Appendix for 'Framing Effects in the Wild'

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Contents

1 Independent Variable

1.1 Market Coverage of Different Newspapers

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 monthly 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.

1.2 BERT Classifiers

1.2.1 Migration

1.2.2 Crime

2 Structural Topic Model

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)[1]. The number of topics was chosen to strike a balance between the computational and human resources necessary to estimate and annotate the topics and finding appropriate topics for the large corpus of nearly 90,000 migration articles[2]. 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.

2.1 Treatment

2.2 Modeling Exposure with STM in TWFE Model

3 Difference-in-Differences Estimates

Treated Group: Bild Readers in first (and only pre-treatment) wave. Control Group: Never-Readers of Bild. Post Date: $>= 01.02.2017$

3.1 Descriptives

Show Demographics for Treatment and Control Groups.

	Control	Treatment
Gender (0 = m, 1 = f)	0.57	0.44
Birthyear	1971.18	1972.24
Political interest (1, 5)	3.24	3.54
Immigration Attitude (-3, 3)	1.00	1.43
General left-right (0-10)	4.30	4.96
Share of AfD supporters	0.16	0.22
AfD attitude (-5, 5)	-3.05	-1.94

Note that the variable "Birthyear" is left-censored in the data. All respondents born before 1955 were assigned 1955 as birth year.

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

[2]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

3.2 Variable: Immigration Attitudes

3.2.1 Outcome: Reduce Immigration (1130)

3.2.1.1 Question Text Jetzt geht es um Zuzugsmöglichkeiten für Ausländer. Sollten die Zuzugsmöglichkeiten für Ausländer erleichtert oder eingeschränkt werden?

(1) 1 Zuzug von Ausländern erleichtern

(2) 2

(3) 3

(4) 4

(5) 5

(6) 6

(7) 7 Zuzug von Ausländern einschränken

Transformed to [-3, 3].

3.2.1.2 Treatment groups across time (add counterfactual if time)
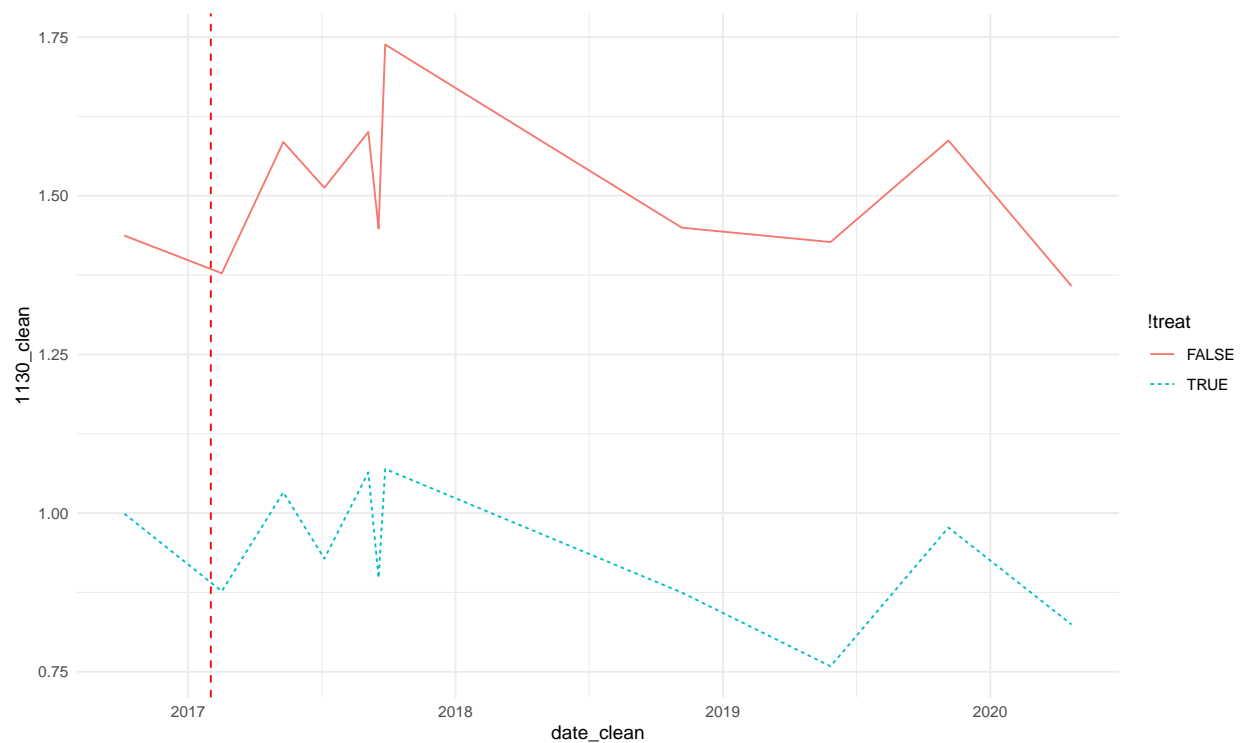
3.2.1.3 Treatment groups across time, by prior attitude
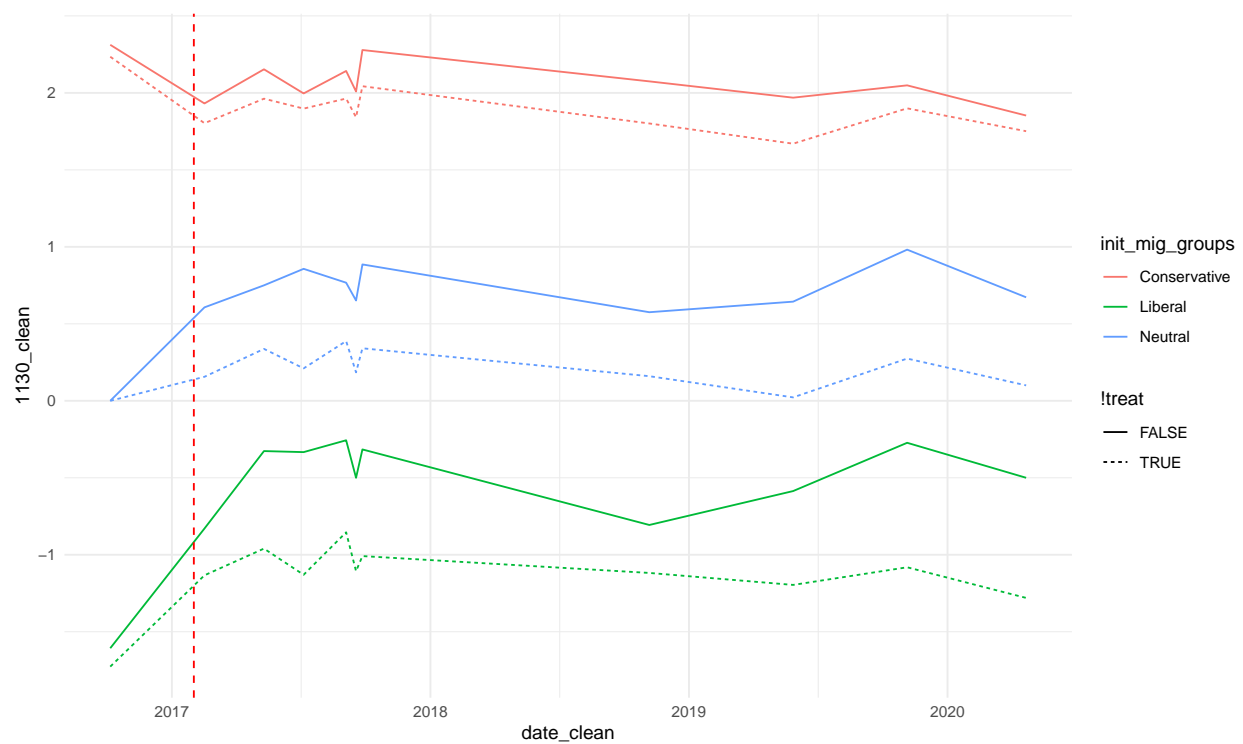
3.2.1.4 Effect by prior opinion

Pre−post differences of treated and untreated
by initial migration attitude

Placebo estimate post BTW
by initial migration attitude
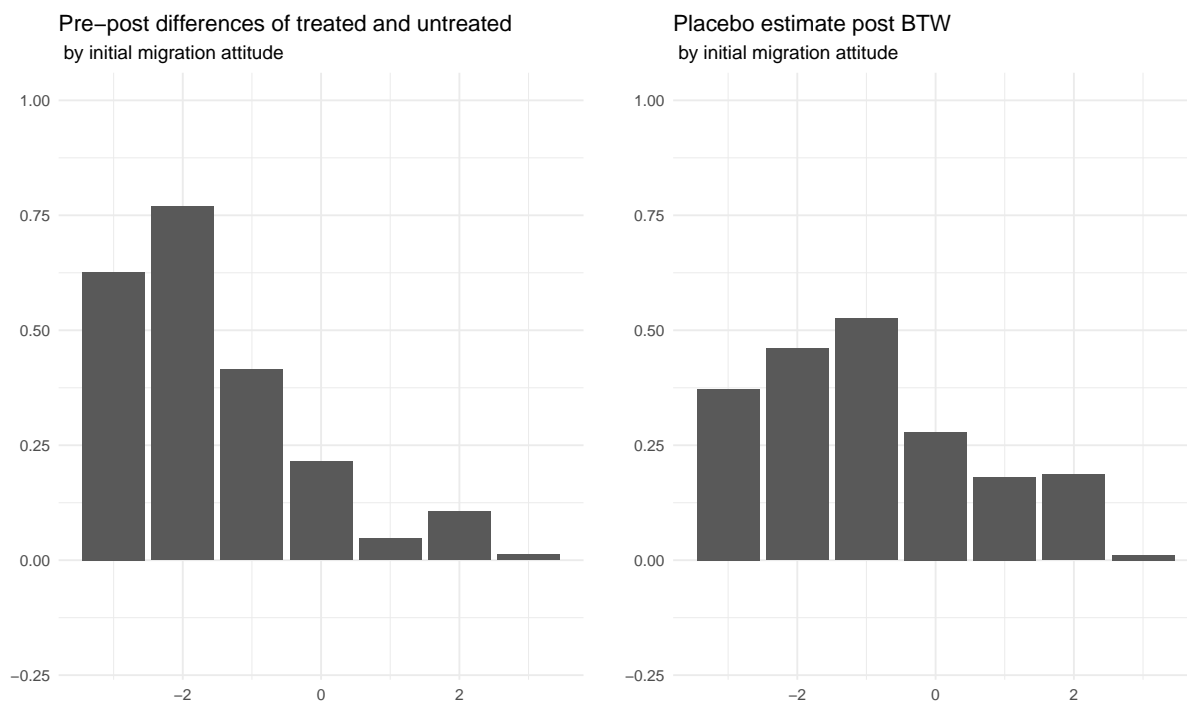
3.2.1.5 Regression to the mean among Bild readers

- Placebo-treatment post Bundestagswahl (3-6 months after treatment)
- Exclusing Bild readers actually treated
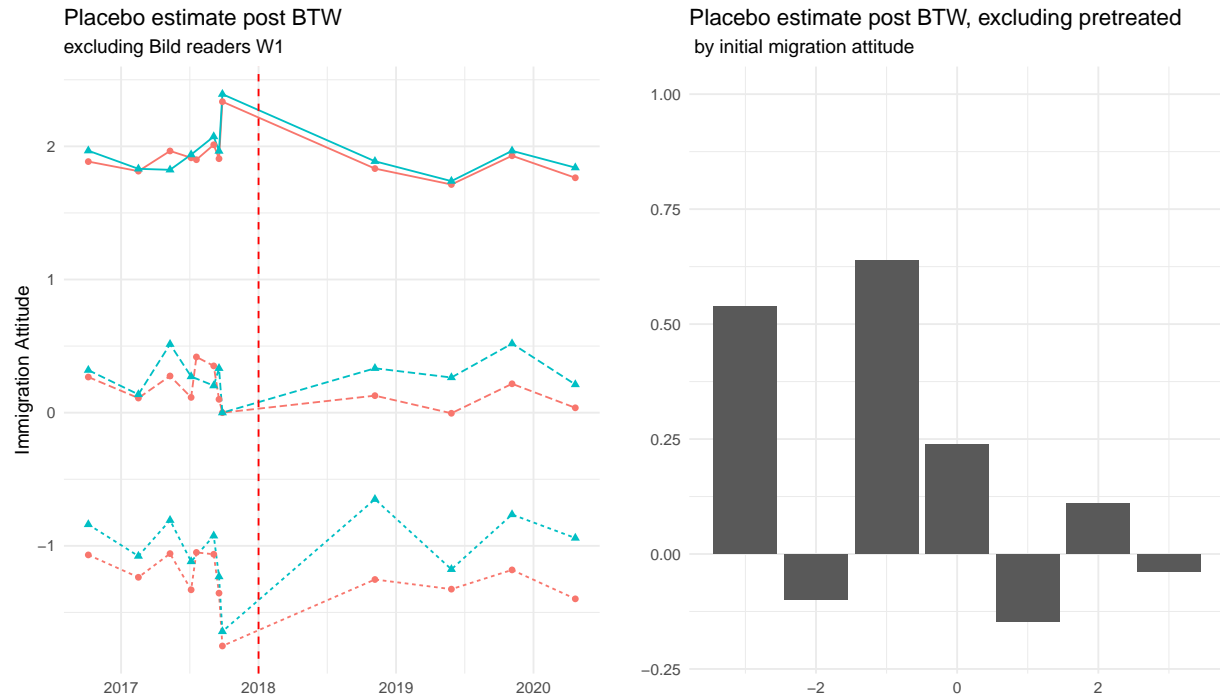
3.2.1.6 Effect of Reichelt takeover

	Model 1	Model 2	Model 3	Model 4	Model 5
ATE	0.131*	0.089*	0.048	0.348***	0.346***
	(0.057)	(0.044)	(0.041)	(0.066)	(0.060)
ATE X					
Immigration Attitude W1				-0.104***	-0.121***
				(0.027)	(0.026)
Immigration Attitude W1		0.796***		1.000***	
		(0.005)		(0.000)	
Num.Obs.	84538	84110	84538	84110	84110
R2 Pseudo	0.001	0.238	0.413	0.243	0.422
Std.Errors	by:	by:	by:	by:	by:
	Individual	Individual	Individual	Individual	Individual
FE: Individual			X		X

Note: ^^ + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

3.2.1.7 Number of respondents in each group

6

	FALSE	TRUE
-3	496	36
-2	833	50
-1	1183	115
0	2563	323
1	1838	249
2	2150	348
3	3625	633

3.2.1.8 Number of observations

	FALSE	TRUE
-3	8432	612
-2	14161	850
-1	20111	1955
0	43571	5491
1	31246	4233
2	36550	5916
3	61625	10761

3.2.1.9 Conservative Outlets only

	Model 1	Model 2	Model 3	Model 4
ATE	0.077	0.052	0.462***	0.472***
	(0.067)	(0.048)	(0.070)	(0.064)
ATE X				
Immigration Attitude W1			-0.119***	-0.138***
			(0.030)	(0.028)
Num.Obs.	18023	18023	17932	17932
R2 Pseudo	0.015	0.429	0.271	0.440
Std.Errors	by: Individual	by: Individual	by: Individual	by: Individual
FE: Individual		X		X

Note: ˆˆ + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Immigration attitudes among Bild readers across time
Compared to FAZ & Welt readers
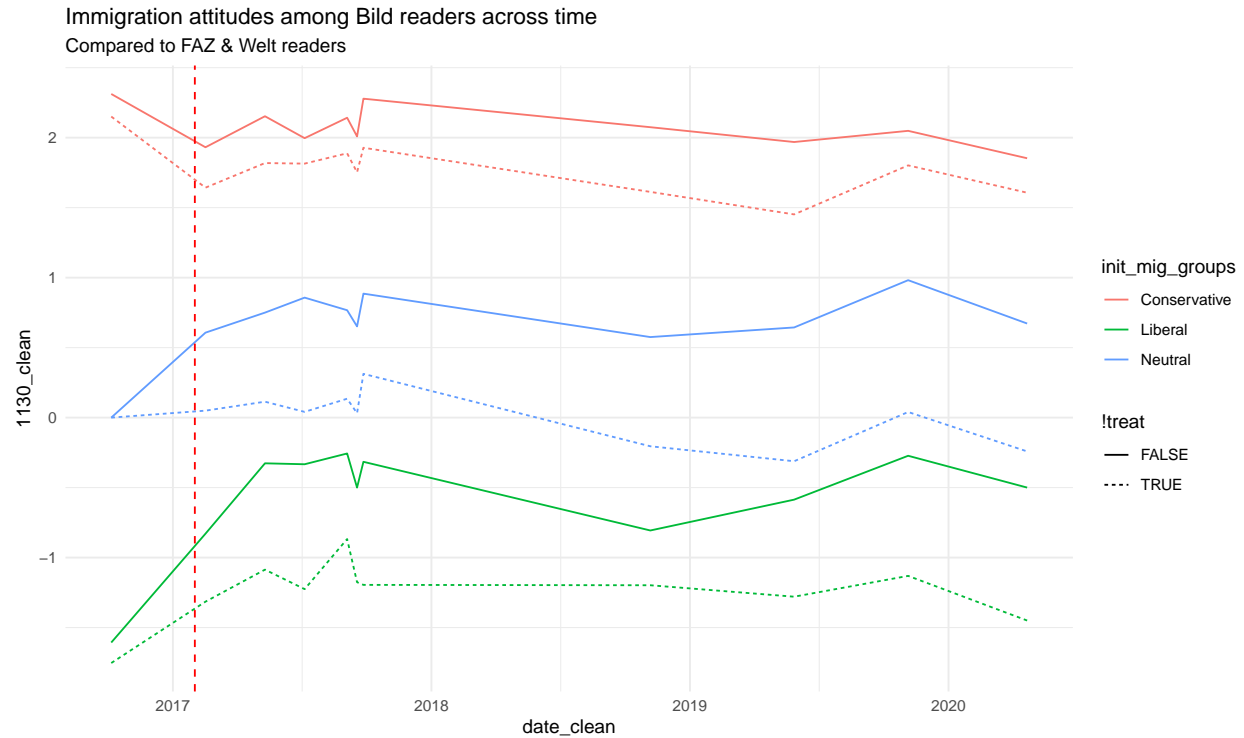
3.2.2 Outcome: Immigration Attitude Nonresponse (1130 = -99)

	Model 1	Model 2	Model 3	Model 4
ATE	-0.003	-0.005	0.001	0.000
	(0.003)	(0.004)	(0.001)	(0.001)
ATE X				
Immigration Attitude W1			-0.001+	-0.001+
			(0.001)	(0.000)
Num.Obs.	87611	87611	86960	86960
R2 Pseudo	0.000	-0.173	0.000	-0.075
Std.Errors	by: Individual	by: Individual	by: Individual	by: Individual
FE: Individual		X		X

Note: ^^ + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

3.2.3 Outcome: Integration Attitude (1210)

3.2.3.1 Question Text Es gibt unterschiedliche Auffassungen darüber, wie sehr sich Ausländer in Deutschland anpassen sollten. Manche denken, dass sich Ausländer vollständig an die deutsche Kultur anpassen sollten. Andere denken, Ausländer sollten auch hier möglichst nach der eigenen Kultur leben können.

(1) Ausländer sollten sich vollständig an die deutsche Kultur anpassen
(2)
(3)
(4)

(5)
(6)
(7) Ausländer sollten möglichst nach eigener Kultur leben können

Recoded to [-3, 3].

3.2.3.2 Effect of Reichelt takover

	Model 1	Model 2	Model 3	Model 4
ATE	-0.155**	0.015	-0.033	0.059
	(0.051)	(0.041)	(0.064)	(0.057)
ATE X				
Immigration Attitude W1			-0.073*	-0.036
			(0.030)	(0.027)
Num.Obs.	63593	63593	63154	63154
R2 Pseudo	0.001	0.351	0.074	0.351
Std.Errors	by: Individual	by: Individual	by: Individual	by: Individual
FE: Individual		X		X

Note: ˆˆ + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

3.2.4 Outcome: Integration Attitude Nonresponse (1210 = -99)

3.3 General Nonresponse/Attrition (1130 = -95)

	Model 1	Model 2	Model 3	Model 4
ATE	-0.085***	-0.102***	-0.106***	-0.134***
	(0.010)	(0.012)	(0.015)	(0.016)
ATE X				
Immigration Attitude W1			0.015*	0.022**
			(0.007)	(0.007)
Num.Obs.	102909	102909	102161	102161
R2 Pseudo	-0.020	-1.286	-0.022	-1.274
Std.Errors	by: Individual	by: Individual	by: Individual	by: Individual
FE: Individual		X		X

Note: ˆˆ + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

3.4 Variable: Voting Behaviour

3.4.1 Outcome: Voting AfD (190b)

Bei der Bundestagswahl können Sie ja zwei Stimmen vergeben. Die Erststimme für einen Kandidaten aus Ihrem Wahlkreis und die Zweitstimme für eine Partei. Was werden Sie auf Ihrem Stimmzettel ankreuzen?

	Model 1	Model 2	Model 3	Model 4
ATE	0.013	-0.003	-0.023+	0.003

	Model 1	Model 2	Model 3	Model 4
	(0.016)	(0.010)	(0.012)	(0.008)
ATE X				
Immigration Attitude W1			0.029***	-0.001
			(0.009)	(0.006)
Num.Obs.	69310	69310	68876	68876
R2 Pseudo	0.006	2.244	0.217	2.243
Std.Errors	by: Individual	by: Individual	by: Individual	by: Individual
FE: Individual		X		X

Note: ^^ + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

3.4.2 Outcome: Voting Nonresponse (190b = -99 | -98)

	Model 1	Model 2	Model 3	Model 4
ATE	-0.003	-0.006	-0.020	-0.031+
	(0.011)	(0.012)	(0.015)	(0.016)
ATE X				
Immigration Attitude W1			0.013+	0.020**
			(0.007)	(0.007)
Num.Obs.	95309	95309	94607	94607
R2 Pseudo	0.012	0.861	0.017	0.861
Std.Errors	by: Individual	by: Individual	by: Individual	by: Individual
FE: Individual		X		X

Note: ^^ + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Sizable effect, most likely among liberals.

3.4.3 Outcome: Scalometer AfD (430i)

	Model 1	Model 2	Model 3	Model 4
ATE	-0.173	-0.086	-0.436***	-0.132
	(0.126)	(0.074)	(0.120)	(0.089)
ATE X				
Immigration Attitude W1			0.176**	0.056
			(0.068)	(0.044)
Num.Obs.	98166	98166	97501	97501
R2 Pseudo	0.002	0.356	0.041	0.357
Std.Errors	by: Individual	by: Individual	by: Individual	by: Individual
FE: Individual		X		X

Note: ^^ + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Decrease, if anything. Most sizable among liberals, but disappers when controlling for individual FEs.

3.5 Variable: Issue Considerations

3.5.1 Outcome: MIP Migrant Crime (840s)

	Model 1	Model 2	Model 3	Model 4
ATE	-0.001	-0.001	0.002+	0.002
	(0.002)	(0.003)	(0.001)	(0.002)
ATE X				
Immigration Attitude W1			-0.003*	-0.002
			(0.001)	(0.002)
Num.Obs.	71716	71716	71218	71218
R2 Pseudo	0.000	-0.134	-0.001	-0.134
Std.Errors	by: Individual	by: Individual	by: Individual	by: Individual
FE: Individual		X		X

Note: ˆˆ + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001 No effect, but also very low N.

3.5.2 Outcome: MIP Migration (840s)

	Model 1	Model 2	Model 3	Model 4
ATE	0.021	0.009	-0.012	-0.007
	(0.018)	(0.017)	(0.024)	(0.026)
ATE X				
Immigration Attitude W1			0.020+	0.011
			(0.011)	(0.011)
Num.Obs.	71716	71716	71218	71218
R2 Pseudo	0.009	0.604	0.086	0.604
Std.Errors	by: Individual	by: Individual	by: Individual	by: Individual
FE: Individual		X		X

Note: ˆˆ + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

NO effect on general problem perception of migration..

3.5.3 Outcome: Crime Attitude (2880h)

	Model 1	Model 2	Model 3	Model 4
ATE	0.068	0.013	0.009	0.031
	(0.044)	(0.039)	(0.059)	(0.052)
ATE X				
Immigration Attitude W1			0.020	-0.023
			(0.029)	(0.025)
Num.Obs.	35068	35068	34806	34806
R2 Pseudo	0.001	0.457	0.034	0.457
Std.Errors	by: Individual	by: Individual	by: Individual	by: Individual
FE: Individual		X		X

**Note:** ˆˆ + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Nothing.

3.5.4 Outcome: Correlation of Crime Attitude (2880h) & Immigration Attitude (1130)

3.5.4.1 Question
Die staatlichen Befugnisse in der Kriminalitätsbekämpfung sollten ausgeweitet werden, auch wenn das zu einer stärkeren Überwachung der Bürger führt.

(1) stimme überhaupt nicht zu
(2) stimme eher nicht zu
(3) teils/teils
(4) stimme eher zu
(5) stimme voll und ganz zu

3.5.4.2 Bootstrap of correlations
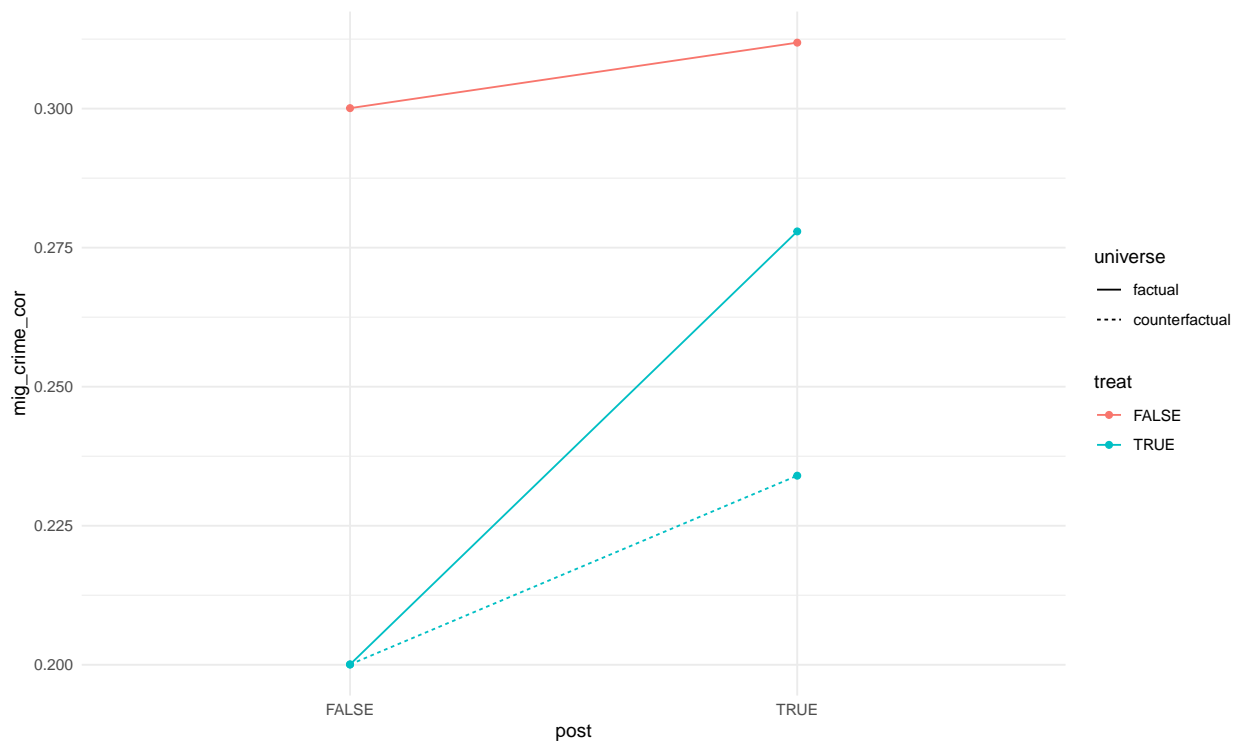
(cannot show this by subgroup bc would condition on pre-treatment opinion, which restricts variation on migration attitudes to 0, hence no correlation)

3.5.4.3 Interaction of DiD with Crime Attitude (following Nelson & Kinder 1996)
(Association of Crime with migration attitude should be sigificantly higher in post-treatment-group)

	Model 1	Model 2	Model 3	Model 4
(Intercept)	0.757***		0.000***	
	(0.018)		(0.000)	
postTRUE	-0.030	-0.031*	0.179***	0.174***
	(0.019)	(0.014)	(0.015)	(0.015)
treatTRUE	0.479***		0.000***	
	(0.050)		(0.000)	

	Model 1	Model 2	Model 3	Model 4
crime_att	0.478***	0.049***	0.000***	-0.083***
	(0.015)	(0.014)	(0.000)	(0.017)
postTRUE × treatTRUE	0.037	0.164+	0.364***	0.419***
	(0.090)	(0.092)	(0.090)	(0.096)
postTRUE × crime_att	0.000	0.030*	0.193***	0.219***
	(0.017)	(0.012)	(0.013)	(0.015)
treatTRUE × crime_att	-0.180***	0.115	0.000***	0.120
	(0.041)	(0.079)	(0.000)	(0.099)
postTRUE × treatTRUE × crime_att	0.113	-0.092	-0.031	-0.111
	(0.072)	(0.081)	(0.088)	(0.098)
init_mig			1.000***	
			(0.000)	
postTRUE × init_mig			-0.267***	-0.273***
			(0.007)	(0.008)
treatTRUE × init_mig			0.000***	
			(0.000)	
init_mig × crime_att			0.000***	0.022**
			(0.000)	(0.007)
postTRUE × treatTRUE × init_mig			-0.160***	-0.194***
			(0.046)	(0.053)
postTRUE × init_mig × crime_att			-0.033***	-0.034***
			(0.006)	(0.006)
treatTRUE × init_mig × crime_att			0.000***	-0.069
			(0.000)	(0.042)
postTRUE × treatTRUE × init_mig × crime_att			0.053	0.087+
			(0.039)	(0.045)
Num.Obs.	28019	28019	27935	27935
R2 Pseudo	0.025	0.513	0.379	0.541
Std.Errors	by: Individual	by: Individual	by: Individual	by: Individual
FE: Individual		X		X

Note: ˆˆ + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

3.6   Variable: Accuracy Motivation

This variable is only measured post-treatment

3.6.1 Mean accuracy motivation by initial immigration attitude
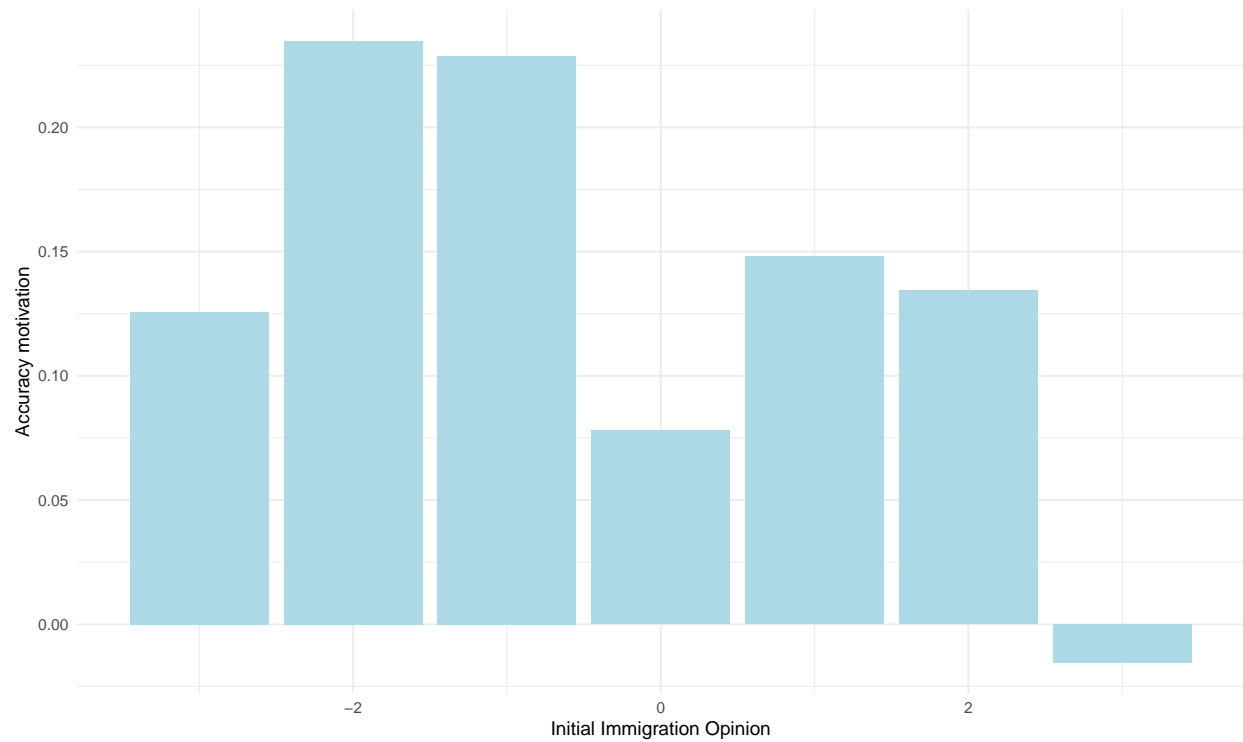
3.6.2 DiD by post-treatment accuracy motivation

	Model 1	Model 2	Model 3	Model 4
ATE	0.131*	0.048	0.130*	0.120*
	(0.057)	(0.041)	(0.058)	(0.050)
ATE X Accuracy Motivation			-0.013	-0.018
			(0.056)	(0.049)
Num.Obs.	84538	84538	76352	76352
R2 Pseudo	0.001	0.413	0.005	0.400
Std.Errors	by: Individual	by: Individual	by: Individual	by: Individual
FE: Individual		X		X

Note: ˆˆ + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

4 TWFE: BERT Estimates

4.1 Distribution of Independent Variable
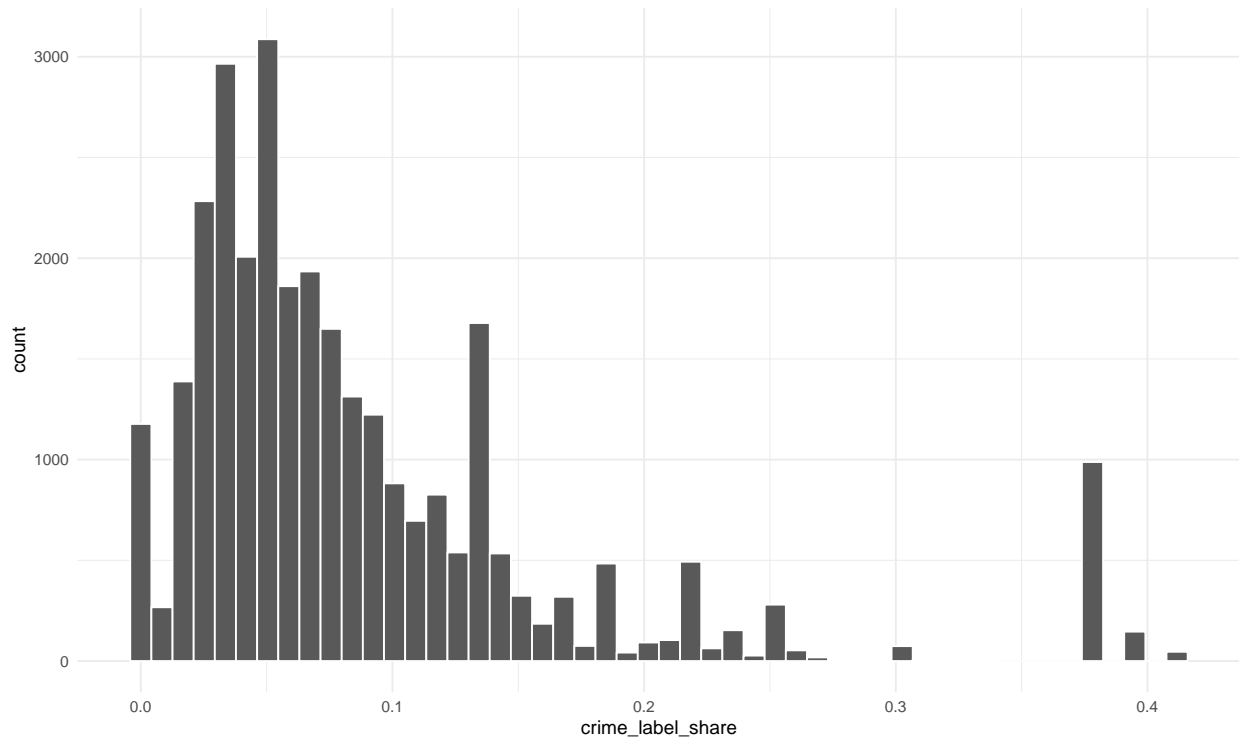
4.2 Variable: Immigration Attitudes

4.2.1 Outcome: Reduce Immigration (1130)

Jetzt geht es um Zuzugsmöglichkeiten für Ausländer. Sollten die Zuzugsmöglichkeiten für Ausländer erleichtert oder eingeschränkt werden?

(1) 1 Zuzug von Ausländern erleichtern

(2) 2

(3) 3

(4) 4

(5) 5

(6) 6

(7) 7 Zuzug von Ausländern einschränken

	Model 1	Model 2
Crime Share	0.235*	0.407**
	(0.116)	(0.156)
Crime Share X		
Immigration Attitude W1		-0.165**
		(0.052)
Num.Obs.	26585	23163
R2 Pseudo	0.509	0.503
Std.Errors	by: lfdn	by: lfdn
FE: wave	X	X
FE: lfdn	X	X

Note: ˆˆ + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

4.2.2 Outcome: Immigration Attitude Nonresponse (1130 = -99)

	Model 1	Model 2
Crime Share	0.004	-0.004
	(0.009)	(0.007)
Crime Share X		
Immigration Attitude W1		0.003
		(0.003)
Num.Obs.	26739	23225
R2 Pseudo	-0.315	-0.117
Std.Errors	by: lfdn	by: lfdn
FE: wave	X	X
FE: lfdn	X	X

Note: ˆˆ + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

4.2.3 Outcome: Integration Attitude (1210)

Es gibt unterschiedliche Auffassungen darüber, wie sehr sich Ausländer in Deutschland anpassen sollten. Manche denken, dass sich Ausländer vollständig an die deutsche Kultur anpassen sollten. Andere denken, Ausländer sollten auch hier möglichst nach der eigenen Kultur leben können.

(1) Ausländer sollten sich vollständig an die deutsche Kultur anpassen
(2)
(3)
(4)
(5)
(6)
(7) Ausländer sollten möglichst nach eigener Kultur leben können

	Model 1	Model 2
Crime Share	0.115	0.023
	(0.148)	(0.184)

	Model 1	Model 2
Crime Share X		
Immigration Attitude W1		0.077
		(0.062)
Num.Obs.	18217	16019
R2 Pseudo	0.508	0.496
Std.Errors	by: lfdn	by: lfdn
FE: wave	X	X
FE: lfdn	X	X

Note: ˆˆ + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

4.2.4 Outcome: Integration Attitude Nonresponse (1210 = -99)

	Model 1	Model 2
Crime Share	-0.004	-0.006
	(0.010)	(0.011)
Crime Share X		
Immigration Attitude W1		0.000
		(0.004)
Num.Obs.	18282	16076
R2 Pseudo	-0.318	-0.323
Std.Errors	by: lfdn	by: lfdn
FE: wave	X	X
FE: lfdn	X	X

Note: ˆˆ + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

4.3 Conditioning on Prior Exposure

4.3.1 DV: Immigration Attitude

	Model 1	Model 2
Crime Share	0.235*	0.223
	(0.116)	(0.138)
Crime Share X		
Lagged Exposure		0.042
		(0.597)
Num.Obs.	26585	17069
R2 Pseudo	0.509	0.518
Std.Errors	by: lfdn	by: lfdn
FE: wave	X	X
FE: lfdn	X	X

Note: ˆˆ + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Exposure has no conditioning effect - maybe conditional effect IS ceiling effect? (but still holds compared to conservative news consumers?)

4.4 Variable: Voting Behaviour

4.4.1 Outcome: Voting AfD (190b)

Bei der Bundestagswahl können Sie ja zwei Stimmen vergeben. Die Erststimme für einen Kandidaten aus Ihrem Wahlkreis und die Zweitstimme für eine Partei. Was werden Sie auf Ihrem Stimmzettel ankreuzen?

4.4.2 Outcome: Voting Nonresponse (190b = -99 | -98)

	Model 1	Model 2
Crime Share	0.021	0.044
	(0.033)	(0.040)
Crime Share X Immigration Attitude W1		-0.014
		(0.013)
Num.Obs.	26276	22865
R2 Pseudo	1.980	1.881
Std.Errors	by: lfdn	by: lfdn
FE: wave	X	X
FE: lfdn	X	X

Note: ˆˆ + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

4.4.3 Outcome: Scalometer AfD (430i)

	Model 1	Model 2
Crime Share	-0.314+	-0.112
	(0.167)	(0.178)
Crime Share X Immigration Attitude W1		-0.168*
		(0.067)
Num.Obs.	30086	25666
R2 Pseudo	0.453	0.449
Std.Errors	by: lfdn	by: lfdn
FE: wave	X	X
FE: lfdn	X	X

Note: ˆˆ + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

4.5 Variable: Issue Considerations

4.5.1 Outcome: MIP Migrant Crime (840s)

	Model 1	Model 2
Crime Share	-0.013+	-0.005
	(0.007)	(0.007)

	Model 1	Model 2
Crime Share X		
Immigration Attitude W1		-0.004
		(0.003)
Num.Obs.	28722	24546
R2 Pseudo	-0.227	-0.210
Std.Errors	by: lfdn	by: lfdn
FE: wave	X	X
FE: lfdn	X	X

Note: ˆˆ + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

4.5.2 Outcome: MIP Migration (840s)

	Model 1	Model 2
Crime Share	-0.082+	-0.076
	(0.048)	(0.064)
Crime Share X		
Immigration Attitude W1		-0.023
		(0.021)
Num.Obs.	28722	24546
R2 Pseudo	0.806	0.780
Std.Errors	by: lfdn	by: lfdn
FE: wave	X	X
FE: lfdn	X	X

Note: ˆˆ + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

4.6 TWFE Conditional on Paper Consumed (driven by Bild-readers?)

	Model 1	Model 2
Crime Share	0.235*	0.341+
	(0.116)	(0.196)
Crime Share X Paper: Bild		-0.219
		(0.185)
Num.Obs.	26585	23266
R2 Pseudo	0.509	0.502
Std.Errors	by: ID	by: ID
FE: Wave	X	X
FE: ID	X	X

Note: ˆˆ + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Effect **lower** among Bild readers!