

A Method of Analysis for Incidents Involving Unmanned Aerial Systems

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Abstract: Unmanned Aerial Systems (UAS) have experienced a surge in popularity since 2014. In line with the massive increase of the number of UAS operating within the National Airspace System (NAS), the number of incidents involving manned aircraft and UAS have increased in both number and severity. To gain further insight into this issue the Federal Aviation Administration's (FAA) database of incidents between manned and unmanned aircraft was analyzed. Each incident was evaluated using the UAS location, altitude, and distance relative to the manned aircraft. This data was then summarized into weekly totals and fit to a distribution curves. A Monte Carlo simulation was then performed, it was determined that without changes over 1,000 Near Mid-Air Collisions (NMACs) would occur annually by 2020. Using data from human factors studies and real-world analogues the number of projected incidents dramatically decreases if the FAA takes meaningful regulatory action on UAS.

Keywords: UAS, Monte Carlo Simulation, Modeling, Statistical Analysis