

# Framing Effects in the Wild: How the News Media Shapes Public Opinion by Defining Political Issues

Manuscript prepared for the 12th Annual Conference of the European Political Science Association in Prague, Czech Republic

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2022-06-15

## Abstract

A vast body of research is devoted to the persuasive effects of news framing. However, the study of the effects of framing has almost exclusively taken an experimental approach, with limited external validity. Existing observational work has so far mostly studied correlational data or assessed ‘media effects’ broadly. I contribute to these bodies of research by exploiting a unique case from Germany, where an editorial change in Germany’s largest tabloid - *Bild* - led to a substantial shift in the paper’s migration framing. Combining panel data from over 15,000 individuals with content analysis of 2.5 million newspaper articles using transformer models and a difference-in-differences design, I show that a substantial increase in the emphasis of crime in migration coverage did not affect immigration attitudes, nor did it increase the association of migration attitudes with attitudes about crime. These findings question the generalizability of framing effects research and add to a recent body of empirical studies questioning the role of the news media for opinion formation in the twentyfirst century.

*I am thankful for extensive feedback on earlier stages of this draft from Daniel Bischof, Jóhanna Ýr Bjarnadóttir, Elias Dinas, Florian Foos, Felix Hagemann, Julian Heid, Christina Gahn, Matthew Levendusky, Heike Klüver,*

*Thomas M. Meyer, Rune Slothuus, Antonio Valentim as well as participants in the EPSIP Colloquium at HU Berlin, CIVICA EGN Workshop at the EUI, CompText Conference 2022, and the Political Behaviour Section at Aarhus University.*

## 1 Introduction: Does Framing Matter?

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. One of the largest fields within this literature is concerned with framing effects. A huge body of experimental evidence suggests that citizens substantially alter their issue attitudes when presented with different frames (Busby, Flynn, and Druckman 2019; Chong and Druckman 2007; Leeper and Slothuus 2020; Nelson, Clawson, and Oxley 1997; Sniderman and Theriault 2004; Slothuus 2008). However, there is little research investigating whether these findings translate into a messy reality (Barabas and Jerit 2010), where frames are communicated by specific actors, and citizens self-select into media outlets, potentially shielding them from some frames and exposing them to others.

In fact, many researchers argue that the effects of media content on attitudes are minimal. Observational research on media effects is abundant (Broockman and Kalla 2022; Durante and Knight 2012; Foos and Bischof 2022; Grossman, Margalit, and Mitts 2022; Guess et al. 2021; Levendusky 2022; Martin and Yurukoglu 2017; Spirig 2020), but has rarely paid attention to the precise content affecting issue attitudes (see Djourelouva 2020 for an exception). To the authors knowledge, no existing observational study assesses the causal effect of changing news framing on issue attitudes.

I address this gap in the literature by presenting evidence from an editorial change in the largest German tabloid *Bild*, resulting in an increasing emphasis of crime in the paper's migration coverage. The case is ideal to assess the everyday influence of issue frames on public opinion, as one outlet changed its framing while other papers maintained theirs. By employing BERT models for the measurement of crime frames in a corpus of 2.5 million newspaper articles, I am able to clearly identify the treatment - something that is usually left to experimental studies. Coupling this data with a large-scale panel survey of over 15,000 individuals allows the precise estimation of this framing effect with a difference-in-differences design.

The results show that emphasis framing does not affect citizens' political atti-

tudes in the real world. The influence of the news media on opinion formation in contemporary news environments with high levels of consumer choice and diverse exposure seems to be rather limited. Similarly, the study contributes to the media effects literature by investigating the effects of changing news *content* on public opinion, independent of the effects of the changing availability of news *outlets*. More generally, this research has important implications for our understanding of contemporary democracies, questioning the role of the media in public opinion formation.

The paper will proceed as follows: in the next section I will briefly discuss the existing literature on framing and media effects, before describing the theoretical framework and research design, including case, measurement, and estimation strategy. The results section will then showcase findings from difference-in-differences and fixed-effect models assessing the impact of increased emphasis of crime in news coverage about migration, both on the association of attitudes about crime with attitudes about migration, as well as migration attitudes themselves. Lastly, I discuss the wider implications of the findings for the study of framing effects and the role of the news media in the opinion formation process.

## 2 Framing Effects vs. Media Effects

Research on framing has shown for decades that citizens' attitudes are highly reactive to minor changes in question wording and emphasis of specific considerations. However, it remains unclear how well these experimental findings translate into the real world, where citizens self-select into media content, receive cues from political actors, and are usually more concerned with their private lives than politics. Scholarly effort has therefore been devoted to test the conditions under which framing effects materialize, designing experiments which emulate different aspects of real-world environments. For example, it has been shown that exposure to conflicting frames can serve to strengthen the effect of frames one was earlier exposed to, dependent on individual preconditions (Bechtel et al. 2015; Chong and Druckman 2013; Druckman and Leeper 2012). Others have assessed what influence the sender of a frame has and shown that the effects of framing are more pronounced when the sponsor of the frame is from one's own party (Druckman 2001; Slothuus 2010; Slothuus and De Vreese 2010). Lastly, concerns about the duration of framing effects have been addressed by some experimental research showing that those effects can last at least several weeks (Lecheler and De Vreese 2011).

While these findings enable a better understanding about individuals' susceptibility to framing effects in real-world environments, the literature almost exclusively provides us with experimental evidence. Experiments can only incorporate few characteristics at a time and are limited to emulate a realistic environment for the study of news. As a result, this type of evidence lacks external validity to generalize to the real world. In order to test the external validity of framing effect studies, it is therefore necessary to study observational data. As Donald Kinder puts it: "[E]xperimental results can always be questioned on their generalizability, and framing effects are no exception. [...] A more balanced reading of frame effects requires methodological diversification, experiments and studies oriented to the world outside" (2007, 157).

This call for an assessment of framing effects beyond experimental studies has been echoed by various scholars over time (Busby, Flynn, and Druckman 2019; Leeper and Slothuus 2020), yet rarely been answered. Existing research is often riddled with endogeneity concerns, co-treatment or concerned with media effects broadly, instead of assessing framing effects specifically. For example, Jerit (2008) investigates the effects of framing on public opinion compared to addressing the opponents issue. She finds that reframing is less effective than engagement with the opposite parties' frames, a finding that suggests that framing is not very effective. However, this study does not try to identify causal effects, but restricts itself to the assessment of correlational evidence. Others show with similar correlational designs that only specific frames seem to drive issue importance (McLaren, Boomgaarden, and Vliegenthart 2018), but do not assess effects on attitudes.

Other work has put more emphasis on causal identification of media effects using quasi-experimental designs, but paid less attention to the precise definition of the independent variable. This literature has usually exploited changes in news media markets such as boycotts of certain outlets (Foos and Bischof 2022), entries of new outlets (DellaVigna and Kaplan 2007; Grossman, Margalit, and Mitts 2022), changing TV channel positions (Martin and Yurukoglu 2017), or partisan takeovers of news outlets (Durante and Knight 2012; Levendusky 2022; Spirig 2020) to estimate the effects of changing news exposure on political behavior. Interestingly, the results differ across studies. While some studies find substantial effects of exposure to slanted media on political attitudes and voting behavior even in the long run (Foos and Bischof 2020; Grossman, Margalit, and Mitts 2022), others find that consumers switch outlets when the slant of currently consumed news changes (Durante and Knight 2012; Spirig 2020).

Another approach is to assess consumer reactions to news content through field

experiments. In this setup, consumers are randomly assigned to specific news outlets and the development of their political attitudes is assessed. Guess et al. (2021), for example, randomly assigned individuals to receive content from a left-leaning or a right-leaning news outlet in their online news feeds. Similar studies have assessed the effects of cross-partisan content on TV (Broockman and Kalla 2022) and social media (Bail et al. 2018). This literature provided contradicting results as well: while some found liberalizing effects of liberal content (Broockman and Kalla 2022), others found no effects (Guess et al. 2021), or even partisan backlash (i.e. individuals becoming even more conservative in response to liberal content; Bail et al. (2018)).

I argue this lack of consensus regarding the effects of media content is at least partly related to a lack of precision in the definition of the independent variable. The vast majority of studies in this literature observes or manipulates the consumed *outlet*, rather than the *content*. This is problematic for three main reasons. First, by assuming a stable ‘slant’ of specific news outlets, it remains unclear which content consumers actually react to (or not). While it is certainly true that news outlets have a certain political leaning, there is variation in how political and how persuasive specific news content is. Second, citizens are often aware of outlets’ political leaning. Baum and Gussin (2008) showed that consumers place the same news content more left- or right-leaning, dependent on whether it was presented as Fox news or CNN content. This implies that citizens should be able to discount political bias of outlets (muting potential effects of biased content) or might show motivated responses to content they perceive as motivated by political motives (e.g. backlash to opposing news sources). Third, by focusing on the effects of the consumption of different outlets, the literature studies a process unlikely to be observed in the real world - after all, changes in the makeup of media markets are extremely rare and switches from one partisan outlet to an opposing partisan outlet even more so. The main influence of news editors on public opinion should be exercised by editing the everyday content of news, rather than changing the consumer base of their outlets.

To my knowledge, there are only two observational studies assessing the causal effect of exposure to specific content on political attitudes. Slothuus (2010) takes advantage of a sudden shift in a political parties’ framing of retirement benefits, and shows that this changed framing has substantial impact on party supporters’ attitudes about the issue. However, it is unclear how these findings translate to news framing effects, as it is impossible to distinguish the effect of partisan cue-taking from the persuasive effect of the frame itself. The only study which assesses the precise impact of changing news content on political

attitudes comes from Djourelouva (2020). She exploits a ban of the term “illegal migrant” in the *Associated Press* and shows that this language has modest effects migration attitudes. While the study itself reveals impressively how language can shape political attitudes, it constitutes a highly specific case and a rather minor change in the framing of migration. While news stories might lack the term “illegal migrant,” they might still extensively cover crimes committed by migrants and thus associate migration with crime.

Summarized, we lack an understanding of how framing affects political opinions in the real world. While experimental evidence suggests rather strong effects, it is unclear how these findings travel outside the lab. Observational evidence on media effects is abundant but has not studied precisely what the impact of framing is. The present study therefor exploits a naturally occurring change in the news framing of a particular issue *within* a specific outlet to isolate the effects of news framing on political opinions.

### 3 Emphasis Framing and the Value-Expectancy Model

”Framing is the process by which a communication source, such as a news organisation, defines and constructs a political issue or public controversy” (Nelson, Clawson, and Oxley 1997). A ”frame” is then the operating unit of this process, defining the issue at hand in a specific way. Different forms of frames have been conceptualised. When I talk about ’frames’ here, I refer to *emphasis frames*. These frames emphasise certain topics in relation to an issue, guiding the recipient to think about the issue with those considerations in mind that are promoted by the frame (Leeper and Slothuus 2020, 152). For example, issues of increasing welfare contributions might be discussed with reference to inequality and providing chances to the poor, or by mentioning that higher welfare benefits might result in higher taxes. Individuals’ support of a statement will differ dependent on the frame presented (Sniderman and Theriault 2004).

Work using the emphasis framing concept of framing - as opposed to other definitions like equivalence frames (Kahneman and Tversky 1979), episodic frames (Iyengar 2005), or generic frames (De Vreese 2005) - mostly builds on the expectancy-value model developed by Ajzen and Fishbein (2000). This model suggests that an attitude on a given issue is a function of two things: considerations relating to that object and their respective weights. The eval-

uation of the issue is subdivided into a number of considerations, which will carry clear evaluations. For example, to form an opinion about whether immigration to one's country should be restricted, a person might consider the humanitarian conditions in the countries of origin (negative consideration regarding restrictive migration policy), as well as the risk of increased crime (positive consideration; note that the model does not differentiate whether a consideration is grounded in objective reality). 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 crime is bad. 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.

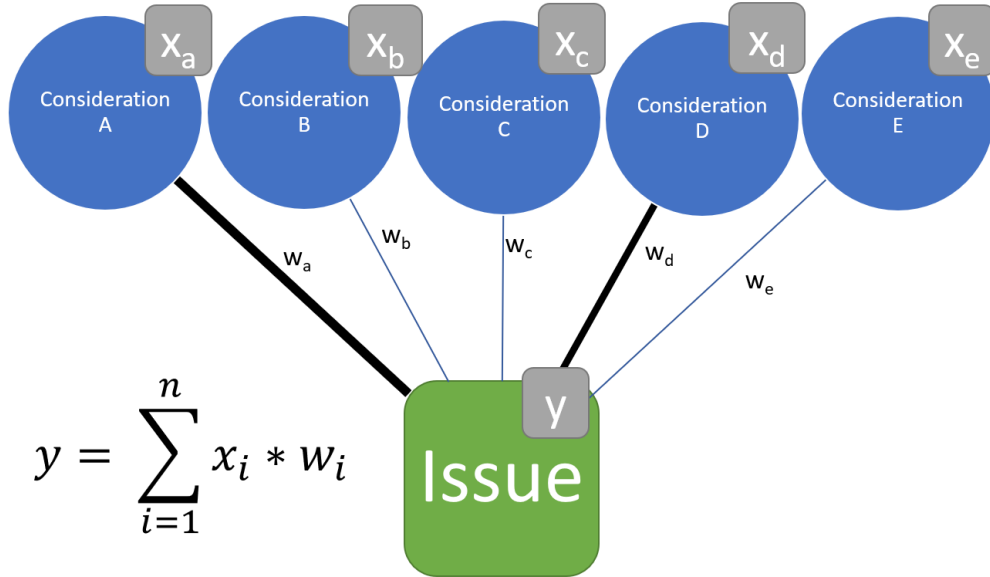


Figure 1: The cognitive evaluation of an issue  $y$  is determined by the strength of association  $w_i$  with other concepts with existing evaluations  $x_i$ .

According to this model, framing changes opinions by changing the association of a single consideration with the issue at hand. As a result, a specific consideration factors more prominently in an individuals' attitude formation

process: “media frames influence opinions by stressing specific values, facts, or other considerations, endowing them with greater apparent relevance to the issue than they might appear to have under an alternative frame” (Nelson, Clawson, and Oxley 1997, 569).

Applying this to the issue of migration policy and the consideration of criminal migrants, one can imagine a news consumer confronted with an increased volume of news about crimes committed by migrants. The value-expectancy model predicts that the consumer forms a cognitive definition of migration that is increasingly associated with the issue of crime, meaning this consideration features more prominently when forming an opinion about the appropriate level of immigration policy. As a result, their opinion about migration policies should become more restrictive.

***Association hypothesis:*** When an individual is exposed to a specific consideration about an issue, their association of the issue with this consideration should be strengthened.

***Evaluation hypothesis:*** When an individual is exposed to a specific negative consideration about an issue, their attitude about the overall issue should become more negative.

However, not all those exposed to a frame should respond similarly. As theories of motivated reasoning suggest, individuals should differ in their evaluation of an argument based on the attitudinal congruence of the statement with one’s pre-existing attitudes. Those exposed to counter-attitudinal information will evaluate it as less convincing, spend more time counter-arguing it and be less likely to expose themselves to it in the first place (Kunda 1990; Taber and Lodge 2006). Hence, those who already hold attitudes congruent with the idea that migration promotes crime - namely that migration should be restricted - should be most likely to react to increased exposure to migration coverage emphasising crime, whereas those with the most liberal migration attitudes should either not react to information they avoid and find unconvincing, or react by developing *more liberal* migration attitudes. Consistent with this hypothesis, existing media effects studies find ideological inertia and even backlash when individuals are exposed to content from opposing political outlets (Bail et al. 2018; Broockman and Kalla 2022; Guess et al. 2021).

***Motivated reasoning hypothesis:*** The effect of exposure to a specific frame should be stronger for individuals with congruent attitudes.



## 4 Research Design

### 4.1 A Rare Shift in Migration Framing

In order to test whether changing news content - rather than a shift in the consumed news outlet - affected political attitudes, I exploit an editorial change in the largest German tabloid newspaper, *Bild*. As I will show, this editorial change resulted in a substantial shift in the papers' migration framing and is hence ideal to assess the effect of within-newspaper content shifts. Additionally, the fielding of a large-scale panel survey in the same period allow to assess the impact of news content on migration attitudes and how predispositions condition this effect. I will briefly discuss the context of the case in this section.

In the summer of 2015, Germany became sanctuary for around 800,000 refugees who had fled war, violence, and famine in Syria and elsewhere. The German public debated how to deal with the newly arriving and for the first time since the post-war years, a radical right party was likely to win representation in the national parliament. Surprisingly, given its traditional populist style and right-wing takes on migration, the major tabloid newspaper *Bild* promoted an open stance towards the newly arriving in this period. This was often connected to chief editor Kai Diekmann, who hosted a refugee family in his home (Reichart 2015).

In December 2016, Axel Springer, the company owning *Bild*, announces that Diekmann will leave the company. Less than a week after, it becomes public that prosecutors investigate Diekmann for sexual harassment. While the company claimed that this was not the reason for Diekmann's departure, the process might have been sped up as a result of the investigations<sup>1</sup> ("Springer-Mitarbeiterin wirft Diekmann Belästigung vor" 2017). The migration coverage in *Bild* severely changed when Diekmann left the newspaper in February 2017 and Julian Reichelt took over the position as editor-in-chief. The paper increasingly started painting a picture of refugees as criminals on the tabloid's front page (Niggemeyer 2018; Zudeick 2018). Headlines like "I killed 40 people and want asylum" increasingly dominated the migration coverage of the newspaper. In a speech months before he took over the position as chief editor, Reichelt outlined his motivation for such a shift in migration coverage:

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<sup>1</sup>According to a former editor of the newspaper I talked to, rumors in the company at the time also suggested Diekmann's departure might have been sped up as a result of the investigation.

“I can assure you: nothing has hurt [*Bild*] economically as much as our clear, humane, empathetic stance in the refugee crisis”<sup>2</sup>. He also argued that the German media shows too little tolerance towards anti-immigration attitudes and therefor excludes those holding such views from the political discourse.

This presents a unique case to study the effects of media content on public opinion. As outlined above, past observational studies have usually explored the effect of consuming a new/different news outlet, without assessing the precise shift in content. In this case, the shift in content took place *within* the outlet and can be clearly identified. The change of editor itself was not salient, which means any opinion changes among readers are most likely the result of the content (Spirig 2020). Additionally, the timing of the editorial change is potentially exogenous, given the pressure from allegations against Diekmann. In summary, *this case is as close as possible to a field experiment in which a specific consideration of migration coverage is amplified in the coverage of one newspaper, but not others.*

I estimate the effect of 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.

## 4.2 Measuring Crime Frames in Migration Coverage

To measure media attention to immigration, I collected 2.5 million newspaper articles from the websites of 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. Following the value-expectancy model, I identify crime frames in migration coverage in a two-step process: first, I use supervised machine learning to identify content about migration. Second, I identify content about crime *within* migration coverage by applying a similar supervised classifier. This approach closely resembles the value-expectancy model, as I first identify coverage about the *issue*, before identifying the considerations emphasized in the discussion of this issue.

<sup>2</sup>Reichelt in a speech at Deutschlandfunk’s conference "Formate des Politischen 2016": <https://vimeo.com/190347766>

Table 1 in the appendix shows the number of print copies sold and online page impressions for each newspaper per day. It becomes clear that German newspapers have a rather important position in the German news market. The tabloid *Bild* has by far the largest reach, with over 1.7 Million sold newspaper daily and around 550 million web visits per month. For reference: the German Wikipedia site had less than twice as many visits (975 million) in the same time frame <sup>3</sup>. *Bild* is 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 left-wing *taz*.

To identify whether an article is about migration, a research assistant annotated 1800 articles. As migration content is rare, and training data needs to be somewhat balanced, articles cannot be selected randomly. Instead, I first construct a dictionary of terms related to migration. I use dictionary extension based on German GloVe word-embeddings<sup>4</sup> 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 coder hand-coded these articles, assessing whether their main topic is related to migration.

Using this sample, a BERT transformer model<sup>5</sup> 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 period from 2013 to 2019, around 90,000 (3.6%) are identified to treat the issue of migration.

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 large-scale sexual assaults on new years eve in Cologne 2016, and the conflict over asylum policy between the conservative sister parties 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

<sup>3</sup>Wikipedia Siteviews Analysis: <https://pageviews.wmcloud.org/siteviews/>

<sup>4</sup>Downloadable from <https://deepset.ai/german-word-embeddings>.

<sup>5</sup><https://huggingface.co/bert-base-german-cased>

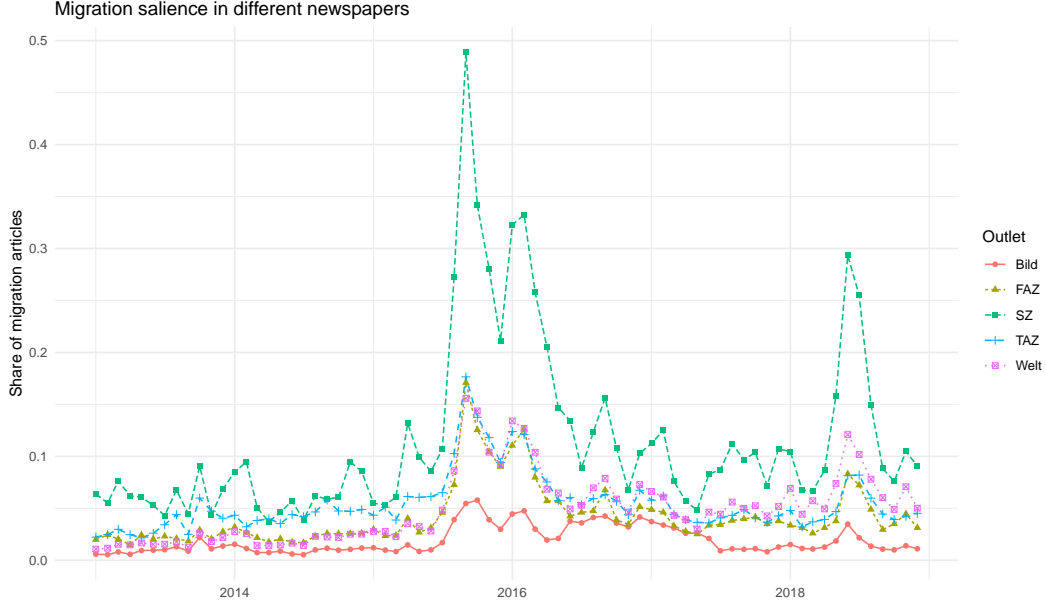


Figure 2: Share of migration content out of all content in six different newspapers.

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%.

To identify migration coverage containing the crime consideration and thereby associating migration with crime, I first fine tune a BERT classifier for German language in a similar fashion as above, this time with coverage about crime as the outcome of interest. Using a training sample of 1400 articles and a test sample of 400 articles, the classifier reaches a very good performance with an F1 score of 85.7%. I then apply this classifier to classify the approximately 90,000 articles about migration identified by the first classifier. About 7% of all migration coverage consists of articles about some form of crime<sup>6</sup>. The share of migration content devoted to news about crime within a given time frame allows me to assess how prominent the consideration of crime as a result of migration was at a specific point in time.

The left panel of figure 3 shows the share of migration coverage devoted to crime news (solid, red line), once for Bild and once for all other newspapers (dashed, black line). As we can see, *Bild*'s attention to crime news in its migration coverage substantially increased briefly following the takeover of Julian

<sup>6</sup>See appendix 1.2 for more information about the classifier, training process and data.

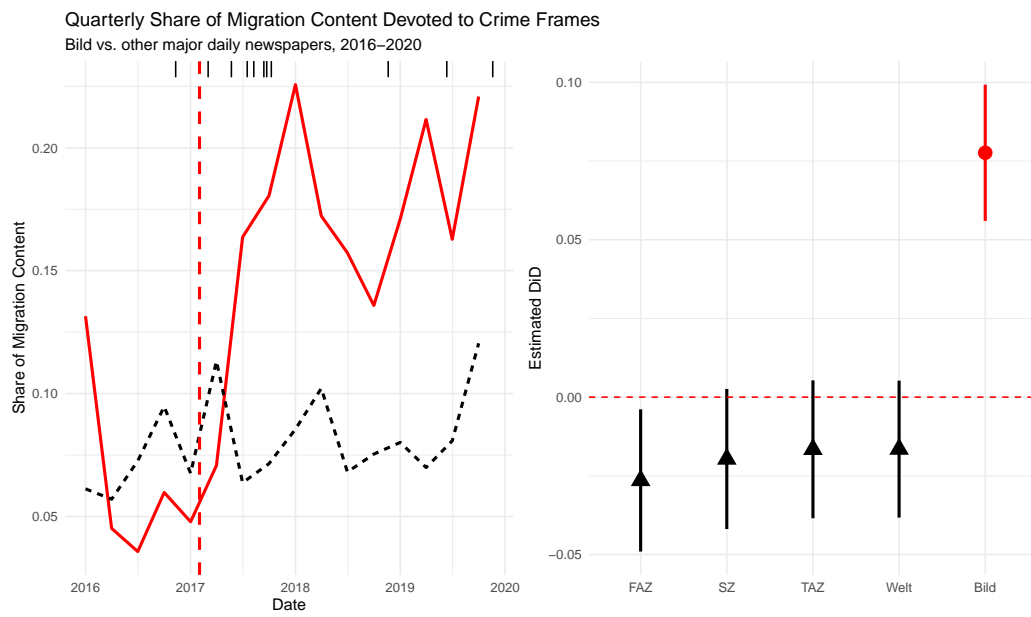


Figure 3: Estimated change in attention to crime content in migration coverage, Bild vs. other newspapers. Black ticks in left panel indicate survey waves.

Reichelt, while it focused less on the issue preceding the editorial change. The trends run largely parallel to each other preceding the treatment, with the major exception being the few months following the events at new year’s eve in Cologne 2015/16. The right-hand panel shows difference-in-difference estimates of the crime emphasis in migration coverage of one newspaper compared to all others, before and after the editorial change in *Bild*. One can see that *Bild* was the only newspaper which substantially changed its emphasis of the frame, while other newspapers maintained their levels of attention. Note that estimates using a structural topic model to identify migration framing yield similar results (see appendix 2.1).

### 4.3 Measuring Immigration Attitudes and News Exposure

In order to assess the impact of this change in framing on migration attitudes, it is necessary to use data on consumers’ immigration attitudes, as well as their news consumption. The 2017 Election Panel by the German Longitudinal election study luckily contains this data. 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). Six of these waves contain questions on immigration attitudes, asking respondents whether immigration of foreigners should be restricted or made easier. Responses were recorded on a seven-point Likert scale. This variable was centered on zero ( $-3$  - easier,  $3$  - restricted).

The panel also contains a question on newspaper consumption, which was asked in seven waves. 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.

### 4.4 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  $\beta_3$ , 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 ( $Post_t$ ).

In order to assess the conditioning effect of prior opinions, I also estimate a model interacting the difference-in-difference term with the initial migration opinion,  $y_{i1}$ , including all constitutive terms. The metric of interest is again the coefficient of the interaction  $Post_t * BildReader_i$ , as well as its variation across different initial migration attitudes, captured by the coefficient for  $Post_t * BildReader_i * y_{i,t=1}$ .

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. 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  $\frac{3*0.1+7*0.2}{3+7} = \frac{1.7}{10} = 0.17$ .

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* (TWFE). This means that general time trends ( $\phi$ ) and individual differences ( $\rho$ ) are controlled for in order to estimate within-individual changes beyond general trends in migration attitudes. Note however that this model - other than the difference-in-difference model - does *not* estimate a causal

effect, but a correlation of crime framing in consumed migration content. A correlation could also be explained by individuals changing their opinion and afterwards selecting their news content accordingly. The model however allows to generalize the findings from the DiD estimate to all newspapers and a broader time period.

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

The TWFE model creates a rather high hurdle to detect a correlation of independent and dependent variable, not only because I 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. Both issues should increase attenuation bias, thereby decreasing the size of the estimate of the true underlying correlation.

Again, an interaction model will be estimated for this model, by interacting frame exposure with the initial migration attitude. As the fixed effects already capture any time-constant individual characteristics and thereby already allow the intercept to vary (Brambor, Clark, and Golder 2006), I will not include both fixed effects and initial migration opinion at the same time, but estimate individual models with either control.

## 5 Results

### 5.1 Framing Effects on Migration Attitudes

Did increased exposure to crime frames about immigration affect individuals' attitudes? My results, displayed in ?? seem to suggest that this was not the case. The dependent variable is a seven-point Likert-scale capturing immigration preferences from -3 (liberalize immigration) to 3 (restrict immigration). Model 1 shows the simple DiD estimate, comparing changes among Bild-readers to those who never read Bild, even post-treatment. The estimate for the average treatment effect is a moderate 0.131 on the seven-point scale (about 2% of the scale), which is significant at the .05-level. This changes once we include individual fixed effects in model 2: The effect shrinks to a negligible 0.048 and is not significant at any common levels. The average treatment effect of exposure to more crime news at the individual seems negligible. However, do readers react differently, dependent on their prior attitudes?



	Model 1	Model 2	Model 3	Model 4
Post X Treat	0.067* (0.028)	0.018 (0.023)	0.261*** (0.034)	0.272*** (0.032)
Post X Treat X Initial Attitude			-0.087*** (0.014)	-0.096*** (0.014)
Num.Obs.	102373	102373	101840	101840
R2 Pseudo	0.003	0.404	0.236	0.413
Std.Errors	by: ID	by: ID	by: ID	by: ID
FE: ID		X		X

**Note:**  $\hat{\alpha} + p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Recall that I hypothesized that readers are motivated reasoners, who will evaluate new evidence in line with their pre-existing attitudes. Those with liberal immigration attitudes should reject news about migrant crime, therefore show inertia or even backlash, while those with more conservative attitudes should be more inclined to accept the message. Model 3 and 4 suggest, contrary to my hypothesis, that more liberal readers show the strongest shift towards more conservative migration attitudes. This effect is substantial: for a neutral reader reporting 0 on the  $[-3; 3]$  scale, the model predicts a 0.346 point change, controlling for individual fixed effects. This effect *doubles* to 0.709 ( $.346 + (-.121) * (-3)$ ), a full 10% of the scale, among the most liberal readers, and decreases to essentially 0 (0.017) among the most conservative readers. It seems that liberal readers are *more* motivated to incorporate the crime framing into their worldview.

The left panel of figure 4 shows this descriptively by initial migration attitude. As one can see, all groups diverge from each other after treatment, however this process is most pronounced (and substantial in size) among those with liberal initial migration attitudes, smaller for those who reported a neutral attitude towards migration, and smallest for those reporting conservative attitudes. Whereas all groups seem to regress to a common mean, it seems that - especially among initially neutral respondents - Bild readers move substantially towards the conservative pole, while non-readers show more stability in their attitudes.

This might be a true effect of the change in newspaper content, however given that treatment assignment is not random, it might also constitute the outcome of a selection bias: Bild readers, differing from those who never read Bild,

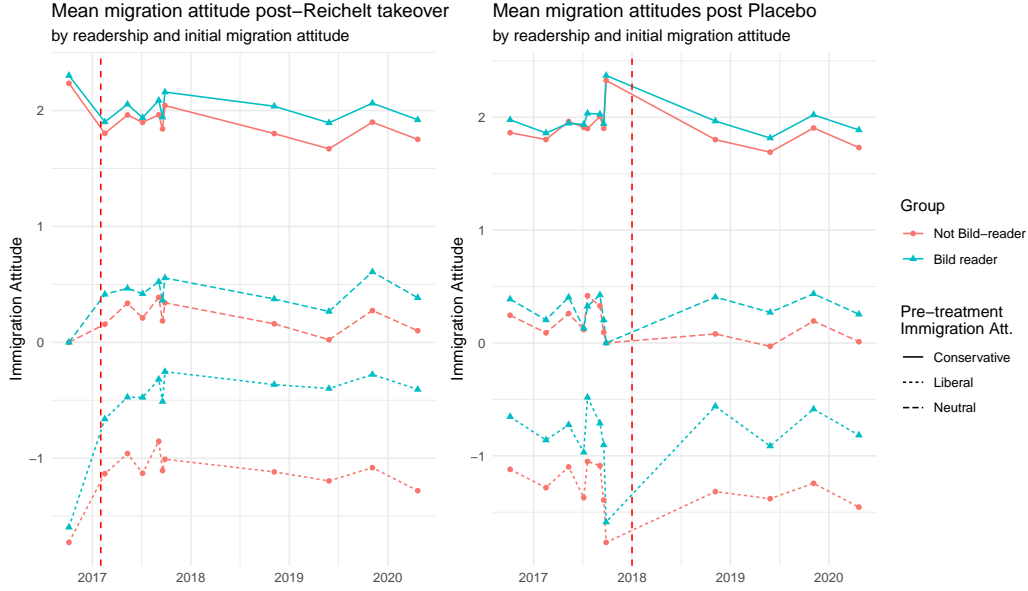


Figure 4: Mean Immigration Attitude across Survey Waves, by Readership and Initial Immigration Attitude

might converge to a different mean than the general population. This “gravitational pull” towards a common mean should be more pronounced among the most liberal Bild readers, as Bild readers generally hold more conservative immigration attitudes ( $\hat{x}_{Bild} = 1.44$ ;  $\hat{x}_{!Bild} = 1.00$ ; see appendix 3.1). To assess this possibility, the right-hand panel of figure 4 shows the average migration attitude using a placebo treatment, namely defining Bild readership in the post-election wave of the panel (the last wave containing a question on news consumption), well after the emphasis on crime in Bild increased. Despite the lack of changing content, we can observe similar regression to the mean following the placebo date, despite the shorter post-treatment period. Those with the most liberal immigration attitudes show the strongest divergence from their control group counterparts, whereas the difference is less pronounced in the conservative group. Theoretically, this might be driven by long-term changes among those who were treated in W1. However, as appendix 3.2.1.5 shows, even if we exclude those reading Bild in the original survey wave (i.e. the original treatment group), similar differences arise.

Summarised, these estimates reject two of the three hypotheses outlined above. Neither is there evidence for a direct effect (evaluation hypothesis), nor are there moderated effects beyond what we would expect given selection bias

(motivated reasoning hypothesis). The next section will therefor assess the last hypothesis, association, before I discuss the generalizability of these estimates.

## 5.2 Tracing the Mechanism: the Association of Crime and Migration Attitudes

As outlined above, framing theory suggests that increased exposure to a specific consideration about an issue leads to stronger association of an issue with this consideration. In the present case, this should mean that the correlation of attitudes on immigration with attitudes about crime should increase. The GLES Panel data contains a variable asking respondents whether “the state’s capabilities to fight crime should be extended, even if that would entail more surveillance,” asked in three waves overlapping with the migration attitude question. Figure 5 shows the correlation of crime- and migration attitudes in treatment and control group, pre- and post-treatment. I added a counterfactual, applying the change in the control group to the treatment group, for easier interpretation. As we can see, the treatment group actually saw a *smaller* increase in the correlation of crime and migration attitudes than the control group, *despite weaker pre-treatment association*. Following (Nelson and Kinder 1996), table ?? regresses immigration attitudes on attitudes towards crime and investigates whether this association is generally different between the two groups<sup>7</sup>, changes post-treatment, and whether it changes more in the treatment group using interaction terms. I find minor differences between the groups, but no significant difference when interacted with the DiD-term - respondents do not seem to associate crime more strongly with migration following the change in migration coverage in *Bild*.

	Model 1
Crime Attitude	0.457*** (0.014)
Crime Attitude X Post	-0.005 (0.015)
Crime Attitude X Bild Reader	0.069** (0.024)
Crime Attitude X Post X Bild	-0.001

<sup>7</sup>These differences are however in the opposite direction as the (substantial) differences in the descriptive correlations outlined in the plot. I am currently not sure how to interpret this.

Model 1
(0.028)

**Note:**  $\hat{\hat{}} + p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

### 5.3 Generalization

Is this null effect specific to Bild readers or does exposure to crime framing affect readers of all newspapers similarly? In order to generalize these findings, I estimate the average exposure of each respondent to crime frames in migration coverage in the week preceding an interview. Immigration attitudes are then regressed on this measure, it's interaction with prior attitudes, as well as fixed effects for individual and wave. This way, it is possible to assess the correlation of changes in migration attitudes with changing exposure to crime framing beyond general time-trends.

Surprisingly, results suggest a significant correlation of individual crime exposure and changes in respondents' immigration attitude. This association is not significant once controlling for the salience of migration content in a respondents diet (i.e. the share of articles concerned with migration out of all articles), which is surprisingly negatively related to migration attitudes, meaning the more salient migration content in a respondents' news content, the less conservative that person's attitude towards migration.

	Model 1	Model 2	Model 3	Model 4
Crime Share	0.235* (0.116)	0.179 (0.122)	0.407** (0.156)	0.353* (0.164)
Migration Salience		-0.720 (0.554)		-0.620 (0.594)
Crime Share X Initial Attitude			-0.165** (0.052)	-0.164** (0.052)
Num.Obs.	26585	26585	23163	23163
R2 Pseudo	0.509	0.509	0.503	0.503
Std.Errors	by: ID	by: ID	by: ID	by: ID
FE: Wave	X	X	X	X
FE: ID	X	X	X	X

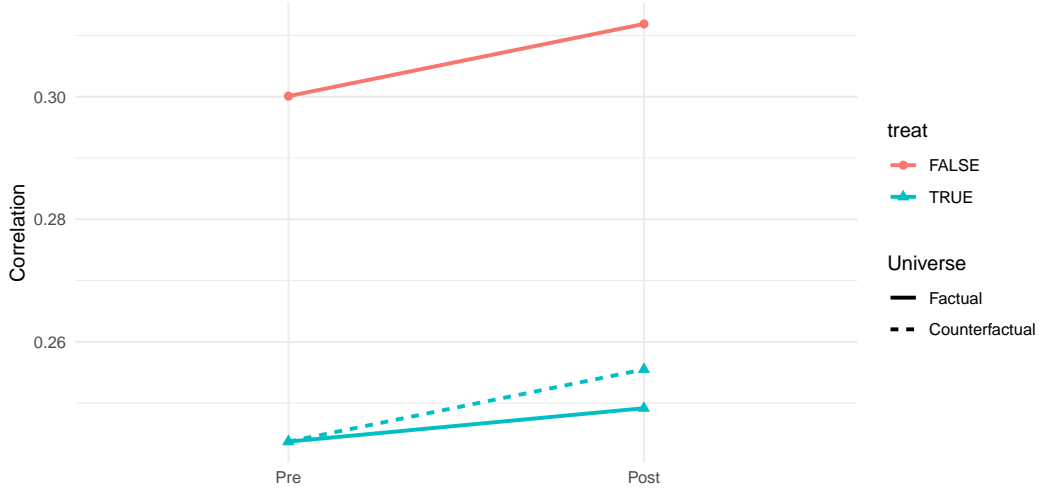


Figure 5: Correlation of crime and migration attitudes in treatment and control group, pre- (wave 1) and post-treatment (waves 3 & 13).

**Note:**  $\hat{\alpha} + p < 0.1$ ,  $* p < 0.05$ ,  $** p < 0.01$ ,  $*** p < 0.001$

Similarly, I do find an interaction effect, which is robust to controlling for exposure to general migration content. The correlation of exposure to crime frames and migration attitudes is strongest among respondents with most liberal initial migration attitudes, and negligible among the most conservative respondents. The finding again contradicts our initial hypothesis that conservative readers should be *most* inclined to react to the exposure. A change in migration framing from 0% to 100% about crime corresponds to a 0.9 point change on the seven-point scale for the most liberal individuals. Note that since there is no biased definition of a treatment group here, this cannot be explained by regression to the mean, but might be related to ceiling effects (which would suggest an even larger true effect).

These findings are rather puzzling. The DiD estimates show absolutely no effect of a substantial increase in crime framing on migration attitudes, nor an increase in the association of migration and crime attitudes. The TWFE model, however, shows a significant correlation of migration attitudes and migration coverage about crime, as well as a stronger reaction of more liberal-minded respondents to such news. As the model presents mere correlations of immigration attitudes and crime content in the news, controlling for time trends, it cannot address endogeneity concerns. Hence, the effects in the TWFE model likely capture selection effects, as individuals developing a more lib-

eral/conservative attitude towards migration choose more liberal/conservative news outlets.

In order to explore this alternative explanation, I estimate a TWFE Model regressing newspaper readership on respondents' migration attitude. The results indicate that changing migration attitudes are only weakly linked to newspaper consumption. A significant effect can only be observed for the left-leaning *SZ* and *taz*, in the expected direction: as individuals develop more conservative (liberal) attitudes, they report reading these two newspapers less (more). The association is however tiny: as respondents move one point towards the conservative pole of the seven point migration attitude scale, their likelihood to report reading *SZ* (*taz*) drops by 6 (8) percentage points.

	Bild	FAZ	SZ	taz	Welt
Migration Attitude	0.000 (0.002)	-0.004 (0.003)	-0.006* (0.003)	-0.008** (0.003)	0.003 (0.003)
Std.Errors	by: lfdn	by: lfdn	by: lfdn	by: lfdn	by: lfdn
FE: wave	X	X	X	X	X
FE: lfdn	X	X	X	X	X

**Note:**  $\hat{\alpha} + p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

## 6 Conclusion: Framing Effects in the Real World

This study estimated the causal effect of news framing on migration attitudes, exploiting a rare case of changing migration framing. Results indicate that this shift in news framing did not result in any change in migration attitudes. These findings add to a body of theoretical work and recent empirical findings questioning the media's influence on political attitudes (Guess et al. 2021; Lau, Rogers, and Love 2021). Taken together, this research suggests that the influence of the news media on opinion formation in contemporary news environments with high levels of consumer choice and diverse exposure is severely limited. Even a major change in migration framing did not change respondents' attitudes in the present study. This does not necessarily entail that classic news media has no influence at all over opinion formation, but it might at the very least be restricted to specific "windows of opportunity."

The present case described an established issue that had been in the center of public debate for 1.5 years. It might well be that news framing plays a more critical role for the evaluation of emerging issues. Further research should explore this possibility, assessing the impact of similar cases of changing news framing in the real world. It remains crucial, however, to focus on precise changes in *content*, in order to improve our conceptual understanding of the effects of media exposure.

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