

Delinquency in Croatia: Decoding the Socio-Economic Roots Through Court Chronicles

*Vedran Recher**

Abstract: *This study examines the socio-economic determinants of violence intensity in Croatia, utilizing individual case data from court documents (2017-2021). Through a probit model analysis of 560 cases, key variables such as income levels, age, gender, alcohol usage, and marital status of both perpetrators and victims were scrutinized. Our findings indicate a significant association between lower income and higher violence intensity for both victims and perpetrators. Notably, perpetrators aged 65+ exhibit less frequent but more intense violent behavior. This study highlights the crucial role of income in violent behavior, suggesting targeted policies for lower income groups to effectively combat violence.*

Keywords: violence; crime; income; probit

JEL Classification: K42; J15; O15

Introduction

Historically, delinquency has been studied through various lenses, each offering unique insights into the factors that contribute to violent behavior. Sociological theories have often emphasized environmental influences, highlighting how external factors shape individual actions. For instance, economic challenges are shown to be significant determinants in cases of domestic violence. Research by Wijanarko and Eleanora (2020) underscores that primary needs and financial stressors can drive perpetrators towards violence. Similarly, socioeconomic status, education levels, migration experiences, and the impacts of being part of a racial, ethnic, or gender-based

* University of Zagreb Faculty of Economics and Business, Zagreb, Croatia. Corresponding Author
E-Mail: vrecher@efzg.hr

minority significantly influence the occurrence of gender-based violence, as detailed in the study by Opanasenko, Lugova, Mon, and Ivanko (2021).

Conversely, psychological perspectives delve into the internal workings of the individual, suggesting that certain predispositions may predispose one to delinquent behavior. This view is supported by Schechter and Sternlof (1969), who linked impulse-dominated and psychologically immature behavior to social pathology. Complementing this, Widom's 1989 study provides a nuanced understanding of how early childhood experiences, specifically abuse or neglect, can increase the risk of adult criminal behavior. However, it's crucial to note, as Widom (1989) does, that not all abused or neglected children develop into delinquent, criminal, or violent adults, indicating the complexity of these developmental pathways.

Building on these foundational studies, our research aims to further dissect the individual determinants of violence intensity. To achieve this, we utilize a unique dataset comprising 560 detailed court documents, encompassing comprehensive information about both victims and perpetrators of violent crime. This dataset presents an unprecedented opportunity to analyze the intricate interplay of various factors in determining the intensity of violent behavior. By examining these cases, we can gain deeper insights into how individual characteristics and environmental influences contribute to the severity of violent acts. Our analysis aims to bridge the gap between sociological and economic perspectives, offering a more holistic understanding of the roots of violent behavior. This, in turn, could inform more effective interventions and policies aimed at reducing delinquency and supporting at-risk populations.

Delinquency in Croatia

Croatia is still a relatively peaceful country, illustrated by the fact that it has the lowest reporting of crime, violence or vandalism in the area in the EU-SILC survey (Eurostat, 2023). This holds for total population as well as those below 60% of median equivalised income. There are, however some interesting studies on the delinquency and violence in Croatia.

For example, Van San and Snel (2004) study explored the myth of violence among former Yugoslav delinquents, particularly focusing on how these myths are used by delinquents to establish their position in the criminal scene as specialists in violence. It underscores the role of cultural and historical narratives in shaping perceptions and behaviors of delinquents in Croatia and the former Yugoslav region.

Recent empirical research in Croatia has shed light on various determinants of adolescent delinquency, highlighting a range of factors from personal traits to social influences. Ritossa (2022) reports an increase in various forms of violence against children within family setting during the COVID-19 lockdown in Croatia, with infringement of children's rights being the most prevalent offense, underscoring the im-

part of the pandemic on family dynamics and child welfare in Croatia, highlighting the need for targeted interventions.

Erdelja et al. (2013) explore the delinquency in incarcerated male adolescents in Croatia. They find it is associated with factors like single parenthood, increased exposure to violence at home and in the community, and poorer self-image, reaffirming the findings by Widom (1989).

Ajdković, Bulat and Sušac (2018) also find that adolescents in Croatia who have experienced family violence are more likely to develop internalizing and externalizing problems, indicating significant psychological impacts, which highlights the long-term psychological effects of family violence on Croatian youth, emphasizing the need for psychological support and preventive measures.

Vrselja (2017) emphasizes the role of an adolescent's desire for autonomy and association with deviant peers as significant predictors of late delinquency, although their interaction does not significantly exacerbate delinquent behavior. Complementing this, Barnow, Lucht, and Freyberger (2005) identify parental antisocial behavior, parental rejection, and peer deviance as key contributors to adolescent aggression and delinquency, underscoring the influence of family and social environment (Barnow et al., 2005). Additionally, Scaramella et al. (2002) reveal that lack of nurturant parenting indirectly fosters delinquency through increased antisocial behavior and affiliation with deviant. Supporting this, Nagin and Paternoster (1991) demonstrate that past delinquent behavior is a strong predictor of future delinquency, highlighting the importance of early behavioral patterns. In terms of personality traits, Ljubin-Golub, Vrselja, and Pandžić (2017) find that sensation seeking significantly influences both normative and minor adolescent delinquency.

Müller-Fabian and Delcea (2017) further elucidate the role of personality factors and environmental influences such as family dynamics and substance abuse in shaping juvenile delinquency. Lastly, Pratt et al. (2002) highlight the strong association between Attention Deficit Hyperactivity Disorder (ADHD) and delinquent behavior, although they note variations across different study designs and populations (Pratt et al., 2002). Collectively, these studies underscore the multifaceted nature of delinquent behavior in Croatian adolescents, influenced by a blend of individual traits, family background, peer associations, and psychological conditions.

Considering the socio-economic determinants of violent crimes, research is abundant, but somewhat contradictory. Research indicates a complex relationship between perpetrator income level and violent crime. Several studies have found that poverty and income inequality are associated with violent crime, with more pronounced correlations in specific types of violent crimes such as homicide and assault. For example, Hsieh and Pugh (1993) conducted a meta-analysis revealing that poverty and income inequality are linked to violent crime, particularly homicide and assault. Similarly, Fajnzylber, Lederman, and Loayza (2002) found that income inequality is positively correlated with homicide and robbery rates both within and between coun-

tries, suggesting causation from inequality to crime rates. The relationship between income level and violent crime is also influenced by demographic and social factors. For instance, Pabayo, Molnar, and Kawachi (2014) reported that income inequality increases the risk for nonblack boys of committing acts of aggression and being victims of violence. Kennedy et al. (1998) noted a strong correlation between income inequality and firearm violent crime, along with decreased social capital. Furthermore, education level, social development, and other factors interplay with income levels in influencing violent crime rates. Saavedra, López, and Trigo (2017) found a significant association between low levels of education and violent crime perpetration (Saavedra et al., 2017). Thus, it is not surprising that in our sample the vast majority of perpetrators of violent crime have no income, or have income below average (Table 1).

Socio-economic factors play a critical role in shaping the landscape of violence at a micro-level. Research indicates that socioeconomic disadvantage can foster violence through attitudes, social-structural sources, and community-level social control processes (Markowitz, 2003). A stark correlation exists between greater inequality and higher rates of violent crime and homicide, highlighting the socially corrosive nature of inequality (Wilkinson, 2004). Interestingly, the anticipation of a personal economic downturn seems to be a stronger motivator for violence than comparative economic status (Bartusevičius and van Leeuwen, 2022). Violent conflict impacts the poor by affecting assets, education, health, and causing displacement and socioeconomic network breakdowns (Justino, 2007). In South Korea, child maltreatment is associated with socio-economic factors at various systemic levels (Hong et al., 2011). Additionally, poverty and inequality, when considered alongside nationality, culture, and religion, are linked to violence (Sen, 2008). Factors such as neighborhood economic disadvantage and instability can significantly increase the likelihood of intimate violence against women (Benson et al., 2003), and household economic status and vulnerability to poverty can determine the onset and effectiveness of conflicts (Justino, 2009).

In next section we describe the unique dataset of sample of court documents in Croatia and empirical strategy used to estimate the relationship between socio-economic factors and violence intensity.

Data and empirical strategy

The database was collected as part of the “Croatian Violence Monitor: A Study of the Phenomenology, Etiology, and Prosecution of Delinquent Violence with Focus on Protecting Particularly Vulnerable Groups of Victims” project. The sample was constructed by categorizing criminal cases into three groups according to the project’s definition of violence¹: 1) completed criminal acts that fully meet the criteria for the project’s definition of violence, 2) those largely conforming to this definition

along with attempts from the first group, and 3) those partially fitting the definition. Following the selection of relevant criminal cases, a questionnaire, along with the Ethics Committee's approval from the Faculty of Law in Zagreb, and a list of relevant criminal cases, were sent to court presidents. The sample includes only final criminal files in which the perpetrator was convicted of the mentioned crimes, with the finality occurring between 2017 and 2021 (a five-year period). Courts provided the total number of these crimes, and their ID number was searched in the court database. The court staff then prepared these files for researchers².

Criminal files were collected from four county and four municipal courts in Croatia – the County and Municipal Court in Zagreb, Split, Osijek, and Rijeka, depending on the actual jurisdiction over the specific criminal cases. The research was conducted in Zagreb in 2021/2022 and in other cities in 2022/2023. The first phase involved a pilot study with approximately 20 files to test and verify variables (instrument testing), after which the questionnaire was revised according to the findings of the pilot implementation.

Data were extracted from the files and entered into a specially designed questionnaire divided into three parts (general information about the case, information about the perpetrator, and information about the victim). The questionnaire comprised a total of 89 questions (12 on the case, 49 on the perpetrator, and 28 on the victim). Data entry was partially done using the paper and pencil method and partially entered into an electronic database created for the project.

Table 1 shows summary statistics of the sample of court documents. As in the sample, by definition we have violent crimes, we introduce the measure of violence intensity. For this, we use the legal classification of injuries to the victim. For cases without injuries and minor physical injuries we put 0, meaning low intensity of violence, or almost no violence. For all other cases, i.e. major physical injuries, especially major physical injuries, immediate death and delayed death, we put 1, indicating high intensity of violence.

We use this approach as categorizing violence intensity into a binary variable we create a clear distinction between less severe and more severe cases. This simplification is beneficial when trying to determine factors that lead to more severe outcomes. Further, using legal classifications for injuries ensures that the measure of intensity is grounded in a standardized and widely recognized framework, which adds validity to present analysis. Additionally, relying on the extent of physical injuries provides an objective criterion to classify the violence intensity, as opposed to subjective measures that could vary between observers. Finally, from a policy-making perspective, understanding the distribution of low vs. high-intensity violence within various demographic segments can inform targeted interventions and prevention strategies.

The mean violence intensity in the sample is relatively low at 0.17, with a standard deviation of 0.37, indicating that most cases have low intensity of violence, but there is some variation. Most perpetrators (52%) are categorized as having below-average

income, with a significant portion (25.8%) not having any income. This distribution could suggest a correlation between economic status and the propensity for violence, though causation cannot be inferred from this statistic alone. The age of perpetrators is fairly well-distributed, with a higher concentration in the 25-34 age bracket (28.9%). The least represented age group is 65 and over (7.3%). This could indicate that younger individuals are more likely to be involved in violence. A large majority of the perpetrators (61.9%) have vocational secondary education, which closely resembles the distribution in population. In the most recent academic year for which data is accessible, 66 percent of students were enrolled in vocational education (DZS, 2023). Concurrently, 55 percent of the overall population had achieved a secondary education level as their highest attainment (DZS, 2023). A significant number of perpetrators (33.1%) had consumed alcohol, which is a known risk factor for violence. Nearly half of the perpetrators are employed (45.5%), while a substantial proportion is unemployed (35.7%). This is expected considering the known unemployment and crime nexus (Raphael and Winter-Ebmer, 2001; Edmark, 2005; Recher, 2020), and knowing that unemployment rate in Croatia was 7.5 percent in 2021 (HZZ, 2021). In other words, the unemployment rate in our sample of violent perpetrators is by some margin larger than the average unemployment rate in the population. Almost half of the perpetrators are not married (48.7%), which could be relevant to understanding the social context of the individuals involved in violence. The mean number of previous convictions is low (0.06), with a low standard deviation (0.23), suggesting that most perpetrators do not have a history of convictions, which is interesting. The most common relationship to the victim is a romantic partner (43.2%), followed by family (24.4%), indicating that a significant proportion of violence occurs within intimate or family settings. Family violence is the most reported type (57.5%), which aligns with the data on the relationship to the victim. This is followed by other violence in public surroundings (9.4%) and violence against the police (4.9%). Similar to perpetrators, a higher number of victims fall under the 25-34 age bracket, and most are employed (31.9%). The income distribution for victims is somewhat similar to that of the perpetrators. The mean score for perpetrator sex is 0.94, which suggests that males are predominantly the perpetrators, while the mean score for victim sex is 0.42, indicating that a larger proportion of victims are female, which is expected.

Table 1: Summary statistics of data from the sample of court documents

	Overall
	N = 1114
Violence intensity (mean (SD))	0.17 (0.37)
Income (%)	
Above average	51 (4.6)
Average	124 (11.1)
Below average	579 (52.0)
Missing	73 (6.6)
No income	287 (25.8)
Perpetrator age (%)	
25-34	322 (28.9)
35-44	271 (24.3)
45-54	156 (14.0)
55-64	96 (8.6)
65+	81 (7.3)
Less than 25	188 (16.9)
Perpetrator education(%)	
Below primary	36 (3.2)
Finished primary	274 (24.6)
NA	20 (1.8)
Secondary (general)	33 (3.0)
Secondary (vocational)	690 (61.9)
Tertiary	61 (5.5)
Perpetrator under alcohol influence (%)	
0	660 (59.2)
1	369 (33.1)
NA	85 (7.6)
Perpetrator work status (%)	
Employed	507 (45.5)
NA	20 (1.8)
Retiree	173 (15.5)
Student	16 (1.4)
Unemployed	398 (35.7)
Marital status (%)	
Divorced	152 (13.6)
Married	378 (33.9)
NA	22 (2.0)
Not married	543 (48.7)
Widowed	19 (1.7)
Previous convictions (mean (SD))	0.06 (0.23)
Relationship to victim (%)	
Acquaintance	182 (16.3)
Family	272 (24.4)
Romantic partner	481 (43.2)

	Overall
	N = 1114
Stranger	179 (16.1)
Type of violence (%)	
Blood crime	16 (1.4)
Discriminatory violence	5 (0.4)
Drug related violence	60 (5.4)
Extortion violence	12 (1.1)
Family violence	640 (57.5)
Heritage related violence	3 (0.3)
Hooliganism	6 (0.5)
Institutional violence	4 (0.4)
Neighbourhood violence	27 (2.4)
Other violence in private surroundings	76 (6.8)
Other violence in public surroundings	105 (9.4)
Prostitution related violence	1 (0.1)
Subletting related violence	6 (0.5)
Violence against the police	55 (4.9)
Violence as part of a breakup	42 (3.8)
Violence as part of theft	19 (1.7)
Violence in a bar	25 (2.2)
Workplace violence	12 (1.1)
Victim age (%)	
25-34	172 (15.4)
35-44	144 (12.9)
45-54	103 (9.2)
55-64	85 (7.6)
65+	221 (19.8)
Less than 25	389 (34.9)
Victim work status (%)	
Employed	355 (31.9)
NA	324 (29.1)
Retiree	111 (10.0)
Student	168 (15.1)
Unemployed	156 (14.0)
Victim income (%)	
Above average	5 (0.4)
Average	86 (7.7)
Below average	296 (26.6)
Missing	439 (39.4)
No income	288 (25.9)
Perpetrator sex (mean (SD)) Female = 0	0.94 (0.23)
Victim sex (mean (SD)) Female = 0	0.42 (0.49)

Source: Authors' presentation based on a sample of court documents

To analyse the determinants of violence intensity, we utilize a probit regression model. The dependent variable Y_i is binary, indicating the presence of high intensity violence (coded as 1) or low/no violence (coded as 0) for each observation i . The probit model is specified in the generalized linear model (GLM) framework as follows:

$$\phi(Y_i) = \phi(\alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki})$$

where ϕ denotes the cumulative distribution function of the standard normal distribution, α is the intercept, $\beta_1, \beta_2, \beta_k$ are coefficients of the socio-economic predictors, and X_{1i}, X_{2i}, X_{ki} are the socio-economic predictor variables described in Table 1 for individual i . The parameters of the probit model will be estimated using the Maximum Likelihood Estimation (MLE) technique. Maximizing this likelihood function provides estimates of the parameters that are most consistent with the observed outcomes.

Socio-economic predictors of violence

In this section, we present the results of the analysis. Table 2 presents the results of the probit model presented in the previous section. The regression indicates that compared to above average income, perpetrators with average income or below average income are associated with a higher intensity of violence. This is consistent with the literature, which suggests that economic hardship can correlate with more severe criminal behavior, including violence (Kennedy et al., 1998; Savage, Ellis, and Wozniak, 2019). Interestingly, perpetrators with income below average, and with no income do not exhibit any statistically significant difference to those with above average income with regards to violence intensity, which is contrary to the mentioned literature. This could be due to the difference in opportunities to commit a crime, as those individuals are more likely to have less interactions than people who work. People who work often travel to the workplace, and have interactions with their colleagues, in line with a routine activity approach by Cohen and Felson (1979). In this perspective, criminal activities take place when potential perpetrators, appropriate targets, and a lack of effective guardianship intersect at a particular location and moment (Cohen and Felson, 1979). However, this theory can hardly explain this in full as the majority of the sample is related to violence in private surroundings as shown in Table 1. Relationship between perpetrator and victim is acquaintance and stranger in 32 percent of the cases, which means that routine activity approach can explain at best this part of the crimes.

The positive coefficient for perpetrators who consume alcohol suggests that alcohol use may increase the intensity of violence, aligning with studies that have found substance abuse to be a risk factor for violent behavior (Eggink, de Waal and Goudriaan, 2019). Being married is negatively associated with violence intensity, which may imply social stability or other mitigating factors associated with marriage. Vic-

tim's income level does not show a significant association with the intensity of violence in this model. However, the literature suggests that income inequality can influence overall rates of violence and victimization (Wolf, Gray and Fazel, 2014).

The regression indicates that perpetrators aged 65+ are associated with higher violence intensity. The literature indicates that age can be a factor in crime, with younger individuals often being more involved in violent crimes (Erbay and Özcan, 2021), which is contrary to our results. The explanation could be in Table 1, as there is a small overall number of perpetrators in this age group. It is possible that for them the probability of being violent is small, which is in line with the literature. Another quite plausible explanation is that older people are generally more fragile. As we use novelty approach of violence intensity, compared to violence occurrence which is standard in the literature, it is possible that the same action results in worse outcomes for older people.

The gender of the perpetrator is not significantly associated with violence intensity in the regression results. However, the literature on gender differences in violent crime is extensive, with findings often indicating higher rates of violent crime perpetration among males (Dennison and Thompson, 2011). Again, the vast majority of our sample are males, meaning that they are indeed more likely to be violent. However, there seems to be no difference in the intensity of violence between genders. Finally, if victim is male, it seems that the probability for higher violence intensity is also higher.

Probit coefficients from Table 2 represent the change in the z-score of the dependent variable for a one-unit change in the predictor variable, holding all other variables constant. The z-score in a probit model corresponds to the normal distribution and is linked to the probability of the dependent event occurring. However, unlike linear regression coefficients, probit coefficients are not directly interpretable as changes in the probability of the dependent event because the relationship between the z-score and the probability is nonlinear. Instead, the coefficients indicate the direction and relative magnitude of the relationship between predictors and the probability of the event. In order to better grasp the relative influence of socio-economic predictors on violence intensity, we calculate the average marginal effects (AME).

AME in a probit model provide a means of understanding the impact of predictor variables on the probability of an outcome, considering the nonlinear nature of the probit model. As mentioned, in a probit model, the relationship between predictors and the probability of the outcome is not constant across all values of the predictors, unlike in a linear model. The AME of a predictor is calculated as the average change in the probability of the outcome variable occurring as a result of a one-unit change in the predictor, holding all other variables constant. This average is computed over all observations in the dataset, providing a summary measure of the impact of the predictor on the probability of the outcome across the entire sample. AMEs are particularly useful because they translate the coefficients of probit models, which are not directly interpretable in terms of probabilities, into more meaningful terms.

Table 2. Results of the estimated probit model

	<i>Dependent variable:</i>	
	Violence intensity	
Perp. income - average	0.512*	(0.309)
Perp. income - below average	0.034	(0.281)
Perp. income - NA	0.116	(0.359)
Perp. without income	0.594**	(0.288)
Alcohol	0.362***	(0.114)
Alcohol NA	0.028	(0.207)
Married	-0.191	(0.184)
Marital status unknown	0.469	(0.378)
Not married	0.218	(0.175)
Widowed	-0.405	(0.523)
Victim income - average	4.499	(100.976)
Victim income - below average	4.025	(100.976)
Victim income - NA	4.118	(100.976)
Victim without income	3.618	(100.976)
Age 35-44	-0.099	(0.152)
Age 45-54	-0.306	(0.187)
Age 55-64	0.108	(0.212)
Age 65+	0.594***	(0.218)
Age <25	0.104	(0.158)
Perp. sex	0.282	(0.254)
Victim sex	0.685***	(0.112)
Constant	-6.042	(100.977)
Observations	992	
Log Likelihood	-370.692	
Akaike Inf. Crit.	785.384	

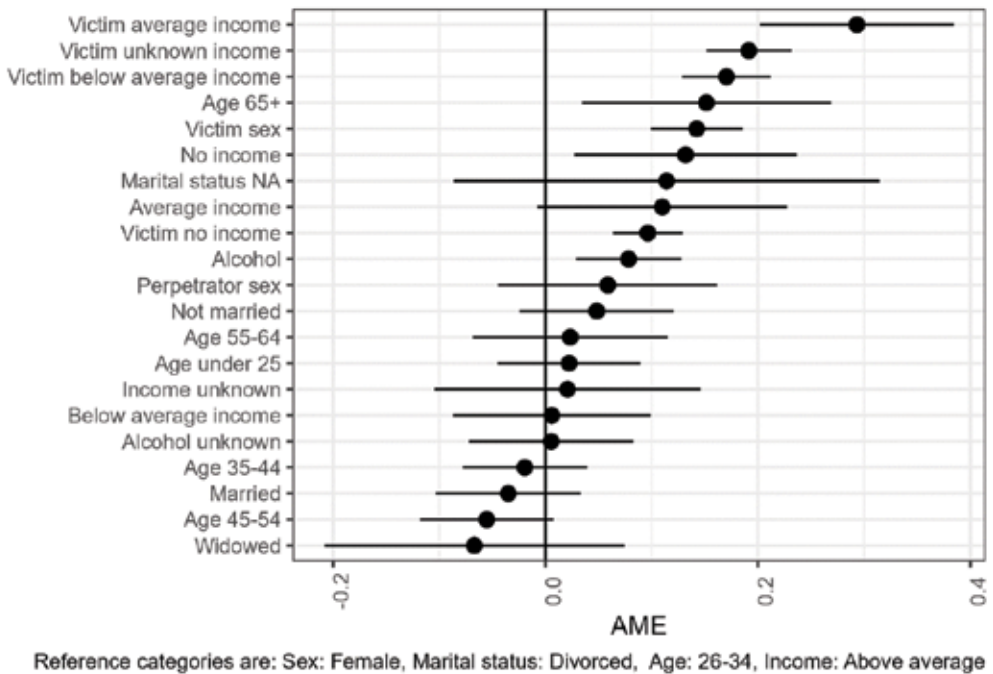
Note:

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

Source: Authors' calculation

Figure xxx shows average marginal effects of the estimated probit model, ordered by size, along with 95 percent confidence intervals. As can be seen from the Figure xxx, some important differences arise when comparing the results to Table 2. One obvious observation is that some coefficients are significant when looking at AME. This is because the probit coefficient is a measure of the effect of a one-unit change in the predictor variable on the latent variable’s z-score, which can be small or may not vary much across different levels of the predictor variable. As a result, the probit coefficient might not be statistically significant if there’s not enough evidence to suggest that the predictor variable has a consistent effect on the outcome across all levels of the predictor. On the other hand, the AME is the average change in the predicted probability of the outcome variable when the predictor variable changes by one unit, averaged over the sample. Since it is an average effect, it can smooth out variations that occur at different values of the predictor variable. This can lead to a situation where the AME shows a significant effect because it captures the average impact over all observations, even though the probit coefficient for any individual change in the predictor variable is not significant.

Figure 1. Average marginal effects of the estimated probit model.



Source: Authors’ calculation

The average marginal effect indicates that the income level of victims is a crucial factor influencing the severity of violence, with a notable statistical impact observed across all categories. Additionally, gender emerges as a significant factor affecting violence intensity, echoing findings from the initial probit model analysis. Regarding the characteristics of perpetrators, the data reaffirms that older individuals are more likely to engage in violent acts compared to younger individuals. Another key socioeconomic factor is the absence of income; perpetrators without any income are significantly associated with violent behavior. When examining the income levels of victims, the results do not suggest that victims generally have higher socioeconomic status than perpetrators. Interestingly, the pattern of violence tends to occur within similar socioeconomic strata, with low-income victims and perpetrators often encountering each other. This could be due to them moving in the same social circles and the environmental conditions this creates, potentially facilitating the emergence of violence, as Cohen and Felson's (1979) theory suggests.

Conclusion

The findings of this study underscore the critical role of socio-economic factors in influencing the intensity of violent behavior in Croatia. Our analysis reveals a pronounced income gradient in both perpetration and victimization of violence, highlighting that lower income is associated with a higher probability of involvement in violent incidents. This result aligns with and extends the findings of previous research, which has variously pointed to economic hardship as a key factor in criminal behaviour (Schrag, Robinson and Ravi, 2018; Lucero, Lim and Santiago, 2016; Hong et al., 2020 among others).

Notably, the most surprising outcome of our research is the heightened intensity of violence among the 65+ age demographic. While this age group is typically less involved in violent crimes, our study indicates that incidents involving older individuals tend to be more severe. This finding challenges conventional perceptions of violence demographics (Dowd, Sisson and Kern, 1981; Rodstein, 1975; Vorderwülbecke, Hartwig and Kuhlmeier, 2019) and calls for further research into age-related patterns of violent behaviour. However, as noted in the paper, this could be due to the approach of measuring violence intensity as dependent variable. Older people are on average more easily heavily injured than younger people.

Our study's primary limitation lies in its external validity. The results, while robust within the context of the sampled Croatian courts, may not be generalizable to other regions or countries. Future research should aim to replicate this study in different socio-economic and cultural contexts to validate and potentially expand upon our findings.

In conclusion, this research represents a seminal contribution to the understanding of violent behavior at the micro-level, using real court document data. It highlights the importance of socio-economic factors, particularly income, in both perpetrating

and experiencing violence. These insights are crucial for developing targeted interventions and policies aimed at the lower-income quintiles, where they are likely to have the most significant impact. By breaking new ground in the use of micro-data from court documents, this study paves the way for more nuanced and effective approaches to combating violence and addressing its root causes.

For example, implementing targeted economic support programs aimed at improving the financial well-being of individuals with lower incomes. These programs could include initiatives like job training, skill development, and financial assistance to help lift individuals and families out of poverty. Reducing financial stress can be an effective way to mitigate violence intensity. Further, we should recognize the unique dynamics involving older perpetrators in violent cases. Develop specialized support services and interventions for elderly individuals to address their specific needs, including mental health services, social engagement programs, and elder abuse prevention measures. Finally, it is advisable to launch awareness campaigns and intervention programs to address alcohol abuse issues. Providing resources for alcohol rehabilitation and support for individuals struggling with alcohol addiction can help reduce the incidence of violence associated with alcohol use.

Declarations

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Conflicts of interest/Competing interests

There is no conflict of interest/Competing interests.

Availability of data and material

The data that supports this study is confidential data from court records

Code Availability

The computer program results are shared through the tables in the manuscript. Full R code is available upon request.

Authors' Contributions

Not applicable.

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NOTES

¹ The project CroViMo defines violence as any intentional physical harming or killing of another person

² Some court files were unavailable – they could not be obtained from archives, or were under extraordinary legal remedies at higher courts, or were otherwise unavailable at the courts where research was conducted)

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