# Technological Implementations in Law Enforcement: A Literature Review

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# Chapter 1: Introduction

The history of technology in law enforcement is one of great advancement. Before cars were even invented, police officers were still there. They made their way around their jurisdiction on foot as a means of transportation. As industrialization began to take ground and towns began to gain in population, police officers even used horses as a means to get around quicker and more effectively. As cars were invented, police began to utilize this new mode of transportation. It took them a great distance farther and in record time. Before radios were developed, officers would have to use call boxes or telephones to communicate. As technology began to advance, police cars changed and were developed to be faster and have more gadgets in order to make an officer's work safer and more effective. Radios were placed in police cars, handheld radios made way, computers were put inside patrol vehicles, etc. The advancement in technologies has made law enforcement life easier and easier.

Even though technology from the beginning of policing to now has changed tremendously, technology in law enforcement still continues to evolve. As questions behind racial disparities and issues between community and police relations began to arise, implementation of pieces such as body-worn cameras that officers wear on their chests, and dashboard cameras that officers have in their car begin to become more and more common as well in daily patrolling of communities. Even technology that aids in officer safety, dangerous situations, and routine patrol begin to make headlines including drones and helicopters. Now is the question of what effect, if any, these technologies actually have on this profession.

## Research Questions

- Do drones, body cams, and dash cams aid criminal justice, or does it hinder the profession?
- What effects, if any, does this technology have on policing?
- What effect does this technology have on the public and police relationship?
- Does the cost of this innovative technology on departments produce outcomes to support the money spent?

**Purpose of the Study**

This study aims to discover existing research and data on the implementation of technology including dash cameras, body cameras, and drones on law enforcement and their relations with the community. Conducting this research will allow others to understand what these technologies are used for and if they are effective in reaching their desired goals. Police departments may use this information as a means to decide whether or not to spend the costs of this technology or not depending on its effectiveness to do its job. Researchers may use this information to evaluate what areas and what technology need further studying.

This study is a meta-analysis that looks at different studies conducted and articles written about these technologies and their effectiveness to help or hinder law enforcement. In order to provide a deep dive into this research question, many different databases were accessed through Anna Maria College's Mondor-Eagan Library. The outcomes that are expected to be found are that body cameras and dash cameras show a great deal of help in terms of improving community relations with the police, improving interactions, decreasing use of force incidents, and providing key evidence in court. It would be expected to find that drones are extremely helpful when

surveying land and locating suspects. Lastly, it is predicted to find many studies to be conducted on body cameras and dashboard cameras but not as many on the use of drones in policing.

**Significance to the Field**

This analysis is significant in many ways. This study can be used by police departments and agencies to evaluate the effectiveness of this new technology and thus decide whether or not the benefits outweigh the costs. As well as providing researchers with areas of study about this technology that may need a deeper dive. Overall, this study could provide leaders and officers in the criminal justice field with information they could use in order to create educated decisions when it comes to the implementation of this technology.

**Definitions**

*BWCs (Body-worn cameras): "*wearable audio, video, or photographic recording system" (*Body Camera,* 2021)

*Dashboard cameras:* "a video camera mounted usually on the dashboard of a vehicle and used to continuously record activity through the vehicle's windshield" (*Definition of DASHCAM,* n.d.)

*Drones:* "unmanned aircraft" (Lutkevich, 2021)

*Law Enforcement: "*the agencies and employees responsible for enforcing laws, maintaining public order, and managing public safety" (Bureau of Justice Statistics, 2021)

**Limitations**

Some limitations within this analysis include that I only had access to certain sources based on sources my institution had access to or what they could provide me with. Thus, I was

unable to fully be able to see all research on this topic and this analysis is only based on some of the research out there but not all of it. Another limitation was finding the right word combinations for the keywords in the search bar to find relevant sources in the very thousands of results that had appeared.

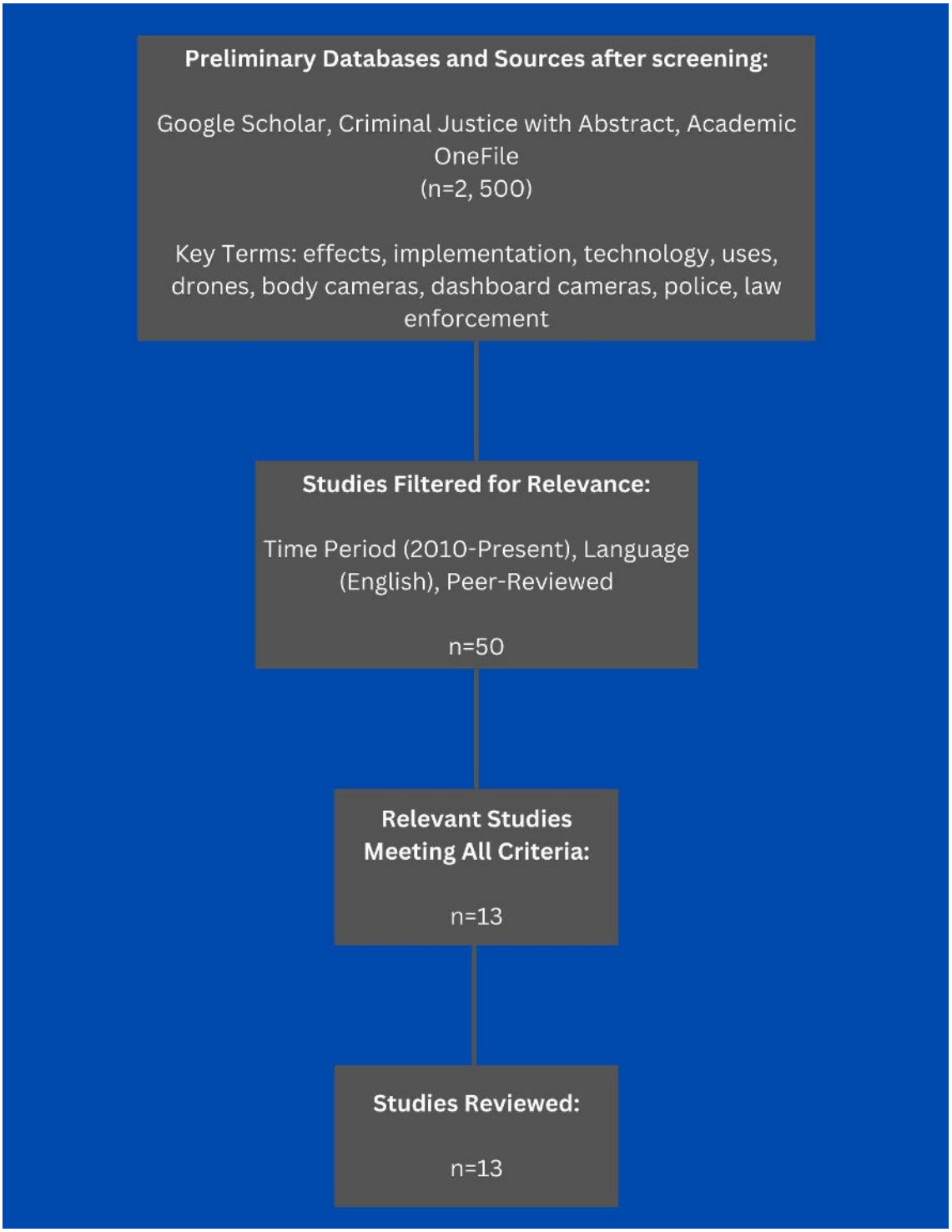
## Chapter 2: Methodology

The information used to create this thesis came from articles made available by multiple databases including Google Scholar and databases made available by Anna Maria College including a criminal justice database, Criminal Justice Abstracts with Full Text, and Academic OneFile. Searches using these databases were made with the following key terms: "implementation," "effects," "consequences," "uses," "technology," "drones," "body cameras," "police officers," "police," "dash cams", and "law enforcement." To ensure the articles were relevant, various combinations of these key terms were used to find the best and most relevant articles. Organization websites such as the United States Department of Justice, Bureau of Justice Assistance, and Office of Justice Programs were used to gather further information on this field topic.

Inclusion criteria that were used in the database searches included full-text, peer-reviewed articles, and that all articles have a publication date of 2010 and newer to guarantee that the articles show the most current effects of technology in law enforcement rather than the outdated information. Articles that had a publication date of before 2010, articles other than organization websites that were not peer-reviewed, and those written in a language other than English were excluded from this research.

There was an abundance of articles having to do with this subject, which is one of the key successes of this methodology. However, the databases provided by Anna Maria College had limited articles available compared to other online research and Google Scholar research. Along with this, many articles provided by Google Scholar specifically gave abstracts and introductions but not the entire text, making the research more difficult. (Refer to Figure 1)

*Figure 1*


Preliminary Databases and Sources after screening:
Google Scholar, Criminal Justice with Abstract, Academic OneFile
(n=2, 500)
Key Terms: effects, implementation, technology, uses, drones, body cameras, dashboard cameras, police, law enforcement
Studies Filtered for Relevance:
Time Period (2010-Present), Language (English), Peer-Reviewed
n=50
Relevant Studies Meeting All Criteria:
n=13
Studies Reviewed:
n=13

# Chapter 3: Literature Review

Technological implementation within the criminal justice system is a huge reason that in certain aspects law enforcement can succeed. Body cameras, dashboard cameras, drones, helicopters, etc. are all examples of technology that has created a more successful and safer environment for law enforcement officials to do their daily jobs. Do body worn cameras affect trial outcomes? Are these videos used often as evidence to convict a suspect? Can these technologies create a safer environment for police officers? Do they aid in catching criminals? These are all questions that need to be answered in order to discover if these technologies that agencies spend money on are creating outcomes that are worth the cost in the first place. This is a debate that has been going on since the implementation of new technologies and is the focus of this thesis.

## Body Cameras

Body-worn cameras (BWCs) are a new technological implementation that has become part of police departments across the country. This technology was first majorly implemented in New York “in 2013 after a federal court found police wrongly targeted minorities with a stop-and-frisk program” (Whitehurst, 2023). BWCs were introduced to aid in “police oversight, accountability, and transparency, yet there remains uncertainty about their impacts on policing outcomes” (Williams, 2021) and whether or not the benefits of the inclusion of this technology are actually worth the costs that it brings unto the departments and agencies. This technology has the potential to deter police misconduct by videoing and allowing for a review of the officers' actions during interactions with the public. Not only this but by creating a video of officers'

actions, said officers most often respond by showing large amounts of discretion when working as well as maintaining the standard and formal rules and procedures of their department (Williams, 2021).

BWCs have many potential benefits in many different ways including symbolic benefits, behavioral benefits, and informational benefits. Symbolic benefits of using said technology comes in the form of trust and legitimacy between police officers and the community they serve. Police executives and BWC manufacturers have expressed hope that including body cameras would increase public trust or assert that the technology can do that (Stoughton, 2018). This is being shown to be true. In a survey conducted by Reveal, the manufacturer of body-worn cameras, it was shown that “sixty percent of Americans "believe that if all police officers wore body cameras, police/community tensions would be reduced," and twenty-eight percent believe tension would be "[r]educed a lot” (Stoughton, 2018). Although it is not stated what population of people within the country were surveyed. The article continues to list three symbolic benefits of BWCs. The BWCs can indicate the departments’ responsiveness to calls for transparency and accountability from the public, the implementation will show that the agency is committed to improving officer behavior and professionalism, and BWC adoption will signal to the public that an agency is taking steps to reduce police use of force and increase the safety and wellbeing of the community at the hands of officers (Stoughton, 2018).

The behavioral benefits of BWCs fall into three different categories which include reducing violence, improving compliance with rules, and decreasing discourteous behavior from civilians and officers. Officers will become more likely to obey the rules and procedures in which they take an oath to follow. On the other hand, citizens of the community will be more likely to follow officer directions and orders when knowing and visually seeing that the actions

of the officer and the individual are being monitored. When mentioning discourteous and disrespectful behavior, BWCs will create a more polite and inviting atmosphere to improve police encounters. When referring to reducing violence, the objective of BWCs is to discourage resistance by civilians and tremendously reduce the frequency of use of force incidents by police officers (Stoughton, 2018).

The implementation of BWCs in policing offers many informational benefits. Video allows for crucial insight into interactions between officers and the community. It tells us exactly what happened while eliminating any he-said she-said: “Body-worn camera systems will not only provide comprehensive evidence... they will also provide accurate and objective evidence” (Stoughton, 2018). BWCs offer information on police accountability. A video encounter provides critical evidence in police accountability in a system that provides powerful police unions that have allowed for too much to be swept under the rug. From an officer's perspective, police can often be wrongly punished in scenarios due to the way that society and media outlets only provide certain parts of the video and not the whole story. Thus, BWCs can allow for the public and agencies to view the whole scenario at once (Stoughton, 2018). When addressing BWCs when pertaining to investigations, video footage can be crucial in supporting an investigation and prosecution of a suspect. BWCs can capture a suspect engaging in criminal activity, they can be used to capture witness statements, prosecutors can use the video as evidence, video can provide a recording of a suspect's interrogation, defense attorneys can use these videos to identify legal violations or poor investigative procedures, and even provide video of a crime scene. Overall, a BWCs can provide evidence of a good investigation but also provide evidence of a bad one (Stoughton, 2018). It is very abundant that policing should and can benefit from BWCs, as has happened already:

> As of November 2017, the first page of a Google News search for 'body-camera video' returned links to various news outlets reporting on BWC video that showed, inter alia, a Baltimore police officer verbally de-escalating a suicidal man armed with a knife, a Los Angeles police officer allegedly planting cocaine in a hit-and-run suspect's wallet, a Cleveland sergeant who was criminally charged for using excessive force, and fatal police shootings in Providence, Rhode Island; Santa Clara, California; and Pueblo, Colorado. (Stoughton, 2018)

Thus, showing that not only could policing benefit from the inclusion of BWCs in daily patrolling, but the public and civilians can benefit from the inclusion as well.

**Body Worn Camera Studies**

There have been various studies that evaluate the effectiveness of BWCs on civilian and officer behavior, however, not all of the studies were found to have consistent findings. A randomized, controlled study out of California found that during their 12-month evaluation of BWCs, there was a 90% reduction in complaints filed against officers and a 50% decrease in use of force incidents (Stoughton, 2018). In addition to that study, a study out of the Oakland PD saw a decline of 70% in use-of-force incidents and a large decline in civilian complaints over their seven-year evaluation of BWCs from 2008-2015. Then in 2017 there was a study released by Las Vegas Metro Police stating that the implementation of BWCs reduced officer misconduct and use of force incidents. There are similar results internationally in Scotland that showed civilians were less likely to commit assaults on officers wearing BWCs (Stoughton, 2018). However, not all studies showed positive results. For example, a randomized study of the Metro Police Department in Washington, DC showed there was no significant effect on officer use of force or civilian complaints. Then, a 30-month study at Phoenix PD found that BWCs did not impact

civilian behavior or force incidents but found a decrease in civilian complaints and increase in use of discretion by officers (Stoughton, 2018). One multi-site study then suggested that when officers announce they are recording they may actually have more of an effect than the presence or no presence of BWCs. These conflicting findings make it implausible to assume that body-worn cameras have consistent effects on civilian and officer behaviors and use of force incidents without further studies that can create more consistent findings.

**Dash Cameras**

Dash cameras along with body cameras have been implemented in agencies as a way to aid in policing. The use of dashboard cameras was first introduced in the 1960s when a small tripod was placed on the dashboard of a patrol car in a Connecticut State Police car. However, the implementation of this technology didn't gain much ground until the 1990s and 2000s. In the 1990s, the war on drugs in America advanced the use of dash-cams in order to video traffic stops and record large amounts of narcotics being seized. In the late 1990s and early 2000s, the Department of Justice recognized the value of in-car cameras as allegations of racial biases and injustices swept the nation. Today, with the "miniaturization and advances in technology have made the use of the mobile video recorder practical and affordable" (Rosenblatt, n.d.).

There are many ways in which dashboard cameras could help reduce crime. Dash cams help to deter further criminal activity. Dashboard cams have been proven to de-escalate certain scenarios because people often act differently when they are being recorded due to the fact they cannot lie about the scenario when it was caught on camera. One study, for example, showed that half of citizens in the country would change their behavior if they knew they were being recorded (Lindquist, 2022). Not only do dash cams deter criminal activity, but they also improve conviction rates. Video of a crime can be used as highly effective evidence in court and be a

solid way to persuade a jury by providing hard evidence of the crime. It was stated that “93% of prosecutors surveyed as part of an International Association of Chiefs of Police study rated the use of this video evidence in court as successful or highly successful” (Lindquist, 2022). Dash cams also provide a reduction in fraudulent claims for both citizens and officers. Before the implementation of this technology, citizens could make counterclaims against arresting officers which cost the department time and money to fight. However, due to the implementation of dash cams, officers were exonerated 93% of the time when footage was able to be shown and reviewed of an incident (Lindquist, 2022). Dash cam footage can also provide key components of officer training. It can be used to teach police officers or review scenarios and learn from mistakes. It can be used to enhance an officer's perspective and knowledge for future incidents. This technology can also provide an extra set of eyes as a single officer can only be aware of so much at a single time.

Dashboard cameras and the effects of such technology was discussed by Dr. Nick Camp from Stanford University in a podcast published by the American Psychological Association. Dr. Camp focuses his research on racial disparities between law enforcement and citizens. Camp stated that dashboard cameras give us an unbiased account of the story as it captures everything. However, Camp mentioned that studies have shown that when this video is used as evidence it tends to make people sympathize with the officer as it is only recording one point of view (Luna, 2019). However, as the technology rapidly advances, there have been instances where agencies “pair dash cameras with microphones or with body cameras... [and] you can get different views of the same event” (Luna, 2019) making it harder for people to empathize with the officer right off the drop as they see the whole scenario play out. Dash cameras are technology that police officers find particularly helpful especially in today’s society. “They believe that having these

interactions recorded in case they get a complaint will protect them" (Luna, 2019). Overall, however, Camp seeks to have more agencies use these videos for training purposes. Not only just viewing them in certain scenarios such as use of force incidents, but also in scenarios of looking at officers' communication skills. The words and voice of an officer is important in every aspect of patrolling, detective work, etc., and by looking at how officers communicate with the public, these officers can learn how to prevent many instances of escalating uses of force (Luna, 2019).

**Dashboard Camera Results**

The impact of dashboard cameras on modern day policing has shown various outcomes in different categories such as officer safety, agency liability and control, training and education, community perception, judicial processes, and agency policies and procedures. First in the category of officer safety, written evaluations and face-to-face interviews resulted in 33% of officers stating that dash cams promote officer safety. However, 64% said it had no impact on their safety while 3% of officers said it actually hindered their safety (Rosenblatt, n.d.). In the next category of agency liability, it was found that in 93% of cases of complaints against an officer were exonerated when dashboard camera evidence was used. On the other hand, in the category of training and education dashboard cameras seemed to not be part of most of the agencies' training curriculum. In the agency in which dashboard cameras are implemented, only 53% of those agencies gave some sort of initial training on how to use them (Rosenblatt, n.d.). Thus, giving the conclusion that some agencies have access to this technology but do not know how to use it. When evaluating the results of dashboard cameras on community perceptions, there seems to be varying outcomes. On one hand, 94% of the community surveyed decided that they support the use of dashcams as well as 51% of respondents saying that their behavior would improve when being recorded. On the other hand, 34% reported that their knowledge of the

police videoing them would make them more likely to lodge a complaint against the officer, and 15% then said that the use of video cameras would not make them change their decision on complaining (Rosenblatt). Next is the effect of dashboard cameras on judicial processes. The prosecutors surveyed stated that the presence of video footage increased their ability to obtain convictions and increased the number of guilty pleas while 58% of those prosecutors reported a reduction of time they had to spend in court (Rosenblatt, n.d.), According to studies and surveys established, 83% of agencies that implemented and used dash cameras issues policies and procedures regarding them. These policies include supervisor review of videotapes to ensure accountability and honesty of an officer (Rosenblatt, n.d.). Of the studies and surveys given for the effects of dashcams, there seems to be mixed data on if this technology produces outcomes beneficial to the community and to law enforcement.

**Drones**

The use of drones in law enforcement is a relatively new use of technology as it was only first introduced a little more than a decade ago in 2011. The inclusion of these aerial vehicles offers significant benefits to the government and policing municipalities. However, it is considered that “the use of unmanned aerial systems (UAS) to supplement and operationalize US border enforcement and municipal policing disturbs the supposed boundary between military and civilian or battleground and home front” (Kaplan, 2019). The American Civil Liberties Union (ACLU) reported in 2014 that police are drawing from military concepts, organization, and equipment for high-risk situations such as hostage situations, active shooters, barricade scenarios, and even search warrants. Law enforcement is adopting drones to have a first line of defense in certain dangerous scenarios in which an officer may be put in unneeded harm's way (Kaplan, 2019). However, the use of drones has led to reveal that this ‘weaponry’ is primarily

impacting communities of color and revealing racial disparities due to when they are deciding to use this technology and when they decide not to.

The United Kingdom published an article out of the University of Reading responding and accessing both the uses and misuses of drone technology in policing. They surveyed the 40 police agencies that use drones in their region. The article first states the benefits of using drones. UK police forces use drones in operations ranging from oversight, crime scene monitoring, organized crime investigation, and thermal flyovers in apprehending criminals. The University of Reading reported that drones are so valuable because they provide "rapid collection of image, video and sensor data which can be shared to provide critical real-time information [and] can also be used to enter and assess remote, inaccessible and dangerous locations and environments, lowering risks to officers on the ground" (Hookway, 2023). Not only this but this technology provides for faster access and deployment. However, there are challenges in the use of drones. Challenges include regulations, resourcing, and even technical and operational limitations as people must be trained in using this technology. The forces studied expressed the frequency in changes to drone regulations even for police agencies and that there are often challenges in funding as drones have a short life span. In addition, there are technical limitations for the reliance on drones as weather, battery, and flight time are all factors that must be taken into consideration while operating (Hookway, 2023).

Drones are used for a variety of different tasks depending on the agency involved with using them. In 2018, there was a survey conducted of over 200 police departments to establish in what scenarios they equip their drone for. 83% of the departments reported that their drones were used in search and rescue missions. 79% reported the use of drones for disaster management, and 76% for SWAT missions and operations. 71% then reported using the technology for monitoring

crime and traffic offenses. Lastly 40% responded that they used drones in order to surveillance a crime scene or a particular individual, and 48% used it to track down fleeing suspects *(Drones,* 2023*).* However, there were no studies found that showed the effectiveness of carrying out these particular tasks.

# Chapter 4: Discussion

## Summary

The implementation of new technology in policing has led to significant advancements in the profession and for the community. Although it is likely to be thought that these new advancements work effectively and are worth the money, this study has shown that more research needs to be done. Dash cameras, body cameras, and drones are all helpful technologies used by law enforcement that could be even more effective if more studies are conducted. This analysis evaluated different studies and articles in order to conclude if the effectiveness and benefits of this technology are worth the costs to the departments.

The purpose of this study was to evaluate the effectiveness of new technological implementation in law enforcement. This was done through a meta-analysis by looking at studies conducted on similar research questions. This analysis was conducted by surveying several different databases made available to be through my institution.

## Conclusions

After analyzing the studies and articles examined, there are many different conclusions that can be made regarding the effectiveness of new technology in doing what it was intended to do. One conclusion that can be made from this study is that there cannot be an affirmative statement made on the effectiveness of BWCs in reducing use of force incidents and officer misconduct. In some studies, it was stated that BWCs led to a reduction in complaints against police officers as well as a reduction in use of force incidents and police misconduct. However, in a study done at a different department, the opposite was stated in that study. It was discovered that there were no effects of BWCs on use of force incidents or officer misconducts.

Another conclusion that can be made is that the use of dashboard cameras can have both a positive and negative effect. On one hand, studies showed that dash cams significantly aid in the judicial processes when used as evidence as well as providing a great help in exonerating cases of complaints filed against officers when they had their dash cam footage as evidence. However, on the other hand, it was found that dash cams do not promote officer safety and when the public was surveyed it resulted in a majority of the public concluding that the presence of a dash cam would not affect their attitudes when interacting with the police.

Overall, the biggest conclusion made was that more research needs to be done. The research analyzed in this paper found an inconsistency with the results of many studies and contradictory conclusions. One study would say the technology was worth the money and effective in its being, and then another study would say the opposite. Along with that, more information needs to be provided on the effectiveness of drones in law enforcement as it was difficult to find articles on this topic especially from within the United States.

The major implication gathered from these conclusions is the need for more studies. As these technologies continue to grow in popularity and are promising to improve community relations with police, hold officers accountable, and protect officers, more research needs to be done in order to conclude that this is actually happening. If these technologies are causing more harm than good, more research can show this outcome and have departments act accordingly. However, as of now there is much inconsistency in the research, and it is making it hard to draw concrete conclusions about the effectiveness in implementing such technology across the country.

**Limitations**

As previously stated, there were a couple of limitations to this study. One of the limitations was the short amount of time in which was provided to complete this study. If more time was allotted, more research could have been done in hopes of finding more sources. Another limitation was that I was only allowed the sources provided by my institution and did not have access to all of the sources that could have provided me with a vast amount of knowledge. A third limitation was my inability to find many sources relating to drones and policing that were not about drones in the military, drones as weaponry, or studies that were outside of the United States in differing countries.

**Recommendations for Future Research**

This study could be continued and expanded on in many ways. A recommendation for future research on this topic is for researchers to do more studies on this topic. The studies already out there have inconsistent data and results as well as very little studies done. A recommendation would be to experiment more with how these technologies actually affect law enforcement and their community relations and more in depth. More studies mean more data to compare to each other in order to draw accurate and current conclusions.

## References


Bureau of Justice Statistics. (2021, February 18). *Law Enforcement*. Bureau of Justice Statistics. https://bjs.ojp.gov/topics/law-enforcement

*Body camera*. (2021, April 18). Wikipedia. https://en.wikipedia.org/wiki/Body_camera

*Definition of DASHCAM*. (n.d.). Www.merriam-Webster.com. https://www.merriam-webster.com/dictionary/dashcam#:~:text=plural%20dashcams%20also%20dash%20cams

*Drones for Law Enforcement: Benefits and Use Cases*. (2023, April 3). https://www.flytbase.com/blog/drones-for-law-enforcement

Hookway, D. (2023, October 18). *Policing with drones and policing drone misuse*. University of Reading. https://research.reading.ac.uk/research-blog/policing-with-drones-and-policing-drone-misuse/

Kaplan, C., & Miller, A. (2019). Drones as "Atmospheric Policing." *Public Culture*, *31*(3), 419–445. https://doi.org/10.1215/08992363-7532679

Lindquist, J. (2022, October 27). *5 ways dash cams can help reduce crime*. Kustom Signals. https://kustomsignals.com/blog/5-ways-police-dash-cams-can-help-reduce-crime-2#:~:text=Dash%20cam%20video%20can%20be,behavior%20and%20successful%20police%20tactics.

Luna, K., & Camp, N. (2019, October 28). *The role of body and dash cams in policing, with Nick Camp*. American Psychological Association. https://www.apa.org/news/podcasts/speaking-of-psychology/body-dash-cams

Lutkevich, B. (2021, December). *What is a Drone?* https://www.techtarget.com/iotagenda/definition/drone

Rosenblatt, D. N., Cromartie, E. R., & Firman, J. (n.d.). *The impact of video evidence on Modern Policing*. U.S. Department of Justice. https://portal.cops.usdoj.gov/resourcecenter/RIC/Publications/cops-w0404-pub.pdf

Stoughton, S. W. (2018). POLICE BODY-WORN CAMERAS. *North Carolina Law Review*, *96*(5), 1363+. https://link.gale.com/apps/doc/A545357038/AONE?u=mlin_c_annamc&sid=bookmark-AONE&xid=93d4e5ca

Whitehurst, L. (2023, November 3). *Police body camera ramp up started a decade ago. how well have they worked?*. AP News. https://apnews.com/article/police-body-cameras-shooting-914729c87b65c102acc766e713031f63

Williams, Morgan, et al. *Body-Worn Cameras in Policing: Benefits and Costs*. Mar. 2021, www.nber.org/system/files/working_papers/w28622/w28622.pdf, https://doi.org/10.2139/ssrn.3817882.