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Surveillance in the 21st Century: Public Perception of Drone Surveillance by Law Enforcement

Insight into this paper: As unmanned aerial vehicles (UAVs) become increasingly integrated into law enforcement operations, public opinion remains deeply divided over their legitimacy and use. While some individuals view drones as valuable tools for enhancing safety, surveillance efficiency, and search-and-rescue capabilities, others express serious concerns regarding privacy, Fourth Amendment protections, and the potential for expanded or weaponized surveillance. This paper highlights how technological advancement in policing has outpaced public consensus, revealing a growing tension between perceived security benefits and fears of civil liberties erosion.

Topics: Drones, UAS, Law Enforcement, Surveillance, Fourth Amendment, UAVs, Privacy, Facial Recognition, Traffic, Police

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Introduction

Unmanned aerial vehicles (UAVs), also known as drones, have emerged as a significant component of modern aviation. In 2024, drone sales in the United States amounted to $6.58 billion, with a projected compound annual growth rate (CAGR) of 16.9% from 2024 to 2034, culminating in an anticipated $31.34 billion by 2034. As of March 2025, the Federal Aviation Administration (FAA) has recorded well over 1 million registered drones, comprising 412,505 commercial registrations, 384,895 recreational registrations, and 8,313 paper registrations. In accordance with FAA laws governing drone operation in the USA, there are 438,673 certified remote pilots and over 1,024,862 TRUST Certificates issued to recreational pilots (FAA, 2023). As drone technology continues to advance, a growing number of industries are incorporating drones into non-traditional aviation applications for safety, production challenges, monitoring, and other purposes, enhancing the effectiveness and efficiency of operations. Their endeavors have expanded to include agriculture, construction, film projects, real estate, search and rescue, and even law enforcement. Technology has reached such a level of sophistication that law enforcement agencies are employing it for tasks such as facial recognition, license plate scanning, tracking suspects, and even eavesdropping on private conversations, thereby raising ethical concerns and the risk of infringing constitutional rights.

Currently, there is insufficient accountability for the deployment of drone technology by law enforcement, which may raise concerns for individuals, as certain drone activities could potentially lead to constitutional dilemmas in the future. Only 18 states in the USA have enacted legislation requiring law enforcement agencies to obtain a search warrant before deploying drones for surveillance or conducting searches (Current Unmanned Aircraft State Law Landscape, 2023). This results in 32 states where law enforcement can utilize drones to surveil citizens without their knowledge or the necessary approvals, thereby infringing on individuals' Fourth Amendment rights.

Recently, there has been a shift in public perception toward law enforcement and the invasive methods they employ against the public. We are seeing growing concern about the

over-policing of citizens across the country, with the construction of police training campuses and increased budget allocations to the police, which reduce funds for much-needed community development. The utilization of drone technology by law enforcement is unlikely to be beneficial and may provoke greater resistance from individuals against such surveillance practices. This study employs a qualitative methodology, using a survey, to assess participants' perceptions of law enforcement drone use and examine diverse demographic viewpoints, perceived security, funding for drones, ethical considerations, and prospective initiatives as drone technology expands across multiple agencies nationwide. By examining an individual's viewpoint on the ethical application of drone technology, we can evaluate experiences informed by prior encounters and law enforcement responses, while considering cultural disparities within the USA.

Literature Review

A trend is emerging in the United States and worldwide regarding the incorporation of Unmanned Aerial Vehicles (UAVs), also known as drones, into law enforcement agencies' activities (Ramirez, 2023). Advancements in drone technology, including improvements in battery life, high-definition camera systems, sensors, size, and cost (Hildmann & Kovacs, 2019), provide law enforcement agencies with significant advantages by enhancing situational awareness, allowing officers to evaluate complex scenarios from a safe distance, and improving response capabilities for greater effectiveness and efficiency (Jesse, 2024). Drones can deliver real-time aerial perspectives of incidents, enhance human decision-making, and increase patrol efficacy in high-risk scenarios (Khan et al., 2022). As technology progresses, it is employed in diverse applications, including search and rescue, agriculture, environmental operations, firefighting, flood monitoring, filmmaking, storm research, mining, aerial news coverage, construction, real estate, and cargo and communications (Brumfield, 2014). Law enforcement agencies have increasingly utilized drone technology for criminal detection, crime scene photography and 3-D reconstruction, search and rescue operations, crowd management, traffic monitoring, and numerous other uses that mitigate risks for personnel (Ramirez, 2023). Drones are outfitted with high-definition camera systems and sensors that facilitate search and rescue operations through thermal and infrared imaging and enhance traffic accident investigations by providing aerial perspectives and documenting crucial evidence. Moreover, as the frequency of natural disasters increases, drones serve as law enforcement's eyes in the sky, monitoring the environment during such events, assessing damage, and locating individuals (Dokoro et al., 2024).

The increased use of drones by law enforcement agencies has sparked significant public discourse and apprehension, primarily focused on privacy and civil liberties (Brumfield, 2014; Khan et al., 2022; Ramirez, 2023; Smith, 2015). Civil rights groups and organizations nationwide have voiced disapproval of drone usage in law enforcement, citing concerns that drone surveillance violates essential privacy rights and the freedom to associate (Brumfield, 2014; Smith, 2015). There is increasing apprehension that drones may serve as a modern incarnation of "Big Brother," enabling law enforcement to do surveillance without warrants, so violating citizens' Fourth Amendment rights (Ramos, 2024). A series of reports by the American Civil Liberties Union (ACLU) underscores the need to safeguard individual privacy rights. The ACLU has advised that law enforcement should deploy drones solely with a warrant or in emergency circumstances and recommends that authorities preserve photos and recordings only if they include proof of criminal activity (Ramos, 2024). Critics from various societal sectors express concerns that law enforcement's use of drones may result in indiscriminate mass surveillance and possible violations of the Fourth Amendment (Smith, 2015). As drones are still a nascent technology in law enforcement applications, there has been limited evaluation of their effects on privacy and civil rights, indicating that agencies may lack openness in their policies and practices regarding drone operations.

The public perception of law enforcement's use of drones is ambivalent, often marked by limited approval due to concerns regarding privacy infringements and financial implications (Koslowski & Schulzke, 2018). Previous research indicates that public perception is affected by the context of drone utilization. Research indicates that there is significant support among Americans for the utilization of police drones in reactive scenarios, such as search and rescue missions or suspect apprehension. Conversely, there is a degree of caution and diminished support for proactive applications, including monitoring protests, traffic infractions, or home arrest surveillance (Przeszlowski & Guerette, 2024). In contrast to the skepticism surrounding law enforcement's use of facial recognition technology, individuals exhibit less apprehension about its application to high-profile subjects potentially involved in terrorist activities, as there are established policies to mitigate misuse. This stands in stark contrast to drone operations, where regulatory frameworks are still in development.

The current societal and political climate in the United States has engendered a pervasive distrust of the police, profoundly affecting public concern regarding the deployment of drones by law enforcement, due to perceptions of police legitimacy and efficacy in combating crime. Research indicates that individuals who trust in the legitimacy and efficacy of law enforcement are more likely to endorse the proactive and reactive use of drones in policing. Conversely, persons who express skepticism towards contemporary policing methods in the United States oppose not only the deployment of drones but also facial recognition technology (Bragias et al., 2021), a burgeoning trend that encompasses license plate scanners. This indicates that even a slight awareness of their operations can undermine public trust in law enforcement (Przeszlowski & Guerette, 2024). The fundamentals of drone usage in the public sector are outlined here; nonetheless, there is growing worried among administrators regarding the militarization of law enforcement through the deployment of weaponized drone systems nationwide. Academics have posited that permitting law enforcement to use armed drones may exemplify extreme police militarization, resulting in excessive force and potential harm to innocent bystanders (Brumfield, 2014). Given the increasing opposition to aggressive policing and the infringement of individual rights, public support of drones for law enforcement is uncertain, perhaps leading to unwarranted community pushback. Law enforcement agencies seeking to employ drones will persistently encounter mistrust as they acquire equipment akin to military technology, potentially raising constitutional concerns that further erode public trust in policing.

METHODOLOGY

This study employed a quantitative research approach, using an online survey to collect data. The survey requested participants' demographic data (age, gender, race, location, income, and housing status), followed by questions about drone use. Tables 1-5, and Figures 1, A1-A8 provide the statistical results. Statistics were calculated using IBM SPSS v. 29.0.1.0.

This study comprises 58 volunteers chosen from a targeted population. Participants in this survey comprised employees and students at the University of Louisiana at Monroe to eliminate bias and enhance the generalizability of the findings. The Institutional Review Board (IRB) at the University of Louisiana at Monroe granted approval for this study under approval number 1370-2024. The ethical guidelines outlined in The Handbook for Ensuring Protection of Human Research Subjects (2011) were followed throughout the entire process to maintain ULM's ethical standards surrounding human subjects. Before the survey began, informed consent was obtained from each study participant, which also outlined the study's methods, possible risks, and benefits. Participants gave their written informed consent in compliance with ULM policy.

DEMOGRAPHICS OF THE SAMPLE

This pilot study included 58 diverse participants as presented in Tables 1–5.

TABLE 1: GENDER DISTRIBUTION

Gender	Frequency	Percent
Male	20	34.5
Female	32	55.2
Nonbinary	2	3.4
Prefer Not to Answer	4	6.9

Note. $N = 58$.

TABLE 2: AGE RANGE

Ranges	Frequency	Percent
18-26	22	37.9
27-38	12	20.7
39-49	9	15.5
50+	13	22.4
Prefer Not to Answer	2	3.1

Note. $N = 58$.

TABLE 3: ETHNICITY DISTRIBUTION

Race/Ethnicity	Frequency	Percent
White	43	74.1
African American	7	12.1
Latin/Hispanic	2	3.4
Asian	1	107
Native Hawaiian /Pacific Islander	1	107
Prefer not to answer	4	6.9

Note. $N = 58$.

TABLE 4: HOUSEHOLD INCOME

Income Ranges	Frequency	Percent
< $25,000	8	13.8
$25K–$50K	10	17.2
$50K–$100K	16	27.6
$100K–$200K	12	20.7
>$200K	6	10.3
Prefer Not to Answer	6	10.3

Note. $N = 58$.

TABLE 5: HOMEOWNER/LIVING STATUS

Status	Frequency	Percent
Homeowner	27	46.6
Renter	14	24.1
Other	11	19
Prefer Not to Answer	6	10.3

Note. $N = 58$.

Survey Results from the Sample

Figure 1 presents all descriptive results for the survey items. The pilot study's results revealed that participants somewhat agreed that drone monitoring makes them feel more secure (M = 3.41, SD = 1.29) and agreed that drones make them more likely to follow the law (M = 3.41, SD = 1.20). Participants generally disagree that law enforcement drone use infringes on personal privacy (M = 2.26, SD = 1.28), which closely correlates with their views on whether such use violates individual Fourth Amendment rights (M = 2.31, SD = 1.37). The results indicate a slight tendency to oppose reallocating surveillance funding to social services (M = 2.69, SD = 1.22).

Figure 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Does the presence of drone monitoring contribute to your sense of security? *	58	1	5	3.41	1.285
Does the presence of drones increase your inclination to comply with the law more frequently? *	58	1	5	3.41	1.200
Do you believe that your privacy is being violated by the use of drones by law enforcement? *	58	1	5	2.26	1.278
Do you believe funds for surveillance equipment should be allocated to social programs? *	58	1	5	2.69	1.217
Would you be willing to give permission for drone surveillance of your neighborhood to enhance the area's safety? *	58	1	5	3.38	1.437
Do you support the idea of equipping drones with sophisticated camera systems that employ facial recognition technology? *	58	1	5	3.60	1.426
Do you support the idea of equipping drones with lethal weapon systems? *	58	1	5	4.41	1.077
Do you believe that the use of drones by law enforcement to conduct surveillance on you is a violation of your Fourth Amendment rights? *	58	1	5	2.31	1.366
Do you endorse the utilization of unmanned aerial vehicles by law enforcement agencies? *	58	1	5	3.16	1.484
Valid N (listwise)	58				

Note. Questions were answered using a Likert scale of 1 = *strongly disagree* and 5 = *strongly agree*.

Results further indicate that participants may exhibit a modest willingness to permit law enforcement drone surveillance to improve neighborhood safety (M = 3.38, SD = 1.44) and to use drones equipped with facial recognition technology (M = 3.60, SD = 1.43). Conversely, data indicate a significant disagreement with the weaponization of drones (M = 4.41, SD = 1.08), suggesting that public perception of this use may alter the social contract between law enforcement and the community. Results show participants lean towards a moderately positive attitude towards the integration of drone technology in law enforcement (M = 3.16, SD = 1.48).

Practical Insights

Public opinion on the use of drones by law enforcement appears to be about evenly split. The findings reveal that 43.1% either concurred or strongly concurred, while 41.3% opposed or strongly opposed the deployment of drones by law enforcement, as illustrated in Figure A8. This signifies a societal divide: some view it as beneficial, while others express skepticism. Concerns that may arise from fundamental issues in law enforcement regarding trust, civil liberties, and oversight.

Analyzing specific issues related to law enforcement drone deployments indicates increased public animosity. Figure A3 reveals that 69% of respondents expressed apprehension about potential privacy infringements, while 62.1% contended that law enforcement's drone deployment infringes their Fourth Amendment rights. Participants' replies highlight the tension between the swift proliferation of technological surveillance and personal freedoms in society. As anticipated, 81% opposed the use of weaponized drones (see Figure A6). This data underscores the public's moderate view of law enforcement drone use; nonetheless, any sense of overreach or excessive force will provoke considerable dissent.

The perceived advantages of drone surveillance received a participant mean score of 3.41 on a 5-point scale for providing a sense of security, indicating a moderate overall viewpoint. However, 50% of respondents disagreed or strongly disagreed with the notion that drone monitoring improves their sense of safety, while 31.1% believed it would boost their security, as indicated in Figure A1. The disparity in average responses suggests that the numerical mean may conceal fundamental divisions in sentiment, since many individuals exhibit distrust or unease.

A national dialogue has emerged over police budgets, social programs, and the distribution of funds for improving urban infrastructure (Beck, 2025). Further, Enemark (2021) reviewed the use of drones by police through an international lens, including the United States. Figure A4 shows that the allocation of funds for supplementary surveillance equipment is split: 46.6% advocate increasing spending on social programs, while 25.8% oppose it. Generally, a trend suggests that low-income individuals are more inclined to support funding for social programs over surveillance technology; however, a statistical study (Chi-Square test, p = .765) indicates no significant correlation between income level and budget distribution. These results may reflect the small sample size in this study. Further research should occur, using powered sample sizes, given the visual trends indicating substantial socioeconomic gaps.

Demographic analysis reveals diverse perspectives. Younger individuals and renters are more skeptical of law enforcement drone use, whereas older participants and homeowners are more supportive. Tables 2–4 provide the specific breakdown of the diverse participant backgrounds. Women exhibited greater apprehension about privacy and constitutional rights than men. The 46% homeowner group may explain the higher household income noted in Table 4, where 27.6% earn between $50,000 and $100,000 and 20.7% earn between $100,000 and $200,000, who polled as more likely to accept drones in their neighborhoods.

The study's participants showed less diversity in ethnic distribution, with White (32.1%) as the predominant group, although not the majority. African Americans and Latinos/Hispanics accounted for 13.2% and 11.3%, respectively. Asians constituted 9.4%, while Native Hawaiians or

Pacific Islanders accounted for 3.8%. Despite the pilot study's limited sample size, the statistics indicate that background characteristics can influence individuals' views on drone monitoring and public safety. For a detailed analysis of respondents' thoughts from the survey questions, refer to the Appendix, which includes Figures A1-A8.

Conclusion

As drone technology and its applications expand into other industries, particularly law enforcement, research indicates a gap in public sentiment toward law enforcement drone use. While people recognize the advantages of drones, do the benefits surpass the general perception? Drones will enhance security and operational efficiency; nonetheless, they raise significant concerns regarding privacy, civil liberties, and potential government overreach. This study reflects a nuanced public perspective, wherein moderate support for drone usage in specific contexts of neighborhood safety is counterbalanced by significant opposition to the weaponization of drone systems, particularly due to concerns regarding constitutional infringements in the current political climate globally. This study's results underscore how demographic factors, including age, gender, income, and housing status, influence perceptions, revealing that younger participants, renters, and women are more inclined to voice fear regarding law enforcement's use of drones.

This important and novel study, combined with other research, indicates that insufficient controls and accountability, along with the proliferation of drone technology for monitoring by law enforcement, may intensify social suspicion and violate fundamental rights. A transparent government has consistently been the cornerstone of a well-functioning society, and through transparency, public discourse, and legislative action, the deployment of drones by law enforcement agencies will conform to the democratic and ethical principles esteemed by the American populace. As drone technology advances, as with other technological advancements, the regulatory framework must also evolve, ensuring a balance between innovation, safety, and the safeguarding of civil liberties in the 21st century.

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APPENDIX

Tables were built using IBM SPSS V. 29.0.1.0 and then copied into Figures A1-8.

FIGURE A1: SENSE OF SECURITY

*Does the presence of drone monitoring contribute to your sense of security? **

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	3	5.2	5.2	5.2
	A	15	25.9	25.9	31.0
	N	11	19.0	19.0	50.0
	DA	13	22.4	22.4	72.4
	SD	16	27.6	27.6	100.0
	Total	58	100.0	100.0	

FIGURE A2: LEGAL COMPLIANCE

*Does the presence of drones increase your inclination to comply with the law more frequently? **

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	3	5.2	5.2	5.2
	A	10	17.2	17.2	22.4
	N	20	34.5	34.5	56.9
	DA	10	17.2	17.2	74.1
	SD	15	25.9	25.9	100.0
	Total	58	100.0	100.0	

Figure A3: Privacy Concerns

*Do you believe that your privacy is being violated by the use of drones by law enforcement? **

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	20	34.5	34.5	34.5
	A	20	34.5	34.5	69.0
	N	5	8.6	8.6	77.6
	DA	9	15.5	15.5	93.1
	SD	4	6.9	6.9	100.0
	Total	58	100.0	100.0	

Figure A4: Use of Public Funds

*Do you believe funds for surveillance equipment should be allocated to social programs? **

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	11	19.0	19.0	19.0
	A	16	27.6	27.6	46.6
	N	16	27.6	27.6	74.1
	DA	10	17.2	17.2	91.4
	SD	5	8.6	8.6	100.0
	Total	58	100.0	100.0	

Figure A5: Permission of Surveillance

*Would you be willing to give permission for drone surveillance of your neighborhood to enhance the area's safety? **

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	5	8.6	8.6	8.6
	A	17	29.3	29.3	37.9
	N	7	12.1	12.1	50.0
	DA	9	15.5	15.5	65.5
	SD	20	34.5	34.5	100.0
	Total	58	100.0	100.0	

Figure A6: Advancing Camera Systems

*Do you support the idea of equipping drones with sophisticated camera systems that employ facial recognition technology? **

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	4	6.9	6.9	6.9
	A	14	24.1	24.1	31.0
	N	8	13.8	13.8	44.8
	DA	7	12.1	12.1	56.9
	SD	25	43.1	43.1	100.0
	Total	58	100.0	100.0	

Figure A7: Weaponizing Drones

*Do you believe that the use of drones by law enforcement to conduct surveillance on you is a violation of your Fourth Amendment rights? **

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	23	39.7	39.7	39.7
	A	13	22.4	22.4	62.1
	N	8	13.8	13.8	75.9
	DA	9	15.5	15.5	91.4
	SD	5	8.6	8.6	100.0
	Total	58	100.0	100.0	

Figure A8: *Drone Use by Law Enforcement*

*Do you endorse the utilization of unmanned aerial vehicles by law enforcement agencies? **

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	8	13.8	13.8	13.8
	A	17	29.3	29.3	43.1
	N	9	15.5	15.5	58.6
	DA	6	10.3	10.3	69.0
	SD	18	31.0	31.0	100.0
	Total	58	100.0	100.0	