2025

1-2. CRIMINAL GEOGRAPHICAL JOURNAL

Number 1-2. Volume VII. March 2025 ISSN 2676-9778

Hungarian Association of Police Science – International Criminal Geographical Association

CGJ

CRIMINAL GEOGRAPHICAL JOURNAL

ACADEMIC AND APPLIED RESEARCH IN CRIMINAL GEOGRAPHY SCIENCE

VOLUME VII. / NUMBER 1-2. / March 2025

Academic and applied research in criminal geography science. CGR is a peer-reviewed international scientific journal. Published four times a year.

All correspondence should be addressed to the chair of the editorial board
criminalgeography@gmail.com

Vol. VII. 2025/1-2. Designed by Antal Forró

CONTENTS

LECTORI SALUTEM!

Dear Readers,

We are pleased to welcome you to the latest issue of the *Criminal Geographical Journal*, where we continue to explore the most pressing questions in the field of criminal geography. In an era where digitalization, artificial intelligence, and global migration reshape criminal patterns, understanding the spatial aspects of crime has never been more critical.

This issue delves into the relationship between urban structures and criminal activity, as well as the role of modern geoinformation tools in crime prevention. Among the featured studies, you will find an analysis of crime patterns in Budapest's VIII district, an in-depth examination of the law enforcement applications of maps, and a discussion on the implications of the EU AI Act for Hungary's policing strategies.

Additionally, we present key insights from the 5th Criminal Geographical Conference and provide updates on recent developments in both Hungarian and international crime geography research.

We hope this issue will serve as an engaging and thought-provoking resource for our readers. We welcome your feedback and insights, as our goal is to foster a continuously evolving, interdisciplinary dialogue in the field.

Wishing you an enjoyable and informative read!

If you have any comments or suggestions regarding the journal, please write them to the editorial board!

Krisztina Keller Ph.D.
Executive Scientific Secretary of
Criminal Geographical Association

Authors of this issue

Berei, Róbert asssistant lecturer, Ludovika University of Public Service (Budapest, Hungary)

Bói, László asssistant lecturer, Ludovika University of Public Service (Budapest, Hungary)

Frigyer, László asssistant lecturer, Ludovika University of Public Service (Budapest, Hungary)

Gyaraki, Réka Ph.D. assistant professor, Ludovika University of Public Service (Budapest, Hungary)

Kiss, Valentin Bence pol. lieutenant (Biharkeresztes Border Police Office)

Mezei, Kitti Ph.D. associate professor, Ludovika University of Public Service (Budapest, Hungary)

Lectors of this issue

Mátyás, Szabolcs Ph.D. associate professor (Ludovika University of Public Service, Hungary)

Nyitrai, Endre Ph.D. associate professor (Ludovika University of Public Service, Hungary)

Sivadó, Máté Ph.D. associate professor (Ludovika University of Public Service, Hungary)

Tihanyi, Miklós Ph.D. associate professor (Ludovika University of Public Service, Hungary)

Ürmösné Simon, Gabriella Ph.D. associate professor (Ludovika University of Public Service, Hungary)

Vári, Vince Ph.D. associate professor (Ludovika University of Public Service, Hungary)

Dr. Bói, László police lieutenant colonel, assistant lecturer

Ludovika University of Public Service

boi.laszlo@uni-nke.hu

Dr. Berei, Róbert police lieutenant colonel, assistant lecturer

Ludovika University of Public Service

berei.robert@uni-nke.hu

THE ROLE OF THE MAIN CRIME GEOGRAPHICAL FACTORS IN JÓZSEFVÁROS'S CRIME

Abstract

The study examines District VIII (Józsefváros) from a crime geographical perspective. It shows how certain physical and socio-geographical factors affect crime. The crime geography of Józsefváros was last investigated nearly thirty years ago, and no detailed, exploratory analysis has been published since then.

The present research does not rely on criminal statistical data; rather, it aims to reveal the geographical factors that positively or negatively influence the development of crime in one of Budapest's most criminally infected districts.

Keywords: Józsefváros, crime, criminal geography, District VIII.

1. Introduction

The 8th district, also known as Józsefváros, is in the memories and eyes of many as one of the capital's nerve-racking districts. This was mainly due to the high crime indicators in its sectors, but it is worth mentioning that the district is not uniform in terms of levels. It cannot be stated in general terms that the district has crime rates above the capital city average. Józsefváros consists of eleven districts, which radically differ in terms of social, economic, architectural, urban structure, and characteristics.

As can be seen from the above, it is clear that there is a real basis for the fact that the district is positioned at the bottom in the eyes of the broader public since, in certain parts of it, the residents live at a level below the Hungarian average and the crime rate is also significant in

these parts of the district. The media also plays a significant role in the negative image of the district, just think of the film Nyócker (2004) (www.jozsefvaros.hu).

At the district level, segregates were formed in many places (e.g., Magdolna quarter, Orczy quarter, Corvin quarter), the development of which was also influenced by unfavorable historical reasons. In this connection, we can think of the devastation of the Second World War, which caused significant damage to the building stock (Turányi 1963). Those who moved into the properties of deceased and emigrated Jewish residents did not pay enough attention to their maintenance. When the Greater Budapest was created (1950), the development of the newly annexed parts of the district was considered necessary, and the rehabilitation of the former districts and the restoration of World War II damage were neglected (including District VIII). During the revolution of 1956, the district suffered one of the most severe destructions, and in connection with this, the capital city administration also postponed damage mitigation and renovation. Many people moved out of the increasingly deteriorating buildings, and the new arrivals invested less energy than the minimum to preserve the condition. All in all, these factors led to the fact that by the time of the system change, District VIII. has become the most neglected district of the capital (www.jozsefvaros.hu).

2. Presentation of the main geographical and statistical data of Józsefváros

District VIII. with an area of 6.85 km2 and a population of 69,917 (01.01.2023) (https://www.ksh.hu), its population has decreased significantly in the last three decades (25% between 1990 and 2023). The rate and dynamics of the decrease were greater than the Hungarian average.

We see the reason for this as worse existential conditions prevailed in Józsefváros decades ago. This "pushed" thousands of natives to other districts or outside the capital.

According to the KSH database, there are 47,866 apartments in the district (Table I). This value was only 39,974 in 1990. The increase in the number of apartments is dynamic. This clearly shows the process that has taken place in Józsefváros over the past decade. Thanks to the rehabilitation work, many new apartments were built (a 7.8% increase compared to the value of 2011) (www.ksh.hu)

Table I: Part of District VIII. and their population

Part of District VIII.	Number of population	Number of flats
Corvin quarter	9 487	5 501
Csarnok quarter	10 869	6173
Ganz quarter	1 505	906
Kerepesdűlő	839	559
Losonci quarter	8 806	4681
Magdolna quarter	10 234	5906
Népszínház quarter	6 740	4557
Orczy quarter	9 310	5735
Palota quarter	12 097	7120
Százados quarter	4 055	2203
Tisztviselőtelep	2 308	1076
altogether	76 250	44 417

Source: www.ksh.hu (edited by the authors)

2.1. Correlations between crime and social stratification in Józsefváros

The relationship between the propensity to commit crimes and socio-economic factors has been investigated by numerous researchers worldwide, and the case of Józsefváros is no exception. Areas more densely populated by low-income, disadvantaged social groups often have higher crime rates, as poverty, low education, and unemployment can all contribute to crime.

In some parts of Józsefváros —especially in the Magdolna quarter and the Orczy quarter—the proportion of the population suffering from social problems is significant. Opportunities for social mobility are limited, and in many cases, poverty spanning generations can be seen. This can contribute not only to the increase in the number of crimes but also to their recurring, cyclical nature.

An important role is also played by the so-called "ghettoization" phenomenon, during which disadvantaged social groups are concentrated in certain parts of the city. Increasing segregation and the deterioration of the residential environment can facilitate the rise of illegal activities, especially in terms of drug trafficking and street crime.

Rehabilitation projects, such as the renewal of the Magdolna district, have brought certain positive changes, but their impact is not yet clear. Previous research shows that this type of urban rehabilitation can reduce the crime rate in the short term, but without addressing deeper social problems, it will not bring lasting results in the long term.

Overall, the crime situation in Józsefváros is closely related to social stratification, and the simultaneous treatment of social and economic problems is essential for a more effective crime prevention strategy.

3. Geographical factors in Józsefváros

3.1. Natural geographic factors

In the case of Józsefváros, physical geographical factors play a small role, so this research is not meant to be scrutinized. I will mention a few physical geographical facts about District VIII to define the area better. The district is located on the Pest side of Budapest. It is true for the district as a whole (and the Pest part as well) that is the part of the Pest plain. The Danube is located a few kilometers from the district, so it has no direct impact on crime or on Józsefváros (Pécsi 1959).

3.2. Social geographic characteristics

3.2.1. Population geographic characteristics

Ca. 70,000 people live in Józsefváros. This is 4.2% of the capital's population (1,685,342 people). The population density of Budapest is 3,209 people/km2, and in Józsefváros, it is about three times higher (10,226 people/km2) (ksh.hu). Higher population density has the effect of increasing crime, and this also applies in the case of Józsefváros.

The proportion of men is 48.9%, while that of women is 51.1%. These values differ slightly from the capital and national values (Hungary: 48.1%; Budapest: 46.9%; District VIII: 48.9%) (Table II).

Table II: Gender distribution (%)

	Hungary	**Budapest**	**District VIII.**
men	48,1	46,9	48,9
women	51,9	53,1	51,1

Source: KSH database (edited by the authors)

However, if the Józsefváros values are compared with the national average, a significant difference can be observed. The age group 0-14 differs from the national average by about 6% and from the Budapest average by 4%.

Based on this, it can be seen that the population of Józsefváros is aging and aging to a greater extent than the rest of the country or the capital. This can positively affect crime in the long term since it is primarily the younger age group that shows a higher frequency of crime. The

Józsefváros values are also the highest for the 15-64 age group. The difference between the national and district values is more than ten percent (64.9% - 76.05). Surprisingly, in the case of the 65-year-old and older age group, District VIII. shows the smallest values (20.6% - 21.15 - 15.6%). This is also favorable from the point of view of crime (Table III).

Table III: Population distribution by main age groups (%)

	Hungary	**Budapest**	**District VIII.**
0-14	14,5	12,4	8,4
15-64	64,9	66,5	76,0
older than 65 years	20,6	21,1	15,6

Source: KSH database (edited by the authors)

3.2.2. The structure of the economy

The structure of the economy and certain economic indicators (e.g., unemployment rate, inflation, GDP) also influence the development of crime.

In the case of the capital's districts, it is difficult to precisely define the economic role, partly because the individual districts have grown financially. On the other hand, a division of labor has developed between the individual areas. Contrary to the stereotypes formulated against the district, Józsefváros can be considered a district with a particularly strong economy. Out of the 23 districts, the 8th district takes the 7th place based on the number of registered businesses (Balás et al. 2019), which clearly shows that the people living here have a strong entrepreneurial activity.

A high proportion of the enterprises are engaged in trade (25%), and many of them are involved in the retail trade of clothing products. This is mainly due to the large number of people of Chinese origin (citizenship) living in the district, who operate shops. There are also relatively many catering units (restaurants, pubs) among the businesses.

In these places, crimes against property abd the person, as well as rioting may occur more frequently. Municipal constructions (rehabilitation works) have created a construction industry in the district, and thanks to the universities, research and development (R+D) is also present in the district (Balás et al. 2019). The district unemployment figures are higher than the capital average. There is a direct correlation between long-term unemployment and crime rates.

3.2.3. Settlement structure

"District VIII. is located in two zones, partly in the Inner Zone and partly in the Transitional Zone. It has an urban structure and built environment reminiscent of the historical era of the capital's development. (Balás et al. 2019, 39.)

The settlement structure of Józsefváros is diverse; there are many settlement structure zones in the district. Because the district is made up of eleven parts, Józsefváros has several centers and sub-centers. These centers are mostly criminally infested (e.g., Blaha Lujza Square, Rákóczi Square, Baross Square), as these are the central sectors where the nightclubs, pubs, nightclubs, subway platforms, and other public transport stops are mostly located. In many cases, these central places have relevance not only to the district but also to the capital; that is, they have a central function (e.g., Blaha Lujza Square).

In relation to the central function, Keleti Railway Station should be mentioned. It is Hungary's busiest railway station, and millions of people visit it each year (Figure 1).

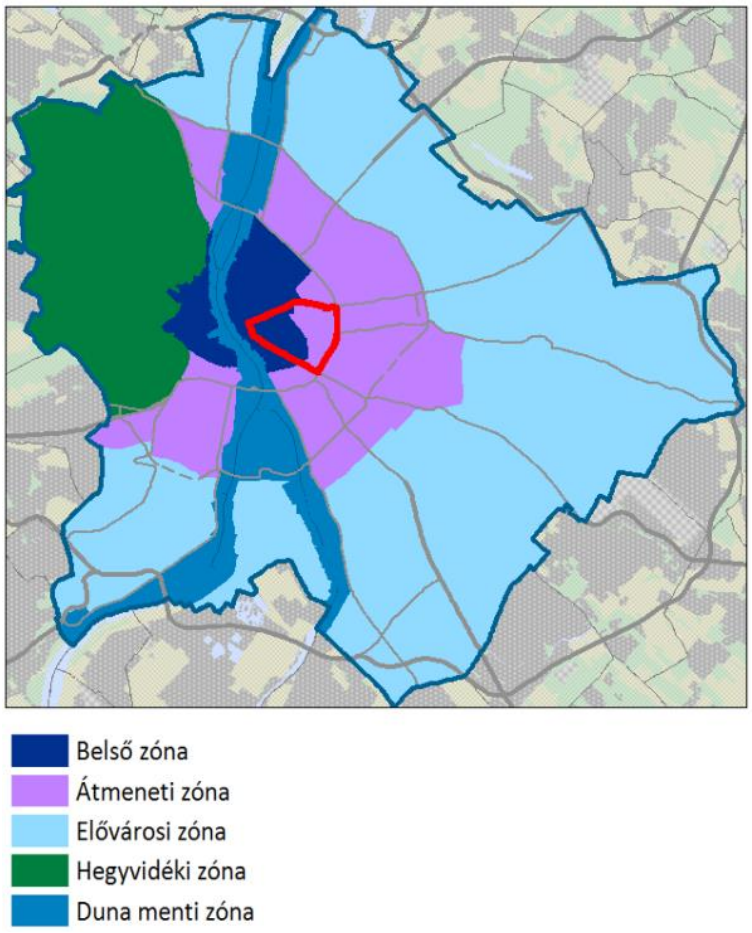

Figure 1. Józsefváros in zone system of Budapest (TSZT 2017 after Balás et al. 2019, 39.)

3.2.4. Transport geography features

Many researchers have proven the impact of traffic on crime. If an area is easily accessible (can be accessed quickly and safely), criminals will also take advantage of this opportunity. Examining the axes of urbanization and the primary transport routes is necessary. In the capital case, the number of traveling criminals is particularly significant, i.e., those who travel to the capital to commit a crime (Mátyás 2014). Someone may travel daily to commit some crime. In such cases, predictable public transport is an important aspect. Traveling crime is, of course, closely related to the use of vehicles, which the perpetrators use to ensure movement between their place of residence and the place of the crime (Bói 2015)

Several important roads pass through Józsefváros, which are not only of capital but also national importance. We can think of the boulevards or the fact that part of the roads connecting Pest and Buda pass through the district.

Several types of public transport can be found in Józsefváros, which transport millions of passengers annually (metro, bus, tram, trolley, railway). Their crime-generating effect is indisputable, and the stops of these means of public transport also appear as hot spots on the criminal map of the capital in many cases (e.g., Keleti Railway Station area, Rákóczi square)

However, we do not know the exact figure for committed crimes, as we can expect a high latency. Victims of crimes committed using transport and at bus stops often do not file a report, as the crime committed against them is less serious. Victims usually do not file a complaint if there are no documents or a large amount of cash in the stolen wallet.

3.2.5. Sports facilities and entertainment venues

Higher crime rates are observed in sports facilities and entertainment venues. In the 8th district, there are several large-scale sports facilities and numerous entertainment venues.

The MTK is located on the district's border, and the FTC football stadium is not far from the 8th district. These facilities increase the risk of crimes being committed during matches. The newest sports facility in Józsefváros is the Ludovika University of Public Service sports complex, but matches that pose a significant security risk are not held here.

Józsefváros is centrally located, yet the number of entertainment venues is much lower than in the 5th, 6th, and 7th districts. There are mainly smaller units that meet the needs of the local population, and there are no entertainment venues in the district that have national appeal or attract a significant number of tourists. Nevertheless, entertainment venues are crime-attracting areas everywhere.

3.2.6. Secondary and higher education institutions

Few sources examine the crime-attracting effect of educational institutions, even though these centers have a serious generating factor in the cases of many crimes. The predictive software Risk Terrain Model also considers educational institutions risky places (among many others).

In Józsefváros, there are many high schools with a national reputation and an agglomeration area, but in addition to these, there are also many vocational schools in the district, which are attended by problematic, primarily local youth. These obviously carry more risks.

There are many higher education institutions in District VIII. whose students exceed ten thousand. In the case of students studying in higher education, the fact that they have fun irresponsibly due to their age appears as an increased risk factor, which can make them potential victims. As a result of possible excessive consumption of alcohol and, narcotics and mind-altering drugs, they can more easily become the victim of a crime or even become a perpetrator themselves.

3.2.7. Tourism

District VIII has many historic buildings (see Palace Quarter) and tourist attractions of national importance (e.g., the Hungarian National Museum, Fiumei Street National Cemetery, the Hungarian Museum of Natural Sciences, the Botanical Garden, Gólya Castle). The number of visitors is above the average for the capital city but far below the districts visited by tourists in the most significant number (Districts I., V., VI., VII.).

The district's rehabilitation program promotes tourism development, within the framework of which many parts of Józsefváros were renewed (Zubereczki 2017). Nevertheless, District VIII will not be able to compete with the most popular districts in terms of tourism. On the other hand, the growing number of visitors predicts that the number of injured domestic and foreign tourists is expected to be higher (Mátyás 2016).

4. Summary

In the case of Józsefváros, the study examined the geographical factors of crime that may influence crime. Physical geographical factors only have a minimal effect on the number of crimes, but some socio-geographical factors noticeably increase the number of registered crimes. Such factors include transport geography. Due to its geographical location and role, the district carries out significant transit traffic, which results in several million people visiting the district annually. According to the author's findings, although tourism will not dominate the district's economic sectors in the future, an increase in the number of tourists is likely (partially

as a result of significant rehabilitation works), which predicts an increase in the number of the victims.

References

Balás, Gábor – Baranyai, Zsolt – Szendrei, Zsolt – Berényi, Mária – Vojnits, Csaba Ferenc (2019): JÓZSEFVÁROS TELEPÜLÉSFEJLESZTÉSI KONCEPCIÓ (https://hetfa.hu/wp-content/uploads/2023/02/VIIIker_TFK_megalapozo_v4.pdf)

Bói, László (2015) Az utazó bűnözés és a sorozatbűncselekmények összefüggései. (Pécsi Határőr Tudományos Közlemények; 16.) 149-156.

Mátyás, Szabolcs (2014): Budapest bűnözésföldrajzi vizsgálata 2009 és 2012 között Magyar Rendészet, 14(3): 93-103.

Mátyás, Szabolcs (2016): A külföldi bűnelkövetők területi és strukturális jellemzői Magyarországon. In: Hautzinger Zoltán (szerk.): A migráció bűnügyi hatásai. Magyar Rendészettudományi Társaság, Budapest, 338 p., pp. 75-87.

Pécsi, Márton (1959): Budapest természeti földrajza. Akadémiai Kiadó, Budapest

Turányi, Károly (1963): A Józsefváros kialakulása. In: (szerkesztő nélküli): Tanulmányok Budapest Múltjából 15. 329-363. (https://epa.oszk.hu/02100/02120/00015/pdf/ORSZ_BPTM_TBM_15_329.pdf)

Zubereczki, Dávid (2017): Gettóból az ingatlanfejlesztők paradicsoma (https://index.hu/urbanista/2017/09/26/magdolnanegyed_rehabilitacioja/)

Internet sources

https://www.ksh.hu

www.jozsefvaros.hu

Dr. Frigyer, László Lt. Colonel, assistant professor
Ludovika University of Public Service
frigyer.laszlo@uni-nke.hu

AS THE LAVA OF THE KRAKATAU!

Abstract
This paper describes the amazing development of crime geography in Hungary. In the last ten years, a virtually unknown field of study has taken off and is now becoming more and more widely known, not only at home but also abroad. The teachers at the Ludovika University of Public Service have played a huge role in this. The author presents the milestones in the development of the geography of crime from 2016 onwards.

Keywords: crime geography, ICGA, Ludovika University of Public Service, criminal geography

1. Introduction

I met Szabolcs Mátyás in 2015, and I have been in the same office with him for almost a decade. I admit honestly that I had not really heard of crime geography before, but since then I feel like I have witnessed the rise of a discipline. Perhaps "rise" is not the right word for it, perhaps "explosion" would be a more appropriate term to describe the journey that crime geography has made in recent times.

Krakatau is one of the most famous volcanoes on Earth, with one of the largest explosions. When I thought about the title, I suddenly remembered the devastating volcano in Indonesia from my geography studies in secondary school. This field of study was rising as fast as the lava of Krakatau when it erupted in 1883.

What makes this field extremely attractive and interesting to me is that it is not an abstract science, but a practical field. It can be applied in everyday investigations, it can help in forensic cognition (Angyal et al. 2017), it can assist the authorities in investigating crimes against property (Vajda 2024), and even cybercrimes (Packosz 2024).

In my study I have collected the milestones that best illustrate this rapid development. The milestones are presented in separate chapters to better illustrate the soaring geography of crime.

2. Methodology

In my research, I used mostly secondary sources, such as the archival issues of the Bűnözésföldrajzi Közlemények and the Criminal Geographical Journal, and the posts on the Facebook page of the International Criminal Geographical Association. In addition to the above research work, I read through the academic textbook Crime Geography and researched the MTMT and Google Scholar databases.

3. Results

3.1. Conferences

The first conference on the geography of crime was organised by the Criminal Section of the Hungarian Society of Police Sciences on 14 April 2016 at the Faculty of Law Enforcement of the Ludovika University of Public Service. The organizer was dr. Vince Vári, police lieutenant-colonel. The title of the conference was "Different region, different police? - or open questions of criminal geography and the measurability of police work". The scientific meeting was attended by dozens of theoretical and practical experts. Building on the success of the conference, the MRTT organised another conference on crime geography later that year. On 15 December 2016, the conference was entitled "The multifaceted city or the spatial characteristics of crime in Budapest". This was an even larger conference than the previous one. It was attended by the Chief of Police of Budapest, district captains and representatives of the municipal police. At the conference, speakers presented the differences and characteristics of the capital's crime geography (Mátyás 2023).

For a few years thereafter, no geography of crime conference was organised, but from 2020 onwards, an annual conference was organised jointly by the NKE and MRTT (two in the some years!) (Mátyás 2023).

Until 2023, the conferences had both English and Hungarian language sections, but due to a significant increase in the number of registrations, the organisers decided to separate the English and Hungarian language conferences in 2024, so from now on they will organise one Hungarian and one English language conference per year. Each year, the number of registrations has reached record levels and the range of participants has grown. In addition to the Law enforcement faculty and students from other universities in the country (e.g. University of Pécs, Óbuda University, Eszterházy Károly Catholic University, University of Oradea), while the English-language section has also attracted participants from China, Slovakia, Russia and Romania.

As far as the author is aware, no other country has previously organised a conference on the geography of crime.

3.2. International Criminal Geographical Association

Perhaps the biggest milestone was the establishment of the International Criminal Geographical Association (ICGA). It was founded on March 10, 2022, by NKE Law enforcement faculty members (Szabolcs Mátyás, János Sallai, Máté Sivadó, Miklós Tihanyi, Vince Vári). The non-profit organisation has rapidly grown in membership, with members from more than ten countries, including China and Turkey. The current president of the organisation is dr. Miklós Tihanyi.

The ICGA is not an organisation for its own sake, it was not founded to become one more scientific organisation in the world, but to promote the geography of crime. Since its foundation, it has organised conferences, competitions and contests, and has also become involved in publishing (see more in chapter 3.3).

3.3. Journals

It is vital for a discipline to have written documents that facilitate its scientific development. In the case of crime geography, this has not been the case in the past. Neither a textbook nor a journal. The lack of such a journal has been filled by the Law enforcement lecturers who have started a journal.

There are two crime geography journals in the world, one is the Bűnözésföldrajzi Közlemények (Ciminal Geographical Bulletin) and the other is the English-language Criminal Geographical Journal. Both journals have their roots in Hungary and were founded by the Law enforcement lecturers. The peer-reviewed scientific journals are published jointly by the ICGA and the Hungarian Law Enforcement Society. (The Bűnözésföldrajzi Közlemények is available at: https://rendeszet.uni-nke.hu/publikaciok/bunozesfoldrajzi-kozlemenyek)

The first journal, Criminal Geographical Journal, was founded in August 2019, followed by several issues a year. So far, more than forty articles have been published in the ten issues, which is certainly remarkable. The majority of the articles were written by the Ludovika University of Public Service, but there were also a number of articles by the faculties and researchers from other universities. In addition, there has been a significant number of submissions from foreign authors, with articles from China and Russia. More than half of the editorial board is made up of foreigners, all but the technical editors have academic degrees, two of them professors.

The Bűnözésföldrajzi Közlemények was launched in 2020. Nine issues have been published so far. The authors are mostly Hungarian, but in some cases articles in English by foreign authors have been published. As in the case of the English-language journal, all members of the editorial board hold a Ph.D. degree.

The editorial board is composed of representatives from several universities and several countries. The members of the editorial board from other countries all speak Hungarian.

For both journals, a selection of the best articles selected by the editorial board was published in 2023.

3.4. Competitions and tenders

It may seem surprising that a discipline would run competitions to promote itself. This has not deterred national representatives of the geography of crime, in order to promote it to a wider audience of young people.

In honour of Béla Földes, several competitions in Hungarian-language geography of crime have been held. The competition was conducted online. The organisers gave very little time to solve the problems, so it was practically impossible for anyone to use an unauthorised aid, as anyone who might have relied on it would not have had time to solve the problems. Only those who typed in their answers with virtually no thought were able to achieve results. During the online competition, everyone had to switch on the camera, which also ensured the fairness of the competition. In addition to students from Faculty of Law enforcement, the event also attracted entries from several universities.

The English-language geography of crime competition in honour of Horst Herold was held under similar conditions. In addition to Hungarian students, Erasmus students from abroad also took part in the competition and achieved good results.

The International Association of Crime Geography also organised essay writing competitions in both English and Hungarian. Experience so far has shown that the number of essays in Hungarian was higher, but the jury was able to evaluate a number of valuable entries in English as well.

3.5. Connecting with the scientific life

One of the most important tasks is to keep in touch with the scientific community. This is done through several channels by the actors in the field of geography of crime in Hungary. In the two online journals mentioned above, not only studies are published, but also the most important news from the Hungarian and foreign geography of crime. In addition to this, a Facebook page

helps to provide quick and up-to-date information, where the latest news is always posted (https://www.facebook.com/profile.php?id=100083572868172).

3.6. Higher education and the geography of crime

In order to promote a discipline, it is important that it has its own textbook and is taught as a university subject.

The Criminal geography course was first offered at Eszterházy Károly College in the academic year 2009/2010. The lecturer of the subject was Antal Tóth, who was the first person to obtain a Ph.D. degree in the field (Geography Teacher MA course). Starting from the academic year 2013/14, Szabolcs Mátyás offered an optional course "Criminal Geography" at the Institute of Geography of the University of Debrecen, and starting from the academic year 2014/15, an optional course "Applied Criminal Geography". Currently, the above two courses are offered at the Institute of Geography of the University of Debrecen, the course "Geography of Law Enforcement" at the MA in Criminalistics of the Ludovika University of Public Service, and the course "Criminal Geography" at the Doctoral School of Law Enforcement.

In 2020, an academic note entitled Crime Geography will be published for students, followed by an extended version in Hungarian in 2023 and in English in 2024. Both publications are available free of charge on the web.

Several researchers have obtained Ph.D. degrees in the field of criminal geography. They are listed below, with the year of the thesis and the institution that awarded the degree:

- Tóth, Antal (2007, University of Debrecen,
- Mátyás, Szabolcs (2011, University of Debrecen),
- Piskóti-Kovács, Zsuzsa (2014, University of Miskolc),
- Erdei, Gábor (2014, Ludovika University of Public Service),
- Zachar, Zalán (2022, Hungarian University of Agriculture and Life Sciences).

In 2023, it was also the topic of a habilitation lecture on the criminal geography ("The relationship between settlement structure and crime")

4. Concluding thoughts

In my study, I have reviewed the most important findings of research on the geography of crime in Hungary. I have introduced the journals Bűnözésföldrajzi Közlemények and Criminal Geographical Journal, mentioned the establishment of the International Crime Geographical Association and the competitions organised by the association, the English and Hungarian essay

writing competitions, and the online English-language Horst Herold and Hungarian-language Béla Földes crime geography competitions. In addition to the above, I have introduced the persons who have obtained Ph.D. degrees in the field of geography of crime and described the place of geography of crime in higher education.

Bibliography

Angyal, Miklós – Bezsenyi, Tamás – Bói, László – Farkasné Halász, Henrietta – Girhiny, Kornél – Nyitrai, Endre – Tirts, Tibor (2017): Tisztjelölt hallgatók a kriminalisztikai megismerés startkövénél (Egy szimulált baleset tanulságai). Magyar Rendészet 17(2): 27-66.

Mátyás, Szabolcs (2023): Bűnözésföldrajz (university book). International Criminal Geographical Association, Budapest

A Criminal Geographical Journal és a Bűnözésföldrajzi Közlemények korábbi lapszámai (https://rendeszet.uni-nke.hu/publikaciok)

Packosz, Nikiforosz (2024): Összefüggéstelen összefüggések – avagy egy bűneset (kiber)térbeli vázlata. Bűnözésföldrajzi Közlemények, 5(1-2): 9-18.

Vajda, Endre (2024): A Magyarországon elkövetett rablások és kifosztások forró pontos elemzése. Bűnözésföldrajzi Közlemények 5(1-2): 39-48.

Internet resources

URL1: https://rendeszet.uni-nke.hu/publikaciok

https://www.facebook.com/profile.php?id=100083572868172

www.mtmt.hu

https://scholar.google.com/

Kiss, Valentin Bence pol. lieutenant

Biharkeresztes Border Police Office

kissvalentin97@gmail.com

THE LAW ENFORCEMENT APPLICATION OF MAPS

Abstract

In my study, I examine an area that has received small attention: the use of maps for law enforcement purposes. The research presents historical milestones and the current legal framework. My study begins in the 19th century, at the point of divergence between law enforcement and military defence. This research paper is the first part of a series of articles.

Keywords: cartography, border policing, crime geography, law enforcement

1. Introduction

In the 19th century, Hungary transitioned into a nation-state, therefore it became essential to establish an independent law enforcement agency. Consequently, several processes were initiated, initially in a military-organized manner, which led to the integration of cartographic activities within the gendarmerie and border guard units. By examining the current situation, I will outline the use of maps for criminal investigations and the opportunities provided by current legislation.

2.1. The beginnings of law enforcement map utilization

The separation of law enforcement from military defence was a complex process, varying by country depending on historical, political, and cultural contexts. The need for a distinct law enforcement apparatus arose with the development of societies and the necessity of maintaining public order. Unlike the military, which focuses on external threats, law enforcement is grounded in democratic principles, rule of law, and the protection of individual rights. Hungary's emergence as an independent nation-state laid the foundation for distinguishing between external and internal threats. The state undertakes the obligation to meet the basic social needs, for which purpose the modern public administration was established.

The exercise of authority derived from state imperium is necessary to fulfil these obligations. In terms of fundamental human rights, the legal practice regarding military and police use of

force has been re-evaluated, resulting in a greater emphasis on respecting human dignity and protecting individual rights. During this transformation, legal frameworks were required to consider not only the potential extent of force used but also the transparency, proportionality, and legal certainty of said procedures (Finszter 2018).

Following Austro-Hungarian Compromise of 1867, it became essential to establish a legal system balancing citizens' rights and obligations while laying the foundations for the rule of law. The Kingdom of Hungary gained substantial internal autonomy within the Austro-Hungarian Empire, regaining legislative authority. The National Assembly regained its authority and the constitution was restored. Our country had its own parliament, responsible for domestic affairs, including education, culture, and local government.

During this period, Hungary lacked a unified organization responsible for maintaining public order and security. Crime rates surged, especially in rural areas, where outlaw gangs were instilling fear in villages. The gendarmerie was a military-trained but police-oriented organization, established by a parliamentary decree in 1881, which placed the police force under state control. The main task of the gendarmes was to protect public safety and order in the countryside, while the police safeguarded the security of cities and urban areas (URL1).

During World War I, the development of our public law slowed down, but as a result of the restoration, the process of bourgeois development did not stop. After the German occupation of our country in 1944 and the end of the fascist era, the working class took power, leading to the establishment of Hungary's single-party state system. Contrary to previous practices, the rule of law functioning of the police ceased, and its duties were taken over by military law enforcement and judiciary. The political transition of 1989–1990 provided new opportunities for democratic development, further accelerated by Hungary's accession to NATO in 1999 (Finszter, 2018).

Since the establishment of organized policing, law enforcement agencies have utilized maps, and their evolution reflects the modernization of policing itself. The earliest documented police use of maps dates back to the 19th century, when various cities established police organisations. The first Hungarian study in crime geography was conducted by Béla Földes in 1889. Examining crime statistics from the 1870s and 1880s, he found that the number of convicted individuals per 100,000 residents was the highest in Hungary's poorest regions (Tóth, 2007).

In his book "The Statistics of Crime", Földes wrote: "…it would be an exaggeration to deny the influence of geographical and climatic factors and attribute everything to the level of education; as we will soon see, each state has its own criminographic characteristics in summer and winter, which sufficiently proves the impact of natural factors. However, this influence is

only expressed under certain conditions, as humans are not unconditionally subject to these factors." (Földes, 1889) The legal foundation for police map utilization appeared in the 1941 Organizational and Service Regulations of the Royal Hungarian Gendarmerie, which emphasized situational awareness for law enforcement purposes. According to the regulations, "it is the primary duty of the station commander to acquire and expand local and personal knowledge, without which maintaining public security, conducting effective criminal investigations, and managing personnel is impossible." According to Annex 9, the station commander keeps a "Guard Post Description," which provides information about the general local and personnel conditions of the guard post.

The Guard Post Description classified territorial and social aspects into nine categories for the V. Gendarmerie District in Szeged:

1. Geographical location, area, population size. Historical landmarks, heroic graves, religious pilgrimages, national and weekly markets.
2. Terrain characteristics, soil and hydrological conditions, climate.
3. Transportation infrastructure. Major roads, railways, water routes, air routes. Railway, post, telegraph, and telephone stations.
4. Local government and judicial authorities, Royal District Court, Royal Court of Justice, Royal Prosecutor's Office, Juvenile Court, and chemical experimental stations. Nearby military command headquarters.
5. Settlement and demographic characteristics.
6. Language, religion, education, and political affiliations of the population. Schools, hospitals, bathhouses, and emergency stations which can primarily be considered in terms of rescue and assistance within the guard post.
7. Agriculture, industry, commerce. Factories, mines, and working conditions.
8. Public security conditions.
9. Notable individuals and large landowners within the district. (Szervezeti és szolgálati utasítás a Magyar Királyi Csendőrség számára 9. számú melléklete, 1941).

Although the Organizational and Service Instructions for the Hungarian Royal Gendarmerie, Annex 9, 1941 was based on the customs and technological level of its time, it established principles still applicable in modern law enforcement assessments.

The 1977 Regulations of the National Border Guard Commander designated situational awareness a separate chapter titled "Patrol Preparation for Duty." According to point 78, after

entering duty, "the patrol receives the combat task on an enlarged sketch or a terrain model in the service room..." (Hőr/4 BM HŐR országos parancsnokának szabályzata, 1977). Based on the chapter titled "Patrol Service," the patrol's tasks vary depending on the terrain, season, time of day, and weather conditions in order to ensure safe service and to make use of the terrain's features. The effectiveness of camouflage is determined by the specific combination of time of day, season, terrain, and weather. Ideal visibility conditions are also used by illegal border violators to approach the state border and choose the location for crossing. According to the regulations, increased caution must be exercised during border patrol service, using various camouflage tools, and movement must also adapt to the terrain's characteristics. At night, under limited visibility conditions, unnecessary use of light sources and reflectors should be minimized, and movement on the terrain must be silent. Proper selection of the terrain, quiet securing of equipment, and silent movement are essential for effective camouflage. In winter, snow coverage is beneficial for observation purposes, but it makes it difficult for patrols to conceal themselves and facilitates sound propagation. Patrols must use snow cover, avoid dark backgrounds, and move along paths where tracks are already visible. Forested and mountainous areas provide an ideal opportunity for illegal border violators to approach covertly, while also offering favourable conditions for camouflage of the patrol's activities. For situational awareness, information of the state border, the road network, and surrounding terrain features is essential. The regulation also includes methods for determining cardinal directions using instrumental (compass) and non-instrumental methods (sun, celestial bodies, terrain features). In the digital era, the application of analogue orientation methods is often undervalued, but determining cardinal directions based on celestial bodies offers many possibilities. The position of the Sun, Moon, and Pole Star can serve as a reference, which is particularly useful in situations when other methods are not available.

2.2. Contemporary use of maps in law enforcement

Law enforcement operations rely on the gathering, processing, and management of terrain-related data. A police operation is defined as "the entirety of the coordinated activities of the police, implemented through various forms of service and procedural actions, based on a unified concept and plan, according to the objective, task, place, and time, which aims to solve complex tasks related to crime prevention, law enforcement, public administration, and law enforcement responsibilities." (3 11/1998. /IV. 23./ ORFK utasítás a Magyar Köztársaság Rendőrségének Csapatszolgálati Szabályzata kiadásáról 20. pont) The key organizational element in police operations is the command unit, which directly plans the execution of the operation,

coordinates, and directs subordinates. For the preparation of the operation, the police chief issues an order, followed by task clarification and timeline assessment. After this, the commander responsible for the execution of the operation develops a concept. The concept includes a brief understanding of the situation and orientation to determine the feasibility of the plan. The purpose of the situation assessment is to organize and categorize the available data, considering the desired outcome.

Currently the operational situational assessments include:

1. Crime situation analysis:

The analysis of the general public safety influences the quantity and quality of the resources required for an operation. With knowledge of criminal contamination, offender profiles, as well as the probable movement direction and time relevant to border patrol, more effective and efficient strategies can be developed to ensure the success of an operation. Georeferenced data should be collected regarding the situation of illegal activities. This is supported by public reports, patrol reports, information provided by partner agencies, and the media.

2. Own resources and capabilities:

The number of personnel, as a fundamental factor, is closely related to the efficiency of resources and the optimal utilization of available capabilities. Without adequate personnel, even the most modern technical equipment and the highest level of training will result in limited success. A key aspect of determining our own situation is also the professional capabilities of the forces available.

3. Collaborating entities:

The public safety network holds significant importance from the perspective of cooperation. Its members include, the civil guard, municipal law enforcement, and civilian collaborators. In the public safety strategy of a municipality, it is essential to establish cooperation, in which the police must also be actively involved (Polyák 2023). During collaboration with partner authorities, it is necessary to address the clarification of the rules regarding jurisdiction and authority.

4. Public perception:

It is obvious that good public safety lies in the population’s interest. With this in mind, citizens living in or near an operational area can either assist or obstruct the success of a mission. The

concept must include relevant data on whether the population is expected to positively or negatively affect the execution of an operation.

5. Terrain analysis:

The analysis of the terrain extends to the quality of the road network affecting an operational area, its hydrography, coverage, the nature of the vegetation, its transparency, the ownership and possession characteristics of borderland properties.

6. Season, time-of-day, and weather:

The characteristics of an area are determined by the season, time of day, and weather conditions. The changing seasons not only bring visible transformations in our environment but also have a significant impact on the nature and effectiveness of border surveillance. Changes in nature also influence the order of society.

Effective criminal investigation, alongside law enforcement, depends on the quality of carefully analysed and evaluated data. Despite the legal framework allowing it, the use of cartographic support in crime analysis remains limited. According to the definition in the chapter "Practical Implementation of Operational Crime Analysis" in Appendix 4 of the Crime Analysis Regulations of the Hungarian Republic Police, issued by Directive 13/2001. (X. 2.) ORFK, "when studying a more extensive case, all important elements must be highlighted and placed in space and time. This can be done by recording events, locations, and corresponding timestamps on a map or chart. This way, the case file becomes easily reviewable in chronological order. In certain cases, small-scale maps (covering only streets) can be used." (13/2001. /X. 2./ ORFK utasítás a Magyar Köztársaság Rendőrsége Bűnelemzési Szabályzatának kiadásáról 3. pont) Maps can also be utilized in crime prevention. A useful method in predictive policing is the graphical representation of different criminal behaviours and offender profiles to identify various trends and clusters based on available data. Advanced predictive policing models, such as machine learning algorithms, incorporate past criminal data, environmental factors, and socio-economic indicators to predict where and when criminal activities are likely to occur (Harmati – Szabó 2020). Depending on the complexity of different crimes, varying amounts of data processing may be required. The continuously growing volume of information makes it impractical, inefficient, and costly to manage in paper format. As a result, digital databases and information systems are becoming increasingly significant.

References

Finszter Géza (2018): Rendészettan. NKE, Budapest

Földes Béla (1889): A bűnügy statisztikája. Budapest

Harmati Barbara – Szabó Imre (2020): A prediktív rendészet és az automatizált igazságszolgáltatás. Belügyi Szemle, 68(5): 23-37 (https://real.mtak.hu/108916/1/HarmatiBarbaraSzaboImreBelugyiSzemle2020.evi5.szam23-37..pdf)

Polyák Zsolt (2023): A közbiztonsági háló jelentősége a helyi rendészetben. Belügyi Szemle, 71 (6): 1023-1039 (http://real.mtak.hu/168119/1/50026-1-10-20230607.pdf)

Tóth Antal (2007): A bűnözés térbeli aspektusainak szociálgeográfiai vizsgálata Hajdú-Bihar megyében, Debreceni Egyetem, Debrecen

Legal documents and regulations

11/1998. (IV. 23.) ORFK utasítás a Magyar Köztársaság Rendőrségének Csapatszolgálati Szabályzata kiadásáról 20. pont

13/2001. (X. 2.) ORFK utasítás a Magyar Köztársaság Rendőrsége Bűnelemzési Szabályzatának kiadásáról 3. pont

Hőr/4 BM HŐR országos parancsnokának szabályzata (1977)

Szervezeti és szolgálati utasítás a Magyar Királyi Csendőrség számára 9. számú melléklete (1941)

Online sources

URL1: https://gocsejimuzeum.hu/blog/2021/04/tortenelmi-tenyek-a-csendorsegrol (Letöltés ideje: 2024.02.15.)

Mezei, Kitti Ph.D. associate professor
Ludovika University of Public Service, Faculty of Law Enforcement
mezei.kitti@uni-nke.hu

Gyaraki, Réka Ph.D. police Major, assistant professor
Ludovika University of Public Service, Faculty of Law Enforcement
gyaraki.reka@uni-nke.hu

TRANSFORMING LAW ENFORCEMENT WITH AI: INSIGHTS FROM THE EU AI ACT AND HUNGARY'S PERSPECTIVE[1]

Abstract

This paper examines the transformative potential and challenges of integrating artificial intelligence (AI) into law enforcement, focusing on the European Union's AI Act and its implications for Hungary. It explores the ethical and legal issues surrounding applications like predictive policing, real-time biometric identification, and offender profiling, emphasising the risks of data biases and violations of fundamental rights. While Hungary has yet to deploy AI in law enforcement, the paper identifies promising areas for adoption, including video analysis, behavioural profiling, and open-source intelligence gathering. The findings underscore the importance of balancing innovation with robust governance to safeguard rights and public trust. By analysing the intersection of criminal geography, technology, and law enforcement, this study highlights how AI can serve as a catalyst for smarter resource allocation and more effective crime prevention strategies.

Keywords

Artificial intelligence, EU AI Act, high-risk AI systems, law enforcement, predictive policing

1. Introduction

Integrating artificial intelligence (AI) into law enforcement presents both transformative opportunities and significant challenges. This paper examines the role of AI in policing within the framework of the European Union's AI Act, focusing on its regulatory implications and potential law enforcement applications in Hungary. By analysing the classification of AI systems as high-risk, the ethical concerns surrounding their use, and the current technological

[1] The research was supported by the European Union project RRF-2.3.1-21-2022-00004 within the Artificial Intelligence National Laboratory framework and by the János Bolyai Research Scholarship of the Hungarian Academy of Sciences.

capabilities, the paper explores how AI can enhance efficiency and decision-making while ensuring compliance with fundamental rights.

Cases involving law enforcement use have been mainly classified as high-risk AI systems. The AI Act defines law enforcement authority and law enforcement activities.[2] Importantly, the AI Act will exclude AI systems used for military, defence, or national security purposes from the scope of the AI Act, regardless of whether public or private entities utilise them [Article 2 (3)]. This exclusion is justified by both international law and the specific competencies governing defence and security within the EU. The exclusion is supported by Article 4(2) of the Treaty on European Union (TEU), which designates defence and national security matters as the sole responsibility of Member States. Additionally, the specificities of the Member States' defence policies, covered by Chapter 2 of Title V of the TEU, are subject to public international law. However, if these systems are also used for non-excluded purposes, such as civilian or law enforcement activities, they must comply with the AI Act. Conversely, AI systems developed for civilian or law enforcement purposes that are subsequently used for military, defence, or national security purposes are not subject to the AI Act. This allows entities engaged in national security, defence, and military activities to use AI systems without being affected by the regulation (Recital 24). Arguably, these rules create a loophole that allows Member States to exempt themselves from the rules for any activity they deem relevant for "national security" (Leufer et al. 2023).

2. The AI Act's risk-based approach

2.1. Forbidden AI systems in law enforcement

Following its risk-based approach, the AI Act proposes a category of prohibited AI systems. This entails a completely prohibited category (Title II), which includes the prohibition of real-time remote biometric identification for law enforcement purposes in publicly accessible spaces[3] with narrow exceptions where the use is strictly necessary to achieve the public interest,

[2] Law enforcement authority "means any public authority competent for the prevention, investigation, detection or prosecution of criminal offences or the execution of criminal penalties, including the safeguarding against and the prevention of threats to public security; or any other body or entity entrusted by Member State law to exercise public authority and public powers for the purposes of the prevention, investigation, detection or prosecution of criminal offences or the execution of criminal penalties, including the safeguarding against and the prevention of threats to public security"; law enforcement "means activities carried out by law enforcement authorities or on their behalf for the prevention, investigation, detection or prosecution of criminal offences or the execution of criminal penalties, including safeguarding against and preventing threats to public security."

[3] Publicly accessible space "means any publicly or privately owned physical place accessible to an undetermined number of natural persons, regardless of whether certain conditions for access may apply, and regardless of the potential capacity restrictions". In the context of the AI Act, a publicly accessible space refers to any physical area open to an indeterminate number of people, whether publicly or privately owned, and regardless of its use, such

which outweighs associated risks. These situations include searching for victims of crime, addressing threats to life or physical safety, and locating or identifying perpetrators or suspects of serious criminal offences (such as human trafficking or sexual exploitation or for the prevention of terrorist attacks) punishable by a custodial sentence or detention order of at least four years. Thus, the prohibition does not apply where these systems are used for any of the listed specific purposes because the severity threshold for such offences ensures that real-time biometric identification systems are proportionate and justified. In principle, relying on such an exception will require thorough assessments, technical and organisational measures, notifications and a warrant.[4] However, the AI Act allows the use of real-time and post-event biometric identification for law enforcement and private purposes under certain conditions in general, so there is no ban in these cases (Raposo 2022).

One of the major concerns with facial recognition technology is the lack of consent in collecting and storing individuals' biometric data. Another banned use case is databases based on bulk scraping of facial images (Sobel 2021) since there are cases in which specific harms stem from the online deployment of AI biometric systems (Georgieva – Hoekstra 2022). Bulk scraping of facial images can defined as the automated collection of large volumes of facial images and associated metadata from publicly accessible web sources, using algorithms or bots, typically to build or enhance facial recognition datasets, often without explicit user consent. These images are then used to train facial recognition systems or create massive facial image databases (see Solove 2024). An issue of considerable controversy revolves around the involvement of private companies in implementing these technologies. For example, in February 2020, media outlets revealed leaked documents indicating that Clearview AI had secured contracts with over 600 law enforcement agencies globally, including Europe (Sanz 2022). This technology equips users with the capability to potentially identify every individual they encounter in real-time, significantly enhancing law enforcement's ability to swiftly and accurately match faces against extensive databases. The system enables an investigating officer, for example, to submit an image of a person of interest for analysis and conduct a search within a database compiled by Clearview AI. This database purportedly contains publicly accessible images sourced from

as commercial, service, transport, or entertainment spaces (e.g., shops, banks, gyms, airports). Spaces remain publicly accessible if access requires fulfilling certain conditions (e.g., buying a ticket or prior registration). However, areas restricted to specific individuals by law or authority (e.g., workplaces, company premises, prisons) are not considered publicly accessible. Online spaces are excluded, as they are not physical.

[4] Real-time biometric identification is held permissible for law enforcement if the following prerequisites apply: a) *ex-ante* permission by a judicial authority; b) targeted search; and c) link with the investigation of committed serious crimes listed in Article 83(1) Treaty on the Functioning of European Union (terrorism, trafficking in human beings and sexual exploitation of women and children, illicit drug trafficking, illicit arms trafficking, money laundering, corruption, counterfeiting of means of payment, computer crime, and organised crime).

online postings, which may not necessarily pertain to the individual under investigation, raising concerns about privacy and the ethical implications of such technology (Gonzáles Fuster 2020). The AI Act will ban the use of predictive policing software to assess an individual's risk of committing future crimes based on personal traits. The final version of the ban is considerably weaker than that proposed by the EP in June. Such uses of AI-based tools in policing and criminal justice risk discrimination and a violation of fundamental rights, including the right to a fair trial and the presumption of innocence. Predictive policing usually encompasses various approaches (only some of which are prohibited), which can be broadly categorised into four types: predicting crimes by forecasting high-risk locations and times, identifying potential offenders at risk of committing or repeating crimes, creating profiles resembling those of past offenders, and predicting potential victims of crimes to identify vulnerable individuals or groups (Egbert - Leese 2020). Predictive policing systems have already been deployed in Europe, in Austria, Germany and Switzerland (EUFRA 2022).

2.2. High-risk AI systems in law enforcement

An AI system is considered high-risk either because it is a safety component of an already strictly regulated product group or because it is used in an area where it poses a significant risk of harm to the health, safety or fundamental rights of natural persons. However, the AI Act states that "any AI system referred to in Annex III shall not be considered as high-risk if they do not pose a significant risk of harm, to the health, safety or fundamental rights of natural persons, including by not materially influencing the outcome of decision making" [Article 6 (3)]. The cases exempt from the high-risk classification are narrow procedural tasks, improvements to the results of previously completed human activities, decision or outlier detection without replacing human assessments, and those in which the AI system is designed to detect decision-making patterns or deviations, not to replace or influence previous human assessments without proper review [Article 6 (3) a)-d)]. AI systems will be considered not to pose a significant risk of harm if they meet at least one of four criteria. Nonetheless, the AI Act also makes it clear that any AI system will automatically be considered to be high-risk if the AI system performs the profiling of individuals. General-purpose AI systems used as high-risk AI systems or integrated into them will require providers to take additional steps, too.

Annex III categorises post-biometric identification and emotional inference for law enforcement purposes as high-risk applications. As a result, law enforcement agencies must comply with stricter requirements if they plan to utilise these tools. As permitted by relevant EU or national law, biometrics encompasses remote biometric identification systems, excluding

AI systems used solely for identity verification. It also includes AI systems for biometric categorisation based on sensitive attributes and those used for emotion recognition.

High-risk AI uses also include law enforcement use cases since their actions involving certain AI systems can wield significant power imbalances, potentially leading to surveillance, arrest, or deprivation of individuals' liberty, impacting fundamental rights as guaranteed by the EU Charter of Fundamental Rights. These are, according to Annex III, AI systems intended to be used by law enforcement authorities or on their behalf or by Union institutions, bodies, offices or agencies in support of law enforcement authorities for assessing the risk of individuals becoming victims of criminal offences, employing polygraphs and similar tools, evaluating the reliability of evidence in criminal investigations or prosecutions, assessing the risk of individuals offending or re-offending, not solely based on profiling or assessing personality traits, characteristics, or past criminal behaviour, and finally, profiling individuals during the detection, investigation, or prosecution of criminal offences within the constraints of Directive (EU) 2016/680. According to the AI Act, predictive policing tools generally fall under the high-risk AI systems category.

AI technologies can revolutionise crime prevention and law enforcement by leveraging geospatial data and historical crime patterns to identify high-crime areas. This approach enhances the efficiency of resource allocation, improves public safety, and facilitates proactive policing strategies. Operational since 2017, Denmark's POL-INTEL project leverages the Gotham system developed by Palantir Technologies. This system integrates various data sources to create a mapping system that identifies areas with higher crime rates, assisting in strategic decision-making for law enforcement (Collier 2020). The Dutch police have implemented the Crime Anticipation System, which uses historical crime data and machine learning algorithms to predict where and when future crimes might occur. This approach enables the proactive deployment of police resources to anticipated hotspots (Ferguson 2017). Germany has utilised the Precobs (Pre Crime Observation System) software, which analyses past crime data to predict potential future incidents, particularly focusing on burglary patterns. This system has been employed in cities like Munich and Nuremberg, aiming to allocate police resources more effectively (Egbert 2018). By combining historical crime data, geospatial analysis, and AI-driven methodologies like hotspot analysis, law enforcement can transition from reactive policing to proactive strategies. These techniques enable safer communities while promoting efficient use of resources. AI-backed geospatial data was criticised for disproportionately targeting minority neighbourhoods. It is important to ensure that datasets are

free from racial, socio-economic, or geographic biases. A regular audit is needed for the AI models to prevent the reinforcement of systemic inequalities (Mohler et al. 2015; Brayne 2021). If AI systems lack high-quality training data, fail to meet performance standards or lack transparency, they may discriminate or produce unjust outcomes. This can hinder the exercise of procedural rights, such as the right to an effective remedy, a fair trial and the presumption of innocence (Gless 2020; Palmiotto 2018). Since the use of AI tools by law enforcement and other authorities risks creating inequality or exclusion, it is crucial to consider how these tools impact the defence rights of suspects, especially regarding the challenges in understanding how these systems work and the difficulties in contesting their results in court, particularly for individuals under investigation. Therefore, the AI Act requires that providers of high-risk AI systems observe comprehensive mandatory compliance obligations for risk mitigation, data governance, detailed documentation, record-keeping, human oversight, transparency, robustness, accuracy, and cybersecurity (Section 2).

2.3. Limited-risk AI systems

As provided by Article 50 of the AI Act, other, non-high-risk, limited AI systems are subject only to transparency obligations. They apply in specific cases and include obligations, such as the obligation to inform individuals when interacting with a chatbot, the obligation to disclose and clearly label where visual or audio deepfake content has been manipulated by AI, or the obligation to inform and obtain the consent of people who are exposed to permitted emotion recognition and biometric categorisation systems. The transparency obligations prescribed for providers in the AI Act will be applicable to only a small portion of deepfakes. The AI Act will not protect against the malicious use of deepfakes. There are further issues with these rules. It is problematic that in certain situations, they place the burden of risk onto users, allowing providers to avoid responsibility for their conduct (Helberger - Diakopoulos, 2023; Veale - Borgesius 2021). The transparency obligations in Article 50 will not be applicable to the use of AI systems for law enforcement purposes, as it would undermine the interests of crime detection, prevention and investigation.[5]

3. Law enforcement applications of AI in Hungary

The functions of the police are defined in Act XXXIV of 1994. These include, among others, border protection, combating terrorism, crime prevention and detection, the recovery of

[5] When notified, individuals may attempt to evade justice or alter their behaviour, potentially undermining the effectiveness of the technology.

property, and immigration and asylum-related tasks.[6] The roles in law enforcement, crime prevention, public administration, and related areas have been established to fulfil these legal obligations. Within this framework, the application of AI in domestic law enforcement is explored. AI and its development present not only challenges for law enforcement but also opportunities to enhance certain functions within the organization. The primary and most essential requirement is for law enforcement agencies to perform their duties professionally while adhering to current legislation. The critical question is: how can AI assist in achieving these goals?

AI's development and adoption have a significant impact—both positive and occasionally negative—across various fields, including industry, medicine, biological research, and economics. In these areas, AI, including advanced techniques such as deep learning, is being increasingly employed to mitigate human error and fatigue. Similarly, many countries have already incorporated AI into law enforcement as a decision-making and investigative tool for maintaining public safety and to support policing in public spaces and during events (e.g., through body cameras, facial recognition technology, etc.).

AI could also play a valuable role in predictive policing. While this approach is not yet widely used in Hungary, AI can act as an assistant rather than replacing physical police officers. The aim of this study is to examine the potential domestic applications of AI, alongside the international practices that have yet to be adopted in Hungarian law enforcement.

Currently, AI is not employed by Hungarian law enforcement agencies such as the Hungarian Police or the National Tax and Customs Administration. However, there is a clear intention to explore its use, and experts are investigate the possibilities. In the context of public order, traffic policing, and law enforcement investigations, IT tools capable of serving as evidence or facilitating evidence collection are already indispensable. Digitally recorded data offer significant potential, which could be further enhanced by AI-driven applications.

The use of AI by law enforcement agencies could increase efficiency and provide substantial support in areas such as facial recognition, video and voice analysis, public order protection, event security, traffic policing, and crime prevention. However, before implementing AI solutions, it is essential to assess the readiness and training of personnel to ensure successful adoption. Potential areas where AI could be deployed in law enforcement include:

- Internal document management and document search support
- Big Data analytics,

[6] Paragraph (1) of Article 1 of Act XXXIV of 1994 on the Police

- audio transcription,
- identification of still and moving images (e.g., based on behaviour or movement patterns),
- profiling,
- processing CCTV camera footage,
- enhancing airport security,
- image processing systems to support border protection,
- tools for sound, image, and text recognition and analysis.

A closely related area is using AI to support open-source data collection by law enforcement's criminal investigation units. Collecting, acquiring, and analysing open-source data from the Internet and available databases remains a significant challenge, but AI could significantly enhance these capabilities.

3.1. Possibilities for the predictive use of AI

One of the possibilities of AI is its use in a predictive process. As we will describe in the profiling section for offenders, it can indicate the possibility of re-offending, but it can also be used to detect most crimes, whether in the online space or the physical space. For many years, law enforcement has been using databases relevant to investigations. One such database is eModus,[7] the latest version of the former criminal records system.[8] The eModus manages the forensic characteristics of unsolved crimes in the unknown offenders section of the register (Juhász 2022). The known offenders' section of the register contains the details, description, forensic characteristics and the forensic characteristics of the perpetrators (suspects) of modus offences committed by them. Here, we deal with the pseudonyms or nicknames of the persons and their tattoos, which are of particular importance among the descriptive features and other particular characteristics.

Persons with tattoos who have committed an offence not covered by the modus collection are also included in the register with a restricted set of data (Juhász 2022).

The data stored in eModus can be used, among other things, for e-sight. Currently, in 2022, the development of this system and the verification of the factuality of the data entered is underway. The eModus system is one of the systems that is linked to the RobotZsaru system and which

[7] 12/2021 (IV. 30.) ORFK Instruction on certain tasks related to the operation of the electronic Modus Operandi Register

[8] It was a paper-based register, which was enacted by the Order of the Deputy Minister of the Interior of the MNK of 01/1967 on the Rules of Criminal Records (Chapter X).

allows law enforcement users to deduce new locations, victims and methods from previous offences and offender data, even in the case of serial offences.

3.2. Exploration possibilities using data and text mining

Law enforcement agencies can use common search engines available on the Internet, such as Google, Bing, Chrome, etc., to help them carry out their tasks. In addition to general internet searches, there is also the possibility of using different databases. One of these databases is the public register (address register, identity register, wanted persons register). The other database is the integrated case management system RobotZsaru, which is partially linked to these central registers, but other data stored in it are entered by law enforcement personnel. The content of these data records, decisions, the data and facts entered in them are recorded differently, and often the databases are not linked, or the necessary data and characteristics are not recorded.

Since the different databases are not interconnected (often due to legal restrictions), some data and information can be accessed, for example, by requesting data, sometimes with the permission of a prosecutor or a judge. For this reason, there is still a need for appropriate legislation on the databases used for detection purposes, but it would be timely to have proper 'interoperability' and 'transparency' between these data.

3.3. Other applications of AI in investigations and detection

AI can respond to specific, targeted searches for illegal content or criminally relevant information on the Internet. Based on images or videos of the searched items, the algorithm can, with appropriate programming and learning, search the information on the Internet in such a way that the content or information is filtered out of the large data set with the lowest possible error rate. This technology could be applied to identify child pornography, stolen objects/vehicles or even copyrighted content. The system is capable of performing recurrent searches on a given criterion, allowing even 24-hour continuous online monitoring of the content searched.

During investigations and detections, facial image recognition and video analysis would, among other things, filter and analyse illicit content, which would, for example, make the work of police officers easier, especially in the case of images and videos that are either psychologically stressful or often impossible to detect with the human eye.

In addition to facial recognition, the use of behavioural systems can help investigations.

Behavioural biometrics include:

- handwriting: handwriting image, dynamics,

- speaking tone,
- typing rhythm,
- movement: gait, changes in body position (Földesi 2017).

However, the efficiency of such technologies is influenced by environmental factors. In relatively sparse environments where individual movements are discernible, these tools perform well, but their effectiveness diminishes in densely populated or crowded settings, where distinguishing individual behaviours becomes significantly more challenging (Dobó – Gyaraki 2021).

Myo Thida and colleagues proposed two distinct modelling techniques to detect human activity and track individuals within crowds. The first approach, known as the macroscopic modelling technique, focuses on analyzing and understanding the collective movement patterns of people in crowded environments. This method examines the overall dynamics of crowd behavior rather than individual movements, providing insights into how groups of people navigate shared spaces. The second technique complements the macroscopic approach by targeting individual-level analysis, offering a more granular perspective on human activity within the crowd. Together, these methods provide a comprehensive framework for detecting and tracking human activity in complex, high-density scenarios, enabling applications in areas such as public safety, event management, and urban planning (Thida 2023).

3.4. The possibility of profiling in law enforcement and investigations

Profiling has the potential to improve the detection of different types of crime and to enable investigating authorities to model known and unknown offences and thus either detect or predict certain newer methods of offending that are likely to be used.

Profiling is a criminal analytical and evaluative activity used to detect unknown offenders, which is a combination of data already obtained in the course of an investigation, data from previous and similar crimes collected and organised specifically for this purpose, and scientific experience, mainly of a psychological nature, which can be obtained by other means, to provide investigators with an insight into the internal and external characteristics of the offenders. The profile drawn up in advance provides a typological picture of the offender, which can be used to narrow down the pool of potential perpetrators (Kiss 1995).

The literature on profiling, human profiling, is still mostly psychological, i.e. in certain situations, such as during interrogations, the perpetrator's body language, use of language (idioms, dialect), family and social relations, etc. However, in our country, the so-called specific profiling (profile analysis) has only been carried out in relation to the crime of homicide.

It is called specific profile analysis when a hypothetical picture of an unknown perpetrator of a specific crime is developed. It aims to narrow down the possible offenders based on the information obtained to describe the physical, psychological and sociological characteristics of the offender and his past and expected future behaviour (Istanoviszki 2012).

3.5. The applicability of AI in the field of public order, public safety and traffic policing

The use of facial recognition, image recognition and video analysis systems are appropriate in the fields of public order, public security and traffic policing. Over the last decades, the presence of public cameras in public spaces, public institutions, shopping centres, public transport, and on busy and less busy roads has become more and more natural. They can help in investigations in the event of crime, accidents or events, as they not only monitor but also record and store the footage for a short period of time, in accordance with the law. However, the examination of these recordings and the detection of the incriminated event or person is time-consuming and manpower-intensive, and there is a greater possibility of human error. Traffic and risk screening can often be used without human intervention to find the searched, or wanted person in a crowd, or even if you signal an accident risk situation, the presence of a device dangerous to public safety, AI can provide the opportunity to carry out the necessary analyses without bias and without distractions or misleading situations.

Two methods are commonly used for face recognition: the pattern-based (or photometric) method, where global features of the face or parts of the face (e.g. eyes, mouth) are compared with stored patterns, and the geometric-based method, where certain details of the face (eyes, nose, chin, etc.) are analysed based on their relative positions and dimensions (Németh – Tóth 2019).

In certain locations or objects, in certain situations, in certain cases, the face, voice, movement or even biometric identification of persons can be of great importance where access is restricted or subject to prior verification. Examples of this are AI-driven systems used in airport passenger screening in several countries, which in addition to identifying persons, also examine their behaviour and facial expressions, and dedicated IT applications that can screen out passengers at risk based on their answers to questions about entry into the country.

In traffic, it can play an essential role in predicting accident-prone locations and vehicle congestion, but also in border protection, anticipating migration flows, marking a more vulnerable border section, and detecting illegal border crossings at night, as these algorithms can work with a much lower error rate.

3.6. Digitisation applications currently available

Compact, modular search/text mining/analysis/evaluation systems using AI are now widely available and can quickly and efficiently process virtually any amount of data, regardless of its format, structure, language or form. Examples of AI applications have already been available in our country including decision-support or signalling AI applications already used by financial institutions to flag account numbers and financial flows that are at high risk of money laundering and fraud, thereby enabling, among other things, financial institutions to meet their obligations to prevent terrorism and money laundering.

These applications, already developed and in use, are able to analyse the detected criteria in relation to the criteria or directions given. In law enforcement, this method will make static databases, which until now have been operated independently, processable and capable of providing correlations and results that could never have been obtained using human resources alone. A comprehensive search/analysis/evaluation system of this kind would provide an opportunity to restructure the already traditional and outdated analysis/evaluation activities while supporting the work of specialised crime prevention, detection and investigation services with increased efficiency.

It is also necessary to talk about the disadvantages of the use of AI in the home country because it is easier to deduce from this which areas AI would be indispensable. In addition to the positive potential of using AI in offender profiling, there can also be drawbacks. While discriminatory and other negative perceptions of a person are formed based on experience or external factors, data on the skin colour, gender identity, and religion of offenders can be more prominent in the database (e.g., creole colour as a definition of skin colour may not only apply to Roma identity.) In New York, a commission on AI found that "AI in decision-making "can help increase efficiency in some areas", but also noted that the increasing use of facial recognition and other algorithm-driven technology in law enforcement and immigration control risk deepening racism and xenophobia and could lead to human rights abuses." (Nick-Cumming 2020)

A further disadvantage of the aforementioned specific profiling is that the AI may make racist assumptions about certain ethnic groups, age, and gender, which may undermine confidence in law enforcement and investigations, mislead investigations and thereby cause greater harm when recording the transcripts of suspect interviews, it is possible to take into account not only the personal data of the person interviewed but also other external characteristics (height, gender, eyes, hair and skin colour, tattoos, gait, etc.) as well as their education, occupation, and marital status.

First of all, we feel it is necessary to clarify that one of the most important steps towards the application of AI has been taken, as there is a clear positive attitude from organisations and authorities. Understanding the (near) future application of AI is inevitable for law enforcement professionals, not only because of the possibility of its use within the organisation but also because of the crucial importance that can be attached to the investigation of crimes committed using AI or the damage and accidents caused by self-driving cars, drones, etc., which are increasingly being mentioned.

In any case, the first thing that needs to be done is to change the legislation, which would allow databases to become interoperable without or with a shortening of the lengthy authorisation procedures in certain cases (sometimes 1-2 days or even 1 week, depending on the workload of the prosecution services), even allowing AI to decide on the granting of authorisations.

The full standardisation of the systems used by law enforcement agencies will be necessary, which would make it easier to train AI, and, after the creation of the appropriate legal framework, the preparation of simplified interrogations, protocols, and expert opinions, which should be filled in, even in the form of questionnaires, instead of long descriptions.

4. Summary

The paper explores the integration of AI into law enforcement, focusing on the European Union's AI Act and its implications, particularly in Hungary. It examines the opportunities, risks, and regulatory challenges associated with deploying AI in policing and crime prevention. One significant focus is the EU AI Act, which categorises law enforcement AI applications as high-risk but exempts systems used for military, defence, or national security purposes. This creates a regulatory gap, as AI systems designed for civilian use could be repurposed for exempt activities without oversight.

The publication delves into prohibited and high-risk AI applications under the AI Act. Notably, the use of real-time biometric identification in public spaces is banned, except under specific conditions such as preventing terrorism or addressing severe public safety threats. Similarly, predictive policing based on personal traits is prohibited due to concerns over discrimination and violations of fundamental rights. High-risk classifications cover tools like post-event biometric identification and criminal profiling systems, which pose challenges in ensuring fairness, transparency, and non-discrimination. Integrating criminal geography with AI enhances law enforcement by using tools like geospatial analysis and hotspot mapping to identify crime patterns, optimise resource allocation, and improve community safety.

In the Hungarian context, while AI has yet to be implemented in law enforcement, the paper outlines potential application areas. These include document management, behavioural analysis, video and image recognition, predictive policing, and open-source intelligence gathering. However, significant challenges remain, such as the lack of interoperability between databases and the need for enhanced legal and technical frameworks.

The paper also explores the potential of AI in offender profiling and predictive capabilities. AI systems could improve the integration of psychological and forensic data for crime detection and prevention. However, the risk of biases in AI outputs raises concerns about discriminatory practices, which could erode public trust and compromise investigative processes.

Technological applications discussed include AI-driven tools for analysing surveillance data, managing traffic, and predicting high-risk situations. Systems like eModus and RobotZsaru demonstrate initial steps in integrating AI into Hungarian law enforcement by enabling pattern recognition and linking criminal databases.

The ethical risks of using AI are a critical concern. Issues such as biases in data, privacy violations, and discriminatory outcomes underline the need for robust governance. The publication highlights the importance of legal reforms, transparency, and oversight to address these challenges effectively.

In conclusion, the paper emphasises that while AI offers significant potential to enhance the efficiency and effectiveness of law enforcement, its deployment must be carefully managed. A balanced approach is essential to harness innovation while safeguarding fundamental rights and maintaining public trust.

References

Brayne, S. (2021): Predict and Surveil: Data, Discretion, and the Future of Policing. Oxford University Press.

Collier, B. (2020): Intelligence-led Policing: Balancing Public Safety and Privacy. Policing and Society, 30(4), 401–420.

Dobó, J. – Gyaraki, R. (2021): Possibilities of the use of artificial intelligence in the field of law enforcement. Magyar Rendészet, No. 4.

Egbert, S. – Leese, M. (2020): Predictive policing and its origins. Routledge.

Egbert, S. (2018): Predictive Policing and the Politics of Patterns. Surveillance & Society, 16(1), 72–91.

EUFRA: EU Agency for Fundamental Rights (2022): Bias in algorithms – Artificial intelligence and discrimination. Publications Office of the European Union.

Ferguson, A. G. (2017): The Rise of Big Data Policing: Surveillance, Race, and the Future of Law Enforcement. NYU Press.

Földesi, Krisztina (2017): The applicability of biometric identification procedures in police work. Doctoral thesis. Budapest, Óbuda University.

Georgieva, I. – Timan, T. – Hoekstra, M. (2022): Regulatory divergences in the draft AI Act – Differences in public and private sector obligations. https://www.europarl.europa.eu/RegData/etudes/STUD/2022/729507/EPRS_STU(2022)729507_EN.pdf

Gless, S. (2020): AI in the courtroom: a comparative analysis of machine evidence in criminal trials. Georgetown Journal of International Law, 51(2), 195–253.

González Fuster, G. (2020): Artificial intelligence and law enforcement. https://www.europarl.europa.eu/RegData/etudes/STUD/2020/656295/IPOL_STU(2020)656295_EN.pdf

Helberger, N. – Diakopoulos, N. (2023): ChatGPT and the AI Act. Internet Policy Review, 12(1). DOI: https://doi.org/10.14763/2023.1.1682.

Istanovszki, L. (2012): Crime Analysis in Modern Law Enforcement. Patrocinium, Budapest, p. 62.

Juhász, Gy. (2022): The future of data collection for criminalistics, the electronic Modus Operandi Register and research possibilities. Belügyi Szemle, No. 2022/1.

Kiss, A. (1995): Profiling as a new criminological method? In: László Pusztai (ed.) Criminology and Criminalistics Studies 32. OKRI, Budapest, pp. 217–233.

Leufer, D. – Rodelli, C. – Hídvégi, F. (2023): Human rights protection…with exceptions: what's (not) in the EU's AI Act deal. https://www.accessnow.org/whats-not-in-the-eu-ai-act-deal/ Accessed 5 March 2024.

Mohler, G. O., et al. (2015): Randomized Controlled Field Trials of Predictive Policing. Journal of the American Statistical Association.

Németh, A.– Tóth, G. (2019): Application of facial recognition systems. Internal Affairs Review, 67(1), 129.

Nick-Cumming B. (2020): U.N. Panel: Technology in Policing Can Reinforce Racial Bias. New York Times, 07.12.2020.

Palmiotto, F. (2018): The black box on trial: the impact of algorithmic opacity on fair trial rights in criminal proceedings. In M. Ebers – M. Cantero Gamito (Eds.) Algorithmic governance and governance of algorithms. Springer.

Raposo, V. L. (2022): The use of facial recognition technology by law enforcement in Europe: a non-Orwellian draft proposal. European Journal on Criminal Policy, 29, 515–533.

Sanz, M. B. L. (2022): About ClearviewAI's mockery of human rights, those fighting it, and the need for EU to intervene. https://edri.org/our-work/we-need-to-talk-about-clearview-ai/

Sobel, B. L. W. (2021): A new common law of web scraping. Lewis & Clark Law Review, 25(1), 147–207.

Solove, D. J. – Hartzog, W. (2024): The Great Scrape: The Clash Between Scraping and Privacy. 113 California Law Review (forthcoming 2025). Available at SSRN: https://ssrn.com/abstract=4884485 or http://dx.doi.org/10.2139/ssrn.4884485

Thida, Myo, et al. (2013): Contextual Analysis of Videos: The Detection of Events and Activities. Springer. DOI: 10.1007/978-1-4471-5288-3.

Veale, M. – Borgesius, F. (2021): Demystifying the draft EU Artificial Intelligence Act: analysing the good, the bad, and the unclear elements of the proposed approach. Computer Law Review International, 22(4), 97–112.

Abstracts of the 5th criminal geographical conference

András, Lehel Hunor police captain, press officer
Jász-Nagykun-Szolnok County Police Headquarters
&
Bélai, Gábor police captain, master teacher
Ludovika University of Public Service

Recording of police actions - an organisational view

With the rapid digital development of recent years, mobile phones have also developed a lot and become available to many. This clearly has an impact on police actions. Perhaps the introduction of body cameras (BWC) has an even greater impact, not only on police measures, but also on the organizational culture of the police. Overseas and in several European countries, body cameras are part of police equipment. Numerous international studies have proven the positive effects of body cameras, but the Hungarian police have only been testing these devices for a few years. Body cameras were first tested in Hungary in 2015 at the Budapest Police Headquarters. Not only were body cameras tested, but service cars were equipped with industrial tablets and cameras to record images and the audio of police actions. The footage recorded with the image and audio recording equipment could have been used in criminal and misdemeanor proceedings initiated for crimes and violations committed at the scene, and the police hoped that these tools would reduce the number of violent acts against police officers, increase the law-abiding behavior of the police, and raise the standard of professional work. Finally, industrial computers and video as well as audio recording equipment installed in service vehicles were removed from the vehicles and were not introduced into the Hungarian police for various reasons. However, the Police Act still provides for the possibility of making video and audio recordings. Body cameras have not yet been uniformly introduced in the Hungarian police, but in response to a journalist's inquiry in 2025, the communications service responded that there were 143 working body cameras on law enforcement police officers.

Keywords: police actions, body cameras, image and sound recording, organizational culture

Dr. Balláné Dr. Füszter, Erzsébet police colonel, professor emerita
Ludovika University of Public Service

A criminal geography approach to the drug issue

Three plants (the poppy, the hemp and the coca bush) are considered to be the starting materials for the most commonly used illicit psychoactive drugs (heroin, cannabis and cocaine).
Their production and the geographical location of the main trafficking routes used for their transport depend essentially on the location of cultivation, which is determined primarily by where the plant can be grown in sufficient quantity and quality, with the right active ingredient content, economically and in a relatively permissive social environment.
This is the reason why, in addition to social factors, geobotanical aspects are of crucial importance in the production of drugs of plant origin. The „comfort level" of a plant is essentially determined by climatic and soil characteristics.
The main heroin and cannabis producing countries are mostly in Central Asia, South-East Asia and North Africa, but as both poppy and hemp are characterised by their ability to grow in good quality almost everywhere in the temperate zone, the potential cultivation and production is not strictly limited to a few regions, but is geographically very broad. In contrast, the cultivation of coca shrubs with sufficient active ingredient content is almost exclusively restricted to the eastern slopes of the Andes.
Despite the fact that drug trafficking is a worldwide phenomenon, there are some special places and routes that are of particular forensic importance in the fight against drug crime.

Keywords: criminal geography, drug, crime, heroin

Dr. Horváth, Orsolya Ph.D. adjunct professor
University of Pécs

3D Geovisualization in Forensic Investigations

3D geovisualization enhances forensic investigations by integrating Geographic Information Systems (GIS) with advanced visualization techniques. Using methods such as terrestrial laser scanning (TLS), close-range photogrammetry (CRP), and LIDAR, crime scenes can be reconstructed with high spatial accuracy, surpassing traditional 2D documentation methods.

This technology improves evidence interpretation, allowing legal professionals to analyze spatial relationships and crime scene dynamics more effectively. Research suggests that while traditional 2D documentation provides a comprehension rate of 70-80%, 3D models increase this to nearly 90%, contributing to fairer legal proceedings.

Despite its advantages, challenges remain, including high costs, technical complexity, and legal restrictions on UAV (drone) usage. Efficient data processing is also crucial for maximizing forensic applications.

Keywords: 3D geovisualization, forensic science, crime scene reconstruction, GIS, LIDAR, photogrammetry, legal evidence.

Dr. Lippai, Zsolt Sándor Ph.D. police lieutenant-colonel, assistant lecturer

Ludovika University of Public Service

Geographical aspects of security and crime during a visit by the Pope

The presenter, as a practicing law enforcement professional, takes the reader behind the scenes of the geographically well-defined security of a domestic papal visit, giving an insight into its incredibly complex implementation. His presentation examines some of the assassination attempts on popes, the personal protection of the Holy Father, the preliminaries of a papal visit, the activities of state and non-state actors in the security of the visit, and some of the specific elements of the visit. The details of Pope Francis' visit to Budapest in 2021, convey the papal message that "*I wonder if I could come next year or the year after, because there is so much of value for the Hungarians...*"

Keywords: Pope Francis in Hungary, assassinations, security, drone surveillance, securing the visit, state and non-state actors

Dr. Nyitrai, Endre PhD associate professor

Ludovika University of Public Service

The relationship between network research and the geography of crime

Network research is used in many fields, but it is also important in the field of law enforcement, as the main catalyst of investigations, which can be used to speed up the flow of information.

The toolbox of network research, combined with the knowledge of crime geography, enables perpetrators and events, as well as criminally relevant geographic locations to be connected and connections to be explored.

However, data, data analysis methods, programs, and the application of artificial intelligence are essential for network research. During the investigation, data can be generated in a number of ways, such as by smart devices, which, if connected to a network, are also capable of communicating with each other, thereby continuously providing data related to their operation, use and situation, which can be significant from a criminal and crime geographical point of view. Devices connected to the Internet can communicate and share data without human intervention. The purpose of the presentation is to describe the smart devices that, when connected to a network, can serve the security of smart cities and, at the same time, the detection of crimes and the identification of perpetrators.

Keywords: Smart city, smart police, IoT, network research, geography of crime

Rucska, András police major, master teacher

Ludovika University of Public Service

Possibilities of applying new forensic procedures at the city and county level

In our country, there are different levels of criminal technical departments. The type of crime depends on which unit is represented at the scene. The Municipal (District) Police Headquarters' Criminal Investigation Departments/Divisions do not have the resources and criminal investigation equipment that the County Police Headquarters' Criminal Investigation Departments at the second level have.

The "top authority", the Criminal Technical Department under Riot Police, National Bureau of the Investigation, has an outstanding equipment park and expertise, even compared to the county departments - and therefore even more options. The potential for interoperability at the city and county levels in terms of tools is greatly influenced by the availability of material resources and the provision, acquisition and application of knowledge of tools and various procedures that may be considered new.

My presentation – in addition to presenting the criminal technology tools operated at different levels – highlights the possibilities available in order to help the criminal technicians to the success of the investigation with modern methods that fully meet today's expectations, even at

the city level, in such a way that special financial expenditure should not be necessary. I will present one of the emerging methods of visual representation, photogrammetry, and the application of this method during field visits.

Keywords: criminal technique, new criminal technology tools, photogrammetry, crime scene, evidence

Sidló, Mariann Ph.D. student

Ludovika University of Public Service

The criminal geographic aspects of Dr. Jenő Unger's writings on investigation

Dr. Jenő Unger, as a police officer and the head of the department of criminalistics at the Academy of Law in Eger, wrote numerous scientific and popularizing articles, including on investigative issues. Through the criminal geographical aspects of his articles on investigation written in the thirties and forties of the last century, we can gain insight into the policing issues of the given period, which can serve as lessons for today. In the case of disappearances, finding the causes can answer the question of where the person who disappeared may have gone. This also has an impact on the necessary measures, such as the drafting of the wanted document or, if necessary, the notification of the competent authorities, such as border guards, and other relevant organisations. Or, in case of getting lost, preparing the search for the missing person and providing assistance. It is also important to take into account that the missing person may have committed a crime, so it is also very important to compare the characteristics of the person with the crimes of the given and surrounding areas in order to detect a possible connection.

Keywords: Unger Jenő, criminal geography, law enforcement, Eger

News from the world of the Hungarian and international criminal geography

International Criminal Geographical Association

Call for competition

the International Criminal Geographical Association

2nd Horst Herold international criminal geographical competition

Dear Colleagues!

The International Criminal Geographical Association is organizing an online international criminal geographical competition for the second time. We welcome applications from the university students who would like to compare their knowledge of criminal geography with other students.
The purpose of the competition is to popularize criminal geography and give all students, who wish to compete, an opportunity to give an account of their current level of knowledge.

Deadlines:
Competition registration deadline: 15th April 2024
Date of the competition: 25th April 2024, 14.00-15.00 pm
Venue: online (via Microsoft Teams)
Participation is free!

Recommended literature:
Mátyás, Szabolcs (2024): Crime Geography
https://real.mtak.hu/204407/1/Crime_Geography_MatyasSzabolcs.pdf

The first three winners of the competition will receive a certificate.
If you would like to participate in the competition, please send us an e-mail to the following e-mail address till 15th April 2024 (mszabolcs1975@gmail.com).

Organising committee:
Dragana Ćvorović Ph.D. associate professor (University of Criminal Investigation and Police Studies)
Gabriella Ürmösné Simon Ph.D. associate professor (Ludovika University of Public Service)
György Szabados Ph.D., associate professor (University of Debrecen)
Krisztián Szabó Ph.D., associate professor (University of Debrecen)
Krasnova, Kristina Aleksandrovna Ph.D., associate professor (North-West branch of the University of Justice named after V.M. Lebedev, Saint Petersburg)
Krisztina Keller Ph.D., associate professor (Budapest Corvinus University)
László Bói assistant professor (Ludovika University of Public Service)
Máté Sivadó Ph.D., associate professor (Ludovika University of Public Service)
Miklós Tihanyi Ph.D., associate professor (Ludovika University of Public Service)
Róbert Berei assistant professor (Ludovika University of Public Service)
Szabolcs Mátyás Ph.D., associate professor (Ludovika University of Public Service) (head of the organising committee)
Vince Vári Ph.D., associate professor (Ludovika University of Public Service)
Zoltán Bujdosó Ph.D. professor (Hungarian University of Agriculture and Life Sciences)

Conditions of publishing

Length of paper: max. 40 000 characters with spaces
CGR is an English-language journal. Either US or British/Commonwealth English usage is appropriate for manuscripts, but not a mixture of these.

Word process
sing formats: MS Word (docx, doc)
Page layout size: A4
Font type: Times New Roman, font size: 12 pt.
Abstract: 200-300 words
Keywords: 4-6 maximum
References style in text: 10 pt, footnotes
References: at the end of the paper in alphabetical order (TAYLOR, Tom (2018))
Picture format: JPG
Authors' name: main author must be underlined
Citation: APA format

Potential topics might include:

- Crime and GIS
- Crime and analytical work
- Predictive policing
- Geographical features and crime
- Spatial criminalistic methods
- Criminology in spatial aspect

What kind of work do we wait for?

- Original articles
- Critical reviews
- Surveys
- Opinions

The journal is published only in online version.

4 volumes are issued a year

Peer review

The CGR operates a single blind review process. All contributions will be initially assessed by the editor for suitability for the journal. Papers deemed suitable are then typically sent to a minimum of two independent expert reviewers to assess the scientific quality of the paper.

Title page information

The title should be informative, and please avoid abbreviations.

Authors' names: Be kind clearly indicate the given name(s) and family name(s) of each author. Provide the e-mail address, work of place and academic or scientific title.

For example:

Tom Taylor Ph.D. assistant professor

University of London (England)

tom.taylor@gmail.com

We do not accept papers with poor English, and mind the grammar and the word order as well! Before forwarding the publication to the editorial stuff, please check the English grammar thoroughly by yourself, and by another person who has at least C1 level of English, native speaker, or a teacher of English! If you use AI for translation, please check the whole translation again, for it may contain grammatical mistakes as well. We reserve the right to send the papers back, if it is full of grammatical mistakes and sounds "Hunglish".

Please do not use highlights in your paper!

Impresszum / Impressum
Kiadó / Publisher: Magyar Rendészettudományi Társaság Bűnözésföldrajzi Tagozat / Hungarian Association of Police Science Criminal Geographical Section
Cím / Address: 1089 Budapest, Diószegi Sámuel u. 38-42.
A kiadásért és szerkesztésért felelős személy / Responsibles for publishing and editing: Dr. Mátyás Szabolcs / Dr. Szabolcs Mátyás
Kapcsolat / Contacts: criminalgeography@gmail.com
web: www.rendeszet.hu