



建筑与城市规划学院

SCHOOL OF ARCHITECTURE AND URBAN PLANNING HUST

T²M TRANSPORT, TRAFFIC
& MOBILITY

The Expansion and Remodeling of The Concept of “Transport Safety”

交通安全概念的扩展与重塑

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0.Traffic itself 交通本身

For traffic, there are several words used at the same time: transportation (transport), travel, traffic. The three words are actually macro to micro understanding in the field of transportation.

对于交通有几个单词同时在使用: **Transportation (Transport)**、**Travel**、**Traffic**, 三个单词实际上是在交通领域的宏观至微观的认识。

Transportation (Transport)

It mainly refers to the behavior and system of passengers and goods moving in space by some means, emphasizing the transportation mode and the generated system.

主要指的是客货在空间中通过某些方式进行移动的行为和系统, 强调的是运输这种方式以及生成的系统。

Travel

It refers to the movement of two or more destinations in space, emphasizing the change of OD relationship and spatial distance.

指在空间中的两点或多点进行移动, 强调的是OD关系和空间距离的变化。

Traffic

It refers to the movement of different types of vehicles in a specific traffic space for a specific purpose.

指的是不同类型的交通工具以特定目的在特定交通空间的移动。

CONTENTS

目录

Theme: Urban mobility in the post-epidemic era

主题：后疫情时代的城市机动性



Transport concerns about safety and health
交通对安全健康的关注



What enlightenment does the new
epidemic situation bring to Transport ?
新冠疫情带给交通什么启示？



Expansion of Transport management target system
交通治理目标体系的扩展

1.1 Foreign traffic research stage国外交通研究阶段



国外对于城市交通的研究最早开始于20世纪初，主要依赖于城市建设和发展水平，是从“**城市公共卫生健康**”这一重大城市问题出发开始关注城市公共交通空间。

Foreign research on urban transportation began at the beginning of the 20th century. It mainly depends on the level of urban construction and development. It starts from the major urban problem of "urban public health " to pay attention to urban public transport space.

1.1 Foreign traffic research stage国外交通研究阶段



Phase 2

“交通安全事故”问题展开对公路设计建设的工程学研究，即交通规划学中的 Design and Construction of Transportation Facilities，与此同时对城市街道空间的**“社会学反思”**促进了对街道活力、公平性等研究，这两个方向同时推进了交通规划学的“硬性”和“软性”进步。
The problem of “traffic safety accident” is the engineering research of highway design and construction of transportation. At the same time, the “Sociological Reflection” of urban street space promotes the research on the vitality and fairness of streets. These two directions promote the “hard” and “soft” progress of traffic planning.

1.1 Foreign traffic research stage国外交通研究阶段

许多高校都开展关于**交通工程设计规划**的基础课程，但更进一步地是将交通作为一项**专业管理工作**来进一步学习其**分析研究方法**（Travel Demand Analysis、Statistics in Transport 、 Environment Impact Assess 、 Traffic Capacity Analysis ）和**管理手段**（Transport Admin & Policy 、 International Supply Chain Management 、 Transportation Budgeting and Finance），一定程度上说，正在转型转向于**基于治理**的学科研究。



Phase 3

Many colleges and universities carry out basic courses on traffic engineering design and planning, but further study the analysis and research methods (travel demand analysis, statistics in transport, environment impact assessment, traffic capacity analysis) and management means (transport Admin & policy, International Supply Chain Management, Transportation Budgeting and Finance)To a certain extent, it is transforming to the discipline research based on governance.

除此之外，国外交通学科还更关注交通相关事业的**运营管理**（Operation of Transportation Facilities 、 Operations of Transportation Terminals 、 Transportation Economics、Transportation Policy, Planning and Development）等。

1.2 Recent development of domestic traffic research

国内交通研究近况

时间	类型	题目
2016	面上	基于群体行为的交通拥堵治理政策效用研究
2015	面上	基于弹性工作制和动态停车收费耦合效应的交通需求组合管理优化
2015	面上	基于居民健康福利视角的中国道路交通节能减排政策模拟及优化研究
2019	面上	复杂环境下城市多模式交通流运行特性分析与协同管控策略
2019	面上	面向出行者和管理者双主体的交通网络冗余性分析与优化
2018	面上	一体化交通需求管理组合策略作用机制研究
2016	面上	限制型需求管理政策对城市交通需求-出行结构-网络流量协同演化的影响机理及政策优化研究
2015	面上	考虑社会公平与效率的城市交通系统管理与优化建模研究

总览近些年的国家自然科学基金，其中“交通类”课题尽管随着技术进步在“**治理**”手段上逐渐向**智能化、人性化、清洁化**发展，但实质上仍以四五十年代的**系统论、信息论、控制论**为理论基础，认为**通过调整交通空间网络结构、信号系统、监控系统等可以有效的控制交通问题**。

近三年来，为应对突发事件（含自然极端天气）的**危机预警类**研究略有增加，但学者们公认为对于日益复杂的交通问题单纯的依赖“空间规划”和“交通系统”解决越来越困难：**学科交叉和交融**是研究的重要趋势。

According to the National Natural Science Foundation of China (NSFC) in recent years, although the "traffic" project has gradually developed to intelligent, humanized and clean in terms of "governance" means with technological progress, it is still based on the system theory, information theory and cybernetics theory of the 1940s and 1950s. It is believed that the adjustment of traffic space network structure, signal system and monitoring system can be effective Control traffic problems.

In the past three years, there has been a slight increase in the research on crisis early warning in response to emergencies (including natural extreme weather). However, scholars generally believe that it is more and more difficult to rely solely on "spatial planning" and "transportation system" to solve the increasingly complex traffic problems. Interdisciplinary and blending is an important trend.

- 01 拥堵治理
Congestion management
- 02 环境污染治理
Environmental pollution control
- 03 需求管理
Demand management
- 04 公平与效率
Fairness and efficiency

1.3 Public health and transportation公共健康与交通

过去的研究相对粗略地指明交通产生的污染对人体健康有一定的影响，而近些年更加精准的量化实验研究则明确地验证了这一观点。

特别是在中微观层面（街区、街道、社区）进行的样本研究充分的说明交通空间的营造与公共健康的密切关系。

Previous studies have indicated that traffic pollution has a certain impact on human health, but in recent years, more accurate quantitative experimental studies have clearly verified this view.

Especially in the middle and micro level (block, street, community) sample research fully demonstrates the close relationship between the construction of traffic space and public health.



慢行绿色交通

快速轨道交通

绿色技术标准

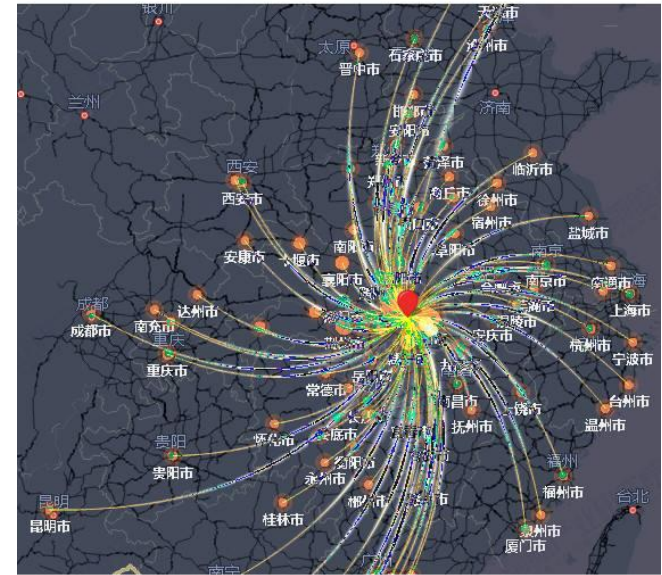
街道品质标准

·Lutz Sager. Estimating the effect of **air pollution on road safety** using atmospheric temperature inversions[J]. Journal of Environmental Economics and Management,2019,98.

·Angel Dzhambov,Boris Tilov,Iana Markevych,Donka Dimitrova. [Residential road traffic noise and general mental health in youth: The role of noise annoyance, neighborhood restorative quality, physical activity, and social cohesion as potential mediators](#)[J]. Environment International . 2017

1.4 Public health and transportation~ 公共卫生与交通

图表8：2020年1月23日武汉市人口迁出路径图



资料来源：百度地图 前瞻产业研究院整理

雪球：财经投资社交APP

1

内在联系的研究（时空地理角度）

Research on internal relations (from the perspective of space-time geography)

疫情传播方式 Mode of transmission

人口的流动路径 The flow path of population

2

城市治理与应急防控

Urban governance and emergency prevention and control

公共事件——卫生（传染性疫情） Public events - Health (infectious diseases)

物资调度、风险管控 Material scheduling and risk control

常态化管理 Normalized management

3

交通行为的认知

Cognition of traffic behavior

时空迁移行为+出行/生活方式

Spatiotemporal migration behavior + travel / lifestyle

宏观、中微观 Macro, medium and micro



1.5 The core of traffic safety

交通的“安全”内核

“安全” 总与 “事故” 紧密相关
Safety is always closely related to accidents



生命权+财产权 Right to life + right to property
避免发生人身伤亡或财物损失

Avoid personal injury or property damage

避免一切客观因素对安全的影响

Avoid the influence of all objective factors on safety

交通法律与规范的约束+社会教育

Restriction of traffic laws and regulations + Social Education

“安全” 离 “健康” 的距离

The distance between "safety" and "health"



健康权（生理+心理） Right to health (physiological + psychological)

公共健康的影响因素——污染等 The influencing factors of public health
pollution, etc

新一轮交通法律与规范的约束+空间干预措施

A new round of traffic laws and regulations constraints + spatial intervention measures



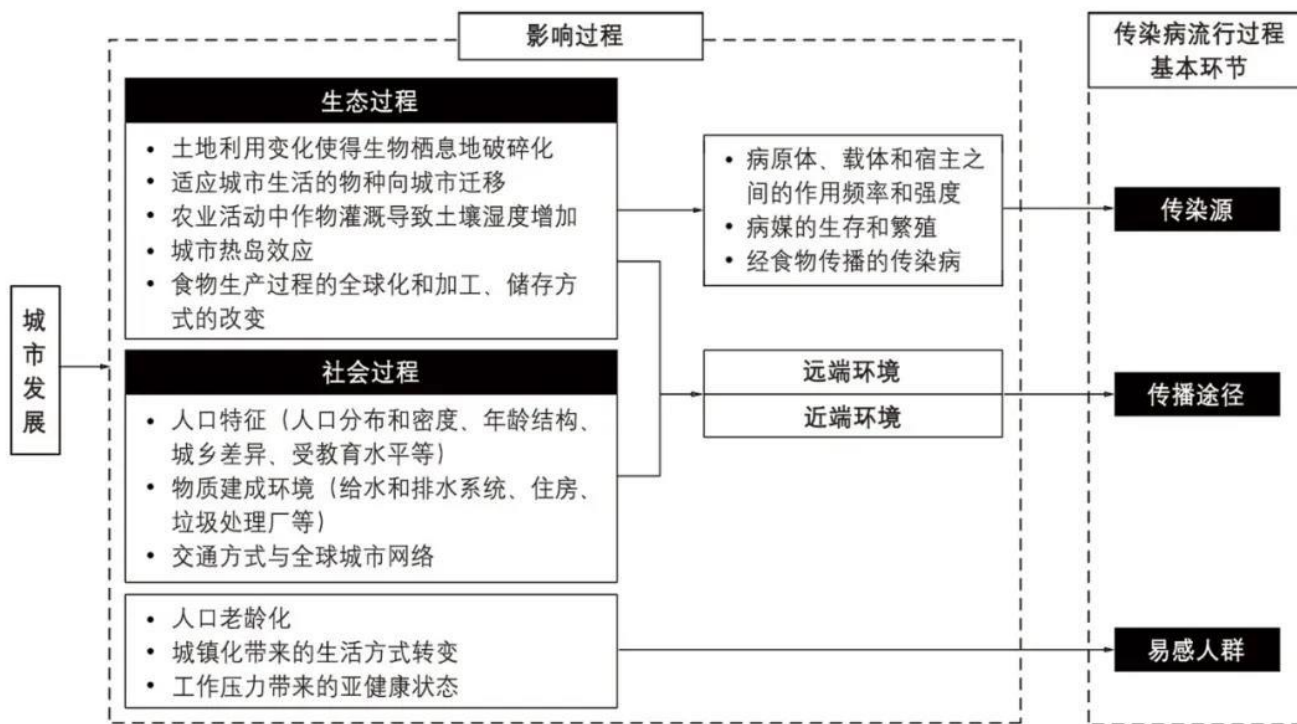
2.1 Traffic strategy during COVID-19 epidemic 新冠疫情期间的交通策略



2.2 Study on the planning of COVID-19 epidemic period 新冠疫情期间的规划研究

王兰, 贾颖慧, 李潇天, 杨晓明. 针对传染性疾病防控的城市空间干预策略[J/OL]. 城市规划: 1-9 [2020-09-25]. <http://kns.cnki.net/kcms/detail/11.2378.TU.20200720.0902.002.html>.

Urban Spatial Intervention Strategies for the Prevention and Control of Infectious Diseases



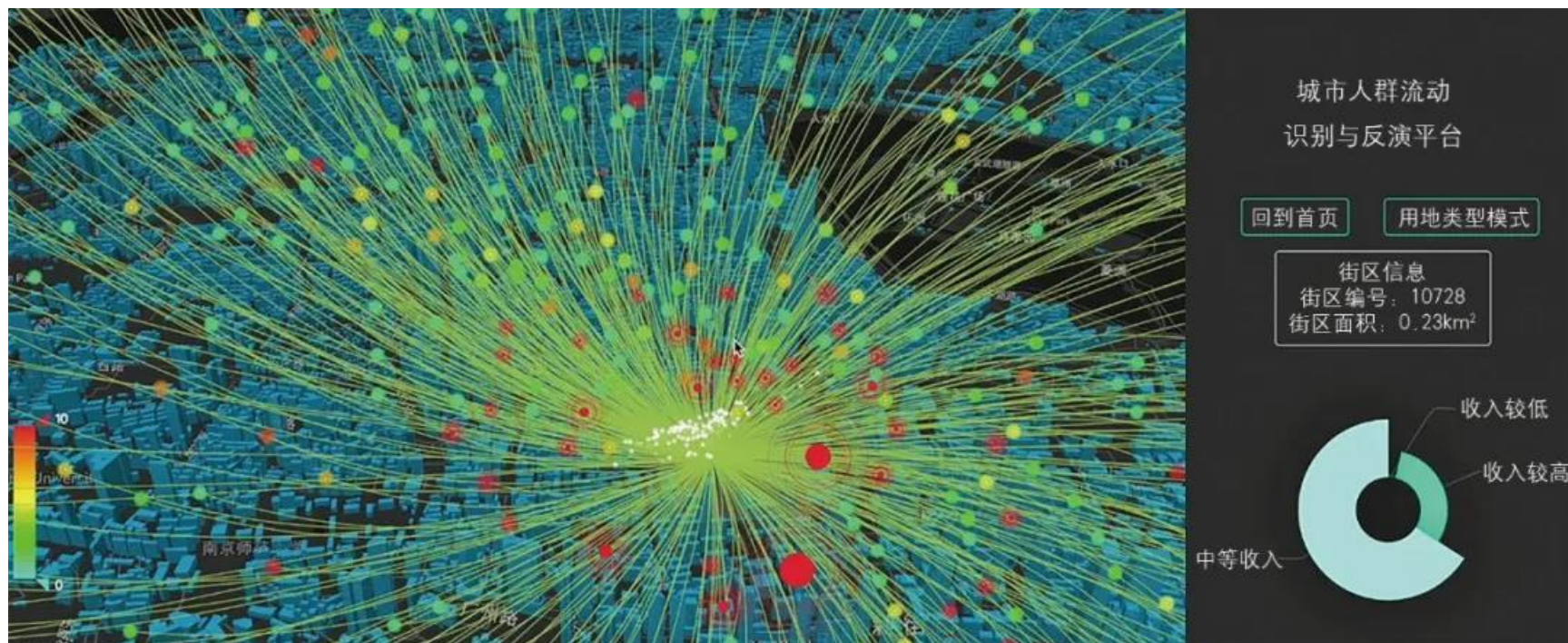
隔离传染源、切断传播途径、保护易感人群

2.2 Study on the planning of COVID-19 epidemic period 新冠疫情期间的规划研究

杨俊婵,史北祥,史宜,李永辉.高密度城市的多尺度空间防疫体系建构思考[J/OL].城市规划:1-8[2020-09-

25].<http://kns.cnki.net/kcms/detail/11.2378.TU.20200319.1535.002.html>.

Thinking on the Construction of Multi-Scale Spatial Epidemic Prevention Systems in High-Density Cities



城市-社区-建筑的多尺度空间防疫体系

2.3 The extension of the connotation of "security " “安全” 内涵的扩展

过去的交通安全意味着**避免车祸发生或防止公交和地铁上的犯罪**等，而许多国家交通行政机构的主要职责也是安全，但目前看来，它必须包括“**公共卫生安全**”。因此，未来仍然会防止人群聚集，并采取一系列措施，如（1）在进入共享车辆或候机楼前进行健康检查或体温检测成为常态；（2）改善公共交通的清洁程序（消毒等成为必要环节）；（3）重新配置座位和隔断以创造物理距离；（4）无现金系统以减少货币交换；（5）包括车辆内饰将更多地使用易清洁材料以及出现新的清洁认证标准等。对于大运量公共交通，这个工程不仅投资巨大，并且需要又快又好的进驻日常生活。

In the past, traffic safety meant avoiding traffic accidents or preventing crimes on buses and subways. However, the main responsibility of traffic administrative agencies in many countries is also safety, but at present, it must include "public health safety". Therefore, in the future, crowd gathering will still be prevented, and a series of measures will be taken, such as (1) health check or temperature test before entering shared vehicles or terminal buildings; (2) improvement of cleaning procedures for public transport (disinfection and so on become necessary); (3) reconfiguration of seats and partitions to create physical distance; (4) cashless system to reduce currency exchange; and (5) It includes more use of easy to clean materials in vehicle interior and new cleaning certification standards. For the large volume of public transport, this project not only has a huge investment, but also needs to enter daily production and life quickly and well.

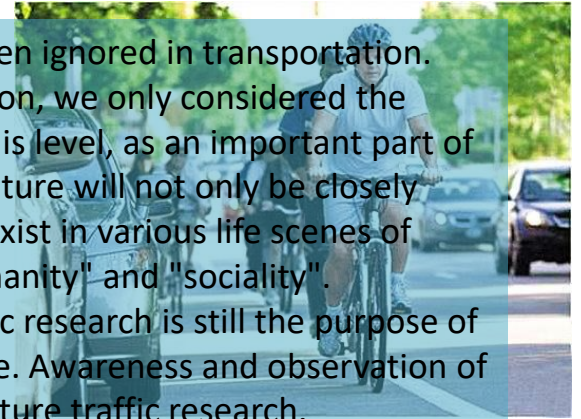
3.1 Thinking of traffic scene (sinking) 交通的场景化思考（下沉）

过去的交通经常忽视类似的思考，就交通谈交通，仅考虑单纯系统的运作，就这个层面来说，未来交通作为系统中的重要一环，除了与经济紧密联系，同时更存在于城市居民的各种生活场景之中，增加了更多的“人文性”和“社会性”。

但交通研究的起点本质仍然是出行目的、出行方式选择。意识和观察到这一点的变化更加有利于对未来交通的研究。



In the past, similar thinking was often ignored in transportation. When we talked about transportation, we only considered the operation of a simple system. On this level, as an important part of the system, transportation in the future will not only be closely linked with the economy, but also exist in various life scenes of urban residents, adding more "humanity" and "sociality". However, the starting point of traffic research is still the purpose of travel and the choice of travel mode. Awareness and observation of this change is more conducive to future traffic research.

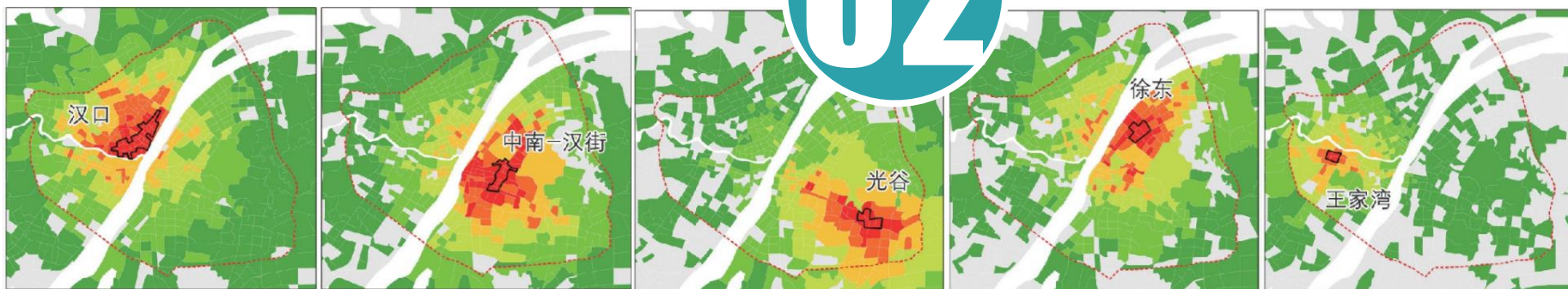


3.2 Thinking of traffic regularity(uprising) 交通的规律化思考（上升）

基于传统的工程技术原则，我们尽力通过空间干预调节交通行为，使之能满足我们日渐丰富的规划目标体系——可持续发展。规划学科把握住基本的时空规律展开分析和探讨。城市次区域层级的交通研究特别“通勤圈（日常生活单元）”的研究揭示了新时期交通出行与土地利用的新特征，也意味着新的交通治理模式。

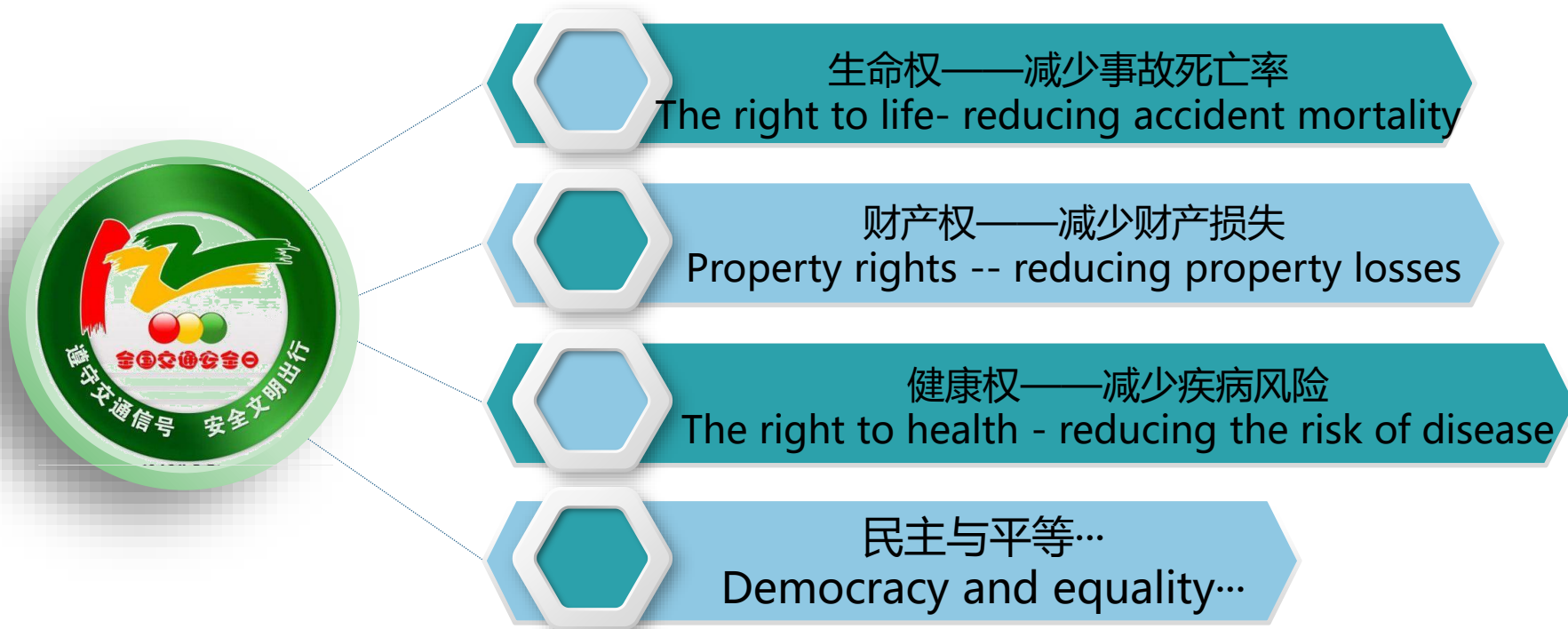
Based on the traditional engineering technology principles, we try our best to adjust the traffic behavior through spatial intervention, so that it can meet our increasingly rich planning target system sustainable development. Planning disciplines grasp the basic laws of time and space to carry out analysis and discussion. The study of urban sub regional level traffic, especially the study of "commuting circle (daily life unit)", reveals the new characteristics of traffic travel and land use in the new period, and also means a new traffic governance mode.

02



3.3 Back To "Transport Safety "

回到 “交通安全”



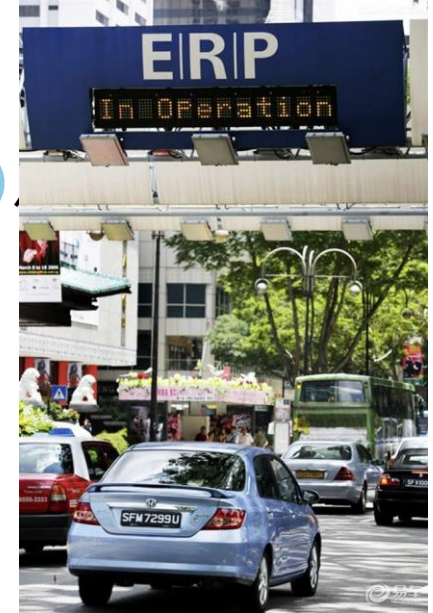
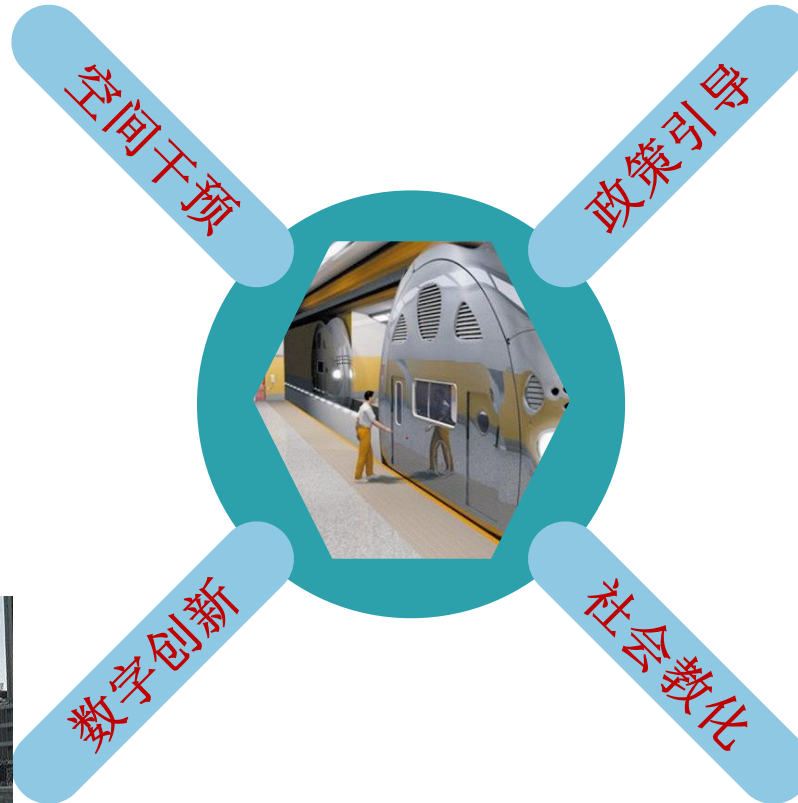
交通目标的发展与社会发展水平紧密相关，目标体系的丰富意味着社会的进步。
The development of traffic target is closely related to the level of social development, and the enrichment of target system means the progress of society.

3.4 Remolding the target system needs "top level design "

目标体系的重塑需要“顶层设计”



Space intervention



Policy guidance



Digital innovation



Social Cultivation

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