Crime Occurrence on the D.C. Metro: A Literature Review

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Chapter 1: Introduction

Every day, thousands of people ride the Metro in Washington D.C. to get around the city and travel to their destinations; yet it is uncommon for individuals who utilize the Metro system to contemplate their potential interaction and/or the possibility of becoming a victim or spectator to crime occurrence while actively on the Metro, or within the Metro stations (WMATA, 2024). Unfortunately, it is not unusual for crimes such as robbery, assault, and disorderly conduct to occur within Metro and Subway stations (WMATA, 2024). In fact, on March 15, 2024, what started as an altercation between two passengers on a New York Subway, turned into a violent incident that resulted in a shooting (Pereira, Ivan et al., 15 Mar. 2024). More specifically, collecting and analyzing qualitative and quantitative data surrounding crime committed on the Metro, as well as in Metro stations within Washington D.C. can ultimately provide insights and solutions to prevent crime and make riding the Metro safer (WMATA, 2024).

Data and research have depicted that criminal justice professionals who are provided an understanding of why crimes happen, when crimes occur, and environmental factors that can lead an individual to engage in criminal behavior, as well as the technological security advancements that are already put in place as security preventative measures (Irvin-Erickson, 2015). Further, this allows criminal justice professionals the ability to create crime prevention strategies, take more proactive prevention measures, as well as reduce crime rates (Irvin-Erickson, 2015).

Research Questions

My overall research questions are,

1) Can crime rates on the Washington D.C. Metro and in the Metro stations, alter depending on the time of day?

2) Can environmental factors affect crime on the Metro and within the Metro stations?

3) Does the presence of technological security advancements that are put in place as security preventative measures mitigate crime occurrences?

Overview of Study

A literature review is the form this thesis will take, as the research is based using articles, peer-reviewed journals, the dictionary for proper definitions, and scholarly sources. In terms of the methods used to conduct research, an analysis and examination of texts from secondary resources was located: such as the Anna Maria College Library website which displays various databases, such as EBSCOhost, Academic OneFile, and Gale Research. Many sources were found on Google Scholar. Google was another search engine used to gather information. All the sources and articles found were examined in this literature review. The process of examining all the sources found, as well as taking comprehensive notes, was done to guide the writing of this thesis.

Purpose of Study

This analysis and literary review of twenty- five sources endeavors to help criminal justice professionals understand criminology as it relates to the transportation system in Washington D.C. Research, studies, and experiments conducted are necessary to ensure that criminal justice professionals dealing with public transportation; like the D.C. Metro police, are aware that the time of day in which riders utilize the Metro, that surrounding environments can expose individuals to crime, and how technological advancements put in place to monitor crime

occurrences on the Metro and within the Metro stations can affect crime contingency (Irvin-Erickson, 2015).

Definitions

- Larceny: The Unlawful act of taking and carrying away the personal property of another individual or from a store, company, etc. with the intent to deprive the rightful owner of it permanently (Merriam-Webster Dictionary, 2024).
- Coupling Constraints: Dictates when, where, and for how long an individual until limits are created that cause them the need other people or other things to act or go into place to take on or handle some sort of action (Yule, et al. 10 Sept. 2009).
- Crime Generators: Activity that provides a greater opportunity for crimes to occur because of the high number of people that are in a specific area at a certain time (Irvin-Erickson, 2015).
- Crime Attractors: Activity that captivates offenders to a particular place because of the location well-known criminal opportunity for crime occurrence (Irvin-Erickson, et al., 2015).
- Nodes: Refers to the central place where people go or gather in their routine activities (Brantingham and Brantingham, 1995)**.**
- Typology: The study of or analysis or classification based on types or categories (Solomon, 1977).
- Pattern Theory of Crime: Explains why individuals commit crimes in certain areas. It also, explains how offenders are aware that a certain time and place can provide them an opportunity to engage in criminal activity (Brantingham, et al., 22 Jan 2021).

Limitations

In every study, there is more likely than not, a limitation that prevents the person(s) conducting the study, or the researcher(s) who is undergoing a literary review, from obtaining a perfect outcome and conclusion of their research (Ross, 2019). One significant limitation of this research was having limited access to online databases with relevant research. For instance, a lot of articles provided information relevant to crime rates on the Washington D.C. Metro, and in the Metro, stations alter depending on the time of day, environmental factors, and the presence of technological security advancements that are put in place as security preventative measures, were outdated (La Vigne, 1997). Also, there was limited access to books and scholarly sources that provided insights on this topic considering that Anna Maria College is in the northeast, but the location of the transportation system being studied is in the mid-Atlantic (WMATA, 2024).

Chapter 2: Methodology

The methods used to conduct research was done through an analysis and examination of texts from secondary resources which were located through Google Scholar. Additionally, the Anna Maria College Library website, which displays various databases, such as EBSCOhost, Academic OneFile, and Gale Research was used. Google was another search engine used to gather information. Further, some key search terms and concepts that were inserted into the search engine databases include but are not limited to, “crime occurrences based on time of day and travel times”, “environmental factors”, “technological advancements”, “crime prevention”, “analytics used to measure crime”, and “routine activity theory”. Certain exclusion criteria consisted of articles not written in English. Additionally, some inclusion criteria encompassed, peer review journals, scholarly sources, and relevant material to my topic and field of study. Next, the subject advisor to this thesis paper, Dr. John D. Colautti helped find two sources used

in this thesis. The sources are (Irvin-Erickson, 2015) and (Piza, et al., 2019). Last, through the examination of each resource, it guided the process of finding more articles and expanded on the further concepts depicted in this thesis.

Chapter 3: Results

Introduction

Distinctively, individuals who ride the Metro may not be cognizing of the potential risk or the probability that they can become a victim or a witness to a crime incident while riding the Metro, or in Metro stations (WMATA, 2024). Emphasizing to criminal justice professionals, as well as to individuals who travel on the Metro the importance of comprehending how different times of the day can have an impact on crime prevalence, how environmental factors can affect the crime on the Metro and within the Metro stations, and how the presence of technological security advancements that are put in place as security preventative measures mitigate crime occurrences (WMATA, 2024).

Time

The common notion that crime only occurs after dark, or that one is safer during the day is invalidated due to various studies conducted by criminal justice professionals: such as the one administered by Yasemin Irvin-Erickson on the temporal analysis of crime at the Washington D.C. Metro rail stations (Irvin-Erickson, 2015). This study depicts the temporal trends in crime and the crime observations that are arranged into three temporal groups, or groups relating to time, including peak hours of travel, off-peak day hours, and off-peak night hours (Irvin-Erickson, 2015). Further, the study puts forth that stations assume different nodal and place-based crime-generating and crime-attracting characteristics that vary for different crimes during

different times (Irvin-Erickson, 2015). In simpler terms, being at a central location where people gather for their routine activities, such as travel to and from work produces the opportunity for crimes to occur, either through crime-generating or crime-attracting characteristics (Irvin-Erickson, 2015).

Situation

Also, it is a criminological fact that situational factors relate to place and time, which play a key role in manufacturing opportunities for crime (Irvin-Erickson, 2015). This is because crimes require convergence, two or more things that come together, which consists of the victim and the offender, (or the individual who engages in a certain illegal or deviant act) in a specific place and time (Irvin-Erickson, 2015). Convergence of the victim and offender in a certain place and time ascertains how crime occurrence is not just something that transpires at night because, generally speaking, more people travel on the Metro during the day, which is necessary because according to Felson and Cohen's study of the routine activity theory, and the long-acknowledged notion that the criminological fact that situational factors relating to place and time of a willing offender and an available victim which expedites the likelihood of crime, but if less individuals were utilizing the Metro, there would be less of a chance of either a willing offender or an available/vulnerable victim limited the possibility of a crime transpiring (Cohen and Felson, 1979; Irvin-Erickson, 2015).

Geography

Additionally, the concepts of the time geography framework were introduced (Brantingham and Brantingham, 1995; Irvin-Erickson, 2015). The time geography framework is the abstraction that human activities such as riding the Metro to advance from one location to

another are interconnected to time and the space in which the activity takes place (Brantingham and Brantingham,1995; Irvin-Erickson, 2015). For instance, crimes were measured by three different groups: peak hours non-peak day hours, and non-peak night hours of the Metro system (Irvin-Erickson, 2015). Peak hours are defined as being from four-thirty a.m. to nine a.m., and three p.m. to seven p.m. (Irvin-Erickson, 2015). Non-peak day hours are listed as nine a.m. to three p.m., and non-peak night hours are seven p.m. to four-thirty a.m. (Irvin-Erickson, 2015). These peak and non-peak hours are established since the Metro setting consists of factors like operating seven days a week, opening at five a.m. on weekdays, seven a.m. on weekends, and closing at midnight. Sunday through Thursday and at three a.m. on Friday through Saturday (WMATA, 2014; Irvin-Erickson, 2015). Understanding the time geography framework and the operating hours of the Metro on certain days is imperative for both criminal justice professionals, and people who ride the Metro because of the time of day in which riders utilize the Metro, and the fact that they are riding the Metro in itself (in the space in which the Metro is), puts them at a risk of becoming a victim or witness to a crime (Irvin-Erickson, 2015).

Along with the concept of time geography framework, the notion of flexibility comes into play (Irvin-Erickson, 2015). For example, the idea of flexibility, and how it relates to predicting, analyzing, and potentially mitigating crime occurrences is prevalent when cognizing about how simply riding the Metro can put persons in harm's way. More specifically, even though individuals can plan where and when the flexible activities, in this case, (riding or waiting for the Metro) transpire, depending on the locations and operating hours, as well as the venues offering these activities, people can be restricted in time or space in which they chose to engage and where they chose to participate in such activities (Miller, 2004; Irvin-Erickson, 2015). In simpler terms, people are limited to which Metro station they utilize, along with what times they use the

Metro, so it creates a situation where lots of people are congregating which by design allows crime to arise at a certain time when people gather for that said activity (Irvin-Erickson, 2015).

Time and Geography

Further, depicted in a study is how the nature of the Metro creates an opportunity for crimes to occur (Ceccato 2013; Ceccato and Uittenbogaard 2014, Newton 2014; Irvin-Erickson, 2015). The study is of crime and perceived safety in and around stations, crime patterns at stations during different times of the day, and on different days (Ceccato 2013; Ceccato and Uittenbogaard 2014, Newton 2014; Irvin-Erickson, 2015). First, their studies display the idea that the time of day and the fact that the Metro station is an underground location pose a potential risk for individuals just by its very nature of existence (Irvin-Erickson, 2015). Also, because thousands of people use the Metro system in Washington D.C. every day, usually in a routine manner, it gravitates people to a specific location at a specific time; especially because the Metro runs on a basic schedule so people must congregate in similar places as they wait for the Metro to arrive (WMATA, 2024). This creates the potential for a crime to occur because there is a higher chance of having a willing offender, and an available victim present at that place, at that time (Cohen and Felson, 1979; Irvin-Erickson, 2015).

Moreover, time geography is introduced, and focuses on the correlation between activities in time and space, like waiting for the Metro in a Metro station, and how these associations inflict constraints on human behavior (Irvin-Erickson, 2015). Additionally, the time geography and time geography framework are used to divide and arrange information regarding crimes on and within Metro stations into sections at different daily and hourly temporal groups determined by the daily and hourly patterns of human activities (Irvin-Erickson, 2015).

Unlawful act trends at transit stations can vary both temporally and in the kinds of crimes that occur (Irvin-Erickson, 2015).

Also, based on the restrictions that settings, such as a specific location, at a specific time, put on the movement patterns of the Metro, also affect the patterns of the offenders, and the potential victims (Irvin-Erickson, 2015). These setting restrictions also affect different places (Metro stations) which can make them become risky places for crimes to occur at different times (Irvin-Erickson, 2015). Additionally, this depicts the idea of coupling constraints (Irvin-Erickson, 2015). Coupling constraints are when, where, and for how long an individual has until they join in with others to produce, transact, or consume the actions, attitudes, and ideologies of their surroundings (Yule, et al., 2009). This pertains to the setting and nature of time constraints the Metro system allows for because people who ride the Metro during peak hours when crime is on the rise have a higher chance of witnessing or becoming a victim of a crime; because they are clustered with an exuberant amount of people (Irvin-Erickson, 2015). According to the notion of coupling constraint, it will not take long before individuals who may not have partaken in a deviant act, will engage in an unlawful act because of their surroundings: which further exposes more people to the possibility of spectating or falling victim to crime (Irvin-Erickson, 2015).

Next, data obtained from the Washington Metropolitan Area Transit Authority, then used in Irvin-Erickson's (2015) study mirrors the change in ridership at peak and non-peak hours and is presumed to launch certain crimes at certain times crime (Irvin-Erickson, 2015). For example, Metro stations in remote areas were attractors of larcenies during peak hours and they were attractors of disorderly conduct during non-peak hours (Irvin-Erickson, 2015). Metro stations that were in central parts of the city or had other stations near the rest of the rail system bring about larcenies and disorderly conduct during peak hours and they spawn robberies during non-

peak day hours (Irvin-Erickson, 2015). Also, Metro stations that are accessible to an abundance of people and have a high potential for human activity promote the opportunity for robberies and larcenies during non-peak night hours (Irvin-Erickson, 2015). Crime rates on the Washington D.C. Metro and in the Metro, stations can change, and the type of crimes that occur can change depending on the time of day, relating to peak hours of travel, non-peak day hours, and non-peak night hours (Irvin-Erickson, 2015).

Environmental Factors

Not only does the time of day influence whether an individual could potentially become a victim of, or witness to, crime occurrence; but so does environmental characteristics, such as where Metro stations are located, city crime affecting the crime rates within the Metro systems, and the existence of risk factors such as low income, which can affect the crime on the Metro and within the Metro stations (Irvin-Erickson, 2015). A study was administered in Ottawa, Canada relating to how the presence of an O-Train station provides insights to criminal justice professionals about the crime rates of the surrounding neighborhoods of the station, and vice versa (Gallison, et al., 2017).

In simpler terms, the study from Ottawa, Canada sheds light on the notion that criminal justice professionals who analyze crime within the O-Train system and in surrounding neighborhoods in which the O-Train stations are have found that crime rates rise because the station in that neighborhood (Gallison, et al., 2017). The study further depicts that having a Train or Metro station can alter the outside perimeter environment by the mere presence of the station due to the nature of human activity that occurs (Gallison, et al., 2017). Such human activity takes place, which is the function of an abundance of individuals who gather and wait for their train or Metro to travel from one location to another location (Gallison, et al., 2017). This

act creates an opportunity for a willing offender to have access to an available victim, which raises the chances of crime occurrence (Irvin-Erickson, 2015).

Additionally, the potential clustering of offenses close to the O-Train station was presented in the Ottawa, Canada study (Gallison, et al., 2017). Again, this illustrates how the O-Train occupying space in a district raises the crime rates in that area (Gallison, et al., 2017). More specifically, crimes such as theft of a vehicle increased due to the existence of an O-Train station, but commercial burglary, which is the unlawful entering a commercial establishment such as a business, office, or retail store did not rise based on the presence of the O-Train station (Gallison, et al., 2017). Last, robbery did not rise in districts in which O-Train stations are located, but robbery occurs within and on O-Trains and O-Train stations (Gallison, et al., 2017). Hereof, one can concur that due to the human nature of how train stations allow for individuals to assemble, it can potentially increase crime rates in the district in which they are located, but not all crimes measured increase, just certain ones, such as theft of a vehicle, or at least in the case of the Ottawa, Canada O-Train study conducted by Jordana Gallison and Andresen Martin, in January of 2017.

While having a Metro or train station in a certain neighborhood or city can impact the malfeasance in that area, transit stations within themselves can create illegal acts through the presumption of crime generators and crime attractors (Irvin-Erickson, 2015). To a greater extent, it is comprehensible that the same transit hubs can serve multiple roles in terms of contributing to crime existence (Irvin-Erickson, 2015). A Metro station can be both a crime attractor and a crime generator, while the Metro station is utilized by customers because the surrounding area changes over time (Irvin-Erickson, 2015). For instance, according to Bertolini's Node-Place Model of 1996, transit focal points are one of the few places that bring people from different environments

physically together (Bertolini, 1996; Irvin-Erickson, 2015). In simpler terms, Bertolini's Node-Place Model looks at different locations and examines how functional a place is, how approachable the place is to people, and how many activities, such as stores, restaurants, and businesses are in that one location (Bertolini, 1996; Irvin-Erickson, 2015).

Supplementary, to the Node-Place Model, a node is defined as central places where people go to or gather to conduct their routine activities; such activities consist of but are not limited to, shopping, working at businesses and in corporations, eating at restaurants, and experiencing what that location has to offer for entertainment, like going to the movies (Irvin-Erickson, 2015). This is relevant to understanding crime occurrence on and within the Washington D.C. Metro stations due to the notion of crime pattern theory (Irvin-Erickson, 2015). Crime pattern theory is the phenomenon that criminal events happen in patterns in time and space (Sleeuwen, 2021). Therefore, when criminal justice professionals analyze crime frequencies within the Metro system they can recognize how the specific location in which a Metro station is located, along with the surrounding environment in terms of what businesses, shops, restaurants, etc. are around the area that draws individuals to that location that can either generate crime because of the opportunity it provides for unlaw acts to occur or attract criminal offenders to the station since the criminal offender will have an awareness of the tasks and recreation that exists in that specific area, as well as the preventative measures that are put in place to mitigate them from undergoing such acts of crime (Irvin-Erickson, 2015). If there is police presence or persons nearby, it could reduce the ability for a wrongdoer to engage in such illegal activity: hens, why the knowledge of the Node-Place Model and crime pattern theory of imperative to criminal justice professionals, especially when dealing with transit system (Sleeuwen, 2021).

To constitute how transit stations can become crime generators and crime attractors, the magnitude of delinquency at a station along with the physical aspects, like the layout of the venue of the stations are factored in (Irvin-Erickson, 2015). In simpler terms, different characteristics of the layout of the venue of a Metro station, such as the station platform, transition area (place/space where individuals get on and off the Metro), the lobby of the Metro station, and the exit and entrance of the station are evaluated to understand crime outcomes (Irvin-Erickson, 2015). Represented above is how criminal justice professionals can use the concept of broken windows theory to depict how the physical aspects of a Metro station, and the presence of crime itself can generate and attract crime (Irvin-Erickson, 2015). For instance, broken widows' theory is the idea that visible indicators of disorderly activity; like vandalism, loitering, antisocial behavior, and malfunction within the Metro station, regarding how everyone operates to get from one destination to another, can create more dysfunctional activity and generate crime (O'Brien, et al., 2018).

Along with broken windows theory, criminal professionals can use typology to acknowledge the virtue of the physical features of a Metro station as it relates to the amount of delinquency (Irvin-Erickson, 2015). Typology is defined as the study of, or classification based on types or categories; and in this case the classification of physical aspects and layout of the venue of the Metro station itself as it correlates to crime occurrence (Solomon, 1977). This kind of study provides evidence that the means of tangible aspects of the Metro stations themselves, like the exit-entrance ways are a function of the conditions of the Metro station in itself and the surrounding areas in which the stations are located (Ceccato., 2013; Irvin-Erickson, 2015).

Not only are the physical aspects and layout of a Metro station analyzed, but the environment around the station is also examined (Irvin-Erickson, 2015). For example, crime that

happens in and around transit stations increases the chance for different crimes to occur rises, which is related to the immediate environment in which the station is located (Ceccato, 2013; Irvin-Erickson, 2015). This depicts crime pattern theory, which explains why individuals commit crimes in certain areas, and how offenders are aware that a certain time and place can provide them an opportunity to engage in criminal activity (Brantingham, et al., 22 Jan 2021). To that point, criminal behavior can be comprehended by understanding how people react in their physical environment (Irvin-Erickson, 2015). According to crime pattern theory, deviant decisions are affected by a person's surroundings: such surroundings consist of the elements of the environment; the land uses, design features of the physical infrastructure of buildings, and transit stations, which can influence people's behaviors (Irvin-Erickson, 2015).

Moreover, elements of the Metro station such as connectedness, remoteness, accessibility and activity level, and socioeconomic status of an area in which the Metro station is located are considered by criminal justice professionals to understand crime circumstances (Irvin-Erickson, 2015). Connectedness measures the association of each Metro station to the rest of the transit system (Irvin-Erickson, 2015). Further, the more a station is connected to the rest of the transit system, the more potential victims and targets it will bring together at one place and time (Irvin-Erickson, 2015). Additionally, the notion of interchange and connection within the Metro station also contributes to crime occurrences (Irvin-Erickson, 2015). Interchange refers to a Metro station's ability to provide cross-platforms that allow riders to change between lines, and/or directions in which they choose to travel throughout the Metro system and the Washington D.C. area (Irvin-Erickson, 2015).

The concept of interchange is important when analyzing and understanding crime development because it sheds light on how an individual who wishes to engage in criminal

activity will have a greater chance to do so due to the ability to commit a crime and quickly leave the area by utilizing the cross-platforms to change the direction in which they travel in, as well as flee the area faster (Irvin-Erickson, 2015). Also, the idea of connection indicates if the Metro station provides attachments to any other rail transit systems, such as but not limited to Amtrack, Virginia Railway Express, and Maryland Area Regional Commuter (MARC), it serves as a crime-generating characteristic because of the dense collection of people, potential targets, and offenders (Irvin-Erickson, 2015). Furthermore, this displays routine activity theory (Cohen and Felson, 1979). Routine activity theory is the notion that crime occurs when three elements come together: a willing and motivated offender(s), a suitable/ vulnerable target, and the lack or absence of a capable guardian (Cohen and Felson, 1979). With a dense collection of people, there is a higher chance that there will be more persons who can be either a willing offender or a vulnerable target (Cohen and Felson, 1979).

Next, the element of remoteness is considered by criminal justice professionals to understand crime circumstances (Irvin-Erickson, 2015). Remoteness measures the seclusion of the Metro station from the center of the city or town, as well as the seclusion from the transit system itself (Irvin-Erickson, 2015). Also, remoteness is a characteristic that is expected to be crime-generating because remote stations provide better opportunities for certain crimes like vandalism and disorderly conduct (Irvin-Erickson, 2015). Additionally, remote stations experience higher crime rates in general since crimes, especially vandalism and disorderly conduct are more likely to attract offenders who are seeking targets that lack guardianship: whether the target is a person or property that can be tampered with or destroyed (Irvin-Erickson, 2015).

Another element of Metro stations that criminal justice professionals factor in when accessing crime occurrence is the accessibility and activity level of the Metro station (Irvin-Erickson, 2015). Accessibility and activity level look at the ease of access to the Metro station, as well as the activity level of people around the station (Irvin-Erickson, 2015). Some activities that are assessed are the number of retail businesses, lodging services, the number of entertainment and recreational venues, and health, legal, and educational services there are near the Metro station (Irvin-Erickson, 2015). Additionally, some other activities that criminal justice professionals will analyze that are near a Metro station that can have an impact on crime is the number of legal, social, and public administration services there are near the Metro station (Irvin-Erickson, 2015). Also, another variable measured is the walkability level around the Metro station (Irvin-Erickson, 2015). The walkability of any location is based on the distance to nearby places and pedestrian friendlessness, such as being well-lit and having clear pathways (Walk-Score, 2024; Irvin-Erickson, 2015). Last, the ridership of the Metro station is factored in when analyzing the accessibility and activity level (Irvin-Erickson, 2015). Ridership is the total number of entries and exits at each station (Irvin-Erickson, 2015). These variables were extracted from the National Establishment Time Series Database (Irvin-Erickson, 2015). This pertains to crime occurrence because the more easily accessible and multifunctional a Metro station is, there is more of a chance for opportunities for human activity, which is a characteristic for creating the possibility for crime to occur (Irvin-Erickson, 2015).

Socioeconomic status is another element of the environment that criminal justice professional observes to comprehend crime development (Irvin-Erickson, 2015). Socioeconomic status measures the level of income and wealth in the immediate geography of the location where the Metro station is housed (Irvin-Erickson, 2015). It was found that stations in a location with a

low socioeconomic status had higher crime rates (Irvin-Erickson, 2015). Further, criminal justice professionals use the socioeconomic status of an area as a defining factor that can be used to represent a part of why social disorganization exists (Hart and Waller, 2013; Irvin-Erickson, 2015). To that point, places with high social disorganization are theorized to provide unique opportunities for crimes (Irvin-Erickson, 2015).

On the flip side, when stations are in places where individuals own homes, are employed, and have access to higher education, the crime rates in the environment around that Metro station are lower (Irvin-Erickson, 2015). Last, locations that had people with a low and high socioeconomic status into context in terms of crime occurrence, stations that were in areas with a low socioeconomic status attracted crimes such as robberies during busy hours and non-busy night hours (Irvin-Erickson, 2015). Stations in areas with a high socioeconomic status attracted crimes such as larcenies during busy and non-busy day hours (Irvin-Erickson, 2015).

One more element of the environment of a Metro station that is examined to understand crime existence is the notion that other crimes that occur can create more crime (Irvin-Erickson, 2015). For instance, "other crimes" that happen in plain view are something that criminal justice professionals measure to acknowledge the prevalence of specific crimes at the Metro station (Irvin-Erickson, 2015). The prevalence of other crimes that can thrive on the same opportunities for a particular crime at stations is assumed to be an indicator of better opportunities for that crime to occur (Irvin-Erickson, 2015). More specifically, this is used as an indicator of how stations can have a status as a crime attractor: the more known a place is for having crime occur, the more it will attract people to engage in crime at that station (Irvin-Erickson, 2015).

In context, where the actions of alcohol violations, public urination, and vandalism occur, which are considered unruly conduct incidents, the possibility that other people will

participate in other disorderly acts of deviance (Irvin-Erickson, 2015). Additionally, if robbery is prevalent in a Metro station, then the chances of aggravated assaults and larceny rises, and in stations with a high number of larceny and aggravated assaults, the chance of robbery goes up (Irvin-Erickson, 2015). Further, robberies can be classified as violent crimes, so Metro stations with a high number of robberies are expected to display a greater chance for an aggravated assault to occur (Irvin-Erickson, 2015).

Determined from the elements of the Metro station such as connectedness, remoteness, accessibility and activity level, and socioeconomic status of an area in which the Metro, and the presence of other crimes, are concrete results of crime incidents (Irvin-Erickson, 2015). For example, most larcenies were observed to take place during peak hours of travel, followed by non-peak day hours, and the lowest number of crime incidents during non-peak night hours (Irvin-Erickson, 2015). From this, one can suggest that larcenies, being a crime against property are more likely to happen when more people are traveling because the more riders there are, the more opportunities to steal the property of other individuals (Irvin-Erickson, 2015). Next, disorderly conduct was observed to be almost equally divided between happening during non-peak night hours and peak hours with a small number of disorderly conduct incidents occurring during non-peak day hours (Irvin-Erickson, 2015). More disorderly conduct is observed to be related to the number of other crimes present at the station (Irvin-Erickson, 2015). Also, when disorderly conduct is higher an increase in vandalism and public urination increases, which also increases the overall rate ratio for disorderly conduct, especially during non-peak night hours (Irvin-Erickson, 2015). Nearly fifty-six percent of the aggravated assaults were observed to happen during the non-peak night hours suggesting that they are more likely to occur at times when there are fewer people and less guardianship at stations (Irvin-Erickson, 2015).

Following, robberies transpired across different times of the day (Irvin-Erickson, 2015). Eighty percent of robberies were almost equally divided between peak hours and non-peak night hours, and the remaining twenty percent of the robberies transpired during non-peak day hours (Irvin-Erickson, 2015). To this point, since robberies are classified to be a crime against both persons and property, robbery is likely to be nourished by the opportunities provided by both dense and less dense populations in and around Metro stations (Irvin-Erickson, 2015). This is because compact populations offer more available and vulnerable victims and targets, and less compact populations offer less guardianship (Irvin-Erickson, 2015). Additionally, the remoteness of a Metro station indicates that during non-peak night hours, stations that are further away from the Metro Center are more likely to experience disorderly conduct crime incidents (Irvin-Erickson, 2015). Therefore, understanding the environment in and around the Metro stations is vital to criminal justice professionals, so they can acknowledge crime occurrence, and work to prevent it (Irvin-Erickson, 2015).

Technology

The last area of focus to help criminal justice professionals comprehend crime occurrences within and on the Washington D.C. area Metro system is the use of technology to detect crime (Piza, et al., 2019). A common technology used to monitor crime within a Metro station is CCTV (closed-circuit Television) (Piza, et al., 2019). A closed-circuit TV is a type of situational crime prevention strategy that increases levels of formal surveillance within a target area (Piza, et al., 2019). In simpler terms, obtaining a CCTV can help broaden the coverage criminal justice professionals have of a certain location, and allow them to see when and where crimes are transpiring, as well as by whom (Piza, et al., 2019). More specifically, situational crime prevention strategies, like having a CCTV focus on preventing crime by reducing criminal

opportunities and increasing the chances an individual will get caught which raises the perceived risk of offending through the modification of the physical environment: by having security cameras visible in Metro stations (Piza, et al., 2019).

This depicts a situational prevention of crime because due to Cesare Beccaria's rational choice perspective, people consider crime as a purposive behavior desired to meet the offender's needs (Wright, 2017). Moreover, the rational choice perspective describes how offenders consider several choice structuring characteristics that consist of the potential rewards and risks that are involved when they decide to engage in a certain deviant or unlawful act (Piza, et al., 2019). Thus, having security cameras visible, limits the offender's perceived reward of engaging in crime because there is a higher chance they will get caught, so the perceived risk of committing the crime is raised which according to the rational choice perspective will steer the person away from engaging in deviant acts (Piza, et al., 2019).

Chapter 4: Discussion

Summary

It is uncommon for individuals who utilize the Metro system to think about their potential interaction and/or the possibility of becoming a victim or spectator of crime occurrence while actively on the Metro, or within the Metro stations (WMATA, 2024). Unfortunately, it is not unusual for crimes such as robbery, assault, and disorderly conduct to occur within Metro stations (WMATA, 2024). Data and research have depicted that criminal justice professionals who are provided an understanding of why crimes occur, and when crimes occur such as referring to the time of day, as well as the alignment with the peak hour travel times, the ways environmental factors; such as where Metro stations are located, city crime rate affecting the

crime rates within the Metro systems, and presence of risk factors such as low income, which can lead an individual to engage in deviant or criminal behavior, as well as the technological security advancements that are already put in place as security preventative measures (Irvin-Erickson, 2015). Further, this allows criminal justice professionals the ability to create crime prevention strategies, take more proactive prevention measures, as well as reduce crime rates (Irvin-Erickson, 2015).

Moreover, analysis and literary review of my twenty-five sources can help criminal justice professionals understand the criminology behind the transportation system in Washington D.C. Research, studies, and experiments conducted are necessary to ensure that criminal justice professionals dealing with public transportation; and be aware that the time of day in which riders utilize the Metro, surrounding environments can expose individuals to crime, and how technological advancements put in place to monitor crime occurrences on the Metro and within the Metro stations can affect crime contingency (Irvin-Erickson, 2015).

Conclusions

From the literary review of the Washington D.C. Metro system, one can recognize the stark reality that whether you travel on the Metro during the day or at night when the Metro stations are busy or quiet, or in an area with a high or low socioeconomic status crime can always occur (Irvin-Erickson, 2015). Although, Metro stations that have prosocial activities located in the area, such as but not limited to businesses, retail stores, legal offices and services, recreation centers, and schools are less likely to have criminal activity transpire (Irvin-Erickson, 2015). Last, it was noted that the more guardianship and/or knowledge of technological advancements, such as CCTV security cameras, the less likely unlawful and deviant acts will occur (Piza, et., al., 2019). Therefore, for Metro stations to become highly functional and safe for

all of its riders, there should be more security present during all times of travel, more advancements in technology, such as high-quality security cameras, and awareness of such security measures put in place, so people who utilize the Metro systems know that there are cameras, which will prevent crime, and cities should try to ensure that the areas in and around the Metro stations are well lit, easy accessible, walkable and that there is prosocial activities and venues nearby; such as recreational centers, business, and legal services to denture anti-social behaviors and crime from occurring (Irvin-Erickson, 2015; Piza, et al., 2019).

Limitations and Recommendations for Future Research

All in all, one of the limitations emphasized in this study was the lack of resources available regarding the recently developed technological advancements that are in place to monitor crime. A reason for this would be because research and analyses on such technological advancements are still underway, therefore there are limited resecures on the topic. Consequently, in the future, I would focus on finding more current sources on technological advancements put in place as security measures to deter crime occurrences.

Appendix: A

Enclosed is a synthesis chart depicting how I gathered sources early on in my research.

Synthesis Chart

Author/Date:	**Title:**	**Population:**	**Location:**	**Method:**	**Topics/Main Findings:**	**Limitations:**
Irvin-Erickson, Yasemin, and Nancy La Vigne. (16 July 2015).	"A Spatio-Temporal Analysis of Crime at Washington, DC Metro Rail: Stations' Crime-Generating and Crime-Attracting Characteristics as Transportation Nodes and Places - Crime Science."	Individuals who utilize the metro system in Washington D.C.	Washington D.C., U.S.	Observational Research	Crime rates spike at night and early morning hours. Crime rates are lower in during higher traveled, conventual 9-5 job travel times. Crime rates lowered with police presence. In more commonly used stations crime was lower versus less used/well-known stations, and crime rates were higher	Only looking at metro stations and systems in Washington D.C, and not factoring use of technologies, and based on observational research and social science characteristics.

					within stations in higher crime areas.	
Piza, E., Welsh, B., Farrington, D., and Thomas, A. (2019).	CCTV Surveillance for Crime Prevention: A 40-Year Systematic Review with Meta-Analysis.	Meta-analysis of individuals who employ the metro system within Washington D.C.	Washington D.C., U.S.	Observational Research and Meta-analysis	Crime rates lowered with police presence. Crime rates lowered with the presence of cameras and other security technologies.	Only looking at metro stations and systems in Washington D.C, not factoring crime rates outside of the station, and based on observational research and social science characteristics.
(2024) "Washington Metropolitan Area Transit Authority."	*WMATA Crime Statistics,*	Statistical analysis of individuals who use the metro system in D.C.	Washington D.C., U.S.	Observational Research Meta-analysis, and statical evidence	Crime rates spike at night and early morning hours. Crime rates are lower in during higher traveled, conventual 9-5 job travel times. Crime rates lowered	Only looking at metro stations and systems in Washington D.C, not factoring crime rates outside of the station, and not factoring use of technologies

					with police presence. In more commonly used stations crime was lower versus less used/well-known stations, and crime rates were higher within stations in higher crime areas.	
La Vigne, Nancy G. (Nov. 1997).	Visibility and Vigilance: Metro's Situational Approach to Preventing Subway Crime."	Individuals who utilize the metro system in Washington D.C	Washington D.C., U.S.	Observational Research and Meta-analysis	Crime rates lowered with police presence. Crime rates are lower in during higher traveled, conventual 9-5 job travel times.	Only looking at metro stations and systems in Washington D.C, not factoring crime rates outside of the station, and not factoring use of technologies, and based on observational research and social science characteristics.

References

Bertolini, L. (1996). Nodes and places: complexities of railway station redevelopment. *European Planning Studies*, *4*(3), 331-345.

Brantingham, P., and Brantingham P. (2021, January 22). "Pattern Theory of Crime." *Criminology and Criminal Justice,* Oxford Research Encyclopedia of Criminology.

Brantingham, P., & Brantingham, P. (1995). Criminality of Place: Crime Generators and Crime Attractors. *European Journal on Criminal Policy and Research, 3*(3), 5–26.

Ceccato, V. (2013). *Moving Safely: Crime and Perceived Safety in Stockholm's Subway Stations*. Maryland: Lexington Books.

Ceccato, V, & Uittenbogaard, AC. (2014). "[PDF] Space-Time Dynamics of Crime in Transport Nodes". *Semantic Scholar.* Association of the American Geographers 105, 131–50.

Chen, H. T., Wu, S. W., & Hsieh, S. H. (2013). Visualization of CCTV coverage in public building space using BIM technology. *Visualization in Engineering*, *1*, 1-17.

Cohen, L.E., and M. Felson. (2010, May 25). "Social Change and Crime Rate Trends: A Routine Activity Approach (1979)." *Taylor & Francis*, Taylor & Francis.

Gallison, J.K., and Andresen, M.A. (2017, January 1). "Crime and Public Transportation:

A Case Study of Ottawa's O-Train System" *Canadian Journal of Criminology and Criminal Justice,* University of Toronto Press.

Hart, T. C., & Waller, J. (2013). Neighborhood boundaries and structural determinants of social disorganization: Examining the validity of commonly used measures. *W. Criminology Rev.*, *14*, 16.

Irvin-Erickson, Y., and La Vigne N. (2015, July 16). "A Spatio-Temporal Analysis of Crime at Washington, DC Metro Rail: Stations' Crime-Generating and Crime-Attracting Characteristics as Transportation Nodes and Places - Crime Science." *SpringerLink*, Springer Berlin Heidelberg.

La Vigne, N. G., Lowry, S. S., Markman, J., and Dwyer, A. M. (2011, September). "(PDF) Evaluating the Use of Public Surveillance Cameras for Crime Control and Prevention" *Research Gate,* Urban Institute Policy Center.

La Vigne, N. G. (1997, November). "Visibility and Vigilance: Metro's Situational Approach to Preventing Subway Crime." *National Institute of Justice Research in Brief*, U.S. Department of Justice Office of Justice Programs National Institute of Justice.

Merriam-Webster. (2024, March). "Larceny Definition and Defined with Examples". *Merriam Webster Dictionary.*

Miller, H. J. (2004). Activities in space and time. In *Handbook of transport geography and*

spatial systems (pp. 647-660). Emerald Group Publishing Limited.

Newton, A., Partridge, H., & Gill, A. (2015). In and around: Identifying predictors of theft within and near major mass underground transit systems. *Safety and security in transit environments: An interdisciplinary approach*, 99-115.*spatial systems* (pp. 647-660). Emerald Group Publishing Limited.

O'Brien, Daniel T., Farrell, C., Welsh, Brandon C. (2018, May). "Broken (Windows) Theory: A Meta-Analysis of the Evidence for the Pathways from Neighborhood Disorder to Resident Health Outcomes and Behaviors." *Social Science & Medicine*, Pergamon.

Pereira, I., Crudele, M., Katersky, A., and Shapiro, E. (2024, March 15). "NYC Man Will Not Face Charges for 'Self-Defense' Shooting on Brooklyn Subway." *ABC News*, ABC News Network.

Piza, E., Welsh, B., Farrington, D., and Thomas, A. (2019). CCTV Surveillance for Crime Prevention: A 40-Year Systematic Review with Meta-Analysis. *Criminology & Public Policy, 18*(1): 135-159.

Ross, P. T., Zaidi, N. L. B. (2019, August). "Limited by Our Limitations." *Perspectives on Medical Education*, U.S. National Library of Medicine.

Sleeuwen, S. E. M. Van, Ruiter, Stijn, and Steenbeek, Wouter. (2021, January 29). "Right Place,

Right Time? Making Crime Pattern Theory Time-Specific - Crime Science." *SpringerLink*, Springer Berlin Heidelberg.

Solomon, H. M. (1977). "NCJRS Virtual Library." *CRIME AND DELINQUENCY – TYPOLOGIES. Office of Justice Programs*, U.S. Department of Justice, Office of Justice Programs.

Walkscore (2024). Walk Score Methodology. https://www.walkscore.com/methodology.shtml. Accessed 23 Feb. 2024.

WMATA (2024). WMATA Reports Crime Down 14 Percent Following Security Steps. *Mass Transit,* Mass Transit. https://www.wmata.com/about/transit-police/crime-stats.cfm Accessed 23 Feb. 2024.

WAMTA (2024). WMATA Washington Metropolitan Area Transit Authority. *WMATA Crime Statistics.* https://www.wmata.com/about/transit-police/crime-stats.cfm Accessed 23 Feb. 2024.

Wright, J.P. (2017, October 27). "Rational Choice Theories." *Rational Choice Theory,* Oxford Bibliographies.

Yule, C., and Griffiths, E. (2009, September 10). "Household Structure, Coupling Constraints, and the Non-partner Victimization Risks of Adults." *Journal of Research and Crime Delinquency".* Sage Journals.