

An aerial photograph of Tianjin, China, overlaid with a network of transit lines in green and white. The map also features a heatmap where red and yellow colors indicate areas of high building density or urban development. The text is overlaid on the left side of the image.

Preparation and Implementation of a City Transit-Oriented Development Strategy and Project Management Support for Tianjin

Richard Liu, Regional Director of East Asia, ITDP
16 Sep 2019

Institute for Transportation & Development Policy

Introduction

•Objective:

•Help Tianjin to develop, implement, and adopt its own City-Level TOD strategy (and related policies and plans) that will guide growth at the city level that effectively integrates land-use planning and transport planning.

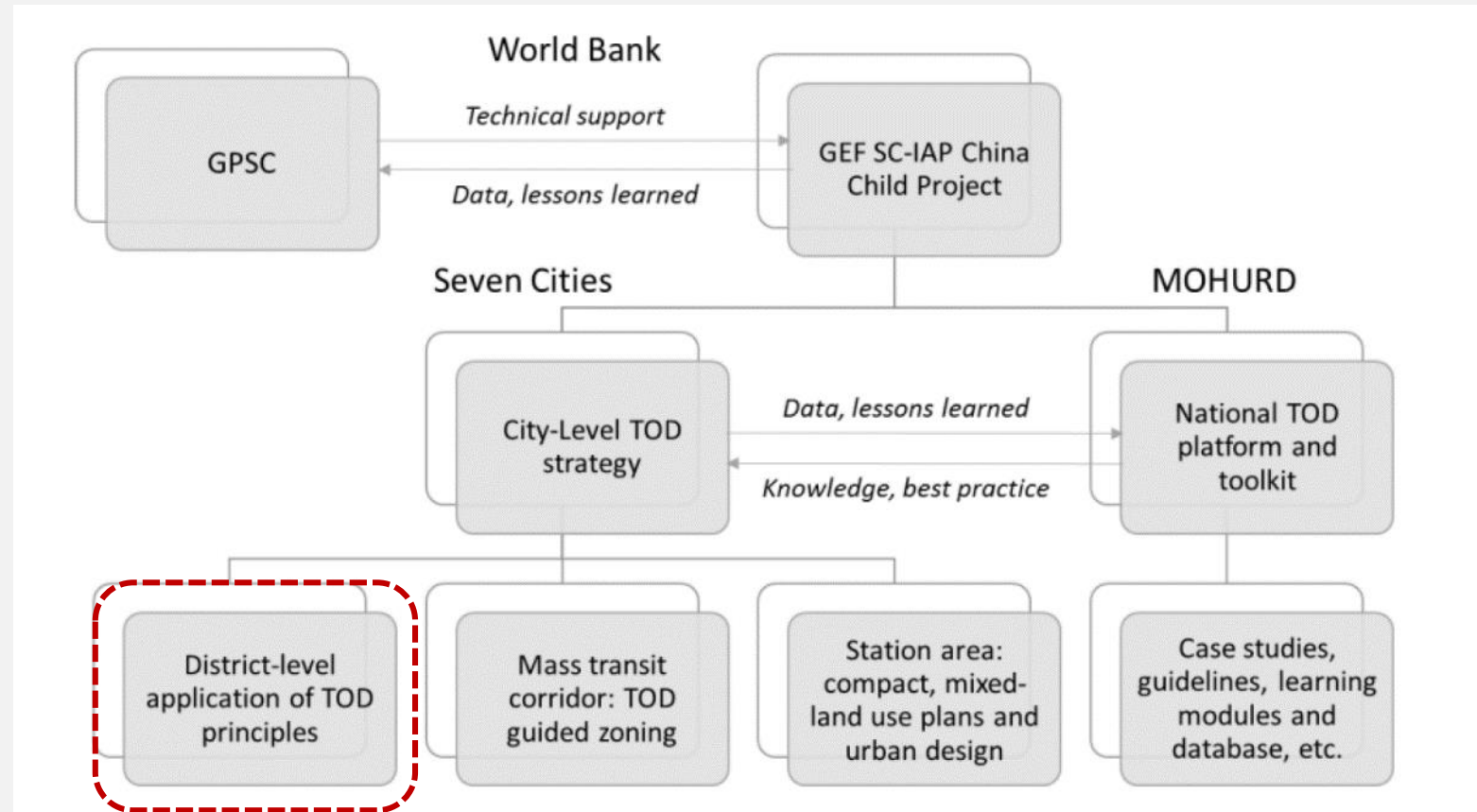
•Funding:

•1.2 million USD

•Term:

•Jan 2019-Dec 2022

Overall project design framework



The City of Tianjin



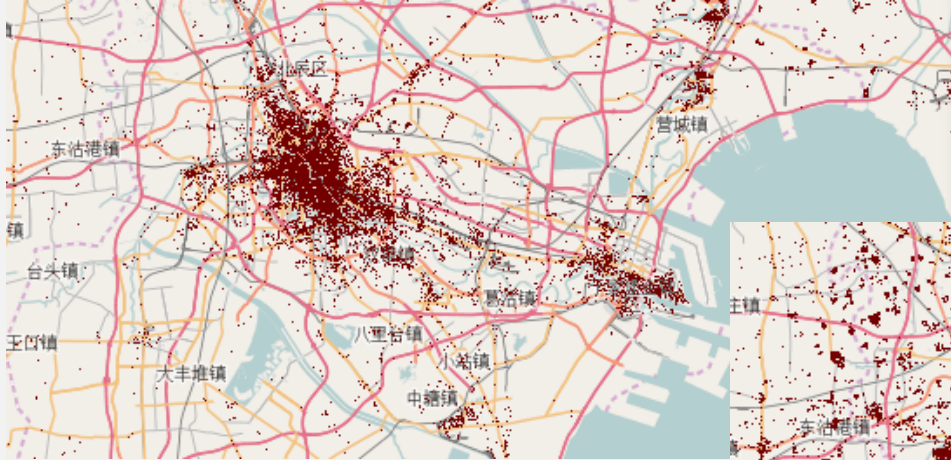
Tianjin

Area (City) 4,335 square km

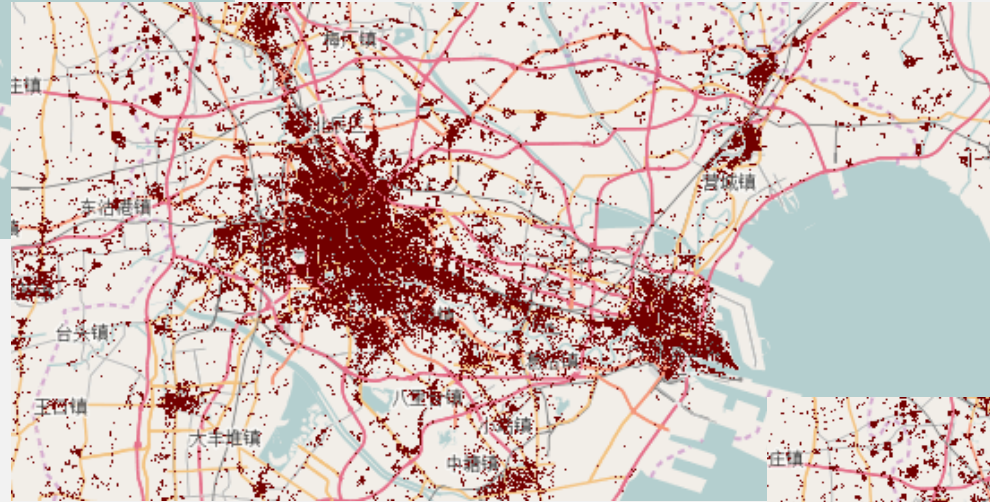
Area (Metro) 11,917 square km

Populations (Metro): 15.6 million (2019)

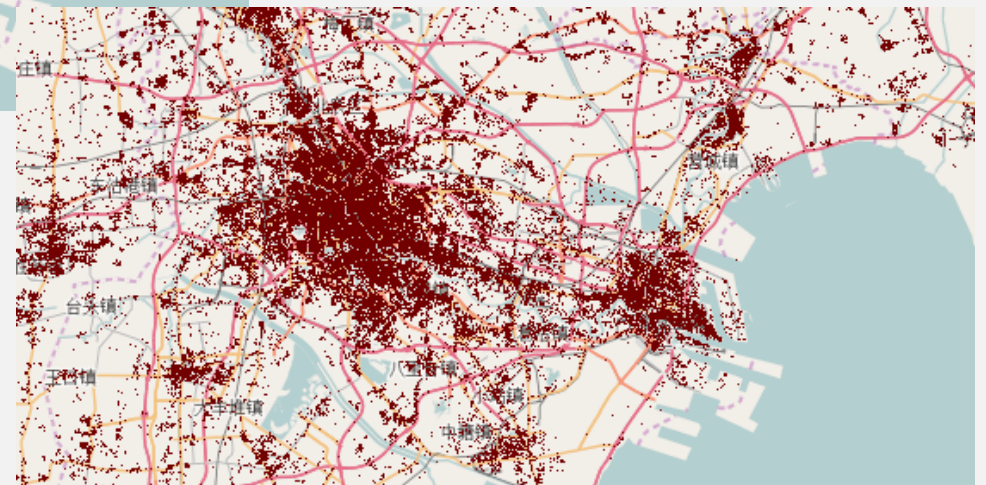
Rapid Expansion of the Urban Footprint



1975



2000



2015

Source: European Commission

Challenges

Car-dependency

Congestion

Pollution & toxic air

Unhealthy lifestyle

Crash fatality & injury

Environment
degradation



Beijing

Metro Ridership & Intensity

Ridership and ridership intensity of metro systems in different Chinese cities on April 30,2019

Rank	City	Passenger volume (= pull in + tranfer) (10,000 people)	Operation mileage (Kilometer)	Intensity of flow (=Passenger volume / Operation mileage) (10,000 people / Kilometer)
1	Beijing	1332.88	626.85	2.13
2	Shanghai	1241.80	673.00	1.85
3	Guangzhou	1049.02	476.86	2.20
4	Hongkong	930.80	222.20	4.19
5	Shenzhen	624.38	285.04	2.19
6	Chengdu	485.51	225.62	2.15
7	Wuhan	443.49	318.00	1.39
8	Nanjing	411.80	378.00	1.09
9	Chongqing	346.70	315.46	1.10
10	Xi'an	328.07	126.35	2.60
11	Hangzhou	208.03	117.60	1.77
12	Tianjin	173.65	219.70	0.79
13	Zhengzhou	124.57	95.40	1.31
14	Suzhou	118.90	121.00	0.98
15	Shenyang	100.79	60.30	1.67

People Near Transit (PNT)

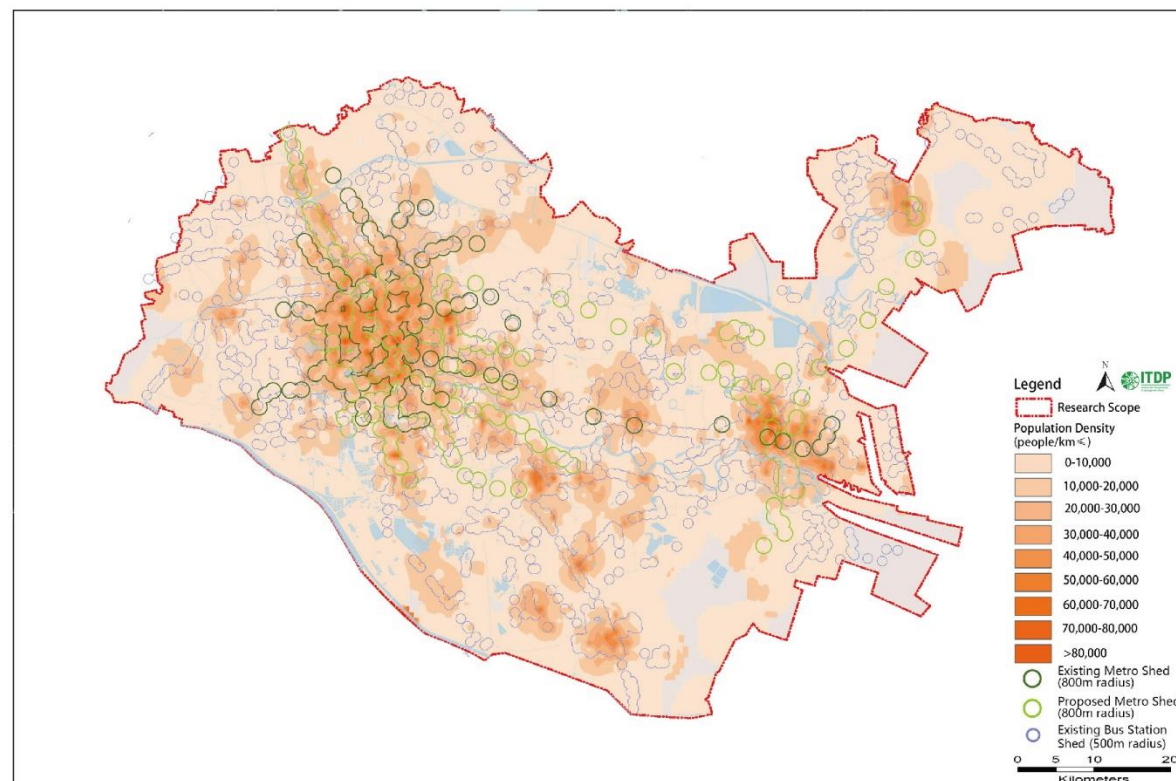
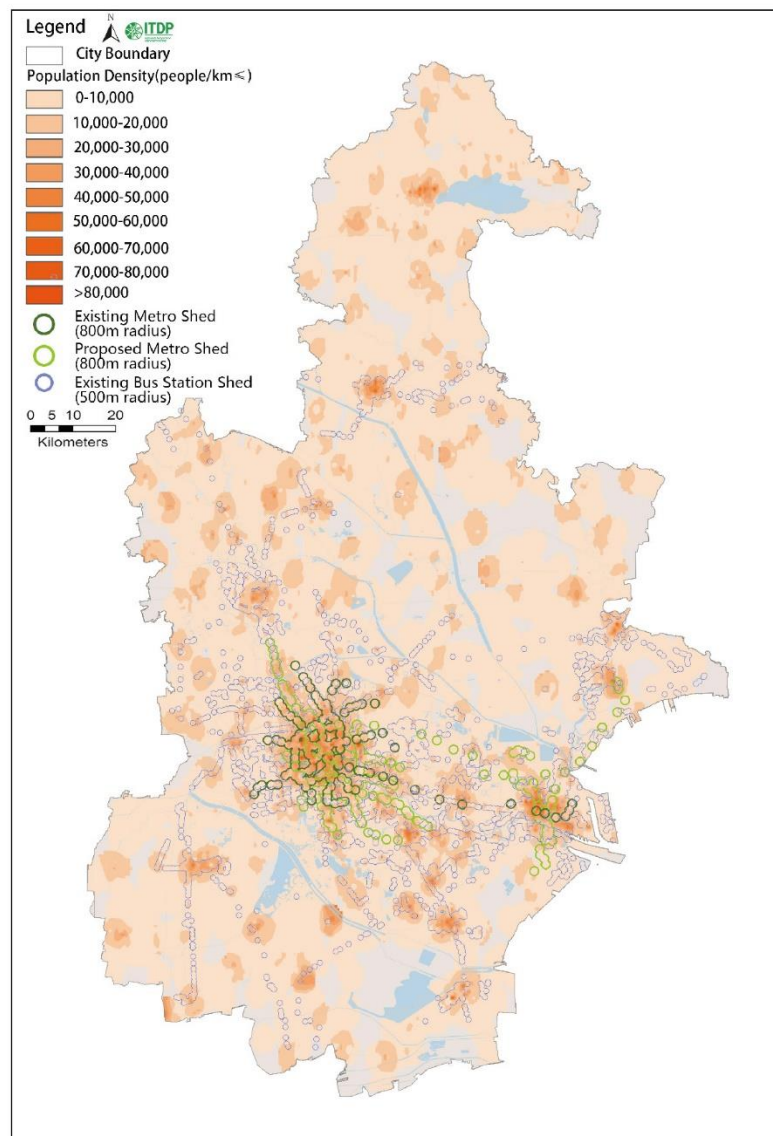
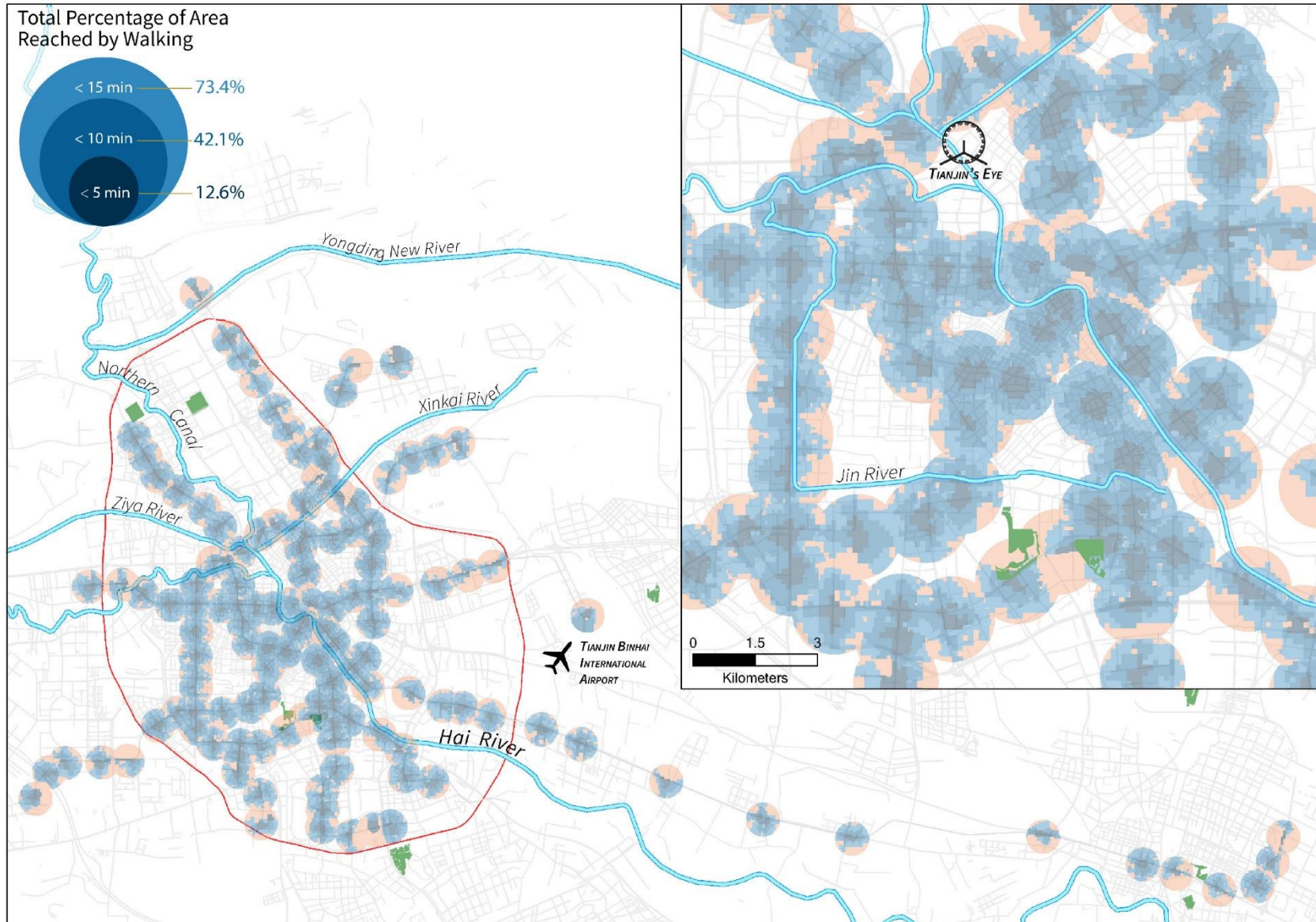


Table of all PNTs in Tianjin by different definitions and scopes

Existing metro (city boundary)	🚶🚶🚶	20.96%	Existing + planned metro (city boundary)	🚶🚶🚶🚶	34.38%
Existing metro (Research Scope)	🚶🚶🚶🚶	33.3%	Existing + planned metro (Research Scope)	🚶🚶🚶🚶🚶	49.96%
Existing metro (Center City)	🚶🚶🚶🚶🚶🚶	59.76%	Existing + planned metro (Center City)	🚶🚶🚶🚶🚶🚶🚶	80.18%
Existing metro + bus (city boundary)	🚶🚶🚶🚶🚶🚶🚶	62.5%	Existing + planned metro + bus (city boundary)	🚶🚶🚶🚶🚶🚶🚶🚶	69.78%
Existing metro + bus (Research Scope)	🚶🚶🚶🚶🚶🚶🚶🚶	74.9%	Existing + planned metro + bus (Research Scope)	🚶🚶🚶🚶🚶🚶🚶🚶🚶	85.5%
Existing metro + bus (Center City)	🚶🚶🚶🚶🚶🚶🚶🚶🚶🚶	98.5%	Existing + planned metro + bus (Center City)	🚶🚶🚶🚶🚶🚶🚶🚶🚶🚶🚶	99.12%

Distribution of Actual Walking Time in Existing Metro Sheds



12.6% coverage: < 5 mins
42.1% coverage: < 10 mins
73.4% coverage: < 15 mins
26.4% coverage: > 15mins

Legend

Area Reached by Walking
800m radius around metro stations

- Reachable within 5 minutes
- Reachable within 10 minutes
- Reachable within 15 minutes
- Further than a 15-minute walk

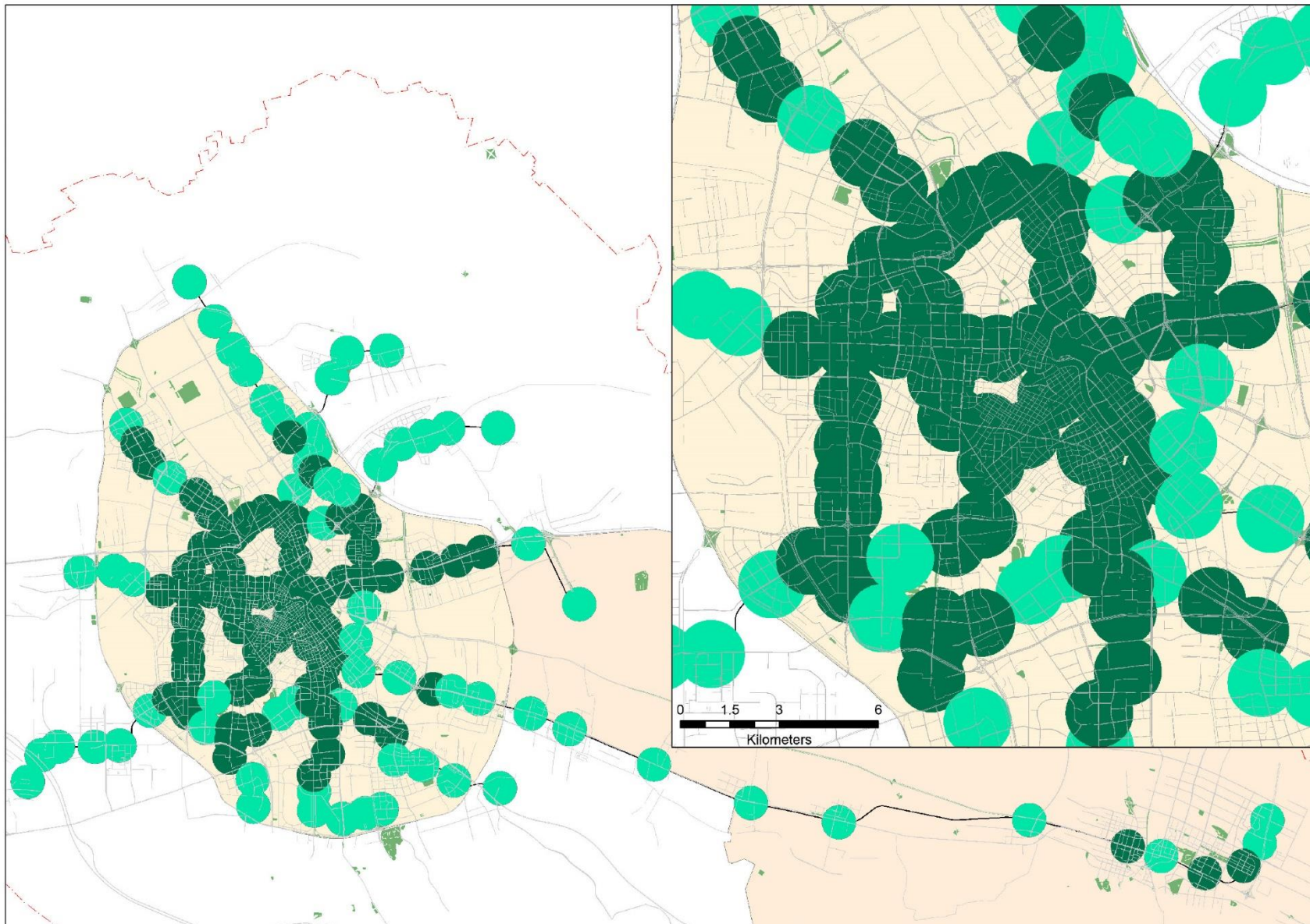
Others

- Roadways
- Waterways
- Outer Ring Road/boundary of Center City
- Scope of research
- Green space

0 5 10 20 Kilometers



Bicycle Lane Density in Existing Metro Sheds



87 Stations: Grade A

● $\geq 12 \text{ km/km}^2$

53 Stations: Grade B

● $< 12 \text{ km/km}^2$

Legend

Bike Lane Density
in Metro Shed (800m radius)

Dense Biking Zone

● $\geq 12 \text{ km/km}^2$

Inadequate area

● $< 12 \text{ km/km}^2$

Others

— Metro lines

— Roadways

▭ Research Scope

▭ Green space

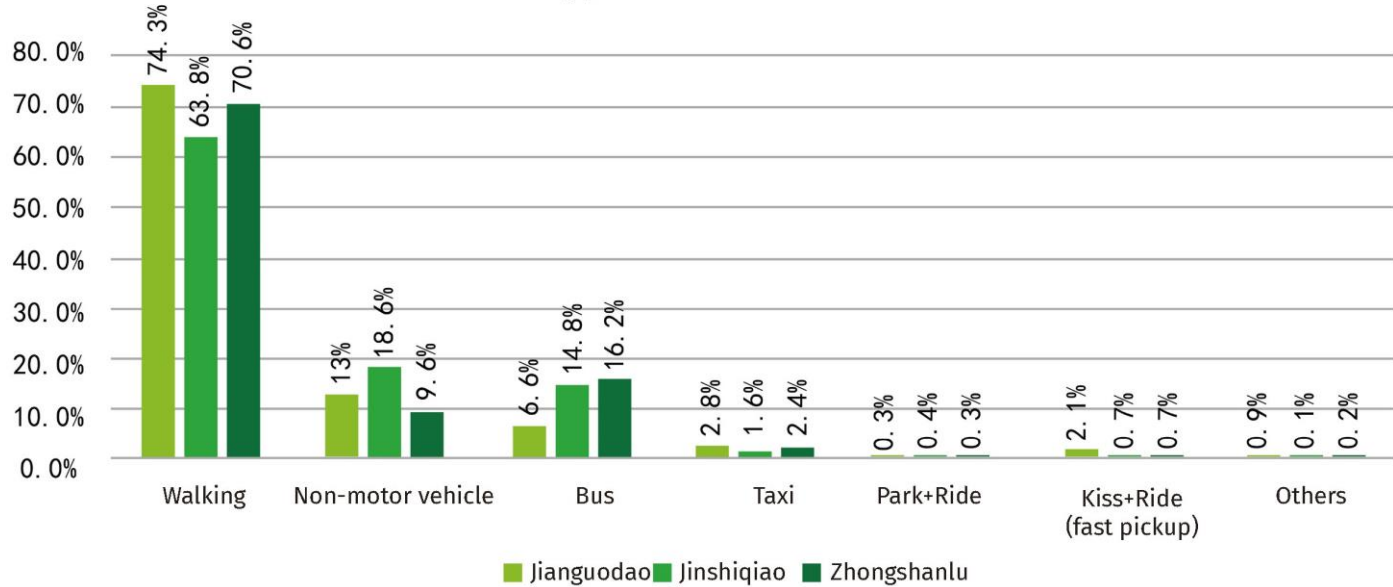
▭ Center City

▭ Binhai New Area

0 5 10 20
Kilometers



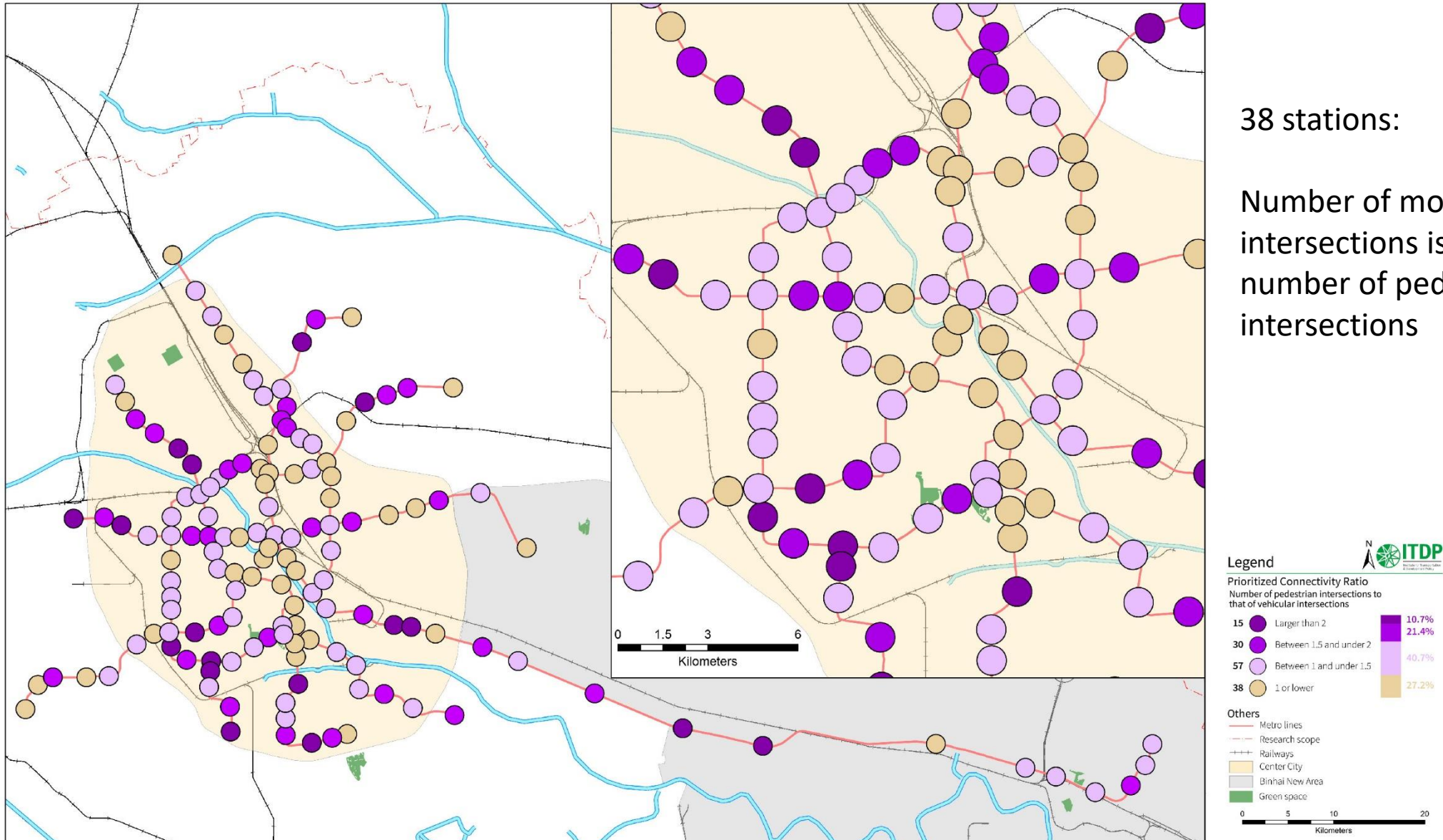
Transfer Ratio of Typical Metro Station in Hebei District



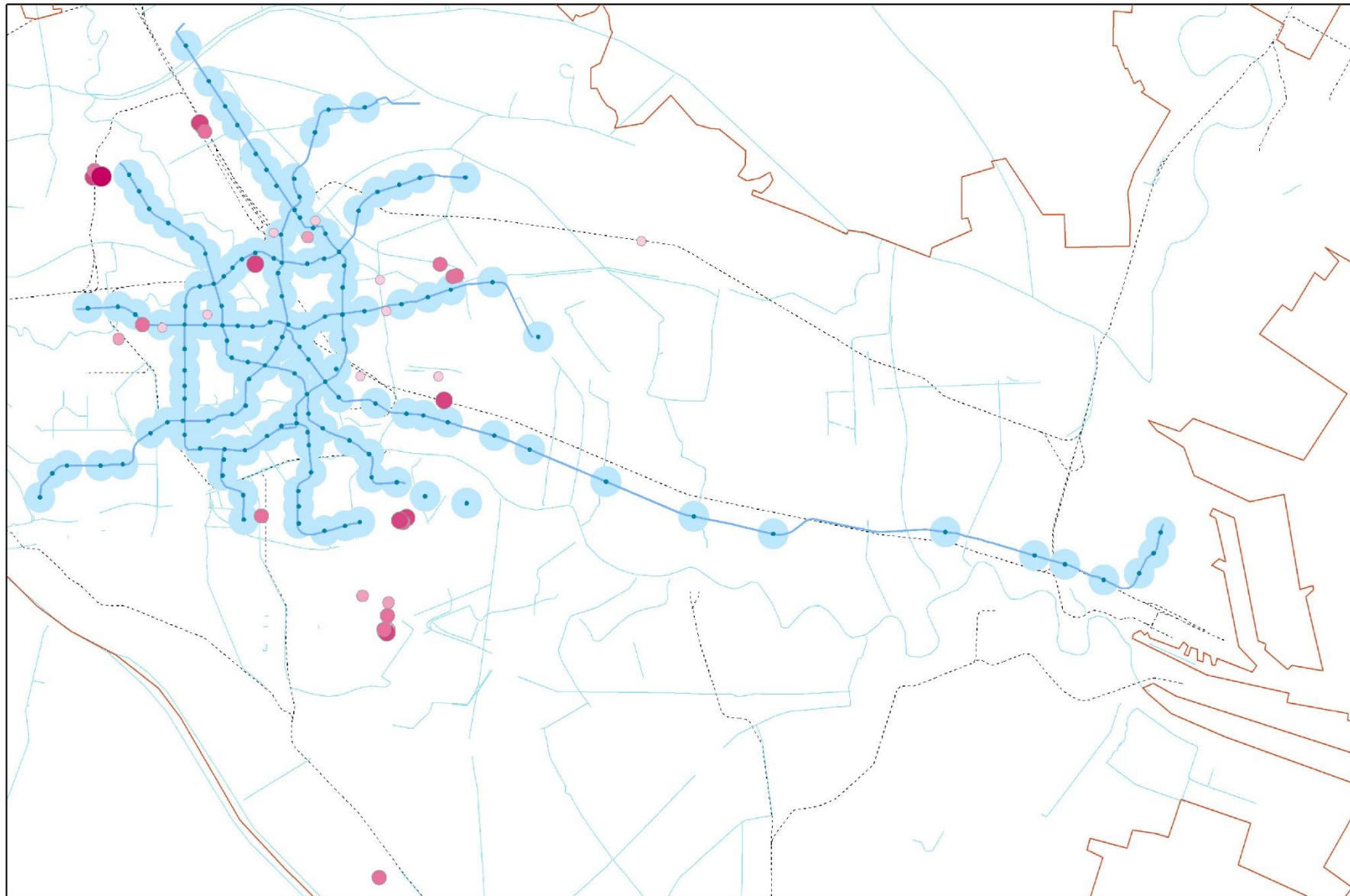
Source: Connection Project of Typical Metro Stations of Hebei Districts by the Tianjin Planning Institute



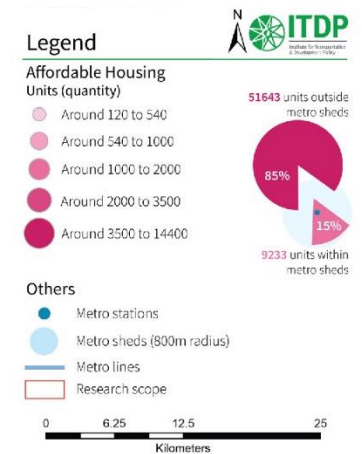
Connectivity Index of Existing Metro Sheds (Intersection Ratios)



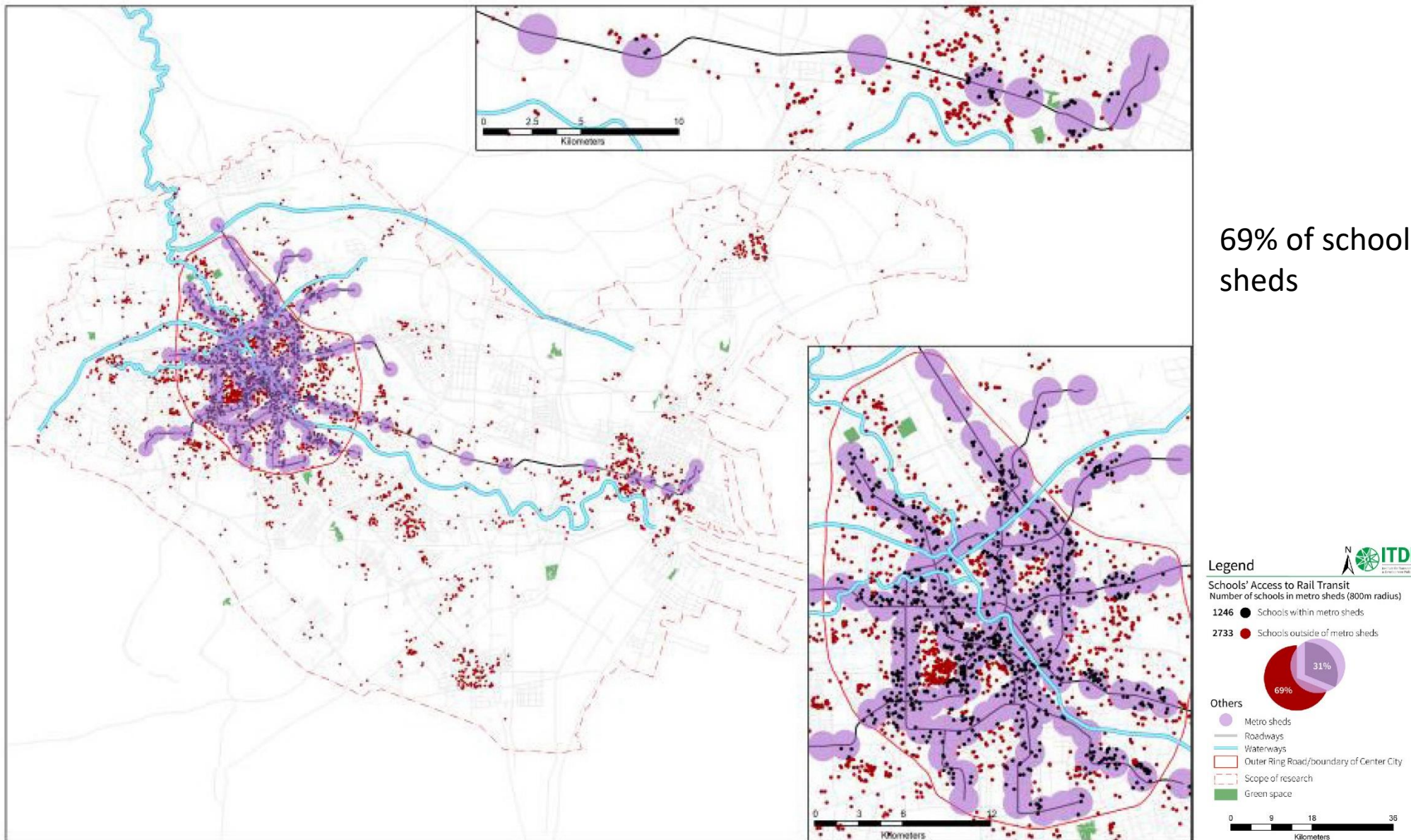
The Distribution of Affordable Housing within the Study Scope



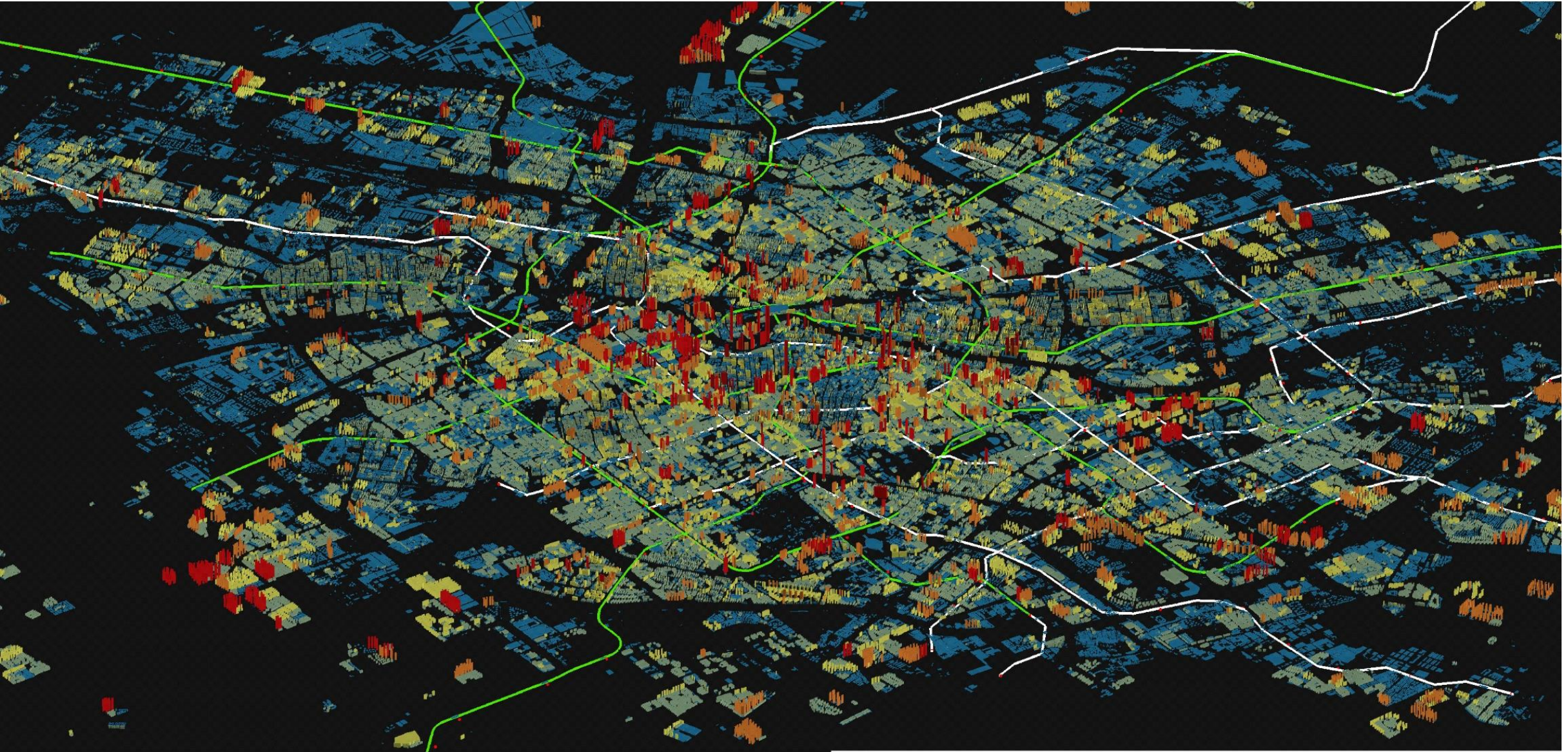
Only 15.2%, about 9233 units of the affordable housing are located within metro sheds.



The Distribution of Schools in Existing Metro Sheds



69% of schools outside of metro sheds





Legend

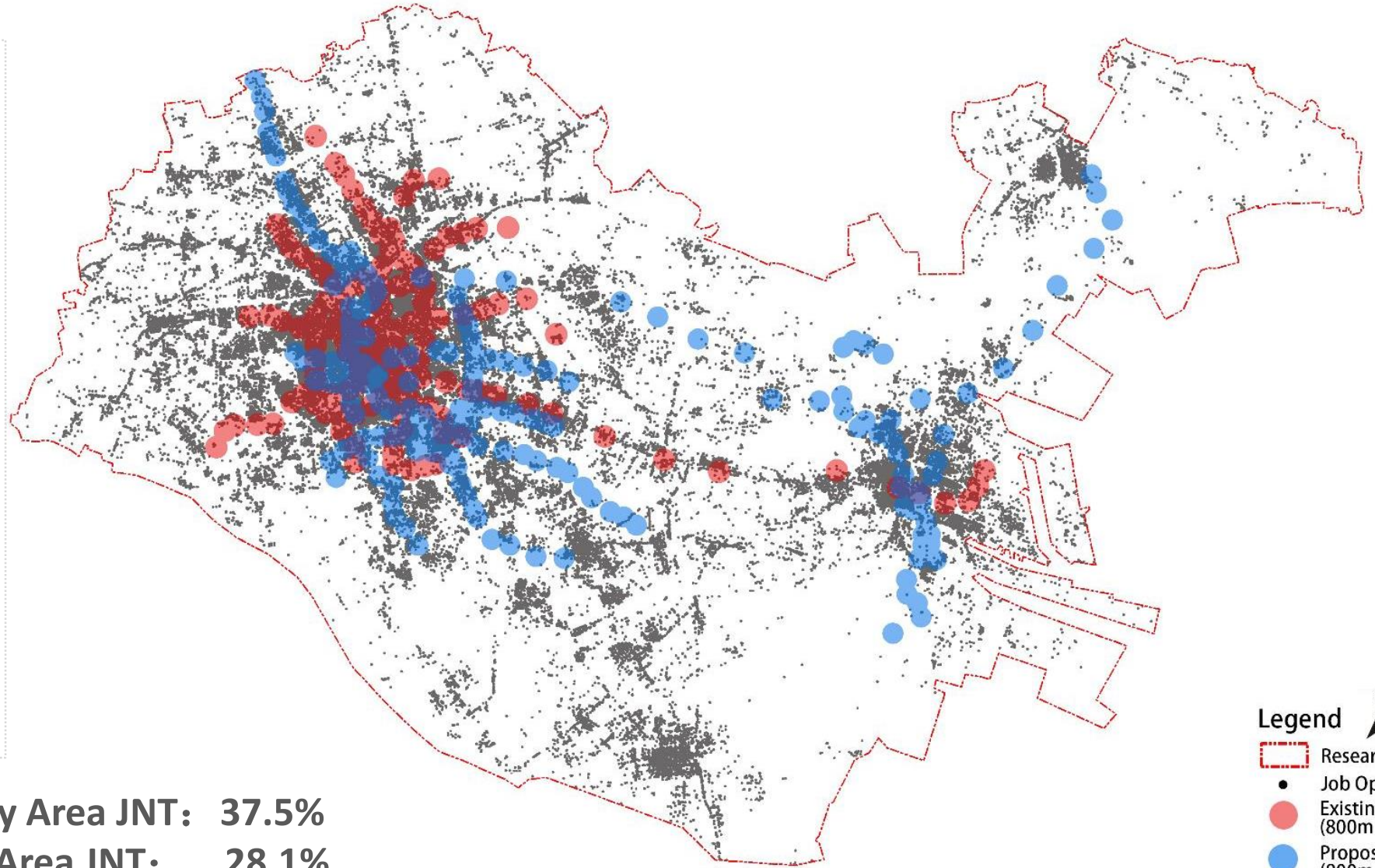
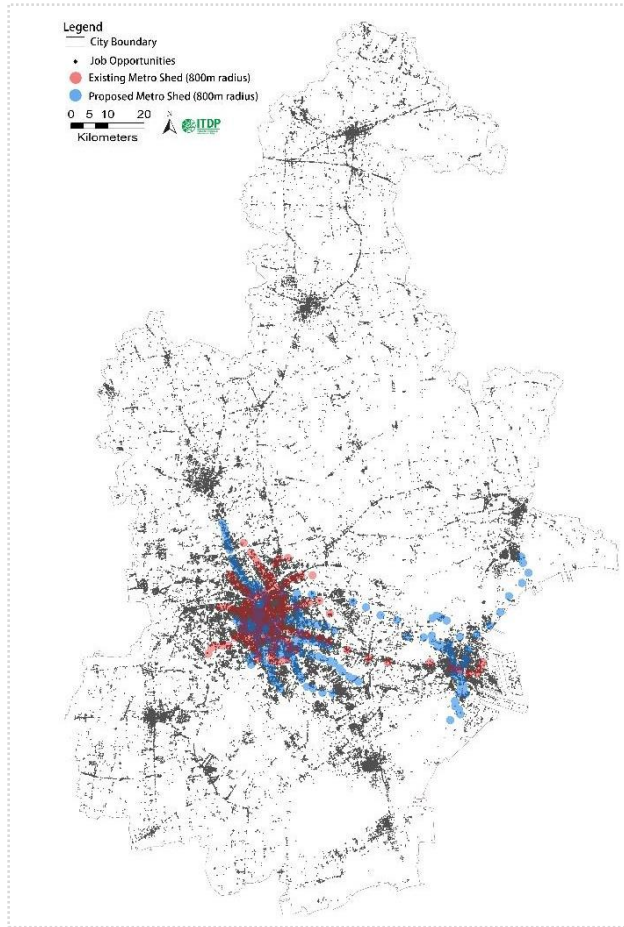
Building Heights (floors)

	Over 25		7 to 15		Under 5
	16 to 25		5 to 6		

Others

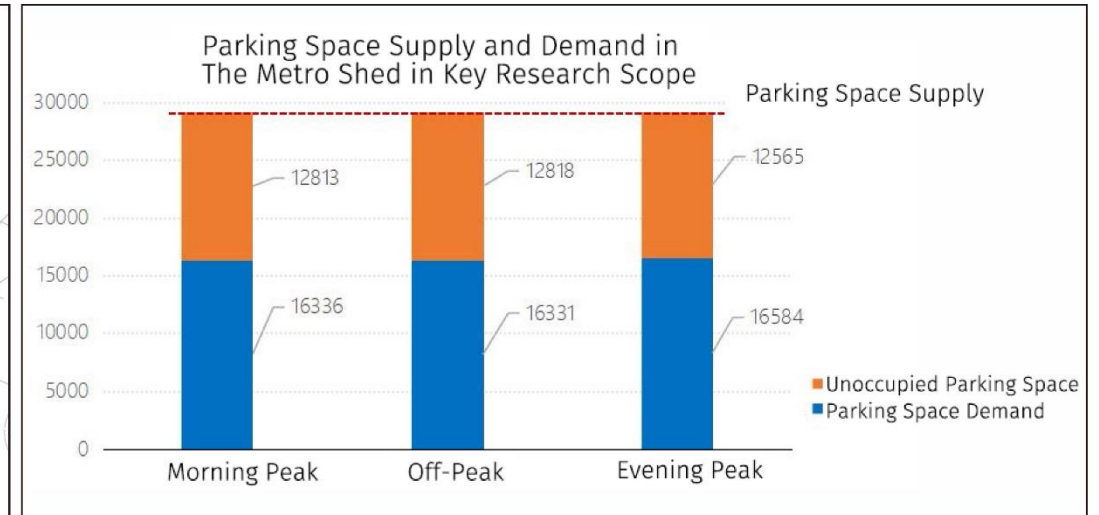
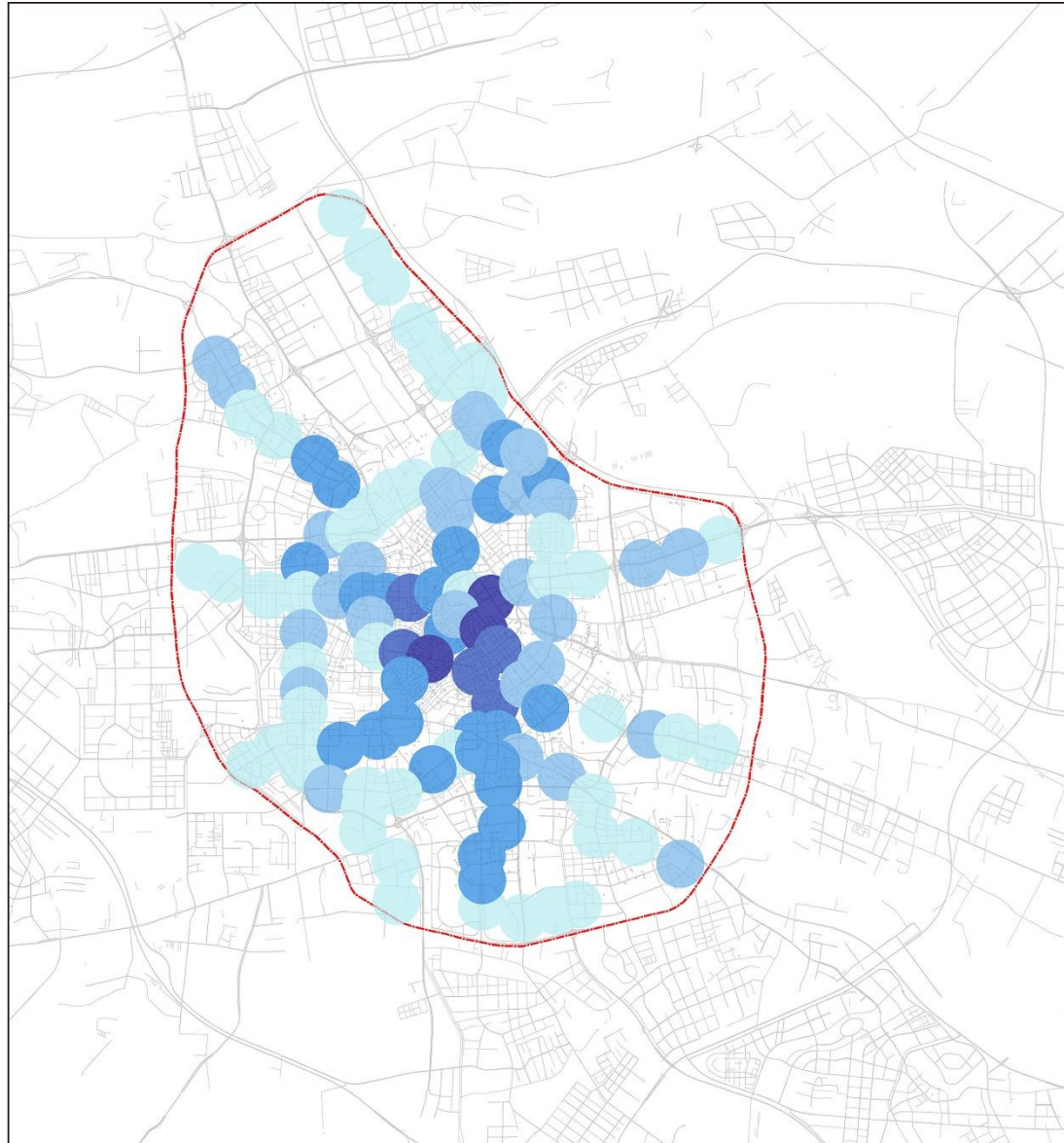
	Planned metro lines
	Existing metro lines

The Distribution of Job Opportunities in Metro Sheds



Study Area JNT: 37.5%
City Area JNT: 28.1%

On Street Parking in Tianjin Center's Existing Metro Sheds



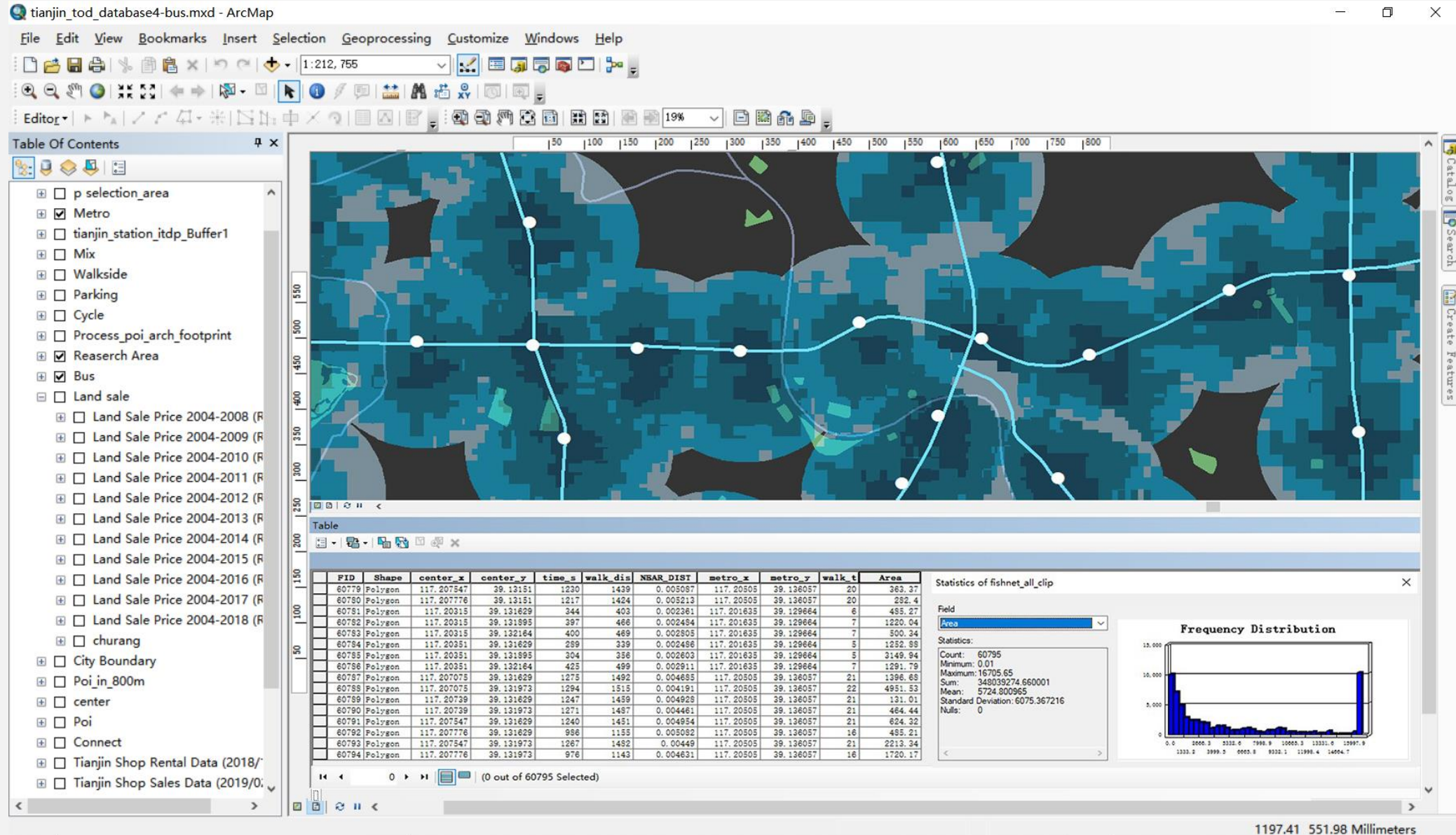
Parking demand is far less than parking supply, therefore, the number of parking spaces can be decreased and release these spaces for other purposes.

Strengthening the Participatory Process



Structure an Information System

Data collection and
GIS information
platform



Lessons Learned

TAD, not TOD

Transit-adjacent, not
transit-oriented



Tianjin

Lessons Learned

Tianjin's transformation into a TOD City requires many tasks, many reforms, many hands and minds

A. Systemization

- Integrate the development goals of Tianjin TOD
- Building a urban planning system guided by TOD

B. Integration

- Optimize the implementation and management entity of TOD
- Establish a implementation system with multi-party coordination

C. Sustainability

- Prefect development incentive system, land use system, and other matching policies
- Test a financing system that bundle metro and property development, and prefect a safeguard system accordingly

Obrigado!

richard.liu@itdp.org



ITDP

Institute for Transportation
& Development Policy



瑞安大街 (BRT
 corridor) 沿廊设计意向

瑞安大街 (BRT 走廊) 沿廊设计意向
Recommendation for streetfront on Rui'an Road (BRT corridor)