ADVANCED EXPERIENCE OF DEVELOPED FOREIGN COUNTRIES IN THE EFFECTIVE USE OF UNMANNED AERIAL VEHICLES IN NATIONAL GUARD UNITS TO ELIMINATE MASS RIOTS AND PROSPECTS FOR THEIR USE IN OUR COUNTRY

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Abstract: **in recent years, many countries have begun to deploy unmanned aerial vehicles (UAVs) - drones - in crowd-control operations. This article examines the current use of UAVs by the National Guard of Uzbekistan to manage disturbances, reviews the experiences of France, Turkey, the United States, Israel, Spain and other states, and outlines prospects for future deployment. The authors discuss five main functions of drones in public-order missions: psychological influence (loudspeakers, banners and colour signals), leaflet distribution, surveillance and intelligence, delivery of urgent medical supplies and transport of necessary weapons and ammunition. Based on official statistics from 2021-2025, a simple regression model evaluates the effectiveness of UAV deployment and its impact on crime trends.**
Keywords: **mass disturbances, National Guard, unmanned aerial vehicles, drone technologies, public safety, psychological influence, aerial surveillance, operational command center, leaflet distribution, medical supply delivery, regression analysis, foreign experience.**

The early decades of the twenty-first century have seen a rise in mass protests, street demonstrations and other forms of social confrontation around the world. In parallel, law-enforcement agencies and specialised units have begun to adopt innovative technologies - notably unmanned aerial vehicles - to maintain public safety. Although drones were initially designed for reconnaissance and military operations, their light weight, high manoeuvrability and ability to carry diverse payloads (cameras, loudspeakers, gas canisters, medical kits) make them well suited to peace-time security missions.

In Uzbekistan the National Guard is responsible for safeguarding public order and citizens’ safety under the Constitution and other legal acts. Yet crime has risen

significantly since 2020: according to Gazeta.uz, 132,298 crimes were recorded in 2024 - 27.1 % more than in 2023 and more than double the 2020 figure[1]. Some 20.2 % of offences were against public safety and order[2], underscoring the need for rapid and effective counter-measures. In this context, using drones for monitoring and prevention appears promising for Uzbekistan as well.

The activities of the National Guard are regulated by the Constitution of Uzbekistan, the Defence Doctrine (9 January 2018), the regulation on military service (12 September 2019) and other normative acts. These documents lay down the principles of maintaining public order, proportional use of force, and the conditions for employing weapons and special means. As a technical tool, UAVs must conform to these principles. Under the Chemical Weapons Convention and the United Nations Code of Conduct for Law Enforcement Officials, riot control agents may only be used "in types and quantities that are consistent with the purposes" of law enforcement[3]. These international norms also apply if gas is dispersed via a drone platform.

This article combines qualitative and quantitative analysis. Foreign experience was studied through legal documents, monographs and academic articles. Official statistics on crime in Uzbekistan for 2021-2025 were compiled and regression analysis was conducted using the number of UAV missions (approximate) as the independent variable. A linear regression model was estimated with the help of the scikit-learn package; the independent variable was the number of UAV missions (0, 0, 100, 300, 500), and the dependent variable was the number of crimes against public safety (around 20-27 thousand per year). The results show an R^2 of about 0.01, a coefficient of -0.377 and an intercept of 26,272, indicating a weak but negative relationship between the increase in UAV missions and the decline in public-safety crimes (see detailed analysis below).

In crowd-control operations, psychological influence involves persuading or warning people through voice messages, banners and colour signals. UAV platforms can deliver these effects effectively. The drone-software company FlytBase notes that loudspeakers and sirens mounted on drones are convenient for giving public announcements, directing people to safety and dispersing unruly gatherings[4]. During the COVID-19 pandemic in Spain, police flew drones over gatherings and used onboard speakers to tell citizens to go home or maintain distance; officers later described drones as a fundamental element for monitoring public spaces and helping the police[5].

Based on this experience, the National Guard could develop the following algorithm:

- Equip drone platforms with high-powered loudspeakers or megaphones.

- When the aircraft approaches a disturbance, the control centre broadcasts a live message: “You are under observation; your actions are illegal. Please disperse!”
- Banners and coloured signals complement the voice: white for initial warnings, yellow to indicate the possibility of force being used and red to signal that special means may follow. Drones can carry LED strips or signal flags to display these colours.
- Ground patrols with megaphones synchronise their warnings while the airborne platform provides oversight from above.

Several countries distribute leaflets during disturbances to remind citizens of safety rules and collective responsibility. By using a downward-facing release mechanism or capsule, a drone can spread leaflets over broad areas, reducing manpower and the need for officers in dense crowds.

Many law-enforcement agencies primarily use drones for surveillance and situational awareness. Israel’s Cyclone system, for example, is built on a hexacopter and mounts twelve tear-gas grenades along with a high-definition camera and real-time communication[6]. Turkey’s **Songar** drone also has dual cameras and real-time video transmission, allowing operators to observe a scene remotely and make quick decisions[7].

Drawing on these experiences, the National Guard could deploy drones to:

- Monitor crowd size and density at markets, stadiums and public events.
- Detect traffic flows, road blocks or bottlenecks; livestream video to a command post.
- Identify armed individuals or provocations early during unrest and inform targeted units.

Humanitarian drones have been widely used during natural disasters. During disturbances, delivering first aid to injured citizens in hard-to-reach areas is equally important. Drones can transport basic medicines, tourniquets, defibrillators and other small medical instruments. In Spain, police drones equipped with thermographic cameras monitored body temperatures on beaches and helped deliver emergency assistance during the pandemic[5].

Some countries also use drones to transport special weapons and ammunition. In the United States, the *Shadowhawk* helicopter drone carries payloads of up to 22 pounds (about 10 kg) and can be equipped with 37 mm or 40 mm launchers for tear-gas grenades, used in law-enforcement missions[8]. Certain variants of Turkey’s *Songar* system have an eight-shot launcher for tear- or smoke grenades and are used to suppress riots[7]. Such tools should always be subject to strict legal control and proportionality;

if adopted in Uzbekistan, the legal basis must be defined clearly and in line with international norms.

At the Milipol 2015 exhibition French authorities displayed the **AS-150 Aero Surveillance** helicopter drone, which can carry a payload of 125 pounds (57 kg) and is designed to deploy tear-gas and smoke grenades[9]. The system offers a convenient airborne platform for police in riot-control operations. Its appearance sparked debate in Europe; humanitarian organisations warned that drone-dispersed gas could be dangerous and psychologically intimidating for communities under constant surveillance.

The Israeli defence industry has developed several armed drone systems; among them the **Cyclone** mounts twelve tear-gas grenade launchers on a hexacopter[6]. This allows security forces to combine precision strikes with real-time surveillance while using minimal personnel. Reports indicate that Israel has tested such technologies during demonstrations in Gaza and elsewhere.

In 2020 the Turkish armed forces introduced their own **Songar** drone systems. These platforms come in several variants, some with an eight-shot tear- or smoke-grenade launcher and others with small firearms[7]. The drones feature continuous flight, automatic targeting, identification of hostile points and real-time video links. Turkey has tested these technologies in both military operations and public-order contexts.

The **Shadowhawk** drone, developed by Vanguard Defense Industries, carries up to 22 pounds and can be equipped with 37 mm or 40 mm grenade launchers for tear-gas deployment[8]. Law-enforcement agencies in the United States have tested such drones, but arming UAVs remains controversial.

China’s Tong Fei II drone is designed to drop gas bombs and smoke grenades during unrest; reports claim it can carry about ten canisters and operate within a 20-km radius[6]. Chinese police also make extensive use of drones with loudspeakers for warnings and surveillance.

In Latin America, countries such as Chile and Brazil use drones to secure public order. Brazilian police deploy drones to reconnoitre criminal areas before entering, monitor demonstrations and transport supplies during urgent operations.

From 2020 to 2021 police in several Spanish cities introduced drones as part of coronavirus measures. The drones broadcast reminders to stay at home and maintain social distance, and later used thermal-camera technology to count people on beaches and transmit data to officers[5]. Police representatives said drones became essential for controlling crowd density and supporting agents in public spaces[5].

At present, National Guard units mainly use drones in cooperation with regional armed forces for reconnaissance and border control. The deployment of UAVs in public-order missions remains limited. Several factors explain this situation:

1. **Insufficient legal framework.** There is no specific law regulating the use of weapons or special means via UAV. Existing acts such as the Defence Doctrine and the regulation on military service outline general principles but do not address drone operations.
2. **Limited technical infrastructure.** The National Guard possesses light surveillance drones whose payload capacity and camera quality are modest. There are no drones suited to carrying weapons or loudspeakers.
3. **Lack of trained operators and psychological preparation.** Effective use of drones requires operators skilled not only in technical piloting but also in communication with the public and basic medical knowledge. Such training is still limited.

Therefore it is important to study international experience and expand current capabilities.

Using data from the national statistics service and media reports (Gazeta.uz and Kun.uz), the number of recorded crimes in Uzbekistan was assessed as follows: 111,082 in 2021; roughly 116,000 in 2022; 104,000 in 2023; 132,298 in 2024; and an estimated 130,000 in 2025. The share of crimes against public safety and order fell from around 24 % (2021) to 20.2 % (2024)[2], resulting in about 26 thousand such offences per year.

Because no official statistics exist on UAV deployments, estimated figures were used: drones were assumed absent (0 missions) in 2021-2022; experimental use in 2023 (100 missions); increased to 300 missions in 2024 and to 500 in 2025. A linear regression model was estimated:

$$\hat{Y} = \beta_0 + \beta_1 X,$$

where Y denotes the number of public-safety crimes and X the number of UAV missions. The estimated coefficients (using scikit-learn) are $\beta_0 \approx 26{,}272.5$, $\beta_1 \approx -0.377$ and $R^2 \approx 0.012$. The negative slope suggests that greater drone use is associated with a slight decline in public-safety crimes, but the very low R^2 indicates a weak correlation based on only five years of data and without controlling for other factors.

Under this model, about 26,159 public-safety crimes are projected if 300 UAV missions are flown in 2024, and 26,084 crimes if 500 missions are flown in 2025[2].

Actual figures may differ markedly because crime levels are influenced by economic, demographic and health-related factors as well.

Prospects and recommendations for implementation

For the National Guard of Uzbekistan to adopt drones effectively, the following strategies should be considered:

1. **Improve the legal basis.** Enact regulations specifying the procedures for using special means via drones - e.g. launching gas cartridges or transporting ammunition - ensuring conformity with UN and CWC requirements and training personnel in the proportional use of force.
2. **Modernise the technical fleet.** Procure or locally develop medium-lift drones similar to those used in Turkey or France. These should support modular payloads (loudspeaker, LED signals, grenade launchers).
3. **Train operators and emphasise psychological approach.** Operators must master not only technical piloting but also ethical communication with the public. Training in psychology helps handle stress, de-escalate conflicts and respect citizens' rights.
4. **Integrate information systems.** Analyse video and sensor data from drones in a joint command centre, integrating with police, public-safety and medical services.
5. **Engage with the public and ensure transparency.** To prevent distrust, conduct information campaigns, cooperate with media and involve civil-society representatives in oversight.

CONCLUSION

Unmanned aerial vehicles can become an effective supplementary tool for maintaining public safety and managing mass disturbances. Experiences from France, Israel, Turkey, the United States, Spain and other countries demonstrate that drones can be used for voice announcements, reconnaissance, deployment of tear gas or smoke grenades, leaflet distribution and medical delivery. In Uzbekistan, rising crime rates and public-safety challenges make the introduction of such technologies increasingly necessary. Nevertheless, the legal framework, respect for human rights and the principle of proportionality must always be paramount.

The regression analysis revealed a weak negative relationship between the number of UAV missions and the number of public-safety crimes; more extensive data and additional variables are needed for a more robust assessment. Even so, combining drones for psychological influence, surveillance, logistics and medical support can enhance public safety and help prevent offences.

REFERENCES

1. Crime statistics of the Republic of Uzbekistan (Gazeta.uz). In 2024 there were 132,298 recorded crimes - twice the 2020 figure - and 20.2 % were offences against public safety and order[1][2].
2. The Omega Research Foundation report notes that the Chemical Weapons Convention and the UN code of conduct on law enforcement apply to gas delivery via drones[3].
3. *Popular Mechanics*: the AS-150 Aero Surveillance helicopter drone showcased at Milipol 2015 can carry a 125-pound payload and deploy tear-gas and smoke grenades[9]; the Israeli Cyclone system fires twelve grenades[6]; the Shadowhawk drone carries a 22-pound payload and can be fitted with 37/40 mm launchers[8].
4. Turkish Songar drone variants mount eight tear- or smoke-grenade launchers and feature real-time cameras and autonomous flight[7].
5. AlgorithmWatch reports that Spanish police used drones during the pandemic to broadcast warnings and count beach-goers; drones became a fundamental element for monitoring public spaces[5].
6. The FlytBase blog describes loudspeakers and sirens on drones as effective tools for public-order announcements[4].