

# **Bachelor's Thesis**

## **Big Brother is watching you: A study on the effectiveness of camera surveillance technologies in the public urban spaces of Lelystad**

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## Abstract

This research focuses on the effectiveness of camera surveillance technologies in the public urban spaces of Lelystad, in terms of the trade-off between security and privacy. The development of surveillance technologies brings about discussions on the invasion of the personal living environment, while trying to secure certain places. In order to deliver a relevant study on this debate, the case of Lelystad will be examined. In 2021, municipal camera surveillance was implemented in a residential neighbourhood as a result of structural disturbance and the regular occurrence of criminal offences, that also had an impact on the sense of safety of inhabitants. This issue is relevant to study because it offers an examination which attributes to the ongoing debates on security versus privacy. In addition, it offers perspectives policy makers and society can take into account when making decisions or determining a stance on this topic.

This makes up for the main question that was formed: How effective is the use of surveillance technologies in public urban spaces in Lelystad, in terms of the trade-off between security and privacy? This trade-off indicates that in theory the measure brings more security, while simultaneously having an impact on the privacy of people who are subject to the monitoring. Thus, the effectivity is established on grounds of a situation where as much security is achieved through maintaining public order and catching illegal acts. While restriction of privacy is minimized as much as possible by arguing for necessity, proportionality and subsidiarity.

In order to answer the established main question, interviews with representatives of the police and municipality of Lelystad were conducted respectively, as well as a survey among visitors of the affected area. The results showed that the local governments argued critically for this measure, after which it was implemented. On average, inhabitants of Lelystad felt like municipal camera surveillance was an effective measure to be taken in this area. Thus, it can be concluded that surveillance technologies are effective for the assigned period, while bearing in mind the flaws which are also present.

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# 1. Introduction

## 1.1. Context

Technology has undoubtedly innovated hugely over the past decades. We have seen the rise of social media and the problem of fake news it brought with it. As well as the practice of remote warfare, using drones and other equipment to act in wars and conflicts while the operators remain at a safe distance. These innovations clearly bring certain questions with it involving ethics and safety. The act of mass surveillance in public urban spaces is another one of these innovations.

Governments and private institutions have been using surveillance technologies to increase safety, which has not been a secret. But as the Snowden revelations in 2013 unveiled, there was a lot more happening than most people were aware of. The National Security Agency of the United States was building 'a pattern of life' through peoples' laptops, cell phones, Facebook and more (Macaskill & Dance, 2013). This detailed profile of a target and anyone associated with them, was spanning very widely. It also included everyone who was a maximum of three steps away from a possible target as seen by the agency. Edward Snowden unveiled a great amount of information about this act in 2013 to journalists. These revelations emphasized how important a restructuring of our approach to security and surveillance is (Dratwa, 2017).

The prior shows how public safety questions have gotten great amounts of attention in the last decade. But the release of George Orwell's novel *1984* (which was released in 1949), also had an impact on the world and brought attention to surveillance. The book is centred around a system where Big Brother is the leader, and he is always watching (Trilling, 1949). During the time of writing, cameras were not part of surveillance of course. But, as Lynskey (2019) describes the influence of the book: "it has infiltrated the consciousness of countless people who have never read it." His novel was supposed to be a warning, and now the term *Big Brother Is Watching You* has acquired a whole world of itself.

All these acts of monitoring come down to checking whether people are acting according to the rules or not, as it is its main purpose. And with the technological possibilities nowadays, an action of mass surveillance has developed. Mass surveillance is defined as the data-driven security practice in which information is gathered about people and their whereabouts and behaviours, to eliminate individuals who are considered risky (Friedewald et al., 2017). Consequently, surveillance is also an active practice in the Netherlands.

In the Netherlands the government rules for camera surveillance in public spaces entail that municipalities are allowed to make use of camera surveillance in public spaces (Rijksoverheid, n.d.). They can make use of this in order to maintain public order and to research illegal acts. The police can subsequently make use of this camera footage (Autoriteit Persoonsgegevens, n.d.-a). This legislation is made up in the municipal law article 151c (Wettenbank, n.d.). The most important aspects of this law entail that the municipality can place cameras in public spaces for a certain period of time, when it is found necessary in order to monitor this public space. Eventually the mayor decides whether the measure will be implemented. Together with the Public Prosecutor (Officier van Justitie, part of the Openbaar Ministerie) the mayor decides for what period of time it is important that the cameras will be placed. The mayor has to end the term of camera surveillance when it is not deemed essential anymore for public order. The cameras have to be visible to everyone entering the monitored area and only public spaces are allowed to be monitored. The footage that is gathered from camera surveillance is to be processed in corporation with the police. The data is to be destroyed after a maximum of four weeks, unless there is serious suspicion that there are criminal activities captured on the camera footage. In that case the police can keep hold of the footage for a longer period of time to investigate the matter further.

Additional legislation includes that when the police involves an external monitoring party, they have to enter into a processing agreement with the police, stating that they will work in a manner led by the

police (Autoriteit Persoonsgegevens, n.d.-a). The chief of police then has to assign a specific group of people that can monitor and process the footage from the cameras.

In order to gain insight into the privacy risks camera surveillance brings about, it is mandatory to perform a Data Protection Impact Assessment (DPIA). This is obliged to carry out when personal information is processed on a large scale and people are monitored in public spaces. The chief of police is responsible to perform this assessment. The required aspects of a DPIA are a systematic description of the data processing that will be performed, as well as an assessment of the privacy risks. In addition the measures to tackle these risks should be included.

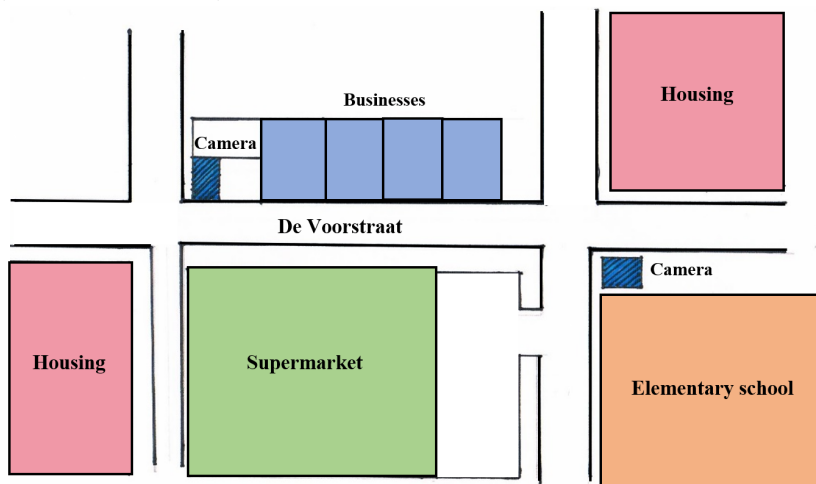
Another important aspect that should be considered is the assessment of necessity (Autoriteit Persoonsgegevens, n.d.-b). This entails the consideration whether the measure of camera surveillance is necessary to use in order to achieve the goal that is set. For this it is crucial to make sure all lighter measures are already in use before implementing camera surveillance in public spaces, this is the subsidiarity assessment. Lastly, the aspect of proportionality is important to consider. This questions if the measure is in proportion to the goal, thus whether the invasion of privacy is not disproportionate to the goal.

## 1.2. Problem statement

### 1.2.1. Research problem

Inevitably doubts arise with these innovations of mass surveillance, spanning lots of different groups in society. For civilians it could feel as an invasion of privacy while they are out in public spaces. A question which emerges is whether the resulting violations of privacy and human rights are compatible with fundamental rights and the values of democratic societies (Čas et al., 2017). The problem with surveillance is the incidental of monitoring everyone, in the act of trying to keep order and focus on people performing illegal activities. To study this trade-off between security that is trying to be gained and privacy which is restricted in process, the municipal camera surveillance in Lelystad will be the research case. As a consequence of the structural disturbance of public order around the area of ‘de Voorstraat’, municipal camera surveillance was originally installed from December 15, 2021 until April 15, 2022 (Gemeente Lelystad, 2021). According to the municipality there are incidents of nuisance, intimidation, vandalism and violence in the area. The most direct cause of the instalment of camera surveillance was a gunfire incident in ‘de Voorstraat’ on June 2<sup>nd</sup> of 2021, according to the press announcement by the municipality. When the cameras register irregularities the police will be informed. In the press announcement about the addition of these cameras, the municipality speaks about how the privacy of closely living people is maintained. The cameras are placed alongside a main street in a residential district. Close to the cameras is a large chain supermarket, along with some smaller companies across the street from this supermarket. An elementary school is based next to the supermarket, which makes it of extra importance to maintain a safe area. An indicational map of the area in which the cameras are placed can be seen in Figure 1.

**Figure 1. Indicational map of the municipal camera surveillance area on 'De Voorstraat' in Lelystad, the Netherlands (Not accurate to scale)**



There is a rising national concern towards camera surveillance, which was proposed by Amnesty International in the *We Sense Trouble* report (2020). In this report they actively advocate against camera surveillance in the Netherlands. The report brings light to human rights violations committed by the Dutch police, through predictive policing system. They investigated the Sensing project in the city of Roermond to support the conducted research. The Sensing project shows ways of indiscriminate mass surveillance. Amnesty defines this as: *'The widespread and bulk monitoring, interception, collection, storage, analysis or other use of communication or location data that is not targeted at an individual or an identifiable and distinguishable group or location and is not based on reasonable suspicion'* (2020, p. 30). This makes it a problematic act according to Amnesty, because it interferes with the rights to privacy and freedom of expression. This addresses the importance of public urban spaces in which people can act freely, without feeling inhibited by camera surveillance.

### 1.2.2. Research questions

For this research the effectiveness of camera surveillance technologies in Lelystad is studied. This will be demarcated by focussing on public urban spaces in Lelystad, specifically the area around 'de Voorstraat'. The part of mass surveillance that this research will focus on, is camera surveillance. This is what is allowed in public spaces in the Netherlands. The effectiveness is defined in this research in terms of the trade-off between security and privacy. This is the topic that was studied, because the researcher wanted to find out whether these camera surveillance techniques actually gain safety and security, by focussing on a particular case study. The goal of this research is to help readers understand surveillance technologies in the Netherlands and its justification. In addition insight will be offered into the possible consequences and benefits for the security and privacy in public urban spaces, focussing on the project in Lelystad.

The main research question that arises from this problem statement is:

***How effective is the use of surveillance technologies in public urban spaces in Lelystad, in terms of the trade-off between security and privacy?***

To answer this main question, the following sub questions have been formed:

*Sub question 1:* How is camera surveillance justified by the local and national government?

*Sub question 2:* What is the opinion of inhabitants of Lelystad towards camera surveillance in public urban spaces?

### 1.3. Relevance

#### 1.3.1. Societal relevance

The concept of technological surveillance has a direct impact on a society as a whole. People are constantly kept an eye on when they find themselves in public urban spaces where camera surveillance is active. It may not be the goal to watch everyone while monitoring these spaces, but it is a side effect of these systems. The camera surveillance is legitimized in the Netherlands because of the security it brings in terms of maintaining public order (Friedewald et al., 2017). A certain ethical discussion arises from this discrepancy. Camera surveillance is fully an infringement of the Dutch constitution. In article 10 it is explained how everyone has the right for one's personal living environment (privacy) to be respected. It goes without saying that there are exceptions to this constitutional law, of which municipal camera surveillance to ensure public order is one. Nonetheless, it should be considered that there is a violation of the law in a way. Therefore, it can be argued that camera surveillance does not respect privacy and is a measure that is too heavy in this manner.

The question this raises however, is if the trade-off is great enough because of the unintended consequences it brings with it. This research will help gain insight into this ongoing debate by researching a case in the Dutch context. Because the concerning case is being executed at this moment in time, it offers a current depiction of the effectiveness for Dutch cities. This makes it helpful for people to achieve more knowledge about security questions, in particular camera surveillance. When offered the outcomes of this particular research, people can take these conclusions into account when forming their own opinions on these security questions.

Another aspect of why this research is relevant for society, is that policy makers can take the conclusions into account when opting for camera surveillance as a measure to improve security in a specific area. They can get value from an independent study in the Dutch context, with a focus on both aspects of security and privacy, as well as attention brought to both the policy makers and the civilians. For the policy makers in the case of Lelystad it is helpful to take the conclusions of the research into account when debating whether this temporary project of camera surveillance should be renewed for an additional period of time. For policy makers in general, it might be insightful to get the full context of case and its effectiveness conclusions, in order to decide on municipal camera surveillance.

This research includes a survey that was held among civilians that act in the affected neighbourhood. The conclusions that are drawn from this survey offer a thorough explanation of recommendations and opinions of people in this area. Findings from research support opinions on societal issues in a way where they might be taken more seriously. In addition, a neighbourhood that has shown structural disturbance for a longer period of time, is shown in a broader light. Which brings light to the safety questions in this neighbourhood in general. Thus, the research is relevant for society in a way where voices are heard from both the government and civilians.

#### 1.3.2. Scientific relevance

Research on surveillance often looks at the effectiveness of the measure. It is considered a heavy measure because everyone in the eye of the camera will be brought into the footage. In the public domain this can be seen as highly alarming. However, there is also a great value in camera surveillance because of the addition in maintaining order it offers to law enforcement. This interplay is why it is often a topic of discussion in literature.

For this research, the main operationalization will be through the trade-off between security and safety. As established in literature there is a push and pull between these two concepts (Friedewald et al., 2017). Security is potentially gained through camera monitoring, because data-driven security practices could permit authorities to focus their attention and resources in a more efficient fashion on emerging threats and disrupting them before they have taken place (Čas et al., 2017). This is in

contrast to the infringement of privacy that might come along with the use of this measure. Firstly, it has to be questioned whether the Charter of Fundamental Rights of the European Union or the EU data protection framework and the values of democratic societies are not violated because of surveillance technologies. Also there is uncertainty on security necessarily depending upon mass-surveillance and whether surveillance technologies address the most pressing security needs with the most efficient means. In this manner, the research is scientifically relevant because it builds on a well-established trade-off in literature.

In this research case there is a focus on a project of first time municipal camera surveillance for the city. To study this pilot case the effectiveness will be studied. It is relevant to look at the case of Lelystad for multiple reasons. Firstly, one of the causes for this project was a shooting incident in the affected area, which is a residential area. Families live here, as well as there being an elementary school in the central point of this neighbourhood. Thus, the municipality cares to ensure a safe space without a structural disturbance of public order. In addition, the specific trade-off between security and privacy in municipal camera surveillance in the Netherlands is something that has not been studied extensively. This trade-off is something so multifaceted, because security is commended by the ones who set it up, while the ones who are supposed to benefit from this, could also be the ones that endure the most troubles from it. Therefore, it is of high importance to consider both parties in this interplay, to get a full grasp of its effectiveness.

The project of camera surveillance in Lelystad is the first the city has had. For a pilot in general it is of importance to evaluate the outcomes critically. Between 2016 and 2021 the WODC (Scientific Research and Documentation Centre, a governmental institution) conducted a number of evaluations for camera surveillance projects in cities in the Netherlands as a consequence of the latest change of law in 2016 (Flight, 2022). What Flight mentions in the report however, is these evaluation are done increasingly less, when they are done it is almost exclusively done by municipalities themselves. The scientific quality of these recent reports is lower than ten years ago, during this time more than fifty evaluations were done, over a period of five years. In comparison to the 27 evaluations that were done during the past five years. These were also rarely done by a university or research institutes. In addition, the report mentions how only 2 out of 27 evaluations were of a high enough level to be able to draw reliable and valid conclusions from them. Thus, it is relevant to research this case because it offers an independent, scientifically based effectiveness study.

The evaluations of the WODC report are valuable and show an important view on whether the municipality will bear the burdens of the validation of privacy and whether the measure is effectual. Because of the actuality of the project in Lelystad, it is not yet included in the evaluations of the WODC report. The fact that it has not yet been included makes it of great relevance to conduct this research on the effectiveness. Thereafter, the conclusions of this research could likely help the police and municipality of Lelystad with the manner of continuation of the camera surveillance project. The opinion of inhabitants might be of great value to them because it is gathered from an independent party.

In the Netherlands there are ongoing societal discussions about mass surveillance. As mentioned before, Amnesty International has been advocating against mass surveillance in the Netherlands (2020). The report studies a case other than Lelystad, while focussing partly on similar aspects. The Amnesty report is to value of this research because by studying multiple cases in the Netherlands independent from each other, results could later be used in a comparative study to gain a better view of effectiveness in the Netherlands as a whole. The report also offers a broad explanation of the ethical dilemmas that arise because of surveillance technologies, which is important to take into consideration in this research as well.

Along these lines, the case study of effectiveness of camera surveillance in the public urban spaces of Lelystad fits into the broader body of work on surveillance, and its effectiveness.

## 2. Theoretical framework

### 2.1. Definition public urban spaces

Public urban spaces is a broad term, but will be defined as ‘property in urban areas that is open to the greater public’ (Low & Smith, 2005). These spaces are the opposite of private spaces, which are protected by private property use rules. Public spaces include recognizable geographies of daily movement, they are part of everyday life.

### 2.2. Privacy versus security trade-off

The privacy versus security trade-off is something that has been considered before by Van den Broek et al. (2017). They state that security comes at the cost of privacy, and that both cannot be achieved to the fullest at the same time. Security can only be achieved by exercising control over a situation, whereas intrusion of the personal living environment is often necessary. In reality, the trade-off is not this binary. Because giving up a part of privacy does not mean more security is gained (Granick, 2006). The general conception used to be that when you would be present in public spaces and no cameras were in eyesight, you would not be monitored. However, the fast developments of surveillance this is not the case anymore, which is why the concept of privacy has shifted. For individuals, it has also become rather hard to identify these privacy threats of datafication through camera surveillance (Jameson et al., 2019). There is an ambiguity about it, but also an unease because of the large scale of information that is processed. This unease lies within the fear of data being leaked, as well as the lack of anonymity that comes with surveillance technologies.

Friedewald et al. (2017) also explain the possible limitations of a trade-off approach. When saying privacy could be restricted to reach more security, it implies that there is not a possibility for it to be the other way around, which is in line with the definition by Van den Broek et al. (2017). However, it is possible to gain security while privacy is ensured as much as possible. For instance, privacy is key in protecting yourself from the powers of the state, but also in online security. More security is gained when less is known about one’s life in this instance. Another important notion is the different perception of privacy between people, and the different view on maintaining privacy (Friedewald et al., 2017). Privacy is one of the fundamental human rights, in addition to being a precondition for expressing oneself freely. But there is a very diverse conception of what privacy entails and the importance of privacy, this is mainly because there is no universal agreement on the scope of privacy. This is a result of the inherent moral, political, and perceptual differences in the world (Mills, 2008). Therefore it is also not possible to establish a single policy, which is why every case needs to be considered individually by reason of its circumstantiality.

The reason this trade-off between privacy and security exists in relation to technological surveillance, is because people historically trust the social contract between the people and the government. There is a distinction made between the government and the private sector, where the first is much more trusted (Jameson et al., 2019). The people hand over a part of their privacy, because the government ensures a life with more security. Through focus group discussions in the case of Amsterdam, the respondents were informed that the increase of data control means the ownership of it will shift increasingly to the government. The larger portion of respondents believed this would increase public safety. It is noted that the trust of the government is highly related to the historical developments of a nation, where in a European welfare state the government is favoured to the private sector, which is the opposite for the American context.

The importance of privacy is widely agreed upon in scientific literature (Moncrieff et al., 2009). In order to retain privacy as much as possible while also ensuring the surveillance systems’ purpose, there is a way in which data-hiding techniques are combined with context-aware policies, while also storing the data securely (Moncrieff et al., 2009). In order to retain as much privacy as possible when monitoring using cameras, data storage and -analysis systems must minimize the outward flow of information about passers-by, the identifying information should be filtered from the footage. Through

data-hiding this privacy-sensitive information is detected and removed before using the data any further. On the other hand, when trying to identify someone by using data to help solve or prevent crimes, it is necessary however to have access to these identifying aspects of the data. So, the data which is gathered is only made meaningful through the way it is handled, which entails the data analysis and algorithms which have to be taken care of in a balanced way (Jameson et al., 2019). Thus, inaccuracies and unjust decision making should be minimized. However, this is challenging because the algorithms that are used are based on certain policies. For human monitoring, there is also a risk of unjust profiling because of personal affiliations. In addition, there is an added privacy risk when surveillance is used in residential neighbourhoods (Flight, 2022). People have a higher expectation that they can move in these spaces without being watched. This is different to a location such as a train station, which has a more diverse set of visitors who are likely to visit only sporadically.

As discussed, camera surveillance is flawed to an extent, but perhaps the biggest flaw is the lack of efficiency. In this manner, there is an infringement of privacy while no increase in security is factually shown. Through statistics from CCTV in the UK, it became apparent that analogue cameras help solve only 3 percent of crimes (Bowcott, 2008). These analogue cameras are lacking in efficiency because the data can only be stored for a limited time and the quality of the footage is very poor. More innovated systems show a rate of 15 to 20 percent helping police to solve crimes. This raises questions on whether the measure is in proportion to the goal, when no significant signs of effectiveness are shown.

While considering the limitations of surveillance technologies, there are evidently also aspects that make it a valuable measure. Without these, it would not be justified to implement this measure as extensively as it has been. The most important value camera surveillance can bring might be its preventative working. Research proves that when cameras are monitoring, people choose to act in a more socially accepted and lawful way when they are aware of the cameras (Jansen et al., 2018). This conclusion shows the preventative working on crimes that cameras can have. The most straight-forward benefit camera surveillance might have, is the illegal activities that can be caught red-handed with no physical enforcement on-site. In this manner, surveillance technologies are valuable when trying to maintain public order.

In addition the safety feeling of inhabitants can be increased by camera surveillance, which attributes to the security. Lindgren & Nilsen (2012) argue that people who are associated with criminal or disorderly behaviour are worrying to inhabitants of residential areas. Thus, when there is knowledge that these loiterers are being monitored by cameras, this can help with the feeling of safety. The awareness about a constant monitoring tool is a beneficial aspect in this sense, especially because of the personal living environment facet of residential areas.

### 2.3. Theory on surveillance

In order to explain the key theories on surveillance, a three phase distinction will be used (Galič et al., 2017). This phase model will help with laying a base for this research, in terms of the historical developments regarding surveillance. The first phase consists of the architectural prison design by Jeremy Bentham, the Panopticon. Which became most famous through Michel Foucault's interpretation of it. Secondly, the post-Panopticon phase will be discussed. The third phase consists of the contemporary conceptualisations of surveillance. It is of importance to the research to focus on the groundworks of surveillance, in order to be able to link results from the primary data to surveillance theory.

#### 2.3.1. Phase one

The start of surveillance theory was with Bentham's idea of the Panopticon in 1791. The Panopticon is a round architectural prison structure where prisoners are all separated from each other, leaving no options to communicate. The guards can look into every cell from a central tower, but they could not be seen by the prisoners. This leads to a control mechanism, because the prisoners were constantly

conscious of the ability of being watched. Consequently, this would lead to them acting according to the rules. It shows the possibility of disciplinary power, through an illusion of constant surveillance. People will act in a certain way when they are aware that they could be watched. The panopticon is a widely used metaphor for surveillance (Galič et al., 2017). With surveillance the main objective is to spot suspicious or criminal activity when reviewing the camera images. But what the Panopticon shows is that people might not do something suspicious or criminal in the first place, because they are aware of possible cameras and being watched.

The other fundamental thinker on surveillance from this first phase is Foucault. His analysis of Panopticon is entirely grounded in Bentham's architectural design. He defines the concept of panopticism as:

*'A type of power that is applied to individuals in the form of continuous individual supervision, in the form of control, punishment, and compensation, and in the form of correction, that is, the modelling and transforming of individuals in terms of certain norm'* (Foucault, 2002).

This is different from Bentham in the sense that there is constant supervision. While for Foucault discipline would be internalised at a certain moment, which is when the watching would be exhausted. For modern technologies, this would mean that when discipline is internalised at a certain moment, camera surveillance is not necessary anymore. He did not envision a 'society of control', all-seeing inspection is not desired.

The Panopticon is a vision that can be transferred to specific circumstances of other parts of society. This was a big part of Foucault's interpretation of the Panopticon. He believes it is a system that has become present in many aspects of Western societies, but often stays unnoticed (Galič et al., 2017). This is what makes it very powerful, because it is embedded in everyday life. In terms of modern surveillance, because everybody can potentially be under camera surveillance, people will internalise control, morals and values. To the level where you are not consciously aware of acting according to the norm because of surveillance cameras.

### 2.3.2. Phase two

The second phase moves beyond the idea of the Panopticon. Although this phase is still largely based on Foucault's ideas, these post-Panopticon thinkers establish less delineated power dynamics between institutions and individuals. In the Panopticon model, surveillance was limited to physical spaces of total institutions. Global developments made it necessary to acquire a post-Panopticon view. One of these thinkers is Deleuze, who assumes nowadays it is the control of corporations that have the ability of governing, instead of discipline (Galič et al., 2017). This development came to be because of processes of capitalism and globalisation which are changing societies. Within these societies, institutions such as schools, hospitals or factories have become corporations. These corporations focus on short term results, for which constant monitoring is necessary (Deleuze, 1992). Individuals are not the most important part of surveillance anymore, it is the individuals' representation which is important. The individual in terms of purchasing behaviour has become essential to monitor and control according to this post-Panopticon view.

Haggerty and Ericson (2000) explored these developments of the late 20<sup>th</sup> century in the context of post-Panoptic surveillance. One of their main findings is that surveillance was increasing with the help of growing technological capabilities, specifically computer-driven databases. This addition caused surveillance to branch out to more extensive purposes, such as governance, security, profit and entertainment. In addition, surveillance is largely reliant on machines to make observations. Another key point is that there is a desire to bring systems together, in order to increase overall surveillance capacity.

### 2.3.3. Phase three

Lastly, the contemporary conceptualisations of surveillance are delved into by Galič et al. (2016). Surveillance theories seem to shift with new technologies, but there is still a fundamental in the earlier theories. It has become harder to find an overarching theory, however, because of the constantly changing and increasing technologies. In this phase, there is less of an urge to move away from the Panopticon theory, but builds on both the first and second phases. The concept of social sorting is being explored, which entails the certain profiles of deviance that are made because of the white male gaze from the people reviewing camera footage. This entails the predictive monitoring which has been formed by a dominating Caucasian view, based on prejudices towards race, for example. Highly developed software should help with objectivity on this matter. However, it should be taken into account that this automated software is also made by certain people, which could unintentionally still include a white male gaze.

Furthermore, Galič et al. (2016) discuss the possible resistance to power, whether the surveillance is through institutions or corporations. This resistance could be in the form of using different forms of technology, not making use of social media for example. A different form of resistance is 'sousveillance', a term by Steve Mann (Galič et al. 2016). This involves watching back at the people watching you, by wearing a camera yourself for instance.

## 2.4. Application to case

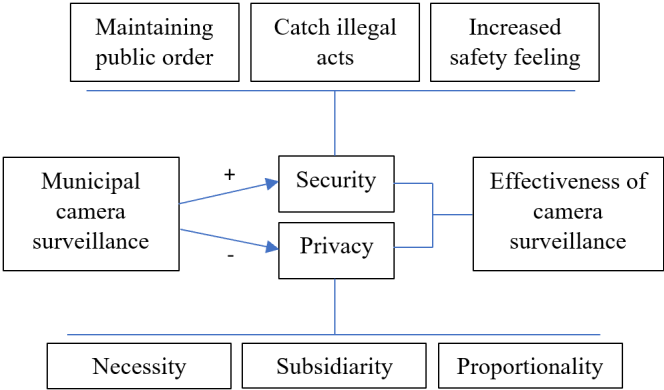
In this section the main concepts will be turned into measurable observations to evaluate the effectiveness of camera surveillance in Lelystad. The effectiveness will be examined through the concepts of security and privacy. These concepts are not hard to measure directly, which is why they will be subdivided into better measurable concepts.

The main reasons for implementing camera surveillance have become clear through the literature. The argument for municipal camera surveillance should also be in line with the Dutch law stating what signs of disruption should be present in order to implement this measure. The latter explains how the main argument for camera surveillance should rely on maintaining public order and researching illegal acts. As the literature also explains, security can be gained when there is a higher feeling of safety as well.

It should also be well considered that camera surveillance is a heavy measure to gain more security. Thus, the argumentation to implement camera surveillance in a specific case should be well substantiated on the following grounds: necessity, subsidiarity and proportionality (Autoriteit Persoonsgegevens, n.d.-b). These concepts are used for examining to what extent privacy is at stake. The assessment of these aspects also plays a part in the evaluation of the WODC report (Flight, 2022). Because of these clear assessments, they will also be used to assay the conditions of the case of Lelystad. These aspects have to be taken into account to make sure the least possible privacy is invaded, and the measure is not needlessly implemented.

In order to visualise this operationalization in a visual diagram, a conceptual model has been made, which can be seen in Figure 2.

**Figure 2. Conceptual model of the effectiveness of camera surveillance in the public urban spaces of Lelystad, in terms of the trade-off between security and privacy**



The conceptual model describes the relationships that are central in this research through the concepts that were mentioned previously. The expectation of municipal camera surveillance is that it makes for more security, while privacy is infringed to a certain extent. This security is gained through the power it holds in the maintaining of public order, the catching of illegal acts and the increasement of safety feelings. The privacy invasion should be minimized by considering the concepts of necessity, subsidiarity, proportionality when implementing camera surveillance. Together security and privacy make up for the effectiveness of camera surveillance, considering that it is most effective when security as gained as much as possible, when restriction of privacy is minimized as much as possible.

## 3. Methodologies

### 3.1. Mixed methods

The goal of this case study is to gain knowledge on the effectiveness of technological surveillance in Lelystad. To study this case, a mixed methods approach was used. Qualitative and quantitative methods were combined, because the results can be better generalised to answer the main question. Qualitative methods give an extensive explanation of certain issues, but can lack in external validity on their own because of its smaller sample size. By including a quantitative method, this will be compensated. The methods primary data collection methods used were interviews and a survey. Literature review was done to build the theoretical framework and explain the important concepts, but will also be the base of the interview- and survey questions to ensure the validity. For this research the decision was made to gather both quantitative and qualitative data at the same time. However, the survey was started before the conducting of interviews because preliminary results could be useful in the interviews. This turned out to be a valuable aspect when in conversation with the police and municipality. The preliminary results were about half of the total sample, at which point the researcher also gathered information by having small conversations with inhabitants. These results were a topic of conversation in the interviews and were also compared to comments of the inhabitants which were gathered through the police and municipality. Afterwards both the quantitative and qualitative data were analysed and where possible, linked to each other, when subsequently conclusions were drawn.

### 3.2. Data collection

#### 3.2.1. Interviews

It was of importance to have in depth interviews with the local government about their justification on starting this project of camera surveillance in Lelystad. For this research is it important to ask about their motives and considerations on implementing this measure. In the press statement from the municipality announcing the surveillance project, it was noted that the police offered an advice to the municipality, and the decision was in accordance with the Openbaar Ministerie (OM; Public Ministry). To examine the justification on the national level, it was first planned to have an interview with an expert on the topic, if possible someone from the OM who is closely connected to the project. However, it was not possible within the time frame to get into contact with the OM. From the interviews with the police and municipality the information necessary to explore the national justification was derived, which is why it is not of great sorrow that an interview with the OM was not possible. A representative of the police caused a useful interview alongside the interview with the municipality representatives, because the municipality and police both worked on a different on this project. Together these interviews will help with answering the first sub question.

In order to conduct valuable interviews that will help with answering the sub questions and ultimately the main question of this research, it was necessary to prepare an interview guide (Appendix 1). Because the interviews with both the police and municipality representatives were semi-structured, the interview guide was made up of around ten to fifteen questions, which focused on the main themes that were to be discussed. The main themes were mostly the same for the police and municipality. The interviews started with an introduction on the respondents and the main causes for implementing camera surveillance, which included the way this measure was argued for towards higher forms of government. This led naturally to how most security could be achieved in the area. Following was the topic of privacy, on which multiple questions were prepared about which measures of maintaining privacy were taken, what considerations about the invasions of privacy were made and the privacy codes that have to be made before implementation. In order to also include the second sub question, on the opinions of inhabitants, the influence of inhabitants on this surveillance project was also discussed. The preliminary results from the survey was a topic in both the interviews with the police and the municipality. The closing subject matter from the interview guide was the continuation of the project,

this included the reflection of the past period of surveillance, as well as how they argued for an extended period of municipal camera surveillance.

### 3.2.2. Survey

In order to answer the second sub question, a survey was conducted amongst civilians of Lelystad, in the form of a five point Likert scale. This quantitative method helps with retrieving data from larger groups of people, by asking them about their opinions on matters with a satisfaction scale of five points. A sample of the population will be used, because it is not possible to question the whole population. The goal is to perform a random sample, because this increases the validity and reliability of the research. But because of the limited size of this research and the questionnaire taking place face-to-face, it might not be possible to gather all respondents at random. This will decrease the external validity, because the conclusions will not be fully generalizable.

A general thought, which has also been discussed before, is that camera surveillance causes a restriction of privacy, because of the invasion of the personal living environment. However, not everyone feels this way, which makes it important to consider inhabitants' opinions. In order to offer an insight into visitors of the affected neighbourhood in Lelystad, questioning civilians on their opinions towards the project is a valuable aspect of the research. There is a focus civilians' personal view towards the issue, which is relevant to research because these views might differ within a population. From the trade-off it is expected that more security means less privacy, but it is important to consider inhabitants' opinions because it might not be this abstract in empirical cases.

For this research the survey attributes to answering the second sub question because it offers the opinion of a larger group of people on the camera surveillance in public urban spaces. In addition it was the initial plan to have in depth interviews with people who live and spend time in the relevant area about the implications of camera surveillance. In semi-structured in depth interviews people were to be asked about their experiences and opinions on certain topics. In reality it was not accessible to arrange interviews with people from the area. It was thought to be made easier by asking people during the questionnaire that was conducted, if they were open to have a conversation about the camera surveillance at that moment in time or later on. Respondents were mostly not open to have a conversation that ranged broader than the questionnaire. To make up for this in a way, the researcher wrote down notes of what respondents were saying apart from answering the standard questions. This makes for a small addition of respondent opinions. One question of the survey was an open question on whether respondents have a suggestion for the municipality, which is where some people spoke up more about their thoughts on the matter.

The sample of the population that will be questioned is distinguished by the people who live and act in the area close to the two cameras that are placed on 'the Voorstraat'. In between the two cameras there is a chain supermarket located, next to which the researcher conducted the questionnaire. It is expected that the people who come here, shop here on a regular basis and are thus relevant to the research. Because the survey is only a part of the data collection, and the population is very specific, the size of the qualitative data collection is limited.

The questionnaire template can be seen in Appendix 3. The first question that was asked as a part of the questionnaire was whether respondents were aware of camera surveillance when they were in this area. This question was asked to identify the attitude of the respondents towards the cameras. It was valuable to understand if people thought about the cameras when they were acting in this neighbourhood, or whether they did not actively notice them. Secondly, it was asked whether people felt safer knowing these cameras were monitoring the area. The answers to this question offer an understanding of the capacity the cameras have to improve the safety feeling of respondents. The third question focuses on the aspect of privacy, asking to what extent these cameras feel like an invasion of privacy. The answers to this question are valuable for the research because the restriction of the personal living environment for respondents is directly measured. The following question asked

whether respondents feel like they behave differently because of the camera surveillance. When people are highly aware they might act in a different manner, which would indicate a restriction of privacy. Therefore the answers to this question help with researching the feeling of privacy restriction among the sample. The last closed question was whether respondents agreed with the placement of these cameras. The accordance towards the camera surveillance project helps with establishing the thoughts of respondents on the security this measure brings along.

### 3.3. Data analysis

#### 3.3.1. Quantitative data

After the data was collected, the quantitative data was analysed using SPSS 28 software. This allows ] to draw statistical conclusions from the survey. The data from the survey questionnaire was transferred to the SPSS dataset, in which every answer of the Likert scale was assigned a value from 1 to 5. For this survey only descriptive statistics were used to analyse the quantitative data, because it was of importance to discover the mean per every question. The mean per statement helps with identifying the average answer respondents gave to that statement. Also including the frequency tables that can be drawn from SPSS shows us how the data per statement is distributed.

This sole way of analysing the quantitative data is valuable, but by including an effectivity test additional conclusions can be drawn. This analysis is made up of the sum per respondent of multiple questions. By calculating the sum of the answers, it is possible to get a view on how respondents feel about the effectiveness of camera surveillance while not asking them directly. One item from the closed questions is excluded from the sum analysis because it did not add to one of the two items of the effectivity trade-off, privacy or security. This will be further discussed in the Chapter 4.2.3. of the results.

#### 3.3.2. Qualitative data

To analyse the qualitative data, ATLAS.ti was used. This is a software which allows to pinpoint key points of interview transcripts and possible relations between interviews, and identify themes (the coding process). Providing structure to the gathered data, makes it possible to examine it in a systemic way, which increased the validity of the analysis. It is also of importance to code the data, to make sure the bias of the researcher is decreased. With set-up codes it is harder to only interpret the things of interest to the researcher. In addition, the coding process allows for others to methodically and systematically review your analysis, which increases the reliability.

Because it is clear that there is a normative reasoning for camera surveillance by the municipality as explained prior, a mostly deductive approach will be used to analyse the qualitative data of this research. This allows us the look for certain aspects that are discussed in the theoretical framework and introduction. But because of the case specificity not all codes can be drawn from the literature. Thus, an addition of inductive methods will be used, where there is a more bottom-up approach. The coding process will start with a set of code groups which will be focused on, while assigning new codes as well on an inductive manner. The combination of deductive and inductive methods helps with ensuring the validity, because concepts that are established from literature are examined in the primary data. But the room for additional codes also allows for a non-excluding view towards the data. There are three layers of coding, where the first layer focusses on identifying concepts and findings from the text itself. The second layer focusses on attributing the codes from the first layer to code groups. While the third layer is made for fitting these code groups in more abstract themes. Thus, the codes develop with each one being more abstract and overarching.

Through the concepts security and privacy, which can be seen as the main two overarching concepts in the coding process, multiple code groups were established beforehand. These code groups are based on the relationships shown in the conceptual model. For the concept privacy, the code groups necessity, proportionality and subsidiarity were created. For the concept security, the code groups

maintaining public order, catch illegal acts and safety feeling were created. The first layer of coding was done on a more inductive manner, where open codes were created for quotes from the text. These codes fit with the established code groups, as well as with code groups that were later developed. In the end a new concept was added, trajectory. This was added to also include code groups and codes which were about the process behind the cameras surveillance in Lelystad. The code book can be found in Appendix 2.

## 4. Results

The results chapter will be distributed into two parts, namely the two methods for primary data collection. First, the results that are gathered from the interviews will be explored. Together the results from the interview with the municipality and the police will be discussed through certain themes. Following is the explanation of results from the survey that was conducted. For this an analysis per questionnaire statement is done, and an analysis of thoughts on the effectivity per respondent. The chapter finishes with a discussion of the respondent propositions on how the safety issues can be tackled, apart from camera surveillance.

### 4.1. Interviews

The results from the interviews with the police and municipality on the justification of the local and national government is to be discussed in this chapter. The representative of the police has an operational specialist position. Which entails that she is a policeman, but her main occupation is to look at new developments and see if these fit with the police team or the municipality. In addition she has a lot of executive contacts with the municipality of Lelystad and Zeewolde, the latter is also part of this police unit.

The three representatives of the municipality all have a position in the safety department of the local government. They assist the major in safety issues and maintaining public order. All three specialist advisors work together but also deliver different contributions to projects. In order to explain the justification of the national government, the interviews with both the police and municipality deemed to be enough as they worked closely on the project with the Openbaar Ministerie.

#### 4.1.1. Motivation

The placement of municipal cameras is possible when there is a threat to the public order in an area that can be fought against with digital monitoring via cameras. The representatives of the municipality explain how the initial start of the camera surveillance project was when they, as safety advisors, were given certain areas in Lelystad where there was an enforcement shortage and where it was felt that the area was not at the peak of what it could be. Thereafter, they went to the area themselves to investigate and have some conversations with inhabitants of the area, as well as some professionals. They came to the spot where the cameras are currently placed and realised this would be an area that needs further engagement in the improving of the safety issues. Thus, they came to the measure of camera surveillance, which at that point had not been done before in Lelystad. When discussing this with both the municipality and the police, the police set up an advice report on why this would be an appropriate measure to be taken. It is emphasized that the shooting incident, which was said to be the cause in the press announcement of the municipality, was not the direct cause of the camera placement. However, it was something that set the safety questions in this area in a brighter light. Historically this neighbourhood has had trouble with disturbance of public order, more recently this also included a group of youth that would hang around in the area and cause nuisance.

The police representative elaborates on the report that was written in the interview. For longer period of time criminal activities are being committed in this neighbourhood, 'De Waterwijk'. There were also multiple mentions from inhabitants about this disturbance in the area. For the police it was clear that when they are physically monitoring in the area with troops, no significant criminal acts are being committed. Due to a lack of personnel and time, it is not possible to monitor 24 hours per day however. Thus, camera surveillance was also an appropriate measure for the police to help with the safety questions in the neighbourhood.

Even though the municipality and police were rather positive towards the application of the measure, the OM had certain questions about the case. For the OM it is important to be critical towards camera surveillance applications, since it is a heavy and intrusive measure. Thus, they were firstly not that pleased with the application of Lelystad, and were questioning whether all lighter measures were taken

before and if there was not anything else that could be done. This is also to prevent cameras being placed everywhere, without there being a hard selection process. Eventually permission was given, after which the cameras were placed in December of 2021, which are shown in Figure 3 & 4.

**Figure 3 & 4. Municipal cameras placed in 'de Voorstraat' of Lelystad**



#### 4.1.2. Safety justification

In order to examine the justification for safety reasons it is valuable to look at it along the lines of necessity, questioning whether the level of measure is necessary in order to achieve the goal. The goal in this case is clear, in that it is to have a watching eye even when the police cannot be there physically. According to the police and municipality there has been a structural disruption in this area of Lelystad, which makes it an appropriate measure to apply camera monitoring. Because it has been a structural problem for years, the measure is not too heavy to achieve the goal. Which is also why it was eventually considered as a fit measure by the OM, when the argumentation for camera surveillance was strong enough.

As established in Chapter 2.3.1., the idea of self-discipline via a watching eye is something that dates back to the late 18<sup>th</sup> century. The idea of the Panopticon shows that a feeling of being watched can have a preventative working towards acts that are not considered as correct. This concept can take up various forms. When connecting it to the case of Lelystad, it is argued by the representative of the police that the preventative working of camera surveillance might be the most valuable aspect. The signs which indicate the presence of cameras are often enough for agitators to keep calm (Figure 5.). These signs are obligated to be placed in the area near cameras, because people should be able to know that they are entering an area that is monitored. The representative of the police feels these signs together with the notable size of the cameras, is something that works in a deterrent manner.

**Figure 5. Sign of camera monitoring by police**



The municipality representatives also mention that from a small questionnaire they conducted all respondents have a safer feeling because of the camera placement. This feeling of safety is utterly important for people to act in a public space as unrestricted as possible. The aspect of activities caught in the act is also an important resource of camera surveillance. The footage that is captured on the cameras can be stored for 28 days before it has to be deleted. The camera footage is live monitored during the times of 16:00 until 22:00. This was considered to be a valuable time to watch the footage, in order to catch any activities red-handed.

The supermarket in the area between the two cameras has a stake as well in the safety of the neighbourhood. For them it valuable to be placed in an area that has a secure feeling is not troubled by agitators. This can be drawn back to the second phase of the phase model that was discussed in Chapter 2.3.2. It is mentioned that the corporations play a larger part in governing, than the self-discipline that is formed with camera surveillance. For corporations it is the individuals in terms of purchasing behaviour that become essential to monitor and control. Thus, in the interest of improving the supermarket, it is important to monitor and create a safe space. The chain supermarket does have their own cameras attached to the building, which are placed to monitor their own terrain only.

#### 4.1.3. Privacy justification

In order to consider the privacy justification by the governments the concepts of subsidiarity and proportionality will be examined. Subsidiarity questions if the least invasive remedy is being used. In this case both the municipality and police explain that after years of structural disturbance no distinct progress was made in making the area more secure. During this time lighter measures have attempted, but without a real result. There were certain concerns that not all lighter measures had been used, but this was eventually not a restricting aspect to implement camera surveillance. Thus, it can be concluded that lighter measures were used first.

Secondly, proportionality is important to consider. This entails whether the resource is in proportion to the goal. In this case, a shooting incident, and more importantly the structural disturbance of public order, are incidents of such a size that the resource can be considered in proportion to the goal. This is mentioned multiple times by both the representative of the police and the municipality, in this area the structural disturbance is something that has been a struggle for a long time. There have not just been several criminal incidents over a period of time, but also groups of youth that make the area feel unsafe to inhabitants.

In terms of a privacy protocol, the police and municipality were not able to elaborate much on the DPIA that was made for this project. Because the monitoring of the footage is done in cooperation with the city of Almere, they have performed this assessment already. However, police and municipality did elaborate on how the privacy was considered for this case specifically. The first way of protecting the privacy of inhabitants was to blur the houses that are in view of the cameras. This is a quite standard procedure with camera surveillance considering the technological developments of the recent years. Following is that the cameras are placed on clearly visible locations, and signs are used to indicate that there are cameras monitoring the area. These are important aspects for people to be able to identify areas where cameras are placed, so when they do not feel comfortable being monitored, they can make a conscious decision about not visiting the area. Lastly, a question was asked to the representative of the police on how they felt about the cameras being placed in a residential area. As the report by the WODC states, it might be a larger impact on the personal living environment to place cameras in a residential area because the same people come by and the live monitors get too familiar with them (Flight, 2022). The police representative explained that the people that review the footage live from 16:00 to 22:00 are based in Almere, thus they do not know the residents of the area well. Also it was said that the quality of the footage is not enough to easily identify people. In contrast to what the WODC report states, the representative explains that it could be beneficial to be able to identify loiterers from the footage. Because there are groups of disturbers that reoccur in the neighbourhood, it might help to know the patterns and profiles of loiterers.

#### 4.1.4. Evaluation

Both the municipality and the police elaborated on how it was an odd period for this project to be judged on its effectivity properly. The project was approved in June of 2021, but because a project like this takes time to realise (also given that it was the first municipal camera surveillance in Lelystad), the cameras were placed in December of that year. At this time a calm period embarked because of the governmental restrictions that were active during that time, in the context of the COVID-19 pandemic. This caused the streets to be more quiet than usual, because numerous places were obliged to close. In addition, it was a period of winter, in which the police explains it is always more calm than in the summer and spring periods.

Nonetheless, the police was able to evaluate the period of camera surveillance thus far. This reflection was rather positive, it showed that a preventative working was present. But it is important to take into account that it was likely a more quiet period than usual, as mentioned in the previous paragraph. The live monitoring between the times of 16:00 and 22:00 caused an agitator to be caught on camera destroying a bus stop within a day of the placement of the cameras. At this time the police was informed immediately, after which the person in question was arrested. This might have been a discouraging factors for agitators of the future, because they could have heard of the stronger presence of units.

#### 4.1.5. Continuation

As mentioned it was an odd period to evaluate the period of camera surveillance. The choice was made to continue the process till September of 2022 for now. However, to continue camera surveillance for a certain period of time, you need to have a strong argumentation on why it is still a necessary measure to be taken after the initial period. The representatives of the police and municipality elaborate on this by explaining that it would be valuable to continue with camera surveillance for another five months from the ending of the first period, because this will include the summer period. According to police rates more disturbance and illegal acts take place during this season of the year. Based on the evaluation of the initial period of surveillance it does show that less criminal offenses have taken place in comparison to that same period a year prior. Thus the expectation is that during the summer period, which is considered a problematic time, camera surveillance in this area will also help with catching acts red handed and with preventing these crimes as well.

## 4.2. Survey

The results of the survey will help with explaining the opinion of inhabitants of Lelystad. These results will subsequently help with answering the main question in Chapter 6.3. because it shows an important part of the effectiveness, in terms of the trade-off between security and privacy. This being the effectivity in terms of the possibly improved safety feeling of inhabitants and how they feel about camera surveillance and the restriction of the personal living environment. These aspects are best researched by questioning the people who actually take part in the surveillance, the people that live and act in the area.

### 4.2.1. Survey explanation

In order to identify the opinion of inhabitants of Lelystad towards camera surveillance in public urban spaces a survey was conducted, which reached a total of 42 respondents. These respondents are made up of people that were walking in the area in between the two cameras, which is where the researcher approached people. There were five Likert item statements in the questionnaire, as well as one open question. The statements were to be answered with one of the five answers in the Likert scale. For the analysis in SPSS the following values were attributed: 1= Strongly disagree, 2= Disagree, 3= Neutral, 4=Agree, 5=Strongly agree.

The first statement that was presented to the respondents was: “I am aware of the cameras when I am in this area”. The second statement was: “I feel safer knowing the area is being monitored”. The third statement was: “These cameras feel like a restriction of my privacy”. The fourth statement was: “I behave differently because these cameras are present”. The fifth statement was: “I agree with the placement of these cameras”. The open question that was asked was: “Do you have a suggestion for how the municipality can approach this safety issue, other than the placement of cameras?”.

### 4.2.2. Statement analysis

To analyse the data that was gathered a descriptive statistics analysis was done using SPSS, this shows the mean value per statement and the standard deviation from that mean, as shown in Table 1. What this tells us is the average answer the respondents had to the statement, along with the deviation of how dispersed the data is of that mean. The lower the standard deviation means the data is clustered around the mean, which indicates that more respondents have given the same answer. The 5 point Likert scale has an interval of 0,80 per item. This means that the results of the mean can be fit in to a certain interval to identify the average answer to the statement. Because the distribution cannot be exactly 0,80 per item, the first four items have an interval of 0,79 and the last item 0,80 to have the most equal distribution possible (Pimentel, 2010). The distribution is as follows, from 1 to 1,79 it means strongly disagree. From 1,80 to 2,59 it means disagree. From 2,60 to 3,39 it means neutral. From 3,40 to 4,19 it means agree. From 4,20 to 5 it means strongly agree.

**Table 1. Descriptive statistics of the opinion of people in the area of ‘de Voorstraat’ on the camera surveillance.**

Statement	N	Minimum	Maximum	Mean	Std. Deviation
I am aware of the cameras when I am in this area	42	1	4	2,67	1,074
I feel safer knowing the area is being monitored	42	2	5	3,19	,969
These cameras feel like a restriction of my privacy	42	1	5	2,26	,939
I behave differently because these cameras are present	42	1	3	1,90	,431
I agree with the placement of these cameras	42	2	5	3,93	,558

The first statement “I am aware of the cameras when I am in this area” has a mean of 2,67, which means it fits in the ‘Neutral’ interval. Thus, the respondents have an average neutral point of view towards the awareness of the cameras. From also speaking to the visitors of the area, it became clear that a number of people did not know the cameras were placed and consequently were not aware of them. This ranged from people who visited the area regularly, to people who visited only sporadically. As visible in Appendix 4 (Frequency tables), respondents answered with ‘Disagree’ and ‘Strongly disagree’ 23 times. On the other hand, 15 respondents did answer with ‘Agree’ to the statement, noting that they are aware of the cameras when visiting the area.

Second, the statement “I feel safer knowing the area is being monitored” has a mean of 3,19, which puts it in the ‘Neutral’ interval. This is an interesting conclusion, because the answers of respondents were very dispersed. However, the mean is on the upper end of the interval, indicating that it is tending to the ‘Agree’ interval. This is also seen when looking at the answer frequency, where 47,7 percent answered ‘Agree’ or ‘Strongly agree’, whereas 19 percent answered with ‘Neutral’ and the remaining 33,3 percent answered with ‘Disagree’. During the conducting of the survey several respondents emphasized they answered with ‘Disagree’ because they already feel safe in the area, and are not dealing with a safety concern as such. On the other hand, a large group did feel safer because of the cameras, because of the disturbance of public order. A very small set of respondents mentioned they also feel safer because drivers might slow down as a result of the cameras, giving them a preventative use.

The statement “These cameras feel like a restriction of my privacy” has a mean of 2,26, which puts it in the ‘Disagree’ interval. The majority of respondents do not feel like the cameras are a restriction of their privacy. In total 81 percent of the respondents answered to this statement with ‘Disagree’ or ‘Strongly disagree’. When considering the trade-off between security and privacy it beneficial for the effectivity that the inhabitants of Lelystad have a low sense of privacy restriction because of the cameras. For more than three quarter of the respondents the cameras are not considered as a constraint of their personal living environment. There was only one respondent who answered with ‘Strongly agree’, indicating that they did feel like the cameras are a big restriction of their privacy. From the interviews with the municipality and police, it was mentioned that from their conversations with inhabitants there was no negative feedback. The municipality mentioned they asked a question on privacy as well, but there not being any respondents noting that the cameras felt like a restriction of their privacy. However, the sample size of that questioning was less than 20 respondents, which shows a lower reliability. Therefore it is likely that the data from this research is more accurate because of the larger sample size of 42 respondents.

The statement “I act differently because these cameras are present” has a mean of 1,90, which puts it in the ‘Disagree’ interval. Zero respondents answered to this statement with ‘Agree’ or ‘Strongly agree’, thus it can be concluded that inhabitants of Lelystad do not behave differently because of the camera surveillance. This means there is a low restriction of privacy considering this aspect. When people continue their life in the same manner as before the cameras were placed, they do not feel the need to . However, it should be considered that a portion of the respondents did know the cameras were there before it was mentioned to them. It should be taken into consideration that the chance people know they act differently because of a small change in their daily life such as the placement of cameras in a public urban space, is quite slim. Thus, the respondents who are aware of the cameras, but do not feel they act differently, might act differently but they do not notice it themselves. This could be in very small things such as keeping to the speed limit or placing your shopping card back neatly in line. Still, these are not acts that help with maintaining public order as such.

Another notion is that the researcher has probably not spoken to inhabitants that have been part of disturbing public order, since they would probably not want to speak about camera surveillance. However, the chances are high they are noticing the cameras as the project has taken place. The police also affirmed this when talking about the positive effect the cameras have had thus far, stating that

they have had an preventative working as well. What the police did mention is that on the first they of the surveillance project, a bus stop was destroyed and the offender was caught in the act because the footage was monitored live at that moment. Word going around on this might have had an impact on other disturbers, likely on the group of youths that are part of the disturbance in the area (Police Lelystad, personal communication, May 24, 2022).

Lastly, the statement “I agree with the placement of these cameras” has a mean of 3,93, which puts it in the ‘Agree’ interval. A total of 90,4 percent of the respondents answered to this statement with ‘Agree’ or ‘Strongly agree’, indicating that the large majority of people think of the camera surveillance trajectory as a useful measure that was taken by the municipality and police. Nevertheless most respondents did not know effective the measure has been, but they felt that if it would help with safety that is was an appropriate choice to start with camera surveillance in this area of Lelystad.

#### 4.2.3. Effectivity analysis

In order to analyse the opinion of respondents on the effectivity in general, a sum of the statement answers per respondent is taken. The higher the sum of a person, the more effective camera surveillance can be perceived. It would mean there is a high level of feeling safe and being in accordance with the trajectory, while there being a low invasion of privacy. Because the first statement of the questionnaire “I am aware of the cameras when in this area” does not add distinctly to the effectivity trade off, it is excluded from this analysis. To analyse this, the sum per respondent of the four relevant questions is taken. Where the highest possible score is 20, and the lowest score attainable is 4.

For two question the values were reversed for this matter (1=Strongly agree, 2=Agree, 3=Neither agree or disagree, 4=Disagree, 5= Strongly disagree). For the statement “These cameras feel like a restriction of my privacy” the values are reversed because the highest value now means that they strongly disagree with the statement, which indicated a lower restriction of privacy. The last reversed statement is “I act differently because these cameras are here”. The highest value now indicates that they strongly disagree with the statement, so the respondents do not act differently as a result of the camera placement. This would mean a lower restriction of privacy because they did not change their behaviour as a consequence of the placement of these cameras, which indicates they do not feel like the cameras are a restriction of the personal living environment.

The weak point of this effectivity analysis is that it does not offer a full conclusion for the effectivity trade-off, because it is solely the opinion of inhabitants on the project of camera surveillance. To a certain extent this approach does cover the safety feeling of inhabitants, which could be influenced by camera monitoring. What was shown in Table 1. nonetheless, is that there cannot be a conclusion drawn from the data that the general feeling of safety is increased by the cameras. Due to the mean of the statement “I feel safer knowing the area is being monitored”, falling in the ‘Neutral’ interval. The stronger point of this approach is clearly that only by gathering the opinions of a sample of the population, is how you get a sense of their opinion on a matter. For this issue specifically it is of importance to involve this because there is a high subjectivity on safety and privacy feelings. Also, together with the factual effectivity based on numbers from the police and the justification of the police and municipality, a grounded conclusion can be drawn.

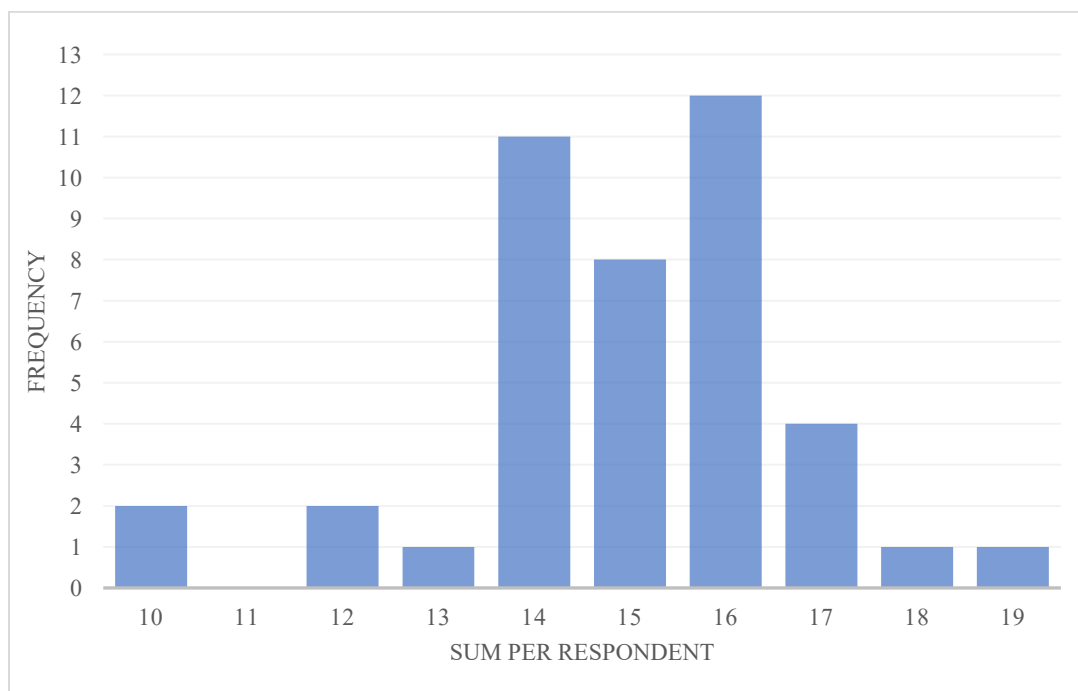
In order to identify the full sum effectivity, the mean from the sum was drawn. Table 2. shows the mean of the sum per respondent, which is 14,95. With 4 being the lowest score attainable and 20 being the highest, this means that the average score on effectivity is rather high. From this mean can be derived that the average opinion of respondents think of the camera surveillance project in ‘de Voorstraat’ as a useful measure which makes for a higher safety feeling, and a low invasion of privacy.

**Table 2. Descriptive statistics for the sum per respondent on the effectivity of camera surveillance in the area of ‘de Voorstraat’.**

	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
Sum	42	14,95	1,821

In the interest of getting a more detailed view on how these sums per respondent are distributed, a bar chart covering the sum frequencies is shown in Figure 6. It is shown that the three most frequently achieved values are 16 (12 times), 14 (11 times) and 15 (8 times), which together make up for 73,8 percent of all values. Together with the mean of the sums per respondent (Table 2.) it can be concluded that this analysis shows that the camera surveillance are thought to be effective through four independent statements.

**Figure 6. Bar chart of the sum per respondent on the effectivity of camera surveillance in the area of ‘de Voorstraat’.**



The bar chart also shows that there are no values registered from 4 to 9, which indicates that not one of the respondents has a strong disapproval towards camera surveillance and a negative view on the effectiveness of it. On the other hand, there is also not one respondent with a maximum score of 20 and only one of score 18 and 19 respectively. This indicates that there is not anyone in the sample who thinks it has the highest effectiveness. It should be taken into account that the questionnaire was held face to face, while asking answers to Likert item statements. This means it is hard to grasp exactly which item the respondent agrees with, because the researcher has to interpret this for a large part. However, there was just one researcher conducting the whole survey, which means that all answers from respondents were interpreted in the same way at least. For the conclusion of the effectivity analysis via sum per respondent, the fact there are not much extreme high or extreme low values does mean that the data is centred more around the mean. This increases the validity when assuming the mean as a form of conclusion.

#### 4.2.4. Respondent propositions

As mentioned before, the last question of the questionnaire was an open question asking whether the respondents have a suggestion on how the municipality and police can approach the safety concerns,

different from camera surveillance. An overview of the answer per respondent to this question can be seen in Appendix 5.1. A total number of 15 respondents answered this question that they did not have a specific suggestion to tackle the safety issues. The other main answers to the open question were that more physical police monitoring or other forms of law enforcement in the area would help. Many of these answers were followed by a mention that respondents were aware that there is not enough personnel to make this happen however. This is something that was also mentioned by the representative of the police, they would like to have more police monitoring the streets physically, but there is an enforcement deficit which makes it rather impossible to achieve this. This enforcement deficit was something that also initiated the thinking about a measure such as camera surveillance to try to improve security in Lelystad.

A different answer to this question was on the topic of tackling the problem at its core. One respondent suggested that a higher basic income would help lowering crime rates and minimize the structural disturbance. When the general income is higher, there might be less of a motive to committing criminal offenses because of the added structure to residents' lives. Another respondent suggested that more activities for youth groups should be organised. This way they are being kept busy, and will not be loitering the area as much. The same respondent also mentioned that heavier punishment of criminal offenses would be beneficial in their opinion. When the punishment is heavier, it might be more put off from committing these illegal acts. The respondent does mention that they are aware that this is not in the hands of the municipality. The suggestion of heavier treatment was mentioned by one other respondent. In order to make the area feel like it is a safer place to be, one responded suggested that the municipality should focus on eradicating any *black spots* in the neighbourhood. These spots were described as dangerous sections which are not properly visible, for example sites which are surrounded by large bushes. In plain sight less acts of disturbance might occur because they are visible to residents of the neighbourhood.

Additionally, two respondents mentioned ways of public initiatives in order to tackle security issues. Firstly, a respondent suggested that there could be more discussions with inhabitants about feelings of safety. By discussions between the municipality or police and inhabitants the thoughts of residents on the roots of the structural disturbance and possible solutions can be debated. Secondly, another respondent suggested a monitoring initiative by people from the neighbourhood. They argue that it would perhaps be suitable to organise a group of youth inhabitants to monitor the area. This would be less intimidating than the police and could help people with a troubled past to do something valuable.

## 5. Discussion

This research was a case study of the effectiveness of camera surveillance in the public urban spaces of Lelystad, in terms of the trade-off between security and privacy. In order to answer the main question in the Chapter 6.3, it is necessary to answer the sub questions that were formed first. The first sub question was: How is camera surveillance justified by the local and national government? The second sub question was: What is the opinion of inhabitants of Lelystad towards camera surveillance in public urban spaces? The answering of these questions makes for discussion on the suggestions for future research and recommendations for practice, which will also be discussed in this chapter.

### 5.1. Answering of sub questions

#### 5.1.1. Sub question 1

The justification by the local and national government of camera surveillance in the neighbourhood around ‘De Voorstraat’ will be mainly explained through the data from the interviews that were held with representatives of the Lelystad municipality and a representative of the Lelystad police. Because of the structural disturbance of public order that was established in this neighbourhood in Lelystad specifically, there was a quest to find a measure to fight this disturbance and get a more secure area. Municipal camera surveillance had not yet been implemented in Lelystad before, but the municipality wanted to start this at some point in time. Thus, the first steps were taken for camera surveillance around the area of ‘De Voorstraat’. The next important moment of this trajectory was the advice that the Lelystad police wrote to implement camera surveillance in this area. This advice was written with the argumentation that this neighbourhood has seen multiple generations of loiterers and criminals that get together and the amount of criminal offences that were committed. For the police it was clear that when they were present physically, not much disturbance would occur. However, due to enforcement deficits in personnel, it is not possible to be active in the neighbourhood physically to prevent acts and disturbance from happening. Therefore, the police argued that it would be beneficial to implement camera surveillance on top of the other measures that have been taken against this problem of security. The necessity of this measure is argued for on the grounds that previous measures have not worked trying to tackle this safety issue. Thus, the measure of camera surveillance would be necessary in order to achieve the goal, which is maintaining public order and catching illegal acts. This was the initial justification of the local government to implement camera surveillance.

The level of national government which was involved in this case, was the Openbaar Ministerie (OM). For them it is important to be critical towards new applications of municipal camera surveillance because it is considered a heavy measure, as it has a certain impact on the personal living environment. The legislation needs to be critically reviewed in the process of implementation. The main assessment from law article 151c is that the municipality can place cameras in public spaces for a certain period of time when it is found necessary in order to monitor the public space (Wettenbank, n.d.). The mayor eventually decides whether the measure will be implemented and on which grounds together with the OM. When the OM was first approached about camera surveillance in the area around ‘De Voorstraat’, they were not eager about the plans. This was the case as they were not certain whether all lighter measures had been used. The subsidiarity is important to consider, because for the justification of camera surveillance in public urban spaces it is the last resort. The proportionality of this case is the next concept that needs to be critically reviewed by policy makers when arguing for camera surveillance. The invasion of privacy cannot be disproportionate to the goal it is trying to achieve. Because of the established structural disturbance for a longer period of time the measure can be considered in proportion to the goal. A leading incident in this trajectory had also been a shooting incident in the summer of 2021.

After these aspects were reviewed and substantiated more properly in the so called ‘triangle consultations’ between the municipality, the police and the OM, all parties were in agreement that this measure was valuable to implement. The OM finally considered it as pilot project for Lelystad, and the

substantiation was because of the structural nature of this problem that has been happening for years. Eventually the mayor has the power to implement such a measure.

These findings relate to the literature firstly because there is a justification for camera surveillance in terms of its goals being the maintenance of public order and catching illegal acts. This justification was also argued for in terms of the cameras' preventative working it turned out to have, as which was also explained by Jansen et al. (2018) and through Foucault's theory of the Panopticon (2002). Secondly, it was not deemed as extra problematic by the police of Lelystad to place these cameras in a residential area. It is thought of residential neighbourhoods to have an added privacy risk because people expect to not be monitored in such an area (Flight, 2022).

### 5.1.2. Sub question 2

The opinion of inhabitants of Lelystad towards camera surveillance in public urban spaces will be explained through the results from the survey that was conducted among passer-by's in the area of the cameras. As explained more elaborately in Chapter 4.2 of the Results, based on the data that was gathered from the survey a statement analysis and an effectivity analysis was done.

It was gathered that on average the inhabitants of Lelystad are neutral to being aware of the cameras when visiting this area. Only 5 out of 42 respondents answered with neutral, but because the answers were very divided to this question, the average is neutral. Part of the sample was not very aware of the cameras, they differed from people who are frequent visitors who forgot about the cameras, to people who rarely visited this specific area and did not know about the cameras because of this. The people who are more aware of the cameras in this area, have conscious thoughts about these cameras. Likewise, inhabitants are neutral to feeling more safe because these cameras are monitoring the area on average. This average was leaning towards the interval of agreeing to feeling safer because cameras are monitoring. A part of the respondents who did not feel safer because the cameras were monitoring, mentioned this was because they did not have feelings of unsafety in the first place. But the larger group of the sample did feel safer in some capacity because of the camera monitoring.

On average the respondents did not feel like these cameras were a restriction of their privacy. Over 80 percent did not feel like an invasion of the personal living environment occurred because of this measure. This makes the measure less problematic, because the proportionality is on track. According to the evaluation of the police on the surveillance period, less acts were committed and acts were prevented. While at the same time the average opinion of inhabitants is that it is not a restriction of privacy for them, which makes the measure proportionate to the goal.

The conclusions from sample did not say the respondents acted differently because of the presence of these cameras on average. This is beneficial towards the minimizing of privacy restriction, because when people do not act different because they are monitored, they likely do not actively change their behaviour during their everyday life. Which indicates that the personal living environment is not invaded heavily. A total of more than 90 percent of the sample agreed with the placement of the cameras in this area. Thus, the measure is generally in accordance with the inhabitants of Lelystad. While also looking at the previous answers from the sample, this indicates that despite certain concerns about municipal camera surveillance, inhabitants do feel this is a valuable measure to be taken in this neighbourhood.

In order to get a view of the thoughts on effectivity of this measure, an effectivity analysis was done including four of the questions from the questionnaire. This analysis showed a result that almost 75 percent of the respondents scored one of three most frequent scores, which are located at the higher end of the scale. In addition, no extremely low values were registered, which indicates that not one of the respondents has a strong disapproval towards camera surveillance and a negative view on the effectiveness of it. On the other hand, there were also little to none extremely high values registered. This indicates that there is not anyone in the sample who thinks it has the highest effectiveness. Thus,

in general the measure is considered as effective, but it is not considered ultimate as through this analysis.

The suggestions of respondents for the municipality to tackle this safety issue were mainly focussed on the increasement of physical (police) enforcement. Due to lack of personnel it is not something that is possible however at this moment in time. A smaller set of respondents suggested options which were more focussed on tackling this problem at its core. They suggested that eradicating dangerous blind spots and helping the loiterers and offenders would help with tackling the safety issues. Lastly, two respondents suggested that there more initiatives involving inhabitants would help.

In conclusion, the average opinion of inhabitants of Lelystad according to this sample is that the implementation of camera surveillance was effective to them, when focussing on the concepts of security versus privacy. On average the sample did not feel like the cameras were an invasion of their privacy, but they also did not necessarily feel safer knowing these cameras were monitoring. The main thought which this brings is that inhabitants think this is a beneficial measure, but don't have strong feelings about the impact on their own lives specifically.

These findings do not show distinct signs of an increased safety feeling. Lindgren and Nilsen (2012) argued that people who are associated with disorderly behaviour are worrying to inhabitants of a residential area. Thus, when these people vanish for the larger part, this would increase the safety feeling. From the survey an increased sense of safety could not be concluded. However, it should be noted that multiple respondents from the sample remarked that they already felt safe, which is why they did not feel safer because of cameras monitoring the area.

## 5.2. Recommendations

### 5.2.1. Suggestions for further research

These answers to the sub question make for consultation of the outcomes of this research, which is why recommendations based on this research will be discussed. On the grounds that this was a single case study, there is enough room and a need to further to further explore the topic of effectiveness of camera surveillance. A first recommendation for future research could be another evaluation after a period of non-pandemic and the summer period. From the interviews it was gathered that this was not a normal evaluation period, which is why the results are only valid to a certain extent. The research clearly states that this was only an effectiveness study of the initial period of surveillance, which is why these results are valid in this manner. It will also be valuable to do a study of effectiveness that researches a period that is longer than four months in general.

In addition to this, the way the COVID-19 pandemic has had an influence on maintaining public order in general could be an interesting topic for future research. Because of the advice to stay at home as much as possible in large parts of the world, patterns of life changed. As the review of the municipality and police mentioned, less criminal offences took place during this period. Thus, it would be valuable to research the effects of the pandemic on security in public urban spaces.

As mentioned in the Results chapter, the representative of the police could not further elaborate on the specific privacy protocols that were written. Due to the time limitations of this research it was not possible to go further into the DPIA that was made by the police/municipality of Almere. However this would be valuable to research as to gather what specific risks camera surveillance brings with it in this specific case.

### 5.2.2. Recommendations for practice

In addition are the recommendations for practice, which focus on propositions of what should be taken into consideration after conducting this research. This research focused on the justification of the different levels of government, this focus together with the opinions of inhabitants offer conclusions which are valuable for policy makers. Firstly, a topic that was frequently discussed was the law

enforcement personnel deficit. This was an obstacle that was mentioned by the police themselves, because they would like to be able to be present on the streets more often. But it was also something mentioned by respondents saying that they would think the safety issue would be better approachable if more police and other forms of law enforcement were present physically. This shows there is an importance to consider in terms of increasing law enforcement on the streets. This is a problem that has to be embarked upon by the national government however, because they are in power make more assets available to decrease this deficit. Thus, there is an advice towards the executive powers to take these statements from both the police and inhabitants of Lelystad into account.

Furthermore, a notion that should be considered by the local government of Lelystad, is that it is of value to consider inhabitants' voices. Partly because they are most valid and reliable when they are independently gathered from the local government. Through this trajectory of camera surveillance opinions might change, as the technological aspects of camera surveillance will change as well. This makes it important to regularly focus on the opinions of inhabitants, since they are the ones affected by this measure in a positive and negative sense.

Moreover, it might be important to inform the local inhabitants about the factual effectivity rates, so they can acquire more knowledge about the situation. This will help with discussions between inhabitants and policy makers, as they can exchange thoughts and ideas based on evaluation numbers. The feeling of safety among residents can be considered just as important as the incidents that might be caught or prevented because of camera surveillance. What is shown from the statement about safety however, is that there is not a significant group of respondents that feels more safe because of the cameras. Therefore, it is favourable to get residents opinions and suggestions to the foreground of these discussions because they will be able to tell what will help with them feeling more safe and secure in this neighbourhood. These debates between policy makers and residents was also suggested by one of the respondents.

## 6. Conclusion

The main question of this research was: How effective is the use of surveillance technologies in public urban spaces in Lelystad, in terms of the trade-off between security and privacy? The conclusions chapter of this research will be divided into three sections. Firstly, a synopsis of everything previously discussed will be given in order to offer a clear conclusion to the research later. Following are the reflections on the trajectory and contents of this research. Finally, a concluding answer to the main question of this research will be proposed.

### 6.1. Summary

This research tried to gain insight in the effectiveness of camera surveillance technologies in public urban spaces in Lelystad, the area around 'De Voorstraat' specifically, in terms of the trade-off between security and privacy. The municipality of Lelystad announced the implementation of this measure on the grounds of structural disturbance taking place, including nuisance, intimidation, vandalism and violence. According to the news announcement residents and business owners do not feel safe. After which the choice to implement municipal camera surveillance was made by the mayor for the period of December 15, 2021 until April 15, 2022.

The trade-off in terms of this specific case was relevant to research because it fits within the ongoing societal discussions about the restrictions surveillance technologies can bring along, as well as the scientific value it offers in terms of an effectiveness study that is based on a the concept of privacy versus security. In order to examine this effectiveness, the justification of the different levels of government and the opinions of inhabitants of Lelystad were studied. This was done through interviews with representatives of the municipality and a representative of the police of Lelystad. In addition a survey was conducted among visitors of the affected area.

The results show that this measure was mainly justified through the structural disturbance in this area for a long period of time, which was affecting the maintenance of public order and caused a lack of safety feelings among inhabitants. After a report offered by the police of Lelystad, which was met with a critical point of view by the OM, finally the measure was implemented. The results from the sample set showed that generally inhabitants of Lelystad thought of camera surveillance as an effective measure. This was based on an analysis with a focus on security being gained as much as possible, and the restriction of privacy being minimized. Though the respondents of the survey did feel that more physical law enforcement would help with making this area more secure.

### 6.2. Reflections

It is important to take the position of the researcher into account in the context of this research. This research is about a matter of societal safety and privacy questions, both which the researcher is also experiencing in their life. In current societies it is a topic you will read about in medias and form your own opinions about. Ultimately this will make for a certain type of framing of the issue, because of information brought to the researcher unconsciously. It goes without saying the researcher will try to remain as objective as possible and did not include their own view on camera surveillance.

Because of the bounded size of this research, there are also certain limitations. The research is trying to gain insight into the Dutch context, but just one city of many is being explored. The only definite conclusions can be given about the city Lelystad. Assuming that choices from the government in this case were made based on how other cities in the Netherlands have handled similar situations, some conclusions can be generalized for the Dutch context. But in the end, the primary data is solely about Lelystad, which makes it not possible to generalize all outcomes for the whole of the Netherlands or broader.

Another limitation of the bounded size of the research is that the sample of the survey is only a fraction of the population with a total of 42 respondents. Due to only one researcher conducting the survey, and the questionnaire being asked face to face, it was time consuming process. This leaves a

question whether the saturation point is met, where there are no extremely new answer profiles to the questions.

Nonetheless the number of respondents is enough to draw conclusions and is therefore very valuable. The strength of a face to face questionnaire is that the chances that people do understand the questions properly are higher, because they can ask the researcher for a further explanation. When conducting the survey, this turned out to be a valuable aspect. At a moment when respondents did not know why, when or where the cameras were placed the researcher could elaborate to a point where the respondents felt knowledgeable enough to answer the questions.

The fact that respondents were not able to fill in their own answers but the researcher doing this for them based on what the respondents mentioned, is a questionable aspect of a face to face questionnaire. It might be hard for a researcher to fully grasp what the respondent means when answering the questions, because an oral answer is not really given in the Likert item answers. Thus, the researcher needs to interpret to their best ability to which item their answers fits best. Also, respondents might not be completely honest with answering the questions because they are telling the researcher directly. They might be shy about their answer, to which they might change it to a more socially acceptable answer in their opinions.

A potential ethical dilemma that arises when researching mass surveillance is the unintended discrimination that comes with it. As Amnesty (2020, p. 37) discussed in their report, the Dutch police uses personal characteristics to act on preventive measures, such as colour, religion, nationality and/or ethnic origin. When personal characteristics make the police act up by reviewing camera images, it can be seen as highly problematic. This does not play a dominant role in the research at this stage, but it is something that plays a role in societal debates and therefore cannot go without being mentioned.

Even though this is a case study of Lelystad, the fact that the bigger part of the respondents which had a suggestion for the municipality said that they would think it would be helpful to tackle this safety issue to have more police and law enforcement on the streets is important to consider in a broader context. It has been established that the police themselves also would like to have more personnel in order to monitor the streets physically. Thus, it is valuable for higher forms of government to consider this deficit in law enforcement as a genuine concern. The representative of the police also expressed how the presence of the police has a strong influence on the illegal acts that happen at that moment in time, because there is almost no disturbance when they are present.

However, it should be considered also that when police are live monitoring for the better part of the day, this can also be seen as an invasion of privacy. When police are present in this residential area excessively people might be more aware of safety problems, which can be seen as a restriction of the personal living environment as well.

### 6.3. Conclusions

The answer to the main question “How effective is the use of surveillance technologies in public urban spaces in Lelystad, in terms of the trade-off between security and privacy?” is that overall the camera surveillance project in Lelystad can be regarded as effective. Considering the main assessment concepts of necessity, proportionality and subsidiarity in the government justification (as described in the conceptual model), the conclusion is that a thorough argumentation was given for the camera placement with the goal of making the affected area more secure. After a critical review by the national and local governments, the measure was substantiated as a necessity after years of structural disturbance. There were certain doubts about all lighter measures being used before the application of camera surveillance, which makes it problematic in terms of the subsidiarity. Nonetheless, police, municipality and the OM agreed to implement the measure eventually.

The inhabitants share the same view on the overall effectiveness of the project. The mean of the effectivity analysis per respondent was high enough to consider the project as effective per the opinion

of the inhabitants. The data was also centred closely around this mean, which indicated that overall the most of the respondents considered the measure as effective, to a varying extent. There was not one respondent who was strictly opposed towards camera surveillance in 'de Voorstraat' area. However, the initial period that was evaluated was considered to be abnormal because of the combination of the COVID-19 pandemic and winter time. However, even for a short period of camera surveillance it was valuable to research the effectivity because it was a pilot for Lelystad, where a scientifically based, independent research could be of great value to consider the continuation of the project and in broader terms of security versus privacy.

These findings on the effectivity of the sample are in line with the evaluation made by the police on the initial period of camera surveillance. According to this report on the prevented cases and illegal acts that were caught, the measure was considered to have a positive impact compared to rates of the same period a year prior. Based on these evaluations of factual reflections as well as conversations with inhabitants conducted by the police and the municipality, the choice was made to extend the surveillance period from April 2022 until September 2022. The governments explained that the summer period is a time of frequent disturbance, which is how the extension of the measure was mainly justified. On grounds of it being a convenient tool only, it is not enough to extend a period of municipal surveillance. The continuation also indicates positive thoughts on the effectiveness of all levels of government.

What is important to consider is that the results of the survey did not show significant evidence that the sample felt safer because of technological monitoring. Nonetheless, the safety feeling of inhabitants plays a major role in making this public urban space more secure, as it is one of the main concepts of security (as established in the conceptual model). To tackle these safety issues, respondents frequently suggested getting more physical surveillance on the streets. On the other hand, the sample showed that inhabitants did not feel like the measure was an invasion of their privacy. Which is most important in order to continue justifying a heavy measure such as camera surveillance. This confirms that the goal is in proportion to the measure. When relying on the opinions of inhabitants, privacy is not disproportionately restricted in relation to the security that is gained.

In conclusion, camera surveillance in the public urban spaces of Lelystad is effective because to a certain extent privacy invasion is minimized, and security is gained. There are flaws, which is something that does come along with camera surveillance in public urban spaces, especially in a residential area. Taking these aspects into consideration, the justification of the governments and the opinion of inhabitants showed results that argued for municipal camera surveillance being an effective measure in the area of 'De Voorstraat' in Lelystad.

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## 8. Appendices

### 8.1. Appendix 1

#### 8.1.1. Interview guide municipality

The interview guide was originally in Dutch, but has been translated to English for uniformity purposes of the research.

#### **Introduction**

Could you tell me about your position within the municipality of Lelystad?

Could you elaborate on the process of the camera surveillance trajectory in the area around ‘De Voorstraat’?

What were the most important motivations for the municipality to implement camera surveillance?

#### **Effectiveness**

According to the press statement released by the municipality, the cameras are there to register irregularities. Have there been incidents where the cameras have assisted with detecting these irregularities? (In the press statement it was mentioned the cameras would be there till April 15, 2022, but they are still here at the time of the interview)

Is there a feeling that the cameras have a preventative working? (From the preliminary findings of the survey, thus far nobody said that acted differently because of the cameras)

Has there been a reflection by the municipality on the effectiveness of camera surveillance during the period of December 15, 2021 until April 15, 2022 (and beyond)?

#### **Privacy**

According to the press statement privacy is being guaranteed by only retrieving footage of public spaces. Is the privacy of people visiting the area also guaranteed in other ways? (For example data-hiding methods, where recognizable aspects of people are automatically blurred)

In what way has there been consideration of privacy versus security within the municipality regarding conversations on implementing camera surveillance?

From the preliminary results of the survey, varying answers were given to the question whether these cameras felt like a restriction of privacy. Is such a response something you take into consideration when talking about the extension of the camera surveillance trajectory?

Could you tell me something about the safety analysis and the privacy protocol which were mentioned in the press statement?

#### **Influence residents**

Almost every respondent agreed with the camera surveillance measure, but a large group did not feel necessarily safer because of the camera monitoring. Have there been conversations with the inhabitants of this area about their opinion on this measure?

Does a conclusion that people do not feel safer because of this measure have importance to the municipality? Or is the effectiveness on maintaining public order more important?

The questionnaire also included an open question asking whether the respondents have a suggestion on how to tackle this safety issue in a different way. The most common response was more physical law enforcement. Is this something that was considered to maintain public order?

### 8.1.2. Interview guide police

The interview guide was originally in Dutch, but has been translated to English for uniformity purposes of the research.

#### **Introduction**

Could you tell me about your position within the police (with regards to security)?

#### **Advice report**

In the press statement by the municipality of Lelystad, there is a mentioning of the public order being structurally disturbed and nuisance, after which the police wrote an advice to implement camera surveillance. Could you elaborate on this advice?

Were other, lighter measures taken before to tackle these problems?

#### **Privacy**

Despite measures being taken to maintain privacy as much as possible, camera surveillance in public spaces can still be seen as an invasion of the personal living environment because everyone in view of the cameras is being filmed. Was there a consideration between privacy and security because of these reasons? Which eventually led to the advice to implement camera surveillance (the advantages are more substantial than the invasion of privacy).

Was there a consideration that camera surveillance in this area might be more problematic because it is a residential neighbourhood? (Inhabitants might get recognized by monitors because of their frequent visits)

Has a data protection impact assessment (DPIA) been executed? What were the possible risks that occurred because of this measure in this area?

In what way are these risks minimised as much as possible?

Is this DPIA the privacy protocol which was mentioned in the press statement?

Was it a conscious choice to place the cameras as big white blocks on the side of the road, so visitors are aware they are being monitored?

#### **Effectiveness**

Has the measure of camera surveillance had a desired working thus far?

With what kind of incidents has camera surveillance helped?

Does it also have a preventative working?

#### **Continuation**

Because the cameras are still in the area, it can be derived that there was a positive reflection. The municipality mentioned that it was a strange evaluation period because of the COVID-19 pandemic and winter, which is why it hard to fully reflect on the measure. However, could you tell me something about the evaluation of the first period?

A common suggestion of respondents was to have more physical law enforcement in the area. Because of personnel deficit this is hard, but is such a common suggestion something you take into consideration to increase the general feeling of safety? (First results do not show an increase of safety feelings because of the camera surveillance)

## 8.2. Appendix 2

### Codebook

Theme	Code group	Open code	Description
Security	Maintaining public order	Disturbance for a longer period of time	The disturbance has been a structural problem for a long time in this specific neighbourhood.
		Enforcement deficit	Because of the safety issues in this neighbourhood, surveillance of any kind is required to maintain public order. But there is not enough law enforcement personnel to tackle this problem.
		Illegal acts	Mentioning of illegal acts that took place in the affected neighbourhood.
		Live monitoring of footage	The live watching of the camera footage by a team in Almere which is done between 16:00 and 22:00.
		Loiterers	Mentioning of the people that cause the structural disturbance by causing nuisance.
		Prevented cases	This acknowledges the preventative working of camera surveillance. In comparison less illegal acts took place than the year before, which indicates a preventative working.
		Structural disturbance	The disturbance of public order has not been some sporadic acts, but it has been a structural problem including familiar loiterer groups.
	Catch illegal acts	Caught in act incidents	Acts that were caught live on camera when the footage was watched live and the police could be brought in immediately.
		Detection of suspects	The camera footage is used afterwards to investigate something that has happened in the affected area, or beyond.
	Safety feeling	Improvement of safety feelings	The cameras help improve the safety feeling among a group of inhabitants.

		Loiterers	Mentioning of the people that cause the structural disturbance by causing nuisance.
Privacy	Necessity	Disturbance for a longer period of time	The disturbance has been a structural problem for a long time in this specific neighbourhood.
		Considerations about significance of the case	To what extent is this measure needed in this area.
		OM questions whether it's necessary	OM questioned the argumentation of the municipality in the first place.
		Structural disturbance	The disturbance of public order has not been some sporadic acts, but it has been a structural problem including familiar loiterer groups.
		Ultimum remedium	A term used to indicate the measure of camera surveillance as the last resort.
	Subsidiarity	Citizen-based prevention team	An initiative from inhabitants where they voluntarily keep watch to maintain public order.
		Considering other measures	Considering whether there are lighter and other measures being used first, before following through with the heavy measure of camera surveillance.
		Enforcement deficit	Because of the safety issues in this neighbourhood, surveillance of any kind is required to maintain public order. But there is not enough law enforcement personnel to tackle this problem.
		Ultimum remedium	A term used to indicate the measure of camera surveillance as the last resort.
		Uncertain whether all lighter measures were used	There was an uncertainty within the municipality representatives whether all lighter measures were used first.
	Proportionality	Advising role of OM	OM had an advising role because they had doubts about the camera surveillance in this specific case.
		Camera surveillance as a long and effective measure	Camera surveillance was described as a measure which would

			solve problems for the long term.
		Considerations about the invasion of privacy	The invasion of privacy was an important aspect for the police when writing an advice report.
		Critical view by OM	OM was critical towards the project at first, in order to make sure the measure was not implemented if it was not fully necessary.
		Disturbance for a longer period of time	The disturbance has been a structural problem for a long time in this specific neighbourhood.
		Considerations about substantiation of argument	The municipality was questioning critically whether these was enough substantiation for this measure.
		Residential area is not a source of more privacy restriction	In a residential area the same people pass by frequently. But because the people watching the live footage are based in Almere, more privacy is retained because they are not familiar with frequent passers-by.
		Structural disturbance	The disturbance of public order has not been some sporadic acts, but it has been a structural problem including familiar loiterer groups.
		Ultimum remedium	A term used to indicate the measure of camera surveillance as the last resort.
	Privacy measures	Awareness of cameras	The cameras and signs that the area is using camera surveillance need to be obvious, so people do know they appear on the footage.
		Blurring of homes	Windows of houses are automatically blurred in order to maintain privacy.
		Live monitors are not familiar with frequent passers-by	Because the people watching the live footage are based in Almere, more privacy is retained because they are not familiar with frequent passers-by.
		Privacy protocol	A privacy protocol (DPIA) is made beforehand to get knowledge of the privacy risks of camera

			surveillance in a specific area.
Trajectory	Inducement	Camera surveillance as a long and effective measure	Camera surveillance was described as a measure which would solve problems for the long term.
		Disturbance for a longer period of time	The disturbance has been a structural problem for a long time in this specific neighbourhood.
		Enforcement deficit	Because of the safety issues in this neighbourhood, surveillance of any kind is required to maintain public order. But there is not enough law enforcement personnel to tackle this problem.
		Feeling of unsafety	There were feelings of unsafety among residents of the neighbourhood.
		Illegal acts	Mentioning of illegal acts that took place in the affected neighbourhood.
		Loiterers	Mentioning of the people that cause the structural disturbance by causing nuisance.
		Pilot project	The project was considered a pilot project because it was the first time there was municipal camera surveillance in Lelystad.
		Police advice for camera surveillance	The police proposed an advice to implement camera surveillance in response to the structural disturbance of public order.
		Shooting incident	In the summer of 2021 a shooting incident happened in the affected neighbourhood.
		Structural disturbance	The disturbance of public order has not been some sporadic acts, but it has been a structural problem including familiar loiterer groups.
	Continuation	Abnormal evaluation period	Because of the COVID-19 pandemic and the winter period it was hard to fully evaluate the first camera surveillance period.

		Camera surveillance as a long and effective measure	Camera surveillance was described as a measure which would solve problems for the long term.
		Evaluation of police numbers	A report was made by the police on the incidents and prevented incidents of the camera surveillance period.
		Evaluation of residents' opinions	The municipality questioned a sample of civilians on how they feel about the camera surveillance measure.
		Extended camera surveillance	Camera surveillance project was extended for another 5 months after the initial period.
		Initially no significant signs of effectiveness	At first there were doubts about the signs of effectiveness.
		No thoughts of invasion of privacy	Through police and municipality no voices were heard from residents that they felt of this measure as an invasion of privacy.
		Reflection	There was reflected upon the period of camera surveillance to consider extending the measure.

### 8.3. Appendix 3

#### Survey questionnaire

The questionnaire was originally in Dutch, but has been translated to English for uniformity purposes of the research.

**1. Are you aware of the cameras when you are in this area?**

- Strongly aware
- Aware
- Neutral
- Unaware
- Strongly unaware

**2. I feel safer knowing the area is being monitored by these cameras.**

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

**3. These cameras feel like a restriction of my privacy**

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

**4. I behave differently because these cameras are present**

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

**5. Do you agree with the placement of these cameras?**

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly agree

**6. Do you have a suggestion for the municipality on how to tackle this issue of safety, different from the placement of cameras?**

## 8.4. Appendix 4

### Frequency tables

#### I am aware of the cameras when I am in this area

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	5	11,9	11,9	11,9
	Disagree	18	42,9	42,9	54,8
	Neutral	5	11,9	11,9	66,7
	Agree	14	33,3	33,3	100,0
	Total	42	100,0	100,0	

#### I feel safer knowing the area is being monitored

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	14	33,3	33,3	33,3
	Neutral	8	19,0	19,0	52,4
	Agree	18	42,9	42,9	95,2
	Strongly agree	2	4,8	4,8	100,0
	Total	42	100,0	100,0	

#### These cameras feel like a restriction of my privacy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	5	11,9	11,9	11,9
	Disagree	29	69,0	69,0	81,0
	Neutral	1	2,4	2,4	83,3
	Agree	6	14,3	14,3	97,6
	Strongly agree	1	2,4	2,4	100,0
	Total	42	100,0	100,0	

#### I behave differently because these cameras are present

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	6	14,3	14,3	14,3
	Disagree	34	81,0	81,0	95,2
	Neutral	2	4,8	4,8	100,0
	Total	42	100,0	100,0	

**I agree with the placement of these cameras**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	4,8	4,8	4,8
	Neutral	2	4,8	4,8	9,5
	Agree	35	83,3	83,3	92,9
	Strongly disagree	3	7,1	7,1	100,0
	Total	42	100,0	100,0	

## 8.5. Appendix 5

### 8.5.1. Respondent propositions

Respondent answers to the question: Do you have a suggestion for the municipality on how to tackle this issue of safety, different from the placement of cameras?

ID	Answer
1	No
2	No
3	No
4	No
5	Neighbourhood police officer better visible
6	No
7	No
8	No
9	More physical police (or other forms of law enforcement) monitoring
10	More physical police in the neighbourhood
11	No
12	No
13	More physical police in the neighbourhood (but understand it is hard because of enforcement deficit)
14	Minimum basic income (according to respondent this would prevent criminal acts from taking place)
15	No, more discussions with inhabitants
16	More physical police in the neighbourhood (but understand it is hard because of enforcement deficit)
17	Activities for youth (keeps them busy) Heavier punishment (but is not in the hands of municipality)
18	More law enforcement
19	More cameras
20	Handle the people that enact the illegal facts with heavier treatment
21	No
22	More physical police in the neighbourhood
23	Better help for people that enact the safety issues, because they need better support
24	New town council
25	More physical police in the neighbourhood, more surveillance
26	More physical police in the neighbourhood
27	More physical monitoring by law enforcement Improvement of traffic (this would improve the safety feeling)
28	More cameras
29	Better lighting in the neighbourhood Ensure there are no <i>black spots</i> (dangerous spots which are not properly visible, such as lots of bushes)
30	More law enforcement Monitoring by youth inhabitants (less intimidating than police) (people that have gone down a wrong path before, but can now help people)
31	More law enforcement
32	No
33	More physical police in the neighbourhood
34	No
35	No
36	More physical police in the neighbourhood
37	No

38	More law enforcement
39	More cameras, because more physical police monitoring is not possible
40	No (does not feel unsafe)
41	More law enforcement
42	More cameras More law enforcement

#### 8.5.2. Additional respondent remarks

ID	Comments
8	Was informed through media that the cameras were here, not by seeing them in the first place. Acknowledges the trade-off between privacy and security. They did feel like the area was unsafe because of drug dealing and other crimes, and also the neighbourhoods surrounding this area feel unsafe to the respondent. Does feel like a restriction of privacy, but does agree with the placement of the cameras because of the unsafe feeling.
14	The respondent does not believe in the functioning of municipal cameras, questions what they do in the end and whether the data is safe with the municipality.
16	Acknowledges how there is not enough personnel for police to monitor the streets more.
17	Cameras might be beneficial for traffic as well (preventative working).
19	Does already feel really safe in this neighbourhood.
21	Since the camera placement there have still been incidents (with a knife involved), where police was not alarmed quickly enough. The respondent does not agree with the placement of the cameras because they feel like you should be able to be somewhere without being filmed.
23	The respondent feels like the cameras help with the safety feeling at night and for the people living in the neighbourhood.
25	The respondent is not sure whether they agree with the placement of the cameras because they can follow you, but it does help with feeling safer.
27	Because cameras are everywhere according to the respondent, they do not have an opinion on feeling safer or the invasion of privacy. They feel like you are being filmed everywhere nonetheless.
29	The respondent acknowledges the power of investigation afterwards of the cameras. The footage is helpful when tracing suspects.
30	In accordance with camera surveillance, as long as it is shown clearly that cameras are made use of in the area.
36	The respondent has a feeling less disturbance and illegal acts have occurred since the placement of the cameras.
41	In the evening the respondent does feel safer because of the cameras, during the day they already feel safe.