



Promote Green Transport in China:

Reflections on the Tianjin Urban Transport Improvement Project

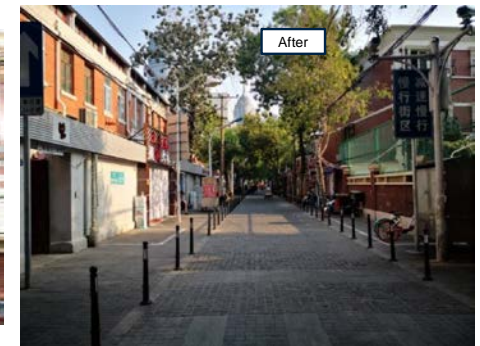
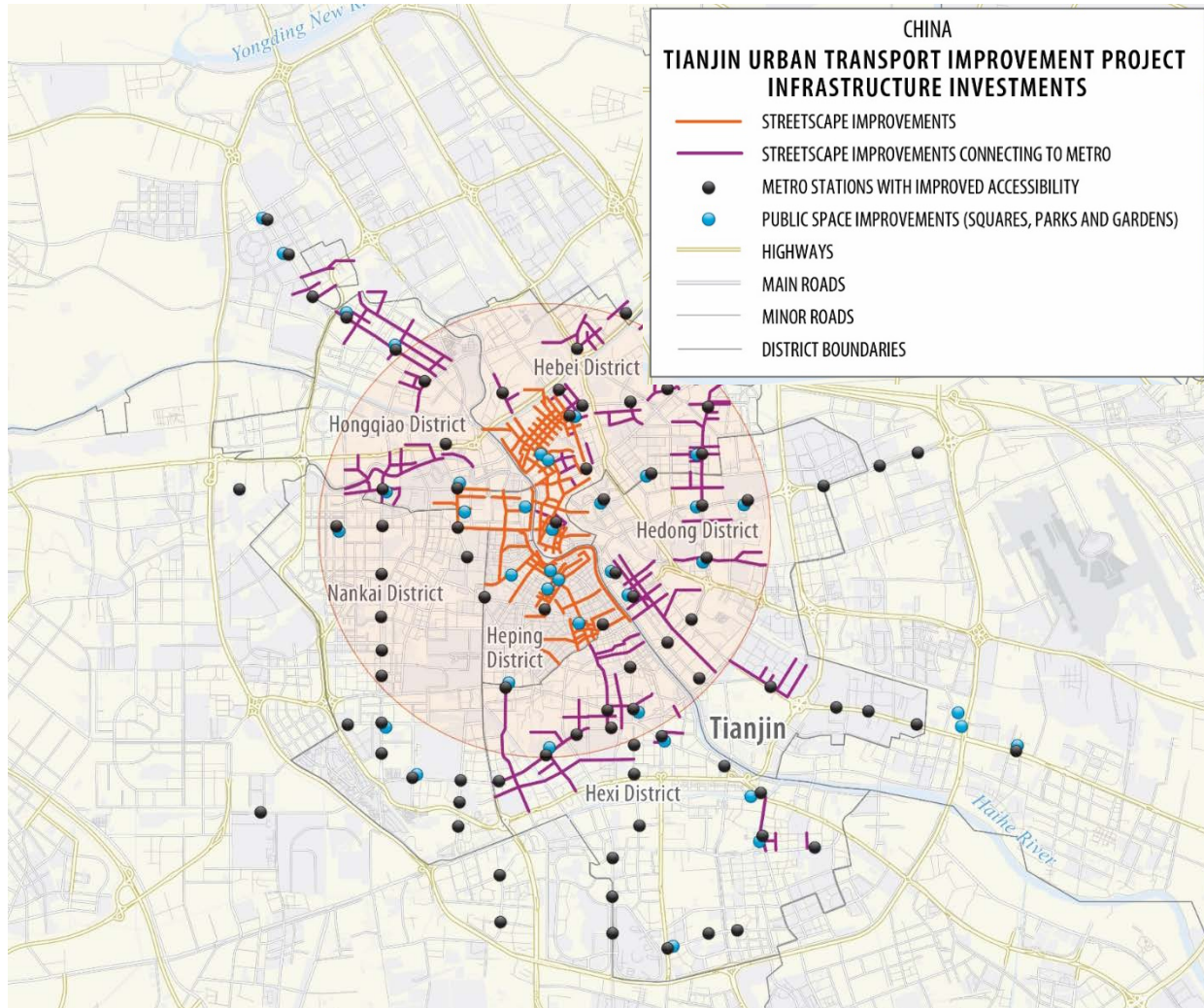
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China Sustainable Transportation Center

Beijing CityDNA Technology Ltd.

2024-11-19

DECISION-SUPPORT PLATFORM FOR IMPROVING NON-MOTORIZED TRANSPORT FACILITIES AND ENVIRONMENT IN TIANJIN



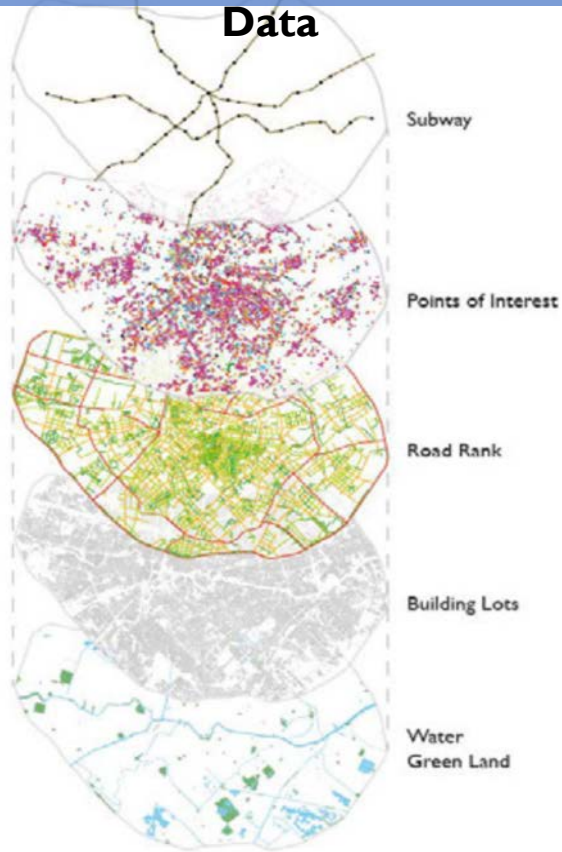
Source: World Bank

DECISION-SUPPORT PLATFORM FOR IMPROVING NON-MOTORIZED TRANSPORT FACILITIES AND ENVIRONMENT IN TIANJIN

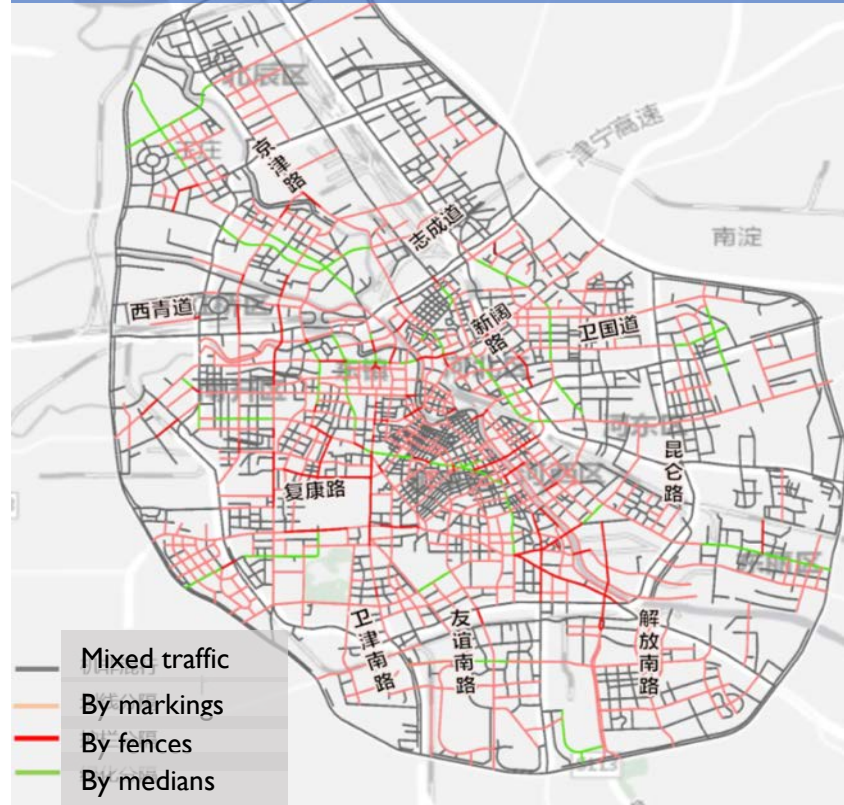
Data

Better Integrated Data for Smarter NMT Planning and Decision Making

Multi-layers Infrastructure Data

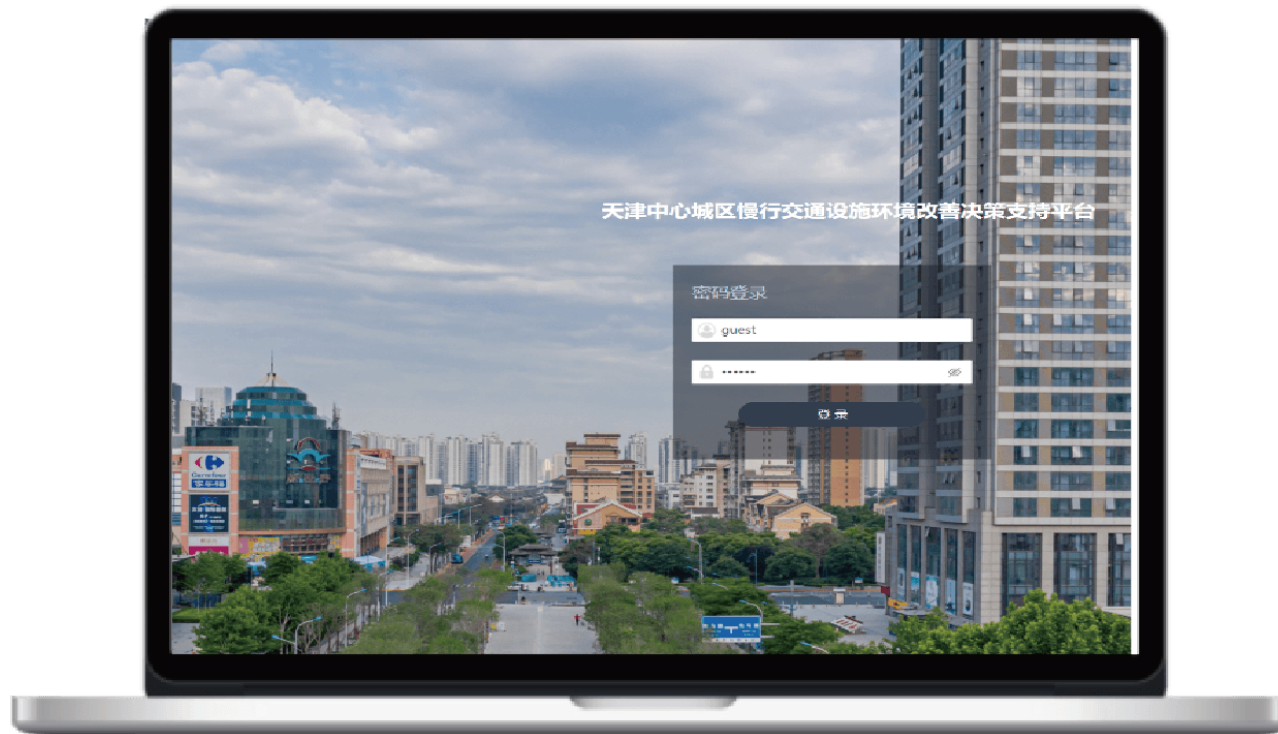


Apply computer vision and AI to identify bike lane separation facilities



Spatiotemporal Distribution of PBS Traffic Volume





Application Module:

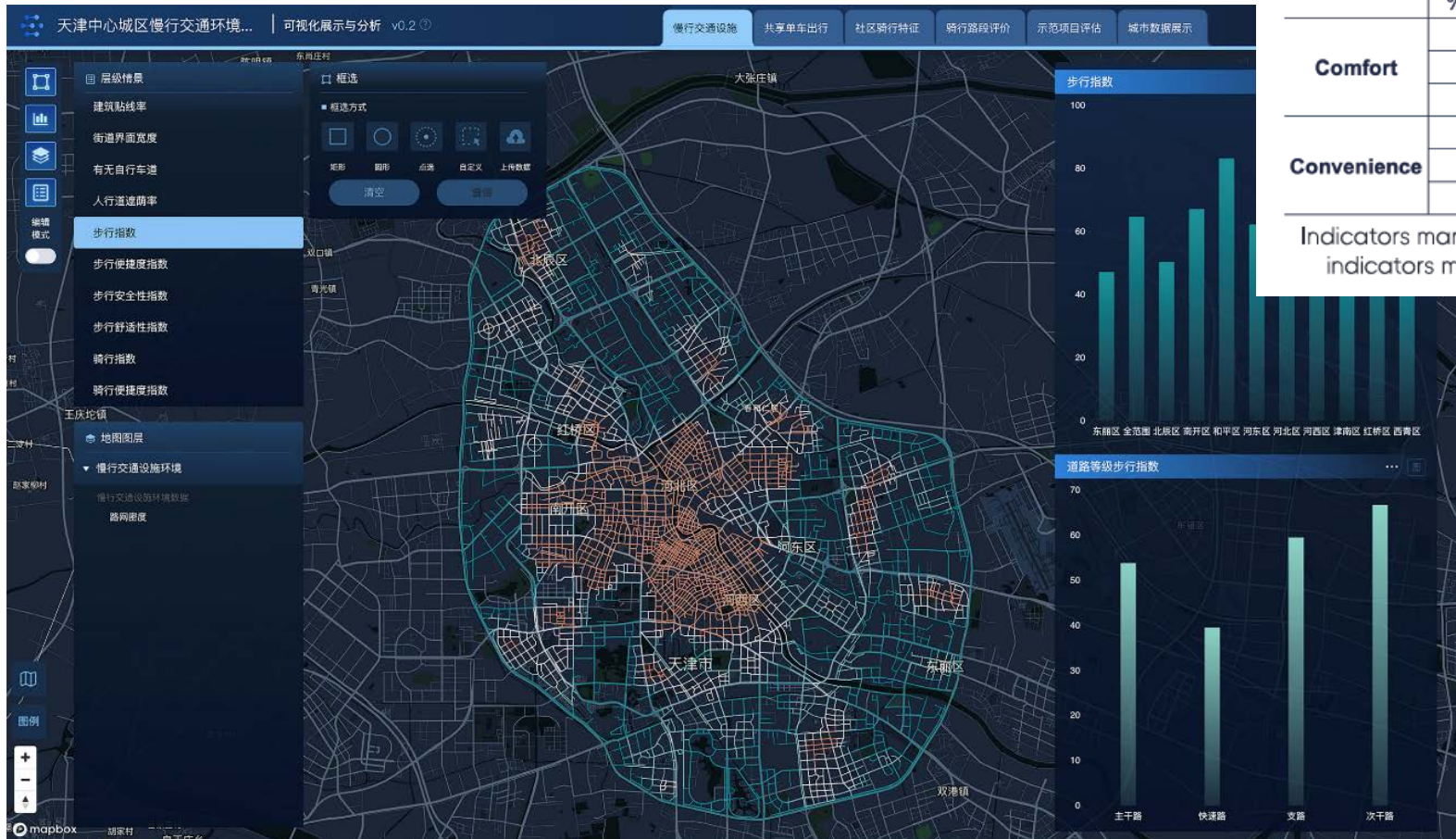
- ✓ NMT Facility and Environment Assessment
- ✓ Public Bike Sharing Supply-Demand Analysis
- ✓ Community Life Circle Facility Assessment
- ✓ Renovation Project Identification
- ✓ Post-Assessment of Project Implementation
- ✓ Public Opinion Collection and Analysis

DECISION-SUPPORT PLATFORM FOR IMPROVING NON-MOTORIZED TRANSPORT FACILITIES AND ENVIRONMENT IN TIANJIN

1. NMT Facility and Environment Assessment

Dimension	Indicator	
	Walkability	Bikeability
Safety	Sidewalk existence (+)	Bike lane existence (+)
	Crossing facility existence (+)	
	% Sidewalk with illegal parking (-)	% Bike lane with illegal parking (-)
Comfort	% Street with tree shade (+)	
	Street width (-)	Bike lane isolation (+)
Convenience	Street wall continuity ratio (+)	
	Street network density (+)	
	Crossing facility density (+)	
	Facility accessibility (+)	

Indicators marked as "+" imply a positive relationship with street score, while indicators marked as "-" imply a negative relationship with street score

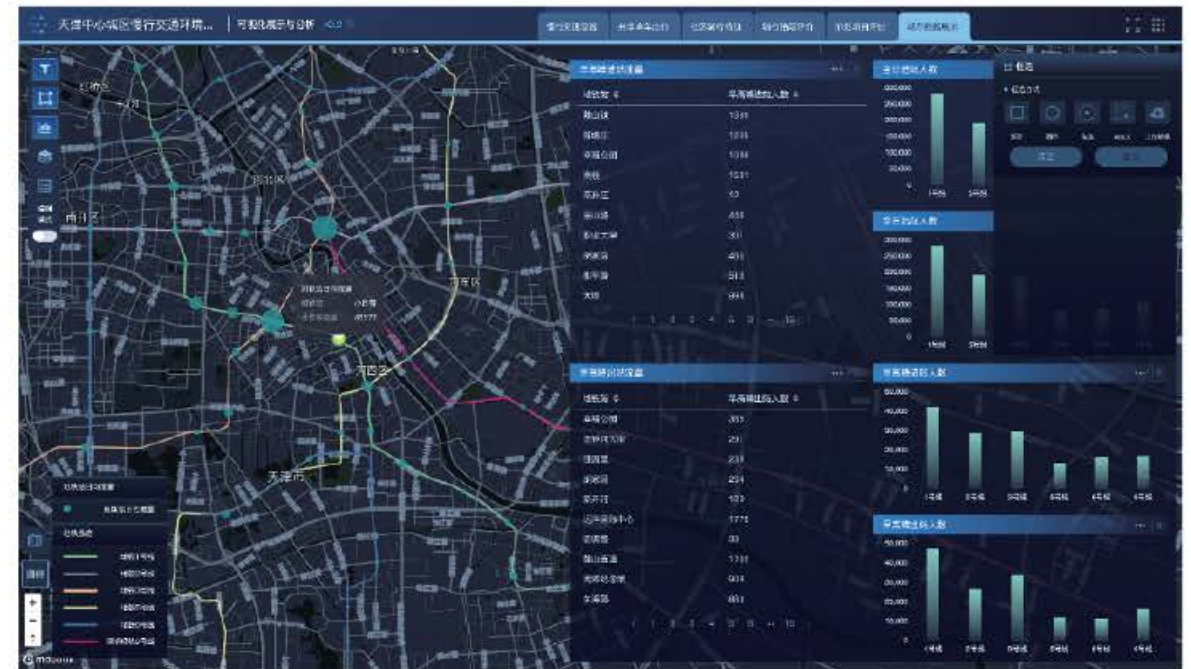


6,020 streets
1,783 km

2. Public Bike Sharing Supply Demand Analysis



Cycling Characteristics Analysis

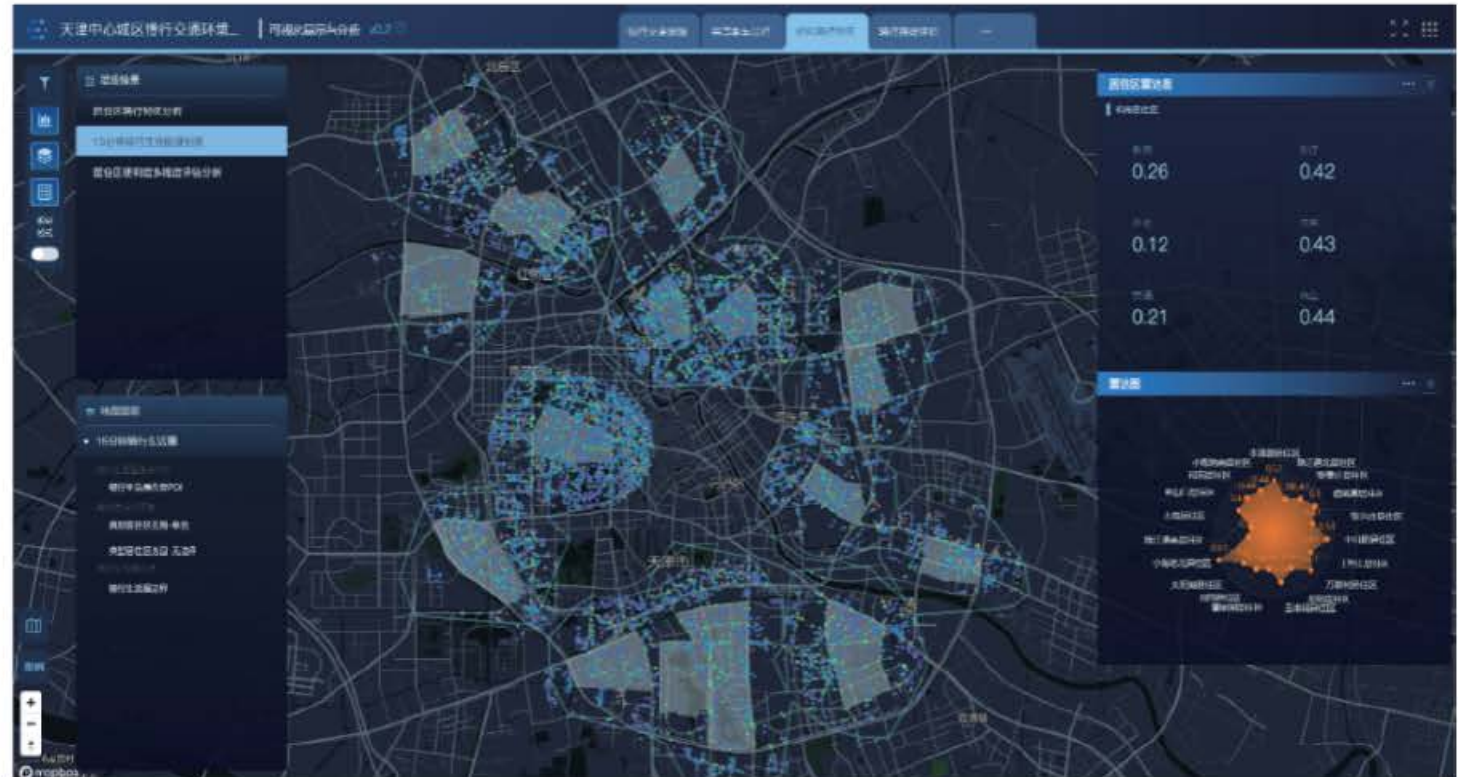


Analysis of subway cycling connection environment

3. Community Life Circle Facility Assessment

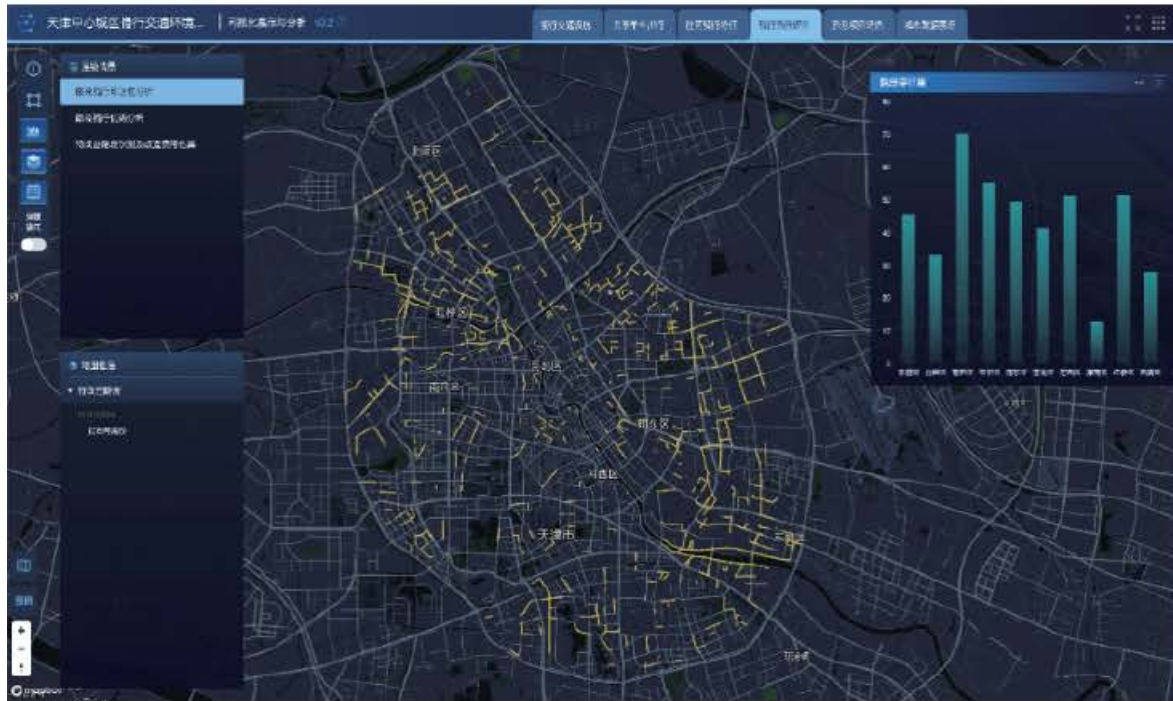
number (Major)	index	number (Subclass)	type
1	Education	1	Primary school
		2	Middle school
		3	training institution
2	Medical	4	Community public health station
		5	Hospital
3	Elderly care	6	Senior center
		7	Training institution
4	Recreational &Sports	8	Gym
		9	Cultural center
5	Transport	10	Subway station
		11	Bus station
6	Business	12	Market
		13	Financial services institution
		14	Supermarket
		15	Pharmacy

Classification of POI types for public service facilities



Assessment of supporting facilities in community cycling living areas

4. Renovation Project Identification and Cost Estimation



Identification of road sections to be reconstructed



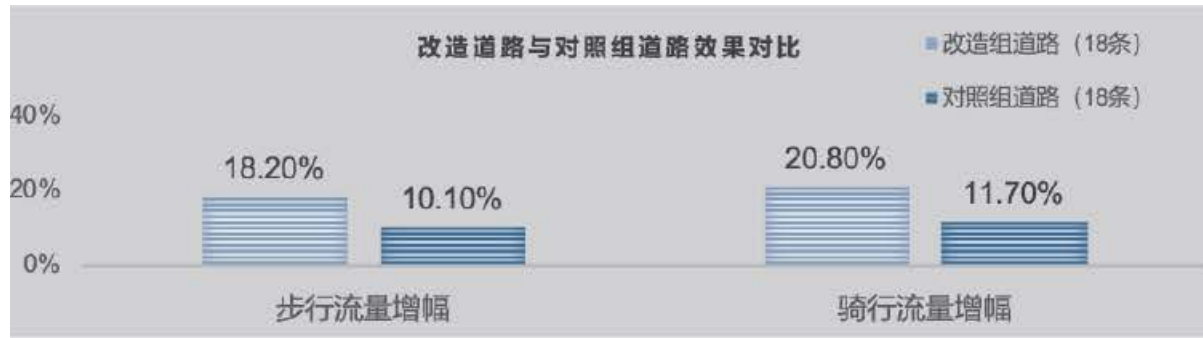
Comparative evaluation of project

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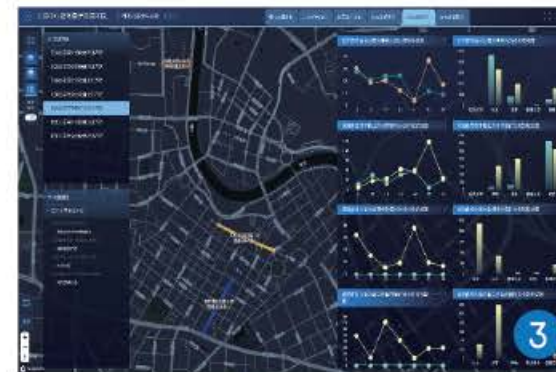
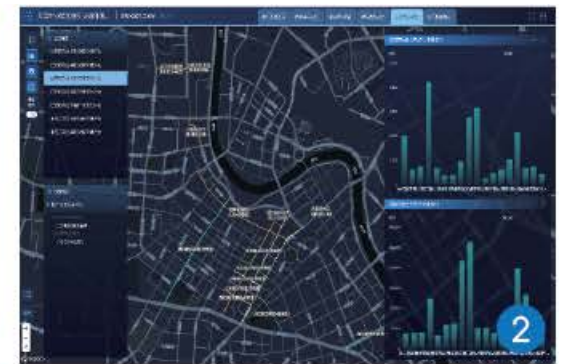
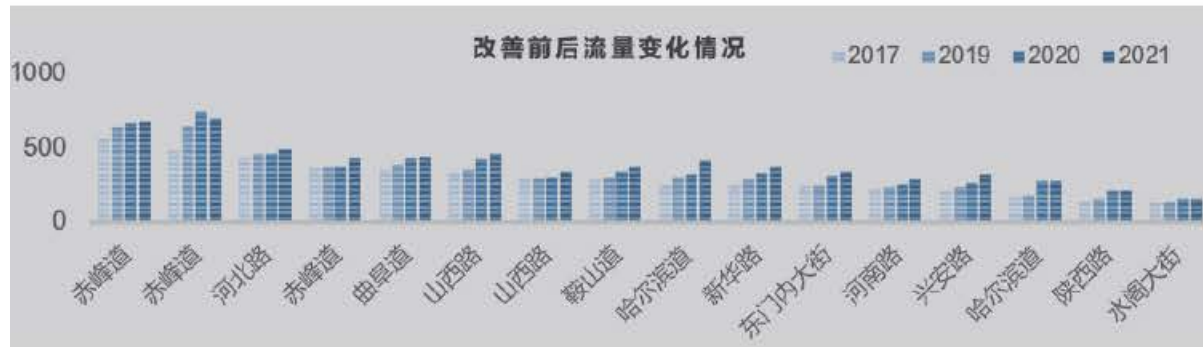
Before and After look of Shuige Road



5. Post-Assessment of Project Implementation



Comparison of the effects of reconstructed roads and control roads



1. Comparative analysis of environmental assessment of pedestrian facilities before and after reconstruction of typical road sections
2. Comparative analysis of traffic volume before and after reconstruction of typical road sections
3. Comparative analysis of stay behavior before and after renovation of typical public spaces

5. Post-Assessment of Project Implementation

The overall economic vitality index:
pilots +18.4% vs. **non-pilots +2.7%**

河南路 人行道改造效果示例

麦购休闲广场附近路段：拓宽人行道；加设栏杆，进行机非隔离

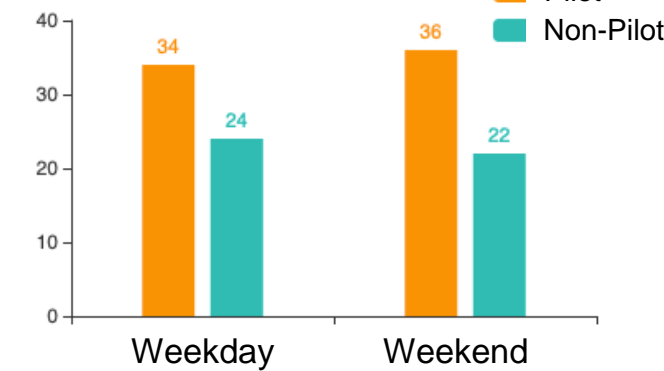


保定道 自行车道改造效果示例

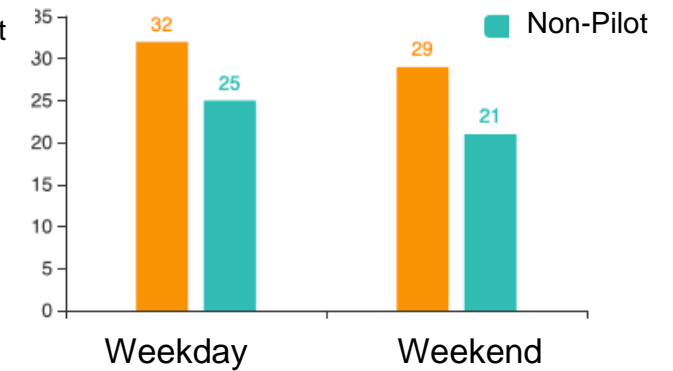
山西路与河北路之间路段：单侧 双侧；彩色铺装；路缘石漆黄色实线



Walk Share %



Bike Share %



	Pilot Streets		
	Before (2016)	After (2020)	Change Rate %
# Quality stores/ 100m	3.4	8.3	142.7
# Popular stores/ 100m	3.4	6.8	101.2
Store rating by customers	3.2	3.5	9.5
Store opinions	249.2	323.1	29.6
Store expenditure	168.5	218.1	29.4
Store rent (RMB/m/day)	4.0	5.7	43.4

DECISION-SUPPORT PLATFORM FOR IMPROVING NON-MOTORIZED TRANSPORT FACILITIES AND ENVIRONMENT IN TIANJIN

6. Public Opinion Collection and Analysis

During a one-month NMT campaign, more than 5,000 proposals from residents were collected using the PinStreet app.

互联网 + 公众参与 = 路见
Internet + Public Participation = PinStreet

- **聚焦城乡空间品质和民生问题的公众互动平台**
Public interaction platform focusing on urban space quality and livelihood issues
- **高效的公众参与解决方案**
Efficient public participation solutions



- 骑行环境 (Biking Environment)
- 自行车停放 (Bike Parking)
- 过街设施 (Illegal Parking)
- 步行环境 (Walking Environment)
- 无障碍设施 (Wayfinding)
- 标识与指引 (Crossing)
- 夜间照明 (E-Bike)
- 遮阳避雨设施 (Recreational Space)
- 电动车 (Facilities for Disabled)
- 休憩空间 (Lighting)
- 占道停车 (Shading)
- 自定义 (Other)

- Biking Environment
- Bike Parking
- Illegal Parking
- Walking Environment
- Wayfinding
- Crossing
- E-Bike
- Recreational Space
- Facilities for Disabled
- Lighting
- Shading
- Other



DECISION-SUPPORT PLATFORM FOR IMPROVING NON-MOTORIZED TRANSPORT FACILITIES AND ENVIRONMENT IN TIANJIN

6. Public Opinion Collection and Analysis

路见天津·公众参与管理平台

参与概况

提案总数 6487	参与人数 5157	字数统计 284084
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地图工具

地图工具 分布图

提案类别 全选 清除

- 骑行环境
- 自行车停放
- 电动车
- 过街设施
- 步行环境
- 占道停车
- 无障碍设施
- 标识与指引
- 休憩空间
- 夜间照明
- 遮阳避雨设施
- 自定义

提案详情

共6487条, 已选择6487条

向往
丰台区少年宫(文体路东)

#骑行环境#路边缺少自行车道, 机动车违停现象严重, 极易导致危险事故发生。

0 0

momo
河北区秀山里(江都路西100米)

#休憩空间#小区环境卫生差! 小朋友没有一个可以安全玩的区域, 老年人没有可以遛弯活动的地方~小区排水管道更换完了善后无人管理路面都是明显的石头与土堆~

0 0

柳岩
河北区成林道(星期8广场东南)

#占道停车#卖菜的太多了! 应设几个生活所需的零售市场! 老百姓关心的就是: 柴米油盐酱醋茶! 迫切地希望建市场! 以方便老百姓的生活所需!!!!

0 0

6. Public Opinion Collection and Analysis



Influence on China's National Policy to Promote NMT

2019 "Green Travel Action Plan (2019-2022)", 《绿色出行行动计划（2019—2022）》

Issued by MoHURD and MoT, together with 12 departments, to guide local cities to carry out green creation actions to encourage green travels, and improve the NMT system as an important content. Evaluation Standards included indicators such as the construction of sidewalks and bike lanes.

2020 "Opinions on the Sidewalk Purification and Bicycle Lane Construction" 《关于开展人行道净化和自行车专用道建设工作的意见》

Issued by MoHURD, to ensure continuous smooth sidewalks, clean up illegal parking, open up dead end roads, improve street crossing facilities, etc. Promote the planning, construction and maintenance of bicycle-only lane networks.

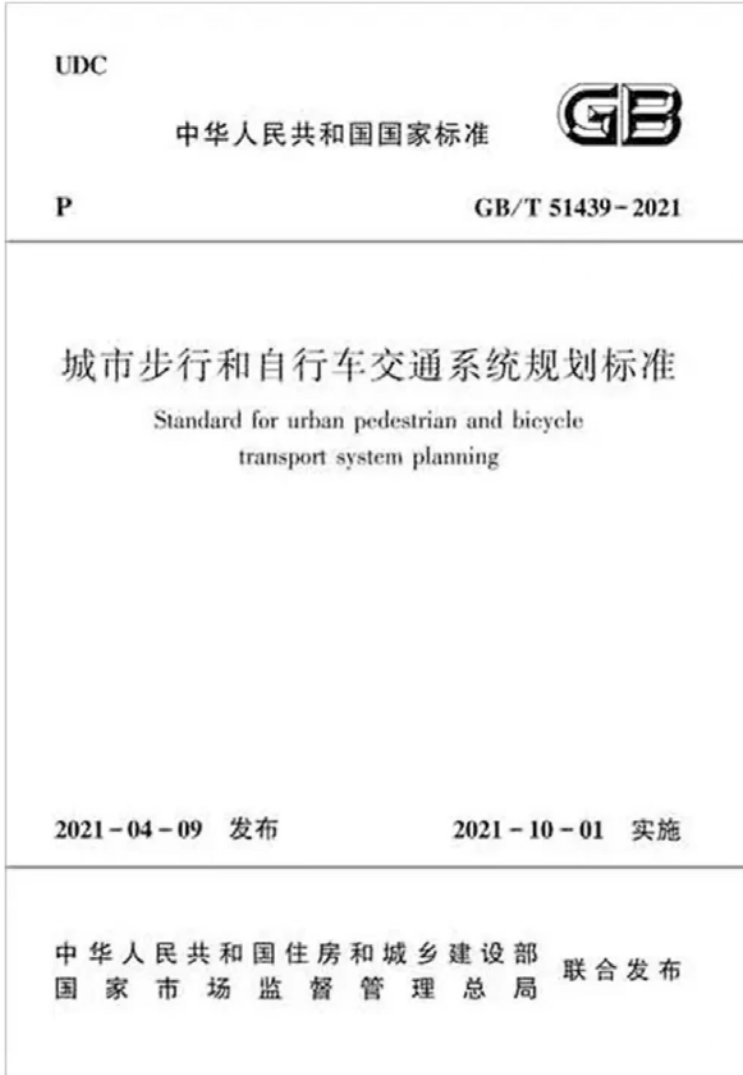
2021 "Notice on Carrying out the 2021 Urban Physical Examination Work" 《关于开展2021年城市体检工作的通知》

Issued by MoHURD, to include the NMT mode share, and the network density of bicycle lanes as key city performance indicators.

Influence on China's NMT Code (2021)

5.1.1 城市道路的横断面规划设计应优先保障步行和自行车通行空间，竖向设计宜优先保障步行和自行车通行空间。

The cross-sectional and vertical planning and design of urban roads should prioritize pedestrian and bicycle space at first.

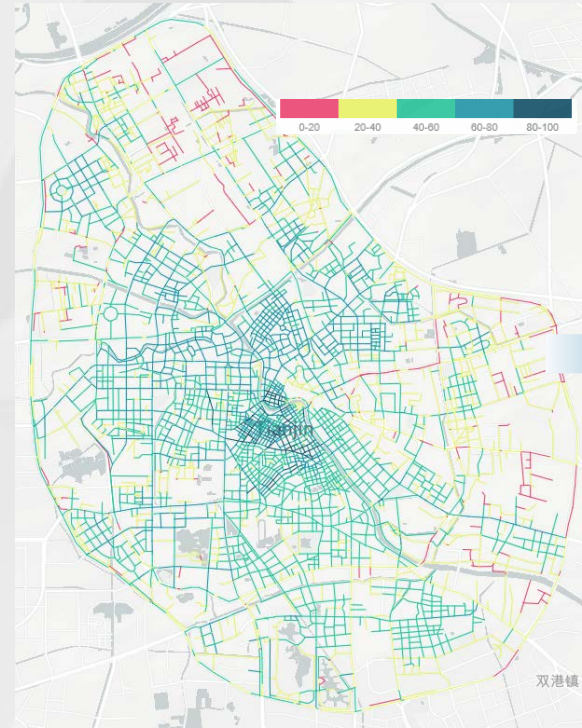


Influence on China's NMT Code (2021)

- ✓ Shift away from the "primary- secondary- branch" conventional road classification
- ✓ Include non-municipal streets (alley, hutong, greenway) in the NMT network

		Bike lane width (m)	
		Standard	Min.
Tier-1 bike lane		4.5	3.5
Tier-2 bike lane		3.5	2.5
Bike only lane	Two-way	4.5	3.5
	One-way	3.5	2.5

		Sidewalk width (m)	
		Standard	Min.
Tier-1 Pedestrian Path		4.0	3.0
Tier-2 Pedestrian Path		3.0	2.0
Special areas	Shopping mall, hospital, school	5.0	4.0
	Rail station, wharf	5.0	4.0
	Metro station, bus terminal, BRT station	4.0	3.0



天津街道现状评估 > 骑行指数



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Influence on China's NMT Code (2021)

✓ Design On-street Parking

Before and After look of Xinhua Road



Before and After look of Xingan Binjiang Ave



Influence on China's NMT Code (2021)

✓ Design On-street Parking

5.3.7 路内机动车停车泊位可紧邻机动车道，结合机非隔离带设置，不得侵占非机动车通行空间。无机非隔离带时，紧邻机动车道设置的路内机动车停车泊位与非机动车道之间应设置缓冲区，停放车辆不得进入缓冲区，缓冲区宽度不宜小于0.5m。

5.3.7 On-street parking shall be adjacent to the car lane or integrated with the separation belt. It shall not block the walking and biking space. For streets with no separation belt, a buffer zone no less than 0.5m wide shall be placed between car parking area and the bike lane.

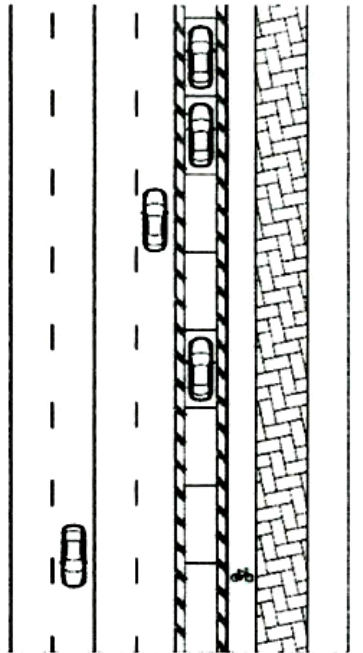
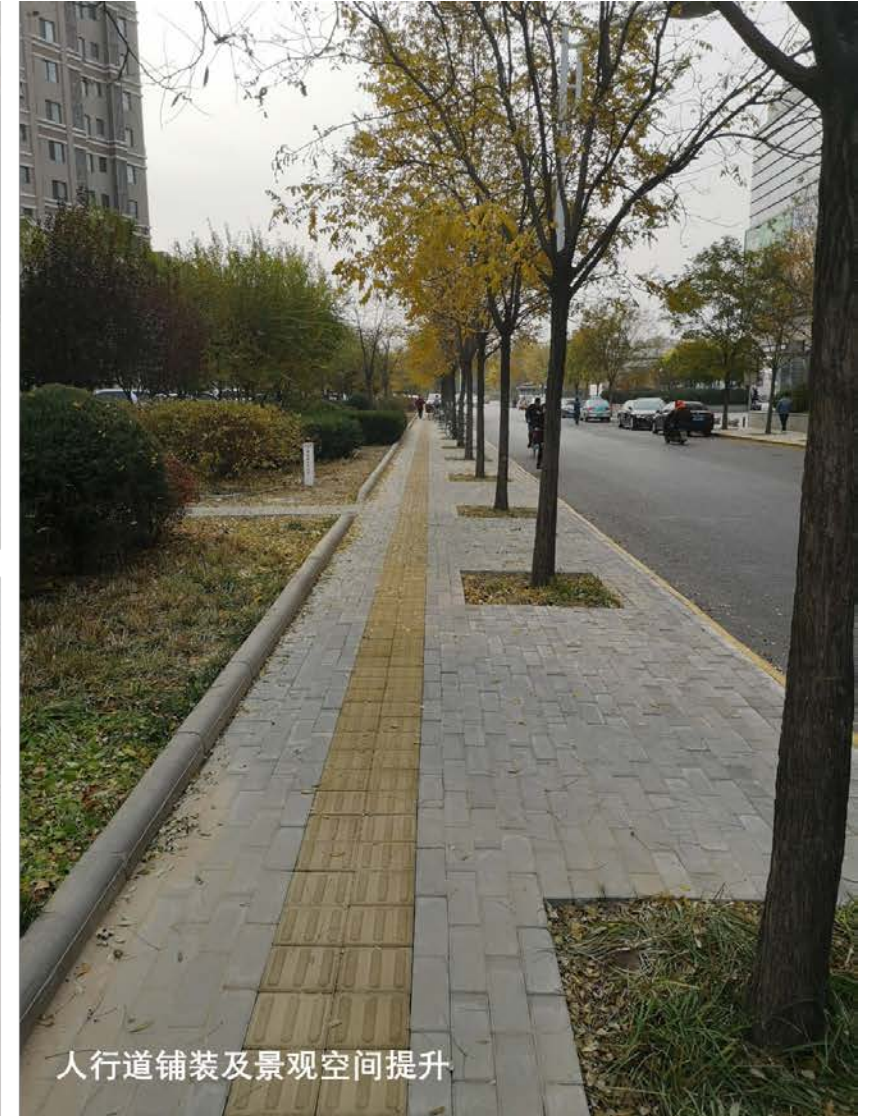


图2 路内机动车泊位与非机动车道间设置缓冲区

Influence on China's NMT Code (2021)

✓ Design Crossing Facilities and Traffic Calming



PINSTREET PUBLIC PARTICIPATION IN CHINA

As of now, the PinStreet initiatives have reached over **50** cities in China. More than **500,000** citizens used the PinStreet app to post their suggestions on improving city facilities and services.



City Futures Shaped by Data

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2024-3 Washington D.C.