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Social Inclusion
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Supplementary File

1. Sensitivity analysis

We first assessed the robustness of the TikTok visibility index (PLVS) to changes in the weighting scheme. The Pearson correlation between the original PLVS and the version without hashtag weights is very high ($r = 0.976$), indicating that the overall distribution of visibility is largely insensitive to this adjustment. Consistently, both versions exhibit significant positive spatial autocorrelation: the original PLVS shows Moran's I = 0.494 ($p < 0.001$), while the no-hashtag version yields Moran's I = 0.434 ($p < 0.001$). These results demonstrate that both the values and the spatial clustering of the visibility index remain highly robust to modifications in the weighting approach.

We further tested the sensitivity of the spatial clustering to the choice of grid resolution. Using a finer 250 m grid, the Moran's I for TikTok visibility is 0.326 ($p < 0.001$), compared with 0.494 ($p < 0.001$) for the original 500 m grid. Although the absolute Moran's I decrease slightly at the finer scale, positive spatial autocorrelation remains significant, indicating that the overall clustering pattern of visibility is consistent across different spatial resolutions.

Version / Grid	Moran's I	Expectation	Variance	p-value
Original PLVS (500 m grid)	0.4943	-0.00055	0.0001315	< 0.001
No-hashtag PLVS (500 m grid)	0.4342	-0.00055	0.0001285	< 0.001
Original PLVS (250 m grid)	0.3253	-0.00014	0.0000342	< 0.001

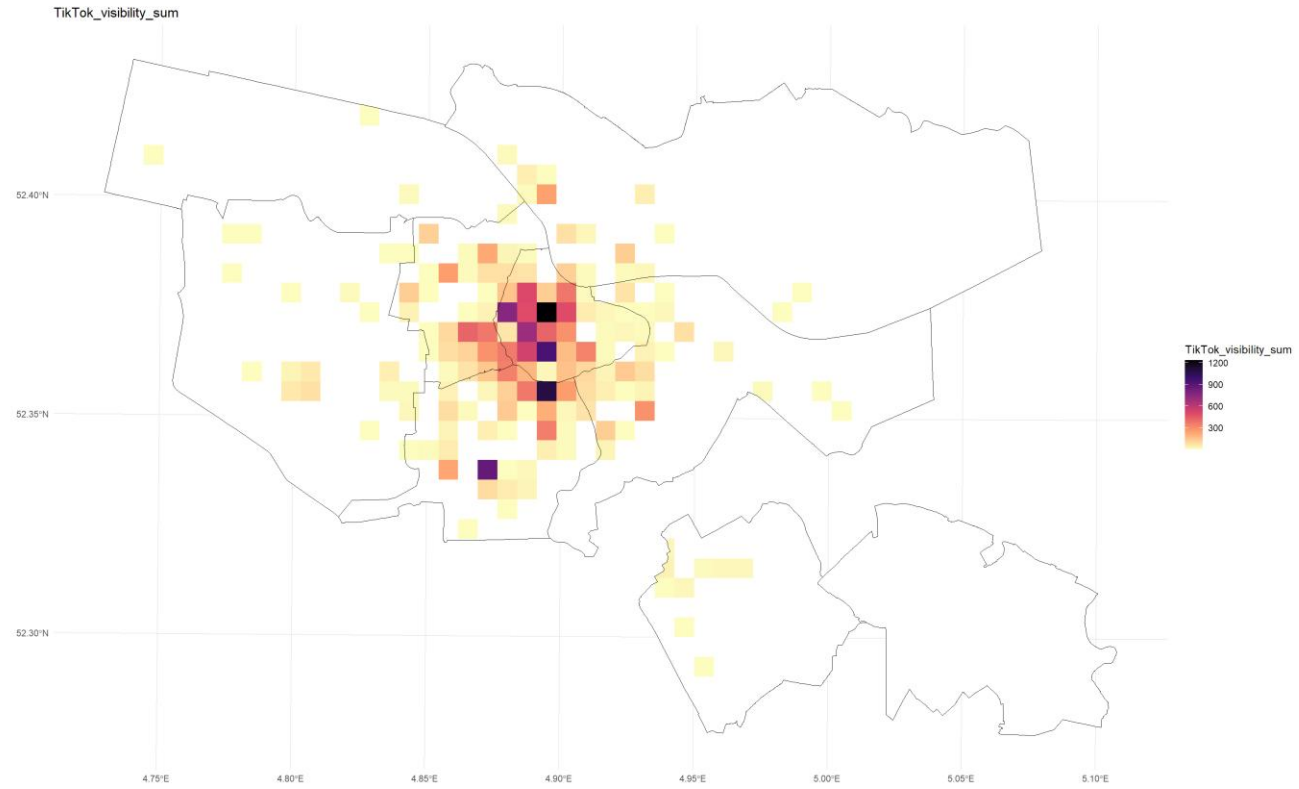


Figure 1. 500-meter spatial grid aggregation of TikTok PLVS (has_hashtag weight = 6).

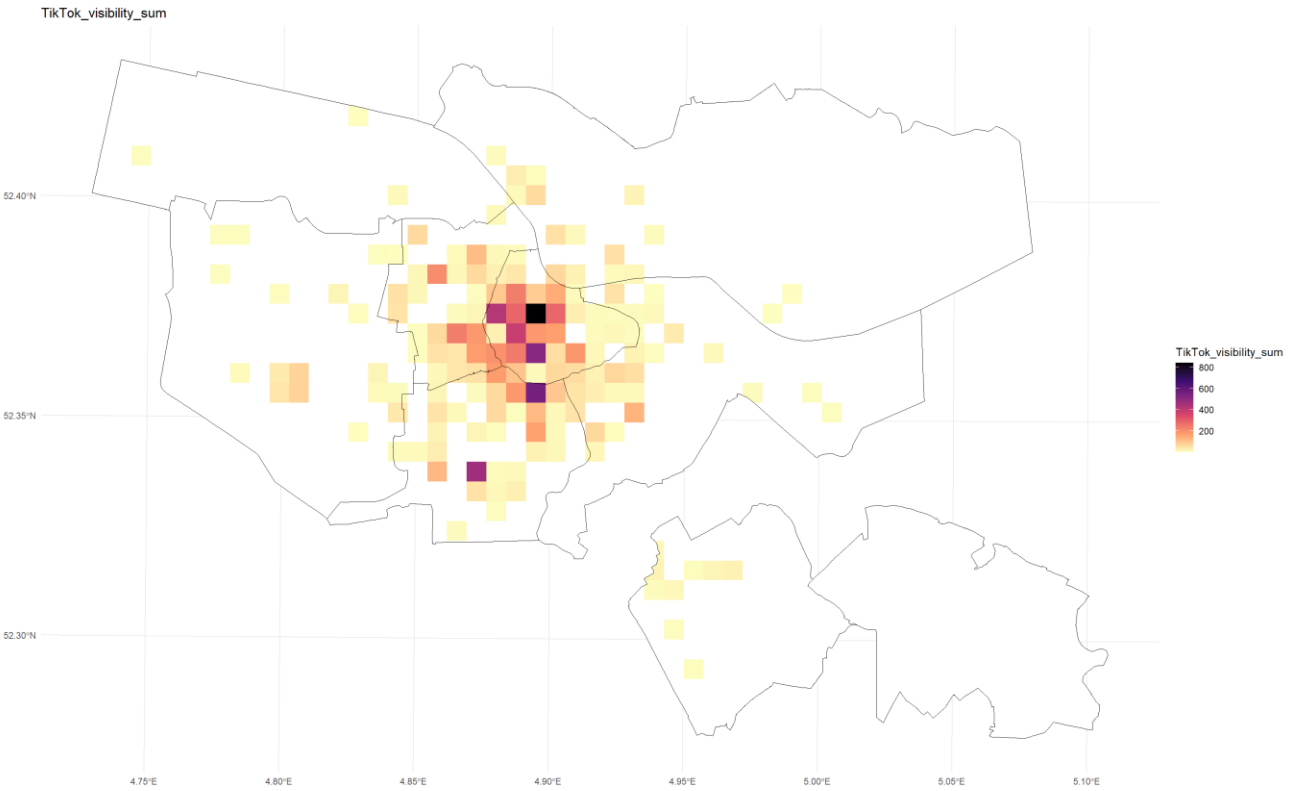


Figure 2. 500-meter spatial grid aggregation of TikTok PLVS (has_hashtag weight = 0).

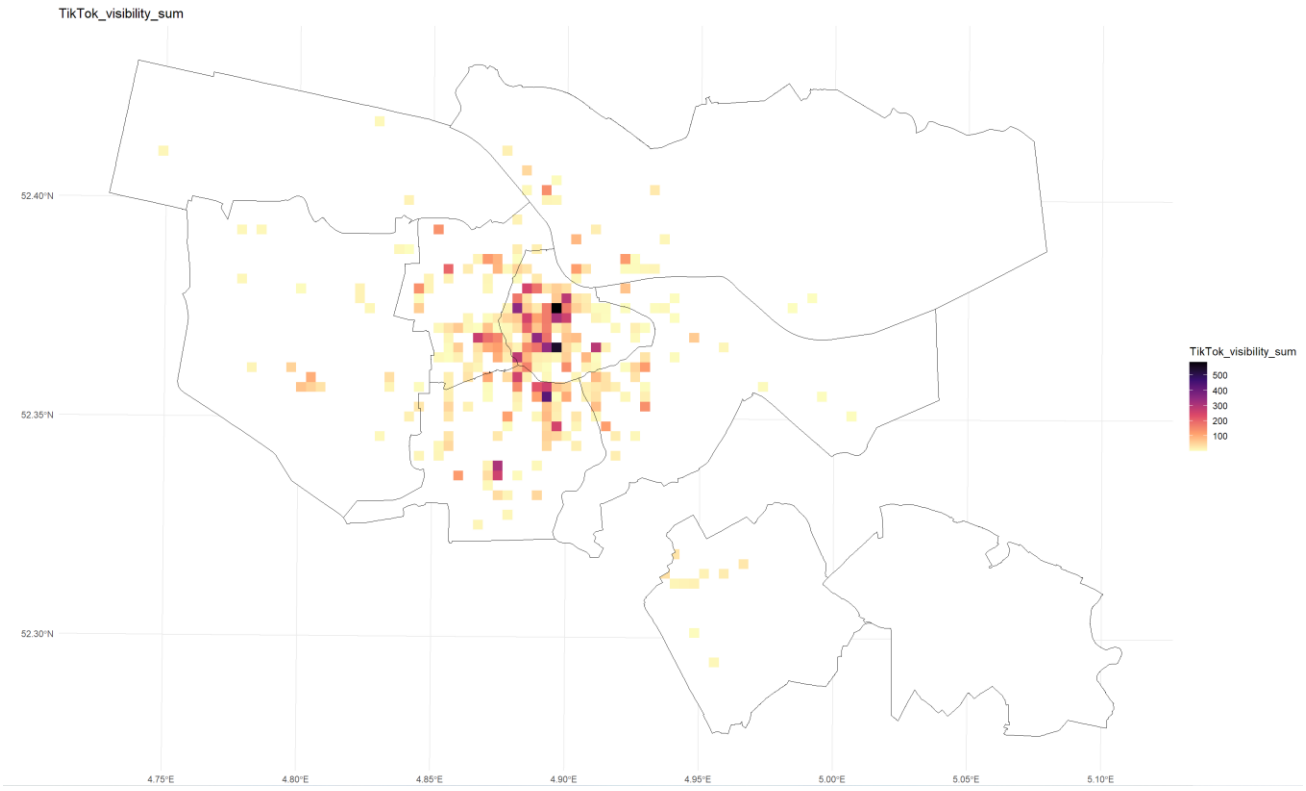
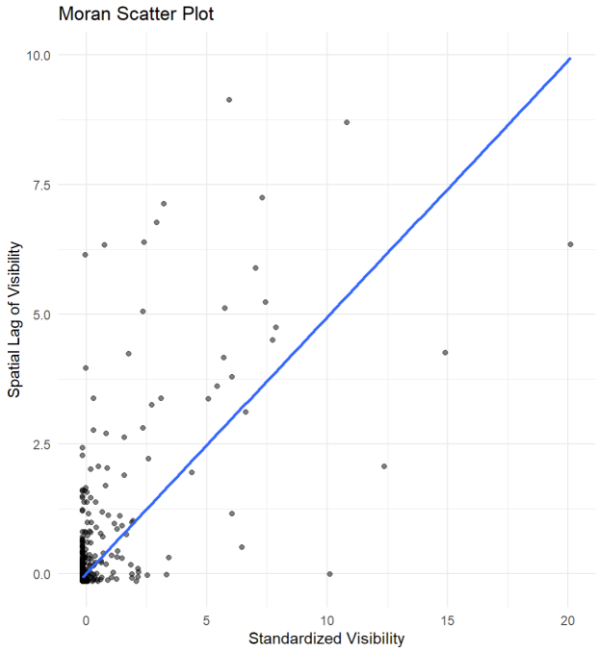


Figure 3. 250-meter spatial grid aggregation of TikTok PLVS (has_hashtag weight = 6).

2. Additional materials for Global Moran's I analysis

For the Global Moran's I, we used a contiguity-based spatial weights matrix generated. A Moran scatter plot has been provided to illustrate the relationship between TikTok visibility and its spatial lag. We decided not to include Local Moran's I (LISA) in the revised manuscript because our focus is on regression-based analysis, and adding LISA would substantially increase the number of figures without changing the main interpretation. Using the same contiguity-based spatial weights matrix ensures consistency between the global Moran's I and any potential LISA analysis.



3. Additional materials for OLS regression

We have conducted additional diagnostics for the OLS regression of TikTok visibility. Residuals were examined using the Shapiro-Wilk test, which indicates deviations from perfect normality ($W = 0.326$, $p < 0.001$); however, given the large sample size ($N = 1{,}820$), the OLS estimates remain reliable. Variance Inflation Factor (VIF) values for all independent variables are low (distance_to_centrum = 1.19, poi_count = 1.19), indicating negligible multicollinearity. To account for the skewed distribution of POI counts, we also estimated a log-transformed specification (poi_log = log1p(poi_count)), which yields qualitatively consistent results, with POI density remaining the strongest predictor of visibility ($\beta = 25.32$, $p < 0.001$) and distance to the city centre showing a small but significant positive effect ($\beta = 0.0011$, $p < 0.05$). The R^2 decreases from 0.645 (original model) to 0.225 in the log-transformed model due to the non-linear scaling, but the substantive interpretation remains consistent. Distance was calculated from grid centroids to the city centre in meters using the Dutch RD New projection (EPSG:28992).

OLS Regression of TikTok Visibility (POI Count)		
Predictors	**Estimate (Std. Error)**	**p-value**
Distance to Centrum	0.001*** (0.0003)	0.0004 ***
POI Count	1.748*** (0.033)	0.009 ***
Intercept (Constant)	-8.973*** (2.510)	< 0.001 ***

Model Statistics	
Observations	1,820
R2	0.645
Adjusted R2	0.645
Residual Std. Error	36.237 (df = 1817)
F-statistic	1650.327*** (df = 2; 1817)
Note: *p<0.1; **p<0.05; ***p<0.01	

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OLS Regression of TikTok Visibility ((POI_log Count))		
Predictors	**Estimate (Std. Error)**	**p-value**
Distance to Centrum	0.001** (0.0005)	0.021 **
Log of POI	25.320*** (1.387)	< 0.001 ***
Intercept (Constant)	-19.280*** (5.115)	< 0.001 ***
Model Statistics		
Observations	1,820	
R2	0.225	
Adjusted R2	0.225	
Residual Std. Error	53.526 (df = 1817)	
F-statistic	264.328*** (df = 2; 1817)	
Note: *p<0.1; **p<0.05; ***p<0.01		

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