Supplementary Materials for

The Potential of 3-D Building Height Data to Characterize Socioeconomic Activities: A Case Study from 38 Cities in China

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Table S1. Aggregated roads from Open Street Map.

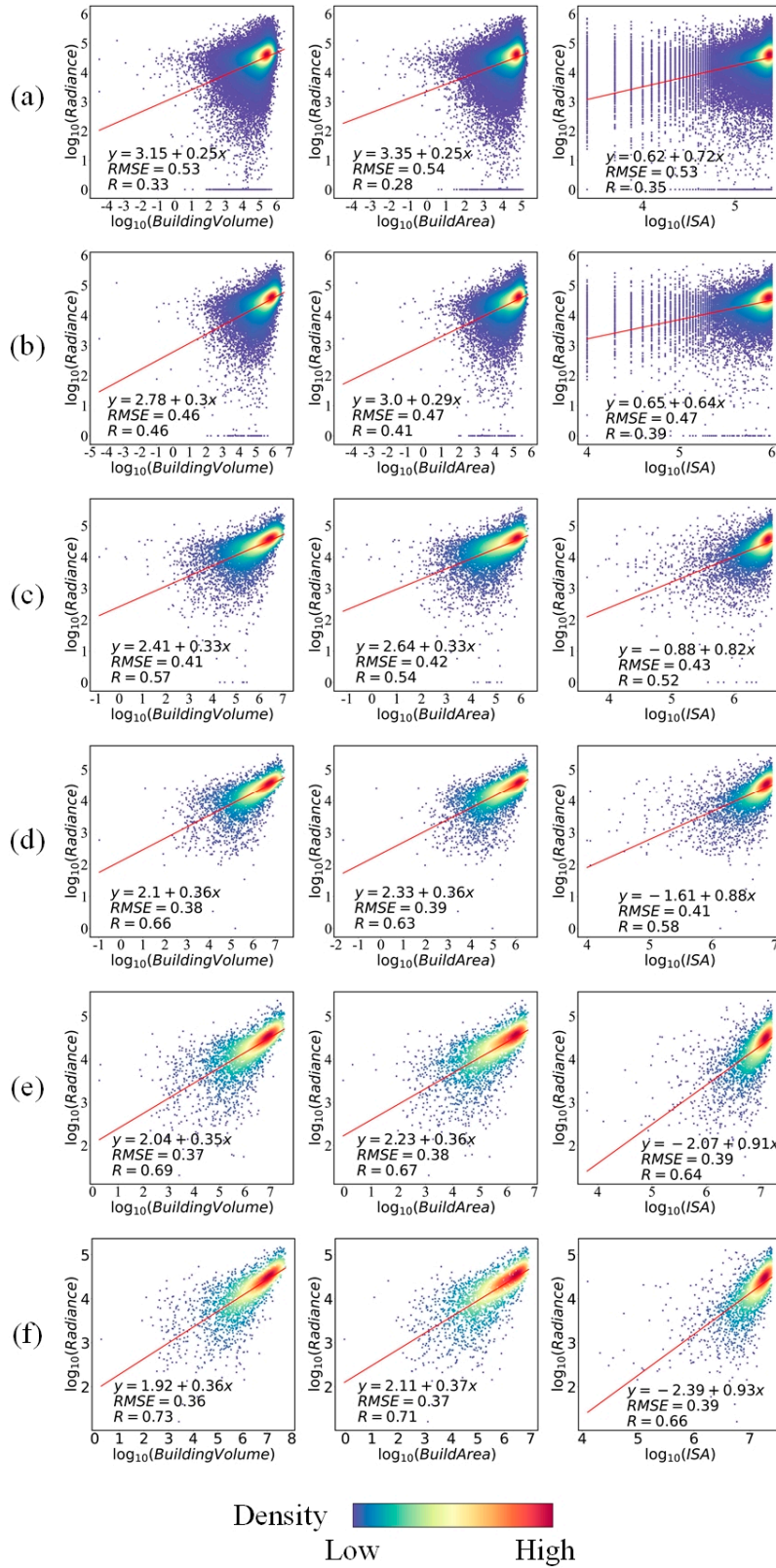| Category	Sub-Categories
Main Roads	**Primary & Primary_link**
	Secondary & Secondary_link
	Tertiary & Tertiary_link
	Trunk & Trunk_link
Residential Roads	**Footway**
	Pedestrian
	Residential
Commercial Roads	**Services**

Figure S1. The regression results in different scales. (a) 500m, (b) 1km, (c) 2km, (d) 3km, (e) 4km, (f) 5km.
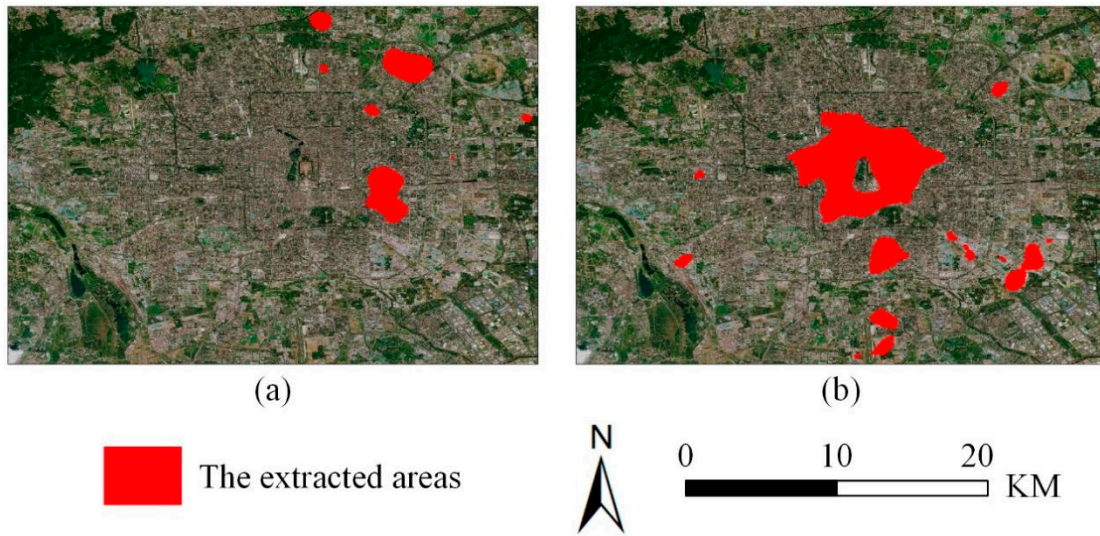
Figure S2. The extracted areas using the quantile-based approach with 3D (a) and 2D (b) indicators in Beijing.
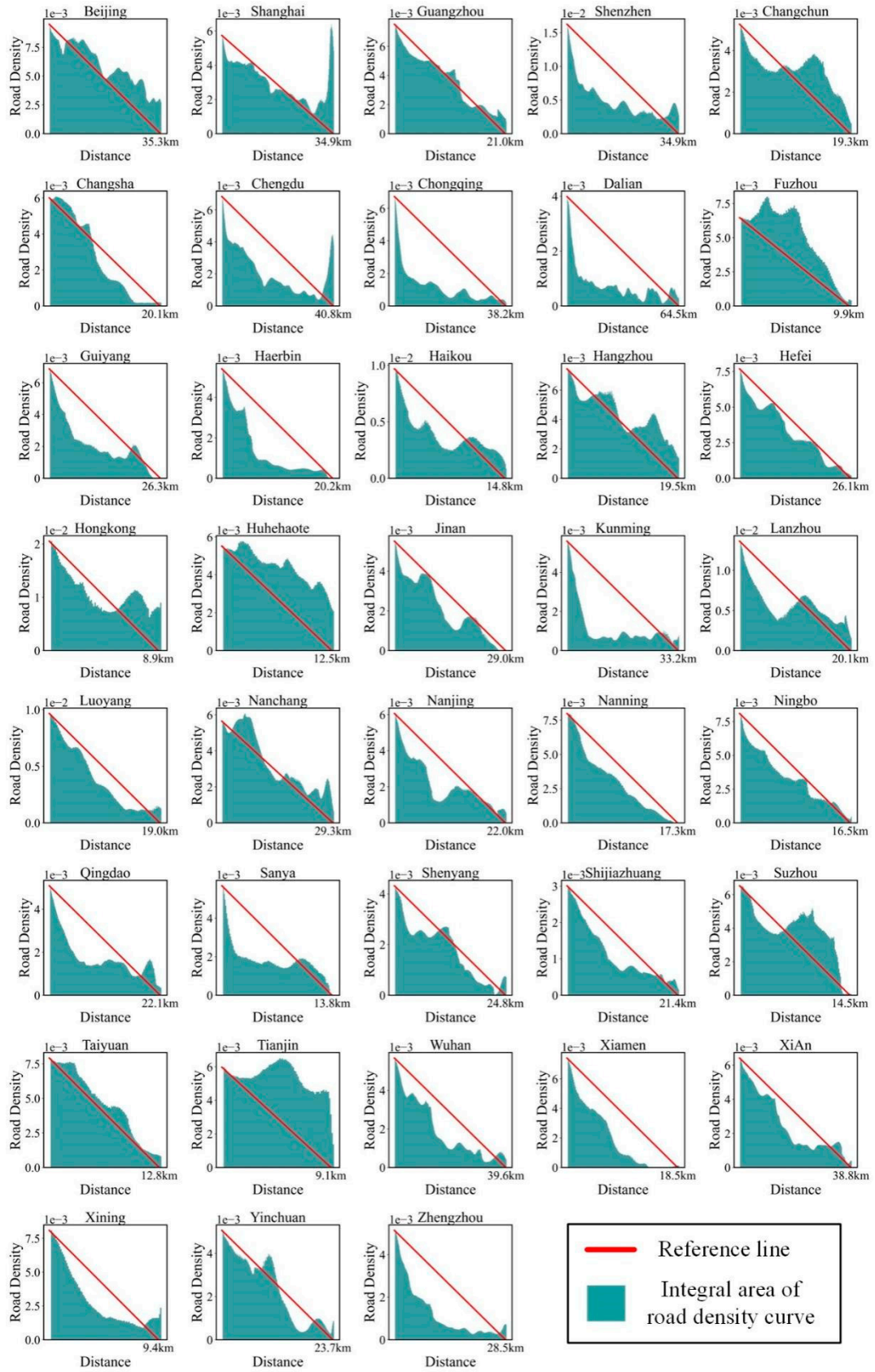
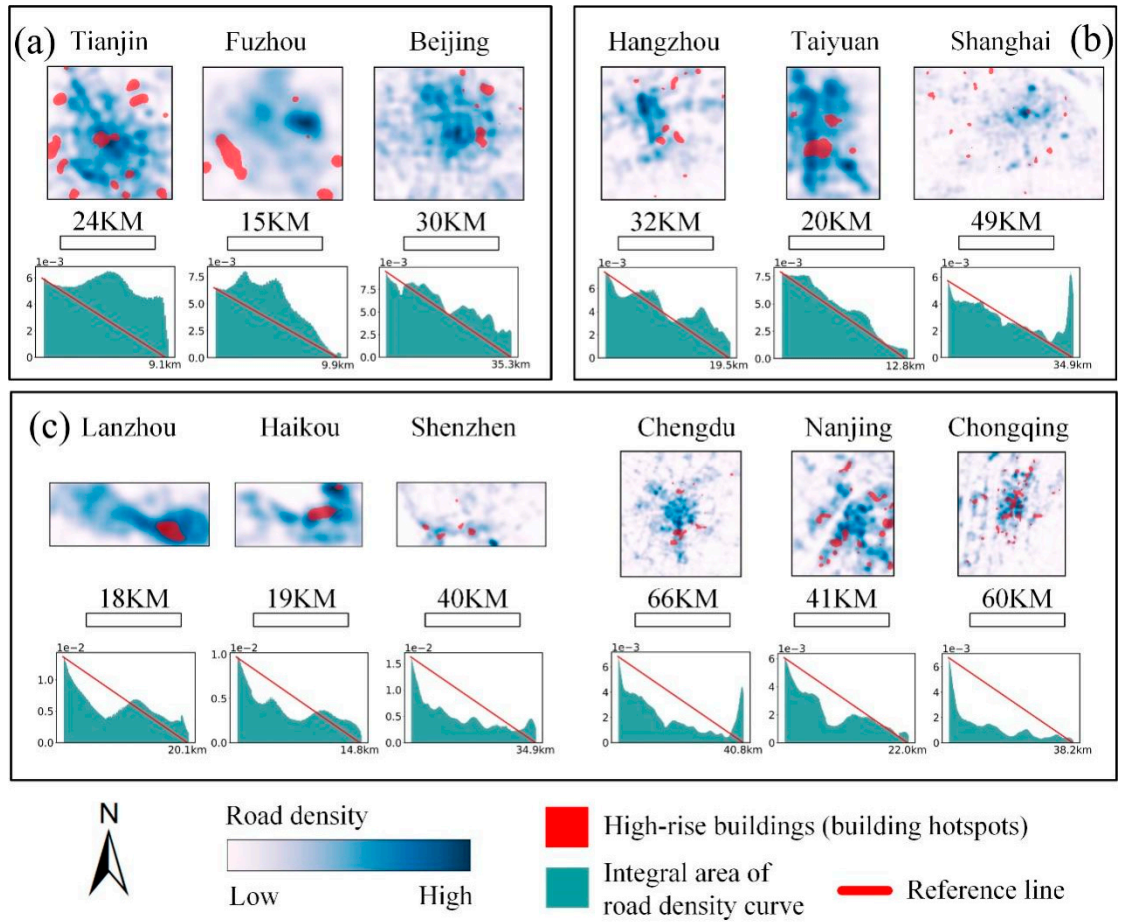**Figure S3.** The road density curves of all cities.

Figure S4. Illustration of the road density curve change in representative cities with different road distribution patterns. (a) imbalanced pattern, (b) balanced pattern, (c) sustainable pattern
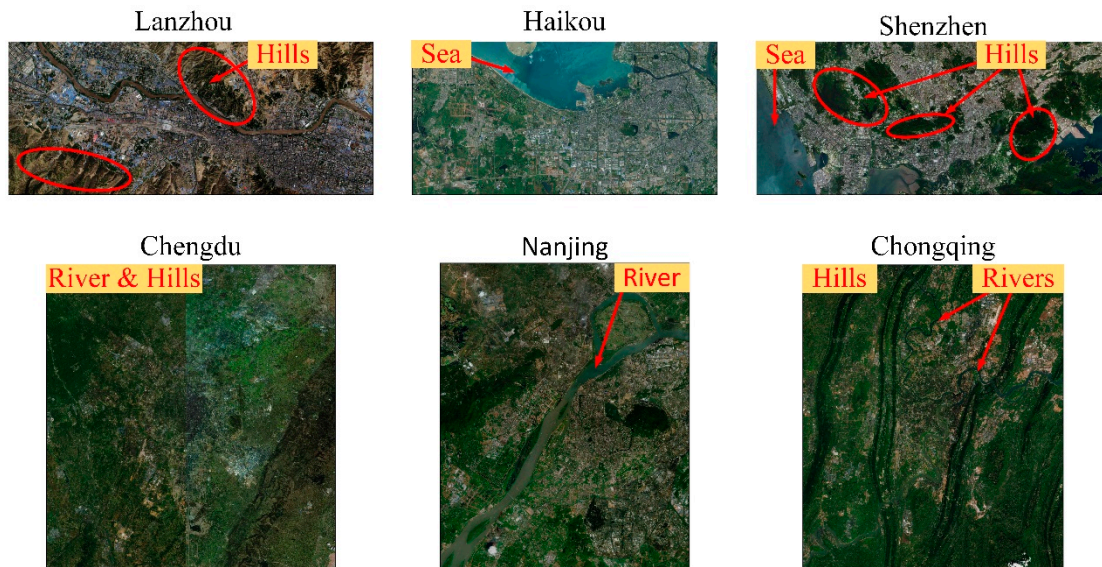

Figure S5. Satellite images of six cities: Lanzhou, Haikou, Shenzhen, Chengdu, Nanjing, and Chongqing. The hills and rivers are marked on the map.