Small Unmanned Aircraft Systems Survey Report 2023

Unmanned Aircraft Systems (UAS), referred to by many as drones, have seen marked growth over the past decades. UAS have proven themselves useful in many applications from military to civilian and recreational to commercial. Because of this growth, the National Airspace System (NAS) has seen a rapid increase in UAS operations. To continue with the safe integration of UAS into the NAS, The Federal Aviation Administration (FAA) has taken and continues to take extensive actions, including but not limited to public education and outreach, implementing new regulations, issuing certifications, and establishing registrations.

The FAA strives to better understand the characteristics and operations of UAS across the United States and therefore has a need for data relating to UAS operations. This data supports safety analysis, helps identify potential investments and work planning, and supports forecasting. However, unlike most air carrier operations, the statutory reporting requirements related to UAS operations are largely nonexistent. UAS operators are required to register and pay a fee under part 107 rules but do not have operations reporting requirements. As such, the majority operators do not report basic operational characteristics such as number of flights conducted, flight times, or flight locations.

To evaluate some of these UAS operational characteristics and gain the necessary data needed to assist in assessing safety and forecasting future UAS operations, the FAA performs a survey of UAS registrants. Survey methodology was selected because it is cost effective, accurate, and has lower resource requirements and public burden compared to other avenues of data collection such as additional reporting requirements or rule changes.

The survey started with a baseline administration in 2021 and has continued through 2022 and 2023. The information collection is approved through the Office of Management and Budget (OMB) and the FAA privacy office, thereby satisfying statutory requirements for federal information collections and maintaining safety around the privacy of the respondents.[1] The survey relies on two UAS registries for its sample frame, the Part 107 registry and the recreational UAS registry. The Part 107 registry broadly covers operators of drones less than 55lbs who are operating for work, business, school, non-profit, mixed purposes, and nearly all other purposes.[2] The recreational registry serves a limited statutory exception and is intended for operators who are operating UAS under 55lbs for exclusively recreational purposes.[3] Broadly, the recreational exemption provides a lower burden and simplified path to compliant operations in the NAS for individuals who fly exclusively for fun. Part 107 operators have a comparatively larger burden and more complicated path to compliant operations in the NAS but are

[1] OMB Control #2120-0797
[2] Part 107 – Small unmanned aircraft systems (14 CFR Part 107). See https://www.faa.gov/uas/commercial_operators for further information.
[3] The Exception for Limited Recreational Operations of Unmanned Aircraft (USC 44809). See https://www.faa.gov/uas/recreational_flyers for further information.

afforded far more flexibility in terms of operation purpose, operation type, and ability to apply for waivers.[4] These two registries cover the majority, though not all, of small UAS operators within the NAS.[5]

Both the recreational and Part 107 registries require an email address and physical address of the registrant/owner upon registration. This information allows the FAA to select a stratified random sample survey methodology using type of operator, recreational or Part 107, and geography, U.S. county, as the strata. This sampling procedure balances public burden with the need for accurate data estimates and forecasts. In 2023 we sampled 30 recreational registrants and 30 Part 107 registrants from each U.S. county. However, many counties had fewer than the sampling target of 30 registered operators. In these cases, the survey sampled all eligible registrants. The low number of eligible registrants is a result of two factors. First, many counties simply did not have 30 registered operators. Second, the 2023 survey and previous years of the survey have offered a permanent opt-out option from future UAS surveys.[6] The registrants on the opt-out list were not sampled. Therefore, in counties with few registrants, this may have resulted in the sampling of all available registrants.

The survey for 2023 UAS activity opened on December 14th, 2023, and closed on February 16th, 2024. Follow-up reminder emails were sent out until the final week of the 2023 survey. Recruitment was exclusively via email acquired from the registries. A total 60,162 invitations were sent to registrants located in over 2,100 counties. This sample constitutes roughly 30% of active UAS registrants in the sample frame. The total registrants included in the sample by type, were 41,001 recreational registrants and 19,161 Part 107 registrants.

The survey consisted of a questionnaire distributed by Survey Monkey. They were selected due to their functionality and a current support structure that meets FAA requirements. The questionnaire consisted of as few as 6 questions or as many as 40 questions with some questions containing multiple response options. The number of questions per participant was based on the registry they were recruited from and the skip logic enacted by the individual responses. The average time to complete the survey was short at approximately 10 minutes. Generally, Part 107 respondents reported solely on their nonrecreational activity while recreational respondents reported solely on their recreational activity. An exception to this was when Part 107 respondents indicated only recreational activity. These respondents were given questions about their recreational activity. All sampled registrants were given the opportunity to participate in the survey by completing the questionnaire, opt out of the current year's survey, or be permanently removed from future survey invitation lists. Of those that accessed the survey, 94% agreed to participate, 2.9% opted out of the survey for 2023, and 3.3% requested that the FAA permanently remove them from the FAA's survey list.

The response rate for the entirety of the sample was 26.2%. Response rate varied marginally by registry, 27% of recreational registrants responded, whereas 23% of Part 107 registrants responded. This difference is consistent with the 2022 survey and the 2021 survey baseline response rates. Of the invited registrants who did not respond, 4.9% had unreachable email addresses, 5.4% had opted out of

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[4] See https://www.faa.gov/uas/commercial_operators/part_107_waivers for Part 107 waiver information.
[5] Other operators include but are not limited to operators of UAS under 250grams for recreational purposes, operators under Department of Defense authorities, or operators performing under other agreements.
[6] Sampled registrants from all previous years and this year had the option of not responding to the survey and opting out of all future requests to participate in the survey. Sampled registrants could opt out either through the Survey Monkey platform or within the initial question of the survey.

receiving emails from Survey Monkey, and the reason for the remainder of the non-responses is unknown.

The survey contained a self-report question on the type of UAS operator the respondent considered themselves. Respondents were given the multiple-selection options of; (a) commercial, business, or pilot for hire; (b) emergency response, public safety, or law enforcement; (c) other government (nonemergency); (d) university, research institution, or non-profit; (e) recreational or hobby: drone; (f) recreational or hobby: model aircraft; and (g) a fill-in "other" category. The distinction between recreational drone operator and recreational model aircraft operator was added in the 2023 survey in a response to feedback and data from the 2022 survey. For respondents from the recreational registry, 98.3% self-identified as recreational operators, 72.3% identified as drone operators, 40.7% identified as model aircraft operators, and 14.8% of respondents identified as both recreational drone and model aircraft operators. A minority of 1.7% of operators did not self-identify as recreational and instead self-identified with a use better suited for Part 107 or selected "other".

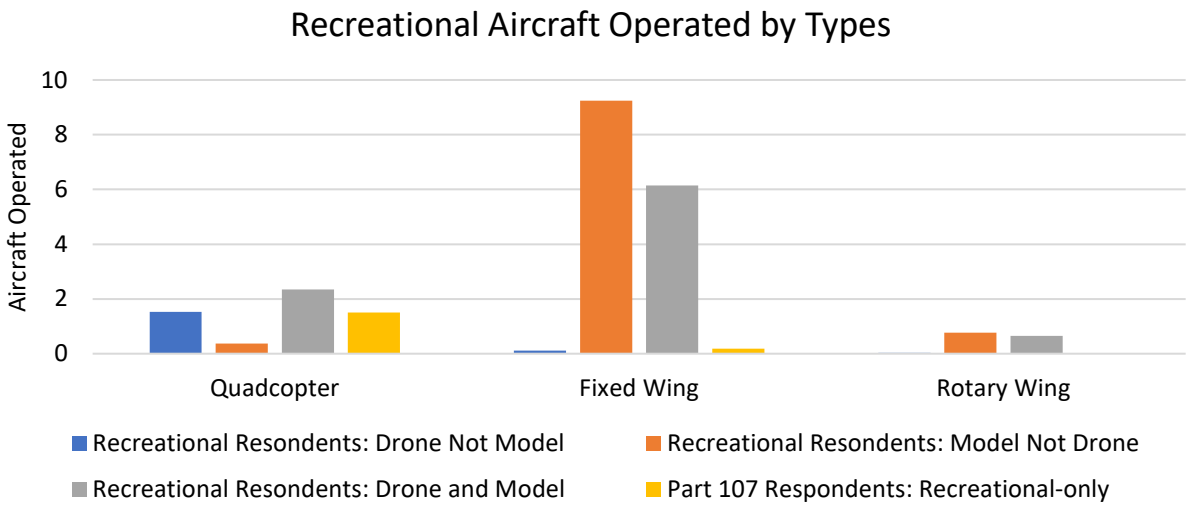
For respondents from the Part 107 registry who self-identified, almost one half of respondents (48.4%) identified exclusively as recreational operators with 91.0% self-identifying only as recreational drone operators, 4.1% only as recreational model aircraft operators, and 4.9% as both. Approximately one fifth (20.3%) of Part 107 respondents self-identified with at least one recreational and one nonrecreational category and just under one third (31.3%) self-identified exclusively as nonrecreational operators. A minority of respondents (1.2%) selected only the "other" category. Of those identifying as any nonrecreational operator category, 74.2% reported operating their UAS for commercial, business, or pilot for hire reasons, 21.2% for emergency response, public safety, or law enforcement, 11.0% for other government (non-emergency) purposes, and 12.5% for university, research institution, or non-profit purposes. Responses to the self-identification question suggest that the vast majority of UAS operators who register in the recreational registry are using their UAS for personal enjoyment. However, Part 107 registrants have more diverse uses for their UAS. With nearly one half of Part 107 registrants using their UAS for personal enjoyment, defining all of Part 107 operators as nonrecreational or non-hobby is likely not accurate.

The survey asked respondents to estimate the average number of flights or operations they conducted in 2023, where a flight was defined as a takeoff and a subsequent landing. Respondents from the recreational registry reported an average of 54.9 flights a year. However, the median was only 10 flights per year; suggesting that many recreational operators are using their UAS around once a month while a smaller group of enthusiasts are operating much more frequently. Respondents were also asked about the average duration of each flight. Recreational registrants reported an average duration of each flight was 14.0 minutes, with a median duration of 10 minutes. Further, they reported an average of over 6 UAS per operator with a median figure of 2 aircraft per operator. Respondents from the recreational registry who self-identified as a drone operator and not a model aircraft operator reported an average of 1.7 aircraft owned with 1.5 operated. For respondents who self-identified as model aircraft operators and not drone operators, the average number of aircraft owned was noticeably larger at 12.2 with 7.3 operated in 2023. This distinction shows that self-identified model aircraft operators have more aircraft in general than self-identified drone operators.

Regarding the number of aircraft operated in 2023 (Figure 1), respondents from the recreational registry reported an average of 1.22 quadcopters, 3.1 fixed wing aircraft, and less than 0.3 for all other airframe

types (i.e., hexacopter, octocopter, rotorcraft, and “other”). Interestingly these data reveal a marked difference in the type of aircraft operated by respondents who self-identified as drone operators and those who self-identified as model aircraft operators. For drone operators, the number of quadcopters operated dominates the airframe type, but for model aircraft operators fixed wing airframes are far more common. These data also reveal that self-identified model aircraft operators are operating a larger number of aircraft than self-identified drone operators. This difference highlights a heterogeneity in the recreational registrants beyond the distinction based in the frequency of operations.

Figure 1 Recreational Aircraft Operated by Registration and Airframe Type



The flight behavior for Part 107 registrants is complicated by the diversity of the population. Notably, nearly one half of registered Part 107 operators self-identified as recreational only operators. These self-identified recreational-only Part 107 operators represent a distinct category of operator and have distinct flight characteristics. As such, the FAA sought to differentiate nonrecreational Part 107 operations from recreational operations. Therefore, Part 107 registrants were asked specifically about the number of recreational and nonrecreational flights they conducted in 2023. Part 107 respondents who indicated zero nonrecreational and at least one recreational flight (36.1%) were classified as recreational-only Part 107 operators and subsequent survey questions solely targeted their recreational activity. Part 107 respondents who indicated at least one nonrecreational flight (52.5%) were classified as core Part 107 operators and subsequent survey questions solely targeted their nonrecreational activity.

Recreational-only Part 107 - as defined by their annual reported flights - also self-identified as recreational operators (97.7%) with 95.9% of that group self-identifying as a recreational drone operator and 10.0% self-identifying as a model aircraft operator, indicating consistency across the self-identification question and the annual flight classification.

Recreational-only Part 107 operators reported an average of 18.1 annual recreational flights with a median of 6 flights. These operators reported an average of 1.9 aircraft owned and 1.6 aircraft operated in 2023 with an average of 1.5 quadcopters, 0.19 fixed wing, and less than 0.02 other airframe types. Given the fleet and flight profile of this group, they appear to be more akin to novice drone operators in the recreational registry than the recreational enthusiast or model aircraft operators.

This suggests that there could be some confusion among operators regarding which registry is more appropriate to their operations. One counter argument is that this portion of recreational-only Part 107 operators are seeking expanded flying privileges with Part 107 waivers unavailable to recreational registrants. However, only 5.0% (16 respondents) of this group reported seeking a waiver in 2023 with 17.2% (55 respondents) indicating their intention to seek a waiver in 2024. Although within the current rules it is entirely acceptable for a Part 107 registrant to operate solely recreationally, these operators might be better served by the section-44809 recreational registry given the lower burden required to operate.

For core Part 107 classified operators (at least one nonrecreational flight in 2023), 91.1% self-identified with a nonrecreational category, while 8.9% self-identified only as a recreational operator. Table 1 shows selected data including the average and median number of flights, flight time, aircraft owned, and aircraft operated for core Part 107 classified operators who self-identified with a nonrecreational activity. Over 70% of Core Part 107 operators identified as commercial, business, or pilot for hire with a substantial 21% identifying as emergency response, public safety, or law enforcement. The average number of annual flights ranged from 110 to 216 for all groups. Flight times were relatively consistent with averages in the 20 minutes range, likely because of the operational constraints of small UAS. Number of aircraft owned and aircraft operated had a median of 2 for most groups and higher averages, showing values indicating that there is a group of operators with far more aircraft than the average.

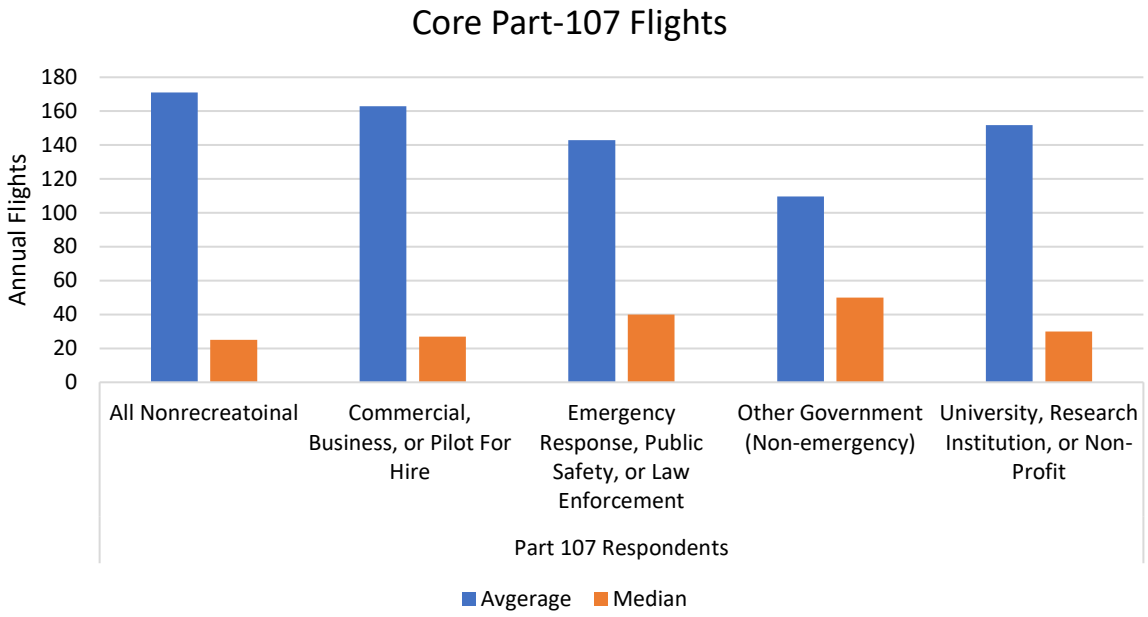
Table 1 Core Part 107 UAS Characteristics Self Identification

Self-Identification Category	**Core Part 107**	**Commercial, Business, or Pilot for Hire**	**Emergency Response, Public Safety, or Law Enforcement**	**Other Government (Non-emergency)**	**University, Research Institution, or Non-Profit**	**Other**
Count of Operators	1291	945	269	139	168	57
Percent of Core Part 107 Operators	100%	73%	21%	11%	13%	4%
Avg Flights	145.6	162.9	142.9	109.7	151.8	216.1
Med Flights	29	27	40	50	30	40
Avg Flight time (min)	27	28.9	24.1	20.5	22.3	20.6
Med Flight time (min)	20	20	20	20	20	20
Avg Aircraft Owned	6.6	5.7	9.7	7.1	6.8	3.8
Med Aircraft Owned	2	2	3	2	2	2
Avg Aircraft operated	5.4	4.8	8.3	4.1	3.8	2.9
Med Aircraft operated	2	2	2	2	2	2

Core Part-107 classified operators also reported their annual number of recreational flights in addition to their annual number of nonrecreational flights. Overall, these respondents reported an average of 28.3

annual recreational flights with a median of 5, fewer than the number of nonrecreational flights. Just over three quarters (76.2%) of respondents reported more annual nonrecreational flights than recreational. Those who self-identified as university, research institution, or non-profit reported the most annual recreational flights with 36.7 while those self-identifying as commercial, business, or pilot for hire reported the fewest at 26.4 annual recreational flights. Just over one third (34.0%) of respondents reported zero recreational flights in 2023. Those reporting zero flights by self-identification group varied slightly, with 44.6% of other government (non-emergency) operators reporting zero recreational flights compared to 31.9% of commercial, business, or pilot for hire operators. These data demonstrate that even the Core Part-107 operators, those who conducted at least one nonrecreational flight, are flying for personal enjoyment. This is further evidence that Part-107, which was intended primarily for nonrecreational use, enables recreational flying as well.

Figure 2 Annual Nonrecreational Flights by Self-Identification



These data demonstrate that the self-identified commercial operators are the largest group, have the longest average flight time, and the highest number of nonrecreational flights. When looking at the median number of flights, this group has the smallest value at 27 annual nonrecreational flights with the other group medians between 30 and 50. This suggests that there exists a smaller group of more frequent flyers while most fly less frequently.

Core Part 107 classified operators who self-identified only as recreational operators (8.9% of the respondents), flew an average of 14.4 annual nonrecreational flights and 32.2 annual recreational flights. Compared to the 91.1% of operators who self-identified with a nonrecreational category, these Part 107 recreational operators reported less than one tenth of the annual nonrecreational flights and 27% more annual recreational flights. As such, because these operators conduct so few nonrecreational flights and average more recreational flights, they might only consider themselves recreational operators.

To better understand the location operators are performing flights of their UAS, two questions were included in the survey. First, respondents were asked if they operated in a county outside of the county in which they are registered but inside the state in which they are registered; and second, they were asked if they operated outside of the state in which they are registered. For recreational operators who responded (6,657; 60%) to this item, 21% operated outside of their registered county and 25% operated outside of their registered state. For core Part 107 operators who responded (2,630; 61%) to this item, 27% operated outside of their registered county and 31% operated outside their state. Operators who indicated operating outside of their state were then asked what states they operated in and the number of flights conducted. For operators who indicated they operated outside their county and not outside of their state, they were asked what counties they operated in and the number of flights conducted. These data highlight that travel beyond the county in which the operator is based and beyond the state in which the operator is based is very common. These data also show that core Part-107 operators are slightly more likely to travel than recreational operators.

The FAA also estimated the total number of flights by State (including Territories and Washington DC) by applying population weighting to the sample. Particularly the FAA is interested in the core part 107 flights and the recreational registrant flights. The population are those registered as a recreational flyer or a Part 107 operator. To appropriately population weight the data the state level active registry number was used as a multiplier for the sampling response numbers.

For population weighted state estimates (Figures 3 and 4) two totals were added together. First, flights conducted by operators who are registered within state, labeled within state flights; and second, flights conducted by operators registered in another state, labeled out of state flights (see Tables 2 and 3 in appendix for full accounting of flights for all locations). Out of state flights were calculated using the number of flights conducted out of state and proportioning them to the total annual flights at the operator level. In this way, all data related to the number of flights in a year was based on the first annual flight question. Out of state flights were then assigned, aggregated, and population weighted. In this way, the travel patterns of operators within any given state are assumed to be consistent. For any given state, the sum of the flights contributed to it by all other states constitutes the out of state flights. Within state flights were calculated by taking the difference between annual flights and the out of state flights at the operator level and then applying the same population weighting by the total number of active registrants in that state and registry.

Figure 3 Population Weighted Part-107 Registrants' Nonrecreational Annual Flights in Contiguous U.S.

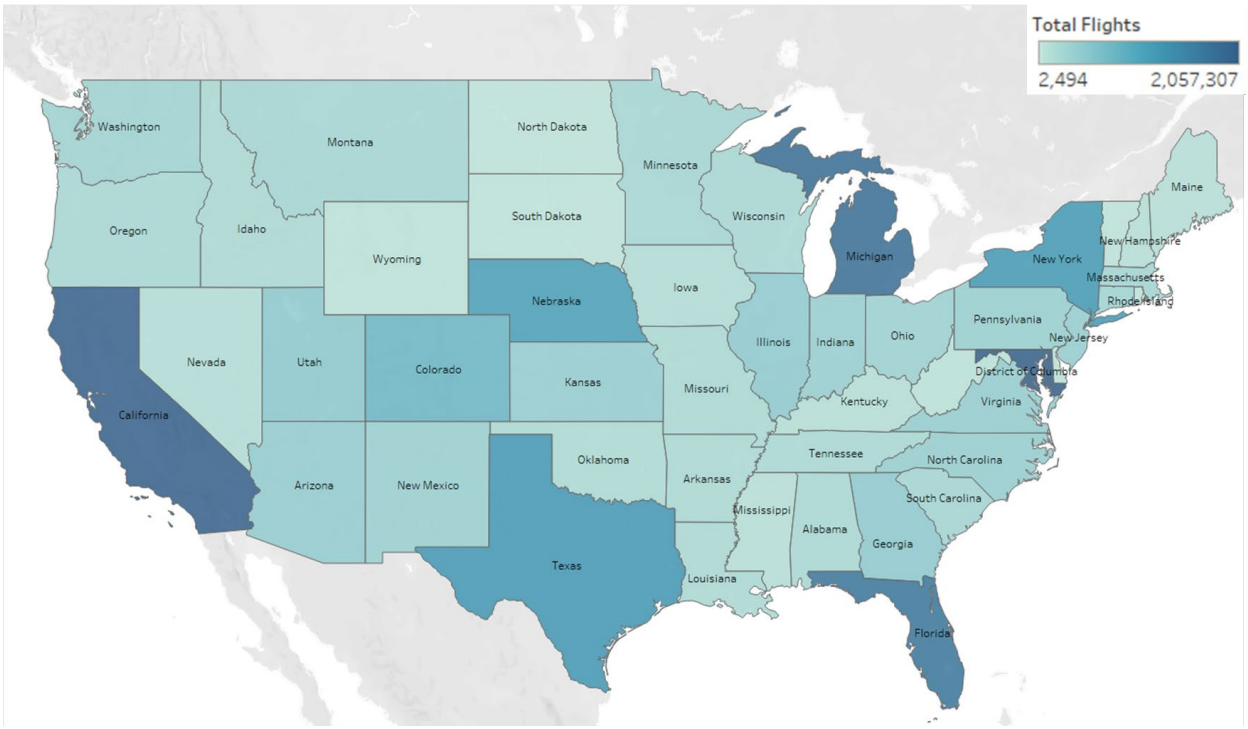
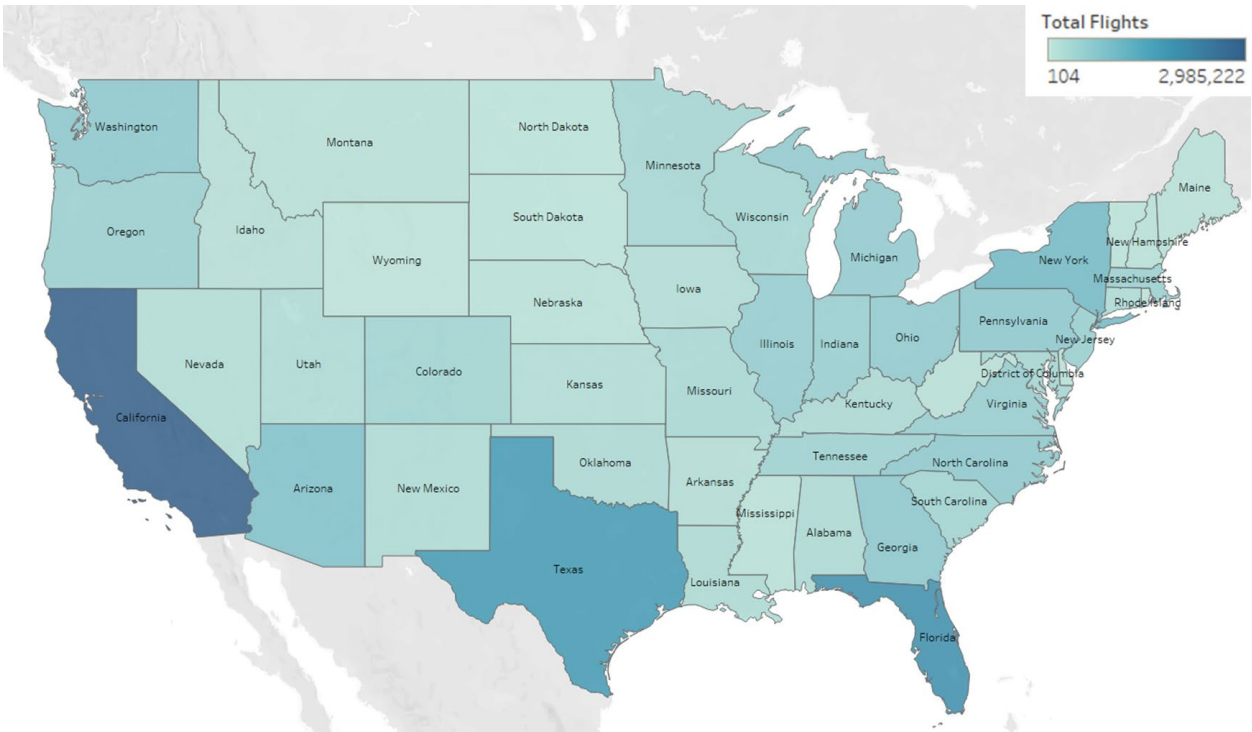


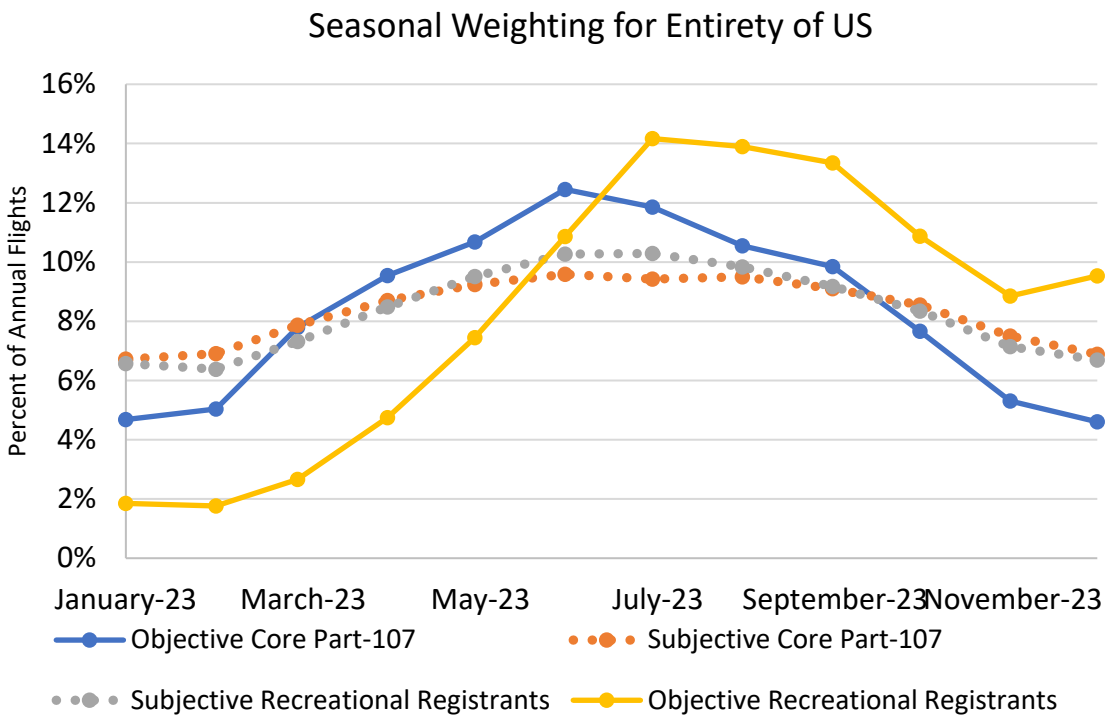
Figure 4 Population Weighted Recreational Registrants' Total Annual Flights in Contiguous U.S.



The FAA also investigated a seasonality effect by analyzing two questions. One question was a subjective scale that asked respondents about how active they were for every month of the year using a 5-point Likert scale from “very inactive” to “very active”. The other question was an objective scale where the respondent entered an estimated number of flights conducted for every month of the year. To calculate the seasonality effect for the subjective scale, linear values (1-5) were applied to the subjective ratings. For both scales, percent of activity by month was generated by respondent then averaged to weight the likelihood of flying evenly across respondents. Absolute flight numbers were also calculated and in most cases the numbers did not vary dramatically. Potentially due to the larger time demand and burden of these questions, fewer respondents answered the questions leading to increased variability in the data at the state level.

Figure 5 shows the national level seasonality effect using the subjective and objective scales by operator registry. When comparing the seasonality of core Part-107 operators to recreational operators, it is notable that the general seasonality effect is less pronounced for the core Part-107 operators (see figures 5). This is anticipatable given that most of these operators identified as commercial and potentially have less flexibility in when they fly than a recreational operator. When comparing the subjective and objective scales, the subjective provides a more consistent curve, perhaps because of respondents’ heuristics. Additionally, an interesting jump in the recreational registrants’ flights occurs in the month of December. This uptick in operations could be due to the holiday season and reflect the recreational operators’ excitement.

Figure 5 Seasonality by Question Type and Registry



To further investigate the possibility of a seasonality effect and combat low response rates at the state level for these questions, the FAA aggregated state level activity using the US climate regions (see Table 4

in appendix) as defined by the National Centers for Environmental Information at the National Oceanic and Atmospheric Administration; under the premise that weather is a driving force in the decision for many UAS operators to fly or to apply for an authorization to fly. Data from the objective question was used in the regional approach and generated operations by region expressed as a percentage of total operations. Perhaps expectedly, a notable pattern emerges; for more temperate southern regions like the South the seasonality curve is less pronounced than for more northern regions such as the Upper Midwest (see figures 6 and 7).

Figure 6 Seasonality by Region for Recreational Registrants

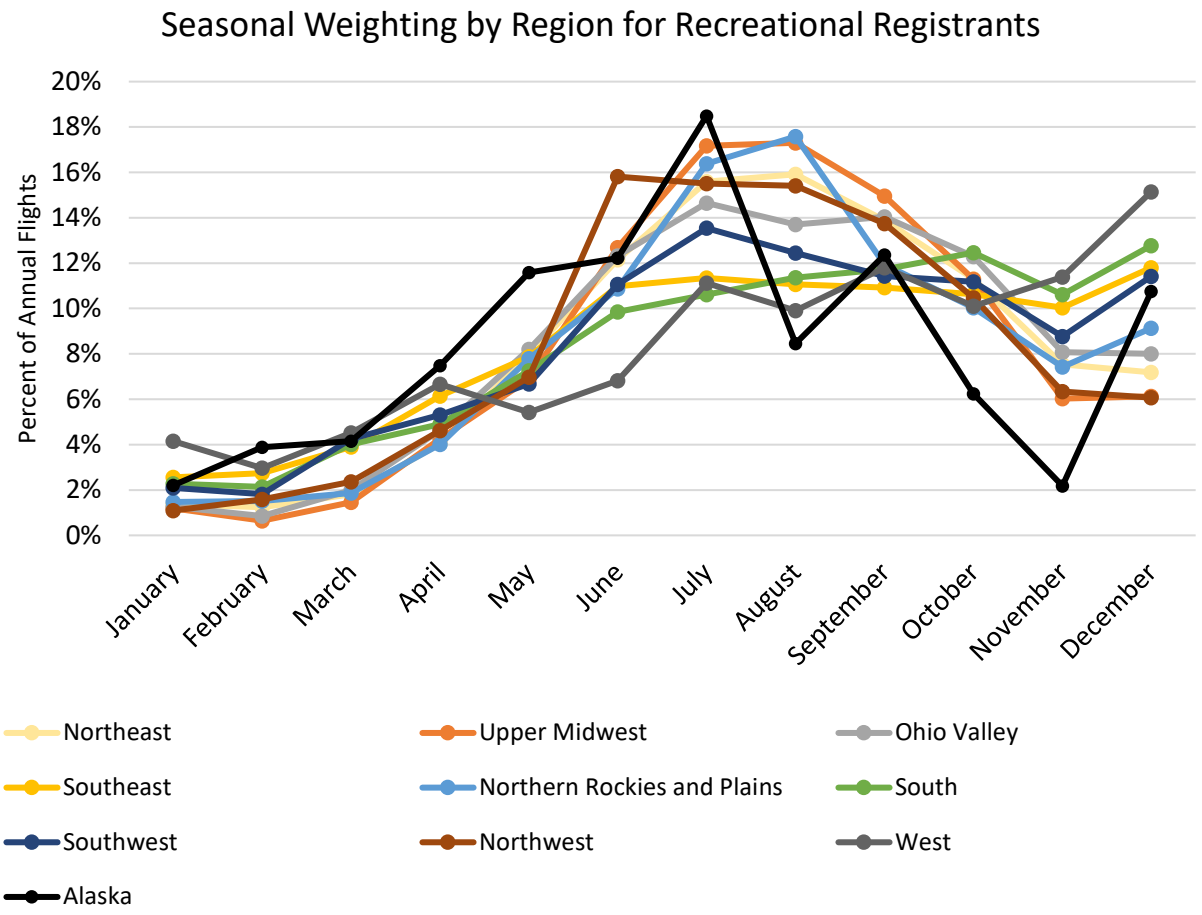
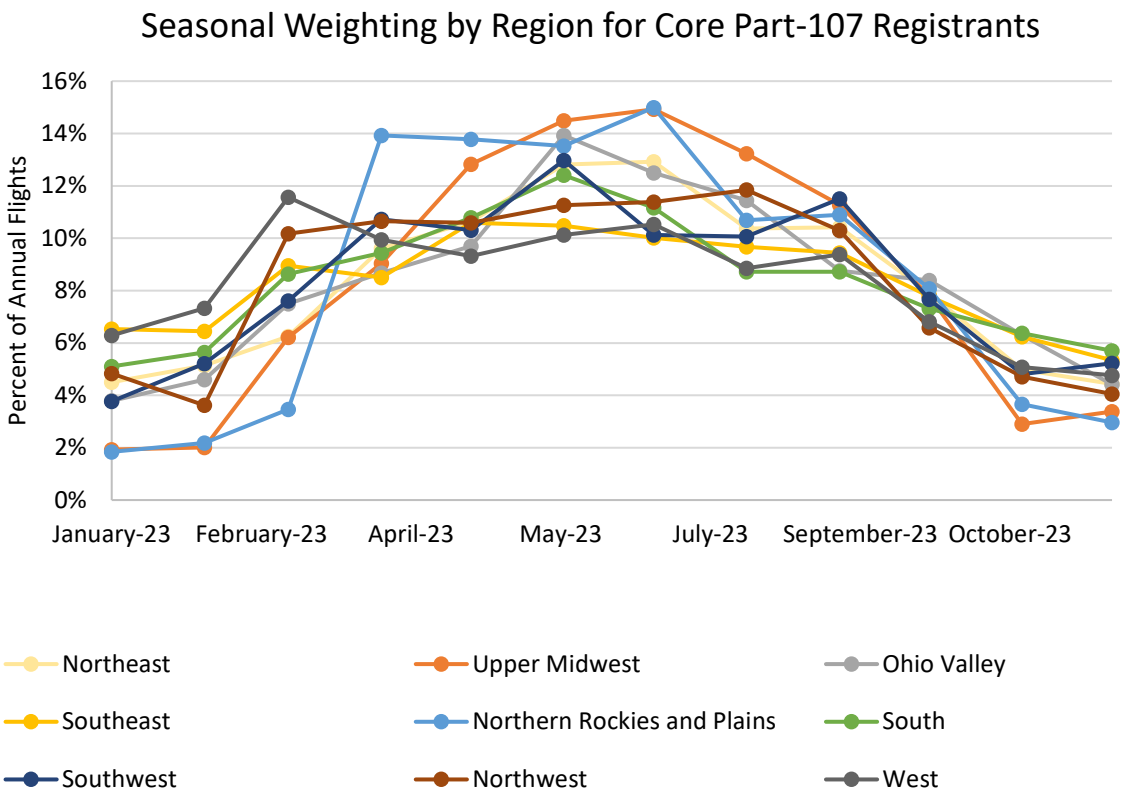


Figure 7 Seasonality by Region for Core Part-107 Registrants

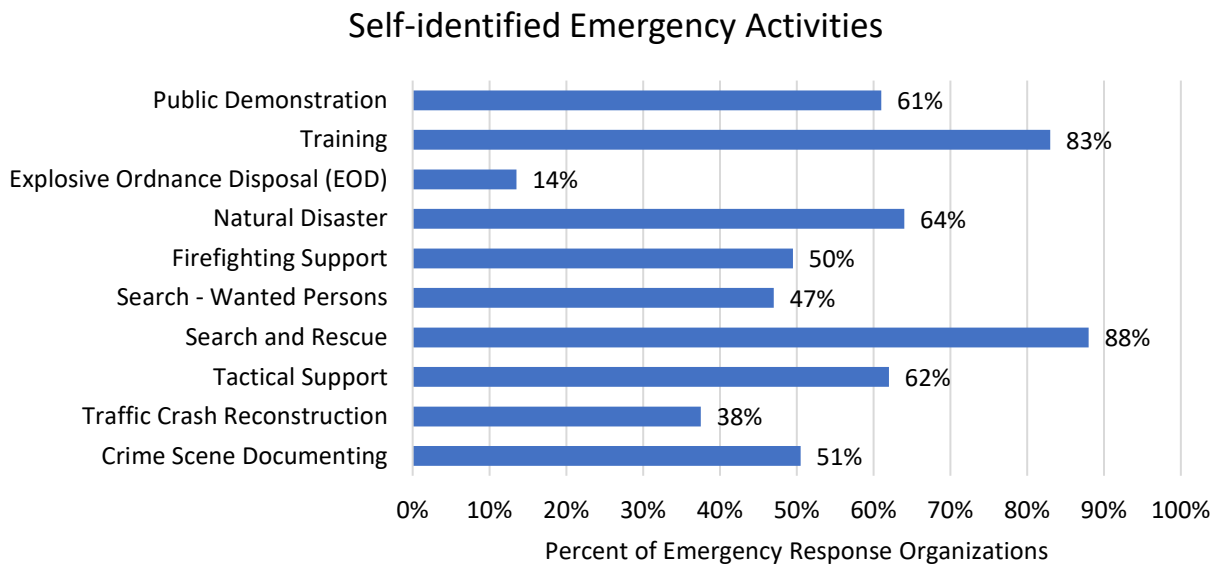


The FAA added additional questions to the 2023 survey to estimate the lifespan of UAS. Respondents provided the number of UAS they had decommissioned in 2023 and how long they had owned that UAS where decommissioned was defined as disassembled, parted out, defective or damaged beyond use, scrapped, or having become obsolete. Recreational respondents reported an average of 4.1 years (median of 3) of ownership prior to decommissioning and for recreational respondents who decommissioned at least one UAS, the average number UAS decommissioned was 2.3. For self-identified model aircraft operators who did not identify as drone operators, the average ownership prior to decommissioning was slightly longer at 4.3 years (median of 3) and they reported slightly more aircraft decommissioned at 2.6 for those who decommissioned at least one UAS. For self-identified drone and not model aircraft operators, the reverse was true with an average ownership of 3.8 years (median of 3) and 1.5 decommissioned UAS in 2023.

Core Part 107 respondents reported an average of 3.6 years (median of 3) of ownership prior to decommissioning and, for those who decommissioned at least one UAS, they reported an average of 4.5 UAS decommissioned in 2023. Recreational-only Part 107 respondents reported an average of 3.3 years (median of 3) of ownership prior to decommissioning and, for those who decommissioned at least one UAS, they reported an average of 1.6 UAS decommissioned in 2023. Therefore, all groups had a median of 3 years of ownership prior to decommissioning their UAS. This estimate is congruent with current FAA estimates of UAS lifespan and provides additional data to estimating the economic depreciation of UAS.

The FAA also has an interest in how drones are being used by emergency response organizations. Two hundred Part 107 registrants indicated that they operate drones for an emergency response organization (police department, fire department, or search and rescue agency) and that their organization has an unmanned aircraft system. Nearly one half (47%) of these organizations share the UAS program with another organization. These organizations have been operating for an average of 5 and half years. They reported an average of 25.3 operations per month with a median of 5 and a maximum of 1000, demonstrating that some organizations are far more active than others. These organizations alone conducted an estimated 58,848 emergency response operations in 2023. The organizations reported an average of 11.2 UAS operators and/or remote pilots currently participating in their program with only 5.1% of the organizations hiring private UAS operators and/or remote pilots. These respondents also provided the type of missions they conducted in 2023 (Figure 8). Over 80% of organizations engaged in training operations and search and rescue operations, while a minority 14% had missions related to explosive ordnance disposal.

Figure 8 Emergency Response Activities



In general, these data illuminate meaningful differences with respect to fleet and flight characteristics between distinguishable groups of registrants within both the recreational registry and the Part 107 registry. Within the recreational registry there are two distinct groups, those who self-identify as drone operators and those who self-identify as model aircraft operators; with model aircraft operators having larger fleets comprised of more fixed wing aircraft, operating more frequently, and operating for slightly shorter periods of time as compared to drone operators. Within the Part 107 registry, two distinct primary groups appear. First, those engaged solely in recreational activities whose activity resembles recreational drone operators more than the other Part-107 operators. Second, a core Part-107 group engaged in a diversity of nonrecreational and recreational activities. Further, we estimated the population level recreational flight activity of recreational operators at over 21 million flights a year; and the population level nonrecreational flight activity of core Part 107 operators at just under 21 million flights a year, providing an estimation of over 42 million annual flights of UAS a year.

Appendix

Table 2 Population Weighted Part-107 Registrants' Nonrecreational Annual Flights

States (Including Territories and DC)	Out of State Flights	Within State Flights	Total Core Part 107 Flights
Alabama	54,776	143,641	198,417
Alaska	8,226	57,111	65,337
Arizona	46,795	351,140	397,935
Arkansas	9,979	172,200	182,179
California	575,365	1,477,483	2,052,848
Colorado	246,705	537,125	783,831
Connecticut	24,309	244,484	268,794
Delaware	9,329	14,905	24,234
Florida	80,129	1,631,968	1,712,097
Georgia	70,672	367,785	438,457
Hawaii	18,764	261,218	279,982
Idaho	12,591	157,953	170,544
Illinois	27,143	415,749	442,892
Indiana	14,082	345,237	359,319
Iowa	22,526	104,372	126,898
Kansas	46,703	344,552	391,255
Kentucky	40,522	45,706	86,228
Louisiana	7,824	166,417	174,241
Maine	9,696	71,634	81,330
Maryland	41,651	2,015,656	2,057,307
Massachusetts	25,150	205,945	231,095
Michigan	35,030	1,784,485	1,819,514
Minnesota	45,687	188,980	234,667
Mississippi	20,437	60,034	80,471
Missouri	47,293	129,262	176,554
Montana	10,154	227,871	238,025
Nebraska	13,140	1,102,192	1,115,332
Nevada	39,356	64,397	103,753

States (Including Territories and DC)	Out of State Flights	Within State Flights	Total Core Part 107 Flights
New Hampshire	19,190	64,869	84,059
New Jersey	58,125	318,569	376,694
New York	48,432	1,155,716	1,204,148
New Mexico	245,781	92,011	337,792
North Carolina	65,403	294,085	359,488
North Dakota	8,441	16,256	24,697
Ohio	19,609	290,658	310,266
Oklahoma	35,852	126,333	162,185
Oregon	39,881	162,950	202,830
Pennsylvania	91,799	259,614	351,412
Rhode Island	7,250	6,246	13,496
South Carolina	16,699	212,870	229,569
South Dakota	10,058	12,075	22,133
Tennessee	27,903	158,225	186,128
Texas	210,950	1,027,316	1,238,266
Utah	10,887	445,824	456,711
Vermont	11,984	9,575	21,560
Virginia	32,628	354,243	386,871
Washington	41,344	238,917	280,261
West Virginia	20,868	16,531	37,398
Wisconsin	23,197	186,113	209,310
Wyoming	11,808	17,242	29,050
District of Columbia	30,407	1,173	31,579
Puerto Rico and U.S. Virgin Islands	4,158	52,997	57,155
U.S. Territories in the Pacific Ocean	2,494	0	2,494
Total	2,699,182	18,209,912	20,909,094

Table 3 Population Weighted Recreational Registrants' Annual Flights

States (Including Territories and DC)	Out of State Flights	Within State Flights	Total Recreational Registrants Flights
Alabama	21,158	218,488	239,645
Alaska	2,349	61,042	63,391
Arizona	104,925	742,642	847,568
Arkansas	13,638	149,260	162,898
California	69,704	2,915,517	2,985,222
Colorado	27,238	361,631	388,869
Connecticut	19,915	186,473	206,388
Delaware	39,654	42,173	81,828
Florida	145,524	1,814,219	1,959,743
Georgia	49,838	630,465	680,303
Hawaii	11,400	192,911	204,312
Idaho	13,275	107,919	121,194
Illinois	24,395	537,145	561,540
Indiana	61,320	453,756	515,076
Iowa	14,794	172,183	186,978
Kansas	7,308	183,346	190,655
Kentucky	35,151	210,065	245,216
Louisiana	12,658	219,376	232,033
Maine	14,106	64,102	78,207
Maryland	12,044	312,820	324,864
Massachusetts	16,456	438,079	454,535
Michigan	25,620	564,759	590,379
Minnesota	41,994	295,631	337,625
Mississippi	10,161	76,880	87,040
Missouri	18,840	273,384	292,225
Montana	9,012	98,188	107,200
Nebraska	11,420	72,429	83,848
Nevada	22,139	151,461	173,600

States (Including Territories and DC)	Out of State Flights	Within State Flights	Total Recreational Registrants Flights
New Hampshire	12,803	67,359	80,162
New Jersey	11,460	498,567	510,028
New York	129,389	893,869	1,023,258
New Mexico	14,271	199,145	213,415
North Carolina	57,253	590,546	647,799
North Dakota	6,299	45,435	51,735
Ohio	37,994	594,495	632,489
Oklahoma	28,827	222,290	251,117
Oregon	58,208	427,158	485,366
Pennsylvania	70,044	593,867	663,911
Rhode Island	13,538	33,547	47,085
South Carolina	69,011	316,400	385,411
South Dakota	10,468	41,501	51,969
Tennessee	47,919	382,992	430,911
Texas	53,934	1,690,529	1,744,463
Utah	26,922	184,167	211,090
Vermont	17,837	44,547	62,384
Virginia	37,104	499,533	536,637
Washington	37,087	630,747	667,834
West Virginia	37,029	58,718	95,748
Wisconsin	26,254	303,061	329,315
Wyoming	11,431	21,539	32,970
District of Columbia	104	0	104
Puerto Rico or U.S. Virgin Islands	4,278	69,057	73,336
U.S. Territories in the Pacific Ocean	2,145	1,808	3,953
Total	1,677,648	19,957,221	21,634,869

Table 4 US Climate Regions

States (Including Territories and DC)	Region
Alabama	Southeast
Alaska	Alaska
Arizona	Southwest
Arkansas	South
California	West
Colorado	Southwest
Connecticut	Northeast
Delaware	Northeast
Florida	Southeast
Georgia	Southeast
Hawaii	Hawaii
Idaho	Northwest
Illinois	Ohio Valley
Indiana	Ohio Valley
Iowa	Upper Midwest
Kansas	South
Kentucky	Ohio Valley
Louisiana	South
Maine	Northeast
Maryland	Northeast
Massachusetts	Northeast
Michigan	Upper Midwest
Minnesota	Upper Midwest
Mississippi	South
Missouri	Ohio Valley
Montana	Northern Rockies and Plains
Nebraska	Northern Rockies and Plains
Nevada	West
New Hampshire	Northeast
New Jersey	Northeast

States (Including Territories and DC)	Region
New York	Northeast
New Mexico	Southwest
North Carolina	Southeast
North Dakota	Northern Rockies and Plains
Ohio	Ohio Valley
Oklahoma	South
Oregon	Northwest
Pennsylvania	Northeast
Rhode Island	Northeast
South Carolina	Southeast
South Dakota	Northern Rockies and Plains
Tennessee	Ohio Valley
Texas	South
Utah	Southwest
Vermont	Northeast
Virginia	Southeast
Washington	Northwest
West Virginia	Ohio Valley
Wisconsin	Upper Midwest
Wyoming	Northern Rockies and Plains
District of Columbia	District of Columbia
Puerto Rico and U.S. Virgin Islands	Puerto Rico and U.S. Virgin Islands
U.S. Territories in the Pacific Ocean	U.S. Territories in the Pacific Ocean