

DRONES FOR THE ENTERPRISE

HOW VARIOUS INDUSTRIES ARE LEVERAGING
DRONES TO INCREASE EFFICIENCY AND CUT
COSTS

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Nicholas Shields | Research Associate



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KEY POINTS

- **Since the implementation of the Federal Aviation Administration's (FAA) Part 107 regulations back in August 2016, the US commercial drone industry has taken off.** Companies across the US have rushed to deploy drones to cut costs, boost operational efficiency, and open up new streams of revenue. Meanwhile, firms elsewhere in the world have taken notice and ramped up their own drone projects.
- **Agriculture companies were relatively early adopters of unmanned aircraft, with many trialing drone use to monitor crops as far back as 2014.** Today, farmers are using the aircraft to monitor crops and livestock, and manage seedlings, irrigation, and fertilization. If the FAA revises its line-of-sight requirement over the next few years, farmers will eventually be able to fly drones over miles of land without supervision.
- **The construction and mining industries are in the earliest stages of commercial drone use.** These firms are turning to drones to complete legally mandated safety inspections, as well as to conduct mapping and surveying of worksites prior to starting projects.
- **Property and casualty (P&C) insurers are increasing their use of drones to assess and evaluate properties.** This includes both inspecting damages after a storm and assessing properties and other assets before a policy is issued. In both use cases, insurers are able to collect more and better data to plug into their models and algorithms to improve premium pricing and assess the cost of payouts.
- **Media and telecommunications firms, meanwhile, are leveraging the aircraft to inspect and monitor their assets, and add new angles to the footage they capture.** This helps companies cut costs and inspection times, and enables them to create new, engaging footage for live sports and TV shows to prop up stagnating viewership, and ultimately revenue.

- **Lastly, public sector agencies — ranging from firefighting and police forces to the US Department of Interior — are taking advantage of the aircraft to inspect infrastructure and find missing persons and suspects.** In particular, drone flights conducted by the Department of Interior have risen a whopping 518% in the last year. Meanwhile, state contractors are taking advantage of the aircraft to inspect bridges and other pieces of aging infrastructure.
- **Drones will lead these industries to become highly data-driven in the coming years, making the aircraft a must-have for companies to keep pace with their competitors.** For instance, drones used in the insurance and agriculture industries will capture millions of data points that can be cross-analyzed with historical weather and crop growth patterns, respectively. From there, machine learning (ML) algorithms will be able to predict everything from crop failures to the monetary value of natural disasters.

[Download the charts and associated data in Excel »](#)

INTRODUCTION

Drones — commonly referred to as unmanned aircraft — are no longer a niche product used in only a handful of industries. Since the Federal Aviation Administration's (FAA) Part 107 regulations [took effect](#) back in August 2016, companies across the US have rushed to deploy drones to cut costs, boost operational efficiency, and open up new streams of revenue. Drone technology provider PrecisionHawk, for instance, saw its pipeline of inbound leads increase about 300% in the month after the regulations became effective, the company's CEO, Michael Chasen, told Business Insider Intelligence. Meanwhile, to keep pace with their rivals in the US, companies overseas have expanded their drone projects and pressured national governments and [supranational unions](#) to help them deploy more and more unmanned aircraft.

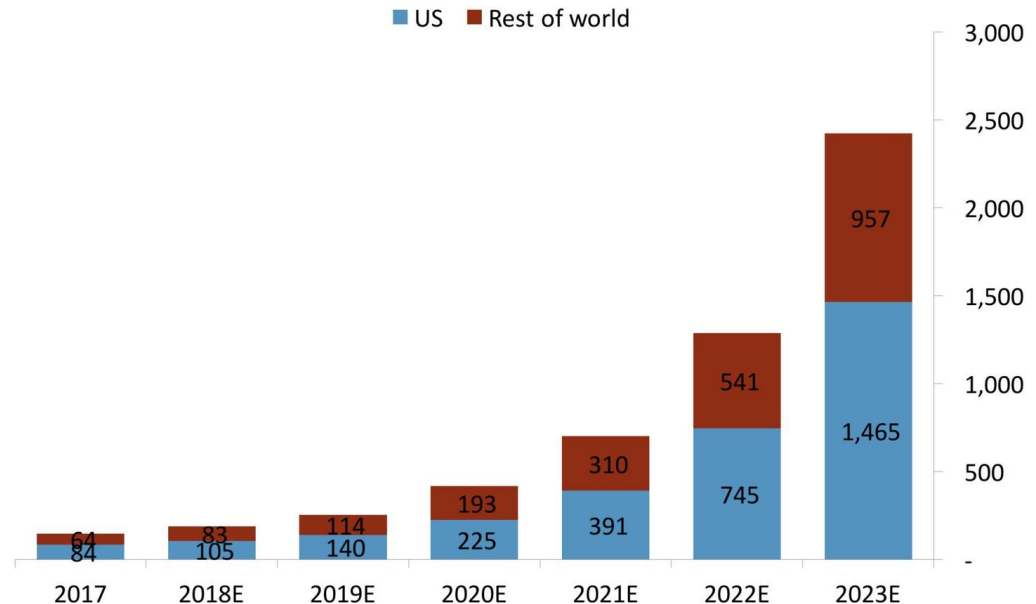
Although consumer drones often grab the headlines in the media, it's the enterprise side of the drone market that holds an exponentially greater amount of potential. Companies ranging from the world's largest property and casualty (P&C) insurers to big agriculture conglomerates have begun to realize the deep potential returns on investment (ROI) for their drone projects.

In this report, Business Insider Intelligence details how unmanned aircraft are disrupting a slew of different industries, including agriculture, construction and mining, insurance, media and telecommunications, and the public sector. We also size the market for global enterprise drone shipments, and pinpoint the features that make drones useful tools within different industries. Lastly, we make predictions for how drone use in these industries will evolve over the next five to 10 years and to what extent their impact will be magnified over this period.

Market Size

Global Enterprise Drone Shipments

Thousands



Source: Business Insider Intelligence estimates, 2018

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Business Insider Intelligence defines enterprise drones as all unmanned aerial vehicles (UAVs) sold directly to a business for use in its operations.

Total global shipments will rise at a 66.8% compound annual growth rate (CAGR) from 2017 to reach 2.4 million in 2023. The US market will lead the way, as shipments will rise at a 69.4% CAGR to reach 1.5 million at the end of our forecast period.

The majority of enterprise drone shipments will go to the domestic market, eventually culminating in 58% of all shipments in 2023 arriving in the US. This is largely due to an increasingly friendly regulatory environment — more exemptions to the FAA's line-of-sight rule and the ban on drones flying over humans will spur accelerated shipment growth in the US from 2019 through 2023, even if official regulations aren't revised. Meanwhile, an increasingly favorable regulatory environment and digitally savvy population in the Asia-Pacific region will help enterprise drones become the fastest-growing market in the years ahead.

AGRICULTURE

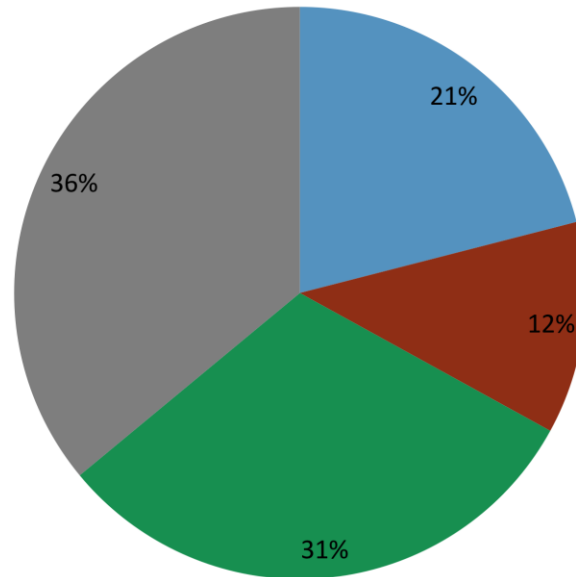
The UN [projects](#) that the world's population will swell from 7.3 billion today to 9.7 billion by 2050, causing consumption to rise 69% between 2010 and 2050, according to an Australian Journal of Agricultural and Resource Economics [study](#). Farmers and agriculture companies will need to boost production to keep up, which they're increasingly turning to drones to do, as the unmanned aircraft promise to save time, money, and other resources.

AGRICULTURE BY NUMBERS		
	Annual industry revenue	\$2.6 trillion
	Industry employees	2.1 million as of 2015
	Addressable market for drone use	\$32.4 billion
	Share of total value generated by enterprise drones	25.4%
	Top regulatory barriers	LOS requirements, autonomous drone bans
<small>Source: PwC, St. Louis Fed, US Department of Agriculture, Arizona State University</small>		
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Twenty-one percent of farmers in the US plan to use drones in 2018, according to an April 2017 [survey](#) of 1,092 farmers conducted by Farm Journal Pulse and cited by Agweb. Meanwhile, 12% will hire a third-party firm to operate drones for them, and another 31% said they're considering the use of unmanned aircraft. Most of the farmers and agriculture companies using unmanned aircraft today are large, well-capitalized, primarily Big Ag-owned farms that manage thousands of acres of land, largely because the ROI is far higher than it is for farmers who manage only a handful of acres. Farmers and agriculture companies are primarily using unmanned aircraft for surveying, mapping, and managing the acres of land that they operate.

US Farmers' Plans For Drones In 2018

- Am planning on operating drones myself
- Will use drones operated by a third party
- Are considering using drones
- Not considering using drones



Source: Farm Journal Pulse, n=1,092, 2017

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Top Use Cases

Mapping and crop monitoring. Most enterprise drones are equipped with high-definition and thermal imaging cameras that can be used to very accurately capture the light and heat that crops generate through photosynthesis. By capturing this data via drone and cross-analyzing it with the [normalized difference vegetation index](#) (NDVI), farmers and agricultural companies can understand plant health and measure how far along in their growth periods the crops are. For dead or poisoned crops, this gives farmers the opportunity to either replace them entirely or spray them with substances designed to cure their diseases.

Irrigation management. When equipped with a thermal imaging camera, unmanned aircraft can identify areas where water is pooling or where there's a lack of moisture. From there, farmers can move their watering equipment out to the location to give in-need crops water to try and save them, ultimately saving farmers time and money that would be used to replace these potentially spoiled crops. The Food and Agriculture Organization of the United Nations [estimates](#) that \$1 trillion in crops is wasted or lost every year, costs that can at least be partially recouped via drone use. In the coming years, technological advancements could enable high-payload drones to identify crops that are dehydrated and spray small amounts of water on them, giving farm employees time to get more water before it's too late.

Fertilization, soil, and seed management. Most crops need to be sprayed with at least a half dozen different types of fertilizer, often on a monthly or weekly basis. Drones can scan the ground and maintain a precise distance away from the field in order to spray the right amount of fertilizer, and ensure that its coverage is even across a large area of crops. DroneFly [estimates](#) that drones can spray fertilizer 40 to 60 times faster than doing so by hand. In addition, drones with thermal cameras can collect soil data before seeds are planted, which can be analyzed to ensure more accurate planting. Moreover, while not yet used broadly across the industry, a handful of startups have been able to develop planting systems that, when equipped onto unmanned aircraft, can drastically boost the number of seeds that eventually sprout. BioCarbon Engineering, a California-based agtech startup, was able to [achieve](#) a 75% uptake rate of the tree seedlings planted during a recent test run and expects that it can eventually reach an 85% uptick over traditional planting tactics.

Livestock monitoring. Chicken, cows, and other livestock are often given the freedom to roam over an area of a farm spanning several dozen acres, and in some cases, several square miles, making keeping track of them challenging. Thermal imagers can detect the heat that livestock emit to track them over these long distances, allowing farmers to determine if there are any missing, injured, or preparing to give birth to new animals.

What Comes Next

Gartner [expects](#) the market for drone use in agriculture will be constrained by price and regulatory limitations through 2020, accounting for only 7% of the total growth in the global commercial drone industry. In the years after, however, looser regulations and lower prices will drive small, individual farmers to integrate drones into their operations, pushing the agricultural drone market to become the largest of any industry. PwC [pegs](#) the total global addressable market for agricultural drone use at a whopping \$32.4 billion, second only to infrastructure applications.






Drones will allow the agriculture industry to become incredibly data-driven in the years ahead.

The aircraft will collect millions of data points annually for individual farmers that can be analyzed and leveraged to gain the insights necessary to boost crop yields and cut down production inefficiencies. Additionally, Astro Teller, head of Alphabet's X moonshot arm, recently [told](#) MIT Tech Review that he foresees AI algorithms being able to analyze the data agricultural drones collect to determine when to harvest, water, or replant crops in the not-too-distant future.

On the regulatory front, the FAA's line-of-sight requirement could be relaxed in the coming years, enabling farmers and agriculture companies to fly drones over dozens of acres of land without needing to constantly move their positions and ensure they can still see their aircraft. If this occurs, it's not unreasonable to imagine a future where swarms of drones fly over farm fields at very low altitudes, spraying water and fertilizer, planting seeds, or identifying crops in need of hydration.

CONSTRUCTION AND MINING

The construction and mining industries are highly regulated to ensure workers stay safe in these extremely dangerous environments. Especially in the mining business, strict regulations are in place to limit deadly accidents, like the one in West Virginia that [killed](#) 29 miners back in 2009. Staying in compliance with these laws can be quite burdensome, consuming companies' time and money. One way firms will try to overcome these hurdles is by turning to drone technology. In fact, drone use in construction and mining could eventually become a \$28.3 billion global market, according to PwC [estimates](#). That would make it the second-largest segment for commercial drone use, behind only agriculture.

CONSTRUCTION AND MINING BY NUMBERS		
	Annual industry revenue	\$8.5 billion
	Industry employees	7.8 million as of February 2018
	Addressable market for drone use	\$28.3 billion
	Share of total value generated by enterprise drones	23%
	Top regulatory barriers	Autonomous drone bans, bans on drones flying over people
Source: Business Insider Intelligence estimates, PwC, St. Louis Fed, Bureau of Labor Statistics		
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Top Use Cases

Safety inspections. Nearly all states in the US and many foreign governments have legal requirements that mandate construction companies inspect their sites either weekly or daily to ensure they're safe for workers. When done manually, however, this process can take anywhere from 10 hours to a few days, according to [The Insurance Journal](#), slowing down workflows and diverting valuable manpower away from other projects. Drones equipped with the right cameras and sensors can conduct these inspections in as little as 15 minutes, according to industry sources who spoke to Business Insider Intelligence.

Mapping and surveying. Construction and mining sites typically span at least 10 acres and have hundreds of workers and millions of dollars' worth of materials, including gravel, concrete, and sand. Keeping track of all these supplies and materials is very difficult, leading to losses and waste. The U.K. Green Building Council [estimates](#) that 15% of all materials bought by construction companies around the world every year is wasted. Considering the US construction industry spent [\\$1.23 trillion](#) in 2017, that amounts to about \$180 billion worth of wasted materials in the US alone. Drones outfitted with thermal imagers and high-definition cameras can create 3D models of worksites to more accurately track materials at every stage of the building process to reduce inefficiencies. These models can also be used to quickly assess a project's progress, which is especially useful for sites deep inside tunnels that would take human workers over an hour to reach.






What Comes Next

The construction and mining industries globally are in the earliest stages of commercial drone use. Currently, stringent regulations, such as the US' ban on flying drones directly over humans, limit these companies' use of the aircraft to hours when workers aren't on site, typically either during the early morning or late evening. However, revisions to drone regulation are [expected](#) to come down the pipeline, opening the door for some of the world's largest markets to eventually permit autonomous flights of drones over project sites. Construction and mining companies will likely begin to automate mandatory inspections using drone technology, helping to streamline workflows and boost efficiencies.

In addition, software, mapping, and analytics will progress to help provide estimates on the quantity of materials companies have left, while equipping project managers with real-time predictions on how much further projects have to go before they're completed. While the market will not reach its full potential for at least another 15 years, dozens of drones will eventually be able to fly over a single construction site and collect millions of data points that can be analyzed to speed up building times and inspections and cut down on wasted materials.

INSURANCE

The rising costs and [frequency](#) of natural disasters are putting P&C insurers globally in a crunch. In fact, it's [estimated](#) that the average global annual cost of insurance claims from natural disasters has increased eight-fold since 1970. Meanwhile, German reinsurer Munich Re [estimates](#) that inflation-adjusted insured catastrophe losses reached an all-time high of \$135 billion in 2017. As the insurance industry seeks out new solutions to reduce these losses and improve efficiencies, it's likely many firms will turn to drone technology to provide faster and more accurate property assessments. Matthew Josefowicz, CEO of insurance consultancy Novarica, [estimated](#) last May that 20% of global P&C insurers were actively piloting or deploying unmanned aircraft.

INSURANCE BY NUMBERS		
	Annual industry revenue	\$1.2 trillion
	Industry employees	2.7 million as of March 2018 (US only)
	Addressable market for drone use	\$6.8 billion
	Share of total value generated by enterprise drones	5.3%
	Top regulatory barriers	Autonomous drone bans, LOS requirements, bans on drones flying over humans
Source: Business Insider Intelligence estimates, PwC, Bureau of Labor Statistics, Insurance Information Institute		

Top Use Cases

Claims assessments. In the aftermath of natural disasters like hurricanes and floods, P&C insurers often have to handle a high volume of complex claims. Additionally, damage to local infrastructure can make it quite challenging for human assessors to access properties. For instance, it took adjusters three days to reach the edge of damages after a tornado hit Joplin, Missouri in 2014. To counter these pain points, insurance firms can turn to unmanned aircraft. Enterprise drones, which are often equipped with GPS trackers and high-definition cameras, can get to hard-to-reach locations immediately after a disaster hits. From there, they can capture precise images and videos of damage that can be transmitted in real time back to mobile devices for assessment. According to Farmers Insurance, a drone could help a claims adjuster [process](#) three houses in an hour, versus about three houses a day on their own.






Risk evaluations. When determining coverage for a property, an in-person inspection is often required to assess its current condition and identify any risk factors, such as damage, leaks, or mold. If an assessor misses an issue, which is common due to an inability to reach and inspect every inch of a property, an insurer could be on the hook for future damages. One way insurers can perform more accurate inspections, thus reducing future losses, is by adopting drone technology to complement human assessors. Drones not only have the ability to provide a full and detailed aerial view of large properties, but they can also be used to identify hard-to-find issues. For example, drones equipped with infrared cameras have the ability to quickly and accurately detect water and air leaks, which are easily missed by humans but can lead to expensive structural damage. In turn, drone data can be plugged into an insurer's risk model for a comprehensive view of a property for a more accurate determination of value and risk.

What Comes Next

Cognizant [predicts](#) that drone technology could make adjusters 40-50% more efficient by enabling them to cut down assessment times and more accurately assess the costs of damages. Eventually, the data being gathered via unmanned aircraft will be used in machine learning (ML) algorithms to build models that will be able to accurately predict damages before they occur. For example, drones will be able to gather data on properties that can be plugged into ML algorithms and combined with weather data to give predictions on the monetary value of the claims insurers' will need to pay out, all before storms even occur. It's unlikely that drones will ever completely replace human assessors, but insurers will be able to reduce the number of workers they have on-site in the coming years, ultimately cutting down costs and fortifying profit margins.

MEDIA AND TELECOMMUNICATIONS

The global media industry is at a tipping point, as stagnating viewership is forcing broadcast and media companies to search for new ways to engage viewers. PwC [estimated](#) in 2017 that global entertainment and media industry revenue will grow at a 4.2% five-year compound annual growth rate (CAGR) through 2021, a projection the firm revised down from the prior year. Meanwhile, an increasingly saturated smartphone market and a fierce price war are pushing telecommunications firms to [search](#) for new sources of revenue and ways to cut costs. To cope with these new challenges, firms across the telecommunications and media industries are increasingly taking advantage of unmanned aircraft to engage audiences and reduce expenses through faster inspections of network infrastructure and other real estate.

MEDIA AND TELECOMMUNICATIONS BY NUMBERS		
	Annual industry revenue	\$1.88 billion in 2017
	Industry employees	1.9 million as of March 2018 (US only)
	Addressable market for drone use	\$15.2 billion
	Share of total value generated by enterprise drones	11.9%
	Top regulatory barriers	Bans on drones flying over humans, LOS requirements
Source: Business Insider Intelligence estimates, PwC, St. Louis Fed, Bureau of Labor Statistics		
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Top Use Cases

Inspections of infrastructure and physical assets. Cell towers, network hardware, and power lines often cost [hundreds of thousands](#) of dollars and take days to inspect. Drones, on the other hand, can quickly capture images that can be assembled into a virtual 3D model of a cell tower on a mobile device. That allows companies to nearly instantly identify damage that could bring down a tower or power line. In addition, large enterprise technology vendors — including [Intel](#) — have developed software stacks that can compare these models to historical ones, identifying areas of damage or erosion, and thereby enabling companies to take preventative measures. Using drones is also exponentially more efficient than manual methods — T-Mobile, for instance, used a drone to [inspect](#) a cell antenna at a stadium in Utrecht, Holland, which cut down the inspection time from a week to only 15 minutes. Additionally, media companies have begun using unmanned aircraft to inspect physical assets. For instance, Snaproll Media started using drones for surveying and inspecting film sets after getting [FAA approval](#) back in 2014.

Aerial filming and photography. Viewership of live events — especially [sports](#) — is stagnating, a trend that industry experts expect to continue, ultimately depressing the industry's revenue growth. Media and film production companies are turning to drones to capture high resolution, 4K images down at the ground level within only a few feet of actors or athletes, and without any shadows or air disturbance. That's something helicopters with film crews onboard simply can't accomplish. Fox Sports, notably, brought unmanned aircraft to NFL, MLB, PGA Tour, and NASCAR events back in 2016, and [expanded](#) its use of the aircraft for live sports events last year. Even in movie filming, unmanned aircraft can be highly effective at capturing aerial footage: Filmmakers used drones while filming *The Wolf of Wall Street*, *Harry Potter*, and *Skyfall*, according to [PwC](#).






What Comes Next

Telcos and media companies are aggressively exploring new use cases for unmanned aircraft. Verizon and AT&T have been [trialing](#) drones to provide cell coverage over areas affected by natural disasters where cellular infrastructure is knocked out. In addition, Sprint has already successfully [trialed](#) a drone projecting cell coverage at highly populous events where data consumption is high, such as sporting events or concerts. Over the next few years, changes in regulations — notably, the potential elimination of the ban on drones flying over humans and line-of-sight rule — will allow companies to fly at least several drones during events like these.

Meanwhile, the FAA recently [granted](#) an exemption to its line-of-sight requirement for Xcel Energy, the largest power company in Colorado, suggesting it may soon grant telcos the same permission. Though the firm had been using drones that it kept within operators' line-of-sight for about a year, the company says flying the aircraft freely will help make inspections much more efficient, ultimately lowering costs for customers. Business Insider Intelligence expects the FAA and other regulatory bodies around the globe will grant more exemptions like these in the years ahead, before eventually relaxing the laws themselves, giving telcos and internet service providers that take advantage a key competitive edge.

PUBLIC SECTOR

Public sector groups — with the exception of the US military — haven't traditionally been early adopters of new, digital technologies. But, with companies across industries increasingly [seeing](#) strong ROI from their unmanned aircraft, these organizations are now taking notice and seeking to replicate those results. As of April 2017, 347 government agencies outside of the US military — 83% of which are police and firefighting forces — were using unmanned aircraft in some capacity, [according to](#) The Center for the Study of the Drone at Bard College, representing a 518% explosion over the prior 24 months.

PUBLIC SECTOR BY NUMBERS		
	Annual industry revenue	\$11.5 trillion (US only)
	Industry employees	22.3 million (US only)
	Addressable market for drone use	\$107 million by 2022
	Share of total value generated by enterprise drones	7.1%
	Top regulatory barriers	Bans on drones flying over humans, LOS requirements
<small>Source: Business Insider Intelligence estimates, Bureau of Labor Statistics, St. Louis Fed, Trading Economics, US Bureau of Economic Analysis</small>		

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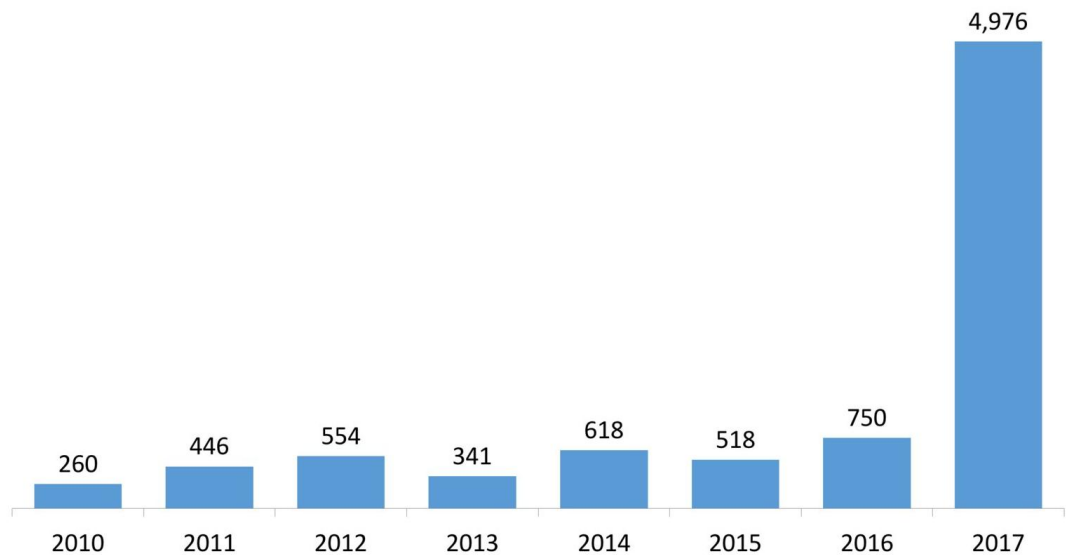
Top Use Cases

Surveying. Public employees — from firefighters to police officers, as well as government officials — need to monitor and examine crime scenes, fires, and publicly owned land. Unmanned aircraft can help with these assessments in different ways for different groups. Police forces, for instance, need to assess the aftermath of crime scenes to capture minute details, like the location of blood stains, that can be used as evidence later on. Unmanned aircraft [can fly above](#) crime scenes and take high-resolution images, capturing stains, skid marks, and other small details that simply cannot be seen with the naked eye. Meanwhile, the Department of Interior (DOI) uses the aircraft to increase efficiency when surveying land. Drones take about one-seventh of the time and one-tenth of the cost to survey and map out federal lands as traditional methods, according to DOI officials speaking to [The Wall Street Journal](#). In particular, they can be incredibly helpful during forest fires: The DOI [deployed](#) drones 707 times during 71 wildfires in 2017. These aircraft use infrared cameras to map the progression of a fire, helping to determine where to position firefighting crews on the ground.

Inspections. Federal law [mandates](#) that state-owned bridges are inspected at least once every two years, a process that takes weeks and often yields inaccurate or incomplete results, largely because humans need to inspect awkward angles that can be unsafe to get up close to, according to [PwC](#). Compounding this pressure is the sheer volume of infrastructure that needs to be inspected for damages ahead of potential repairs — American Road and Transportation Builders Association [estimates](#) that about 55,000 bridges across the US are in need of major repairs. Manual inspections are also costly: State agencies or contractors typically need to use a "[snooper](#)," which is a heavy-duty truck with a price tag as high as \$1 million. Drones equipped with thermal, infrared, and other cameras can map out infrastructure and access areas very dangerous for human workers to reach. Many state-level contractors, for instance, now send drones up to inspect the tops of 200-foot suspension bridges or underneath the bridges' roadways, thus eliminating the need to use expensive equipment or put a worker in danger. Minnesota started [trialing](#) drones for bridge inspections back in 2015, and now uses them to capture images of small cracks and crevices, which it will eventually compile into a library of thousands of images to identify deterioration over time.

Drone Flights Conducted By Department Of Interior

By fiscal year



Source: US Department of Interior, February 2018

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Search and rescue. Searching for missing persons and suspects usually takes at least days, and requires dozens of police officers and first responders, often diverting valuable resources away from other priorities. For instance, it took over 100 state, local, and even some federal authorities nearly two weeks to [find](#) marathon bombing suspect Dzhokhar Tsarnaev back in 2013. Worse yet, suspects [often hide](#) in forests and other sparsely populated yet dense areas, making finding them through traditional searches using helicopters and people on the ground difficult, or impossible. Police forces can now use unmanned aircraft equipped with thermal imagers, which, unlike other high-definition cameras, capture heat waves. The human body is significantly [hotter](#) than the natural environment, so drones equipped with thermal imagers can identify humans from hundreds of feet in the air without being detected, even at night. This allows law enforcement to instantly identify humans on the ground, and alert authorities back at a central location to send out additional forces to catch the suspect or help the missing person.

What Comes Next

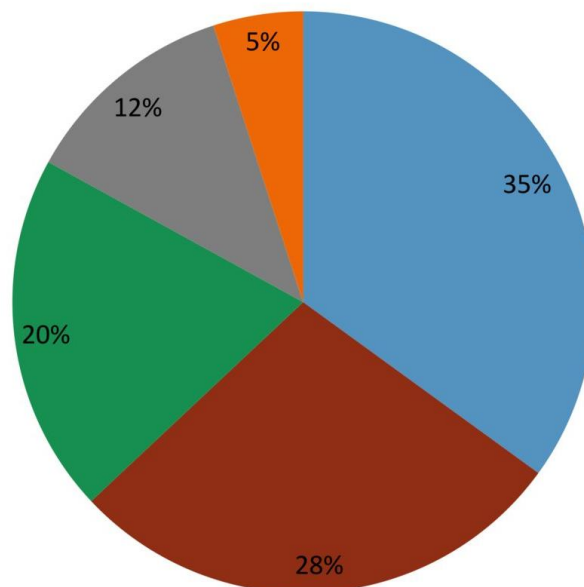
The proliferation of drones in the public sector will continue to move at a slower pace than other industries, largely because of cost constraints. Yet, as forest fires [become](#) more costly and common, it will force the DOI to slowly continue to expand the number of drone flights it conducts annually, and could also push local law enforcement agencies to use unmanned aircraft to help tackle the fires right away before federal authorities arrive on the scene.

Meanwhile, on the search and rescue front, computer vision software — the same type found in Apple's latest iPhone — only just [started to arrive](#) in enterprise drones a little over a year ago. Once law enforcement agencies begin to make widespread use of aircraft with this technology, changes in regulations [will occur](#) over the next three to four years that will enable police forces to fly drones over cities and other densely populated areas, helping to better identify suspects on the run and capture evidence at crime scenes.

US Public Sector Agencies Using Drones

Outside the federal government

■ Sheriff ■ Police ■ Firefighting forces ■ City or county government ■ State government



Source: Center for the Study of the Drone at Bard College, n=347, 2018

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THE FUTURE ENTERPRISE DRONE MARKET

Looser regulations in the largest drone markets in the world are set to enable companies across industries to deploy drones that fly exponentially further than is currently allowed. Meanwhile, we expect the cost of drone hardware to continue to drop, while advancements in drone software, mapping, visualization, and analytics tools will accelerate, especially once regulatory changes start to occur late this year and into 2019. The changes will ultimately allow businesses to fly at least dozens of drones over their assets, capturing millions of data points that firms will analyze to produce real-time, actionable insights.

Meanwhile, the impact of unmanned aircraft isn't limited to the industries we profile in this report. Utility companies, in particular, have ramped up their use of unmanned aircraft over the last few years. In addition to the Xcel Energy example mentioned above, New York Power Authority, the country's largest power company, [began](#) using unmanned aircraft in January 2017 to inspect and repair power lines in the Niagara Falls region. Additionally, energy providers have started using drones to inspect everything from oil refineries to offshore drilling sites and wind turbines. Oil industry recruiting and consulting firm Fircroft [estimates](#) that drones are 85% faster and cheaper than human inspections.

THE BOTTOM LINE

- Since the implementation of the FAA's Part 107 regulations, the US commercial drone industry has taken off. In response, firms elsewhere in the world have ramped up their own drone projects.
- Agriculture companies were relatively early adopters of drones, and are now using them to monitor crops and livestock, and manage seedlings, irrigation, and fertilization.
- The construction and mining industries are turning to drones to complete legally mandated safety inspections, as well as to conduct mapping and surveying of worksites prior to starting projects.
- P&C insurers are increasing their use of drones to assess and evaluate properties.
- Media and telecommunications firms are leveraging the aircraft to inspect and monitor their assets, and add new angles to the footage they capture.
- Public sector agencies are taking advantage of the aircraft to inspect infrastructure and find missing persons and suspects.
- Drones will lead these industries to become highly data-driven in the coming years, making the aircraft a must-have for companies to keep pace with their competition.

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