International Journal of Geo-Information

MDPI

Article

The potential impact of cycling on urban transport energy and modal share: a GIS-based methodology

Supplementary Materials

1. Sensitivity Analysis on L_{kj} and job data statistics.

Table S1. Active modal share summarizing statistics.

Active modal share per inhabitant (%)		Urban facilities		Urban facilities and jobs	
L_{kj}	Measure	full cycling	no cycling	full cycling	no cycling
70/20/10	Min	3.3	0.5	3.5	0.4
	Max	94.3	71.8	73.7	48.0
	Average	45.8	18.6	35.6	12.7
	Average per inhabitant	55.3	24.7	42.6	16.8
	Standard deviation	24.9	15.9	18.7	10.6
	Coef. of variation	0.54	0.9	0.52	0.87
50/35/15	Min	92.9	69.6	73.2	46.7
	Max	3.2	0.4	3.4	0.4
	Average per inhabitant	53.9	23.5	41.7	16.0
	Average	44.5	17.6	34.8	12.1
	Standard deviation	24.5	15.3	18.5	10.2
	Coefficient of variation	55%	87%	55%	83%

Citation: Materials, S. The potential impact of cycling on urban transport energy and modal share: a GIS-based methodology. *ISPRS Int. J. Geo-Inf.* **2023**, *11*, 48. https://doi.org/10.3390/ijgi12020048

Academic Editor(s): Wolfgang Kainz and Hartwig H. Hochmair

Received: 26 October 2022
Revised: 29 January 2023
Accepted: 30 January 2023
Published: 10 February 2023



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Table S2. Modal share and fossil energy spending to jobs only.

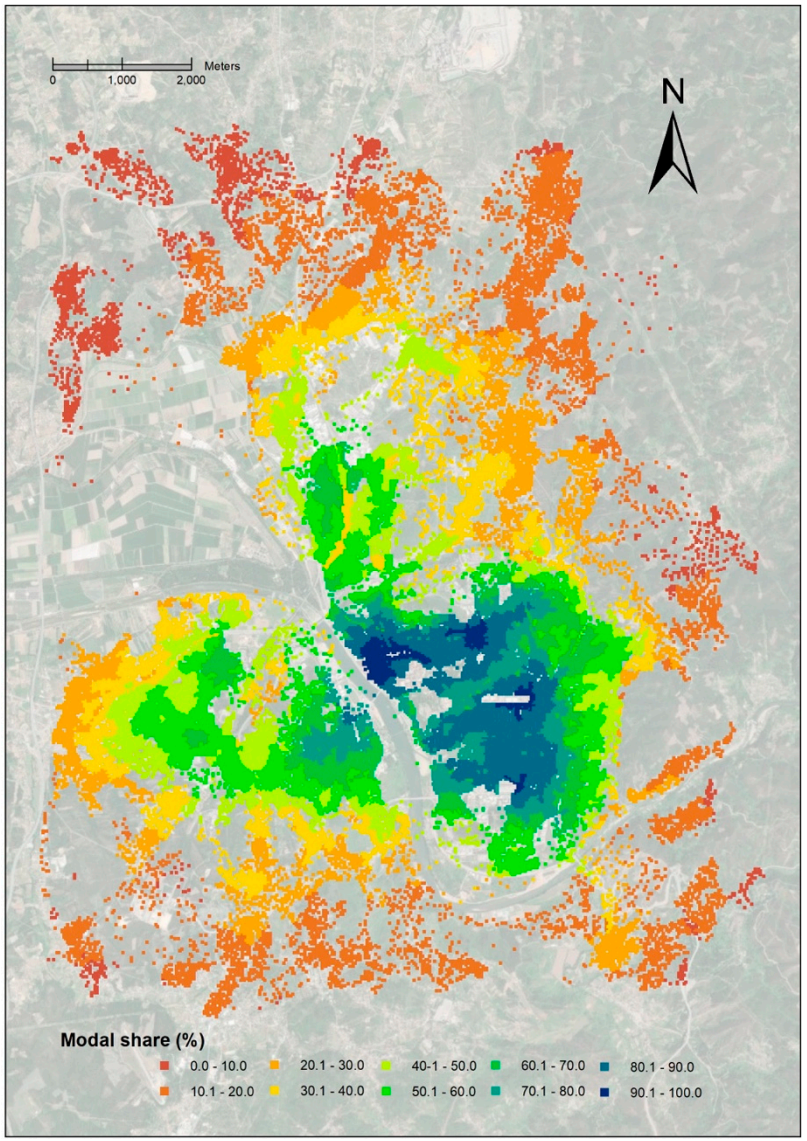
Transport fossil energy spending (MJ/passenger-trip)		Urban facilities		Urban facilities and jobs	
L_{kj}	Measure	full cycling	no cycling	full cycling	no cycling
70/20/10	Min	0.19	0.69	3.29	5.32
	Max	35.37	36.34	46.16	47.59
	Average	6.70	8.18	13.54	15.88
	Average per inhabitant	4.53	5.90	10.69	13.01
	Standard deviation	6.17	6.21	7.97	7.69
	Coef. of variation	0.92	0.76	0.59	0.48
50/35/15	Min	0.24	0.85	3.34	5.38
	Max	35.85	36.89	46.47	47.94
	Average per inhabitant	4.75	6.16	10.82	13.17
	Average	6.97	8.48	13.71	16.08
	Standard deviation	6.27	6.31	7.94	7.75
	Coefficient of variation	90%	74%	58%	48%

Table S3. Modal share and fossil energy spending to jobs only.

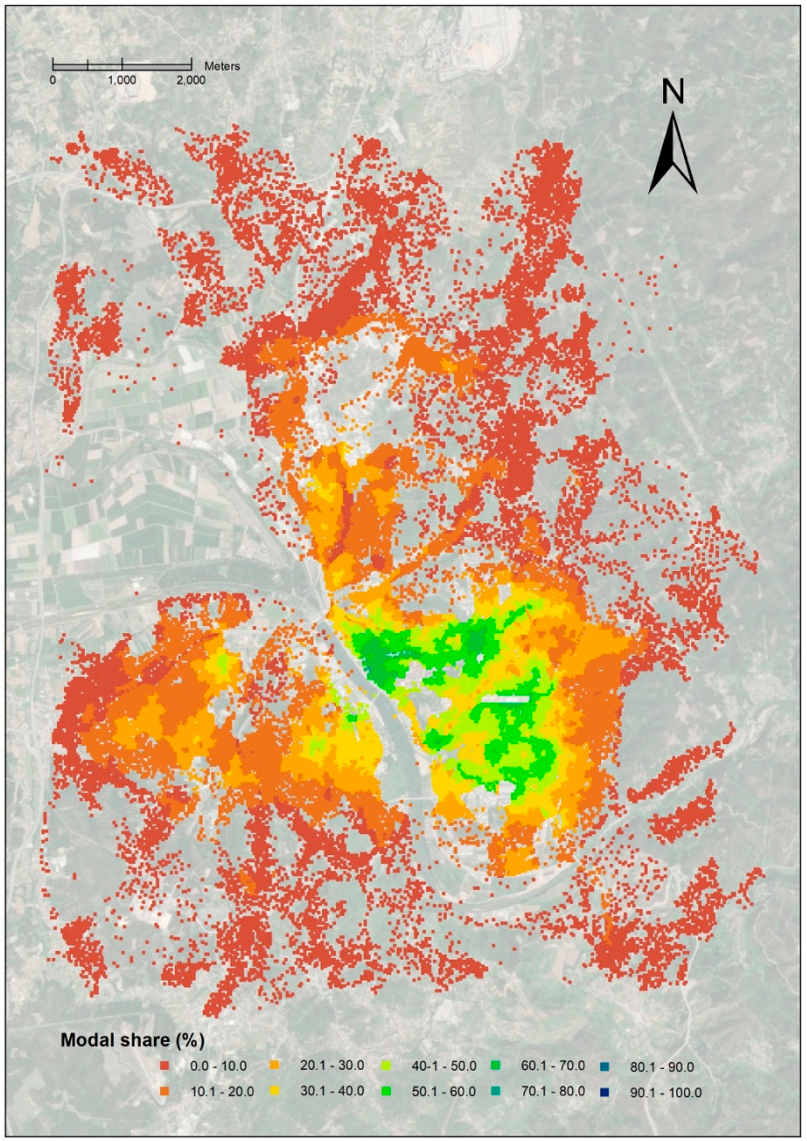
Accessibility to jobs only	Active modal share per inhabitant (%)		Transport fossil energy spending (MJ/passenger-trip)	
Measure	full cycling	no cycling	full cycling	no cycling
Min	3.8	0.4	8.55	13.21
Max	40.1	7.5	64.81	67.03
Average	18.0	2.7	25.39	29.2
Average per inhabitant	21.2	3.9	23.25	27.47
Standard deviation	8.7	1.6	11.15	10.55
Coef. of variation	48%	59%	44%	36%

2. Full maps for L_{kj} = 70/20/10.

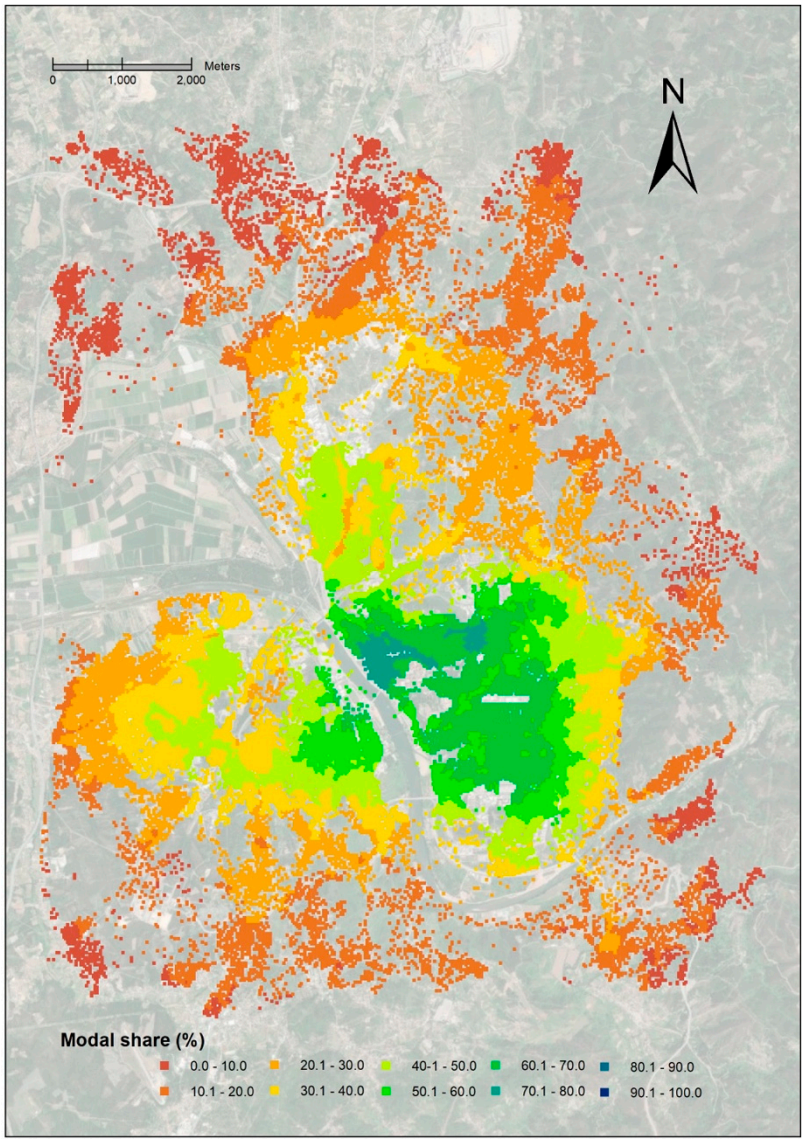
The maps below are full/no-cycling modal share and energy spending maps for three types of accessibility trips: urban facilities, facilities plus jobs, and jobs only. Differential maps between scenarios are also presented for the two indicators.



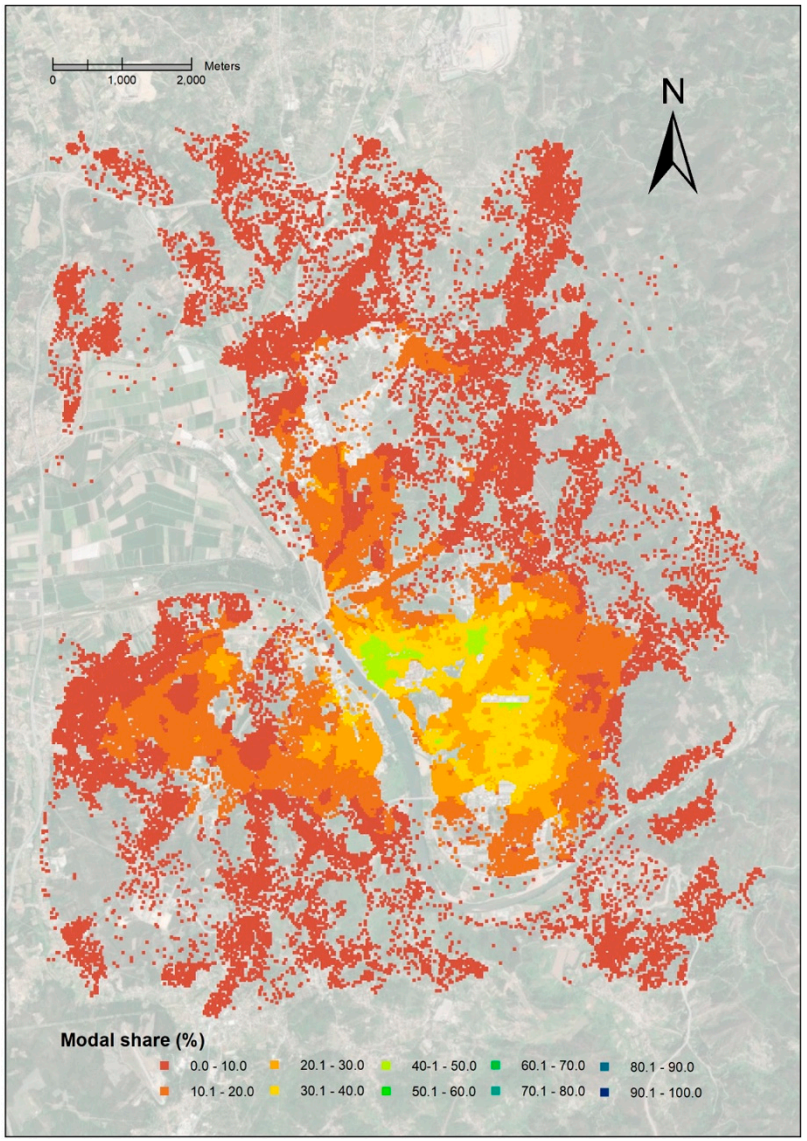
(S1**a**) Full cycling modal share to urban facilities.



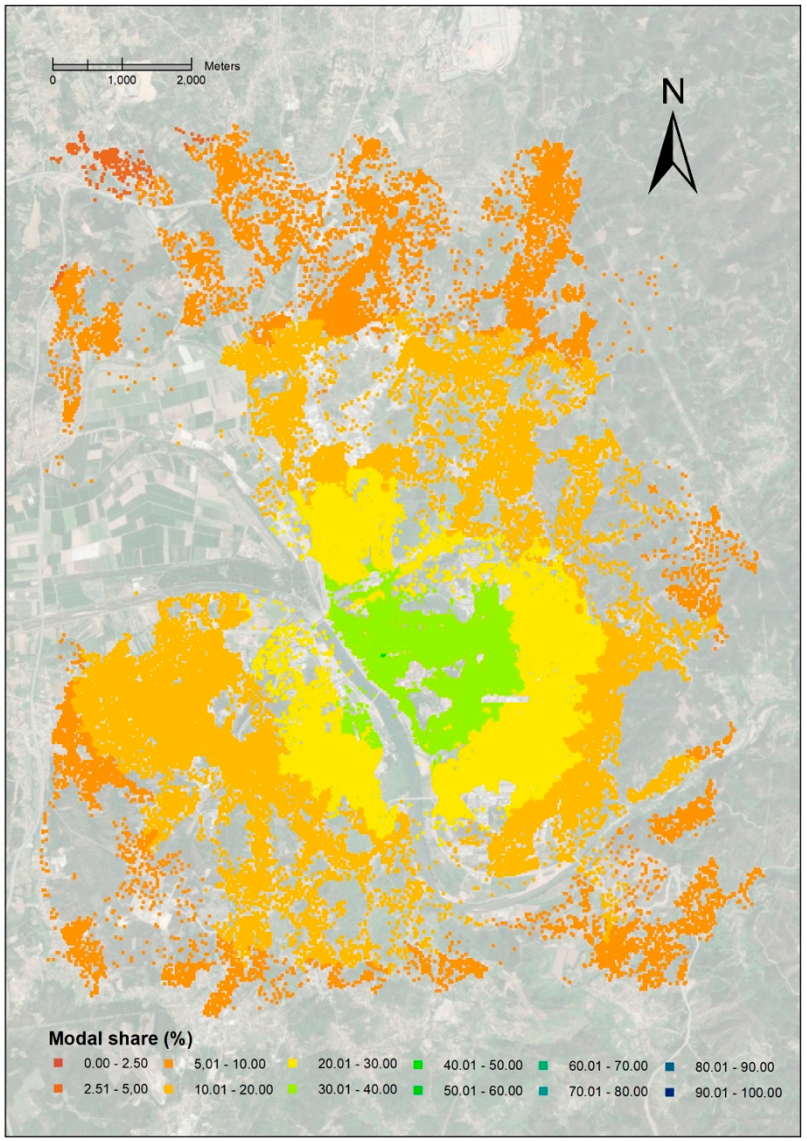
(S1**b**) No cycling modal share to urban facilities.



(S2a) Full cycling modal share to urban facilities plus jobs.



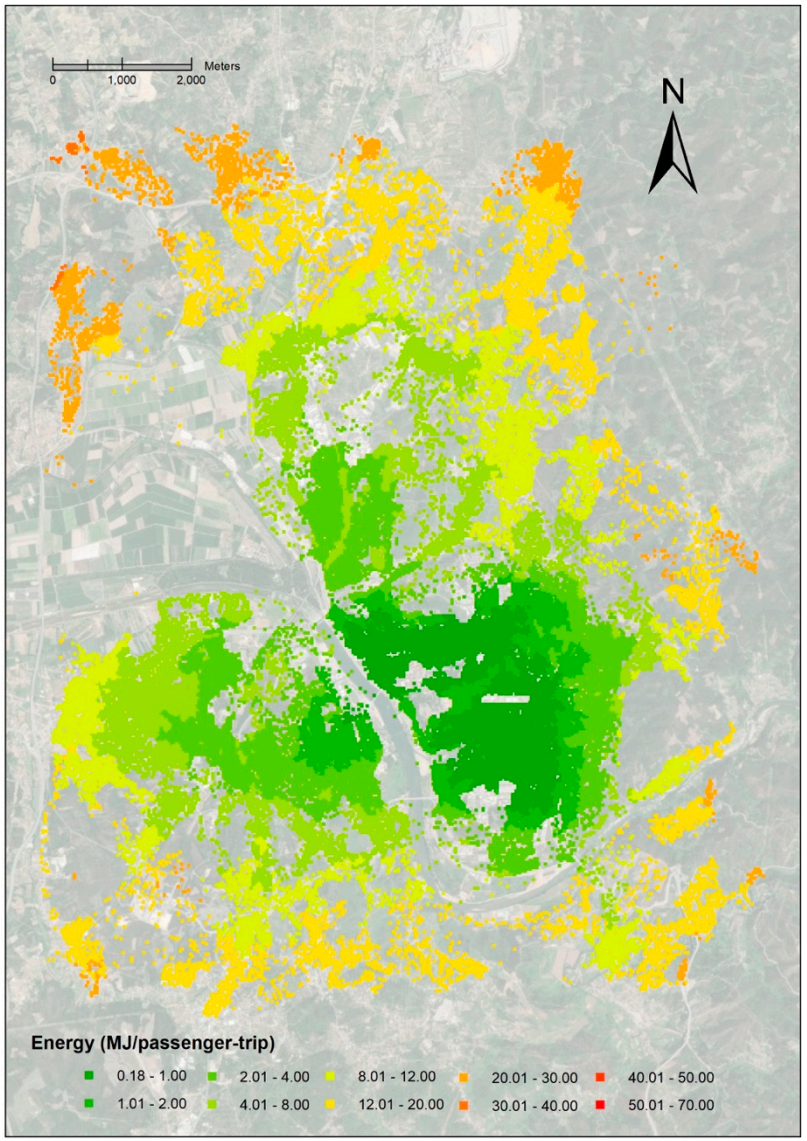
(S2b) No cycling modal share to urban facilities plus jobs.



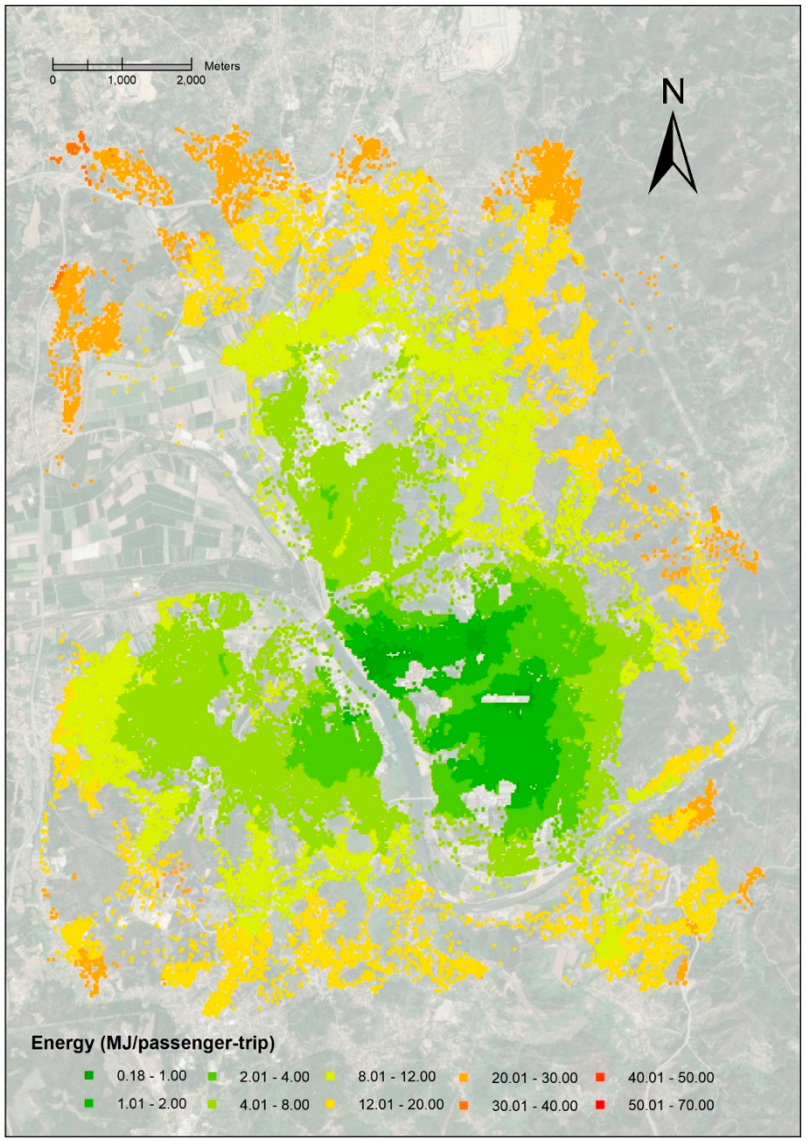
(S3a) Full cycling modal share to jobs.



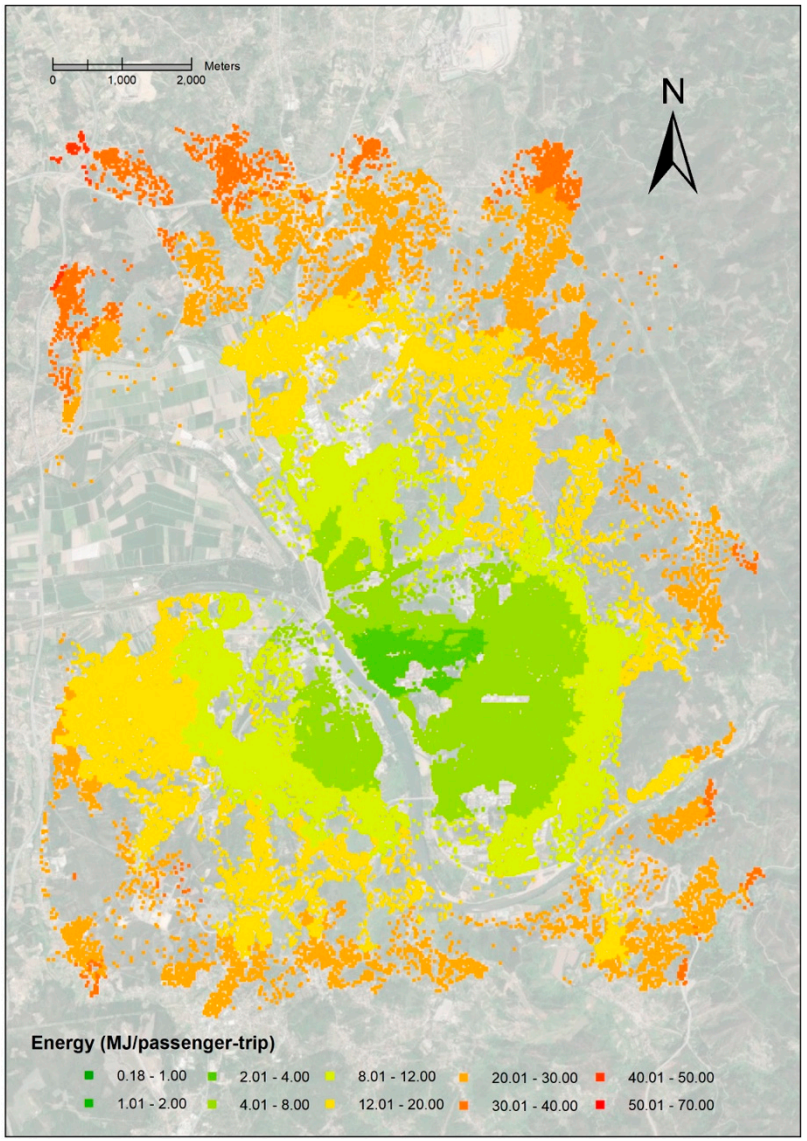
(S3b) No cycling modal share to jobs



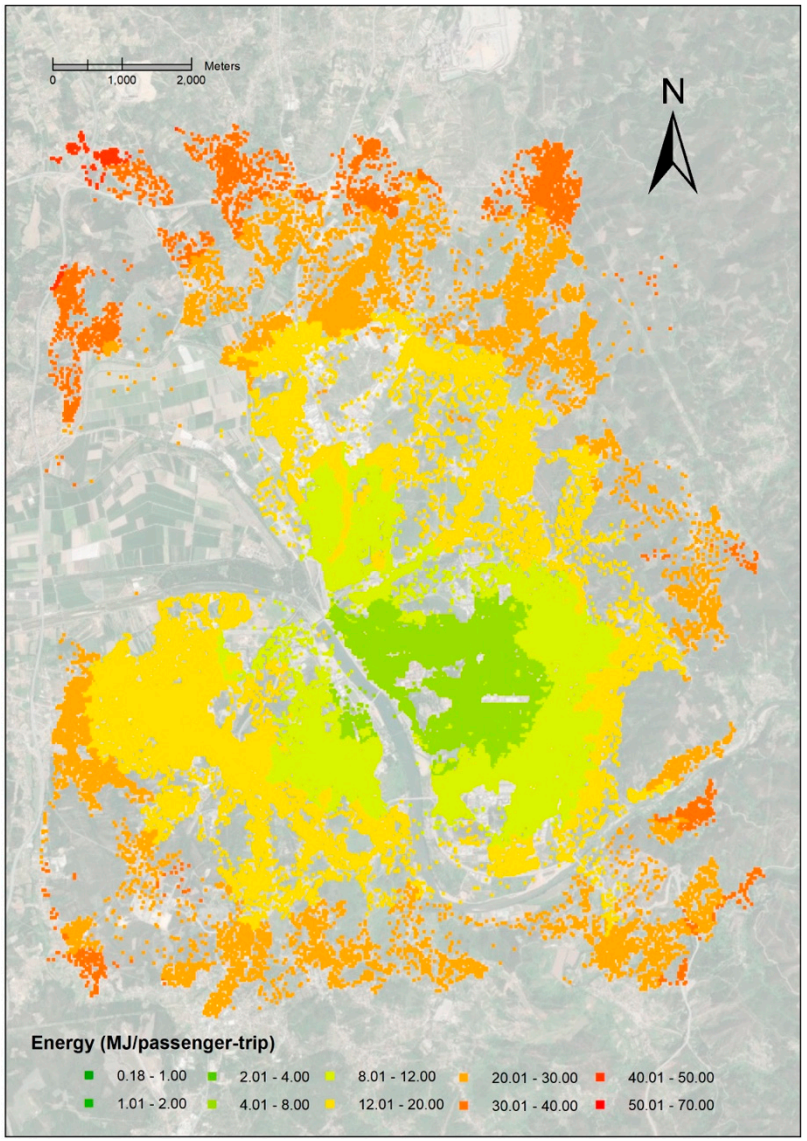
(S4a) Full cycling fossil energy spending to urban facilities.



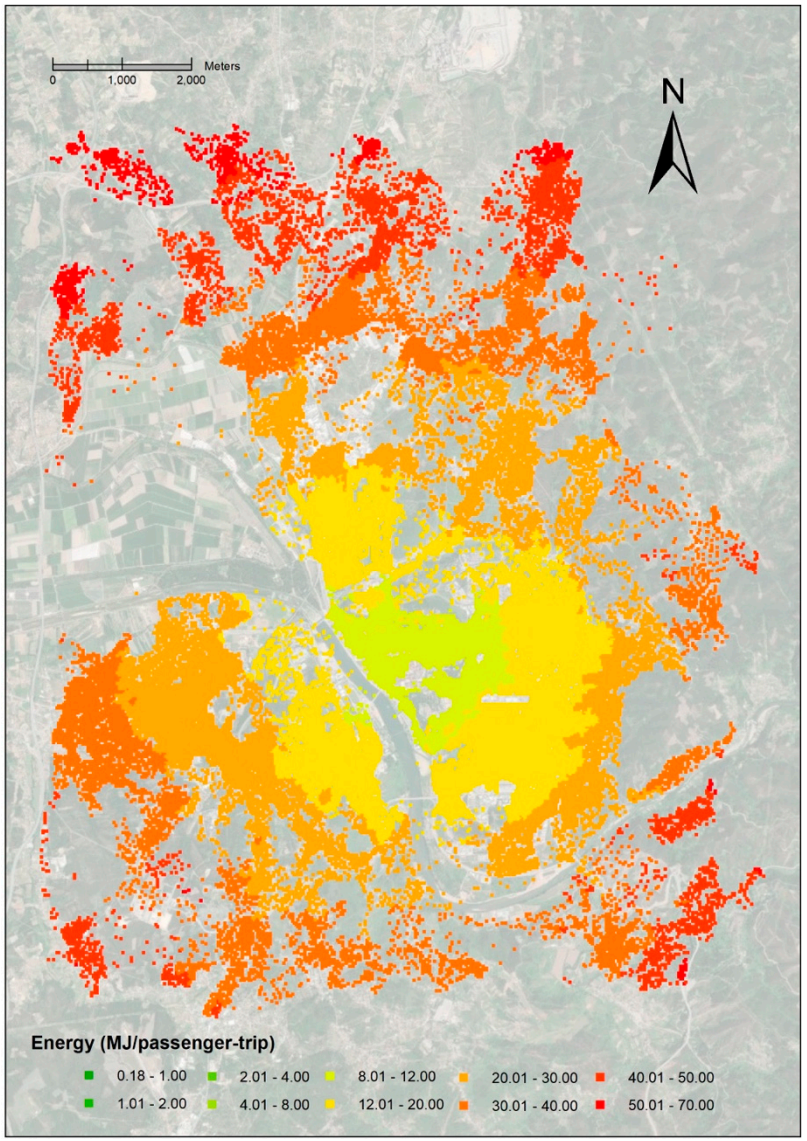
(S4b) No cycling fossil energy spending to urban facilities.



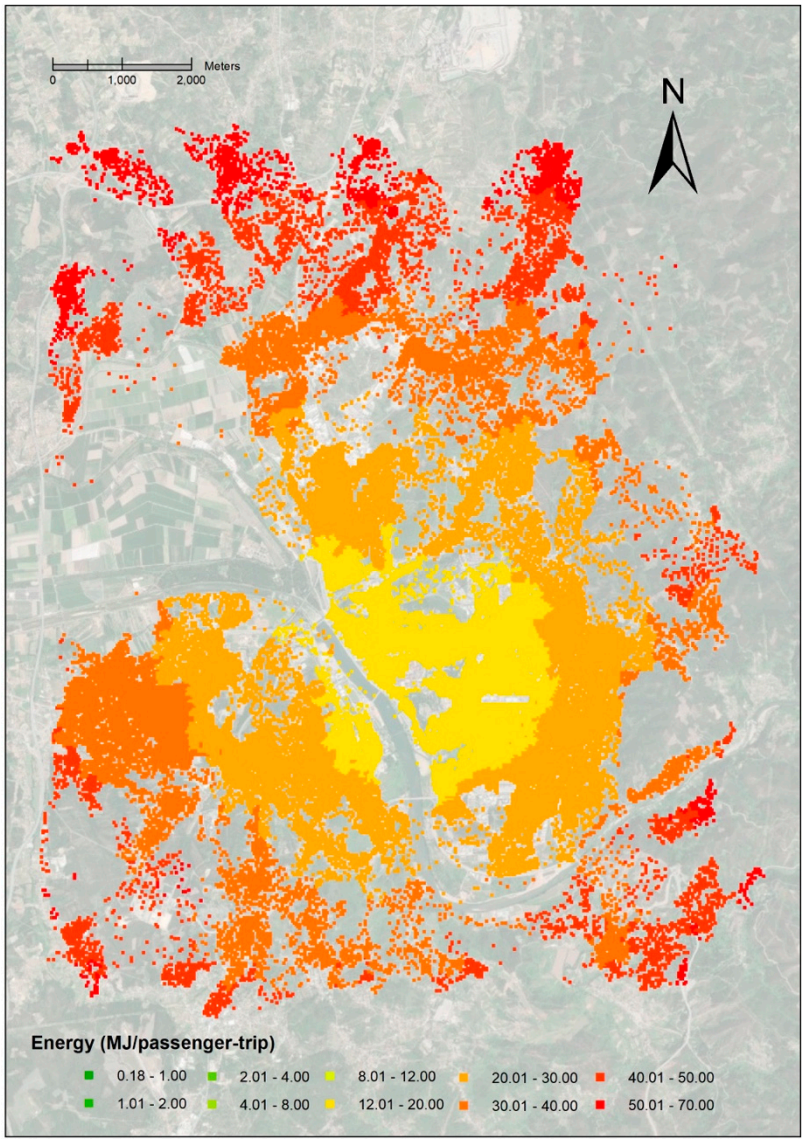
(S5a) Full cycling fossil energy spending to urban facilities plus jobs.



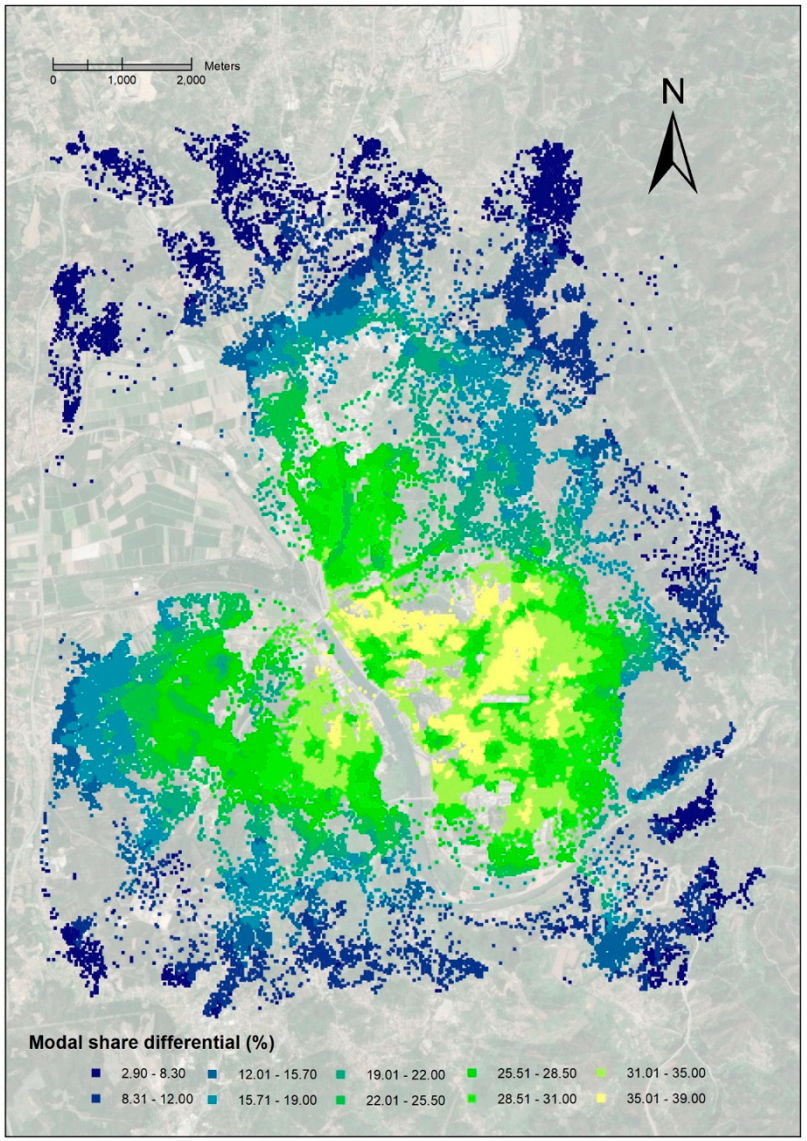
(S5b) No cycling fossil energy spending to urban facilities plus jobs.



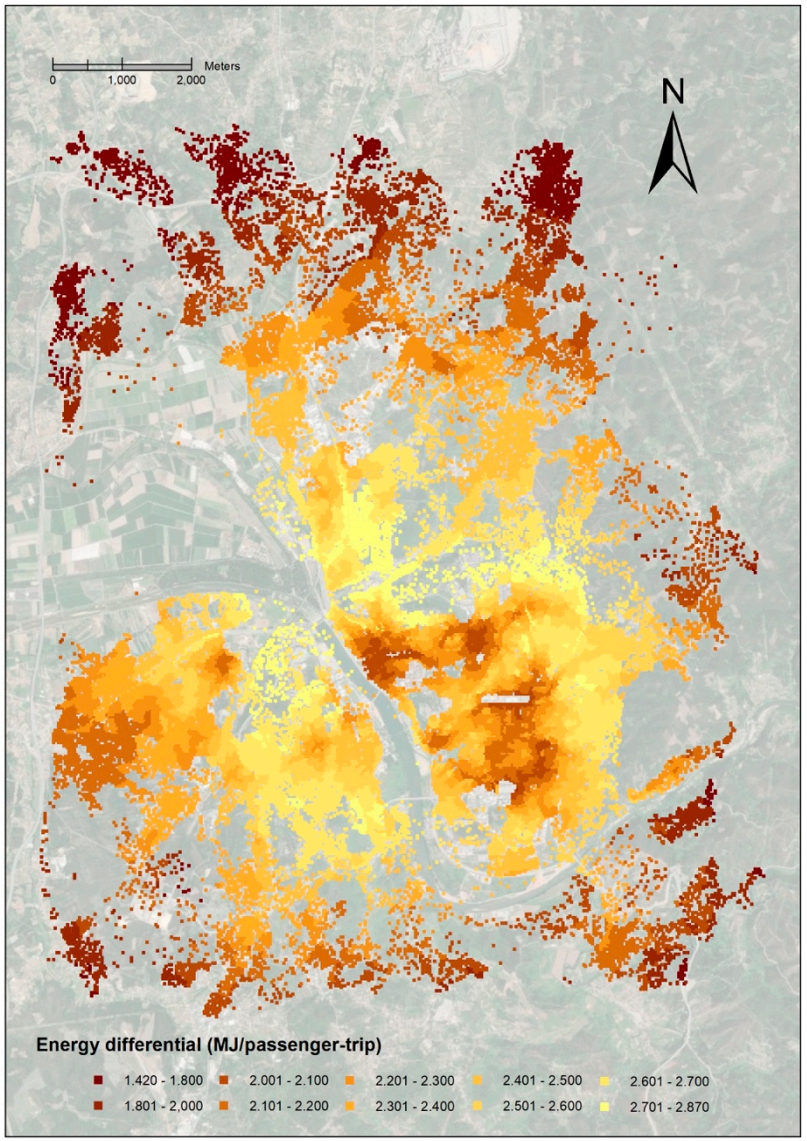
(S6a) Full cycling fossil energy spending to jobs.



(S6b) No cycling fossil energy spending to jobs.



(S7a) Full cycling/no cycling modal share differential to urban facilities plus jobs.



(S7b) Full cycling/no cycling fossil energy spending differential to urban facilities plus jobs.