

Table 3.1 Sensitivity Analysis Result

Analysis Type	Specification	Correlation (r)	95% CI	Δ from Base
A. Data Completeness Analysis				A. Data Completeness Analysis
Primary Analysis	All 1,731 LSOAs	-0.327	[-0.363, -0.290]	—
Measured Only	1,660 LSOAs (96%)	-0.327	[-0.362, -0.291]	0.000
Inverse Probability Weighted	Weighted by P(complete)	-0.324	[-0.360, -0.287]	0.003
High Confidence Only	CI width < 8 pp	-0.331	[-0.368, -0.293]	-0.004
B. Spatial Weight Matrix Specifications				
Global Moran's I				
Queen Contiguity	Shared boundaries	0.487	p < 0.001	—
K-Nearest Neighbours	k = 8	0.481	p < 0.001	-0.006
Distance Threshold	500m radius	0.478	p < 0.001	-0.009
Inverse Distance	1/d weighting	0.491	p < 0.001	0.004
C. Bootstrap Uncertainty Quantification				
Standard Bootstrap	1,000 replications	-0.327	[-0.362, -0.292]	0.000
Stratified by Borough	Preserve admin structure	-0.326	[-0.361, -0.290]	0.001
Block Bootstrap	Spatial blocks (2km)	-0.328	[-0.366, -0.290]	-0.001
Bias-Corrected (BCa)	Adjusted percentile	-0.325	[-0.360, -0.289]	0.002
D. Outlier and Influence Analysis				
Exclude High Leverage	Cook's D > 4/n	-0.332	[-0.367, -0.296]	-0.005
Winsorized (5%)	Trim extreme values	-0.319	[-0.355, -0.282]	0.008
Robust Regression	Huber M-estimator	-0.321	[-0.357, -0.284]	0.006
Exclude Westminster	Remove outlier borough	-0.342	[-0.378, -0.305]	-0.015
E. Temporal Stability				
Recent Images Only	2022-2024 (78%)	-0.324	[-0.361, -0.286]	0.003
Summer Images	Jun-Aug only	-0.330	[-0.372, -0.287]	-0.003
Season Adjusted	Month fixed effects	-0.322	[-0.358, -0.285]	0.005
Daylight Hours Only	08:00-18:00	-0.326	[-0.362, -0.289]	0.001