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RESEARCH IN BRIEF

The Las Vegas Body-Worn Camera Experiment: Research Summary

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Introduction

The past several years have seen an increase in body-worn cameras (BWCs) on police as agencies around the U.S. have acquired the technology for their officers. BWCs on officers enjoy a great deal of public support and are generally believed to be a mechanism for reducing police use of force, reducing complaints of officer misconduct, and enhancing the transparency of policing. However, while BWCs offer several potential advantages for both police and the public, empirical research into their value is still limited. Questions remain in terms of the impact of BWCs on police practice and their influence on police-citizen relationships.

In 2014, the Las Vegas Metropolitan Police Department (LVMPD) became one of the first large police agencies in the United States to begin equipping its officers with BWCs. The National Institute of Justice (NIJ) provided funding for the first 200 of these BWCs as part of a research study designed to determine the impact of the technology on a variety of outcomes, including officer use of force, complaints of officer misconduct, and officer discretionary activities. The study also provided a cost-benefit analysis associated with the utilization of BWCs.

This *Research in Brief* summarizes information from three products of the Las Vegas BWC Experiment: the study's final report presented to NIJ (Braga, Coldren, Sousa, Rodriguez, and Alper, 2017); an article that discusses the study's methodology and implementation challenges (Sousa, Coldren, Rodriguez, and Braga, 2016); and an article that addresses key elements of the impact evaluation (Braga, Coldren, Sousa, and

HIGHLIGHTS

- Officers with body-worn cameras had fewer complaints of misconduct than their control group counterparts. The percent of officers with body-worn cameras that generated at least one complaint decreased from 54.6% to 38.1%. By comparison, the percent of officers in the control group that generated at least one complaint decreased from 48.0% to 45.5%.
- Officers with body-worn cameras had fewer incidents of uses of force than their control group counterparts. The percent of officers with body-worn cameras that generated at least one report for use of force decreased from 31.2% to 19.7%. By comparison, the percent of officers in the control group that generated at least one report for use of force increased from 26.3% to 27.3%.
- Although there were few differences between body-worn camera officers and control group officers in terms of responses to dispatched calls, officer-initiated stops, or responses to crime incidents, officers with body-worn cameras issued slightly more citations and made slightly more arrests.
- The costs of body-worn cameras were estimated to be between $828 and $1,097 per user per year. The cost savings as the result of fewer complaints of misconduct and fewer resources spent on misconduct investigations were estimated at $4,006 per user per year. The net savings associated with body-worn cameras were therefore estimated to be between $2,909 and $3,178 per user per year.

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Rodriguez, In Press).

Research Objectives

In addition to examining the BWC implementation process in Las Vegas, the research for the Las Vegas BWC Experiment had two principle objectives: conduct an impact evaluation using a "randomized controlled trial" (RCT) with a sample of LVMPD officers, and conduct an evaluation of the costs and benefits of implementing BWCs in Las Vegas. The impact evaluation was specifically concerned with whether BWCs influenced citizen complaints of officer misconduct, officer use of force incidents, and officer discretionary activities such as citations issued and arrests made. The primary research question for the cost-benefit analysis asked how the possible financial benefits of BWCs (i.e., potentially lower labor costs associated with investigating fewer complaints of misconduct) compared to the financial costs of acquiring and equipping officers with the technology.

Impact Evaluation – Design

The design for the impact evaluation involved an RCT that called for LVMPD patrol officers to be randomly assigned into one of two groups: an "experimental" group comprised of officers who wore BWCs, and a "control" group comprised of officers who did not wear BWCs but who served as comparisons for those in the experimental group. According to the principles of random assignment, RCTs produce two equivalent groups prior to the introduction of the experimental condition (in this case, BWCs). Therefore, any differences at the end of the experiment between the two groups on the key outcome variables can be attributed to the BWCs worn by the experimental group officers.

Recruitment for the sample of officers began in February 2014. Obtaining a sufficient sample of volunteers to accommodate the research design involved overcoming a number of technical, administrative, and personnel challenges. Nevertheless, by September 2014 the final sample had been obtained, consisting of 416 randomly assigned officers: 218 in the experimental group and 198 in the control group.[1]

Table 1 presents information on the sample. Importantly, the experimental group did not differ significantly from the control group on key demographic variables or on prior complaints of misconduct. This suggests that the randomization procedure did indeed produce two balanced groups. Also, Table 1 suggests that the sample of officers in the study was generally representative of the larger population of LVMPD patrol officers. The main difference between the study participants and the remainder of the patrol division related to officer rank, where there was a slight overrepresentation of sergeants in the sample – the result of a recruitment strategy that encouraged sergeants to volunteer for the study in an effort to lead by example.[2]

Officers in both groups were monitored for a one-year period on the key outcome variables, including use of force, complaints of misconduct, arrests made, and citations issued. Two potential concerns were also monitored during this time. The first related to *attrition* – the idea that officers might drop out of the study for various reasons, thereby resulting in unbalanced groups and / or impacting the statistical power of the study. The second potential concern was the possibility of *contamination* – the idea that officers in the experimental group might interact with control group officers and influence their decisions, such as when a BWC officer and a control officer respond to the same call for service. Analyses ultimately determined that both attrition and contamination had minimal impacts on the results of the study.[3]

Impact Evaluation – Results

The impact evaluation first considered whether BWCs had an impact on citizen complaints of police misconduct.

TABLE 1: Randomized Controlled Trial Sample

	Experimental n=218	Control n=198	Study Participants n=416	Remainder of Patrol n=955
Percent Male	92.1%	91.5%	91.8%	90.1%
Percent Female	7.9%	8.5%	8.2%	9.9%
Percent White	73.2%	69.7%	71.5%	71.3%
Percent Hispanic	12.6%	15.4%	14.0%	14.7%
Percent Black	7.9%	9.6%	8.7%	6.4%
Percent Asian / Other	6.3%	5.3%	5.8%	7.6%
Average Age	36.3	37.7	36.9	35.8
Average Years on Job	8.7	9.9	9.3	8.6
Percent Patrol Officer	86.4%	83.0%	84.7%	93.0%
Percent Sergeant	13.6%	17.0%	15.3%	7.0%
Average Complaints	.94	.86	.89	.96

* Adapted from Braga et al. (2017)

DIAGRAM 1: Percent of Officers with at Least One Misconduct Complaint / Use of Force Incident

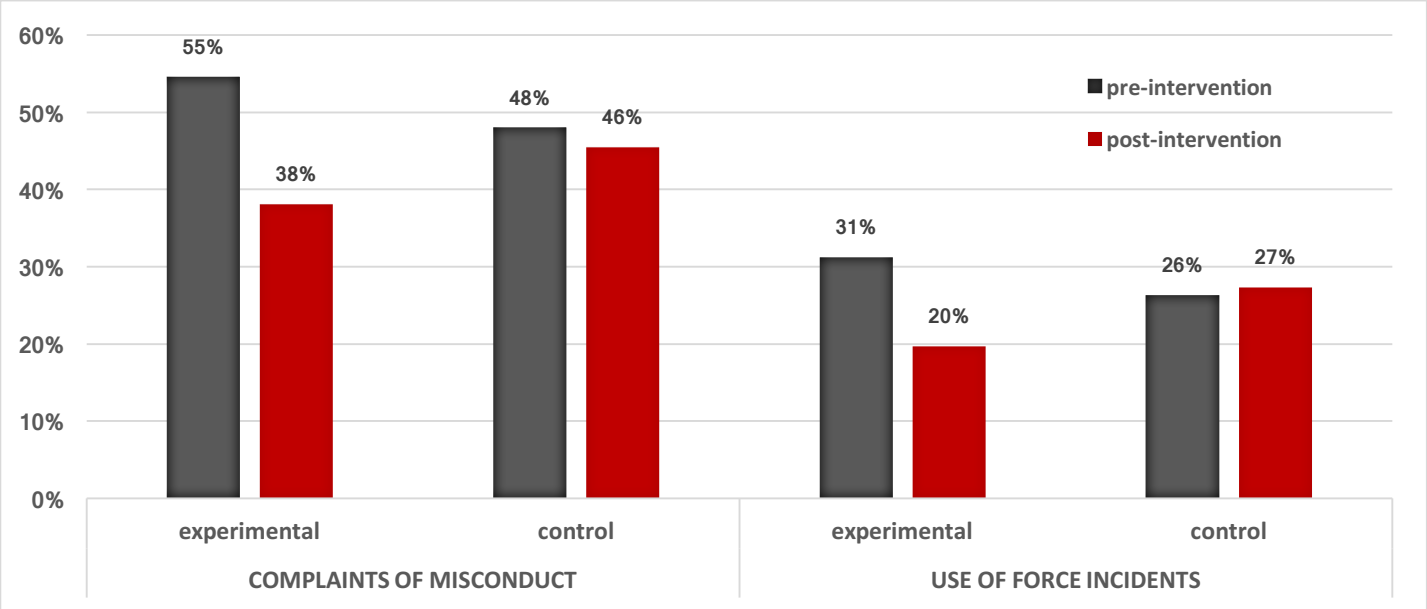

DIAGRAM 2: Average Number of Citations Issued / Arrests Made Per Officer Per Month

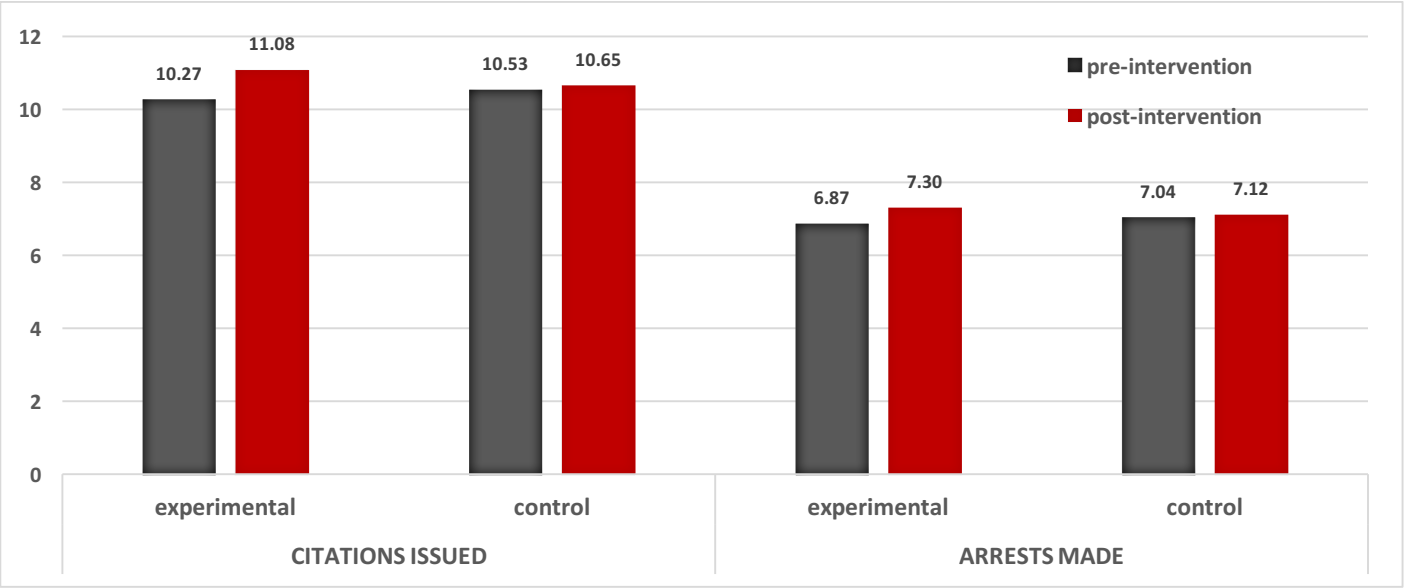

Diagram 1 compares the experimental group and the control group in terms of complaints of police misconduct. The percent of officers in the experimental group that generated at least one complaint decreased from 54.6% pre-intervention to 38.1% during the intervention – a difference of 16.5% and an overall percent reduction of 30.2%. By comparison, the percent of officers in the control group that generated at least one complaint decreased from 48.0% pre-intervention to 45.5% during the intervention – a difference of only 2.5% and an overall percent reduction of only 5.2%. These results suggest a significant difference between officers with BWCs and those without BWCs in terms of citizen complaints of misconduct (Braga et al., In Press; Braga et al., 2017).

Diagram 1 also compares the experimental group and the control group in terms of use of force incidents. The percent of officers in the experimental group that generated at least one use of force report decreased from 31.2% pre-intervention to 19.7% during the intervention – a difference of 11.5% and an overall percent reduction of 36.9%. The percent of officers in the control group, however, that generated at least one use of force report actually *increased* from 26.3% pre-intervention to 27.3% during the intervention – a difference of 1.0% and an overall percent increase of 3.8%. Similar to the analysis of citizen complaints of misconduct, these results suggest a significant difference between officers with BWCs and those without BWCs in terms of use of force incidents (Braga et al., In Press; Braga et al., 2017).

The impact evaluation was also interested in whether BWCs impact officer activity levels. Analyses revealed few differences between experimental and control officers in terms of responses to dispatched calls, officer-initiated stops, or responses to crime incidents. There were differences, however, in terms of citations issued and arrests made.

Diagram 2 compares the experimental group and the control group in terms of citations issued and arrests made. The number of citations issued by officers in the experimental group increased from an average of 10.27 per officer per month before the intervention to an average of 11.08 per officer per month during the intervention – an increase of 7.9%. The number of citations issued by officers in the control group increased from an average of 10.53 per officer per month before the intervention to an average of 10.65 per officer per month during the intervention – an increase of

just 1.1%. This suggests a significant difference between officers with BWCs and those without BWCs in terms of issuing citations (Braga et al., In Press; Braga et al., 2017).

Similarly, the number of arrests made by officers in the experimental group increased from an average of 6.87 per officer per month before the intervention to an average of 7.30 per officer per month during the intervention – an increase of 6.3%. By comparison, the number of arrests by officers in the control group increased from an average of 7.04 per officer per month before the intervention to an average of 7.12 per officer per month during the intervention – an increase of only 1.1%. This also suggests a significant difference between officers with BWCs and those without BWCs in terms of arrest activities (Braga et al., In Press; Braga et al., 2017).

Cost-Benefit Analysis

The cost-benefit analysis considered the annual financial costs and benefits per BWC user. The costs were estimated using FY 2014 amounts for BWC installation, training, operation, maintenance, FOIA requests, and video storage costs, including one-time and recurring costs. Using these data, the total cost incurred for BWC implementation was $1,097 per BWC user per year.[4] More recent invoices, however, suggested a slight decrease in costs for BWCs and storage, bringing the amount down to $828 per user per year. Considering this adjustment, the analysis therefore estimated that BWCs cost between $828 and $1,097 per user per year.

The financial benefits of BWCs were derived primarily from the estimated decrease in complaints of misconduct as the result of BWCs, the reduced cost to investigate these complaints, and the reduced amount of time it takes to resolve complaints when video evidence is available.

There may be additional financial benefits, such as fewer and / or lower court settlements arising from citizen complaints of misconduct, but the inclusion of these data were not feasible given the timeframe of the study and the length of time required to resolve court proceedings.

Table 2 estimates the labor costs associated with investigating an average complaint of officer misconduct with and without BWC video information. When considering the investigator's modified hourly wage[5] and hours spent investigating a complaint of misconduct, considerable cost savings are realized when BWC video is available. Rather than a combined 91 hours of investigative time costing $6,776 without BWCs, the estimate is slightly over 7 hours of investigative time costing $554, for a difference of over $6,200 per complaint of misconduct.

The average number of complaints of misconduct during the intervention phase of the impact evaluation was 0.59 for the BWC users. Based on difference-in-difference estimates, had the BWC users experienced the same post-intervention change as the control group, their average would have been 0.84 complaints per officer. Table 3 considers these averages along with the estimated costs of investigating misconduct complaints with and without BWCs. BWCs result in fewer complaints of misconduct – and when complaints do occur with BWCs, the average costs of the investigations are much less. As a result, BWCs are associated with substantially less investigative costs per officer per year.

Given the cost of BWCs to be between $828 and $1,097 per user per year – and given the estimated savings of $4,006 per officer per year as the result of fewer misconduct complaints / less expense associated with misconduct investigations – the net annual savings generated by BWCs is estimated to be between $2,909 and $3,178 per user per year.

TABLE 2: Labor Costs per Misconduct Complaint Investigation

	Modified Hourly Wage	Hours Spent on Complaint with BWC	Investigation Cost with BWC	Hours Spent on Complaint without BWC	Investigation Cost without BWC
Detective	$71.52	6	$429	80	$5,721
Sergeant	$89.40	1	$89	7	$626
Lieutenant	$107.28	0.33	$35	4	$429
Total		7.33	$554	91	$6,776

* Adapted from Braga et al. (2017)

TABLE 3: Investigation of Misconduct Complaint Costs, With and Without BWCs

	With BWC	Without BWC	Cost Avoidance per user per year
Annual complaint investigations per officer	0.59	0.84	
Average cost per investigation	$554	$6,776	
Percentage cleared based on BWC alone	66%	0%	
Annual investigation costs per officer [6]	**$1,686**	**$5,692**	**$4,006**

* Adapted from Braga et al. (2017)

Discussion

The results of the impact evaluation's randomized controlled trial indicate that BWCs were associated with substantial reductions in complaints of officer misconduct and police use of force incidents. These results are consistent with the perceived benefits of the BWC technology and support the notion that BWCs can help to improve relations between police and communities.[7] When comparing BWC officers to their control counterparts, however, it also appears that BWC officers generated more citations and arrests. Further research is needed to determine the reasons for this increase in enforcement activity – or whether this increase in activity could impact police-citizen relations.[8]

The results of the cost-benefit analysis suggest substantial cost savings associated with BWCs. These cost savings are primarily the result of the impact of BWCs on complaints of officer misconduct. First, as demonstrated in the impact evaluation, BWCs are associated with fewer complaints of officer misconduct. Second, when complaints of misconduct do occur, investigations into the complaints are much shorter and require fewer resources due to the presence of video evidence. While there are expenses related to BWC implementation, training, operation, and video storage and maintenance, the benefits of the technology appear to offset these costs.

Overall, the results of Las Vegas BWC Experiment suggest the benefits of the technology. BWCs were associated with substantially fewer complaints of officer misconduct, fewer incidents of police use of force, and a net cost savings. Several of the findings – such as indications that BWCs are associated with slightly more citations issued and arrests made by officers – warrant further investigation. Nevertheless, the results presented here demonstrate the potential value of BWCs to police and citizens.

Endnotes

1. The randomization procedure allowed for slightly more officers in the experimental group in

anticipation of higher levels of attrition from that group.

2. Due to the original technical infrastructure, four of the then eight patrol area commands were better equipped to handle a large number of officers with BWCs. Therefore, although officers in the sample came from all eight area commands, Bolden, Enterprise, Northeast, and Northwest area commands were overrepresented in the sample.

3. Analyses revealed low levels of attrition and very modest levels of contamination. Attrition (for reasons such as retirement, promotion, changes of assignment, medical leave, and voluntary withdrawal from the study) was approximately 12% from the experimental group and 8% from the control group. Contamination, which was measured by the percentage of calls for service that involved one or more experimental and control group officers, averaged approximately 19% per month over the course of the study. Although additional analyses suggest that the impacts of attrition and contamination were minimal, they remain potential limitations of the study design (see Braga et al., 2017).

4. For an itemized list of BWC implementation costs and the specific procedure to estimate the cost per user per year, see Braga et al. (2017).

5. Modified hourly wage considers wages, holiday and leave costs, taxes and fringe benefits.

6. Annual investigation costs per BWC officer was determined via the following formula: a = (0.59 "annual complaint investigations per BWC officer" x $554 "average cost per video review investigation" x 66% "percent cleared based on BWC video alone") + b = (0.59 x ($554 + $6,776) "average cost per video review investigation + usual investigation cost" x 34% "percent not cleared based on BWC video").

7. This study does not explore why BWCs are associated with fewer complaints of misconduct or fewer uses of force. One possibility is that officers are altering their behavior knowing that their actions are being recorded. Another possibility is that citizens, aware of the BWCs, are less likely to make false allegations of police misconduct or engage officers in ways that could result in use of force. The extent to which either of these possibilities (or both) influenced the results is not known.

8. It may be, for example, that BWC officers increase their discretionary enforcement activity because they are more confident that video evidence will hold offenders accountable. It may also be, however, that officers are concerned that their supervisors will review videos and hold them accountable for discretionary decisions.

References

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