Strategic Government Communication About Performance*

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Abstract

A great deal of research presents the correspondence between economic conditions and incumbent electoral fortunes as evidence of democratic accountability. A central theoretical mechanism for this phenomenon is that voters have information about performance. Using communications data consisting of more than 110,000 government press releases from cities in the U.S. combined with fine-grained economic and crime data, I leverage the breadth of local variation in conditions to assess the inputs to this mechanism behind accountability. I provide causal evidence that government communication changes as a result of performance in a strategic manner: local politicians are more likely to communicate about both economic conditions and crime when performance is improving — better wages and less crime — than when performance is worse. These findings add direct evidence from the underutilized area of local politics that politicians strategically communicate in a way that threatens accountability.

Keywords: accountability, retrospective voting, political communication, economy, crime, local politics

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Democratic accountability relies on the ability of citizens to judge the performance of governments and reward or punish the responsible politicians at the ballot box. Theoretically, this feedback loop is normatively appealing because it incentivizes politicians to respond to the preferences of their constituents. In turn, via regular elections, it helps citizens get policies that represent their wishes.

The correspondence between economic conditions and the voteshare of incumbent politicians is often used as evidence of this type of democratic accountability. Yet this research is far from conclusive: it has often indicated a mild connection between performance and voting patterns, or one that is dependent on certain conditions. Much of the research on the subject focuses on the information environment, and suggests that the media may play a crucial role in enabling accountability by giving voters information about performance.

Political communication may also influence this process. This communication may enable citizens to directly learn about politicians' performance. Yet conventional wisdom in political science holds that politicians communicate strategically with their constituencies (e.g., Fenno, 1978; Mayhew, 1974). This strategic communication may allow politicians to present information about their own performance in order to emphasize positive performance. Though the news media and people's own knowledge and experiences, among other factors, may be counterbalancing forces to this communication, some citizens may still form opinions and choose representatives based on it. Democratic accountability relies on the ability of voters to select politicians through elections, but if they base these decisions on a distorted picture of their representatives' performance then this may not be fulfilled.

Existing scholarly attention to the communication and representational styles of politicians has focused largely on members of Congress and the President. Less attention has been given to the communication patterns of politicians at other levels of government, such as in cities, despite the fact that such levels of government provide the greater variation needed to empirically test many theories of political communication. The wide variation in the performance of local politicians provides an opportunity to test political communication's role

in a central theory of political accountability.

In this paper, I gather a large-scale dataset of political communication in cities in the United States to directly answer questions about politicians' strategic behavior. Using a temporally dense and geographically broad database of over 110,000 municipal press releases in large cities, I examine patterns in local politicians' communication. I combine these data with fine-grained economic and crime data to assess one mechanism behind retrospective voting — that of the informational inputs to voter knowledge. Using panel "difference-in-differences" models that take advantage of within-city variation in performance, I show that politicians communicate more about the economy when economic performance is improving. On the other hand, when economic performance becomes worse, they communicate less about it. In contrast, they communicate more about crime when violent crime rates fall, and less when crime rates rise. Politicians communicate strategically in a way that may therefore over-emphasize positive performance and contribute to failures of retrospective voting. This pattern may help to explain evidence elsewhere showing that accountability for performance is limited or conditional on other factors, especially in local elections.

This paper proceeds as follows. First, I discuss previous research on retrospective voting and the mechanisms behind it, including politicians' communication and representational styles. Next, I introduce the original press releases data, along with my sources of economic and crime data and my research design. I then discuss my findings and demonstrate how politicians strategically communicate about both economic growth and crime. Finally, I briefly conclude and discuss the implications for future research on accountability, political communication, and urban politics.

Background

Central in scholarly discussions of electoral accountability is the observation that incumbent electoral fortunes often correspond with economic conditions. Such economic voting is an

example of the more generalized phenomenon of retrospective voting, in which voters reflect on past performance in their evaluations of incumbent candidates or parties. For decades, researchers have documented this pattern using data from national (e.g., Fiorina, 1978; Tufte, 1978), state (e.g., Peltzman, 1987; Ebeid and Rodden, 2006), and local elections (Arnold and Carnes, 2012; Berry and Howell, 2007; Hopkins and Pettingill, 2018). This kind of performance-driven accountability is generally assumed to lead to normatively favorable outcomes.[1]

The evidence of this phenomenon has resulted in a number of contingent theories. Recent examinations of this question that have evaluated retrospective voting across levels of government have identified small but consistent effects of local economic conditions on incumbents' electoral fortunes (de Benedictis-Kessner and Warshaw, 2020*a*). Yet previous research on retrospective voting has claimed that different types of economic circumstances affect evaluations of government — either personal economic conditions (e.g. Fiorina, 1978), or generalized, societal conditions (e.g. Kinder and Kiewiet, 1981). Moreover, while survey data has often documented a robust relationship between subjective evaluations of the economy and approval of the national government, similar evidence in state and local elections has been more mixed. Why has an area with such devoted scholarly attention come to such mixed conclusions?

One central contingency that researchers have focused on is access to information about performance. Especially when research has relied on election data, it has demonstrated that retrospective voting is dependent upon information. When more information is available to voters – and it is of better quality — voters may be better able to make retrospective judgments (Berry and Howell, 2007; Hopkins and Pettingill, 2018). The news media may play an important role in providing this type of information to voters (e.g. Bisgaard, Dinesen, and Sønderskov, 2016; Snyder and Strömberg, 2010; Reeves and Gimpel, 2012; Soroka, Stecula, and Wlezien, 2015). Especially in local elections, where information is less easily available

[1]Though, see Ashworth and Bueno de Mesquita (2014) for a theory that this may counterintuitively lead to worse outcomes.

(Bernhard and Freeder, 2020; Crowder-Meyer, Gadarian, and Trounstine, 2020) and attribution of responsibilities more difficult (Arceneaux, 2006; de Benedictis-Kessner, 2018; Sances, 2017), the provision of additional information may be crucial in enabling democratic accountability.[2] When provided by an impartial source, we might expect that accurate information enables better voting decisions (Kogan, Lavertu, and Peskowitz, 2016).

At the same time, longstanding wisdom in political science holds that politicians behave strategically to best ensure their reelection (Mayhew, 1974). Political communication is often used to secure this support among the electorate. Politicians might selectively communicate about certain events to proactively define the standards on which they are judged by voters (Fenno, 1978; Grose, Malhotra, and Van Houweling, 2015). Mayhew (1974) describes a subset of this communication as credit-claiming, whereby politicians highlight the work they have done on behalf of their constituents. In contrast, they may also attempt to shift blame to others for negative outcomes (Hellwig and Coffey, 2011; McGraw, 1991). This credit-claiming and blame-shifting communication might distort the information environment for voters. It could cause voters to pay more attention to the topics elites communicate about, or cause them to interpret performance differently (Bisgaard and Slothuus, 2018) — especially in the absence of other information from media coverage or opposing campaigns. Voters may therefore judge those politicians based on a biased version of performance. This dynamic could explain the conditional evidence of retrospective voting, especially in subnational elections. Assessing whether this potential fault in accountability exists, however, requires empirical comparison of communication patterns and objective performance.

Much of the research on politicians' strategic communication has relied on indirect evidence of credit-claiming. In particular, it has focused on legislators' *spending* behavior to demonstrate that representatives in Congress and elsewhere spend money on projects for which they can later claim credit (e.g., Evans, 1994; Shepsle and Weingast, 1981). This

[2]Structural factors, such as incumbent tenure (Larsen, 2019), and individual-level factors, such as voter sophistication (Alt, Lassen, and Marshall, 2016), motivated reasoning (e.g. Bisgaard, 2015) or personal contact with the housing market (Larsen et al., 2019), may also play a role in voters' abilities to hold local governments accountable.

spending, often in the form of strategically-targeted pork-barrel projects, can help an incumbent subsequently gain constituents' electoral support (e.g., Kriner and Reeves, 2012; Reeves, 2011). A primary theoretical explanation for this is that politicians communicate about such spending to voters, or claim credit, in order to gain their support (Mayhew, 1974). Yet the actual communication mechanism by which this particularistic spending is translated into votes has remained in large part "a black box" in research on the subject (Bickers and Stein, 1996).

Recent research has begun to answer the question of this mechanism at least partially by uncovering patterns in elites' strategic communication, but has focused almost exclusively on national politicians (e.g. Kernell, 1993; Neustadt, 1990; Vavreck, 2009). National politicians strategically communicate in order to sway voters' perceptions of politicians' efficacy and their support for those politicians (Grimmer, 2013; Grimmer, Messing, and Westwood, 2012). Less attention has been paid to whether subnational politicians — the vast majority of elected government officials in the U.S. — communicate in similar ways.[3]

This may be because research on American politics has largely ignored fundamental questions of accountability and representation in cities, often due to a lack of data (Trounstine, 2010; Warshaw, 2019). Yet local politics often provides an ideal place to test theories about politics more broadly due to the greater variation in local conditions and institutions — which allow for researchers to harness modern causal inference techniques for assessing these theories. Understanding such patterns in accountability and representation at the local level is crucial for understanding how they may feed into broader processes of democratic accountability across levels of government. Moreover, direct evidence of the phenomenon of credit-claiming is crucial to support broad theories of elite behavior – yet such evidence directly from politicians' communication is currently sparse.

[3]Some exceptions are work by Holman (2016), who documents differences in issue emphasis across 16 cities' State of the City addresses, and by Boussalis, Coan, and Holman (2018), who show patterns in discussions of climate change.

Theoretical Expectations from Local Politics

Explaining how politicians communicate in response to objective conditions is crucial in assessing this mechanism behind retrospective voting. Though theories behind credit-claiming are ordinarily applied to communication about positive performance, they can be naturally extended to communication about negative outcomes as well.[4] The theory presented here expands the predictions of credit-claiming to political communication more broadly, and presents contrasting expectations for both positive and negative performance, which I apply to two areas of government performance.[5]

Economic growth is one policy area that is especially apt for such strategic communication at the local level. Much of urban policymaking is unified around bringing businesses and workers to cities in order to raise additional tax revenue for the city and attract residents (Logan and Molotch, 1987; Peterson, 1981; Stone, 1946). These policies may take the form of tax breaks to incentivize companies to relocate their headquarters, or simply dedicating more funding to business districts.[6]

Existing research in urban politics has shown that mayors are, indeed, likely to communicate about economic development. Mayors discuss economic development and the state of the economy prominently in their annual State of the City addresses (Holman, 2016). Mayors also cite economic development as one of the highest priority parts of their job (Einstein and Glick, 2018). Survey evidence suggests that perceptions of the local economy may in turn structure voters' decisions (e.g. Oliver, Ha, and Callen, 2012; Park and Reeves, 2020). When voters hear about positive economic growth, they may be more likely to support the

[4]Mayhew (1974) describes credit-claiming as politicians "acting so as to generate a belief in a relevant political actor... that one is personally responsible for causing the government... to do something that the actor considers desirable" (52-53).

[5]Other areas of performance – e.g. street repairs (Burnett and Kogan, 2017) or education (Berry and Howell, 2007; Kogan, Lavertu, and Peskowitz, 2016) – might also influence patterns of communication. Unfortunately, objective data on these types of performance are not widely available across geographies and time, while fine-grained data on both the economy and crime make causal inferences about communication possible here, as I discuss in the next section.

[6]Economic development is a policy area distinct from residential housing development, which is often a less universally-appealing form of development and accompanied by more conflict (Einstein, Glick, and Palmer, 2019).

incumbent government — giving politicians an incentive to discuss such growth *more* when communicating with voters.

Theories of accountability also suggest that strategic communication may arise around issues of crime and public safety. Local politicians discuss crime (Holman, 2016; Marion and Oliver, 2013), and political communication more generally can shape constituents' beliefs about crime (Larsen and Olsen, 2020; Oliver, 1998). Crime may also be an area in which voters engage in retrospective judgments of local politicians — punishing the government when crime rates are higher and rewarding the government when crime decreases (Arnold and Carnes, 2012). Voters who have more information about crime easily available may judge the government less favorably (Kalmoe et al., 2019). Politicians therefore have an incentive to communicate *less* about crime in order to bolster their support among the electorate.

These areas of government performance present two contrasting expectations for communication. On the one hand, local politicians might discuss the economy and crime both when performance is good and when it is worse — without asymmetry. This would suggest that political communication does not hinder accountability but instead simply raises awareness of objective conditions. On the other hand, if politicians communicate about economic growth and crime in a way that presents information about performance in these two areas differentially based on whether conditions and improving or worsening, then this communication may threaten voters' ability to hold them accountable.

Data

In this section I describe the communications, economic, and crime data that I use to test these theoretical questions.

First, I use data on municipal press releases ranging from 1989 to 2017 in 50 of the largest cities in the United States — such as Buffalo, NY, at the smaller end of the spectrum, and Los Angeles, CA, at the larger end.[7] These press releases are often picked up by local newspapers

[7]These cities have an average population of 940,756 residents per the 2015 ACS.

and used as the start of a story or reprinted either partially or wholesale (Franklin, 2008, 1986; Turk and Franklin, 1987), especially in an age of declining local media resources (Martin and McCrain, 2019; Peterson, 2020; Rubado and Jennings, 2020). Apart from their widespread availability to voters both directly and via the media, they also offer a pure picture of politicians' strategic behavior via a direct window into their expressed priorities.

I gather the press releases from the websites of each individual city, where they are generally posted in some sort of municipal press release archive. To gather these text documents I develop a scraper, or automated text retrieval tool, for each of these 50 individual municipal websites, which extracts the text and posting date of all available press releases that each city has stored online. For cities where this approach yielded very few or no press releases, I supplemented the scraped data by contacting the city and requesting all available press releases that they had stored digitally or on paper. I then added these press releases to the scraped press releases. For some cities, this set of press releases encompasses 27 years of communication, while for others it captures only several recent months.[8] Together, my resulting database encompasses 111,892 individual press releases between 1989 and 2017. The temporal range of data within each city is shown in Figure 1, with the date along the horizontal axis, the city along the vertical axis, and each individual press release plotted as a black point.[9] Though the data are sparse in some cities and in earlier years, this corpus represents the largest collection of municipal political communications data available. My research design, which I discuss in the next section, allows me to use these data to leverage within-unit changes in communication and performance without fear of bias due to the imbalance in coverage between cities.[10]

[8]In some cities the mayors office manages press releases directly, and in other cities the city government as a whole releases these communications. This ambiguous authorship may make it difficult to conclude *why* a government would talk about topics in a strategic manner. I assume that communication released by the government reflects priorities and an expressed agenda that filters down from the top regardless of direct authorship, as the mayor often may not exert specific control over each press release but often directs their general content. This assumption means that the results presented here are conservative estimates of the effect of strategic mayoral control on communications.

[9]Dates for all press releases in Albuquerque and Omaha were unavailable. This eliminates them from this plot and the main analyses in this paper.

[10]The unbalanced nature of this panel is not problematic for my analyses given the use of panel data models

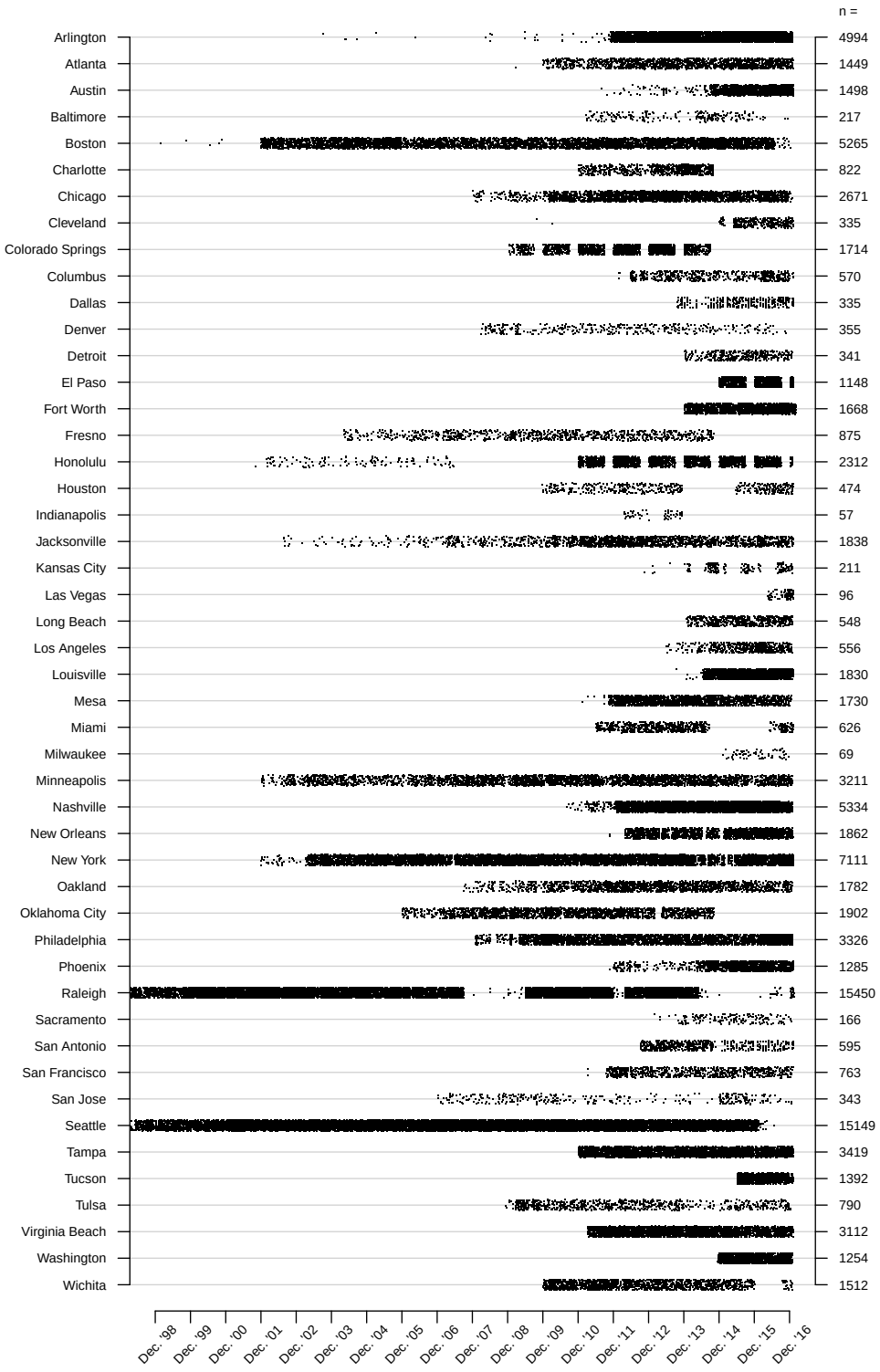

Figure 1: Press Releases Dataset

to identify within-city effects under the assumption that the missingness of observations is not correlated with errors (Wooldridge, 2002).

Next, I combine these text data with information on economic performance from the Quarterly Census of Wages and Employment (QCEW). The QCEW consists of quarterly information on total wages and employment collected by the Bureau of Labor Statistics from 1991 to the present. It is based on the unemployment insurance filings provided by business establishments. These data cover nearly all businesses in the United States, decreasing the degree of measurement error and therefore enabling more valid analyses of the effect of the economy (Healy and Lenz, 2017; Sances, 2017).[11] I use the average quarterly wages per worker from the QCEW as a measure of economic performance aggregated at the metropolitan area level for each of the cities in my press releases data.[12] For each press release, this gives me a measure of objective economic performance in that city at that specific point in time.

Finally, I combine my text data with information on crime from the FBI's National Incident-Based Reporting System (NIBRS) data. The NIBRS data consist of all information about criminal incidents reported by police agencies in the United States through a centralized system to the FBI. These data are unfortunately not as comprehensive as the economic conditions data, as many police agencies do not report any data to the FBI via this system. However, those agencies that *do* report their crime data do so in its entirety and with great detail, making these data an objective source of information about crime. I calculate the monthly total of violent crimes, classified by the FBI as all murder and non-negligent manslaughter, rape, robbery, and aggravated assault for each city, divided by the city's population to create a measure of the violent crime rate.[13] For each press release, this gives me a measure of crime conditions in that city at that specific point in time.[14]

[11] These data are not sample-based in the way that measures of the economy from the Current Population Survey (CPS) are, but are based on the location of businesses that report wages and employment rather than the location of employees.

[12] I use this broad geographic definition because these data are measured at the location of businesses rather than worker and I want to ensure that as many voters in each city as possible are captured in this measure.

[13] I linearly interpolate city-level population counts for years between the decadal censuses.

[14] The NIBRS data cover only a subset of 15 of the 50 cities, and only 12 during the time period in which I have press releases. This limits my statistical power, as my primary research design leverages within-city changes in crime rates, but still represents the broadest possible set of objective data to apply to this question aside from my data on economic conditions.

Research Design

In order to assess strategic political communication about the economy and crime, I use a combination of methods to analyze these data. First, I use structural topic models (Roberts et al., 2014), a form of unsupervised machine learning, to broadly categorize the content of the press releases data. Next, I use these machine-identified categories to develop dictionaries that enable me to code whether each press release is about economic growth or crime.

Structural topic models (STM) are one of a number of automated methods for describing text-as-data, which more generally develop a structure for eliciting latent themes present in documents expressed by the co-occurrence of certain words (Blei, 2012). Topic models such as STM allow researchers to describe patterns within a large dataset of text, though each method comes with its own tradeoffs (see, e.g., Grimmer and Stewart, 2013). STMs in particular allow for incorporation of the covariate structure of the corpus of documents with the content of the documents' text (Lucas et al., 2015; Roberts et al., 2014). Crucially for my purposes, STMs can incorporate a covariate such as the municipality producing each document, which allows me to model topic structure that varies across cities — in other words, allowing each city to talk about the same topic but using slightly different language.

I apply a variety of pre-processing steps to the text data in order to make it more useful for eliciting meaningful topics. This includes search-and-replace substitution of each city's name with, instead, the generic word "cityname," elimination of all non-alphanumeric characters and common html tags that were included when the data were collected from the municipal websites, and removal of all English-language stopwords (e.g. articles, prepositions, and conjunctions). I run the STMs on the processed text data to produce semantically-coherent topics.[15]

I employ STM on my press releases data as a first step at assessing the content of

[15]STMs represent each document as a mixture of topics with each word assigned to exactly one topic. After assignment of words to topics, the STM represents each document as a vector of proportions assigned to each topic, and therefore an overall prevalence of a given topic within the corpus of documents can be created by summing these proportions across all documents.

these communications generally. However, unsupervised learning methods can only glean so much meaning from the text without careful reading by researchers. In keeping with the suggestions made by Grimmer and Stewart (2013), I read a sample of press release from each of the topic clusters produced by the STM to come up with human-readable summary labels. By reading these sample documents, I verify that the STM is identifying true topical clusters of documents rather than an amalgamation of unrelated articles with common words in them. Then, for the primary analyses of this paper, I use the machine-coding to guide my own human coding decisions about the data. Specifically, I dig further into two topics that appeared in the STM-generated topical clusters: economic growth and crime. I then generate two dictionaries that precisely match the concepts of economic growth and crime and therefore provide a better conceptual measure of communication about these topics (Muddiman, McGregor, and Stroud, 2019).

I then use these human-created dictionaries to classify each press release in my dataset if it uses more than a threshold number of the words in these dictionaries. I designate a press release as being about economic growth when it uses multiple words in a list of words about job growth, job training, and profit returns to the localized area.[16] Similarly, I designate a press release as being about crime when it uses multiple words in a list concerning specific types of crimes, arrests, and police investigations.[17] I test several different alternative threshold values for the number of words in each dictionary to constitute topic membership and present these alternative analyses in Appendix C.

To assess my hypotheses about strategic political communication, I use temporal aggregates of press releases within cities as the unit of analysis and operationalize my main dependent variables as the proportion of press releases within that city and time period con-

[16]This dictionary consists of the following words: business, businesses, economy, economic, job, jobs, development, growth, grow, growing, create, creating, creation, investment, opportunities, workforce, working, company, employ, employment, and employing.

[17]This dictionary consists of the following words: police, officer, officers, precinct, victim, homicide, homicides, crime, crimes, burglary, burglaries, shooting, investigation, detective, detectives, surveillance, suspect, suspects, robbery, arrest, arrested, charged, and warrant.

taining the threshold number of words in these topical dictionaries.[18] Then I examine the influence of objective city-level conditions on this communication. For communication about the economy, I assess whether economic conditions in a given city — operationalized by the change in the natural log of quarterly wages per worker between the past quarter and the current quarter — influences the proportion of press releases about economic growth.[19] For communication about crime, I assess whether objective crime conditions — operationalized as the change in the natural log of the city's violent crime rate per 100,000 residents between the past month and the current month — affect the proportion of press releases about crime.

Specifically, I use differences-in-differences panel regression models with city- and time period-level fixed effects to isolate the causal effect of changes in the economy or crime on local politicians' communication (Angrist and Pischke, 2008; Wooldridge, 2002). These regressions take the following forms:

$$Economic\ Growth_{it} = \beta \Delta Wages_{it} + \gamma_i + \tau_t \tag{1}$$

$$Crime_{it} = \beta \Delta Crime_{it} + \gamma_i + \tau_t \tag{2}$$

In both cases, the dependent variable is the proportion of press releases belonging to the relevant topic in a given city and time period, while the main independent variable is the measure of performance described above, and γ_i represents city-level fixed effects. τ_t represents time period fixed effects, which in the first equation are at the year-quarter level and in the second equation are at the year-month level. In all models I weight each city-time period aggregation of press releases by the total number of press releases made during that

[18] In the Appendix, I test several alternative research designs. In Appendix D I use individual press releases as the unit of analysis rather than temporal aggregations, which allows me to assess the influence of performance on the probability of an individual press release being about a given topic. These results are largely similar to those presented here. In Appendix E I test the influence of performance on the density of outcomes (that is, the total number of press releases) within these temporal aggregates.

[19] Research on economic conditions and the news, as well as retrospective voting, has reliably used the *change* in conditions rather than levels as the salient indicator for economic performance (Soroka, Stecula, and Wlezien, 2015).

time period in that city. In addition, I cluster standard errors at the level of measurement of the independent variable — either by MSA and quarter, for the effects of the economy, or by city and month, for the effects of crime — in order to account for serial correlation within geographic units and time periods (Beck and Katz, 1995; Bertrand, Duflo, and Mullainathan, 2004).

City-level fixed effects allow me to assess the impact of variation in performance within cities in my press releases data that eliminates the impact of time-invariant confounders that might also affect communication. The inclusion of time period fixed effects as well allows me to account for the impact of specific time period shocks to communication.[20] Together, these two-way fixed effects allow me to interpret the effects of the economy or crime in a causal manner if I assume that there are no time-varying confounders — that is, no unobserved factors that might affect certain cities in only certain time periods and lead to the observed differences in communication.

This main assumption, often called the assumption of parallel trends, is fundamentally untestable without knowledge of unobservable factors. Yet in the context of a binary treatment (say, in a program evaluation framework) this assumption can be easily falsifiable if there exist pre-treatment trends between different groups (say, the treatment and control groups). In a continuous treatment context such as mine, the same assumption can be tested in a similar framework. Specifically, to test for the potential presence of time-varying confounders, I regress lagged versions of my main outcome variables on contemporaneous economic growth and criminal activity to see if cities with different trends in performance are proceeding along similar paths prior to treatment. The results from these placebo checks are shown in Appendix B, and indicate little evidence of pre-treatment trends. This assuages concerns about the validity of this research design for assessing the causal effects of performance on communication.

The main quantity of interest that this research design enables me to identify, despite

[20] For instance, seasonal differences, such as increased construction during the busier summer building season, might induce variation in communication about the economy.

non-random assignment of economic conditions or crime to cities, is β, the causal effect of performance on communication patterns. This model takes advantage of variation in performance within cities and time periods across the entire dataset of press releases.[21] Interpretation of the effects of performance, therefore, are the within-city effects of different changes in economic conditions and crime rates. If performance has an effect on communication patterns — in other words, if β is nonzero — this would represent evidence of strategic communication.

Results

What do municipal governments communicate about? To best describe the overall content of local politicians' communication, I examine the latent topic structure of municipal press releases, as identified by the structural topic model. The STM identifies coherent groupings of language into topics that appear across the corpus of press releases and demonstrates the most common topics discussed and the ways that they are each discussed. Table A1 in Appendix A shows these topics, with the summary label that I create for each, the words that the STM identified as the most predictive of that topic, and the frequency of the topic across all press releases in the entire corpus of documents. The topics frequently discussed in municipal press releases are, unsurprisingly, matters associated with cities, the programs they provide to residents, and other routine business of a government.

Most common among these topics are subjects related to the business of running a city: crime, infrastructure, utilities, events, and administrative announcements. The topics also adhere to the areas of city policy that the urban politics literature most often describes as the focus of municipal politicians. Perhaps surprising is how distinct these topics are from much of what politicians at other levels of government talk about in their communication. Particularly absent are most of the political issues present in national-level discourse in

[21] I present models with several alternative specifications — omitting fixed effects entirely, and using only city-level fixed effects — in Appendix C.

United States politics.[22] The common topics of Congressional press releases, identified by Grimmer (2013), are conspicuously missing from these local press releases.

Strategic Communication

The overall prevalence of these categories of communication, of course, masks their potential correspondence with reality. To assess this correspondence — and politicians' potential use of communication for strategic gain — I next examine two of the common topics within these press releases, those about crime and economic growth, using my manually created dictionaries. Using my indicator of topic membership based on these dictionaries, I quantify the prevalence of both of these topics across the entire corpus of press releases. This approach indicates that press releases about economic growth are 6.5% of the universe of press releases, while those about crime are 5.7% of the total.[23] The press releases about economic growth in these data generally concern new businesses and jobs brought to the city, while the press releases about crime concern recent crimes, arrests that were made, and ongoing police investigations. An excerpt from one of the economic development press releases reads as follows:

> *Mayor Lee Announces Growth of Cleantech & Biotech Companies in Mission Bay*
>
> *10/28/11 — Mayor Edwin M. Lee today announced that the Mission Bay Innovation Center located within the FibroGen building in Mission Bay, has grown from five companies when it was launched in 2009, to 23 biotech and cleantech companies today, adding 134 jobs.... "The business of San Francisco is innovation, and that's why companies that are developing technology to improve the*

[22] One exception, perhaps, is the presence of a topic about sustainability, which constitutes only 1.7% of text in all documents as identified by the STM.

[23] These numbers come from using ten words from the respective dictionaries as the threshold value for topic membership, but the prevalence of these topics shifts when using other threshold values for the indicators. For the main analyses below I continue to use ten as the threshold value, though I present models using other threshold values in Appendix C. The results from these alternative models are largely consistent with those results presented here.

environment and the health and well being for people the world over choose San Francisco as their home," said Mayor Lee.

An excerpt from a press release about crime from Arlington, Texas, reads as follows:

Woman Deceased After Shooting in Parking Lot at Apartment Complex

2/16/12 — The Arlington Police Department is investigating the death of a woman in her 20s, who was discovered deceased this evening in the parking lot of an apartment complex. Police officers were dispatched at approximately 8:40 pm on Thursday, February 16, 2012, to multiple calls reporting shots fired in the area of the apartment complex located in the 2200 block of Henderson Drive... Anyone with information about this incident is asked to call Arlington Police Detective Caleb Blank at 817-459-5735, or Crime Stoppers at 817-469-TIPS (8477). All tipsters remain anonymous and are eligible for a reward up to $1,000. This is the third homicide in Arlington this year.

These press releases demonstrate two ways in which politicians can communicate about objective conditions in their cities in the areas of economic growth and crime. They also exemplify areas in which communication of information may be strategic. In the former case, the potential benefit that a local politician could gain from discussing economic growth is clear. In this single communication, Mayor Ed Lee of San Francisco claims credit for attracting companies to the area, job growth, and construction. Other press releases about this topic follow a similar pattern, often attaching the mayor directly to a new business or job growth. Press releases about crime, on the other hand, demonstrate how communication might operate to the opposite effect. Government discussion of a recent violent crime, as in this example, might result in backlash from constituents afraid of worsening public safety in their city. Strategic politicians might seek to minimize this public reaction and therefore communicate less about crime to maintain their public support.[24]

[24]Of course, they might also shift the *manner* in which they discuss the topic. In times of deteriorating

As a first cut at investigating the possibility of such strategic communication, I compare the objective conditions in these two areas of performance with the prevalence of press releases about these two topics. In the top panel of Figure 2, I plot the mean proportion of press releases in a city-quarter about economic growth, along the vertical axis, within bins of the associated MSA's quarterly wages per worker, along the horizontal axis. The positive-sloped linear trend line in this plot demonstrates that, when economic conditions are better, the proportion of press releases about economic growth is much higher. In the bottom panel of Figure 2, I likewise plot the mean proportion of press releases about crime in a city-month along the vertical axis, within bins of the associated city's violent crime rate along the horizontal axis. The negative-sloped linear trend line in this second plot indicates that as the violent crime rate increases, press releases from city governments are less likely to be about crime.

Both of these plots are consistent with a story of strategic communication by local politicians, but they are subject to a variety of issues that threaten a causal interpretation. A number of confounding factors could lead to the observed relationships in Figure 2. For instance, cities with higher wages may also elect politicians who are more concerned with business and economic growth, leading to a cross-sectional correspondence between economic conditions and communication about the economy. It would therefore be inaccurate to interpret these cross-sectional relationships as evidence of economic conditions or crime *causing* differences in communication.

To better assess the causal effect of economic conditions and crime rates on communication, I next move to the difference-in-differences models that incorporate city and time-period fixed effects to account for these potential confounders. In Table 1 I show the results of these models for both topics of communication. In the first column I present the coefficient for

performance they might discuss hopes for future performance or policy efforts focused on change. Both these strategies might be effective ways to acknowledge and discuss a given policy area but avoid discussing current performance. For this reason, when developing my dictionaries of words to identify press releases in both topics, I focus on words that occur in direct reports of objective events rather than those that might be more likely to appear in press releases discussing the issues less directly.

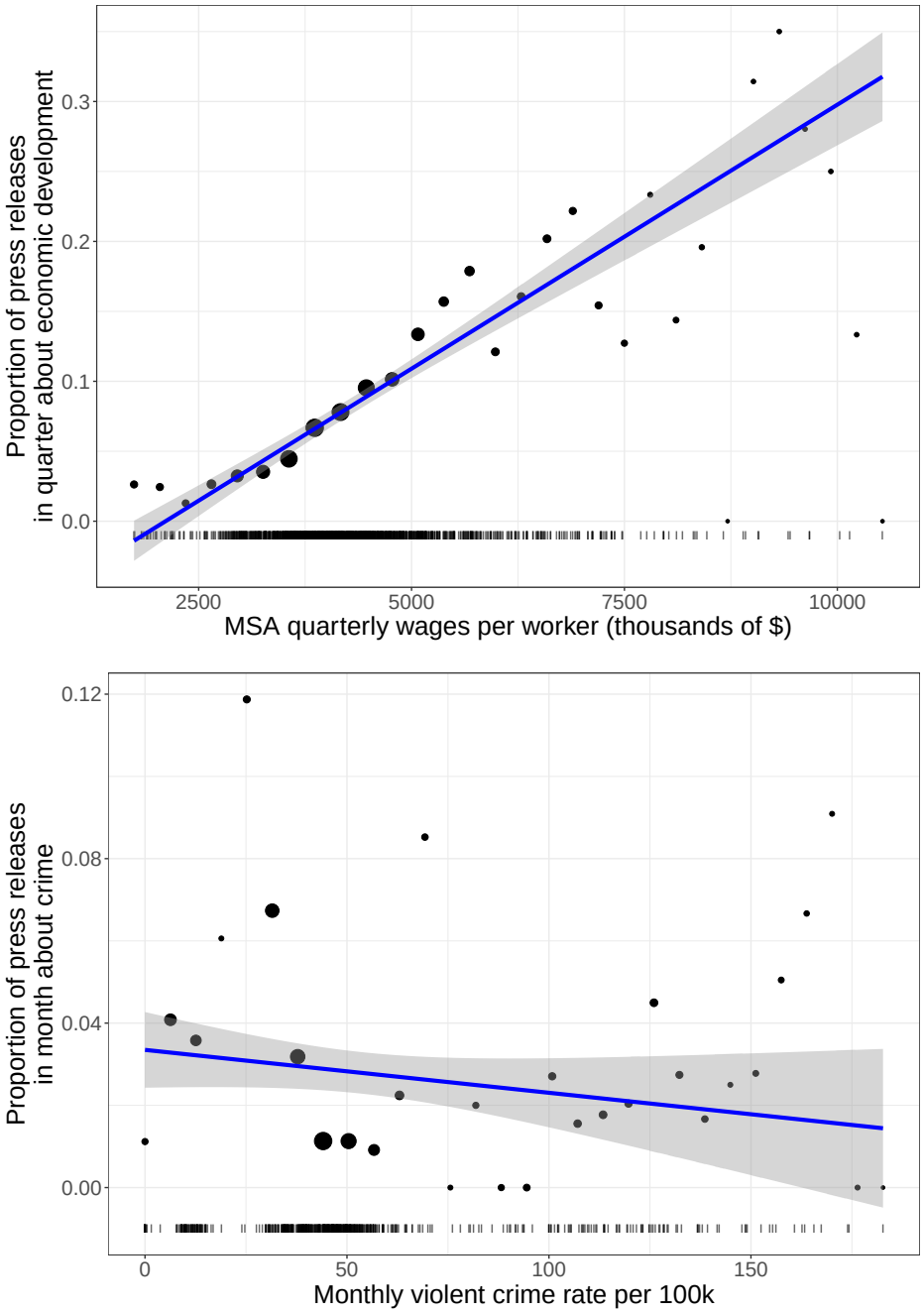

Figure 2: Plots show the cross-sectional relationship between objective conditions and communication in two areas of performance. Filled circles show the mean quarterly or monthly proportion of press releases containing more than 10 words in the respective dictionary within bins of equal width along the horizontal axis. Size of circles is proportional to the total number of press releases within each bin. Tick marks at the bottom of each plot indicate the density of the data along the horizontal axis.

economic conditions, and in the second column the coefficient for crime rates, with standard errors clustered at the level of treatment below them in parentheses.[25] These results indicate that the cross-sectional relationship observed in Figure 2 holds true within-city as well.

Table 1: Effect of Economic Conditions and Crime on Communication

	Proportion of documents having > 10 words in:	
	Economic growth dictionary	Crime dictionary
	(1)	(2)
Δ Log(quarterly wages per worker)	0.05**	
	(0.02)	
Δ Log(violent crime rate per 100k + 1)		−0.02*
		(0.01)
City fixed effects?	✓	✓
Quarter fixed effects?	✓	
Month fixed effects?		✓
Observations	1,310	520
R^2	0.80	0.53
Adjusted R^2	0.77	0.40
Note:		*p<0.1; **p<0.05; ***p<0.01
		Standard errors clustered by MSA and year-quarter, in model 1 and by city and year-month in model 2

Within a given city, as economic conditions improve, as measured by the change in the log of quarterly wages per worker, the proportion of press releases about economic growth increases, as shown in the lefthand column. Crime rates demonstrate a similar effect on communication, albeit in the opposite direction: as crime rates increase, as measured by the change in the log of the violent crime rate, the proportion of press releases about crime decreases, as shown in the righthand column. Because both independent variables are measured using the change in the log of their respective levels, their interpretation is similar and straightforward. When the change in quarterly wages increases by one percentage point, the proportion of press releases about economic growth increases by five percentage points,

[25]For both analyses, I cluster standard errors at the level at which I measure variation in the independent variable. For the analyses using economic conditions, I cluster by MSA and year-quarter, and for crime rates, I cluster by city and month.

and when the change in crime rates increases by one percentage point, the proportion of press releases about crime decreases by two percentage points. These effects are statistically significant and their magnitude, given the baseline rates of these types of communication — 8.5% for economic growth and 5% for crime — is substantively large. The effect of a one percentage point increase in the change in wages per worker increases the proportion of press releases about economic growth by 64%, while the parallel effect for crime rates reduces the proportion of press releases about crime by 31%. As these effects are the result of *changes* in economic conditions and crime rates, the lower or higher rates of communication that occur do not simply reflect a lack of events in these policy areas to discuss, but a shift in emphasis following changes in performance in both policy areas.

However, the shifts that actually occur in both wages and crime rates *within* city are ordinarily small. In reflection of the realistic amount of variation in these measures of performance and following the recommendations of Mummolo and Peterson (2018), these effects can be better characterized in terms of the typical changes within cities in the independent variables. The within-city change in logged wages ranges from -0.33, at the lowest, to 0.25, at the highest, with a standard deviation of 0.07. The results from the fixed effects model in Table 1 indicate that moving from the 25th percentile of this within-city measure, at -0.043, to the 75th percentile, at 0.084, would be equivalent to two-thirds of a percentage point increase in the proportion of press releases about economic growth. Within cities, the proportion of press releases about economic growth has a standard deviation of 8.5 percentage points. This effect therefore represents a small but consistent shift in the average city's discussion patterns. Figure 3 demonstrates the impact of these within-city changes in economic conditions. I plot the change in the log of wages per worker, residualized at the city- and quarter-level, along the horizontal axis, while I plot the residualized proportion of press releases about economic growth along the vertical axis. Filled circles indicate the mean proportion about that topic within bins of equal width along the horizontal axis. The positive trend line reproduces the effect shown in column 1 of Table 1.

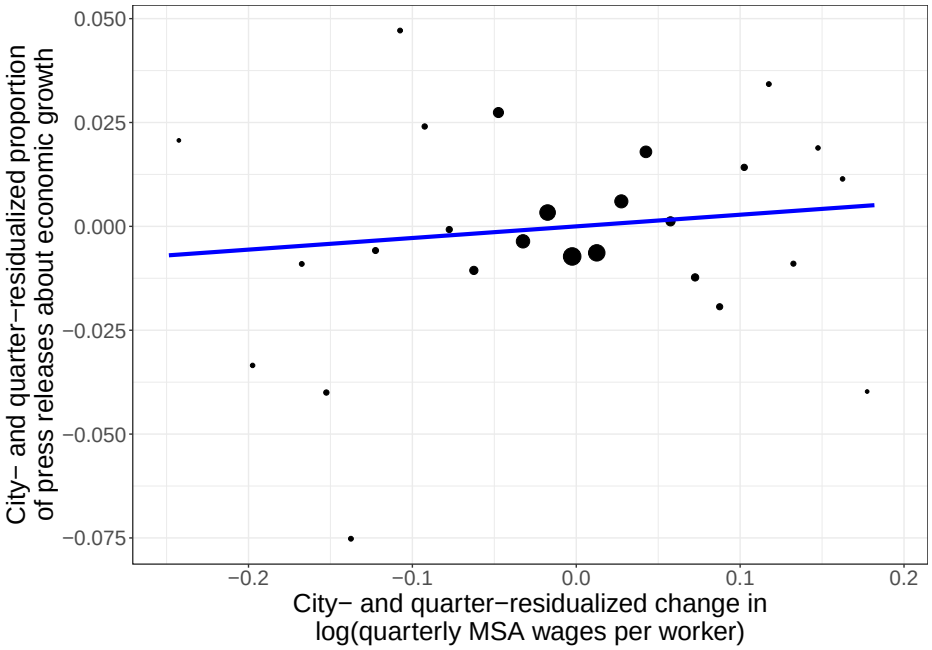

Figure 3: Change in MSA economic conditions and communication about economic growth. Open circles show the city- and quarter-residualized mean proportion of press releases containing more than 10 words in the economic growth dictionary within bins of equal width along the horizontal axis, which represents the city- and quarter-residualized change in the log of quarterly wages per worker in that MSA. Size of circles is proportional to the number of press releases within each bin.

Similarly, the within-city variation in the change of logged violent crime rates is also small on average, with a standard deviation of 0.23, a minimum of -1.01, and a maximum of 1.74. The results from the model in Table 1 indicate that moving from the 25th percentile of this within-city measure, at -0.133, to the 75th percentile, at 0.112, would be equivalent to a decrease in the proportion of press releases about crime of slightly less than half a percentage point. Given that within cities, the proportion of press releases on crime has a standard deviation of 8.9 percentage points, this effect represents a small but substantively important shift. Figure 4 demonstrates the impact of these within-city changes in crime rates. I plot the residualized change in the log of the violent crime rate along the horizontal axis and the residualized proportion of press releases about crime along the vertical axis. Filled circles indicate the binned mean proportion of topic membership, and the negatively sloped trend line reproduces the effect of crime rates shown in column 2 of Table 1.

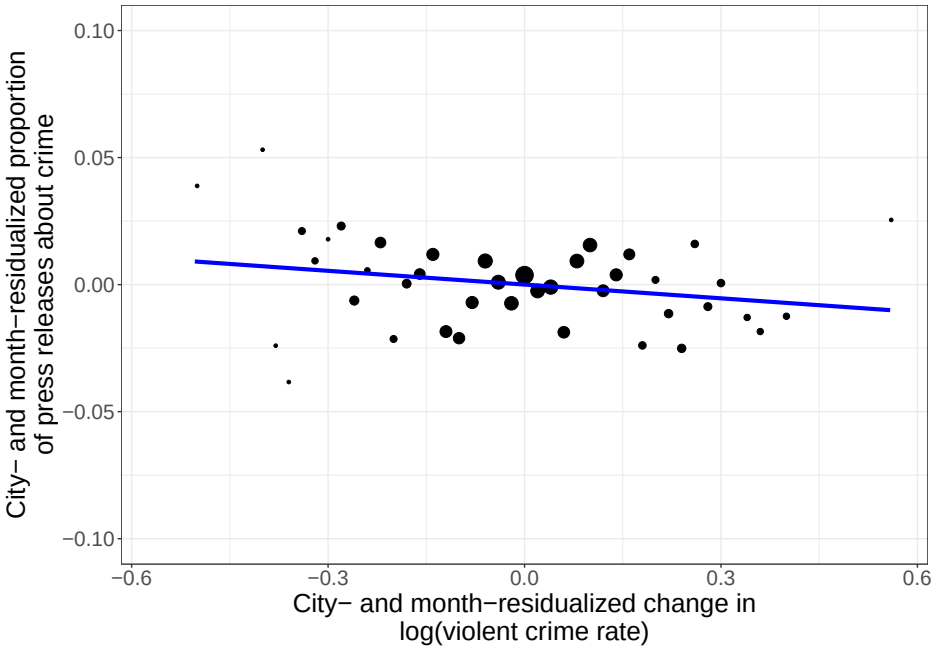

Figure 4: Change in city crime rate and communication about crime. Open circles show the city- and month-residualized mean proportion of press releases containing more than 10 words in the crime dictionary within bins of equal width along the horizontal axis, which represents the city- and month-residualized change in the log of the monthly crime rate in that city. Size of circles is proportional to the number of press releases within each bin.

Together, these results indicate the consistent but small impact of performance on communication. In both economic growth and crime, political communication varies as objective conditions change within cities. When performance is better — measured by rising wage growth or falling crime rates — local politicians communicate more about these areas than when performance is worse. Rather than communication patterns that reflect real conditions in an unbiased manner, these patterns reflect emphasis on positive performance. These distortions suggest strategic motivations behind the production of press releases that may result in biases in voters' information environment.

Conclusion

Evidence of retrospective accountability for performance has often led to mixed or conditional theories. Often, the theory behind these results is that such accountability is contin-

gent upon access to information about performance. In this paper, I examine politicians' patterns of communication in cities in the United States. I utilize three sources of temporally and geographically broad data and a robust causal inference research design to demonstrate that politicians communicate strategically in relation to both economic growth and crime. Their communication strategically emphasizes issues where they are performing well — and de-emphasizes areas where performance is worse. While these effects are small, they reflect the causal effects of changes in objective conditions within cities. This type of within-city change affords the econometric leverage to assess causal effects, but it likely ignores additional variation in conditions across cities — for instance, at the national level — that may also influence politicians' communication patterns. The direct evidence of causal influences on politicians' behavior presented here helps to explain why previous research may have found such contingent evidence of retrospective accountability, especially in subnational elections (e.g. de Benedictis-Kessner and Warshaw, 2020*a*; Hopkins and Pettingill, 2018). These findings contribute to broad theories of political communication and democratic accountability.

Political scientists have long pointed to the numerous ways that local politics is distinct from the debates and phenomena occurring at other levels of government. More recently, work on local politics has shown that local representation and accountability may function more similarly to national-level politics than previously thought (e.g. de Benedictis-Kessner and Warshaw, 2016, 2020*b*; Einstein and Kogan, 2015; Sances, 2018; Tausanovitch and Warshaw, 2014). The results from this paper provide evidence that local politicians, unsurprisingly, are strategic in their communication in accordance with longstanding theories about national politicians' behavior. Given research on the low levels of knowledge that citizens have about government responsibilities and performance, especially in cities (Crowder-Meyer, Gadarian, and Trounstine, 2020), this type of communication may powerfully sway voters' perceptions of government performance (Larsen and Olsen, 2020). These perceptions may in turn shape voters' judgments of politicians in elections and subvert accountability.

Moreover, such strategic communication may sway voters' decisions at multiple levels

of government. While local politics in the United States has become more nationalized, local political communication may still influence national politics, especially as the role of local media outlets has declined (Darr, Hitt, and Dunaway, 2018; Hopkins, 2018; Martin and McCrain, 2019; Peterson, 2020; Rubado and Jennings, 2020). Voters incorporate information about localized economic conditions and crime rates into their judgments of the president and downballot politicians (de Benedictis-Kessner and Warshaw, 2020*a*; Healy and Lenz, 2017; Kalmoe et al., 2019; Park and Reeves, 2020). Strategic behavior by local politicians may therefore have effects that spill over into national politics.

Of course, voters may be protected from these influences for a variety of reasons. For one, citizens – especially politically knowledgeable ones – are critical consumers of information. Though less knowledgeable voters may be more susceptible to strategic communication, they may not subsequently connect their perceptions of performance to their votes (Alt, Lassen, and Marshall, 2016). Second, the government's own communication is only one source of information for citizens. Alternative presentations of performance elsewhere, such as by the news media, may counteract strategic government communication (Chong and Druckman, 2007). Institutions such as the media may therefore be crucial in enabling citizen's judgments based on performance (Snyder and Strömberg, 2010). Finally, people's perceptions are often shaped by their own experiences and their surroundings (Bisgaard, Dinesen, and Sønderskov, 2016; Larsen et al., 2019). When communication departs from reality, these personal observations may provide a contrasting influence on opinions. Yet despite these counterbalancing forces, not all voters are likely to be immune to the effects of strategic communication. At the margins, therefore, such communication may still sway voters' perceptions and behavior.

Normative expectations for democratic accountability rely on voters having accurate information about government. If this information is slanted in one direction or another because it is influenced by politicians' strategic communication, voters' ability to hold government accountable may be hindered. Though the evidence from this paper shows that local politicians' communication in two areas is strategic, future research should continue to

assess such strategic elite behavior in other areas of performance. Furthermore, developing an understanding of the direct effects of such strategic communication on voters is also an important agenda for future research. This type of work can shed light on how substantially such communication influences voters' perceptions — and which voters are most susceptible to these influences. Moreover, this paper only examines patterns of communication in large cities. Information on local politics and elections may be hard to find in big cities, but it may be even more difficult to find in smaller towns where local news coverage is uncommon and rapidly disappearing (Martin and McCrain, 2019; Peterson, 2020). Examining the contextual conditions under which these communication effects are more – or less — powerful is also deserving of future attention. Answering these questions is crucial for democratic accountability not just in cities, but at all levels of government.

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Supplementary Appendix for "Strategic Government Communication About Performance"

Justin de Benedictis-Kessner

August 18, 2020

A Results from STM

For the main results of this paper, I use a dictionary approach to classify press releases about economic growth and crime. However, as a way of exploring these data, I also use Structural Topic Models (STM) with one covariate — the source city — to analyze the text data in my corpus, which accommodates the varying style of press releases between the 50 cities in my data yet also identifies common themes and topics across all cities.Here, I present the machine-generated topic clusters identified by the STM with 45 topics in Table A1. The first column lists the summary label that I create for each topic, the second column shows the five words that the STM identified as the most predictive of that topic, and the third column shows the frequency of the topic across all press releases in the entire corpus of documents.[26]

[26]It also lists the topic number in parentheses in the first column. These topic numbers are arbitrarily selected by the model — lower numbered topics do not explain more variance within the model, but were simply assigned lower numbers in the model.

Table A1: STM-identified topic summaries and frequency, K=45

Topic Summary Label	Highest Probability Words	Frequency in Corpus (%)
Crime reports (23)	police, cityname, suspect, officers, crime	5.14
Infrastructure repairs & closures (13)	will, traffic, cityname, street, road	4.46
City planning (24)	city, will, public, council, meeting	3.93
Community/vounteer events (41)	community, program, cityname, neighborhood, will	3.73
Holiday closures/calendars (15)	will, open, friday, monday, center	3.53
Public utilities (2)	city, cityname, information, box, department	3.43
Parks & recreational programs (35)	park, parks, recreation, center, community	3.40
Parks & public facilities (25)	project, new, will, construction, building	3.39
Mayoral announcements (37)	said, people, can, make, city	3.21
Awards & global issues (4)	cityname, mayor, cities, national, city	2.92
Misc. announcements (20)	year, new, years, first, one	2.76
Personnel announcements (10)	police, department, chief, cityname, officers	2.68
Economic development (31)	cityname, business, economic, jobs, businesses	2.57
Performing arts & events (18)	cityname, music, will, festival, center	2.56
Fiscal affairs (21)	city, million, budget, tax, will	2.55
Technology and administration (7)	city, information, cityname, online, can	2.50
City council/govt boards (40)	council, cityname, city, board, committee	2.50
Permitting/licensing (39)	city, property, order, department, cityname	2.42
Parking restrictions & road closures (29)	street, parking, will, avenue, cityname	2.23
Events/intergovernmental affairs (26)	cityname, mayor, city, office, release	2.22
Water quality/sewer (12)	water, cityname, public, utilities, sewer	2.20
Weather preparedness (6)	snow, weather, can, city, emergency	2.16
Celebrations & memorials (28)	cityname, honor, veterans, day, memorial	2.08
Garbage & recycling (33)	waste, recycling, collection, cityname, will	2.06
Education (1)	school, students, schools, youth, education	1.99
Legislation/intergovernmental affairs (45)	mayor, bill, legislation, state, statement	1.86
Festivals & events (5)	cityname, visitors, convention, will, zoo	1.79
Emergency preparation & management (14)	fire, emergency, cityname, department, safety	1.77
Demographic statistics (11)	percent, report, cityname, city, safety	1.73
Sustainability/energy (27)	energy, city, cityname, green, light	1.72
Transportation (43)	transportation, transit, bus, will, service	1.71
Sporting events (9)	cityname, will, game, team, sports	1.69
Arts & culture (30)	arts, art, cityname, cultural, city	1.67
Crime reports (16)	district, pike, persons, charged, detectives	1.59
Law enforcement (38)	court, law, gun, cityname, enforcement	1.56
Affordable housing (17)	housing, affordable, development, cityname, will	1.49
Public health & safety (3)	health, care, services, violence, cityname	1.41
Animals and pets (44)	animal, shelter, cityname, animals, pet	1.41
Libraries (34)	library, cityname, public, branch, san	1.31
Voting & elections/airports (22)	airport, cityname, election, texas, international	0.97
Misc. mayoral announcements (32)	city, bloomberg, mayor, will, citynameers	0.96
Speech transcripts (42)	going, mayor, think, people, know	0.89
Transit/road closures (19)	will, highway, closed, street, lane	0.86
Street & infrastructure repairs (36)	street, avenue, completion, date, estimated	0.74
Street repair (8)	street, end, place, road, avenue	0.22

B Placebo Checks for Pretreatment Trends

In this section, I examine the effect of economic growth and increases in crime on past communication – a placebo check for the potential presence of time-varying confounders commonly known as a check for parallel trends in pretreatment outcomes. Across both communication areas, these placebo checks show that there is no significant effect of contemporaneous conditions on pretreatment outcomes. This suggests that threats to causal inference from time-varying confounders are unlikely.

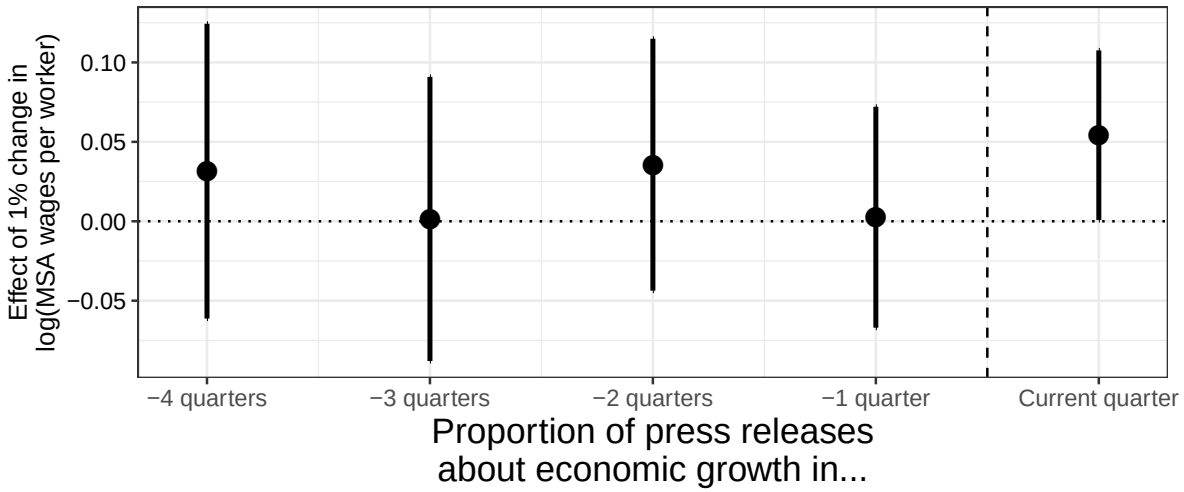

Figure A1: Treatment effect of contemporary economic growth on current and previous outcomes. Points indicate the effect of 1% greater economic growth on communication about the economy, using communication measured in past periods designated along the x-axis, with 95%-confidence intervals.

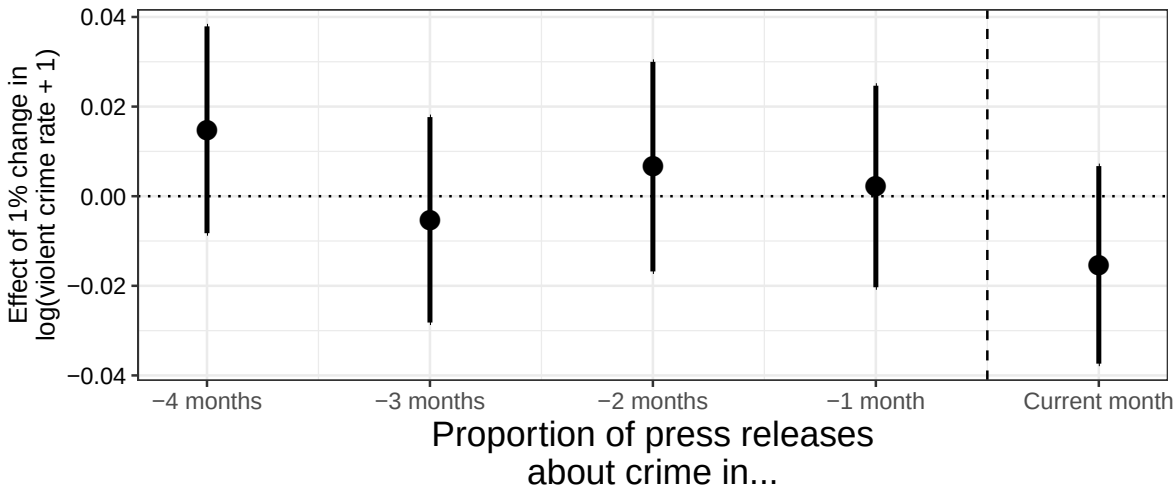

Figure A2: Treatment effect of contemporary crime conditions on current and previous outcomes. Points indicate the effect of 1% greater change in violent crime on communication about crime, using communication measured in past periods designated along the x-axis, with 95%-confidence intervals.

C Results Using Additional Model Specifications

In this section, I present the main analyses presented in the paper, but with several alternative model specifications. First, in Table A2, I show the main effect of economic conditions on communication about economic growth but omitting fixed effects from the models. In Table A3 I show similar specifications for crime. Then, in Tables A4 and A5 I reproduce the main analyses of the paper, but using a different measurement of communication for the dependent variable. I show results using a threshold for topic membership that is anywhere between 5 and 15 words from the manually-created dictionaries for both economic growth and crime communication.

Table A2: Effect of Economic Conditions on Communication, Omitting Fixed Effects

	Proportion of documents having > 10 words in:		
	Economic growth dictionary		
	(1)	(2)	(3)
Δ Log(quarterly wages per worker)	0.02	0.02	0.05**
	(0.03)	(0.02)	(0.02)
City fixed effects?		✓	✓
Quarter fixed effects?			✓
Observations	1,310	1,310	1,310
R^2	0.0004	0.77	0.80
Adjusted R^2	−0.0004	0.76	0.77

Note: *p<0.1; **p<0.05; ***p<0.01
Standard errors clustered by MSA and year-quarter

Table A3: Effect of Crime Rates on Communication, Omitting Fixed Effects

	Proportion of documents having > 10 words in:		
	Crime dictionary		
	(1)	(2)	(3)
Δ Log(violent crime rate)	-0.03^{**}	-0.03^{*}	-0.02^{*}
	(0.02)	(0.01)	(0.01)
City fixed effects?		✓	✓
Month fixed effects?			✓
Observations	520	520	520
R^2	0.02	0.32	0.53
Adjusted R^2	0.02	0.30	0.40

Note: *p<0.1; **p<0.05; ***p<0.01
Standard errors clustered by city and year-month

Table A4: Effect of Economic Conditions on Communication, Alternative Thresholds

	Proportion of documents having x words in dictionary:										
	> 15	> 14	> 13	> 12	> 11	> 10	> 9	> 8	> 7	> 6	> 5
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Δ Log(quarterly wages per worker)	0.04^{***}	0.04^{***}	0.05^{***}	0.05^{***}	0.06^{***}	0.05^{**}	0.07^{***}	0.06^{***}	0.06^{***}	0.06^{***}	0.06^{***}
	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
City fixed effects?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Quarter fixed effects?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310
R^2	0.76	0.77	0.76	0.77	0.79	0.80	0.81	0.81	0.82	0.83	0.83
Adjusted R^2	0.73	0.73	0.73	0.74	0.76	0.77	0.78	0.79	0.80	0.80	0.81

Note: *p<0.1; **p<0.05; ***p<0.01
Standard errors clustered by MSA and year-quarter

Table A5: Effect of Crime Rates on Communication, Alternative Thresholds

	Proportion of documents having x words in dictionary:										
	> 15	> 14	> 13	> 12	> 11	> 10	> 9	> 8	> 7	> 6	> 5
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Δ Log(violent crime rate)	0.01	0.003	0.001	0.0002	−0.0005	-0.02^{*}	−0.003	−0.003	−0.002	0.004	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)
City fixed effects?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Month fixed effects?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	520	520	520	520	520	520	520	520	520	520	520
R^2	0.37	0.38	0.38	0.37	0.38	0.53	0.39	0.40	0.43	0.44	0.47
Adjusted R^2	0.21	0.22	0.21	0.20	0.21	0.40	0.22	0.24	0.28	0.29	0.32

Note: *p<0.1; **p<0.05; ***p<0.01
Standard errors clustered by city and year-month

D Results Using Individual Press Releases as Outcomes

In the main body of the paper, I use temporal aggregations of press releases within a city as the unit of analysis and assess the impact of objective conditions on the proportion of press releases about a given topic. However, another way of analyzing these data is to use the individual press release as the unit of analysis, and assess the influence of objective conditions — average wages per worker and crime rates — on the probability that a press release is about a given topic. To do this, I use the disaggregated form of the data used in the main analyses and conduct similar analyses to those presented in the main text. I regress the probability of a document being about economic growth on the change in the log of wages during that quarter in that MSA, and the probability of a document being about crime a city on the change in the log of the crime rate in that month in that city. As with the main analyses in the paper, I include city and time period fixed effects in a difference-in-differences approach.

The primary results of these analyses are shown in Figure A3 and A4. These results are also shown in Table A6 and Table A7, both for the model without fixed effects, in the first column, using only city-level fixed effects, in the second column, and using the preferred causal identification strategy with two-way fixed effects, in the third column. These results indicate that a 1% larger change in economic conditions leads to a 5 percentage point increase in the proportion of press releases in a given city-quarter about economic development, and a 1% larger change in the violent crime rate leads to a 2 percentage point decrease in the proportion of press releases in a given city-month about crime.

In addition, as I do with the main models in Appendix C, I also vary the threshold number of words in the dictionaries I use to classify press releases. These results, presented in Table A8 and Table A9, are substantively similar to those using the threshold of 10 words.

Table A6: Effect of Economic Conditions on Individual Press Releases

	Probability of document having		
	>10 words in dictionary		
	(1)	(2)	(3)
Δ Log(quarterly wages per worker)	0.02	0.02	0.05*
	(0.04)	(0.03)	(0.03)
City fixed effects?		✓	✓
Quarter fixed effects?			✓
Observations	101,568	101,568	101,568
R^2	0.0000	0.10	0.10
Adjusted R^2	0.0000	0.09	0.10
Note:			*p<0.1; **p<0.05; ***p<0.01
			Standard errors clustered by MSA and year-quarter

Table A7: Effect of Crime Rates on Individual Press Releases

	Probability of document having > 10 words in dictionary		
	(1)	(2)	(3)
Δ Log(violent crime rate per 100k + 1)	−0.03**	−0.03*	−0.02*
	(0.02)	(0.01)	(0.01)
City fixed effects?		✓	✓
Month fixed effects?			✓
Observations	12,672	12,672	12,672
R^2	0.001	0.03	0.04
Adjusted R^2	0.001	0.02	0.03

Note: *p<0.1; **p<0.05; ***p<0.01
Standard errors clustered by city and year-month

Table A8: Effect of Economic Conditions on Individual Press Releases, Alternative Thresholds

	Probability of document having x words in dictionary:										
	> 15	> 14	> 13	> 12	> 11	> 10	> 9	> 8	> 7	> 6	> 5
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Δ Log(quarterly wages per worker)	0.04**	0.04*	0.05**	0.05*	0.06**	0.05*	0.07**	0.06**	0.06**	0.06***	0.06**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
City fixed effects?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Quarter fixed effects?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	101,568	101,568	101,568	101,568	101,568	101,568	101,568	101,568	101,568	101,568	101,568
R^2	0.07	0.08	0.08	0.09	0.09	0.10	0.10	0.11	0.11	0.12	0.12
Adjusted R^2	0.07	0.08	0.08	0.09	0.09	0.10	0.10	0.11	0.11	0.12	0.12

Note: *p<0.1; **p<0.05; ***p<0.01
Standard errors clustered by MSA and year-quarter

Table A9: Effect of Crime Rates on Individual Press Releases, Alternative Thresholds

	Probability of document having x words in dictionary:										
	> 15	> 14	> 13	> 12	> 11	> 10	> 9	> 8	> 7	> 6	> 5
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Δ Log(violent crime rate per 100k + 1)	0.0004	0.002	−0.002	−0.003	−0.01	−0.02*	−0.01	−0.002	−0.004	−0.01	−0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
City fixed effects?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Month fixed effects?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	12,451	12,451	12,451	12,451	12,672	12,672	12,451	12,451	12,672	12,451	12,451
R^2	0.02	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05
Adjusted R^2	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04

Note: *p<0.1; **p<0.05; ***p<0.01
Standard errors clustered by city and year-month

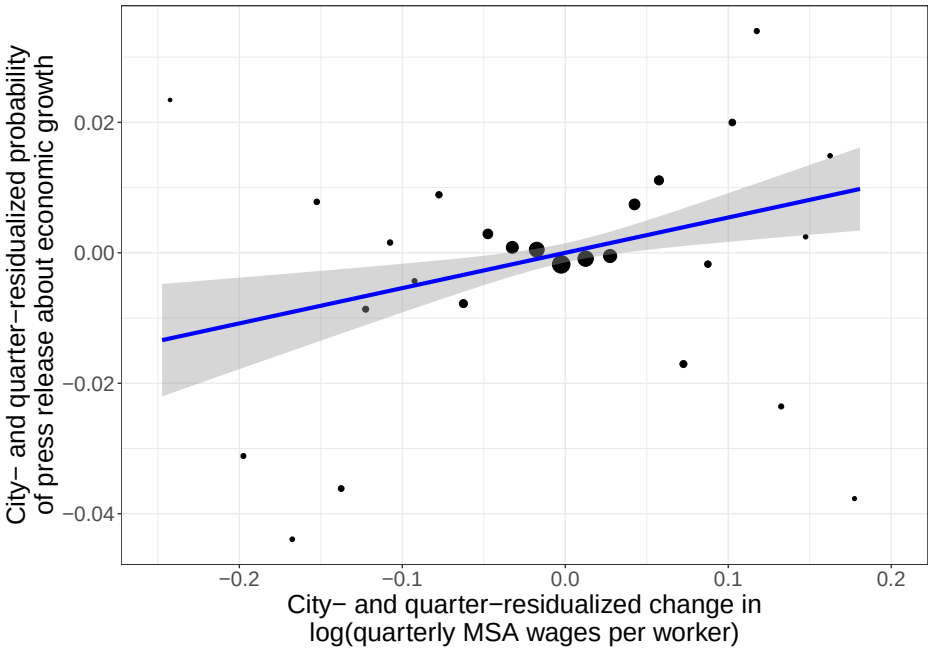

Figure A3: Change in MSA economic conditions and communication about economic growth. Open circles show the city- and quarter-residualized mean probability of a press release containing more than 10 words in the economic growth dictionary within bins of equal width along the horizontal axis, which represents the city- and quarter-residualized change in the log of quarterly wages per worker in that MSA. Size of circles is proportional to the number of press releases within each bin.

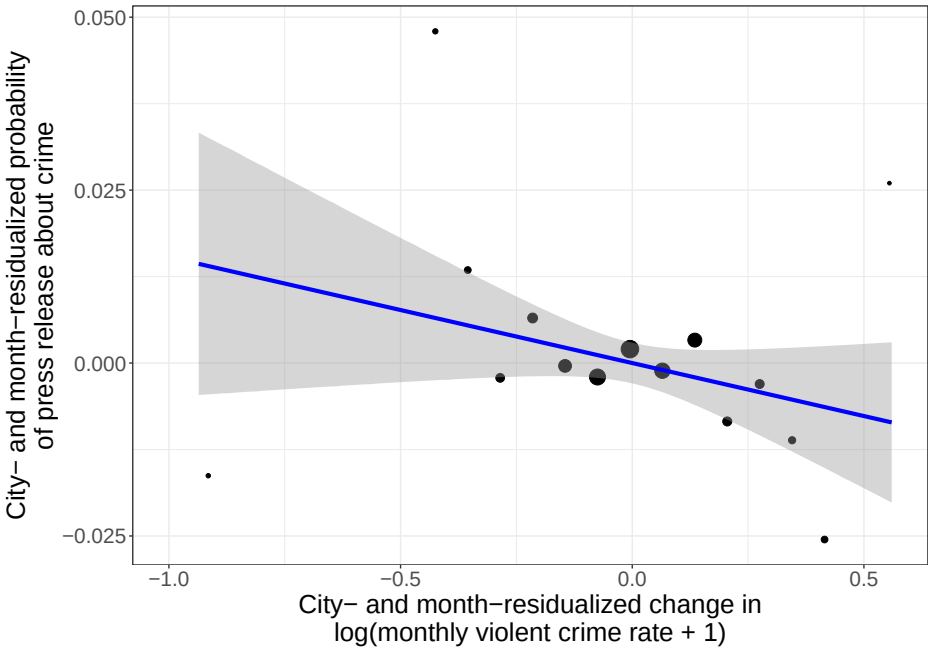

Figure A4: Change in city crime rate and communication about crime. Open circles show the city- and month-residualized mean probability of a press release containing more than 10 words in the crime dictionary within bins of equal width along the horizontal axis, which represents the city- and month-residualized change in the log of the monthly crime rate in that city. Size of circles is proportional to the number of press releases within each bin.

E Density of Press Releases

Another outcome of interest in relation to objective conditions and performance in cities is the aggregate number of press releases within a given time period — that is, the density of press releases. To analyze the effect of both economic conditions and crime on this outcome, I use similar aggregations of press releases at the temporal unit of measurement for the main independent variables, as in the main text. Using the city-time period aggregate datasets, I then conduct similar analyses to those used in the main analyses and regress the number of press releases a city released during that time period on the change in the log of wages, or the change in the log of the crime rate. As with the main analyses in the paper, I include city and time period fixed effects in a difference-in-differences approach. I show these results in Table A10, which indicates that both measures of objective conditions have effects on the density of cities' press releases that are statistically indistinguishable from zero.

Table A10: Effect of Economic Conditions and Crime on Density of Communication

	Dependent variable:	
	Number of press releases	
	(1)	(2)
Δ Log(quarterly wages per worker)	13.48	
	(13.63)	
Δ Log(violent crime rate per 100k + 1)		−1.53
		(2.41)
City fixed effects?	✓	✓
Quarter fixed effects?	✓	
Month fixed effects?		✓
Observations	1,310	520
R^2	0.65	0.83
Adjusted R^2	0.60	0.78
Note:		*p<0.1; **p<0.05; ***p<0.01
		Standard errors clustered by MSA and year-quarter, in model 1 and by city and year-month in model 2