

# Local Information Programming and the Structure of Television Markets

Federal Communications Commission  
Media Ownership Study #4

Jack Erb\*

Office of Strategic Planning and Policy Analysis  
Federal Communications Commission

Email: [jack.erb@fcc.gov](mailto:jack.erb@fcc.gov)

May 20, 2011

**Abstract:** We analyze the relationship between the ownership structure of television markets and the amount of local news and public affairs programming provided in the market (at both the overall market and individual station levels). We find that commercial television stations that are cross-owned with major newspapers in the same market tend to air more local news programming, but that the station-level increase does not translate into more local news programming at the market level. Television-radio cross-ownership has a moderate (but statistically significant) positive impact on local information programming at the station level, and each additional in-market radio station controlled by the television station owner corresponds to additional local news minutes aired by the television station. However, local news programming at the market level is likely to be lower, as the scale economies enjoyed by the cross-owned stations are outweighed by the crowding out of local news programming on other stations. Multiple ownership (i.e., situations in which a single parent controls two or more stations in the same market) does not appear to impact the amount of local information programming at either the market or station level (though this result appears somewhat dependent upon model specification). But we do find that multiple ownership and broadband subscribership have a positive impact on the relative mix of local vs. national news programming.

---

\* The views expressed in this paper are those of the author and do not necessarily reflect the views of the FCC Commissioners or staff. I'd like to thank Jonathan Levy, Tracy Waldon, and Andy Wise for helpful comments and suggestions on earlier drafts.

## **Introduction**

Audiences for local television news programming – and by extension, advertising revenues – continue to decline. Although 2010 closed with signs of recovery, audiences and revenues remain about 10% below their 2007 levels.<sup>1</sup> Yet local television news remains the most popular news medium, with a sizable majority of Americans (78%) stating they get at least some of their news from a local television station in a typical day (see Pew, 2010).<sup>2</sup> The television stations that broadcast local news over the public airwaves fall under the purview of the Federal Communications Commission, and the Commission has long imposed limits on the concentration of ownership in both the local and national broadcast markets. These rules limit the number of television stations, radio stations, and major print newspapers that a single entity may own in a market, both within and across platforms. In this study, we examine how the ownership structure in a television market impacts the quantity of local news and public affairs programming provided by television stations, with the goal being to inform media ownership policy. We find that local news and public affairs programming (together known as information programming) is correlated with various ownership characteristics, most notably television-newspaper cross-ownership, television-radio cross-ownership, and the national reach of the commercial television owners. Depending on the specification, multiple-ownership of same-market commercial television stations is also correlated with local information programming, with the direction of the correlation depending on the overall size of the market.

At the heart of the Commission’s rules lie three policy goals: Competition, localism, and diversity. These policy goals are sometimes at odds with one another. For example, the

---

<sup>1</sup> According to the PEW Center’s Project for Excellence in Journalism (2011), local news viewership fell between 5.5% and 6.5% in 2009 (a rate almost four times the rate of decline in 2008), and advertising revenues fell by 22%. These declines were largely due to the economic downturn, though the proliferation of new and multiple media platforms also played a role, with 92% of Americans stating they use multiple platforms to get news on a typical day. However, in the past year, the rate of decline in audience slowed to -1.1%, and advertising revenues *increased* by about 17%, due largely to record spending on political advertising (PEW, 2010 and 2011).

<sup>2</sup> By comparison, 73% say they get news from a national network or cable channel, 61% from online sources, 54% from radio, 50% from a local newspaper, and 17% from a national newspaper (Pew, 2010).

FCC has determined – with the ruling being upheld on appeal – that television stations, radio stations, and newspapers compete in separate and distinct markets (both in terms of viewers and advertising).<sup>3</sup> Under this reasoning, the Commission’s cross-ownership rules may not be necessary to maintain competition across media platforms.<sup>4</sup> Yet even if restrictions on cross-ownership are not warranted on the grounds of competition, they may still be warranted on the grounds of (1) maintaining or promoting a diversity of viewpoints, or (2) ensuring that broadcast outlets continue to be responsive to the needs of their local communities.

As another example, consider the case of allowing owners to control multiple television stations within any given market. This may increase the provision of local news if the consolidation permits the owner to spread the high fixed costs of news-gathering operations over multiple television stations. Increased concentration could also lead to more diverse programming as a single owner might seek to appeal to a diverse audience in order to maximize total viewership.<sup>5</sup> However, the increased concentration of broadcast outlets could also lead to market power in the selling of advertising, which would be contrary to the Commission’s goal to promote competition.

Participants in previous Media Ownership Proceedings have debated all sides of the issues, and the debate continues in the courts. Many parties have argued that media consolidation reduces the number of independent voices in a market, and therefore reduces the diversity of viewpoints available to the public. However, others argue that the current rules ignore the harsh, economic reality currently being faced by “traditional” media. Especially relevant, they say, are the costs of “failing” or “distressed” newspapers and broadcast stations; they concede that consolidation leads to a reduction in the number of independent voices in a market, but are quick to note that bankruptcy would have the

---

<sup>3</sup> See *Prometheus Radio Project, et al. v. FCC* (2004).

<sup>4</sup> In Section 202(h) of the Telecommunications Act of 1996, the FCC is directed to “repeal or modify any regulation it determines to be no longer in the public interest” (see 2006 Quadrennial Review Order, Par. 1).

<sup>5</sup> This argument was made by Steiner (1952). Owen and Wildman (1992) present a brief introduction to the Steiner model as well as other models of program choice.

same effect should a station or newspaper cease operations.<sup>6</sup> The FCC's current rules attempt to strike a delicate balance between encouraging information programming that is competitive, diverse, and locally-responsive, while allowing broadcast outlets the economic flexibility to adapt to a rapidly changing media landscape.

Although a full debate of the media ownership rules is outside the scope of this paper, we do aim to shed light on the following topic: Whether (and to what extent) market structure influences the quantity of local news and public affairs programming available to consumers over the public airwaves. We find that a number of factors do. Individual television stations that are cross-owned with newspapers air more local news than comparable stations in the market. However, the television markets that contain these cross-ownership relationships do not air any more (or perhaps air even less) local news programming than comparable markets (presumably due to a reduction in news from the non-cross-owned stations). There is a small, positive relationship between the local-news programming of individual stations and the number of within-market commercial radio stations controlled by the television station owner. But again, there is a crowding out at the market level as the number of television stations that are cross-owned with radio stations increases.

The effect of joint ownership of two or more within-market television stations is uncertain, and appears to depend on model specification. For most specifications, the variable is not statistically different from zero. In the specifications where multiple-ownership is statistically significant, the magnitude (and sign) of the correlation depends on market size, with the correlation being negative in larger markets and less negative (or even positive) in smaller markets. The national reach of the station owners (in terms of stations owned and population served) is strongly correlated with local news programming. In general, a larger national reach is negatively correlated with minutes of local news at the station level.

---

<sup>6</sup> The Commission implicitly recognized the economic realities facing newspapers and broadcast stations by including provisions for “failed”- and “failing”-stations in the current Newspaper/Broadcast Cross-Ownership Rule.

Another interesting factor impacting local information programming is broadband availability. Our results show that stations in markets with higher percentages of broadband availability tend to air a more local news and less national news than stations in comparable markets. This result holds at both the market and station levels. A possible explanation for this pattern is that online national news may be more readily available (and consumed) than online local news (see for example, Pew, 2010). If viewers are able to stay informed of national events online, there may be larger demand for local news programming on television stations.

The impact of ownership structure on local *public affairs* programming is more difficult to decipher due to the larger variation in such programming across both markets and stations. However, a few factors are statistically related to local public affairs programming. The strongest correlate is the total number of radio stations in the television market, with more radio stations being negatively correlated with the minutes of local public affairs programming aired by TV stations in the overall market. Parent population reach is also negatively correlated with local public affairs programming at the station level.

### **The Commission's Ownership Rules**

As mentioned previously, the FCC has imposed a number of limits on the concentration of ownership in media markets (both within and across distribution platforms) in order to promote the policy goals of competition, localism, and diversity. Three of these rules specifically limit the number of broadcast *television* stations that an entity may control: (1) The local television ownership rule, (2) the newspaper/broadcast cross-ownership rule, and (3) the radio/television cross-ownership rule.<sup>7</sup> In recent years, a number of

---

<sup>7</sup> Two other rules also limit the number and types of stations an owner may control: The National Ownership Reach rule and the Dual Network Ownership rule. The national ownership cap was fixed by Congress in 2004, and limits station owners to a maximum audience reach of 39% of the total US television audience. Being set by Congress, the national ownership cap is not part of the 2010 ownership review and, consequently, not a significant part of this study. The dual network rule prohibits broadcast television stations from affiliating with a network that would result from a merger between any of the top four networks (ABC, CBS, Fox and NBC). There is little empirical evidence (at least recent evidence) that comes to bear on this rule, and we will not address it in this analysis.

empirical studies have been undertaken to estimate the impact of ownership structure on the amount of local news and public affairs programming offered by a television station. These studies have often come to conflicting conclusions. We review the ownership rules and prior empirical studies throughout the remainder of this section.<sup>8</sup>

### Local Television Ownership Rule

The Local Television Ownership Rule limits the number of same-market, commercial television stations an entity may own to a maximum of two, and also places restrictions on the types of stations that may be jointly owned.<sup>9</sup> The rule provides that an entity may own two commercial television stations in the same market only if (1) the Grade B signal contours of the stations do not overlap (rare), or (2) at least one of the stations is not among the top four stations in the market in terms of audience share, and at least eight independently owned-and-operated full-power broadcast television stations would remain in the market after the combination (more common). The Commission's ownership rules regarding joint ownership do not apply to noncommercial stations, but noncommercial stations are included in the counts of independently owned-and-operated television stations when determining market size.

One of the primary purposes of the Local Ownership Rule is to “encourage diversity in ownership in order to foster a diversity of viewpoints” (FCC, 2010, par. 19). However, also of concern is whether television stations under multiple-ownership serve the local needs of the community where they broadcast. A number of studies have been authored over the last 10 years that attempt to determine how multiple-ownership impacts the quantity (and to a lesser extent, the quality) of local news and public affairs programming. Most of these studies find little to no impact. Shiman (2007b and 2009) finds that broadcast television stations that are jointly-owned with other television

---

<sup>8</sup> Crawford, et al. (2008) also contains a brief overview of the status of the media ownership debate as it has unfolded over the last decade.

<sup>9</sup> The local television ownership rule also applies to local marketing agreements (LMAs), an arrangement where the owner of one station agrees to provide the programming (and advertising) on a station licensed to another owner. Any agreement involving more than 15% of the station's programming is attributable under the Local Television Ownership Rule. In the empirical analysis, we treat attributable LMAs between two stations in the same market as jointly-owned stations.

stations in the same market provide more local news programming than comparable non-jointly-owned stations. However, this result is almost entirely driven by non-commercial stations; jointly-owned commercial stations do not appear to provide significantly more local news than commercial stations that are not jointly-owned.

Using a random sample of 221 television stations, Napoli and Yan (2007) estimate a two-step model to determine the likelihood of a station providing *any* local news programming in the first step, and the average amount of local news provided (conditional on providing at least some local news) in the second step. The authors find that jointly-owned stations are no more (or less) likely to offer at least some local news programming, but that conditional on offering at least some local news programming, jointly-owned stations air fewer minutes of local news than non-jointly-owned stations. Yan and Napoli (2006) use a similar model to estimate the amount of public affairs programming offered by stations, and find that neither the likelihood of a jointly-owned station offering at least some local public affairs programming nor the amount of public affairs programming (conditional on offering at least some public affairs programming) were statistically different from the programming offered by non-jointly-owned stations.

In their filings during the 2006 Media Ownership Review, Kimmelman et al. (2007) show that holding other factors fixed (including market concentration) multiple ownership has a positive effect on local news provision at the market-level. However, they also find that increased market concentration has a negative effect on the minutes of market-level local news. The overall effect of permitting station combinations, therefore, depends on the combined impact of both joint-ownership and market concentration on local news provision

#### *Radio/Television Cross-Ownership Rule*

The Radio/Television Cross-Ownership Rule allows for common ownership between radio and television broadcast stations, but the number and type of stations one entity may own depends on the total number of independent media voices that remain post

merger. For markets where at least 20 independently-owned media voices remain post merger, a party may own up to two television stations and up to six radio stations.<sup>10,11</sup> In markets where at least 10 independent media voices would remain, an entity may own up to two television stations and four radio stations. Regardless of the number of voices remaining in the market, the rule allows the combination of up to two television stations and one radio station.

There is less evidence on whether owners who own both TV and radio stations provide more or less local news and public affairs programming on their television stations. Shiman (2007b and 2009) finds evidence that radio/TV cross-owned stations provide slightly more local news and public affairs programming than television stations not cross-owned with radio stations, but the effect (and statistical significance) varies depending on the model specification. Crawford (2007) finds no statistically significant evidence that local information programming varies with cross-ownership status. Kimmelman et al. (2007) present results for dozens of regressions incorporating radio/TV cross-ownership. The vast majority of them indicate no statistically significant relationship between cross ownership and news/public affairs programming. Of the handful of specifications that do result in statistically significant results, about half show a negative correlation, and the other half show a positive correlation. Neither Yan and Napoli (2006) nor Napoli and Yan (2007) explicitly control for radio cross-ownership in their studies.

### *Newspaper/Broadcast Cross-Ownership Rule*

Perhaps the most contentious of the Commission's rules is the Newspaper/Broadcast Cross-Ownership Rule. In 1975, the Commission prohibited the within-market combination of a full-power broadcast station and a major daily newspaper. Specifically, for a newspaper and broadcast station to be co-owned, the service contours of the

---

<sup>10</sup> Entities that own multiple television and/or radio stations in a market must also comply with the Local Television Ownership Rule and the Local Radio Ownership Rule (not discussed here) in order for cross-ownership to be permitted.

<sup>11</sup> Alternatively, a party may own one television station and up to 7 radio stations, provided that at least 20 media voices remain post merger.



broadcast station could not completely encompass the newspaper's city of publication. However, approximately 17 television/newspaper combinations were "grandfathered" under the previous rules and permitted to continue joint operations after the 1975 ruling.

In the 2002 Biennial Review (FCC, 2003), the Commission relaxed the outright prohibition of newspaper/broadcast cross-ownership, opening the door for certain broadcast/newspaper mergers. The ruling relied on a report by Spavins, Denison, Roberts, and Frenette (2002) which found that cross-owned stations aired more local news than non-cross-owned stations. However, the FCC's reliance on the report drew criticism since the report's results were not tested for statistical significance, nor did the report's authors control for other factors that may also have had a significant impact on news provision. Consequently, the FCC's ruling was appealed in court, and the Third Circuit Court of Appeals stayed the effectiveness of the revised rules and remanded them to the FCC for further justification or modification, arguing that the new cross-ownership rules were not supported by reasoned analysis (*Prometheus Radio Project, et al. v. FCC*, 2004).<sup>12</sup> The FCC incorporated additional analysis into the 2006 Quadrennial Review Order (FCC, 2008) and once again relaxed the outright ban on newspaper/broadcast cross-ownership in favor of a case-by-case approach (which included a "remaining voices test" for combinations in the top 20 markets). Once again, the ruling found itself in front of the Third Circuit and was stayed. In addition, the FCC petitioned the court in 2009 to hold the rule in abeyance given (1) the considerable passage of time, (2) changes in the Commission's membership, and (3) the pending 2010 Quadrennial Review. However, in March 2010, the Court lifted the stay and the revised Newspaper/Broadcast Cross-Ownership Rule went into effect.

The new rule specifically allowed for the combination of one broadcast station and one daily newspaper in the top 20 television markets, if (in the case of television stations) at least 8 independently owned and operated major media voices remained after the merger, and the television station was not among the top 4 rated stations in the market (in terms

---

<sup>12</sup> The Court, however, did agree with the FCC's finding that the blanket cross-ownership prohibition was not in the public interest.

of audience share). Outside of the top 20 markets, the FCC ruled that newspaper-broadcast cross-ownership was generally not in the public interest, but allowed for case-by-case exceptions if (1) the combination involved a “failing” or “failed” newspaper or television station or (2) the combination would lead to a new source of local broadcast news (i.e., a television station that was providing no local news pre-merger agrees to provide at least 7 hours per week of local news post-merger).<sup>13</sup>

Not surprisingly, numerous studies have attempted to identify the impact of newspaper-television cross-ownership on the quantity of local news and public affairs programming aired by the television station. In the 2006 Quadrennial Review, Shiman (2007a) finds that television stations that are cross-owned with newspapers produced significantly more *total* news programming (an increase of about 11%), but that there was no statistically significant impact of cross-ownership on total public affairs programming. Subsequent peer reviews and filed comments (most notably by Kimmelman et al., 2007) critiqued the analysis by Shiman on the grounds that the analysis did not distinguish between local and non-local news programming, nor did it distinguish between “grandfathered” and “waivered” cross-ownership situations.<sup>14</sup> In addition, they argued that the relevant metric for cross-ownership is the impact on news and public affairs programming at the *market* level rather than the *station* level.

In their own analysis of the data employed in Shiman (2007a), Kimmelman et al. (2007) determine that at the market level, markets containing a newspaper-television cross-ownership relationship do not offer more local news or public affairs programming. In fact, many of the coefficients in their models suggest a negative (albeit statistically insignificant) relationship between cross-ownership and local information programming, especially for those markets where the cross-ownership had been “grandfathered.” In addition, Kimmelman et al. (2007) revisit the station-level findings, incorporating

---

<sup>13</sup> See 47 Code of Federal Regulations 73.3555(d) for the current newspaper-television cross-ownership rule.

<sup>14</sup> Since the cross-ownership ban in 1975, approximately 13 television stations have been granted waivers (either temporary or permanent) permitting television/newspaper cross-ownership (in addition to the 17 television stations that were grandfathered). In their 2007 filings with the FCC, Kimmelman et al. (2007) argue that the distinction between grandfathered and waived stations is important, because waived stations are likely to be on their “best behavior” so as to maintain their waived cross-ownership status.

additional variables and peer-review suggestions into the models. They conclude that the positive and statistically significant relationship between cross-owned stations and news programming is driven largely by a single station (WGN in Chicago).<sup>15</sup>

Shiman (2009) revisits the original analysis, modeling only the *local* news programming aired by the stations (in addition to incorporating many of the other suggestions from peer reviews and filed comments). He continues to find a positive and statistically significant relationship between “grandfathered” television-newspaper cross-ownership and the quantity of local news programming at the station level. Shiman (2009) also performs a market-level analysis of the effect of cross-ownership that is similar to the Kimmelman et al. (2007) analysis. The model specifications between the two market-level studies differ in meaningful ways, and Shiman’s results are in direct contradiction to the results in the Kimmelman et al. (2007) analysis – namely, that markets with newspaper cross-owned stations produce more (not less) local news.<sup>16</sup>

Other papers that analyze newspaper-broadcast cross-ownership are Crawford (2007) and Yan (2006). As part of a broader effort to estimate the impact of market structure on many different types of television programming (e.g., news, minority, children’s, religious, violent/indecent), Crawford (2007) finds that cross-ownership increases the amount of local news aired by a station (by about 3%) but has no effect on the amount of local public affairs programming. However, his study is specific to prime-time programming (6:00pm to 12:00am). Yan (2006) estimates a selection model to simultaneously determine (1) the probability that a station will air any local news and (2) the average amount of local news (conditional on airing any news). The author finds that newspaper-broadcast cross-owned stations are significantly more likely to air at least

---

<sup>15</sup> Tribune was granted a permanent waiver in November 2007 allowing joint-ownership of the Chicago Tribune and the WGN TV and AM broadcast stations (affirmed in MB Docket No. 06-121). Prior to 2007, WGN was a grandfathered station.

<sup>16</sup> The market-level analyses of Shiman and Kimmelman et al. differ in two primary respects. First, although the dependent variable was the total number of news minutes aired in the market, Kimmelman et al. did not control for the total number of stations in the market, whereas Shiman did. Second, the analysis in Kimmelman et al. included market fixed effects, but the Shiman model did not.

some local news, but that they do not broadcast more local news than other stations that also provide local news.<sup>17</sup>

## **Empirical Model and Data**

The previous literature on local information programming has focused primarily on the impact of market structure on the *station*-level provision of local news and public affairs programming. However, it is not clear that local news provision at the station level is the policy variable of interest. Ultimately, the measure of interest is the amount of news and public affairs programming available in the market. For example, a television station that is cross-owned with a newspaper or radio station may benefit from economies of scope in the provision of local news, leading to an increase in news at that station. If other stations in the market respond to the increased efficiency of the cross-owned station's news operations by ceding (either partially or completely) their own production of local news, there may actually be less (and more concentrated) news provision in the overall market. However, a station-level analysis can also provide meaningful insight; after all, the total amount of information programming in the market is simply an aggregation of the decisions of individual stations. Therefore, in what follows, we estimate the relationship between market structure on local information programming at both the market and station level.

In order to estimate the impact of market structure, we employ the following models:

### **Market-Level Analysis:**

$$AvgNewsMins_{jt} = Structure_{jt} \mathbf{b} + Demog_{jt} \mathbf{d} + \mathbf{t}_t + \mathbf{e}_{jt}, \quad (1)$$

### **Station-Level Analysis:**

$$AvgNewsMins_{ijt} = Station_{ijt} \mathbf{q} + Structure_{jt} \mathbf{b} + Demog_{jt} \mathbf{d} + \mathbf{a}_j + \mathbf{h}_n + \mathbf{t}_t + \mathbf{e}_{ijt}, \quad (2)$$

---

<sup>17</sup> Yan (2006) finds no effect of cross-ownership on the likelihood or amount of local public affairs programming aired by a station.

where  $AvgNewsMins_{ijt}$  is the average number of minutes (per day) of local news programming aired by station  $i$ , in market  $j$ , in year  $t$ . (For the market-level analysis, the dependent variable is summed over all stations in the market.)<sup>18,19</sup> The vector  $Structure_{jt}$  contains variables describing the ownership structure in the overall television market, and  $Demog_{jt}$  is a vector of variables containing various market demographics. In the station-level analysis,  $Station_{ijt}$ , contains station-specific ownership characteristics that could influence the quantity of local information programming aired by the station. Last, the models include various fixed effects for markets ( $a_j$ ), network affiliation ( $h_n$ ), and time period ( $t_t$ ).

### News and Public Affairs Minutes

The dependent variable in this analysis is constructed from television programming schedules purchased by the FCC from Tribune Media Services (hereafter TMS). The data contain complete programming information for every full-power broadcast station in the U.S. for multiple weeks in each of the years 2007 and 2009.<sup>20</sup> Each program is categorized by TMS according to genre, for example, News, Sports, Children, Educational, Religious, Sitcom, etc. There are over 100 possible program genres, with the 30 most common genres accounting for approximately 90% of all programs.<sup>21</sup> The

---

<sup>18</sup> We also estimate separate models where we employ the average amount of local public affairs programming as the dependent variable ( $AvgPAMins$ ). Many variations of these models are also estimated as robustness checks on the original models, e.g., Tobit, Heckman selection, GLM models for the percentage of total news that is local, separate regressions for Big4 and non-Big4 affiliates, etc.

<sup>19</sup> We use average minutes per day (instead of total minutes) in order to account for differences in the number of days across time periods in the programming data (see below).

<sup>20</sup> The dataset contains programming data for the following time periods: Nov 4 – Nov 17, 2007; Mar 27 – May 10, 2008; Nov 1 – Nov 14, 2009; and May 6 – May 12, 2010.

<sup>21</sup> We classify as “News” those programs with a genre of “News” or “Newsmagazine” (or their Spanish equivalents “Noticias” and “Revista Noticiosa”). We classify as Public Affairs those programs with a genre field of “Community”, “Debate”, “Public”, or “Public affairs” (or their Spanish equivalents). In addition to being assigned a primary genre in the TMS data, each program is assigned up to five secondary genres. Most programs were assigned at least two genres, but few were assigned more than two (only 35% of all programs were assigned 3 or more genres, and less than 10% of programs were assigned more than three). For the principle specification, only the primary genre was used to categorize news and public affairs programming. For example, a program with a primary genre of “Health” and a secondary genre of “News” was *not* classified as news in our sample. Using secondary genres increases the number of local news programs (local public affairs programs) in our sample by about 29% (64%), but only increases the

data also indicate the origination source of the program – local, network, or syndicated.<sup>22</sup> Using these two fields (i.e., genre and origination source), we are able to construct the total number of minutes of local news and public affairs programming aired by each station in each market.

### *Limitations of the Programming Data*

Before proceeding, it is important to discuss some of the limitations of using scheduled minutes as our measure of the quantity of local information programming.

Unfortunately, our data do not let us observe the content of the program being aired. Consequently, all scheduled minutes (both within and across local news programs) are considered equal in quality. For example, five minutes of “hard news” or “in-depth” investigative reporting are considered equivalent to a heart-warming dog rescue or an anchor reading stories from the national news wire. In addition, the measure does not distinguish between news minutes and advertising minutes. This lack of “content analysis” has led many researchers and policy makers to question the usefulness of studies that employ “total scheduled news minutes” as a measure of local information programming.

However, the task is to examine the impact of market structure on the quantity of local news, and it is likely the case that “quality” news minutes are at least somewhat correlated with “scheduled” news minutes. That is, if a station decides to increase their local news programming, it is likely that at least some of that programming is dedicated to high-quality, hard-news minutes. Furthermore, insofar as “scheduled minutes” is an error-laden measure of “actual news minutes”, the measurement error in the dependent

---

amount of local news *minutes* (local public affairs minutes) by about 3% (25%). As a robustness check, the dependent variable was also coded using secondary genres, and the results are reported below. Overall, we find that the results are remarkably similar in sign, significance, and magnitude regardless of whether secondary genres are used to classify news and public affairs programming.

<sup>22</sup> In a limited number of cases, TMS counts as “local news” certain news programs that may be “locally selected” but not “locally produced.” This occurs primarily in larger markets with significant ethnic populations. For example, WMBC in New York aired programs titled *Morning News Korea*, *News from Italy*, and *Showbiz India*. These programs are geared toward the local population, but the news is not about the local population per se. The instance of such programs does not appear to be wide spread in our data, and occurs most commonly on independent stations.

variable of a regression model is a major concern only if that error is non-random (i.e., systematically correlated with the explanatory variables in the model). As long as the measurement error is random, the increased uncertainty will reduce the precision of the estimated coefficients, but will not necessarily cause those coefficients to be biased.

One major benefit to using scheduled news minutes is that it avoids the subjective classifications that often plague content analysis. There is typically considerable disagreement about what constitutes “hard” news. It is easy enough to classify heart-warming dog rescues relative to city council election results. More difficult can be the classification of weather, sports, and traffic reports.<sup>23</sup>

Last, neither scheduled minutes nor content analysis is able to inform the question regarding what is the “right” amount of local news. Increases in the amount of local news may not necessarily be welfare enhancing if individuals would prefer entertainment programming. Using this reasoning, it is possible that scheduled news minutes, rather than news minutes from content analysis, may be a more accurate representation of what individuals “prefer” from their local news programs.

Consequently, while a detailed content analysis might provide more flexibility than simply counting scheduled minutes, an analysis of scheduled minutes is not without value.

### *Station, Market, and Demographic Variables*

The complete list of independent variables is given in Table 1. The principle source of data for the station, market, and demographic variables is a data set that was compiled and maintained by FCC Media Bureau staff. The data set was compiled from multiple sources and was cross-checked, cleaned, and distributed to the authors of all eleven FCC

---

<sup>23</sup> For example, consider how one would classify a story about a game involving the hometown baseball team. The classification may be different depending on whether the game was a regular season game or a World Series game. Even the news worthiness of a regular season game may change if, for instance, the game involved an altercation that resulted in a long-term suspension for the team’s star player. There are likely to be disagreements on which (if any) of these events are actual “news.”

media ownership studies.<sup>24</sup> The data set is also being used by FCC staff for internal analyses. The collective data are referred to as “Study Zero.”<sup>25</sup> Study Zero contains ownership, revenue, affiliation, and location information for every full-power broadcast station in the U.S., as well as market-level industry and demographic data (e.g., satellite and cable subscribership, race, population, income). Low-power, Class A and satellite stations are not included in the data set or analysis.

The variables comprising market ownership structure in our model include the number of within-market commercial stations that are jointly owned; various cross-ownership variables indicating the number of stations in each market that are owned by parents who also own radio stations and/or newspaper publications; the number of commercial and non-commercial stations; the number of total radio stations and major print newspapers; the number of stations owned by “local” parents; the number of stations affiliated with a “Big 4” network (ABC, CBS, Fox, and NBC); the number of stations affiliated with the PBS network; the number of stations owned and operated by a major television network (O&O); the number of stations controlled under local marketing agreements (LMA); and minority and female ownership information.

The vector  $Demog_{jt}$  contains market demographic variables such as per capita income; percentage estimates of various race and age groups; geographic size of the television market (square mileage); percentage of market population with a bachelors degree; the number of households with a television; the number of households that subscribe to cable and satellite TV service; population density; and the number of households with a broadband subscription.

The majority of the ownership variables in the vector  $Station_{ijt}$  are binary in nature including multiple-ownership and newspaper cross ownership. Also binary are the variables for LMA status; O&O status; minority and female ownership; local ownership;

---

<sup>24</sup> The FCC contracted eleven academic studies for the 2010 Media Ownership Review. Brief descriptions of ten of the eleven studies can be found at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DA-10-1084A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-10-1084A1.pdf).

<sup>25</sup> For a full list of all data sources and variable descriptions, see the Study Zero documentation.



and whether the station is “multicasting.” The non-binary variables are the population reach of the parents (as a percentage of US population), total number of commercial radio stations owned by the parent (both within and across markets), total number of commercial TV stations owned by the parent (all markets), and total parent revenue.

These variables were merged with the average daily minutes of local news and public affairs programming (calculated from the TMS data) and were used to estimate the relationship between market structure and local information programming.<sup>26</sup>

### Descriptive Statistics

Descriptive statistics for the primary variables in the analysis are displayed in Table 2. The average television market contains 7.7 TV stations, with 5.9 commercial stations and 1.8 non-commercial stations.<sup>27</sup> The average number of independent voices in a market, however, is smaller due to ownership consolidation. Of primary concern in our analysis is the impact of multiple-station ownership and cross-platform ownership on the amount of local news and public affairs programming provided by television stations in the market. As discussed above, under certain conditions, an entity may own two commercial television stations in a single market.<sup>28</sup> Approximately 45% of the television markets contain at least one parent entity that has a controlling interest in multiple (in-market) commercial stations, and approximately 18% of the markets contain two or more parent entities that have a controlling interest in multiple commercial stations. The row labeled “Multi-Owned Com Stations” in Table 2 reports the number of total commercial television stations in the market that are controlled under multiple ownership. Just under 1.5 television stations per market will be controlled through multiple-ownership, on

---

<sup>26</sup> The Study Zero station and demographic data were compiled as of December 31<sup>st</sup> for the years 2007 and 2009. The 2007 Study Zero data were merged with the November 2007 and May 2008 TMS data, and the 2009 Study Zero data were merged with the November 2009 and May 2010 TMS data.

<sup>27</sup> The median number of television stations is 7. Approximately 42% of markets in the sample have more than 7 stations, with 58% containing seven or fewer.

<sup>28</sup> In rare cases, temporary approval may be given for an entity to own more than two television stations in a market, e.g., temporary approval of a merger or acquisition in which one of the conditions of approval being that the entity divest one or more stations within a certain period of time in order to comply with the ownership limits. These situations are *not* classified as joint-ownership in the Study Zero dataset.

average. The Dallas-Ft. Worth, TX market has the largest absolute number of commercial stations under multiple-ownership with 10, and the Victoria, TX market has the highest concentration of multiple-ownership, with both of the two commercial stations in the market under the control of a single entity (i.e., 100% concentration).<sup>29</sup> The variable “% Multi-Owned Com Stations” indicates the percentage of commercial stations controlled under multiple ownership within each television market. On average, 18% of a market’s commercial stations are jointly owned. Of the 45% of markets that have stations under multiple-ownership, only 1 market is indicated as containing a combination that involves a group of 3 stations (NBC/GE in Los Angeles, CA). In every other market, no entity owns a controlling interest in more than two stations.

News and public affairs information is also disseminated via radio and newspaper. The average market contains 66 radio stations (AM and FM) and 2 major newspapers (i.e., newspapers with circulation greater than 5% of the total households in the market). The FCC ownership rules limit the number of commercial radio stations and daily newspapers that may be cross-owned with commercial television stations.<sup>30</sup> Our market-level analysis includes three cross-ownership variables. The first, “Newspaper XOwned Stations,” indicates the total number of commercial stations in the market that are controlled by entities that also own a daily newspaper in the same market. Twenty-seven markets have at least one such station, and the New York market contains the most newspaper cross-owned stations, with three.<sup>31</sup> Similarly, the second variable, “Radio XOwned Stations,” indicates the total number of commercial TV stations in the market controlled by entities that also control a commercial radio station in the same market.

---

<sup>29</sup> The two stations in the Victoria, TX market are controlled by a single parent under a local marketing agreement (LMA). This LMA (along with a few others) was grandfathered in 1999 when the Commission altered its ownership rules to consider LMAs attributable toward local and national television ownership limits. Prior to 1999, television stations controlled under an LMA were not attributable toward ownership counts (see FCC, 1999). An LMA is “attributable” if the agreement involves more than 15% of the brokered stations’ programming minutes.

<sup>30</sup> The FCC’s rules apply to “daily” newspapers, regardless of the circulation of that paper. A daily newspaper is defined as a newspaper that is published at least 4 days per week.

<sup>31</sup> News Corporation owns WNYW (Fox), WWOR (My Network TV) and *The New York Post*. In 2007, Tribune owned WPIX (CW) and *Newsday*. However, *Newsday* was sold to Cablevision in 2008, leaving New York with only two newspaper-TV cross-owned stations. The only other market with more than one newspaper-TV cross-owned station is the Hartford-New Haven, CT market. Tribune Company owns WTIC (Fox), WTXN (CW), and the *Hartford Courant*. (Note: WTXN changed call signs to WCCT in June 2010.)

Many more markets contain radio-TV cross-owned stations, with around 30% of markets containing at least one.<sup>32</sup> Most markets with radio-TV cross-owned stations have fewer than 4 commercial TV stations under cross ownership; only 5 markets have 5 or more commercial stations under cross ownership.<sup>33</sup> The third cross-ownership variable is “Radio/TV XOwned Ratio”. This variable is meant to capture the extent to which owners may be able to spread fixed costs over multiple stations, and is a rough measure of the average size of the cross-owned-station group. The variable is constructed by summing the total number of commercial broadcast outlets (radio and broadcast) in the market owned by all “Radio/TV Parents” and dividing by the number of “Radio/TV Parents”.<sup>34</sup>

Other variables of interest include network affiliation, local ownership, and stations that are owned and operated by a major television network. Most markets have stations that air the programming of the four largest television networks (ABC, CBS, Fox, and NBC). Approximately two-thirds of all markets (68%) have stations that air programming from all four of the “Big4” networks, with approximately one-third (32%) of markets having fewer than four of the Big4 networks. More precisely, three of the four Big4 networks are represented in approximately 16% of markets, two of the Big4 networks are present in approximately 10% of markets, and about 6% of markets have only one Big 4 network.<sup>35</sup> There are (on average) about 1.7 PBS affiliate stations per market. Approximately 12% of markets have no PBS affiliate, 70% of markets have either one or two PBS affiliates, and 18% have more than two stations affiliated with the PBS network. The variable “Num Local Parents” counts the number of commercial TV stations in the market that are controlled by parents that are headquartered in the market. The average

---

<sup>32</sup> This percentage is increased to 66% if combinations between non-commercial stations are included. Since the FCC rules concern only combinations between commercial stations, we focus primarily on combinations between commercial stations unless otherwise noted.

<sup>33</sup> These markets are Dallas-Ft. Worth, Chicago, and New York (five each); Los Angeles (six in 2007, seven in 2009); and San Francisco-Oakland-San Jose (seven in 2007, six in 2009).

<sup>34</sup> “Radio/TV XOwned Ratio” is set equal to zero in cases where “Radio/TV Parents” is equal to zero. In the station-level analysis, we also include the variable “Radio XOwned Total” to capture the impact of television station owners who also control out-of-market commercial radio stations.

<sup>35</sup> There are 11 markets with more than 5 stations affiliated with the Big4 networks. This usually happens in larger markets where there are two major cities that have stations with non-overlapping signals. For example, in the Washington, DC market, there is an NBC affiliated station in both Washington, DC (WRC) and in Hagerstown, MD (WHAG).

market contains just under two stations owned by local parents. There are also a large number of O&O stations in our sample. The variable “Num O&O” counts the number of stations in each market owned and operated by a major, national television network.<sup>36</sup> Approximately 34% of markets contain at least one O&O station. The largest markets tend to have more O&O stations, with Chicago, Dallas-Ft. Worth, Los Angeles, New York, Philadelphia, and San Francisco being the six markets that have at least eight O&O stations.

The dependent variable of our analysis is the average daily minutes of local news and public affairs programming aired in the market. The average market will air approximately 12 hours (720 minutes) of local news and approximately 1.5 hours (90 minutes) of local public affairs programming per day. However, news and public affairs minutes vary widely across markets. Minutes of local news programming ranges from a low of 18 minutes per day (Presque Isle, ME) to a high of more than 46 hours per day (Los Angeles, CA). Public affairs minutes vary even more, with the standard error being almost double the mean.

Figure 1 shows the histogram of market-level news and public affairs minutes across our sample. The distribution of local news minutes is single peaked, but exhibits a positive skew. On the other hand, minutes of local public affairs programming are highly skewed to the right with a large majority of stations airing no more than a handful of minutes in the typical day.

Perhaps more interesting are the station-level histograms of local news programming displayed in Figure 2. The top panel of the figure shows that the distribution has multiple peaks, and suggests that the underlying data may not be generated from a single process. Further inspection reveals that this pattern is largely due to the differences between the programming patterns of Big4 and non-Big4 stations, and to a lesser extent, the differences between “large” and “small” markets. The middle panel in Figure 2 displays

---

<sup>36</sup> See Table 1 under “Station Characteristics” for a full list of owners and networks that comprise the set of O&O stations.

the histogram of news minutes for non-Big4 stations. The distribution is heavily skewed to the right and resembles the shape of an exponential distribution. The bottom panel of Figure 2 displays the histogram of news minutes for Big4 stations. Contrary to non-Big4 stations, the Big4 distribution is more bell-shaped, especially for Big4 stations in larger markets (i.e., markets with 8 or more total television stations).

Note that the four histograms in Figure 2 exclude from the counts of the number of stations that air zero minutes of local news. In 2009, 518 stations in our sample (32%) did not air a single minute of local news programming. Big4 affiliates, in addition to producing the most news, also have the highest incidence of local news. Of Big 4 affiliates, only 34 of 739 stations (4.6%) did not air local news. On the other hand, approximately half of non-Big4, commercial stations did not air local news, failing to appear on 222 of 487 such stations (45.6%). And more than two-thirds of non-commercial stations didn't air any local news – or 262 of 383 non-commercial stations (68.4%).

The station level histograms of local public affairs minutes (not presented here) are similar in shape to the local news histograms for non-Big4 stations – concentrated near zero with long right tails. This is true for all major sub-populations as well: Big4 vs. non-Big4 stations, commercial vs. non-commercial stations, and large vs. small markets.

### Econometric Notes

Before proceeding to the results, a couple of econometric issues deserve mention. The majority of our models are estimated using Ordinary Least Squares regression techniques (OLS). The OLS method ensures that the estimated coefficients on the regressors are the most efficient estimates of the (conditional) correlation between the regressor and the dependent variable, or best linear predictors. For example, the coefficient on the newspaper-television cross-ownership variable isolates the correlation between newspaper cross-owned stations and the amount of local news programming in the market, *conditional on* (or holding constant) all of the other variables in the model (such

as the number of TV stations, number of stations owned by local owners, per capita income, etc.).<sup>37</sup>

However, the OLS coefficients are not necessarily estimates of the *causal* effects of the regressors on the dependent variable. That is, a statistically significant positive (or negative) relationship between newspaper cross-owned stations and local news minutes does not necessarily imply that cross-ownership is the *cause* of the higher (or lower) quantity of local news minutes in the market. Such an interpretation requires additional assumptions – the most important of which is lack of correlation between the regressors and the model error, or regressor exogeneity. These assumptions may not necessarily hold in this regression analysis. Specifically, there are at least three possible sources of endogeneity: omitted variable bias, simultaneity, and selection.<sup>38, 39, 40</sup> Consequently, we

---

<sup>37</sup> Under certain conditions on the model regressors and errors, OLS can be shown to be the minimum-variance estimator in the class of all linear and unbiased estimators (also known as B.L.U.E.).

<sup>38</sup> Omitted variable bias arises in a model when the *included* explanatory variables are correlated with important variables that are *excluded* from the model. Intuitively, if important variables are excluded from the model, the effect of these variables on local news minutes may be improperly attributed to other variables that are included in the model. More precisely, any variable not included in our model is implicitly included in the error term. If the included and omitted regressors are correlated – and the omitted variables have a non-zero impact on local news minutes – the resulting correlation between the regressors and errors will confound a causal interpretation of the regression coefficients. To limit the possibility of omitted variable bias, our specifications include a large number (and wide variety) of explanatory variables. However, the possibility remains that there are important variables unaccounted for in the models.

<sup>39</sup> Regarding simultaneity, causal interpretations are typically derived from underlying “structural” relationships between variables that may be jointly determined. In the case of a station’s programming decisions, advertising revenues, ownership structure, and viewership are all likely to be determined simultaneously through a “supply and demand” process. Proper estimation of the causal impact of ownership structure on local news provision requires careful estimation of these structural relationships. However, our analysis employs more of a “reduced-form,” estimation approach. As such, we combine all “supply” and “demand” factors into one equation to estimate the overall (equilibrium) relationship between ownership structure and local information programming.

<sup>40</sup> Sample selection concerns the possibility that certain subsets of television stations are missing programming data for at least one of the years in the sample. The ownership data and the programming data come from two separate sources, and (as one might expect) do not perfectly match. The TMS dataset is missing programming information for 123 station-level observations; 118 of those from 2007. The primary reason for the missing data is that the TMS dataset only includes programming information from digital broadcast streams, and most of the stations with missing observations had not yet made the transition from analog to digital broadcasting technology. Although the vast majority of stations had completed the digital transition well before 2007, a substantial fraction (approximately 8%) had not. All stations were eventually required by the FCC to make the transition by June 2009, and those that were unable to do so either sought temporary authorization to continue broadcasting in analog, or they ceased operations and went “dark”. As a consequence, there were substantially more stations with missing programming information in the 2007 data than the 2009 data.

We account for the missing programming information in a couple of ways. We first note that the missing data only impacts the dependent variable. In the market-level analysis – where the local news

cannot definitively say whether ownership structure is *causing* changes in news programming, whether the nature of news programming in the market is *causing* owners to seek consolidation, or whether some third factor is *causing* both consolidation and news programming. Our discussion of the results below reflects this uncertainty – using phrases that suggest correlation (such as “correlated with,” “corresponds to,” and “relationship between”) instead of phrases that suggest causality (such as “causes,” “induces,” and “leads to”).

A second econometric issue concerns the likely correlation between the programming decisions of stations both across time and within the market. In order to account for both the temporal and within-market correlation, for all models we estimate and report the cluster-robust standard errors in which the errors are clustered at the level of the television market.

## **Results**

### *Local Information Programming at the Market Level*

Table 3 reports the estimated coefficients and robust standard errors of the relationship between market structure and market-level, local information programming.<sup>41</sup> The first two columns contain estimates for local news, and the last two columns contain estimates for local public affairs. A number of coefficients merit discussion. First, market-level, local news programming does not appear to be correlated with the number of co-owned

---

minutes are aggregated over all the stations in the market – the missing observations will lead us to undercount the average number of minutes of information programming. Since we can observe the number of stations in the market for which we have missing programming information, we include a series of binary variables that control for the total number of stations with missing programming data in each market.

In the station-level analysis, the missing programming information prevents the inclusion of the observations in the regression estimation. Simply running a regression on the remaining (non-missing) observations could lead to biased coefficient estimates if there is correlation between the errors of the “selection” and “outcome” equations. To test this possibility, we check the robustness of the OLS coefficient estimates by also estimating a Heckman selection model. We further discuss this model below.

<sup>41</sup> The models were estimated by OLS, and the robust standard errors were constructed by clustering the residuals at the television market level. Statistical significance at the 5% and 10% levels are denoted by the symbols \* and †, respectively.

commercial stations in the market. The coefficient on “Multi-Owned Com Stations” in Column (1) is positive, but not statistically significant at the conventional levels.

Likewise, newspaper cross-ownership and local news minutes are not statistically related at the market level. Markets containing commercial TV stations that are cross-owned with major print newspapers in the same market tend to have approximately 41 fewer local-news minutes per cross-owned station (or approximately 5.7% of the total local news minutes in the average market), however, the result is imprecisely measured and not statistically different from zero.<sup>42</sup>

On the other hand, cross-ownership between commercial television and commercial radio stations *does* appear to have a statistically significant impact on the amount of local news programming available to the market. The impact is non-linear and has both a positive and a negative component. First, each additional commercial television station in the market that is cross owned with a commercial radio station corresponds to a 59 minute drop in news minutes in the market during the average day. However, for each additional broadcast outlet owned by every cross-owned parent, news minutes will increase approximately 16 minutes. The overall relationship between radio-television cross-ownership and local news will depend on both the number of television stations under cross-ownership, as well as the average size of the cross-ownership station group.<sup>43</sup>

---

<sup>42</sup> Note that the regression controls for the number of commercial and non-commercial stations in the market. Therefore, the combination of an *existing* station with a newspaper would correspond to 41 fewer minutes of local news. However, were a newspaper owner to add a *new* commercial television station to the market, the resulting impact on local news minutes would be the sum of the coefficients on “News XOwn Stations” and “Com TV Stations”, or an increase of approximately 39 minutes ( $= -41+80$ ). In this case, the positive impact of adding a new station would supersede the negative impact of the combination between the newspaper and television station.

<sup>43</sup> The relationship between the countervailing effects is easier understood through specific examples. Consider a market with a single cross-owned combination between one commercial television station and one commercial radio station. This combination involves two broadcast outlets and the combination corresponds to approximately 27 fewer minutes of news ( $= -59 + 2 \times 16$ ) than would be observed in a comparable market with no cross-ownership combination. If the combination instead involved one commercial television station and 5 commercial radio stations, the combination would correspond to approximately 37 *more* minutes of local news ( $= -59 + 6 \times 16$ ) than would be observed in a comparable market. If the market had two combinations (involving two separate owners), the first consisting of a combination between one television station and 3 radio stations and the second consisting of a combination between one television station and 5 radio stations, the combinations would correspond to approximately



Of the other market structure variables in the model, four appear to have a statistically significant relationship with local news provision in the market. Not surprisingly, more stations is correlated with higher levels of local news. The coefficient on “Com TV Stations” indicates 80 more minutes of news for each additional commercial television station in the market. Likewise, stations affiliated with Big4 networks tend to air more local news. The coefficient on “Num Big4” indicates that (even after controlling for the number of stations in the market) there is about 35 additional minutes of local news programming for each additional Big4 station in the market. The number of stations in the market that are owned and operated by major television networks also co-varies with local news minutes, with the effect depending on whether or not the station is owned by a Big4 network.

A handful of the market demographic factors also have an impact on local news programming. Asian population percentage (coef: 9.06) has a positive, statistically-significant effect on local news programming. The age composition of the market population also plays a role. Markets with higher proportions of individuals age 55 to 64 tend to air less local news, while markets with higher proportions of individuals in the 65-plus age range tend to air more local news programming.<sup>44</sup>

Jumping to Column (3) of Table 3, we see the impact of market structure on the total amount of local public affairs programming aired in the market. None of the four variables corresponding to the Commission’s ownership rules (i.e., multiple-ownership of commercial TV stations, newspaper-TV cross-ownership, radio-TV cross-ownership, and “Radio/TV XOwned Ratio”) is statistically related to the total amount of local public affairs programming at the market level. However, the total number of radio stations in the market is negatively related to public affairs programming. Each additional radio station in the market corresponds to a 1 minute decrease in public affairs programming

---

38 fewer minutes of local news programming [ $= 2 \times (-59) + 5 \times 16$ ] than would be observed in a comparable market.

<sup>44</sup> The omitted category is the percentage of the population under age 18. Consequently, a one-unit increase in the 55-to-64 demographic coincides with a one-unit decrease in the under-18 demographic.

per day at the market level (or approximately 1% of the total public affairs minutes in the average market).

The number of Big 4 affiliated stations is also negatively correlated with local public affairs minutes, with a coefficient of -31 minutes. Last, there is a positive correlation between public affairs minutes and the number of cable subscribers in the market, and a negative correlation between public affairs minutes and the number of households that receive over-the-air television programming.<sup>45</sup>

We estimate the relationship between broadband and local information programming in Columns (2) and (4). The market-level data in the FCC dataset contain information on the percentage of households in the market with broadband connections that have download speeds greater than 768kbps. Unfortunately, these data are only available for 2009, and for this reason we estimate separate regressions using only the 2009 data. Overall, the coefficients from the regressions using only the 2009 data (column 2) are comparable to the coefficients from the full-sample regression, though some differences emerge. The radio-TV cross-ownership variables are still significant and show the same direction of correlation as the full-sample regression. One significant difference in the results is the coefficient on Minority Ownership, which substantially falls in absolute magnitude and is no longer significant. Due to the small number of stations that are minority owned, changes in the news programming or ownership structure of just one or two minority-owned stations can have a large impact on the coefficient estimates. The reduction in sample size also has a noticeable impact on the precision of the estimators, and the coefficient on “Num O&O” is no longer significant.

Regarding broadband availability, the number of broadband subscribers in a market is positively correlated with local information programming. A one-percent increase in subscribership is associated with a 2 minute increase in local news and a 1.8 minute

---

<sup>45</sup> The coefficient on the TVHH variable represents the public-affairs impact of the number of households that own a television, *holding constant* the number of households that subscribe to either cable or satellite television service. Therefore, the coefficient on TVHH is interpreted as the correlation between public affairs minutes and the number of over-the-air (or broadcast-only) television households (i.e., those that do not subscribe to a pay TV service).

increase in local public affairs in the market. However, although both of these coefficients are larger than their standard errors, neither is significantly different from zero at conventional levels.

### Local Information Programming at the Station Level

We now turn our attention to estimating the impact of ownership characteristics on the local news and public affairs programming of *individual stations*. Descriptive statistics for the station-level data can be found in Table 4. The average broadcast station in our data will air 97 minutes of local news programming and 12 minutes of local public affairs programming per day. The majority of the explanatory variables at the station level are binary measures of the count variables used in the market-level regressions. These include indicators for whether the station is jointly-owned with another in the market, newspaper cross-ownership, local parent, O&O station, and minority/female ownership. The data also include counts of the number of in- and out-of-market commercial radio stations owned by parents of commercial TV stations, the total number of commercial TV stations owned by the parent, and the nationwide reach of the parent (i.e., the sum of total population from all markets in which a parent owns a television station, measured in millions).<sup>46</sup>

The estimated coefficients from an OLS regression of the station-level model are presented in Table 5.<sup>47</sup> A few of the results differ markedly from the market-level analysis, most notably, the impact of newspaper-TV cross-ownership. Our results indicate that newspaper-television cross-owned stations provide almost 50% more news

---

<sup>46</sup> The station-level regressions also include an indicator variable for whether or not the station is broadcasting multiple signals (discussed in more detail later) and whether the station has a dual network affiliation on the primary broadcast feed.

<sup>47</sup> As seen in Equation (2), the station-level regressions also include fixed effects for each market, network affiliation, and year. Controlling for individual-market fixed effects eliminates much of the variation in news across markets. Consequently, many of the market structure variables used in the market-level analysis have little explanatory power on local news and public affairs programming at the station level, and have therefore been dropped from the full-sample specification. However, when estimating the impact of broadband on local news and public affairs provision, we drop the market fixed effects and include the full battery of market structure variables. The fixed effects are dropped to avoid co-linearity with broadband subscriptions (and other time-invariant market-level) variables.

than the average station (or 47 more minutes per day). The opposite signs on the coefficients of the newspaper cross-ownership variables between the market- and station-level analyses seem to indicate a “crowding out” effect on local news: Although the cross-owned stations, themselves, will offer more local news, it appears that this increase does not extend to the amount of news at the market level. If anything, the other (non-cross-owned) stations in the market appear to cede (at least partially) their own production of local news, and they do so to an extent that results in lower amounts of local news programming than the level of programming in markets without newspaper-cross-owned stations.

Radio-TV cross-owned stations also appear to air more local news on average. The coefficients are moderate in magnitude, but statistically significant at the 5% level. For every additional radio station a parent owns within the market, the parent’s television station will air 3.8 more minutes of local news per day ( $= 4.23 - 0.46$ ). This result corresponds with the pattern observed in the market level analysis. That is, larger broadcast station “groups” will correspond to more local news. However, as discussed previously, there also appears to be a “crowding out” effect with radio-TV cross-ownership as each additional cross-owned television station leads to less news at the market level. Whether the overall news in the market increases or decreases depends on the average size of the cross-ownership “groups” (see Table 3).

Interestingly, the coefficient on the total number of nationwide radio stations owned by the parent is negatively correlated with local news. So, while increases in in-market cross-ownership will lead to more news at the station level, each additional out-of-market radio station controlled by the television parent will reduce local news programming by about 30 seconds per day.

As with the market-level regressions, the multiple-ownership of (within-market) television stations does not appear to impact the amount of local news programming at the station level. The coefficients on both “Multi-Owned Com Stations” and “Multi-Owned Noncom Stations” are small and not statistically different from zero. However,

the effect of owning out-of-market stations is statistically significant and appears to be negatively related to local news production. Each additional (out-of-market) commercial TV station owned by the parent corresponds to a 0.84 minute reduction in local news by the station. Once the number of out-of-market stations has been controlled for, the nationwide population reach of the parent has no impact on local news minutes.

Other station-level characteristics that correlate with local news programming are whether the station is owned by a local parent (-8.62 minutes), whether the station is multicasting other broadcast feeds (+11.65 minutes), whether the station is affiliated with two or more networks (-41.39 minutes), and whether the station is owned and operated by a major network (-60.88 minutes for non-Big4, O&O stations and +9.65 minutes for Big4, O&O stations).

Broadband availability plays a more important role in the station-level regressions, and the results largely confirm the results found in the market-level analysis. The station-level coefficients, however, are statistically significant. A ten percentage-point increase in the percentage of households with broadband connections in the market leads to a five minute increase in daily local news programming for the average station.

Fewer variables correlate with the station-level provision of local public affairs programming. Just as with local news programming, a station's nationwide presence is negatively correlated with local public affairs programming, but in this case, the population reach variable is statistically significant and the number of total stations is not. Last, "Multi-Owned Com Stations" has a statistically significant negative coefficient, but only in specifications omitting the 2007 data.

### Robustness Checks

In Table 6 we report the results of various robustness checks of the models in Tables 3 and 5. The models in Panel A are identical to the model in Column (1) of Table 3, other than the specification difference noted in the first row of the table. Likewise, the models

in Panel B are identical to the model in Column (1) of Table 5, excepting the specification modification. However, for simplicity, we report only the coefficients for the market structure variables (and station characteristic variables) that are most relevant for the FCC media ownership rules.<sup>48</sup> The results from the robustness checks are largely similar to the results found in the original regressions. However, there are a few substantial differences.

First, the relationship between multiple-ownership and market-level local news appears to depend on the overall size of the market. The regressions reported in Column (1) of Table 6 include interaction variables between the “Multi-Owned Com Stations” variable and the “Total Number of TV Stations in the market”. This interaction allows the impact of jointly-owned commercial television stations to vary with market size.<sup>49</sup>

The coefficient on the multiple-ownership variable and the coefficient on the interaction between multiple-ownership and number of stations are both statistically different from zero. Together, they indicate that multiple-ownership is correlated with *more* local news in smaller markets and with *less* local news in larger markets. Specifically, Panel A shows that the impact of an addition multi-owned station on total daily local news minutes in the market is equal to  $48.05 - 3.50 \times TVStations$ , where *TVStations* equals the total number of television stations in the market. The average television market contains approximately eight television stations, meaning that each additional multiple-owned station corresponds to an increase in local news in the market of approximately 20 minutes.<sup>50</sup> However, a market with five television stations would experience 30.5 *more* minutes of local news per additional multiple-owned station, and a market with 18 television stations would experience 20 *fewer* minutes of local news per additional multiple-owned station.<sup>51</sup>

---

<sup>48</sup> We also only report the results for local news programming. The coefficients for local public affairs programming were often statistically insignificant, and no clear pattern emerged from those that were.

<sup>49</sup> We also constructed the interaction between multiple owned stations and the number of television *voices* in the market. The results were similar to using the number of television *stations* in the interaction.

<sup>50</sup> This figure is comparable to the (statistically insignificant) 13.11 minute increase in local news per cross-owned station that was reported in Column (1) of Table 3.

<sup>51</sup> Cross-ownership situations typically result from the combination of two existing stations in the market (rather than the creation of a new station). Therefore, the relevant incremental increase is likely to be two

One concern with these estimates is whether multiple-owned stations are adequately represented in markets with a small number of television stations. After all, the Commission's ownership rules require that the television market contain at least eight independent television voices before permitting the joint ownership of same-market, commercial television stations. In our sample, approximately 20% of television markets with fewer than eight stations had at least two stations under multiple-ownership (24 out of 121) markets. This percentage is reversed for markets with eight or more television stations, with 82% of large markets (73 out of 89) having at least two commercial stations under multiple-ownership. Even though the percentage is substantially smaller in smaller markets, it appears that the identification from multiple-ownership in smaller markets is not being driven solely by one or two market outliers.<sup>52</sup>

One possible explanation for the large positive correlation between local news and multiple-ownership in small markets is that the owners of these stations are on their "best behavior" and are producing more local news than they otherwise would because they know that they are an "exception" to the Commission's rules. However, the coefficients on multiple-ownership in the station-level regression (Panel B) are statistically insignificant, and the point estimates are negative. This suggests that any increase or decrease in the *aggregate* number of local news minutes in the market is due to the behavior of other stations, and not the behavior of the co-owned stations themselves. For example, theory suggests that co-owned stations would likely attempt to differentiate their programming in order to maximize the joint audience share of the two stations.<sup>53</sup> If

---

stations (rather than one), and the impact on local news minutes would be double the magnitudes discussed here. Additionally, were the combination to arise from the creation of a new station, the total impact on news would include the impact of increasing the "Com TV Stations" variable by one unit.

<sup>52</sup> Large and small markets do differ in terms of the percentage of multiple-owned commercial stations that arise from LMAs. Almost 75% of all multiple-owned stations in small markets are "attributable" LMAs. Many of the LMA combinations in small markets would otherwise be in violation of the existing ownership rules, but exist because they were "grandfathered" when the FCC changed the LMA attribution rule in 1999 (FCC, 1999). On the other hand, only 15% of all multiple-owned stations in large markets are "attributable" LMAs. The regression results, therefore, could suggest differences between LMAs and "equity" cross-ownership, or differences between "grandfathered" and permissible LMAs. However, our regressions control for the number of LMAs in the market and further analysis did not immediately suggest that this is the case.

<sup>53</sup> See, for example, Berry and Waldfogel (2001).

the owner of the cross-owned stations increases news on one station while decreasing news on the other station (such that the total news between the two stations was unchanged), there may be incentive for other stations in the market to increase their provision of local news.

Columns (2) through (6) in Table 6 report the coefficients from using alternative definitions of “News” in constructing the dependent variable. Column (2) expands the definition of local news to include all programs that list “News” as a primary *or* secondary genre, and Column (3) narrows the definition of local news to include only the news provided by *commercial* television stations. Neither of these two alternative definitions substantially alters the conclusions of the models employing the original definition. Although the magnitudes are slightly different, the signs and significance of the coefficients are largely unchanged.

The subset of commercial station news is further refined in Column (4) of Table 6 to include only the news from Big4 affiliate stations. Again, the magnitudes of the coefficients change slightly, but the biggest difference is the relative sensitivity of Big4 news to the total number of radio stations and newspapers in the market. Big4 local-news programming increases as the number of radio stations in the market increase, but decreases as the number of newspapers in the market increase.

In Column (5), we aggregate the amount of local news provided on every “stream” being broadcast by the stations. Digital broadcasting technology makes it possible for stations to broadcast multiple “streams” of programming over a single channel in the broadcast spectrum – a process often referred to as “multicasting.” It is unclear exactly what programming is aired on multicast channels and programming seems to vary widely across stations and across markets. Some stations air news loops and/or weather forecasts (including radar imagery) on their secondary multicast channels. Others air HD feeds of their primary broadcast or air time-shifted replays of local news broadcasts. These multicast channels (other than the station’s primary channel) do not have “must-carry” rights, and therefore most are *not* available on many cable and satellite systems.



However, the programming on multicast channels can represent a significant amount of total *over-the-air* programming in some markets, and may be a significant source of news and public affairs information for those without cable and satellite subscriptions. As seen in the last row of each panel in Column (5), there is approximately 50% more local news at both the market and station level when multicast programming is included.

The regression in Column (5) reports the relationship between ownership structure and the total amount of local news broadcast over all multicast feeds. Only two of the regressors are statistically correlated with the dependent variable at the market level – “Radio XOwned Stations” and “Total Newspapers”. At the station level, jointly-owned commercial stations tend to provide less news over all multicast feeds than stations that are not jointly-owned. Specifically, they provide 33 fewer minutes of news over all their multicast feeds (or 22% less news). The point estimate on jointly-owned *non-commercial* stations increases by an order of magnitude and the point estimate indicates that the stations will provide an additional hour of news over all multicast feeds under joint ownership. However, the standard error on this coefficient also increases by an order of magnitude, and the result is statistically insignificant.

Column (6) contains the results for “primetime” local news programming.<sup>54</sup> The amount of primetime local news appears largely uncorrelated with the explanatory variables at the market level, with only the total number of stations being a statistically significant factor. At the station level, though, both newspaper and radio cross-ownership continue to explain local news production at a statistically significant level.

### Fixed-Effect Regressions

Column (7) of Table 6 contains the coefficient estimates from a full fixed-effects specification, i.e., fixed effects for each television market in the market-level regression and fixed effects for each television station in the station-level regression. The advantage

---

<sup>54</sup> We classify as “Primetime” any program that has a starting time between 5:00 pm and 11:30 pm, inclusive. Alternative definitions were tested, and the results were not sensitive to the definition employed.

of using a fixed effects model comes in being able to control for unobserved, time-invariant factors that impact the quantity of local news in the market (or aired by the station). This is especially beneficial if those unobserved factors happen to be correlated with the other regressors in the model. However, fixed-effect regressions also present two additional challenges. First, the inclusion of fixed effects cut the degrees of freedom by about 50%, increasing the uncertainty of the point estimates. This is readily evident from the lack of statistical significance in a large majority of the coefficients in Column (7). The second challenge is the dearth of variation in the ownership variables across time periods. Identification in fixed-effect models is achieved entirely by within-group variation in the regressors; the cross-sectional variation across groups is not exploited. If there are relatively few changes in ownership status across time periods, the magnitude and sign of the coefficients will depend heavily on the small handful of markets (or stations) that do change – meaning the coefficients could reflect the idiosyncratic characteristics of certain groups rather than a general pattern across all groups.

At the market level, the coefficients imply that a one-station increase in the number of multiple owned stations in the market will lead to approximately 28 fewer minutes of news. The coefficient on total newspapers is also negative and significant, suggesting that local news is increasing on television as newspapers go out of business.

Interestingly, none of the market-level patterns mentioned above manifests itself in the coefficients of the station-level, fixed-effect regressions (at least in a statistically significant magnitude). Therefore, to the extent that the fixed-effect results can be generalized to the entire sample, it seems that the changes in local news resulting from television station consolidation are driven by the behavior of the non-consolidated stations.

Whether or not the results *can* be generalized, however, is an important question. In fact, when looking at changes in multiple-owned television station across time periods, we find that only 43 stations (out of more than 1200 commercial stations) changed multiple-ownership status from 2007 to 2009. This amounts to approximately 3.5% of all

commercial stations. As nearly every pair of television stations that changed multiple-ownership status across time periods occurred in a distinct television market, the market-level changes in ownership status represent a larger fraction of total observations. However, multiple-ownership changes still only occurred in about 11% of markets over our time frame (23 out of 210 markets).

Changes in radio and newspaper cross-ownership are even less frequent. Only 13 markets (out of 210) had at least one television station change radio-cross-ownership status from 2007 to 2009, and only 5 markets had a change in newspaper-cross-ownership status. Consequently, it's unclear how much importance should be placed on the results in the fixed-effect regressions.

### Selection Model

As mentioned above, approximately 8% of all stations in the sample are missing programming data for 2007 – due primarily to the status of the station's transition from analog to digital broadcasting. The selection of stations into the sample on the basis of their “digital on-air date” could potentially bias the coefficients in an OLS regression if the unobserved factors that drive the digital transition are correlated with the unobserved factors driving the production of local news or public affairs programming. In order to correct for the potential selection bias, we estimate the following Heckman selection model:

$$AvgNewsMins_{ijt} = W_{ijt}g + e_{ijt} \quad (3)$$

$$S_{ijt} = 1[Z_{ijt}p + v_{ijt} > 0] \quad (4)$$

where the vector  $W = (Station_{ijt}, Structure_{jt}, Demog_{jt})$ ,  $g = (q', b', d')$ , and  $Z_{ijt} = (DTV_{ijt}, W_{ijt})$ .

Equation (3) – the “outcome” equation – contains the same set of explanatory variables that were included in Equation (2).<sup>55</sup> In Equation (4) – the “selection” equation –  $S_{ijt}$  is a binary variable indicating whether or not the observation is included in the sample (i.e.,  $S_{ijt} = 1$  if station  $i$  in market  $j$  has programming information in time  $t$ , and  $S_{ijt} = 0$  if programming information is missing). The explanatory variables in the selection model ( $Z_{ijt}$ ) include the full set of variables from the outcome equation ( $W_{ijt}$ ), along with an additional variable ( $DTV_{ijt}$ ) that indicates whether or not the station was broadcasting in digital during the time period.<sup>56</sup> The function  $1[\cdot]$  is an indicator function that equals 1 if  $Z_{ijt}\mathbf{p} + v_{ijt} > 0$  and equals 0 otherwise. Although  $Z_{ijt}$  is observed for all observations, the selection model assumes that the dependent variable ( $AvgNewsMins_{ijt}$ ) is only observed if  $S_{ijt} = 1$ , and is unobserved if  $S_{ijt} = 0$ .

As before, we are primarily interested in the parameter  $\gamma$  (though the selection parameter  $\pi$  may also be of interest). Since the dependent variable is only observed if  $S_{ijt} = 1$ , we must derive an estimating equation based on the following conditional expectation:

$$E[AvgNewsMins_{ijt} | Z_{ijt}, S_{ijt} = 1].$$

Under the appropriate assumptions, it can be shown that this expectation has the following functional form:

$$E[AvgNewsMins_{ijt} | Z_{ijt}, S_{ijt} = 1] = W_{ijt}\mathbf{g} + \mathbf{r} \cdot I(Z_{ijt}\mathbf{p}) \quad (5)$$

---

<sup>55</sup> The market, network, and time-period fixed effects are dropped here for notational simplicity. However, we continue to include the fixed effects in all estimated models.

<sup>56</sup> The Heckman selection model does not rule out the case where the outcome model contains elements that are not found in the selection model. However, since (4) is not a structural model, it is not usually desirable to impose such exclusion restrictions. However, we exclude certain variables from the selection model because they are perfect predictors of selection in the first-stage.

Likewise, the model does not rule out the case where  $Z = W$ . However, if  $Z = W$ , identification of the parameters in the outcome model is achieved entirely through the non-linearity of  $I(\cdot)$  (see Equation 5). Consequently, the vector  $Z$  in a selection model will typically contain variables in addition to those found in  $W$ .

where the function  $I(Z_{ijt}p)$  is the inverse Mills ratio.<sup>57</sup>

From Equation (5) it can be seen that an OLS regression of  $AvgNewsMins_{ijt}$  on  $W_{ijt}$  will generally lead to inconsistent estimates of  $g$  since  $I(Z_{ijt}p)$  is omitted from the regression. The parameter  $r$  in (5) is proportional to the correlation between  $e_{ijt}$  and  $v_{ijt}$ , and stronger correlation will typically lead to larger differences between the OLS and the selection-corrected estimates. However, if  $r = 0$ , the correlation between the errors is equal to zero, and an OLS regression on the restricted sample will produce consistent estimates of  $g$ .

In order to estimate Equation (5), we employ Heckman's two-step selection correction. In the first step, estimates of  $p$  are obtained through probit estimation of  $S_{ijt}$  on  $Z_{ijt}$ . In the second step, consistent estimates of  $g$  and  $r$  are obtained through an OLS regression of  $AvgNewsMins_{ijt}$  on  $W_{ijt}$  and  $I(Z_{ijt}\hat{p})$ , where  $\hat{p}$  are the estimated coefficients from the first-stage probit model. (The estimated standard errors are also adjusted to account for the randomness of  $\hat{p}$ .)

The results from this estimation are presented in Columns (8) and (9) of Table 6; Column (8) contains estimates of the marginal effects from the first-stage selection model and Column (9) contains the estimates from the second-stage outcome model. There are only a few factors that predict selection at a statistically significant level – most notably, *DTV*. The results indicate that the probability a station will be *included* in the sample is 8% higher for stations that are broadcasting in digital. On the other hand, it appears that non-commercial stations that are jointly owned with other non-commercial stations in the

---

<sup>57</sup> The standard assumptions of the selection model are that (1) the vector  $(e, v)$  is independent of  $Z$  with zero mean, (2)  $v \sim Normal(0,1)$ , and (3)  $E(e | v) = rv$ . (We continue to note that any violations of regressor exogeneity discussed in previous sections continue to apply to the selection model in this section.) The inverse Mills ratio is defined as  $I(\cdot) \equiv f(\cdot) / \Phi(\cdot)$ , where  $f(\cdot)$  and  $\Phi(\cdot)$  are, respectively, the PDF and CDF of the standard normal distribution. Chapter 17 of Wooldridge (2002) contains a general overview of selection models.

same market are more likely to be *missing* from the sample (by about 3.7%).<sup>58</sup> No other variables, including those not reported here, are statistically significant predictors of selection.

In the outcome equation, there appears to be very little difference between the results of the selection model and the results of the OLS model in Table 5. Most of the coefficients differ by less than a few hundredths of a unit. Consequently, there is likely little correlation between the unobserved factors that influence selection and the unobserved factors that influence local news production. This result is confirmed by testing the coefficient,  $r$ , on the selection correction term,  $I(\cdot)$ , in the second-stage equation. The coefficient is less than half the magnitude of the standard error ( $-5.34$  and  $12.02$ , respectively) and is not statistically different from zero. The selection bias in this model appears to be minimal.

#### *Grandfathered vs. Waivered Newspaper-Television Cross-Ownership*

In our sample, approximately 30 commercial television stations are cross-owned with major print newspapers in the same market. All of these combinations were granted an exception to the Commission's outright ban on newspaper-TV cross-ownership. Not all of the combinations came about through the same process, however. Seventeen of the combinations were "grandfathered" when the cross-ownership ban was initially imposed in 1975. The other 13 combinations were only approved after the cross-ownership restrictions were "waived" by the FCC following a review of individual circumstances of each transaction. Furthermore, of the "waivered" stations, two received "permanent" waivers from the FCC before 2007 (WGN-Chicago and WNYW-New York), four were operating under temporary waivers in 2007 before being granted permanent waivers in February 2008, and five continue to operate under temporary waivers.<sup>59</sup>

---

<sup>58</sup> Of the variables not reported in Column (8), only a few of the network dummies had a statistically significant marginal impact on the probability of being selected. In addition, newspaper-television cross ownership was a perfect predictor of selection and was, therefore, not included in the first-stage estimation.

<sup>59</sup> Two cross-owned stations were operating under temporary waivers in 2007 but dissolved the newspaper-TV combination before 2009. These were WMBB (Media General) in Panama City, and WPIX (Tribune)

Commenters in previous media ownership proceedings have indicated that the “permanent” and “temporary” television stations may be different in fundamental ways, and therefore, the distinction should be made between the two types of cross ownership when analyzing their impact on local news and public affairs programming. Kimmelman et al. (2007), for example, was particularly concerned about the distinction. They argued that because temporary stations “are subject to a waiver, they are likely to be on their best behavior” (pg. 90). Furthermore, they predict that since the grandfathered stations “have been in place for a long period of time, it is much more reasonable to argue that the behavior of the TV stations in those combinations reflects the long-term effect of cross-ownership” (pg. 89).

In Table 7, we re-estimate the impact of newspaper-television cross-ownership on local news programming by making distinctions between grandfathered vs. waived and permanent vs. temporary combinations.<sup>60</sup> Column (1) reproduces the regression results from Tables 3 and 5 when all newspaper-TV cross-owned stations are combined into a single variable. As mentioned above, each additional newspaper-cross-owned station in the market corresponds to 41 *fewer* minutes of local news programming, despite the fact that the cross-owned stations, themselves, tend to air 47 *more* minutes of local news than similar stations in the market. However, distinguishing between permanent and temporary combinations has a meaningful impact on the results (Column 2).<sup>61</sup>

At the market level, the coefficient on permanent combinations (-50.23) is twice as large in magnitude as the coefficient on temporary combinations (-22.8), potentially indicating that markets with permanent combinations have less news than markets with temporary

---

in New York. Note that the New York market shows up as both a permanent-waiver market (because of WNYW) and temporary-waiver market (because of WPIX) in 2007.

<sup>60</sup> Other than the distinction between “grandfathered” vs. “waived” or “permanent” vs. “temporary” combinations, the regressions in Table (7) are identical to the regressions in Column (1) of Table 3 and Column (1) of Table 5. Coefficients on other regressors in the model do not change in meaningful ways across specifications. For brevity, we report only the coefficients on the newspaper-television cross-ownership variables.

<sup>61</sup> We classify as permanent combinations all grandfathered stations and those stations operating under permanent waivers in time period  $t$ . All stations operating under temporary waivers in time period  $t$  are classified as temporary combinations.

combinations. However, neither of these coefficients is statistically different from zero or statistically different from each other, so we cannot rule out the possibility that there is no correlation between newspaper cross-ownership and local news at the market level. At the station level, however, the coefficient on permanent stations is statistically different from zero, and indicates that permanent stations air almost an hour more local news than non-cross-owned stations. Temporary stations have a positive correlation with local news, as well, but the coefficient is imprecisely measured and not distinguishable from zero.

In the last column of Table 7, we further divide the class of permanent combinations into “grandfathered”, “permanent waiver before 2007” and “permanent waiver between 2007 and 2009.” All the coefficients at the market level are negative and most of them insignificant, just as the coefficients in Columns (1) and (2). From these results it is clear that WGN in Chicago and WNYW in New York (the two stations that received permanent waivers before 2007) may have a large and significant influence on local news. However, it is important to interpret these results with caution. The coefficients suggest that the New York and Chicago markets are airing approximately 464 fewer news minutes per day than comparable markets. In other words, holding all other factors constant (number of TV stations, multiple-ownership of TV stations, market demographics, etc.), New York and Chicago have less local news than would be expected (by more than seven hours!). Because a permanent-waivered, cross-owned television station is the common link between the two markets, the model attributes the difference in news to the presence of the cross-owned stations. However, it is possible that the coefficient may actually be picking up the influence of other factors unique to New York and Chicago that are not controlled for in the model. So the result may not be indicative of what happens to markets once a station receives a permanent waiver.<sup>62</sup>

At the station level, the stations that were grandfathered or that received permanent waivers prior to 2007 air significantly and substantially more local news than non-cross-

---

<sup>62</sup> Note that WGN is unique because it was originally a grandfathered station. However, stations lose their grandfathered status if the license is sold or transferred. WGN received a permanent waiver when Sam Zell (and others) bought out Tribune Company stock and took the company private.



owned stations in the same market. Grandfathered stations air almost a full hour more local news than comparable stations in the same market, and WGN and WNYW air 2 hours more local news than comparable stations in the Chicago and New York markets. While similar cautions apply to the interpretation of the coefficients, the number of stations in the sample and station-by-station comparisons give us relatively more confidence that the difference in news in the station-level regressions actually correspond to differences in cross-ownership.<sup>63</sup>

Overall, it appears that newspaper-TV cross-owned stations (especially grandfathered stations) produce more news than comparable non-cross-owned stations. However, this station-level increase does not appear to translate to the news at the market level. Markets with cross-owned stations do not air any more news (and perhaps air less news) than markets without cross-owned stations, indicating that there is a “crowding-out” of news production by cross-owned stations. In addition, there appears to be little evidence of temporary-waivered stations being on their “best behavior” and airing significantly more news than non-cross-owned stations. While the coefficient is positive, it is less than half the size of the coefficient on grandfathered stations and not statistically different from zero.

#### *Big4 vs. Non-Big4 Multiple-Ownership*

Similar to the different categories of newspaper cross-ownership, there are also different categories of multiple-ownership of television stations. Specifically, the impact on local news may be different if a Big4 station combines with another Big4 station, than if the Big4 station combined with a non-Big4 station. In Table 8, we test the difference in news production between different types of multiple-ownership combinations.

---

<sup>63</sup> For example, newspaper cross-ownership is more integral to the differences between stations than to the differences between markets. Consequently, while it may not be true that the difference between local news minutes across markets is due to the presence or absence of a single cross-owned station in the market, it is more likely that the difference between local news across stations within a market is due to the fact that one of the stations is cross-owned with a newspaper and the other is not.

The first column of Table 8 reproduces the coefficient estimates from Column (1) of Tables 3 and 5. The second column introduces three new variables to the market-level regression and four new variables to the station level regression. The market level variables are counts of the number of stations in each market belonging to different types of ownership combinations. For each additional station involved in a Big4/non-Big4 combination, the total amount of local news in the market increases by a statistically significant 22.11 minutes. On the other hand, combinations between two Big4 stations or between two non-Big4 stations do not correlate with local news at the market level in a statistically significant magnitude.

In the station-level regressions (where each variable is a zero-one indicator of whether or not the station is involved in a combination with a Big4 or non-Big4 station), none of the coefficients are significant. Yet the coefficients suggest that if any pattern exists, when a station cross-owns with a Big4 station, it will air less local news. This is true whether or not the news-airing station itself is a Big4 station. On the other hand, when a station is cross-owned with a non-Big4 station, it will air *more* local news. This suggests that for Big4/non-Big4 combinations, the controlling owner will shift more news to the Big4 station (6.87 minutes) at the expense of the non-Big4 station (-15.79 minutes). Note however, that the overall level of news between the two stations will fall by about 9 minutes. However, when taken in conjunction with the increase in market-level local news, other stations in the market apparently increase their local news production in response to a Big4/non-Big4 combination.

#### *Percentage of Total News Originating from Local Sources*

We now turn our attention to the mix of local vs. national news programming in a market. For the individual station, producing and airing local news can be very profitable, but it is often less costly to air a national news program (whether network or syndicated). Because of this, the relative mix of local vs. national news (and not simply the overall level of local news) may co-vary with the ownership structure of the television market. To determine the relationship between various ownership and demographic factors on the

mix of local news, we employ as the dependent variable the “percentage of local news relative to total news” (at both the market and station level).<sup>64</sup>

The results of these regressions are found in Table 9. The regressions of primary interest – those with the percentage of local news as the dependent variable – are reported in Columns (4) and (5). However, for comparison, we also report the results from separate regressions using the number of local, national, and total (“local + national”) news minutes as the dependent variables in Columns (1) through (3), respectively. We also only report the results from the 2009 data in order to calculate the effect of broadband availability on the relative percentage of local vs. national news.

The market-level regression in Panel A (Column 4) indicates that markets with more commercial television stations and total radio stations air a (statistically significant) higher relative percentage of local news. That is, a market with one additional commercial television station is associated with 1.25 percentage point shift in local vs. national news and a market with 50 additional radio stations is associated with a 3.5 ( $= 50 \times 0.07$ ) percentage point shift in local news. Also significant is the “average number of radio/TV cross-owned outlets per cross-owned parent”, with more outlets corresponding to a higher percentage of news that is local. Presumably, the more TV and radio stations owned by the cross-owned parent, the easier (or more cost-effective) it is to produce local relative to national news.

Perhaps the most interesting result, however, is that markets with higher levels of broadband availability (both fixed and mobile) air a higher relative percentage of local news. The results indicate that a ten percentage point increase in the number of households in the market with a broadband connection corresponds to a 2.2 percentage-point shift in the amount of local vs. national news programming. An intuitive explanation would be that consumers may acquire a significant fraction of their national news from online sources, but tend to acquire local news from television sources. For

---

<sup>64</sup> More specifically, the percentage is calculated by dividing local news minutes by the sum of local, network, and syndicated news minutes (all multiplied by 100). Importantly, it is *not* the number of local news minutes divided by the minutes of all other (both news and non-news) programming.

example, Pew (2010) finds that 73% of internet users get information on “national events,” while only 58% report getting information on “developments in your state” and 51% report getting information on “developments in your local community.” In addition, among internet users with a favorite news site, 37% reported that their favorite news site was the site of a major national television news network, while only 13% reported their favorite site was a local online news site. This is not definitive proof that online news consumption is driving a larger relative share of local news programming, but regardless of the underlying cause, there appears to be a statistically significant correlation between broadband availability and the stations’ decision to broadcast local news programs in higher ratios to national news programs.

The station-level regression shows a similar pattern between broadband and the percentage of news from local sources. However, stations that are jointly-owned with other commercial stations or that are cross-owned with newspapers appear to air a higher percentage of local news relative to national news. Specifically, stations under multiple ownership air 5.2 percentage points more local news and stations cross-owned with newspapers air 7.5 percentage points more local news than comparable stations. The coefficients on “Total Parent Com Stations” and “Parent Population Reach” are almost equal and opposite in sign, so it is unclear how a television owner’s national presence impacts its decision to air local relative to national news. Last, the correlation between broadband subscriptions and the percentage of news from local sources can once again be seen in the station-level regressions.

The dependent variable in Column (4) is limited between 0 and 1 (or more specifically, between 0 and 100), and a non-linear model may be more appropriate than OLS estimation. Column (5) presents estimates of the marginal effects from a Generalized Linear Model for both the market and station level.<sup>65</sup> The GLM results are almost identical to those obtained via OLS.

---

<sup>65</sup> The GLM model is implemented in Stata with the “binomial” distribution (family) and a “logit” link function.

## Data Censoring

Approximately 30% of the television stations in our sample air no local news programming at all. Consequently, there is a large mass point in the distribution of local news minutes at zero, and simply fitting a linear model to the station-level data may produce biased estimates of the true relationships between local news minutes and the independent variables. A censored regression model may provide more meaningful estimates of these relationships.

Within the class of censored regression models are two principle categories. Although both categories are (unfortunately) classified as “censored regression models,” the two situations are fundamentally different. The first category arises from true data censoring. For example, data on household income may be top coded to conceal the identities of certain individuals (e.g., all incomes above some threshold, say \$500,000, are top coded at \$500,000).

The second category of censored regression models – and the category that applies to our data – is sometimes referred to as a “corner solution model” (see for example, Wooldridge, 2002, Chapter 16). A corner solution model describes the situation where mass points are observed because the dependent variable is an “observable choice” or “outcome variable” arising from the underlying optimization problem of an economic agent. Many station owners in our sample find it optimal to air zero minutes of local news programming, presumably because it is more profitable to air other types of programming. Fundamentally, the censored outcome (of zero news minutes) is a “choice variable,” and not simply an artifact of data collection. Approximately 32% of the stations in our sample choose not to air any local news (at least over the weeks for which we have programming data).

The most common estimation procedure for censored regression models is the Tobit model. The standard Tobit model is specified as:

$$\begin{aligned}
AvgNewsMins_{ijt}^* &= W_{ijt}\mathbf{g} + u_{ijt} \\
u_{ijt} | W &\sim Normal(0, \mathbf{S}^2) \\
AvgNewsMins_{ijt} &= \max(0, AvgNewsMins_{ijt}^*)
\end{aligned}$$

where  $W_{ijt}$  and  $\mathbf{g}$  are as defined previously (see Selection Model), and  $AvgNewsMins_{ijt}^*$  is a latent (i.e., unobserved) variable.<sup>66</sup> In a corner solution model, the parameters in  $\mathbf{g}$  are no longer the quantities of interest as they no longer represent the marginal effects. Instead, the marginal effects are non-linear functions of  $\mathbf{g}$ .<sup>67</sup> Using the above model, we can calculate the appropriate expectations:

$$Pr[AvgNewsMins_{ijt} > 0 | W_{ijt}] = \Phi\left(\frac{W_{ijt}\mathbf{g}}{\mathbf{S}}\right) \quad (6)$$

$$E[AvgNewsMins_{ijt} | W_{ijt}, AvgNewsMins_{ijt} > 0] = W_{ijt}\mathbf{g} + \mathbf{S} \cdot I\left(\frac{W_{ijt}\mathbf{g}}{\mathbf{S}}\right) \quad (7)$$

$$E[AvgNewsMins_{ijt} | W_{ijt}] = \Phi\left(\frac{W_{ijt}\mathbf{g}}{\mathbf{S}}\right) \cdot \left[ W_{ijt}\mathbf{g} + \mathbf{S} \cdot I\left(\frac{W_{ijt}\mathbf{g}}{\mathbf{S}}\right) \right] \quad (8)$$

where once again,  $\Phi(\cdot)$  is the CDF of the standard normal distribution and  $I(\cdot)$  is the inverse Mills ratio. As is clear from the above equations, the marginal impacts of  $W_{ijt}$  on the expectations and probabilities of  $AvgNewsMins_{ijt}$  are non-linear functions of  $\mathbf{g}$ . In addition, OLS (whether performed on the entire sample or on the non-censored portion of the sample) will generally produce inconsistent estimates of  $\mathbf{g}$ .

---

<sup>66</sup> See Chapter 16 of Wooldridge (2002) for a general introduction to censored regression models. Again we note the dependence of this model on regressor exogeneity.

<sup>67</sup> The parameter  $\mathbf{g}$  represents the marginal effect of  $W$  on the latent variable  $AvgNewsMins^*$ . In the case of true data censoring, the impact of the independent variables on the latent variable is the quantity of interest (the latent variable being the unobserved “true” dependent variable). In corner solution models, however, the latent variable is an artificial construct that has no intuitive meaning, and we are not interested in  $E[y^*|x]$ , but rather  $E[y|x]$ ,  $E[y|x, y>0]$ , and  $Pr[y>0|x]$ .

Estimates of the coefficients and marginal effects of the Tobit model can be found in Table 10. Column (1) reproduces the results from the OLS regression on the full sample (see Table 5). Column (2) contains the Tobit coefficient estimates, and Columns (3) through (5) contain the marginal effects.

There are numerous factors that correlate with whether or not the station offers any local news programming (see Column 3). Stations that are cross-owned with newspapers are about 11% more likely to have local news programming than a comparable, non-cross-owned station. Radio cross-ownership is also positively related to local news provision, with a 1.4% increased likelihood of offering news for each additional radio station owned in-market. Multiple-ownership (within market) does not appear to influence whether or not a station provides at least some local news, but the more stations a parent owns nationally, they are less likely to offer local news. Stations that multicast are 3.7% more likely to provide local news. Other factors that are negatively correlated with the likelihood of a station offering news are owner-operated status (−17% ) and dual network affiliation (−11% ).

The same factors that contribute to whether or not a station airs *any* local news also contribute to the *amount* of local news aired by the station (conditional on the station airing at least some news). The estimated relationships in the Tobit model are equivalent to those from the OLS model in sign (i.e., positive vs. negative), but are generally slightly smaller in magnitude. For example, holding other factors constant, the Tobit model estimates that newspaper-television cross-owned stations air approximately 27 more minutes of local news in the average day (see Column 4). The OLS model, on the other hand, estimated the difference to be about 47 minutes. Similarly, the (statistically significant) marginal relationships between local news minutes and the explanatory variables measuring radio cross-ownership, the number of national stations owned by the parent, multicasting station, dual affiliation, O&O status, and parent revenue are smaller in magnitude in the Tobit model compared to the OLS estimates.

Column (5) contains estimates of the “overall” change in average news minutes for each of the independent variables. These derivatives account for changes in local news that arise from the stations that switch from providing zero minutes of local news to a positive amount of local news as the independent variables change. Overall, these effects are very similar to the effects found in Column (4) for the subset of stations that were already providing local news; all the effects have the same sign but all are slightly larger in magnitude.

### **Conclusion**

The FCC media ownership rules have received considerable attention over the last decade in the courts, in the press, and in the academic literature. The econometric results in this study offer recent (and perhaps new) insight into the relationships between television market structure and local news programming. Often, these correlations differ depending on whether news is measured at the market or station level. Overall, cross-ownership variables appear to have a statistically and practically stronger relationship with local news minutes than do the multiple-ownership variables. In conclusion, we briefly summarize these relationships.

Regarding newspaper-television cross-ownership, there appears to be only minor evidence that the presence of a cross-owned station impacts the amount of local news in a market. While many of the newspaper cross-ownership variables show a negative correlation with market-level news, almost none of them are statistically different from zero. At the station level, however, newspaper cross-ownership has a positive correlation with local news that is both practically and statistically significant, especially for those combinations that were grandfathered in 1975. However, since the station-level increase does not spill over to the market level, this may be evidence that cross-owned stations are “crowding out” the news of non-cross-owned stations.

Similar to newspaper cross-ownership, radio-television cross-ownership also has a positive and statistically significant correlation with a television stations’ local news



minutes. In addition, there appear to be economies of scale as the television stations show further increases in news minutes for each additional radio station they own within a market. However, at the market level, the results are mixed. For each additional television station in the market under radio cross-ownership, the total amount of news minutes from all stations in the market is lower (again, an apparent crowding out of news). This negative correlation is partially mitigated, though, as the average number of broadcast outlets per cross-owned station group in the market increases and the scale economies kick in.

There appears to be little correlation between multiple-ownership of television stations and local news programming, at either the market or station level. There is some evidence that in-market combinations between Big4 and non-Big4 stations lead to moderately more news at the market level, but this effect does not show up at the station level. The owners of these specific combinations appear to shift more news to the Big4 station and away from the non-Big4 station, but not in statistically significant amounts. This market level increase might be driven by other stations increasing their news programming in response to the shift in news away from the non-Big4 station, but the evidence is not conclusive. Combinations between two Big4 stations or between two non-Big4 stations are not statistically correlated with local news at the market or station level (though the point estimate is negative in the former case and positive in the latter case).

Although multiple-ownership combinations don't correlate with the *level* of local news minutes, they do correlate with the *percentage* of local news minutes (relative to national news minutes) aired at the individual station. It appears this is driven by the multi-owned stations slightly reducing their national news coverage. The percentage of households in the market subscribing to broadband connections also corresponds to increased percentages of local news coverage relative to national news coverage. When subscription rates are higher, stations tend to air more local news and less national news.

Regarding public affairs programming, there is little evidence of correlation between local public affairs minutes and market ownership structure. This is likely due to the relatively large variation in local public affairs programming and the relatively limited sample size in our dataset. Consequently, it is difficult to come to any conclusion about how changes in the ownership rules might impact such programming.

## References

- Berry, Steven and Joel Waldfogel, 2001, "Do Mergers Increase Product Variety? Evidence from Radio Broadcasting," *Quarterly Journal of Economics*, 116, 1009-1025.
- Crawford, Gregory S., 2007, "Television Station Ownership Structure and the Quantity and Quality of TV Programming," FCC Media Ownership Study #3, 2006 Media Ownership Review, Federal Communications Commission, available at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DA-07-3470A4.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-07-3470A4.pdf), accessed May 20, 2011.
- Crawford, Gregory S., Evan Kwerel, and Jonathan Levy, 2008, "Economics at the FCC: 2007-2008," *Review of Industrial Organization* 33, 187-210.
- FCC, 1999, "Report and Order," Discussion Paper, Federal Communications Commission, FCC 99-207.
- FCC, 2003, "Report and Order and Notice of Proposed Rulemaking," Discussion Paper, Federal Communications Commission, FCC 03-127.
- FCC, 2008, "Report and Order and Order on Reconsideration," Discussion Paper, Federal Communications Commission, FCC 07-216.
- FCC, 2010, "Notice of Inquiry", Discussion Paper, Federal Communications Commission, FCC 10-92.
- Kimmelman, Gene, Mark Copper, and Ben Scott, 2007, "Further Comments of Consumers Union, Consumer Federation of America and Free Press," Filed Comment, MB Docket No. 06-121, Federal Communications Commission, <http://fjallfoss.fcc.gov/ecfs/document/view?id=6519743198>, accessed May 20, 2011.
- Napoli, Philip M. and Michael Zhaoxu Yan (2007), "Media Ownership Regulations and Local News Programming on Broadcast Television: An Empirical Analysis," *Journal of Broadcasting & Electronic Media* 51(1), 39-57.
- Owen, Bruce and Steven Wildman, 1992, *Video Economics*, Harvard University Press.
- Pew Research Center, 2010, "Understanding the Participatory News Consumer," Project for Excellence in Journalism, available at [http://www.journalism.org/analysis\\_report/understanding\\_participatory\\_news\\_consumer](http://www.journalism.org/analysis_report/understanding_participatory_news_consumer), accessed on May 20, 2011.
- Pew Research Center, 2011, "The State of the News Media 2011: An Annual Report on American Journalism," Project for Excellence in Journalism, available at <http://stateofthemedias.org/>, accessed on May 20, 2011.

*Prometheus Radio Project, et al. v. FCC*, 373 F.3d 372 (3d Cir. 2004).

Shiman, Daniel, 2007a, “The Impact of Ownership Structure on Television Stations’ News and Public Affairs Programming,” FCC Media Ownership Study #4 – Section I, 2006 Media Ownership Review, Federal Communications Commission, available at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DA-07-3470A5.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-07-3470A5.pdf), accessed on May 20, 2011.

Shiman, Daniel, 2007b, “Response to Phillip Leslie’s Review of Section I of Study #4, ‘The Impact of Ownership Structure on Television Stations’ News and Public Affairs Programming’,” 2006 Media Ownership Review, Federal Communications Commission, available at [http://www.fcc.gov/mb/peer\\_review/prrespstudy4.pdf](http://www.fcc.gov/mb/peer_review/prrespstudy4.pdf), accessed on May 20, 2011.

Shiman, Daniel, 2009, “Second Response to Peer Reviews of Section I of Study #4, ‘The Impact of Ownership Structure on Television Stations’ News and Public Affairs Programming’,” Working Paper, 2/25/2009, 2006 Media Ownership Review, Federal Communications Commission.

Spavins, Thomas, Loretta Denison, Scott Roberts, and Jane Frennette, 2002, “The Measurement of Local Television News and Public Affairs Programs,” FCC Staff Working Paper, Federal Communications Commission, available at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-226838A12.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-226838A12.pdf), accessed on May 20, 2011.

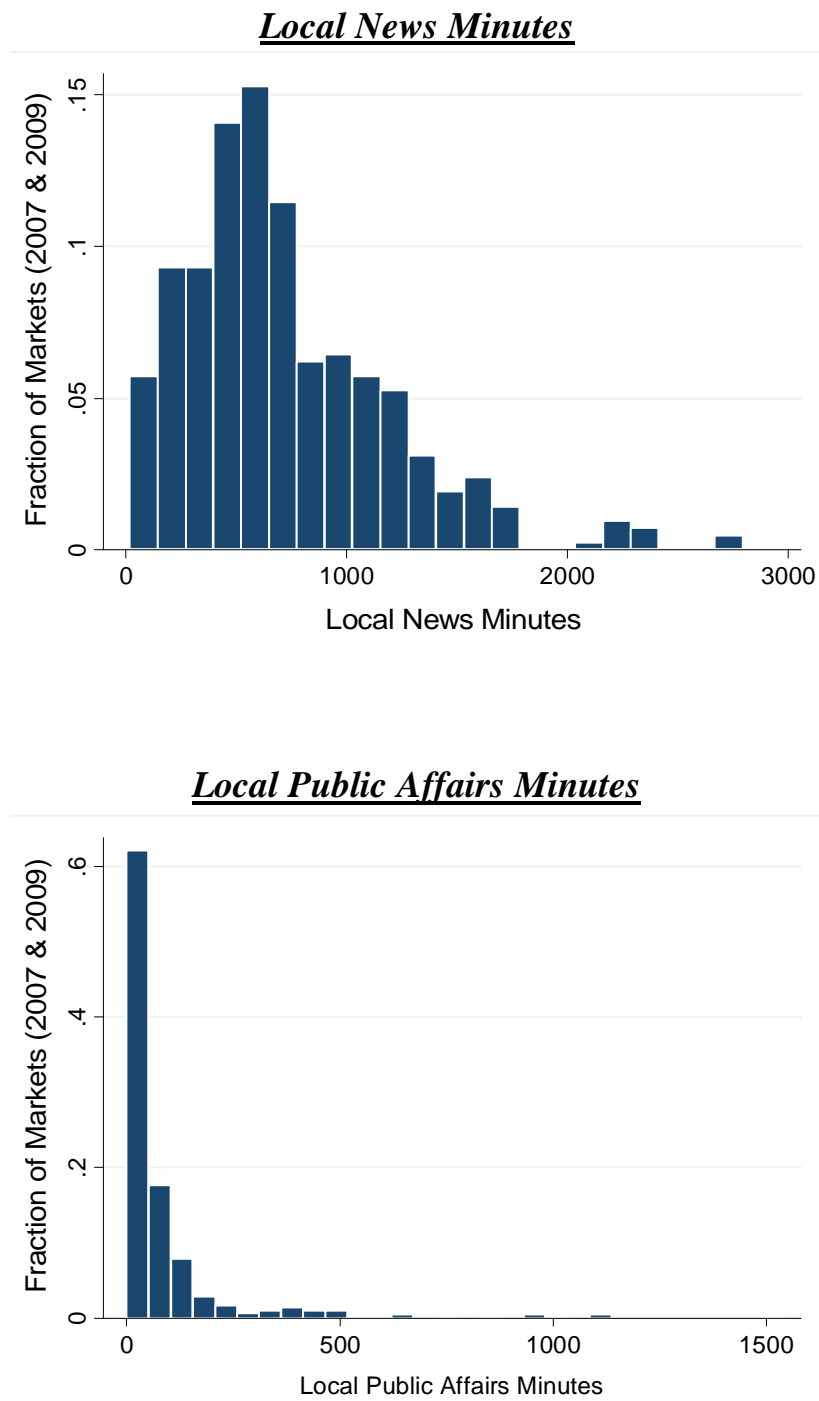
Steiner, Peter, 1952, “Program Patterns and Preferences, and the Workability of Competition in Radio Broadcasting,” *Quarterly Journal of Economics*, 66, 194-223.

Wooldridge, Jeffrey, 2002, *Econometric Analysis of Cross Section and Panel Data*, MIT Press.

Yan, Michael Z., 2006, “Newspaper-Television Cross-Ownership and Local News and Public Affairs on Television Stations: An Empirical Analysis,” Working Paper, Donald McGannon Communication Research Center, Bronx, New York.

Yan, Michael Zhaoxu and Philip M. Napoli, 2006, “Market Competition, Station Ownership, and Local Public Affairs Programming on Broadcast Television,” *Journal of Communication* 56, 795-812.

**Figure 1: Market-level Local News and Public Affairs Minutes per Day**

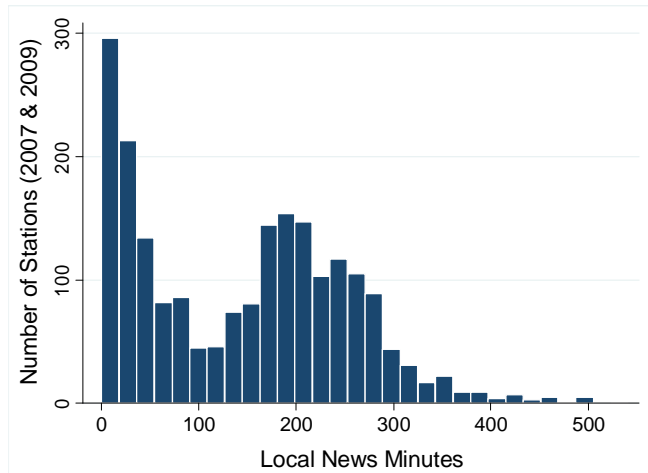


\* Histograms include all market-year observations in our sample. Consequently, each market is represented twice in the figures, once for 2007 and once for 2009.

**Figure 2: Station-level Local News Minutes per Day**

**All Stations**

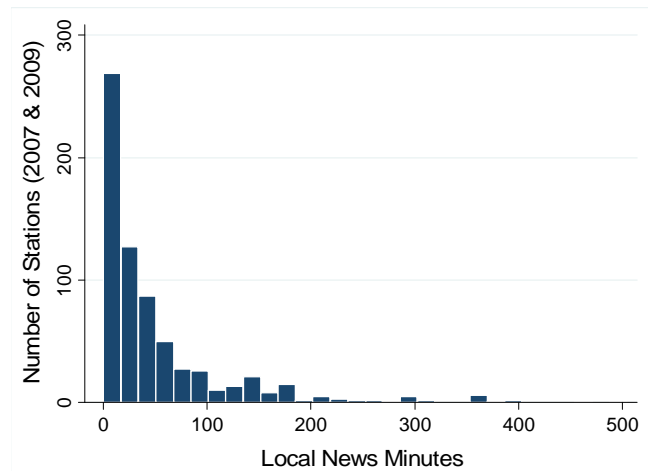
*(Excludes Zero)*



**Non-Big 4 Stations**

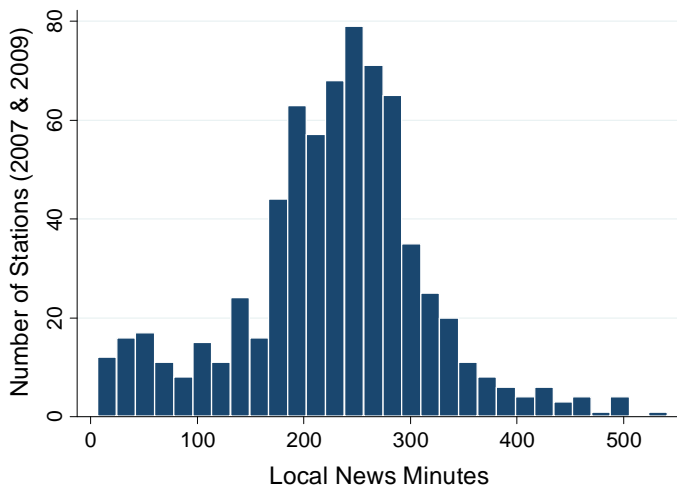
*(Commercial and Non-commercial)*

*(Excludes Zero)*



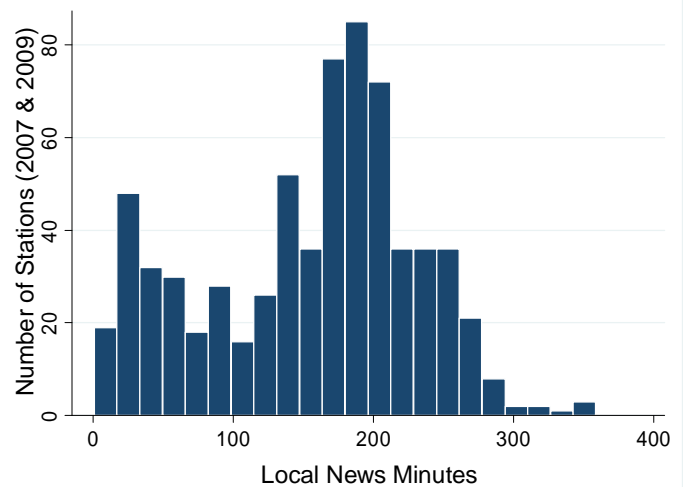
**Big 4 Stations**

*Markets with 8 or More TV Stations*  
*(Excludes Zero)*



**Big 4 Stations**

*Markets with Less Than 8 TV Stations*  
*(Excludes Zero)*



\* Histograms include all station-year observations in our sample with positive local news minutes. Consequently, most stations are represented twice in the figures.

---

**Table 1: Names and Descriptions of Model Variables**

---

<u>Variable Names</u>	<u>Variable Descriptions</u>
<i>Local News and P.A. Minutes</i>	
Local News Minutes per Day	Average number of local news minutes aired per day – market and station level
National News Minutes per Day	Average number of national news minutes (Network + Syndicated) aired per day – market and station level
Local News as % of Total	Percentage of total news minutes that originate from a local source
Local P.A. Min per Day	Average number of local public affairs minutes aired per day – market and station level
National P.A. Minutes per Day	Average number of national public affairs minutes (Network + Syndicated) aired per day – market and station level
Local P.A. as % of Total	Percentage of total local public affairs minutes that originate from a local source

---

*Market Structure*

TV Stations	Number of full-power television stations in the market
Com TV Stations	Number of commercial TV stations in the market
Noncom TV Stations	Number of noncommercial TV stations in the market
Multi-Owned Com Stations	Number of commercial TV stations controlled by entities that control two or more commercial TV stations in the market (including equity and LMA joint ownership)
% Multi-Owned Com Stations	Percentage of commercial TV stations in the market that are jointly controlled with other in-market commercial TV stations (equity and LMA joint ownership)
Newspaper XOwned Stations	Number of commercial television stations in the market cross-owned with a major print newspaper
Radio XOwned TV Stations	Number of commercial TV stations in the market cross-owned with at least one commercial radio station in the market
Radio/TV XOwned Ratio	Total number commercial broadcast outlets (radio and television) owned by all “Radio/TV Parents” in the market, divided by the number of “Radio/TV Parents” ** A “Radio/TV Parent” is an entity that controls both a commercial television station and a commercial radio station in the same market
Total Radio Stations	Total number of radio stations in the market
Total Newspapers	Total number of newspapers in the market with at least 5% circulation
Num Local Parents	Number of TV stations in the market controlled by entities headquartered in the market
Num Big4	Number of commercial TV stations in the market affiliated with one of the “Big4” television networks (ABC, CBS, Fox, and NBC)
Num PBS	Number of TV stations in the market affiliated with the PBS television network
Num O&O	Number of commercial TV stations in the market that are owned and operated by a television network (e.g., ABC, CW, Ion, Univision, etc.)
Num Big4 O&O	Number of commercial TV stations in the market that are owned and operated by one of the “Big4” television networks (ABC, CBS, Fox, and NBC)
Num LMA	Number of commercial TV stations in the market in a Local Marketing Agreement with another (in-market OR out-of-market) station
Minority Owned TV Stations	Number of TV stations in the market controlled by minority owners
Female Owned TV Stations	Number of TV stations in the market controlled by female owners
AdRevenueLocalPct	Percentage of television revenues in the market that are from local advertising

---

*Station Characteristics*

Multi-Owned Com Stat	Indicator for whether commercial station parent controls another
----------------------	--

Multi-Owned Noncom Stat	commercial station in the market Indicator for whether non-commercial station parent controls another non-commercial station in the market
News XOwned in Market	Indicator for whether station parent also owns at least one newspaper in the market
Radio XOwned in Market	Number of radio stations controlled by television station parent in SAME market
Radio XOwned Total	Number of radio stations controlled by television station parent in ALL markets
Total Parent Com Stations	Total number of commercial TV stations controlled by television station parent in ALL markets
Parent Pop Reach (millions)	Sum of total population in all markets in which a parent owns a television station
LMA	Indicator for whether the station in LMA agreement with another station (both within and across markets).
Local Parent	Indicator for whether controlling parent is located in the same market as the television station
Multicasting Station	Indicator for whether the station is broadcasting multiple video streams
Dual Affiliation	Indicator if station is affiliated with more than one network on primary broadcast stream
O&O Station	Indicator for whether station is owned and operated by a television network [including ABC/Disney (ABC), CBS Corp. (CBS, CW), News Corp (Fox, My Network TV), NBC/GE (NBC, Telemundo), Broadcast Media Partners (TeleFutura, Univision), CIG Media (Ion), Equity Media Holdings (Retro Television Network), and Trinity Broadcasting Network (TBN)]
O&O Big4	Indicator for whether station is a Big4 affiliate owned and operated by a Big4 network
Noncom Station	Indicator for whether station is a non-commercial station
Minority Owned	Indicator for whether the station is minority controlled
Female Owned	Indicator for whether the station is controlled by a female
Parent Revenue	Estimated annual revenue of television station parent in thousands of dollars

---

Market Demographics

PerCapitaIncome (\$1,000s)	Market level per capita income
BachelorsPct	Percentage of market population over age 25 with a bachelors degree or higher
SqMiles	Geographic size of market (in thousands of square miles)
AsianPopPct	Percentage of market population that is Asian
BlackPopPct	Percentage of market population that is Black
HispanicPopPct	Percentage of market population that is Hispanic
PctPop18to34	Percentage of market population age 18 to 34
PctPop35to54	Percentage of market population age 35 to 54
PctPop55to64	Percentage of market population age 55 to 64
PctPop65plus	Percentage of market population 65 or older
TVHH	Number of households in the market that own a television
CableHH	Number of households in the market subscribing to cable-delivered pay-TV service
SatHH	Number of households in the market subscribing to satellite-delivered pay-TV service
PopDen	Population density in market (population per square mile)
Broadband768Pct	Proportion of households in market with an internet connection that has download speed of at least 768kbps (2009 Only)

---



**Table 2: Market-Level Descriptive Statistics**

<u>Variable</u>	<u>Mean</u>	<u>Std Dev</u>	<u>Min</u>	<u>Max</u>	<u>Variable</u>	<u>Mean</u>	<u>Std Dev</u>	<u>Min</u>	<u>Max</u>
<i>Dependent Variables</i>					<i>Market Demographics</i>				
Local News Minutes per Day	722.17	474.92	18.57	2793.61	PerCapitaIncome (\$1,000s)	23.19	3.76	11.66	38.95
National News Min per Day	496.14	213.04	45.43	1332.95	BachelorsPct	23.22	5.78	12.49	43.14
Local News as % of Total	56.15	12.16	9.42	79.21	SqMiles (1,000s)	14.80	18.94	0.67	139.70
Local P.A. Min per Day	88.45	165.99	0.00	1551.43	AsianPopPct	2.20	3.49	0.00	42.20
National P.A. Min per Day	43.65	41.63	0.00	261.43	BlackPopPct	10.32	11.43	0.10	63.70
Local P.A. as % of Total	59.51	27.07	0.00	100.00	HispanicPopPct	10.75	15.49	0.60	94.60
<i>Market Structure</i>					PctPop18to34	23.52	2.08	19.08	35.80
TV Stations	7.71	4.45	1.00	27.00	PctPop35to54	27.43	1.59	22.34	31.70
Com TV Stations	5.88	3.49	1.00	23.00	PctPop55to64	11.43	1.21	7.03	15.98
Noncom TV Stations	1.83	1.43	0.00	8.00	PctPop65p	13.80	2.40	6.19	23.95
Multi-Owned Com Stations	1.46	2.01	0.00	10.00	TVHH (1,000s)	543.21	830.70	3.94	7493.53
% Multi-Owned Stations	18.09	22.50	0.00	100.00	CableHH (1,000s)	337.29	587.45	2.67	6406.29
Newspaper XOwned Stations	0.13	0.38	0.00	3.00	SatHH (1,000s)	147.43	204.25	0.91	1934.25
Radio XOwned TV Stations	0.59	1.15	0.00	7.00	PopDen	149.78	214.10	2.30	1776.80
Radio/TV XOwned Ratio	1.48	2.46	0.00	12.00	<b>Number of Obs: 419</b>				
Total Radio Stations	65.60	43.33	3.00	241.00	<i>2009 Only (Obs: 205)</i>				
Total Newspapers	1.96	0.92	0.00	5.00	Broadband768Pct	50.87	11.35	17.37	98.05
Num Local Parents	1.89	2.11	0.00	13.00					
Num Big4	3.52	0.97	1.00	6.00					
Num PBS	1.67	1.30	0.00	8.00					
Num O&O	0.95	1.95	0.00	11.00					
Num Big4 O&O	0.24	0.73	0.00	4.00					
Num LMA	0.46	0.83	0.00	4.00					
Minority Owned TV Stations	0.22	0.58	0.00	6.00					
Female Owned TV Stations	0.34	0.62	0.00	4.00					
AdRevenueLocalPct	64.07	9.70	33.00	84.00					

**Table 3: Market-Level Regressions – Impact of Market Structure on Local News and Public Affairs Minutes**

Regressors	Local News Minutes per Day				Local Public Affairs Minutes per Day			
	(1)		(2)		(3)		(4)	
	Full Sample		2009 Only		Full Sample		2009 Only	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
<i>Market Structure</i>								
Multi-Owned Com Stations	13.11	10.32	17.22	12.57	-7.69	9.06	-10.44	14.32
News XOwned Stations	-41.18	28.11	-42.25	33.07	16.91	32.97	-8.93	37.11
Radio XOwned TV Stations	<b>-58.68<sup>†</sup></b>	30.78	<b>-68.16<sup>†</sup></b>	37.81	-24.87	22.32	-36.44	34.88
Radio/TV XOwned Ratio	<b>16.07*</b>	7.18	<b>16.99*</b>	8.30	-1.85	5.38	1.64	8.57
Com TV Stations	<b>80.12*</b>	13.35	<b>61.49*</b>	15.91	<b>32.32<sup>†</sup></b>	17.35	<b>49.34<sup>†</sup></b>	27.70
Noncom TV Stations	37.74	40.77	74.43	47.02	<b>55.82<sup>†</sup></b>	29.12	<b>91.06*</b>	42.47
Total Radio Stations	-0.36	0.71	0.32	0.84	<b>-1.03<sup>†</sup></b>	0.60	<b>-1.30<sup>†</sup></b>	0.78
Total Newspapers	-5.98	10.53	-10.62	13.87	-3.26	8.35	-5.02	12.94
Num Local Parents	-11.81	9.85	-7.33	12.04	8.72	7.24	14.33	10.02
Num Big4	<b>35.80*</b>	16.23	<b>45.12*</b>	19.12	<b>-31.40<sup>†</sup></b>	17.22	-40.75	27.35
Num PBS	-11.25	40.80	-46.12	49.03	-30.14	28.62	-62.48	42.44
Num O&O	<b>-38.53<sup>†</sup></b>	22.96	-25.72	28.69	-6.82	22.96	-24.14	38.04
Num Big4 O&O	70.45	62.60	16.02	79.18	89.77	54.42	141.86	94.78
Num LMA	6.03	12.87	6.28	15.02	1.78	6.78	1.19	11.28
Minority Owned TV Stat.	<b>-48.85<sup>†</sup></b>	29.68	-2.76	36.73	4.12	28.50	6.46	38.50
Female Owned TV Stat.	25.98	16.98	22.37	21.12	-19.25	12.76	-31.34	22.02
AdRevenueLocalPct	-0.05	0.97	-0.82	1.25	0.17	0.82	-0.66	1.18
<i>Market Demographics</i>								
PerCapitaIncome (\$1,000s)	8.25	5.60	2.88	6.00	-0.32	2.98	-3.09	4.01
BachelorsPct	5.80	3.94	4.64	4.07	-2.95	2.35	-5.02	3.78
SqMiles (1,000s)	0.69	1.08	-0.04	1.21	0.55	0.50	0.55	0.79
AsianPopPct	<b>9.06*</b>	4.24	<b>34.03*</b>	11.85	1.29	2.63	6.54	11.59
BlackPopPct	0.33	1.15	0.08	1.34	-0.25	0.77	-0.92	1.06
HispanicPopPct	0.81	1.19	-0.23	1.39	-0.78	0.78	<b>-2.63*</b>	1.22
PctPop18to34	-7.14	10.01	<b>-22.51<sup>†</sup></b>	12.04	4.13	6.49	-4.87	9.55
PctPop35to54	17.79	14.08	17.08	16.78	13.04	14.37	-0.71	19.28
PctPop55to64	<b>-55.01*</b>	17.52	<b>-62.61*</b>	19.70	-8.36	10.17	-12.28	15.94
PctPop65p	<b>17.74*</b>	9.06	15.64	9.92	4.30	7.07	-0.84	9.90
TVHH (1,000s)	0.55	0.38	0.86	0.61	<b>-0.61<sup>†</sup></b>	0.33	-0.65	0.48
CableHH (1,000s)	-0.49	0.37	-0.86	0.60	<b>0.72*</b>	0.32	0.74	0.47
SatHH (1,000s)	-0.25	0.52	-0.69	0.82	0.57	0.43	0.59	0.54
PopDen	0.22	0.14	<b>0.32*</b>	0.16	-0.13	0.08	-0.10	0.10
<i>Broadband Availability</i>								
Broadband768Pct	–	–	2.00	1.27	–	–	1.79	1.12
Year F.E.	Yes		No		Yes		No	
2007 Missing Station F.E.	Yes		Yes		Yes		Yes	
N	418		205		418		205	
R-squared	0.90		0.91		0.47		0.53	

Table contains OLS estimates of Equation (1). All standard errors are clustered at the market level. Statistical significance at the 5% and 10% levels are denoted by the symbols \* and <sup>†</sup>, respectively.

---

**Table 4: Station-Level Descriptive Statistics**

---

<u>Variable</u>	<u>Obs</u>	<u>Mean</u>	<u>Std Dev</u>	<u>Min</u>	<u>Max</u>
<i>Dependent Variables</i>					
Local News Minutes per Day	3108	97.36	111.84	0.00	710.00
National News Minutes per Day	3108	66.89	68.91	0.00	435.00
Local News as % of Total	2854	45.42	35.18	0.00	100.00
Local P.A. Min per Day	3108	11.92	46.28	0.00	1067.14
National P.A. Minutes per Day	3108	5.88	12.72	0.00	123.21
Local P.A. as % of Total	1897	71.90	36.61	0.00	100.00
<i>Station Characteristics</i>					
Multi-Owned Com Stat	3108	0.19	0.39	0.00	1.00
Multi-Owned Noncom Stat	3108	0.10	0.30	0.00	1.00
News XOwned in Market	3108	0.02	0.13	0.00	1.00
Radio XOwned in Market	3108	0.54	1.40	0.00	11.00
Radio XOwned Total	3108	4.67	19.17	0.00	140.00
Total Parent Com Stations	3108	14.23	16.17	0.00	56.00
Parent Pop Reach (millions)	3108	32.46	46.58	0.06	199.17
LMA	3108	0.06	0.24	0.00	1.00
Local Parent	3108	0.25	0.43	0.00	1.00
Multicasting Station	3108	0.67	0.47	0.00	1.00
Dual Affiliation	3108	0.00	0.07	0.00	1.00
O&O Station	3108	0.12	0.33	0.00	1.00
Big4 Affiliation	3108	0.47	0.50	0.00	1.00
O&O × Big4	3108	0.03	0.18	0.00	1.00
PBS Affiliation	3108	0.22	0.41	0.00	1.00
Noncom Station	3108	0.24	0.43	0.00	1.00
Minority Owned	3108	0.03	0.16	0.00	1.00
Female Owned	3108	0.04	0.20	0.00	1.00
Parent Revenue (\$ millions)	3096	279.28	451.03	0.00	2109.55

---

**Table 5: Station-Level Regressions – Impact of Market Structure on Local News and Public Affairs Minutes**

<b>Regressors</b>	<b>Local News Minutes per Day</b>				<b>Local Public Affairs Minutes per Day</b>			
	<b>(1)</b>		<b>(2)</b>		<b>(3)</b>		<b>(4)</b>	
	Full Sample		2009 Only		Full Sample		2009 Only	
	<b>Coef.</b>	<b>S.E.</b>	<b>Coef.</b>	<b>S.E.</b>	<b>Coef.</b>	<b>S.E.</b>	<b>Coef.</b>	<b>S.E.</b>
<i>Station Characteristics</i>								
Multi-Owned Com Stat	-3.80	8.04	0.24	7.76	-2.79	2.59	<b>-4.71*</b>	2.20
Multi-Owned Noncom Stat	3.75	6.84	4.66	6.25	2.97	4.15	5.42	4.55
News XOwned in Market	<b>47.36*</b>	14.82	<b>49.31*</b>	16.67	-4.84	5.27	-4.15	3.20
Radio XOwned in Market	<b>4.23*</b>	1.87	<b>2.85<sup>†</sup></b>	1.54	-0.37	0.86	0.24	1.26
Radio XOwned Total	<b>-0.46*</b>	0.19	<b>-0.45*</b>	0.19	0.11	0.08	0.12	0.09
Total Parent Com Stations	<b>-0.84*</b>	0.25	<b>-0.88*</b>	0.26	-0.02	0.14	-0.04	0.09
Parent Pop Reach (millions)	-0.14	0.14	0.19	0.17	<b>-0.13*</b>	0.06	<b>-0.16<sup>†</sup></b>	0.09
LMA	-10.09	9.02	-4.06	9.15	2.23	2.54	3.71	3.59
Local Parent	<b>-8.62<sup>†</sup></b>	4.92	-3.66	5.14	4.89	5.48	3.56	5.65
Multicasting Station	<b>11.65*</b>	4.40	<b>14.10*</b>	5.18	2.13	3.45	4.48	3.63
Dual Affiliation	<b>-41.39*</b>	15.65	-34.31	26.55	4.34	3.95	-1.88	4.56
O&O Station	<b>-60.88*</b>	13.74	<b>-91.41*</b>	15.15	5.85	5.67	4.27	8.63
O&O × Big4	<b>70.53*</b>	18.13	<b>84.49*</b>	18.07	-0.48	4.42	4.86	4.34
Noncom Station	-7.33	16.88	10.54	25.59	45.83	30.48	<b>49.59<sup>†</sup></b>	29.33
Minority Owned	7.48	11.32	12.45	10.55	-1.98	5.94	-4.14	5.94
Female Owned	-2.60	7.19	-0.12	7.17	-3.00	2.79	-7.14	4.37
Parent Revenue (\$ millions)	<b>0.09*</b>	0.01	<b>0.09*</b>	0.01	0.00	0.00	0.00	0.01
<i>Market Structure</i>								
Com TV Stations	3.39	2.32	<b>3.26*</b>	1.02	1.81	2.82	1.06	1.06
Noncom TV Stations	<b>7.37*</b>	2.65	2.28	1.46	5.14	7.06	0.53	0.67
AdRevenueLocalPct	0.07	0.14	0.19	0.18	-0.20	0.13	-0.06	0.14
<i>Other Market Structure</i>								
	No		Yes		No		Yes	
<i>Market Demographics</i>								
	Yes		Yes		Yes		Yes	
<i>Broadband Availability</i>								
Broadband768Pct	–	–	<b>0.50*</b>	0.18	–	–	0.18	0.15
<hr/>								
Year F.E.	Yes		No		Yes		No	
Affiliation F.E.	Yes		Yes		Yes		Yes	
Market F.E.	Yes		No		Yes		No	
2007 Missing Station F. E.	Yes		Yes		Yes		Yes	
<hr/>								
N	3085		1573		3085		1573	
R-squared	0.73		0.69		0.25		0.26	

Table contains OLS estimates of Equation (2). All standard errors are clustered at the market level. Statistical significance at the 5% and 10% levels are denoted by the symbols \* and <sup>†</sup>, respectively.

**Table 6: Market Structure and Local News Minutes per Day – Alternative Specifications and Robustness Checks**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<b>Difference in specification from Column (1) of Tables 3 and 5</b>	Multi-Owned interacted with Total Number of Stations	Alternate Coding of News using Secondary Genres	Local News from Com Stations Only	Local News from Big4 Stations Only	Local News from All Multicast Feeds	Local News Starting Between 5:00 and 11:30 pm	<b>Full Fixed Effects – Panel A:</b> Market FE <b>Panel B:</b> Station FE	<b>Heckman Selection Model – Column (8):</b> Selection Equation Marg. Eff. <b>Column (9):</b> Outcome Equation Coef.	
<b>Regressors</b>	<b>Panel A: Market-Level Regressions</b>								
Multi-Owned Com Stations	<b>48.05*</b>	15.61	<b>17.38<sup>†</sup></b>	8.39	40.96	-5.31	<b>-38.37*</b>		
Multi-Owned Com * Num TV Stat	<b>-3.50<sup>†</sup></b>	–	–	–	–	–	–		
News XOwned Stations	-41.37	-45.08	-31.32	-5.85	114.59	-7.49	48.03		
Radio XOwned Stations	-39.78	<b>-58.09<sup>†</sup></b>	<b>-46.82<sup>†</sup></b>	<b>-73.57*</b>	<b>-362.70<sup>†</sup></b>	-27.23	-19.18		
Radio/TV XOwned Ratio	11.37	<b>14.47<sup>†</sup></b>	<b>17.40*</b>	<b>23.32*</b>	22.56	2.70	-9.88		
Com TV Stations	<b>90.64*</b>	<b>83.32*</b>	<b>80.31*</b>	<b>59.43*</b>	63.64	<b>20.80*</b>	37.35		
Noncom TV Stations	37.97	35.66	-3.73	15.74	253.10	<b>55.93*</b>	47.82		
Total Radio Stations	-0.68	-0.33	-0.10	<b>1.14<sup>†</sup></b>	-3.28	-0.19	-0.81		
Total Newspapers	-0.85	-7.94	-12.57	<b>-20.08*</b>	<b>81.84<sup>†</sup></b>	-4.87	<b>-55.22*</b>		
Mean of Dep. Var.	722.17	742.84	707.54	635.84	1087.95	174.73	722.17		
	<b>Panel B: Station-Level Regressions</b>								
Multi-Owned Com Stat	-11.09	-3.51	-9.25	-19.54	<b>-33.03<sup>†</sup></b>	-2.79	-0.45	0.0031	-3.86
Multi-Owned Com * Num TV Stat	0.29	–	–	–	–	–	–	–	–
Multi-Owned Noncom Stat	3.88	4.40	–	–	65.57	1.95	-2.46	<b>-0.0365<sup>†</sup></b>	3.93
News XOwned in Market	<b>47.37*</b>	<b>47.25*</b>	<b>41.17*</b>	<b>33.17*</b>	92.69	<b>14.59*</b>	-17.36	–	<b>47.36*</b>
Radio XOwned in Market	<b>4.14*</b>	<b>4.44*</b>	2.71	-1.14	-1.45	<b>1.04<sup>†</sup></b>	-0.09	0.0014	<b>4.26*</b>
Radio XOwned Total	<b>-0.46*</b>	<b>-0.45*</b>	<b>-0.41<sup>†</sup></b>	-0.42	-0.09	-0.06	0.04	-0.0001	<b>-0.46*</b>
Total Parent Com Stations	<b>-0.83*</b>	<b>-0.87*</b>	<b>-0.84*</b>	-0.65	-1.17	-0.10	0.04	0.0004	<b>-0.82*</b>
Parent Population Reach	-0.14	-0.15	-0.23	<b>-1.69*</b>	<b>-0.71<sup>†</sup></b>	<b>-0.10*</b>	-0.12	-0.0001	-0.14
Broadcasting in Digital	–	–	–	–	–	–	–	<b>0.0830*</b>	–
Mean of Dep. Var.	97.36	100.33	125.64	183.25	147.04	23.62	97.35	Lambda:	-5.34
								(Lambda SE):	12.02

Table contains OLS (and Selection Model) estimates of alternative specifications of Equation (1) (Panel A) and Equation (2) (Panel B). Other than the noted specification change, the models are identical to those presented in Column (1) of Tables 3 and 5. All standard errors are clustered at the market level. Statistical significance at the 5% and 10% levels are denoted by the symbols \* and <sup>†</sup>, respectively.

**Table 7: Newspaper-Television Cross-Ownership and Local News Minutes**

	(1)	(2)	(3)
	<u>Local News Minutes per Day</u>	<u>Local News Minutes per Day</u> (Permanent vs. Temporary Combo)	<u>Local News Minutes per Day</u> (Grandfathered vs. Waivered)
<i>Panel A: Market-Level Regressions</i>			
<b>Num Newspaper XOwned</b>	-41.18 [28.11]	–	–
<b>Num Permanent XOwned</b>	–	-50.23 [36.03]	–
<b>Num Temporary XOwned</b>	–	-22.80 [40.71]	–
<b>Num Grandfathered XOwned</b>	–	–	-30.25 [39.30]
<b>Num Perm Waivers (Before 2007)</b>	–	–	<b>-463.81*</b> [167.13]
<b>Num Perm Waivers (After 2007)</b>	–	–	-70.07 [56.43]
<b>Num Temp Waivers</b>	–	–	-34.39 [58.39]
<b>Regression Specification</b>	Identical to Column (1) of Table (3)	Identical to Column (1) of Table (3) plus distinction between “Permanent” vs. “Temporary” XOwned stations	Identical to Column (1) of Table (3) plus distinction between “Grandfathered” vs. “Waivered” XOwned stations
<i>Panel B: Station-Level Regressions</i>			
<b>Newspaper XOwned Station</b>	<b>47.36*</b> [14.82]	–	–
<b>Permanent XOwned Station</b>	–	<b>57.37*</b> [15.76]	
<b>Temporary XOwned Station</b>	–	22.61 [30.11]	
<b>Grandfathered Station</b>	–	–	<b>57.02*</b> [15.35]
<b>Perm Waiver Station (Before 2007)</b>	–	–	<b>128.51*</b> [75.08]
<b>Perm Waiver Station (After 2007)</b>	–	–	-9.37 [20.07]
<b>Temp Waiver Station</b>	–	–	23.11 [30.29]
<b>Regression Specification</b>	Identical to Column (1) of Table (5)	Identical to Column (1) of Table (5) plus distinction between “Permanent” vs. “Temporary” XOwned stations	Identical to Column (1) of Table (5) plus distinction between “Grandfathered” vs. “Waivered” stations

Table contains OLS estimates of Equation (1) in Panel A and Equation (2) in Panel B. Specifications are identical to column 1 in Table 3 and column 1 of Table 5 with the exception that the newspaper cross-ownership variables have been replaced with separate variables for “Waivered” and “Grandfathered” cross-ownership. Only coefficients and standard error estimates on newspaper cross-ownership variables are reported. All standard errors are clustered at the market level. Statistical significance at the 5% and 10% levels are denoted by the symbols \* and †, respectively.

**Table 8: Big 4 Multiple-Ownership and Local News Minutes**

	(1) <u>Local News Minutes per Day</u>	(2) <u>Local News Minutes per Day</u> (Big4 vs. Non-Big4 Combinations)
<i>Panel A: Market-Level Regressions</i>		
<b>Multi-Owned Com Stations</b>	13.11 [10.32]	–
<b>Number of Big4 / Big4 Multi-Owned Stations</b>	–	-13.36 [14.56]
<b>Number of Big4 / Non-Big4 Multi-Owned Stations</b>	–	<b>22.11*</b> [10.74]
<b>Number of Non-Big4 / Non-Big4 Multi-Owned Stations</b>	–	8.44 [21.67]
<b>Regression Specification</b>	Identical to Column (1) of Table (3)	Identical to Column (1) of Table (3) plus distinction between various multiple-ownership combinations
<i>Panel B: Station-Level Regressions</i>		
<b>Multi-Owned Com Stations</b>	-3.80 [8.04]	–
<b>Big4 Station Multi-Owned with Big4 Station</b>	–	-18.56 [11.89]
<b>Big4 Station Multi-Owned with Non-Big4 Station</b>	–	6.87 [12.67]
<b>Non-Big4 Station Multi-Owned with Big4 Station</b>	–	-15.79 [11.15]
<b>Non-Big4 Station Multi-Owned with Non-Big4 Station</b>	–	3.57 [11.16]
<b>Regression Specification</b>	Identical to Column (1) of Table (5)	Identical to Column (1) of Table (5) plus distinction between various multiple-ownership combinations

Table contains OLS estimates of Equation (1) in Panel A and Equation (2) in Panel B. Specifications are identical to column 1 in Table 3 and column 1 of Table 5 with the exception that the multiple-ownership variable has been replaced with separate variables for different types of multiple-ownership combinations. Only coefficients and standard error estimates on multiple-ownership variables are reported. All standard errors are clustered at the market level. Statistical significance at the 5% and 10% levels are denoted by the symbols \* and †, respectively.

**Table 9: Market Structure and Percent of Total News from Local Sources (2009 Only)**

	(1)	(2)	(3)	(4)	(5)
	Local News Minutes per Day	National News Minutes per Day	Total News Minutes per Day	Percentage From Local Source	Percentage From Local Source – GLM Estimation
<b>Regressors</b>	<u>Panel A: Market Level Regressions</u>				
Multi-Owned Com Stations	17.22	-8.27	8.95	0.63	0.63
News XOwned Stations	-42.25	25.98	-16.28	-1.09	-1.11
Radio XOwned Stations	<b>-68.16<sup>†</sup></b>	3.68	-64.48	-2.41	-2.39
Radio/TV XOwned Ratio	<b>16.99*</b>	-5.03	11.96	<b>0.86*</b>	<b>0.86*</b>
Com TV Stations	<b>61.49*</b>	<b>16.47*</b>	<b>77.96*</b>	<b>1.25*</b>	<b>1.27*</b>
Noncom TV Stations	74.43	<b>52.07*</b>	<b>126.50*</b>	1.33	1.26
Total Radio Stations	0.32	-0.06	0.26	<b>0.07<sup>†</sup></b>	<b>0.07*</b>
Total Newspapers	-10.62	9.06	-1.56	-0.01	-0.03
Num O&O	-25.72	11.02	-14.70	-1.78	<b>-1.81<sup>†</sup></b>
Num Big4 O&O	16.02	27.27	43.29	-1.00	-1.01
Broadband769Pct	2.00	<b>-2.12*</b>	-0.12	<b>0.22*</b>	<b>0.21*</b>
Mean of Dep. Var.	739.55	534.33	1273.88	54.93	54.93
	<u>Panel B: Station-Level Regressions</u>				
Multi-Owned Com Stat	0.24	-2.34	-2.11	<b>5.19*</b>	<b>4.49*</b>
Multi-Owned Noncom Stat	4.66	<b>12.58*</b>	<b>17.24<sup>†</sup></b>	0.36	4.71
News XOwned in Market	<b>49.31*</b>	-3.99	<b>45.33*</b>	<b>7.50*</b>	<b>6.34*</b>
Radio XOwned in Market	<b>2.85<sup>†</sup></b>	<b>2.00*</b>	<b>4.85*</b>	0.90	1.03
Radio XOwned Total	<b>-0.45*</b>	<b>-0.30*</b>	<b>-0.75*</b>	-0.04	-0.06
Total Parent Com Stations	<b>-0.88*</b>	0.05	<b>-0.83*</b>	<b>-0.18<sup>†</sup></b>	<b>-0.20*</b>
Parent Population Reach	0.19	<b>-0.13*</b>	0.05	<b>0.22*</b>	<b>0.22*</b>
O&O Station	<b>-91.41*</b>	<b>13.48<sup>†</sup></b>	<b>-77.92*</b>	<b>-29.62*</b>	<b>-22.20*</b>
O&O * Big4	<b>84.49*</b>	-4.49	<b>80.00*</b>	10.97	–
Broadband768Pct	<b>0.50*</b>	<b>-0.27*</b>	0.23	<b>0.19*</b>	<b>0.18*</b>
Mean of Dep. Var.	95.95	69.32	165.27	46.31	46.31

Table contains OLS estimates of alternative specifications of Equation (1) (Panel A) and Equation (2) (Panel B). Other than the noted change in the dependent variable, the models are identical to those presented in Column (2) of Tables 3 and 5. All standard errors are clustered at the market level. Statistical significance at the 5% and 10% levels are denoted by the symbols \* and <sup>†</sup>, respectively.



**Table 10: Tobit Estimation of Station-Level Effects – Impact of Market Structure on Local News Minutes per Day**

	(1)	(2)	(3)	(4)	(5)
	Tobit Estimates of Marginal Effects				
<b>Regressors</b>	OLS Model (Table 5)	Tobit Coefficient Estimates ( $\gamma$ )	$\frac{\partial P(y > 0   x)}{\partial x_i}$	$\frac{\partial E(y   x, y > 0)}{\partial x_i}$	$\frac{\partial E(y   x)}{\partial x_i}$
Multi-Owned Com Stat	-3.80	-6.99	-0.0162	-4.12	-4.52
Multi-Owned Noncom Stat	3.75	9.52	0.0221	5.61	6.15
News XOwned in Market	<b>47.36*</b>	<b>45.71*</b>	<b>0.1061*</b>	<b>26.95*</b>	<b>29.52*</b>
Radio XOwned in Market	<b>4.23*</b>	<b>6.61*</b>	<b>0.0153*</b>	<b>3.90*</b>	<b>4.27*</b>
Radio XOwned Total	<b>-0.46*</b>	<b>-0.53*</b>	<b>-0.0012*</b>	<b>-0.31*</b>	<b>-0.34*</b>
Total Parent Com Stations	<b>-0.84*</b>	<b>-1.00*</b>	<b>-0.0023*</b>	<b>-0.59*</b>	<b>-0.65*</b>
Parent Population Reach	-0.14	-0.21	-0.0005	-0.12	-0.13
LMA	-10.09	-11.65	-0.0271	-6.87	-7.52
Local Parent	<b>-8.62<sup>†</sup></b>	-10.88	-0.0253	-6.42	-7.03
Multicasting Station	<b>11.65*</b>	<b>16.07*</b>	<b>0.0373*</b>	<b>9.47*</b>	<b>10.38*</b>
Dual Affiliation	<b>-41.39*</b>	<b>-48.40*</b>	<b>-0.1124*</b>	<b>-28.54*</b>	<b>-31.26*</b>
O&O Station	<b>-60.88*</b>	<b>-83.02*</b>	<b>-0.1685*</b>	<b>-21.18*</b>	<b>-23.89*</b>
O&O × Big4	<b>70.53*</b>	<b>65.91*</b>			
Noncom Station	-7.33	-17.53	-0.0407	-10.34	-11.32
Minority Owned	7.48	4.79	0.0111	2.83	3.10
Female Owned	-2.60	-1.85	-0.0043	-1.09	-1.19
Parent Revenue (\$ millions)	<b>0.09*</b>	<b>0.10*</b>	<b>0.0002*</b>	<b>0.06*</b>	<b>0.06*</b>

Table contains Tobit estimates of coefficients and marginal effects of Equation (2). Other than the estimation procedure, the model regressors are identical to those presented in Column (1) of Tables 5. All standard errors are clustered at the market level. Statistical significance at the 5% and 10% levels are denoted by the symbols \* and <sup>†</sup>, respectively.