Homicide Clearance rate and Clearance time in the Netherlands

An analysis of factors affecting the clearance rate and clearance time

Master Thesis

Crisis and Security Management

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Abstract

There is a debate in the field of homicide studies which factor affects the clearance of homicides more; victim characteristics or incident characteristics. According to Black (1970; 1976), the police has a preference in which victims they investigate more. Gottfredson and Hindelang (1979) argue that factors outside the control of the police have a bigger effect on clearance rate. This research studies the clearance rate and clearance time in the Netherlands from 2017 until 2019. The research uses the Dutch Homicide Monitor, a database with data from all the homicides in the Netherlands. The variables of this study are age, gender, type of homicide, and modus operandi. The results of the research supported both Black's (1970; 1976) and Gottfredson and Hindelang's (1979) propositions. All variables had an effect on the clearance rate and clearance time in the Netherlands. This means that both victim characteristics and incident characteristics affect the clearance in the Netherlands.

1. Introduction

1.1 Homicides, clearance rate, and clearance time

Homicides have a huge impact on society (Liem et al., 2019). They are considered one of the most serious crimes and cause shock and disbelief in society. The clearance rate and clearance time of homicides are of importance regarding the societal impact. Clearing a homicide means that the police identifies a homicide as solved. Clearance time is the number of days it took for the police to clear said homicide. Clearance rate is the percentage of homicides that are cleared by the police. The police have the goal to be as efficient as possible. This means to clear homicides and to clear them as soon as possible (Davies, 2007). But the resources of the police - like the capacity of detectives and DNA testing - are not infinite (Black, 1970). They need to choose how to use the limited resources. Addington (2007) researched the homicides in the United States (US). She concluded that the amount of resources and the usage of these resources has an influence on the homicide clearance rate and clearance time (Addington, 2007).

In the US there is a lot of research done about which factors influence the clearance rate and clearance time (Addington, 2007; Litwin, 2004; Alderen & Lavery, 2007; Baskin & Sommers, 2010; Lee, 2005: Ousey & Lee, 2010). Braga, Turchan, and Barao (2018), for instance, researched the relationship between homicide clearances and resources in the US.

They concluded that investigative resources have both a direct and an indirect effect on the clearance rate. The direct effect is simply that having more investigative resources leads to more homicides being cleared. The indirect effect is that the use of criminal investigative resources has a positive effect on the criminal rate, which results in fewer homicides. However, Braga, Turchan, and Barao (2018) still see that factors, like victim characteristics and crime scene, have a bigger effect on the clearance rate. They also conclude that the effect of using investigation resources differs among the different types of homicide. Criminal and drugs-related homicides are harder to solve than for example familial related homicides.

The findings of Braga, Turchan, and Barao (2018) contribute to the bigger discussion about the clearance rate (Litwin, 2004) This discussion is focussed on which factors contribute to the clearance rate. It all started with Black (1970;1976), who concluded that some people got more 'law' than others. This means that the police investigate more 'likable' victims sooner than less 'likeable' victims (Black 1970;1976). Examples of likable victims are woman, children, and white people. These factors are divided into discretionary factors and non-discretionary factors. Discretionary factors are factors that the police have an influence on by distributing their resources a certain way. Discretionary factors are also called victim characteristics. Age and gender are examples of discretionary factors. When the police engage more in cases with 'likable' victims, such as children and women, the police engage in 'victim preferencing'. Non-discretionary factors are factors outside of the control of the police, also called incident characteristics. For instance, the weapon that was used, where the victim was found, or the type of homicide. The type of homicide refers to how the homicide can be categorized A father that kills his son can be categorized, for example as a domestic homicide. A robbery that resulted in a homicide or a drug-related liquidation can be categorized as criminal milieu homicide. These circumstances of the homicide are not dependent on police resources. This research will do a quantitative analysis to see which factors contribute to a higher clearance rate and lower clearance time. The discretionary factors are age and gender of the victims. The non-discretionary factors are the type of homicide and the modus operandi. These factors are most often studied in earlier research (Addington, 2007; Baskin & Sommers, 2010; Lee, 2005)

To research these factors the Dutch Homicide Monitor (DHM) will be used. This database holds the data of all homicides that took place in the Netherlands from 1992 up until today. For every homicide, all important characteristics are noted. For instance, the date of the homicide, the modus operandi, the crime scene, and the victim and perpetrator characteristics.

For this research, we will look at the years 2017 until 2019; the data from these years is collected from open sources.

The research question of this research is:

To what extent do victim characteristics and/or incident characteristics affect the homicide clearance rate and clearance time in the Netherlands?

1.2 Academic & societal relevance

Between 2009 and 2014 the clearance rate in the Netherlands was 77 percent (Liem et al., 2019) This is a high percentage compared to countries in, for example, South America and the United States (US), where the percentage differs from 24 percent up until 65 percent, but it is a low percentage compared with Western countries such as Switzerland and Finland, where the percentage is, respectively, 93 and 98 percent (Liem et al., 2019). Not clearing homicide cases has an impact on society; for instance, relatives will never get closure.

Much research has been done within homicide studies into the relationship between, one the one hand discretionary factors and non-discretionary factors and on the other hand clearance rate and clearance time (Addington, 2007; Baskin & Sommers, 2010). Most of these studies are done in the US (Addington, 2007; Baskin & Sommers, 2010; Litwin, 2004; Lee, 2005). The US differs a lot in police organization and the nation-wide culture compared to the Netherlands. An example is the low percentage of gun ownership in the Netherlands of 2 percent compared to 48 percent in the US (Killias, 1993). Because the US differs a lot from the Netherlands it is important if to see if the results in the Netherlands also differ.

1.3 Reading guide

To answer the above-mentioned research question, this research will firstly study the important theoretical literature about this subject. Secondly, the important empirical studies about this subject will be summarized. Thirdly, the methodology of this research will be explained. Fourthly, the results of the quantitative analysis will be presented. At last, this research will discuss the results and compare them to the theory and previous empirical studies that have been done in this area.

2. Theoretical framework

2.1 Propositions Black (1970; 1976) and Gottfredson and Hindelang (1979)

The main theory associated with victim preferencing is the theory of the law of Black (1970; 1976). Black developed his theory while investigating the crime rates in the US. According to this theory, the law is not equally distributed within a state. There are different factors that result in that some groups gain 'less' law than others. Important factors for Black (1976) are stratification and morphology. Stratification can be defined as the vertical aspect of social life, which means the division of material conditions - like money - through the levels of society. Morphology is the horizontal aspect of social life; thus, the way individuals act among each other. Integration is, for instance, an important factor for morphology, separation of different groups in a society affects the morphology negatively. The quantity of law can also be seen reflected in the work of the police. According to Black (1970; 1976), the police base their decisions on victims' characteristics. Black (1970; 1976) focuses mostly on the appointed tasks where the police have an influence on, also called the discretionary tasks. The police have limited resources for investigation. So, the police choose to make decisions in the investigation process on characteristics such as age, gender, ethnicity, and the criminal history of the victim (Litwin, 2004). Homicide cases in the US that have less value to society are less likely to be investigated by the conservative, mostly white, American police (Black, 1976).

There is a lot of criticism on the propositions of Black (Litwin, 2004). Gottfredson and Hindelang (1979) have found no empirical support for Black's propositions. Gottfredson and Hindelang investigated various crimes in the US and looked at which factors led to cases being cleared. They developed a different theory than Black, that focuses more on the non-discretionary factors, also called incident characteristics. According to Gottfredson and Hindelang (1979), these non-discretionary factors, the factors which the police have no influence on, have a greater impact on the clearance rate. Examples of these factors are for example, the type of weapon used, the crime scene, the type of homicide, and the relationship between victim and perpetrator. These factors have a bigger influence on the clearance rate than victim characteristics (Litwin, 2004). For instance, according to Robert and Lyons (2009), the amount of evidence that the police can gather is of influence on whether a homicide is cleared or not.

In this research, the theories of Black (1970;1976) and Gottfredson and Hindelang

(1979) will be used to explain the findings. This research will look at the relationship between clearance rate and clearance time with, on the one hand victim characteristics, in this case age and gender, and, on the other hand, with incident characteristics, in this case, the type of homicide and the modus operandi. It will be investigated if the Dutch police act more on victim preferencing as Black (1970; 1976) suggests or if non-discretionary factors have a bigger influence as Gottfredson and Hindelang suggest.

2.2 Literature review

Before the analysis of the current research, it is important to understand previous empirical studies. First, the previous studies about discretionary factors and non-discretionary factors will be discussed. This part will start with the only research that found support for Black‘s (1970; 1976) propositions. Thereafter, the studies will be discussed that only found support for Gottfredson and Hindelang’s (1979) propositions. In addition, the studies that found empirical support for both propositions will be discussed. The second part will discuss studies regarding homicides in the Netherlands.

2.2.1 Victim preferencing and non-discretionary factors

The research by Wong (2010) is the only research that found support for the theory of law by Black (1976). Wong looked at the crime clearance in Canadian municipalities, in the years 2000 and 2001. Wong saw that there was a difference in clearance within the different categories. These categories were stratification, morphology, culture, and organization. Wong (2010) looked at variables of minorities and social factors. He concluded that in Canada minorities are discriminated in many fields. This is also the case in crime clearance rates. The findings of Wong (2010) looked at all crimes, so it is not clear if his findings also are relevant to apply to only homicides.

Litwin (2004) has investigated the clearance rate of homicides in Chicago from 1989 until 1991. In this study there was no empirical support found for the statements of Black (1970; 1976). On the contrary, according to Litwin (2004) the police are organized to minimize the victim preferencing. Who the victim is, has no influence on the clearance rate in this research. Litwin (2004) uses non-discretionary factors as control variables. He found a statistically significant difference in the clearance rate when the homicide was committed with a firearm. During this study only the clearance rate was investigated, not the clearance time.

Baskin and Sommers (2010) did a research on the influence of forensic evidence in

homicide cases. They investigated homicides in five jurisdictions in the US in 2003. They concluded that forensic evidence could be helpful but was non-determinative in homicides investigation. They found out that non-discretionary factors had more effect on the clearance rate. Homicides with firearms were less likely to be cleared. Also, cases were the suspect knew the victim were cleared more than cases were the suspect did not know the victims.

Addington (2007) researched the relation between victim preferencing and clearance rate and time in the US. For this study, the National Incident-Bases Reporting System (NIBRS) was used. Addington (2007) looked at murders that took place between 2000 and 2002, an amount of 5706 murders in total. She concludes that most homicides are cleared in the first days after the homicide. There is a drop in the clearance rates after the first week. Addington (2007) also looked if there was a difference in clearance rate and clearance time when looking at different victims. When looking at gender and age, the data did highlight a difference. Homicides involving women and children were more likely to get cleared than homicides involving males and adults. However, there was no difference between non-white victims and white victims. Addington (2007) also looked at non-discretionary factors as control variables. When a victim was found in a private location or was killed with a knife, it had a positive effect on the likeliness for clearance and clearance time. The presence of multiple victims or additional felonies committed had a negative effect on the likeliness of clearing a homicide.

Alderen and Lavery (2007) researched the discretionary and non-discretionary factors in relation to the homicide clearance rate. They researched homicides in Chicago in the US from 1991 until 2002. They found evidence for both discretionary as non-discretionary factors. The use of firearms results in a higher chance for clearance, according to Alderen and Lavery (2007). Alderen and Lavery (2007) also looked at the difference between primary and secondary homicides. Primary homicides are homicides that did not occur during the perpetration of another crime (Jason, Strauss, & Tyler, 1983). Secondary homicides are homicides that occurred during the perpetration of another crime. Examples of secondary homicides are criminal homicides and sexual homicides. Primary homicides are more likely to be cleared than secondary homicides. Alderen and Lavery (2007) also looked at the victim characteristics and found a statistically significant difference in the clearance rate. This difference can be found in age, gender, and ethnicity. Cases with females, children, and people not from minorities are more likely to be cleared.

Lee (2005) studied the declining homicide clearance rate and clearance time in Los Angeles, US. She examined the homicides in Los Angeles from 1990 until 1994. Lee (2005) challenged the statements that non-discretionary factors are the explaining variables in

clearance rate and clearance time. Lee (2005) concluded that the victims' characteristics were more explaining factors than non-discretionary factors. Her research showed ethnicity and gender as the most explaining factors related to the clearance rate. There was no difference between discretionary factors and non-discretionary factors related to clearance time.

Ousey and Lee (2010) researched, just as Lee (2005), the declining homicide clearance rate in American cities. Ousey and Lee (2010) looked at the homicides of 173 Americans from 1980 until 2000. They researched whether either the discretionary factors or the non-discretionary factors were more explaining of the clearance rate. Ousey and Lee (2010) found no difference in the discretionary factors for them to be more explaining. They found no difference between age, gender, and ethnicity. They did found support for the non-discretionary factors. However, there was only a drop in the clearance rate when a firearm was used, or the victim and the perpetrator did not know each other. They found no empirical support for a difference in the different types of homicides.

The above-mentioned literature is North-America oriented. It is good to look at this research because there is a lot of research done on this subject. However, the culture and police organization in the Netherlands differs a lot from the American culture and police organization. That is why the next studies are Western-European oriented because there are more similarities between these countries and the Netherlands than between countries such as the US and Canada with the Netherlands. Banzinger and Killias (2014) researched uncleared homicides in Switzerland from 1980 until 2004. 87 percent of the homicides in these years has been cleared by the Swiss police. They found support for the effect on homicide clearance rate for both discretionary factors and non-discretionary factors. Homicides with children and females as victims are more likely to be cleared in Switzerland. Also, homicides that took place in a private home are cleared more than homicides that took place in public space. There is one factor that differs from the previous studies. In Switzerland, there is no decrease in the clearing of homicides involving a firearm. According to Killias and Markwalder (2012), this is because firearms are not often used in the Swiss criminal milieu.

Sturup, Karlberg, and Kristainsson (2015) studied 264 homicides in Sweden from 2007 until 2009. Their focus was on explaining the uncleared homicides and the time it took to clear a homicide. They found four factors that had a statistically significant difference. Homicides were more likely to be cleared when the victim was intoxicated with alcohol and when there were eyewitnesses. Homicides were less likely to be cleared when a firearm was used or when the victim had had a criminal record in the past five years. The first three factors are non-discretionary factors. Whether a victim has a criminal record is a discretionary factor. When

researching the clearance time Sturup et al. (2015) only found a positively statistically significant difference for victims intoxicated with alcohol and a negatively statistically significant difference for homicides involving firearms.

2.2.2 Homicides in the Netherlands

Firstly, it is important to understand more about homicides committed in the Netherlands. Aarten, Schonberger, and Liem (2019) studied 25 years of homicides in the Netherlands. They looked at homicides from 1992 until 2016. Just like the current research, they used the Dutch Homicide monitor. There were 4845 homicides committed in the Netherlands within these 25 years. The clearance rate within these years was 84 percent. The most common type of homicides were homicides within a household (37 percent). The second type were disputes followed by homicides, where the victim and the perpetrator were not related. This applied to 27 percent of all homicides. The third category were criminal milieu homicides. 10 percent of all cases was from this category. The most common weapons used within the 25 years researched were firearms and knives. Together these types of weapons are used in almost 70 percent of all homicide cases. The most common victims of these homicides were men, namely 69 percent. The research of Aarten et al. (2019) shows that since the'90's, there has been a decrease in homicides, which increased again after 2009. The research of Aarten et al. (2019) gives a good image of homicides in the Netherlands prior to the years that will be studied in this research.

The second empirical research that is important for the current research is that of De Poot, Van Koppen, Bokhorst, and Muller (2004). De Poot et al. (2004) investigated detectives in the Netherlands from 1998 until 2001. They were the first to do ethnographic research on detectives in the Netherlands. They looked at all the practices of detectives and how this could improve their work. De Poot et al. (2004) looked at all different offenses that were investigated by Dutch detectives. In their research, they categorized homicides with deprivation of liberty and abuse. 62 percent of these cases were cleared which is a lot more than 27 percent of cleared cases in the other category: burglary, thefts with violence, arson, and sex offenses.

Bijleveld and Smit (2006) found a higher percentage than De Poot et al. (2004), when looking only at homicides. Bijleveld and Smit (2006) focused on all homicides that took place in 1998 in the Netherlands. In this year 77 percent of all homicides were cleared. As we can see, there is an overlap in the researched year compared to De Poot et al. (2004). However, the number is much higher when looking at only homicides than the category of De Poot et al.

(2004). This difference can be explained because the other crimes in the category of De Poot et al. (2004) have a lower clearance rate than homicides.

Ganpat and Liem (2012) also focused on homicides in the Netherlands. They used the Dutch Homicide Monitor and looked at all the homicides from 1992 until 2009. Ganpat and Liem (2012) found that the homicides in the Netherlands are declining steadily. Something that is interesting for the current research is that Ganpat and Liem (2012) found a clearance rate of 90 percent. This number is much higher than 77 percent found in 1998 and from 2009 until 2014 (Bijleveld & Smit, 2004; Liem et al., 2019). Ganpat and Liem (2012, pp. 332-333) also looked at the types of homicides and how much these different types are cleared. The most frequent type of homicide is argument/altercation, these are homicides following an argument between non-familial members. 21 percent of the homicides was argument/altercation. 23 percent of these homicides was cleared. The least frequent type of homicide were children who killed their parents. This was only 2 percent of all homicide cases. Parent killing was also two percent of all cleared homicide cases.

The last empirical research compared the clearance rate in four Western European countries, including the Netherlands. The research of Liem et al. (2019) looked at the clearance in the Netherlands, Finland, Sweden, and Switzerland. The research included data of the European Homicide Monitor and compared the clearance rates of the four countries from 2009 until 2014. Over this period the clearance rate in the Netherlands was the same as in the research of Bijleveld and Smit (2006), namely 77 percent. The clearance rate in the Netherlands is the lowest of all the countries. In Sweden, the clearance rate is 83 percent, in Switzerland 93 percent and the highest number is in Finland with 98 percent., the number of Finland is especially remarkable because when comparing it to the population difference, Finland has two times more homicides than the Netherlands (1.9 per 100,000 residents compared to 0.9 per 100,000) (Liem et al., 2019). There are different factors that could explain the difference in ratings between Finland and Switzerland and Sweden and the Netherlands. For instance, in Finland and Switzerland there is a high amount of homicide-suicides compared to the Netherlands and Sweden. Another factor is the high amount of homicides in a criminal milieu in the Netherlands and Sweden. Criminal milieu homicides have a lower percentage of clearance due to the lack of information people are willing to share with the police (Braga, Turchan & Barao, 2018).

Table 2.1 *Overview empirical studies*

Researcher(s)	Publication time	Country or countries	Time periode	Results
Victim characteristics and non-discretionary factors				
Wong	2008	Canada	2000-2001	Difference in clearance in the categories: stratification and morphology.
Litwin	2004	United States	1989-1991	No support for victim preferencing.
Baskin & Sommers	2010	United States	2003	Significant difference in clearing when victim and perpetrator are related.
Addington	2007	United States	2000-2002	A drop in clearance after the first week and a difference in clearance in the categories gender and age.
Litwin	2004	United States	1989-1991	No support for victim preferencing.
Alderen & Lavery	2007	United States	1991-2004	Significant difference in clearing in the categories: type of weapons, primary or secondary homicide, and victim characteristics.
Ousey & Lee	2010	United States	1980-2000	No support for propositions Black (1970). Significant difference categories firearm and victim-perpetrator relation
Lee	2005	United States	1990-1994	Significant difference victim characteristics: ethnicity and gender
Banzinger & Killias	2014	Switzerland	1980-2014	Support for both discretionary and non-discretionary factors
Sturup & Karlberg & Kristainsson	2015	Sweden	2007-2009	Support for both discretionary and non-discretionary factors
Clearance rate in the Netherlands				
Aarten, Schornberger, and Liem	2019	The Netherlands	1992-2016	84 percent clearance rate. A decrease in homicides since the ’90’s.
De Poot, Bokhorst, Van Koppen, and Muller	2004	The Netherlands	1998-2001	62 percent of the category homicides, deprivation of liberty and abuse are cleared.
Bijleveld and Smit	2006	The Netherlands	1998	77 percent of homicides are cleared
Ganpat & Liem	2012	The Netherlands	1992-2009	Clearance rate of 90 percent.
Liem, Suonpää, Lehti, Kivivuori, Granath, Walser, & Killias	2018	The Netherlands, Sweden, Switzerland, and Finland	2009-2014	77 percent of the homicides in the Netherlands are cleared, which is low compared to Finland and Switzerland.

3. Methodology

3.1 Data

The data from the Dutch Homicide Monitor (DHM) will be used for this research. This database is a derivative of the European Homicide Monitor (EHM) (Aarten, et al., 2019). The EHM holds homicides of the Netherlands, Finland, Sweden, and Switzerland. Using the same codebook gives the advantage of being able to easily compare these countries. This database holds characteristics and facts of the homicides that happened in the Netherlands. The data of 1992 until 2016 is collected using open sources and backed up with police records and documents of the prosecution. For this research, the data from 2017 until 2019 will be analyzed. This data is found in open sources, such as newspapers and websites. These sources are open for public use, so anyone can repeat this research. This contributes to the replicability of the research. To guarantee the validity of the research only acknowledged newspapers and websites used to retrieve data. Both national as local newspapers and websites were used to retrieve as much data as possible. All information found in these newspapers and websites was also checked in other sources, to guarantee the truthiness of the data. The coding of the sources has been executed based on the coding manual of the EHM (Ganpat et al., 2011). This makes the DHM easier comparable to other countries bound to the EHM. The data is processed and analyzed with IBM SPSS statistics 26.

3.2 Variables

This research investigates if victim characteristics and non-discretionary factors affect the homicide clearance rate and clearance time. The dependent variables of this research are the clearance rate and clearance time. The database has three values for the variable CLEARED. These are cleared, exceptionally cleared, and uncleared. A homicide is cleared when the police arrest a suspect and bring this suspect to prosecution. Exceptionally cleared are cases that are cleared but where the perpetrator is not brought to court. For instance, because the perpetrator committed suicide or is killed by the police. Clearance will be recoded into a dichotomous variable. Cleared cases and exceptionally cleared cases will together be the category cleared cases. For the variable clearance time the variable TIMEARRESTED of the DHM will be analyzed. TIMEARRESTED is the amount of days between the moment the homicide took

place and the homicide was cleared. This variable only looks at the cases that are cleared.

The independent variables of this research can be divided into two subgroups, namely victim characteristics and non-discretionary factors. The variables for victim characteristics are age and gender. For the variable age, there will be two categories children and adults. Children are victims of 0 years until 18 years and adults are everyone older than 18 years. When someone turns 18, this person is considered an adult in the Netherlands. In addition, previous literature found empirical support for differences between children and adults Addington, 2007; Wong, 2008; Billias & Kinger, 2018). That is why these categories will be used. The variable gender will be divided into males and females. Addington (2007) and Alderen and Lavery (2007) found statistically significant differences between male and female victims.

This research will also look at the two non-discretionary factors. These independent variables are the type of homicides and modus operandi, the type of violence that causes death. These two variables are the most studied in previous literature (Addington, 2007; Litwin, 2004; Alderen & Lavery, 2007; Billias & Kinger, 2018; Sturup et al., 2018). The types of homicide will be categorized into four categories. The first category is domestic homicides; meaning all familial related homicides, like child-killing, infanticide, and partner killing. The second category is criminal milieu homicides which are homicides that had a criminal motive. Drug-related homicides and liquidations are examples of criminal milieu homicides. Robbery homicides are also included in criminal milieu homicides. The third category is dispute homicides. These are homicides that follow a dispute between non-related people. The last category is other homicides. These are homicides that cannot be categorized among the earlier categories, for instance, homicide by a mentally disturbed person or sexual homicides. The reason for this categorizing is because earlier studies have found differences in clearance rate and clearance time between cases where victim and perpetrator were related and when they were not related (Baskin & Sommers, 2010; Ousey & Lee, 2010). There is also a negative effect on clearance with cases that can be categorized into criminal milieu homicides, like drug-related and gang-related homicides (Braga, Turchan, & Barao, 2018). The variable modus operandi will be categorized into three categories. These are knife, firearm, and other. Knives and firearms are the most common modus operandi. These modus operandi showed also a statistically significant difference in earlier studies (Addington, 2007; Litwin, 2004; Baskin & Sommers, 2010; Ousey & Lee, 2010). The category other are all types where violence is only a small part of the modus operandi. Examples of these modus operandi are poisoning, drowning, smoke, or fire, etc.

3.3 Sample

The sample that will be used for this research consists of 361 homicide cases in the Netherlands from 2017 until 2019. Most homicide cases happened in 2017, when 43% of all homicides (*N* = 156) were committed. 2017 is followed by 2019 with 30% (*N* = 107) and 2018 with 27% (*N* = 98). To be able to compare the amount of homicides with other countries, the numbers are then compared to 100,000 inhabitants. This results in a homicide rate of 0.93 per 100,000 in 2017, 0.61 in 2018 and 0.68 in 2019.

Table 3.1
Frequency Table per categorical variable

Variable	Score	N	%
Age of victims	Children (0-18)	25	6.9
	Adults (19+)	317	87.8
	Unknown	19	5.3
	Total	361	100.0
Gender of victims	Male	242	67.0
	Female	118	32.7
	Unknown	1	0.3
	Total	361	100.0
Type of Homicide	Domestic homicide	111	30.7
	Criminal milieu homicide	73	20.2
	Dispute homicides	75	20.8
	Other	27	7.5
	Unknown	75	20.8
	Total	361	100.0
Modus operandi	Firearm	104	28.8
	Knife	126	28.8
	Other	74	20.5
	Unknown	57	15.8
	Total	361	100.0
Clearance Rate	Uncleared	60	16.6
	Cleared	300	83.1
	Unknown	1	0.3
	Total	361	100.0

The average homicide rate was 0.94 between 2009 and 2014 (Liem et al., 2019). The homicide rates of 2018 and 2019 are especially much lower than the average from 2009-2014. In table 3.1 we can see the frequencies of background characteristics. The largest group of victims are adults with 87.8 percent. Only 6.9 percent of the victims were children. More than two-thirds of victims of the sample are men. The largest type of homicide is domestic homicide, this includes partner and familial related homicides. This category is 30.7 percent of all homicides. The second-largest category is criminal homicide with 17.2 percent. The last

dependent variable is the modus operandi. A firearm is the most common modus in the Netherlands with 126 cases, followed by homicides by knives with 104 cases. The dependent variables of this research are the clearance rate and clearance time. In table 4.1 we see that of the 361 cases 83.1 percent is cleared by the Dutch police. Clearance time is a numeric variable that goes from 0 until 720 (M = 27.71, SD = 94.87). For the analyses with clearance time only the cases that are cleared will be used.

3.4 Analyses

First, the bivariate relationship between the independent variables, age, gender, type of homicide, and modus operandi and the dependent variable clearance rate will be analyzed. Pearson chi-square is used to measure independence and to see if there is a statistically significant relationship between the categories of the variables. There is a statistically significant difference when $\alpha < .05$.

Second, the relationship between clearance time and the independent variables will be analyzed. To see if there is a statistically significant difference among the different categories shall we compare the means of the different categories. Because gender and age are variables with only two categories, independent t-tests will be performed. Type of homicide and modus operandi have more than two categories. Therefore, for these variables an ANOVA analysis will be used. An ANOVA will show if there is a statistically significant difference among all categories. If a statistically significant difference is found a post-hoc test will be executed to show among which categories there is a statistically significant difference.

4. Results

4.1 Clearance rate

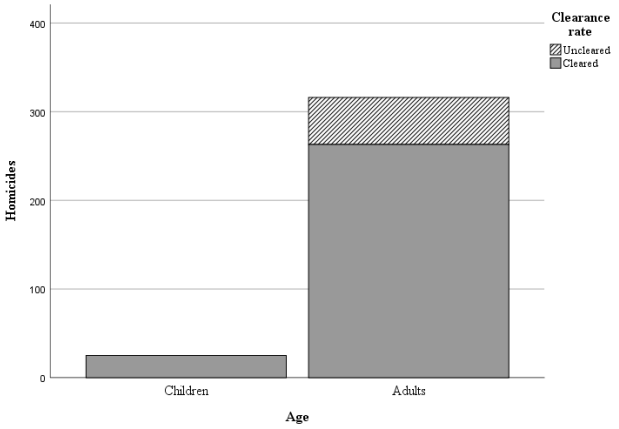
First, we will look at the victim characteristics variables age and gender in relation to the clearance rate. When comparing homicide cases with children and adults, we see that all cases with a child as a victim were cleared by the police. While 83 percent of the homicides cases with adults were cleared. A chi-square test of independence was performed to examine the relation between clearance rate and age. The relation between the variables age and clearance rate was statistically significant, X^2 (1) = 5.0, p = .026.

The second variable is gender. There is a statistically significant difference between

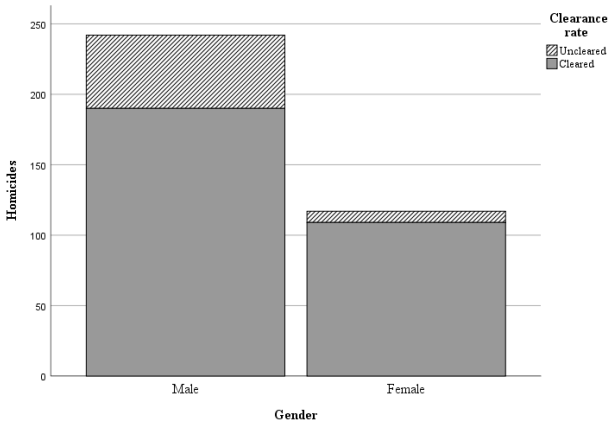
homicides with male and female victims and the clearance rate, X^2 (2) = 12.4, p = .002. 93 percent of the cases with a female victim are cleared, while among male victims this percentage is 79.

The non-discretionary variable type of homicide has a significant difference between the categories regarding to clearance rate X^2 (3) = 55.5, p < .001. In table 5.5, we see that 33 percent of the criminal milieu homicides remain uncleared, this is the highest percentage of uncleared cases. For both domestic homicides and dispute homicides remains 3 percent uncleared.

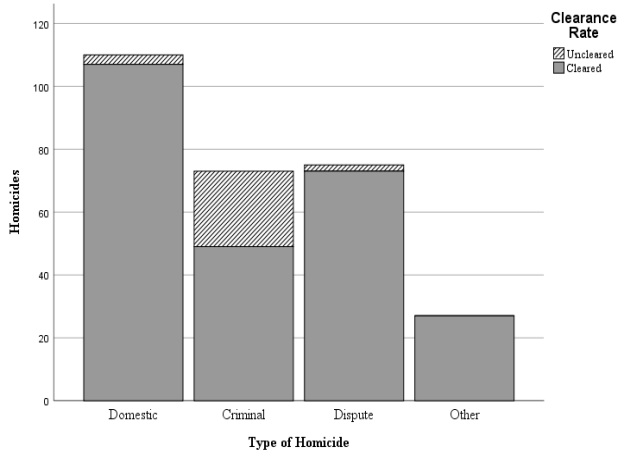
Just as the variable age, gender, and type of homicide, there is a significant difference between the categories of modus operandi X^2 (2) = 36.5, p <.001 regarding clearance rate. Homicides with firearms differ from the other categories, only 28 percent of the homicides where a firearm was used were cleared. This differs from the category knife. Homicides cases with knives are solved in 94 percent of the cases.



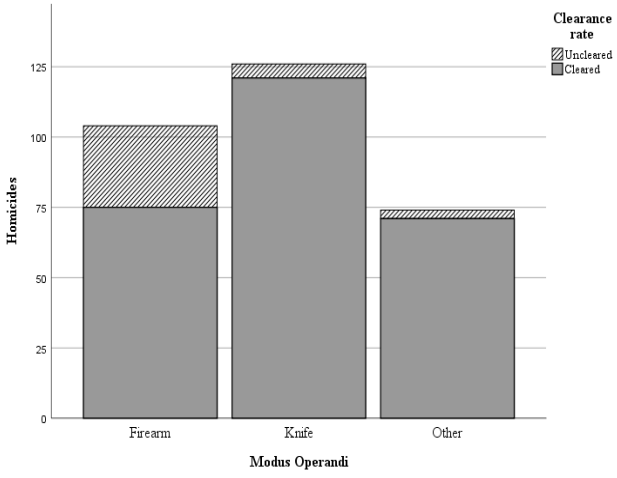
Graph 3.1 Clearance rate & Age



Graph 3.2 Clearance rate & Gender



Graph 3.3 Clearance rate & Type of Homicide



Graph 3.4 Clearance rate & Modus operandi

4.2 Clearance time

The dependent variable clearance time is an interval/ratio variable that goes from 0 until 720. For the discretionary factors, age and gender, independent t-tests will be used. For the non-discretionary factors, type of homicide and modus operandi, will an ANOVA be executed. The independent t-test shows a statistically significant difference between children (M = 7.41, SD = 26.30) and adults (M = 30.72, SD = 100,36), $t(253) = 4.01$, $p = .046$. The t-test shows also a statistically significant difference between male (M = 38.94, SD = 114.34) and female victims (M = 6.67, SD =26.90), $t(261) = 21.64$, $p < .001$.

The ANOVA shows a statistically significant difference in clearance time among the categories of type of homicide, $F(3,221) = 11.53$, $p > .001$. The post hoc test Bonferroni revealed that there was a statistically significant difference between criminal milieu homicides and all other categories. There was no statistically significant difference among the other categories. The ANOVA also showed a statistically significant difference in clearance time for modus operandi, $F(2, 237) = 7.49$, $p = .001$. The post hoc test showed statistically significant differences between the category firearm and the categories knife and other modus operandi. There was no statistically significant difference between the categories knife and other modus operandi.

4. Discussion

The results of the analyses will be discussed in this part. Firstly, the meaning of the results for every variable will be discussed. Secondly, the results of this research will be compared to earlier studies. And lastly, the debate of Black (1970; 1976) and Gottfredson and Hindelang (1979) will be discussed in relation to the results of this research.

This research looked at the factors that affected the clearance rate and clearance time in the Netherlands in the period 2017-2019. The factors were divided into discretionary factors, also called victim characteristics, and non-discretionary factors, also called incident characteristics. The goal of the current research was to investigate whether the Dutch police had an influence on the clearance rate and clearance time. If discretionary factors are the only factor that affect the clearance rate and clearance time this means the police acted on ‘victim preferencing’. This means that the police gave more attention to a certain type of victim. If non-discretionary factors are the only factors that affect the clearance rate and the clearance time,

can concluded that the clearance rate and the clearance time are outside police control.

The discretionary factors were age and gender. We see that all cases of children are cleared, while 83 percent of the cases of adults is cleared. This is a statistically significant difference between age and clearance rates. There was also a statistically significant difference between age and clearance time. The variable gender also has a statistically significant difference in relation to the clearance rate and clearance time. From the homicide cases with male as victims 22 percent remains uncleared. The independent t-test has shown a relationship between gender and clearance time. Among the discretionary factors, we can conclude that cases with children and females as victims are cleared more and earlier cleared than cases with adults and males. This can be explained because female and children victims are more likely to be killed by someone they know. Baskin and Sommers (2010) have found a positive effect regarding the clearance time and cases where the victim and perpetrator knew each other.

The non-discretionary factors that were investigated in this research were the type of homicides and the modus operandi. There was a statistically significant difference between these two variables and the clearance rate and clearance time. Criminal milieu homicides, for instance, are cleared in 64 percent of the cases. This differs a lot from domestic homicide cases, of which 97 percent of the cases are cleared. Criminal milieu homicides are the hardest cases to clear and when they are cleared it takes the most time (Litwin, 2004). The ANOVA showed that there was a statistically significant difference between criminal milieu homicides and all other groups. According to Litwin (2004), witnesses are less eager to share information within criminal milieu homicides than other homicides. The witnesses are afraid of reprisal when they share information with the police. Besides the type of homicide, the variable modus operandi was also analyzed. The chi-square showed a statistically significant difference among modus operandi and clearance rate. The ANOVA showed a statistically significant difference between the groups: Firearm, knife, and other modus operandi. The statistically significant difference was between firearm and the other categories. Homicides committed with a firearm are less likely to be cleared and take longer to clear. Based on the analyses, we can conclude that both the discretionary factors as well as the non-discretionary affect the clearance rate and clearance time. Age, gender, type of homicide, and modus operandi all have a statistically significant affect. This means that the clearance rate and clearance time is affected by all variables.

When comparing the results of the current research with the results of earlier empirical studies, we can state that this research has found empirical support for both discretionary factors and non-discretionary factors to be affecting factors for clearance rate and clearance time. The research can be put in the same category as that of Addington (2007), Alderen and Lavery

(2007), Lee (2005), Banzinger and Killias (2014), and Sturup & Karlberg and Kristainsson (2015). All these studies found empirical support for discretionary factors and non-discretionary factors related to clearance rate. The current research found the same empirical support for the victim characteristics, age and gender, and clearance rate as the American studies of Addington (2007) and Alderen and Lavery (2007). These studies also found a statistically significant difference between male and female victims and children and adult victims. The results are also the same as Banzinger and Killias (2014) found in Switzerland. Banzinger and Killias (2014) and the current research have found that the variables age and gender have a significant effect on the clearance rate. Addington (2007) found the same statistically significant difference as the current research. There were many studies that found a difference for the variable modus operandi (Addington, 2007; Litwin, 2004; Baskin & Sommers, 2010; Ousey & Lee, 2010; Sturup, Karlberg, & Kristainsson, 2015). Especially homicides where a firearm was used as a weapon were less likely to be cleared, because this modus operandi was often used in criminal milieu homicides which are less likely to be cleared (Liem et al., 2019). There was a statistically significant affect between the modus operandi and the clearance rate and clearance time. Addington (2007) and Lee (2005) concluded that gang-related or drugs-related homicides were less likely to be cleared and took longer to clear. The analyses have also shown statistically significant differences between criminal milieu and other types of homicides. The chances for a later clearing increase in the category of criminal milieu homicide.

Criminal milieu homicide seems to be an important category for this research. Criminal milieu homicide, namely, affects all other variables. All categories, which are less likely to be cleared or more likely to take more time to be cleared are categories that are overrepresented by criminal milieu homicides. There was, for instance, only one case within the criminal milieu homicides with a female victim. It can be questioned if the 'victim preferencing' is the reason that cases with male victims are less likely to be cleared and also cleared after a longer time or that the reason is that male victims are overrepresented in criminal milieu homicide cases.

This research had as a goal to see if victim characteristics had an effect on clearance rate and clearance time or if the effect was caused by incident characteristics. This contributes to the debate between Black (1970; 1976) and Gottfredson and Hindelang (1979). The results show that both discretionary factors and non-discretionary factors have an effect on clearance rate and clearance time. This research shows empirical support that there is no difference in effect between victim characteristics and incident characteristics, just as most earlier studies

did (Addington, 2007; Alderen & Lavery, 2007; Lee, 2005; Banzinger & Killias, 2014; Sturup & Karlberg & Kristainsson, 2015).

5. Limitations and further research

The data of this research was collected by analyzing open sources. This affects the reliability and transparency of the research. However, it limits the validity of the research. The information that can be found in open sources is limited. The media is mostly reliable on the information the police provide. This causes a lot of missing data in the database, which affects the validity of the research. Also, the truthfulness of the information in newspapers and on websites cannot be guaranteed. To minimize this limitation information source was checked in multiple sources.

For further research it could be an interesting addition to add the variable of ethnicity of the victim into the framework. Gangpat and Liem (2012) have seen that almost half of the victims and perpetrators of homicides in the Netherlands are non-Dutch. So, it will be interesting to see if the overrepresentation causes a difference in clearance rate and clearance time. In American studies this variable has often been studied. Alderen and Lavery (2007) and Lee (2005) found a statistically significant difference for the category ethnicity of the victim when looking for the difference between Caucasian, Afro-American, and Hispanics. Addington (2007) found no difference in clearance time between white and black people. It will be interesting to see if in the Netherlands this is the same because the demographics of the Netherlands differ a lot from US demographics.

The category criminal milieu homicides can be studied more. This category has a large effect on the clearance rate and clearance time. Qualitative research about this category can explain why criminal milieu homicides in the Netherlands are less likely to be cleared and take longer to clear.

6. Conclusion

This research studied the homicides in the Netherlands from 2017 until 2019. It tried to look at which factor affect the clearance rate and clearance time in the Netherlands. The theories of Black (1970;1976) and Gottfredson and Hindelang (1979) were taken as a starting point for this research. Black's propositions were that some victims get 'more' law than other victims. This means that victims' characteristics have an effect on the clearance rate and clearance time. If

Black's propositions are true, this means the police act on 'victim preferencing'. Gottfredson and Hindelang (1979) argue that not victim characteristics or discretionary factors are the reason that homicides are cleared, but that a factor outside police control has a bigger effect on the clearance of homicides. These factors are called non-discretionary factors. This research looked at two discretionary factors age and gender, and two non-discretionary factors type of homicide and modus operandi.

Between 2017 and 2019 361 homicides cases were committed in the Netherlands; of these homicides 83.1 percent is cleared. This is a high percentage compared to the US where most previous studies about this subject have taken place, but a low percentage in comparison to Western European countries such as Finland and Switzerland (Addington, 2007; Alderen & Lavery, 2007; Liem et al., 2019). When comparing the independent variables with the clearance rate and clearance time, we see a statistically significant difference between all categories. Cases with adult victims, male victims, criminal milieu homicide, and homicides committed with a firearm are less likely to be cleared and take longer to clear.

It is hard to conclude if the police act on 'victim preferencing' or not. The current research shows that victim characteristics, like gender and age, have an effect on the clearance rate and clearance time. Nevertheless, we can also see that incident characteristics have an effect on clearance rate and clearance time. Because these factors are related it is not clear which of these factors is the most predicting for the clearance rate and clearance time. For instance, within the category criminal milieu homicides, most victims are male adults. This overrepresentation of male and adult victims within criminal milieu homicides can explain why cases with male and adult victims are less likely to be cleared. Deepening research on criminal homicide cases in the Netherlands could explain the percentages of this research.

As previously mentioned, have homicides a big impact on society (Liem et al.,2019). Clearing homicides helps to reduce the impact. Relatives get closure when the homicides are cleared, and people feel safer. In the Netherlands are many homicides cleared and most often cleared on the same day. This helps to reduce the impact. Investing more time in tackling criminal milieu homicides and all other activities in the criminal milieu will help to lower the uncleared cases in the Netherlands.

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Appendix

Tables of clearance rate and dependent variables

Table 7.1

Clearance rate and Age

	Children	Adults	Total
Uncleared	0 (0%)	53 (17%)	53 (15%)
Cleared	25 (100%)	263 (83%)	288 (85%)
Total	25 (100%)	316 (100%)	341 (100%)

x^2 (1) = 5.0, p = .026.

Table 7.2

Clearance Rate & Gender

	Male	Female	Total
Uncleared	52 (22%)	8 (7%)	60 (17%)
Cleared	190 (79%)	109 (93%)	299 (83%)
Total	242 (100%)	117 (100%)	359 (100%)

x^2 (2) = 12.2, p < .001

Table 7.3

Clearance rate & Type of Homicide

	Domestic Homicide	Criminal milieu homicide	Dispute homicides	Other	Total
Uncleared	3 (3%)	24 (33%)	2 (3%)	0 (0%)	30 (10%)
Cleared	107 (97%)	49 (67%)	73 (97%)	27 (100%)	269 (90%)
Total	110 (100%)	73 (100%)	75 (100%)	102 (100%)	299 (100%)

x^2 (3) = 55.5, p < .001

Table 7.4

Clearance rate & Modus operandi

	Firearm	Knife	Other	Total
Uncleared	29 (28%)	5 (4%)	26 (4%)	37 (12%)
Cleared	75 (72%)	121 (96%)	71 (96%)	267 (88%)
Total	104 (100%)	126 (100%)	74 (100%)	304 (100%)

x^2 (2) = 36.5, p <.001