Crime Prevention in Public Transportation: The Route Zwolle-Emmen

by

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Abstract:

This research explores the locations, times and type of offenses that take place in and around the train route Zwolle-Emmen, operated by Arriva, focusing specifically on pickpocketing, assault of public transport employees and vandalism/destruction of public transport property. For each of these offenses, Crime Scripts are constructed to provide insight into the modus operandi of offenders. Additionally, this research also proposes a number of Situational Crime Prevention measures to help prevent these crimes from recurring. Examples of these measures include, increasing CCTV awareness, installing electronic ticket gates at station Emmen, floodlighting at rail yards, offering incident-oriented trainings to public transport employees and encouraging employees to work in pairs, also known as “Buddying”. The majority of the data used in this research derives from police reports from the Basisvoorziening Handhaving (BVH) and BlueSpot Monitor (BSM) systems. The main findings show that, overall, crime levels on this route are lower than generally perceived by Arriva employees, but that the majority of crime occurs at station Zwolle, followed by station Emmen, and that little crime occurs at intermediate stations. Moreover, this research also illustrates that particular stations can act as crime generators or crime attractors depending on the time, location and type of offense. Vandalism, for example, occurred mostly during the evening and night at rail yards, whereas pickpocketing occurred mostly in busy areas of the station, such as the station hall, platform or inside trains, at relatively scattered times throughout the day with a peak between 14:00 and 18:00. Assault of public transport employees occurred most frequently inside trains but also relatively scattered throughout the day, with a small peak between 16:00 and 18:00.

Samenvatting:

Deze scriptie onderzoekt de diverse locaties, tijden en soort overtredingen in en rond het Arriva traject Zwolle-Emmen, met specifiek aandacht voor zakkenrollerij, mishandeling van openbaar vervoer (OV) personeel en vandalisme/baldadigheid van OV eigendommen. Voor ieder overtreding worden “Crime Scripts” opgesteld om inzicht te krijgen in de handelswijze, de zogenaamde “modus operandi” van de overtreders. Tevens geeft dit onderzoek ook een aantal situationele criminaliteitspreventieaanbevelingen als hulpmiddel ter voorkoming van heroptreding. Voorbeelden van deze aanbevelingen zijn het bewust maken en bewust worden van het gebruik van CCTV (cameraopnames), het installeren van elektronische toegangspoorten op station Emmen, het aanbrengen van betere verlichting bij opstelterreinen, het aanbieden van specifiek op incidenten georienteerde trainingen aan het OV personeel en het bevorderen van OV personeel op stations en in de treinen in tweetallen te werken, ook bekend als “buddying”. Bij dit onderzoek is hoofdzakelijk gebruik gemaakt van Politierapporten van de Basisvoorziening Handhaving (BVH) en BlueSpot Monitor (BSM) systemen. De bevindingen tonen dat het aantal overtredingen op deze route lager is dan in het algemeen wordt geanticipeerd door de medewerkers van Arriva, maar hierentegen vindt de meerderheid van de overtredingen plaats op station Zwolle, gevolgd door station Emmen, en dat er relatief weinig overtredingen plaatsvinden op de tussenstations. Dit onderzoek toont ook aan dat bepaalde stations meer criminaliteit aantrekken en bevorderen. Zij werken als “crime generators en crime attractors”, afhankelijk van de tijd, plaats en soort overtreding. Vandalisme vond vooral plaats ‘s avonds en ‘s nachts op opstelterreinen. Hierentegen vond zakkenrollerij meestal plaats gedurende de dag in de stationshal, op het perron en in de treinen, met een toename van incidenten tussen 14.00 en 18.00 uur. Mishandelingen van het OV personeel vond het meest plaats in de treinen, verspeid over de dag met een kleine toename van de incidenten tussen 16.00 en 18.00 uur.

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1. Introduction

In 2016, an action program was introduced by the Dutch Ministry of Infrastructure and Water Management (IenW) which called for the improvement of public safety in and around public transportation by the year 2018 (State secretary of IenW, 2019). Although there has been a decrease in the number of incidents occurring in public transportation in the past few years, as well as an increase the overall sense of safety of employees and passengers, the goals of the program have not yet been reached (State secretary of IenW, 2019). Public safety on public transportation such as trains, metros and busses, remains an issue for many countries, including the Netherlands. It is important that both employees and passengers are and feel safe at, or on their way to work.

This research thus addresses the issue of public safety of passengers and employees in public transportation, focusing specifically on the train route Zwolle-Emmen. The route Zwolle-Emmen is operated by the Dutch train company Arriva, whereas busses operate between the train station Emmen and the asylum-seeking center in Ter Apel. Although the influx of asylum seekers in the Netherlands has decreased and remained relatively steady since the peak in 2015 (Centraal Bureau, 2020), asylum seekers have gained a lot of media attention over the past few years, especially those residing in Ter Apel (Looden, 2019; Jongsma, 2019; Vissers, 2018). This is due to a small percentage of asylum seekers from “safe countries” who have been causing nuisances in the busses heading from Ter Apel to Emmen, making their way to Zwolle by the Arriva-operated trains, and eventually to Amsterdam (Looden, 2019; Van de Poll, 2015; Ministry of Justice and Security, 2019). So much so, that the Dutch ministry decided to introduce special busses to be used only by people residing at the asylum-seeking center (Looden, 2019; Ministry of Justice and Security, 2019). As many asylum seekers thus travel via the route Zwolle-Emmen, it has come to the attention of Arriva that a number of crimes on this route could be connected to the asylum seekers who are also causing problems in the busses.

This research, commissioned by the police of the east of the Netherlands and Arriva, explores situational crime prevention methods for specific crimes in order to improve the public safety of passengers and employees in and around public transportation, specifically the route Zwolle-Emmen. These specific crimes include pickpocketing, assault of public transportation employees and vandalism/destruction of public transport property. For each of these offenses an overview of the times, days, stations and more precise locations within stations is made, as well as Crime Scripts, which are step-by-step accounts of the modus operandi of offenders and elaborated on later in this paper. These Crime Scripts are then used to pinpoint which

preventive measures could be used and when, in order to reduce crime and improve public safety in and around the train route Zwolle-Emmen.

The societal relevance of this research is the improvement of public safety for passengers, employees, and citizens in general. Understanding and defining crime prevention methods, including the construction of crime scripts for specific offenses, and communicating these to Arriva employees should help to better recognize and tackle such offenses. Furthermore, the creation of crime scripts for particular offenses could assist the police with their investigations and increase the possibility for the police to make arrests. Although the police already have barrier models for several types of offenses, they do not have barrier models on crime in and around public transportation. The construction of crime scripts specifically made for public transport could therefore support the development of public transport-related barrier models created by the police in the future.

The scientific relevance, on the other hand, is that although there is already some research on safety within public transport, more research is needed on crime occurring on public transport, or in close vicinity of train stations. This research thus aims to contribute to the current body of literature on crime and safety in and around public transportation by translating theoretical aspects of situational crime prevention into realistic and implementable measures which have been examined by Arriva employees.

This leads to the following research question: What measures could help prevent crime in and around the train-route Zwolle-Emmen?

The sub-questions which answer this research question are:

- Which theories help explain the locations, times and types of offenses of crime incidents, and how can Crime Scripts be used to help explain and prevent crime in public transport?
- What are the locations, times and type of offenses that occur in and around the train route Zwolle-Emmen?
- What is the modus operandi of criminals in and around the train route Zwolle-Emmen?
- Based on the Crime Scripts, what are possible preventive measures of crime on the train-route Zwolle-Emmen?

The structure of this paper is as follows: first the theoretical background will be discussed, diving into the three main theories of Situational Crime Prevention, namely the Rational Choice Perspective, Crime Pattern theory and the Routine Activities theory. In this section, the concept of Crime Scripts will be explained in more detail, as well as Situational Crime Prevention itself and its 25 situational control measures. The theoretical background chapter

is followed by a chapter explaining the key concepts in this research and then the method, results, situation crime prevention methods, which includes the formulated Crime Scripts for the three offenses (pickpocketing, assault of public transport employees and vandalism/destruction of public transport property), the conclusion and recommendations.

2. Theoretical Background

As there is little availability of theoretical models on crime prevention specifically within public transportation, Situational Crime Prevention and the theories grounded in this approach, namely the rational choice perspective, the routine activities approach and crime pattern theory, make up the theoretical background of this research. Research conducted by Irvin-Erickson and La Vigne (2015), La Vigne (1997), Loukaitou-Sideris et al. (2002), Newton (2014) and Natarajan et al. (2015) have demonstrated the value of applying Situational Crime Prevention to public transportation and will therefore also make up part of the theoretical basis of this research. Additionally, Situational Crime Prevention and the theories rooted in this method will help to construct Crime Scripts later in this research, which will be used to make recommendations of crime prevention methods in public transportation. Before delving into Situational Crime Prevention and its techniques, the Rational Choice Perspective, Routine Activities Approach and Crime Pattern Theory will be discussed.

2.1 The Rational Choice Perspective

The rational choice perspective, developed by Cornish and Clarke, is a framework used to explain how environmental factors motivate criminals to commit specific crimes. The essence of the Rational Choice Perspective is that offenders consider committing a crime rationally, based on costs and benefits (Cornish & Clarke, 2017). Some of these benefits include excitement, control, revenge, sexual gratification, or material possessions, to name a few (Cornish & Clarke, 2017). This rational decision-making is not without flaws, as offenders often have to weigh the costs and benefits in imperfect circumstances where there is a lot of risk and time pressure and a lack of knowledge (Cornish & Clarke, 2017). In these circumstances, the decision-making process is considered a “bounded rationality” and can lead to outcomes that are sufficient for the offender, rather than optimal (Cornish & Clarke, 2017). Additionally, the Rational Choice Perspective also assumes that an offender’s decision-making is crime specific (Cornish & Clarke, 2017). Offenders commit a particular crime to satisfy a particular benefit (Cornish & Clarke, 2017), for instance assaulting someone may satisfy the offender’s need to feel in control.

One critique of the Rational Choice Perspective is that some crimes, especially violent crimes that are not economically motivated, are simply not rational but senseless (Cornish & Clarke,

2017), and, for example, committed out of frustration or boredom. Nevertheless, such "senseless" crimes are still considered rational according to the principles of the Rational Choice Perspective. Vandalizing the waiting area at a train station platform may be perceived as senseless and caused by boredom, but for the offender, this particular crime may satisfy a specific reward, such as thrill or a sense of control, and is therefore rational nevertheless. Likewise, assaulting a public transport employee to avoid receiving a fine seems to most individuals absurd, but the offender, whose decision-making process is often bounded, may view this as the best possible way to get himself out of that situation.

Furthermore, the decisions an offender makes can fall into either "involvement" or "event" decisions. "Event" decisions relate to the crime itself and thus to the preparation, execution, and completion stages of the crime, whereas "involvement" decisions relate to the offender's criminal career, and as such about their initial involvement (initiation), continued involvement (habituation) and desistance (Cornish & Clarke, 2017). At each of these three stages, different factors affect the decisions an offender makes (Cornish & Clarke, 2017). For example, whether an offender decides to continue committing crimes or stop altogether will likely depend on how successful past crimes have been. The more successful previous crimes have been, the more likely the offender will continue to commit crimes in the future, whereas if the offender has nearly gotten caught the more likely he or she will desist from crime. Lastly, the Rational Choice Perspective argues that criminal events develop in a series of "stages and decisions" and that Crime Scripts can be useful for identifying these stages and decisions in order to detect and prevent crime (Cornish & Clarke, 2017). The concept of Crime Scripts and their use will be elaborated on later in this chapter.

2.2 The Routine Activity Approach

The routine activity approach, introduced by Cohen and Felson, focuses on the environment of an offender and the opportunities it creates for an offender to commit a crime, rather than the offender himself. Routine activities are the actions people carry out in their daily lives, such as work or social activities, which often bring people of different backgrounds together at different times of the day, and on occasion also with amenities like weapons or tools which can either enable or prevent the occurrence of a crime (Cohen & Felson, 1979). The time and place of routine activities therefore play an important role in understanding crime rates. Cohen and Felson (1979) argue that the convergence of three elements in "space and time", namely motivated offenders, suitable targets and the absence of capable guardians against a violation, will influence the likelihood of a crime to take place. The lack of any one of these elements is therefore sufficient to prevent a crime from occurring (Cohen & Felson, 1979).

Targets includes both people and property, whereas capable guardians refer not only to the police but also ordinary citizens carrying out their routine activities (Cohen & Felson, 1979).

Cohen and Felson (1979) demonstrate that an increase in crime levels do not necessarily correspond to social or economic inequalities, but simply relate to the converge of these three elements in space and time. For example, although the US experienced economic growth and decreases in social inequalities after the Second World War, crime rates still increased (Cohen & Felson, 1979). This can be explained by a shift in the structure of routine activities after WWII. More men and women began working away from home resulting in more empty houses during the day and thus more opportunities for offenders to commit crime (Cohen & Felson, 1979). The economic boom meant an increase in technological advances, like cars or televisions, providing more targets (Cohen & Felson, 1979). Additionally, technological advances provided not only targets but also the means for committing a specific crime, such as weapons or getaway cars (Cohen & Felson, 1979). Nevertheless, Cohen and Felson (1979) also mention that these developments can facilitate criminal activities but can also disrupt them, as weapons, for example, could be used to by someone to defend themselves or their home.

The routine activity approach was later adapted by several criminologists. Brunet (2002) compiles an overview of the ways in which these different researchers/criminologists have recommended to reformulate the routine activity approach. The reformulated theory includes the previous three elements (motivated offender, suitable targets, absence of capable guardians) but now also includes responsibility levels for crime discouragement and crime facilitators. Additionally, guardianship, initially considered a single relationship between "protector and target", is now seen as three types of "monitoring relationships", namely guardian/target, handler/offender and manager/place (Brunet, 2002). The handler/offender relationship, also called "intimate handler", is the person exercising social control over a "handled offender" (Brunet, 2002). The relationship may be personal, for example between a parent or child, or more hierarchical such as between a student or a principal/teacher but can also be between strangers. It is thus an extension of the capable guardian concept (Brunet, 2002). The manager/place relationship, on the other hand, is between a place and someone who oversees a place like doormen, receptionists, or homeowners, also referred to as "place managers" (Brunet, 2002). Moreover, crime facilitators are the physical resources that help an offender commit a crime (Brunet, 2002). These include the aforementioned technological advances such as getaway cars, weapons and stolen credit cards, but also drugs and alcohol as these could encourage an offender to commit a crime.

Brunet (2002) applies the reformulated routine activity theory to civil remedies, namely through civil laws concerning nuisance abatement, youth curfews and alcohol server liability, in order to illustrate how these could help prevent or discourage crime. Civil remedies are “procedures and sanctions specified by civil statutes and regulations that are used to prevent or reduce criminal problems and incivilities” (Brunet, 2002), such as penalties or fines, losing privileges like a driver’s license or detention. With regards to nuisance abatement, property owners can act as place managers in order to end nuisances on their property, such as drug dealing. The property owner therefore has the responsibility to end the nuisance “under the threat of civil punishment” (Brunet, 2002). Juvenile curfews, on the other hand, should increase adult supervision of juveniles, either by guardians, parents or the police, which should result in fewer youth crimes as fewer adolescents will be out on the street at night (Brunet, 2002). Lastly, server liability laws ensure that servers no longer contribute to the intoxication of an individual who could then injure another individual or third party (Brunet, 2002).

2.3 Crime Pattern Theory

Another environmental theory rooted in situational crime prevention is Brantingham and Brantingham’s (1995) crime pattern theory. This theory states that crime occurs when targets and potential offenders intersect in specific environments where committing a particular crime is relatively easy (Brantingham & Brantingham, 1995). Certain physical environments, such as shops, car parks, public transportation, offices, homes and parks, can create not only criminal opportunities but also generate fear (Brantingham & Brantingham, 1995). According to Brantingham and Brantingham (1995), high-crime levels often occur in places where people “feel safe and express little fear”, whereas, with a few exceptions, places marked by darkness, graffiti or vandalism and where people often feel uneasy, have generally low-levels of crime. Robberies, for example, often occur in busy streets where people generally feel safe.

There are four types of “urban sites” important to the crime pattern theory, namely crime generators, crime attractors, crime-neutral sites and fear generators (Brantingham & Brantingham, 1995). Crime generators are places that attract large groups of people or where large groups of people travel through such as sport stadiums and park and rides (Brantingham & Brantingham, 1995). Crime generators produce crime as they concentrate large volumes of targets, such as people or goods, at particular times and places in settings which are favorable for specific crimes (Brantingham & Brantingham, 1995). Within these volumes of people are also potential offenders who “notice and exploit criminal opportunities” in a given crime generating location (Brantingham & Brantingham, 1995). These criminals, however, do not go to these places with the intention of committing a crime, but exploit criminal opportunities generated by these locations (Brantingham & Brantingham, 1995). Crime attractors, on the

other hand, are places that create opportunities for criminal activities and motivated offenders are attracted to these locations as they are aware of the criminal opportunities they generate (Brantingham & Brantingham, 1995). Examples of crime attractors include bars and parking garages. Note, some places, such as malls or public transportation, could potentially serve as both crime attractors and crime generators, as they both attract large groups of people but simultaneously are known for their criminal opportunities. Unlike in crime generator areas, in crime attractor areas the motivated offender actually goes to the location with the intention of committing a crime because of the criminal opportunities (Brantingham & Brantingham, 1995).

Aside from crime attractors and crime generators there exist also crime-neutral areas and fear generators. Crime-neutral areas are those that neither attract offenders nor produce crimes, but experience crime sporadically, often committed by people living locally (Brantingham & Brantingham, 1995). Places or locations are generally never only crime attractors, crime generators or crime-neutral areas, but often serve as a crime attractor for specific crimes and crime generator or crime-neutral area for other crimes (Brantingham & Brantingham, 1995). Lastly, fear generators exists in many forms but are generally connected to five categories: (1) direct fear of another person, (2) fear of being alone, (3) fear at night, in the dark, (4) fear in unknown areas, and (5) fear of encounters with "scary" people (Brantingham & Brantingham, 1995). Fear is often heightened in situations where individuals are physically vulnerable or have no control over the given situation (Brantingham & Brantingham, 1995). For instance, individuals may experience more fear in public transportation as they have nowhere to escape to.

Brantingham and Brantingham (1995) also mention several characteristics which influence crime levels in particular areas, including nodes, paths, edges and land uses. Nodes are central places and crime is often committed close to the central places or nodes of an offender's life, such as their work, their home, where they shop or where they spend their leisure time (Brantingham & Brantingham, 1995). Likewise, individuals are often also victimized close to or in the nodes of their lives or routine activities (Brantingham & Brantingham, 1995). Nodes or central places can be crime attractors, crime generators, fear generators or crime-neutral areas (Brantingham & Brantingham, 1995). Paths are also important in "shaping routine activities" as they are the routes people take in their routine activities, for example their way to work, school or shopping, and thus "strongly influence the distribution of crimes" as they create a pattern at which the offender and the victim could intersect (Brantingham & Brantingham, 1995). As mentioned earlier, crime often occurs when the victim or target and potential offender intersect in an environment that makes committing a crime possible. Additionally, edges are places that are noticeably distinct from other places and can be perceived as physical or imagined barriers, like the edges of major roads or

residential areas (Brantingham & Brantingham, 1995). The surrounding areas of edges often encounter high-crime levels and may consist of “mixes of land uses” as well as crime generators and crime attractors (Brantingham & Brantingham, 1995). Lastly, land uses may “physically cluster or disperse” people of similar social backgrounds (Brantingham & Brantingham, 1995). The distribution of land uses can therefore have an effect on the crime levels of whole neighborhoods (Brantingham & Brantingham, 1995).

2.4 Situational Crime Prevention

The rational choice perspective, routine activity approach and crime pattern theory are the three main environmental theories on crime that are rooted in Situational Crime Prevention. Situational Crime Prevention seeks to not only reduce the rewards gained from specific crimes and reduce criminal opportunities, but also to increase the risks of committing specific crimes by manipulating the immediate environment, resulting in little incentive for potential offenders to commit particular crimes (Clarke, 1995). As the rational choice perspective already explained, potential offenders make decisions on whether to commit a particular crime or not, and although these conditions are often made in imperfect circumstances, for example under time pressure or when intoxicated, committing a crime remains a choice nevertheless. The main purpose of Situational Crime Prevention is thus to create “unfavorable circumstances” in order for potential offenders to choose to avoid committing crime (Clarke, 2017). It is also important to point out that Situational Crime Prevention will likely only succeed if it focuses on specific types of crime (Clarke, 2017). When the crime focused on is too general, the opportunity structure of the crime may vary as well as the resources, motives and skills of the offender, which means that intervention points may be ineffective (Clarke, 2017). When Situational Crime Prevention is crime-specific, however, even just one intervention point in the opportunity structure is often enough to prevent a crime from occurring (Clarke, 2017).

Clarke (2017) provides twenty-five opportunity-reducing techniques to prevent crime. These are divided into five categories, namely “increase the effort”, “increase the risks”, “reduce the rewards”, “reduce provocations” and “remove excuses”, of which the first three derive from the rational choice perspective. The first five techniques, which increase the effort of criminals to pursue a crime, are (1) target hardening, which are physical barriers that hinder the offender from committing a crime, such as locks, bulletproof screens or safes, (2) access control, which are measures that prevent an offender from entering sites, like fences, entry phones or ID badges, (3) deflecting offenders, which are measures to guide people into behaving accordingly, such as signs, the closing of specific streets or scattering bars so they are not all closely located to one another, (4) controlling facilitators, which are measures that control crime facilitators such as, gun control, breathalyzers or regulating ID’s and licenses (Clarke,

1995) and lastly (5), screen exits, such as electronic devices, gates or tickets for exits (Clarke, 2017). Entry/exit screening differs from access control as the aim is not to prevent offenders from entering a location but instead to identify potential offenders who are not “in conformity with entry requirements” by entry and exit screening (Clarke, 1995). Screening may include the screening of bags and passengers at airports, as well as showing documents or tickets upon entering a location or installing automatic ticket gates in public transport.

The next five opportunity-reducing techniques are (6) Extent guardianship, (7) strengthen formal surveillance, (8) utilize place managers, (9) natural surveillance and (10) reduce anonymity and aim to increase the risks of committing a particular crime. Formal surveillance is carried out by the police and security guards who discourage offenders from committing crimes (Clarke, 1995). Their surveillance, however, may be enhanced by alarm systems, speed cameras, closed circuit television (CCTV), informant hotlines, as well as increasing the surveillance done by citizens (Clarke, 1995). Employees, on the other hand, can act as place managers and may also assist in surveillance, for example shop assistants, doormen, train conductors, parking lot attendants and resident caretakers (Clarke, 1995). Furthermore, in order to promote natural surveillance carried out by citizens in their routine activities, street lighting and defensible space, where space is formed in a way that crime becomes more visible, may be improved, and a neighborhood watch may be established (Clarke, 1995). Lastly, the risk for offenders to commit a crime increases when their anonymity is reduced, for example by introducing school uniforms or presenting personal identification (Clarke, 2017).

Furthermore, five techniques Clarke (2017) mentions which should reduce the reward of committing a crime are (11) conceal targets, (12) target removal, (13) identifying property, (14) disrupt markets and (15) denying benefits. Concealing targets, for example by storing away personal items or parking out of plain sight, and removing targets by, for instance, installing removable car radios, carrying no or less cash, or installing safes in homes, help to reduce the reward for potential criminals (Clarke, 1995). Likewise, registering vehicles or other measures that allow property to be identified and track the owner down, such as personal identification numbers on car radios, also reduce rewards (Clarke, 1995). Furthermore, disrupting markets and denying benefits could also have an effect on crime levels as monitoring pawn stores or flea markets makes it more difficult for offenders to sell their stolen items, and rapid removal of graffiti or ink tags on clothing items could discourage offenders (Clarke, 2017).

Another category of Situational Crime Prevention is reducing provocations. According to Wortley (2017) “situations can create stress and provoke an antisocial response, particularly some form of aggression”. The five provocation-reducing techniques include (16) reducing

frustrations and stress by polite service, soothing music or efficient queues, (17) avoiding disputes, by introducing fixed cab fares, separating football supporters from different teams and ensuring bars are not overcrowded, (18) reducing emotional arousal, for instance by prohibiting bad behaviour and racial slurs, (19) neutralizing peer pressure through slogans or campaigns, and lastly (20) discouraging imitation for example by repairing damaged property (Clarke, 2017).

The last five techniques of Situational Crime Prevention under the category “remove excuses” are (21) rule setting, (22) post instructions, (23) alert conscience, (24) assist compliance and (25) control drugs and alcohol (Clarke, 2017). Rule setting means to introduce clear rules and regulations which employees and citizens must follow, or improving existing ones (Clarke, 1995). Examples of rule setting are banning the consumption of alcohol in public places like streets and parks, establishing rules surrounding cash-handling in shops, and ensuring hotel employees register guests. Posting instructions may also limit crime for example by placing signs or posters in public areas, such as those in public transportation instructing passengers not to put their feet up on chairs or listen to music out loud. Furthermore, speed signs or reminders such as “shoplifting is stealing” may alert individuals’ conscience (Clarke, 2017). Assisting compliance, on the other hand, for instance by providing public trash cans or bathrooms encourage individuals to behave accordingly. Lastly, by controlling drugs and alcohol, for instance by sever limits in bars, potential crimes such as drunk driving or alcohol related altercations may also be reduced (Clarke, 2017).

Although each of these measures may be very beneficial for preventing specific crimes, they can be quite difficult to implement as they require coordination amongst different actors and can be time consuming (Clarke, 2017). Nevertheless, these situational measures are generally easier to initiate compared to removing to root of the problem, which is what dispositional theories, theories focused on personality, often aim to do. Aside from being difficult to implement, Situational Crime Prevention has also often been criticized for displacing crime rather than actually preventing it, as offenders would simply move on to another target, location or crime if the initial option is no longer viable due to the preventive measures (Clarke, 2017). Nevertheless, the rational choice perspective assumes that if other options are also no longer viable as measures to reduce opportunities and increase risks have been implemented there too, the offender would most likely settle for smaller rewards and carry out smaller crimes, or perhaps even desist from crime altogether (Clarke, 1995). Displacement is of course still possible for particular crimes, but offenders who choose to continue carrying out a particular crime only in another location are a minority (Clarke, 2017). Furthermore, criminal adaptation where “offender populations” detect loopholes or adapt to preventive measures already in place pose an even bigger issue for Situational Crime Prevention than

displacement, as new situational prevention measures are regularly required due to criminal's adaptation or changes in the offender's modus operandi (Clarke, 2017). Other issues concerning the effectiveness of Situational Crime Prevention are that people are expected to carry out some surveillance responsibilities, but ordinary citizens do not always pay attention to matters that do not concern themselves, and measures are sometimes not implemented or executed correctly, which has to do more with the practice than the principles of Situational Crime Prevention (Clarke, 1995).

Nonetheless, when measures are implemented correctly, Situational Crime Prevention can be a very useful tool to reduce crime. When criminal opportunities and rewards are reduced and risks of crime are increased, offenders often turn to legitimate ways of generating income (Clarke, 2017). Additionally, the "diffusion of benefits" where crime is reduced "beyond the immediate focus of the measures introduced" provides another practical and positive outcome of Situational Crime Prevention (Clarke, 2017). For example, when offenders become aware that several homes in one neighborhood use security systems, there may be a reduction in burglaries not only in those particular homes, but also in the entire neighborhood as offenders may not want to take the risk as they do not know exactly which homes have alarms and which do not, or they believe all homes have alarms, even though this is not the case.

2.5 Situational Crime Prevention in and around Public Transportation

Situational Crime Prevention and the theories it incorporates provide a framework for analyzing crime in public transportation. Crime in public transportation can occur either on a moving and at times stationary vehicle ("en route"), or in and around stops and stations (Newton, 2014). The walking to and from the station, waiting at the station and travelling on the vehicle itself are all considered part of the public transportation journey where crime and opportunities for crime may develop (Newton, 2014). Public transportation creates unique opportunities for specific crimes as it moves large groups of "high-risk populations", namely targets and potential offenders, around in limited space (Loukaitou-Sideris et al., 2002). Public transportation therefore has the ability to shape temporal and spatial concentrations of targets, victims and potential offenders, and thus has an influence on the crime levels of these networks (Newton, 2014).

The potential victims or targets of crime on public transportation include passengers and employees of the entire system (Newton, 2014). For the route Zwolle-Emmen, this includes all employees from the Dutch transport companies that operate on this route (Arriva, NS, Blauwnet), such as conductors, engineers, maintenance employees as well as staff working in restaurants or shops at the station. Employees and passengers also serve as potential guardians along stations, stops and "en route" vehicles. Potential offenders may be individuals

who use public transportation to travel to where they plan on committing crime or who specialize in committing crime specifically within the public transport network (Newton, 2014).

Brantingham and Brantingham's (1995) concepts of nodes, paths, edges and land uses can also be used to explain crime in public transportation. As previously mentioned, nodes are central places where both targets/victims and offenders move to and from, whereas paths connect these nodes (Brantingham & Brantingham, 1995). Nodes and paths thus closely correspond to Cohen and Felson's (1979) idea of routine activities, which are the activities people carry out in their daily lives, including travelling, working and leisure. In public transportation, nodes represent stations and bus stops (Newton, 2014) and possibly also bicycle storages or parking garages nearby stations. Paths in public transportation, on the other hand, represent the routes on which trains, busses, trams and metros operate and link different stops and stations to one another (Newton, 2014). Furthermore, edges, which are the boundaries around nodes or central places, may be less distinct within public transportation (Newton, 1014). Edges include the boundaries around stops and stations, but as walking to and from a stop or station as well as to and from the bicycle storages and parking garage also consist as part of the public transportation network, the boundaries of edges may be more imagined. Nodes, paths and edges are all places in which potential targets/victims and offenders could intersect, increasing the likelihood of a crime occurring. Lastly, land uses surrounding public transportation could also influence crime levels, as nearby bars, schools, abandoned buildings or liquor stores could attract or facilitate crime (Loukaitou-Sideris et al., 2002).

Brantingham and Brantingham's (1995) notion of crime attractors and crime generators can also be applied to public transportation in order to explain crime levels. Irvin-Erickson and La Vigne (2015) explain that public transportation can act as both a crime generator and crime attractor, but that this can vary according to the nodal and place characteristics of a given station and the time of day. Crime generators are areas within public transportation network which allow for more opportunities in crime because more people have access to or use these stations (Irvin-Erickson & La Vigne, 2015). Crime attractors, on the other hand, are stations or areas of the public transportation network which attract more criminal activities because they are known to have successful criminal opportunities (Irvin-Erickson & La Vigne, 2015).

Irvin-Erickson and La Vigne (2015) explore several crime attracting and crime generating characteristics of Washington DC's metro stations which influence crime levels, including the connectedness and remoteness of different stations, how accessible stations are and how much potential there is near these stations for human activity. They found that the connectedness of stations and their level of accessibility and human activity had a positive

correlation with crime rates. The more connected a station is, the more passengers and hence targets/victims will converge in space and time, making connectedness a crime-generating characteristic, whereas the more remote a station is, the less guardianship there will be and hence more criminal opportunities for specific crimes like vandalism, making remoteness a crime-attracting characteristic (Irvin-Erickson & La Vigne, 2015). Furthermore, the more accessible a station is, the higher the potential for human activity, which is also a crime-generating characteristic (Irvin-Erickson & La Vigne, 2015).

Applying opportunity reducing measures of Situational Crime Prevention can be very effective in order to reduce crime levels for particular crimes in and around public transportation. Irvin-Erickson and La Vigne (2015) identify several issues along the Los Angeles Metro Green Line which influence crime levels, namely a lack of surveillance and guardianship in parking lots and the physical attributes of platforms which result in a lack of natural surveillance. They propose that Situational Crime Prevention methods like extending security/surveillance to areas near stations, such as the walk from the car park to the station, improving surveillance within parking garages and the visibility of platforms and other parts of the station that could otherwise entrap targets or hide offenders, should reduce crime levels along this line (Irvin-Erickson & La Vigne, 2015). Likewise, Newton (2014) suggests that the improvement of design failures, such as better lighting and the removal of dark areas and hiding places, as well as sufficient and effective guardians and place managers could improve safety and reduce crime on public transportation.

A study conducted by La Vigne (1997) illustrates that the design characteristics, management and maintenance policies that include situational crime prevention techniques of the Metro system in Washington DC, ensure increased safety and lower crime levels compared to other transit systems in metropolitan areas like Boston, Atlanta and Chicago. Target hardening by making property graffiti resistant, controlling access by limiting the number of stairs to enter underground stations and controlling facilitators by removing fast food restaurants, public restrooms and luggage lockers each increase the effort for criminals to commit crimes (La Vigne, 1997). Additionally, entry and exit screening processes through automated fare collection and formal, employee and natural surveillance all increase the risks to commit crimes (La Vigne, 1997).

Another study illustrating the value of Situational Crime Prevention in public transportation is conducted by Natarajan et al. (2015), who explore crime in public transportation in El Salvador. Although the public transportation conditions in this study differ significantly from those explored in the previously mentioned studies, it illustrates how a few practical measures could vastly improve passenger's and employee's safety on public transportation. Natarajan et al.

(2015) found that the conditions of bus stops in El Salvador are generally very poor, covered in graffiti, have little or no lighting and are often surrounded by vendors, drunks and homeless people. The busses themselves are largely overcrowded, providing opportunities for pickpockets and/or sexual assault, causing fear especially amongst female passengers (Natarajan et al., 2015). Furthermore, the lack of police presence, the many unauthorized bus stops, reckless driving, and vendors selling products inside busses all encourage crime within the transportation system (Natarajan et al., 2015). Opportunity-reducing techniques thus include rule setting by creating measures which drivers are not allowed to deviate from, such as not allowing unauthorized stops, increasing and improving capable guardians and place managers by employing bus inspectors, increasing the presence of law enforcement to ensure the rules are being followed and making bus drivers responsible for safety on their bus (Natarajan et al., 2015). Additionally, improving lighting at bus stops, defensible space and cameras may increase women's' feeling of safety as well as reduce crime (Natarajan et al., 2015).

2.6 Crime Scripts

Crime scripts are a useful tool to determine which opportunity-reducing techniques of Situational Crime Prevention are effective for specific crimes, for example specific crimes occurring in public transportation, and to identify the modus operandi used by an offender in order to detect and prevent crime. Crime scripts are "step-by-step accounts of the procedures used by offenders to commit particular crimes" and illustrate the decisions, actions and resources that are necessary for committing a particular crime (Cornish & Clarke, 2017) before, during and after the crime, making it possible to identify intervention points to "disrupt the script" and prevent crime (Leclerc, 2017). Crime scripts not only document the stages of a specific criminal activity, but also encompass a better understanding into the offender's rationale and decision-making process (Leclerc, 2017). Offender self-reports, victim self-reports, police investigation files and court transcripts are all potential data sources for creating crime scripts, but, according to Leclerc (2017), offender self-reports are the preferred data source as these commonly present the entire decision-making process and modus operandi of an offender. The stages of crime scripts are generally as follows: (1) preparation, (2) enter setting, (3) precondition, (4) target selection, (5) initiation, (6) continuation, (7) completion, (8) finish up, (9) post condition and (10) exit setting (Cornish & Clarke, 2017). Tompson and Chainey (2011) have suggested another, shorter model that includes only four stages, namely "preparation", "pre-activity", "activity" and "post-activity".

3. Method

3.1 Key Concepts

The Route Zwolle-Emmen: the route Zwolle-Emmen is located in the provinces Drenthe and Overijssel in the Netherlands and has a total of eleven stops. These stops are Zwolle, Dalfsen, Ommen, Mariënberg, Hardenberg, Gramsbergen, Coevorden, Dalen, Nieuw Amsterdam, Emmen Zuid and Emmen, and also operate in this order. The route is operated by Arriva, but other public transport companies like the Nederlandse Spoorwegen (NS) and Blauwnet also operate between Zwolle and other stations in the Netherlands. The route Zwolle-Emmen generally runs four times per hour between 06:21 and 00:21 on weekdays and between 06:51/07:51 and 00:57 on weekends ("Reisplanner," n.d.).

Basisvoorziening Handhaving (BVH) and BlueSpot Monitor (BSM): BVH is the nationwide incident registration system of the Dutch police. All incidents are reported in the BVH system (Abraham et al., 2018). Nevertheless, the BVH and BSM databases are combined and the BSM database ensures that the information from the BVH database is clearer and more transparent. The selection criteria (1) time and (2) location (sub-question two) were thus retrieved from the BSM database.

Maatschappelijke Klasse: maatschappelijke Klasse or MK are the registration codes the police use in order to classify and identify incidents in their databases (Abraham et al., 2018). Each particular incident has a registration code or MK. Relevant examples to this research are pickpocketing ("zakkenrollerij/tassenrollerij"), vandalism ("vandalisme/baldadigheid") and assault ("mishandelingen").

Pickpocketing: pickpocketing is classified under the MK "zakkenrollerij/tassenrollerij", whereas pickpocketing with force is classified under the MK "zallenrollerij/tassenrollerij met geweld". Pickpocketing without violence or force is the removal of goods such as money from the victim's body or clothing worn by the victim ("Dataportaal-definities," 2018). If the perpetrator steals a good specifically out of a bag which the victim is carrying, this is called "tassenrollerij" ("Dataportaal-definities," 2018). Throughout this research, these two terms will not be distinguished and will thus both be referred to as Pickpocketing.

Vandalism/Destruction of Public Transport Property: this research focuses partially on vandalism/destruction of public transport property. This is however not a distinct registration code but rather three codes grouped together. These codes are destruction of/to public transportation ("vernieling van/aan openbaar Vervoer/abri"), destruction of/to public building ("vernieling van/aan openbaar gebouw") and vandalism ("vandalisme/baldadigheid"). Destruction of/to public transportation is to intentionally damage or render inoperable public

transportation properties such as trains, bus/tram shelters or any other real estate belonging to public transport ("Dataportaal-definities," 2018). Likewise, destruction of/to public building is the intentional damage or rendering inoperable of a public building ("Dataportaal-definities," 2018). Vandalism, on the other hand, is the intentional and pointless destruction of someone's belongings, which can be either publicly or privately owned ("Vandalisme," n.d.).

Assault of public transport employees: there is no registration code that refers specifically to assault of public transport employees, which is why the codes for assault in general, as well as simple and severe assault are used. When collecting data, only police reports that include assault of public transport employees are selected. The registration code for assault is "mishandelingen" and simple assault is "eenvoudige mishandeling". Both assault and simple assault is the deliberate injuring of someone, whereas severe assault ("zware mishandeling"), is deliberately inflicting a serious injury or bodily harm onto someone, which could cause severe mental or physical consequences ("Dataportaal-definities," 2018).

Total: The total shown at the bottom of the tables in the "Results" chapter includes the total number (N) of incidents for pickpocketing, vandalism/destruction and assault of public transport employees that have taken place on the route Zwolle-Emmen.

3.2 Data Sources

Police Databases: The majority of data for this research derives from police reports from the BVH and BSM databases. These police reports included conversations with offenders, statements of police officers, victim self-reports, and in some cases also offender self-reports, although the number and quality of these was limited.

Interviews: In order to gain better insight into the current crime prevention methods in place on the route Zwolle-Emmen (sub-question four), one phone interview was conducted with Pascal Aalberts, Arriva's Quality, Health, Safety and Environment (QHSE) Manager of the east of the Netherlands. Questions related to CCTV/Bodycams, electronic ticket gates, overcrowding, security, lighting, training of employees, communication between employees and the rail yard on this route were asked. Furthermore, in order to ensure that the prevention measures and Crime Scripts are realistic, relevant, and implementable, another interview was conducted with Pascal Aalberts and Stephan Stroo, an Arriva employee who works regularly on the train route Zwolle-Emmen.

3.3 Procedure

The type of offenses, namely pickpocketing, assault of public transport employees and vandalism/destruction of public transport property, were selected in consultation with Arriva and the police and chosen based on what is relevant for both parties.

For each offense, data in BSM was filtered to include only incidents which dated back roughly four years, as more than four years was not possible due to Dutch law, namely from 04-05-2016 until 13-05-2020. The data was also filtered to include all stations on the train route Zwolle-Emmen (Zwolle, Dalfsen, Ommen, Mariënberg, Hardenberg, Gramsbergen, Coevorden, Dalen, Nieuw Amsterdam, Emmen Zuid and Emmen) and streets in the direct vicinity of these stations. Furthermore, a perimeter of 49,39km^2 was also established around the train route so the data included not only events which occurred at or near stations but also events that occurred “en route”.

Furthermore, each offense was also filtered based on their registration code (MK). For pickpocketing, the data was filtered to include the registration codes pickpocketing (zakkenrollerij/tassenrollerij) and Pickpocketing with force (zakkenrollerij/tassenrollerij met geweld). For vandalism/destruction of public transport property the selected codes are destruction of/to public transportation (vernieling van/aan openbaar vervoer), destruction of/to public building (vernieling van/aan openbaar gebouw) and vandalism (vandalisme/baldadigheid). Lastly, for assault of public transport employees, the registration codes upon which the data was filtered are assault (mishandelingen), simple assault (eenvoudige mishandeling), severe assault (zware mishandeling) and remaining or other assault (overige mishandeling).

Additionally, thirteen other offenses were also selected and filtered based on the same (1) time and (2) location criteria as pickpocketing, assault of public transport employees and vandalism/destruction of public transport property, in order to compare the frequencies of these offenses and provide additional background information of crime on the route Zwolle-Emmen. Only crimes that are likely to occur on public transportation were selected, meaning crimes such as driving under the influence, residential burglary, or fraud were excluded from this list as the likelihood of these crimes occurring in and around public transportation is very small or even impossible. The selected offenses are shootings, possession of firearms, human trafficking, overt violence against persons, drug trafficking, rebellion/resistance, public intoxication, assault (excluding public transport employees), threats, youth-related nuisances, destruction (excluding public transport property), alcohol/drug-related nuisances and lastly theft of all types but excluding pickpocketing.

Although the selected offenses were filtered, they often still included incidents which were not relevant for the present study, as some police reports had little to no information and some incidents were registered multiple times, meaning there initially appears to be a lot more registered incidents than there really are. Nevertheless, all the irrelevant incidents were excluded from this research and the relevant incidents registered multiple times were included only once.

3.4 Data Analysis

The data from the BVH and BSM databases were coded both quantitatively and qualitatively in Excel into the following categories: “station”, “precise location”, “date”, “time” and “description of event” and also includes the category “crime facilitator” (which refers to drugs, alcohol or other substances) for assault of public transport employees and vandalism/destruction of public transport property, as well as “destroyed object” for vandalism/destruction. The “crime facilitator” column is not included for pickpocketing as there are clear rewards for pickpocketing offenders, whereas for assault or vandalism the reason behind committing such a crime are often related to misusing substances. The frequencies and percentages of the coded data from Excel were then analyzed in IBM SPSS Statistics. Furthermore, clustered columns and line charts of the data were created in Excel.

The “time of day” criteria of table 4 and table 5 in the “Results” chapter was divided into peak and off-peak hours. The peak and off-peak hours have been established by the Dutch public transport company Nederlandse Spoorwegen (NS) and are the same for Arriva. Peak and off-peak hours on weekdays are Mondays through Fridays between 06:30 until 09:00 and 16:00 until 18:30, whereas weekend hours are off-peak starting from Friday 18:30 until Monday 04:00 (NS, 2020).

Crime Scripts: In order to construct the Crime Scripts for the selected offenses and to answer the third sub-question, “what is the modus operandi of criminals in and around the train route Zwolle-Emmen?”, the coded data, specifically the category “description of event” was used to gain more insight into the offender’s procedure before, during and after committing the crime. The structure of the Crime Script is adapted from Tompson and Chainey (2011) and include the stages “Preparation” or “Preconditions and Initiation”, “pre-activity”, “activity” and “post-activity”. In order to ensure credibility within crime scripting, Borrion (2013) suggests twelve properties related to the quality assurance of Crime Scripts: typology, traceability, transparency, consistency, context, completeness, parsimony, precision, uncertainty, usability, ambiguity and accuracy. These criteria are considered in the process of developing the Crime Scripts in this research.

First, the Crime Scripts for vandalism/destruction of public transport property, assault of public transport employees and pickpocketing are each performed offender Crime Scripts, as they focus on the offender's actions and the actions demonstrated in the scripts derive from police reports and have thus actually occurred. Second, these Crime Scripts only fall within the scope of the route Zwolle-Emmen, as the data used to create these scripts only focused specifically on this route. The Crime Scripts aim to be as clear and specific as possible, including all relevant details and omitting irrelevant details, Furthermore, each police report was carefully analyzed, resulting in a similar pattern or modus operandi being detected for the majority of cases per type of offense. The individual reports used to make the Crime Scripts were then integrated or merged together based on this pattern in order to make one final script for the crimes pickpocketing and assault of public transport employees. For vandalism/destruction of public transport property, two different modi operandi were detected, resulting in two separate Crime Scripts for this type of offense. With each Crime Script a table has been created to include prevention measures for each specific stage of the Crime Script. These prevention measures derive from this study, the interviews, and Situational Crime Prevention literature.

3.5 Ethical Issues

This research project was reviewed and approved by the BMS Ethics Committee of the University of Twente under number 200408.

4. Results

4.1 Crime Rates on the Route Zwolle-Emmen

Figure 1 illustrates a total of sixteen different crimes that have occurred on the route Zwolle-Emmen over the past four years, including pickpocketing (N=97), vandalism/destruction of public transport property (N=41) and assault of public transport employees (N=31). Roughly 1/5 of destruction incidents are aimed at public transport property, whereas nearly 1/4 of assault incidents are aimed at public transport employees. It is clear from figure 1 that all types of theft of all kinds, including car theft, bicycle theft, theft from stores or offices but excluding pickpocketing, is reported most frequently with a total of 1634 incidents, whereas shootings (N=1), possession of firearms (N=2) and human trafficking (N=2) are reported the least often. Furthermore, Figure 1 also illustrates that the number of crime incidents reported on the route Zwolle-Emmen, with the exception of theft (N=1634), appear relatively low considering this is data from the past four years from a train-route which carries between 10,000 to 100,000 passengers per day (P. Aalberts, personal communication, June 4, 2020).

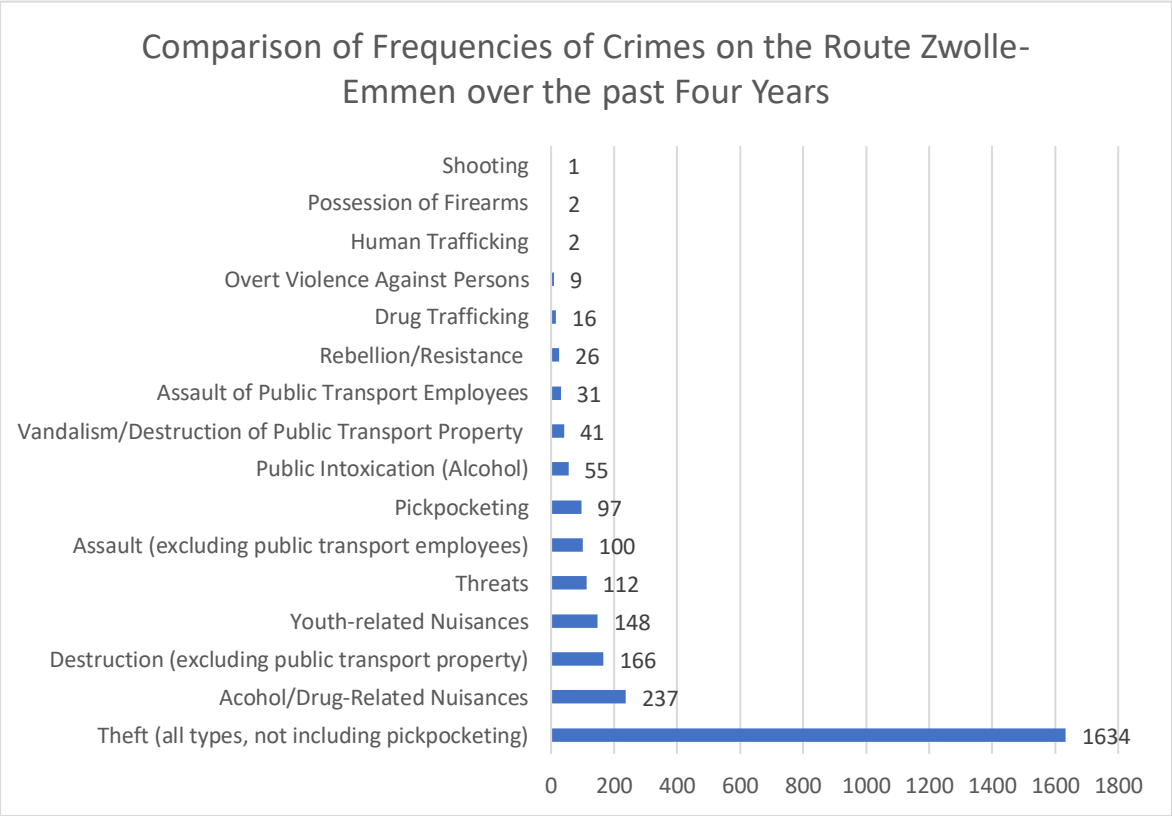

Figure 1 *Comparison of frequencies of crimes on the route Zwolle-Emmen over the past four years*

4.2 Crime Rates per Station

Table 1 shows that from the three selected offenses this research focuses on, roughly 80% of pickpocketing incidents, 68% of assault of public transport employee incidents and 54% of vandalism/destruction of public transport property incidents occurred at station Zwolle. This could be due to station Zwolle being the largest station from the train route Zwolle-Emmen, which has trains that are operated by both Arriva and the NS. The NS trains connect Zwolle to many different cities throughout the Netherlands, meaning that from the route Zwolle-Emmen, station Zwolle likely has the most potential targets. Station Emmen, being the station that carries the second most passengers on this route (P. Aalberts & S. Stroo, personal communication, July 24, 2020), has the second most reported incidents for each of these offenses, with pickpocketing at around 12%, assault of public transport employees at roughly 23% and vandalism/destruction of public transport property at 22%. Table 1 also illustrates that these offenses rarely occur at the intermediate stations of the route, with the exception of vandalism/destruction of public transport property at station Mariënberg (17%), which can be explained by the fact that, like Zwolle and Emmen, station Mariënberg also has a rail yard whereas the other intermediate stations do not (P. Aalberts, personal communication, June 4, 2020).

	Pickpocketing	*Assault of Public Transport Employees*	*Vandalism/Destruction of Public Transport Property*
Station	%	%	%
Zwolle	80.41	67.74	53.66
Dalfsen	0.00	0.00	2.44
Ommen	2.06	3.23	0.00
Mariënberg	1.03	0.00	17.07
Hardenberg	2.06	0.00	2.44
Gramsbergen	0.00	0.00	0.00
Coevorden	2.06	3.23	2.44
Dalen	0.00	0.00	0.00
Nieuw Amsterdam	0.00	3.23	0.00
Emmen Zuid	0.00	0.00	0.00
Emmen	12.37	22.58	21.95
Total	97	31	41

Table 1 *Crime rates per station*

4.3 Crime Rates per Precise Location

The type of offenses by their precise location at stations are illustrated in table 2. For pickpocketing, the precise locations at stations are relatively spread out with the majority of pickpocketing incidents (34%) occurring in the more general area of stations, such as the station hall or the entrances or exits. Table 2 also illustrates where assault of public transport employees typically occurs at stations on the route Zwolle-Emmen. The majority of these assaults occur inside trains (44%), followed by platforms (23%) and the more general area of stations (19%).

Table 2 *Crime Rates per Precise Location*

	Pickpocketing	*Assault of Public Transport Employees*	*Vandalism/Destruction of Public Transport Property*
Precise location	%	%	%
In Station	34.02	19.35	14.63
In Train	17.53	43.94	9.76
On Platform	15.46	22.58	12.20
Bus station/bus shelter	3.09	9.68	12.20
Near station	14.43	6.45	4.88
Tracks/rail yard	0.00	0.00	41.46
In bus	3.09	0.00	4.88
Bicycle storage	1.03	0.00	0.00
Escalators	4.12	0.00	0.00
unknown	7.22	0.00	0.00
total	97	31	41

Lastly, vandalism/destruction of public transport property occurs most often at the tracks or in the rail yard (41%). It is important to mention that from the total of 41 reported vandalism/destruction of public transport property incidents, a total of 19 incidents were vandalism where graffiti was sprayed on the outside of trains, and the remaining 22 incidents were other types of destruction of public transport property, such as breaking doors or windows. From these 19 incidents, the majority of graffiti incidents occurred at the tracks or the rail yard, whereas the locations of the remaining 22 incidents of destruction of public transport property are more spread out, with 15% of incidents occurring in stations, 12% on platforms and 12% in bus stations/shelters.

4.4 Crime Rates per Day (weekend and weekday)

Table 3 and Figure 2 both illustrate the crime rates for pickpocketing, assault of public transport employees and vandalism/destruction of public transport property on the route Zwolle-Emmen per day of the week. For each type of offense, crime levels are relatively equally distributed with the most incidents occurring during weekdays rather than weekends. Table 3 also illustrates that although crime rates are higher in total on weekdays, when observing the days of the week individually, crime levels are generally higher in the days leading up to the weekend or on Saturdays, as is the case for assault of public transport employee incidents, compared to the beginning of the week. For example, most pickpocketing incidents occurred on Thursdays (20%) followed by Fridays (18%) and Saturdays (18%). Assault of public transport employees occurred most frequently on Fridays (26%) and Saturdays (26%) and, lastly, for vandalism/destruction of public transport property most incidents occurred on Fridays (22%).

Table 3 *Crime Rates per Day of the Week*

	Pickpocketing	*Assault of Public Transport Employees*	*Vandalism/ Destruction of Public Transport Property*
Day	%	%	%
Monday	12.37	6.45	7.32
Tuesday	6.19	6.45	2.44
Wednesday	13.40	6.45	17.07
Thursday	19.59	12.90	14.63
Friday	17.52	25.81	21.95
Saturday	17.52	25.81	17.07
Sunday	13.40	16.13	19.51
Total	97	31	41

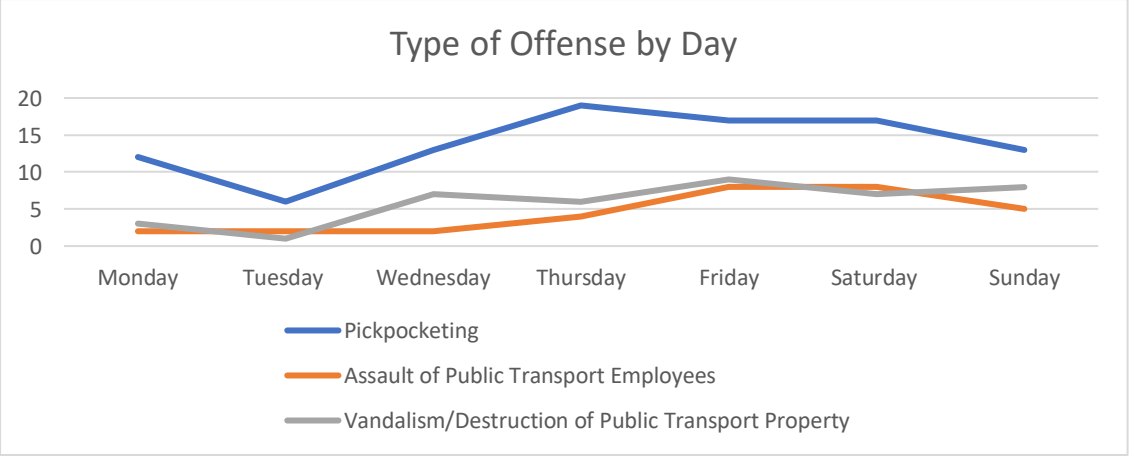

Figure 2 Crime rates per day

4.5 Crime Rates by Time of Day

Table 4 shows crime levels during peak and off-peak hours on weekdays whereas Table 5 shows crime levels during off-peak weekends. Figure 3 illustrates the differences in crime levels every two hours, with the exception of the time frame 00:00 until 06:00. This is because for vandalism/destruction of public transport property, most incidents occurred during the night but were not detected until the early morning when employees would start their workday. It is thus unknown when exactly during the night most of the vandalism (graffiti) incidents occurred. Nevertheless, as few crimes occurred for pickpocketing and assault of public transport employees during the night hours, this time frame should have little effect on the crime levels as shown in figure 3.

Table 4 shows that most pickpocketing incidents occur during weekdays (N=64) at off-peak day hours (42%) followed by weekday peak-afternoon hours (28%). Table 5, on the other hand, illustrates that during off-peak weekends (N=33), pickpocketing occurs mostly during the day hours from 12:00 until 18:30 (42%), but also frequently during evening hours which are from 18:30 until 00:00 (33%). When comparing pickpocketing during weekdays and weekends, figure 3 illustrates a peak from 14:00 until 18:00, which is consistent with both table 4 and 5.

Table 4 *Crime rates during weekdays (peak and off-peak hours from Monday 06:30 until Friday 18:30)*

	Pickpocketing	*Assault of Public Transport Employees*	*Vandalism/Destruction*
Time of the day	%	%	%
06:30-09:00 (peak morning hours)	9.38	11.76	0.00
09:00-16:00 (off-peak day hours)	42.19	35.29	13.04
16:00-18:30 (peak afternoon hours)	28.13	29.41	4.35
18:30-00:00 (off-peak evening hours)	15.63	17.65	21.74
00:00-06:30 (off-peak night hours)	3.13	5.88	60.87
Unknown	1.56	0.00	0.00
Total	64	17	23

Assault of public transport employees, on the other hand, occurs relatively steady on a daily basis, with a small peak between 16:00 and 18:00 as illustrated in figure 3. Table 4 shows that the majority of assault incidents occur during weekdays (N=17), but this is only three more than on weekends (N=14) as seen in table 5. Furthermore, table 4 illustrates that on weekdays, most assault of public transport employee incidents occur during off-peak day hours (35%) and peak-afternoon hours (29%), and on weekends most assaults incidents occur during the day (43%) and evening hours (50%).

Table 5 *Crime rates during weekends (off-peak hours from Friday 18:30 until Monday 04:00)*

	Pickpocketing	*Assault of Public Transport Employees*	*Vandalism/Destruction of Public Transport Property*
Time of the day	%	%	%
00:00-06:30 (night hours)	6.06	0.00	38.89
06:30-12:00 (morning hours)	15.15	7.14	11.11
12:00-18:30 (day hours)	42.42	42.86	0.00
18:30-00:00 (evening hours)	33.33	50.00	50.00
Unknown	3.03	0.00	0.00
Total	33	14	18

Lastly, figure 3 shows a decline in vandalism/destruction of public transport incidents during the morning hours, and a relatively even distribution of vandalism incidents throughout the rest of the day, with a small peak during the evening and a large peak during the night hours. This is illustrated more clearly in table 4, which shows that during weekdays (N=23) a large majority of vandalism incidents occur during the off-peak night hours (61%), and during the weekend, shown in table 5 (N=18), 39% of vandalism/destruction incidents occurred during the night hours and 50% during the evening hours.

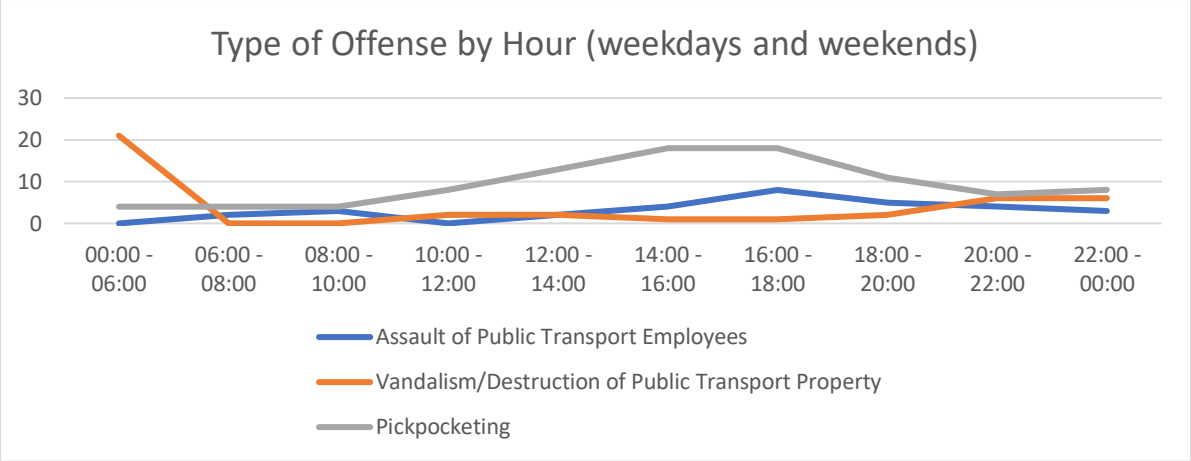

Figure 3 *Comparison of types of offenses every two hours*

4.6 Crime Facilitators

Table 6 shows the crime facilitator rates for assault of public transport employees and vandalism/destruction of public transport property. For assault of public transport employees, table 6 illustrates that for 55% of incidents, offenders were under the influence of drugs or alcohol or suffered from psychological issues at the time of committing the incident. For vandalism/destruction of public transport property, it is mostly unknown (76%) whether offenders had been using drugs or abusing alcohol or whether they suffered from psychological issues at the time they committed vandalism or destruction.

Table 6 *Crime facilitator rates per offense*

	Assault of Public Transport Employees	*Vandalism/Destruction of Public Transport Property*
Crime facilitator	%	%
Marijuana	16.13	2.44
Alcohol	16.13	14.63
Psychological Problems	9.68	2.44
Other (drugs/alcohol/psychological problems)	54.84	4.88
Unknown	2.44	75.61
Total	31	41

5. Crime Scripts and Situational Prevention Measures

The Crime Scripts and a number of Situational Prevention measures have been discussed and checked with two Arriva employees. Both Arriva employees found that the Crime Scripts were logical and argued that the events occurred in the way they had seen or experienced. Nevertheless, their suggestions, for the Crime Scripts and prevention measures, are discussed in this chapter.

5.1 Crime Script for pickpocketing in and around the route Zwolle-Emmen

Table 7 *Performed offender Crime Script for pickpocketing on the train route Zwolle-Emmen*

Stages	Offender's Actions
1. Preparation	1. Select train station, day, time and the precise location or wait for next opportunity.
2. Pre-Activity	2. Enter the selected train station and head towards the train, platform, escalators or remain within the station. 3. Enter through the electronic ticket gate at station Zwolle. 4. Observe potential targets use items (phone, wallet) and watch where they store them away. 5. If the target uses their debit/credit card to charge their travel card or withdraw cash, get close enough to the target without being noticed and watch them enter their PIN. 6. Select easy target who is either: (1) alone, (2) intoxicated (3) distracted or (4) located on a busy platform or train and whose bags or jacket pockets are unzipped.
3. Activity	7. Approach target and steal items from target's pocket or bag and place into own pocket or bag without being noticed
4. Post-Activity	8. Exit the train, platform, or the train station entirely. 9. Use stolen items

I. Preparation

Table 7 shows the performed offender Crime Script for pickpocketing on the train route Zwolle-Emmen. In the first stage, "preparation", offenders select the train station, the precise location within the train station, as well as the time and day, or wait for the next opportunity. From the police data, it was clear that most offenders chose station Zwolle or Emmen as their pickpocketing location.

II. Pre-Activity

In the “pre-activity” stage, offenders enter the selected train station and head towards the precise location, such as the platform or train, where they either see pickpocketing opportunities or head there because they know these locations are successful for their pickpocketing opportunities. At station Zwolle, offenders will need to enter the station through the electronic ticket gates. Station Zwolle is the only station on the route Zwolle-Emmen which has such gates (P. Aalberts, personal communication, June 4, 2020).

After entering the train station, offenders select easy targets. From the police data it was seen that the targets were often walking from one area of the station to another (i.e. from entrance to platform, from platform to exit, from ticket charging machines to platform etc.), standing on an overcrowded platform or sitting inside the train. Additionally, police data also illustrated that targets were often distracted, for example by talking to friends, focusing on where they needed to go so that they would not miss their train or by looking out of the window or sleeping inside trains (police data). Some targets were also intoxicated, making them easier targets as they are less alert. Offenders may also specifically select targets whose bags or pockets are unzipped (police data). In most cases, offenders will observe targets use items such as their phone or wallet and watch where targets store these items away after using them (police data). In other cases, offenders may even get close enough to a target to watch them enter their PIN when using an ATM or charging their travel card (police data).

III. Activity

During the “activity” stage, offenders will approach the target and steal the items, such as a phone, wallet or even a laptop, and place these into their own pocket or bag. In order to get close enough to the selected target to steal items without being detected, offenders may either “accidentally” bump into the target and grab the item or initiate a scheme such as a conversation or asking for directions/travel information (police data). Nevertheless, police data showed that in most cases, offenders will stand behind the target on a busy platform and grab the item(s) (i.e. phone, wallet) out of the target’s pocket or bag.

IV. Post-activity

During the final stage, “post-activity”, offenders exit the train, platform or train station entirely and use the stolen items. From a few police reports it was observed that, in order to gain access to stolen phones, offenders may hack into the victim’s iCloud or change SIM cards. Stolen debit or credit cards may be used to buy goods or food using the contactless payment method or by withdrawing cash from an ATM machine if the offender observed the victim enter their PIN (police data).

5.2 Situational Crime Prevention Measures for pickpocketing in and around the route Zwolle-Emmen

Table 8 *Pickpocketing prevention measures*

Stages	Situational Crime Prevention Measures
I. Preparation **- Point 1 of the Pickpocketing Crime Script**	
II. Pre-Activity **- Points 2, 3, 4, 5 and 6 of the Pickpocketing Crime Script**	Control access by installing electronic ticket gates at the entrance of station Emmen. Reduce rewards: inform passengers about pickpocketing methods, remind passengers to conceal personal items and to be aware when entering their PIN, post signs that warn against pickpocketing, remove targets and identify property Deflect offenders: minimize overcrowding in trains or on platforms. Strengthen formal surveillance: CCTV near ATM machines and the travel card charging machines.
III. Activity **- Point 7 of the Pickpocketing Crime Script**	Deflect offenders: minimize overcrowding Strengthen formal surveillance: ensure cameras are working and that their view is not obstructed. Post signs that remind individuals that CCTV is being used Extend guardianship: increase the number of stewards and employees working in trains, station halls and platforms. Assist natural surveillance: reduce the number of empty train compartments
IV. Post-Activity **- Points 8 and 9 of the Pickpocketing Crime Script**	Increase the effort by controlling access/screening exits (see “pre-activity”). Disrupt illegal market so offenders cannot sell stolen items.

Increase Effort by Controlling Access/Screening Exits: In order to reduce the likelihood of potential offenders entering the selected train station (point 2), one situational crime prevention measure would be to control access to stations by installing electronic ticket gates at the entrances (Smith & Cornish, 2006). This could prevent potential pickpockets who do not carry

a ticket from accessing trains and train stations. It should, however, be mentioned that these gates are very expensive (P. Aalberts, personal communication, June 4, 2020) and as pickpocketing (as well as vandalism and assault) rarely occurs at the intermediate stations it may not be worth the costs to install gates at all stations. Nevertheless, it could be useful to install these gates at station Emmen where pickpocketing incidents occur more frequently (table 1). Zwolle is already equipped with electronic ticket gates. Additionally, installing electronic tickets gates would also make it more difficult for offenders to quickly exit or flee the scene and could thus help prevent point 8 of the Crime Script (Smith & Cornish, 2006). Arriva employees argued that although it would be possible to install electronic ticket gates at station Emmen and also close a few exits and entrances (as there are now about five or six which is unnecessary), which would also be logical as station Emmen is currently very open and easily accessible for individuals who are not planning on travelling, it would be more cost effective to carry out platform controls more frequently (P. Aalberts & S. Stroo, personal communication, July 24, 2020). During platform controls, a number of employees are assigned a station and will check tickets and ensure people are behaving accordingly.

Reduce Rewards: Reducing possible pickpocketing rewards for offenders by limiting the number of potential targets could help to prevent points 4, 5, 6 and 7 of the pickpocketing Crime Script. Informing passengers on pickpocketing techniques so they will be more alert, reminding passengers to conceal their personal items (Smith & Cornish, 2006) for instance by properly closing bags, keeping hands in pockets where their phone or wallet is and not putting phone or wallet in pants pockets but in closed bags or pockets on the inside of jackets, and to carefully enter their PIN are all possible ways to reduce rewards (This study). Additionally, posting signs that posting signs that warn against pickpocketing could also reduce rewards for offenders, but according to Clarke (1995), some offenders may take advantage of these sign by standing near them “to see which pockets [are] checked by passengers on reading the signs”. Other ways to reduce the rewards and make pickpocketing a less attractive option for offenders are to identify property through apps such as “Find My Phone” and to remove targets by ensuring passengers carry as little cash as possible, password protect their devices and accounts and contact their bank as soon as possible to block their credit/debit card (This study).

Deflect Offenders by Minimizing Overcrowding: Deflecting offenders by minimizing overcrowding in trains and on platforms could also limit the number of potential targets, and thus help prevent points 6 and 7 of the script, as offenders cannot hide within the crowd (La Vigne, 1997). Although four Arriva trains already operate on this route every hour (P. Aalberts, personal communication, June 4, 2020), overcrowding could be reduced even more by extending platforms, adding extra train carriages during peak hours (or switching a first class

carriage to a second class carriage) and distributing waiting areas, entrances and ticket check-in poles on the platform evenly to encourage passengers to spread out more (This study). Nevertheless, Smith and Cornish (2006) argue that reducing the number of empty train carriages could help reduce pickpocketing as the natural surveillance within trains will increase when more people are sitting together.

Increase the Risks: Strengthening formal surveillance through CCTV should help reduce points 5 and 7 of the pickpocketing Crime Script (Smith & Cornish, 2006). CCTV is already installed in several locations on the route Zwolle-Emmen, namely inside all trains on this route and the majority of station Zwolle. Station Emmen has one camera on the platform but the intermediate stations do not have cameras at all, except for municipality-owned CCTV near stations, which do not necessarily point towards the actual stations themselves (P. Aalberts, personal communication, June 4, 2020). Nevertheless, as few pickpocketing offenses occur at the intermediate stations, it will likely be too expensive and unnecessary to install CCTV at all intermediate stations. Moreover, a large number of cameras at station Zwolle are of poor quality (P. Aalberts & S. Stroo, personal communication, July 24, 2020). It is thus important to ensure that all existing cameras, whether inside trains or stations, function properly and point towards platforms, entrances/exits and the station hall, and that their view is not obstructed, and that old, poor quality cameras are replaced (This study). Additionally, placing CCTV near ATM and ticket charging machines so they record possible offenders who watch targets enter their PIN (without of course filming individuals enter their actual PIN) could also strengthen formal surveillance and increase the risk for offenders to pickpocket (This study). Furthermore, reminding offenders that there is CCTV in and around stations and that they are being filmed, for instance by posting signs or displaying it on screens in trains, could discourage them from pickpocketing as there is more risk they will be caught (Mazerolle et al., 2002). Since there is no one constantly monitoring CCTV on the route Zwolle-Emmen, as the images are only retrieved when incidents are reported (P. Aalberts & S. Stroo, personal communication, July 24, 2020), it will not add extra costs as no extra employees would need to be hired to monitor the cameras. Moreover, as the awareness of CCTV alone may improve behaviour and thus reduce crime as people know they are being filmed, it is also not necessary to have someone constantly monitor the CCTV (Flight, 2018).

There are, however, mixed findings on the effectiveness of CCTV in public areas (Welsh and Farrington, 2009; Piza, 2018; Ratcliffe et al., 2009). Studies have shown that CCTV may be beneficial in reducing car thefts in car parks, but that CCTV is less effective in other public spaces (Welsh and Farrington, 2009; Piza, 2018). Piza (2018) and Welsh and Farrington (2009) argue that CCTV may be most effective to prevent crime when used in combination with other control measures.

Moreover, extending guardianship to prevent point 7 of the script could also increase the risk for offenders to pickpocket. So far, each train is equipped with one steward who ensures the safety of passengers, maintains order and controls tickets (P. Aalberts, personal communication, June 4, 2020). This means that, aside from CCTV, large parts of the train are unsupervised by employees who can directly interfere. By increasing the number of employees working in and around the train stations, specifically in stations halls, trains and on platforms, offenders may be discouraged from pickpocketing due to the increased risk of getting caught (Smith & Cornish, 2006).

Disrupt Illegal Markets: By disrupting illegal markets so that offenders cannot sell stolen items such as phones could make stealing such items less desirable and thus prevent point 9 of the script (Smith & Cornish, 2006).

5.3 Crime Script for graffiti on trains (vandalism) on the route Zwolle-Emmen

Table 9 *Performed offender Crime Script for vandalism/destruction of public transport property on the train route Zwolle-Emmen (graffiti on trains)*

Stages	Offender's Actions
I. Preparation	1. Buy dark clothing, gloves, a hoodie and spray cans. 2. Coordinate/communicate with possible co-offenders. 3. Select train station or rail yard (generally Zwolle, Mariënberg or Emmen) and wait until night when the rail yard is dark and unsupervised
II. Pre-Activity	4. Break into setting by climbing through or over the fence or gate. 5. Select a train where there is little lighting, no cameras and little to no security.
III. Activity	6. Approach train, possibly with co-offenders. 7. Spray graffiti on the side of the train
IV. Post-Activity	8. Possibly take photographs of the graffiti and pack up used items 9. Leave setting through or over the fence or gate.

I. Preparation

Table 8 shows the performed offender Crime Script for vandalism (graffiti on trains) on the train route Zwolle-Emmen. During the "preparation" stage, offenders will presumably buy the items necessary for spraying graffiti on trains. These items include spray cans as well as dark

clothing, gloves and possibly a hoodie in order for offenders to be somewhat camouflaged (police data). Next, offenders presumably coordinate with their co-offenders on strategies, such as which train to vandalize, at which station, and at what time (generally at night when the rail yard is dark and unsupervised) if they vandalize with others rather than alone. Once offenders have strategized, they select their final choice of train station, which according to the data is either Zwolle, Emmen or Mariënberg.

II. Pre-Activity

During the "pre-activity" stage, offenders will break into the rail yard at station Zwolle, Emmen or Mariënberg by either climbing through or over the fence (police data). Offenders will then select a specific train to vandalize (if they have not already done so already in the previous stage).

III. Activity

In the "activity" stage, offenders approach the selected train, possibility with their co-offenders, and proceed to spray graffiti on the side of the train.

IV. Post-Activity

After spraying graffiti on the selected train at the selected rail yard, offenders may take photographs of their work before packing up their items (spray cans, gloves, camera) and leaving the rail yard through or over the fence (police data).

5.4 Situational Crime Prevention measures for vandalism in and around the route Zwolle-Emmen

Table 10 *Vandalism prevention measures*

Stages	Situational Crime Prevention Measures
I. Preparation **- Points 1, 2 and 3 of the Vandalism (Graffiti on Trains) Crime Script**	Prohibit the sale of spray cans/paints or increase price. Strengthen formal surveillance: CCTV, motion detector cameras Assist natural surveillance: install motion sensor lights or floodlighting and sirens or alarms. Extend guardianship: hire security guard to patrol the rail yards during unsupervised hours.
II. Pre-Activity **- Points 4 and 5 of the Vandalism (Graffiti on**	Increase effort: control access by installing secure fences that cannot be cut open which have barbed wire or spikes on top. Assist natural surveillance install motion sensor lights or floodlighting and sirens or alarms.

Trains) Crime Script	Post “no trespassing” signs and reminders that CCTV is being used.
III. Activity **- Points 6 and 7 of the Vandalism (Graffiti on Trains) Crime Script**	Increase the effort by target hardening: train surfaces that are graffiti resistant. Reduce rewards by denying benefits: rapid graffiti removal. Post instructions: posters reminding or informing potential offenders of the costs of vandalism
IV. Post-Activity **- Points 8 and 9 of the Vandalism (Graffiti on Trains) Crime Script**	Reduce rewards by denying benefits: rapid graffiti removal. Increase effort: control access by installing secure fences that cannot be cut open which have barbed wire or spikes on top.

Restrict the sale of spray paints: As there is little use for spray paints aside from vandalism, prohibiting the sale of spray paints or increasing the price of them significantly could prevent point 1 of the vandalism (graffiti on trains) Crime Script (Smith & Cornish, 2006).

Increase the risks: The rail yards at station Emmen, Zwolle and Mariënberg where vandalism occurs more frequently lacks surveillance in several areas. First, there are no cameras at any of these rail yards except for inside the trains, but these turn off roughly an hour after the trains stop running (P. Aalberts, personal communication, June 4, 2020). Furthermore, there is no security at these locations during the hours when the trains are not in use, leaving them unsupervised for about three hours during the night (P. Aalberts, personal communication, June 4, 2020). Although this may not be a long period of time, it is more than enough for offenders to spray paint graffiti on trains. Lastly, once all employees leave the rail yard, for example after cleaning, the lights are switched off until employees begin their shift at around 05:00, meaning the area is dark in the meantime (P. Aalberts, personal communication, June 4, 2020).

Control measures to prevent offenders from spraying graffiti and selecting and breaking into either one of the rail yards at these three stations (points 3, 4, 5 and 7) thus include enhancing formal surveillance by placing CCTV or motion detector cameras, assisting natural surveillance through floodlighting or motion sensor lights and sirens/alarms (Smith & Cornish, 2006), and extending guardianship by hiring at least one security guard/employee at each of

these three stations to patrol the rail yard during the hours it would otherwise be unsupervised (Smith & Cornish, 2006). Each of these control measures should increase the risks for offenders to vandalize trains, which should ultimately deter them from selecting these rail yards. According to Arriva employees, installing cameras here is effective and they are currently working on doing so, however hiring security at night is less implementable as this is very expensive and unless graffiti cases increase significantly, extra security during the night hours will likely not happen (P. Aalberts & S. Stroo, personal communication, July 24, 2020).

Increase the effort by controlling access/screening exits: Situational crime prevention measures to prevent offenders from breaking into, or easily exiting (points 4 and 9), the rail yards at station Zwolle, Emmen and Mariënberg would be to control access by installing more secure fences. The fences currently in place are 1.85 meters tall, but offenders can still easily access the rail yards by placing a ladder against fences and climbing over them (P. Aalberts, personal communication, June 4, 2020). Placing barbed wire or spikes on top of these fences makes it much more difficult for offenders to climb over, even if they are using a ladder (This study).

Post instructions: Removing excuses by posting instructions such as “no trespassing” and reminders that CCTV is being used may discourage possible offenders and could possibly prevent point 4 of the script, as offenders will be more aware that they are engaging in illegal activities which are also being recorded (Mazerolle et al., 2002). Moreover, posting information about the costs of vandalism could also help to remind offenders that their actions are harmful (Smith and Cornish, 2006).

Increase the effort: A control measure to help prevent point 7 of the script would be to increase the effort for offenders to vandalise trains through target hardening, for example by introducing graffiti-resistant train surfaces (Smith & Cornish, 2006).

Reduce rewards: Lastly, in order to help prevent points 7 and 8 of the vandalism Crime Script, reducing possible rewards for offenders by denying benefits could help to prevent the spraying of graffiti on trains in the future. By ensuring graffiti is rapidly removed from train surfaces, offenders will no longer be able to admire their work the next day and may thus be discouraged to put in the time and effort to vandalize trains in the future (La Vigne, 1997).

5.5 Crime Script for destruction of public transport property on the route Zwolle-Emmen

Table 11 *Performed offender Crime Script for vandalism/destruction of public transport property on the train route Zwolle-Emmen*

Stages	Offender's Actions
I. Preconditions and Initiation	1. Abuse substances 2. Find items to vandalize or destroy target/object with 3. Enter train station (generally station Zwolle, Emmen or Mariënberg) and head towards the bus shelter, train, platform, or remain within the station. 4. At station Zwolle, enter through the electronic ticket gate.
II. Pre-Activity	5. Wait for dark 6. Loiter unobtrusively 7. Select target
III. Activity	8. Vandalize or destroy target
IV. Post-Activity	9. Exit the train, bus, bus shelter or train station.

I. Preconditions and Initiation

Table 9 illustrates the performed offender Crime Script for Destruction of Public Transport Property, not including graffiti on trains but more destruction in general, on the route Zwolle-Emmen. Unlike the previous Crime Scripts, this Crime Script begins at the "preconditions and initiation" stage. Destruction of property and assault cases are generally less goal oriented and planned compared to vandalism and pickpocketing, which is why "preconditions and initiation" is a more suitable header for this stage than "preparation".

At this stage offenders may abuse substances such as drugs or alcohol, but as table 6 shows, for roughly 76% of public property destruction incidents it is unknown if offenders actually do abuse substances or suffer from psychological issues as this was not mentioned in the police reports. Next, offenders enter the train station, which is generally station Zwolle, Emmen or Mariënberg, find items to vandalize or destroy target with and then head towards the bus shelter, train, platform, or remain within the station hall. At station Zwolle, the offender would need to enter through the electronic ticket gate.

II. Pre-Activity

As most vandalism/destruction of public transport property incidents occurred in the evening or at night, offenders will, presumably, wait for dark before they begin to loiter unobtrusively in or around the train station. Offenders will then select a target, which is generally a window, (glass) door, or any other breakable item that is unsupervised and where there is little natural or formal surveillance (police data).

III. Activity

During the "activity" stage, offenders will vandalize or destroy the selected target. This could be done by throwing items such as stones or glass bottles against glass doors, windows or waiting areas, by kicking doors or other objects or "tagging" (writing messages) on public transportation surfaces such as walls, doors or the seats of trains or busses (police data).

IV. Post-Activity

In the final stage, "post-activity", the offenders have destroyed property and will exit their current location, such as the train, bus, bus shelter or train station. At station Zwolle, offenders will need to exit through the electronic ticket gates.

5.6 Situational Crime Prevention measures for destruction of public transport property in and around the route Zwolle-Emmen

Table 12 *Destruction of public transport property prevention measures*

Stages	Situational Crime Prevention Measures
I. Preconditions and Initiation **- Points 1, 2, 3 and 4 of the Vandalism/Destruction of Public Transport Property Crime Script**	Remove excuses by controlling drugs and alcohol: restrict the sale of alcohol at and near stations. Reduce Provocations: rapid clean-up of glass bottles, bricks or stones that are left at or near stations. Increase the effort by controlling access: Install electronic ticket gates at the entrances of station Emmen.
II. Pre-Activity **- Points 5, 6 and 7 of the Vandalism/Destruction of Public Transport Property Crime Script**	Increase the risks: assist natural surveillance, strengthen formal surveillance and extend guardianship in the evening or at night.
III. Activity **- Point 8 of the Vandalism/Destruction**	Increase the risks: assist natural surveillance, strengthen formal surveillance and extend guardianship in the evening or at night (see "pre-activity")

of Public Transport Property Crime Script	Remove excuses by posting instructions not to vandalize property and signs increasing awareness of CCTV. Increase the effort by target hardening: unbreakable glass for bus shelters, windows and waiting areas. Reduce provocations by discouraging imitation: rapid clean-up of broken items. Post instructions: posters reminding or informing potential offenders of the costs of vandalism
IV. Post-Activity **- Point 9 of the Vandalism/Destruction of Public Transport Property Crime Script**	Increase the effort by controlling access/screening exits (see "Precondition and Initiation").

1. Remove excuses by controlling drugs and alcohol: One situational crime prevention measure to help prevent point 1 of the Vandalism/Destruction of Public Transport Property Crime Script is to remove excuses by controlling drugs and alcohol, for example by restricting the sale of alcohol at and near stations (This study). If offenders destroy property because they are under the influence of alcohol, restricting the sale of alcohol in shops such as "AH to go" and other stores that may be located in or near stations could ultimately decrease destruction of property incidents.

Reduce provocations: Reducing provocations by ensuring there are no glass bottles, loose bricks or stones left at or near stations could reduce the temptation or inspiration for offenders to destroy public transport property (point 2) (This study). Additionally, discouraging imitation by rapidly repairing broken property and by ensuring broken items and tools used to destroy public transport property are cleaned up could also decrease the chances of offenders destroying property (point 8) (Smith & Cornish, 2006).

Increase the effort: As mentioned in the Pickpocketing Crime Script, installing electronic ticket gates at the entrances of station Emmen, as station Zwolle which has the highest crime levels (table 1) already has these gates and Mariënberg mainly encounters vandalism on trains at rail yards rather than stations, could also be an effective way to keep possible offenders out of stations as they would need to increase their effort to access the given station (points 3 and 4) (Smith & Cornish, 2006). Likewise, such gates would also make it more difficult for offenders to exit the station (point 9) after vandalizing or destroying public transport property (Smith & Cornish, 2006).

Furthermore, target hardening also increases the effort for offenders to destroy property (point 8), for example by installing unbreakable glass for bus shelters, windows and waiting areas (Smith & Cornish, 2006).

Increase the risks: Increasing the risks through assisting natural surveillance, strengthening formal surveillance and extending guardianship at night (points 5, 6, 7 and 8 of the destruction of property Crime Script) could also help reduce to likelihood of offenders to destroy or vandalize public transport property which occurs most frequently during the evening and night (table 4 and 5). Assisting natural surveillance can be achieved by ensuring there are no trees or bushes that obstruct the view of the platform and that there is enough lighting at stations and on platforms which all work properly (La Vigne, 1997), whereas strengthening formal surveillance can be achieved through CCTV (Smith & Cornish, 2006). Again, there are mixed findings on the effectiveness of CCTV in public areas (Welsh and Farrington, 2009; Piza, 2018; Ratcliffe et al., 2009), but when used in combination with other control measures CCTV may be more effective (Welsh & Farrington, 2009; Piza, 2018). Thus, ensuring that existing CCTV works, and monitors platforms and stations properly could be effective when it comes to reducing destruction of public transport property incidents. Furthermore, extending guardianship, for example by increasing employee supervision in the evening and night hours could discourage offenders from committing a crime, due to the increased risk of getting caught (Smith & Cornish, 2006). According to Arriva employees, however, hiring extra security at night is relatively expensive and so although this would be possible, destruction of public transport property incidents would need to occur very frequently (P. Aalberts & S. Stroo, personal communication, July 24, 2020).

Remove excuses by posting instructions: Lastly, in order to help prevent destruction/vandalism of public transport property (point 8), it may be useful to post instructions such as signs which remind offenders that CCTV is being used on stations and platforms (Mazerolle et al., 2002), as well as instructions not to vandalize public transport property (This study). Moreover, posting information about the costs of vandalism could also help to remind offenders that their actions are harmful (Smith and Cornish, 2006), however, as offenders may be under the influence of drugs or alcohol this may not be as effective.

5.7 Crime Script for assault of public transport employees on the route Zwolle-Emmen

Table 13 *Performed offender Crime Script for assault of public transport employees on the train route Zwolle-Emmen*

Stages	Offender's Actions
I. Preconditions and Initiation	1. Abuse substances 2. Enter train station or bus station without a ticket and ID. 3. Head to train, station hall or platform
II. Pre-Activity	4. Refuse to show ticket and ID to public transport employee(s) when asked 5. Refuse to cooperate when asked to leave by public transport employee.
III. Activity	6. Physically (and verbally) abuse employee(s) by kicking, punching, hitting or spitting.
IV. Post-Activity	7. Leave the station, train or bus through the nearest exit.

I. Preconditions and Initiation

Table 10 shows the performed offender Crime Script of assault of public transport employees on the train route Zwolle-Emmen. During the "preconditions and initiation" stage, the offender generally abuses substances such as drugs or alcohol before entering the train station (most often station Zwolle or Emmen) without a ticket and ID (police data). The offender then heads to the station hall, platform or train.

II. Pre-Activity

In the "pre-activity" stage the offender is located inside the train and refuses to show his ticket and ID to public transport employees when asked (police data). The offender refuses to cooperate which leads to employees either fining the offender or asking the offender to exit the train. At this point, the offender presumably becomes angry at the employee, which leads to events escalating in the next stage. According to one Arriva employee, another reason, that at the moment often leads to assault of public transport employees is the refusal of some individuals to wear face masks in trains, which is now required due to Covid-19 (P. Aalberts & S. Stroo, personal communication, July 24, 2020).

III. Activity

During the “activity” stage of the Crime Script, the offender physically and often also verbally assaults the public transport employee, generally by kicking, punching, hitting or spitting, because the offender is asked or told to do something he does not want to do, such as exit the train or station entirely, or show his ID.

IV. Post-Activity

After assaulting one or more employees, the offender leaves or, attempts to leave the train station through the nearest exit.

5.8 Situational Crime Prevention measures for assault of public transport employees on the route Zwolle-Emmen

Table 14 *Prevention measures for assault of public transport employees*

Stages	Situational Crime Prevention Measures
I. Preconditions and Initiation **- Points 1, 2 and 3 of the Assault of Public Transport Employees Crime Script**	Remove excuses by posting instructions against drinking or using drugs publicly or entering public transportation whilst under the influence of drugs or alcohol. Remove excuses by setting rules/controlling drugs and alcohol: ban on alcohol consumption at and near the train station; restrict the purchase of alcohol at stations. Increase the effort by controlling access: install electronic ticket gates at the entrances of stations.
II. Pre-Activity **- Points 4 and 5 of the Assault of Public Transport Employees Crime Script**	Increase the effort by utilizing place managers: ensure employees work in groups, enhancing training programmes for employees.
III. Activity **- Point 6 of the Assault of Public Transport Employees Crime Script**	Increase the effort by utilizing place managers: enhancing training programmes for public transportation employees (see “pre-activity”). Improve communication between employees Increase the risks by strengthening formal surveillance by ensuring all employees wear bodycams Increase the risks by encouraging employees to press charges Post signs that remind passengers CCTV is being used. Remove excuses by alerting conscience by publicizing penalties for assaulting public transportation employees

IV. Post-Activity **- Point 7 of the Assault of Public Transport Employees Crime Script**	Increase the effort by controlling access/screening exits (see "preparation")

Remove Excuses: In order to prevent an offender from becoming intoxicated, which could escalate into aggression and thus assault, it may be beneficial to remove excuses by posting instructions against drinking or using drugs publicly, or entering public transportation whilst under the influence of drugs or alcohol (point 1) (Smith & Cornish, 2006). Likewise, setting rules/controlling drugs and alcohol by banning alcohol consumption at and near the train station (Smith & Cornish, 2006) and restricting the purchase of alcohol at stations shops could also help prevent point 1 of the Assault of Public Transport Employee Crime Script (This study). Additionally, posting instructions that remind passengers CCTV is being used inside trains may also help prevent assault cases (point 6) (Mazerolle et al., 2002), as well as removing excuses by appealing to offenders' conscience, for instance by publicizing penalties for assaulting employees, and thus ensuring offenders are aware of the risks of committing assault on a public transport employee (Smith & Cornish, 2006).

Increase the effort: Controlling access/screening exits by installing an electronic ticket gate at station Emmen (station Zwolle already has these), where the second most assault offenses take place (table 1), could also help prevent assault of public transport employee incidents as offenders who are not in possession of a ticket or perhaps are too intoxicated to find their ticket will have more difficulty to access the station and/or platform, as well as exit the station after having committing assault (point 2, 3 and 7) (Smith & Cornish, 2006). Nevertheless, according to Arriva employees, carrying out platform controls more frequently may be more cost effective (P. Aalberts & S. Stroo, personal communication, July 24, 2020).

Additionally, increasing the effort it takes for offenders to assault employees by utilizing place managers could also prevent public transport employees from being assaulted (points 4, 5, and 6). For instance, by ensuring employees work in groups or with a partner when controlling tickets, also known as "buddying", could make them less prone to being assaulted as they will have back-up when an offender becomes increasingly aggressive (Smith & Cornish, 2006). Moreover, if employees work with a partner or in groups, they outnumber the offender which could ultimately discourage the offender. The idea of having employees work with a partner was very well supported by Arriva employees and considered very efficient as this would not only increase the actual safety of employees but also increase the feeling of safety for employees (P. Aalberts & S. Stroo, personal communication, July 24, 2020).

Furthermore, Arriva employees are currently required to follow a “buitengewoon opsporingsambtenaar” (BOA) training (P. Aalberts & S. Stroo, personal communication, July 24, 2020), which means they are allowed to make arrests, check identity cards and issue fines (Ministry of Justice and Security, 2020). On occasion, employees also receive de-escalation training and training on how to deal with confused persons (P. Aalberts, personal communication, June 4, 2020) but Arriva is currently working on a lesson plan to figure out which trainings they would like to offer (P. Aalberts & S. Stroo, personal communication, July 24, 2020). Offering refresher trainings on de-escalation and how to deal with confused persons more frequently, for example every six months, ensures employees are more prepared in these situations (Smith & Cornish, 2006). If the de-escalation and dealing with confused persons refresher courses are not enough and the situation escalates, offering more frequent refresher courses on basic self-defence could be beneficial (This study).

Increase the risks: Furthermore, strengthening formal surveillance by ensuring all public transport employees directly working on the route Zwolle-Emmen, including the train engineers, wear bodycams and have these turned on at all time increases the risk for offenders to assault employees and could thus discourage them (point 6) (This study). Nevertheless, as bodycams are not always noticeable, Flight (2018) argues that, like CCTV, the idea of informing citizens they are being filmed with a bodycam, which should ensure greater compliance and improved behaviour from the citizen or possible offender, may even be more effective than the actual bodycam itself. Additionally, encouraging employees to press charges when they are assaulted, even if they are only very mildly assaulted also increases the risks (This study).

Improve communication between employees: Lastly, improving communication between employees (to help prevent point 6 of the assault Crime Script), for example by providing personal alarms for employees or emergency buttons in more locations, should result in a faster response time when one employee cannot control an aggressive offender or when the employee is already being assaulted (Smith & Cornish, 2006).

6. Discussion and Conclusion

Arriva employees generally perceive the route Zwolle-Emmen as a route that encounters high crime levels, hence this research. Nevertheless, this study has illustrated that despite employee's perceptions, relatively little crime occurs on this route. Over the past four years, only 97 pickpocketing incidents, 31 public transport employee assaults and 41 vandalism/destruction of transport property incidents have been reported, although in reality, the number of incidents could be higher due to unreported cases. Nevertheless, some of the most important findings of this research show that the majority of crime for each of the three aforementioned offenses occur at station Zwolle, followed by station Emmen, whereas little crime occurs at the intermediate stations. For station Zwolle, this is likely a result of the size of the station and the many connections it carries to other stations throughout the Netherlands, whereas for station Emmen it could be because it is the end stop of the route that connects to the asylum-seeking center in Ter Apel. The intermediate stations, on the other hand, are rather small and have fewer connections to other stations and cities, which could thus explain why little crime is reported at these stations.

Moreover, this research has also illustrated that, in accordance with the findings of Loukaitou-Sideris et al. (2002), different public transport crimes occur in different settings, namely at different times, locations, days and stations. For instance, table 2 shows that most pickpocketing incidents occurred in the more general area of the station, as well as inside trains and on platforms, whereas only 1% of reported pickpocketing incidents took place in bicycle storages at stations and only 3% occurred in busses and in bus shelters/stations. This is mostly consistent with the findings of Loukaitou-Sideris et al. (2002) that pickpocketing generally occurs in locations where there are crowds and thus many potential targets/victims, and where offenders will not easily be noticed. Train platforms, stations and the trains themselves are often crowded and have higher levels of human activity (Irvin-Erickson & La Vigne, 2015) compared to bicycle storages or bus shelters.

The number of reported pickpocketing incidents in busses is low (3%) compared to trains (18%), but this can be explained by the surveillance and/or guardianship levels in busses. Not only are busses are smaller, meaning there are fewer places for offenders to hide, but passengers can also see the bus driver, reminding them of the guardianship or surveillance on a given bus compared to trains where the driver is hidden away in his own compartment. Furthermore, the zero reported pickpocketing incidents on tracks and in rail yards is also consistent with the findings of Loukaitou-Sideris et al. (2002), as these locations are more remote, have no crowds and little to no potential victims.

Likewise, zero assault of public transport employee incidents have been reported in rail yards, as well as in busses, bicycle storages or on escalators. It is logical that the majority of assault incidents occur on trains, platforms or in stations as these are the locations where the most public transport employees work, meaning the possibility of them becoming a target increases. Nevertheless, one would expect the number of assault incidents in busses to be higher. This can possibly be explained by fewer employees working within busses compared to trains. Busses generally only have one employee working inside the bus, namely the driver, whereas trains have ticket inspectors and a steward in addition to the driver. For vandalism, on the other hand, the majority of graffiti incidents occurred at the rail yard/tracks, which is logical as the trains are stationed in these locations when they are not in use, increasing the potential targets (trains) for offenders. Additionally, there is a lack of guardianship and more remoteness (Irvin-Erickson & La Vigne, 2015) at rail yards compared to platforms where offenders would be more easily caught spraying graffiti.

For all three types of offenses focused on in in this research, namely pickpocketing, assault of public transport employees and vandalism/destruction of public transport property, incidents occur mostly during weekdays. That pickpocketing occurs mostly during weekdays can be explained by a higher number of potential targets and more crowds during weekdays, as people often use public transportation to commute to work and back home. Furthermore, it was also observed that during both weekdays and weekends, pickpocketing rarely occurs during (off-peak) night hours (3% on weekdays, 6% on weekends), which makes sense as trains do not operate between roughly 01:00 and 06:00, meaning offenders and potential targets will not be able to travel by train during the majority of the off-peak night hours.

For assault of public transport employees, it was observed that although crime rates are generally higher on weekdays, crime rates per day were higher nearing the weekend (26% on Fridays) and on Saturdays (26%), which could be because possible offenders may drink/take drugs more when it is (almost) weekend, and therefore the chances of an offender assaulting a public transport employee may increase. Assault incidents occur relatively scattered throughout the day, with the exception of night hours and morning hours. The lack of incidents during night hours can be explained by the same reason as for the lack of pickpocketing incidents during night hours, as trains simply do not operate between around 01:00 until 06:00.

Moreover, the distribution of assault throughout the day can perhaps be explained by the offender's reasoning. As illustrated in table 6, the majority of offenders suffered from either psychological issues or were either intoxicated or on drugs. The Rational Choice Perspective argues that all offenders deliberately commit crime and often make decisions to commit a

certain crime in less than ideal circumstances, for example when intoxicated (Cornish & Clarke, 2017). Offenders assaulting a public transport employee may do so because they are angry or confused, which for them, in their given condition, may be a good enough reason. Unlike pickpocketing, offenders assaulting public transport employees under the influence of alcohol or drugs or suffering from psychological issues may not make their decision to commit such a crime based on the ideal location or time, for example when it is less busy and there is less guardianship, which is why the crime levels for assault are more or less evenly distributed as the incidents are often not planned. Furthermore, the involvement of crime facilitators such as drugs or alcohol could explain why assault incidents in the morning are less frequent, as offenders may simply start drinking or using drugs later in the day.

Similarly, vandalism/destruction incidents occurred mostly on Fridays which could also be explained by it being almost weekend, resulting in offenders to drink/take drugs which could facilitate vandalism/destruction, or by offenders having more free time to spray graffiti on Fridays (it being weekend or almost weekend) compared to other weekdays. The fact that most vandalism/destruction of public transport property incidents occurring during the evening and night hours can be explained by a lack of guardianship and surveillance during these hours, especially for spraying graffiti on trains at night, and it being dark and thus easier for offenders to hide. Furthermore, destruction of public transport property, excluding graffiti on trains, could also be due to the use of drugs or alcohol as offenders may use these substances more during the evening or night hours which could then lead to vandalism/destruction, but as figure 6 illustrates, for the majority of vandalism/assault incidents the use of such substances is unknown.

Additionally, this research also illustrates that, in accordance with Brantingham and Brantingham's (1995) Crime Pattern theory, stations can act as both crime generators and crime attractors depending on the time, place and type of crime itself. It was observed, for instance, that pickpocketing incidents occurred mostly in the station (hall, entrance, exit etc.), on platforms or inside trains between 14:00 and 18:00. Assault of public transport employees occurred mostly inside trains and at relatively steady times throughout the day, with a small peak between 16:00 and 18:00. Vandalism (graffiti on trains), on the other hand, occurred only at the rail yard during the night hours between 00:00 and 06:00, whereas destruction of public transport property occurred at various locations within stations, namely within the station (hall, entrance, exit etc.), on platforms or at the bus station/shelter also at relatively steady times throughout the day with a small peak in the evening between 20:00 and 00:00. Additionally, it was also observed that although the majority of incidents for each of these three offenses occurred at station Zwolle, followed by station Emmen, multiple vandalism (graffiti on trains)

incidents also occurred at Mariënberg, whereas little to no pickpocketing or assault cases occurred here.

That the crime levels the route Zwolle-Emmen experiences differ depending on the station, precise location, day and time is thus consistent with Brantingham and Brantingham's (1995) Crime Pattern theory. Some stations, like Mariënberg, are crime attractors for specific crimes, vandalism in this case, due to the known criminal opportunities they create. Other stations, like station Zwolle, are crime generators for specific crimes like pickpocketing due to the concentration of large volumes of people and thus potential targets. Likewise, station Zwolle may also serve as a crime attracting station for the same crime (pickpocketing) as offenders may be aware of the many pickpocketing opportunities at this station, along with the best times and locations to carry out this crime.

In addition to finding out the days, times, locations and stations, this research has also constructed a total of four Crime Scripts for each of these offenses. One for pickpocketing, one for assault of public transport employees, and two for vandalism/destruction of public transport property as two different modi operandi were discovered. One modus operandi for offenders spraying graffiti on the side of trains at rails yards at station Zwolle, Emmen and Mariënberg, and one modus operandi for offenders who destroyed public transport property around stations, most likely due to misusing substances or suffering from psychologic issues. These four Crime Scripts also provide possible situational prevention methods for each of these crimes on the route Zwolle-Emmen.

For pickpocketing, effective control measures are to increase the awareness of CCTV and ensure that existing CCTV functions as it should, and ensuring passengers are aware of how to properly conceal their personal items. Moreover, installing electronic ticket gates at station Emmen may also be effective, but not as cost efficient as more frequent platform controls. For vandalism (graffiti), effective control measures include placing restrictions on the sale of spray paints, improving lighting (floodlighting) and CCTV at rail yards, placing barbed wire or spikes on top of fences to reduce trespassing, and rapidly removing graffiti to discourage imitation. Destruction of public transport property on the route Zwolle-Emmen could be prevented by controlling the sale of alcohol, reminding offenders of the costs of vandalism, and also rapidly cleaning up broken items to discourage imitation. Lastly, in order to help prevent the assault of public transport employees on this route, having employees work in pairs, also known as "Buddying", ensures they have back-up in case events escalate. Likewise, offering more frequent incident-oriented trainings should also ensure employees are better prepared to de-escalate possible incidents. Furthermore, having employees wear bodycams and encouraging

them to press charges when they are assaulted should also help prevent this type of crime in the future, as well as publicizing penalties for assaulting employees.

7. Limitations and Recommendations

One of the main limitations of this research is that the frequencies for each offense may not be entirely accurate as many incidents often go unreported. For example, someone may think they misplaced or lost their phone and will thus not report it when it may have in fact gotten stolen. Likewise, some Arriva employees may have only been nudged or bumped into by an offender but, as it did not hurt, may not have felt the need to report it even though it was assault.

Additionally, Leclerc (2017) argues that offender self-reports are the preferred data source of Crime Scripts as these should ideally present the entire decision-making process and modus operandi of an offender. Nevertheless, this research mostly used police reports, which also sometimes included offender and victim self-reports, though the number and quality of offender self-reports were limited. One potential limitation is therefore that the most ideal data source for constructing Crime Scripts was not used, which could have negatively affected the given Crime Scripts. Nevertheless, it could also be argued that the most reliable data source for Crime Scripts is a combination of the offender self-reports, victim self-reports and police reports/investigation files, as each of these reports may include some level of unreliability and perhaps even bias. For example, offenders may lie or exaggerate events, victims may fail to recollect important details, and police officers may, subconsciously, racially profile potential offenders and reflect this in their reports. A combination of data sources, where data can be compared and confirmed, would thus provide the most reliable information.

Furthermore, when comparing the crime levels for these three offenses to other offenses on the route Zwolle-Emmen, the actual police reports for the other offenses were not analyzed, which could result in a slight inaccuracy in the frequencies as some incidents may have been filed or reported double. One last limitation of this research is that the sample size for three main offenses (pickpocketing, assault of public transport employees and vandalism/destruction) is quite small which could potentially undermine the results. However, as these sample sizes consist of all reported incidents (for these three crimes) over the past four years on the route Zwolle-Emmen, the results should still be representative for this specific route. Additionally, when comparing the sample size to the sample sizes of other offenses (Figure 1) it can be observed that the number of incidents or the sample size of these crimes is also relatively small (except for theft, but that is because theft is general and includes all types).

Some recommendations to improve this research would be to investigate whether the Crime Scripts for each of these offenses is similar or perhaps even identical to other routes and to test whether crime levels of this route are similar to other train routes operated by Arriva. This could better illustrate whether the crime levels for this route are high, low or normal compared to other routes. Lastly, it would be interesting to extend the research on this route to the route Zwolle-Amsterdam, as possible offenders from the asylum-seeking center in Ter Apel often make their way from Amsterdam to Zwolle, and then from Zwolle-Emmen to Ter Apel.

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