How the News Media Shapes Public Opinion by Defining Political Issues

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Abstract

Scholars heavily debate the importance of the news media for the opinion formation process in contemporary media environments. A growing body of observational studies and field experiments moves beyond the limitations of classic experimental studies, mostly focusing on major changes in media markets or exposure to media sources usually not consumed. However, this provides little insight into the most common case of media influence: within-outlet changes in news coverage. The predominant concern with average treatment effects creates additional issues by masking how citizens react differently to new information. Exploiting a rare shift in the migration coverage of the major German tabloid, and combining a large-scale panel survey with a state-of-the-art analysis of media content, I address both issues. Evidence from difference-in-differences and fixed effect models shows that a moderate increase in the emphasis of crime in migration coverage substantially affects immigration attitudes, but only among individuals who do not already associate immigration with crime. These findings suggest that media outlets hold substantial power to shape public opinion by emphasising certain issue considerations over others.

1 Introduction

The persuasiveness of the news media has been a fixation of research on political communication and public opinion for at least the past 100 years. Nearly as

long has the debate moved back and forth on whether the news media is the major source of citizens' political attitudes. In recent years, this debate has increasingly seen contributions from observational research employing powerful causal identification strategies, as well as large-scale field experiments - often with conflicting findings.

I address two gaps within this line of inquiry. First, research in this field has studied somewhat rare occurrences like news boycotts (Foos and Bischof 2022), fundamental changes in the makeup of news media markets (Durante and Knight 2012; Grossman, Margalit, and Mitts 2022; Martin and Yurukoglu 2017), or exposing (partisan) news consumers to outlets with opposing viewpoints (Broockman and Kalla 2022; Guess et al. 2021). These studies give us a better understanding of the big picture of media landscapes, how they affected today's political landscape, and inform about the implications of highly partisan media. However, they tell us little about the everyday impact of the news media on opinion formation. This study hence aims to show how changes in news coverage of a given outlet affect consumers' issue attitudes in the medium term.

Second, while all these studies have convincingly shown the average treatment effect (ATE) of the consumption of a specific, usually partisan news outlet in a specific setting, they have usually not assessed which scope conditions underlie this effect (Chiang and Knight 2011; Spirig 2020 for exceptions). This study therefor calls for increased attention to the actual *content* of political communication, as well as the *preconditions* that determine how respondents react to such content.

I address these gaps in the literature by presenting evidence from an editorial change in the largest German tabloid, resulting in an increasing emphasis of crime in the paper's migration coverage. The case is ideal to assess the everyday influence of news outlets to shape public opinion, as the change in editorship and content itself was not salient (Spirig 2020). The coupling with a large-scale panel survey fielded before and after the editorial change enables the assessment of heterogeneous effects across subgroups.

The results show that the news media has substantial influence on citizens' political attitudes. By changing the emphasis of different aspects of an issue, newspapers can shift citizens' opinions even on highly salient and emotional issues such as immigration. Furthermore, this effect is dependent on the accessibility of considerations towards an issue. Those citizens who already define immigration in terms of crime do not react to exposure to this consideration. This finding underlines the importance of assessing heterogeneous treatment effects in media effects studies.

The paper will proceed as follows: in the next section I will briefly discuss the media effects literature, before describing the theoretical framework and research design, including case, measurement, and estimation strategy. The results section will then showcase findings from difference-in-difference and fixed-effect models assessing the hypotheses formulated in the theoretical framework, as well as some supporting descriptive statistics. Lastly, I discuss the wider implications of the findings for the study of media effects and the role of the news media in contemporary democracies.

2   The Study of Media Effects on Public Opinion

The empirical literature broadly consists of two camps of scholars providing conflicting evidence about the influence that the news media has on political attitudes in contemporary democracies. The "maximal effects" camp builds on a large body of experimental evidence that shows how even slight changes in question wording affect citizens attitudes about important issues (Nelson, Clawson, and Oxley 1997; Druckman 2001; Druckman and Leeper 2012; Leeper and Slothuus 2020; and Busby, Flynn, and Druckman 2019 for a review). Additionally, a growing body of observational research supports the understanding of the media as a critical information source for citizens. These studies show that the boycott, entry or increasing presence of outlets within media markets affects consumers' political attitudes, electoral turnout, and voting behaviour (Durante and Knight 2012; Foos and Bischof 2022; Gentzkow, Shapiro, and Sinkinson 2011; Grossman, Margalit, and Mitts 2022; Martin and Yurukoglu 2017). While these studies are important contributions to our understanding of the influence of changing media landscapes on public opinion and democracy, they tell us little about the everyday influence of news outlets on viewers' political opinions. Especially the often employed long-term perspective makes it hard to distinguish effects of potential persuasion from the socialization of new cohorts in changing media markets. Additionally, such large and salient changes in media markets might treat citizens in other ways than changes in content. For example, a newspaper boycott is the result of strong attitudes towards that newspaper. If this outlet is also associated with certain ideological positions, changing positions might ultimately be the result of attitudes towards the newspaper rather than the lack of exposure to its content. In cases where a new newspaper replaces others, it is unclear whether citizens react to the absence of old or the presence of new content. The precise nature of the treatment in these observational studies is therefor often unclear (see also

Spirig (2020) on this issue).

Another body of research builds on extensive field experiments that assigns subjects to partisan news sources (Guess et al. 2021; Broockman and Kalla 2022). This however provides evidence on a process unlikely to be observed in the real world: as these outlets are highly partisan, they will be mostly consumed by partisans and it is particularly unlikely that consumers will self-select into opposing partisan news. Additionally, viewers have clear expectations regarding the ideology of these news outlets (Baum and Gussin 2008) and likely discount any content from these outlets. Similar to the observational research discussed above, these studies usually do not assess the precise change in content that resulted in opinion change (or not) but assume that partisan media slant should affect opinions. Research interested in the persuasive influence of the news media should instead focus on specific within-outlet changes in news content within relatively short periods (few days to months).

Lastly, and importantly, the predominant concern with average treatment effects (ATEs) in both observational studies and field experiments implicitly assumes that citizens are similarly affected by exposure to news content. However, a large body of experimental work shows that citizens process new information based on prior predispositions and attitudes (Druckman and Leeper 2012; Taber and Lodge 2006; Zaller 1992). In order to understand the potential influence of the news media, research needs to assess how its impact differs across different groups.

3   Theoretical Framework

3.1   Defining Issues in Political Discourse

Most observational research concerning media effects on public opinion has been concerned with a broad concept often called 'news slant.' Usually defined as content from partisan media outlets (Broockman and Kalla 2022; Guess et al. 2021; Martin and Yurukoglu 2017), sometimes operationalised as similarity to specific parties' communication (Gentzkow and Shapiro 2010) or issue positions/tonality (Spirig 2020), there appears to be surprisingly little theorizing in observational research about precisely *which* content affects opinions.

To address this shortcoming in this study, I build on the *value-expectancy model* (Ajzen and Fishbein 2000), often employed in research on emphasis framing (Nelson, Clawson, and Oxley 1997; Leeper and Slothuus 2020). This model suggests that an attitude on a given issue is a function of two things: consid-
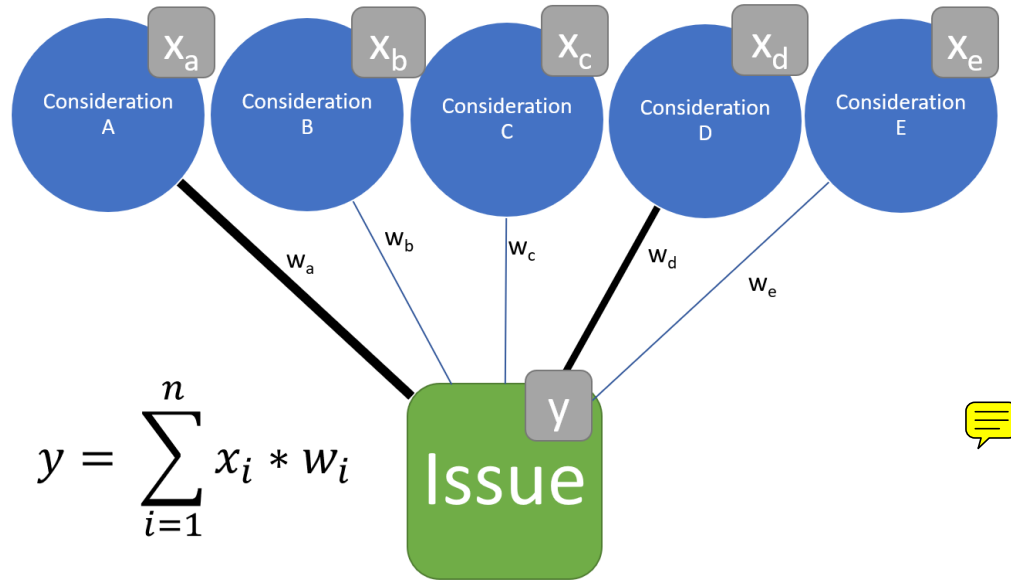
$$y = \sum_{i=1}^{n} x_i * w_i$$

Figure 1: The cognitive evaluation of an issue y is determined by the strength of association w_i with other concepts with existing evaluations x_i.

erations relating to that object and their respective weights. The evaluation of the issue is subdivided into a number of considerations, which will carry clear evaluations. For example, to form an opinion about whether a lockdown is necessary to battle the spread of Covid-19 in one's country, a person might consider the detrimental short-term effect on businesses and individuals' mental health (negative considerations), as well as the prevention of overburdened hospitals and additional deaths (positive considerations). Individuals weigh each of these considerations to form an overall opinion on the subject.

Figure 1 visualizes this logic. A given issue is associated with an attitude y. The issue is related to a number of different considerations, each of which carries an associated evaluation x_i, e.g. that the prevention of overcrowded hospitals is a good thing. Each of these considerations is more or less associated with the issue. Based on the strength of this association w_i, a given consideration's evaluation is more or less reflected in the issue evaluation y, which is equal to the weighted sum of considerations.

This conceptualization allows me to generate specific expectations about how coverage of an issue in the news media affects respondents' issue attitudes. Emphasis of a specific consideration in news coverage of an issue should change

issue attitudes of those exposed to such communication by strengthening the association of the issue with the specific consideration, thus making the consideration more accessible in the cognitive evaluation of the overall issue. If the consideration is positive/negative, the attitude towards the issue should become more positive/negative (Ajzen and Fishbein 2000).

Association hypothesis: **Increased exposure to positive/negative considerations about an issue results in more positive/negative attitudes about the issue.**

While this framework is very similar to work on emphasis framing (Busby, Flynn, and Druckman 2019; Nelson, Clawson, and Oxley 1997; Leeper and Slothuus 2020), I refrain from using the term 'framing.' The concept of framing, while often operationalized with imprecision, suggests a form of communication through mere emphasis of existing considerations, absent any form of information (Slothuus and Leeper 2021). While theoretically interesting, this likely represents the least common form of media coverage, which primarily conveys information (albeit in a slanted way).

3.2 Accessibility: The Limits of Association

In essence, this simple model of informational updating assumes that issue considerations in news coverage will be translated 1:1 into accessible issue considerations in citizens minds, thereby changing the overall evaluation of the issue. However, the emphasis of considerations can only go so far too change issue attitudes. As Ajzen and Fishbein (2000, 5, emphasis in original) write: "only a relatively small number [of considerations] influence attitude at any given moment. It is these *accessible* [considerations] that are considered to be the prevailing determinants of a person's attitude." Attitudes are changed by making certain considerations accessible at the expense of others. However, once new information has been incorporated into the evaluation of an issue and related considerations are highly accessible in the evaluation of the issue, more of the same information should not affect issue attitudes.

This idea is compatible with a simple model of learning[1] or the concept of accessibility. New information should affect the relative weighting of considerations in the evaluation of the issue. However, once the information is incorporated into the cognitive issue representation, no additional effect of exposing the individual to the same information again should be observed. Experimental

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[1]Note that 'learning' does not mean that the information needs to be an accurate representation of reality

evidence about 'pretreatment effects' corroborates this idea. Individuals who received and reviewed information about an issue were far less susceptible to react to a similar framing five days later - they mainly reacted to the first exposure (Druckman and Leeper 2012).

***Accessibility hypothesis*: Individuals are less likely to change their issue attitudes when exposed to considerations that are already highly accessible in their evaluation of the issue.**

4   Research Design

4.1   The Case

Germany, November 2016. A little more than a year after the country became sanctuary for around 800,000 refugees who had fled war, violence, and famine in Syria, Afghanistan, or elsewhere; a little more than a year after the major tabloid newspaper, *Bild*, had started its campaign *#RefugeesWelcome* promoting an open stance towards the newly arriving. The radical right party *Alternative für Deutschland* is on the rise, profiting from the continued debate about the proper way to deal with the new neighbors. Julian Reichelt, then the responsible editor for digital content at *Bild*, is giving a speech at a conference on Media and Democracy. He argues that the media shows too little tolerance towards anti-immigration attitudes and therefor excludes those holding such views from the political discourse. He also explains how he views the surprisingly liberal stance of the newspaper towards refugees in 2015 and the following months from an economic standpoint: "I can assure you: nothing has hurt us economically as much as our clear, humane, empathetic stance in the refugee crisis" [2].

A few months later, Reichelt becomes chief editor at Bild, replacing Kai Diekmann. The tone changes. The paper increasingly paints a picture of refugees as criminals and terrorists on the tabloid's front page (Niggemeyer 2018; Zudeick 2018). Headlines like "I killed 40 people and want asylum" start dominating the migration coverage of the newspaper.

This presents a unique case to study effects of media content on public opinion. As outlined above, past observational studies have usually assumed the nature of the news content when readers opt in or out of newspapers or were riddled

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[2]Reichelt in a speech at *Deutschlandfunk*'s conference "Formate des Politischen 2016": https://vimeo.com/190347766.

with co-treatment like strong attitudes towards a newspaper or a highly visible takeover. In this case, the shift in content can be clearly identified (see below) and the change of editor itself was not salient, which could have affected readers in other ways than purely content (Spirig 2020). Hence, this case is as close as possible to a field experiment in which a specific consideration of migration coverage (crime) is amplified in the coverage of one newspaper, but not others.

I exploit this communicative shift in the tabloid's migration coverage with a difference-in-differences design to answer the question how much influence the news media has to shape public opinion. Compared to the experimental setting, this can tell us with high external validity how news content affects political attitudes in contemporary news environments, in the medium term, in the real world.

The setting more generally represents a least-likely case for the observation of media effects. The issue has been salient for one and a half years before the takeover, and opinions are likely chrystalized. The polarized nature of the topic should make it less likely that citizens will incorporate new information (Taber and Lodge 2006). Additionally, Germany had a large debate about refugees and crime after the new year's eve 2015 in Cologne. According to a report of the ministry of interior in Northrhine-Westphalia, hundreds of women were sexually assaulted and robbed by men they perceived to be of "north-african/arabic" descent [3]. This debate could serve as 'pre-treatment' and as such prevent further attitudinal change (Druckman and Leeper 2012). Lastly, the political parties in Germany had taken clear and visible positions which provides citizens with strong party cues, from which they could infer positions in case they didn't hold strong attitudes themselves (Slothuus and Bisgaard 2021).

4.2   Measurement

4.2.1   Measuring news attention to migration

To measure media attention to immigration, I collected 2.5 million newspaper articles from the most important German broadsheets *Frankfurter Allgemeine Zeitung (FAZ), Spiegel Online (SPON), Süddeutsche Zeitung (SZ), Die Tageszeitung (TAZ), Die Welt* and the major German tabloid *Bild* for the period 2013-2019. Table 1 shows the number of print copies sold and

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[3]see report of the ministry of interior in Northrhine-Westphalia: https://web.archive.org/web/20160116104020/http://m.mik.nrw.de/fileadmin/user_upload/Redakteure/Dokumente/Themen_und_Aufgaben/Schutz_und_Sicherheit/160111ssia/160111berppkoeln.pdf

online page impressions for each newspaper per day. The tabloid *Bild* has by far the largest reach, closely followed by the weekly published *Spiegel*. The daily broadsheets sell less, and interestingly the online presence seems to be dominated by the right, given the weak presence of centre-left *SZ* and *taz*.

Paper	Print Sales (thousands)	Web Impressions (millions)
Bild	1756	555
Spiegel	758	388
FAZ	242	123
SZ	358	13
taz	51	7
Welt	521	135

Table 1: Average daily sales and online impressions of different newspapers in 2017. Source: Informationsgemeinschaft zur Feststellung der Verbreitung von Werbeträgern e. V. (2021). Quartalsauflagen. https://ivw.de/aw/print/qa. Table generated with stargazer.

To identify whether an article is about migration, a research assistant annotated 1800 articles. As migration content is rare, and my training data needs to be somewhat balanced, articles cannot be selected randomly. I first construct a dictionary of terms related to migration. I use dictionary extension based on German GloVe word-embeddings[4] to construct a comprehensive dictionary, and apply it to the articles. Based on the relative share of migration words in an article, I draw a stratified sample of 300 articles (100 from articles with no migration terms, 100 from the quarter with most migration terms and 100 from the remainder in between) for each newspaper for a total of 1,800 papers. Then, a student assistant[5] hand-coded these articles, assessing whether their main topic is related to migration.

Using this sample, a BERT transformer model[6] is fine-tuned on a subset of 1,400 annotated articles. After fine-tuning, the model correctly classifies 95.5% of the test set (F1: 0.94, recall: 0.93, precision: 0.95). This classifier is then used to annotate all 2.5 million newspaper articles. For the time frame from 2013 to 2019, around 90,000 (3.6%) are identified to treat the issue of migration.

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[4]Downloadable from https://deepset.ai/german-word-embeddings.

[5]Thank you, Robin. I know it was painful.

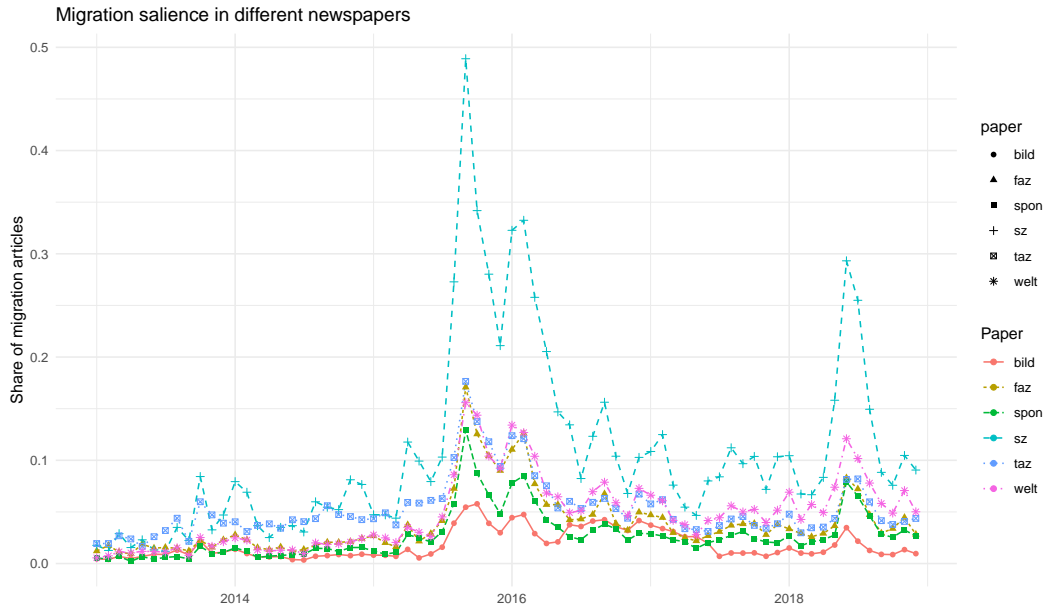[6]https://huggingface.co/bert-base-german-cased

Figure 2: Share of migration content out of all content in six different newspapers.

Figure 2 shows the share of migration articles in each newspaper. Clear peaks in attention are visible surrounding the refugee movements of summer 2015, following the new years eve in Cologne 2016, and the conflict over asylum policy between CDU and CSU in 2018. Newspapers seem to be event-driven and follow largely parallel trends, albeit at different levels, with the centre-left *SZ* discussing migration most and the tabloid *Bild* least. Attention decreases in mid-2016, but remains high compared to pre-2015 levels. Surrounding the fielding period of the survey waves (gray vertical lines), most newspapers show similar levels of attention to the issue between 2.5% and 6% of all articles, with the exception of *SZ*, which moves between 5% and 12.5%.

4.2.2   Identifying Considerations in Migration Content

To identify different considerations about migration in news coverage, I estimate a structural topic model with 60 topics for the nearly 90,000 migration articles in the full period (2013-2019)[7]. The number of topics was chosen to strike a balance between the computational and human resources necessary to estimate

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[7]The topics' prevalence along with the most important words can be assessed in the appendix.

and annotate the topics and finding appropriate topics for the large corpus of
nearly 90,000 migration articles[8]. Topic prevalence is estimated as a function
of the release date of the article, as well as the newspaper it has been published
in. The 60 topics' most predictive words and ten most representative articles
were assessed to identify and label the content of each topic, and all topics
related to crime (two in total) are selected and their prevalence added together
for a daily measure of attention to crime in each newspaper.

4.2.3   Measuring Dependent and Conditioning Variable

The conditioning and dependent variables are measured using the Election
Panel by the German Longitudinal election study. This study consists of a
total of 15 waves from 2016-2020, with 10,000 - 20,000 respondents per wave
(Debus, Faas, and Roßteutscher 2017). Seven of these waves contain questions
on immigration attitudes, asking respondents whether immigration of foreigners
should be restricted or made easier. Responses where recorded on a seven-point
Likert scale. This variable was centered on zero (-3 - easier, 3 - restricted).

The survey also contains a question on newspaper consumption, which was
asked in seven waves, of which four overlap with the dependent variable. The
question provides respondents with a list of the six major daily newspapers plus
an option "another daily newspaper," and asks whether they had consumed
the paper in print or read articles from their website, and if so, how many days
in the past week.

4.2.4   Measuring the Accessibility of Considerations

The measurement of the accessibility of issue considerations in observational
research is difficult, as running panel surveys are usually not asking about
specific considerations about issues of the day. However, other measures should
be highly correlated with the concept of cognitive acessibility. The attitudes
themselves are the clearest manifestation of the accessibility of considerations.
As Ajzen and Fishbein (2000: 5) write: "highly accessible beliefs tend to
correlate more strongly with an independent measure of attitude than do less
accessible beliefs." If a person has an extreme position on an issue, in line with
a specific salient consideration, it is more likely that they strongly associate

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[8]Currently, I work to identify crime content using supervised models (similar to the
identification of migration content) to provide a specific estimate of the attention to the
consideration of interest. I will also analyse the data with embedding regression, assessing
how the meaning of migration related terms like 'migrant', 'asylum' or 'syrian' changed in
Bild compared to other newspapers

this consideration with the issue than if this person had an opposing opinion. Hence, I will use the initial migration opinion in wave 1 of the panel as measure of the accessibility of crime in the evaluation of immigration policy.

4.3   Estimation

I will present evidence from two different estimation strategies to capture the effect of crime framing in migration coverage on immigration attitudes. The first will exploit the case outlined above and a *difference-in-differences* (DiD) estimator to show the effect of the editorial change - and the related content shift - on migration attitudes:

$$y_{it} = \alpha + \beta_1 * Post_t + \beta_2 * BildReader_i + \beta_3 * Post_t * BildReader_i + \epsilon_{it}$$

The dependent variable y_{it} indicates a respondent's migration attitude in a given survey wave, measured on the Likert scale described above. The conditioning variable $BildReader_i$ is a simple binary variable indicating whether respondents read *Bild* in the past week and is measured in the pre-treatment wave. $Post_t$ indicates whether an interview took place preceding or following the editorial change. The estimator of interest is β_3, which indicates the change in migration attitudes of *Bild* readers following the editorial change, controlling for pre-treatment differences ($BildReader_i$), as well as general pre-post shifts in migration attitudes ($Post_t$).

The second strategy combines the media content analysis with the survey data directly to generate a measure of individual exposure to migration content. Based on the responses to the question which newspapers an individual consumed for how many days in the past week, I generate a weighted estimate of migration content in the week preceding that survey date. I do that by first estimating the daily attention in the specific outlet in the week preceding the interview date. Then, I weight it by the days the person read it and divide the sum of the two by the overall number of days a person read any newspaper. This provides me with an individual estimate of migration content in a respondent's news diet, dependent on interview date and the frequency of newspaper consumption:

$$Attention_{i,c} = \frac{\sum_{np=1}^{NP} DaysRead_{i,np} * \frac{\sum_{d-1}^{d-7} Attention_{np,c}}{7}}{\sum_{np=1}^{NP} DaysRead_{i,np}}$$

So if individual i read paper A (devoting 10% of their migration coverage in the past week to consideration c) for 3 days last week and paper B (devoting 20% to c) 7 days, then the estimated relative exposure to consideration c would be $\frac{3*0.1+7*0.2}{7+3} = \frac{1.7}{10} = 0.17$.

This estimate can then be used to assess whether the individual migration opinion has been affected by changing news coverage using a *two-way fixed-effect model*. This means that general time trends (ϕ) and individual differences (ρ) are controlled for in order to estimate within-individual changes beyond general trends in migration attitudes. This estimation strategy creates a rather high hurdle to detect effects, not only because we have to rely on daily estimates of newspaper content - which can only be a proxy for actual exposure, but also because the data in this model comes from two different sources, mitigating potential common source error ([]).

$$y_{it} = \alpha + \beta_1 * FrameExposure_{it} + \rho_i + \phi_t + \epsilon_{it}$$

5 Results

5.1 Treatment

Figure 3 shows the development of crime attention and a difference-in-differences estimate of *Bild* compared to other newspapers in 2016 and 2017. The left panel shows the average monthly attention to crime topics within migration content for Bild (red line) and all other newspapers. All newspapers start at a very high level in January 2016, when the aforementioned new years eve is discussed and develop at somewhat similar levels across 2016. When Reichelt takes over as chief editor in February 2017, the share of crime content out of all migration coverage is around 3% and *below* that of other newspapers. This starkly changes around four months later, in June 2017, when both papers experience a peak and Bild moves up to a plateau around 10%, compared to around 5% in all other newspapers. Comparing the changes pre-post with a difference-in-differences estimate for each newspaper (right panel), it becomes evident that *Bild* was the only newspaper that experienced a substantial shift in the attention devoted to migration content addressing crime, with an increase of around five percentage points compared to all other newspapers.
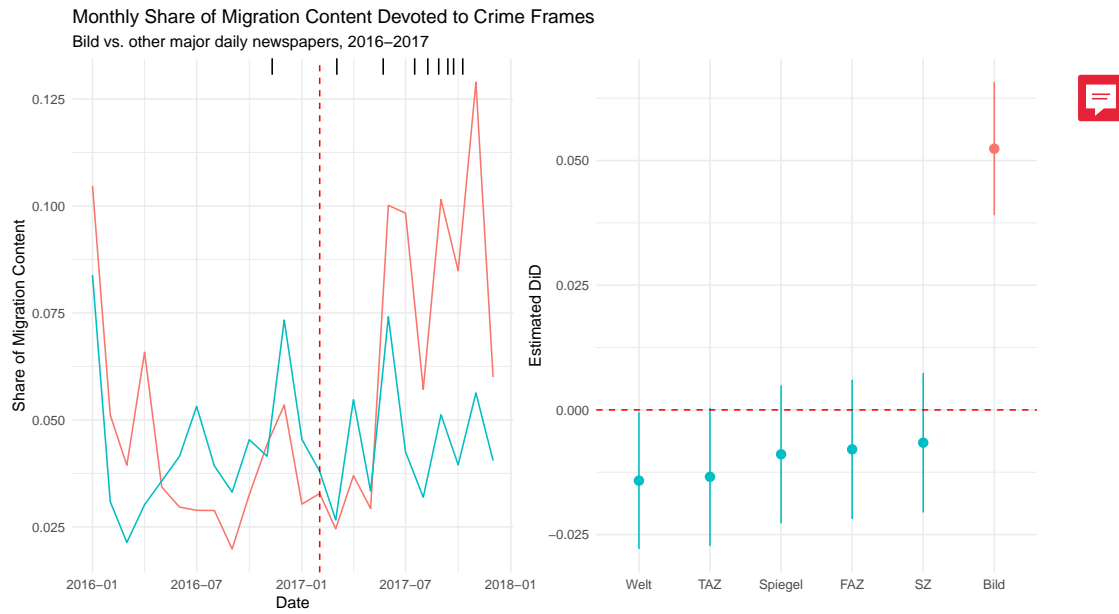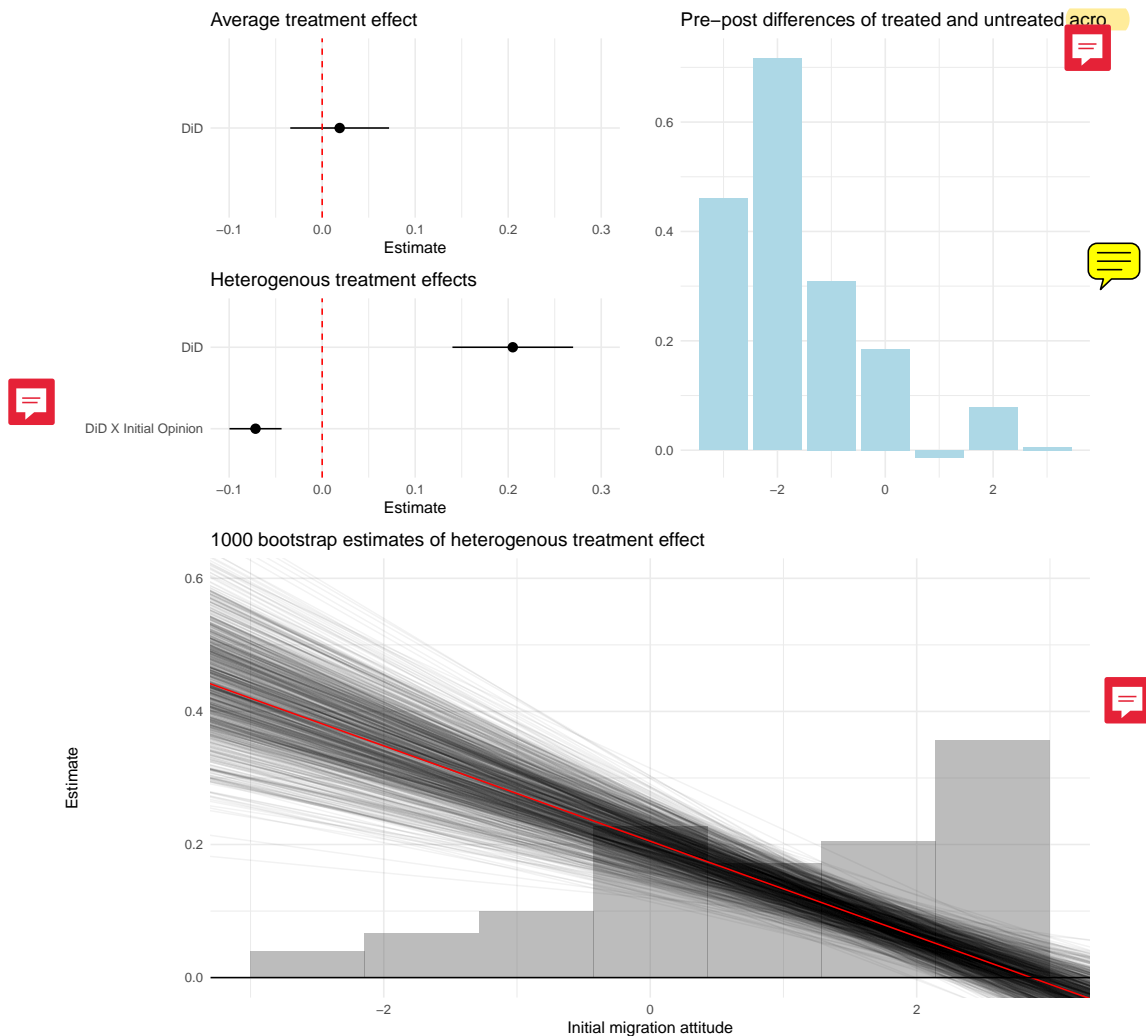
Monthly Share of Migration Content Devoted to Crime Frames
Bild vs. other major daily newspapers, 2016–2017

Figure 3: Estimated change in attention to crime content in migration coverage, Bild vs. other newspapers.

5.2   Effects

5.2.1   DiD

How did this shift in migration content affect migration attitudes? The first plot in the upper left panel of figure **??** shows the average treatment effect of the simple DiD model. We can see a small, positive, but insignificant effect of around 0.02 points on the seven-point Likert scale.

Others arrived at similar findings. For example, Guess et al. (2021, 4) interpret the effective null in the average treatment effect as "results that in many ways provide support for a minimalist view of media impact." However, as I will

show, it is important to take into account how the accessibility of considerations structures the processing of new information.

The second panel in the top left corner of figure **??** presents the DiD-estimate conditional on respondents' migration attitude in the first wave. As I centered this variable, the direct effect indicates the change among *Bild*-readers with moderate migration attitudes. We can see a fairly robust effect of 0.2 points on the seven-point scale (around 3% of the scale). This might seem small, but keep in mind that the treatment was a mere increase in crime coverage on migration of around 5 percentage points. The interaction effect indicates that, with higher values of the initial migration attitude (i.e. more restrictive), this effect decreases to -0.01, a negligible substantive effect statistically not significant from zero. Vice versa, however, the effect increases for those with the most liberal attitudes up to 0.42 points on the seven-point scale (6%).

The bottom panel visualizes this better, together with 1000 blocked bootstrap estimates, resampling individuals rather than observations (Bertrand, Duflo, and Mullainathan 2004). Both the simple linear model estimate and the bootstrap suggest highly significant estimates. The histogram in the background of the bottom visualisation also suggests why the average treatment effect is insignificant: many respondents hold a restrictive attitude on migration and thus do not react to the new information. The upper right panel shows the treatment effects for each pre-treatment attitude, essentially matching respondents. The estimated difference among those with liberal migration attitudes with this approach reaches up to 0.72 points, or 10.3% of the overall scale - given a 5 percentage point increase in attention to crime in migration coverage. The linearity assumption of the interaction effect seems justified, as effect estimates become smaller moving from the most liberal to the most conservative issue attitude.

5.2.2   Individual Exposure Model

In order to assess the robustness of these estimates, as well as their generalizability beyond *Bild*-readers, I estimate an individual exposure model with two-way fixed effects. Figure 4 displays the result. Note that a one-point increase in the independent variable denotes a 100 precentage point increase in the share of crime content in migration coverage.

The overall pattern is similar to the results reported for the DiD-model, suggesting a generalization of the heterogeneous impact of crime news on migration attitudes. The direct effect suggests an impact of 0.5 points for a one hundred
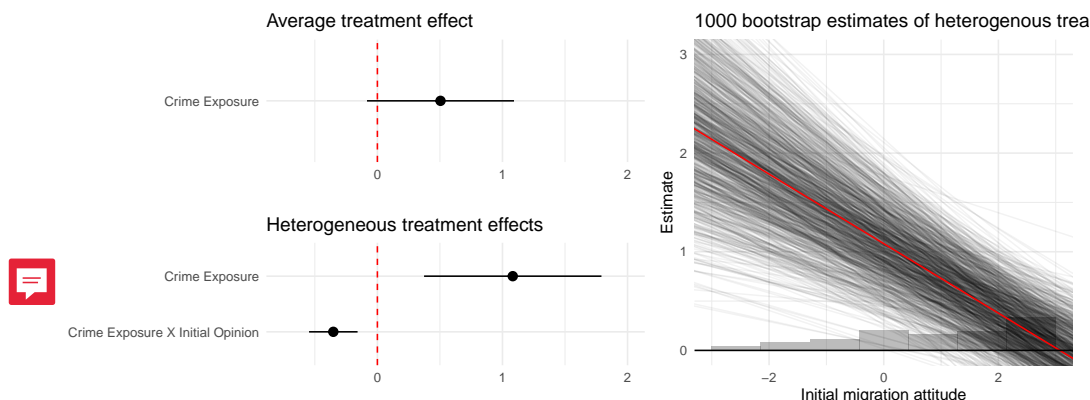
Figure 4: Average and heterogenous treatment estimates from individual exposure model

percentage point increase in attention to crime in migration coverage. For a treatment similar to the change in the migration coverage in *Bild* (a 5 percentage point increase), this suggests a small effect of 0.025 points, which is not significant.

However, the picture changes again when exposure is interacted with different levels of pre-treatment attitudes. For respondents with the most liberal migration attitudes, the model predicts that a 100 percentage point increase in crime framing corresponds to a 2.14 point change on the seven point Likert scale, or 0.11 points with a five percentage point treatment. These estimates are far smaller than in the DiD-model (by a factor of three to four). This is likely an outcome of the higher hurdles this model faces in terms of the combination of media content and survey responses, introducing more noise and thus decreasing effect size ([]). Although with less precision, the estimates are significant both in the OLS model and with the blocked bootstraps (see also bottom figure 4).

5.3 Timing of effect

If, as claimed, the change in migration content is responsible for the opinion change, then the shift in migration attitudes should correspond to changes in migration coverage. Figure 5 plots the difference of readers and non-readers of Bild across waves, as well as the changing content in Bild at the same time. As we can see, while all reader attitudes remain rather stable following the change in editorship, attitudes among liberal and neutral readers become more
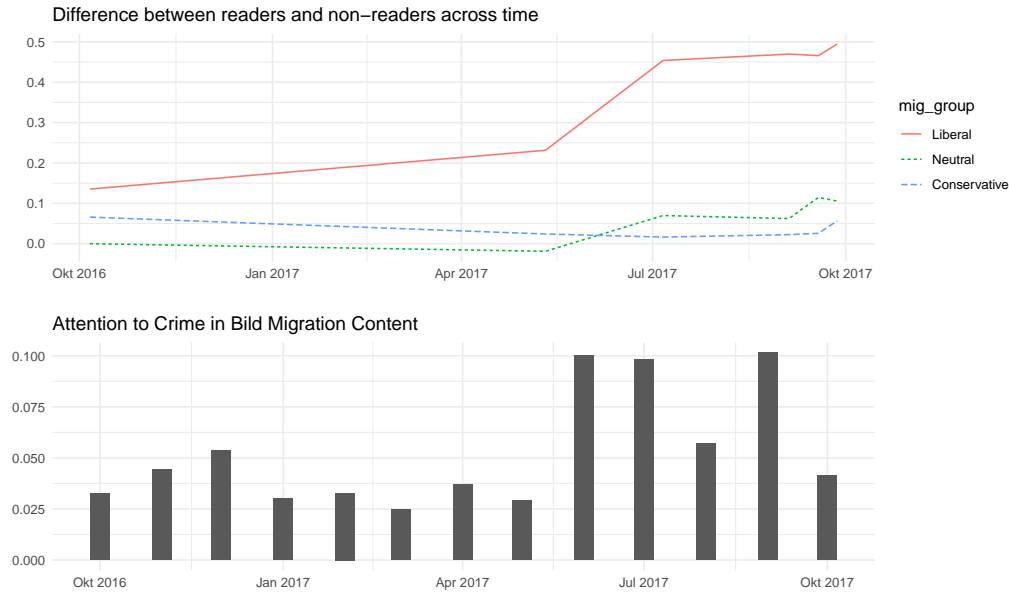
Figure 5: Differences between treated and untreated across time and corresponding migration content

conservative once the attention to crime in *Bild*'s migration coverage increases. This is strong evidence that the content of the tabloid was the driving factor behind the attitudinal changes.

5.4   Selecting out

Another expectation in the literature is that readers selectively choose their outlets based on the alignment of the content with their political attitudes (Bennett and Iyengar 2008). Figure 6 gives some indication whether this is the case. As there is no pre-treatment wave, no DiD-estimates regarding the likelihood of individual readers to stop consuming the newspaper[9]. The evidence presented is therefor purely descriptive. The graph shows the association of migration attitudes in the first wave with the likelihood to read Bild in later waves for all respondents who claimed to read the paper at a later point. As can be seen, those with liberal migration attitudes are actually slightly *more* likely to continue reading the newspaper. This is the opposite of what

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[9]Two pre-treatment waves would be necessary at least: one in which the readership is defined and one giving a pre-treatment estimate of the likelihood of outward selection, based on the readership definition in the first wave.

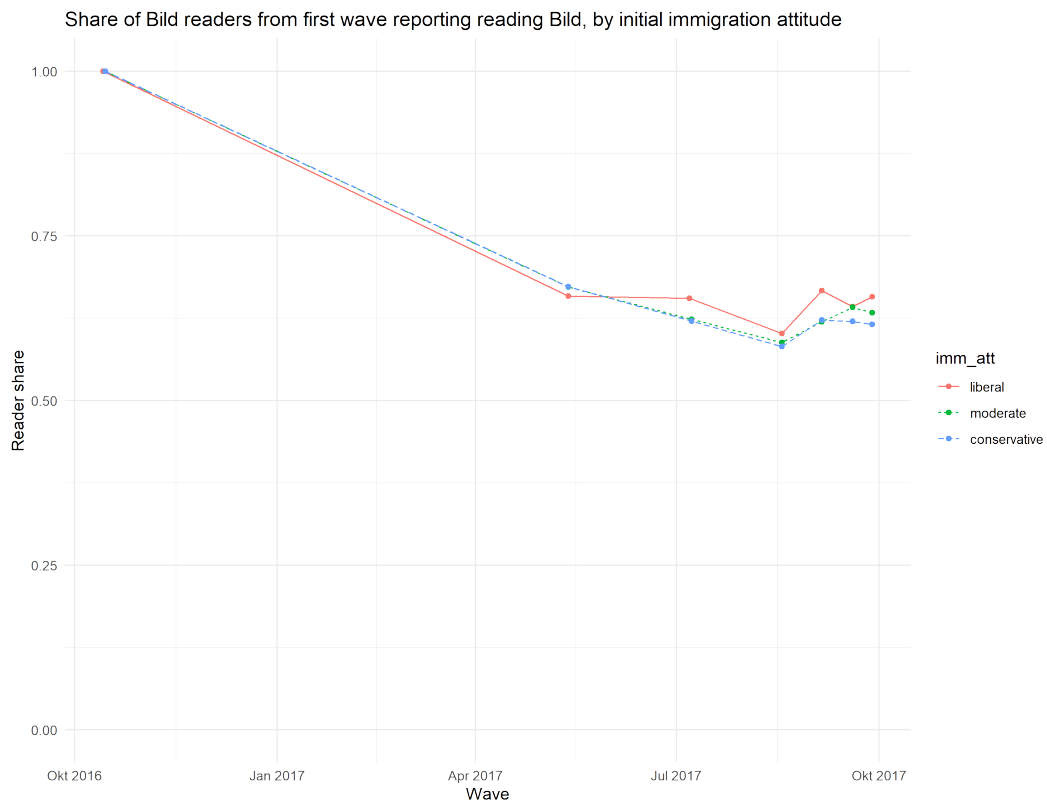Share of Bild readers from first wave reporting reading Bild, by initial immigration attitude

Figure 6:   Opt-out of conservative readers across time, pre-and post treatment

would be expected, given that the newspapers' migration coverage became more conservative. Figure 7 shows the association of migration attitudes and *Bild* readership across time. Generally, conservative migration attitudes are positively associated with readership of the tabloid. However, following the change in editorship, this relationship weakened. Agaion, this is in direct contradiction of what would be expected by the selective exposure literature: if consumers sought news content in line with their preferences, the relationship should strengthen after the newspapers' conservative turn.
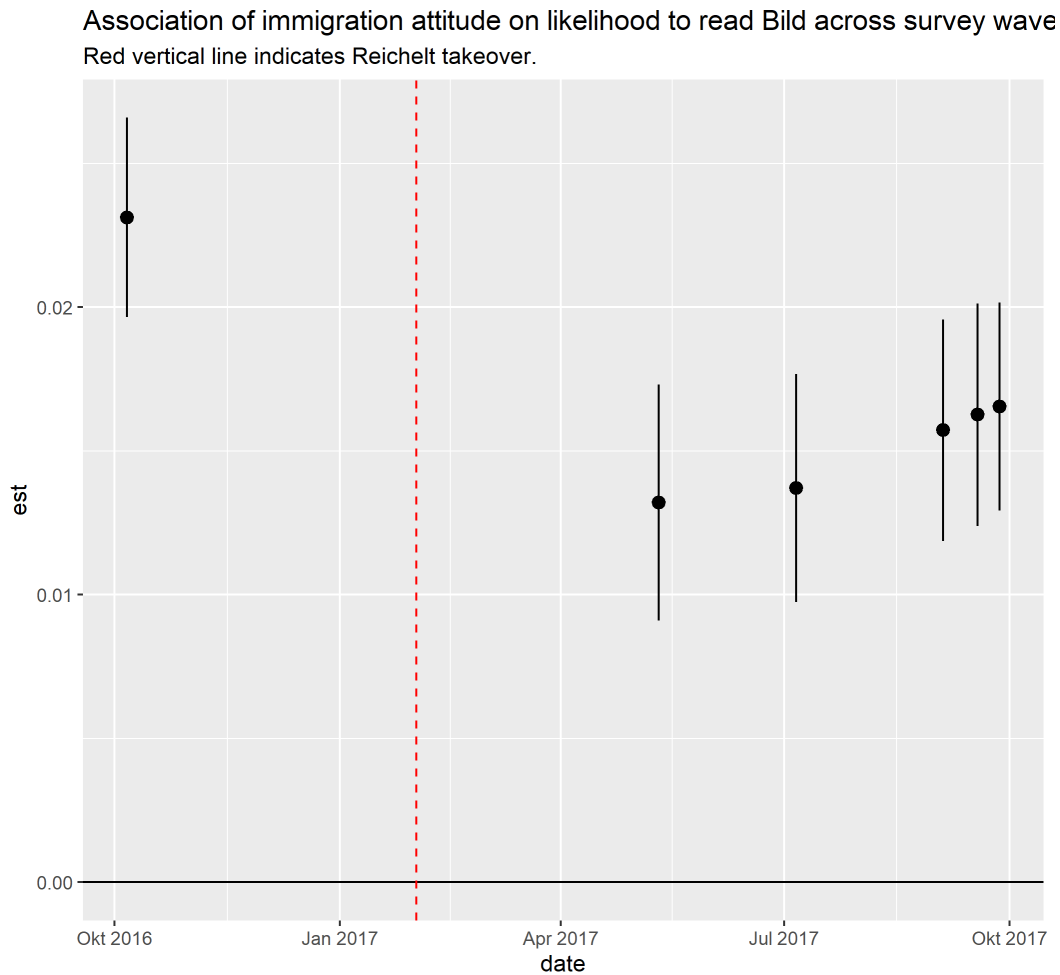

Figure 7:   Association of migration attitude with Bild-readership across time

6 Conclusion

The results underline the substantial importance of the news media for opinion formation. By associating the valenced topic of crime with the migration issue, *Bild* could substantially reshape the migration attitudes of their readers. The findings of the individual exposure model suggest that this phenomenon is not limited to tabloid readers but a strategy that could be employed by any news outlet. Given the least-likelihood nature of the issue and the case, the impact of news content on issue attitudes should be even more pronounced for less affective and polarised issues in less politicised contexts. Furthermore, the results support the implications of the value-expectancy model of opinion formation. By being exposed to crime content in the discussion of migration and migrants, citizens learn a new issue definition and as a result change their reported migration attitude.

However, this process does not affect all citizens similarly. Those respondents who are most likely to already hold perceptions of migrants as criminals do not respond to increases in crime framing. This is in line with the interpretation that citizens react only to new information by updating their issue definitions, while those who already formed an association of migration and crime will not react. This does by no means suggest that conservatives will never react to conservative frames. New considerations might well make conservative respondents on an issue even more conservative (and vice versa for liberals). However, it is important to assess how accessible considerations condition the effects of new information. This is a promising avenue for further research.

The findings have a clear implication for the media effects literature. The current practice of focusing on the average treatment effects of exposure to entire news outlets will only be fruitful if scope conditions like acessibility of considerations and the precise nature of the treatment are considered. Otherwise even the most elaborate field experiments will result in conflicting findings.

Interesting insights can be won for political strategy as well. By associating issues with other concepts with clearly valenced evaluations (such as crime, freedom, or democracy), political actors can manipulate mass opinion on these issues. An interesting question for political competition is whether this is also possible for political actors - can political parties' images become more positive or negative dependent on accessible associations?

Fundamentally, these results suggest that the news media can have substantial impact on public opinion, albeit in a more nuanced way than previously shown. They underline the critical role that the news media plays in the making of

public opinion in contemporary democracies by defining what is at stake for citizens.

7   Next steps

I plan to work on the following next steps:

- Add estimates using another measure of accessibility: reporting Migrant Crime as the most important problem.
- Exploit long-term survey data to show parallel trends in migration opinions of bild readers and non-Bild readers to address this critical assumption of the DiD-estimator.
- Classify all articles with a crime content classifier to generate a more objective measure of crime content and corroborate the results of the topic model.
- Run placebo estimates with other newspapers for robustness - no effect should be visible here (no change in migration content visible).
- explain lag in treatment: why did change in content happen three-four months after the takeover? Did Reichelt slowly replace editors/react to event?
- Additional robustness by excluding that migraiton opinion is correlated with sample attrition.

Resources

Ajzen, Icek, and Martin Fishbein. 2000. "Attitudes and the Attitude-Behavior Relation: Reasoned and Automatic Processes." *European Review of Social Psychology* 11 (1): 1–33. https://doi.org/10.1080/14792779943000116.

Baum, Matthew A., and Phil Gussin. 2008. "In the eye of the beholder: How information shortcuts shape individual perceptions of bias in the media." *Quarterly Journal of Political Science* 3 (1): 1–31. https://doi.org/10.1561/100.00007010.

Bennett, W. Lance, and Shanto Iyengar. 2008. "A new era of minimal effects? The changing foundations of political communication." *Journal of Communication* 58 (4): 707–31. https://doi.org/10.1111/j.1460-2466.2008.00410.x.

Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan. 2004. "How much should we trust differences-in-differences estimates?" *Quarterly Jour-*

nal of Economics 119 (1): 249–75. https://doi.org/10.1162/003355304772839588.

Broockman, David E, and Joshua L Kalla. 2022. "The manifold effects of partisan media on viewers ' beliefs and attitudes : A field experiment with Fox News viewers *." *Working Paper.*

Busby, Ethan, D. J. Flynn, and James N. Druckman. 2019. "Studying Framing Effects on Political Preferences." *Doing News Framing Analysis II*, 27–50. https://doi.org/10.4324/9781315642239-2.

Chiang, Chun Fang, and Brian Knight. 2011. "Media bias and influence: Evidence from newspaper endorsements." *Review of Economic Studies* 78 (3): 795–820. https://doi.org/10.1093/restud/rdq037.

Debus, Marc, Thorsten Faas, and Sigrid Roßteutscher. 2017. "GLES Panel 2016-2021, Wellen 1-15." Köln: GESIS Datenarchiv. https://doi.org/10.4232/1.13783.

Druckman, James N. 2001. "The Implications of Framing Effects for Citizen Competence." *Political Behavior* 23 (3): 225–56. http://www.ingentaconnect.com/content/klu/pobe/2001/00000023/00000003/00369814.

Druckman, James N., and Thomas J. Leeper. 2012. "Learning More from Political Communication Experiments: Pretreatment and Its Effects." *American Journal of Political Science* 56 (4): 875–96. https://doi.org/10.1111/j.1540-5907.2012.00582.x.

Durante, Ruben, and Brian Knight. 2012. "Partisan control, media bias, and viewer responses: Evidence from berlusconi's italy." *Journal of the European Economic Association* 10 (3): 451–81. https://doi.org/10.1111/j.1542-4774.2011.01060.x.

Foos, Florian, and Daniel Bischof. 2022. "Tabloid Media Campaigns and Public Opinion: Quasi-Experimental Evidence on Euroscepticism in England." *American Political Science Review* 116 (1): 19–37. https://doi.org/10.1017/S000305542100085X.

Gentzkow, Matthew, and Jesse M Shapiro. 2010. "What Drives Media Slant? Evidence From U.S. Daily Newspapers." *Econometrica* 78 (1): 35–71. https://doi.org/10.3982/ecta7195.

Gentzkow, Matthew, Jesse M. Shapiro, and Michael Sinkinson. 2011. "The effect of newspaper entry and exit on electoral politics." *American Economic Review* 101 (7): 2980–3018. https://doi.org/10.1257/aer.101.7.2980.

Grossman, Guy, Yotam Margalit, and Tamar Mitts. 2022. "How the Ultra-Rich Use Media Ownership as a Political Investment." *The Journal of Politics.* https://doi.org/10.1086/719415.

Guess, Andrew M, Pablo Barberá, Simon Munzert, and Junghwan Yang. 2021. "The consequences of online partisan media," 1–8. https://doi.org/10.1073/pnas.2013464118/-/DCSupplemental.y.

Leeper, Thomas J., and Rune Slothuus. 2020. "How the News Media Persuades." *The Oxford Handbook of Electoral Persuasion*, 150–68. https://doi.org/10.1093/oxfordhb/9780190860806.013.4.

Martin, Gregory J., and Ali Yurukoglu. 2017. "Bias in cable news: Persuasion and polarization." *American Economic Review* 107 (9): 2565–99. https://doi.org/10.1257/aer.20160812.

Nelson, Thomas E., Rosalee A Clawson, and Zoe Oxley. 1997. "Media Framing of a Civil Liberties Conflict and Its Effect on Tolerance." *American Political Science Review* 91 (3): 567–83.

Niggemeyer, Stefan. 2018. ""Asyl" nicht mehr ohne "Irrsinn" denken." https://uebermedien.de/30565/asyl-nicht-mehr-ohne-irrsinn-denken/.

Slothuus, Rune, and Martin Bisgaard. 2021. "Party over Pocketbook? How Party Cues Influence Opinion When Citizens Have a Stake in Policy." *American Political Science Review*, 1–7. https://doi.org/10.1017/S0003055421000332.

Slothuus, Rune, and Thomas J. Leeper. 2021. "Can Citizens Be Framed? How Persuasive Information More than Emphasis Framing Changes Political Opinions." *Working Paper.*

Spirig, Judith. 2020. "Media Take-Over and Voting Behavior : Can Politician-Owned Newspapers Sway Voters ?"

Taber, Charles S., and Milton Lodge. 2006. "Motivated Skepticism in the Evaluation of Political Beliefs." *American Journal of Political Science* 50 (3): 755–69.

Zaller, John. 1992. *The nature and origins of mass opinion.* Cambridge University Press.

Zudeick, Peter. 2018. "Der Krawallmodus wird ihr nicht helfen." https://www.deutschlandfunkkultur.de/kommentar-zur-bild-zeitung-der-krawallmodus-wird-ihr-nicht.1005.de.html?dram:article%7B/_%7Did=422831.