



ORGANISED VEHICLE CRIME IN EUROPE

BARRIERS TO PREVENT VEHICLE THEFT AND ONLINE
DISTRIBUTION OF STOLEN VEHICLES AND VEHICLE PARTS



Organised vehicle crime in Europe

Barriers to prevent vehicle theft and online distribution of stolen vehicles and vehicle parts

Authors

- **Dr. Atanas Rusev**, Director, Security Program, Center for the Study of Democracy
- **Tihomir Bezlov**, Senior Fellow, Security Program, Center for the Study of Democracy
- **Vladislav Krastev**, Analyst, Security Program, Center for the Study of Democracy
- **Dr. Jelle Jansens**, Professor, Institute for International Research on Criminal Policy, Ghent University
- **Catherine Monbailliu**, Researcher, Institute for International Research on Criminal Policy, Ghent University
- **Dr. Sonja John**, Researcher, Berlin School of Economics and Law
- **Prof. Klaus von Lampe**, Professor, Berlin School of Economics and Law
- **Dr. Nacer Lalam**, Head of Studies and Research, Institute of Advanced Studies of the Ministry of the Interior of the French Republic

- **Dr. Fiamma Terenghi**, Lecturer, University of Manchester
- **Dominique Rademaker**, Counselor, Centrum voor Criminaliteitspreventie en Veiligheid, The Netherlands
- **Lienke Hutten**, Counselor, Centrum voor Criminaliteitspreventie en Veiligheid, The Netherlands
- **Joeri Vig**, Counselor, Centrum voor Criminaliteitspreventie en Veiligheid, The Netherlands
- **Veronica Marchio**, Researcher, University of Bologna, Italy

Editorial Board

- **Dr. Jelle Jansens**, Professor, Institute for International Research on Criminal Policy, Ghent University
- **Catherine Monbailliu**, Researcher, Institute for International Research on Criminal Policy, Ghent University



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Introduction

Organised property crime is considered to be a significant criminal market affecting virtually all members states of the European Union. Organised property crime is reportedly being committed by highly mobile organised crime groups (MOCG). These groups have been engaging in various forms of property crime, such as motor vehicle theft throughout Europe. At European level, ongoing initiatives are supporting member states in the fight against organised property crime. Nonetheless, to date still little is known on the logistical processes of motor vehicle theft across EU member states and in Europe as a whole. Within this context, this project aims at enhancing the knowledge of organised property crime in the form of motor vehicle crime, which includes motor vehicle theft and the sale of stolen vehicle parts.

The partners of this project analysed the logistical process of motor vehicle theft and stolen vehicle parts in six EU member states: Belgium, the Netherlands, Bulgaria, France, Germany and Italy. The findings were published in a country report. This country report formed the basis for a national barrier model. The national barrier model also has elements that apply at the European level. These elements, from the six national barrier models, are combined into one European barrier model on motor vehicle theft and stolen vehicle parts.

In the next paragraphs motor vehicle (parts) theft in Europe is discussed as well as the situation of motor vehicle theft and stolen vehicle parts in these six countries. For the country data, the registered number of stolen vehicles is used. Furthermore, it is important to take into account that the data of the six countries rely on interview data. More information regarding the specific country can be found in the [country reports](#).

Motor vehicle theft in Europe

Motor vehicle crime includes both the theft of the vehicle as well as stolen vehicle parts. The definition of motor vehicle theft is the removal of a motor vehicle without the consent of the owner of the vehicle. This excludes robbery of a car or vehicle.

Within the European Union motor vehicle theft appears to be stable or declining (Eurostat Crime Statistics, 2022).

Figure 1 shows the number of stolen vehicles in 2021. As seen in the figure Iceland, Estonia and Montenegro are countries with the lowest amount of (registered) stolen cars. The countries with the highest amount of (registered) stolen cars are Spain, Italy, the Netherlands, Germany and Turkey.

These numbers of stolen vehicles are lower than the number of (registered) stolen vehicles in 2016 (see [figure 2](#)). In 2016 the highest amount of (registered) stolen vehicles was more than 160,000, while in 2021 the highest amount of (registered) stolen vehicles was around 110,000.

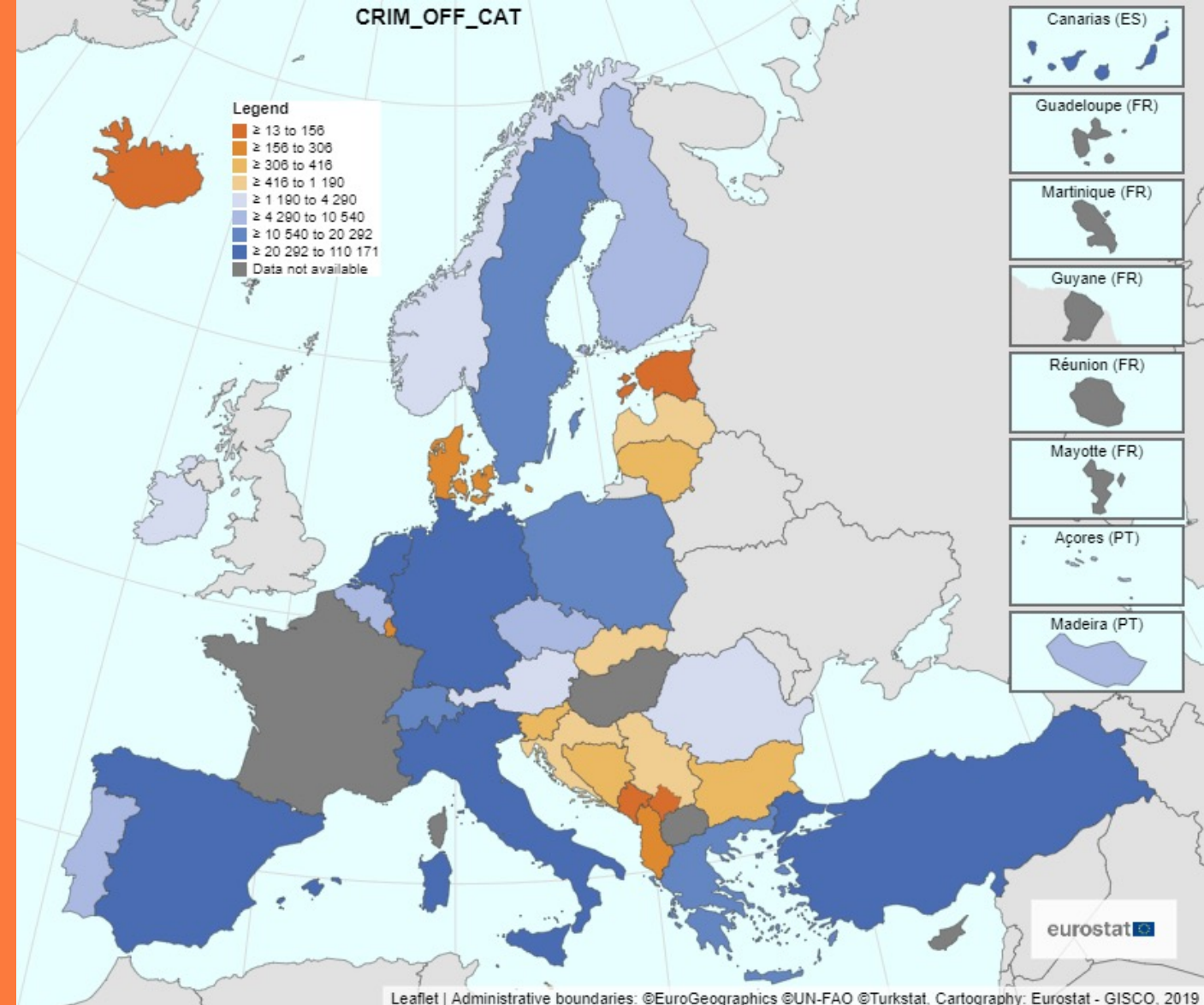


Figure 1: Recorded offences by offence category – police data – theft of motorized vehicles or parts thereof (2021). Unit of measure: number.
Source: [Eurostat](#) (last updated 11.05.2023).

The data show that the number of stolen vehicles is declining, the average price of the stolen vehicles is steadily increasing. Next to more expensive cars being stolen, fast cars are also often stolen and used for other type of criminal activities.

Motor vehicle crime is part of organised crime and mobile organised crime groups (MOCGs) are involved in car theft across all of Europe. Cars are stolen on supply and demand base for financial gain and are transported abroad. In addition, stolen cars are used to transport and import drugs, weapons and money. The tools that are used for the theft change constantly in order to avoid detection and vehicles are stripped to move vehicles parts across borders.

<https://frontex.europa.eu/media-centre/news/news-release/true-crime-car-theft-1vBT7u>

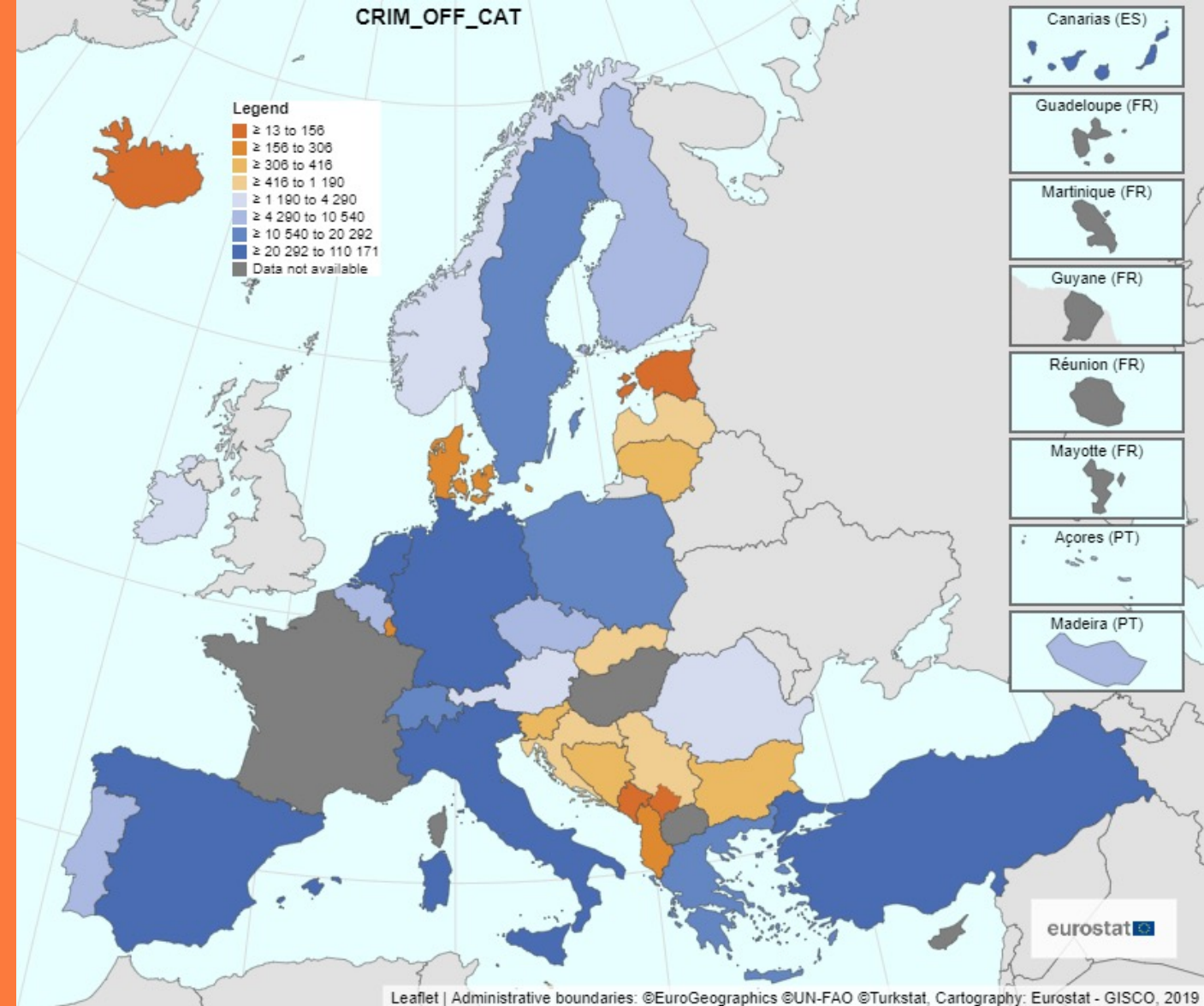


Figure 2: Recorded offences by offence category – police data – theft of motorized vehicles or parts thereof (2016). Unit of measure: number.
Source: Eurostat (last updated 11.05.2023).



Motor vehicle theft per country

Belgium →

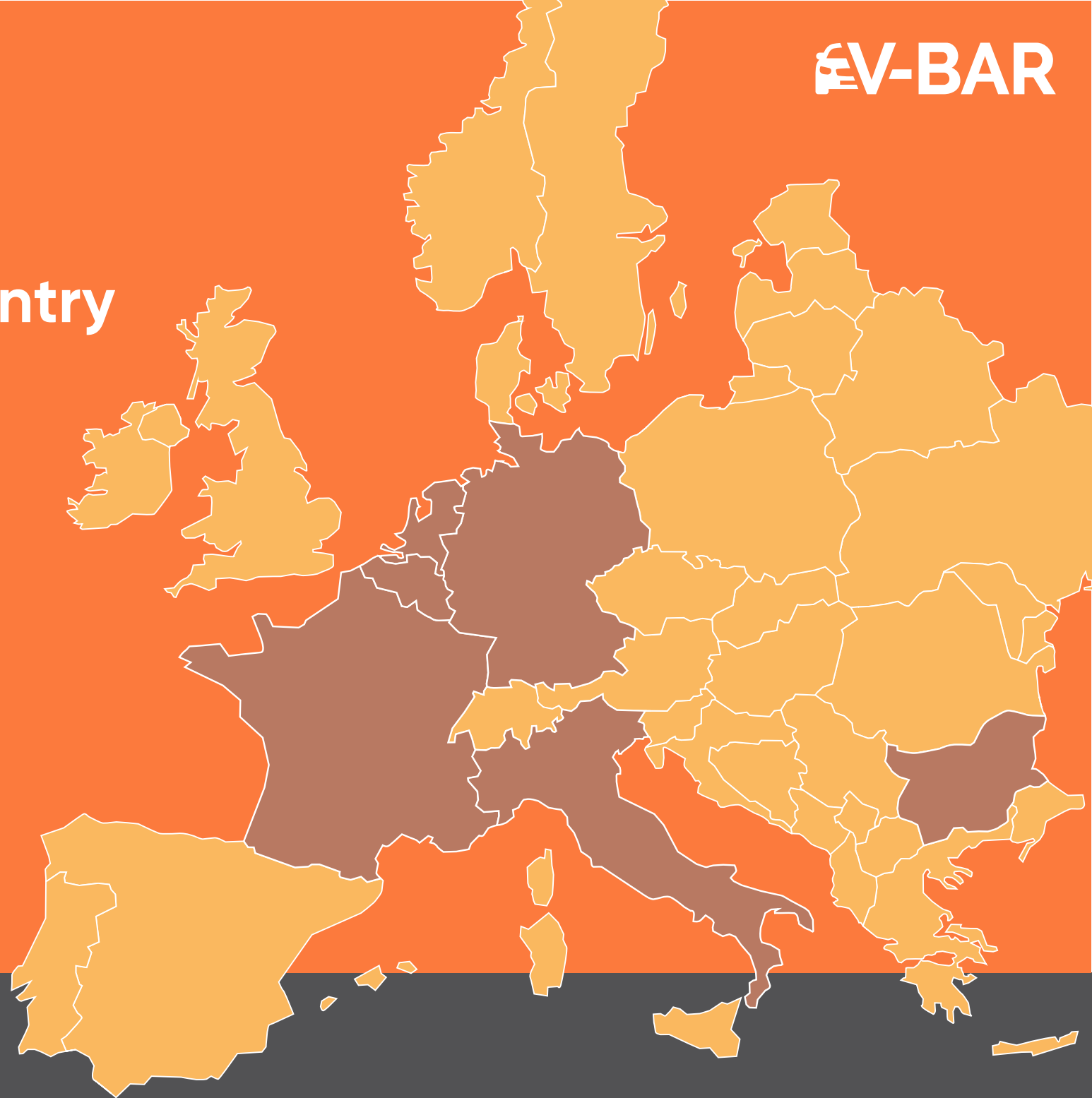
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Belgium

Belgium is considered an export and transit country for motor vehicle crime. An export country because of the large amount of vehicles that are available and transit due to the multiple ports that are available and its easy access to other countries in Europe.

Over the years 2013 to 2021 statistics show there has been a decline in motor vehicle theft in Belgium. In 2013 more than 10,000 cars were stolen in Belgium. In 2021, 4,745 vehicles were reported stolen in Belgium which means that the number of vehicle thefts dropped by 88 per cent compared to 2000 and 38 per cent compared to 2018 (Federale Politie, 2022). Specific car models and brands are more commonly stolen than others. In Belgium the Land Rover Velar, Lexus Landcruisers/SUV's and the Toyota RAV4 are frequently stolen. Airbags and dashboard consoles are frequently stolen car parts.

Motor vehicle theft in Belgium shows little spatial variation over time with most thefts concentrated in Henegouwen/Hainaut, more specifically in Charleroi and the capital of Brussels. Criminals seem to prefer either big cities (Charleroi, Liège, Brussels, Antwerp) or border areas (Henegouwen - France, Antwerp and Limburg -the Netherlands and Liège - Germany).

The main findings of Belgium can be found on the [next page](#).
More information can be found in the [Belgium country report](#).

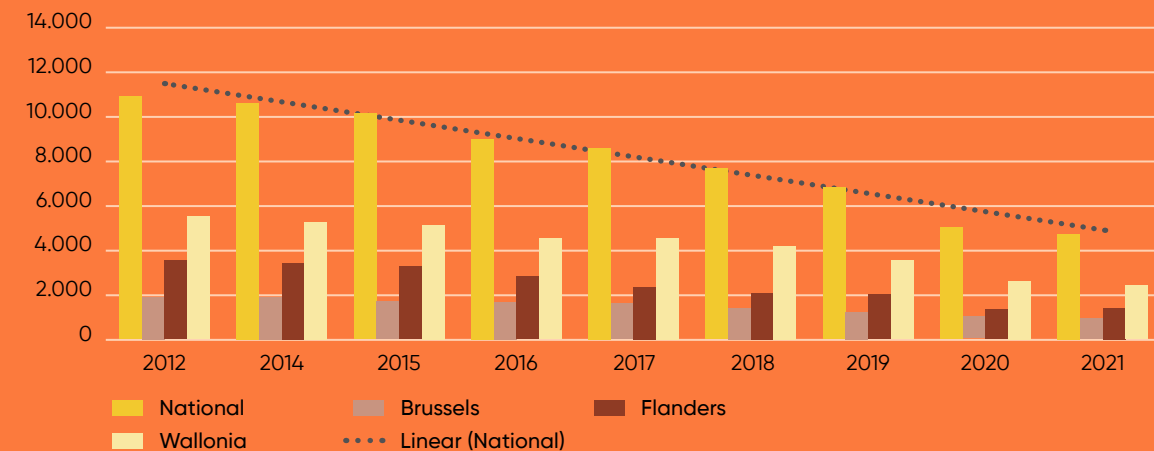
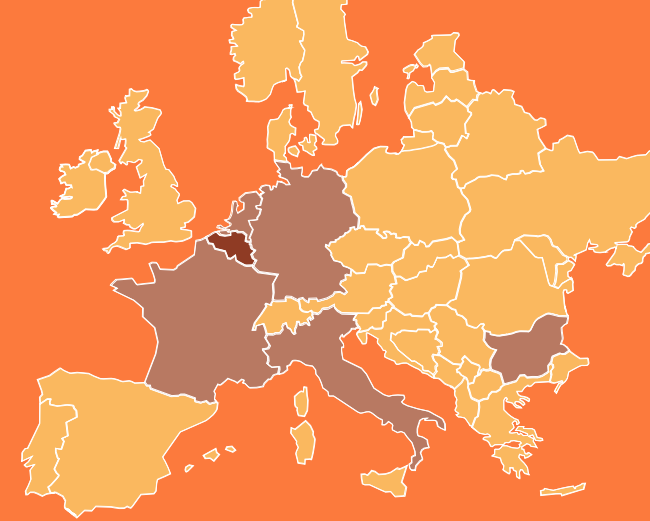
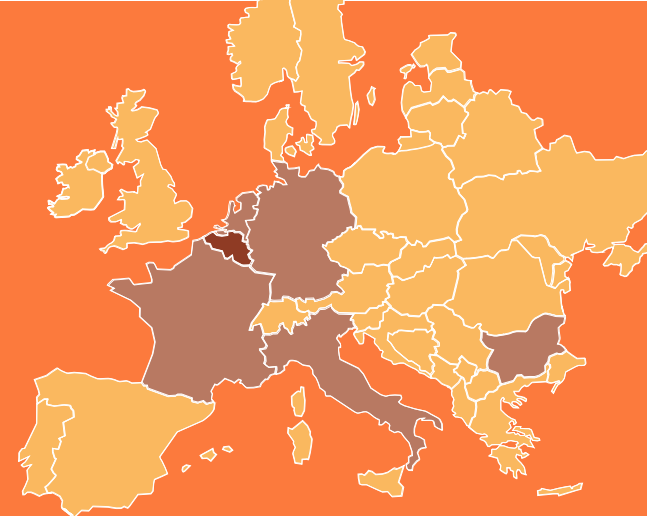


Figure 3: Motor vehicle theft in Belgium between 2013 and 2021.
Source: Criminaliteitsstatistieken, Federale Politie België 2021.



Belgium

Main findings

The shift from property crime committed by individual perpetrators to organised property crime may signal larger societal harms and is therefore being prioritized by the Belgian government and Law Enforcement Agencies (LEAs).

There is limited information available in regard to the phenomenon in Belgium, as motor vehicle theft has – and still is – not been considered to be a priority for LEAs.

A noticeable trend in motor vehicle theft is the use of ICT-technologies by criminal organizations to steal recently built SUV's and luxury cars.



The Netherlands

The Netherlands has a key function as a transshipment hub in organised vehicle crime, due to the ports and the easy access to other countries in Europe. Perpetrators from abroad travel to the Netherlands to steal cars or car parts and transport them back to their own countries. These cars and car parts are stolen on a demand-and-supply basis. Vehicle crime in the Netherlands is also part of organised and subversive crime. Stolen cars are used for other criminal activities, such as the transportation of drugs, weapons and money.

Over the last years there has been a decline in passenger vehicles theft. In 1995 more than 26,000 cars were stolen. In 2012 more than 11,000 cars were stolen. This decline continued after 2012. Only 2022 showed a slight increase in stolen cars. The top five car brands that are stolen in the Netherlands are Toyota, Volkswagen, Peugeot, Renault and Audi. The Toyota RAV4 is the model with the highest risk of being stolen.

There has also been a decline in theft of car parts. In 2012 more than 32,000 car parts were stolen. In 2020 the number declined to 18,000. In 2020 the most common car parts that were stolen were from the car brands Volkswagen, Toyota and BMW. Frequently stolen parts are license plates, navigation systems and air bags. Recently, catalysators are stolen often.

The main findings of the Netherlands can be found on the [next page](#). More information can be found in the [Dutch country report](#).

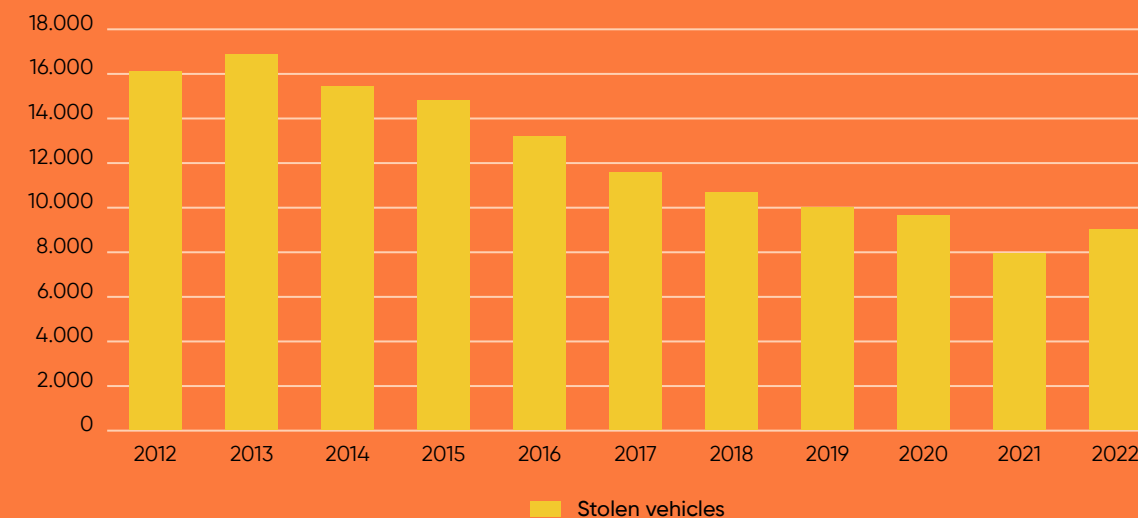
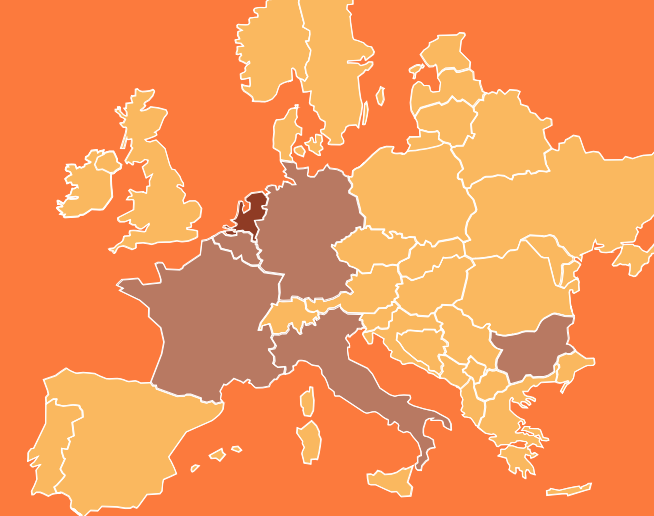
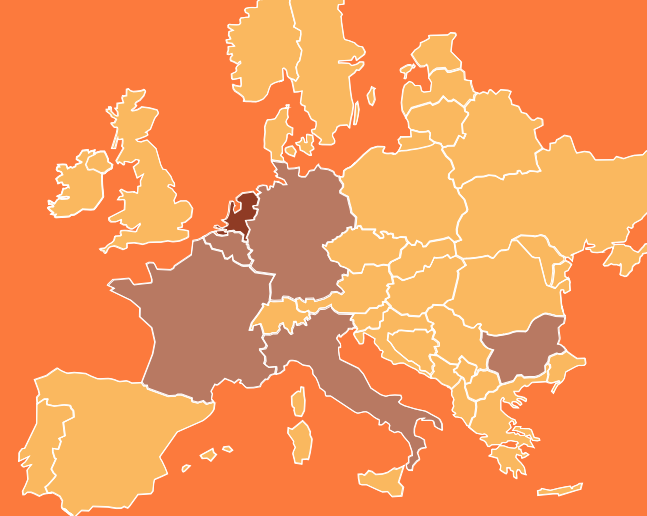


Figure 4: Registered vehicle theft in the Netherlands 2012-2022 (all types of vehicles). Source: Politie data (database).





The Netherlands

Main findings

There has been a downward trend in the theft of passenger vehicles and car parts. However, 2022 has shown a rise in the theft of passenger cars to date.

The literature distinguishes between two alliances. The first criminal alliance is based on social ties, such as family ties, friendships or being neighbours. The second criminal alliance is based on a cell structure and is managed from abroad. Both these types of alliances are mentioned by the respondents.

Stolen vehicles are used for several purposes. In addition to financial gain, they are mainly used for other criminal activities.

The impact of vehicle crime is multifold, ranging from repeated victimhood to interference with trade, distortion of competition and environmental crime.

Foreign trade was initially more widespread. However, domestic trade in stripped (stolen) automotive parts has increased since 2013.

Many of the stolen automotive parts and stolen cars are transported abroad to Baltic states, Central and Eastern Europe and African countries.



Bulgaria

Bulgaria ranks comparatively lower than other EU member states in terms of frequency of stolen vehicles. Moreover, the number of stolen cars in Bulgaria is even lower than the average number of stolen vehicles among the EU member states. Statistics show that there is a decline in vehicle theft over the past twenty years. In 2000, 11,196 cars were stolen in comparison to the 1,581 cars stolen in 2020. However, since the beginning of 2022, there has been a slight increase in the theft rates. Most of the car theft in Bulgaria takes place in its capital Sofia. High-end and keyless luxury cars are stolen most often.

The main findings of of Bulgaria can be found on the [next page](#).
More information can be found in the [Bulgarian country report](#).

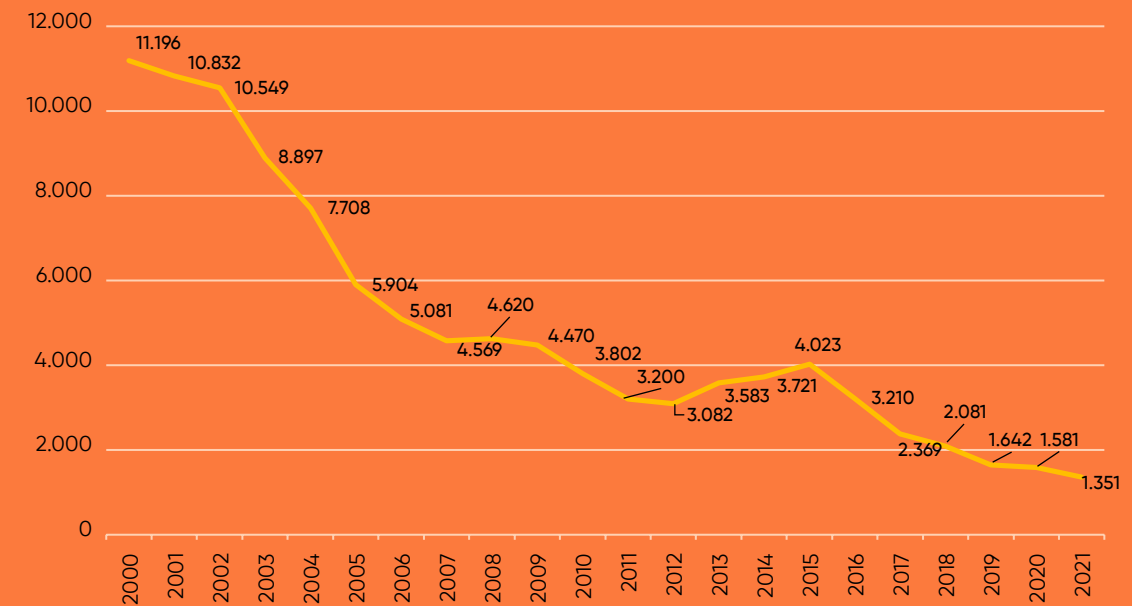
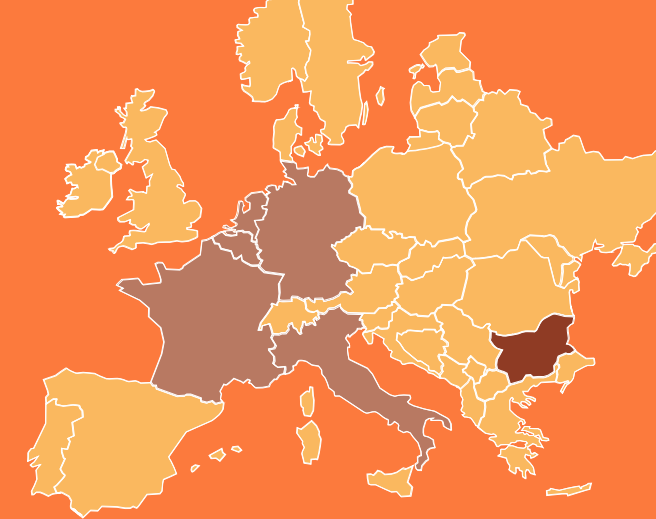
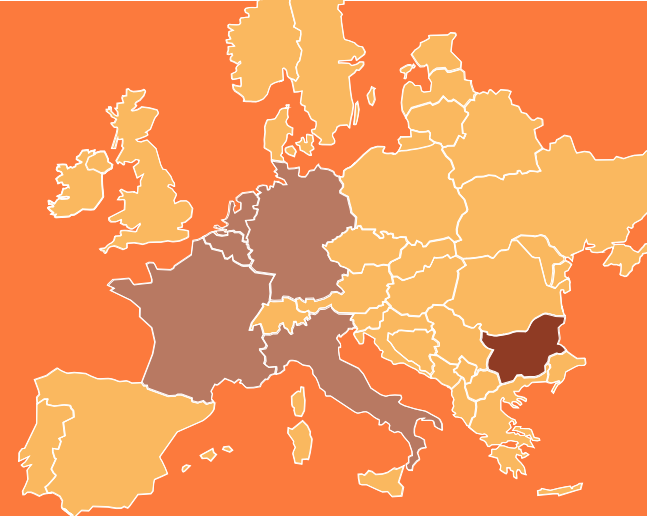


Figure 5: Recorded vehicle crime offences in Bulgaria (art.194-196a; art.198-199; art. 346, para 1,2,5 and 6 of the Penal Code).

Source: Author's elaboration on data from the Ministry of Interior.





Bulgaria

Main findings

Most car thefts in Bulgaria are committed by local criminal groups utilising elaborate logistical networks of facilitators.

The number of car thefts in Bulgaria has dropped over the years, although nowadays, most stolen vehicles are high-end keyless luxury automobiles.

Most car thefts involve sophisticated ICT tools and methods such as relay attacks, reprogramming the fob and jamming the GPS signal.

The bigger part of car thefts is perpetrated to disassemble and sell the stolen vehicles for spare parts.



Italy

Italy is a key country for the acquisition of stolen motor vehicles and spare parts for national and foreign illicit market. Data from Eurostat show that Italy has a high rate of motor vehicle theft. The number of stolen vehicles in Italy exceeds the number of stolen vehicles in other European countries such as Sweden, Finland, Portugal, Greece, the Netherlands and Belgium. In 2022 more than 120,000 motor vehicles were stolen (this includes cars, motorcycles and heavy vehicles). Data shows that from 2017 onwards the number of stolen vehicles in Italy has declined. From 2021 onwards there is an increase in stolen vehicles.

For 2019 through 2021 the car models that are stolen the most are the Fiat Panda and the Fiat 500. Volkswagen Golf is also a car model that is frequently stolen. For the car parts, GPS, clutch actuators and electric batteries for electric cars are frequently stolen. LED headlights, engine control units, multifunction steering wheels are also stolen often.

The majority of the thefts in Italy take place in five regions: Lombardy, Latium, Campania, Apulia and Sicily. Data shows that these five regions have the highest average numbers of motor vehicle thefts. This trend continued in 2022.

The main findings of Italy can be found on the [next page](#).
More information can be found in the [Italian country report](#).

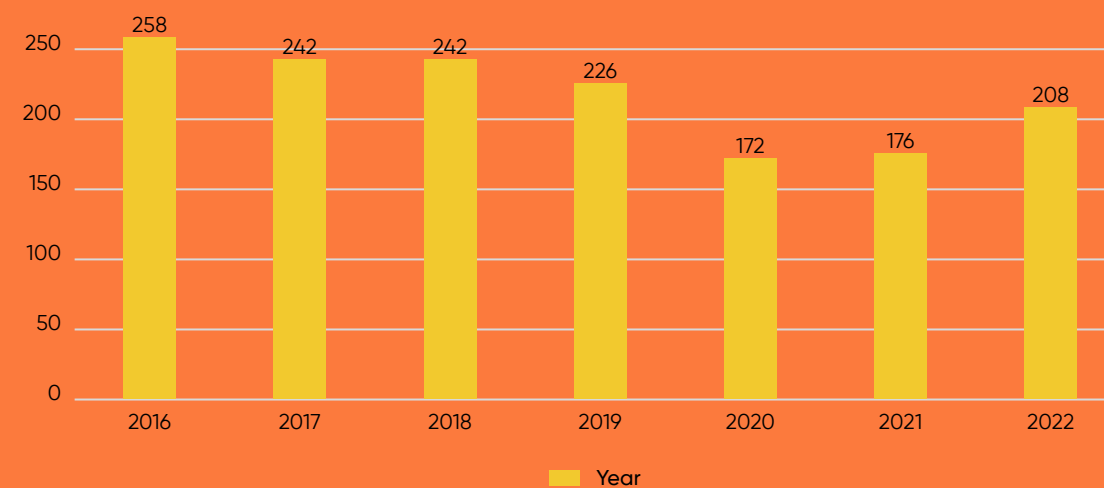
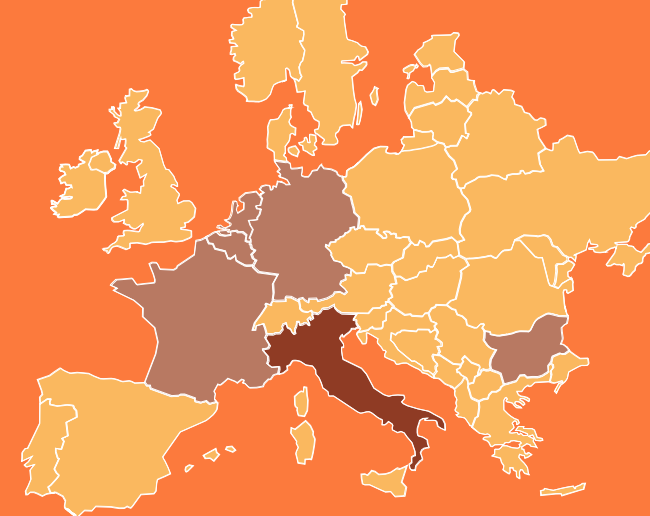
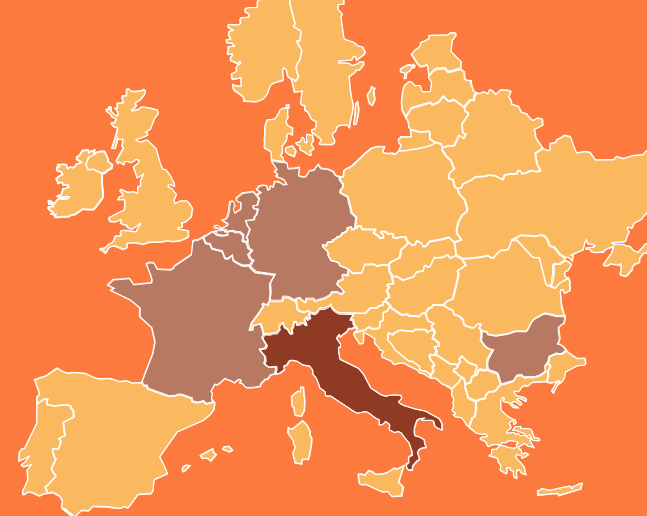


Figure 6: Motor vehicle thefts in Italy per hundred thousand inhabitants, 2016-2022.

Source: SDI.

*Data refers to thefts of motor vehicles including cars, motorcycles and heavy vehicles.





Italy

Main findings

At the European level, Italy is a key country for stolen motor vehicles and spare parts to be illegally sold on the national territory and abroad.

Motor vehicles theft is a major crime problem in Italy affecting differently regional territories. It is committed by both individual criminal entrepreneurs and criminal associations composed of Italian and foreign nationals. These actors tend to be stable in their area of operation and are able to accomplish each step of the crime by operating in the form of small/large criminal networks.

An important trend in the last ten years in motor vehicle theft is the increasing use of ICT technologies by both individual criminal entrepreneurs and criminal associations to steal new generation vehicles (including SUV and luxury cars) which represent a significant share of the total of motor vehicles in the national territory.

This type of crime is not perceived as serious at the social level and especially because it allows consumers to have vehicle parts (of high-end brands in particular) at lower prices.

The Italian criminal code is well developed and comprehensive in the fight against motor vehicle theft as well as there is evidence of bilateral police cooperation agreements and EU judicial cooperation. There is also a dedicated National State Police Unit in charge of combatting this type of crime both at the central and regional level (i.e. State Traffic Police).

Compared to other organised crime activities such as drug trafficking, human trafficking, arm trafficking, motor vehicle theft does not represent one of the main investigative priorities and especially in the North where this type of crime is less systematic compared to the South.



Germany

Germany has a large and continuously growing domestic market for motor vehicles with a high share of premium cars of manufacturers like Audi, BMW, Mercedes and Porsche. At the same time, the number of stolen cars has significantly declined in recent decades from around 200,000 per year in 1993 and 1994 to below 30,000 since 2019. Most stolen cars are believed to be marketed abroad, particularly in Eastern Europe, Central Asia, North Africa, West Africa and the Middle East.

The main findings of Germany can be found on the [next page](#).
More information can be found in the [German country report](#).

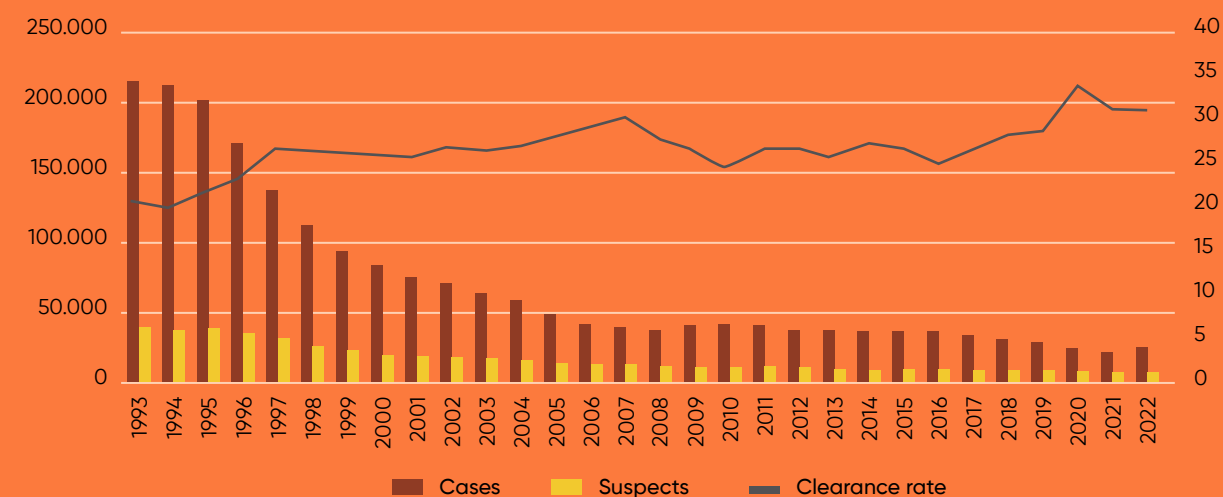
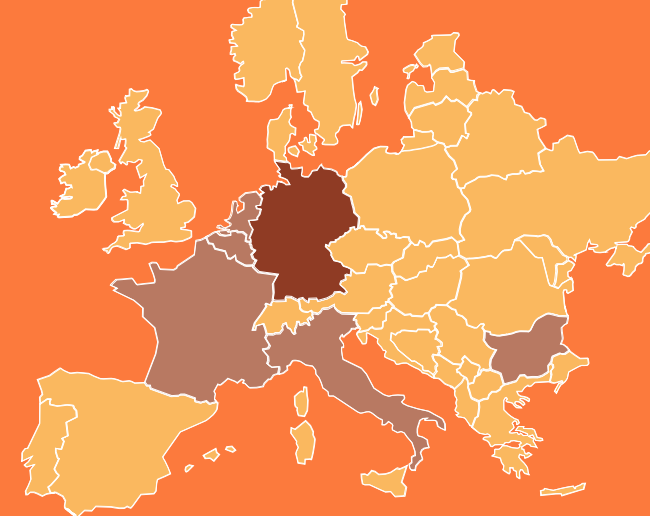
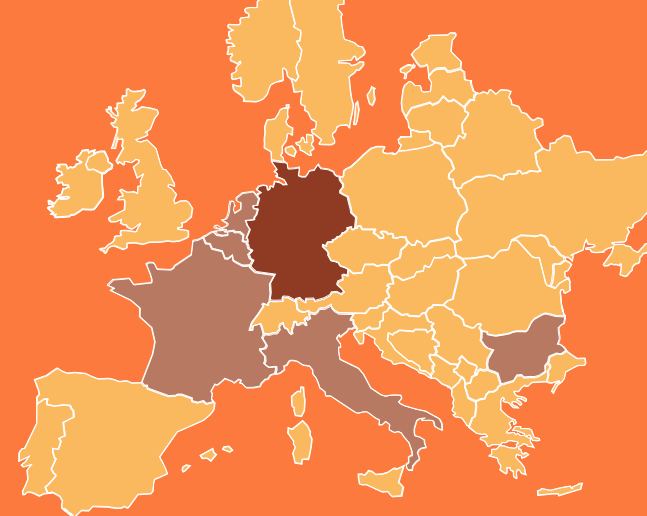


Figure 7: Theft and unauthorized use of motor vehicles in Germany, 1993-2022.
Source: Bundeskriminalamt, Police Crime Statistics from various years.





Germany

Main findings

Motor vehicle crime continues to be committed in on organised fashion.

The most important offender strategy is to exploit weaknesses in the keyless technology.

Motor vehicle crime is not perceived to be a major crime problem given that damage is largely socialized through insurance.



France

The numbers of vehicle theft for France have declined over the last years. In 2008 more than 211,000 cars were stolen. In 2020 approximately 119,700 cars were stolen. From 2020 onwards the number of stolen vehicles has increased. In 2021 approximately 122,700 vehicles were stolen and for 2022 the number of stolen vehicles is approximately 134,000 . In France the top three cars that were stolen frequently in 2022 were the Toyota Prius, DS7 Crossback and Renault Mégane. Also, for automotive parts, 2021 showed a 30% increase in stolen automotive parts. Car parts that were stolen more often were rims, rearview mirrors and catalytic converters.

The main findings of France can be found on the [next page](#).
More information can be found in the [French country report](#).

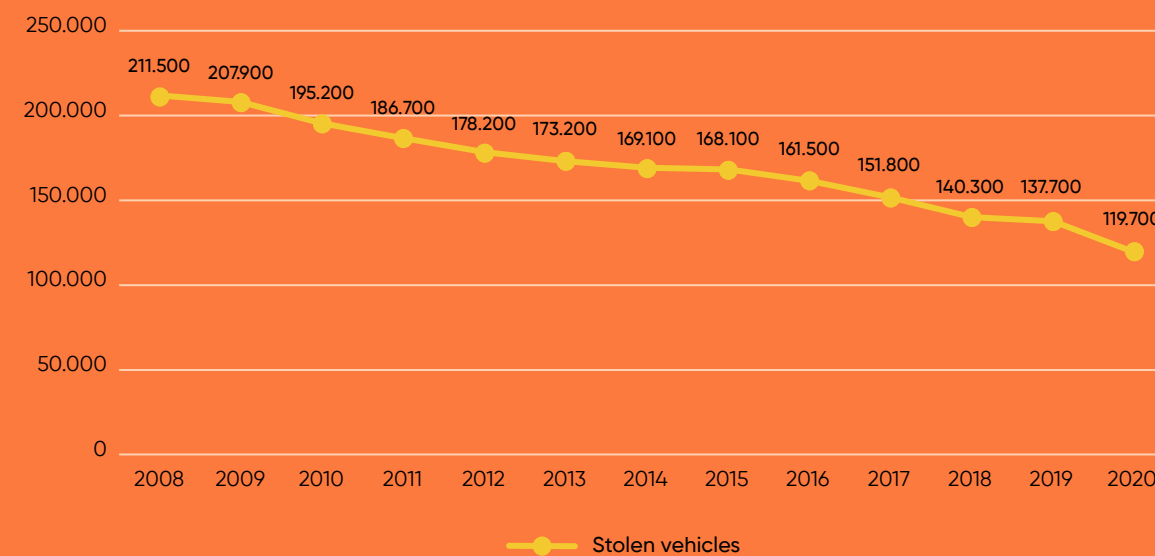
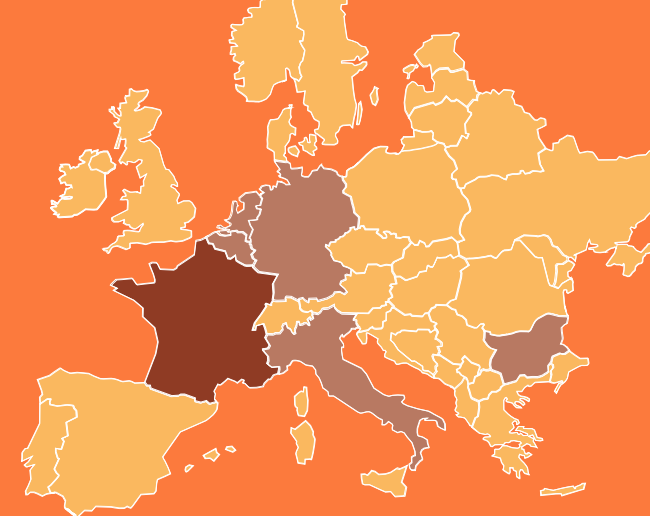
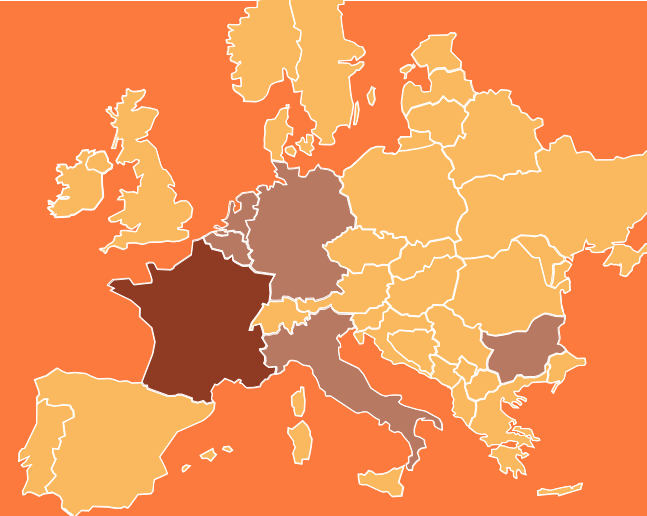


Figure 8: Motor vehicle theft in France 2008 – 2020.

Source: SSMSI, bases des crimes et délits enregistrés par la police et la gendarmerie.





France

Main findings

There is a decline in amateur theft and a persistence of professional theft.

The main stolen vehicles are Sport Utility Vehicles (SUV) and city cars.

Individuals involved in vehicle theft do not differ much from individuals involved in other types of theft.



Modi operandi

There are multiple modi operandi (MO) regarding vehicle theft. These MO also depend on where the stolen vehicle will be transported to for trade. Stolen cars can stay on national territory, but are also transported abroad. A lot of vehicles from Europe are mainly transported to Africa or Eastern Europe. Some vehicles are transported to Asia and the Middle East as well. Respondents of the interviews in a couple of member states, state that there are different modi operandi and they mainly relate to trade routes. The main three modi operandi identified in Belgium serve as an illustration, as it may vary by member state.

1. Hit and Run MO

Criminals from neighbouring countries enter the 'target' country to steal a vehicle. After stealing the car, they immediately leave the country. In this MO the car is driven across the border.

2. Eastern European MO

The mobile organised crime groups (MOCG) enter the 'target' country by public transport, airplane or by own transportation and stay for a few weeks. In this MO the MOCGs use more sophisticated methods of target identification (track and trace) and steal multiple cars. These cars are transported by road via trucks and containers. Mostly to Poland, Ukraine, Belarus, Lithuania or Russia.

3. Central and South-African MO

The criminal networks are already based and residing in the 'target' country. Cars and car parts are stolen on demand from abroad by using ICT tools. The stolen cars or car parts are transported by road to the ports of neighbouring countries or directly to the port if the target country has such. These cars and car parts are transported to the centre and south of Africa. Lomé (city in Togo) and Cotonou (city in Benin) are popular harbours used for this MO.

Criminal alliances

In the literature two types of criminal alliances are distinguished (Ferwerda & Wolsink, 2022):

1. A criminal alliance which is based on social relations, such as friendships, family ties or neighbours. It is also possible that these social relations are based on work relations or shared detention history. This criminal alliance operates on a local and regional level. The members of this alliance are usually natives of the target country. One individual is considered the leader and is often the owner of a garage, workshop or warehouse. The members have multiple roles in stealing the car or car parts. However, stealing the car or car parts is not the main goal for this group. The car parts get sold and the car plays a facilitating role in other criminal activities, such as transporting weapons and drugs.
2. A criminal alliance based on a cell structure and managed from abroad. This alliance has a professional and organised structure. Every member has a specific role, whereby members are replaceable. By structuring the alliance in this way, the group is able to function if an element/a member of the group is apprehended. The alliance receives information from abroad which cars and car parts are the target. The members of this alliance are usually non-natives of the 'target' country and travel from abroad to the 'target' country.

Both types of criminal alliances are seen in Europe. In Bulgaria vehicle thefts are done by small criminal groups consisting of two or three perpetrators that operate locally. These groups are also involved in other criminal activities and are embedded in more extensive criminal networks. In the Netherlands and Belgium organised groups come from foreign countries. They stay in one of these countries for a while and move around. In Germany the criminal groups are structured and international. In most offender groups the members have a specific expertise regarding vehicle theft and only few have an overall understanding of an operation.

Methods

There are several techniques to break into the car and steal it. It is still possible to break into a car by breaking the door or the window. Opening the lock is also still a method that is used by criminals. Different types of tools (either machines or devices) are used for opening the lock, for example a lock cylinder or a turbo decoder.

However, in the last years, the methods employed to steal motor vehicles have evolved from basic 'hardware' techniques such as window breaking, forced opening of locks and theft of keys in private houses to 'software based' innovative techniques. These 'software based' techniques allow for covert intrusion and low detection from law enforcement.

Over the past few years, criminals have been targeting keyless vehicles. One method that is used is the relay attack where the criminal tempers with the communication between the keyfob and the vehicle using a set of devices. These devices can intercept, boost and retransmit the signal from the key. This method needs two to three criminals to work effectively. The first person must be near the original car key to intercept the signal from inside the house of the owner of the vehicle. The other person stands close to the car with a second device, which will relay the unlock-message from the key. The device also transmits the signal to start the vehicle. The criminals are then able to start the vehicle and drive off.

There is another device, the 'Nintendo Gameboy', that can be used by one person to hack the car. By only touching or pushing the lock of the car, the device can intercept the signal, read it and emulate a signal to unlock the vehicle and start it. It is also possible to 'save' the key and come back later to open and start the vehicle. These devices, programming devices and programmable keyfobs can be easily purchased online.

For some vehicles it is possible to open and start the vehicle through an application. It is possible to hack the application and as a result open and use the vehicle.

Other options for opening and starting a car are devices that can be connected to the onboard diagnostics (OBD) system through the wheels, headlights and rear windows. Once the criminal can reach the OBD system, the engine management system is also in reach.

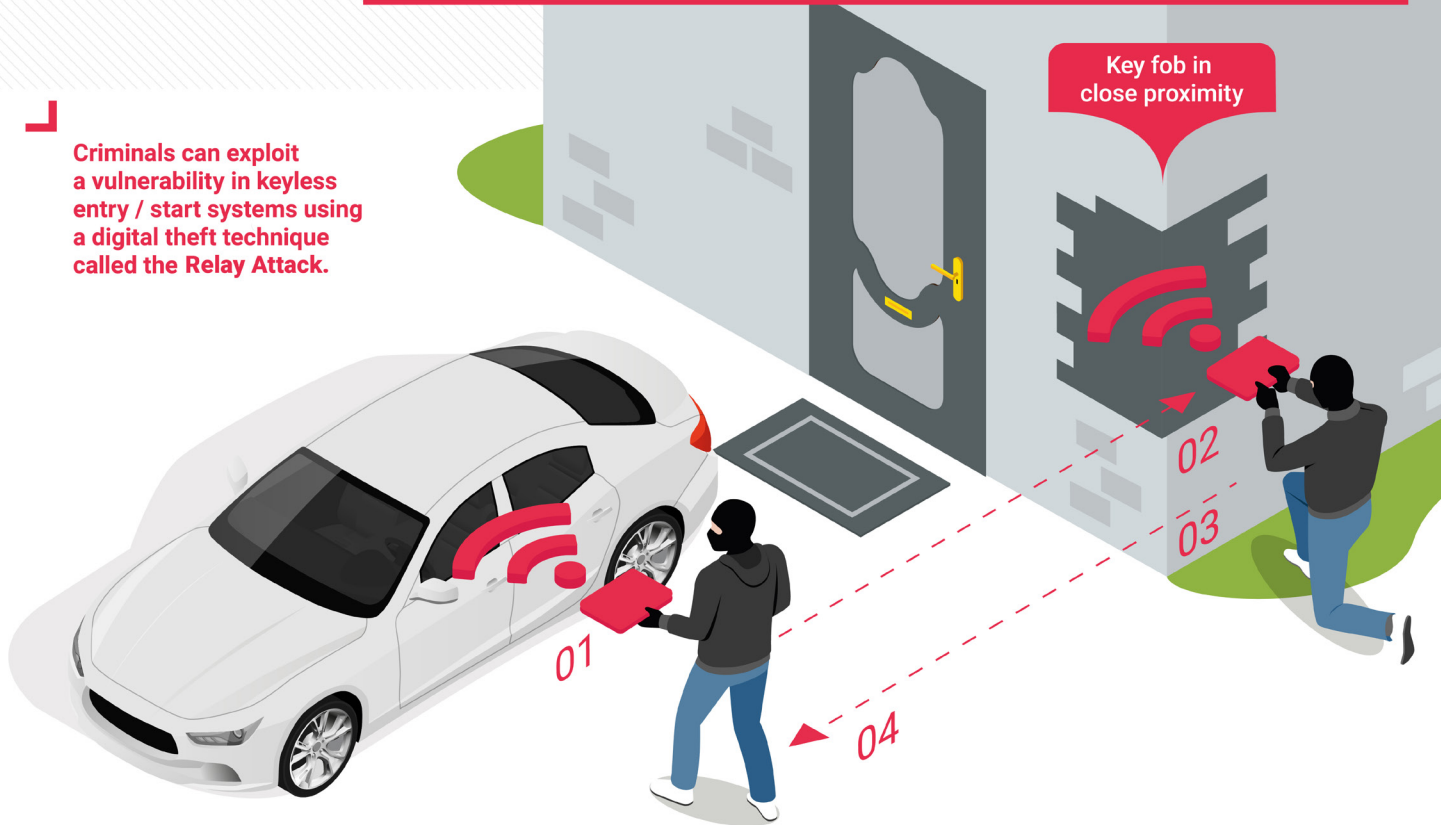
The use of ICT devices in vehicle theft is developing constantly and is a noticeable trend in Europe. It is therefore likely that in the near future new methods and means will be introduced and used.

The various modi operandi and methods show that these networks are highly professional and well organised.



Explained: How the Relay Attack works

Criminals can exploit a vulnerability in keyless entry / start systems using a digital theft technique called the Relay Attack.



01

First thief stands within close proximity of the vehicle and uses device to relay received signals to the second thief.

02

Second thief stands as close to the house as possible, typically by the front door, holding the second device.

03

The second device transmits the relayed signal up to 10-15 metres into the house.

04

When the key stored in the house receives the signal it replies in a normal manner, fooling the system into thinking the owner is close by, allowing entry into the vehicle. A second relay is required to start the ignition.

#VehicleSecurity

Figure 9: How the relay attack works. Source: Thatcham Research, 2023.

Impact of motor vehicle theft

Motor vehicle theft has a significant impact on a victim whose vehicle is stolen. It can cause financial and emotional harm. In addition, the victim may need to arrange for alternative means of transportation. Furthermore, personal belongings in the vehicle need to be replaced.

Next to the victim, vehicle theft also impacts society. It affects the general public's sense of safety. It also affects the market. With the trade of stolen car parts and stolen vehicles the legal sector takes a hit. Bona fide businesses cannot offer car parts or vehicles for the same prices. Usually, illicit businesses have (extremely) low prices. This affects the competition in the legal markets for car servicing, used cars and used car parts.

As mentioned earlier, vehicle theft can become part of organised crime. Stolen cars can be used to transport and import drugs, weapons and money and to commit other crime.

Moreover, motor vehicle theft has not only an impact on the victim or the country in which the vehicle was stolen but has also its impact on Europe. The market of stolen vehicles affects the European Union and its member states.

The European barrier model

What is a barrier model?

A barrier model gives overview and insight in a (criminal) phenomenon or process. With a barrier model one is not looking at a specific offender, a specific case or a specific crime. By taking a step back, one can look at the story and the world behind the (criminal) phenomenon or process. Together with public and private partners, one dives into the world behind the (criminal) phenomenon or process.

With a barrier model one can look at the steps criminals need to take to commit a crime. For each step, we subsequently examine which service providers and opportunities enable the criminal and which signs may indicate criminal activity. By doing so, we make opportunity structures transparent, so we can find out what barriers can be put up to disrupt these opportunities and, as a result, the work of criminals. The barrier model allows for preventive interventions and repressive measures.



Opportunities: things that make it easier or even possible to commit the crime or the process/phenomenon. With a barrier model you want to take away the opportunities or the opportunity structures.



Signals: visible signs that are related to the criminal phenomenon or process. These visible signs do not have to relate to the criminal activities.



Facilitators: people or organisations who make the crime possible by consciously or unconsciously assisting or helping the criminals.



Partners: people or organisations who help to disrupt the criminal process. Partners can/must take an active role.



Barriers: interventions focused on disrupting the criminal activities, process or phenomenon.



Theories related to the barrier model

The barrier model shows similarities with a few criminological and business theories:

- Crime scripts
- Situational crime prevention
- Logistical business processes

The **crime scripts theory** was developed by Derek Cornish (1994a) and is used to map a specific crime phenomenon. In every event, the procedures and steps are placed in chronological order. The events take place before, during and after the crime.

The **situational crime prevention theory**, developed by Ronald Clarke (1995), focuses on preventing (the occurrence of) an (attractive) opportunity by changing the situational circumstances. The situational circumstances are changed in such a way that the costs of the crime increase and the benefits of the crime decrease. Therefore, the choice to commit the crime becomes less appealing.

The **logistics of organised crime approach**, formulated by Sieber and Bögel, calls for a comprehensive analysis of what is needed in the execution of a particular illegal activity (Spapens, 2011). This includes tools, the required expertise and the individuals who possesses this specific expertise or these tools.

By looking at the process of the crime phenomenon in different steps and the logistical business processes involved, one can identify weak spots in the process of the crime phenomenon and detect possibilities for disruption. In addition, it is possible to identify different parties who contribute (knowingly and unknowingly) to the crime phenomenon and parties who can help in preventing the crime phenomenon.

What is a European barrier model?

A European barrier model is a barrier model on a European level. The countries involved in this project all made a national barrier model. From each country a research team worked on their national barrier model and country report. The national barrier models are based on the country reports. These national barrier models are combined into a European barrier model.

For every step in the business model of vehicle theft the similarities between the countries of the opportunities, signals, facilitators, partners and barriers are added into the European model. Furthermore, opportunities, signals and barriers which are relevant and applicable on an European level were also added.

The information from the six country reports and national barrier models was added in random order and double information (information that is mentioned in country report A and is also mentioned in country report C) was not added in the model. This resulted in the first concept of the European barrier model.

The researchers from the various countries involved in the project had two workshops to work on the European barrier model together. During the first workshop the researchers got the opportunity to discuss the conceptual European barrier model. At this workshop other experts (from the police and administrative approach) were also present. In this way the European barrier model received feedback and certain information was explained more elaborately. The feedback on the European model was processed later. Furthermore, the researchers and experts looked at the barriers of the European barrier model and prioritized barriers in every step. During the second workshop, four of the prioritized barriers were chosen to be elaborated.

The steps

Organised property crime is often committed by organised crime groups. These organised crime groups are also involved in motor vehicle theft. Therefore, this European barrier model for vehicle theft is based on the process of mobile organised crime groups (MOCGs). The (business) model of MOCGs consists of seven steps.

These steps are:

1. entry
2. stay
3. infrastructure
4. crime
5. storage
6. transport and trade
7. profit

These seven steps are applied to the process of vehicle theft by MOCGs. During the first workshop the researchers and experts gave feedback on the model and one of the feedback comments included the steps of the European barrier model. According to the experts vehicle theft includes more steps than the original business model for MOCGs.

Therefore, the seven steps were elaborated to ten steps. The steps 'preparation' and 'post-crime' were added to the model. The step 'transport and trade' was divided into two separate steps: 'transport' and 'trade'.

For each step the model provides insight in the opportunities, signals and facilitators that make vehicle theft possible. Furthermore, the barrier model shows how to disrupt the criminal process of vehicle theft and the partners that are needed.

It is important to take into consideration that not every step is applicable for every country involved in the project.

About the model in this publication

The model in this publication is a concise representation of the digital barrier model. This brief overview provides insight into this phenomenon and the application of the barrier model. The extended version is available via: www.barrieremodellen.nl.

Step 1 | **Entry** →

(Foreign) criminals entering a country to carry out their criminal activities.

Step 2 | **Stay** →

This step focuses on the place (foreign) criminals choose to stay in the country where they will carry out their criminal activities.

Step 3 | **Infrastructure** →

The infrastructure of the chosen country is used to help achieving the criminal activities. By infrastructure public transportation, roads, ports and communicational services are meant.

Step 4 | **Preparation** →

This step focuses on the preparation that is needed to carry out the theft of the vehicle or the car parts. This step can be considered as pre-crime actions, such as selecting and tracking vehicles.

Step 5 | **Crime** →

The vehicle theft takes place. The theft can be committed in several ways.

Step 6 | **Post-crime** →

This step refers to covering up one's tracks after stealing the vehicle or the car parts.

Step 7 | **Storage** →

This step consists of storing the stolen vehicle and stolen car parts in a storage facility or someplace else.

Step 8 | **Transport** →

This step concerns the transport of the stolen car. Either overseas or by land.

Step 9 | **Trade** →

This step refers to the trading of the stolen car as a whole or the separate stolen car parts. This trade can be done physically or online.

Step 10 | **Profit** →

This step refers to the financial gain the criminals achieve due to selling the car and car parts. Furthermore, this step also refers to the profit a criminal makes because of the stolen vehicle. The stolen vehicle can be sold, swapped or exchanged for services, resources or goods.

Step 1 | Entry



Opportunities

- The open borders of the Schengen area. Due to the open borders, there are no border controls. It is relatively easy to enter some EU countries anonymously.
- Some of the perpetrators/members of the criminal alliance are already legal residents in EU countries. Furthermore, the cost of traveling inside the EU are relatively low.
- Few to no documentation checks.
- An individual can buy tickets for someone else (and under a false name).



Signals

- Within this step there are few signals of criminal activity since the crime vehicle theft is not yet committed.
- The luggage does not match the kind of trip the criminals try to convey. This is a signal that, in combination with other signals, could tell something is suspicious.



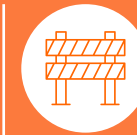
Facilitators

- Airports and airlines. Due to their services the perpetrator can enter the country.
- Car rental companies rent out cars to perpetrators.



Partners

- Car rental companies can detect signals of false documentation, might be able to identify straw men and can provide information and data who is renting a vehicle in a country. They can also prohibit cash transactions.
- Airports can take actions at customs (e.g. focus on suspicious behaviour).



Barriers

- Adequate regulations that could enable and facilitate data sharing between Law Enforcement Agencies (LEA) and the private sector (such as rental and airlines).
- Passport controls with enquiry to destination/place of residence.
- Pro-active training in identifying signals.
- More resources for LEAs to conduct more patrols.
- Expanding and renewing the ANPR-camera networks and examining whether national camera systems could be connected to European systems. This barrier is already put in progress.

Step 2 | Stay



Opportunities

- Ability to legally stay in countries short term and long term (as a tourist).
- Ability to stay anonymous since campgrounds, hotels and Airbnb's haven't got a night register or guest register. If they do have a register, only the main tenant is registered.
- Cash payments and transactions are still allowed and make it possible to stay anonymous.



Signals

- Deviant behaviour, such as deviant activity at campgrounds, hotels and Airbnb's. For example: people coming in and out at strange hours, coming and going in different cars, curtains shut during the day. These types of signals are dependent on the context. These types of activities could for example be signals for areas with limited night life.
- Overcrowding: too many people for the amount of space at the accommodation.



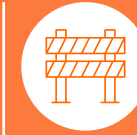
Facilitators

- Accommodation providers such as campgrounds and holiday parks, as well as internet brokers like Airbnb are mostly unconsciously facilitating in letting these criminals stay in the country where they will commit criminal activities.
- Conscious facilitators that are accommodating a place to stay for the criminals. It is possible that there is a network of criminals already living in the country and they arrange accommodation or let the criminals stay at their own place.



Partners

- Law Enforcement Agency: enforcing more LEA control in general, for example by enforcing registration at Airbnb.
- Mayor: making sure local Airbnb's enforce a municipal registration of their guests.
- Accommodation providers, such as hotels and camp grounds, can be a partner by applying a registration of the guests.
- Civilians: alerting/tipping the police (anonymously) of deviant behaviour or other signals.



Barriers

- More resources for community policing and being more present.
- Better regulation of the registration and identification of tourists/guests in the touristic sector Verifiable registration of tenants and visitors, as well as making use of a digital night register.
- Awareness campaigns directed at owners of lodging/accommodations that are being rented.



This is a brief overview of this step. For all opportunities, signals, facilitators, partners and barriers of this step, visit: www.barrieremodellen.nl.

Step 3 | Infrastructure



Opportunities

- There is a lack of patrols of LEAs, because intervention teams need to be available for urgent calls and there are not enough resources to do more random controls on roads.
- Criminals can easily move fast and anonymously within the country and the EU.
- The current Automatic Number Plate Recognition (ANPR)-camera system: there is a broad network of alternative roads which are not equipped with ANPR-camera systems.
- A good network of roads and public transport across Europe.
- Roll of ports provide perpetrators to take their own cars with them.
- Use of straw men for rental services.



Signals

In this step are few to signals since the criminal activity hasn't happened (yet). A signal that could indicate something is suspicious, is the use of false number plates.



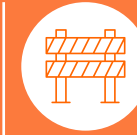
Facilitators

- Roll of ports enable passengers to take their cars with them.
- Public transport enables passengers to travel anonymously.
- Straw men who are used by criminals to rent cars in their name.



Partners

- Law Enforcement Agencies: more patrolling and being more present in public spaces.
- Police and investigation agencies.



Barriers

- Expanded and upgraded ANPR-systems could contribute to early detection and become effective barriers to combat motor vehicle theft.
- More ANPR use at hubs.
- The ANPR-data from the camera systems could be shared in Europe (linking databases and synchronizing databases).
- Surveillance and controls on highways and at ports.

Step 4 | Preparation



Opportunities

- The internet can be used to search how to open a car/ get access to a car. There are multiple YouTube tutorials online on how to use a device to get into the car.
- Lack of control over the sale of virgin car keys bought in countries where the jurisdiction is more lenient. Virgin keys are bought by legal users who try to replace their car key. Car companies make sure that making these keys is not made illegal.
- Easy access to lock picking devices and ICT-tools.
- Ability to access public information on vehicles (information regarding the value of the car, how many kilometres the car has driven, what technology is in the car, etc).
- The ICT-tool that is used to program blank key fobs via the OBD port of a car, can be easily purchased online.



Signals

- Buying virgin car keys. Even keys with a serial number are usually the signs of suspicious activity.
- Asking questions about a specific model of car on specific websites for cars: questions regarding the car and how car functions/works.
- Unfamiliar vehicles driving through the neighbourhood.



Facilitators

- Social media (channels) where individuals are able to find information regarding vehicle theft.
- Google Street View.
- Straw men (gathering information for the theft).
- Garage owners need to buy virgin keys for professional reasons. They can collaborate with criminal networks.
- Providers of tools and special equipment for (breaking into) cars such as unscrupulous locksmiths.



Partners

- European Union, Europol and Interpol: can be partners in creating/stimulating more cooperation between different LEAs.
- Central websites regarding vehicle authority (Dutch example: RDW).
- Media can help with increasing awareness of civilians.
- Local communities (neighbourhood watch or neighbourhood WhatsApp group) can warn the LEAs if something deviant happens.



Barriers

- Promoting anti-theft measures by all private sector partners in general (insurance companies, car dealerships, car manufacturers).
- Car owners could be encouraged to equip their vehicles with car alarms (e.g. incentive, tax reduction).
- A dialogue with the car manufacturers about the importance of three elements:
 1. Limiting the accessibility of the On-board diagnostics (OBD) plug
 2. Stop putting the Vehicle Identification Number (VIN) directly at the bottom of the windshield
 3. Installing a sound system signalling the driver when he left his keys in the ignitionSo they can implement these three elements in their design.
- Requirements on keys for cars with keyless entry. For example: sleep mode after 3 to 5 seconds not using. This way the signal can't be intercepted by the software used by the perpetrators to use the key to open and start the car.
- More targeted use of ANPR.
- LEA visible on the street: preventive work in areas that can be seen as hotspots for vehicle theft: road checks, discreet surveillance, etc.



This is a brief overview of this step. For all opportunities, signals, facilitators, partners and barriers of this step, visit: www.barrieremodellen.nl.

Step 5 | Crime



Opportunities

- Low presence of police patrols during night-time.
- Parking lots of large retailers, malls and outlets where a large number of vehicles are parked together.
- Criminals use VPN's and encrypted apps for communication, so no telephone signals can be detected/identified by the police.
- Sophisticated technology is used to overcome mechanical and electronic anti-theft protection, for example with vulnerabilities of keyless technology. The ICT-tool that is used to program blank key fobs via the OBD port of a car, can be easily purchased online.
- ICT tools like jammers are easily accessible/available and can block the LoJack Frequency Trackers of car manufacturers and other privately installed track and trace systems within the vehicle.
- Criminals use the 'all keys are lost' system in cars to program blank key fobs, by using an ICT-tool connected to the OBD port of a car (with OBD you can read the complete onboard computer from the car).
- Cryptographic techniques are used to secure data and communication within the car's system, which helps prevent unauthorized access, theft and hacking of the vehicle. However, the standardized use of cryptography in modern cars is easily breached.



Signals

- Abnormal/deviant patterns: certain security systems keep track of patterns. If the pattern is deviates, a crime may be committed. For example, a fixed pattern takes place every Monday during the day (for example, traveling to work between 07:00 and 09:00 and traveling home around 18:00), but then suddenly the car is used on Monday at midnight; there is a deviation from the pattern.
- Possession of locksmith or jamming equipment/ jammer detection.
- False license plates.
- Jamming of GPS or mobile phone signal in the neighbourhood vicinity.
- Known locations and ANPR alerts: some places/locations are popular with criminal groups. These places are known to LEAs for criminal activity or for its use by specific mobile organised crime groups (MOCG) or in specific modi operandi (MO's).



Facilitators

- Providers of tools and special equipment for (breaking into) cars such as unscrupulous locksmiths.
- Criminal network: provides the know-how and tools for car theft or false documentation for ID's or vehicles.



Partners

- National police; LEAs: can identify more signals and teach these signals to patrolling teams.
- Municipal authorities: local authorities are responsible for the infrastructure of the municipal and can work towards transforming it into more resilient to vehicle crime.
- European Union, Europol and Interpol: can be partners in creation more cooperation between different LEAs.
- Private security companies: many private security companies are involved in guarding parking lots of big supermarkets, malls and outlets which makes them potential partners to the police. They could pick up signs of suspicious activities and alert the police.
- Locksmith associations: can be essential partners for increasing accountability and integrity among locksmith professionals.
- Car manufacturers and car dealers: working pro-actively on security measures/updates and implementing new anti-theft ICT technology in cars.
- Insurance companies: mandatory anti-theft prevention for clients, giving access to LEAs to their tracking systems, alerting LEAs to patterns in crime/MO's. Insurance Europe is an overarching association of insurance companies within the EU, they can be a partner in creating cooperation between different insurance companies and more trend detection concerning fraud.



Barriers

- ICT-developers: can help car manufacturers identify risks and provide them with solutions and security measures/updates.
- Local communities: signalling and reporting suspicious activity and behaviour to the police and taking additional precautionary measures to safeguard their property (neighbourhood watch or neighbourhood WhatsApp group).

- A more comprehensive cooperation between European countries to combat organised crime. This cooperation also needs to be extended to the private sector. Prioritised prevention/repression of car theft within member states, shared rules/norms for documentation and knowledge in license plate identification, faster information sharing between LEA and more trust, speeding up the process of mutual assistance between EU LEAs.
- LEA visible on the street: preventive work in areas that can be seen as hotspots for vehicle theft: road checks, discrete surveillance, etc.
- Improved or developed regular exchange of information between police, car manufacturers and car dealers.
- Insurance companies and manufacturers can give LEAs access to their tracking systems and alert LEAs to patterns in crime/MO's.

- Educating the public in preventing recent car theft trends (for example owners of keyless cars). Preventive actions by the general public (for example placing keys in a case or biscuit tin).
- Encouraging car owners to equip their vehicles with car alarms (e.g. incentive, tax reduction). Also adding new mandatory equipment to the vehicles with keyless-go systems. Simple systems can impeach this transmission, such as anti-wave pockets.
- Dialogue with the car manufacturers about the importance of three elements:
 1. Limiting the accessibility of the OBD plug
 2. Stop putting the VIN directly at the bottom of the windshield
 3. Installing a sound system signalling the driver when he left his keys in the ignitionSo they can implement these three elements in their design.
- Requirements on keys in the case of cars with keyless entry. For example: sleep mode after 3 to 5 seconds not using. In this way the signal can't be intercepted by the software used by the perpetrators to use the key and open and start the car.

Step 6 | Post-crime



Opportunities

- The open borders result in fast and anonymous movement of criminals between different EU countries, while the mutual assistance requests for European LEA are a slow process.
- Well-developed street infrastructure (to get away after the crime).
- The reported distrust between LEA and the private sector plays a role in the slow detection of stolen cars.
- Most criminals try to cover their tracks by switching between license plates. False license plates are easy to access online or within the criminal network.



Signals

There are few to no signals for this specific step. A signal could be the previous criminal activity/ criminal record: after the crime, police systems can indicate the presence of criminals by car identification.



Facilitators

Since this happens after the vehicle is stolen, but before it is stored, there are not a lot of facilitators. Except for the criminal network that is involved with a malicious car dealerships and car repair shops or chop shops. These can be used to steal the car parts before they are stored somewhere else.



Partners

- Insurance companies: mandatory anti-theft prevention for clients, access for LEAs to their tracking systems, alerting LEAs to patterns/MO's. Insurance Europe is an overarching association of insurance companies within the EU, they can be a partner in creating cooperation between different insurance companies and more trend detection concerning fraud.
- Private security companies (help to retrieve the car). They get hired by the owner of the car to retrieve the car.
- ICT-developers: can help LEA with identifying the tools that are confiscated. Retailers can provide information on buyers.
- Maritime companies: collect the VINs of the cars (the most frequently stolen models) that are embarked. These VIN's are reported to the police/LEA in order to check if the cars are stolen.



Barriers

- Improving or developing regular exchange of information between police, car manufacturers and car dealers.
- Edit a list of the most frequently stolen models of vehicles every month, specifying which ones are easily available in the country of destination of a ship and demand from the maritime companies to control the VINs of these vehicles during the embarkement. These VIN can then be transmitted to the police or local forces and be matched with the FOVES (stolen vehicle folder) to check if the vehicles are stolen or not.
- Insurance companies can grant LEAs access to their tracking systems and alert LEAs to patterns in crime/MO's.
- ICT-developers help LEA with identifying the tools that are confiscated.
- Insurance Europe can promote cooperation between different insurance companies and more trend detection concerning fraud.
- Expanding the cooperation between car manufacturers and ICT experts/ white hat hackers in identifying risks and providing solutions and security measures/updates.



This is a brief overview of this step. For all opportunities, signals, facilitators, partners and barriers of this step, visit: www.barrieremodellen.nl.

Step 7 | Storage



Opportunities

- Easy access to inexpensive and anonymous storage areas and garages.
- Ability to pay for the parking/storage facilities in cash.
- Garage owners are allowed to add new license plates to a vehicle (including temporary plates).
- Ability to use straw men for the rental of the garage or storage area.
- Vacant firms, storage facilities and (malicious) car repair shops provide a lot of privacy and are mostly located on industrial sites where surveillance is less common.



Signals

- The presence and use of GPS jammers at garages, car-repair shops, used-car yards or storage facilities.
- Cars parked longer than an x number of days in a car park. This can be seen as deviant when it concerns a car park which is not known for long term parking.
- Nighttime activity in garages, car repair shops, car dealerships, used car yards and storage facilities.



Facilitators

- Landlords/lessors of storage locations/ garages can become unsuspecting facilitators when accepting tenants without contracts and cash payments.
- 'Cleaners' (individuals who are specialised in searching geolocation systems in the car and removing them).
- Garage owners and workshops: provide place to storage the car and car parts.
- Straw men: used by car thieves to rent property (garages, storage places) in their name.



Partners

- National tax and customs administration: revenue authorities can sanction landlords that do not officially register renting contracts to avoid paying taxes.
- LEA's: can identify the signals or investigate reports of the private sector.
- Labour and social inspection services: can detect fraudulent car dealerships/ car repair shops.
- Storage facility owners: can report suspicious behaviour (odd rental requests, adamant refusal of ID cards, other documentation and credit cards).



Barriers

- Hot spot mapping: pattern recognition based on typical parking locations, e.g. industrial areas, as preferred parking locations for specific groups or perpetrators.
- Cooperation between police and Communications Regulation Commission (CRC) and telecommunication companies to identify/track down signal jamming. CRC and telecoms possess specialised jamming detection equipment that allows them to establish and localise such unauthorised interferences and help identify illegal chop shops or hideouts for stolen vehicles.
- Regular (unannounced) inspections of car repair shops or used-car yards.
- Installation of perfected geolocation systems on vehicles: could be a potential method to increase the rate of recovered vehicles and limit the criminal opportunities (track and trace devices).

Step 8 | Transport



Opportunities

- Proximity and ties to the other regions and countries in the Schengen area.
- Open borders provide a secure option for transport as there is the least risk for LEA/ private sector controls. Customs agencies and expedition offices have not enough resources to monitor every container and there is no obligation to thoroughly check documentation. Criminals take advantage of the massive amount of container shipments that gets transported every day from multiple ports.
- There is a large criminal network available that will provide resources for transport and trade. Criminal networks can also trade with each other, stolen cars do not always end up in the legal market.
- Criminal networks take advantage of poor working conditions and low wages in some Eastern European countries to attract (unknowing) truckdrivers for employment within their criminal network. Even though there is an European authority (European Labour Authority) fighting this abuse, it still happens.
- Corruption at African customs. Their very low wages make it possible for criminals to corrupt some of them in case of difficult control. They moreover usually employ assistants who are paid only with the money coming from corruption.



Signals

- False documentation: criminals use false documentation for the car/containers and their own identification. During checks, car thieves will provide digital documentation for the stolen cars, these documents are harder to verify. Having multiple documents of different vehicles or identities on mobile phones can indicate criminal activity.
- Vehicles stacked on lorries or containers: criminals will try to make as much profit as possible in one shipment so they will stack vehicles without much care (it's cheap to repair the damage in country of export).
- Container weight does not match reported 'bill of load' (a contract that spells out the quantity, type and destination of the goods being shipped).
- At the last minute there is a need to load a car onto the container.



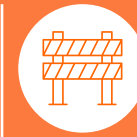
Facilitators

- (African) customs: regular controls the vehicles imported from Europe. But they have no means to identify stolen vehicles (they can't identify the VIN numbers in some cases, they have no access to the European stolen vehicles folders, etc.).
- Harbours (and harbour master/ port supervisory authority): they transport most of the export theft vehicles in cargos or ferries. Roll-off ports at harbours enable passengers to take their cars with them.



Partners

- LEA (national police and border police) more controls and random checks/ learning to identify signals or trend detection.
- Customs (National Customs Agency (NCA)): more controls and diligent VIN checks on borders/in ports.
- Vehicle inspection services: can be a partner by reporting suspicious behaviour and to adhere the mandatory check of multiple VIN's on vehicles.
- Harbour masters: can signal suspicious/ deviant behaviour.



Barriers

- Developing an intensive and routine interregional and international cooperation.
- Enhancing inter-institutional cooperation at BCPs: regular exchange of information between national police, border police and customs authorities in order to regularly update the risk profiles applied during border checks.
- Developing EU guidelines and regulation to prevent problems with the General Data Protection Regulation (GDPR) in EU countries. Such as a coherent EU policy on minimum requirements for data collection within shipping companies. This will enable them to conduct trend detection and better identification of criminal activity.
- Adding vehicle theft and vehicle parts theft to PARSEC, a project which aims to deliver a set of solutions by developing innovative tools, services and security management views to fight the abuse of postal and express courier flows for criminal and terrorist purposes.
- Installing jammers' detection systems at the tollgates. These systems can identify vehicles equipped with GPS jammers. These vehicles have higher probabilities to be stolen vehicles and can become the object of priority controls.
- Checking whether the reported 'bill of load' matches the weight of the shipment. This check is required but can be done more strictly.

- No further changes (in other words: no extra vehicles or car parts added) to the shipment X number of hours prior to departure.

Step 9 | Trade



Opportunities

- Big used (second hand) car market (constant inflows and outflows of vehicles).
- Due to the high demand of vehicles and vehicle parts, motor vehicle crime remains profitable (fast trade).
- A high demand and value of (stolen) car parts in European countries (examples: airbags, tires, specific brand accessories (Mercedes, BMW, Jaguar), catalyts and ICT), while the value and demand of (stolen) complete cars is higher in non-European countries.
- It is very easy to forge documents and license plates, as there are websites that sell access to blank formats online. These forged documents can be used for multiple reasons: insurance fraud, cloning of vehicles, security during controls and validating legitimate sales (online or physical).
- It is easy for criminals to take advantage of the existing legal car trade circuits and infiltrate or mimic these practices.
- General online second-hand selling platforms like eBay, Facebook market-place and other second-hand websites, have little control and security measures implemented.



Signals

- Missing or unoriginal documents: car parts sold without proper documents from the manufacturer or vehicle sold with missing or unoriginal documents for registration or purchase.
- Refurbished cars at vehicle inspection services: the hidden VIN's of a car don't match up and tempered or altered VIN stamps can indicate a refurbished car.
- Suspiciously low prices of spare parts or used vehicles. Cheap car parts or cars on online platforms: abnormal low prices in comparison with other advertisements online can signal illegal goods.
- Seller only accepts cash payments.
- Newly licensed vehicles for second hand cars (makes no sense for a second-hand car).



Facilitators

- Online platforms: websites, online second-hand platforms or classified ads platforms. No standards for documentation of online sale, no mandatory Car-Pass (outside of Belgium), insufficient monitoring of goods and users and no mandatory identification by ID-card or Itsme-app.
- Used car and scrap yard owners.
- Second hand car dealerships in non-EU countries (demand).



Partners

- Used car and scrap yard owners: can be a partner for LEAs to signal illegal or suspicious behaviour (requests for certain brands, frequent buyers).
- National tax and customs administration (administering taxes and social security contributions): may flag certain irregularities discovered during tax audits of used car and scrap yard owners.



Barriers

- A EU initiative to expand the Belgian Car-Pass system: the Car-Pass is a mandatory document when selling a second-hand car. This official document provides an overview of the mileage and other car specifics to prevent fraud when selling a car.
- Regular inspections of used cars yards and scrap yards.
- Synchronizing the collected Car Pass data within the EU with the existing European car and driving licence information system (EUCARIS).
- Vehicles and vehicle parts could more extensively be marked and included in a networked system in such a way that they can no longer be used when stolen, thus reducing, if not eliminating their marketability.
- An EU policy on prohibiting cash transactions above 3000 euro applicable to all EU countries, which will impact the new and second-hand car market.
- Better registration and transparency of damaged cars.



Opportunities

- Illegal trade is difficult to distinguish from legal trade due to cash intensive economy and massive grey sector. Also, easy access to cash transfers (Western Union) and a large amount of cash friendly places.
- Money laundering opportunities (fraud and cash transactions): insufficient compliance with anti-money laundering (AML) requirements. Money gets reinvested in the legal market (malicious car dealerships, car repair shops).



Signals

- Living standards are higher than expected compared to official employment; display of unjustified income.
- Large amount of cash exchanges.
- Businesses show no activity but are active for tax purposes.
- False invoices, mismatching records.



Facilitators

- Accountants or accounting firms.
- Businesses and entrepreneurs used as a front for money laundering, for example: nail salons, chip shops, pizzerias, massage salons, hairdressers, automotive companies/dealerships, leasing companies (risk of lease fraud).
- Insurers (risk of insurance fraud).
- Banks (unconscious facilitator).



Partners

- National tax and customs administration (administering taxes and social security contributions): may flag certain irregularities discovered during tax audits of used car and scrap yard owners. Such flagged irregularities might prove helpful in detecting money laundering.
- Chamber of Commerce: can give access to annual accounts and other company data (via Chamber of Commerce trade register) such as liability and who is allowed to sign.
- Financial institutions: partners in detecting criminal behaviour and tracking and tracing of money trails. Also, money transfer services, i.e., Western Union and Money Gram, can be partners when anonymous transfers are no longer accepted and there is a registration for transfers verified with ID's or Itsme-app.
- Banks: risk factor analysis, Know Your Customer, Customer Due Diligence, tracking of the money.



Barriers

- Money transfer services, i.e., Western Union and Money Gram, no longer accept anonymous transfers and have a registration for transfers verified with ID's or Itsme-app.
- Barriers concerning cash: better and more comprehensive regulation and legislation of the cash transfer services active within the country of EU and cash transactions should be restricted in the EU.
- Improving the effectiveness of asset tracing, seizing and confiscation.
- A better and more automated tracking of money trails. Before transfers are completed, there needs to be a risk taxation system. Financial institutions are creating more sophisticated 'Know Your Customer' (KYC) services, but preventive action needs to be developed.



Keeping the steering wheel in firm hands: preventive measures against motor vehicle crime

The way forward

The European barrier model for organised vehicle crime provides an overview of numerous potential interventions in the fight against organised vehicle crime. In order to effectively combat this phenomenon, researchers and experts prioritized five barriers. According to these researchers and experts these are the most crucial barriers to address the phenomenon.

All these barriers share the main goal of crime prevention and stopping crime on a European level. The experts chose these barriers because these barriers are the most feasible, have the potential to achieve the main goal and have the most impact.

The five prioritized barriers are:

1. EU-wide data driven ANPR (Automatic Number Plate Recognition)
2. Inventorizing the processes of selling cars in the different member states
3. Know Your Customer (KYC)
4. Marking car parts
5. Creating awareness among vehicle owners by insurance companies

1. Eu-wide data driven ANPR (Automatic Number Plate Recognition)

Purpose of the barrier

This barrier aims to achieve to share and connect the data analysis methods and to create awareness of ANPR (Automatic Number Plate Recognition) – methods or other lists.

How does the barrier work?

In every country a mandatory list is created with the same criteria. This can be an ANPR-list or another type of list (for example: a list of criminal offences). In this way it is easier to share and connect data for analysis, which is needed to stop crime on a European level. The ANPR-list needs to be connected to the Central Information System (CIS) or Schengen Information System (SIS II).

Criminal offences on a list can be the following:

- stolen vehicles
- licenses of stolen vehicles
- movements of known perpetrators
- vehicles in risk groups (vehicles that have a higher percentage of being stolen)

Application of the barrier

In the Netherlands the ANPR-lists are used to prevent car theft. ANPR-lists are used as sensing tools in order to stop the crime.

The following example will be used as an illustration: ANPR-lists were used as a sensing tool to sense patterns of cars. By doing this, it was possible to identify clone cars. There was an ANPR-hit in city A for a specific car and that specific car also had an ANPR-hit in city B half an hour later. It is however not possible to drive from city A to city B within half an hour, because city B is on the other side of the country. Therefore, the ANPR sensed a pattern which indicated there were two cars with the same license plate, which meant one of the cars was a cloned car.

We would like to implement this barrier also in other member states.

Positive effects

- Similar working processes on a European level
- Opportunities for intelligence led police
- Limiting opportunities > preventing/stopping crime
- Reinstation of (new) borders > virtual border controls
- Connects borders

Preconditions

- Commitment of the European member states
- The criteria of the lists need to be possible and practical for every country (e.g. full license plate)
- Constant learning process: the list can be adjusted



2. Inventorizing the processes of selling cars in the different member states

Purpose of the barrier

The purpose of this barrier is to share information and recommendations within the EU. In every member state the transfer of the ownership of a car is done differently. Across Europe member states do not know what the process in the other countries is like. By researching and sharing this knowledge, member states can be more alert and prevent different types of fraud relating to vehicle theft.

How does the barrier work?

Research in different member states about the process of selling vehicles will take place to inventorize how cars are sold and bought. The inventory leads to an overview of the minimal requirements needed for each member state in the process of buying and selling cars. Furthermore, the best practices will be collected, harmonized and shared with the European member states.

Application of the barrier

When detaining individuals in a vehicle, not all police officers are familiar with the rules pertaining to the transfer of vehicle ownership in other countries. For instance, in France, it is common to have a two week window to transfer the ownership of a car. Providing law enforcement personnel with more information on these diverse procedures can enhance their ability to recognize signs of undesirable situations effectively.

Positive effects

- Overview and insight of the different processes of selling and buying cars in the different member states
- More active prevention of fraud regarding vehicle theft
- Overview of good practices and learning from other countries
- Might result in a more unified and mutual process of selling and buying vehicles

Preconditions

- Commitment of the European member states
- A responsible party for the inventory

3. Know Your Customer (KYC)

Purpose of the barrier

This barrier aims to raise and force awareness by car dealers in dealing with illegal goods. For car dealers it is important to know what they are dealing with and whether it is fairtrade.

How does the barrier work?

Supervision and monitoring the selling of second hand car parts on a European level, by using a register. This also provides a higher chance of retracing stolen car parts.

Application of the barrier

In the Netherlands there is a good example of how sellers and buyers can be more aware of the goods they are dealing. It is called the Digital Buyers Register (DOR). Second hand goods dealers and buyers are legally obliged to keep a continuous and certified purchasing register in which they must keep track of:

- the date of acquisition of the good
- a description of the good as specific as possible
- the price
- the name and address of the provider of the good

In the case of trading in copper (alloy) against cash payment, it is also mandatory to state type and unique number of identification document with which the supplier identifies himself.

The DOR facilitates buyers in registering the used and irregular goods they purchase. An additional advantage is that in this way, more information about the purchased item (including photos) and the seller (identification requirement) is registered.

The DOR database is also connected to police database (Stop Heling) with reports of stolen goods. The DOR thus offers the possibility to automatically check, for example by serial number, whether an item is registered as stolen. If this is the case, there is a match and the police will automatically receive a notification.

KYC is also already implemented by banks. These tools are already available. The DOR can therefore be implemented in other member states to establish a European database to regulate (second handed) car parts on a European level.

Positive effects

- Limited possibilities for perpetrators to sell stolen second hand car parts
- Improvement of economic health; fair competition and equal playing field on economic level

Preconditions

- Monitoring necessary, otherwise second hand good dealers will not comply
- Car parts need to be marked (see next barrier)



4. Marking car parts

Purpose of the barrier

This barrier aims to prevent, detect and curb the trade of stolen parts (on the internet).

How does the barrier work?

Marking car parts to prevent the sale of stolen parts. The car parts can be either marked in the factory or afterwards with micro dotting. The marking should be started with the parts that are stolen the most.

Application of the barrier

In Germany, FADA (Federation of Automobile Dealers Association) is used to prevent the selling of stolen parts. The FADA-system makes it possible to query vehicle data directly from German vehicle manufacturers for online access to factory data. Vehicle data such as the vehicle identification number, engine and transmission number, production identification number, multimedia devices, airbag, etc. can be queried via FADA, as well as information about the description and equipment of cars. The FADA working group includes representatives of German vehicle manufacturers and investigators from Austria, Germany and South Tyrol. They hold annual meetings to exchange information and evaluate technical measures. Marking car parts makes it harder to sell stolen vehicle parts.

Other European member states and European automotive brands should be included into this system.

Positive effects

- More safety by buying these products with numbers and a safer market of used vehicle parts
- More incentive to buy original parts: if they get stolen the chance is higher that they can be found back
- Re-use of parts from cars you can't drive in anymore (e.g. because of accident). The parts are marked and they can use them again (re use)

Preconditions

- Car manufacturers must be willing to cooperate
- Parts have to be marked before it is possible to start with this barrier
- Someone has to be responsible for the system
- There needs to be a European database (Europol)
- Other member states should have the possibility to 'log in' to FADA



5. Creating awareness among vehicle owners by insurance companies

Purpose of the barrier

This barrier aims to create awareness for owners of the vehicles. Furthermore, it reduces the costs of insurance companies and strengthens the cooperation with the insurance companies, police and car owners.

How does the barrier work?

Insurance companies have the ability to identify trends, such as prevalence of theft for specific car brands. By utilizing insights from these trends, they can engage car owners in crime prevention measures. The insurance companies can present options, solutions and possible barriers to the owners of the vehicles.

Application of the barrier

Cooperation between insurance companies and LEA exists in different member states, like France. Both parties are working together and are thinking about solutions and measures to prevent cars from being stolen. Trend detection through insurance companies can be used to inform owners of high-risk car brands. By informing the owners of this specific car brand, the owners can take preventive measures to protect the car.

Articles in newspapers like ANWB (NL) and AUTOPLUS (FR) can be used to spread awareness and provide anti-theft measures to high-risk vehicle owners.

Through close collaboration between insurance companies, enhanced information sharing is achieved, enabling the early detection of vehicle crime. This is made possible by both adhering to relevant legal provisions for information exchange and mutually providing access to each other's information systems.

Positive effects

- Change of responsibilities from police to private sector and car owners
- Owners can take preventive measures on their own/pick up signals
- Preventing the use of stolen cars for other types of crimes

Preconditions

- Trend detection system within the insurance companies/associations
- Good communication strategy: car owners should not be deterred, but encouraged to take action to implement the possible measures and solutions.



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