Consolidation and Advertising Rates: A Study of the Impact of Newspaper Ownership Swap on Community Newspapers in Ontario

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1 Introddction

Despite the considerable focus on daily newspapers for their thorough coverage of national and international events, academic research on community newspapers in Canada is surprisingly scant. However, these local publications play a pivotal role in conveying regionally pertinent information. They serve as vital platforms for local government activities, advertisements, fundraising efforts for community projects and elections, and fostering regional business. Additionally, they carry immense cultural significance, representing a treasured heritage of Canadian society. Community newspapers also contribute to connections within local households, ensuring that multifaceted local news spreads across the residents in these areas, fostering closer networking. These functions cannot be easily replaced by daily newspapers that primarily concentrate on international and national events. Despite the proliferation of numerous online news platforms in recent decades, community newspapers continue to hold a crucial position in reaching specific households, particularly among elderly individuals who may choose not to use or lack experience in accessing the internet. As a result, community newspapers serve as a significant intermediary for disseminating news to this subgroup of the population.

In 2017, a notable event occurred: Postmedia and Metroland exchanged dozens of ommunity newspapers, subsequently shutting down most of them in various regional markets of Ontario, resultling loss in approximate 244 jobs. Prior to these events, a significant number of regional markets had newspapers operated by both Postmedia and Metroland. However, following the occurrence of these events, many of these markets underwent a change, with only one newspaper remaining in operation, owned by either Postmedia or Metroland (CBC News, 2017). This change transpired due to the ownership swap strategy implemented by Postmedia and Metroland. Under this strategy, the companies engaged in the exchange of newspaper ownership across various markets. Despite their claimed objective of cutting down costs by focusing on the areas where they primarily operated their business and discontinuing business in the less focused areas, it is suspicious that they wanted to prevent situations where a single market had newspapers operated by both Postmedia and Metroland. By doing so, the two companies can eliminate potential market overlap or competition between them within the same geographic area.

This large-scale closure has the potential to stifle competition, increase market concentration, and alter the industry's market structure. Given that a majority of community newspapers operate on a free distribution model and generate revenue primarily from advertisements, undertaking a comprehensive analysis of the event's repercussions on the advertising side becomes crucial. This is particularly important considering the substantial role that community newspapers play in advertising for local businesses within their respective regions. Therefore, it is important for us to specifically examine how this event directly impacted advertising rates within the local markets that were affected.

We aim to ascertain whether the ownership swap led to higher advertising rates in the regions that underwent these changes, particularly for newspapers owned by Postmedia and Metroland. If there is a change, we seek to understand the reasons behind it. Is it a result of the two companies cutting down their operating costs, or is it because the swap led to a reduction in competition? This consideration is crucial because if the event resulted in increased advertising rates, it could lead to concerns about local businesses losing access to newspapers that offered more affordable rates. This potential scenario could potentially harm businesses in these markets. Furthermore, if there is a significant competition effect, people worry that the anti-competitive behavior is harmful to other newspapers owned by companies other than Postmedia or Metroland.

To address these inquiries, we obtain advertising rate and circulation data for Ontario from 2013 to 2019 from sources including Adoreach and News Media Canada. The data from News Media Canada enable us to observe information regarding the market, name, and ownership of community newspapers. Meanwhile, Adoreach provides the rates for posting advertisements per line. Subsequently, we identify the census subdivision within which each newspaper operates and integrate data with demographic information from CHASS. By merging these three, we create a cohesive dataset that allows us to explore variations in advertising rates across different newspaper ownerships and markets.

Our primary challenge lies in the fact that local markets display distinct characteristics, including population, age, education levels, and others. Moreover, the selection of local markets for swapping newspapers is likely not random. This can lead to potential discrepancies in the demographic characteristics between the markets where the event (swap) takes place and those that remain unaffected. These demographic attributes likely play a crucial role in determining advertising rates. Furthermore, markets with significant variations in demographic data are unlikely to follow a common time trend, an assumption that is essential for accurately identifying the treatment effect in a difference-in-differences regression setup. To tackle this challenge, we are implementing the matching strategy outlined in Smith and Todd (2004). Specifically, we are utilizing market characteristic data to compute propensity scores. These scores allow us to select markets unaffected by the event, based on the similarity of their propensity scores, creating a set of control markets, which helps us eliminate markets with differing parallel trends.

Our approach deviates from the traditional matching strategy, where each treatment is paired with a single control entity. Instead, we opt for matching each market in the treatment group with multiple markets. Subsequently, we calculate the average of these matched markets, creating a synthetic control group. This method is similar to the one imployed by Abadie and Gardeazabal (2003), which creates synthetic controls from existing controls by average or weighted averaging of the markets. This approach proves advantageous in further reducing bias in market characteristics, as compared to the

practice of matching each treatment market with only one control market.

Upon the completion of the matching process, we proceed with a difference-in-differences regression analysis involving both the treatment group and the synthetic control markets. This analytical method empowers us to ascertain the impact of the event on the advertising rates within the markets that were influenced by the newspaper swap.

Our findings indicate a significant increase in the mean advertising rate within the markets affected by the swap event. This increase is observed not only in the mean advertising rate for all newspapers but also in the mean advertising rate for newspapers owned by Postmedia or Metroland, both of which experience substantial surges. On average, post-event, the rate difference between the treated and untreated markets increased by \$0.41 per line. For newspapers owned by either Postmedia or Metroland, this difference increased by \$0.62 post-event. This implies a challenging environment for companies aiming to advertise within the markets impacted by these events. The loss of access to lower-rate options indicates that these companies are encountering a less favorable landscape for their advertising endeavors following the swap. However, our findings suggest that the surge in rates originates from the two companies shutting down lower-rated newspapers. Both Postmedia and Metroland are actively shutting down lower rated newspaper acquired from the swap. Given that most community newspapers are free, a lower-rated newspaper is likely cost-benefit inefficient. We find no evidence, however, of a significant competitive effect on the advertising side due to these events. There is no evidence indicating that these events allowed the consistently existing newspapers operated by the two companies to charge higher rates in these affected local markets.

The remainder of the paper is organized as follows: Section 3 provides literature review. Section 3 provides background information on the event, data specifics and descriptive statistics. Section 4 summarizes market structure and advertising rate series. Section 5 outlines the empirical framework, and Section 6 presents the results and includes a robustness check. Section 7 concludes.

2 Literature Review

Many studies examine the newspaper industry with majority focus on daily newspapers. Extensive literature studies the two-sided market feature in the newspaper industry. Evan (2002) points out that in a two-sided market feature, focusing on one side can lead to misleading interpretations of market power. Chandra and Collard-Wexler (2009) corroborate this opinion with an empirical study of a merger in the Canadian newspaper industry. They show that neither subscription prices nor advertising rates necessarily increase after newspapers merge, as opposed to a product with one-sided customers. Two-sided market structures also exhibit network feedback loops. Rysman (2004) finds that there are positive network effects in the Yellow Pages, in which readers value advertisements and advertisers value readerships, thus, more readers lead to more advertisements, and vice versa. This poses challenges for modeling the equilibrium. Filistrucchi and Klein (2013) introduce a two-sided market model with heterogeneous consumers, taking network effects into consideration. Filling the gaps in theoretical literature often relies on oversimplification to achieve a unique equilibrium, such as assuming firms set prices only on one side or restricting one side's network effect to zero. Filistrucchi,

Klein, and Michielsen (2012) study the merger effects in a hypothetical merger in the Dutch newspaper industry, considering heterogeneous products on both sides and accounting for network effects.

Apart from the feedback loops between the two side, another reason newspapers often exhibit counterintuitive post merger price series is that they frequently subsidize one side from another. Rochet and Tirole (2003) corroborate the incentive for publishers to subsidize one market side from another, stating that publishers might set copy prices below the cost to attract readers. Pattabhiramaiah (2014) concludes that as advertising revenue decreases, newspapers are less willing to subsidize readers compared to the past, leading to an increase in the subscription price for newspapers in general. Argentesi et al. (2007) develop a structural model to study competition in both the readers' and advertisers' segments of Italian newspapers. They find that newspapers have more market power on the readers' side than on the advertisers' side.

Newspaper markets exhibit strong evidence of economies of scale. Dertouzos and Trautman (1990) find significant economies of scale in the circulation and content of newspapers. Rosse (1967) identifies economies of scale in both the readership and advertiser sides. Reasons for these economies of scale include readers not necessarily disliking advertisements, as suggested by Kaiser and Song (2009), and newspapers with larger scales potentially offering better quality, thus attracting more readers Berry and Waldfogel (2010). The newspaper industry also shows high concentration. Dertouzos and Trautman (1990) reveal that only 1% of the newspaper industry faces competition in the same city. Fan (2013) emphasizes that product characteristics significantly influence consumer welfare, noting that mergers in the daily newspaper sector cause shifts in these characteristics. Overlooking these shifts and focusing solely on price might lead to skewed welfare estimations. examines the influence of cross ownership and chain ownership, along with competition between local newspapers and broadcasters, on newspaper advertising rates. While there has been ample analysis on market structures in daily newspapers, the ownership structure in community newspapers remains under researched.

The number of newspapers has seen a significant decline in recent decades, especially with the rise of internet platforms. Kroft and Pope (2014) demonstrate that websites, such as Craigslist, directly reduce advertisement in print newspapers.

Our paper relates closely to these studies with regarde to the erosion of advertising revenue, consolidation, and post merger price series. We observe that the Canadian community newspaper industry has a high concentration, with Postmedia and Metroland accounting for around 50% of publications. In line with previous literature, chain newspapers (those owned by Postmedia and Metroland in this context) have markedly higher rates than those owned by smaller companies. Additionally, our research supports the observation that newspapers are on the decline. We note that Postmedia and Metroland have been shutting down newspapers with lower rates. As most community newspapers are free, closing community newspapers becomes a strategy to halt reader subsidies.

However, most of the research listed above centers on daily newspapers and magazines. Notably, there exists a research gap concerning community newspapers. Even though daily newspapers receive extensive scrutiny, community newspapers, which mainly serve local communities and circulate weekly, have not been as thoroughly examined. Community newspapers often distribute issues at no cost, relying heavily on advertising for revenue. This model mirrors the Yellow Pages. Rysman (2004) explores the Yellow Pages market structure, highlighting how increased advertising directly enhances

readership and the reverse. Still, Yellow Pages studies can not fill the research gap on community newspapers. While both rely on advertising revenue, their target readers differ: Yellow Pages readers usually look for advertisements, while community newspaper readers seek both news content and ads. Our research seeks to bridge this gap, illuminating the price series of community newspapers and potentially offering insights to similar products such as Yellow Pages. By studying how community newspapers navigate competition from internet platforms, we aim to provide insights into challenges of similar free printed product such as Yellow Pages might also encounter.

3 Data and Background

We collect newspaper ownership, circulation, and circulation area data from News Media Canada covering the period from 2013 to 2019. The News Media Canada dataset includes information about circulation areas, operating companies, circulations, and distribution days for each newspaper. Using the circulation area of each newspaper, we determine representative latitude and longitude coordinates corresponding to their locations. Subsequently, we identify the census subdivisions that encompass these points and define the census subdivision in which a newspaper circulates as its market. Through analyzing this dataset, we are able to determine the census subdivisions affected by the newspaper swap in 2017 and identify the newspapers operating within those markets. We consider the census subdivision an appropriate market definition for community newspapers, as they primarily provide news relevant to the local municipality, including government initiatives, fundraising events, and political activities. The term "census subdivision" is synonymous with "municipality" and accurately reflects the scope of coverage provided by these newspapers. In aggregate, there are 214 markets, out of which 33 experienced a swap in 2017.

It is important to note that the dataset provided by News Media Canada, while comprehensive, may be subject to noise and incompleteness. This is because newspapers have the choice to subscribe to membership with News Media Canada and voluntarily report their circulation statistics. Consequently, not all community newspapers across Canada are captured in this dataset. Furthermore, if a newspaper appeared in the dataset previously but is absent in the current year, it does not necessarily imply that the newspaper has ceased publication. It could be due to the newspaper suspending its membership or choosing not to report statistics to the association. However, our discussions with the data provider indicate that most influential newspapers opt to subscribe to News Media Canada, as it is the leading association for community newspapers. Membership offers valuable benefits such as low-cost webinars for editorial, marketing, and advertising departments, sales training, auditing, and representation of members' interests in various public affairs issues. These services and resources are valuable to community newspapers and can potentially yield cost-cutting benefits. Consequently, we believe that this dataset adequately captures market features and can provide answers to our research questions.

We gather the rate data from Adoreach, the dataset containing the line rate for each community newspaper in Ontario. Most of the newspapers from Adoreach can be merged with the dataset collected from News Media Canada. Some newspapers are in the rate dataset but not in the News Media Canada dataset, and vice versa—certain newspapers in the News Media Canada dataset do not appear in the Adoreach dataset. To enhance completeness, we create an outer join of the two datasets so that any

newspaper appearing in one of the datasets will be included in the analysis. Furthermore, given the fact that the majority of newspapers, especially the more influential ones and those well-known to the public, reside in both datasets, we believe that both datasets can capture a comprehensive view of the characteristics we are interested in investigating in this paper.

Figure 1 visualizes the number of newspapers involved in the analysis from 2013 to 2019. During this period, there are approximately 200 to 300 community newspapers in Ontario. The ownership of these newspapers is relatively concentrated. For most of the years, more than 50% of the newspapers are owned by Postmedia and Metroland, underscoring the significant roles these two companies play in communicating local news. The substantial closures by these two companies can lead to a significant loss of local news sources and platforms for companies to advertise their local businesses.

In 2017, Postmedia and Metroland (owned by Torstar) engaged in an ownership exchange involving more than 40 local community newspapers without monetary transactions, as both companies asserted that the newspapers held similar values. Subsequent to the exchange, many of the newly acquired newspapers were slated for closure. Postmedia intended to retain only two out of the 24 newly acquired newspapers, while the rest were set to be shut down. Similarly, Metroland also revealed its plan to close a majority of the newly acquired newspapers, opting to keep only 4 out of the 15 newly acquired newspapers operational.

4 Market Structure and Advertising Rate

Can this action potentially lead to a reduction in competition by withdrawing from areas where the other company primarily operated its business? What is the pre- and post-market structure in these swap-affected local areas? To address these questions, we conduct an examination for each impacted census subdivision to determine if Metroland or Postmedia are avoiding competition. This involves counting the newspapers owned by Metroland, Postmedia, and other entities before and after the ownership swap within these markets. Our assessment of newspaper presence is based on observations, recognizing that the available data might not encompass all newspapers operating within a market. Therefore, Table 1 should be interpreted with caution.

For instance, based on the tabulation results of the data presented in Table 1, it appears that Post-media does not possess any newspapers in the Ottawa census subdivision, both before and after the swap. However, news reports regarding the swap event suggest that Postmedia does indeed own some newspapers in Ottawa, even though they are not included in the dataset. "In addition, Postmedia will acquire the free commuter newspapers, Metro Ottawa and Metro Winnipeg. Postmedia already owns other newspapers in both of those cities, and plans to shut down Metro in each of them." (CBC News, 2017)

However, the data clearly indicates a significant shift in market structures that gives rise to suspicions of anti-competitive behavior by the two companies. In numerous census subdivisions, prior to the swap, both companies were operating at least one newspaper. Surprisingly, after the swap, a considerable number of markets were left with only one of the two companies (Postmedia or Metroland) operating newspapers. Out of the 33 markets affected by the swap, 21 had newspapers from both Postmedia

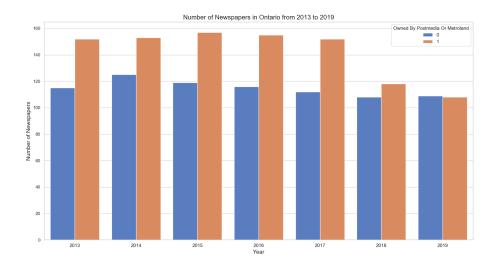


Figure 1: Number of Newspapers In Ontario

and Metroland, and some had newspapers operated by other companies too. However, post-swap, one of either Postmedia or Metroland withdrew from these 21 markets. In some of these areas, companies other than Postmedia or Metroland continued their newspaper operations. Furthermore, among these 21 markets, 12 had 2 or more companies (comprising entities beyond Postmedia and Metroland) operating newspapers. After the swap, only one of Postmedia or Metroland continued its operations in these 12 markets, eliminating any other company's presence and establishing a monopoly for the remaining company (since our data does not guarantee to include all community newspapers, this interpretation should be kept with caution). This pattern suggests potential strategic actions taken by the companies to reduce competition and raises concerns about increased market concentration.

It is important to note that Table 1 enumerates all newspapers in the markets influenced by the swap (at least one newspaper operated in each of these markets). This includes both newspapers that were swapped and those that were not. Most of the community newspapers closed right after the swap. For these newspapers, the data reflects only their immediate closure and not any change in ownership. However, these closures affect the market structure. There are many markets that have one newspaper owned by Metroland and one newspaper owned by Postmedia. After these newspapers are swapped and closed, only one newspaper owned either by Metroland or Postmedia remains in the market.

Markets sometimes show distinct trends in ownership changes. Take, for example, the situation in South Huron before 2017. At that time, Metroland owned two newspapers: the Exeter Times Advocate Weekender and the Exeter Times Advocate. After 2017, these two newspapers were acquired by Postmedia, which chose to continue their operation after the swap. Intuitively, we expect to see in each of the markets, the two companies avoid contact. However, post-2017, the ownership of these two newspapers shifted to Postmedia, which decided to sustain their operation post-acquisition.

Intuitively, we expect to see in the swap-affected markets, Postmedia and Metroland would strive to avoid direct competition. However, while our market definition based on census subdivisions is generally effective, it is not perfect. The strategic vision of companies' CEOs might extend beyond these designated subdivisions. For instance, in the case of South Huron, if its geographic location is proximate to other areas where Postmedia has a presence, Postmedia might have an incentive to consolidate its foothold by acquiring all newspapers in South Huron. However, defining markets based on census subdivisions still reflect a tendency to avoid contact within the same market, as suggested by the previously discussed statistics.

Table 2 provides a tabulation of the total 39 community newspapers that were involved in the swap during the events. This includes details about ownership before the swap, whether a newspaper was shut down immediately after the swap, and the census subdivisions where a newspaper was operating. Most of the newspapers were shut down immediately, left only 6 newspapers remain operation. Postmedia acquired 24 newspapers from Metroland and subsequently shut down 22 of these acquired newspapers. On the other hand, Metroland acquired 15 newspapers from Postmedia and closed 11 of the acquired newspapers. Both companies shut down a substantial number of newspapers, with the majority of closures originating from Postmedia.

Figure 1 presents the Series of rates of community newspapers classified into various groups. These groups encompass newspapers owned by Postmedia or Metroland that are operating in the event-affected market but not swapped, newspapers that were swapped and subsequently closed, newspapers that were swapped and continue to operate after the event, newspapers owned by Postmedia or Metroland and operating in unaffected markets, and newspapers owned by other companies. Among the 39 community newspapers, rate data is available for 31 newspapers. Furthermore, we have closely observed rate trends for two newspapers that continued operations after the swap, both originating from the Metroland to Postmedia transition. This suggests that interpreting rate series for the group in which newspapers were swapped and maintained operations post-event should be approached with thoughtful consideration.

Nonetheless, it is reassuring to note that the majority of the swapped newspapers do have accompanying rate data. This ensures that the figure effectively captures rate patterns across different groups.

An intriguing observation is that newspapers which underwent swapping and subsequent shutdown exhibit lower rates, in contrast to the newspapers owned by Postmedia or Metroland that operate in event-affected markets, showing the highest average rate. Newspapers owned by other companies and newspapers owned by Postmedia or Metroland that operate in unaffected markets have rate patterns that fall in the middle of the groups. The two newspapers that remained operational after being swapped from Metroland to Postmedia also exhibit significantly lower rates compared to the other groups. However, there are no noticeable signs of a significant increase in rates for these newspapers after the swap took effect post-2017. Instead, it is apparent that these newspapers, with notably lower rates, were either swapped or closed.

Figure 2 and 3 depict the separate rate series of newspapers owned by Metroland and Postmedia, each further divided into various categories. Both companies are involved in swapping or shutting down newspapers with lower advertising rates. The distinction lies in the fact that, for Metroland, newspapers operating in affected markets but not swapped exhibit a similar average rate compared to newspapers operating in unaffected markets. Conversely, in the case of Postmedia, newspapers operating in affected markets but not swapped show a higher rate compared to newspapers operating

in unaffected markets.

	Before Swap			After S	wap	
CSDs	Others	M	Р	Others	Μ	Р
Alnwick/Haldimand	0	0	1	0	0	0
Barrie	1	1	1	1	1	0
Belleville	1	1	1	1	0	1
Bradford West Gwillimbury	0	1	1	0	1	0
Brantford	0	1	1	0	0	1
Brockville	1	1	0	1	0	0
Cobourg	0	1	1	0	1	0
Collingwood	0	1	1	0	1	0
Cramahe	0	1	1	0	1	0
Fort Erie	0	1	1	0	1	0
Innisfil	0	1	1	0	1	0
Kingston	1	1	1	1	0	1
London	3	1	1	4	0	1
Meaford	1	1	0	1	0	0
Niagara-on-the-Lake	0	1	1	0	1	0
Norfolk County	2	1	1	2	0	1
Orillia	1	1	1	1	1	0
Ottawa	5	8	0	9	0	0
Pelham	2	1	2	2	2	0
Peterborough	1	1	1	1	2	0
Port Colborne	0	1	1	0	1	0
Port Hope	0	1	1	0	1	0
Quinte West	2	1	1	2	0	1
South Frontenac	0	1	1	0	0	1
South Huron	0	2	0	0	0	2
Southwold	0	1	0	0	0	0
St. Catharines	1	0	1	1	1	0
St. Marys	1	2	0	1	0	0
St. Thomas	0	1	0	0	0	0
Stirling-Rawdon	0	1	0	0	0	0
Stratford	0	1	1	0	0	1
Thorold	0	0	1	0	0	0
Welland	1	0	1	1	1	0
Sum of Each Column	24	38	26	29	17	10

Table 1: Market Structure: Number of Newspapers Owned by Metroland, Postmedia, and Other Companies Before and After the Swap for Each Census Subdivision Affected by the Newspaper Swap

Newspaper	CSDs	$\mathbf{Closure}$	Previous Owner
Kingston Heritage	Kingston	YES	M
Nepean Barrhaven News	Ottawa	YES	M
Norfolk News	Norfolk County	YES	M
Orleans News	Ottawa	YES	M
Ottawa East News	Ottawa	YES	M
Ottawa South News	Ottawa	YES	M
Ottawa West News	Ottawa	YES	M
Meaford Express	Meaford	YES	M
Our London	London	YES	M
St. Marys Journal Argus	St. Marys	YES	M
St. Marys Journal Argus Weekender	St. Marys	YES	M
St. thomas Elgin Weekly News	Southwold and St. Thomas	YES	M
Stirling Central Hastings News	Stirling-Rawdon	YES	M
Stittsville News	Ottawa	YES	M
Stratford Gazette	Stratford	YES	M
Quinte West News	Quinte West	YES	M
Kanata Kourier Standard	Ottawa	YES	M
West Carleton Review	Ottawa	YES	M
Frontenac Gazette	South Frontenac	YES	M
Belleville News	Belleville	YES	M
St. lawrence News	Brockville	YES	M
Exeter Times Advocate	South Huron	NO	M
Exeter Times Advocate Weekender	South Huron	NO	M
Brantford Brant News	Brantford	YES	M
Fonthill Pelham News	Pelham	YES	P
Collingwood Enterprise Bulletin	Collingwood	YES	P
Fort Erie Times	Fort Erie	YES	P
In Port News	Port Colborne	YES	P
Bradford West Gwillimbury Times	Bradford West Gwillimbury	YES	P
Thorold Niagara News	Thorold	YES	P
Welland Tribune	Welland	NO	P
St. Catharines Standard	St. Catharines	NO	P
Peterborough Examiner	Peterborough	NO	P
Orillia Packet and Times	Orillia	YES	P
Niagara Falls Review	Pelham	NO	P
Innisfil Examiner	Innisfil	YES	P
Niagara Advance	Niagara-on-the-Lake	YES	P
Barrie Examiner	Barrie	YES	P
Northumberland Today	Cramahe, Port Hope, Alnwick/Haldimand and Cobourg	YES	P

Table 2: Newspapers Swapped in 2017, Closure Status of Operating Market, and Ownership Before Swap, Where M Represents Metroland and P Represents Postmedia.

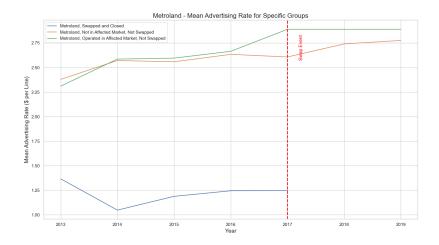


Figure 2: Rate Series for Different Specific Group

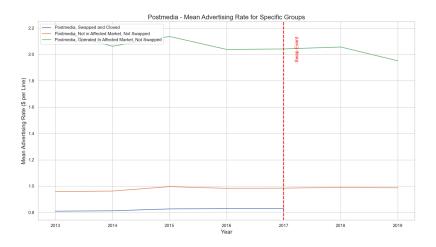


Figure 3: Rate Series for Postmedia

5 Matching and Construction of Control Markets

Whether this shift in market structure is reflected in the rates charged by newspapers in these swapped markets is our first main objective. To investigate this, we employ a matching strategy to identify the treatment effect on the rate environment in markets where at least one newspaper was swapped.

The objective of our approach is to estimate the average treatment effect on the mean advertising rate for the markets that have been influenced by the swap event for market i and year t.

$$ATT = E\{r_{it}^1 | d_{it} = 1\} - E\{r_{it}^0 | d_{it} = 1\}$$

The indicator d_{it} takes a value of 1 if market i experienced any newspaper swaps during the event. r_{it}^1 represents the observed average advertising rate after the swap. On the other hand, r_{it}^0 denotes the unobserved counterfactual average advertising rate that would have prevailed had the markets not

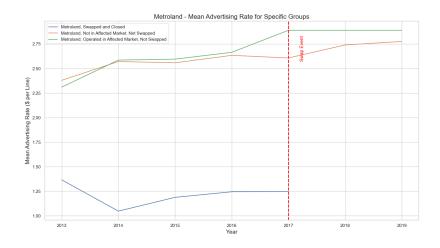


Figure 4: Rate Series for Metroland

been affected by the swap event.

Before the 2017 swap and cessation of operations across dozens of newspapers by the two companies, it is likely that the CEOs had already internally negotiated and settled on the decision. This might have led newspapers, particularly those owned by Postmedia and Metroland in the affected markets, to adjust their rates. Consequently, the average rate for these markets could have changed, potentially creating anticipation effects.

To minimize bias and exclude control markets that fail to meet the common time trend assumptions, we employ a probit regression to calculate a propensity score. This score is based on demographic and market structure variables, predicting the likelihood of a market being chosen for a newspaper swap. We incorporate demographic variables from Fan (2013) that might influence newspaper outcomes. With the propensity scores available, we match each treatment market with control markets based on score proximity. Instead of pairing a single market for each treatment, we match n control markets (unaffected by the swap) to each treatment market, based on the closest propensity scores. A synthetic control market is then constructed by averaging the characteristics of these n matched control markets. To determine the value of n, we use a balance test discussed in Smith and Todd (2005). We start with n=1 and conduct repeated balance tests to gauge the reduction in bias for market characteristics after each match. We choose the value for n to achieve the maximum bias reduction in market characteristics. Additionally, we match the control markets with replacement, allowing a given control market to be paired with more than one treatment market. This scenario ensures each treatment market is matched with a high-quality candidate, reducing the bias in market characteristics. However, this approach also decreases the number of distinct markets matched to calculate the counterfactual mean in market characteristics, leading to an increase in variance. Dehejia and Wahba (DW) (1999, 2002) show that matching without replacement can lead to poor matches because many treatment members are paired with members having significantly different propensity scores. Matching without replacement also has a drawback in that the match result depends on the order in which each treatment member is matched.

5.1 Propensity Score Outcomes

Of the 214 markets analyzed, 33 underwent a newspaper swap in 2017, with 29 of these experiencing newspaper closures from either Postmedia or Metroland. We assigned a value of 1 to markets impacted by the swap and 0 to those that were not affected, focusing our analysis at the market level. To ensure comprehensiveness, we executed an outer join between the rate data sourced from Adoreach and the information from News Media Canada. Although most newspapers were present in both datasets, a significant number of newspapers did not have available rate data. Given that our objective is to compare the rates, it is vital for the markets to have newspapers with available rate data. Conducting an analysis on markets without any newspapers providing rate data is unfeasible. To address this challenge, we initially tallied the number of newspapers in each market, taking into account even those without available rate data. We subsequently exclude any newspapers that do not have rate data available for at least one year. It is worth noting that some newspapers have rate data for certain years but not for all. This could be due to reasons such as the newspapers' closure or their decisions not to report rates to Adoreach. Nevertheless, these newspapers with partial data are still included in our further study when computing the mean rate of each market. For example, if newspaper A has rate data available for 2013 and 2019, but not for 2014, 2015, 2016, 2017, or 2018 (this could be because newspaper A in market K chose not to report the rate to Adoreach from 2014 to 2018, but decided to report the rate for 2013 and 2019), then newspaper A is included in the mean rate calculation of market K for years where data is available but excluded for the years where rate is unavailable.

We run the regression for the propensity score to determine whether a market would be chosen to undergo a newspaper swap, focusing on the observations from 2017. This is because the event occurs exclusively in that year, and most of the market characteristics, such as demographic variables, are time-invariant. Some markets only have newspapers with missing rate data for certain years, resulting in specific market-year observations without details. Although the probit regression does not mandate a market to possess rate data, the outcome of the regression is a key factor in determining the control groups. Therefore, it is crucial for markets forming the potential control group to offer a majority of the rates from 2013 to 2019. To address this issue, in the regression, we exclude markets that, as of 2017, only have newspapers missing rate data for every year from 2013 to 2019. For instance, if a market have 2 newspapers in 2017 and neither of them has rate data available for any years between 2013 and 2019. We will exclude that market from the probit regression. However, if these two newspapers do not have rate data for 2017 but possess rate data for at least one year outside of 2017, this market will still be included in the probit regression. This is because we aim to compare the rates between swap-affected markets and control markets over the years from 2013 to 2019. We do not want to omit a market simply because it lacks rate data for 2017 if it has data from other years. However, markets that, as of 2017, solely contain newspapers with missing rate data spanning the entire period from 2013 to 2019 tend to lack rate data for most, if not all, of those years. It is essential to exclude these markets from the probit regression to avoid skewing the results in the subsequent rate analysis. By excluding these market, we retain 190 out of total 214 markets and 31 out of 33 swap-affected markets in the regression. As a result, there is not significant loss of information.

Our regression findings reveal that the average age within a market is a significant predictor of the likelihood of a newspaper swap. Specifically, both Postmedia and Metroland seem to favor swapping

	Prob (Treat=1)
Intercept	-29.1604
шестесре	(21.3834)
Age	5.5666**
1100	(2.5434)
Education	-0.4351
	(0.4453)
Income	0.0338
moomo	(1.2155)
# of Newspapers	-0.0787
T of itemspapers	(0.7640)
Population	0.7881
1 opulation	(0.5474)
Population Growth	0.5755
Topulation Growth	(0.3528)
N	190
Pseudo R2	0.08

Table 3: Probit Regressions for the Possibility of a Market Being Affected by a Swap: Any observations with missing values are dropped to run the regression. All variables are log-transformed. For example, if the population of a market is 1000, then Population = $\log(1000 + 10)$. Other variables are transformed in a similar manner. We add 10 before the log transform because some variables, like the population growth rate, can be negative. Treatment markets are defined as swap-affected markets.

newspapers in areas with a predominantly older demographic. A plausible explanation could be the predilection of older individuals towards community newspapers, making it more cost-effective for businesses to tailor strategies in such locales. Including additional variables in the regression can enhance its explanatory power. However, this may lead to the exclusion of certain markets if data for those variables is absent. To choose the most effective variables, we incorporate demographic variables based on the selection presented as controls in Fan (2013). We use these to estimate propensity scores, which in turn help select control markets, reinforcing the common time trend assumption. In subsequent analysis, the common time trend tests show these variables uphold the common time trend assumption necessary for DID analysis.

Other variables are not potent predictors for the probability of a market to be affected in the swap event. Nevertheless, this does not mean there is no potential influence. We further our study with a balance test to see how the matching process influenced the differences in market characteristics. If a variable doe not help in predicting a market's treatment, we would expect negligible changes in bias after matching, though the bias can still decrease by chance.

5.2 Balance Test and Bias Reduction

For each treatment market, we select a set of n markets that have the most similar propensity scores and calculate the average characteristics of these matched markets. Starting with n = 1, we adjust and test until we determine which n provides the greatest reduction in bias. Through our testing, we

Variable	Treated	UnTreated	Matched	Bias (Untreated)	Bias (Matched)	Reduction
Pop	10.2784	9.5938	10.1725	6.6601%	1.0306%	84.5256%
Pop Growth	2.5966	2.4695	2.5902	4.8953%	0.2466%	94.9628%
Age	3.984	3.9745	3.9903	0.2393%	-0.1577%	34.0742%
Income	10.4275	10.4493	10.4182	-0.2088%	0.0888%	57.4609%
Education	8.2323	7.4565	8.1327	9.4231%	1.209%	87.1698%
# of Papers	2.5317	2.475	2.4873	2.2409%	1.7552%	21.6716%

Table 4: Balance Test Results and Bias Reduction: Bias Calculation as Percentage Difference (Mean Value of Treated Minus Mean Value of All Untreated Markets, Divided by the Mean Value of Treated Markets). Treatment markets are defined as swap-affected markets.

discover that when n is set to 4, the difference between the treatment market and the matched control means is minimized.

Table 3 presents the balance test results, revealing a notable reduction in bias across all variables. Given that all variables are log-smoothed, the initial bias is not pronounced, emphasizing the importance of bias reduction in this study. The population variable stands out with a remarkable 93% reduction in bias. Age, Income, and Education all show reductions in bias exceeding 80%. Moreover, the population growth variable sees a bias reduction of over 60%. These results from the balance test indicate that our matching approach effectively aligns markets with similar characteristics.

This result suggests that markets which experienced newspaper swaps had significantly different characteristics endogenous to the decision of whether a market would undergo a swap. Consequently, the full sample of unaffected markets might not serve as an appropriate control group.

5.3 Difference in Difference Regression

We conduct a difference-in-differences regression to analyze the impact of the treatment market and associated synthetic control markets. The regression equation is as follows:

$$Rate_{it} = \alpha + \beta_1 Treated + \beta_3 Post + \beta_2 Treated Post + \epsilon_{it}$$

Here, Rate represents the dependent variable for market i in year t. Post is a dummy variable equal to 1 if t > 2017, indicating the post-treatment period. Treated is a dummy variable equal to 1 for treated markets. The interaction term TreatedPost captures the combined effect of being a treated market in the post-treatment period. We do not include fixed effects because all demographic variables are time-invariant. Moreover, since all treatments occur in 2017, including year fixed effects leads to collinearity with the Post dummy, so we do not include time fixed effects either. However, when we conduct a robust analysis with market and time fixed effects and drop demographic variables, the treatment effect remains significant.

The coefficient of *TreatedPost* represents the treatment effect we aim to investigate. To determine the source of variation, we perform three regressions. In Regression (1), we calculate the mean rate of each market year using all newspapers in the dataset. In Regression (2), we calculate the mean rate of

each market year using newspapers owned either by Postmedia or Metroland. Finally, in Regression (3), we calculate the mean rate of each market year using newspapers both owned by Postmedia or Metroland and operated at least one year on or before 2017 and at least one year after 2017. The mean rate is calculated annually for all eligible newspapers in the market based on the criteria specified for each regression.

The goal of the first regression is to determine how the rate environment changed after the swap. The results indicate that the average advertising rate increased and stayed high following the newspaper swap in 2017 within these impacted markets. Consequently, companies seeking to advertise in these areas now face significantly higher rates. It is important to note that companies interested in advertising in community newspapers are likely targeting local businesses and projects. Therefore, policymakers in regional areas should be aware of the potential negative effects on businesses due to the increased rate environment post the 2017 swap.

Regression (2) examines the rate series for newspapers run by Postmedia and Metroland. It appears that the average rate of products in these affected markets rises significantly. Given the dominant market concentration in the community newspaper industry across Canada, the increase in average rates for newspapers owned by Postmedia and Metroland likely contributes substantially to this elevated rate environment in the affected markets.

There are potential reasons for the increased average advertising rate. One is that Postmedia or Metroland might be discontinuing newspapers with lower rates. The absence of these low-rate newspapers could raise the average advertising rate for newspapers they own in these markets. Another possibility is that Postmedia or Metroland have swapped and closed several newspapers, which might grant remaining newspapers more market power, allowing these papers to charge higher rates, leading to an elevated average rate.

To differentiate between these scenarios, Regression (3) considers the rate of continuously operating newspapers owned by Postmedia or Metroland. If newspaper swaps and closures empower other ongoing newspapers to charge more, we should see a positive coefficient on TreatedPost, especially for those owned by Postmedia or Metroland. This would suggest these companies use swaps and closures to benefit their existing newspapers. However, regression results contradict this. The coefficient for Regression (3) is not statistically significant. Hence, no evidence that supports the theory that the closure of newspapers leads to remaining newspapers gaining market power and charging higher rates. Instead, it seems Postmedia or Metroland are discontinuing lower-rate newspapers, and these closures do not confer more market power to the other newspapers in these affected markets.

Considering that most community newspapers are free, those with lower rates might be less costeffective, prompting Postmedia or Metroland to discontinue these cheaper options. While this may be
a viable business decision, it could adversely impact companies that are financially limited, restricting
their ability to invest in advertising in these local markets, because they have less lower price options
after 2017.

Most of the market characteristic variables are consistent across the four regressions. A higher average age contributes to a lower mean rate in the market, possibly because older people have a lower inclination to consume, pushing down the rates newspapers can charge. A market with a higher number of newspapers leads to a lower rate, consistent with the idea that competition puts downward pressure

All	P&M	P&M Cross
40.9397***	37.5023***	21.3530*
(8.8359)	(10.8245)	(11.7164)
-0.0074	-0.4026***	0.3729***
(0.0701)	(0.0846)	(0.0956)
0.4100***	0.6177***	-0.0661
(0.1408)	(0.1748)	(0.1671)
0.0710	0.0349	0.0183
(0.0891)	(0.1076)	(0.0979)
-1.4259***	-1.4597***	-2.6153***
(0.2068)	(0.2513)	(0.2630)
-0.3726***	0.0804	-0.0729
(0.1287)	(0.1568)	(0.1753)
-3.5617***	-0.6109	1.6954
(0.9563)	(1.1802)	(1.2563)
-1.7795***	-2.5857***	-1.8046***
(0.5460)	(0.6634)	(0.6926)
1.6807***	1.7520***	2.7297***
(0.1621)	(0.1962)	(0.2021)
-1.8685***	-2.2381***	-1.0209
(0.4108)	(0.4968)	(0.6726)
0.5252	0.5006	0.6087
407	398	336
	40.9397*** (8.8359) -0.0074 (0.0701) 0.4100*** (0.1408) 0.0710 (0.0891) -1.4259*** (0.2068) -0.3726*** (0.1287) -3.5617*** (0.9563) -1.7795*** (0.5460) 1.6807*** (0.1621) -1.8685*** (0.4108) 0.5252	40.9397*** 37.5023*** (8.8359) (10.8245) -0.0074 -0.4026*** (0.0701) (0.0846) 0.4100*** 0.6177*** (0.1408) (0.1748) 0.0710 0.0349 (0.0891) (0.1076) -1.4259*** -1.4597*** (0.2068) (0.2513) -0.3726*** 0.0804 (0.1287) (0.1568) -3.5617*** -0.6109 (0.9563) (1.1802) -1.7795*** -2.5857*** (0.5460) (0.6634) 1.6807*** 1.7520*** (0.1621) (0.1962) -1.8685*** -2.2381*** (0.4108) (0.4968)

Table 5: Difference-in-Differences Regression Analysis: Dependent Variables Represent the Mean Rate of Each Market Year Calculated using Different Subsets of Newspaper: Regression (1) Utilizes All Newspapers in the Dataset. Regression (2) Utilizes Newspapers Owned by Postmedia or Metroland. Regression (3) Utilizes Newspapers Owned by Postmedia or Metroland and Operated Both Before and After the Swap Event. Each treatment market is matched with n optimal control markets based on propensity scores, where n is chosen to minimize biases in characteristics. For each treatment market, a synthetic control market is constructed by averaging the characteristics of the n matched control markets. Regression analyses are conducted on the treatment markets and their corresponding synthetic control markets. Treatment markets are defined as swap-affected markets.

on the rates newspapers can charge. Interestingly, higher incomes are associated with lower rates in the market, given that most community newspapers post advertisements for products on sale. An entity with a higher income may be less likely to be attracted to the advertisements in community newspapers. The focus of this research is to identify the Treatment Effect. Future studies exploring how market characteristics affect rate series will be interesting.

6 Robustness Checks

6.1 Fixed Time and Market Effects and Common Time Trend Test

Given that demographic variables remain consistent over time, and considering that the newspaper swap event took place in 2017, incorporating both market and year fixed effects will result in the

Mean Rate	Mean Rate	P&M Mean Rate	P&M Mean Rate Cross
TreatedPost	0.2774*** (0.0482)	0.3811*** (0.0576)	-0.0203 (0.0344)
Within R-squared	0.0891	0.1170	0.0012
N	407	398	336

Table 6: Regression with Market and Yearly Fixed Effects: Regression (1) Utilizes All Newspapers in the Dataset. Regression (2) Utilizes Newspapers Owned by Postmedia or Metroland. Regression (3) Utilizes Newspapers Owned by Postmedia or Metroland and Operated Both Before and After the Swap Event. Treatment markets are defined as swap-affected markets.

demographic variables, Treated and Post being omitted. Nonethelss, excluding market and year fixed effects could yield inconsistent coefficients if there are unobserved market or year factors that correlate with "TreatedPost". To ensure robustness, we conduct regressions without the demographic variables, Treated and Post variables, controlling for both market and year fixed effects. This helps verify the reliability of the TreatedPost coefficient.

Table 5 presents the regression results. We observe that the 'TreatedPost' variable remains highly statistically significant in Regression 1 and Regression 2, aligning with the findings from Table 4. However, the coefficient in Regression 3, where the mean rate is calculated based on newspapers owned by Postmedia or Metroland, is statistically insignificant. This furthur suggests no significant evidence of a competitive effect. Instead, our findings align with the hypothesis that Postmedia and Metroland swapped and then closed newspapers which charged lower rates. The removal of these lower-rated newspapers subsequently elevated the mean rate in the markets affected by the swaps.

One of the critical assumptions for identifying the treatment effect in a difference-in-differences regression is that treated and control markets follow common time trends. Given that the CEOs of both companies formed a decision to strategically swap several newspapers before its actual execution, it is conceivable that the rates of the newspapers owned by Postmedia or Metroland changed prior to the event. To investigate whether the treatment markets and control markets adhered to a similar time trend before the event, we conducted the following regression to test the common time trend assumption:

$$Rate_{it} = \beta_1 Treated * Year_{2015} + \beta_2 Treated * Year_{2016} + \beta_3 Treated * Year_{2017} + \beta_4 Treated Post + u_i + \eta t + \epsilon_{it} + \beta_2 Treated * Year_{2016} + \beta_3 Treated * Year_{2017} + \beta_4 Treated Post + u_i + \eta t + \epsilon_{it} + \beta_4 Treated Post + u_i + \eta t + \epsilon_{it} + \beta_4 Treated Post + u_i + \eta t + \epsilon_{it} + \beta_4 Treated Post + u_i + \eta t + \epsilon_{it} + \beta_4 Treated Post + u_i + \eta t + \epsilon_{it} + \beta_4 Treated Post + u_i + \eta t + \epsilon_{it} + \beta_4 Treated Post + u_i + \eta t + \epsilon_{it} + \beta_4 Treated Post + u_i + \eta t + \epsilon_{it} + \beta_4 Treated Post + u_i + \eta t + \epsilon_{it} + \beta_4 Treated Post + u_i + \eta t + \epsilon_{it} + \beta_4 Treated Post + u_i + \eta t + \epsilon_{it} + \beta_4 Treated Post + u_i + \eta t + \epsilon_{it} + \beta_4 Treated Post + u_i + \eta t + \epsilon_{it} + \beta_4 Treated Post + u_i + \eta t + \epsilon_{it} + \beta_4 Treated Post + u_i + \eta t + \epsilon_{it} + \beta_4 Treated Post + u_i + \alpha_4 Treated Post + u_i + \alpha_$$

The regression is similar to the one with market and year fixed effects. The key difference is the addition of an interaction between Treated and the Year dummy, spanning three years before the post-swap period. By controlling for each year's fixed effect, the coefficients β_1 , β_2 , and β_3 capture the difference in the time trend in rates starting from three years before the post-swap period. Table 6 presents the results. As evident, the coefficients are not statistically different from zero. This suggests that there is no significant anticipation effect prior to the event's occurrence.

	Mean Rate	P&M Mean Rate	P&M Mean Rate Cross
TreatedPost	0.2498***	0.3573***	-0.0047
freatedPost	(0.0561)	(0.0666)	(0.0416)
Treated*Year2015	-0.0122	-0.0232	0.0473
freated Year2015	(0.0630)	(0.0729)	(0.0507)
Treated*Year2016	-0.0331	-0.0341	0.0272
Treated Tear2010	(0.0635)	(0.0731)	(0.0505)
Treated*Year2017	-0.0918	-0.0610	0.0025
freated Year2017	(0.0635)	(0.0731)	(0.0505)
R-squared	0.0951	0.1190	0.0050
N	407	398	336

Table 7: Common Time Trend Test: Regression (1) Utilizes All Newspapers in the Dataset. Regression (2) Utilizes Newspapers Owned by Postmedia or Metroland. Regression (3) Utilizes Newspapers Owned by Postmedia or Metroland and Operated Both Before and After the Swap Event. Treatment markets are defined as swap-affected markets.

Variable	Treated	UnTreated	Matched	Bias (Untreated)	Bias (Matched)	Reduction
Pop	10.2795	9.5938	10.3617	6.6704%	-0.7991%	88.0207%
Pop Growth	2.6033	2.4695	2.5786	5.1393%	0.949%	81.5347%
Age	3.9828	3.9745	3.981	0.2089%	0.046%	77.99%
Income	10.4319	10.4493	10.4259	-0.1663%	0.0579%	65.1898%
Education	8.2414	7.4565	8.3393	9.5235%	-1.1877%	87.5291%
# of Papers	2.5322	2.475	2.5049	2.2589%	1.077%	52.3227%

Table 8: Balance Test Results and Bias Reduction: Bias Calculation as Percentage Difference (Mean Value of Treated Minus Mean Value of All Untreated Markets, Divided by the Mean Value of Treated Markets). Treatment markets are defined as swap-affected markets with at least one swapped newspaper closed.

6.2 Treatment Markets Defined as Markets with Closure

Of the 31 swapped-affected markets included in the analysis, 29 experienced newspaper closure from either Postmedia or Metroland. To test robustness, we categorize these 29 markets as treatment markets and use swap-unaffected markets as control groups to replicate the aforementioned analysis. The rate series are similar to the previous analysis. There is a slight loss of significance for TreatedPost in the DiD regression according to Table 9. However, when controlling for time and market fixed effects, TreatedPost is significant at the 0.01 level.

	All	P&M	P&M Cross
T44	79.5553***	90.6046***	89.8537***
Intercept	(9.7452)	(13.8671)	(16.5342)
Treated	-0.1141	-0.5900***	0.1800
freated	(0.0870)	(0.1224)	(0.1544)
TreatedPost	0.4316**	0.5793**	-0.1084
TreatedFost	(0.1773)	(0.2589)	(0.2815)
Post	0.1012	0.0716	0.0515
POSt	(0.1120)	(0.1610)	(0.1678)
Donulation	-2.1364***	-2.3093***	-3.3941***
Population	(0.2354)	(0.3286)	(0.3803)
Population Growth	-0.6544***	-0.4325**	-0.6861***
ropulation Growth	(0.1406)	(0.2026)	(0.2468)
Age	-7.2341***	-6.0315***	-5.2102***
Age	(1.0727)	(1.5785)	(1.8867)
Income	-3.9622***	-5.2874***	-5.4426***
income	(0.5860)	(0.8316)	(0.9562)
Education	2.2928***	2.5939***	3.5449***
Education	(0.1872)	(0.2603)	(0.2987)
# of Newspapers	-1.1528***	-2.2689***	-1.0374
# of Newspapers	(0.4235)	(0.5953)	(0.8504)
R-squared	0.5966	0.5439	0.5603
N	379	361	293

Table 9: Difference-in-Differences Regression Analysis: Dependent Variables Represent the Mean Rate of Each Market Year Calculated Using Different Subsets of Newspapers: Regression (1) Utilizes All Newspapers in the Dataset. Regression (2) Utilizes Newspapers Owned by Postmedia or Metroland. Regression (3) Utilizes Newspapers Owned by Postmedia or Metroland and Operated Both Before and After the Swap Event. Each treatment market is matched with n optimal control markets based on propensity scores, where n is chosen to minimize biases in characteristics. For each treatment market, a synthetic control market is constructed by averaging the characteristics of the n matched control markets. Regression analyses are conducted on the treatment markets and their corresponding synthetic control markets. Treatment markets are defined as swap-affected markets with at least one swapped newspaper closed.

Mean Rate	Mean Rate	P&M Mean Rate	P&M Mean Rate Cross
TreatedPost	0.2610*** (0.0625)	0.4133*** (0.0705)	-0.0529 (0.0515)
Within R-squared	0.0524	0.1030	0.0043
N	379	361	293

Table 10: Regression with Market and Yearly Fixed Effects: Regression (1) Utilizes All Newspapers in the Dataset. Regression (2) Utilizes Newspapers Owned by Postmedia or Metroland. Regression (3) Utilizes Newspapers Owned by Postmedia or Metroland and Operated Both Before and After the Swap Event. Treatment markets are defined as swap-affected markets with at least one swapped newspaper closed.

	Mean Rate	P&M Mean Rate	P&M Mean Rate Cross
TreatedPost	0.2261***	0.3944***	-0.0480
freatedPost	(0.0725)	(0.0811)	(0.0624)
Treated*Year2015	-0.0075	0.0002	0.0434
freated fearzors	(0.0807)	(0.0873)	(0.0760)
Treated*Year2016	-0.0323	-0.0153	0.0203
Treated Tear2010	(0.0813)	(0.0877)	(0.0758)
Treated*Year2017	-0.1330	-0.0782	-0.0391
	(0.0813)	(0.0877)	(0.0758)
R-squared	0.0611	0.1058	0.0084
N	379	361	293

Table 11: Common Time Trend Test: Regression (1) Utilizes All Newspapers in the Dataset. Regression (2) Utilizes Newspapers Owned by Postmedia or Metroland. Regression (3) Utilizes Newspapers Owned by Postmedia or Metroland and Operated Both Before and After the Swap Event. Treatment markets are defined as swap-affected markets with at least one swapped newspaper closed.

7 Conclusion

In recent decades, the newspaper industry has grappled with significant challenges due to market contraction, a result of the rise of the internet and digital news platforms. This shift has garnered considerable attention from both the industry and academic circles. However, the majority of research in this field has focused on daily newspapers. The study of community newspapers and the decline of local news remains largely overlooked by scholars, despite growing concerns about the profound impact of losing local news sources. In 2017, Postmedia and Metroland exchanged ownership of several community newspapers, subsequently closing many of them. Following the swap, a number of markets, previously served by both companies, were left with a single newspaper under the operation of just one of the firms. This sparked concerns regarding consolidation and the potential avoidance of competition, as well as disppearing of local news. On the other hand, the company contends that their objective is to concentrate on areas where their primary business is located, subsequently closing down newspapers in regions that are not their main focus. They believe this approach helps achieve cost savings, particularly given the ongoing challenges in the newspaper industry. To ascertain which of the two factors plays a pivotal role, we sourced data from News Media Canada and AdoReach. We applied matching strategies to minimize potential biases between the treatment and control groups. Following this, we undertook a difference-in-differences analysis using matched control groups to determine the effect on rates after the newspaper swap.

Our regression results suggest that the mean advertising rate in the affected markets surged significantly post-swap. This increase, however, can be attributed to the closure of lower-rated newspapers by Postmedia and Metroland, inadvertently raising the average advertising rate in these swap-impacted markets. While an exploration of the market structure reveals evidence of potential competition avoidance, the rates of newspapers owned by Postmedia and Metroland that survived in the swap-affected regions did not increase significantly. These findings support the idea that Postmedia and

Metroland are primarily cutting operating costs by discontinuing newspapers with lower rates. There is no clear evidence suggesting that competitive series significantly affected the advertising rates of newspapers owned by the two firms.

It is important to underscore that advertising rates in the impacted markets remained elevated following the swap events. This trend poses challenges for existing companies, limiting their access to more economical advertising options. While there is no evidence to suggest that Postmedia and Metroland executed newspaper swaps with the intent of boosting rates for their other ongoing newspapers in these markets, the disappearance of certain publications, particularly those offering lower rates, is a cause for concern. The repercussions extend beyond the simple reduction of news sources. It could also potentially restrict essential advertising avenues for local businesses and government entities.

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