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Comparing the Uses and Benefits of Stationary Cameras Versus Body-Worn Cameras in a Local Jail Setting

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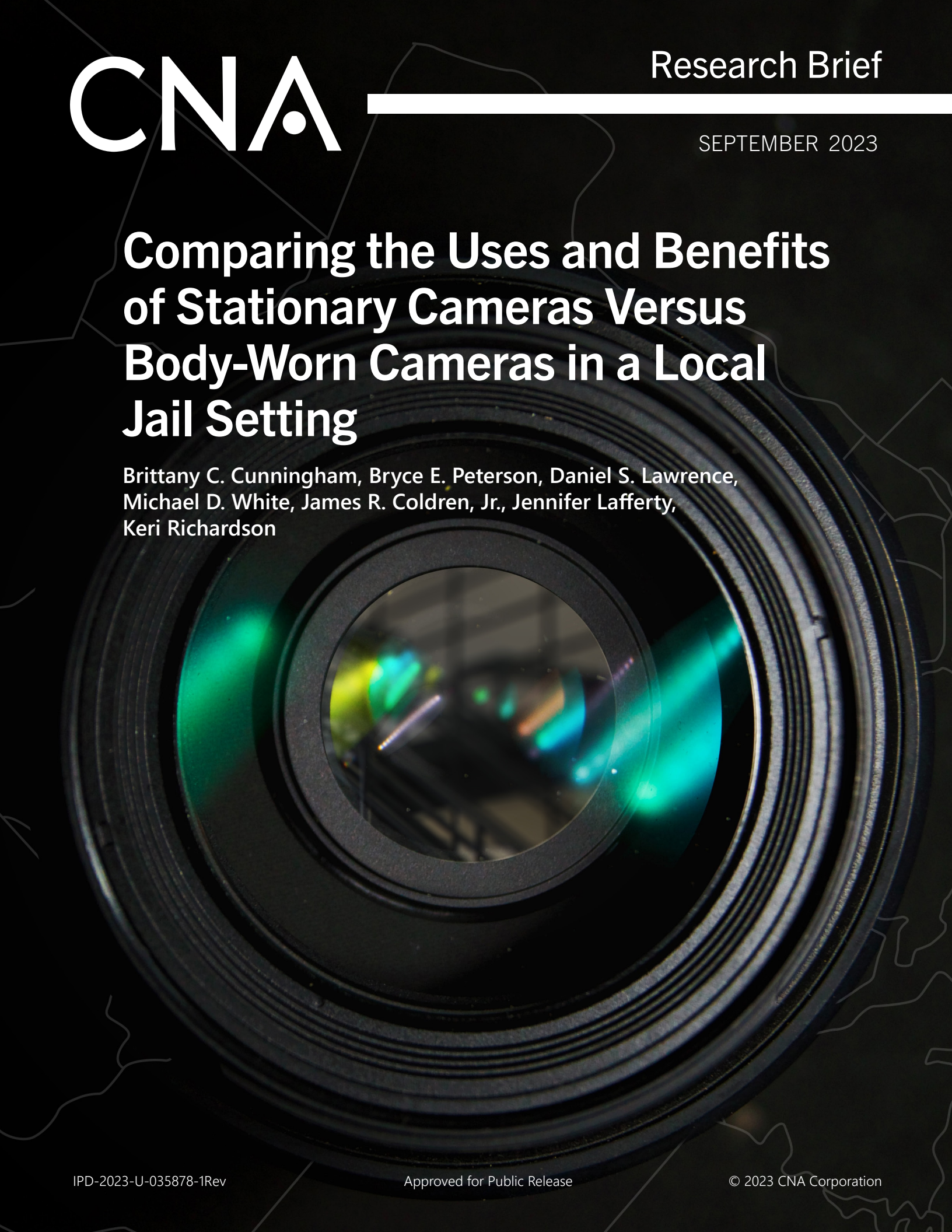

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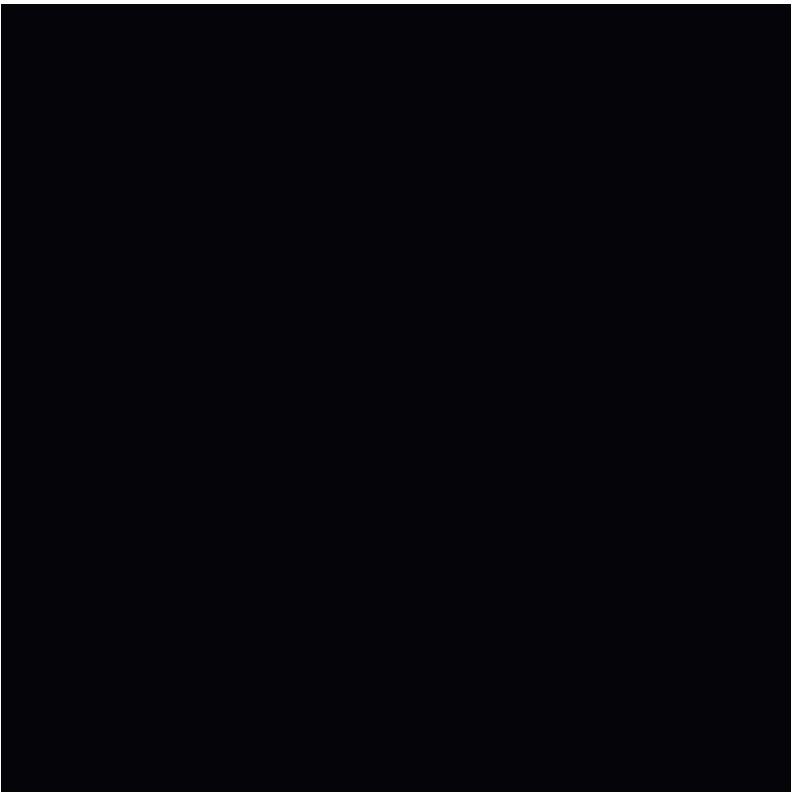

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INTRODUCTION

Over the past decade, thousands of law enforcement agencies in the United States have adopted body-worn cameras (BWCs) (Hyland, 2018). The rapid diffusion of these devices has been driven by several factors, most notably numerous controversial uses of force by police against community members of color and evidence suggesting that BWCs can produce a range of positive outcomes like reductions in complaints and uses of force (Braga et al., 2018; Peterson & Lawrence, 2021; Sutherland et al., 2017), added evidentiary value in investigations and downstream court proceedings (Huff et al., 2023; Todak et al., 2023), and enhanced perceptions of procedural justice and police legitimacy (Demir et al., 2020; McCluskey et al., 2019).

The demand for police BWCs has continued unabated into the 2020s (National Conference of State Legislatures, 2022; White & Malm, 2020), and interest has now expanded to corrections. By 2023, at least ten state prison systems have begun the process of deploying BWCs, with many local jails following suit (Bogel-Burroughs, 2022; Brodie et al., 2020; Welsh-Huggins, 2021; Winton, 2021). Despite this expansion, there is limited research on the impact of these devices in prisons or jails. There are also fundamental differences between correctional and law enforcement settings that researchers must consider. For example, correctional officers interact with incarcerated residents on a more consistent and long-term basis than police interact with civilians.

BY 2023, AT LEAST TEN STATE PRISON SYSTEMS HAVE BEGUN THE PROCESS OF DEPLOYING BWCS, WITH MANY LOCAL JAILS FOLLOWING SUIT.

Prisons and jails also include a high concentration of vulnerable populations, including people under serious psychological distress and experiencing mental and behavioral health challenges (Maruschak et al., 2021).

Another potential concern is that BWCs are redundant in prisons and jails because these environments are already saturated with stationary surveillance cameras (Allard et al., 2006). Although the stationary camera networks in many correctional facilitates are outdated and suffer from blind spots (Lawrence et al., 2022), it is not yet clear whether BWCs offer any added benefits beyond what is captured through these extant systems. For example, can BWCs provide additional evidentiary value in the investigation of misconduct incidents or staff uses of force? The current brief seeks to address this knowledge gap by examining the footage of response-to-resistance (RTR) events produced by BWCs compared to stationary closed-circuit television (CCTV) cameras in a correctional setting. The following sections describe the background of the current study, our approach to reviewing BWC and stationary CCTV camera footage, and our key findings.

STUDY BACKGROUND

With funding from the National Institute of Justice (2018-75-CX-0019), CNA examined the impact BWCs provided to correctional deputies within the Loudoun County Adult Detention Center (LCADC) in Virginia. The study aimed to contribute to the body of knowledge on the implementation and impact of BWCs in jail settings and to assess the degree to which BWCs affect correctional deputy safety, serious events, resident injuries, and cost effectiveness. The LCADC implemented the Watchguard VISTA BWCs provided by Motorola Solutions.

THE STUDY AIMED TO CONTRIBUTE TO THE BODY OF KNOWLEDGE ON THE IMPLEMENTATION AND IMPACT OF BWCS IN JAIL SETTINGS AND TO ASSESS THE DEGREE TO WHICH BWCS AFFECT CORRECTIONAL DEPUTY SAFETY, SERIOUS EVENTS, RESIDENT INJURIES, AND COST EFFECTIVENESS.

This study is supported by several other publications. First, we conducted an analysis of the changes in deputies' attitudes toward the BWC program over the course of the yearlong study period (November 2020 to October 2021) (Peterson et al., 2023). Second, we investigated the impact of BWCs on the prevalence and dynamics of RTR events, including deputy control methods and resident resistance levels (Lawrence et al., 2023a). Third, we assessed the impact BWCs had on the number of resident injuries and how RTR event characteristics affect the likelihood of an injury occurring (Lawrence et al., 2023b). The final research report of the grant provides a comprehensive summary of the project and its numerous findings (Cunningham et al., 2023).

The LCADC, operated by the Loudoun County Sheriff's Office, provides jail services to Loudoun County, Virginia, which is the third most populous county in the state, with a population of nearly 421,000 in 2020 (US Census Bureau, 2023). The facility houses maximum-, medium-, and minimum-security level residents and includes work release, workforce, drug treatment, and mental health programs. Most LCADC residents are pretrial detainees, with approximately 20 percent serving sentences for misdemeanor or felony convictions. During the evaluation period, the facility had an average daily population of 222 residents of which 81 percent were male and 51 percent were white, 24 percent were Black, 21 percent were Hispanic, and 3 percent were Asian. During this time, more than 80 percent of residents had a length of stay under two weeks, while only 4 percent of residents had a length of stay over six months. The LCADC is staffed by 124 individuals, including 102 front-line deputies and 22 supervisors, the majority of whom are white and male. Staff supervise eight housing units that have one to four housing pods (20 pods in the entire facility), in addition to four general units that include the medical unit, hallways, intake unit, and transportation between the facility and outside locations (e.g., county courthouse, offsite medical facilities).

APPROACH TO FOOTAGE REVIEW

We developed a methodology and data collection process to facilitate our review of footage from both BWCs and stationary CCTV cameras within the LCADC. We randomly selected 13 RTR events from the 97 events that occurred during the study period and then pulled and reviewed video footage from all cameras that captured footage of these events, including BWCs and stationary cameras. We were interested in learning how information differs across the camera types and therefore developed a data collection form that study team members completed while reviewing footage. In total, our team reviewed footage from 46 BWCs and 48 stationary cameras and entered this information into a database for analysis. The form covered topics such as the RTR event details, the audio and video quality of the footage, the actions of the residents and deputies, whether the resident acknowledged the presence of a camera in any way, injuries, and the disposition of the event.

FINDINGS

Video quality

We assessed the footage captured by both BWCs and stationary CCTV cameras for video quality using a three-point scale: poor, fair, and good. In most cases, the video quality was rated as either fair or good across both camera types. The visual recordings were generally clear, allowing for easy distinction of the behaviors exhibited by the deputies and residents. However, it should be noted that the stationary CCTV cameras in the facility, being older than the BWCs, sometimes produced pixelated footage with a grainier appearance. Also, because stationary CCTV cameras were positioned at higher vantage points throughout the facility, they were often far away from individuals, making it difficult to distinguish individual characteristics. On the other hand, BWC footage quality was occasionally compromised when deputies moved quickly around the facility or when there was too much, or too little, physical distance between the staff member and jail resident.

Positioning and viewshed

We also examined how BWCs and stationary CCTV cameras were positioned in the facility, as well as their viewsheds (i.e., the view of the facility from each camera's vantage point). We found advantages and disadvantages to both camera types. BWCs were strategically positioned near the center of the deputies' chests to optimize their first-person viewsheds. As a result, most BWC footage produced adequately framed views of the jail residents and RTR events taking place. However, there were occasional issues with the BWC footage of deputies on scene, particularly from those who were supporting the deputies directly engaging with the residents during RTR events. These deputies' viewsheds were occasionally obstructed by the other deputies on scene, making them miss some parts of the RTR event. Meanwhile, the BWCs on deputies directly involved in the RTR event sometimes had limited views because of their proximity to the resident.

Conversely, the stationary CCTV camera viewsheds presented a zoomed-out view of the RTR event. This perspective could benefit an RTR investigation

because it allows jail administrators to view an event from a single, continuous vantage point. Stationary CCTV cameras also have their limitations. Because they are almost always farther away from the deputy-resident interaction than BWCs, they may miss critical information about an RTR event. For example, based on how deputies and residents are positioned relative to the stationary CCTV camera, the cameras may not capture a strike, grab, or other physical action initiated by either party. The viewsheds from stationary CCTV cameras are also limited to other environmental barriers (such as pillars or stairwells; see Shukla et al., 2021) and susceptible to interference by jail residents. In one instance, a resident obstructed the view of a stationary CCTV camera in a holding cell by placing a towel over it, completely blocking the stationary camera's view of an RTR event.

Figure 1 depicts some of the differences in the positioning and viewsheds of the LCADC stationary CCTV cameras and BWCs. Together, these images show the benefits and drawbacks of each camera type. Images from the stationary cameras (top row) show deputies escorting residents (1), interacting with them in their cell (2), or stationed in a common area (3). Although these provide a zoomed-out view of deputy-resident interactions, they are missing detail. For example, if an RTR occurred in a cell, there would be very little information about what precipitated or occurred during the event. Contrasting this, images from LCADC BWCs (bottom row) show first-person views of deputies engaging with residents in a hallway (4), cell (5), and a common area (6). These views generally offer more detail about the interaction and the resident involved. However, as depicted in image 6, other deputies may obstruct the BWC's view, underscoring the need to have BWC footage from all deputies in a facility.

Figure 1. Footage of LCADC stationary cameras and BWCs

Source: Photos taken by the LCADC and shared with CNA.

The viewsheds of stationary CCTV cameras can complement those of BWCs by providing a more comprehensive view of the entire scene. In one specific example from our review of LCADC RTR events, a deputy's BWC mount shifted out of position during the event, causing the camera to point toward the ground and miss capturing the deputy's interaction. However, that event was observed from a distance by a stationary camera.

It is also worth noting that most prisons and jails do not have stationary CCTV cameras placed inside cells, showers, bathrooms, and other areas throughout the facility (e.g., janitorial closets, storage closets; Lawrence et al., 2022). Thus, when deputies equipped with BWCs respond to RTRs in these locations, they create footage of the event that would have otherwise been unavailable.

Audio

As is the case in most prisons and jails, the stationary CCTV cameras placed in the LCADC are not equipped to collect audio. LCADC officials and staff thus felt the audio from BWCs would greatly benefit their investigations of RTR events. Yet, we identified a few audio problems through our review of BWC footage. For example, audio from these devices would often be muffled when the deputy was too close to the resident (e.g., in instances where the deputy was physically preventing the resident from moving).

There were also some drawbacks to the audio recording capabilities of BWCs. For example, we interviewed LCADC deputies who noted that BWCs negatively affected their ability to establish and build rapport with incarcerated residents. Residents became more reluctant to openly share information with deputies in private settings once they became aware that the BWCs could audio record their conversations (even if the deputies were not actually activating their BWCs during these interactions). This change in behavior led the deputies to believe that the presence of BWCs hindered their ability to establish relationships with the residents. These findings were further supported by surveys we conducted with the deputies, where a greater number of deputies disagreed with the statement "inmates are generally cooperative in their encounters with deputies" following the implementation of BWCs (Peterson et al., 2023).

TO MAXIMIZE THE UTILITY OF BWCS IN JAIL SETTINGS, DEPUTIES SHOULD MAKE RESIDENTS AWARE OF THEIR BWCS.

In our review of BWC video and audio, we also examined whether residents acknowledged the presence of the camera during their interactions with deputies. Patterson and White (2021) argue that citizen awareness of BWCs during police-community encounters is an essential precondition for the potential "civilizing effect" of these devices. It thus stands to reason that to maximize the utility of BWCs in jail settings, deputies should make residents aware of their BWCs. We found that correctional deputies did not noticeably announce their use of BWCs at any point during the RTR events we reviewed, nor did jail residents acknowledge the presence of the cameras (though this was not always clear from the footage we reviewed). It is important to note that LCADC policy does not require deputies to announce when they are activating their BWCs, so this finding was not unexpected.

Investigative time and costs

Although not directly related to our review of BWCs and stationary CCTV cameras, we found that the additional footage produced by BWCs provided more evidence for LCADC officials to review during their RTR investigations. To estimate this and the other financial impacts of BWCs, we worked with LCADC to fill out a data form on the relevant costs associated with the program. In addition to the up-front costs for purchasing equipment and training personnel, this form focused on the time staff spent investigating RTR events with and without BWCs.

WE ESTIMATED A TOTAL COST OF $535.85 PER RTR INVESTIGATION IN UNITS WITH ONLY STATIONARY CAMERAS, COMPARED TO $1,959.02 PER INVESTIGATION IN UNITS WHERE DEPUTIES WERE EQUIPPED WITH BWCS.

Table 1 below describes the costs of these RTR investigations. We estimated a total cost of $535.85 per RTR investigation in units with only stationary cameras, compared to $1,959.02 per investigation in units where deputies were equipped with BWCs. Much of this stems from the 10 hours of overtime on average required by LCADC second lieutenants (the supervisors primarily responsible for reviewing RTR events) to review the additional BWC footage of each RTR event. Notably, the implementation of BWCs led to a significant reduction in the number of RTRs—from 62 in units without BWCs to 35 in units with BWCS (see Lawrence et al., 2023a)—so fewer investigations were necessary in units equipped with the BWCs. Still, we estimated an overall increase of $35,342.87 in personnel time associated with RTR investigations over our one-year study period. This increase does not account for how BWC footage may have improved the "accuracy" of investigations, leading to enhanced accountability

Table 1. Personnel costs associated with RTR investigations

Staff information				Without BWCs			With BWCs		
Position	*# per RTR*	*Hourly wage*	*OT wage*	*# hours*	*# OT hours*	*Total wages*	*# hours*	*# OT hours*	*Total wages*
Deputy	6.5	$36.71	$55.06	0.66	0	$157.47	2	0	$477.18
Sergeant	1	$48.98	$73.48	2	0	$97.97	2	0	$97.97
1st Lt.	1	$65.13	$97.70	0.75	0	$48.85	2	0	$130.27
2nd Lt.	1	$54.52	$81.78	2	0	$109.05	2	10	$926.89
Captain	1	$78.16	$117.24	0.75	0	$58.62	2	0	$156.32
Major	1	$85.20	$127.79	0.75	0	$63.90	2	0	$170.39
			Cost per RTR			**$535.85**			**$1,959.02**
			# RTRs over study period			**62**			**35**
			Total costs			**$33,222.70**			**$68,565.57**

Notes: OT=overtime; data provided by LCADC officials.

and transparency. For more information regarding the cost-effectiveness of the LCADC program, see Cunningham et al. (2023).

Differential goals and foci

Although not something we directly tested in the current study, it is important to acknowledge the differential goals and foci of BWCs versus stationary cameras. Stationary cameras, for example, were specifically implemented in both prisons and jails as a tool for controlling incarcerated populations (Allard et al., 2006). Correctional administrators use these cameras to deter resident misbehavior and unearth critical information during investigations into resident assaults, riots, escapes, contraband infractions, or other misconduct incidents (Allard et al., 2008; Debus-Sherrill et al., 2014; Lawrence et al., 2022).

Conversely, the widespread uptake of BWCs by police departments has been driven primarily by the ability of these devices to improve officer transparency and accountability (Peterson, 2023; PERF, 2018; President's Task Force on 21st Century Policing, 2015). As a result, most research has focused on the ability of BWCs to reduce police officer use-of-force incidents and community member complaints (Lum et al., 2020; White et al., 2023a, 2023b), with relatively fewer studies focused on how these cameras can improve the evidence collection for police investigations and court proceedings (Huff et al., 2023; Todak et al., 2023). Though the results of these studies have been mixed, they spotlight the transparency and accountability goals of BWCs.

In discussing the purpose of BWCs, White and Malm (2023) contend that these devices "make the invisible visible" by seeking to eliminate the hidden nature of most police-citizen encounters (Goldstein, 1960; Skolnick & Fyfe, 1993). Yet the correctional environment is undoubtedly more hidden to the public, shielded both physically by walls and fences, and metaphorically by the relative lack of accountability mechanisms and public interest in correctional issues compared to other components of the justice system. To this last point, there has been almost no empirical research on the amount and scope of RTRs in correctional facilities, nor on the potential efficacy of strategies to mitigate these events. Thus, BWCs may be a valuable addition to prisons and jails, even those with extensive networks of stationary cameras, because they draw attention to critical issues and stimulate public discourse around correctional reform.

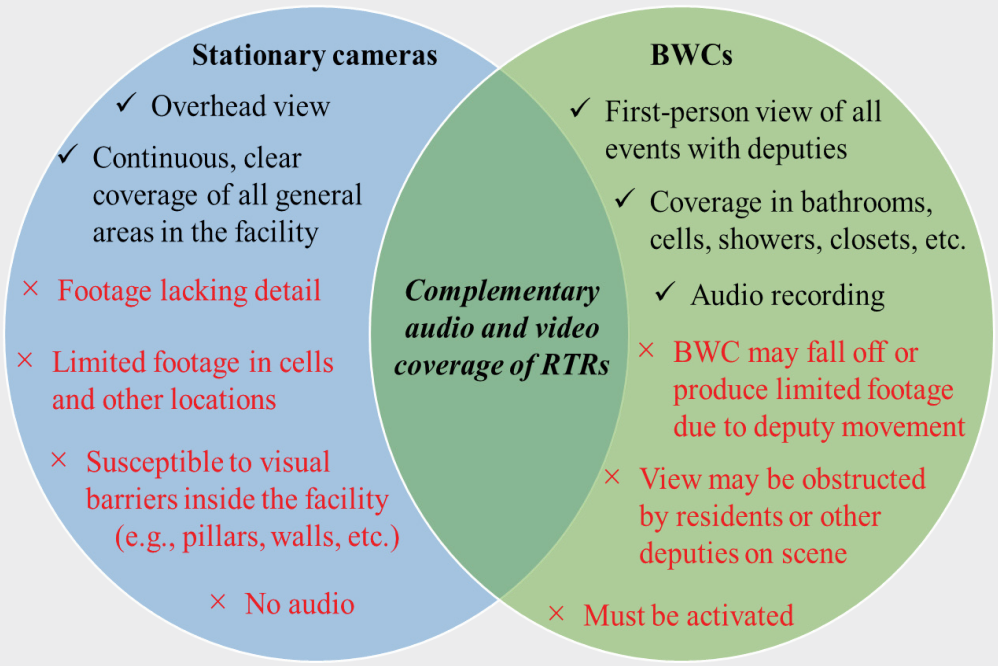
BWCS MAY BE A VALUABLE ADDITION TO PRISONS AND JAILS, EVEN THOSE WITH EXTENSIVE NETWORKS OF STATIONARY CAMERAS, BECAUSE THEY DRAW ATTENTION TO CRITICAL ISSUES AND STIMULATE PUBLIC DISCOURSE AROUND CORRECTIONAL REFORM.

CONCLUSION AND FUTURE APPLICATIONS

Our findings suggest both BWCs and stationary cameras play a crucial role in providing insights into RTRs, despite inherent limitations associated with each camera type. Importantly, we found the two camera types complemented one another to help overcome those limitations. For instance, although stationary cameras lacked audio capabilities, BWCs captured audio, offering additional context to the situation, including tone of voice and verbal exchanges. BWCs provided first-hand views of RTR events from the deputies involved, but these views could be obstructed by other deputies or limited because of the deputy's movement or proximity to the resident. In such cases, a stationary camera often captured views of the whole scene. Deputies equipped with BWCs can also enter areas within the facility that do not have stationary cameras, such as cells, showers, and bathrooms. Although not directly addressed in our study, it is also important to note that BWCs must be activated by deputies to capture RTR events, while stationary cameras are constantly recording. By leveraging the strengths of both stationary cameras and BWCs, agencies can obtain a more comprehensive and complete body of evidence than by relying on either type of camera alone (see **Figure 2**).

As the use of BWCs expands in correctional facilities, the potential applications of this technology will become more apparent. For example, although initial prison and jail BWC programs have focused on how these devices can improve investigations of RTR events, new opportunities will arise to assess deputy behavior and treatment of residents through BWC footage more broadly. Currently, such assessments are difficult given the personnel time required to

Figure 2. Complementary capabilities of BWCs and stationary cameras



review BWC footage, as noted above. Yet recent efforts have emerged to develop analytical tools that enable criminal justice agencies to efficiently and systematically process and review large quantities of BWC footage. These tools typically rely on two domains within the field of artificial intelligence: natural language processing (NLP), which facilitates language translation and speech-to-text conversion from BWC audio files, and computer vision (CV), which extracts distance and movement patterns from the visual inputs of BWC footage.

Leveraging the data generated by NLP- and CV-based analytic tools holds immense potential for providing criminal justice agencies with real-time insights into BWC users' behaviors (Peterson, 2023). For example, prison and jail supervisors can use information gathered from these tools to evaluate correctional officers' performance, hold them accountable for their actions, and implement corrective interventions when needed. Supervisors can thus use BWC footage to proactively address problematic behaviors before they escalate into more serious incidents. Moreover, supervisors can identify and reinforce positive interactions with incarcerated residents, fostering a culture of good behavior within the agency. In short, these tools can enhance the evidentiary value of BWCs, helping correctional administrators harness the power of these devices to increase transparency and accountability, monitor deputy conduct, and improve overall treatment of residents.

THESE TOOLS CAN ENHANCE THE EVIDENTIARY VALUE OF BWCS, HELPING CORRECTIONAL ADMINISTRATORS HARNESS THE POWER OF THESE DEVICES TO INCREASE TRANSPARENCY AND ACCOUNTABILITY, MONITOR DEPUTY CONDUCT, AND IMPROVE OVERALL TREATMENT OF RESIDENTS.

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