

# 尺度变化与空间结构

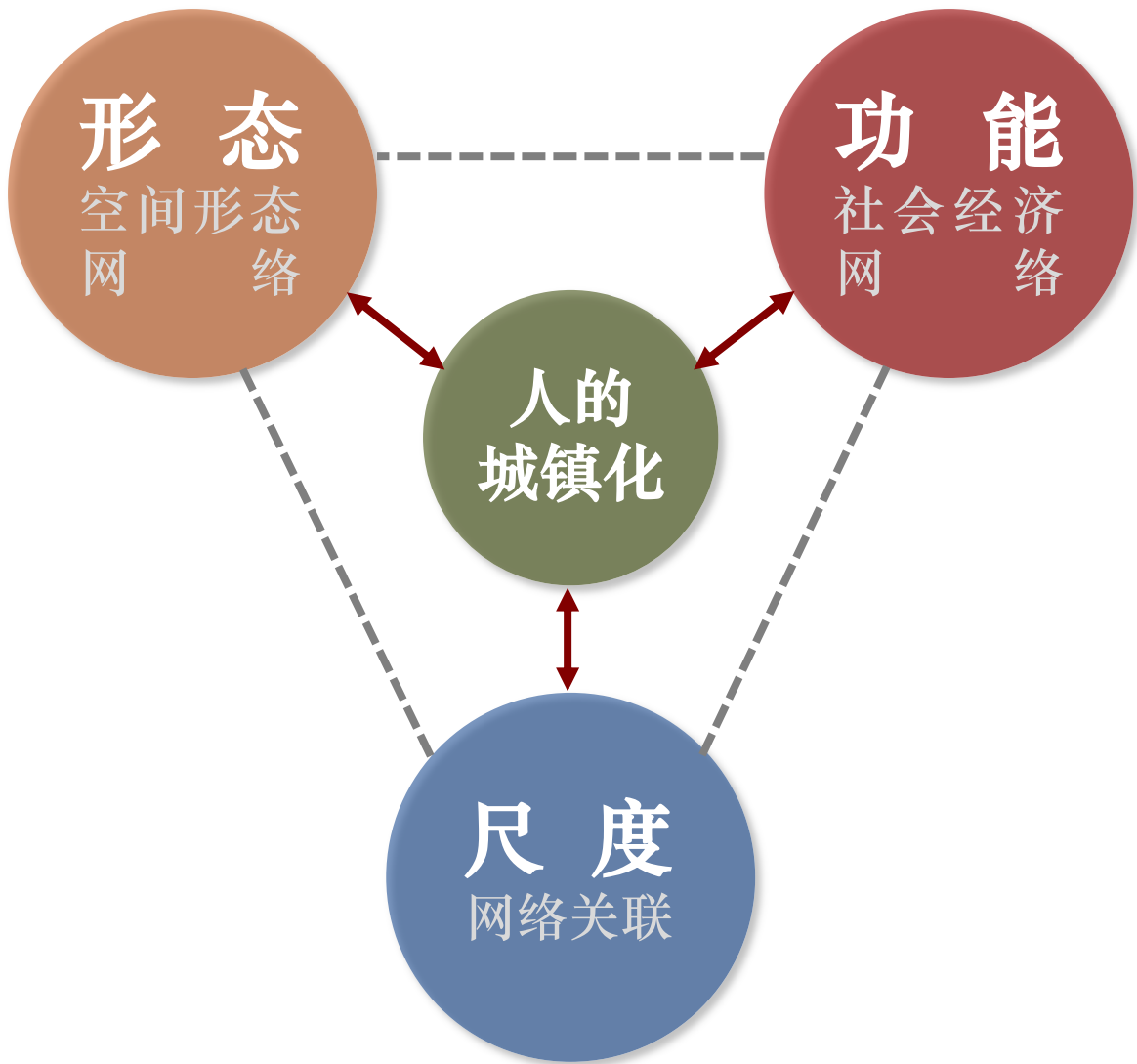
## Scale Variations & Spatial Structures

杨滔

中国城市规划设计研究院  
清华大学建筑学院

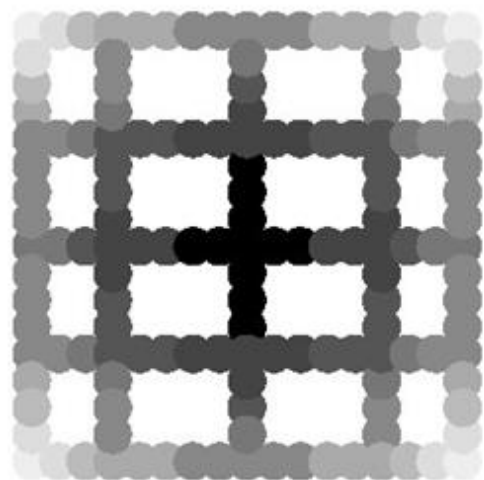
2017.11

道路网络  
道路等级  
车行系统  
人行系统  
用地性质  
开发强度  
城市界面  
建筑平面  
建筑立面  
.....

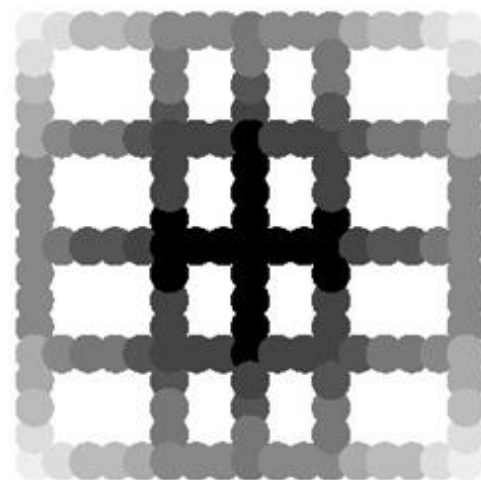


功能布局  
功能配比  
人口构成  
人口流动  
人口来源  
租金价格  
土地价格  
尾气污染  
街道活力  
.....

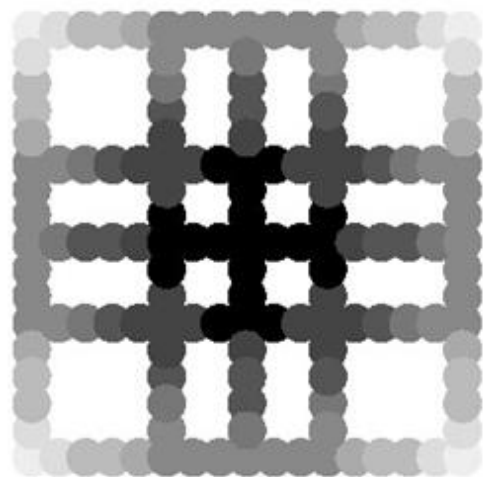




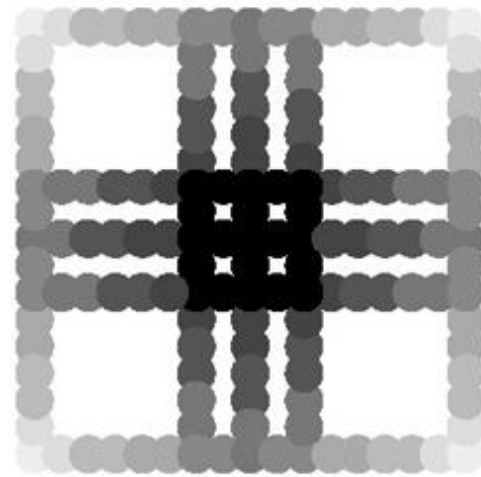
A .1585



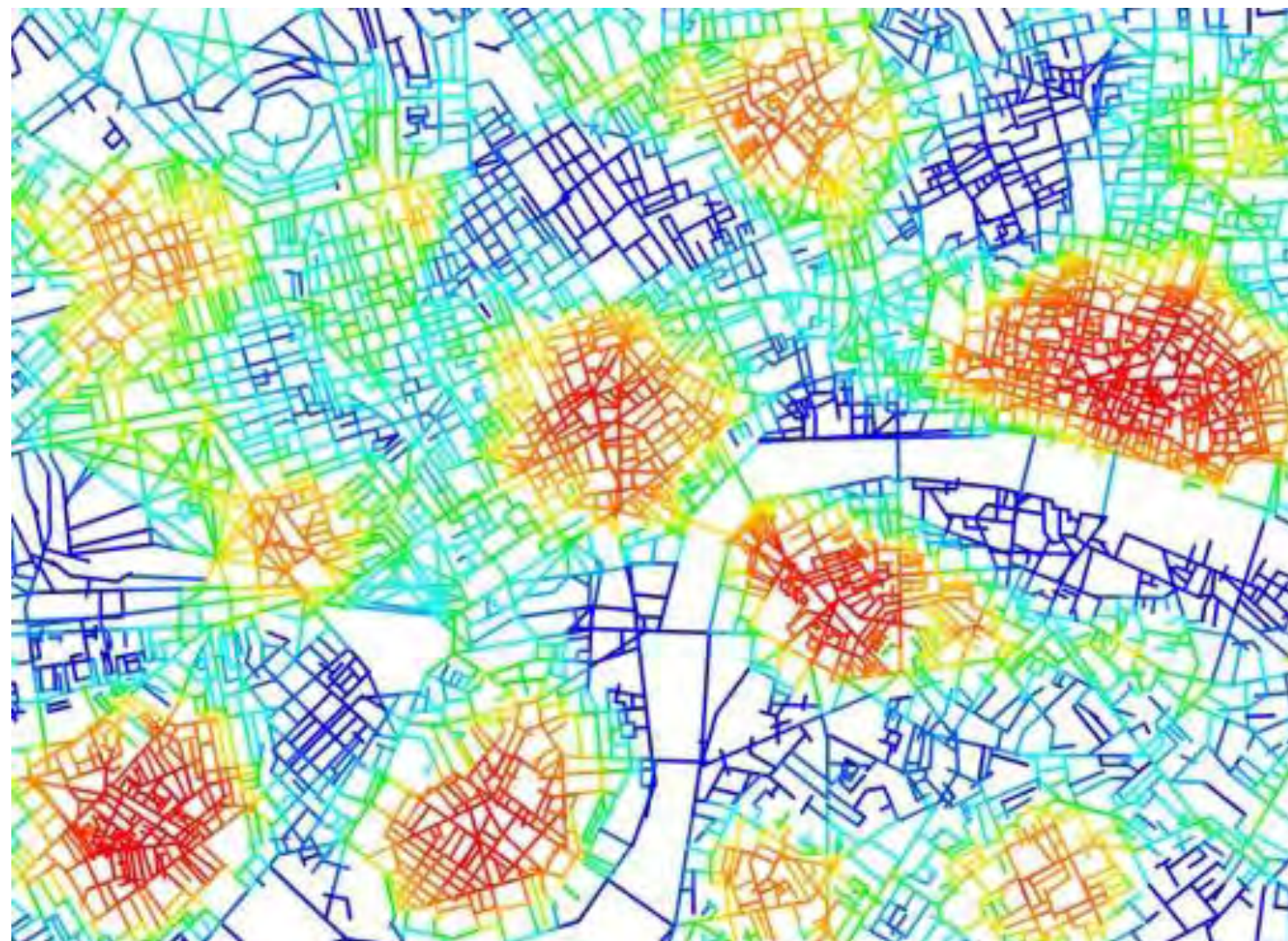
B .1544



C .1528



D .1509



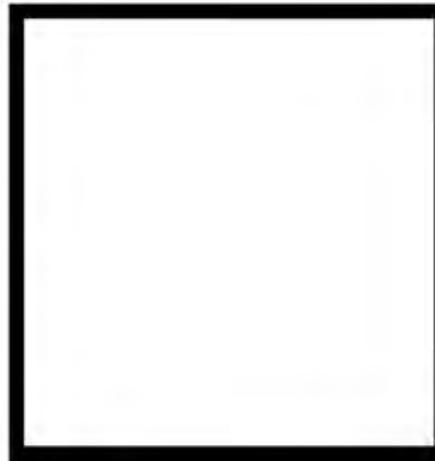
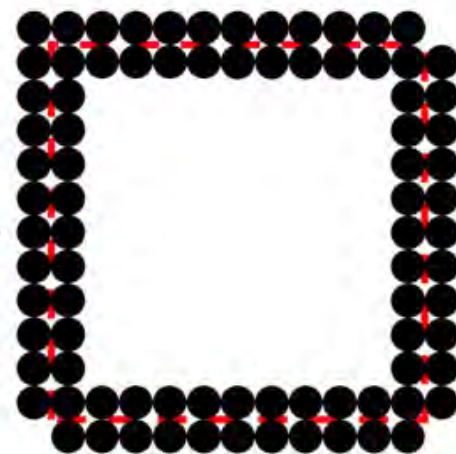
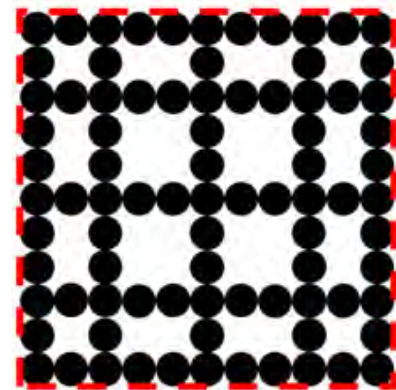
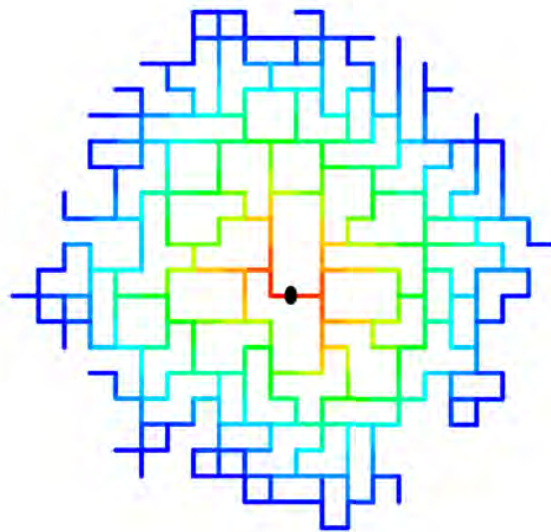
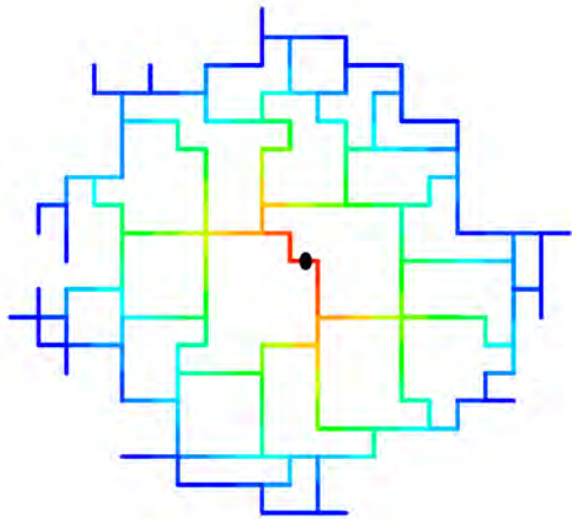
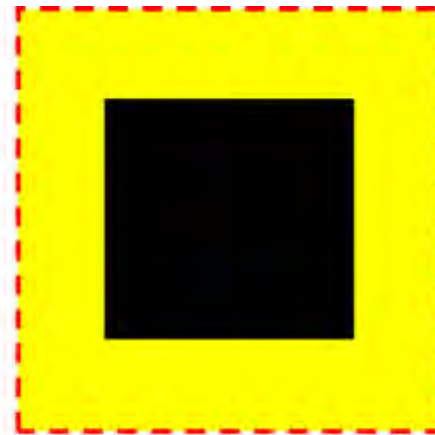
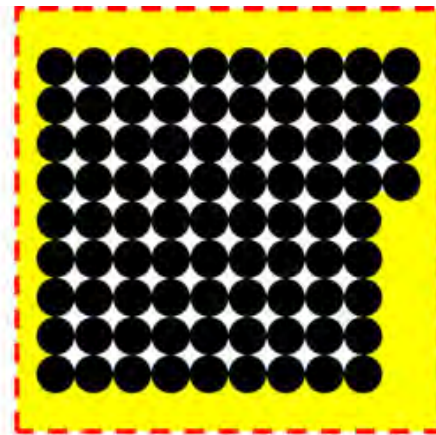
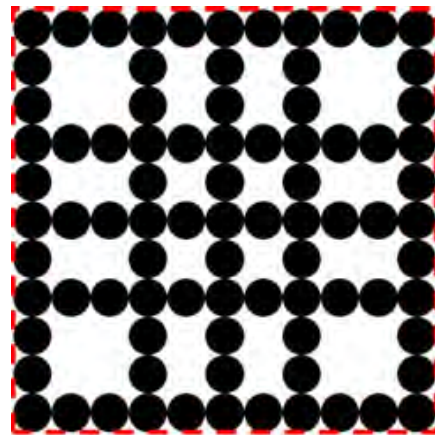
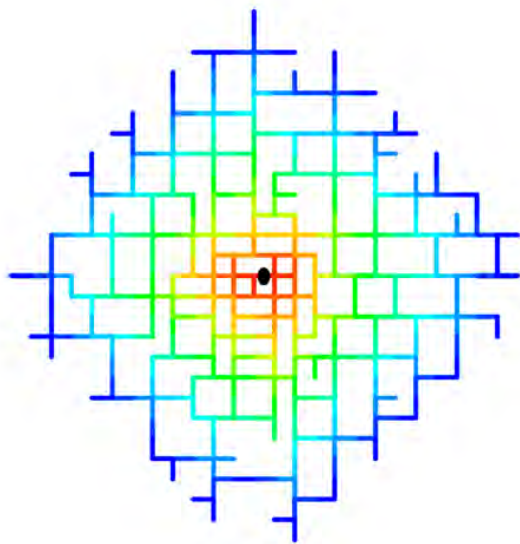
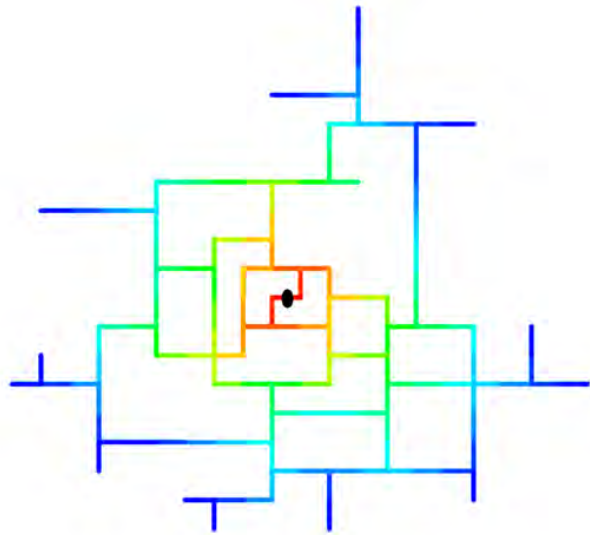


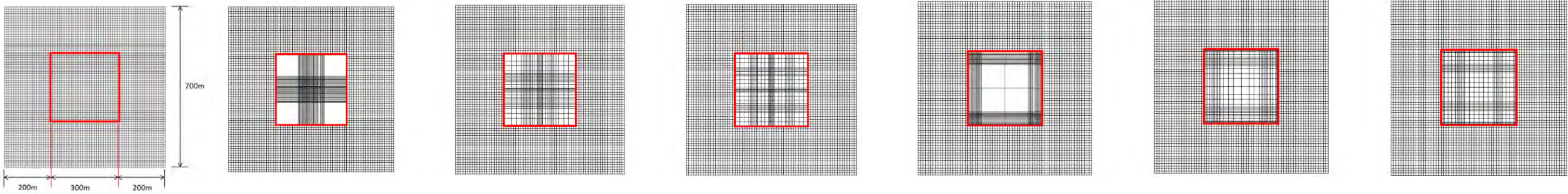
黑色: 31.75m  
灰色: 47.14m



黑色: 79.74m  
灰色: 50.12m

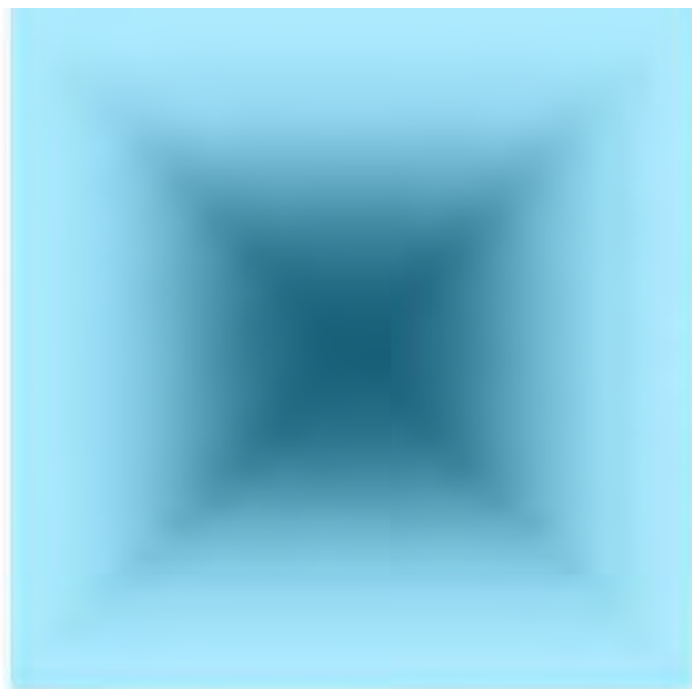






	MMD_ R20	MMD_ R40	MMD_ R60	MMD_ R80	MMD_ R100	MMD_ R120	MMD_ R140	MMD_ R160	MMD_ R180	MMD_ R200	MMD_n
SGrid A	13.0	26.5	39.8	53.1	66.4	79.7	93.1	106.4	119.7	133.0	372.9
SGrid B	11.8	25.8	41.6	55.9	69.5	82.1	94.2	106.0	117.8	129.6	361.7
SGrid B1	12.8	26.7	40.1	53.4	66.6	79.7	92.7	105.7	118.5	131.4	365.4
SGrid B2	12.8	26.4	39.5	52.9	66.4	79.7	92.8	106.1	119.3	132.4	369.0
SGrid C	11.8	25.6	40.9	54.5	67.6	80.3	92.9	105.5	118.4	131.4	388.0
SGrid C1	12.7	26.5	39.8	52.9	65.9	78.9	92.0	105.1	118.4	131.9	380.4
SGrid C2	12.7	26.3	39.5	52.8	66.2	79.4	92.6	106.0	119.4	132.9	376.9





大尺度“中心—边缘”

+

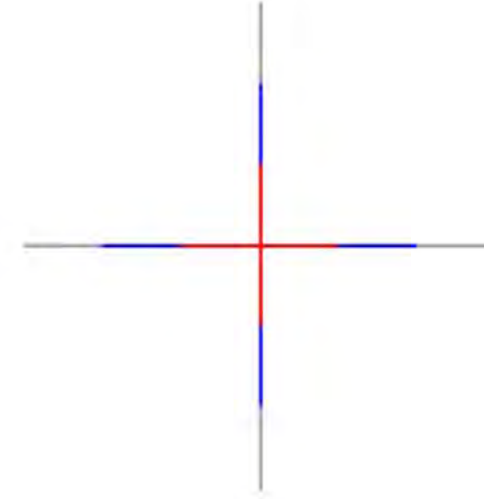
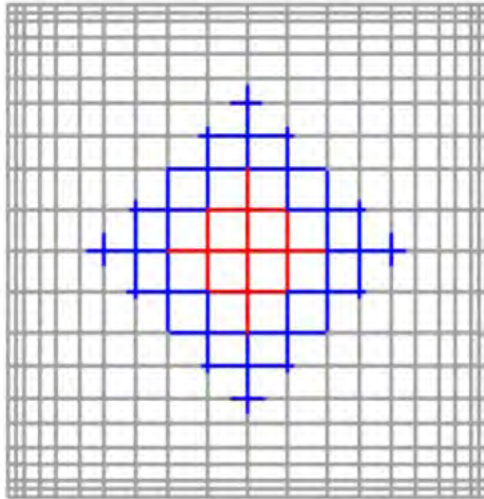
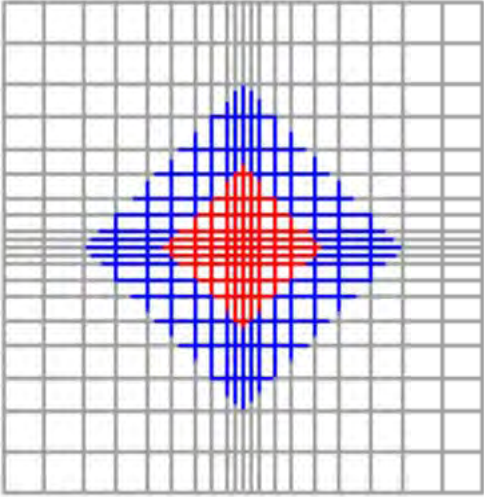
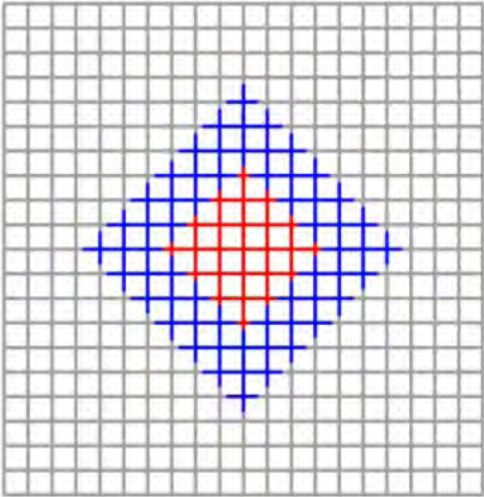


中小尺度“中心—边缘”  
与“边缘—中心”的交替

=



模糊分区



Nonlinear Fit

Response: NC, Predictor: Formula

Control Panel

Converged in Gradient

Criterion	Current	Stop Limit
Iteration	6	60
Obj Change	1.209414e-13	1e-15
Relative Gradient	1.0727714e-8	0.000001
Gradient	5.4064681e-7	0.000001

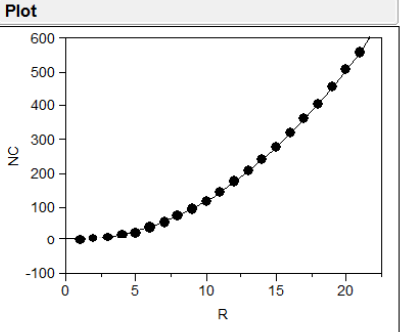
Parameter	Current Value	Lock	SSE
b0	0.9743964128	<input type="checkbox"/>	N
b1	2.0873427472	<input type="checkbox"/>	21
Edit Alpha	0.050		
Convergence Criterion	0.00001		
Goal SSE for CL	.		

Solution

SSE	DFE	MSE	RMSE
32.759330539	19	1.7241753	1.3130786

Parameter	Estimate	ApproxStdErr
b0	0.9743964128	0.01594308
b1	2.0873427472	0.00568042

Solved By: Analytic NR



Parameter	Estimate	Low	High
b0	0.9743964128	0.87874	1.07005
b1	2.0873427472	2.05326	2.12143

Correlation of Estimates

	b0	b1
b0	1.0000	-0.9978
b1	-0.9978	1.0000

Nonlinear Fit

Response: Centre\_Edge\_NC, Predictor: Formula

Control Panel

Converged in Gradient

Criterion	Current	Stop Limit
Iteration	7	60
Obj Change	6.202125e-14	1e-15
Relative Gradient	3.0989987e-8	0.000001
Gradient	2.6635545e-6	0.000001

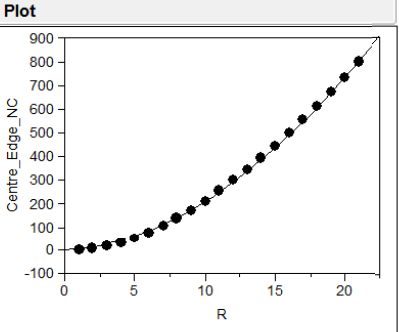
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b1	1.8028341115	<input type="checkbox"/>	21
Edit Alpha	0.050		
Convergence Criterion	0.00001		
Goal SSE for CL	.		

Solution

SSE	DFE	MSE	RMSE
771.68416125	19	40.614956	6.3729864

Parameter	Estimate	ApproxStdErr
b0	3.3348967613	0.15423371
b1	1.8028341115	0.01617974

Solved By: Analytic NR



Parameter	Estimate	Low	High
b0	3.3348967613	2.40949	4.2603
b1	1.8028341115	1.70576	1.89991

Correlation of Estimates

	b0	b1
b0	1.0000	-0.9971
b1	-0.9971	1.0000

Nonlinear Fit

Response: Edge\_Centre\_NC, Predictor: Formula

Control Panel

Converged in Gradient

Criterion	Current	Stop Limit
Iteration	7	60
Obj Change	9.486539e-12	1e-15
Relative Gradient	7.4978249e-8	0.000001
Gradient	2.2905105e-6	0.000001

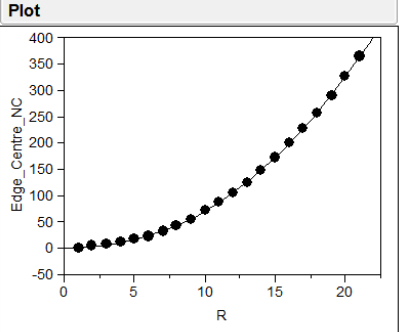
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b1	2.2052464776	<input type="checkbox"/>	21
Edit Alpha	0.050		
Convergence Criterion	0.00001		
Goal SSE for CL	.		

Solution

SSE	DFE	MSE	RMSE
25.975324364	19	1.3671223	1.1692401

Parameter	Estimate	ApproxStdErr
b0	0.4408077869	0.01060312
b1	2.2052464776	0.00832823

Solved By: Analytic NR



Parameter	Estimate	Low	High
b0	0.4408077869	0.37719	0.50443
b1	2.2052464776	2.15528	2.25522

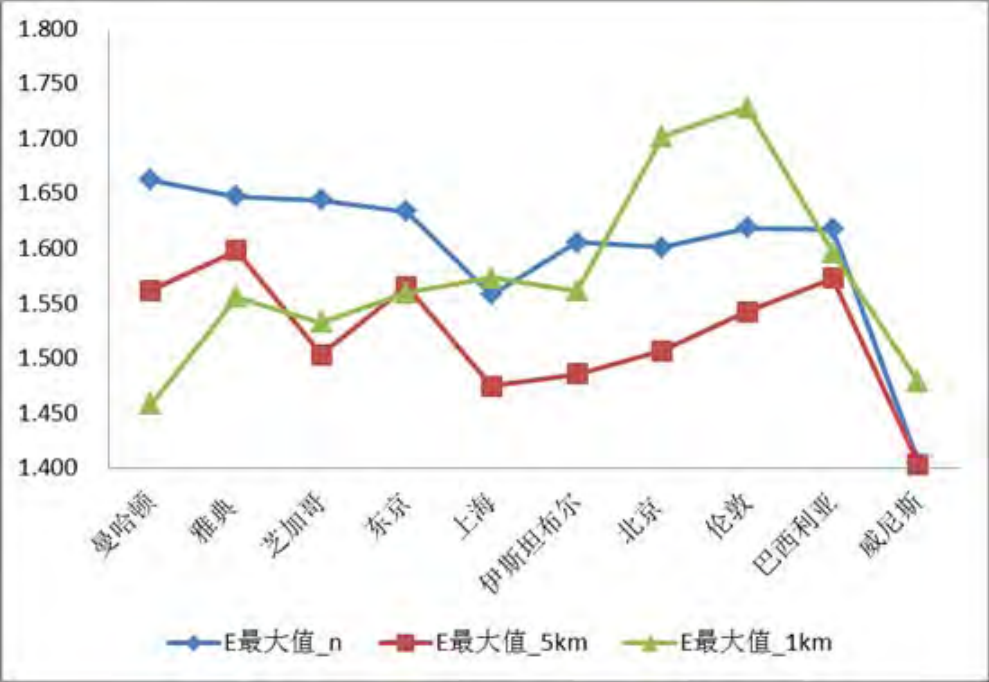
Correlation of Estimates

	b0	b1
b0	1.0000	-0.9980
b1	-0.9980	1.0000



城市	空间数	连接度	线段长度（m）	幂指数
曼哈顿	6830	5.46	99	1.529
雅典	144335	5.07	48	1.817
芝加哥	131153	4.78	136	1.889
东京	250892	4.40	34	1.867
上海	37663	4.08	121	1.774
伊斯坦布尔	68903	4.34	63	1.829
北京	56361	4.09	111	1.704
伦敦	272642	4.09	72	1.878
巴西利亚	52713	3.97	102	1.56
威尼斯	5655	3.67	29	1.311

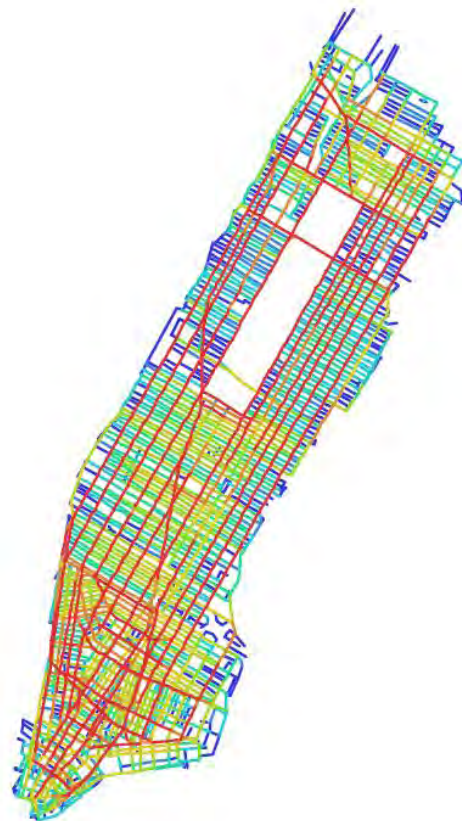
城市	E 均值_n	E 均值_5km	E 均值_1km	E 最大值_n	E 最大值_5km	E 最大值_1km
曼哈顿	1.187	1.180	1.149	1.663	1.562	1.459
雅典	0.982	1.060	1.114	1.648	1.599	1.556
芝加哥	0.965	1.041	1.036	1.644	1.504	1.533
东京	0.894	0.959	1.007	1.634	1.566	1.560
上海	0.890	0.958	0.965	1.558	1.475	1.574
伊斯坦布尔	0.859	0.937	0.996	1.606	1.486	1.562
北京	0.853	0.926	0.933	1.601	1.507	1.702
伦敦	0.808	0.903	0.942	1.619	1.543	1.729
巴西利亚	0.802	0.888	0.923	1.618	1.573	1.597
威尼斯	0.757	0.760	0.831	1.405	1.404	1.479







n



5km



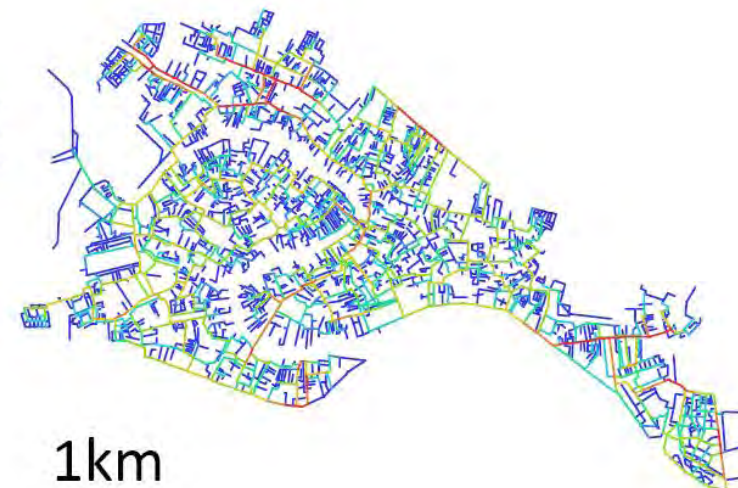
1km



5km

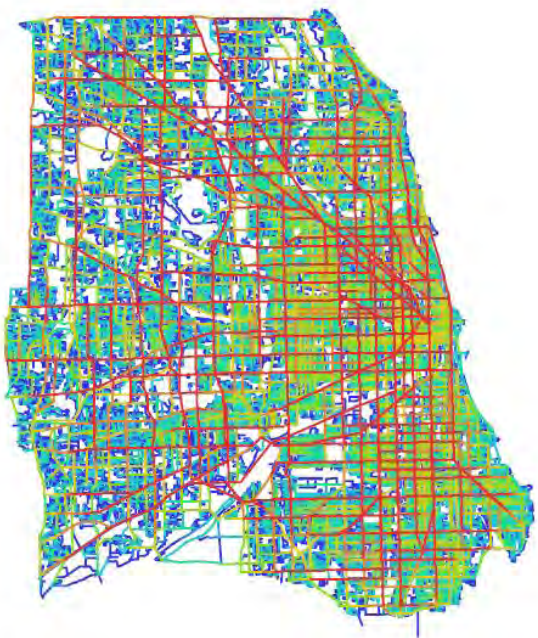


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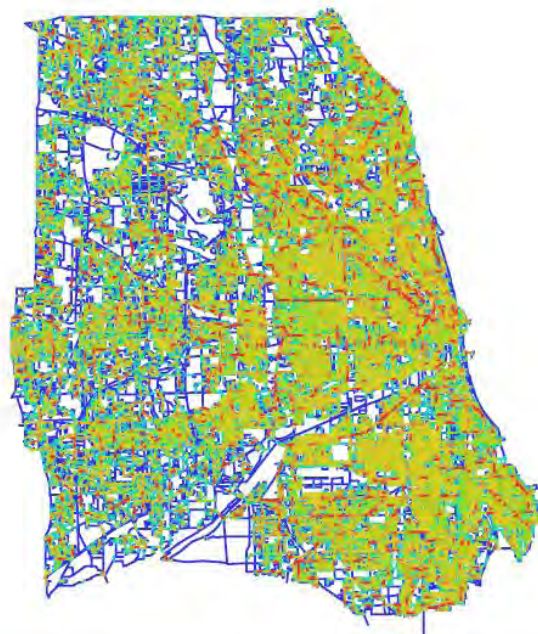


1km





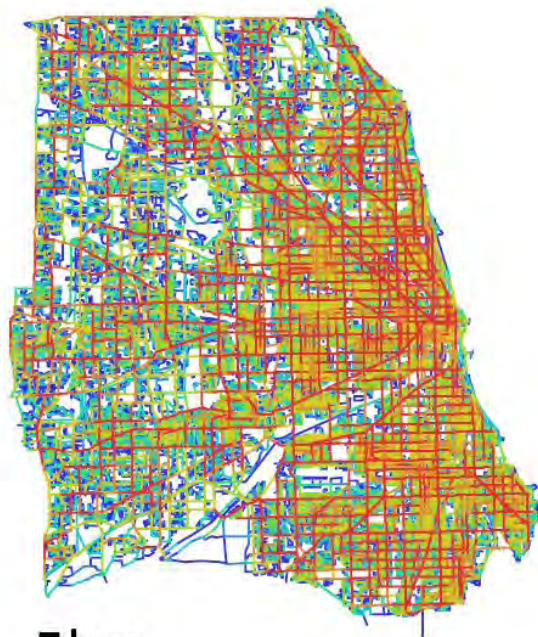
n



1km



n



5km



5km



1km

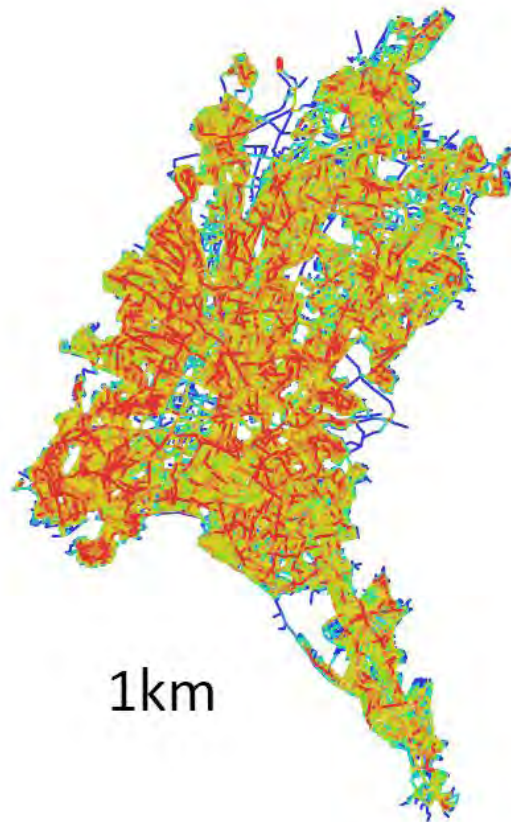




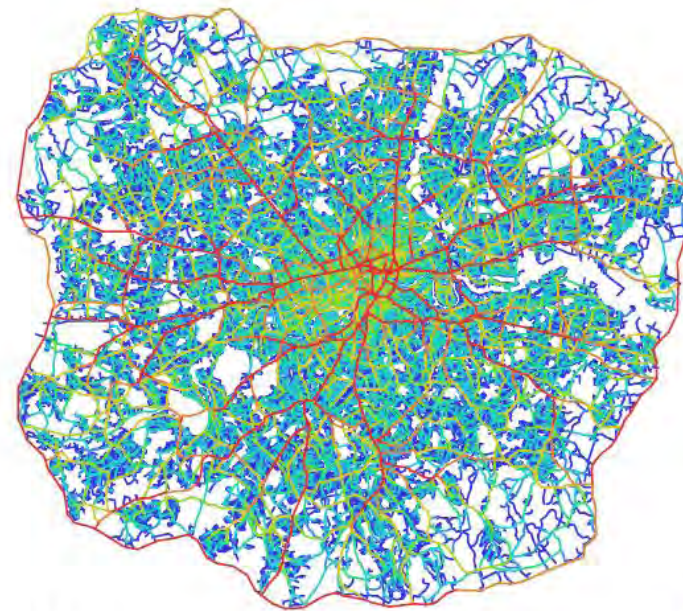
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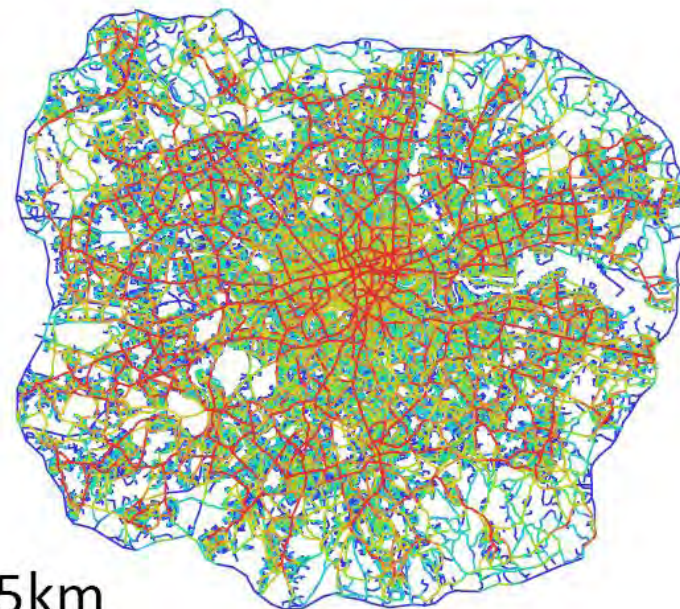
5km



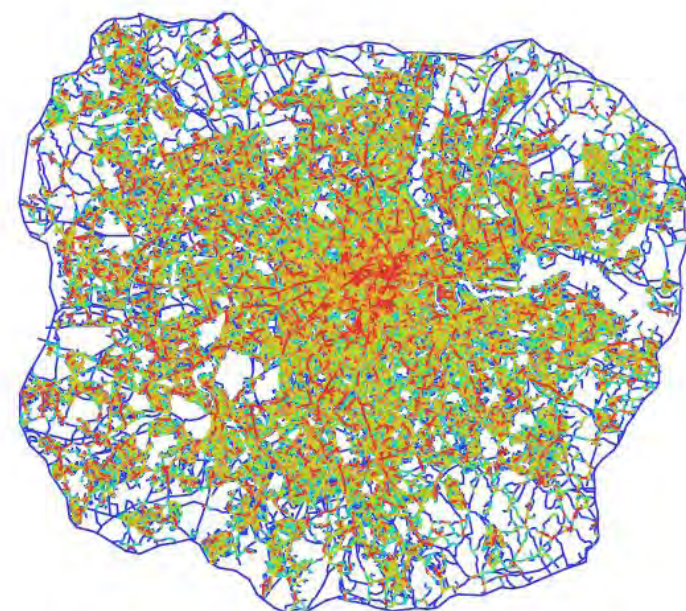
1km



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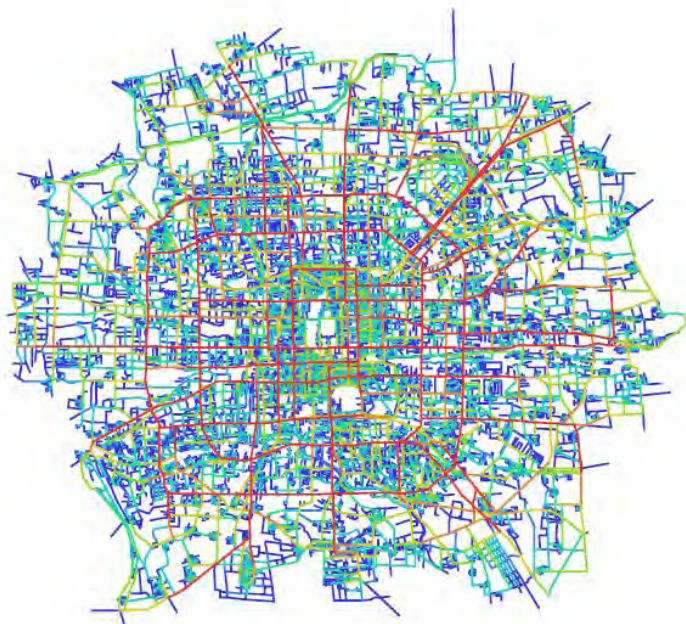


5km

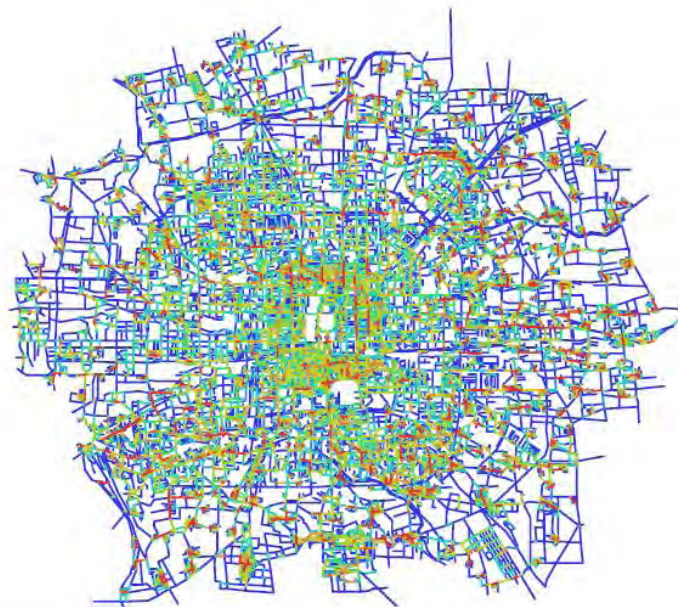


1km





n



1km



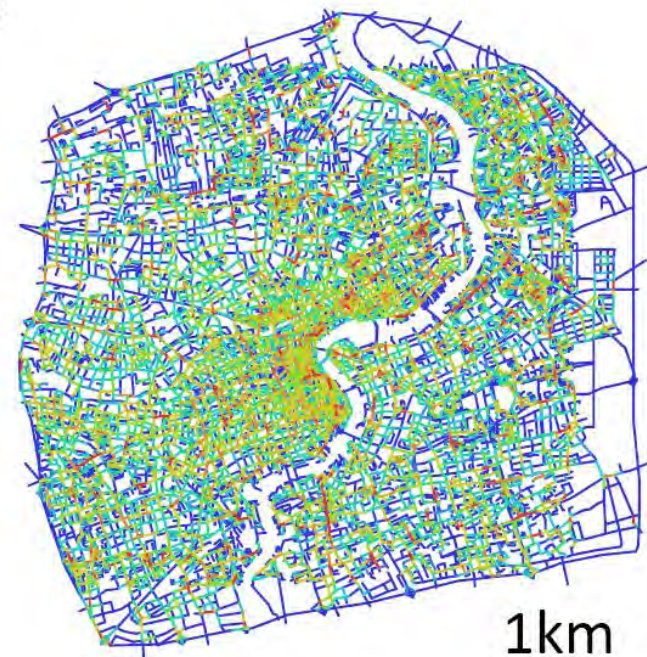
n



5km

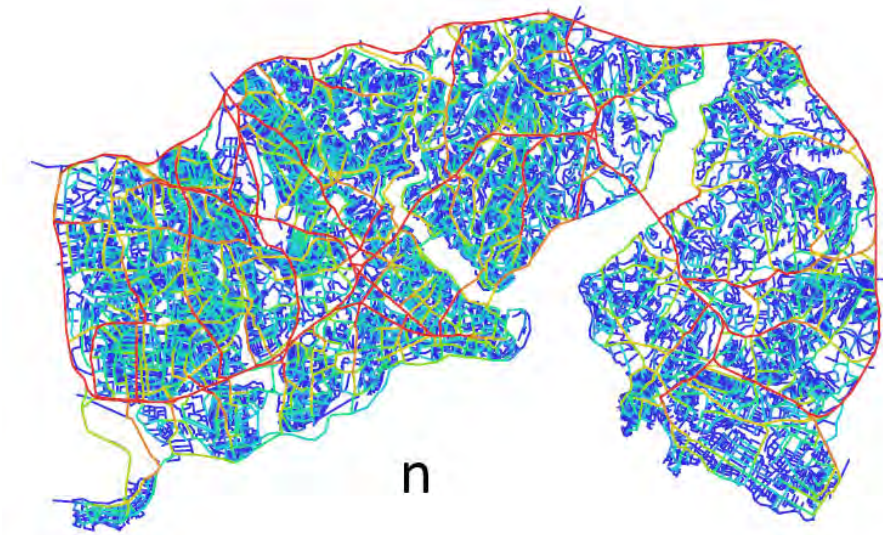


5km

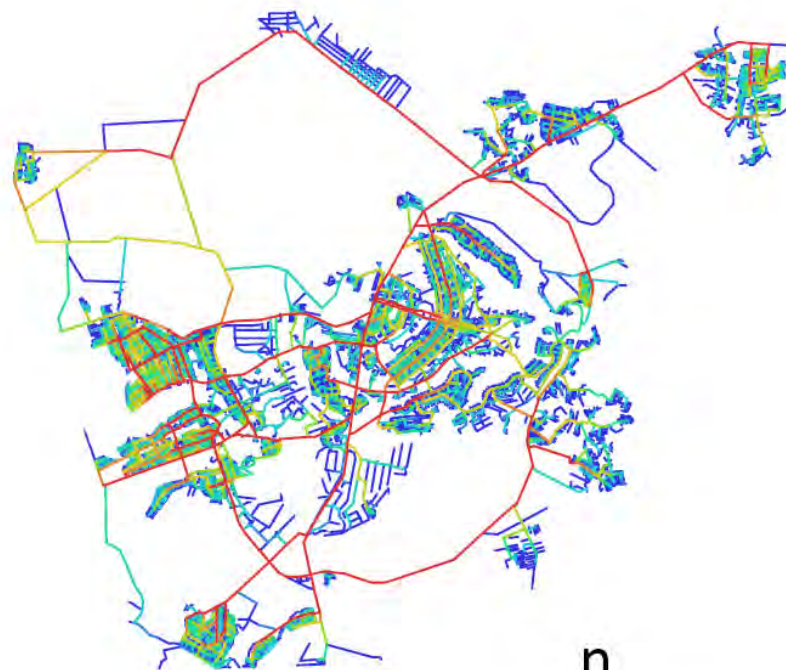


1km

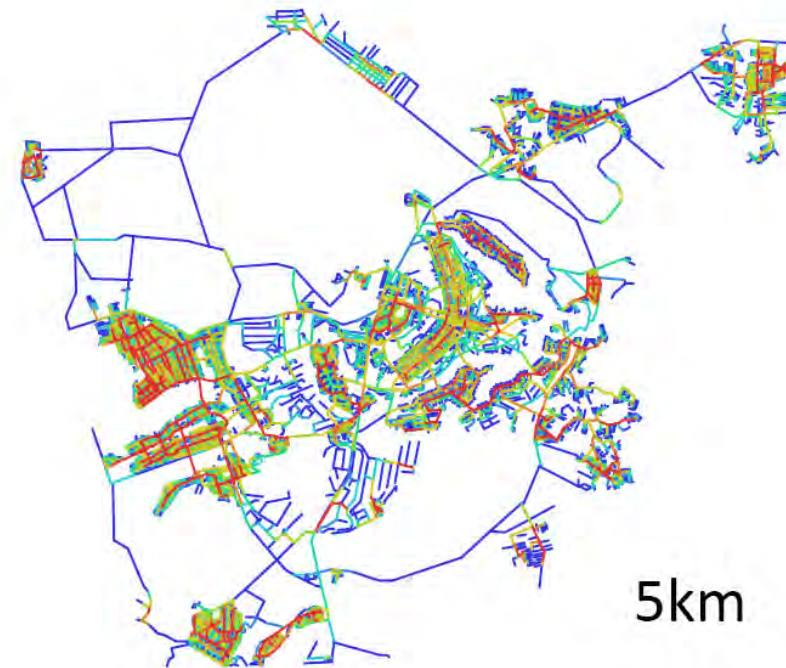




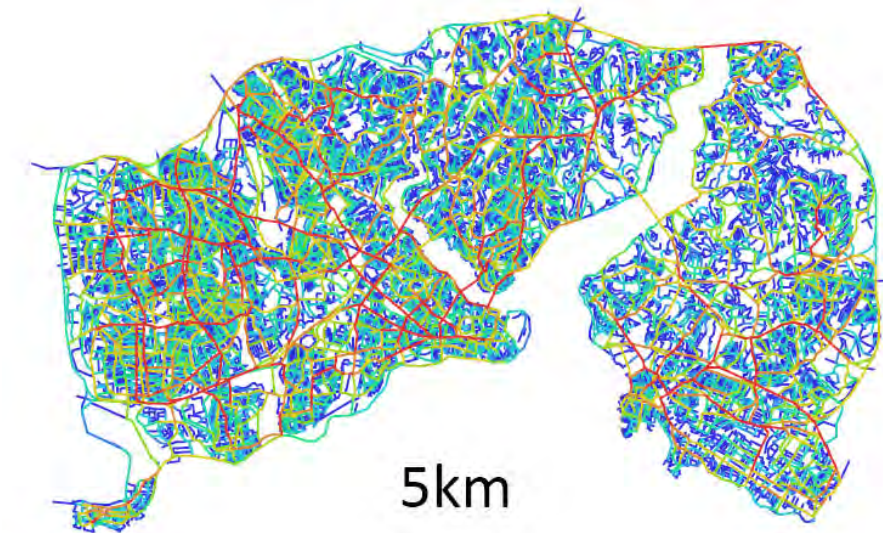
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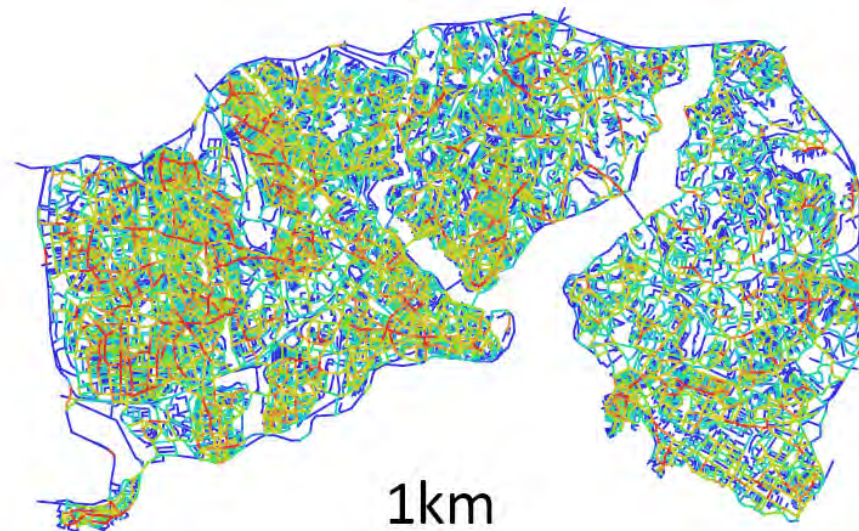
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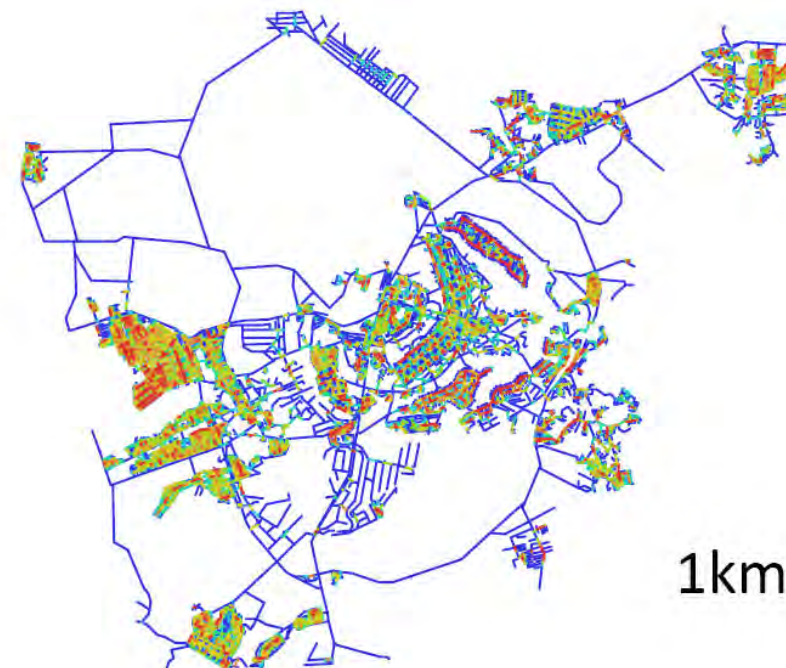
5km



5km



1km



1km

曼哈顿——威尼斯      线性空间

芝加哥——东京      正交网格与极坐标网格

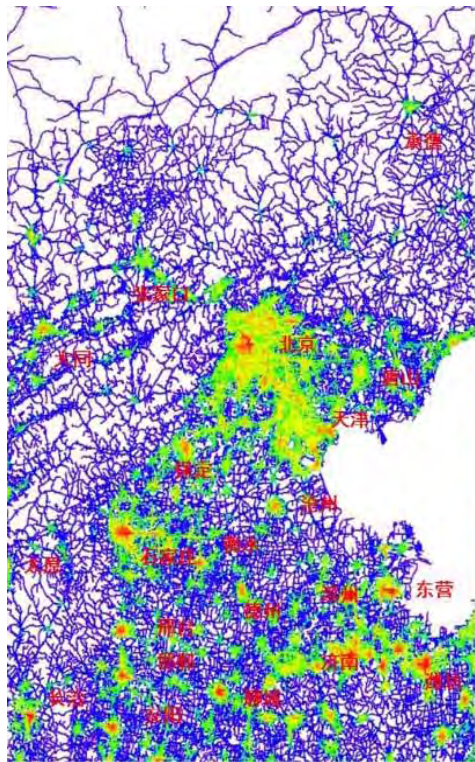
雅典——伦敦      多重的放射状结构

北京——上海      强环+弱放射

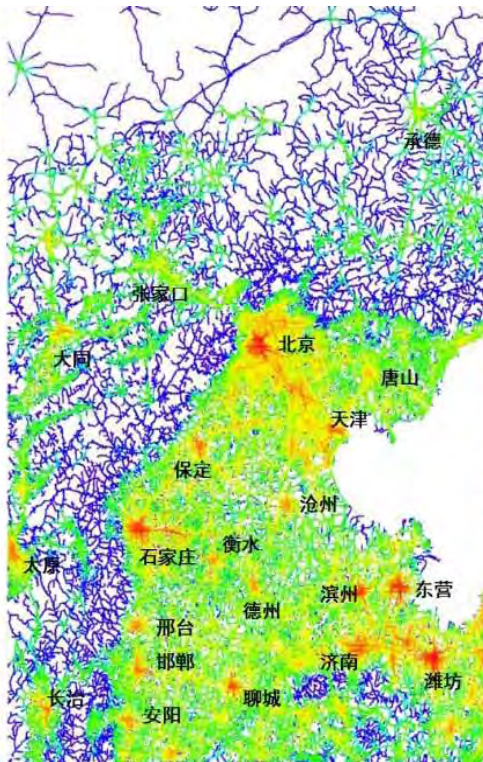
伊斯坦布尔——巴西利亚      自由分散组团

良好的城市空间网络结构依赖于不同尺度的高效率空间彼此有机地连接在一起，同时在同一尺度下不同效率的空间适度协同，形成空间效率精细叠加的空间网络形态。

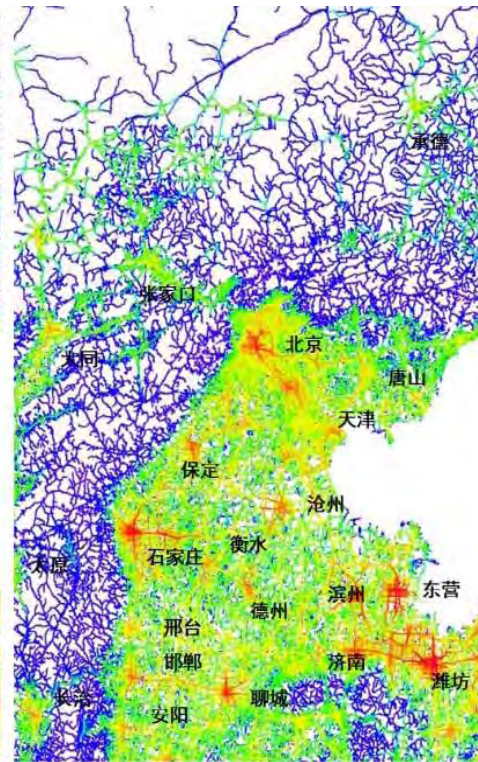




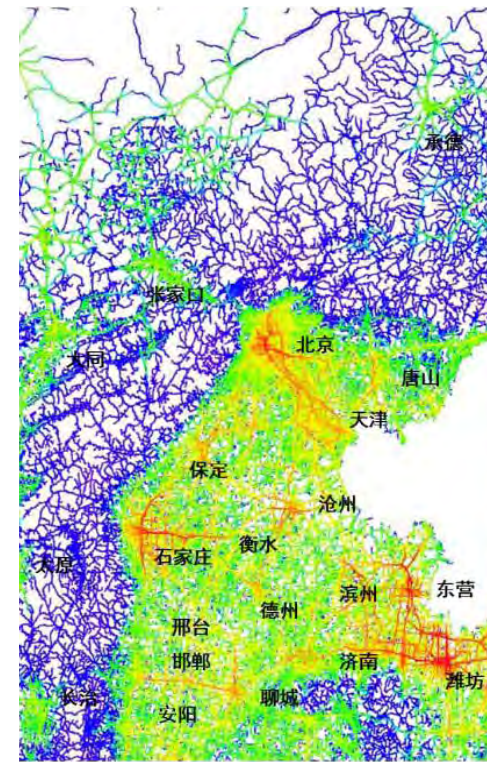
10km



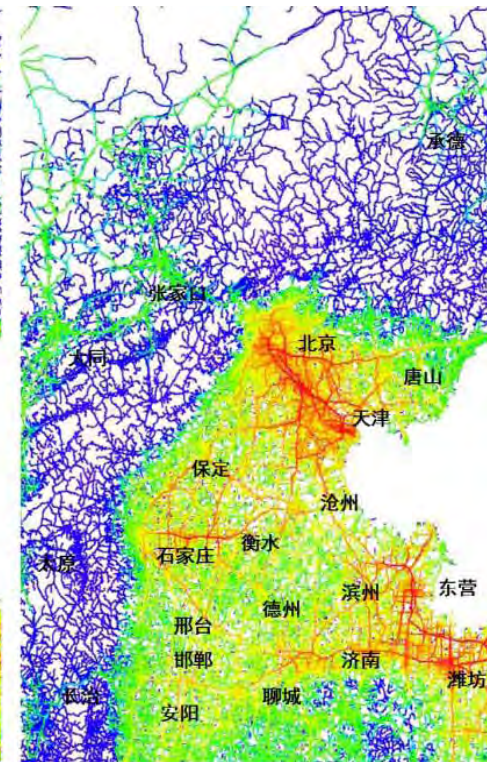
20km



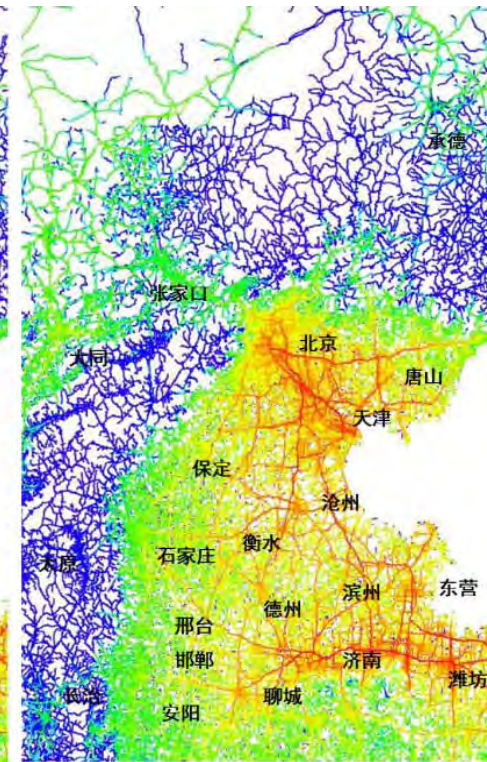
30km



50km

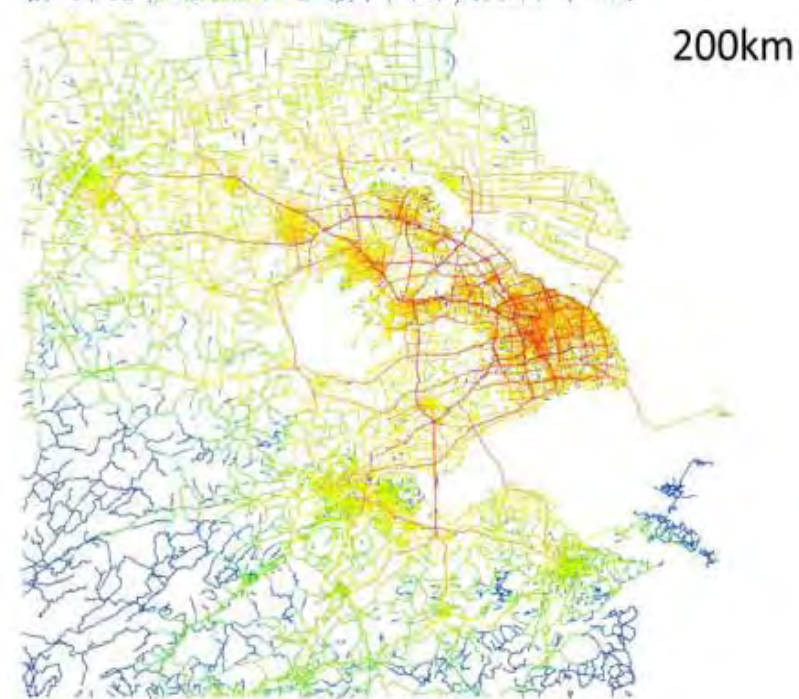
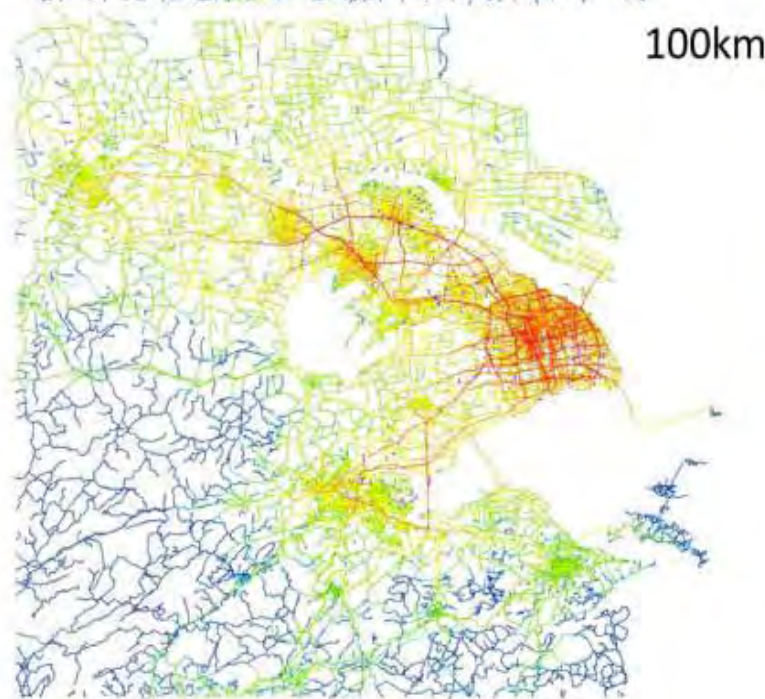
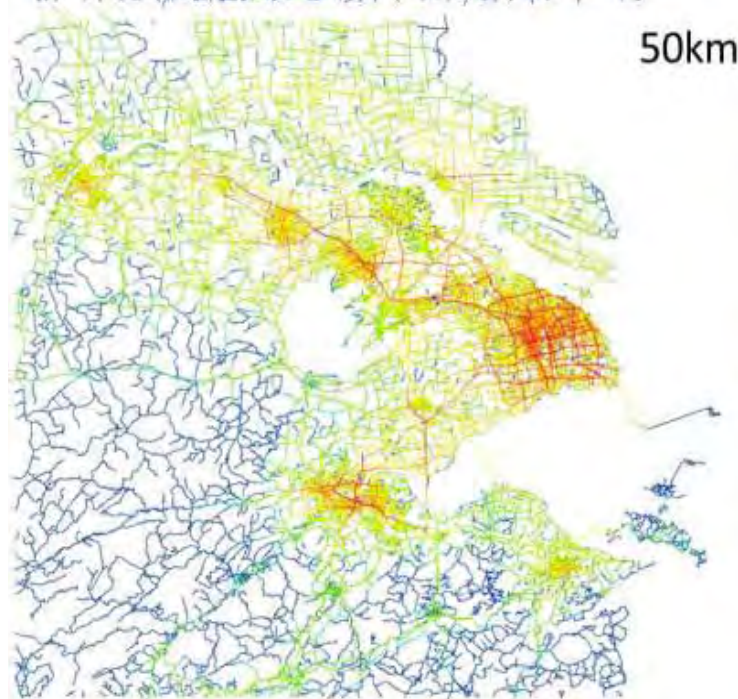
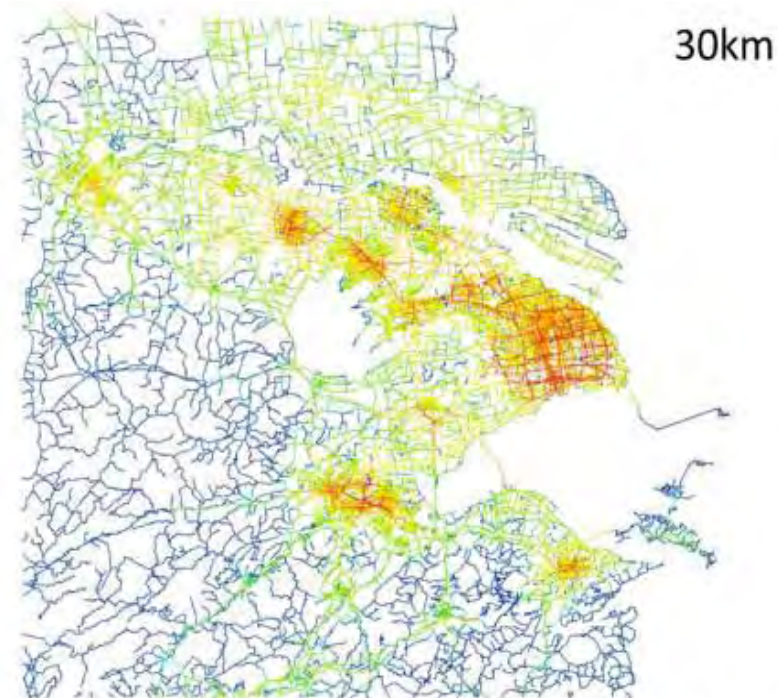
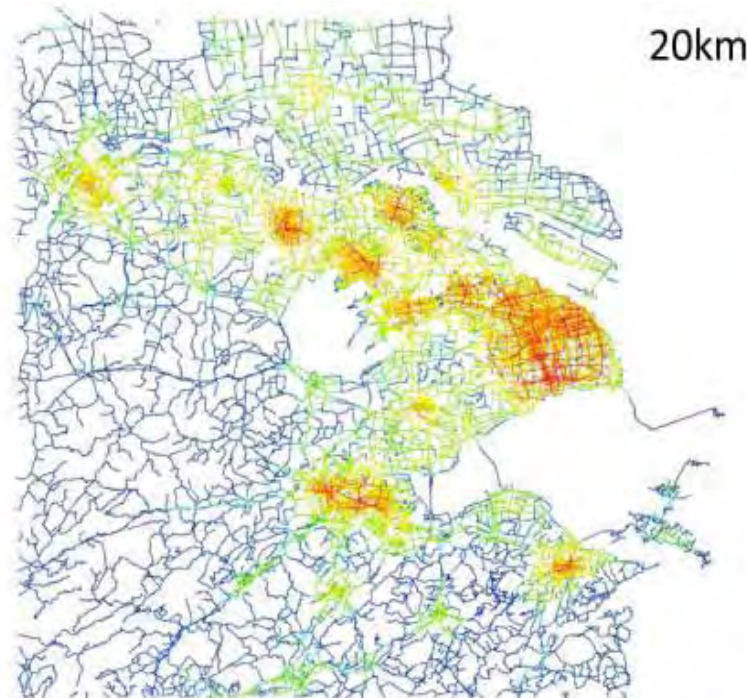
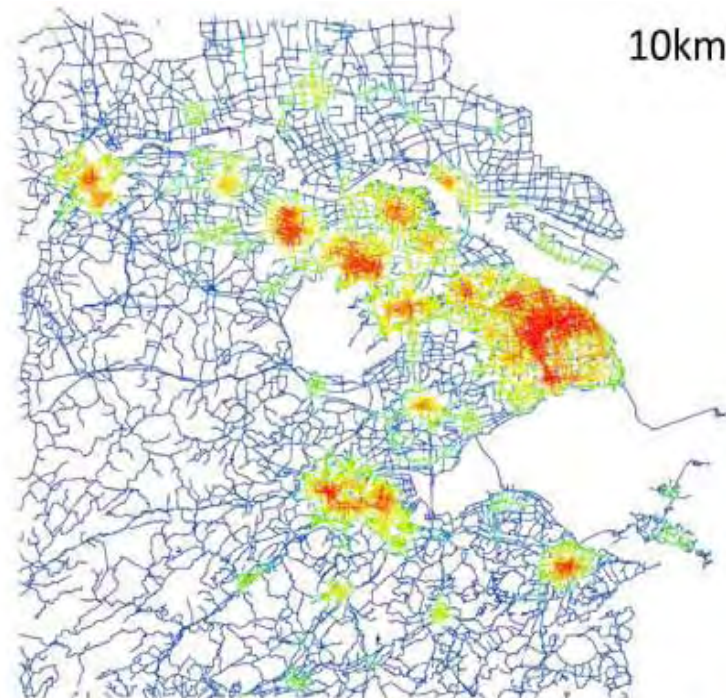


100km

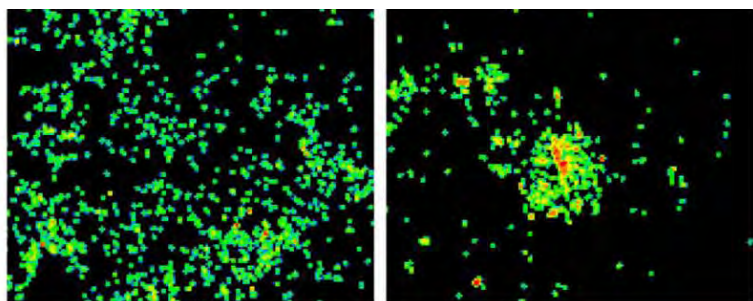


200km

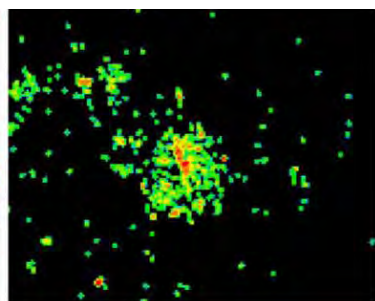




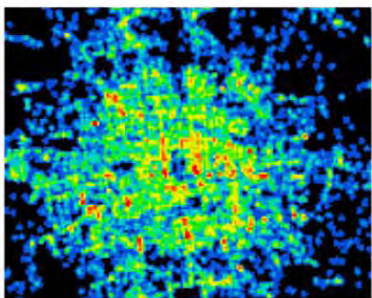




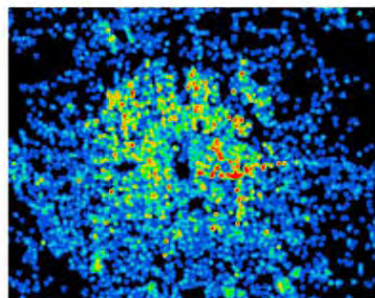
工业



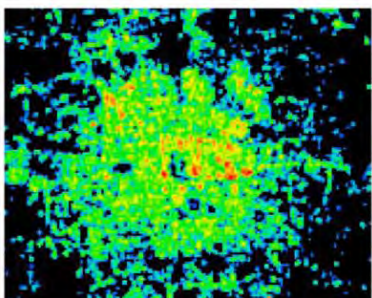
旅游景点



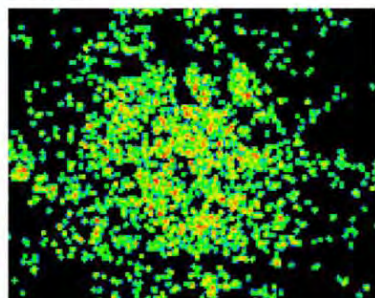
商业



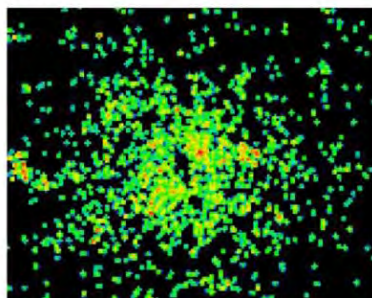
商务办公



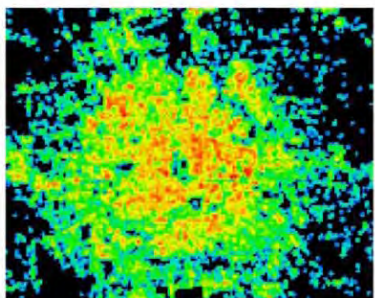
餐饮



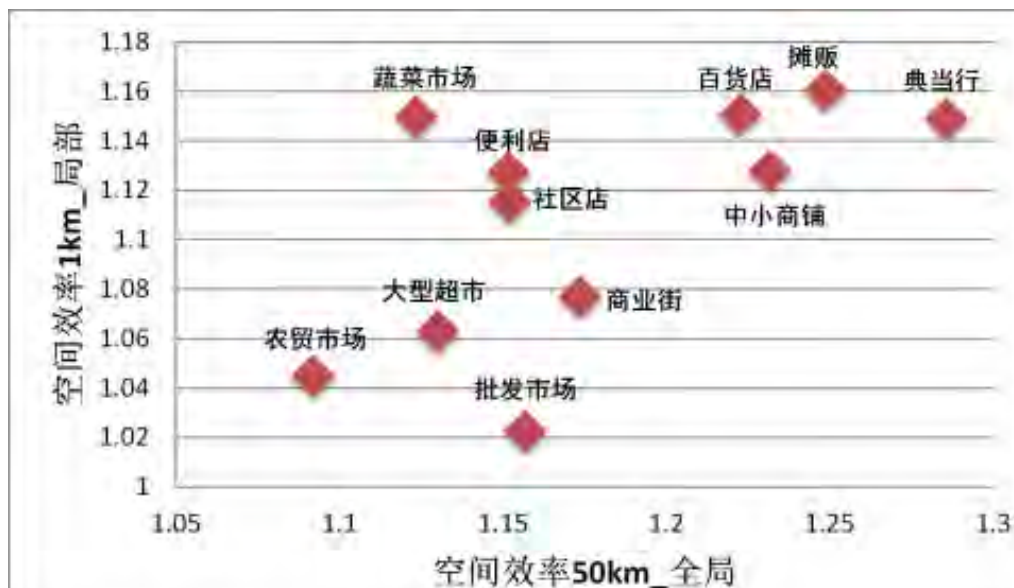
中小学



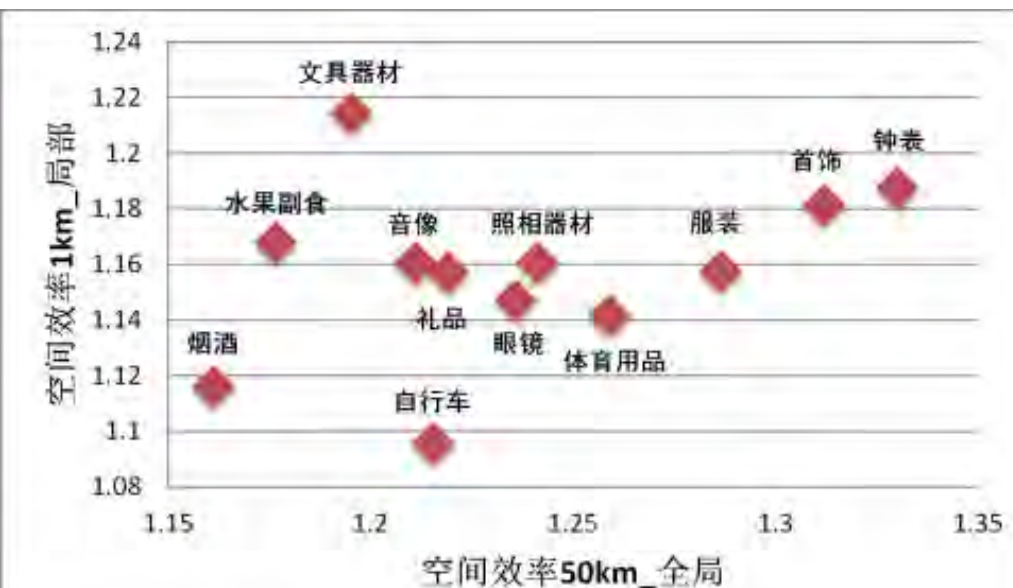
行政机构



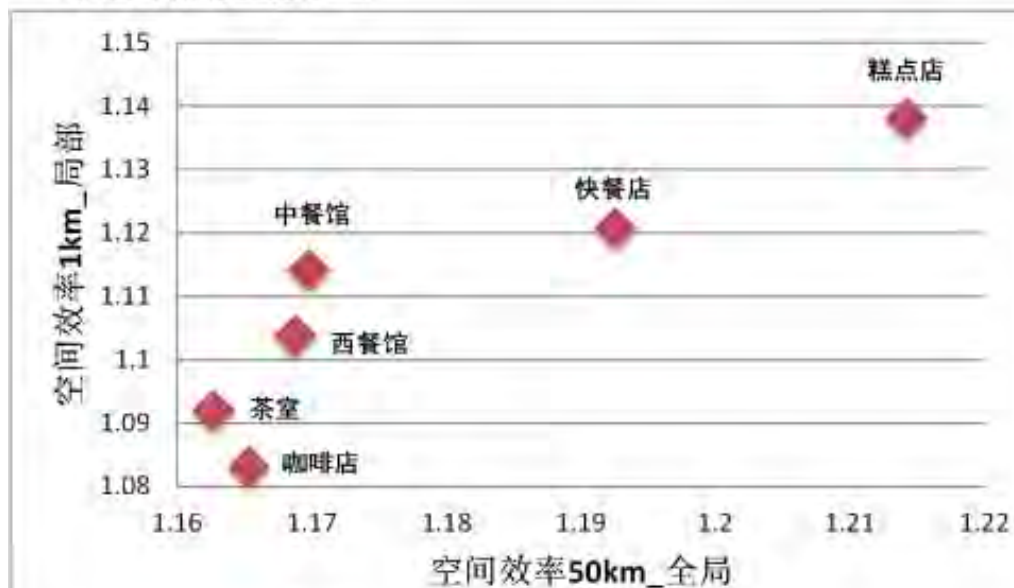
公共服务设施



a) 各种商业类型



b) 中小型商铺

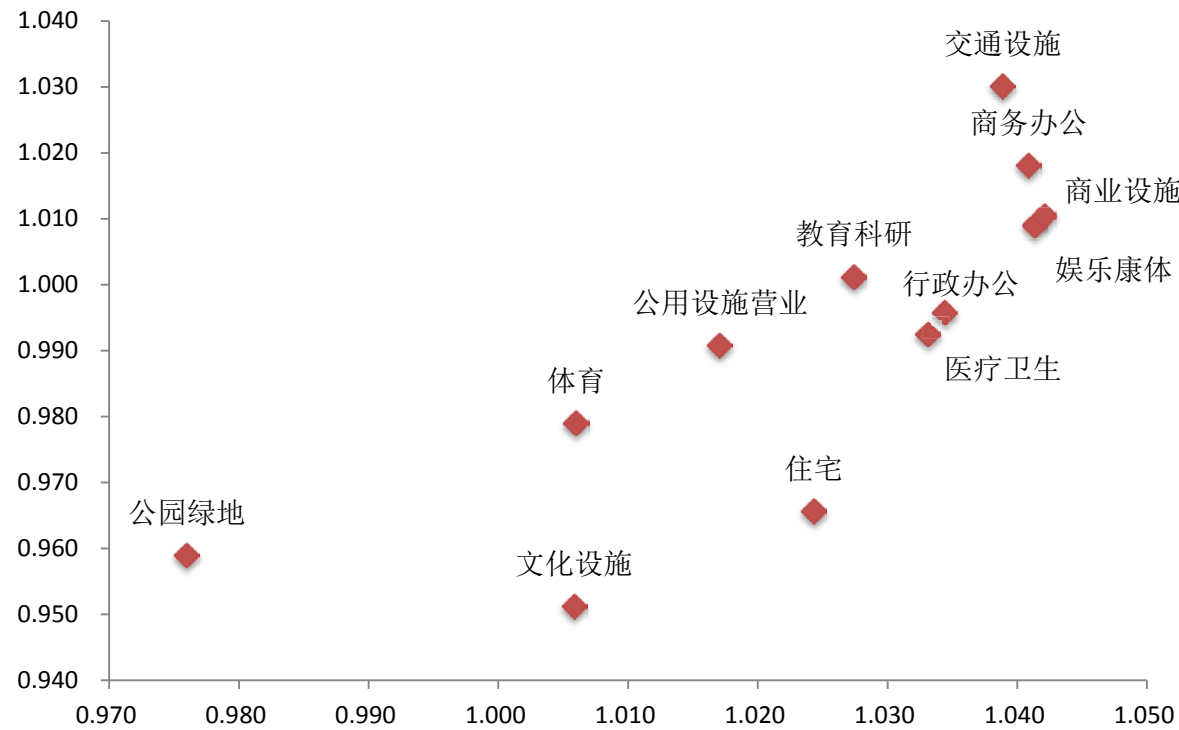


c) 各种餐饮类型

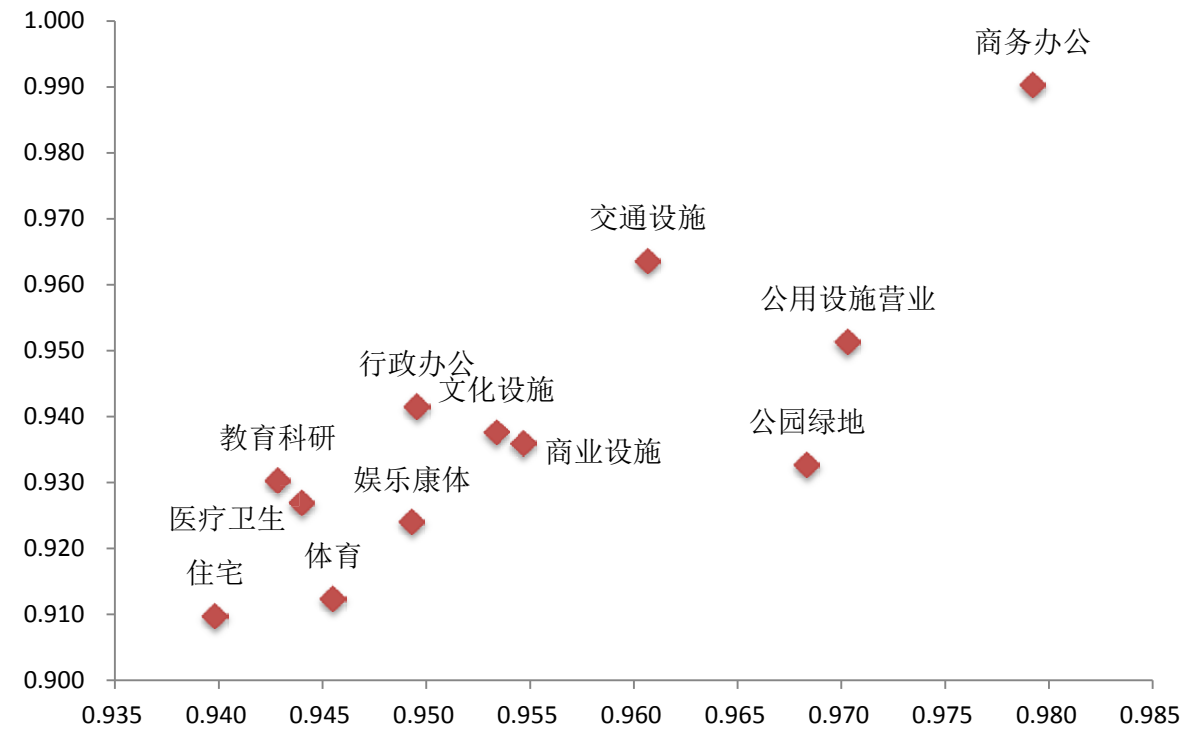


d) 各种娱乐设施

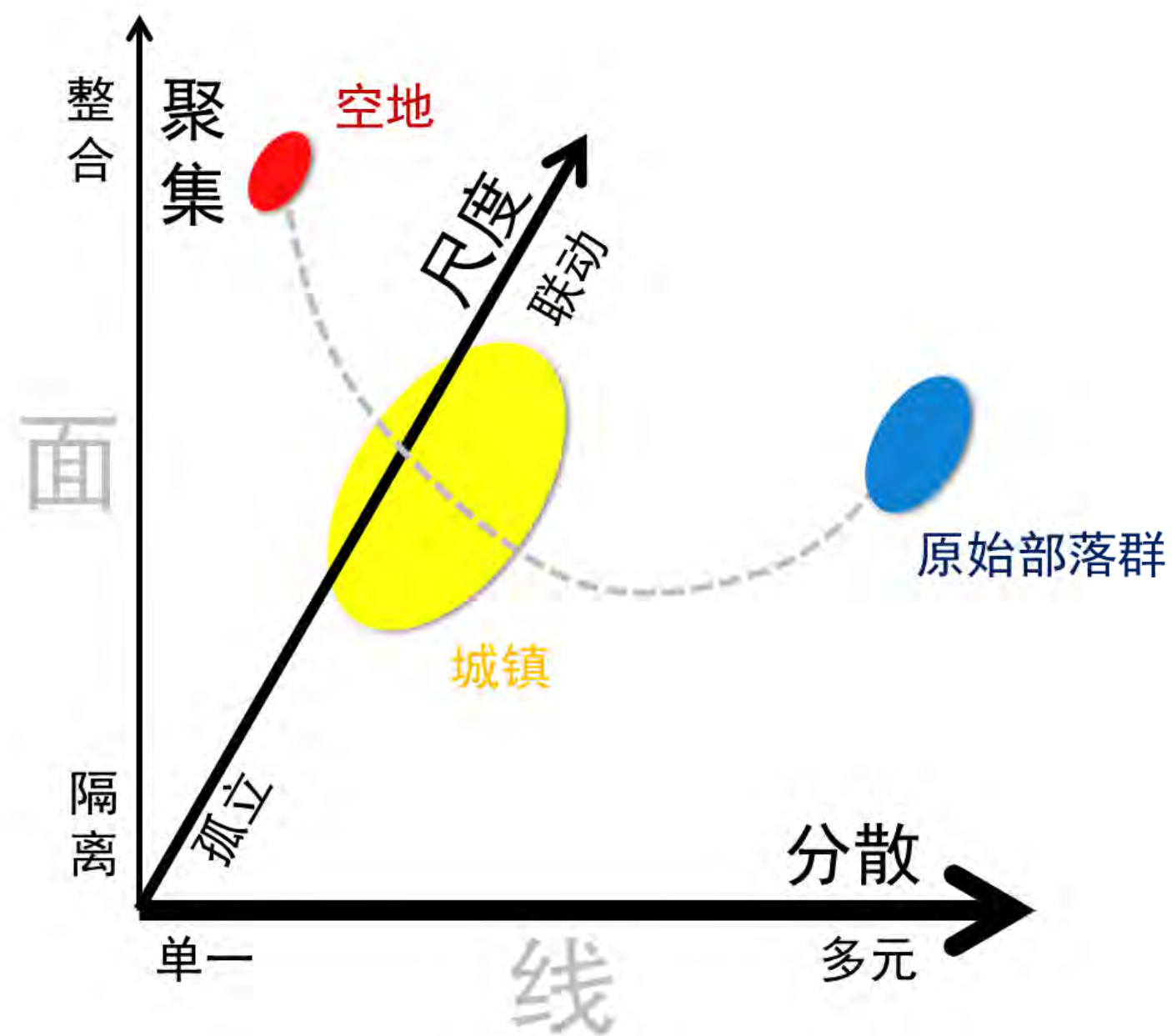


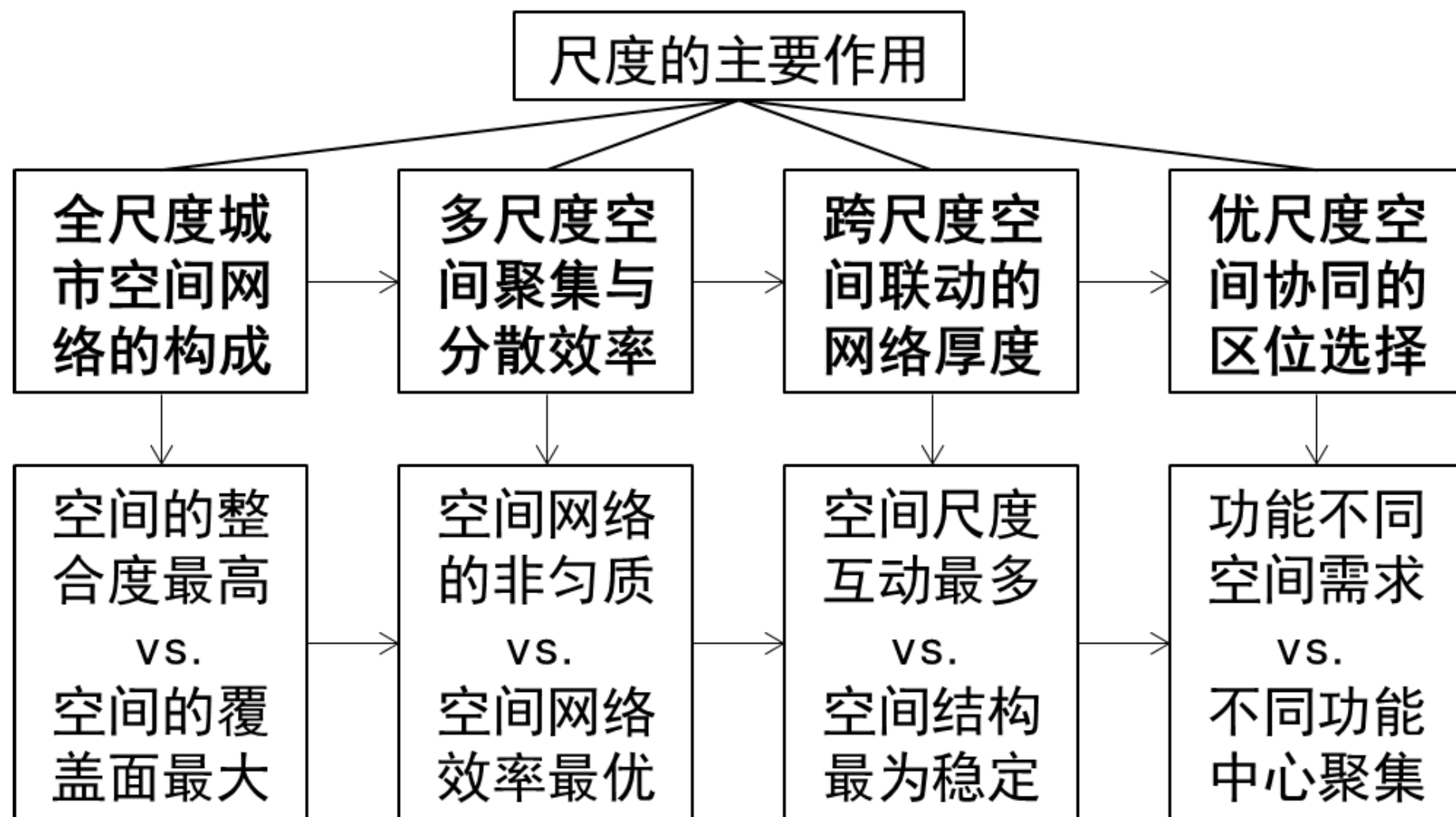


成都



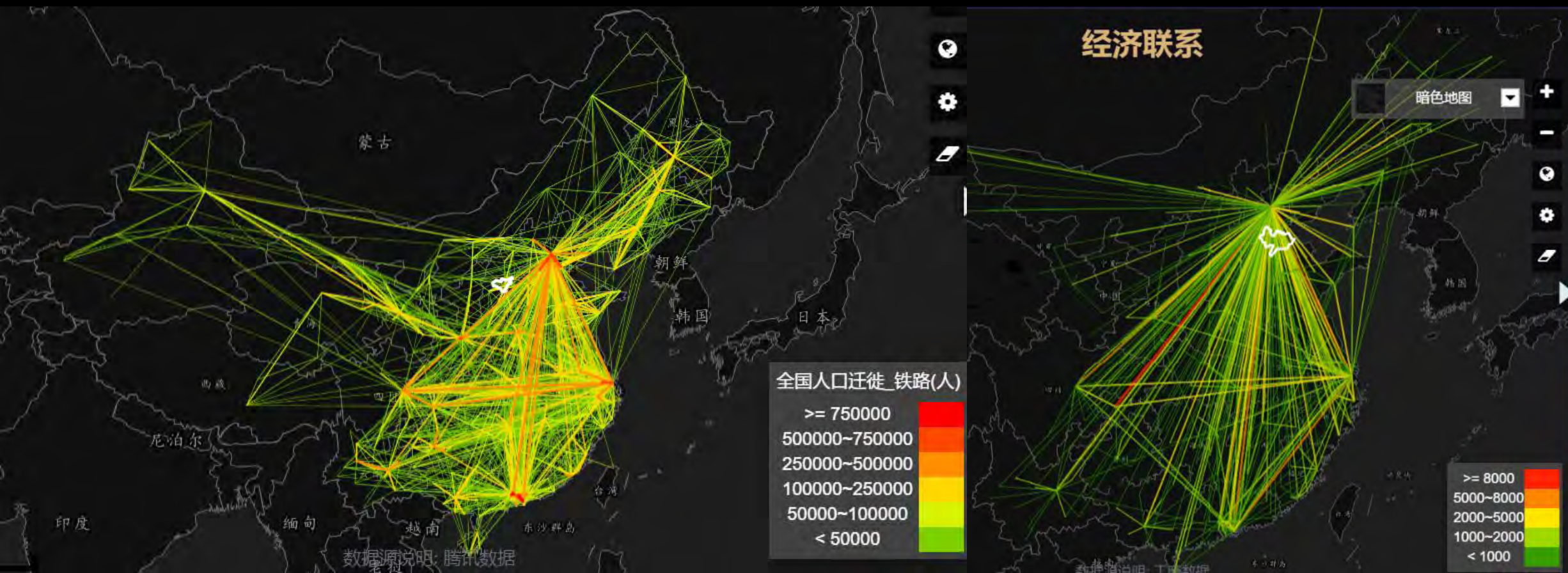
上海



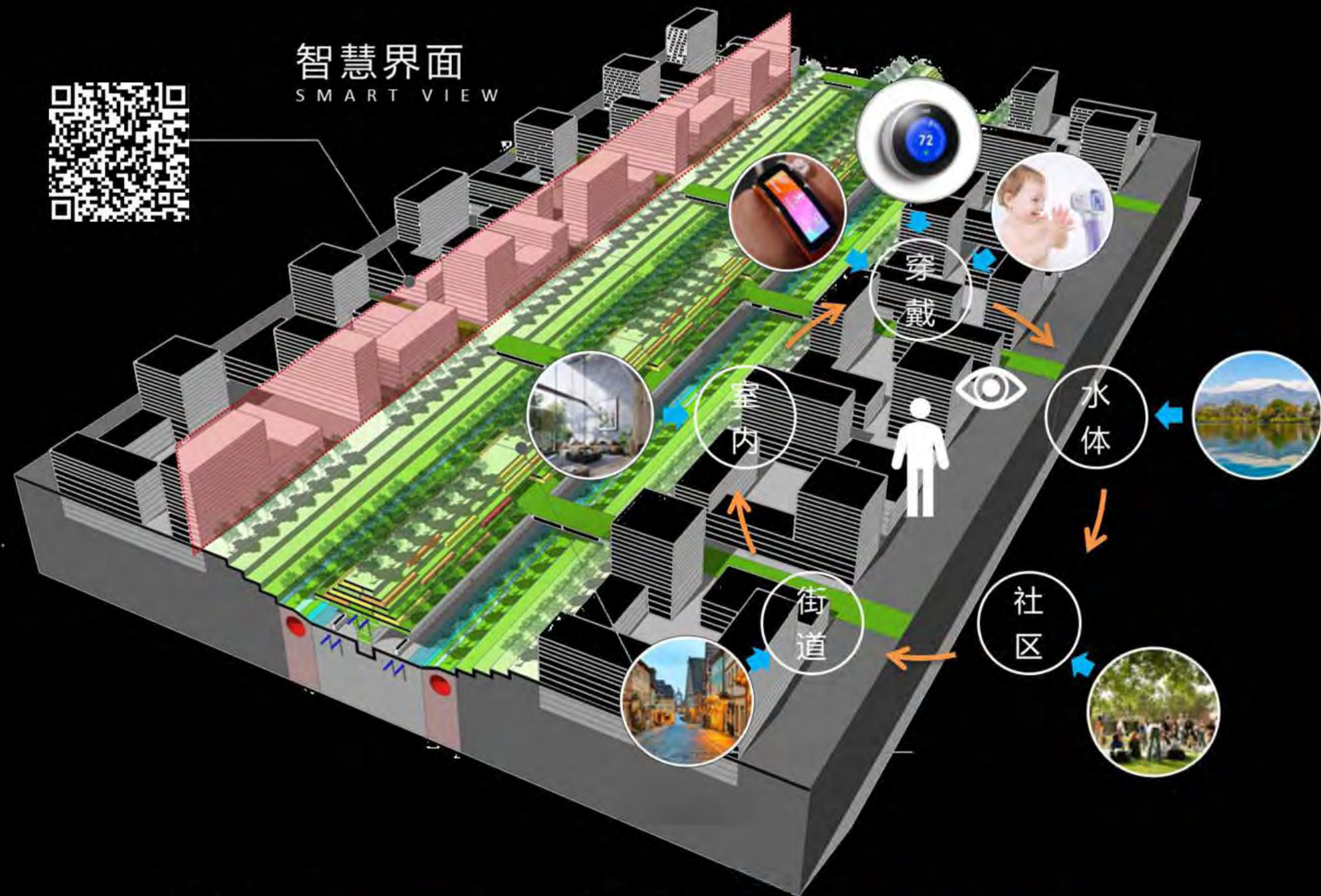




# 全国人口与经济协同







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城市设计

## 超大街区设计的多样性与尺度

约翰·皮珀尼斯 封 晨 詹姆斯·朴  
杨 滔 [译]

## Diversity and Scale in Superblock Design

John Peponis, FENG Chen, James Park  
Translated by YANG Tao (from English to Chinese)

### 摘要

超大街区是由主干道所围合的较大城市地区。在世界很多城市中，这种类型的街坊是城市化的组成单元。城市中超大街区出现的限制因素较为多元，包括用地和体验尺度等。我们从这些角度比较了超大街区设计不同形态特征，从而证明这种设计的突现原则可用于创造丰富多彩且较为整合的城市，支持社会与文化的开放性。

### 关键词：

超大街区, 空间句法, 尺度, 形态多样性, 形态类型

### Abstract:

Superblocks, defined as larger urban areas surrounded by arterial streets, emerge as organizing units of urbanism in many parts of the world. We compare different morphologies of superblock design from the point of view of the diversity of urban conditions that they engender, including land uses and the scale of experiences. We identify an emerging principle of superblock design that can generate richly diversified and integrated cities, supporting social and cultural openness.

**Key words:** Superblocks Space syntax Scale Morphological diversity  
Morphological types

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谢谢聆听