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Error Volatility in Commercial Demographic Data

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Business geographers devote considerable effort to develop models of space to answer complex spatial questions. Unfortunately, little thought is given to the accuracy of the input data in most of these models. This paper examines the accuracy of tract level population and income data reported for the second quarter of 2020 from five spatial-demographic data vendors (Experian, Synergos/PopStats, ScanUS, ESRI and EASI) by comparing their estimates to the 2020 Census enumeration of population as well as the American Community Survey (ACS) 5-year estimates of income. Data are compiled for 80 Census tracts in the 40 fastest growing US metropolitan areas. These results are compared against an identical 2015 study. Mean absolute percent errors (MAPE) for 2020 population estimates were found to have increased marginally since 2015 and median household income estimations were consistent with the measured accuracy in 2025. A significant spatial variation in the magnitude of these errors was also found, with MAPE increases being the most substantial in urban tracts. The magnitude of this bias grew after controlling for the size of tracts, errors increased substantially with urban tracts. The consistency of the errors and biases found in these vendor data likely result in flawed location analysis, particularly in rapidly growing in-town neighborhoods.

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