

How to assess the feasibility of sUAS applications in urban environment: geodemographic analysis of 3D urban space

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Abstract— The rapid growth of small Unmanned Aerial System (sUAS) in urban areas has garnered greater interest in its application in urban space. As a first step to assess the feasibility of sUAS and UAM in urban areas, the authors utilize a diverse set of urban airspace use data to model the interaction of urban dwellers and the 3D airspace. With the anticipated utilization of sUAS in urban airspace, a multi-dimensional understanding of such space is essential. In doing so, it is necessary to integrate and analyze two important elements that constitutes an urban environment: people (or human behavior) and man-made structures. In this study, highly urbanized areas – San Francisco, CA was analyzed for their urban space characteristics by considering both the daytime and nighttime population with the 3D geospatial information. We aim to evaluate the temporal variations of such interactions and geofence in populated urban regions. Regionalization is conducted using SKATER algorithms for clustering purpose. The outcomes have several unique information that can benefit drone delivery target area identification, landing location identification, demand prediction.