

## 28<sup>th</sup> Joseph T. Nall Report

General Aviation Accidents in 2016

### Non-commercial fixed-wing

**Figure 1.1: General Aviation Accidents in 2016**

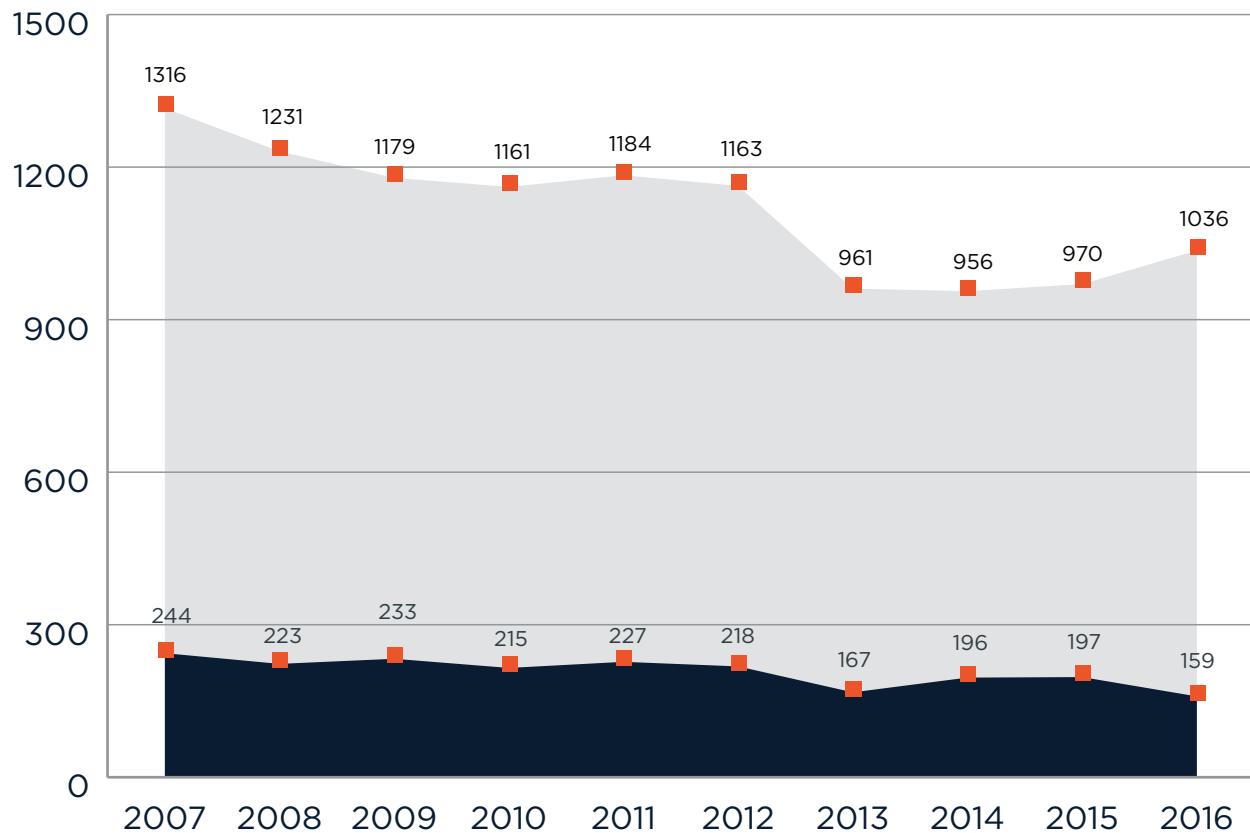
Non-commercial fixed-wing

Number of accidents	1036
Number of aircraft*	1051
Number of fatal accidents	159
Lethality (percent)	15.3
Fatalities	283

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

**Figure 1.2: General Aviation Accident Trends 2007-2016**

Non-commercial fixed-wing



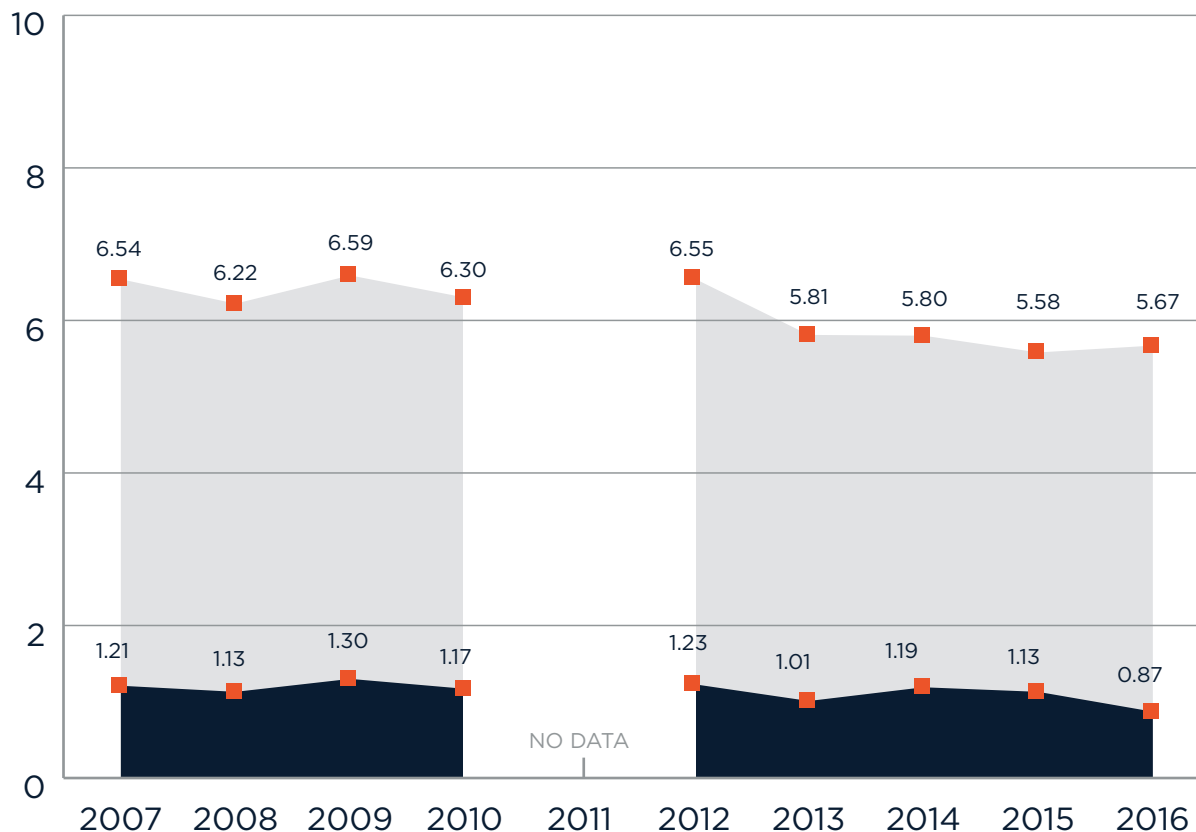
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### Non-commercial fixed-wing

**Figure 1.3: General Aviation Accident Rates 2007-2016**

Non-commercial fixed-wing



**Figure 1.4: General Aviation Accidents in 2016**

	Non-Commercial	
	All Accidents	Fatal Accidents
Pilot Related	<b>755</b> 72.9%	<b>121</b> 76.1%
Mechanical	<b>185</b> 17.9%	<b>16</b> 10.1%
Other/Unknown	<b>96</b> 9.3%	<b>22</b> 13.8%

**Figure 1.5: Aircraft class:**

Non-commercial fixed-wing

	Accidents	Fatal Accidents	Lethality
Single-engine fixed-gear	<b>780</b> 74.2%	<b>102</b> 62.2%	13.1%
SEF tailwheel	<b>324</b>	<b>37</b>	11.4%
Single-engine retractable	<b>193</b> 18.4%	<b>43</b> 26.2%	22.3%
Single-engine turbine	<b>21</b>	<b>4</b>	19.0%
Multiengine	<b>78</b> 7.4%	<b>19</b> 11.6%	24.4%
Multiengine turbine	<b>21</b>	<b>3</b>	14.3%

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### Non-commercial fixed-wing

**Figure 1.6: Type of operation:**

Non-commercial fixed-wing	Accidents		Fatal Accidents		Fatalities	
Personal	<b>771</b>	73.4%	<b>127</b>	77.4%	<b>223</b>	78.8%
Instructional	<b>181</b>	17.2%	<b>16</b>	9.8%	<b>23</b>	8.1%
Public use	<b>7</b>	0.7%	<b>3</b>	1.8%	<b>5</b>	1.8%
Positioning	<b>12</b>	1.1%	<b>2</b>	1.2%	<b>3</b>	1.1%
Aerial observation	<b>9</b>	0.9%	<b>1</b>	0.6%	<b>3</b>	1.1%
Business	<b>23</b>	2.2%	<b>4</b>	2.4%	<b>7</b>	2.5%
Executive / corporate	<b>1</b>	0.1%	<b>0</b>	0.0%	<b>0</b>	0.0%
Other work use	<b>24</b>	2.3%	<b>6</b>	3.7%	<b>14</b>	4.9%
Other or unknown	<b>23</b>	2.2%	<b>5</b>	3.0%	<b>5</b>	1.8%

**Figure 1.7: Flight Conditions:**

Non-commercial fixed-wing	Accidents		Fatal Accidents		Fatalities	
Day VMC	<b>923</b>	89.1%	<b>125</b>	78.60%	<b>223</b>	78.20%
Night VMC*	<b>82</b>	7.9%	<b>21</b>	13.20%	<b>36</b>	12.60%
Day IMC	<b>23</b>	2.2%	<b>6</b>	3.80%	<b>11</b>	3.90%
Night IMC*	<b>5</b>	0.5%	<b>5</b>	3.10%	<b>13</b>	4.60%
Unknown	<b>3</b>	0.3%	<b>2</b>	1.30%	<b>2</b>	0.70%

\*Includes dusk.

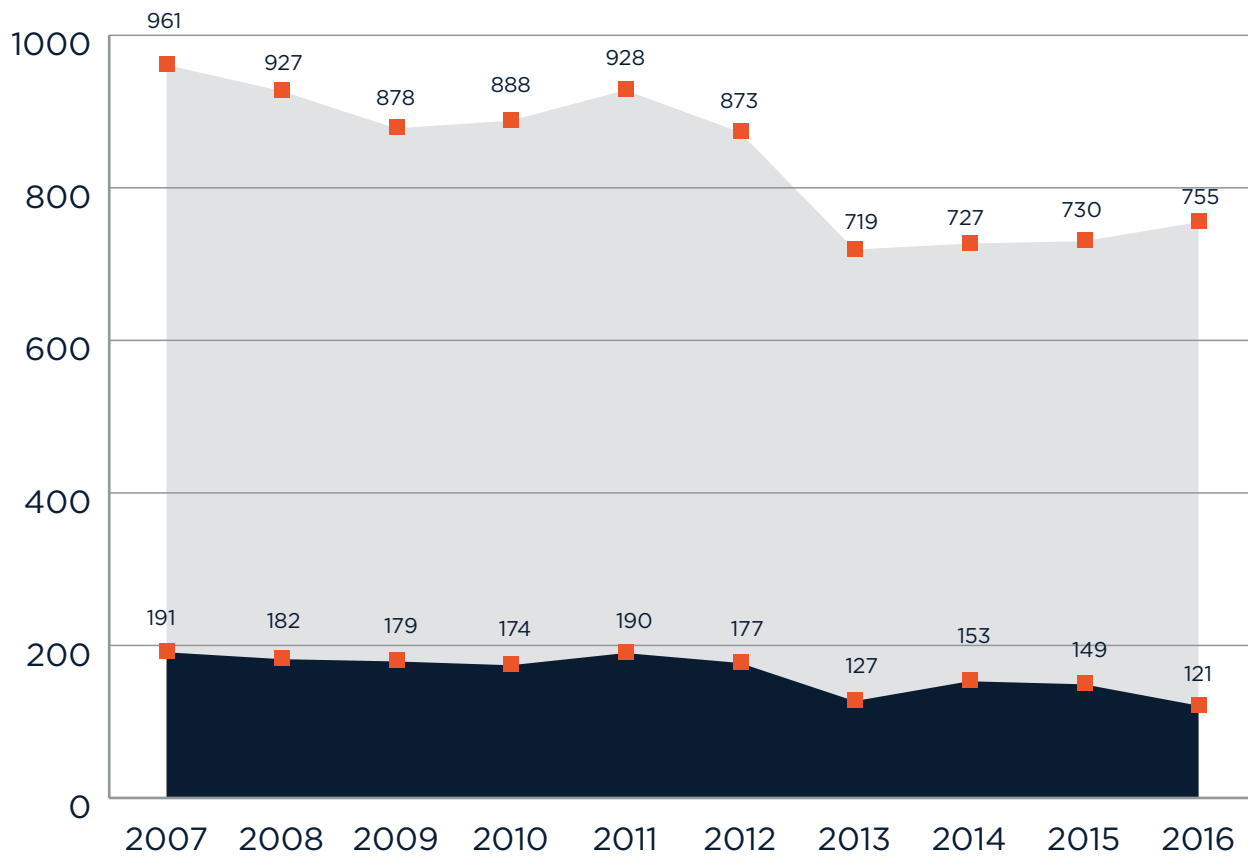
**Figure 1.8: Pilots involved**

Non-commercial fixed-wing	Accidents		Fatal Accidents		Lethality
ATP	<b>200</b>	19.0%	<b>35</b>	21.3%	17.5%
Commercial	<b>265</b>	25.2%	<b>48</b>	29.3%	18.1%
Private	<b>479</b>	45.6%	<b>76</b>	46.3%	15.9%
Sport	<b>19</b>	1.8%	<b>2</b>	1.2%	10.5%
Student	<b>80</b>	7.6%	<b>2</b>	1.2%	2.5%
Other or unknown	<b>8</b>	0.8%	<b>1</b>	0.6%	12.5%
Second pilot on board	<b>192</b>	18.3%	<b>46</b>	28.0%	24.0%
CFI on board*	<b>273</b>	26.0%	<b>46</b>	28.0%	16.8%
IFR pilot on board*	<b>570</b>	54.2%	<b>97</b>	59.1%	17.0%

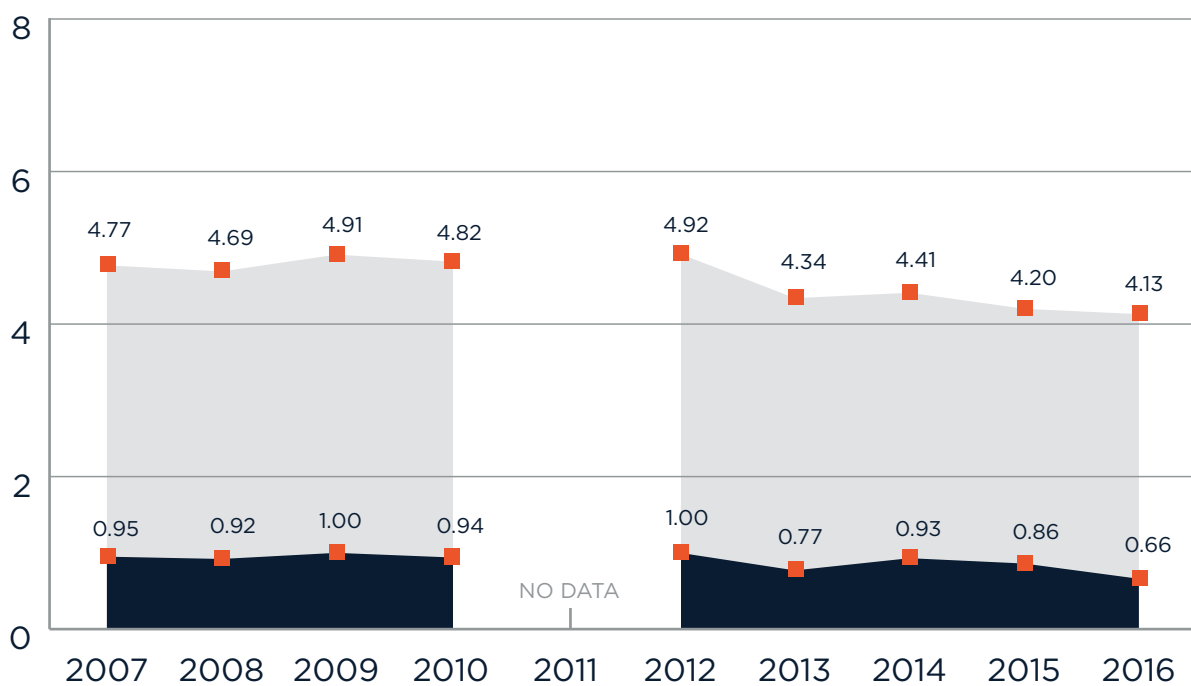
\*Includes single-pilot flights.

## Non-commercial fixed-wing

**Figure 1.9: Pilot-related Accident trend**

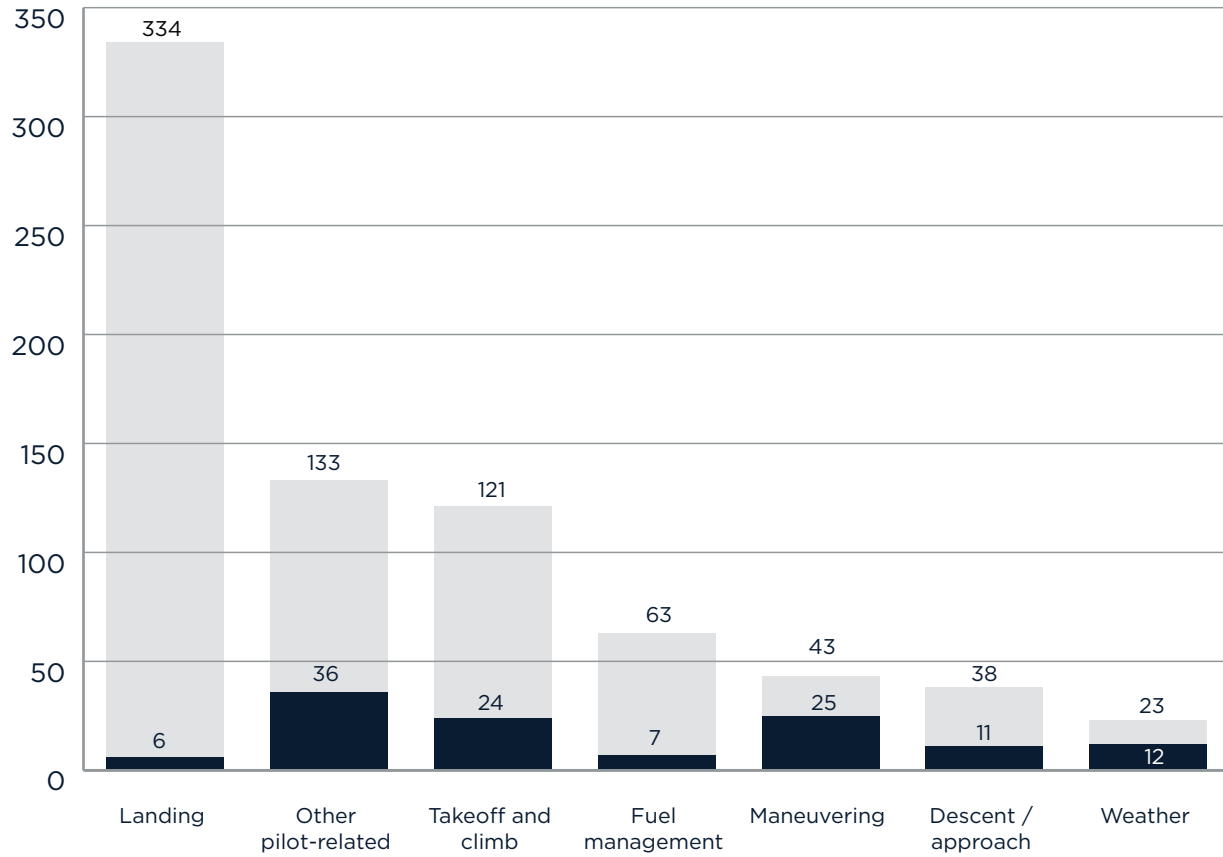


**Figure 1.10: Pilot-Related Accident Rates 2007-2016**



## Non-commercial fixed-wing

Figure 1.11: Types of pilot-related accidents



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### Non-commercial fixed-wing: Landing

Figure 1.1.1: Landing accident trend

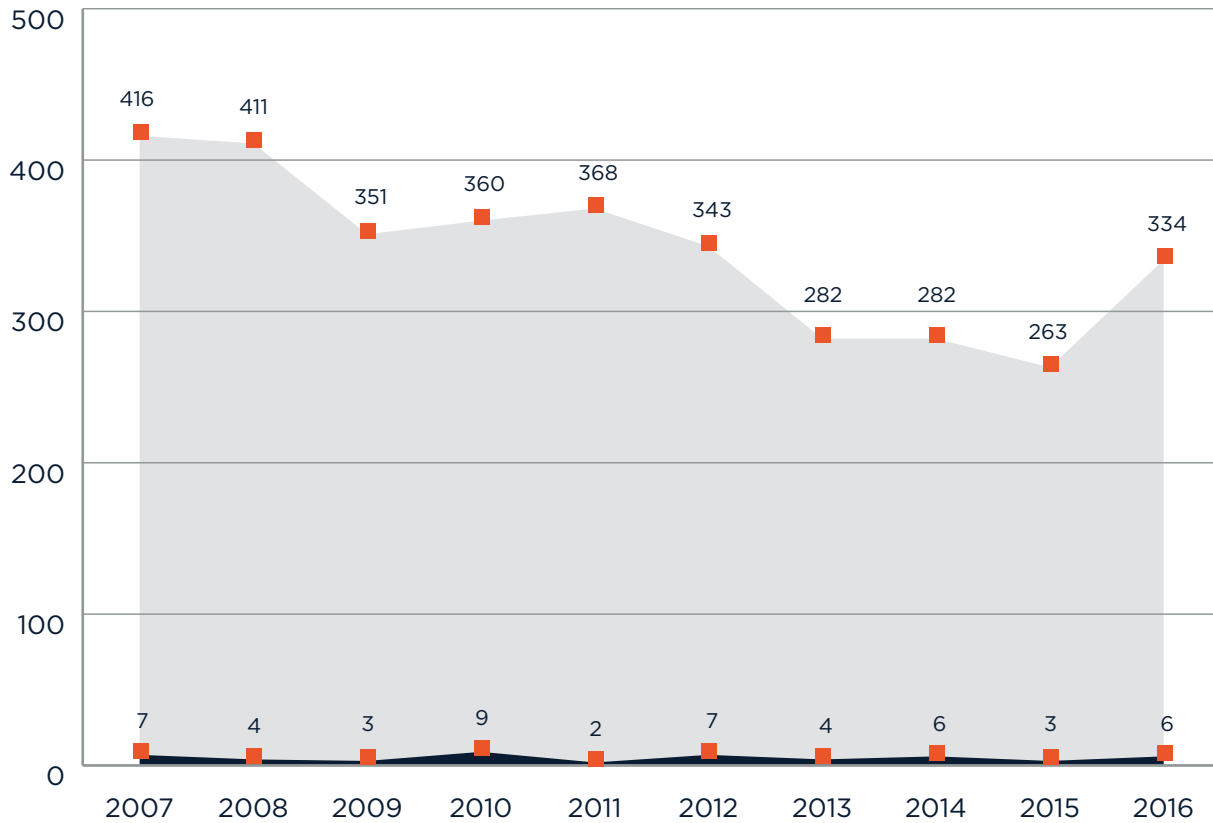
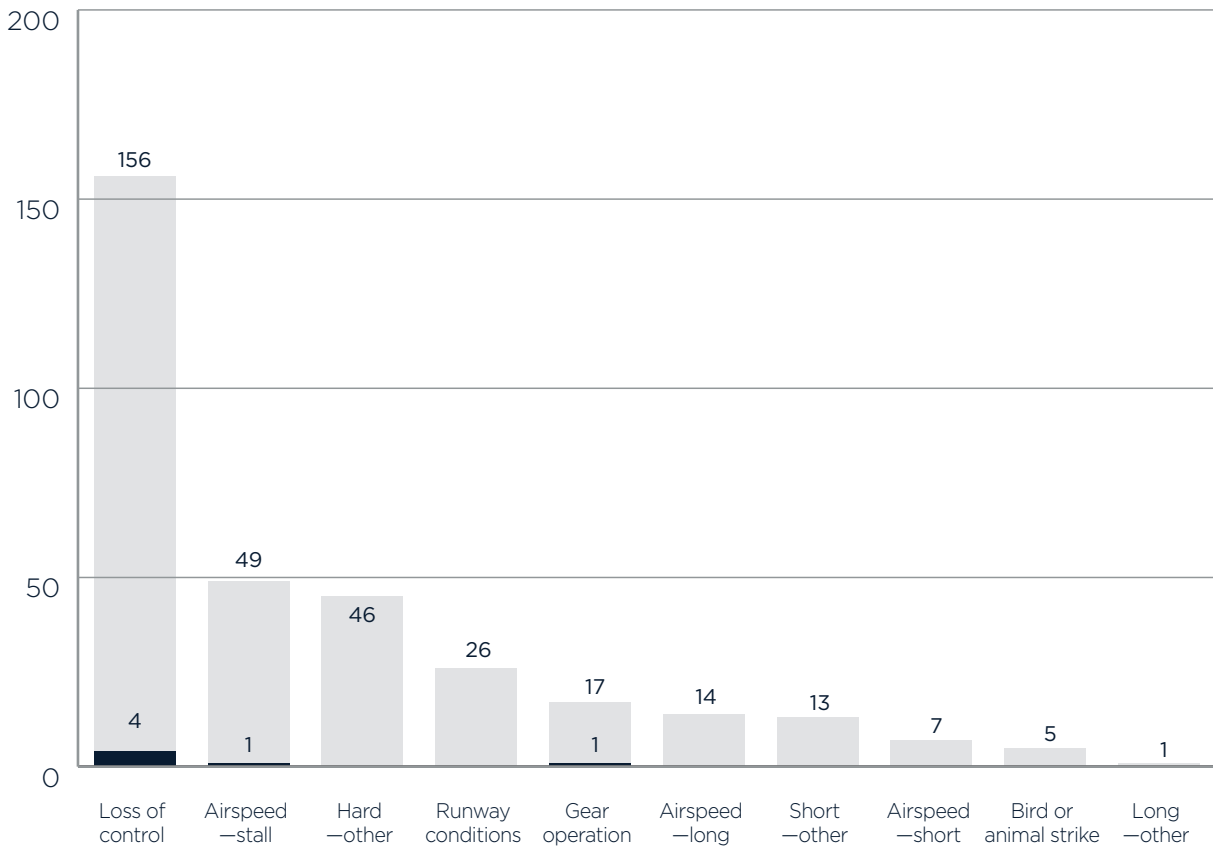


Figure 1.1.2: Types of landing accidents



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### Non-commercial fixed-wing: Landing

**Figure 1.1.3: Aircraft involved in landing accidents:**

Non-commercial fixed-wing	Accidents	Fatal Accidents	Lethality
Single-engine fixed-gear	<b>269</b> 80.5%	<b>3</b> 50.0%	1.1%
SEF tailwheel	<b>129</b>	<b>0</b>	
Single-engine retractable	<b>48</b> 14.4%	<b>3</b> 50.0%	6.3%
Single-engine turbine	<b>2</b>	<b>0</b>	
Multiengine	<b>17</b> 5.1%	<b>0</b> 0.0%	0.0%
Multiengine turbine	<b>8</b>	<b>0</b>	

**Figure 1.1.4: Flight conditions of landing accidents:**

Non-commercial fixed-wing	Accidents	Fatal Accidents	Lethality
Day VMC	<b>310</b> 92.8%	<b>6</b> 100.0%	1.9%
Night VMC*	<b>20</b> 6.0%	<b>0</b>	
Day IMC	<b>4</b> 1.2%	<b>0</b>	

\*Includes dusk.

**Figure 1.1.5: Pilots involved in landing accidents:**

Non-commercial fixed-wing	Accidents	Fatal Accidents	Lethality
ATP	<b>51</b> 15.3%	<b>1</b> 16.7%	2.0%
Commercial	<b>71</b> 21.3%	<b>1</b> 16.7%	1.4%
Private	<b>160</b> 47.9%	<b>4</b> 66.7%	2.5%
Sport	<b>6</b> 1.8%	<b>0</b> 0.0%	0.0%
Student	<b>44</b> 13.2%	<b>0</b> 0.0%	0.0%
Other or unknown	<b>2</b> 0.6%	<b>0</b> 0.0%	0.0%
Second pilot on board	<b>45</b> 13.5%	<b>0</b> 0.0%	0.0%
CFI on board*	<b>75</b> 22.5%	<b>2</b> 33.3%	2.7%
IFR pilot on board*	<b>158</b> 47.3%	<b>3</b> 50.0%	1.9%

\*Includes single-pilot flights.

## Non-commercial fixed-wing: Other-pilot related

**Figure 1.2.1: 'Other' and unclassified accidents:**

Non-commercial fixed-wing	Accidents		Fatal Accidents		Lethality
Not yet assigned	<b>3</b>	3.1%	<b>2</b>	9.1%	66.7%
Other	<b>39</b>	40.6%	<b>15</b>	68.2%	38.5%
Other (power loss)	<b>54</b>	56.3%	<b>5</b>	22.7%	9.3%



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## Non-commercial fixed-wing: Takeoff and climb

Figure 1.3.1: takeoff and climb accident trend

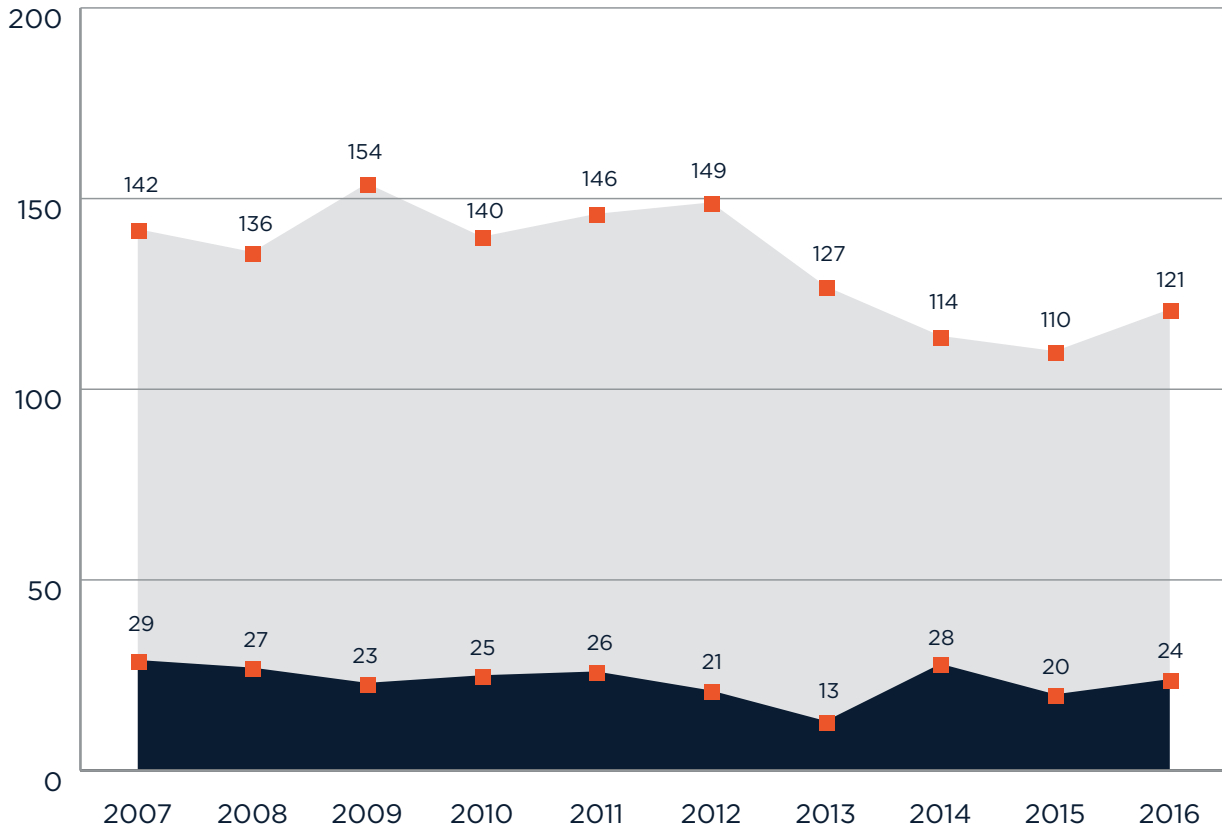
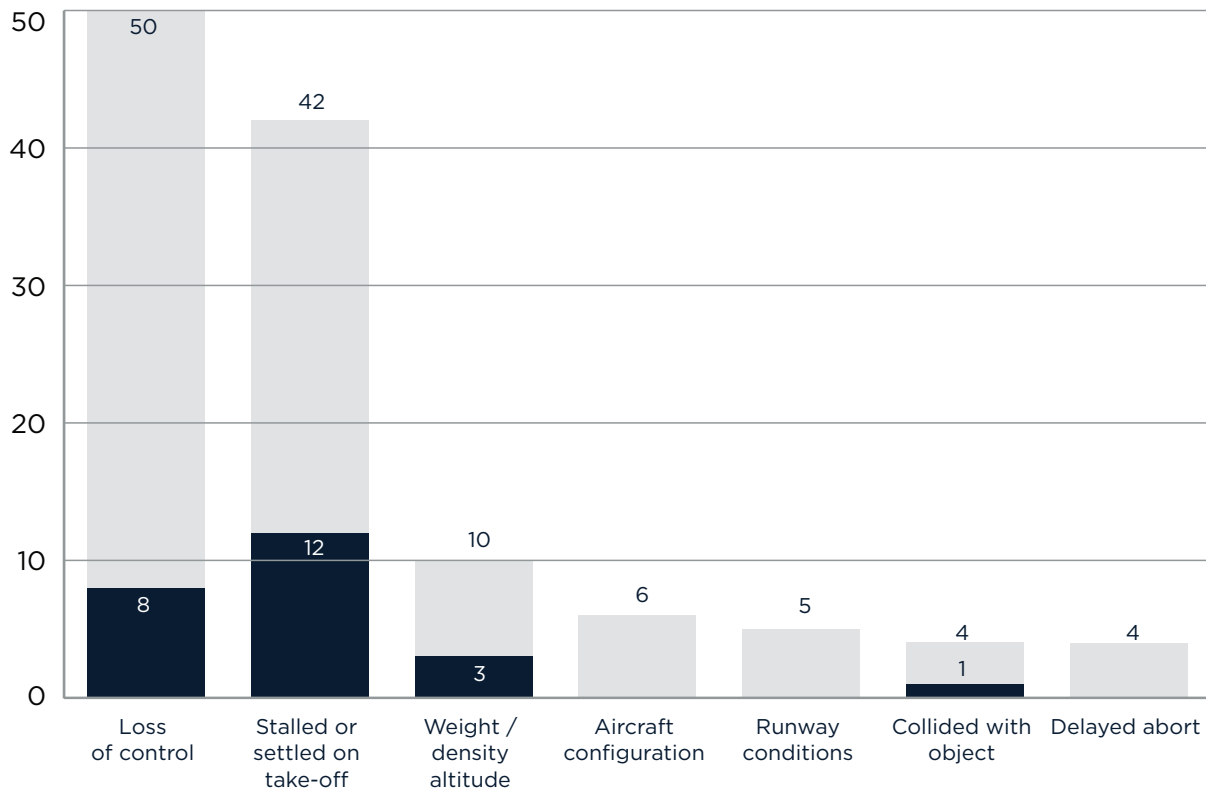


Figure 1.3.2: Types of takeoff and climb accidents



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### Non-commercial fixed-wing: Takeoff and climb

**Figure 1.3.3: Aircraft involved in takeoff and climb accidents:**

Non-commercial fixed-wing	Accidents	Fatal Accidents	Lethality
Single-engine fixed-gear	<b>97</b> 80.2%	<b>16</b> 66.7%	16.5%
SEF tailwheel	<b>38</b>	<b>3</b>	7.9%
Single-engine retractable	<b>15</b> 12.4%	<b>4</b> 16.7%	26.7%
Single-engine turbine	<b>2</b>	<b>0</b>	0.0%
Multiengine	<b>9</b> 7.4%	<b>4</b> 16.7%	44.4%
Multiengine turbine	<b>1</b>	<b>0</b>	0.0%

**Figure 1.3.4: Flight conditions of takeoff and climb accidents:**

Non-commercial fixed-wing	Accidents	Fatal Accidents	Lethality
Day VMC	<b>111</b> 91.7%	<b>22</b> 91.7%	19.8%
Night VMC*	<b>10</b> 8.3%	<b>2</b> 8.3%	20.0%

\*Includes dusk.

**Figure 1.3.5: Pilots involved in takeoff and climb accidents:**

Non-commercial fixed-wing	Accidents	Fatal Accidents	Lethality
ATP	<b>25</b> 20.7%	<b>4</b> 16.7%	16.0%
Commercial	<b>28</b> 23.1%	<b>5</b> 20.8%	17.9%
Private	<b>58</b> 47.9%	<b>14</b> 58.3%	24.1%
Student	<b>10</b> 8.3%	<b>1</b> 4.2%	10.0%
Second pilot on board	<b>19</b> 15.7%	<b>5</b> 20.8%	26.3%
CFI on board*	<b>30</b> 24.8%	<b>6</b> 25.0%	20.0%
IFR pilot on board*	<b>64</b> 52.9%	<b>12</b> 50.0%	18.8%

\*Includes single-pilot flights.

## Non-commercial fixed-wing: Fuel management

Figure 1.4.1: Fuel management accident trend

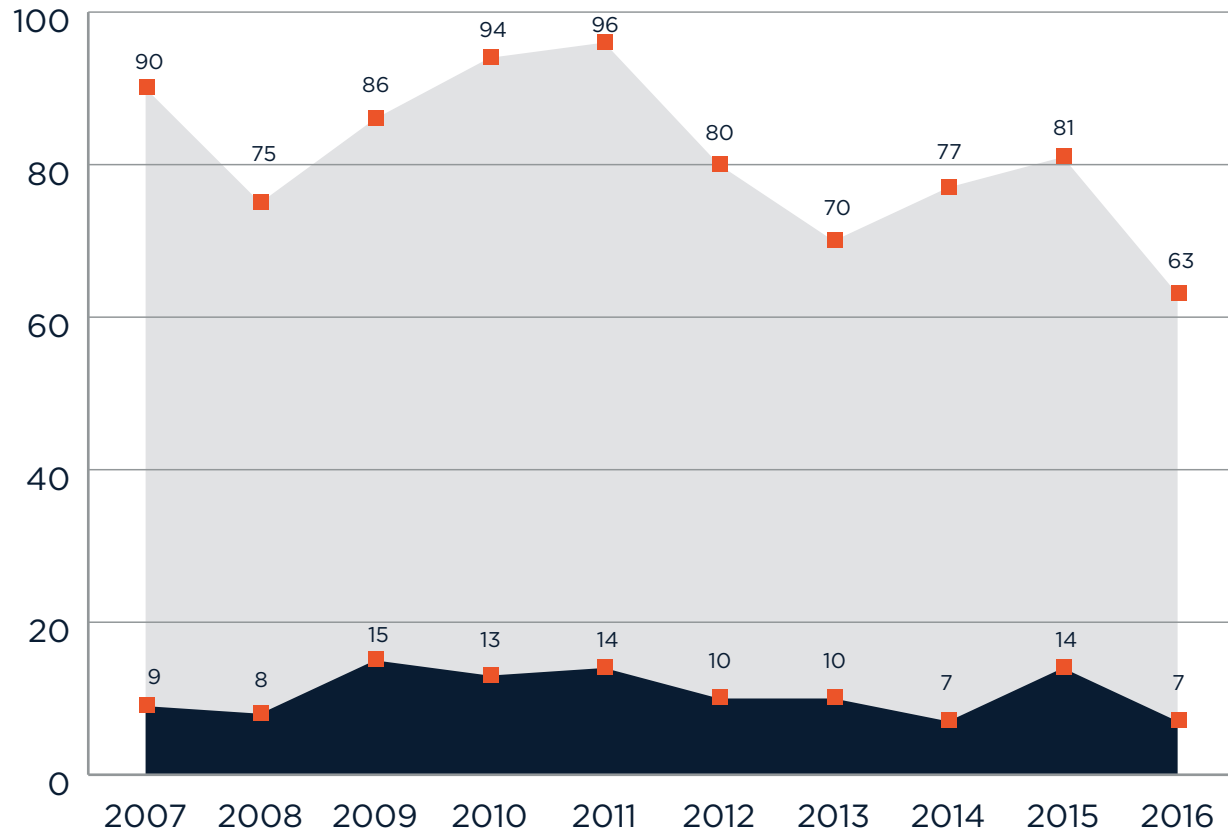
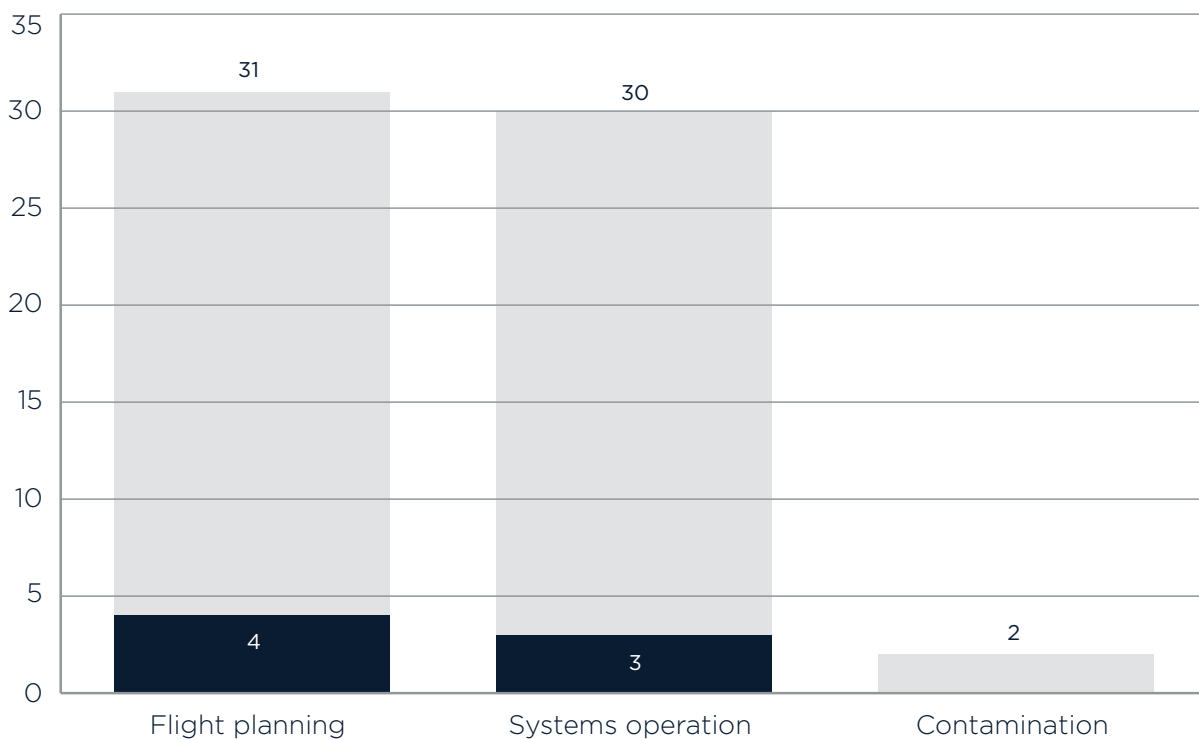


Figure 1.4.2: Types of fuel management accidents



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### Non-commercial fixed-wing: Fuel management

**Figure 1.4.3: Aircraft involved in fuel management accidents:**

Non-commercial fixed-wing	Accidents	Fatal Accidents	Lethality
Single-engine fixed-gear	<b>41</b> 65.1%	<b>3</b> 42.9%	7.3%
SEF tailwheel	<b>11</b>	<b>0</b>	
Single-engine retractable	<b>15</b> 23.8%	<b>3</b> 42.9%	20.0%
Multiengine	<b>7</b> 11.1%	<b>1</b> 14.3%	14.3%

**Figure 1.4.4: Flight conditions of fuel management accidents:**

Non-commercial fixed-wing	Accidents	Fatal Accidents	Lethality
Day VMC	<b>49</b> 77.8%	<b>4</b> 57.1%	8.2%
Night VMC*	<b>11</b> 17.5%	<b>3</b> 42.9%	27.3%
Day IMC	<b>3</b> 4.8%	<b>0</b> 0.0%	0.0%

\*Includes dusk.

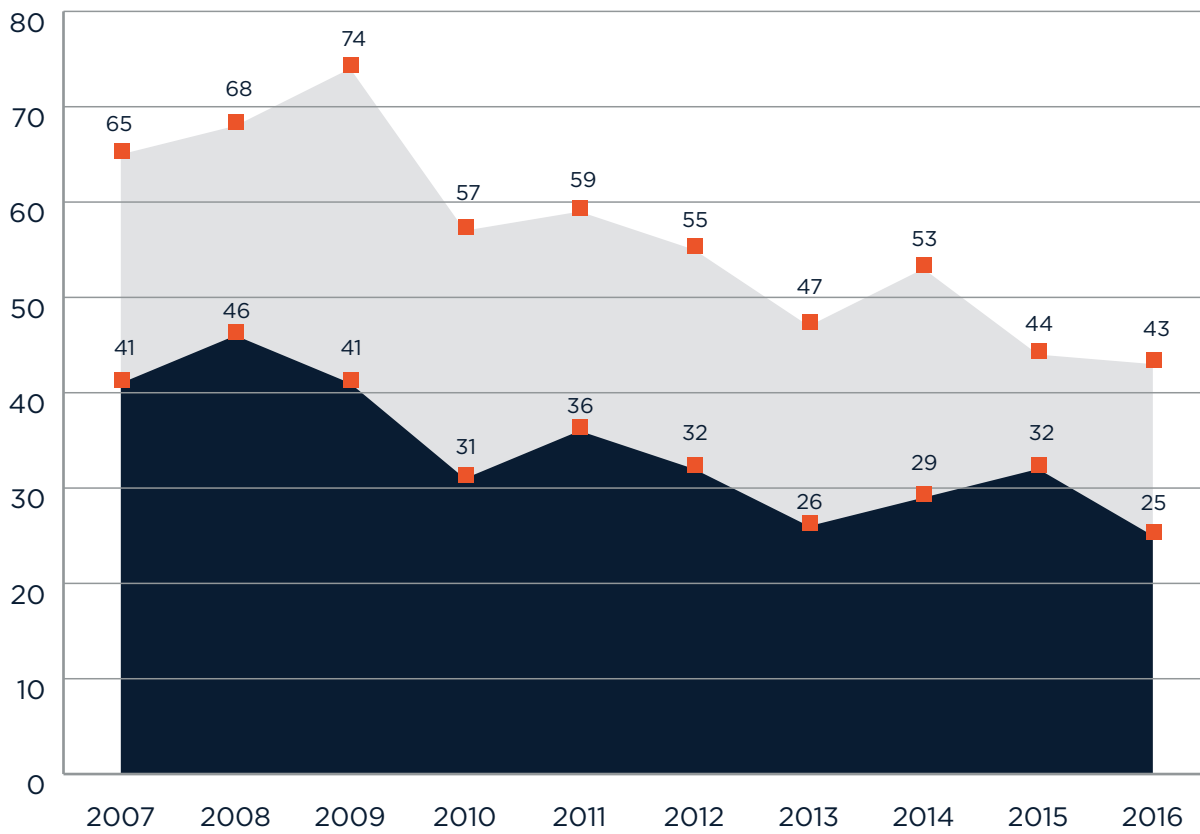
**Figure 1.4.5: Pilots involved in fuel management accidents:**

Non-commercial fixed-wing	Accidents	Fatal Accidents	Lethality
ATP	<b>8</b> 12.7%	<b>1</b> 14.3%	12.5%
Commercial	<b>20</b> 31.7%	<b>3</b> 42.9%	15.0%
Private	<b>31</b> 49.2%	<b>3</b> 42.9%	9.7%
Student	<b>4</b> 6.3%	<b>0</b> 0.0%	0.0%
Second pilot on board	<b>11</b> 17.5%	<b>1</b> 14.3%	9.1%
CFI on board*	<b>16</b> 25.4%	<b>3</b> 42.9%	18.8%
IFR pilot on board*	<b>36</b> 57.1%	<b>6</b> 85.7%	16.7%

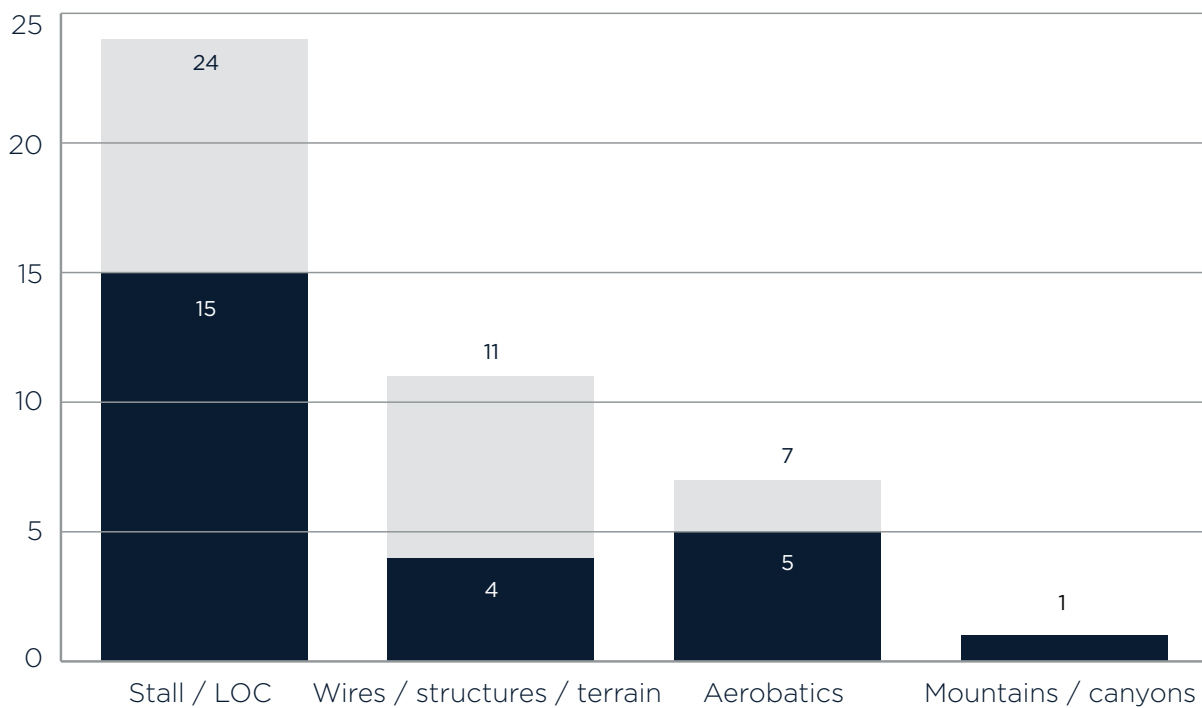
\*Includes single-pilot flights.

## Non-commercial fixed-wing: Maneuvering

**Figure 1.5.1: maneuvering accident trend**



**Figure 1.5.2: Types of maneuvering accidents**



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### Non-commercial fixed-wing: Maneuvering

**Figure 1.5.3: Aircraft involved in maneuvering accidents:**

Non-commercial fixed-wing	Accidents	Fatal Accidents	Lethality
Single-engine fixed-gear	<b>33</b> 76.7%	<b>20</b> 80.0%	60.6%
SEF tailwheel	<b>20</b>	<b>13</b>	65.0%
Single-engine retractable	<b>6</b> 14.0%	<b>2</b> 8.0%	33.3%
Multiengine	<b>4</b> 9.3%	<b>3</b> 12.0%	75.0%
Multiengine turbine	<b>2</b>	<b>1</b>	50.0%

**Figure 1.5.4: Flight conditions of maneuvering accidents:**

Non-commercial fixed-wing	Accidents	Fatal Accidents	Lethality
Day VMC	<b>43</b> 100.0%	<b>25</b> 100.0%	58.10%

**Figure 1.5.5: Pilots involved in maneuvering accidents:**

Non-commercial fixed-wing	Accidents	Fatal Accidents	Lethality
ATP	<b>15</b> 34.9%	<b>10</b> 40.0%	66.7%
Commercial	<b>15</b> 34.9%	<b>9</b> 36.0%	60.0%
Private	<b>11</b> 25.6%	<b>6</b> 24.0%	54.5%
Sport	<b>2</b> 4.7%	<b>0</b> 0.0%	0.0%
Second pilot on board	<b>11</b> 25.6%	<b>10</b> 40.0%	90.9%
CFI on board*	<b>16</b> 37.2%	<b>10</b> 40.0%	62.5%
IFR pilot on board*	<b>28</b> 65.1%	<b>17</b> 68.0%	60.7%

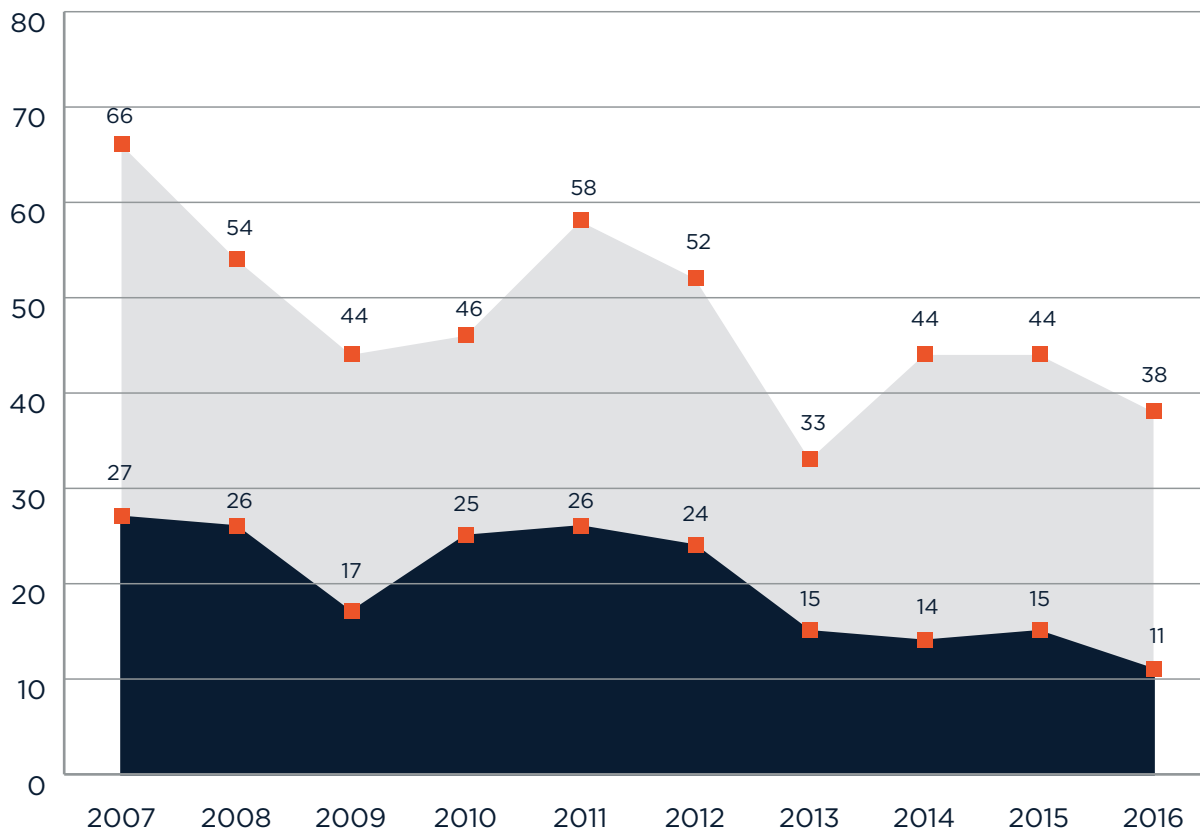
\*Includes single-pilot flights.

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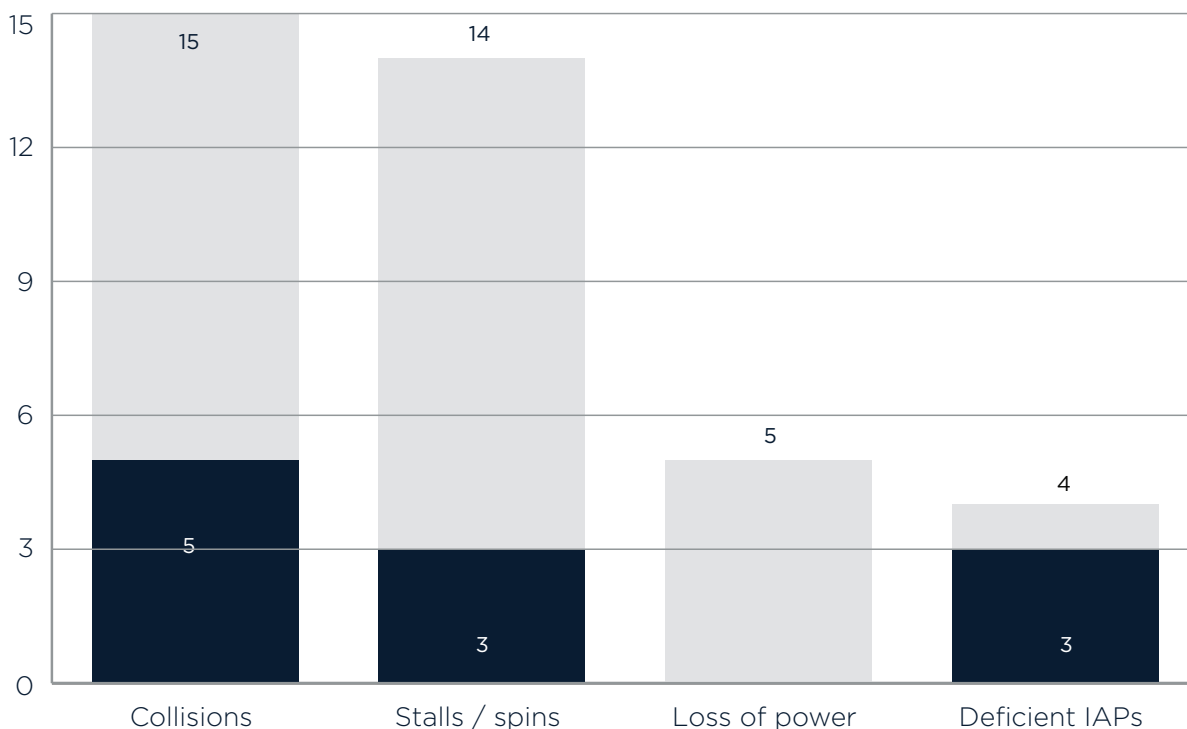
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## Non-commercial fixed-wing: Descent/approach

**Figure 1.6.1: Descent and approach accident trend**



**Figure 1.6.2: Types of decent and approach accidents**



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### Non-commercial fixed-wing: Descent/approach

**Figure 1.6.3: Aircraft involved in descent and approach accidents:**

Non-commercial fixed-wing	Accidents	Fatal Accidents	Lethality
Single-engine fixed-gear	28 73.7%	6 54.5%	21.4%
SEF tailwheel	10	2	20.0%
Single-engine retractable	8 21.1%	4 36.4%	50.0%
Single-engine turbine	2	1	50.0%
Multiengine	2 5.3%	1 9.1%	50.0%
Multiengine turbine	1	1	100.0%

**Figure 1.6.4: Flight conditions of descent and approach accidents:**

Non-commercial fixed-wing	Accidents	Fatal Accidents	Lethality
Day VMC	25 65.8%	4 36.4%	16.0%
Night VMC*	8 21.1%	3 27.3%	37.5%
Day IMC	3 7.9%	2 18.2%	66.7%
Night IMC*	2 5.3%	2 18.2%	100.0%

\*Includes dusk.

**Figure 1.6.5: Pilots involved in descent and approach accidents:**

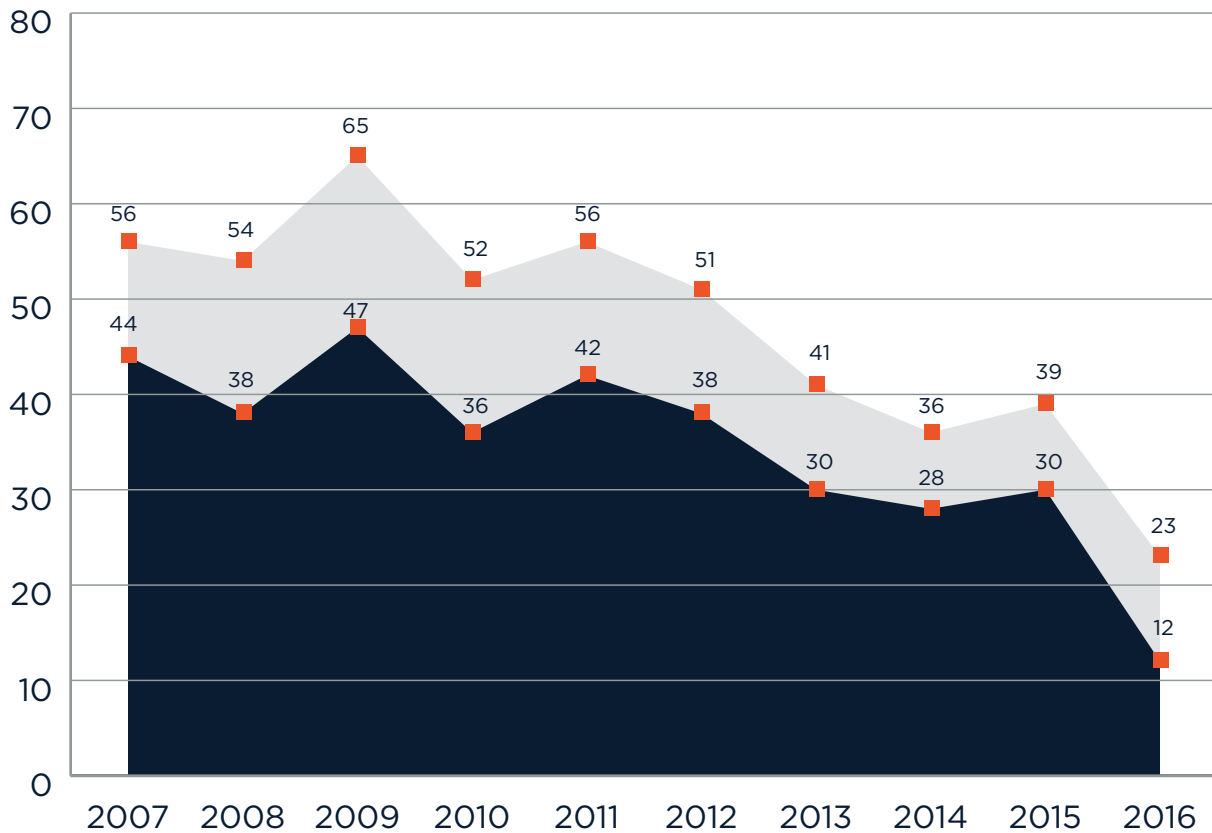
Non-commercial fixed-wing	Accidents	Fatal Accidents	Lethality
ATP	7 18.4%	3 27.3%	42.9%
Commercial	9 23.7%	3 27.3%	33.3%
Private	20 52.6%	5 45.5%	25.0%
Sport	1 2.6%	0 0.0%	0.0%
Other or unknown	1 2.6%	0 0.0%	0.0%
Second pilot on board	11 28.9%	4 36.4%	36.4%
CFI on board*	10 26.3%	2 18.2%	20.0%
IFR pilot on board*	25 65.8%	9 81.8%	36.0%

\*Includes single-pilot flights.

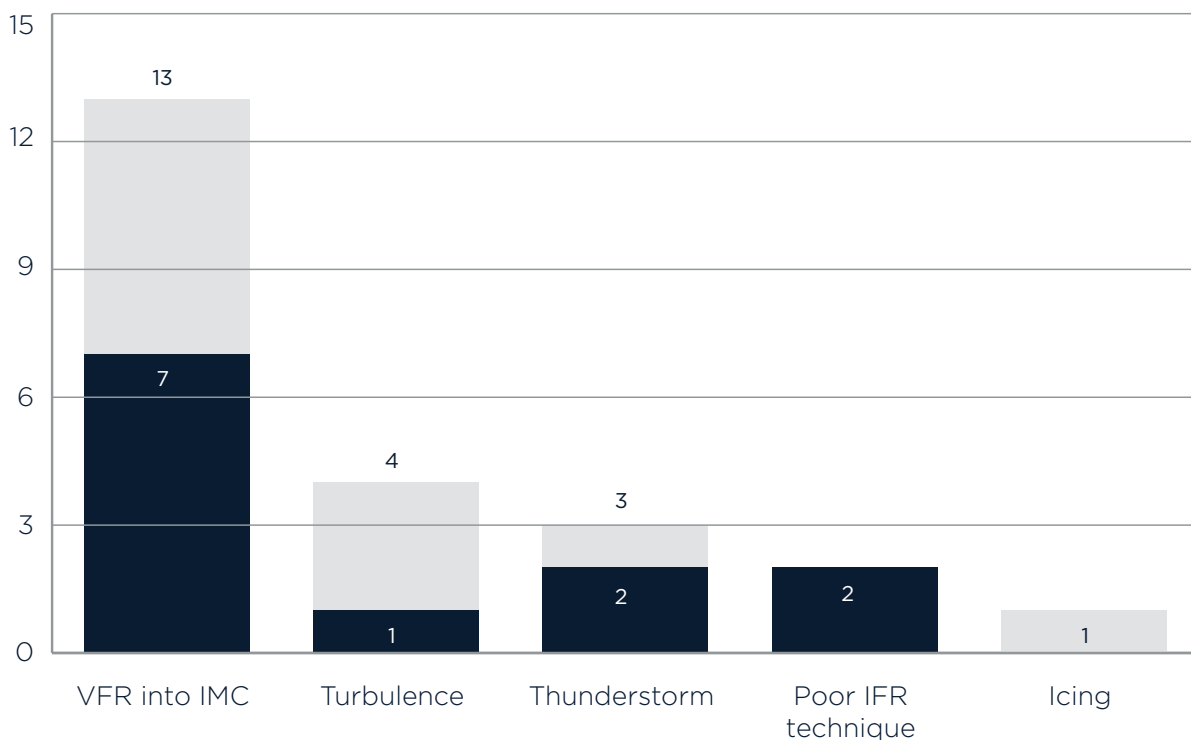


## Non-commercial fixed-wing: Weather

**Figure 1.7.1: weather accident trend**



**Figure 1.7.2: Types of weather accidents**



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### Non-commercial fixed-wing: Weather

**Figure 1.7.3: Aircraft involved in weather accidents:**

Non-commercial fixed-wing	Accidents	Fatal Accidents	Lethality
Single-engine fixed-gear	16 69.6%	7 58.3%	43.8%
SEF tailwheel	5	1	20.0%
Single-engine retractable	5 21.7%	3 25.0%	60.0%
Single-engine turbine	1	1	100.0%
Multiengine	2 8.7%	2 16.7%	100.0%
Multiengine turbine	1	1	100.0%

**Figure 1.7.4: Flight conditions of weather accidents:**

Non-commercial fixed-wing	Accidents	Fatal Accidents	Lethality
Day VMC	8 34.8%	4 33.3%	50.0%
Night VMC*	2 8.7%	2 16.7%	100.0%
Day IMC	9 39.1%	2 16.7%	22.2%
Night IMC*	2 8.7%	2 16.7%	100.0%
Unknown	2 8.7%	2 16.7%	100.0%

\*Includes dusk.

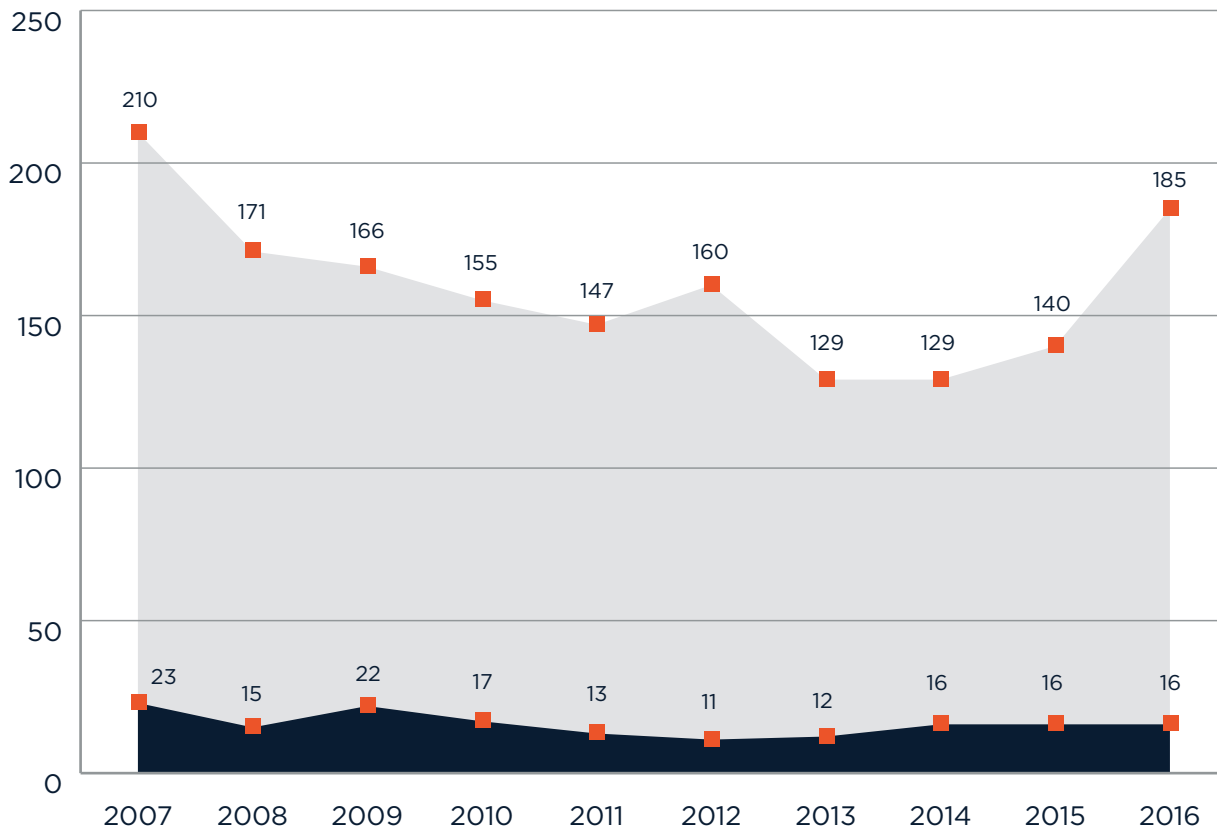
**Figure 1.7.5: Pilots involved in weather accidents:**

Non-commercial fixed-wing	Accidents	Fatal Accidents	Lethality
ATP	2 8.7%	1 8.3%	50.0%
Commercial	8 34.8%	4 33.3%	50.0%
Private	12 52.2%	7 58.3%	58.3%
Student	1 4.3%	0 0.0%	0.0%
Second pilot on board	5 21.7%	2 16.7%	40.0%
CFI on board*	6 26.1%	1 8.3%	16.7%
IFR pilot on board*	11 47.8%	4 33.3%	36.4%

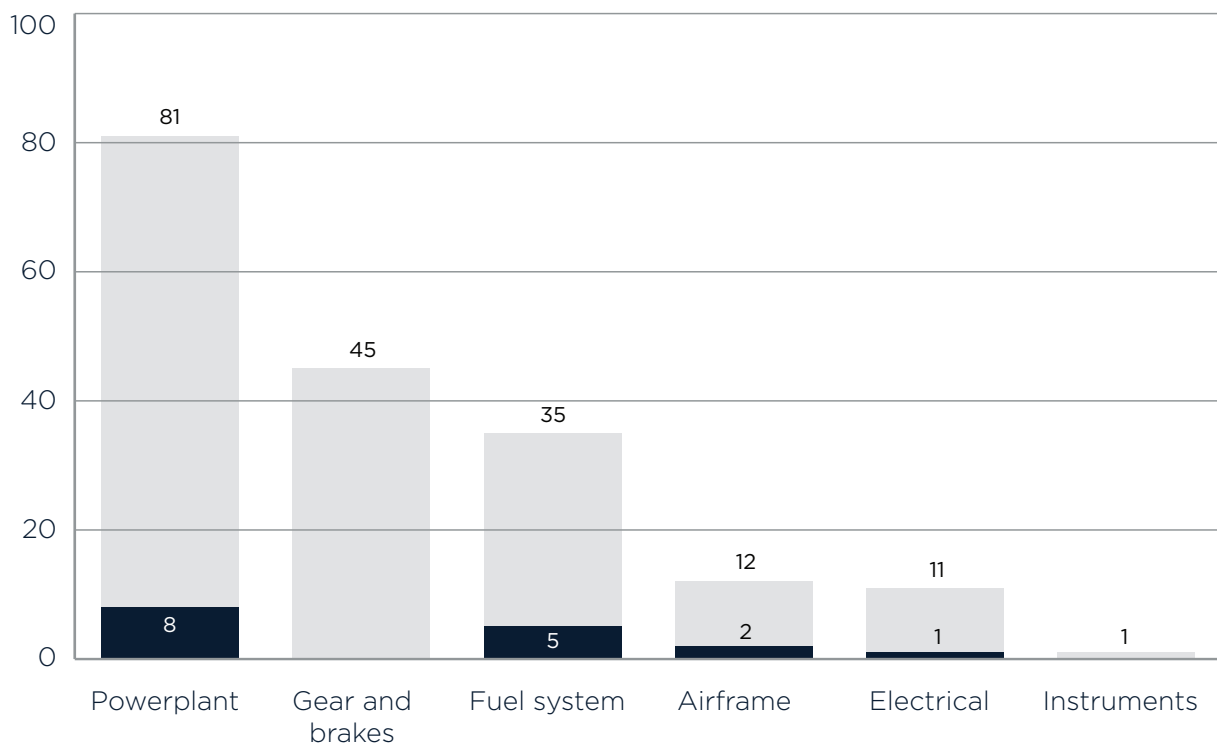
\*Includes single-pilot flights.

## Non-commercial fixed-wing: Mechanical

**Figure 1.8.1: mechanical accident trend**



**Figure 1.8.2: Types of mechanical accidents**



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### Non-commercial fixed-wing: Mechanical

**Figure 1.8.3: Aircraft involved in mechanical accidents:**

Non-commercial fixed-wing	Accidents	Fatal Accidents	Lethality
Single-engine fixed-gear	<b>114</b> 61.6%	<b>10</b> 62.5%	8.8%
SEF tailwheel	<b>45</b>	<b>4</b>	8.9%
Single-engine retractable	<b>53</b> 28.6%	<b>4</b> 25.0%	7.5%
Single-engine turbine	<b>8</b>	<b>0</b>	
Multiengine	<b>18</b> 9.7%	<b>2</b> 12.5%	11.1%
Multiengine turbine	<b>3</b>	<b>0</b>	

**Figure 1.8.4: Flight conditions of mechanical accidents:**

Non-commercial fixed-wing	Accidents	Fatal Accidents	Lethality
Day VMC	<b>175</b> 94.6%	<b>15</b> 93.8%	8.6%
Night VMC*	<b>8</b> 4.3%	<b>1</b> 6.3%	12.5%
Day IMC	<b>2</b> 1.1%	<b>0</b> 0.0%	0.0%

\*Includes dusk.

**Figure 1.8.5: Pilots involved in mechanical accidents:**

Non-commercial fixed-wing	Accidents	Fatal Accidents	Lethality
ATP	<b>49</b> 26.5%	<b>5</b> 31.3%	10.2%
Commercial	<b>50</b> 27.0%	<b>8</b> 50.0%	16.0%
Private	<b>72</b> 38.9%	<b>2</b> 12.5%	2.8%
Sport	<b>4</b> 2.2%	<b>1</b> 6.3%	25.0%
Student	<b>9</b> 4.9%	<b>0</b> 0.0%	0.0%
Other or unknown	<b>1</b> 0.5%	<b>0</b> 0.0%	0.0%
Second pilot on board	<b>37</b> 20.0%	<b>8</b> 50.0%	21.6%
CFI on board*	<b>56</b> 30.3%	<b>9</b> 56.3%	16.1%
IFR pilot on board*	<b>115</b> 62.2%	<b>11</b> 68.8%	9.6%

\*Includes single-pilot flights.