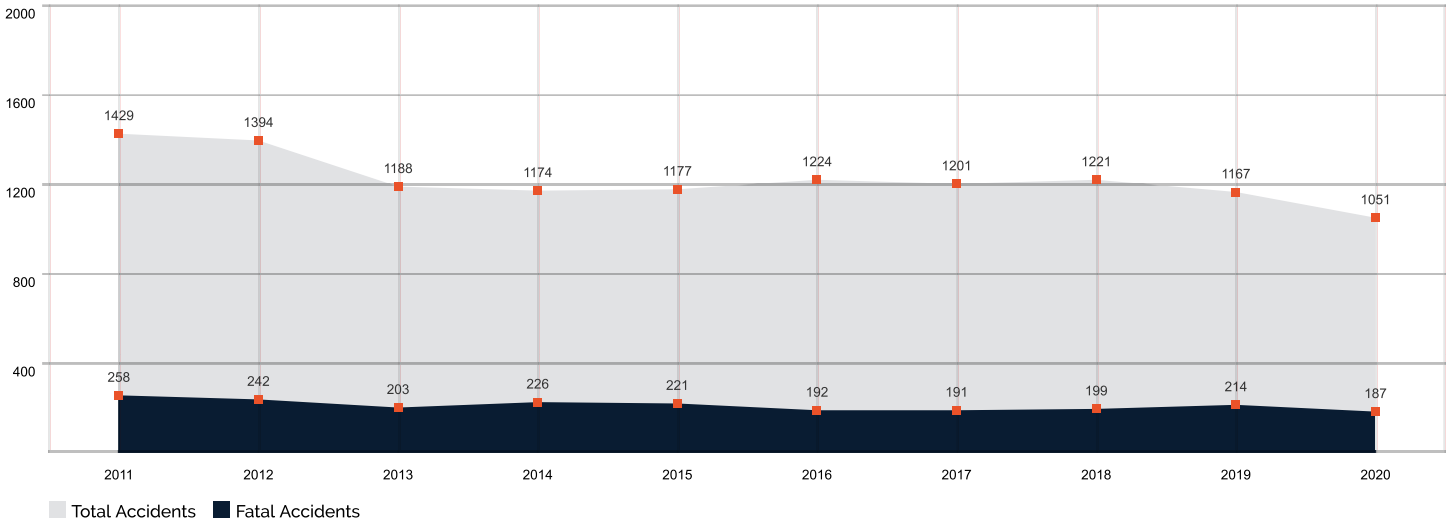
The 32nd Joseph T. Nall Report

The AOPA Air Safety Institute releases the 32nd *Joseph T. Nall Report*, presenting users with near real-time accident analysis updated on a rolling 30-day cycle. You can view data from 2008 to the current year. Please note that the NTSB takes approximately two years to issue a probable cause statement, so only preliminary data is available for later years.

GENERAL OVERVIEW

The year 2020 saw a decrease in total accidents (1051), of which 187 were fatal. The overall total and fatal accident rates for 2020 saw a downward trend finishing with a total accident rate of 4.69 per 100,000 hours and a fatal accident rate of 0.83 per 100,000 hours. A large drop in accidents helped mitigate a substantial decrease in flight activity. Overall, flight activity fell from 25.5 million hours in 2019 to 22.4 million hours in 2020.

General Aviation Accident Trends 2011-2020
2020 Overall Summary



General Aviation Accident Rates 2011-2020
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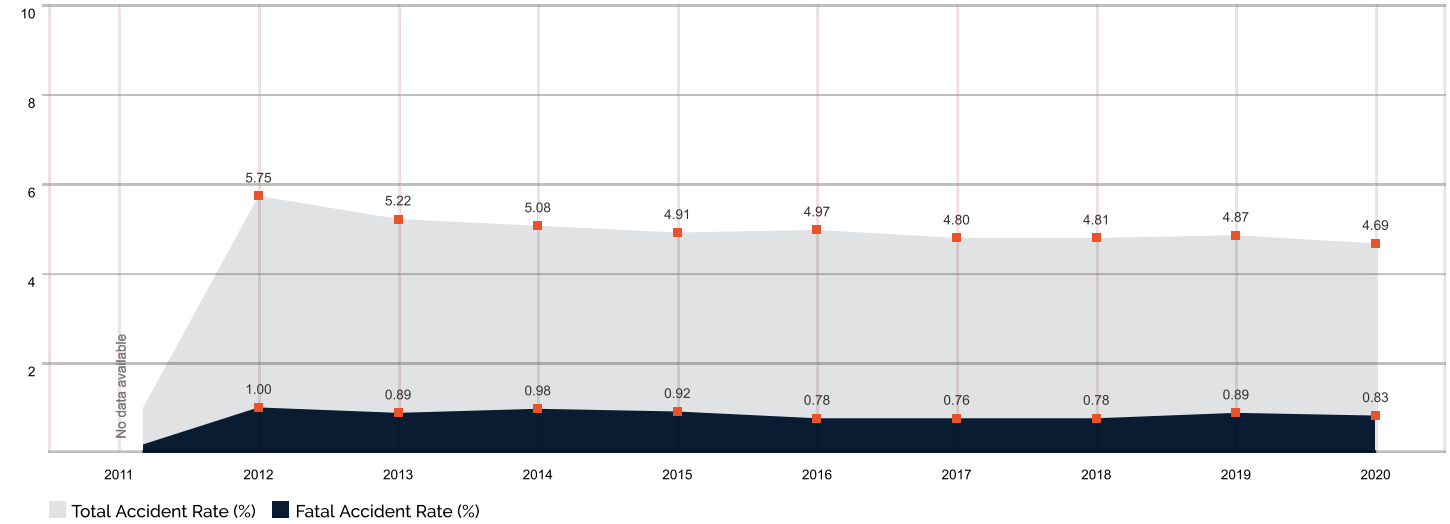

NON-COMMERCIAL FIXED-WING

Non-commercial fixed-wing aircraft had 892 total accidents, of which 156 were fatal (figure 1.1). With overall accidents (892) trending downward, following a large decrease in flight activity, for this category, the accident rate (5.27) trended downward (figures 1.2 and 1.3). Non-commercial fixed-wing showed a

decrease in fatal accidents (156), with the fatal accident rate falling (0.92) even with the decreased flight activity (figures 1.2 and 1.3). The percentage of pilot-related accidents remains around 70 percent (figure 1.4).

Pilot-related accidents consisted of 612 total, of which 79 accidents were fatal. Landing accidents still accounted for the largest number (305), but thankfully suffered few fatal accidents (figure 1.11). Loss of control (137) continued to dominate as the leading cause of landing accidents (figure 1.1.2). Accidents that could not be classified into a meaningful phase of flight, but were reasonably inferred based on preliminary data, fell into the other and unclassified accident category. As more NTSB accidents are classified this category will shrink, and those accidents will be placed in their respective areas. Takeoff and climb accidents (130) rose from the previous year (figure 1.3.1). The largest number of accidents (53) were loss of control (figure 1.3.2), followed by stalled or settled on take-off (36). Fuel management (58) dropped slightly from the previous year (figure 1.4.1), with flight planning accounting for the largest total number of accidents (38) (figure 1.4.2). Maneuvering accidents decreased in both total (39) and fatal (16) from the previous year (figure 1.5.1). Stall/LOC had 18 accidents, of which 11 were fatal (figure 1.5.2). Descent and approach accidents increased (45) while fatal accidents (24) rose sharply from the previous year (figure 1.6.1). Stall/spin and collisions (17) had the same number of accidents while stalls/spins lead in fatal accidents (13) (figure 1.6.2). Weather accidents declined in total (23) and fatal (17) accidents (figure 1.7.1). VFR into IMC led the cause category with 11 accidents, of which 9 were fatal (figure 1.7.2).

Mechanical decrease in total accidents (153) and had a small decrease in fatal accidents (14) from the previous year (figure 1.8.1). Powerplant issues (77) continued its lead, followed by gear and brakes (33), and fuel system (26), which accounted for the majority of mechanical accidents (figure 1.8.2).

Figure 1.1: General Aviation Accidents in 2020

2020 Non-commercial fixed-wing

Number of accidents	892
Number of aircraft	897
Number of fatal accidents	156
Lethality (%)	17.5
Fatalities	273

**Each aircraft involved in a collision is counted separately.*

Figure 1.2: General Aviation Accident Trends 2011-2020

2020 Non-commercial fixed-wing

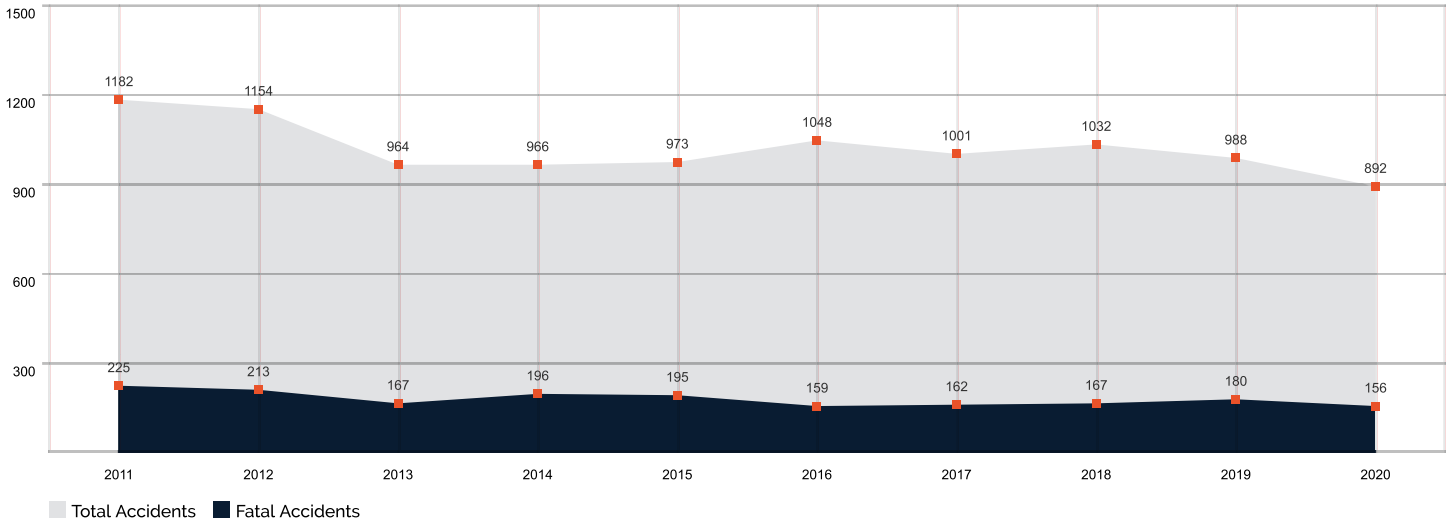

Figure 1.3: General Aviation Accident Rates 2011-2020

2020 Non-commercial fixed-wing

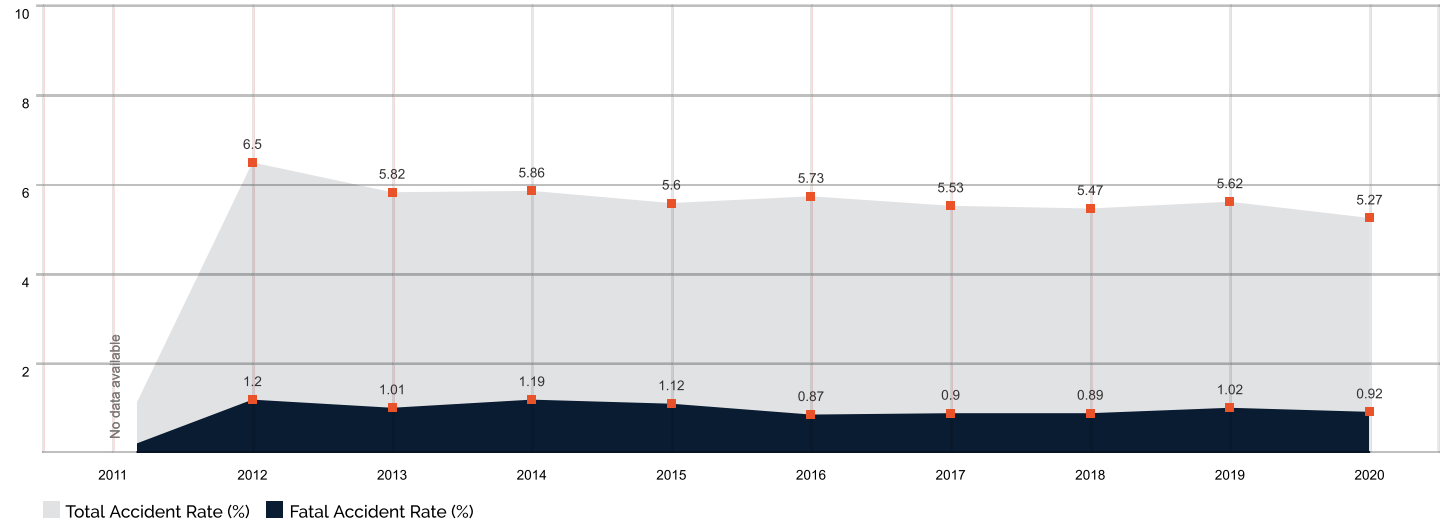

Figure 1.4: General Aviation Accidents in 2020

2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents
Pilot-Related	614 69.1%	79 51.6%
Mechanical	153 17.2%	14 9.2%
Other / Unknown	122 13.7%	60 39.2%

Figure 1.5: Aircraft class

2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Lethality
Single-engine fixed-gear	652 72.7%	92 58.2%	14.1%
SEF tailwheel	285	30	10.5%
Single-engine retractable	177 19.7%	46 29.1%	26%
Single-engine turbine	28	10	35.7%
Multiengine	59 6.6%	16 10.1%	27.1%
Multiengine turbine	5	3	60%
Unknown	9 1%	4 2.5%	44.4%

Figure 1.6: Type of operation

2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Fatalities
null	2 0.2%	0 0%	0 0%
Aerial Application	2 0.2%	1 0.6%	1 0.4%
Personal	684 76.7%	129 83.8%	214 84.6%
Instructional	152 17%	12 7.8%	19 7.5%
Public Use	3 0.3%	0 0%	0 0%
Positioning	12 1.3%	2 1.3%	2 0.8%
Aerial Observation	8 0.9%	2 1.3%	4 1.6%
Business	9 1%	5 3.2%	10 4%
Executive / Corporate	3 0.3%	0 0%	0 0%
Other work use	14 1.6%	3 1.9%	3 1.2%
Other or unknown	3 0.3%	0 0%	0 0%

Figure 1.7: Flight Conditions
2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Fatalities
Day VMC	**760** 85.5%	**107** 69.9%	**178** 68.5%
Night VMC	**71** 8%	**10** 6.5%	**15** 5.8%
Day IMC	**24** 2.7%	**14** 9.2%	**32** 12.3%
Night IMC	**12** 1.3%	**11** 7.2%	**18** 6.9%
Unknown	**22** 2.5%	**11** 7.2%	**17** 6.5%

**Night fields include dusk.*

Figure 1.8: Pilots involved
2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Lethality
ATP	**121** 13.5%	**15** 9.5%	12.4%
Commercial	**194** 21.6%	**25** 15.8%	12.9%
Private	**386** 43%	**66** 41.8%	17.1%
Sport	**14** 1.6%	**5** 3.2%	35.7%
Student	**64** 7.1%	**6** 3.8%	9.4%
Other or unknown	**118** 13.2%	**41** 25.9%	34.7%
Second pilot on board	**136** 15.2%	**24** 15.2%	17.6%
CFI on board	**216** 24.1%	**24** 15.2%	11.1%
IFR pilot on board	**442** 49.3%	**67** 42.4%	15.2%

**CFI on board and IFR pilot on board include single-pilot flights.*

Figure 1.9: Pilot-related Accident trend
2020 Non-commercial fixed-wing

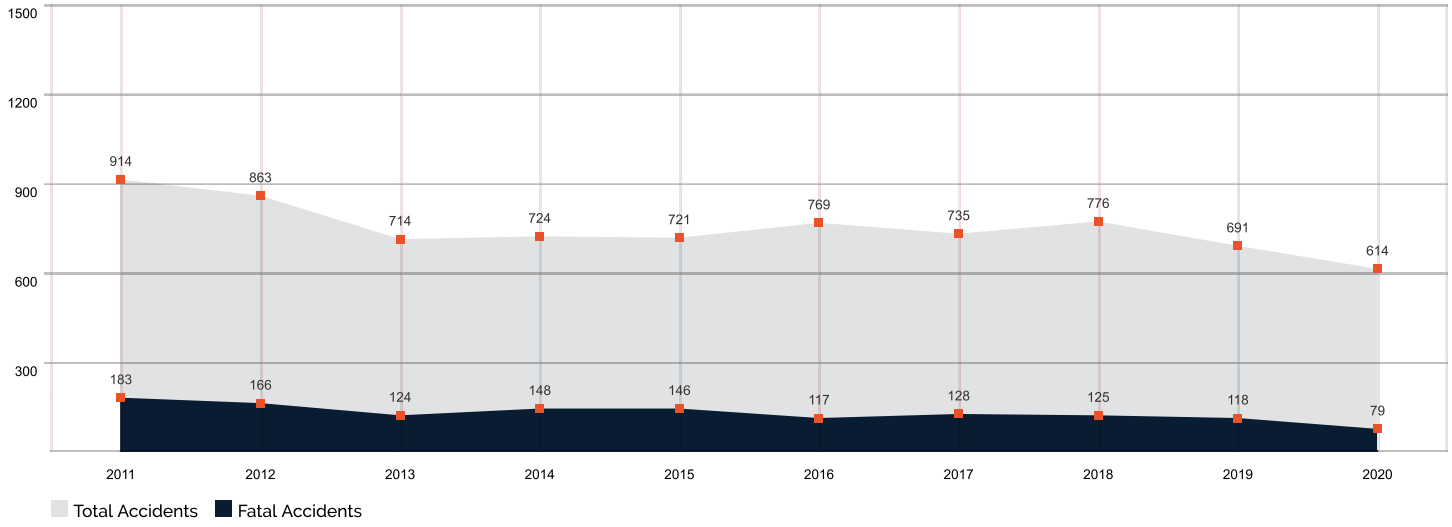

Figure 1.10: Pilot-related Accident Rates
2020 Non-commercial fixed-wing

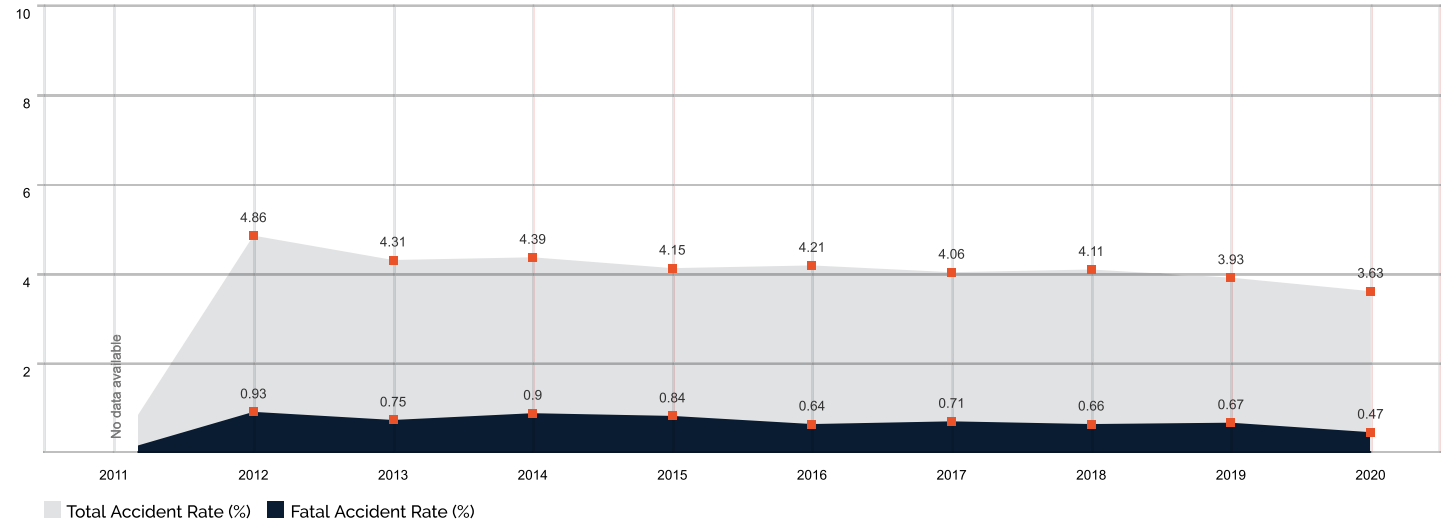

Figure 1.11: Major types of accidents
2020 Non-commercial fixed-wing

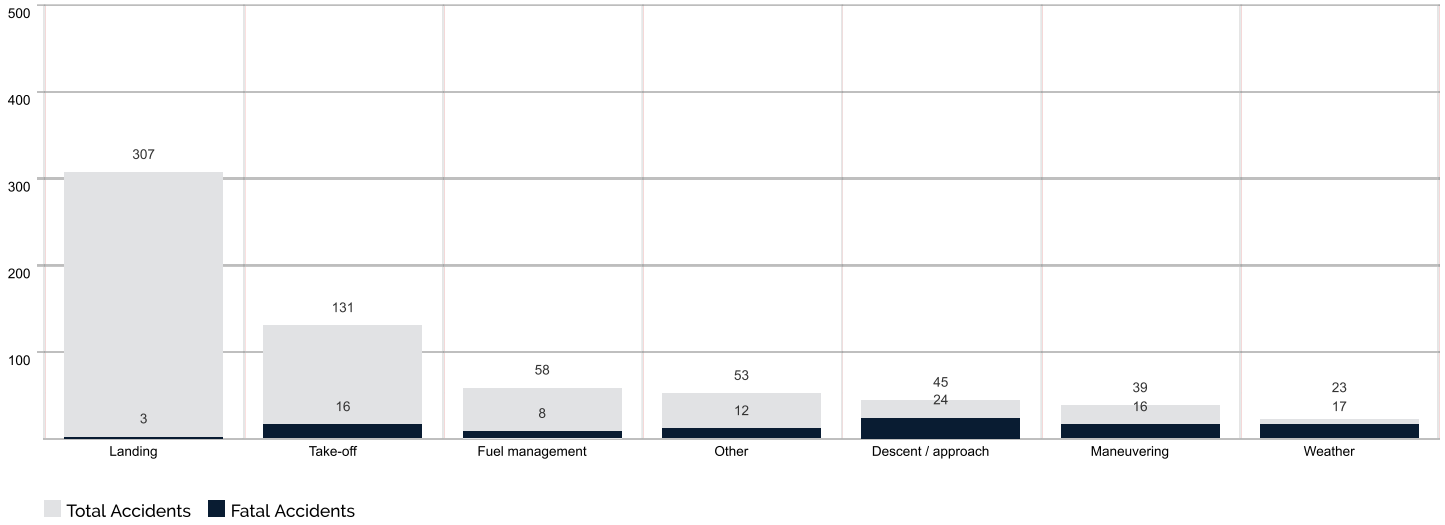

Figure 1.1.1: Landing Accident Trend
2020 Non-commercial fixed-wing

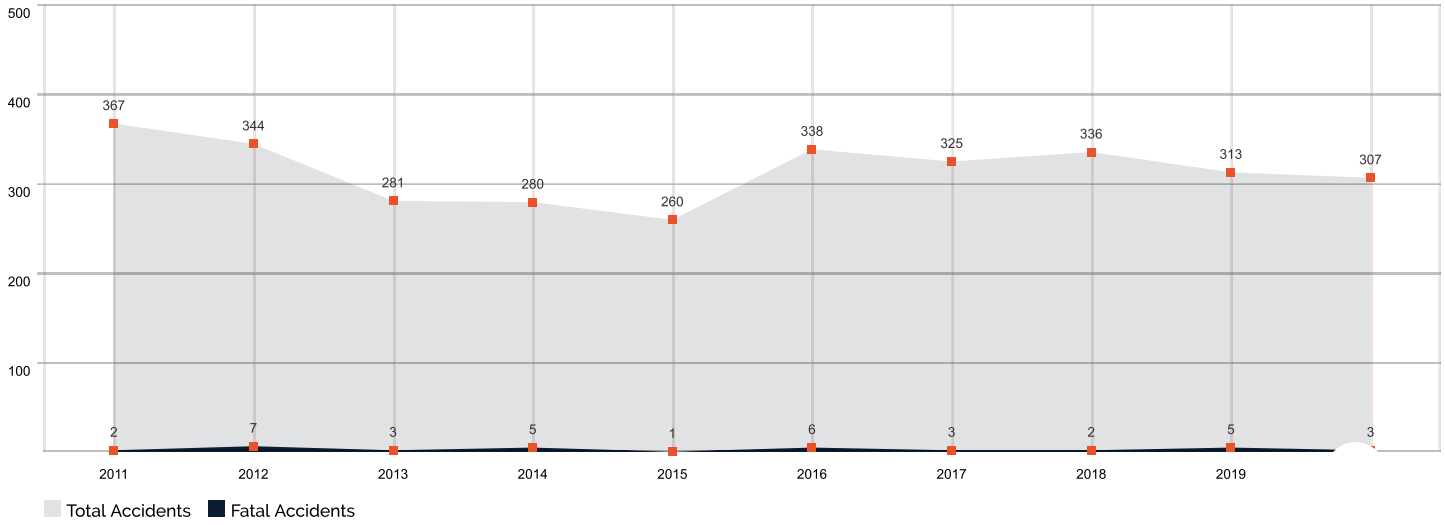

Figure 1.1.2: Types of Landing Accidents
2020 Non-commercial fixed-wing

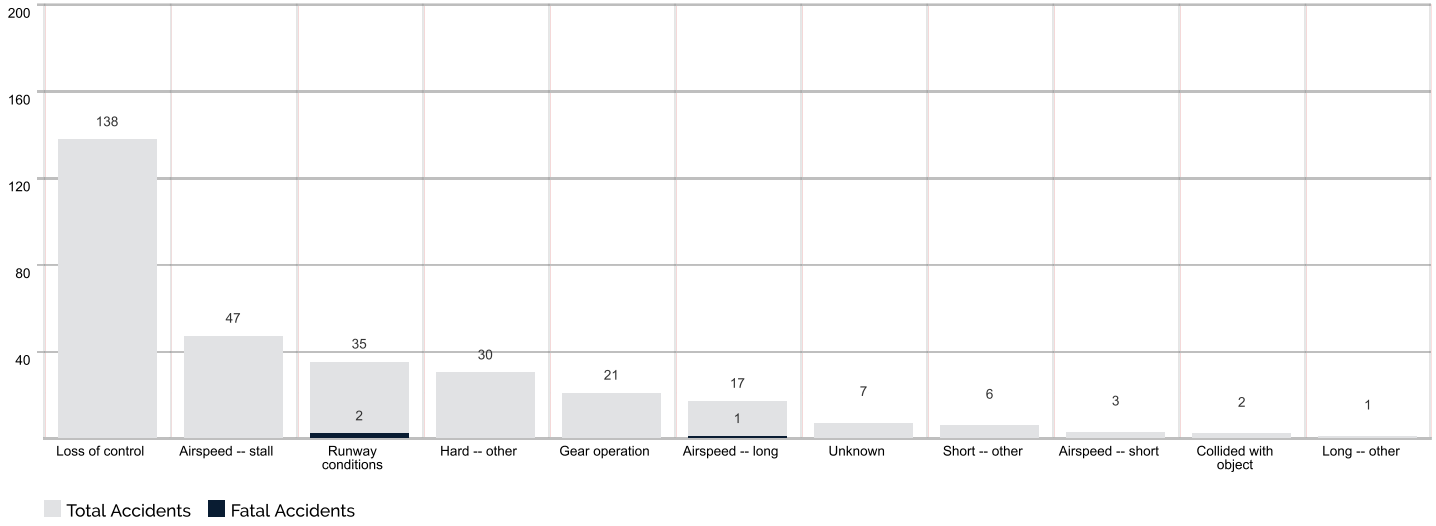

Figure 1.1.3: Aircraft involved in landing accidents
2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Lethality
Single-engine fixed-gear	246 80.1%	2 66.7%	0.8%
SEF tailwheel	130	0	0%
Single-engine retractable	39 12.7%	1 33.3%	2.6%
Single-engine turbine	7	0	0%
Multiengine	18 5.9%	0 0%	0%
Unknown	4 1.3%	0 0%	0%

Figure 1.1.4: Flight conditions of landing accidents
2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Lethality
Day VMC	280 91.2%	3 100%	1.1%
Night VMC	20 6.5%	0 0%	0%
Day IMC	3 1%	0 0%	0%
Night IMC	1 0.3%	0 0%	0%
Unknown	3 1%	0 0%	0%

**Night fields include dusk*

Figure 1.1.5: Pilots involved in landing accidents
2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Lethality
ATP	43 14%	0 0%	0%
Commercial	62 20.2%	0 0%	0%
Private	151 49.2%	3 100%	2%
Sport	5 1.6%	0 0%	0%
Student	31 10.1%	0 0%	0%
Other or unknown	15 4.9%	0 0%	0%
Second pilot on board	51 16.6%	1 33.3%	2%
CFI on board	80 26.1%	0 0%	0%
IFR pilot on board	161 52.4%	1 33.3%	[illegible]

**'CFI on board' and 'IFR pilot on board' include single-pilot flights.*

Figure 1.2.1: 'Other' and unclassified accidents
2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Lethality
Other	50	35	70%
Other (power loss)	20	3	15%
Landing	10	0	0%
Descent / approach	8	7	87.5%
Fuel management	8	2	25%
Weather	7	6	85.7%
Take-off	6	2	33.3%
Collision	5	4	80%
Taxi	3	0	0%
Maneuvering	3	0	0%
Not yet assigned	1	0	0%
Cruise	1	1	100%

Figure 1.3.1: Takeoff and climb accident trend
2020 Non-commercial fixed-wing

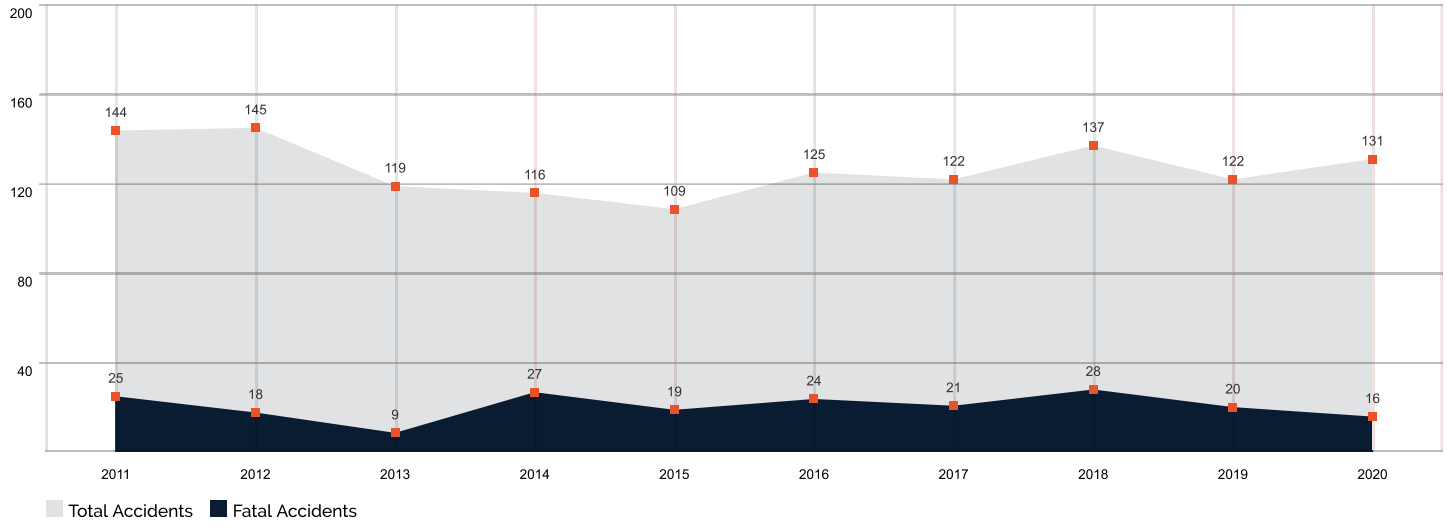

Figure 1.3.2: Types of takeoff and climb accidents
2020 Non-commercial fixed-wing

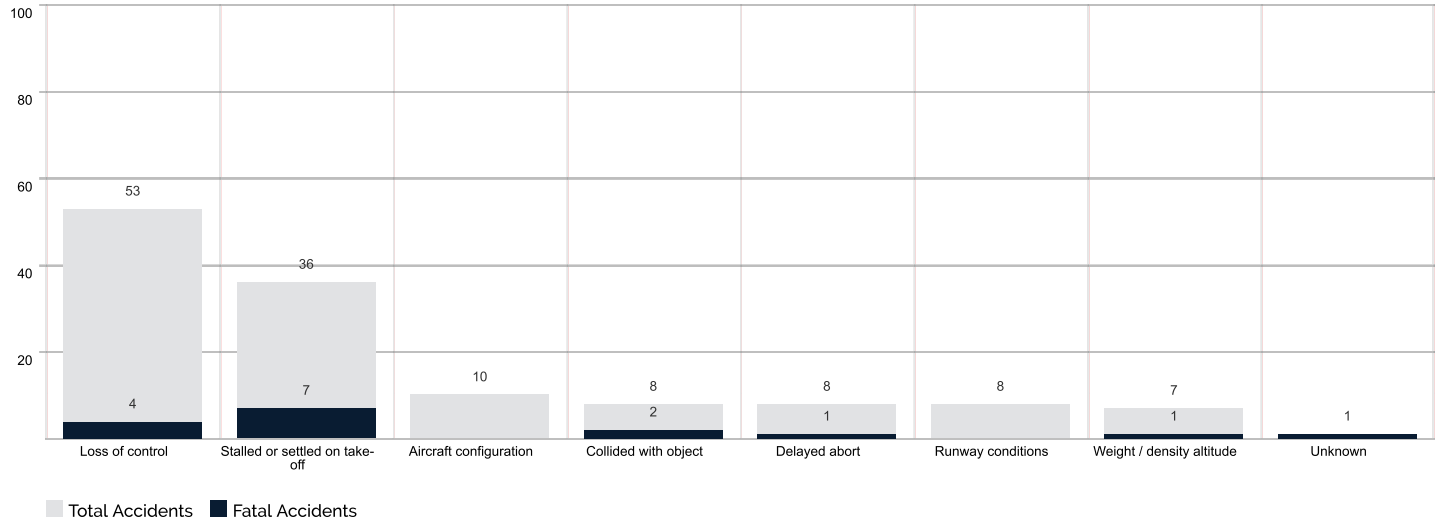

Figure 1.3.3: Aircraft involved in takeoff and climb accidents
2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Lethality
Single-engine fixed-gear	101 77.1%	11 68.8%	10.9%
SEF tailwheel	46	3	6.5%
Single-engine retractable	21 16%	4 25%	19%
Single-engine turbine	3	1	33.3%
Multiengine	8 6.1%	0 0%	0%
Unknown	1 0.8%	1 6.3%	100%

Figure 1.3.4: Flight conditions of takeoff and climb accidents
2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Lethality
Day VMC	121 92.4%	14 87.5%	11.6%
Night VMC	10 7.6%	2 12.5%	20%

**Night fields include dusk*

Figure 1.3.5: Pilots involved in takeoff and climb accidents
2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Lethality
ATP	19 14.5%	0 0%	0%
Commercial	28 21.4%	3 18.8%	10.7%
Private	58 44.3%	8 50%	13.8%
Sport	3 2.3%	2 12.5%	66.7%
Student	12 9.2%	1 6.3%	8.3%
Other or unknown	11 8.4%	2 12.5%	18.2%
Second pilot on board	22 16.8%	4 25%	18.2%
CFI on board	32 24.4%	3 18.8%	9.4%
IFR pilot on board	67 51.1%	6 37.5%	9%

***CFI on board' and 'IFR pilot on board' include single-pilot flights.*

Figure 1.4.1: Fuel management accident trend
2020 Non-commercial fixed-wing

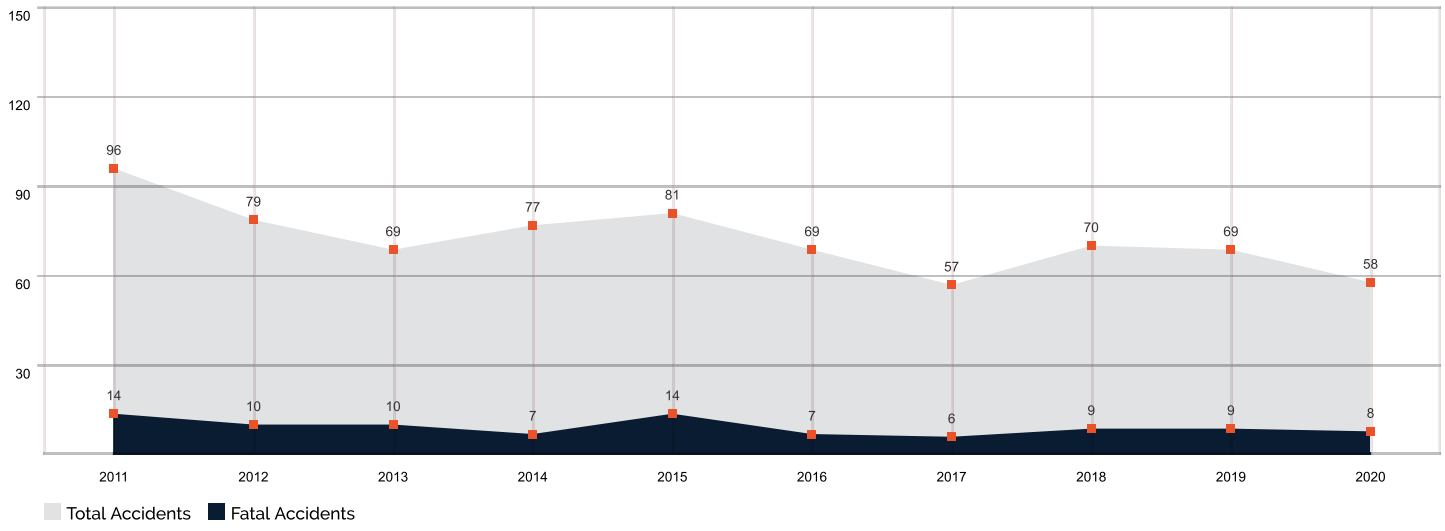

Figure 1.4.2: Types of fuel management accidents
2020 Non-commercial fixed-wing

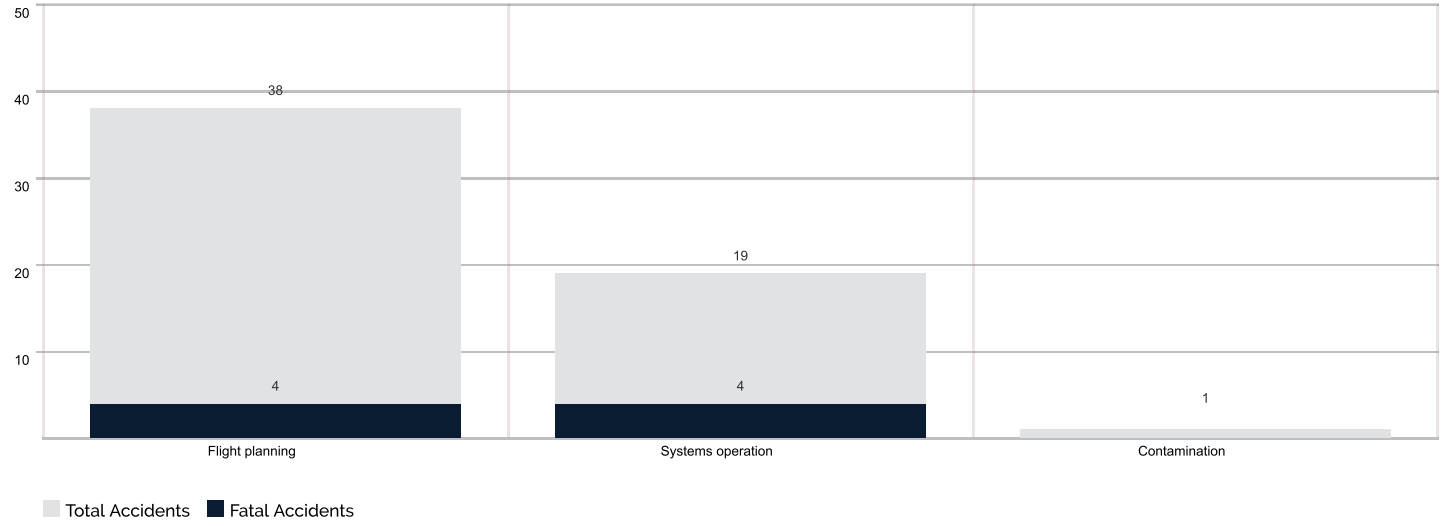

Figure 1.4.3: Aircraft involved in fuel management accidents
2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Lethality
Single-engine fixed-gear	**34** 58.6%	**3** 37.5%	8.8%
SEF tailwheel	**9**	**0**	0%
Single-engine retractable	**20** 34.5%	**4** 50%	20%
Single-engine turbine	**3**	**1**	33.3%
Multiengine	**4** 6.9%	**1** 12.5%	25%
Multiengine turbine	**1**	**0**	0%

Figure 1.4.4: Flight conditions of fuel management accidents
2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Lethality
Day VMC	**46** 79.3%	**6** 75%	13%
Night VMC	**11** 19%	**2** 25%	18.2%
Day IMC	**1** 1.7%	**0** 0%	0%

**Night fields include dusk*

Figure 1.4.5: Pilots involved in fuel management accidents
2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Lethality
ATP	**7** 12.1%	**0** 0%	0%
Commercial	**12** 20.7%	**1** 12.5%	8.3%
Private	**31** 53.4%	**6** 75%	19.4%
Student	**2** 3.4%	**0** 0%	0%
Other or unknown	**6** 10.3%	**1** 12.5%	16.7%
Second pilot on board	**3** 5.2%	**0** 0%	0%
CFI on board	**12** 20.7%	**0** 0%	0%
IFR pilot on board	**27** 46.6%	**6** 75%	22.2%

**'CFI on board' and 'IFR pilot on board' include single-pilot flights.*

Figure 1.5.1: Maneuvering accident trend
2020 Non-commercial fixed-wing

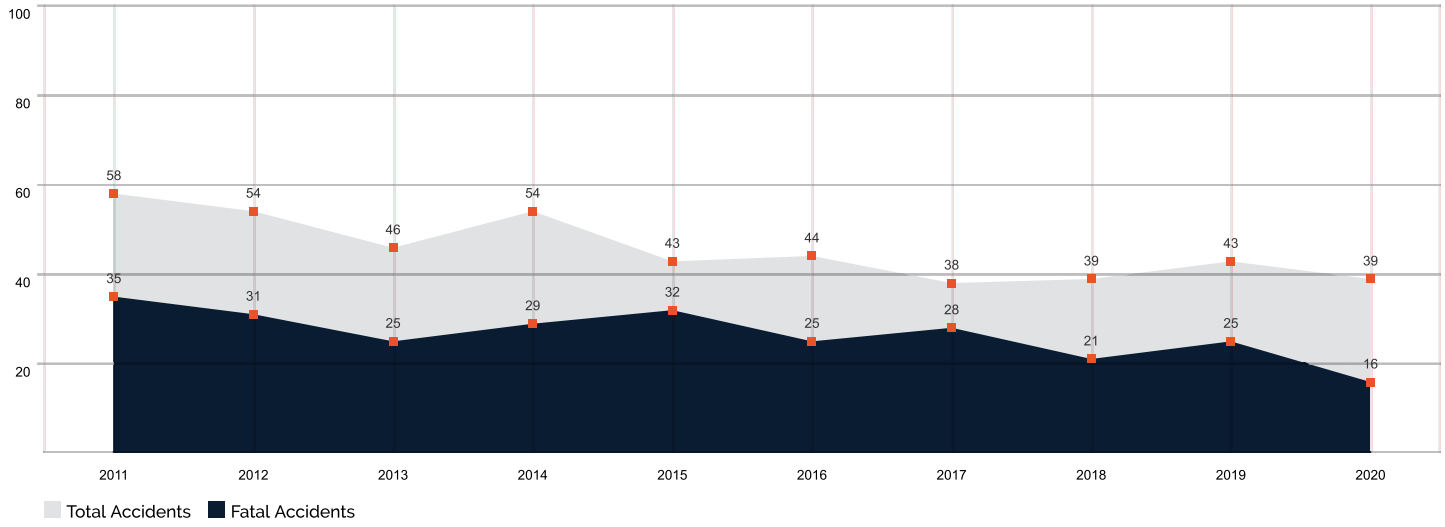

Figure 1.5.2: Types of maneuvering accidents
2020 Non-commercial fixed-wing

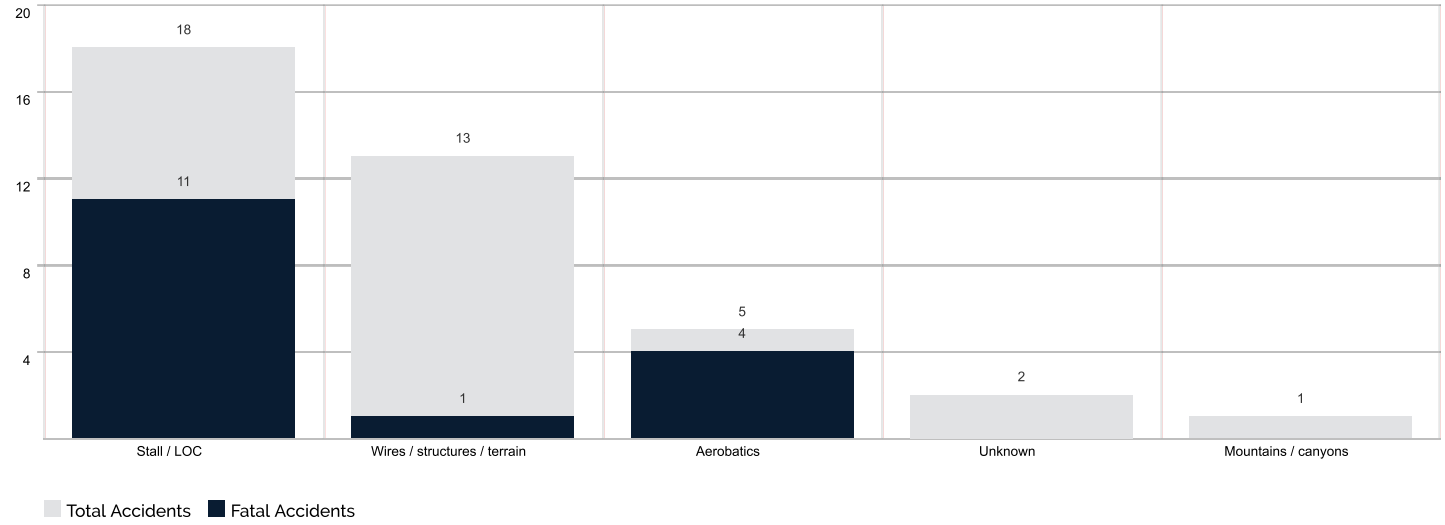

Figure 1.5.3: Aircraft involved in maneuvering accidents
2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Lethality
Single-engine fixed-gear	**34** 87.2%	**14** 87.5%	41.2%
SEF tailwheel	**16**	**6**	37.5%
Single-engine retractable	**5** 12.8%	**2** 12.5%	40%
Single-engine turbine	**1**	**0**	0%

Figure 1.5.4: Flight conditions of maneuvering accidents
2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Lethality
Day VMC	**38** 97.4%	**16** 100%	42.1%
Day IMC	**1** 2.6%	**0** 0%	0%

**Night fields include dusk*

Figure 1.5.5: Pilots involved in maneuvering accidents
2020 Non-commercial fixed-wing

	Accidents		Fatal Accidents		Lethality
ATP	4	10.3%	3	18.8%	75%
Commercial	10	25.6%	3	18.8%	30%
Private	17	43.6%	8	50%	47.1%
Sport	1	2.6%	1	6.3%	100%
Student	2	5.1%	1	6.3%	50%
Other or unknown	5	12.8%	0	0%	0%
Second pilot on board	4	10.3%	2	12.5%	50%
CFI on board	8	20.5%	3	18.8%	37.5%
IFR pilot on board	18	46.2%	7	43.8%	38.9%

**'CFI on board' and 'IFR pilot on board' include single-pilot flights.*

Figure 1.6.1: Descent and approach accident trend
2020 Non-commercial fixed-wing

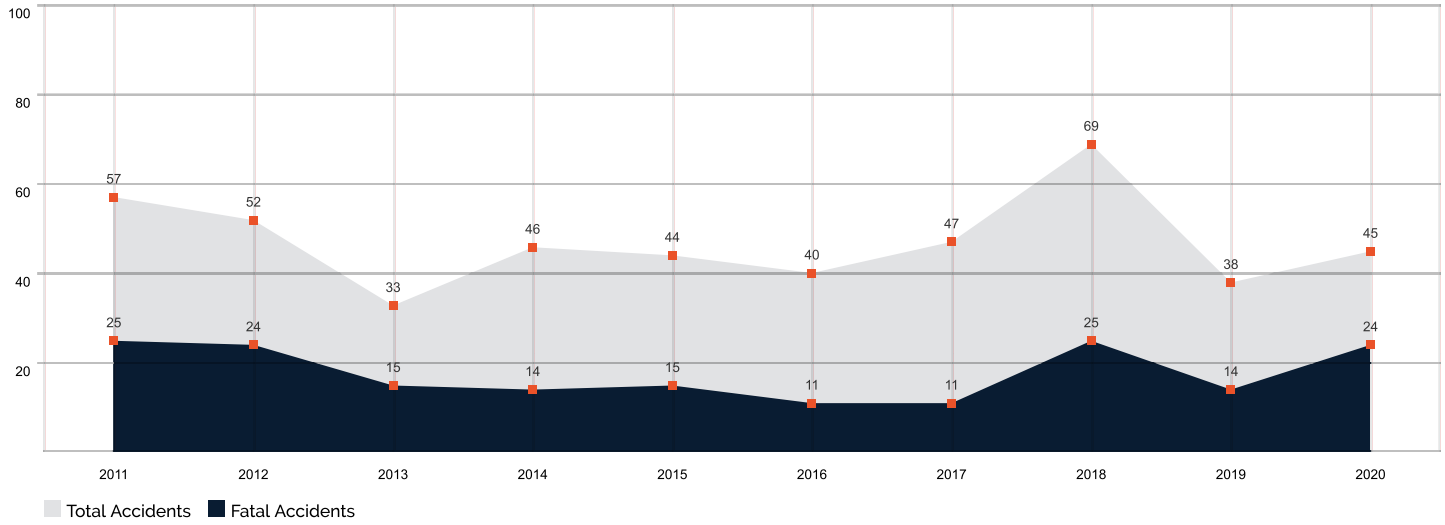

Figure 1.6.2: Types of descent and approach accidents
2020 Non-commercial fixed-wing

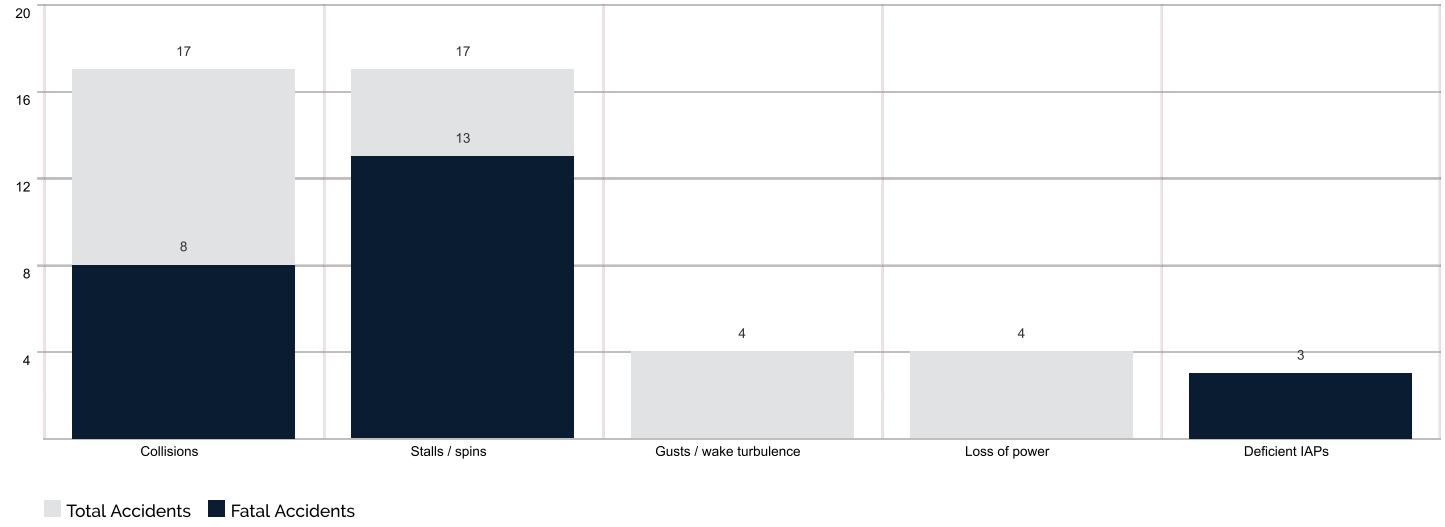

Figure 1.6.3: Aircraft involved in descent and approach accidents
2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Lethality
Single-engine fixed-gear	32 71.1%	15 62.5%	46.9%
SEF tailwheel	7	2	28.6%
Single-engine retractable	10 22.2%	8 33.3%	80%
Single-engine turbine	1	1	100%
Multiengine	3 6.7%	1 4.2%	33.3%

Figure 1.6.4: Flight conditions of descent and approach accidents
2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Lethality
Day VMC	33 73.3%	14 58.3%	42.4%
Night VMC	5 11.1%	3 12.5%	60%
Day IMC	4 8.9%	4 16.7%	100%
Night IMC	2 4.4%	2 8.3%	100%
Unknown	1 2.2%	1 4.2%	100%

**Night fields include dusk*

Figure 1.6.5: Pilots involved in descent and approach accidents
2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Lethality
ATP	3 6.7%	2 8.3%	66.7%
Commercial	10 22.2%	4 16.7%	40%
Private	22 48.9%	11 45.8%	50%
Sport	1 2.2%	0 0%	0%
Student	1 2.2%	1 4.2%	100%
Other or unknown	8 17.8%	6 25%	75%
Second pilot on board	4 8.9%	2 8.3%	50%
CFI on board	8 17.8%	3 12.5%	37.5%
IFR pilot on board	19 42.2%	12 50%	63.2%

**'CFI on board' and 'IFR pilot on board' include single-pilot flights.*

Figure 1.7.1: Weather accident trend
2020 Non-commercial fixed-wing

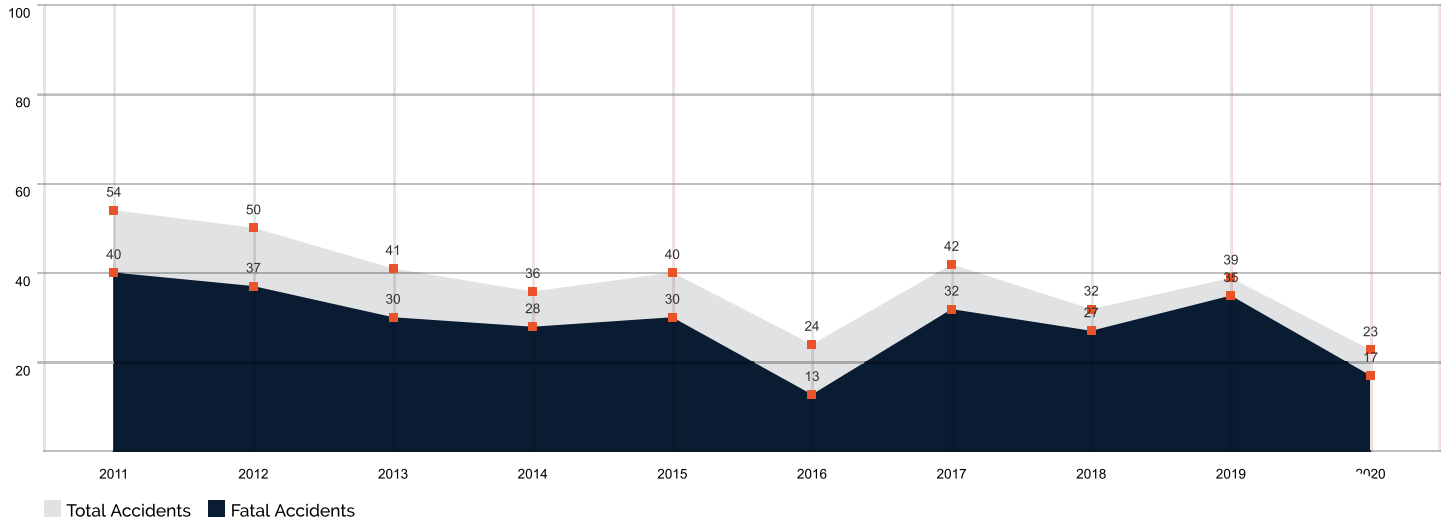

Figure 1.7.2: Types of weather accidents
2020 Non-commercial fixed-wing

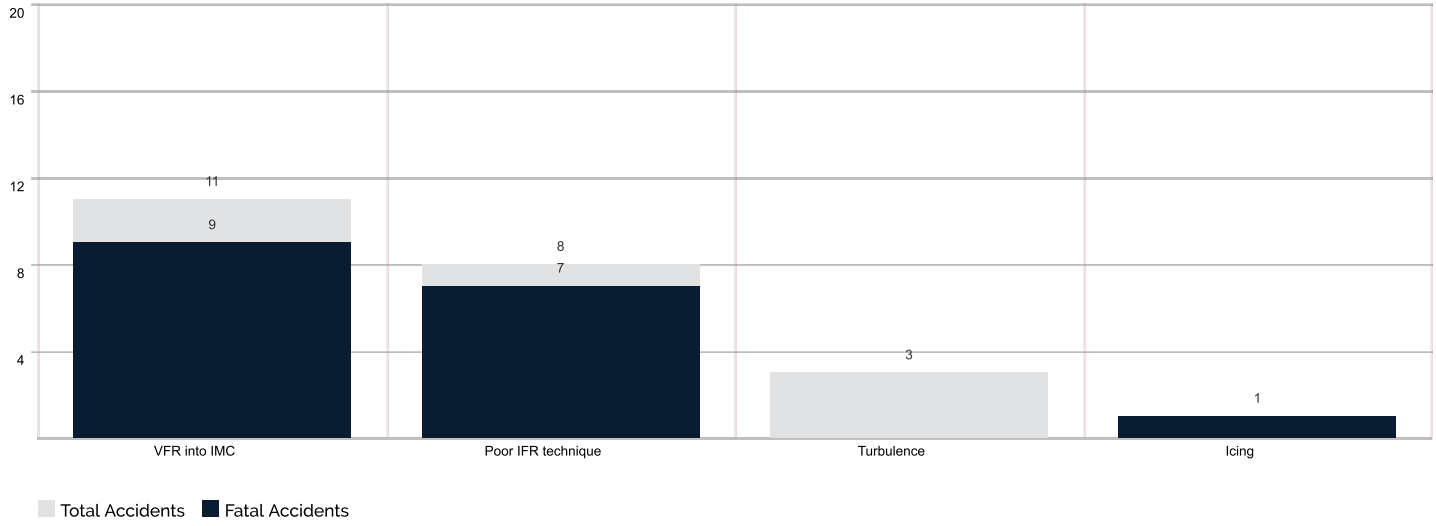

Figure 1.7.3: Aircraft involved in weather accidents
2020 Non-commercial fixed-wing

	Accidents		Fatal Accidents		Lethality
Single-engine fixed-gear	**14**	60.9%	**9**	52.9%	64.3%
SEF tailwheel	**2**		**2**		100%
Single-engine retractable	**7**	30.4%	**6**	35.3%	85.7%
Single-engine turbine	**1**		**1**		100%
Multiengine	**2**	8.7%	**2**	11.8%	100%

Figure 1.7.4: Flight conditions of weather accidents
2020 Non-commercial fixed-wing

	Accidents		Fatal Accidents		Lethality
Day VMC	**4**	17.4%	**1**	5.9%	25%
Night VMC	**1**	4.3%	**1**	5.9%	100%
Day IMC	**10**	43.5%	**8**	47.1%	80%
Night IMC	**7**	30.4%	**7**	41.2%	100%
Unknown	**1**	4.3%	**0**	0%	0%

**Night fields include dusk*

Figure 1.7.5: Pilots involved in weather accidents
2020 Non-commercial fixed-wing

	Accidents		Fatal Accidents		Lethality
ATP	**2**	8.7%	**2**	11.8%	100%
Commercial	**1**	4.3%	**0**	0%	0%
Private	**14**	60.9%	**11**	64.7%	78.6%
Sport	**1**	4.3%	**0**	0%	0%
Student	**2**	8.7%	**1**	5.9%	50%
Other or unknown	**3**	13%	**3**	17.6%	100%
Second pilot on board	**2**	8.7%	**2**	11.8%	100%
CFI on board	**2**	8.7%	**2**	11.8%	100%
IFR pilot on board	**8**	34.8%	**7**	41.2%	87.5%

**'CFI on board' and 'IFR pilot on board' include single-pilot flights.*

Figure 1.8.1: Mechanical accident trend
2020 Non-commercial fixed-wing

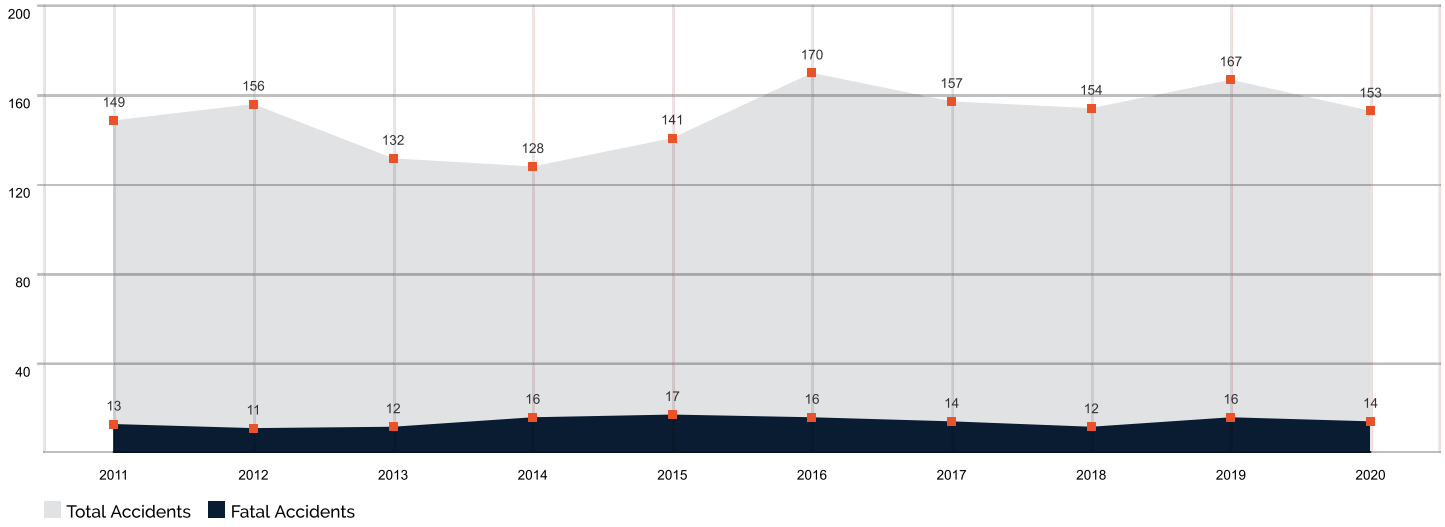

Figure 1.8.2: Types of mechanical accidents
2020 Non-commercial fixed-wing

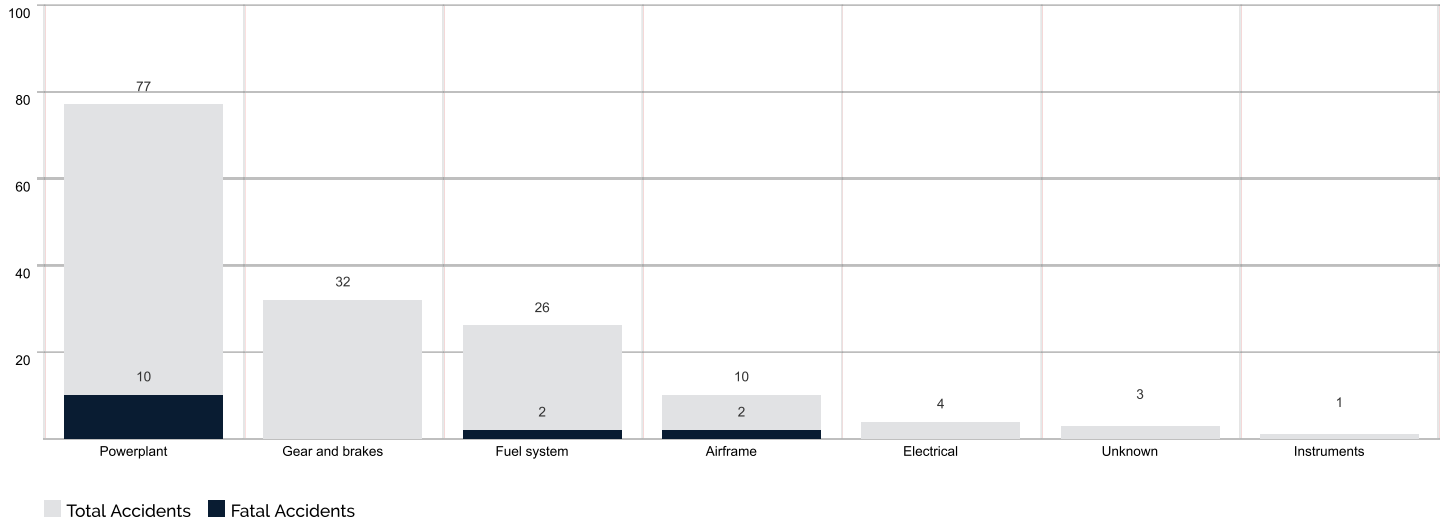

Figure 1.8.3: Aircraft involved in mechanical accidents
2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Lethality
Single-engine fixed-gear	94 62.3%	4 28.6%	4.3%
SEF tailwheel	39	2	5.1%
Single-engine retractable	43 28.5%	6 42.9%	14%
Single-engine turbine	7	2	28.6%
Multiengine	13 8.6%	4 28.6%	30.8%
Multiengine turbine	1	1	100%
Unknown	1 0.7%	0 0%	0%

Figure 1.8.4: Flight conditions of mechanical accidents
2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Lethality
Day VMC	135 88.2%	14 100%	
Night VMC	10 6.5%	0 0%	
Day IMC	2 1.3%	0 0%	0%
Unknown	6 3.9%	0 0%	0%

**Night fields include dusk*

Figure 1.8.5: Pilots involved in mechanical accidents
2020 Non-commercial fixed-wing

	Accidents	Fatal Accidents	Lethality
ATP	22 14.4%	1 7.1%	4.5%
Commercial	50 32.7%	7 50%	14%
Private	46 30.1%	5 35.7%	10.9%
Student	2 1.3%	0 0%	0%
Other or unknown	33 21.6%	1 7.1%	3%
Second pilot on board	31 20.3%	7 50%	22.6%
CFI on board	45 29.4%	6 42.9%	13.3%
IFR pilot on board	87 56.9%	11 78.6%	12.6%

"CFI on board' and 'IFR pilot on board' include single-pilot flights.

COMMERCIAL FIXED-WING

Commercial fixed-wing accidents comprised 67 accidents, 13 of which were fatal (figure 2.1). The overall accident rates rose substantially for total accidents (2.17) and for fatal accidents (0.42) from the previous year (figure 2.3). The majority of commercial fixed-wing accidents continued to be pilot-related (figure 2.4). Part 137 surpassed Part 135 accidents by 13 total accidents and one additional fatal accident.

Figure 2.1: General Aviation Accidents in 2020
2020 Commercial fixed-wing

Number of accidents	67
Number of aircraft	67
Number of fatal accidents	13
Lethality (%)	19.4
Fatalities	24

Each aircraft involved in a collision is counted separately.

Figure 2.2: General Aviation Accident Trends 2011-2020
2020 Commercial fixed-wing

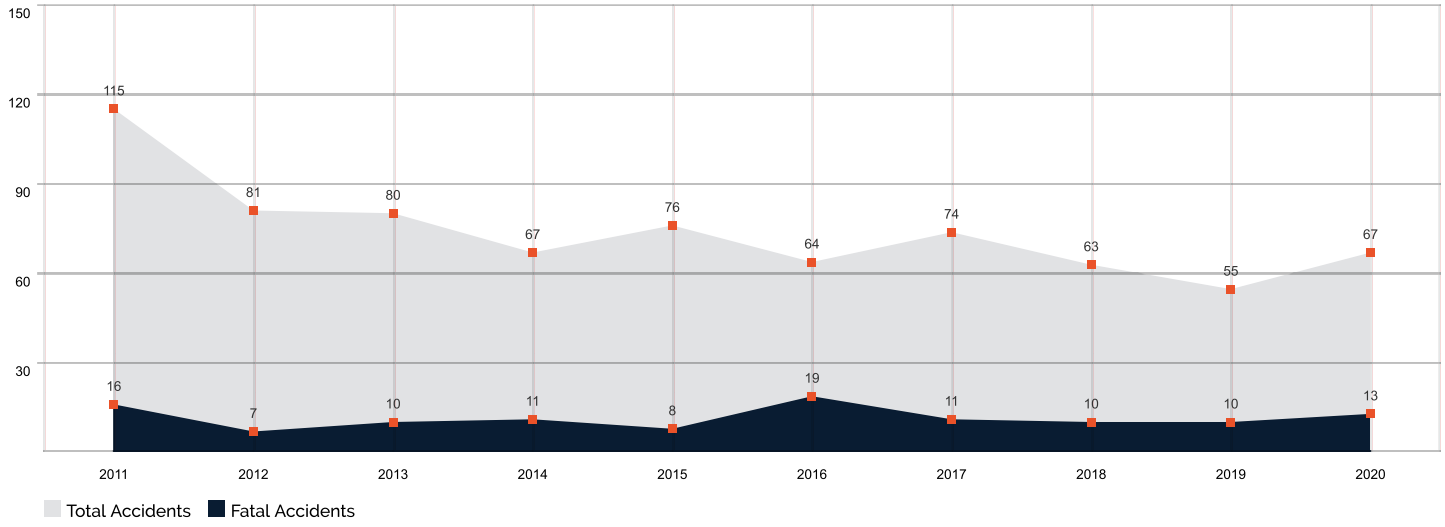

Figure 2.3: General Aviation Accident Rates 2011-2020

2020 Commercial fixed-wing

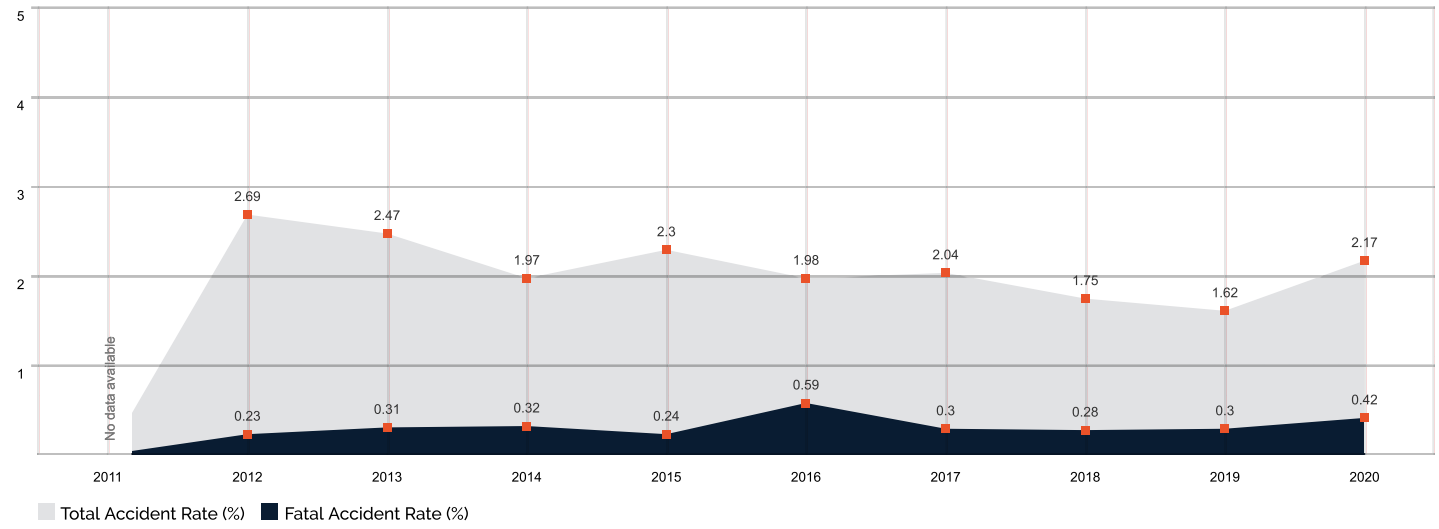

Figure 2.4: General Aviation Accidents in 2020

2020 Commercial fixed-wing

	Accidents		Fatal Accidents	
Pilot-Related	43	64.2%	9	69.2%
Mechanical	14	20.9%	0	0%
Other / Unknown	10	14.9%	4	30.8%

Figure 2.5: Aircraft class

2020 Commercial fixed-wing

	Accidents		Fatal Accidents		Lethality
~~Charter or Cargo (Part 135):~~					
Single-engine fixed-gear	14	51.9%	4	66.7%	28.6%
SEF tailwheel	7	25.9%	3	50%	42.9%
Single-engine retractable	2	7.4%	1	16.7%	50%
Multiengine	11	40.7%	1	16.7%	9.1%
Multiengine turbine	2	7.4%	0	0%	0%
~~Aerial application (Part 137):~~					
SEF tailwheel	40	null%	7	0%	17.5%

Figure 2.6: Flight Conditions

2020 Commercial fixed-wing

	Accidents		Fatal Accidents		Fatalities	
~~Charter or Cargo (Part 135):~~						
Day VMC	12	44.4%	2	33.3%	9	52.9%
Night VMC	8	29.6%	1	16.7%	1	5.9%
Day IMC	5	18.5%	2	33.3%	6	35.3%
Night IMC	1	3.7%	0	0%	0	0%
Unknown	1	3.7%	1	16.7%	1	5.9%
~~Aerial application (Part 137):~~						
Day VMC	37	92.5%	7	100%	7	100%
Night VMC	1	2.5%	0	0%	0	0%
Unknown	2	5%	0	0%	0	0%

**Night fields include dusk.*

Figure 2.7: Pilots involved in commercial fixed-wing accidents
2020 Commercial fixed-wing

	Accidents		Fatal Accidents		Lethality
Charter or Cargo (Part 135):					
ATP	**8**	29.6%	**1**	16.7%	12.5%
Commercial	**13**	48.1%	**2**	33.3%	15.4%
Other or unknown	**6**	22.2%	**3**	50%	50%
CFI on board	**12**	44.4%	**3**	50%	25%
IFR pilot on board	**22**	81.5%	**4**	66.7%	18.2%
Aerial application (Part 137):					
ATP	**3**	7.5%	**0**	0%	0%
Commercial	**35**	87.5%	**7**	100%	20%
Other or unknown	**2**	5%	**0**	0%	0%
CFI on board	**9**	22.5%	**1**	14.3%	11.1%
IFR pilot on board	**16**	40%	**3**	42.9%	18.8%

**CFI on board and IFR pilot on board include single-pilot flights.*

NON-COMMERCIAL HELICOPTER

Non-commercial helicopter had 62 accidents, 13 of which were fatal (figure 3.1). The majority of all accidents remained pilot-related. Total accidents decreased to 62, and 13 were fatal (figure 3.3). The fatal accident rate, rose slightly to 0.99, while the total accident rate decreased to 4.72 (figure 3.4). Accidents still awaiting a final cause, not yet assigned, and rotorcraft aerodynamics made up the largest categories (12) (figure 3.9).

Figure 3.1: General Aviation Accidents in 2020
2020 Non-commercial helicopter

Number of accidents	**62**
Number of aircraft	**62**
Number of fatal accidents	**13**
Lethality (%)	**21**
Fatalities	**18**

**Each aircraft involved in a collision is counted separately.*

Figure 3.2: Major causes: Helicopter general aviation accidents
2020 Non-commercial helicopter

	Accidents		Fatal Accidents	
Pilot-Related	**45**	72.6%	**6**	46.2%
Mechanical	**5**	8.1%	**1**	7.7%
Other / Unknown	**12**	19.4%	**6**	46.2%

Figure 3.3: General Aviation Accident Trends 2011-2020
2020 Non-commercial helicopter

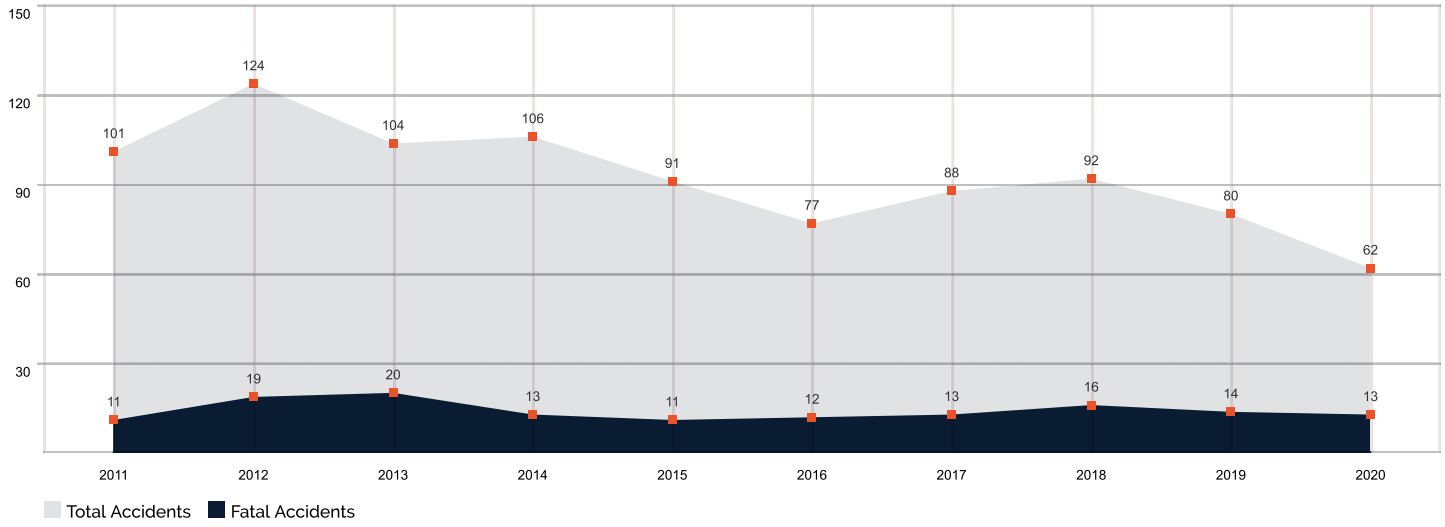

Figure 3.4: General Aviation Accident Rates 2011-2020
2020 Non-commercial helicopter

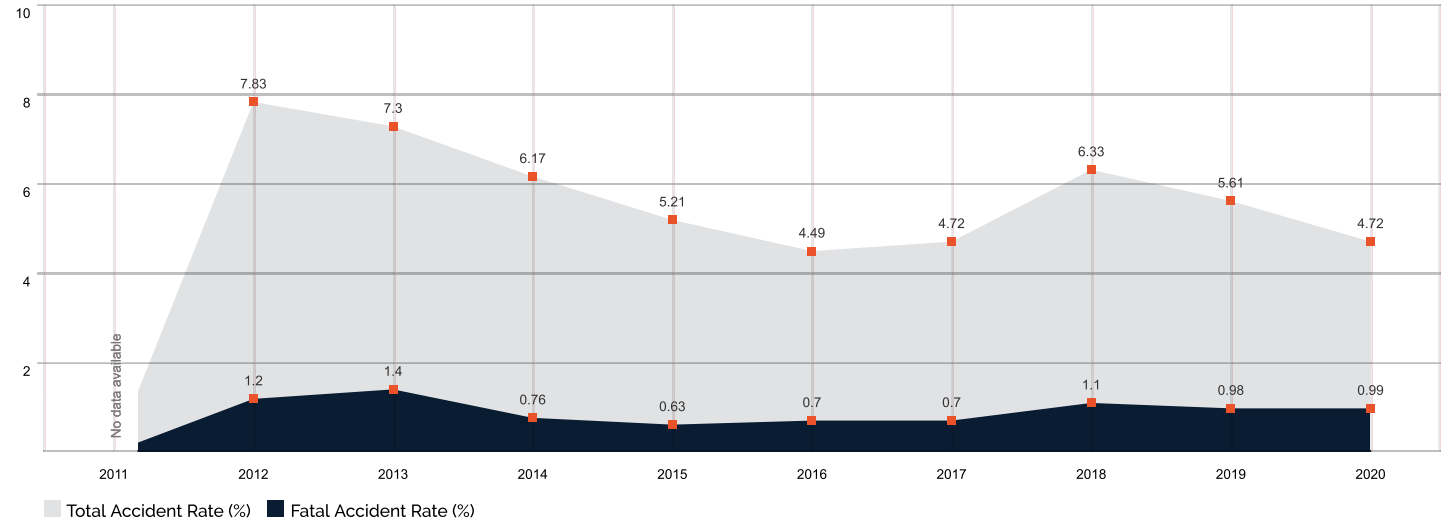

Figure 3.5: Aircraft class
2020 Non-commercial helicopter

	Accidents	Fatal Accidents	Fatalities
Unknown	12 19.7%	2 15.4%	5 27.8%
Single-engine reciprocating	28 45.9%	6 46.2%	7 38.9%
Single-engine turbine	20 32.8%	5 38.5%	6 33.3%
Multi-engine turbine	1 1.6%	0 0%	0 0%

Figure 3.6: Type of operation
2020 Non-commercial helicopter

	Accidents	Fatal Accidents	Fatalities
Aerial Application	1 1.6%	0 0%	0 0%
Fire Fighting	1 1.6%	1 7.7%	1 5.6%
Personal	24 38.7%	4 30.8%	5 27.8%
Instructional	13 21%	3 23.1%	1 5.7%
Public Use	2 3.2%	1 7.7%	1 5.6%
Positioning	6 9.7%	1 7.7%	1 5.6%
Aerial Observation	8 12.9%	2 15.4%	5 27.8%
Business	5 8.1%	1 7.7%	2 11.1%
Other work use	2 3.2%	0 0%	0 0%

Figure 3.7: Flight Conditions
2020 Non-commercial helicopter

	Accidents	Fatal Accidents	Fatalities
Day VMC	47 75.8%	6 46.2%	7 38.9%
Night VMC	4 6.5%	2 15.4%	3 16.7%
Unknown	11 17.7%	5 38.5%	8 44.4%

**Night fields include dusk.*

Figure 3.8: Pilots involved
2020 Non-commercial helicopter

	Accidents	Fatal Accidents	Lethality
ATP	12 19.4%	4 30.8%	33.3%
Commercial	32 51.6%	5 38.5%	15.6%
Private	11 17.7%	2 15.4%	18.2%
Student	3 4.8%	1 7.7%	33.3%
Other or unknown	4 6.5%	1 7.7%	25%
Second pilot on board	10 16.1%	4 30.8%	40%
CFI on board	26 41.9%	3 23.1%	11.5%
IFR pilot on board	40 64.5%	7 53.8%	17.5%

**CFI on board and IFR pilot on board include single-pilot flights.*

Figure 3.9: Types of non-commercial helicopter accidents
2020 Non-commercial helicopter

	Accidents	Fatal Accidents	Lethality
Rotorcraft aerodynamics	12 19.4%	3 23.1%	25%
Maneuvering	10 16.1%	1 7.7%	10%
Landing	6 9.7%	0 0%	0%
Taxi / ground operations	5 8.1%	0 0%	0%
Mechanical	5 8.1%	1 7.7%	20%
Take-off / climb	3 4.8%	0 0%	0%
Weather	3 4.8%	0 0%	0%
Other / miscellaneous	2 3.2%	0 0%	0%
Pre-flight / static	2 3.2%	0 0%	0%
Not yet assigned	12 19.4%	6 46.2%	50%
Cruise	1 1.6%	1 7.7%	100%
Fuel management	1 1.6%	1 7.7%	100%

COMMERCIAL HELICOPTER

Commercial helicopter had a total of 30 accidents, of which seven were fatal (figure 4.1). The vast majority (60 percent) were pilot-related followed by other/unknown (27 percent), and mechanical (11 percent) (figure 4.2). The fatal accident rate stabilized at 0.64, the total accident rate (2.74) declined slightly from the previous year (figure 4.4). Part 133 had 11 accidents (four were fatal), Part 135 had nine accidents (one was fatal), and Part 137 had nine accidents, of which two were fatal (figure 4.5).

Figure 4.1: General Aviation Accidents in 2020
2020 Commercial helicopter

Number of accidents	30
Number of aircraft*	30
Number of fatal accidents	7
Lethality (%)	23.3
Fatalities	17

**Each aircraft involved in a collision is counted separately.*

Figure 4.2: Major causes: Helicopter general aviation accidents
2020 Commercial helicopter

	Accidents	Fatal Accidents
Pilot-Related	**15** 50%	**1** 14.3%
Mechanical	**4** 13.3%	**0** 0%
Other / Unknown	**11** 36.7%	**6** 85.7%

Figure 4.3: General Aviation Accident Trends 2011-2020
2020 Commercial helicopter

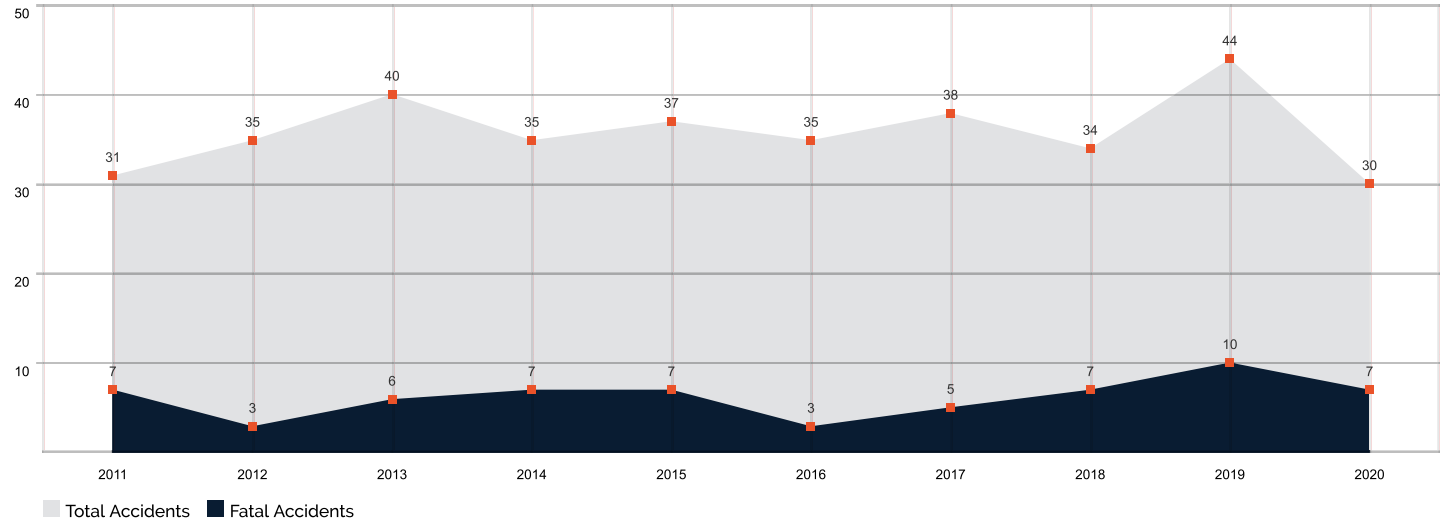

Figure 4.4: General Aviation Accident Rates 2011-2020
2020 Commercial helicopter

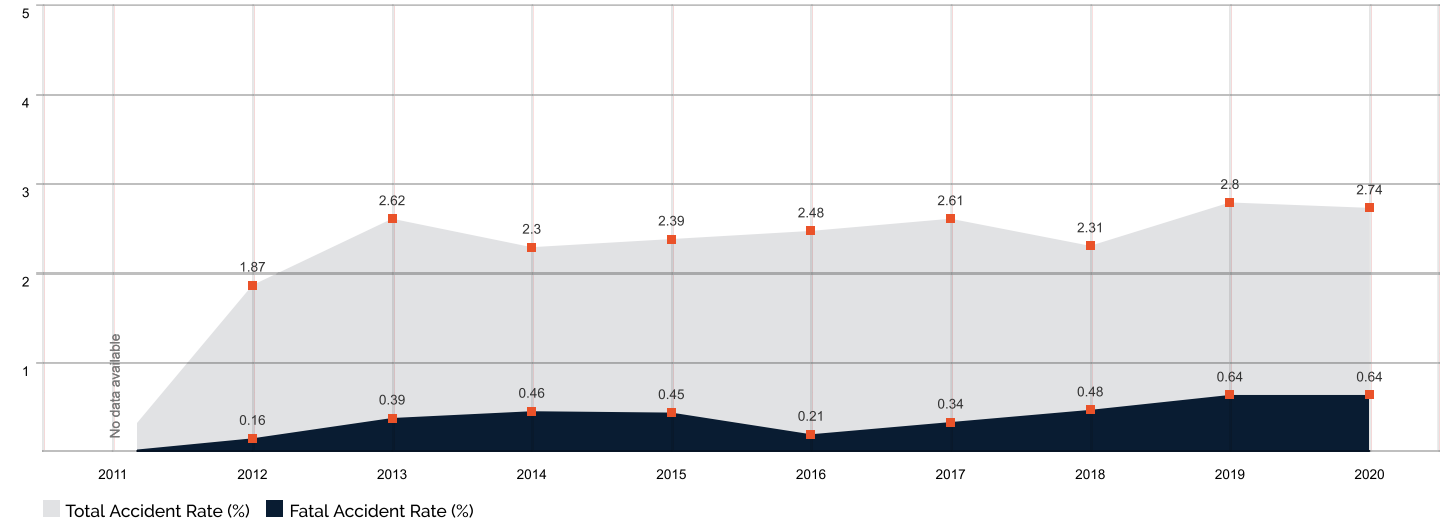

Figure 4.5: Aircraft class
2020 Commercial Helicopter

	Accidents	Fatal Accidents	Lethality
External Load (Part 133):			
Unknown	1 10%	2 50%	200%
Single-engine turbine	9 90%	2 50%	22.2%
Charter or Cargo (Part 135):			
Unknown	2 22.2%	1 100%	50%
Single-engine reciprocating	2 22.2%	0 0%	0%
Single-engine turbine	4 44.4%	0 0%	0%
Multi-engine turbine	1 11.1%	0 0%	0%
Aerial application (Part 137):			
Unknown	1 11.1%	1 50%	100%
Single-engine reciprocating	4 44.4%	0 0%	0%
Single-engine turbine	4 44.4%	1 50%	25%

Figure 4.6: Flight Conditions
2020 Commercial Helicopter

	Accidents	Fatal Accidents	Fatalities
External Load (Part 133):			
Day VMC	6 54.5%	0 0%	0 0%
Unknown	5 45.5%	4 100%	6 100%
Charter or Cargo (Part 135):			
Day VMC	6 60%	0 0%	0 0%
Night VMC	1 10%	0 0%	0 0%
Day IMC	1 10%	1 100%	9 100%
Unknown	2 20%	0 0%	0 0%
Aerial application (Part 137):			
Day VMC	5 55.6%	0 0%	0 0%
Night VMC	1 11.1%	0 0%	0 0%
Unknown	3 33.3%	2 100%	2 100%

**Night fields include dusk.*

Figure 4.7: Pilots involved in commercial helicopter accidents
2020 Commercial Helicopter

	Accidents	Fatal Accidents	Lethality
External Load (Part 133):			
Commercial	10 90.9%	3 75%	30%
Other or unknown	1 9.1%	1 25%	100%
CFI on board	4 36.4%	2 50%	50%
IFR pilot on board	6 54.5%	2 50%	33.3%
Charter or Cargo (Part 135):			
Commercial	8 80%	0 0%	0%
Other or unknown	2 20%	1 100%	50%
Second pilot on board	1 10%	0 0%	0%
CFI on board	4 40%	0 0%	0%
IFR pilot on board	6 60%	0 0%	0%
Aerial application (Part 137):			
ATP	2 22.2%	0 0%	0%
Commercial	7 77.8%	2 100%	28.6%
CFI on board	4 44.4%	0 0%	0%
IFR pilot on board	5 55.6%	1 50%	

**CFI on board and IFR pilot on board include single-pilot flights.*

Figure 5.1: Fixed-wing amateur-built accident trend
2020 Sport/Experimental

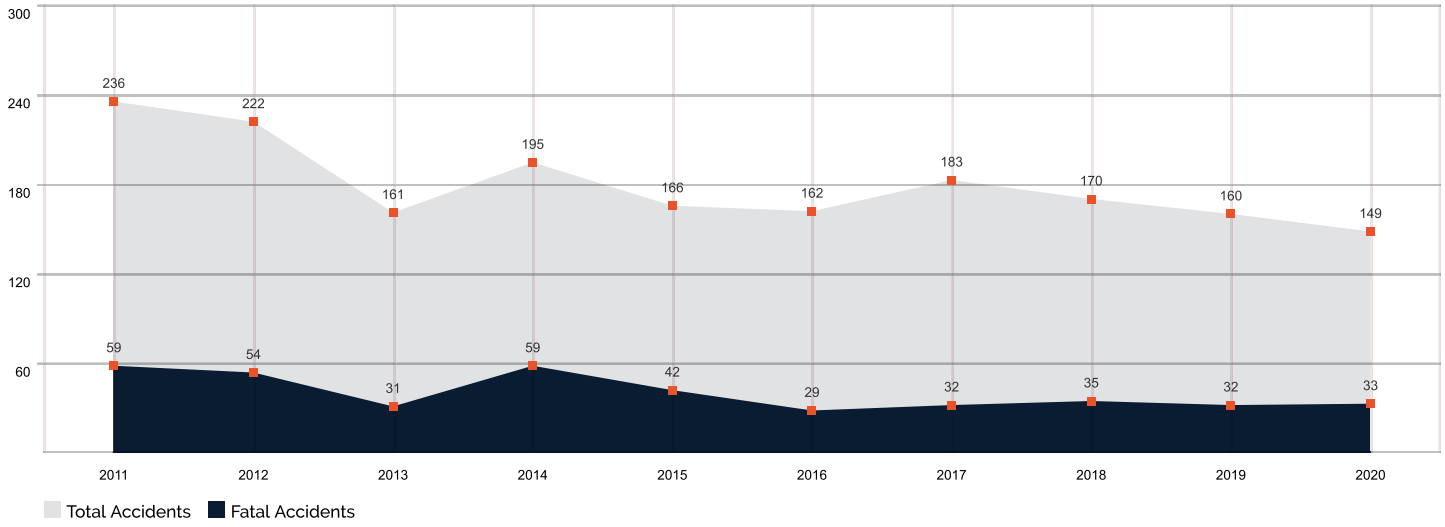

Figure 5.2: Types of fixed-wing amateur-built accidents
2020 Sport/Experimental

	Accidents		Fatal Accidents		Lethality
Landing	44	29.7%	0	0%	0%
Mechanical	28	18.9%	2	6.1%	7.1%
Take-off	22	14.9%	5	15.2%	22.7%
Other	12	8.1%	5	15.2%	41.7%
Maneuvering	11	7.4%	8	24.2%	72.7%
Descent / approach	9	6.1%	5	15.2%	55.6%
Pre-flight	6	4.1%	1	3%	16.7%
Fuel management	5	3.4%	0	0%	0%
Weather	4	2.7%	2	6.1%	50%
Cruise	3	2%	2	6.1%	66.7%
Other (power loss)	2	1.4%	2	6.1%	100%
Incapacitation	1	0.7%	1	3%	100%
Taxi	1	0.7%	0	0%	0%

Figure 5.3: Types of amateur-built aircraft involved in accidents
2020 Sport/Experimental

	Accidents		Fatal Accidents		Lethality
E-LSA	13	8.7%	2	6.1%	15.4%
Single-engine fixed-gear	120	80.5%	27	81.8%	22.5%
SEF tailwheel	69		13		18.8%
Single-engine retractable	14	9.4%	4	12.1%	28.6%
Multiengine	1	0.7%	0	0%	0%
Unknown	1	0.7%	0	0%	0%