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Institute for Transport Economics and Transport Policy Studies
Together with Vysokovsky Graduate School of Urbanism

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MARKET INITIATIVE AND CENTRAL PLANNING: A CASE STUDY OF BUS NETWORK IN MOSCOW

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MARKET INITIATIVE AND CENTRAL PLANNING

Points of the debate

- Central planning is a mainstream way for achieving integration and coordination. But limitations in demand development.
- Market initiative have a poor reputation for wasteful competition and poor coordination. But demand responsiveness.
- Intermediate regimes: Netherlands with area-based contracting with incentives.
- Hybrid regimes: formal and informal, public and private, planned and self-regulated, etc.
- 'Big bang' reforms in developing countries (e.g., Transantiago).

Still few studies on hybrid regimes and the influence of different regimes on network structure.

STUDY AREA

Moscow (inner city)

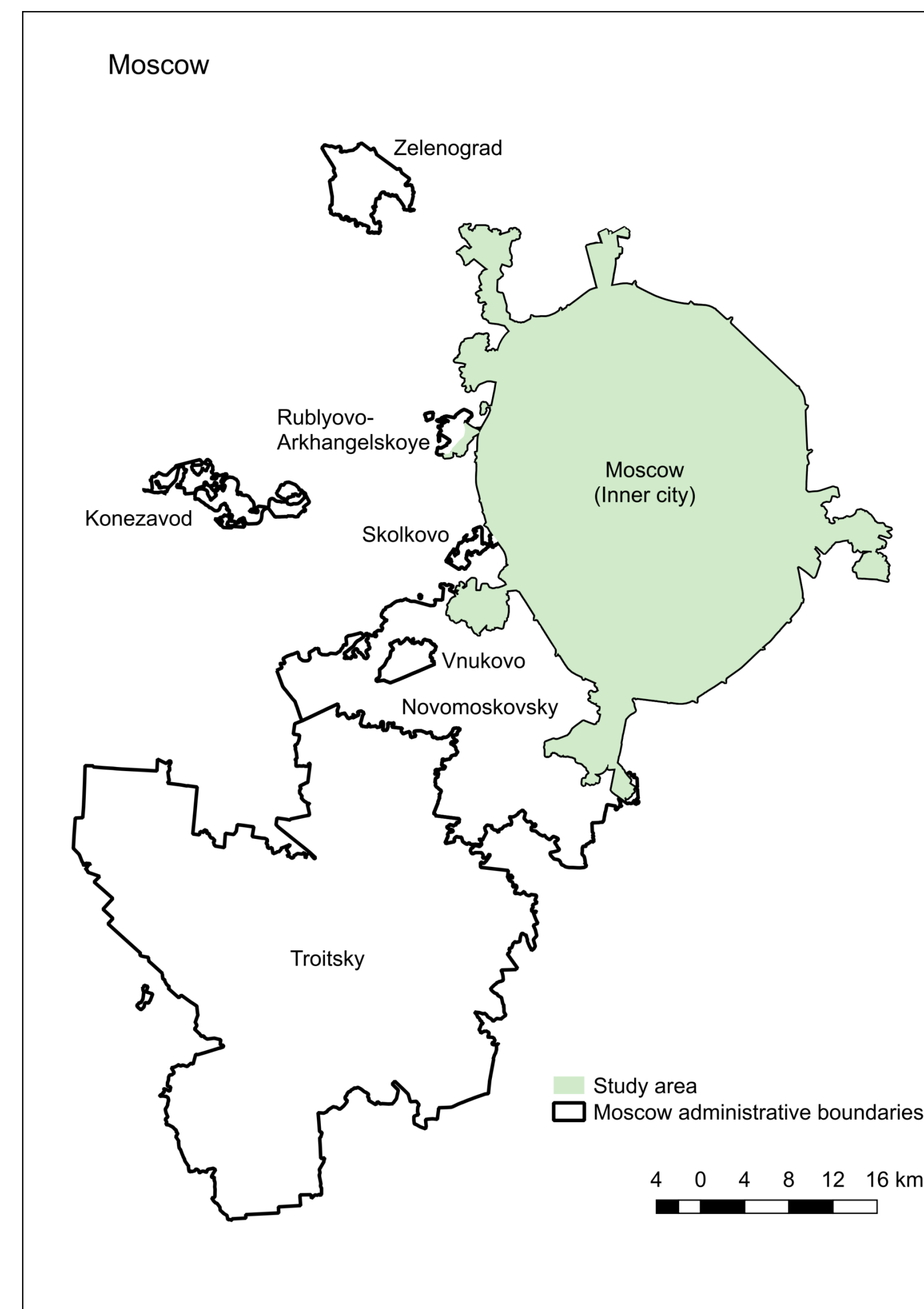
The capital and the largest city of Russia

More than 12 million people

15 metro lines, 9 railway lines, ~ 1000 land transport routes

State operator (Mosgortrans): 70% of bus and 100% of tram, trolleybus and electric bus market

Private operators serve the remaining 30% of the bus market



PUBLIC TRANSPORT GOVERNANCE IN MOSCOW

A brief history

N	Time period	Organisational form	Description
1	Before 1991	State monopoly	All services by public operator
2	1991 - 1998	Hybrid: state operator plus free market	Basic services by public operator; additional services by private operators who enter the market freely and provide services without special regulation
3	1998 - 2006	Hybrid: state operator plus route registration	Basic services by public operator; additional services by private operators who propose routes and achieve permits after the approval of authorities
4	2006 - 2016	Hybrid: state operator plus route franchising	Basic services by public operator; additional services by private operators who propose routes and achieve 5-year permits if authorities approve the route and if operators make best quality bid in competitive tender. No formal preference to the proposer of the route.
5	After 2016	Hybrid: state operator plus gross cost contracting	Basic services by public operator; additional services by private operators who work under competitive gross cost contracts for predefined routes and services

THE NEW MODEL OF 2016

Service improvements

Institute for Transport Economics and Transport Policy Studies

The old model

ГОРОДСКОЙ
ПАССАЖИРСКИЙ
ТРАНСПОРТ

СТАРАЯ МОДЕЛЬ УПРАВЛЕНИЯ ПАССАЖИРСКИМИ ПЕРЕВОЗКАМИ

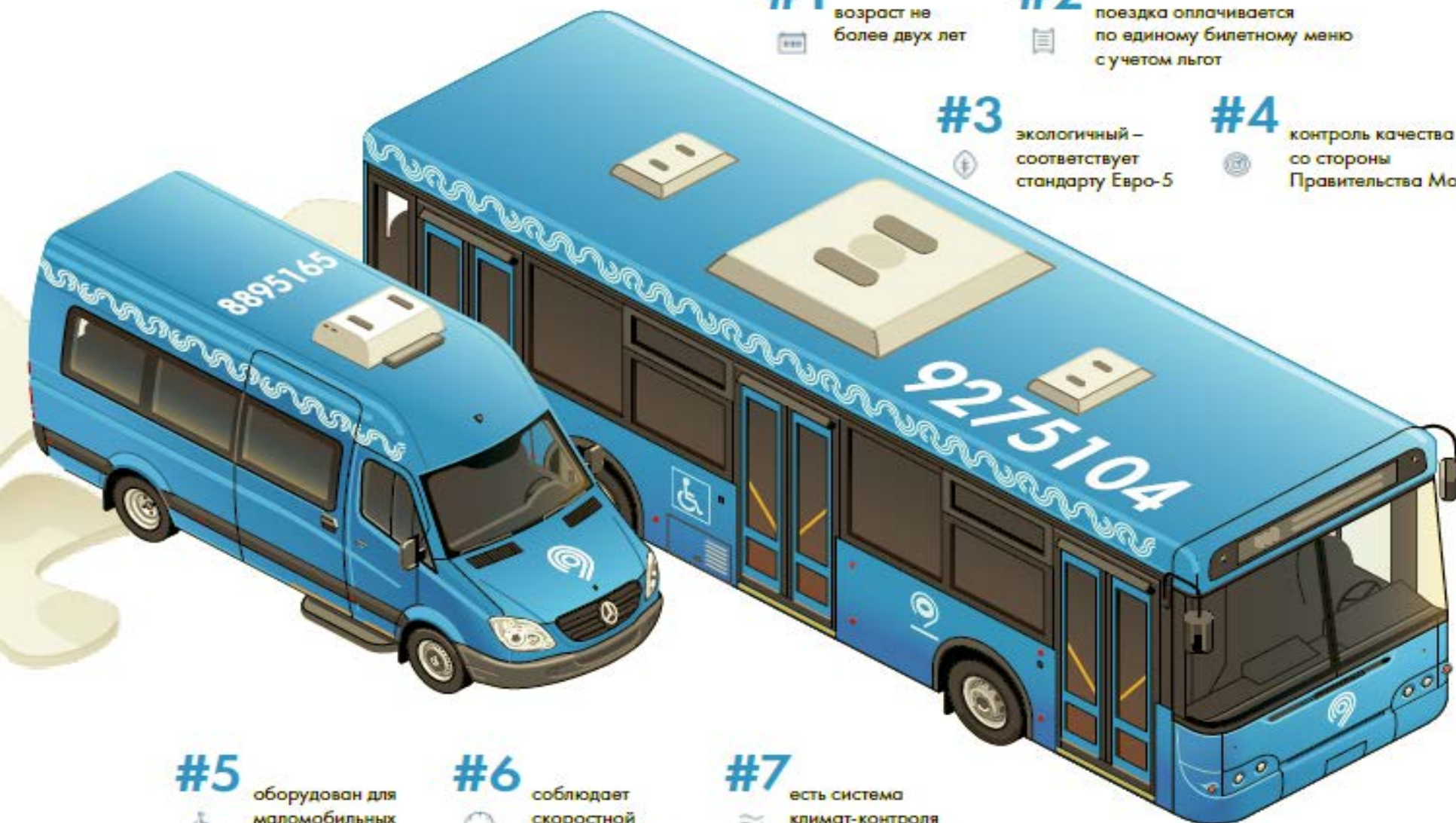
- #1 разрозненные операторы
- #2 нет требований к качеству перевозок
- #3 неэффективная маршрутная сеть
- #4 несоблюдение расписания
- #5 не действуют льготы для отдельных категорий граждан
- #6 низкая экологичность подвижного состава
- #7 высокое количество ДТП с участием таких перевозчиков



The new model

НОВАЯ МОДЕЛЬ УПРАВЛЕНИЯ ПАССАЖИРСКИМИ ПЕРЕВОЗКАМИ

- #1 возраст не более двух лет
- #2 поездка оплачивается по единому билетному меню с учетом льгот
- #3 экологичный – соответствует стандарту Евро-5
- #4 контроль качества услуг со стороны Правительства Москвы
- #5 оборудован для маломобильных граждан
- #6 соблюдает скоростной режим и ПДД
- #7 есть система климат-контроля



НАЗЕМНЫЙ
ГОРОДСКОЙ
ПАССАЖИРСКИЙ
ТРАНСПОРТ

NETWORK CHANGES IN MOSCOW IN 2016

Key indicators

Criterion		2015	2016	2019
1	Routes			
	Bus (private)	461	207 (-55%)	221
	Bus (Mosgortrans)	607	545	575
	Trolleybus (Mosgortrans)	99	95	48
	Tram (Mosgortrans)	49	51	51
2	Network length			
	Bus (private)	7078 km	3527 km (-50%)	3839 km
	Bus (Mosgortrans)	11258 km	10405 km	11449 km
	Trolleybus (Mosgortrans)	2041 km	1963 km	979 km
	Tramway (Mosgortrans)	952 km	987 km	1044 km
3	Fleet size (number of daily circulating units)			
	Bus (private)	3771	1665 (-56%)	1784
	Bus (Mosgortrans)	4681	3786	4582
	Trolleybus (Mosgortrans)	1283	1226	627
	Tram (Mosgortrans)	774	622	580

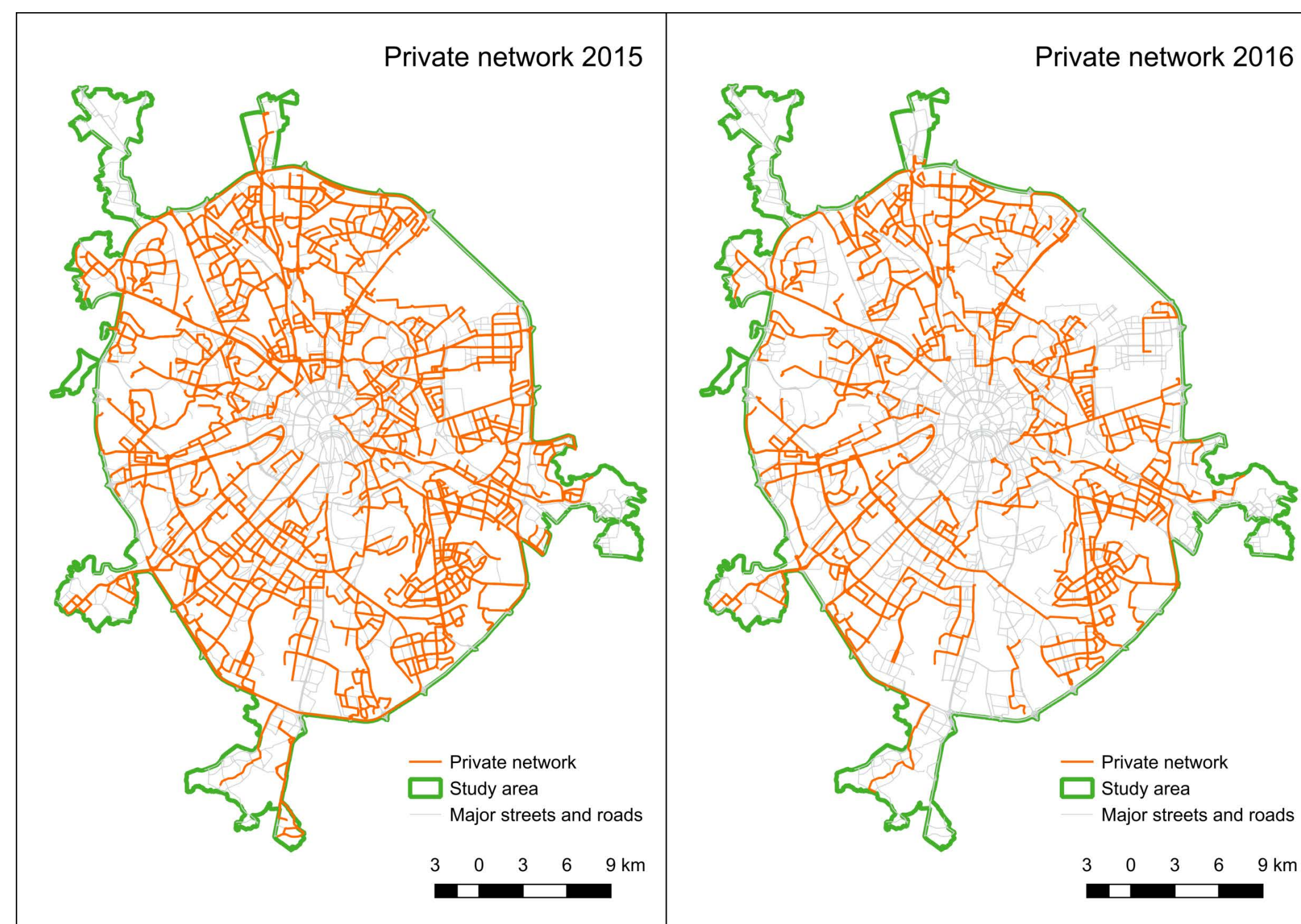
RESEARCH QUESTIONS

Q1. Were the changes aimed at rationalising the private network by eliminating parallel routes while saving (or increasing) the network coverage and capacity?

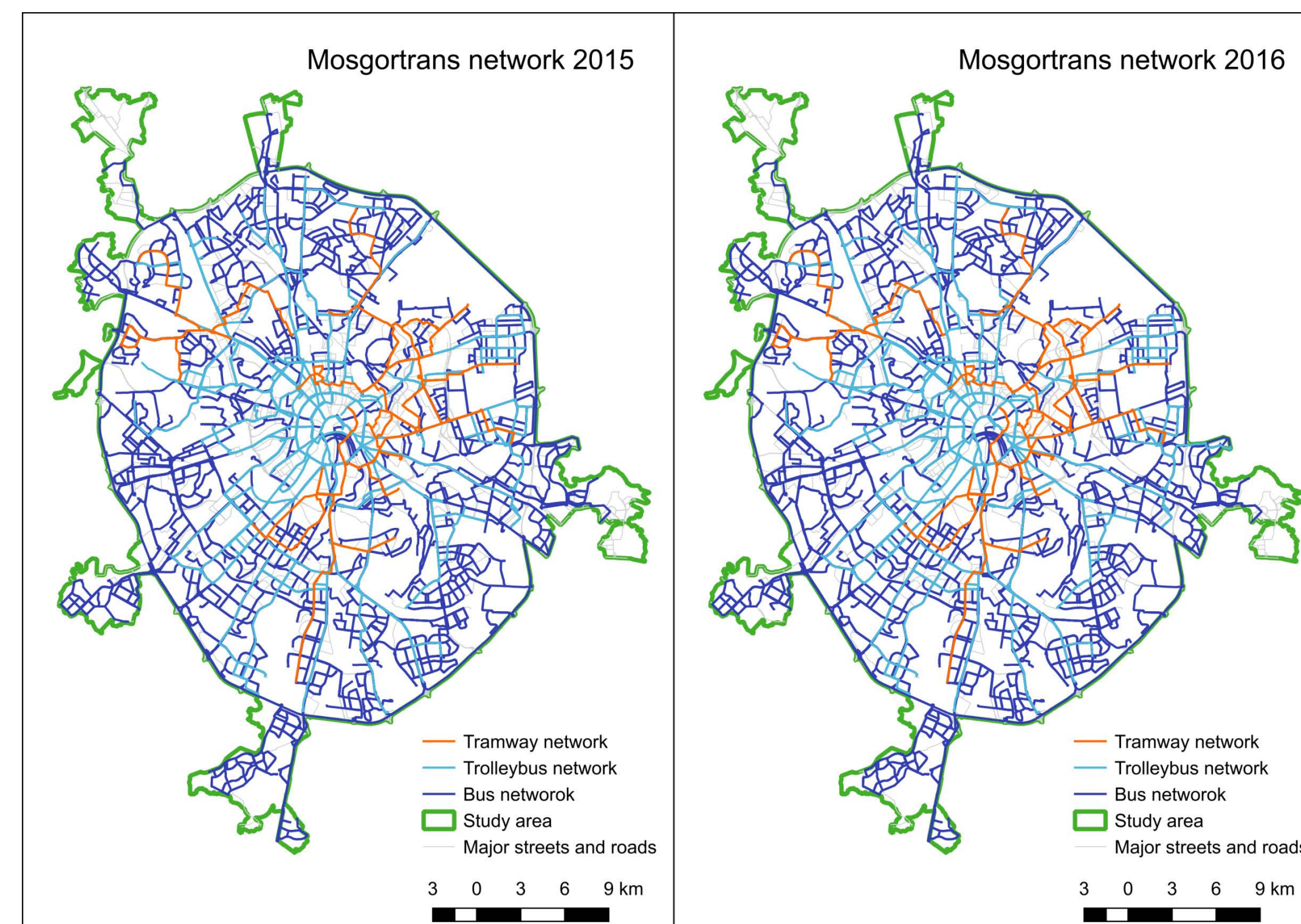
Q2. Whether the changes have divided operating areas between Mosgortrans and private operators, or not?

NETWORK CHANGES IN MOSCOW IN 2016

Private operators (minibus)



State operator (bus, trolleybus and tram)



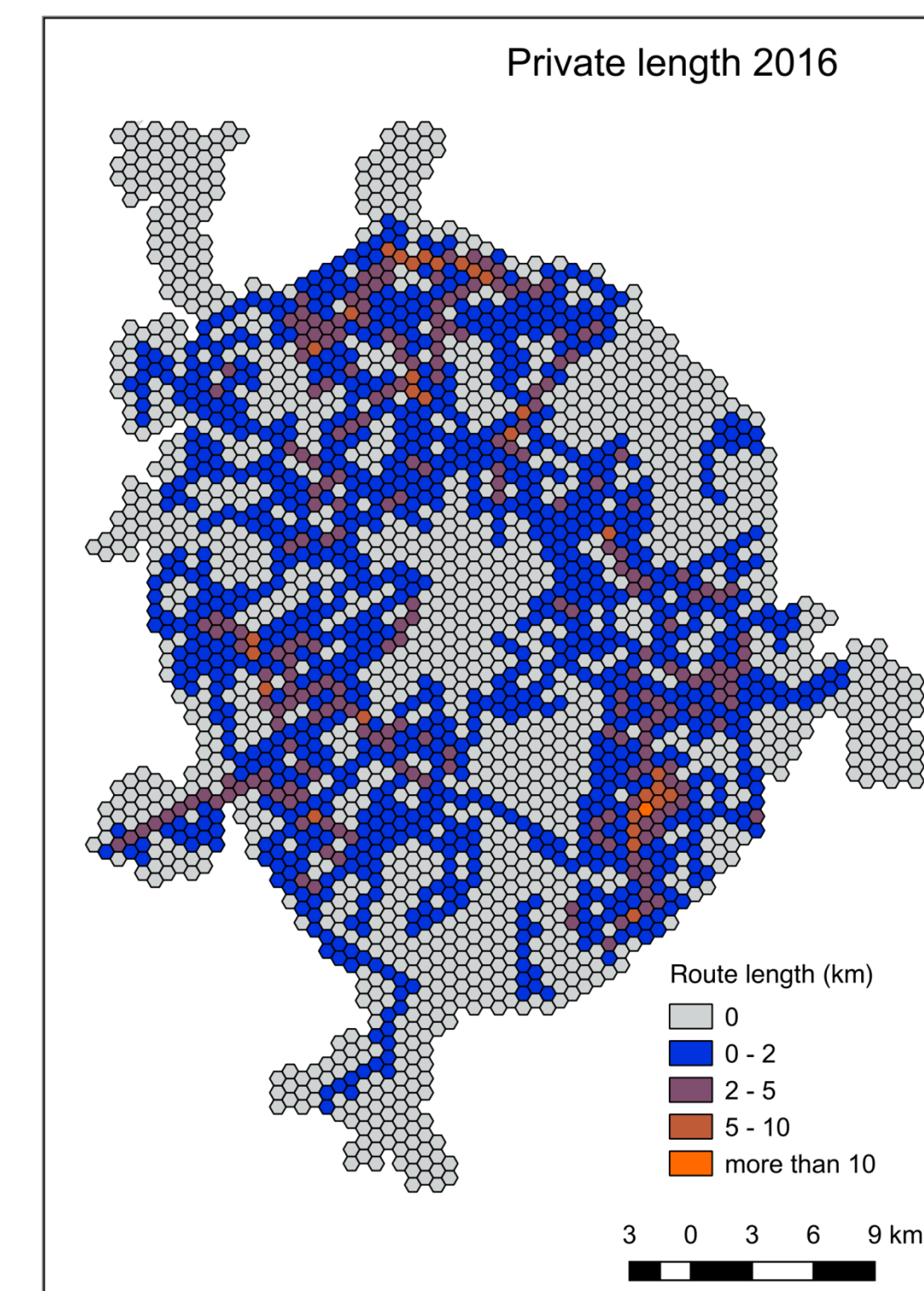
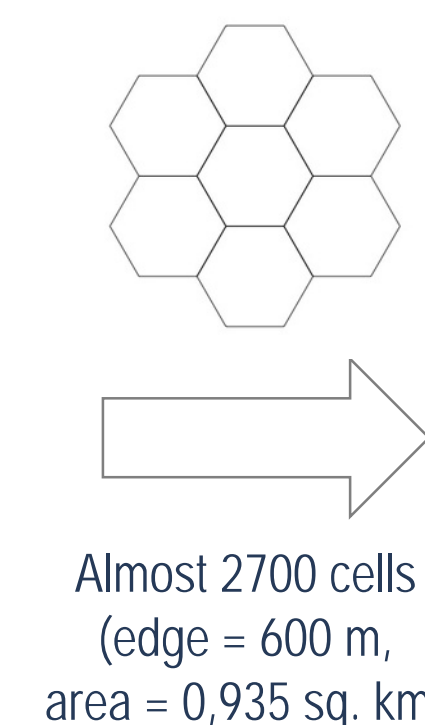
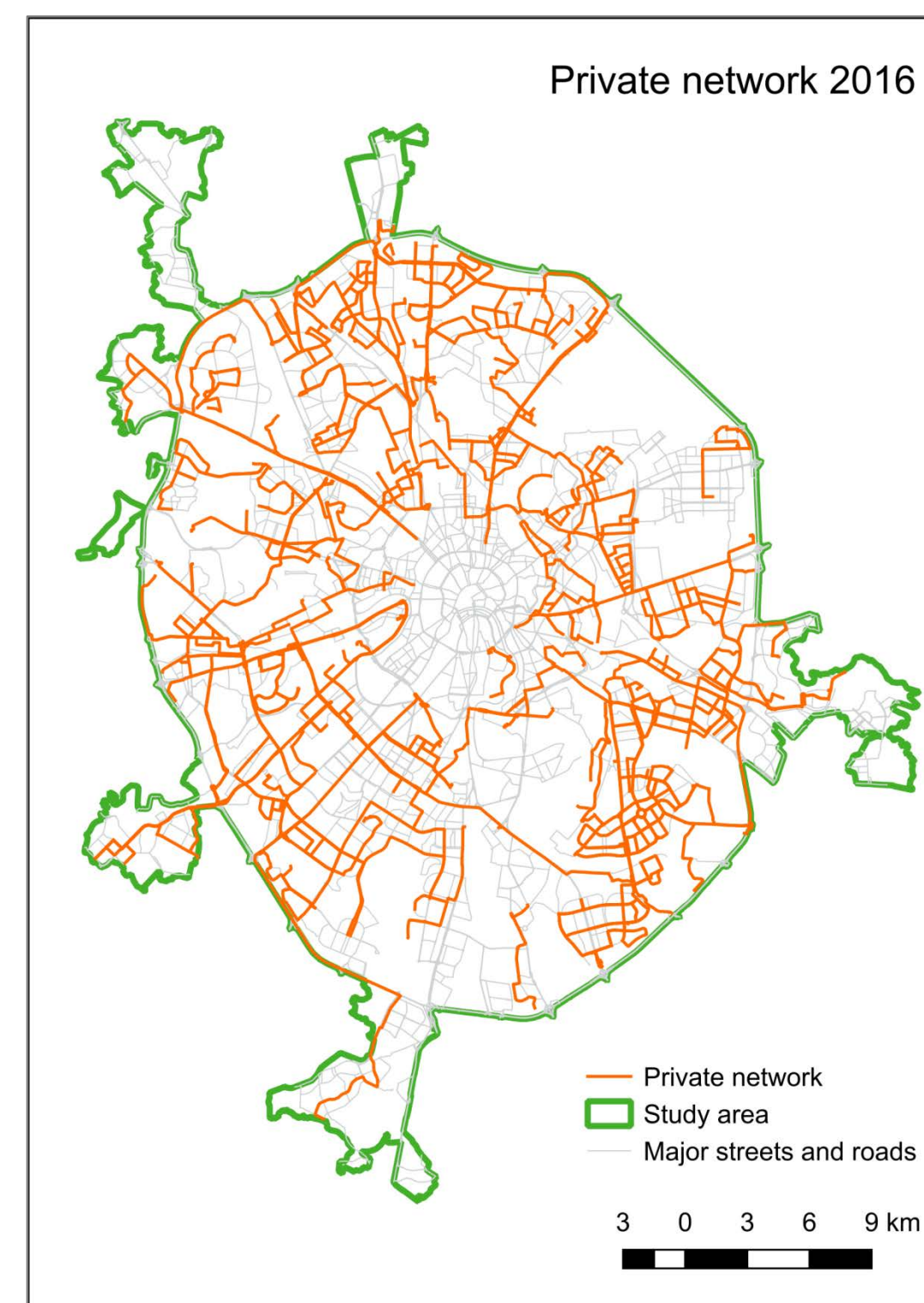
RESEARCH METHOD

Hexagon mosaic maps (geographical method)

Why: Established geographical method to analyse spatial data.
Allows to use point, line or polygon based data.

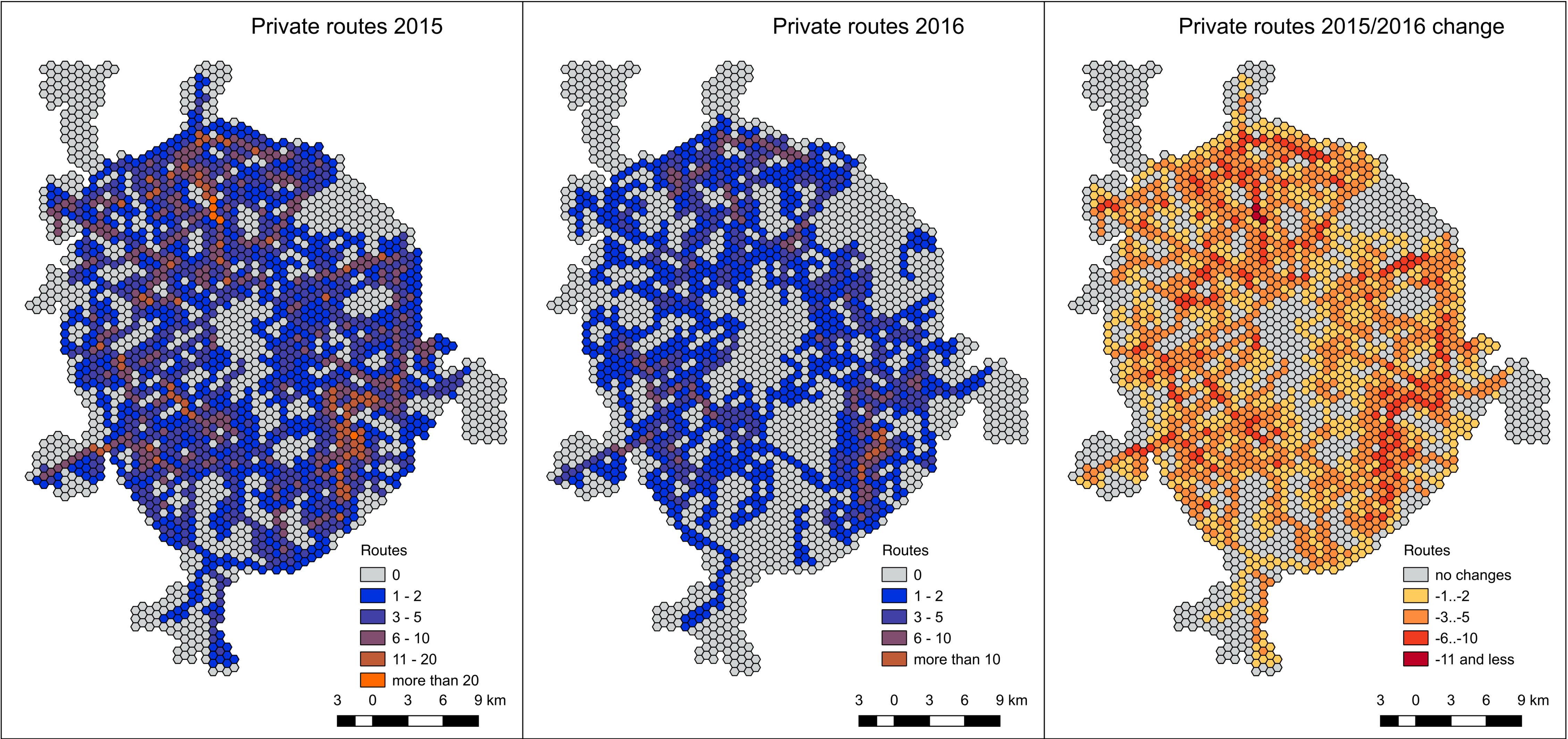
Why hexagons (not triangles or rectangles):
Visual appeal and representational accuracy
(see, Carr et al., 1992, p. 229).

Input: Linear data with routes (with attributes).



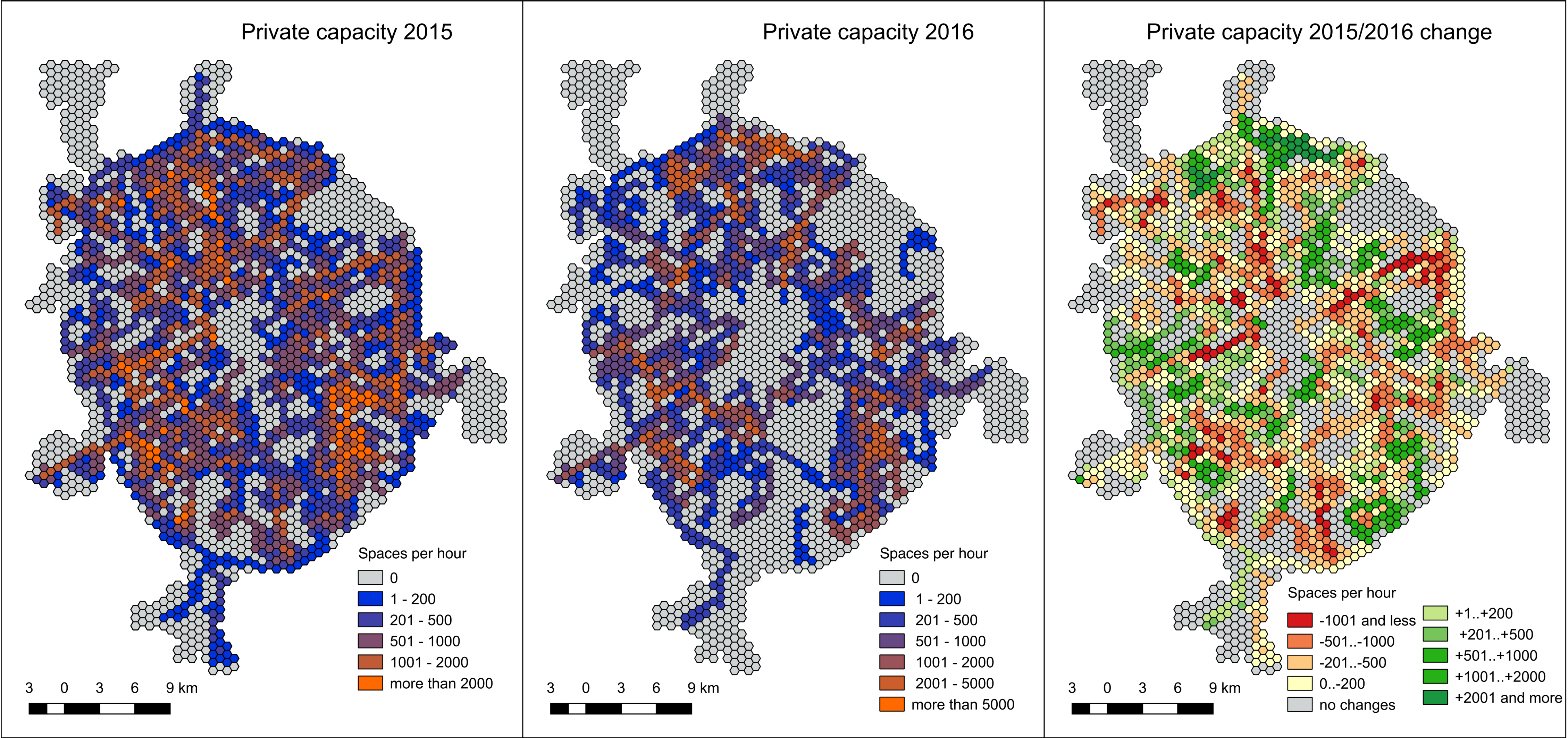
RESULTS

Number of routes (private)



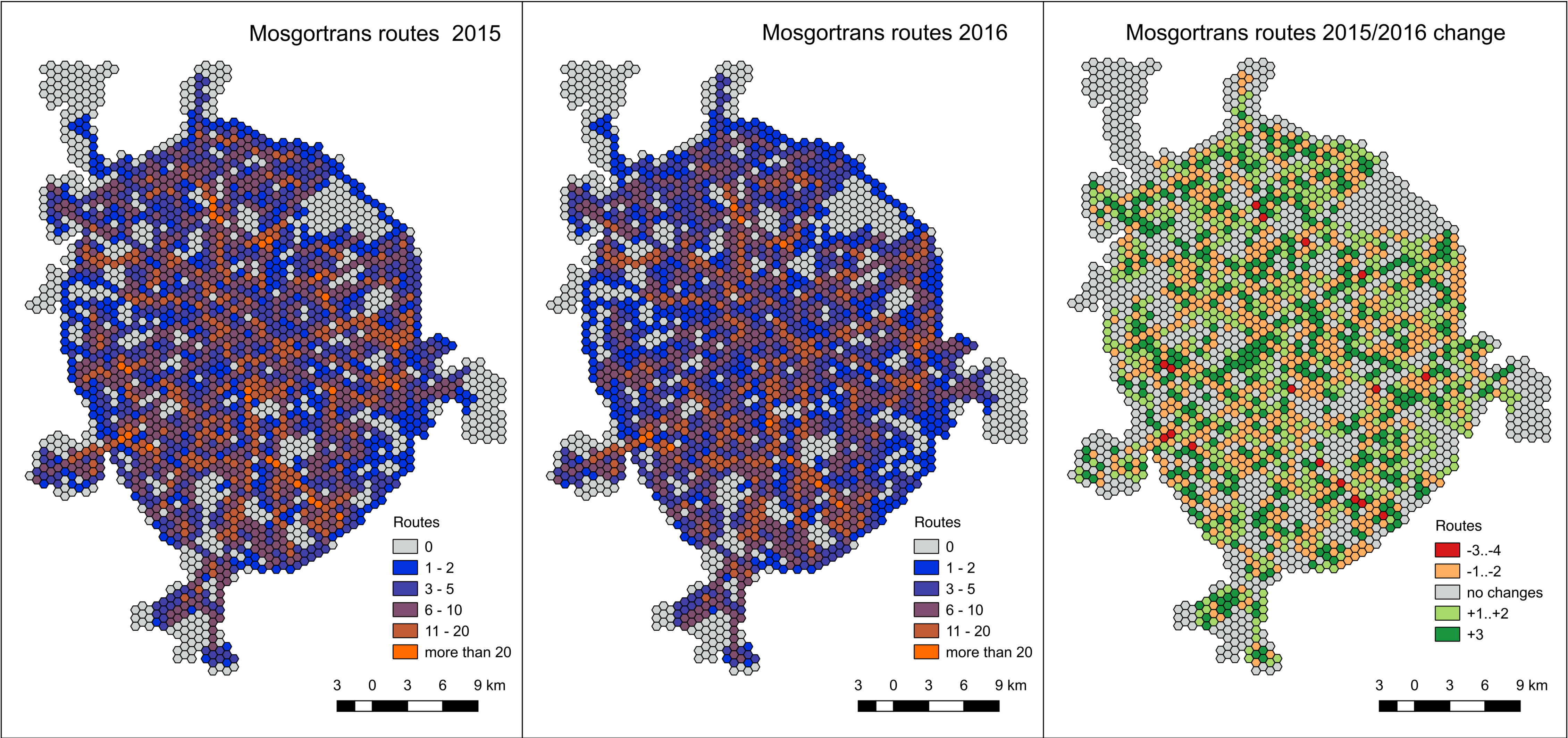
RESULTS

Capacity (private)



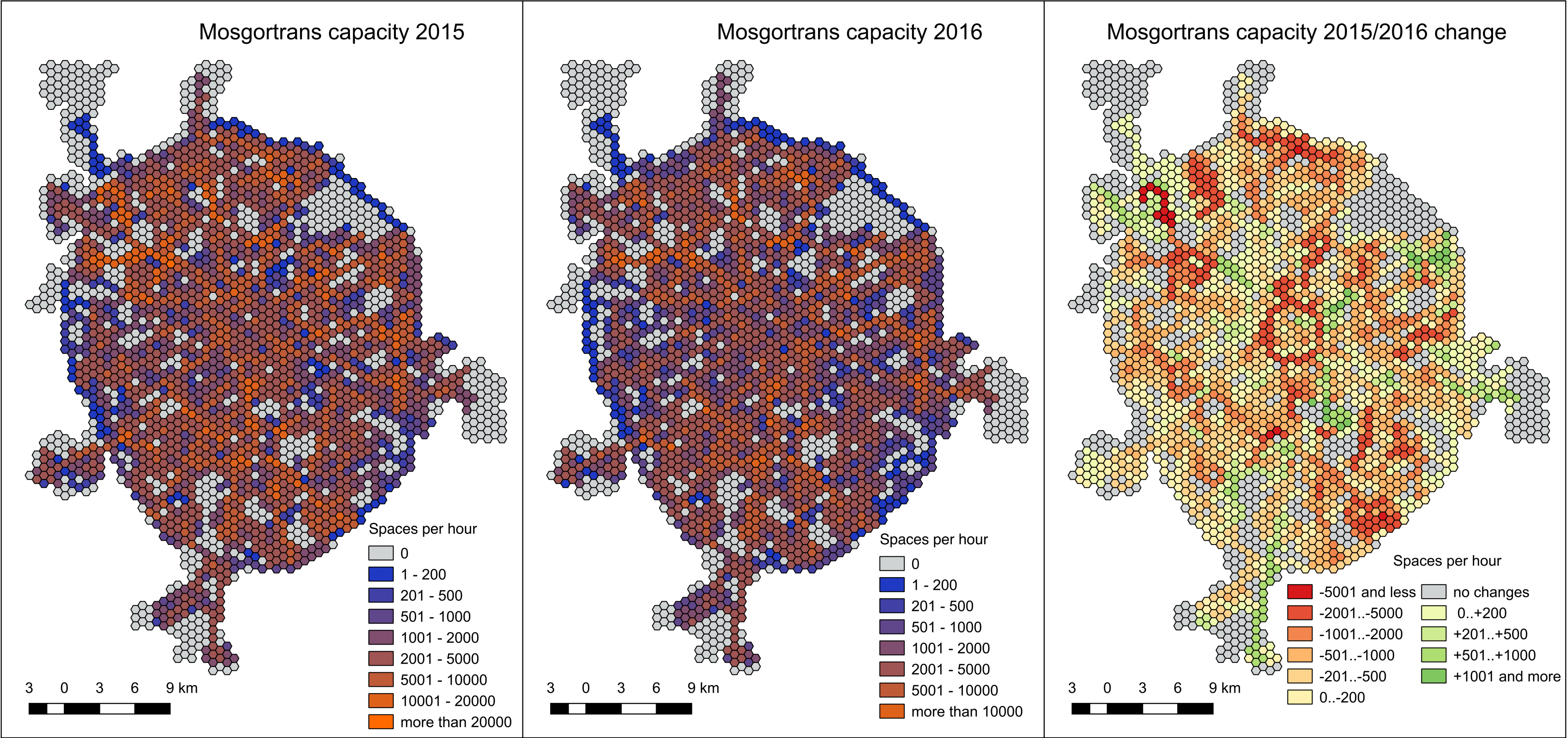
RESULTS

Number of routes (public)



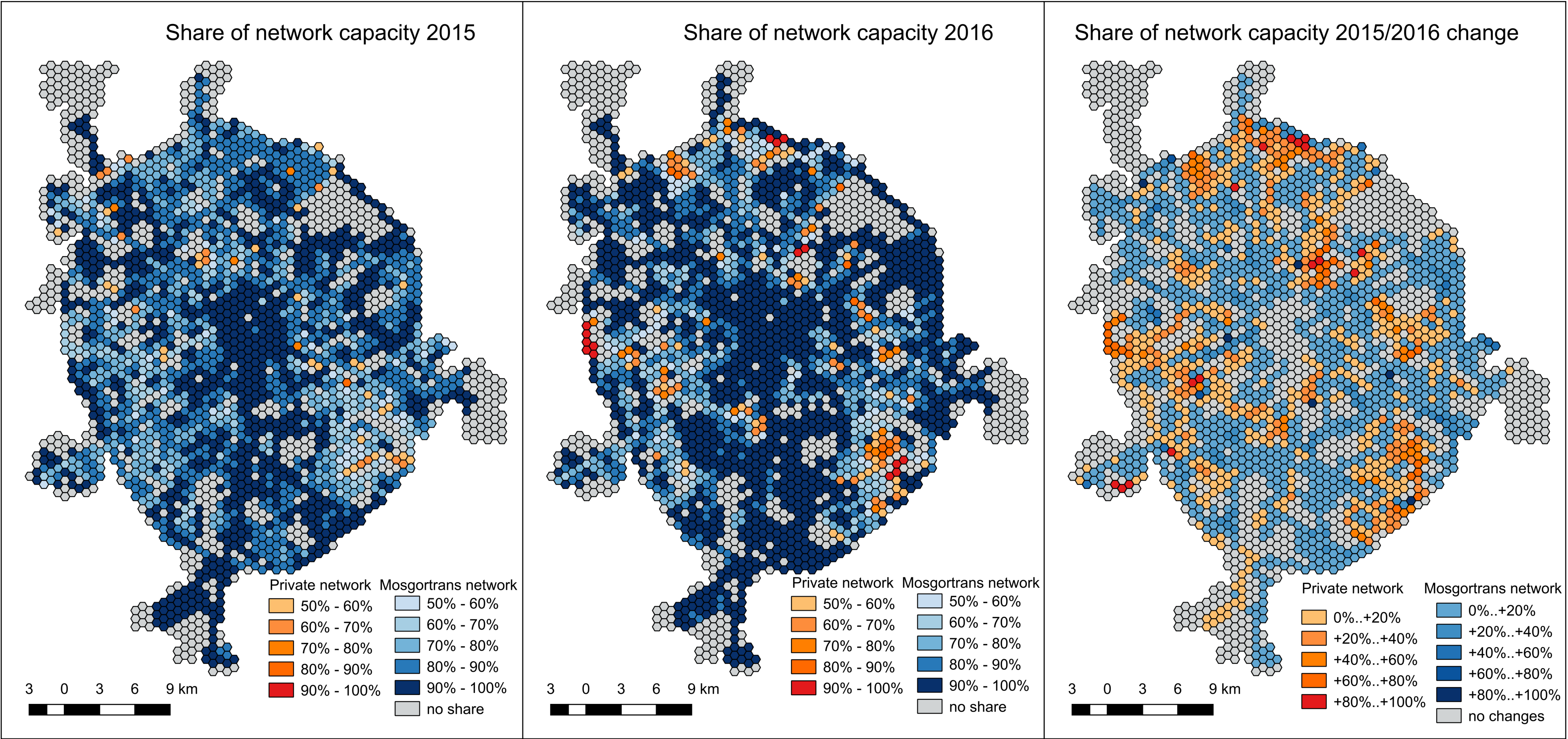
RESULTS

Capacity (public)



RESULTS

Market share (private / public)



CONCLUSIONS

Private operators:

The initial network was developed more evenly than usually thought (not only along the most lucrative corridors).

The overall network changes were far greater than the pure 'rationalisation'.

The complexity, coverage, and frequency of the private operators' network were significantly deteriorated.

The capacity of the private operators' network was redistributed (decreased, but not evenly).

Market shares:

The market shares of public and private operators have remained stable, but changed in some areas.

DISCUSSION

Whether the reductions were aimed at coping with excess capacity, or to reduce the competition with public operator?

Should the hybrid networks be structured spatially?

Can the switch from market initiative to central planning be done 'ideally'?

Some comments to this study:

- The hexagon based framework works well.
- Further use of statistical methods is needed to make the study robust.
- Other data (housing, schools, hospitals, metro and rail stations, depots location) can be added to the study to understand how different institutional regimes change the coverage of these objects by public transport.
- Recent data (2019) may be included to show the changes to the network after 2016. Question: what had planners learned?



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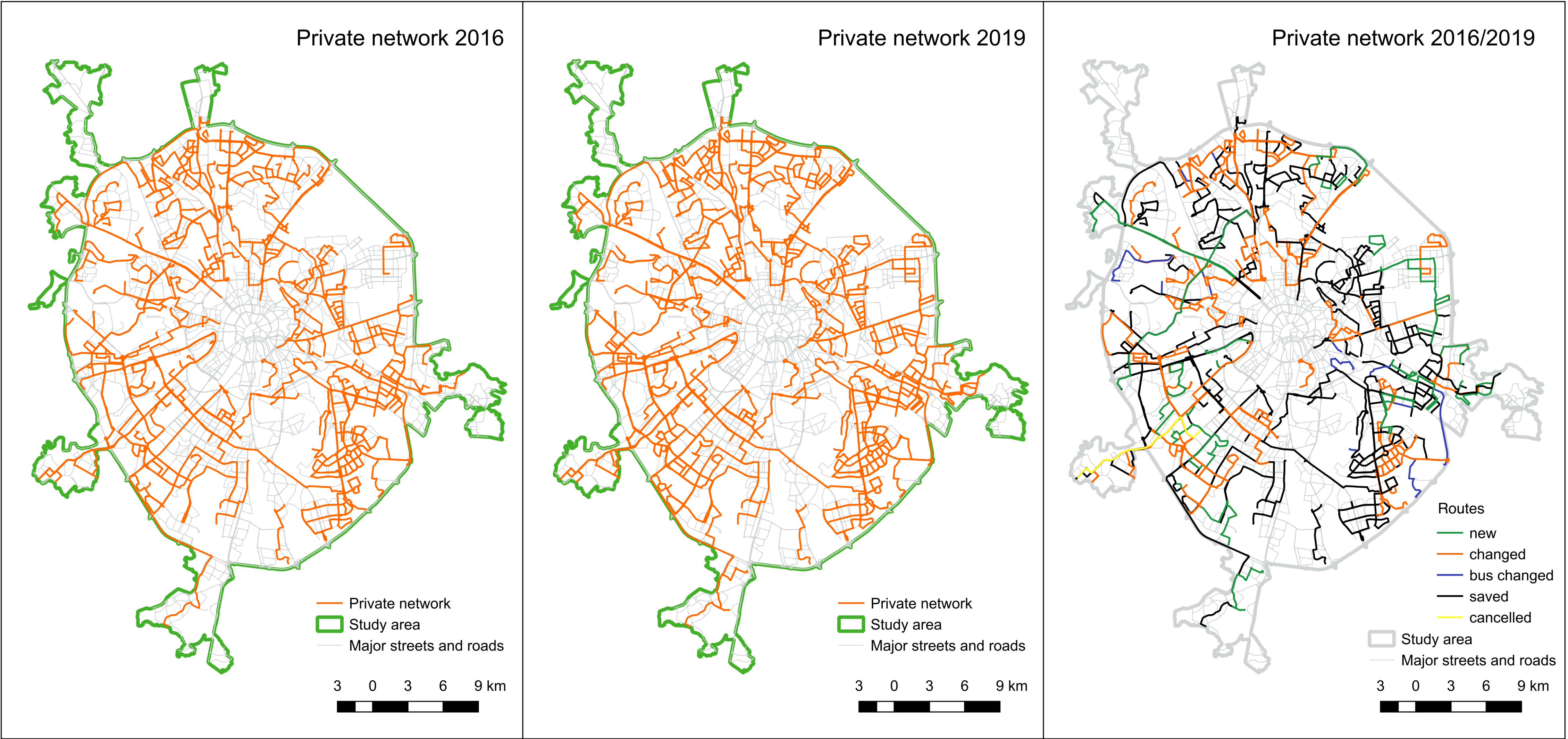
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BACK-UP

(optional)

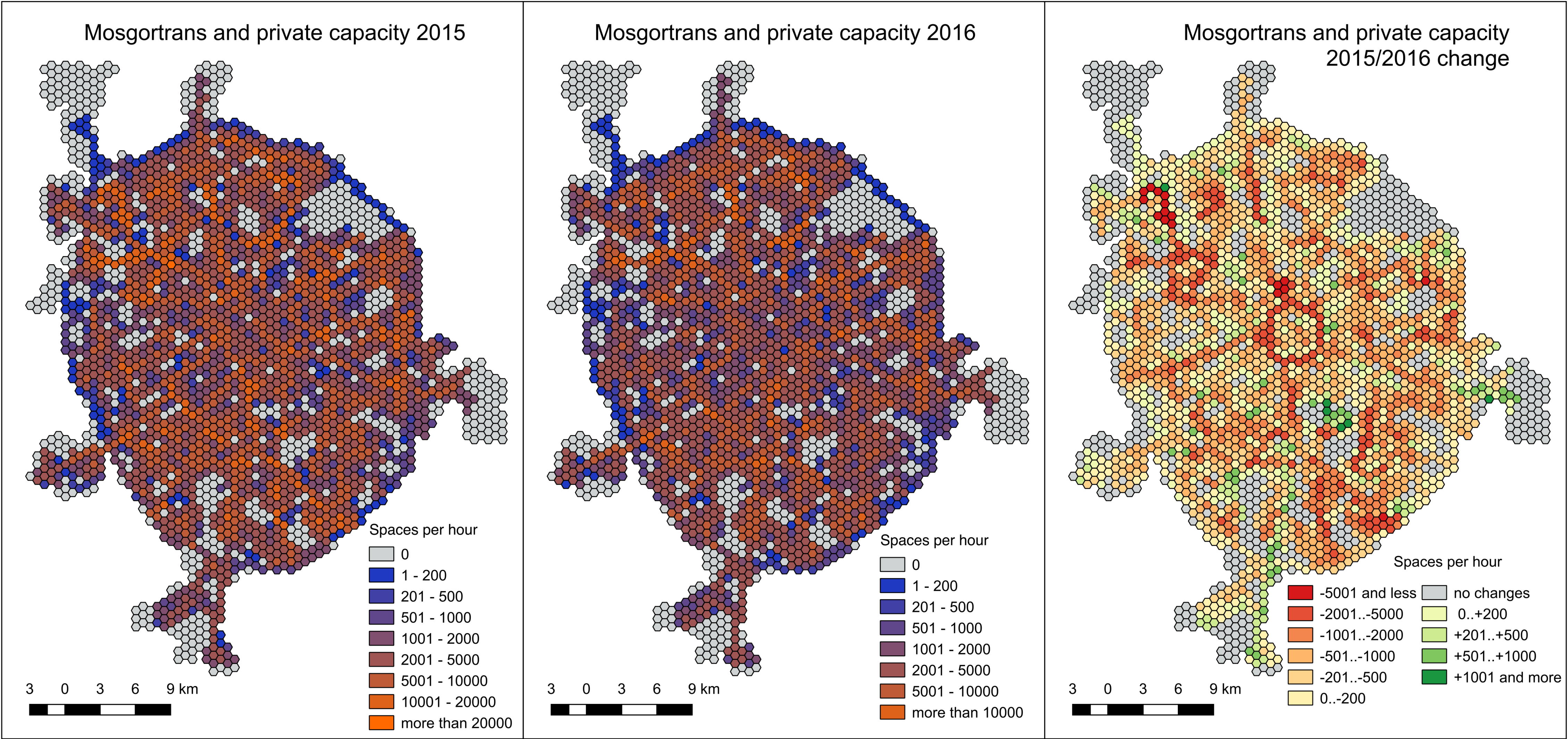
RESULTS

Private network development after 2016



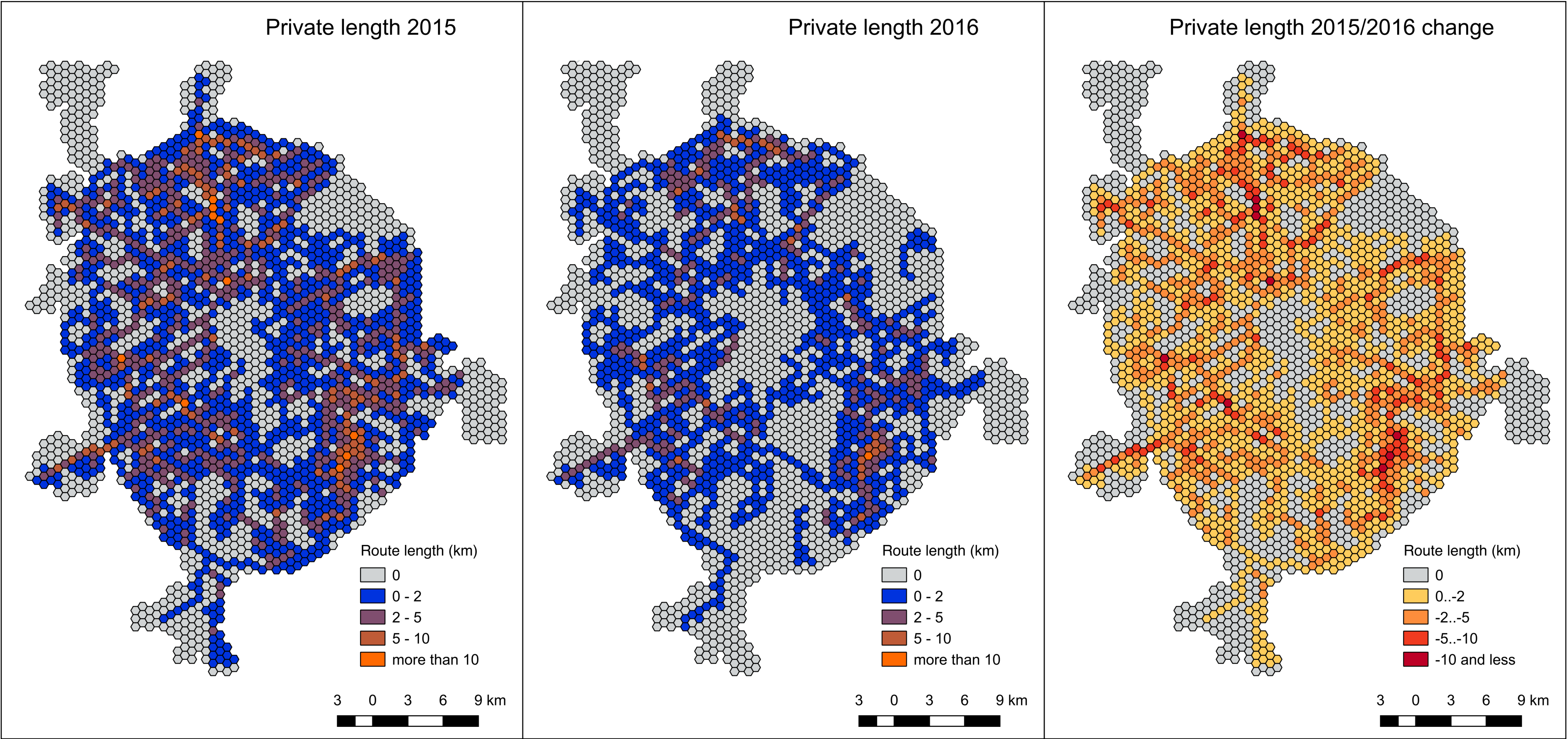
RESULTS

Capacity (all)



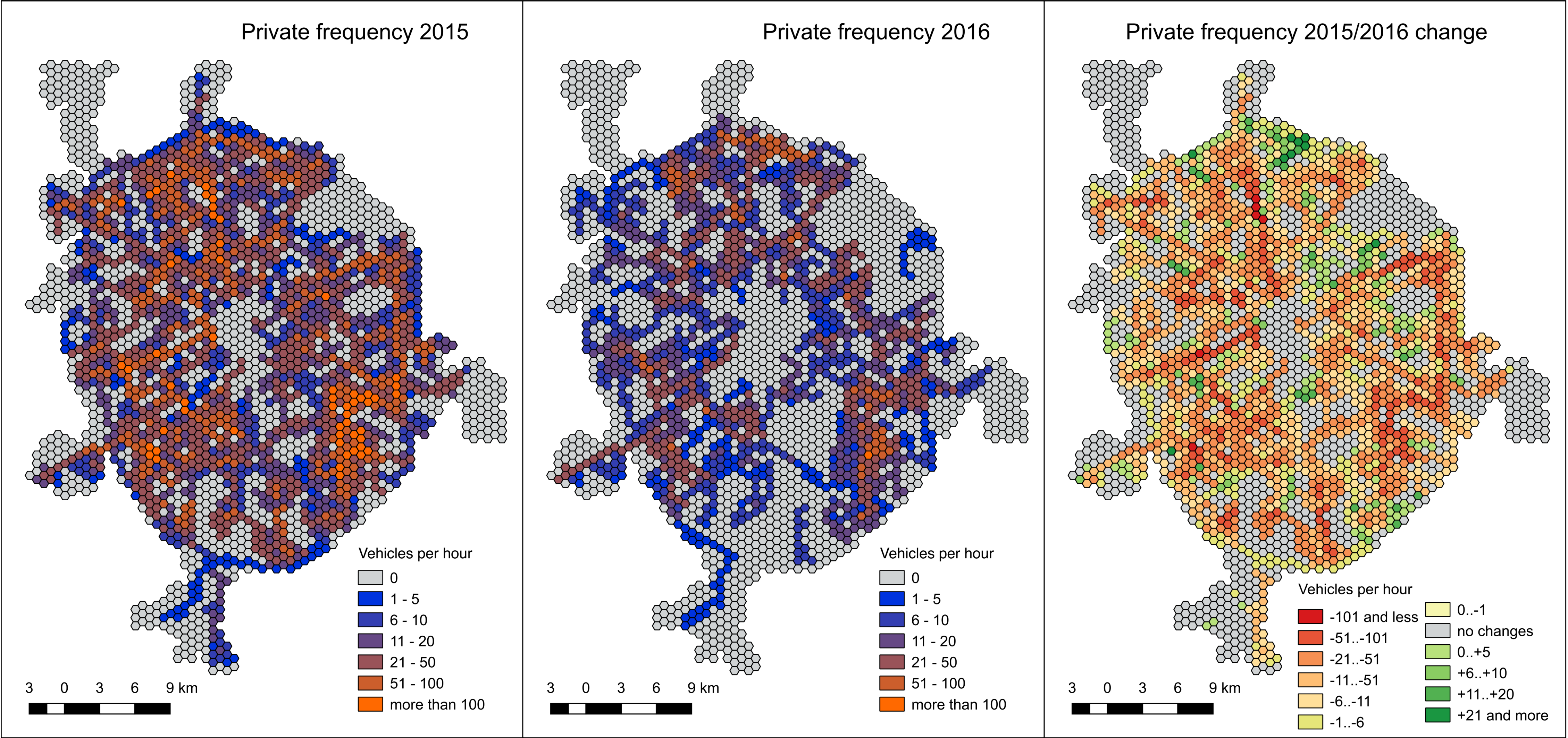
RESULTS

Route length (private)



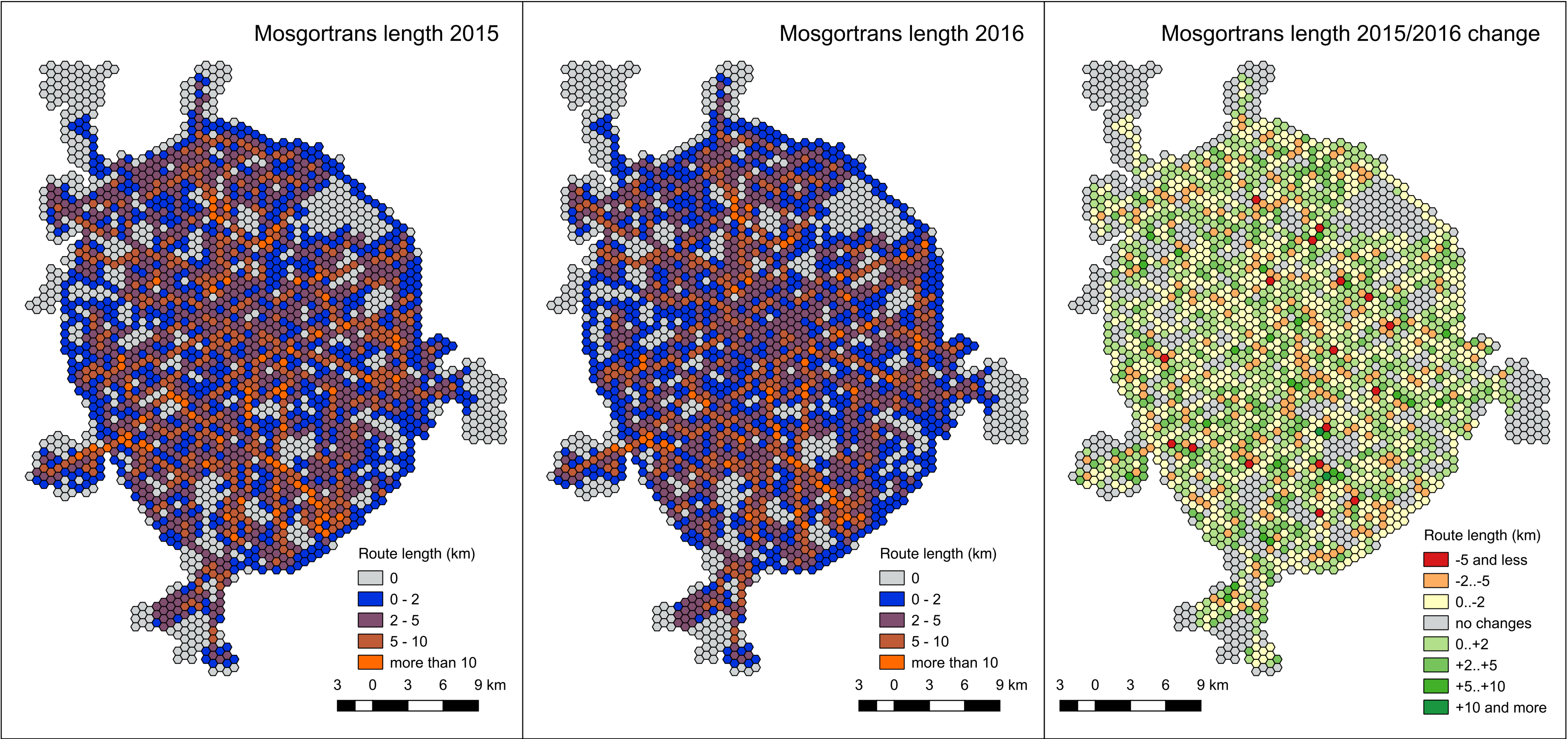
RESULTS

Frequency (private)



RESULTS

Route length (public)



RESULTS

Frequency (public)

