

Essays on the Politics of Maintaining Order

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Submitted in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy
under the Executive Committee
of the Graduate School of Arts and Sciences

COLUMBIA UNIVERSITY

2021

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Abstract

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Maintaining order is a core function of the state. Yet, in many contexts, actors other than the state are involved in combating crime and violence. Such actors range from private security companies who sell protection to vigilante mobs who brutally punish criminal suspects. This dissertation explores how states maintain order when they are faced with private crime prevention efforts. Taken together, the three chapters of the dissertation provide insights into the determinants of law enforcement policy, the sources of citizens' willingness to cooperate with the state, and the social drivers of crime and violence.

Chapter 1 presents a formal model that sheds light on the incentives of political parties to invest in law enforcement when citizens can purchase private protection. Private security measures like burglar alarms, camera systems, and security guards are pervasive in high income communities around the world. I model the supply of crime and the demand for private protection together with a political process that determines public spending on the police. The model provides conditions under which parties may over- and underspend on law enforcement relative to other government services. In relatively poor societies, left parties are prone to spend less and right parties are prone to spend more than the socially optimal amount on policing. The reverse is true in relatively rich societies, where the base of the right party can afford private protection. The results call into question the conventional wisdom that tough-on-crime policies are the domain of parties on the right, and provide an explanation for why such policies in various contexts

have been implemented by left-wing politicians.

Throughout the developing world, criminal suspects are often assaulted or even killed at the hands of their community. Chapter 2 considers the micro-dynamics of how state capacity affects citizens' choice between the state and mob vigilantism. I present results from a field experiment in South Africa that creates variation in the capacity of police to locate households. Findings from mid- and endline surveys suggest households exposed to an increase in police capacity became more willing to rely on police and less willing to resort to vigilantism. Results from a mechanism experiment point towards increased fear of state punishment for vigilante violence rather than improved perceptions of police service quality as the link between state capacity and vigilantism. The broader implication is that citizens' cooperation with capable state institutions may not necessarily reflect citizens' satisfaction with state services. Instead, citizens may draw on state institutions because states limit citizens' choices by sanctioning those who participate in informal practices that the state deems illegal.

Chapter 3 draws on original surveys with more than 10,000 respondents from hundreds of communities in Uganda, Tanzania, and South Africa to show that women are more likely than men to support mob vigilantism. This result runs counter to a large literature in public opinion that finds women are less supportive of violence than men across a variety of domains throughout industrialized contexts. Drawing on qualitative evidence, a vignette experiment in Uganda, and additional survey measures from Tanzania, the chapter shows that men and women differ in their beliefs about the downsides of mob vigilantism. Men are more likely to think mob vigilantism creates risks of false accusation for those who do not commit crime. The chapter traces this divergence in beliefs to differences in the extent to which men and women are at personal risk of being accused of a crime that they did not commit. The results highlight the role that beliefs play in the link between gender and views about violence.

Table of Contents

List of Tables	iii
List of Figures	vii
Acknowledgments	x
Introduction	1
Chapter 1: Private Security and Public Policing	7
1.1 Introduction	7
1.2 Model	12
1.3 Sorting Equilibrium	15
1.4 Induced Preferences Over Police Spending	20
1.5 Platform Choice	25
1.6 Discussion	32
Chapter 2: State Capacity and Mob Vigilantism	35
2.1 Introduction	35
2.2 Theory	40
2.3 Experimental Design	52
2.4 Main Results	60

2.5	Mechanisms	66
2.6	Alternative Explanations	80
2.7	Discussion	82
Chapter 3: Gender and Support for Vigilante Violence		86
3.1	Introduction	86
3.2	Background	90
3.3	Empirical Strategy	92
3.4	Main Results	92
3.5	Mechanisms	97
3.6	Alternative Explanations	112
3.7	Discussion	117
References		120
Appendix A: Chapter 1		129
Appendix B: Chapter 2		139
B.1	Supplementary Information	139
B.2	Identification	162
B.3	Additional Analyses	172
B.4	Question Wording	186
Appendix C: Chapter 3		201
C.1	Supplementary Information	201

C.2	Additional Analyses	203
C.3	Question Wording	213
C.4	Declaration of Co-Authorship	215

List of Tables

2.1	Baseline perceptions of police service quality and risk of state punishment for mob vigilantism	48
2.2	Effects of alarm treatment on respondents' willingness to rely on police and participate in mob vigilantism	63
2.3	Effects of alarm treatment on perceptions of police	71
2.4	Heterogeneity in effects of alarm treatment on perceptions of police at endline by prior beliefs	73
2.5	Number of respondents across information treatment conditions	75
2.6	Effect of information treatments among respondents with low priors about risk of state punishment for mob vigilantism	76
2.7	Interactive effects of alarm and information treatment on willingness to participate in mob vigilantism	79
3.1	Main results – gender differences in support for mob vigilantism	95
3.2	Beliefs about the plausibility of vigilantism among women and men in Uganda . .	106
3.3	Beliefs about the plausibility of vigilantism among women and men in Uganda by whether the target is a woman or man	108
3.4	Beliefs about mob vigilantism among women and men in Tanzania	111
3.5	Women express more favorable views of police than men.	113
3.6	Greater preferences for swift and severe punishments among women in Uganda does not appear to account for the gender gap in support for mob vigilantism. . .	116

B.1	Averages of baseline covariates by sampling procedure	157
B.2	Sociodemographic characteristics of midline and endline samples	157
B.3	Balance on covariates among respondents in baseline ($N = 250$)	164
B.4	Balance on covariates among all respondents in midline ($N = 483$)	165
B.5	Balance on covariates among main respondents in midline ($N = 438$)	166
B.6	Balance on covariates among all respondents in endline ($N = 448$)	167
B.7	Balance on covariates among main respondents in endline ($N = 409$)	169
B.8	Reported household size and rates of attrition across experimental conditions . .	170
B.9	F -test of treatment-by-covariate interactions in models of attrition	170
B.10	Additional respondents sampled across experimental conditions	171
B.11	Effects of the alarm treatment on whether respondents have recently spoken to police	172
B.12	Effects of the alarm treatment on respondents' support for mob vigilantism and willingness to call the community	173
B.13	Effects of alarm treatment on respondents' willingness to rely on police and par- ticipate in mob vigilantism among initial respondents	175
B.14	Effects of alarm treatment on respondents' willingness to rely on police and par- ticipate in mob vigilantism estimated with covariate adjustment	176
B.15	Effects of alarm treatment on respondents' willingness to rely on police and par- ticipate in mob vigilantism without imputations	177
B.16	Effects of the alarm treatment on the willingness to alert and to cooperate with police	178
B.17	The effect of the alarm treatment on individual items used to create the index "Support MV" at midline	179
B.18	The effect of the alarm treatment on individual items used to create the indices "Join MV" and "Support MV" at endline	179

B.19	The effect of the alarm treatment on individual items used to create the index “Service quality” at midline	180
B.20	The effect of the alarm treatment on individual items used to create the index “Service quality” at endline	180
B.21	Effect of information treatments among all endline respondents	181
B.22	Effect of information treatments among respondents with low priors about police service	182
B.23	Effect of the alarm treatment on recollection of incidents of mob vigilantism that happened <i>prior</i> to treatment	183
B.24	Effect of the alarm treatment on safety and punishment preferences	185
C.1	Beliefs about the plausibility of vigilantism against “black magic” among women and men in Uganda	203
C.2	Beliefs about the plausibility of vigilantism against “black magic” among women and men in Uganda by whether the target is a woman or man	204
C.3	Beliefs about the plausibility of vigilantism among women and men in Uganda (ordinal outcome)	205
C.4	Beliefs about the plausibility of vigilantism among women and men in Uganda by whether the target is a woman or man (ordinal outcome)	206
C.5	Main results – gender differences in support for mob vigilantism (missing values removed through listwise deletion)	208
C.6	Beliefs about the plausibility of vigilantism among women and men in Uganda (missing values removed through listwise deletion)	209
C.7	Beliefs about the plausibility of vigilantism among women and men in Uganda by whether the target is a woman or man (missing values removed through listwise deletion)	210
C.8	Beliefs about mob vigilantism among women and men in Tanzania (missing val- ues removed through listwise deletion)	210

C.9 Women in our samples express more favorable views of police than men (missing values removed through listwise deletion) 211

C.10 Greater preferences for swift and severe punishments among women in Uganda does not appear to account for the gender gap in support for mob vigilantism (missing values removed through listwise deletion) 212

List of Figures

1.1	Private security personnel per police officer	8
1.2	Sorting equilibrium for a given budget share α that is spent on policing	19
1.3	Indirect utility for a given type θ_i as a function of policing budget share α	21
1.4	Induced preferences over budget share of policing as a function of type θ_i	24
1.5	Welfare optimum and party platforms as a function of b and $\bar{\theta}$	29
1.6	Composition of party bases for different values of $\bar{\theta}$	31
2.1	Slow response is main reason for dissatisfaction with police service	46
2.2	Hypothesized effects of police alarm	50
2.3	Study timeline	53
2.4	Households in study sample	54
2.5	Baseline views by interest in police alarm	56
2.6	Alarm panics over time	60
2.7	Views on state punishment in Sub-Saharan Africa	83
B.1	Official rate of various crimes in study precinct compared to median across all precincts	148
B.2	Incidents of mob vigilantism in study precinct	149
B.3	The police alarm system	150
B.4	Overview of sampling strategy	156
B.5	Change in outcomes in control group across survey waves by gender	184

C.1 In Africa women make up 3% of the prison population on average. 201

C.2 The gender gap in support for mob vigilantism widens with respondent age across
six samples from Uganda, Tanzania, and South Africa. 207

Acknowledgements

While writing this dissertation, I had the support of many mentors, collaborators, family members and friends. I am deeply grateful for all the help that I have received throughout – without it, this dissertation would not be the same.

My biggest thank you goes to my core group of advisors. Learning from and working with them made graduate school a truly transformative experience for me. Starting from day one, Don Green has gone above and beyond as a mentor and advisor. He has supported this dissertation in countless ways – including through financial support from his research budget and almost daily phone calls during tumultuous episodes of field work. I am fortunate to have had the opportunity to learn from Don about experimental methodology in the abstract but also about how to put an experiment into practice. With his keen sense of how to balance statistical and practical concerns and his unfailingly kind approach to research staff, Don remains my most important role model for how to conduct research in the field. Don approaches research (and people) with an unwavering sense of curiosity and optimism that is truly inspiring and has helped me through the most challenging stages of writing this dissertation.

Macartan Humphreys has been a continuous source of inspiration. Macartan has the ability to ask questions that cut right to the chase. He often made me re-think my projects in fundamental ways – sometimes sparking insights years after he originally asked the question. He has also helped me develop a positive attitude towards my research in my most skeptical moments. Throughout my time in graduate school, I have learnt a lot from seeing Macartan provide feedback on other people's work. Rather than focusing on its weaknesses, Macartan engages with

research on its own terms and provides feedback that helps make a piece of work the best it can be. With his open-mindedness, commitment to research ethics, methodological versatility, and willingness to think deeply about everything, Macartan has provided me with a positive example that will guide all my future research and teaching.

I am incredibly lucky that I took a class on game theory with Michael Ting in my first year of graduate school. Mike's exceptionally clear instruction and step-by-step guidance instilled in me the confidence that I could write down my own formal model – something that I had not envisioned myself doing prior to starting graduate school. Mike has been exceptionally generous with his time, and has influenced this dissertation through numerous rounds of conversations, comments and feedback. I am deeply grateful for the opportunity to learn from him about how to write a good model and effectively communicate its results. Mike's appreciation for insightful research and his matter-of-fact approach to the research process has continuously helped me to focus my efforts on what is important – thereby alleviating many of the anxieties that come with being a graduate student.

I would also like to thank John Marshall for always being available to provide thoughtful feedback and for pushing me to think carefully about how to tease apart mechanisms. Alexandra Scacco and the rest of the crew at WZB gave me a chance to present this work multiple times at different stages and provided feedback that helped me move this dissertation along. Thank you so much for that! For valuable comments on earlier drafts of the papers, my thanks also go to Tara Slough, John Huber, Tom Clark, Ryan Hubert, Dara Cohen, Danielle Jung, David Stasavage, Kate Baldwin, Alexandra Hartman, and Nicholas Rush Smith. I am also grateful to Ethan Bueno de Mesquita and Amanda Clayton who took the time to serve as outside readers on my dissertation committee and provided excellent comments, thoughts and feedback.

This work would not have been possible without the generosity, expertise and dedication of the many people involved in the implementation of my project in South Africa. I am deeply indebted to Itumeleng Motshegoa who was the backbone of my household surveys. Through power outages, team quarrels, difficult-to-find respondents and more, she never lost her calm

and always had a creative solution up her sleeve. Thanks for all your efforts throughout this project and for your friendship – it means a lot. A huge thank you goes to everyone at MeMeZa Shout Crime Prevention, and especially Thuli Mthethwa, Elmarie Pereira and Herman de Jager. Without any prior experience with experimental research, they became fantastic implementing partners and made this project happen. I am especially grateful to El and Harry for making me feel part of their family and for being there during difficult times. Isadora Amaral also worked tirelessly to help collect the data used in this dissertation. Her attention to detail and dedication were invaluable and I am so grateful that she stuck with me despite all the obstacles. Thank you to Maggie Naude for providing me with a true home away from home and for lending me an ear whenever things became stressful. I would also like to thank Craig Rivett for putting me in touch with almost everyone I know in South Africa. The idea for this project would not have been born without his willingness to share his network and ability to point me to the right people in the right moment.

Before I started work in South Africa, I learned the basics of how to manage a survey from collaborating with staff at Innovations for Poverty Action (IPA) Uganda. Special thanks go to Jackie Namiburu and Cristina Clerici for their help in collecting the data from Uganda that are being used here. I am also grateful to Citizen Surveys in South Africa for including some of my survey questions on vigilantism in their questionnaire, as well as to the Abdul Latif Jameel Poverty Action Lab (J-PAL) and to the Columbia Political Science Department for providing funding for exploratory fieldwork.

One of the most important things that I take from graduate school is a network of fellow students who have supported me throughout this process as my closest friends and collaborators. I am incredibly fortunate to have worked with Jasper Cooper on many projects including the third chapter of this dissertation. His drive for innovation and creativity have been invaluable and I am deeply grateful for our collaboration. Heated debates about every aspect of statistics with Georgiy Syunyaev and Tom Leavitt have been one of the most stimulating features of my time at Columbia. Tom and Gosha have contributed to this dissertation through countless rounds of

commenting and feedback, and their friendship is what has sustained me through it all. Thank you! Dylan Groves has been extremely generous in providing opportunities to collect data in Tanzania, as well as comments, feedback and support. My thanks also go to Tinghua Yu, Anja Kilibarda, Viviana Rivera-Burgos, Salif Jaiteh, Justin Canfil, and Umberto Mazzei who have all been fantastic friends and supporters.

Last but not least, I am deeply grateful for my support network outside Columbia. Thank you, Robert, for being there for me throughout the biggest part of this process. Anja, Henrike and Facundo, you have helped me push this dissertation over the finish line - thank you! Robert Mauksch, I am so thankful for your continued support with all things in life. And finally, my family. I am filled with gratitude for my parents, Maria and Helmuth. Leading by example, they have taught me to be curious about the world and instilled in me a sense of dedication. Without you, I would not be on this journey. My sister, Lucie, continues to inspire me with her decisiveness, creativity and compassion. The three of them are my biggest source of support and have always been there for me, no matter what. Thank you so much – for everything.

For Helmuth, Maria and Lucie.

Introduction

The prevalence of large-scale conflicts in the form of interstate and civil wars has decreased drastically in the twenty-first century. Nonetheless, around one quarter of the world's population continues to live in conditions of insecurity (World Bank, 2011). One reason are high rates of crime, especially throughout the developing world. Almost half a million people lost their lives to homicide in 2017 – far more than the around 89,000 people who were killed in active armed conflicts.¹

Preventing citizens from expropriating or attacking each other is thought to be a quintessential task of states (Hobbes, 1958; Wilson, 1889). However, non-state actors often play a large role in crime control. Private security guards patrol gated communities throughout the United States. Vigilante mobs in South Africa brutally punish criminal suspects. Market vendors in Uganda apprehend and publicly sanction pickpockets. Why do citizens turn to private actors in some contexts, but to the state in others? And how do state actors respond to citizens' private crime prevention efforts? These are the questions that guide this dissertation.

On the one hand, private efforts to combat crime may be second-best alternatives in places where state institutions are predatory or weak. Complaints about police being under-resourced, corrupt and generally ineffective are pervasive around the world, especially in the Global South.² In other contexts, militarized, abusive and excessive policing practices have undermined citizens'

¹United Nations. "A New Era of Conflict and Violence." <https://www.un.org/en/un75/new-era-conflict-and-violence>. Accessed 07/14/2021.

²See Baker (2017) for examples from Africa, Dammert (2019) for examples from Latin America and Human Rights Watch (2009) for an example from India.

trust in state law enforcement.³ Where citizens do not see state institutions as a viable option, private actors may step in to fill the void.

However, non-state responses to crime come with their own potential for insecurity and violence. Vigilante mobs commit gruesome assaults, often in response to minor offenses. In South Africa, mob vigilantism leads to an average of two murders every day (SAPS, 2018/2019). A tendency of citizens to bypass state justice institutions may also further undermine their effectiveness. State agencies like the police typically rely on information provided by citizens to effectively combat crime (Tyler and Huo, 2002). Such agencies may struggle to achieve their goals if citizens turn to private actors instead. Beyond that, the ability of citizens to rely on private alternatives may shape the broader incentives of government officials to invest in public law enforcement.

In studying the origins and consequences of private efforts to combat crime, this dissertation thus sheds light on fundamental questions about whether and how states maintain order. The dissertation does so by employing a diverse set of methodological approaches that encompasses field and survey experimentation, game theory and qualitative field work. Most of the empirical evidence that the dissertation brings to bear stems from Sub-Saharan Africa, the region that ranks first when it comes to the prevalence of common crimes like theft and assault across world regions. Around one quarter of Sub-Saharan Africans report that someone in their household experienced theft in the past year, and Sub-Saharan Africa is the only world region in which crime has increased over the past decade (van Dijk, Nieuwbeerta and Larsen, 2021). Questions about how public and private actors address crime and violence thus remain pressing concerns of direct relevance for policy-makers in the region.

The first chapter of the dissertation explores the incentives of political parties to spend public funds on policing when citizens can purchase private protection. I build a formal model that combines three elements: a model of the supply of crime, a model of the demand for private protection and a model of a political process that determines public investment in law enforcement. The theory features a continuum of citizens who are differentiated by income. Citizens choose

³Examples include the United States (Gottschalk, 2008; Soss and Weaver, 2017) and El Salvador (Holland, 2013).

whether to commit crime and whether to purchase private protection. Those who commit crime expropriate the income of others; those who purchase private protection are immune to expropriation. A left and a right party decide how much of an exogenously given government budget to spend on policing. The left party represents the lower and the right party the upper half of the income distribution.

The model provides conditions under which right and left parties may over- and underspend on law enforcement relative to other government services. Parties' investment decisions ultimately depend on societal wealth. In relatively poor societies, the base of the left party is so poor that members care little about investments in policing that would reduce the risk of expropriation. The base of the right party is rich enough to care about protecting incomes but not so rich that members can invest in private protection. Hence, the locus of demand for public policing lies within the right party's base. Left parties are prone to spend less and right parties are prone to spend more than the socially optimal amount on policing. The reverse is true in relatively rich societies. Here, the base of the right party can afford to purchase private protection. The base of the left party is rich enough to care about protection from expropriation but not rich enough to purchase private protection, and hence demands public policing.

Private security measures are pervasive. In many countries, the size of the private security industry far exceeds that of the public law enforcement sector.⁴ The chapter sheds light on the consequences for law enforcement policy. Conventional wisdom holds that tough-on-crime policies are the domain of conservative parties (see e.g. Caldeira and Cowart, 1980). Existing evidence on the relationship between partisanship and law enforcement spending, however, is mixed.⁵ The chapter shows that right parties may not have incentives to invest in policing if rich citizens can opt out by purchasing private protection. This insight provides one explanation for why harsh anti-crime policies in various contexts have been implemented by left-wing politicians who rep-

⁴Provost, Claire. May 12, 2017. "The Industry of Inequality: Why the World Is Obsessed with Private Security." *The Guardian*. <https://pulitzercenter.org/stories/industry-inequality-why-world-obsessed-private-security>. Accessed 07/15/2021.

⁵See, for example, Gerber and Hopkins (2011), Ferreira and Gyourko (2009) and de Benedictis-Kessner and Warshaw (2016) for evidence on the relationship between the partisanship of mayors and municipal spending on law enforcement in the US.

resent poorer constituents.⁶

The second chapter of the dissertation homes in on the micro-dynamics of how state capacity affects citizens' choice between state and non-state alternatives. In contrast to the first, the second chapter focuses not on private protection for the rich but on mob vigilantism, a non-state alternative to the state's justice system that is common in low income communities throughout the developing world. In many contexts, victims of crime turn to their community – family, friends, and neighbors – who brutally punish or even kill criminal suspects (Jung and Cohen, 2020). The prevalence of such vigilantism is often attributed to the ineffectiveness of state institutions.⁷ How would citizens' behavior change if police became more capable?

Whereas the model in the first chapter allows state agents to endogenously choose how much to invest in law enforcement, the second chapter takes a partial equilibrium approach in that it studies the effects of an exogenous shock to the capacity of police. Specifically, the chapter relies on a field experiment that creates localized variation in the capacity of police in a low-income township in South Africa. Crime rates are high and police presence low in South Africa's township environments. In collaboration with a South African non-profit organization that works closely with police, I randomly assigned 100 out of 250 homes to receive an alarm system that increases the ability of police to locate households. To measure outcomes, I implemented three waves of household surveys that encompass a total of 1,656 face-to-face interviews with members of study households and their neighbors.

I find that respondents from households assigned to a police alarm become more inclined to cooperate with police and less willing to resort to vigilantism. Results from an additional information experiment speak against the interpretation that alarm owners refrain from vigilantism because they perceive reliance on police as more attractive. Instead, the reluctance to resort to vigilantism seems driven by an increased fear of being arrested for breaking the law. The broader implication is that citizens' willingness to cooperate with capable state institutions need not re-

⁶See Holland (2013) and Bonner (2019) for examples from Latin America, Super (2016) for an example from Africa, and Forman Jr. (2017) for examples from the US.

⁷See Baker (2002), Sekhonyane and Louw (2002), and Tankebe (2009) for examples.

flect satisfaction with state services. Such cooperation can also be due to the state's ability to limit citizens' choices by sanctioning those who participate in informal practices that could substitute for the state.

The first two chapters focus on the relationship between state and non-state responses to crime. The third chapter turns to the social dynamics that condition support for vigilante violence.⁸ Drawing on original survey data collected through over 10,000 interviews in Uganda, South Africa and Tanzania, the chapter shows that women consistently support mob vigilantism at higher rates than men. This finding runs counter to a large literature in public opinion according to which support for violent practices tends to be lower among women (see e.g. Hurwitz and Smithey, 1998; Shapiro and Mahajan, 1986).

The chapter makes use of vignette experiments from rural Uganda and Tanzania to show that women and men differ in their beliefs about the downsides of mob vigilantism as a social practice. Vigilante mobs rarely engage in a systematic process of investigation and adjudication. Instead, decisions about guilt and innocence are made quickly and collectively by large groups of community members. This mode of decision making opens the door for false accusations – be they deliberate or the result of someone having been in the wrong spot at the wrong time. The chapter shows that men are more likely to believe that vigilantism poses risks even for citizens who do not commit crime. This gender gap in beliefs about the risk of false accusations may drive the gender gap in support. Using survey and additional qualitative evidence, the chapter traces this divergence in beliefs to differences in men's and women's personal risk of being punished for a crime that they did not commit.

The three chapters of this dissertation provide novel theoretical insights and policy lessons to the literatures on state building, violence and law enforcement. The first chapter calls into question the conventional wisdom that right parties always take a tougher stance on crime, and provides an explanation for the tendency of left-wing politicians in various contexts to implement tough-on-crime policies. The second chapter highlights that the quality of state law enforcement

⁸This chapter is based on a paper that has been co-authored with Jasper Cooper. See section C.4 in the appendix for details on co-author contributions.

services is not the only choice variable through which state agents impact citizens' choice between private and public alternatives. State agents can also employ the state's coercive powers to deprive citizens of private options. Doing so may be a particularly effective way to discourage mob vigilantism. The last chapter draws attention to the role that beliefs play in shaping support for violence. The chapter suggests that raising awareness about the risks that vigilante violence poses for those who are not engaged in crime may be one way to increase opposition against mob vigilantism. Both, the second and third chapters point towards perceptions of risks – the risk of state punishment and the risk of false accusations – as factors that explain variation in citizens' views on vigilante violence.

Beginning with a general equilibrium account of law enforcement spending and ending with an investigation of how gender shapes citizens' views on vigilantism, this dissertation progresses from the macro- to the micro-level. Taken together, the three chapters of the dissertation highlight that understanding how states can and do establish order requires attention to the existence of private alternatives and to how citizens with heterogeneous experiences and motivations choose between public and private options.

Chapter 1: Private Security and Public Policing

1.1 Introduction

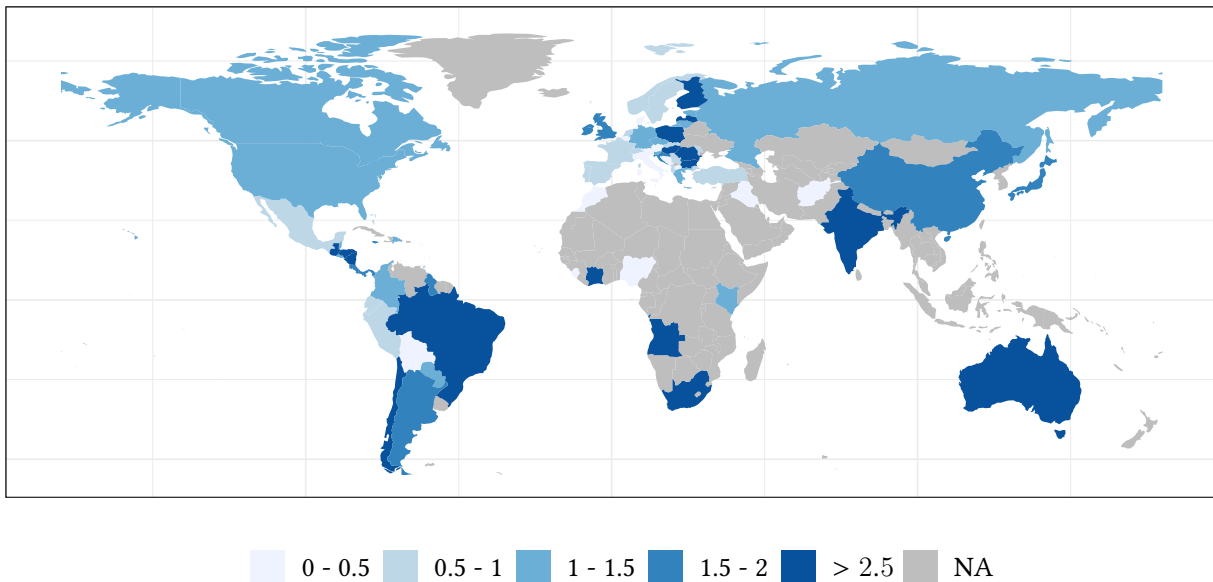
Tough-on-crime policies such as militarized policing and harsh sentences are common throughout the world. Prominent examples include the American “war on drugs” that has contributed to a massive increase in incarceration rates since the 1970s, the more recent anti-drug campaign of President Rodrigo Duterte in the Philippines and *mano dura* crime policies in El Salvador. In addition to their consequences for the rights of criminal suspects, initiatives of this kind have been criticized for diverting a disproportionate amount of government resources towards law enforcement (Gottschalk, 2008; Soss and Weaver, 2017). In other contexts, concerns about crime control are of the opposite nature. Insufficient police staff, resources and training are said to contribute to crime and insecurity in many contexts including parts of Africa (Baker, 2017), Latin America (Dammert, 2019), Asia (Human Rights Watch, 2009) and Europe.¹ What determines how much elected officials choose to invest in law enforcement?

Many attribute law and order politics to the ideology of conservative parties. Given their focus on individual responsibility, parties on the right are seen as pre-disposed to emphasize law enforcement (Caldeira and Cowart, 1980). Yet, even though tough-on-crime policies have often been implemented by conservative politicians, leftists have not been entirely passive. Consider, for example, Andrés Manuel López Obrador, the current president of Mexico. During his term as mayor of Mexico City from 2000 to 2005, Obrador supported a group of local business men in hiring Rudolph Giuliani, former mayor of New York City known for his “zero-tolerance” approach to crime, to help address Mexico City’s crime problem. Following Giuliani’s recommendations,

¹For an example see Dodd, Vikram. July 4, 2019. “Police resources ‘xdrained to dangerously low levels’, say former top officers.” The Guardian. <https://www.theguardian.com/uk-news/2019/jul/04/police-watchdog-reforms-chief-inspector-constabulary>. Accessed 07/15/2021.

Obrador increased prison terms for existing offenses and defined new categories of crime which led to a drastic increase in prison populations. Far from being a conservative, Obrador is a member of the social democratic Partido de la Revolución Democrática. Similar examples of left-wing politicians being tough on crime exist elsewhere in Latin America as well as in other parts of the world.²

Figure 1.1: Private security personnel per police officer



Data have been accessed here: Provost, Claire. May 12, 2017. “The Industry of Inequality: Why the World Is Obsessed with Private Security.” The Guardian. <https://pulitzercenter.org/stories/industry-inequality-why-world-obsessed-private-security>. Accessed 07/15/2021. Data stem from various years between 2011 and 2016.

From a theoretical perspective too there are reasons to suspect that the relationship between partisan politics and law enforcement policies may be more complicated. Around the world, citizens invest in various forms of private security to minimize crime-induced property loss and physical harm. Examples of private security measures include burglar alarms, camera systems, security guards, armed response teams, and gated communities. Figure 1.1 shows that private

²Holland (2013) and Bonner (2019) provide other examples of Latin American parties on the left that have embraced tough-on-crime approaches. South Africa, which has been ruled by the center-left African National Congress since 1994, has one of the highest incarceration rates in Africa and the world (Super, 2016). Forman Jr. (2017) discusses the role of African American officer holders, many of whom are Democrats, in pushing for tough-on-crime policies in the United States.

security personnel outnumber police personnel across a range of contexts – sometimes by a factor of more than two-to-one. Those who can afford to move to a gated community or hire a security guard often belong to richer segments of society that also form the base of conservative parties. Where private security allows the rich to reduce their dependence on public efforts to maintain order, it appears less obvious that conservative parties will emphasize law enforcement.

In this chapter, I develop a theory that sheds light on the incentives of right- and left-wing parties to spend public funds on policing when citizens can invest in private alternatives. My model features a continuum of citizens who are differentiated by how much income they can earn through legal means. Citizens choose whether to commit crime and whether to purchase private protection. Those who commit crime earn additional income by expropriating others. This notion of crime corresponds well to common property crime such as burglary that private security measures are typically meant to prevent. A minimum amount of law enforcement exists independent of the political process and makes crime costly, even in the absence of additional investments in the police. The costs of crime increase with income. Richer individuals may have greater opportunity costs when incarcerated, for example, and the decline in future job prospects as a result of incarceration may be greater for those with white-collar jobs.

Citizens can protect themselves against expropriation by purchasing private protection. The higher is a citizen's legal income, the smaller are the cost that the citizen has to pay to shield herself from theft. This assumption captures the idea that many forms of private protection are tailored to the lives of individuals at the upper end of the income distribution. Burglar alarms and CCTV systems, for example, require electricity. Households in low-income neighborhoods throughout the developing world often lack access to a stable electricity supply. Similarly, high-income individuals who can afford a car may be able to relocate to a gated community with relative ease, while low-income households who depend on public transportation will face a significant increase in travel costs.

In the model, there are two political parties. The left-leaning party represents the lower and the right-leaning party the upper half of the income distribution. The party in power chooses

how much of an exogenously given government budget to spend on policing. Public investments in the police increase the costs of criminal activity, thereby reducing the incentives to commit crime as well as the need for private protection. Whatever is not invested in policing is spent on an alternative public good such as roads or education that yields the same marginal benefit for all citizens. Parties seek to maximize the welfare of their base, taking into account how crime and protection choices change as a result of how much is spent on policing.

The model predicts that both left- and right-wing parties may spend suboptimal amounts on policing and that parties' spending decisions depend on the wealth of society. If society is not too rich, the base of the left-wing party consists of a mix of criminally active individuals and individuals who are relatively poor and hence less concerned about protecting their income against crime. The base of the right-wing party is dominated by law-abiding citizens who are rich enough to care about the protection of their incomes but not so rich that they would purchase private protection. As a consequence, left-wing parties tend to under- and right-wing parties tend to over-invest in law enforcement relative to what would be socially optimal.

As society grows richer, the base of the right-wing party becomes increasingly dominated by individuals who are rich enough to purchase private protection and who thus oppose investments in public policing. The base of the left-wing party becomes less dominated by those who commit crime. Supporters of the left-wing party also become richer and hence more concerned with keeping their incomes safe, though not rich enough to purchase private protection. Ultimately, left-wing parties become prone to over-, and right-wing parties become prone to under-invest in law enforcement relative to the social optimum.

These results are of direct relevance for empirical work on the relationship between partisanship and law enforcement policies. Existing evidence from the US suggests that Republican control of state and federal levels correlates with increased rates of incarceration and law enforcement expenditures (Caldeira and Cowart, 1980; Jacobs and Carmichael, 2001; Jacobs and Helms, 1996, 2001; Smith, 2004*b*; Yates and Fording, 2005). Work that focuses on the local level and pays close attention to causal identification, however, produces findings that are less clear-

cut. A series of papers relies on regression discontinuity designs to causally identify the effect of mayoral partisanship on municipal spending patterns. Among these, Gerber and Hopkins (2011) show that Democratic mayors spend less on public safety than Republican ones, Ferreira and Gyourko (2009) do not uncover any difference between Democratic and Republican mayors; and de Benedictis-Kessner and Warshaw (2016) find that Democratic mayors spend, if anything, more on policing than their Republican counterparts. Outside the US, the picture looks similarly mixed. Block (2019) shows that right-wing governors in Mexico may or may not spend more on policing than those from the left depending on the party of their political opponent. Guillamón, Bastida and Benito (2013) demonstrate that conservative parties in Spain increase local police spending. A study of law enforcement legislation in the UK, on the other hand, assigns greater “toughness scores” to Labor governments under Blair and Brown than to preceding and subsequent conservative governments (Staff, 2018). My model predicts that the relationship between partisan control and anti-crime policy is conditional on the income level in the polity under consideration. It thus provides a novel and testable hypothesis that may help account for these contradictory findings

Several existing papers model service provision by public and private actors (see e.g. De la Croix and Doepke, 2009; Epple and Romano, 1996*a,b*; Glomm and Ravikumar, 1998). These models do not combine the focus on public and private provision with a model of crime.³ Nonetheless, they are similar to the model presented here in that they feature a continuum of citizens who choose whether to purchase a private alternative and whose preferences collectively determine the quality of public provision. The presence of private provision in these models results in citizens’ preferences over the quality of the public service not being single peaked. The same is true in the model in this paper. Hence, majority voting equilibria are not guaranteed to exist and if they do exist, the median voter may not be pivotal. Previous papers focus on the existence and characteristics of majority voting equilibria in such settings.

The model presented here instead introduces political parties that care about the welfare of their base. The paper thus characterizes the behavior of political actors whose incentives are

³The focus in Epple and Romano (1996*a*) and De la Croix and Doepke (2009) is education. Epple and Romano (1996*b*) consider health services.

rooted in an underlying general equilibrium model of citizen behavior. The approach is similar to that taken by Austen-Smith (2000) who characterizes tax rates that are chosen by political parties who represent different occupational groups. In Austen-Smith (2000), a given tax rate induces citizens to optimally sort into occupational groups. Here, a given level of spending on the police induces citizens to optimally sort into criminal and privately protected sectors. To my knowledge, papers that derive the behavior of political actors from sorting equilibria of this kind are rare.

A handful of models share the focus on public and private provision of security but use different kinds of set ups. One example is Guha (2013) who considers the effect of an exogenously given level of policing on the incentives to purchase different kinds of private protection. Closer to this chapter are Helsley and Strange (2005) and Mendoza (2015) who endogenize the level of public spending on the police. None of these models produce results that pertain to the relationship between partisan control and law enforcement spending.

This chapter proceeds as follows. Section 1.2 presents the model set up. Section 1.3 derives crime and protection choices for a given level of public spending on the police. Section 1.4 considers the resulting preferences over police spending for various parts of the population. Section 1.5 describes parties' spending choices. Section 1.6 concludes.

1.2 Model

1.2.1 Income, crime, and private protection

There is a continuum of individuals with population size normalized to 1. Individuals are distinguished by the amount of income that they earn through legal means. I denote by $\theta_i \in \Theta = [0, \bar{\theta}]$ the legal income of individual i . The distribution of income in the population is uniform with support Θ . Citizens have risk-neutral preferences over income.

Each individual i makes a choice $x_i^c \in \{0, 1\}$ of whether to commit crime and a choice $x_i^p \in \{0, 1\}$ of whether to purchase private protection. Let λ_j denote the subset of types in Θ that choose to engage in activity $j \in \{c, p\}$. A citizen who commits crime expropriates the legal income of exactly one victim. This victim is chosen at random from the set of unprotected indi-

viduals, i.e., from those with $\theta_i \notin \lambda_p$. The expected return to crime is thus given by $\mathbb{E}[\theta_i \mid \theta_i \notin \lambda_p]$. Income from criminal activity cannot itself be expropriated through crime. Citizens who commit crime suffer cost $d\theta_i$. Throughout, I assume $d > 1$, though my analysis of party platforms below will require a slightly more restrictive assumption. That the cost of crime increase with income captures the notion that richer citizens may suffer from greater opportunity cost when incarcerated and from greater losses of future earnings.

Citizens who purchase private protection are immune to expropriation and keep their legal income with certainty. Private protection comes at cost $c - e\theta_i$ with $c > 0$ and $0 < e < \frac{1}{2}$. The cost of private protection decrease with income, because many forms of private protection cater to the living conditions of richer citizens. For example, richer citizens are more likely to have access to a stable electricity supply that can power security equipment and to the means of transportation required to live in remotely located gated communities.

Citizens who do not purchase private protection lose their legal income θ_i if they are the target of crime. Denote the share of such unprotected citizens in the population by $\pi = \int_{\theta \notin \lambda_p} \frac{1}{\theta} d\theta$ and the share of citizens who commit crime by $\gamma = \int_{\theta \in \lambda_c} \frac{1}{\theta} d\theta$. Recall that each citizen who is criminally active expropriates one victim that is randomly chosen from the set of unprotected individuals. It is thus intuitive to assume that the probability that an unprotected individual i is the target of crime and loses her legal income equals $\frac{\gamma}{\pi}$. Equation 1.1 summarizes citizen i 's expected income as a function of her own and society-wide crime and protection choices.

$$y_i(x_i^c, x_i^p, \lambda_c, \lambda_p) = \begin{cases} \theta_i(1 - \frac{\gamma}{\pi}) & \text{if } x_i^c = 0 \text{ and } x_i^p = 0 \\ \theta_i(1 - \frac{\gamma}{\pi}) + \mathbb{E}[\theta_i \mid \theta_i \notin \lambda_p] - d\theta_i & \text{if } x_i^c = 1 \text{ and } x_i^p = 0 \\ \theta_i - c + e\theta_i & \text{if } x_i^c = 0 \text{ and } x_i^p = 1 \\ \theta_i - c + e\theta_i + \mathbb{E}[\theta_i \mid \theta_i \notin \lambda_p] - d\theta_i & \text{if } x_i^c = 1 \text{ and } x_i^p = 1. \end{cases} \quad (1.1)$$

1.2.2 Policing and public goods

There is an exogenously given government budget G that can be spent in two ways. First, government revenue can be spent on policing which increases the cost of crime. Individuals who choose to commit crime face a marginal utility loss of s with $0 < s < \frac{c}{G}$ from each additional dollar that is spent on policing. For example, investments in policing may increase the rate of criminal convictions. s can be interpreted as a measure of police effectiveness. Second, government revenue can be spent on a public good unrelated to policing that has marginal benefit $b > 0$ for all citizens. Given a share $\alpha \in [0, 1]$ of government revenue that gets spent on policing, citizens earn the following expected utility:

$$u_i(x_i^c, x_i^p, \lambda_c, \lambda_p, \alpha) = y_i(x_i^c, x_i^p, \lambda_c, \lambda_p) - x_i^c \alpha G s + (1 - \alpha) G b \quad (1.2)$$

For any given share $\alpha \in [0, 1]$ of government revenue spent on policing, I derive a sorting equilibrium that takes the form of two cutpoints $\theta_j(\alpha) \in \Theta$ for $j \in \{c, p\}$. Each cutpoint $\theta_j(\alpha)$ partitions the type space Θ into two intervals $\lambda_j^*(\alpha)$ and $\lambda_{-j}^*(\alpha)$ such that, in equilibrium, individuals with $\theta_i \in \lambda_j^*(\alpha)$ find it optimal to engage in activity j and individuals with $\theta_i \in \lambda_{-j}^*(\alpha)$ find it optimal not to engage in activity j . Formally, θ_c must be such that for each individual i , $u_i(1, x_i^{p*}, \lambda_c^*, \lambda_p^*, \alpha; \theta_i) \geq u_i(0, x_i^{p*}, \lambda_c^*, \lambda_p^*, \alpha; \theta_i)$ if $\theta_i \in \lambda_c^*(\alpha)$ and $u_i(0, x_i^{p*}, \lambda_c^*, \lambda_p^*, \alpha; \theta_i) \geq u_i(1, x_i^{p*}, \lambda_c^*, \lambda_p^*, \alpha; \theta_i)$ if $\theta_i \in \lambda_{-c}^*(\alpha)$. The conditions for θ_p are analogous. Individuals in this model hence take the interval of types $\lambda_c(\alpha)$ that commit crime and the interval of types $\lambda_p(\alpha)$ that purchase private protection as given and, for any given α , choose optimally whether to engage in crime and whether to buy private protection.

In addition to the set up presented so far, I make the following assumption about the upper bound of the income distribution $\bar{\theta}$:

$$\bar{\theta}_{min} := \frac{2(cd + Gs)}{1 + 2de} < \bar{\theta} < \frac{4dc}{2de + 1} =: \bar{\theta}_{max}. \quad (1.3)$$

This assumption makes sure that the two equilibrium cutpoints are always interior. It also ensures that, in equilibrium, median types with income $\frac{\bar{\theta}}{2}$ never commit crime and always remain unprotected.

1.2.3 Politics

There are two political parties indexed by $k \in \{L, R\}$. The base of party L is the lower half of the income distribution, i.e., all citizens with $\theta_i \in \left[0, \frac{\bar{\theta}}{2}\right]$. The base of party R is the upper half of the income distribution, i.e., all citizens with $\theta_i \in \left[\frac{\bar{\theta}}{2}, \bar{\theta}\right]$. Party k chooses a proportion α_k of government revenue that is spent on policing rather than on the alternative public good. Parties seek to maximize the welfare of their base in the sorting equilibrium that results from their chosen platform.

1.3 Sorting Equilibrium

To gain intuition for the sorting equilibrium, consider first the decision of whether to engage in crime. In deciding whether to commit crime, a citizen trades off the benefit of additional income from expropriation against the cost of crime. The net benefit of engaging in crime is given by

$$\mathbb{E}[\theta_i \mid \theta_i \notin \lambda_p] - d\theta_i - \alpha Gs.$$

Taking the set of privately protected individuals λ_p as given, it is easy to see that the net benefit of committing crime is decreasing in an individual's legal income θ_i . As a consequence, individuals with a greater legal income have less incentive than individuals with a smaller legal income to commit crime. Hence, in any sorting equilibrium with a single indifferent type $\theta_c(\alpha)$, low income individuals with $\theta_i \leq \theta_c(\alpha)$ will choose to commit crime and high income individuals with $\theta_i > \theta_c(\alpha)$ will refrain from doing so.

Next, let us consider the decision of whether to purchase private protection. Individuals who do not purchase private protection lose their legal income to crime with probability $\frac{\gamma}{\pi}$. The benefit

of purchasing private protection is that one gets to keep one's legal income with certainty. Yet, private protection comes at a cost $c - e\theta_i$. Any citizen will hence find it optimal to purchase private protection if

$$\theta_i - c + e\theta_i \geq \theta_i \left(1 - \frac{\gamma}{\pi}\right).$$

It is easy to see that the left-hand side of this expression increases faster with θ_i than the right-hand side. Intuitively, protecting oneself against expropriation becomes more important the higher the legal income that one may lose. In addition, private protection becomes less costly the higher one's legal income. For a given crime rate, richer individuals thus have a greater incentive than poorer individuals to purchase private protection. In a sorting equilibrium with a single indifferent type $\theta_p(\alpha)$, high income individuals with $\theta_i > \theta_p(\alpha)$ will thus find it optimal to purchase private protection, while low income individuals with $\theta_i \leq \theta_p(\alpha)$ will prefer to remain unprotected.

Given that the equilibrium takes this form, we can make use of the properties of the uniform distribution to express the quantities in citizens' utility function that depend on society-wide crime and protection choices as a function of the equilibrium cutpoints $\theta_c(\alpha)$ and $\theta_p(\alpha)$. Recall that the probability that an unprotected citizen loses her legal income to crime is given by $\frac{\gamma}{\pi}$, where γ denotes the population share of citizens who commit crime and π the share of citizens who remain unprotected. Since, in equilibrium, all individuals with $\theta_i \leq \theta_c(\alpha)$ choose to commit crime, we can write the equilibrium share of citizens who commit crime as $\gamma = \frac{\theta_c(\alpha)}{\theta}$. Similarly, the equilibrium share of citizens who remain unprotected can be expressed as $\pi = \frac{\theta_p(\alpha)}{\theta}$, since, in equilibrium, all individuals with $\theta_i \leq \theta_p(\alpha)$ choose to remain unprotected. Finally, recall that the expected return to crime is given by the expected income among unprotected citizens. In equilibrium, those who engage in crime can thus expect to earn $\mathbb{E}[\theta_i \mid \theta_i \notin \lambda_p(\alpha)] = \frac{\theta_p}{2}$.

Solving for the sorting equilibrium entails substituting these expressions into the utility function given in equation 1.2 and finding the values of $\theta_c(\alpha)$ and $\theta_p(\alpha)$ which jointly satisfy the re-

quirement that type $\theta_c(\alpha)$ is exactly indifferent between committing and not committing crime, while type $\theta_p(\alpha)$ is exactly indifferent between purchasing and not purchasing private protection. In other words, $\theta_c(\alpha)$ and $\theta_p(\alpha)$ need to solve the following system of equations:

$$\begin{aligned} u_i(x_i^c = 1, x_i^p; \theta_c) &= u_i(x_i^c = 0, x_i^p; \theta_c) \\ u_i(x_i^c, x_i^p = 1; \theta_p) &= u_i(x_i^c, x_i^p = 0; \theta_p). \end{aligned}$$

Lemma 1 characterizes the resulting sorting equilibrium. Its proof and all other proofs can be found in the appendix.

Lemma 1 (Sorting Equilibrium). *For all $\alpha \in [0, 1]$, there is a unique sorting equilibrium with two cutpoints*

$$\theta_c(\alpha) = \frac{c - 2e\alpha Gs}{1 + 2de} \tag{1.4}$$

$$\theta_p(\alpha) = \frac{2(cd + \alpha Gs)}{1 + 2de} \tag{1.5}$$

such that

$$x_i^{c*} = \begin{cases} 1 & \text{if } \theta_i \in [0, \theta_c(\alpha)] = \lambda_c^*(\alpha) \\ 0 & \text{if } \theta_i \in (\theta_c(\alpha), \bar{\theta}] = \lambda_{-c}^*(\alpha) \end{cases}$$

and

$$x_i^{p*} = \begin{cases} 0 & \text{if } \theta_i \in [0, \theta_p(\alpha)] = \lambda_{-p}^*(\alpha) \\ 1 & \text{if } \theta_i \in (\theta_p(\alpha), \bar{\theta}] = \lambda_p^*(\alpha). \end{cases}$$

For all $\alpha \in [0, 1]$, the cutpoints satisfy the following inequalities:⁴

$$0 < \theta_c(\alpha) < \frac{\bar{\theta}}{2} < \theta_p(\alpha) < \bar{\theta}.$$

Note that the two cutpoints $\theta_c(\alpha)$ and $\theta_p(\alpha)$ are sufficient to fully characterize citizen behavior in the sorting equilibrium. To simplify notation, I will subsequently dispense with $\lambda_j^*(\alpha)$ and $\lambda_{-j}^*(\alpha)$ and refer to the cutpoints only. According to lemma 1, the cutpoints are always interior and $\theta_c(\alpha) < \theta_p(\alpha)$ for all α . In practice, the sorting equilibrium thus divides the type space into three intervals (see Figure 1.2). Individuals with $\theta_i \in [0, \theta_c(\alpha)]$ at the lower end of the income distribution remain unprotected and commit crime. Individuals with $\theta_i \in (\theta_c(\alpha), \theta_p(\alpha)]$ in the middle of the income distribution also remain unprotected but do not commit crime. Individuals with $\theta_i \in (\theta_p(\alpha), \bar{\theta}]$ at the upper end of the income distribution do not commit crime but purchase private protection. No one finds it optimal, in equilibrium, to do both, commit crime and purchase private protection. The median of the income distribution remains unprotected and never commits crime.

How does equilibrium behavior change as more of the public budget is spent on policing? It is easy to see that $\theta_c(\alpha)$ decreases in α . Intuitively, increased public spending on the police decreases the size of the criminal sector, because it makes crime more costly. At the same time, $\theta_p(\alpha)$ increases in α . As the size of the criminal sector decreases, fewer citizens at the upper end of the income distribution see the need to purchase private protection. In other words, an increase in α moves both equilibrium cutpoints outwards, thereby increasing the middle segment of the population that neither commits crime nor purchases private protection. Both the decrease in the share of criminally active and the increase in the share of unprotected citizens contribute to a decrease in the equilibrium probability that any given citizen without protection loses her income to crime, which is given by

⁴This result makes use of the following parameter restrictions introduced in the model set up: $d > 1$, $0 < e < \frac{1}{2}$, $c > Gs$ and $\bar{\theta}_{min} < \bar{\theta} < \bar{\theta}_{max}$.

$$\frac{\gamma}{\pi} = \frac{\theta_c(\alpha)}{\theta_p(\alpha)} = \frac{c - 2e\alpha Gs}{2(cd + \alpha Gs)}.$$

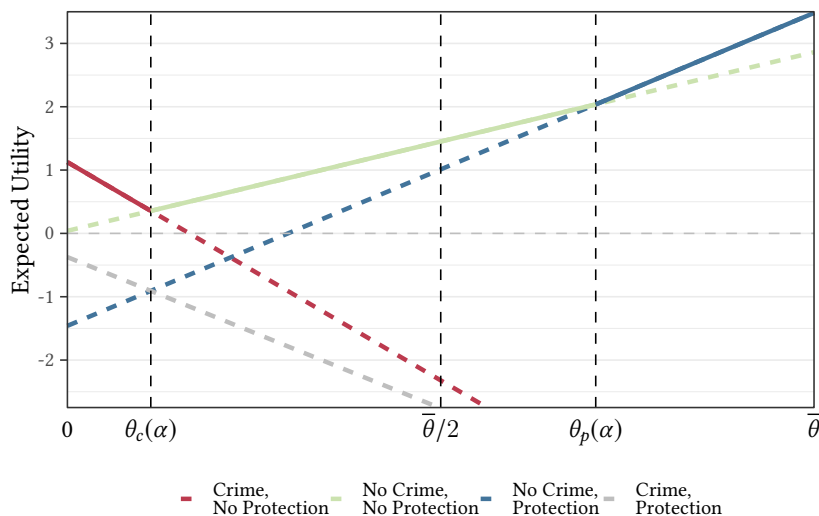


Figure 1.2: Sorting equilibrium for a given budget share α that is spent on policing

$\alpha = 0.1, G = 1, s = 1, c = 1.5, d = 2.9, e = 0.475, b = 0.045$. The figure plots the expected utility of an individual i conditional on crime and protection choices, as a function of individual i 's legal income θ_i , and assuming that all other individuals make optimal choices. The dashed parts of the line represent individual i 's utility from deviations from optimal behavior, while the solid parts represent her expected utility in equilibrium.

Finally, note that neither $\theta_c(\alpha)$ nor $\theta_p(\alpha)$ depends on the upper bound of the income distribution $\bar{\theta}$. An increase in $\bar{\theta}$ adds additional types at the top of the income distribution, but all of these types will purchase private protection. Since privately protected individuals cannot be expropriated, an increase in $\bar{\theta}$ does not alter the returns to crime. Hence, behavior in the sorting equilibrium does not change as society becomes richer. This insight will be relevant for the results presented below.⁵

⁵Note that this insight is always true because $\bar{\theta}$ is assumed to be such that $\theta_p(\alpha)$ is always interior. Hence, the privately protected segment of the population always exists. Moreover, the same logic would not apply if private protection would only shield a fraction of a person's income from expropriation.

1.4 Induced Preferences Over Police Spending

In this section, I discuss preferences over α , the share of the available public budget spent on policing, that result from this sorting equilibrium. Given how crime and protection choices change with α , what amount of police spending do different segments of the population prefer? Understanding how the demand for policing varies across crime and protection choices and income helps build intuition for the subsequent results on party platforms.

Note first that some but not all citizens change their equilibrium behavior with α . The equilibrium cutpoints are always interior and $\theta_c(\alpha) < \theta_p(\alpha)$ for all $\alpha \in [0, 1]$. Hence, there always exists a set of types at the bottom, at the top and in the middle of the income distribution whose behavior does not depend on α (see also Figure 1.4 below). Individuals with $\theta_i < \theta_c(\alpha = 1)$ will always commit crime, even if the entire public budget is invested in policing. Individuals with $\theta_c(\alpha = 0) < \theta_i < \theta_p(\alpha = 0)$ will never commit crime and never buy private protection, even if none of the available budget is invested in policing. Finally, individuals with $\theta_i > \theta_p(\alpha = 1)$ will always purchase private protection even if all of the available budget is invested in policing. The crime and protection choices of citizens with $\theta_i \in (\theta_c(\alpha = 1), \theta_c(\alpha = 0)]$ or $\theta_i \in (\theta_p(\alpha = 0), \theta_p(\alpha = 1)]$, on the other hand, will change as α changes.

Substituting the equilibrium expressions for $\theta_c(\alpha)$ and $\theta_p(\alpha)$ into the utility function given in equation (1.2) reveals that the indirect utility of types whose behavior does not depend on α is always concave in α . Preferences of citizens who change their behavior based on α , however, are not necessarily well behaved. To see why, consider Figure 1.3 which plots citizens' indirect utility as a function of α . The panel on the left concerns a citizen with $\theta_i \in (\theta_c(\alpha = 1), \theta_c(\alpha = 0)]$ who chooses to commit crime at low levels of police spending ($\alpha \leq \tilde{\alpha}_c$) and refrains from doing so at high levels of police spending ($\alpha > \tilde{\alpha}_c$). The red line depicts citizen i 's indirect utility as long as she commits crime, which, in this example, decreases across the entire range of α and is hence maximized at $\alpha = 0$. At $\alpha = \tilde{\alpha}_c$, individual i switches from committing crime to obeying the law. As depicted by the green line, her indirect utility now begins to increase with α and is

maximized at $\alpha = \alpha^*(0, 0)$.

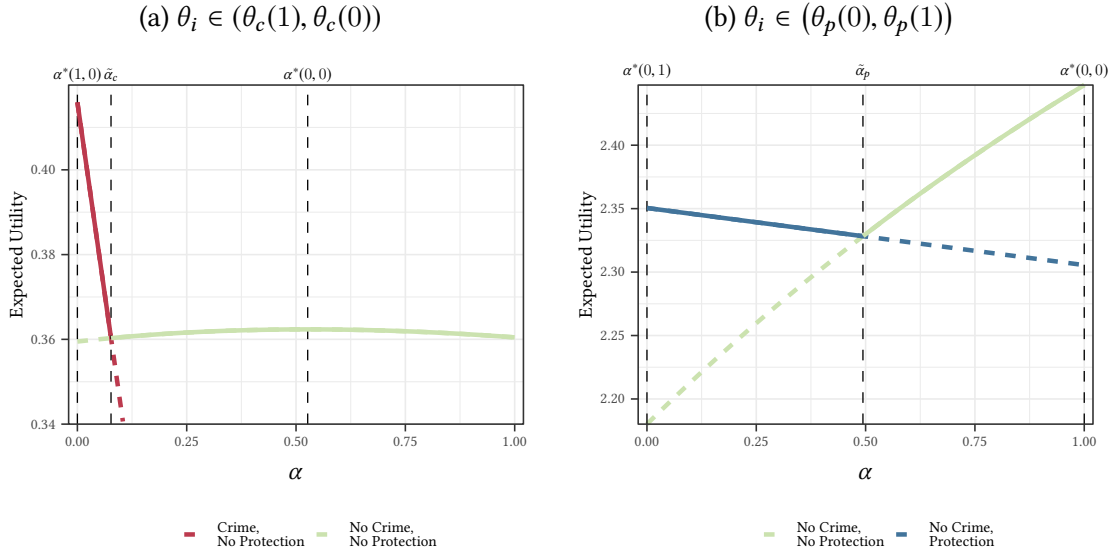


Figure 1.3: Indirect utility for a given type θ_i as a function of policing budget share α

$G = 1, s = 1, c = 1.5, d = 2.9, e = 0.475, b = 0.045$. In the left panel, $\theta_i = 0.38$. $\tilde{\alpha}_c$ denotes the policing budget share for which $\theta_c(\alpha) = 0.38$. In the right panel, $\theta_i = 2.58$. $\tilde{\alpha}_p$ denotes the policing budget share for which $\theta_p(\alpha) = 2.58$

Similarly, the right panel displays the indirect utility of a citizen with $\theta_i \in (\theta_p(\alpha = 0), \theta_p(\alpha = 1)]$ who purchases private protection at low levels of police spending ($\alpha \leq \tilde{\alpha}_p$) and refrains from doing so at high levels of police spending ($\alpha > \tilde{\alpha}_p$). As depicted by the blue line, the indirect utility of this individual is decreasing in α as long as she purchases private protection. After all, the main benefit of spending on the police is that it reduces the chance of losing one's income to crime. Privately protected individuals cannot be expropriated and hence always prefer for the entirety of the public budget to be spent on the alternative public good. At $\alpha = \tilde{\alpha}_p$, this citizen no longer wants to purchase private protection. Now, her indirect utility begins to increase with α . In fact, conditional on not wanting to purchase private protection, the individual in this example prefers for the entirety of the available budget to be spent on policing. Clearly, in both of these examples, citizens' preferences are not concave in α .

That the presence of private provision may induce non-single peakedness in the preferences over a publicly provided service is a well-known result in the literature. As a consequence, a simple majority voting equilibrium may not exist and, if it does exist, the median voter may not

be pivotal. Others have focused on the conditions under which a majority voting equilibrium in models of public and private provision exist and on the form that such an equilibrium takes (Epple and Romano, 1996a).

Here, my interest lies with the policies chosen by left- and right-wing parties. Parties' choices will ultimately take into account both, how citizens' behavior and, conditional on their behavior, how citizens' utility changes as a result of changes in α . To develop intuition for the forces that drive the choice of party platforms, this section characterizes citizens' preferences over police spending *conditioning* on a citizen's own crime and protection choices. In other words, I ask, presuming that an individual of type θ_i , say, commits crime and does not purchase private protection, and taking into account how the crime and protection choices of *other* individuals change with α , what is citizen i 's preferred budget share of policing? This is a partial equilibrium exercise in the sense that there is no guarantee that type θ_i would indeed want to commit crime and remain unprotected, even at the budget share of police spending that would maximize her utility conditional on these choices. Lemma 2 summarizes citizens' conditional preferences over police spending.

Lemma 2 (Preferences over police spending). *Conditional on individual i 's crime and protection choices, x_i^c and x_i^p , $u_i(x_i^c, x_i^p, \theta_c(\alpha), \theta_p(\alpha), \alpha)$ is concave in the budget share α that gets spent on policing. Preferred budget shares are given by*

$$\alpha^*(x_i^c, x_i^p; \theta_i) = \begin{cases} \min \left\{ \max \left\{ 0, \frac{1}{G_s} \left[\sqrt{\frac{\theta_i c s (1+2de)^2}{2(b+2de(b+s))}} - cd \right] \right\}, 1 \right\} & \text{if } x_i^c = 1 \text{ and } x_i^p = 0 \\ \min \left\{ \max \left\{ 0, \frac{1}{G_s} \left[\sqrt{\frac{\theta_i c s (1+2de)}{2b}} - cd \right] \right\}, 1 \right\} & \text{if } x_i^c = 0 \text{ and } x_i^p = 0 \\ 0 & \text{if } x_i^c = 0 \text{ and } x_i^p = 1 \end{cases} \quad (1.6)$$

$$\alpha^*(0, 1; \theta_i) \leq \alpha^*(1, 0; \theta_i) \leq \alpha^*(0, 0; \theta_i) \text{ for all } \theta_i \in [0, \bar{\theta}].$$

Privately protected citizens who do not commit crime always prefer zero spending on the police. These citizens only earn legal income and this legal income is privately protected against

expropriation. Since the main upside of police spending is that it reduces the risk of expropriation, these citizens do not reap any benefit from increased policing and would like to see the entire public budget be invested in the alternative public good.

Citizens who remain unprotected may prefer non-zero levels of police spending irrespective of whether they do or do not commit crime. When considering an increase in police spending, all citizens who do not own private protection trade off the benefit of a decrease in the risk of losing their legal income to crime against the utility loss that results from reduced spending on the alternative public good. It is easy to see from equation (1.6) that unprotected citizens, regardless of their crime choice, prefer higher levels of police spending the lower the marginal value of the alternative public good, b , and the higher their legal income, θ_i . Intuitively, a decrease in b makes spending on the alternative public good less attractive relative to spending on the police. Similarly, citizens with a higher legal income stand to lose more to crime and hence derive a larger marginal benefit from spending on the police.⁶

Unprotected citizens who commit crime trade off two additional considerations when deciding how much of the public budget they would like to be spent on policing. First, an increase in police spending decreases the incentives for those at the upper end of the income distribution to purchase private protection. As the lowest type who purchases private protection, θ_p , shifts to the right, the average income among unprotected individuals and hence the return to crime increases. On the flip side, an increase in police spending directly reduces the utility of criminally active individuals by increasing the legal cost of crime. Ultimately, the share of police spending that an unprotected citizen of type θ_i prefers if she commits crime will always be lower than the share of police spending that she would prefer if she chose to abide by the law.

Taken together, the demand for police spending of a citizen of type θ_i is greatest if she remains unprotected and does not commit crime, lower if she remains unprotected but commits crime and smallest if she purchases private protection. These relationships are strict except for in cases in

⁶This result is driven by the assumption that expropriation causes the victim to lose her entire income. If criminally active individuals were to steal a fixed amount from their victims irrespective of the victim's income, preferences over police spending among this group would be independent of type.

which preferences of the unprotected individual lie at the corner.

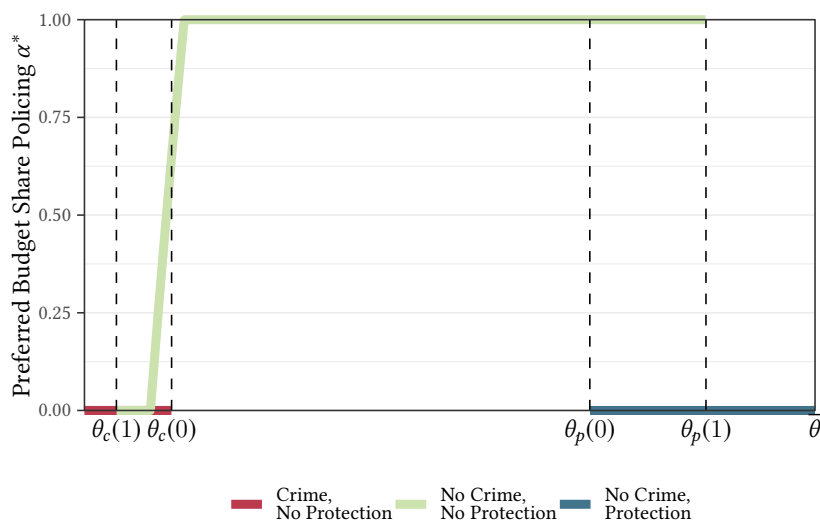


Figure 1.4: Induced preferences over budget share of policing as a function of type θ_i

$$G = 1, s = 1, c = 1.5, d = 2.9, e = 0.475, b = 0.045$$

Figure 1.4 provides a sense of how the demand for police spending is distributed across the population. The figure plots preferred budget shares as a function of crime choices, protection choices and type. For types whose equilibrium behavior does not depend on the level of police spending α , the figure shows a single line that corresponds to the type's preferred budget share given the type's equilibrium behavior. For types whose behavior in equilibrium changes with α , the figure shows two lines that correspond to the type's preferred budget share given the two possible choice profiles that can be optimal for this type. In any sorting equilibrium, individuals with $\theta_i < \theta_c(\alpha = 1)$ at the bottom of the income distribution remain unprotected and commit crime. Hence, this group prefers relatively little policing. In the example shown in Figure 1.4, preferences among this group always lie at the corner. Individuals with $\theta_c(\alpha = 1) < \theta_i < \theta_c(\alpha = 0)$ change their behavior from committing crime to abiding by the law as public spending on policing increases. As they switch to being law-abiding citizens, individuals in this group begin to prefer weakly more police spending. Individuals with $\theta_c(\alpha = 0) < \theta_i < \theta_p(\alpha = 0)$ always

remain unprotected and never commit crime. Since demand for policing among all unprotected citizens increases with their legal income, demand for policing is relatively high among this group. In fact, any unprotected type who does not commit crime will always prefer weakly more public spending on the police than any unprotected type who does commit crime, since types who commit crime in equilibrium are always poorer than those who do not.

Citizens with $\theta_p(\alpha = 0) < \theta_i < \theta_p(\alpha = 1)$ prefer high levels of policing up until the point where they switch to purchasing private protection. Once they are privately protected, their demand for policing falls to zero. Individuals with $\theta_i > \theta_p(\alpha = 1)$ at the very top of the income distribution always purchase private protection and hence always prefer zero public spending on the police.

Overall, the model thus predicts that demand for policing is highest among the middle class who is rich enough to care about the risk of losing one's income to crime but not so rich that it would privately protect its income. Demand for policing at the lower end of the income distribution is muted because poorer citizens care less about protecting their income and are more inclined to be criminally active, while demand at the upper end of the income distribution is low because the richest citizens rely on private security rather than public policing to protect their incomes.

1.5 Platform Choice

Before turning to party platforms, I first ask what level of police spending would be chosen by a social planner who maximizes the welfare of citizens. Social welfare is given by the following expression:

$$\begin{aligned}
 W(\alpha) = & \int_0^{\theta_c(\alpha)} \frac{u_i(1, 0, \theta_c(\alpha), \theta_p(\alpha), \alpha)}{\bar{\theta}} d\theta \\
 & + \int_{\theta_c(\alpha)}^{\theta_p(\alpha)} \frac{u_i(0, 0, \theta_c(\alpha), \theta_p(\alpha), \alpha)}{\bar{\theta}} d\theta \\
 & + \int_{\theta_p(\alpha)}^{\bar{\theta}} \frac{u_i(0, 1, \theta_c(\alpha), \theta_p(\alpha), \alpha)}{\bar{\theta}} d\theta.
 \end{aligned} \tag{1.7}$$

Equation (1.7) makes explicit the ways in which social welfare depends on α , the share of the public budget that is spent on policing. First, the level of police spending changes the limits of the three integrals. As more of the public budget is spent on policing, fewer people commit crime and purchase private protection, i.e., the limits of the first and third integral move closer together, while the limits of the integral in the middle of the expression move apart. Second, the level of police spending affects the utility functions over which each of the integrals is taken. As discussed in the previous section, the utility of citizens among each of the three segments of society, those who commit crime, those who purchase private protection and those who do neither, changes with the level of police spending. In some cases, these changes are a result of the fact that α enters citizens' utility functions directly. In others, they result from the ways in which citizens' utility depends on $\theta_c(\alpha)$ and $\theta_p(\alpha)$ and thus on the set of types in the population who commit crime and purchase private protection.

Social welfare turns out to be convex in α and can increase or decrease with how much is spent on policing. The welfare optimum must hence always lie at one of the corners. Put differently, a welfare maximizing social planner will either spend the entirety of the available budget on policing or on the alternative public good. Lemma 3 summarizes the conditions under which either of these alternatives obtains. The result depends on the following threshold value of b , the marginal value of the alternative public good:

$$\bar{b}_W = \frac{s(c + 2de^2Gs)}{(1 + 2de)^2\bar{\theta}}. \quad (1.8)$$

Lemma 3 (Welfare maximization). *Citizen welfare, $W(\alpha)$, is convex in α . The welfare maximizing budget share of policing is given by*

$$\alpha_W^* = \begin{cases} 1 & \text{if } b \leq \bar{b}_W \\ 0 & \text{if } b > \bar{b}_W \end{cases} \quad (1.9)$$

\bar{b}_W is decreasing in $\bar{\theta}$.

Intuitively, as b increases, all citizens stand to gain more from public spending on the alternative public good. As was discussed in the previous section, segments of society who will ever prefer non-zero public spending on the police – those who do not purchase private protection – thus prefer lower levels of police spending at higher levels of b . Note also that $\theta_c(\alpha)$ and $\theta_p(\alpha)$ are independent of b . In other words, the marginal benefit of the alternative public good has no bearing on whether and which citizens commit crime and purchase private protection. An increase in b thus reduces demand for policing among unprotected segments of the population without changing the size of these segments. Hence, as public spending on the alternative public good becomes less valuable, the overall demand for public spending on the police increases. If the value of the alternative public good exceeds the threshold \bar{b}_W , it is socially optimal to spend all of the public budget on the alternative public good. Otherwise, it is socially optimal to invest the entirety of the public budget in policing.

It is easy to see from equation (1.8) that the threshold \bar{b}_W is always positive and that it decreases with the upper bound of the income distribution $\bar{\theta}$. In other words, as society becomes wealthier, the range of b for which it is socially optimal to invest in policing shrinks. To gain intuition for this result, remember that, for any given share of police spending α , all individuals with $\theta_i \in \left(\theta_p(\alpha), \bar{\theta}\right]$ purchase private protection. Behavior in the sorting equilibrium is unaffected by $\bar{\theta}$, which means that $\theta_p(\alpha)$ does not change with $\bar{\theta}$. An increase in $\bar{\theta}$ hence expands the set of types at the upper end of the income distribution who find it optimal to purchase private protection. As a consequence, a greater share of the population is immune to expropriation and prefers for the entirety of the available budget to be spent on the alternative public good. Intuitively, as societal wealth grows relative to the cost of private protection, a greater share of the population will be privately protected which diminishes the need for public policing.

With this knowledge about the welfare optimizing budget share of policing in hand, I now turn to the platform choices of parties. Party L seeks to maximize the welfare of citizens that fall into the lower half of the income distribution, while party R seeks to maximize the welfare of citizens that fall into the upper half of the income distribution. Parties' objective functions are

hence given by

$$V_L(\alpha) = \int_0^{\theta_c(\alpha)} \frac{u_i(1, 0, \theta_c, \theta_p, \alpha)}{\bar{\theta}} d\theta + \int_{\theta_c(\alpha)}^{\bar{\theta}} \frac{u_i(0, 0, \theta_c, \theta_p, \alpha)}{\bar{\theta}} d\theta \quad (1.10)$$

$$V_R(\alpha) = \int_{\bar{\theta}}^{\theta_p(\alpha)} \frac{u_i(0, 0, \theta_c, \theta_p, \alpha)}{\bar{\theta}} d\theta + \int_{\theta_p(\alpha)}^{\bar{\theta}} \frac{u_i(0, 1, \theta_c, \theta_p, \alpha)}{\bar{\theta}} d\theta. \quad (1.11)$$

$V_R(\alpha)$, the objective function of party R , is always convex in α . To guarantee convexity of $V_L(\alpha)$, it is sufficient to assume, in addition to parameter restrictions which have already been introduced, that the exogenous cost of crime decrease fast enough with a citizen's legal income:

Assumption 1. $d > \frac{1}{2e}(1 + \sqrt{3}) = \underline{d}$.

Under this assumption, both party platforms – like the social optimum – will lie at the corner. Whether parties prefer to spend the available budget on the alternative public good or on policing will again depend on b , the marginal benefit of the alternative public. The relevant threshold values of b are given by

$$\bar{b}_L = \frac{\bar{\theta}s(1 + 2de)}{8d(cd + Gs)} - \frac{4des(c - Gse)}{\bar{\theta}(1 + 2de)^2} \quad (1.12)$$

$$\bar{b}_R = \frac{2cs}{(1 + 2de)\bar{\theta}} - \frac{\bar{\theta}s(1 + 2de)}{8d(cd + Gs)}. \quad (1.13)$$

Since all citizens stand to gain more from spending on the alternative public good if b is high, it is intuitive that parties choose to invest in policing whenever the alternative public good is not too valuable. The central result of this chapter concerns the respective relationship of \bar{b}_L and \bar{b}_R , the thresholds at which each of the parties switches from spending on the police to spending on the alternative public good, and the socially optimal threshold \bar{b}_W . As depicted in Figure 1.5, this relationship depends on the upper bound of the income distribution $\bar{\theta}$.

If $\bar{\theta} = \bar{\theta}_W$, where

$$\bar{\theta}_W = \frac{2\sqrt{2d(cd + Gs)(2de(2c - esG) + c)}}{\sqrt{(1 + 2de)^3}},$$

all three thresholds, \bar{b}_L , \bar{b}_R and \bar{b}_W , coincide. Hence, both parties behave like a welfare maximizing social planner in the sense that they invest in policing if and only if it is socially optimal to do so.

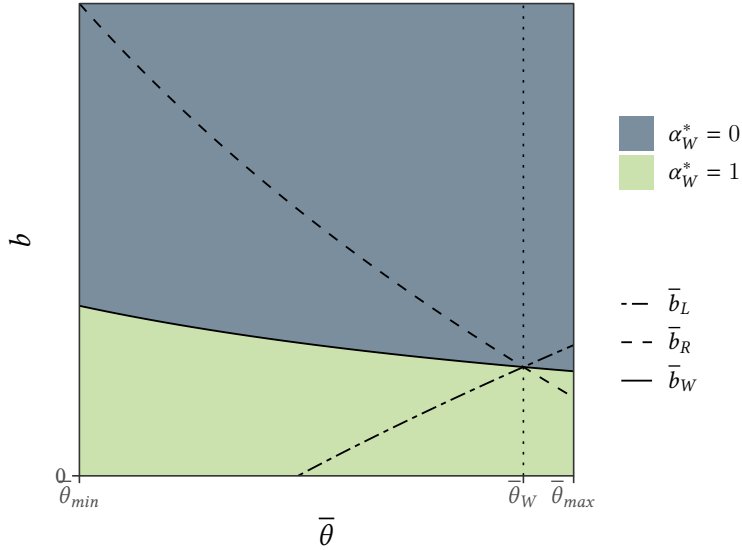


Figure 1.5: Welfare optimum and party platforms as a function of b and $\bar{\theta}$

$$G = 1, s = 1, c = 1.5, d = 2.9, e = 0.475$$

If $\bar{\theta}$ lies to the left of $\bar{\theta}_W$, \bar{b}_R exceeds \bar{b}_W and \bar{b}_W exceeds \bar{b}_L . This ordering implies that there exists a range of values of b for which it would be socially optimal to invest in the alternative public good, and yet party R chooses to invest in policing. Similarly, there exists a range of values of b for which it would be socially optimal to invest in policing, and yet party L chooses to invest in the alternative public good. Put differently, if society is not too rich, the right-wing party may over- and the left-wing party may under-invest in policing.

If $\bar{\theta}$ exceeds $\bar{\theta}_W$, the relationship between each party's platform and the social optimum is reversed, i.e. \bar{b}_L exceeds \bar{b}_W and \bar{b}_W exceeds \bar{b}_R . There hence exist values of b for which party L chooses to invest in policing even though it would be socially optimal to invest in the alternative

public good. Likewise, there exist values of b for which party R chooses to invest in the alternative public good even though it would be socially optimal to invest in policing. In other words, if society is sufficiently rich, the right-wing party may under- while the left-wing party may over-police.

Proposition 1 summarizes these party platforms as well as their relationships to the welfare optimum:

Proposition 1 (Platform Choice). $V_R(\alpha)$ and $V_L(\alpha)$ are convex in α . Parties' optimal platforms are given by

$$\alpha_L^* = \begin{cases} 1 & \text{if } b \leq \bar{b}_L \\ 0 & \text{if } b > \bar{b}_L \end{cases} \quad (1.14)$$

$$\alpha_R^* = \begin{cases} 1 & \text{if } b \leq \bar{b}_R \\ 0 & \text{if } b > \bar{b}_R. \end{cases} \quad (1.15)$$

- If $\bar{\theta} \in (\bar{\theta}_{min}, \bar{\theta}_W)$, then $\bar{b}_L < \bar{b}_W < \bar{b}_R$.
- If $\bar{\theta} = \bar{\theta}_W$, then $\bar{b}_L = \bar{b}_W = \bar{b}_R$.
- If $\bar{\theta} \in (\bar{\theta}_W, \bar{\theta}_{max})$, then $\bar{b}_R < \bar{b}_W < \bar{b}_L$.

To gain intuition for this result, consider Figure 1.6 which displays how the composition of the left and right party's base changes with the upper bound of the income distribution, $\bar{\theta}$. Recall that behavior in the sorting equilibrium for a given α does not change with the upper bound of the income distribution, i.e., neither $\theta_c(\alpha)$ nor $\theta_p(\alpha)$ depend on $\bar{\theta}$. The vertical dashed lines in Figure 1.6 plot the highest and lowest possible equilibrium cutpoints for the two cases in which none or all of the available budget is spent on policing. The primary effect of an increase in the upper bound of the income distribution is that it adds individuals at the top end of the distribution who find it optimal to purchase private protection. This addition, in turn, changes the composition of the base of each party.

A low $\bar{\theta}$ implies, for any given α , that the base of party L includes a non-trivial share of individuals who commit crime. These individuals prefer relatively little investment in policing. The rest of the base of party L is made up of unprotected and law-abiding individuals. While this group demands relatively more public spending on the police, its demand increases with citizens' legal income. In a society that is not very rich, the unprotected and law-abiding part of party L 's base will also not be very rich. Demand for policing will hence remain muted among this group. Overall, a left-wing party in a relatively poor society thus has few incentives to invest in policing.

In contrast, the base of party R in such a society is made up primarily of law-abiding citizens that are relatively rich but not rich enough to purchase private protection – the group with the greatest demand for policing. Privately protected individuals with zero demand for policing make up only a small share of party R 's base in this case. Right-wing parties in relatively poor societies may thus spend too little on other public goods and too much on policing.

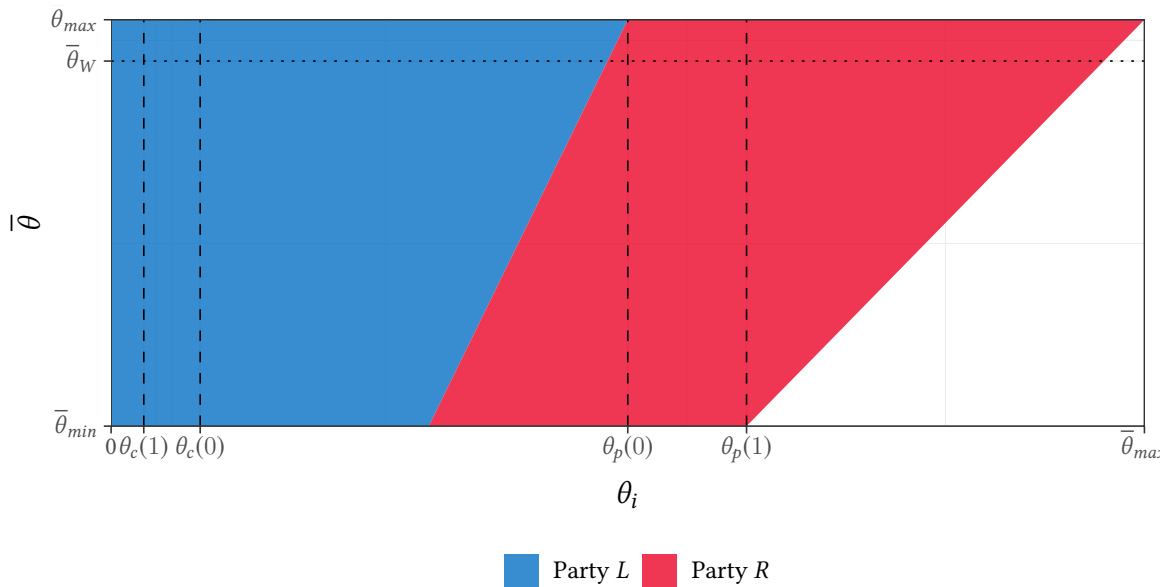


Figure 1.6: Composition of party bases for different values of $\bar{\theta}$

$$G = 1, s = 1, c = 1.5, d = 2.9, e = 0.475$$

As society grows richer, individuals who commit crime begin to make up a smaller share of the base of party L . Moreover, party L 's base starts to include an increasingly greater share of

citizens who are rich enough to demand substantial police spending but not so rich that they would want to purchase private protection. Party L 's incentives to invest in policing thus grow stronger as the upper bound of the income distribution goes up. The base of party R , on the other hand, becomes more and more dominated by individuals who are privately protected and hence prefer zero public spending on the police. As $\bar{\theta}$ moves past $\bar{\theta}_W$, the left-wing party becomes prone to over-invest and the right-wing party becomes prone to under-invest in policing.

1.6 Discussion

Establishing order is a classic task of governments. Where governments fail to invest in law enforcement institutions, citizens suffer from crime and insecurity. Over-investment in law enforcement, on the other hand, diverts scarce public resources that could be used to provide other valuable services. This chapter develops a model in which political parties decide how much of an exogenously given government budget to spend on policing as opposed to other public goods. Given a level of government spending on the police, citizens decide whether to commit crime and whether to purchase private protection.

The central distributional conflict in the model arises because citizens have different levels of income. The higher their income the less inclined citizens are to commit crime and the more interested they become in public spending on the police that reduces the risk of criminal expropriation. Those who are very rich, however, use private means to shield themselves against crime and hence lose all interest in public law enforcement. The demand for policing is strongest among citizens of the middle class who own enough to care about losing what they have to crime but not so rich that they would invest in private protection.

Contrary to conventional wisdom, the model predicts that the champions of law-and-order politics may not always be parties on the right. In a society that is relatively poor, the unprotected yet affluent middle class that has the strongest demand for policing forms part of the base of parties on the right. Right-wing parties thus have incentives to over-invest in policing. In a society where the rich are affluent enough to shield themselves from crime, however, the incen-

tives of right-wing parties to invest in policing shrink. Here, the locus of demand for policing shifts to the base of parties on the left, who, as a result, become prone to over-emphasize law enforcement.

The core logic that drives the model – that demand for policing is strongest among the unprotected middle class – has some grounding in empirical reality. Forman Jr. (2017), for example, traces parts of the demand for tough-on-crime policies in the United States to African American middle class voters. According to Forman Jr., such policies put poor Black Americans at risk but were seen as a way to protect the homes of black middle class voters in high crime areas. Forman Jr. discusses numerous examples in which this middle class demand seems to have translated into Democratic officer holders pushing for tough-on-crime policies.⁷ Similarly, a pre-election poll with likely voters in the 2021 Democratic mayoral primary race in New York City found that the demand for uniformed police officers in subways was considerably lower among college-educated voters – a demographic that is more likely to be able to afford private precautions, for example in the form of moving to a low-crime neighborhood.⁸ The primary race was ultimately won by Eric Adams, a pro-law-enforcement candidate who built a coalition of lower income Black and Latino voters. These examples correspond well to the dynamics at play in the model. Future empirical work may test the model’s main prediction concerning the relationship between partisan control, law enforcement spending and a polity’s income.

That said, the model leaves several questions about the relationship between partisan politics, the availability of private security and public law enforcement unaddressed. Three features that stand out are the distribution of income in society, the price of private security, and electoral competition. First, income distributions are typically skewed to the right. Hence, it is important to ask whether the logic presented here is robust to changes in the shape of the income distribu-

⁷Examples include John Ray, a Democratic council member in D.C. from 1979 to 1997, who pushed for higher maximum and mandatory minimum sentences and Marion Barry, Democratic mayor of D.C. from 1979 to 1991, who oversaw a major antidrug initiative that massively extended police powers and produced a spike in drug-related arrests.

⁸La Raja, Raymond J. July 10, 2021. “The New York mayoral primary is a reminder that Black and Latino voters are pragmatic.” The Washington Post. <https://www.washingtonpost.com/outlook/2021/07/10/new-york-mayor-primary-adams-pragmatic/> Accessed 08/10/2021.

tion. Second, the model assumes an exogenously given price of private protection. One interesting question for future research concerns the conditions under which political office holders may want to regulate the private security industry and drive up prices. Third, political parties typically care not only about the welfare of their base but also about winning elections. Considering the effect of electoral competition may shed light on the conditions under which democratic institutions can mitigate or exacerbate the distributional conflicts that drive over- and under-investment in public law enforcement institutions.

Chapter 2: State Capacity and Mob Vigilantism

2.1 Introduction

Around the world, purchasable private security measures of the kind considered in the previous chapter tend to be concentrated in high-income neighborhoods. Nonetheless, non-state alternatives to the state's justice system are far from absent in many low-income communities. One widespread form of informal crime control throughout the developing world is mob vigilantism. In many contexts, spontaneously formed groups of ordinary community members physically "punish" criminal suspects.¹ Even though practices like mob vigilantism may help deter crime in places where the state is weak, this tendency of citizens to bypass the state has severe downsides. First, vigilante mobs commit gruesome assaults, often in response to minor offenses. In South Africa, vigilantism results in an average of two deaths every day (SAPS, 2018/2019). Second, the reluctance to cooperate with state law enforcement may undermine the effectiveness of formal legal institutions. The police and courts, for instance, rely on information provided by citizens to function effectively (Tyler and Huo, 2002).

Both the reluctance to cooperate with state institutions and the popularity of informal alternatives are often attributed to state weakness.² Implicit in such accounts is the idea that, as state institutions like the police increase in capacity, they will ultimately supersede informal alternatives like vigilantism. In this chapter, I shed light on the microdynamics that underlie the relationship between state capacity and citizens' willingness to, respectively, rely on state insti-

¹In South Africa, the police registered almost six mob vigilantism cases per day in 2018, with about two cases per day resulting in the death of the accused (SAPS, 2018/2019). Official police statistics suggest that mobs kill more than one person per day in Uganda (Uganda Police, 2013). In the main city of Tanzania, Dar es Salaam, and in one province of Papua New Guinea, groups killed one person every two days over the course of a year (Ng'walali and Kitinya, 2006; CLRC, PNG, 2009). These numbers are likely underestimates of the true prevalence of mob vigilantism, because many incidents do not come to the attention of authorities.

²See for example Acemoglu et al. (2020), Baker (2002), Sekhonyane and Louw (2002) and Tankebe (2009).

tutions and engage in vigilante violence. I present theoretical arguments and empirical evidence collected during thirteen months of field work in South Africa on how and why citizens may change their views and behavior as they come to perceive a greater ability of police to affect their lives.

Police are tasked with apprehending suspects and gathering evidence to ensure that perpetrators of crime will be convicted by the courts. Insofar as police target perpetrators whom citizens would like to see punished, police thus provide a service that citizens demand. To the extent that citizens wish to engage in behavior that lies outside the law, however, police act not as service providers but as regulators of behavior. The perception that police have become more capable to affect their lives, I argue, may thus change citizens' response to crime through two mechanisms. A first link arises from the logic of competition between service providers. Community members who take the law into their own hands apprehend and punish alleged law-breakers. They hence produce services that, to some degree, resemble those provided by the state. If increased police capacity results in improvements in the quality of state services, it may cause citizens to voluntarily substitute away from vigilantism and towards state institutions. A second link arises from the logic of regulation. Vigilantism is also a crime. Where improved police capacity increases the chance that those who commit vigilante acts will go to prison, citizens may become reluctant to engage in vigilantism.

Throughout history, the capacity of state agents to provide services and regulate citizens' behavior has been shaped by technological innovations. Examples range from the ability to create cadastral maps (Scott, 1998) and the invention of the telegraph (Martland, 2014) to facial recognition software (Xu, 2021) and biometric identification systems (Breckenridge, 2014). These technologies have expanded the reach of the state by making it easier for state officials to identify and locate citizens or, as Scott (1998) puts it, by making citizens more "legible" to state agents.³

³Scott (1998, chapter 1) argues that cadastral maps allowed the state to identify property owners, thereby expanding its capacity for revenue collection. Martland (2014, p. 298) describes how the speed in communication associated with the telegraph allowed police in Chile to curb crime by locating bandits involved in cattle theft. Curry, Phillips and Regan (2004) show how geo-location technology improved the efficiency of state provided emergency services by allowing first responders to locate households in an emergency. Barnwal (2017) and Muralidharan, Niehaus and Sukhtankar (2016) show how biometric identification systems improve the efficiency of government transfer

I leverage a similar shift, albeit on a much smaller scale. This study makes use of a unique opportunity to create exogenous variation in the extent to which households are legible to police in order to study the effects on views about state and vigilante justice.

I create this variation in the context of a field experiment that I implemented in partnership with a South African non-profit organization that works closely with South African police. Even though South Africa falls at the upper end of the distribution of conventional measures of state capacity in Sub-Saharan Africa, police capacity remains low in many parts of the country (Khayelitsha Commission, 2014). Many South Africans are hesitant to rely on police and instead draw on various types of informal enforcement mechanisms (Baker, 2008). Vigilantism is widespread, especially in urban and semi-urban areas of the kind in which this study is set.

The experiment equips households in one police precinct with an alarm system that links them to the police. When activated, the alarm sends text messages to various police personnel. Names, contact details and the location of households that own an alarm are on file at the police station and also contained in the text message. The system is meant to improve police service delivery by making it easier for police to quickly find households if they are subject to crime. That their names and contact details are on file at the police station, however, may also worry households who would like to engage in illegal activities such as vigilantism. Being more legible to police may increase the perceived risk that police would find out if one broke the law.

This study is based on 250 households, 100 of which were randomly assigned to receive an alarm system. I measure outcomes during a midline ($N = 483$) and an endline ($N = 448$) survey that were conducted, respectively, one and eight months after treatment roll-out. The findings suggest that respondents from households that received an alarm became more willing to rely on police. In both mid- and endline surveys, respondents in the treatment group are more likely to say that they would reach out to police if they experienced a crime, for example. Evidence of effects on the willingness to engage in vigilantism is mixed in the sample as a whole. A pre-registered subgroup analysis, however, indicates a sizable negative effect on this outcome among

schemes by making it possible to uniquely identify beneficiaries. See Lee and Zhang (2017) and Brambor et al. (2020) for general accounts of how state capacity depends on the information that states have about citizens.

parts of the sample who had particularly low prior beliefs about police at baseline.

Delving into the exploration of mechanisms, I find that respondents from households that received an alarm developed both a more positive view of the quality of services that police provide and a greater sense of being regulated by police. For example, respondents in the treatment group believe that police would respond more quickly if called, but also perceive it more likely that police would find out if respondents engaged in illegal behavior.

To better understand the relative importance of these changes in bringing about the apparent decrease in the willingness to participate in vigilantism, I subsequently present results from a mechanism experiment that was part of the endline survey. The experiment featured two information treatments designed to induce independent changes in respondents' beliefs about police efforts to provide services that citizens desire and to convict those who participate in vigilantism.

Two findings emerge. First, only the treatment that highlights police efforts to bring perpetrators of vigilantism to justice appears to decrease the willingness to participate in vigilantism. Even though respondents who were assigned to the service quality treatment are more likely to believe that police make efforts to arrest criminals whom citizens would like to see convicted, there is little evidence that this change translated into a reduction in respondents' proclivity to participate in vigilantism. Second, priming respondents to think that police make efforts to convict perpetrators of vigilante violence appears to increase the extent to which the alarm treatment discourages vigilantism. Priming police's commitment to service delivery seems to have, if anything, the opposite effect. Both patterns point to the importance of an increased expectation of state punishment as a link between police capacity and citizens' reduced proclivity to engage in vigilantism.

These results speak to a growing literature on the interplay between formal and informal justice institutions.⁴ A prominent idea in this literature is that the existence of multiple ways to resolve disputes and punish wrong-doers leads citizens to forum shop (e.g. Sandefur and Siddiqi,

⁴See for example Acemoglu et al. (2020), Cooper (2018), Blair (2019), Blair, Karim and Morse (2019), Sandefur and Siddiqi (2011), Lazarev (2017), Magaloni, Franco-Vivanco and Melo (2020), Aldashev et al. (2012), D'Aoust and Sterck (2016).

2011). In other words, when faced with more than one provider of enforcement services, citizens choose to rely on whichever provider promises to deliver the best outcome at lowest cost. State capacity plays a role in these accounts because it allows the state to expand formal service provision to previously unserved areas (see e.g. Cooper, 2018) or to alter the characteristics of state services so that they compare more favorably with those provided through informal channels (see e.g. Sandefur and Siddiqi, 2011). The state is thus treated as one of many entities that compete for the demand of citizens who act as consumers in a market for enforcement services.

The findings presented in this chapter suggest that the relationship between the state and informal enforcement mechanisms is not limited to one of competition. Even though states sometimes choose to recognize informal actors as legitimate providers of enforcement services (Oomen, 2005), highly decentralized forms of crime control such as vigilante mobs typically fall outside the confines of the law. Where the state has declared an informal alternative illegal, an increase in police presence may induce citizens to abandon this alternative not because of an improvement in state services but out of a concern about state punishments for those who deal with crime in extra-judicial ways. Increased police capacity may be particularly effective at reducing vigilantism if citizens are convinced that police are determined to convict those who commit vigilante acts.

A second take-away from this study concerns the upsides and downsides of state capacity from the perspective of citizens. Much of the recent literature on state capacity focuses on its importance for economic development and government service provision (Berwick and Christia, 2018). The results presented here shed light on potential downsides of state capacity for certain groups of citizens. Even democratic states use their capacity not only to provide citizens with services but also to limit citizens' choices by placing sanctions on those who engage in practices that the state deems illegal. Vigilantism is only one example of an illegal practice that is widespread. Other examples include electricity theft (Smith, 2004c), unlicensed street vending (Holland, 2016) or tax evasion (Ali, Fjeldstad and Sjørusen, 2014). An increase in the capacity of state institutions like the police is likely to be a double-edged sword for those who support such activities.

This chapter is structured as follows. Section 2.2 discusses the theoretical link between police capacity and the choice between state and community justice. This section also relates the theoretical framework to the study context and the police alarm intervention. Section 2.3 describes the design of the experiment and section 2.4 presents its main results. Section 2.5 lays out theoretical predictions and empirical results that help distinguish the two hypothesized mechanisms. Section 2.6 considers alternative explanations, chief among which is the worry that effects may be driven by experimenter demand. Section 2.7 concludes.

2.2 Theory

2.2.1 The choice between police and mob vigilantism

According to Max Weber's (1946) classic notion of the state as an organization that claims the monopoly of the legitimate use of violence, the placement of sanctions on those who break the law is a task fulfilled by state institutions. In practice, formal justice institutions often co-exist with informal enforcement mechanisms. In some contexts, such informal mechanisms take the form of non-state actors including private security companies, traditional authorities, or vigilante organizations (Baker, 2008). I here focus on settings where the dominant mechanism of informal crime control involves ordinary community members meting out punishments against criminal suspects, while centralized providers of informal enforcement services are absent or weak. A report from South Africa contains a detailed description of an example of such vigilante violence:

Let me give you an example of what happened in my neighborhood just this morning at 5.00am! We heard a woman screaming *i-Bag yam? I-Bag yam? Nal'isela* (My bag! My Bag! Here's a thief!). In no time, I mean, in no time, everybody was coming out, slamming doors behind them. I mean, it was like a split second – and they were all dressed in their clothes, not pyjamas. It was as if they were waiting, ready all night for exactly this kind of thing to happen. Then they descended upon this man – they came with all sorts of weapons to assault him. Rocks on the street were thrown at him. In no time, the man was gone – in no time – they had finished him. Think about it, in a matter of a few minutes, perhaps seconds, a man is dead, killed by a group of people in my community for snatching a woman's handbag on her way to work. (Khayelitsha Commission, 2014, p.342)

Accounts of incidents in which spontaneously formed groups of citizens hurt or kill suspects of criminal behavior are abundant throughout the developing world (Human Rights Watch, 2010; Smith, 2004a; Adinkrah, 2005; Schuberth, 2013; Kirsch and Grätz, 2010; Gross, 2016). When asked why they participate in or support vigilantism, respondents in qualitative interviews often point towards unsatisfactory police performance. As one South African respondent explained: “It is not a good thing to take the law into your own hands, but since the police is [*sic*] not doing a good job, people have no other option.”⁵ A similar sentiment was expressed by a market vendor in Uganda: “The police do not help us. So, we have become police ourselves.”⁶ How may citizens’ views on crime control change as police become more capable?

I take as a starting point the assumption that citizens wish for some set of transgressions against the law to be punished. This demand may reflect various desires including a preference for the deterrence of future crime or a taste for vengeance (Becker, 2000). Consider a citizen who has information about a crime. To fix ideas, imagine that the citizen, in the absence of a centralized informal alternative such as a gang or vigilante organization, has two principal options to ensure that the perpetrator of this crime is punished. She can either report what she knows to the police or rally her family, friends, and neighbors.⁷ Inspired by qualitative evidence from South Africa, I discuss four considerations that may affect the citizen’s choice.

Nature of the offense. The set of offenses for which it is indeed true that both state and community punishment are viable options will often be a subset of the actions that citizens would like to see punished. Witchcraft, for example, is not typically punishable by law. Still, the demand for punishment of alleged witches is high in many contexts including South Africa (Smith, 2019; Miguel, 2005). The apprehension of perpetrators who are heavily armed, on the other hand, requires coercive capacities that typically go beyond those of ordinary community members. Drug dealers, for instance, are rarely the target of vigilantism, because they tend to be connected to heavily armed criminal networks. Despite these examples, the set of offenses that get addressed

⁵Interview with South African resident of study precinct in Northwest Province on 9 August 2018.

⁶Focus group with market vendors in Owino market, Kampala, Uganda on 31 May 2017.

⁷In practice, citizens also have the option not to report the crime or to rely on both the community and police.

through both the state's justice system and vigilantism remains large and includes minor crimes such as petty theft and burglary as well as violent offenses like sexual assault and rape.

Expected punishment for criminal suspect. Provided that the offense in question may be punished by both the state and the community, an important consideration may be the kind of punishment that perpetrators would receive under either scenario. Countless anecdotes suggest that vigilantism results in harsh and often gruesome punishments.⁸ The contrast between state and community punishment is particularly stark when it comes to petty crimes. If dealt with through the state's justice system, such crimes would, in most contexts, result in not more than a short prison sentence. When dealt with through vigilantism, they often end in grave injury or death.⁹ Aside from being harsh, community punishments also tend to be more public than state sanctions. Vigilante incidents often attract large crowds of spectators.¹⁰ How these differences shape the choice between reliance on the state and vigilantism may vary with tastes for punitiveness and instrumental concerns about deterrence. Many South African respondents cited its harsh and public nature as a reason to support vigilantism, for example. Others opposed vigilantism on the same grounds.¹¹

Probability that criminal suspect will be punished. Another concern may be whether turning to, respectively, the state or the community will indeed lead to the alleged perpetrator being punished. A precondition for effective punishment is that perpetrators have been apprehended and that enough evidence has been collected to meet whatever standard is used to determine guilt. Community members are spatially proximate to the crime scene and tend to be well informed about community structures. Hence, community members are well positioned to apprehend criminal suspects. Moreover, communities are not bound by due process requirements and often mete out punishment even if evidence of guilt is tenuous – a characteristic of mob vigilan-

⁸A re-occurring form of punishment, both in South Africa and other contexts, is “necklacing” which involves putting a rubber tire filled with petrol around a person's chest and arms and setting it on fire.

⁹Examples from the study precinct (Northwest Province, South Africa) include a person who was beaten to death for having stolen two chairs; a person who suffered serious injury when being assaulted for stealing sneakers and two people who were burnt to death for stealing food and drinks.

¹⁰One respondent estimated crowd sizes of sixty to ninety community members for various incidents in the study precinct (interview on December 3 2018, study precinct, Northwest Province, South Africa).

¹¹Various qualitative interviews with residents of study precinct in Northwest Province, 2018.

tism that will be discussed in more detail in chapter 3. Turning to the state's justice institutions, it is here where police most obviously play a role. Apprehending perpetrators and investigating crimes are classic responsibilities of police. As police forces increase in capacity, they may be better able to provide these services.

Risk of state punishment for vigilantes. Finally, citizens may consider the legal repercussions of their engagement with non-state mechanisms of enforcement. Such mechanisms do not always fall outside the law. Rural traditional courts, for example, are non-state actors but still recognized by the South African constitution. If a traditional court finds someone guilty of stealing and determines that the person's family has to pay a fine, the state treats this judgment as a legitimate use of authority and not as a robbery (see Oomen, 2005, p. 202). Acts of mob vigilantism that are perpetrated by ordinary community members, however, amount to serious crimes like assault or murder.¹² As a consequence, targets of vigilantism have access to legal recourse. One survivor of a vigilante incident in the study precinct, for example, opened an assault case against his attackers. In another case, several individuals were sent to prison because they participated in the burning of two suspected thieves.¹³ This risk of state punishment may be most relevant for the decision of whether to actually inflict violence – an act that is often, though not exclusively, carried out by young men.¹⁴ The woman who screamed “My bag! My Bag! Here's a thief!” in the anecdote above, for example, is unlikely to be held accountable for the death of the accused if she did not participate in the assault. That said, those who inflict vigilante violence will often be the instigator's immediate community – her family, friends and neighbors. Hence, even in deciding whether to encourage or support vigilantism, citizens may take into account the chances that doing so will cause their husbands, sons and brothers to get arrested. Just as a police force with more capacity will be better able to apprehend perpetrators whom citizens would like to see convicted, more police capacity may also enable police to more effectively investigate cases of

¹²The South African police, for example, conducted a nationwide analysis of dockets for cases of murder, attempted murder and assault to determine the share of dockets that pertain to incidents of vigilantism (SAPS, 2018/2019).

¹³Interviews with 4 men and 2 women, August 7 and 8 2018.

¹⁴In the control group of this study, the share of respondents who stated that they would personally participate in the beating of a suspect was 21% among men under the age of 35 and 10% among the rest of the sample.

vigilantism.

This discussion suggests that police capacity may matter to the extent that it allows police to increase two core outputs, the probability that a perpetrator will be convicted if a crime is reported to the police and the probability that community members will be sanctioned if they, instead, take the law into their own hands. In other words, an increase in police capacity may affect the choice between reliance on the state and vigilantism through two mechanisms:

1. *Improved Quality of Police Service:* An increase in police capacity may encourage cooperation with police and discourage mob vigilantism by increasing the probability that a criminal who is reported to the police gets sanctioned through the formal justice system.
2. *Increased Risk of State Punishment:* An increase in police capacity may encourage cooperation with police and discourage mob vigilantism by increasing the probability that participation in vigilante violence has legal repercussions.

While these two mechanisms are not mutually exclusive, each points towards a qualitatively distinct reason for why the state is the dominant provider of enforcement services in certain places but not others. The first mechanism implies that citizens of strong states voluntarily choose to consume services offered by the state, because police capacity makes it possible for the police to *out-compete* the community as a service provider. The second mechanism implies that citizens in strong states refrain from participating in vigilante violence, because a capable police force helps to effectively *rule out* such behavior.

2.2.2 Crime and policing in South Africa

This study is set in South Africa, where both violent and property crime are widespread.¹⁵ Problems are particularly acute in the country's townships. A result of urban planning policies

¹⁵According to the United Nations Office on Drugs and Crime (UNODC), South Africa recorded 36 homicides per 100,000 people in 2017; roughly five times the worldwide average of 5 homicides per 100,000 people. Homicide rates are often said to be the most reliable indicator of the overall levels of crime, because homicides tend to come to the attention of authorities irrespective of reporting decisions. UNODC suggests that South Africa experienced 2 robberies per 100,000 people in 2016 as compared to a worldwide average of 0.3 robberies per 100,000 people.

implemented under South Africa's Apartheid regime,¹⁶ townships are racially segregated semi-urban areas that are typically located at the outskirts of major towns and cities. Not unlike urban slums in other parts of the world, townships tend to suffer from limited access to government services including water, sanitation and electricity. Many townships now contain large informal settlements that remain entirely without access to these services.

The same is true for the predominantly black, low income township in the Northwest Province where this study takes place.¹⁷ Around 60% of respondents in this study do not own a flushing toilet, for example, and more than 90% do not have running water inside the house. The threat of becoming a victim of crime is a constant reality in the study precinct. Figure B.1 in section B.1.3 of the appendix details the most common kinds of crimes. Burglary, robbery and serious assault are especially prevalent and happen at a rate that far exceeds the respective country-wide median.¹⁸ In the baseline survey of this study ($N = 250$), roughly 44% of respondents report that someone in their household has experienced a crime over the past year. Nationwide, the share of households that report having experienced a crime over the past year is roughly 9% ($N = 21,095$).¹⁹

Police performance is a concern throughout South Africa,²⁰ and police stations in low income townships tend to face the biggest obstacles.²¹ While the study precinct does not fall far from the countrywide median when it comes to police personnel per capita,²² the conditions in this

¹⁶See Mahajan (2014) for more on township characteristics and history.

¹⁷Data from the 2011 census suggest that the median income in the study precinct is slightly below (80%) the median income across all police precincts.

¹⁸Since crimes that result from mob vigilantism are not counted separately, the high rate of assaults may in part reflect the prevalence of mob vigilantism. Moreover, actual crime rates may be even higher than suggested by official crime statistics insofar as not all crimes are reported to police. That said, these numbers are also based on population estimates from the 2011 census, and the population of the study precinct has almost certainly grown.

¹⁹See the nationally representative Victims of Crime Survey 2016/17 by StatsSA.

²⁰A government-mandated study that sought to determine reasons for the prevalence of armed violence points to "a general lack of capacity for investigating and prosecuting perpetrators of crime" (CSVR, 2010, 52).

²¹A commission of inquiry that was established in 2012 as the result of public outrage about the quality of policing services in one particularly crime-ridden township found that police stations that serve low income communities are most understaffed (Khayelitsha Commission, 2014). The judge presiding over a resulting court case in front of South Africa's inequality court ruled in 2018 that the way in which the police allocate resources across police precincts discriminates against poor and black communities.

²²The median police precinct had 2.9 assigned police officers per 1,000 people in 2015/2016. The study precinct had 2.4 assigned police officers per 1,000 people in the same year. These are data on the number of police officers assigned to a police station, which do not necessarily reflect the number of police officers actually present at a given station. Data have been obtained from the Social Justice Coalition (<https://sjc.org.za/>), an activist group involved in the Khayelitsha Commission and the Equality Court case on the discriminatory distribution of police resources.

precinct, as in many townships, are not set up to facilitate the work of police. Scott (1998) famously argued that the ability of state institutions to function effectively is linked to the extent to which communities are “legible” to state agents. Even though townships under Apartheid were designed to be legible spaces that could be easily policed, townships tend to be difficult to “read” today. Many townships have grown substantially over recent years. Instead of following a carefully thought-out urban design, this growth typically happened organically through the expansion of informal settlements. The result tends to be a confusing layout of streets and the absence of a well organized address system. Street names, for example, are rare in the study precinct. Instead, houses are numbered within sections that comprise hundreds if not thousands of houses. To make matters worse, there are three different numbering systems and the numbers within a given system are not necessarily in sequence. Even during the day, it is thus difficult to locate specific houses. Problems are more severe at night, because street lights are rare. In addition, most police officers do not live in the communities that they serve, which limits their insight into community structures.

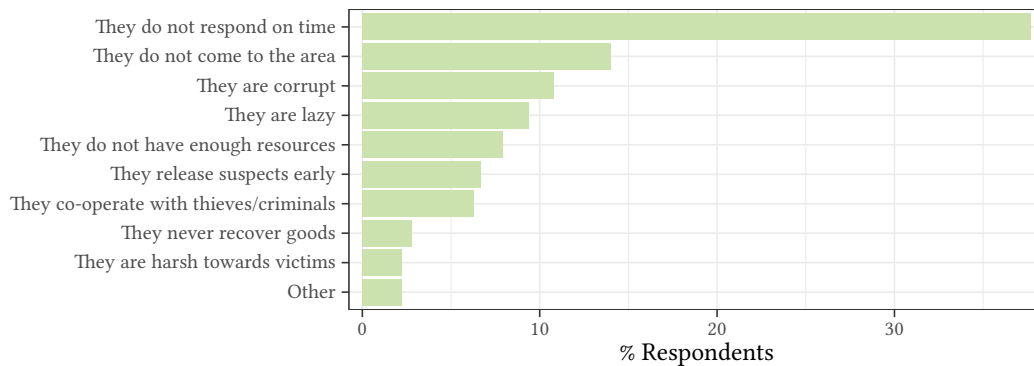


Figure 2.1: Slow response is main reason for dissatisfaction with police service ($N = 8,906$)

Calculated among 43% of respondents who said they are not satisfied with police in their area. Respondents were asked to select the main reason for their dissatisfaction. Data taken from the nationally representative Victims of Crime Survey 2016/17 by StatsSA.

Dissatisfaction with police is widespread throughout the country.²³ Figure 2.1 shows that

²³A recent nationally representative opinion poll ($N = 21,095$) indicates that 43% of South Africans are dissatisfied with police services in their area (StatsSA, 2016/2017).

slow response times are the most important grievance, which is perhaps not surprising given the infrastructural conditions.²⁴ Other complaints are that one's area is not served by the police at all and that police are corrupt. Opinions in the study precinct mirror these nationwide concerns. 55% of respondents in the control group of this study, for example believe that police would never come or take longer than two hours to arrive when called in an emergency. A related complaint is that police are generally ineffective at ensuring that those who are guilty of crime are convicted.²⁵

2.2.3 Vigilantism in South Africa

Centralized providers of informal enforcement services such as traditional courts, gangs and vigilante groups exist in various parts of South Africa. Nonetheless, there are many townships like the study precinct in which the dominant form of informal crime control is mob vigilantism. Tribal authorities, for example, have little influence in the precinct where this study is set. Neither is there an organized vigilante group or a gang that residents could turn to with concerns about crime.²⁶

The term “mob justice” is widely used throughout the study township to refer to incidents in which community members physically punish suspects of criminal behavior. In fact, many households own a whistle for the purpose of summoning the community in emergencies.²⁷ Figure B.2 in section B.1.3 of the appendix plots data from the endline survey of this study in which respondents were asked how many vigilante incidents they could recall happening in their area between May and July 2018. In most areas, at least a quarter of respondents could recall one incident or more. In qualitative interviews, most respondents were able to describe at least one if not multiple cases in their area. Most anecdotes involved victims who had been accused of burglary or theft, often in the form of stealing items from people's yards or houses. Some of the

²⁴See Curry, Phillips and Regan (2004) for arguments about how a swift emergency response depends on well organized address systems and the availability of location data.

²⁵61% of control group respondents believe that “the police and the courts often let people who are guilty go free.”

²⁶There is an organization that deals specifically with cattle theft which however happens rarely (see Figure B.1).

²⁷Examples given of situations in which the whistle would be used include someone noticing a stranger in their yard or discovering that their house had been broken into. Whistles are also used to summon the community for other reasons such as the start of a community meeting. Hearing a whistle in the evening hours, however, is often interpreted as a call for help, since meetings do not typically happen at that time.

more serious accusations were related to sexual violence including rape. Many, though not all incidents of vigilante violence led to severe injuries of the accused; in the most extreme cases, the accused had been killed.

The approach of police in South Africa to mob vigilantism is ambiguous. While there is no shortage of anecdotes about police turning a blind eye or even supporting vigilantism, arrests and convictions do happen.²⁸ Many police officers seem aware that police action against vigilantism has the potential to spark public outrage since many support such violence.²⁹ Around 40% of control group respondents, for example, support the beating of someone who is “known to be involved in stealing cars and plasma TVs,” and almost half oppose prison sentences for perpetrators of vigilantism even in cases where the criminal suspect was killed. Yet, many police personnel seem also convinced that giving in to community pressures would be a failure to perform one’s duty and could result in disciplinary consequences.

Risk of punishment MV	Police service quality		Total
	Low	High	
Low	31.2%	15.6%	46.8%
High	27.2%	26.0%	53.2%
Total	58.4%	41.6%	N = 250

Table 2.1: Baseline perceptions of police service quality and risk of state punishment for mob vigilantism

At baseline, one woman was interviewed in each household. Percentages indicate shares of respondents. Respondents who answered “not very likely” or “not likely at all” when asked whether police would arrest perpetrators of a hypothetical vigilantism incident in the respondent’s street are coded as perceiving a low risk of punishment for mob vigilantism. Whoever answered “somewhat likely” or “very likely” was coded as perceiving a high punishment risk. Perceptions of police service quality are measured through an index of three items: *Customer Service*, *Arrive quickly* and *Send guilty to prison*. Respondents are coded as perceiving police service quality as high or low depending on where they fall relative to the baseline sample median. See appendix section B.4.6 for details on question wording.

²⁸Interviews with police in Northwest Province in 2018 and 2019.

²⁹For example, several individuals who were involved in a vigilante incident that happened during the course of this study in the study precinct were subsequently held by the police on assault charges. A group of angry community members marched to the police station, demanding the release of the perpetrators of vigilantism (Interview with police, 8 May 2018, Northwest Province).. A patrol officer described responding to a different incident of vigilantism and facing a large group of angry community members as a frightening experience.

Table 2.1 displays the joint distribution of perceptions about the two theoretically relevant outputs of police activity, the quality of service delivery and the risk of state punishment for vigilantism, in the baseline survey of this study. Around 16% of respondents fall above the median in terms of their expectations about the quality of services that police provide but do not think it likely that those who participate in mob vigilantism would be arrested. Conversely, almost one third of respondents perceive it likely that there would be legal repercussions for vigilante violence while, at the same, having little hope that reliance on police would result in high quality services like a speedy response. This latter group may include particularly disgruntled residents who, in qualitative interviews, described the police as doing little for the community while also depriving community members of the possibility to protect themselves against crime.

2.2.4 Increasing police capacity through a home-based police alarm

I study the introduction of a home-based alarm system that was developed by a South African non-profit organization in collaboration with South African police. The alarm is a small electronic device that is installed in the house and can be triggered via a panic button, remote control or cell phone.³⁰ The system also includes a motion sensor that can be activated if no one is at home. The alarm can be triggered silently or such that a bright light flashes outside the alarm owner's house and a siren sounds. In either case, the alarm sends text messages to various police personnel including members of the police station management,³¹ police officers currently on duty at the police station and senior members of the Community Policing Forum (CPF), a volunteer organization that serves as liaison between police and community.³² Text messages indicate the alarm owner's name, contact numbers, and landmarks close to the alarm owner's home. This information is also on file at the police station. All instances in which an alarm is triggered are

³⁰Households without access to electricity received a solar panel to power the alarm. The solar panels are specifically designed to power the alarm system and, beyond that, do not provide general access to electricity. Moreover, the alarm is equipped with a 24-hour battery that can power the alarm during electricity outages.

³¹The study precinct is partitioned into four sectors and the alarms send text messages to sector managers.

³²Alarm owners can also link up to two neighbors to their alarm, who will receive text messages when the alarm is triggered. Neither surveys with households who were eligible for the alarm treatment nor surveys with neighbors provided any evidence of a change in community relations as a result of the alarm treatment.

registered in the back end system of the non-profit organization.

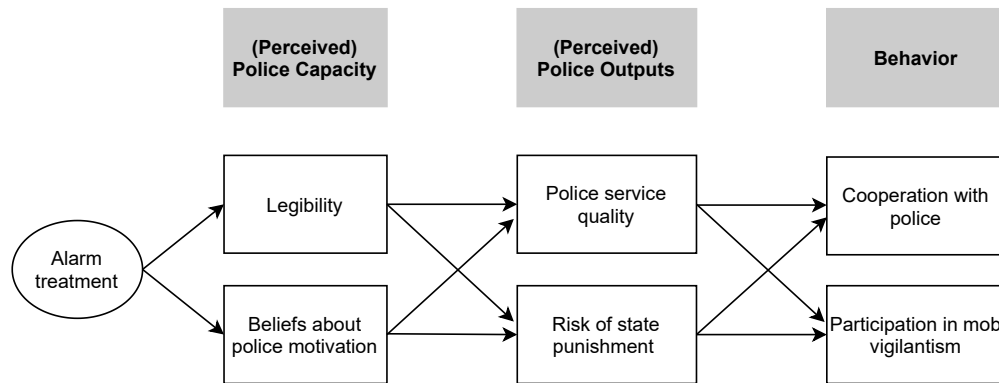


Figure 2.2: Hypothesized effects of police alarm

Figure 2.2 summarizes two ways in which this alarm treatment may alter the de facto or perceived ability of police to affect the lives of household members. First, households that are protected by an alarm may become more “legible” for police, i.e., police may be better able to identify and locate households and their members. A core purpose of the alarm is to make it easier for police to find households that reach out to police in an emergency. Alerting the police without an alarm requires calling a centralized emergency hotline or the closest police station. When calling from a landline phone, calls to the emergency hotline are free of charge.³³ Given the absence of a reliable address system and the confusing layout of township streets, however, it can be difficult to explain the location of a specific house over the phone. This is especially true if the person on the phone is a call center agent who lacks familiarity with the specific township. The absence of street lights further complicates the process of locating households at night time. The alarm system was designed to address these challenges by sending location details directly to the local police station, flashing a bright light and sounding a siren. Moreover, this study installed only 100 alarms in a precinct with more than 42,000 residents. Anecdotal evidence suggests that, by the end of this study, some police officers would have been able to find households with an alarm from memory alone. Alarm recipients may thus expect a faster police response, which may increase the chance that perpetrators are apprehended and convicted – an improvement in police

³³See https://www.saps.gov.za/services/cc_10111.php. Accessed 12/15/2019.

service quality.

On the flip side, alarm recipients may also feel more watched by police. Being easy to locate for police has its upsides if one is subject to crime, but it may also increase the chances that police are able to find out and successfully intervene if a household member breaks the law. Many residents of the study precinct live in informal settlements with little or no access to government services. Hence, local authorities such as police have limited records of who these people are, where they live and what they do. Names and contact details of alarm owners, however, are on file at the police station irrespective of whether the alarm is triggered. In part, the effect of this change may be psychological. The alarm console, for example, shows the logo of the South African Police Service,³⁴ and hence may serve as a daily reminder that someone at the police station now has a record of this household and its residents. This thought may be unsettling to someone who engages in or lives with family members who engage in activities like vigilantism that fall outside the law, even without it being immediately obvious how the police will use this information.

A second possibility is that the alarm treatment causes household members to update their views of police more generally in ways that are not a direct result of the functionality of the alarm. Community members may expect the alarm project to have differential costs and benefits for different “types” of police, for example. That the alarm gives community members an easy way to contact police and provides information about incidents to an outside party may be perceived as a nuisance by unmotivated police.³⁵ Highly motivated police, on the other hand, may welcome the project as a way to increase police output. Households who receive the alarm may thus perceive the police’s involvement in the alarm project as a signal of police motivation.³⁶ Learning may also occur through interactions with police that arise as a result of the alarm treatment. The belief that police are highly motivated to perform may again make alarm recipients more optimistic

³⁴See Figure B.3 in the appendix for a picture of the alarm console.

³⁵The concern that the alarm system creates too much “demands” on police has sometimes been voiced by police and there is variation across police precincts in the willingness to collaborate with the non-profit organization.

³⁶Of course, other community members could draw the same inference to the extent that they can spot the alarm sirens or come to know about the project in other ways. Yet, a survey with neighbors showed little evidence of indirect effects of the alarm treatment on surrounding households.

about the services that police provide but also more worried about the consequences of breaking the law.

In line with the central argument of this chapter, the alarm treatment may thus affect the choice between formal and informal crime control through two logics. On the one hand, the belief that police are able to respond quickly when called to the home and highly motivated may make reliance on the state more attractive. Importantly, the alarm system is well set up to improve police performance with regard to burglaries, a crime that is both common in the study precinct and often dealt with through mob vigilantism. The perception that police take their job seriously together with the belief that one has become “known” to police, on the other hand, may make participation in vigilantism, like involvement in any other kind of crime, appear more risky.

2.3 Experimental Design

2.3.1 Household sampling and baseline survey

This study is set in a police precinct that was selected by the implementing partner and the South African police. A main reason was the high rate of burglary and robbery at residential premises in this precinct – crimes that the alarm intervention appears well suited to address. The precinct is located in the Northwest Province and covers a semi-urban area that is roughly thirteen kilometers long and, at its widest point, six kilometers wide. The experiment involves a sample of 250 households which were selected as part of a baseline survey that took place between May and July 2018. See Figure 2.3 for more details on the study timeline.

Households were sampled in two ways. 135 households were chosen from a list of vulnerable homes provided by the police. This procedure corresponds to the implementing partner’s usual way of selecting beneficiaries. In theory, the police was supposed to create this list by consulting their records of households that recently experienced crime. In practice, the CPF was heavily involved in the creation of this list and appears to have selected households whose members are regular attendees of crime-related community meetings. The remaining 115 households were chosen from a pool of households that was created independently from the police. A team of

enumerators walked the streets of the eleven highest crime areas of the precinct and geo-located every tenth house.

Households were selected from these two pools in non-random ways designed to limit non-compliance, attrition and interference. To limit interference, a stochastic algorithm was used to select the largest sample of households in each pool such that each household is located no closer than 150 m to any other house in the sample. Due to inaccuracies in the geo-location procedure, around 67% of the final sample satisfies this constraint. To limit non-compliance, 27 households who indicated in the baseline survey that they would not be interested in an alarm system were excluded. To limit attrition, 77 households that were interviewed during the baseline survey but could not be reached via phone or in person during subsequent back-checks were excluded from the final sample. More details on sampling can be found in sections B.1.4 and B.1.6 of the appendix.

Figure 2.3: Study timeline

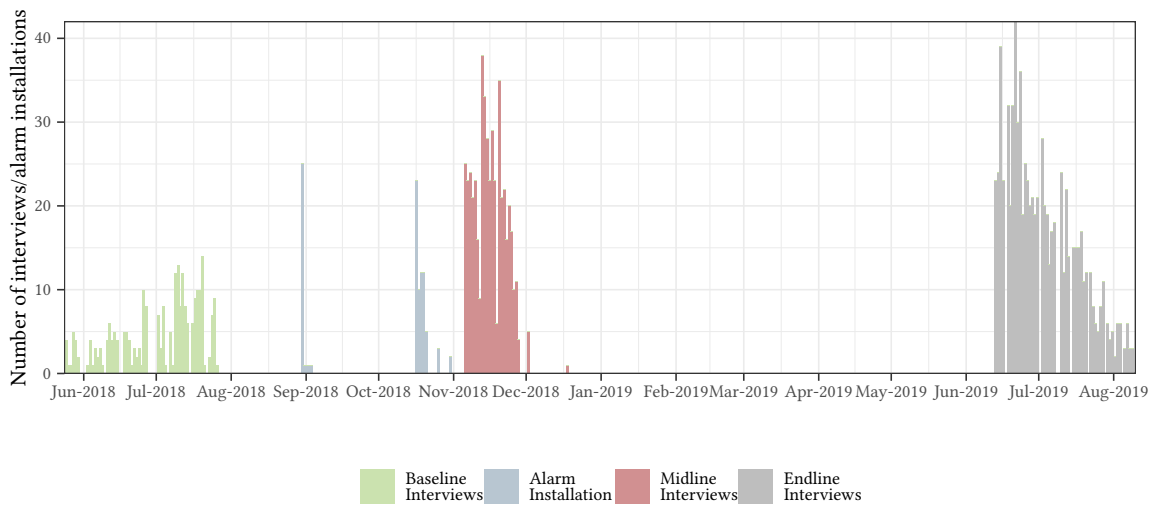
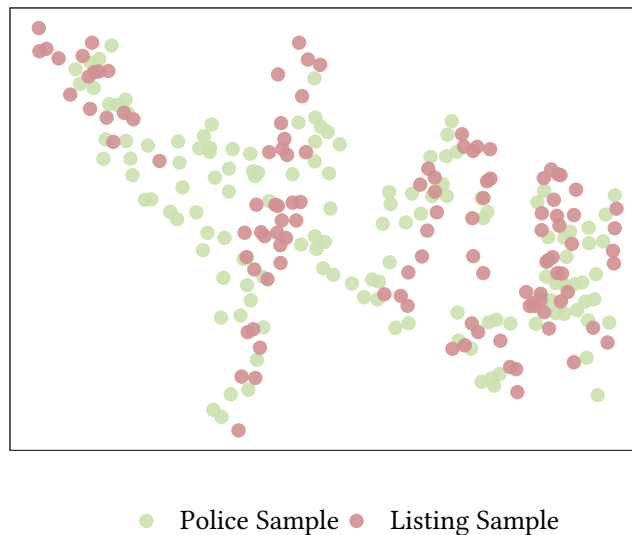


Figure 2.4 gives a sense of the locations of households in the final sample. Precise locations are not shown in order to protect the identity of study participants. There is spatial overlap across the two sets of households – those that were sampled through the police and those that were sampled through the listing exercise. Households sampled through the police are more geographically dispersed, because the listing exercise was only conducted in specific areas that

the police identified as most crime-ridden. During the baseline survey, one woman was interviewed in every household.³⁷ Enumerators were instructed to interview the woman who is most involved in household decisions.³⁸ Table B.1 in section B.1.7 of the appendix compares baseline responses across respondents that were sampled, respectively, through the police and the listing exercise. While the two groups appear similar in many respects, respondents who were sampled through the police have higher expectations of police outputs and a greater baseline willingness to turn to the police.

Figure 2.4: Households in study sample



2.3.2 Random assignment

Prior to random assignment, households were organized into 50 blocks of 5. To do so, the sample was divided into two sets according to the way in which households had been sampled. Within each set, blocks were formed to minimize the within-block multivariate Mahalanobis distance of four variables: baseline measures of support for and the willingness to participate

³⁷In other projects, the implementing partner focuses on the safety of women and was hence most interested in safety-related views of women. To accommodate these preferences, the baseline survey included only female respondents. Budget constraints made it impossible to survey two household members at baseline. Mid- and endline surveys interview a woman and a man in each household where available. The sample includes a larger share of women because some households sampled at baseline turned out to be all-women households.

³⁸This rule ensured that respondents would be able to confirm their household's interest in the alarm system.

in vigilantism and the household's latitude and longitude.³⁹ 100 households, two in each block, were assigned to receive the alarm treatment. Alarm installations took place in September and October 2018.⁴⁰

2.3.3 Treatment take-up and compliance

Interest in the police alarm was widespread. Only a small share of respondents (27 out of 358) was excluded from the study prior to random assignment because of a lack of interest in the alarm at baseline. At the time of the midline interview, 93 of 100 households in the treatment group and no household in the control group were equipped with an alarm. Among the seven households in the treatment group that did not comply with their assigned treatment, four households refused the alarm, one dismantled it after installation and two did not receive an alarm due to administrative errors. Of the latter two households, one received an alarm before the endline interview.⁴¹

To some extent, the widespread interest in the police alarm may seem at odds with the argument that the alarm may increase the perceived risk of state punishment for illegal activities. Given that many of them support vigilantism, why would respondents agree to a treatment that stores their contact details at the police station? One explanation is that respondents trade off the downsides of increased police supervision with the promise of improved service delivery. The latter concern may weigh heavily given that vigilantism is not a panacea for all kinds of crime. Gun violence is common in the study precinct. Since communities lack the coercive capacity to mete out punishments against groups of heavily armed perpetrators, many may be willing to limit their freedom to engage in vigilantism in exchange for improved police protection.

³⁹Blocking on the sampling strategy and on latitude and longitude ensured buy-in from the police and the CPF, who wanted alarms to be spread across the precinct and to be distributed mainly to households on the police list.

⁴⁰Due to supply chain problems, treatment roll-out was interrupted after the first set of alarms had been installed in September and only continued in the second half of October.

⁴¹A regression of an indicator for a household's receipt of the alarm on a treatment assignment indicator yields an *F*-statistic of roughly 1977, suggesting that treatment assignment remains a strong instrument for treatment received.

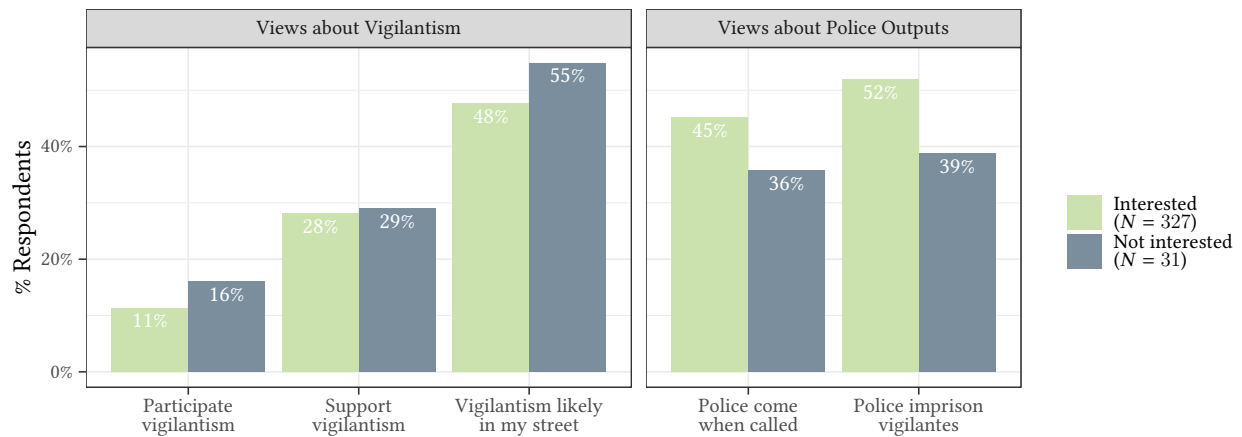


Figure 2.5: Baseline views by interest in police alarm

The sample includes 358 baseline respondents. 250 of these are part of the experimental sample. See section 2.3.1 and section B.1.4 of the appendix for selection criteria. 15 households are coded as “not interested,” because they showed no interest during the baseline interview. 12 households were interested during the baseline interview, but had changed their mind when they were contacted during subsequent telephonic back-checks. Four households refused the alarm after they had been randomly assigned to receive it.

How citizens resolve this trade-off may depend on their expectations about police service delivery and their taste for vigilantism. Figure 2.5 plots responses from all baseline respondents, including those who did not become part of the study sample. The figure compares respondents who showed interest in the alarm to those who refused it, either at baseline or during a later stage.⁴² Putting aside the caveat that the number of households who refused the alarm at any point is very small ($N = 31$), the plot suggests that these groups differ in intuitive ways. For example, those not interested in an alarm are 45% more likely to say they would participate in vigilantism and appear less optimistic that police would arrive when called in an emergency.

2.3.4 Outcome measurement

I measure outcomes using two waves of household surveys; a midline survey that took place roughly one month and an endline survey that took place around eight months after the installation of alarms. The target was to interview the same two members in each household at midline

⁴²This figure should be interpreted as suggestive, because it is unknown whether households assigned to the control group may also have refused the alarm system had they been assigned to it.

and endline: the woman who had been interviewed at baseline and one randomly selected adult man. In all-women households, a second woman respondent was selected at random. Since 23 out of 250 households have only one member, the target sample size was 477 respondents. 438 of these respondents could be interviewed at midline giving a response rate of 92%. At endline, the response rate was 85% with 407 respondents completing the interview. Section B.2.2 of the appendix shows that the treatment does not appear to affect rates and patterns of attrition.

In addition to the so sampled respondents, more respondents were interviewed if other household members were available at the time of the interview.⁴³ As can be seen in section B.2.3 of the appendix, there is no statistically significant relationship between treatment and whether or how many additional respondents were interviewed in a given household. In line with the pre-analysis plan, analyses in this chapter are based on all 483 respondents interviewed at midline and all 448 respondents interviewed at endline. As I show in section B.3.2 of the appendix, all main results are robust to sub-setting the sample to the two initially sampled respondents per household. See section B.2.1 of the appendix for evidence of covariate balance across experimental conditions and section B.1.7 for sociodemographic characteristics of the midline and endline samples.

Missing values due to non-response to outcome questions are imputed using multivariate imputation via chained equations. Outcomes are imputed within pre-specified outcome families (e.g. “vigilantism related outcomes”) and the imputation procedure does not condition on treatment status or covariates. All outcome measures range from zero to one. Individual items have been imputed prior to the creation of indices and indices are created by averaging constituent items. See section B.4 of the appendix for the question wording and coding of all outcomes. Section B.3.2 of the appendix shows that all main results are robust to removing missing items through listwise deletion.

⁴³During the midline survey, 45 additional respondents were interviewed across 39 households. During the endline survey, 39 additional respondents were interviewed across 38 households.

2.3.5 Estimation and hypothesis tests

The main analyses below seek to estimate the intent-to-treat (ITT) effect among respondents in the sample using the following linear regression specification:

$$Y = \alpha + \tau z + \delta \mathbf{n} + \epsilon.$$

Y here is a vector of outcomes; α is an intercept; τ is the ITT among respondents in the sample; z is a vector of treatment assignments; \mathbf{n} is a vector of cluster sizes (number of respondents from a given household included in the analysis) and δ is the associated coefficient; ϵ is a vector of error terms that allows for clustering at the household level. I control for the number of respondents per household, since heterogeneity in cluster size may bias estimates of the finite sample ITT if cluster size correlates with potential outcomes. In addition to this specification, the pre-analysis plan also contains a specification that controls for a set of covariates selected through lasso regression. In the main text, I focus on estimates based on the simpler of the two pre-registered specifications. Section B.3.2 of the appendix shows that all main results are robust to controlling for lasso selected covariates. Hypothesis tests are based on p -values calculated via randomization inference by permuting treatment assignment 2000 times in order to simulate the sampling distribution of the estimator under the sharp null hypothesis of no (positive or negative) treatment effect for any unit. Unless stated otherwise, the direction of hypothesis tests (upper, lower or two tailed) follows the pre-registration. See section B.1.1 of the appendix for a summary of divergences from the pre-analysis plan.

2.3.6 Ethical considerations

In this section, I describe various ethical considerations and efforts that have been made to address these. A first question is whether the alarm treatment may have been likely to produce adverse effects. Given that it comes with a siren, for example, one may worry that the alarm could be used to instigate mob vigilantism. It is impossible, however, to trigger the alarm's siren without

also sending text messages to the police. For this reason, the implementing partner who had already installed almost 2,000 alarm systems throughout South Africa prior to this study did not think it likely that the alarm would be used in this way. To guard against adverse consequences for alarm recipients, households were informed in detail about the functionality of the alarm and were given ample opportunity to refuse it. Only a small proportion of households did so.

In evaluating the ethical implications of the intervention, it is also important to keep in mind that the implementing partner would have installed the one hundred alarms in this precinct even if this study had not taken place. Similarly, this study did not artificially limit the number of alarms to be distributed to create a control group. Doing so would be ethically problematic if the alarm system had important welfare benefits. At the time of the study, the implementing partner did not have funding for more than one hundred alarms for this precinct.

Turning to the data collection process, two risks for the well-being of respondents were re-traumatization through sensitive survey questions and implication of respondents in illegal behavior. Regarding the former, survey questions were vetted extensively through pretesting and discussions with the local research team. Questions about crime victimization were kept at a high level of generality. For example, questions asked about household level rather than individual experiences with crime and did not go into detail about the kinds of crimes that respondents and their family members experienced. Women respondents were matched to women enumerators and enumerators were trained to interview respondents in private. With regard to the risk of implicating respondents, no questions were asked about respondents' participation in vigilantism or other illegal activities. Questions on such topics made use of hypothetical scenarios or asked respondents whether they knew of or witnessed incidents irrespective of their own participation.

Finally, given the high crime rate, it was crucial to take steps to ensure the safety of study staff. In all survey waves, enumerators were residents of the study community, even though they were assigned to work in sections other than their own. Prior to starting work in a given section, local approvals were obtained from the relevant community leaders. Where local communities seemed uninformed about the survey or hostile, enumeration was stopped until problems were

solved with local authorities. Police were aware of survey activities at all times. Enumerators always worked in pairs and were not allowed to enter a home by themselves. The times where enumerators had to walk in between households were kept to a minimum and enumerators were given bags such that they would not carry expensive equipment such as tablets in the open. Wherever possible, the team stopped work before nightfall. Where enumerators conducted surveys after dark, a car was kept close and enumerators were dropped at their home after interviews were finished.

2.4 Main Results

2.4.1 Usage of the police alarm

Before considering how the alarm treatment affected household members, I provide a sense of the extent to which households made use of the alarm. Figure 2.6 plots the number of times any of the alarms in the study precinct was triggered per day across the study period.

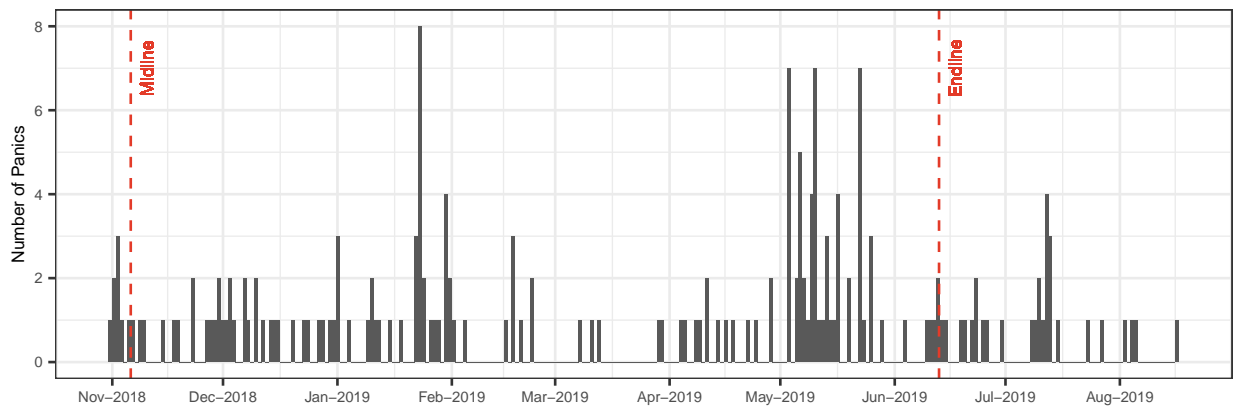


Figure 2.6: Alarm panics over time

Data are taken from the back end system of the implementing partner.

The back end system of the implementing partner registered 159 alarm panics in the study precinct between 1 November 2018 and the start of the endline survey in mid-June 2019.⁴⁴ At

⁴⁴I collapse multiple panics registered for the same household on the same day into one panic, since such patterns likely result from a household member triggering the alarm more than once in the same situation.

least one panic was registered in 72 of the 94 households that received an alarm. In the endline survey, respondents from only 15 of the households in the treatment group reported that a household member had experienced a crime since the previous Christmas. A subset of registered panics are likely false alarms.⁴⁵ Alarms may also have been triggered in emergencies other than crime. In one case, a household triggered an alarm because the neighboring house was on fire. Finally, alarms may sometimes be triggered as part of maintenance procedures of the implementing partner. Importantly, even panics that are not related to crime may result in a police response.

2.4.2 Effects on the willingness to rely on police and participate in mob vigilantism

Table 2.2 displays estimates of the effect of the alarm treatment on the two main outcomes of interest, citizens' willingness to rely on police and to participate in mob vigilantism. The main takeaway from the table is that the alarm treatment seems to have increased the willingness to rely on police and decreased the willingness to participate in mob vigilantism, especially among respondents who expected little from police at baseline.

I measure respondents' willingness to rely on police through an index with two components. The first is an item that captures respondents' inclination to reach out to police if someone is trying to enter their home to steal from them. The second is a subindex of multiple items that measure respondents' general proclivity to share information about crime with police. Column 1 suggests that the alarm treatment increased the willingness to rely on police at midline by roughly one third of a control group standard deviation ($p < 0.01$). Column 2 shows that the estimated effect at endline is slightly smaller but highly statistically significant ($p < 0.01$). In short, the alarm treatment seems to have encouraged reliance on police in both the short and medium term. Table B.16 in section B.3.3 of the appendix shows that estimates are similar for both index components.

Estimates shown in columns 5 and 7 stem from models that allow treatment effects to vary

⁴⁵The motion sensor of the alarm is very sensitive and false alarms happen. Even those who are not the target of crime may thus receive a call from a police officer or have police come to their house as a result of the alarm treatment. One alarm recipient, for example, told the enumeration team that her child had silently triggered the alarm. The alarm owner expressed her surprise about finding police officers outside her door soon after.

across prior beliefs. To the extent that it causes household members to learn about police, the alarm treatment may create surprises among those who expected little from police at baseline, while reaffirming beliefs or even disappointing among those who expected a lot. Following my pre-analysis plan, I consider prior beliefs about the two theoretically relevant police outputs – police service quality and the risk of state punishment for mob vigilantism. Prior beliefs are captured using household-level measures from the baseline survey (see Table 2.1). Column 5 presents estimates from an analysis that regresses the outcome on the treatment indicator, an indicator for high prior beliefs about the risk of state punishment for vigilantism and the interaction between the two. Column 7 presents estimates from the equivalent specification for prior beliefs about police service delivery.⁴⁶

Both columns indicate that effects on the willingness to rely on police are concentrated among those who expected little from police at baseline. Among those who had low prior beliefs about, respectively, the risk of being arrested for vigilantism and police service delivery, the alarm treatment seems to have increased the willingness to rely on police at endline by roughly one third of a control group standard deviation. The interaction terms are almost of the same size as the main coefficients, suggesting that effects among the two high prior groups are close to zero. The estimated difference in treatment effects across low and high prior groups is statistically significant for both dimensions of prior beliefs ($p < 0.05$ and $p < 0.1$).

Next, I turn to effects on the willingness to participate in mob vigilantism. I measure this outcome using one item at midline and an index of the same and another item at endline. Both measures present respondents with a scenario in which the community has gotten hold of a criminal and ask respondents about their likely course of action. The item that was measured in both survey waves gives respondents three ordered options: advocate for handing the suspect over to police, let others beat the suspect but do not participate, or personally participate in beating the suspect. The second item asks only whether respondents would participate in beating the suspect.

⁴⁶This analysis marginalizes across the rows/columns of Table 2.1. Due to limited power, I did not pre-specify that I would analyze effects within all four cells of this table.

	Rely police		Join MV		Rely police	Join MV	Rely police	Join MV
	Midline	Endline	Midline	Endline	Endline	Endline	Endline	Endline
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alarm	0.097*** (0.028)	0.075*** (0.031)	-0.078*** (0.032)	-0.012 (0.028)	0.132*** (0.044)	-0.100** (0.044)	0.126*** (0.042)	-0.042 (0.037)
Alarm × High Prior Punishment					-0.108** (0.062)	0.158*** (0.057)		
Alarm × High Prior Service							-0.104* (0.061)	0.066 (0.057)
Control Mean	0.6	0.64	0.24	0.17	0.64	0.17	0.64	0.17
RI <i>p</i> -value Main	0	0.003	0.006	0.344	0.002	0.011	0.001	0.148
Hypothesis Main	upr	upr	lwr	lwr	upr	lwr	upr	lwr
RI <i>p</i> -value Diff.	-	-	-	-	0.034	0.002	0.061	0.206
Hypothesis Diff	-	-	-	-	lwr	upr	lwr	upr
Number HHs	245	237	245	237	237	237	237	237
Observations	483	448	483	448	448	448	448	448

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

Table 2.2: Effects of alarm treatment on respondents' willingness to rely on police and participate in mob vigilantism

All outcome measures range from 0 to 1. The results in columns 5 to 8 are based on specifications that regress the outcome on an indicator for treatment assignment, an indicator for high prior beliefs at baseline, the interaction between the two, and the cluster size control. Dichotomous baseline measures of prior beliefs are treated as household-level measurements, since only one respondent was interviewed per household at baseline. Prior beliefs about punishment (columns 5 and 6) are measured through an item that asks whether it is likely (unlikely) that participants in a hypothetical incident of vigilantism would be arrested. The measure of prior beliefs about service quality (columns 7 and 8) captures whether respondents fall above or below the median of an index of three items: *Arrive quickly*, *Send guilty to prison* and *Customer service*. See section B.4.6 for question wording and table 2.1 for the joint distribution of prior beliefs. Randomization inference *p*-values and directions of hypothesis tests are displayed in the table. Section B.1.2 of the appendix contains more details on model specification and testing. See section B.4.1 for question wording and coding of outcomes.

Column 3 suggests that the alarm treatment decreased the willingness to participate in vigilantism at midline by roughly one fifth of a control group standard deviation. The estimate is highly statistically significant ($p < 0.01$) and implies a reduction in the proclivity to inflict vigilante violence by around thirty percent relative to the control group mean. The estimated effect at endline is substantially smaller and falls short of statistical significance.⁴⁷

Once I allow for treatment effects to vary across low and high prior groups, however, I find evidence of a negative effect even at endline. Column 6 suggests that the alarm treatment decreased the willingness to participate in vigilantism among those with low prior beliefs about the likelihood of being arrested for doing so by about one third of a control group standard deviation ($p < 0.05$). This decrease is roughly of the same relative magnitude as the increase in the willingness to rely on police among this subgroup. The interaction term indicates that the alarm treatment's effect on the willingness to participate in vigilantism is statistically significantly less negative among the corresponding high prior group ($p < 0.01$). As can be seen in column 8, prior beliefs about service delivery appear to condition effects in similar ways, but the patterns are less pronounced.

Taken together, the results presented in Table 2.2 suggest that the alarm treatment encouraged reliance on police and discouraged vigilantism, especially among parts of the sample that expected little from police at baseline. These findings are in line with the central prediction that an increase in police capacity helps state institutions to supersede informal enforcement mechanisms.

In the appendix, I present evidence of the extent to which these results generalize to other, related outcomes. Table B.11 in section B.3.1 of the appendix contains little evidence of a treatment effect on the share of respondents who have recently spoken to police. The apparent absence of an increase in contact with police may appear surprising given the high number of alarm panics and the estimated increase in respondents' willingness to rely on police. A possible explanation

⁴⁷Table B.18 in section B.3.3 of the appendix shows that the apparent absence of an effect at endline is not an artifact of the inclusion of another item in the outcome index. Using only the item that was measured in both waves, the effect estimate at endline is only half the size of the estimated effect at midline and falls short of statistical significance.

is that the alarm acts as a deterrent of household-level crime, which would reduce the need for households in the treatment group to reach out to police. Respondents in the treatment group are indeed more likely to say they feel safe. The evidence of a reduction in crime victimization, however, is limited (see Table B.24 in section B.2.3 of the appendix).⁴⁸

Table B.12 in section B.3.1 of the appendix suggests that the alarm treatment reduced not only the willingness to participate in vigilantism but also support for the participation of others – at least at midline and among those with low prior beliefs about the risk of punishment for vigilantism.⁴⁹ That said, those who were assigned to receive an alarm do not appear less inclined to reach out to their neighbors in case of a criminal attack. In short, even though respondents in the treatment group have become more reluctant to personally engage in and support vigilantism, these respondents would still rely on their community for help in emergencies.

This pattern of results may be interpreted as a first clue regarding the question of mechanisms. Fear of state punishment should matter most for outcomes that concern vigilante violence. Merely alerting one's neighbors if one is at risk of being robbed is not a crime. Hence, if the effects of the alarm system are due to increased concerns about state punishment, the apparent absence of an effect on this last outcome is no surprise. If the alarm system worked by convincing citizens that police provide high quality services, on the other hand, one would expect it to reduce demand for *all* kinds of community involvement, irrespective of whether such involvement is illegal.

In the next section, I provide more evidence on the mechanisms through which the alarm system may have produced its two main effects – an increase in the willingness to rely on police and a decrease in the willingness to engage in vigilantism.

⁴⁸One possible explanation for these seemingly contradictory results is that the crime victimization measures used here are very noisy. See section B.1.8 in the appendix for details.

⁴⁹Tables B.17 and B.18 in section B.3.3 of the appendix show results for individual items.

2.5 Mechanisms

2.5.1 Conceptual framework

Why does the alarm treatment discourage vigilantism and encourage reliance on police? Below, I state my theory in formal terms to derive predictions that distinguish between the two hypothesized mechanisms. Consider again the choice between reporting a criminal to police or taking the law into one's own hands. Above, I have described several factors which may affect this choice. First, state and community punishments differ in harshness and publicity which may cause citizens to favor one or the other. Let x_v be the utility that citizens derive from community punishment and x_s their utility from state punishment. Second, citizens may consider the probability that calling the police or rallying a vigilante mob does indeed result in punishment of the criminal. I denote these probabilities by p_s and p_v . A final consideration is that those who participate in vigilantism may receive a prison sentence. I denote by q the probability of state punishment for vigilantism and by y the resulting utility loss.

Both p_s , the probability that reliance on the state results in punishment of the criminal, and q , the probability that the citizen faces punishment for her involvement in vigilantism are outputs of police activity. Specifically, it will be helpful to think of these outputs as a function of two inputs, police capacity and police effort. By police capacity, I refer to factors that help police be more effective at whatever task they choose to pursue.⁵⁰ For example, the more personnel a police chief has at her disposal and the more motivated officers are to perform, the better police may be able to solve crimes of any kind. Whether crimes of a particular kind get solved will also depend on how much effort police dedicate to this crime as opposed to others. Let e_s be the effort that police would make to convict the perpetrator that the citizen would like to see convicted and e_v be the effort that police will make to convict the citizen if she engages in vigilantism. Denoting police capacity by θ , the two outputs of interest can be written as $q(e_v, \theta)$ and $p_s(e_s, \theta)$. Both functions

⁵⁰See Berwick and Christia (2018) for an overview of different ways to conceptualize the capacity of state institutions. The notion put forward here is similar to Hanson and Sigman (2013)'s definition of state capacity as the "ability of state institutions to effectively implement official goals."

are assumed to increase in their two arguments.

Taken together, a citizen will choose to take the law into her own hands if the expected utility of community punishment net of the expected legal costs exceeds the expected utility of reporting the crime to police:

$$U_v - U_s = \underbrace{p_v x_v}_{\text{exp. utility of MV}} - \underbrace{q(e_v, \theta)y}_{\text{exp. legal cost of MV}} - \underbrace{p_s(e_s, \theta)x_s}_{\text{exp. utility of state justice}} \geq 0. \quad (2.1)$$

The key idea is that the police alarm serves as a shock to perceptions of police capacity. That they have become more legible to police may convince households that police have acquired a greater *general* ability to affect the lives of household members. While not impossible, it seems less likely that the alarm treatment would affect perceptions of what *specific* kind of actions police would prioritize. For example, even though I find that the alarm treatment increased respondents' stated willingness to rely on police, I do not find evidence of an increase in actual contact with police that could serve as an opportunity to learn about police priorities. Neither was the alarm system presented to respondents as a solution to a particular kind of crime. Equation (2.1) makes explicit that a shock to police capacity may affect citizen behavior through both, its effect on the expected costs of vigilantism and its effect on the expected utility of reliance on the state. As a first step towards understanding the relevance of these mechanisms, I will test whether the alarm treatment did indeed affect citizens' perceptions of police service quality p_s and the risk of state punishment for vigilantism q .

Merely showing that the alarm treatment changed citizens' views of police outputs, however, says little about the extent to which these changes contributed to the effect of the alarm treatment on the willingness to rely on police and participate in vigilantism. Isolating such mediating effects is complex even under ideal conditions. I here use two strategies to generate additional evidence on the relative importance of the two mechanisms.

First, equation (2.1) suggests that treatments which individually manipulate perceptions about police effort levels e_s and e_v would trigger only one of the mechanisms. Such treatments would

thus allow for an assessment of how effective each of the two mechanisms is at discouraging vigilantism. Section 2.5.3 presents results from a mechanism experiment that was designed to achieve this aim.⁵¹

Second, I leverage theoretical expectations about how police efforts and capacity may interact to affect the willingness to participate in vigilantism. In the context of the alarm treatment shock to police capacity, it seems intuitive that police capacity and efforts would be complements, i.e., in formal terms that $\frac{\partial^2 q(e_v, \theta)}{\partial \theta \partial e_v} > 0$ and $\frac{\partial^2 p_s(e_s, \theta)}{\partial \theta \partial e_s} > 0$. The alarm should facilitate a speedier police response to crime, for example, but only to the extent that police attempt to find the household in question. Similarly, members from households with an alarm may think that police could use information about the identity of household members to identify and arrest them for participating in vigilantism. This change should worry respondents only to the degree that they expect police to make efforts to investigate cases of vigilantism.

Suppose that the effect of the alarm treatment is mediated to some degree by an increase in the risk of punishment for vigilantism. If so, the discouraging effect of the alarm system on vigilantism should be stronger the more convinced citizens are that police invest significant effort e_v to bring perpetrators of vigilantism to book. Similarly, to the extent that the effect of the alarm system is mediated by its effect on the expected utility of relying on police, the alarm treatment should be more effective at discouraging vigilantism if citizens are convinced that police make significant efforts e_s to provide services that citizens desire. I make use of the mechanism experiment to test these predictions.

Subsequently, I first present estimates of the effects of the alarm treatment on perceptions of police outputs before I describe the design and results of the mechanism experiment.

2.5.2 Effects on perceptions of police

Table 2.3 presents estimates of the effects of the alarm treatment on perceptions of police. All outcomes are coded such that positive estimates indicate a treatment-induced increase in

⁵¹This exercise is similar in spirit to what has been termed a “mechanism experiment” by Ludwig, Kling and Mullainathan (2011). It also bears resemblance to the notion of implicit mediation analysis (Gerber and Green, 2012).

respondents' expectations about police capacity and outputs.

The outcome in column 1 is an index of two items. The first asks respondents whether someone from the local police knows the location of their house, while the second asks whether local police know the respondent's name or the name of another household member. This outcome can be thought of as a manipulation check. Did the alarm treatment indeed convince citizens that they have become more "legible" to police? The coefficient in column 1 indicates a positive shift in respondents' sense of being known to police by a little more than one fifth of a control group standard deviation ($p < 0.05$). In relative terms, this change corresponds to an increase of over 20% from a control group mean of 0.44.

Columns 2 to 5 suggest that the alarm treatment caused respondents to perceive a better quality of police service. Columns 2 and 3 provide evidence that the police alarm had enduring effects on expectations about the speed with which police would respond when called to an emergency in one's home. The outcome is a scale that ranges from "The police would not come" coded as 0 to "The police would come in less than thirty minutes" coded as 1. At midline, the alarm treatment is estimated to have increased this outcome by around 16% from a control group mean of 0.38 ($p < 0.05$). The effect appears, if anything, slightly larger at endline.

The outcomes in columns 4 and 5 are indices that combine a range of items designed to capture respondents' more general expectations about police service quality. Tables B.19 and B.20 in section B.3.3 of the appendix show estimates of treatment effects on individual items. There is some evidence of increased expectations of police service quality that go beyond improved response times. The midline results indicate that the alarm treatment increased the police service quality index by around 15% ($p < 0.05$), for example, and the share of midline respondents who think that police are successful at sending those who are guilty to prison is almost ten percentage points higher in the treatment than in the control group ($p < 0.05$). Changes seem less pronounced at endline, suggesting, perhaps, that respondents lowered some of their expectations as the novelty of the alarm treatment wore off. Column 5 points towards an increase in the police service quality index by roughly 0.04 scale points at endline, but the estimate falls short of

statistical significance.

Turning to perceptions of the likelihood of punishment for illegal behavior, the outcome in column 6 is an index of two items which ask respondents how likely it is that police would find out if respondents bought a stolen car or rented space to an illegal immigrant. These behaviors were selected to avoid offending respondents by asking them to imagine having committed acts that are unambiguously illegal. The estimate in column 6 is indicative of an increase in the perception that police would find out about these behaviors of around 0.04 scale points ($p < 0.1$).

Finally, columns 7 and 8 pertain to perceptions that relate directly to the risk of state punishment for vigilantism. The outcome in column 7 measures respondents' perceptions of the speed with which police would respond to a vigilante incident and the outcome in column 8 captures whether respondents believe that police will make sure that those who take the law into their own hands go to prison. Contrary to the outcome in column 6, both measures are not specific to the legal risk faced by the respondent him- or herself. Hence, any changes in these outcomes would have to be a result of respondents updating their general views about police. The results shown in columns 7 and 8 provide little evidence of such updating in the sample as a whole. Even though the share of respondents who believe that police ensure that those who take the law into their own hands go to prison is around four percentage points higher in the treatment than in the control group, this estimate falls short of statistical significance.

Recall, however, that learning about police may be conditional on prior beliefs and that effects on the main behaviors of interest were concentrated among households with low prior beliefs about police outputs at baseline. Table 2.4 therefore, again, allows treatment effects to vary across prior beliefs about police service quality and the risk of state punishment for vigilantism.

	<i>Legibility (θ)</i>		<i>Police service quality (p_s)</i>			<i>Risk of state punishment (q)</i>		
	Know HH	Arrive quickly		Service quality		Would discover	Respond MV	Imprison MV
	Endline	Midline	Endline	Midline	Endline	Endline	Endline	Endline
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alarm	0.100** (0.047)	0.059** (0.033)	0.091*** (0.036)	0.067** (0.029)	0.041 (0.034)	0.039* (0.026)	0.004 (0.035)	0.041 (0.043)
Control Mean	0.44	0.38	0.45	0.44	0.56	0.78	0.67	0.71
RI p -value	0.016	0.035	0.005	0.022	0.12	0.067	0.448	0.204
Hypothesis	upr	upr	upr	two	upr	upr	upr	upr
Number HHs	237	245	237	245	237	237	237	237
Observations	448	483	448	483	448	448	448	448

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

Table 2.3: Effects of alarm treatment on perceptions of police

All outcome measures range from zero to one. Randomization inference p -values and directions of hypothesis tests are displayed in the table. Section B.1.2 of the appendix contains details on model specification. See section B.4.2 for question wording and coding of outcomes.

Columns 1 and 4 of this table contain little evidence of a treatment effect on the perceived speed with which police would respond to vigilantism, even among those who expected little from police at baseline. Estimates of effects among low prior subgroups in columns 2 and 5, however, indicate a statistically significant increase of roughly ten percentage points in the share of respondents who think that police ensure that perpetrators of vigilante violence go to prison ($p < 0.1$ and $p < 0.05$, respectively). The interaction terms suggest that treatment effects on this outcome are close to zero in both high prior subgroups. Columns 3 and 6 show similar patterns in terms of effects on perceptions about police service quality. Again, treatment effects appear concentrated among those with low priors and effects among high prior subgroups are statistically significantly smaller.

To some extent, it may seem surprising that prior beliefs about one kind of police output appear to condition treatment effects on perceptions of another kind of police output. For example, those with low prior beliefs about police service quality see statistically significantly larger treatment effects than those with high prior beliefs about police service quality on perceptions of both police service quality *and* the proclivity of police to send perpetrators of vigilantism to prison. It is important to keep in mind, however, that the two dimensions of prior beliefs are not independent. As suggested by equation 2.1, low expectations of one kind of police output may be reflective of the general conviction that police have little capacity θ . Updating beliefs about θ may lead to increased expectations with regard to various kinds of police outputs.

The results in this section provide evidence that the alarm system caused respondents to expect more from police, both in terms of the quality of service police provide and in terms of the extent to which police are able or inclined to ensure that respondents face punishment for illegal behavior including participation in vigilantism. Effects of both kinds appear concentrated among the low prior groups that also saw the greatest increase in the willingness to rely on police and the largest decrease in the willingness to participate in vigilantism. The results presented so far thus provide evidence consistent with the relevance of both mechanisms.

	<i>Risk of state punishment (q)</i>		<i>Service quality (p_s)</i>	<i>Risk of state punishment (q)</i>		<i>Service quality (p_s)</i>
	Respond MV	Imprison MV	Service index	Respond MV	Imprison MV	Service index
	(1)	(2)	(3)	(4)	(5)	(6)
Alarm	0.047 (0.052)	0.091* (0.066)	0.117*** (0.045)	0.026 (0.045)	0.110** (0.055)	0.110*** (0.040)
Alarm × High Prior Punishment	-0.078 (0.070)	-0.075 (0.088)	-0.114** (0.062)			
Alarm × High Prior Service				-0.043 (0.073)	-0.145** (0.089)	-0.095* (0.062)
Control Mean	0.67	0.71	0.53	0.67	0.71	0.53
RI <i>p</i> -value Main	0.216	0.07	0.009	0.238	0.032	0.006
Hypothesis Main	upr	upr	upr	upr	upr	upr
RI <i>p</i> -value Diff.	0.153	0.136	0.032	0.21	0.047	0.072
Hypothesis Diff	lwr	lwr	lwr	lwr	lwr	lwr
Number HHs	237	237	237	237	237	237
Observations	448	448	448	448	448	448

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

Table 2.4: Heterogeneity in effects of alarm treatment on perceptions of police at endline by prior beliefs

All outcome measures range from 0 to 1. All specifications regress the outcome on an indicator for treatment assignment, an indicator for high prior beliefs at baseline, the interaction between the two, and the cluster size control. Dichotomous baseline measures of prior beliefs are treated as household-level measurements, since only one respondent was interviewed per household at baseline. Prior beliefs about punishment (columns 1 to 3) are measured through an item that asks whether it is likely (unlikely) that participants in a hypothetical incident of vigilantism would be arrested. The measure of prior beliefs about service quality (columns 4 to 6) captures whether respondents fall above or below the median of an index of three items: *Arrive quickly*, *Send guilty to prison* and *Customer service*. See section B.4.6 for details on question wording and table 2.1 for the joint distribution of prior beliefs. Randomization inference *p*-values and directions of hypothesis tests are displayed in the table. Section B.1.2 of the appendix contains more details on model specification. See section B.4.3 for question wording and coding of outcomes.

2.5.3 Mechanism experiment

Design

Even though both mechanisms may be at play, they may not be equally important. To shed light on the effectiveness of each mechanisms, I designed a mechanism experiment that features two information treatments in the form of local news articles (see section B.1.9 of the appendix). The first article is meant to convince respondents that police make effort to deliver services that citizens desire (“Police fight crime” treatment). It focuses on two cases of rape and the police’s efforts to convict perpetrators of crimes against women and children. Pre-testing among respondents from a similar township close by suggested that the demand for conviction of perpetrators of such crimes is high and that most respondents view the described police efforts as an important part of service delivery.⁵² The second article is meant to affect beliefs about police effort to convict perpetrators of mob vigilantism (“Police fight MV” treatment).

Information treatments were administered during the endline survey and assigned on the respondent level using simple random assignment. Respondents were assigned to one, both or none of the two information treatments, creating a full factorial design. Information treatments were randomized across all respondents in the endline sample, which includes two members of one neighboring household for each of the 250 study households.⁵³ In total, the endline sample comprises $N = 815$ respondents. Analyses that pertain to the information treatments alone are based on respondents from main and neighboring households as pre-registered.

Enumerators read out the relevant article(s) during the endline interview and asked several open ended questions about respondents’ opinions in order to encourage engagement with article content. Enumerators were not aware that the goal was to understand the effects of the information treatments on subsequent survey responses and, instead, thought that the aim was to elicit respondents’ views about the articles. Outcomes were measured in later parts of the

⁵²Note also that mob vigilantism rarely targets women and children, which reduces the likelihood that this treatment would affect perceptions about the police’s approach to mob vigilantism.

⁵³See sections B.1.5 and B.1.6 of the appendix for details on the sampling strategy for neighbors.

questionnaire. Given limited questionnaire space, outcome measures are limited to respondents’ perceptions of police effort and their willingness to participate in mob vigilantism.

Table 2.5 shows the breakdown of respondents across information treatment conditions. In practice, all subsequent analyses will marginalize across one of the two dimensions of the factorial design. Effects of the “Police fight crime” treatment, for example, will be estimated by regressing outcomes on an indicator for whether a respondent was assigned to this treatment. Effects of the “Police fight mob vigilantism” treatment will be estimated in an analogous way.

	Police fight crime = 1	Police fight crime = 0
Police fight mob vigilantism = 1	210 (113)	189 (107)
Police fight mob vigilantism = 0	223 (124)	193 (104)

Table 2.5: Number of respondents across information treatment conditions

The first number in each cell pertains to the total number of respondents from main households and neighbors in that condition. The number in parentheses pertains to respondents from main households only. The p -value of a randomization inference based Chi-squared contingency table test is 0.294.

Results

I begin by analyzing effects of the information treatments, marginalizing across assignment to the the alarm treatment. Table B.21 in section B.3.4 of the appendix suggests that neither of the information treatments is effective at shifting respondents’ expectations about police effort in the endline sample as a whole. Again, new information may be most effective at shifting beliefs among those who, a priori, expect police effort levels to be low. Hence, the pre-analysis plan specified that, in the event that information treatments appeared ineffective, their effects would be analyzed within two low prior subgroups. Analyses in Table 2.6 are based on the sub-sample of respondents with low prior beliefs about the police’s inclination to ensure arrest of participants of mob vigilantism.⁵⁴

Column 1 of Table 2.6 suggests that the “Police fight crime” treatment is effective at shifting respondents’ beliefs about police effort in this subgroup. Respondents who received this treat-

⁵⁴Analyses that do not involve the alarm treatment make use of measurements of priors from the endline survey that were asked prior to the administration of the information treatments.

ment are almost twelve percentage points more likely to believe that “the police do everything they can to ensure that criminals receive the punishment that they deserve” ($p < 0.05$). This shift represents an increase in the perception of police service delivery effort of around 50%. As can be seen in column 3, the estimated effect of this treatment on respondents’ expectations about whether police ensure that perpetrators of mob vigilantism go to prison, however, is small and statistically insignificant. Columns 2 and 4 show a similar pattern for the “Police fight MV” treatment. While this treatment appears to increase the perception that police would send perpetrators of mob vigilantism to prison by around 22% ($p < 0.1$), there is no evidence of an effect of this treatment on expectations about the inclination of police to make sure that “criminals receive the punishment that they deserve.”

	Believes police fight crime	Believes police fight MV	Would participate MV
Police fight Crime	0.115** (0.058)	-0.005 (0.052)	-0.005 (0.049)
Police fight MV	0.034 (0.059)	0.083* (0.052)	-0.087** (0.048)
Control Mean	0.23	0.28	0.42
RI p-value	0.032	0.276	0.553
Hypothesis	upr	upr	upr
Observations	243	243	243

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

Table 2.6: Effect of information treatments among respondents with low priors about risk of state punishment for mob vigilantism

All outcome measures range from 0 to 1. Analyses are run on a subset of respondents from main and neighboring households that has low priors about the risk of legal repercussions for mob vigilantism as measured during the endline survey, prior to the administration of information treatments. See section B.4.6 for the endline item used to measure prior beliefs. Columns 1, 3 and 5 regress the outcome on an indicator for assignment to the ‘Police fight crime’ treatment. Columns 2, 4 and 6 regress the outcome on an indicator for assignment to the ‘Police fight MV’ treatment. Standard errors are heteroskedasticity robust. See section B.1.2 of the appendix for information on model specification and section B.4.4 of the appendix for outcome question wording and coding.

These results suggest that the information treatments were successful at independently shift-

ing perceptions about the two kinds of police effort. The question of interest is the extent to which these shifts translate into changes in the willingness to participate in mob vigilantism. Column 5 contains little evidence that the “Police fight crime” treatment has an effect on the willingness to participate in vigilante violence. Column 6, however, suggests that the “Police fight MV” treatment has decreased the willingness to participate in vigilantism by around 20% ($p < 0.05$).

These findings are mirrored to some degree in Table B.22 in section B.3.4 of the appendix which presents estimates among respondents with low prior beliefs about service delivery. Here, too, the “Police fight crime” treatment appears to have caused an upward shift in expectations about service delivery; yet, this shift does not appear to translate into a reduction in the willingness to participate in mob vigilantism. The “Police fight MV” treatment, on the other hand, seems to shift neither beliefs about police effort nor the willingness to participate in vigilantism among this subgroup.

To summarize, even though the “Police fight crime” treatment appears to have produced a shift in beliefs about service delivery efforts in both low prior subgroups, there is little evidence that either of these shifts translated into a change in the willingness to participate in vigilantism. The “Police fight MV” treatment seems to have produced a shift in beliefs about police efforts to sanction perpetrators of vigilantism only among those who, a priori, did not expect police to make such effort. Among this subgroup, the “Police fight MV” treatment also seems to have discouraged participation in vigilante violence. Taken together, these findings suggest that an increase in the perceived risk of state punishment for vigilantism is, at least in the short run, more effective at discouraging vigilantism than an increase in the perception that police are committed to convicting perpetrators that citizens would like to see punished.

Finally, I turn to the interaction between the alarm and information treatments. Table 2.7 shows estimates from specifications that regress the measure of respondents’ willingness to participate in vigilantism on an indicator for assignment to the alarm treatment, an indicator for assignment to one of the information treatments as well as the interaction between the two.

Models in columns 1 and 3 are based on endline data from respondents in the 250 main study households. Models in columns 2 and 3 exclude respondents who were assigned to one of the information treatments.

The first row in columns 1 and 2 shows that the estimated effect of the alarm treatment on the willingness to participate in vigilantism among those who were not assigned to the “Police fight crime” treatment is small and not statistically significant. The interaction terms in these columns provide no evidence that the “Police fight crime” treatment made the alarm treatment more effective at discouraging vigilantism. The interaction term in column 1 is positive rather than negative, while that in column 2 is close to zero. Both estimates fall short of statistical significance.

Turning to columns 3 and 4, the estimated effect of the alarm treatment on the willingness to participate in vigilantism among those who were not assigned to the “Police fight MV” treatment is again small and not statistically significant. Yet, in this case, both interaction terms are negative and statistically significant, suggesting that the “Police fight MV” treatment increased the extent to which the alarm treatment discourages vigilantism ($p < 0.1$ and $p < 0.05$). The model in column 3 suggests that the alarm treatment decreased the willingness to participate in vigilantism among those who were assigned to the “Police fight MV” by around 0.06 scale points ($p < 0.1$). This effect size is equivalent to roughly one sixth of a standard deviation in the control group (those assigned to neither the alarm nor the “Police fight MV” treatment). The model in column 3 marginalizes across the “Police fight crime” treatment, meaning that some of those who were assigned to the “Police fight MV” treatment were also assigned to the “Police fight crime” treatment. The model in column 4 subsets to respondents who were not assigned to the “Police fight crime” treatment and hence provides a cleaner comparison in cases where the two information treatments interact. This model suggests that the alarm treatment has decreased the willingness to engage in vigilantism by around 0.13 scale points among those who were also assigned to the “Police fight MV” treatment ($p < 0.05$) – a reduction that is equivalent to more than one third of a control group standard deviation.

	Would Participate Vigilantism			
	All respondents	Police fight MV = 0	All respondents	Police fight crime = 0
	(1)	(2)	(3)	(4)
Alarm	-0.045 (0.050)	0.036 (0.072)	0.034 (0.050)	0.036 (0.072)
Alarm × Police fight Crime	0.061 (0.067)	0.0002 (0.093)		
Alarm × Police fight MV			-0.097* (0.068)	-0.169** (0.097)
Control Mean	0.28	0.24	0.27	0.24
RI p-value Alarm	0.164	0.672	0.755	0.672
Hypothesis Alarm	lwr	lwr	lwr	lwr
RI p-value Diff.	0.816	0.47	0.076	0.043
Hypothesis Diff	lwr	lwr	lwr	lwr
Number HHs	237	174	237	161
Observations	448	228	448	211

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

Table 2.7: Interactive effects of alarm and information treatment on willingness to participate in mob vigilantism

All outcome measures range from 0 to 1. Analyses in columns 1 and 3 are based on all respondents from main households in the endline survey. Columns 2 and 4 subset this sample to those who were not assigned to one of the information treatments. All models regress the outcome on an indicator for assignment to the alarm treatment, an indicator for assignment to the respective information treatment and the interaction between the two. In addition, all specifications control for cluster size. The row labeled “Control Mean” shows the average outcome among respondents who were neither assigned to the alarm treatment nor to the respective information treatment. See section B.4.5 in the appendix for wording and coding of outcome questions. Standard errors are clustered on the household level. Hypothesis tests are based on randomization inference. See section B.1.2 in the appendix for details on model specification.

Priming respondents to believe that police make efforts to convict those who take the law into their own hands thus appears to make the alarm treatment more effective at discouraging vigilantism. Priming citizens to think that police are committed to sanctioning perpetrators whom most citizens would like to see convicted appears to have, if anything, the opposite effect. This pattern of results again points towards the importance of an increase in the perceived risk that vigilantism may lead to a prison sentence rather than to improved satisfaction with police service quality as a link between police capacity and mob vigilantism.

2.6 Alternative Explanations

In this section, I consider the possibility that the estimated effects of the alarm treatment may be due to factors other than the two mechanisms discussed in this chapter and present evidence that speaks against major alternative explanations.

Given that all outcome measures in this project are survey-based, an obvious concern is that results may be driven by experimenter demand. Respondents were asked during the baseline survey whether they would be interested in a police alarm. Hence, respondents were likely able to draw a connection between the alarm treatment and outcome measurement.

While it seems difficult to rule out completely, several observations speak against the interpretation that the findings are driven solely by experimenter demand. First, several steps were taken to limit the perceived connection between the alarm treatment and subsequent surveys. Respondents were never asked any questions about the alarm during mid- and endline interviews and enumerators were not aware that the purpose of the study was to assess effects of the alarm. Second, if results were driven by experimenter demand, it appears difficult to account for the apparent concentration of treatment effects on certain outcomes and among certain subgroups. It seems unclear, for example, why respondents would see the need to censor their views about some aspects of police performance but not others. Similarly, it is not obvious why respondents with low priors about the police would be most susceptible to such bias.

Given that mob vigilantism is a crime, one may be most worried about experimenter demand

driving observed differences in outcomes that relate to vigilantism. To assess this possibility, the endline survey asked respondents whether and how many incidents of mob vigilantism they recall happening in their section during May, June, and July 2018 and whether they personally witnessed any of these. Given that alarm installations took place in September and October of the same year, the alarm treatment could not have affected these outcomes. A tendency among respondents in the treatment group to report that they remember or witnessed fewer incidents than respondents in the control group would thus be evidence of a treatment-induced reluctance to be associated with mob vigilantism. Yet, as can be seen in Table B.23 in section B.3.5 of the appendix, there is no evidence of such a tendency, neither among the sample as a whole, nor among the subgroup that sees the largest decrease in the willingness to participate in mob vigilantism.

A second concern may be that treatment effect estimates reflect changes among the control rather than the treatment group. For example, control group respondents may have been disgruntled because they did not receive a police alarm which may have caused them to become more frustrated with police. Alternatively, police may have focused all their efforts on households that received an alarm, neglecting other households in the precinct. Figure B.5 in section B.3.5 of the appendix shows, however, that men and women in the control group developed more positive views about the police and became less inclined towards mob vigilantism over time. If anything, these patterns suggest that their knowledge of the alarm project may have led control group respondents to shift their views in ways that are similar to the changes that occurred in the treatment group. If so, the estimates reported here would understate the true effects of the alarm treatment.

A final possibility is that observed differences in the willingness to engage with police and in views about vigilantism are driven by changes in respondents' preferences about the nature of punishment. For example, the alarm treatment may make household members feel safer, which in turn may decrease their demand for maximal deterrence through harsh and immediate punishments in the form of vigilante violence. Table B.24 in section B.3.5 of the appendix shows that, even though there is little evidence of a reduction in household level crime victimization, mem-

bers of households that were assigned to an alarm are indeed more inclined to report that they feel safe in their home.⁵⁵ Beyond that, however, the estimates in the table provide little support for the hypothesis that the alarm treatment caused a reduction in respondents' demand for harsh and immediate punishments.

2.7 Discussion

This chapter investigates the microdynamics that underlie the relationship between state capacity and the popularity of community-based alternatives to the state's law enforcement system. Many have suggested that the prevalence of informal ways to deal with crime is indicative of the inability of state institutions to provide citizens with effective law enforcement services (see e.g. Acemoglu et al., 2020; Baker, 2008; Tankebe, 2009). If state institutions such as police were more effective, these arguments seem to imply, citizens would voluntarily substitute away from informal alternatives such as vigilantism and choose to rely on the state.

Drawing on experimental variation in the ability of police to intervene in certain households but not others, I show that an increase in police capacity did indeed encourage reliance on police and discourage vigilantism. That said, citizens who were assigned to a positive shock to police capacity developed not only more sanguine views of police service quality. They also became more convinced that participation in vigilante violence may lead to state punishment. Results from a mechanism experiment suggest that the risk of legal repercussions may play a bigger role in the decision of whether to participate in vigilantism than expectations about police service delivery.

Why might improvements in citizens' expectations about the quality of police services have limited effects on vigilantism? One possibility is that this finding results from characteristics of the research design. The results presented in this chapter have a relatively short time horizon, for example; and the effects of improvements in service delivery may take longer to materialize. Higher quality services may also be more effective at discouraging vigilantism if such improve-

⁵⁵As mentioned above, this pattern of results may be due to my crime victimization measures being so noisy that it is difficult to detect treatment effects. See section B.1.8 in the appendix for details.

ments result directly from actions taken by state officials and not, as is the case here, from a technological windfall provided by a non-profit organization.

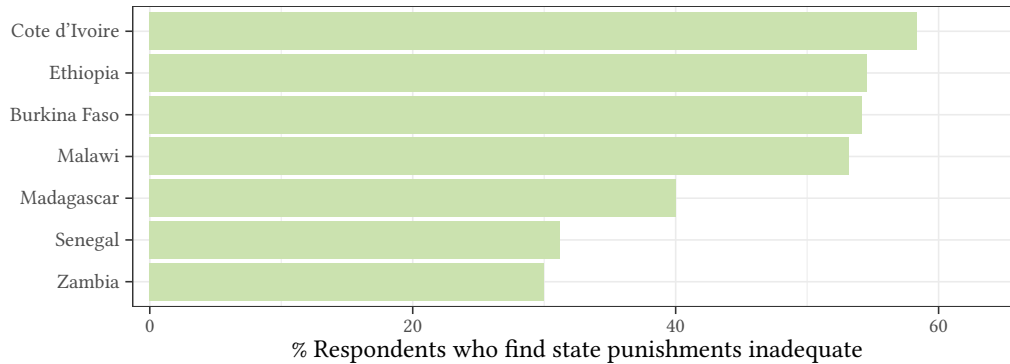


Figure 2.7: Views on state punishment in Sub-Saharan Africa

Data are taken from the 2017 WJP Rule of Law Index survey by the World Justice Project (<https://worldjusticeproject.org/our-work/research-and-data/wjp-rule-law-index-2020>). For each country, the sample consists of around 1,000 respondents from major urban centers. Respondents were asked: "Please tell us how confident you are that the criminal justice system as a whole gives punishments which fit the crime?" The figure displays the proportion of respondents who chose "Not very confident" or "Not at all confident."

A more structural explanation may be that state justice, even if administered effectively, provides an imperfect substitute for vigilante justice. Smith (2019) argues, for example, that South Africans resort to vigilantism because they wish for criminal suspects to enjoy few due process protections and for punishments to be harsher than those provided by the state. Nationally representative surveys indeed suggest that more than 50% of South Africans are dissatisfied with the courts, the most frequent complaint being that sentences are too lenient.⁵⁶ Figure 2.7 shows that such discontent with the state's punishment regime is widespread also in other countries in Sub-Saharan Africa. Where citizens are fundamentally opposed to how the state treats law-breakers once they have been apprehended, states may be unable to out-compete community punishment by improving police service delivery.

The results presented here suggest that police capacity may nonetheless play a role in discouraging vigilantism, because it allows the state to effectively place sanctions on those who engage

⁵⁶These numbers are based on the Victims of Crime Survey 2016/17 by StatsSA. Out of 54% of respondents who are dissatisfied with the courts, 46% point to lenient sentences as the reason.

in vigilante violence. Reluctance of citizens in high capacity states to engage in vigilantism need not reflect that citizens are satisfied with police services. Such reluctance may also be driven by the expectation that those who take the law into their own hands will go to prison.

Beyond informal enforcement mechanisms like vigilantism, similar logics may also apply to other informal practices that are widespread in low capacity contexts. Unlicensed health providers, for example, are ubiquitous throughout the developing world. To some degree, this prevalence may be driven by limited access to formal health care. Yet, such providers sometimes supply controversial remedies,⁵⁷ or procedures like abortions that have been criminalized by the state. Where citizens see formal health care as an imperfect substitute, informal providers may remain popular even as the quality of government services improves. Another example are unlicensed moneylenders who often prevail despite increased availability of formal credit (Tsai, 2004). Notwithstanding high interest rates, borrowers may prefer loan sharks, for example because they do not require formal contracts. As in the case of vigilantism, a lower prevalence of these informal services in high capacity contexts may in part reflect the state's ability to crack down on suppliers.⁵⁸

A broader implication is that state capacity can have downsides for certain groups of citizens. Those who favor vigilantism or other informal practices that the state deems illegal may be wary of increased state presence, even if it comes with improvements in the quality of government services. Residents of the study precinct seemed cognizant of this trade-off. Not only was the willingness to participate in vigilantism particularly widespread among those who refused a police alarm, but those who received an alarm sometimes asked to have its siren installed at the back of their house. Installing the siren out of sight seems counterintuitive if the police alarm's only effect is better police protection against intruders. If the police alarm is known to also deter

⁵⁷In Tanzania, for example, traditional healers have been involved in killings of albinos whose body parts are widely believed to have healing powers. See Poon, Linda. January 16, 2015. "Can A New Ban On Witchcraft Protect The Albinos Of Tanzania?" NPR. <https://www.npr.org/sections/goatsandsoda/2015/01/16/377505104/can-a-new-ban-on-witchcraft-protect-the-albinos-of-tanzania>. Accessed 07/23/2021.

⁵⁸Attempts to regulate informal services are common throughout the world. Tsai (2004), for example, describes how governments in India and China have attempted to ban informal lending and the government of Tanzania has attempted to ban traditional medicine in an attempt to stop the killing of albinos.

vigilantism, however, the decision to hide the alarm may reflect a desire to enjoy the benefits of improved police service delivery while upholding the threat of community punishment. In line with the interpretation that alarm owners sought to hide the alarm, I find little evidence that effects of the alarm spilled over to neighboring households.

A final question concerns the incentives of state officials. Given widespread public support for vigilantes, why do state agents choose to enforce laws against vigilantism? Alternative courses of action include simply looking the other way or even changing the state's punishment regime in such a way that it aligns more closely with the preferences of vigilantes. An important next step towards understanding how state institutions supersede vigilante violence will thus be to consider the incentives not only of citizens but also of police and their political principals.

Chapter 3: Gender and Support for Vigilante Violence

3.1 Introduction

Mob vigilantism often turns into gruesome public spectacles watched by entire communities. In many cases, spectators do not step in to stop the violence but rather cheer it on. Where police attempt to investigate, they frequently face tight-knit communities that refuse to testify about what happened and frustrate the police's attempts to separate witnesses from perpetrators. In addition to those who actively inflict violence, vigilante acts are thus fueled by larger groups of people who view mob vigilantism as legitimate and are willing to support it.

This chapter investigates who supports mob vigilantism and why.¹ The previous chapter as well as much of the existing literature on vigilantism and other non-state mechanisms of crime control focuses on the role of police and state capacity.² This chapter instead homes in on the social drivers of mob vigilantism. The chapter makes use of original survey data collected through over 10,000 interviews conducted in Uganda, Tanzania, and South Africa, as well the Afrobarometer, to demonstrate that there is a robust gender gap in support. Women are substantially more likely to support vigilante violence than men.³ In some instances, support among women exceeds that among men by a factor of almost two-to-one.

What explains this gender gap in support for vigilante violence? This chapter draws on two additional data collection efforts to investigate this question. Study 1 consists of a vignette exper-

¹This chapter is based on a paper that has been co-authored with Jasper Cooper. See section C.4 in the appendix for details on co-author contributions.

²See, for example, Acemoglu et al. (2020), Cooper (2018), Blair (2019), Blair, Karim and Morse (2019), Jaffrey (2021), Lazarev (2017), Magaloni, Franco-Vivanco and Melo (2020), Nussio and Clayton (2021), Sandefur and Siddiqi (2011).

³This chapter uses the terms “men” and “women” to describe gender identities, not biological traits. Thus, “women” includes both cis- and transgender women. As all survey measures used in this chapter rely on self- or enumerator-coded binary gender identification, it is not possible to explore whether the processes described work differently for cis- and trans-gendered individuals, or for non-binary individuals. Some authors discussed in this chapter use the terms “men” and “women” to describe biological differences.

iment that was implemented in Uganda in 2017. Study 2 makes use of survey measures collected in Tanzania in 2019. Study 1 suggests that women and men differ in their beliefs about mob vigilantism. A possibility that seems to loom large in the minds of men is that vigilantism can be directed towards the “wrong” person. Rather than the outcome of a deliberate investigation and adjudicative process, vigilante acts are typically committed by “angry mobs” that move to murderous violence with little deliberation. The evidence suggests men see scenarios that are conducive to false accusations as more plausible than women. That men are more likely to believe that vigilantism puts even those who do not commit crime at risk may be one driver of the observed gender gap in support.

Why might women and men diverge in their perceptions of the risk of false accusations? One reason may be that women face a lower personal risk of being falsely accused and attacked by a vigilante mob.⁴ Survey data from Tanzania show that 70% of men believe it somewhat or very likely that they could be attacked for a crime that they did not commit. Only 37% of women think they could be targeted in this way. The vignette experiment in Uganda suggests that respondents rate scenarios in which a woman experiences a vigilante attack as less plausible than scenarios in which vigilantism is directed at a man. Administrative data from Uganda support the notion that victims of vigilante violence are almost always men (see e.g. Uganda Police, 2013). Personal experience may lead men to perceive a higher risk of wrongful accusation than women.

In sum, this chapter argues that gender conditions support for mob vigilantism, because it shapes how men and women understand the costs of mob vigilantism as a social practice. The chapter describes a series of alternative explanations for the gender gap and shows that there is little empirical support for these accounts.

This chapter makes several contributions. First, this chapter is, to my knowledge, the first quantitative study to focus explicitly on how gender shapes support for mob vigilantism. Most of the existing work on vigilante violence does not explicitly consider the role of gender. One exception is a chapter by Abrahams (1998) that provides an ethnographic account of women’s

⁴As will be discussed below, this argument may be less applicable to accusations of black magic.

engagement in vigilantism. Abrahams describes vigilantism as a mostly male dominated activity but speculates about how women's involvement may change as a result of female empowerment. He does not focus on levels of support. To the extent that gender plays a role in existing quantitative work, gender is mostly included as a control variable in large multivariate regressions. The evidence regarding the existence of a gender gap in support is mixed. Papers on Ghana (Tankebe, 2009), Pakistan (Tankebe and Asif, 2016), and the Netherlands (Haas, de Keijser and Bruinsma, 2014) provide no statistically significant evidence of a gender gap. Two studies in Latin America find that support for vigilantism is greater among men (Nivette, 2016; Zizumbo-Colunga, 2017). Yet, the results of these pre-existing analyses are difficult to interpret, because many of them condition on attitudinal variables that are plausibly affected by gender *and* by the respondent's views on vigilantism.⁵ This chapter makes use of six different data sources from various contexts in Sub-Saharan Africa to show that women consistently support mob vigilantism at higher rates than men, and proposes a specific mechanism that links gender to views about vigilantism.

Even though few perpetrators of vigilante violence are women, anecdotal evidence suggests that women can encourage or discourage vigilantism in important ways. Women may instigate vigilante acts and convince bystanders to take part.⁶ Having witnessed a vigilante incident, women can choose whether to cooperate with police and may encourage others to do the same. The views of parents are also particularly likely to shape how mob vigilantism is viewed by younger generations. Finally, women, just like men, may join movements that protest vigilantism. Such movements exist in several parts of the world and seem to have had some success in generating greater police presence in areas affected by mob vigilantism.⁷

The findings in this chapter suggest that women support mob vigilantism more than men because women are less convinced that vigilantism poses risks even for people who are not involved in criminal activities. Thus, raising awareness about these risks might bolster opposition to vigilante violence. The realization that vigilantism can endanger people who did not commit

⁵These attitudinal variables are “colliders” on the path from gender to support for mob vigilantism (Pearl, 2009).

⁶See section 2.2.1 in chapter 2 for an example of a vigilante act instigated by a woman.

⁷Social movements following a spate of necklacing incidents in Cape Town, South Africa, for example, led to a government inquiry called the Khayelitsha Commission in 2014.

crime has fueled protest in the past. In 2018, for example, protests erupted after mobs in India killed more than two dozen people in response to false rumors about child kidnappers spread through the messaging platform, WhatsApp.⁸ As one protester complained:

Everyone could feel: ‘it could have been my son, it could have been me’. That feeling is impacting people a lot. That it could have been anyone, so innocent, in that barbaric incident.⁹

Finally, the findings presented here contribute to a large literature in public opinion that finds women are generally less supportive of violent practices than men. This finding stems primarily from research in the United States and Western Europe and spans a range of domains including views on capital punishment (Applegate, Cullen and Fisher, 2002; Hurwitz and Smithey, 1998; Whitehead and Blankenship, 2000), gun control (Shapiro and Mahajan, 1986), military aid and the usage of troops (Fite, Genest and Wilcox, 1990), defense spending (Togebly, 1994), inter-personal violence, and the display of violence on television (Smith, 1984). One common interpretation of these findings holds that traditional gender norms socialize women into an “ethic of care,” which leads them to oppose violence (Gilligan, 1993). The notion that women are more peaceful than men has also come to structure popular expectations about the consequences of female empowerment. Fukuyama (1998), for example, predicts that “[a] truly matriarchal world (...) would be less prone to conflict and more conciliatory and cooperative than the one we inhabit now.”

By focusing on a kind of crime-related violence that is ubiquitous in developing country contexts, this chapter joins a set of studies that add nuance to these claims (Dube and Harish, 2020; Karim et al., 2018; Tessler, Nachtwey and Grant, 1999; Tessler and Warriner, 1997). The findings in this chapter suggest women can support violent practices at higher rates than men, even in societies where women are strongly expected to play caregiver roles. In contrast to existing work,

⁸Pokharel, Sugam and Griffiths, James. July 16 2018. “India WhatsApp rumors: Mob kills man in latest attack, 30 arrested.” CNN. <https://www.cnn.com/2018/07/16/asia/india-whatsapp-lynching-intl/index.html>. Accessed July 20 2018.

⁹Kachari, Panjuri. 14 July 2018. “Death by ‘fake news’: social media-fueled lynchings shock India.” AFP. <http://www.france24.com/en/20180714-death-fake-news-social-media-fuelled-lynchings-shock-india>. Accessed 21 July 2018.

this chapter interprets this gender gap as resulting from differences in the *beliefs* women and men hold, rather than from intrinsic differences in their tastes. The argument is not that women have a greater preference for violent punishments of those who commit crime. Neither does the chapter claim that men care more about protecting those who do not commit crime. Instead, the chapter shows that women and men have different beliefs about the extent to which mob vigilantism targets the innocent and traces this disparity to gender differences in indirect and direct experiences with mob vigilantism.

This chapter is structured as follows. Section 3.2 recapitulates some of the key characteristics of the phenomenon of mob vigilantism. Section 3.3 describes the estimation strategy and section 3.4 the main results – estimates of the gender gap in support for vigilante violence. Section 3.5 presents a theoretical framework and empirical results on the mechanisms which may give rise the gender gap in support for vigilante violence. Section 3.6 considers alternative explanations. Section 3.7 concludes.

3.2 Background

Like the previous chapter, this chapter focuses on mob vigilantism, the extralegal investigation and punishment of alleged offenses. The word “mob” indicates that the chapter focuses on vigilante violence perpetrated by spontaneous groups, in public and as a defense against (alleged) criminals.¹⁰ This phenomenon is thus distinct from organized vigilante groups such as peasant vigilante committees (see Gitlitz and Rojas, 1983, on Peru), state-sponsored groups like crime prevention panels (see Baker, 2008, on Uganda), armed self-defense groups (see Moncada, 2021, on Mexico) or gangs that enforce their own legal codes and run their own courts (see Rodgers, 2008, on Nicaragua).

The mostly “defensive” nature of this form of vigilantism distinguishes it from resemblant forms of group violence, such as racially motivated lynchings and ethnic riots (Tolnay and Beck,

¹⁰Bateson conceptualizes vigilantism along five dimensions: whether it is individual versus collective, violent versus non-violent, private versus public, spontaneous versus institutionalized, and defensive versus offensive. In these terms, mob vigilantism is collective, violent, public, spontaneous, and defensive vigilantism.

1995; Pfeifer, 2021; Scacco, 2010; Weintraub, 2021; Wilkinson, 2006). Mob vigilantism does disproportionately target certain groups. For example, the evidence below suggests that mob vigilantism is more often directed toward men than toward women. Anecdotal accounts—e.g., on spates of violence targeting immigrants accused of theft in South Africa in 2008 and 2015—suggest members of minority groups may be particularly likely to be targeted. However, even if discriminatory in practice, the incidents that this chapter focuses on do not have as their putative purpose the persecution and control of specific identity groups. Rather, mob vigilantism is a response to alleged criminal acts.

The chapter focuses predominantly on violence in response to offenses that clearly fall under the jurisdiction of the state, such as robbery, assault, and reckless driving. As mentioned in chapter 2, there is also a gray zone of mob vigilantism that arises in response to social transgressions many citizens may consider “criminal” even though these transgressions do not fall within the purview of the state. Into this gray zone falls mob vigilantism in response to allegations of black magic or witchcraft.¹¹ In the contexts covered by this chapter, group-based punishments appear to arise more commonly in response to allegations of petty crime than in response to witchcraft allegations. Among 426 cases of vigilante killings in Uganda in 2013, for example, 70% were a response to theft, robbery, or burglary, and 9% a response to murder. Only 1% arose in response to allegations of witchcraft (Uganda Police, 2013).¹² As will be described in more detail below, witchcraft-related vigilantism is nonetheless of interest to this study. Previous research suggests that the ability to use black magic is often attributed to women (Miguel, 2005; Oster, 2004), which provides a potentially informative contrast to statutory offenses.

The chapter assumes throughout that mob vigilantism is more “violent” than punishments that would be meted out by the state for equivalent transgressions. This assumption may seem at odds with reports of human rights abuses by police and carceral systems in many Sub-Saharan

¹¹Another example is so-called “cow vigilantism” in India, whereby predominantly Muslim citizens are attacked by groups of predominantly Hindu citizens in response to allegations of killing cows. While many states place legal restrictions on cow slaughter, states such as Assam experience cow vigilantism despite placing no legal restrictions on cow slaughter.

¹²20% of incidents arose as a result of other unspecified causes.

African states. While incidents of mob vigilantism may sometimes deescalate or end without debilitating injury to the accused, respondents in this and other studies describe horrific acts of murder and public torture when asked to describe examples of “mob justice,” as it is colloquially known in many contexts. One common method of punishment called “necklacing,” for example, involves burning victims to death by placing a tire over the shoulders of the accused, filling it with petrol, and setting it alight.

3.3 Empirical Strategy

This chapter draws on diverse sources of survey data to measure respondents’ support for mob vigilantism. Details of sampling and question wording will be described for each result in turn below. The following linear regression specification is used to estimate gender gaps in support:

$$Y = \alpha + \beta x + C\gamma + \epsilon.$$

Y here is a vector of binary indicators for whether the respondent supports mob vigilantism as opposed to reliance on police; α is an intercept; x is a vector of binary indicators for whether the respondent identifies as a woman and β the main coefficient of interest; C is a matrix of community fixed effects and γ the vector of associated coefficients; ϵ is a vector of error terms. Two-tailed p -values are calculated using a Wald test of the null hypothesis that the coefficient on gender is zero based on a normal approximation to the sampling distribution. Outcomes have been imputed through bootstrapping.¹³

3.4 Main Results

Table 3.1 displays the main results. The main takeaway is that, across different samples, countries, and question wordings, women consistently express higher support for mob vigilan-

¹³For each missing value, one non-missing value is sampled at random. This procedure is, in expectation, identical to mean imputation. All outcomes used in this paper have been imputed using this procedure. Section C.2.4 of the appendix shows that results are almost identical if missing values are instead eliminated through listwise deletion.

tism than men. In some cases, the share of women who support mob vigilantism is almost twice as high as the share of men.

The first three columns draw on data collected in 2015, 2016, and 2017 as part of an unrelated study on mass media and social norms in 168 villages in Uganda's central region. Respondents in each village were sampled at random, but the set of villages is a convenience sample. Villages were selected to fit two criteria. First, each village had to have a local video hall. Video halls are akin to makeshift movie theaters and common in rural Uganda. Villages also had to be at least four kilometers apart from all other villages in the sample.¹⁴

Analyses in columns that label the "Target of mob" as "Driver" rely on a survey question that asks respondents to imagine that a truck driver drove through their village and ran over a small girl, killing her. The scenario suggests that a group of men from the respondent's village got hold of the truck driver. It asks the respondent which of the following two statements comes closest to her view:

1. The group of men should beat the truck driver to teach him a lesson.
2. The group should leave it to the police to investigate and to determine the truck driver's punishment.

Columns 1 and 2 of Table 3.1 show that women in the 2015 and 2016 samples are five percentage points more likely to select the first statement than men. Among men, 6% of respondents agree with the first statement. In relative terms, the support for mob vigilantism is thus 80% higher among women. The *p*-value indicates that this difference is highly unlikely to arise due to sampling variability alone ($p < 0.01$).

In 2017, during re-interviews of some 2016 respondents and interviews with new respondents from the same villages, the question wording was changed to focus on a common form of mob

¹⁴The distance constraint in the 2015 sample was five kilometers. In 2015 we interviewed 2,431 and in 2016 we interviewed 5,534 adult respondents. In 2017, we re-interviewed 1,041 respondents from the 2016 survey, in addition to 915 new respondents. When conducting pooled analyses, the answers of 1,041 respondents who were re-interviewed in 2017 are excluded, and the sample is restricted to responses from the first time when respondents were asked about mob vigilantism in 2016. In total, we interviewed 8,880 unique respondents in Uganda. See Wilke, Green and Cooper (2020) and Green, Wilke and Cooper (2020) for more details on sampling.

vigilantism that is of great concern to women: marketplace theft. The question wording was designed to create empathy with the crime victim. The goal of placing the statements of support for mob vigilantism in the words of “friends” was to reduce social stigma associated with endorsing violence. The question read:

Suppose a widow from your village is selling soap in the market in order to raise enough money to send her son to school. One day, when she is about to close up for the day, a young man on a boda [motorbike] from a different village rides past and grabs her money, stealing all the money that she made during the day. Observing the incident, some men from your village manage to push the driver off his bike. One friend turns to you and says, “We should call the police, this man could be hurt.” The other friend says, “The police won’t do anything, we should punish him now.” Which friend would you agree with?

The results are reported in column 3. As expected, the alternative wording does elicit higher levels of support. At 12%, men’s rate of support for mob vigilantism is twice as high as when they are asked about the truck driver. However, the absolute difference between men and women’s support remains constant. Women are five percentage points more likely to indicate they would agree with the friend who endorses mob vigilantism. In relative terms, the gender gap is lower in magnitude, but support for vigilante violence is still 40% higher among women.

Column 4 reports results based on data from a baseline survey conducted in 2018 in thirty-six villages in Pangani, Tanzania, as part of a field experiment on radio and social norms (Green and Groves, 2018). Respondents were randomly sampled from within villages, and villages were selected as a function of their proximity to radio transmitters. The question wording is the same as that used for the outcome in columns 1 and 2, focusing on the treatment of a truck driver who recklessly killed a young girl. Again, there are sizable and statistically significant gender differences: Women are four percentage points more likely than men to support mob vigilantism. As in the samples from Uganda, the share of men who support mob vigilantism against a truck driver is 6%.

	Mob Vigilantism Preferred over Police Intervention								
	Uganda 1 (1)	Uganda 2 (2)	Uganda 3 (3)	Tanzania 1 (4)	Tanzania 2 (5)	South Africa (6)	South Africa (7)	Pooled (8)	Afrobarometer (9)
Woman	0.048*** (0.011)	0.046*** (0.007)	0.048*** (0.017)	0.036** (0.014)	0.041* (0.024)	0.049** (0.022)	0.012 (0.021)	0.043*** (0.005)	0.023*** (0.003)
Mean among men	0.06	0.06	0.12	0.06	0.07	0.06	0.11	0.07	0.1
Area FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Target of mob	Driver	Driver	Thief	Driver	Thief	Thief	Driver	Mix	
Crime victim gender	W	W	W	W	W	M	W	Mix	
Observations	2,431	5,534	1,956	1,365	601	604	1,300	12,750	51,587
Adjusted R ²	0.013	0.014	-0.004	0.019	0.006	0.003	-0.003	0.020	0.073

Note:

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

Table 3.1: Across six different samples in Uganda, Tanzania, and South Africa, as well as the 2015 Afrobarometer, women are more supportive of mob vigilantism than men.

Coefficients stem from a linear model that regresses a binary indicator for whether the respondent supports mob vigilantism as opposed to reliance on police on community-level fixed effects and a binary indicator for whether the respondent identifies as a woman. Significance stars are based on a two-tailed Wald test of the null hypothesis that the coefficient on gender is zero using a normal approximation to the sampling distribution. The samples used in columns 2 and 3 share 1,041 respondents. The row labeled “Target of Mob” provides information about the hypothetical accused whom respondents were asked to consider when deciding whether they would support mob vigilantism. The row labeled “Crime victim gender” indicates whether the accused was described as having committed a crime against a man (*M*) or a woman (*W*).

So far, all survey measures of support for mob vigilantism involved scenarios in which vigilante mobs punish someone who is accused of having committed a crime against a woman or a girl. This question wording raises the concern that the observed gender gap in support is an artifact of our measurement strategy. For example, women may identify more strongly than men with the crime victims in these scenarios and hence have a greater demand for punishment. Columns 5 and 6 report results from a survey that randomly varied the gender of the crime victim in the survey vignette. The survey was part of a separate field experiment on radio soap operas conducted in thirty rural villages throughout fifteen wards in Tanzania's northeastern Tanga Region (Green, Groves and Manda, 2020). Again, the villages were selected non-randomly as a function of the experimental requirements, and respondents were randomly selected within villages. The question wording focused on a common form of mob vigilantism in Tanzania:

A [man/woman] from your community is blowing the whistle, because [he/she] saw someone stealing food and a box of cold drinks from [his/her] yard. The neighbors come running and one of them gets hold of the thief. Again, which of the following do you believe the neighbors should do?

The pronouns in square brackets distinguish the two versions of the scenario that differ in terms of whether the crime victim is a man or a woman. Simple random assignment was used and each respondent was read only one scenario. Respondents who answered "The neighbors should beat the thief there and then" instead of "The neighbors should call the police and leave it to them to deal with the thief" are coded as supportive of mob vigilantism. Despite differences in region and question wording, the results are remarkably consistent with the three Ugandan samples and the other sample from Tanzania. Women are four to five percentage points more likely than men to support mob vigilantism, irrespective of whether the crime victim is a man or a woman. Hence, the gender gap does not seem to be driven by the gender of the victim of crime in the vignettes.

Column 7 reports the gender gap in answers to the truck driver question fielded during a nationally-representative survey in South Africa. Citizen Surveys South Africa included the question as part of their May 2018 public opinion survey, fielded in-person among a multi-stage, stratified random sample. The estimated gender gap is again positive, though it is not statistically

significant.

Column 8 pools the samples included in columns 1 through 6.¹⁵ Across data collection efforts from 2015 to 2019 in over 640 Sub-Saharan African communities, women are four percentage points more likely than men to support mob vigilantism over police intervention. The standard error is small relative to the estimated effect, suggesting the likelihood of this difference arising due to sampling variation alone is low ($p < .001$).

The final column of Table 3.1 uses the 2016 round of the Afrobarometer data to test for gender gaps in support for mob vigilantism across thirty-six Sub-Saharan African countries. The question asks, “If you were a victim of crime in this country, who, if anyone, would you go to first for assistance?” Respondents are coded as supportive of mob vigilantism if they answered they would first go to their “own family or friends” or that they “would join with others to take revenge.” Again, there is statistically significant (if substantively smaller) evidence for a gender gap in support for mob vigilantism. Among men, 10% of respondents say that they would turn to friends or family, or that they would join others in taking revenge. The share of women who choose these vigilantism related answer options exceeds that of men by roughly two percentage points.

3.5 Mechanisms

Why might women be more supportive of vigilantism than men? This section delves into beliefs that may underpin the observed gender gap in support for extra-judicial punishment. The section makes use of additional survey measures and vignette experiments from Uganda and Tanzania to provide evidence that men and women differ in their understanding of how vigilantism operates. The section shows that men are more likely than women to believe that mob vigilantism poses risks for the innocent, and that these risks may be concentrated on men.

¹⁵Excluding 1,041 observations from the sample in column 3 who were already interviewed as part of the sample in column 2.

3.5.1 Conceptual framework

Vigilante acts typically consist of gruesome assaults and often result in the death of criminal suspects. Nonetheless, a substantial minority of citizens in all contexts that are part of this study appears to support vigilantism. What generates demand for such extreme violence? In qualitative interviews, respondents often justified their support by pointing out that those accused of crime deserve harsh punishments and that harsh treatment of supposed criminals in public will teach a lesson to others who commit crime. One South African woman said, for example, “Yes, when we get them [‘the criminals’], we will kill them,” suggesting criminal suspects deserve to be executed. Similarly, market vendors in Uganda spoke in favor of the public beating of thieves with a *kiboko* (heavy cane), explaining that they believed this practice to have a discouraging effect on other pickpockets.

Vigilante punishments are, in many cases, harsher than sentences handed out by the state. It is common for vigilante mobs to kill suspects for snatching a handbag or for burglary of household items. Such petty crimes would, at most, result in a prison sentence when reported to the state. Incidents of vigilante violence are also often watched by entire communities. As foreshadowed in chapter 2, a preference for harsh and public sanctions, linked to an inherent taste for punishment or a strong concern for deterrence of crime, may thus drive demand for vigilante violence. This logic is in line with other recent work on vigilantism. Smith (2019) argues, for example, that supporters of vigilantism in South Africa believe that the state does not punish criminals harshly enough.¹⁶

An important assumption that appears to underly the view that vigilantism is an effective way to place harsh punishments on wrongdoers is that vigilante acts are indeed directed towards those who break the law. Anecdotal accounts suggest, however, that the evidence base for community judgments of guilt or innocence is often tenuous. Where suspects have not been caught red-handed, accounts of individual witnesses or vaguely related circumstantial evidence often

¹⁶See Baron et al. (2021) for related arguments on punitive violence in Mexico.

seem sufficient to trigger vigilante violence.¹⁷ These features open the door for both accidental accusations of innocent individuals who happen to be in the wrong place at the wrong time and deliberate false accusations levied to settle personal vendettas.

The possibility that vigilante attacks could target innocent community members may be one downside that shapes citizens' views on vigilantism. Even someone who would like those who commit crime to be executed, for example, may be hesitant about supporting a practice that executes innocent people. Assaults that are thought to target individuals who did not commit crime are unlikely to bring satisfaction to those who have an intrinsic preference for harsh punishments of rule breakers. Moreover, the suspicion that vigilantism targets non-criminals may also create doubts about its deterrent effect. The ability of vigilantism to deter crime crucially depends on the perceived correlation between guilt and the likelihood of being the target of vigilante violence. To see why, imagine that vigilante mobs were known to randomly select their victims without any regard to involvement in crime. In this case, all citizens would face the same likelihood of being attacked by a mob, irrespective of whether they engage in crime. Vigilantism should not have any impact on whether individuals decide to break the law in this scenario. Finally, the notion that vigilante mobs may target innocent community members also raises the possibility that oneself or one's friends or family could be attacked for a crime that was committed by someone else.

The possibility of wrongful accusation may dampen citizens' categorical support for mob vigilantism. Similar dynamics have been documented with respect to harsh punishments by the state. Norris and Mullinix (2020), for example, show that information about the prevalence of wrongful convictions in the US justice system reduces overall support for capital punishment.

¹⁷The following anecdote illustrates the fragility of the evidence base on which vigilante violence can be based. Residents of the police precinct in South Africa's Northwest Province that was the setting for the study presented in chapter 2 assaulted a man who had come to the precinct from a neighboring community. Community members found that the man had in his possession a phone, which was thought to have been stolen by a group of men known for their addiction to nyaope (a prevalent drug in South Africa). Since those engaged in substance abuse often exchange stolen goods for drugs, community members concluded that the man must be a drug dealer. Police arrived before the accused was injured, and could not ascertain any evidence that the accused was involved in the drug business. It remained unclear whether his phone was indeed the phone that had been stolen, and whether any phone had been exchanged for drugs. The accused opened a case against the community members who assaulted him (Interview with police, 8 May 2018, Northwest Province).

The possibility of false accusations appeared to loom large in the minds of men in qualitative interviews. The head of security of one of the largest markets in Uganda, for example, described how he must be careful where he puts his hands when he moves about the market, lest his brushing past someone be mistaken for an attempt at pickpocketing.¹⁸ Similarly, a South African respondent recalled a case in which a man was running away from a group of men who were attempting to rob him and ended up being mistaken for the accused and attacked.¹⁹ Market vendors in Uganda mentioned that criminals sometimes levy false accusations against innocent vendors in the market to create a mob situation that allows them to escape.²⁰ Finally, a young man in South Africa expressed the view that mobs often beat up people who did not actually commit the crime of which they are accused. When asked whether he was personally afraid of being accused, he responded: “it is very risky.” He explained that, once one has been accused, it is almost impossible to convince “the community” of one’s innocence.²¹ Women, on the other hand, were less likely to mention the risk of false accusations in qualitative interviews. Of eleven female focus group participants and interview respondents in South Africa, for example, not one mentioned false accusations as a problematic feature of vigilantism – all seemed convinced that vigilante mobs mostly assault victims who in fact committed a crime.²²

Hence, one reason for the gender gap in support for vigilantism may be that men are more convinced of the risks that it poses not only for those who are involved in crime but also for those who are not. Yet, if different beliefs about the risks associated with mob vigilantism do lead to the gender gap observed in Table 3.1, how does this disparity in beliefs arise?

¹⁸Interview in Kampala, Uganda on 31 May 2017.

¹⁹Interview on August 9 2018 with resident of the police precinct in South Africa’s Northwest Province where the study described in chapter 2 took place.

²⁰Focus group with market vendors in Owino market, Kampala, Uganda on 31 May 2017.

²¹Interview on August 9 2018 with resident of the police precinct in South Africa’s Northwest Province where the study described in chapter 2 took place. Similar accounts can be found in other contexts where mob vigilantism is prevalent. Consider the following example from an article on lynching in Nigeria: “In Ikeja, Lagos, in 2011, two men, Alaba and Samuel were severely beaten and very nearly killed for eating human flesh. Closer investigation showed that what they’d been chewing on was, in fact, beef.” (See Cole, Teju. October 24 2012. “Perplexed... Perplexed’: On Mob Justice in Nigeria.” *The Atlantic*. <https://www.theatlantic.com/international/archive/2012/10/perplexed-perplexed-on-mob-justice-in-nigeria/264006/>. Accessed July 21 2018.)

²²Focus group on 31 July 2018 with six women residents of the police precinct in South Africa’s Northwest Province where the study described in chapter 2 took place. Interviews with five women residents of the same precinct on 7 August 2018.

One possibility is that men estimate the tendency of vigilante mobs to attack innocent citizens to be higher, because men face a greater risk than women of being personally accused of a crime that they did not commit. In many contexts, men are more likely to commit crimes than women. Figure C.1 in section C.1.1 of the appendix, for example, shows that women make up roughly 3% of the prison population across Sub-Saharan Africa. Unless state justice systems are severely biased in favor of women or women are substantially better at committing crimes without being caught, the plot suggests that the vast majority of crimes are committed by men.

As described above, vigilante mobs make quick decisions about whether someone is guilty or not, often in the face of substantial outrage over the crime that was committed. Widely held beliefs about the kinds of people who typically commit crime may play an outsized role in who is singled out as a target. As a consequence, the risk of being falsely targeted for a crime that one did not commit may be substantially higher for men than for women.²³ In line with this logic, Uganda's Annual Crime Report lists that 94% of the 508 people killed by mobs in 2013 were men (Uganda Police, 2013), which is similar to the figures reported in a recent press review in Ghana by Adzimah-Alade et al. (2020), who find 92% of those targeted by mobs are men. The vast majority of cases of vigilante violence that came up in qualitative interviews were directed at men.

Both women and men may judge the overall risk of false accusations based on their own personal experience and the experiences of people in their networks. If the risk of being punished for a crime that one did not commit is concentrated on men, men may over- and women may underestimate this risk, especially in societies where social networks are formed along gender lines.²⁴ Alternatively, men may have greater incentives to learn about the frequency of false accusations. Scrutinizing an allegation may not be a first priority among people who never expect to be subject to allegations. However, people who feel they could be falsely accused themselves may pay greater attention to the details of the evidence base or attempt to investigate after the

²³See Farmer and Terrell (2001) for similar arguments about gender and crime in the US context.

²⁴Zalman, Larson and Smith (2012) make use of a similar logic to explain why non-white respondents in the US perceive a greater frequency of wrongful convictions by the state's justice system than white respondents.

fact. Hence, men may face stronger incentives to learn about the risk of false accusations than women.

One exception to this logic may be vigilante attacks in response to accusations of “witchcraft” or “black magic.” In some contexts, stereotypes about witches are highly gendered with the stereotypical “witch” being a woman (Miguel, 2005). Where this is the case, the risk of being accused of and punished for using witchcraft may be concentrated on women. Moreover, it is unclear what it means for a witchcraft allegation to be based on a tenuous evidence base or how one should think about certainty of guilt in the case of witchcraft. Neither the measurements of support for vigilantism used nor the explanation for the observed gender gap put forward in this chapter fully extend to witchcraft related vigilantism. Hence, the subsequent analyses mainly focus on vigilante violence in response to offenses that are unrelated to black magic. Findings that relate to witchcraft are discussed in passing.

As a first step towards understanding whether the belief based mechanisms outlined here contribute to the gender gap in support for vigilantism, the subsequent sections investigate whether women and men do indeed differ in their beliefs about the risks that mob vigilantism poses for those who do not commit crime. Demonstrating the existence of a divergence in beliefs across genders, however, does by no means establish that this disparity contributes to the gender gap in support for vigilante violence. As mentioned in chapter 2, questions about mediation are notoriously difficult to answer. One problem is that women and men differ along many dimensions other than their beliefs about the risk of false accusations. As a second step, this paper thus provides evidence that speaks against the notion that the gender gap in support is driven by some of the main other ways in which women’s views may diverge from those of men. A more direct test of the importance of beliefs about the risk of false accusations may attempt to experimentally manipulate these beliefs in the context of a mechanism experiment akin to the one presented in chapter 2. The discussion section returns to this possibility as an opportunity for future research.

3.5.2 Study 1: Gendered understandings of vigilantism in Uganda

Study 1 is designed to answer two questions. First, do men and women indeed differ in their assessments of whether vigilante violence can be a response to allegations of crime that rest on a tenuous evidence base? Second, what are respondents' beliefs about whether vigilante violence tends to target men and women, respectively? The experiment was implemented as part of the 2017 household survey in rural Uganda described above (Wilke, Green and Cooper, 2020; Green, Wilke and Cooper, 2020). Respondents were asked to rate a hypothetical scenario that involves an act of vigilantism in terms of how likely they believe it is that the scenario could happen in their village. A number of characteristics of the scenario were randomly varied in order to find out what kinds of vigilante scenarios men and women find plausible.

Design

The 2017 household survey encompassed a sample of $N = 1,956$ respondents from rural Ugandan villages (see section 3.4 above for details on sampling of respondents). As part of a longer interview on a variety of topics, enumerators read the following scenario to respondents:

Imagine a situation in which a [man/woman] [from your community] [is accused of/is observed] [stealing from/using black magic against] a [man/woman] [from your community]. [A bystander/the victim] gathers a group of people [in the garden/in the market place] and they [beat/kill] the [accused/perpetrator].

The square brackets indicate attributes of the scenario that were varied at random. Each attribute could take two possible values. For example, the accused was introduced as either a man or a woman. The second attribute shows only one expression because the accused was either labeled as "from your community" or no information was given on the origin of the accused. All attributes were varied independently using simple random assignment and each respondent was read exactly one randomly assigned version of the scenario. Respondents were then asked to rate how likely it is that such a situation could occur in their community.

Three of the attributes were designed to vary the extent to which the scenario allows for false accusations. First, it was varied whether the scenario implies that the suspect has been caught red-handed. The scenario describes the suspect either as being “observed” or as being “accused” of committing the offense. The word “observed” primes respondents to think that witnesses exist. The word “accused” creates the possibility that the evidence base is more tenuous. The second variation is that the scenario refers to the criminal suspect either as “the accused,” which implies uncertainty of guilt, or as “the perpetrator,” which implies certainty of guilt. Finally, it was varied whether it is a bystander or the victim who gathers the group of people who beat the accused. Mention of a bystander who gathers a group of vigilantes suggests again that there is at least one other person who is willing to corroborate that the crime actually happened. A scenario in which the alleged victim him- or herself rallies the community leaves more room for accusations to be fabricated. Apart from the extent to which the scenario implies a tenuous evidence base, scenarios also varied in terms of the gender of the person who is the target of the vigilante act.

The goal is to understand the effect of these variations on whether women and men believe that such a vigilante incident could ever happen in their village.²⁵ All results shown in the text are based on a dataset that excludes respondents who received the version of the scenario in which the suspect is accused of black magic rather than of theft. Results for respondents that were assigned to a black magic scenario are shown in the appendix.

As standard in the literature on vignette experiments (Hainmueller, Hopkins and Yamamoto, 2014), the focus is on the average marginal component effects (AMCEs) of each prime. The effect of each individual prime may vary depending on the other details of the scenario to which a respondent was assigned. The AMCE reflects the average effect of each prime, where the average is taken across the distribution of all other characteristics of the scenario that results from the randomization scheme. AMCEs are estimated separately among men and women using a simple

²⁵The original answer options were “Something like this would never happen in my village,” “Something like this could happen, but it is not very likely,” “This is the sort of thing that sometimes happens in my village” and “Things like this are very common in my village.” The outcome used here is a binary indicator that takes the value 0 if the respondent said ‘Something like this would never happen in my village’ and the value 1 otherwise. Section C.2.2 in the appendix shows that results are qualitatively similar when using the ordinal measure as an outcome.

difference-in-means estimator.

Results

Let us first focus on the effect of the three primes that vary the extent to which the scenario allows for false accusations. The first subtable of Table 3.2 displays the percentage of women and men who indicate that the vigilante incident could happen in their village broken down by whether or not respondents were assigned to the version of the scenario that explicitly mentions that the crime has been observed.

Men are roughly five percentage points *less* likely to say the scenario could happen in their village if the scenario specifies that the crime has been observed. Even though this estimate falls short of statistical significance, the direction of the effect suggests that men are more inclined to deem a scenario plausible if it leaves open the possibility that the target of the vigilante act is innocent. The opposite is the case for women. The share of women who consider it likely that the scenario could happen in their village is around 9 percentage points *higher* if the scenario mentions that the crime has been observed. This difference in means is highly statistically significant. In contrast to men, women thus seem more inclined to deem vigilante scenarios plausible if the guilt of the suspect appears certain. These results are in line with the notion that men are more likely to believe that vigilante mobs operate on a tenuous evidence base.

This interpretation is re-enforced when we focus on the descriptive differences across men and women, holding constant the randomized primes. The share of women who consider plausible a scenario in which a suspect has merely been accused but not observed in the act is almost 10 percentage points lower than the share of men who consider such a scenario plausible. When it comes to scenarios in which the suspect has been observed, on the other hand, the share of women who believe that such a scenario could happen in their village exceeds that of men by roughly 4 percentage points.

Mob responding to [observation / accusation] of crime could happen in my village.			
	Women (N = 543)	Men (N = 465)	<i>Estimated gender gap:</i>
Suspect was observed (N = 529)	65.3%	61.4%	+3.9 pp.
Suspect was accused (N = 479)	56.1%	66.5%	-10.4 pp.**
<i>Estimated prime effect:</i>	-9.2 pp.**	+5.1 pp.	-14.3 pp.**

Mob targeting [perpetrator / accused] could happen in my village.			
	Women (N = 543)	Men (N = 465)	<i>Estimated gender gap:</i>
Suspect described as ‘perpetrator’ (N = 535)	60.3%	59.3%	+1 pp.
Suspect described as ‘accused’ (N = 473)	61.7%	69.3%	-7.7 pp.*
<i>Estimated prime effect:</i>	+1.4 pp.	+10.1 pp.**	-8.6 pp.

Mob instigated by [bystander / victim] could happen in my village.			
	Women (N = 543)	Men (N = 465)	<i>Estimated gender gap:</i>
Bystander instigates mob (N = 501)	62.6%	59.5%	+3.1 pp.
Victim instigates mob (N = 507)	59.2%	67.8%	-8.6 pp.**
<i>Estimated prime effect:</i>	-3.5 pp.	+8.2 pp.*	-11.7 pp.*

Mob could happen when all three primes [reduce / heighten] false accusation risk			
	Women (N = 149)	Men (N = 128)	<i>Estimated gender gap:</i>
All three primes reduce risk of false accusation (N = 149)	67.9%	49.2%	+18.6 pp.**
All three primes heighten risk of false accusation (N = 128)	52.3%	71.4%	-19.1 pp.**
<i>Estimated prime effect:</i>	-15.5 pp.*	+22.2 pp.**	-37.7 pp.***

Table 3.2: Beliefs about the plausibility of vigilantism among women and men in Uganda

Data stem from 2017 household survey in rural Uganda. Results are estimated among subset of respondents presented with an incident of theft (as opposed to black magic). Last subtable is subset to respondents assigned either to all three primes that increase uncertainty of guilt (scenario does not mention that crime was observed, suspect is referred to as “accused” and incident was instigated by victim) or to none of these primes (scenario mentions that crime was observed, suspect is referred to as “perpetrator” and incident was instigated by a bystander). Significance stars indicate statistical significance based on a two-tailed unequal variance *t*-test of the null hypothesis that the AMCE is zero or that group means are equal across genders. **p*<0.1; ***p*<0.05; ****p*<0.01

Similar patterns can be observed in the second and third subtables of Table 3.2. Men are roughly 10 percentage points more likely to think it plausible that a vigilante incident could have happened in their village if the suspect is referred to as “the accused” rather than the “perpetrator,”

a difference in means that is highly statistically significant. The same change in wording does not appear to have any effect on women's assessments of whether a scenario is plausible.

Turning to the identity of the instigator, men are eight percentage points more likely to deem victim-instigated incidents plausible as compared to bystander-instigated incidents. Again this difference is statistically significant. Women are, if anything, less likely to believe that an incident could have happened in their village if the scenario mentions that the incident was instigated by the victim of the crime. Finally, comparing across genders, both subtables illustrate men are more likely than women to believe in scenarios that suggest the suspect may not have committed a crime.

The final subtable restricts attention to extremes, comparing respondents who received either all three of the primes signaling uncertainty of guilt or none of them. Scenarios that do not mention that the crime was observed *and* refer to the target of the vigilante act as "the accused" *and* state that the vigilante act was instigated by the crime victim should be most indicative of the possibility that the suspect may not have committed the crime. Conversely, scenarios that describe the crime as observed *and* refer to the suspect as the "perpetrator" *and* state that the vigilante act was instigated by a bystander should provide the strongest indication that the suspect is guilty.

The patterns that emerge are striking. A little less than half of the men who were assigned to a scenario that strongly implies certainty of guilt believe that the scenario could have happened in their village. Among men who were assigned to a scenario that casts doubt on the guilt of the target, roughly 70% consider the scenario plausible – an increase of more than 20 percentage points. This effect is highly statistically significant. Among women, the effect is almost of the same size but in the opposite direction. Roughly 68% of women who were assigned to a scenario that implies certainty of guilt believe that the scenario could have happened in their village. This share decreases by almost 16 percentage points to around 52% if women are asked to consider a scenario in which the evidence base seems tenuous. Not only are the estimated effects among women and men statistically significant, but the difference between them is highly statistically

significant as well. Moreover, the estimated gender gaps indicate men are almost 20 percentage points more likely than women to consider scenarios in which the evidence base is tenuous plausible. The share of women who believe that scenarios that strongly imply certainty of guilt are plausible exceeds the share of men who find such scenarios convincing by roughly the same amount.

Overall, the results from the vignette experiment are thus in line with the patterns that emerged from qualitative evidence. Women appear to believe less strongly in the possibility that vigilantism can be directed towards someone who did not commit a crime. Men’s perception of high risks of false accusations may lead them to support vigilantism at lower rates than women.

Mob targeting [man / woman] could happen in my village.

	Women (N = 543)	Men (N = 465)	<i>Estimated gender gap:</i>
Mob targets woman (N = 491)	57.9%	55.7%	+2.2 pp.
Mob targets man (N = 517)	63.7%	72.4%	-8.7 pp.**
<i>Estimated prime effect:</i>	+5.8 pp.	+16.7 pp.***	-10.9 pp.*

Table 3.3: Beliefs about the plausibility of vigilantism among women and men in Uganda by whether the target is a woman or man

Data stem from 2017 household survey in rural Uganda. Results are estimated among subset of respondents presented with an incident of theft (as opposed to black magic). Significance stars indicate statistical significance based on a two-tailed unequal variance *t*-test of the null hypothesis that the AMCE is zero or that group means are equal across genders. **p*<0.1; ***p*<0.05; ****p*<0.01

As hypothesized above, this divergence in beliefs may be due to men being more likely to become the targets of vigilante attacks. Do women and men indeed see vigilante violence that is directed toward women as less plausible? As can be seen in Table 3.3, both women and men appear to find scenarios in which vigilante mobs target a man more plausible than scenarios in which the target is a woman. The estimated difference between the share of women who believe that, respectively, a man or a woman could be targeted by a vigilante mob in their village is roughly six percentage points. This difference falls short of statistical significance. Among men the estimated difference is almost 17 percentage points and the estimate is highly statistically significant. While this evidence does not directly speak to the risk of *false* accusations, these

patterns suggest that men in particular perceive that they are more likely to be targeted by vigilantism than women. The tendency is similar among women, though less pronounced. While the rates of women and men who find a scenario with a female target plausible are similar, the share of men who consider the scenario in which the target is a man plausible exceeds the share of women who find such a scenario plausible by roughly nine percentage points.

Taken together, the results of the vignette experiment are in line with the idea that men perceive considerable risks of vigilante violence for those who are not involved in criminal activities. Men also seem to perceive themselves as the primary targets of mob vigilantism. Women, on the other hand, appear less convinced that vigilantism can target citizens who have not committed a crime and do not hold as strong a view as men of the gender gap in victimization.

Tables C.1 and C.2 in the appendix show that patterns are less clear cut among respondents who were assigned to a scenario that involved an accusation of black magic. Here, none of the three primes that imply a tenuous evidence base appears to make a difference for the extent to which both men and women rate a scenario as plausible. The gender of the person who is the target of the vigilante attack, however, does appear to matter. Both men and women again find scenarios in which the target is a man more plausible. Men are 12 percentage points more likely to rate a scenario as plausible if the target of vigilante violence is described as a man and not a woman. The share of women who find a scenario plausible is estimated to increase by 5 percentage points when the target is described as a man rather than a woman, but this estimate falls short of statistical significance. These results suggest the belief that magical offenses are typically committed by women may not be as widespread in Uganda. The findings also support the notion that certainty of guilt is a murkier concept when it comes to black magic.

3.5.3 Study 2: Vigilantism and false accusations in Tanzania

Study 2 was designed to further explore the interpretation of the evidence in two ways. First, the survey in Uganda did not include any direct survey measures of citizens' perceptions of the likelihood of false accusations or the risk that one could personally become the target of vigilante

punishment for a crime that one did not commit. Instead, the vignette experiment manipulated the degree to which a scenario of vigilante violence allows for false accusations through subtle primes. This approach helped shed light on the kinds of scenarios that women and men find plausible while guarding against experimenter demand effects. Study 2 takes a more direct approach and asks respondents about their perceptions of the risk of false accusations. This evidence bolsters the claim that the beliefs of men and women diverge.

Design

Study 2 is based on a 2019 household survey with $N = 1,205$ respondents in rural Tanzania (Green, Groves and Manda, 2020). Details of the sampling strategy are provided in section 3.4 above. The study included two measures of respondents' perceptions of the likelihood of false accusations. The first measure concerns general beliefs about the accuracy of community perceptions of guilt but is not specific to the occurrence of vigilante violence:

I will now read you two statements. Please tell me with which of the statements you agree more, even if you do not agree with either one completely.

- Statement 1: If most people in a community think that a person is a criminal, that person is probably a criminal.
- Statement 2: If most people in a community think that a person is a criminal, this does not mean that the person is actually a criminal.

The second measure presents respondents with a scenario that more explicitly involves vigilante violence against an innocent person and asks them to assess the likelihood that they themselves could become the victim of such violence:

Imagine the following situation: A group of people accuses someone of stealing and beats up the person. Later, it turns out that the person was innocent. How likely do you think it is that you would ever be falsely accused and attacked in this way?

- It is very likely for an innocent person to be falsely accused.
- It is somewhat likely for an innocent person to be falsely accused.
- It is not very likely for an innocent person to be falsely accused.
- It is not likely at all for an innocent person to be falsely accused.

Results

Table 3.4 shows that women and men are about equally likely to think that community perceptions of guilt may be wrong. Around 50% of both women and men believe that someone who is deemed a criminal by most people in the community may not necessarily have committed a crime. Hence, women and men do not seem to differ in their general assessments of the likelihood that communities may wrongly denounce community members. That said, the question used to elicit these responses does not explicitly mention vigilante violence. Do women and men differ in their assessments of whether they could personally become the victim of a vigilante attack without having committed a crime?

The lower subtable reports the share of women and men who think it “somewhat likely” or “very likely” that they could be personally attacked by a vigilante mob for a crime that they did not commit. Here, there is a large difference between the beliefs of men and women. Only around 37% of women believe it likely that they could be falsely accused and attacked. The share of men who believe that they could be attacked in this way is almost twice as high: 70% of men deem it likely or very likely that they could be attacked for a crime that they did not commit. That men perceive a greater risk of personally becoming the victim of a false accusation may be one reason why men find vigilante scenarios that are based on a tenuous evidence base more plausible and why they are less supportive of mob vigilantism than women.

Some people suspected of crimes are not necessarily criminals.			
	Women (N = 604)	Men (N = 601)	<i>Estimated gender gap:</i>
% who agree:	49.2%	49.6%	-0.4 pp.
It is somewhat or very likely for an innocent person be falsely accused.			
	Women (N = 604)	Men (N = 601)	<i>Estimated gender gap:</i>
% who agree:	36.6%	70.2%	-33.6 pp.***

Table 3.4: Beliefs about mob vigilantism among women and men in Tanzania

Data stem from 2019 household survey in rural Tanzania. Significance stars indicate statistical significance based on a two-tailed unequal variance *t*-test of the null hypothesis of equal means across groups. **p*<0.1; ***p*<0.05; ****p*<0.01

3.6 Alternative Explanations

The previous section has proffered an explanation for the gender gap in support for mob vigilantism. Women and men have different understandings of the risk that such violence poses to innocent bystanders and themselves. Of course, the evidence presented does not conclusively establish that this divergence in beliefs is behind the gender gap in support that we observe. The next section provides evidence with regard to alternative mechanisms. There is little evidence in favor of these alternatives.

3.6.1 Differential police treatment

Most of the measures of support for mob vigilantism used in this chapter invite respondents to identify which of two alternatives comes closest to their preferred option: mob vigilantism or police intervention. Accounts of mistreatment and misogyny at the hands of predominantly male police forces can be found throughout the world, as well as in Sub-Saharan Africa. Therefore, one might ask whether women are more likely to support mob vigilantism because they hold a dimmer view of police than men.

Table 3.5 displays estimates of gender gaps in several measures of respondents' approval of police. All outcomes vary from 0 to 1. Section C.3.1 of the appendix provides details on question wording. Columns 1, 2, and 4 suggest women in two of the Uganda surveys and the first Tanzania survey are more likely than men to expect satisfactory treatment by police if they were robbed. Column 3 illustrates that women in Uganda are more likely than men to indicate it is unlikely a police officer would expect a bribe in exchange for police work. Columns 5 and 6 provide no evidence that women are less trusting of police than men in South Africa and in the Afrobarometer sample. As can be seen in columns 7 and 8, women in the Afrobarometer sample are further less likely than men to believe that police are corrupt and are no more likely than men to report difficulties with access to police.

	Police Approval							
	Uganda 1	Uganda 2	Uganda 3	Tanzania 1	South Africa	Afrobar.	Afrobar.	Afrobar.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Woman	0.038*** (0.014)	0.028*** (0.011)	0.043*** (0.015)	0.030 (0.019)	0.021 (0.024)	0.008*** (0.003)	0.015*** (0.002)	0.0002 (0.002)
Mean among men	0.61	0.51	0.07	0.52	0.42	0.52	0.47	0.47
Area FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Outcome	Satisf.	Satisf.	No Bribe	Satisf.	Trust	Trust	Not Corrupt	Easy access
Observations	2,431	5,534	1,157	1,365	1,300	51,587	51,587	51,587
Adjusted R ²	0.022	0.011	0.025	0.032	0.074	0.156	0.129	0.127

Note:

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

Table 3.5: Women express more favorable views of police than men.

Outcomes range from 0 to 1. Coefficients stem from a linear model that regresses the outcome on community-level fixed effects and a binary indicator for whether the respondent identifies as a woman. Significance stars are based on a Wald test using a normal approximation to the sampling distribution. The row labeled “Outcome” contains information about the outcome measure. See section C.3.1 of the appendix for details on question wording.

In sum, the table lends no support to the notion that gender gaps in support for mob vigilantism are driven by women's distaste for police. If anything, women are more likely than men to expect satisfactory treatment from and to express trust in police.

3.6.2 Differential demand for deterrence

Previous research has suggested women may be more afraid of crime than men and as a result more supportive of harsh punishments (Hurwitz and Smithey, 1998). Therefore, women may express greater support for mob vigilantism than men simply because women have a stronger preference for deterrence. To investigate this possibility, the 2017 survey in rural Uganda elicited respondents' demand for harsh punishments, independent of respondents' support for mob vigilantism. Specifically, the focus was on respondents' views about punishment by the state. Because it was unclear a priori what kinds of punishments would be considered severe, the seriousness of the crime and the length of the resultant sentence were randomized:

Imagine you've been robbed at [gunpoint / knifepoint] and you report the robbery to the police. They arrest the robber, and he will be kept in prison for [1/5/10] year[s]. Is that a severe enough punishment, or should he have been punished more?

1. It is severe enough
2. He should have been punished more

Column 1 of Table 3.6 shows that women in the sample from Uganda are indeed more supportive of harsh punishments than men. Columns 3 and 5 display estimates of the gender gap in support for mob vigilantism from a regression that controls for respondents' preferences over punishment. The idea behind regressions of this kind is to understand whether gender conditions support even if one "blocks" the potential causal path that runs from gender to support for mob vigilantism through support for harsh punishments. Indeed, the estimated gender gap in support for mob vigilantism remains of roughly the same magnitude as reported in the main results table and statistically significant, even when controlling for respondents' preferences over punishment (see columns 3 and 5). This pattern of results provides some reassurance that, while women may

prefer harsher punishments than men, this difference alone does not appear to account for the entire gender gap in support for mob vigilantism. Note, however, that this interpretation rests on strong assumptions about the absence of unmeasured confounders not only in the relationship between gender but also between punishment preferences and support for mob vigilantism (see VanderWeele, 2015, chapter 2.3). Ultimately, this evidence should only be interpreted as suggestive.

3.6.3 Differential demand for due process

The argument put forward in this chapter is that women support mob vigilantism more than men because women's estimate of the risk of getting the "wrong" person tends to be lower than that held by men. Implicit in this claim is the notion that, if women came to believe that this risk is higher, their support for mob vigilantism would drop. An alternative possibility is that men simply care more about protecting those who do not commit crime. If so, a mere change in women's *beliefs* about the risk of false accusations would not be enough to counter their support for mob vigilantism. The 2017 Uganda survey included the following survey measure to elicit how respondents navigate the trade-off between effective punishment and due process protections:

What about situations in which you cannot be sure whether the accused actually committed a crime? Some people say that it is better to punish the accused there and then even if you are not certain of their guilt, because otherwise they might get away with it. Others say that you should get all of the facts before deciding whether to punish someone even if it means that guilty people will sometimes escape punishment. Which view comes closest to your own?

1. It is better to punish the accused there and then even if you are not certain of their guilt, because otherwise they might get away with it
2. You should get all of the facts before deciding whether to punish someone even if it means that guilty people will sometimes escape punishment

	<i>Dependent variable:</i>				
	Should punish more severely	Should punish more swiftly	Mob Should Beat Thief		
	(1)	(2)	(3)	(4)	(5)
Woman	0.054** (0.023)	-0.005 (0.010)	0.045*** (0.017)	0.049*** (0.016)	0.046*** (0.016)
Should punish more severely			0.057*** (0.017)		0.054*** (0.016)
Should punish more swiftly				0.263*** (0.037)	0.260*** (0.037)
Mean outcome among men	0.54	0.05	0.12	0.12	0.12
Observations	1,956	1,956	1,956	1,956	1,956
Adjusted R ²	-0.0002	0.004	0.001	0.021	0.027

Note:

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

Table 3.6: Greater preferences for swift and severe punishments among women in Uganda does not appear to account for the gender gap in support for mob vigilantism.

Data stem from 2017 household survey in rural Uganda. Coefficients stem from a linear model that regresses the outcome on community-level fixed effects, the respective covariate where applicable and a binary indicator for whether the respondent identifies as a woman. Significance stars are based on a Wald test using a normal approximation to the sampling distribution.

As can be seen in column 2 of Table 3.6, there is no evidence that women have a greater willingness to abandon due process protections and to punish without certainty of guilt. Moreover, the estimated gender gap in support for mob vigilantism remains unchanged from the main results when controlling for respondents' demand for due process (see columns 4 and 5). Hence, there is no strong evidence that women's greater support of mob vigilantism is driven by a greater tolerance for punishments of those who do not commit crime.

3.7 Discussion

Across a range of domains and industrialized settings, a large public opinion literature finds greater support for violence among men than among women. This chapter, however, shows that women support vigilante violence at higher rates than men across six different surveys conducted in different countries in Sub-Saharan Africa. While vigilante violence is like other violence in that it is mostly perpetrated by men,²⁶ women nonetheless play an important role in limiting or exacerbating the prevalence of mob vigilantism. Women around the world are frequently assaulted and robbed, and may be driven to instigate mob vigilantism. Conversely, women and men who do not support vigilantism may stop others from participating or deescalate incidents.

Drawing on qualitative evidence, vignette experiments, and additional survey data from Uganda and Tanzania, this chapter has explored the underpinnings of the gender gap in support for vigilante violence. The findings suggest men are more convinced than women that vigilantism poses risks even to those who do not commit crime. The chapter traces this disparity in beliefs to differences in the extent to which women and men are personally affected by such risks.

Like many existing accounts of women's apparent opposition to violence, the explanation presented here points towards the influence of distinct gender roles in society. The chapter suggests that the perception that crimes are mostly committed by men and not women results in a concentration of the risk of being falsely accused by a vigilante mob on men. In contrast to existing accounts, however, this chapter does not link differences in how society treats women and

²⁶See White and Rastogi (2009) for notable exceptions to this rule in India.

men to tastes for violence. The essence of this account is not that women have a stronger desire for violent punishments of those who commit crime. Nor does this chapter argue that men are inherently more inclined to protect those wrongly accused. Instead, the chapter demonstrates that women and men hold different *beliefs* about the extent to which vigilantism threatens the innocent and argues that these beliefs drive varying levels of support.

While the gender gap in support for vigilantism exists across several samples from Sub-Saharan Africa, it is important to ask whether this finding will travel to other points in time and parts of the world. Some aspects of the argument suggest that one should expect to see similar patterns elsewhere. Given the spontaneous and unregulated nature of mob vigilantism, the risk of false accusations is likely a recurrent feature. It is not difficult to find anecdotes about vigilante attacks on innocent citizens in contexts other than the ones considered here.²⁷ In contexts where the risk of being attacked for a crime that one did not commit concentrates among men, similar divergences in beliefs may arise. All else equal, such beliefs may produce similar gender gaps elsewhere. However, it is entirely possible that other ways in which gender identity shapes people's experiences may offset or even reverse the patterns observed here.

One more complicated question is why the gender disparity in beliefs about vigilantism persists despite cross-gender communication and whether the factors that contribute to its persistence are present elsewhere. If men are personally afraid of being wrongly accused, why do they not communicate this fear to the women in their lives? Presumably, women would not want to support a practice that puts their husbands, sons, and friends at risk. While definitively answering this question falls outside the scope of this chapter, the data make it possible to speculate.

Figure C.2 in section C.2.3 of the appendix shows that the gender gap in support for vigilantism widens with age in the six original survey samples in Uganda, Tanzania, and South Africa. Women and men support vigilantism at almost the same rate among 18 to 20 year olds, but the

²⁷Consider a case of mob vigilantism that provoked widespread protests in July 2018 in the Indian state of Assam. Two young men from the state capital went to visit a famous waterfall in the poor, rural district of Karbi Anlong. Unbeknown to the men, rumors of child kidnappers had been circulating for months in the villages neighboring the waterfall. The men were confronted by a villager as they relaxed by a river, so they fled in their car. Convinced he had caught the child kidnappers, the villager phoned ahead to the next community, who stopped the men and beat them for over an hour and a half, as they pleaded for their lives.

gender gap measures five to seven percentage points among those of age 30 or older. Since older cohorts may differ from younger ones in many ways, this pattern is open to multiple interpretations. One possibility in line with the findings is that older cohorts were raised under gender norms that limit cross-gender communication and help sustain the divergence in beliefs across women and men. Another is that women in older cohorts were more confined to tasks that take place in the home and had less exposure to village-level processes such as vigilantism. The ability of these and other explanations to account for gender differences in public opinion observed elsewhere remains a topic for future research.

In contexts in which the gender gap does exist, the interpretation advanced here suggests that informing both women and men about the tenuous evidence base of vigilante attacks may be one way to reduce support for vigilante violence. Doing so may also reduce the gender gap in support observed here. A promising next step to solidify these conjectures will be to randomly expose individuals to information about the risk of false accusations inherent in mob vigilantism. Such a test can be done relatively inexpensively in the context of a survey experiment like the one presented in chapter 2. A more ambitious research design may invite participants to interact with victims who were attacked for a crime that they did not commit or to attend screenings of video messages that dramatize the risk of false accusations. Either design would shed light on the potential of campaigns that stress the risks that vigilantism poses for those who do not commit crime to shore up societal opposition to vigilantism.

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Appendix A: Chapter 1

Proof of Lemma 1. First, let us consider whether other forms of sorting equilibria with two cutpoints exist. Note that all citizens receive the utility $(1 - \alpha)Gb$ from the alternative public good, irrespective of their crime and protection choices. Hence, we can ignore this part of the utility function for the purposes of deriving the sorting equilibrium. Moreover, note also that all terms in the citizen's utility function given in equation (1.2) that pertain to the cost and benefit or engaging in crime are additively separable from those that pertain to the benefit and cost of purchasing private protection. Hence, we can consider these two choices in isolation. Now, suppose that there is an equilibrium in which high income individuals with $\theta_i > \tilde{\theta}_c(\alpha)$ commit crime while low income individuals with $\theta_i \leq \tilde{\theta}_c(\alpha)$ refrain from doing so. The net benefit of committing crime is given by

$$\mathbb{E} [\theta_i \mid \theta_i \notin \lambda_p] - d\theta_i - \alpha Gs.$$

This expression is decreasing in θ_i . As a consequence, if individual i finds it optimal to commit crime and $\theta_i > \theta_j$, individual j must also find it optimal to commit crime. Hence, an equilibrium of this form cannot exist. Second, suppose that there is an equilibrium in which low income individuals with $\theta_i \leq \tilde{\theta}_p(\alpha)$ purchase private protection while high income individuals with $\theta_i > \tilde{\theta}_p(\alpha)$ refrain from doing so. If individual i does not purchase private protection, she loses her legal income θ_i to crime with probability $\frac{\gamma}{\pi}$. If she purchases private protection, she keeps her legal income with certainty but pays cost $c - e\theta_i$. Hence, the net benefit of purchasing private protection is given by

$$\theta_i - c + e\theta_i - \theta_i \left(1 - \frac{\gamma}{\pi}\right)$$

This expression is increasing in θ_i . As a consequence, if individual i finds it optimal to purchase private protection and $\theta_i < \theta_j$, individual j must also find it optimal to purchase private protection. Hence, an equilibrium of this form cannot exist. We have thus shown that, in any sorting equilibrium in which the cutpoints are interior, it must be the case that individuals with $\theta_i \leq \theta_c(\alpha)$ commit crime while individuals with $\theta_i > \theta_c(\alpha)$ refrain from doing so. Similarly, it must be the case that individuals with $\theta_i > \theta_p(\alpha)$ purchase private protection while individuals with $\theta_i \leq \theta_p(\alpha)$ refrain from doing so.

Using the properties of the uniform distribution as described in the text to express $\frac{\gamma}{\pi}$ and $\mathbb{E}[\theta_i \mid \theta_i \notin \lambda_p]$ in terms of θ_c and θ_p yields the following two conditions that have to hold for type θ_c to be indifferent between committing crime and not committing crime and type θ_p to be indifferent between purchasing and not purchasing private protection:

$$\frac{\theta_p}{2} - d\theta_c - \alpha Gs = 0 \tag{A.1}$$

$$\theta_p \left(1 - \frac{\theta_c}{\theta_p}\right) = \theta_p - c + e\theta_p \tag{A.2}$$

The cutpoints given in equations (1.4) and (1.5) are the unique solution to this system of equations.

Next, I show that $0 < \theta_c(\alpha) < \frac{\bar{\theta}}{2} < \theta_p(\alpha) < \bar{\theta}$ for all $\alpha \in [0, 1]$. Since $\theta_c(\alpha)$ is decreasing in α , $\theta_c(1) > 0$ implies that $\theta_c(\alpha) > 0$ for all $\alpha \in [0, 1]$. We thus need

$$\theta_c(1) = \frac{c - 2eGs}{1 + 2de} > 0,$$

which holds for $e < \frac{1}{2}$ and $c > Gs$. Similarly, since $\theta_p(\alpha)$ is increasing in α , we have $\theta_p(\alpha) < \bar{\theta}$ for all $\alpha \in [0, 1]$ if it is true that $\theta_p(1) < \bar{\theta}$, which holds for

$$\theta_c(1) = \frac{2(cd + Gs)}{1 + 2de} = \bar{\theta}_{min} < \bar{\theta}.$$

For $d > 1$, $\bar{\theta}_{min} < \bar{\theta}$ also implies $\theta_c(0) < \frac{\bar{\theta}}{2}$. Since $\theta_c(\alpha)$ is decreasing in α , it is hence true that $\theta_c(\alpha) < \frac{\bar{\theta}}{2}$ for all $\alpha \in [0, 1]$. Finally, it remains to show that $\theta_p(0) > \frac{\bar{\theta}}{2}$, which implies that $\theta_p(\alpha) > \frac{\bar{\theta}}{2}$ for all $\alpha \in [0, 1]$. This is true if

$$\bar{\theta} < \frac{4dc}{2de + 1} = \bar{\theta}_{max}.$$

$d > 1$ and $c > Gs$ imply $\bar{\theta}_{min} < \bar{\theta}_{max}$.

Proof of Lemma 2. The equilibrium probability that an unprotected individual is losing her income to crime is given by

$$\frac{\gamma}{\pi} = \frac{\theta_c(\alpha)}{\theta_p(\alpha)} = \frac{c - 2e\alpha Gs}{2(cd + \alpha Gs)}.$$

In equilibrium, the expected return to crime is equal to

$$\mathbb{E}[\theta_i \mid \theta_i \leq \theta_p] = \frac{\theta_p(\alpha)}{2} = \frac{cd + \alpha Gs}{1 + 2de}.$$

Substituting these expressions into the utility function given in equation 1.2, the indirect utility $u_i(1, 0, \theta_c, \theta_p, \alpha)$ of committing crime without purchasing private protection is given by

$$u_i(1, 0, \theta_c, \theta_p, \alpha) = \theta_i \left(1 - \frac{c - 2e\alpha Gs}{2(cd + \alpha Gs)} \right) + \frac{cd + \alpha Gs}{1 + 2de} - d\theta_i - \alpha Gs + (1 - \alpha)Gb.$$

The second derivative of $u_i(1, 0, \theta_c, \theta_p, \alpha)$ with respect to α is negative, which proves that $u_i(1, 0, \theta_c, \theta_p, \alpha)$ is concave in α :

$$\frac{\partial^2 u_i(1, 0, \theta_c, \theta_p, \alpha)}{\partial \alpha^2} = -\frac{\theta_i G^2 s^2 c (1 + 2de)}{(cd + \alpha Gs)^3} < 0.$$

The preferred budget share $\alpha^*(1, 0; \theta_i)$ of an individual who chooses to remain unprotected and to commit crime is hence given by the solution to the following first order condition:

$$\frac{\partial u_i(1, 0, \theta_c, \theta_p, \alpha)}{\partial \alpha} = \frac{G}{2} \left(\frac{\theta_i s c (1 + 2de)}{(cd + \alpha Gs)^2} - \frac{4sde}{1 + 2de} - 2b \right) = 0.$$

This equation has the following two roots:

$$\alpha_1 = \frac{1}{Gs} \left[-\sqrt{\frac{\theta_i c s (1 + 2de)^2}{2(b + 2de(b + s))}} - cd \right]$$

$$\alpha_2 = \frac{1}{Gs} \left[\sqrt{\frac{\theta_i c s (1 + 2de)^2}{2(b + 2de(b + s))}} - cd \right].$$

We have $\alpha_1 < 0$. Since $\alpha \in [0, 1]$, we must have $\alpha^*(1, 0; \theta_i) = \alpha_2$.

The indirect utility $u_i(0, 0, \theta_c, \theta_p, \alpha)$ of not committing crime and not purchasing private protection is given by

$$u_i(0, 0, \theta_c, \theta_p, \alpha) = \theta_i \left(1 - \frac{c - 2e\alpha Gs}{2(cd + \alpha Gs)} \right) + (1 - \alpha)Gb.$$

The second derivative of $u_i(0, 0, \theta_c, \theta_p, \alpha)$ with respect to α is negative, which proves that $u_i(0, 0, \theta_c, \theta_p, \alpha)$ is concave in α :

$$\frac{\partial^2 u_i(0, 0, \theta_c, \theta_p, \alpha)}{\partial \alpha^2} = -\frac{\theta_i G^2 s^2 c (1 + 2de)}{(cd + \alpha Gs)^3} < 0.$$

The preferred budget share $\alpha^*(0, 0; \theta_i)$ of an individual who chooses not to commit crime and to

remain unprotected is hence given by the solution to the following first order condition:

$$\frac{\partial u_i(0, 0, \theta_c, \theta_p, \alpha)}{\partial \alpha} = \frac{\theta_i G s c (1 + 2de)}{2(cd + \alpha G s)^2} - Gb = 0.$$

This equation has the following two roots:

$$\alpha_3 = \frac{1}{Gs} \left[-\sqrt{\frac{\theta_i c s (1 + 2de)}{2b}} - cd \right]$$

$$\alpha_4 = \frac{1}{Gs} \left[\sqrt{\frac{\theta_i c s (1 + 2de)}{2b}} - cd \right].$$

We have $\alpha_3 < 0$. Since $\alpha \in [0, 1]$, we must have $\alpha^*(0, 0; \theta_i) = \alpha_4$.

Finally, the indirect utility $u_i(0, 1, \theta_c, \theta_p, \alpha)$ of not committing crime and purchasing private protection is given by

$$u_i(0, 1, \theta_c, \theta_p, \alpha) = \theta_i - c + e\theta_i + (1 - \alpha)Gb.$$

$u_i(0, 1, \theta_c, \theta_p, \alpha)$ is linear and hence concave in α . Moreover, $u_i(0, 1, \theta_c, \theta_p, \alpha)$ is decreasing in α , which implies that the preferred budget share $\alpha^*(0, 1; \theta_i)$ of an individual who chooses to purchase private protection but not to commit crime will always lie at the corner, i.e., $\alpha^*(0, 1; \theta_i) = 0$.

The last part of lemma 2 requires

$$\begin{aligned}
& \alpha^*(1, 0; \theta_i) \leq \alpha^*(0, 0; \theta_i) \\
\Rightarrow & \frac{1}{Gs} \left[\sqrt{\frac{\theta_i cs(1 + 2de)^2}{2(b + 2de(b + s))}} - cd \right] \leq \frac{1}{Gs} \left[\sqrt{\frac{\theta_i cs(1 + 2de)}{2b}} - cd \right] \\
& \Rightarrow \frac{(1 + 2de)}{\sqrt{b + 2de(b + s)}} \leq \sqrt{\frac{1 + 2de}{b}} \\
& \Rightarrow \sqrt{1 + 2de} \leq \sqrt{1 + 2de\left(1 + \frac{s}{b}\right)}
\end{aligned}$$

Since $\frac{s}{b} > 0$, this condition always holds. The inequality is strict with the exception of instances in which both preferred budget shares lie at the corner, i.e. $\alpha^*(1, 0; \theta_i) = \alpha^*(0, 0; \theta_i) = 0$ or $\alpha^*(1, 0; \theta_i) = \alpha^*(0, 0; \theta_i) = 1$.

Proof of Lemma 3. Evaluating the integral in equation (1.7) results in the following expression for welfare

$$W(\alpha) = \frac{(1 + e)\bar{\theta}}{2} - c + (1 - \alpha)Gb + \frac{c^2 d(3 + 4de) + 2\alpha Gsc + 4\alpha^2 de^2 G^2 s^2}{2(1 + 2de)^2 \bar{\theta}}.$$

The second derivative of $W(\alpha)$ w.r.t. α is given by

$$\frac{\partial^2 W(\alpha)}{\partial \alpha^2} = \frac{4de^2 G^2 s^2}{(1 + 2de)^2 \bar{\theta}}.$$

It is easy to verify that $\frac{\partial^2 W(\alpha)}{\partial \alpha^2} > 0$ which proves that $W(\alpha)$ is convex in α . As a consequence, the welfare maximizing budget share α_w^* will always lie at the corner. Welfare at $\alpha = 0$ and $\alpha = 1$ is given by

$$W(0) = \frac{(1+e)\bar{\theta}}{2} - c + Gb + \frac{c^2 d(3+4de)}{2(1+2de)^2 \bar{\theta}}$$

$$W(1) = \frac{(1+e)\bar{\theta}}{2} - c + \frac{c^2 d(3+4de) + 2Gsc + 4de^2 G^2 s^2}{2(1+2de)^2 \bar{\theta}}$$

$W(1) \geq W(0)$ as long as

$$b \leq \frac{s(c + 2de^2 Gs)}{(1+2de)^2 \bar{\theta}} = \bar{b}_W.$$

It follows that $\alpha_w^* = 1$ if $b \leq \bar{b}_W$ and $\alpha_w^* = 0$ if $b > \bar{b}_W$. Finally, it is easy to see from the above expression that $\frac{\partial \bar{b}_W}{\partial \theta} < 0$.

Proof of Proposition 1. Evaluating the integrals in equation (1.11) yields the following expression for the objective function of party L :

$$V_L(\alpha) = \frac{(1-\alpha)Gb}{2} + \frac{\bar{\theta}(2\alpha Gs(1+e) + c(2d-1))}{16(cd + \alpha Gs)} + \frac{d(c - 2\alpha Gse)^2}{2\theta(1+2de)^2}.$$

Differentiating this expression twice w.r.t. α gives

$$\frac{\partial^2 V_L(\alpha)}{\partial \alpha^2} = \frac{4G^2 s^2 e^2 d}{\bar{\theta}(1+2de)^2} - \frac{\bar{\theta} G^2 s^2 c(1+2de)}{8(cd + \alpha Gs)^3}.$$

$\frac{\partial^2 V_L(\alpha)}{\partial \alpha^2}$ is increasing in α and decreasing in $\bar{\theta}$. The following condition ensures that $\frac{\partial^2 V_L(\alpha)}{\partial \alpha^2} > 0$ for all $\alpha \in [0, 1]$:

$$\bar{\theta} < \frac{4\sqrt{2}ed^2c}{(1+2de)^{\frac{3}{2}}}.$$

It is easy to verify that $\bar{\theta}_{max} < \frac{4\sqrt{2}ed^2c}{(1+2de)^{\frac{3}{2}}}$ if $d > \frac{1}{2e}(1 + \sqrt{3}) = \underline{d}$. It follows that $\bar{\theta} < \theta_{max}$ and $d > \underline{d}$ are sufficient to ensure that $V_L(\alpha)$ is convex in α for all $\alpha \in [0, 1]$. Hence, the budget share α_L^*

that maximizes $V_L(\alpha)$ must lie at the corner. $V_L(0)$ and $V_L(1)$ are given by

$$V_L(0) = \frac{Gb}{2} + \frac{dc^2}{2\bar{\theta}(1+2de)^2} + \frac{\bar{\theta}}{8} - \frac{\bar{\theta}}{16d}$$

$$V_L(1) = \frac{d(c-2Gse)^2}{2\bar{\theta}(1+2de)^2} + \frac{\bar{\theta}(2Gs(1+e)+c(2d-1))}{16(cd+Gs)}.$$

$V_L(1) \geq V_L(0)$ as long as

$$b \leq \frac{\bar{\theta}s(1+2de)}{8d(cd+Gs)} - \frac{4des(c-Gse)}{\bar{\theta}(1+2de)^2} = \bar{b}_L.$$

It follows that $\alpha_L^* = 1$ if $b \leq \bar{b}_L$ and $\alpha_L^* = 0$ if $b > \bar{b}_L$.

Evaluating the integrals in equation (1.10) yields the following expression for the objective function of party R:

$$V_R(\alpha) = \frac{(1-\alpha)Gb}{2} - c + \frac{\bar{\theta}(6\alpha Gs(1+e)+c+cd(6+8e))}{16(cd+\alpha Gs)} + \frac{c(cd+\alpha Gs)}{\bar{\theta}(1+2de)}.$$

The second derivative of $V_R(\alpha)$ w.r.t. α is given by

$$\frac{\partial^2 V_R(\alpha)}{\partial \alpha^2} = \frac{\bar{\theta}G^2s^2c(1+2ed)}{8(cd+\alpha Gs)^3}.$$

Clearly, $\frac{\partial^2 V_R(\alpha)}{\partial \alpha^2} > 0$ which proves that $V_R(\alpha)$ is convex in α . Hence, the budget share α_R^* that maximizes $V_R(\alpha)$ must lie at the corner. $V_R(0)$ and $V_R(1)$ are given by

$$V_R(0) = -c + \frac{Gb}{2} + \frac{\bar{\theta}}{16} \left(\frac{1}{d} + 6 + 8e \right) + \frac{c^2d}{(1+2de)\bar{\theta}}$$

$$V_R(1) = -c + \frac{\bar{\theta}(6Gs(1+e)+c+cd(6+8e))}{16(cd+Gs)} + \frac{c(cd+Gs)}{(1+2de)\bar{\theta}}.$$

It is straightforward to verify that $V_R(1) \geq V_R(0)$ as long as

$$b \leq \frac{2cs}{(1+2de)\bar{\theta}} - \frac{\bar{\theta}s(1+2de)}{8d(cd+Gs)} = \bar{b}_R.$$

It follows that $\alpha_R^* = 1$ if $b \leq \bar{b}_R$ and $\alpha_R^* = 0$ if $b > \bar{b}_R$.

Finally, consider the ordering of \bar{b}_L , \bar{b}_W and \bar{b}_R . First, if $c > Gs$, $d > 1$ and $0 < e < \frac{1}{2}$, then $\bar{b}_L < \bar{b}_W < \bar{b}_R$ at $\bar{\theta} = \bar{\theta}_{min}$. Second, let us differentiate \bar{b}_L , \bar{b}_W and \bar{b}_R w.r.t $\bar{\theta}$:

$$\begin{aligned}\frac{\partial \bar{b}_L}{\partial \bar{\theta}} &= \frac{s(1+2de)}{8d(cd+Gs)} + \frac{4des(c-Gs)}{(1+2de)^2\bar{\theta}^2} \\ \frac{\partial \bar{b}_W}{\partial \bar{\theta}} &= -\frac{s(c+2de^2Gs)}{(1+2de)^2\bar{\theta}^2} \\ \frac{\partial \bar{b}_R}{\partial \bar{\theta}} &= -\frac{2cs}{(1+2de)\bar{\theta}^2} - \frac{s(1+2de)}{8d(cd+Gs)}.\end{aligned}$$

It is easy to see that $\frac{\partial \bar{b}_L}{\partial \bar{\theta}} > 0$ and $\frac{\partial \bar{b}_W}{\partial \bar{\theta}}, \frac{\partial \bar{b}_R}{\partial \bar{\theta}} < 0$. Moreover, $c > Gs$, $d > 1$ and $0 < e < \frac{1}{2}$ imply that $\frac{\partial \bar{b}_R}{\partial \bar{\theta}} < \frac{\partial \bar{b}_W}{\partial \bar{\theta}}$, i.e., \bar{b}_R decreases more quickly with $\bar{\theta}$ than \bar{b}_W . These facts together with the ordering of \bar{b}_L , \bar{b}_W and \bar{b}_R at $\bar{\theta}_{min}$ imply that there must be a unique $\bar{\theta} > \bar{\theta}_{min}$ at which \bar{b}_L intersects \bar{b}_W from below. Likewise, there must be a unique $\bar{\theta} > \bar{\theta}_{min}$ at which \bar{b}_R intersects \bar{b}_W from above. Solving the following two equalities for $\bar{\theta}$

$$\bar{b}_L = \bar{b}_W$$

$$\bar{b}_R = \bar{b}_W$$

reveals that all three curves have a unique intersection at

$$\bar{\theta} = \frac{2\sqrt{2d(cd+Gs)(2de(2c-esG)+c)}}{\sqrt{(1+2de)^3}} = \bar{\theta}_W.$$

Finally, $c > Gs$, $d > \underline{d}$ and $0 < e < \frac{1}{2}$ are sufficient to ensure that $\bar{\theta}_W$ is real and that $\bar{\theta}_W < \bar{\theta}_{max}$.

which completes the proof of the last part of the proposition.

Appendix B: Chapter 2

B.1 Supplementary Information

B.1.1 Pre-registration

Pre-analysis plans (PAPs) and addendums for this study can be found at: <https://osf.io/87u4f>. Below, I describe ways in which the analyses diverge from what has been pre-registered. Most divergences arise because of inconsistencies in the analysis procedures that have been pre-specified, respectively, prior to the midline survey and in between the mid- and endline surveys. As a general rule, I follow the endline PAP that was pre-registered in between the mid- and the endline survey.

Regression Specification. The midline PAP pre-specified a regression specification that includes block fixed effects. The endline PAP changed the regression specification to one without block fixed effects. Conditioning on block fixed effects is not required for unbiasedness (treatment assignment probabilities do not vary across blocks). Due to the large number of small blocks (50 blocks with 5 units each), the inclusion of block fixed effects leads to a substantial increase in the number of parameters to be estimated. It also runs the risk that entire blocks drop out of the analysis, especially in the presence of attrition and when estimating conditional effects. To harmonize analyses across survey waves and in keeping with what has been pre-registered prior to the endline survey, none of the analyses in this paper condition on block fixed effects. Both PAPs pre-specified two regression specifications, a barebones specification that does not control for covariates and one that controls for a set of covariates selected through a LASSO procedure. I prioritize results based on the barebones specification for transparency but show the robustness of main results to the other specification in section B.3.2 of the appendix.

Construction of indices. Some items that are used to create indices are only available in the midline or only available in the endline survey. All items available in a given survey wave have been used to create the indices as they were specified in the PAP that pertains to the particular survey wave. As a consequence, indices do not always contain the same items across waves. Detailed information on how the indices for each wave were created can be found in section B.4. The following list details ways in which outcome construction diverges from the midline PAP:

- *Alert Police.* The midline PAP specified that this item would be combined with another variable into an index. The second variable is an indicator that takes the value 1 if the respondent “mentioned any form of reaching out to the police, including sounding the MeMeZa alarm” in response to an open-ended question about what the respondent would do if attacked in her home. The estimated treatment effect on this item is substantial. Yet, since this measure conflates availability of the alarm with willingness to rely on police, it was excluded from the endline survey. In keeping with the endline PAP, it is not part of the analysis presented in this paper.
- *Support MV.* This index was only pre-registered at endline. The midline PAP pre-specified that the constituent outcomes of this index would be analyzed separately. Analyses of constituent items are included in the appendix.
- *Service quality.* This index was only pre-registered at endline. The midline PAP pre-specified that the constituent outcomes of this index would be analyzed separately. Analyses of constituent items are included in the appendix.

All outcome measures are constructed in keeping with the endline PAP. The only exception is the index *Rely Police*. Both the end- and midline PAPs pre-specified that the constituent outcomes of this index (*Alert Police* and *Cooperate Police*) would be analyzed separately. Analyses of constituent items are included in the appendix.

Direction of hypothesis tests. The direction of all hypotheses tests follows the endline PAP. This creates the following divergences from the midline PAP:

- *Support MV.* In keeping with the endline PAP, I conduct a one-tailed test (lower). The midline PAP pre-specified a two-tailed test.
- *Call Com.* In keeping with the endline PAP, I conduct a one-tailed test (lower). The midline PAP pre-specified a two-tailed test.
- *Service Quality.* In keeping with the endline PAP, I conduct a one-tailed test (upper). The midline PAP pre-specified a two-tailed test.
- *Join MV.* In keeping with the endline PAP, I conduct a one-tailed test (upper) with regard to the difference in conditional treatment effects across low and high prior groups. The midline PAP pre-specified the opposite one-tailed test (lower).

Non-registered analyses. The following analyses have not been pre-specified:

- *Table 2.4.* Both PAPs pre-specified that I would analyze treatment effect heterogeneity with regards to prior beliefs about service quality on service quality outcomes (column 6) and with regards to prior beliefs about the risk of punishment on outcomes that pertain to beliefs about this risk (columns 1 and 2). Yet, as explained in the text, when taking into account that the two dimensions of prior beliefs are not independent, it seems intuitive that prior beliefs about one kind of police output may condition treatment effects on beliefs about another kind of police output. While not pre-specified, the analyses in columns 3, 4 and 5 thus arise from the same logic.
- *Table 2.6.* Analyses in columns 2 and 3 have not been pre-specified, because the PAP focused on the question of whether information treatments shift the beliefs that they are supposed to shift. Analyses in columns 2 and 3 seek to demonstrate that the information treatments did not affect beliefs that they were not intended to affect.

- *Table 2.7.* Analyses in columns 2 and 4 that subset to those who were not assigned to the respective other information treatment have not been pre-specified. They are included here because they provide a cleaner comparison in the event that the two information treatments interact to effect the willingness to participate in mob vigilantism.

Registered analyses that are not reported in this paper. The following analyses have been pre-registered but are not reported here:

- *IV estimation.* The midline PAP also pre-specified an IV estimator. Given the high rate of compliance, this analysis has been omitted from the endline PAP and from the paper.
- *Spillover analyses.* Both PAPs pre-specified that I would analyze spillover effects. The midline PAP specified an analysis that makes use of the spatial layout of households, while the endline PAP specified an analysis that makes use of the sample of neighbors. Given the superiority of the second approach in terms of statistical power, I do not rely on the first approach. I report in the text that I find very little evidence of any kinds of spillover using the second approach. Results are available upon request.
- *Omnibus tests.* The PAPs pre-specified two omnibus tests of the joint significance of two subsets of hypotheses as an additional strategy to shed light on the relevance of the two core mechanisms. It has become clear that these tests are not well suited to discriminate between these mechanisms. One major reason is that, as mentioned in the main text, it is plausible that prior beliefs about one kind of police output may condition treatment effects on both kinds of police outputs under both kinds of mechanisms. Given its limited probative value, this analysis has been omitted here.
- *Behavioral measure.* The endline PAP pre-specified a behavioral measure in the form of respondents' choice between two different kinds of t-shirts that were given to respondents as a thank you gift. The results of this t-shirt experiment do little to strengthen or counter the results presented here and are hence omitted, but are available upon request.

- *Effects of information treatments on demand for policing.* The endline PAP pre-specified hypotheses about the effect of the information treatments on measures of demand for policing that serve to inform a follow-up project but are not directly related to what is presented in this paper.

B.1.2 Explanatory note for regression tables

Effects of alarm treatment. Unless otherwise indicated, the unit of analysis is always the respondent. Standard errors in all analyses that involve the alarm treatment allow for clustering on the household level so long as the analysis does not collapse the dataset to the household level. As pre-specified, all analyses that involve the alarm treatment control for cluster size, i.e. the number of respondents interviewed in a given household. Unless indicated otherwise, no additional covariates are included. All p -values are calculated, as pre-specified, using randomization inference by permuting treatment assignment 2,000 times to simulate the sampling distribution of the estimator under the sharp null hypothesis of no (positive/negative) treatment effect. The row labeled “hypothesis” in each table indicates the direction of hypotheses tests which follows the pre-analysis plans (see section B.1.1 of the appendix for exceptions).

Heterogeneous effects analyses such as those shown in Tables 2.2 and 2.4 make use of the pre-registered interaction specification where the outcome is regressed on an indicator for treatment assignment, the moderator and the interaction between the two as well as the cluster size control. As pre-specified, all hypothesis tests that involve conditional intent-to-treat (ITT) effects and differences between them are based on randomization inference. p -values for hypotheses involving conditional ITTs are calculated by sub-setting to the respective group and using the same procedure of permuting treatment assignment 2,000 times described above. Tests of hypotheses involving the difference between conditional ITTs are based on the sharp null hypothesis that the treatment effect for each unit is equal to the estimate of the ITT in the sample as a whole. The testing procedures proceeds as follows:

1. Adjust outcomes in the treatment group based on the assumption that the ITT estimated for the sample as a whole is the true unit-level effect.
2. Permute treatment assignment 2,000 times.
3. Estimate the ITT in each subgroup and the difference between the two ITTs for every

permutation.

4. Compare the observed difference in conditional ITT estimates to the simulated sampling distribution to calculate a p -value.

The resulting p -values can be slightly different from parametric p -values based on clustered standard errors but the differences tend to be minor and can go in either direction (larger/smaller p - values).

Effects of information treatments. The information treatments were randomized across the entire endline sample ($N = 815$) including 448 respondents from main households and 376 respondents from neighboring households. Analyses in Tables 2.6, B.21 and B.22 pertain to the information treatments only. These analyses marginalize across the alarm treatment and do not differentiate between respondents from main or neighboring households. All such analyses estimate the effect of one factor of the full factorial design while marginalizing over the other factor. Hence, these analyses rely on pre-specified specifications of the form

$$Y = \alpha + \tau z_{info} + \epsilon,$$

where Y is a vector of outcomes; α is an intercept; τ is the ITT of either the “Police fights crime” or the “Police fights mob vigilantism” prime; z_{info} is a vector of indicators of assignments to the respective prime; and ϵ is a vector of error terms. The unit of analysis is the respondent. Since information treatments were assigned on the respondent and not the household level, this specification does not control for cluster size. For the same reason, standard errors are heteroskedasticity robust but do not allow for any clustering on the household level. Hypothesis tests are based on randomization inference drawing on the same simple random assignment procedure that was used to assign the information treatments in the first place.

Interaction between alarm and information treatments. Table 2.7 shows estimates from

the following pre-registered regression specification:

$$Y = \alpha + \tau_1 z_{alarm} + \tau_2 z_{info} + \tau_3 z_{alarm} * z_{info} + \delta \mathbf{n} + \epsilon,$$

where Y is a vector of outcomes; α is an intercept; τ_1 is the ITT of the alarm treatments among those who were not assigned to the respective information treatment; z_{alarm} is a vector of indicators of assignments to the alarm treatment; τ_2 is the ITT of the respective information treatment among those who were not assigned to the alarm treatment; z_{info} is a vector of indicators of assignments to the respective information treatment; τ_3 is the difference in the effect of the alarm treatment across those who were and were not assigned to the respective information treatment; \mathbf{n} is a vector of cluster sizes (number of respondents from a given household included in the analysis) and δ is the associated coefficient; ϵ is a vector of error terms that allows for clustering at the household level. p -values that pertain to hypotheses about τ_1 and τ_2 are calculated by sub-setting to the respective group and using randomization inference based on the random assignment function that was used, respectively, to assign households to the alarm treatment or respondents to the information treatment. The p -value regarding the interaction term pertains to the sharp null hypothesis that the treatment effect for each unit is equal to the estimated ITT in the sample as a whole. This p -value is calculated using the same procedure as described immediately above, this time permuting both assignment of the alarm and of the information treatments.

B.1.3 Additional plots and figures

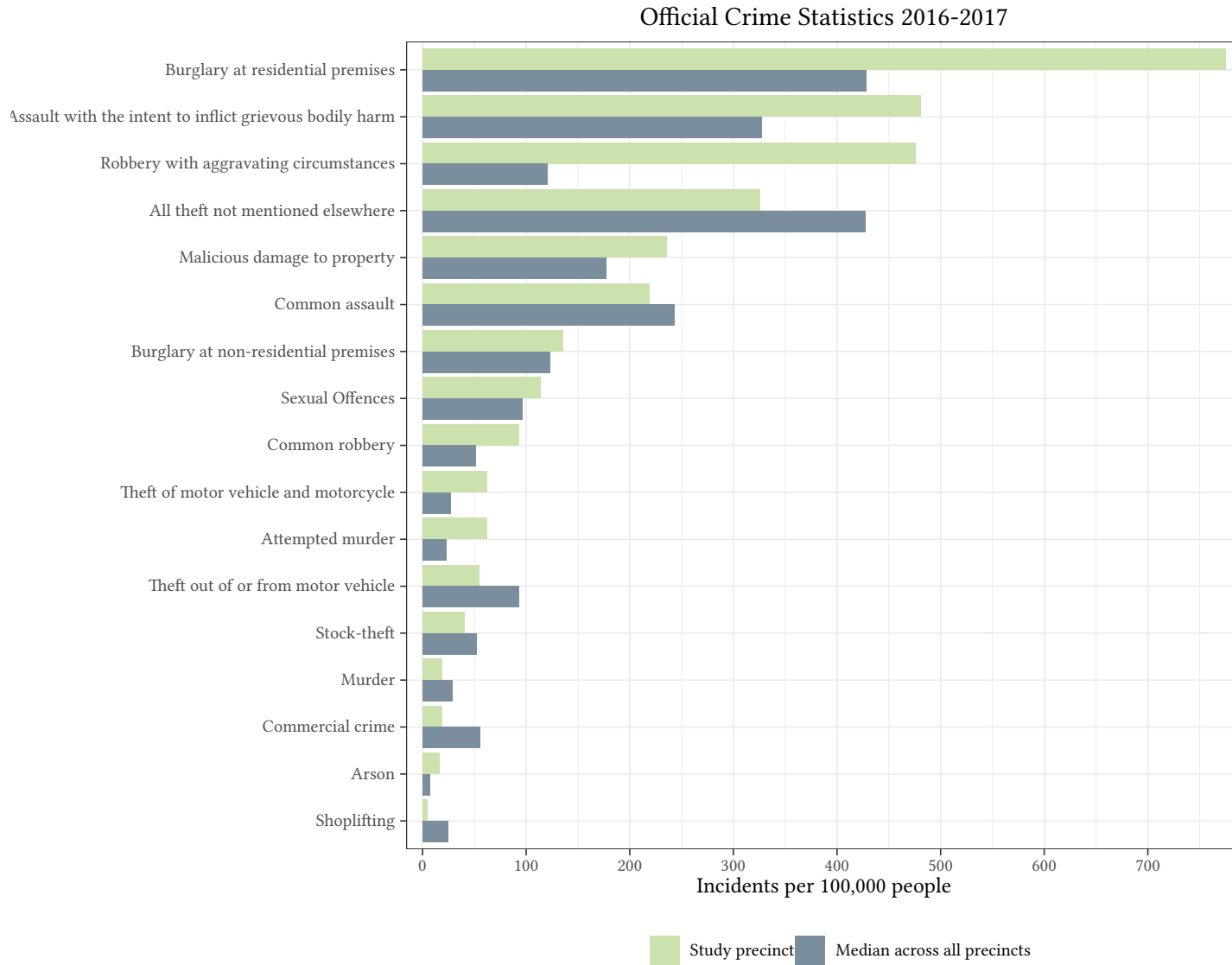


Figure B.1: Official rate of various crimes in study precinct compared to median across all precincts

Crime incident data have been taken from official crime statistics by the SAPS. Crime rates have been calculated using data on population by police district that have been calculated based on the 2011 census and can be found at <https://datahub.io/pi/police-district-population-nometa>. The plot reports data for all crime categories defined as “community reported serious crime” by SAPS (2017/2018).

How many mob violence incidents can you recall that happened in your section?

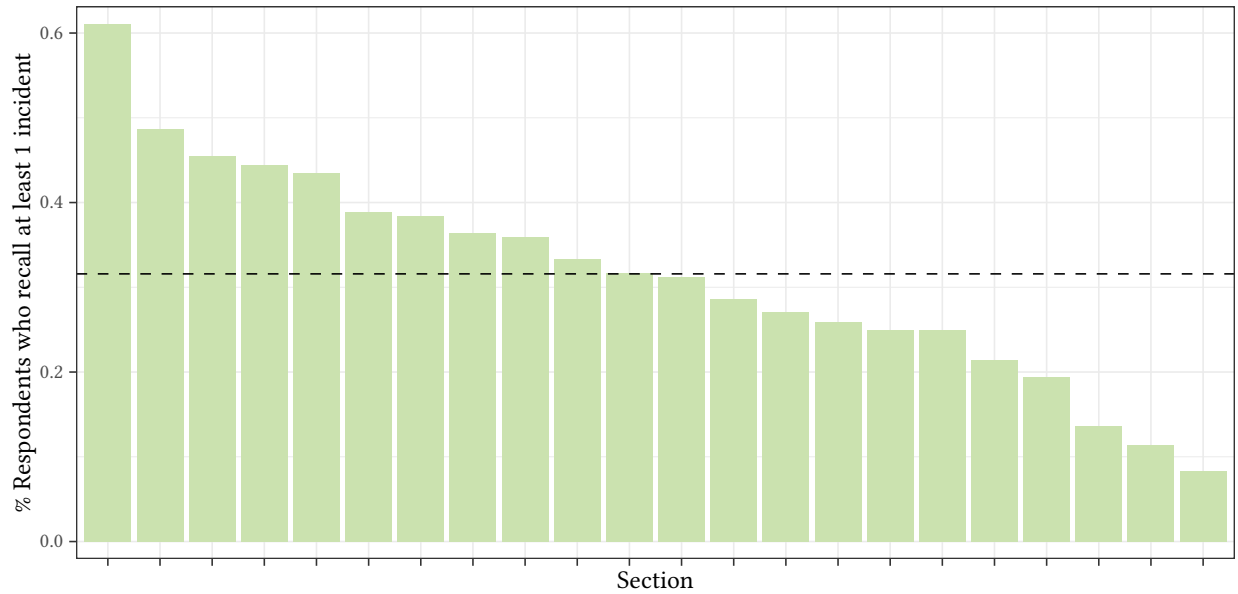


Figure B.2: Incidents of mob vigilantism in study precinct

Plot is based on all responses during the endline survey ($N = 815$). Respondents were asked “I would like you to think back to last year last winter, meaning May, June and July last year (2018). Can you recall any mob justice incidents that happened in your section during last winter?” If the respondent answered yes, they were asked “How many mob justice incidents can you recall from last winter?” Bars correspond to the share of respondents in each section that can re-call at least one incident.



Figure B.3: The police alarm system

B.1.4 Sampling strategy for households

Sampling of households during the baseline survey was based on two different sampling strategies. The original intention was to sample 150 households through each of the strategies.

Police list

150 households were sampled from a list of households provided by the police station. This is how the implementing partner usually selects alarm recipients. In total, the police provided a pool of 390 names and contact details. The survey team managed to geo-locate 336 of these 390 households. 54 households could either not be found or turned out to be duplicates of houses that had already been located. Among the geo-located households, a stochastic algorithm was used to identify sets of households that satisfy the constraint that every household is located at least 150 m apart from all other households in the set. This distance constraint was imposed to limit spillover effects. Among the sets identified through a large number (at least 1M) of iterations of the algorithm, the set with the overall maximum distance between units and the largest share of units with a distance of at least 200 m from all other units in the set was chosen. Due to practical and time constraints, the selection of households started prior to the complete pool of names having been received from the police and before all households had been geo-located. The above procedure was therefore applied repeatedly to subsets of households. For example, in the first round of sample selection, the random walk algorithm was run on the first 92 households that had been geo-located before the start of the survey. From the 92 households, a set of 67 units satisfying the 150 m distance constraint was selected. Subsequently, as additional households were geo-located, the random walk algorithm was run again to select sets of additional households subject to the constraint that these households would be at least 150 m apart from each other and from the 67 households in the initially selected set.

Listing of households in high crime areas

The other 150 households were selected from areas that are perceived, by the police, as areas with a particularly high crime rate and low trust in the police. In those areas, a listing exercise was conducted during which enumerators walked through the areas and geo-located the addresses of every tenth house. In total, 946 households were geo-located in 11 areas. The same sequential random-walk based procedure described above was used to identify sets of households that satisfy the constraint that every household is located at least 150 m apart from all other households in the set and at least 150 m from the set of households sampled from the police list.

Both sampling strategies cover a similar geographic area, since the households identified by the police tend to reside in the same high-crime area that the rest of the sample was drawn from.

Household replacement criteria

Households identified through the process described above were excluded from the sample if one of the following conditions was true:

- *No adult woman available.* The baseline data collection focused on adult female respondents. As such, all-male households were excluded from the sample.
- *No South African citizen available.* Non-South-Africans are generally believed to be quite mobile and likely to move from one place to the other. They were thus excluded from the sample in order to decrease the risk of attrition.
- *No permanent resident available.* The sample was limited to households that stay permanently in the police precinct in order to reduce the risk of attrition.
- *Relevant respondent could not be found after 3 visits.* See below for the within-household sampling strategy used to select respondents from household members. Enumerators were instructed to conduct three visits during different times of the day.

- *Relevant respondent refused to be interviewed.* See below for within-household sampling strategy used to select respondents from household members.

Baseline sample

Additional challenges arose during the implementation of the above described sampling strategy for households: Towards the end of the baseline survey, surveying became impossible in two areas due to opposition from community members who felt suspicious towards the survey team. Households in these areas were replaced with more households from the other high crime areas in the sample. In some cases, the list of names provided by the police was outdated and people had moved. In these cases, the new residents of the address listed on the list received from the police were interviewed. Finally, the existence of three separate house numbering systems and double-numbering (more than one house with the same house number) led to inaccuracies in the geo-coordinates captured during the listing exercise. As a result of these problems, not all households in the sample satisfy the 150 m distance constraint. Additional households were included in the baseline sample to alleviate this problem. In total, we interviewed 358 respondents in the baseline survey, 171 from the police list and 187 that were sampled from high crime areas. 15 respondents refused to be interviewed and 16 respondents could not be found after 3 visits.

Selection of experimental units

From the 358 households sampled during the baseline survey, a set of 250 households was chosen as the pool of experimental units. The selection was made so as to minimize problems of non-compliance and attrition.

- *Exclusion of households not interested in alarm.* In order to avoid non-compliance, respondents were asked during the baseline survey whether they would be interested in receiving an alarm system.¹ 15 households (7 from the police and 8 from the listing in high crime

¹Specifically, respondents were asked: 'Before I leave, I would like to know whether you may be interested in receiving a home alarm system to protect your household. The system is an electronic device to be installed in your home that allows you to quickly alert the police or your neighbors. The alarm can also make a loud noise to indicate

areas) indicated that they would not want to be considered for an alarm. A further 12 households said they were interested during the baseline interview, but had changed their mind by the time they were contacted again during a subsequent round of telephonic back-checks.

- *Exclusion of CPF leaders.* The sample contained 5 of the 10 executive members of the CPF. The implementing partner decided to non-randomly allocate 10 alarm units to these executive members in order to ensure buy-in for the project.
- *Exclusion of households that could not be reached during back-checks.* Given the challenges of locating households and due to concerns about data quality, it was decided to conduct telephonic back-checks of all remaining households that would be considered for randomization. Households that could not be reached via phone were visited in person. Only households that could be reached during the back-check phase and still showed interest in the alarm system were included in the final experimental subject pool.

that there is a problem in your home. We are cooperating with a non-profit organization called MeMeZa that gives out these alarms for free. If you are interested in receiving an alarm, we will pass your contact details on to MeMeZa. However it is not certain that you will receive an alarm, since MeMeZa uses a lottery system to give out the alarms. Depending on the availability of alarms, some of those who are interested will receive an alarm relatively soon, some will receive one later and others may not receive one at all. Would you be interested in receiving an alarm system?'

B.1.5 Sampling strategy for neighbors

In the endline survey, one neighboring household was sampled for each of the 250 main household in the sample. Enumerators were instructed to always survey the household to the right of the main household. If there was no neighbor to the right (e.g. because the house was at a corner), enumerators were allowed to replace the house to the right with the house to the left. Within each neighboring household, one randomly selected adult woman and one randomly selected adult man were interviewed. In all-male and all-female households, two men or, respectively two women were interviewed. In single member households, only one respondent was interviewed. A relatively high number of 84 neighboring households turned out to be one-member households. Taking into account that only one respondent could be interviewed, the target sample size was $N = 416$ neighbors. 84% of those ($N = 349$) could be interviewed. As in main households, additional respondents were interviewed in a given neighboring household if available during the time of the interview. In total, 18 additional neighbors were sampled in this fashion, giving a total sample size of $N = 367$ neighbors.

B.1.6 Sampling strategy overview

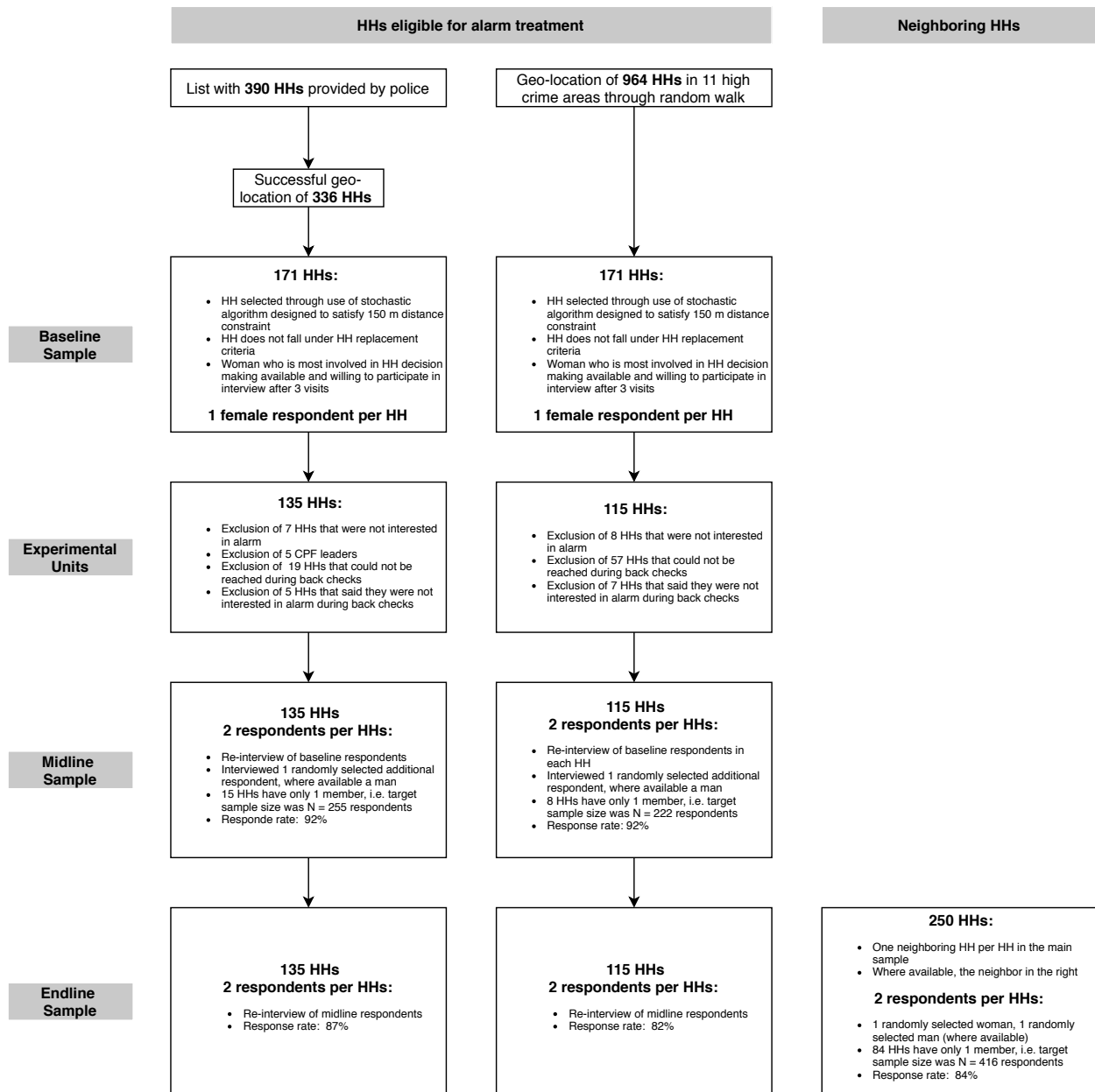


Figure B.4: Overview of sampling strategy

B.1.7 Descriptive statistics

	Police Sample (N = 135)	Listing Sample (N = 115)
Would participate mob vigilantism	0.11	0.12
Supports mob vigilantism	0.28	0.28
Would definitely call police	0.51	0.33
Perceives high risk of punishment for vigilantism	0.62	0.43
Believes police ensure the guilty go to prison	0.34	0.24
Feels safe in home	0.24	0.30
Age	46.44	44.33
Married	0.44	0.36
Household Size	4.90	4.71
Owns flushing toilet	0.36	0.23
Has tap water in house	0.13	0.07
Owns pay TV	0.59	0.34
Owns electric stove	0.81	0.88
Owns microwave	0.62	0.63
Owns washing machine	0.54	0.45
Owns motor vehicle	0.23	0.20

Table B.1: Averages of baseline covariates by sampling procedure

	Midline (N = 483)	Endline (N = 448)
Woman	0.63	0.64
Age	42.43	42.88
Married	0.35	0.37
Did not complete secondary education	0.51	0.51
Unemployed	0.37	0.39
Not religious	0.11	0.11

Table B.2: Sociodemographic characteristics of midline and endline samples

B.1.8 Measurement of crime victimization

The measurement of crime victimization through surveys is complicated by the sensitive nature of the topic and respondents' limited ability to recall the timing of and classify crime events. Crime victimization surveys typically employ extensive batteries of questions about specific kinds of crime and time-intensive interview techniques to help respondents recall and classify crime incidents (Cantor and Lynch, 2000). The main focus of this study is on respondents' views about police and vigilantism. Given constraints on questionnaire space, it was not feasible to include an elaborate crime victimization module in the midline and endline questionnaires. Hence, the questions about crime victimization that were asked in this study remain at a high level of generality. While this design has the added advantage that it limits the risk of re-traumatization of respondents, it may also have diminished the quality of crime victimization data.

During the midline survey, respondents were asked the following question:

- People in South Africa experience many types of crime such as robbery, burglary, assault, or violent threats. Thinking about the past month, have you or has anyone of your household been a victim of any type of crime in the past month?
 - 0 = No
 - 1 = Yes

The examples in the first sentence were meant to provide respondents with a concrete frame of reference for thinking about crime. Nonetheless, the data suggest that the responses elicited by this question are noisy. During enumeration, telephonic back checks for quality control were conducted with a subset of the sample. In many cases, responses to the above question during back checks did not match responses that were given in the original interview. Moreover, the correlation among responses given by the two main respondents in a given household is very low ($\rho = 0.02$). Respondents disagreed about whether the household had experienced a crime in 30% of households with more than one respondent ($N = 203$).

To counter these problems, the question wording was changed for the endline survey to focus more concretely on crimes in the respondents' home:

- Criminals in South Africa often break into people's houses or yards to attack or steal from them. I would like you to think about the time since last Christmas. Since last Christmas, did any crime happen in your house or yard?

- 0 = No

- 1 = Yes

Indeed, there were fewer problems in telephonic back checks and the correlation among responses within households increased to $\rho = 0.2$. Nonetheless, disagreement about whether a crime happened in the household remains in 16% of households with more than one respondent ($N = 183$).

B.1.9 Information treatments

Police Fight Crime:

Rapists sentenced to 13 life sentences and 240 years

Two rapists were combinedly sentenced to 13 life sentences, as well as 240 years imprisonment after a rape and robbery spree in the Brits area in 2016. Obed Pilusa (31) and Siphon Nampa (31) were found guilty of numerous cases of rape and robbery between January and May 2016 and were sentenced by the Gauteng North High Court. Pilusa was sentenced to six life sentences for rape and 120 years imprisonment for eight counts of robbery. Nampa was sentenced to seven life sentences for rape and 120 years imprisonment for eight counts of robbery. The North West Provincial Police Commissioner, Lieutenant General Baile Motswenyane welcomed the hefty sentences. She congratulated the detectives of the Brits police's Family Violence, Child Protection and Sexual Offences Unit (FCS) for working tirelessly to ensure that the perpetrators were brought to book. "The sentences will serve as an indication that the police will not hesitate to deal harshly with those who commit crimes against women and children," she said.

Source: <https://kormorant.co.za/41975/rapists-sentenced-13-life-240-years/>

Police Fight Mob Vigilantism:

Acts of Vigilantism, A Concern to Northwest Police Commissioner

The Provincial Commissioner Lieutenant General Baile Motswenyane is concerned about cases of vigilantism that are mushrooming in the province. According to police spokesperson in the North West, Colonel Sabata Mokwabone, the Provincial Commissioner's concerns stem from sev-

eral acts of vigilantism where even some lives of people who were suspected of having committed crimes were lost. “Acts of vigilantism are condemned in the strongest terms they deserve. On the basis of the Constitution, I therefore make an appeal to communities not to commit acts of vigilantism, when you are found, the law will have to deal harshly with you.” There are more than 40 cases of vigilantism that have been reported in the province which the police are currently investigating and several suspects have been arrested so far. The Provincial Commissioner has warned that those responsible in perpetuating acts of vigilantism will soon feel the full might of the law.

Source: <https://www.northwestnewspapers.co.za/mafikengmail/community/blogs/editor-s-viewpoint/393-acts-of-vigilantism-a-concern-to-nw-police-commissioner>

B.2 Identification

B.2.1 Covariate balance

Tables B.3 to B.7 below examine balance on pre-treatment covariates across experimental conditions among, respectively, baseline, midline and endline respondents. Most covariates are taken from the baseline. Since only one respondent was interviewed at baseline, baseline measurements are treated as household-level measurements when analyzing the midline and endline samples that include two respondents per household. A smaller set of measures which are plausibly unaffected by treatment (e.g. demographic characteristics such as age) are taken from midline and endline surveys.

For each covariate, I test for a significant relationship to treatment using randomization inference. The first column of each table shows the name of the covariate and the following columns show means of the covariate in the treatment and control condition. Treatment and control differences are estimated using a linear model that regressed a given covariate on a treatment assignment indicator. For Tables B.4 to B.7, the model also controls for cluster size (the number of respondents from a given household included in the analysis). The last column in each table shows a two-tailed p -value that is calculated by comparing the observed coefficient of the treatment assignment indicator to the sampling distribution of the estimator under the sharp null hypothesis of no effect of treatment on the respective covariate for any unit. The sampling distribution under the sharp null hypothesis is simulated by permuting treatment assignment 2,000 times and re-estimating the same regression model. If tests were independent, we would expect 5% of covariates to show imbalance that is significant at the 5% level.

- Table B.3 pertains to the baseline sample. 7/79 (9%) of tests yield a p -value equal to or less than .05.
- Table B.4 pertains to all respondents that were interviewed during the midline survey. 7/103 (7%) of tests yield a p -value equal to or less than .05.

- Table B.5 pertains to the two main respondents sampled in the midline survey, i.e. excluding additional respondents sampled in an ad hoc way. 8/103 (8%) of tests yield a p -value equal to or less than .05.
- Table B.6 pertains to all respondents that were interviewed during the endline survey. 7/103 (7%) of tests yield a p -value equal to or less than .05.
- Table B.7 pertains to the two main respondents sampled in the endline survey, i.e. excluding additional respondents sampled in an ad hoc way. 4/103 (4%) of tests yield a p -value equal to or less than .05.

	Control	Treatment	p -value
electric_stove_bl	0.80	0.91	0.01
main_income_other_bl	0.19	0.09	0.03
criminals_from_area_bl	0.43	0.30	0.04
prepaid_electricity_bl	0.82	0.90	0.04
electricity_source_other_categories_bl	0.18	0.10	0.04
criminals_from_other_areas_bl	0.21	0.32	0.05
approached_police_bl	0.65	0.52	0.05
number_births_bl	2.77	2.39	0.06
discuss_neighbors_bl	1.71	1.48	0.06
main_income_pensions_bl	0.07	0.15	0.06
water_source_other_categories_bl	0.30	0.20	0.06
rubbish_collection_other_categories_bl	0.20	0.11	0.07
own_refuse_dump_bl	0.80	0.89	0.08
prayer_private_bl	7.59	7.74	0.09
microwave_bl	0.59	0.69	0.09
tap_water_in_yard_bl	0.60	0.70	0.10
dishwasher_bl	0.05	0.01	0.15
prisoners_guilty_bl	0.47	0.56	0.16
interest_public_affairs_bl	2.21	2.06	0.20
member_organization_bl	0.78	0.84	0.22
spend_electricity_bl	0.56	0.48	0.22
police_ask_for_bribe_bl	0.89	0.76	0.25
spend_police_1_bl	0.25	0.18	0.25
government_does_enough_bl	0.53	0.60	0.27
experienced_violent_crime_bl	0.11	0.15	0.28
pit_latrine_bl	0.72	0.66	0.28
pay_tv_bl	0.45	0.51	0.29
other_organizations_bl	0.07	0.04	0.40
beat_truck_driver_bl	0.32	0.35	0.44
washing_machine_bl	0.48	0.53	0.44
flush_toilet_tank_bl	0.15	0.18	0.48
mob_violence_police_reaction_bl	1.83	1.74	0.49
trust_neighbor_bl	0.77	0.73	0.50
mob_violence_plausibility_bl	1.65	1.74	0.52
satisfaction_services_bl	0.39	0.37	0.53
motor_vehicle_bl	0.23	0.20	0.53
religious_service_bl	1.38	1.31	0.54
observed_conditions_bl	2.69	2.61	0.58
private_security_bl	0.02	0.01	0.58
discuss_government_bl	2.19	2.28	0.60
flush_toilet_public_bl	0.13	0.15	0.61
guard_dogs_bl	0.22	0.25	0.65
call_police_bl	2.27	2.31	0.66
adequate_force_bl	0.56	0.59	0.69
number_children_bl	1.81	1.89	0.70
response_time_bl	3.11	3.17	0.70
street_committee_connection_bl	0.43	0.39	0.71
able_to_name_bl	1.81	1.84	0.72
shout_community_bl	0.75	0.73	0.72
police_quality_bl	1.59	1.55	0.72
criminals_from_outside_bl	0.36	0.38	0.73
main_income_salary_bl	0.31	0.33	0.73
other_categories_toilet_bl	0.01	0.01	0.74
government_corrupt_bl	0.60	0.62	0.75
blow_whistle_bl	0.14	0.15	0.75
punishment_preferences_bl	0.71	0.73	0.76
report_informal_provider_bl	0.77	0.76	0.76
feel_safe_bl	0.27	0.26	0.78

voice_heard_bl	0.91	0.88	0.79
know_state_official_bl	0.40	0.39	0.80
state_official_bl	0.12	0.13	0.82
discussed_crime_bl	0.90	0.91	0.82
join_mob_bl	0.45	0.44	0.82
number_school_children_bl	1.38	1.41	0.83
government_unresponsive_bl	0.77	0.79	0.84
tap_water_in_house_bl	0.10	0.10	0.84
spend_police_2_bl	0.53	0.54	0.86
number_incidents_bl	0.94	0.91	0.88
attend_meetings_cpf_bl	1.49	1.47	0.92
cpf_connection_bl	1.35	1.33	0.94
know_number_bl	0.81	0.82	0.96
spend_education_bl	0.61	0.62	0.96
hh_size_bl	4.82	4.81	0.97
due_process_bl	0.87	0.87	0.98
courts_punish_not_enough_bl	0.75	0.75	0.98
perceived_crime_risk_bl	1.88	1.88	0.98
other_first_action_bl	0.11	0.12	0.99
main_income_social_grants_bl	0.43	0.43	0.99
attend_meetings_street_committee_bl	0.47	0.46	1.00

Table B.3: Balance on covariates among respondents in baseline ($N = 250$)

	Control	Treatment	p -value
electric_stove_bl	0.82	0.93	0.01
approached_police_bl	0.67	0.52	0.03
criminals_from_area_bl	0.43	0.30	0.04
spend_police_1_bl	0.26	0.15	0.04
prepaid_electricity_bl	0.83	0.92	0.04
earn_salary	0.56	0.47	0.04
floor_material_missing	0.31	0.21	0.05
number_births_bl	2.84	2.46	0.06
tsonga	0.07	0.14	0.07
microwave_bl	0.61	0.74	0.08
discuss_neighbors_bl	1.68	1.43	0.09
dishwasher_bl	0.05	0.01	0.09
own_refuse_dump_bl	0.81	0.89	0.12
prisoners_guilty_bl	0.47	0.57	0.14
retired	0.13	0.19	0.14
spend_electricity_bl	0.56	0.49	0.16
age	41.67	43.52	0.16
completed_secondary_education	0.37	0.31	0.18
work_full_time	0.18	0.14	0.19
pray_private_bl	7.60	7.73	0.20
member_organization_bl	0.79	0.86	0.20
main_income_pensions_bl	0.09	0.16	0.20
sepedi	0.19	0.13	0.22
other_organizations_bl	0.08	0.04	0.23
observed_conditions_bl	2.78	2.64	0.24
interest_public_affairs_bl	2.18	2.01	0.25
mob_violence_police_reaction_bl	1.87	1.71	0.25
experienced_violent_crime_bl	0.10	0.16	0.26
child_hh_head	0.30	0.27	0.26
no_religion	0.10	0.14	0.27
home_language_sepedi	0.12	0.08	0.28
government_does_enough_bl	0.53	0.60	0.30
tiled_floor	0.25	0.32	0.31
police_ask_for_bribe_bl	0.87	0.75	0.32
pay_tv_bl	0.45	0.53	0.32
tap_water_in_yard_bl	0.63	0.69	0.34
pit_latrine_bl	0.72	0.66	0.34
hh_head	0.38	0.39	0.34
interview_tswana	0.96	0.94	0.34
in_a_relationship	0.17	0.15	0.35
lutheran	0.23	0.28	0.38
others_present	0.21	0.26	0.38
state_official_bl	0.10	0.14	0.39
secondary_education_incomplete	0.39	0.43	0.39
adequate_force_bl	0.54	0.59	0.40
flush_toilet_tank_bl	0.14	0.18	0.40
hh_size_bl	5.08	4.98	0.41
satisfaction_services_bl	0.39	0.36	0.42
mob_violence_plausibility_bl	1.64	1.74	0.42
number_incidents_bl	0.97	0.82	0.47
guard_dogs_bl	0.22	0.27	0.49
unemployed	0.38	0.35	0.49
work_part_time	0.17	0.15	0.50
single	0.31	0.34	0.51
concrete_floor	0.36	0.40	0.51
private_security_bl	0.02	0.01	0.54
police_quality_bl	1.56	1.66	0.56
motor_vehicle_bl	0.24	0.23	0.57
voice_heard_bl	0.91	0.84	0.58
criminals_from_outside_bl	0.35	0.38	0.61
religious_service_bl	1.37	1.31	0.63

know_state_official_bl	0.40	0.37	0.63
flush_toilet_public_bl	0.13	0.16	0.63
main_income_social_grants_bl	0.41	0.42	0.64
discussed_crime_bl	0.89	0.91	0.65
beat_truck_driver_bl	0.31	0.34	0.66
main_income_salary_bl	0.31	0.34	0.66
length_stay	4.07	4.15	0.67
washing_machine_bl	0.51	0.56	0.68
courts_punish_not_enough_bl	0.76	0.73	0.69
discuss_government_bl	2.22	2.31	0.70
spouse_hh_head	0.23	0.24	0.70
report_informal_provider_bl	0.77	0.75	0.71
able_to_name_bl	1.82	1.78	0.72
zcc	0.18	0.19	0.73
due_process_bl	0.86	0.88	0.75
call_police_bl	2.27	2.30	0.75
home_language_tswana	0.70	0.69	0.75
trust_neighbor_bl	0.76	0.75	0.77
attend_meetings_cpf_bl	1.49	1.60	0.78
apostolic	0.21	0.20	0.78
street_committee_connection_bl	0.43	0.39	0.80
spend_education_bl	0.60	0.61	0.80
number_school_children_bl	1.46	1.45	0.81
kind_day	1.55	1.58	0.81
punishment_preferences_bl	0.72	0.74	0.82
feel_safe_bl	0.28	0.28	0.82
tswana	0.51	0.51	0.82
blow_whistle_bl	0.14	0.14	0.84
know_number_bl	0.82	0.84	0.84
response_time_bl	3.08	3.11	0.85
female	0.64	0.62	0.85
cpf_connection_bl	1.33	1.35	0.88
government_corrupt_bl	0.62	0.62	0.90
spend_police_2_bl	0.53	0.54	0.90
perceived_crime_risk_bl	1.87	1.89	0.91
shout_community_bl	0.75	0.74	0.91
married	0.35	0.35	0.91
number_children_bl	1.88	1.94	0.92
attend_meetings_street_committee_bl	0.47	0.45	0.94
join_mob_bl	0.45	0.46	0.96
government_unresponsive_bl	0.78	0.78	0.97
tap_water_in_house_bl	0.11	0.12	0.97

Table B.4: Balance on covariates among all respondents in midline ($N = 483$)

	Control	Treatment	p -value
electric_stove_bl	0.80	0.93	0.01
approached_police_bl	0.67	0.52	0.03
prepaid_electricity_bl	0.83	0.92	0.03
microwave_bl	0.59	0.72	0.04
earn_salary	0.54	0.44	0.04
criminals_from_area_bl	0.43	0.30	0.05
dishwasher_bl	0.05	0.01	0.05
floor_material_missing	0.31	0.23	0.05
main_income_pensions_bl	0.08	0.15	0.07
number_births_bl	2.81	2.45	0.08
discuss_neighbors_bl	1.69	1.46	0.08
spend_police_1_bl	0.25	0.16	0.08
own_refuse_dump_bl	0.80	0.89	0.08
prisoners_guilty_bl	0.47	0.57	0.11
pray_private_bl	7.59	7.74	0.12
member_organization_bl	0.78	0.86	0.13
interest_public_affairs_bl	2.21	2.03	0.13
spend_electricity_bl	0.57	0.46	0.13
retired	0.14	0.20	0.16
tap_water_in_yard_bl	0.61	0.69	0.17
age	42.55	44.62	0.18
sepedi	0.19	0.13	0.18
tsonga	0.08	0.13	0.18
pay_tv_bl	0.45	0.53	0.19
beat_truck_driver_bl	0.30	0.34	0.21
tiled_floor	0.24	0.31	0.21
mob_violence_police_reaction_bl	1.88	1.72	0.23
in_a_relationship	0.17	0.13	0.25
work_part_time	0.17	0.13	0.25
completed_secondary_education	0.37	0.32	0.26
work_full_time	0.20	0.15	0.26
others_present	0.20	0.25	0.26
home_language_sepedi	0.13	0.08	0.26
length_stay	4.05	4.19	0.27
government_does_enough_bl	0.53	0.60	0.28
police_ask_for_bribe_bl	0.88	0.76	0.28
pit_latrine_bl	0.72	0.66	0.33
lutheran	0.22	0.27	0.33
kind_day	1.55	1.59	0.38
single	0.29	0.33	0.38

mob_violence_plausibility_bl	1.64	1.77	0.39
flush_toilet_public_bl	0.13	0.17	0.39
satisfaction_services_bl	0.39	0.36	0.40
other_organizations_bl	0.07	0.05	0.40
guard_dogs_bl	0.21	0.26	0.41
number_incidents_bl	0.98	0.83	0.42
private_security_bl	0.02	0.01	0.44
observed_conditions_bl	2.74	2.63	0.47
religious_service_bl	1.39	1.31	0.47
experienced_violent_crime_bl	0.11	0.14	0.49
washing_machine_bl	0.50	0.55	0.50
adequate_force_bl	0.56	0.60	0.52
voice_heard_bl	0.92	0.85	0.54
punishment_preferences_bl	0.71	0.75	0.54
child_hh_head	0.27	0.25	0.54
zcc	0.18	0.20	0.55
concrete_floor	0.36	0.40	0.56
street_committee_connection_bl	0.46	0.40	0.57
join_mob_bl	0.44	0.46	0.57
secondary_education_incomplete	0.39	0.41	0.59
number_children_bl	1.85	1.97	0.61
call_police_bl	2.27	2.32	0.61
no_religion	0.11	0.12	0.61
flush_toilet_tank_bl	0.15	0.17	0.64
discussed_crime_bl	0.89	0.91	0.66
due_process_bl	0.85	0.88	0.66
criminals_from_outside_bl	0.35	0.38	0.68
spouse_hh_head	0.25	0.26	0.68
state_official_bl	0.11	0.13	0.69
discuss_government_bl	2.21	2.28	0.69
tswana	0.49	0.51	0.70
interview_tswana	0.96	0.95	0.71
home_language_tswana	0.68	0.70	0.71
know_number_bl	0.82	0.84	0.72
unemployed	0.37	0.36	0.73
tap_water_in_house_bl	0.10	0.11	0.74
attend_meetings_street_committee_bl	0.50	0.45	0.75
perceived_crime_risk_bl	1.86	1.90	0.76
spend_education_bl	0.60	0.62	0.76
main_income_salary_bl	0.31	0.33	0.76
response_time_bl	3.07	3.12	0.77
trust_neighbor_bl	0.77	0.75	0.80
number_school_children_bl	1.43	1.46	0.82
blow_whistle_bl	0.15	0.14	0.82
know_state_official_bl	0.39	0.37	0.83
motor_vehicle_bl	0.23	0.21	0.83
attend_meetings_cpf_bl	1.49	1.52	0.85
spend_police_2_bl	0.54	0.53	0.85
police_quality_bl	1.60	1.63	0.86
female	0.63	0.63	0.86
hh_head	0.41	0.41	0.86
married	0.36	0.37	0.86
apostolic	0.20	0.20	0.86
able_to_name_bl	1.80	1.78	0.88
hh_size_bl	4.90	4.94	0.89
cpf_connection_bl	1.33	1.35	0.89
main_income_social_grants_bl	0.42	0.43	0.90
shout_community_bl	0.74	0.75	0.91
report_informal_provider_bl	0.76	0.77	0.92
government_corrupt_bl	0.61	0.60	0.93
courts_punish_not_enough_bl	0.75	0.75	0.94
government_unresponsive_bl	0.78	0.77	0.95
feel_safe_bl	0.27	0.27	0.98

Table B.5: Balance on covariates among main respondents in midline ($N = 438$)

	Control	Treatment	p -value
prepaid_electricity_bl	0.83	0.93	0.01
electric_stove_bl	0.80	0.94	0.01
microwave_bl	0.58	0.75	0.01
approached_police_bl	0.68	0.53	0.02
spend_police_1_bl	0.27	0.15	0.03
floor_material_missing_el_fu	0.29	0.20	0.04
number_births_bl	2.84	2.45	0.05
earn_salary_el_fu	0.55	0.48	0.09
prisoners_guilty_bl	0.46	0.58	0.09
dishwasher_bl	0.05	0.01	0.10
tsonga_el_fu	0.08	0.15	0.11
interest_public_affairs_bl	2.21	1.99	0.11
own_refuse_dump_bl	0.81	0.89	0.11
discuss_neighbors_bl	1.69	1.47	0.12
pray_private_bl	7.58	7.74	0.12
criminals_from_area_bl	0.40	0.29	0.13
mob_violence_police_reaction_bl	1.91	1.71	0.13
sepedi_el_fu	0.18	0.11	0.14
experienced_violent_crime_bl	0.09	0.17	0.16

tap_water_in_yard_bl	0.61	0.69	0.16
in_a_relationship_el_fu	0.19	0.15	0.19
spend_electricity_bl	0.56	0.49	0.20
other_organizations_bl	0.08	0.04	0.21
retired_el_fu	0.13	0.18	0.22
interview_tswana_el_fu	0.97	0.94	0.22
work_full_time_el_fu	0.19	0.14	0.23
length_stay_el_fu	4.02	4.16	0.23
age_el_fu	41.62	43.08	0.24
pay_tv_bl	0.45	0.53	0.26
no_religion_el_fu	0.10	0.13	0.29
washing_machine_bl	0.49	0.58	0.29
home_language_sepedi_el_fu	0.11	0.07	0.31
hh_head_el_fu	0.38	0.39	0.32
government_does_enough_bl	0.54	0.61	0.32
main_income_salary_bl	0.29	0.35	0.32
pit_latrine_bl	0.73	0.68	0.32
private_security_bl	0.02	0.01	0.33
single_el_fu	0.31	0.35	0.34
flush_toilet_tank_bl	0.13	0.16	0.37
unemployed_el_fu	0.41	0.38	0.38
member_organization_bl	0.80	0.86	0.38
satisfaction_services_bl	0.38	0.35	0.39
kind_day_el_fu	1.58	1.63	0.40
state_official_bl	0.10	0.14	0.40
religious_service_bl	1.38	1.30	0.41
punishment_preferences_bl	0.69	0.74	0.41
know_number_bl	0.80	0.86	0.41
main_income_pensions_bl	0.09	0.14	0.42
observed_conditions_bl	2.75	2.65	0.44
join_mob_bl	0.41	0.43	0.45
motor_vehicle_bl	0.25	0.23	0.45
others_present_el_fu	0.21	0.24	0.46
police_ask_for_bribe_bl	0.85	0.74	0.47
completed_secondary_education_el_fu	0.36	0.32	0.50
tiled_floor_el_fu	0.25	0.30	0.50
trust_neighbor_bl	0.79	0.76	0.50
guard_dogs_bl	0.22	0.28	0.50
discuss_government_bl	2.17	2.30	0.52
child_hh_head_el_fu	0.28	0.27	0.53
lutheran_el_fu	0.25	0.29	0.54
concrete_floor_el_fu	0.38	0.42	0.56
mob_violence_plausibility_bl	1.67	1.75	0.56
beat_truck_driver_bl	0.30	0.31	0.57
due_process_bl	0.85	0.88	0.59
blow_whistle_bl	0.15	0.13	0.60
voice_heard_bl	0.92	0.86	0.61
spend_education_bl	0.59	0.60	0.61
number_incidents_bl	0.93	0.86	0.63
flush_toilet_public_bl	0.13	0.16	0.64
know_state_official_bl	0.39	0.37	0.65
spouse_hh_head_el_fu	0.24	0.22	0.66
work_part_time_el_fu	0.15	0.14	0.67
able_to_name_bl	1.84	1.79	0.68
discussed_crime_bl	0.89	0.92	0.68
secondary_education_incomplete_el_fu	0.43	0.41	0.71
report_informal_provider_bl	0.78	0.76	0.71
spend_police_2_bl	0.52	0.55	0.71
shout_community_bl	0.73	0.76	0.74
street_committee_connection_bl	0.44	0.37	0.76
police_quality_bl	1.57	1.62	0.77
home_language_tswana_el_fu	0.69	0.68	0.81
government_unresponsive_bl	0.76	0.76	0.82
call_police_bl	2.30	2.33	0.84
hh_size_bl	4.98	5.09	0.85
response_time_bl	3.09	3.07	0.87
tap_water_in_house_bl	0.12	0.12	0.87
zcc_el_fu	0.18	0.19	0.88
perceived_crime_risk_bl	1.90	1.87	0.88
number_school_children_bl	1.46	1.50	0.89
main_income_social_grants_bl	0.44	0.43	0.90
apostolic_el_fu	0.21	0.21	0.91
cpf_connection_bl	1.38	1.39	0.91
government_corrupt_bl	0.61	0.62	0.94
number_children_bl	1.91	1.98	0.95
feel_safe_bl	0.28	0.29	0.97
attend_meetings_street_committee_bl	0.47	0.42	0.97
female_el_fu	0.64	0.63	0.98
criminals_from_outside_bl	0.38	0.38	0.98
courts_punish_not_enough_bl	0.75	0.73	0.98
tswana_el_fu	0.49	0.51	0.99
adequate_force_bl	0.57	0.57	0.99
attend_meetings_cpf_bl	1.54	1.63	0.99
married_el_fu	0.34	0.36	1.00

Table B.6: Balance on covariates among all respondents in endline ($N = 448$)

	Control	Treatment	p-value
electric_stove_bl	0.79	0.93	0.00
microwave_bl	0.56	0.74	0.00
prepaid_electricity_bl	0.82	0.92	0.01
approached_police_bl	0.67	0.53	0.04
floor_material_missing_el_fu	0.30	0.21	0.06
number_births_bl	2.81	2.42	0.06
pray_private_bl	7.57	7.75	0.06
spend_police_1_bl	0.26	0.15	0.07
dishwasher_bl	0.05	0.01	0.07
prisoners_guilty_bl	0.46	0.58	0.08
sepedi_el_fu	0.18	0.11	0.09
own_refuse_dump_bl	0.80	0.89	0.09
earn_salary_el_fu	0.53	0.45	0.11
tap_water_in_yard_bl	0.60	0.70	0.12
retired_el_fu	0.13	0.20	0.13
main_income_pensions_bl	0.08	0.14	0.13
criminals_from_area_bl	0.40	0.30	0.14
interest_public_affairs_bl	2.21	2.02	0.16
work_full_time_el_fu	0.20	0.14	0.17
length_stay_el_fu	4.04	4.21	0.17
discuss_neighbors_bl	1.68	1.49	0.17
age_el_fu	42.26	44.20	0.20
washing_machine_bl	0.48	0.57	0.20
government_does_enough_bl	0.53	0.62	0.21
experienced_violent_crime_bl	0.09	0.15	0.21
member_organization_bl	0.79	0.86	0.23
spend_electricity_bl	0.56	0.48	0.23
pay_tv_bl	0.45	0.53	0.25
kind_day_el_fu	1.56	1.63	0.26
tsonga_el_fu	0.09	0.14	0.26
mob_violence_police_reaction_bl	1.88	1.75	0.28
tiled_floor_el_fu	0.24	0.30	0.29
lutheran_el_fu	0.23	0.28	0.32
others_present_el_fu	0.19	0.24	0.32
home_language_sepedi_el_fu	0.11	0.07	0.32
pit_latrine_bl	0.73	0.68	0.32
no_religion_el_fu	0.10	0.14	0.34
completed_secondary_education_el_fu	0.37	0.33	0.35
religious_service_bl	1.38	1.28	0.36
punishment_preferences_bl	0.70	0.76	0.36
satisfaction_services_bl	0.38	0.35	0.38
know_number_bl	0.80	0.86	0.38
police_ask_for_bribe_bl	0.85	0.73	0.38
other_organizations_bl	0.08	0.05	0.38
work_part_time_el_fu	0.16	0.13	0.39
discuss_government_bl	2.16	2.29	0.40
flush_toilet_tank_bl	0.13	0.17	0.43
single_el_fu	0.30	0.33	0.44
main_income_salary_bl	0.29	0.33	0.44
state_official_bl	0.11	0.14	0.45
interview_tswana_el_fu	0.96	0.95	0.46
in_a_relationship_el_fu	0.18	0.15	0.47
tswana_el_fu	0.48	0.51	0.50
due_process_bl	0.85	0.88	0.51
private_security_bl	0.02	0.01	0.51
motor_vehicle_bl	0.24	0.21	0.53
courts_punish_not_enough_bl	0.73	0.76	0.55
flush_toilet_public_bl	0.12	0.15	0.55
secondary_education_incomplete_el_fu	0.42	0.39	0.56
mob_violence_plausibility_bl	1.67	1.75	0.58
guard_dogs_bl	0.22	0.25	0.59
attend_meetings_cpf_bl	1.50	1.62	0.60
beat_truck_driver_bl	0.30	0.31	0.60
spend_education_bl	0.59	0.62	0.60
discussed_crime_bl	0.89	0.91	0.63
shout_community_bl	0.73	0.76	0.66
street_committee_connection_bl	0.45	0.40	0.66
zcc_el_fu	0.17	0.19	0.67
unemployed_el_fu	0.39	0.38	0.67
call_police_bl	2.29	2.34	0.67
number_incidents_bl	0.93	0.85	0.67
cpf_connection_bl	1.35	1.41	0.67
hh_head_el_fu	0.40	0.41	0.69
observed_conditions_bl	2.72	2.66	0.69
main_income_social_grants_bl	0.46	0.44	0.69
spouse_hh_head_el_fu	0.25	0.24	0.70
concrete_floor_el_fu	0.38	0.40	0.72
join_mob_bl	0.42	0.44	0.72
voice_heard_bl	0.91	0.88	0.73
spend_police_2_bl	0.52	0.54	0.73
trust_neighbor_bl	0.78	0.77	0.77
government_corrupt_bl	0.60	0.62	0.77
police_quality_bl	1.59	1.56	0.77
home_language_tswana_el_fu	0.68	0.69	0.78
blow_whistle_bl	0.15	0.13	0.78
child_hh_head_el_fu	0.26	0.25	0.80
feel_safe_bl	0.28	0.28	0.81
able_to_name_bl	1.83	1.80	0.82
number_school_children_bl	1.45	1.46	0.83
report_informal_provider_bl	0.77	0.76	0.84

response_time_bl	3.10	3.11	0.86
tap_water_in_house_bl	0.11	0.12	0.87
apostolic_el_fu	0.20	0.21	0.90
attend_meetings_street_committee_bl	0.48	0.46	0.90
married_el_fu	0.35	0.37	0.93
government_unresponsive_bl	0.77	0.76	0.94
hh_size_bl	4.90	4.99	0.95
number_children_bl	1.90	1.93	0.95
criminals_from_outside_bl	0.38	0.38	0.95
perceived_crime_risk_bl	1.88	1.88	0.95
female_el_fu	0.64	0.63	0.96
know_state_official_bl	0.38	0.37	0.96
adequate_force_bl	0.57	0.58	0.96

Table B.7: Balance on covariates among main respondents in endline ($N = 409$)

B.2.2 Attrition

	Treatment	Control	<i>p</i> -value
Single Member Household	10 (N = 100)	13 (N = 150)	0.836
Respondent Not Interviewed Midline	13 (N = 190)	26 (N = 287)	0.452
Respondent Not Interviewed Endline	21 (N = 190)	49 (N = 287)	0.121

Table B.8: Reported household size and rates of attrition across experimental conditions

The outcome in row 1 is an indicator for whether enumerators reported that there is only one person living in a particular household. The unit of analysis is the household. The outcomes in row 2 and 3 are, respectively, an indicator for whether a respondent attrited in the midline or endline survey. The unit of analysis is the respondent. Rows 2 and 3 are based on a “completed” dataset, which assumes that for the response rate to be 100%, 477 respondents should have been interviewed: two respondents per household other than the 23 households that have only one household member. *p*-values stem from an unequal variance *t*-test that was conducted via randomization inference by permuting treatment assignment 2,000 times to generate the distribution of the test statistic under the sharp null hypothesis of no effect of treatment on reported household size or attrition for any unit.

	<i>p</i> -value	N
1	0.222	477
2	0.818	477

Table B.9: *F*-test of treatment-by-covariate interactions in models of attrition

P-values come from an *F*-test that compares the following two models. The full model regresses an indicator for whether a respondent attrited on an indicator for treatment assignment and all treatment-by-covariate interactions using eight pre-registered baseline covariates. The nested model restricts all interaction terms to be zero. Row 1 pertains to the midline survey and row 2 pertains to the endline survey. The unit of analysis is the respondent and the analysis is based on two “completed” datasets which assume that, for the response rate to be 100%, 477 respondents should have been interviewed, two respondents per household other than the 23 households that have only one household member. *p*-values have been calculated using randomization inference by permuting treatment assignment 2,000 times.

B.2.3 Additional respondents

	Any Additional Resp.		N Additional Resp.	
	Midline	Endline	Midline	Endline
	(1)	(2)	(3)	(4)
Alarm Treatment	0.058 (0.048)	0.066 (0.049)	0.068 (0.059)	0.077 (0.051)
Control Mean	0.136	0.134	0.156	0.134
RI <i>p</i> -value	0.22	0.248	0.174	0.126
Number HHs	245	237	245	237
Hypothesis	two	two	two	two
Observations	245	237	245	237
Adjusted R ²	0.002	0.004	0.001	0.005

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

Table B.10: Additional respondents sampled across experimental conditions

The unit of analysis is the household for all analyses. The sample contains all main households in which at least one respondent was interviewed at, respectively, midline and endline. The outcome in columns 1 and 3 is an indicator for whether an additional respondent was interviewed in a given household in the respective survey wave. The outcome in columns 2 and 4 is the number of additional respondents interviewed. Outcomes are regressed on an indicator for treatment assignment and *p*-values are calculated using randomization inference.

B.3 Additional Analyses

B.3.1 Additional outcomes

	Spoken to police			
	Midline	Endline	Endline	Endline
	(1)	(2)	(3)	(4)
Alarm	-0.017 (0.035)	0.041 (0.050)	0.042 (0.071)	0.054 (0.065)
Alarm × High Prior Punishment			0.014 (0.098)	
Alarm × High Prior Service				-0.007 (0.096)
Control Mean	0.18	0.44	0.44	0.44
RI p-value Main	0.671	0.213	0.297	0.182
Hypothesis Main	upr	upr	upr	upr
RI p-value Diff.	-	-	0.552	0.405
Hypothesis Diff	-	-	-	-
Number HHs	245	237	237	237
Observations	483	448	448	448

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

Table B.11: Effects of the alarm treatment on whether respondents have recently spoken to police

Section B.1.2 of the appendix contains more details on model specification. See section B.4.7 for question wording and coding of the outcome.

	Support MV		Call Com.		Support MV	Call Com.	Support MV	Call Com.
	Midline	Endline	Midline	Endline	Endline	Endline	Endline	Endline
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alarm	-0.041*	-0.031	-0.003	0.030	-0.118**	0.032	-0.042	0.048
	(0.032)	(0.042)	(0.024)	(0.025)	(0.066)	(0.036)	(0.056)	(0.029)
Alarm × High Prior Punishment					0.156**	-0.007		
					(0.086)	(0.048)		
Alarm × High Prior Service							0.013	-0.053
							(0.087)	(0.050)
Control Mean	0.3	0.37	0.78	0.76	0.37	0.76	0.37	0.58
RI <i>p</i> -value Main	0.085	0.23	0.446	0.883	0.045	0.771	0.226	0.933
Hypothesis Main	lwr	lwr	lwr	lwr	lwr	lwr	lwr	lwr
RI <i>p</i> -value Diff.	-	-	-	-	0.043	0.507	0.426	0.83
Hypothesis Diff	-	-	-	-	upr	upr	upr	upr
Number HHs	245	237	245	237	237	237	237	237
Observations	483	448	483	448	448	448	448	448

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

Table B.12: Effects of the alarm treatment on respondents' support for mob vigilantism and willingness to call the community

All outcome measures range from 0 to 1. The results in columns 5 to 8 are based on specifications that regress the outcome on an indicator for treatment assignment, an indicator for high prior beliefs at baseline, the interaction between the two, and the cluster size control. Dichotomous baseline measures of prior beliefs are treated as household-level measurements, since only one respondent was interviewed per household at baseline. Prior beliefs about punishment (columns 5 and 6) are measured through an item that asks whether it is likely (unlikely) that participants in a hypothetical incident of vigilantism would be arrested. The measure of prior beliefs about service quality (columns 7 and 8) captures whether respondents fall above or below the median of an index of three items: *Arrive quickly*, *Send guilty to prison* and *Customer service*. See section B.4.6 for question wording and Table 2.1 for the joint distribution of prior beliefs. Randomization inference *p*-values and directions of hypothesis tests are displayed in the table. Section B.1.2 of the appendix contains more details on model specification and testing. See section B.4.8 for question wording and coding of outcomes.

B.3.2 Robustness

Excluding additional respondents

	Rely police		Join MV		Rely police	Join MV	Rely police	Join MV
	Midline	Endline	Midline	Endline	Endline	Endline	Endline	Endline
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alarm	0.097*** (0.030)	0.059** (0.033)	-0.061** (0.032)	-0.012 (0.030)	0.104** (0.045)	-0.101** (0.045)	0.109*** (0.043)	-0.043 (0.039)
Alarm × High Prior Punishment					-0.085* (0.065)	0.161*** (0.060)		
Alarm × High Prior Service							-0.106* (0.064)	0.066 (0.061)
Control Mean	0.61	0.65	0.22	0.18	0.65	0.18	0.65	0.18
RI p-value Main	0	0.032	0.026	0.346	0.012	0.012	0.004	0.146
Hypothesis Main	upr	upr	lwr	lwr	upr	lwr	upr	lwr
RI p-value Diff.	-	-	-	-	0.066	0.002	0.059	0.206
Hypothesis Diff	-	-	-	-	lwr	upr	lwr	upr
Number HHs	243	233	243	233	233	233	233	233
Observations	438	409	438	409	409	409	409	409

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

Table B.13: Effects of alarm treatment on respondents' willingness to rely on police and participate in mob vigilantism among initial respondents

All analyses are run on samples that are subset to the two initially sampled respondents. All outcome measures range from 0 to 1. The results in columns 5 to 8 are based on specifications that regress the outcome on an indicator for treatment assignment, an indicator for high prior beliefs at baseline, the interaction between the two, and the cluster size control. Dichotomous baseline measures of prior beliefs are treated as household-level measurements, since only one respondent was interviewed per household at baseline. Prior beliefs about punishment (columns 5 and 6) are measured through an item that asks whether it is likely (unlikely) that participants in a hypothetical incident of vigilantism would be arrested. The measure of prior beliefs about service quality (columns 7 and 8) captures whether respondents fall above or below the median of an index of three items: *Arrive quickly*, *Send guilty to prison* and *Customer service*. See section B.4.6 for question wording and Table 2.1 for the joint distribution of prior beliefs. Randomization inference *p*-values and directions of hypothesis tests are displayed in the table. Section B.1.2 of the appendix contains more details on model specification and testing. See section B.4.1 for question wording and coding of outcomes.

Adjusting for covariates

	Rely police		Join MV		Rely police	Join MV	Rely police	Join MV
	Midline	Endline	Midline	Endline	Endline	Endline	Endline	Endline
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alarm	0.067*** (0.026)	0.048** (0.029)	-0.071** (0.029)	-0.005 (0.026)	0.070* (0.042)	-0.070 (0.038)	0.093*** (0.038)	-0.026 (0.036)
Alarm × High Prior Punishment					-0.047 (0.056)	0.124** (0.053)		
Alarm × High Prior Service							-0.105** (0.055)	0.048 (0.054)
Control Mean	0.6	0.64	0.24	0.17	0.64	0.17	0.64	0.17
RI p-value Main	0.005	0.035	0.011	0.438	0.054	0.104	0.007	0.289
Hypothesis Main	upr	upr	lwr	lwr	upr	lwr	upr	lwr
RI p-value Diff.	-	-	-	-	0.203	0.021	0.034	0.144
Hypothesis Diff	-	-	-	-	lwr	upr	lwr	upr
Number HHS	245	237	245	237	237	237	237	237
Observations	483	448	483	448	448	448	448	448

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

Table B.14: Effects of alarm treatment on respondents' willingness to rely on police and participate in mob vigilantism estimated with covariate adjustment

All outcome measures range from 0 to 1. The results in columns 5 to 8 are based on specifications that regress the outcome on an indicator for treatment assignment, an indicator for high prior beliefs at baseline, the interaction between the two, and the cluster size control. In addition, all specifications control for a set of covariates selected through a pre-specified LASSO regression procedure. Dichotomous baseline measures of prior beliefs are treated as household-level measurements, since only one respondent was interviewed per household at baseline. Prior beliefs about punishment (columns 5 and 6) are measured through an item that asks whether it is likely (unlikely) that participants in a hypothetical incident of vigilantism would be arrested. The measure of prior beliefs about service quality (columns 7 and 8) captures whether respondents fall above or below the median of an index of three items: *Arrive quickly*, *Send guilty to prison* and *Customer service*. See section B.4.6 for question wording and Table 2.1 for the joint distribution of prior beliefs. Randomization inference p-values and directions of hypothesis tests are displayed in the table. Section B.1.2 of the appendix contains more details on model specification and testing. See section B.4.1 for question wording and coding of outcomes.

Listwise deletion

	Rely police		Join MV		Rely police	Join MV	Rely police	Join MV
	Midline	Endline	Midline	Endline	Endline	Endline	Endline	Endline
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alarm	0.096*** (0.028)	0.076*** (0.031)	-0.078*** (0.032)	-0.012 (0.028)	0.132*** (0.044)	-0.100** (0.044)	0.126*** (0.042)	-0.042 (0.037)
Alarm × High Prior Punishment					-0.106** (0.062)	0.158*** (0.057)		
Alarm × High Prior Service							-0.101* (0.061)	0.066 (0.057)
Control Mean		0.64	0.24	0.17	0.64	0.17	0.64	0.17
RI p-value Main	0	0.002	0.006	0.344	0.002	0.011	0.001	0.148
Hypothesis Main	upr	upr	lwr	lwr	upr	lwr	upr	lwr
RI p-value Diff.	-	-	-	-	0.037	0.002	0.066	0.206
Hypothesis Diff	-	-	-	-	lwr	upr	lwr	upr
Number HHs	245	237	245	237	237	237	237	237
Observations	476	447	483	448	447	448	447	448

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

Table B.15: Effects of alarm treatment on respondents' willingness to rely on police and participate in mob vigilantism without imputations

All outcome measures range from 0 to 1. The results in columns 5 to 8 are based on specifications that regress the outcome on an indicator for treatment assignment, an indicator for high prior beliefs at baseline, the interaction between the two, and the cluster size control. Dichotomous baseline measures of prior beliefs are treated as household-level measurements, since only one respondent was interviewed per household at baseline. Prior beliefs about punishment (columns 5 and 6) are measured through an item that asks whether it is likely (unlikely) that participants in a hypothetical incident of vigilantism would be arrested. The measure of prior beliefs about service quality (columns 7 and 8) captures whether respondents fall above or below the median of an index of three items: *Arrive quickly*, *Send guilty to prison* and *Customer service*. See section B.4.6 for question wording and Table 2.1 for the joint distribution of prior beliefs. Randomization inference p -values and directions of hypothesis tests are displayed in the table. Section B.1.2 of the appendix contains more details on model specification and testing. See section B.4.1 for question wording and coding of outcomes.

B.3.3 Disaggregating indices

	Alert police		Coop. police		Alert police	Coop. police	Alert police	Coop. police
	Midline	Endline	Midline	Endline	Endline	Endline	Endline	Endline
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alarm	0.103*** (0.038)	0.079** (0.037)	0.091*** (0.030)	0.070** (0.035)	0.140*** (0.051)	0.124** (0.054)	0.132*** (0.051)	0.120*** (0.047)
Alarm × High Prior Punishment					-0.114* (0.074)	-0.103* (0.071)		
Alarm × High Prior Service							-0.110* (0.072)	-0.098 (0.071)
Control Mean	0.65	0.7	0.55	0.58	0.7	0.58	0.7	0.58
RI <i>p</i> -value Main	0.003	0.015	0	0.019	0.002	0.017	0.004	0.006
Hypothesis Main	upr	upr	upr	upr	upr	upr	upr	upr
RI <i>p</i> -value Diff.	-	-	-	-	0.06	0.084	0.07	0.107
Hypothesis Diff	-	-	-	-	lwr	lwr	lwr	lwr
Number HHs	245	237	245	237	237	237	237	237
Observations	483	448	483	448	448	448	448	448

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

Table B.16: Effects of the alarm treatment on the willingness to alert and to cooperate with police

All outcome measures range from 0 to 1. The results in columns 5 to 8 are based on specifications that regress the outcome on an indicator for treatment assignment, an indicator for high prior beliefs at baseline, the interaction between the two, and the cluster size control. Dichotomous baseline measures of prior beliefs are treated as household-level measurements, since only one respondent was interviewed per household at baseline. Prior beliefs about punishment (columns 5 and 6) are measured through an item that asks whether it is likely (unlikely) that participants in a hypothetical incident of vigilantism would be arrested. The measure of prior beliefs about service quality (columns 7 and 8) captures whether respondents fall above or below the median of an index of three items: *Arrive quickly*, *Send guilty to prison* and *Customer service*. See section B.4.6 for question wording and Table 2.1 for the joint distribution of prior beliefs. Randomization inference *p*-values and directions of hypothesis tests are displayed in the table. Section B.1.2 of the appendix contains more details on model specification and testing. See section B.4.1 for question wording and coding of outcomes.

	Support MV Index (ML)				
	Not arrest mob	Beat known thief	Beat petty thief	Beat driver	Comm. deal crime
Alarm	-0.063 (0.048)	-0.033 (0.044)	-0.028 (0.039)	-0.042 (0.035)	-0.039 (0.045)
Control Mean	0.46	0.35	0.22	0.18	0.3
RI p-value	0.193	0.438	0.464	0.234	0.358
Hypothesis	two	two	two	two	two
Number HHs	245	245	245	245	245
Observations	483	483	483	483	483

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

Table B.17: The effect of the alarm treatment on individual items used to create the index “Support MV” at midline

The unit of analysis is the respondent in all analyses. Section B.1.2 of the appendix contains details on model specification. See section B.4.8 for question wording and coding of outcomes.

	Join MV Index (EL)		Support MV Index (EL)	
	Join beating	Join mob	Not arrest mob	Beat known thief
Alarm	-0.039 (0.035)	0.016 (0.033)	0.049 (0.049)	-0.013 (0.048)
Control Mean	0.21	0.14	0.58	0.33
RI p-value	0.136	0.684	0.857	0.39
Hypothesis	lwr	lwr	lwr	lwr
Number HHs	237	237	237	237
Observations	448	448	448	448

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

Table B.18: The effect of the alarm treatment on individual items used to create the indices “Join MV” and “Support MV” at endline

The unit of analysis is the respondent in all analyses. Section B.1.2 of the appendix contains details on model specification. See sections B.4.1 and B.4.8 for question wording and coding of outcomes.

Service Quality Index ML						
	Take problem seriously	Appear competent	Send guilty to prison	Make effort	Not pay to escape	Care about community
	(1)	(2)	(3)	(4)	(5)	(6)
Alarm	0.057* (0.031)	0.055* (0.031)	0.097** (0.045)	0.069 (0.047)	0.051* (0.028)	0.042 (0.028)
Control Mean	0.6	0.68	0.35	0.42	0.25	0.44
RI <i>p</i> -value	0.072	0.099	0.042	0.144	0.052	0.399
Hypothesis	two	two	two	two	two	two
Number HHs	245	245	245	245	245	245
Observations	483	483	483	483	483	483

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

Table B.19: The effect of the alarm treatment on individual items used to create the index “Service quality” at midline

The unit of analysis is the respondent in all analyses. Section B.1.2 of the appendix contains details on model specification. See section B.4.2 for question wording and coding of outcomes.

Service Quality Index EL			
	Take problem seriously	Send guilty to prison	Make effort
	(1)	(2)	(3)
Alarm	-0.030 (0.029)	0.040 (0.048)	0.114** (0.048)
Control Mean	0.74	0.46	0.47
RI <i>p</i> -value	0.846	0.208	0.014
Hypothesis	upr	upr	upr
Number HHs	237	237	237
Observations	448	448	448

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

Table B.20: The effect of the alarm treatment on individual items used to create the index “Service quality” at endline

The unit of analysis is the respondent in all analyses. Section B.1.2 of the appendix contains details on model specification. See section B.4.2 for question wording and coding of outcomes.

B.3.4 Additional results information treatments

	Believes police fight crime	Believes police fight MV
Police fight Crime	0.020 (0.035)	
Police fight MV		-0.009 (0.028)
Control Mean	0.46	0.65
RI p-value	0.263	0.63
Hypothesis	upr	upr
Observations	815	815

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

Table B.21: Effect of information treatments among all endline respondents

Analyses are run among all endline respondents (from main *and* neighboring households). Column 1 regresses the outcome on an indicator for assignment to ‘Police fight crime’ treatment. Column 2 regressed the outcome on an indicator for assignment to the ‘Police fight MV’ treatment. See section B.1.2 of the appendix for information on model specification and section B.4.4 of the appendix for outcome question wording and coding.

	Believes police fight crime		Believes police fight MV		Would participate MV	
Police fight Crime	0.068** (0.040)		0.009 (0.039)		0.005 (0.035)	
Police fight MV		-0.024 (0.040)		0.027 (0.038)		-0.023 (0.035)
Control Mean	0.2	0.25	0.56	0.56	0.35	0.36
RI p-value	0.046	0.724	0.402	0.238	0.549	0.262
Hypothesis	upr	upr	upr	upr	lwr	lwr
Observations	451	451	451	451	451	451

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

Table B.22: Effect of information treatments among respondents with low priors about police service

Analyses are run on a subset of all respondents (from main *and* neighboring households) that has low priors about the quality of police service as measured during the endline survey, prior to the administration of the information treatments. See section B.4.6 for the endline item used to measure prior beliefs. Columns 1, 3 and 5 regress the outcome on an indicator for assignment to ‘Police fight crime’ treatment. Columns 2, 4 and 6 regress the outcome on an indicator for assignment to the ‘Police fight MV’ treatment. See section B.1.2 of the appendix for information on model specification and section B.4.4 of the appendix for outcome question wording and coding.

B.3.5 Ruling out alternative explanations

Social desirability bias

	All endline respondents			Low priors legal repercussions MV		
	Any MV incidents	Number MV incidents	Witnessed any	Any MV incidents	Number MV incidents	Witnessed any
	(1)	(2)	(3)	(4)	(5)	(6)
Alarm	0.042 (0.050)	0.285 (0.175)	0.053 (0.046)	0.048 (0.075)	0.342 (0.225)	0.040 (0.066)
Control Mean	0.31	0.75	0.22	0.33	0.67	0.22
RI p-value	0.802	0.96	0.884	0.74	0.94	0.734
Hypothesis	lwr	lwr	lwr	lwr	lwr	lwr
Number HHs	237	237	237	110	110	110
Observations	448	448	448	202	202	202

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

Table B.23: Effect of the alarm treatment on recollection of incidents of mob vigilantism that happened *prior* to treatment

During the endline survey, respondents were asked “I would like you to think back to last year last winter, meaning May, June and July last year (2018). Can you recall any mob justice incidents that happened in your section during last winter?” If they answered “yes,” they were asked “How many mob justice incidents can you recall from last winter?” as well as “Did you personally witness any of these mob justice incidents?” The outcome in columns 1 and 4 is an indicator variable for whether respondents can recall any incidents. The outcome in columns 2 and 5 is the number of incidents that a respondent can recall. The outcome in columns 3 and 6 is an indicator for whether a respondent reports having witnessed any incidents of vigilantism. Those who cannot recall an incident are coded as zero. Analyses in columns 1 to 3 are based on the entire sample. Analyses in columns 4 to 6 are subset to respondents from households with low priors about the likelihood of state punishment for vigilante violence. This subgroup is of relevance, because it sees the largest (in absolute value) treatment effects on the willingness to participate in vigilante violence. See section B.1.2 of the appendix for information on model specification.

Changes among control group

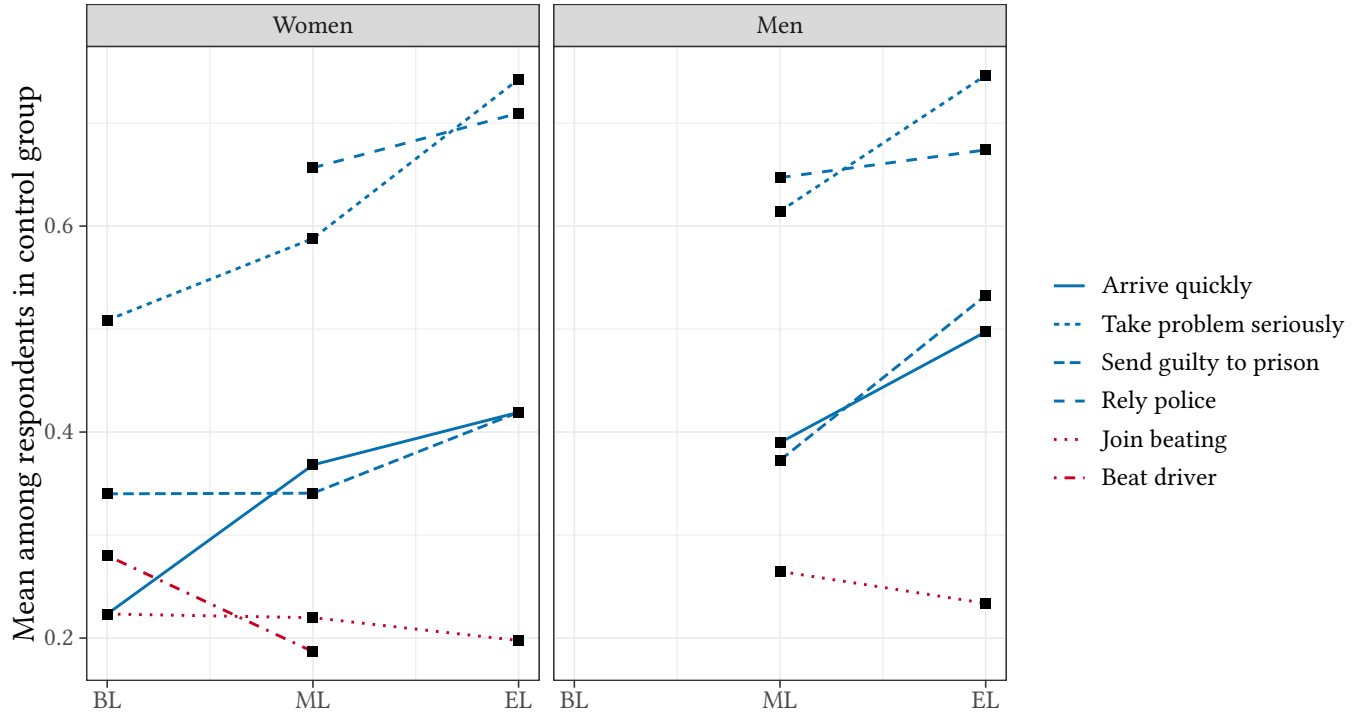


Figure B.5: Change in outcomes in control group across survey waves by gender

Only women respondents were interviewed in the baseline. Outcomes in blue relate to the police; outcomes in red relate to mob vigilantism. BL stands for baseline, ML stands for midline and EL stands for endline. See sections B.4.1, B.4.2, and B.4.8 for question wording.

Change in punishment preferences due to improved safety

	Feel Safe	HH experienced crime	Punish more	Quick justice
	(1)	(2)	(3)	(4)
Alarm	0.099*** (0.028)	-0.018 (0.049)	-0.009 (0.047)	-0.020 (0.050)
Control Mean	0.59	0.18	0.46	0.51
RI p-value	0	0.368	0.86	0.684
Hypothesis	upr	lwr	two	two
Unit of Analysis	Ind.	HH	Ind.	Ind.
Number HHs	237	237	237	237
Observations	448	237	448	448

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

Table B.24: Effect of the alarm treatment on safety and punishment preferences

All analyses draw on data from the endline survey. The question wording of outcome measures is as follows. *Feel safe*: Do you feel safe in your home during [at random: day/night] time? If yes: Do you feel just safe or very safe? If no: Do you feel just unsafe or very unsafe? 1 = Very safe, 0.66 = Just safe, 0.33 = Just unsafe, 0 = Very unsafe. *Crime Victimization*: Since last Christmas, did any crime happen in your house or yard? 1 = Yes, 0 = No. Answers have been collapsed to household level means. *Punish more*: Imagine you've been robbed at knifepoint and you report the robbery to the police. The robber took your belongings but did not hurt you. The police arrest the robber, and he will be kept in prison for 2 years. Is that a severe enough punishment, or should he have been punished more? 0 = It is severe enough., 1 = He should have been punished more. *Quick justice*: Please tell me which of the following statements comes closest to your view: 1 = Statement 1: The most important thing is that justice is served quickly. 0 = Statement 2: As long as the sentence is fair, I don't mind how long it takes for justice to be served. See section B.1.2 of the appendix for information on model specification.

B.4 Question Wording

This section provides the question wording and coding of all outcome measures except for those that are explained in table captions, broken down by tables. The responses “don’t know” and “refuse to answer” have been coded as missing and imputed using multivariate imputation via chained equations for all measurements. Indices have been created by averaging across items.

B.4.1 Table 2.2

Column 1, 2, 5 and 7: Rely Police. This measure is an index of one item and one sub-index:

- *Alert Police:*
 - Suppose someone is trying to enter your home to steal something from you. Some people say that reaching out to the police in such situations is useless, because the police won’t arrive in time anyway. What about you, which of the following comes closest to what you would do?
 - * 0 = I would not rely on the police for help.
 - * 0.5 = I may alert the police later, but not right away.
 - * 1 = Before doing anything else, I would alert the police to come and help me.
- *Cooperate Police:* This measure is an index of the following three items:
 - *Report Police:* Please tell me which of the following statements comes closest to your view:
 - * 1 = If I see a crime, I will always report it to the police.
 - * 0 = I do not think it is worth reporting minor crimes to the police, because the police won’t do anything anyway.
 - *Share Information (only part of the midline index):* Suppose you are aware that a member of your community is selling drugs. Which of the following are you most likely to do?

- * 1 = I would report this person to the police.
 - * 0 = I would turn a blind eye, because I do not feel comfortable reporting criminals to the police.
- *Report GBV*: Imagine you are at home watching TV in the afternoon. You hear your neighbor's wife screaming, because her husband is beating her. Which of the following are you most likely to do?
- * 1 = I would alert the police.
 - * 0 = I would go to the neighbor's house and intervene, or, I would turn a blind eye.

Column 3, 4, 6 and 8: Join MV. This measure is a single item at midline and an index of two items at endline:

- *Join beating*: In this same situation, suppose some men from your community do get hold of the burglar who stole from you and that they want to beat him up. Which action are you most likely to take?
 - 0 = I would try to calm the group down and tell them we should wait for the police.
 - 0.5 = I would not join the group but allow the men to continue with the beating.
 - 1 = I would join the group in beating up the thief.
- *Join mob (only endline)*: Suppose you are on your way home. In your street, you encounter a group of [at random: 10/50] community members. The community members are beating a man who has been caught stealing from your neighbor's yard. Would you join the group?
 - 1 = Yes
 - 0 = No

B.4.2 Table 2.3

Column 1: Know HH. This measure is an index of two items:

- *Know Name:* Thinking about the police that work in your community. Do you think that someone from the police knows your name? If no: Do you think the police knows the name of someone else who lives in this household?
 - 0 = Respondent answered no to both questions.
 - 0.5 = Respondent said no to the first question but yes to the second.
 - 1 = Respondent said yes to the first question.
- *Know House:* Do you think someone from the police knows your house?
 - 0 = No
 - 1 = Yes

Columns 2 and 3: Arrive Quickly.

- Imagine you are at home and alert the police in an emergency. Do you think the police would come to your help?
 - If Yes or Maybe: Do you think the police would take more or less than an hour to come to your help? If you don't know, please give your best guess.
 - * If More than an hour:
 - Do you believe the police would take more than two hours or less than that?
 - * If Less than an hour:
 - Do you believe the police would take less than 30 minutes or more than that?
 - 0 = The police would not come
 - 0.25 = The police take more than two hours

- 0.5 = The police would take more than one hour but less than two
- 0.75 = The police would take less than one hour but more than 30 minutes
- 1 = The police would take less than 30 minutes

Column 4: Service Quality Midline. This outcome measure is an index of the following measures:

- *Customer service:* This measure is a sub-index of two items:
 - *Take problem seriously:* When you or someone like you takes a problem to the police, how likely is it that the police take your problem seriously?
 - * 1 = Very likely
 - * 0.5 = Somewhat likely
 - * 0.25 = Not very likely
 - * 0 = Not likely at all
 - *Appear competent:* When you or someone like you takes a problem to the police, how likely is it that the police appear to know what they are doing?
 - * 1 = Very likely
 - * 0.5 = Somewhat likely
 - * 0.25 = Not very likely
 - * 0 = Not likely at all
- *Send guilty to prison:* Which of the following statements comes closer to your view?
 - 1 = Statement 1: The police and the courts ensure that people who are guilty almost always go to prison.
 - 0 = Statement 2: The police and the courts often let people who are guilty go free.
- *Make effort:* Which of the following statements comes closer to your view?

- 1 = Statement 1: If the police do not respond to incidents of crime in time, it is because they do not have enough cars.
 - 0 = Statement 2: The police have enough cars and if they do not respond in time, it is because they cannot be bothered to do their jobs.
- *No collusion with criminals*: This measure is a sub-index of two items:
 - *Not pay to escape*: Suppose the police catches a criminal. Do you think it is likely that the criminal could escape punishment by offering money to the police officers? If yes: Do you think it is just likely or very likely? If no: Do you think it is unlikely or very unlikely?
 - * 0 = Very likely
 - * 0.25 = Likely
 - * 0.5 = Unlikely
 - * 1 = Very unlikely
 - *Care about community*: Which of the following statements is closest to your view:
 - * 1 = Statement 1: The police have the community's best interest at heart.
 - * 0 = Statement 2: The police do not care about the community and are colluding with the criminals.

Column 5: Service Quality Endline. This outcome measure is an index of three items:

- *Take problem seriously*: When you or someone like you takes a problem to the police, how likely is it that the police take your problem seriously?
 - 1 = Very likely
 - 0.5 = Somewhat likely
 - 0.25 = Not very likely

- 0 = Not likely at all
- *Send guilty to prison:* Which of the following statements comes closer to your view?
 - 1 = Statement 1: The police ensure that people who are guilty almost always go to prison.
 - 0 = Statement 2: The police often let people who are guilty go free.
- *Make effort:* Which of the following statements comes closer to your view?
 - 1 = Statement 1: If the police do not respond to incidents of crime in time, it is because they do not have enough cars.
 - 0 = Statement 2: The police have enough cars and if they do not respond in time, it is because they cannot be bothered to do their jobs.

Column 6: Would Discover. This outcome measure is an index of the following two items:

- *Discover stolen car:* We do not mean to say that you would ever do something like this. However, suppose you bought a stolen car and you tried to hide it from the police. How likely do you think it is that the police would find out about that?
 - 1 = Very likely
 - 0.5 = Somewhat likely
 - 0.25 = Not very likely
 - 0 = Not likely at all
- *Discover illegal immigrant:* Again, we do not mean to say that you would ever do something like this. However, suppose you had a tenant who is an illegal immigrant without papers and you want to hide that from the police. How likely do you think it is that the police would find out about that?
 - 1 = Very likely

- 0.5 = Somewhat likely
- 0.25 = Not very likely
- 0 = Not likely at all

Column 7: Respond MV. Suppose such an incident [an incident of mob vigilantism] did happen in your street. Do you think the police would hear about the incident? If Yes: Will they be alerted while the incident is happening or will they hear about it later? If Yes: And are the police likely to arrive while the community members are still beating the criminal?

- 0 = The police would not hear about the incident
- 0.33 = The police will hear about the incident but later, not while it is happening.
- 0.66 = The police will hear about the incident while it is happening but not arrive while the community members are still beating the criminal.
- 1 = The police will hear about the incident while it is happening and arrive while the community members are still beating the criminal.

Column 8: Imprison MV.

- Which of the following statements comes closest to your view?
 - 1 = Statement 1: The police do everything they can to ensure that those who take the law into their own hands receive a prison sentence.
 - 0 = Statement 2: The police do not care much about sending those who take the law into their own hands to prison.

B.4.3 Table 2.4

Outcomes in columns 1, 2, 5 and 6 are the same as those in table 2.3 and have been described in section B.4.2.

- *Columns 3 and 6: Service index.* In line with the pre-analysis plan, this is the same index as the one called *Service Quality Endline* in column 6 of table 2.3 and described in section B.4.2. The only difference is that the item *Arrive quickly* was added to the index (see explanation of column 4 of table 2.3 in section B.4.2.) The rationale behind this pre-registered change was to limit the number of outcomes in the subgroup analyses.

B.4.4 Tables 2.6 and B.22

Columns 1 and 2: Believes police fight crime

- And finally, what about these two statements?
 - 1 = The police do everything they can to ensure that criminals receive the punishment that they deserve.
 - 0 = The police do not make much of an effort to ensure that criminals receive the punishment that they deserve.

Columns 3 and 4: Believes police fight MV

- Finally, which of the following do you believe the police will do?
 - 1 = The police will do all they can to send those who beat the criminal to prison.
 - 0.5 = The police may make some efforts to send those who beat the criminal to prison, but they will not try very hard.
 - 0 = The police will not do anything to send those who beat the criminal to prison.

Columns 5 and 6: Would participate MV. This outcome is an index of the following two items:

- *Join Beating 3:* Some people we speak to say that they would definitely participate in beating a criminal if the community were to catch one. Others say that they would not participate in the physical punishment of a criminal. Which comes closest to your view? If would not participate: What if the criminal had hurt someone you know. Would you participate in beating the criminal?

- 0 = No, I would never participate
 - 0.5 = I would participate only if the criminal hurt someone I know
 - 1 = Yes, I would participate
- *Join Beating 4*: Suppose someone in your community is known for breaking into the houses of old women. One day, your neighbors catch the guy red-handed as he is breaking into the house of an old lady in your street. A group of community members surrounds the thief and they start to beat him. Which of the following are you most likely to do?
 - 1 = I would join the group in punishing the criminal.
 - 0.5 = I would stay and watch but would not join the group.
 - 0 = I would leave the scene.

B.4.5 Table 2.7

The outcome in all columns is the same as that in column 5 and 6 in table 2.6 described in section B.4.4.

B.4.6 Measures of prior beliefs

Alarm treatment

Tables 2.2 and 2.4 in the main text provide evidence of how the effect of the alarm treatment varies across subgroups defined by prior beliefs about, respectively, the risk of facing state punishment for involvement in mob vigilantism (q) and the expected quality of services provided by police (p_s).

Measures of prior beliefs are taken from the baseline survey. Since only one woman respondent was interviewed during the baseline survey, baseline measures of priors beliefs are treated as household level measures. For example, if the baseline respondent in a given household thought

it unlikely that those who participate in vigilante violence will be arrested, then all respondents interviewed in this household at midline and endline will be treated as having had a low prior belief about q in all analyses of effect heterogeneity.

Prior beliefs about legal repercussions for MV (q):

- Suppose such an incident (an incident of mob vigilantism) did happen in your community. How likely is it that the police would hear of the event and arrest the people who [beat/killed] the accused?
 - High prior q (1 =) “Very likely” or “Somewhat likely”
 - Low prior q (0 =) “Not very likely” or “Not likely at all”

Prior beliefs about police service quality (p_s): This item is an index using the following measurements:

- *Customer service:* When you or someone like you takes a problem to the police, how likely is it that the police [at random: take your problem seriously/ appear to know what they are doing]?
 - 1 = Very likely
 - 0.5 = Somewhat likely
 - 0.25 = Not very likely
 - 0 = Not likely at all
- *Arrive quickly:* Imagine you are at home and alert the police in an emergency. Do you think the police would come to your help?
 - If Yes or Maybe: Do you think the police would take more or less than an hour to come to your help? If you don’t know, please give your best guess.

- * If More than an hour:
 - Do you believe the police would take more than two hours or less than that?
 - * If Less than an hour:
 - Do you believe the police would take less than 30 minutes or more than that?
- 0 = The police would not come
 - 0.25 = The police take more than two hours
 - 0.5 = The police would take more than one hour but less than two
 - 0.75 = The police would take less than one hour but more than 30 minutes
 - 1 = The police would take less than 30 minutes
- *Send guilty to prison:* Which of the following statements comes closer to your view?
 - 1 = Statement 1: The police and the courts ensure that people who are guilty almost always go to prison.
 - 0 = Statement 2: The police and the courts often let people who are guilty go free.
 - High prior p_s (1 =) respondent's score falls strictly above baseline sample median of index
 - Low prior p_s (0 =) respondent's score falls below baseline sample median of index

Information treatments

Analyses that draw on information treatments only (see Tables 2.6 and B.22) use questions that were asked during the endline survey prior to the administration of the information treatments to measure prior beliefs about the risk of legal repercussions for mob vigilantism and police service quality. The advantage is that these measures, contrast to the above described baseline measures of priors are available for every respondent and not only for the one respondent per household that has been interviewed during the baseline. Moreover, these are the only measures of priors that are also available for neighbors. Since these measures are post-treatment when it

comes to the alarm treatment, I do not rely on them when analyzing the alarm treatment and the information treatments together.

Endline beliefs (prior to information treatment) about legal repercussions for MV (q):

- Which of the following statements comes closest to your view?
 - High prior (1 =): Statement 1: The police do everything they can to ensure that those who take the law into their own hands receive a prison sentence.
 - Low prior (0 =): Statement 2: The police do not care much about sending those who take the law into their own hands to prison.

Endline beliefs (prior to information treatment) about police service quality (p_s):

- Which of the following statements comes closest to your view?
 - High prior (1 =): Statement 1: The police ensure that people who are guilty almost always go to prison.
 - Low prior (0 =): Statement 2: The police often let people who are guilty go free

B.4.7 Table B.11

Spoken to police (Midline). I would like you to think about the last month. During this time, did you ever speak to someone from the police?

- 1 = Yes
- 0 = No

Spoken to police (Endline). I would like you to think about the time since last Christmas. During this time, did you ever speak to someone from the police?

- 1 = Yes
- 0 = No

B.4.8 Table B.12

Column 1,2,5,7: Support MV This measure is an index of five items at midline and two items at endline:

- *Not arrest mob*: Sometimes communities beat criminals to death and then the police begin to investigate. Do you think the police should arrest community members who beat criminals to death?
 - 0 = Yes
 - 1 = No
- *Beat known thief*: Someone in your community is known to be involved in stealing cars and plasma TVs. One day, the community catches him red-handed as he is breaking into a house. Which of the following do you believe the community members should do?
 - 0 = The community should call the police and leave it to them to deal with the thief.
 - 1 = The community members should beat the thief there and then.
- *Beat petty thief (only midline)*: Finally, imagine the following: A [at random: man/woman] from your community is blowing the whistle, because [he/she] saw someone stealing food and a box of cold drinks from [his/her] yard. The neighbors come running and one them gets hold of the thief. Again, which of the following do you believe the neighbors should do?
 - 0 = The neighbors should call the police and leave it to them to deal with the thief.
 - 1 = The neighbors should beat the thief there and then.

- *Beat driver (only midline)*: Imagine the following situation: A truck driver drove drunk through your neighborhood and knocked over a small girl and the girl died. A group of men from your community got hold of the truck driver. Which of the following do you believe they should do?

- 0 = The group should leave it to the police to investigate.
- 1 = The group of men should beat the truck driver to teach him a lesson.

- *Community deal crime (only midline)*: Some people think that, if people want to stop crime in their neighborhood, it is best for community members to deal with criminals themselves. Others think that these matters are best left to the police. Which comes closest to your view?

- 1 = Community members should deal with criminals themselves.
- 0 = These matters are best left to the police.

Column 3,4, 6 and 8: Call Comm. This measure is an index of two items:

- *Alert community*: What about your neighbors and other community members. If someone is about to enter your home to steal from you, would you reach out to the community for help? If YES: Would you want to alert the entire community or just the people you know best?

- 0 = No,
- 0.5 = People I know best,
- 1 = Entire community.

- *Alert neighbors*: Imagine you come home and you see a burglar leaving your Yard. Would you want to alert your neighbors [at random: even though, if the community gets hold of the man, they may beat him very severely]?

- 1 = Yes,

- 0 = No.

Appendix C: Chapter 3

C.1 Supplementary Information

C.1.1 Share of women in prison population across Sub-Saharan Africa

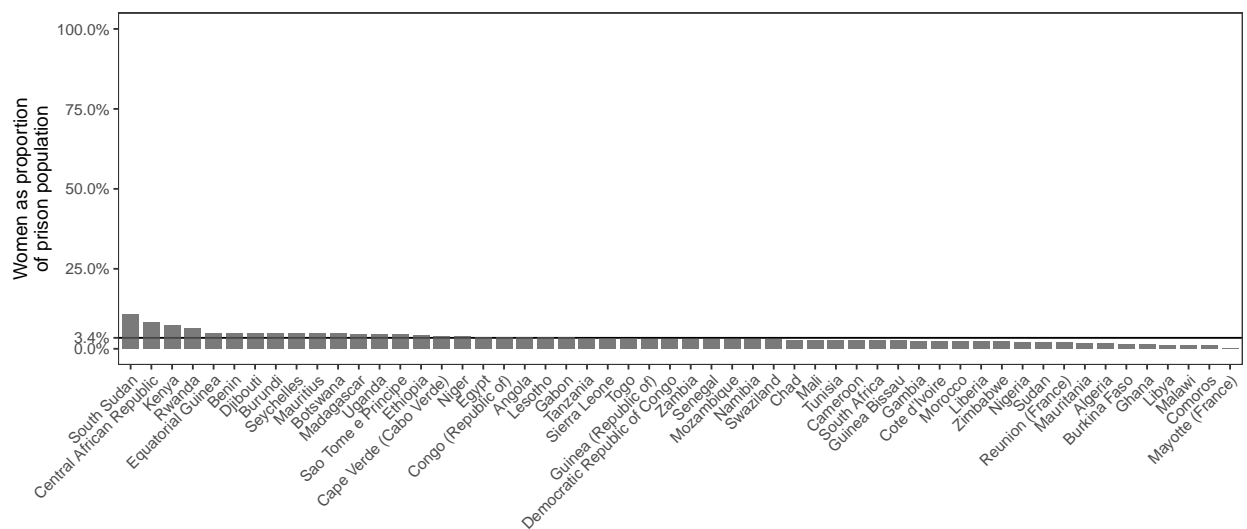


Figure C.1: In Africa women make up 3% of the prison population on average.

Source: ICPR 2018.

C.2 Additional Analyses

C.2.1 Results of vignette experiment for vigilantism against “black magic”

Mob targeting [perpetrator / accused] could happen in my village.			
	Women (N = 493)	Men (N = 455)	<i>Estimated gender gap:</i>
Suspect described as ‘perpetrator’ (N = 476)	52.2%	67%	-14.8 pp.***
Suspect described as ‘accused’ (N = 472)	47.5%	61.5%	-14.1 pp.***
<i>Estimated prime effect:</i>	-4.7 pp.	-5.4 pp.	+0.8 pp.

Mob instigated by [bystander / victim] could happen in my village.			
	Women (N = 493)	Men (N = 455)	<i>Estimated gender gap:</i>
Bystander instigates mob (N = 464)	49.8%	60.8%	-11 pp.**
Victim instigates mob (N = 484)	50%	67.2%	-17.2 pp.***
<i>Estimated prime effect:</i>	+0.2 pp.	+6.4 pp.	-6.2 pp.

Mob responding to [observation / accusation] of crime could happen in my village.			
	Women (N = 493)	Men (N = 455)	<i>Estimated gender gap:</i>
Suspect was observed (N = 471)	49.4%	67.7%	-18.3 pp.***
Suspect was accused (N = 477)	50.4%	60.9%	-10.4 pp.**
<i>Estimated prime effect:</i>	+1 pp.	-6.9 pp.	+7.9 pp.

Mob could happen when all three primes [reduce / heighten] false accusation risk			
	Women (N = 131)	Men (N = 104)	<i>Estimated gender gap:</i>
All three primes reduce risk of false accusation (N = 115)	49.3%	63.6%	-14.3 pp.
All three primes heighten risk of false accusation (N = 120)	51.7%	55%	-3.3 pp.
<i>Estimated prime effect:</i>	+2.4 pp.	-8.6 pp.	+11 pp.

Table C.1: Beliefs about the plausibility of vigilantism against “black magic” among women and men in Uganda

Data stem from 2017 household survey in rural Uganda. Results are estimated among subset of respondents presented with an incident of “black magic” (as opposed to theft). Last subtable is subset to respondents assigned either to all three primes that increase uncertainty of guilt (scenario does not mention that crime was observed, suspect is referred to as “accused” and incident was instigated by victim) or to none of these primes (scenario mentions that crime was observed, suspect is referred to as “perpetrator” and incident was instigated by a bystander). Significance stars indicate statistical significance based on a two-tailed unequal variance *t*-test of the null hypothesis that the AMCE is zero or that group means are equal across genders. **p*<0.1; ***p*<0.05; ****p*<0.01

Mob targeting [man / woman] could happen in my village.

	Women (N = 493)	Men (N = 455)	<i>Estimated gender gap:</i>
Mob targets woman (N = 462)	47.5%	58.2%	-10.7 pp.**
Mob targets man (N = 486)	52.2%	69.8%	-17.6 pp.***
<i>Estimated prime effect:</i>	+4.7 pp.	+11.6 pp.***	-6.9 pp.

Table C.2: Beliefs about the plausibility of vigilantism against “black magic” among women and men in Uganda by whether the target is a woman or man

Data stem from 2017 household survey in rural Uganda. Results are estimated among subset of respondents presented with an incident of “black magic” (as opposed to theft). Significance stars indicate statistical significance based on a two-tailed unequal variance *t*-test of the null hypothesis that the AMCE is zero or that group means are equal across genders. *p<0.1; **p<0.05; ***p<0.01

C.2.2 Results of vignette experiment using ordinal outcome measure

Mob responding to [observation / accusation] of crime could happen in my village.			
	Women (N = 543)	Men (N = 465)	<i>Estimated gender gap:</i>
Suspect was observed (N = 529)	1.91	1.797	+0.113
Suspect was accused (N = 479)	1.847	1.888	-0.041
<i>Estimated prime effect:</i>	-0.063	+0.092	-0.154

Mob targeting [perpetrator / accused] could happen in my village.			
	Women (N = 543)	Men (N = 465)	<i>Estimated gender gap:</i>
Mob target described as ‘perpetrator’ (N = 535)	1.833	1.763	+0.07
Mob target described as ‘accused’ (N = 473)	1.931	1.934	-0.003
<i>Estimated prime effect:</i>	+0.098	+0.171**	-0.073

Mob instigated by [bystander / victim] could happen in my village.			
	Women (N = 543)	Men (N = 465)	<i>Estimated gender gap:</i>
Bystander instigates mob (N = 501)	1.904	1.786	+0.118
Victim instigates mob (N = 507)	1.855	1.89	-0.035
<i>Estimated prime effect:</i>	-0.049	+0.103	-0.152

Mob could happen when all three primes [reduce / heighten] false accusation risk			
	Women (N = 149)	Men (N = 128)	<i>Estimated gender gap:</i>
All three primes reduce risk of false accusation (N = 149)	1.929	1.677	+0.252*
All three primes heighten risk of false accusation (N = 128)	1.8	2.079	-0.279
<i>Estimated prime effect:</i>	-0.129	+0.402**	-0.531**

Table C.3: Beliefs about the plausibility of vigilantism among women and men in Uganda

Data stem from 2017 household survey in rural Uganda. Results estimated among subset of respondents presented with an incident of theft (as opposed to black magic). Last subtable is subset to respondents assigned either to all three primes that increase uncertainty of guilt (scenario does not mention that crime was observed, suspect is referred to as “accused” and incident was instigated by victim) or to none of these primes (scenario mentions that crime was observed, suspect is referred to as “perpetrator” and incident was instigated by a bystander). Significance stars indicate statistical significance based on a two-tailed unequal variance *t*-test of the null hypothesis that the AMCE is zero or that group means are equal across genders. The outcome is an ordinal scale that codes answer options as follows: 1 = “Something like this would never happen in my village,” 2 = “Something like this could happen, but it is not very likely,” 3 = “This is the sort of thing that sometimes happens in my village” and 4 = “Things like this are very common in my village.” **p*<0.1; ***p*<0.05; ****p*<0.01

Mob targeting [man / woman] could happen in my village.

	Women (N = 543)	Men (N = 465)	<i>Estimated gender gap:</i>
Mob targets woman (N = 491)	0.579	0.557	+0.022
Mob targets man (N = 517)	0.637	0.724	-0.087**
<i>Estimated prime effect:</i>	+0.058	+0.167***	-0.109*

Table C.4: Beliefs about the plausibility of vigilantism among women and men in Uganda by whether the target is a woman or man

Data stem from 2017 household survey in rural Uganda. Results estimated among subset of respondents presented with an incident of theft (as opposed to black magic). Significance stars indicate statistical significance based on a two-tailed unequal variance *t*-test of the null hypothesis that the AMCE is zero or that group means are equal across genders. The outcome is an ordinal scale that codes answer options as follows: 1 = “Something like this would never happen in my village,” 2 = “Something like this could happen, but it is not very likely,” 3 = “This is the sort of thing that sometimes happens in my village” and 4 = “Things like this are very common in my village.” **p*<0.1; ***p*<0.05; ****p*<0.01

C.2.3 Gender gap in support for mob vigilantism across age cohorts

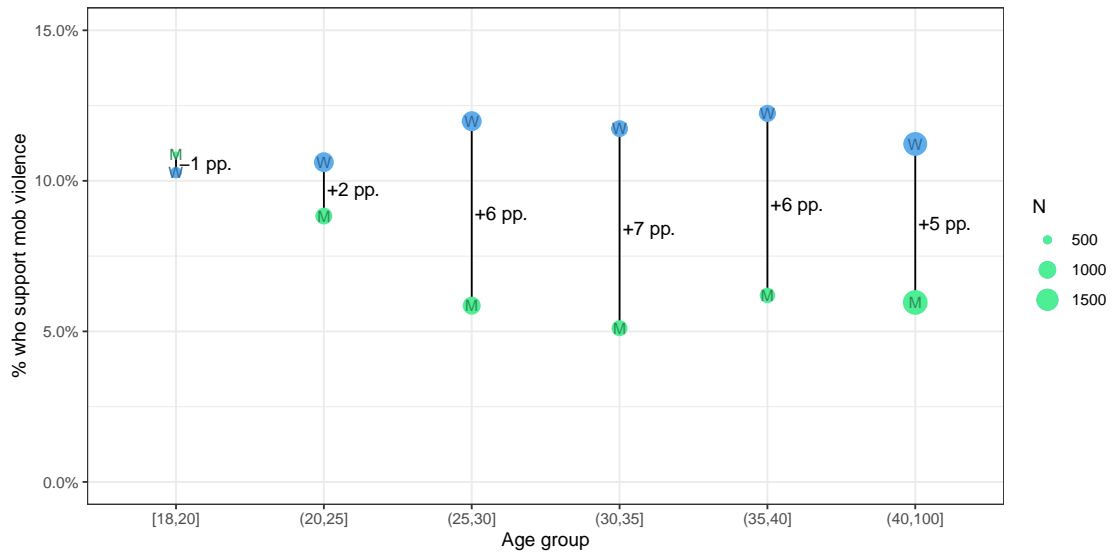


Figure C.2: The gender gap in support for mob vigilantism widens with respondent age in our six samples from Uganda, Tanzania, and South Africa

Blue dots depict average support for mob vigilantism among women in a given age group; green dots depict average support for mob vigilantism among men. The size of the dots corresponds to the sample size. See section 2.4 for details on question wording in each of the six surveys.

C.2.4 Estimates based on listwise deletion

	Mob Vigilantism Preferred over Police Intervention								
	Uganda 1 (1)	Uganda 2 (2)	Uganda 3 (3)	Tanzania 1 (4)	Tanzania 2 (5)	Tanzania 2 (6)	South Africa (7)	Pooled (8)	Afrobarometer (9)
Woman	0.048*** (0.011)	0.046*** (0.007)	0.048*** (0.017)	0.036** (0.014)	0.041* (0.024)	0.049** (0.022)	0.022 (0.023)	0.044*** (0.005)	0.023*** (0.003)
Mean among men	0.06	0.06	0.12	0.06	0.07	0.06	0.11	0.07	0.1
Area FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Target of mob	Driver	Driver	Thief	Driver	Thief	Thief	Driver	Mix	
Crime victim gender	W	W	W	W	W	M	W		
Observations	2,431	5,528	1,954	1,362	601	604	1,186	12,626	51,587
Adjusted R ²	0.013	0.014	-0.005	0.019	0.006	0.003	0.001	0.021	0.073

Note:

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

Table C.5: Across six different samples in Uganda, Tanzania, and South Africa, as well as the 2015 Afrobarometer, women are more supportive of mob vigilantism than men.

Coefficients stem from a linear model that regresses a binary indicator for whether the respondent supports mob vigilantism as opposed to reliance on police on community-level fixed effects and a binary indicator for whether the respondent identifies as a woman. Significance stars are based on a two-tailed Wald test of the null hypothesis that the coefficient on gender is zero using a normal approximation to the sampling distribution. The samples used in columns 2 and 3 share 1,041 respondents. The row labeled “Target of Mob” provides information about the hypothetical accused whom respondents were asked to consider when deciding whether they would support mob vigilantism. The row labeled “Crime victim gender” indicates whether the accused was described as having committed a crime against a man (*M*) or a woman (*W*). Outcomes have not been imputed, i.e., missing values are dealt with through listwise deletion.

Mob responding to [observation / accusation] of crime could happen in my village.

	Women (N = 543)	Men (N = 465)	<i>Estimated gender gap:</i>
Suspect was observed (N = 529)	65.3%	61.4%	+3.9 pp.
Suspect was accused (N = 479)	56.1%	66.5%	-10.4 pp.**
<i>Estimated prime effect:</i>	-9.2 pp.**	+5.1 pp.	-14.3 pp.**

Mob targeting [perpetrator / accused] could happen in my village.

	Women (N = 543)	Men (N = 465)	<i>Estimated gender gap:</i>
Suspect described as ‘perpetrator’ (N = 535)	60.3%	59.3%	+1 pp.
Suspect described as ‘accused’ (N = 473)	61.7%	69.3%	-7.7 pp.*
<i>Estimated prime effect:</i>	+1.4 pp.	+10.1 pp.**	-8.6 pp.

Mob instigated by [bystander / victim] could happen in my village.

	Women (N = 543)	Men (N = 465)	<i>Estimated gender gap:</i>
Bystander instigates mob (N = 501)	62.6%	59.5%	+3.1 pp.
Victim instigates mob (N = 507)	59.2%	67.8%	-8.6 pp.**
<i>Estimated prime effect:</i>	-3.5 pp.	+8.2 pp.*	-11.7 pp.*

Mob could happen when all three primes [reduce / heighten] false accusation risk

	Women (N = 149)	Men (N = 128)	<i>Estimated gender gap:</i>
All three primes reduce risk of false accusation (N = 149)	67.9%	49.2%	+18.6 pp.**
All three primes heighten risk of false accusation (N = 128)	52.3%	71.4%	-19.1 pp.**
<i>Estimated prime effect:</i>	-15.5 pp.*	+22.2 pp.**	-37.7 pp.***

Table C.6: Beliefs about the plausibility of vigilantism among women and men in Uganda

Data stem from 2017 household survey in rural Uganda. Results estimated among subset of respondents presented with an incident of theft (as opposed to black magic). Last subtable is subset to respondents assigned either to all three primes that increase uncertainty of guilt (scenario does not mention that crime was observed, suspect is referred to as “accused” and incident was instigated by victim) or to none of these primes (scenario mentions that crime was observed, suspect is referred to as “perpetrator” and incident was instigated by a bystander). Significance stars indicate statistical significance based on a two-tailed unequal variance *t*-test of the null hypothesis that the AMCE is zero or that group means are equal across genders. Outcomes have not been imputed, i.e., missing values are dealt with through listwise deletion. **p*<0.1; ***p*<0.05; ****p*<0.01

Mob targeting [man / woman] could happen in my village.

	Women (N = 543)	Men (N = 465)	<i>Estimated gender gap:</i>
Mob targets woman (N = 491)	57.9%	55.7%	+2.2 pp.
Mob targets man (N = 517)	63.7%	72.4%	-8.7 pp.**
<i>Estimated prime effect:</i>	+5.8 pp.	+16.7 pp.***	-10.9 pp.*

Table C.7: Beliefs about the plausibility of vigilantism among women and men in Uganda by whether the target is a woman or man

Data stem from 2017 household survey in rural Uganda. Results estimated among subset of respondents presented with an incident of theft (as opposed to black magic). Significance stars indicate statistical significance based on a two-tailed unequal variance *t*-test of the null hypothesis that the AMCE is zero or that group means are equal across genders. Outcomes have not been imputed, i.e., missing values are dealt with through listwise deletion. **p*<0.1; ***p*<0.05; ****p*<0.01

Some people suspected of crimes are not necessarily criminals.

	Women (N = 604)	Men (N = 601)	<i>Estimated gender gap:</i>
% who agree:	49.1%	49.7%	-0.6 pp.

It is somewhat or very likely for an innocent person to be falsely accused.

	Women (N = 604)	Men (N = 601)	<i>Estimated gender gap:</i>
% who agree:	36.6%	70.2%	-33.6 pp.***

Table C.8: Beliefs about mob vigilantism among women and men in Tanzania

Data stem from 2019 household survey in rural Tanzania. Significance stars indicate statistical significance based on a two-tailed unequal variance *t*-test of the null hypothesis of equal means across groups. Outcomes have not been imputed, i.e., missing values are dealt with through listwise deletion. **p*<0.1; ***p*<0.05; ****p*<0.01

	Police Approval							
	Uganda 1	Uganda 2	Uganda 3	Tanzania 1	South Africa	Afrobar.	Afrobar.	Afrobar.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Woman	0.039*** (0.014)	0.030*** (0.011)	0.040*** (0.015)	0.036* (0.020)	0.013 (0.024)	0.009*** (0.003)	0.018*** (0.002)	-0.001 (0.003)
Mean among men	0.61	0.51	0.07	0.52	0.42	0.52	0.47	0.47
Area FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Outcome	Satisf.	Satisf.	No Bribe	Satisf.	Trust	Trust	Not Corrupt	Easy access
Observations	2,424	5,513	1,146	1,314	1,261	50,485	47,012	44,376
Adjusted R ²	0.021	0.012	0.026	0.030	0.077	0.162	0.153	0.165

Note:

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

Table C.9: Women in our samples express more favorable views of police than men.

Outcomes range from 0 to 1. Coefficients stem from a linear model that regresses the outcome on community-level fixed effects and a binary indicator for whether the respondent identifies as a woman. Significance stars are based on a Wald test using a normal approximation to the sampling distribution. The row labeled “Outcome” contains information about the outcome measure. See section C.3.1 of the appendix for details on question wording. Outcomes have not been imputed, i.e., missing values are dealt with through listwise deletion.

	<i>Dependent variable:</i>				
	Should punish more severely	Should punish more swiftly	Mob Should Beat Thief		
	(1)	(2)	(3)	(4)	(5)
Woman	0.055** (0.023)	-0.005 (0.010)	0.045*** (0.017)	0.049*** (0.016)	0.047*** (0.016)
Should punish more severely			0.057*** (0.017)		0.054*** (0.016)
Should punish more swiftly				0.263*** (0.037)	0.260*** (0.037)
Mean outcome among men	0.54	0.05	0.12	0.12	0.12
Observations	1,953	1,956	1,951	1,954	1,951
Adjusted R ²	-0.001	0.004	0.001	0.021	0.026

Note:

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

Table C.10: Greater preferences for swift and severe punishments among women in Uganda does not appear to account for the gender gap in support for mob vigilantism.

Data stem from 2017 household survey in rural Uganda. Coefficients stem from a linear model that regresses the outcome on community-level fixed effects, the respective covariate where applicable and a binary indicator for whether the respondent identifies as a woman. Significance stars are based on a Wald test using a normal approximation to the sampling distribution. Outcomes have not been imputed, i.e., missing values are dealt with through listwise deletion.

C.3 Question Wording

C.3.1 Question wording for Table 3.5

Column 1, 2 and 4

Imagine you've been robbed and you report the robbery to the police. How likely is it that the police officer will deal with the case in a satisfactory manner?

- 0 = Not at all likely
- 0.5 = Somewhat likely
- 1 = Very likely

Column 3

If you went to the police, how likely do you think it is that they would ask for something in exchange for helping you, e.g. money, cell phone credit, food or fuel?

- 1 = Not likely at all
- 0.66 = Not very likely
- 0.33 = Somewhat likely
- 0 = Very likely

Column 5

How much do you trust the police?

- 1 = A lot of trust
- 0.66 = Some trust
- 0.33 = Little trust
- 0 = No trust

Column 6

How much do you trust each of the following, or haven't you heard enough about them to say: The Police?

- 1 = A lot
- 0.66 = Somewhat
- 0.33 = Just a little
- 0 = Not at all

Column 7

How many of the following people do you think are involved in corruption, or haven't you heard enough about them to say: Police?

- 1 = All of them
- 0.66 = Most of them
- 0.33 = Some of them
- 0 = None

Column 8

Based on your experience, how easy or difficult is it to obtain the following services from government? Or do you never try and get these services from government: Help from the police?

- 1 = Very easy
- 0.66 = Easy
- 0.33 = Difficult
- 0 = Very difficult

C.4 Declaration of Co-Authorship



Declaration of Dissertation Co-Authorship

Manuscript Title

Student Name

Co-Author 1 name, institution, and title

Co-Author 2 name, institution, and title

Description of Co-Author Contributions

Co-Author 1 Contributions

Co-Author 2 Contributions

The Authors are in agreement that this manuscript will be used in the Ph.D. dissertation of the student named below.

Co-Author 1 Signature Date

Co-Author 2 Signature Date