', although it may be an artifact of the

data collection process. Another noteworthy occurrence is the prominence of the United States in all three language choropleths, a reflection of its superpower status in the world. In the English map, it is the dominant country; in the other two, it is dwarfed only by the language's domestic country. As was expected for the Hindi and Urdu maps, India and Pakistan are the most prominent countries. However, in the Urdu map, Afghanistan and India—Pakistan's neighboring countries—also figure prominently; in the Hindi map, only India is noticeably different. Although the overlaps in the mentioned maps suggest that content may be recycled, the stark differences in the choropleths debunks this proposition, suggesting that publicly funded BBC does cater to the needs and desires of its minority consumers, who are most likely to find themselves on the wrong side of the digital divide.
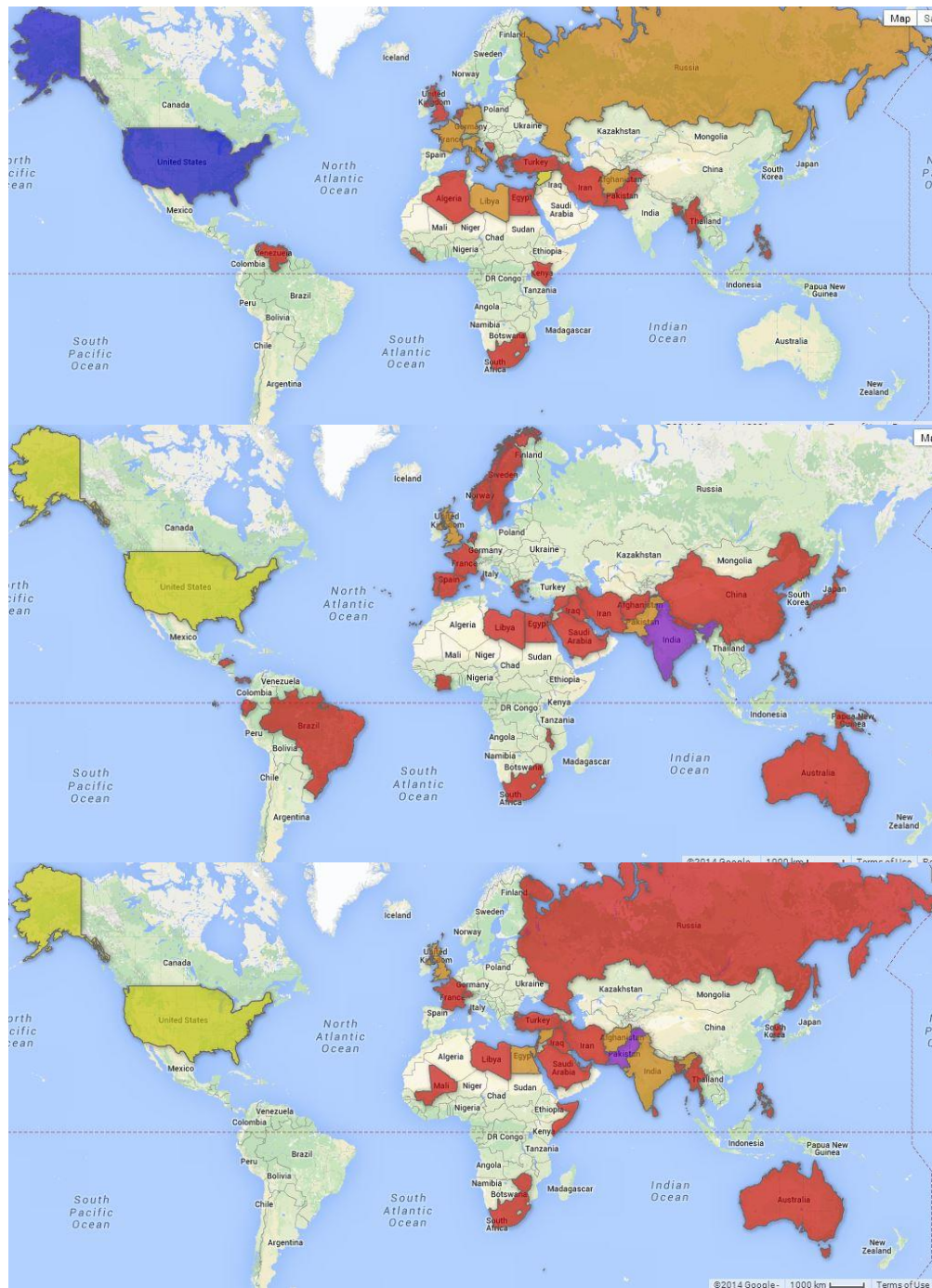
Figure 1) *Choropleth of Countries in English, Hindi, and Urdu Papers respectively.*[17] Red is lowest while purple is highest; other colors follow in rainbow order. Although most of the mentioned countries are mentioned only a few times, we see some significant outliers. The United States is prominent in all of these stories, a result of its world status as a superpower. South Asian stories—"domestic" stories—are prominent in the Hindi and Urdu papers. The English paper has a more even distribution of countries relative to the Hindi and Urdu papers, perhaps the result of English's status as a world language and BBC's global nature. Contrary to the maps presented above, this set suggests that stories are in fact written for particular demographics rather than simply translated.
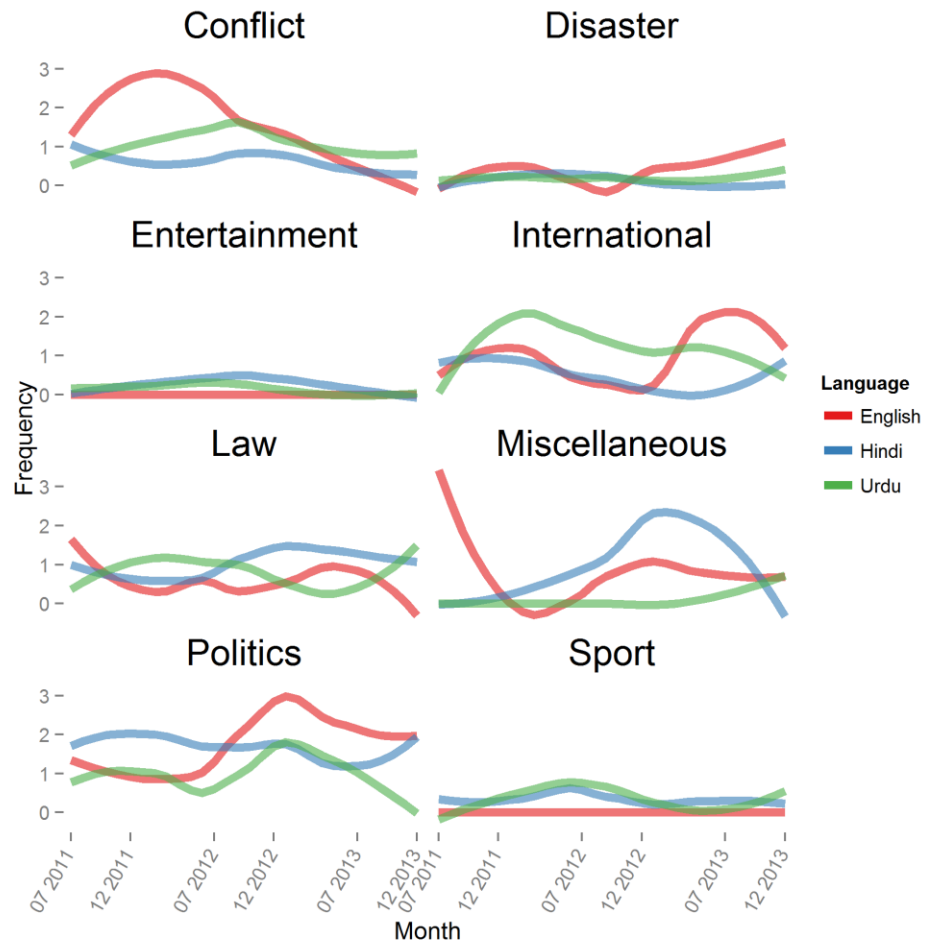
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[17] Ibid.

Figure 2) *Category Frequency by Month and Language*.[18] These graphs exhibit widespread divergence of coverage across languages. However, some overlap exists. The Sport graph shows simultaneous increases in Hindi and Urdu at the time of the Olympics (07 2012); recall that the Sport section is not represented in English due to data inconsistencies. The Disaster graph shows simultaneous increase at the time of Typhoon Haiyan (12 2013). Nonetheless, the Politics and Law graphs diverge considerably—these issues are more domestic in nature. The Conflict graph reflects the English concern about Syria and Libya.
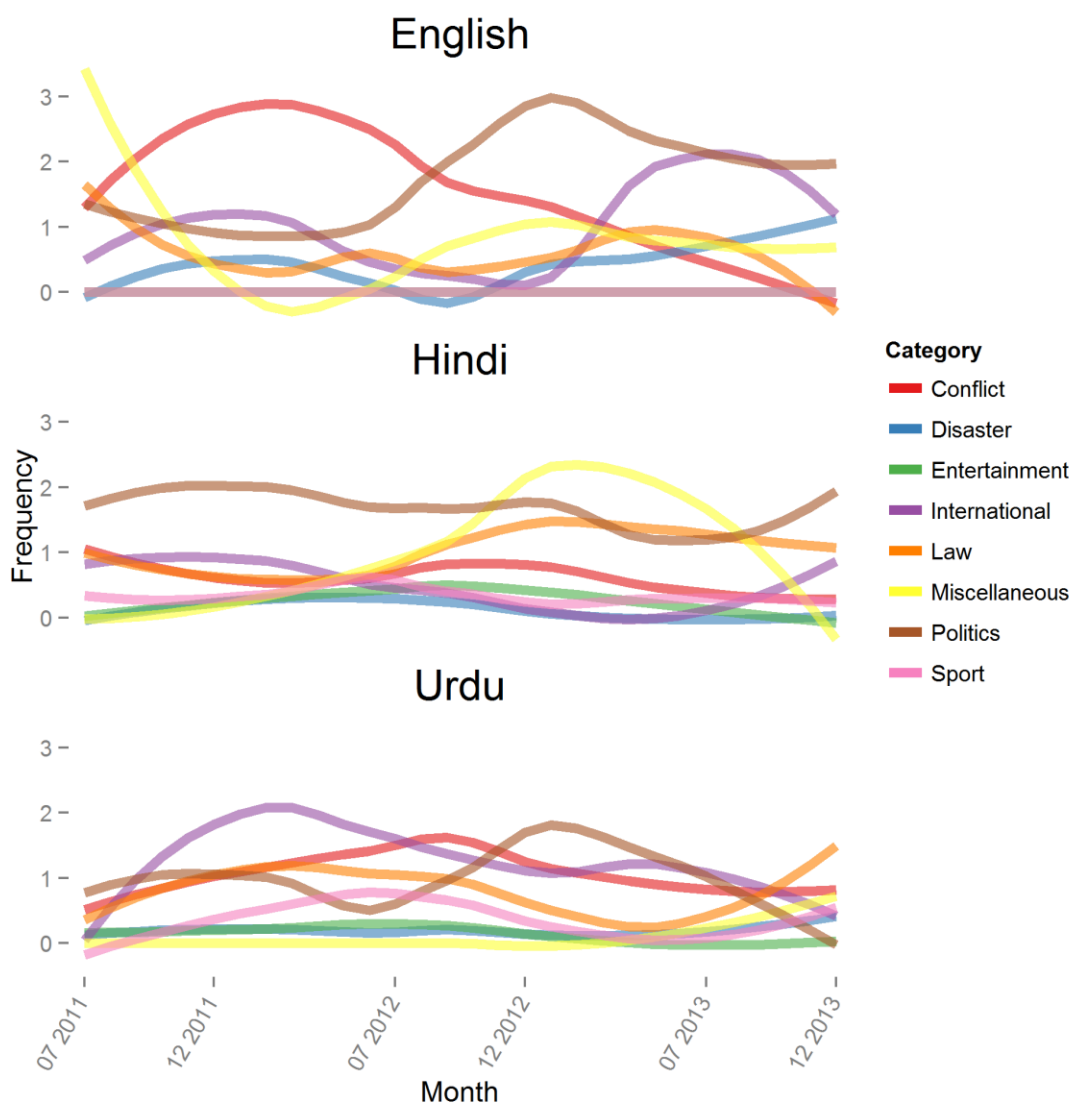
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[18] R; Wickham, ggplot2.

Figure 3) *Category Frequency by Language and Month.*[19] Similar to Figure 3, these graphs highlight the differences in coverage of different categories. In the English section, Conflict increases reflect concern about Libya and Syria while Politics increases reflect concerns about the American fiscal cliff. Nevertheless, the prevailing trend is rapidly changing relative frequencies. The Hindi and Urdu papers appear far more consistent. The Hindi paper shows a deep interest in Politics and Law—which are largely domestic issues—and Miscellaneous—usually interviews with interesting people. The Urdu paper shows high interest in International affairs, which dovetails with its choropleth (see Figure 2). Again, the range of coverage suggests that the Hindi and Urdu papers publish materials specifically for their audiences.

Figures 2 and 3 showcase the category composition of each language across time.

Although some overlaps occur, the monthly frequency of the stories in each category

clearly differs among languages. If content were simply curated from English language

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[19] Ibid.

sources, the lines would be more aligned: The crests and troughs in the Hindi and Urdu

papers would reflect those in the English paper. However, not only do the crests and

troughs not align; they do not occur in the same categories. This suggests that Hindi and

Urdu stories are written for those readers. Thus, BBC provides these readers with

accessible information that is relevant to them, a key goal in fighting information
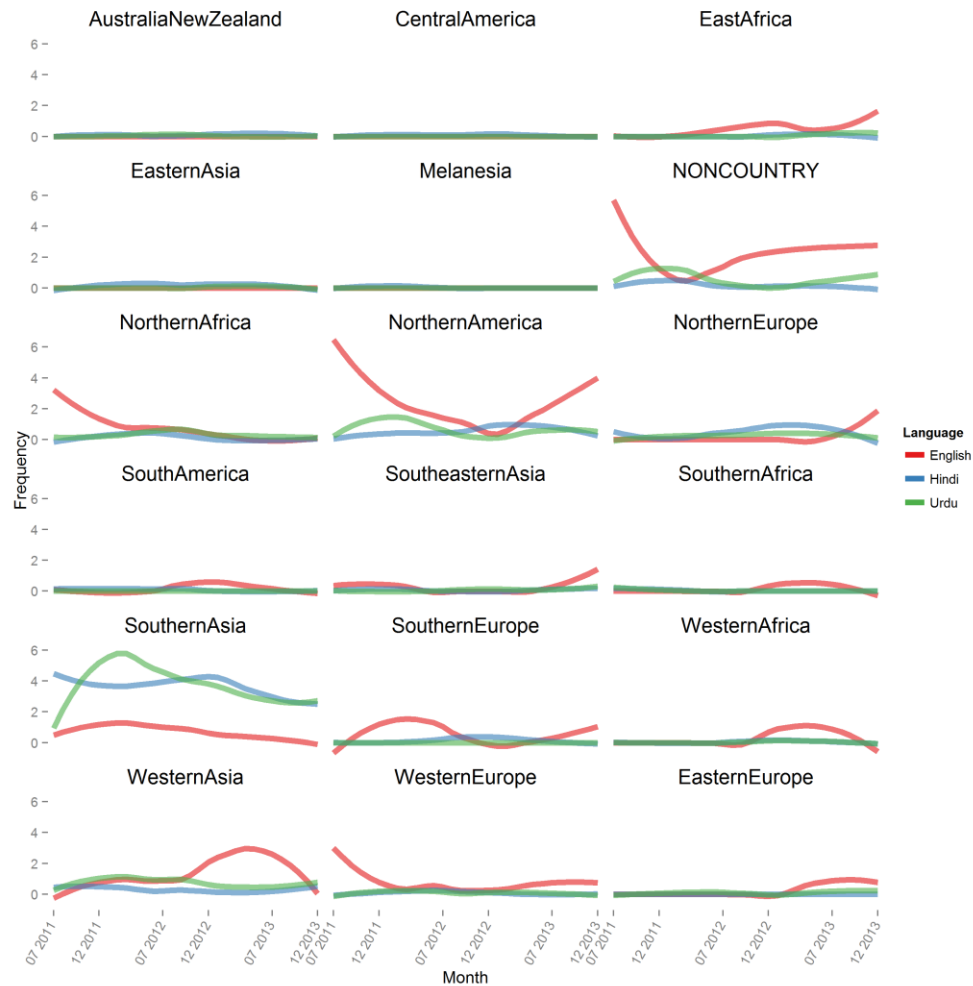
poverty.

Figure 4) *Regions by Language and Month*. [20] Noncountry refers to intergovernmental and nongovernmental organizations such as the Arab League and the Red Cross. These graphs again corroborate the choropleths presented in Figure 2. Southern Asia figures prominently in the Hindi and Urdu papers, and the English paper covers a wide range of regions. However, most regions have few, if any, stories at all. In the Enlgish paper, North America rises during times of American political strife while Western Asia reflects concerns about Syria and Libya.

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[20] Ibid.

Figure 4 highlights the regional composition of the data. These corroborate our conclusions from the geospatial data. The English paper exhibits more diverse coverage on a regional basis than the Hindi and Urdu papers. Southern Asia is consistently higher than the other regions. However, Western Asia and Northern America also have significant increases at particular points: Western Asia reflects concerns over Syria and Libya; Northern America reflects concerns over the American fiscal cliff. Non-country is also of interest: This categorization tracks the appearance of nongovernmental and intergovernmental organizations. Non-countries are far more prevalent in the English version, a result of increased emphasis on United Nations and European Union stories. Again, this graphic implies that the BBC Hindi and Urdu papers run different stories from the English paper, stories that are more relevant to their readers, a crucial element in addressing information poverty.

Taken together, these visualizations suggest that publicly funded media like BBC address information poverty on a global scale by publishing media that closes the digital divide. BBC Hindi and Urdu publish materials that are accessible to those who cannot read English and provide stories that are relevant to these people. These papers have different stories about different regions than the English paper. Furthermore, the English paper contains more diverse coverage, meaning that it is globally accessible and relevant to people, especially those who may suffer from information poverty.

Conclusion

Information poverty, the lack of access to information and the ability to use it, still affects billions of people worldwide. The structure of their business disincentivizes private

companies from serving these customers; however, publicly funded companies have more freedom to create programming that fulfills the need of currently underserved populations. Data analyses performed on English, Hindi, and Urdu headline data suggest that BBC, a publicly funded British media company, does in fact serve these populations by writing news stories that appeal particularly to them. Thus, public funded media is an important tool in the struggle against information poverty and the lack of societal, political, and economic power it engenders. Further research could involve expanding into more languages, more dates, or more news sources.

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