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Do Newspapers Matter? Evidence from the Closure of *The Cincinnati Post*[*]

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Abstract

The Cincinnati Post published its last edition on New Year's Eve 2007, leaving the *Cincinnati Enquirer* as the only daily newspaper in the market. The next year, fewer candidates ran for municipal office in the suburbs most reliant on the *Post*, incumbents became more likely to win re-election, and voter turnout fell. We exploit a difference-in-differences strategy – comparing changes in outcomes before and after the *Post*'s closure in suburbs where the newspaper offered more or less intensive coverage – and the fact that the *Post*'s closing date was fixed 30 years in advance to rule out some non-causal explanations for these results. Although our findings are statistically imprecise, they demonstrate that newspapers – even underdogs such as the *Post*, which had a circulation of just 27,000 when it closed – can have a substantial and measurable impact on public life.

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"Give light and the people will find their own way."

– motto of the E.W. Scripps Co., owner of *The Cincinnati Post*

1 Introduction

A century ago, 689 cities in the United States had competing daily newspapers; at the start of this year, only about 15 did, but one of those has already lost its second newspaper, and two more will likely become one-paper towns within days.[1] Many monopoly newspapers are also struggling financially. The decline in competition and in the newspaper industry as a whole has prompted concern that the nation is losing a crucial source of information about public affairs. In the words of one observer, "More of American life will occur in shadows. We won't know what we won't know."[2]

This paper offers a case study of the consequences of closing a newspaper. *The Cincinnati Post* published its last edition Dec. 31, 2007, leaving the *Cincinnati Enquirer* as the only daily newspaper covering Cincinnati and its suburbs in southern Ohio and northern Kentucky. The closing was particularly important in the northern Kentucky suburbs, where the *Post* historically dominated circulation and, as we document, provided more than 80 percent of the combined local news coverage in the two papers. We use a difference-in-differences strategy to show that the closing of the *Post* reduced the number of people voting in elections and the number of candidates for city council, city commission and school board in the Kentucky suburbs, and raised incumbent council and commission members' chances of keeping their jobs. Our analysis does not include any communities in Ohio, which has not held regular

[1]The 1909-1910 figure is from Busterna and Picard (1993). Today's precise count depends on the definition of competing newspapers. Cities with major competing, separately owned dailies include Boston; Charleston, W.Va.; Chicago; Detroit; Fort Wayne, Ind.; Honolulu; Los Angeles; New York; Salt Lake City; Seattle, where Hearst Corp. plans to sell or close the *Post-Intelligencer* this month; Trenton, N.J.; Tucson, Ariz., where Gannett Co. plans to sell or close the *Citizen* by March 21; York, Pa.; and Washington. Denver fell off the list Feb. 27 when the *Rocky Mountain News* closed.

[2]Tom Rosenstiel, director of the Pew Research Center's Project for Excellence in Journalism, quoted in Starr (2009).

municipal elections since the *Post* closed. We emphasize that because the Kentucky sample is small, our results are subject to substantial statistical uncertainty. In addition, because the *Post* closed less than two years ago, we can calculate only short-run effects. We are circulating the results now because of intense public interest in the state of the newspaper industry. We plan to separately analyze outcomes in Ohio after that state's November 2009 municipal elections.

Our results shed light on two important public policy concerns. First, our findings suggest that even a small newspaper – the *Post* sold about 27,000 copies daily in 2007, compared with 200,000 for the *Enquirer* – can make local politics more vibrant. Although competing publications or other media such as TV, radio and blogs may take up some slack when a newspaper closes, none of these appears so far to have fully filled the *Post*'s role in municipal politics in northern Kentucky. Our findings confirm the fears of community leaders such as Boone County Judge-Executive Gary Moore, who said on learning of the *Post*'s impending closure: "I'm very concerned about Northern Kentucky news getting to our constituents. The *Post* has done a wonderful job through the years of being the daily informant of what's going on in the community to our residents" (Duke, 2007). To the extent that our findings apply beyond Cincinnati, they also suggest that local politics will become less competitive after closures of the much larger second newspapers in cities such as Denver (where the *Rocky Mountain News* shut down Feb. 27) and Seattle (where the *Post-Intelligencer* is expected to close within weeks) or of monopoly newspapers in places such as San Francisco (where Hearst Corp. has threatened to close the *Chronicle* if it cannot cut costs).

Second, the *Post*, an afternoon newspaper whose weekday circulation fell nearly 90 percent in its last 30 years,[3] survived as long as it did thanks to an implicit government subsidy for newspaper competition. Under the Newspaper Preservation Act (1970), competing news-

[3]According to the *Editor and Publisher International Yearbook*, the *Post*'s Ohio and Kentucky editions had total Monday-to-Friday circulation of 246,323 in 1977. The decline was linear with time. The *Enquirer*'s weekday circulation in 1977 was 190,407.

papers that are in "economic distress" can obtain an exemption from antitrust laws and form a joint operating agreement (JOA) that charges monopoly prices for subscriptions and advertising, as long as the papers retain independent newsrooms. The *Post* and the *Enquirer* formed a JOA in 1977. In passing the act, Congress determined that the value for democracy of preserving independent editorial voices outweighed the potential deadweight losses from monopoly pricing.[4] As then-Rep. Spark Matsunaga, Democrat of Hawaii and a sponsor of the act, put it in House debate: "Let us make no mistake about it, we are here being forced into making a choice between preserving a free press as opposed to keeping the sanctity of the antitrust laws. In a democratic society such as ours the choice is obvious – the free press must be preserved" (Matsunaga, 1970). Despite the explicit congressional rationale for the Newspaper Preservation Act, and even though 27 JOAs have existed over the years, ours is the first analysis we know of to measure the political impact of preserving competition through a JOA.[5]

The JOA between the *Post* and the *Enquirer* is central to our empirical strategy. Figure 1 lays out the timeline of events. Like most JOAs, the Cincinnati agreement specified a terminal date, in this case Dec. 31, 2007. Unusually, though, the *Post* survived exactly until this date chosen 30 years in advance, and no longer. (Of the 19 other JOAs that have ended so far, 15 ended early when the owners decided that publishing two newspapers was unprofitable and closed one paper. The other four lapsed or were dissolved with both newspapers continuing to publish.) The *Enquirer*'s owner, Gannett Co., announced in January 2004 that it would not renew the agreement at the terminal date, suggesting that Gannett thought publishing two newspapers no longer maximized joint surplus. (If Gannett had merely thought that profits from going it alone would exceed its share of JOA profits,

[4]Newspapers in a JOA also combine their printing and delivery operations to exploit economies of scale, but publishers can obtain these savings without an antitrust exemption so long as they continue to compete in advertising and subscription sales.

[5]An existing literature investigates the effect of JOAs on newspaper content and profits (see, e.g., Busterna and Picard, 1993).

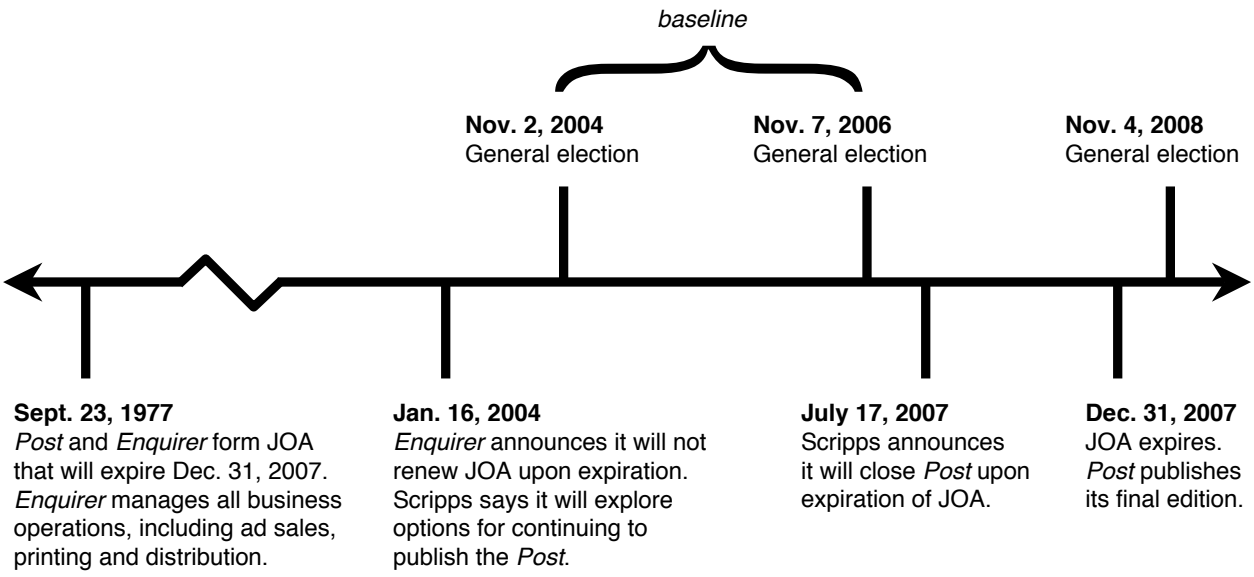

Figure 1: Key events for the empirical strategy.

it could have tried to renegotiate the agreement.) But the E.W. Scripps Co., owner of the *Post*, apparently preferred to keep publishing: Instead of agreeing with its partner to close the *Post* before the end of the JOA, as has been typical in other cities,[6] Scripps said it would explore "whatever options it may have to continue publishing newspapers in the Cincinnati market in some form" (E.W. Scripps, 2004). These options proved unattractive because, with the *Enquirer* managing the JOA's business operations, Scripps would have had to buy printing presses and hire advertising and circulation salespeople to keep the *Post* open. Still, Scripps took more than three years to announce that it would close the paper (E.W. Scripps, 2007).

The *Post*'s central role in Scripps' history may have motivated the company's reluctance. Company namesake Edward Willis Scripps made his reputation in the 1880s when he bought the *Post* and built it into what was, at the time, Ohio's largest daily (Baldasty, 1999; Stevens,

[6]Full disclosure: The first author worked from 1998 to 1999 at the *Birmingham (Ala.) Post-Herald*, a Scripps newspaper that participated in a JOA and later closed.

1969). The family-controlled media chain's headquarters remain in Cincinnati, and many corporate executives once worked in the *Post* newsroom. But even if Scripps' decision has an explanation other than historical sentiment, it seems unlikely that Scripps chose the *Post*'s exact closing date near the actual time of the closing.[7] Rather, the JOA partners picked a date 30 years in advance, and the *Post* closed on that date because it was the default outcome if the partners never changed the agreement.

Because the *Post*'s closing date was fixed so far in advance, changes in local politics after early 2004 – when Gannett announced it would not renew the JOA – cannot have caused the paper to close exactly when it did. Third factors such as short-run municipality-level economic fluctuations that might affect both local politics and the paper's viability are also less likely to be responsible for the timing of the closing, though Scripps perhaps would have kept the paper open if the towns it covered had experienced a sudden economic boom. Therefore, we can more plausibly attribute changes in political outcomes after the *Post* closed to the paper's closing instead of some other source. To help rule out the possibility that the political changes occurred for other reasons and only randomly coincided with the *Post*'s closure, we employ a difference-in-differences strategy, comparing changes in political outcomes before and after the closure in suburbs that received relatively more or less coverage from the paper. Suburbs that received less coverage serve as controls representing the likely change between 2004 and 2008 if the *Post* had never existed. We also account for the possibility that political outcomes and *Post* coverage both responded to the 2004 announcement on the paper's future by instrumenting for post-2004 coverage with 2003 coverage.

Previous researchers have also studied newspapers' political impact. Adserà et al. (2003) use cross-country and cross-state regressions to show that places with higher newspaper circulation per capita have less corruption. Trounstine (2009) collects data on 7,000 U.S. cities and finds that incumbent advantage is lower in cities that have their own daily or weekly

[7]The company has not publicly explained the timing of its decision to close the *Post*.

newspaper. Erikson (1976), Kahn and Kenney (2002), Knight and Chiang (2008) and many others show that newspaper endorsements influence voters' preferences and choices. In all these studies, there is no exogenous variation in newspapers' availability or content, either across communities or over time. The studies therefore run the risk that the correlations do not reflect a causal impact of newspapers: Unobserved third factors may influence both newspapers and electoral outcomes, or the causality may run from political preferences to newspaper content and readership rather than the other way around. Our difference-in-differences strategy helps reduce such concerns, though at the cost of limiting the analysis to a small number of municipalities in just one state.

The paper proceeds as follows. Section 2 summarizes our data, section 3 lays out our empirical strategy and results, and section 4 concludes.

2 Data

Our analysis covers all 48 incorporated municipalities in seven Kentucky counties: Boone, Campbell and Kenton, which formed the core of the *Post*'s Kentucky circulation area, as well as Bracken, Gallatin, Grant and Pendleton, which border the core counties.[8] We have data on the number of stories about each municipality in both the *Post* and the *Enquirer* in each year from 2003 to 2007; the results of every school board, city council and city commission election from 2004 to 2008;[9] and demographics from the 2000 census.

2.1 Newspaper coverage

We obtain the story counts by searching NewsLibrary (`www.newslibrary.com`), a widely used newspaper database. In the searches, we include the county name in addition to

[8] Our sample excludes the former city of Latonia Lakes, Kenton County, which was dissolved in 2006.

[9] We exclude mayoral elections because only three municipalities in our sample have held mayoral elections since the *Post* closed.

the municipality name to avoid counting irrelevant stories that would otherwise appear for municipalities with generic names such as Union. To see whether certain kinds of stories disproportionately include the county name, we picked two municipalities at random and performed searches with and without their respective county names. We found no salient differences in the content of stories with and without county names.

The *Post* published both an Ohio edition and a Kentucky edition, with some stories appearing in both editions. In general, the Kentucky edition provides a more accurate measure of coverage in Kentucky. However, every Kentucky-edition story appears in our searches for the city of Covington because the *Post*'s Kentucky reporters were based there. Therefore, for all municipalities except Covington, we count stories in the Kentucky edition. For Covington, we count stories in the Ohio edition and multiply by that year's average ratio in other municipalities of Kentucky-edition stories to Ohio-edition stories. (This ratio ranges from 6 to 10.)

We use the story counts to construct an index of the *Post*'s importance in covering each municipality: the fraction of stories about that municipality that appeared in the *Post*. This index is a useful measure of the *Post*'s role because, all else equal, communities where the *Post*'s share of coverage was higher lost more coverage when the *Post* closed. (We cannot base our analysis on circulation data because independent dealers delivered the *Post* and the paper had no centralized list of subscribers' addresses. Also, because broadcasters and bloggers often quote newspaper stories, the number of stories a paper publishes may matter more than the number of subscribers: One subscriber with a well-read blog or popular broadcast can multiply a story's impact many times.) The *Post*'s share of coverage is highly serially correlated: R-squareds in regressions of 2004 through 2007 indexes on the 2003 index range from 0.71 to 0.83. Thus the index measures relatively permanent differences in the *Post*'s importance across municipalities.

2.2 Political outcomes

News coverage potentially influences election outcomes in many ways. By revealing incumbents' misdeeds or making it easier for challengers to get their message out, a newspaper may reduce incumbent advantage. Newspaper stories could also raise interest in politics, inspiring more people to vote or run for office.

To measure these aspects of political engagement and competition, we obtained election records from county election supervisors for every municipality in the counties of interest. The records include the date of the election; the election type (general or primary); the name of the municipal body (for instance, City of Bromley or Covington Independent School District); the title of the elected office (for instance, city council member); the candidates' names and party affiliations (we find that virtually all candidates for local races are nonpartisan); the number of votes each candidate received; the identities of the winners; and the number of votes each voter could cast (some elections allow voters to cast multiple votes, corresponding to multiple seats).

Election records do not identify incumbents, so we determine whether a candidate is an incumbent by checking whether that candidate won the previous election for the same office. We verified a random sample of the results by contacting officeholders and found that our method was accurate. Because we do not have election data before 2004, we can identify incumbents only in 2006 and 2008. We therefore examine only city council and city commission elections, which are for two-year terms.

We use the election dataset to construct several measures of political engagement and competition. Our first measure is the estimated number of people who voted in each municipality's local races in the 2004 and 2008 general elections. The 2004 and 2008 elections should be more comparable than the 2006 and 2008 elections when examining voter turnout because 2004 and 2008 were presidential election years, while 2006 was not. In addition, school board elections are for four-year terms, so comparing elections four years apart guar-

antees that we are comparing races for the same office. Because election records do not show the actual number of voters, we construct our estimate in two steps. For each race on the ballot, we estimate the number of voters casting ballots in that race as the larger of the most votes received by any candidate or the ratio of total votes cast to the number of votes allowed per voter in that race. We then estimate the number of voters in the election by the maximum across races of the number of voters in each race. There is no municipal-level data on voting-age population after 2000 for the small suburbs in our sample, so we use the number of voters as a proxy for turnout.

Our second measure is the ratio of candidates for office to seats up for election. For each municipality and year, we count the people whose names appeared on a primary or general election ballot. We divide this number by the number of seats up for election. As with the number of voters, we construct this variable for 2004 and 2008.

Our third measure is the fraction of seats in a municipality that incumbents win in a given year. We measure incumbent advantage by the fraction of seats won by incumbents rather than by the difference in probabilities of winning for non-incumbents and incumbents conditional on running because unpopular incumbents might not seek re-election; in that case, incumbents who appeared on the ballot would have a high probability of winning even if voters were, in effect, throwing out many other incumbents.

2.3 Describing the data

Table 1 gives summary statistics. The municipalities range in size from the city of California, voting-age population 55 in 2000, to Covington, voting-age population 32,151. The *Post* dominated coverage of the Kentucky suburbs, publishing 84 to 87 percent of total stories in each year. But there was substantial variation in the *Post*'s importance across municipalities, with the two papers splitting coverage of some places roughly equally and the *Post* publishing 100 percent of stories about other places. The data on incumbent

Table 1: Summary statistics ($N = 48$ municipalities).

Variable	mean	s.d.	min	max
Enquirer articles				
2003	37.1	38.7	1	154
2004	36.2	40.9	0	163
2006	24.4	28.2	0	128
Post articles				
2003	173.3	208.0	7	1,310
2004	200.2	220.3	14	1,361
2006	160.6	198.1	8	1,270
Post share				
2003	0.82	0.11	0.33	0.97
2004	0.86	0.09	0.55	1.00
2006	0.87	0.11	0.47	1.00
Fraction of seats won by incumbent				
2006	0.63	0.21	0.00	1.00
2008	0.73	0.18	0.33	1.00
change	0.10	0.25	-0.33	1.00
Voters				
2004	1,610	1,995	20	9,273
2008	1,700	2,106	29	9,203
log change	0.09	0.34	-0.32	1.98
Ratio of candidates to seats				
2004	1.41	0.39	1	2.83
2008	1.36	0.38	1	2.71
change	-0.05	0.38	-0.83	1
Voting-age population, 2000	3,959	5,728	55	32,151
Voting-age percent black, 2000	1.2	1.7	0.0	8.8
Voting-age percent ages 18-34, 2000	31.9	5.7	21.1	50.0

advantage and the ratio of candidates to seats begin to tell our story about the *Post*'s impact: On average, incumbents were more likely to win and the ratio of candidates to seats was lower after the *Post* closed than before. Our task in the next section is to demonstrate that other factors that may have changed around the time of the *Post*'s closure did not cause the differences in incumbent advantage and ratio of candidates to seats. The data on voters

go the other way: More people voted after the *Post* closed than before. However, the 2008 presidential election had unusually high turnout. We show below that, controlling for the overall change in turnout, the number of voters fell in municipalities where the *Post* had dominated coverage.

3 Empirical strategy and results

Our basic model for the effect of *Post* coverage on an outcome y_{it} in municipality i in year t is:

$$y_{it} = \alpha_i + (\theta_0 + \mathbf{x}_i'\boldsymbol{\theta}_2)t + \theta_1 postshare_{it} + \epsilon_{it}, \tag{1}$$

where *postshare* is the *Post*'s share of all stories about the municipality, $\mathbf{x}_i$ represents demographic characteristics of the municipality and ϵ_{it} is all factors other than *postshare* that affect the outcome. The coefficient θ_1 represents the effect of an increase in the *Post*'s coverage share on the outcome. If we interpret *postshare* as a proxy for the importance of the *Post* to a particular community, a positive value of θ_1 implies that outcome y was higher in communities where the *Post* played a larger role. Closing the *Post* sends *postshare* to zero, so θ_1 is also the effect of closing the *Post* in a community that got all its coverage from the *Post*. We use the *Post*'s share instead of the total number of stories in the *Post* because larger municipalities may tend to have more stories in both newspapers. Taking the ratio of stories in the two papers controls for the overall level of coverage while limiting the number of regressors, which is desirable because we have only 48 observations.

Our model allows municipalities to differ both in the initial level of their outcomes (α_i) and in trends in these outcomes over time ($\mathbf{x}_i'\boldsymbol{\theta}_2 t$). For example, some municipalities might generally have higher turnout or might have demographic characteristics that led to larger changes in turnout between 2004 and 2008. Because $postshare_{i,2008}$ is zero for every munici-

pality, we can take first differences of our model to obtain

$$y_{i,2008} - y_{i,2004} = \theta_0 - \theta_1 postshare_{i,2004} + \mathbf{x}_i'\boldsymbol{\theta}_2 + (\epsilon_{i,2008} - \epsilon_{i,2004}). \quad (2)$$

Equation (2) represents a difference-in-differences strategy: It compares changes in outcomes across years in municipalities with different levels of *Post* coverage.

The error term in (2) is $(\epsilon_{i,2008} - \epsilon_{i,2004})$. Hence ordinary least squares estimates of θ_1 based on (2) will be biased if changes in other factors $(\epsilon_{i,2008} - \epsilon_{i,2004})$ are correlated with the initial level of *Post* coverage. The fact that the *Post*'s closing date was set 30 years in advance helps rule out many sources of correlation. For example, if Scripps had chosen the closing date based on economic trends around 2007 in the communities where the *Post* was strong, and if local economic trends were correlated with local political trends, then the error term would be correlated with the *Post*'s share in 2004. Because Scripps appears not to have set the closing date based on contemporaneous economic trends, we think this type of correlation is unlikely to be a problem.

Other sources of correlation may remain, however. Although first-differencing removes any differences between 2004 and 2008 that affected all municipalities equally, it cannot remove differences between the two years that affected some municipalities more than others. Our leading concern is that Barack Obama's historic presidential candidacy in 2008 may have increased turnout among young or black voters. Kentucky and national exit polls showed that blacks made up a larger fraction of voters in 2008 than in 2004. National polls also showed a slight increase in turnout among the young, though Kentucky polls showed no such difference. (See National Election Pool, 2004 and 2008. The polls show no other significant differences between the 2004 and 2008 electorates in Kentucky.) Exit polls do not break down data by municipality, but if the statewide and national differences carried through to the places we study, and if *Post* coverage varied with the age structure or racial

composition of a community,[10] then *postshare* could be correlated with the error term in (2) even if *Post* coverage had no causal effect on turnout. We account for this possible correlation by including as regressors $\mathbf{x}_i$ in (2) the fraction of voting-age people who are black and the fraction who are ages 18 to 34 in the 2000 census.[11] While Obama's candidacy is an important difference between 2004 and 2008, other differences between the years may remain and may have interacted with demographics we do not observe. The possibility of such interactions is an important caveat to all difference-in-difference studies, including ours.

Another concern is that any unobserved factor ϵ_{2004} that affected politics in 2004 could also have prompted the newspapers to change their coverage, again producing a correlation between the error term and the *Post*'s coverage share in 2004. If political behavior and *Post* or *Enquirer* content both changed after 2004 in anticipation of the JOA's end, we could also find a spurious correlation. To guard against these possibilities, in some specifications we instrument for the *Post*'s 2004 share with its 2003 share, which will be uncorrelated with ϵ_{2004} if the errors are serially uncorrelated. Instrumenting for the *Post*'s share also can reduce attenuation bias in the estimate of θ_1 if the *Post*'s share in any given year is a noisy measurement of the paper's true long-run importance in a community. The measurement error in $postshare_{it}$ appears to be classical: $\text{corr}(postshare_{it}, postshare_{is})$ does not depend on $t - s$ for $t \neq s$, consistent with a model where $postshare_{it} = trueshare_i + u_{it}$ with i.i.d. u_{it}.

Finally, ordinary least squares and instrumental variables models may be misspecified because each of our dependent variables has only a limited range. For example, no matter how low the local level of interest in politics, someone always runs for office, so the ratio of candidates to seats is left-censored at one; we account for the censoring in some specifications by estimating (2) with the identically censored least squares (ICLS) panel data

[10] We find marginally statistically significant evidence that the *Post*'s share was higher in communities where a larger share of the voting-age population is black or ages 18 to 34.

[11] We measure the fraction who are ages 18 to 34 as of 2000, rather than the fraction who will reach ages 18 to 34 by 2008, because the number of teenagers in 2000 will be a poor predictor of the number of young adults in 2008 if different communities are particularly attractive to people of different ages.

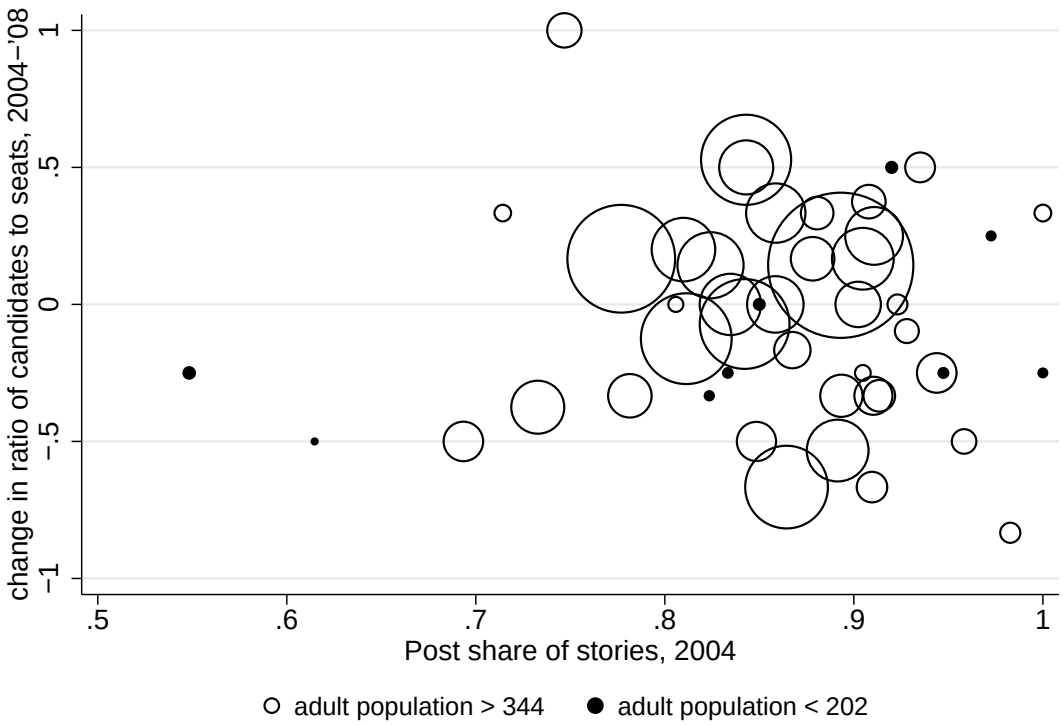

Figure 2: *Post* story share and changes in the number of candidates. Each observation is a municipality. The area of the circle is proportional to the municipality's voting-age population in 2000.

estimator of Honoré (1992). Related, no matter how big or small incumbents' advantage is, the probability of an incumbent victory cannot fall below zero or exceed one, so we employ the two-sided identically censored least squares (ICLS2) estimator of Alan et al. (2008) in some specifications. Last, the number of voters must be a positive integer; because the zero bound on number of voters never binds, OLS is unbiased, but a count model would be more efficient, and we estimate a Poisson conditional fixed effects model in some specifications. Unfortunately, these models do not let us use an instrument for *Post* coverage.

Figure 2 illustrates the regression in (2), for the outcome of ratio of candidates to seats. The general pattern is that municipalities with a higher share of *Post* stories experienced a larger drop in the competitiveness of elections, suggesting that the *Post*'s closure reduced competitiveness. However, a few municipalities with voting-age populations of about 200 or

fewer are outliers, and if one counts all municipalities equally, these outliers could suggest the opposite pattern – no change or a small increase in competitiveness after the *Post* closed. Similar patterns appear when we graph the other outcomes. We conjecture that voters in the smallest communities can easily learn about candidates, who are also their neighbors, without the aid of newspaper reporters; thus newspapers likely matter more outside the smallest communities. We also think it is reasonable to weight municipalities by voting-age population because we may be more concerned about a newspaper's impact in places where more people live. Because some readers may disagree, though, we also calculate unweighted estimates as well as estimates that exclude the smallest municipalities.

Table 2 presents the results.[12] On all three measures of political engagement and competition, we find indications that the *Post*'s closure made elections less competitive:

Incumbent advantage: In the weighted estimates using all methods, municipalities where the *Post* was more important experienced a greater increase in incumbent advantage after the *Post* closed. However, if we do not weight by voting-age population, the relationship has a smaller magnitude and the opposite sign. The estimated effect is highly statistically significant in the weighted IV specifications. The point estimate in these specifications is implausibly large – changing the *Post*'s share from one to zero would raise incumbent advantage by more than 100 percentage points. (Recall that the sign of θ_1 is the opposite of the sign of the regression coefficient in (2).) Notice, though, that the range of *postshare* is substantially less than zero to one; our estimates will not reflect nonlinearities in the effect of *postshare* outside the observed range. According to the weighted IV estimates, a one-standard-deviation increase in the *Post*'s share reduces incumbent advantage by 16 to 19 percentage points, still large but not impossible.

[12]To be conservative, the table reports the larger of the heteroskedasticity-robust standard error or the non-robust standard error for each coefficient. Given the small sample size, we do not attempt to account for spatial correlation.

Table 2: Effect of the *Post* on political engagement and competition.

	UNWEIGHTED						WEIGHTED					
							A. Change in probability that winner is incumbent					
Post share	-0.52	-0.53	-0.30	-0.30	-0.68	-0.71	0.82	0.64	1.90	1.65	0.91	0.75
of stories	(0.37)	(0.38)	(0.37)	(0.38)	(0.58)	(0.57)	(0.62)	(0.63)	(0.77)	(0.76)	(0.69)	(0.77)
R-squared	0.05	0.07	0.04	0.06	-	-	0.05	0.09	-	0.02	-	-
method	OLS	OLS	IV	IV	ICLS2	ICLS2	OLS	OLS	IV	IV	ICLS2	ICLS2
							B. Change in ln(voters in general election)					
Post share	-0.31	-0.28	-0.14	-0.07	-0.45	-0.34	-0.36	-0.20	-0.51	-0.31	-0.78	-0.31
of stories	(0.55)	(0.56)	(0.65)	(0.64)	(0.44)	(0.43)	(0.35)	(0.36)	(0.43)	(0.42)	(0.22)	(0.23)
R-squared	0.01	0.02	0.00	0.02	-	-	0.02	0.07	0.02	0.07	-	-
method	OLS	OLS	IV	IV	Poiss.	Poiss.	OLS	OLS	IV	IV	Poiss.	Poiss.
							C. Change in ratio of candidates to seats					
Post share	0.07	0.07	0.29	0.22	0.08	0.06	-0.24	-0.69	-1.02	-1.23	-0.32	-1.39
of stories	(0.65)	(0.67)	(0.72)	(0.72)	(0.75)	(0.73)	(0.96)	(1.08)	(1.36)	(1.12)	(1.31)	(1.46)
R-squared	0.00	0.00	-	0.00	-	-	0.00	0.11	-	0.10	-	-
method	OLS	OLS	IV	IV	ICLS	ICLS	OLS	OLS	IV	IV	ICLS	ICLS
N	48	48	48	48	48	48	48	48	48	48	48	48
controls	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes

Standard errors (larger of heteroskedasticity-robust or non-robust) in parentheses. Panel A compares 2008 with 2006; panels B and C compare 2008 with 2004. *Post* share of stories is measured in the base year of the comparison, with the 2003 share used as an instrument for IV estimates. Weights are population age 18 and older in 2000 census. Controls are percentage of the population age 18 and older who are black and who are ages 18 to 34.

Number of voters: In all specifications, our point estimates show that relatively fewer people went to the polls after the *Post* closed in places where the *Post* was more important. A one-standard-deviation increase in the *Post*'s share is predicted to draw 1 to 8 percent more voters to the polls. The results are highly statistically significant in one of the weighted Poisson specifications but not statistically significant otherwise. Because our dependent variable is the natural logarithm of the number of voters, we can interpret our results as describing the effect on turnout: Changes in voting-age population, which is unobserved but is the denominator of turnout, will enter the error term of (2), and our estimates will be unbiased if the population growth rate is uncorrelated with the *Post*'s coverage share.[13]

Number of candidates: The weighted estimates show that relatively fewer people ran for office after the *Post* closed in places where the *Post* was more important. According to the IV estimates, a one-standard-deviation increase in the *Post*'s share raised the ratio of candidates to seats by about 0.1. A few of the coefficients are marginally statistically significant against a one-sided alternative. As with incumbent advantage, the relationship has the opposite sign and smaller magnitude in the unweighted estimates.

Controlling for race and age structure proves not to affect the results. In regressions not reported here, we controlled only for race and obtained similar results. The small sample size makes the dangers of specification searching particularly high, so we deliberately did not experiment with other controls.

Table 3 investigates the effect of weights on our results by recalculating all of the estimates after excluding the nine municipalities with voting-age populations of 201 or fewer. (The next-smallest municipality has 345 voting-age residents.) The weighted and unweighted

[13]We cannot check this assumption about population growth because the Census Bureau has no population counts after 2000 for communities as small as those we study.

Table 3: Results excluding nine smallest municipalities.

	UNWEIGHTED						WEIGHTED					
							A. Change in probability that winner is incumbent					
Post share	-0.44	-0.42	0.32	0.35	-0.48	-0.46	0.94	0.77	2.20	1.98	1.01	0.86
of stories	(0.85)	(0.85)	(0.65)	(0.73)	(0.84)	(0.86)	(0.67)	(0.69)	(0.83)	(0.86)	(0.71)	(0.85)
R-squared	0.02	0.04	-	-	-	-	0.06	0.10	-	0.01	-	-
method	OLS	OLS	IV	IV	ICLS2	ICLS2	OLS	OLS	IV	IV	ICLS2	ICLS2
							B. Change in ln(voters in general election)					
Post share	-0.85	-0.86	-1.03	-0.95	-0.49	-0.38	-0.40	-0.24	-0.58	-0.39	-0.78	-0.31
of stories	(0.82)	(0.86)	(0.94)	(0.94)	(0.46)	(0.46)	(0.38)	(0.40)	(0.47)	(0.47)	(0.22)	(0.24)
R-squared	0.03	0.05	0.03	0.05	-	-	0.03	0.08	0.02	0.07	-	-
method	OLS	OLS	IV	IV	Poiss.	Poiss.	OLS	OLS	IV	IV	Poiss.	Poiss.
							C. Change in ratio of candidates to seats					
Post share	-0.98	-1.02	-1.54	-1.53	-1.37	-1.61	-0.30	-0.79	-1.23	-1.50	-0.39	-1.48
of stories	(1.17)	(1.24)	(1.54)	(1.52)	(1.50)	(1.68)	(1.04)	(1.16)	(1.51)	(1.26)	(1.44)	(1.59)
R-squared	0.03	0.03	0.02	0.03	-	-	0.00	0.11	-	0.10	-	-
method	OLS	OLS	IV	IV	ICLS	ICLS	OLS	OLS	IV	IV	ICLS	ICLS
N	39	39	39	39	39	39	39	39	39	39	39	39
controls	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes

Standard errors (larger of heteroskedasticity-robust or non-robust) in parentheses. Panel A compares 2008 with 2006; panels B and C compare 2008 with 2004. *Post* share of stories is measured in the base year of the comparison, with the 2003 share used as an instrument for IV estimates. Weights are population age 18 and older in 2000 census. Controls are percentage of the population age 18 and older who are black and who are ages 18 to 34.

versions of each specification almost always have the same sign within the restricted sample, confirming that the main effect of weighting the data is to reduce the influence of a few small suburbs. This finding supports our conjecture that newspapers simply have a different impact in very small communities: Where the candidates and voters are neighbors, voters can get the news without a newspaper.

4 Conclusion

The logo of the E.W. Scripps Co., printed on the front page of all its newspapers, is a lighthouse. This paper describes what happened when one of Scripps' lights went out. *The Cincinnati Post* was a relatively small newspaper, with circulation of only 27,000 when it closed. Nonetheless, its absence appears to have made local elections less competitive along several dimensions: incumbent advantage, voter turnout and the number of candidates for office. We caution that although our preferred point estimates tell a compelling story, the results are statistically imprecise and sometimes sensitive to the treatment of very small municipalities. Further, our results cover only the Kentucky suburbs, because Ohio has not held regular municipal elections since the *Post* closed, and represent only the short-run consequences of the paper's closing. Future research could investigate whether political engagement and competition return to their pre-closure level in the long run.

Several other well-known newspapers have closed since the *Post* – the largest being Scripps' *Rocky Mountain News*, circulation 210,000, just last month – and more are in danger. Observers are energetically debating whether these closings matter: Do newspapers play a valuable, irreplaceable role in American democracy, or can new media fill the gap left when a paper closes? Starr (2009) argues that the newspaper industry's decline "raises practical questions for anyone concerned about the future of American democracy." On the other hand, after the *Rocky* closed, U.S. Rep. Jared Polis, Democrat of Colorado, said the

paper's demise was "mostly for the better" (Crummy, 2009). Whether our results support Starr's view or Polis' depends on how one values competitive elections. But if voter turnout, a broad choice of candidates and accountability for incumbents are important to democracy, we side with those who lament newspapers' decline.

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