

UNIVERSITÉ D'ORLÉANS

ÉCOLE DOCTORALE SCIENCES DE L'HOMME ET DE LA SOCIÉTÉ

LABORATOIRE D'ÉCONOMIE D'ORLÉANS

THÈSE présentée par :

Mamadou SACKO

soutenue le : **12 Novembre 2024**

pour obtenir le grade de : **Docteur de l'Université d'Orléans**

Discipline/Spécialité : **Sciences Économiques**

Economic and Social Impact of Conflicts and Terrorist Attacks: The Role of the Media.

THÈSE DIRIGÉE PAR :

Mr Daniel MIRZA

Professeur, Université de Tours

RAPPORTEURS :

Mr Mathieu COUTTENIER

Professeur, Ecole Normale Supérieure de Lyon

Mr Jose DE SOUSA

Professeur, Université Paris-Panthéon-Assas

JURY :

Mme Béatrice BOULU-RESHEF

Professeure, Université d'Orléans (Présidente du Jury)

Mr Mathieu COUTTENIER

Professeur, Ecole Normale Supérieure de Lyon (Rapporteur)

Mr Jose DE SOUSA

Professeur, Université Paris-Panthéon-Assas (Rapporteur)

Mr Pierre-louis VEZINA

Professeur, King's College London (Examineur)

Mr Daniel MIRZA

Professeur, Université de Tours (Directeur)

Résumé :

Les trois chapitres de cette thèse visent à approfondir notre compréhension des effets du terrorisme sur les attitudes des individus. Elle examine comment le terrorisme influence les préférences et les comportements individuels. À cet effet, une attention particulière est portée sur l'importance du rôle des médias.

Le premier chapitre analyse l'impact du terrorisme sur la couverture médiatique de l'immigration et ses répercussions sur le soutien aux politiques anti-immigration. Nos résultats montrent qu'à la suite des attaques terroristes en France, l'immigration est plus fréquemment évoquée par les médias, en particulier en lien avec les musulmans et l'insécurité. Nous montrons également que la couverture médiatique négative accrue après l'attentat de Paris a augmenté le soutien au principal parti anti-immigration lors des élections de décembre 2015.

Le deuxième chapitre examine l'impact de l'attentat contre Charlie Hebdo sur les attitudes envers les immigrés et les musulmans à travers une analyse couvrant plusieurs pays européens. Cet événement, lié aux représentations de l'islam, coïncide avec la collecte de données de l'Enquête sociale européenne (ESS) en France et dans les autres pays étudiés. L'analyse révèle une baisse générale des attitudes positives envers ces groupes après l'attaque, avec des variations notables entre des pays tels que la France, l'Allemagne, l'Irlande, la République tchèque et la Finlande. Le chapitre explore également l'influence des médias sur ces perceptions, montrant que les représentations médiatiques variaient selon les pays.

Le troisième chapitre explore l'impact des menaces terroristes, perçues à travers les médias, sur le comportement des consommateurs français. À l'aide d'un cadre théorique simple et en utilisant les données du panel Kantar de 2014 à 2016, nous montrons que lors de périodes de risque accru, les consommateurs réduisent leurs visites dans les grands magasins à forte interaction et préfèrent les options en ligne ou de proximité à faible interaction. Cela entraîne une hausse moyenne des prix de 0,5%, sans changement dans les dépenses totales.

Mots clés : Terrorisme, Immigration, Médias, Élections, France.

Economic and Social Impact of Conflicts and Terrorist Attacks: The Role of the Media.

Abstract :

The three chapters of this thesis aim to deepen our understanding of the effects of terrorism on individuals' attitudes. It examines how terrorism influences individual preferences and behaviors. To this end, particular attention is given to the importance of the role of the media.

The first chapter analyzes the impact of terrorism on media coverage of immigration and its consequences on support for anti-immigration policies. Our findings show that following terrorist attacks in France, immigration is more frequently discussed in the media, particularly in connection with Muslims and security issues. We also demonstrate that the increased negative media coverage after the Paris attack boosted support for the main anti-immigration party in the December 2015 elections.

The second chapter examines the impact of the Charlie Hebdo attack on attitudes towards immigrants and Muslims through an analysis involving several European countries. This event, associated with representations of Islam, coincided with the data collection of the European Social Survey (ESS) in France and other studied countries. The analysis reveals a general decline in positive attitudes towards these groups after the attack, with notable variations between countries such as France, Germany, Ireland, the Czech Republic, and Finland. The chapter also explores how media coverage influenced these perceptions, finding that media sentiment varied by country.

The third chapter explores the impact of perceived terrorist threats, as conveyed through the media, on the behavior of French consumers. Using a simple theoretical framework and data from the Kantar panel between 2014 and 2016, we show that during periods of heightened risk, consumers reduce their visits to high-interaction large stores and prefer online or nearby low-interaction shopping options. This shift leads to an average price increase of 0.5%, with no change in total spending.

Keywords: Terrorism, Immigration, Media, Elections, France.

L'Université d'Orléans n'entend donner aucune approbation ou improbation aux opinions exprimées dans cette thèse. Ces opinions doivent être considérées comme propres à l'auteur.

Acknowledgements

Je tiens à exprimer ma plus profonde gratitude à mon directeur de thèse, Daniel Mirza. Daniel a cru en moi dès le début et m'a fait confiance pour mener à bien ce projet ambitieux. Sa disponibilité constante, même à des heures tardives, sa patience, et sa capacité à me pousser au-delà de mes limites ont été des piliers essentiels tout au long de ce travail. J'ai énormément appris à ses côtés et reste admiratif de sa rigueur scientifique, de sa passion pour aller toujours plus loin et de son engagement sans faille. Je ne le remercierai jamais assez pour son soutien indéfectible.

Je remercie également les membres de mon jury de thèse pour avoir accepté de faire partie de cette aventure malgré leurs emplois du temps chargés : Mme Béatrice Boulu-Reshef (Université d'Orléans, Présidente du Jury), M. Mathieu Couttenier (École Normale Supérieure de Lyon, Rapporteur), M. Jose de Sousa (Université Paris-Panthéon-Assas, Rapporteur), M. Pierre-Louis Vézina (King's College London, Examineur), et Mme Catherine Bros (Université de Tours, Examinatrice).

À ma compagne, Aicha Mansaré, je dédie ces quelques lignes pour lui témoigner ma reconnaissance infinie. Merci pour ton soutien constant, ta patience et ta compréhension face à mes longues heures d'absence pour ce travail. Merci d'avoir accepté que cette thèse fasse partie de notre quotidien et d'avoir été ma source de réconfort et de motivation.

Je tiens à remercier chaleureusement mes parents, Salihan et Salimata, pour leur soutien sans faille qui m'a permis de poursuivre ce qui me passionne le plus : apprendre. Ils m'ont toujours encouragé à suivre ma voie et à faire ce qui me rend heureux sans jamais attendre quoi que ce soit en retour. Leur amour et leurs conseils ont été ma boussole tout au long de ce parcours.

Je suis également reconnaissant envers mes co-auteurs : Daniel Mirza, Matthieu Picault, Ahmed Tritah, Elena Stancanelli, et Thierry Verdier. Leur collaboration et leurs apports intellectuels ont été d'une valeur inestimable dans la réalisation de ce travail.

Enfin, je souhaite exprimer toute ma gratitude à mes camarades du Laboratoire d'Économie d'Orléans (LEO). Travailler au quotidien dans un environnement si amical et stimulant a été un véritable privilège. Merci à mes collègues et amis doctorants : Arouna,

Bienvenu, West, Lucien, Inessa, Pauline, Sébastien, Wassim, Asbath, Yacouba, Diallo, et bien d'autres. Leur présence, leur disponibilité, et leur soutien ont rendu cette expérience encore plus enrichissante et inoubliable.

Abstract

The three chapters of this thesis aim to deepen our understanding of the effects of terrorism on individuals' attitudes. It examines how terrorism influences individual preferences and behaviors. To this end, particular attention is given to the importance of the role of the media.

The first chapter analyzes the impact of terrorism on media coverage of immigration and its consequences on support for anti-immigration policies. Our findings show that following terrorist attacks in France, immigration is more frequently discussed in the media, particularly in connection with Muslims and security issues. We also demonstrate that the increased negative media coverage after the Paris attack boosted support for the main anti-immigration party in the December 2015 elections.

The second chapter examines the impact of the Charlie Hebdo attack on attitudes towards immigrants and Muslims through an analysis involving several European countries. This event, associated with representations of Islam, coincided with the data collection of the European Social Survey (ESS) in France and other studied countries. The analysis reveals a general decline in positive attitudes towards these groups after the attack, with notable variations between countries such as France, Germany, Ireland, the Czech Republic, and Finland. The chapter also explores how media coverage influenced these perceptions, finding that media sentiment varied by country.

The third chapter explores the impact of perceived terrorist threats, as conveyed through the media, on the behavior of French consumers. Using a simple theoretical framework and data from the Kantar panel between 2014 and 2016, we show that during periods of heightened risk, consumers reduce their visits to high-interaction large stores and prefer online or nearby low-interaction shopping options. This shift leads to an average price increase of 0.5%, with no change in total spending.

Keywords: Terrorism, Immigration, Media, Elections, France.

Contents

List of Figures	xiii
List of Tables	xvii
1 Chapter 0. General Introduction	1
1.1 Literature Review	4
1.1.1 Political Economy of Terrorism	4
1.1.2 Media Economics and Political Communication	10
1.1.3 Behavioral Economics and Social Psychology	15
1.1.4 Economics of Conflict	17
1.2 Contribution of the Dissertation	19
1.3 Résumé substantiel en français	24
1.3.1 Chapitre 1 — Terrorism, Media Attitudes Towards Migration and Votes: Evidence from France	24
1.3.2 Chapitre 2 — Media Influence and Public Attitudes in Europe: A Cross-National Analysis of the Charlie Hebdo Attack	27
1.3.3 Chapitre 3 — Terrorism Threat And (Mis)-Allocation Of Consumption: Evidence From French Household Data	29
2 Chapter 1. Terrorism, Media Attitudes Towards Migration and Votes: Evidence from France	33
2.1 Introduction	36
2.2 Data and methods	40
2.2.1 Media database	40
2.2.2 Measuring Media Salience	42
2.2.3 Measuring Media Tone	46
2.2.4 Political orientation: salience and tone	54
2.3 The Impact on Media Behavior: Empirical Strategy and Results	59

2.3.1	Media Behavior: Results	60
2.3.2	Impact by Media Groups	65
2.4	Voting Behavior: Empirical Strategy and Results	71
2.4.1	Vote Shares: Some Facts for France	71
2.4.2	Measures of Exposure Related to Migration News	73
2.4.3	Model specification	75
2.4.4	First Set of Results	78
2.4.5	Second Set of Results: Tackling Endogeneity	79
2.4.6	Coefficient Stability Test	83
2.4.7	Media Contribution to the Rise of the Extreme Right after November 13	84
2.5	Conclusion	85
.1	Impact per Attack	87
.2	Descriptive statistics	87
.2.1	Salience: Mean before, after and for the study period	97
.2.2	Tone: Mean before, after and for the study period	97
.2.3	Mean before and During Terror by Media Group	97
.2.4	Immigration + Economy	98
.2.5	Immigration + Humanitarian	98
.2.6	Dictionary Validation	98
.2.7	Top medias across categories	98
.3	The dictionary	104
.3.1	positive words	104
.3.2	Negative words	106

3	Chapter 2. Media Influence and Public Attitudes in Europe: A Cross-National Analysis of the Charlie Hebdo Attack	111
3.1	Introduction	114
3.2	Data and Methods	118
3.2.1	Data	118
3.2.2	Methods	122
3.3	Results	127
3.3.1	Robustness checks	129
3.3.2	Heterogeneous Findings	131
3.3.3	Discussion	133
3.4	Role of the media	134
3.4.1	Large Language Models (LLMs)	136

3.4.2	Structural Topic Modeling (STM)	144
3.5	Conclusion	148
.1	Media coverage: Charlie-Hebdo	152
.2	Difference in SMD after adjusting	152
.3	Robustness Checks	160
.4	Heterogeneous Findings	160
.5	Prompt used for the LLM	160
.6	Exemplar Documents	160
4	Chapter 3. Terrorism Threat And (Mis)-Allocation Of Consumption: Evidence From French Household Data	173
4.1	Introduction	176
4.2	Related literature	177
4.3	A simple model of consumption and terrorism avoidance	180
4.3.1	Benchmark model of consumption and shopping time	180
4.3.2	Consumption and avoidance of terror risk	182
4.3.3	Making terror risk endogenous	186
4.4	Data and Methods	188
4.4.1	Data Sources	188
4.4.2	Outcome Variables	189
4.4.3	Explanatory variables	190
4.4.4	Descriptive and graphical analysis	191
4.4.5	Empirical Method	192
4.5	Results	193
4.5.1	Weekly Number of Visits	193
4.5.2	Share of Spending at High Interaction Shops	194
4.5.3	Average Price per Product	196
4.5.4	Total Expenditure	197
4.5.5	Robustness Tests	198
4.5.6	Heterogeneous Findings	204
4.6	Conclusions	207
.1	Full Regression Tables	211
.1.1	Weekly Number of Visits	211
.1.2	Share of Spending at High Interaction Shops	211
.1.3	Average Price per Product	211
.1.4	Total Expenditure	211
.1.5	Robustness Tests	211

List of Figures

2.1	Word-cloud based on the LDA algorithm	44
2.3	Author's Dictionary Validation by Themselves	50
2.4	Mean Tone of Immigration news	52
2.5	Mean Tone of Immigration + Muslims news	53
2.8	Weekly Saliency Point Estimate with 90% CI	68
2.9	Weekly Tone Point Estimate with 90% CI	68
2.10	Right leaning media - Saliency Point Estimate with 90% CI	68
2.11	Right leaning media - Tone Point Estimate with 90% CI	70
2.12	Left leaning Media - Saliency Point Estimate with 90% CI	70
2.13	Left leaning Media - Tone Point Estimate with 90% CI	70
2.14	The regional press - Saliency Point Estimate with 90% CI	88
2.15	The regional press - Tone Point Estimate with 90% CI	88
2.16	Change in vote share (%) for the FN, at the Département level, between 2010 and 2015	89
2.17	Distribution of the FN Vote share across municipalities, in 2010 and 2015	89
2.18	Media contribution to the rise of the extreme right after November 13	92
19	Charlie Hebdo - Saliency Point Estimate with 90% CI	93
20	Charlie Hebdo - Tone Point Estimate with 90% CI	94
21	The Bataclan - Saliency Point Estimate with 90% CI	94
22	The Bataclan - Tone Point Estimate with 90% CI	94
23	Nice - Saliency Point Estimate with 90% CI	95
24	Nice - Tone Point Estimate with 90% CI	95
25	Weekly count of news that link Immigration to Economic issues	99
26	Weekly count of news that discusses the humanitarian side of immigration	99
27	Author's Dictionary Validation by ChatGPT	100
28	ChatGPT's Dictionary validation by the Authors	100
29	ChatGPT's Dictionary validation by Itself	100

30	LSDFr Dictionary Validation by the Authors	101
31	LSDFr Dictionary Validation by ChatGPT	101
32	Top medias across categories	102
33	Mean Salience and Tone of Immigration and Islam-Related News	103
3.1	Means of outcome variables Before and After Charlie Hebdo Attack	121
3.2	Propensity scores and treatment groups	127
3.3	Effect of Terror on Attitudes towards Immigrants and Muslims	154
3.4	Percentage of News Linking the Attack to Muslims/Immigrants by Country	155
3.5	Supportive vs. Non-Supportive News Percentages by Country	156
3.6	Percentage of Each Positive Category by Country Relative to Total News	156
3.7	Percentage of Each Negative Category by Country Relative to Total News	156
3.8	Estimate of Supportive Topics Proportion across Countries	157
3.9	Estimate of Unsupportive Topics Proportion across Countries	157
10	Media Coverage: Charlie-Hebdo	158
11	Difference In SMDs After Adjusting Through Greedy Matching	158
12	Difference In SMDs After Adjusting Through Hybrid Matching	159
13	Difference In SMDs After Adjusting Through Optimal Matching	159
14	Attitudes towards Immigrants: Treatment Effect	161
15	Attitudes towards Immigrants: Treatment Effect	162
16	Attitudes towards Immigrants and Muslims: Placebo 1 (Fake attack date, 2014-12-07)	163
17	Attitudes towards Immigrants and Muslims: Placebo 2 (Fake attack date, 2014-11-07)	164
18	Attitudes towards Immigrants and Muslims: Treatment Effect Estimates for Czech Republic	166
19	Attitudes towards Immigrants and Muslims: Treatment Effect Estimates for Finland	167
20	Attitudes towards Immigrants and Muslims: Treatment Effect Estimates for Ireland	168
21	Attitudes towards Immigrants and Muslims: Treatment Effect Estimates for Germany	169
22	Attitudes towards Immigrants and Muslims: Treatment Effect Estimates for France	170
4.1	Time (T1) to consume in HI v/s Time (T2) to consume in LI places	186

4.2	Time (T1) to consume in HI v/s Time (T2) to consume in LI places, with endogenous terror	212
4.3	Threat of terrorism measured as % of terrorism news	213
4.4	Percentage of spending at high and Low interaction shops	213

List of Tables

2.1	Weekly estimates on Saliency	62
2.2	Weekly estimates - Tone	64
2.3	Impact of Exposures to NATIONAL and REGIONAL Media on votes	90
2.4	Impact of Exposures to NATIONAL Media on votes	91
2.5	Impact of NATIONAL media Concern about migration (Tone-weighted Saliency Measure)	91
2.6	Impact of NATIONAL media Concern about migration (Tone-weighted Saliency Measure, Small Cities (Less Than 10,000 Inhabitants)	92
2.7	Coefficient Stability	93
8	List of the newspapers, characteristics and descriptive statistics.	96
9	Saliency and Tone of Immigration and Immigration + Muslims Before and During Terror Events.	97
3.1	Control Variables Stratified by Treatment Status	153
3.2	Effects of Charlie Hebdo attacks on Attitudes	155
3	Multilevel Linear Regression With Random Intercepts	165
4	Leave One Country Out Analysis: Attitude toward Immigrants	165
5	Leave One Country Out Analysis: Attitude toward Muslims	166
6	An example of the prompting strategy and the output from the model. . . .	171
7		172
4.1	Weekly Number of Visits	194
4.2	Share of Spending at High Interaction Shops	195
4.3	Average Price per Product	196
4.4	Total Expenditure	197
4.5	Weekly Number of Visits	199
4.6	Share of Spending at High Interaction Shops	201
4.7	Average Price per Product	202

4.8	Total Expenditure	203
4.9	Weekly Number of Visits	214
4.10	Share of Spending at High Interaction Shops	215
4.11	Average Price per Product	216
4.12	Total Expenditure	217
13	Weekly Number of Visits	218
14	Share of Spending at High Interaction Shops	219
15	Average Price per Product	220
16	Total Expenditure	221
17	Weekly Number of Visits	222
18	Share of Spending at High Interaction Shops	223
19	Average Price per Product	224
20	Total Expenditure	225

1

Chapter 0. General Introduction

Since the turn of the 21st century, Europe has experienced a significant increase in terrorist attacks, with a marked escalation during 2014 and 2015, largely influenced by the rise of the Islamic State of Iraq and the Levant (ISIL) Nesser et al. (2016). While the average number of terror attacks in Western Europe was around 70 per year between 2004 and 2007, this figure soared to an average of 239 attacks annually between 2015 and 2018. Peri et al. (2023). Simultaneously, Europe witnessed a massive influx of undocumented migrants, peaking during the 2015 refugee crisis, with over 1.5 million asylum applications Dustmann et al. (2017). This unprecedented wave of migration has fueled public anxieties about immigration, fostering negative attitudes toward foreigners and contributing to the rise of right-wing political parties Peri et al. (2020); Halla et al. (2017). The convergence of increased terrorism and immigration has provided fertile ground for anti-immigrant rhetoric and the growth of far-right political movements across Europe. Parties such as Hungary's Fidesz and Poland's Law and Justice (PiS) have gained significant political traction, while formerly fringe nationalist parties have seen rising support in countries such as Germany, France, the Netherlands, and the United Kingdom Fekete (2018); Peri et al. (2020). In the public discourse, terrorism and immigration are frequently interlinked Crabtree and Kluch

(2017), a connection that far-right parties have been quick to exploit . To fully understand the surge in support for anti-immigrant parties, it is essential to examine the role of the media, which has been shown to influence public opinion (e.g. Walgrave and De Swert (2004); Walgrave and De Swert (2007); Boomgaarden and Vliegenthart (2007); Burscher et al. (2015)).

This thesis examines the interplay between terrorism, media coverage, and public attitudes toward immigration, with a particular focus on France. The first two chapters explore how terrorism influences media portrayal of immigrants and how these portrayals, in turn, affect immigration policy preferences. The third chapter investigates how terrorism-induced fear impacts consumer behavior, specifically examining the ways in which perceived threats lead to changes in shopping patterns. Terrorism, by its nature, aims to generate fear and deliver a message to a broader audience beyond the immediate victims . However, the effectiveness of terrorism in achieving these objectives remains a matter of ongoing academic debate Black (2004); Rosenfeld (2004); Schinkel (2009); Turk (2004).

France is an especially pertinent case for studying the relationship between terrorism, negative attitudes toward foreigners, and the rise of anti-immigrant political movements. After a relatively calm period, France experienced a series of devastating terrorist attacks in 2015 and 2016 that shocked the nation and the world. The Charlie Hebdo shooting on January 7, 2015, perpetrated by two French-born individuals of Algerian descent, marked the beginning of a violent period. This was followed by the Hyper Cacher supermarket attack just two days later, where another French-born Muslim man claiming allegiance to ISIL killed four Jewish hostages . France endured further tragedy in November 2015, when coordinated terrorist attacks targeting restaurants, bars, a concert venue, and a stadium resulted in 130 deaths, making it the deadliest event in the country's post-war history. These attacks were again linked to ISIL, with many of the perpetrators being French citizens. In July 2016, a lone attacker drove a cargo truck into a crowd celebrating Bastille Day in Nice, causing 86

deaths and leaving hundreds injured. Less than two weeks later, terrorists targeted a church in Normandy, killing a priest Neiberg (2017).

These attacks profoundly impacted French public opinion, with security and terrorism quickly becoming the most pressing concerns Brouard (2016); Mayer et al. (2016). In the 2018 Eurobarometer survey, terrorism and immigration emerged as the top two issues cited by respondents as the most significant problems facing the European Union Commission (2018). The increasing salience of terrorism, particularly its linkage with immigration, created an opportunity for far-right parties like the Rassemblement National (RN) to capitalize on public fears Hutchins and Halikiopoulou (2020). Despite attempts by its leader Marine Le Pen to distance the party from its extremist origins Shields (2013); Stockemer and Barisione (2017), the RN continues to focus heavily on anti-immigrant policies Vasilopoulos et al. (2019), advocating for stricter border controls, the cessation of dual nationality, and the primacy of French citizens over immigrants in economic and social matters Hutchins and Halikiopoulou (2020).

The RN's rhetoric often frames terrorism as an external threat, despite the fact that many of the attackers were French nationals. Following the Charlie Hebdo attacks, for example, RN propaganda described the "Islamist danger" as a direct consequence of immigration Mayer and Tiberj (2016). Similarly, in the aftermath of the November 2015 attacks, the party called for harsh measures against Muslims and immigrants, even though most of the perpetrators were French citizens. This framing of terrorism as a foreign problem helps to reinforce the RN's anti-immigrant stance and garner public support Hutchins and Halikiopoulou (2020).

Given the party's position on immigration and its framing of terrorism, many observers argued that Marine Le Pen, would experience an increase in support as a result of the attack Peri et al. (2020). In fact, in the first round of the regional election that took place on December 6, 2015, just three weeks after the terror events of November 13, 2015, the RN garnered nearly 28% of the vote, coming out on top in six out of 13 metropolitan regions. In

the subsequent, presidential election in April 23, 2017, Le Pen garnered 21 percent of the vote, enough to propel her to the next round of voting for the first time in her political career Peri et al. (2020).

Moreover, the timing of the January 2015 attacks coincided with the fieldwork for the seventh wave of the European Social Survey (ESS), which includes several questions assessing public attitudes toward immigrants and Muslims across Europe. This overlap between terrorist events, national elections, and survey data in France offers a unique opportunity to examine the effects of terrorism on public opinion as well as the link between terrorism risk and consumer behavior given that France's transitioned from a relatively low-threat environment in 2014 to one of the primary targets of terrorism between 2015 and 2016 provides a rich context for studying these dynamics.

This thesis aims to shed light on two key aspects of the relationship between terrorism and public behavior. First, it demonstrates that media coverage of immigration, particularly following terrorist attacks, plays a crucial role in shaping negative public perceptions of immigrants. Second, it argues that the constant portrayal of terrorism in the media generates fear among consumers, leading to changes in shopping behavior as people seek to avoid perceived risks.

1.1 Literature Review

1.1.1 Political Economy of Terrorism

Impact of Terrorism on Public Attitudes

This thesis contributes to the political economy literature on terrorism, particularly the argument that terrorism heightens negative attitudes toward immigrants. Numerous studies, especially after the 9/11 attacks, have shown a short-term increase in anti-immigrant sentiment

not only in the U.S. Hopkins (2010); Panagopoulos (2006); Hitlan et al. (2007) but also in Western Europe, including Sweden, Germany, and the UK Åslund and Rooth (2004); Noelle-Neumann (2002); Schüller (2016); Sheridan (2006). These studies often compare survey data before and after attacks to assess changes in public opinion.

Later studies on European terrorist attacks have employed natural experiments, taking advantage of attacks occurring during survey fieldwork Helbling and Meierrieks (2022). For instance, the 2004 Madrid bombings led to increased anti-Arab and anti-Semitic sentiments Echebarria-Echabe and Fernández-Guede (2006), as well as ethnic segregation in Spain (Sandell et al., 2016). Similarly, anti-immigrant attitudes surged in the Netherlands following the 2004 Theo van Gogh assassination Boomgaarden and De Vreese (2007); Das et al. (2009); Finseraas et al. (2011). The 2005 London bombings negatively impacted young Muslim men's employment and earnings (Rabby and Rodgers iii, 2010), while also fostering greater prejudice toward Muslims (Van de Vyver et al., 2016). Evidence from Belgium reveals that lower terrorism fear correlates with more positive attitudes toward refugees (De Coninck, 2022); (Andersen and Mayerl, 2018).

The 2015 Bataclan attack in Paris also had varied effects: countries with low immigrant populations and positive political climates toward immigrants exhibited a stronger negative shift in attitudes Nussio et al. (2019); Ferrín et al. (2020). Notably, the 2011 Oslo attacks, committed by a right-wing extremist, produced more positive attitudes toward immigrants in Norway Jakobsson and Blom (2014). Mancosu and Ferrin Pereira (2021) investigate the effect of the 2017 Manchester bombings in the UK. While they find that these attacks led to a negative response (increased stereotyping) towards immigrants and refugees in the immediate aftermath of the attack, this effect disappeared after a few days. Meta-analytical evidence suggests that terrorism is associated with small but significant increases in outgroup hostility Godefroidt (2023).

Research has also explored cross-border spillover effects of terrorism. For example, the 2002 Bali attack worsened attitudes toward immigrants in Finland, Poland, and Portugal Legewie (2013), and the 2015 Paris attacks had similar effects in some European countries Castanho Silva (2018); Savelkoul et al. (2022); Ferrín et al. (2020); Jungkunz et al. (2019). However, no significant shifts were observed in the U.S. after the Paris attacks Boydston et al. (2018), and the 2008 Mumbai attacks did not increase support for illiberal immigration policies in Europe Finseraas and Listhaug (2013).

An important insight from this literature is the highly variable impact of terrorism, depending on the specific attack and the country in question. For instance, Peri et al. (2023) finds limited evidence that terror attacks in Europe broadly influence attitudes toward immigration or political orientation. Similarly, Van Hauwaert and Huber (2020) report no conclusive evidence of increased outgroup hostility following the 2015 Bataclan attack in Paris. In contrast, Castanho Silva (2018) demonstrate a negligible overall effect of both the 2015 Charlie Hebdo and November Paris attacks on various out-group-related attitudes, such as anti-immigrant and anti-Muslim sentiments. However, Savelkoul et al. (2022) reveal that attitudes toward Muslims became more negative in Ireland and the Czech Republic shortly after the Charlie Hebdo attack, while in France, attitudes improved. Likewise, Solheim (2021) found that the same attack negatively influenced immigration policy preferences outside France, but not within the country. Additional research by Van Assche and Dierckx (2021) also found no significant impact of the November 2015 and 2016 Brussels terrorist attacks on attitudes toward Muslims, refugees, or immigrants in France and Belgium. By allowing for variation across countries, Finseraas et al. (2011) detected negative effects in only a few nations, such as Norway, Spain, and Slovakia. These mixed findings suggest that terrorist attacks do not uniformly influence immigration attitudes, highlighting the need for further research to better understand the nuanced relationship between terrorism and public opinion on immigration.

Chapter 2 of this thesis contributes to this debate by re-examining the impact of the Charlie Hebdo attack, which has produced inconclusive findings in prior research . Our analysis uses the European Social Survey (ESS) and employs various methodologies, including OLS models, matching, and machine learning techniques. We find a general decline in positive attitudes toward immigrants and Muslims post-Charlie Hebdo, with considerable variation across countries: while France and Germany exhibited improvements in attitudes, the Czech Republic, Finland, and Ireland saw negative shifts, confirming substantial heterogeneity in and the cross-border diffusion of terrorism-induced anti-immigration views.

The Charlie Hebdo attack did not lead to a decline in positive attitudes toward immigrants and Muslims specifically in France, which contrasts with the expected negative reactions given the attack's local occurrence. The findings deviate from this anticipated outcome, suggesting that something distinctive about the Charlie Hebdo attack influenced public response. The first chapter of this thesis provides a clue: of the three major attacks that France experienced between 2015 and 2016, Charlie Hebdo was unique in that media coverage involving immigrants and Muslims adopted a more positive tone, on average, in the three weeks following the attack, except for the week of the attack itself (see Figure 19 of Chapter 1). This implies that after the initial psychological shock of the attack subsided, French media took on a more favorable stance in reporting where the terms "Immigrants" and "Muslims" appeared together.

Two key theoretical frameworks are often used to explain public reactions to terrorist attacks: "*System Justification Theory (SJT)*" (Jost and Banaji, 1994) and "*Intergroup Conflict Theory (ICT)*" (of Oklahoma. Institute of Group Relations and Sherif, 1961). Both posit that terrorism increases perceptions of threat, leading to heightened prejudice, ethnocentrism, and xenophobia Helbling and Meierrieks (2022). Many studies use these frameworks to explain post-attack anti-immigrant attitudes Vasilopoulos et al. (2019); Legewie (2013); Lindén et al. (2018); Hitlan et al. (2007). However, our findings challenge the predictions of SJT and ICT,

especially in France, where one might expect stronger negative reactions but instead observe more positive attitudes following the Charlie Hebdo shooting. One possible reason is that the attack's target—specifically, the Charlie Hebdo journal for its criticism of Islam and the portrayal of the Prophet Mohammed—differed from attacks like Bataclan or Nice, which targeted the general public. This difference likely altered public perceptions of personal risk, mitigating the typical fear-driven response predicted by SJT and ICT. Similar findings were observed in the case of attacks in Norway directed at political elites rather than the general populace, which did not significantly alter Norwegians' attitudes toward immigrants Jakobsson and Blom (2014). This suggests that the specific nature of a terrorist attack and its perceived motive play crucial roles in shaping public reactions.

To explain the findings for France and Germany, Chapter two turns to alternative theories, such as the contact hypothesis Allport et al. (1954), which suggests that increased interaction between native populations and immigrants can improve intergroup attitudes Pettigrew and Tropp (2006). In countries like France and Germany, where there is greater personal interaction with Muslim immigrants, these interactions may have helped mitigate stereotypes, stabilizing or even improving attitudes toward immigrants after the attacks Enos (2014).

Impact of Terrorism on Electoral Outcomes

A growing body of research examines the impact of terrorism on electoral outcomes, with many studies finding that terrorist attacks can shift public support toward right-wing political parties. For example, evidence from Israel shows that terrorist attacks increase support for conservative parties, as demonstrated by studies from Berrebi and Klor (2008) and Gould and Klor (2010). Getmansky and Zeitzoff (2014) specifically found that support for right-wing parties rises in areas of Israel affected by rocket attacks from the Gaza Strip. Similarly, in Turkey, Kibris (2011) observed that casualties among police forces led to increased support

for right-wing parties. A meta-analysis by Godefroidt (2023) further confirms that terrorism is generally associated with a shift toward political conservatism, though the effect is modest.

In France, the 2015 Paris and 2016 Nice attacks caused significant shifts in public opinion toward right-wing preferences, as documented by Brouard et al. (2018). In the United States, Wright and Esses (2019) found that individuals who perceived immigrants as security threats were more likely to vote for Donald Trump. Additional studies suggest that terrorist attacks often increase support for authoritarian policies Bonanno and Jost (2006); Nail et al. (2009); Van de Vyver et al. (2016); Vasilopoulos et al. (2018). This shift is frequently linked to heightened anxiety about death, which has been shown to boost endorsement of right-wing ideologies Jost et al. (2003); Jost et al. (2007); Landau et al. (2004).

However, other studies have found little to no impact of terrorism on political attitudes and electoral outcomes. Abrahms (2006) and Abrahms (2012) argue that terrorism often fails to achieve its political objectives. Baccini et al. (2021) found that successful terrorist attacks in the U.S. do not significantly affect presidential or non-presidential elections. Similarly, Peri et al. (2020) conducted a multi-country analysis in Europe and found limited evidence that terror attacks systematically influence political attitudes, although international attacks are linked to a rise in vote shares for nationalist parties.

These conflicting findings highlight the complexities of assessing terrorism's impact on electoral outcomes, partly due to selection bias. Terrorist attacks are not random; they are often strategically timed and targeted at populations likely to respond in ways that align with the attackers' objectives, such as increasing support for right-wing parties to derail peace negotiations or for left-wing parties to secure concessions. This strategic targeting can result in an overestimation of terrorism's impact on voting behavior Baccini et al. (2021). Moreover, voter preferences can influence the likelihood of terrorist attacks, creating a reciprocal relationship that complicates causal inferences Berrebi and Klor (2008).

Chapter 1 of this thesis adds to this debate by exploring how terrorist attacks influence support for anti-immigrant parties through media coverage of immigration. First, it demonstrates that the Paris terrorist attack of November 13, 2015, led to a surge in media focus on immigration and a significant deterioration in the tone of coverage. Subsequently, it shows that exposure to heightened and negative media portrayal of immigration is strongly associated with increased support for the main anti-immigration party in France

1.1.2 Media Economics and Political Communication

Media Influence on Public Opinion

Immigration has become a critical political issue in Western democracies, and understanding the factors shaping public attitudes towards immigrants is increasingly important Boomgaarden and Vliegenthart (2009). Among these factors, media plays a significant role in influencing public opinion Bratti et al. (2020); Gentzkow and Shapiro (2006); Djourelouva (2020); DellaVigna and Kaplan (2007). Research consistently shows that increased media coverage, especially when negative, can lead to unfavorable public attitudes towards immigrants Crawley (2005); Threadgold (2009); Innes (2010); Rasinger (2010); Balch and Balabanova (2016). For example, Facchini et al. (2017) found that viewers of Fox News are more likely to hold negative views of undocumented immigrants compared to CBS viewers, even after accounting for ideological self-selection. Similarly, Benesch et al. (2019a) demonstrated that the volume of immigration-related media coverage in Germany significantly influences native attitudes at the individual level.

Media can shape public opinion not only through the tone of coverage but also by emphasizing certain characteristics, such as ethnicity, which can heighten out-group hostility among audiences Sniderman et al. (2004). Studies have shown that visibility of immigration issues in the media—regardless of the actual immigrant inflow or tone—tends to increase anti-immigrant sentiment Van Klingeren et al. (2015). On the other hand,

unbiased media coverage can mitigate negative perceptions of immigration Keita et al. (2021). However, coverage of immigration often polarizes public opinion, as seen in France Schneider-Strawczynski and Valette (2021). It has also been shown that high visibility of the refugee crisis in the media increases citizens' Euroscepticism (Harteveld et al., 2018). Moreover, undifferentiated reporting on Islamic State terrorism has been shown to heighten fear of terrorism and foster hostility toward Muslims Von Sikorski et al. (2020).

Chapter one of this thesis contributes to this literature by examining how terrorist attacks perpetrated by individuals of migrant backgrounds, such as the Charlie Hebdo shooting, the 2015 Paris attacks, and the Nice attack, affected media coverage of immigrants. The findings reveal that these events intensified media focus on immigration and negatively altered the tone, often associating immigration with "Muslims" and security concerns.

The media also plays a crucial role in shaping public perceptions of terrorism through agenda setting and framing. Agenda-setting theory posits that media significantly influence public opinion by prioritizing certain issues McCombs and Shaw (1993). Meanwhile, framing theory suggests that media shape public understanding by using specific words, phrases, and imagery to present events Altheide (2006); Entman (1993); McCombs and Shaw (1993); Woods (2011); Woods (2007). For instance, by highlighting immigrants and Muslims in their coverage of terrorism, media can reinforce public associations between these groups and terrorism Price et al. (1997); Scheufele (2004); Tewksbury and Scheufele (2019). Research indicates that the way a terrorist event is framed can significantly influence public perception of the event's causes and implications Iyengar (1987); Brinson and Stohl (2009); Brinson and Stohl (2012).

Chapter two of this thesis explores how the framing of the Charlie Hebdo shooting in five European countries influenced public attitudes toward immigrants and Muslims. The analysis found that in Germany, media emphasized collective interfaith efforts and support for diversity, which corresponded with more positive public attitudes. Similarly, in France,

coverage that highlighted republican values and democratic ideals was associated with improved public attitudes. Conversely, in the Czech Republic, Finland, and Ireland, the media focused on divisive rhetoric, contributing to a negative shift in public attitudes toward immigrants.

Media Influence on Electoral Outcomes

The factors contributing to the success of anti-immigrant parties have been widely debated in both popular and academic circles. This dissertation argues that a crucial element often overlooked in previous analyses is the role of media content. Media can shape public concerns by consistently highlighting specific issues, thereby increasing the likelihood that citizens will vote based on those salient topics. These agenda-setting and priming processes can benefit anti-immigrant parties when media attention focuses on immigration, as confirmed by several empirical studies Scheufele and Tewksbury (2007); Boomgaarden and Vliegenthart (2007); Sheets et al. (2016).

Several studies have examined the relationship between terrorism, and voting behavior. For instance, Montalvo (2011) conducted a natural experiment analyzing the impact of the 2004 Madrid terrorist attacks on Spanish elections, which took place just days after the attacks. The study found that the attacks significantly influenced voting outcomes, with a shift away from the incumbent conservative party, which had supported the Iraq War in 2003. Similarly, Balcells and Torrats-Espinosa (2018) used survey data collected around the time of ETA's attacks in the Basque region to investigate voting behavior. They observed increased voter turnout following the attacks but found no significant change in support for the incumbent party.

Further evidence on the relationship between terrorism, and media coverage suggests that increased media coverage of immigration alone, regardless of tone, correlates with higher support for anti-immigrant parties. For example, Vliegenthart and Boomgaarden (2007)

and Burscher et al. (2015) found that the volume of immigration-related news increases the likelihood of votes for parties with anti-immigrant platforms. Additionally, biased media portrayals of immigrant criminality have been shown to significantly impact political outcomes, boosting support for far-right parties Couttenier et al. (2021); Djourelouva (2020).

Chapter one of this thesis contributes to this literature by examining how media coverage of immigration following the November 13, 2015, Bataclan terrorist attack influenced voting behavior during the *Élections Régionales*, held three weeks later on December 6, 2015. The analysis shows that greater exposure to immigration-related media salience and negative coverage is strongly associated with increased support for the main anti-immigrant party in France at the municipal level. On average, media coverage of immigration contributed approximately 3% to the vote share of the anti-migrant party across all localities.

Portrayal of Minorities in the Media

This thesis aligns with recent literature exploring how minorities are portrayed in the media. A key finding from this research is that media coverage often disproportionately focuses on certain minority groups over others (Ter Wal, 2002). For example, despite labor migration being the most common type of immigration in many OECD countries, refugees are often the most prominently covered group in the media (Blinder and Allen, 2016). In countries like the Netherlands, Germany, and Sweden, asylum seekers dominate media narratives even before the 2015 refugee crisis, overshadowing labor migrants, who make up the majority of immigrants Eberl et al. (2018); (Lubbers et al., 1998). Similarly, in the UK, although students represented a larger share of immigration than labor, family, or asylum migrants in 2015, they were the least reported group Blinder and Allen (2016).

When examining media coverage by religion, Muslim immigrants consistently receive the most attention. In the UK, media coverage of British Muslims has increased significantly since 2000, with about two-thirds of the content framing Muslims as a threat or problem.

Common terms associated with British Muslims in the media include "terrorist," "extremist," and "suicide bomber," with few positive representations (Moore et al., 2008). In contrast, U.S. media often focus on Latino migrants (Valentino et al., 2013). External events, such as terrorist attacks or political changes, also influence the salience of immigration in the media. For instance, immigration coverage in Germany peaked after the 9/11 attacks Boomgaarden and Vliegenthart (2009), while in the UK, media attention on immigration increased following the 2010 election of a Conservative-led government Allen (2016).

Chapter one of this thesis contributes to this literature by demonstrating that terrorist attacks significantly influence media coverage of immigrants. The findings show that after major attacks in France, terms like "immigration" and "migration" are frequently linked with "Muslims" and "security." A surge in media reporting intensity—up to 200%—is observed for three weeks post-attack, gradually declining to 20-50% in the following weeks before normalizing after one and a half to two months.

This thesis also engages with studies analyzing the tone of media content regarding minorities. Research consistently shows that immigration news tends to be strongly negative Igartua et al. (2008). For example, De Vreese et al. (2017) identified immigration as the third most negative topic in political news across 16 Western democracies. Exposure to media that negatively portrays ethnic minorities increases perceived threats among readers Vergeer et al. (2000). Similarly, negative media framing of immigration amplifies public perception of immigration as a pressing problem compared to other policy issues Boomgaarden and Vliegenthart (2009). A strong positive correlation exists between negative immigration-related news and citizens' perceived threats regarding immigration Schlueter and Davidov (2013). Furthermore, preferences for TV channels that depict Muslims negatively are associated with higher levels of Islamophobia over time Eyssel et al. (2015).

Research also highlights variations in the tone of immigration coverage across different media genres. Tabloids generally present more negative portrayals of immigrants than quality

newspapers Cheregi (2015); Kroon et al. (2016); Lawlor (2018). Television news tends to portray immigration more negatively than print media Igartua et al. (2008), while talk shows often depict ethnic minorities more positively compared to other TV formats Ter Wal (2002). Differences also exist between liberal and conservative media; while liberal outlets sometimes provide more positive coverage, they may still focus on negative aspects like group-related issues, whereas conservative outlets emphasize crime Eberl et al. (2018).

Chapter one of the thesis further contributes to this literature by developing a publicly available dictionary for measuring immigration news content in French and validating it. Using this dictionary, the study measures the tone of French news articles about immigration published online from October 2014 to October 2015, spanning periods before and after three major terrorist attacks. The results show that, generally, the tone of immigration news becomes substantially more negative after a terrorist attack, increasing up to ten times compared to the pre-attack period; however, this effect is short-lived, lasting about two weeks. The Charlie Hebdo shooting stands out as an exception to this trend (see Figure 19 of Chapter 1). While the tone of media coverage involving immigrants and Muslims is notably negative during the week of the attack, it rapidly shifts to a more positive tone in the following week and remains elevated for approximately three weeks before returning to pre-attack levels.

1.1.3 Behavioral Economics and Social Psychology

Behavioral Responses to Terrorism

A growing body of literature explores how individuals behave in response to terrorism risk, consistently finding that people tend to avoid situations where they could become victims of an attack. Following the 9/11 attacks, many individuals reduced or avoided air travel Greenberg et al. (2004); Huddy et al. (2002), avoided crowds and tall buildings Malik et al. (2018); Nellis (2009), and spent more time at home, steering clear of large public events Greenberg et al. (2004); Huddy et al. (2002). Similarly, in Washington, DC, pedestrian

traffic declined during periods of heightened terror threat Bowles (2004). In Israel, in-depth interviews revealed that daily routines were significantly altered following terrorist attacks, with individuals staying home more frequently and avoiding leisure activities Herzenstein et al. (2015).

Research suggests that these avoidance behaviors are particularly pronounced among vulnerable populations, such as women, non-whites, and individuals with mental health issues, who are more likely to perceive higher levels of risk Eisenman et al. (2009); Nellis (2009); Haner et al. (2019). Such behaviors are also more prevalent among political conservatives Altheide (2006); Gadarian (2014); Jackson (2013). Although studies on consumer responses to terrorism are relatively limited, existing evidence indicates that terrorism and the fear it generates influence consumption choices. For instance, terrorism has been shown to affect individual consumption patterns, such as reduced alcohol consumption after 9/11 Knudsen et al. (2005), increased tobacco use Pesko (2014), and heightened expenditure on sugar-rich foods following the Bataclan concert-hall attack in Paris Mirza et al. (2022).

In Israel, terrorist attacks negatively impacted the demand for services like bus travel and coffee shops, with occasional users showing significant changes in behavior, while frequent users remained relatively unaffected Becker and Rubinstein (2011). Moreover, individuals who have survived a terrorist attack tend to make more cautious consumption decisions Baumert et al. (2020). A study by Predmore et al. (2007) found that U.S. women preferred online shopping when concerned about physical safety, while Israeli consumers favored in-person shopping unless faced with extreme physical risks.

Chapter three of this thesis contributes to this literature by examining how contemporary terrorism threats influence the shopping behavior of French consumers. Our analysis reveals that, as a behavioral coping strategy, French consumers reduce visits to grocery stores and increase spending at low-interaction venues such as online stores or convenience stores, which typically have higher prices. However, overall grocery expenditure remains largely

unchanged in the face of terrorism threats. These coping responses vary across household types, with families with children being more likely to adopt these avoidance strategies.

The Media's Role in Shaping Public Reactions to Terrorism

Media coverage also plays a critical role in amplifying the economic damage caused by terrorism. For instance, Melnick and Eldor (2010) found that the economic impact of terrorist attacks grows in direct proportion to the amount of media coverage, suggesting that the media does not just report on the economic consequences of terrorism but actively shapes them. Evidence shows that media coverage can intensify the psychological and health impacts of terrorism. For example, Schlenger et al. (2002) found that higher exposure to televised coverage of terrorist attacks was associated with increased levels of clinically significant psychological distress symptoms. Similarly, Slone (2000) demonstrated in a laboratory study that Israeli adults who watched terrorism-related news experienced higher anxiety levels compared to those watching other types of news.

Chapter three of this thesis contributes to this growing literature by examining how media coverage of terrorism affects public risk perception and subsequently alters consumer behavior. Our findings highlight that the media's portrayal of terrorism significantly influences how individuals assess risks, which, in turn, affects their consumption decisions. This work forms part of a broader discussion on the role of media in shaping public attitudes and behaviors during times of crisis, it demonstrates the media's capacity to moderate the societal impact of terrorism beyond simply conveying information.

1.1.4 Economics of Conflict

The Economic Cost of Terrorism

The economic impact of terrorism on advanced economies is generally short-lived unless the attacks are persistent in specific locations Sandler and Gaibullov (2022); Abadie and

Gardeazabal (2008); Baumert et al. (2020). For example, Abadie and Gardeazabal (2003) found that terrorism reduced per capita GDP in the Basque Country by 10%, while Eckstein and Tsiddon (2004) estimated a 5% decline in GDP and annual per capita consumption in Israel in 2004. Similarly, Brodeur (2018) showed that successful terrorist attacks, compared to failed ones, led to a 2% reduction in jobs and total earnings in the affected areas in the subsequent years. Terrorist threats also deter foreign direct investment and trade by increasing the perceived risks of conducting business in affected regions Jain and Grosse (2009); Abadie and Gardeazabal (2008); Enders and Sandler (1996). Additionally, terrorism negatively impacts economic growth by shifting spending away from investment and towards government expenditures Blomberg et al. (2004). Successful attacks also heighten consumer pessimism regarding business conditions, buying conditions, and personal finances Brodeur (2018).

Micro-level studies on the economic impacts of terrorism often focus on the health consequences for individuals directly or indirectly exposed to attacks Galea et al. (2006); Johnson et al. (2017); Richman et al. (2008). Evidence suggests that terrorism adversely affects mental and physical well-being far beyond the immediate victims. For instance, the 9/11 attacks caused widespread psychological distress, negatively impacting subjective well-being Metcalfe et al. (2011); Tsai and Venkataramani (2015); Tierney (2008); Galea et al. (2002); Schlenger et al. (2002); Antonius (2015); Maguen et al. (2008); Schuster et al. (2001). In the months following the attacks, 40% to 50% of U.S. adults continued to fear for their safety, and 11% reported changing their behavior, such as avoiding public gatherings Eisenman et al. (2009). The Boston Marathon bombing similarly reduced immediate well-being among those affected Clark et al. (2020). Additionally, terrorism has been linked to adverse birth outcomes, further demonstrating its far-reaching health impacts Quintana-Domeque and Ródenas-Serrano (2017); Bravo and Castelló (2021). These

findings suggest that the fear of terrorism alone can inflict economic and psychological damage comparable to that caused by the attacks themselves.

Chapter three of this thesis contributes to the literature on the microeconomic impacts of terrorism by examining how terrorism influences household consumption patterns. Our findings provide evidence of the indirect economic costs of terrorism through changes in consumer behavior, such as increased spending at higher-priced low-interaction venues, leading to higher overall prices for consumers. This research expands the discussion on the broader economic impacts of terrorism beyond direct physical and infrastructural damage, highlighting the substantial indirect costs borne by households.

1.2 Contribution of the Dissertation

This dissertation contributes to and expands on the previously described literature on political economy, media economics, behavioral economics and the economics of conflict, particularly concerning the economic and social costs of terrorism. The core contribution lies in highlighting the critical role of media in shaping public responses to terrorism. Traditional research often views the media as a passive transmitter of information, neglecting its active role in influencing public perception and behavior following terrorist attacks Solheim (2021). This thesis argues that media content is a crucial factor that not only shapes perceived fear of terrorism but also amplifies public reactions to such events.

The dissertation pursues three main objectives. The first objective is to determine whether exposure to negative media coverage of immigration, following the 2015 Bataclan attack in Paris, influenced public support for the main anti-immigrant party in France. This chapter examines whether media content can be partly responsible for the rise in popularity of the extreme right in France. The findings suggest that increased negative coverage of immigration following terrorist attacks significantly contributed to the success of the extreme right in France.

The second objective examines whether exposure to different framings of the same terrorist attack, specifically the Charlie Hebdo shooting, explains variations in public attitudes toward immigrants and Muslims across countries. This chapter demonstrates that anti-Muslim sentiment post-attack is not solely a result of the attack itself but is significantly shaped by how the media frames the event. This highlights the media's influence on public attitudes and the variable impact of terrorism across different contexts.

The third objective explores how constant media coverage of terrorism affects the public's sense of threat, altering consumer behavior. This chapter investigates the shift from high-interaction shopping venues, like supermarkets, to low-interaction venues, such as online stores, in response to perceived terrorism threats. It reveals that media coverage not only aids terrorist organizations in spreading fear beyond immediate victims but also imposes significant economic costs by altering consumer behavior.

Overall, this dissertation provides a novel approach by focusing on the media's role in shaping the consequences of terrorism. The research shows that media should be considered essential to understanding the relationship between terrorism, public policy preferences, and behavioral changes. This work has significant policy implications, urging policymakers to promote balanced and responsible media reporting during crises to mitigate the amplification of terrorism's negative effects. The findings also underscore the need for targeted interventions to address the behavioral adjustments individuals make in response to terrorism news, thereby reducing the broader economic impact of terrorist attacks.

The first chapter, entitled "*Terrorism, Media Attitudes Towards Migration and Votes: Evidence from France*", investigates how terrorist attacks influence media discourse on migration and, subsequently, public support for anti-immigrant parties in France. It focuses on three major terrorist attacks: the Charlie Hebdo shooting (January 7, 2015), the Bataclan attack (November 13, 2015), and the Bastille Day attack in Nice (July 14, 2016). The study analyzes how these events affected the salience (intensity) and tone (negativity) of

immigration coverage in nearly all French local and national newspapers, using data from Europress and Factiva.

To capture media content, the study employs Natural Language Processing (NLP) methods to construct weekly measures of the salience and tone of immigration coverage at the media level. A custom dictionary tailored for immigration news in French is constructed to accurately assess the tone of articles. The results reveal that terrorist attacks lead to a sharp increase in media attention on immigration and a significant deterioration in the tone, with immigration coverage often linked to terms like "Muslims" and "(in)security."

The chapter further examines how these shifts in media coverage influence public behavior, specifically voting for the Rassemblement National (RN), France's main anti-immigrant party. By constructing a weighted average exposure measure to media content at the municipal level, the study links media exposure to changes in vote share for the RN in the 2015 regional elections, held just three weeks after the Bataclan attack.

Key findings include:

- A fivefold increase in the salience of immigration coverage in the first three weeks after an attack, with levels gradually returning to baseline after six to seven weeks.
- A marked increase in negative tone, doubling compared to pre-attack levels, especially in left-leaning newspapers.
- Media exposure to negative immigration coverage is strongly associated with increased support for the RN, with an average contribution of 3% to the RN vote share, though this impact varies significantly across different regions, ranging from 0.76% to 24%.

These findings suggest that media coverage plays a significant role in shaping public opinion and electoral outcomes, indicating that media can amplify the social and political consequences of terrorism.

The second chapter, entitled "*Media Influence and Public Attitudes in Europe: A Cross-National Analysis of the Charlie Hebdo Attack*", examines the impact of the Charlie

Hebdo shooting on public attitudes towards Muslims and immigrants across multiple European countries, focusing on the role of media in shaping these attitudes. It leverages the overlap between the attack and the fieldwork of the European Social Survey (ESS) in several countries, allowing a unique cross-national analysis.

The study employs various methodologies, including OLS models with country fixed effects, matching methods, and machine learning techniques, to assess changes in attitudes towards Muslims and immigrants in five European countries: France, Germany, Ireland, the Czech Republic, and Finland. The analysis finds a general decline in positive attitudes towards Muslims post-attack, with notable differences across countries.

To understand these cross-national differences, the chapter analyzes online news articles from these countries using two NLP techniques, large language models and structural topic modeling. The findings reveal that media portrayal of immigrants and Muslims varied significantly: Germany and France had predominantly positive media coverage, consistent with improved public attitudes towards these groups, while Ireland, the Czech Republic, and Finland had more negative media sentiment, aligning with deteriorating public attitudes.

Key contributions of this chapter include:

- Demonstrating that the media environment acts as a mediator, shaping public perception in response to the same terrorist event differently across countries.
- Highlighting that media framing, rather than the attack itself, significantly influences public attitudes, suggesting that balanced and responsible media coverage can mitigate the negative societal impacts of terrorism.

This chapter provides new insights into how media can either exacerbate or reduce public hostility towards minority groups, emphasizing the need for careful consideration of media's framing during crises.

The final chapter, entitled “*Terrorism Threat And (Mis)-Allocation of Consumption: Evidence from French Household Data*”, explores how the perceived threat of terrorism,

as conveyed through media, affects consumer behavior in France, particularly regarding shopping habits. Motivated by psychological theories suggesting that individuals adopt coping strategies to minimize perceived risks, the chapter presents a conceptual framework linking perceived threat to changes in shopping behavior.

Using data from the French Kantar Panel, which tracks daily expenditure data from about 15,000 French households between 2014 and 2016, the study measures perceived terrorism threat through the salience of terrorism in the media. It explores several dimensions of consumer behavior: reduction in shopping trips, shift from high-interaction venues (e.g., supermarkets) to low-interaction venues (e.g., proximity stores and online shopping), impact on prices, and overall grocery spending.

The main findings include:

- A significant reduction in the number of shopping trips during periods of heightened terrorism threat.
- A notable shift in spending from high-interaction venues to low-interaction ones, with a 1.5% decrease in expenditures at supermarkets and a corresponding increase in spending at proximity stores and online shopping.
- This shift leads to higher average prices per product, with a 0.5% price increase after adjusting for inflation, reflecting the typically higher costs at low-interaction venues.
- Despite the changes in shopping patterns, total grocery spending remains unchanged, indicating that consumers reallocate spending without altering overall expenditure.
- Families with young children are particularly sensitive to terrorism threats, showing a more pronounced shift in shopping behavior.

This chapter highlights the broader economic implications of media coverage of terrorism, showing that perceived threats can disrupt normal consumption patterns, leading to higher costs and inefficiencies in household spending. It identifies an indirect economic cost

of terrorism, beyond immediate physical damages, through the lens of altered consumer behavior.

Through these three chapters, this dissertation highlights the crucial role of the media in shaping public reactions to terrorism, influencing political preferences, social attitudes, and consumer behavior. By adopting a media-centric approach, the research not only adds depth to our understanding of the consequences of terrorism but also offers valuable policy insights. It advocates for responsible media practices and highlights the need for targeted interventions to mitigate the amplified social and economic costs of terrorism resulting from media coverage.

1.3 Résumé substantiel en français

1.3.1 Chapitre 1 — Terrorism, Media Attitudes Towards Migration and Votes: Evidence from France

Ce premier chapitre explore comment les attentats terroristes affectent la couverture médiatique de l'immigration et, en retour, influencent les préférences électorales en faveur des partis anti-immigration. L'analyse porte sur le contexte français, particulièrement marqué par les attaques terroristes de 2015, notamment les attentats du 13 novembre à Paris. Ces événements ont profondément marqué l'opinion publique et ont coïncidé avec une hausse spectaculaire du vote pour le Front National (FN, devenu Rassemblement National) lors des élections régionales de décembre 2015.

Objectifs et cadre conceptuel

L'objectif est double : (1) évaluer l'évolution de la couverture médiatique en matière d'immigration à la suite des attentats, tant en termes de fréquence que de tonalité, et (2) identifier l'effet de cette couverture sur le vote en faveur du RN. Ce chapitre s'inscrit dans

les littératures sur l'économie politique du terrorisme, la communication politique et les effets comportementaux des crises, et mobilise des cadres théoriques issus de l'économie des médias (agenda-setting, framing).

Données et méthodologie

L'analyse repose sur une base de données originale construite à partir de milliers d'articles de presse issus de journaux nationaux et régionaux français, couvrant la période allant d'octobre 2014 à octobre 2016. À l'aide d'une combinaison d'analyse textuelle automatisée et d'outils de NLP, deux indicateurs clés sont construits : la saillance médiatique de l'immigration (mesurée par la fréquence des articles sur le sujet) et la tonalité (mesurée à partir d'un dictionnaire validé d'expressions positives et négatives liées à l'immigration).

Cette dynamique médiatique est ensuite reliée au comportement électoral au niveau communal, en mobilisant les résultats des élections régionales de 2010 et 2015. La stratégie empirique combine régressions simples et contrôles pour l'endogénéité, en s'appuyant sur la variation géographique de l'exposition aux médias.

Résultats principaux

- **Augmentation de la couverture médiatique :** Les attentats du 13 novembre 2015 ont entraîné une augmentation massive et immédiate de la couverture médiatique de l'immigration, multipliée par 2 à 3 dans les semaines suivant l'attaque.
- **Changement de tonalité :** Parallèlement à cette hausse de la fréquence, la tonalité des articles devient significativement plus négative. L'immigration est fréquemment associée à des notions d'insécurité et de menace, avec une surreprésentation des termes comme "musulmans", "radicalisation", ou "terrorisme". Ce glissement est observable dans la quasi-totalité des médias, indépendamment de leur orientation politique.

- **Effet sur le vote :** L'analyse économétrique montre que les communes les plus exposées à cette couverture médiatique négative ont connu une progression plus forte du vote pour le Front National. En moyenne, l'exposition accrue à des contenus médiatiques associant immigration et menace sécuritaire explique jusqu'à 3 points de pourcentage de la hausse du vote FN, toutes choses égales par ailleurs. L'effet est particulièrement marqué dans les petites communes (moins de 10 000 habitants) où les médias locaux jouent un rôle plus important.

Robustesse et extensions

Les résultats sont robustes à plusieurs tests : prise en compte de l'endogénéité (par des variables instrumentales), analyse de stabilité des coefficients, et validation des mesures textuelles via des méthodes supervisées et non-supervisées. Une attention particulière est portée aux différences entre groupes de médias (nationaux vs régionaux, droite vs gauche), ce qui permet de montrer l'hétérogénéité des effets selon la source d'information.

Conclusion

Ce chapitre démontre que les attentats terroristes n'influencent pas uniquement l'opinion publique par la peur directe qu'ils suscitent, mais aussi via le rôle de médiation des médias, qui cadrent l'interprétation des événements. La surmédiatisation de l'immigration, lorsqu'elle est accompagnée d'un cadrage négatif, alimente les peurs et favorise les formations politiques aux discours anti-immigration. Ce mécanisme est central pour comprendre la montée du populisme en Europe.

1.3.2 Chapitre 2 — Media Influence and Public Attitudes in Europe: A Cross-National Analysis of the Charlie Hebdo Attack

Ce chapitre explore l'impact de l'attentat contre Charlie Hebdo, survenu en janvier 2015 à Paris, sur les attitudes des citoyens européens envers les immigrés et les musulmans. En s'appuyant sur un dispositif de recherche comparatif, il montre comment les représentations médiatiques influencent les perceptions sociales à la suite d'un événement terroriste majeur. Ce travail apporte un éclairage nouveau sur les effets différenciés de la menace terroriste selon les contextes nationaux, en soulignant le rôle central joué par les médias dans la construction de l'opinion publique.

Contexte et problématique

L'attentat contre Charlie Hebdo, perpétré par des citoyens français se réclamant de l'islam radical, a marqué un tournant dans l'histoire contemporaine de la France et de l'Europe. Survenu durant la période de collecte des données de l'Enquête Sociale Européenne (ESS, vague 7), cet événement offre une opportunité unique pour évaluer empiriquement les effets immédiats d'un attentat sur les attitudes vis-à-vis des minorités. Contrairement à d'autres attentats ciblant la population civile, celui-ci visait explicitement la liberté d'expression et un média satirique, ce qui peut avoir influencé différemment les représentations sociales.

L'analyse pose deux questions principales : (1) les attitudes envers les immigrés et les musulmans se sont-elles détériorées dans les semaines suivant l'attaque ? Et (2) dans quelle mesure le traitement médiatique du terrorisme a-t-il façonné ces attitudes ?

Données, échantillons et méthodes

L'étude utilise les données individuelles de l'ESS collectées en 2014-2015 dans 12 pays Européens. Ces pays présentent des niveaux de diversité, d'exposition aux migrations

et de contextes politiques variés. La fenêtre temporelle autour de l'attentat permet une quasi-expérimentation naturelle, en comparant les attitudes déclarées avant et après l'attaque.

Pour identifier l'effet causal, le chapitre mobilise plusieurs stratégies empiriques : des régressions OLS avec contrôles, des techniques d'appariement (propensity score matching, hybrid matching), et des méthodes issues de l'apprentissage automatique. La robustesse des résultats est vérifiée via des tests placebo, des analyses par sous-groupe, et une triangulation avec des données médiatiques textuelles analysées par Structural Topic Modeling (STM) et des grands modèles de langage (LLMs).

Principaux résultats

- **Effet moyen négatif européen :** L'attentat de Charlie Hebdo est suivi d'une baisse significative des attitudes positives envers les immigrés et les musulmans.
- **Forte hétérogénéité selon les pays:**
 - En France et en Allemagne, les attitudes sont restées stables, voire légèrement améliorées.
 - À l'inverse, en Irlande, en République tchèque et en Finlande, on observe un net recul des perceptions favorables.
- **Rôle des médias dans les différences nationales:** En combinant les données ESS aux analyses de contenu de la presse (via STM et LLMs), le chapitre montre que la tonalité médiatique est un facteur explicatif déterminant.
 - En France, les médias ont mis l'accent sur l'unité nationale, les valeurs républicaines et le rejet du terrorisme, sans insister excessivement sur l'immigration.
 - En Allemagne, les récits médiatiques ont promu le dialogue interreligieux et la solidarité.

- En revanche, dans les autres pays, les discours médiatiques ont davantage lié terrorisme et immigration, en insistant sur la menace islamiste et les failles de l'intégration.
- **Effets renforcés dans les pays peu exposés à la diversité:** Les analyses par sous-groupes révèlent que les effets négatifs sont plus prononcés dans les pays où les contacts avec les populations immigrées sont faibles. Ce résultat est cohérent avec l'hypothèse du contact : là où les interactions sont rares, les stéréotypes négatifs sont plus sensibles aux chocs médiatiques.

Discussion et implications

Ces résultats appellent plusieurs enseignements. D'abord, ils montrent que l'impact des attentats ne peut être généralisé : il dépend du contexte local et du cadrage médiatique. Ensuite, ils confirment que les médias ne sont pas de simples relais de l'information, mais des acteurs puissants qui modèlent les perceptions sociales. Enfin, ils soulignent que des messages médiatiques apaisants peuvent limiter, voire inverser, les effets de polarisation attendus à la suite d'un attentat.

Contrairement aux prédictions des théories de la justification du système (SJT) ou du conflit intergroupe (ICT), les résultats pour la France et l'Allemagne suggèrent qu'un traitement médiatique responsable peut prévenir la montée des préjugés. Ce constat plaide pour une vigilance accrue quant au rôle des médias en période de crise, notamment pour éviter les amalgames entre immigration, islam et terrorisme.

1.3.3 Chapitre 3 — Terrorism Threat And (Mis)-Allocation Of Consumption: Evidence From French Household Data

Ce chapitre explore comment les perceptions de menace terroriste, façonnées par la couverture médiatique, modifient les comportements de consommation des ménages français.

À travers une approche comportementale enrichie par un modèle théorique simple et des données de consommation à haute fréquence, ce travail démontre que la peur liée au terrorisme entraîne des ajustements significatifs, mais coûteux, dans les modes de consommation. En particulier, les individus cherchent à éviter les lieux perçus comme risqués, au détriment de leurs préférences économiques habituelles.

Objectif et contribution

Alors que les chapitres précédents analysaient les effets politiques et attitudinaux du terrorisme, ce troisième chapitre examine les conséquences économiques micro-comportementales : comment les consommateurs réagissent-ils à un climat de peur alimenté par les médias ? L'objectif est de quantifier l'impact du risque terroriste perçu sur les décisions de consommation quotidiennes, en termes de choix d'enseignes, de fréquence des achats et de niveau de prix.

Ce chapitre enrichit la littérature sur l'économie du comportement en situation de crise, en y intégrant la médiatisation des menaces sécuritaires comme variable centrale. Il constitue également une contribution à l'économie des conflits, en illustrant les effets indirects mais concrets du terrorisme sur les comportements économiques de masse.

Modèle théorique

Le cadre théorique repose sur une modélisation simple de l'arbitrage entre deux types de magasins :

- **Haut niveau d'interaction (HI)** : Hypermarchés, centres commerciaux – plus économiques, mais perçus comme plus risqués en contexte de menace terroriste.
- **Faible interaction (LI)** : Commerces de proximité, achats en ligne – plus chers, mais perçus comme plus sûrs.

Le consommateur maximise son utilité en arbitrant entre le prix, le confort, et la perception du risque. La menace terroriste agit ici comme un coût psychologique additionnel associé aux magasins HI.

Données et identification empirique

L'analyse empirique repose sur les données du panel Kantar Worldpanel couvrant les achats de plus de 10 000 ménages français entre janvier 2014 et décembre 2016. Ces données hebdomadaires très détaillées permettent d'observer :

- Le nombre de visites hebdomadaires en magasin,
- La part des dépenses dans les enseignes HI versus LI,
- Le prix moyen payé par produit,
- Les dépenses totales.

La menace terroriste est mesurée par la part hebdomadaire des articles de presse consacrés au terrorisme (indice de saillance médiatique), construite à partir d'une base de données textuelle de la presse française. Cette mesure permet de capturer l'évolution de la perception du risque dans le temps, indépendamment du nombre réel d'attentats. La stratégie d'identification repose sur des variations temporelles du climat médiatique, combinées à des effets fixes hebdomadaires et régionaux.

Résultats principaux

- **Réduction des visites en magasin HI** : Lors des pics de menace terroriste médiatisée, les ménages réduisent significativement la fréquence de leurs visites dans les magasins à forte interaction. Cette baisse atteint jusqu'à 10% par rapport aux périodes de faible exposition médiatique.

- **Repli vers les options LI plus coûteuses** : La baisse des visites HI s'accompagne d'un déplacement des achats vers les commerces de proximité ou en ligne. Ces canaux, bien que plus chers, sont préférés en période de risque perçu, ce qui constitue une forme d'évitement comportemental du risque.
- **Augmentation des prix moyens payés** : Ce repli vers les enseignes LI entraîne une hausse moyenne des prix de 0,5%, sans réduction significative des dépenses totales. Les ménages continuent à consommer, mais à un coût plus élevé, traduisant une perte de bien-être.
- **Hétérogénéité des effets** : Les effets sont plus marqués :
 - chez les familles avec enfants,
 - dans les grandes agglomérations (où le risque perçu est plus élevé),
 - chez les ménages à revenu intermédiaire (les plus sensibles à l'arbitrage entre sécurité et prix).

Discussion et implications

Ces résultats suggèrent que le terrorisme, au-delà de ses effets directs, engendre des coûts économiques diffus via la peur et les comportements d'évitement qu'il suscite. Les consommateurs s'auto-restreignent en modifiant leurs habitudes, ce qui génère une forme d'inefficience comportementale : ils paient plus cher pour un même panier de biens.

Le rôle des médias est ici central : c'est la perception du risque, et non le risque objectif, qui détermine les ajustements de consommation. Ce chapitre démontre ainsi que la médiatisation du terrorisme peut produire des effets économiques indirects significatifs, notamment en modifiant les équilibres de marché entre différents types d'enseignes.

Enfin, cette analyse ouvre la voie à des politiques publiques de communication de crise : en modulant le ton et la fréquence des messages liés au risque, les autorités et les médias peuvent limiter les effets négatifs de la peur sur l'économie domestique.

2

Chapter 1. Terrorism, Media Attitudes Towards Migration and Votes: Evidence from France

Joint work with Daniel Mirza¹ ; Matthieu Picault² and Ahmed Tritah³

¹University of Tours, Laboratoire d'Economie d'Orléans (LEO) and CEPII (Paris)

²University of Orléans and Laboratoire d'Economie d'Orléans (LEO)

³Université de Poitiers and Laboratoire d'Economie de Poitier (LèP).

Abstract

This paper investigates media attitudes towards migration in the aftermath of terrorist attacks and examines their impact on voting outcomes. Using natural language processing (NLP) methods, we analyze French news articles on immigration before and after three major terrorist events in 2015 and 2016. Our findings show how salience of immigration in the French media have increased for over 7 weeks after the attacks. Importantly, within the first three weeks, when linked to "Muslims" or "(in)security" related issues, we document that it has been multiplied by 5. Besides, the tone of reporting decreased dramatically although this effect was shorter-lived, lasting up to two or three weeks. In terms of the electoral impact, we find that municipalities with higher exposure to negative media coverage saw a corresponding rise in votes for the main anti-migrant party during the *Élections Régionales*, held three weeks after the Bataclan attack. On average, the media contributed about 3% to the increase in anti-migrant vote share, with contributions reaching figures higher than 20% in some localities.

Keywords: Terrorism, Immigration, Media, Elections, France

JEL Classification: F51, F22, L82, D72

2.1 Introduction

Terror events tend to produce limited and short-lived effects on the economic activity of advanced economies, except when they are persistent (see Sandler and Gaibullov (2022) and Abadie and Gardeazabal (2008)). While the economic impact of terrorism has been extensively studied, one question that remains underexplored is how terrorism affects public attitudes towards migrants in the longer run, leading to more discrimination and requirements for more stringent policies against migrants. Especially, it is important to understand what is the particular role of the media in shaping these attitudes.

In this paper, we offer a new perspective by examining how media coverage, particularly in its tone and salience regarding migrants, evolves in response to terrorist attacks and how these changes, in turn, influence public support for anti-immigration policies.

Why is it important to concentrate specifically on the media's induced changes in attitudes towards migrants in western economies, especially towards Muslim origin migrants, after terror shocks? One of the key objectives of radical terrorist organizations is to create divisions between Muslim and non-Muslim communities, thus encouraging individuals of Muslim origin to align with their cause in developed countries. If media outlets adopt a more negative stance towards Muslim migrants following terrorist events, this could amplify negative attitudes towards this group, inadvertently supporting the terrorists' broader goals.

The first aim of this paper is to evaluate how acts of terrorism influence the discourse on migrants in local and national news. Specifically, we seek to quantify the intensity, tone, and duration of changes in media behavior towards migrants in the aftermath of terrorist attacks. The second objective is to measure the extent to which these shifts in media coverage translate into changes in voting behavior, potentially leading to longer-term political impacts of terrorism.

We analyze news articles on immigration published in most French local and national newspapers between 2014 and 2016, being recorded in the Europress and Factiva online databases. Depending on the reported newspaper, up to 90% of the articles published online were also published in hard-paper print editions⁴. Using Natural Language Processing (NLP) methods, we construct a weekly dataset at the media level, which reports the salience (share) and tone of immigration-related news articles. Through event study techniques, we estimate how terrorism alters the salience and tone of migration coverage and the duration of these shifts.

Our analysis focuses on three major terrorist attacks that occurred in France between 2015 and 2016: (i) the Charlie Hebdo shooting on January 7, 2015, (ii) the Paris terrorist attacks of November 13, 2015 (targeting the Bataclan concert hall and the Stade de France), and (iii) the Bastille Day attack in Nice on July 14, 2016. We hypothesize that these events significantly influenced media reporting on immigration, particularly with regard to Muslims, for three reasons: (1) the perpetrators were either first- or second-generation migrants from Muslim-majority countries; (2) the attacks targeted important symbols of French culture and values; and (3) the attackers were linked to or inspired by Islamist groups, potentially causing confusion in media reporting between Islamist ideology and the Muslim religion, to which many immigrants in France belong.

Our findings indicate that these terrorist attacks triggered increased media attention on immigration and a marked deterioration in the tone of articles mentioning immigration. Specifically, after a major terrorist event, the words "immigration" or "migration" were more frequently associated with terms like "Muslims" or "(in)security". This resulted in a significant increase in media coverage of these topics, with a multiplication by 5 of our salience measure observed in the first three weeks following an attack across various media outlets. This increase subsequently falls down to around 30-50% in the following weeks, returning to baseline levels about six to seven weeks after the attack. The shift in tone, while

⁴See https://www.discoverfrance.net/France/DF_media.shtml

shorter in duration (up to two weeks), was notably severe, with negative tone increasing by almost 100% compared to pre-attack levels. Interestingly, both salience and negative tone shifts were at least as significant, if not more so, in left-leaning newspapers compared to right-leaning ones.

In the second part of this paper, we explore how media exposure influences public behavior. It is plausible that both journalists and the general public are psychologically affected by a major terror shock, potentially leading to a statistical correlation between changes in public attitudes towards migrants and changes in media behavior. However, this paper aims to identify a direct causal relationship between media exposure and changes in public voting behavior, beyond the direct psychological impact of the shock itself.

To address this, we first identified an election close enough to an important terror event: the *Élections Régionales*, a nationwide election held at the municipal level on December 6, 2015, just three weeks after the Bataclan attack on November 13. Using data on local market shares of media outlets, we constructed a weighted average exposure measure for each municipality, capturing how changes in media behavior affected different groups of voters. This cross-local variation in media exposure was then tested as a predictor of differences in voting outcomes across municipalities.

Our results show that greater exposure to media salience and negative tone is clearly associated with increased support for the main anti-immigration party in France at the municipal level. This finding holds even after applying various strategies to mitigate potential endogeneity between media exposure and voting behavior. Across all localities, the median contribution of immigration coverage to the vote share in favor of the main anti-migrant party (Front National/Rassemblement National) is approximately 3%. However, this small average effect hides a significant heterogeneity across *Départements*. The lowest contribution is around 0.76%, while the highest contribution, is around 24%.

This paper contributes to four strands of literature. First, the political science literature has shown that media often focus disproportionately on specific migrant groups, frequently portraying them negatively. For example, the intensity of media reporting on minorities often does not reflect their actual demographic presence, as is the case with refugees, who are often overrepresented in media coverage compared to their share of migration statistics (Blinder and Allen, 2016; Lubbers et al., 1998; Ter Wal, 2002). When differentiating migrants by religion, Muslim immigrants are the most prominent group in media coverage (Moore et al., 2008), and in the U.S., Latino migrants receive the most negative coverage (Valentino et al., 2013). Media visibility of immigration has been shown to increase public anti-immigration attitudes (Benesch et al., 2019b; Van Klinger et al., 2015). In the context of France, Schneider-Strawczynski and Valette (2021) finds that immigration news polarizes attitudes, while other research shows that media coverage of the refugee crisis strengthens Euroscepticism (Harteveld et al., 2018).

Second, the literature on crime shocks and attitudes towards migrants shows that when the foreign origin of offenders is highlighted, public attitudes and policies towards migrants become more negative. Couttenier et al. (2021) finds that increased reporting on crimes committed by foreigners boosts anti-Muslim votes in Switzerland. Conversely, Keita et al. (2021) finds that highlighting the native origin of criminals reduces public concerns about immigration. Djourelouva (2020) shows that newspapers avoiding the term "illegal immigrant" lead to less support for restrictive immigration policies.

Third, a growing body of research explores the relationship between terrorism and attitudes toward migrants. Some early studies focused on single-country cases, while more recent work uses cross-country surveys (see Castanho Silva (2018), Legewie (2013), and Ferrín et al. (2020)). The evidence is mixed: negative shifts in attitudes are not always observed. However, Ferrín et al. (2020) finds that the Bataclan attack had a negative impact

on attitudes toward immigrants, particularly among educated and left-wing individuals in France.

Finally, a limited number of studies examine the relationship between terrorism and voting behavior. Montalvo (2011) conducts a natural experiment on the 2004 Madrid bombings and finds that the attacks led to a clear shift in votes against the incumbent party, which had supported the Iraq war. Balcells and Torrats-Espinosa (2018) studies voting behavior after ETA attacks in the Basque region and finds an increase in voter participation but no significant shift in support for the incumbent party. However, these studies do not examine the role of the media in shaping voting behavior towards anti-migrant parties.

The rest of this paper is organized as follows: In the next section, we present our data and methodology for analyzing the salience and tone of media articles. Section 3 presents our first set of results on the impact of terror shocks on media behavior. In Section 4, we examine how these changes in media behavior influence voting outcomes in favor of anti-migrant parties. Section 5 concludes with a discussion of our findings and avenues for future research.

2.2 Data and methods

2.2.1 Media database

To assess the discourse on migrants around the period of terrorist attacks, we extract articles from the French local/regional, and national newspapers on Europress and Factiva. We focus our extraction on articles (i) published between October 1, 2014 (3 months before the Charlie-Hebdo terrorist attack) and October 31, 2016 (3 months after the attack of Nice) that (ii) contain at least one occurrence of either “immigrants(s)”, “migrant(s)” or “migration”.⁵ After removing duplicate articles, our corpus included 65,683 papers.

⁵The corresponding words in French are “immigré(s)”, “migrant(s)” or “immigration.”

However, some articles using those words concerned topics that were irrelevant to our study. We apply the Latent Dirichlet Allocation method (LDA, Blei et al. (2003)) in the Natural Language Processing (NLP) literature to identify irrelevant topics and corresponding articles within these topics that need to be removed. The LDA method is a generative statistical model (probabilistic modelling tool) that is capable to generate topics from a collection of articles, based on similarity of words being used across these articles. Jelodar et al. (2019) offer a survey on the use of LDA.⁶ LDA relies on two assumptions to construct its corpus of topics : (i) the documents that discuss the same topic will use similar words (ii) the main topic of discussion in a document is defined by the words used in the document. In the first corpus of topics delivered by our LDA⁷ based on these assumptions, articles under two particular themes related to non human migration –namely animal migration and data migration– were excluded.

After those two topics were removed, a second round of collection of articles by our LDA method returned 24 topics for human-specific migration. Figure 4.3 presents those 24 topics and, for each topic, the 20 most relevant words. Some topics appeared more relevant to our study than others. In particular, after having manually read a random group of about 100 articles belonging to topics 9 (“theatre/movie”), 10 (“movie/film”) and 17 (“club/sports”) related to leisure activities, we have withdrawn them. Our readings confirmed that they were indeed irrelevant to the question being treated in our study. On the opposite, while we thought topic 1 and topic 19 to be potentially irrelevant, the manual reading of articles belonging to these topics showed that they detail or narrate events organized either at a town or city level (Topic 1) or messages relayed by Christian authorities (Topic 19), both being related to migrants and being eventually, relevant to our study. After these adjustments and checks, we were left with 56,331 articles mentioning migration with 75% of those from

⁶See also ? for another use of LDA on media articles related to migrants.

⁷The pre-processing includes both stopwords removal and lemmatization using Spacy. The LDA was performed with 24 topics, a symmetric alpha, an update every 5 documents, a chunksize of 2000 documents and 2 passes.

local newspapers and the remaining 25% from national newspapers that have constituted our working database for the rest of our study.

2.2.2 Measuring Media Salience

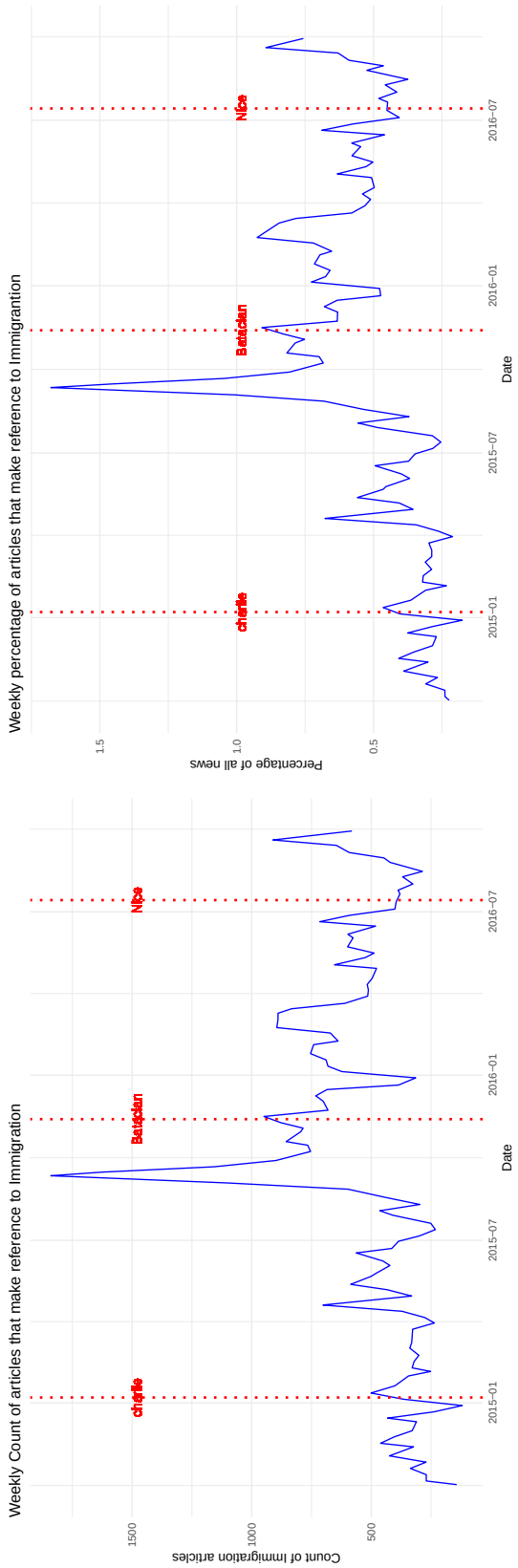
First, we focus our attention on the relative importance of immigration in the media landscape by measuring the salience of immigration news in the French media. The salience of migration in a given media (a typical journal) can be simply measured in terms of counts of articles mentioning migration. It can also be expressed in terms of shares, where the share measures the ratio of the former (article counts) to the total number of articles published by the journals at a given point in time (Boomgaarden et al., 2010).

Figure 2.2a presents the simplest measure of migration salience, through counting all published articles in France mentioning migration, at the week level. Figure 4.4 presents an alternative figure of salience in terms of *shares*, where the total number of papers related to migration is divided then by the total number of articles published by all of these journals in a week. Probably because the denominator varies very little overtime, the evolution of the two measures happen to be very similar, both showing strong variation in media attention to the issue of immigration over time, with immigration salience reaching the highest levels around August-September 2015. These two months concern indeed the European refugees' crisis when European countries received more than 1.2 million asylum applications according to Eurostat. The peak of our share and count measures also corresponds to the death of Aylan Kurdi by 2 september 2015, the two years old boy refugee whose image made most of the media headlines at that time. Note however that these figures do not change much after the main attacks we are concerned with: as one can see, a slight increase in media attention to immigration follows the shooting of Charlie Hebdo on January 7, 2015, and the November 13, 2015 attack in Paris. The increase in media attention following the Nice attack on July 14, 2016, is not directly observable.

Nevertheless, when we investigate the salience of articles mentioning together the words "immigration/migration" and "islam/muslims" (not to be confounded with islamism/islamsits), the figures change dramatically. From Figure 2.2c, we observe that, following each of the three terrorist attacks, there is significant increase in news articles discussing simultaneously immigration and Muslims. From a count of around 10 to 20 articles related to both family of words before Charli Hebdo attack, the count headed to more than 100 articles the week after the attack, then stagnated at an average of 25 to 30 article several weeks after the attack. The attack of November 13, 2015 generated again, a very large reaction from the media in terms of salience of news articles citing immigration and Muslims related words, with tendencies reaching back the same levels than those before november 13, few weeks later. Interestingly, although the media reacted to Nice's attack too, the magnitude of that reaction appeared to be smaller.

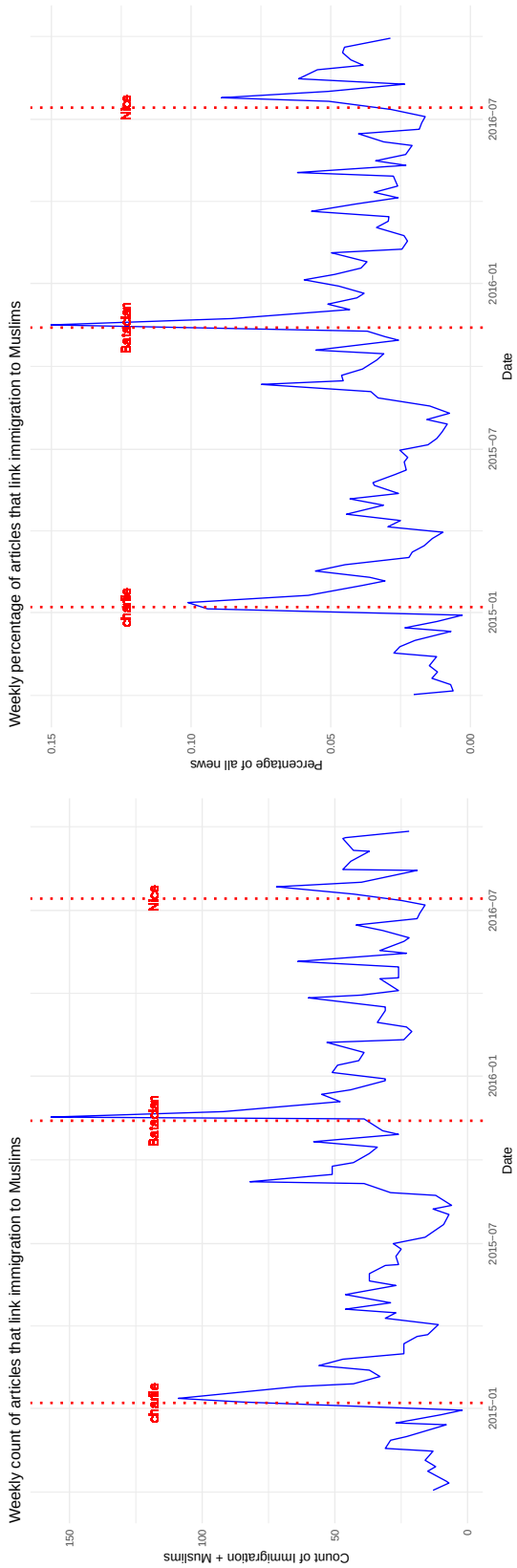
Figure 2.1 Word-cloud based on the LDA algorithm





(a) Salience of Immigration news as count

(b) Salience of Immigration News as Percentage of All News



(c) Salience of Immigration + Muslims as count

(d) Salience of Immigration + Muslims as Percentage of All News

Notes: Blue line is our measure of weekly salience score in the French newspapers $Salience_w$ obtained from Equation 4.4. Vertical red dashed lines indicate the date of the three major terrorist attacks within the time frame of the study.

2.2.3 Measuring Media Tone

Second, and in addition to the salience of migration in newspapers, the way articles discuss such topic is of outmost importance. To identify the tone of articles on immigration, we used a Dictionary-based approach with a list of positive and a list of negative words. We count the occurrences of these positive and negative words, then compute the relative difference between them at the article level. The $Tone_i$ of each article i is given by:

$$Tone_i = \frac{W_i^P - W_i^N}{W_i^T} \quad (2.1)$$

where W_i^P is the number of positive words, W_i^N the number of negative words and W_i^T is the number of total words within an article i . This measure provides a score that lies between -1 and +1 (Lawlor, 2015).

By construction, such measure does not discriminate between the journalist who writes the paper view and influential people's view being referred to in the paper. For instance, in a far-right journal, one would expect a negative tone towards migrants, whereby the journalist presents the view of a politician as a support to his own sentiment. In a centre or left-wing journal, a journalist might still evoke a politician which has negative attitude about migrants but could still soften (or even contradicts) the politician discourse through the use of some counter-arguments. What is important then is whether or not this measure is likely to capture the general tone of the article written by the journalist. We discuss this point in the next subsection.

Nevertheless, let us go back for now to our $Tone$ measure in equation 1. Some issues arise here about the right dictionary to use. Which words should define this dictionary? Which should be chosen to have positive connotations? Which could be associated with negative connotations? We discuss and analyze three options. A first option is to pick a dictionary in the french language, publicly available. A second option is to build our own

dictionary, due to the specific features of immigration related subjects, and the contextual words being used then. A third option is to let an artificial intelligence do it on our behalf.

Publicly available french dictionary

Very few dictionaries are publicly available for tone analysis of the French language. To our knowledge, the only available dictionaries for tone assessment of French news articles are the French translation of two dictionaries developed primarily for the English language. the first is the Linguistic Inquiry and Word Count (LIWC, Piolat et al. (2011)) dictionary. It focuses on words with psychological meaning. The second is the Lexicoder Sentiment Dictionary (LSDFr Duval and Pétry (2016)), designed to differentiate between the negative and positive tone in a political text. Neither of them were specifically designed for immigration-related texts, however. Rather they were built for political texts in the general sense, including economics, crime, foreign affairs, environment-related texts, etc.

That being said, we begin by constructing a *Tone* measure based on the LSDFr dictionary mentioned above⁸ that we then apply to our 56,000 articles in our database.

To validate this dictionary in our context and the *Tone* measure on which it is based, we picked randomly 200 articles (that we shall refer to them as validation series articles or 'V-series' articles) and distributed them among us 4 co-authors. We read carefully each of these V-series articles (with the publishing journal name hidden to ensure unbiased scoring). We then classified each article in function of our own perception (i.e. *subjective* appreciation) of the dominant tone that comes out from each article: a positive, neutral, or negative dominant tone. At the end of the process, 43.4% of articles were classified as having a general negative dominant tone, 31.6% as being rather neutral, and 25% to be associated with a general positive dominant tone. Figure 31 in the appendix shows the distribution of net tone scores based on LSDFr dictionary, across our three different subjective perceptions. The net tone based on the LSDFr dictionary showed limited coherence with our perceptions. It

⁸LIWC was not tested due to its focus on non-political texts and its cost.

tended to be negatively biased across the three possible dominant outcomes. The distributions did not change much across the three perceptions, while they were expected to shift upward when turning from a negative dominant perception to a neutral one, and again further upward when turning from a neutral perception to a positive dominant perception.

This disappointing outcome can be explained by the idea that such a general dictionary, is not specific to the context being under study. Words can have different inclinations depending on the context (Loughran and McDonald, 2011). For example, the widely used Harvard psycho-sociological dictionary can be ill-suited for financial applications (Gentzkow et al., 2019). Another example, applied to our case of immigration is the word “security”, considered to be positive in general, including within dictionaries with a larger scope such as the LSDFr. We have conducted a context analysis through reading randomly articles referring to the word *security* in our context which revealed that *security* has a negative connotation when used in the context of immigrants. The word is principally used to point out to security concerns which are raised by immigrants. Additionally, for a dictionary to work well, the classification of the words must closely align with how the words are used in a particular context. If a dictionary is developed for a specific application, then this assumption should be easy to justify. But when dictionaries are created for a larger scope, this assumption becomes difficult to justify (Grimmer and Stewart, 2013).

Given the lack of a suitable dictionary for the tone analysis of immigration news in french and to avoid potential miss-classification, we then propose to create a problem-specific dictionary. Our aim is to capture the definitive meaning of words therefore, following Young and Soroka (2012).

Human-based, context-specific, dictionary

To build our own dictionary, we select, again randomly, 200 new articles from the corpus. We refer to these articles as A-series articles in what follows. Our objective is still to identify

and categorize words with positive or negative connotations. Our hypothesis is that words that would appear out of these 200 articles to have positive or negative connotations in our view, are representative of the words that should be retrieved in the rest of the nearly 56,300 articles at hand related to immigration. Based on this assumption, we can then compute a new net *Tone* measure using Equation 2.1 above, for each and every article in our database.

Going back to the choice of our words to be included in the dictionary, the 200 articles that constitute our A-series, were equally and randomly distributed among the four of us (i.e. co-authors and coders). Through our reading, a word was included in our dictionary if at least three coders classified it as positive or negative. For ‘positive’ or ‘negative’ words classified by fewer than three coders, we employed additional strategies. First, we examined different uses of the word in the corpus, reviewing at least 10 and up to 30 instances if necessary. The final decision regarding the word’s classification was made through team meetings. Words with multiple meanings or tricky contextual usage were excluded from the dictionary.

We accounted for basic negation patterns and word boosters that modify or amplify the meaning of certain words. When a positive word in our dictionary is preceded by a negation,⁹ its score is multiplied by -1, reversing its connotation, and vice versa. We also included boosters: when one of the words in our dictionary is preceded by an amplifier,¹⁰ its score is multiplied by two. The final dictionary is available in Appendix .3 and is composed of 1504 words, with 517 positive words and 987 negative words.

To validate our dictionary and new *Tone* measure, we compared the outcomes with this measure to the overall perceptions of the coders. One simple way was to go back again to the 200 V-series articles (see above sub-section), and confront the already existing

⁹List of negative terms: pas, ne, n’, jamais, plus, rien, aucunement, nullement, sans.

¹⁰List of amplifiers: absolument, archi, beaucoup, bigrement, bougrement, carrément, complètement, considérablement, cruellement, davantage, diablement, diantrement, divinement, drôlement, entièrement, exceptionnellement, excessivement, extrêmement, fabuleusement, grandement, hyper, impeccablement, incroyablement, infiniment, joliment, merveilleusement, prodigieusement, profondément, rudement, sacrément, spécialement, sublimement, superbement, tellement, terriblement, totalement, trop, très, ultra, vachement, vraiment, énormément.

appreciation of the coders (positive, neutral or negative dominant tone for each article) to our new dictionary-based *Tone* measure.

Figure 2.3 Author's Dictionary Validation by Themselves

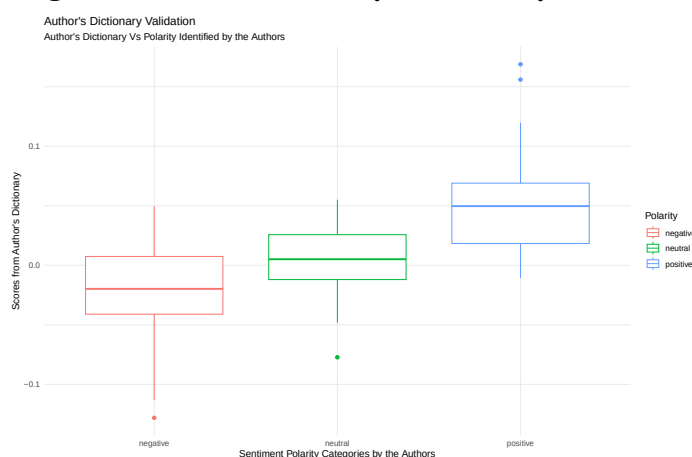


Figure 2.3 shows the distribution of net tone scores across the three different subjective perceptions of the coders. Our dictionary performed very well, accurately distinguishing between articles with different tones. A very high proportion of articles measured as negative in net by our dictionary were actually already perceived as negative by our own readings, articles we perceived as neutral had their net tone measure lying mostly around 0, and positively perceived articles by our readings received mostly positive scores by the net tone measure based on our dictionary.

Machine-based dictionary

Some might argue that our choice of positive or negative words in an article, or our perception of the general tone of an article as researchers, might be different from those of a representative journalist writing his or her article. We thus proceeded by constructing an alternative dictionary using GPT-3.5 Turbo (ChatGPT), a popular large language model developed by OpenAI. We used ChatGPT to classify words with positive or negative

connotations in the same 200 A-series articles originally given to human coders.¹¹ From there, we then constructed an alternative measure of tone using Equation 2.1, with positive and negative words returned by the machine classification instead of our own (human-based) classification. Figure 3.2 in the appendix reproduces Figure 2.3, with the measure of net tone now based on the Machine-based dictionary. The two figures, the one based on machine tone scores and the figure based on our own dictionary, appear to be very much consistent.

As an ultimate cross-check, we considered again the 200 V-series articles and let now ChatGPT give its own perception about the dominant tone of each of these. Namely, we used it to classify these articles as positive, neutral, or negative based on their *dominant* tone.¹² We then compared the tone of articles annotated by human readers with the measure delivered through the ChatGPT-constructed dictionary. Figure 28 in the Appendix shows the result. Our hand-coded measure appears to be very consistent, again, with the general tone returned by ChatGPT.

Figures for the Tone measure

In the rest of the paper, we show the results related to our own-based dictionary. It will be our measure of reference throughout the paper. We use alternatively the ChatGPT based dictionary as a robustness check (mainly in the econometric work in section 4). It actually appears to be providing very similar results.

¹¹We used the following prompt to get the list of positive and negative words: *I will provide you with a news article about IMMIGRATION. Your task is to read the article and identify all the words that, in your opinion, have a positive or negative connotation. The goal is to identify and classify each word that could help determine the tone of the article. Therefore, you should return two lists of words (positive and negative words from the text).*

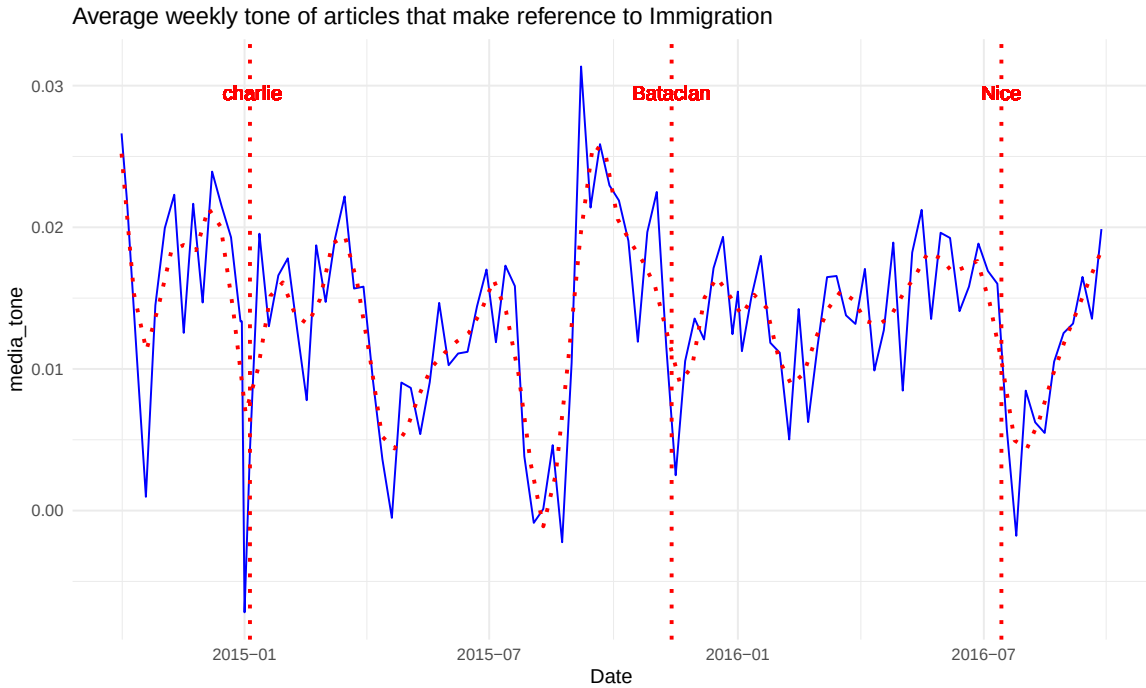
¹²The prompt used to classify the news articles for the validation task was: *Determine the overall tone of the following article in relation to the issue of migrants. Possible tones: Positive, Neutral, or Negative. Important Instructions: The tone should be a composite measure based on: (A) The relative negativity or positivity of the actual events or issues covered in the article (50%). (B) The newspaper's opinions or stance on these events and issues (50%). Justification: Provide a detailed justification for your choice, addressing both (A) and (B) specifically.*

We begin by computing a weekly average tone score $Tone_w$ as follows:

$$Tone_w = \frac{\sum_i Tone_i}{N_w^M} \quad (2.2)$$

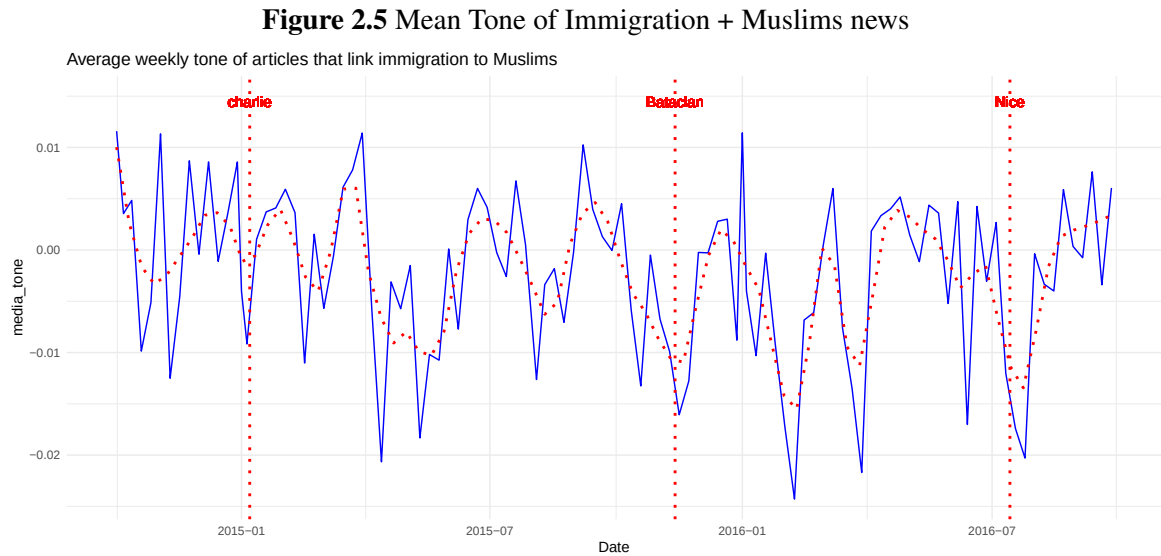
where N_w^M is the total number of news articles about immigration published in week w and $Tone_i$ is tone score of article i related to migration, computed using Equation 2.1. We also compute a by-journal measure, based on the same equation. In Figure 3.3, we show our measures of average weekly tone about immigration and in Figure 2.5, we also plot measures of average weekly tone on immigration referring also to Muslims (the measures are computed here over all journals in our database). Both figures show that the tone of immigration-related news varies significantly from one week to another with many of the important dips coinciding with weeks of terrorist attacks. Both measure are volatile.¹³

Figure 2.4 Mean Tone of Immigration news



Notes : Blue line is our measures of average weekly tone of news articles about immigration from Equation 2.2. The red dotted line is a weekly moving average. Vertical red dashed lines indicate the date of the three major terrorist attacks within the time frame of the study.

¹³Very similar figures, available upon request, are obtained with the ChatGPT based dictionary.



Notes : Blue line is our measures of average weekly tone of news articles about immigration and Muslims from Equation 2.2. The red dotted line is a weekly moving average. Vertical red dashed lines indicate the date of the three major terrorist attacks within the time frame of the study.

Surprisingly, in contrast to previous findings claiming that news about immigration are generally negative, our data from figure 4 shows that news about general immigration are not negative in general. To the contrary, they appear to be much more frequently positive and, only occasionally negative. On average, the value of the average weekly tone appears to be around 0.015. Besides, the number of positive words appears to be exceeding that of negative ones by 1.5 percent on average during the period.¹⁴ Figure 3.3 still shows that the tone related to immigration *in general* is being dramatically deteriorated after our three major shocks.

From Figure 2.5, we observe that the news discussing immigration while linking it to Muslims is around 0 before Charlie's events and become rather negative on average after Charlie's events. One needs to wait for the end of the period of terrorism in France (after Nice events) to see a sort of recovery trend, again towards an average value a slightly higher than 0, for the last months of observations in our data. That being said, compared to the salience measure where peaks are being observed in the presence of the terror shocks, the dramatic

¹⁴For a text of 1000 words say, one would observe 15 more positive words than negative ones related to the subject of immigration.

decrease in the net tone does not seem to be observed in the same proportions when articles refer to Muslims (compare Figure 2.5 to 2.2c). This observation is consistent with a narrative where the media, despite evoking much more the muslim's community just after the events, might be adopting a rather cautious tone, while still more negative than usual. Nevertheless, when it does not mention muslims, it seems to talk about immigration in general with a much more negative tone after the shocks compared to its behaviour before the shock (i.e. Figure 3.3). Such fact could be consistent with a rather cautious attitude by the media in general of not willing to stigmatize muslims *per se* in times of terror, in particular when adopting a negative tone about immigration, in general.

2.2.4 Political orientation: salience and tone

Then, we look at how salience of immigration in the media and the tone towards immigration have been changing across the journals' political orientation. To simplify, we consider two periods: a period before the beginning of the terror wave (Sept. 2014-Dec. 2014) and a period after the beginning of the terror wave encompassing the three major terror acts and many other smaller scale acts and threat related to terror (Jan. 2015- Dec. 2016).

We use the classification issued by the main political science institution in France (SciencePo) informing about the political orientation of each journal. We group them across three groups: Right leaning, Centre and Left-leaning journals.¹⁵ For the rest of the journals not classified by Science Po, which happen to be exclusively regional/local journals, they were grouped into a fourth heterogenous category (Regional media).

We first look at whether one can find a pattern in the salience and tone data related to immigration across these four groups, in particular across the three political orientations of our journals. Figures 2.6a and 2.6b show the results. When concentrating on the salience

¹⁵The right oriented journals include together far right and traditional right/conservative related media journals (Valeurs actuelles, Le Figaro, Le Point and l'Express). The left oriented group includes the left and far-left related journals (La Croix, Libération, l'Humanité).

measure (Fig. 2.6a), it seems that the left leaning journals talk mostly about immigration and even more so during the period of terror. Also, one can identify a U-shape curve across the three political orientations, where left and right leaning journals talk more about migration while the centre evokes less the migration subject than the rest, whether we look at the period before or whether we stick to the period during which terrorism events were active.

From Figure 2.6b, one can see however that a pattern emerges with respect of the tone scores across different orientations: for either periods, the right-oriented media expresses the least positive tone about immigration, while the left expresses the most positive one. Interestingly, taken together, regional newspapers seem to be expressing an even more positive tone on average about immigration. Nevertheless, during the period of terror this tone becomes less positive for all 4 categories, with still the same ranking across the 4 categories.

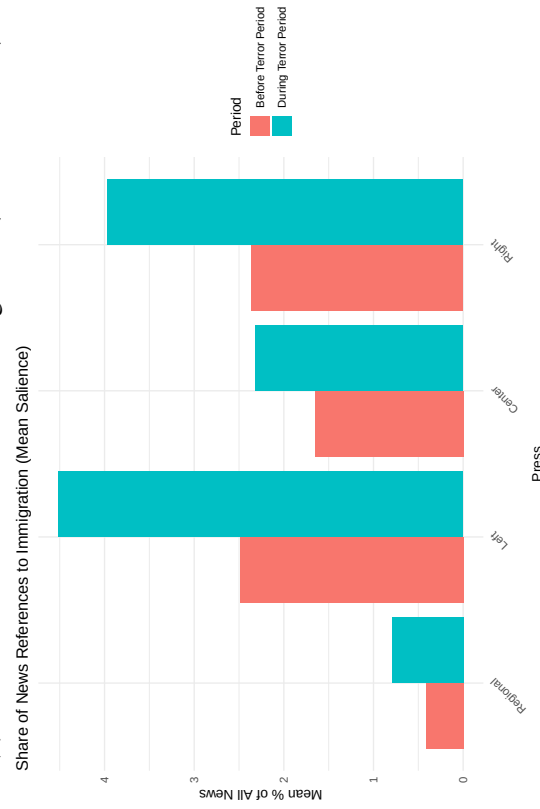
Now, for articles combining migration with muslims, the U-shape picture regarding salience is a bit different on its extremes, where one can see that right-leaning media seem to be talking now relatively more about muslims related migrants and even more so during the terror period. The tone adopted by the right leaning media, while being the most negative before the terror period across the three orientations, becomes less negative during the terror wave. Again, this is consistent with a situation where even the right leaning media might not want to stigmatize muslims during a very sensitive period and prefers talking more about muslims without necessarily expressing a more negative sentiment towards this muslim minorities, compared to what it usually does in normal time. A similar tendency appears for the left leaning media too, where the adopted tone about muslims is drastically reduced during the terrorism period.

Figures ?? to ?? in the appendix retrace the same series of figures with the three main orientations replaced by each specific journal. **Daniel: Mamadou peux tu mettre les figures qui retracent les tendance par journal, en appendix comme je l'ai indiqué dans la phrase.**

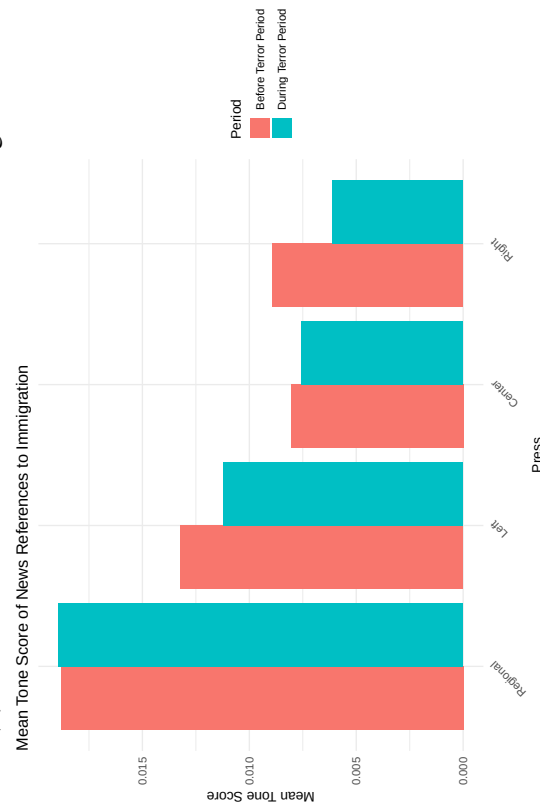
Si tu ne trouves pas le temps, enleve le terme 'in the appendix'. En tout cas il n'arrive pas à mettre un numéro aux figures pour je ne sais quelle raison. Here, similar tendencies are being observed across political orientations. One interesting thing to add here though is that the figures related to the right in the figures 2.6a to 2.6c are mostly driven by one newspaper, Valeurs actuelles, the far right media in France. Also, on the other other extreme, the centre-left and Christian journal (La Croix) is the journal adopting the more positive tone over the migrant community when associated with muslims.

Of course all these changes in media behaviour still need to be confronted to econometric outcomes in the next section where other factors are accounted for and controls are being undertaken. In particular, is there a real change in salience and tone the weeks lying just after a terror attack, when controlling for other factors, especially when one conditions out each journal's traditional view about migrants in normal times. Can we estimate these changes and do they last for long?

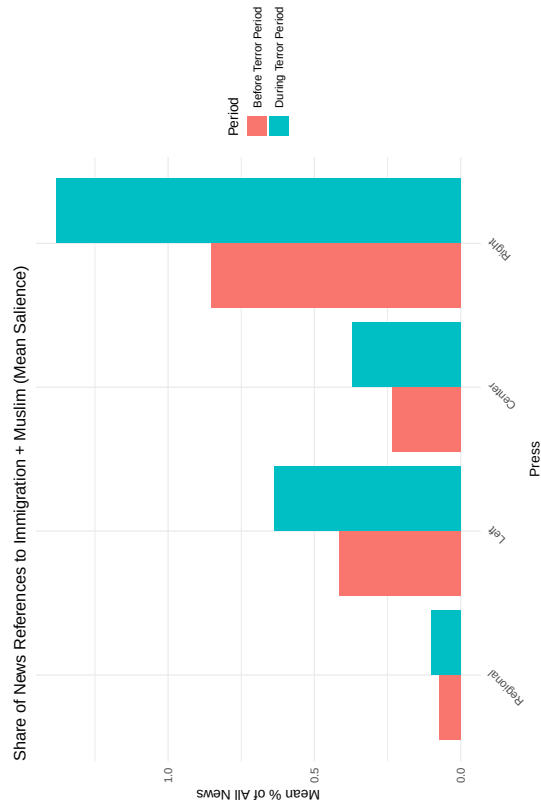
(a) Share of News References to Immigration (Mean Saliency)



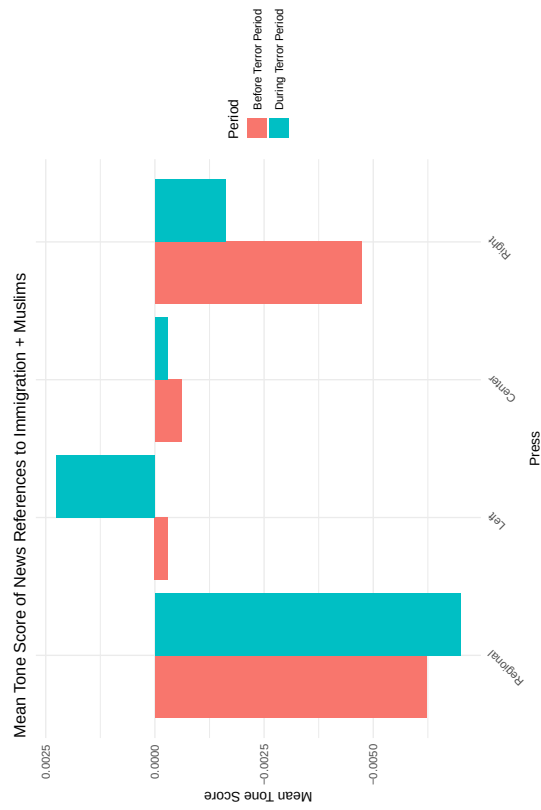
(b) Mean Tone Score of News References to Immigration



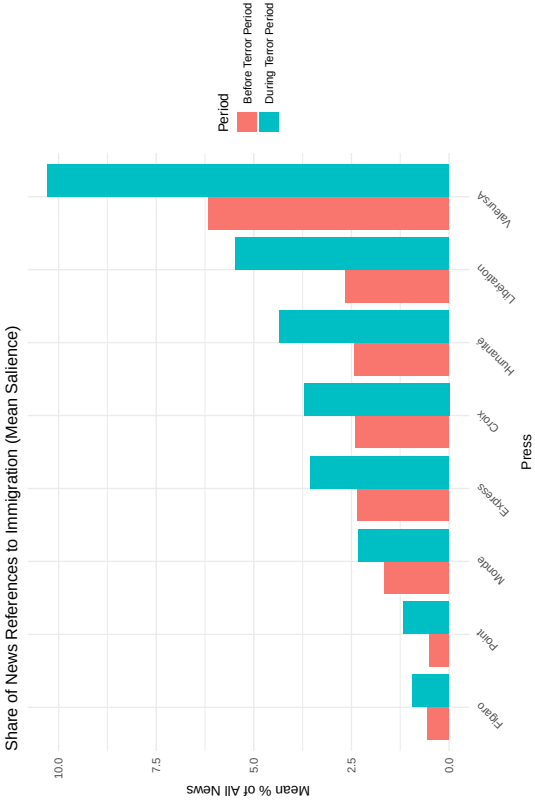
(c) Share of News References to Immigration + Muslims (Mean Saliency)



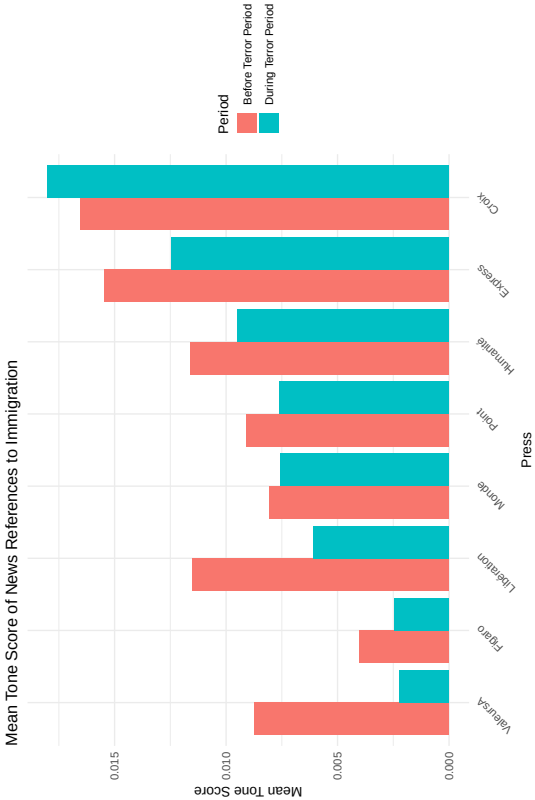
(d) Mean Tone Score of News References to Immigration + Muslims



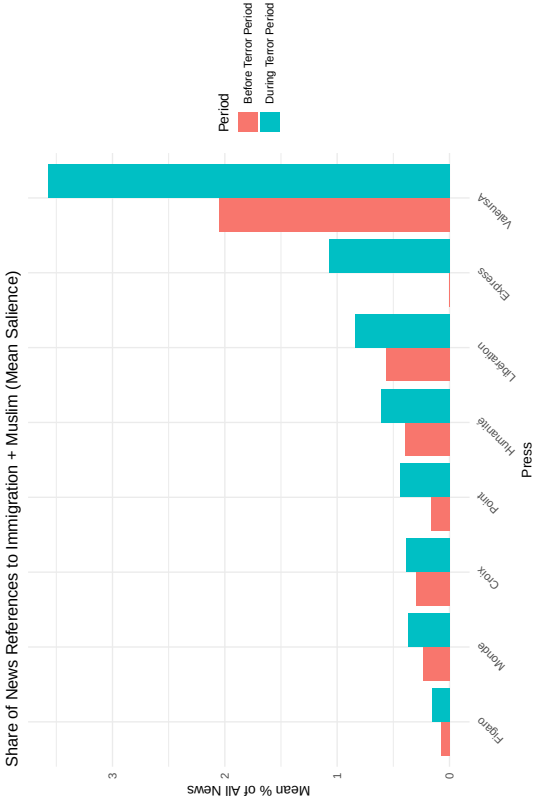
(a) Share of News References to Immigration (Mean Salience)



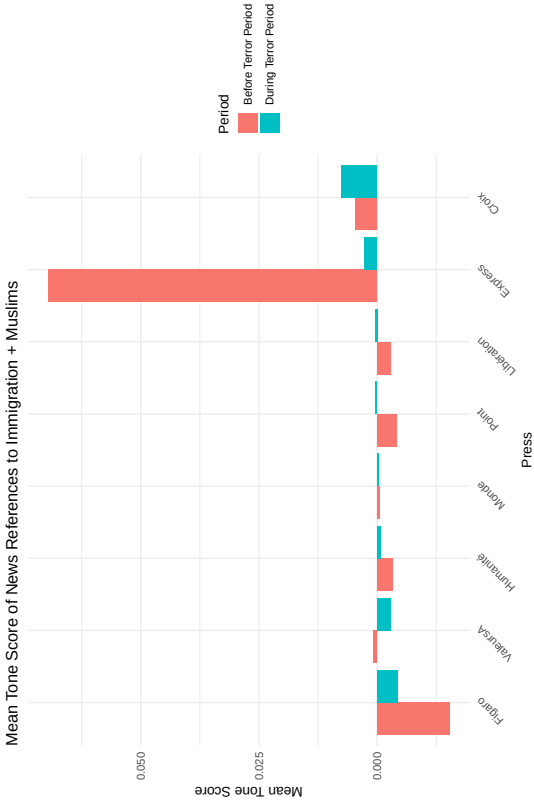
(b) Mean Tone Score of News References to Immigration



(c) Share of News References to Immigration + Muslims (Mean Salience)



(d) Mean Tone Score of News References to Immigration + Muslims



2.3 The Impact on Media Behavior: Empirical Strategy and Results

In this section, we outline our empirical strategy to estimate the effect of terrorism on both the salience and tone of immigration-related news coverage. We employ an event study with unobserved fixed effects, using the following specification:

$$Y_{jt} = \alpha_0 + \sum_{\omega} \alpha_{\omega} * T_Week(\omega)_t + \zeta X_t + q_t + \eta_j + u_{jt} \quad (2.3)$$

Where $Y_{j,t}$ represents either media salience (measured as percentage shares) or media tone at the weekly and journal level.¹⁶ In additional specifications, we also explore how media behavior evolves in terms of salience and tone for articles that reference specific characteristics, including mentions of Muslims, security, the economy, and humanitarian issues.

Our key explanatory variables, $T_Week(\omega)_t$ are a set of dummy variables associated with each typical week, ω . These variables aim to capture changes in salience (or tone) during the weeks surrounding the three major terrorist attacks under study. We hypothesize that media responses, particularly in salience and tone, will exhibit a stronger change in the immediate aftermath of these attacks, with the effect diminishing over time. Conversely, if the model properly identifies the shock, we should observe no significant effect in the weeks preceding the attacks.

To model these temporal dynamics, we introduce a series of weekly dummy variables: three dummies corresponding to the three weeks before the attacks ($\omega = -1$ to -3), a dummy for the week of the attack ($\omega = 0$), and seven dummies for the seven weeks following the

¹⁶Some newspapers are published weekly, necessitating the aggregation of salience and tone figures at the weekly level for daily publications.

attack ($\omega=1$ to 7).¹⁷ In addition, X_t represents a set of control variables, including a dummy variable $Ref.Crises_t$ which captures the refugee crisis period, and $Nauffrage_t$ a dummy indicating a major shipwreck that occurred during the crisis. Finally, we include quarterly fixed effects, q_t and journal fixed effects, η_j to account for temporal and publication-specific variations.

2.3.1 Media Behavior: Results

Salience

Table 4.1, with its main findings visually represented in Figure 2.8, presents the results related to the salience measure. Column 1 shows that in the weeks following one of the three major terrorist attacks, there is no statistically significant increase in general immigration coverage in the media. None of the weeks from 0 to 7 show a significant effect on overall immigration coverage.

However, when immigration topics are associated with Muslims (column 2) and (in)security-related words (column 3), a clear pattern emerges. Specifically, the proportion of articles linking immigration with Muslims and security concerns increases significantly. Column 2 reports that in the week of a major terrorist attack, the share of news articles connecting immigration with Muslims rises by approximately 0.14 percentage points. This increase persists, reaching 0.39 percentage points in the second week and 0.25 percentage points in the third week. On average, over the first three weeks, there is an increase of around 0.26 percentage points. After this period, the effect gradually diminishes and disappears by the eighth week.

The magnitude of this effect is substantial. To grasp its significance, it is essential to understand that prior to the terrorism period in France (up to December 2014), the

¹⁷Recall again that we are concentrating here on the 3 major attacks in France. And week-1 to week-3 are controlled for by our the regression.

average salience of immigration articles referencing Muslims was around 0.07% per journal. This translates to roughly 1 article per 1,400 being published weekly on migration and Muslim-related issues. A major terrorist attack, however, raises this figure by an average of 0.26 percentage points in the first three weeks, increasing the salience from 0.07% to 0.34%. In other words, in the immediate aftermath of a major terrorist attack, approximately 3.4 out of every 1,000 articles per journal are estimated to refer to migration and Muslim-related topics, multiplying the number of such articles by almost five.

A similar pattern is observed in the salience of migration and security-related issues (column 3), with a significant increase lasting up to four weeks after the shock. The magnitude of this effect is comparable to that found in column 2. However, unlike Muslim-related topics, where salience returns to pre-attack levels after eight weeks, the salience of security-related topics returns to normal by the fifth week, with statistical insignificance observed from Week 5 onwards.

Finally, when examining the salience of articles linking migration to economic conditions (column 4) or humanitarian issues (column 5), no significant changes are found in the weeks following a major terrorist attack.

In conclusion, immigration *per se* does not become a prominent subject in the aftermath of a major attack. However, specific themes related to Muslims and security issues in the context of immigration become highly salient, with these effects lasting for approximately 5 to 8 weeks following the attack.

Tone

An increase in the volume of discourse about migrants and Muslims does not necessarily imply a negative tone. In fact, some media outlets might discuss migrants in a more positive light, emphasizing that they should not be conflated with perpetrators of violence. To provide a comprehensive understanding of media behavior following terrorist attacks, it is essential to

Table 2.1 Weekly estimates on Saliency

	<i>Dependent variable:</i>				
	Percentage.Articles				
	Immigration	Muslims	Security	Economy	Humanitarian
	(1)	(2)	(3)	(4)	(5)
Minus3	0.19 (0.12)	−0.04 (0.05)	0.08 (0.07)	0.04 (0.06)	0.04 (0.05)
Minus2	0.37** (0.15)	−0.01 (0.06)	0.02 (0.09)	0.21*** (0.07)	0.03 (0.07)
Minus1	0.21 (0.15)	0.05 (0.06)	0.01 (0.09)	0.08 (0.07)	0.05 (0.07)
Week0	0.14 (0.10)	0.14*** (0.04)	0.18*** (0.06)	−0.07 (0.05)	−0.02 (0.04)
Week1	0.15 (0.12)	0.39*** (0.05)	0.39*** (0.07)	−0.08 (0.06)	0.01 (0.05)
Week2	−0.04 (0.12)	0.25*** (0.05)	0.23*** (0.07)	−0.05 (0.06)	−0.04 (0.05)
Week3	−0.09 (0.12)	0.14*** (0.05)	0.12* (0.07)	−0.01 (0.06)	−0.05 (0.05)
Week4	0.14 (0.12)	0.19*** (0.05)	0.16** (0.07)	0.10* (0.06)	−0.08 (0.05)
Week5	−0.06 (0.12)	0.10** (0.05)	−0.02 (0.07)	0.02 (0.06)	−0.02 (0.06)
Week6	0.15 (0.12)	0.11** (0.05)	0.02 (0.07)	−0.08 (0.06)	0.01 (0.05)
Week7	−0.16 (0.12)	0.08 (0.05)	−0.07 (0.07)	−0.04 (0.06)	−0.06 (0.05)
Naufrage_day	−0.11 (0.10)	−0.08** (0.04)	−0.09* (0.05)	−0.05 (0.04)	−0.04 (0.04)
refugee_crisis	1.01*** (0.09)	0.11*** (0.04)	0.39*** (0.05)	0.26*** (0.04)	0.58*** (0.04)
Constant	0.89*** (0.13)	0.02 (0.05)	0.20*** (0.07)	0.31*** (0.06)	0.17*** (0.06)
Observations	3,952	3,432	3,640	3,848	3,848
R ²	0.69	0.57	0.65	0.54	0.32
Adjusted R ²	0.69	0.57	0.65	0.53	0.31

Note:

*p<0.1; **p<0.05; ***p<0.01

Quarter FE: YES

Journal FE: YES

examine changes in the tone of coverage, particularly regarding Muslims, within the corpus under analysis.

The results are presented in Table 4.2 and are more clearly synthesized in Figure 2.9. In the first three weeks following an attack (i.e., weeks 0, 1, and 2), column 1 shows that the overall tone of immigration-related news becomes significantly more negative. After this period, media sentiment gradually returns to the baseline levels observed before the attacks, with the tone becoming statistically insignificant from Week 3 onward.

However, when it comes to discussions involving Muslims or security-related issues (columns 2 and 3 of Table 4.2), terrorism has a pronounced impact, particularly during Week 0 and Week 1. Whether the media refers to Muslims or security, the shift in sentiment during these two weeks is substantial. Specifically, in Week 0 of the attack, the average tone score drops to -0.01, a significant decrease from the baseline, where the tone was slightly positive at approximately +0.001 before the attack period (as seen in columns 2 and 3 of Table 4.2).¹⁸ This shift represents a decline in tone exceeding 100%. In Week 1, the tone remains negative, though the reduction is about 30% compared to the baseline. Even when the media discuss economic or humanitarian issues in conjunction with migration, the tone becomes more negative during Week 0. Nonetheless, by Week 3, the tone appears to return to pre-attack levels, regardless of the subject being discussed alongside migration.

How do these results from Table 4.2 align with the findings from Table 4.1? Table 4.1 demonstrates that the media continues to discuss migrants, Muslims, and security-related issues for up to 7 weeks following an attack. However, the tone of these discussions becomes negative primarily in the two weeks immediately following the attack. By the third week, while the media maintains a negative sentiment toward migration, it no longer emphasizes links to security or religion, focusing instead on migration in a more general term. Again,

¹⁸See also Appendices A.1 and A.2 for average measures of salience and tone before and during the attack periods.

Table 2.2 Weekly estimates - Tone

	<i>Dependent variable:</i>				
	Media_Tone				
	Immigration	Muslims	Security	Economy	Humanitarian
	(1)	(2)	(3)	(4)	(5)
Minus3	−0.002 (0.002)	−0.0002 (0.002)	−0.001 (0.002)	−0.004** (0.002)	−0.001 (0.002)
Minus2	0.01*** (0.002)	−0.001 (0.002)	0.01** (0.002)	0.004* (0.002)	0.01** (0.003)
Minus1	−0.005*** (0.002)	0.0004 (0.002)	0.001 (0.002)	−0.001 (0.002)	0.001 (0.002)
Week0	−0.005*** (0.001)	−0.01*** (0.001)	−0.01*** (0.002)	−0.005*** (0.002)	−0.01*** (0.002)
Week1	−0.003* (0.002)	−0.003* (0.002)	−0.004** (0.002)	0.0004 (0.002)	−0.002 (0.002)
Week2	−0.004** (0.002)	−0.0000 (0.002)	−0.001 (0.002)	0.0002 (0.002)	−0.001 (0.002)
Week3	−0.002 (0.002)	0.001 (0.002)	−0.0001 (0.002)	−0.0003 (0.002)	0.001 (0.002)
Week4	−0.001 (0.002)	0.003* (0.002)	0.004** (0.002)	−0.003* (0.002)	−0.0001 (0.002)
Week5	−0.003* (0.002)	0.0004 (0.002)	0.0002 (0.002)	0.004* (0.002)	0.001 (0.002)
Week6	0.0004 (0.002)	−0.001 (0.002)	0.001 (0.002)	−0.002 (0.002)	−0.001 (0.002)
Week7	−0.003* (0.002)	0.002 (0.002)	−0.001 (0.002)	−0.003 (0.002)	0.002 (0.002)
Naufrage_day	−0.01*** (0.001)	−0.0004 (0.001)	−0.001 (0.001)	−0.0005 (0.001)	−0.003** (0.002)
refugee_crisis	−0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.01*** (0.001)	0.003* (0.002)
Constant	0.01*** (0.002)	0.001 (0.002)	0.004** (0.002)	0.01*** (0.002)	0.002 (0.002)
Observations	4,028	3,498	3,710	3,922	3,922
R ²	0.26	0.05	0.12	0.18	0.20
Adjusted R ²	0.25	0.04	0.11	0.17	0.19

Note:

*p<0.1; **p<0.05; ***p<0.01
Quarter FE: YES
Journal FE: YES

this is consistent with an hypothesis of non-stigmatization towards the muslim community in times of terror.

We also assessed the impact of each of the three terrorist attacks individually (see Appendix A for detailed results). The outcomes for tone are generally consistent across all three attacks, with a negative shift in tone observed for up to 2 weeks when discussing Muslims and/or security. In terms of salience, however, the effects differ somewhat. Following the first attack, Charlie Hebdo, the media significantly referenced Muslims and security issues for up to 7 weeks (as indicated by statistically significant coefficients). For the Bataclan attack, the persistence of these references was shorter, lasting about 3 weeks. In the case of the Nice attack, there is no statistically significant effect related to Muslims or security. Nevertheless, the salience of general immigration-related topics increased for up to 6 weeks following the Nice attack.

2.3.2 Impact by Media Groups

We now turn to examining the impact of the attacks across different media groups based on political orientation, following the classification provided by Science Po (see previous section). We concentrate on right-leaning and Left-leaning media in what follows.¹⁹

Right-Leaning Media

The right-leaning media in our dataset include: *Valeurs Actuelles*, *Le Figaro*, *Le Point* and *L'Express*, collectively providing approximately 416 observations on migrants related articles overtime, which we analyze here.

As discussed in Section 2, right-leaning media consistently exhibited a more negative tone towards migrants throughout the entire period of study (both before and during the

¹⁹*Le Monde* is the only journal that is classified at the center (center left) and the number of articles evoking migration is relatively small (around 100 observations), which is why we do not show here the results for the center media.

terror events), alongside relatively high salience, particularly in comparison to centrist outlets. Specifically, 2.3% of the articles from right-oriented media mentioned migrants before the attacks (i.e., before 2015), and of those, about one-third (around 0.8%) also mentioned Muslims. In contrast, only 0.07% of articles in other journals mentioned both Muslims and migrants—more than 10 times lower than the right-leaning media's figure.²⁰

Figures 2.10 and 2.11 illustrate how right-wing media responded to the terrorist attacks. While the estimates are less precise due to the reduced sample size, we observe that the behavior of right-leaning media aligns with the general media trends in terms of the direction and persistence of effects. However, in terms of magnitude, the effects differ significantly.

Starting with Figure 2.10, in a purely statistical sense, the share of news linking immigration to Muslims increased significantly for at least four weeks. However, for weeks 5 and 6, the point estimates for the Muslim-specific sub-sample are positive and almost statistically significant at the 10% level (the zero coefficient lies within the confidence interval, but the interval suggests that the true estimate is likely positive). The estimates are similar for the insecurity-specific sub-sample, though with wider confidence intervals, making the coefficients statistically insignificant from Week 3 onward. In terms of magnitude, during the three weeks following Week 0, the average effect on salience can be estimated at roughly 1.5 percentage points. This increase raises the salience of articles citing both migrants and Muslims to 2.3%, compared to 0.85% just before the attacks. This represents more than a 2.7-fold increase in the wake of the events, compared to the pre-attack period.

Turning to the tone regression, summarized in Figure 2.11, we find that the tone related to the two sub-samples (Muslims and insecurity-related issues) deteriorated for approximately two weeks (Weeks 0 and 1). A more liberal interpretation of the results could extend this negative impact on tone to Weeks 2 and 3, though for Week 3, we cannot reject the hypothesis that the true coefficient value is zero at a strict 10% significance level. In terms of magnitude, the net tone measure was, on average, around -0.005 before 2015. The average

²⁰Around 78% of the journals are regional, and 80% of the observations come from regional publications.

point estimate for the Muslim-specific sub-sample during the three weeks following the attacks is approximately -0.008, lowering the tone measure to -0.013—more than 2.5 times lower than its pre-2015 level.

Left-Leaning Media

The left-leaning media outlets in our dataset include: *La Croix*, *Liberation* and *L'Humanité*, which collectively provide approximately 312 observations used in the following analysis.

Figure 2.12 and 2.13 present the outcomes. In terms of salience, these media seem to react in a more persistent manner compared to the general trends observed for right-leaning outlets (as discussed in Section 2). Specifically, regarding the salience of Muslims in migration-related coverage, the positive impact, though declining over time, remains quasi-statistically significant even after the seventh week following the terror attacks.

In terms of magnitude, the impact on salience for left-leaning journals is relatively modest. From an initial share of 0.4% of articles discussing Muslims, the salience increases to 0.9% during the first three weeks, representing a 2.25-fold increase. Interestingly, after Week 2, the salience decreases, stabilizing at a new, higher plateau of around 0.65% by Week 6 and 7, with an incremental effect of approximately 0.25 percentage points. However, this parameter is only marginally statistically significant, hovering slightly above the 10% threshold.

Turning to Figure 2.13, we observe a significant change in tone in Week 0 for left-leaning journals when discussing Muslims. Starting from a nearly neutral tone of around -0.0003, there is a sharp negative shift of more than *30 times*, with the tone decreasing by -0.01 in Week 0. This negative effect on Muslim-related articles diminishes after one week. Interestingly, the negative tone persists for two weeks in articles discussing immigration more broadly, with a magnitude similar to that observed in the Muslim-specific sub-sample. The effect almost carries over into Week 2, though it becomes statistically insignificant at the 10% level.



Figure 2.8 Weekly Salience Point Estimate with 90% CI

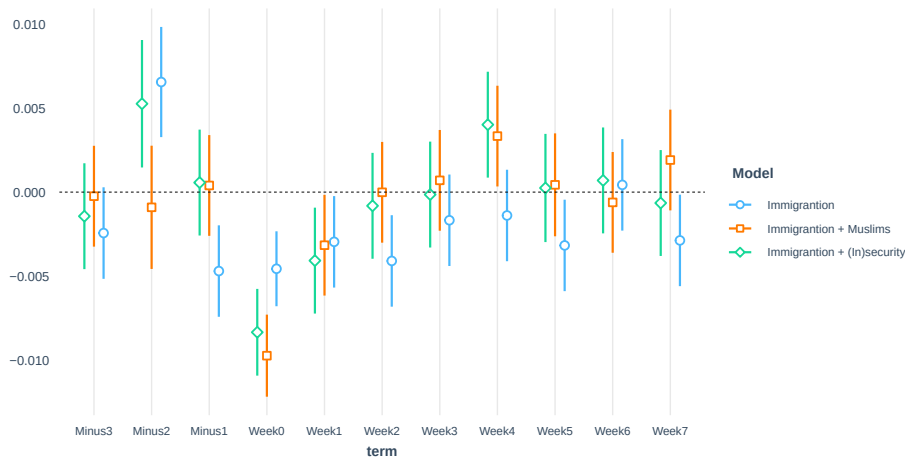


Figure 2.9 Weekly Tone Point Estimate with 90% CI

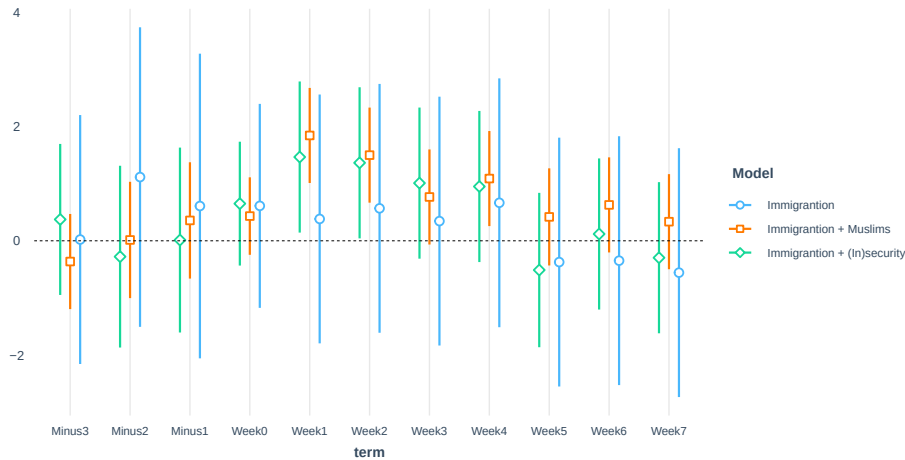


Figure 2.10 Right leaning media - Salience Point Estimate with 90% CI

To summarize, left-leaning media do cite Muslim migrants more frequently after the attacks. Besides, the tone shifts dramatically to a more negative stance, much more so than the tone shifts observed in right-leaning media. This may be due to the fact that, prior to the attacks, left-leaning media generally exhibited a positive tone towards migrants overall (and a neutral tone towards Muslim migrants specifically), which became sharply negative in the aftermath of the attacks.

The Regional Press

Lastly, we examine the reaction of the regional press, as shown in Figure 2.14 and 2.15, based on approximately 3,200 observations.

The share of news linking immigration to Muslims or security concerns increased for about two weeks following the terrorist attacks. This represents a significant rise in salience, increasing from 0.07% before the attacks to 0.15% during the first three weeks. However, this increase is smaller compared to that observed in national journals.

Regarding tone, the sentiment in articles linking immigration to insecurity and Muslims deteriorated during the week of the attack. The absolute value of the tone measure increased by approximately 2.65 times, from -0.006 before 2015 to -0.016 immediately after the attacks. This magnitude is comparable to the effect observed in right-leaning journals, though it is much smaller than the sharp tone deterioration observed in left-leaning outlets.

All in all, the left-leaning press seems to react more than the rest of the media after the terror shocks.

²¹list of the regional press in our data together with the number of immigration news published by each media between parentheses: Ouest-France (4557), La Voix du Nord (4232), Sud-Ouest (3430), La Provence (2312), L'Est Républicain (2195), Le Parisien (1840), La République des Pyrénées (1732), Midi Libre (1698), La Nouvelle République du Centre-Ouest (1609), Aujourd'hui en France (1069), Le Courrier de l'Ouest (1481), Le Télégramme (1413), L'Indépendant (1033), Presse-Océan (735), Le Journal de Saône et Loire (731), Le Bien Public (614), Paris-Normandie (543), Charente Libre (536), Centre Presse Aveyron (510), Le Journal du Centre (362), Le Berry Républicain (272), Le main libre (223), La Nouvelle République Dimanche (184), Acteurs publics (86), Le Havre Libre (25)

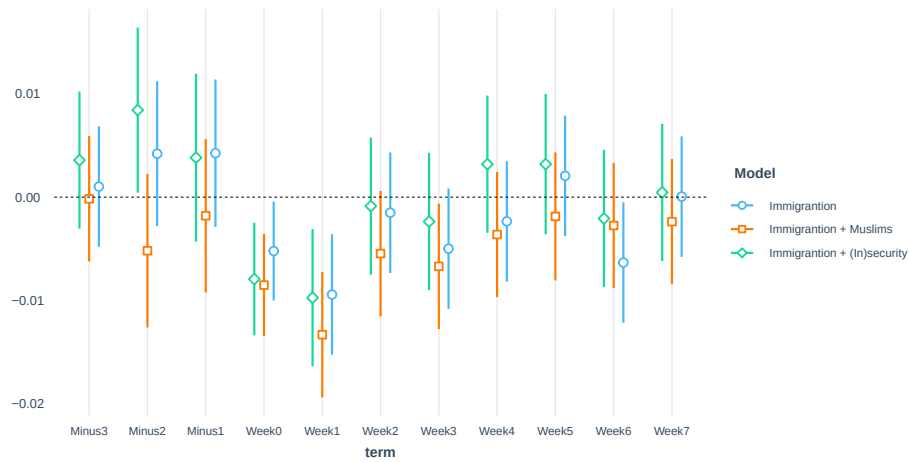


Figure 2.11 Right leaning media - Tone Point Estimate with 90% CI



Figure 2.12 Left leaning Media - Salience Point Estimate with 90% CI

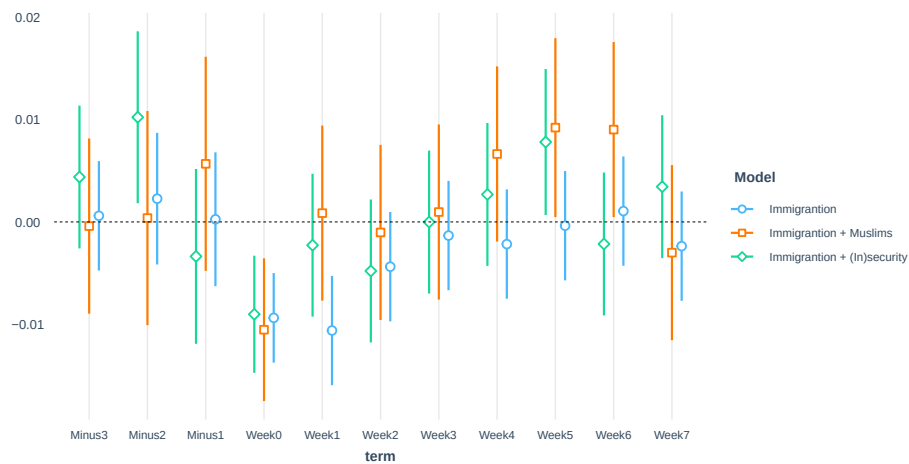


Figure 2.13 Left leaning Media - Tone Point Estimate with 90% CI

2.4 Voting Behavior: Empirical Strategy and Results

The objective of this section is to explore how changes in media coverage of migration-related topics following a major terrorist attack can influence voting behavior. Specifically, we are not aiming to show that terrorist events themselves directly change voting patterns. Instead, the focus is on identifying whether increased salience and more negative tones in migration-related news during the weeks after the attacks affect voting outcomes—and if so, by how much?

To isolate this effect on voting outcomes, we needed to identify a French election that occurred within a few weeks of at least one major terrorist attack. Incidentally, an important nationwide election took place in early December 2015: the *Élections Régionales* were held on the 6th and 13th of December. These elections are designed to elect a regional council for each region in France, which is responsible for regional policymaking. Our analysis will focus on the first round of these elections, held on December 6th, where all political parties were represented. Crucially, this date falls in the third week following the November 13th Bataclan attack, which is optimal for our study, as most media impact tends to occur between the first and third week after an attack (as shown in the previous econometric results).

Data on voting outcomes are available at various local levels in France. The challenge here was to link differences in voting outcomes to the varying levels of exposure people had to the media they consumed, while controlling for both observable and unobservable factors that could influence voting outcomes across different municipalities.

2.4.1 Vote Shares: Some Facts for France

Data on voting outcomes for the *Élections Régionales* were collected from the official government website (?), at the finest administrative level (the "Commune" or "Municipality" level). For comparison purposes and to meet the control requirements for our econometric

model presented below, we also collected voting outcomes from the previous *Élections Régionales* which took place in March 2010. The dataset includes outcomes from around 36,000 communes.

Our main objective is to determine whether changes in media behavior influenced voters' preferences for anti-migrant parties following the attacks. In France, one anti-migrant party stands out: the far-right Front National (FN), which was rebranded as Rassemblement National (RN) in 2018. Given its long-standing anti-migrant stance and nationwide presence, our analysis focuses specifically on this party. At the national level, during the December 2015 elections, the FN significantly increased its vote share, rising from 11.42% in the first round of the 2010 election to 27.73% in 2015—a roughly 145% increase.

France is administratively divided into *regions*, which are further divided into *Départements* (similar to counties in the U.S.). Each *Département* is made up of several municipalities, or *communes*. Figure 2.18 displays the average percentage change in FN vote share across 95 French *Départements* between the 2010 and 2015 *Élections Régionales*. In some *Départements*, the FN's vote share increased by more than 300%, particularly in areas where the party previously received minimal support. This demonstrates a "catch-up effect", where regions with initially low FN support in 2010 experienced the largest growth by 2015. This shift in favor of the FN is also observable at the municipal level. Figure 2.17 shows the distribution of FN votes across all French *communes* in 2010 and 2015. Notably, the entire distribution shifted to the right by 2015, indicating a widespread increase in FN support.

While many factors could explain the rise of the far-right in France, the specific question we ask here is: Did the media's communication on immigration following the November 2015 terrorist attacks play a role in the increase in FN support, as illustrated in Figures 2.18 and 2.17? We attempt to answer this question in the following analysis.

2.4.2 Measures of Exposure Related to Migration News

To assess the impact of media exposure on voter behavior, we need data that reflects how much people are exposed to the media outlets in our analysis. The *Alliance pour les Chiffres de la Presse et des Media* (ACPM)²² is a well-established institution in France's media market that provides certified measures of circulation for all French newspapers (both online subscriptions and print sales) at the *Département* level, and on a daily or weekly basis. This institution tracks the number of subscriptions and sales for each journal within each *Département*.

Our data on salience and tone related to migration are constructed at the journal level. For each *Département*, where municipalities and their voters are located, we can define a measure of potential exposure to migration-related articles. This measure is the weighted average of salience (or tone) across the journals that people in a given *Département* are exposed to. The weights are based on each journal's share of circulation in the *Département*. For example, if in a certain *Département*, two journals are sold—one local, accounting for 80% of newspaper circulation, and one national, representing the remaining 20%—then a voter in that *Département* would be potentially exposed to a weighted average of the salience or tone of these articles. In this case, the local journal would weigh four times more heavily than the national journal. Therefore, if the local journal has a negative attitude towards migrants after a terrorist attack, while the national journal maintains a neutral stance, people in that *Département* would be exposed to four times more of the negative tone from the local newspaper than the neutral tone from the national one. Consequently, the overall exposure measure would reflect this imbalance.

It's important to note that allowing journal circulation shares to vary over time would make the exposure measure endogenous by construction. If people's attitudes towards migrants become more negative after the attack, they might choose to read more from

²²In English, this can be translated as *The Alliance for Media and Press Data*.

journals that report negatively on migration. This unobservable change in preferences could affect both voting outcomes and the sales of newspapers, potentially biasing the relationship between media exposure and votes. To avoid this, we fix the circulation shares at their 2014 levels, just before the wave of terrorist attacks in France began.

Some might argue that it would be more accurate to have circulation data at the municipal level rather than the *Département* level. However, even if this information were available, using it might not be ideal. In many municipalities in France, people work and consume goods and services at the *Département* level, primarily in the major urban centers. Therefore, using *Département*-level newspaper circulation may actually be a more appropriate way to calculate our exposure measures.

We are particularly interested in voters' exposure to the salience and tone of journals during the three-week period between the November 13th terrorist attack and the *Élections Régionales* on December 6th (referred to as period "a" for "after"). We compare this with a representative period before the attack, referred to as period "b" (for "before"), which is defined as the three weeks prior to the attack. Recall that media attitudes towards migration were similar to normal times in the weeks leading up to the attack (as indicated by the non-significant parameters for the variables from Weeks -1 to -3 in our earlier salience and tone measures).

The potential exposure of a voter to media attitudes in a given period p ($p \in [a, b]$), calculated at the *Département* level, is defined as:

$$Expo(A)_m^p = \sum_j A_j^p \times sh_{m(D),j} \quad (2.4)$$

Where A represents either salience or net tone. Thus, A_j^p measures the salience or tone of journal j 's toward migrants during period p with ($A = S$) for salience and ($A = T$) for tone. These measures are calculated at the journal level j , for the three weeks before the attack ($period = b$) and the three weeks after ($period = a$). For each period, we define an average

salience measure by aggregating the number of migration-related articles over the three weeks and dividing by the total number of articles published by each journal. The tone score for the three-week period is calculated similarly, summing the tone scores for all articles published during the period and dividing by the total number of articles. Finally, $sh_{m(D),j}$ represents the share of circulation of journal j in the *Département* D , where municipality m is located.

2.4.3 Model specification

We aim to model the votes for the main far-right party in December 2015, denoted as $Vote_m^{15}$ as a function of media exposure related to migration at that time, $Expo_m^{15}$, and a set of control variables represented by the vector X_m^{15} . Media exposure in December 2015 could be influenced by both pre- and post-attack exposures (i.e. $Expo_m^b$ for the period before the November attack, and $Expo_m^a$ for the period after). Therefore, our basic voting model is represented by the following equation:

$$Vote_m^{15} = \alpha_0 + \alpha_1 * Expo_m^b + \alpha_2 * Expo_m^a + X_m^{15} \zeta' + u_m \quad (2.5)$$

In this equation, $Vote_m^{15}$ represents the votes in percentage for the far-right party in municipality m in 2015. The exposure to media attitudes about migrants before and after the November 13, 2015, terrorist attack ($Expo_m^b$ and $Expo_m^a$ respectively) should influence how people vote by December 2015. The X_m^{15} includes control variables observed up to 2015 that may impact voting outcomes, which will be discussed below.

However, across municipalities, $Expo_m^a$ could be highly dependent on $Expo_m^b$. For example, if people in certain localities typically vote for right-wing parties, they are likely exposed to more right-leaning newspapers, and this behavior is unlikely to change significantly before and after November 13. Additionally, because we use fixed 2014 journal circulation shares (discussed previously) to compute the exposure variables, these

shares do not change before and after the attack. If both exposure variables are included in the regression, this could lead to biased estimates. To address this, we propose a simple alternative: instead of using $Expo_m^a$, we use the difference in exposure, computed as $\Delta Expo_m^a = Expo_m^a - Expo_m^b$.

This difference represents an innovation shock and serves as our treatment effect variable, capturing only the changes in media behavior after the November 13 attack relative to the pre-attack period.²³ We thus substitute $\Delta Expo_m^a$ for $Expo_m^a$ in the regression.

Besides, because we need to control for unobserved characteristics of each locality, we express our specification in differences, by analyzing the change in voting outcomes from the 2010 to the 2015 *Élections Régionales*. Considering that media exposure can be expressed in terms of either salience or tone, the model that we then propose to test is expressed as follows:

$$\Delta Vote_m = \alpha_0 + \alpha * Expo(A)_m^b + \beta * \Delta Expo(A)_m^a + X_m \zeta' + v_m \quad (2.6)$$

Here, $\Delta Vote_m = Vote_m^{15} - Vote_m^{10}$ represents the change in the far-right party's vote share between 2010 and 2015 at the municipal level, expressed in percentage points. The variable A indicates whether the measure used in the regression is salience ($A = S$) or tone ($A = T$). The parameter β represents the treatment effect on $\Delta Expo(A)_m^a$ which we aim to identify. Meanwhile, $Expo(A)_m^b$ serves as a control, related to voting outcomes before the attack. The vector, X_m includes additional control variables that account for various factors that are expected to influence the voting outcomes, such as demographic changes, change in economic conditions, or shifts in employment between 2010 and 2015.

Specifically, in terms of controls at the municipality level, we could have access to crime rates per 1,000 inhabitants, the percentage of people over 60, and the poverty level by 2015.

²³We also tested an alternative two-step approach by regressing $Expo_m^a$ on $Expo_m^b$ and using the residual $RExp_m^a = Expo_m^a - \hat{\rho} \cdot Expo_m^b$ where $\hat{\rho}$ is the estimated coefficient. The results were similar, so we opted to use $\Delta Expo_m^a$ in the following analysis. Results are available upon request.

At the level of the *Département*, we could have access to the variables in differences between 2010 and 2015. Namely, we account for the percentage change in the share of immigrants, the percentage change in unemployment and GDP.²⁴ Additionally, because some unobserved factors might have changed preferences of people towards voting for the far-right after 2010, we include the FN vote share from the 2012 presidential election at the municipality level.

While the terrorist attacks themselves are expected to affect FN support nationwide, this impact is assumed to be constant across localities and is captured by the constant term α_0 . The goal of our analysis is not to measure the nationwide effect of the attacks, but rather to identify how media exposure, after the attacks, influenced voting in favor of the anti-migrant party, on top of the overall shock.

Another information is important to mention: we exclude municipalities in the Île-de-France region.²⁵ This decision was made because the November 13 attacks had an especially strong impact on both voters and journalists in Île-de-France, where national newspapers are heavily consumed (around 90% of journal purchases are national). Including these municipalities might lead to biased estimates of β , as changes in media discourse and voter preferences in Île-de-France could simply reflect simultaneous shifts in both groups.

Finally, our key variable of interest, $\Delta Expo(A)_m^a$ is computed using fixed weights for each journal—specifically, the journal’s circulation share in 2014, before the wave of terrorist attacks. In essence, we are conducting a Shift-Share (Bartik) regression, where the weights are treated as exogenous, and only the salience and tone of each journal change between the pre- and post-attack periods. Since the weights vary across *Département*, this creates differences in media exposure across our observations (municipalities).

²⁴All Data are sourced from the French National Institute of Statistics and Economic Studies (INSEE).

²⁵We exclude municipalities from the following *Départements*: Paris (75), Seine-et-Marne (77), Yvelines (78), Essonne (91), Hauts-de-Seine (92), Val-de-Marne (94), and Val-d’Oise (95).

2.4.4 First Set of Results

We now present the results based on equation 2.6. The key question here is: Did the municipalities that experienced the largest increase in media salience and the greatest deterioration in media tone regarding immigration coverage also see the most significant rise in the extreme right's vote share compared to 2010, after controlling for confounding factors? We first run a simple Ordinary Least Squares (OLS) regression on general immigration news, followed by an analysis focusing on media coverage of migrants and Muslims in French newspapers.

Recall that the exposure variables can be expressed in terms of both salience and tone. Additionally, tone can be defined using either our custom dictionary or ChatGPT's dictionary. This allows us to examine how each of these three exposure variables (salience, own tone measure, and the ChatGPT tone) influence voting outcomes. In the results that follow, the key coefficient to compare across these variables is the β coefficient from equation 2.6, which captures the change in exposure.

The first set of results is detailed in Table 4.3. In columns (1) to (3), we examine how votes for the far-right party respond to media reporting on general immigration issues, using the three alternative exposure variables. Interestingly, the effects of the November 13th terrorist attack, when viewed through the lens of the change in exposure variables, are not consistent across the three specifications. While the two tone measures in columns (2) and (3) suggest that increased exposure to negative media tone after the attack is associated with a rise in votes for the far-right party, column (1) shows a different story. Here, the increase in overall migration reporting does not lead to a higher vote share for the FN. In fact, the relationship is negative and statistically significant, suggesting that greater coverage of migrants —regardless of the tone— may lead voters to shift away from the anti-migrant party.

In columns (4) and (5), we focus on media exposure specifically related to migrants and Muslims. Column (4) shows no significant relationship between media salience and voting outcomes when both migrants and Muslims are mentioned together. However, the tone effect in column (5) aligns with the results in columns (2) and (3), both in terms of sign and statistical significance. Notably, the magnitude of the effect in column (5) is nearly twice as large as that observed in the general migration analysis.²⁶

It is also worth highlighting the role of the main control variable, the exposure variable from before the attack ($Expo(A)_m^b$). This variable behaves largely as expected: it is positively related to voting outcomes when expressed in terms of salience and negatively related to votes when expressed in terms of tone, across all our specifications.

2.4.5 Second Set of Results: Tackling Endogeneity

One important issue we must address is the potential endogeneity of our exposure measures. To clarify, a terrorist attack can shift people's attitudes towards migrants, which may lead them to favor anti-migrant policies, as reflected in their voting behavior. Media firms, seeking to maximize profits, might anticipate this shift in attitudes and adjust their content accordingly, publishing more articles about migrants with a more negative tone. If this endogeneity is not properly accounted for, it could bias the estimates of our treatment variable (i.e., the change in exposure after the attack), hence weakening the results presented in Table 4.3.

The challenge, therefore, is to produce unbiased estimates or, at the very least, offer a method to quantify the potential bias caused by unobserved factors. To address this, we implement two strategies. The first involves improving our Shift-Share (Bartik) instrument approach, which was implicitly used in the previous analysis. The second strategy employs a method developed by Oster (2019), which estimates the extent of bias in our parameters due

²⁶Here we report the results using the ChatGPT dictionary for tone, but similar findings were obtained using our custom dictionary.

to unobservable factors, such as changes in voter preferences after the November 13th attack, that we cannot directly measure.

Shift-Share Strategy

The use of exposure measures with fixed weights for each journal, as discussed earlier, represents a basic shift-share strategy. In this approach, we identify the effect on votes through variations in exposure, driven solely by changes in salience or tone within each journal. However, this strategy may not be sufficient to fully address endogeneity. If journals are aware of changes in their readers' preferences, they might respond by adjusting their reporting on migration, making changes in salience and tone themselves endogenous to reader preferences.

This hypothesis—that media outlets are aware of their readers' preferences—should particularly apply when journalists are geographically close to their audience. Local newspapers are likely more in tune with the preferences of their readers, who account for a large share of their sales. Conversely, national newspapers, which are headquartered in Paris (inside the Île-de-France region), may be less sensitive to provincial preferences. Instead, they might write for an audience that reflects preferences in the Île-de-France region or, broadly reflecting average preferences across the country, without specifically targeting provincial readers.

As a result, exposure to national media in localities outside Île-de-France is likely to be exogenous to voting patterns. Hence, since the overall change in media exposure can be decomposed into exposure to national media and exposure to local media, we re-apply a shift-share strategy but now through focusing solely on national media.

Table 2.4 presents the results. Column (6) reproduces the specification from column (1) of Table 4.3, but with our treatment variable in salience terms, now calculated only for

national media.²⁷ The coefficient on our treatment variable aligns with expectations, being positive and statistically significant. In columns (7) and (8), where exposure is expressed in terms of tone (using both our own dictionary and the ChatGPT dictionary), the results are consistent: increased exposure to negative tone in national media after the shock is associated with a rise in far-right votes at the municipal level.

Thus far, we have analyzed the effects of salience and tone alternatively, not together. This is because both measures are affected by the November 13th shock, which potentially bias the results if they were to be introduced together. To address this, we propose an alternative variable that combines both factors. We begin by weighting each migration-related article by the inverse of its tone (i.e. $[1/(1 + \textit{Tone})]$), and then sum over those articles for each journal and each given week. This produces what we shall call a Tone-Weighted number of articles on migrants by each journal j and each week w , denoted as, $TWN_{w,j}^M$. By dividing by the total number of articles published by each journal in each week, we obtain a Tone-Weighted Salience variable:

$$TWSalience_{w,j} = \frac{TWN_{w,j}^M}{N_{w,j}} \quad (2.7)$$

The tone measure can be negative, but it never drops below -1, ensuring that $1 + \textit{Tone}$ is always greater than 0, making the Tone-Weighted Salience variable easy to interpret. This variable can be thought to be a proxy for *media concern* about immigration: when a terror shock increases the share of articles with a negative tone, the Tone-Weighted Salience measure rises.

This variable is also directly comparable to the standard salience measure. In weeks where all migration-related articles have a neutral tone ($\textit{Tone} = 0$), the Tone-Weighted Salience is identical to the salience measure. However, during weeks when the media expresses

²⁷The control variable for exposure before the shock, has been also computed using only national media. It is not shown in our following tables to emphasize on our variable of interest. Still, the effect on this control variable appears to be quite similar to that obtained in previous regressions and mostly stable across our different specifications.

concern about migration with a negative tone, the Tone-Weighted Saliency will exceed the simple saliency measure. We can then compute exposure to media using this Tone-Weighted Saliency variable.

Table 2.5 compares the effects of the standard saliency measure (reproduced from Table 2.4) with those of the Tone-Weighted Saliency variable, focusing solely on national media exposure. Column (12) reproduces column (9) from Table 2.4. Columns (13) and (14) present results based on Tone-Weighted Saliency, using our custom dictionary and ChatGPT's dictionary, respectively. These results are consistent with those of the pure saliency measure in terms of sign, statistical significance, and magnitude when accounting for standard errors. Columns (15) to (17) repeat the analysis, focusing on media coverage related to migrants and Muslims. Here, the effect on voting in favor of the far-right is twice as large in magnitude. We interpret more in details those results in the following subsections, when we will be concentrating on how exposure to media contributes to vote changes across different localities in France.

Lastly, some might argue that national media are particularly sensitive to the preferences of large urban municipalities, where people are more educated and concerned with national-level issues, leading to a higher share of national media consumption. If this is the case, the results might still be subject to endogeneity between exposure and voting behavior, especially in large cities. In Table 2.6, we address this concern by reproducing the results from Table 2.5, but limiting the analysis to small cities (with populations under 10,000). The results are qualitatively similar, and in some cases, the effects are even larger than those observed for the full sample of municipalities.²⁸

²⁸The results are not sensitive to the population threshold. Similar results are obtained when using thresholds of 2,000, 5,000 or 20,000 inhabitants.

2.4.6 Coefficient Stability Test

While the causal effect of media exposure estimated above appears robust, it could still be biased if voters' preferences are not adequately accounted for. This raises concerns about omitted variable bias when analyzing the impact of media coverage on election results. However, several aspects of our analysis strengthen our confidence in the causal interpretation of our findings. Notably, when we control for prior exposure to immigration news—a factor likely influenced by similar unobserved variables—the coefficient on the post-attack exposure variable actually increases, rather than decreases. As shown in Table 2.7, removing the control variable for pre-attack media exposure reduces the β coefficient on the post-attack exposure variable (i.e. our treatment variable).²⁹

Despite this important control, unobservable changes in voter preferences after the attack could still bias our estimates if not properly addressed. To assess the potential extent of this bias, we apply the methodology from Oster (2019), which measures how much omitted variables could influence our results. This approach tests the stability of the β coefficient for our key variable (post-attack media exposure) by comparing two models: one with an extended set of controls, including potential unobservables, and another with a restricted set of controls (only observable variables). At the bottom of Table 2.7, we present the δ^* estimates, which indicate the proportional bias in our β coefficient due to unobservables. These estimates show how much unobservables would need to influence changes in voting behavior to explain away our results. We also report the β^* estimates, which represent the coefficient we would have obtained had we been able to account for unobservables that increase the R^2 by 30%, as recommended by Oster (2019)

Our analysis finds negative δ^* values for general immigration news, suggesting that adding more controls would actually *increase*—*not decrease*—the size of the β coefficient

²⁹Columns 2, 4, 6 present results without the inclusion of the pre-attack exposure control variable to be compared respectively with columns 1, 3, 5.

for our key variable. This is similar to the effect seen when introducing the pre-attack exposure variable, implying that unobservable changes in voter preferences after the attack are unlikely to be driving our results Graham et al. (2017). The β^* estimates for the general immigration news specifications are also consistently higher than the original coefficients, further supporting the robustness of our findings against omitted variable bias.

2.4.7 Media Contribution to the Rise of the Extreme Right after November 13

Using the results from Table 2.5 (columns 16 and 17) and the observed changes in media exposure across all *Départements* in France, we can now estimate the contribution of media concern about immigration and Muslims to the rise in votes for the main anti-immigration party in each locality. The median contribution to the vote share for the anti-migrant party across all localities is approximately 3%. However, there is significant heterogeneity across all of our *Départements*. The lowest contribution is around 0.76%, while the highest contribution, observed in the *Départements* of Aube, is around 24%.

To put this into perspective, for the Aube Département, we estimate that a quarter of the increase in votes—from 25% in 2010 to 44% in 2015—can be attributed to the November 13th terrorist attacks. Figure 2.18 summarizes the results across all *Départements* in France.³⁰ As shown, in the majority of localities the contribution to the vote share does not exceed 5%, although in the southeast, many *Départements* see contributions exceeding 20%.

In summary, while the overall contribution of media exposure may not be substantial in most *Départements*, the effect is notably significant in certain regions. Although the National Front did not eventually win the regional elections in any *Département*, it is plausible that the party that did win—primarily the right-wing *Les Républicains* in the southeast—may

³⁰As noted earlier, we exclude the results related to the Île-de-France region.

respond to this surge in support for the far-right by adopting tougher regional policies on immigration.

2.5 Conclusion

In this paper, we utilized natural language processing techniques to analyze news articles on immigration published before and after three major terrorist events in 2015 and 2016 in France. We specifically examined whether these events caused shifts in both the intensity of reporting and the content of news about immigrants, as well as the duration of these changes. Furthermore, we assessed the impact of the media's portrayal of migrants following the November 13, 2015, terrorist attack on the voting outcomes for the main anti-immigration party in France. Our approach offers a comprehensive test of whether news media content can be held partly responsible for the recent surge in the popularity of the extreme right in France.

Our findings strongly support the argument that terrorism significantly affects media attitudes toward immigrants. Following the 2015 and 2016 terrorist attacks, the salience of immigration in media coverage increased sharply, especially when linked to terms such as “Muslims” or “(in)security”. This increased media focus, coupled with a deteriorating tone—more pronounced in left-leaning newspapers—was intense but short-lived. Our analysis reveals that municipalities exposed to more negative media coverage experienced a relatively small rise in votes for anti-migrant parties in the closest elections to one of the terror events being studied. However, the average effect hides a large heterogeneity across french localities (in one of them it has been measured to be contributing around 24% of the vote share increase).

The findings of this study have significant implications for media regulation, public policy, and political strategy. Media portrayals of migrants, particularly after terrorist events, can unintentionally amplify divisive narratives, fostering negative public attitudes and

bolstering support for anti-migrant policies. Policymakers should consider implementing media regulations that encourage balanced and responsible reporting, especially in times of crisis, to prevent the unintentional reinforcement of harmful stereotypes and societal divisions.

This paper is relevant to the ongoing debate on the effectiveness of terrorist attacks in achieving political objectives. It extends existing knowledge on the relationship between terrorism and electoral outcomes by highlighting the media's influential role in shaping voter preferences in the aftermath of such events. While our findings align with previous research on the effects of terrorist attacks on election outcomes, they expand the literature by quantifying the electoral impact of media salience and tone, providing robust empirical evidence that enriches theoretical discussions on media influence during crises.

However, this study faces limitations. The focus on France limits the generalizability of our findings to other contexts with different media landscapes and political environments, and the study's temporal scope may not capture the long-term dynamics of media influence on voting behavior.

Future research should consider cross-country comparisons to assess whether the observed effects are consistent across various media and political contexts. Exploring the role of social media alongside traditional media could provide a more comprehensive understanding of how different platforms shape public opinion and influence voting behavior. Additionally, investigating the long-term effects of media coverage on political attitudes could reveal whether short-term changes in sentiment lead to enduring shifts in public policy and societal attitudes towards migrants.

Given the crucial role of media in shaping public discourse, particularly during crises, this study calls for a reevaluation of media practices, especially in reporting on sensitive issues like migration in the wake of terrorism. Balanced and responsible journalism is essential for

maintaining social harmony and protecting democratic values, ensuring that media serve to inform rather than inflame public sentiment during challenging times.

.1 Impact per Attack

.2 Descriptive statistics

Table 8 displays the distribution of the identified sub-components across the media for media with at least 20 news articles about immigration within the time frame of the study. The column "Presse" shows the name of the news media, the column "All news" displays the count of all news articles of the specified media that exist within the archive Europress and Factiva, the column "Immigration news" displays the count news articles identified as being linked to immigration, the column "% Immigration" displays the percentage of all news articles that is related to immigration, the remaining columns display the percentage of the category mentioned within immigration news. It is important to acknowledge that the sum of percentages across categories may surpass 100% that is because an article can be assigned to more than one category.

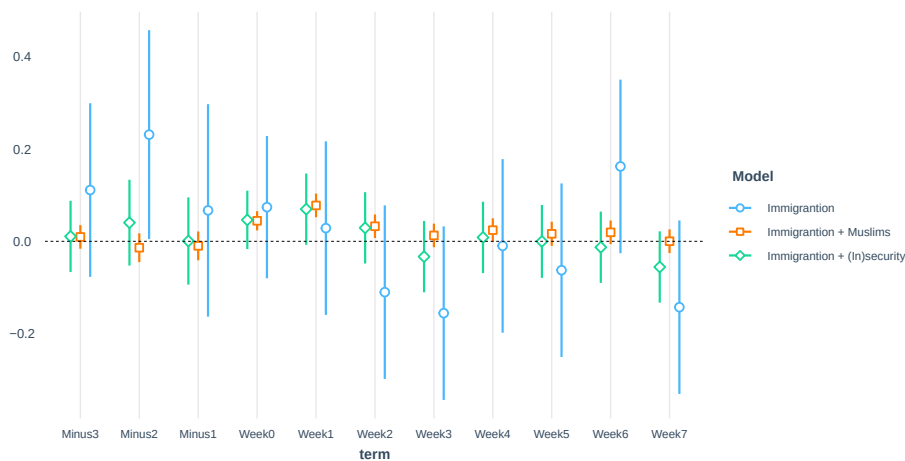


Figure 2.14 The regional press - Saliency Point Estimate with 90% CI

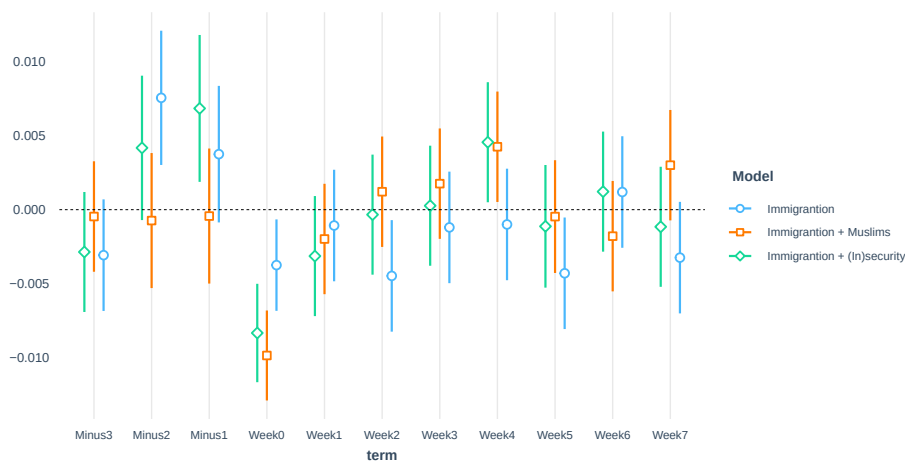


Figure 2.15 The regional press - Tone Point Estimate with 90% CI

Figure 2.16 Change in vote share (%) for the FN, at the Département level, between 2010 and 2015

Change in Vote Share for the Far Right from 2010 to 2015 Regional Election

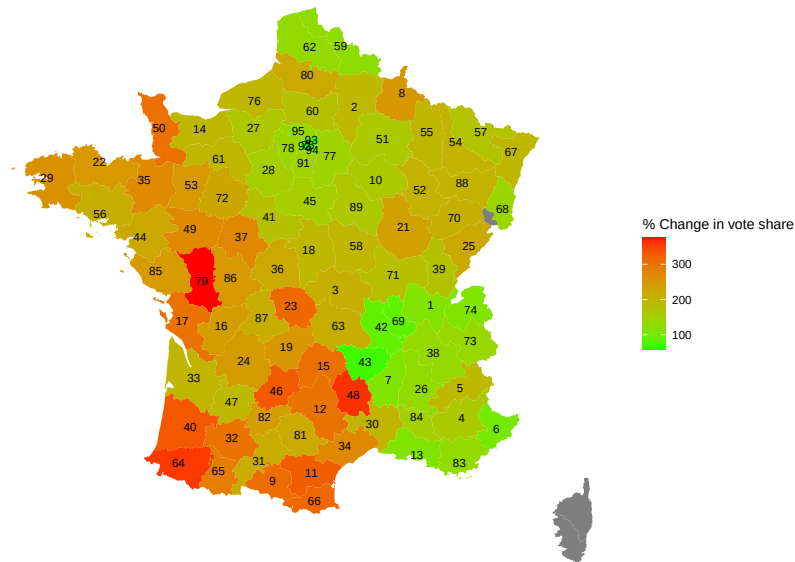
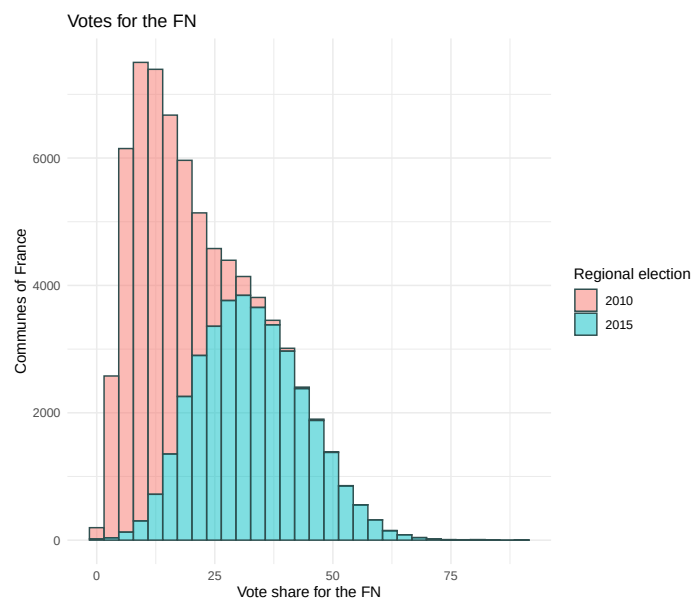
**Figure 2.17** Distribution of the FN Vote share across municipalities, in 2010 and 2015

Table 2.3 Impact of Exposures to NATIONAL and REGIONAL Media on votes

	<i>Dependent variable:</i>				
	Δ_Vote				
	(1)	(2)	(3)	(4)	(5)
$\Delta_Salience_Immigration_News$	-3.46*** (0.32)				
$Expo_Salience_Immigration_News_Before$	0.63*** (0.06)				
$\Delta_Tone_Immigration_News$		-2.29*** (0.11)			
$Expo_Tone_Immigration_News_Before$		-0.25*** (0.02)			
$\Delta_Tone_GPT_Immigration_News$			-2.19*** (0.13)		
$Expo_Tone_GPT_Immigration_News_Before$			-0.16*** (0.03)		
$\Delta_Salience_Muslims_News$				-0.24 (0.34)	
$Expo_Salience_Muslims_News_Before$				1.46*** (0.27)	
$\Delta_Tone_GPT_Muslims_News$					-3.87*** (0.38)
$Expo_Tone_GPT_Muslims_News_Before$					-9.68*** (0.51)
$CrimeCases_1000hab$	-0.02*** (0.003)	-0.02*** (0.003)	-0.02*** (0.003)	-0.02*** (0.003)	-0.02*** (0.003)
$\Delta_Immigrant_Population$	0.08*** (0.01)	0.07*** (0.01)	0.09*** (0.01)	0.07*** (0.01)	0.14*** (0.01)
$\Delta_Unemployment$	-0.002*** (0.0004)	-0.002*** (0.0004)	-0.002*** (0.0004)	-0.002*** (0.0004)	-0.002*** (0.0004)
Δ_GDP	-0.14*** (0.02)	0.03 (0.02)	-0.03 (0.02)	-0.14*** (0.02)	-0.11*** (0.02)
$Share_Old_People$	-0.09*** (0.005)	-0.08*** (0.005)	-0.09*** (0.005)	-0.09*** (0.005)	-0.10*** (0.005)
$Share_Poverty$	0.43*** (0.01)	0.43*** (0.01)	0.42*** (0.01)	0.44*** (0.01)	0.43*** (0.01)
$Presi_2012$	0.48*** (0.01)	0.47*** (0.01)	0.47*** (0.01)	0.48*** (0.01)	0.48*** (0.01)
Constant	5.71*** (0.34)	4.54*** (0.34)	5.73*** (0.33)	6.39*** (0.34)	5.62*** (0.33)
Observations	32,670	32,670	32,670	32,670	32,670
R ²	0.31	0.31	0.31	0.31	0.31
Adjusted R ²	0.31	0.31	0.31	0.31	0.31

Note:

*p<0.1; **p<0.05; ***p<0.01

Dep Var is the difference in score between 2015 and 2010

Table 2.4 Impact of Exposures to NATIONAL Media on votes

	<i>Dependent variable:</i>		
	Δ_Vote		
	(6)	(7)	(8)
$\Delta_Salience_Immigration_News_Nat$	4.65*** (1.14)		
$\Delta_Tone_Immigration_News_Nat$		-13.99*** (1.02)	
$\Delta_Tone_GPT_Immigration_News_Nat$			-6.50*** (0.59)
Controls	Yes	Yes	Yes
Constant	6.51*** (0.33)	6.63*** (0.34)	6.72*** (0.34)
Observations	32,670	32,670	32,670
R ²	0.31	0.31	0.31
Adjusted R ²	0.31	0.31	0.31

Note:

*p<0.1; **p<0.05; ***p<0.01

Dep Var is the difference in score between 2015 and 2010

Table 2.5 Impact of NATIONAL media Concern about migration (Tone-weighted Salience Measure)

	<i>Dependent variable:</i>					
	Δ_Vote					
	(12)	(13)	(14)	(15)	(16)	(17)
$\Delta_Salience_Immigration_News_Nat$	4.65*** (1.14)					
$\Delta_Salience_Immigration_Tone_Weighted_Nat$		4.93*** (1.14)				
$\Delta_Salience_Immigration_Tone_Weighted_GPT_Nat$			4.74*** (1.13)			
$\Delta_Salience_Muslims_News_Nat$				7.05*** (1.26)		
$\Delta_Salience_Muslims_Tone_Weighted_Nat$					6.97*** (1.22)	
$\Delta_Salience_Muslims_Tone_Weighted_GPT_Nat$						7.06*** (1.25)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Constant	6.51*** (0.33)	6.49*** (0.33)	6.50*** (0.33)	6.31*** (0.34)	6.30*** (0.34)	6.31*** (0.34)
Observations	32,670	32,670	32,670	32,670	32,670	32,670
R ²	0.31	0.31	0.31	0.31	0.31	0.31
Adjusted R ²	0.31	0.31	0.31	0.31	0.31	0.31

Note:

*p<0.1; **p<0.05; ***p<0.01

Dep Var is the difference in score between 2015 and 2010

Table 2.6 Impact of NATIONAL media Concern about migration (Tone-weighted Salience Measure, Small Cities (Less Than 10,000 Inhabitants))

	<i>Dependent variable:</i>					
	Δ_Vote					
	(18)	(19)	(20)	(21)	(22)	(23)
$\Delta_Salience_Immigration_News_Nat$	6.75*** (1.36)					
$\Delta_Salience_Immigration_Tone_Weighted_Nat$		7.08*** (1.36)				
$\Delta_Salience_Immigration_Tone_Weighted_GPT_Nat$			6.86*** (1.35)			
$\Delta_Salience_Muslims_News_Nat$				9.85*** (1.48)		
$\Delta_Salience_Muslims_Tone_Weighted_Nat$					9.65*** (1.43)	
$\Delta_Salience_Muslims_Tone_Weighted_GPT_Nat$						9.80*** (1.47)
Controls Used	Yes	Yes	Yes	Yes	Yes	Yes
Constant	4.50*** (0.40)	4.48*** (0.40)	4.49*** (0.40)	4.24*** (0.40)	4.23*** (0.40)	4.24*** (0.40)
Observations	28,076	28,076	28,076	28,076	28,076	28,076
R ²	0.29	0.29	0.29	0.29	0.29	0.29
Adjusted R ²	0.29	0.29	0.29	0.29	0.29	0.29

Note:

*p<0.1; **p<0.05; ***p<0.01

Dep Var is the difference in score between 2015 and 2010

Figure 2.18 Media contribution to the rise of the extreme right after November 13

Contribution of Immigration Coverage to Far-Right Vote Share

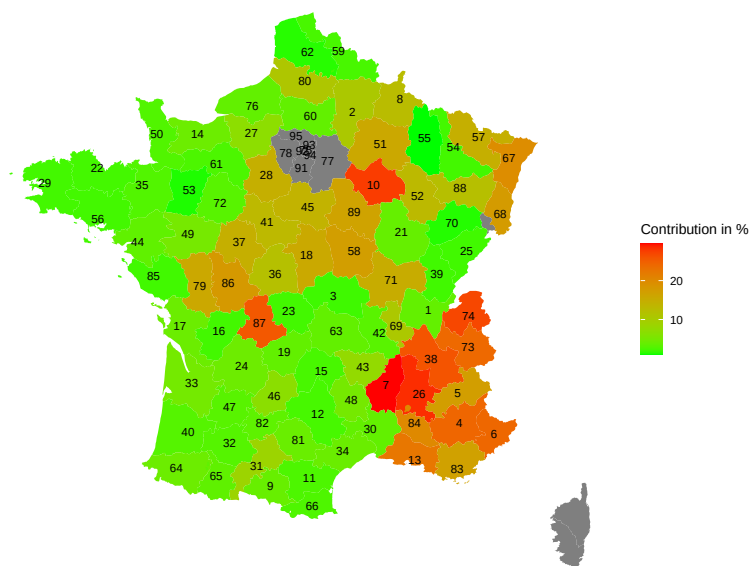
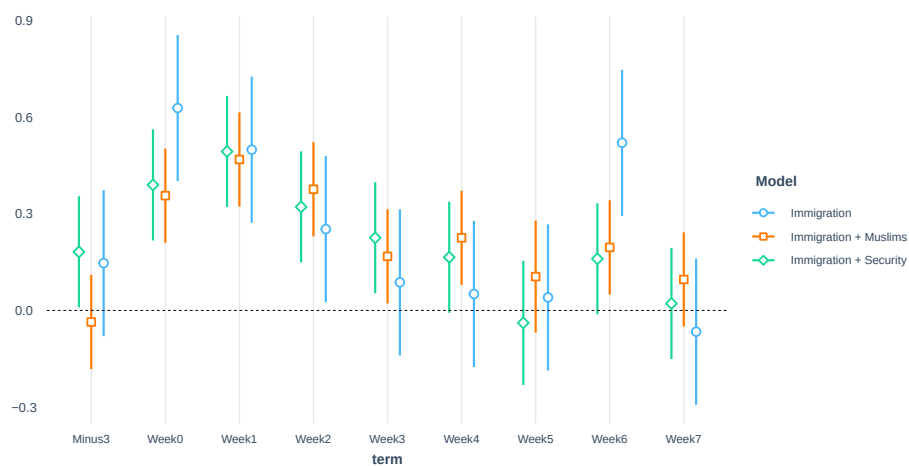


Table 2.7 Coefficient Stability

	<i>Dependent variable:</i>					
	Δ_Vote					
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta_Salience_Immigration_News_Nat$	4.65*** (1.14)	1.65 (1.01)				
$Expo_Salience_Immigration_News_Before_Nat$	0.34*** (0.06)					
$\Delta_Salience_Immigration_Tone_Weighted_Nat$			4.93*** (1.14)	3.31*** (1.09)		
$Expo_Salience_Immigration_Tone_Weighted_Before_Nat$			0.29*** (0.05)			
$\Delta_Salience_Immigration_Tone_Weighted_GPT_Nat$					4.74*** (1.13)	-1.30 (1.14)
$Expo_Salience_Immigration_Tone_Weighted_GPT_Before_Nat$					0.32*** (0.06)	
Controls Used	Yes	Yes	Yes	Yes	Yes	Yes
δ^* for $\beta = 0$	-0.26	-	-0.342	-	-0.284	-
β^* for $\delta = 1$	24.9	-	20.0	-	22.9	-
Constant	6.51*** (0.33)	7.02*** (0.32)	6.49*** (0.33)	6.97*** (0.32)	6.50*** (0.33)	20.62*** (0.30)
Observations	32,670	32,670	32,670	32,670	32,670	32,678
R ²	0.31	0.31	0.31	0.31	0.31	0.17
Adjusted R ²	0.31	0.30	0.31	0.30	0.31	0.17

Note:

*p<0.1; **p<0.05; ***p<0.01
Dep Var is the difference in score between 2015 and 2010

**Figure 19** Charlie Hebdo - Salience Point Estimate with 90% CI

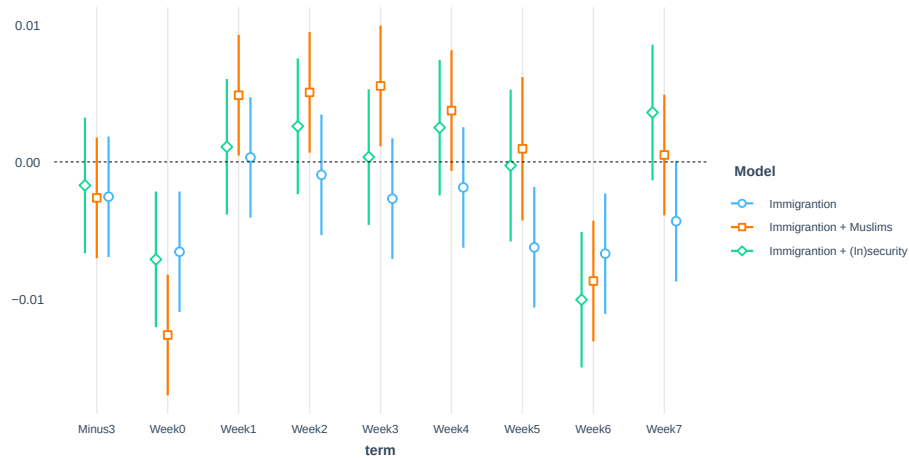


Figure 20 Charlie Hebdo - Tone Point Estimate with 90% CI

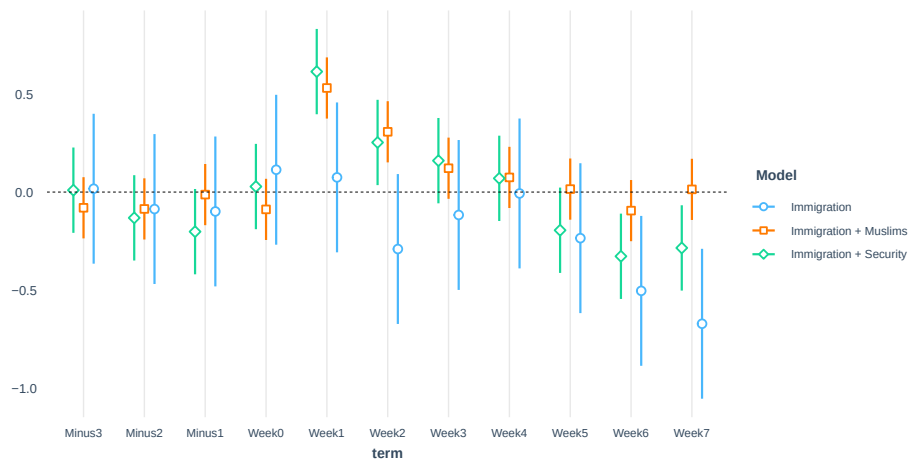


Figure 21 The Bataclan - Salience Point Estimate with 90% CI

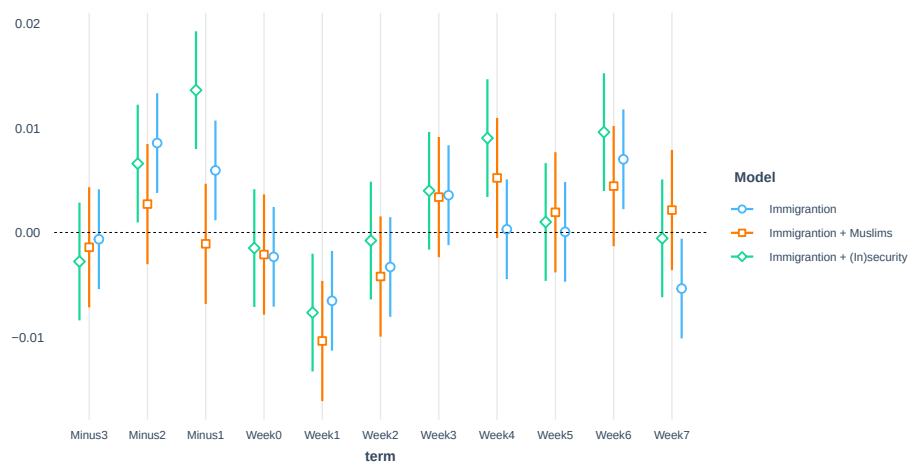


Figure 22 The Bataclan - Tone Point Estimate with 90% CI

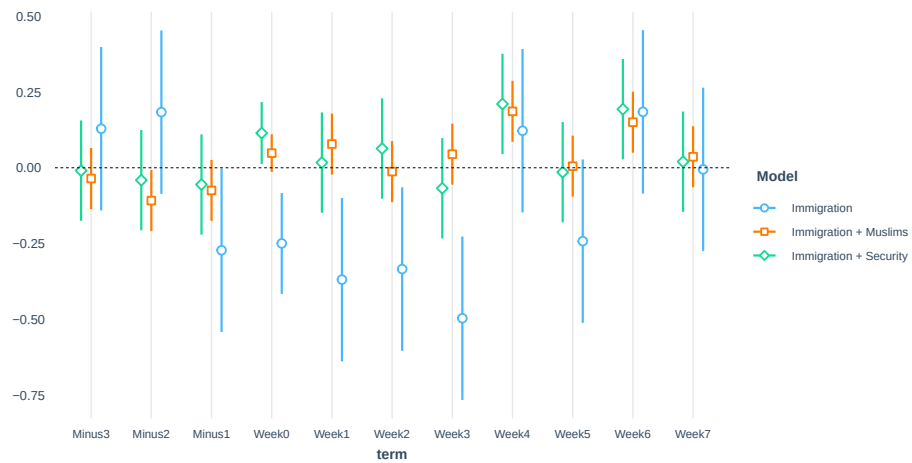


Figure 23 Nice - Salience Point Estimate with 90% CI

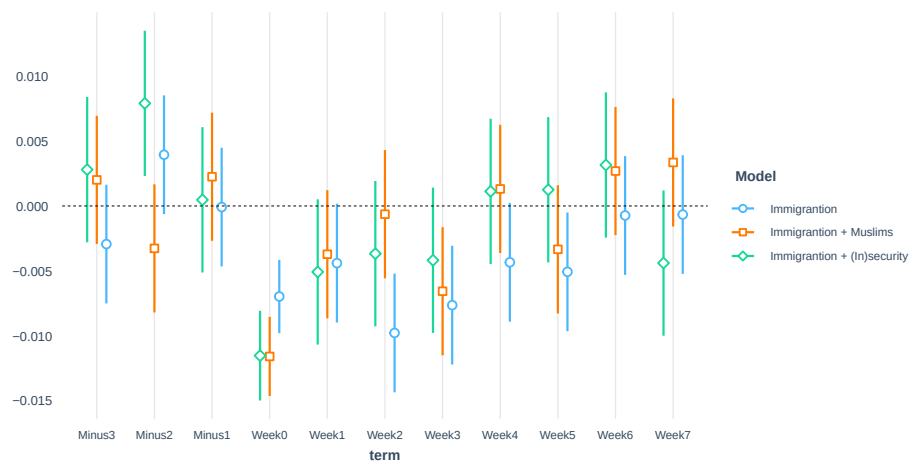


Figure 24 Nice - Tone Point Estimate with 90% CI

Table 8 List of the newspapers, characteristics and descriptive statistics.

Presse	Regional/national and P Orientation	All news	Immigration news	% Immigration	% Immigration + Muslims	% Immigration + Humanitarian	% Immigration + Economy	% Immigration + (In)security
1 Acteurs publics	Regional	8324	86	1.03	4.65	27.91	38.37	25.58
2 Aujourd'hui en France	Regional	1322736	1069	0.08	15.25	30.87	11.79	33.12
3 Le Berry Républicain	Regional	279544	272	0.10	5.15	18.38	15.44	7.35
4 Centre Presse Aveyron	Regional	432738	510	0.12	16.08	34.51	9.61	30.59
5 Charente Libre	Regional	493225	536	0.11	14.55	37.87	11.19	24.81
6 Le Courrier de l'Ouest	Regional	3516243	1481	0.04	9.18	25.25	9.32	14.58
7 La Croix	Left	870938	1705	0.20	16.36	37.71	20.18	24.40
8 L'Express	Right	65805	394	0.60	28.68	21.57	50.76	41.62
9 Le Figaro	Right	9868208	2943	0.03	28.03	34.59	25.38	41.28
10 Le Havre Libre	Regional	1789	25	1.40	0.00	20.00	8.00	20.00
11 L'Humanité	Left	496458	1346	0.27	20.58	39.45	27.64	38.11
12 Le Journal du Centre	Regional	338702	362	0.11	2.76	21.27	8.56	11.60
13 L'Est Républicain	Regional	1277075	2195	0.02	10.52	32.98	12.94	21.87
14 L'Indépendant	Regional	2843052	1033	0.04	14.81	33.59	11.42	28.36
15 La Nouvelle République Dimanche	Regional	84874	184	0.22	9.24	27.17	9.24	23.91
16 La Nouvelle République du Centre-Ouest	Regional	8607653	1609	0.02	9.51	28.71	11.31	16.59
17 La République des Pyrénées	Regional	834301	1732	0.21	22.40	48.21	14.38	41.11
18 La Voix du Nord	Regional	14495683	4232	0.03	3.95	18.38	7.30	21.41
19 La Provence	Regional	8589400	2312	0.03	9.99	23.31	11.42	18.21
20 Le Bien Public	Regional	1250382	614	0.05	8.14	31.60	13.52	19.38
21 Le Journal de Saône et Loire	Regional	2402216	731	0.03	8.89	36.39	13.95	19.29
22 Le main libre	Regional	225817	223	0.10	5.83	22.42	7.62	6.73
23 Libération	Left	681378	1785	0.26	27.45	34.34	28.07	38.71
24 Midi Libre	Regional	10112085	1698	0.02	16.90	30.92	12.96	28.50
25 Le Monde	Center	5395026	3272	0.06	28.27	36.31	32.61	41.29
26 Ouest-France	Regional	114427294	4557	0.00	7.15	35.90	10.82	14.31
27 Paris-Normandie	Regional	832455	543	0.07	11.42	33.15	14.92	29.47
28 Le Parisien	Regional	4148000	1840	0.04	10.16	36.58	8.37	19.35
29 Le Point	Right	213506	424	0.20	40.80	26.65	49.29	53.77
30 Presse-Océan	Regional	987714	735	0.07	14.56	31.02	8.03	23.95
31 Le Progrès	Regional	18661920	2025	0.01	9.19	43.36	27.51	22.67
32 Sud Ouest	Regional	27838020	3430	0.01	11.98	37.29	15.60	28.34
33 Le Télégramme	Regional	9343835	1413	0.02	7.71	34.18	9.91	13.16
34 Valeurs Actuelles	Right	63823	776	1.22	49.61	22.16	36.60	55.28

.2.1 Salience: Mean before, after and for the study period

Sub_Components	Mean Before Terror	Mean During Terror	Mean for the study period
1 Immigration	0.30% (SD = 0.07)	0.57% (SD = 0.24)	0.53% (SD = 0.24)
2 Immigration + Muslims	0.02% (SD = 0.02)	0.04% (SD = 0.02)	0.03% (SD = 0.02)
3 Immigration + Security	0.07% (SD = 0.03)	0.14% (SD = 0.06)	0.13% (SD = 0.06)
4 Immigration + Economy	0.06% (SD = 0.02)	0.07% (SD = 0.03)	0.08% (SD = 0.03)
5 Immigration + Humanitarian	0.02% (SD = 0.01)	0.11% (SD = 0.12)	0.09% (SD = 0.11)

.2.2 Tone: Mean before, after and for the study period

Sub_Components	Mean Before Terror	Mean During Terror	Mean for the study period
1 Immigration	0.0164 (SD = 0.008)	0.0161 (SD = 0.005)	0.0162 (SD = 0.006)
2 Immigration + Muslims	0.0012 (SD = 0.008)	(-) 0.0018 (SD = 0.008)	(-) 0.0013 (SD = 0.008)
3 Immigration + Security	0.0004 (SD = 0.008)	(-) 0.0037 (SD = 0.006)	(-) 0.0031 (SD = 0.006)
4 Immigration + Economy	0.0226 (SD = 0.005)	0.0225 (SD = 0.005)	0.0225 (SD = 0.005)
5 Immigration + Humanitarian	0.0415 (SD = 0.009)	0.0393 (SD = 0.010)	0.0396 (SD = 0.010)

.2.3 Mean before and During Terror by Media Group

Group	Period	Salience Immigration	Tone Immigration	Salience Muslims	Tone Muslims
Right	Before Terror	2.35	0.009	0.85	-0.0047
	During Terror	3.97	0.006	1.38	-0.0016
Center	Before Terror	1.65	0.008	0.23	-0.0006
	During Terror	2.32	0.007	0.37	-0.0003
Left	Before Terror	2.49	0.013	0.41	-0.0003
	During Terror	4.51	0.011	0.64	0.00226
Regional	Before Terror	0.42	0.019	0.07	-0.00622
	During Terror	0.80	0.019	0.10	-0.007

Table 9 Salience and Tone of Immigration and Immigration + Muslims Before and During Terror Events.

1. The column mean before terror displays the mean for the specified category before beginning of the phases of terrorism (from the 1st October 2014 to the 6th of January 2015, inclusive).

2. The column mean after terror displays the mean for the specified category from the date of the first terrorist attack (Charlie Hebdo) until the last date of our study period, from the 7th of January 2015 until the 31st of October 2016.
3. the column mean for the study period displays the mean of the specified category for all dates present in the dataset, from the 1st of October 2014 to the 31st of October 2016.

.2.4 Immigration + Economy

.2.5 Immigration + Humanitarian

.2.6 Dictionary Validation

.2.7 Top medias across categories

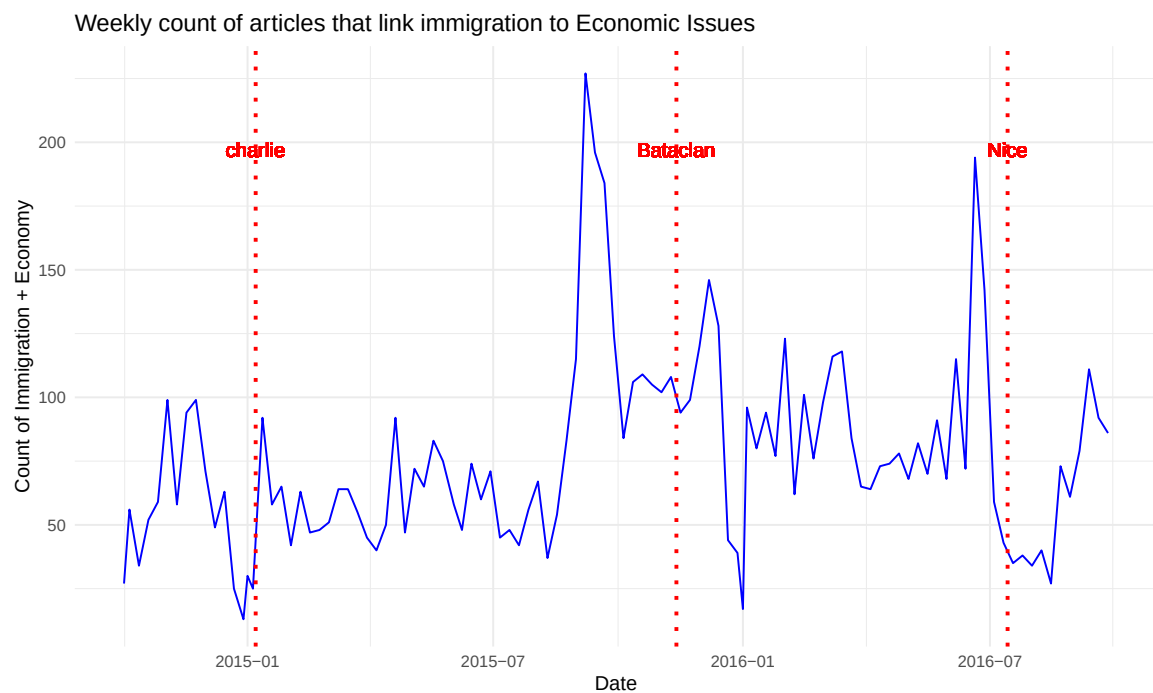
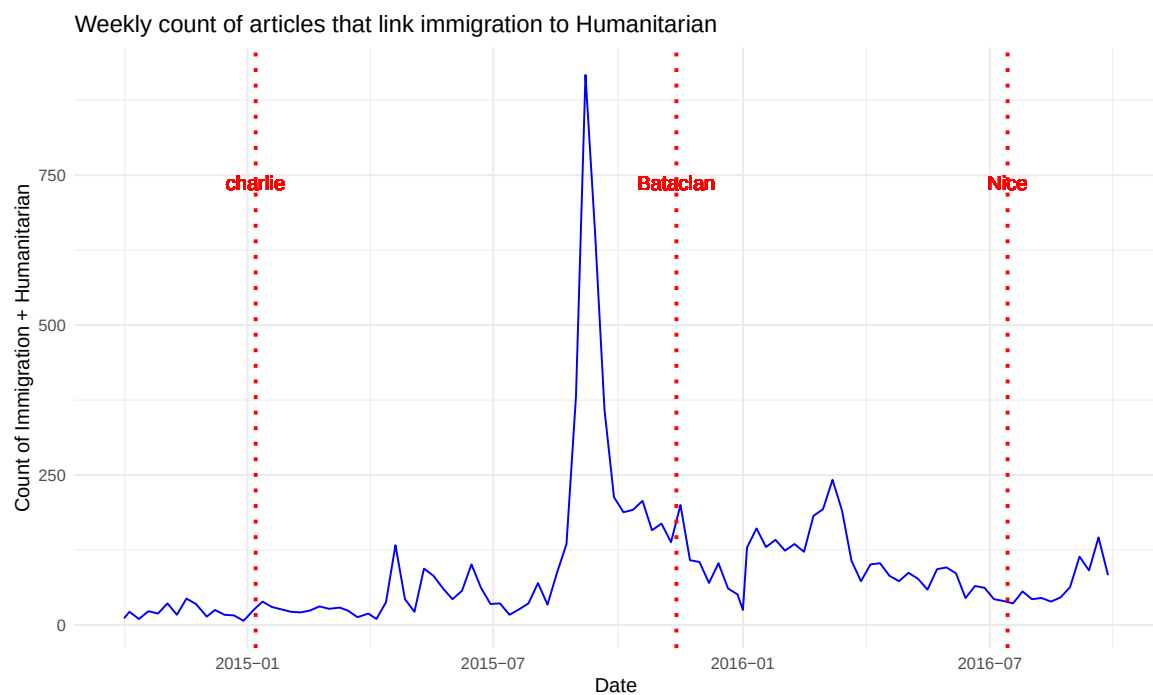
Figure 25 Weekly count of news that link Immigration to Economic issues**Figure 26** Weekly count of news that discusses the humanitarian side of immigration

Figure 27 Author’s Dictionary Validation by ChatGPT

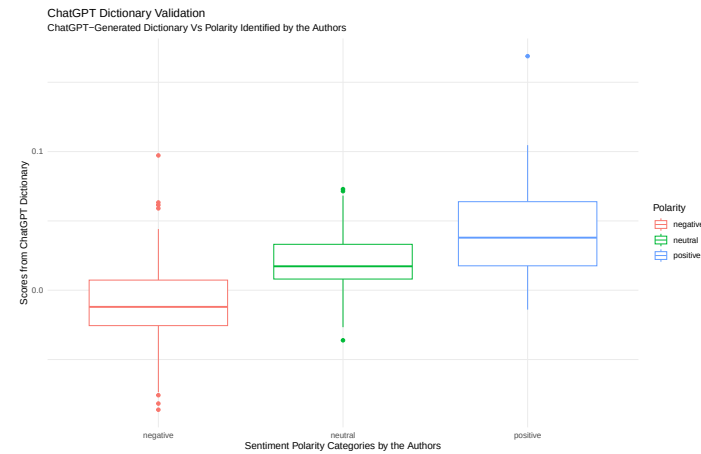
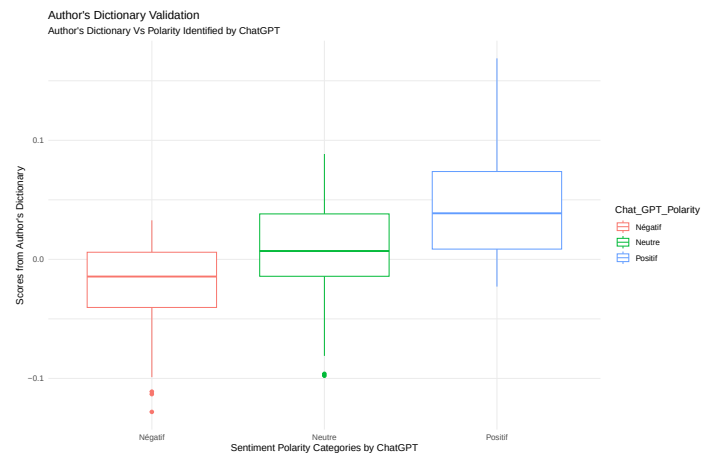


Figure 28 ChatGPT’s Dictionary validation by the Authors

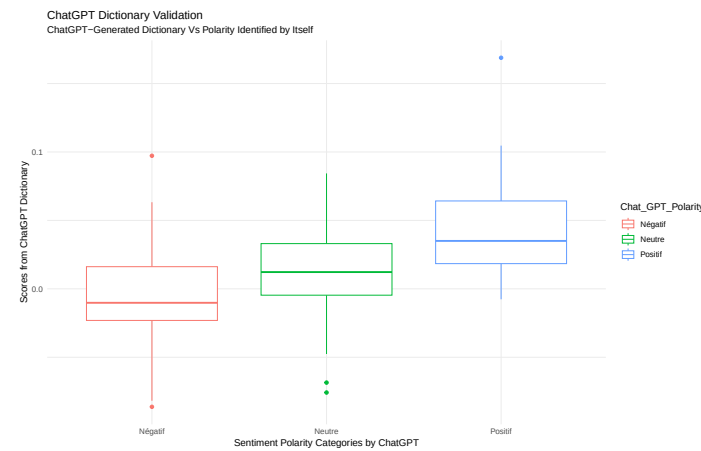


Figure 29 ChatGPT’s Dictionary validation by Itself

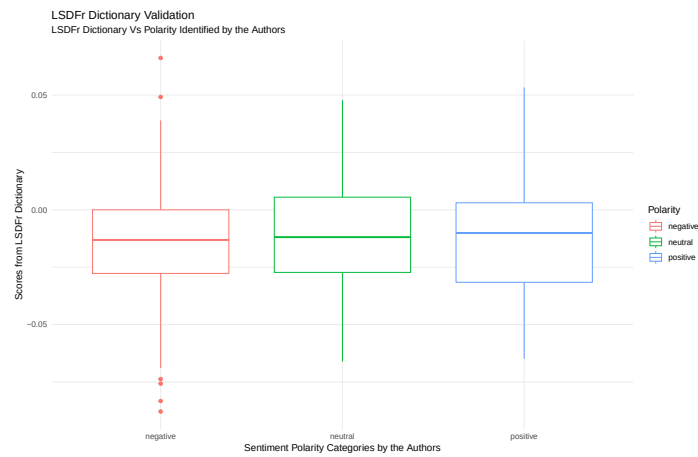
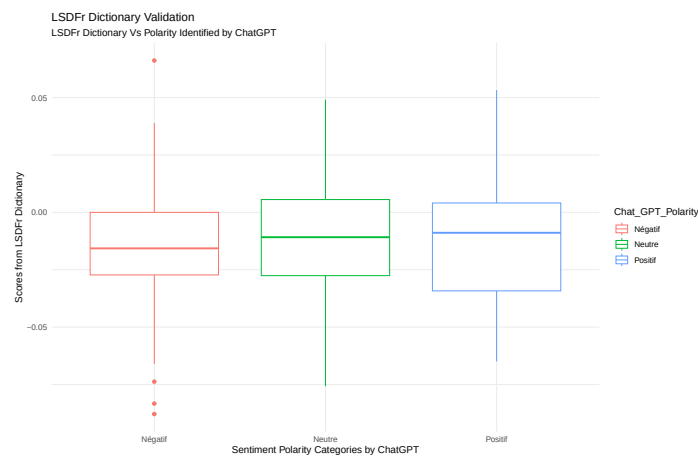
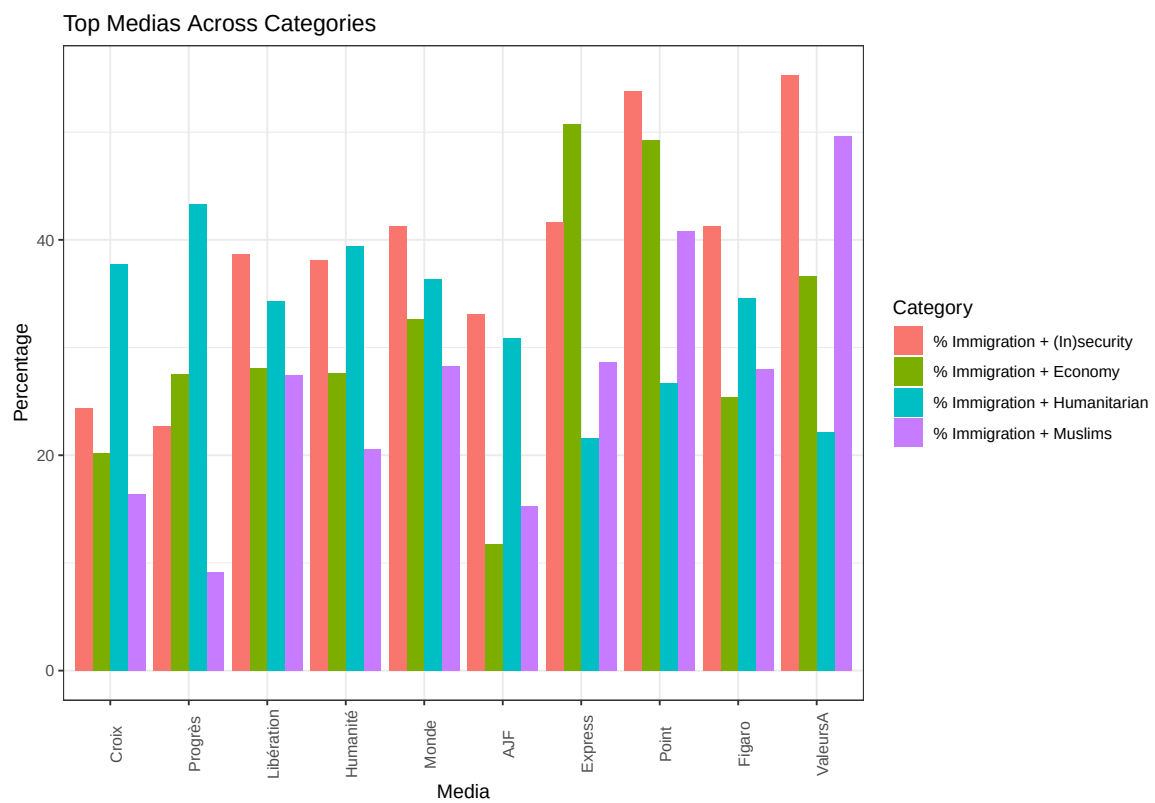
Figure 30 LSDFr Dictionary Validation by the Authors**Figure 31** LSDFr Dictionary Validation by ChatGPT

Figure 32 Top medias across categories



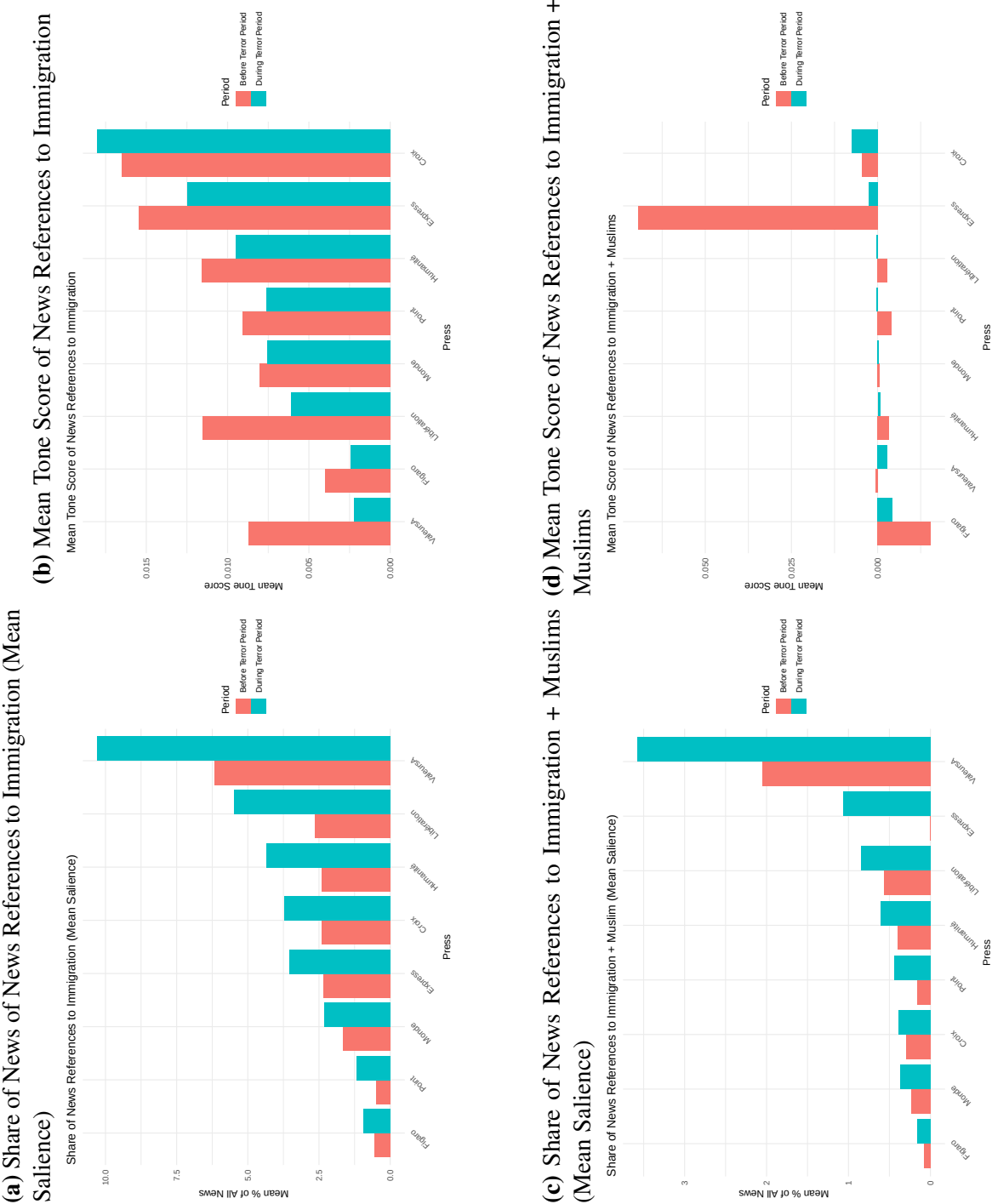


Figure 33 Mean Salience and Tone of Immigration and Islam-Related News

.3 The dictionary

.3.1 positive words

“aboutir, abri, acceptable, acception, accepter, accessibilité, acclame, accompagnement, accomplie, accord, accorder, accueil, accueille, accueillir, accès, accélérer, acquitter, action, adaptation, adapter, adaptée, admirer, adoration, adoucir, aide, aider, aimer, aimon, aisance, aiser, ajustement, aliment, alimentaire, allier, allié, allocation, allocation familial, allouer, alternatif, amadouer, ambiance, ambitieux, ambition, ambitionn, ami, amical, amitier, amour, amoureux, amélioration, améliorer, aménagement, ange, angélique, apaisante, aplanir, applaudi, applaudissement, apport, apprendre, apprentissage, approbation, approuver, asile, assainissement, assidûment, association, assouplir, assouplissement, assurance, assurer, atout, attractivité, authentique, avantage, beau, bel, belle, bien, bienveillance, bienvenu, bise, blague, boisson, bon, bonheur, boulot, bravo, brille, briller, business, bénéficie, bénéficier, bénévolat, bénévole, café, calme, calmer, camarade, capable, carrière, certitude, champagne, chance, chanter, chantier, ciner, citoyenneter, civilisation, clément, cohabitation, cohérent, cohésion, cohésion social, collaboration, collect, collecte, collecter, collectif, commerce, commercial, communauté, communauté vie, communion, compassion, comprend, compréhensible, compétence, compétitivité, concret, concrétisent, confectionner, confiance, confiant, conforme, confort, confrère, conscience, conseil, conseiller, consommation, consommer, constructif, construit, consulter, contribuer, contribution, convaincre, convergence, converger, conviction, convivial, convié, coopération, coordinateur, coordination, coriace, cotisation, cotiser, coté, courageux, couverture, croire, croissance, créateur, créatif, création, créativité, crédible, créer, culte, culture, culturel, culturelle, célèbre, célébrer, dansante, danse, dialogue, dignité, diplomatique, disponible, distribuer, distribution, diversifier, don, donner, donneur, douceur, droit, durable, dynamisme, débat, déboucher, decemment, décision, décisionnelle, décor, décoration, découverte, défendre, défense, défilé, déjeuner, déjouer, désamorcer, désir, détendue, développé, dîne, efficace, efficacité, efficence, effort, embauche, embaucher, embrasse, emmaü, empathie, emploi, emploie, employer, encadrement, encourageant, encourager, engagement, engagé, entente, enthousiaste, entraid, entreprendre, entrepreneur, espérance, espérer, espéron, essentielle, exceptionnel, excuser, exonérer, fabriquer, facile, facilement, faciliter, familial, famille, fasciner, faveur, favorable, favori, favoriser, festif, festival, fable, fidèle, fidélité, fier, financement, financer, financier, financée, fleurissement, flexibilité, fondation, force, formation, formidable, fort, fortune, france terre immigration, franchement, fraternel, fraternelle, fraternité, fulgurant, fête, gagner, gentiment, grand littérature française, gratuit, gratuitement, guide, généreux, générosité, gérer, gîte, habile,

harmonie, heureux, hommage, honneur, honnêteter, honorer, hospitalité, humain, humaine, humainement, humanisme, humaniste, humanitaire, humanité, humour, huppé, héberge, hébergement, héberger, héritage, héros, idéal, imaginer, impressionner, inciter, inclusif, incontestable, incontester, indemniser, industrialisation, informer, infrastructure, innocenté, innovation, innover, insertion, inspiration, inspirer, installation, installer, installée, insérer, intellectuel, intelligence, intelligent, intime, intégration, intégrer, intégrité, intégré, intéressant, intéresse, intérêt, inventer, investir, investissement, investissent, invité, jeu, jeune, joie, joli, jouer, jouet, jouon, joyeux, laissez-passer, laurier, laïcité, libert, liberté, libre, libéralisation, libéraliser, libère, libérer, liquidité, loger, logique, loisir, lucide, lucidité, lucratif, lumineuse, lumière, légal, légalement, légerter, légitimité, maîtriser, malin, martyr, maîtriser, meilleur, merci, mieux, miséricorde, mixité, mobiliser, mobilité, moderne, modèle, modérer, moins difficile, monument, motiver, multiculturalisme, muscler, médicament, mélange, mérite, métier, nourrir, nourriture, nouveau, nouveauté, Noël, nutrition, négociation, obtenir, oeuvre, offert, offerte, offre, offrir, offron, ong, opportunité, optimisme, organisation, organiser, orientation, ouvert, ouverte, ouverture, ouvrir, ovationner, pacifier, paix, parcours, pardon, pardonner, parfaire, parrainage, partager, partenair, partenariat, participation, participer, participeron, passionner, patriote, penser, perfectionnement, plaider, plaisanterie, plaisir, pluralité, poliment, popularité, positif, possibilité, possible, poèm, prier, primer, prioritaire, privilégier, prière, productiviste, professionnalisation, professionnaliser, professionnel, profit, profite, profiter, progresse, projet, promenade, promotion, promouvoir, proposé, propre, prospère, prospérité, protecteur, protection, protéger, prouesse, précaution, précieuse, préparation, présent, préservation, préserver, prévention, puissance, pédagogie, pérenne, qualifié, raisonnable, raisonnablement, rapprocher, rassembl, rassembler, rassurant, rassure, ratifier, ravi, raviver, recrutement, recruter, recréer, redonner, refonder, refuge, relancer, relaxer, relie, reloger, remercier, remobilisation, renaissance, renforcer, renfort, renommé, renouer, renouveler, repas, respecter, respectueux, responsable, ressource, restaurer, rever, riche, richness, rigueur, rir, réception, réchauffer, récompenser, réconciliation, réconcilier, réconfort, régala, réglée, régulariser, réhabilitation, réinsertion, réinsérer, réintégration, réintégrer, réjouissante, rémunérer, rénovation, rénover, réorientation, réouverture, république, résilience, résolution, résoudre, résurrection, rétablissemer, rétribution, réussir, rêve, sagement, salaire, saluer, sang froid, santé, satisfaction, sauver, sauveront, sauvetage, sauveteur, scolarisation, scolariser, secourir, secours, sensibilisation, sensibiliser, sensible, service, servir, sincère, social, socle, soin, solidaire, solidarité, sollicitude, solution, solvabilité, soucier, souhaiter, soulagée, soupe, sourire, soutenir, soutien, sportif, spécialiste, stabilisation, stabilité, stable, stratégique, structurée, subvention, succès, suffire, supporter, supérieur, surmonter, survie, survivant, survivre, sympathique, sécurisation, sécuriser, sécurité, sérieux, sérénité, talent, tendresse, terre mélange, tolérance, transparence, travail, travaille, travailler, travailleur, trophée, unanime, union, unité, universalisme, universelle, utile, utopie, valeur, validité, vertueux,

victoir, victoire, victorieux, vie, visible, vision, vivre, vivre - ensembl, volontaire, volontier, volonté, vouloir, vrai, vraie, véritable, vérité, vêtement, échang, échanger, échapper, échapper enfermement, éclairer, éclairé, écolo, écologie, écologique, économique, édification, éducateur, éducation, égalité, élite, émanciper, émergent, émotion, émouvoir, énergie, énergétique, équilibre, équitable, étincellant, évolution

.3.2 Negative words

“oligarchie, catastrophe, pièger, surabondance, pesant, bloquer, contaminer, anxiété, tyrannie, confisquer, tension, interdire, tenté, menacer, intimidation, regrette, pardon, endoctriner, truand, pann, brutalité, narcissique, dissimulé, expulser, crise identitaire, tué, provoquer, renseignement, détresse, obligation, débarquer, méchanceté, obstacl, abattre, fixer réfugié, arme, peur, discréditer, impuissier, hospitalier, engorger, impréparation, plaindre, exiguë, détruire, dévaster, empêcher, recours, illégal, sexisme, incident, rechercher, judiciaire, poison, envahi, barrer, hurlement, écrouer, déploré, prétendre, atrociter, interdiction, renvoyer, djihadiste, sabotage, être - dire, criminalité, déloyal, pénitentiaire, empêche, exagéron, fauteur, suppression, attentat, tragédie, contagion, fanatique, démantèlement, destruction, dominer, insuffisante, encombrer, critique, zone gris, escalade, accuser, chantage, squatter, inhumain, criminaliser, peiner, bavure, djihad, islamophob, encellulement, soldat, contre, dommage, sombrer, réduit, accusation, daech, déficit, sécurité, incompetent, craquent, “anti-étranger”, priver, voler, isoler, exécuter, gesticulation, déclin, massive, bête, lacunaire, risque, criminel, fatigue, dégénérer, cantonné, noie, naufrage, médical, sale, fermeture, submerger, embarcation, battre, déshumanisation, démission, insulter, arsenal, rétention, fragmentation, incertitude, hystérie, faiblesse, accablement, loin consensuel, bombe, désinvolte, mourir, tribunal, fumeux, ignoble, laxisme, violence, émotion, piéger, éliminé, ras-le-bol, détourné, inadapté, abandonnée, accuse, réactionnaire, djihadist, ne passer pas, nuancer, effroyable, souffrir, saturation, sinistrose, identitaire, chaotique, violation, hypothermie, fusil-mitrailleur, islamisme, taper, enfermé, déborder, pointer, djihadisme, exploiter, gendarmerie, choquer, contrevérité, parquet, faiblard, découper, grossièrement, illusion, tirer, renier, défaut, malade, démanteler, meurtrier, armer, virulent, frisson, perdre, instrumentaliser, omerta, bagarre, invasion, allergie, pique, injurieux, désaccord, fusil, clivage, réaction, perdraient, illettrisme, assourdissant, immonde, artificiellement, excès, érosion, mort, assaut, disparition, évacuer, anti-migrant, violent, serré, xénophobie, monstrueux, exorbiter, couteau, malheureux, déplorer, horreur, licenciement, resurgir, bactérie, tsunami, risquent, éloignement, ignorer, bombarder, éclaté, difficulté, addiction, machisme, néocolonial, dégradante, terreur, ébranler, explosion, cagoulé, opposer, enfer, mauvais, inadaptation, gangrener, braquage, fragmenter, ivre, diabète, squat, crainte, débouter, criminologie, chavirer, dette, foire empoigne, turbulence, incompatible, colère, fou, soi-diser, “anti-immigré”, interminable, vulnérabilité, défaillant, division,

gaspillage, génocid, banditisme, martial, laxiste, condamnaient, ciblé, réticence, faim, danger, déclasser, hospitalisation, hostile, abuser, explosif, esclavage, inconnu, charge, criminel, outrage, projectile, populiste, furieux, rechigner, interpellé, insensible, combat, écriquer, illégalement, égoïsme, éliminer, caniveau, raciste, fâcher, dérobé, évacuation, intransigeant, précarité, fragile, espionnage, confrontation, dégrader, condamné, incertain, vertige, pollution, escroquerie, incapacité, amende, tair, protester, critiquer, polémique, amalgame, abattre, détenu, guerre, illettré, battu, intrigue, jihad, assassinat, gâcher, souffrir, embarcation fortune, bataille, désolation, effondrement, entasser, répugnant, endeuiller, tourmente, enfourcher, cassé, décès, hurler, strict, dénoncer, paranoïa, inégalité, trouble, contradiction, interdire, jamais, gâchée, risquer, décadence, regretter, absurde, impopularité, incontrôlable, insulte, contester, sinistre, gravement, traite, maudire, empirer, communautarisme, contrôle, guérilla, sécuritaire, déscolariser, plonger, piège, désemparer, autoritarisme, malédiction, mortem, trafiquant, inutile, échapper, ment, scepticisme, eurosceptique, foutre, soumission, incohérent, ombre, difficile, insalubrité, impuissance, gaspiller, déchet, offenser, cellule, dispersion, fatal, hôpital, "dae", fièvre, contrainte, ingérable, puni, accusent, tuer, crouler, épuisement, contraint, grever, autarcie, insenser, démunir, cogner, traîner, incomplet, malhonnêteté, contentieux, inquiet, diviser, qaïda, fichage, fâche, pessimisme, jihadiste, juge, disparaître, paresseux, torrentiel, inquisiteur, tomber, dangérosité, prisonnier, fracture, casseur, ravager, nationaliste, combattant, ghettoïsation, dénonciation, débordement, farce, violeur, dictature, pression, dénigrer, purger, impopulaire, dangereux, déracinement, sauter, assassin, déchoit, retirer, étouffer, handicap, cracher, échec, destructeur, couper, impasse, affaiblir, ch, étrangler, exploité, détonateur, loin, instabilité, retard, rivalité, châtie, malheur, affaiblissement, indifférer, scarifiée, incarcérer, spolier, clandestin, injustice, interpellation, stigmatiser, dégat, maladie, perte, instable, pourrir, médiéval, terrifier, condamnation, détérioration, enfoncer, perquisition, masochisme, problème, outrance, négatif, désintégration, adultère, réticent, piégé, poussiéreux, traumatique, désastre, piller, perturber, faille, lacrymogène, abandonneron, négatif, indignation, redouter, tort, prison, grincer, confronter, affaiblie, effrayer, déloger, dégradé, arrêté, exclusion, détention, lutter, renoncer, dépit, discrédité, déchaîner, espion, meurtre, provocation, faute, mitrailler, tueur, menace, forteresse europe, rejeter, funeste, épouvanté, blessé, complice, suspicion, tromper, vainement, cadavre, anti-loi, défaite, barbelé, impossible, déstabiliser, clôture, surpeupler, vulnérable, hooliganisme, erreur, corrompue, préjugé, besoin, mafia, frileux, paralyser, déconfite, rebelle, violer, indigne, solitaire, idéologie, ironie, craint, pilleur, drogue, drame, rixe, inexistante, déception, harcèlement, fermer, aggraver, sceptique, dépression, crever, prostitution, méprise, choc, durcir, gendarme, extrémisme, coup, précipitation, vague, limite, traumatiser, insécurité, dégringoler, chaos, reconduit, secouer, sentence, abus, expulsé, overdose, colon, pénible, pnr, coupable, charlatan, soupçon, seuil tolérance, infamie, inférieur, péril, persécution, indifférence, attroupement, misère, tendre, excessif, dérapage, provocateur, perdu, disperser,

raté, excrément, antiterroriste, vague réfugié, frapper, complication, compliquer, radical, noyade, sans-papiers, trahison, agresser, terrorisée, cavale, accrochage, discrimination, venger, rien, urgence, sanctionner, sombre, ruine, trahi, écrase, refuser, écoeurer, hospitaliser, pleurer, insuffiser, séparation, rabatteur, dae, craindre, dérive, terrible, vulgaire, anti-immigration, kalachnikov, arrestation, grognement, décapiter, tempête, consterner, burqa, fugue, archaïque, incarcérée, malmené, affrontement, massacre, fuite, décédé, casser, rude, bancale, fiasco, égoïste, tortueux, sanglant, détruite, diabétique, embûche, abandonner, subir, alerte, panique, brutal, rétracter, briser, balle, bêtise, inquiétante, adversaire, racaille, négligence, malfaiteur, enterrement, douteux, exaspérer, pétard, asphyxiant, kidnapper, arroger, merde, inaction, révolte, incohérence, enrage, hooligan, infériorisation, alarme, échouer, commissariat, claqu, illégau, désaveu, revendiquer, imposer, jungle, assistanat, chômage, ghetto, contredire, insalubre, poignardé, angoisse, suspendre, crise, pauvrete, fermer, inculper, déprimé, attaquant, dévaluer, forcé, dissoudre, rejet, controverser, expulsion, intempestif, inondation, militaire, disparaître, enfermer, arm, déplorable, ennemi, évacuer, frappé, abasourdi, gangrène, hostile, dangereuse, blessure, défausser, faux, déguerpier, exploser, attrist, fondamentalisme, problème, empoisonner, rejette, grave, extrémiste, rupture, caisse vide, accident, hostilité, triste, terrorisme, falsifier, peine, exploitation, résigner, écraser, milice, crevé, corruption, euroscepticisme, déni, terroriste, mécontentement, élitiste, séparer, éloigner, volte-face, arracher, miséreux, salafisme, désert, dévastée, kidnapping, afflux migratoire, krach, saturer, détester, persécuter, déséquilibré, complexité, terrifiante, faible, salafiste, déchéance, condamner, préoccupant, arrêter, dissimuler, afflux, sauvage, séquestration, incontrôlé, rébellion, convoquer, absence, désolé, trahie, porcherie, délinquance, "ex-braqueur", ignorance, lobotomiser, tabasser, rétorsion, épuiser, police, secte, timide, hain, crucifixion, scandale, diable, affronter, antisémite, malsain, malheureusement, désastreuse, fuité, enquêteur, naïf, désertification, attaquer, abusivement, envahisseur, problématique, orphelin, incendie, déformer, déconstruire, intense émotion, délinquant, coupure, hésitation, hurlante, révolution, défavorbal, oblige, "court-circuiter", refus, attaque, agressive, bassiner, jettent, tragique, intense, sorcier, inacceptable, contresens, commando, régime autorisation, excès, brûlante, juger, soupçonner, émeute, nazi, modicité, combattre, manifesté, ingratitude, extrême, fardeau, aggraver, stigmatisation, analphabétisme, austérité, mal, exclure, absent, abîmer, mitrailleur, daesh, représaille, primaire, non déclarer, fragilité, extradé, protagoniste, errement, exil, expulser, traqu, confiance, surendettement, gêne, offensive, pauvre, ne pas donner bon image, racisme, jalouser, éclater, antidépresseur, chute, barbarie, défendre, effacer, surveillance, caprice, vieillissement, barrage, inquiéter, attentat - suicide, loubard, blesser, capricieux, clashe, feu, xénophobe, embrouille, insoutenable, évacué, malaise, isolement, haine, inquiétude, trafic, corrompre, enquête, barber, vol, verrou, noyer, irrégulier, radicalisation, décapitation, obliger, durcissement, suicide, islamiste, mortel, débarqu, discriminer, manifester, inculqué, boue, brûler, impéritie, effrayer, conflit, épine, vandalisme, kamikaze, néonazisme, amère, démon, putsch,

rançonner, opposition, fuir, sévère, pire, camp, façade, décourager, refermer, manifestation, conservateur, gâchis, ternir, victime, absurdité, procureur, quitter, frontière, "anti-système", peser, blocage, catapulte, dégradation, précaire, carcéral, anéanti, trahir, grille, raid, inconscience, suspect, doute, sidérer, agression, nier, rival, rompue, armée, fascisme, pléthorique, maléfique, bondir, carnage, honte, dissolution, grenade, inapte, désordre, passeur, émeute, saboter, démagogie, cri, agressiv, crime, fusillade, sacrifier, anti-migrant, policier

3

Chapter 2. Media Influence and Public Attitudes in Europe: A Cross-National Analysis of the Charlie Hebdo Attack

Abstract

This paper presents a comprehensive cross-national analysis of the impact of the January 2015 Charlie Hebdo shooting in Paris on public attitudes towards immigrants and Muslims. Utilizing a robust array of methodologies, including fixed-effects models, various matching methods, and advanced machine learning techniques, we examine how attitudes shifted in different European nations post-Charlie Hebdo, revealing a nuanced picture of regional variations in response to the attack. Additionally, we investigate the role of media in shaping these attitudes, employing two natural language processing (NLP) methods: Large Language Models (LLM) and Structural Topic Modeling (STM), to analyze news articles from five European countries and understand how immigrants and Muslims were portrayed following the attack. Our findings indicate a general decline in positive attitudes towards immigrants and Muslims in Europe, with distinct patterns emerging in specific countries that correlate with media coverage. This paper not only sheds light on the societal effects of terrorism but also highlights the critical role of media narratives in influencing public opinion. The results emphasize the need for a sensitive approach to reportage in the wake of such incidents.

Keywords: Terrorism, Immigration, Media, France

JEL Classification: F51, F22, D72

3.1 Introduction

On January 7, 2015, a profound event shook Paris. Said and Cherif Kouachi, French citizens of Algerian descent, launched a deadly attack on the office of Charlie Hebdo, a well-known satirical newspaper. This assault, rooted in the offenders' claimed retaliation for the paper's portrayal of Prophet Mohammed, not only claimed the lives of eleven employees and a police officer but also sparked a series of related attacks over three days. This culminated in a hostage situation at a kosher supermarket by Amedy Coulibaly, another French citizen, this time of Malian origin. The attacks were followed by large-scale demonstrations and received extensive coverage in both the international and French press, with narratives linking these brutal acts to radical Islam.

In recent years, several other deadly terrorist attacks targeting civilians have been carried out in major European cities – Madrid in 2004, London in 2005, Paris in 2015, Brussels, Nice, and Berlin in 2016, London and Manchester in 2017 – committed by individuals of migrant backgrounds claiming a connection with the Islamic State of Iraq and Syria (ISIS). Previous research has examined how these terrorist attacks influence a variety of societal outcomes, including attitudes towards immigrants and Muslims. For example, anti-Arab and anti-Semitic prejudices intensified after the 2004 Madrid attack Echebarria-Echabe and Fernández-Guede (2006). Ethnic segregation also increased between Arab immigrants and native Spaniards shortly after the attack (Sandell et al., 2016), as did anti-immigrant attitudes in general after the assassination of Theo van Gogh in the Netherlands Boomgaarden and De Vreese (2007); Das et al. (2009). (Rabby and Rodgers iii, 2010) documented that the London bombings caused a decrease in the employment, real earnings, and hours worked of very young Muslim men. (Van de Vyver et al., 2016) also reported stronger prejudices toward Muslims and immigrants after the London bombings. Both (De Coninck, 2022) and (Andersen and Mayerl, 2018) show that positive attitudes toward refugees are associated with

lower terrorism fear in Belgium. Attitudes towards immigrants also became more negative in some European countries after the Bali attacks in 2002 Legewie (2013) and the 2015 Paris (Charlie Hebdo) attack Castanho Silva (2018); Savelkoul et al. (2022).

While the consistent finding in this literature is that terrorist attacks, particularly those committed by ‘out-group’ members such as Islamic terror groups, increase negative attitudes towards Muslims in particular and by extension towards all immigrants, there are also suggestive findings pointing in the opposite direction. For example, Castanho Silva (2018) illustrates the (average) non-impact of the Paris 2015 (Charlie Hebdo) and November 2015 events on a wide range of out-group-related measures, such as anti-immigrant and anti-Muslim attitudes. Van Assche and Dierckx (2021) also found no impact of the November 2015 and 2016 Brussels terrorist attacks in France and Belgium respectively on attitudes towards Muslims, refugees, and immigrants.

A growing number of these studies have taken advantage of the coincidental overlap between the terrorist attack and survey fieldwork to estimate causal effects. This analytical approach, known as unexpected event during survey design (UESD) Muñoz et al. (2020), allows researchers to use the timing of the interview to assign respondents to either a treatment group (i.e., interviewed after the attack) or a control group (i.e., interviewed before the attack). The unexpected nature of the event means that assignment to treatment and control is exogenous to respondent characteristics, conditional on excludability and ignorability assumptions.

This paper adopts the same approach to test whether the Charlie Hebdo shooting caused Europeans to have more negative attitudes towards Muslims in particular and by extension towards all immigrants. Although the attack happened in France, we can expect other European countries to react negatively as well, since citizens of other European countries will likely consider France as part of the same broad “in-group” when it comes to terrorism. We focus on the Charlie Hebdo shooting because the attack was a direct consequence of the

journal's vocal critics of Islam. The attack also happened in the middle of the fieldwork of the European Social Survey (ESS) in France and many other European countries, offering a unique opportunity to assess the impact of the event in 12 European nations with respondents interviewed before and after the event. While the Charlie Hebdo attack has been the focal event of two studies on attitudes toward Muslims Castanho Silva (2018) and Savelkoul et al. (2022), our study is an important addition to this literature as there is still no consensus on the average impact of the attack on attitudes towards Muslims. By re-examining the impact of the Charlie Hebdo shooting on attitudes towards immigrants and Muslims using a vast number of methodologies, we hope that the study finally answers the question of whether the Charlie Hebdo shooting caused a shift in public opinion about Muslim immigrants.

Moreover, and most importantly, while the studies mentioned above are undeniably insightful, they have a different focus as none of them have explored the role of the media in shaping attitudes towards immigrants and Muslims. Indeed, Charlie Hebdo led to the global *Je suis Charlie* movement, which strengthened the media interest in the event with an outstanding amount of news on the issue (see figure 10). In this study, we explore the idea of the media environment resulting from the incident acting as a mediator that either exacerbates or reduces negative perceptions towards immigrants and Muslims. Only a few studies have considered the impact of certain types of news coverage on immigration attitudes, and most evidence that exists is not specific to terrorism. For example, (Sniderman et al., 2004) have shown that by simply emphasizing the ethnicity of news subjects (i.e., by making it visible), news media can increase out-group hostility in the native media audiences. (Van Klingeren et al., 2015) indicate that media visibility of immigration increases public anti-immigration attitudes, even when controlling for real-world developments (e.g., immigrant inflows) or media tone. Furthermore, many pieces of evidence indicate that the more news media report on immigration (i.e., in quantity alone), the more people tend to vote for parties with an anti-immigrant stance (see (Vliegenthart and Boomgaarden, 2007) and (Burscher et al.,

2015)) and that media bias in coverage of immigrant criminality can significantly affect political outcomes and support for far-right parties (i.e. (Couttenier et al., 2021); (Djourelouva, 2020) or that lack of bias can significantly reduce natives' concerns about immigration (Keita et al., 2021). The only piece of evidence specific to terrorism was conducted in a controlled laboratory setting and found that undifferentiated news about Islamic State terrorism increased participants' fear of terrorism and resulted in hostile perceptions toward Muslims in general (Von Sikorski et al., 2020). Despite this growing body of literature, a direct link between media coverage of specific terrorist acts, like the Charlie Hebdo shooting, and a decline in attitudes toward outgroups covered in the news remains under-explored. Our study that focuses specifically on the coverage of immigrants and Muslims in the Charlie Hebdo news articles is therefore an important addition to this literature.

We extend the existing literature on the effect of terror on attitudes toward outgroups in two ways. First, leveraging data from the European Social Survey's seventh wave and employing the latest causal inference methods, we offer a multifaceted analysis of the shooting's effect on attitudes toward both immigrants and Muslims. Our approach involves an array of methodologies, starting with OLS models with country fixed effects, progressing through various matching methods like greedy and optimal matching, as well as several weighing methods like Inverse Probability Weighting and Entropy balancing, and culminating in advanced machine learning techniques like Augmented Inverse Propensity Weighting. Our findings indicate a general decline in positive attitudes towards immigrants and Muslims post-Charlie Hebdo, with notable variances across countries like France, Germany, Ireland, Czech Republic, and Finland. This conclusion remains robust across different methodological applications (RDD and Multilevel Linear Regression with Random Intercept) and time-window adjustments (we varied the time window from 10 days to 2 months with 10 days increment). Pre-existing time trends are also ruled out through falsification tests.

Second, in addition to data on attitudes collected immediately before and after the incident, we also analyze news articles published online in 5 European nations on the issue in the month following the incident. These news data enable us to assess the role of the media in shaping public opinion against or in favor of immigrants. Utilizing two different natural language processing methods, a large language model and structural topic modeling, we analyze these news articles, uncovering a correlation between media sentiment and public opinion. Notably, Germany and France emerge as countries with predominantly positive media portrayal of immigrants and Muslims consistent with the improvement in public attitudes towards these groups observed in both countries. This contrasts with Ireland, Czech Republic, and Finland where both attitudes towards immigrants and Muslims and media sentiments towards these groups are more negative. To the best of our knowledge, this is one of the few studies exploring how the framing of terror incidents around immigration and cultural out-groups, like Muslims, can specifically play a role in shaping attitudes towards these groups.

3.2 Data and Methods

3.2.1 Data

To test the impact of the Charlie Hebdo terrorist attack on attitudes towards immigrants and Muslims, we utilized data from the seventh round of the European Social Survey (ESS). The ESS is a cross-national survey that reviews attitudes, beliefs, and behavior patterns in European countries every two years based on probability samples gathered through face-to-face interviews. The seventh round of the ESS includes several questions that allow measurement of attitudes towards immigrants and Muslims, and it includes a large number of respondents interviewed immediately before the attacks took place. This makes it possible to assess whether the event shifted attitudes towards immigration from a causal angle by

adopting the UESD framework. The terror attacks can be seen as a natural experiment where the attacks are an exogenous shock to attitudes toward immigration and immigrants.

For our analyses, we rely on ± 30 days' bandwidth in the main specification because almost all media coverage on the issue was published within one month after the event. Beyond that period, there was almost no press coverage on the issue (see figure 10 in appendices). Nonetheless, in the robustness tests, we discuss results for smaller and larger bandwidths. We kept only respondents from countries with participants interviewed both before and after the attack, resulting in a sample size of 6,041 respondents from 12 European countries, with 2,886 respondents interviewed before the attack and 3,155 after the attack.

The identification of valid causal estimates based on the comparison of respondents interviewed before and after the day of the event hinges on several identifying assumptions. The first is excludability: any difference between respondents interviewed before and after the event shall be the sole consequence of the event. That is, the timing of the interview should affect the outcome variable only through the event. For this assumption to hold, it is important that no other, unrelated events take place around the date of the attack that could affect the outcome. In our case, we have a great advantage with the Charlie Hebdo shooting because no major terrorist attack happened in the months leading to the attack in Europe. We adopt a short time span so that the subjects had very limited time to change some of their attitudinal characteristics due to any other exogenous event than the attack. We also followed the literature Muñoz et al. (2020) and applied the following robustness checks: examination of pre-existing time trends through falsification tests (placebo specifications for one and two months before the actual date) as well as with the RDD that includes a running variable. We also assessed the effect of the shooting on other outcomes for which there should be no effect (attitude toward Jewish and Gypsy populations).

The second key assumption is temporal ignorability: this assumption requires that the timing of the interviews during the fieldwork period occurred by chance. In other words,

every individual must have the same, a priori, probability of being interviewed before or after the exogenous treatment. In this way, the treatment assignment is randomized. However, the timing of the interview in the ESS is not under the researchers' control and is not random. The fieldwork often follows a geographical pattern for efficiency reasons. Any correlation between subject location and time of the interview will lead to a violation of the ignorability assumption since the location can be correlated with many other respondents' characteristics that might bias the findings. This potential source of bias can be resolved by controlling for covariates that have been shown to influence how the fieldwork was organized.

Outcomes, Treatment and Control variables

The primary objective of this study is to assess the impact of the Charlie Hebdo attack on public attitudes towards immigrants and Muslims. To this end, we have selected two pertinent variables from the European Social Survey (ESS). The first dependent variable, measuring attitudes towards immigrants, is derived from a survey question asking respondents their views on allowing immigrants from poorer countries outside Europe into their country. The response options range from:

“Allow none to come (1)”, “Allow a few (2)”, “Allow some (3)” or “Allow many (4)”.¹ Our second dependent variable mirrors the first, albeit focusing on attitudes towards Muslims. Respondents were asked to express their views on the extent to which they believe their country should allow Muslims to immigrate. The response categories for this question are identical to those used for the variable on immigrants, ensuring consistency in the measurement of attitudes towards these two groups.

Figure 4.3 presents the mean scores of the outcome variables for respondents interviewed before and after the Charlie Hebdo attack. An initial observation reveals that respondents interviewed post-attack exhibit more negative attitudes towards both immigrants and Muslims.

¹We recoded the attitude variables so that a higher value represented a more positive view on immigrants.

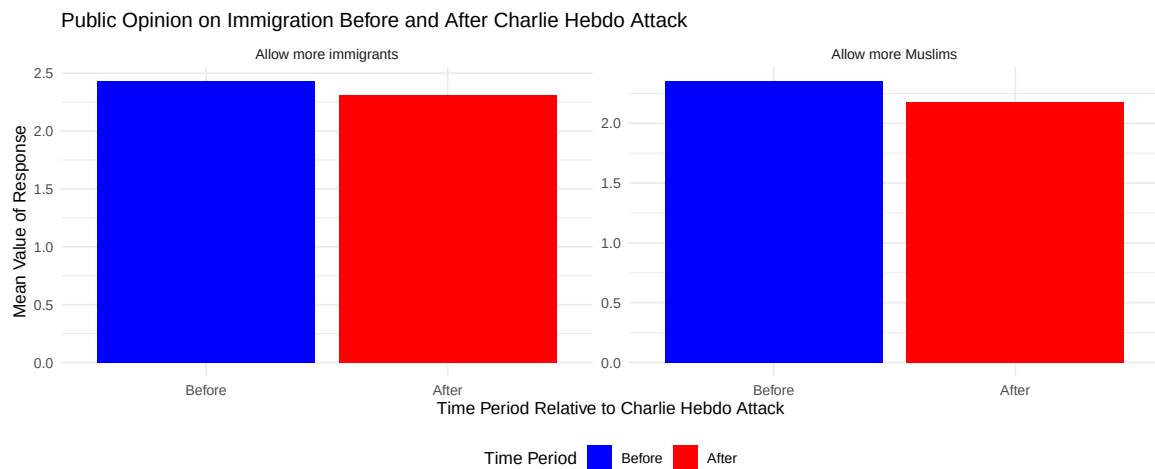


Figure 3.1 Means of outcome variables Before and After Charlie Hebdo Attack

However, we cannot interpret this difference in means causally unless we assess whether the key identifying assumptions of the UESD are met.

The treatment variable in our study is a binary indicator that segregates the respondents into two distinct groups: those interviewed before the attack date (07/01/2015) and those interviewed after. We deleted all respondents from the analyses who were interviewed on the day of the event, as we cannot be sure whether those respondents had been exposed to the event or not.

In our main specification, we incorporate a range of socio-demographic variables that are relevant for assessing the ignorability assumption. These include gender (with male as the reference category), age, education level (categorized into seven levels), income (segmented into deciles), living area (divided into five categories), self-reported political orientation (on a scale from 0, left-leaning, to 10, right-leaning), religiosity (with non-religious respondents as the reference group), and country of residence. The decision to use these specific variables was based on recommendations for this particular design Muñoz et al. (2020) but also on previous studies. As we progress to more advanced methodologies for estimating the causal effect that better handle high-dimensional datasets, we will introduce additional controls.

Table 3.1 presents the results of an imbalance analysis, which assesses whether the respondents in the pre- and post-intervention groups are sufficiently comparable regarding our included exogenous covariates. The last column provides the absolute value of the standardized difference in means; it is often recommended that the SMD should not exceed 0.25, which is the case for all our variables. Nonetheless, the smaller these differences are, the more accurate our causal effect estimate will be. We therefore discuss below methods for controlling for these imbalances to increase confidence that the assignment to pre- or post-intervention groups is essentially exogenous.

3.2.2 Methods

To address the ignorability assumption, most studies in the literature employ either matching/weighting techniques to improve covariate balance between treatment and control groups or use controls within a regression framework. To enhance our analysis and mitigate the limitations inherent in both approaches, we employ both methods in this study.

Regression-Based Methods

We begin our analysis with a Regression-Based Method (RBM) to estimate the average treatment effect (ATE) as the difference between the mean outcomes of treated and control groups, conditional on covariates. The ATE is given by:

$$\tau_{ATE}^{Reg} = \mathbb{E}[f(1, X) - f(0, X)]$$

Here, $f(1, X) = \mathbb{E}[Y \mid A_n = 1, X_n = x]$ represents the mean outcome Y for the treated group ($A = 1$), and $f(0, X) = \mathbb{E}[Y \mid A_n = 0, X_n = x]$ the mean outcome Y for the control group ($A = 0$). This estimation is feasible because treatment assignment can be considered random once we control for the covariates X . Formally, this implies:

$$\{Y_i^{(1)}, Y_i^{(0)}\} \perp A_i \mid X_i$$

The RBM that we employ is the Country Fixed Effects (FE) estimator, a method widely accepted across disciplines for estimating causal effects from non-experimental data, particularly effective when time-variant confounders are minimal. This is especially pertinent given the short timeframe (1 month) of our study. The country fixed effects approach has a shortcoming in our application: it does not take into account the dependence of observations nested within countries. In the robustness tests, we replace the country fixed effect estimator with the Multilevel Linear Regression (Random Intercept) to account for the hierarchical structure of the data. Another downside general to all RBM is that they assume linearity in the functional form of $f(1, X)$ and $f(0, X)$. Matching or weighting methods do not make such assumptions, making them more reliable for estimating the causal effect. We therefore complement the FE approach with matching and weighting methods.

Matching Methods

Matching methods create comparable groups of treated and control based on observed characteristics. The most popular matching methods are all based on Propensity-Score Matching (PSM). PSM facilitates balanced comparisons between treated and untreated subjects using their propensity scores. A propensity score is the probability that a respondent belongs to the treatment group conditional on the covariates X . $e(X) = E[A = 1 \mid X]$. In our study, we employ several PSM techniques to estimate the ATE, including nearest neighbor (greedy matching), Coarsened Exact Matching (CEM), and optimal matching. All methods are applied without replacement to ensure unique pairings.

“*Greedy matching*” pairs subjects based on the closest propensity scores. Although computationally efficient, it can result in suboptimal pairings. Figure 11 in our appendices assesses the plausibility of the ignorability assumption by analyzing balance on pre-treatment

covariates between treatment and control groups before and after adjustment through greedy matching. The figure plots the difference in means in standard deviation units of all sociodemographic characteristics of respondents as well as their place of residence. Although the algorithm has achieved considerable improvements in Standardized Mean Differences (SMD), there is still room for improvement for certain covariates like country of residence. To enhance matching precision, especially for these critical variables, “*Coarsened Exact Matching (CEM)*” is used in combination with greedy matching, striking a balance between precision and the practicality of sample size. CEM coarsens continuous covariates into broader categories to allow for exact matching within these groups. This combined matching approach significantly improved balance on the chosen variable for exact matching (country of residence), as evidenced by the SMDs presented in figure 12 in our appendices, showing a reduction to zero for these variables. However, improvement is still limited on other covariates. We therefore use “*Optimal matching*” to minimize the average within-pair difference in propensity scores across all pairs, rather than seeking the closest match per individual. This method, suited for our study’s manageable sample size, significantly improved the balance across our sample as shown in figure 4.4 in our appendices by the SMD reductions below 0.05 for all covariates, including prioritized country of residence and political orientation, enhancing the credibility of our causal inferences.

Weighting Methods

The most popular of the weighting methods is the Inverse Probability of Treatment Weighting (IPTW) (See (Chesnaye et al., 2022) for application to observational data). IPTW balances the characteristics of treated and control groups in observational studies by assigning weights based on their propensity scores. Treated subjects are weighted by the inverse of their probability of receiving treatment, and control subjects by the inverse of their probability of not receiving treatment. This weighting simulates the conditions of a randomized controlled

trial, adding robustness to our causal analysis by minimizing bias due to confounding variables. The ATE is given by:

$$\hat{\tau}_{IPW} = \frac{1}{N} \sum_{n=1}^N \left(\frac{A_n Y_n}{e(X_n)} - \frac{(1 - A_n) Y_n}{1 - e(X_n)} \right)$$

Another weighting method for causal inference that has gained popularity in recent years is Entropy Balancing Hainmueller (2012). This method adjusts the weights of the treatment and control groups such that the weighted distributions of the covariates in both groups match precisely. It reweights the sample by minimizing the entropy distance subject to covariate balance constraints, ensuring that the weighted means, variances, and higher-order moments of the covariates are equivalent across the treatment and control groups. The ATE is given by:

$$\hat{\tau}_{EB} = \frac{1}{N} \sum_{n=1}^N w_n Y_n A_n - \frac{1}{N} \sum_{n=1}^N w_n Y_n (1 - A_n)$$

where w_n are the weights derived to achieve covariate balance.

Machine Learning Methods

Machine learning (ML) methods are becoming increasingly popular for causal inference due to their flexibility and ability to handle complex data structures, as highlighted by (Baiardi and Naghi, 2021). The ML method we employ is the Augmented Inverse Propensity-Weighted (AIPW) estimator (Robins et al., 1994). The AIPW estimator involves a two-step process: First, we fit a propensity score model using machine learning techniques. Unlike traditional methods, these techniques do not assume linearity in the functional forms of $f(1, X)$ and $f(0, X)$, allowing for a more flexible and accurate modeling of the treatment assignment mechanism. Second, we estimate the treatment effects by weighting outcomes based on these propensity scores. The AIPW estimator is notable for its "double robustness," meaning that

the estimator remains reliable as long as either the propensity score model or the outcome model is correctly specified. This robustness is particularly valuable, as it ensures consistency even if one of the models is misspecified. The ATE is estimated as:

$$\hat{\tau}_{ATE}^{AIPW} = \frac{1}{N} \sum_{n=1}^N \left(\underbrace{f(1, X_n) - f(0, X_n)}_{\text{Regression Adjustment}} + \left(\underbrace{\frac{A_n}{e(X_n)}(Y_n - f(1, X_n))}_{\text{Augmentation}} - \underbrace{\frac{1 - A_n}{1 - e(X_n)}(Y_n - f(0, X_n))}_{\text{Augmentation}} \right) \right)$$

In this formula, the first term $f(1, X_n) - f(0, X_n)$ represents the regression adjustment, capturing the difference in predicted outcomes for treated and control units. The second term involves augmentation components that adjust for any discrepancies in the propensity score model, thus ensuring the estimator's robustness.

Because ML methods are better capable of handling high-dimensional data sets, to further bolster our analysis against potential omitted variable bias, we expanded our control variables to include factors such as respondents' TV watching time, interest in politics, satisfaction with life, happiness level, experiences of discrimination, and current employment status. We also applied piecewise polynomials for all continuous variables, increasing our total number of covariates to 55.

One key assumption for all matching and weighting methods that we have not discussed yet is positivity. This assumption states that every subject must have a non-zero probability of receiving treatment Zhu et al. (2021). We verified this assumption by examining the overlap in propensity score distributions, ensuring all scores fell within a typical range of 0.05 to 0.95, as illustrated in figure 3.2. We now proceed to the results section, where we present the estimated Average Treatment Effects (ATE) for each method, providing a detailed analysis of the societal impact of the Charlie Hebdo shooting on attitudes towards immigrants and Muslims.

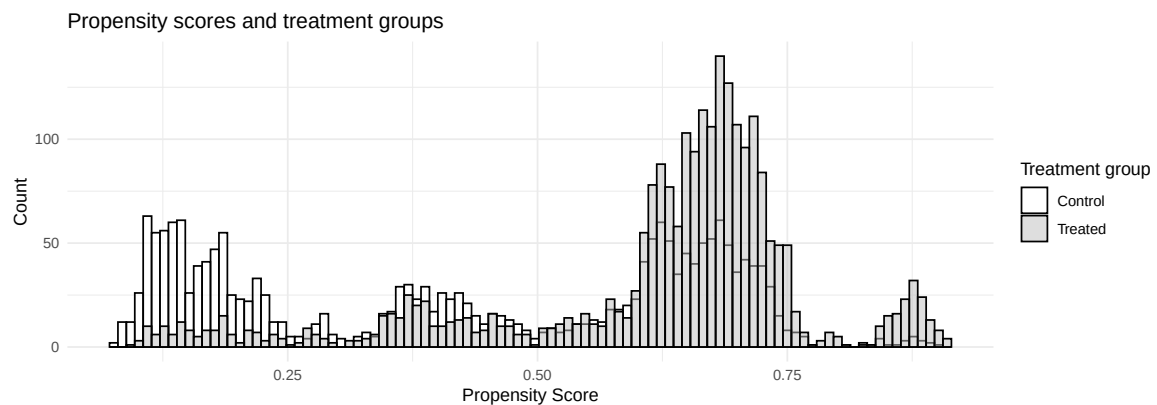


Figure 3.2 Propensity scores and treatment groups

3.3 Results

Figure 3.3 presents the point estimate of the Average Treatment Effects (ATE) of the Charlie Hebdo shooting on attitudes towards immigrants and Muslims, with 95% confidence intervals drawing on the ± 30 days bandwidth. The figure shows a remarkably uniform picture as all seven methods indicate a statistically significant decrease in attitudes, suggesting that those interviewed after the attacks had more negative attitudes towards immigrants and Muslims compared to those interviewed before. This finding corroborates results from previous research from both the United States and Europe that terrorism causes a negative shift in attitudes towards outgroups. The magnitude of these effects varies between 8% to 12% of the standard deviation pretreatment distribution for attitudes towards immigrants and from 6% to 10% for attitudes towards Muslims. Although the scale of these effects is modest relative to the standard deviation, they are more significant than the gender gap. This uniformity in the direction of the effects suggests a discernible average shift in public sentiment post-Charlie Hebdo in Europe, albeit not a drastic one.

Next, we test whether the shift in attitude happened immediately after the Charlie Hebdo attacks. For this purpose, we specify a model that includes a running variable ranging from -30 to 30 (the fieldwork days before and after the attacks), with 0 corresponding to January

8th, 2015. This variable is interacted with the treatment indicator. In this interactive model, the constitutive term for the “treatment group” variable corresponds to the effect of the terrorist attacks when the running variable “days” equals 0 (i.e., on January 8th, the first day immediately after the attacks). The interactive term, in turn, indicates whether or not the effects of the attacks changed (weakened or strengthened) as time went by after the attacks. This design is very similar to the Regression Discontinuity Design (RDD) as assignment to the treatment group varies discontinuously with the day of the interview. Specifically, the treatment effect is identified by comparing outcomes on either side of a threshold.²

The “treatment” coefficient in the interactive model as shown in table 3.2 reveals that attitudes toward immigrants and Muslims shifted negatively immediately after the attacks on January 8th, 2015. Moreover, the coefficient of the interactive term (Treatment*Days) of this model is positive and significant for Muslims but not for immigrants, indicating that the effects of the attacks did not significantly change thereafter for immigrants but the negative trend in attitudes towards Muslims is less steep as it diminishes over time. Using the same design, we also tested whether the attack caused the same effect for attitudes toward unrelated groups such as Jewish and Gypsy populations and found no evidence of such effect (results available upon request).

One issue highlighted in research on terrorist attacks and public opinion is the potentially short-term impact of such events, whereby effects may last for merely days. Mancosu and Ferrin Pereira (2021), for example, find that negative attitudes against immigrants after the 2017 Manchester bombing lasted only for a week. To assess the duration of the effect beyond one month, we considered comparing attitudes of those interviewed in the 30 days leading to

²The equation that is estimated

$$Y_i = \alpha + \beta_1 Treatment + \beta_2 Days + \beta_3 Treatment_i \times Days + \delta Controls_i + \epsilon_i \quad (3.1)$$

The set of dependent variables—contained in Y measures attitudes toward immigrants and Muslims. The main independent variable (Treatment) is equal to 1 for respondents answering the survey after the attack occurred (0 otherwise). The vector of control variables (Control) includes respondents’ gender, age, education level, income, living area, self-reported political orientation, religiosity, and country of residence.

the attack to the attitudes of those interviewed from the 31st day to the 60th day following the attack. Unfortunately, too few respondents were interviewed in the post-attack period and most of those interviewed were from a single country - Austria. Data limitations mean that we are unable to effectively assess the long-term effect of the attack. The best we can do here is to investigate to what extent the absolute size of the effect varied by the length of the time window, which we discuss in the next section.

Before discussing further robustness checks, we briefly examine the estimated coefficients for the control variables in the fixed effects (FE) model. The controls display the expected signs: women report more negative attitudes compared to men; older respondents also exhibit more negative attitudes. In contrast, respondents with higher levels of educational attainment report significantly more positive attitudes. Political alignment plays a role as well, with those on the right of the political spectrum reporting more negative attitudes. Additionally, respondents residing in rural areas show more negative attitudes. Geographic variation is also evident: respondents living in Belgium, the Czech Republic, Finland, and Ireland report below-average attitudes. Those in Switzerland, Germany, France, and Sweden report above-average attitudes, while respondents in Denmark, the Netherlands, and Slovenia report average attitudes.

3.3.1 Robustness checks

To assess the robustness of our results to the choice of event window, we varied the bandwidths, considering -10 to 10, -20 to 20, -40 to 40, -50 to 50, and -60 to 60 days. For each bandwidth, we ensured that survey respondents were balanced around the event date after controlling for confounders. Figures 14 and 15 in the appendices confirm that our conclusions about the negative impact of the Charlie Hebdo shooting on attitudes toward immigrants and Muslims hold across different time windows and methods (FE, Greedy

Match, Hybrid Match, Optimal Match, IPW, Entropy Balancing, or AIPW). The precise number of days or the method used does not change our conclusion.

Furthermore, as we increase the time window, the magnitude of the impact diminishes. This pattern reinforces the credibility of our conclusion that the attitude shift is due to the shooting and suggests that the impact is short-lived, with attitudes likely returning to their pre-shooting levels a few months after the event. We limit our analysis to two months post-event due to data availability and to avoid issues with causal inference, as unrelated events, such as the massive arrival of migrants in Europe from March 2015, could bias the findings.

To assess the validity of the exclusion restriction, which implies that the timing of the survey only affects the outcome of interest through exposure to the event, we performed two falsification tests. These tests examine whether the observed effects are uniquely linked to the Charlie Hebdo event or if similar patterns could occur in the absence of such a dramatic incident. If our findings are caused by a declining trend in attitude, we would find a statistically significant treatment effect when assuming that the attacks happened one month before its actual date on December 7th, 2014 (Placebo 1) or two months before its actual date (Placebo 2) on November 7th, 2014. The results of these tests, as shown in 16 and 17 in the appendices, demonstrate that our main findings are not driven by preexisting time trends unrelated to the event of interest. All seven methods indicate no treatment effect or a slight improvement in attitudes towards immigrants, in contrast with the decline observed on the actual attack date. These findings, particularly the consistency across all methods, further validate our primary results that the shifts in attitudes are directly associated with the Charlie Hebdo incident, rather than a general decline in sentiment towards immigrants and Muslims in Europe.

As mentioned earlier, an important shortcoming in the country fixed effect estimator that we use in our initial analysis is that it does not take into account the dependence of

the observation nested within countries. We therefore replace it with the Multilevel Linear Regression (Random Intercept) to account for the hierarchical structure of the data. The results (see table 4.3 in the appendices) remain the same for both attitudes towards immigrants and Muslims. We also perform leave-one-out analyses to ensure that the main results are not driven by one single country. The results (see table 4 and 5 in the appendices) hold when each country is left out one at a time.

3.3.2 Heterogeneous Findings

So far, we have focused on the average impact of the attack on all 12 European nations, ignoring that we are dealing with largely differentiated contexts and environments that can moderate or exacerbate the average negative effect observed. The heterogeneous nature of terrorism's impact is evident in the varied findings of previous studies. For instance, (Legewie, 2013) observed significant cross-national variations in the anti-immigrant sentiments triggered by the Bali attack with pronounced effects found in countries like Portugal, Poland, and Finland, while no impact is found in others including Belgium, Switzerland, Sweden, the Netherlands, Norway, and Great Britain. (Savelkoul et al., 2022) reported mixed responses within Europe to the Charlie Hebdo attack, with notable differences in public resistance towards Muslims across countries such as Ireland, the Czech Republic, France, Austria, Finland, and Germany.

Given this backdrop of varying national responses, our study aims to delve deeper by estimating the impact of the Charlie Hebdo attack on attitudes towards immigrants and Muslims for each country within our sample that has a sufficient number of respondents both before and after the attack. Based on the data presented in Table 3.1, we have identified five countries (the Czech Republic, Germany, Finland, France, and Ireland) that meet the criterion of having at least 100 respondents interviewed both before and after the attack. We summarize below the key findings:

Czech Republic: The findings for the Czech Republic reveal a consistent trend of declining positive attitudes towards both immigrants and Muslims following the Charlie Hebdo attack (See figure 18 in the appendices).

Finland: For Finland, there is a clear indication of a decline in positive attitudes towards immigrants, as shown by all the methods applied (see figure 19 in the appendices). A similar trend of a negative shift is observed for attitudes towards Muslims, with three of the methods reporting a minor decrease in positive attitudes while the other four methods indicate no significant change.

Ireland: The analysis for Ireland presents a picture similar to Finland, with five methods suggesting a minor to moderate decline in positive attitudes while the other two methods indicate no significant change in attitude toward immigrants. In contrast, the negative impact on attitudes towards Muslims is more pronounced and consistent across methodologies (see figure 20 in the appendices).

Germany: The analysis of Germany's response to the Charlie Hebdo attack offers an intriguing perspective on how such events can influence public attitudes in varying national contexts. Across all methodologies, the data indicates no significant shift in attitudes towards immigrants post-Charlie Hebdo attack. The results for attitudes towards Muslims in Germany also point to either no significant change (two methods) or a slight improvement (five methods) post-attack. Overall, the results for Germany suggest a notable improvement in public sentiment towards Muslims and no significant change towards immigrants in the aftermath of the Charlie Hebdo attack (see figure 21 in the appendices).

France: As we turn to France, the focal point of the Charlie Hebdo attack, we inherently anticipate the strongest reactions here due to the attack's local occurrence. Typically, in the context of terrorist attacks, especially one as significant as Charlie Hebdo, one might expect a deterioration in attitudes towards both immigrants and Muslims, assuming that the proximity and direct impact of the event would intensify public sentiment. Surprisingly, the results for

France show a different trend than initially expected. Five of the methods employed suggest an improvement in attitudes towards both immigrants and Muslims following the Charlie Hebdo attack. The other two methods indicate no significant change (see figure 22 in the appendices).

These country-specific results highlight the diverse ways in which societies react to terrorist attacks, influenced most likely by local media narratives, historical context, and societal values. The next section will discuss the implications of these findings and explore potential explanations for the variations observed.

3.3.3 Discussion

Reflecting on the overall negative impact observed in the sample when all countries are combined and the contrasting country-specific impacts—ranging from negative shifts in the Czech Republic, Finland, and Ireland to improvements in France and Germany—we must examine underlying theories and alternative explanations. Two main theoretical frameworks typically used to explain reactions to terrorist attacks are “*System Justification Theory (SJT)*” (Jost and Banaji, 1994) and “*Intergroup Conflict Theory (ICT)*” (of Oklahoma. Institute of Group Relations and Sherif, 1961). These theories explain negative reactions to terrorist attacks through perceived threats and competition over resources. Recent work has combined explanations from SJT and ICT to better understand the driving forces behind prejudice toward immigrants following terrorism.

However, applying SJT to our findings does not offer a straightforward explanation, especially for France, where one might expect a heightened sense of threat and consequently more negative attitudes, yet we observe the opposite. One possible explanation for the SJT mechanism not being activated is that fear of being targeted in future attacks was probably not relevant in this case since the attack was specifically directed toward the Charlie Hebdo journal and not the general public. How people perceive their own risk of being a victim of a

terror attack and the motive of the terrorists seem to play an important role in determining how people will respond to an attack Jakobsson and Blom (2014). Moreover, statistics on the Muslim population in 2015 (higher for France and Germany) and unemployment rates across the five countries do not consistently align with predictions from intergroup conflict theory.

A theoretical argument that could help explain this puzzling finding is based on the contact hypothesis Allport et al. (1954), which states that increased personal interaction between two groups improves attitudes (for an overview, see Pettigrew and Tropp (2006)). Personal interaction between natives and Muslim immigrants in Germany and France may have helped reduce pre-existing stereotypes and thereby stabilize anti-immigration attitudes in these countries (Enos (2014).

In short, the arguments based on SJT and ICT suggest that contextual factors moderate the extent to which terrorism might result in anti-immigrant attitudes. The magnitude of the public response depends on various factors, including people's economic position and their resulting vulnerability to changes in the labor market, or the extent to which they deem cultural homogeneity within their country an important policy goal. Another important contextual factor that is often overlooked is the media environment surrounding the incident. This study argues that media coverage of immigrants and Muslims following terrorism can be an important mediating factor.

3.4 Role of the media

It is widely acknowledged that information relayed through mass media influences the formation of anti-immigration attitudes. However, comparative studies on how media coverage of terror incidents affects public opinion toward specific outgroups are limited. To date, research has primarily focused on identifying the causal link between terrorism and attitudes toward outgroups, without exploring the specific channels through which this shift occurs, aside from the size and increase of the outgroup population and unemployment levels

as mediating factors. This study argues that in addition to the societal and economic context, news coverage of the attack itself must be considered as a contextual factor.

To understand how news coverage of a terror incident affects public opinion about immigrants and Muslims, it is important to assess whether the media environment surrounding the incident encourages or discourages assigning responsibility to these groups. Mainstream media coverage influences readers' assessments of the gravity of the act and the reasons behind it. When mass media highlight immigration and Muslims in their coverage of the incident, the audience is more likely to view these groups as relevant to the act. This is particularly significant for topics like terrorism, which the general public finds difficult to understand and has little direct experience with. Consequently, the media often serve as the primary information source, leading to strong fluctuations in how incidents are interpreted and responsibility is assigned.

Media influence on public opinion is traditionally understood through agenda-setting theory, which posits that frequent reporting on an issue increases its perceived importance Maxwell (2004). However, understanding media influence requires examining not only the salience of issues but also how they are framed. Media frames are thematic structures that shape audience interpretation, pushing them to view issues within a specific context Erhard et al. (2022). Distinguishing between agenda-setting and framing is crucial for accurately attributing media effects on attitudes, especially in sensitive domains like immigration and ethnic relations post-terrorism.

In this context, we first focus on the agenda-setting effects on attitudes toward immigrants and Muslims. We explore the relationship between the visibility of immigrants and Muslims in news about the Charlie Hebdo shooting and shifts in public opinion about these groups. We hypothesize that countries where the media frequently link immigrants and Muslims with the incident will exhibit the most negative shifts in public opinion.

However, analyzing the visibility of immigrants and Muslims in Charlie Hebdo news articles is insufficient to understand their impact on public opinion. We also assess how the content, specifically the stance of the news toward immigrants and Muslims, could explain differences in attitudes across the five countries. We focus on how the media influence public opinion by assigning responsibility for the incident to these groups or by determining which political claims and comments about immigrants and Muslims are relevant to the discussion. We hypothesize that countries with a higher share of unsupportive Charlie Hebdo news articles about immigrants and Muslims will show the most negative shifts in public opinion.

These expectations are tested through descriptive analysis using a corpus of 19,320 news articles published online up to a month after the Charlie Hebdo attack, containing the keyword “Charlie Hebdo.” This corpus includes a wide array of local and national perspectives, predominantly from France (16,284) and Germany (2,671), where no negative shift in public opinion was observed, and Ireland (216), the Czech Republic (131), and Finland (18), where a negative shift was noted. These countries differ significantly in the size of their outgroup populations, allowing us to rule out outgroup size as an explanatory factor for the differences in reactions. For the analysis, we assume that all survey respondents were exposed to news about the incident either directly or through interpersonal communication. We use two Natural Language Processing (NLP) methods for analysis: Large Language Models (LLMs) and Structural Topic Modeling (STM).

3.4.1 Large Language Models (LLMs)

The emergence of Large Language Models (LLMs) like ChatGPT has revolutionized the field of Natural Language Processing (NLP), offering unprecedented opportunities for understanding and analyzing human-produced text. LLMs, with their vast knowledge bases and contextual understanding capabilities, have become powerful tools in various NLP tasks. One such task is stance detection, a nuanced form of sentiment analysis focused on

identifying the position or perspective expressed in text towards a specific subject or entity. Unlike general sentiment analysis, which classifies text as positive, negative, or neutral, stance detection delves into understanding the explicit or implied stance towards particular targets, often crucial in analyzing public opinions on controversial topics Küçük and Can (2020).

Recent studies have showcased the impressive performance of LLMs across a range of NLP tasks (Cruickshank and Ng, 2023). For instance (Zhang et al., 2022) evaluate ChatGPT's performance on detecting political stance and highlight ChatGPT's proficiency in political stance detection, often outperforming traditional models. (Zhang et al., 2023) provide a comprehensive investigation into the capabilities of LLMs in performing various tasks, confirming that LLMs can significantly surpass standard language models, especially in scenarios requiring a nuanced understanding of text. Nonetheless, despite their impressive capabilities, LLMs are not without challenges. Variability in performance across different versions Aiyappa et al. (2023), the tendency to produce plausible but incorrect answers (hallucinations) Cruickshank and Ng (2023), and limitations in handling complex tasks requiring deep understanding Zhang et al. (2023) are among the issues researchers and practitioners face. With these limitations in mind, the next section will delve into our strategy for employing these models in analyzing the media coverage of the Charlie Hebdo attack. We will discuss the prompting strategies designed to optimize the quality of outputs and prevent undesirable behaviors like hallucination.

Prompting Strategy

As we delve into the sophisticated world of Large Language Models (LLMs) such as GPT-3.5 Turbo, it becomes crucial to master the art of prompt engineering—the technique of crafting effective prompts to elicit accurate and relevant responses from these models Schmidt et al. (2023). A few key techniques in prompt engineering that are particularly relevant for

LLMs include: “*Few-Shot Prompting*:“ Providing the model with a few examples of the desired output to guide its responses White et al. (2023); “*Chain-of-Thought Reasoning*:“ Encouraging the model to “think aloud,” detailing its reasoning process step-by-step, which often enhances the quality and reliability of its responses Wei et al. (2022); “*Preventing Hallucinations*:“ Introducing strategies to minimize the risk of the model generating plausible but incorrect or unverifiable information Huo et al. (2023). In light of these techniques, and over several iterations and adjustments, we designed a prompt that consistently yields the desired outputs while containing only essential components to identify and analyze the stance of news articles towards immigrants and Muslims. The prompt includes:

- A clear task definition: Asking the model to identify whether Muslims or Immigrants are discussed in the article and to discern the presence of supportive or unsupportive opinions about them.
- Desired output format: Specifying a straightforward ‘Yes’ or ‘No’ response format to facilitate the classification of the articles’ sentiments.
- Evidence requirement: Asking the model to provide evidence from the article for each answer to minimize hallucinations and ensure reliability.

Table 6 in the appendices showcases an example of the employed prompt and the corresponding output obtained from GPT-3.5 Turbo.

Result of the LLM

In our quest to understand media influence on public attitudes post-Charlie Hebdo, we have utilized the GPT-3.5 Turbo, a popular Large Language Model developed by OpenAI. To manage this extensive data and ensure accuracy in model responses, we undertook two essential preprocessing steps:

Sample Reduction for France: Given the overwhelming number of articles from France, we randomly selected 2,500 articles for a more manageable and representative analysis. This

selection was meticulously done to retain the distribution of news sources. This step was crucial for ensuring the feasibility of manually verifying model-generated evidence and categorizing the opinions expressed in the articles.

Multilingual Corpus Management: To address the multilingual nature of our data, we employed Microsoft machine translation APIs to translate non-English articles into English, the language in which LLMs, particularly GPT-3.5 Turbo, show superior performance. This step ensures consistency in analysis and broadens the accessibility of our findings to an English-speaking audience.

Our analysis began by exploring the extent to which news articles link the Charlie Hebdo attack to Muslims or immigrants. Figure 3.4 presents the percentage of news articles associating the attack with these groups in each country. Interpreting these percentages within the framework of agenda-setting theory provides a nuanced understanding of media's impact. The theory posits that a higher frequency of media coverage, or salience, should correlate with increased public concern about the topic. Intriguingly, our findings align with this theory for France, where lower media salience correlates with an improved public attitude post-attack. However, the results for Germany present an unexpected deviation. Despite a high salience of immigrants and Muslims in the media post-Charlie Hebdo attack, reflecting a supposedly heightened public concern, attitudes towards these groups improved. This divergence in Germany, contrasted with the alignment in France, suggests that while agenda-setting theory can provide some insights, it does not fully encapsulate the complex dynamics at play. This discrepancy further emphasizes the necessity to explore beyond mere salience to the specific stance and framing of news articles to understand their influence on public attitudes.

Moving forward, we will focus on the second question posed to the LLM regarding the presence of supportive and unsupportive opinions about immigrants and Muslims in the news articles. The distribution of news articles with supportive and unsupportive opinions about

immigrants or Muslims post-Charlie Hebdo, as shown in figure 3.5, presents a much clearer picture.

Germany: Clearly stands out with more supportive opinions than unsupportive opinions toward immigrants and Muslims. This is consistent with the improvement in public attitudes towards these groups in Germany. This finding suggests that more positive coverage of outgroups following terror can lead to more positive public perceptions.

France: Interestingly, France exhibits the lowest percentages of both supportive and unsupportive news articles, with as many supportive as unsupportive, offering balanced coverage of immigrants and Muslims following the incident. This is consistent with the improvement or stability in public attitudes towards immigrants and Muslims in France. The result from France reinforces the idea that balanced coverage of minorities following terror can also lead to more positive public perceptions.

Czech Republic Finland and Ireland: These three countries have a higher share of unsupportive opinions than supportive ones, aligning with the more negative shifts in public attitudes observed in these countries post-attack. The Czech Republic, for instance, exhibits the highest percentages of news articles with non-supportive opinions, closely followed by Finland and Ireland. Overall, the results support the idea that a negative media environment towards Muslim immigrants following a terrorist attack can increase hostility towards these groups.

As we delve deeper into the media's influence, our next step involves categorizing the various themes present in the evidence provided by the model. This approach was crucial for ensuring accuracy in our analysis; each piece of evidence cited by the model to support the identification of supportive or unsupportive opinions was manually verified to confirm its presence in the actual text. This verification process helped us minimize any potential hallucinations. During this verification, we also classified the evidence into broader categories of supportive and unsupportive opinions. This classification allowed us to analyze if certain

arguments were more prevalent in specific countries. For instance, Figure 3.6 organizes supportive opinions into themes such as calls for unity, criticism of discrimination, the positive societal impacts of Muslims, and narratives distancing Muslims from terrorism by country. This categorization by country helps us better understand the nuances of media narratives in each country and their potential impact on public sentiment.

Muslims Distanced from Terrorism: This theme captures articles where Muslims or their leaders explicitly condemn terrorism and distinguish their faith from extremist acts. Example: “The rector of the Givors Mosque strongly condemns the attack on the satirical newspaper and calls it an inadmissible act.” This theme is particularly present in the Czech Republic, Germany, and Ireland.

Call for Unity, Tolerance, and Dialogue: This category includes articles advocating for solidarity, understanding, and open conversation among different communities. Articles in this category usually call for a dialogue between religious leaders or highlight community leaders advocating for peace and unity. Example: “The article calls for dialogue between priests, rabbis, and imams to define common values.” This category is mostly present in the Czech Republic, Germany, and France.

Criticism of Discrimination and Surveillance: Articles in this category criticize unfair treatment, discrimination, or excessive surveillance targeting Muslims or immigrants. Example: “Chancellor Merkel’s statement protects Muslims against general suspicion and affirms that the vast majority of Muslims in Germany are constitutional citizens.” This category is dominated by Finland, followed by Germany.

Positive Societal Impact of Muslims: Articles in this category usually describe heroes issued from immigration or who are Muslims. Example: “It describes Bathily’s efforts to save the customers and his willingness to help the police with information.” This category is mainly present in the Czech Republic.

Humanitarian and Cultural Perspectives: This theme captures articles that show support for multiculturalism or discuss the humanitarian obligation of Europeans. Example: “The article highlights the need to address Germany’s humanitarian obligation to people who flee their home countries due to war and persecution.” This category is present only in Germany and France and represents less than 1% of each country’s news articles about Charlie Hebdo.

Economic Contributions of Immigrants: This category includes articles that remind Europeans that they need immigrants out of their own economic interest. Example: “The Siemens CEO promotes more immigration and tolerance in Germany, saying that Germany needs more openness out of its own economic interest. We must be attractive to top talent.” This category is also present only in Germany and represents less than 1% of Germany’s news articles about Charlie Hebdo.

General Support: This category encompasses articles expressing sympathy or support for Muslims and immigrants in a general sense. Example: “Integration Commissioner Aydan Özoguz calls for support for Muslims in Germany and emphasizes the need for unity.” This category is mostly present in Germany, followed by the Czech Republic.

In conclusion, Germany clearly stands out with a significant percentage of articles featuring a variety of supportive themes, especially highlighting that the terrorists do not represent Muslims’ faith, warning against discriminating against Muslims, and calling for unity, tolerance, and dialogue. This aligns with the observed improvement in public attitudes towards these groups in Germany. The Czech Republic also shows a notable focus on distancing Muslims from terrorism and on unity, tolerance, and dialogue, even though attitudes did not improve in the Czech Republic as the country also featured the highest share of unsupportive opinions. France presents a mix of supportive categories but at lower percentages compared to Germany and the Czech Republic. Interestingly, despite these lower percentages, public attitudes in France improved post-attack, mostly

because France also featured the lowest share of unsupportive opinions. Ireland and Finland, with lower percentages of supportive opinions, reflect the more negative shifts observed in public attitudes post-attack, indicating a potential correlation between less supportive media coverage and more adverse public sentiment.

Similarly, figure 3.7 categorizes non-supportive opinions into several themes. We discuss below the most common categories with examples.

Anti-Islamic Discourse: Articles in this category contain critical or hostile views towards Islam as a religion or generalize Muslims negatively. Example: “The article presents multiple opinions that are critical of Islam and suggests there is a problem with the faith itself leading to terrorism.” This category is mainly present in the Czech Republic.

Negative Portrayal and Stereotyping: This theme includes articles portraying Muslims or immigrants in a stereotypical or negative light, often associating them with various societal issues. Example: “The article mentions that not a minority, but a significant proportion of Muslims who refer to the Koran hold extreme attitudes.” This theme is mainly present in Finland.

Blame the Attack on Muslims: Here, the articles specifically attribute the cause or responsibility for terrorism directly to the Muslim community or faith. Example: “Opinions suggesting Muslims need to ask themselves why so many terrorists invoke the Koran.” This category is dominated by Finland, followed by the Czech Republic.

Security Threat: Articles categorized here discuss Muslims or immigrants as a potential security risk or threat. Example: “Concerns about young Muslims leaving for jihad in Syria or Iraq.” This category is mainly present in the Czech Republic and Ireland.

Tougher Immigration Policy: Articles categorized here discuss the need for a tougher immigration policy as a response to the attack. Example: “The Prime Minister speaks out against Islamism, and there is mention of the need for deportation of rejected asylum seekers.” This category is mainly present in Finland and the Czech Republic.

Cultural Threat: This category includes articles that criticize multiculturalism or warn against the Islamization of the West. Example: “Petr Fiala, who warns of the dangers of radical Islam and suggests that multiculturalism and political correctness have failed.” This category is mainly present in the Czech Republic.

Miscellaneous: This broad category encompasses anything that could not be classified within other categories. Example: “The article implies that the blasphemy law is being used by Muslim terrorists to justify their atrocities.” This category is mostly present in Ireland and the Czech Republic.

As we conclude our analysis of the results from the Large Language Model (LLM), the intricate relationship between media portrayals and public attitudes becomes more evident. The detailed categorization of supportive and non-supportive opinions provided by the LLM offers a granular understanding of how immigrants and Muslims are represented in the media following the Charlie Hebdo attack. These insights highlight the important role of media in shaping public attitudes and underscore the need for deeper analysis to fully understand these dynamics. To verify and further explore these findings, we will now employ Structural Topic Modeling (STM) as an alternative natural language processing (NLP) method. This approach will allow us to validate the insights gained from the LLM analysis and examine the robustness of our findings, particularly focusing on whether Germany still appears as the country with the highest percentage of supportive news, and the Czech Republic, Finland, and Ireland as the countries with the highest percentage of unsupportive news, aligning with the shifts in public attitudes observed in these countries.

3.4.2 Structural Topic Modeling (STM)

To assess the validity and robustness of the results obtained using LLMs, we next apply Structural Topic Modeling (STM) (Roberts et al., 2013) to classify and analyze themes in news coverage produced by the incident in France, Germany, the Czech Republic, Finland,

and Ireland. We focus specifically on articles that have been identified by the LLM as discussing both the shooting and immigration as well as Muslims, aiming to discern the stance—supportive or unsupportive—of these news articles toward immigrants and Muslims.

STM, a derivative of topic models, facilitates the discovery of latent themes across large text corpora by examining word co-occurrence within documents. Unlike traditional topic models, which assign each word in a document to a single topic (single-membership models like Latent Dirichlet Allocation), STM (Roberts et al., 2014) allows documents to exhibit multiple topics (mixed-membership). STM's distinctive feature is its ability to incorporate document metadata (e.g., publication country, publication year) into the analysis, enabling the model to adjust topic prevalence and content based on these attributes.

Model Specification Choices

Covariates: The first choice in the STM model specification is to choose covariates to incorporate in the model. The only covariate included in our model is the country of publication, assumed to influence the prevalence of topics but not the content. Including such a covariate allows us, for instance, to determine how frequently specific themes appear in articles from different countries.

Number of Topics k : The second choice is the number of topics (k) to be discovered. Selecting the appropriate k depends on the desired granularity and the specific research questions. For this study, we trialed models with k ranging from 8 to 14, evaluating each model for coherence (documents within a topic discuss the same theme) and exclusivity (documents discussing similar themes are grouped under the same topic). A k value of 10 was chosen as optimal, providing a clear distinction between topics without sacrificing coherence.

Results of STM

We analyzed the discovered topics by identifying exemplar documents, those with the highest probability of belonging to a topic, thus being the most representative of the idea being discussed. Each topic was assessed for its supportiveness toward immigrants and Muslims based on the dominant tone in its exemplar documents, five of which were selected for each topic and provided to three different LLMs (Perplexity.ai, Claude.ai, and ChatGPT) ³ to assess the supportiveness of the document toward immigrants and Muslims. The overall tone of a document was determined by majority classification from the LLMs. Similarly, a topic is classified as Supportive/Unsupportive if the vast majority, at least 4 out of 5 of its exemplar documents, are classified that way.

Based on the classifications provided in Table 7 in the appendices, three topics clearly stand out as very supportive of immigrants and Muslims, with at least 4 out of 5 of their exemplar documents classified as supportive toward these groups. The supportive topics include: **Topic 1:** *Interfaith Solidarity and Condemnation of Violence*. The exemplar documents consistently promote a narrative of unity, peace, and condemnation of violence, involving leaders from multiple faiths who collectively reject terrorism and advocate for interfaith solidarity and understanding. **Topic 3:** *Expressions of National Unity and Democratic Values*. The exemplar documents focus on defending democratic principles and national unity in response to terrorism, emphasizing an inclusive approach that transcends religious and cultural differences. **Topic 8:** *Community Responses to Anti-Islam Demonstrations*. The exemplar documents portray a consistent theme of widespread public demonstrations supporting diversity and inclusivity, often overshadowing anti-Islam demonstrations.

³These LLMs were chosen because they were the most popular at the time of the analysis in July 2024. Gemini was not included in the analysis as it refuses to answer any question that could be linked to politics. The prompt used: "The news article below was extracted in the month following the Charlie Hebdo shooting, I would like you the assess whether the articles express opinions that could be considered supportive or unsupportive of Immigrants/Muslims."

Regarding unsupportive topics, none can be clearly classified as fully unsupportive. However, some topics can be classified as Neutral and leaning slightly toward unsupportive. These are topics with 3 out of 5 of their exemplar documents classified as Neutral and the remaining 2 as unsupportive. Two such topics are: **Topic 4:** *Controversial Discourse in the Wake of the Paris Attacks*. The exemplar documents report several controversial statements regarding Muslims, including comments by President Miloš Zeman about Muslims' inability to adapt genetically, without endorsing or condemning these views. **Topic 5:** *Societal Reflections and Cultural Discourse in Contemporary Literature*. This topic engages with complex and sometimes controversial reflections on modern society, using literature (e.g., Michel Houellebecq's novel "Submission") as a mirror to societal fears and aspirations. While the articles maintain a generally neutral stance toward Muslims, the novel itself is controversial, stirring debates about societal fears of Islamization.

To summarize, the STM analysis has uncovered a diverse range of themes in media coverage regarding immigrants and Muslims following the Charlie Hebdo attack. These themes include highly supportive topics focused on collective interfaith efforts to condemn violence and promote unity (Topic 1), the defense of democratic values and unity in the face of terrorism (Topic 3), and strong community support for diversity, opposing xenophobic rhetoric (Topic 8). On the other hand, neutral to slightly unsupportive topics include divisive rhetoric (Topic 4) and discussions of Michel Houellebecq's controversial novel "Submission" (Topic 5). Additionally, neutral topics (Topics 2, 6, 7, 9, and 10) offer nuanced perspectives that are not clearly supportive or unsupportive.

To explore the distribution of these themes across Germany (DE), France (FR), Ireland (IE), the Czech Republic (CZ), and Finland (FI), we employed linear regression to estimate the proportion of documents from each country that discuss supportive or unsupportive topics, as identified in the STM model. This approach incorporates measurement uncertainty from the STM model using the method of composition, as detailed by (Roberts et al., 2018).

Figure 3.8 displays the estimates of the proportion of supportive topics (Topics 1, 3, and 8) across the five countries, including 90% confidence intervals. Topics 1 and 8 are notably prominent in Germany, suggesting a strong narrative of interfaith solidarity and resistance to xenophobia. This aligns with the LLM findings, which identified Germany as having the highest percentage of supportive media coverage of immigrants and Muslims, correlating with improved public attitudes toward these groups. Topic 3 appears most frequently in France, indicating a robust emphasis on republican values and democratic ideals after the attack, consistent with improved public attitudes toward immigrants and Muslims there. Topic 3 is also significant in Ireland; however, no improvement in public attitudes toward immigrants and Muslims is observed, likely due to the presence of Topic 5 (illustrated in Figure 3.9), which is neutral but slightly leaning toward unsupportive. The coexistence of supportive and unsupportive topics in Ireland could explain the lack of observed improvement in public attitudes.

Figure 3.9 illustrates the estimates of the proportion of unsupportive topics (Topics 4 and 5) across the five countries, complete with 90% confidence intervals. Topic 4 is predominantly high in the Czech Republic and also notable in Finland, indicating a national discourse that is critically unsupportive of Muslims. This correlates with the negative shift in public attitudes in these countries and aligns with the LLM results, which show high percentages of non-supportive media coverage. Topic 5 appears in almost all countries, including Germany and France. These findings confirm the alignment between the STM and LLM analyses, offering a coherent picture of how media coverage influences public attitudes in different national contexts.

3.5 Conclusion

In this article, we exploited the timing of the seventh round of the European Social Survey (ESS) and the Charlie Hebdo shooting to study the causal link between the attack and attitudes

toward immigrants and Muslims. Our study combines observational data from ESS, collected immediately before and after the Charlie Hebdo attack, with a natural experiment design to assign respondents to treatment (post-attack) and control (pre-attack) groups. We employed several causal inference methods, including OLS models with country fixed effects, various matching and weighting techniques, and a machine learning approach.

Our main findings are as follows. First, we identified a negative average impact of the attack on European attitudes toward immigrants and Muslims. This finding is robust across different methodological and time window adjustments. Second, our regression discontinuity design provides clear evidence that the shift in attitude occurred immediately after the attack on January 8, 2015, and is specific to immigrants and Muslims, with no shift in attitudes detected toward Jews or Gypsies. Third, the further away respondents were interviewed from the date of the attack, the smaller the magnitude of the impact, suggesting that the effects of the attack dissipate within a few months.

While the average reaction was more negative, there were significant variations across countries. The Czech Republic, Finland, and Ireland exhibited negative shifts, while France and Germany showed improvements. This raises the question of why reactions to the same terrorist attack differ so significantly from one country to another.

Traditional theoretical frameworks, such as System Justification Theory (SJT) and Intergroup Conflict Theory (ICT), suggest that perceptions of safety threats or competition over scarce resources could explain negative shifts in attitudes. However, these theories alone do not account for the nuanced differences observed across nations in our study. To delve deeper into these attitudinal shifts, we examined the role of the media. Using news articles published about the Charlie Hebdo shooting in the month following the incident in five European countries, we employed two natural language processing (NLP) methods: Large Language Models (LLM) and Structural Topic Modeling (STM). We tested the hypothesis

that both the visibility of outgroups and the stance of the news toward them influence public reactions to the incident.

Our descriptive results indicate that anti-Muslim sentiment is not solely a direct artifact of terrorist attacks; rather, it is significantly influenced by the media coverage that follows these events. While terrorist attacks create a context for potential shifts in attitudes, the nature of media coverage—supportive or unsupportive—toward immigrants and Muslims plays a critical role in moderating or exacerbating the effect of these attacks on public attitudes. Specifically, our findings suggest that supportive media coverage can mitigate the negative impact of terrorism on attitudes toward Muslims, while unsupportive or divisive media coverage can amplify negative sentiments.

For example, our results revealed that Germany displayed a substantial proportion of supportive media coverage, focusing on collective interfaith efforts to condemn violence and support for diversity, which aligned with more positive public attitudes toward immigrants and Muslims. In contrast, France exhibited improved public attitudes despite featuring both lower levels of supportive and unsupportive media content. This suggests that the media coverage in France effectively emphasized the country's republican values and democratic ideals in response to the attack. Conversely, the Czech Republic, Finland, and Ireland, which presented higher levels of unsupportive media content focusing on divisive rhetoric, experienced a correspondingly negative shift in public attitudes. This pattern indicates that unsupportive content typically exacerbates negative perceptions towards immigrants and Muslims, while supportive and nuanced media approaches mitigate such effects.

This study contributes significantly to our understanding of the media's influence on public opinion in the aftermath of terrorism, particularly regarding directly involved outgroups. While predicting the impact of specific terror incidents on attitudes towards immigrants is difficult, we have shown that considering the political climate in which the attacks occurred offers a starting point for understanding the conditions under which

terrorist attacks lead to shifts in attitude toward outgroups. We encourage further studies in understanding under which conditions terrorism leads to outgroup hostility. Our findings also demonstrate the importance of knowing about the actual contents of the news to understand how it might affect readers. Additionally, our study showcases the utility of LLMs for quantifying opinions across countries and demonstrates how STM can analyze topic prevalence across different national contexts. Combining these methods provides deeper insights into the complex dynamics of media influence.

Our analysis does have limitations. First, we cannot establish a causal link between media coverage and attitude shifts, as only five countries were analyzed. Future research could expand this scope to include more countries or different contexts, potentially using variations in media exposure to establish causality. Additionally, while we focused on direct measures of attitude towards immigrants, future studies might explore indirect measures, such as voting patterns for anti-immigrant parties, to assess whether terrorist attacks influence election outcomes. Another limitation is our inability to investigate the long-term effect of the attack on attitudes due to the lack of data beyond two months after the attack. Understanding the exact duration of the effect is crucial from a policy perspective. Complementing short-term reactions with long-term consequences would provide a more comprehensive picture of how terrorist events impact citizens.

.1 Media coverage: Charlie-Hebdo

.2 Difference in SMD after adjusting

Table 3.1 Control Variables Stratified by Treatment Status

	Before	After	SMD
n	2886	3155	
Gender = Male (%)	1386 (48.2)	1502 (47.8)	0.0018
Age (mean (SD))	47.02 (18.06)	47.55 (17.30)	0.024
Education (%)			
Education Level I	207 (7.2)	153 (4.9)	0.0286
Education Level II	440 (15.3)	413 (13.2)	0.0165
Education Level IIIb	605 (21.0)	846 (27.0)	0.0617
Education Level IIIa	550 (19.1)	594 (19.0)	0.0082
Education Level IV	426 (14.8)	541 (17.3)	0.0263
Education Level V1	278 (9.7)	220 (7.0)	0.0364
Education Level V2	367 (12.8)	365 (11.6)	0.0148
Other	3 (0.1)	2 (0.1)	0.0001
Income (mean (SD))	5.39 (2.77)	5.17 (2.69)	0.0710
Political Orientation (mean (SD))	5.02 (2.17)	4.89 (2.03)	0.0772
Living Area (%)			
Big city	715 (25.0)	636 (20.3)	0.0497
Suburbs of big City	282 (9.9)	313 (10.0)	0.0029
Small City	829 (29.0)	1189 (37.9)	0.0928
Village	845 (29.6)	752 (24.0)	0.0509
Farm	185 (6.5)	247 (7.9)	0.0049
Religiosity = No (%)	1673 (58.2)	1750 (55.7)	0.0222
Country (%)			
Austria	38 (1.3)	230 (7.3)	0.0568
Belgium	255 (8.8)	64 (2.0)	0.0816
Switzerland	63 (2.2)	62 (2.0)	0.0050
Czech Republic	754 (26.1)	1182 (37.5)	0.1349
Germany	294 (10.2)	550 (17.4)	0.0976
Denmark	149 (5.2)	23 (0.7)	0.0483
Finland	132 (4.6)	162 (5.1)	0.0063
France	446 (15.5)	267 (8.5)	0.0843
Ireland	238 (8.2)	533 (16.9)	0.0795
Netherlands	326 (11.3)	36 (1.1)	0.1138
Sweden	51 (1.8)	11 (0.3)	0.0157
Slovenia	140 (4.9)	35 (1.1)	0.0264

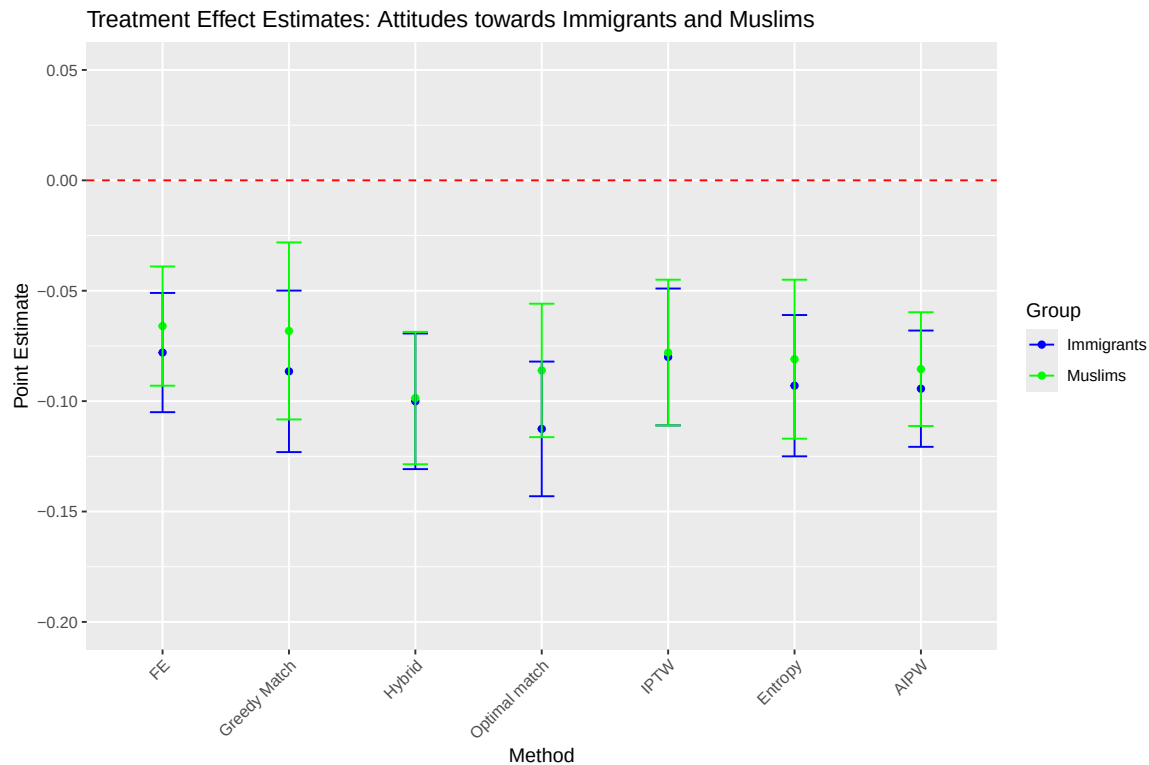


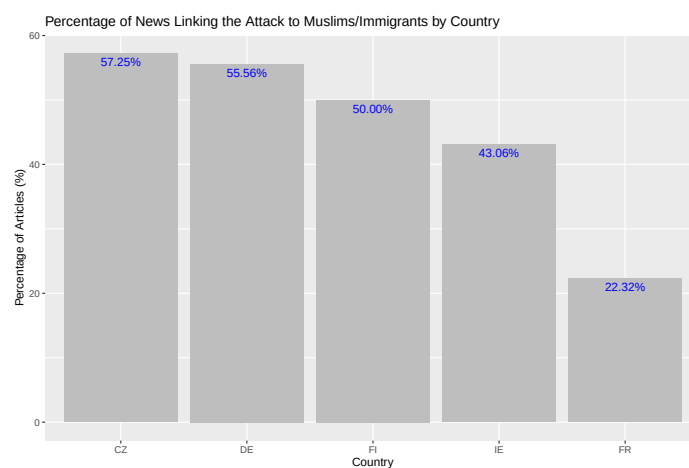
Figure 3.3 Effect of Terror on Attitudes towards Immigrants and Muslims

Note:

- This figure represents the Average Treatment Effects (ATE) of the Charlie Hebdo shooting on attitudes towards immigrants and Muslims. Attitudes towards immigrants and Muslims are measured from a survey question about allowing immigrants/Muslims in the country. Responses ranged from “Allow none to come (1)” to “Allow many (4)”. Treatment is a binary indicator based on interviews conducted before or after the shooting (07/01/2015). Fixed effects estimator (FE) used 4,479 observations. All matching methods point estimate derived from a paired t-test after matching. Greedy Match: 2,278 matched out of 2,278 treated; Hybrid method combines Exact and Greedy matching: 1,359 matched out of 2,278 treated; Optimal Match: 1,359 matched out of 2,278 treated; IPTW (Inverse Probability Weighting): Utilized 4,413 unweighted observations. Entropy Balancing Utilized 4,413 unweighted observations. AIPW (Augmented Inverse Propensity-Weighted): Estimation involved 4,385 observations.

Table 3.2 Effects of Charlie Hebdo attacks on Attitudes

	<i>Dependent variable:</i>	
	Immigrants	Muslims
	(1)	(2)
Treatment	−0.141** (0.056)	−0.113** (0.055)
Treatment:Days_Since_Attack	0.005 (0.003)	0.008*** (0.003)
Constant	2.857*** (0.109)	2.735*** (0.109)
Observations	4,479	4,453
R ²	0.186	0.356

**Figure 3.4** Percentage of News Linking the Attack to Muslims/Immigrants by Country

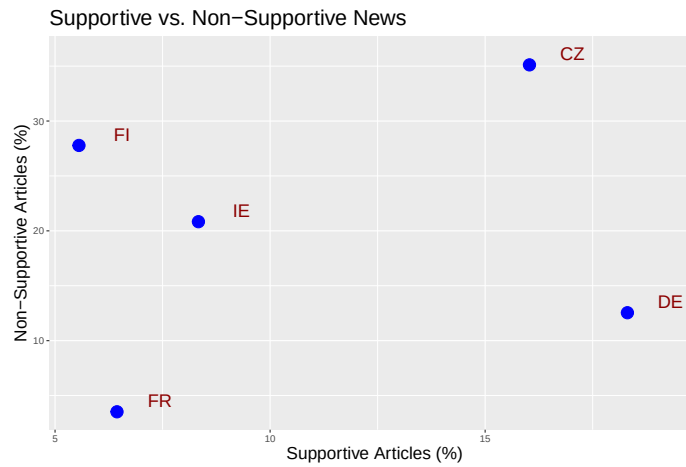


Figure 3.5 Supportive vs. Non-Supportive News Percentages by Country

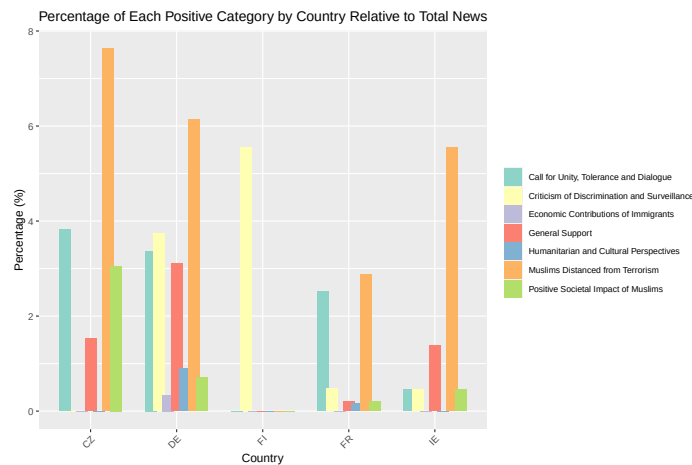


Figure 3.6 Percentage of Each Positive Category by Country Relative to Total News

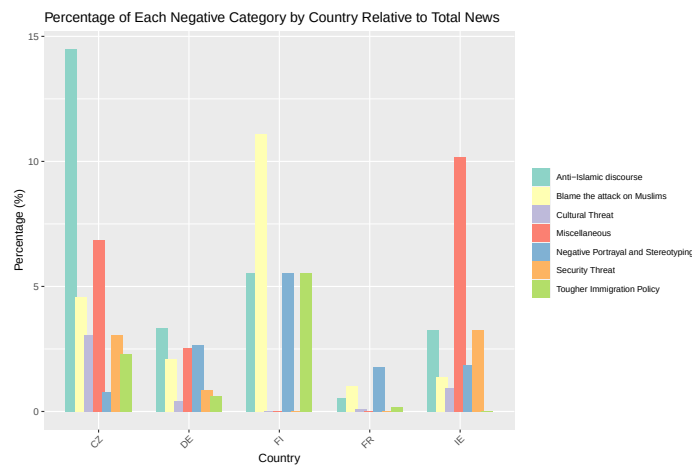


Figure 3.7 Percentage of Each Negative Category by Country Relative to Total News

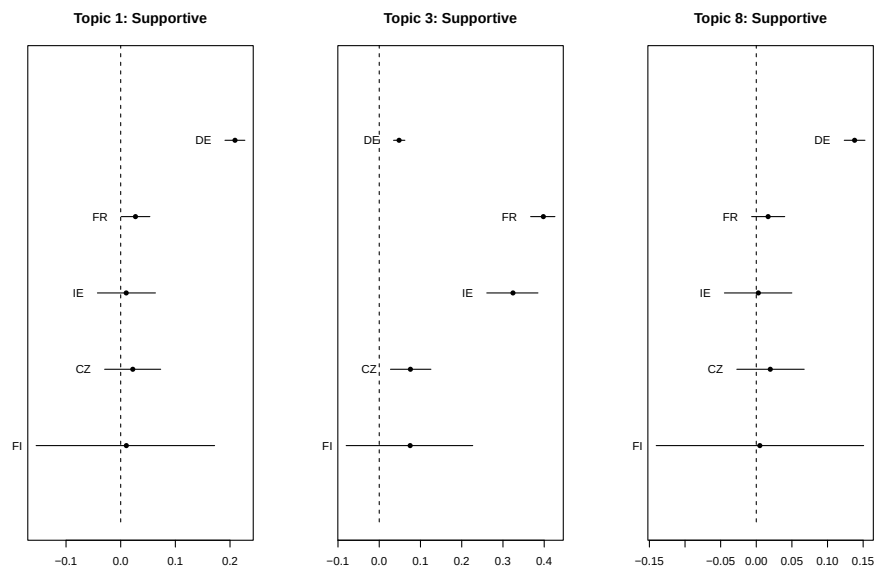


Figure 3.8 Estimate of Supportive Topics Proportion across Countries

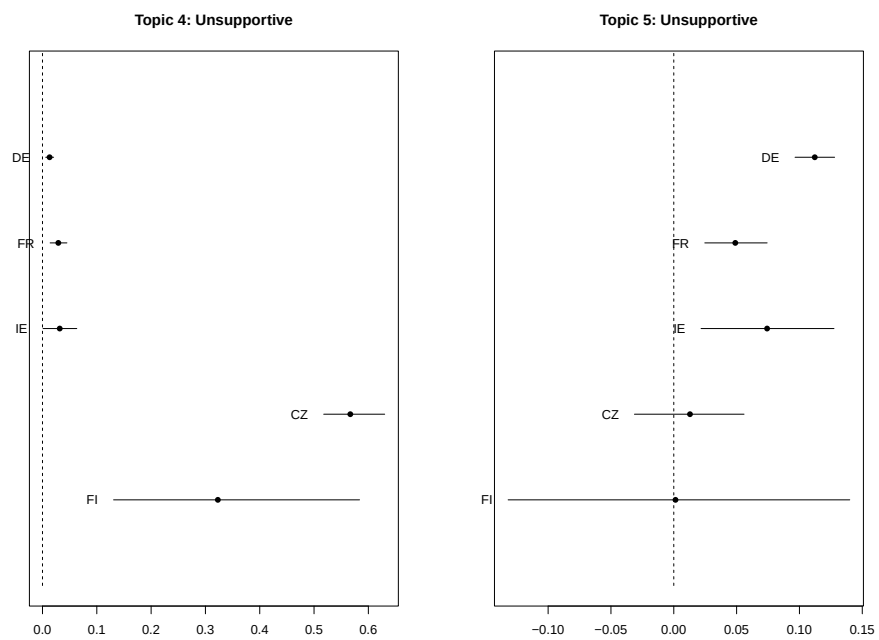


Figure 3.9 Estimate of Unsupportive Topics Proportion across Countries

EVOLUTION

Peak: 6.3K documents on January 09, 2015

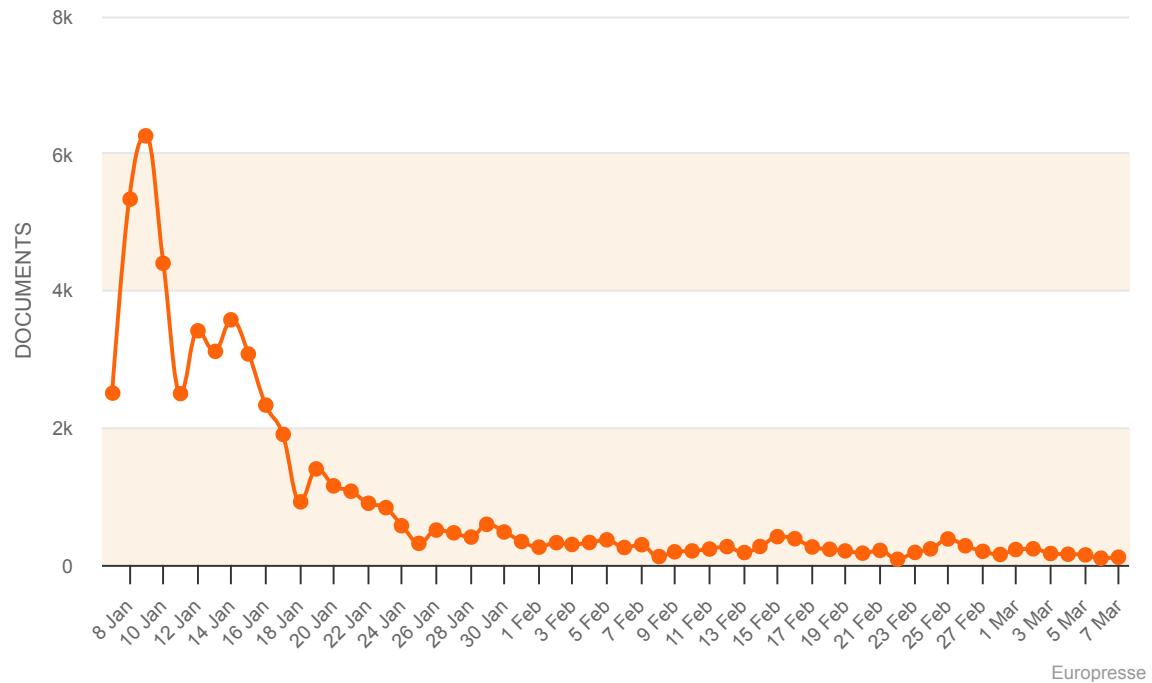


Figure 10 Media Coverage: Charlie-Hebdo

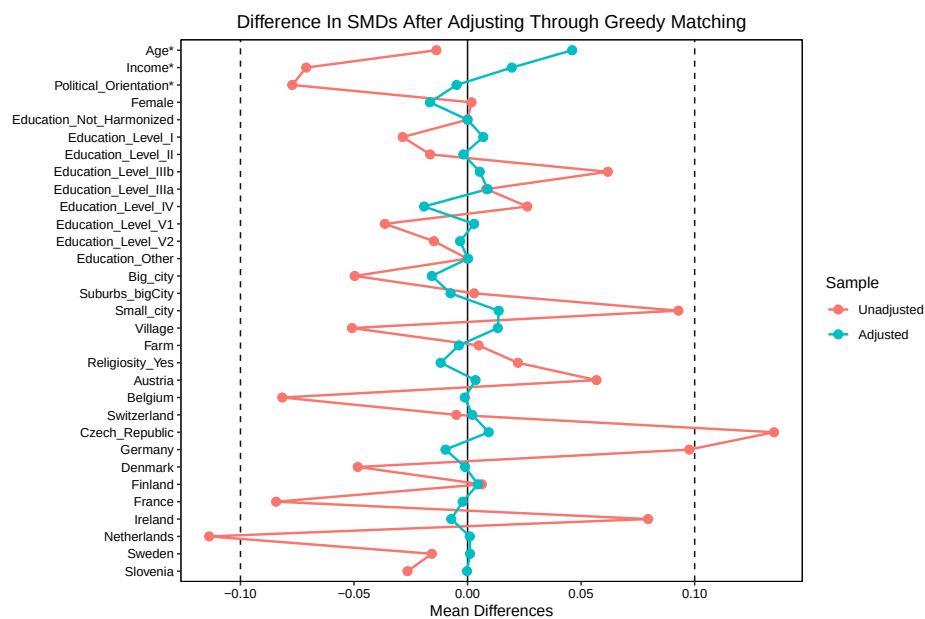


Figure 11 Difference In SMDs After Adjusting Through Greedy Matching

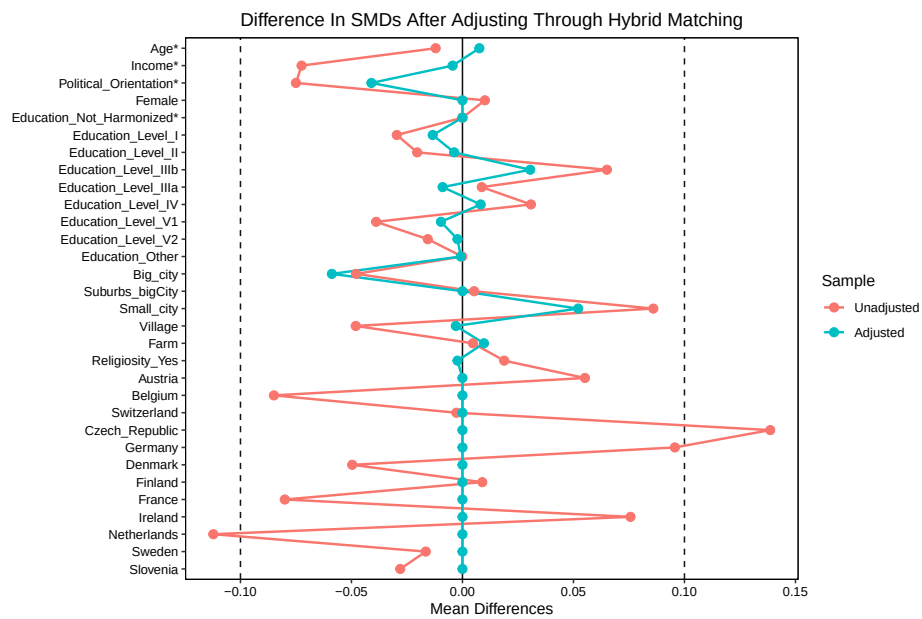


Figure 12 Difference In SMDs After Adjusting Through Hybrid Matching

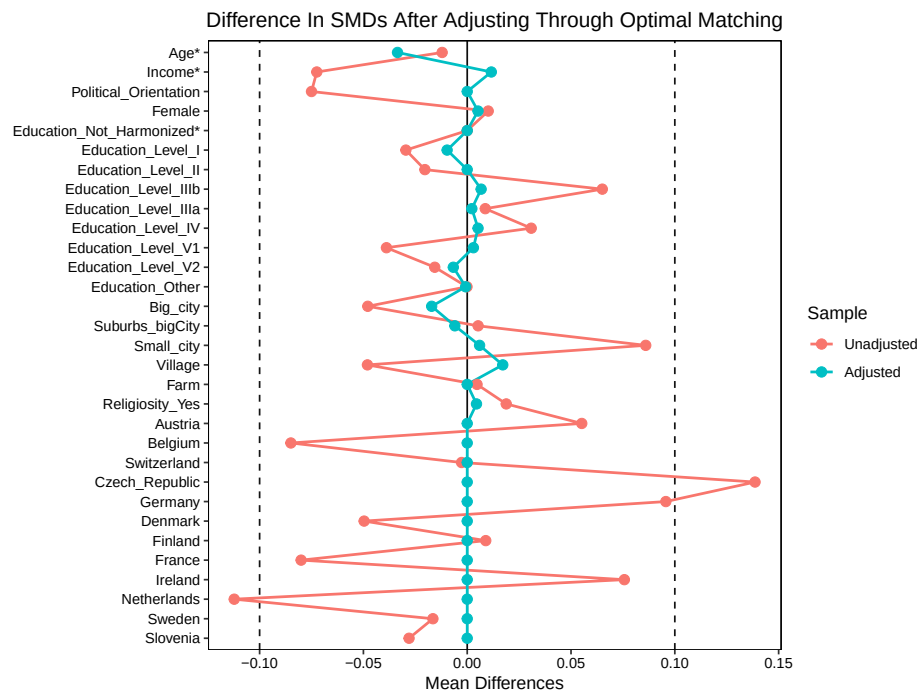


Figure 13 Difference In SMDs After Adjusting Through Optimal Matching

.3 Robustness Checks

.4 Heterogeneous Findings

.5 Prompt used for the LLM

.6 Exemplar Documents

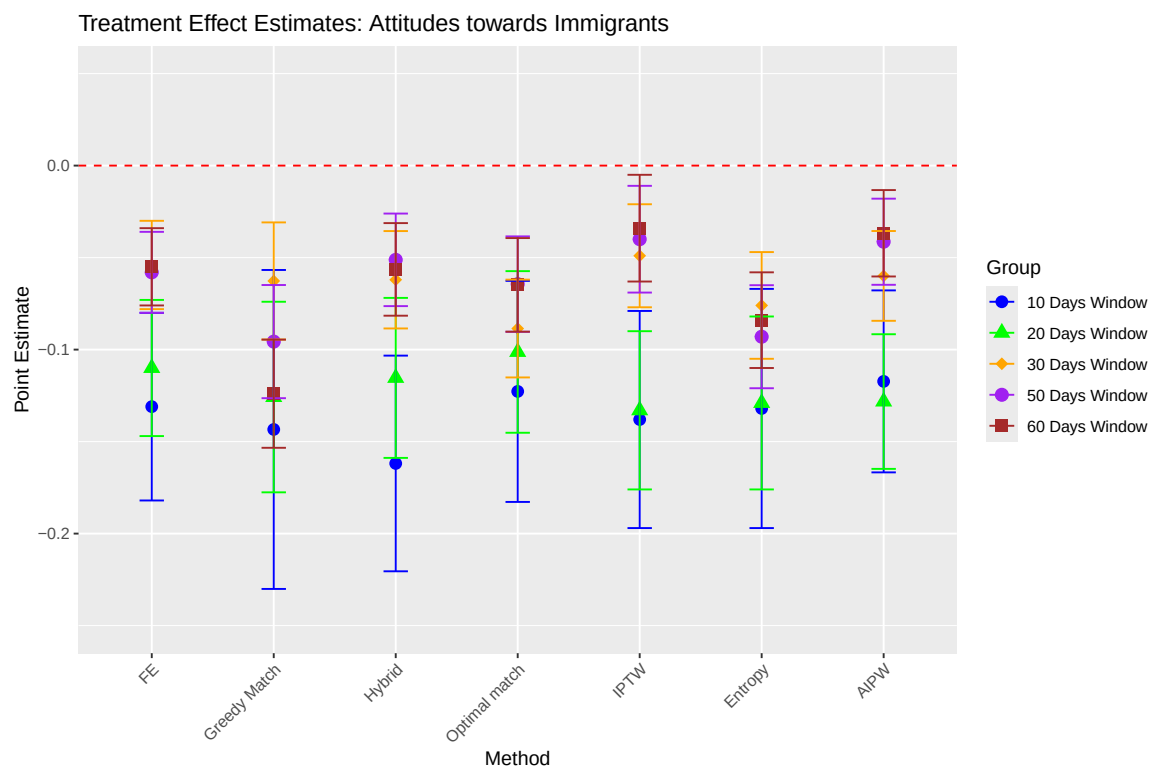


Figure 14 Attitudes towards Immigrants: Treatment Effect
Note:

- This figure represents the Average Treatment Effects (ATE) of the Charlie Hebdo shooting on attitudes towards immigrants for different bandwidth choices.

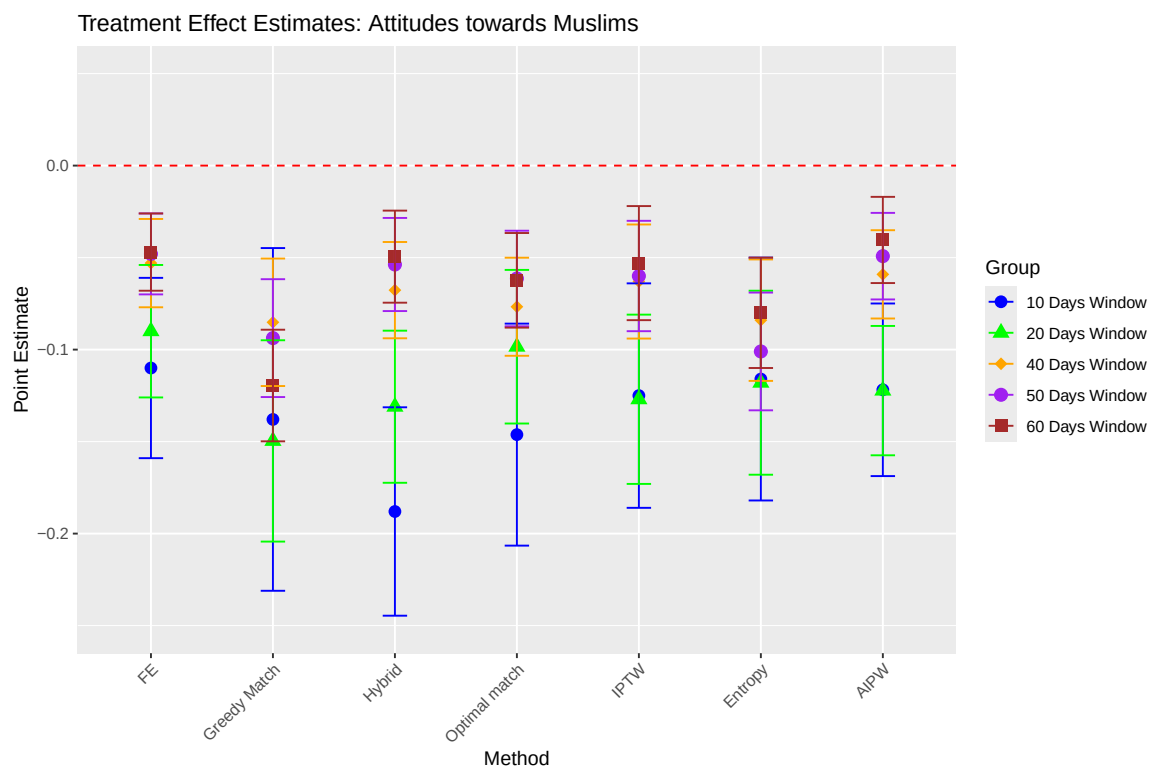


Figure 15 Attitudes towards Immigrants: Treatment Effect
 Note:

- This figure represents the Average Treatment Effects (ATE) of the Charlie Hebdo shooting on attitudes towards immigrants for different bandwidth choices.

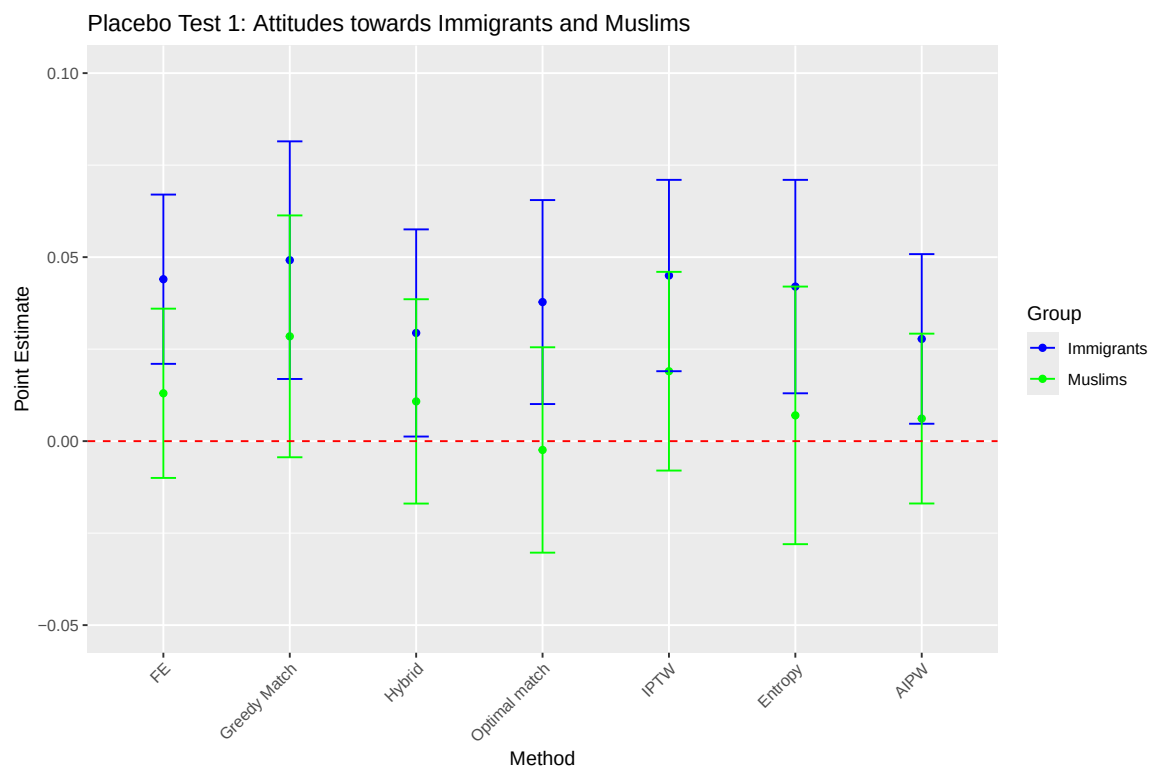


Figure 16 Attitudes towards Immigrants and Muslims: Placebo 1 (Fake attack date, 2014-12-07)

Note:

- This figure represents the Average Treatment Effects (ATE) of the Charlie Hebdo shooting on attitudes towards immigrants and Muslims when we falsely assume that the attack happened one month before the actual date. Fixed effects estimator (FE) used 6,283 observations. All matching methods point estimate derived from a paired t-test after matching. Greedy Match: 2,063 matched out of 2,063 treated; Hybrid method combines Exact and Greedy matching: 1,667 matched out of 2,063 treated; Optimal Match: 1,667 matched out of 2,063 treated; IPTW (Inverse Probability Weighting): Utilized 6,193 unweighted observations. Entropy Balancing: Utilized 6,193 unweighted observations. AIPW (Augmented Inverse Propensity-Weighted): Estimation involved 6,167 observations.

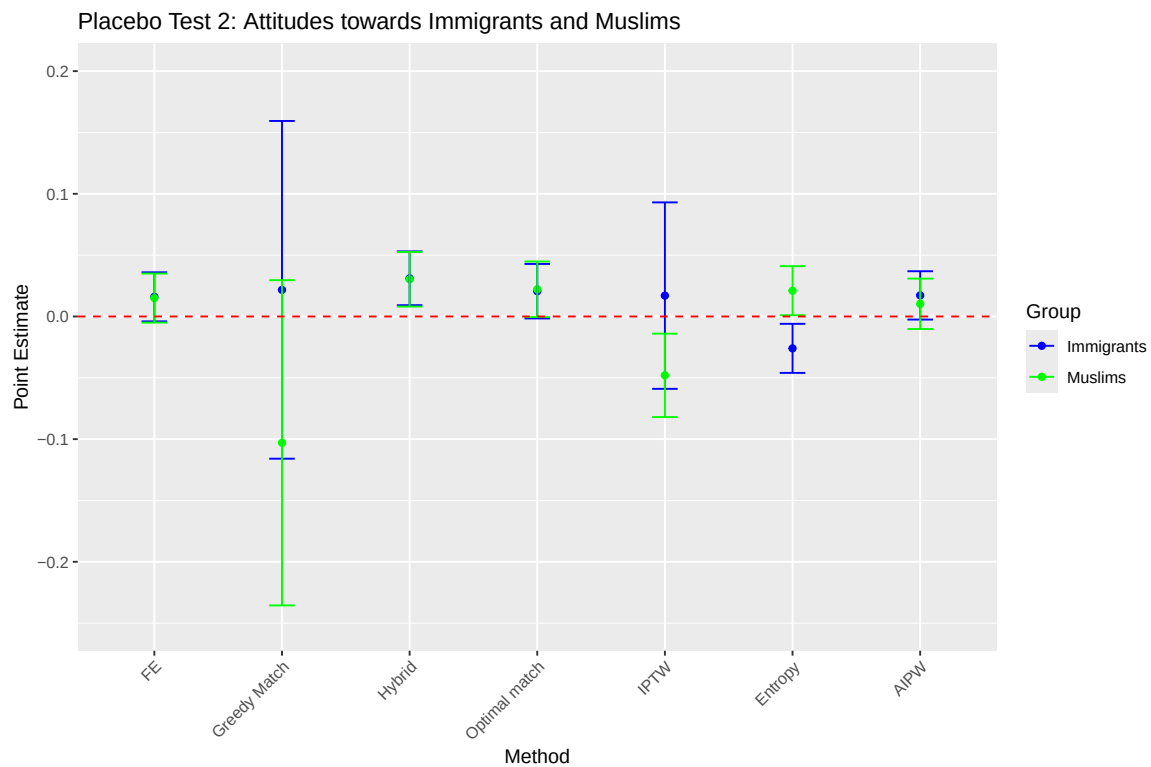


Figure 17 Attitudes towards Immigrants and Muslims: Placebo 2 (Fake attack date, 2014-11-07)

Note:

- This figure represents the Average Treatment Effects (ATE) of the Charlie Hebdo shooting on attitudes towards immigrants and Muslims when we falsely assume that the attack happened two months before the actual date. Fixed effects estimator (FE) used 8,366 observations. All matching methods point estimate derived from a paired t-test after matching. Greedy Match: 4,092 matched out of 4,092 treated; Hybrid method combines Exact and Greedy matching: 2,571 matched out of 4,092 treated; Optimal Match: 2,571 matched out of 4,092 treated; IPTW (Inverse Probability Weighting): Utilized 8,256 unweighted observations. Entropy Balancing Utilized 8,256 unweighted observations. AIPW (Augmented Inverse Propensity-Weighted): Estimation involved 8,230 observations.

Table 3 Multilevel Linear Regression With Random Intercepts

Predictors	Immigrants		Muslims	
	Estimates	CI	Estimates	CI
(Intercept)	2.80***	2.59 – 3.02	2.73***	2.46 – 3.00
Treatment	-0.08**	-0.13 – -0.03	-0.07*	-0.12 – -0.02
Male	-0.02	-0.07 – 0.03	0.06*	0.01 – 0.11
Age	-0.01***	-0.01 – -0.00	-0.01***	-0.01 – -0.00
Education_Level_II	0.09	-0.03 – 0.21	0.15*	0.02 – 0.27
Education_Level_IIIb	0.16**	0.04 – 0.28	0.20***	0.08 – 0.32
Education_Level_IIIa	0.26***	0.14 – 0.39	0.27***	0.15 – 0.40
Education_Level_IV	0.32***	0.20 – 0.45	0.37***	0.25 – 0.50
Education_Level_V1	0.52***	0.39 – 0.66	0.60***	0.47 – 0.74
Education_Level_V2	0.59***	0.46 – 0.72	0.63***	0.50 – 0.76
Education_Other	-0.26	-1.06 – 0.53	0.60	-0.19 – 1.39
Income	0.01	-0.00 – 0.02	0.01	-0.00 – 0.02
Political_Orientation	-0.06***	-0.07 – -0.04	-0.04***	-0.05 – -0.03
Suburbs_bigCity	0.06	-0.03 – 0.15	-0.00	-0.09 – 0.09
Small_city	-0.07*	-0.14 – -0.01	-0.14***	-0.20 – -0.07
Village	-0.03	-0.10 – 0.04	-0.09**	-0.16 – -0.02
Farm	-0.04	-0.15 – 0.07	-0.16**	-0.27 – -0.05
Religious_No	0.02	-0.04 – 0.07	0.01	-0.04 – 0.06
Random Effects				
σ^2	0.64		0.63	
τ_{00}	0.06 (Country)		0.13 (Country)	
ICC	0.09		0.18	
N	12 (Country)		12 (Country)	
Observations	4479		4453	
Marginal R² / Conditional R²	0.088 / 0.165		0.087 / 0.247	
<i>Note:</i> * p<0.05 ** p<0.01 *** p<0.001				

Table 4 Leave One Country Out Analysis: Attitude toward Immigrants

	Dependent variable:											
	Attitude Toward Immigrants											
	(CZ)	(FR)	(DE)	(BE)	(NL)	(CH)	(IE)	(AT)	(FI)	(DK)	(SE)	(SI)
Treatment	−0.076** (0.032)	−0.110*** (0.029)	−0.078*** (0.029)	−0.073*** (0.027)	−0.073*** (0.027)	−0.069** (0.027)	−0.071** (0.028)	−0.076*** (0.027)	−0.072*** (0.028)	−0.086*** (0.027)	−0.076*** (0.027)	−0.082*** (0.027)
Constant	3.060*** (0.109)	2.865*** (0.111)	2.869*** (0.107)	2.858*** (0.104)	2.898*** (0.105)	2.858*** (0.103)	2.838*** (0.108)	2.720*** (0.098)	2.855*** (0.104)	2.875*** (0.103)	2.873*** (0.103)	2.880*** (0.103)
Observations	3,274	3,856	3,765	4,208	4,176	4,381	3,949	4,294	4,223	4,339	4,428	4,376
R ²	0.185	0.184	0.161	0.191	0.193	0.183	0.196	0.185	0.187	0.186	0.178	0.186
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*Note:**p<0.1; **p<0.05; ***p<0.01
Between Parentheses is the code of the country left out

Table 5 Leave One Country Out Analysis: Attitude toward Muslims

	Dependent variable:											
	Attitude Toward Muslims											
	(CZ)	(FR)	(DE)	(BE)	(NL)	(CH)	(IE)	(AT)	(FI)	(DK)	(SE)	(SI)
Treatment	-0.059* (0.032)	-0.099*** (0.029)	-0.094*** (0.029)	-0.055** (0.027)	-0.062** (0.027)	-0.065** (0.027)	-0.044 (0.028)	-0.062** (0.027)	-0.067** (0.027)	-0.069** (0.027)	-0.064** (0.027)	-0.065** (0.027)
Constant	2.964*** (0.111)	2.771*** (0.111)	2.833*** (0.107)	2.803*** (0.105)	2.856*** (0.105)	2.811*** (0.103)	2.727*** (0.107)	2.459*** (0.097)	2.762*** (0.103)	2.796*** (0.103)	2.792*** (0.102)	2.797*** (0.102)
Observations	3,242	3,840	3,746	4,182	4,150	4,360	3,930	4,270	4,198	4,313	4,401	4,351
R ²	0.214	0.356	0.326	0.363	0.367	0.354	0.386	0.360	0.365	0.354	0.352	0.356
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note:

*p<0.1; **p<0.05; ***p<0.01
Between Parentheses is the code of the country left out

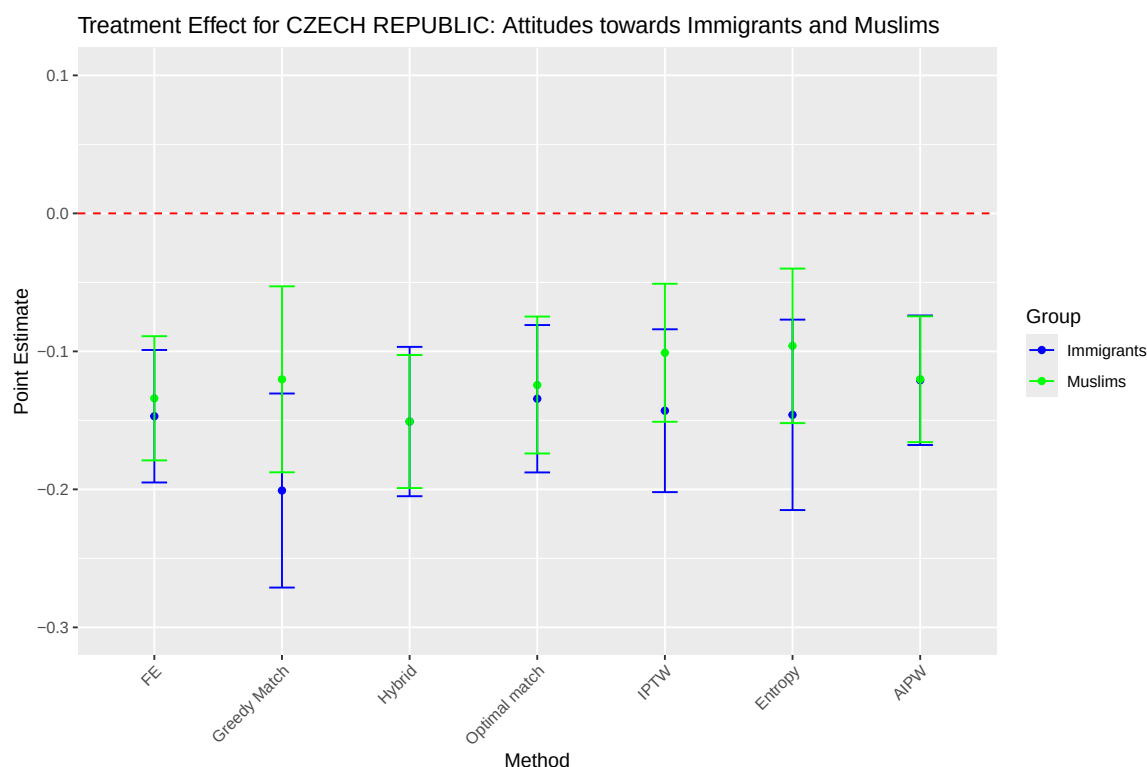


Figure 18 Attitudes towards Immigrants and Muslims: Treatment Effect Estimates for Czech Republic
Note:

- This figure represents the Average Treatment Effects (ATE) of the Charlie Hebdo shooting on attitudes towards immigrants and Muslims in CZECH REPUBLIC. Fixed effects estimator (FE) used 1,205 observations. All matching methods point estimate derived from a paired t-test after matching. Greedy Match: 763 matched out of 763 treated; Hybrid method combines Exact and Greedy matching: 411 matched out of 763 treated; Optimal Match: 402 matched out of 763 treated; IPTW (Inverse Probability Weighting): Utilized 1,190 unweighted observations. Entropy Balancing: Utilized 1,190 unweighted observations. AIPW (Augmented Inverse Propensity-Weighted): Estimation involved 1,172 observations.

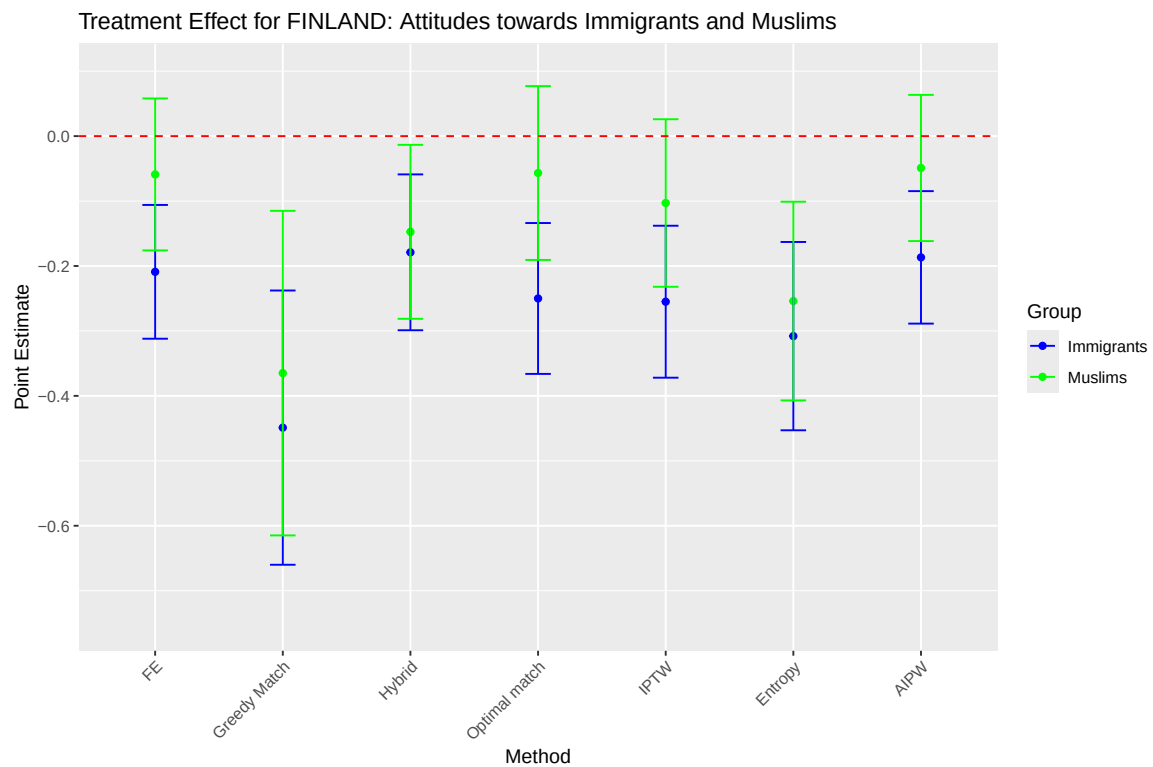


Figure 19 Attitudes towards Immigrants and Muslims: Treatment Effect Estimates for Finland
Note:

- This figure represents the Average Treatment Effects (ATE) of the Charlie Hebdo shooting on attitudes towards immigrants in Finland. Fixed effects estimator (FE) used 256 observations. All matching methods point estimate derived from a paired t-test after matching. Greedy Match: 137 matched out of 137 treated; Hybrid method combines Exact and Greedy matching: 95 matched out of 137 treated; Optimal Match: 88 matched out of 137 treated; IPTW (Inverse Probability Weighting): Utilized 252 unweighted observations. Entropy Balancing Utilized 252 unweighted observations. AIPW (Augmented Inverse Propensity-Weighted): Estimation involved 252 observations.

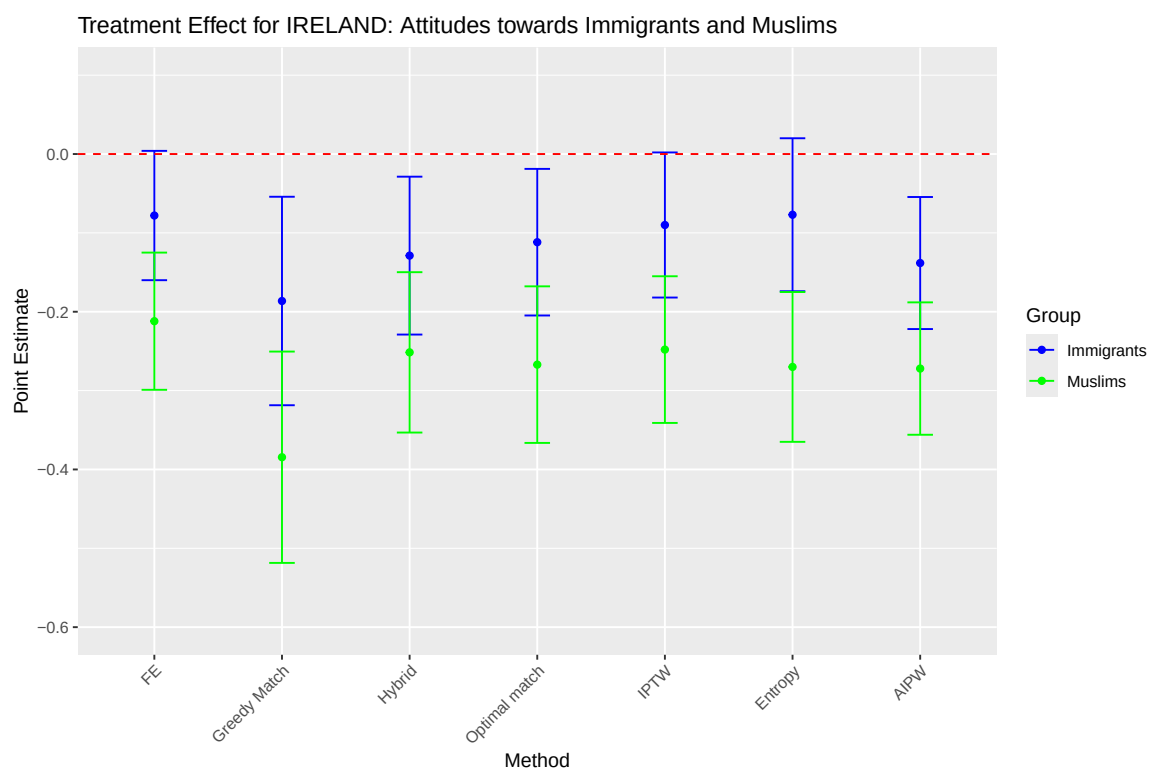


Figure 20 Attitudes towards Immigrants and Muslims: Treatment Effect Estimates for Ireland
 Note:

- This figure represents the Average Treatment Effects (ATE) of the Charlie Hebdo shooting on attitudes towards immigrants in Ireland. Fixed effects estimator (FE) used 530 observations. All matching methods point estimate derived from a paired t-test after matching. Greedy Match: 355 matched out of 355 treated; Hybrid method combines Exact and Greedy matching: 163 matched out of 355 treated; Optimal Match: 161 matched out of 355 treated; IPTW (Inverse Probability Weighting): Utilized 518 unweighted observations. Entropy Balancing Utilized 518 unweighted observations. AIPW (Augmented Inverse Propensity-Weighted): Estimation involved 514 observations.

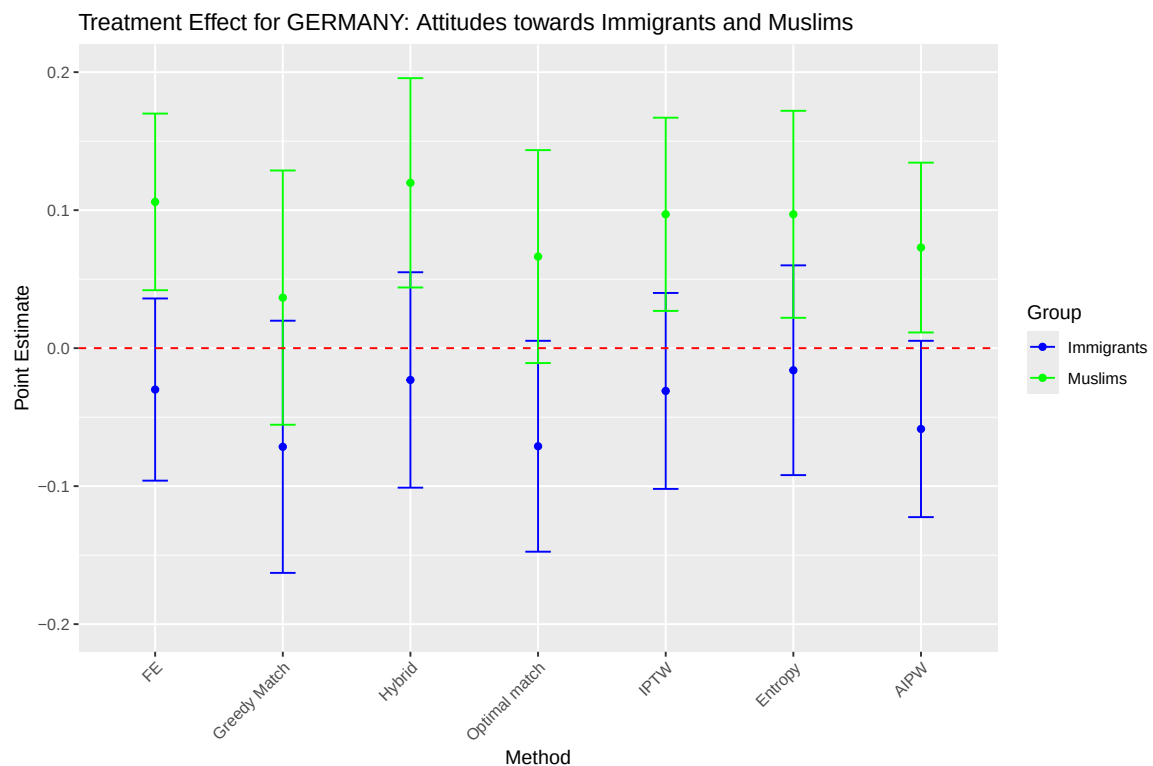


Figure 21 Attitudes towards Immigrants and Muslims: Treatment Effect Estimates for Germany
Note:

- This figure represents the Average Treatment Effects (ATE) of the Charlie Hebdo shooting on attitudes towards immigrants and Muslims in Germany. Fixed effects estimator (FE) used 714 observations. All matching methods point estimate derived from a paired t-test after matching. Greedy Match: 471 matched out of 471 treated; Hybrid method combines Exact and Greedy matching: 217 matched out of 471 treated; Optimal Match: 211 matched out of 471 treated; IPTW (Inverse Probability Weighting): Utilized 704 unweighted observations. Entropy Balancing: Utilized 704 unweighted observations. AIPW (Augmented Inverse Propensity-Weighted): Estimation involved 703 observations.

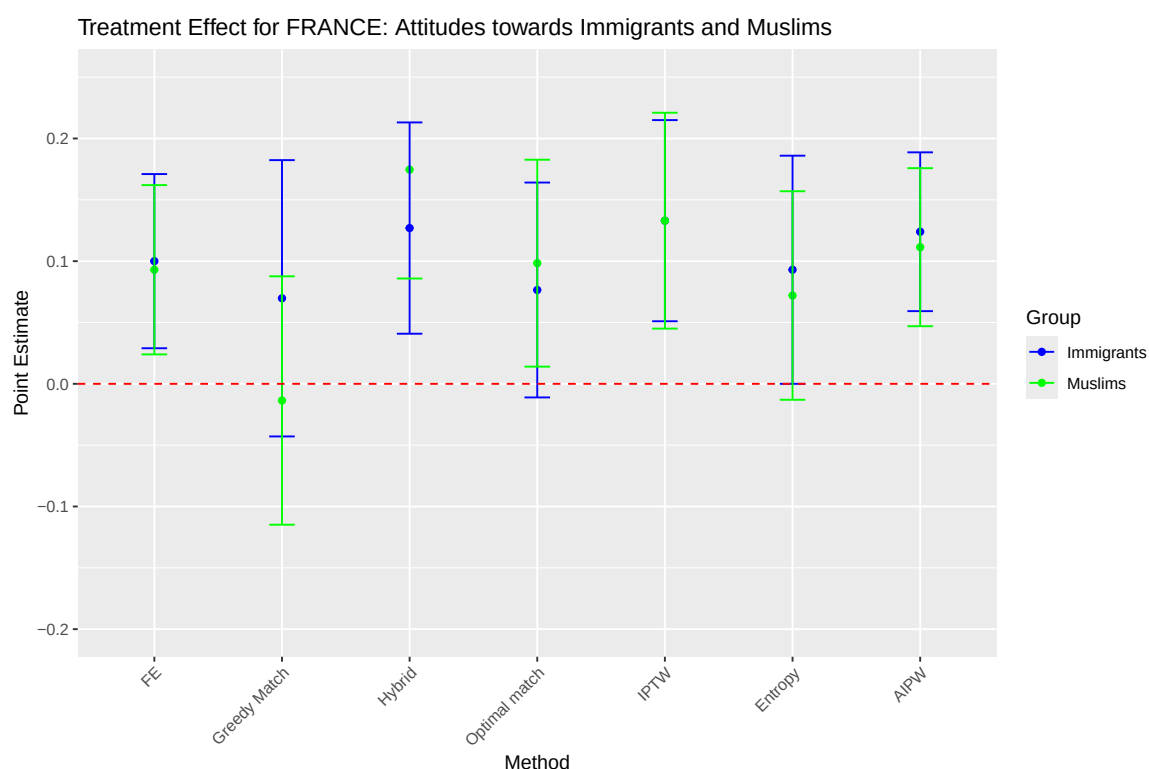


Figure 22 Attitudes towards Immigrants and Muslims: Treatment Effect Estimates for France
 Note:

- This figure represents the Average Treatment Effects (ATE) of the Charlie Hebdo shooting on attitudes towards immigrants and Muslims in France. Fixed effects estimator (FE) used 623 observations. All matching methods point estimate derived from a paired t-test after matching. Greedy Match: 223 matched out of 223 treated; Hybrid method combines Exact and Greedy matching: 189 matched out of 223 treated; Optimal Match: 183 matched out of 223 treated; IPTW (Inverse Probability Weighting): Utilized 612 unweighted observations. Entropy Balancing Utilized 612 unweighted observations. AIPW (Augmented Inverse Propensity-Weighted): Estimation involved 610 observations.

Prompt: Please answer the following questions to assess the article's stance towards Islam/Muslims in particular and immigrants in general. You must answer all questions:

1. Does any part of the news article below discuss Islam/Muslims or immigrants? Provide a 'Yes' or 'No' answer and include specific evidence from the article.
2. Is any opinion presented in the article that can be described as supportive of Muslims or immigrants? Provide a 'Yes' or 'No' answer and explain why based on the opinions expressed in the article.
3. Is any opinion presented in the article that can be described as NOT supportive of Muslims or immigrants? Provide a 'Yes' or 'No' answer and explain why based on the opinions expressed in the article.

Article: *"Terror in France: 'It is not possible for one to hold a pencil and the other a kalashnikov,' says the imam of the mosque in Drancy. French Muslims are indignant at the barbaric act of attackers. They are also afraid of reprisals. DRANCY A tape dammed the road to the brown square mosque building on the outskirts of the northern Paris suburb of Drancy, with three police cars standing in the adjacent car park. The entrance to the building is protected by several armed men who are tasked with preventing possible violent attacks that several mosques across the country faced after Wednesday's assassination of Charlie Hebdo magazine. The mosque is not closed, and for Friday prayer, worshippers come as usual. 'The faithful are scared, they are shocked. But they are also resentful of those barbarians brandishing religion. They are afraid of more violence, some mosques were attacked yesterday,' says Hassen Chalghoumi, Imam Hassen Chalghoumi, who said violence only breeds more violence. Mr Chalghoumi is preparing for a large demonstration on Sunday, which is said to be attended by a number of leaders of Paris's Muslim community. 'Someone who uses guns to kill people has no pranic to do with Islam,' he says convincingly. When asked what freedom of speech means to him, he immediately replies: 'It is holy to me. One may disagree with some articles, but that's it. It is impossible for one to have a pencil in his hand and the other a Kalashnikov.' ...*

Output:

1. Yes, the news article below discusses Muslims and Islam, as well as immigrants in general. The article mentions French Muslims and their concerns in light of the Charlie Hebdo attacks. It also includes information about a mosque in Drancy, and its imam's views on the attacks and Islam in general. The article also mentions the background of a young man who became radicalized and joined ISIS in Syria. Unemployment in the French suburbs is also mentioned, which is often linked to immigrants.
2. Yes, the article includes an opinion that can be described as supportive of Muslims. The imam in Drancy, Hassen Chalghoumi, speaks out against the attackers and affirms that Islam does not condone violence. He also expresses his support for freedom of speech, but believes it should not lead to violence or disrespect.
3. No, the article does not present any opinion that can be described as not supportive of Muslims or immigrants.

Table 6 An example of the prompting strategy and the output from the model.

Table 7

Topic	Document	Perplexity	Chat GPT	Claude	Overall
1	1	Supportive	Supportive	Supportive	Supportive
1	2	Supportive	Supportive	Supportive	Supportive
1	3	Supportive	Supportive	Supportive	Supportive
1	4	Supportive	Supportive	Supportive	Supportive
1	5	Supportive	Supportive	Supportive	Supportive
2	1	Neutral	Neutral	Neutral	Neutral
2	2	Neutral	Neutral	Neutral	Neutral
2	3	Neutral	Neutral	Neutral	Neutral
2	4	Neutral	Neutral	Neutral	Neutral
2	5	Neutral	Neutral	Neutral	Neutral
3	1	Supportive	Supportive	Supportive	Supportive
3	2	Unsupportive	Supportive	Neutral	N/A
3	3	Neutral	Supportive	Supportive	Supportive
3	4	Supportive	Supportive	Supportive	Supportive
3	5	Neutral	Supportive	Supportive	Supportive
4	1	Neutral	Unsupportive	Neutral	Neutral
4	2	Unsupportive	Unsupportive	Neutral	Unsupportive
4	3	Neutral	Supportive	Neutral	Neutral
4	4	Neutral	Supportive	Neutral	Neutral
4	5	Unsupportive	Unsupportive	Neutral	Unsupportive
5	1	Unsupportive	Unsupportive	Unsupportive	Unsupportive
5	2	Neutral	Unsupportive	Neutral	Neutral
5	3	Unsupportive	Unsupportive	Unsupportive	Unsupportive
5	4	Neutral	Supportive	Neutral	Neutral
5	5	Neutral	Supportive	Neutral	Neutral
6	1	Neutral	Supportive	Supportive	Supportive
6	2	Unsupportive	Unsupportive	Neutral	Unsupportive
6	3	Supportive	Supportive	Supportive	Supportive
6	4	Unsupportive	Supportive	Unsupportive	Unsupportive
6	5	Supportive	Supportive	Supportive	Supportive
7	1	Neutral	Neutral	Unsupportive	Neutral
7	2	Neutral	Neutral	Unsupportive	Neutral
7	3	Unsupportive	Neutral	Unsupportive	Unsupportive
7	4	Neutral	Neutral	Unsupportive	Neutral
7	5	Neutral	Neutral	Unsupportive	Neutral
8	1	Supportive	Neutral	Neutral	Neutral
8	2	Supportive	Supportive	Supportive	Supportive
8	3	Supportive	Supportive	Supportive	Supportive
8	4	Supportive	Supportive	Supportive	Supportive
8	5	Supportive	Supportive	Supportive	Supportive
9	1	Neutral	Supportive	Neutral	Neutral
9	2	Neutral	Neutral	Neutral	Neutral
9	3	Neutral	Neutral	Neutral	Neutral
9	4	Supportive	Supportive	Supportive	Supportive
9	5	Neutral	Neutral	Neutral	Neutral
10	1	Neutral	Neutral	Neutral	Neutral
10	2	Neutral	Neutral	Neutral	Neutral
10	3	Neutral	Neutral	Neutral	Neutral
10	4	Neutral	Neutral	Neutral	Neutral
10	5	Neutral	Neutral	Neutral	Neutral

4

Chapter 3. Terrorism Threat And (Mis)-Allocation Of Consumption: Evidence From French Household Data

Joint work with Daniel Mirza ¹ ; Elena Stancanelli² and Thierry Verdier³

¹University of Tours, Laboratoire d'Economie d'Orléans (LEO) and CEPII (Paris)

²Paris School of Economics and CNRS

³Paris School of Economics, ENPC-Paris Tech and PUC-Rio

Abstract

This paper investigates consumer responses to terrorism threats, focusing on the reallocation of consumption between high and low-interaction shopping venues. We introduce a conceptual framework explaining how perceived terrorism threats influence spending patterns, leading to a shift from high to low-interaction venues despite higher costs. Utilizing the French Kantar Panel data (15,000 households over 3 years) and a novel proxy for perceived terrorism threat from media coverage, we provide new evidence of terrorism's indirect economic effects. Our findings reveal that perceived terrorism threat reduces the number of shopping trips but does not significantly alter total grocery expenditure. In 2015, compared to 2014, the perceived threat of terrorism in France led to a nearly 1.5% reduction in expenditure at high-interaction venues, while expenditures at proximity retailers and online shopping increased by approximately 1% and 0.6%, respectively. This shift resulted in an average price increase of about 0.5% for consumers. Our study contributes to understanding the microeconomic costs of terrorism by demonstrating its impact on consumer behavior and shopping patterns.

Keywords: Terrorism, Conflict economics, Household economics, Media.

JEL Classification: D1 Household behavior and family economics; D12 Consumer economics: empirical analysis; F52 National security, economic nationalism

4.1 Introduction

In recent years, individuals have increasingly become targets of terrorist attacks in public spaces such as sports events, concerts, bars, restaurants, and shopping centers. This pervasive threat has heightened public awareness of terrorism's potential danger. A common response to this threat is for individuals to avoid situations where they might become victims of an attack. For instance, following the 9/11 attacks, the psychology and sociology literature have found that many people reduced or avoided air travel, avoided crowds and tall buildings or spent more time at home and avoided large public events (Malik et al. (2018), Nellis (2009), Huddy et al. (2002)). In-depth interviews with Israelis revealed significant alterations in daily behaviors following terrorist attacks, such as staying home more often and avoiding leisure activities (Herzenstein et al., 2015). These observations suggest that individuals often develop behavioral coping strategies to minimize the risk of future attacks. This paper offers an economic view on the threat of terrorism and its effect on behavioral coping strategies. Especially, it studies how this change in behaviour mis-allocates resources across different sectors of the economy, producing inefficiencies in the economy which experiences terror threats.

We begin by presenting a simple theoretical framework to understand how, in times of terror, one can observe a mis-allocation of consumption through coping strategies. More precisely, people tend to avoid high-interaction places of consumption/markets preferring to consume in low-interaction ones. This change in behaviour alters the allocation of spending in favor of low interaction places where one usually observe higher prices for goods with identical quality, thus leading to a reduction in the purchasing power of consumers.

We then test this framework using data on food-consumption, from the French Kantar Panel, which provides unique daily continuous in-home scanner expenditure data from approximately 15,000 representative French households tracked between October 2014 and

December 2016 in France, thus encompassing the period of terrorism in France which mainly lies between the beginning of January 2015 and September 2016. Besides, the places of shopping of consumers are observable in our data, from which we can easily distinguish high-interaction from low interaction places. Because possible substitutions across places of spendings should be observable at weekly basis, we study the consumption behaviour at the weekly level.

On the other hand, we measure the weekly threat of terror through the observation of the salience of terrorism in the newspapers, defined by the weekly share of articles mentioning or talking explicitly about terrorism threat, acts or incidents, across all French journals in the online Europress archiv.

Our analysis suggests that French consumers do change their behavior by avoiding high-interaction grocery store visits while spending more at low-interaction venues, leading to higher prices per product. Overall spendings across all types of stores are not significantly affected by the threat of terror. Furthermore, these coping responses vary by household composition, with those with children being more likely to engage in coping strategies. These findings are robust to alternative measure of perceived threat of terrorism.

4.2 Related literature

Research on the macroeconomic impact of terrorism show that, when they are persistent, terrorist campaigns can inflict lasting economic damage. For instance, Abadie and Gardeazabal (2003) found that terrorism reduced per capita GDP in the Basque Country by 10% while Eckstein and Tsiddon (2004) estimated a 5% decline in GDP and annual consumption per capita for Israel in 2004. The threats of terrorism decrease the foreign direct investment and trade by increasing the risks of conducting business in foreign countries (Jain and Grosse (2009); Abadie and Gardeazabal (2008); Enders and Sandler (1996)).

Terrorism have a negative effect on growth and is associated with a diversion of spending from investment towards government expenditures (Blomberg et al. (2004)).

Some micro-level studies on terrorism have also been undertaken. On the supply side, while using firm level data, Mun et al (2021) find that US firms experience a nearly 3.4% TFP decrease in standard deviation units when located near terror acts. Nevertheless, most of the micro studies focus on households in times of terror. Some examine the health consequences for individuals directly or indirectly exposed to attacks and find that terror negatively affects the mental, physical or subjective well-being of individuals beyond the direct victims. (Metcalf et al. (2011); Tsai and Venkataramani (2015); Tierney (2008); Galea et al. (2002); Schlenger et al. (2002); Antonius (2015); Maguen et al. (2008); Schuster et al. (2001); Clark et al. (2020)).

Our paper contributes to a small but growing body of literature that explores behavioral responses to the fear of terrorism. Previous studies have shown that vulnerable populations, such as women, non-whites, and individuals with mental illness, are more likely to perceive higher levels of population risk and exhibit avoidance behaviors due to terrorism. (Eisenman et al. (2009); Nellis (2009); Haner et al. (2019)). These behaviors are also more prevalent among political conservatives (Altheide (2006); Gadarian (2014); Jackson (2013)). While the literature on consumer responses to terrorism is limited, there is evidence that 9/11 reduced alcohol consumption (Knudsen et al. (2005)) but increased tobacco use (Pesko (2014)); and the terrorist attack at the Bataclan concert-hall in Paris increased expenditure on sugar-rich foods (Mirza et al., 2022). Becker and Rubinstein (2011) documented a negative impact of terrorist attacks on the demand for goods and services subject to such attacks in Israel (e.g., bus services, coffee shops), noting that the overall impact primarily reflects the reactions of occasional users, with no significant effect on frequent users. Moreover, those who have survived a terrorist attack tend to make more cautious consumption choices (Baumert et al., 2020). Brodeur (2018) finds that successful attacks between 1970 and 2013

in the US, in comparison to failed attacks, increase consumers' level of pessimism about business conditions, buying conditions, and their personal finances, which happens to be one important source of the decline in demand and thus employment in the US in times of terror. Based on a small scale survey of US and Israeli individuals, a paper from the Management literature by Predmore et al. (2007) documents that U.S. women considered buying online when concerned about physical safety, while Israeli consumers still preferred in-person shopping unless faced with extreme physical risk.

While these studies provide valuable insights, a still unanswered question is to which extent consumers reallocate their spendings across the sectors of the economy when faced with a risk of terror. A second important question is to which extent the information on the threat vehiculed by the media is informative about these reallocations of spendings. Our study concentrates on household consumption in shopping places and addresses this gap.

In fact, our study also contributes to the literature on the role of the media in shaping fear of terrorism. There are evidences that the health impact of terrorism is exacerbated by media coverage of the incidents. Indeed, media coverage of terrorism trigger a particularly large emotional response in the form of fear, anxiety and distress. For instance, Schlenger et al. (2002) finds that prevalence of clinically significant psychological distress symptoms was positively associated with hours of television coverage of the attacks watched. Slone (2000) finds in a laboratory study of Israeli adults that those who watched terrorism- related news endured higher levels of anxiety than those who watched other types of news. Media coverage is also an important channel through which terrorism produces economic damage. For instance, Melnick and Eldor (2010) shows that the economic damage caused by terrorist attacks increases monotonically with the amount of media coverage.

4.3 A simple model of consumption and terrorism avoidance

4.3.1 Benchmark model of consumption and shopping time

In this section we begin by presenting a theoretical set-up which will guide us to understand individual consumers' behaviour faced with terror threat.

Let us consider a population of identical households L . A household has T units of time that he decides to allocate to do shopping for consumption and leisure: T_1 in a "supermarket", T_2 in "local proximity shops", and T_3 for home leisure with $T_1 + T_2 + T_3 = T$. Buying one variety of good in any shop demands 1 unit of time, determining therefore the span of varieties $N_i = T_i$ for $i = 1, 2$ in the two types of shops. Utility is Cobb-Douglas between consumption and leisure, and Dixit-Stiglitz over consumptions varieties. It is defined by

$$\begin{aligned} U &= \left[\int_0^N c(k)^{\frac{\sigma-1}{\sigma}} dk \right]^{\alpha \frac{\sigma}{\sigma-1}} (T_3)^{1-\alpha} \\ &= \left[\int_0^{T_1} c_1(k)^{\frac{\sigma-1}{\sigma}} dk + \int_0^{T_2} c_2(k)^{\frac{\sigma-1}{\sigma}} dk \right]^{\alpha \frac{\sigma}{\sigma-1}} (T_3)^{1-\alpha} \end{aligned} \quad (4.1)$$

with $\sigma > 1$, the elasticity of substitution between two consumption varieties. Given this, the household maximizes the utility with respect to T_i , and $c_i(k)$, given his budget constraint (with fixed income R), the time constraint, with p_i the price of varieties in shop i . We assume $p_1 < p_2$ (the price of varieties in the supermarket is less than in local proximity shops)

$$\int_0^{T_1} p_1 c_1(i) di + \int_0^{T_2} p_2 c_2(i) di = R \quad (4.2)$$

For convenience denote the price index of consumption as:

$$\begin{aligned} P(T_1, T_2) &= \left[\int_0^{T_1} (p_1)^{1-\sigma} dk + \int_0^{T_2} (p_2)^{1-\sigma} d = i \right]^{\frac{1}{1-\sigma}} \\ &= \left[T_1 (p_1)^{1-\sigma} + T_2 (p_2)^{1-\sigma} \right]^{\frac{1}{1-\sigma}} \end{aligned}$$

Fixing T_1, T_2, T_3 for the moment, maximization of (4.1) in $c_i(k)$ under the budget constraint (4.2) gives

$$c_i(k) = \frac{p_i^{-\sigma}}{P(T_1, T_2)^{1-\sigma}} R$$

and the consumer time allocation is obtained by:

$$\begin{aligned} \max_{T_i} U(T_1, T_2, T_3) &= R^\alpha \left[T_1 \cdot p_1^{1-\sigma} + T_2 \cdot p_2^{1-\sigma} \right]^{\frac{\alpha}{\sigma-1}} (T_3)^{1-\alpha} \\ T_1 + T_2 + T_3 &= T \end{aligned}$$

which provides the following solution :

$$\begin{aligned} T_1^b &= T^b \frac{\alpha}{\alpha + (1-\alpha)(\sigma-1)} T \\ T_2^b &= 0 \\ T_3^b &= T - T^b = \frac{(1-\alpha)(\sigma-1)}{\alpha + (1-\alpha)(\sigma-1)} T \end{aligned}$$

Hence, in an environment without uncertainties, given that varieties are less costly in the "supermarket" than in "local proximity shops", and given that they sell the same type of goods, the household spends all his shopping time in the "supermarket".

4.3.2 Consumption and avoidance of terror risk

Now assume an alternative situation, where some terror threat produces uncertainty. Assume that our household, has a "perceived" probability rate q to be hit by a "terrorist" action each unit of time that he spends in the "supermarket shop" (i.e. q can be also viewed as the rate of instantaneous risk of terror). Then the probability to avoid a terrorist act $\Pi(T_1)$ after T_1 units of time in the "supermarket shop", assuming that there is no risk to be hit by a terrorist event when going to proximity shops is simply given by:⁴

$$\Pi(T_1) = e^{-qT_1}$$

Thus, the probability to avoid a terrorist act is negatively related to the time spent in the supermarket shop.

Assume that in case of being hit by a terrorist action, the utility of the household is 0. The problem of a risk neutral household writes therefore as

$$\begin{aligned} \max_{T_i} W(T_1, T_2, T_3) &= e^{-qT_1} \cdot R^\alpha \left[T_1 \cdot p_1^{1-\sigma} + T_2 \cdot p_2^{1-\sigma} \right]^{\frac{\alpha}{\sigma-1}} (T_3)^{1-\alpha} \\ T_1 + T_2 + T_3 &= T \end{aligned}$$

⁴Indeed we should have the following condition:

$$\Pi(T_1 + dT_1) = \Pi(T_1) [1 - q \cdot dT_1]$$

or letting $dT_1 \rightarrow 0$,

$$\frac{\Pi'(T_1)}{\Pi(T_1)} = -q$$

and therefore assuming that $\Pi(0) = 1$ (ie. no risk to be hit by a terrorist when staying at home), we obtain

$$\Pi(T_1) = e^{-qT_1}$$

Log differentiating, the first order condition for an interior solution $(T_i)_{i \in (1,3)} \geq 0$ gives:

$$\begin{aligned} -q + \frac{\alpha}{\sigma-1} \frac{p_1^{1-\sigma}}{T_1 \cdot p_1^{1-\sigma} + T_2 \cdot p_2^{1-\sigma}} &= \lambda \\ \frac{\alpha}{\sigma-1} \frac{p_2^{1-\sigma}}{T_1 \cdot p_1^{1-\sigma} + T_2 \cdot p_2^{1-\sigma}} &= \lambda \\ \frac{1-\alpha}{T-T_1-T_2} &= \lambda \end{aligned}$$

or eliminating the lagrange multiplier λ

$$\begin{aligned} T_1 \cdot p_1^{1-\sigma} + T_2 \cdot p_2^{1-\sigma} &= \frac{\alpha}{\sigma-1} \frac{p_1^{1-\sigma} - p_2^{1-\sigma}}{q} \\ T_1 \cdot p_1^{1-\sigma} + T_2 \cdot p_2^{1-\sigma} &= \frac{\alpha}{\sigma-1} p_2^{1-\sigma} \frac{T-T_1-T_2}{1-\alpha} \end{aligned}$$

Thus

$$\begin{aligned} T_1 \cdot p_1^{1-\sigma} + T_2 \cdot p_2^{1-\sigma} &= \frac{\alpha}{\sigma-1} \frac{p_1^{1-\sigma} - p_2^{1-\sigma}}{q} \\ T_1 + T_2 &= T - \frac{1-\alpha}{q} \frac{p_1^{1-\sigma} - p_2^{1-\sigma}}{p_2^{1-\sigma}} \end{aligned} \tag{4.3}$$

From FOC1, one obtains:

$$T_2 (p_1^{1-\sigma} - p_2^{1-\sigma}) = \left[T - \frac{1-\alpha}{q} \frac{p_1^{1-\sigma} - p_2^{1-\sigma}}{p_2^{1-\sigma}} \right] p_1^{1-\sigma} - \frac{\alpha}{\sigma-1} \frac{p_1^{1-\sigma} - p_2^{1-\sigma}}{q}$$

which provides (for interior solutions $(T_i^*)_{i \in (1,3)} > 0$):

$$\begin{aligned} T_2^* &= \frac{T}{p_1^{1-\sigma} - p_2^{1-\sigma}} p_1^{1-\sigma} - \left[(1-\alpha) \frac{p_1^{1-\sigma}}{p_2^{1-\sigma}} + \frac{\alpha}{\sigma-1} \right] \frac{1}{q} \\ T_1^* &= T - \frac{1-\alpha}{q} \frac{p_1^{1-\sigma} - p_2^{1-\sigma}}{p_2^{1-\sigma}} - T_2^* \\ T_3^* &= T - T_1^* - T_2^* \end{aligned}$$

This regime occurs with shopping in the proximity shops when the threat of terrorism is large enough (ie. $q \geq \bar{q}$) to have $T_2^* > 0$ with

$$\bar{q} = \frac{\alpha \frac{p_2^{1-\sigma}}{p_1^{1-\sigma}} + (1-\alpha)(\sigma-1) \left(p_1^{1-\sigma} - p_2^{1-\sigma} \right)}{T(\sigma-1)} \frac{p_1^{1-\sigma}}{p_2^{1-\sigma}}$$

and then $T_2^*(q)$ is increasing in q ,

Similarly, shopping in the supermarket occurs (ie. $T_1^*(q) > 0$) when

$$T_1^*(q) = -\frac{T}{p_1^{1-\sigma} - p_2^{1-\sigma}} p_2^{1-\sigma} + \frac{1}{q(\sigma-1)} [\alpha + (1-\alpha)(\sigma-1)] > 0$$

and this will be satisfied when

$$q \leq \tilde{q} = \frac{p_1^{1-\sigma} - p_2^{1-\sigma}}{p_2^{1-\sigma}} \frac{[\alpha + (1-\alpha)(\sigma-1)]}{(\sigma-1)T}$$

Notice that $\tilde{q} > \bar{q}$, as $p_1 < p_2$.

From this discussion, we obtain then the following characterization of the optimal consumption patterns:

- **Low terror risk :**

When $q \leq \bar{q}$, then $T_2^* = 0$ and $T_1^*(q) > 0$. The household only shops in the supermarket shop like in the benchmark. $T_1^*(q)$ is then solution of the following first order conditions

$$\begin{aligned} -q + \frac{\alpha}{\sigma-1} \frac{1}{T_1} &= \lambda \\ \frac{1-\alpha}{T-T_1} &= \lambda \end{aligned}$$

$T_1^*(q)$ is determined by the unique solution $T_1 \in [0, T]$ such that

$$\frac{\alpha}{\alpha + (1 - \alpha)(\sigma - 1)} T = T_1 + \frac{q(\sigma - 1)}{\alpha + (1 - \alpha)(\sigma - 1)} (T - T_1) T_1$$

which is decreasing in q , and $T_1^*(q) < T^b$.

• **Intermediate Terror risk:**

- When $\bar{q} < q < \tilde{q}$, $T_1^*(q) > 0$ and $T_2^*(q) > 0$, given respectively by

$$\begin{aligned} T_1^*(q) &= -\frac{T}{p_1^{1-\sigma} - p_2^{1-\sigma}} p_2^{1-\sigma} + \frac{1}{q(\sigma - 1)} [\alpha + (1 - \alpha)(\sigma - 1)] \\ T_2^*(q) &= \frac{T}{p_1^{1-\sigma} - p_2^{1-\sigma}} p_1^{1-\sigma} - \left[(1 - \alpha) \frac{p_1^{1-\sigma}}{p_2^{1-\sigma}} + \frac{\alpha}{\sigma - 1} \right] \frac{1}{q} \end{aligned}$$

As can be seen $T_1^*(q)$ is decreasing in q while $T_2^*(q)$ is increasing in q . As the risk of terror increases, the household substitute shopping in the supermarket for shopping in proximity shops.

• **High terror risk:**

- Finally when $\tilde{q} \leq q$, then $T_1^*(q) = 0$ and $T_2^*(q) > 0$ solution of the following first order conditions

$$\begin{aligned} \frac{\alpha}{\sigma - 1} \frac{1}{T_2} &= \lambda \\ \frac{1 - \alpha}{T - T_2} &= \lambda \end{aligned}$$

or

$$T_2^*(q) = \frac{\alpha}{\alpha + (\sigma - 1)(1 - \alpha)} T = T^b$$

Figure 4.1 Time (T_1) to consume in HI v/s Time (T_2) to consume in LI places

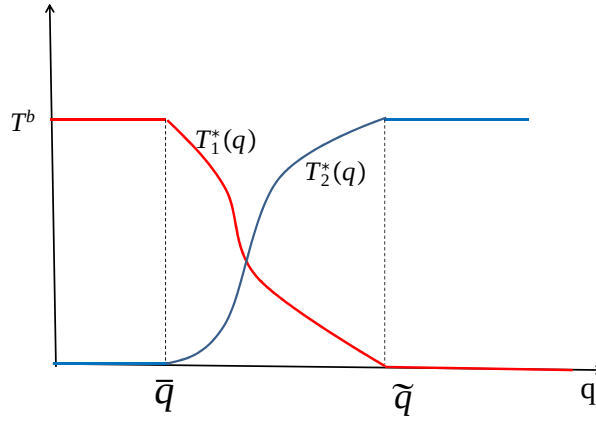


Fig 1: Optimal shopping time under terror

For high enough terror risk, the household does not shop in the supermarket and only the benchmark time in the proximity shop which is safe from terrorism.

The shape of the shopping times as a function of the terrorist risk are represented in figure 4.1, where we plot the two equilibrium consumption time $T_1^*(q)$ and $T_2^*(q)$ as a function of the instantaneous rate of terrorist event q .

4.3.3 Making terror risk endogenous

Making the risk of terror to be endogenous with terror organizations setting q endogeneously does not change qualitatively our predictions. To see this, consider now a terrorist organization which spends resources to commit a terror action. We suppose that the objective of the organization is to get a visibility gain V each time that a terrorist action succeeds in the hitting an individual in the supermarket place. Hence for a population of N individuals, each spending an amount of time T_1 in the supermarket, the proba for $k \in \{0, \dots, N\}$ individuals to

be hit is a binomial with parameter

$$p = 1 - e^{-qT_1}$$

where q is the instantaneous terror rate chosen by the terrorist organization at a cost $C(q)$ with $C(0) = 0, C'(q) > 0, C''(q) > 0$. The expected number of individuals hit by the terror action is therefore $Np = N(1 - e^{-qT_1})$. The expected net gain of the terrorist organization writes as

$$VN(1 - e^{-qT_1}) - C(q)$$

From this one finds the optimal terror risk as $q^*(T_1)$ given by

$$VNT_1 e^{-q^*T_1} = C'(q)$$

$q^*(T_1)$ is obviously shifted up by VN . Moreover when $q^*(T_1)T_1 < 1$ (this is ensured when $C'(1) > VNT/e$) then $q^*(T_1)$ is an increasing function of T_1 : the optimal terror rate chosen by the organization is increasing in the shopping time of individuals in the place where they can be hit: the supermarket.

We can then bring together the optimal consumption behavior of the households and the terrorist organization to obtain the equilibrium pattern of consumption and shopping in the society. On the one hand, the optimal consumption behavior of households, given a terror rate q is given by $T_1^*(q)$, while the optimal terror rate chosen by the organization is given by $q^*(T_1)$.

The equilibrium (T_1^e, q^e) is obtained by the conditions

$$T_1^e = T_1^*(q^e) \quad \text{and} \quad q^e = q^*(T_1^e)$$

This is represented in figure 4.2 where the curve $q^*(T_1)$ is added to the previous picture. The equilibrium is located at point E at the intersection of $T_1^*(q)$ and $q^*(T_1)$. From this, one also obtains the equilibrium shopping time in the proximity shop $T_2^e = T_2^*(q^e)$. Again, the prediction where q was assumed to be exogenous is retrieved in the case where q is being manipulated by the terror organization. Note however, that new equilibrium q^e is lower in the last case and the time spent in supermarkets in equilibrium T_1^e , although decreasing with q , appears to be higher here.

4.4 Data and Methods

4.4.1 Data Sources

Expenditure Data

The expenditure data used to test our conceptual framework comes from the French Kantar panel, which collects detailed and continuous data on non-durable expenditure for approximately 15,000 French households. These households were tracked between 2014 and 2016, encompassing periods before, during, and after three major terrorist attacks in France. In each Kantar panel household, a respondent continuously reports purchases by scanning the barcodes of food items. The Kantar sample is representative of the French population and aligns well with statistics from the French National Statistical Institute (INSEE). This data allows precise quantification of weekly total expenditure at different shopping venues, including hypermarkets, supermarkets, EDMP (hard-discount stores), proximity convenience stores, and online shops.

In our study, "Grande-Surface" (comprising hypermarkets and supermarkets) and EDMP are considered high-interaction shops, while proximity convenience stores and online shops are classified as low-interaction shops. We hypothesize that during periods of high-risk

perception, consumers will reduce their visits to grocery shops and increase spending at low-interaction venues.

Media Data

To measure the perceived threat of terrorism, we use the salience of terrorism in media coverage data. Salience is operationalized as the share of stories mentioning terrorism during a given period Woods (2007). To this end, we constructed a corpus of articles from French newspapers mentioning terrorism, using boolean search strings and the online archive Europress. Articles analyzed were published between October 1, 2013, and October 31, 2017. After removing duplicates, our corpus contained a total of 179,829 comprehensive set of articles on terrorism.

4.4.2 Outcome Variables

The outcome variables are aggregated by shopping week and in some cases transformed to logarithmic form for ease of interpretation. These variables address our key research questions:

1. **Shopping Frequency:** To test if consumers reduce shopping trips during high threat periods, we measure the number of weekly visits to all types of grocery shops.
2. **Expenditure Shift:** To determine if consumers prefer low-interaction shops during high threat periods, we measure the weekly expenditure at high-interaction shops (hypermarkets, supermarkets, EDMP) as a percentage of total expenditure. A decrease in this share implies an increase in spending at low-interaction shops.
3. **Price per Product:** To assess if the shift to low-interaction shops results in higher average prices, given that these venues typically have higher prices.

4. **Overall Spending:** To examine if overall grocery spending increases during high threat periods due to higher prices at low-interaction shops.

4.4.3 Explanatory variables

Our main variable of interest is the perceived threat of terrorism, measured by the salience of terrorism news in the media. This is defined as the weekly percentage of news articles referencing terrorism, calculated using Equation 4.4:

$$Salience_Terror_w = \frac{N_w^t}{N_w^T} \times 100 \quad (4.4)$$

where $Salience_Terror_w$ is the salience of terrorism news in the French media in week w , N_w^t is the number of news article published in France in week w about terrorism and N_w^T is the total count of news article published in France in week w .

We also use the following household-level control variables from the Kantar panel:

1. **Income Bracket:** Monthly income in four categories: less than €1,399; €1,400 to €2,699; €2,700 to €3,799; €3,800 or more.
2. **Family Type:** Household composition: singles, couples without children, families with younger children, and families with older children.
3. **Municipality Size:** Population size of the municipality: rural (less than 2,000 inhabitants), small town (2,000 to 49,999 inhabitants), medium city (50,000 to 199,999 inhabitants), and large city (more than 200,000 inhabitants).
4. **Holiday Weeks:** Indicator for whether a given week includes a national holiday (e.g., Christmas, New Year, Easter, Bastille Day) or a regional school vacation.
5. **Ecology Media Salience:** Weekly percentage of news articles about eating organic food, to control for media-driven incentives affecting shopping choices.

4.4.4 Descriptive and graphical analysis

In Figure 4.3, we plot our measure of the threat of terrorism, represented by the weekly percentage of terrorism-related news in the media. The vertical red dashed lines indicate the dates of three major terrorist attacks within the study's timeframe: the Charlie Hebdo attack (January 2015), the Paris attacks (November 2015), and the Nice attack (July 2016). The graph shows noticeable spikes in the salience of terrorism news following these events, highlighting the periods of heightened perceived threat.

In Figure 4.4, we plot the weekly average percentage of spending at high-interaction and low-interaction shops. Both figures are adjusted for control variables such as household income, family type, municipality size, holiday weeks, and media salience of ecological news. This adjustment ensures that the observed trends are not confounded by these factors. Figure 4.4 reveals several notable trends. First, there is a visible decline in the percentage of spending at high-interaction shops (hypermarkets, supermarkets, and EDMP) throughout the study period with a considerable drop following the major terrorist attacks. Conversely, the percentage of spending at low-interaction shops (proximity convenience stores and online) shows an upward trend.

These trends suggest that during periods of heightened threat perception, consumers tend to avoid high-interaction shopping venues, shifting their spending towards low-interaction alternatives. This behavioral shift aligns with our hypothesis that consumers adopt coping strategies to minimize their risk of exposure to potential terrorist attacks in crowded, high-interaction environments. The descriptive analysis thus supports our theoretical framework, indicating a measurable change in consumer behavior in response to perceived terrorism threats. The next section will delve deeper into the empirical methods used to quantify these behavioral changes and their implications on overall spending patterns.

4.4.5 Empirical Method

To estimate the impact of the threat of terrorism on consumer spending behavior, we employ an Ordinary Least Squares (OLS) regression model with unobserved fixed effects. Our outcome variables are different aspects of consumer spending behavior, and our variable of interest is the measure of the perceived threat of terrorism. We control for special weeks that could affect shopping behavior, monthly income, family type, municipality population size, and the salience of organic food in the media. The fixed effects in our model include household, month, and week of the year. The model is specified as follows:

$$Y_{jt} = \alpha_0 + \alpha_1 * Salience_Terror_t + \zeta X_{jt} + \eta_j + \omega_t + u_{jt} \quad (4.5)$$

Where:

- Y_{jt} is one of the four dependent variables defined earlier:
 1. The number of weekly visits to all types of grocery shops.
 2. The weekly expenditure at high-interaction shops as a percentage of total expenditure.
 3. The average price per product.
 4. The overall weekly grocery spending.
- $Salience_Terror_t$ is the variable of interest, measuring the weekly terrorism threat level in France as the percentage of news articles referring to terrorism. To capture any potential non-linearity between the threat of terrorism and the outcome variables, we transform this continuous variable into four categorical variables (quartiles) representing different threat levels for alternative specifications.
- X_{jt} represents the control variables previously listed, including:
 1. Monthly income (in four brackets).

2. Family type (singles, couples without kids, families with younger children, families with older children).
 3. Population size of the municipality of residence (rural, small town, medium city, large city).
 4. Special weeks (national holidays, school vacation weeks).
 5. Media salience of organic food.
- η_j and ω_t are household and time (month and week of the year) fixed effects, respectively.
 - u_{jt} is the error term.

4.5 Results

4.5.1 Weekly Number of Visits

Table 4.1 presents OLS estimates examining the relationship between the perceived threat of terrorism and the weekly number of visits to grocery stores. In column (1), the coefficient for *Salience.Terror* is -0.00459 and is statistically significant at the 5% level. This indicates that a one percentage point increase in the weekly salience of terrorism news is associated with a 0.459% decrease in the number of grocery store visits. Given the standard deviation of *Salience.Terror* is 0.9, an increase of one standard deviation in terrorism salience corresponds to a decrease in grocery store visits by approximately 0.41% ($0.00459 * 0.9$).

Column (2) further explores this relationship using quartiles of the terrorism threat. The coefficients for "Salience Terror Q2", "Salience Terror Q3", and "Salience Terror Q4" are all negative and statistically significant at the 1% level, indicating that higher quartiles of terrorism threat are associated with fewer grocery store visits. Specifically, the highest quartile (Q4) sees a reduction of 2.76% in weekly visits compared to the lowest quartile.

Table 4.1 Weekly Number of Visits

	(1) Log.Visit	(2) Log.Visit
Saliency.Terror	-0.00459** (0.00)	
Saliency.Terror_Q2		-0.0236*** (0.01)
Saliency.Terror_Q3		-0.0298*** (0.01)
Saliency.Terror_Q4		-0.0276*** (0.01)
Controls Used	Yes	Yes
Constant	0.732*** (0.10)	0.745*** (0.10)
Observations	1768642	1768642
Adjusted R^2	0.425	0.425

The table shows the impact of terrorism threat on the weekly number of visits to grocery stores. Column (1) uses the continuous measure of terrorism threat (Saliency.Terror), while column (2) uses categorical quartiles (Saliency.Terror Q2, Q3, Q4) to capture different levels of threat. Standard errors are reported in parentheses. All models include controls for household characteristics and fixed effects for household, month, and week. Standard errors in parentheses.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

These results support our hypothesis that heightened perceptions of terrorism risk lead to reduced consumer mobility, as individuals likely avoid high-interaction environments to minimize perceived risk.

4.5.2 Share of Spending at High Interaction Shops

Table 4.2 presents the results for the effect of the perceived terrorism threat on the share of spending at high-interaction shops (hypermarkets, supermarkets, EDMP). In column (1), the coefficient for Saliency.Terror is -0.169 and statistically significant at the 5% level. This suggests that a one percentage point increase in the weekly salience of terrorism news corresponds to a 0.169 percentage point decrease in the share of spending at high-interaction shops. An increase of one standard deviation in terrorism salience results in a decrease of

Table 4.2 Share of Spending at High Interaction Shops

	(1) High_inter	(2) High_inter
Saliency.Terror	-0.169** (0.07)	
Saliency.Terror_Q2		-0.833*** (0.11)
Saliency.Terror_Q3		-1.465*** (0.11)
Saliency.Terror_Q4		-1.233*** (0.10)
Controls Used	Yes	Yes
Constant	64.01*** (3.88)	64.68*** (3.91)
Observations	1768642	1768642
Adjusted R^2	0.360	0.360

The table shows the impact of terrorism threat on the share of spending at high-interaction shops. Column (1) uses the continuous measure of terrorism threat (Saliency.Terror), while column (2) uses categorical quartiles (Saliency.Terror Q2, Q3, Q4) to capture different levels of threat. Standard errors are reported in parentheses. All models include controls for household characteristics and fixed effects for household, month, and week. Standard errors in parentheses.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

approximately 0.152 percentage points in spending share at high-interaction shops (0.169 * 0.9).

In Column (2), the coefficients for "Saliency Terror Q2", "Saliency Terror Q3", and "Saliency Terror Q4" are all negative and statistically significant at the 1% level. Specifically, the highest quartile (Q4) shows a reduction of 1.233 percentage points in the share of spending at high-interaction shops compared to the lowest quartile. This indicates a more substantial decrease in spending at high-interaction shops as the perceived threat of terrorism increases. These findings also align with our hypothesis that consumers shift their spending away from high-interaction shops towards low-interaction alternatives during periods of heightened terrorism threat, likely as a coping mechanism to reduce perceived risk.

4.5.3 Average Price per Product

Table 4.3 Average Price per Product

	(1)	(2)
	Avg.Price	Avg.Price
Salience.Terror	0.0148*** (0.00)	
Salience.Terror_Q2		0.0201*** (0.01)
Salience.Terror_Q3		0.0246*** (0.01)
Salience.Terror_Q4		0.0495*** (0.01)
Controls Used	Yes	Yes
Constant	1.462*** (0.47)	2.102*** (0.37)
Observations	1768642	1768642
Adjusted R^2	0.104	0.104

The table shows the impact of terrorism threat on the average price per product. Column (1) uses the continuous measure of terrorism threat (Salience.Terror), while column (2) uses categorical quartiles (Salience.Terror Q2, Q3, Q4) to capture different levels of threat. Standard errors are reported in parentheses. All models include controls for inflation in food products, household characteristics and fixed effects for household, month, and week. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 4.3 presents the results of the effect of the perceived terrorism threat on the average price per product. In column (1), the coefficient for Salience.Terror is 0.0148 and statistically significant at the 1% level. This indicates that a one percentage point increase in the weekly salience of terrorism news is associated with a 1.48% increase in the average price per product, after controlling for inflation in food products. An increase of one standard deviation in terrorism salience corresponds to a 1.332% increase in the average price per product ($0.0148 * 0.9$).

In column (2) the coefficients of "Salience Terror Q2", "Salience Terror Q3", and "Salience Terror Q4" are all positive and statistically significant at the 1% level. Notably, the

highest quartile (Q4) shows a 4.95% increase in the average price per product compared to the lowest quartile.

These findings suggest that during periods of heightened terrorism threat, consumers tend to shift their spending towards low-interaction shops, which typically have higher prices. This shift results in an overall increase in the average price per product, aligning with our hypothesis that the perceived threat of terrorism leads to changes in shopping behavior that drive up consumer costs.

4.5.4 Total Expenditure

Table 4.4 Total Expenditure

	(1)	(2)
	Log.Spending	Log.Spending
Salience.Terror	-0.00428 (0.00)	
Salience.Terror_Q2		-0.00118 (0.01)
Salience.Terror_Q3		0.00569 (0.01)
Salience.Terror_Q4		-0.00189 (0.01)
Controls Used	Yes	Yes
Constant	3.822*** (0.03)	3.823*** (0.03)
Observations	1768642	1768642
Adjusted R^2	0.299	0.299

The table shows the impact of terrorism threat on total expenditure. Column (1) uses the continuous measure of terrorism threat (Salience.Terror), while column (2) uses categorical quartiles (Salience.Terror Q2, Q3, Q4) to capture different levels of threat. Standard errors are reported in parentheses. All models include controls for household characteristics and fixed effects for household, month, and week. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 4.4 presents the results of the effect of the perceived terrorism threat on total grocery expenditure. In column (1), the coefficient for Salience.Terror is not statistically

significant. Similarly, the coefficients for `Saliency.Terror_Q2`, `Saliency.Terror_Q3`, and `Saliency.Terror_Q4` in column (2) are also not statistically significant. This suggests that varying levels of perceived terrorism threat do not have a significant impact on total grocery spending.

These findings imply that while the perceived threat of terrorism influences where consumers choose to shop (as evidenced by shifts to low-interaction shops) and how much they spend per product (with higher prices at low-interaction venues), it does not significantly alter their overall grocery expenditure. Consumers appear to reallocate their spending across different types of stores without changing the total amount spent, possibly prioritizing essential goods and finding alternative shopping venues that balance safety and cost. This observation aligns with previous findings that while terrorism can affect specific consumer behaviors and preferences, the aggregate economic impact on total expenditure might be limited Baumert et al. (2020).

In short, our analysis reveals that the perceived threat of terrorism significantly affects consumers' shopping behaviors. Consumers reduce their visits to grocery stores and shift their spending towards low-interaction shops, resulting in higher average prices per product. However, the total expenditure on groceries remains unchanged, indicating a reallocation of spending rather than a reduction. These behavioral adjustments highlight the resilience of consumer spending patterns in the face of terrorism threats, driven by a desire to maintain consumption while minimizing perceived risks. In the following section, we will test the robustness of these findings by exploring alternative measure of perceived threat of terrorism and additional control variables.

4.5.5 Robustness Tests

To ensure the robustness of our findings, we conduct additional tests using alternative measures of the perceived threat of terrorism and controlling for the occurrence of major

terrorist attacks. Specifically, we use a normalized indicator of the intensity of Google searches for the term "Menace terroriste" (terrorist threat), which ranges from 0 to 100, as an alternative measure of perceived threat. Additionally, we control for the occurrence of one of the three major terrorist attacks in the given week (Terror.Week0) or the week before (Terror.Week1).

The use of Google search data provides a complementary measure of public concern about terrorism, reflecting real-time public interest and fear. Controlling for the occurrence of major terrorist attacks helps isolate the effect of perceived threat from actual events, providing a clearer understanding of how perceived threat influences consumer behavior independently of specific incidents.

Weekly Number of Visits

Table 4.5 Weekly Number of Visits

	(1) Log. Visit	(2) Log. Visit	(3) Log. Visit	(4) Log. Visit
Salience.Terror.Media	-0.00539** (0.00)		-0.0101** (0.00)	
Salience.Terror.Google		-0.000438** (0.00)		-0.000794** (0.00)
Terror.Week0			0.0141 (0.01)	0.0467* (0.03)
Terror.Week1			0.0454 (0.03)	0.0178 (0.02)
Controls Used	Yes	Yes	Yes	Yes
Constant	0.666*** (0.03)	0.726*** (0.10)	0.661*** (0.03)	0.668*** (0.03)
Observations	1594830	1594830	1594830	1594830
Adjusted R^2	0.419	0.419	0.419	0.419

The table shows the impact of terrorism threat on the weekly number of visits to grocery stores, using alternative measures of perceived threat. Columns (1) and (3) use the salience of terrorism in media, while columns (2) and (4) use the intensity of Google searches for "Menace terroriste." Columns (3) and (4) also control for the occurrence of major terrorist attacks in the given week (Terror.Week0) or the week before (Terror.Week1). Standard errors are reported in parentheses. All models include controls for household characteristics and fixed effects for household, month, and week. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 4.5 presents the results of the robustness tests on the relationship between the perceived threat of terrorism and the weekly number of visits to grocery stores. In columns (1) and (2), both the salience of terrorism in the media and the intensity of Google searches for "Menace terroriste" are negatively associated with the number of grocery store visits, with coefficients of -0.00539 and -0.000438, respectively. Both coefficients are statistically significant at the 5% level, reaffirming our previous findings that heightened perceived threat reduces consumer mobility.

Columns (3) and (4) incorporate controls for the occurrence of major terrorist attacks in the given week (Terror.Week0) or the week before (Terror.Week1). The coefficients for Saliency.Terror.Media and Saliency.Terror.Google remain negative and significant, with values of -0.0101 and -0.000794, respectively. Additionally, the coefficient for Terror.Week0 in column (4) is positive and significant at the 10% level, indicating a slight increase in visits immediately following a major attack.

These robustness tests confirm that our findings are consistent across different measures of perceived threat and remain significant even when controlling for the occurrence of major terrorist attacks. This strengthens our conclusion that perceived terrorism threat significantly impacts consumer shopping behavior by reducing the frequency of grocery store visits.

Share of Spending at High Interaction Shops

Table 4.6 presents the results of the robustness tests examining the relationship between the perceived threat of terrorism and the share of spending at high-interaction shops (hypermarkets, supermarkets, EDMP). In column (1), the coefficient for Saliency.Terror.Media is -0.164, which is statistically significant at the 5% level. This indicates that an increase in the salience of terrorism news is associated with a decrease in the share of spending at high-interaction shops. Similarly, in column (2), the coefficient for Saliency.Terror.Google is -0.0143 and statistically significant at the 1% level, supporting the same conclusion.

Table 4.6 Share of Spending at High Interaction Shops

	(1)	(2)	(3)	(4)
	High_inter	High_inter	High_inter	High_inter
Salience.Terror.Media	-0.164** (0.06)		-0.222** (0.11)	
Salience.Terror.Google		-0.0143*** (0.00)		-0.0220*** (0.01)
Terror.Week0			0.116 (0.35)	1.143** (0.51)
Terror.Week1			0.573 (0.73)	0.120 (0.32)
Controls Used	Yes	Yes	Yes	Yes
Constant	81.00*** (0.64)	81.08*** (0.64)	80.94*** (0.64)	81.07*** (0.64)
Observations	1594830	1594830	1594830	1594830
Adjusted R^2	0.365	0.365	0.365	0.365

The table shows the impact of terrorism threat on the share of spending at high-interaction shops. Columns (1) and (3) use the salience of terrorism in media, while columns (2) and (4) use the intensity of Google searches for "Menace terroriste." Columns (3) and (4) also control for the occurrence of major terrorist attacks in the given week (Terror.Week0) or the week before (Terror.Week1). Standard errors are reported in parentheses. All models include controls for household characteristics and fixed effects for household, month, and week. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Columns (3) and (4) add controls for the occurrence of major terrorist attacks (Terror.Week0 and Terror.Week1). The coefficients for Salience Terror Media and Salience Terror Google remain negative and statistically significant, with values of -0.222 and -0.0220, respectively. The coefficient for Terror.Week0 in column (4) is positive and significant at the 5% level, suggesting a temporary increase in spending at high-interaction shops immediately following a major attack.

These robustness tests confirm that our initial findings are consistent across different measures of perceived threat and remain significant even when accounting for the occurrence of major terrorist attacks. This reinforces our conclusion that perceived terrorism threat leads to a shift in consumer spending away from high-interaction shops towards low-interaction alternatives.

Average Price per Product

Table 4.7 Average Price per Product

	(1) Avg.Price	(2) Avg.Price	(3) Avg.Price	(4) Avg.Price
Salience.Terror.Media	0.0157*** (0.00)		0.0304*** (0.01)	
Salience.Terror.Google		0.000867*** (0.00)		0.00156*** (0.00)
Terror.Week0			-0.0502** (0.02)	-0.0925** (0.04)
Terror.Week1			-0.137*** (0.04)	-0.0280 (0.02)
Controls Used	Yes	Yes	Yes	Yes
Constant	2.046*** (0.52)	2.106*** (0.55)	2.055*** (0.51)	2.233*** (0.54)
Observations	1594830	1594830	1594830	1594830
Adjusted R^2	0.107	0.107	0.107	0.107

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The table shows the impact of terrorism threat on the average price per product. Columns (1) and (3) use the salience of terrorism in media, while columns (2) and (4) use the intensity of Google searches for "Menace terroriste." Columns (3) and (4) also control for the occurrence of major terrorist attacks in the given week (Terror.Week0) or the week before (Terror.Week1). Standard errors are reported in parentheses. All models include controls for household characteristics and fixed effects for household, month, and week. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 4.7 presents the results of the robustness tests examining the relationship between the perceived threat of terrorism and the average price per product. In column (1), the coefficient for Salience.Terror.Media is 0.0157, which is statistically significant at the 1% level. This suggests that an increase in the salience of terrorism news is associated with a 1.57% increase in the average price per product. Similarly, in column (2), the coefficient for Salience.Terror.Google is 0.000867 and statistically significant at the 1% level, supporting the same conclusion.

Columns (3) and (4) add controls for the occurrence of major terrorist attacks (Terror.Week0 and Terror.Week1). The coefficients for Salience Terror Media and Salience

Terror Google remain positive and statistically significant, with values of 0.0304 and 0.00156, respectively. The coefficients for Terror.Week0 and Terror.Week1 are negative and significant.

These robustness tests confirm that our initial findings are consistent across different measures of perceived threat and remain significant even when accounting for the occurrence of major terrorist attacks. This reinforces our conclusion that perceived terrorism threat leads to higher average prices per product, likely due to consumers shifting their spending towards low-interaction shops with higher prices.

Total Expenditure

Table 4.8 Total Expenditure

	(1)	(2)	(3)	(4)
	Log.Spending	Log.Spending	Log.Spending	Log.Spending
Salience.Terror.Media	-0.00265 (0.00)		-0.00686 (0.01)	
Salience.Terror.Google		-0.0000738 (0.00)		-0.000103 (0.00)
Terror.Week0			0.00713 (0.02)	-0.0000171 (0.04)
Terror.Week1			0.0423 (0.05)	0.00984 (0.02)
Controls Used	Yes	Yes	Yes	Yes
Constant	3.861*** (0.04)	3.862*** (0.04)	3.856*** (0.04)	3.861*** (0.04)
Observations	1594830	1594830	1594830	1594830
Adjusted R^2	0.299	0.299	0.299	0.299

The table shows the impact of terrorism threat on total expenditure. Columns (1) and (3) use the salience of terrorism in media, while columns (2) and (4) use the intensity of Google searches for "Menace terroriste." Columns (3) and (4) also control for the occurrence of major terrorist attacks in the given week (Terror.Week0) or the week before (Terror.Week1). Standard errors are reported in parentheses. All models include controls for household characteristics and fixed effects for household, month, and week. Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 4.8 presents the results of the robustness tests examining the relationship between the perceived threat of terrorism and total grocery expenditure. In column (1), the coefficient for Salience.Terror.Media is not statistically significant. Similarly, the coefficient for

Saliency.Terror.Google in column (2) is also not statistically significant. Columns (3) and (4) add controls for the occurrence of major terrorist attacks (Terror.Week0 and Terror.Week1), but the coefficients for Saliency.Terror.Media and Saliency.Terror.Google remain statistically insignificant. This suggests that varying levels of perceived terrorism threat do not have a significant impact on total grocery spending.

These findings are consistent with our previous results, indicating that while the perceived threat of terrorism influences specific shopping behaviors, it does not significantly alter overall grocery expenditure. Consumers appear to reallocate their spending across different types of stores without changing the total amount spent.

In summary, our robustness tests confirm that the perceived threat of terrorism significantly affects consumer shopping behaviors, such as reducing store visits and increasing the average price per product due to shifts towards low-interaction shops. However, the total grocery expenditure remains unaffected, indicating a reallocation of spending rather than a reduction. These findings are consistent across different measures of perceived threat and remain significant even when controlling for the occurrence of major terrorist attacks.

4.5.6 Heterogeneous Findings

In this section, we explore whether certain household compositions are more sensitive to the perceived threat of terrorism. We examine the differential impacts based on living area, income, and household type. This analysis helps identify which groups of consumers are most affected by terrorism threats.

Weekly Number of Visits

Table 4.9 presents the results of the heterogeneous effects analysis examining the relationship between the perceived threat of terrorism and the weekly number of visits to grocery stores. The interaction terms reveal several significant findings:

1. **Living Area:** The interaction terms for Small Town, Medium City, and Large City with Salience.Terror are not statistically significant, indicating that the perceived threat of terrorism does not differentially impact grocery store visits based on living area.
2. **Household Type:** The interaction term for Families with Young Children and Families with Older Children are negative and significant at the 10% and 5% level respectively. This suggests that families with children, reduce their grocery store visits more than other household types in response to increased terrorism threat. This finding aligns with previous literature indicating that having children increases sensitivity to threat of terrorism. For example, females report greater fear of terrorism and judge the risk of terrorism to be significantly higher than males do because women were including their fear for their children's safety in their estimates Nellis and Savage (2012); Warr and Ellison (2000).
3. **Income:** The interaction terms for Lower Middle Income, Upper Middle Income, and High Income classes with Salience.Terror are not statistically significant, suggesting that income levels do not significantly modify the impact of perceived terrorism threat on grocery store visits.

These results indicate that the presence of children in a household increases sensitivity to terrorism threats, leading to a greater reduction in grocery store visits. This heightened sensitivity among families with children can be due to parents, not only fearing for themselves but also for their children.

Share of Spending at High Interaction Shops

Table 4.10 presents the results of the heterogeneous effects analysis examining the relationship between the perceived threat of terrorism and the share of spending at high-interaction shops. The interaction terms reveal several significant findings:

1. **Living Area:** The interaction terms for Small Town, Medium City, and Large City with *Salience.Terror* are not statistically significant, indicating that the perceived threat of terrorism does not differentially impact spending at high-interaction shops based on living area compared to rural areas.
2. **Household Type:** The interaction term for Families with Young Children is negative and significant at the 1% level. This suggests that families with young children reduce their spending at high-interaction shops more than other household types in response to increased terrorism threat. This finding once again aligns with previous literature indicating that having children increases sensitivity to threat of terrorism. Nellis and Savage (2012); Warr and Ellison (2000).
3. **Income:** The interaction terms for Lower Middle Income, Upper Middle Income, and High Income classes with *Salience.Terror* are not statistically significant, suggesting that income levels do not significantly modify the impact of perceived terrorism threat on spending at high-interaction shops compared to the low-income class.

These results indicate that the presence of young children in a household increases sensitivity to terrorism threats, leading to a greater reduction in spending at high-interaction shops.

Average Price per Product

Table 4.11 presents the results of the heterogeneous effects analysis examining the relationship between the perceived threat of terrorism and the average price per product.

1. **Living Area:** The interaction term for Large City with *Salience.Terror* is negative and significant at the 10% level, indicating that residents of large cities experience a smaller increase in average prices per product in response to terrorism threats compared to those in rural areas. This might be due to a wider availability of shopping options and competitive pricing in large cities.

2. **Household Type:** The interaction terms for Couples, Families with Young Children, and Families with Older Children with Salience.Terror are not statistically significant, suggesting that household type does not significantly modify the impact of perceived terrorism threat on average prices per product.
3. **Income:** The interaction terms for Lower Middle Income, Upper Middle Income, and High Income classes with Salience.Terror are not statistically significant, indicating that income levels do not significantly influence the relationship between perceived terrorism threat and average prices per product compared to the low-income class.

These results indicate that while the perceived threat of terrorism generally leads to higher average prices per product, this effect is somewhat mitigated for residents of large cities, possibly due to increased market competition and the availability of low-cost alternatives.

Total Expenditure

Table 12 presents the results of the heterogeneous effects analysis examining the relationship between the perceived threat of terrorism and total grocery expenditure. Given that the overall spending is not significantly affected by the perceived threat of terrorism, none of the interaction terms are statistically significant. This consistency suggests that variations in living area, household type, or income level do not modify the impact of terrorism threat on total expenditure. As previously discussed, while consumers may change where and how they shop in response to terrorism threats, their total spending on groceries remains stable.

4.6 Conclusions

Terrorism have long been considered as the greatest safety threat to the world. Particularly, after the terrorist attacks of 9/11, policymakers started worrying about the economic consequences of terrorism. Accordingly, academics soon began analyzing both the macro-

and micro-economic effects that might derive from those attacks Baumert et al. (2020). However, in this increasingly complete image of how terrorist incidents might affect an economy, little effort has been made so far, to the best of our knowledge, to determine how consumers shopping behavior is effected and whether that effect the overall consumption. Nonetheless, it is crucial to study consumers buying behavior in the face of terrorism risk in an economy like France that is very dependent on the spending of millions of customers daily. Any interruption of that spending pattern could cause enormous economic ill to the nation's fiscal health.

This study contributes to this literature on the economic impacts of terrorism by investigating for the first time how perceived terrorism threats influence consumer behavior, specifically focusing on the allocation of consumption between high- and low-interaction shopping venues. Utilizing data from the French Kantar Panel, which tracks grocery purchases of approximately 15,000 households over three years, our research addresses several key questions: (1) Do French consumers engage in coping strategies by reducing shopping trips during high threat periods? (2) Do they spend more at low-interaction venues at the expense of high-interaction ones? (3) Does this shift result in higher prices per product once we account for inflation? (4) Does the threat of terrorism affect overall grocery spending? (5) How do variations in behavioral coping differ by location, household composition, and income?

We provide new insights into the indirect economic effects of terrorism with the following key findings: First, we found that increased salience of terrorism news significantly reduces the number of shopping trips. A one percentage point increase in terrorism salience led to a 0.46% reduction in weekly visits to grocery stores. Second, the threat of terrorism leads to a significant shift from high-interaction venues (hypermarkets and supermarkets) to low-interaction venues (proximity stores and online shopping). In 2015, compared to 2014, expenditures at high-interaction places decreased by 1.5%, while expenditures at proximity

retailers and online shopping increased by approximately 1% and 0.6%, respectively. Third, this shift results in higher average prices per product due to the typically higher prices at low-interaction venues. Our analysis indicates that the average price per product increased by about 1.57% after controlling for inflation in response to heightened terrorism threat. Fourth, despite changes in shopping patterns, total grocery expenditure remains unaffected by the perceived threat of terrorism. This suggests that consumers reallocate their spending across different types of stores without altering the total amount spent. Fifth, families with young children are particularly sensitive to terrorism threats, reducing their visits and spending at high-interaction shops more than other household types. In contrast, income levels and living areas do not significantly influence the relationship between terrorism threat and consumer behavior.

Understanding these behavioral adjustments is crucial for policymakers and businesses. Retailers might need to adapt their strategies, ensuring that low-interaction shopping options are available and affordable as consumers clearly would like to reduce the perceived risk of terror without actually increase overall spending. Moreover, if risk perception is the main driver of consumers' reactions, businesses might consider communicating the true probability of being exposed to terrorist attack that consumers faces when visiting high-interaction shops as explained by Pennings et al. (2002). Policymakers should also consider these behavioral shifts when designing interventions to mitigate any economic loss resulting from the misallocation of resources from high- to low-interaction retail environments.

Future research could explore the long-term impacts of terrorism on consumer confidence and spending, as well as the role of policy interventions in mitigating these effects. Additionally, investigating the psychological mechanisms driving these behavioral changes could provide deeper insights into consumer responses to terrorism threats. Variables not included in our survey may play a role in perceptions of the threat of terrorism, for instance future researches might test whether behavioral adaptations were more common

among individuals with more political media consumption or with previous experience with terrorism. It would interesting to know as well whether the risk attitudes that reflects the consumer's general predisposition to risk plays a role.

.1 Full Regression Tables

.1.1 Weekly Number of Visits

.1.2 Share of Spending at High Interaction Shops

.1.3 Average Price per Product

.1.4 Total Expenditure

.1.5 Robustness Tests

Weekly Number of Visits

Share of Spending at High Interaction Shops

Average Price per Product

Total Expenditure

Figure 4.2 Time (T_1) to consume in HI v/s Time (T_2) to consume in LI places, with endogenous terror

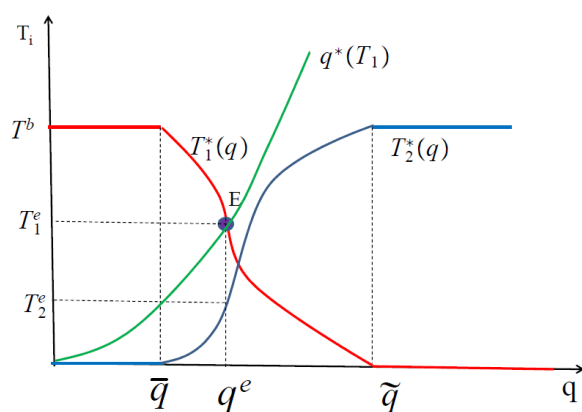


Fig 2: Equilibrium shopping times and terror

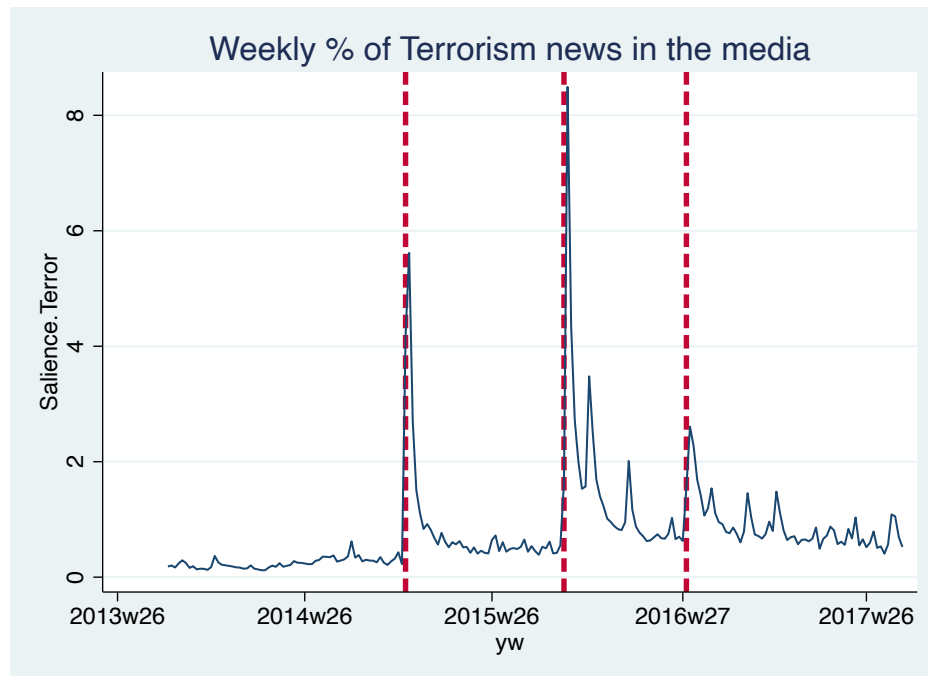
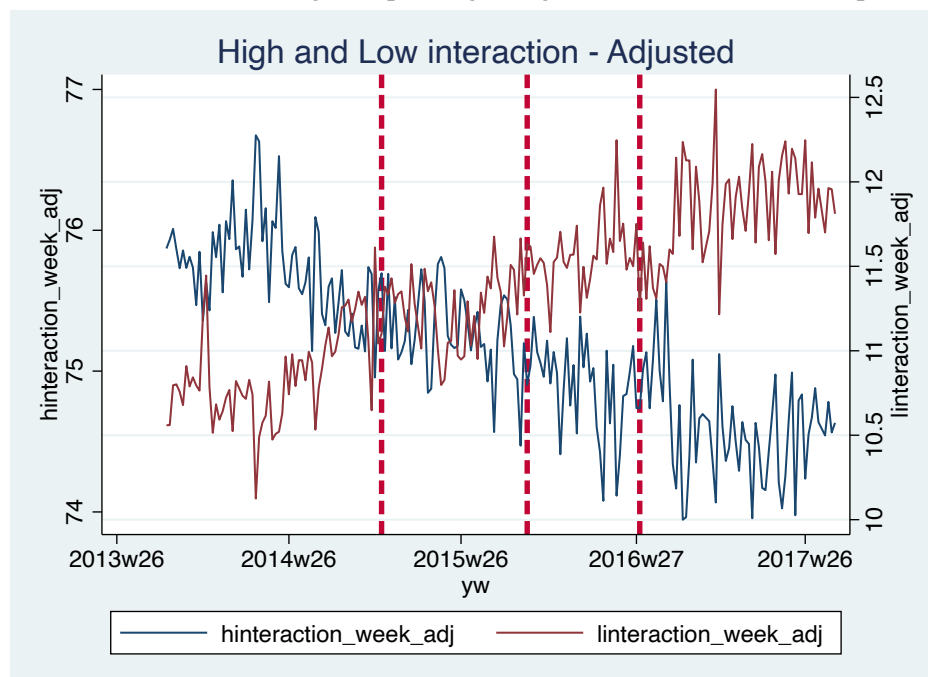
Figure 4.3 Threat of terrorism measured as % of terrorism news**Figure 4.4** Percentage of spending at high and Low interaction shops

Table 4.9 Weekly Number of Visits

	(1) Log. Visit	(2) Log. Visit	(3) Log. Visit
Salience.Terror	-0.00507** (0.00)	-0.00372* (0.00)	-0.00602** (0.00)
Small.Town	0.0395*** (0.01)	0.0393*** (0.01)	0.0394*** (0.01)
Medium.City	0.0387*** (0.01)	0.0378*** (0.01)	0.0379*** (0.01)
Large.City	0.0942*** (0.01)	0.0935*** (0.01)	0.0935*** (0.01)
Lower.Middle.Income.Class	-0.0224*** (0.00)	-0.0225*** (0.00)	-0.0236*** (0.00)
Upper.Middle.Income.Class	-0.0286*** (0.01)	-0.0287*** (0.01)	-0.0289*** (0.01)
High.Income.Class	-0.0193*** (0.01)	-0.0194*** (0.01)	-0.0187** (0.01)
Couples	0.0759*** (0.01)	0.0750*** (0.01)	0.0759*** (0.01)
FAM.With.Young.Child	0.0963*** (0.01)	0.0995*** (0.01)	0.0962*** (0.01)
FAM.With.Old.Child	0.0745*** (0.01)	0.0783*** (0.01)	0.0745*** (0.01)
Small.Town × Salience.Terror	-0.000202 (0.00)		
Medium.City × Salience.Terror	-0.00108 (0.00)		
Large.City × Salience.Terror	-0.000975 (0.00)		
Couples × Salience.Terror		0.00133 (0.00)	
FAM.With.Young.Child × Salience.Terror		-0.00489* (0.00)	
FAM.With.Old.Child × Salience.Terror		-0.00466** (0.00)	
Lower.Middle.Income.Class × Salience.Terror			0.00167 (0.00)
Upper.Middle.Income.Class × Salience.Terror			0.000405 (0.00)
High.Income.Class × Salience.Terror			-0.000820 (0.00)
Controls Used	Yes	Yes	Yes
Constant	0.666*** (0.03)	0.665*** (0.03)	0.667*** (0.03)
Observations	1594830	1594830	1594830
Adjusted R^2	0.419	0.419	0.419

Table 4.10 Share of Spending at High Interaction Shops

	(1) High_inter	(2) High_inter	(3) High_inter
Salience.Terror	-0.124** (0.06)	-0.129* (0.07)	-0.162 (0.11)
Small.Town	1.494*** (0.39)	1.448*** (0.38)	1.448*** (0.38)
Medium.City	1.068* (0.58)	1.058* (0.58)	1.063* (0.58)
Large.City	0.928 (0.89)	0.846 (0.89)	0.855 (0.89)
Lower.Middle.Income.Class	1.452*** (0.25)	1.447*** (0.25)	1.445*** (0.26)
Upper.Middle.Income.Class	1.205*** (0.31)	1.200*** (0.31)	1.237*** (0.32)
High.Income.Class	0.332 (0.37)	0.332 (0.37)	0.311 (0.37)
Couples	1.910*** (0.27)	1.901*** (0.28)	1.909*** (0.27)
FAM.With.Young.Child	-0.375 (0.35)	-0.210 (0.36)	-0.377 (0.35)
FAM.With.Old.Child	0.0121 (0.34)	0.0263 (0.34)	0.00997 (0.34)
Small.Town $\times$ Salience.Terror	-0.0583 (0.06)		
Medium.City $\times$ Salience.Terror	-0.00353 (0.11)		
Large.City $\times$ Salience.Terror	-0.0966 (0.09)		
Couples $\times$ Salience.Terror		0.00936 (0.05)	
FAM.With.Young.Child $\times$ Salience.Terror		-0.211*** (0.06)	
FAM.With.Old.Child $\times$ Salience.Terror		0.00685 (0.06)	
Lower.Middle.Income.Class $\times$ Salience.Terror			0.00877 (0.08)
Upper.Middle.Income.Class $\times$ Salience.Terror			-0.0426 (0.07)
High.Income.Class $\times$ Salience.Terror			0.0300
Controls Used	Yes	Yes	Yes
Constant	80.97*** (0.64)	80.98*** (0.64)	81.00*** (0.65)
Observations	1594830	1594830	1594830
Adjusted R^2	0.365	0.365	0.365

Table 4.11 Average Price per Product

	(1) Avg.Price	(2) Avg.Price	(3) Avg.Price
Salience.Terror	0.0218*** (0.00)	0.0152*** (0.01)	0.0169*** (0.01)
Small.Town	-0.0921*** (0.03)	-0.0970*** (0.03)	-0.0968*** (0.03)
Medium.City	-0.0710 (0.04)	-0.0785* (0.04)	-0.0781* (0.04)
Large.City	-0.199*** (0.05)	-0.208*** (0.05)	-0.208*** (0.05)
Lower.Middle.Income.Class	0.0494*** (0.02)	0.0491*** (0.02)	0.0490*** (0.02)
Upper.Middle.Income.Class	0.100*** (0.02)	0.1000*** (0.02)	0.0980*** (0.02)
High.Income.Class	0.130*** (0.03)	0.130*** (0.03)	0.136*** (0.03)
Couples	0.150*** (0.02)	0.143*** (0.02)	0.150*** (0.02)
FAM.With.Young.Child	0.350*** (0.03)	0.354*** (0.03)	0.350*** (0.03)
FAM.With.Old.Child	0.245*** (0.03)	0.248*** (0.03)	0.245*** (0.03)
Small.Town × Salience.Terror	-0.00638 (0.01)		
Medium.City × Salience.Terror	-0.00981 (0.01)		
Large.City × Salience.Terror	-0.0118* (0.01)		
Couples × Salience.Terror		0.00921 (0.01)	
FAM.With.Young.Child × Salience.Terror		-0.00578 (0.01)	
FAM.With.Old.Child × Salience.Terror		-0.00224 (0.00)	
Lower.Middle.Income.Class × Salience.Terror			0.000293 (0.00)
Upper.Middle.Income.Class × Salience.Terror			0.00283 (0.01)
High.Income.Class × Salience.Terror			-0.00842 (0.01)
Controls Used	Yes	Yes	Yes
Constant	2.911*** (0.04)	2.916*** (0.03)	2.915*** (0.04)
Observations	1594830	1594830	1594830
Adjusted R^2	0.107	0.107	0.107

Table 4.12 Total Expenditure

	(1) Log.Spending	(2) Log.Spending	(3) Log.Spending
Salience.Terror	-0.00296 (0.00)	-0.00263 (0.00)	-0.00277 (0.00)
Small.Town	-0.0431*** (0.01)	-0.0428*** (0.01)	-0.0427*** (0.01)
Medium.City	-0.102*** (0.02)	-0.102*** (0.02)	-0.102*** (0.02)
Large.City	-0.133*** (0.02)	-0.133*** (0.02)	-0.133*** (0.02)
Lower.Middle.Income.Class	0.0287*** (0.01)	0.0286*** (0.01)	0.0283*** (0.01)
Upper.Middle.Income.Class	0.0581*** (0.01)	0.0581*** (0.01)	0.0578*** (0.01)
High.Income.Class	0.0817*** (0.01)	0.0817*** (0.01)	0.0825*** (0.01)
Couples	0.244*** (0.01)	0.242*** (0.01)	0.244*** (0.01)
FAM.With.Young.Child	0.324*** (0.01)	0.323*** (0.01)	0.324*** (0.01)
FAM.With.Old.Child	0.322*** (0.01)	0.324*** (0.01)	0.322*** (0.01)
Small.Town $\times$ Salience.Terror	0.000398 (0.00)		
Medium.City $\times$ Salience.Terror	0.000618 (0.00)		
Large.City $\times$ Salience.Terror	0.000144 (0.01)		
Couples $\times$ Salience.Terror		0.00181 (0.00)	
FAM.With.Young.Child $\times$ Salience.Terror		0.000329 (0.00)	
FAM.With.Old.Child $\times$ Salience.Terror		-0.00250 (0.00)	
Lower.Middle.Income.Class $\times$ Salience.Terror			0.000495 (0.00)
Upper.Middle.Income.Class $\times$ Salience.Terror			0.000412 (0.00)
High.Income.Class $\times$ Salience.Terror			-0.00102 (0.00)
Controls Used	Yes	Yes	Yes
Constant	3.861*** (0.04)	3.861*** (0.04)	3.861*** (0.04)
Observations	1594830	1594830	1594830
Adjusted R^2	0.299	0.299	0.299

Table 13 Weekly Number of Visits

	(1) Log. Visit	(2) Log. Visit
Salience.Terror	-0.00459** (0.00)	
Salience.Terror_Q2		-0.0236*** (0.01)
Salience.Terror_Q3		-0.0298*** (0.01)
Salience.Terror_Q4		-0.0276*** (0.01)
Salience.Ecology	-0.0203* (0.01)	-0.00912 (0.01)
Lower.Middle.Income.Class	-0.0210*** (0.00)	-0.0197*** (0.00)
Upper.Middle.Income.Class	-0.0295*** (0.01)	-0.0269*** (0.01)
High.Income.Class	-0.0221*** (0.01)	-0.0175** (0.01)
Couples	0.0783*** (0.00)	0.0772*** (0.00)
FAM.With.Young.Child	0.0988*** (0.01)	0.0941*** (0.01)
FAM.With.Old.Child	0.0750*** (0.01)	0.0737*** (0.01)
Small.Town	0.0408*** (0.01)	0.0399*** (0.01)
Medium.City	0.0429*** (0.01)	0.0400*** (0.01)
Large.City	0.103*** (0.01)	0.0981*** (0.01)
toussaint	0.211*** (0.05)	0.212*** (0.05)
noel	0.111* (0.07)	0.116* (0.06)
summeroff	0.106 (0.08)	0.108 (0.08)
winteroff	0.00700 (0.01)	0.00667 (0.01)
springoff	0.0112 (0.01)	0.0116 (0.01)
Constant	0.732*** (0.10)	0.745*** (0.10)
Observations	1768642	1768642
Adjusted R^2	0.425	0.425

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Table 14 Share of Spending at High Interaction Shops

	(1) High_inter	(2) High_inter
Salience.Terror	-0.169** (0.07)	
Salience.Terror_Q2		-0.833*** (0.11)
Salience.Terror_Q3		-1.465*** (0.11)
Salience.Terror_Q4		-1.233*** (0.10)
Salience.Ecology	-0.890*** (0.20)	-0.382** (0.16)
Lower.Middle.Income.Class	1.386*** (0.25)	1.449*** (0.25)
Upper.Middle.Income.Class	1.150*** (0.30)	1.279*** (0.30)
High.Income.Class	0.228 (0.34)	0.456 (0.34)
Couples	1.752*** (0.26)	1.696*** (0.26)
FAM.With.Young.Child	-0.496 (0.35)	-0.732** (0.35)
FAM.With.Old.Child	-0.110 (0.34)	-0.168 (0.34)
Small.Town	1.232*** (0.35)	1.185*** (0.35)
Medium.City	1.120** (0.52)	0.973* (0.52)
Large.City	0.881 (0.88)	0.666 (0.88)
tuossaint	-0.539 (0.52)	-0.553 (0.56)
noel	0.112 (0.31)	0.245 (0.30)
summeroff	-0.811 (0.80)	-0.657 (0.87)
winteroff	-0.0589 (0.22)	-0.0878 (0.19)
springoff	-0.0324 (0.22)	-0.00998 (0.19)
Constant	64.01*** (3.88)	64.68*** (3.91)
Observations	1768642	1768642
Adjusted R^2	0.360	0.360

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Table 15 Average Price per Product

	(1) Avg.Price	(2) Avg.Price
Salience.Terror	0.0148*** (0.00)	
Salience.Terror_Q2		0.0201*** (0.01)
Salience.Terror_Q3		0.0246*** (0.01)
Salience.Terror_Q4		0.0495*** (0.01)
Salience.Ecology	0.00228 (0.01)	-0.000923 (0.01)
Inflation_Food	0.0145*** (0.00)	0.00809** (0.00)
Lower.Middle.Income.Class	0.0453** (0.02)	0.0447** (0.02)
Upper.Middle.Income.Class	0.106*** (0.02)	0.105*** (0.03)
High.Income.Class	0.142*** (0.03)	0.140*** (0.03)
Couples	0.154*** (0.02)	0.154*** (0.02)
FAM.With.Young.Child	0.359*** (0.03)	0.361*** (0.03)
FAM.With.Old.Child	0.248*** (0.03)	0.249*** (0.03)
Small.Town	-0.0772** (0.03)	-0.0768*** (0.03)
Medium.City	-0.0659 (0.04)	-0.0642 (0.04)
Large.City	-0.170*** (0.05)	-0.167*** (0.06)
toussaint	0.0306 (0.02)	0.0289 (0.02)
noel	0.0724** (0.03)	0.0692*** (0.02)
summeroff	0.0233 (0.04)	0.0212 (0.02)
winteroff	0.00448 (0.02)	0.00457 (0.01)
springoff	0.0170 (0.01)	0.0145 (0.01)
Constant	1.462*** (0.47)	2.102*** (0.37)
Observations	1768642	1768642
Adjusted R^2	0.104	0.104

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Table 16 Total Expenditure

	(1)	(2)
	Log.Spending	Log.Spending
Salience.Terror	-0.00428 (0.00)	
Salience.Terror_Q2		-0.00118 (0.01)
Salience.Terror_Q3		0.00569 (0.01)
Salience.Terror_Q4		-0.00189 (0.01)
Salience.Ecology	0.0369** (0.02)	0.0341* (0.02)
Lower.Middle.Income.Class	0.0264*** (0.01)	0.0261*** (0.01)
Upper.Middle.Income.Class	0.0594*** (0.01)	0.0588*** (0.01)
High.Income.Class	0.0784*** (0.01)	0.0773*** (0.01)
Couples	0.240*** (0.01)	0.240*** (0.01)
FAM.With.Young.Child	0.318*** (0.01)	0.319*** (0.01)
FAM.With.Old.Child	0.316*** (0.01)	0.317*** (0.01)
Small.Town	-0.0472*** (0.01)	-0.0470*** (0.01)
Medium.City	-0.0987*** (0.01)	-0.0979*** (0.01)
Large.City	-0.134*** (0.02)	-0.133*** (0.02)
toussaint	0.0352 (0.07)	0.0361 (0.07)
noel	0.122 (0.08)	0.124 (0.08)
summeroff	-0.0439 (0.09)	-0.0458 (0.09)
winteroff	-0.0208* (0.01)	-0.0205 (0.01)
springoff	-0.0165 (0.02)	-0.0164 (0.02)
Constant	3.822*** (0.03)	3.823*** (0.03)
Observations	1768642	1768642
Adjusted R^2	0.299	0.299

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Table 17 Weekly Number of Visits

	(1) Log. Visit	(2) Log. Visit	(3) Log. Visit	(4) Log. Visit
Salience.Terror.Media	-0.00539** (0.00)		-0.0101** (0.00)	
Salience.Terror.Google		-0.000438** (0.00)		-0.000794** (0.00)
Terror.Week0			0.0141 (0.01)	0.0467* (0.03)
Terror.Week1			0.0454 (0.03)	0.0178 (0.02)
Salience.Ecology	-0.0144 (0.01)	-0.0166 (0.01)	-0.00992 (0.01)	-0.0149 (0.01)
Lower.Middle.Income.Class	-0.0224*** (0.00)	-0.0222*** (0.00)	-0.0223*** (0.00)	-0.0223*** (0.00)
Upper.Middle.Income.Class	-0.0286*** (0.01)	-0.0283*** (0.01)	-0.0284*** (0.01)	-0.0284*** (0.01)
High.Income.Class	-0.0193*** (0.01)	-0.0188** (0.01)	-0.0191** (0.01)	-0.0189** (0.01)
Couples	0.0759*** (0.01)	0.0758*** (0.01)	0.0759*** (0.01)	0.0758*** (0.01)
FAM.With.Young.Child	0.0963*** (0.01)	0.0962*** (0.01)	0.0960*** (0.01)	0.0958*** (0.01)
FAM.With.Old.Child	0.0745*** (0.01)	0.0746*** (0.01)	0.0745*** (0.01)	0.0746*** (0.01)
Small.Town	0.0393*** (0.01)	0.0401*** (0.01)	0.0393*** (0.01)	0.0392*** (0.01)
Medium.City	0.0379*** (0.01)	0.0394*** (0.01)	0.0377*** (0.01)	0.0375*** (0.01)
Large.City	0.0935*** (0.01)	0.102*** (0.01)	0.0932*** (0.01)	0.0932*** (0.01)
toussaint	0.210*** (0.06)	0.210*** (0.06)	0.211*** (0.06)	0.210*** (0.06)
noel	0.113* (0.07)	0.114* (0.07)	0.110* (0.07)	0.112* (0.07)
summeroff	0.0190 (0.09)	0.0177 (0.09)	0.0198 (0.09)	0.0171 (0.09)
winteroff	-0.000780 (0.01)	-0.000941 (0.02)	-0.000658 (0.01)	-0.000965 (0.02)
springoff	0.00954 (0.01)	0.00941 (0.01)	0.00999 (0.01)	0.00967 (0.01)
Constant	0.666*** (0.03)	0.726*** (0.10)	0.661*** (0.03)	0.668*** (0.03)
Observations	1594830	1594830	1594830	1594830
Adjusted R^2	0.419	0.419	0.419	0.419

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Table 18 Share of Spending at High Interaction Shops

	(1) High_inter	(2) High_inter	(3) High_inter	(4) High_inter
Salience.Terror.Media	-0.164** (0.06)		-0.222** (0.11)	
Salience.Terror.Google		-0.0143*** (0.00)		-0.0220*** (0.01)
Terror.Week0			0.116 (0.35)	1.143** (0.51)
Terror.Week1			0.573 (0.73)	0.120 (0.32)
Salience.Ecology	-1.013*** (0.22)	-1.077*** (0.21)	-0.958*** (0.22)	-1.051*** (0.22)
Lower.Middle.Income.Class	1.452*** (0.25)	1.451*** (0.25)	1.452*** (0.25)	1.453*** (0.25)
Upper.Middle.Income.Class	1.206*** (0.31)	1.206*** (0.31)	1.208*** (0.31)	1.211*** (0.31)
High.Income.Class	0.333 (0.37)	0.336 (0.37)	0.337 (0.37)	0.345 (0.37)
Couples	1.909*** (0.27)	1.908*** (0.27)	1.909*** (0.27)	1.908*** (0.27)
FAM.With.Young.Child	-0.376 (0.35)	-0.380 (0.35)	-0.378 (0.35)	-0.388 (0.36)
FAM.With.Old.Child	0.0111 (0.34)	0.0115 (0.34)	0.0110 (0.34)	0.0116 (0.34)
Small.Town	1.449*** (0.38)	1.447*** (0.38)	1.449*** (0.38)	1.445*** (0.38)
Medium.City	1.064* (0.58)	1.060* (0.58)	1.062* (0.58)	1.052* (0.58)
Large.City	0.858 (0.89)	0.857 (0.89)	0.854 (0.89)	0.848 (0.89)
toussaint	-0.778 (0.60)	-0.781 (0.59)	-0.776 (0.60)	-0.779 (0.59)
noel	0.0713 (0.32)	0.102 (0.29)	0.0450 (0.33)	0.0748 (0.30)
summeroff	-0.829 (0.97)	-0.872 (0.97)	-0.819 (0.98)	-0.884 (0.97)
winteroff	-0.0997 (0.26)	-0.105 (0.26)	-0.0983 (0.26)	-0.105 (0.25)
springoff	-0.156 (0.24)	-0.159 (0.24)	-0.150 (0.24)	-0.154 (0.24)
Constant	81.00*** (0.64)	81.08*** (0.64)	80.94*** (0.64)	81.07*** (0.64)
Observations	1594830	1594830	1594830	1594830
Adjusted R^2	0.365	0.365	0.365	0.365

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Table 19 Average Price per Product

	(1) Avg.Price	(2) Avg.Price	(3) Avg.Price	(4) Avg.Price
Salience.Terror.Media	0.0157*** (0.00)		0.0304*** (0.01)	
Salience.Terror.Google		0.000867*** (0.00)		0.00156*** (0.00)
Terror.Week0			-0.0502** (0.02)	-0.0925** (0.04)
Terror.Week1			-0.137*** (0.04)	-0.0280 (0.02)
Salience.Ecology	0.00800 (0.01)	0.0160 (0.01)	-0.00565 (0.01)	0.0142 (0.01)
Inflation.Food	0.00879 (0.01)	0.00812 (0.01)	0.00887* (0.01)	0.00686 (0.01)
Lower.Middle.Income.Class	0.0486*** (0.02)	0.0488*** (0.02)	0.0483*** (0.02)	0.0488*** (0.02)
Upper.Middle.Income.Class	0.0989*** (0.02)	0.0993*** (0.02)	0.0984*** (0.02)	0.0991*** (0.02)
High.Income.Class	0.127*** (0.03)	0.128*** (0.03)	0.126*** (0.03)	0.128*** (0.03)
Couples	0.151*** (0.02)	0.150*** (0.02)	0.151*** (0.02)	0.150*** (0.02)
FAM.With.Young.Child	0.353*** (0.03)	0.353*** (0.03)	0.354*** (0.03)	0.353*** (0.03)
FAM.With.Old.Child	0.246*** (0.03)	0.246*** (0.03)	0.246*** (0.03)	0.246*** (0.03)
Small.Town	-0.0962*** (0.03)	-0.0961*** (0.03)	-0.0961*** (0.03)	-0.0961*** (0.03)
Medium.City	-0.0764* (0.04)	-0.0768* (0.04)	-0.0757* (0.04)	-0.0764* (0.04)
Large.City	-0.205*** (0.05)	-0.206*** (0.05)	-0.204*** (0.05)	-0.206*** (0.05)
toussaint	0.0357 (0.03)	0.0362 (0.03)	0.0352 (0.03)	0.0361 (0.03)
noel	0.0756*** (0.03)	0.0709*** (0.03)	0.0823*** (0.03)	0.0734*** (0.03)
summeroff	-0.0181 (0.03)	-0.0151 (0.03)	-0.0206 (0.03)	-0.0146 (0.03)
winteroff	-0.000912 (0.02)	-0.000401 (0.02)	-0.00130 (0.02)	-0.000286 (0.02)
springoff	0.0131 (0.01)	0.0138 (0.02)	0.0117 (0.01)	0.0133 (0.02)
Constant	2.046*** (0.52)	2.106*** (0.55)	2.055*** (0.51)	2.233*** (0.54)
Observations	1594830	1594830	1594830	1594830
Adjusted R^2	0.107	0.107	0.107	0.107

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Table 20 Total Expenditure

	(1)	(2)	(3)	(4)
	Log.Spending	Log.Spending	Log.Spending	Log.Spending
Salience.Terror.Media	-0.00265 (0.00)		-0.00686 (0.01)	
Salience.Terror.Google		-0.0000738 (0.00)		-0.000103 (0.00)
Terror.Week0			0.00713 (0.02)	-0.0000171 (0.04)
Terror.Week1			0.0423 (0.05)	0.00984 (0.02)
Salience.Ecology	0.0205 (0.02)	0.0191 (0.02)	0.0245 (0.02)	0.0195 (0.02)
Lower.Middle.Income.Class	0.0287*** (0.01)	0.0286*** (0.01)	0.0287*** (0.01)	0.0286*** (0.01)
Upper.Middle.Income.Class	0.0582*** (0.01)	0.0580*** (0.01)	0.0583*** (0.01)	0.0580*** (0.01)
High.Income.Class	0.0817*** (0.01)	0.0815*** (0.01)	0.0820*** (0.01)	0.0815*** (0.01)
Couples	0.244*** (0.01)	0.244*** (0.01)	0.244*** (0.01)	0.244*** (0.01)
FAM.With.Young.Child	0.324*** (0.01)	0.324*** (0.01)	0.323*** (0.01)	0.324*** (0.01)
FAM.With.Old.Child	0.322*** (0.01)	0.322*** (0.01)	0.322*** (0.01)	0.322*** (0.01)
Small.Town	-0.0428*** (0.01)	-0.0428*** (0.01)	-0.0428*** (0.01)	-0.0428*** (0.01)
Medium.City	-0.102*** (0.02)	-0.102*** (0.02)	-0.102*** (0.02)	-0.102*** (0.02)
Large.City	-0.133*** (0.02)	-0.133*** (0.02)	-0.133*** (0.02)	-0.133*** (0.02)
toussaint	0.0443 (0.09)	0.0442 (0.09)	0.0444 (0.09)	0.0442 (0.09)
noel	0.116 (0.08)	0.117 (0.08)	0.114 (0.08)	0.117 (0.08)
summeroff	0.0221 (0.07)	0.0217 (0.07)	0.0228 (0.07)	0.0217 (0.07)
winteroff	-0.0166 (0.02)	-0.0166 (0.02)	-0.0165 (0.02)	-0.0167 (0.02)
springoff	-0.00503 (0.02)	-0.00518 (0.02)	-0.00463 (0.02)	-0.00514 (0.02)
Constant	3.861*** (0.04)	3.862*** (0.04)	3.856*** (0.04)	3.861*** (0.04)
Observations	1594830	1594830	1594830	1594830
Adjusted R^2	0.299	0.299	0.299	0.299

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

References

- Abadie, A. and Gardeazabal, J. (2003). The economic costs of conflict: A case study of the basque country. *American economic review*, 93(1):113–132.
- Abadie, A. and Gardeazabal, J. (2008). Terrorism and the world economy. *European economic review*, 52(1):1–27.
- Abrahms, M. (2006). Why terrorism does not work. *International Security*, 31(2):42–78.
- Abrahms, M. (2012). The political effectiveness of terrorism revisited. *Comparative Political Studies*, 45(3):366–393.
- Aiyappa, R., An, J., Kwak, H., and Ahn, Y.-Y. (2023). Can we trust the evaluation on chatgpt? *arXiv preprint arXiv:2303.12767*.
- Allen, W. (2016). A decade of migration in the british press. migration observatory report.
- Allport, G. W., Clark, K., and Pettigrew, T. (1954). The nature of prejudice.
- Altheide, D. L. (2006). Terrorism and the politics of fear. *Cultural Studies? Critical Methodologies*, 6(4):415–439.
- Andersen, H. and Mayerl, J. (2018). Attitudes towards muslims and fear of terrorism. *Ethnic and Racial Studies*, 41(15):2634–2655.
- Antonius, D. (2015). When fear is a weapon: how terror attacks influence mental health. *The Conversation*.

- Åslund, O. and Rooth, D.-O. (2004). Shifting attitudes and the labor market of minorities: Swedish experiences after 9-11. Technical report, Working Paper.
- Baccini, L., Brodeur, A., Nossek, S., and Shor, E. (2021). Terrorism and voting behavior: evidence from the united states. *Research & Politics*, 8(1):2053168020987333.
- Baiardi, A. and Naghi, A. A. (2021). The value added of machine learning to causal inference: Evidence from revisited studies. *arXiv preprint arXiv:2101.00878*.
- Balcells, L. and Torrats-Espinosa, G. (2018). Using a natural experiment to estimate the electoral consequences of terrorist attacks. *Proceedings of the National Academy of Sciences*, 115(42):10624–10629.
- Balch, A. and Balabanova, E. (2016). Ethics, politics and migration: Public debates on the free movement of romanians and bulgarians in the uk, 2006–2013. *Politics*, 36(1):19–35.
- Baumert, T., de Obesso, M. M., and Valbuena, E. (2020). How does the terrorist experience alter consumer behaviour? an analysis of the spanish case. *Journal of Business Research*, 115:357–364.
- Becker, G. S. and Rubinstein, Y. (2011). Fear and the response to terrorism: an economic analysis.
- Benesch, C., Loretz, S., Stadelmann, D., and Thomas, T. (2019a). Media coverage and immigration worries: Econometric evidence. *Journal of Economic Behavior & Organization*, 160:52–67.
- Benesch, C., Loretz, S., Stadelmann, D., and Thomas, T. (2019b). Media coverage and immigration worries: Econometric evidence. *Journal of Economic Behavior & Organization*, 160:52–67.
- Berrebi, C. and Klor, E. F. (2008). Are voters sensitive to terrorism? direct evidence from the israeli electorate. *American Political Science Review*, 102(3):279–301.
- Black, D. (2004). The geometry of terrorism. *Sociological theory*, 22(1):14–25.

- Blei, D. M., Ng, A. Y., and Jordan, M. I. (2003). Latent dirichlet allocation. *Journal of machine Learning research*, 3(Jan):993–1022.
- Blinder, S. and Allen, W. L. (2016). Constructing immigrants: Portrayals of migrant groups in british national newspapers, 2010–2012. *International Migration Review*, 50(1):3–40.
- Blomberg, S. B., Hess, G. D., and Orphanides, A. (2004). The macroeconomic consequences of terrorism. *Journal of monetary economics*, 51(5):1007–1032.
- Bonanno, G. A. and Jost, J. T. (2006). Conservative shift among high-exposure survivors of the september 11th terrorist attacks. *Basic and Applied Social Psychology*, 28(4):311–323.
- Boomgaarden, H. G. and De Vreese, C. H. (2007). Dramatic real-world events and public opinion dynamics: Media coverage and its impact on public reactions to an assassination. *International Journal of Public Opinion Research*, 19(3):354–366.
- Boomgaarden, H. G. and Vliegenthart, R. (2007). Explaining the rise of anti-immigrant parties: The role of news media content. *Electoral studies*, 26(2):404–417.
- Boomgaarden, H. G. and Vliegenthart, R. (2009). How news content influences anti-immigration attitudes: Germany, 1993–2005. *European Journal of Political Research*, 48(4):516–542.
- Boomgaarden, H. G., Vliegenthart, R., De Vreese, C. H., and Schuck, A. R. (2010). News on the move: Exogenous events and news coverage of the european union. *Journal of European Public Policy*, 17(4):506–526.
- Bowles, S. (2004). A new postcard from the nation’s capital. *USA Today*, 4:228.
- Boydston, A. E., Feezell, J. T., and Glazier, R. A. (2018). In the wake of a terrorist attack, do americans’ attitudes toward muslims decline? *Research & Politics*, 5(4):2053168018806391.

- Bratti, M., Deiana, C., Havari, E., Mazzarella, G., and Meroni, E. C. (2020). Geographical proximity to refugee reception centres and voting. *Journal of Urban Economics*, 120:103290.
- Bravo, G. A. and Castelló, J. V. (2021). Terrorist attacks, islamophobia and newborns' health. *Journal of health economics*, 79:102510.
- Brinson, M. and Stohl, M. (2009). From 7/7 to 8/10: Media framing of terrorist incidents in the united states and united kingdom. *The faces of terrorism: Multidisciplinary perspectives*, pages 227–244.
- Brinson, M. E. and Stohl, M. (2012). Media framing of terrorism: Implications for public opinion, civil liberties, and counterterrorism policies. *Journal of international and intercultural communication*, 5(4):270–290.
- Brodeur, A. (2018). The effect of terrorism on employment and consumer sentiment: Evidence from successful and failed terror attacks. *American Economic Journal: Applied Economics*, 10(4):246–282.
- Brouard, S. (2016). Les effets des attentats de 2015 sur l'opinion publique. *LIEPP Policy Brief*, (22).
- Brouard, S., Vasilopoulos, P., and Foucault, M. (2018). How terrorism affects political attitudes: France in the aftermath of the 2015–2016 attacks. *West European Politics*, 41(5):1073–1099.
- Burscher, B., van Spanje, J., and de Vreese, C. H. (2015). Owning the issues of crime and immigration: The relation between immigration and crime news and anti-immigrant voting in 11 countries. *Electoral studies*, 38:59–69.
- Castanho Silva, B. (2018). The (non) impact of the 2015 paris terrorist attacks on political attitudes. *Personality and social psychology bulletin*, 44(6):838–850.

- Cheregi, B.-F. (2015). The media construction of identity in anti-immigration discourses: The case of romanian immigrants in great britain. *Revista Română de Jurnalism si Comunicare*, 10(1):5.
- Chesnaye, N. C., Stel, V. S., Tripepi, G., Dekker, F. W., Fu, E. L., Zoccali, C., and Jager, K. J. (2022). An introduction to inverse probability of treatment weighting in observational research. *Clinical Kidney Journal*, 15(1):14–20.
- Clark, A. E., Doyle, O., and Stancanelli, E. (2020). The impact of terrorism on individual well-being: Evidence from the boston marathon bombing. *The Economic Journal*, 130(631):2065–2104.
- Commission, E. (2018). Public opinion in the european union—first results.
- Couttenier, M., Hatte, S., Thoenig, M., and Vlachos, S. (2021). Anti-muslim voting and media coverage of immigrant crimes. *The Review of Economics and Statistics*, pages 1–33.
- Crabtree, S. and Kluch, S. (2017). Terrorism, migration trouble many in europe. *Gallup World*.
- Crawley, H. (2005). Evidence on attitudes to asylum and immigration: What we know, don't know and need to know.
- Cruickshank, I. J. and Ng, L. H. X. (2023). Use of large language models for stance classification. *arXiv preprint arXiv:2309.13734*.
- Das, E., Bushman, B. J., Bezemer, M. D., Kerkhof, P., and Vermeulen, I. E. (2009). How terrorism news reports increase prejudice against outgroups: A terror management account. *Journal of Experimental Social Psychology*, 45(3):453–459.
- De Coninck, D. (2022). Fear of terrorism and attitudes toward refugees: An empirical test of group threat theory. *Crime & Delinquency*, 68(4):550–571.

- De Vreese, C., Esser, F., and Hopmann, D. N. (2017). *Comparing political journalism*. Routledge London.
- DellaVigna, S. and Kaplan, E. (2007). The fox news effect: Media bias and voting. *The Quarterly Journal of Economics*, 122(3):1187–1234.
- Djourelouva, M. (2020). Media persuasion through slanted language: Evidence from the coverage of immigration.
- Dustmann, C., Fasani, F., Frattini, T., Minale, L., and Schönberg, U. (2017). On the economics and politics of refugee migration. *Economic policy*, 32(91):497–550.
- Duval, D. and Pétry, F. (2016). L'analyse automatisée du ton médiatique: construction et utilisation de la version française du lexicoder sentiment dictionary. *Canadian Journal of Political Science/Revue canadienne de science politique*, 49(2):197–220.
- Eberl, J.-M., Meltzer, C. E., Heidenreich, T., Herrero, B., Theorin, N., Lind, F., Berganza, R., Boomgaarden, H. G., Schemer, C., and Strömbäck, J. (2018). The european media discourse on immigration and its effects: A literature review. *Annals of the International Communication Association*, 42(3):207–223.
- Echebarria-Echabe, A. and Fernández-Guede, E. (2006). Effects of terrorism on attitudes and ideological orientation. *European Journal of Social Psychology*, 36(2):259–265.
- Eckstein, Z. and Tsiddon, D. (2004). Macroeconomic consequences of terror: theory and the case of israel. *Journal of monetary economics*, 51(5):971–1002.
- Eisenman, D. P., Glik, D., Ong, M., Zhou, Q., Tseng, C.-H., Long, A., Fielding, J., and Asch, S. (2009). Terrorism-related fear and avoidance behavior in a multiethnic urban population. *American journal of public health*, 99(1):168–174.
- Enders, W. and Sandler, T. (1996). Terrorism and foreign direct investment in spain and greece. *Kyklos*, 49(3).

- Enos, R. D. (2014). Causal effect of intergroup contact on exclusionary attitudes. *Proceedings of the National Academy of Sciences*, 111(10):3699–3704.
- Entman, R. M. (1993). Framing: Toward clarification of a fractured paradigm. *Journal of communication*, 43(4):51–58.
- Erhard, L., Heiberger, R. H., and Windzio, M. (2022). Diverse effects of mass media on concerns about immigration: New evidence from germany, 2001–2016. *European Sociological Review*, 38(4):629–647.
- Eyssel, J., Geschke, D., and Frindte, W. (2015). Is seeing believing? *Journal of Media Psychology*.
- Facchini, G., Mayda, A. M., and Puglisi, R. (2017). Illegal immigration and media exposure: evidence on individual attitudes. *IZA Journal of Development and Migration*, 7:1–36.
- Fekete, E. (2018). *Europe's fault lines: Racism and the rise of the right*. Verso Books.
- Ferrín, M., Mancosu, M., and Cappiali, T. M. (2020). Terrorist attacks and europeans' attitudes towards immigrants: An experimental approach. *European Journal of Political Research*, 59(3):491–516.
- Finseraas, H., Jakobsson, N., and Kotsadam, A. (2011). Did the murder of theo van gogh change europeans' immigration policy preferences? *Kyklos*, 64(3):396–409.
- Finseraas, H. and Listhaug, O. (2013). It can happen here: The impact of the mumbai terror attacks on public opinion in western europe. *Public Choice*, 156:213–228.
- Gadarian, S. K. (2014). Beyond the water's edge: threat, partisanship, and media. *The political psychology of terrorism fears*, pages 67–84.
- Galea, S., Ahern, J., Resnick, H., and Vlahov, D. (2006). Post-traumatic stress symptoms in the general population after a disaster: Implications for public health. *Neria Y, Gross R, Marshall RD et al, eds*, 9(11).

- Galea, S., Resnick, H., Ahern, J., Gold, J., Bucuvalas, M., Kilpatrick, D., Stuber, J., and Vlahov, D. (2002). Posttraumatic stress disorder in manhattan, new york city, after the september 11th terrorist attacks. *Journal of Urban Health*, 79:340–353.
- Gentzkow, M., Kelly, B., and Taddy, M. (2019). Text as data. *Journal of Economic Literature*, 57(3):535–74.
- Gentzkow, M. and Shapiro, J. M. (2006). Media bias and reputation. *Journal of political Economy*, 114(2):280–316.
- Getmansky, A. and Zeitzoff, T. (2014). Terrorism and voting: The effect of rocket threat on voting in israeli elections. *American Political Science Review*, 108(3):588–604.
- Godefroidt, A. (2023). How terrorism does (and does not) affect citizens’ political attitudes: a meta-analysis. *American Journal of Political Science*, 67(1):22–38.
- Gould, E. D. and Klor, E. F. (2010). Does terrorism work? *The Quarterly Journal of Economics*, 125(4):1459–1510.
- Graham, B. A., Miller, M. K., and Strøm, K. W. (2017). Safeguarding democracy: Powersharing and democratic survival. *American Political Science Review*, 111(4):686–704.
- Greenberg, M., Craighill, P., and Greenberg, A. (2004). Trying to understand behavioral responses to terrorism: Personal civil liberties, environmental hazards, and us resident reactions to the september 11, 2001 attacks. *Human Ecology Review*, pages 165–176.
- Grimmer, J. and Stewart, B. M. (2013). Text as data: The promise and pitfalls of automatic content analysis methods for political texts. *Political analysis*, 21(3):267–297.
- Hainmueller, J. (2012). Entropy balancing for causal effects: A multivariate reweighting method to produce balanced samples in observational studies. *Political analysis*, 20(1):25–46.

- Halla, M., Wagner, A. F., and Zweimüller, J. (2017). Immigration and voting for the far right. *Journal of the European economic association*, 15(6):1341–1385.
- Haner, M., Sloan, M. M., Cullen, F. T., Kulig, T. C., and Lero Jonson, C. (2019). Public concern about terrorism: Fear, worry, and support for anti-muslim policies. *Socius*, 5:2378023119856825.
- Harteveld, E., Schaper, J., De Lange, S. L., and Van Der Brug, W. (2018). Blaming brussels? the impact of (news about) the refugee crisis on attitudes towards the eu and national politics. *JCMS: Journal of Common Market Studies*, 56(1):157–177.
- Helbling, M. and Meierrieks, D. (2022). Terrorism and migration: An overview. *British Journal of Political Science*, 52(2):977–996.
- Herzenstein, M., Horsky, S., and Posavac, S. S. (2015). Living with terrorism or withdrawing in terror: Perceived control and consumer avoidance. *Journal of Consumer Behaviour*, 14(4):228–236.
- Hitlan, R. T., Carrillo, K., Zárate, M. A., and Aikman, S. N. (2007). Attitudes toward immigrant groups and the september 11 terrorist attacks. *Peace and Conflict: Journal of Peace Psychology*, 13(2):135–152.
- Hopkins, D. J. (2010). Politicized places: Explaining where and when immigrants provoke local opposition. *American political science review*, 104(1):40–60.
- Huddy, L., Feldman, S., Capelos, T., and Provost, C. (2002). The consequences of terrorism: Disentangling the effects of personal and national threat. *Political Psychology*, 23(3):485–509.
- Huo, S., Arabzadeh, N., and Clarke, C. L. (2023). Retrieving supporting evidence for llms generated answers. *arXiv preprint arXiv:2306.13781*.
- Hutchins, R. D. and Halikiopoulou, D. (2020). Enemies of liberty? nationalism, immigration, and the framing of terrorism in the agenda of the front national. *Nations and Nationalism*, 26(1):67–84.

- Igartua, J.-J., Cheng, L., Moral, F., Fernández, I., Frutos, F. J., Gómez-Isla, J., and Otero, J. (2008). Framing immigration in the news and its socio-cognitive effects. *Palabra Clave*, 11(1):87–107.
- Innes, A. J. (2010). When the threatened become the threat: The construction of asylum seekers in british media narratives. *International Relations*, 24(4):456–477.
- Iyengar, S. (1987). Television news and citizens' explanations of national affairs. *American Political Science Review*, 81(3):815–831.
- Jackson, R. (2013). The politics of terrorism fears. *The political psychology of terrorism fears*, pages 267–282.
- Jain, S. C. and Grosse, R. (2009). Impact of terrorism and security measures on global business transactions: Some international business guidelines. *Journal of Transnational Management*, 14(1):42–73.
- Jakobsson, N. and Blom, S. (2014). Did the 2011 terror attacks in norway change citizens' attitudes toward immigrants? *International Journal of Public Opinion Research*, 26(4):475–486.
- Jelodar, H., Wang, Y., Yuan, C., Feng, X., Jiang, X., Li, Y., and Zhao, L. (2019). Latent dirichlet allocation (lda) and topic modeling: models, applications, a survey. *Multimedia Tools and Applications*, 78:15169–15211.
- Johnson, R. J., Hobfoll, S. E., and Beulaygue, I. (2017). Mental health and terrorism. *A handbook for the study of mental health: Social contexts, theories, and systems*, pages 357–385.
- Jost, J. T. and Banaji, M. R. (1994). The role of stereotyping in system-justification and the production of false consciousness. *British journal of social psychology*, 33(1):1–27.
- Jost, J. T., Glaser, J., Kruglanski, A. W., and Sulloway, F. J. (2003). Exceptions that prove the rule—using a theory of motivated social cognition to account for ideological incongruities and political anomalies: Reply to greenberg and jonas (2003).

- Jost, J. T., Napier, J. L., Thorisdottir, H., Gosling, S. D., Palfai, T. P., and Ostafin, B. (2007). Are needs to manage uncertainty and threat associated with political conservatism or ideological extremity? *Personality and social psychology bulletin*, 33(7):989–1007.
- Jungkunz, S., Helbling, M., and Schwemmer, C. (2019). Xenophobia before and after the paris 2015 attacks: Evidence from a natural experiment. *Ethnicities*, 19(2):271–291.
- Keita, S., Renault, T., and Valette, J. (2021). The usual suspects: Offender origin, media reporting and natives' attitudes towards immigration. *Documents de travail du Centre d'Économie de la Sorbonne*.
- Kibris, A. (2011). Funerals and elections: The effects of terrorism on voting behavior in turkey. *Journal of Conflict Resolution*, 55(2):220–247.
- Knudsen, H. K., Roman, P. M., Johnson, J. A., and Ducharme, L. J. (2005). A changed america? the effects of september 11th on depressive symptoms and alcohol consumption. *Journal of Health and Social Behavior*, 46(3):260–273.
- Kroon, A. C., Kluknavská, A., Vliegenthart, R., and Boomgaarden, H. G. (2016). Victims or perpetrators? explaining media framing of roma across europe. *European Journal of Communication*, 31(4):375–392.
- Küçük, D. and Can, F. (2020). Stance detection: A survey. *ACM Computing Surveys (CSUR)*, 53(1):1–37.
- Landau, M. J., Solomon, S., Greenberg, J., Cohen, F., Pyszczynski, T., Arndt, J., Miller, C. H., Ogilvie, D. M., and Cook, A. (2004). Deliver us from evil: The effects of mortality salience and reminders of 9/11 on support for president george w. bush. *Personality and social psychology bulletin*, 30(9):1136–1150.
- Lawlor, A. (2015). Local and national accounts of immigration framing in a cross-national perspective. *Journal of Ethnic and Migration Studies*, 41(6):918–941.
- Lawlor, A. (2018). Local and national accounts of immigration framing in a cross-national perspective. In *Migrants, Minorities, and the Media*, pages 70–93. Routledge.

- Legewie, J. (2013). Terrorist events and attitudes toward immigrants: A natural experiment. *American journal of sociology*, 118(5):1199–1245.
- Lindén, M., Björklund, F., and Bäckström, M. (2018). How a terror attack affects right-wing authoritarianism, social dominance orientation, and their relationship to torture attitudes. *Scandinavian journal of psychology*, 59(5):547–552.
- Loughran, T. and McDonald, B. (2011). When is a liability not a liability? textual analysis, dictionaries, and 10-ks. *The Journal of finance*, 66(1):35–65.
- Lubbers, M., Scheepers, P., and Wester, F. (1998). Ethnic minorities in dutch newspapers 1990-5: Patterns of criminalization and problematization. *Gazette (Leiden, Netherlands)*, 60(5):415–431.
- Maguen, S., Papa, A., and Litz, B. T. (2008). Coping with the threat of terrorism: A review. *Anxiety, stress, and coping*, 21(1):15–35.
- Malik, O. F., Schat, A. C., Raziq, M. M., Shahzad, A., and Khan, M. (2018). Relationships between perceived risk of terrorism, fear, and avoidance behaviors among pakistani university students: A multigroup study. *Personality and Individual Differences*, 124:39–44.
- Mancosu, M. and Ferrin Pereira, M. (2021). Terrorist attacks, stereotyping, and attitudes toward immigrants: The case of the manchester bombing. *Social science quarterly*, 102(1):420–432.
- Maxwell, M. (2004). Setting the agenda: the mass media and public opinion.
- Mayer, N., Michelat, G., Tiberj, V., and Vitale, T. (2016). Le regard des chercheurs: L’impact des attentats de 2015 sur l’opinion. *La lutte contre le racisme, l’antisémitisme et la xénophobie. Année 2015*, pages 357–365.
- Mayer, N. and Tiberj, V. (2016). Who were the ‘charlie’ in the streets? a socio-political approach of the january 11 rallies. *Revue Internationale de Psychologie Sociale= International review of social psychology*, 29:69–68.

- McCombs, M. E. and Shaw, D. L. (1993). The evolution of agenda-setting research: Twenty-five years in the marketplace of ideas. *Journal of communication*, 43(2):58–67.
- Melnick, R. and Eldor, R. (2010). Small investment and large returns: Terrorism, media and the economy. *European Economic Review*, 54(8):963–973.
- Metcalf, R., Powdthavee, N., and Dolan, P. (2011). Destruction and distress: using a quasi-experiment to show the effects of the september 11 attacks on mental well-being in the united kingdom. *The Economic Journal*, 121(550):F81–F103.
- Mirza, D., Stancanelli, E., and Verdier, T. (2022). Household expenditure in the wake of terrorism: evidence from high frequency in-home-scanner data. *Economics & Human Biology*, 46:101150.
- Montalvo, J. G. (2011). Voting after the bombings: A natural experiment on the effect of terrorist attacks on democratic elections. *Review of Economics and Statistics*, 93(4):1146–1154.
- Moore, K., Mason, P., and Lewis, J. M. W. (2008). Images of islam in the uk: The representation of british muslims in the national print news media 2000-2008.
- Muñoz, J., Falcó-Gimeno, A., and Hernández, E. (2020). Unexpected event during survey design: Promise and pitfalls for causal inference. *Political Analysis*, 28(2):186–206.
- Nail, P. R., McGregor, I., Drinkwater, A. E., Steele, G. M., and Thompson, A. W. (2009). Threat causes liberals to think like conservatives. *Journal of Experimental Social Psychology*, 45(4):901–907.
- Neiberg, M. S. (2017). “no more elsewhere”: France faces the new wave of terrorism. *The Washington Quarterly*, 40(1):21–38.
- Nellis, A. M. (2009). Gender differences in fear of terrorism. *Journal of Contemporary Criminal Justice*, 25(3):322–340.

- Nellis, A. M. and Savage, J. (2012). Does watching the news affect fear of terrorism? the importance of media exposure on terrorism fear. *Crime & Delinquency*, 58(5):748–768.
- Nesser, P., Stenersen, A., and Oftedal, E. (2016). Jihadi terrorism in europe: The is-effect. *Perspectives on terrorism*, 10(6):3–24.
- Noelle-Neumann, E. (2002). Terror in america: Assessments of the attacks and their impact in germany. *International Journal of Public Opinion Research*, 14(1).
- Nussio, E., Bove, V., and Steele, B. (2019). The consequences of terrorism on migration attitudes across europe. *Political Geography*, 75:102047.
- of Oklahoma. Institute of Group Relations, U. and Sherif, M. (1961). *Intergroup conflict and cooperation: The Robbers Cave experiment*, volume 10. University Book Exchange Norman, OK.
- Oster, E. (2019). Unobservable selection and coefficient stability: Theory and evidence. *Journal of Business & Economic Statistics*, 37(2):187–204.
- Panagopoulos, C. (2006). The polls-trends: Arab and muslim americans and islam in the aftermath of 9/11. *International Journal of Public Opinion Quarterly*, 70(4):608–624.
- Pennings, J. M., Wansink, B., and Meulenberg, M. T. (2002). A note on modeling consumer reactions to a crisis: The case of the mad cow disease. *International Journal of research in marketing*, 19(1):91–100.
- Peri, G., Rees, D. I., and Smith, B. (2020). Terrorism, political opinions, and election outcomes: Evidence from europe.
- Peri, G., Rees, D. I., and Smith, B. (2023). Terrorism and political attitudes: Evidence from european social surveys. *Regional Science and Urban Economics*, 99:103864.
- Pesko, M. F. (2014). Stress and smoking: associations with terrorism and causal impact. *Contemporary Economic Policy*, 32(2):351–371.

- Pettigrew, T. F. and Tropp, L. R. (2006). A meta-analytic test of intergroup contact theory. *Journal of personality and social psychology*, 90(5):751.
- Piolat, A., Booth, R. J., Chung, C. K., Davids, M., and Pennebaker, J. W. (2011). La version française du dictionnaire pour le liwc: modalités de construction et exemples d'utilisation. *Psychologie française*, 56(3):145–159.
- Predmore, C. E., Rovenpor, J., Manduley, A. R., and Radin, T. (2007). Shopping in an age of terrorism: Consumers weigh the risks associated with online versus in-store purchases. *Competitiveness Review: An International Business Journal*, 17(3):170–180.
- Price, V., Tewksbury, D., and Powers, E. (1997). Switching trains of thought: The impact of news frames on readers' cognitive responses. *Communication research*, 24(5):481–506.
- Quintana-Domeque, C. and Ródenas-Serrano, P. (2017). The hidden costs of terrorism: The effects on health at birth. *Journal of Health Economics*, 56:47–60.
- Rabby, F. and Rodgers iii, W. M. (2010). The impact of 9/11 and the london bombings on the employment and earnings of uk muslims.
- Rasinger, S. M. (2010). 'lithuanian migrants send crime rocketing': Representation of 'new' migrants in regional print media. *Media, Culture & Society*, 32(6):1021–1030.
- Richman, J. A., Cloninger, L., and Rospenda, K. M. (2008). Macrolevel stressors, terrorism, and mental health outcomes: Broadening the stress paradigm. *American journal of public health*, 98(2):323–329.
- Roberts, M., Stewart, B., Tingley, D., Benoit, K., Stewart, M. B., Rcpp, L., et al. (2018). Package 'stm'. *R Package Version*, 1(3):3.
- Roberts, M. E., Stewart, B. M., Tingley, D., Airolidi, E. M., et al. (2013). The structural topic model and applied social science. In *Advances in neural information processing systems workshop on topic models: computation, application, and evaluation*, volume 4, pages 1–20. Harrahs and Harveys, Lake Tahoe.

- Roberts, M. E., Stewart, B. M., Tingley, D., Lucas, C., Leder-Luis, J., Gadarian, S. K., Albertson, B., and Rand, D. G. (2014). Structural topic models for open-ended survey responses. *American journal of political science*, 58(4):1064–1082.
- Robins, J. M., Rotnitzky, A., and Zhao, L. P. (1994). Estimation of regression coefficients when some regressors are not always observed. *Journal of the American statistical Association*, 89(427):846–866.
- Rosenfeld, R. (2004). Terrorism and criminology. *Terrorism and counter-terrorism: Criminological perspectives*, 5:19–32.
- Sandell, F. R., Edling, C., and Rydgren, J. (2016). Terrorism, belief formation, and residential integration: population dynamics in the aftermath of the 2004 madrid terror bombings.
- Sandler, T. and Gaibullov, K. (2022). Common myths of terrorism. *Journal of Economic Surveys*. Forthcoming.
- Savelkoul, M., te Grotenhuis, M., and Scheepers, P. (2022). Has the terrorist attack on charlie hebdo fuelled resistance towards muslim immigrants in europe? results from a natural experiment in six european countries. *Acta Sociologica*, 65(4):357–373.
- Scheufele, B. (2004). Framing-effects approach: A theoretical and methodological critique.
- Scheufele, D. A. and Tewksbury, D. (2007). Framing, agenda setting, and priming: The evolution of three media effects models. *Journal of communication*, 57(1):9–20.
- Schinkel, W. (2009). On the concept of terrorism. *Contemporary Political Theory*, 8:176–198.
- Schlenger, W. E., Caddell, J. M., Ebert, L., Jordan, B. K., Rourke, K. M., Wilson, D., Thalji, L., Dennis, J. M., Fairbank, J. A., and Kulka, R. A. (2002). Psychological reactions to terrorist attacks: findings from the national study of americans' reactions to september 11. *Jama*, 288(5):581–588.

- Schlueter, E. and Davidov, E. (2013). Contextual sources of perceived group threat: Negative immigration-related news reports, immigrant group size and their interaction, Spain 1996–2007. *European Sociological Review*, 29(2):179–191.
- Schmidt, D. C., Spencer-Smith, J., Fu, Q., and White, J. (2023). Cataloging prompt patterns to enhance the discipline of prompt engineering. URL: https://www.dre.vanderbilt.edu/~schmidt/PDF/ADA_Europe_Position_Paper.pdf [accessed 2023-09-25].
- Schneider-Strawczynski, S. and Valette, J. (2021). Media coverage of immigration and the polarization of attitudes.
- Schüller, S. (2016). The effects of 9/11 on attitudes toward immigration and the moderating role of education. *Kyklos*, 69(4):604–632.
- Schuster, M. A., Stein, B. D., Jaycox, L. H., Collins, R. L., Marshall, G. N., Elliott, M. N., Zhou, A. J., Kanouse, D. E., Morrison, J. L., and Berry, S. H. (2001). A national survey of stress reactions after the September 11, 2001, terrorist attacks. *New England Journal of Medicine*, 345(20):1507–1512.
- Sheets, P., Bos, L., and Boomgaarden, H. G. (2016). Media cues and citizen support for right-wing populist parties. *International Journal of Public Opinion Research*, 28(3):307–330.
- Sheridan, L. P. (2006). Islamophobia pre- and post-September 11th, 2001. *Journal of Interpersonal Violence*, 21(3):317–336.
- Shields, J. (2013). Marine Le Pen and the ‘new’ FN: A change of style or of substance? *Parliamentary Affairs*, 66(1):179–196.
- Slone, M. (2000). Responses to media coverage of terrorism. *Journal of Conflict Resolution*, 44(4):508–522.
- Sniderman, P. M., Hagendoorn, L., and Prior, M. (2004). Predisposing factors and situational triggers: Exclusionary reactions to immigrant minorities. *American Political Science Review*, 98(1):35–49.

- Solheim, Ø. B. (2021). Are we all charlie? how media priming and framing affect immigration policy preferences after terrorist attacks. *West European Politics*, 44(2):204–228.
- Stockemer, D. and Barisione, M. (2017). The ‘new’ discourse of the front national under marine le pen: A slight change with a big impact. *European Journal of Communication*, 32(2):100–115.
- Ter Wal, J. (2002). Racism and cultural diversity in the mass media: An overview of research and examples of good practice in the eu member states, 1995-2000.
- Tewksbury, D. and Scheufele, D. A. (2019). News framing theory and research. In *Media effects*, pages 51–68. Routledge.
- Threadgold, T. (2009). The media and migration in the united kingdom, 1999 to 2009. *Washington DC*.
- Tierney, J. (2008). Living in fear and paying a high cost in heart risk. *New York Times*, 15:234.
- Tsai, A. C. and Venkataramani, A. S. (2015). Communal bereavement and resilience in the aftermath of a terrorist event: Evidence from a natural experiment. *Social Science & Medicine*, 146:155–163.
- Turk, A. T. (2004). Sociology of terrorism. *Annu. Rev. Sociol.*, 30(1):271–286.
- Valentino, N. A., Brader, T., and Jardina, A. E. (2013). Immigration opposition among us whites: General ethnocentrism or media priming of attitudes about latinos? *Political Psychology*, 34(2):149–166.
- Van Assche, J. and Dierckx, K. (2021). Attitudes towards outgroups before and after terror attacks. *Terrorism and political violence*, 33(7):1530–1545.

- Van de Vyver, J., Houston, D. M., Abrams, D., and Vasiljevic, M. (2016). Boosting belligerence: How the July 7, 2005, London bombings affected liberals' moral foundations and prejudice. *Psychological science*, 27(2):169–177.
- Van Hauwaert, S. M. and Huber, R. A. (2020). In-group solidarity or out-group hostility in response to terrorism in France? Evidence from a regression discontinuity design. *European Journal of Political Research*, 59(4):936–953.
- Van Klinger, M., Boomgaarden, H. G., Vliegenthart, R., and De Vreese, C. H. (2015). Real world is not enough: The media as an additional source of negative attitudes toward immigration, comparing Denmark and the Netherlands. *European Sociological Review*, 31(3):268–283.
- Vasilopoulos, P., Marcus, G. E., and Foucault, M. (2018). Emotional responses to the Charlie Hebdo attacks: Addressing the authoritarianism puzzle. *Political psychology*, 39(3):557–575.
- Vasilopoulos, P., Marcus, G. E., Valentino, N. A., and Foucault, M. (2019). Fear, anger, and voting for the far right: Evidence from the November 13, 2015 Paris terror attacks. *Political Psychology*, 40(4):679–704.
- Vergeer, M., Lubbers, M., and Scheepers, P. (2000). Exposure to newspapers and attitudes toward ethnic minorities: A longitudinal analysis. *Howard Journal of Communications*, 11(2):127–143.
- Vliegenthart, R. and Boomgaarden, H. G. (2007). Real-world indicators and the coverage of immigration and the integration of minorities in Dutch newspapers. *European Journal of Communication*, 22(3):293–314.
- Von Sikorski, C., Schmuck, D., Matthes, J., and Binder, A. (2020). “Muslims are not terrorists”: Islamic state coverage, journalistic differentiation between terrorism and Islam, fear reactions, and attitudes toward Muslims. In *Media, Terrorism and Society*, pages 91–114. Routledge.

- Walgrave, S. and De Swert, K. (2004). The making of the (issues of the) vlaams blok. *Political Communication*, 21(4):479–500.
- Walgrave, S. and De Swert, K. (2007). Where does issue ownership come from? from the party or from the media? issue-party identifications in belgium, 1991-2005. *Harvard International Journal of Press/Politics*, 12(1):37–67.
- Warr, M. and Ellison, C. G. (2000). Rethinking social reactions to crime: Personal and altruistic fear in family households. *American journal of Sociology*, 106(3):551–578.
- Wei, J., Wang, X., Schuurmans, D., Bosma, M., Xia, F., Chi, E., Le, Q. V., Zhou, D., et al. (2022). Chain-of-thought prompting elicits reasoning in large language models. *Advances in Neural Information Processing Systems*, 35:24824–24837.
- White, J., Fu, Q., Hays, S., Sandborn, M., Olea, C., Gilbert, H., Elnashar, A., Spencer-Smith, J., and Schmidt, D. C. (2023). A prompt pattern catalog to enhance prompt engineering with chatgpt. *arXiv preprint arXiv:2302.11382*.
- Woods, J. (2007). What we talk about when we talk about terrorism: Elite press coverage of terrorism risk from 1997 to 2005. *Harvard International Journal of Press/Politics*, 12(3):3–20.
- Woods, J. (2011). Framing terror: An experimental framing effects study of the perceived threat of terrorism. *Critical Studies on Terrorism*, 4(2):199–217.
- Wright, J. D. and Esses, V. M. (2019). It’s security, stupid! voters’ perceptions of immigrants as a security risk predicted support for donald trump in the 2016 us presidential election. *Journal of Applied Social Psychology*, 49(1):36–49.
- Young, L. and Soroka, S. (2012). Affective news: The automated coding of sentiment in political texts. *Political Communication*, 29(2):205–231.
- Zhang, B., Ding, D., and Jing, L. (2022). How would stance detection techniques evolve after the launch of chatgpt? *arXiv preprint arXiv:2212.14548*.

- Zhang, W., Deng, Y., Liu, B., Pan, S. J., and Bing, L. (2023). Sentiment analysis in the era of large language models: A reality check. *arXiv preprint arXiv:2305.15005*.
- Zhu, Y., Hubbard, R. A., Chubak, J., Roy, J., and Mitra, N. (2021). Core concepts in pharmacoepidemiology: Violations of the positivity assumption in the causal analysis of observational data: Consequences and statistical approaches. *Pharmacoepidemiology and drug safety*, 30(11):1471–1485.

