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The Usual Suspects: Offender Origin, Media Reporting and Natives' Attitudes Towards Immigration.*

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Abstract

Immigration and crime are two first-order issues that are often considered jointly in people's minds. This paper analyzes how media reporting policies on crime impact natives' attitudes towards immigration. We depart from most studies by investigating the content of crime-related articles instead of their coverage. Specifically, we use a radical change in local media reporting on crime in Germany as a natural experiment. This unique framework allows us to estimate whether systematically disclosing the places of origin of criminals affects natives' attitudes towards immigration. We combine individual survey data collected between January 2014 and December 2018 from the German Socio-Economic Panel with data from more than 545,000 crime-related articles in German newspapers and data on their diffusion across the country. Our results indicate that systematically mentioning the origins of criminals, especially when offenders are natives, significantly reduces natives' concerns about immigration.

Keywords: Immigration, Crime, Media Bias

JEL codes: F22, K42, L82

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On New Year's Eve, two girls were raped in Weil am Rhein. The suspected perpetrators were arrested. In the Stuttgarter Zeitung newspaper, they are named "three youths and a man". SWR, on the other hand, speaks of "four Syrians between 14 and 21 years of age". [...] Why did the Stuttgarter Zeitung editorial staff refrain from informing the media that the suspects are young men with Syrian citizenship? By Frank Buchmeier, Stuttgarter Zeitung, January 9, 2016.

1 Introduction

On New Years's Eve 2015-2016, hundreds of sexual assaults against women occurred in Germany, mostly in Cologne, a city located in the West. In their initial reports, most newspapers followed the guidelines provided by the German press council (Article 12.1 of the German press code) and did not disclose the origins of the suspects. Over the following days, witnesses identified men of "North African" and "Arab" appearance, which was later confirmed by a police press release revealing that most offenders were asylum seekers. This voluntary omission by the press led to widespread accusations of a cover-up on social media. It revived the pre-existing debate on whether journalists should disclose criminals' origins when reporting crime events. A few months later, in July 2016, the Saxony-based regional newspaper Sächsische Zeitung officially announced a change in its rules on crime reporting. Specifically, it stated that it would henceforth always disclose the origins of criminals irrespective of whether the person was a foreigner, a German with a migration background, or an individual with no immigration background. The editor argued that the aim of the German press code of protecting minorities from stigmatization would be better served by *not* following Article 12.1. Despite the importance of the question on the appropriate crime reporting policy, existing empirical evidence remains insufficient to settle the debate.

This paper exploits the unilateral shift in reporting policy by the Sächsische Zeitung as a natural experiment to analyze the causal impact of crime reporting policies on natives' attitudes towards immigration.[1] Using data collected on more than 545,000 crime-related articles published between January 2014 and December 2018 in 25 German newspapers, we first provide empirical evidence that this exogenous shift in reporting policy did create a positive differential in the disclosure of offenders' origins between the Sächsische Zeitung

[1] The regional nature of the Sächsische Zeitung, which publishes in the West of the state of Saxony, entails that it is large enough to have a substantial local impact and small enough not to raise concerns related to spillovers to other states. For instance, in 2014, the Sächsische Zeitung ranked 12th in diffusion among German regional newspapers. These two characteristics make it very suitable for a natural experiment.

and other newspapers. We find this differential to be approximately eight percentage points after July 2016 and mainly driven by an increased propensity to disclose the origin of native German offenders. We also provide sound evidence that no other changes, apart from the disclosure of the origins of offenders, occurred for the Sächsische Zeitung compared to other newspapers in Germany.[2] Then, we estimate how a reporting policy that systematically discloses the origins of criminals impacts natives' concerns about immigration measured using individual-level survey data from the German Socio-Economic Panel (SOEP). Unlike other contributions in the literature, our study does not focus on newspapers' propensity to report crime by natives and immigrants but rather on how to handle sensitive information, such as the origins of offenders. Moreover, the unexpected local shift in crime reporting policy allows us to overcome challenges associated with estimating the relationship between media coverage and readers' beliefs, such as reverse causality, that arises when newspapers adjust their reporting to meet their readers' views.

Our empirical analysis combines two complementary approaches that exploit market share data at the local level for all major newspapers in Germany. The first identification strategy relies on a reduced-form analysis with a difference-in-differences estimator. The treatment intensity is defined as the 2014 share of Sächsische Zeitung sales in the total number of newspaper sales for each German locality. This setting allows us to estimate the extent to which natives' attitudes changed after July 2016 in the diffusion area of the Sächsische Zeitung compared to other localities in Germany. The reduced-form analysis has the advantage that it does not rely on text analysis to identify whether the origin of the offender is revealed in the article text.[3] The second identification strategy uses IV-2SLS estimates. We apply natural language processing methods to a collection of crime-related articles, which allows us to compute the monthly share of articles disclosing the origin of the offender in most serious crimes. We instrument this variable with the shift in reporting policy implemented by the Sächsische Zeitung in July 2016. This second identification strategy can therefore be considered a more direct empirical test, as it precisely captures the overall extent to which each native is exposed to the disclosure of the origins of criminals. In contrast to the reduced-form equation, our 2SLS-IV estimates are thus less likely to be affected by any change that would have been correlated with the spatial diffusion of the Sächsische Zeitung and natives'

[2]Specifically, we find no evidence that the Sächsische Zeitung changed the share of crime-related articles in its total number of articles published each month. We also find no evidence regarding its propensity to report certain types of crimes or the tone employed in crime articles. We also provide evidence that the market share trend of the Sächsische Zeitung across locations did not change significantly after July 2016 compared to the pretreatment period.

[3]We provide additional robustness checks that show that the measurement errors in the text analysis employed in the second identification strategy are rather small.

attitudes towards immigration. In both empirical strategies, the less-demanding estimates always include at least locality fixed effects and regional fixed effects interacted with year-month fixed effects, which control for any time-varying confounders at the regional level such as the level of unemployment or the share of foreign-born in the total resident population, as well as district-year controls. In additional estimates, we also provide evidence that our main conclusions remain unchanged when we include individual fixed effects. Overall, we find that systematically disclosing the origins of criminals reduces natives' concerns about immigration. We provide evidence that this effect is driven by a disproportionate increase in the disclosure of the origins of native offenders.

We interpret our findings within the framework of a simple Bayesian model where individuals do not observe crime rates directly but rely on the partial information relayed by the media to form beliefs on foreign and native crime rates. In such a model, increasing the salience of native criminality, through a disproportionate increase in the share of articles reporting crimes by natives, induces individuals to revise downwards their beliefs about the crime rates of foreigners.[4] Since immigration and crime are two first-order issues that are often considered jointly in the reader's mind (Card et al., 2012; Fitzgerald et al., 2012), lower perceived criminality by foreigners translates into reduced concerns about immigration. This interpretation of the result is reinforced by a heterogeneity analysis showing that the least informed individuals, namely, young and low-skilled natives, were the most likely to update their preferences following the policy change in July 2016. Another potential interpretation of our results is that in the absence of information on the offender's origin, native readers are likely to associate foreigners with each reported crime.[5] Thus, systematically reporting that most crimes are committed by native offenders would reduce the differential in crime rates between natives and foreigners that natives infer from reported crimes. This echoes recent papers by Alesina et al. (2018), Barrera et al. (2020) and Grigorieff et al. (2018), which provide evidence that information may reduce anti-foreigner attitudes.

[4] Couttenier et al. (2019a) discuss such a model in detail. They also provide evidence that a simple comparison of the crime rates of foreigners (pooling all nationalities) with natives in newspapers produces sufficient statistical power to influence natives' attitudes even when crimes and their reporting in the press are sparse.

[5] One can regard this interpretation of the results as being closely related to models of statistical discrimination. See Altonji and Pierret (2001); Laouenan and Rathelot (2017), among others, for evidence of reduced discrimination in the presence of increased information. Indeed, psychological studies report that majority groups are more likely to associate violent crime with minorities and be more subject to misidentification of criminal suspects as being members of other races (Gordon et al., 1996; Oliver and Fonash, 2002; Hammond-Watson and Hamm Baugh, 2018).

Related Literature. This paper contributes to several strands of the literature. *First*, it adds to the literature on the determinants of natives' attitudes towards immigration by highlighting the role of media in shaping how people perceive immigration and foreigners in destination countries (Boomgaarden and Vliegenthart, 2009; De Philippis, 2009; Héricourt and Spielvogel, 2014; de Coulon et al., 2016).[6] For example, Facchini et al. (2017) use US individual surveys that include questions on the most frequently watched network for national evening news to show that individuals watching Fox News are more likely than CBS viewers to report negative attitudes towards undocumented immigrants. They provide evidence that this effect remains even after controlling for ideological self-selection into channels. In a study of Germany, Benesch et al. (2019) show that the volume of media reports in newspapers, TV, and radio regarding immigration issues strongly influences natives' attitudes towards immigration at the individual level. Their paper addresses concerns related to identification using exogenous media spillovers from Switzerland. Our paper contributes to this literature by showing how a local newspaper's reporting policy on immigration-related issues may affect natives' attitudes towards immigration and foreigners. We change the focus from the propensity to report on crime to the more subtle question of what information to reveal. In this way, the closest paper to our analysis is Couttenier et al. (2019a), which studies how media coverage on immigrant criminality in 1,980 Swiss municipalities influenced electoral outcomes in the November 2009 referendum on the "minaret ban". The authors combine comprehensive data on criminality from the Swiss Statistical Office with media coverage on those crimes from 12 newspapers. They compute a pre-vote media bias in the coverage of migrant criminality between newspapers and across municipalities in 2009. Focusing on the most violent crimes, they find that an increase in media bias, that is, an increase in the differential of crime reporting between foreign and native offenders, increased votes in favor of the minaret ban. In contrast to Couttenier et al. (2019a), our paper does not focus on the propensity of newspapers to report immigrant criminality. Instead, our focus is on how newspapers report on criminality, namely whether they disclose offenders' origins. Interestingly, Couttenier et al. (2019a) also simulate the impact of a law that would have forbidden Swiss newspapers to disclose the nationality of criminals. They find that such a policy would have led to a 4.5 percentage point decrease in average pro-ban votes at the municipality level. Our paper directly estimates the causal impact of such a policy

[6] See Meltzer et al. (2017) for a literature review on the link between media and attitudes towards immigration in communication and media research. Additionally, see Scheve and Slaughter (2001); Mayda (2006); Dustmann and Preston (2007); Facchini and Mayda (2009, 2012); Hainmueller et al. (2015); Barone et al. (2016); Brunner and Kuhn (2018) for papers on alternative determinants, other than media, of natives' attitudes towards immigration.

using the Sächsische Zeitung policy shift in reporting as a natural experiment. Following DellaVigna and Kaplan (2007), we find the persuasion rate of the systematic disclosure policy to be between 2.6 and 11 percentage points depending on the empirical strategy. This range includes the persuasion rate found by Couttenier et al. (2019a) in the context of Switzerland and is in the range of other persuasion rates estimated in this literature (DellaVigna and Gentzkow, 2010). Another closely related contribution is Djourelova (2020), who also investigates the impact of a change in media reporting related to immigration. The empirical strategy in Djourelova (2020) exploits of a natural experiment provided by the exogenous ban of the term "illegal immigrant" from US newswire agency articles (Associated Press) in April 2013. Relying on the propensity of AP-subscribing newspapers to report articles from the agency the year before the ban, she finds that individuals more exposed to newspapers that rely more on AP articles are less likely to support restrictive immigration policies after the ban. Our paper shares with Djourelova (2020) the empirical strategy of using an exogenous change in reporting rules and the uneven diffusion of newspapers across the country to investigate how media reporting rules influence natives' attitudes towards immigrants. While Djourelova (2020) investigates the effect of media slant, holding the information content of articles constant, the focus of our study is on the effect of information provided to the reader in newspaper articles addressing a highly contentious topic, namely, crime. Moreover, while the change in the reporting policy is national by design in Djourelova (2020), such that treatment intensity depends on pretreatment behavior, the treated area in our study is limited and therefore clearly defined due to the local nature of the newspaper that implemented the policy change.[7]

Second, this paper contributes to the fast-growing literature analyzing the overall role of media in shaping economic and political behavior. Many papers notably investigate the impact of media on electoral outcomes using exogenous variations in media access and/or penetration (See, among others, Gentzkow, 2006; DellaVigna and Kaplan, 2007; Gerber et al., 2009; Gentzkow and Shapiro, 2010; Snyder Jr and Strömberg, 2010; Gentzkow et al., 2011; Enikolopov et al., 2011; Drago et al., 2014; Barone et al., 2015; Puglisi and Snyder Jr, 2015; Durante et al., 2019). Interestingly, our paper suggests that the way in which journalists handle sensitive information on immigration-related issues such as crime may be a transmission channel of the effect of media on electoral outcomes.[8] In this way, Mastrorocco and Minale

[7]To a lesser extent, the present work is also related to the economic literature studying the links between immigration and crime (See, among others, Moehling and Piehl, 2009; Bianchi et al., 2012; Bell et al., 2013; Chalfin, 2015; Couttenier et al., 2019b; Piopiunik and Ruhose, 2017; Amuedo-Dorantes et al., 2020; Ozden et al., 2018), focusing on their joint impact on natives through media reporting.

[8]Related literature also studies the impact of immigration on electoral outcomes (Gerdes and Wadensjö,

(2018), in the context of Italy, show that exposure to specific channels with disproportional coverage of crime events strongly affects individuals' perceptions of crime with no significant effect on concerns about immigration.

The remainder of this paper is organized as follows. Section 2 first describes the data that we collected and used in our empirical analysis, while Section 3 describes our natural experiment and reports related empirical evidence. Then, Section 4 presents our empirical strategy and main results. Finally, Section 5 offers some concluding remarks.

2 Data

This section presents the data that we use in our empirical analysis. We first describe the data collection and cleaning of crime-related articles in Germany in Subsection 2.1. Then, we describe data on natives' attitudes towards immigration in Subsection 2.2 taken from the German SOEP.

2.1 Media reporting on criminality

We used Dow Jones Factiva archives to collect 545,347 articles published between January 1, 2014, and December 31, 2018, by regional and national German newspapers.[9] Factiva classifies all these articles as related to crime and/or legal action. They belong to 25 widely circulated daily regional and national printed newspapers in the country. The Dow Jones Factiva archives ensure full coverage over time (see Table 1 for a list of these newspapers). The choice of newspapers has been largely determined by their availability in the Dow Jones Factiva archives and our commitment to cover the entire German population. Unfortunately, we could not collect articles in regional newspapers for Saarland and Bremen, the two regions with the lowest population.

We first exclude irrelevant articles that are not related to real crimes from our sample. To do so, we rely on a simple text analysis based on lexicons (lists of words).[10] This allows us to

2010; Otto and Steinhardt, 2014; Halla et al., 2017; Harmon, 2018; Mayda et al., 2019; Edo et al., 2019; Dustmann et al., 2018; Tabellini, 2020; Steinmayr, 2020). Most of these papers show that immigration is often associated with an increase in the share of votes for far-right parties. Here, again, our paper suggests that media reporting on immigration may contribute to this relationship by impacting anti-foreigner attitudes.

[9] We restrict our analysis to articles in German. Crime news in a foreign language is less likely to shape natives' overall attitudes in the country and more likely to be read by a self-selected sample of the total German population, which could systematically bias our analysis.

[10] All the lexicons used in this paper were developed by the authors and are available upon request.

Table 1: List of Newspapers

Newspaper	Editorial Board	Region	Subscription	Nb. Prints	Nb. Articles	Share
Bild	Berlin	Berlin	National	2,205,271	4,386	1.09
Berliner Kurier	Berlin	Berlin	Regional	141,722	4,964	1.23
Der Tagesspiegel	Berlin	Berlin	National	110,429	6,682	1.66
Die Welt	Berlin	Berlin	National	202,790	7,627	1.89
Express	Cologne	North Rhine-Westphalia	Regional	132,836	11,558	2.87
Hamburger Abendblatt	Hamburg	Hamburg	Regional	217,566	13,629	3.38
Hamburger Morgenpost	Hamburg	Hamburg	Regional	108,150	2,458	0.61
Hannoversche Allgemeine Zeitung	Hannover	Lower Saxony	Regional	198,365	10,535	2.62
Kieler Nachrichten	Kiel	Schleswig-Holstein	Regional	97,777	6,912	1.72
Kölner Stadt-Anzeiger	Cologne	North Rhine-Westphalia	Regional	273,382	10,633	2.64
Leipziger Volkszeitung	Leipzig	Saxony	Regional	198,882	12,909	3.20
Märkische Allgemeine Zeitung	Potsdam	Brandenburg	Regional	126,682	35,106	8.72
Mitteldeutsche Zeitung	Halle	Saxony-Anhalt	Regional	191,507	16,438	4.08
Nürnberger Nachrichten	Nuremberg	Bavaria	Regional	449,924	7,312	1.82
Ostsee-Zeitung	Rostock	Mecklenburg-Western Pomerania	Regional	159,364	16,994	4.22
Passauer Neue Presse	Passau	Bavaria	Regional	142,824	2,648	0.66
Rheinische Post	Dusseldorf	North Rhine-Westphalia	Regional	323,432	64,383	15.98
Sächsische Zeitung	Dresden	Saxony	Regional	238,977	35,865	8.90
Stuttgarter Zeitung	Stuttgart	Baden-Württemberg	Regional	197,645	29,426	7.31
Süddeutsche Zeitung	Munich	Bavaria	National	477,836	28,313	7.03
Südwest Presse	Ulm	Baden-Württemberg	Regional	291,917	8,631	2.14
Taz - die tageszeitung	Berlin	Berlin	Regional	53,812	5,652	1.40
Thüringer Allgemeine	Erfurt	Thuringia	Regional	272,508	28,786	7.15
Trierischer Volksfreund	Trier	Rhineland-Palatinate	Regional	89,081	18,709	4.64
Wiesbadener Kurier	Wiesbaden	Hesse	Regional	65,915	12,263	3.04
				Total:	402,819	100%

Source: Authors' elaboration on Dow Jones Factiva archives. Editorial board is the city localization of the newspaper's headquarters. Subscription reports whether the newspaper is disseminated at the regional or national level. The number of prints is taken from the 2014 edition of the distribution data of the German daily press, which were collected in the week from November 4 to 10, 2013 by the Information Community for the Assessment of the Circulation of Media (IVW). Nb. Articles and Share are the total number and the share of articles of each newspaper in our baseline sample, respectively.

identify and drop irrelevant articles in the broad crime and/or legal action categories, such as articles describing crimes in books, movies, theater or arts and entertainment (11.88 % of our initial sample). Then, as suggested by Couttenier et al. (2019a), we isolate crimes associated with violence that are more likely to change interpersonal attitudes towards foreigners than articles reporting traffic violations, environmental crime or financial fraud. Our classification of crimes follows the International Classification of Crime for Statistical Purpose (ICCS) provided by the United Nations Office on Drugs and Crime, except for criminal acts against property that we aggregate in a single category, irrespective of whether they involve violence. The crime types are terrorism; murder; assault and threats; sexual violence; theft, burglary, robbery, and vandalism; drugs; human trafficking; and illegal immigration (see Table 2 for a description of the categories). We attribute each article to one or several of these seven mutually non-exclusive categories using our lexicons. Items that do not belong to any of the seven categories (77,758) are removed from our initial sample (14.26%).[11] We ultimately

[11]The Dow Jones Factiva archives also have a classification that automatically indexes each article using a collection of thousands of correctly indexed documents assembled by Dow Jones editors. We do not use this classification since we have no reliable information on how articles are classified. However, we can compare the classification using our lexicons with the classification obtained from the Dow Jones Factiva archives. As

Table 2: Crime Categories

Category	Short description	ICCS section(s)	ICCS description	Nb. articles	Share.
1	Murder	01	Acts leading to death or intending to cause death.	61,916	15.37
2	Assault - Threats	02	Acts leading to harm or intending to cause harm to the person.	207,709	51.56
3	Sexual violence	03	Injurious acts of a sexual nature.	40,324	10.01
4	Theft - Burglary - Robbery - Vandalism	05	Acts against property involving violence or threat against a person-Acts against property only.	229,454	56.96
5	Drugs	06	Acts involving controlled psychoactive substances or other drugs.	45,152	11.21
6	Human trafficking - Smuggling - Illegal Immigration	0805	Acts related to migration.	48,969	12.16
7	Terrorism	0906	Terrorism.	46,644	11.58
			Total:	402,819	

Source: Authors' elaboration on International Classification of crime for Statistical Purpose (ICCS, v1.0). United Nations Office on Drugs and Crime. Nb. Articles and Share are the total number and the share of articles in each of the non-mutually exclusive categories in our baseline sample, respectively.

have a sample of 402,819 articles.

Our analysis uses a bag-of-words model to detect whether the reporter disclosed the offender's origin. We first convert each article into a vector of tokens (words) using the Natural Language Toolkit package in *Python* (NLTK). Then, we count the number of words from three different lexicons in the article content and title. The first lexicon includes a sample of nationalities whose variations in spelling exclude words related to German citizens.[12] This lexicon includes a total of 1,921 distinct words. For instance, French offenders are identified with the following words: *"france, franzose, franzosen, franzosisch, franzosische, franzosischem, franzosischen, franzosischer, franzosisches"*.[13] The second lexicon allows us to identify German offenders with the six following words: *"deutsch, deutsche, deutschem, deutschen, deutscher or deutsches"*. Finally, the third lexicon includes words that could be associated with foreigners in Germany with no precisely identified origin or nationality, such as "*gefluchteten* (refugees), *asylbewerber* (asylum seeker), *zuwanderer* (immigrant) or *islamistisch* (islamist)". This last lexicon includes a total of 98 words. Subsection 3.2 provides descriptive statistics

reported in Appendix Table A3, on average, in 90% of the cases, an article identified by Factiva as belonging to a given category is also identified by our classification as belonging to the same category. Conversely, in 85% of the cases, an article that Factiva does not identify as belonging to a given category is also not identified by our classification as belonging to the same category.

[12]Instead of using spelling variation, we could have used stem words. However, the identification of the offender's origin was less precise when using the Snowball stemmers developed by Porter (2001).

[13]We removed all capital letters and special characters such as *Umlaut* from the words to increase the chances of detecting relevant words.

on the share of articles disclosing the offender's origins.

Section 5.4 in Appendix F shows three examples of article classification based on words detected by the lexicons. These examples illustrate both the strengths and weaknesses of our lexicon-based approach. The main advantage is the reliable and systematic classification of vast amounts of text, which reduces the subjectivity and risks associated with manual classifications.[14] Simultaneously, our lexicons cannot detect subtle uses of language that would implicitly reveal an origin. In fact, for non-white Germans with an immigration background (naturalized or second-generation migrants), the classification would not detect any origin if the latter is not explicitly revealed but only suggested by a physical description of the offender. Thus, there is a clear tradeoff between lexicons' comprehensiveness and the risk of detecting false positives. To understand the importance of the measurement error in our analysis, Section 5.5 in Appendix F reports a comparison between the classification of articles and the detection of origins provided by our algorithm and a manual check of more than 900 articles. We find that 61% of articles classified as relevant by the lexicon approach, namely, belonging to one of the seven categories of crimes, are true positives and 17% of classified articles are true negatives. This overlap corresponds to an overall accuracy rate of 78%. Conditional on classifying an article as relevant, the lexicon correctly detects whether the offender's origin is mentioned in 72% of cases. When the lexicon approach does not detect any origin being mentioned, it is correct in 98% of cases.

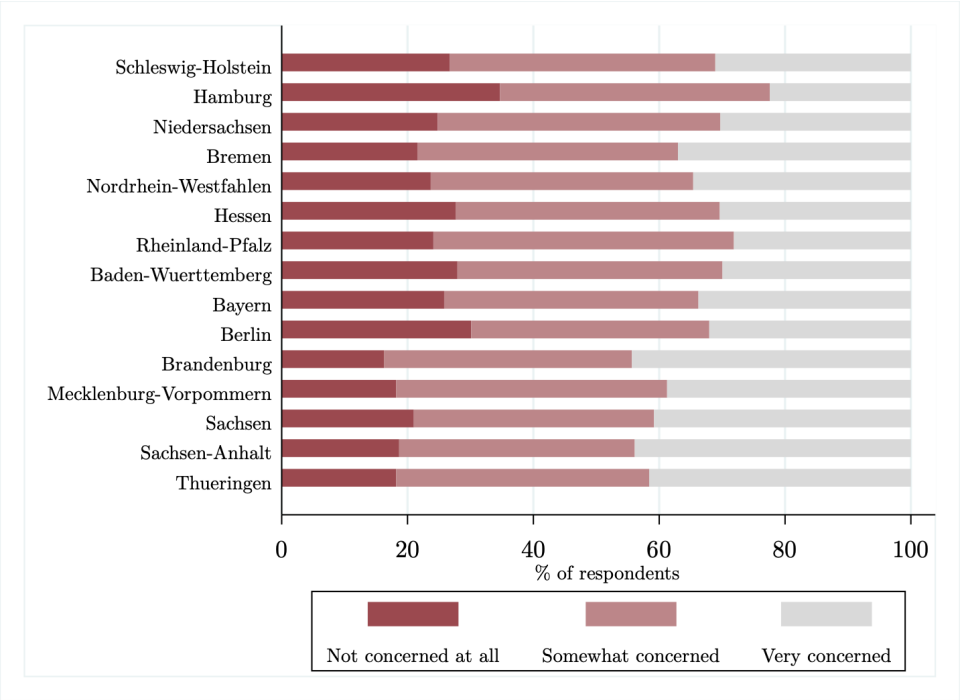
Overall, and despite the aforementioned reassurances, we acknowledge that our simple detection algorithm may fail by not detecting some origins or by wrongly attributing origins to nonoffenders mentioned in the article, such as victims or witnesses.[15] However, we do not view this as a significant issue since our goal is not to measure the share of articles reporting offenders' origin with great precision. Instead, our aim is to quantify the change in reporting policy implemented by the Sächsische Zeitung. Although our reporting policy measure is likely to be noisy, it is doubtful that the measurement errors would be systematically correlated with the treatment. Ultimately, they would imply less precision in our estimates but no systematic bias in the empirical analysis.

[14] It is worth noticing that another advantage of this simple text analysis is its transparency and perfect replicability.

[15] Our empirical analysis in Section 3 will provide reassuring evidence that the detection of the origins of offenders and suspects is robust to a more complex text analysis that isolates sentences in which we explicitly identify keywords associated with victims (*"opfer"*) and perpetrators (*"täter"*).

2.2 Individual attitudes towards immigration

Figure 1: Natives' Attitudes Towards Immigration in German Regions



Notes: This graph depicts the percentage of individuals answering "Not concerned at all", "Somewhat concerned" or "Very concerned" to the question "How concerned are you about immigration?" across German regions over the period 2014-2018. Observations are weighted using individual longitudinal weights provided by the SOEP.

Source: Authors' elaboration on SOEP.

We employ the German SOEP, which includes a question on immigration attitudes. The SOEP is an ongoing representative longitudinal survey that collects information on private households in Germany since 1984. We restrict our analysis to the 2014-2018 period for which we collected data on media reporting. Our sample includes only German natives aged 18 and older. In each of the surveys, individuals are asked to give their opinions on various topics with the following question: *"How concerned are you about the following issues?"*.[16] Individuals may choose between three different answers, namely, "not concerned at all", "somewhat concerned", and "very concerned". We use the month of the interview and

[16]Since the original question is formulated in German, we report our preferred translation. Alternatively, the question could be translated by *"How worried are you about the following issues? "*, in which case the response items become "Very worried", "Somewhat worried" or "Not worried at all".

the place of residence of the respondent to link individual perceptions on these topics with media reporting on criminality across various national and regional newspapers. To do so, we consider the area of diffusion of each newspaper across districts and municipalities in Germany that is provided by the Information Community for the Assessment of the Circulation of Media (IVW).[17] On average, we find that 41.56% of individuals report that they are very concerned about immigration during our analysis period. The rest of the population falls into two categories: those who are somewhat concerned (34.02%) and those who report no concern at all (24.42%). Regarding regional differences, the percentage of respondents for each category is reported in Figure 1. Residents from the region Saxony, the area where the Sächsische Zeitung is distributed, seem to be more concerned about immigration than the rest of the German population, with 43.89% of individuals being very concerned about the issue.

3 The Natural Experiment

This paper analyzes how the disclosure of criminals' origins in the media affects natives' attitudes towards immigration. We exploit a natural experiment that induced an exogenous change in the reporting of crimes for the newspaper Sächsische Zeitung in July 2016. In this section, we first describe the conventional historical rules governing media reporting on crime in Germany. Then, we describe the chronology of events surrounding New Year's Eve 2015-2016 in Cologne, a city located in West Germany. These events led the Sächsische Zeitung, almost exclusively sold in Saxony to change its reporting policy regarding the disclosure of criminals' origin six months later.[18] Finally, we provide descriptive and empirical evidence of this change using the data described in the previous section.

3.1 Media reporting on criminality in Germany and New Year's Eve 2015-2016

Rules and conventions that apply to the press in Germany are described in the German Press Code, best known as the "Pressekodex". The Pressekodex comprises guidelines intended to define "the professional ethics of the press" and defend press freedom in Germany. It helps to preserve the "standing and the credibility of the media" in Germany. While these guidelines

[17] See Section 4 for more details on the newspaper diffusion data.

[18] Figure 4 more clearly illustrates that the area of diffusion of the Sächsische Zeitung is geographically opposite the city of Cologne, where the New Year's Eve 2015-2016 events were concentrated.

are not mandatory, the German Press Code is effectively advisory and broadly accepted among German journalists. Edited by the German Press Council since 1973 in its current form, it defines, among other things, rules on crime reporting to prevent discrimination based on sex, disability, or ethnic, religious, social, or national affiliation. The 2015 version of the code stated that when reporting crimes, "it is not permissible to refer to the suspect's religious, ethnic or other minority backgrounds unless this information can be justified as being relevant to the readers' understanding of the incident. In particular, it must be borne in mind that such references could stir up prejudices against minorities" (See Section 12, pp-9). Nevertheless, while well defined in the Pressekodex, rules on the disclosure of offenders' origins in Germany have been widely challenged in recent years.

The historical debate on whether newspapers should disclose criminals' origins opposes two different visions that would lead to opposite actions and guidelines. Surprisingly, despite the importance of the discussion, empirical evidence to settle the debate is still lacking. On the one hand, journalists supporting Article 12.1 of the German press code argue that systematically revealing perpetrators' origins could result in discriminatory behavior against certain minorities. Indeed, it is likely that natives with pre-existing prejudices pay much more attention to articles that disclose foreigner criminals' origins than to articles disclosing the origins of native criminals. This in turn could result in disproportionally higher attention from the public in general towards immigration-related criminality. Thus, guidelines could be necessary to protect minorities from being systematically associated with criminal activities. On the other hand, journalists against Article 12.1 of the German press code mainly argue that offenders' origins should always be disclosed since not mentioning this information leads natives to overestimate the real proportion of crimes committed by foreigners relative to natives. Indeed, if a biased association between immigration and crime were already widespread in the population, not reporting the origins of criminals would only reinforce the problem. A person with a migration background would systematically be associated with each reported crime. Additionally, they suggest that the rise of the internet and social media makes it difficult to prevent information from reaching the public. Finally, they argue that concealing criminals' origins reduces public confidence in the media's independence and leads readers to feel manipulated by newspapers.[19] Tanit Koch, the former chief editor of BILD, the best-selling German newspaper, declared that Article 12.1 of the German Press Code was "unjustified self-censorship" and that it damaged the credibility of the media as a whole. At present, this debate remains highly sensitive among the German population at large. In a

[19] In a 2015 survey from the Dortmund-based Forsa Institute, 44% of respondents reported that the German press was partially or wholly lying to the people.

2017 interview, Nikolaus Jackob, managing director of the Institute for Journalism in Mainz, emphasized that the German Press was an exception in Europe on this specific subject due to, among others, the "widespread discrimination and persecution during the Nazi era".

The debate reached a turning point following New Year's Eve 2015-2016. More than a thousand acts of theft and sexual attack occurred that night, mostly in Cologne.[20] The next day, the police press release reported that the suspected criminals were of "North African" and "Arab" appearance, which was confirmed during a press conference on January 4, 2016. To a large extent, traditional media did not mention the offenders' origin in their initial reports. The Saxony-based newspaper Sächsische Zeitung reported sexual assaults in Cologne on January 2 but did not mention any information on the offenders' origins. It was only four days after the events, when the news became widespread and following the police press conference in Cologne on January 4, that the newspaper started to disclose information that was by then already public. These omissions from the press led to numerous accusations of a cover-up on social media, and newspapers were accused of repeatedly withholding information on the origins of perpetrators.[21] Journalists explained that the reason for the choice not to disclose the origins of the perpetrators was Article 12.1 of the German Pressekodex (which again generally prohibited journalists from mentioning the origins of criminals). Nevertheless, the absence of reaction from the media and the fact they deliberately decided to conceal criminals' origins had already contributed to the rebirth of the "lügenpresse" (lying-press) term, which was historically used by far-right movements in Germany, as reported in Figure F3 in the Appendix. Importantly, these events occurred in the context of rising anxiety due to immigration in general and the 2015 refugee crisis in particular. German populism has been driven by an increasing distrust in the press, primarily accused of treating information related to migrants in an overly favorable manner.[22] Between 2014 and 2018, Germans ranked

[20]Further investigations and a report from the Federal Criminal Police Office acknowledged that many other sexual attacks occurred the same night in Nuremberg and Munich (27 crimes), Bremen (11), Berlin (6), Baden-Württemberg (25) and Hessen (31). However, the largest number of complaints was recorded in Cologne, Düsseldorf, and Bielefeld, cities that all belong to the North Rhine-Westphalia region (1,076). The report also underlines that the victims were mostly female and that among the 1,076 crimes reported, 384 were sexual offenses.

[21]The outrage was not limited to newspapers but also target German public television, among other media. For instance, ZDF, the major German public-service television broadcaster, did not report the events in Cologne in its daily news bulletin "heute" (German for "today") on January 2, 2016. The channel then had to publicly apologize for having deliberately omitted the information. Chief editor Elmar Theveben declared that "it was a mistake that the incidents were not reported at least at 7 p.m. today. We wanted to wait for the crisis meeting on Tuesday to save time for further interviews. However, it was an obvious error of judgment." https://www.thelocal.de/20160106/cologne-police-cant-work-this-way-minister.

[22]Since 2014, and partly due to the refugee crisis, Germany has witnessed its share of foreign-born population in all residents rise from 10.04% to 13.17%, corresponding to an increase of 2,762,487 individuals according to the German Federal Statistical Office. This historical inflow contributed to the rebirth of far-

immigration issues as the most pressing problem facing the country. At its peak of salience in January 2016, more than 85% of the population reported immigration as the most essential concern.[23]

After January 2016, the discussion became a debate on the foundations of Article 12.1 of the Pressekodex and whether it should be modified or removed.[24] On March 9, despite the public pressure on the need for newspapers to systematically disclose offenders' origins, the German press council first decided to reaffirm its existing rules on criminal reporting. However, following the Press Council meeting, the Saxony-based newspaper Sächsische Zeitung, through its editor-in-chief Uwe Vetterick, declared that the paper would consider disclosing criminals' nationality irrespective of the origin of the offender.[25] The official announcement was made public several months later in July 2016 in the following terms: *[...] we asked ourselves: does the Directive of the Press Code actually contribute to the protection of minorities in the current situation in Dresden and Saxony? Many Sächsische Zeitung employees, on the contrary, are convinced that it is precisely the failure to name the nationality of offenders and suspects that can create room for rumors that often harm those we would like to protect. [...] That is why, after some thoroughly controversial discussions, we decided not to comply with the guidelines of the German Press Council when reporting on crime committed by foreigners. Instead, we will in the future specify the origin of offenders or suspects at all times. It does not matter if the offender is German, which is the rule, or a foreigner.*[26] We exploit this

right parties and negative sentiments regarding immigration. For instance, the Alternative for Germany party (AfD) obtained a stunning success in the last German federal elections of 2017, becoming the third-largest political force in the country with 94 seats in the Bundestag.

[23]Information from the German poll *Politbarometer*, accessed on February 16, 2021. Link: https://www.forschungsgruppe.de/Umfragen/Politbarometer.

[24]To highlight the intensity of the debate over the German Press Code in this troubled period, we collected monthly data on web-search interest on the German Press Code in Germany from 2014 to 2019. This allows us to obtain information on how frequently the term "Pressekodex" was entered into Google's search engine each month during this period. As depicted in Figure F4 in the Appendix, the largest number of requests including the term "Pressekodex" occurred precisely in January 2016 at the time of the Cologne events. This emphasizes that while the debate already existed in Germany, this event was a primary explanation for the return of the issue to the forefront of public interest.

[25]The decision was also based on a specific survey addressed to its subscribers, which revealed that at least 25% of them thought that the newspaper was concealing the origins of foreign criminals "out of consideration for them".

[26]Source: Fakten gegen Gerüchte, Sächsische Zeitung, July 3, 2016 (Authors' translation). The full version of the article is reported in Appendix C. Note that one year later, on March 22, 2017, the German Press Council finally adjusted the German Press Code, making it slightly looser than it had been previously. Section 12.1 was rewritten such that offenders' origins could be disclosed but only if it is in the public interest. It now states that when reporting on crimes, *"it must be ensured that any reference to a suspect's or perpetrator's membership in ethnic, religious or other minority groups does not result in a discriminatory generalization of individual misconduct. As a rule, membership in a minority group shall not be mentioned unless this is in the legitimate interest of the general public. In particular, it must be borne in mind that such references could stir up prejudices against minorities"* (Section 12, pp-9).

Table 3: Mean Comparisons in Disclosure Policies before and after July 2016.

	Mean Before July 2016	Mean After July 2016	Diff. in mean (value)	Diff. in mean (p-value)
Sächsische Zeitung:				
$Disclose_{n,t}$	34.60%	43.81%	9.21%	0.000
$Disclose_{n,t}^{Ger}$	9.33%	16.34%	7.01%	0.000
$Disclose_{n,t}^{For}$	25.24%	30.03%	4.79%	0.000
$Disclose_{n,t}^{Mig}$	15.06%	16.55%	1.49%	0.201
Other newspapers:				
$Disclose_{n,t}$	34.86%	34.62%	-0.24%	0.822
$Disclose_{n,t}^{Ger}$	10.72%	12.01%	1.29%	0.030
$Disclose_{n,t}^{For}$	24.05%	24.58%	0.53%	0.432
$Disclose_{n,t}^{Mig}$	17.06%	16.12%	-0.94%	0.442

Note: T-tests on the equality of means. $Disclose_{n,t}$ is the share of articles that disclose criminals' origins relative to the total number of crime-related articles in newspaper n at year-month t. It is first computed for all origins and then for the three lexicons described in Subsection 2.2, namely, Germans ($Disclose_{n,t}^{Ger}$), foreign nationalities ($Disclose_{n,t}^{For}$) and immigration markers ($Disclose_{n,t}^{Mig}$).

unexpected policy shift to study how natives in the diffusion area of the Sächsische Zeitung reacted to this change.

3.2 Descriptive evidence

This subsection provides descriptive evidence that the Sächsische Zeitung effectively changed its reporting policy after its official announcement in July 2016. Using crime-related articles collected from several newspapers across the country, we define $Disclose_{n,t}$ as the share of i articles that disclose criminals' origins relative to the total number of crime-related articles in newspaper n at year-month t such as:

$$Disclose_{n,t} = \sum_i \frac{[Article_{i,n,t}|Origin = 1]}{Article_{i,n,t}} \tag{1}$$

where $Article_{i,n,t}$ is crime-related article i published in newspaper n at year-month t.

From January 2014 to December 2018, we find that German newspapers on average disclosed offenders' origins in 36.97% of serious crimes (34.72% before July 2016 and 39.21%

after) with substantial variability (standard deviation of 5.85%). Articles reporting a crime may not disclose the origin of the offender for two reasons: (i) the journalist does not have this information, which is typically the case for unsolved cases, for instance, or (ii) the journalist knows the origin but decides that the information is not relevant in the context, in line with the recommendation of Article 12.1 of the Pressekodex. This uncertainty explains why, even for newspapers with a high disclosure level, the percentage of revealed origin is always far below 100%. The main effect of the shift in reporting policy by the Sächsische Zeitung is to remove the second reason (ii). Table 3 shows that, on average, newspapers did not change their reporting policies towards native criminality after July 2016. Note that the statistically significant difference in the mean of native offenders reported in other newspapers is not robust to the exclusion of July 2018 from our sample, for which we observe a one-off increase in disclosure. In contrast, in line with the announced change in reporting policy, we find substantial variation for the Sächsische Zeitung before and after July 2016 in the disclosure of German offenders and, to a smaller extent, a significant increase for other nationalities. However, our algorithm does not detect any differences in keywords associated with immigration before or after July 2016.

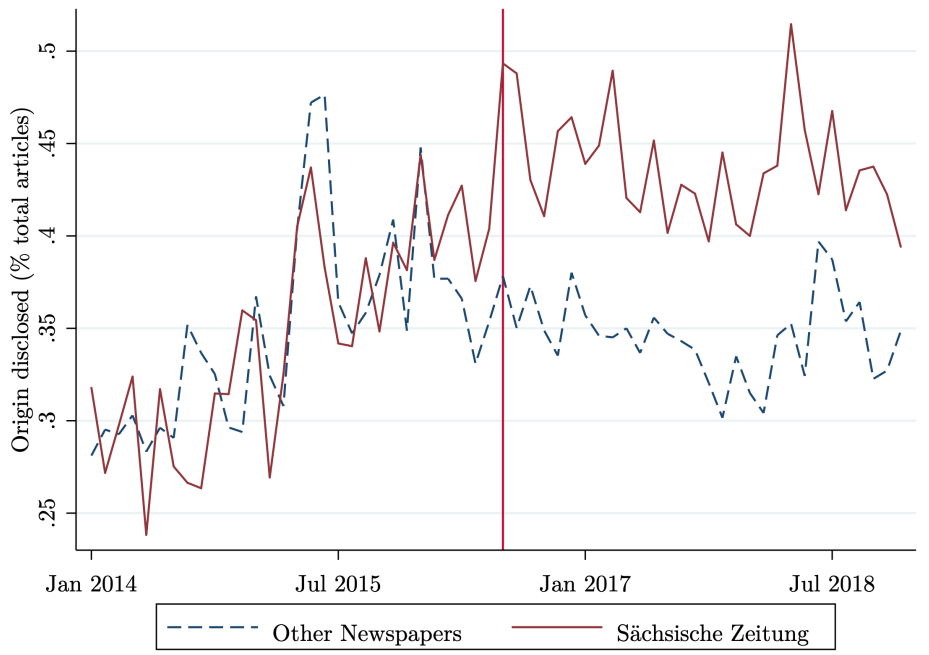
We plot in Figure 2 the variable $Disclose_{n,t}$ for the Sächsische Zeitung and other German newspapers pooled together. As early as July 2016 and its official announcement, the Sächsische Zeitung unambiguously started to depart from other German newspapers by systematically over-disclosing the origins of criminals. This differential in reporting remained remarkably constant over time. Importantly, for our identification strategy, the two lines only distinctly started to diverge in July 2016 and not before. From January 2015 to July 2016, the Sächsische Zeitung reporting closely matched the reporting of other German newspapers in terms of both level and trend. Additional descriptive evidence in Figure B1 in the Appendix suggests that this gap in disclosure is entirely driven by the detection of origins in our first two lexicons with German and foreign nationalities. Again, we find no differences from the third lexicon containing only immigration markers.

3.3 Empirical evidence

Difference in Differences. This subsection empirically tests the validity of the descriptive evidence reported in the last subsection with a more formal analysis at the newspaper-year-month level. We estimate the following specification:

$$Disclose_{n,t} = \beta SZ_n \times July16_t + \gamma_t + \gamma_n + \varepsilon_{n,t} \tag{2}$$

Figure 2: Share of Crime-related Articles Disclosing Criminals' Origins



Note: This graph depicts the variable $Disclose_{n,t}$, which is the share of i articles disclosing criminals' origins relative to the total number of crime-related articles in newspaper n at year-month t. All newspapers except the Sächsische Zeitung are pooled together.
Source: Authors' elaboration on Dow Jones Factiva archives.

where $July16_t$ is a dummy variable equal to one after July 2016 and zero before and SZ_n is a dummy variable equal to one for the Sächsische Zeitung and zero otherwise. γ_t and γ_n are year-month and newspaper fixed effects, respectively, which control for time-varying cofounders at the country level and time-invariant newspaper characteristics. Thus, β captures the differential in reporting offenders' origins between the Sächsische Zeitung and other German newspapers after July 2016. As in standard difference-in-differences estimates, our identifying assumption is that in the absence of the July 2016 policy shift, the Sächsische Zeitung would have continued to disclose the criminal's origin like other newspapers in Germany. Standard errors are clustered at the newspaper level. Our results are reported in Table 4.

Column (1) reports the results of our main specification estimated without fixed effects. We find a positive and highly significant β, which suggests that the Sächsische Zeitung indeed increased its propensity to disclose offenders' origins in crime-related articles after July 2016, as we have already shown graphically in Figure 2. This effect remains in column (2) when

Table 4: Change in Reporting Policy

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
SZ_n	-0.073***						
	(0.026)						
$July16_t$	0.015						
	(0.017)						
$SZ_n \times July16_t$	0.077***	0.074***	0.077***	0.078***	0.048***	0.095***	0.097***
	(0.017)	(0.018)	(0.010)	(0.011)	(0.000)	(0.000)	(0.000)
Newspaper FEs		√	√	√	√	√	√
Year-month FEs		√	√	√			
Newspaper × linear time trend			√	√		√	√
Year-Month × Regional FEs					√	√	√
Nb. Articles weights				√			√
Nb. Observations	1,475	1,475	1,475	1,475	1,475	1,475	1,475
Adjusted R^2	0.006	0.736	0.822	0.885	0.741	0.817	0.907

Note: The dependent variable is $Disclose_{n,t}$, the share of i articles disclosing criminals' origins relative to the total number of crime-related articles in newspaper n at year-month t. $July16_t$ is a dummy variable equal to one after July 2016 and zero before, and SZ_n a dummy variable equal to one for the Sächsische Zeitung and zero otherwise. Robust standard errors clustered at the newspaper level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Dow Jones Factiva archives.

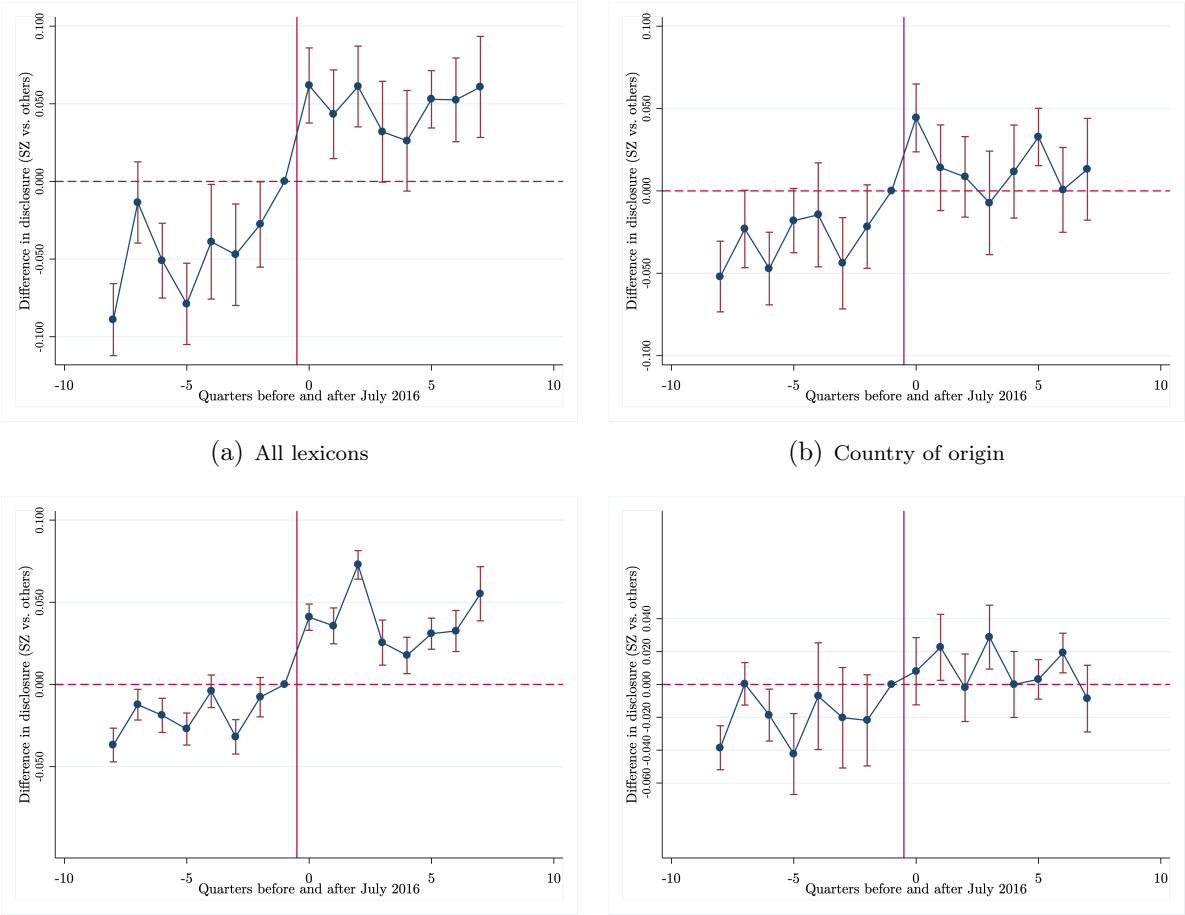
controlling for year-month and newspaper fixed effects. Regarding the magnitude of the effect, we estimate that the Sächsische Zeitung policy shift in reporting created a positive differential of approximately 7.4 percentage points compared to other newspapers.[27] In column (3), we show that this effect is robust to controlling for newspaper-specific linear time trends, allowing for differential trends in newspapers. Interestingly, this new estimate supports the parallel trends assumption described above: in the absence of the change in reporting policy, the Sächsische Zeitung would have continued to disclose criminal origins similarly to other newspapers in Germany. Column (4) confirms these findings, taking into account the size of the newspapers by using weighted regressions. Indeed, we find no significant differences in our coefficient of interest when estimates are weighted using the total number of crime-related articles published by each newspaper.[28] Then, from columns (5) to (7), we replicate

[27]Table B1 in the Appendix replicates these results for each type of crime. Our coefficient of interest is significant for all types of crimes except immigration crimes, for which our coefficient of interest is relatively small and only significant at the 10% level. This result makes sense since immigration crimes involve foreigners by definition, leaving little room to disclose more offender origins. Nevertheless, one must interpret these results with caution, as differences in the precision of the estimated coefficients may be affected by the volume of articles available for each crime type.

[28]Table B2 in the Appendix provides additional support for the validity of the parallel trends assumption. In this set of estimates, we remove observations after July 2016 and include alternative placebo treatments in November 2014, June 2014 and May 2015. In all estimates, our coefficient of interest is not significant, which shows that the Sächsische Zeitung only started to depart from other newspapers after July 2016 and

our analysis with a different source of variation by including regional fixed effects interacted with year-month effects. The fixed effects absorb any time-varying cofounders at the regional level, such as the level of unemployment or foreign-born share in the resident population. Our conclusions remain unchanged, although we observe a slight but nonsignificant increase in our benchmark coefficient.

Figure 3: Changes in Reporting Policy over time, Alternative Lexicons



(a) All lexicons

(b) Country of origin

(c) German identity

(d) Immigration markers

Note: The dependent variable is $Disclose_{n,t}$, the share of i articles disclosing criminals' origins relative to the total number of crime-related articles in newspaper n at year-month t for a particular subset of origins. Each coefficient corresponds to the interaction between the SZ_n variable and a given quarter before and after July 2016. The first quarter before July 2016 (April 2016 to June 2016) is the omitted category. We include 95 percent confidence intervals around the estimated coefficients. Standard errors are clustered at the newspaper level. All estimates include newspaper and year-month fixed effects and are weighted by the total number of crime-related articles published by each newspaper. The same graph is obtained without weights and available upon request.
Source: Authors' elaboration on Dow Jones Factiva archives.

not before.

Event analysis. We divide our treatment variable into a set of interactions using quarterly leads and lags before and after July 2016. The first quarter before July 2016 (April 2016 to June 2016) is the omitted category. The estimated coefficients are reported in Figure 3. We find that before July 2016, the differential in reporting between the Sächsische Zeitung and other newspapers was negative, with no significant differences between all quarters. In line with the natural experiment, we observe that this gap only becomes positive in July 2016 after the Sächsische Zeitung's official announcement. Then, this differential remains positive and highly significant (except for two quarters). We also provide additional estimates in Figure 3 suggesting that our effect is mainly driven by the lexicons identifying German offenders and foreign nationalities (although not precisely estimated).[29] However, we find no significant differences in reporting for the Sächsische Zeitung after July 2016 using immigration keywords in our third lexicon. This is consistent with the official announcement of the paper, which states that it reports *"the origin of offenders or suspects, at all time [...] no matter if they are German [...] or foreigners. "*.

Perpetrators and Victims. Bag-of-words models have the advantage of being entirely transparent and flexible in their implementation. Our methodology allows us to detect in each article whether the origin of the offender is revealed. Nevertheless, this class of algorithms completely discards semantics and the meaning of the sentences, which may increase measurement errors. In our case, one would like to verify that the gap between the Sächsische Zeitung and other newspapers after July 2016 is not driven by revealing the victims' origins. We replicate our analysis but only consider that an article discloses an origin when it also includes keywords associated with victims or perpetrators. Table 5 reports the results, where columns (1) and (2) show the results of our benchmark specification. Reassuringly, we find no evidence in columns (3) and (4) that the positive gap that we observe in our previous estimates is driven by the new disclosure of the origin of victims. Conversely, columns (5) and (6) show that our main effect is robust to more precisely identifying the origins associated with offenders.[30]

[29] Figure B2 in the Appendix replicates our analysis on a restrictive set of foreign nationalities. We find no significant increase associated with the disclosure of the 2015 top 10 refugee nationalities. In contrast, we see a small rise in late 2017 for the top 10 immigrant nationalities. Nevertheless, the magnitude of the effect is smaller than that for Germans, indicating that the Sächsische Zeitung mainly changed its reporting policy on native criminality.

[30] As expected, the positive gap in disclosure between the Sächsische Zeitung and other newspapers decreases in magnitude under this restrictive set of estimates. By definition, it does not take into account all the crime articles for which the Sächsische Zeitung discloses the origins of the offenders without using keywords associated with perpetrators. Moreover, while there are few words to designate victims of crime, many other words not included in this lexicon can be used to refer to offenders. Examples are "the accused" or "convicted". We did not extend this specific lexicon beyond a few keywords because our goal was not to

Table 5: Change in Reporting Policy, Perpetrators vs. Victims

	(1) All	(2) All	(3) Victims	(4) Victims	(5) Perpetrators	(6) Perpetrators
$SZ_n \times July16_t$	0.074***	0.088***	0.001	0.004	0.018***	0.019***
	(0.018)	(0.014)	(0.004)	(0.003)	(0.004)	(0.003)
Newspaper FEs	√	√	√	√	√	√
Year-month FEs	√	√	√	√	√	√
Nb. Articles weights		√		√		√
Nb. Observations	1,475	1,475	1,475	1,475	1,475	1,475
Adjusted R^2	0.736	0.828	0.483	0.617	0.489	0.624

Note: The dependent variable is $Disclose_{n,t}$, the share of i articles disclosing criminals' origin relative to the total number of crime-related articles in newspaper n at year-month t. Columns (3) and (4) assume that articles that do not include the word "öpfer" (victim) do not reveal any particular origin. Columns (5) and (6) assume that articles that do not include the word "täter" (perpetrator), and its variations in spelling, do not reveal any particular origin. $July16_t$ is a dummy variable equal to one after July 2016 and zero before, and SZ_n a dummy variable equal to one for the Sächsische Zeitung and zero otherwise. Robust standard errors clustered at the newspaper level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Dow Jones Factiva archives.

Additional robustness checks. A legitimate concern regarding our analysis would be that the new disclosure of native offenders would not have been the only change implemented in the new reporting policy of the Sächsische Zeitung. *First*, we provide evidence in Figure D1 that the share of violent crime reported in the total number of articles published each month was identical between the Sächsische Zeitung and other newspapers in Germany before July 2016 and remained similar thereafter. *Second*, Figure D2 in the Appendix reveals that the Sächsische Zeitung did not start to overreport or underreport any particular type of violent crime. In particular, we observe that the share of immigration-related crime in the total reported crime remained identical between the Sächsische Zeitung and other newspapers between 2014 and 2018. *Third*, we show in Figure D3 that the tone that the Sächsische Zeitung employed in crime articles did not change compared to other newspapers after July 2016. Indeed, we use a simple text analysis with a publicly available German-language resource for sentiment analysis, the Spacy-Sentiws package in Python, to detect "emotions" in articles such as joy, surprise, anger, fear, disgust, sadness, or contempt (Remus et al., 2010). For all emotions, we find no systematic differences between the Sächsische Zeitung and other newspapers before or after July 2016.

Overall, these results provide strong evidence for the natural experiment described above.

capture all possible references to offenders.

After July 2016, the Saxony-based newspaper Sächsische Zeitung indeed started to overreport offenders' origins compared to other German newspapers with no other substantial change. Our identification strategy exploits this exogenous change to investigate how media reporting on criminality affects natives' attitudes towards immigration. Therefore, our testable assumption is that an increase in the share of articles disclosing the origin of an offender may have impacted natives' attitudes towards foreigners in the area of diffusion of the Saxony-based newspaper by changing their beliefs about the differential in crime propensity between natives and foreigners. The direction of the effect is ambiguous, as suggested by the tense debate surrounding the Pressekodex in Germany. This ambiguity calls for a more formal empirical analysis in Section 4.

4 Media Reporting and Natives' Attitudes Towards Immigration

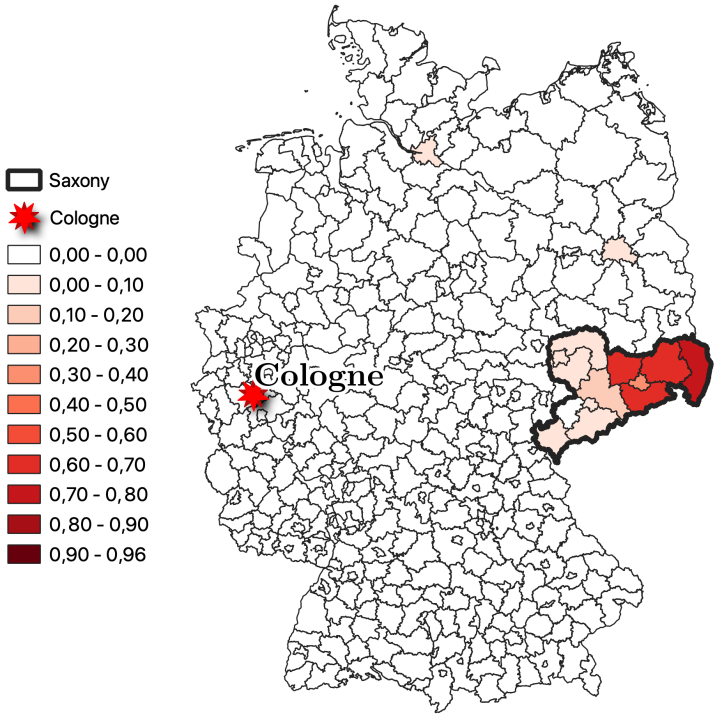
This section investigates the impact of a systematic reporting of offenders' origins on natives' attitudes towards immigration.

4.1 Data on the diffusion of newspapers

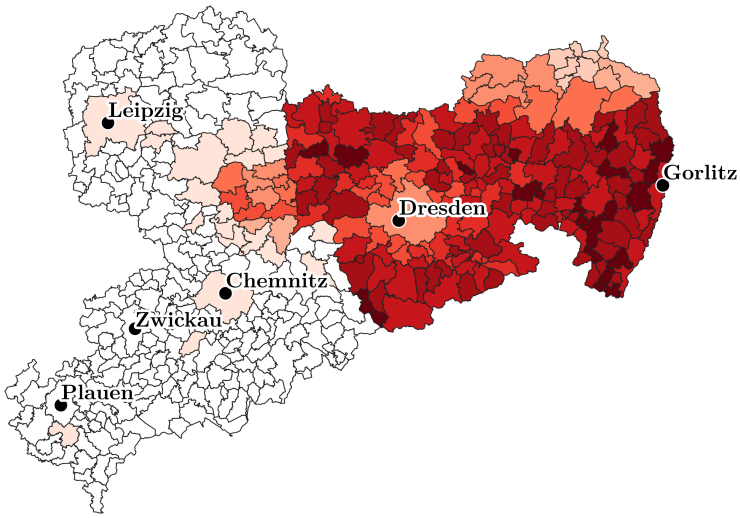
Data on the diffusion of newspapers are taken from the IVW.[31] Particularly, we use the 2014 edition of the distribution data of the German daily press, which were collected from November 4 to 10, 2013. During this reference week, publishers reported the direct individual sales of daily newspapers, the number of newspaper copies sold via the distribution partners (press wholesalers, railway station bookstores, other retailers), all copies sold by subscription, and other sales and in-flight copies. The number of sold units was then aggregated at the municipality level. Although e-papers constitute only a small fraction of sales, they were included in the diffusion number and attributed to a municipality based on the place of residence of the invoice recipient. The choice of the 2014 edition in our empirical analysis is guided by the desire to use the information on newspapers' diffusion areas before July 2016, i.e., that cannot be affected by the treatment.

[31] The original German name is *Informationsgemeinschaft zur Feststellung der Verbreitung von Werbeträgern*. The IVW is an organization comparable to the Audit Bureau of Circulation in India or in the UK. Its main mission is to certify and audit the circulations of major publications, including newspapers and magazines, within Germany.

Figure 4: Sächsische Zeitung Areas of Diffusion, IVW 2014 Edition



(a) All Germany (Districts)



(b) Saxony (Municipalities)

Note: This map depicts the sales of the Sächsische Zeitung as a percentage of total sales at the (a) district and (b) municipality levels.

Source: Authors' elaboration on Information Community for the Assessment of the Circulation of Media (IVW).

An essential characteristic of the German newspaper landscape is the purely regional and, in many cases, even local character of the majority of daily newspapers. In other words, for most regional newspapers, the diffusion area can be clearly identified. Such newspapers often have high diffusion in a cluster of a few localities and virtually no distribution in other areas. This is typically the case for the Sächsische Zeitung, as reported in Figure 4. In 2014, the IVW reported that each edition of the Sächsische Zeitung would circulate approximately 238,000 times, placing it in the top 12 German newspapers in terms of circulation. Nevertheless, the newspaper was not diffused at all in most districts, while its market share reached 70% in some districts in Saxony and even exceeded 90 percent in a few municipalities. Hence, this newspaper is large enough to have a meaningful local impact but still too small to influence the overall newspaper landscape.

A legitimate concern regarding our analysis is that the change in reporting policy affected the overall circulation of the newspaper or modified its market share. Comparing the diffusion of the Sächsische Zeitung relative to other local newspapers in Saxony between the IVW editions of 2014, 2016, and 2018, we find no evidence of a noticeable change in local newspaper consumption.[32] First, Figure E2 in the Appendix shows that the district-level market shares of the Sächsische Zeitung in Saxony remained relatively constant over our period of analysis compared to major local competitors such as *Freie Presse*, *Morgenpost für Sachsen*, and *Leipziger Volkszeitung*. Mapping the diffusion of the three editions of diffusion analysis at the municipality level, Figure E3 also emphasizes no significant changes in diffusion at the municipality level. Additionally, we more formally investigate the change in diffusion by comparing the mean changes in district-level market shares between the 2014 edition and the 2016 edition of the diffusion data (i.e., before the policy change) with the mean changes in district-level market shares between the 2016 edition and the 2018 edition (i.e., after the policy change). Table E1 in the Appendix shows that we cannot reject the null hypothesis that local diffusion growth is the same before and after the change in reporting policy.[33] Finally, as shown in Figure E1 in the Appendix, the general diffusion of the Sächsische Zeitung exhibited a downward trend over our period of analysis from 2014 to 2018. This is reassuring because it mitigates the concerns that changes in the distribution could confound the effects of the policy change.[34]

[32]The IVW collected data for the 2014, 2016, and 2018 editions in November 2013, 2015, and 2017, respectively.

[33]We obtain the same result when replicating the analysis at the municipality level in Table E2 in the Appendix.

[34]For instance, one could have been concerned that the announcement of the reporting policy change could have induced a sizable expansion or contraction of the readership, in which case our estimated effect would have captured changes in the composition of the exposed persons instead of changes in attitudes.

4.2 Reduced-form analysis

Empirical strategy. Our goal is to assess the effect of the Sächsische Zeitung change in crime reporting policy on natives' attitudes towards immigration in the diffusion area of the newspaper. We first compute the variable E_l^{SZ}, which captures the Sächsische Zeitung market share in locality l. In our analysis, locality mainly refers to districts (*"Kreise"*) in our benchmark analysis as well as municipalities (*"Gemeinde"*) as a robustness check. Formally, exposure to the Sächsische Zeitung articles in locality l could be defined as:

$$E_l^{SZ} = \frac{Sales_{n=SZ,l}}{\sum_n Sales_{n,l}} \tag{3}$$

where $Sales_{n,l}$ is the total number of sales of newspaper n in locality l in November 2013. Then, our benchmark empirical model features the $Attitudes_{i,l,t}$ of individual i towards immigration in locality l at time t as the dependent variable. We combine the two answer modalities "Not concerned at all" and "Somewhat concerned" about immigration. This allows us to obtain a dummy variable equal to one for "Very concerned" and zero otherwise. We estimate the following specification using a linear probability model:

$$Attitudes_{ilt} = \gamma_l + \gamma_{rt} + \beta E_l^{SZ} \times July16_t + \boldsymbol{\phi' X_{it}} + \boldsymbol{\delta' D_{ly}} + \varepsilon_{ilt} \tag{4}$$

where γ_l are locality fixed effects and γ_{rt} stands for regional fixed effects interacted with year-month fixed effects. The latter controls for any time-varying confounders at the regional level, such as the level of unemployment or the share of foreign-born individuals in the total resident population. $\boldsymbol{X_{it}}$ is a vector of individual characteristics included to increase the precision of the estimates with age, marital status, education, employment status and the log of individual earnings.[35] When interacted with $July16_t$ in additional estimates, it also ensures that our treatment effect is not wrongly attributed to differing trends in observables between individuals in the diffusion area of the Sächsische Zeitung and other areas. $\boldsymbol{\delta' D_{ly}}$ is a vector of district controls varying at the year level. It includes the unemployment rate, the share of social transfer recipients, the share of refugees, the net internal and international migration flows, the share of crime in the overall population, and the share of foreigners in total crime (Destatis, 2020). We also provide additional results including individual fixed effects to address spatial sorting issues. Our main conclusions remain unchanged when using this highly demanding specification. Standard errors are clustered at the NUTS-2 level in all estimates. β is our coefficient of interest that captures the impact of the Sächsische Zeitung

[35] Definitions and sources of the control variables are available in Appendix Table A2.

Table 6: OLS Regressions, Baseline Estimates

	(1)	(2)	(3)	(4)	(5)	(6)
E_l^{SZ}	0.129***	0.069***				
	(0.021)	(0.024)				
$July16_t$	-0.007					
	(0.013)					
$July16_t \times E_l^{SZ}$	0.047***	-0.052***	-0.055***	-0.062***	-0.088***	-0.043***
	(0.016)	(0.018)	(0.015)	(0.016)	(0.027)	(0.005)
Indiv. Controls	Yes	Yes	Yes	Yes	Yes	Yes
District-Year Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year-Month × Regional FEs	No	Yes	Yes	Yes	Yes	Yes
District FEs	No	No	Yes	Yes	Yes	Yes
Indiv. Controls $\times July16_t$	No	No	No	Yes	Yes	Yes
District × linear time trend	No	No	No	No	Yes	No
Individual FEs	No	No	No	No	No	Yes
Nb. Observations	109,481	109,481	109,481	109,481	109,481	103,993
Adjusted R^2	0.046	0.081	0.098	0.099	0.101	0.479

Note: The dependent variable is a dummy variable for "Very concerned" about immigration. All estimates include the full vector of individual controls with age, marital status, education, employment status and individual earnings. All estimates include the full vector of district-year controls with unemployment rate, share of social transfer recipients, share of refugees, net migration flows for natives and foreign-born, share of crime in overall population, and share of foreigners in total crime. Robust standard errors clustered at the NUTS-2 level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1. Source: Authors' elaboration on SOEP.

policy change in the newspaper diffusion areas on individual attitudes towards immigration.

Benchmark results. Table 6 reports the results of estimating Eq. (4) with different combinations of fixed effects and/or control variables. Column (1) shows that the most parsimonious specification, including no fixed effects, estimates a β that is positive and significantly different from zero at conventional levels. However, this effect could be due to the confounding effect of time-varying trends related to concerns about immigration. This explanation seems highly plausible given the context during our period of analysis when Germany experienced a substantial increase in refugee immigration in 2015, which could have influenced individual perceptions of immigration. This period also corresponded to a rise in approval rates for the right-wing political party AfD, founded in 2013. Heterogeneous regional developments characterized both of these phenomena. Adding time fixed effects interacted with location fixed effects (at the regional level) reverses the sign of our coefficient of interest, which becomes negative and remains highly statistically significant (see column 2). This

suggests that the region-specific time trends were indeed a confounding factor. In columns (3) and (4), the effect is not substantially affected by further adding district fixed effects and an interaction between individual control variables and a dummy variable identifying the periods before and after the change in reporting policy. Finally, in columns (5) and (6), we provide two additional challenging estimates, which alternatively add a district linear time trend (column 5) and individual fixed effects (column 6) to our benchmark specification. Our coefficient remains negative in both cases, highly significant, and of the same order of magnitude as in our previous estimates.

Interpretation. Overall, it seems that systematically disclosing the origins of offenders reduces natives' concerns about immigration. This echoes the Bayesian framework by Couttenier et al. (2019a), which shows that individuals infer migration-specific crime rates from crime reports in the media to form their beliefs about the relationship between crime and migration. An increased share of articles mentioning crimes committed by natives signals a lower crime rate by foreigners than what was perceived before the change in reporting policy. This, in turn, would induce a decline in concerns about immigration, as long as foreigner criminality is associated with such worries. Regarding the magnitude of the effect is concerned, our average point estimate indicates that a one-standard-deviation increase in exposure to the Sächsische Zeitung (0.09) is associated with a 0.006 percentage point decrease in concerns about immigration. We also compute a persuasion rate defined as the share of individuals who changed their attitudes towards immigration in response to the treatment in comparison with the population at risk of treatment. Following DellaVigna and Kaplan (2007), the persuasion rate f computed for the entire German population may be defined as:

$$f = 100 \times \frac{\hat{\beta}}{N} \times \frac{1}{1 - Attitudes_{Ger}} \tag{5}$$

where $\hat{\beta}$ is the estimated impact of the treatment, namely, the percentage point decrease in concerns about immigration in response to the new disclosure of criminals' origins. N is the share of newspaper readers in the German population. According to the Federal Association of Digital Publishers and Newspapers, 68 percent of Germans aged 14 or older read a newspaper at least once a day.[36] $Attitudes_{Ger}$ is the average share of individuals with some or no concerns about immigration across the country before July 2016. Implicitly, this calculation assumes no spillovers between treated individuals and the control group. Under

[36]Source: https://www.bdzv.de/nachrichten-und-service/presse/pressemitteilungen/artikel/detail/acht-von-zehn-deutschen-lesen-zeitung/.

these assumptions, the persuasion rate in our framework is $f = 100 \times \frac{0.006}{0.68} \times \frac{1}{1-0.66} =$ 2.60%. This persuasion rate is close to the one found by Couttenier et al. (2019a) in the context of Switzerland and it is in the range of other persuasion rates estimated in this literature (DellaVigna and Gentzkow, 2010).

Robustness checks. The effect estimated in Table 6 essentially represents the difference in changes in individual concerns about immigration as a function of the local exposure to the newspaper Sächsische Zeitung. Given the newspaper's very local nature, the vast majority of individuals in our sample have zero exposure. Therefore, a legitimate concern is that individuals in other regions of Germany might not represent a valid control group, essentially due to differences in regional political preferences, as previously mentioned. We address this concern by omitting all individuals residing in West Germany since regions in East Germany constitute a more homogenous group in terms of political preferences and attitudes. The results shown in Table B3 in the Appendix suggest that this does not substantially affect the estimated effect, either in terms of magnitude or in terms of statistical significance.

Table 7: OLS Regressions, Alternative Concerns

	(1) Immigration	(2) Health	(3) Environment	(4) Crime	(5) Pers. Situation	(6) Economy
$July16_t \times E_l^{SZ}$	-0.079***	0.047	0.031	0.074***	-0.015	-0.018
	(0.024)	(0.033)	(0.027)	(0.008)	(0.022)	(0.024)
Indiv. Controls	Yes	Yes	Yes	Yes	Yes	Yes
District-Year Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year-Month × Regional FEs	Yes	Yes	Yes	Yes	Yes	Yes
District FEs	Yes	Yes	Yes	Yes	Yes	Yes
District × linear time trend	Yes	Yes	Yes	Yes	Yes	Yes
Nb. Observations	109,481	109,387	109,344	109,378	109,318	109,232
Adjusted R^2	0.100	0.076	0.032	0.105	0.071	0.034

Note: The dependent variable is a dummy variable for "Very concerned" about immigration. All estimates include the full vector of individual controls with age, marital status, education, employment status and individual earnings. All estimates include the full vector of district-year controls with unemployment rate, share of social transfer recipients, share of refugees, net migration flows for natives and foreign-born, share of crime in overall population, and share of foreigners in total crime. Robust standard errors clustered at the NUTS-2 level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1. Source: Authors' elaboration on SOEP.

Placebos. Another legitimate concern is that our estimated effect could capture a very local trend in overall changes in attitudes specific to the diffusion area of the newspaper Sächsische Zeitung. To test this alternative explanation, we estimated the same specification

as in Table 6, column (5) but replaced our dependent variable with alternative concerns about different topics. Specifically, we test whether the change in reporting policy affected concerns about the personal economic and health situation, the environment, the climate, the economy, or crime. As reported in Table 7, we find no effect on concerns that are orthogonal to immigration. This substantially mitigates concerns of a local trend that could have driven our main results. It also suggests that our estimated coefficient β captures the genuine effect of the change in reporting policy on natives' attitudes towards immigration. Nevertheless, we find a significant effect of the treatment on perceptions of crime. This confirms our initial assumption that immigration and crime are two first-order issues that are often considered jointly in peoples' minds. The positive coefficient for crime may be interpreted as a priming effect, indicating that increasing the share of articles with natives portrayed as criminals increases the salience of overall criminality, which translates into increased concerns about crime.

Table 8: OLS Regressions,
Heterogeneity Analysis with Individual Characteristics

Sub-Sample →	(1) All	(2) No High School	(3) High School	(4) College	(5) Age< 50	(6) Age≥ 50	(7) Unemployed	(8) Employed
$July16_t \times E_l^{SZ}$	-0.055***	-0.143***	-0.065***	-0.060***	-0.106***	-0.044**	-0.084***	-0.050**
	(0.015)	(0.047)	(0.010)	(0.011)	(0.019)	(0.017)	(0.011)	(0.020)
Indiv. Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District-Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Month × Regional FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nb. Observations	109,481	14,047	65,859	29,452	54,957	54,482	39,081	70,348
Adjusted R^2	0.098	0.106	0.079	0.085	0.108	0.103	0.104	0.105

Note: The dependent variable is a dummy variable for "Very concerned" about immigration. All estimates include the full vector of individual controls with age, marital status, education, employment status and individual earnings. All estimates include the full vector of district-year controls with unemployment rate, share of social transfer recipients, share of refugees, net migration flows for natives and foreign-born, share of crime in overall population, and share of foreigners in total crime. Robust standard errors clustered at the NUTS-2 level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1. Source: Authors' elaboration on SOEP.

Heterogeneity analysis. We run in Table 8 additional estimates on subsamples as a heterogeneity analysis. Column (1) reports our benchmark specification. In columns (2) to (4), we divide our sample by educational attainment. Our estimate shows that the treatment has larger effects on low-skilled respondents, although the coefficients are still highly significant for high school and college graduates. In columns (5) to (8), we divide our sample using the median age and employment status. We find that our results are mostly driven by individuals aged 49 years or less and unemployed respondents. In line with a Bayesian framework, less

informed individuals and individuals with initially more biased attitudes may be more likely to be affected by a change in media reporting (DellaVigna and Gentzkow, 2010). Indeed, they could be more likely to update their preferences when given more information. Instead, high-skilled natives may already have a better understanding of the differential in crime rates between immigrants and natives.

4.3 2SLS

Section 4 presented results using estimates based on a reduced-form equation without using any data collected on German newspapers. Another strategy would be to directly compare localities where, on average, newspapers tend to disclose criminals' origins regularly with other localities where the German Press Guidelines are followed more strictly. Because newspapers' reporting rules may be endogenous to attitudes towards immigration, this identification strategy requires 2SLS estimates using the Sächsische Zeitung policy shift of 2016 as an instrument. Unlike the reduced-form estimates, this alternative strategy precisely captures the overall extent to which natives are exposed to the disclosure of criminals' origins and thus complements our first set of results. Indeed, using a straight measure of the average disclosure rate makes our interpretation less likely to be affected by any change that would have been correlated with the spatial diffusion of the Sächsische Zeitung and natives' attitudes towards immigration.

Empirical strategy. We first compute a weighted share of articles disclosing offenders' origins in locality l at year-month t. Weights are the relative diffusion of each newspaper in locality l in November 2013:[37]

$$WDisclose_{lt} = \sum_n \frac{Sales_{nl} \times Disclose_{nt}}{\sum_n Sales_{nl}} \tag{6}$$

where $Sales_{nl}$ is the November 2013 total number of sales of newspaper n in locality l and $Disclose_{n,t}$ the share of i articles that disclose criminals' origins relative to the total number of crime-related articles in newspaper n at year-month t, as described in Section 3. We estimate the following 2SLS specification:

$$Attitudes_{i,l,t} = \gamma_l + \gamma_{rt} + \beta W\widehat{Disclose}_{lt} + \boldsymbol{\phi'X_{it}} + \boldsymbol{\delta'D_{ly}} + \varepsilon_{ilt} \tag{7}$$

[37] We chose the 2014 edition of the IVW such that the diffusion of newspapers across Germany cannot be affected by the treatment of 2016 and thus can be considered exogenous to the latter.

with:

$$\widehat{WDisclose}_{lt} = \gamma_l + \gamma_{rt} + \delta E_l^{SZ} \times July16_t + \boldsymbol{\phi' X_{it}} + \boldsymbol{\delta' D_{ly}} + \varepsilon_{lt} \tag{8}$$

Standard errors are clustered at the NUTS-2 level. Note that this last equation echoes the equation estimated at the newspaper level in Section 3. Again, β is our coefficient of interest, which captures the impact of the Sächsische Zeitung policy shift in its area of diffusion on individual attitudes towards immigration.

Benchmark results. The 2SLS results are reported in Table 9. Columns (1) and (2) show our benchmark specification results without and with individual fixed effects. While we still find a negative sign for our coefficient of interest, the latter is not significant at conventional levels in column (1). The Kleibergen-Paap F-statistic of these two first estimates suggests that the Sächsische Zeitung policy shift of 2016 does not provide sufficient variation in the first-stage estimates to explain changes in the natives' average exposure to the disclosure of the origins of criminals. However, one must bear in mind that our sample of 25 newspapers does not cover all sales in Germany. For some localities, we do not cover enough sales to obtain precise estimates of exposure to crime reporting. Therefore, we report additional estimates in columns (3) and (4) by eliminating localities for which we do not cover at least 50% of the total number of sales. This allows us to increase the strength of the instrument and to increase the precision of the estimates. Excluding districts for which we cover less than 50% of the overall sales, we recover a coefficient of interest that is negative and significant at the one percent level.[38] For these regressions, the first-stage estimates are significant at the one percent level, and the Kleibergen-Paap F-statistic clearly exceeds the Stock-Yogo critical value of 16.38. Thus, as long as we exclude these localities, our 2SLS results confirm that disclosing offenders' origins indeed improves attitudes towards immigration. Regarding the magnitude of the coefficient, we find that an increase in exposure to offenders' origins (0.05) is associated with a 0.06 percentage point decrease in the probability of reporting strong concerns about immigration. This effect corresponds to a persuasion rate of 11%, which is approximately four times larger than the persuasion rate estimated with the reduced-form equation but still in the range of persuasion rate estimates in the literature (DellaVigna and Gentzkow, 2010).

Additional mechanisms. A significant advantage of the 2SLS estimates in our case is that they allow us to test for different mechanisms, such as whether the improvement that we

[38] The choice of alternative thresholds do not change our main conclusions. As as long as the instrument is strong, we always find a negative and significant coefficient for our variable of interest. These results are available upon request.

Table 9: 2SLS Regressions, Baseline Estimates

Coverage	(1) All	(2) All	(3) > 50%	(4) > 50%	(5) All	(6) All
$WDisclose_{lt}$	-0.746	-0.495**	-1.231***	-0.502**		
	(0.572)	(0.206)	(0.196)	(0.241)		
$WDisclose_{lt}^{Ger}$					-0.767**	-0.510***
					(0.308)	(0.065)
Indiv. Controls	Yes	Yes	Yes	Yes	Yes	Yes
District-Year Controls	Yes	Yes	Yes	Yes	Yes	Yes
District FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year-Month × Regional FEs	Yes	Yes	Yes	Yes	Yes	Yes
Individual FEs	No	Yes	No	Yes	No	Yes
Nb. Observations	109,481	103,993	36,996	35,033	109,481	103,993
KP F-test	3.896	4.298	179.856	238.809	54.173	60.296
First stage	0.074**	0.080**	0.059***	0.069***	0.072***	0.078***

Note: The dependent variable is a dummy variable for "Very concerned" about immigration. All estimates include the full vector of individual controls with age, marital status, education, employment status and individual earnings. All estimates include the full vector of district-year controls with unemployment rate, share of social transfer recipients, share of refugees, net migration flows for natives and foreign-born, share of crime in overall population, and share of foreigners in total crime. Robust standard errors clustered at the NUTS-2 level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1. Source: Authors' elaboration on SOEP.

observe in natives' attitudes towards immigration is driven by disclosing the origins of foreign or native offenders. In this way, Table 9 reports two additional estimates in columns (5) and (6) that only focus on the share of articles disclosing the origins of German offenders. For our benchmark specification, we find that disclosing German offenders' origins significantly reduces concerns about immigration. For this set of estimates, the sample's restriction to districts for which we cover at least 50% of overall sales is not necessary, which confirms that our natural experiment mostly relies on the new disclosure of native offenders by the Sächsische Zeitung.[39] Note that we find the instrument to be weak in the first-stage estimates for alternative lexicons focusing on origin countries and foreigner identifiers.[40] Again, this is in line with the changes in reporting policy over time described in Figure 3 under alternative lexicons. Finally, we replicate our 2SLS analysis but focus on the different types of crimes in Table 10. For all crimes except immigration-related crimes, we find that the Sächsische

[39]Eliminating localities for which we do not cover at least 50% in these regressions does not affect our coefficient of interest.

[40]These estimates are available upon request.

Table 10: 2SLS Regressions, Types of Crime

	(1) Murder	(2) Assault	(3) Theft	(4) Sexual	(5) Drugs	(6) Immig.	(7) Terrorism
$WDisclose_{lt}^{Ger}$	-0.339***	-0.435***	-0.717***	-0.459***	-0.346***	-1.847*	-0.551***
	(0.041)	(0.055)	(0.119)	(0.084)	(0.043)	(1.046)	(0.068)
Indiv. Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District-Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Month × Regional FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nb. Observations	103,993	103,993	103,993	103,993	103,993	103,993	103,993
KP F-test	211.497	59.171	791.857	361.361	51.961	2.593	116.136
First stage	0.116***	.091***	0.055***	0.086***	0.114***	0.021	0.072***

Note: The dependent variable is a dummy variable for "very concerned" about immigration. All estimates include the full vector of individual controls with age, marital status, education, employment status and individual earnings. All estimates include the full vector of district-year controls with unemployment rate, share of social transfer recipients, share of refugees, net migration flows for natives and foreign-born, share of crime in overall population, and share of foreigners in total crime. Robust standard errors clustered at the NUTS-2 level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1. Source: Authors' elaboration on SOEP.

Zeitung policy shift of July 2016 improved natives' attitudes towards immigration in the area of diffusion of the paper.

5 Conclusions

In this paper, we estimate how a reporting policy that systematically discloses the origins of criminals impacts natives' attitudes towards immigration as measured with an individual survey from the German Socio-Economic Panel. Specifically, we use the unilateral shift in reporting policy made by the Sächsische Zeitung as a natural experiment to analyze the causal impact of crime reporting policies on natives' concerns about immigration.

To do so, we employ text analysis methods on more than 545,000 crime-related articles collected between January 2014 and December 2018 in 25 German newspapers. This allows us to provide empirical evidence that the exogenous shift in reporting policy announced by the Sächsische Zeitung indeed created a positive differential in origin disclosure with other newspapers of approximately eight percentage points after July 2016. Along with data on local market shares for each newspaper, we compute the relative degree of exposure of individuals to the Sächsische Zeitung and to other newspapers at the monthly level. Using a reduced-form analysis with a difference-in-differences estimator, where the treatment is

defined as the 2014 relative share of Sächsische Zeitung sales in the total number of newspaper sales for each German locality, we find that systematically disclosing the origins of criminals reduces natives' concerns about immigration. Our results are further validated when using IV-2SLS estimates with the monthly share of articles revealing the origin of the offender in most serious crimes for a given locality across 25 widely circulated newspapers and the shift in reporting policy implemented by the Sächsische Zeitung in July 2016 as an instrument. We estimate the persuasion rate of such a policy to be between 2.6% and 11%.

Our results echo the literature on media's impact on individuals' beliefs and attitudes with additional policy implications. Indeed, this paper provides evidence that when linking the coverage of two first-order issues such as criminality and immigration, the way media treat sensitive information and particularly the origins of offenders is crucial. Specifically, our results do not support the assumption underlying Article 12.1 of the German Press Code that systemically revealing a perpetrator's origin would result in discriminatory attitudes towards certain minorities. Instead, we show that the exact opposite policy, systematically mentioning the origins of criminals, particularly in regard to native offenders, significantly reduces natives' concerns about immigration. However, it is crucial to bear in mind that in the experiment we evaluated, the newspaper Sächsische Zeitung clearly stated that it had no intention of stigmatizing foreigners, which was confirmed by our text analysis. A policy of systematically disclosing the origins of offenders could still be misused in other contexts, for example, when newspapers follow an anti-migration agenda. Future research, similar to Alesina et al. (2018), for instance, would have to confirm the extent to which the narrative behind immigration-related stories can shape natives' towards immigration beyond the tense debate surrounding crime.

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The Usual Suspects. Offender origin, Media Reporting and Native Attitudes Towards Immigration.

Online Appendix.

Appendix A: Data

Table A1: Summary Statistics

Variable	Mean	Std. Dev.	Min.	Max.
$Attitudes_{i,l,t}$	0.342	0.474	0	1
E_l^{SZ}	0.014	0.090	0	0.719
$WDisclose_{lt}$	0.156	0.131	0.011	0.670
$WDisclose_{lt}^{Ger}$	0.054	0.048	0.002	0.282
Age	3.933	1.586	1	6
Education	2.140	0.615	1	3
Married	0.605	0.489	0	1
Employed	0.643	0.479	0	1
Log Indiv. earnings	7.224	5.022	0	14.691
Unemployment rate	6.872	3.029	1.400	17.100
Share of social transfer recipients	0.004	0.001	0.000	0.015
Share of refugees	0.016	0.008	0.001	0.130
Net migration flows (natives) % tot pop.	-0.001	0.004	-0.014	0.030
Net migration flows (foreign born) % tot pop	0.015	0.015	-0.026	0.325
Crime per 100,000 inhabitants (log)	9.450	0.454	8.388	12.245
Share of foreigners in total crime	30.722	13.195	3.600	96.900
Nb. observations:	109,481			

Source: Authors' elaboration on Dow Jones Factiva archives and SOEP.

Table A2: Sources and Definitions

Variable	Definition	Source
$Attitudes_{i,l,t}$	Dummy variable. Concerns about immigration (Very concerned (1); Somewhat concerned or not concerned at all (0))	SOEP
E_l^{SZ}	Exposure to the Sächsische Zeitung as defined in Eq. (3).	Authors' calculations based on IVW.
$WDisclose_{lt}$	Weighted share of articles disclosing the origins of offenders as defined in Eq. (6).	Authors' calculations based on IVW and Dow Jones Factiva archives.
Age	Categorical variable (18-24 (1); 25-34(2); 35-443); 45-54(4); 55-64(5), 65+(6))	SOEP
Education	Categorical variable. (Less than high-school (1), High-school graduates (2); College graduates (3))	SOEP
Married	Dummy variable. (Married (1); Single (0))	SOEP
Employed	Dummy variable. (Employed (1); Not employed (0))	SOEP
Log Indiv. earnings	Individual labor earnings (hyperbolic sine transformation)	SOEP
Unemployment rate	Number unemployed persons each year, divided by the population active in the local labor market in the same year.	Federal Statistical Office.
Share of social transfer recipients	Number of beneficiaries of social transfers in a locality as of December 31 of each year, divided by the total population in the locality in the same year.	Federal Statistical Office.
Share of refugees	Number of refugees residing in the locality as of December 31 of each year, divided by the total population in the locality in the same year.	Federal Statistical Office.
Net internal migration flows % tot pop.	Immigration from other German municipalities – Emigration to other German municipalities, divided by the total population in the locality in the same year.	Federal Statistical Office.
Net international migration flows % tot pop	Immigration from abroad – Emigration abroad, divided by the total population in the locality in the same year.	Federal Statistical Office.
Crimes per 100,000 inhabitants (log)	Number of crimes recorded in the district, adjusted for population size.	Federal Statistical Office.
Share of foreigners in total crime	Number of recorded crimes committed by non-Germans in the district, divided by the total population in the locality in the same year.	Federal Statistical Office.

Source: Authors' elaboration.

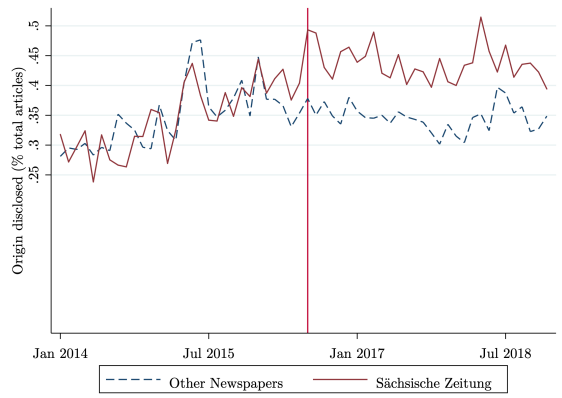
Table A3: Classification of Articles into ICCS Categories

Lexicons →	Murder				Assaults			
Factiva cat. ↓	No		Yes		No		Yes	
No	333,162	90.82 %	33,673	9.18%	192,915	52.72 %	173,007	47.28%
Yes	7,741	21.51%	28,243	78.49%	2,195	5.95 %	34,702	94.05%
Lexicons →	Sexual				Theft			
Factiva cat. ↓	No		Yes		No		Yes	
No	359,779	94.20%	22,143	5.80%	171,328	66.79%	85,199	33.21%
Yes	2,716	13.00%	18,181	87.00%	2,037	1.39%	144,255	98.61%
Lexicons →	Drugs				Immig.			
Factiva cat. ↓	No		Yes		No		Yes	
No	357,580	90.78 %	36,322	9.22 %	353,291	90.18 %	38,469	9.82 %
Yes	87	0.98%	8,830	99.02%	559	5.05 %	10,500	94.95%
Lexicons →	Terrorism							
Factiva cat. ↓	No		Yes					
No	354,717	92.72%	27,866	7.28 %				
Yes	1,458	7.20%	18,778	92.80%				

Note: Factiva categories correspond to the crime categories provided by the Dow Jones Factiva archives. Lexicons correspond to our seven lexicons build for each main ICCS classification. Yes (No) reports the number of articles that are (not) identified as belonging to a given type of crime.
Source: Authors' elaboration on Dow Jones Factiva archives.

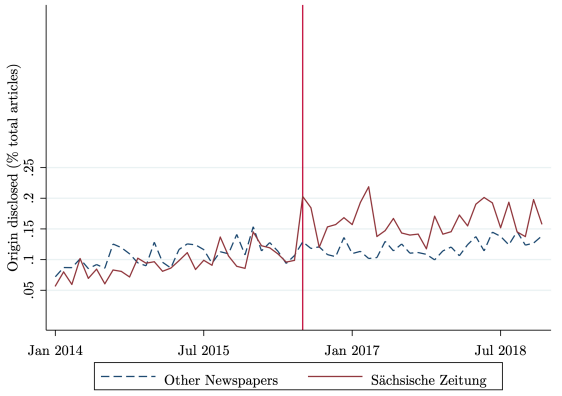
Appendix B: Additional Robustness Checks

Figure B1: Share of Crime-related Articles Disclosing Criminals' Origins
Alternative Lexicons

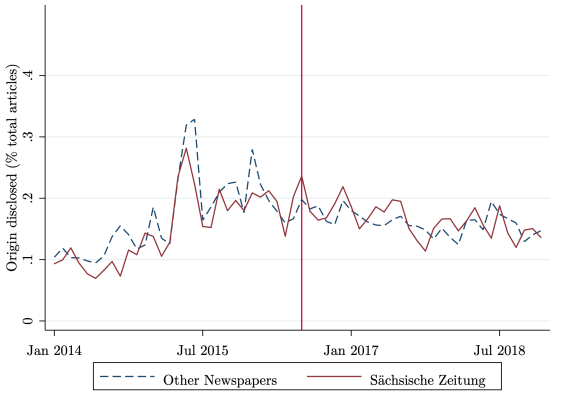


(a) All lexicons

(b) Country of origin



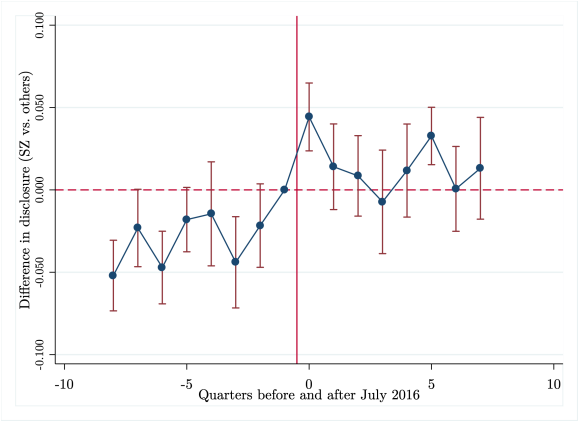
(c) German identity



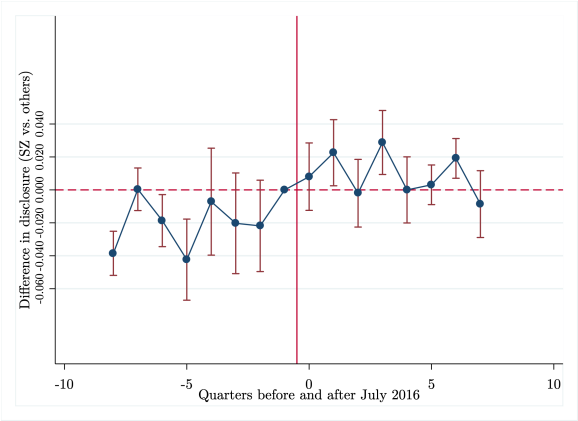
(d) Immigration markers

Note: This graph depicts the variable $Disclose_{n,t}$, which is the share of i articles disclosing criminals' origins relative to the total number of crime-related articles in newspaper n at year-month t. All newspapers except the Sächsische Zeitung are pooled together.
Source: Authors' elaboration on Dow Jones Factiva archives.

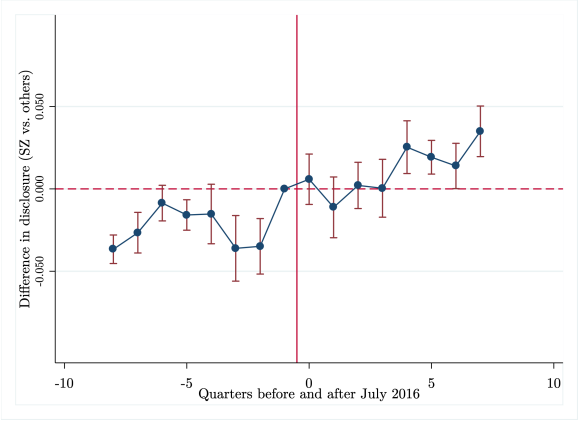
Figure B2: Changes in Reporting Policy over Time
Alternative Lexicons



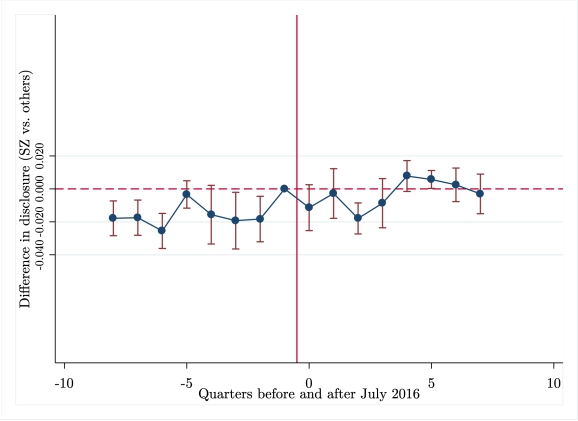
(a) Country of origin



(b) Immigration markers



(c) Top 10 origins



(d) Refugees

Note: The dependent variable is $Disclose_{n,t}$, the share of i articles disclosing criminals' origins relative to the total number of crime-related articles in newspaper n at year-month t for a particular subset of origins. Each coefficient corresponds to the interaction between the SZ_n variable and a given quarter before and after July 2016. The first quarter before July 2016 (April 2016 to June 2016) is the omitted category. The figure displays 95 percent confidence intervals around the estimated coefficients. Standard errors are clustered at the newspaper level. Estimates are weighted by the total number of crime-related articles published by each newspaper. The same graph is obtained without weights and available upon request.
Source: Authors' elaboration on Dow Jones Factiva archives.

Table B1: Change in Reporting Policy,
Robustness by Type of Crime

	(1) Murder	(2) Assaults	(3) Sexual	(4) Theft	(5) Drugs	(6) Immig.	(7) Terrorism.
$SZ_n \times July16_t$	0.064***	0.082***	0.030**	0.094***	0.103***	0.010*	0.046***
	(0.018)	(0.014)	(0.011)	(0.012)	(0.015)	(0.006)	(0.015)
Newspaper FEs	√	√	√	√	√	√	√
Month FEs	√	√	√	√	√	√	√
Nb. Articles weights	√	√	√	√	√	√	√
Nb. Observations	1,465	1,472	1,464	1,473	1,466	1,464	1,463
Adjusted R^2	0.461	0.737	0.378	0.750	0.581	0.278	0.458

Note: The dependent variable is $Disclose_{n,t}$, the share of i articles disclosing criminals' origins relative to the total number of crime-related articles in newspaper n at year-month t. $July16_t$ is a dummy variable equal to one after July 2016 and zero before, and SZ_n a dummy variable equal to one for the Sächsische Zeitung and zero otherwise. Robust standard errors clustered at the newspaper level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Dow Jones Factiva archives.

Table B2: OLS Regressions, Placebo Treatment

	(1)	(2)	(3)	(4)
Time span:	All	Jan. 2014 to Dec. 2016		
$July16_t \times E_l^{SZ}$	-0.054***			
	(0.015)			
$Nov14_t \times E_l^{SZ}$		-0.016		
		(0.052)		
$Jun14 \times E_l^{SZ}$			-0.004	
			(0.034)	
$May15_t \times E_l^{SZ}$				0.167
				(0.122)
Indiv. Controls	Yes	Yes	Yes	Yes
District-Year Controls	Yes	Yes	Yes	Yes
District FEs	Yes	Yes	Yes	Yes
Year-Month × Regional FEs	Yes	Yes	Yes	Yes
Nb. Observations	109,481	44,771	44,771	44,771
Adjusted R^2	0.066	0.053	0.053	0.053

Note: The dependent variable is a dummy variable for "Very concerned" about immigration. All estimates include the full vector of individual controls with age, marital status, education, employment status and individual earnings. All estimates include the full vector of district-year controls with unemployment rate, share of social transfer recipients, share of refugees, net migration flows for natives and foreign-born, share of crime in overall population, and share of foreigners in total crime. Robust standard errors clustered at the NUTS-2 level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1. Source: Authors' elaboration on SOEP.

Table B3: OLS Regressions, Baseline Estimates
East Germany Only

	(1)	(2)	(3)	(4)	(5)	(6)
E_l^{SZ}	0.026	0.071				
	(0.042)	(0.041)				
$July16_t$	0.018					
	(0.024)					
$July16_t \times E_l^{SZ}$	-0.024*	-0.053**	-0.059***	-0.070***	-0.096**	-0.051***
	(0.011)	(0.017)	(0.014)	(0.015)	(0.032)	(0.005)
Indiv. Controls	Yes	Yes	Yes	Yes	Yes	Yes
District-Year Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year-Month × Regional FEs	No	Yes	Yes	Yes	Yes	Yes
District FEs	No	No	Yes	Yes	Yes	Yes
Indiv. Controls $\times July16_t$	No	No	No	Yes	Yes	Yes
District × linear time trend	No	No	No	No	Yes	No
Individual FEs	No	No	No	No	No	Yes
Nb. Observations	23,465	23,465	23,465	23,465	23,465	22,426
Adjusted R^2	0.046	0.081	0.105	0.107	0.108	0.487

Note: The dependent variable is a dummy variable for "Very concerned" about immigration. All estimates include the full vector of individual controls with age, marital status, education, employment status and individual earnings. All estimates include the full vector of district-year controls with unemployment rate, share of social transfer recipients, share of refugees, net migration flows for natives and foreign-born, share of crime in overall population, and share of foreigners in total crime. Robust standard errors clustered at the NUTS-2 level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1. Source: Authors' elaboration on SOEP.

Table B4: 2SLS Regressions, Victims vs. Perpetrators

	(1) All	(2) Victims	(3) Perpetrators
$WDisclose_{lt}$	-0.510***	-6.382	-1.624***
	(0.065)	(7.674)	(0.393)
Indiv. Controls	Yes	Yes	Yes
District-Year Controls	Yes	Yes	Yes
District FEs	Yes	Yes	Yes
Year-Month × Regional FEs	Yes	Yes	Yes
Individual FEs	Yes	Yes	Yes
Nb. Observations	103,993	103,993	103,993
KP F-test	60.296	0.612	65.752
First stage	0.078***	0.006	0.024***

Note: The dependent variable is a dummy variable for "Very concerned" about immigration. Column (2) assumes that articles that do not include the word "öpfer" (victim) do not reveal any particular origin. Columns (3) assumes that articles that do not include the word "täter" (perpetrator), and its variations in spelling, do not reveal any particular origin. All estimates include the full vector of individual controls with age, marital status, education, employment status and individual earnings. All estimates include the full vector of district-year controls with unemployment rate, share of social transfer recipients, share of refugees, net migration flows for natives and foreign-born, share of crime in overall population, and share of foreigners in total crime. Robust standard errors clustered at the NUTS-2 level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1. Source: Authors' elaboration on SOEP.

Appendix C: Estimates at the Municipality Level

In this appendix, we investigate the robustness of the previous results, showing that our conclusions remain unchanged when considering the municipality level. As reported in Figure 4, the area of diffusion for the Sächsische Zeitung is mainly limited to the state of Saxony. Our benchmark estimate includes 3,315 distinct municipalities, with 119 for Saxony.[41] Irrespective of the identification strategy, namely, OLS or IV-2SLS estimates in Table C1, we still find a negative effect of the Sächsische Zeitung 2016 policy shift on natives' concerns regarding immigration. The estimated coefficients are not significantly different from those estimated at the district level.

Table C1: OLS and 2SLS Regressions, Estimates at the Municipality Level

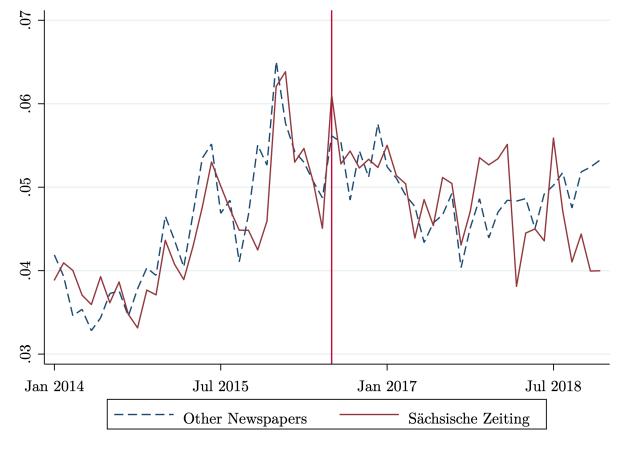
	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS	(6) OLS	(7) 2SLS	(8) 2SLS
E_l^{SZ}	0.131***	0.077***						
	(0.026)	(0.027)						
$July16_t$	-0.007							
	(0.013)							
$July16_t \times E_l^{SZ}$	0.047***	-0.051***	-0.053***	-0.059***	-0.108***	-0.034***		
	(0.015)	(0.017)	(0.005)	(0.005)	(0.024)	(0.005)		
$WDisclose_{lt}^{Ger}$							-0.694***	-0.383***
							(0.093)	(0.059)
Indiv. Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District-Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Month × Regional FEs	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FEs	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Indiv. Controls $\times July16_t$	No	No	No	Yes	Yes	Yes	No	No
Municipality × linear time trend	No	No	No	No	Yes	No	No	No
Individual FEs	No	No	No	No	No	Yes	No	Yes
Nb. Observations	108,917	108,917	108,917	108,917	108,917	103,491	108,917	103,491
Adjusted R^2	0.046	0.081	0.158	0.159	0.160	0.466		
KP F-test							53.589	58.083
First-stage							0.076***	0.079***

Note: The dependent variable is a dummy variable for "Very concerned" about immigration. All estimates include the full vector of individual controls with age, marital status, education, employment status and individual earnings. All estimates include the full vector of district-year controls with unemployment rate, share of social transfer recipients, share of refugees, net migration flows for natives and foreign-born, share of crime in overall population, and share of foreigners in total crime. Robust standard errors clustered at the NUTS-2 level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1. Source: Authors' elaboration on SOEP.

[41] The municipalities correspond to the place of residence of respondents in the survey sample.

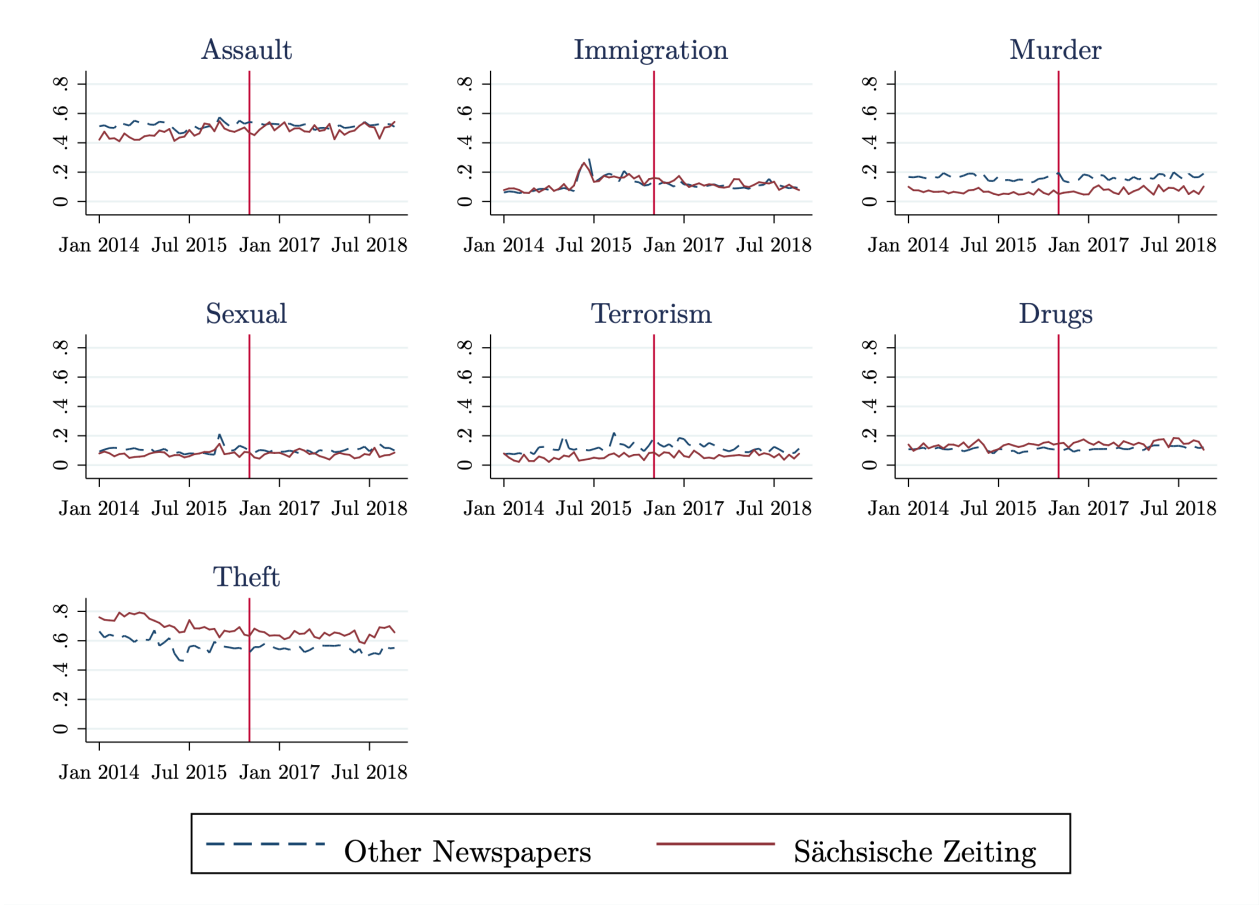
Appendix D: Differences Between the Sächsische Zeitung and Other Newspapers Over Time

Figure D1: Share of Crime-related Articles in the Total Number of Articles



Note: This graph depicts the share of articles related to violent crimes as defined in Table 2 in the total number of articles published each month. Source: Authors' elaboration on Dow Jones Factiva archives.

Figure D2: Change in the Reporting of the Sächsische Zeitung across various types of crime



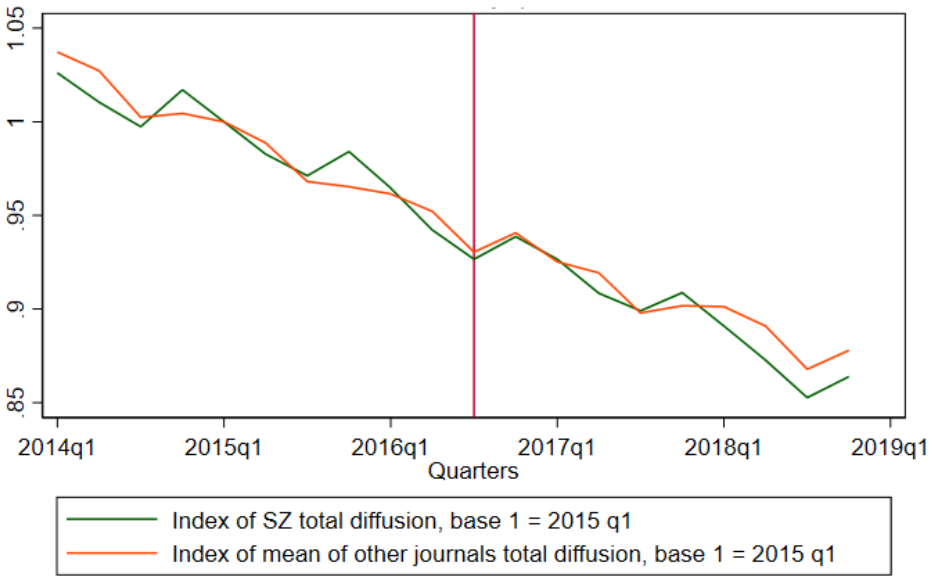
Note: The figure reports the difference in the share of articles reporting a specific type of crime between the Sächsische Zeitung and other newspapers.
Source: Authors' elaboration on Dow Jones Factiva archives.

Figure D3: Change in the Tone of the Sächsische Zeitung
across various types of emotions

Note: The figure reports the difference in the share of articles reporting a specific emotion between the Sächsische Zeitung and other newspapers.
Source: Authors' elaboration on Dow Jones Factiva archives.

Appendix E: Sächsische Zeitung Diffusion Across Municipalities and Districts (2013-2017)

Figure E1: Evolution of Total Newspaper Diffusion over Time, by Quarter



Note: The vertical line corresponds to the third quarter of 2016.
Source: Authors' elaboration on data from IVW.

Table E1: Variation over Time in the Market Share of the Sächsische Zeitung, by District

	Observations	Mean	S.e.	S.d.	95 percent c.i.	
Share 2017 - share 2015 (1)	10	0.011	0.004	0.013	0.002	0.021
Share 2015 - share 2013 (2)	10	0.013	0.004	0.012	0.004	0.022
Difference (2) -(1)	10	-0.001	0.002	0.006	-0.006	0.003
t with 9 degrees of freedom				-0.723		
T-test (2) -(1) != 0				$Pr(\|T\| > \|t\|) = 0.488$		

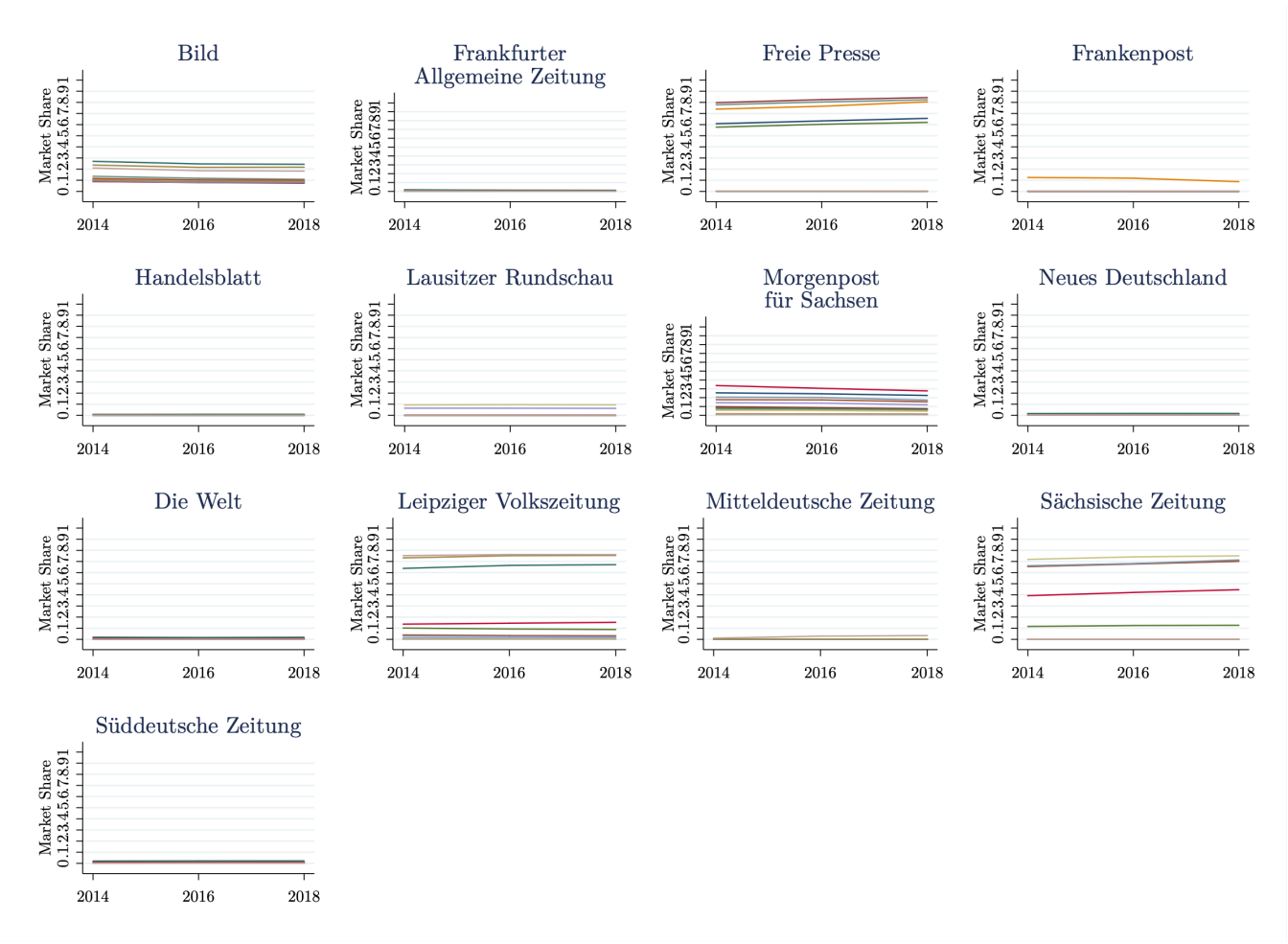
Note: The average variation in the diffusion share of the newspaper Sächsische Zeitung is calculated for districts in the state of Saxony where at least one copy of the newspaper was sold in each edition of the IVW diffusion analysis. The IVW collected data for the 2014, 2016, and 2018 editions in November of the years 2013, 2015, and 2017, respectively.

Table E2: Variation over Time in the Market Share of the Sächsische Zeitung, by Municipality

	Observations	Mean	S.e.	S.d.	95 percent c.i.	
Share 2017 - share 2015 (1)	200	0.015	0.002	0.031	0.011	0.019
Share 2015 - share 2013 (2)	200	0.015	0.002	0.025	0.012	0.019
Difference (2) -(1)	200	0.000	0.003	0.041	-0.006	0.005
t with 199 degrees of freedom				-0.102		
T-test (2) -(1) != 0				$Pr(\|T\| > \|t\|) = 0.919$		

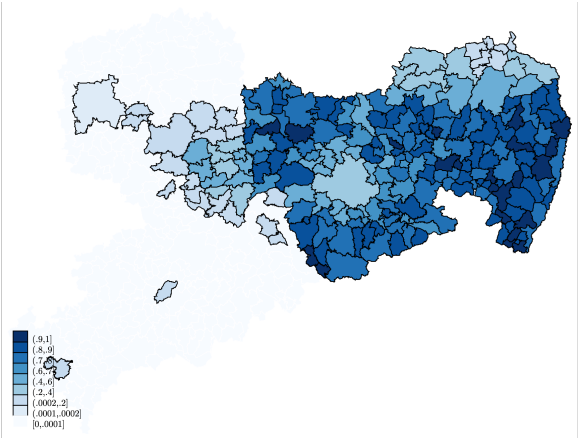
Note: The average variation in the diffusion share of the newspaper Sächsische Zeitung is calculated for municipalities in the state of Saxony where at least one copy of the newspaper was sold in each edition of the IVW diffusion analysis. The IVW collected data for the 2014, 2016, and 2018 editions in November of the years 2013, 2015, and 2017, respectively.

Figure E2: Evolution of Sächsische Zeitung Diffusion over Time and Across Districts in Saxony

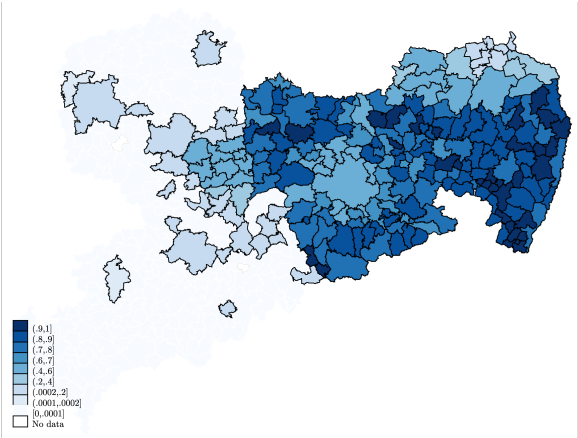


Note: This graph shows the relative diffusion of the Sächsische Zeitung and other newspapers over time for each district in Saxony. Each line represents the total number of sales by each newspaper in the total number of sales for all newspapers at the district level. It includes newspapers for which the number of sales during the week of reference exceeds 1,000 copies for at least one year between the 2014 and the 2018 editions. Source: Authors' elaboration on data from IVW.

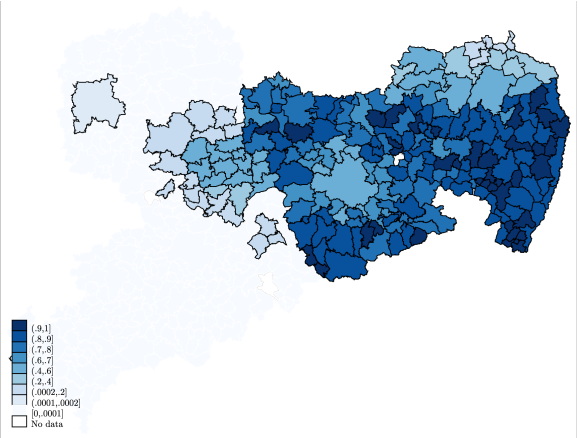
Figure E3: Sächsische Zeitung Areas of Diffusion, Municipalities



(a) 2014 edition



(b) 2016 edition



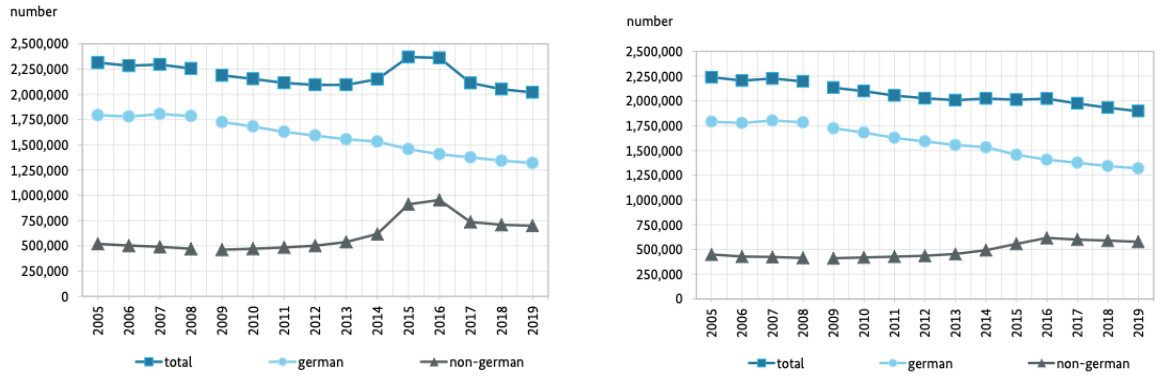
(c) 2018 edition

Note: These maps depict the sales of the Sächsische Zeitung as a percentage of total sales at the municipality level.

Source: Authors' elaboration on Information Community for the Assessment of the Circulation of Media (IVW).

Appendix F: Additional Documentation

Figure F1: Criminality in Germany, 2019 Development of Suspects.



(a) Total offenses (b) Excluding offenses against foreigners' law

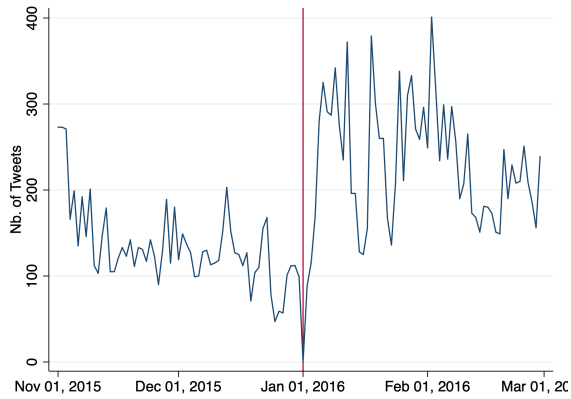
Note: In 2009, police crime statistics started to count the "real" number of suspects at the federal level. The number of suspects is therefore not comparable with values for earlier years.
Source:

Figure F2: Criminality in Germany, Share of Foreigners.

year	recorded cases			total offences, excluding offences against the Residence Act, the Asylum Act, and the Freedom of Movement Act/E.U. (since 2005 key 890000)		
	suspects total	non German suspects		suspects total	non German suspects	
		number	in %		number	in %
2005	2,313,136	519,573	22.5	2,238,550	448,544	20.0
2006	2,283,127	503,037	22.0	2,204,819	427,911	19.4
2007	2,294,883	490,278	21.4	2,225,139	423,288	19.0
2008	2,255,693	471,067	20.9	2,196,728	414,347	18.9
*) 2009	2,187,217	462,378	21.1	2,133,703	410,518	19.2
2010	2,152,803	471,812	21.9	2,098,601	419,232	20.0
2011	2,112,843	484,529	22.9	2,054,232	427,259	20.8
2012	2,094,118	502,390	24.0	2,025,952	435,559	21.5
2013	2,094,160	538,449	25.7	2,007,328	453,015	22.6
2014	2,149,504	617,392	28.7	2,023,623	492,610	24.3
2015	2,369,036	911,864	38.5	2,011,898	555,820	27.6
2016	2,360,806	953,744	40.4	2,022,414	616,230	30.5
2017	2,112,715	736,265	34.8	1,974,805	599,357	30.4
2018	2,051,266	708,380	34.5	1,931,079	589,200	30.5
2019	2,019,211	699,261	34.6	1,896,221	577,241	30.4

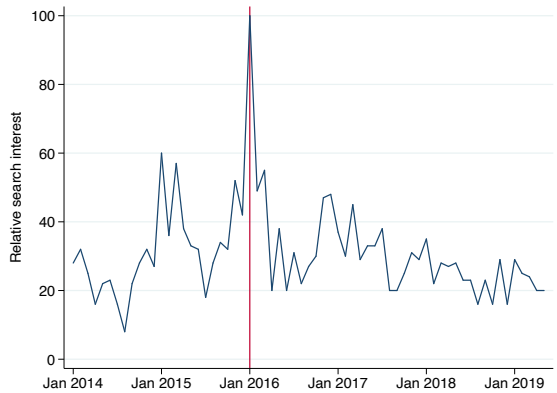
Note: In 2009, police crime statistics started to count the "real" number of suspects at the federal level. The number of suspects is therefore not comparable with values for earlier years.
Source: Police crime statistics. Federal Republic of Germany Report 2019. V 1.0.

Figure F3: “Lügenpresse” in Germany from Twitter



Notes: This graph depicts the number of tweets on Twitter including the term “Lügenpresse” between November 1, 2015, and March 1, 2016.
Source: Authors’ elaboration on Twitter.

Figure F4: “Pressekodex” in Germany from January 2014 to May 2019.
Google Trends Search Interest



Notes: Google Trends does not allow us to obtain the exact number of search requests with the word “Pressekodex” made by German residents. The only information that is available is the monthly search intensity relative to the total number of searches received by Google over the period. Thus, the score that is depicted here is a deviation from the highest relative search volume, which is set at 100. A score of 0 means virtually zero searches of the term “Pressekodex” for a given month. Source: Authors’ elaboration on Google Trends.

5.1 Sächsische Zeitung policy change.

Title: Facts against rumors.
Subtitle: Why the Sächsische Zeitung will always mention the nationality of offenders in the future. Regardless of whether they are Germans or foreigners.
By Oliver Reinhard.

What is truth? The one in the papers? Well: Even journalists are neither wise nor omniscient. But as a rule, they do their best to get as close as possible to the truth with their work, even uncomfortable, ugly or bad truths, about which one neither likes to write nor read. This is one of the highest virtues of journalism, of professional ethics.

But: Many people doubt that journalists really do strive for the highest possible truth content. They instead believe that journalists manipulate, halve, and suppress truths. Especially since the refugee crisis, there has been much talk of declining trust in the media. However, studies show that the degree and proportion of mistrust and confidence in the press have not changed for decades.

We wanted to know more about this. That's why we asked Professor Lutz Hagen from the Institute for Communication Science at the TU Dresden to conduct a representative survey among our subscribers in the spring of this year. To find out what they think about the coverage of the Sächsische Zeitung.

We were delighted with the result. 56 percent gave our work the grade Good, 34 percent a Satisfactory, six percent even a Very Good. 72 percent of the subscribers also said that nothing had changed in their trust in the Sächsische Zeitung since the beginning of the refugee crisis.

Of course, these findings are no reason to be satisfied with everything and just carry on like this. After all, striving for quality and trust among readers is also part of the editorial team's constant and everyday tasks. Since we know that the issue of foreigner crime is a particularly sensitive question of reader confidence, we have dealt with it separately. It is no secret that many Germans believe that the media, in their reporting, conceal foreign criminals' origins out of consideration for them. Although a majority of 53 percent of our subscribers surveyed do not share this opinion, another 15 percent say "I don't know". But at least 25 percent think so.

Our goal: protecting minorities

The truth is that almost all media, including the Sächsische Zeitung, adhere to guideline 12.1 of the press codex, issued by the German Press Council, when it comes to foreigner

crimes. The latter recommends: "In reporting on crimes, the suspects' or perpetrators' affiliation to religious, ethnic or other minorities is only mentioned if there is a justifiable factual connection for understanding the reported event." This applies, for example, to a crime committed for religious motives. But not for theft out of greed or poverty.

The directive goes on to say: "It should be noted in particular that mention could incite prejudice against minorities." And such stigmatization – or worse – of minorities has indeed been on the rise for some time. Also and especially in Saxony

It is imperative to us to protect the vast majority of non-criminal refugees in Dresden and the other communities in our area of distribution and to protect them from discrimination. Nevertheless, we have asked ourselves: does the Press Codex Directive really contribute to the protection of minorities in the current situation in Dresden and Saxony?

On the contrary, many SZ employees are convinced: Especially not mentioning the nationality of criminals and suspects can create room for rumors that often harm precisely those we would like to protect. Like most of our colleagues, four out of five SZ subscribers do not consider the naming of the nationality of perpetrators to be discriminatory and also plead for naming the nationality.

That is why, after quite controversial discussions, we have decided to no longer adhere to the guidelines of the German Press Council when reporting on foreigner crime as of today. Instead, we will in the future always state the origin of offenders or suspects. Regardless of whether they are Germans, which is the rule, or foreigners.

However, we will be able to report the origin only for crimes of which the police authorities also inform us, which is not usually the case with minor cases such as petty thefts or tax evasion. And if the police do not report the origin of the perpetrators and suspects of more serious offenses, we cannot do so either. If they do, we will not conceal this information.

An important motive for our decision was also the findings of the subscriber survey in the spring. Although the SZ has rarely mentioned the origin of the perpetrators so far – usually only if it was directly related to the crime – many readers estimate the number of criminal refugees in Saxony to be considerably higher than it is. This overestimation of crime committed by foreigners is a serious problem nationwide because it can promote racist prejudices.

Foreigners are not more criminal than Germans.

We are aware of this: Like so many media users – and many a journalist – some SZ readers also take information from the press very selectively.

https://www.saechsische.de/fakten-gegen-geruechte-3434300.html. Translated

from German to English by the authors.

5.2 Article 12.1 of the German Press Code

The German Press code is a guideline for journalist work that is published by the German Press Council. It aims at preserving the "standing and the credibility of the media" in Germany. Section 12 describes rules on discrimination with a specific focus on criminality in subsection 12.1. We report below the English version of the guideline that is free-access on the German Press Council website.[42] We highlight, in Section 12, important changes between the versions of March 2015 and March 2017.

5.3 Section 12

There must be no discrimination against a person because of his/her sex, disability or membership in an ethnic, religious, social or national group.

Guideline 12.1, Reports on crimes :

March, 2015:

When reporting on crimes, *it is not permissible to refer to the suspect's religious, ethnic or other minority membership unless this information can be justified as being relevant to the readers' understanding of the incident.* In particular, it must be borne in mind that such references could stir up prejudices against minorities.

March, 2017:

When reporting on crimes, *it must be ensured that any reference to a suspect's or perpetrator's membership in ethnic, religious or other minority groups does not result in a discriminatory generalization of individual misconduct. As a rule, membership in a minority group shall not be mentioned, unless this is in the legitimate interest of the general public.* In particular, it must be borne in mind that such references could stir up prejudices against minorities.

[42] https://www.presserat.de/pressekodex/pressekodex/

5.4 Examples of articles published in the Sächsische Zeitung

This section presents three examples of articles taken from the newspaper Sächsische Zeitung. It illustrates which words are detected from the crime lexicons, allowing us to identify relevant articles. Words detected in the origin lexicons are used to identify articles revealing the origin of offenders. Articles were translated from German to English by the authors, and original German versions are available upon request.

Example 1

Title *The senseless death of a construction yard employee still troubles minds four days after the crime. Now a witness has come forward.*

Publication date: *September 26, 2016.*

Relevant extract: *"The shock still sits deep", says mayor Tobias Goth (CDU). With this, he surely speaks for many Leisnig residents who continue to deal with the events of last Friday evening. A 53-year-old man who was employed in the building yard of the city of Leisnig was* ***attacked*** *by a 25-year-old* ***German*** *in the middle of the market square and so seriously injured that he succumbed to his injuries. There are various reports about the exact incident. The DA has meanwhile been able to speak exclusively with one of the first responders*, who also witnessed the crime.[...]*

Crime lexicon words detected: attacked → assault lexicon.

Origin lexicon words detected: German.

Example 2

Title: *Radeberg; attack at the Pulsnitzer Straße.*

Publication date: *March 14, 2017.*

Relevant extract: *A man was injured at night on Sunday in Radeberg. The 30-year-old visited a pub on Pulsnitzer Straße in the evening. When he wanted to leave the pub together with an acquaintance at about 3 o'clock, a 21-year-old* ***German*** *jumped into his legs from behind. The man pulled his* ***victim*** *to the ground. Witnesses eventually took the attacker outside. The 30-year-old sustained minor injuries as a result of the* ***attack****. The exact background of the crime is so far unclear. The police were informed of the incident on Monday. The officers are now investigating for* ***physical injury****. (SZ)*

Crime lexicon words detected: Attack; physical injury → assault lexicon.

Origin lexicon words detected: German.

Example 3

Title: *One of three thieves caught in the act.*

Publication date: *March 29, 2017.*

Relevant extract: *Zittau. A patrol of the police station Zittau-Oberland set on Monday afternoon in Zittau a* ***thief*** *after a short escape. "A witness had observed how two unknown men deposited various goods worth more than 600 euro at an emergency exit door in a store on Hochwaldstraße and opened it a short time later," the Görlitz police department announced on Tuesday. "The perpetrators handed over part of the loot to an accomplice waiting outside." The witness intervened and informed the police. The accomplice was initially able to flee, but a little later was placed near the store by an alerted patrol of the Zittau police station and temporarily arrested. "The officers seized* ***stolen goods*** *worth about 50 euro carried by the* ***Czech****," the police statement said. "The two unknown* ***suspects*** *who had acted in the store were able to flee without loot." The criminal investigation department has taken up the investigation. (SZ)*

Crime lexicon words detected: thief; stolen goods → theft lexicon.

Origin lexicon words detected: Czech.

5.5 Accuracy of lexicon-based classifications of newspaper articles

In building the lexicons, we read a sample of 980 newspaper articles published in March 2017. After reading the articles, we first decided whether they were indeed relevant to our analysis, i.e., if they reported one or more of the violent crime categories retained for our study. We then noted all words that allowed us to identify the type of crime mentioned in the relevant articles. Next, we checked whether the articles mentioned the origin of the criminal and, if so, which words allowed us to identify the origin. The two-step process entails that we checked for the criminal's origin only in articles classified as relevant. Hence, this information is missing for articles classified as irrelevant (book or movie reviews, biographies of police officers, general discussions on crime, etc.). The lists of words obtained from this exercise were the core of the lexicons, which were then completed by adding synonyms and declinations.

After using the lexicons to assign the articles to crime categories, we can compare the automatic classification to the manual classification of the 980 articles. The results presented in Table F1 indicate that 77.55 percent of articles are correctly classified as relevant or nonrelevant. All misclassifications are due to false positives. This is not surprising because the words used to identify relevant articles all included lexicons, significantly reducing the probability of missing a relevant article. Among the articles identified as relevant based on the lexicons, 73 percent were true positives. This leaves a substantial but acceptable measurement error. The critical aspect for our identification strategy is that the measurement error should not be systematically correlated with the treatment, i.e., it should stay constant before and after the change in reporting policy implemented by the Sächsische Zeitung.

Table F1: Classification of Article Relevance
Comparing Manual Checks to Lexicon Classification

Article relevance by method		Number articles	Share in %	Cumulated share
Both methods classify as irrelevant	TN	165	16.84	16.84
Both methods classify as relevant	TP	595	60.71	77.55
Manual check yes, lexicon no	FN	0	0	77.55
Manual check no, lexicon yes	FP	220	22.45	100
Total		980	100	
Positive predictive value	PPV		73%	
Negative predictive value	NPV		100%	
Accuracy	ACC		78%	

Note: TN stands for true negative, TP is true positive, FN means false negative, and FP means false positive. $PPV = TP/(TP + FP)$; $NPV = TN/(TN + FN)$; and $ACC = (TP + TN)/(TP + TN + FP + FN)$.

Next, we assessed the accuracy of origin detection in relevant articles. Here, we focus on the subset of 595 articles classified as relevant by both lexicon-based classification and manual classification because, as mentioned previously, the presence of origins was not checked for irrelevant articles in the manual classification. The results in Table F2 show that the overall accuracy rate stands at 89 percent. Again, the misclassifications are mostly driven by false positives since the lexicon-based approach detects some words associated with origins that are not associated with the criminal. For example, the detected words may describe the victim, a police officer in charge, a witness, or objects involved, such as guns bought abroad

or car registration numbers. Overall, 72 percent of detected positives are true positives, which we consider an acceptable level of precision given the simplicity of the algorithm we implement. The few false negatives are due to very subtle word combinations that suggest a foreign origin to the reader but that we consider too vague to be included in the lexicons.

Table F2: Origin Detection in Articles
Comparing Manual Checks to Lexicon Classification

Origin detection by method		Number articles	Share in %	Cumulated share
No method detects origin	TN	397	66.72	66.72
Both methods detect origin	TP	135	22.69	89.41
Manual check yes, lexicon no	FN	10	1.68	91.09
Manual check no, lexicon yes	FP	53	8.91	100
Total		595	100	
Positive predictive value	PPV		72%	
Negative predictive value	NPV		98%	
Accuracy	ACC		89%	

Note: TN stands for true negative, TP is true positive, FN means false negative, and FP means false positive. $PPV = TP/(TP + FP)$; $NPV = TN/(TN + FN)$; and $ACC = (TP + TN)/(TP + TN + FP + FN)$.