Autonomous Drones in the U.S. Military

Instruments of Death or Reconnaissance?

Jacob Sampley

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Introduction

What is an autonomous drone?

- Unmanned aerial vehicle (UAV)
  - Not all UAVs are fully autonomous
  - 1849 - Used by Austrians while sieging Venice (Custers)
  - Development began under project “Red Wagon”
    - 1960 - U-2 incident with Soviets
  - 1964 - First U.S. use during Gulf of Tonkin incident
    - Reconnaissance (Wagner)
- 1967 - First recon. cameras attached to tactical UAVs
  - Israel during the War of Attrition (Dunstan)
- General Atomics MQ-1 Predator
  - Among the first generation of combat UAVs
  - AGM 114 Hellfire Missile
  - Introduced July 1995
    - Albania (Thompson)

General Atomics MQ-1 Predator (Pratt)

What is an autonomous drone?

- Most UAVs are ***NOT*** fully autonomous
  - Require at least limited input from an operator
- March 2020 - First fully autonomous UAV used in warfare
  - US-Recognized Libyan Government of National Accord vs. forces of General Khalifa Haftar
  - No drone-caused kills confirmed
  - "Logistics convoys and retreating [Haftar-affiliated forces] were subsequently hunted down and remotely engaged by the unmanned combat aerial vehicles or the lethal autonomous weapons systems such as the STM Kargu-2 ... and other loitering munitions," - U.N. Panel of Experts on Libya (Hernandez)

What's the Difference?

UAV	Unmanned Aerial Vehicle	Recon, combat, commercial	Any unmanned aircraft
UAS	Unmanned Aircraft System	Operation of UAV	The systems specifically for operating UAVs
RPA	Remotely-Piloted Aircraft; UAV Sub-Type	Recon, combat, commercial	Any UAV which is remotely-piloted rather than autonomous
Autonomous Drone	UAV Sub-Type	Recon, combat, commercial	Any UAV which is autonomous rather than remotely-piloted

(Gruber)

Method

Review Literature

- US government sources
- Military sources
- International news
- U.N. reports
- Reviews of institutional documents

Gather Data

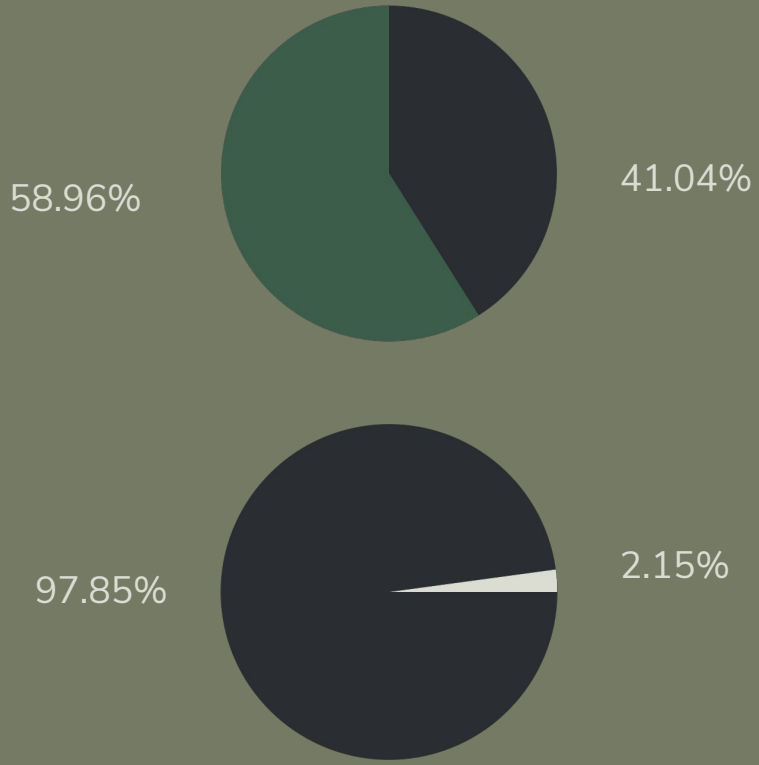
- Drones vs. Planes
- Prevalence of UAVs
- Afghanistan statistics
- Global drone strikes

Analyze Findings

- What does the data show about drone trends?
- Do drones deserve their present level of fear?
- What should we anticipate from the future of drone warfare?

Results

UAVs vs. Planes



2012

Planes
10,767

UAVs
7,494

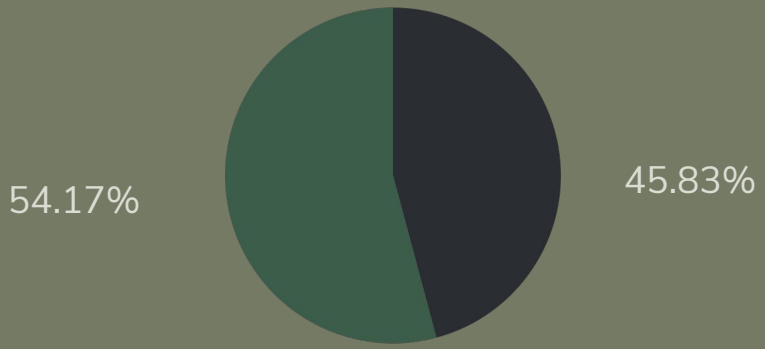
UAVs
7,333

Combat UAVs
161

(Ackerman and Schachtman)

UAVs vs. Planes

2021

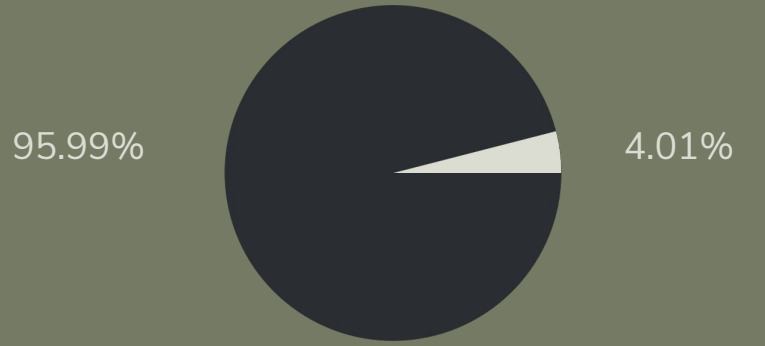


Planes

>13,000

UAVs

>11,000



UAVs

>10,551

Combat UAVs

>441

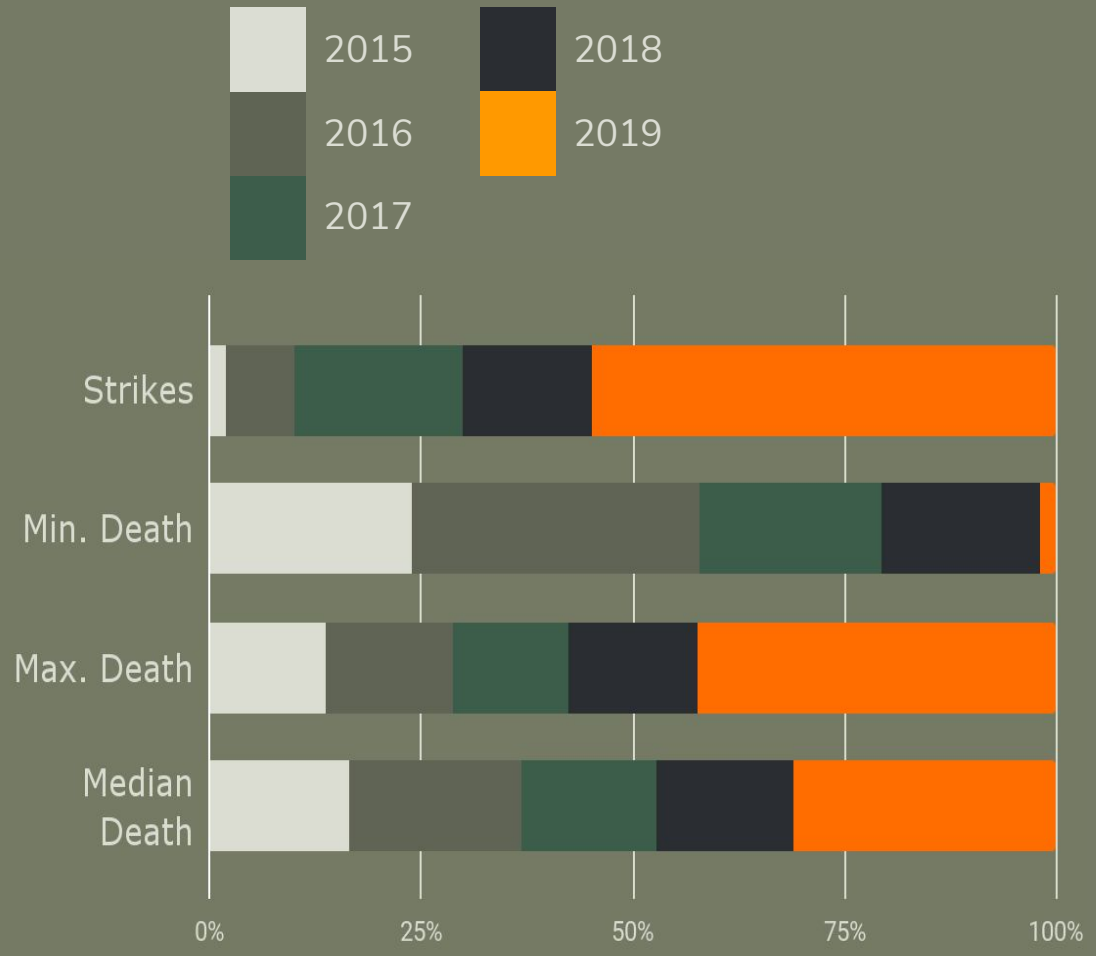
(Gettinger)
(“Unmanned Aircraft Systems”)

Drone Strikes in Afghanistan

	2015	2016	2017	2018	2019
Strikes	235	1071	2611	1990	7167
Min. Death	982	1388	878	767	84
Max. Death	1434	1601	1439	1601	4479
Median Death	1208	1495	1159	1184	2282

("Drone Warfare")

Drone Strikes In Afghanistan



14,040

Confirmed drone strikes globally

(“Drone Warfare”)

13,072

Confirmed drone strikes in Afghanistan

(“Drone Warfare”)

16,901

Afghanis potentially killed by drones

(“Drone Warfare”)

865,828

Drones registered with the U.S. government

(“UAS by the Numbers”)

Discussion

- There is now nearly 1 drone per 300 people in the United States
- While both volume of drone strikes and resulting deaths increased over time in Afghanistan, deaths did not increase proportionally to the amount of strikes, suggesting greater precision
- UAV presence in our military, while once dramatically increasing, has remained proportionally stagnant for the past decade
    - Civilian/commercial drones vastly outnumber military drones
- Fully autonomous UAVs are unlikely to be a threat to U.S. citizens in the near future

- Do you think that military drones will catch up with or surpass the population of civilian/commercial drones within the next 10-15 years?
- With the continuing democratization of technologies such as 3D printing in conjunction with civilian UAVs, do you anticipate armed and autonomous civilian drones to be a problem within the near future?
- Afghanistan saw our highest overall usage of UAVs and drone strikes, the rate generally increasing yearly; do you think our next conflict will continue this upward trend? Why or why not?

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THANK YOU

I DIDN’T SLEEP LAST NIGHT BECAUSE OF THIS SO I HOPE AT LEAST ONE OF YOU ENJOYED MY POWERPOINT