

**Geographical differences in synthetic drug waste dumping**  
Comparison of the province of Groningen and North-Brabant

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**Abstract**

Within the Netherlands most synthetic drug waste is being dumped in the province of NorthBrabant, which brings along great health risks and societal problems. The province of NorthBrabant has been compared with the province of Groningen interviewing various involved parties in the dumping synthetic drug waste problem to find possible explanations for the geographical difference in dumping locations to gain a deeper understanding of this problem. The main results show that a variety of factors determined the concentration of dumping's being located in North-Brabant: foremost path-dependency.

**Key words: Synthetic drug waste dumping, Geographical difference, Path-dependency, Geographical proximity, Opportunity theory**

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## Introduction

Almost weekly news reports are published in important newspapers of the Netherlands about synthetic drug waste being dumped and discovered, mostly in the south of the Netherlands (Baneke, 2020; Thijssen & Stoker, 2020). They emphasize the destructive impact on the environment and society due to health risks and high contamination; marking it a societal problem (De Zwaan, 2018). Many of the chemicals and waste products of ecstasy production are left behind in homes, barns or carelessly dumped in neighbouring yards or meadows, exposing children who play in nature to those toxic chemicals. Furthermore, leaving hazardous materials that can have an effect on the entire community (Denehy, 2006). In this sense synthetic drug waste dumping can be categorized as environmental crime (Schoenmakers & Mehlbaum, 2017).

Landowners are by law responsible for the quality of their soil. Meaning that innocent landowners should pay the bill for the clean-up of illegally dumped drug waste, the bill being sometimes tens of thousands of euros (Wortham, 2007). On average the costs of one dump site being cleaned are around €12.500 euros, also the costs of environmental restoration rise into the thousands of euros (Nicholas, 2015). Moreover, local farmers and foresters are being blackmailed and threatened by criminals to allow the criminals to dump the drug waste in the meadows and forests on their properties, without reporting it to the police or other institutions (Tourkov, 2019; Driessen, 2019). This side of drug waste dumping can be categorized as organized crime (Von Lampe, 2015).

The Netherlands is one of the largest producers of ecstasy, a synthetic drug, worldwide. Of all ecstasy that has ever been confiscated, 42% was traced back to the Netherlands (Soudijn & Vijlbrief, 2011). A report by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) and Europol (2016) also states that the Netherlands and Belgium are the most important areas for MDMA and amphetamine production, which includes ecstasy in Europe. A police report from the Netherlands shows that between 2015 end the first half of 2019 a total of 374 synthetic drug waste dump locations have been found next to 94 production locations in the province of Noord-Brabant. This is the highest amount of dumping locations found compared to the other eleven provinces. Within this time period, only one dumping location is found in the province of Friesland and two in the province of Groningen, the two most northern provinces (Landelijke Eenheid, 2019:). More than 50 percent of the dumping was located in Noord-Brabant (Nicholas, 2015).

Despite being the top producer of synthetic drugs and despite the increasing number of discoveries of dumping locations found mostly in the Dutch province of North-Brabant (EMCDDA, 2016; Provincie Noord-Brabant, 2015), current literature and police reports on this topic seem to focus mainly on the production, distribution and consumption of hard drugs in Brabant and other criminal activities associated with the consumption of drugs (Soudijn & Vijlbrief, 2011; Brunt, Niesink, & van den Brink, 2012; Spruit, 1999). Hardly any literature can be found on the explanation of the province choice for synthetic drug waste dumping in North-Brabant specifically; only a few studies linking the history and geographical location to drugs related crime in North-Brabant (Ministerie van Justitie en Veiligheid, 2017).

Empirical studies in the US have been done about the characteristics of the counties where production and dump sites were seized (Weisheit & Wells, 2010; Wieman, 2007). One concrete outcome of these studies in the US on the geographical explanation for synthetic drug waste dumping is the assumption that drug waste is being dumped near production sites (Denehy, 2006; Scanga 2005; Cohen et al., 2007). The most often found places of synthetic drug waste are on farms, in or alongside rivers, in forests or next to a road (Wortham, 2007; Cohen, Sanyal, & Reed, 2007; Nicholas, 2015). The locations could be in rural areas, but there is also regular dumping and mainly discharging in residential areas and on industrial sites (Schoenmaker & Mehlbaum, 2017).

However, in a large study conducted on behalf of the Dutch research program Police and Science carried out by Schoenmakers, Mehlbaum, Everartz and Poelarends (2016), which focuses on the phenomena of dumping synthetic drug waste (ecstasy) in the Netherlands, concludes that there is no clear view of the

geographical pattern of dumping in relation to the production location in the Netherlands. This was due to a lack of backtracking and case linkage. This immediately addresses the knowledge gap found in literature about geographical choice for the synthetic drug waste dumping in Brabant. Current literature mainly states the occurrence of dumping and dangers of it (O'Dea, Murphy, & Balzer, 1997; Scanga, 2005). The study of Schoenmaker et al. (2016) included more than 20 in-depth interviews with key figures in the professional field of drug-related problems. From those interviews, it was revealed that offenders sometimes do put effort in to dump their waste in multiple locations.

Moreover, another study from De Middelmeer et al. (2018) also conducted interviews with key figures in this field of work. An interesting suspicion was expressed, namely that Belgium synthetic drug waste was dumped intentionally in southern provinces of the Netherlands, among others North-Brabant. It is suspected that this is done in order to complicate the course of justice, seen as transit crime (Kleemans, 2007). This transit crime phenomenon of dumping drug waste across borders, is disturbing because authorities always thought criminals would not drive too long distances from their production site, to reduce the risk of getting caught (De Middelmeer et al., 2018).

As mentioned, sometimes the by-products, or waste from the production process is stored in the lab itself, which makes the drugs lab even more sensitive for fire (Wieman, 2007; Wells & Weisheit, 2012). Even though ecstasy drug laboratories are the reason for the existence of synthetic drug waste and its association with dumping, this research focuses primarily on the geographical explanation of the chosen dumping sites of synthetic drug waste. This is chosen because the dumping of synthetic drug waste is seen and addressed as a self-contained problem in the society and policy in the Netherlands. Therefore, this research tries to get a deeper understanding of why Brabant is preferred more as a province to dump drug waste than other provinces. Introducing the following research question:

*How do 'key stakeholders' explain the geographical difference in synthetic drug waste dump locations, comparing the province of Brabant with the province of Groningen?*

Key stakeholders is used as the collective term for various parties involved in the investigation, enforcement, drawing up and implementation of policies and protocols aimed at tackling synthetic drug waste dumping. The aim of this research is to gain a deeper understanding of why drug waste is being dumped significantly more in the province of Brabant than in Groningen, despite having the same jurisdictional rules and laws applying to the provinces. Phenomenon and/or processes that lay behind organized crime might be able to explain this geographical difference. The objective of the study is to provide an overview of these causes in order to contribute to the scientific and societal problem. The aim is to create an overview of possible causes of the higher sensitivity of Brabant in comparison with Groningen for being a dumping area of synthetic drug waste.

In the literature, many illegal activities, sometimes related to drug use or abuse, have been linked to actual theories and concepts, which serve as possible explanations for their occurrence. Therefore, relevant theories and concepts are introduced from literature focused on explaining illegal activities in general, and these are then applied to the case of synthetic drug waste dumping. The choice for these concepts are clarified and elaborated in the theoretical framework, containing the following factors: (the lack of) institutional thickness (Hall & Windett, 2015), path dependency, undermining families (Tops & Torre, 2014), generation effect (Moors & Spapens, 2017), social embeddedness theory (Kleemans & Van de Bunt, 1999), geographical proximity (Paulsen, 2006), broken windows theory (Wilson & Kelling, 1982), opportunity theory (Felson & Clarke, 1998) and the generation-effect (Moors & Spapens, 2017).

## **Social relevance**

As stated above, the report by the EMCDDA and Europol (2016) shows that the dumping of synthetic drug waste takes place on a large scale in the Netherlands, relative to other European countries. Besides this, the report states that the impacts of chemical waste of synthetic drug production brings along health

risks and environmental damage. The leakage of chemical waste into the ground water system can affect crops and end up in the human body. These potential health risks and environmental damage, together with the large scale on which synthetic drug waste dumping occurs in the Netherlands, create a potential danger for society. Moreover, the costs associated with decontamination of the dumping sites can be high (EMCDDA & Europol, 2016; Lynch & Stretesky, 2013; Scanga, 2005). To know why the waste is being dumped more often in the province of Brabant instead of other provinces in the Netherlands could be an important step forward in understanding and explaining this illegal behaviour in order to reduce harmful economic, environmental and health impacts in the future for society.

## **Scientific relevance**

This research will broadly add to the scientific debate of understanding human behaviour when participating in illegal activities focused on the field of dumping synthetic drug waste. Specifically, the results of this research focused on the dumping synthetic drug waste, will support or disprove the applicability and transferability of the found explanations in the literature for carrying out illegal activities, on the phenomenon of synthetic drug waste dumping. Furthermore, the outcomes might reveal an undescribed cause for the occurrence of dumping of synthetic drug waste on the specific geographical location of North-Brabant.

The next section will provide a theoretical framework of relevant concepts and theory of explaining theories and concepts for criminal activities in general and provides a conceptual framework. The third chapter describes the methodology used for this research. Chapter four provides a short overview of the history of drug production within the Netherlands and includes a policy analysis on both case study areas, describing the environmental, demographical and economic factors in the provinces, to gain a deeper understanding of the wider context of the problem. The sixth chapter will contain the analysis of the interviews. Lastly, the discussion is described providing limitations of the research and recommendations for future research and the conclusion of the main findings will be stated.

## **Theoretical framework**

The first section provides an overview of the nature of the problem of synthetic drug waste dumping followed by concepts that explain the motives behind illegal activities in general.

### **The context of synthetic drug waste dumping**

In the Netherlands, organized crime has been put forward as one of the most urgent policy fields that should be enforced between 2013 and 2017 (Chatwin, 2016). To decide on proper and effective policy, it is important to know how the synthetic drug production process functions, what is already known about synthetic drug waste dumping's and to consider the context of organized and environmental crime.

The choice for the term 'synthetic drug waste dumping' was made due to the limited amount of literature available, to include as many relevant kinds of synthetic drug waste dumping's instead of just ecstasy, this more general term has been chosen to make all studies of different kinds of drugs applicable to and useful for this research. When talking about synthetic drugs the end products ecstasy and amphetamine are most often meant (Klerks, 2017).

The synthetic drug production process contains a sequence of different tasks or processes, which determine the structure of the criminal organization. The whole production process is split up as much as possible to reduce risks of getting caught, depending on the type of drug being produced a remote is sought, serving best for either noise or smell. The criminal organization process of producing synthetic drugs is as follows: 1) obtaining a production location and production resources, 2) setting up the laboratory, 3) carrying out the production process, 4) trafficking the final product and 5) transport and distribution of the final product.

The third step in this process consists of performing the various steps of production and the disposal of the synthetic drug waste (Soudijn & Vijlbrief, 2011). For every pound of ecstasy being produced, six pounds of chemical waste is created (Wieman, 2007; Wortham, 2007; Cohen, Sanyal, & Reed, 2007).

Literature about synthetic drug waste dumping exposes the manner and most often found disposal sites. The drug waste is often being dumped to mask illegal drug producing activities (Scanga, 2005). Disposal of synthetic drug waste, appears in mainly two forms, by dumping and discharges. The former being disposal in sealed containers, the latter being liquid disposal. These two forms of disposal can be subdivided in five different appearances. The first is barrel dumping, this is done either carefully or carelessly discarded or the barrels are left behind in a vehicle. The second appearance of disposal concerns the incineration of the drug waste, including the burning of the vehicle used to dump the drug waste. Thirdly, drug waste can be found by partial discharge, accidentally or carelessly leaking or dumping half of the barrel of drug waste. Fourth, the deliberate discharge, entailing either local discharges on soil, moving discharges from a vehicle, discharges into manure cellars or to surface waters. The last appearance happens in the form of leaving the waste behind in an abandoned production site (Schoenmakers & Mehlbaum, 2017).

### **Organized 'transit' crime versus environmental crime**

Some households dump their household waste once in a while on the side of a road or in a forest, possibly because of the price they need to pay when bringing it to the assigned waste service provider (Visbeen, 2018). This type of dumping is illegal, but is not regarded as organized crime, rather as environmental crime. But why is the dumping of synthetic drug waste seen as a part of organized crime?

Van Koppen, De Poot, Kleemans, & Nieuwbeerta (2010) point out the difference between high-volume crime and organized crime, the former being within reach for every individual, like a street robbery, while the latter requires more complex ties. All illegal activities, like the supply of illegal goods and

services, illegal gambling practices, theft and fraud can be executed in an ‘organized’ way, according to Von Lampe (2015). This organized way entails that illegal activities are incessantly performed, containing the need for planning and preparation. It can also entail that the illegal activity is not a one-off simplistic deed, but comprises an effort of multiple interconnected tasks. The presence of multiple interconnected tasks does not imply that more than one person is involved.

Organized crime in the Netherlands is for the largest part related to the area of ‘transit crime’, being transnational illegal activities like smuggling or money laundering. Three reasons are supporting the claim that the Dutch organized crime requires more complex ties than high-volume crime. The first reason is the necessity to have social connections within organized crime, entailing the entry to suppliers, possible co-offenders and criminal opportunities (Van Koppen et al., 2010). Von Lampe (2015) mentions that not all organized crime requires multiple offenders involved, however, looking at the complex ties involved, finding suitable co-offenders significantly increases the success rate. Second, the ‘transit’ character of Dutch organized crime implies that international contacts are in play. These contacts are not available for just any individual first time offender. The third reason reflects the often-complicated logistics accompanying organized crime in comparison with high-volume crime being executable on any street.

### **Environmental crime**

Schoenmakers and Mehlbaum (2017) highlight the thin line between organized crime and environmental crime. They argue that the dumping of synthetic drug waste is on a crossroad between the two types of categories. When viewed from the perspective of organized crime, synthetic drug waste dumping is one last logistical aspect of the chain of illegal activities associated with organized drug crime: as the by-product of organized crime. Other harmful by-products are the illegitimately retrieved capital, the undermining of societal and economic structures and additional violent crime. In addition to this perspective, the dumping of synthetic drug waste can also be categorized as organized crime on its own. However, this is only the case when the disposal takes place in a systematically organized way, supported by partnerships being set up for this. In the Netherlands, organized crime has been put forward as one of the most urgent policy fields that should be enforced between 2013 and 2017 (Chatwin, 2016).

When viewed from the perspective of environmental crime, synthetic drug waste dumping can be regarded as waste crime. It is categorized as hazardous waste by law. According to the Environmental Management Act, all hazardous wastes must be carefully disposed of. When these requirements are not fulfilled, the waste disposer is punishable. Moreover, illegal disposal on or into soil is in contradiction with the Soil Protection Act (Schoenmaker & Mehlbaum, 2017). The direct harm or contamination that is inflicted on the environment determines the base standard. Indirectly, environmental crime can also have harmful effects on society, named social harm. Synthetic drug waste dumping is seen as an increasing problem in environmental crime (Cohen, Sanyal, & Reed, 2007).

### **Institutional thickness**

In an article from the national government of the Netherlands, the minister of security and justice is guided through wooded areas where synthetic drug waste is often dumped (Ministerie van Justitie en Veiligheid, 2018). A statement from the ministry about collaboration between different parties to tackle this organized crime problem is that institutions such as police, justice, municipalities and other parties, are working together closely. It is a topic addressed more often in literature, arguing that a lack of institutional collaboration or ‘thickness’ could be an incentive to commit crimes. Two types of institutional thickness are found, one focusing on ‘thick institutions’ and the other focusing on multi-agency cooperation or institutional collaboration, the latter supporting the statement of the ministry (Hall & Windett, 2015; Walters, 2000).

The research of Hall and Windett (2015) defines institutional thickness as the number of jurisdictional layers working together. Their results show that the more jurisdictional layers present, the more obstruction there is with implementing policies. ‘Thick institutions’ ensure a lack of influence on the

outcomes of top-down implemented policies, due to the high number of jurisdictional layers. This lack of influence due to multiple layers can be caused by different factors: twisted information, a diminished sense of responsibility or increasing administrative slowness. In this definition, the jurisdictional layers are meant as layers within the government that obstruct policy implementation from for example parliament. This would mean that when new policies against synthetic drug waste are being drawn up to empower police in enforcement or prevention, quick or correct implementation could be obstructed when government has multiple jurisdictional layers and therefore enforcement of the policies are being put on hold and juridical impact is constraint.

Multi-agency cooperation is focused on the collaboration of different institutions to tackle a problem. The multi-agency crime prevention approach from Walters (2000) specifies this approach on crime related problems. Assuming that different institutions bring different insights in terms of knowledge and can therefore approach the problem from different perspectives. Cooperation could then lead to an increased chance of preventing drug waste dumping due to among other things better communication between stand-alone institutions and therefore a better understanding of the problem, resulting in a smaller knowledge gap. It is suggested that this crime prevention approach is most useful when used for situational crime prevention methods. Because then problem-focused methodologies are used for opportunity reduction strategies, resulting in focused agency-specific participation. A side note that is made concerns the equal division of power between all institutions involved when the police is appointed as the major stakeholder, with most executive juridical power. A lack of institutional thickness or cooperation could lead to beneficial circumstances for criminals to practice the production and dumping of drugs in that area due to 'sleeping' civil servants. These more beneficial circumstances for criminals introduces the basis for a theory called the 'opportunity theory' which explains the occurrence of criminal behaviour; the next section will elaborate this theory.

## **Opportunity theory**

According to Felson and Clarke (1998) three factors determine the extent for a crime: the amount of potential offenders, potential targets and the amount of control on potential targets. The opportunity theory claims that the more these factors turn out to be beneficial to criminals, like a high presence of offenders and targets with limited control on potential targets, the more opportunity there is to commit a crime: the more likely it is that an offender will commit the crime.

Another study about waste crime in general (all types of waste), identifies four characteristics that could increase the opportunity for committing waste crime, being: subjective opportunity, objective opportunity, challenges in enforcement and regulation and lastly increased costs of legal waste management (Sahramäki & Kankaanranta, 2017). The *subjective opportunity* consists of a corporation's crime-facilitating environment. Waste crime is used to support or reach corporate goals, it can be seen as a section of white-collar crime, mostly to gain economic benefits by dumping the waste illegally and thereby avoiding waste processing costs. However, the dumping of synthetic drug waste is not to avoid corporate costs but legal prosecution; the concept is therefore not very suitable for this type of crime since the offenders do not really have a choice. *Objective opportunity* reflects the increased opportunity for committing waste crimes by having appropriate or proper targets present, naming the presence of remote areas as an example for the use as an illegal waste dumping site. Thirdly the *challenges in enforcement and regulation* present an opportunity for waste crime offenders. When there is a shortage in surveillance tools, or not a clear policy for enforcement, offenders might use that security gap as an opportunity for their benefit by dumping waste, knowing the risks of getting caught are low. Finally, the *increased costs of legal waste management* lead to more waste dumping's, either on individual level to avoid costs, or on corporate level to increase the revenues. The individual and corporate group brought forward here are relevant, however, Sahramäki and Kankaanranta (2017) left out another possibility, namely that offenders dump their waste illegally not purely for avoiding costs but rather to mask evidence leading to illegal drug production sites (Nicholas, 2015). The best way to summarize the rationale behind the opportunity theory is by providing a quote from Sahramäki and Kankaanranta (2017): "Opportunity structure is conducive to environmental crime in many ways: most offences take

little effort, chances of detection are low, rationalizations are easily found and saving compliance costs is an attractive reward of non-compliance.” (p.219).

### **Situational crime prevention**

In addition, one of the opportunity theories, called situational crime prevention, extends on the opportunity theory by bringing in some nuance. The theory is focused on criminal- and crime-centred frameworks. Criminal centred refers to the assumption of individual's rational choice. When an offender acts reasonable, it is assumed that the offender will make an effort to reach his set goal in the best way possible. He does this by identifying the advantages and disadvantages, also called: costs and benefits. Analysing those outcomes, different options will be evaluated before committing the actual crime (Sahramäki & Kankaanranta, 2017). Balancing out the cost and benefits of dumping drug waste nearby or far from the production site for example. According to this theory, the engagement in crime depends on the situation, only when costs are exceeded by benefits the crime will be committed. The theory thus argues that whether or not individuals engage in a criminal activity, depends on different costs and benefits for each individual. Situational crime prevention refers also to crime-centred, recognizing that variables which can change the decision-making process of a possible offenders vary greatly among types of offences. Situational crime 'prevention' addresses the approach of the problem by adapting the environment to make the opportunity characteristics as little as possible, which could lead to higher perceived risks and higher costs of a crime, influencing the rationality of a possible offender and thereby decreasing the likelihood to commit a crime (Sahramäki & Kankaanranta, 2017).

### **Geographical proximity**

One of the clarifications for the occurrence of illegal activities in a certain area that is mentioned in literature is geographical proximity. This literature is based on Tobler's First Law in geography. This law states that “everything is related to everything else, but near things are more related than distant things” (Tobler, 1970). This law could hypothetically be applied to every step in the synthetic drug production process. When applying this law to the production of drugs and disposal of its waste chemicals in nature, Tobler's First Law would imply that dumping locations of synthetic drug waste are likely to be more related to near production sites than to distant ones.

However, despite this clear explanation of the concept geographical proximity, an ongoing discussion in literature is found about the applicability of the concept as an explaining factor for various types of crime. A study by Paulsen (2006) argues that the travel distance, the 'journey to crime', depends mostly on the type of crime committed. Implying that there might be great variations between travel distances looking at several types of crime.

The outcome of another study, published a view years later by Tonkin, Woodhams, Bull, Bond and Palmer (2011) contradicts this finding and argues that most offenders stay close to home when committing a crime, regardless of the nature of the crime. Psychological processes, underlying criminal spatial behaviour, are related to this close to home location choice for committing crimes. This relationship is also found in a by Philips (1980).

Geographical proximity is said to encourage opportunities, to obtain the needed social capital or to develop a social network for committing crimes (Kleemans, 2007). Following this theory, even money gained from committed crimes tends to be invested in among other things, real estate, tangible things, close to their home rather than investments in stocks (Kruisbergen, Kleemans, & Kouwenberg, 2015). A criminal history of a region can also be interpreted as crimes committed close to one another are more related than distant ones. In this view path-dependency will be further explored in the next part.

## **Path-dependency and undermining crime**

Path-dependency can be divided into two subthemes, the first theme dives into the possible longstanding history of a geographical region being involved in and connected to criminal activities; the longstanding history seen as a predictor for future criminal behaviour, the history determining the ongoing criminal path. In some geographical regions, a web of criminal families blurring the lines between illegal and legal businesses has been rooted in that area for centuries: originated from of a history of smugglers and smuggling routes, evolving into a network of organized crime woven through local society (Klerks, 2017). This phenomena is called undermining crime. Undermining crime explains part of the complex network of organized crime. Undermining crime is the façade of a legal business of for example a bar, but at the same time it could be the white washing home for illegal gambling practices or drug money. The same rule applies to undermining families, infamous in Brabant, the rule of ‘us knows us’ plays a significant role in the reporting of crime (Tops, 2017). Often, normally looking families have been a part of the organized crime for generations long. The families have strong social ties with all locals which is why there is a culture of silence: no reports are being made because everyone is regarded as a friend despite the illegal activities going on and you do not betray friends. These societal norms make the fighting against drug production related problems especially complicated and hard to address (Bruinsma, Ceulen, & Spapens, 2018; Tops & Torre, 2014; Kolthoff & Khonraad, 2016).

There is a strong correlation between undermining crime and the social-network theory. Both undermining crime and families are very dependent on their social network: having to put in a lot of trust in co-offenders and in this case family members and neighbours, not to talk to authorities about ongoing illegal activities. Kruisbergen et al. (2015) emphasize the importance of trust in criminal transactions and activities. All processes involved in synthetic drug production, the choice of production site, import of supplements, distribution, laundering money and dumping of synthetic drug waste cannot be handled through legitimate channels and require a large network based on trust. Therefore, existing local ties are preferably used, both in undermining organized crime as in undermining families, otherwise new contacts have to be made (Kleemans, 2007; Akinci, 2019).

Social embeddedness (network theory) is being presented by Kleemans and Van de Bunt (1999), which states that the more social relations you have within the criminal world. The bigger the chance to get involved. These social relations depend on a lot of factors including ethnicity, youth history and neighborhood. The closer you live to an offender, the bigger the chance you will get some kind of relationship with him and are therefore drawn into criminal activities. As an example, the article explains that many of the drug leading groups are immigrants who have ties with their emigrant countries like Turkey and Marocco. Those countries provide now a huge distribution platform for drugs produced in the Netherlands. The social ties are created with the immigrant’s old countries.

The second theme does not look at the criminal history of a region but use the generation effect as an explanation for criminal behavior. This means that when family members have committed illegal facts, the child has a much bigger risk of committing crimes himself when he is older. Especially when the child experiences violence and other illegal activities at a young age, he is very vulnerable for following into the footsteps of his parents. This effect can also be called the Dalton-effect, having your family layout a criminal path profession (Moors & Spapens, 2017; Ferwerda, Graaf, Lesscher & Saadat, 2018). Reflecting on this concept, the knife of the undermining families cuts both ways: the criminal history of a region and the involvement of family members in criminal activities (generation effect): both could serve as plausible predictors of why drugs are dumped in a certain region.

## Methodology

For conducting this research, a qualitative research method was used. The qualitative research approach is supported by desk research. This contains a literature study and the analysis of policy documents and reports from the police. The research question is a qualitative question and is therefore answered through conducting in depth interviews with various stakeholders in the field. The literature study and analysis of policies and reports can and will be used to support the claims and explanations the interviewees have provided for the given problem statement or emphasize contradicting findings.

Chosen concepts in the theoretical framework were selected by assessing predicted geographical statements and motives in local and national news reports. This paper and the qualitative study function as a validity study of these statements made in the media for the underlying reasons for dumping drug waste mainly in Brabant.

## Interviews

The reason for choosing this method was to provide as many insights from different perspectives and professions of the working field as possible, to give as complete a picture as possible concerning the possible explanations for geographical differences in synthetic drug waste dumping sites between the province of Noord-Brabant and Groningen. Doing interviews provides the opportunity to obtain in depth answers on the issues at matter (Mack, 2005). Moreover, a variety of angles on various policy and law enforcement levels can be exposed in every interview. Non-standardized and per organization specified interviews were needed, taking into account the different nature of all organizations. All stakeholders possessed different knowledge and experiences about the given dumping problem. The foresters provided for example different knowledge than the environmental service.

The most important aspect of the interviews is that most attention is being paid to what the stakeholders think is relevant. The stakeholders were not obliged to stick to a certain answer category which would have been the case when conducting surveys, which gives the interviewee the opportunity to go more in-depth into a topic; providing a more thorough explanation (Mortelmans, 2009). The selection of relevant stakeholders was based on purposive sampling. This sampling procedure is ‘intended to obtain a particular group for a study on the basis of the specific characteristics they possess ... aims to uncover information-rich participants that can shed light on issues of central importance to the study.’ (Hay, 2016, p. 453). The sampling process was mostly conducted upfront, however some interviewees were obtained via snowball sampling, which is another form of purposive sampling. Snowball sampling involves ‘finding participants for a research project by asking existing informants to recommend other who might be interested.’ (Hay, 2016, p.455). So several interviewees were interviewed after recommendations of earlier interviewed participants in the research.

An introductory phone call was made or email was send to explain the aims of the research to be directed to the most relevant person or expert within the organisation or institution. Due to Corona virus, no physical meetings were allowed to take place according to the university’s safety requirements. Therefore, all seven interviews with in total eight people have been held over the phone, except from one which was held via Zoom, an online video call tool. Although it could be important to read body language, in order to interpret non-verbal communication, the choice to do the interviews by phone was made because of the wishes of the interviewees themselves. They preferred telephone contact over the suggested video calls. Some of them had to do the interview from home due to the Corona virus, and had children walk around, therefore this preference was expressed. Taking into account that it is also important to create a safe environment in which the interviewee feels comfortable and at ease answering questions, this clearly indicated preference outweighs the interviewer’s preference (Sarason, 1972). From a researcher’s point of view, no major differences were noticed when comparing the phone call with the video call.

At the start of the interview the informed consent was read out loud to explain the aim of the research and interview and ask for permission to record the interview and to indicate to the interviewees that they may remain anonymous if they wish. All seven interviews lasted between 40 up to 55 minutes. Although none of the interviewees indicated that they wanted to remain anonymous in the survey, the choice was made to reference the citations from the interviewees by their function instead of name, to make it easier for the reader to see from which field of knowledge the input came from.

The following interviewee were interviewed in this research, followed by the Appendix in which the transcript of the specific interview can be found.

#### Interviewees

- Police – Unit coordinator (UC) synthetic drug waste region East-Brabant (Appendix A4)
- Police – Unit coordinator (UC) synthetic drug waste region North (Appendix A6)
- Province of Groningen – Extraordinary investigating officer and instructor of the nature conversation law (Appendix A3)
- Environmental Service Midwest Brabant – (Appendix A5)
- Police – Environmental Team region North – (Appendix A1)
- Police – Environmental Team region North – (Appendix A1)
- State Forestry North – Brabant - Extraordinary investigating officer (Appendix A2)
- State Forestry Groningen - Extraordinary investigating officer (Appendix A7)

#### Coding

The following coding scheme was used to label the transcripts from all interviewed key stakeholders. The coding scheme is based on the theoretical framework presented in the previous chapter and therefore fits the description of ‘thematic coding’.

#### Semi-structured interview table

Out of all citations related to a certain code (topic), the most representative one was chosen to use for the analysis. The most representative citation was regarded as the one which summarized best the tenor of all citations given the same label or code. The semi-structured standardized interview script and informed consent can be found in Appendix C and D.

#### Research process

At the start of this research, the aim was to interview all parties involved with the topic of synthetic drug waste dumping. This all levels of government, police and society. In practice, making first contact turned out to be more difficult and time-consuming than expected, therefore, not all relevant stakeholders could be included. After two months still some institutions and professors have not responded to the multiple emails that were repeatedly send. One week after the introductory email was send I called all the institutions to make sure the email was received or to ask for a direct phone number. However, some of the institutions that are now not included, were not at liberty to provide a direct phone number which obliged me to wait for a written response that has

## Analysis

The gap or uncertainty found in literature which was introduced in the introduction was used in the interviews to gain explanations for the geographical difference in dumping locations. Asking all stakeholders what their vision was on the found results that synthetic drug producers from Belgium were dumping their drug waste intentionally across the borders to frustrate and complicate the justice system (De Middeleer et al., 2018; Kleemans, 2007). The most common explanation is given by the UC of Brabant (Appendix A4): *“I think that most of the drug waste that is dumped in Brabant actually comes from Brabant production. At most from Belgium or from the east of the Netherlands, but what I see very much is that our Brabant criminals themselves mainly fan out to the rest of the Netherlands where they will be producing. So for example to Belgium, for example driving home after they have produced a weekend, and that is reason to dump somewhere on the way back. This can be from Belgium or from the Netherlands, but the criminal does not look at national borders at the time.”*

The first part of this quote reinsures the prediction often made that most of the drug waste is from a production site within the area, whether it is Brabant or Groningen or anywhere else (Denehy, 2006; Scanga 2005; Cohen et al., 2007). This vision on geographical proximity, is shared by the environmental team of the police and the foresters in Groningen and Brabant. Some exceptions can be one of them is provided by the UC of Brabant (Appendix A4): *“We also now see that criminals demonstrably drive miles further and then dump it later. For example, we had a dump truck that said it drove roughly 100 km of drug waste and then searched a wooded area to dump it there.”*

However the fairly recent noticed development seen here, the spreading of production sites to other provinces by criminals from Brabant is seen by multiple stakeholders, especially to more northern provinces (Appendix A). This finding is contradicting Tobler’s law (1970) that assumes near things are more related than distant things. Even though one could say that dumpings found still will be more likely to relate to a production site close by, only then in another province, one should wonder why this movement to other provinces is occurring. Since that means that production sites are no longer more likely to relate to the criminal’s living region, which was a found in the research of Tonkin et al. (2011) which states that criminals often tend to commit a crime close to their home.

Despite the dumping site most likely being related to the production site, regardless the location of the production site, it still does not explain why the synthetic drug waste problem is so large in the province of Brabant compared to Groningen. Therefore, it is important to gain a deeper understanding of this phenomenon in North-Brabant one stakeholder giving a new slant to this discussion: *“...Then you are also in Brabant between the major ports, think of Rotterdam and Antwerp, you are close to the borders of Belgium and Germany. So I think A the culture and B certainly also the geographical factors influence that it is very interesting here in Brabant to do things like this.”* – UC Brabant (Appendix A4)

Again geographical proximity is suggested as one of the possible explanations, this time on a broader scale, but geographically Brabant is relatively most close to all necessary contacts and trade routes. The most outstanding explanation for the geographical difference of synthetic drug waste dumping according to the interviewees is understanding the province’s history, summarized in the next paraphrase which links all criminal activities around synthetic drug waste to the province’s criminal history: *“... you have to go back to the origin, or the origin a century ago. Or maybe even longer. Brabant has always been part of it, it actually belonged to Belgium, but it was the Netherlands ... East Brabant if you look at the soil, it is sandy soil, it is difficult to grow crops. So the mining of the heath, it was really hard work for those people, it was really sucking and they actually did not belong to the Netherlands, but they did not belong to Belgium either. It was actually a bit of a poor area. Of course they were on that border, if you look geographically, you are in between Belgium and Germany. And you are between the Ruhr region of Germany, .... the Westland of the Netherlands, ... the port of Antwerp ..... So those people were poor, large families and mostly Catholic. They had to live on a few cows and some arable farming, yes those people who went poaching, that happened a lot here. And if people like them want to be happy, they will drink themselves. So here you also had gin distilleries. They provided their own drink, purely from*

*poverty. And of course you were with Belgium, so they started to smuggle. So you had poaching, distilling and smuggling .... Well then we go back to that gin distillation, which was smuggled, but distilling well with gin did you need a big shed to set up that laboratory so that pipe through that roof for distilling the drink. So it stood out anyway. Back then many gin distilleries were dismantled, but people already switched to the plants, the hemp plants. That was also a nice trade, which also included smuggling, of course, to Belgium and then they switched from the cannabis plants to the ecstasy labs.”* (Personal communication, May 15, 2020).

In his research Klerks (2017) has thoroughly elaborated on this history of the province. Following the his line of argumentation on the history of organized crime in Brabant, poverty has, among other things, laid the breeding ground for current organized crime, including synthetic drug production and other activities. It started more than three hundred years ago, at that time there was severe poverty everywhere in the country, which led to a migration of people to Brabant because there were charitable institutions established. This influx of people also attracted gangs and it was hard to act against this crime because of the existing border crossings, which prevented persecution if they sought refuge there. Poverty continued in the region, people died of starvation, and peasant families in remote rural areas were particularly affected.

Around 1800 there was still a lot of robbery crime that resulted from poverty. Group crime is often linked to families living in the countryside, this way of livelihood generation is passed on to several generations. The term "neediness" is used to explain robbing at the time. It is noted that certain social groups joined the rural gangs in Brabant not only out of poverty; they had certain qualities, such as mobility, family traditions and connections with authority that would turn a blind eye.

After the southern Netherlands, including what is now Brabant, belonged to France again in the late eighteenth century, smuggling flourished to the south. The smuggling was revived time and time again, because historical events caused multiple annexations of the area to make the future and trade opportunities of the area uncertain. At first smuggling existed mainly out of individuals who knew each other but did not cooperate, later smuggling became more professional and involved more violence.

The smuggling routes for smuggling goods were also used for another lucrative way of raising income: the distillery of liquor. Due to a ban on alcohol in Belgium and increased excise duties in the Netherlands, a lot of alcohol was produced and smuggled back and forth around the first and second World War. After the two World Wars, the smuggling of alcohol turned into butter, because governments relaxed the measures, but a decade later alcohol distilleries were found again, the people of Brabant had learned from Belgians. Until 1990, many distilleries in Noord-Brabant were dismantled, the profit also declined because it was legalized in Belgium and was a lot of competition domestically. As a result, by 1990 many liquor distilleries had already switched to producing synthetic drugs such as ecstasy. From the 90's onwards organized crime in Brabant is becoming bigger and better. *“... And this history can be found in certain families. Those families distilled gin, grew plants and had ecstasy labs in their shed.”* – Forester Brabant (Appendix A2)

This history shows signs of a few explanatory concepts introduced in the theoretical framework, the overarching one is path-dependency, which seems to be encouraged by undermining families, implying a generation effect, and a different culture. A very small group of people are responsible for most of the synthetic drug production, mostly people and/or families from Brabant. Of whom most were originally situated in trailer camps neighborhoods (Klerks, 2017). Professor Tops (2017) wrote about the working-class neighborhoods in the Netherlands and focuses on one in the province of North-Brabant. These neighborhoods are seen as the problem areas. He emphasizes that it is critical to understand the historical background of these neighbourhoods in order to understand the history of criminal activities in the province of North-Brabant.

The deflected culture prevailing in those neighbourhoods, once arose out of poverty and exclusion but nowadays continues to exist even though economic circumstances and the society have changed. The residents have created own norms and values about how to make a living for yourself and what is

accepted in terms of illegal activities. Tops (2017) does describe this as having a independent deviant culture which justifies certain types of criminal behavior.

A fitting and interesting example of this is provided by the forester in North-Brabant (Appendix A4):  
*“...Because you should not count on a neighbor. At least here in Brabant, a neighbor does not betray each other, they do not. I know that there was a drug lab with a farmer who had some sheds, the whole neighborhood was allowed to borrow a trailer there, the carnival association built the largest cars there; he was still a member of a CDA (Christian democratic political party in the Netherlands) department, he was treasurer of the ZLTO department, of the farmers' organization, so he was very deeply rooted in association life ... but everyone knew it in that neighborhood, that he was in those hemp plants ... he thought they were tomato plants, he said when he was caught. That is nonsense of course, because you and I know that they were hemp plants, we are not that naive. But he was most resented that the youth who built large carnival cars there ... that is just a kind of pride ... but they were no longer allowed to take the car out of the shed, they thought that was the worst. Yes really. The whole area thinks that that was the worst outcome of this case ... the whole community was ready to help but they were not allowed to take the car out of the warehouse. Because yes, there was also that lab, which had to be dismantled. But they found that the worst thing, that he was in those pills that was "too bad ... no more".”*

This example addresses two things: the mixing of the under and the upper world, undermining crime, using well known people within the community who are seen as benefactors to the community. The community's response represents the possible different culture present in Brabant regarding the acceptance of criminal activities and the leak of awe for authority. No urge was felt to report these activities to the police for example. An interview conducted for the research of Bruinsma, Ceulen, and Spapens (2018) regards this attitude also as alarming. Almost no sense of wrongdoing can be spotted from the inhabitants about the ongoing criminal activities that their neighbor and prominent figure of the community had gotten himself caught up in.

Since the drug waste dumpings on themselves are not geographically bound to the province of North-Brabant but rather to the geographical proximity of the production site, the opportunity theory certainly seems applicable to the province of Groningen according to various interviewees being aware of the high amount of available empty sheds in the province and remote location, later explained, the question arises: why did the production stay out of Groningen for this long?

The unit coordinator of synthetic drugs in the north of the Netherlands expressed her vision on why drug production and therefore synthetic drug waste dumping had stayed out of the province of Groningen until the last few years. She thought that it could partly be explained by the increased demand for synthetic drugs compared to a few decades or even years ago and besides that, she expects it to have become much easier to produce synthetic drugs, stating:

*“...The production with such precursors and so on and the supply of raw materials from China, the pre-precursors, all this becomes easier because you can just have jerry cans delivered via Ali express ... making and using the boilers, the process of making synthetic drugs, is becoming more and more adept than before. So I mean, I'm already predicting, I'm saying what I think, but then maybe making synthetic drugs was at the start for a few chosen ones who had just archived the recipe and had the right materials, but now everyone can make it . So then it may also happen easier. Plus the fact that the demand is there.”* - UC region North (Appendix A6).

This possible explanation of the absence of drug production in other provinces or Groningen, is supported in a research by Tops, Valkenhoef, Torre and van Spijk (2018), who are researchers from the Dutch police academy. Their report states that until about the turn of the century, the synthetic drugs waste production process was very time and money consuming and moreover, required logistic and chemical expert knowledge which was not readily available. However, because the production of synthetic drugs had started in Brabant, there was also all the knowledge and capital and thus a considerable production advantage to become a world producer (Witte & Moors, 2017). In the early

years after the first introduction of synthetic drug waste production, the production became more difficult at first due to the sharpened focus of national and international drug policy which led to constraints with regard to the necessary purchases of raw materials needed for the production of synthetic drugs (Soudijn & Kleemans, 2009). However, this complication caused criminals to look for more creative ways of producing, including replacing hard-to-obtain raw materials with raw materials that were often simpler to use, cheaper and easier to obtain or order. As a result, production immediately became more accessible and feasible for other potential producers (Tops et al., 2018).

Another perspective or explanation to the relative large absence of synthetic drug waste productions and dumpings in Groningen is offered by the forester of State Forestry in North-Brabant. He reacted to an adjusted version of the previous question, referring to the question whether it is a realistic expectation and fear of State Forestry in Groningen, that crime related to synthetic drug will start to occur more in the province of Groningen. The forester in Groningen states that it is unlikely that this will happen due to the fact that Groningen people would have a completely different mentality and culture than (some) Brabant residents. He refers to the history of the province of Noord-Brabant, which would at the same time explain why drug production and dumping are rooted to this extent in the province of Noord-Brabant.

*"...No, I do not think so. I think Groningen is more dutiful, so they don't get there ... the people who set up such a lab don't get any breeding ground there. Because you will have to approach people with money to rent a shed or something there. I think that because of his Calvinistic streak, a resident from Groningen would react differently than a resident from Brabant who has always been poor and who don't care about the world."* – Forester Groningen (Appendix A7)

However the UC of region North does not share this line of thought completely. The opportunities (potential targets) probably would not be less when just zooming in on the region's history of turning a blind eye to illegal activities and therefore organized crime: *"...Yes, I don't know, because if you look at the amount of hemp in the province, we are no less than Brabant. So a lot of times there has been turned a blind eye here in the area in the north though! There is a very thick shed full of hemp there and everyone turning a blind eye, so I don't know."* – UC region North (Appendix A6)

She nuances this opinion by referring to Brabant's long history of exporting produced goods: *"But the culture in the large production and in an export is of course perhaps more Brabant than Groningen, that could be."* – UC region North (Appendix A6)

Not only does the UC of region North address the high amount of hemp plantations found, also the forester and police men from the environmental team expressed this observation. So not only are the criminals present, also the knowledge is now available and criminal offenders are already in place. This ticks the box for one out of three factors used to determine the extent and likelihood of a crime in Felson and Clarke's (1998) opportunity theory: the amount of potential offenders. The forester of Groningen claims that also potential targets are available: *"..Uhm then it is just an expectation that you think, here you have a lot of rural area with many vacant insulated sheds and barns."* – Forester Groningen (Appendix A7)

The last factor, needed to make a crime more likely to happen, was the amount of control on potential targets. Institutional thickness within organizations did not seem to be the reason for any occurrence of criminal activities. All interviewees thought that the delays accompanied with decision making processes were not more than normal or average for such large organization they are working in or for. All stakeholders indicated that they did have sufficient powers to perform their assigned tasks and duties properly, looking at policy instruments and legislation.

However, institutional thickness between different organizations and institutions was sometimes being perceived or represented differently among the stakeholders. Here perceptions seem to vary among the interviewed stakeholders. The UC of Brabant stating that *"... I think that the criminal thinks 'hey in Brabant they are now so attentive, also the police officers and everything around it', in terms of*

*integrated work we are already working hard, part of 'we have to go north, they are not that far yet, which means that the chance of success is higher.'* (Appendix A4)

The UC of region North however states *"...It is true that the police, together with the Public Prosecution Service, have decided to invest more heavily in synthetic drugs and that does not mean that we will invest less heavily in other drugs, but that we need to draw extra attention to this."* (Appendix A6)

A more disorderly or uncoordinated approach in the field of synthetic drugs becomes apparent between interviews with the province, the police environmental team and state forestry, after using a case of synthetic drug waste dumping in Groningen as an example. Phrasing the forester's first experience about the cooperation between the involved parties: *"...I also had the idea that the other parties involved did not work ... according to a standard working method. Because also in the evening, when you feel pressure on your lungs because of the air that hangs around, then you think about the fire brigade declaring that the chemical air is not harmful, but because of the moderate transfer of knowledge it does not feel comfortable working around the waste."* – Forester Groningen (Appendix A7)

The environmental team of the police commented on this specific dumping, whereby the lack of communication can be explained by the absence of the environmental team of the police on the spot: *"...I saw a press release on the dumping in Beertsterplas ... And I looked at my colleague, because it would have been last month, ... and we as an environment team did not know that, so that means that here too internal communication is not flawless."* They thought the internal miscommunication could be based in the rare occurrence of synthetic drug waste dumpings in the north, making police officers less aware of the protocol they should follow when a dumping is being reported. The added value of cooperation, despite the poor start at the first occurrence in Groningen, is recognized: *"...But that we cooperate with, sometimes we want to investigate the offense, then it is good to involve the different chain partners in our police protocol. And I say "well maybe it is not such a bad idea if it is once communicated with all municipalities in the north of the Netherlands".* – UC region North (Appendix A6)

What has been suggested by both the UC van Brabant and Groningen to improve the approach to synthetic drugs is *"... education mainly in the form of... everyone has their own knowledge ... the moment you bundle that, you will of course become much smarter with each other. Because I have a lot of vision on how to recognize it. But maybe someone from the water company also has a lot of vision, but that does not yet look alike and if you add that together it becomes twice as strong."* (Appendix A4)

Next to that, the creation and implementation of protocols in an integrated approach, the assistance of innovative technology on site at the dumping and a possible legal hand in hatch of drug waste has been suggested. The latter appeared quite a sensitive solution among the stakeholders. Since the hatch would reduce enormous impact on the environment and therefore minimize environmental crime. However, this legal hand in hatch would imply that authorities turn a blind eye on the organized crime laying behind the synthetic drug waste being dropped off. It is very difficult to ethically make the right choice in this regard, as to what type of crime is to prioritize in tackling (Schoenmakers & Mehlbaum, 2017).

## Discussion

The most important consideration when reading this study is that during the study the problem statement did not appear to be entirely accurate. In the interviews I was often warned about the problem surrounding documentation of dumping. A large part of the dumping's are not found, but this does not mean that no dumping takes place. For example, in the preliminary investigation it appeared as if there was no experience with synthetic drug dumping in the province of Groningen until the first dumping a month and a half ago. From this perspective, the absence of this problem, the research question was drawn up and a comparison was made with Groningen. The analysis therefore addresses that there seems to be a new trend going on. After conducting the interviews, it turned out that the advent of synthetic drug problems has been taken into account for a long time and priority has been given to identifying and reporting suspicious activities. Due to the difficult traceability of drug waste owners, the links or explanations found in the analysis remain assumptions or case-specific, but caution should be given to generalization.

The major research that has been done in the US, which included more than 10,000 labs in its research, from Weisheit and Wells (2010) has been used to support the assumption that drug waste is dumped close to the production site. However, it is important to take into account that the counties that are included are of a completely different size in area than the Netherlands in itself, let alone the provinces. The word 'close' or 'nearby' can therefore be perceived differently among Americans than among Dutch people. In the Netherlands, a resident can find a half-hour drive far, while in the United States it is sometimes only normal to spend several hours on the way to family given the vast size of the country.

Most of the literature that is available on dumping of drug waste in general, focusses on pharmaceutical drug waste dumping's in the environment, which have very different backgrounds, motives and dumping locations (Daughton, 2001; Barra Caracciolo et al., 2011; Larsson, 2014). Therefore, these studies are regarded as not representational for synthetic drug waste dumping.

Due to the Coronavirus the research process was partly influenced in the data collection phase of the research. The University of Groningen prohibited physical data collection, therefore, it was impossible to speak to the key stakeholders face to face. What the unintended consequences in terms of quality of data are, cannot be said. However, what was noticed is that institutions were hard to reach. It is unclear whether this is due to working from home as a result of the Corona virus or because of an unwitting approach to institutions. As a result of the late responding of key stakeholders, some interviews were scheduled very closely behind each other, making it unable to adjust the semi-structured interview guide. This might have unintentionally led to not achieving the optimal angle to approach that specific key stakeholder in order to obtain the most relevant information. Also, less stakeholders than admired have been interviewed due to no response. In that defense, the stakeholders that do are interviewed were such experts in the field that a comprehensive picture of the addressed drug problem appears to have been created. It is not experienced that there are still missing perspectives on this problem, although this is a subjective observation.

## **Conclusion**

When looking on a superficial level to the research question presented in this paper, one could answer it with the simple clarification of Tobler's law: that synthetic drug waste dumping's are more likely to be connected to production sites close by than more distant ones, meaning the geographical proximity of synthetic drug labs. According to all interviewed stakeholders, this is most often the case, apart from a few exceptions when talking about the experiences of the past few years.

However, this answer would not be satisfactory enough to reach the aim of this research: to create an overview of possible causes of the higher sensitivity of Brabant in comparison with Groningen for being a dumping area of synthetic drug waste, based on the experiences, opinions and insights of key stakeholders. These key stakeholders would devote the geographical differences mostly to a mix of explanatory concepts for criminal behavior. The criminal history or path dependency of the province of Brabant, geographical opportunity factors, undermining families, emphasizing that these explanations all contribute in some way to the preference and start of synthetic drug waste dumping in the province of Brabant compared to the province of Groningen.

## **Future research**

It would be interesting to further investigate the discrepancy between the plausibility of production moving or spreading to the north, in order to determine the approach and focus of the police and to avoid the social problems. Stakeholders in Groningen find this spread plausible and already expected it, but the ranger still finds it unlikely due to the cultural difference of the people. Future research should focus on tracing the drug waste to the owner of the drug labs, are these new criminals or criminals from Brabant moving production because of higher chance of being caught in the south? If it is southern criminals who move their practices, it may say something about the institutional thickness of Noord-Brabant, then this integral cooperation could be implemented in other provinces to minimize their attractiveness for criminals due to seen opportunities. Investment in the suggested innovative tools might offer a new path to move forward in this approach (Appendix A1).

A second suggestion for future research is found in the perceived cultural differences between the two provinces among various keys stakeholders. The province of Groningen also has a rich history of hemp production, of which one could think that path-dependency and opportunities might equal those of Brabant. It would be valuable to know whether this illegal behavior is also rooted in the actual culture of people from Groningen to know whether

It could be seen as a limitation to this research that no further attention has been paid to the border situation with Germany, a follow-up research would be recommended to more broadly approach the entire context of synthetic drug waste dumping in the province of Groningen.

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# **Appendices**

## **Appendix A**

### **Dutch interview transcripts**

- A1:** Interview Milieu Team Politie Noord-Nederland
- A2:** Interview Boswachter Oost-Brabant
- A3:** Interview Provincie Groningen
- A4:** Interview Politie Oost-Brabant
- A5:** Interview Omgevingsdienst Midden en West Brabant
- A6:** Interview Eenheidscoördinator Politie Noord Nederland
- A7:** Interview Boswachter Groningen

## **Appendix B**

### **English interview transcripts**

The transcriptions have been translated through Google Translate with consent of my supervisor. Quotes in the analysis are not directly copied from this English version of the transcript but have been adjusted in more affluent English.

**B1:** Interview Environmental Team Police Northern Netherlands

**B2:** Interview Forester East-Brabant

**B3:** Interview Province of Groningen

**B4:** Interview unit coordinator Police East-Brabant

**B5:** Interview Environmental Service Central and Western Brabant

**B6:** Interview unit coordinator Police Northern Netherlands

**B7:** Interview Forester Groningen

## Appendix C

### Informed consent Dutch

De informed consent wordt vóór het begin van het interview hardop voorgelezen.

Mijn naam is Querin van Dorsten, ik ben een student van de masteropleiding Cultural Geography van de faculteit Ruimtelijke Wetenschappen. Dit onderzoek beoogt het geografische verschil tussen dumplocaties voor synthetische drugsafval te verklaren, waarbij de provincie Noord-Brabant wordt vergeleken met de provincie Groningen. Ik ben geïnteresseerd in de persoonlijke verhalen, ervaringen en deskundige meningen/inzichten van de diverse betrokken partijen bij de aanpak van het probleem van drugsafval dumpingen, daarom neem ik diepte-interviews af.

Bent u bereid deel te nemen aan dit interview en een vragen over dit onderwerp te beantwoorden?

Het interview duurt ongeveer 45 minuten. Dit gesprek kan volledig anoniem worden afgenomen als u dat wilt en de informatie zal dan worden gebruikt zonder iets te noemen dat uw privacy schendt.

Wilt u in dit onderzoek anoniem blijven?

Zo ja, mag uw functie worden benoemd?

Ik wil dit interview graag opnemen. Op deze manier kan ik er indien nodig opnieuw naar luisteren. Alleen ik als enige onderzoeker zal naar de opnames luisteren. Na het transcriberen van het interview wordt de opname direct gewist. De verstrekte informatie blijft binnen onze onderzoeksgroep. Ook mag u op elk moment besluiten het interview zonder gevolgen te beëindigen.

Heb ik, als onderzoeker, toestemming om dit interview op te nemen?

Zijn er nog vragen voordat we met het interview beginnen?

## Informed consent English

The informed consent is read aloud before the start of the interview.

My name is Querin van Dorsten, I am a student of the master's program in Cultural Geography at the Faculty of Spatial Sciences. This research aims to explain the geographical difference between dump sites for synthetic drug waste, whereby the province of North Brabant is compared with the province of Groningen. I am interested in the personal stories, experiences and expert opinions / insights of the various parties involved in tackling the problem of drug waste dumping, so I conduct in-depth interviews.

Are you willing to participate in this interview and answer any questions on this topic?

The interview lasts approximately 45 minutes. This conversation can be conducted completely anonymously if you wish and the information will then be used without mentioning anything that violates your privacy.

Do you want to remain anonymous in this survey?

If so, can your position be appointed?

I would like to record this interview. This way I can listen to it again if necessary. Only I, the only researcher, will listen to the recordings. After transcribing the interview, the recording is deleted immediately. The information provided remains within our research group. You may also decide to terminate the interview without consequences at any time.

As a researcher, do I have permission to record this interview?

Are there any questions before we start the interview?

## Appendix D

Label	Main question	Prompts
Introduction	<p>Can you tell me about yourself, what are your daily activities?</p> <p>What is your role in tackling drug waste problems?</p>	- For how long have you been in contact with dumping of synthetic drug waste?
	<p>If drug waste is found, what do you notice about the location where it is found?</p> <p>What do you particularly notice about the geographical distribution of dump locations within the Netherlands?</p> <p>How does the investigation process proceed after finding synthetic drug waste?</p>	
Path dependency	Can you tell me about the criminal history of the province?	- Looking at history, is a "specialism" in crime passed down to the next generation?
	In previous studies, different and sometimes clashing conclusions were drawn about the choice of a particular dump location, an example of a collision is the conclusion that drug waste is often dumped close to the production location, while another study states that criminals sometimes travel long distances to dumping the drug waste, what is your view on this?	<ul style="list-style-type: none"> <li>- A large number of times, the owners of the waste are not found / out of date, do you think that the waste found comes from drug laboratories in the province itself or also from surrounding provinces or maybe even Belgium?</li> <li>- Many drugs are produced in North Brabant. Production also takes place in other provinces, but few dumping locations of synthetic drug waste are found, how do you explain the lack of dump locations in other provinces?</li> <li>-</li> </ul>
Undermining families – Pieter Tops	What can you tell me about the geographical distribution of undermining families in the Netherlands?	<ul style="list-style-type: none"> <li>- Are there mainly undermining families or undermining networks or neighborhoods in that sense.</li> <li>- Are there, to your knowledge, undermining families in Groningen?</li> </ul>
Institutional thickness	Do you or does the (organization) cooperate with other authorities /	<p>If so...</p> <p>- Which kind?</p>

	<p>organizations in the field of drug waste dumping?</p>	<ul style="list-style-type: none"> <li>- Are there problems with regard to the cooperation between the various services responsible for tackling these dumping?</li> <li>- Think of bureaucratic hassles, decision processes, information exchange, distribution of power</li> </ul> <p>If not...</p> <ul style="list-style-type: none"> <li>- Do you think this provides maximum effectiveness in combating the problem?</li> <li>- Have you had to cooperate with other authorities in years before? <ul style="list-style-type: none"> <li>- If so... which of the 2 approaches was most effective when looking at the number of drug dumps found?</li> </ul> </li> </ul>
Other explanations for the geographical differences	<p>Recently, there has been a change in the geographical distribution of dump sites. Although the vast majority of dumpings are still found in North Brabant, dumpings are now also being found in more northern provinces, where there was hardly any before, how do you think this is?</p>	<ul style="list-style-type: none"> <li>- Has North Brabant become more unattractive? <ul style="list-style-type: none"> <li>- If so .. how?</li> </ul> </li> <li>- If not... why do other provinces now seem more accessible for dumping drug waste?</li> </ul>
	<p>Are there problems at policy level with regard to tackling illegal drug waste?</p>	<p>Reactief pro</p>
	<p>Do you think it would be of added value if there was more insight into the geographical pattern?</p>	<p>If so, why?</p> <p>If not... why?</p>
	<p>Would you change anything in tackling drug waste dumping?</p> <p>Do you have any policy recommendations?</p> <p>Do you think that legalizing especially ecstasy as synthetic drugs will also solve the dumping of this drug waste?</p>	<ul style="list-style-type: none"> <li>- What do you think could be better / what is lacking in the approach or control?</li> </ul>
Wrapping up	<p>Do you have any comments or additions that you consider useful to mention in connection with this problem / issue?</p>	
	<p>Do you know someone who, in your opinion, could and would like to share further knowledge with me on this subject?</p>	
	<p>What did you think of the interview?</p>	