

Comparing Current Drone Regulations with Public Concerns

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by

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Introduction

Effective regulation of new and rapidly evolving technologies poses many difficulties. Effective regulations are those that not only mitigate the real-world objective risks, but also address the more subjective fears and concerns of the public (Loewenstein, Weber, Hsee, & Welch, 2001; Slovic, Finucane, Peters, & MacGregor, 2004). Numerous new risks may arise when a new range of products is first introduced into society. As such, when the emerging technology does not fit neatly within a pre-existing regulatory scheme, regulators have the difficult task of creating new rules which do not conflict with existing ones. In the absence of an established record of first hand risk assessment data, regulations of new and emerging technologies are largely based on ethical considerations, perceptions of risk, or their potential impacts (Zwickle, Farber, & Hamm, 2018). This is the case with regard to unmanned aerial vehicles (UAVs), more commonly referred to as drones, and the potential threat they pose to manned aircraft and people on the ground. This paper analyzes how current drone regulations relate to public concern and support for drones in the U.S. Understanding this relationship will lead to a more effective regulatory structure that effectively mitigates emerging and existing risks and supports public interests. Furthermore, this paper will utilize this information to address steps that can be taken to create a more effective drone regulation system.

The use of drones in commercial applications has the potential to dramatically transform several industries and in the process, change attitudes and behaviors regarding their impact on daily lives. Drones influence practice, perform tasks, achieve goals, and create new capabilities and possibilities for action. Much like the internet, drones can also allow us to share information faster and cheaper. However, they are also burdened with the perception as being surveillance equipment, and their commercial use has been criticized by both individuals and activist

organizations. Therefore, regulators such as the Federal Aviation Administration (FAA) and its subgroups must form effective regulations to appease both parties.

When there is no empirical data pertaining to the risks of technology, regulators often rely on the precautionary principle, favoring rules that limit rather than permit usage (Hunt & Mehta, 2013). This is true with drone regulations. FAA regulations greatly limit the commercialization of drones, however the public least favor laws that limit the use of drones. The largest discrepancy however is the public's preference for laws protecting personal privacy contradictory to the lack of regulatory constraints currently in place.

Regulators Used the Precautionary Principle

The FAA have employed the precautionary principle to the regulation of drones which can be seen through the progression of initially strict regulations followed by a gradual relaxation. Since 2007, the FAA has adopted a general ban on the use of drones for commercial purposes without a special permit (Chiaet, 2013). Thus, flying drones for commercial use was illegal other than special exemptions and authorizations. In 2012 under the Federal Aviation Administration Modernization and Reform Act, Congress ordered the FAA to develop a plan to integrate unmanned aircraft into the national airspace with a deadline of September 2015. Since then, FAA regulators have loosened the laws regarding the licensing process for commercial operators. The first big change came in 2016 with the announcement of a less burdensome licensing process for commercial operators (Federal Aviation Administration Modernization and Reform Act of, 2012). These rules simplified and expedited the licensing process for commercial operators to fly unmanned aircraft. Previously, commercial users could not operate without prior approval from the FAA. Those seeking authorization would apply for a waiver under section 333

of the Federal Modernization and Reform Act of, 2012. Approval came in the form of a Certificate of Authorization (COA). The length of time it took to obtain a COA averaged between 4 and 6 months, once all documents were submitted to the FAA (Rapp, 2015). Under this application system, the FAA issued more than 6,000 approvals (Kang, 2016). With the onset of the new rules, businesses were able to advance their drone operations quicker and more efficiently. The relaxation of laws from 2007 to 2016 and the increase in the number of drones clearly indicate that the FAA initially took a safe approach regarding drone regulations.

FAA Regulations Significantly Limit the Commercialization of Drones.

The 2016 regulation eliminated much of the bureaucracy involved in obtaining authorization to fly a drone which led the drone industry to see unprecedented growth. The Consumer Technology Association projected 2.8 million drone sales in 2016, a 149% increase over 2015 (Hubbard, 2017). The FAA estimates that seven million drones will be operating by 2020, tripling the number in a mere 4 years from an estimated 2.5 million in 2016. Included in this projection are both hobby drones, climbing from 1.9 million to 4.3 million in 2020, and commercial drones, increasing from 600,000 in 2016 to 2.7 million in 2020. Upon lifting previous constricting rules, the new regulations have given the green light to businesses to begin executing their plans for applying drone technology to a multitude of uses from aerial photography to agricultural applications.

However, as drones proliferate so to have incidents involving unwelcome intrusions into personal privacy. Incidents of people alarmed by a drone peering into their window or flying over their property while taking pictures of activities not viewable from ground level have become more frequent.

Regulation Regarding Privacy

While the 2016 rules provide a comprehensive framework for integrating small commercial drones into the national airspace, they strictly focus only on ensuring air safety. The FAA plainly states that its mission is “to provide the safest, most efficient aerospace system in the world, and does not include regulating privacy” (FAA, 2016b). The FAA has neither the intent nor the mandate to issue or enforce regulations specifically aimed at protecting privacy. Absent a state or local law limiting a drone’s ability to hover over private property or use its platform-mounted camera to peer in windows, implications for the general public may be exposure to intrusive surveillance with little or no legal protection. However, in response to growing privacy concerns, state and local lawmakers nationwide have initiated laws to limit the use of drones. Since 2013 there has been unprecedented legislative activity among states to restrict how, where, and by whom unmanned aircraft in general can be operated. Presently, 31 states have passed laws that expressly regulate the operation of unmanned aircraft (Essex, 2017). Even though the main purpose of this legislative action is to protect privacy, achieving fully effective regulations is still in its infancy.

Even though state and local lawmakers nationwide have initiated laws to limit the use of drones in response to growing privacy concerns, they are mostly ineffective. Florida was one of the first states to grant a legal remedy against anyone who uses a drone to capture images of persons or objects on private property without prior consent where a reasonable expectation of privacy exists (Search and Seizure Using a Drone, 2015). The Florida statute defines reasonable expectation of privacy as a person not being seen by others at ground level regardless of whether he or she is observable from the sky. Several states have enacted similar statutes containing

altitude restrictions, the requirement that the operator maintain a visual line of sight with the drone at all times, and prohibitions on night-time use. Oregon and Nevada have passed laws that prohibit anyone from flying a drone at 400 or 250 ft, respectively, above another person's property without prior consent (Aircraft Operations, 2016; Assembly Bill 239, 2015).

Nevertheless, these types of drone restrictions present obstacles to compliance. For instance, many operators will have difficulty determining if their flight is above the restricted altitude. Moreover, it would be virtually impossible for anyone flying a drone, other than over their own property, to avoid capturing the images of hundreds of persons and properties with the factory-installed camera and live streaming video capability. These laws create a problematic scenario in the scope of creating effective regulations as they do not address public concern. Rules such as requiring the operator to always have a visual line of sight greatly limits the scope of use of drones and does a poor job at preserving personal privacy.

Americans Favor Laws that Protect Personal Privacy

Surveys show that the public highly value laws protecting personal privacy with respect to drones. A study by Ipsos and Reuters (2015) of 2,405 U.S. citizens showed that 42% disapprove private ownership of drones, mostly because of privacy concerns. Another study by Zwickle, Farber, & Hamm (2018) showed that of 768 U.S. citizens, 49.9% identified privacy as the primary concern while 50.1% identified safety. Furthermore, the study highlighted five categories of drones: Amazon drone (delivery drone), Commercial drone, Recreational drone,

Law enforcement drone, and Search-and-rescue drone and evaluated the support for different policies according to each drone type. Fig 1 shows the results of this survey.

	Sample mean	Amazon drone	Commercial drone	Recreational drone	Law enforcement drone	Search-and-rescue drone
Complete ban	2.49	2.59	2.29 [*]	2.55	2.91 ^{***}	2.03 ^{***}
Temporary ban	3.03	3.25 [*]	2.86	2.87	3.46 ^{***}	2.61 ^{***}
Night ban	3.32	3.62 ^{**}	3.25	3.36	3.43	2.92 ^{***}
Private property ban	3.85	3.66	3.95	4.08 ^{**}	4.03 [*]	3.44 ^{***}
Hover limit	3.57	3.86 ^{**}	3.44	3.51	3.72	3.33 ^{**}
Video limit	3.46	4.01 ^{***}	3.24 [*]	3.36	3.48	3.29
Consent	3.77	3.86	3.91	3.76	3.80	3.51 ^{**}

Fig 1. Mean support for regulation by drone (1 = definitely no, 5 = definitely yes) (Zwickle, Farber, & Hamm, 2018)

A category of regulation that respondents showed universal support for, regardless of the type of drone, were restrictions on flying over private property. Further analyzing public perception, the mean differences in regulation support by the most important risk perceived (safety and privacy) were tested. As reported in Fig 2, support was significantly higher for every regulation when the participants were most concerned about privacy risks i.e. people would be in favor of that specific regulation due to privacy concerns rather than safety.

Regulation	Privacy	Safety
Complete ban	2.64	2.34
Temporary ban	3.14	2.91
Night ban	3.43	3.21
Private property ban	4.03	3.67
Hover limit	3.70	3.45
Video limit	3.65	3.27
Consent	3.90	3.65

Fig 2. Mean support for regulation by most important perceived risk (1 = definitely no, 5 = definitely yes) (Zwickle, Farber, & Hamm, 2018)

Although the current regulatory structure governing the use of drones in the U.S. is largely meeting the needs of the public from a safety standpoint, the level of legal protection citizens have with regard to privacy is not up to standard. Emerging technologies typically outpace the laws and regulations governing their use (Macnaghten, Kearnes, & Wynne, 2005; Renn & Roco, 2006) and drones are exception. While respondents' policy support suggested that privacy was a primary concern, existing laws regarding aerial surveillance and trespassing were not written for the current state of the technology. While the FAA has a strict focus on regulating the safety aspects of integrating drones into the airspace, state and local motivations are to pass new laws addressing privacy concerns. However, in areas without legislation there can be little recourse for individuals who feel their privacy has been violated by the use of a drone.

It is evident from the research conducted that the public perceives benefits from using drones to perform a variety of functions in society. This is supported by the low levels of public support for a complete ban on their operation. It is also clear that drones are perceived as presenting risks to personal safety, public safety, and privacy. In general, respondents in the study were most supportive of those regulations that sought to mitigate privacy risks and were least supportive of those which restricted the use of drones to mitigate public safety risks, such as in search-and-rescue operations.

Potential Strategies to Ensure More Effective Regulatory Structure

Many countries have already started the process to adapt their drone regulations however, these arrangements do not effectively address fixing the most imperative problem created by drone technology: faulty privacy and surveillance regulations. Australia, which is one of the pioneers of the use of drones for commercial activities, has recently pointed out the inappropriateness of its Commonwealth Privacy Act, that does not cover collection and use of personal information by private citizens and small business (Christensen, 2014). Therefore, it is crucial to find a way to address personal privacy issues.

One such way is to assign accountability and liability. As of now, the U.S. has only broad general guidelines and basic tools such as evidence collection and operator/witness identification and interview to mitigate UAV related accidents (FAA, 2014). However, since UAVs can cause physical damages much like cars, it seems legitimate to introduce compulsory insurance plans that would create a registry of devices to link each and every sold one to its owner, therefore helping in assigning responsibilities for illegal activities. Ideally, standards must to be set

throughout governmental and private organizations across the world in order for insurance plans to be consistent.

Conclusion

The current regulatory structure governing the use of drones in the U.S. is largely meeting the needs of the public from a perspective of safety, but the level of legal protection citizens have in regard to privacy need to improve. Emerging technologies typically outpace the laws and regulations governing their use (Macnaghten, Kearnes, & Wynne, 2005; Renn & Roco, 2006) and drones are no exception. This is reflected in the FAA and governments struggle to effectively regulate drones. While the survey suggests that privacy was a primary concern, existing laws regarding aerial surveillance and trespassing were not written for the current state of technology (Farber, 2014). While the FAA has a strict focus on regulating the safety aspects of integrating drones into the airspace, state and local concerns lie in new laws protecting privacy. However, for areas without privacy legislation, individuals can have little control or recourse when their privacy has been violated by the use of a drone.

The public perceives certain benefits from the use of drones to perform a variety of functions in society. This is evidenced by the low levels of support for a complete ban on their operation. However, drones are also perceived as presenting risks to personal safety, public safety, and privacy. In general, public opinion on drone regulations are focused privacy which was shown by the participants in the drone survey being most supportive of regulations that sought to mitigate privacy risks and least supportive of those which restricted the use of drones to mitigate public safety risks, such as in search-and-rescue operations. This dichotomy has the deepest implications for law enforcement agencies. Local, state and federal law enforcement

seek to ensure public safety, but in doing so they risk intruding on the privacy of those they seek to protect. If law enforcement officials seek to use drones for investigative purposes, they should do so while remaining aware of the perceived risks the public holds regarding invasions of privacy. To better equip both policymakers and law enforcement to deal with this paradox, philosophical, ethical, and legal research should focus how to most effectively walk the line between protection and intrusion.

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