



# Analysis of U.S. Drone Exemptions 2014-2015

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The Center for the Study of the Drone at Bard College is an interdisciplinary research institution founded in 2012 that examines the novel and complex opportunities and challenges presented by unmanned technologies in both the military and civilian sphere.

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## Executive Summary

This report is based on an analysis of 2,732 Section 333 exemption documents issued by the Federal Aviation Administration between September 25, 2014 and December 31, 2015 to individuals, companies, and other institutions wishing to use drones for non-recreational purposes in U.S. airspace. This dataset offers insights into the shape and possible future direction of the nascent drone industry. We have analyzed these exemptions by date, location, types of intended operations, number of categories of intended operations, and types of unmanned aircraft to be used. Our analysis yielded a number of key findings (Section II). The rate at which exemptions are granted has grown dramatically since the beginning of the Section 333 program. The number of intended operations listed in exemptions has grown from an average of 1.4 intended operations per exemption in the first eight months of the program to 2.38 intended operations per exemption in the final two months of 2015; this has significantly affected the overall spread of intended operations in the dataset. The data suggests the emergence of a “Various Uses” drone services business model, which has contributed to the increased number of intended operations listed per exemption. We found an average of two aircraft listed per exemption, with an overwhelming majority of those—over 60 percent—being DJI-brand products. Exemption holders are located across all 50 U.S. states as well as the District of Columbia and Puerto Rico. The number of exemptions issued per state roughly matches the spread of national population by state, with entities in Florida and Colorado holding a disproportionately high share of exemptions compared to those states’ share of the national population. A number of factors, including uncertainty in the regulatory landscape, local legislation, and advances in technology are all shaping the future of the Section 333 program and the U.S. drone industry as a whole. These factors are discussed in Section III.

# I. Introduction

## Background

Over the past few years, as drone technologies have become progressively more affordable and capable, growing numbers of people have sought to use drones for commercial, non-recreational activities. In order to enable the nascent drone industry to grow, Congress wrote provisions into the 2012 FAA Modernization and Reform Act that required the Federal Aviation Administration to develop and implement regulations for the commercial use of drones in the National Airspace System. Congress set a deadline for the FAA of September 30, 2015 to prepare and implement its drone regulations.<sup>1</sup> In order to allow a degree of growth in the interim period prior to the implementation of these rules, the 2012 Act authorized the FAA to allow certain non-recreational drone operators to begin flying low-risk operations before the full regulations for drones were implemented. Under Section 333 of the Act, the FAA developed a process to review, on a case-by-case basis, petitions from individual operators wishing to be exempted from standing rules that ban the non-recreational use of drones.<sup>2</sup> Users who are granted exemptions could take to the sky without an airworthiness certificate, the FAA's standard for determining whether an aircraft is safe to fly. These exemptions are accompanied by a list of guidelines and restrictions on how and when the exemption holder can fly.

This stop-gap measure became known as a "333 exemption," and it is the principal mechanism by which non-recreational drone users are taking to the skies until the implementation of full regulations, which has been delayed well beyond the September 30, 2015 deadline. The FAA issued its first exemptions on September 25, 2014.<sup>3</sup> The recipients, five companies in California and one in Texas, wished to use drones for movie and television production. Every few weeks for the rest of that year and until early 2015, the FAA approved several more exemptions to an increasingly diverse set of users from a variety of industries.

During this period, the FAA required exemption holders to obtain a Certificate of Authorization before each flight. In March 2015, the FAA eliminated this requirement; entities are now allowed to fly over most geographic areas in the United States as long as they remain under 200 feet and away from airports.<sup>4</sup> Beginning in April 2015, the pace of exemption approvals quickened. That month, 178 exemptions were issued, more than three times as many as were issued in the previous five months combined. The FAA surpassed 500 total exemptions on June 1, 2015 and 1,000 exemptions later that summer.<sup>5</sup> At any given time, there is a backlog of several thousand petitions for exemption.

## Why We Analyze the Data

The future of the unmanned aircraft industry is rife with uncertainty. Ongoing advances in drone technology present new opportunities for businesses, but also generate new regulatory challenges that policymakers must contend with. At the time of writing, nearly 4,000 commercial and civil entities and individuals have obtained permission, through exemptions, to fly drones in the U.S.<sup>6</sup> Once full regulations for non-recreational drone use are implemented, these entities that have operated under exemption will serve as the foundation from which the industry will grow. By examining the exemptions, we are therefore able to gain a clear view of the shape that the industry is likely to take in the near future. The database reveals what kinds of applications current drone technology is most suited to, what kinds of business models are likely to dominate in the market, where these business might be concentrated, and what types of drones they are likely to use. The exemptions reflect the attitudes and intentions of the thousands of individuals and companies that see a role for themselves in the emerging drone economy. This database is the most extensive and detailed source of data on which to build near-term predictions about the drone industry. It is also a singular source for policymakers

looking to develop targeted regulations that enable sustainable growth in a complex and fast-evolving sector.

## Methodology

Our database is built from data extracted from FAA Section 333 exemption letters, which are publicly available on the FAA’s website, as well as the petitions for exemption submitted by would-be non-recreational drone operators, which are available on the public docket at regulations.gov. The FAA’s exemption letters include the date of the exemption, the name and location of the exemptee, a short description of the activities that the exemptee has received permission to engage in, and a list of unmanned aircraft systems that the exemptee will be using for said operations. The petitions for exemption include a detailed description of intended operations, along with information about the drones that the petitioner plans to use, the regulatory basis for the petition, and a description of the likely public benefit of the petitioner’s proposed drone operations.

Using these documents, we have built a database of every exemption. This database includes the date of the exemption, the types of operations covered by the exemption (“Categories”), the types of drones to be used in these operations (“Aircraft”), the location of the exemptee, and a description of the operations covered by the exemption.

The FAA requires petitioners to describe how they plan to use their drones. For example, a petitioner hoping to use a drone for commercial real estate photography must state in his/her petition something to the effect of “I plan to operate unmanned aircraft commercially for real estate photography.” It is generally understood that if a commercial drone user holds an exemption that lists “aerial photography and videography for real estate” as the only service covered by the exemption, that person will not then use his or her drone to conduct aerial surveys for the oil and gas industry.



*Photo: Christopher Michel / Flickr*

This information allows us to develop a detailed picture of the industries that non-recreational drone users currently serve, and the types of missions they engage in. We apply categories to each exemption based on a review of the description of operations provided in either the exemption letter, the petition, or a combination of the two.<sup>7</sup> All exemptions that list an operation that does not fall within one of our categories will receive the designation Other.

More than half of all petitions list more than one kind of operation. For example, a petitioner might request an exemption for infrastructure inspections and aerial photography of weddings; in this case, we categorize the exemption as both Utilities/Energy/Infrastructure and Photo/Film. If an exemption lists two kinds of intended operations that both fall under a single category—for example, an exemption that lists “wedding photography” and “landscape photography”—we do not repeat the category for that exemption.

The “Description” text that we include for each exemption in the database is copied directly from these documents, with occasional formatting and spelling corrections where necessary. This description text reflects the basis for the categories that we apply to the exemption.

Officially, the FAA only separates drone operations into two broad categories: “Aerial Data Collection” and “Closed-set Filming.”<sup>8</sup> (We categorize all closed-set filming exemptions as Photo/Film). We believe that this does not offer a sufficiently granular portrait of the drone services industry. Our categories are designed to more precisely reflect the types of operations that they will engage in.

Every so often, a current exemptee will petition the FAA for an amendment to their exemptions. In the period covered by this report, 204 such amendments were issued. In the majority of cases, these amendments either add new unmanned aircraft to the exemption or new proposed categories of operation. Amended exemptions are updated and labelled in our database with the tag “(Amended mm/dd/yyyy).”

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## Notes

- 1 H.R. H. R. 658—62 “FAA Modernization and Reform Act of 2012, 112th Cong., U.S. G.P.O. (2012), Sec. 332-336 (enacted).
- 2 FAA. “Section 333.” Section 333. Accessed February 13, 2016. [https://www.faa.gov/uas/legislative\\_programs/section\\_333/](https://www.faa.gov/uas/legislative_programs/section_333/).
- 3 FAA. “U.S. Transportation Secretary Foxx Announces FAA Exemptions for Commercial UAS Movie and TV Production.” News release. FAA.gov. Accessed February 19, 2016. <https://www.faa.gov/news/updates/?newsId=83395>
- 4 FAA. “FAA Streamlines UAS COAs for Section 333.” News release. FAA.gov. Accessed February 19, 2016. <https://www.faa.gov/news/updates/?newsId=82245>. <http://www.wsj.com/articles/faa-to-consider-allowing-small-drones-to-fly-over-people-1456356511>
- 5 FAA. “It’s (a) Grand! FAA Passes 1,000 UAS Section 333 Exemptions.” News release. FAA.gov. Accessed February 19, 2016. <https://www.faa.gov/news/updates/?newsId=83395>.
- 6 FAA. “Authorizations Granted Via Section 333 Exemptions.” Authorizations Granted Via Section 333 Exemptions. Accessed March 02, 2016. [https://www.faa.gov/uas/legislative\\_programs/section\\_333/333\\_authorizations/](https://www.faa.gov/uas/legislative_programs/section_333/333_authorizations/).
- 7 Occasionally, when location data is not available in these documents, we use external sources such as the company’s website.
- 8 Rupprecht, Jonathan, Esq. “Participating Individuals, Non-participating Individuals, and the 500ft Bubble.” Rupprecht Law (blog). Accessed February 29, 2016. <http://jrupprechtlaw.com/what-is-the-definition-of-non-participating-person-in-the-333-restrictions>.

## II. Findings

### Rate of Exemption Granting

Our database consists of 2,732 Section 333 exemptions issued by the FAA from the inception of the program, in September 2014, to December 2015. In the first nine months of this period, the rate of exemption-granting increased significantly, from just six exemptions issued in September 2014 to 249 exemptions issued in May 2015. The biggest increase in exemption-granting occurred between March 2015 (30 exemptions issued) and April 2015 (178 exemptions issued). From August 2015 to December 2015, the rate levelled out at an average of 349 exemptions per month. This rate has again spiked in 2016, with over 1,000 exemptions issued in January and February alone.<sup>1</sup>

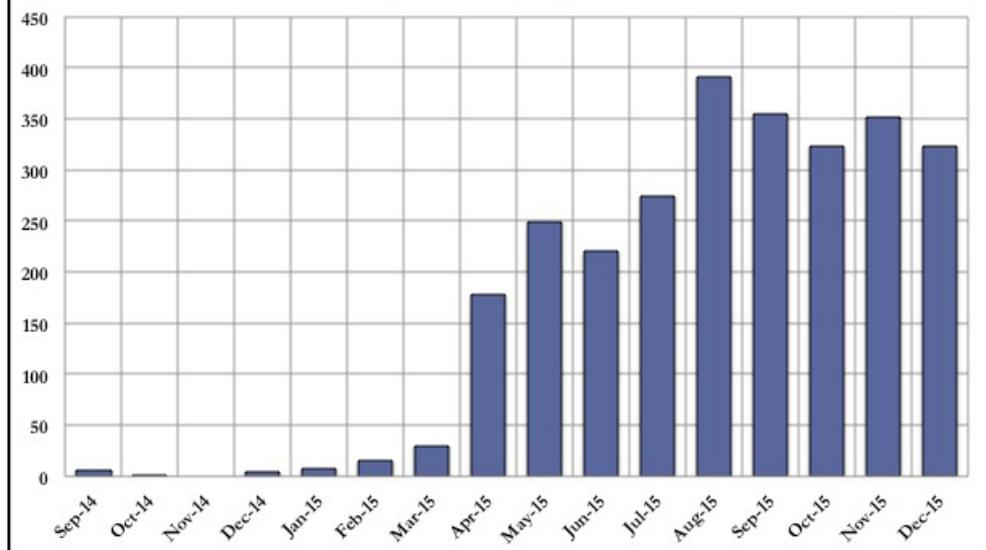
### Intended Operations Categories

On average, each exemption lists just over two types of intended operations, which we call “Categories.” These categories reflect the types of industries that the exemption holders will serve, as well as the types of operations they will engage in. The most common proposed type of operation is Photo/Film, which makes up about 29 percent of all proposed categories of operations listed in exemptions, and appears as an intended category of operation in three out of five exemptions.<sup>2</sup> Real Estate was the second most common, at 18.2 percent, appearing in about two out of five exemptions. Forty seven percent of all exemptions list either Photo/Film or Real Estate as an intended operation, and an additional 28 percent list both. In total, about three quarters of all exemptions list either Photo/Film, or Real Estate, or both as an intended operation.

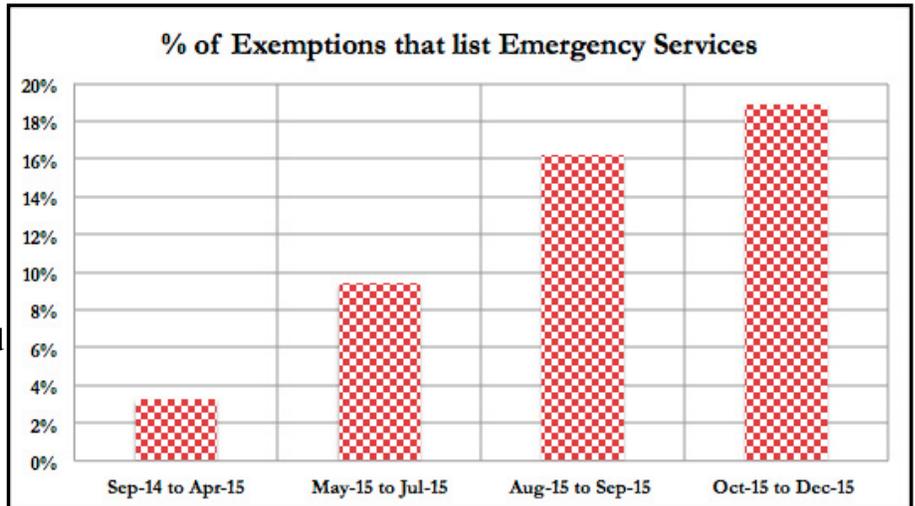
### Key Findings

- The rate of exemption-granting grew significantly throughout the period, from less than ten per month in 2014 to over 300 per month in late 2015.
- On average, each exemption lists about two intended types of operation.
- The most common intended drone operation categories are Photo/Film and Real Estate. Three out of four exemptions list either Photo/Film, Real Estate photography, or both as intended operations.
- The number of intended operations listed in individual exemptions is increasing, suggesting that a “Various Uses” business model is gaining popularity.
- On average, exemptions list two unmanned aircraft types that will be used in operations. The most popular unmanned aircraft maker is DJI, which accounts for two out of three drones listed across all exemptions.
- The geographical spread of exemption-holders roughly matches the national population spread. Entities in Florida and Colorado hold disproportionately high shares of exemptions.

Exemptions Issued per Month



Emergency Services is the only category to have seen sustained and consistent growth in popularity over the period. In the first eight months of the exemptions period, from September 2014 to April 2015, Emergency Services represented just 2.3 percent of all stated intended categories of operations and was listed in just 3 percent of all exemptions. In the period October 2015 to December 2015, it represented 8 percent of all stated categories operations and appeared as an intended operation in 18.9 percent of exemptions.

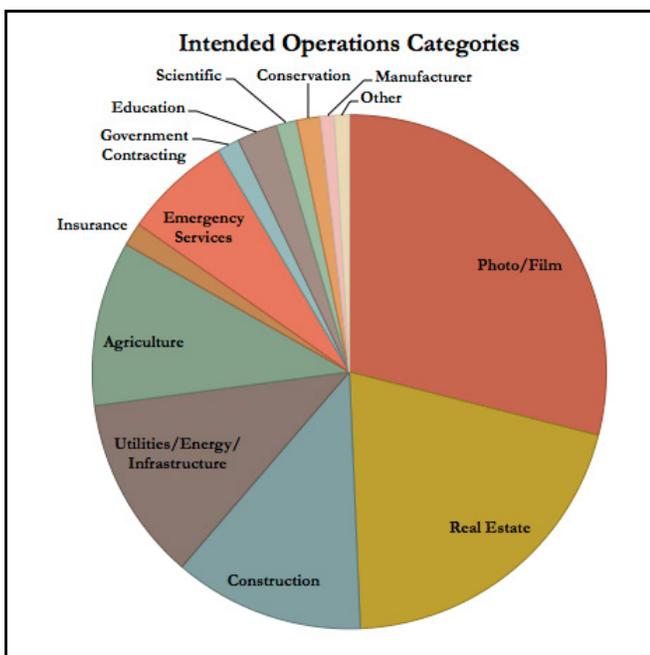


Construction, Utilities/Energy/Infrastructure, and Agriculture are all roughly equally popular applications, each representing about 11 percent of all stated intended categories operations and appearing in about one in five exemptions. Agriculture has proven to be a less common application than anticipated by a variety of market forecast reports. For example, the Association for Unmanned Vehicle Systems 2013 report forecasted that agriculture was likely to be the largest potential for economic impact by 2015.<sup>3</sup> However, Agriculture is listed as an intended operation in just 595 exemptions.

Approximately one in nine exemptions lists Training as an intended operation. However, the FAA currently prohibits training operations under its 333 program “until a further assessment is completed,” at which point exemption holders who list “training” as an intended operation will be permitted to conduct such operations.<sup>4</sup>

### Number of Categories per Exemption

Petitioners are increasingly listing higher numbers of intended categories of operations in their petitions. In the first eight months of the exemptions program, the average number of categories of operations in each exemption was 1.42. In the period from August 2015 to September 2015, the average rose to 2.17. In the final three months of 2015, the average number of intended categories of operations per exemption was 2.38. In the period from August 2015 to December 2015, only 37.8 percent of exemptions listed a single intended operation, compared to 57.3 percent in the period from September 2014 to July 2015.



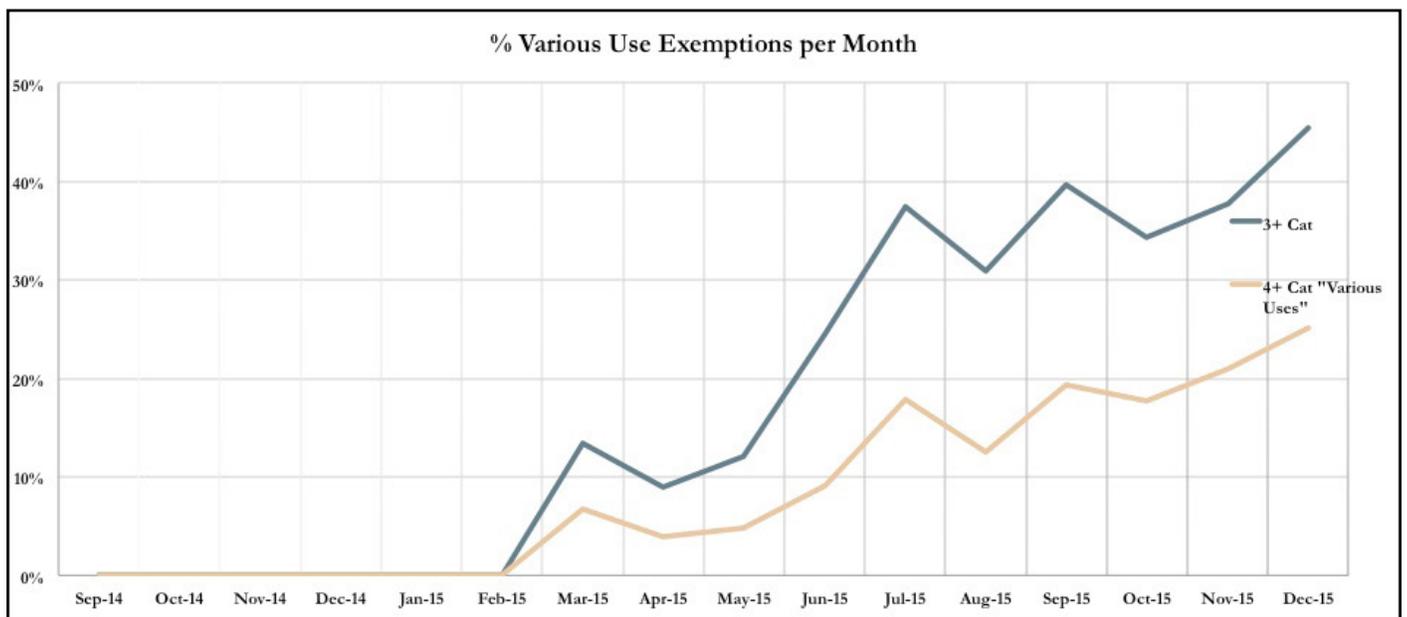
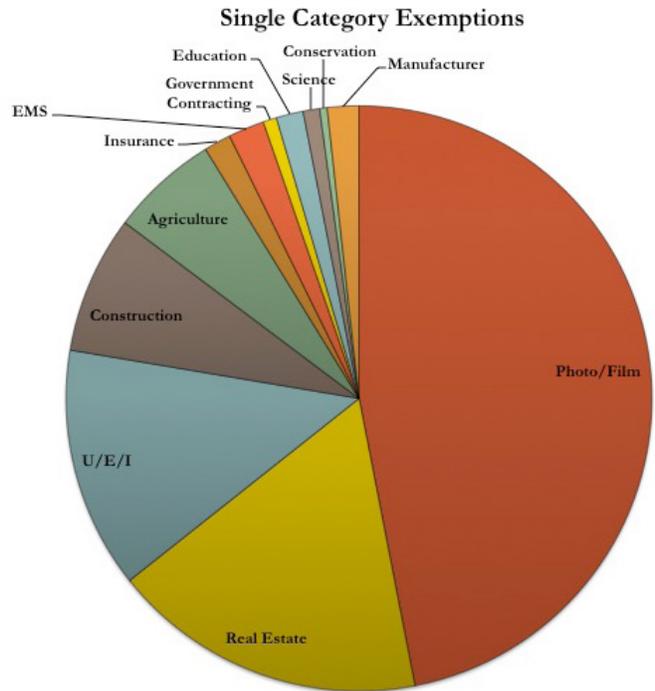
The growth in the number of intended operations per exemption is significant, as it affects the overall proportions of intended operations in the whole Section 333 dataset. In order to measure this influence, we looked at the exemptions that list a single category. There are 1,226 exemptions that list a single category of intended operation. We compared the variety of listed operations in single category exemptions to the intended operations listed among all exemptions and discovered several

differences. For example, Photo/Film was listed as the sole intended operation in 46.2 percent of single category exemptions, even though it represents just 29 percent of all intended operations listed in the database as a whole. Likewise, Emergency Services is listed as the sole intended operation in just 2 percent of single category exemptions, compared to 6.7 percent across all exemptions.

exemptions. In the period from October 2015 to December 2015, 21.2 percent of all exemptions listed four or more categories of intended drone operations. We have observed similar growth in the number of exemptions that list three or more categories of intended operations.

### Various Uses Exemptions

Over the course of 2015, we have seen a new business model emerge with increasing frequency among Section 333 petitioners: companies and individuals offering a wide variety of drone services in a range of industries. This trend likely accounts for much of the growth in the average number of intended uses described by each petition. We have tracked these “Various Uses” exemptions, which we have defined as exemptions that cover four or more Categories of operation. The first Various Uses exemptions were issued in March 2015. Among the exemptions issued in March, April, May, and June 2015, only 39 (5.7 percent of all exemptions issued in that period) were Various Uses exemptions. Among the exemptions granted in July and August, 14.6 percent of the total exemptions issued in that period were Various Uses



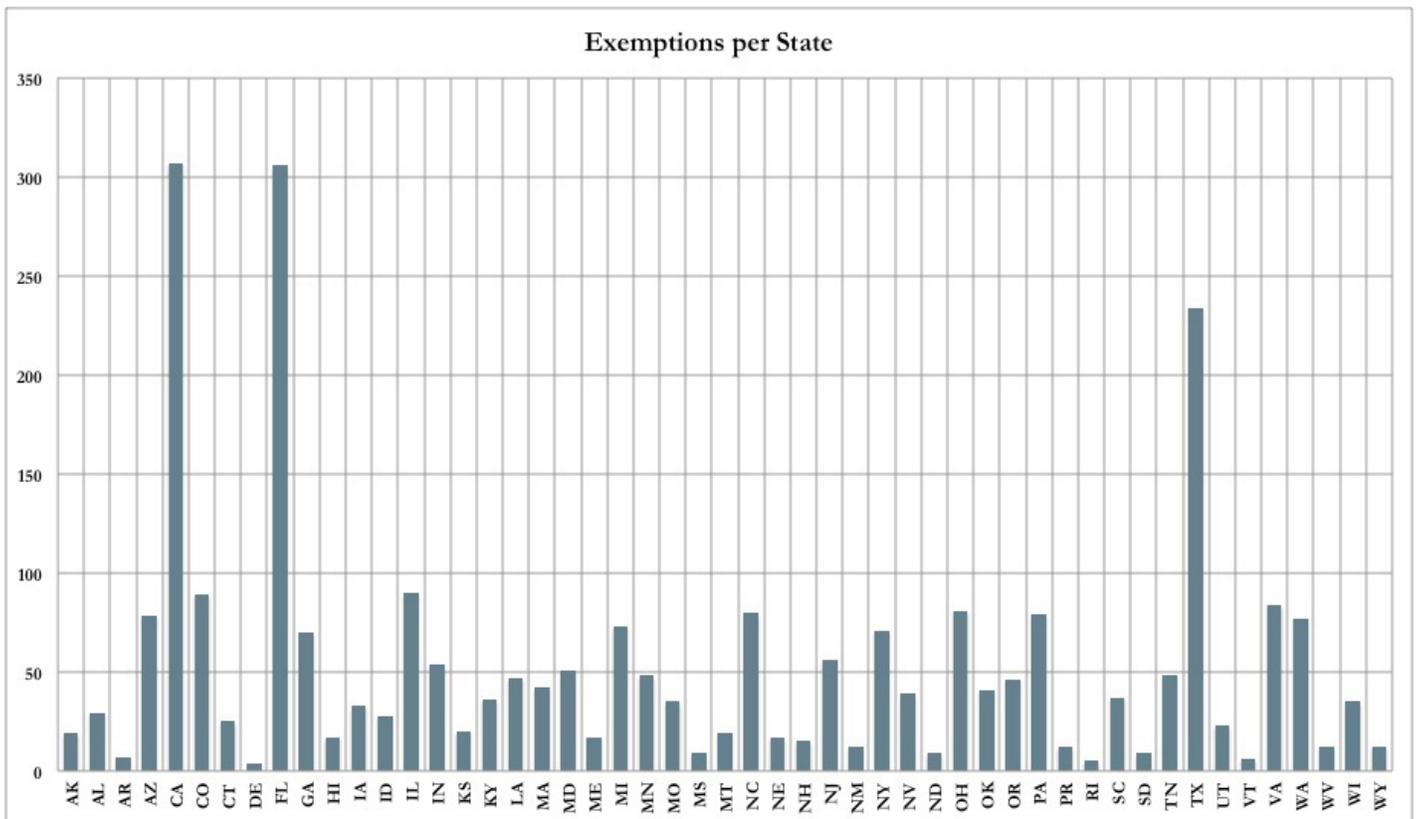
Often, the text describing the intended operations in these Various Uses petitions appears to be copied and pasted from a previous petition with minimal adjustments. This description of intended operations from the company Uneek Perspective, which was granted an exemption on May 19, 2015, is an early and representative example of this text:

These “Various Uses” exemptions account for just 15.4 percent of the total number of exemptions, but include 33.2 percent of all listed intended operations. The growth in the number of Various Uses exemptions is therefore likely having a significant impact on the proportions of intended drone operations represented by our dataset.

- Aerial photography and/or video for public and/or private use including real estate, architecture, land surveying, engineering and other related professional activities.
- Aerial video and/or photography for public and/or private use including television, public events, cinematography and news gathering.
- Aerial inspection/photography of residential/commercial structures under contract with the owners or local government authority.
- Aerial inspection/photography of residential/commercial utility infrastructure including but not limited to electrical power lines, wind turbines and cell towers.
- Aerial video/photography or providing live video feed to assist with search and rescue operations in cases of an emergency or natural disaster only when the local authorities or government has requested it by contract or donation.
- The ability to offer training to persons individually or belonging to both private and/or public organizations that have interests in the use and application of a UAS for the purpose of the safe operation of a UAS to enhance the safety of the National Airspace System (NAS) as well as for the protection of the persons and property.

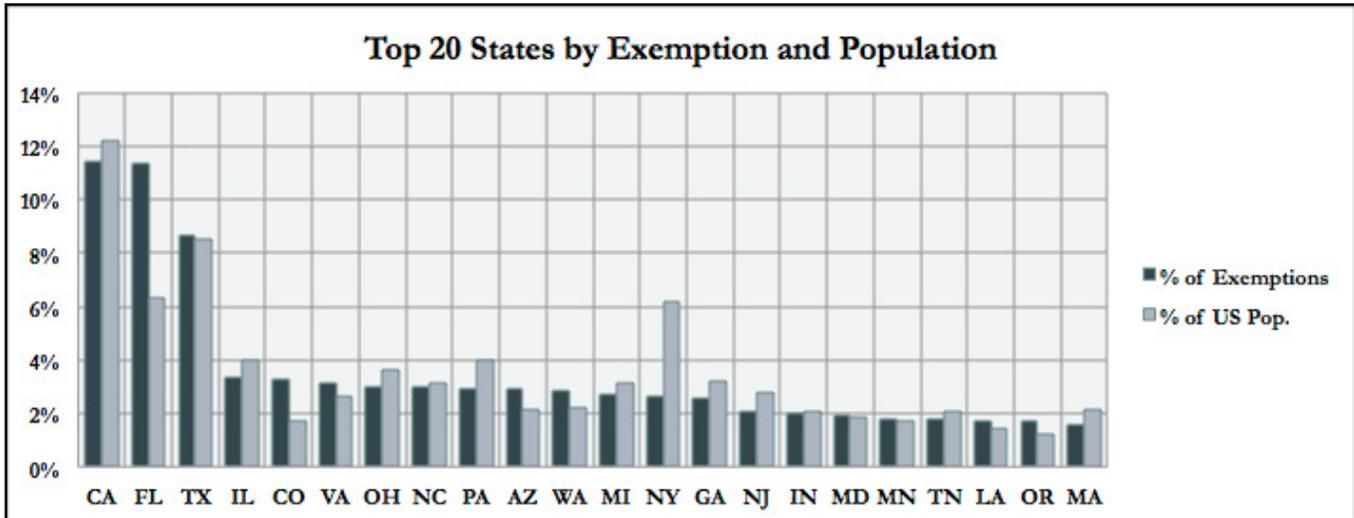
### Geographic Spread

Exemption holders are spread across all 50 states, as well as Puerto Rico and the District of Columbia. California and Florida have the highest number of exemption holders, with 307 and 306 exemptions respectively, followed by Texas with 234. These three states represent a lion’s share of all exemptions: just under one in three exemptions are held by companies or individuals located in either California, Texas, or Florida.



Exemption spread by state closely tracks state populations. Of the top 20 states by exemption, only two, Louisiana and Oregon, are not also top 20 states by population. When compared against its population, Florida is the most over represented in terms of exemption-holders (11.36 percent of all exemptions originate in Florida, whereas the

state only accounts for 6.31 percent of the national population) and New York is the most under represented (2.64 percent of exemptions compared to 6.16 percent of the national population). Colorado also has a high number of exemptions compared to its population size: 3.3 percent of all exemptions compared to 1.7 percent of the national population.<sup>6</sup>



### Unmanned Aircraft Types

Exemptions listed 6,026<sup>5</sup> individual unmanned aircraft. On average, each exemption lists two aircraft. The most popular brand is DJI, representing 3,967 listed unmanned aircraft, roughly two in three of the total number of aircraft listed across all exemptions in the dataset. Of these, the Phantom series was the most common model, with 2,176 listed in exemption documents. Other popular manufacturers were 3D Robotics, senseFly, and Yuneec.

DJI	Phantom	2176
	Inspire	1009
	S1000	346
	S900/S800	305
	F450/F550	82
3D Robotics		456
senseFly		172
Yuneec		112
Other		1313
<b>Total UAS</b>		<b>6026</b>
<b>Avg UAS</b>		<b>2.21</b>

### Notes

1 FAA. "Authorizations Granted Via Section 333 Exemptions." Authorizations Granted Via Section 333 Exemptions. Accessed March 02, 2016. [https://www.faa.gov/uas/legislative\\_programs/section\\_333/333\\_authorizations/](https://www.faa.gov/uas/legislative_programs/section_333/333_authorizations/).

2 Since exemptions can list more than one intended type of operation, we often assign multiple categories to each exemption in our database. We measure the popularity of categories as a proportion of all categories listed across our database.

3 Jenkins, Darryl, and Bijan Vasigh. The Economic Impact on Unmanned Aircraft Systems Integration in the United States. Report. Association for Unmanned Vehicle Systems International. [https://higherlogicdownload.s3.amazonaws.com/AUVSI/958c920a-7f9b-4ad2-9807-f9a4e95d1ef1/UploadedImages/New\\_Economic\\_Report\\_2013\\_Full.pdf](https://higherlogicdownload.s3.amazonaws.com/AUVSI/958c920a-7f9b-4ad2-9807-f9a4e95d1ef1/UploadedImages/New_Economic_Report_2013_Full.pdf)

4 See, for example, [https://www.faa.gov/uas/legislative\\_programs/section\\_333/333\\_authorizations/media/Homeland-Surveillance-12363.pdf](https://www.faa.gov/uas/legislative_programs/section_333/333_authorizations/media/Homeland-Surveillance-12363.pdf)

5 This tally does not include the 324 UAS listed in the exemption granted to Measure, Inc.

6 Census Bureau. "2010 Census Data." 2010 Census. Accessed March 04, 2016. <http://www.census.gov/2010census/data/>.

### III. The Near Future of the Industry

According to a February 2016 Department of Transportation “Significant Rulemaking Report,” the Section 333 Exemption program is scheduled to terminate in late April 2016, when the FAA implements permanent regulations for the non-recreational use of drones weighing less than 55 pounds in U.S. airspace.<sup>1</sup> The final form of these rules is likely to approximately follow the FAA’s “UAS Notice of Proposed Rulemaking” (NPRM).<sup>2</sup> However, a Government Accountability Office report published in July 2015 notes that the FAA’s non-recreational drone rules may not be issued “until late 2016 or early 2017.” Marke “Hoot” Gibson, a senior FAA advisor on unmanned aircraft integration, has said that he expects the FAA’s regulations to be implemented by “May or June.”<sup>3</sup> There are a number of factors that are likely to influence the evolving commercial drone industry in the coming months.

#### Prospects for Current Petitioners and Exemption Holders

Assuming that exemption granting proceeds at its current rate of 500 exemptions per month, over 5,000 exemptions will have been issued under the 333 program. (It is possible that the FAA will cease to grant exemptions as it approaches the date of full rule implementation, though it has not offered any indications to whether this will indeed be the case.

The FAA’s Gibson, during remarks at a National States Geographic Information Council conference, stated that “75 to 80 percent” of current exemption holders will be permitted to continue their commercial operations under their exemptions. The remaining 20 to 25 percent of exemption holders will likely have to file additional paperwork or adjust their operations to comply with updated and/or expanded criteria for operations.<sup>4</sup>

#### Micro-UAS Rules

On February 24, 2016, the FAA announced that it has established a micro unmanned aerial system Aviation Rulemaking Committee, a task force that will develop recommendations for regulations and standards “that would allow for micro UAS to be operated over people who are not directly participating in the operation of the UAS or under a covered structure.”<sup>5</sup> Under Section 333 exemptions, commercial drone operators are currently prohibited from operating drones over people who are not involved in the drone operation. “Micro UAS” are

defined by the FAA as unmanned aircraft that weigh less than 4.4 pounds. The task force will submit its recommendations to the FAA by April 1, 2016. The FAA used a similar task-force-based process to develop its unmanned aircraft registration rules in December 2015.<sup>6</sup> This rule would help pave the way to allowing companies to use drones for package delivery and other flight operations that are currently not covered by the Section 333 exemption program.

#### FAA Authorization Acts

The FAA’s current authorization will expire on March 31, 2016. In order for the agency to receive funding and continue to operate, the President must sign into law a new FAA authorization act on or before that date. The Aviation Innovation, Reform, and Reauthorization (AIRR) Act, which is currently being debated in congress, would reauthorize the FAA for three years. This act would update and modify certain FAA policies with regards to the commercial use of drones in the U.S. Specifically, the Act would “establish procedures for issuing permits under this section with respect to certain unmanned aircraft systems and operations thereof.” This permitting process would be based on a review of proposed commercial drone operations. Permits would be issued to operators based on whether “the unmanned aircraft system and the proposed operation achieve a level of safety that is equivalent to—(A) other unmanned aircraft systems and operations permitted under regulation, exemption, or other authority granted by the Administrator; or (B) any other aircraft operation approved by the

Administrator with similar risk characteristics or profiles.”<sup>7</sup> More generally, this act looks to direct the FAA to simplify and streamline its processes for allowing commercial drone operations. For example, an amendment to the AIRR act would exempt all micro drone operators, both recreational and non-recreational, from aeronautical knowledge tests, age and experience requirements, and airworthiness certification standards.<sup>8</sup>

On March 9, 2016, the Senate Committee on Commerce, Science, and Transportation introduced a parallel FAA authorization act: the Reauthorization Act of 2016. This bill includes a lengthy section on unmanned aircraft systems. Specifically, it calls for stricter privacy standards for commercial drone operators, the development of airworthiness standards for commercial drones, an approval process for commercial unmanned aircraft, new mechanisms and standards for both expanded exemption policies as well as increased enforcement of airspace rules, and the development of standards for beyond visual line of sight operations (see below).

However, given the complexity of these authorization bills, as well as ongoing disputes over certain provisions of the AIRR Act (which are unrelated to drones), Congress deemed that it would be unable to pass the bill before March 31, and so has instead opted to pass a simple short-term authorization that merely extends the provisions of the 2012 authorization act until July 2016. If the FAA’s commercial drone regulations are indeed implemented before July 2016, they may not reflect provisions of the AIRR Act or the Senate Reauthorization Act.

## Local Regulations

A number of state legislatures are currently developing regulations that either limit or promote the use of drones for non-recreational purposes. According to the FAA, in 2015, 45 states considered legislation related to drones.<sup>9</sup> According to an analysis published in January

2016 by the Association for Unmanned Vehicle Systems International, a trade group, over 30 states are currently debating laws that relate to the use of drones for either commercial, public, or recreational operations.<sup>10</sup>

The FAA generally discourages local drone legislation. In a fact sheet published in December 2015, the FAA notes that a “patchwork quilt” of differing restrictions could severely limit the flexibility of FAA in controlling the airspace and flight patterns, and ensuring safety and an efficient air traffic flow.”<sup>11</sup> This guidance may not be enough to prevent some states from passing legislation that applies local restrictions to the commercial use of drones. Such a “patchwork quilt” regulatory environment could potentially influence the shape of the drone industry.

## Beyond Visual Line of Sight Operations

All Section 333 exemptions strictly require that the pilot in command of the drone maintain a direct, uninterrupted visual line of sight with the drone when it is airborne. The FAA’s proposed rules for the non-recreational use of drones would likewise prohibit so-called “Beyond Visual Line of Sight” (BVLOS) operations.<sup>12</sup> However, industry representatives have pointed out that a prohibition of BVLOS operations would significantly limit the growth of the drone services industry.<sup>13</sup> The FAA is taking steps to develop standards that would allow certain BVLOS operations. In May 2015, it announced a series of initiatives, collectively called Pathfinder, intended to explore drone operations not permitted by its NPRM, including a program in collaboration with BNSF Railways to study the feasibility of BVLOS operations.<sup>14</sup> Additionally, the FAA has convened a working group to develop BVLOS operation standards.<sup>15</sup> The FAA has not offered any concrete estimates of when it plans to publish and implement regulations that would enable BVLOS operations.

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## Notes

- 1 Department of Transportation. "Report on DOT Significant Rulemakings." DOT. December 2015. Accessed March 6, 2016. <http://www.transportation.gov/regulations/report-on-significant-rulemakings>
- 2 FAA. "Overview of Small UAS Notice of Proposed Rulemaking, Report." FAA. [https://www.faa.gov/regulations\\_policies/rulemaking/media/021515\\_sUAS\\_Summary.pdf](https://www.faa.gov/regulations_policies/rulemaking/media/021515_sUAS_Summary.pdf)
- 3 Koma, Alex. "FAA Pledges More Guidance, Faster pace in Drone Rule-making." Fedscope. February 24, 2016. Accessed March 6, 2016. <http://fedscoop.com/faa-pledges-more-guidance-faster-pace-in-drone-rule-making>.
- 4 Ibid
- 5 FAA. Aviation Rulemaking Committee. "Performance Standards and Requirements for Micro Unmanned Aircraft Systems." Aviation Rulemaking Committee. 2016. <https://www.faa.gov/news/updates/?newsId=84386>
- 6 FAA. "FAA Small Unmanned Aircraft Registration Begins." News release, December 21, 2015. FAA.gov. Accessed March 9, 2016. <https://www.faa.gov/news/updates/?newsId=84386>.
- 7 Aviation Innovation, Reform, and Reauthorization Act of 2016, H.R., 114th Cong. (2016). [http://transportation.house.gov/uploadedfiles/airr\\_act\\_text.pdf](http://transportation.house.gov/uploadedfiles/airr_act_text.pdf)
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