THE DETERMINANTS OF HOMICIDE RATES

IN RUSSIAN REGIONS IN 2000-2017

By

Daria Gerashchenko

Submitted to

Central European University

School of Public Policy

in partial fulfilment for the degree of Master of Arts in Public Policy

Supervisor: Professor Caitlin Brown

Budapest, Hungary

2019

Copyright Notice

I, the undersigned Daria Gerashchenko, hereby declare that I am the sole author of this thesis. To the best of my knowledge this thesis contains no material previously published by any other person except where proper acknowledgement has been made. This thesis contains no material which has been accepted as part of the requirements of any other academic degree or non-degree program, in English or in any other language. This is a true copy of the thesis, including final revisions.

Date: June 14, 2019

Name (printed): Daria Gerashchenko

Signature:

Cepacer

Abstract

Russian Federation has the highest although declining homicide rate among European states despite government attempts to reduce it. The consequences of homicide include significant economic, social and health costs, that make homicide an important public policy problem. Russian authorities claim that alcohol consumption is the main reason behind homicide, but there is no sufficient evidence of a causal relationship. This paper explores the homicide rates in diverse Russian regions in 2000-2017 to identify factors that contribute to it and to find out whether poverty causes violence. Using panel FE regression in combination with an instrumental variable strategy, this study finds that the key correlates of HR are educational level, low income, alcohol consumption, divorces, and GINI, while poverty is causally related to it. The findings imply that the government should work on anti-poverty policies instead of over-concentrating on reducing alcohol consumption.

Acknowledgements

I would like to express my gratitude to the CEU Foundation that provided significant financial assistance for this research and my studies at CEU as well. I am eternally grateful to the best research supervisor (and a friend) imaginable, professor Cailtlin Brown. Caillin provided me with advice and support throughout the writing process. I could not have made it to the end without her. I would also like to thank wonderful Borbála Faragó, an Academic Writing Instructor, who has been of enormous support to me with this paper (and not only this one) and helped me to cope with every problem I encountered throughout the academic year.

Introduction
Chapter 1. Homicide in Russia and Beyond
1.1 Homicide as a Type of Violence7
1.2 Homicide in Russia
1.3 The Diversity of Russian Regions12
1.4 Government Policy to Reduce Homicide14
Chapter 2. The Determinants of Homicide in Russia
2.1 Research Design16
2.2 Patterns of Homicide in Russian Regions19
2.3 The Determinants of Homicide in Regions: Results of an Analysis
2.4 Poverty as a Reason behind Homicide in Regions: Results of an Instrumental Analysis 22
Conclusion
Appendices
Appendix A27
Appendix B
Appendix C
Appendix D
Appendix E
Appendix F
Appendix G
Appendix H
Appendix I
Appendix J
References

Table of Contents

List of Abbreviations and Acronyms

- HR Homicide Rate
- GDP Gross Domestic Product
- AO Autonomous district
- SSR Security Sector Reforms
- The USSR the Union of Soviet Socialist Republics
- OCG Organized Crime Groups
- FSB Federal Security Service
- MIA Ministry of Internal Affairs
- FE Fixed Effects
- OVB Omitted Variable Bias
- OLS Ordinary Least Squares

Introduction

Homicide is one of the most salient public policy issues for many countries. The gravity of high homicide rate (HR) includes high mortality rate, social insecurity, and deteriorating state authority. Violence causes unavoidable economic costs, i.e. health, institutional, private security and material costs as a share of GDP. It was estimated that homicide costs to the global economy are more than 170 billion US dollars and growing (Geneva Declaration Secretariat 2015). Canadian-American academic Steven Pinker argues that there has been a sharp decline in violence across the globe for the last hundred years owing to an advance of democracy, rule of law, and increasing economic prosperity (Pinker 2011). For instance, stable upper-middle- and high-income countries like Chile and Sweden have lower HR than less stable and rich countries such as El Salvador and Ukraine (UNODC 2011).

Not every country has low HR: Russia, for example, has the highest, although declining, HR among European states (UNODC 2019). Unlike developed countries of the West, Russia is an autocracy with weak institutions, a country in transition experiencing socioeconomic change with a non-linear economic development trend (Pridemore 2005; Kim and Pridemore 2005b). Russia suffered a severe socioeconomic crisis in the 1990s accompanied by weakening state structures and dramatic rise in HR. In the 2000s, with growing state capacity and living standards, HR decreased significantly according to official statistics: from 30.5 in 2002 to 10.8 in 2016 (Crime Stat 2018). The authorities attribute homicide to alcohol consumption and aim at reducing it to control HR. However, some regions consume more alcohol but still have relatively low HR. This evidence suggests that alcohol is not a cause behind the homicide. At the same time, Russia's development in the 2000s and the 2010s was accompanied by socioeconomic instability. This instability is expected to be a "decivilizing" factor meaning that HR should have remained steady rather than decreased. HR is still very high while there is evidence that the statistics have been biased on purpose (Lysova and Shchitov 2015). Importantly, high HR damage the economy significantly.

First, partly because of high HR, the working age population has been decreasing quickly for the last 20 years resulting in falling economic productivity. Second, with an increase in violence, the state is forced to spend more on security. Third, health-related expenses are involved. Thus, the problem of homicide is salient, it affects the state and society, and needs to be addressed.

Russia is a very diverse country in terms of development, demography, and ethnicity. For instance, there are regions that are highly industrialized like Rostovskaja oblast' as well as predominantly agricultural regions like Altajskij kraj. Russia comprises more than 200 different ethnicities and several religious traditions. As local HR are area-specific (Pridemore 2005), mapping homicide regionally is important for understanding its causes, and this diverse environment provides a fruitful ground for research. As the literature review demonstrates below, the topic of HR determinants in Russia is extremely under-researched.

The literature on the topic can be divided into two groups: literature on homicide and violence in general and literature on homicide in Russia. The literature covers reasons behind homicide (Brookman 2005; Lee, Martinez, and Rosenfeld 2001; Eisner 2009; Pinker 2011) and specific characteristics of homicide as a type of violence (Schacht, Rauch, and Mulder 2014; Pérez 2013). Studies concentrate mainly on homicide in Latin America and the US (Pérez 2013; Jütersonke, Muggah, and Rodgers 2009; Bergman 2006; Bonner 2009; Martinez Jr 2014). Risk factors behind homicide in general are: *individual-level factors* such as age, psychological disorders, alcohol and drug consumption (Hudson and Boer 2002; Schacht, Rauch, and Mulder 2014; Strachan 2014; Eisner 2009; Bergman 2006), education, income inequality and social exclusion (R. G. Wilkinson, Kawachi, and Kennedy 1998); *relationship-level factors* such as violent behavior inherent in traditions and family disruption; *community-level factors* such as urbanization, sex ratio and demographic pressures, population density (Jütersonke, Muggah, and Rodgers 2009; K. P. Wilkinson 1984), migration and labor force mobility (Lee, Martinez, and Rosenfeld 2001), poverty and low social

capital (Martinez Jr 2014); *societal-level factors* such as socioeconomic inequalities (Eisner 2009), gun control, institution building and community involvement (Jütersonke, Muggah, and Rodgers 2009). The results of some studies are not consistent with each other. Some find that higher number of men correlate with fewer crimes (Schacht, Rauch, and Mulder 2014) while others insist that HR is high in the areas where men are in surplus (Hudson and Boer 2002). It is also debatable whether economic inequality influences HR (Menezes et al. 2013; Tuttle 2018). Overall, the factors of HR are country-specific, and every case needs to be examined separately.

The literature on HR in Russia is scarce and fragmentary. Several studies explore the caveats in how government agencies report HR (Pridemore 2003b; Lysova 2018; Lysova and Shchitov 2015). Studies heavily concentrate on the effects of alcohol consumption on HR and find a positive relationship between them (Pridemore 2002, 2004; Pridemore and Chamlin 2006; Stickley and Razvodovsky 2012). Other works study spousal homicides (Gondolf and Shestakov 1997) and characteristics of perpetrators (Chervyakov et al. 2002). Earlier studies demonstrate the importance of varying levels of development and poverty, family strength, access to natural resources, unemployment, population size for HR in Russia (Kim and Pridemore 2005b, 2005a; Pridemore 2005).

Russia today faces many challenges: an aging population, high mortality rates, declining standards of living and birth rates. At the same time, HR is unusually high although declining. Existing studies are limited in scope as they cover either Russia as a whole or some specific regions and/or time periods (Chervyakov et al. 2002; Pridemore 2004). Studies fail to find reasons behind increasing HR from west to east of the country (Pridemore 2003a) and explain the factors of HR in diverse regions given the unstable socioeconomic environment during the 2000s. Since some regions consume little alcohol while having high HR and vice versa, Russian authorities' claim that it is the alcohol that is the reason behind the violence is challenged. Thus, alcohol alone cannot explain the diverging patterns of homicide across Russia. There is a need to fill this gap by studying HR factors

in regions so that the government could effectively address the issue. Thus, the research question is: *What factors determine* HR *in* Russian regions in 2000-2017?

The purpose of this thesis is to identify the factors of HR in regions. The goal is essential from the public policy perspective. The thesis will evaluate the effects of sociodemographic and economic factors on HR and will examine causality between HR and poverty. It will be shown that while alcohol consumption is indeed positively related to homicide, it is not the reason, but rather a facilitator of violence while poverty is causally linked to HR.

The present study is a quantitative one. I have collected and systematized the "Rosstat" data that covers 83 regions over 2000-2017. This period was not covered before and is marked with socioeconomic fluctuations that might have influenced HR. To test hypotheses, first, I estimate a fixed-effects panel regression model. The model identifies sociodemographic and economic factors that are statistically significantly related to homicide. Region FE is used because it controls for unobserved characteristics of entities. Secondly, because of OVB, I use instrumental analysis to estimate the relationship between social benefits given to poor households and HR. In contrast to regression, an instrumental analysis is aimed at identifying whether poverty is causally related to homicide. I use vote share for Vladimir Putin and Dmitry Medvedev during presidential elections as an instrument for social benefits. Exclusion restriction implies that, first, the vote share, as one of the measures of political loyalty of the region, determines the regional budget capacity to redistribute benefits. Second, the president is not the head of the executive and is systematically assessed by citizens separately from the government. Increasing HR is directly related to how Russians perceive the government, but not the president, so that the vote share is not directly related to HR.

There are several key findings of the research. I find factors, first, that are significantly positively associated with homicide: the percent of people living on a low income, alcohol consumption per capita, number of divorces per 1000 marriages, and GINI. Second, education is negatively

associated with homicide. After instrumenting social benefits with vote share for the ruling party presidential candidates, the study finds that poverty is causally related to homicide. The expectation that regions with higher alcohol consumption, greater number divorces, lower education level, and those most affected by socioeconomic disturbances, is confirmed. However, I find no support for the previous studies' claims that younger age, male gender, unemployment and rurality, have a significant influence on homicide. The expectation to find that poverty is causally related to homicide is also met. The instrumental analysis gives a solid evidence of a significant causal relationship between the variables at the 95% significance level.

The study has some limitations. First, though I perform several robustness checks for my results, it must be noted that the underlying data may be biased due to manipulations by statistical authorities and the government. Second, missing values in the data are present. Finally, ideally, such research would have required individual-level data while I am only able to construct a region-level panel data set.

The present research contributes to the existing literature on homicide in general and in Russia. I expand on existing literature by demonstrating which factors determine HR in regions. Specifically, I find additional evidence for statistical relevance of several factors while some variables turn out to be statistically insignificant. In addition, at writing, this is the first exploration of a causal relationship between HR and poverty in Russia. This study provides evidence of a causal relationship between the variables and hints at the importance of government support for poor households in reducing HR. While authorities concentrate on reducing alcohol consumption, policy implications are to expand anti-poverty measures to address homicide.

The paper is structured as follows. The first chapter explains the salience of homicide in the academic literature as a public policy problem by exploring its consequences and reasons. The chapter also discusses homicide in Russia and government policies to address the issue as well as how regions differ. The second chapter presents the research design and analyses HR in regions

using panel regression and instrumental analysis. The conclusion presents the answer to the research question and the hypotheses are discussed.

Chapter 1. Homicide in Russia and Beyond

Homicide is a complex phenomenon that affects various spheres of public life. Failure to understand homicide may result in inefficient government policies. Before carrying out an analysis of HR in Russian regions, it is necessary to understand homicide as a phenomenon in general.

This chapter begins with a literature review on homicide as a type of violence exploring what factors determine it in different contexts, its definition, the inconsistencies in findings. Then homicide in Russia is discussed: what are the specifics of homicide in the country and what factors are relevant predictors. After that, the diversity of regions is explained. Finally, government policies to reduce homicide are discussed.

1.1 Homicide as a Type of Violence

UNODC defines homicide as "the unlawful death purposefully inflicted on a person by another person" (UNODC 2013). There is a vast literature on homicide as a type of interpersonal physical violence, that encompasses many aspects: its characteristics, consequences, implications for public policy. Apart from homicide, the literature covers suicide, femicide, infanticide. Studies originate in psychology, sociology, criminology, political science, and confirm that homicide is worthy of research because of its impact on society as it affects family strength, social networks, trust in public institutions, security, social environment.

Studies concentrate on cross-national comparison (Tuttle 2018; Coccia 2017; Rogers and Pridemore 2017), others explore the patterns of homicide in the US, its specific states and cities (Roth 2012; Schacht, Rauch, and Mulder 2014; Lee, Martinez, and Rosenfeld 2001), and in Latin America where homicide has become a salient problem (Brookman and Maguire 2017; Martinez Jr 2014; Bonner 2009). While in the US it is the firearms that account for a large variation explained

in HR, in Latin America drugs and gang-related *machismo*¹ play a crucial role as well (Brookman and Maguire 2017, 451–67).

First, it was discovered that homicide is higher in areas where drug markets are on the rise (Rosenfeld 2016). Second, alcohol can be a facilitator of violence depending on the beverage type (Hockin, Rogers, and Pridemore 2018). The younger structure of population also contributes to violence (WHO 2019), but some studies find no significant relationship between these variables (Males 2015; Pampel and Gartner 1995). Some studies claim that a surplus of men increases HR (Hudson and Boer 2002) while others find the opposite (Schacht, Rauch, and Mulder 2014). Rurality is also positively related to HR (K. P. Wilkinson 1984) while urbanization provides ambivalent evidence (Strachan 2014; Jütersonke, Muggah, and Rodgers 2009). Religiosity may also increase HR (Chon 2016) while the migration is not significantly related to it (Lee, Martinez, and Rosenfeld 2001). Education contributes to how well a person copes with socioeconomic change – educated people tend to have wider social networks and skillsets. Such demographic variables as age, sex, population density, are claimed to have little explanatory power in comparison to other factors.

Civilizing factors of modernization (Eisner 2001), strain and institutional anomie theory generally explain the causes of outward aggression (Agnew 1992; Rosenfeld 2016). Institutional anomie in the form of ineffective governance, corruption, and instability, is thought to be one of the major factors behind increasing HR. The evidence from Latin America suggests that once people lose trust in institutions and the rule of law, lawbreaking becomes easier – the cost of committing a crime decreases (Bonner 2009; Bergman 2006). If coupled with economic uncertainty, increase in violence is hard to control.

Stress, a major element of the strain theory, which results from socioeconomic change, fuels unrest and facilitates violence. Martinez Jr (2014) among sources of frustration lists income inequality as

¹ Exaggerated sense of masculinity that emphasizes male dominance over females (Chon 2016).

a factor of social deprivation, poverty, and unemployment, family disruption, ethnic fractionalization. Tuttle (2018) finds that changes in inflation and family disruption over time are not associated with increases in HR, but these factors can partly explain why some countries are more violent. In contrast to studies that find a positive relationship between rising income inequality (Menezes et al. 2013), others find a negative one (Tuttle 2018). Social support as a precursor to social control mitigates the effects of market fluctuations on lethal violence (Tuttle 2018; Rogers and Pridemore 2017).

1.2 Homicide in Russia

Socioeconomic changes after the collapse of the USSR account for increasing HR in Russia (Schaible and Altheimer 2016, 936–38). One explanation for a sharp rise in HR in the post-Soviet period is the effect of an emotional outburst – totalitarian regime heavily suppressed people's behavior, so that people enjoyed more freedom of self-expression which often resulted in lethal violence. Strain theory discussed in the previous section also explains why HR increased. With the collapse of the USSR and the welfare system people were used to, citizens' inability to address the challenges of the emerging market economy, like high competition on the labor market, plugged them into the abyss of uncertainty. The socioeconomic change also contributed to the erosion of family ties that serve as an important protector against emotional distress. In addition, homicide in the 1990s was closely related to gang activity. The situation changed in the 2000s that are generally characterized by greater economic and political stability that improved public security, but at the same time, as Lysova and Shchitov (2015, 2017) plausibly argue, "decivilizing" factors such as corruption and predatory policing should have contributed to, if not to rising HR, but less precipitous decline in it.

Institutional anomic theory finds its support as Russians possess little trust in security institutions like the police that is rarely effective in fighting crime and is often violent (Lysova and Shchitov 2017). The "stick"² principle persists when statistics are used by the General Procuracy³ as leverage in rewarding police officers. As a result, police officers are interested in living up to the expectations of higher-ranked officials so that they seek to solve the crime often by making up the evidence. The law defines homicide as "intentional infliction of death to another person". ⁴ If the person has died sometime after the assault, it doesn't count as a homicide. ⁵ The precision of statistics is in doubt: many cases are not being investigated or are simply not registered because they're hard to solve. It is argued that the true number of homicides is 8 times greater than reported by the official statistics (Vedomosti 2018a; Lysova 2018).

Patterns of homicide in Russia today are somewhat different from that of the 1990s. Studies find that rural areas are more dangerous than urban presumably because of a lower standard of life, quality of public services, ⁶ as well as because during the Soviet era urban areas lacked major economic disadvantage and were relatively egalitarian in contrast to rural areas. Pridemore (2003a, 2005) and his colleagues (2005a) argue that cultural factors, poverty, and unemployment which result from Soviet location of major industries, account for varying regional HR. Since social disorganization also contributed to family disruption, single-parent households are positively associated with HR. Kim and Pridemore (2005b) find that state support like increased expenditures on education and healthcare surprisingly don't contribute to reducing HR in Russia that is contrary to a social support argument (Tuttle 2018). Some studies find that homicides were characterized by aggravating circumstances while perpetrators were younger and more diversely educated at the beginning of the 2000s (Chervyakov et al. 2002). Today the perpetrators and victims are older - it

² "Stick" system – "Palochnaya Sistema" (in Russian).

³ General Procuracy is a higher office of public security system that oversees the law enforcement.

⁴ For detailed overview of the law see (Konsul'tantPljus 2019; GARANT 2014).

⁵ Additionally, statistics does not count multiple deaths as separate homicides if they happened as a result of one conflict.

⁶ Mental illness is claimed to be one of the determinants of violent crimes. However, it was not found that in Russia mental illness is correlated with violent crimes. The greater number of mentally ill people resides in developed regions with low HR like Moscow (The Village 2018).

is typically a male aged between 30 and 50 years⁷ (IGARAPE 2016). This is contrary to the assumption that younger people are more aggressive.

The literature on homicide in Russia mainly concentrates on alcohol consumption. There are debates about whether alcohol is the reason or a facilitator of violence. Homicide results from a personal conflict⁸ often between relatives, friends, and acquittances, under the influence of alcohol - preference for spirits drunk in binges is typical (Hockin, Rogers, and Pridemore 2018, 235–39). Alcohol is quite cheap to buy and easy to find in contrast to drugs. Stickley and Razdovsky (2012) find that in contrast to spirits, beer and wine are not associated with HR.

Overall, studies find that alcohol and HR in Russia are positively related (Pridemore 2002). Such a relationship is attributed to post-Soviet socioeconomic shocks as well as the absence of formal and informal social norms and control over behavior and alcohol consumption settings. The drinking culture in Russia is distinct from that of the West⁹ – Russians tend to drink in a semiprivate setting among people they know and often conflicts escalate. In addition, males drink more – gender roles prevent females from drinking a lot. Recent studies demonstrate that alcohol leads to homicide remarkably among older people while younger ones are less prone to aggressive behavior when drunk (Vedomosti 2018b).

The government acknowledges that alcohol is destructive to people's health, so a number of policies have been adopted to reduce alcohol consumption for improving public health (TASS 2016). With the rising standards of living in the 2000s, alcohol consumption dropped but remained quite high. "Sober Russia" policy was promoted by the government, taxation of alcohol as well as alcohol prices have increased, while sales were restricted. However, the effects of this campaign are debatable. People didn't stop to drink, they switched to less expensive alcohol like counterfeit

⁷ Perpetrator and victim's age is greater than in the US (Pridemore 2003a). It should also be noted that Russia suffers from a declining male population especially that over 50 years old.

⁸ The weapon commonly used is a knife as a large proportion of homicides are committed at home rather than outside. Access to guns is restricted and approximately 3% of Russians legally possess it. Nevertheless, a vast black market for weapons exists.

⁹ There is no security and regulation such as bar bouncers in the West, for example.

alcohol. Simultaneously, the alcohol lobby is extremely effective in blocking anti-alcohol laws.¹⁰ Overall, research suggests that alcohol is a significant factor but is doubtfully a reason behind homicide (Pridemore 2002) while economic shocks of the 1990s contributed a lot to rising HR.

1.3 The Diversity of Russian Regions

Russian regions are extremely diverse in terms of development, infrastructure and economy, public health provision, geography, climate conditions, socio-cultural characteristics and ethnic composition that are essential to understanding the homicide dynamics. The legacy of the Soviet times still influences intra-regional dynamics, and economic and social institutions are of a different quality that generally explains divergent paths of development (Baranov et al. 2015).

The economic structure of regions was formed during the Soviet era and continued its modernization during the 1990s. The formed structure of the industrial centers demonstrates significant territorial and structural-economic development imbalances, which is largely due to the development of natural growth drivers and the low effectiveness of government measures to regulate and support the development of industries. For instance, natural resource's rents prevented the regions from developing sustainable innovative economies (Dininio and Orttung 2005, 500–503). Major industrial regions are Moscow, St Petersburg, Hanty-Mansijskij AO, Omskaja oblast', Permskij kraj, Bashkortostan. The gap between them is huge: while industrial production in Moscow accounted for 1895.5 billion rubles of income in 2012, in Bashkortostan it was 313.6 billion (Urbanica 2012). The least industrially developed regions are those in the North Caucasus and the Far East. Agricultural regions are typically those situated in the southern part of the country: Altajskij, Krasnodarskij kraj, Arhangel'skaja, Belgorodskaja oblast', Bashkortostan and others. This division into developed West and underdeveloped East is largely explained by the historic formation of the country in the 18-20 centuries and by natural resource allocation.

¹⁰ In December 2018 the "beer lobby" suggested the Parliament to allow beer advertisements on the TV. The law is pending.

Public health service quality varies from region to region as well. In some, like Moscow, the quality depends heavily on its level of development. In others like Ingushetija, traditions and region-specific way of life contribute to health improvement. A number of regions lag behind because of public health underfunding and generally unhealthy lifestyle, examples are Tyva and Altaj (Tikunov and Chereshnya 2016). As a result, life expectancy varies from 81 years in Ingushetija (similar to Norway) to 66 years in Chukotskij AO (similar to Pakistan) (EMISS 2017).

Additionally, some regions are more ethnically diverse than others. For example, the regions of Central Russia like Lipeckaja oblast' are more ethnically homogenous than ethnic republics like Dagestan. This can be explained by historic processes of nations' settlement and Soviet times politics of drawing the territorial units' borders (Riazantsev, Tikunov, and Timonin 2013). It was found that non-Russian regions receive greater federal budget transfers because the authorities fear the emergence of independence movements (Limonov and Nesena 2016). Socio-cultural differences include divergent beliefs and values, religious affiliations – the majority of Russians are Orthodox Christians (71%), other religions include Islam (10%) and Buddism (1%). In contrast to the US, internal migration is not common so that the striking changes in ethnic composition are not likely (Tikunov and Chereshnya 2016).

Overall, regional diversity might account for diverging homicide patterns across the country. Earlier studies noted that the regions most affected by homicide are Tyva and Altaj, Tyumenskaija and Magadanskaja oblast', Primorskij and Habarovskij kraj (Pridemore 2003a, 2005). These regions are situated in the Eastern part of the country and are not among those most economically developed (except for Tyumen which is oil rich) while some of them suffer from high poverty rates and alcoholism. At the same time, most safe regions are industrialized Voronezhskaija oblast' and some ethnic republics like Dagestan which are economically stagnant but free of alcoholism.

1.4 Government Policy to Reduce Homicide

As noted earlier, organized crime and gangs have been a major problem in the 1990s. Several intraministerial bureaus against OCG have been created - in 2004, the Department for Combating Organized Crime and Terrorism was established that is thought to be quite effective in fighting OCG. Some studies claim that OCG were replaced by "legal bandits" such as police officers, FSB, the military and intelligence, who regained control over the monopoly on violence in the 2000s (Stephenson 2017). Despite the elimination of OCG, HR remained high. The government acknowledged the problem and sought to address it (Kremlin 2002). However, no coherent antihomicide policy package has been developed. It is pointed out that a steady decline in HR in the country is likely to be associated with biased statistics and improvements in living standards related to oil prices increase (Lysova and Shchitov 2017).

The primary instrument of government security policy is the strengthening of the security apparatus by giving more authority to security structures (Bacon, Renz, and Cooper 2016). While major SSR were carried out in the military, police structures and law system have also been altered in the 2000s. Changes included amendments to two Criminal Procedure codes to toughen penalties among other things¹¹, but the norms of these two laws often contradict each other and overlap. Corruption and bureaucracy make it possible for perpetrators to escape punishment. Police reform has been enacted in 2009-2011 because of several police-related scandals.¹² However, the effectiveness of the reform is debatable because it didn't imply any serious organizational and personnel changes - the government increased the financing, but the police has not been decentralized, fewer people worked on the spot and the quality of police work improved little (Taylor 2014). ¹³ Nevertheless,

¹¹ This applies to the prison time served. A moratorium was placed on death penalty in 1996 when Russia joined the Council of Europe.

¹² Specifically, there have been several cases when police officers committed outrageous crimes that have caused public outcry. The reform was designed to improve the police image.

¹³ The salaries have increased also because of mass police officers' dismissals.

these state actions weren't motivated by the need to reduce HR, but by the rising public distrust to state security services.

In sum, the government policy in reducing homicide is hard to assess as there is no coherent policy package targeting HR specifically. Instead, the government measures are chaotic. There is a clear need for major reforms, but the government faces financial obstacles such as limited federal and regional budgets, public distrust to state policies and the lack of post-Soviet experience in enacting effective structural reforms. The government is concerned about declining standards of living and rising poverty rate but doesn't link poverty and homicide (RIA Novosti 2019). The government mainly attributes homicide to alcohol consumption (Interfax 2015). As poor people often seek solitude in alcohol, it serves as a facilitator of violence and an additional trigger in poor households. Overall, declining institutional legitimacy, i.e. loss of trust to public institutions such as police, contributes to HR (Rosenfeld 2016) while socioeconomic inequalities are thought to be one of the most important factors behind it (Daly 2017). Proximate causes of homicide include economic disadvantage, firearms, alcohol, and drugs; ultimate causes include institutional anomie. In the Russian case, alcohol is an important factor behind HR, while other factors cannot be ignored. Earlier research failed to explain divergent regional patterns of homicide and this paper seeks to fill this gap.

The next chapter concentrates on the results of the statistical analysis. First, the research design is explained, second, the peculiarities of the data are examined, third, the results of the analysis are presented and discussed.

Chapter 2. The Determinants of Homicide in Russia

After the literature review on the topic, it is now possible to move towards quantitative analysis of the collected data. This chapter, first, presents a research design, then, moves to describing HR dynamics in regions and estimation of a FE panel regression, and, finally, presents the results of instrumental analysis.

2.1 Research Design

The research question of the study is: What factors determine HR in Russian regions in 2000-2017?

To answer the question, several factors that may influence HR are listed based on academic literature on homicide in Russia and beyond. The dependent variable is the homicide rate (number of homicides per 100.000), independent variables are divided into several groups. *Sociodemographic factors* include age structure of the population, sex ratio, education, divorces per 1000 marriages, alcohol consumption. *Economic factors*: % of people with low income, GINI, unemployment, social benefits, public health service quality. *Control variables*: urbanization, population density, religion, ethnic republic status of the region, prisons, industry composition. **Appendix A** presents the summary statistics. I expect to see that regions with higher alcohol consumption, a greater number of younger people, men and divorces, lower education level, and those most affected by socioeconomic disturbances, have higher HR. I also expect to find evidence of causal relationship between HR and poverty.

The data source for my study is the statistical agency "Rosstat" data and "EMISS"¹⁴ (GKS 2018; EMISS 2017). The data is panel, i.e. comprised of multiple observations of several entities over several time periods. The database contains 1494¹⁵ observations for 83 regions (Crimea and Sevastopol' are excluded¹⁶) for 2000-2017. The choice of this particular time period is justified by

¹⁴ Only one variable was collected from the "EMISS" database – GINI.

¹⁵ Missing values are present. See **Appendix A**.

¹⁶ Crimea and Sevastopol' are excluded for two main reasons: 1) these regions have been under the jurisdiction of Ukraine from 1990 to 2014 and the HR dynamics there might differ from that of Russia; 2) the data for these regions is available starting with 2014 that is not enough to claim the validity of the results.

two points: first, the data for the 1990s is quite incomplete and was sufficiently covered before, second, Russia has experienced economic ups and downs during this period that is expected to have an impact on HR. Russian regions are subject to the same federal laws and political influence, share the same common market and history, that provide greater confidence in describing causalities and relationships between variables as the cross-regional analysis is less likely to be heavily influenced by OVB.

First, I estimate a FE panel regression model controlling for years and regions to identify factors that correlate with HR. FE is used to control for unobserved characteristics that may be region-specific. The equation is:

(1)
$$HR_{it} = \beta_0 + \beta_1 X_{it} + \ldots + \beta_n X_{nt} + \alpha_i + \varepsilon_{it}, \text{ where }$$

- Y_{it} is the dependent variable, where i = entity and t = time.
- β_1 (...n) is the coefficients for the independent variables,
- X_{it} (..n) is the independent and control variables (regions and years are denoted by i and t),
- α_i (i=1....n) is the unknown intercept for each entity (n entity-specific intercepts, FE).
- ϵ_{it} is the error.

Secondly, instrumental analysis is used to evaluate whether the relationship between poverty and HR is causal. The coefficient of benefits could have been estimated via OLS if benefits were uncorrelated with unobservable determinants of HR. However, the results may be affected by OVB. There are variables in the equation (1) that are potentially endogenous determinants of HR which could be influenced by social benefits, for example, education. These variables can be the reasons why benefits affect HR. Additionally, there are unobserved factors that may affect both benefits and HR. For example, some regions with high HR might have policies that increase

poverty. Another issue concerns the accuracy of the benefits because of measurement error. For this reason, it is necessary to find an instrumental variable to prove causality.

As the reviewed literature demonstrates, state social support is essential for reducing HR. I use vote share for Vladimir Putin and Dmitry Medvedev during presidential elections 2000, 2004, 2008, 2012 and 2018¹⁷, as an instrument for endogenous social benefits that are given to households to target poverty. Exclusion restriction is formulated as follows. The benefits are distributed by the regional governments¹⁸ based on the budget capacity of the region. The budget depends on government transfers to a large extent: only 15 regions out of 83 in 2017 were money donors. The amount of transfers, so-called "equalization grants"¹⁹, is determined by the mathematical formula²⁰ that measures the tax and expenditure capacities of the regional budget. Another part of the transfers is "balancing grants"²¹ that are aimed at implementing federal welfare policy, improving infrastructure, etc. are distributed for political reasons. The research found that higher transfers are used as a reward for high voter turnout and margin of victory for ruling party candidates in elections of all levels (Sharafutdinova and Turovsky 2017; Jarocińska 2010). That is, transfers are determined by vote share for the ruling party candidates²², and the vote share determines the capacity of the region to redistribute benefits to poor households. Thus, the vote share is related to benefits and is relevant.

The vote share is determined by the political popularity of the candidate that is due to the president's public perception and partly to intensive state propaganda. Research suggests that the president enjoys exceptional popularity regardless of the economic and social situation in the country. This is because of charismatic leadership and Russians' tendency to value projections of

¹⁷ In the data set, I use election results of 2018 for 2017.

¹⁸ There are also some federal social benefits, but this study concentrates on regional-level benefits.

¹⁹ "Dotacii na vyravnivanie" in Russian.

 $^{^{20}}$ Transfers = tax capacity of the regional budget (income tax, corporate tax, etc.)/expenditure capacity of the regional budget (Ministry of Finance 2017).

²¹ "Dotacii na sbalansirovannost" "in Russian.

²² Medvedev has been a "United Russia" party member since 2005 while Putin has quit the party in 2012. Still, despite Putin is not the "United Russia" party member, he holds it accountable. That is in line with the authoritarian type of rule in the country.

country's greatness in a foreign policy area (Hutcheson and Petersson 2016, 1107–9). Simultaneously, homicide is the policy domain of MIA with the police as its part. Rising HR is likely to dampen citizens' approval of the government, but not the president as he is not the head of the executive. Public opinion polls demonstrate that even though the government remains highly unpopular among Russians, the president has always been popular (Levada Center 2019). This suggests that vote share in presidential elections is not directly related to HR, so this variable is expected to be exogenous and fit the exclusion restriction.

The equation (1) is the structural one and the first-stage is given by equation (2):

(2) Social_benefits_{it} =
$$\alpha_0 + \alpha_1$$
 vote_share_{it} + $\alpha_1 X_{it} + \eta_i$, where:

- i denotes regions,
- _t denotes time,
- X_{it} denotes controls.

Before proceeding to the results of an analysis, the next section explores the dynamics of homicide and various economic indicators across regions that the collected data demonstrates.

2.2 Patterns of Homicide in Russian Regions

As homicide is related to socioeconomic changes, a steady decline in HR should correspond to the dynamics of poverty. Collected data (**Appendix B**) demonstrates a rather smooth fall in percentage of people living on a low income²³ that was disturbed by the economic crisis of 2007-2009, anti-Russian sanctions and oil price decrease starting with 2014. Unemployment also fluctuated due to the economic crises. Since the authorities claim that alcohol consumption is the reason behind homicide, alcohol and HR trends should look alike. However, the data shows that HR has been

²³ This value varies across regions and years. Low income means that a person cannot afford annual consumer basket for a working person that includes a basket of necessity goods, food and services.

declining steadily while there are clear fluctuations in alcohol consumption. A sharp decrease starting with 2012-2013 is associated with an anti-alcohol campaign.

Highest HR today are concentrated in the East of the country (**Appendix D**). Regions like Burjatija, Tyva, Magadanskaja and Kurganskaja oblasť, Zabajkaľskij and Habarovskij kraj, Altaj, Chukotskij AO are the most violent throughout the 2000s. These regions belong to the Far East, Ural and Siberian districts (**Appendix E**). Some regions have experienced an improvement in HR: Neneckij AO, Irkutskaja and Kemerovskaja oblasť, Kalmykija.

The Far East, Ural and Siberian districts have higher than country mean HR (**Appendix C**). The lowest HR are in Central, North Caucasian, South and Volga districts. At the same time, the Far East, Ural, North West and Central districts are those that consume more alcohol in contrast to the lowest consumption in the North Caucasian and South districts. The lowest percent of poor people live in the North West and Ural districts while the highest percent resides in the Siberian and North Caucasian districts.

Appendix F demonstrates that there are regions with acute alcoholism problem but rather low HR. In 2017 Orlovskaja oblast consumed 31.7 liters of alcohol (mean 16.4) and HR was just 5.4 (mean 8.3). Other regions include Moscow, Adygeja, Kostromskaja, Murmanskaja, Vologodkaja, and Smolenskaja oblast'. Likewise, there are regions that consume little alcohol, but HR is high there: for example, HR in Tyva in 2017 reached 25.7 with 4.4 liters of alcohol consumed. Other examples include Kalmykija, Hakasija, Altaj. Regions that consume a lot of alcohol while HR is high are outliers: Magadanskaja oblast', Evrejskaja avtonomnaja oblast', Chukotskij AO.

Poor regions experience high HR. For instance, Tyva where over 40% of the population lived on low income in 2017 (mean 15), HR was 25.7; in Burjatija 18% of low-income people and HR is 29.6 (**Appendix G**). Likewise, 8.3% of low-income people in Moscow correspond to 2.5 HR. The data suggests that poverty may be behind violence while the relationship between alcoholism and HR is not very likely to be causal or highly significant. The next section will provide evidence on what factors are statistically related to HR.

2.3 The Determinants of Homicide in Regions: Results of an Analysis

The panel regression estimates are presented in **Appendix H**. Column (1) reports the coefficients from the OLS equation that does not include FE. A year and district FE estimates are reported in column (2), year and region FE - in column (3). While these estimates are not causal, they provide useful insights into the correlates of HR which may help with assessing IV results.

Examining the effects of percent of people living on a low income across all models, I find that the net effect of poverty on HR is positive and significant that is in line with my expectations. The same applies to alcohol consumption, number of divorces and GINI. The results are significant at 99, 95 and 90% significance level. When controlling for region FE, a 1% increase in the percentage of people living on a low income is associated with a 5% increase in HR. At the same time, one unit increase in alcohol consumption leads to a 0.2% increase in HR. R-squared decomposition after OLS showed that only 11% of the variation in HR is explained by endogenous alcohol consumption while low income explains 24%. I also checked the effects of different types of alcohol beverages on HR and found that vodka and beer are significantly positively related to HR while wine, cognac, and champagne, being negative in sign, are not.²⁴ This finding is generally in line with Stickley and Razdovsky's (2012) study, with an exception that, according to their claim, beer is not associated with HR.

Among other findings, a one unit increase in GINI leads to a 102% increase in HR; a one unit increase in divorces' number leads to a 0.03% increase in HR. Additionally, the education level is significantly negatively associated with HR across all models - one unit decrease in the number of people with higher education leads to a 0.2 increase in HR. In line with the academic literature on homicide in general, population density is positively associated with HR (Coccia 2017). At the same

²⁴ The output is not reported in appendices. Can be provided upon request.

time, results demonstrate that non-Christian regions tend to have higher HR. This may be because those regions where Islam, Buddism, and Shamanism are prevalent, the religious passion enhances the "blood law" phenomenon (Chon 2016). Likewise, ethnic republics also tend to have higher HR, probably because of ethnolinguistic heterogeneity within some of them (Tuttle 2013). My expectation to see that higher unemployment, a surplus of men and younger population structure lead to higher HR isn't supported. Contrary to the literature on homicide in Russia, rural areas don't have higher HR.

To check the results' validity, I also run a model without outliers in HR and find that they do not differ dramatically. When adding region and district FE, some variables like age group, sex ratio, unemployment, social benefits, lose significance. This is because FE characteristics of regions and districts across time can explain a lot of variation in HR. These characteristics might include population size, economic structure, territory, etc. R-squared is quite big that is due to a quite large sample size and the number of the variables included.

Now, that the determinants of HR are known, the next section explores whether poverty is causally related to the homicide.

2.4 Poverty as a Reason behind Homicide in Regions: Results of an Instrumental Analysis

It is assumed that the vote share determines the allocation of transfers to the regional budgets. Regional budgets, on the other hand, redistribute social benefits. **Appendix I** demonstrates that, indeed, the vote share and social benefits are positively related across all four presidential terms.

The IV results are presented in **Appendix J**. Like in the panel regression, column (1) presents an IV regression with no FE, column (2) presents district FE, column (3) presents the preferred specification - region FE model. First-stage regression across all models shows a significant negative relationship between social benefits and the vote share. F-statistic also eliminates the concern about "weak instruments".

The results are quite interesting. Controlling for the age structure, sex ratio, education, alcohol consumption, urban population, GINI, unemployment and public health quality, the "no FE" specification demonstrates that a one percent decrease in the share of social benefits given to poor households leads to a 9.3% increase in HR. In the "district FE" specification, a one percent decrease in social benefits is associated with a 4.9% increase in HR. These results are statistically significant at 1% level of significance. Finally, the "region FE" model suggests that a one percent decrease in social benefits is associated with a 4.5% increase in HR, the result is significant at 5% level. Overall, the "social benefits" variable remains negative in sign and statistically significant across all models. The IV results suggest that a percent decrease in the share of social benefits causes a significant increase in HR in regions. This is in line with my expectation that poverty is causally related to homicide.

To check the validity of the IV estimates, I perform a falsification test. The IV strategy relies on the assumption that social benefits is the only channel through which the vote share influences HR. If this assumption is correct, a significant relationship between social benefits and HR should not exist when the sample is restricted to regions which received no transfers and those with the lowest vote share in presidential elections. The results of the test indicate that social benefits are indeed statistically insignificant for the sample of regions which did not receive transfers and those where vote share was the lowest²⁵. This implies that there is no systematic relationship between social benefits and HR. In sum, this test suggests that the instrument is valid, and therefore increases the confidence in the instrumental analysis' results.

23

²⁵ The output is not reported in the appendices. Can be provided upon request.

Conclusion

The aim of the present research was to determine factors that are statistically related to homicide in Russian regions and to find out whether poverty is causally related to it. To achieve the aim, HR in regions was analyzed using a quantitative approach which consisted of a panel regression and an instrumental variable analysis. It was shown that variables such as education, number of divorces, alcohol consumption, GINI, percentage of people living on a low income, are significantly related to HR. At the same time, it was found that poverty is causally related to the homicide. To come to such a conclusion, a theoretical understanding of homicide in general and specifically in Russia was provided. After explaining the research design, the panel and instrumental analysis was presented.

The issue of high HR is very important as it affects both society and the state. The analysis has pointed out the demographic and economic factors that contribute to HR. Specifically, the expectation that regions with higher alcohol consumption, a greater number of divorces, lower education level, have higher HR, was met. Alcohol consumption influences the state of public health in the region in general and adds to homicide statistics – approximately 70% of homicides are committed under the influence of alcohol (Kommersant 2018). Divorces indicate the disruption of family ties that is destructive to the ability of people to cope with stress. As Pridemore (2002) noted, both drinking and divorce reduce social cohesion among groups. Lower educational level, as expected, increases HR. This is because the social capital, that is acquired by certain educational level attainment, can be used as an instrument of achieving a higher standard of life. In addition, poverty and income inequality are positively related to homicide – economic aspect behind violence proves to be influential. The finding is particularly important in the context of Russia which is known for its striking gap between rich and poor. This study also highlights the regional diversity within Russia that suggests how different the regions in terms of homicide are depending on their demographic composition and socioeconomic characteristics.

At the same time, some expectations were not met. Chervyakov et al. (2002) claimed that the perpetrators of violence are predominantly young, but this analysis shows no significance relationship between HR and any of the age categories. In addition, the urban-rural gap proved to be insignificant contrary to the finding of Lysova et al. (2012) and Menezes et al. (2013) that homicide is higher in rural areas.

The analysis has also provided evidence of a causal relationship between homicide and poverty. This finding is useful since the authorities do not link poverty and homicide in Russia. Instead, it is claimed that alcohol consumption is the reason behind high HR in the country. This study, however, finds that alcohol consumption explains only a small proportion of variance explained in HR in contrast to poverty. A percent increase in poverty leads to an average of 4% increase in HR. A pattern of growing HR from West to East corresponds to growing poverty rate. The instrumental analysis provided solid evidence of causality and, thus, it can be concluded that the extent to which poverty contributes to high HR in the country is underestimated by the government.

These findings have implications for the state policy-making. Instead of over-concentrating on decreasing alcohol consumption, the policy-makers should pay more attention to anti-poverty measures. The collected data clearly demonstrates a huge gap between the richest and the poorest regions of Russia. Such regions as Burjatija, Tyva, Magadanskaja oblast', Ingushetija and others, systematically suffer from poverty and need a coherent economic development strategy to bring more jobs and economic opportunities to these regions. The analysis also suggests that social support measures in the form of social benefits given to poor households are quite effective in decreasing HR. This is contrary to the finding of Kim and Pridemore (2005b) that social support has little or no effect on homicide. The government should work towards developing other anti-poverty policy packages targeted specifically at poorest households.

The thesis contributes to the academic literature on homicide in Russia and beyond. This is the first study that employed instrumental analysis to prove causality using the data on Russian regions.

It also confirmed the earlier findings of Kim & Pridemore (2005a), Pridemore (2002) concerning the effects of education and family ties on homicide. Additional evidence was found for the significance of alcohol consumption; however, the significance level reported in this paper is smaller than it was suggested by other studies. This research suggests that is necessary to pay more attention to the regional socioeconomic environment in order to examine and understand the dynamics of lethal violence.

Nevertheless, this study has several opportunities that lay the ground for further research. A deeper look at the effects of poverty on homicide may be taken via exploring individual-level data, but by now, no such data exists. Ideally, an instrument for alcohol consumption is needed to prove the absence or existence of its causal relationship with homicide. Finally, the concern about biased and underreported homicide statistics still prevails. Further research is needed for providing even more solid evidence of causality between poverty and homicide as well as alcoholism and homicide.

Appendices

Appendix A

Summary statistics

		(1)	(2)	(3)	(4)	(5)
VARIABLES	LABELS	Ν	mean	sd	min	max
year	year	1,494	2,009	5.190	2,000	2,017
region_n	region name	1,494	42.34	24.36	1	84
children	% of children / total population	1,494	18.35	4.066	12.10	36.20
labour_force	% labour force / total population	1,494	60.87	3.517	51.50	72.20
pensioners	% pensioners / total population	1,494	20.78	5.250	4.500	30.60
sexratio	number of women per 1000 men	1,494	1,144	58.97	901	1,249
educ	people with higher education, thousands	1,468	14.38	25.52	0	275.4
divorces	number per 1000 marriages	1,494	610.8	159.1	26	1,596
alcohol_pc	alcohol consumption, liters per year	1,446	22.49	8.880	0.00752	87.50
GINI	income inequality index	1,482	0.380	0.0347	0.276	0.595
unemployment	%	1,492	8.654	6.911	0.200	79.70
social_benefits	share of the regional budget, %	1,494	22.34	7.425	0.100	53.90
pubhealth	number of people per doctor	1,494	225.4	52.43	114.4	486.8
urban	% urban population	1,494	69.56	13.24	26	100
pop_density	population density per sq km	1,494	0.437	1.633	0.000208	14.43
nonch	Non-Christian regions	1,494	0.120	0.326	0	1
ethnicrep	region is an ethnic republic	1,494	0.301	0.459	0	1
prison	regions with greater number of prisons	1,494	0.120	0.326	0	1
mining	extraction of fuel and energy minerals	1,494	0.277	0.448	0	1
manufacturing	machined manufacturing	1,494	0.133	0.339	0	1
gasenergy	production and distribution of gaseous fuels	1,494	0.0843	0.278	0	1
agriculture	agriculture	1,494	0.193	0.395	0	1
voteshare	vote share for Putin and Medvedev	1,494	65.61	11.65	25.01	99.76
lowincome	% of people living on a low income	1,494	20.48	11.83	0.100	94.30
homicide_pc	homicide per 100.000 population	1,494	16.44	10.93	1.567	92.08

Appendix B



Mean HR, alcohol consumption, poverty and unemployment across regions 2000-2017





CEU eTD Collection

Appendix D

Regions of Russia with highest HR in 2017 highlighted in dark



9

LEGEND FOR THE MAP WITH REGIONS DIVIDED INTO GROUPS BY % OF PEOPLE LIVING ON A LOW INCOME

MODERATE %

Regions with highest HR in 2017 are marked with >

HIGH %

>

regions are listed from highest to lowest value

LOW % 44 Brjanskaja oblasť 21 Chuvashskaja Respublika >66 Krasnodarskij kraj > 1 Respublika Kalmykija Novgorodskaja oblasť Smolenskaja oblasť 45 > 2 Respublika Tyva 22 Respublika Dagestan 67 46 Kaliningradskaja oblasť Novosibirskaja oblasť Jaroslavskaja oblasť 3 Respublika Ingushetija 23 68 Respublika Severnaja Osetija-Alanija 47 Tul'skaja oblasť > 4 Evrejskaja avtonomnaja oblasť Saratovskaja oblasť 24 69 Ul'janovskaja oblasť 48 Kaluzhskaja oblasť > 5 Respublika Altaj >25 Primorskij kraj 70 49 Tjumenskaja oblasť 6 Respublika Marij Jel > 26Respublika Komi 71 Tambovskaja oblasť >50 Magadanskaja oblasť > 7 Karachaevo-Cherkesskaja Respublika 27Ivanovskaja oblasť 72 Voronezhskaja oblasť 51 Astrahanskaja oblasť Respublika Karelija >73 Sahalinskaja oblasť 8 Irkutskaja oblasť > 28>52 Permskij kraj 29 Chechenskaja Respublika 74 Moscow > 9 Kabardino-Balkarskaja Respublika Arhangel'skaja oblast' 53 Omskaja oblasť > 30 >75 Neneckij avtonomnyj okrug Zabajkal'skij kraj > 10 Tverskaja oblasť >31 Kemerovskaja oblasť >54 76 Kurskaja oblasť > 11 Respublika Hakasija Orenburgskaja oblasť 32 Volgogradskaja oblasť 55 > 77 Nizhegorodskaja oblasť > 12 Respublika Saha (Jakutija) Cheljabinskaja oblasť 13 Respublika Mordovija 56 > 33 Amurskaja oblasť 78 St Petersburg Stavropol'skij kraj Arhangel'skaja oblast' without AO 57 79 Sverdlovskaja oblasť 14 Altajskij kraj 34 Tjumenskaja oblasť without AO 58 > 15 Kamchatskij kraj 35 Vladimirskaja oblasť > 80Chukotskij avtonomnyj okrug 59 Udmurtskaja Respublika > 16 Respublika Burjatija 36 Kostromskaja oblasť 81 Lipeckaja oblasť Respublika Adygeja >37 Habarovskij kraj 60 82 Moskovskaja oblasť 17 Krasnojarskij kraj 61 Rjazanskaja oblasť >18 Kurganskaja oblasť 38 Vologodskaja oblasť 83 Belgorodskaja oblasť 62 Murmanskaja oblasť Rostovskaja oblasť 84 Respublika Tatarstan 19 Tomskaja oblasť 39 Hanty-Mansijskij AO - Jugra 63 >20 Pskovskaja oblasť 40 Orlovskaja oblasť >85 Jamalo-Neneckij avtonomnyj okrug Respublika Bashkortostan 64 41 Kirovskaja oblasť 65 Leningradskaja oblasť 42 Penzenskaja oblasť

Note: The types of regions include republics (Respublika), krais (kraj), oblasts (oblast'), federal cities (Moscow and St Petersburg), an autonomous oblast (avtonomnaja oblast') and autonomous okrugs (AO). The typology is based on varying degree of regional autonomy.

43 Samarskaja oblasť

CEU

uo

Appendix E



Appendix F



Scatter plots: Homicide and alcohol consumption in Russia in 2000, 2010, 2017

Appendix G



Scatter plots: Homicide and poverty in Russia in 2000, 2010, 2017

34

Appendix H

The FE panel regression estimates of the effect of sociodemographic and economic factors on HR

	(1)	$\langle 0 \rangle$	(2)
VARIARIES	(I) No FE	(2) District FF	(3) Region FE
VARIADLES	NOTE	Distilet I'E	Region PE
abildran	0 10 2 ***	0.063***	0.008
ciliuren	(0.102^{++})	(0.003^{+++})	-0.008
1-h 6	(0.009)	(0.000)	(0.019)
labour_force	(0.005)	-0.023^{000}	-0.014
	(0.005)	(0.009)	(0.010)
sexratio	0.004^{***}	0.002^{***}	-0.001
1	(0.000)	(0.000)	(0.001)
educ	-0.003***	-0.003***	-0.002**
1'	(0.001)	(0.000)	(0.001)
divorces	0.001***	0.001***	0.000***
	(0.000)	(0.000)	(0.000)
alcohol_pc	0.012***	0.006***	0.002*
	(0.002)	(0.001)	(0.001)
log_lowincome	0.390***	0.161***	0.057***
	(0.099)	(0.039)	(0.021)
GINI	1.874***	1.934***	1.020**
	(0.682)	(0.338)	(0.418)
L.unemployment	-0.011**	-0.006	-0.006
	(0.005)	(0.005)	(0.004)
L.social_benefits	-0.015***	-0.001	-0.000
	(0.003)	(0.003)	(0.002)
pubhealth	0.001*	0.000	-0.001*
	(0.000)	(0.000)	(0.001)
urban	-0.000	0.003**	0.001
	(0.002)	(0.001)	(0.004)
pop_density	0.038***	0.026**	0.641***
	(0.012)	(0.011)	(0.186)
nonch	0.093**	0.189***	1.044***
	(0.047)	(0.038)	(0.245)
ethnicrep	-0.260***	-0.036	0.613***
	(0.034)	(0.030)	(0.212)
prison	0.211***	0.114***	0.260***
	(0.028)	(0.021)	(0.066)
mining	-0.102***	-0.000	-0.353***
	(0.027)	(0.023)	(0.130)
manufacturing	-0.144***	-0.156***	0.283*
	(0.036)	(0.027)	(0.171)
gasenergy	-0.029	0.033	0.103
	(0.043)	(0.039)	(0.133)
agriculture	-0.154***	-0.152***	-0.700***
	(0.034)	(0.026)	(0.121)
Constant	-11.462***	-0.084	3.893***
	(0.750)	(0.979)	(1.424)

Appendix H continuation

Observations	1,346	1,346	1,346	
R-squared	0.678	0.818	0.927	
District FE	NO	YES	NO	
Region FE	NO	NO	YES	
Year FE	NO	YES	YES	
Robust standard errors in parentheses				

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

Notes: estimation via FE panel regression. The outcome variable is a logged "homicide rate per capita". "Log_lowincome" is a log of "% of people living on a low income". "Unemployment" and "social benefits" variables were lagged; thus, the number of total observations was reduced by one year. Age category "pensioners", district, year and region dummies were omitted from the output.

Appendix I



Appendix J

	(1)	(2)	(3)	
VARIABLES	No FE	District FE	Region FE	
social_benefits	-0.093***	-0.049***	-0.045**	
	(0.009)	(0.005)	(0.022)	
children	0.121***	0.095***	0.086**	
	(0.010)	(0.007)	(0.041)	
labour_force	0.101***	0.105***	0.122***	
	(0.007)	(0.005)	(0.020)	
sexratio	0.003***	0.006***	0.001	
	(0.000)	(0.000)	(0.001)	
educ	-0.005***	-0.001**	0.002	
	(0.001)	(0.001)	(0.005)	
alcohol_pc	0.018***	0.010***	0.005***	
	(0.002)	(0.002)	(0.002)	
urban	-0.001	-0.005***	-0.001	
	(0.002)	(0.001)	(0.004)	
GINI	3.784***	-0.126	-0.919	
	(1.171)	(0.583)	(1.682)	
unemployment	-0.006	0.007*	0.005	
	(0.006)	(0.004)	(0.004)	
pubhealth	0.001***	0.001***	-0.001	
	(0.000)	(0.000)	(0.001)	
Constant	-8.628***	-10.237***	-6.380***	
	(0.960)	(0.781)	(1.649)	
Observations	1,424	1,424	1,424	
R-squared	0.136	0.668	0.851	
Robust standard errors in parentheses				

IV regression estimates of the effect of social benefits on HR

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Notes: estimation via two-stage panel IV regression. The outcome variable is a logged "homicide rate per capita". Age category "pensioners", district and region dummies were omitted from the output.

References

- Agnew, Robert. 1992. "Foundation for a General Strain Theory of Crime and Delinquency." Criminology 30 (1): 47–88.
- Bacon, E., B. Renz, and J. Cooper. 2016. Securitising Russia: The Domestic Politics of Putin. Manchester University Press.
- Baranov, Alexey, Egor Malkov, Leonid Polishchuk, Michael Rochlitz, and Georgiy Syunyaev. 2015. "How (Not) to Measure Russian Regional Institutions." Russian Journal of Economics 1 (2): 154–181.
- Bergman, Marcelo S. 2006. Crime and Citizen Security in Latin America: The Challenges for New Scholarship. JSTOR.
- Bonner, Michelle D. 2009. "State Discourses, Police Violence and Democratisation in Argentina." Bulletin of Latin American Research 28 (2): 227–245.

Brookman, Fiona. 2005. Understanding Homicide. Sage.

- Brookman, Fiona, and Edward R. Maguire. 2017. The Handbook of Homicide. Wiley Online Library.
- Chervyakov, Valeriy V., Vladimir M. Shkolnikov, William Alex Pridemore, and Martin McKee. 2002. "The Changing Nature of Murder in Russia." *Social Science & Medicine* 55 (10): 1713–1724.
- Chon, Don Soo. 2016. "Religiosity and Regional Variation of Lethal Violence: Integrated Model." *Homicide Studies* 20 (2): 129–149.
- Coccia, Mario. 2017. "A Theory of General Causes of Violent Crime: Homicides, Income Inequality and Deficiencies of the Heat Hypothesis and of the Model of CLASH." *Aggression and Violent Behavior* 37: 190–200.
- Crime Stat. 2018. "Zaregistrirovano Ubijstv i Pokushenij Na Ubijstvo (St.St. 30, 105, 106, 107 UK RF)." 2018. http://crimestat.ru/offenses_table.
- Daly, Martin. 2017. Killing the Competition: Economic Inequality and Homicide. Routledge.
- Dininio, Phyllis, and Robert Orttung. 2005. "Explaining Patterns of Corruption in the Russian Regions." World Politics 57 (4): 500-529.
- Eisner, Manuel. 2001. "Modernization, Self-Control and Lethal Violence. The Long-Term Dynamics of European Homicide Rates in Theoretical Perspective." *British Journal of Criminology* 41 (4): 618–638.
 - ——. 2009. "The Uses of Violence: An Examination of Some Cross-Cutting Issues." *International Journal of Conflict and Violence (IJCV)* 3 (1): 40–59.
- EMISS. 2017. "Ozhidaemaja Prodolzhitel'nost' Zhizni Pri Rozhdenii." 2017. https://www.fedstat.ru/indicator/31293#.
- GARANT. 2014. "Koncepcija Ugolovno-Pravovoj Politiki Rossijskoj Federacii: Osnovnye Napravlenija Sovershenstvovanija Ugolovnogo Zakona i Optimizacii Mer Protivodejstvija Prestupnosti (V.A.Avdeev, O.A.Avdeeva, Kriminologicheskij Zhurnal BGUJeP N 1 (27), I Kvartal 2014 g.) | GARANT." 2014. http://base.garant.ru/34754403/.
- Geneva Declaration Secretariat, x. 2015. Global Burden of Armed Violence 2015: Every Body Counts. Cambridge University Press.
- GKS. 2018. "Regiony Rossii. Social'no-Jekonomicheskie Pokazateli." 2018. http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/ catalog/doc_1138623506156.
- Gondolf, Edward W., and Dmitri Shestakov. 1997. "Spousal Homicide in Russia versus the United States: Preliminary Findings and Implications." *Journal of Family Violence* 12 (1): 63–74.
- Hockin, Sara, Meghan L. Rogers, and William Alex Pridemore. 2018. "Population-Level Alcohol Consumption and National Homicide Rates." *European Journal of Criminology* 15 (2): 235– 252.
- Hudson, Valerie M., and Andrea Den Boer. 2002. "A Surplus of Men, a Deficit of Peace: Security and Sex Ratios in Asia's Largest States." *International Security* 26 (4): 5–38.

Hutcheson, Derek S., and Bo Petersson. 2016. "Shortcut to Legitimacy: Popularity in Putin's Russia." *Europe-Asia Studies* 68 (7): 1107–1126.

IGARAPE. 2016. "Homicide Monitor." 2016. https://homicide.igarape.org.br/.

Interfax. 2015. "Alkogol' nazvali prichinoj bolee poloviny ubijstv v Rossii." Interfax.ru. 2015. https://www.interfax.ru/russia/465896.

Jarocińska, Elena. 2010. "Intergovernmental Grants in Russia." *Economics of Transition* 18 (2): 405–427.

Jütersonke, Oliver, Robert Muggah, and Dennis Rodgers. 2009. "Gangs, Urban Violence, and Security Interventions in Central America." *Security Dialogue* 40 (4–5): 373–397.

Kim, Sang-Weon, and William Alex Pridemore. 2005a. "Poverty, Socioeconomic Change, Institutional Anomie, and Homicide." *Social Science Quarterly* 86: 1377–1398.

2005b. "Social Support and Homicide in Transitional Russia." *Journal of Criminal Justice* 33 (6): 561–572.

Kommersant. 2018. "Bolee 70% ubijstv v Rossii sovershili p'janye." February 20, 2018. https://www.kommersant.ru/doc/3554699.

Konsul'tantPljus. 2019. "UK RF Stat'ja 105. Ubijstvo." 2019. http://www.consultant.ru/document/cons_doc_LAW_10699/5b3e04338020a09b25fe9 8ea83bc9362c8bc5a76/.

Kremlin. 2002. "Vstupitel'noe slovo na soveshhanii po voprosam bor'by s prestupnost'ju." Prezident Rossii. 2002. http://kremlin.ru/events/president/transcripts/21617.

Lee, Matthew T., Ramiro Martinez, and Richard Rosenfeld. 2001. "Does Immigration Increase Homicide? Negative Evidence from Three Border Cities." *The Sociological Quarterly* 42 (4): 559–580.

- Levada Center. 2019. "Odobrenie organov vlasti." 2019. https://www.levada.ru/indikatory/odobrenie-organov-vlasti/.
- Limonov, Leonid, and Marina Nesena. 2016. "Regional Cultural Diversity in Russia: Does It Matter for Regional Economic Performance?" *Area Development and Policy* 1 (1): 63–93.

Lysova, Alexandra. 2018. "Challenges to the Veracity and the International Comparability of Russian Homicide Statistics." *European Journal of Criminology*, 1477370818794124.

Lysova, Alexandra, and Nikolay Shchitov. 2015. "What Is Russia's Real Homicide Rate? Statistical Reconstruction and the 'Decivilizing Process." *Theoretical Criminology* 19 (2): 257–277.

-. 2017. "Homicide in Russia." The Handbook of Homicide, 451.

Males, Mike. 2015. "Age, Poverty, Homicide, and Gun Homicide: Is Young Age or Poverty Level the Key Issue?" *Sage Open* 5 (1): 2158244015573359.

Martinez Jr, Ramiro. 2014. Latino Homicide: Immigration, Violence, and Community. Routledge.

Menezes, Tatiane, Raul Silveira-Neto, Circe Monteiro, and José Luiz Ratton. 2013. "Spatial Correlation between Homicide Rates and Inequality: Evidence from Urban Neighborhoods." *Economics Letters* 120 (1): 97–99.

Ministry of Finance. 2017. "Raschet raspredelenija dotacij na vyravnivanie bjudzhetnoj obespechennosti mezhdu sub"ektami Rossijskoj Federacii na 2018 god i planovyj period 2019 i 2020 godov." 2017. http://www.minfin.ru/ru/document/?id_4=119735&area_id=4&page_id=210 4&popup=Y.

Pampel, Fred C., and Rosemary Gartner. 1995. "Age Structure, Socio-Political Institutions, and National Homicide Rates." *European Sociological Review* 11 (3): 243–260.

Pérez, Orlando J. 2013. "Gang Violence and Insecurity in Contemporary Central America." Bulletin of Latin American Research 32 (s1): 217–234.

Pinker, Steven. 2011. The Better Angels of Our Nature: Why Violence Has Declined. Viking New York.

Pridemore, William Alex. 2002. "Vodka and Violence: Alcohol Consumption and Homicide Rates in Russia." *American Journal of Public Health* 92 (12): 1921–1930. -. 2003a. "Demographic, Temporal, and Spatial Patterns of Homicide Rates in Russia." European Sociological Review 19 (1): 41–59.

-. 2003b. "Measuring Homicide in Russia: A Comparison of Estimates from the Crime and Vital Statistics Reporting Systems." Social Science & Medicine 57 (8): 1343-1354.

-. 2004. "Weekend Effects on Binge Drinking and Homicide: The Social Connection between Alcohol and Violence in Russia." Addiction 99 (8): 1034-1041.

- Pridemore, William Alex, and Mitchell B. Chamlin. 2006. "A Time-Series Analysis of the Impact of Heavy Drinking on Homicide and Suicide Mortality in Russia, 1956-2002." Addiction 101 (12): 1719–1729.
- RIA Novosti. 2019. "Putin nazval chislo rossijan, kotorye nahodjatsja za chertoj bednosti." PUA Новости. 2019. https://ria.ru/20190220/1551117397.html.
- Riazantsev, Sergey, Vladimir Tikunov, and Sergey Timonin. 2013. "Mathematical Cartographic Approaches toward Evaluation and Forecasting of Ethnic Composition in the Russian Regions." Annals of GIS 19 (1): 17-25.
- Rogers, Meghan L., and William Alex Pridemore. 2017. "How Does Social Protection Influence Cross-National Homicide Rates in OECD Nations?" The Sociological Quarterly 58 (4): 576-594.
- Rosenfeld, Richard. 2016. "Documenting and Explaining the 2015 Homicide Rise: Research Directions." National Institute of Justice at Https://Www. Ncjrs. Gov/Pdffiles1/Nij/249895. Pdf. Roth, Randolph. 2012. American Homicide. Harvard University Press.
- Schacht, Ryan, Kristin Liv Rauch, and Monique Borgerhoff Mulder. 2014. "Too Many Men: The Violence Problem?" Trends in Ecology & Evolution 29 (4): 214-222.
- Schaible, Lonnie M., and Irshad Altheimer. 2016. "Social Structure, Anomie, and National Levels of Homicide." International Journal of Offender Therapy and Comparative Criminology 60 (8): 936-963.
- Sharafutdinova, Gulnaz, and Rostislav Turovsky. 2017. "The Politics of Federal Transfers in Putin's Russia: Regional Competition, Lobbying, and Federal Priorities." Post-Soviet Affairs 33 (2): 161-175.
- Stephenson, Svetlana. 2017. "It Takes Two to Tango: The State and Organized Crime in Russia." Current Sociology 65 (3): 411–426.
- Stickley, Andrew, and Yury Razvodovsky. 2012. "The Effects of Beverage Type on Homicide Rates in Russia, 1970-2005." Drug and Alcohol Review 31 (3): 257-262.
- 2014. "Non-Political Drivers of Violence." GSDRC. Strachan, Anna. 2014. https://scholar.google.ru/scholar?hl=ru&as_sdt=0%2C5&q=Anna+Strachan+Nonpolitical+drivers+of+violence&btnG=.
- TASS. 2016. "Putin Nazval Mery Pravitel'stva Po Akcizam Na Alkogol' Pravil'nymi, No Zapozdalymi." TACC. 2016. https://tass.ru/ekonomika/3901546.
- Taylor, Brian D. 2014. "Police Reform in Russia: The Policy Process in a Hybrid Regime." Post-Soviet Affairs 30 (2–3): 226–255.
- The Village. 2018. "Cifra Dnja. Skol'ko v Rossii Psihicheski Bol'nyh Grazhdan." The Village. August 21, 2018. https://www.the-village.ru/village/city/news-city/322621-psihicheskinezdorovye.
- Tikunov, Vladimir S., and Olga Yu Chereshnya. 2016. "Public Health Index in Russian Federation from 1990 to 2012." Social Indicators Research 129 (2): 775-786.
- Tuttle, James. 2013. "Culture, Attributional Style, and Lethal Violence: A Cross-National Test of the'Stream Analogy'of Violence."
 - -. 2018. "Specifying the Effect of Social Welfare Expenditures on Homicide and Suicide: A Cross-National, Longitudinal Examination of the Stream Analogy of Lethal Violence." *Justice Quarterly* 35 (1): 87–113.

^{-. 2005. &}quot;Social Structure and Homicide in Post-Soviet Russia." Social Science Research 34 (4): 732-756.

- UNODC. 2011. "UNODC Study Shows That Homicide Rates Are Highest in Parts of the Americas and Africa." 2011. https://www.unodc.org/unodc/en/frontpage/2011/October/unodc-study-shows-thathomicide-rates-are-highest-in-parts-of-the-americas-and-africa.html.
 - -. 2013. "UNODC: Global Study on Homicide." 2013. https://www.unodc.org/gsh/.
- Urbanica. 2012. "250 krupnejshih promyshlennyh centrov Rossii (Top-250)." 2012. http://urbanica.spb.ru/research/ratings/250-krupnejshih-promyshlennyh-tsentrov-rossii-top-250-2010/.
- Vedomosti. 2018a. "S Chem My Idem v Policiju." April 12, 2018. https://www.vedomosti.ru/opinion/articles/2018/04/12/766454-idem-politsiyu.
 - ——. 2018b. "P'janaja Molodezh' Protiv p'janyh Vzroslyh." October 11, 2018. https://www.vedomosti.ru/opinion/articles/2018/10/10/783369-protiv.
- WHO, Interactive Things. 2019. "Violence Info Homicide." 2019. http://apps.who.int/violence-info/homicide.
- Wilkinson, Kenneth P. 1984. "A Research Note on Homicide and Rurality." Social Forces 63 (2): 445-452.
- Wilkinson, Richard G., Ichiro Kawachi, and Bruce P. Kennedy. 1998. "Mortality, the Social Environment, Crime and Violence." Sociology of Health & Illness 20 (5): 578–597.