

Transportation Planning

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广东省高速公路建设对经济发展影响及作用量化研究

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摘要: 为了量化广东省高速公路对经济发展的影响和作用, 本文从广东省产业分布与高速公路的空间关联性入手, 采用双变量Moran's I指数对产业地理分布和高速公路路网分布之间的关系进行测算, 发现广东省一些制造业产业地理分布集聚程度高, 其所在区域及附近地区的高速路网密度也高, 空间自相关性显著。通过投入产出法测算得到广东省高速公路建设每年平均拉动地区生产总值的增长率提高0.41个百分点。最后文章基于计量经济学理论构建高速公路建设对广东省宏观经济增长的贡献模型, 研究得出高速公路建设对广东省宏观经济增长的贡献率达到5.9%, 高速公路对广东省经济增长作用显著。

关键词: 空间自相关; 投入产出; 投资乘数; 经济增长贡献率

The Influence and Effect Research of Expressway Construction on Economic Development in Guangdong Province

Abstract: In order to quantify the role of Expressway in Guangdong province and its impact on economic development, in this paper, starting with the spatial association of Guangdong province from the industrial distribution and highway, use the double variable Moran's I index to calculate the relationship between geographical distribution and industry distribution of the highway network, found that the manufacturing industry agglomeration and high degree of geographical distribution, where area and in the vicinity of the high-speed road network density is high, significant spatial autocorrelation in Guangdong Province. Then through the input-output method to calculate the average annual growth rate of Guangdong which pull the average GDP growth of 0.41 percentage points. Finally, based on econometric theory model, construct the highway construction economic growth model, research and analysis highway construction reached 5.9% to the macro economic growth rate, therefor the highway

has significant impact on the economic growth of Guangdong province.

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The Identification of the “The Belt and Road” China Logistics Node Cities Based on the Big Data

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ABSTRACT

"The Belt and Road" strategy is a new opportunity for China to develop the export-oriented economy. Transportation infrastructure construction plays an important role to promote the "The Belt and Road" logistics network trade access level. This research firstly studied the United States MAP-21 logistics node city identification experience. According to the China actual situation and big data, the research analysed the influence distribution factors of "The Belt and Road" China logistics node cities and established an identification model. The identification results showed 21 national multimodal logistics node cities, 53 key regional multimodal logistics node cities and 10 Frontier port cities. The results provided an important support for "The Belt and Road" logistics network building.

KEYWORDS: The Belt and Road; logistics node identification; big data; multimodal logistics

基于DEA的轨道交通与常规公交换乘效率测评模型

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摘要: 为解决轨道交通与常规公交换乘效率缺少定量评估的问题, 在分析从轨道交通出站至站旁公交站点的换乘路径及主要影响因素的基础上, 确定换乘效率评价指标, 依据指标值是否可做修改划分为输入性指标与输出性指标。运用数据包络分析方法构建轨道交通与常规公交换乘效率非均一测评模型, 对模型的变换及优化进行推导。以重庆市轨道3号线嘉州路—四公里段的站旁公交站点为例, 通过实际调查获取评价指标参数, 运用DEAP软件对模型进行求解和分析, 得出该路段10个轨道车站与常规公交的换乘效率指数, 其中嘉州路、红旗河沟、两路口、南坪4个站点的换乘效率指数达到1, 实现DEA有效即换乘效率最大化。对于未达最优性换乘的其他车站, 结合指标在有效前沿面上的投影计算, 提出各指标优化目标取值, 为轨道交通与常规公交换乘设施改进及客流组织管理提供定量化决策建议。

关键词: 轨道交通; 常规公交; 换乘站; 数据包络分析; 换乘效率指数

Evaluation Model of Transfer Efficiency Between Urban Rail Transit And Bus Transit Based on DEA

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Abstract: In order to solve the problems that the transfer efficiency is the lack of quantitative assessment between rail transit and bus transit, the transfer efficiency evaluation index in the station must be confirmed based on the analyses of transfer path from rail transit station to bus transit station

and main influencing factors, then dividing the indexes into the input indexes and output indexes according to whether the indexes can be modified. Non-uniform evaluation model of transfer efficiency between rail transit and bus transit is constructed by data envelopment analysis, then the transformation and optimization of model are deduced. In the bus stations near Chongqing Rail Transit Line 3(Jiazhoulu station to Sigongli station) cases, the model was calculated and analyzed by DEAP based on the evaluation indexes parameter which gained by field investigation, then the transfer efficiency indexes between the 10 rail transit stations and the bus transit stations were worked out. The results show that the transfer efficiency indexes of Jiazhoulu station, Hongqihegou station, Lianglukou station and Nanping station reached 1, which achieved DEA effective transfer efficiency maximization. For other stations did not reach the optimality of the transfer, the value of each index optimization goals is extracted based on combining projection calculation on effective frontier, to provide quantitative decision suggestions for transfer facilities improvement and passenger traffic organization management between rail transit and bus transit.

Keywords: Rail Transit; Bus Transit; Transfer Station; Data Envelopment Analysis; Transfer Efficiency Index

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交通运输隐患排查治理的体系框架与运行机制研究

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摘要: 分析了隐患排查治理体系的内涵及特点, 结合交通运输行业实际, 提出了交通运输隐患排查治理体系的框架及构成, 并分析提出了交通运输企业隐患排查治理体系运行机制(企业自查隐患-自治隐患-自报隐患)和交通运输管理部门隐患排查治理监管体系运行机制(明确交通运输管理部门的职责-建章立制-交通运输企业基础数据采集-组织教育培训-组织隐患查报-分类分级监管-考核与奖惩-形势分析与预测预警)的具体流程和内容, 为建立先进适用的交通运输隐患排查治理体系提供了技术支持。

关键词: 交通运输; 隐患排查治理; 体系框架; 运行机制

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Research on the System Framework and Operation Mechanism of Transportation Hidden Danger Investigation and Management

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Abstract: The connotation and characteristic of hidden danger investigation and management system are analyzed. Connecting with the practical situation of transportation, the framework and constitution of transportation hidden danger investigation and management system are put forward. The specific process and content of operation mechanism of transportation enterprises hidden danger investigation and management system are put forward, including self-checking hidden danger, self-managing hidden danger, and self-reporting hidden danger. Meanwhile, the specific process and

content of operation mechanism of transportation department hidden danger investigation and supervision system are put forward, including specifying responsibilities, establishing rules and regulations, collecting basic data of transportation enterprise, organizing education and training, organizing hidden danger investigation and management, classification supervision, appraisal, and situation analysis and forecast. All of these provide the technical support for the establishment of an advanced and applicable transportation hidden danger investigation and management system.

Keywords: transportation; hidden danger investigation and management; system framework; operation mechanism

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收费政策影响下高速公路需求价格弹性分析

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摘要: 随着“节假日免费通行”“运煤减半”等政策实行, 价格浮动机制是交通领域的市场化改革必然趋势。高速公路需求价格弹性对定价策略具有重要作用, 本文旨在分析和量化收费政策影响下的高速公路需求价格弹性, 研究需求价格弹性受费率变化、节假日、收费站位置的影响, 以陕西省2014年收费数据进行实例验证。结果表明, 小型客车根据位置、旅行的距离和目的不同, 受收费政策影响的反应是高度可变的。不同节假日期间路网需求价格弹性存在差异, 不同收费站需求价格弹性差异显著。

关键词: 定价策略; 高速公路; 收费政策; 需求价格弹性

Price Elasticity Analysis of Expressway Demand under the Influence of Fee Policy

Abstract: As "the free passage in holiday" and "coal transportation in half price" policy appear, price floating mechanism is an inevitable trend in the market-oriented reform in the field of transportation. Highway demand price elasticity plays an important role in pricing strategy. The purpose of this paper is to analyze and quantify the highway demand price elasticity under the influence of the charging policy, and demand price elasticity affected by rate change, holidays, toll booth location. Example verification was carried out by charge data of Shaanxi province in 2013. Results show that the small car with its location, travel distance and purpose differently, the influence of charge policy response is highly variable. Network demand price elasticity is different during the different holidays, and the significant differences between demand price elasticity of different toll stations.

Keywords: Pricing strategy; highway; Charge policy; Demand price elasticity

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Travellers' Reactions to Urban Traffic Congestion: A Case Study of Shanghai, China

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ABSTRACT

Traffic congestion is one of the worst problems in China, especially in those metropolises, such as Shanghai, Beijing and Shenzhen. The lack of success of many policies designed to curb congestion indicates that the range of responses as viewed by users may be different from those identified by policy-makers. It is important to know travellers' feeling and reaction on urban road traffic congestion, which can help decision makers to make more efficient and useful policies and strategies. This paper would like to indicate which kind of impacts brought on travellers by urban road traffic congestion and point out what behaviours travellers will do to deal with this situation. Firstly, the mechanism of travellers' reaction on traffic congestion will be discussed to analyse the relationship of impact factors on travellers' behaviours such as attitudes, environments, and behaviour cost. Four major parts were considered in the paper to explain travellers' reactions under traffic congestion, they are: impacts and feeling under traffic congestion, behaviours travellers already do, behaviours travellers want to do, and

travel mode move. Finally, some suggestions were provided in the last part of the paper.

KEYWORDS: travellers' reactions, traffic congestion, stimulus-response model, impact factors

省域高速公路网络连通可靠性：黑龙江省案例分析

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摘 要: 连通性及连通可靠性是区域公路网络结构特征及运行状态评价的重要指标。本文首先提出了应用连通度、连通度指数及连通度平均值指标来表征省区高速公路网络连通性, 其次构建了基于初始网络及子网络的数量、规模及平均最短路径距离等因素的连通可靠性评价方法, 最后以黑龙江省高速公路网络为例进行实例分析。研究提出了黑龙江省高速公路网络的连通特性及连通可靠性特征, 得出实例网络县市级网络连通度不高、连通可靠性受到关键节点影响较大的结果, 能够应用于冰雪恶劣天气、恐怖袭击等特殊事件下应急需求点布局、应急物资调度优化等。

关键词: 交通工程; 连通性; 连通可靠性; 高速公路网络; 应急需求点布局

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Connectivity Reliability for Provincial Freeway Network: A Case Study in Heilongjiang, China

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Abstract: Connectivity and its reliability (CIR) are the key indexes of the structural characteristics and the operational status evaluation on the regional highway network. To begin with, the evaluation indexes of the connectivity, the connectivity index and the average value of the connectivity were put forward to express the connectivity of the freeway network in provinces of China. In addition, the evaluation method of the connectivity reliability was established based on the numbers, scales and the average shortest routes of the initial network and sub-networks. Last but not least, a case study was presented to validate the model based on the freeway network of Heilongjiang province. The characteristics of the CIR were identified and showed for the example freeway network; and it brought to light that the connectivity was in an insufficient level, and the connectivity reliability was suffer from the key notes. The findings can be used for the layout of demand points and the optimization of the materials scheduling of the emergency events, such as extreme ice and snow weather condition, terrorist attack and etc.

KEYWORDS: Traffic Engineering; connectivity; connectivity reliability; freeway network; layout of the emergency demand points

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Transport Investment Decision Making Using Social, Economic and Environmental Justifications

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ABSTRACT

Transport projects are typically capital intensive requiring initial capital investment of billions of dollars and a significant level of cost for operating and maintenance. Conventionally, investment decision making has been heavily hinged on economic benefits including financial and economic returns and stimulating national economy. This investment decision making framework leads to concerns on environmental degradation and social responsibility of transport services. In recent years, there is increased air pollution in cities around the world and the transport sector is one of main contributors.

This paper presents a triple bottom line decision making framework for transport investment where the project merits are evaluated using social, economic and environmental criteria. These criteria will be monetised to estimate the conventional economic indicators such as Benefit Cost Ratio (BCR), Net Present Value (NPV) and Internal Rate of Return (IRR). This decision making framework has been used in Australian government agencies for decades to meet user requirements and other objectives in social equity, liveable cities and economic development. Economic parameters for this decision making

framework are presented in Australian dollars and Chinese Yuan. The applicability of each parameter in Chinese and Australian contexts is discussed. This paper aims to introduce Chinese audience the appraisal methodologies used in overseas for achieving balanced social, economic and environmental objectives.

KEYWORDS: Transport investment, economic appraisal, social, economic and environmental assessment

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对于新时期交通运输利用国际金融组织贷款的认识和思考

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摘要: 本文首先简述了新的发展阶段交通运输利用好国际金融组织贷款的重要意义, 紧接着通过对不同类型交通项目贷款情况的统计分析, 明确了交通运输利用国际金融组织贷款的主要特征, 以及存在问题。分析了交通运输利用国际金融组织贷款的国际、国内环境变化, 并从统筹规划、机制建立、示范带动、拓宽渠道等方面提出了交通行业进一步利用好国际金融组织贷款的工作建议。

关键词: 交通运输; 国际金融组织; 贷款

Understanding and Thinking of International Financial Organization Loan for Transportation

Abstract: This paper firstly sketches the significance of making good use of loans from IFC in the new phase. It clearly puts forward the features and existing problems of using loans from IFC in transportation with statistical analysis of transportation loan Project. It analyzes the profound change of international and Chinese environment. Finally, It gives some advices on how to making good use of loans from IFC in transportation from planning, establishment of system, model-driven development, etc.

Keywords: Transportation International Finance Corporation Loans

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印度交通运输发展及对我国的启示

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摘要: 本文从公路、水路、铁路、航空运输和综合协调管理五个方面梳理了印度交通运输行业分散的管理体制特点;总结了印度交通运输体系的发展现状,重点探讨了印度在综合运输管理职能、多种运输方式协调发展、交通基础设施建设以及交通运输行业市场化等方面所存在的问题;结合我国国情,探讨了印度交通运输管理体制和交通运输体系发展对我国的启示,以期为我国当前大部制下的综合运输发展提供经验借鉴。

关键词: 印度; 交通运输; 综合运输体系; 管理体制

The Transport Development of India and Its Enlightenment to China

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Abstract: The study analyzed the decentralized transport management system in India from five aspects, i.e. highway, waterway, railway, air transport and comprehensive coordination management scheme. By summarizing the status quo of India's transport, the article focused on analyzing the major existing problems in comprehensive transport management structure, integrated and coordinated development of multiple transport modes, infrastructure construction and market-based development. Considering the situation of China, it further discussed the experiences and lessons of India's transport development for us to learn.

Keywords: India; Transport; Comprehensive Transport System; Management System



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The Study to the Main Way and Political Measure of Promoting Technological Innovation for Traffic Landscape in Jinan

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ABSTRACT

In terms of the conclusion for traffic landscape design in Jinan city, the text discusses the four following main ways: Rely on simulation of traffic landscape, virtual reality technology, energy saving control technology and so on; Take advantage of renewable energy sources; Enlarge the range of landscape materials and select recycled materials; Establish low-carbon transportation mode. It also comes up with the political measures of technological innovation: the SWOT analysis to the development of traffic landscape in Jinan city; build favorable development environment for traffic landscape; energetically cultivate the technical designer with local cultural characteristics. The text explores the main ways and political measures for technological innovation of traffic landscape in Jinan city, identifies and finds valuable natural landscape resources and cultural landscape resources along traffic lines of Jinan city. Remain the ecology landscape and human landscape resources along traffic lines of Jinan city. Set up exemplary project and fine example of basic project for urban traffic landscape, protect traffic landscape resources in Jinan and improve ecological technology ability for environmental construction. Prevent the surrounding environment and landscape of suburb traffic in Jinan city to realize sustainable development. Improve people's comfort level and thoroughly drive the social economic increasing, which is good for "change ways, adjust structures, keep growth". It not only can deepen the practical study for traffic environment design, but also promote Jinan into special, livable city with beautiful landscape. It has great significance for the developmental strategy of urban space, which realizes "develop east, go west, control south, extend north and dredge center" in Jinan.

Keywords: technology of traffic landscape; way; political measure

摘要: 文章通过对济南市交通景观设计的总结,探讨交通景观技术创新的四个主要途径:依靠交通景观模拟、虚拟现实技术、节能控制等技术;利用可再生能源;扩充景观材料范围,选用可循环使用的材料;建立低碳交通模式。并提出技术创新的政策措施:对济南市交通景观发展的SWOT分析;营造良好的交通景观发展环境;大力培养具有本土文化特色的技术设计人才。文章探索济南市的交通景观技术创新主要途径和政策措施,识别和发现济南市交通沿线有价值的自然景观资源和人文景观资源。维护济南市交通沿线的生态景观和人文景观资源。树立城市交通景观的示范性工程和基础性工程模范,保护济南交通景观资源和提高环境建设的生态技术能力。护济南城郊交通周边环境和景观,实现的可持续发展,提高人民舒适度全面化的带动社会经济的增长,有利于“转方式、调结构、保增长”。不仅可以深化交通环境设计实践研究,而且可以促进济南建设成可识别之城、可驻留之城、山水之城。对实现济南“东拓、西进、南控、北跨、中疏”的城市空间发展战略具有重要意义。

Performance Comparison of Urban Public Transport Vehicle

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ABSTRACT

Urban traffic is a combination of various kinds of transportation demand level. On the premise of the same kind of traffic demand, there may be many public transportation modes for policymakers to choose. To medium capacity of BRT and tram, this paper comparative analysis respectively from the aspects of speed, economical efficiency, energy consumption. In conclusion, the average speed and capacity of both is nearly, and the economical efficiency of BRT is little better than tram, while the energy consumption of tram is greater than BRT. Comprehensive consideration, it is suggested that policy makers give priority to tram under the same condition.

KEYWORDS: vehicle; speed; economical efficiency; energy consumption

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Urban Bus Service Satisfaction Analysis in Cold Region: A Structural Equation Approach

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ABSTRACT

This paper proposes a methodology for evaluating the quality of service perceived by users of a bus transit service. A Structural Equation Model (SEM) approach is used to reveal the unobserved latent aspects describing the service and the relationships among these aspects with the Overall Service Quality. Harbin is taken as the example city and this paper carried out the bus passenger satisfaction survey in Harbin Central Business District. The data of passenger's satisfaction is obtained by the questionnaire survey. And the SEM is established based on the factor analysis. According to the results of the model output, the satisfaction index of the variables was calculated, and the satisfaction degree of the residents of the Harbin city during winter was analysed. According to the analysis of the relationship among the variables and the important degree of different factors, finally put forward the solution and suggestions for urban bus development in cold region.

KEYWORDS: passenger satisfaction; Structural equation model; urban bus; Satisfaction index

The Study on Constructing the Traffic Impact Evaluation System and Quantifying Examination Standards in China

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ABSTRACT

With the rapid development of urbanization and mechanization, it is increasingly important to concern traffic issues caused by disorder development of construction projects. The traffic impact evaluation system develops an extremely important role on coordinating with land development and traffic development, balancing social resource configuration, and perfecting surrounding traffic environment of construction projects. On the basis of analyzing new idea, new situation and new standard, the author elaborates emphases, similarities and differences of regulatory plan stage, first-class development projects and second-class development projects and provides respectively research contents by aiming at “difficult implementation” in the current traffic impact evaluation in China. By virtue of the Kent's risk evaluation method and safety audit forms of roads, the author proposes expert quantification review of the traffic impact evaluation, improves expert quantification review contents of second-class development projects, defines review standards, tries to make urban land utilization coordinate with traffic system, and promotes to develop urban and traffic system in the sound and sustainable direction.

KEYWORDS: Traffic engineering; traffic impact evaluation; quantization review; Kent method; regulatory plan; land coordination analysis

CLC: U491 Literature Identification Code: A

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Research on Level of Service in Subway Transfer Channel Based on the Physiological Signal

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ABSTRACT

Under the conditions of large population in China, the original level of service couldn't meet the needs of subway station managers. From the interdisciplinary perspective of physiology, medical science, and engineering, this study conducted a series field experiment to investigate the influence of passenger flow density on the pedestrian physiology. By quantitatively analysing density and fluctuating rate of heart rates, a significant finding is that pedestrians' physiological characteristics are influenced by the traffic density in channel, and the FRHR is high associated with density, presenting a linear correlation. In the end of paper, the LOS is divided into six levels, caring on the refined classification for higher density, in line with China's national conditions. Research results could provide a theoretical basis and practical reference for subway transit designer and manager.

KEYWORDS: subway; transfer channel; pedestrian; level of service; heart rate

Resources Allocation of the Urban-rural Public Transportation: An Example of Hohhot in China

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ABSTRACT

The integration of urban and rural public transportation is a prerequisite for urban and rural residents to enjoy public services, and also an important strategic task to the Chinese road transport development. The objective of this paper is to analyze resources allocation of the urban-rural public transportation taking Hohhot in China as an example. There are three problems addressed which were bus types, bus number and bus service frequency. In order to make the resources allocation plan of the urban-rural public transportation in Hohhot be intelligible, the bus lines was divided into three level. The first level is urban bus lines. The second level is suburban bus lines. And the third level is rural bus lines. And the paper is focus on the first and second level. The methodologies of determine the bus types, bus number, and bus service frequency was given. And the resources allocation plan of the two levels was proposed with the methodologies.

KEYWORDS: public transportation; urban; rural; integration; resources allocation

托盘共用研究现状及展望

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摘 要: 共享经济为我国绿色物流的发展打开了一个新的大门。托盘共用是一种典型的共享经济模式, 可以实现对托盘的高效利用, 具有重要的经济效益和社会效益, 已在全世界获得了良好发展。我国托盘共用的推行较晚, 但已获得了政府的高度重视。国务院发布的《物流业调整和振兴规划》和《物流业发展中长期规划(2014—2020年)》中均将发展托盘共用作为物流业的一个重要创新技术写入规划。系统分析了国内外关于托盘共用的研究现状; 重点探讨了托盘共用信息化建设、供应链管理与优化、定价、跟踪调度、托盘质量控制、可持续发展(碳排放)、“互联网+托盘共用”模式等托盘共用系统运作管理亟需解决的关键性难题的研究趋势; 对我国托盘共用的发展提出了建议。

关键词: 托盘; 共用; 综述; 共享经济; 互联网+

中图分类号: F760.3

The Research Status and Perspective of Pallet Pooling

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Abstract: The development of sharing economy brings new opportunities to the development of green logistics. Pallet pooling is a typical sharing economy model. Because establishing a pallet pool

is helpful to efficient use of pallets and does have important economic and social benefits, it has been widely promote in almost every country of the world. The development of China's pallet pool is quite late, but it has received high attention of the Chinese government. As an important innovation of the logistics industry, the development of pallet pool has been mentioned both in “The plan of logistics industry restructuring and revitalization” and "The long-term plan of logistics industry development (2014 - 2020)". The two plans were issued by the State Council. By the review of research on pallet pool and analysis of this industry’s development, it was expected that several important problems would be focused on by scholars. These problems were listed as information management, supply chain management and optimization, rental pricing, pallets tracking and allocation, quality control, sustainable development (carbon emissions) , and “internet plus pallet pooling” mode. Finally, some suggestions on China’s pallet pool development were given.

Keywords: pallet; pool; review; sharing economy; internet plus

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Research on Multi-objective Real-time optimization of Automatic Train Operation (ATO) in Urban Rail Transit

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ABSTRACT

The determination and optimization of ATO control strategy is one of the most critical technologies for urban rail train operation. The practical ATO optimal control strategy must consider many goals of the train operation, such as safety, accuracy, comfort, energy saving and so on. This paper designs a set of efficient and universal multi-objective control strategy. Firstly, based on the analysis of urban rail transit and its operating environment, the multi-objective optimization model considering all the indexes of train operation is established by using multi-objective optimization theory. Secondly, NSGA-II is used to solve the model, and the optimal speed curve of train running is generated. Finally, the intelligent controller is designed by the combination of fuzzy controller algorithm and the predictive control algorithm, which can control and optimize train operation in real time. Then the robustness of the control system can be ensured and the requirements for multi-objective in train operation can be satisfied.

KEYWORDS: urban rail transit; multi-objective; ATO; NSGA-II; fuzzy predictive controller

Influences of Driving Distraction on Professional and Non-professional Drivers under Different Traffic Conditions

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ABSTRACT

Driver distraction has become one of leading causes of motor-vehicle crashes. Although kinds of driver distraction affection have been studied extensively, little research effort has addressed the different influences on the traffic conditions and driver's profession. To fill this gap, this study aimed

to investigate the manner and extent to which driver distraction and driver's proficiency affected driving performance in two traffic conditions. Fifty-three licensed drivers (25 professional and 28 non-professionals) completed the driving simulation experiment in the low-flow scenario and high-flow scenario, which included three secondary tasks: hand-free phone task, baseline task and voice message task. Based on experiment data, repeated measure mixed ANOVA was used to analyze the influence on drivers' vehicle control performance for three levels of distraction and two types of drivers in two traffic conditions respectively. The results showed that combined distraction has greater influences than cognition distraction in low-flow condition. Both of distractions can severely undermine drivers' performance in high-flow condition. Compared non-professional drivers, professional drivers adopted more corresponding measures to cope with distractions, such as keep longer headway distance and better lane-keeping performance. The influence of driver distraction was closely related to traffic conditions and driver's profession. These findings shed some light on the further development of driver distraction detection technologies and the targeted intervention strategies about driver distraction while driving, especially professional drivers.

KEYWORDS: Driver distraction; Professional drivers; Driving simulator; Repeated measure mixed ANOVA

大众旅游时代下我国旅游公路规划要点分析

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摘要: 随着大众旅游、全域旅游时代的到来, 旅游公路的重要作用 and 地位日益凸显, 近年来在我国得到了高度重视。加快推进公路供给侧改革, 拓展公路服务旅游功能, 是新形势下促进区域旅游产业发展, 实现产业转型升级、提质增效的有力途径。但是目前我国旅游公路在规划设计方面还存在诸多问题。本文通过分析旅游公路规划发展趋势, 从挖掘分析旅游资源、提炼规划主题、构建交通网络、完善服务设施、创新发展模式等几方面提出了对旅游公路规划设计的相关建议。最后结合贵州赤水河谷旅游公路规划设计进行了应用研究。

关键词: 大众旅游; 旅游公路; 规划设计

Analysis on the Key Points of Tourism Highway Planning in the Era of Mass Tourism in China

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Abstract: Along with the development of global tourism and mass tourism era, important position and effect of tourism highway has become increasingly prominent in China in recent years has been highly valued. Speeding up the road supply side reforms, expand the tourism highway service function, is to promote the development of regional tourism industry under the new situation, a powerful way to achieve industrial transformation and upgrading, quality and efficiency. However, there are still many problems in the planning and design of tourism highway in china. This paper analyzes the development trend of tourism highway planning, analysis of tourism resources, refining the planning

theme, and puts forward relevant suggestions on several aspects of the planning and design of the tourism highway transportation network, perfect service facilities, innovation and development mode from mining. Finally, combined with the Chishui River Valley Tourism Highway Planning and design of Guizhou province.

Keywords: mass tourism; tourism highway; planning and design

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新型城镇化对交通发展要求探讨

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摘要: 党的十八大提出了在2020年全面建成小康社会的新目标新要求, 并指出推进新型城镇化是实现这一目标的根本途径和主要载体。本文通过分析新型城镇化的内涵, 结合当前城镇交通发展存在的问题与困难, 深入分析了新型城镇化对交通发展的要求。

关键词: 城镇化; 城镇交通; 城镇发展

中图分类号: F291

Policy Suggestions of New Urban Transportation Development

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Abstract: For the last two years, “National Plan of New Urbanization” has been issued by the Central Committee of the Communist Party of China (CPC) and the State Council. It’s China’s first plan on urbanization enacted by the central authorities. The article expounds the importance of new urbanization, and analyzes the main requirements of the development of transportation. Combined with analysis of New Urbanization Plan, the article analyses several practical problems on urban transport and provides the relevant policies and suggestions.

Keywords: urbanization; urban transport; urban development

2015年减征1.6升及以下排量乘用车车辆购置税政策评估

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摘要: 针对2015年减半征收1.6升及以下排量乘用车车辆购置税政策, 从对1.6升及以下排量乘用车销量影响、汽车产业结构升级影响、对节能减排效果、对车购税收入影响、对公路规划建设影响以及对国民经济拉动作用的影响6个方面分析该政策产生的效果。

关键词: 运输工程; 运输经济学; 政策评估

Reduction of 1.6 Liters and Below Displacement Passenger Vehicle Purchase Tax Policy Assessment in 2015

Abstract: In 2015 halved and below 1.6 liters of displacement passenger car vehicle purchase tax policy, from the displacement of 1.6 liters and below passenger car sales, auto industry structure upgrade effects on energy saving and emission reduction, analysis of the policy effects on 6 aspects of the influences of highway planning and construction and the influence on the pulling effect of the national economy tax the income effect, car purchase.

Keywords: Transportation engineering; Transport economics; Policy evaluation

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国家综合运输通道的识别规划原理研究

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摘要: 随着我国综合交通运输体系的日渐发展, “运输集中”现象, 即少数关键的设施承担了高比重或核心运输功能的现象日益明显。笔者通过量化分析和案例观察, 发现我国干线运输线路大都表现出3/7比的规律, 即大致30%的骨干线网承担了全网70%左右的货物运输量或车公里数, 通常意义上“帕累托法则”在运输领域得以体现。这一规律现象也符合欧美国家的经验总结。据此笔者给出了我国关键运输廊道识别与规划原则, 为今后进一步完善我国综合运输通道建设、优化通道资源配置提供了一定参考依据。

关键词: 国家综合运输通道; 帕累托法则; 货流密度; 识别性规划

中图分类号: U1

Study of Identification Planning Principles of the National Comprehensive Transportation Corridors

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Abstract: With the development of the integrated transport system in our country, the phenomenon of “Unbalance and concentration of transportation” has been increasingly evident; in other words, a small number of key facilities have taken on a high proportion or important transport function. Through the quantitative analysis and case study, we found that most of our trunk transport lines show “3/7 rules”, that means 30% of transport networks take about 70% of the freight volume or mileage, and the “Pareto Principle” is shown in the field of transportation. This phenomenon also

accords with the experiences of western countries. On this basis, we give the identification principles of the key transport corridors in our country, and propose some improvement suggestions for the future. This paper could be used as a reference to improve the development and optimize the resource allocations of comprehensive transport corridors in our country.

Keywords: National Comprehensive Transport Corridors; Pareto Principle; Density of Freight Flow; Planning by Identification Principles

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基于混合模型的城市出租汽车保有量建模

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摘 要: 为构建一种适合我国城市出租汽车保有量测算的模型, 提出了基于混合模型的城市出租汽车保有量模型。首先, 在对相关测算模型进行适用性分析基础上, 采用比例法、横向城市对比估算法和统计回归分析法分别建立城市出租汽车保有量模型; 其次, 从方法的可靠性、数据精确性和对结果影响程度三个方面构建各因素之间相互联结的层次结果模型, 并对三种方法的测算结果进行加权求和, 从而建立基于混合模型的城市出租汽车保有量模型; 最后, 以丽江市为实例, 对其城区出租汽车保有量合理规模进行测算。结果表明, 本模型很好的结合定量计算和定性评价的优点, 可操作较强, 可为城市交通管理部门提供理论支持和决策依据。

关键字: 出租汽车; 保有量; 混合模型; 层次结果模型

Model for Urban Taxi Ownership Based on Hybrid Model

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Abstract: In order to build a model for urban taxi ownership of China, a model based on Hybrid model is proposed. Firstly, based on the applicability analysis, the urban taxi ownership model is established respectively by using the proportion method, the horizontal city comparison estimation method and the statistical regression analysis method; secondly, the analytic hierarchy process is established from the reliability, data accuracy and the degree of the impact on the results, thus the model for urban taxi ownership based on Hybrid model is established by weighting and summation

of the three methods; finally, calculating the urban taxi ownership for taking Lijiang as example. The results show that the model can combine the advantages of quantitative and qualitative evaluation, which can be used to provide theoretical support and decision - making basis for urban traffic management.

Keywords: Urban Taxi; Ownership; Hybrid Model; analytic hierarchy process

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融入“一带一路”服务新型城镇化的交通运输发展战略研究 ——以黑龙江省为例

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摘 要: 交通运输在国民经济和社会发展中发挥着基础性、先导性和服务性作用。本文围绕交通如何服务黑龙江省“一带一路”战略实施以及如何引领和支撑黑龙江省新型城镇化建设, 重点研究了黑龙江省发展情况、交通发展基础以及城镇化发展趋势, 提出了交通发展的系统思路及对策, 以使交通运输在引领黑龙江省融入国家“一带一路”战略以及推进新型城镇化建设中发挥更大作用, 取得更好成效。

关键词: 一带一路; 新型城镇化; 交通; 协调发展; 城乡一体化

中图分类号: U238

A Study of Transportation Development Strategy on Leading and Supporting “The Belt and Road Initiative” and New-type Urbanization in Heilongjiang

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Abstract: Transportation industry plays a fundamental, leading as well as service role in the regional eco-social development. This paper investigated how transportation industry facilitates the “The Belt and Road Initiative” and leads and supports the promotion of new-type urbanization in Heilongjiang province with the consideration of the current eco-social situation, the transportation conditions,

and the development tendency of urbanization. Afterwards, this paper proposed the corresponding transportation development strategy so as to better facilitate the implementation of “The Belt and Road Initiative” and the new-type urbanization development in Heilongjiang Province.

Keywords: “The Belt and Road Initiative”; New-type urbanization; transportation; coordinated development; Urban-rural integration

新疆公路交通枢纽建设实施方案研究

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摘要: 本文着重在战略层面上研究交通枢纽的功能, 从宏观层面上确定满足丝绸之路经济带核心区经济社会发展需求的交通枢纽中心的概念, 从国家、自治区各项战略规划解析各类因素对交通枢纽中心的具体要求, 最后按系统工程的思路将单项功能进行叠加、归类, 确定丝绸之路经济带核心区交通枢纽中心的功能定位, 实现从经济社会目标到交通枢纽概念的转化。

关键词: 丝绸之路经济带; 交通枢纽中心; 公路交通运输枢纽; 战略研究

Research on Construction Implementation Plan of Highway Transportation Hub in Xinjiang

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Abstract: This article focuses on the study of transportation hub function at the strategic level, tries to define the concept of transportation hub to satisfy the needs for economic and social development of Core Area of Silk Road Economic Belt, and analyzed various factors on the specific requirements of transportation hub that coming from the strategic planning of nation and autonomous region. Finally, based on the theory of system engineering, we superposed and categorized each single function, formed the functional orientation of transportation hubs at the Core Area of Silk Road Economic Belt.

Keywords: the Silk Road Economic Belt; transportation hub; highway transportation hub; strategy

research

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重庆货运量与GDP、产业结构的回归分析

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摘要: 货运量与GDP、产业结构之间的关系是城市交通与经济发展过程中值得关注与研究的问题。利用重庆市1997年直辖以来至2015年的货运量、经济总量的数据, 将货运量影响因素分为数量性影响因素和结构性影响因素, 构建货运量回归模型分析了重庆货运量与GDP、产业结构之间的关系。研究表明: 重庆货运量与重庆GDP、第二产业产值占比呈正相关, 货物运输弹性系数为0.562, GDP的影响程度弱于第二产业产值占比的影响程度, 影响途径少于第二产业产值占比的影响途径; 建议优化重庆工业区位布局 and 交通布局从货运需求的源头和货运途中缓解货运压力。

关键词: 交通运输经济; 货运量; GDP; 产业结构

中图分类号: F061

Regression Analysis of Chongqing's Freight Volume and GDP and Industrial Structure

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Abstract: The relationship between freight volume and GDP and industrial structure is a problem worthy of attention and research in the process of urban transportation and economic development. Based on the data of freight volume and economic volume in Chongqing since the year of 1997, the influencing factors of freight volume are divided into quantitative influencing factors and structural influencing factors. This paper analyzes the relationship between Chongqing freight volume and GDP

and industrial structure, and studies show that Chongqing freight volume is positively correlated with GDP and secondary industry output value in Chongqing, the elasticity of cargo transport is 0.562, and the impact of GDP is weaker than that of secondary industry. The path of GDP affecting the freight traffic is less than that of the secondary industry. It is recommended to optimize the layout of Chongqing's industrial location and traffic layout, easing the pressure from the source of freight demand and freight routes.

Keywords: transportation economy; freight volume; GDP; industrial structure

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对北京城市夜间公共客运体系问题的思考

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摘要: 目前, 国内对城市公共客运体系的研究还主要集中在一般情况下乘客运输, 缺乏针对夜间客运系统问题与发展的相关专项研究, 社会经济的快速发展与城市区域间联系日益紧密, 势必伴随着出行在区域、目的、模式以及时段上的多样化, 城市对外交通枢纽的夜间客流疏散, 急需需要针对城市夜间客运(下文简称夜运)的现状和问题反思。本研究结合实际调研分析了夜运需求的出行规模、群体构成、方式偏好、以及时空分布特征和系统供给特征, 从客运模式与需求特征的适配性、城市端客运效益、出租车能力、及保障制度体系等方面出发总结了夜运问题的症结, 探讨了夜运在城市交通系统中的功能定位及发展模式, 并就基于辅助公交的客运体系完善、枢纽夜间保障运输体制机制等方面提出了对策与建议。

关键词: 城市公共客运体系; 城市夜间客运; 辅助公交

中图分类号: U121

Research on the Urban Night Passenger Transportation System of Beijing

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Abstract: Domestic research on urban public transport system is mainly focused on the general situation of passenger transport, which is lack of special research based on the problem and development of night passenger transport system. With the rapid development of social economy, several problems, such as the evacuation of urban night hub and the issues come with single travel mode, make it necessary to pay attention on the problem of urban passenger transport at night. This paper is

based on the characteristics of travel demand, such as travel scale, travel group, preference and spatial distribution, then describes the general situation of Beijing night passenger transport. It also points out the main problems of the present situation, for instance, the mismatch of passenger mode at night, the difficulty of passenger evacuation in the hub passenger flow. In the end, the author puts forward some countermeasures and suggestions on three aspects; function and the development of night transport mode, the improvement of passenger transport system based on auxiliary bus, and the mechanism of transportation system in the hub.

Keywords: Urban public transport system; Urban passenger transport; Paratransit

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物流园区发展指数编制方法研究

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摘要: 建立物流园区发展指数, 有利于从整体上掌握物流园区发展动态。从物流园区的基础设施、服务能力、运营效率、社会贡献和低碳环保五个方面建立物流园区发展指数指标体系, 并利用层次分析法确定其指标权重; 从宏观角度, 利用景气信号法建立物流园区发展指数信号模型; 从微观角度, 运用主成分分析法构建物流园区发展指数, 以便于对地区进行群体及个体的评价。

关键词: 物流园区; 发展指数; 景气信号法

Research on the Development Index of Logistics Park

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Abstract: The establishment of logistics park development index is conducive to the overall development of the logistics park. The index system of logistics park development index is established from five aspects: infrastructure, service capability, operation efficiency, social contribution and low carbon environmental protection, and by using analytic hierarchy process to determine the index weight. From a macro point of view, using the method of cycle signal logistics park development index signal model is set up. From the microcosmic point of view, using the principal component analysis to build logistics park development index, in order to for group and individual evaluation area.

Keywords: logistics park; development index; good signal method

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新形势下我国综合交通运输发展的政策建议

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摘要: 我国交通运输正处于发展的黄金时期, 综合交通运输是交通运输现代化建设的核心, 新形势下综合交通运输发展意义重大。在深入分析我国综合交通运输发展现状的基础上, 研究提出综合交通运输发展中存在的问题, 并从政策、法规制度、体制机制、基础设施资源配置和运输服务等方面, 提出促进我国综合交通运输发展的政策建议。

关键词: 综合交通运输; 发展现状; 政策建议

Policy Suggestions for the Development of Integrated Transportation in China under the New Situation

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Abstract: Transportation in our country is in the golden period of development, with integrated transportation at the core of transportation modernization development. Under the new situation, The development of integrated transportation is of great significance, This paper analyzes the present situation of integrated transportation in China, Discuss the problems in the development of integrated transportation, And From the policy, laws and institution, The structure and mechanism, Resource allocation for infrastructure, and services of integrated transportation, Put forward the policy suggestions to promote the development of integrated transportation development in China.

Keywords: integrated Transportation; present development situations; policy Suggestions

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Study on the Countermeasures of Perfecting the Tax System of Ship Tonnage in China

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ABSTRACT

In China, the current tonnage tax has a positive impact on the international shipping, whether it is to improve the legislative level, to expand the scope of tax or to increase the tonnage tax license period. However, there are still some problems in the new tonnage tax policy, and there is a certain

gap between the implementation of the modern ship tonnage tax policy and the need for further improvement. With reference to the effective practice and mature experience of the big shipping countries, this paper puts forward some effective measures to promote the development of China's shipping fleet with strategic significance.

KEYWORDS: tonnage dues; shipping; policy of modern Tonnage Tax; Maritime power

全面建成小康社会交通指标的进程监测与评估

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摘要： 围绕交通运输部印发的《全面建成小康社会交通运输发展目标和指标体系》，本文制定了一整套进程监测与综合评估方法体系，测算得出了2015年全面小康交通指标的实现程度。评估方法按照单指标分类评估和多指标综合评估两个层次展开，兼顾了指标的层次性和多样性。评估发现，2015年小康交通指标的总实现程度为65.5%，三通、三覆盖、两降、两提升指标的实现程度分别为58.2%、77.5%、75%、54%，工作进度均超前于时间进度。结合当前实现情况及行业发展趋势，对各指标2020年的完成情况进行预判，并提出了确保如期全面实现小康交通指标的总体对策和工作建议。

关键词： 综合交通运输；监测；层次分析法；全面小康；交通运输指标；评估

中图分类号： U491

The Monitoring and Evaluation of Transportation Indicators for Completing the Well-off Society Building in All Respects

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Abstract: Pointing at “The Transportation Development Objective and Indicators System for Completing the Building of a Well-off Society in All Respects” which is pressed by the Ministry of transportation, a set of monitoring methods and evaluation system are developed to calculate the realization degree of the comprehensive well off traffic index in 2015. Evaluation method is carried out according to two levels of single indicators classification evaluation and multi indicators

comprehensive evaluation, taking into account the hierarchy and diversity of indicators. The assessment finds that in 2015 the realized degree of overall well-off transportation indicator is 65.5%, "three accessing", "three covering", "two declining" and "two promoting" index realization degree are 58.2%, 77.5%, 75% and 54% respectively, all ahead of time schedule. In combination with the current situation and the development trend of the transport industry, the completion of the indicators in 2020 is prejudged, and the overall countermeasures and suggestions to ensure the timely and comprehensive realization of the well-off traffic indicators are put forward.

Keywords: Integrated transportation; monitoring; analytic hierarchy process; well-off society; transportation indicators; evaluation

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A Utility Function-based Public Bike Travel Choice Analysis Model

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ABSTRACT

In this study, we first analyze the statistics for the rental time of public bikes in representative cities. The analysis shows that due to factors such as physical limitations and time benefit, the public bike rental time distribution characteristics of different cities are very similar. Passengers tend to choose public bikes when the transit time is shorter than 29 minutes, whereas they prefer other types of transportation when the transit time is longer than 29 minutes. On this basis, we introduce a utility function to describe passengers' intentions for daily travel and recreational travel when choosing to use public bikes. Based on actual public bike rental time data, we derive a utility function that is approximately a rectangular pulse. The pulse's inflection point is the 29th minute, which determines whether a traveller chooses to use public bikes for daily travel or recreational travel. It is also the time

inflection point that determines whether a traveller chooses to use a public bike for transportation. The conclusion obtained by using the utility function is consistent with that derived from the statistics. Therefore, we conclude that utility functions have great potential for application to studies on public bike traveling.

KEYWORDS: Urban transportation; Public bike sharing; Utility function; Travel choice

全面建成小康社会交通运输发展国外经验借鉴

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摘要: 党的十八大提出了到2020年全面建成小康社会的宏伟目标。交通运输是国民经济的基础性、先导性和服务性行业, 是经济社会发展的“先行官”, 在我国全面建成小康社会征程中具有重要的基础和先导作用。本文对全面建成小康社会对应的工业化阶段进行研判, 通过梳理国外典型发达国家在类似阶段的交通运输发展特征、理念和重点, 总结其发展经验和教训作为借鉴, 结合我国基本国情和交通运输发展实际, 提出对我国在全面建成小康社会进程中交通运输发展的有益启示。

关键词: 小康社会; 工业化; 交通运输; 综合交通; 经验借鉴

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To Build a Moderately Prosperous Society in All Respects Transportation Development Drawing Lessons from External Experience

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Abstract: The 18th National Congress of the Communist Party of China came up with the grand goal of building a moderately prosperous society in all respects in 2020. Transportation is the fundamental, guiding and service profession of national economy, is the “pioneer” of economic and social development, which has foundational and precursory impacts in the process of building a moderately prosperous society in all respects. The article studies the industrialization stage corresponding building a moderately prosperous society in all respects, teases out the characteristics, ideas and priorities

of the transportation development of foreign developed countries in the similar period of building a moderately prosperous society in all respects, sums up its development experience as references, combining with China transportation development reality, provides beneficial enlightenments of transportation development in the process of building a moderately prosperous society in all respects.

Keywords: Moderately prosperous society; Industrialization; Transportation; Integrated transport; Experience reference

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综合熵值法和主成分分析法的公路网与区域经济发展适应性评价

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摘要: 公路运输与国民经济发展相互影响、相互联系。公路运输应当适应区域经济发展, 以达到最大的社会效益和经济效益, 为区域经济的总体发展提供支撑和保障。公路网系统和经济系统是由大量评价指标构成的复杂系统, 科学合理地评价公路网的发展水平是否与区域经济发展水平相适应, 是决策部门制定公路建设发展规划的重要依据。本文建立了基于熵值法、主成分分析法的公路网与区域经济发展的适应性评价模型, 定义公路网与区域经济之间的关系有滞后型、协调型、超前型三种, 确定公路网与经济适应性评价区间阈值。以广东省为例进行的实证分析结果表明, 结合熵值法、主成分分析法的公路网与区域经济协调发展的综合评价分析方法, 能科学、全面和客观评价公路网与区域经济发展适应性状况。

关键词: 公路网; 区域经济; 适应性; 评价模型; 熵值法; 主成分分析法

Adaptability Evaluation of Highway Network and Regional Economic Development Incorporating Entropy Method with Principal Component Analysis

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Abstract: The development of highway network and the development of regional economy are interacting and interrelated. In order to achieve the greatest social and economic benefits and provide support and protection for the overall development of the regional economy, highway transportation should adapt to the development of regional economy. Highway network system and regional

economic system are complicated systems composed of a lot of evaluating indexes. Adaptability evaluation of the development of highway network adapted for the development of regional economy forms an important basic for government decision making scientifically and reasonably on long term highway developing project. In this paper an adaptability evaluating model for highway network and regional economic development incorporating entropy method with principal component analysis is presented. The relationship between highway network and regional economy is defined and its category is classified as lagging, coordinating, and outstripping. The threshold value of adaptability analysis is determined. The results from the empirical analysis of taking Guangdong province as an example show that the comprehensive evaluating analysis method for adaptability of highway network and regional economic development incorporating entropy method with principal component analysis can evaluate adaptability of highway network and regional economy development scientifically, comprehensively and objectively.

Keywords: highway network; regional economy; adaptability; evaluating model; entropy method; principal component analysis

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以习近平扶贫开发思想指引交通先行的路径探析

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摘要: 交通运输是国民经济和社会发展中的基础性、先导性、战略性产业和重要的服务性行业, 交通扶贫攻坚是国家扶贫开发全局中重要的全局性、战略性、关键性问题, 事关全面建设小康社会全局、事关东西区域协同发展、事关保障和改善民生、事关维护国家安全和区域稳定, 在国家扶贫开发全局中处于优先位置。习近平总书记扶贫开发战略思想深刻阐明了新时期我国扶贫开发的重大理论和实践问题, 包括发展第一要务思想、系统战略谋划思想、精准扶贫脱贫思想、强化社会合力思想、改革创新驱动思想等一系列精辟阐述, 是新时期交通扶贫脱贫工作的思想引领和行动指南。“十三五”时期, 交通运输行业将稳步实施《集中连片特困地区交通建设扶贫规划纲要(2011-2020年)》和《“十三五”交通扶贫规划》, 努力开展“‘三通’达标绘蓝图、城乡物流固优势、产业协同提水平、客运一体享成果、创新联动增动力”等五大战略任务, 加快补齐贫困地区交通运输发展“短板”, 切实提升交通运输基本公共服务水平, 充分发挥交通运输在扶贫攻坚中的基础、先行和引领作用, 着力打造扶贫脱贫攻坚的“交通样板”。

关键词: 交通运输, 扶贫脱贫, 样板, 先行, 指南

中图分类号: U491

The Path Analysis of Transportation Ahead Guiding By Xi Jinping's Thought on Poverty Alleviation

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Abstract: Transportation is the foundational, leading, strategic industries and important service industries of the national economy and social development. Transportation poverty alleviation plays in the first place in the national poverty alleviation and development. General secretary Xi Jinping's strategy of poverty alleviation and development profoundly expounds the major theoretical and practical issues of China's poverty alleviation and development in the new period, and it is the guiding ideology and action guide for the work of traffic poverty alleviation. "13th Five-Year" period, transportation industry will steadily implement the "concentrated poverty alleviation plan of transportation construction in poor areas contiguous (2011-2020)" and "13th Five-Year traffic poverty alleviation plan", to carry out five strategic tasks, to speed up the development of transport short board in poor areas, effectively enhance the level of basic public service transportation. Giving full play to the basic and leading role of transportation in tackling poverty, it is making Efforts to create poverty alleviation of poverty tackling traffic model.

Keywords: transportation, poverty alleviation, model, first, guide

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Transit Stop-skipping Scheme with Frequencies Resetting in Urban Network

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Abstract

Stop-skipping scheme has been used in many areas because of its flexibility and the outstanding performance. But few of the researchers consider this strategy in network level. In fact, the impact of this pattern will spread to the network in a certain extent when a stop-skipping scheme is implemented. This paper aims to propose a stop-skipping scheme planning method with the corresponding frequencies resetting problem in urban network. Two objectives for minimizing the user

cost and operator cost are proposed to illustrate the interests of user and operator respectively. And the modified alternating objective genetic algorithm is applied to solve this problem. Then, a computational experiment of the classical network with an extremely ideal lines distribution is solved by our method and the result shows the advantage of our method and the efficiency of the alternating objective genetic algorithm.

Keywords: stop-skipping, frequency setting, genetic algorithm, transit network

网约车进入市场探讨

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摘要: 本文探讨了网约车作为一种新的出行方式进入市场前后, 市场中各出行方式的需求均衡和市场均衡。结果显示, 虽然网约车的进入会减少出租车的利润, 但是社会总成本却降低了。因此, 合理发展网约车可以减少社会总成本。

关键词: 网约车; 需求均衡; 市场均衡

中图分类号: U491**文献标识码:** A

Study of Car-hailing Entering the Market

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Abstract: This paper discusses the demand equilibrium and market equilibrium variations of different trip modes before and after car-hailing service entering the market as a new trip mode. The result shows, the total social costs can be reduced though the entering of car-hailing service may bring down the profits of taxis. Therefore, the rational development of car-hailing service can help reduce the total social costs.

Key words: car-hailing; demand equilibrium; market equilibrium

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打造综合交通枢纽 推动交通提质增效 ——关于云南打造综合交通枢纽的思考

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摘要：打造综合交通枢纽是实现各种交通资源有机结合，发挥功能最大化的关键纽带，是综合交通运输发展的方向和重点。本文介绍了云南综合交通发展的现状，分析了存在的问题，阐述了加快综合交通枢纽建设的重大意义及面临机遇，基于云南实际，对加快综合交通枢纽建设提出了建议。

关键词：综合交通；枢纽建设

We Will Build a Comprehensive Transportation Hub to Improve the Quality and Efficiency of Transportation: Think about Yunnan as a Comprehensive Transportation Hub

Abstract: Building comprehensive hubs is an effective way to integrate various resources of transport and fully utilize these resources, and it is also the main direction and key field for the development of comprehensive transport. This thesis introduces the status quo of comprehensive transport development in Yunnan, analyzes the existing problems, points out the significance and opportunities of speeding up the construction of comprehensive transport hubs, and finally puts forward some proposals to promote the construction of comprehensive transport hubs based on the realities in Yunnan.

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国内外铁路反恐怖形势、研究现状及对策

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摘 要: 作为国家重要基础设施的铁路, 是恐怖主义分子青睐的重要袭击目标。自2013年以来, 这种趋势愈演愈烈。目前, 国内外对铁路反恐防暴问题的研究不够全面、系统和深入, 我国相关研究更是如此。为了加强铁路反恐怖研究, 进一步提升铁路反恐工作水平和铁路反恐警务人才培养质量, 建议理论研究部门与实务部门深度合作, 从八个方面努力以深化铁路反恐怖研究: 从全国反恐体系完善的高度认识和研究铁路反恐问题; 从大交通反恐的视角考虑和谋划铁路反恐怖对策; 以国际视角研究铁路反恐怖问题; 运用理论联系实际的方法; 综合运用多学科的方法; 将宏观战略构建与微观对策研究相结合; 注意研究铁路反恐工作与铁路警务日常工作的关系; 将理论研究与人才培养相结合。

关键词: 反恐体系; 反恐对策; 反恐立法; 铁路反恐防暴

On the Current Situations for Railway-related Terrorism and Relevant Research in the International Community as well as the Countermeasures

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Abstract: As part of critical national infrastructures, railways have been important targets for terrorists. Especially since 2013, this trend is gathering steam. But the relevant research on railway anti-terrorism in the world is not comprehensive, systematic and deep. So is the relevant research in China. In order to enhance China's research in this field, thus improving the levels of railway anti-terrorism work and talent cultivation, it is suggested that railway anti-terrorism research should be conducted by the close cooperation between the theoretical and practical fields from the perspective of

national anti-terrorism systems improvement, the perspective of transportation anti-terrorism strategy enhancement, as well as an international perspective. The method of applying theories to practice and multi-disciplinary approach are suggested. It is also suggested to combine macro strategies design and micro measures research, to study the relations between railway anti-terrorism work and railway policing, and to combine theoretical research and talents cultivation.

Keywords: anti-terrorism systems, anti-terrorism measures, anti-terrorism legislation, railway anti-terrorism and counter-violence

Comparative Study on Regulations of E-bicycles: Lessons learned from China and the United States

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ABSTRACT

Electric bikes are skyrocketing in China for daily commuting while the United States are still in the early adopting phase. E-bike as a new transportation option can cover a long distance, help reduce the greenhouse gas emission, and bring other health benefits. In the meanwhile, social problems and traffic management challenges emerge. China and the United States both have noticed the situation and enacted laws and standards to regulate the market and the uses of e-bikes. However, issues of jurisdiction, the technology standards together with the inconsistency of terms and outdated laws and regulations are still obstacles from a well-organized urban transportation system. This paper compared the regulations of e-bikes both in China and the United States. It identifies the regulations barriers to the e-bike adoption, also policy recommendations are also given for legislatures and governments.

KEYWORDS: Electric bikes; Traffic safety; Comparison; China; United States; Regulation

Effects of User Preferences on Public Transportation Mode Choice

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ABSTRACT

In Jakarta city of Indonesia, the local government offers a variety of public transportation modes for citizens' daily trip. However, public transportation is not the dominant choice because its performance is not very good. To analyse the effects of some influencing factors on transportation mode choice, a copy of questionnaire is designed and 200+ samples are collected via Google Online. The sample data are used to calibrate the parameters of the multinomial logit model, and the validity and reliability of the regression model are both examined. All the variables and parameters are explained to analyse the citizens' travel behaviours in Jakarta city. The results indicate that travel time, parking availability, service comfortability, accessibility, reliability and security have significant effects on choosing Online Transportation System, Transjakarta, Taxi, City Bus and Motorcycle Taxi. It is

suggested that the government should improve public transportation system from several aspects to satisfy road users' preferences.

KEYWORDS:transportation mode; multinomial logit regression; user preference; discrete choice

基于活动和家庭决策的出行需求预测非集计模型综述

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摘要: 对供需不平衡而导致的交通拥堵问题, 目前比较有效地解决途径之一是在适度增加交通供给的同时, 采用合理的出行需求管理措施引导交通需求的产生。因此, 本文首先对出行需求预测方法的研究现状及存在的问题进行综述。在此基础上, 介绍了基于活动和家庭决策的出行需求预测非集计模型TASHA的理论基础、组成构件、输入输出信息、演化过程并对该领域的未来研究做了展望。

关键词: 出行需求; 基于活动; 家庭决策; 非集计模型

Activity and Household Decision Based Travel Demand Forecasting Disaggregated Model

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Abstract: Currently, one of the most effective solutions of traffic congestion which is caused by unbalance between supply and demand is appropriately increase travel supply. Furthermore, reasonably lead the generation of travel demand. In this paper, a review of study on travel demand forecasting method and the existing problems were provided. At this basis, the basic theory, component, input, output, evolutionary process and software platform of the activity and household decision based travel demand forecasting disaggregated model TASHA were introduced, and finally the future work in this field was discussed.

KEYWORDS: Travel Demand; Activity Based; Household Decision; Disaggregated Model

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Origin-destination Matrix Estimation Method in Transit Networks Based on Smartcard Data

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ABSTRACT

Origin-destination (OD) demand information in transit networks is necessary for a wide range of transportation planning studies. However, it is not always easy to obtain it, as OD matrices are difficult to obtain. The high cost of manpower associated with surveying methods of obtaining OD matrices motivates the development of models and methods that can estimate these matrices easily. This paper presents an OD matrix estimation optimization model that features its effectiveness on: explicitly modeling on data from smartcards; and detailing the key issues associated with the model including design of the model parameters; the calibration of model parameters; and solution of the model. Depending on the data from smartcards, the passenger characteristic of a bus line can be further analyzed. The solution method developed with the iterative algorithm has been used in the process of computation. The results of a rigorous validation with data from a transit network reveal that the proposed model and solution method are quite promising for use in transit line adjusting and optimizing.

KEYWORDS: Transportation Planning; Transit OD Matrix Estimation; Model parameters; Smartcard

Bottleneck Congestion and Modal Split with Capacity Variability

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ABSTRACT

This paper analytically explores the bottleneck congestion and modal split under uncertainty in a competitive highway/transit network. The uncertainty is assumed to only occur on highway caused by day-to-day stochastic capacity. A rigorous and comprehensive investigation on the formulation and solution is presented. Both analytical and numerical results reveal that the capacity variability can significantly influence commuters' travel decisions and lead to a distinctive flow pattern during the rush hour. We also examine the effects of transit headway and fare on modal split and equilibrium cost by numerical examples.

KEYWORDS: morning commute problem; bottleneck congestion; modal split; uncertainty

Estimating Economic Impacts of Transport Investments: A Case Study on an Australian National Highway Upgrade Program

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ABSTRACT

Large transport projects have significant impacts on economic growth and productivity at National, State and regional levels. These impacts can be measured by the increases in Gross Domestic Product (GDP), employment, business output, wage income and taxation revenue. In recent years, there is a growing interest in Australian National and State jurisdictions in estimating the economy-wide and productivity impacts of transport investment. Indeed, a new chapter called the Productivity Metrics has been included in 2014 update of National Guidelines of Transport System Management. While such information is critical to justify investment and prioritise large projects that billions of dollars are required as initial capital costs, economic impact analysis is rare in practice even for national or state significant projects. The main reason was that such an analysis requires sophisticated models with intensive macroeconomic data that are not readily available to practitioners. In this paper, we will present a case study on economic impact analysis of a National Highway Upgrade Program. The paper will explain how transport investment affects regional economy and productivity. The Transport Economic Development Impact System (TREDIS) has been used for the analysis. The paper will report

on use of the TREDIS model to estimate economic impacts including the model inputs and estimation approaches. We will present year by year impacts covering 20 year highway upgrade period and 30 year forecasting period, the total impacts for the entire analysis period by industry sector, and the multiplier effects of \$1 million investment in construction and operating phases. The primary objective of the paper is to report the regional economic impacts for a typical national highway upgrade program with \$2.6 billion capital injection and associated operational investment. The secondary objective is to demonstrate the TREDIS' potential and capability for undertaking economic impact analyses.

KEYWORDS: Economic impacts; transport investment

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城市近郊区公路网规划方法探讨

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摘要: 为满足城市近郊区城市化建设阶段公路设施规划建设的需求, 综合运用改进的节点重要度法、直接连线法, 对城市近郊区路网进行规划, 以满足城市近郊区内外联系、腹地开发等多方面交通需求, 建立了与城市近郊区匹配的公路网规划流程, 并成功应用于大同市南郊区的规划实践。结果表明, 该方法能够满足近郊区与主城区直达道路交通, 近郊区对外道路交通, 近郊区内部道路交通多层次需求, 对近郊区的公路网布局具有一定的借鉴意义。

关键词: 节点重要度法; 城市近郊区; 公路网规划

Discussion on the Method of Highway Network Planning in Urban and Suburban Areas of China

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Abstract: In order to meet the requirement of the highway facilities planning in the urban and suburban areas, This paper used improved node important degree method, direct connection method to plan the highway network. Then the City suburb highway network planning process is established, and proved with practice of Nanjiao District of Datong highway network planning successfully. The result show that the method can be used in city suburb highway network planning and it has certain reference on suburban highway network planning.

Keywords: node important degree method; urban and suburban areas; highway network planning

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A Framework of Route Planning for Hazmat Transportation with Equity Consideration

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ABSTRACT

It is important for hazmat transportation problem to consider risk equity in addition to the cost and risk of transport. In hazmat transportation process, in order to reduce distribution difference of hazmat transportation risk over populated areas, we import risk equity as an important condition to optimize vehicle routing when the long-term transport of hazardous materials between single or multiple origin-destination pairs (O-D). Firstly, risk equity evaluation scheme is proposed, it could reflect risk difference among the areas. The evaluation scheme uses standard deviation to measure the risk differences among population areas. Secondly, the model of considering risk distribution equity

is proposed, it could decrease the risk difference among population areas by adjusting the frequency of the path between O-D pairs for hazmat transportation. In order to facilitate making decisions, the model is converted into two sub models. For each model the algorithm is given respectively.

KEYWORDS: hazmat transportation; route optimization; risk equity; multi-objective optimization; NSGA-II algorithm; genetic algorithm.

Agent-based Simulation of the Highway and Industrial Transfer, by the Example of Guangdong

Xuying, Xuelin

ABSTRACT

Purpose-this study aims to test the inner-relationship between the highway and industrial transfer, function and effect of highway infrastructure to industrial transfer and regional economic and social.

Approach- This paper construct the space economic model including transportation infrastructure, using RISwarm simulation system do the Agent-based dynamic simulation of the spatial economic mathematical model of Guangdong Province.

Findings-the main findings of this research are that there are necessary connection between the development of Expressway in Guangdong province and the space transfer and agglomeration existence of modern industry. If technology and services can spread more to the regions around the manufacturing industry, producer services tend to gather in the region with an area of advantage.

Practical implication-The traffic situation improvement between the Pearl River Delta region and the surrounding area of Pearl River Delta region will be more conducive to the innovation and service scale expansion, technology and services market share expanding. The speed of innovation and service agglomeration accelerates the formation of the core-edge structure of the Pearl River Delta's industry. Highway development can strengthen the status of modern service center.

KEYWORDS: transport infrastructure; industrial space; transfer Agent-based dynamic simulation modern service center

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基于竞拍机制的路外公共停车设施的最优收费模型

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摘 要: 为探求路外公共停车设施的最优收费定价机理, 本文构建了基于停车许可证的最优停车设施收费定价的模型。首先, 利用出行者对各停车设施的评价额度, 构建了求解最优停车许可证分配方式的模型。而后, 通过竞拍机制或求解上述最优分配问题的对偶问题即可确定各停车设施的最优收费定价。最后, 通过数值算例验证了此模型在实现停车设施最优收费定价方面的可行性。分析结果表明: 将停车许可证制度导入停车设施后的出行者均衡状态与社会最优状态一致; 利用竞拍机制(如升价竞拍)或求解模型的对偶问题可得到最优停车设施收费价格; 相较评价额度, 停车泊位总数对最优收费定价的影响较大(即敏感因素)。

关键词: 交通工程; 交通需求管理; 停车许可证; 路外公共停车设施, 收费定价机制, 竞拍机制

中图分类号: U491.1

Optimum Pricing Model for Public Off-street Parking Facilities Based on Auction Mechanism

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ABSTRACT

To clarify the mechanism of optimum pricing for public off-street parking lots, this paper

establishes a model which can determine the optimum price for the parking lots based on the parking permits. Firstly, using the users' valuation for parking permits, we establish a model which can determine the optimum allocation of parking permits. Then, using the auction mechanism or solving the dual problem of the optimum allocation problem, we can obtain the optimum price for each parking lots. Finally, throughout the numerical experiment, we verify the feasibility of the basic model for optimum pricing. The results reveal the following: the user equilibrium state based on the parking permits is the same as the social optimum state; we can obtain the optimum price using auction mechanism (e.g., bidding up auction) or solving the dual problem of the optimum allocation problem; comparing with the valuation of permits, the number of parking space is more sensitive for the optimum pricing.

Keywords: traffic engineering; transportation demand management; parking permits; public off-street parking lots; pricing mechanism; auction mechanism

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基于 Downs-Thomson 悖论的城市交通系统公交 分担率理念设计

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摘要: 根据交通经济学中的“Downs-Thomson 悖论”与“Mogridge 猜想”分析了设置 公交专用道后交通系统的动态平衡关系。首先推导了公交分担率与交通系统运行速度及交叉口信号控制延误之间的关系, 之后基于 Wardrop 用户均衡原理和系统最优 原理提出了考虑出行方式划分比例、信号控制延误、和交通分配的双层规划模型。 下层规划模型为基于效用函数理论的出行方式选择模型, 假设出行方式选择行为服从用户均衡原理; 通过对比实施公交优先措施前后的公交分担率可量化公交优先政策对出行方式转移的影响。上层规划模型为基于系统最优原理的均衡交通分配模型, 其目标函数为最小系统总出行时间。研究结果表明, 公交分担率是影响目标函数的 最重要变量; 因此, 通过结合用户均衡原理和系统最优原理可以针对不同交通系统 估算其最优公交分担率。

关键词: 公交专用道; Down-Thomson 悖论; Mogridge 猜想; 用户均衡; 系统最优

中图分类号: U491.12

Modal Split Study Based on Downs-Thomson Paradox

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Abstract: Analytical studies were adopted to capture the mutual interactions of the two competitive travel modes in roadway system; then relationships between bus share and travel speeds and influences of bus share on control delay of general traffic were derived. A combined model that incorporated modal split, traffic control, and traffic assignment was established; the fundamental theories of this model are Wardrop's user equilibrium (UE) principle and system optimal (SO) principle. A bi-level programming procedure was applied to solve the equilibrium assignment problem. The lower level contains a utility-based Logit mode choice model, which assumes traveler's mode choice behavior follows Wardrop's UE principle; by incorporating the impacts of bus priority on mode utility, the extent of modal shift is expected to be identified using "before and after" comparison. The upper level is an equilibrium traffic assignment model, which follows Wardrop's SO principle and takes the minimum total journey time as objective function. It could be demonstrated that bus passenger share is the primary independent variable in the objective function. Therefore, the optimum modal split for a designated roadway system could be identified by combining Wardrop's UE and SO principles.

Keywords: bus lane; Downs-Thomson paradox; Mogridge conjecture; user equilibrium; system optimum

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基于区位熵的货运枢纽（物流园区）布局方法研究

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摘要： 本文首先简述了货运枢纽（物流园区）布局的阶段特征和存在问题，并以问题为导向，在传统的布局思路上，引用了区位熵理论，从枢纽与城市发展、枢纽与产业联动、枢纽与用地供给、枢纽与城市交通、枢纽与运输路径五个方面考虑，提出了货运枢纽（物流园区）的布局方法，并列举了一个应用案例。最后，本文就货运枢纽（物流园区）布局工作提出了一些建议。

关键词： 货运枢纽（物流园区）； 区位熵； 布局

中图分类号： U491

Research on Layout Method of Freight Hub (Logistics Park) Based on Location Entropy

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Abstract: This paper first introduces the stage characteristics and existing problems in the freight hub (Logistics Park) layout. As a problem oriented research, this paper cites the location entropy method based on the traditional layout ideas. It put forward a new layout method of freight hub (Logistics Park) from five aspects, which are the city development, industrial linkage, land supply, city traffic and transport route. In addition, it give an application example to verify the feasibility of the method. Finally, this paper puts forward some suggestions on the layout of freight hub (Logistics Park).

Keywords: Freight Hub (Logistics Park); Location Entropy; Layout

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Analysis of the Relationship Between the Built Environment and Non-work Travel

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ABSTRACT

Many studies have found that residents living in suburbs drive more and walk less than residents of traditional communities. This evidence supports the advocacy of smart growth strategies to alter individuals' travel behavior. However, the difference in travel behavior is more due to residential choice. Household choice and travel attitudes (self-selection) significantly affected all three patterns of household environmental and non-work travel frequencies by auto, transit, and walk / bicycle modes, controlling for residential self-selection. Travel times, and neighbor characteristics (the built environment and its perception) retain a separate effect on behavior after controlling for self-selection. Preferences / attitudes and the built environment itself are more important in explaining changes in non-motorized travel than car and transit travel. Taken together, we conclude that more people would prefer to do so if the city could introduce more policies and provide more land to support non-motorized travel patterns.

KEYWORDS: neighborhood characteristics, built environment, non-work travel, travel behavior

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侧置式运行的有轨电车客流组织及交通影响仿真研究

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摘要: 提出一种有轨电车侧置式运行的道路改造和客流组织方法。通过对原有交通组织方案和运行有轨电车后的交通组织方案进行对比仿真研究, 得到两种方案的交通运行参数, 结合参数对比为该交叉口运行有轨电车的可行性研究和工程实践提供决策支持。

关键词: 有轨电车; 侧置式 ; 运行仿真

Simulation Study on Passenger Flow Organization and Traffic Impact of Side-run Tram

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ABSTRACT

This paper proposes an organization method about side mounted tram. According to compare and simulate the existing organization program and the designed organization program, we can get some operating parameters, we can also use these parameters to provide the proposal for running tram at the crossing in the city.

KEYWORDS: Tram ,Side mounted, Operation simulation

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Modelling Transit Assignment Problem with Sharing BRT Lanes

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ABSTRACT

More and more cities have bus rapid transit (BRT) and its independent lanes for the rights-of-way. However, the actual volume of BRT lines is far less than the capacity of BRT lanes. The spare of the BRT lanes causes the waste of the road resources. Sharing BRT lanes to the conventional buses is a popular strategy to integrate the road traffic resources. In this paper, we create a network with sharing BRT lanes to illustrate the effect of conventional buses on BRT under user equilibrium (UE). Different levels of demand are loaded on the network to account for the effect of congestion. As the stop-to-

stop distances of BRT service and regular bus service are different, not every BRT stop is shared to buses. Therefore, the walking time will have a great impact on the route choices of passengers whose destinations are between BRT only stops and buses only stops, as the distance between them are always within the walking comfortable region. Walking time should be taken into consideration in route choice analysis. A 13 typical transit assignment algorithm is employed to solve the model. Conclusions are 14 presented through the comparison of numerical examples.

KEYWORDS: Sharing BRT lanes; transit assignment model; route section; walking time

The Regional Induced Passenger Demand Prediction Based on VAR Model& Industrial Development Analysis

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ABSTRACT

In order to advance the Silk Road Economic Belt transportation constructions in Shanxi province and effectively guide the transportation infrastructure construction, economic growth-passenger volume VAR model which Lag order is two is established, By considering the influence of the Silk Road Economic Belt, transportation development policy of Shanxi province and the industrial investment, and using average development speed and the GDP contribution of 42 Departments, the prediction of GDP and passenger volume which contained the values that induced by the Silk Road Economic Belt development in Shanxi province were obtained, Finally, the prediction model of regional induced passenger volume was established. The results show that the model has higher prediction precision, and the percentage of the induced passenger volume (9% of the total) has a downward trend in the following year, but the total amounts still have an upward trend, According to the fitted regression equations of the induced passenger volume, it is found that the number of induced passenger volumes reach the extremum point and the added value of the induced passenger volume close to zero at the fifth or sixth year, which indicates the influence of the industry investment policy in the Early years on

the induced passenger volume goes to end, this conclusion consistent with analysis resultsof GDP-the passenger traffic volume impulse response diagram.

KEYWORDS: trafficengineering; the induced passengervolume; the VAR model;the analysis of industrial development; the Silk Road Economic Belt in Shanxi province

Study on Comprehensive Decision of Urban Rail Transit Network Planning

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ABSTRACT

Based on the research and analysis of urban rail transit network planning, Determining Evaluation Index System of Urban Mass Transit Network. On this basis, the evaluation index system of network planning is established. Aiming at the subjective randomness and uncertainty of the existing evaluation methods prevalent in the scheme optimization, this paper analyzes and compares the planning scheme of urban rail transit network in a city, and combines the analytic hierarchy process and the gray correlation method so that the alternatives can be discharged in good or bad order. The ranking results can objectively reflect the actual situation of urban rail transit network planning, in order to solve the problem of optimal selection of urban rail transit network planning, a set of objective scheme is proposed to avoid the decision deviation caused by the defects of single decision method.

KEYWORD: Urban Rail Transit; Project Optimization Line; Analytic Hierarchy Process; Gray Interrelated Method; Network Planning

中小城市公交线网规划研究 ——以云南省蒙自市为例

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摘 要：以蒙自市为具体实例，研究中小城市公交线网规划。鉴于蒙自市的城市发展规模、特殊的交通环境以及现有公交规模，综合考虑下，对现有的公交线网进行了优化，与原有线路相比，调整后的蒙自市公交线网运营组织合理化，线网规划科学化，增强了公交服务的层次性，可满足不同层次的公交需求，使得全市的公共交通资源得到了优化配置，整体提高了城市道路的利用效率，和促进了蒙自市城市交通的可持续发展。

关键词：公交线网规划；公交规划；蒙自市

中图分类号:U491

Research on Public Transportation Network Planning in Small and Medium Size Cities: Mengzi City in Yunnan Province as an Example

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Abstract: Taking Mengzi, Yunnan province as an example, planning of public transportation network in cities of small and medium size is studied. Considering the developing scale, special traffic circumstances and the current scale of public transportation of Mengzi, the current public transportation network is optimized. Compared to the original network, the optimized one aims at rationalizing the organization of public transportation, planning the public transportation network scientifically,

improving the stratification of service and enhancing the competitiveness of public transportations to meet different requirements of different levels in society. As a result, the allocation of traffic resources in the city is optimized, the whole utilization of the roads is increased and the sustainable development of Mengzi's urban transportation is enhanced.

Keywords: Public transportation network planning; Public Transportation Planning; Mengzi city

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神农架旅游交通需求分析与研究

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摘 要: G42沪蓉高速公路宜昌至巴东段建成通车后, 神农架旅游交通量迅速增长, 尤其是“十一、五一”等黄金周, 旅游人数出现井喷, 交通成为神农架旅游品质最关键的要素。如何应对交通总量的快速增长, 如何服务好各类游客的交通需求, 如何以保护生态环境为宗旨实施交通调控措施, 是交通部门亟需作出研判的课题。基于此, 笔者突破省域、市域间行政区划的限制, 以客观的角度, 借鉴国内外类似旅游区交通问题的启示, 通过全面分析神农架旅游发展态势和趋势, 提出合理化解解决方案, 为“十三五”期湖北区域交通及神农架旅游发展提供决策参考。

关键词: 神农架; 旅游; 交通需求; 分析研究

Shennongjia Tourism Traffic Demand Analysis and Research

Abstract: G42 Shanghai Chengdu Expressway Yichang to Badong section after the completion of the opening of Shennongjia tourism, the rapid growth of traffic volume, especially the "eleven, 51" golden week, the number of tourists blowout, traffic becomes one of the key elements of Shennongjia tourism quality. How to deal with the rapid growth of traffic volume, how to serve all kinds of tourist traffic demand, how to protect the ecological environment for the purpose of the implementation of traffic control measures, transportation departments need to make judgments of the subject. Based on this, the author breaks through the provincial and municipal administrative divisions of the inter domain restrictions, to objectively, from traffic problems at home and abroad tourist area similar to the enlightenment, through a comprehensive analysis of Shennongjia tourism development situation

and trends, put forward reasonable solutions, to provide a reference for the "13th Five-Year" period of Hubei regional traffic and tourism development in Shennongjia.

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Multi-period Hierarchical Location Problem of Transit Hub in City Cluster with Fuzzy Demands

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ABSTRACT

To better meet the hierarchical, time-varying and uncertain transportation demands in city cluster under the rapid urbanization of developing countries, the multi-period hierarchical location problem of transit hub in city cluster (THCC) with fuzzy demands is studied. A hierarchical service network of THCC with a multi-flow, nested and non-coherent structure is put forward. The demands are denoted by triangular fuzzy numbers. Then a multi-period hierarchical fuzzy programming model is proposed, aiming to minimize the total demand weighted travel time. Moreover, the model is converted to a determinate linear programming model using the theory of fuzzy numbers. Finally, a numerical example is presented to verify the model. The results of different scenarios illustrate that the demand distribution and the confidence level of the constraints have impacts on the hub location scheme, which means accurate parameters are required for better planning through more investigations.

KEYWORDS: multi-period; hierarchical facility location problem; transit hub; city cluster; triangular fuzzy number

存在拥堵路段的道路网交通流分配研究

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摘要: 为了克服传统交通流分配模型不能有效刻画存在交通拥堵的交通路径选择行为, 以及探讨交通拥堵对交通流分配的影响, 构建了静态拥堵交通流分配模型。基于速度-密度线性关系, 构建畅通与拥堵状态下的路阻函数; 引入需求交通量、分配交通量、迟滞交通量的概念, 以及道路需求交通量大于其通行能力时交通量的“拥堵迟滞”机制, 描述交通拥堵对流量分配的影响; 基于增量分配算法的思想, 构建静态拥堵交通流分配模型的增量分配求解算法, 计算各OD间的需求交通量、分配交通流、迟滞交通量等分配结果; 结合算例, 对比分析了传统静态畅通与改进拥堵交通流分配模型的计算结果, 并分析了未来的研究方向。研究表明, 静态拥堵交通流分配模型可适用于路段畅通与拥堵状态下的交通流分配, 并能保证所有路段的分配交通量均小于其通行能力; 在分配过程中, 当某些路段发生轻微交通拥堵后该路段仍能被继续选择; 同时, 某瓶颈路段发生严重的交通拥堵可导致周边路段的拥堵, 从而引发拥堵连锁反应。

关键词: 交通拥堵; 交通流分配; 需求交通量; 分配交通量; 增量分配算法

中图分类号: U491.12

The Traffic Assignment at the Road Network with Congested Links

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Abstract: The static traffic assignment model with congested links is constructed to research

the influences of congested links on traffic assignment, and to overcome the flaw that the traditional traffic assignment model cannot effectively depict drivers' route choice behavior under congested traffic condition. Firstly, the traffic performance function of links suitable to light and congested traffic condition is built based on the velocity-density linear model. Secondly, the concepts of traffic demand volume, traffic assignment volume and traffic delay volume are respectively proposed. The congestion-delay mechanism is also put forward to describe the effects of traffic congestion on traffic assignment, which is applied when the traffic demand of a link exceeds its traffic capacity. The method of incremental assignment is constructed to calculate the volume of traffic demand, traffic assignment and traffic delay at each O-D pair. Finally, the calculation results of the improved and traditional model are contrasted through a case study. The future work is also discussed. The results show that the static traffic assignment model with congested links can be applicable to the traffic assignment with light and congested traffic condition. Besides, the improved model can ensure that the traffic assignment volume of each link is less than its traffic capacity. It is also illustrated that some slightly congested links can still to be chosen in the process of traffic assignment. Meanwhile, the chain reaction of congestion will occur when the bottleneck link is serious congested.

Keywords: Traffic congestion; Traffic assignment; Traffic demand volume; Traffic assignment volume; Incremental assignment method

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未来交通运输低碳智能发展思路与展望

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摘要: 研究全面贯彻落实创新、协调、绿色、开放、共享的发展理念, 抓住物联网、大数据、云计算等技术普及应用的难得机遇, 遵循“全面感知、泛在互联、交互便捷、协同融合”的客观规律, 围绕控制温室气体排放、建设低碳社会目标, 突出“智能交通”和“绿色交通”两大战略重点, 提出交通运输低碳智能发展的思路 and 战略框架, 推动技术创新、运营模式重构、法规制度创新等三类变革, 构建互联互通、协同运营的综合交通运输体系, 全面感知、低碳智能的交通基础设施体系, 节能低碳、智能先进的运输装备体系, 开放共享、协同高效的运输组织体系, 基于大数据的科学智能决策治理体系等五大体系, 并展望2020年、2030年和2050年低碳智能交通发展状况。

关键词: 节能低碳, 智能共享, 技术创新, 全面感知

Ideas and Prospects for Future Development of Low Carbon Intelligent Transportation

Abstract: Study on the comprehensive implementation of the concept of innovation, coordination, development of green, open and shared, a rare opportunity to seize the Internet of things, big data and cloud computing technology popularization and application, follow the objective law of comprehensive perception, ubiquitous Internet, interactive, collaborative and convenient integration ", on the control of greenhouse gas emissions and the construction of low-carbon society, highlight the " intelligent transportation "and" green transportation "two strategic priorities, put forward low carbon transportation intelligent development ideas and strategic framework, promoting technological innovation, operation mode and regulations reconstruction system innovation three

reform, comprehensive transportation system construction of interoperability, collaborative operation, traffic infrastructure system overall perception intelligent, low-carbon energy, advanced intelligent transportation equipment system, open sharing, collaborative and efficient transportation system, based on the Data science and intelligent decision-making management system and other five systems, and look forward to 2020, in 2030 and in 2050 the development of low-carbon intelligent transportation.

Keywords: Low carbon; Intelligent sharing; Technology innovation; Comprehensive perception

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出口跨境电商物流网络规划

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摘要: 跨境电商与物流息息相关, 但目前的跨境电商物流面临着成本高、运输时间长、退换货难等困难。本文整合自贸区或保税区仓储中心、海外仓储中心以及集货物流模式的特点, 建立出口跨境电商物流网络模型, 并构建传统跨境电商物流模型与之对比。通过对出口跨境电商物流网络模型中的出口退税税率进行灵敏度分析, 得出两种物流模式同出口退税、商品的重量与价格之间的关系, 以及此时出口跨境电商物流网络模型中自贸区或保税区仓储中心以及海外仓储中心的选址。综上所述, 出口跨境电商物流网络模型受商品重量价格以及税率变动的影响小, 鲁棒性较强, 实用前景好。对于政府而言, 可以通过提高出口退税规范跨境电商物流。

关键词: 网络规划、跨境电商、海外仓、灵敏度分析

中图分类号: F252. 1 **文献标志码:** A

Export Cross-border E-commerce Logistics Network Planning

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Abstract: Cross-border e-commerce and logistics are closely related, but the current cross-border e-commerce logistics is facing high cost, long transport time and difficult return. Integrating with the characteristics of FTA or bonded area warehousing center, overseas warehousing and cargo logistics mode, established the export cross-border e-commerce logistics network model, and in order to

contrast with this, we set up the traditional cross-border e-commerce and logistics model. Through the sensitivity analysis of export tax rebates, inferred the relationship between the two logistics models with the export tax rebate, the weight of goods and the price, as well as the location of FTA or bonded area warehousing center and overseas warehousing in the export cross-border e-commerce logistics network model. This model subjected to in the impact of the changing of tax rate and commodity prices and weight was small, and its robust was strong. Government can improve the export tax rebate norms cross-border electricity business logistics.

Keywords: Network Planning; Cross-border E-commerce; Overseas Warehouse; sensitivity analysis

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公路建设与区域经济增长影响：基于全国面板数据的空间计量研究

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摘要：基于2011-2015年全国空间面板数据，借助空间计量模型对公路建设与区域经济增长两者之间的关系进行实证分析。研究结果表明：区域经济增长存在空间正相关性，某些省市区具有较强的空间依赖性，具体而言，河北、北京、天津、上海、浙江等东部沿海地区呈现出高-高集聚态势，珠三角地区呈现高-低集聚态势；就全国省市区而言，本省公路建设投入对本省与相邻省份的经济增长具有一定的拉动作用，且直接效应更明显。

关键词：公路建设投入；区域经济增长；Moran's I指数；空间自相关；空间计量

中图分类号：F542

Spatial Econometric Research on the Impact Between Highway Construction and Regional Economic Growth: Evidence from the National Panel Data

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Abstract: Based on the national spatial panel data from 2011 to 2015, this paper makes an empirical analysis on the relationship between highway construction and regional economic growth by means of spatial econometric model. The results show that there is positive spatial correlation on regional economic growth, and there is strong spatial dependence between some provinces and cities. Specifically, Hebei, Beijing, Tianjin, Shanghai, Zhejiang and other eastern coastal areas show a high-

high agglomeration trend, The Pearl River Delta region presents a high-low agglomeration trend; In the terms of national provinces and municipalities, the province's highway construction investment to their own province and the neighboring provinces of economic growth has a certain pulling effect, and the direct effect is more obvious.

Keywords: highway construction investment; regional economic growth; Moran's I index; spatial autocorrelation; spatial econometrics

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Genetic and Simulated Annealing Algorithms-based Traffic State Identification

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ABSTRACT

Accurate and scientific traffic state identification is the basis of traffic navigation system, traffic control system and traffic organization optimization. In this paper, the dynamic traffic data collected by geomagnetic detector are firstly used to identify traffic state. We proposed SAGA-FCM clustering algorithm which is combined simulated annealing algorithm (SA) with genetic algorithm (GA) for urban expressway traffic state identification. This method can overcome the problems those the dynamic data of other detectors are not accurate and the time interval is not uniform. Meanwhile, it can overcome the instability of FCM algorithm clustering centre , easily falling into the local extreme value and "premature" problem of genetic algorithm. Research results show that, compared with FCM algorithm and GA-FCM algorithm, SAGA-FCM clustering algorithm can be more effective and faster convergence, so as to improve the accuracy of urban traffic state identification.

KEYWORDS: urban expressway; Geomagnetic data; traffic state identification; SAGA-FCM clustering algorithm

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基于蚁群算法的游客个性化出游路径优化

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摘要: 旅游路径规划已成为旅游交通规划研究的一个重要课题。科学的旅游路径可以使游客的需求得到更大程度的满足, 也可以促进各旅游景点间的游客流动, 提高旅游资源的有效利用。针对个性化出游问题, 提出了由旅游活动效用和旅游出行效用两部分构成的旅游体验效用函数, 并以此为目标函数, 建立了考虑景点属性、出游时间和费用预算等约束条件的旅游路径优化模型。随后, 给出了该模型的蚁群求解算法, 并在设计的旅游交通网络下验证了该模型和算法的有效性。

关键词: 旅游路径问题; 蚁群算法; 游客偏好

中图分类号: U491

Optimization of Personalized Tour Route Based on Ant Colony Algorithm

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Abstract: The tour route planning has become an important issue for discussion in the research of the tourism traffic plan. The reasonable planning of tour route is suiting to the demanding of tourists and takes great effect on the improvement of efficiency in distribution of tourists. For the optimization of personalized tour route, the function of the tourism experience utility which was composed of tourism activities utility and travel utility was proposed. The optimal model of the tour route planning was established with the object that the function of the tourism experience utility. Then, the calculation

method to acquire the optimal solution based on ant colony algorithm was given, and the feasibility of the method was confirmed by the example of the tourism transport network.

Keywords: tour route problem; ant colony algorithm; tourist preference

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Study on Path Optimization of Container Intermodal Transportation with Transshipment

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ABSTRACT

This study focuses on one of the intermodal operational issues: how to select routes and transportation modes in intermodal networks, taking into a proper account the transshipment time and cost. BRP function and BP neural networks are employed separately to fit the function of transshipment time and transshipment cost by training survey data, and a multi-objective integer programming model is constructed with cost and time minimum as the target functions, then the model can be solved by transferring time to generalized cost. The paper compares the optimization results under different transportation volumes and cargo owners' propensity for time and cost, and also analyses the influence of transshipment. The results show that, the problem with the consideration of detail transshipment time and cost provides a more insightful solution than the one without.

KEYWORDS: Intermodal transportation; Path Optimization; 0-1 Integer Programming; BP neural network; Multi-objective optimization problem

Strategy and Policy for Promoting Urban Green Travel System in China

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ABSTRACT

Urban green travel system construction is core of the sustainable development of urban

transport, which is also one significant aspect of promoting the urban habitability. In recent years, with the economic development and behavior change, more and more travelers are getting involved in green travel action. From historic development internationally, urban green travel has five different stages generally, and China is still in the primary stage of urban green travel system construction now. Considering the complexity of urban transport, now the targets of urban green travel system construction remain unclear, which brought a lot of impacts on urban green travel development. This paper firstly gives the definition and the characteristics of urban green travel system, analyzes current status and existing problems, then points out the development curve and stage of it, analyzes the major problems and finally puts forward the strategic vision, “ASIE” (Avoid, Shift, Improve and Enhance) strategic approach, the classified guidance as well as policy recommendations, which can provide technical support to the policy making and academic study for urban transport.

KEYWORDS: Urban Transport; Green Travel; System; Strategy and Policy

The Research of Site Selection for Chinese Newly-built Cold Storages under the Background of “The Belt and Road”

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ABSTRACT

According to the national development strategy, “the Belt and Road”, the whole cold chain transport network in the country is in urgent need of improvement. However, the lag in cold chain logistics industry in the central and western regions constrains the sustainable development of the whole cold chain logistics industry. Therefore, the cold chain logistics industry in the central and western regions would be vital to the development of “the Belt and Road”. We take the regions along “the Belt and Road” as examples to analyze concretely. Firstly, we analyze and forecast the demand for cold storages in “the Belt and Road” regions, and use AHP comprehensive evaluation

method to confirm transit node cold storages in cold chain logistics. Then, on this basis, we construct the linear programming model and apply the LINGO software to reach the optimal solution of cold storage network construction distribution in the central and western regions under the condition of minimizing the cost of the cold storage and the transportation. In the end, through above analysis, we raise the development direction and the suggestion of the cold chain logistics in our country under the background of “the Belt and Road”, regional development and relying development are more beneficial to the improvement of the whole cold chain logistics network in our country.

KEYWORDS: The Belt and Road; The Central and Western Regions; Cold chain logistics market; Cold storage network layout; Location model

基于多元回归搭建LNG客车能耗估算模型研究

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摘要: 为建设交通运输能耗统计监测体系, 获取有效能耗信息以对其进行宏观把控, 解决交通运输行业能源消耗量巨大的问题, 本次课题以山东省部分交通运输企业运输装备的日常运营数据为基础, 分析影响营运车辆能耗的主要因素, 并通过多元线性回归的方法, 建立基于营运数据的能耗估算模型。结果表明车辆能耗数学模型有良好的统计学依据, 能与车辆实际能耗数据较好的符合, 从而为车辆能耗的估算以及预测提供依据。

关键词: 能耗估算; 营运车辆; 多元线性回归; 估算

中图分类号: U4-9

Study on Energy Consumption Estimation Model of LNG Bus Based on Multiple Regression

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Abstract: The excessive total energy consumption has become a major problem transportation faced. To build the transportation energy consumption statistical monitoring system, get efficient information about energy consumption and control it in macro-perspective, the main factors that affect the transportation energy consumption were analyzed based on the energy consumption data of commercial vehicles of some transportation enterprises in Shandong. An estimation model has been

formulated through the multiple liner regression method. The results showed that the model had good statistical basis and agreed well with the actual energy consumption, and it could provide reference for estimate and forecast of the energy consumption of commercial vehicles.

Keywords: energy consumption; commercial vehicles; multiple liner regression; estimate

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The Characteristics of Fatigue Perception of Cycling Commuters

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ABSTRACT

Fatigue perception can be used as an effective index for evaluating the rationality of bicycle facilities, so the traffic planners can figure that if there is necessary to improve the present cycling system according to it. Therefore it is significant to study the characteristics of cyclists' fatigue perception during cycling. Based on the field data collected from the commuting cycling experiment, a fatigue perception model of cyclists is constructed via regression analysis in this paper. The proposed model shows that physical properties of cyclist, cycling loading, physiological loading, psychological loading contribute mainly to the change of fatigue perception during cycling, and their impact factors on the change of fatigue perception are -4.922, 0.205, 0.045 and 0.040, respectively. Compared with the other three variables, physical properties of cyclist play a dominant role in the change of fatigue perception. And the cyclists' fatigue perception is the most sensitive to the change of cycling loading among the latter three variables. Furthermore, while the increase of cycling loading is inevitable, the expectation of fatigue perception tends to decline with the physiological loading and psychological loading decreased by improving the cycling environment, so the decision of travelers' behavior on

choosing the cycling for commuting will be influenced. The results based on the model provide traffic planners with reference to the evaluation of present bicycle facilities and the theory of cycling system planning in further study.

KEYWORDS: Traffic Engineering, Bicycle, Cycling Commuters, Physiology and Psychology, Fatigue Perception

Analysis of the Container Transport Channel in the Hinterland of Shenzhen Port

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ABSTRACT

In order to improve the efficiency of container transport, aimed at the profit of each transportation parts, this paper made an in-depth study on the construction of container transport channel in the hinterland of Shenzhen port, and established comprehensive evaluation index system of

container transport channel by using quantitative analysis methods. Then, it used fuzzy grey matter-element method to establish model and through the computation, a better potential channel based on the actual transportation demands could be found so as to provide reference for the construction of new channels.

KEYWORDS: Multimodal Transport; Transport Channel; FHW; Evaluation Index

A Generalized Variational Inequality Formulation for the Bimodal Stochastic Traffic Assignment Problem

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ABSTRACT

This paper extends the binary combined mode choice and assignment model from deterministic user equilibrium condition to stochastic user equilibrium condition. The asymmetric interactions between car mode and bus mode are considered which results in a new variational inequalities (VI) formulation for the combined model. The mode choice and route choice behaviors of passengers are conducted at the same time. The equivalence between optimal condition and the VI model is proved. The existence and uniqueness conditions are also proved. The diagonalization method is utilized to solve the original VI problem. A path enumeration and Frank-Wolf type algorithm is designed to solve the diagonalized subproblem. The numerical examples are conducted in the Nguyen and Dupuis network. The sensitivity analysis is built to evaluate the impact of the parameters on the model.

KEYWORDS: Variational inequalities, combined mode choice and route choice, binary mode, stochastic traffic assignment

长江三峡过坝货运量影响因素分析

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摘要：长江经济带的发展与中国南方数十个省市息息相关，而长江水运又是长江经济带的重要交通运输方式，所以长江三峡过坝货运量的预测对于未来政策的制定，各个省市的发展都有着重要的影响因素，而预测就要考虑影响因素。本文主要通过相关性分析对挑选的19个影响因素进行了分析，最后得出与长江三峡过坝货运量有关的影响因素有17个，但是他们之间互相相关，独立性较差，之后通过分析近10年三峡过坝货运量上下行货种，以及其货运量上升和下降的原因进一步分析了影响三峡过坝货运量因素，并提出在之后的货运预测中需要进一步考虑其余如政策，产运关系等，这样才能做出较为准确和有效的判断。

关键词：交通经济；相关性分析；水运；影响因素

中图分类号：F552.7

Analysis on Influencing Factors of Freight Transport Volume in the Three Gorges of Yangtze River

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ABSTRACT

The development of the Yangtze River economic belt is closely related to dozens of cities China south, while the Yangtze River water is an important means of transportation in the Yangtze River economic belt, the Yangtze River Three Gorges dam so freight volume forecast for future policy formulation, development of all provinces have important influence factors, it is necessary to consider

the influence factors and forecast. This paper focuses on the 19 factors selected were analyzed by correlation analysis, finally obtains the influence factors of dam freight volume associated with the Three Gorges of the Yangtze River over 17, but they are related to the poor independence, than through the analysis of the past 10 years the Three Gorges dam downstream cargo freight volume, freight volume and the reason of the rise and fall of the further analysis of the influence factors of Three Gorges Dam freight volume, and further consider the rest as policy needs to forecast of freight in the production, transport and so on, so as to make a more accurate and effective judge.

Keywords: Transportation economy; correlation analysis; water transport; influencing factors

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在读硕士研究生，主要从事交通经济、交通规划方面的研究。

公交线路全程车与大站快车组合调度模型

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摘要: 公交大站快车能有效节省乘客出行时间与运营成本。论文针对客流断面分布不均衡、高峰期快速直达需求的公交线路, 建立基于公交系统总成本(包含乘客候车时间成本、乘客车内时间成本、企业运营成本)最小为目标的全程车、大站快车组合调度的发车频率优化模型。将模型应用于某条公交线路, 运用遗传算法求解优化方案。讨论了不同规模运力条件下, 组合调度优化频率与乘客出行成本、企业运营成本间关系, 以及乘客出行时间的变化, 并与单一调度进行对比。结果表明: 组合调度相比单一调度能够有效节约乘客出行时间与系统总成本, 给定的运力规模增长时, 组合调度优势更为明显, 验证了模型的有效性与优越性。

关键词: 公交线路; 大站快车; 组合调度; 发车频率; 运力规模

中图分类号: U491

Mixed Scheduling Model for Limited-stop Service and Normal Service

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Abstract: Limited-stop service is useful to reduce passengers travel time and operation cost. Aiming at the characteristics of the unbalanced two-way and one-way distribution of passenger flow in a single bus route, a mixed scheduling model for limited-stop bus and normal bus is proposed considering fleet constraints in actual operation. This model can optimize the total social cost in terms of wait time, in-

vehicle time and operation cost by simultaneously adjusting the frequencies of limited-stop buses and normal buses. Then a case study of a rural transit route is presented. Using this model, the relationship of the frequency and cost is analyzed under the constraints of fleet. The results indicate that the mixed scheduling service can reduce the total social cost and travel time compared with the single scheduling service in the case of unbalanced passenger flow distribution and fleet constraints. With more fleets, the proposed model is superior. Total social cost can be reduced by the mixed scheduling strategy with fleet constraints. Effectiveness and superiority of this model are verified.

Keywords: transit routes; limited-stop service; mixed scheduling; bus frequency; fleet size

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交通运输领域物联网推广模式

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摘要: 在界定了交通运输物联网推广的基础上, 按照推广主体的不同将推广模式分为政府规划主导型、企业产品主导型和管理部门服务主导型3种, 并讨论了各自的机制和特点。最后根据我国物联网发展现状和交通运输管理环境提出了我国交通运输物联网推广模式建议。

关键词: 物联网; 推广模式; 建议

Promotion Mode of Internet of Things in Transportation

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Abstract: On the basis of defining the promotion of Internet of things in transportation, promotion mode has been divided into three types: government planning leading, enterprise products leading and management services leading, which are based on different extension organizations. Then mechanisms and characteristics of each promotion mode are researched. Finally, according to China's Internet of Things development status and transportation management environment, suggestions on the promotion mode of Internet of things in China's transportation have been put forward.

Keywords: Internet of things; promotion model; suggestion

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Distribution Center Location Considering Vehicle Path Optimization Based on the Improved Fusion of Ant Colony and Immune Algorithm

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ABSTRACT

With the rapid development of logistics industry, the demand for cargo transport and

warehousing is also increasing. When constructing logistics network, vehicle delivery path optimal problem and distribution center location problem are necessary to be considered. In current research, these two problems are considered in independent way to find optimal solution and there are mutual restraints between these two problems due to some factors. Therefore this paper designed fusion algorithm with immune algorithm as holistic framework and ant colony algorithm as core to solve objective function. At the first stage of fusion algorithm, taboo search of ant colony algorithm was improved and immune algorithm was integrated; at the second stage, the immune-ant colony algorithm was designed to solve the relationship between vehicle delivery path and distribution center location via value transferring method. A case study was given by example data to analyze the differences between these two kinds of algorithms. Compared with traditional immune location-ant colony optimization algorithm, the fusion algorithm can save 49.5% of total cost and have higher operating efficiency, thus verifying the feasibility and effectiveness of fusion algorithm.

KEYWORDS: logistics engineering; distribution center location; delivery path optimization; algorithm fusion; immune algorithm; ant colony algorithm

基于ARIMA-GARCH-M的城市快速路短时交通流预测

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摘要: 本文考虑ARIMA模型在获得时间序列非线性特性中的限制, 首先结合线性的ARIMA模型和非线性的GARCH-M模型构建一种混合模型ARIMA-GARCH-M对交通流时间序列的异方差性进行建模, 可同时获得交通流时间序列中的线性条件均值和非线性条件方差以提高预测精度; 其次利用城市快速路交通流数据进行模型预测精度的检验。结果表明, 相比于ARIMA模型和BPNN模型的预测结果, 本文构建模型的预测精度得到显著提高, 预测结果的MAPE、NRMSE及EC值分别达到9.610%、0.882%及94.27%。

关键词: 交通流; 时间序列; 预测; 异方差性; ARIMA-GARCH-M模型

Traffic Flow Forecasting Based on Time Series Analysis

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Abstract: It is important to obtain accurate short-term flow forecasting result in ITS. And the interests in the forecasting result not only in the traffic real-time control but also congestion control and network management. Due to the limit of capturing the nonlinear characteristic of the time series, a hybrid ARIMA-GARCH-M model is proposed to forecast the traffic flow. The proposed model combined the linear ARIMA and nonlinear GARCH-M to model the heteroscedasticity of the time series, which can capture both the linear conditional mean and the nonlinear conditional variance. Traffic flow data collected from the expressway in Beijing is used to verify the hybrid model. The result shows that compared with the forecasting results of ARIMA and BPNN, the proposed model

make the forecasting accuracy improved significantly. The values of MAPE, NRMSE and EC value of the forecasting result returns 9.610%, 0.882% and 94.27%, respectively.

Keywords: Traffic Flow; Time series; Forecasting; Heteroscedaticity; ARIMA-GARCH-M Model

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Analysis on Parking Cruising Behavior and Parking Location Choice

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ABSTRACT

Cruising for curb parking has caused fuel waste and traffic congestion in many cities. According

to the survey which was carried out at Youshige Commercial Center in Beijing, this paper analyzes the curb parking cruising time, cruising speed, and some influencing factors for car travelers to choose curb parking. Curb parking location choice models for two assumed scenarios are further established to analyze the differences of curb parking choice behavior in the parking cruising process.

The research results show that the proportion of travelers choosing curb parking increase with the increasing curb parking occupancy rate and the decreasing distance to the destination. The average parking cruising time is about 35s and the average cruising distance is about 100 meters from the destination. And in this paper, the cruising time is the time from the cruising starting location to where the driver parks the car and the cruising distance is the distance between the cruising starting location and the parking location. Most car travelers would like to park at a closer distance to the destination. Compared with two scenarios, more car travelers choose curb parking according to the curb parking situation in the visual field than the given parking occupancy situation along a section of road. Occupancy rate, walking distance after parking and cruising distance are important factors for curb parking location choice in the cruising process. Through the comparison of long-distance and short-distance models, the car travelers concern more on the parking situation than other factors and make a parking choice in the process of approaching the destination.

These conclusions imply that providing the information of curb parking situation can adjust the distribution of curb parking demand and is a good way to guide the parking choice.

KEYWORDS: Parking cruising; Occupancy rate; Parking location choice model; Cruising time

基于曲线匹配的公交行程时间预测方法

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摘要: 根据我国目前智能公交发展现状及需求, 公交行程时间预测已成为实现智能公交的迫切内容。考虑到影响公交行程时间的因素较多且关系复杂, 从大数据角度出发, 提出基于历史行程时间曲线匹配的公交到站时间预测方法。该方法具有较强的鲁棒性。同时为了提高计算速度, 利用聚类分析方法对历史公交行程时间曲线进行了分类, 实现了曲线的分层匹配。最后, 以广州市A线路2015.03.01-2015.06.30间共111天的公交运行数据为基础, 对提出的预测方法进行了验证。算例结果显示该方法的平均预测误差为42.06s、标准差为116.79s, 通过与另两个预测方法结果的比较表明该方法在可行性和准确性两方面都是有效的。

关键词: 智能交通; 公交行程时间预测; 聚类分析; 曲线匹配; 大数据

中图分类号: U491.1 **文献标识码:** A

Bus Travel Time Prediction Based on Curve Matching

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Abstract: According to the status and needs of the development of intelligent public transportation in our country, bus arrival time prediction has been an urgent part of intelligent public transportation. Taking into account the factors that affect the arrival time of the bus station is more and the relationship is complex and from the application of big data mining, this paper proposes a new bus arrival time prediction method based on the traveling time between stops curve matching. This method can get more robustness. At the same time, in order to improve the calculation speed, we used clustering analysis method to achieve the automatic classification of historical data to realize the hierarchical matching of curves. Finally, based on the data of bus station and bus station of A lines in Guangzhou city for 100 days from 2015.03.01 to 2015.06.30, the proposed method is verified. The results show that The average prediction error and standard deviation of the method are 42.06s and 116.79s. By comparing with the other two methods, the proposed method is effective in two aspects of feasibility and accuracy.

Keywords: intelligent transportation; bus travel time prediction; clustering analysis; curve matching; big data

地铁站出入口设置要素探讨及评价研究

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摘要: 地铁站出入口作为地铁与城市的衔接点, 对城市交通体系的运转至关重要, 直接关系到地铁服务城市的有效性。本文对国内外城市地铁站出入口的设置情况进行了分析, 总结了地铁交通发达城市地铁站出入口数量取值规律, 得到出入口数量取值范围, 提出了位置选取的步骤。基于已有的步行可达性理论, 定义了地铁服务范围覆盖率, 并选取指标对出入口设置合理性进行分级评价。结合评价结果对如何设置、优化出入口进行了探讨, 力求为合理设置出入口提供参考依据。论文以正在建设的哈尔滨地铁1号线学府路站及待建设的2号线工人文化宫站为例进行案例分析。

关键词: 地铁站; 出入口数量; 出入口设置位置; 评价

中图分类号: U239.5

Setting Elements Discussion and Evaluation Research on Subway Station Entrance

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Abstract: As a connecting point of subway and city, the entrances of a station are very important to the running of urban traffic system and the service level of the subway. The paper analyzes the setting situation of the domestic and foreign subway stations' entrances and summarizes the rules of conforming the subway entrances' number of the developed cities. And then we obtain the value range of the subway entrances. The paper proposes the steps of choosing the location of a station's entrances.

We define the coverage rate of the service area of a station based on the Walking Accessibility Theory. The paper chooses some indexes to grade and evaluate the setting of a station entrances. Based on these indexes, the designer can make a decision on how to plan a station's entrances and whether the current situation needs to be optimized. We try our best to provide reference on the setting of the station entrances. At last, the paper discusses the entrances' setting of real stations taking Xuefu Road Station of Harbin Metro Line 1 and the Worker Cultural Palace Station of Harbin Metro Line 2 as examples.

Keywords: Subway Station; The Number of Station Entrances; The Setting Location of Station Entrances; Evaluation

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智慧交通顶层设计方案研究

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摘要: 针对如何指导智慧交通工程实践, 本文试图提出一套以系统工程思想为基础的顶层设计方法论。从引入顶层设计概念和企业架构框架入手, 提出适用于指导我国智慧交通建设的一套基于企业架构的顶层设计方法——智慧交通顶层设计的四层级架构, 阐述了该架构的理论基础、设计过程和辅助工具。

关键词: 智慧交通; 顶层设计; 四层级架构; 设计过程; 辅助工具

Research on Top-level Design Method of Smart Transportation

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Abstract: In order to instruct the implementation of Smart Transportation project, this paper attempts to put forward a set of methodologies based on system engineering thought. This paper introduces the concept of the top-level design and enterprise architecture framework, proposes the four-tier architecture of Smart Transportation's Top-level Design, and elaborates its theory, design process and auxiliary tool.

Keywords: Smart Transportation; Top-level Design; Four-tier Architecture; Design Process; Auxiliary Tool

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计算机视觉技术将开启智能交通新时代

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摘要: 智能化是公路交通领域未来发展的必然出路。使用车联网技术虽然能够实现智能交通,但前提是要让所有的汽车都连接互联网,这将是一个相当漫长的过程。本文提出使用计算机视觉技术来实现智能交通的新方法。即利用智能交通摄像头收集实时交通信息,后台计算机结合车辆导航上传的车主出行信息进行综合分析和计算,再将结果利用网络传递给汽车导航终端和交通管理部门,以此实现智能导航、智能分配车流、提供最快到达目的地的路线、预测即将发生堵车的道路等一系列智能化的交通应用。文中首先阐述了计算机视觉技术的应用前景,之后讲述使用这一技术实现智能交通的具体方法,最后就它的优势和可行性进行了分析。

关键词: 交通拥堵; 智能交通; 计算机视觉技术; 智能交通摄像头; 智能导航

中图分类号: TP399

The Technology of Computer Vision Will Open a New Era of Intelligent Transportation

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Abstract: Intelligent solution is an inevitable way out for the future development of highway transportation. The application of Internet of Vehicles may realize intelligent transportation, but the prerequisite is that all of the vehicles on road must be connected to the Internet, which is still a long way to go. This paper proposes a new approach to enable intelligent transportation with computer

vision technology. That is, the smart traffic cameras will be applied to collect real-time transportation data for the back-end computers to analyze and calculate based on the travelling information of the drivers uploaded from the intelligent navigation devices, then the calculated results will be sent to the navigation terminals as well as the traffic management department, so as to provide a series of intelligent traffic applications such as intelligent navigation, smart distribution of traffic flows, suggestion on the quickest route to the destination and prediction of roads having greater possibilities of traffic jam. The paper begins with the explanation of the application prospect of computer vision technology, follows with the detailed method of this technology to realize intelligent transportation and then ends with the analysis of its advantage and feasibility.

Keywords: traffic congestion; intelligent transportation; computer vision technology; smart traffic camera; smart navigation

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多站点场景下大型活动散场时城轨进站量预测

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摘要: 大型活动因其客流的突发性和强聚集性, 容易引发踩踏事故, 对出行安全造成隐患。城市轨道交通以其容量大、速度快、安全、准时等优点, 往往成为大型活动散场时的主要客流疏散方式。本文基于北京工体周边车站的客流数据, 研究多站点场景下大型活动散场时城轨进站客流预测方法, 以期为轨道交通的客流组织和紧急疏散提供数据基础。首先, 研究大型活动对周边城轨车站进站客流的影响; 其次, 基于SP (Stated Preference) 调查问卷数据, 构建基于MNL (Multi-nominal Logit) 模型的到站时空分布预测模型; 最后, 基于所构建模型对周边城轨车站的客流到站时空分布进行预测, 并与实际活动发生日的客流数据进行对比的结果显示, 该到站总量及时间分布模型的最大相对误差分别为8.4%和8.2%, 具有较高的预测精度和良好的实用性。

关键词: 城市轨道交通; 大型活动; 客流预测; 非集计理论; 客流时空分布

中图分类号: U238

Entrance Passenger Flow Forecasting among Multiple Urban Rail Stations During Large Special Event Dissipation

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Abstract: Due to the characteristics of emergency and intense aggregation, large special event may give rise to panic-stricken stampede, which brings risk for travel security. Since urban rail transit has many advantages such as large capacity, high speed, safety and punctuality, it has become the preferred distributing mode during large special event. Based on actual passenger flow data of the subway stations surrounding Beijing Workers' Stadium, the paper developed an entrance passenger flow forecasting approach for urban rail stations during large special event dissipation, which is highly expected to provide theoretical support for passenger flow organization during large-scale special event. First, the impact of large special events on entrance passenger flow of surrounding subway stations was analyzed. Then, using disaggregate theory, an arrival spatio-temporal distribution model was established and estimated on the basis of stated preference survey data. Finally, based on the proposed model, the passenger arrival spatio-temporal distribution of the surrounding stations during an actual event was forecasted. The results show that the maximum relative error of total passenger flow and time-sharing passenger flow are 8.4% and 8.2% respectively, verifying the proposed approach is effective with satisfactory forecasting accuracy.

Keywords: urban rail transit; large special events; passenger flow forecast; disaggregate theory; spatio-temporal distribution of passenger flow

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A Method of Estimating Space Use Pattern Through Linear Programming and Various Data Sources

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ABSTRACT

With the rapid development of economy, tightening land supplies and traffic congestion are becoming one of the important problems in the development of social economy. The deep reason of the urban traffic problems lies in the coordination between the land use and the urban transportation

system. Integrated land use transport models (ILUTMs) can explain the interaction between land use and traffic demand. ILUTMs can be used to predict traffic demand, economic growth and spatial distribution. The quantifiable relationship between space development and spatial distribution of socioeconomic activities is significant to integrated land-use and transportation models, but it is not easy to address. In particular, floorspace is an essential input to the models. The non-residential and residential floorspace shows the space consumption patterns of businesses (including industries, services, administration, and institutions) and households respectively. The existing studies mostly use census data and borrowed space use coefficients (SUCs) for synthesize base-year floorspace and their results and accuracy are largely unknown. This study provides a spatial linear programming method for more accurate SUCs based on population, employment, land-use and travel survey data. The city of Wuhan, China, is an area of rapid economic growth, making it our choice of study area to test the model. The experimental results show that the model can accurately estimate space use coefficients by space type by zone and provide data support for integrated land use transport model.

KEYWORDS: Floorspace, Land-use, Integrated Land Use-Transport Models, Urban Planning

历史名城交通方式划分的多层面研究

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摘要: 现阶段的历史名城兼具着生活、社会、旅游等城市功能, 交通需求日益增长, 交通问题日益严峻。在历史名城道路改扩建困难的情况下, 合理调整各交通方式的分担率成为解决交通问题的一个有效手段。为了更全面的对历史名城交通方式划分问题进行研究, 本文分别站在出行需求个体、出行需求群体、出行供给者三个层面进行分析, 对分别适用于这三个层面的贝叶斯网络模型、MD模型及博弈论模型的基础理论、应用算例及模型特点、适用范围等进行了介绍。结果表明, 贝叶斯网络模型根据出行者具体特征, 可以精确的预测出行者个体的交通选择行为; MD模型追求出行需求整体出行牺牲量最小, 充分考虑出行者属性和各交通方式间服务特性, 可用于预测未来年交通需求总体的交通结构发展方向; 博弈论模型从出行供给者层面上考虑, 建立了反应历史街区内不同交通小区间各交通方式广义利润竞争的动态博弈模型, 可用于确定各交通小区间各交通方式的最优分担率。多层面的交通方式划分模型研究, 有益于探索历史名城居民交通方式选择行为机理, 丰富历史名城交通规划的理论内容。

关键词: 运输规划、规划与政策、交通方式划分

中图分类号: U121

Multilevel Research on Traffic Modal Splitting Methods in Historical Districts

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Abstract: Historic cities play a variety of urban functions such as life, tourism, and social

functions, with the increasing traffic demand, the traffic problem is becoming more and more serious. Under the circumstance of the difficulty of historic city roads' expansion and extension, it is an effective way to solve the traffic problems by adjusting the sharing rate of each transportation mode. In order to make a more comprehensive study on the problem of historic cities' mode split, three aspects are analyzed from the aspects of travel demand individual, travel demand group and travel supplier, the Bayesian network model, MD model and game theory model were built which were applicable to the three aspects, and the basic theory, application examples, characteristics and their applicable scope of the 3 models were introduced. The results show that, the Bayesian network model can be well used to predict the travelers' traffic choice behavior according to the specific characteristics of travelers. The MD model pursuit the minimum trip sacrifice of the whole group, it can be used to predict the whole travel demand group's transport structure in the coming years. The game theory model is considered from the travel supplier level, a dynamic game model is established to reflect the competition of generalized profit among the various modes in different historic districts, and it can be applied to calculate the optimal share rate of transport modes. Research on model split based on multi level is helpful to explore the mechanism of the traffic mode choice of the historic city residents and it can enrich the theoretical content of traffic planning as well.

Keywords: transportation planning, planning and policy, traffic modal split

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港湾式公交停靠站交通流分析及优化设计

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摘要: 文章通过分析港湾式公交停靠站的交通流特性、停靠站的延误以及站点的服务水平等基本特征指标, 以重庆市公交站点为研究对象, 剖析港湾式公交停靠站存在的问题。结合重庆山地城市的特点和公交停靠站的实际情况, 运用VISSIM仿真软件动态的分析预测车辆在线路中的运行情况, 对比分析改善前后的仿真效果, 从而对公交站点的规划和设计进行优化研究。

关键词: 交通工程; 公交规划; 交通仿真; 港湾式站点; 交通流

中图分类号: U491.1+12 **文献标志码:** A

Traffic Flow Analysis and Optimization of Bus Bay Bus Stop Design

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Abstract: In this paper, it mainly analyze the problems existing in the chongqing bus station through the analysis of traffic flow characteristics, bus stop delay and site index of basic characteristics such as service level. According to the characteristics of the mountain city of chongqing and the actual situation of bus stops, we can analyze the simulation effect and optimize the bus site planning and design.

Keywords: traffic engineering; public transport planning; traffic simulation; bus bay station; traffic flow

OBE Implementation: Impact on Sub Degree Logistics and Supply Chain Management Programme

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ABSTRACT

In the recent decades, Outcome-based Education (OBE) creates an innovative educational learning model which makes logistics and supply chain management programme student learning outcomes at the heart of the assessment, curriculum and pedagogy. OBE creates a typical example

of how higher education institutions develop learner-centric logistics and supply chain management education. In the context of sub-degree education sector, logistics and supply chain management expanded rapidly and appeared potential growth in the future. In the study, I will find out the key research questions on how OBE fosters the sub-degree education on logistics and supply chain management? How exogenous and organizational forces influence the implementation of OBE on logistics and supply chain management at sub-degree level? To fill the research gap, we have conducted 24 semi-structured, in-depth face-to-face interviews with various vital logistics and supply chain stakeholders in the OBE in Hong Kong sub-degree institution between December 2016 and January 2017. Academic and managerial implications of the study are also provided.

KEYWORDS: outcome-based education, sub-degree, logistics, supply chain, Hong Kong

大数据分析成果在公共交通的应用

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摘要: 伴随城市化进程的深入, 交通拥堵已经成为大城市发展过程中面临的通病, 大力发展公共交通是缓解这一问题的重要手段。目前, 大数据在交通研究中的作用日益凸显, 本研究基于济南市200余万联通用户, 2013-2015年跨8个月近170亿条手机话单数据, 获取人口职住、出行、OD及特定区域出行特征等, 同时开展多年对比, 全面、系统地掌握城市居民出行特征与变化规律, 并首创性地与公交IC卡/GPS数据进行同步交叉分析。最终, 将分析成果应用于公交走廊规划、公交专用道开辟、公交线网优化及高峰通勤、零时公交、社区公交等多元化公交服务, 全面提升了城市公共交通的规划、管理和决策水平, 在城市治堵、治霾中发挥了至关重要的作用。

关键词: 大数据; 居民出行特征; 公交应用

中图分类号: U238

Applications in Public Transportation of Big-data-based Analysis Results

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Abstract: With the deepening of urbanization, traffic congestion has become a common problem faced by large cities during development. A key means to solve the problem is to develop public transport. At present, the role of big data in transport research is becoming more and more significant. In this paper, over 17 billion mobile data of more than two million users in Jinan over 8 months during 2013-2015 are studied, and information like residential-working population ratio, trip, OD and

trip characteristics of specific area is obtained. Simultaneously, year-on-year comparison is carried out to understand the trip characteristics of urban residents and the change rules comprehensively and systematically. More importantly, cross-over analysis with the bus IC card / GPS data is done innovatively. Eventually, the analysis results are applied on bus corridors planning, bus exclusive lanes establishment, bus network optimization and peak-hours commuting network, midnight bus network, community bus network construction and other diversified bus services, which have comprehensively enhanced the planning, management and decision-making levels of urban public transportation and played an important role in the control of urban traffic congestion and haze mitigation.

Keywords: Big-data; Resident trip characteristics; Application on bus.

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The Large Hub Airport Site Selection Research Based on the Ecological Sensitivity Evaluation Using GIS and AHP in Beijing Eight Districts, China

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ABSTRACT

As a megacity in China, Beijing's transportation, especially for air transportation, are developing faster and faster. The large Hub Airport construction is indispensable for the Beijing's blossom, which is a huge project involving every aspect. The site selection is at the top of the priority list. This paper uses GIS and AHP methods to evaluate the research area ecological sensitivity so that it will provide a scientific decision-making which leads to the least ecological destroy. This paper selects six ecological sensitivity factors, the weights of which are determined by AHP. The results show that the each ecological sensitivity area percent from high to low is 3.9%, 23.53%, 64.57%, 4.99%, 0.01%. The research provides a new approach to the large Hub Airport site selection through the ecological sensitivity comprehensive assessing map. The evaluation model of ecological sensitivity, which is designed into 'the tool box', will be applied to the different region's ecological sensitivity evaluation by modifying the numbers of factor, the input data and parameters. 'The tool box' will decrease the evaluation work and increase the work efficiency.

KEYWORDS: Site selection; Ecological sensitivity evaluation; GIS; AHP; Beijing

摘 要: 近年来, 中国特大城市北京的交通运输发展越来越快了。大型枢纽机场的建设有利于北京的整体发展, 但也涉及多方面的利益。机场的选址工作是整个机场建设环节的重中之重。本文使用了GIS技术和层次分析法来评估了研究区域的生态敏感性, 以便做出符合可持续发展的选址决策。本文共选取了六种生态因子, 由层次分析法求出其权重, 最后计算结果按照生态敏感性由高到低的顺序显示各区域面积分别为3.9%,

23.53%, 64.57%, 4.99%, 0.01%。由arcGIS生成的生态敏感性综合评价图可以一种对生态影响最小的机场选址方案,同时本文将生态敏感性的评价过程做成了工具箱,根据不同地区的实际情况,选取相关的生态影响因子,可以实现生态敏感性评价,为规划决策者提供一种新的规划方法。

Integrating Socioeconomic and Transportation Travel Demand into Environmentally Sustainable Planning

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ABSTRACT

Integration of land use and transportation planning with current and future spatial distributions of population and employment is a challenge but critical to sustainable planning outcomes. The challenge is specific to how sustainability factors (e.g., associated air pollution, urban climate change impact), and land use and socioeconomic changes are integrated into the development process. To address the challenge, this paper presents an integrated modeling and computing framework for systemic analysis of regional- and project-level transportation environmental impacts for land use mix

patterns and associated transportation activities. A synthetic computing platform in has been developed to facilitate the scenario-based quantitative analysis of cause-and-effect mechanisms between land use changes and/or traffic management and control strategies, their impacts on traffic mobility and the environment. Within the integrated platform, multiple models for land use pattern, travel demand forecasting, traffic simulation, vehicle and carbon emission, and other operation and sustainability measures are integrated using mathematical models in a Geographical Information System (GIS) environment. Furthermore, a case study of the Greater Cincinnati area (Ohio, USA) at regional level is performed to test the integrated functionality as a capable tool for urban planning, transportation and environmental analysis. The case study results indicate that such an integration investigation can help assess strategies in land use planning and transportation systems management for improved sustainability and transportation conformity.

KEYWORDS: Integration, land use, socioeconomic factor, activity-based travel demand, transportation environmental sustainability, carbon emission.

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Research on Calculation Methods of Land Use Mix Considering Residential Travel Behavior

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ABSTRACT

This paper proposes two methods to measure the land use mix considering its influence on residential travel behavior. First, the improved entropy method is proposed to obtain better interpretability than the traditional one. And considering the relationship among different land use categories further, the paper proposes an interaction method to model the land use mix due to limitation of the prior method. Residential travel behavior is taken into consideration in two methods proposed. Then, the basic data utilized in this paper is collected from Xiguan Area, Qincheng District, Tianshui City and the paper uses the data to verify the methods. The result shows that the indicator computed by the methods proposed has practical significance, compared with the traditional method, particularly the

interaction method, in which the indicator has better applicability.

KEYWORDS: Land use mix; Entropy method; Interaction method; Travel behavior; GIS

区域经济与交通运输系统协同演化表征方法研究

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摘要: 本文旨在对区域经济与交通运输系统进行研究。除了利用主成分分析法研究子系统之间的协同度外，还引入了粗糙集的理论，对系统演化表征的关键指标进行辨识。通过山西省的实例研究，分析了系统的表征指标，能够反映两个子系统的演化特征。

关键词: 区域经济；交通运输；协同演化；表征方法

中图分类号: U260 **文献标识码:** A

Study on Characterization Method of Co-evolutionary Regional Economic and Transportation System

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Abstract: This paper aims to study on characterization method of co-evolutionary regional economic and transportation system. Besides using the principal component analysis method to discuss the synergy between the system, the rough set theory is introduced to identify key indicators of the system. Based on the case of Shanxi Province, the co-evolution features of the system are analyzed. Results indicated that the proposed indicators could well capture the evolutionary interaction of the two subsystems.

Keywords: Regional economic; Transportation; Co-evolutionary; Characterization method

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Research of Siting Methods Comparison for Electric Vehicle Charging Station

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ABSTRACT

Charging station is a crucial supporting infrastructure to provided energy supplies. Concerning to the charging station construction, the early siting and location is significant, whether it is reasonable or not directly affected the operation efficiency service quality, safety level and user convenience, etc. We have to decide the locations scientifically. In this paper, we use four kinds of siting methods such as game theory, fuzzy analytic hierarchy process, K-means clustering algorithm and genetic algorithm to site the charging stations in a certain area, and then analyzed and compared to explore the characteristics of different siting methods. And we establish a combined evaluation siting model,taking 10 candidate sites as an example to calculate the location and compared with other methods. The

results indicate that this combined evaluation siting method consider the influence of all kinds of constraint factors synthetically, can make charging station siting more rational and scientific.

KEYWORDS: Charging station; Siting method; Comparison; Combined evaluation siting method

基于ES-VSP分布的交通状态对公交车动态排放的影响分析

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摘 要: 为评估不同交通状态下公交车的排放水平, 通过现场实验采集广州市B9、226线路公交车 (共35辆) 的逐秒运行数据, 在不同的道路类型和交通状态划分原则下计算发动机负荷 (engine stress, ES) 和机动车比功率 (vehicle specific power, VSP), 求得ES-VSP分布, 应用IVE模型 (International Vehicle Emission Model) 的基准排放因子得到畅通、轻度拥堵和中度拥堵3种状态的公交车排放因子, 分析其差异。结果表明: 所测公交车的ES-VSP主要分布于发动机低负荷区间bin0~bin19, 且bin11频率处于50.55%~83.39%; 各类状态下公交车的CO、VOC、VOCevap、NOX和PM排放因子范围分别为7.63g/km~11.40 g/km、0.26 g/km~0.46 g/km、0.68 g/km~1.56 g/km、0.32 g/km~0.51 g/km和 0.72×10^{-2} g/km~ 1.28×10^{-2} g/km; 同种交通状态下, 主干路公交车专用道和主干路BRT车道的公交车大部分污染物排放因子低于次干路混行车道和主干路混行车道, 其中中度拥堵时主干路BRT车道的CO、VOC、VOCevap、NOX和PM排放因子最低, 分别为7.66g/km、0.27 g/km、0.87 g/km、0.32 g/km和 0.75×10^{-2} g/km; 次干路混行车道和主干路混行车道的公交车污染物排放因子随交通状态愈加拥堵而增大, 但主干路BRT车道的公交车由于运行工况的特殊性, 其CO排放因子随交通状态愈加拥堵而减小, 对应3种交通状态其排放因子比例为1.0:0.9:0.8。研究显示, 交通状态对公交车运行速度和排放具有显著影响。

关键词: 交通状态; 公交车; ES-VSP; 排放因子

Evaluating the Effects of Traffic States on Dynamicbus Emission Based on ES-VSP Distribution

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Abstract: In order to evaluate the bus emission of different traffic states, the operation data of B9 and 226 bus lines (35 buses in total) in Guangzhou are collected by experiment and divided into different traffic states and road types. Then Engine Stress(ES) and Vehicle Specific Power(VSP) are calculated, followed by ES-VSP distribution calculation. Finally the bus average emission factors of free-flow, mild congestion and moderate congestion are got by using the base emission factors in IVE model(International Vehicle Emission Model) and their differences are analyzed. The results show that, ES-VSP of the buses is mainly distributed in low engine stress states which are bin0~bin19, and the frequency of bin11 is between 50.55% and 83.39%. For various states, the bus emission factors of CO, VOC, VOCevap, NOx and PM are 7.63g/km~11.40 g/km, 0.26 g/km~0.46 g/km, 0.68 g/km~1.56 g/km, 0.32 g/km~0.51 g/km and 0.72×10^{-2} g/km~ 1.28×10^{-2} g/km. In the same traffic state, bus emission factors of ordinary bus lane and BRT lane of arterial road are mostly lower than that of mixed lane of secondary road and arterial road. The bus emission factors of CO, VOC, VOCevap, NOx and PM of BRT lane of arterial road in moderate congestion state are 7.66g/km, 0.27 g/km, 0.87 g/km, 0.32 g/km and 0.75×10^{-2} g/km, which are the lowest. As the traffic state becomes more congested, the bus emission factors of mixed lane of secondary road and arterial road increase. However, due to the particularity of operating conditions of the buses on BRT lane, its CO emission factor decreases as the traffic state becomes more congested, and the CO emission factor ratio is 1:0.9:0.8 corresponding to the 3 types of traffic states. The research shows that, traffic states have an important influence in speed and emission of bus.

Keywords: traffic state; bus; ES-VSP; emission factor

Carbon Emissions Tax Policy of Urban Road Traffic and Its Impact

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ABSTRACT

How to effectively solve traffic congestion and transportation pollution in urban development is a main research emphasis for transportation management agency. Carbon emissions tax can affect the traveller's generalize cost, and will lead to the change of passenger demand, mode choice and traffic flow equilibrium in road network, which has an important significance in green travel and low-carbon transportation management.

This paper first established a mesoscopic model to calculate carbon emissions tax and acquired the value of this charge price in China, which was based on the road traffic flow and vehicles' speed, as well as the carbon emission. Referring to existing research results to calibrate the value of time, this paper had modified the traveller's generalized cost function, including the carbon emissions tax, fuel surcharge and travel time cost, which can be used in the travel impedance model with the consideration of carbon emission tax. Then an analysis method for urban road network traffic flow distribution was put forward, and a joint traffic distribution model was established, which considered the interaction

relationship between private cars and taxis. Finally this paper took Panjin city as an example to analyse the road traffic carbon emissions tax's impact. The results illustrated that carbon emission tax have a positive effect on road network flow equilibrium and carbon emission reduction. This paper will have a good reference value and practical significance on the calculation and implementation of urban traffic carbon emissions tax in China.

KEYWORDS: transportation policy, carbon emissions tax, traffic distribution, traveller's generalized cost, shadow price

Nonlinear Feedback Control Based on ANFIS of YUPENG Ship

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ABSTRACT

In order to solve the problem of control in complex sea condition, this paper designs the nonlinear feedback course keeping controller based on the adaptive neuro-fuzzy inference system (ANFIS) for the YUPENG ship. The information storage and learning ability of neural network is used to design controller, the arctangent function is used as the nonlinear feedback signal to feedback into the input of the controller, the controller can on-line adjust and optimize the control rules by itself. The simulation experiment of controller is carried out, the results show that the course keeping control effect of ANFIS controller added nonlinear feedback algorithm has been significantly improved, the controller has better course keeping effect than that of linear feedback in the condition of wind and wave disturbance and ship model parameter perturbation. This paper lays a foundation towards the intelligent direction for ship course keeping control.

KEYWORDS: ANFIS control algorithm; nonlinear feedback; simulation

Concentration Dynamics of Coarse and Fine Particulate Matter on the Pedestrian Bridge

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ABSTRACT

Epidemiological studies have shown commuting in traffic is associated with adverse health

effect. It is vital to investigate commuters' exposure to traffic-related air pollutants before considering potential health risks. However, there are relatively few publications considering commuters' personal exposure on the pedestrian bridges, which is important for accurate exposure assessment actually. Therefore, we performed "fixed-site" monitoring of the concentration of particulate matter (PM) (PM₁₀, PM_{2.5} and PM_{1.0}) at the pedestrian bridges of different types (urban expressway and arterial road) of road. The aim were to: (i) assess the differences between PMs measured at the studied pedestrian bridges, (ii) identify the best fit probability distribution curves for the PMs to understand the concentration and exposure dynamics of coarse and fine particles on the pedestrian bridges, (iii) quantify the pedestrian exposure in term of respiratory deposition dose (RDD) rate on the pedestrian bridges. The mass concentration of PM on-pedestrian bridge (PM_{2.5}, 52.64 $\mu\text{g m}^{-3}$) is slightly higher than that of the roadside under the bridge (PM_{2.5}, 51.98 $\mu\text{g m}^{-3}$) at arterial road; at the same condition, the concentration of PM for urban expressway was significantly higher than arterial road, especially, it is 1.4 times as much as under the arterial road for PM₁₀. Median PM₁₀, PM_{2.5} and PM_{1.0} on the pedestrian bridge of urban expressway were found to be 167.1, 57.05 and 35.55 $\mu\text{g m}^{-3}$, respectively; these were 19.8%, 14.8% and 20.3% higher than under the pedestrian bridge. The relatively high traffic volume at the urban expressway, average PMs at urban expressway were about 11%-48% high as at arterial road, indicating less favourable dispersion condition. Gauss and LogNormal distribution fitted well to PM data at both pedestrian bridges of different types of road. The average RDD rate of PM₁₀ (143.85 $\mu\text{g h}^{-1}$), PM_{2.5} (9.41 $\mu\text{g h}^{-1}$) and PM_{1.0} (3.78 $\mu\text{g h}^{-1}$) at OBUE was found to be about 47%, 41% and 11% higher than those at OBAR. Findings of this study are a step forward to understand exposure on and under the pedestrian bridges.

KEYWORDS: Particle mass concentration, Pedestrian bridges, Respiratory deposition dose, Probability distribution

中巴伊土国际通道文化价值研究

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摘要: 中巴伊土国际运输通道是“丝绸之路经济带”的重要骨架, 实质是对古丝绸之路的传承与发扬, 研究该通道的文化价值有利于从文化的视角挖掘交通通道的软实力, 本文通过古今丝路的对比, 从通道的器物文化价值、制度文化价值、载体文化价值三方面剖析通道的文化价值, 既可以借古明今, 又可以继往开来。

关键词: 中巴伊土; 国际通道; 文化价值; 器物文化价值

Research on CPIT International Transportation Corridor's Cultural Value

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Abstract: The international transportation corridor including china, Pakistan, Iran and turkey (CPIT), which is an important skeleton of Silk Road Economic, is the essence of the inheritance and development of the spirits of ancient silk road. Studying the cultural value of the corridor is helpful to mining transportation corridor's soft power from the angle of culture. In this article, through the contrast of the ancient silk road, we analyze the cultural value of the international transporting corridor in CPIT from the three aspects: implements cultural value, system of cultural value, the carrier of cultural value. today, Maybe we can learn from yesterday and can inherit past traditions and break new grounds for the future.

Keywords: CPIT; International transportation corridor; cultural value; implement cultural value

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绿色公路建设实践及效益评估研究 ——以麻昭高速公路为例

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摘要: 建设绿色公路, 最大程度降低公路带来的污染资源能耗消耗等负面影响, 是实现交通行业的可持续发展的重要组成, 本文分析了绿色公路的实施背景, 并对绿色公路的生态环保、节能、减排等几方面的核心内涵与建设内容进行了梳理, 在此基础上研究了绿色公路的效益评估主要方法, 并结合云南麻昭高速公路的工程实践进行了评价分析。

关键词: 绿色公路; 生态环保; 节能降碳; 效益评估; 麻昭高速公路

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Research on the Benefit Evaluation of Green and Sustainability Road Construction: Ma Zhao expressway as an Example

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Abstract: The construction of Green Road, minimize the pollution caused by highway resources consumption and other negative effects, is an important component of sustainability and green transportation initiatives, this paper analyzes the implementation background of green highway construction, and summarized the core the aspects of green road, that connotation of ecological environmental protection, energy saving and emission reduction ,etc. Then based on the research of

the green road benefit evaluation method, Yunnan Ma Zhao expressway as an illustrative example is presented.

Key words: green and sustainability road; ecological environmental; energy saving-emission reduction; Ma Zhao expressway

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Concentration Dynamics of Coarse and Fineparticulate Matter at Grade-separation: A Case Study of Xi'an, China

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ABSTRACT

Grade-separation is an important cross node of highway and urban expressway network, which plays an important role in improving the traffic capacity. To investigate concentration dynamics of traffic particulate matter and pedestrian exposure through and around grade-separation, mass concentration of PM₁₀, PM_{2.5}, PM₁ and particulate number were measured at Chang'an grade-separation. The results showed that the average mass concentration of PM₁₀, PM_{2.5} and PM₁ at the exit of the underpass was found to be about 19%, 9% and 4% higher than those at the entrance, and the average particle number in the exit and the entrance was consistent with the trend of particulate

matter mass concentration (PMC). The average percentage of time spent on congestion over all the runs was about 16% of the whole measurement time, but this contribute to 19%, 18% and 18% of the total mass concentration for PM₁₀, PM_{2.5} and PM₁, respectively. Besides, the average mass concentration of PM₁₀, PM_{2.5} and PM₁ at the underpass exceed those at the overpass about 14%, 8% and 7%, respectively, meanwhile, the average particle number at the underpass was found to be about 37% higher than that at the overpass. For further analysis of underpass, all three types PMCs decayed with increasing distance from the exit exponentially. However, for the entrance, PMCs increased near the ramp, then decreased in middle position and increased a little when approaching the entrance, this result could be helpful for designing virescence distribution to mitigate the concentration. The total respiratory deposition dose (RDD) rate of PM₁₀, PM_{2.5}, PM₁ around grade-separation were roughly 3.4-, 2.8- and 2.5-times higher than the RDD rate of background, respectively. Findings of this study are a step forward to understand the distribution of particulate and grade-separation's impact on the environment.

KEYWORDS: Grade-separation; concentration dynamics; particulate matter; overpass and underpass; horizontal variation.

高速公路路域生态修复技术适用性研究

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摘要：通过对山区、干旱、多雨等不同高速公路路域生态系统的修复，有针对性的提出了针对山区高速公路生态区域提出了地形改造技术、结合生态边坡和土工织物的生态修复技术，针对干旱地区高速公路生态区域提出了植物组合优选、土壤改良和植物建植的生态修复方法，针对湿润地区高速公路生态区域提出了径流修复技术。认为目前生态修复技术尚可解决水土保持、边坡景观等表观生态问题，对于高速公路路域的地下水污染、物质能量循环系统的深层修复还需进一步研究，最终实现以生态修复技术促进高速公路的绿色发展的目标。

关键词：高速公路路域生态系统，生态修复技术，地形改造技术，植物组合优选

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Applicability Study on Ecological Repair Techniques on Highway Route Ecosystem

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Abstract: By listing three types of highway route ecosystems—"mountainous", "drought" and "rainy", this paper raised the typical ecological repair techniques for these ecosystems, for example, terrain transformation technique, the combination of ecological slope and soil fabric techniques to solve mountainous highway route ecosystem, combination and select of plants, soil improvement and plant construction techniques to improve drought highway route ecosystem, and run-off repair

technique to deal with rainy highway route ecosystem. This paper gives a positive attitude towards current ecological repair techniques on solving apparent ecological problems such as soil and water conservation and slope landscape. However, this paper points out that there needs further research on groundwater pollution, material circulation and energy circulation, to stimulate the green development of highway by ecological repair techniques.

Keywords: highway route ecosystem, ecological repair techniques, terrain transformation technique, combination and select of plants

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基于ELM327的汽车燃油经济性研究

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摘 要: 为了找出不同车型不同车速条件下汽车燃油消耗规律, 用ELM327和SPSS对汽车燃油经济性进行了研究。通过SPSS对ELM237采集的汽车瞬时等速油耗进行曲线拟合, 结果表明瞬时油耗与车速具有极高的相关性, 相关系数均超过0.95, 并且符合开口向上的二次曲线和三次曲线分布规律。曲线最低点对应车速即为经济车速, 实验车辆经济油耗出现在60~80km/h之间。二次曲线和三次曲线预测瞬时等速油耗具有较高的精度, 为研究车速超过120km/h汽车燃油经济性提供了新的方法。

关键词: 燃油经济性; 瞬时油耗; 等速油耗; 实车实验; 曲线拟合

中图分类号: U467

Research on Automobile Fuel Economy Based on ELM327

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Abstract: In order to find the change rule of fuel consumption of different car under different speed conditions, studied the fuel economy of car, using automotive diagnostic testing tools(ELM327) and related detection software. Carried on curve fitting by SPSS use the instantaneous fuel consumption data collect by ELM237, the results show that the instantaneous fuel consumption and speed has a very high correlation, the correlation coefficient were more than 0.95, and in line with the quadratic curve and cubic curve. The lowest point of the curve is corresponding to the economy speed, and the economy speed of experimental vehicle are between 60 and 80 km/h. Use quadratic curve and cubic curve to forecast fuel consumption has high precision, so it provides a new method to research

fuel consumption when the speed higher than 120 km/h.

Keywords: Fuel economy; Instantaneous fuel consumption; Constant speed fuel consumption;
Road experiment; Curve fitting

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Estimating CO₂ Emissions from Hinterland Transport Chains

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ABSTRACT

This paper estimates CO₂ emissions from competing hinterland transport chains, which can be road-only or road-rail combined transport. An activity-based method is applied to establish a framework for estimating the CO₂ emission intensity for each hinterland transport chain, as well as the total CO₂ emissions from a port-hinterland transport corridor. This framework accounts for both haulage and handling activities, including loading, unloading, and transfer. The method also allows for CO₂ assessment using either a tank-to-wheel (T2W) or a well-to-wheel (W2W) energy intensity. A case study review of the Yiwu-Ningbo commercial corridor in China reveals that road-rail combined transport emits less CO₂ emissions than road-only transport, independent of estimation approach. The case study further compares the CO₂ estimation accuracy of the T2W-based and W2W-based approaches. The W2W-based approach is subsequently adopted to demonstrate the impact of a modal shift, i.e., from road-only (RD) to road-rail combined transport (RR), on the CO₂ emissions generated by the hinterland transport chain. For the Yiwu-Ningbo corridor, an 8.15% shift in TEUs from RD to RR under the best scenario of RR service improvement could reduce CO₂ emissions by 6 588 tons, or 5.27%, of current emissions. For the RR chain, pre-/post- haulage and handling activities contribute to

nearly 30% of the chain's CO₂ emissions. In addition, comparisons with other studies in North America and Europe suggest that road-rail combined transport resulted in lower CO₂ emissions than road-only transport; which are consistent with the results from this Asia-based analysis.

KEYWORDS: carbon dioxide; hinterland transport, activity-based method, semi-life cycle assessment

基于灰色模型的军用飞机NPD特性研究

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摘要: 中国民用航空与军用航空发展迅速, 而飞机噪声传播规律复杂, 防治效果不明显, 使得飞机噪声尤其是军用飞机噪声日益成为制约中国社会经济发展的一个重要因素。针对军用飞机噪声距离特性数据缺失、计算分析复杂等问题, 文章根据噪声传播规律, 提出了基于灰色模型的军用飞机噪声预测方法, 并以某型军用飞机的实测数据为依托, 通过多组实例进行计算分析和对比研究, 验证了该方法的可行性和有效性。

关键词: 军用飞机; 飞机噪声; 噪声距离特性; 灰色预测模型

中图分类号: X827

Noise-Power-Distance Characteristic of Military Aircraft Based on Gray Prediction Model

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Abstract: Duo to the rapid development of civil aviation and military aviation in China and poor noise control, the aircraft noise, especially the noise of military aircraft has become an important factor restricting the development of China's social economy. Aiming at the problems of military aircraft's Noise-Power-Distance characteristic data loss and complexity of calculation and analysis, according to the law of noise propagation, the military aircraft noise prediction model based on grey system theory

is proposed. And the feasibility and effectiveness of gray model method is verified by several cases.

Keywords: military aircraft, aircraft noise, Noise-Power-Distance characteristic, gray prediction model

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Magnitude and Composition of Life Cycle CO₂ Emissions from Freeway Construction in Mountainous Area

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ABSTRACT

Carbon dioxide (CO₂) emissions mitigation from road construction activities is one of potential pathways to deal with climate change. Aiming to assess the magnitude of the CO₂ emissions associated with road infrastructure construction activities and identify hotspots of emissions sources, this study developed a life-cycle assessment on CO₂ emissions of a real case of Xi'an Freeway project, one

of the most complicated construction condition in China, covering four stages of upstream materials production, to-site transportation, onsite construction and offsite production. Then key emissions factors are identified by Pareto Principle. The results showed that the road segment contributes to third top emissions, and its total emissions per lane per kilometer are one magnitude lower than that of bridge and tunnel. Minor subprojects including interchange, traffic safety facilities and temporary works only contribute to 4% of total CO₂ emissions of the road project. Compared to the negligible impact of pavement, subgrade, bridge abutment and tunnel wall have the major responsibility for the total emissions, accounting for 98.8% for bridge. Identification of the key contributor indicates that an overwhelming majority of upstream emissions are associated with only few type of materials with small proportion of total quantity of materials for each subproject, and materials with large quantity consumption only has minor responsibility for total upstream CO₂ emissions of each subproject. Also, certain category of equipment or machinery contributes to the bulk of carbon emissions, which decreases complication and difficulty of the CO₂ emissions control. The findings of the study could offer decision makers a more comprehensive reference to understand the contribution of road infrastructure construction activities to climate change, and the identified hotspots of emissions sources provide the insights of way to equipment selection, construction operation design, and construction materials design.

KEYWORDS: Carbon dioxide emissions; life cycle assessment; construction activities; freeway; mountainous area

公路建设植被可恢复性评价与实证—以青藏公路沿线为例

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摘要: 评价植被的可恢复性(植被恢复潜力)是指导植被恢复困难区域开展植被恢复实践的基础,在矿山复垦领域有着一些应用,但在当前公路行业却是一个薄弱研究领域。当前评价中对于不同等级的可恢复性判断大多缺乏实证,本项目以青藏公路走廊为依托,进行了环境因子评价分区,并在此基础上结合典型区域植被恢复工程的长期跟踪观测,验证各区域的植被的可恢复性,并提出适用的植被恢复工程技术,结果表明:该方法具有良好工程指导性,在青藏公路走廊带按照该方法划分的等级为3-5级区域,可实现植被有效恢复;纯自然恢复仅适用于4-5级区域,且要求边坡具有较好土质条件;在恢复难度大的2级区,采用适合的技术仍可将植被恢复到自然覆盖水平的80%以上,但不同技术措施、不同扰动区恢复效果差异大,边坡、护坡道、取土场恢复难度依次降低;客土喷播可加速植被恢复进程,并能在持久地维持在恒定覆盖水平,是适用于该区域的良好技术;由于可防止牲畜放牧,土工格室+喷播植被效果明显,基本可恢复到接近自然覆盖水平;由于工程结构受冻融毁坏,预制方格+喷播植被效果较差;披碱草、老芒麦、梭罗草、碱茅等植物为适应高寒区的优良植物。

关键词: 植被恢复潜力, 环境分区, 青藏公路, 生态工程

中图分类号: U417.2

Vegetation Restoration Potential Evaluation Based on Environmental Zoning During Road Construction: A Case Study of Qinghai Tibet Highway

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Abstract: The evaluation of vegetation restoration potential is the basis of the practice of vegetation restoration in the difficult area, which is mainly under research in the mine land reclamation while still remain weak in highway. In view of the current evaluation for different levels of restoration is still lack of empirical judgment, we carried a vegetation restoration potential zoning the Qinghai Tibet Highway Corridor, based on the environmental factor zoning assessment, then summarized the tracking investigation data for typical restoration engineering, and verified the restoration potential grade, and put forward the suitable vegetation restoration engineering technology. The results show that this method has a good guide for the engineering, grade 3-5 area in Qinghai Tibet Highway Corridor according to the method, could be effective restored of vegetation; plain naturally restored vegetation applies only to the 4-5 grade area, which need the slope has good soil conditions; in the 2 grade area, which has difficulties being restored, proper measures also could make the cover of natural vegetation be restored for over 80%, whereas big restoration difference between technologies and road zones, with slope, slope embanking area, cutting land restoration difficulty decreased. Spraying soil can accelerate the process of vegetation restoration, and in the long-term to maintain a constant coverage level, which is a good technology for the region. Due to the prevention of livestock grazing, the effect of geocell + hydroseeding has obvious performance, and which could restore the vegetation near to a level of natural cover. As for the destroy of freezing and thawing, the prefabricated grid + hydroseeding has a poor effect; There are several plant species with good adaptation to the local environment which including *Elymusdahuricus*, and Thoreau grass, *Alkaligrass* plants etc.

Keywords: Vegetation restoration potential, environmental zoning , Qinghai Tibet Highway; eco-engineering

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考虑地域差异的柴油车排放清单建立方法研究

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摘 要: 柴油车排放是目前城市大气污染的重要组成部分, 如何结合区域差异建立柴油车排放清单是制定相关减排政策的基础工作。首先按照使用用途将柴油车化分为7种车型, 选择国三、国四、国五三种排放标准的车辆得到基础排放因子; 具体分析不同区域的柴油车排放相关影响因素及修正权值, 包含环境参数、车速分布、载重系数及劣化系数; 结合修正参数建立柴油车综合排放因子计算公式及城市柴油车排放清单计算模型, 以淄博市为例完成了城市柴油车排放清单的建立。研究结论表明建立的柴油车排放清单建立方法, 适用于结合不同城市的环境特征、车辆特征和道路特征定量评价柴油车污染状况, 并为制定具体的柴油车污染物排放控制政策奠定基础。

关键词: 综合交通运输; 排放清单; 排放因子; 区域差异; 柴油车

中图分类号: U491.1

Study on Diesel Vehicle Emission Inventory Based on Regional Difference

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Abstract: Diesel emissions is an important component of urban air pollution, combining with regional differences to establish diesel emissions inventory is important in the formulation of emission regulations. First, according to the intended use of diesel vehicles, we will divide diesel vehicles into seven kinds of models. Then we chose national emission standard 3、4 and 5 to get

basic vehicle emission factor. By analyzing different emission factors about diesel vehicles, which contains environmental parameters、 speed distribution、 load factor and deterioration factor, we finally get diesel comprehensive emission factor calculation model and City diesel emissions inventory calculation model. It is the two calculation models that let us finish the establishment of diesel emissions inventory for the city of Zibo. The research shows that the methods for the establishment of diesel emissions inventory are suitable for environmental characteristics of different cities and diesel vehicle characteristics. It lays the foundation for the development of specific diesel emissions control policy.

Keywords: Integrated transportation; Emission inventory; Correction factor; Regional difference; Diesel car

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基于AnyLogic的电动汽车锂电池回收模型研究

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摘要: 如何合理有效的回收电动汽车废旧锂电池是目前亟需解决的问题。建立互联网+技术+服务模式, 基于生产者责任延伸制度, 生产者联合建立大型回收中心和全国性回收网络, 构建国家级信息平台, 实现电池编码制度和各环节可追溯; 利用SWOT评价方法对组织内外环境进行分析, 对所构建的网络的各个环节提出政策建议, 明确各个主体的责任, 提供技术支撑; 利用AnyLogic软件的智能体理论对动力电池整个全生命周期建立模型, 仿真分析未来10年电池累计存量及电池应用途径等指标变化规律。仿真数据表明回收模型在建立初期投入较大, 回收效率较小, 中期见效明显, 后期持续平稳的增长, 该模型能实现废旧电池的有效循环利用。

关键字: 车用锂电池; 回收模型; SWOT分析; AnyLogic软件; 建模与仿真

中图分类号: U491.1 **文献标志码:** A

Study on Lithium Battery Recovery Model of Electric Vehicle Based on AnyLogic

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Abstract: How to recycle the waste lithium battery of electric vehicle reasonably and effectively, which is an urgent problem to be solved at present. The establishment of Internet +technology + service model based on Extended Producer Responsibility. Producers jointly set up a large recycling center and the national recycling network to build a national information platform. Implemented the battery

coding system and the various links can be traced back; using SWOT evaluation method to analyze the internal and external environment. Putting forward policy suggestion on each link of the network. To make clear the responsibility of each subject. And providing technical support; the whole life cycle model of power battery is built by using the Agent theory of AnyLogic software. Simulation analysis the cumulative stock of the battery, battery applications and other indicators change rule in the next 10 years. Simulation data show that the recovery model which is in the early stage of the establishment needs greater investment, but recovery efficiency is smaller. The medium-term effect is obvious and steady growth in the later period. The model can achieve the effective recycling of waste batteries.

Keywords: Lithium battery for vehicle; Recovery model; SWOT analysis; AnyLogic simulating and modeling

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Ecological Impact Analysis on Material Stock of Urban Road System in Beijing

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ABSTRACT

Rapid urbanization has greatly altered the urban metabolism of material and energy. As a significant part of the infrastructure, urban roads are being rapidly developed worldwide and have formed the pivot of urban economic development for loading the flows of material, energy and

population. Quantitative analysis of metabolic processes on urban road systems, especially the scale, composition, could help to assess the resource appropriation and potential environmental risks, as well as improve urban metabolism models. In this paper, the author takes Beijing as study area, using an integrated model, which covered all types of roads, intersection structures and ancillary facilities, was built for calculating the material stocks of urban road systems. Based on a bottom-up method, the total stocks were disassembled into a number of stock parts rather than obtained by statistical yearbook data, which provided an approach promoting data availability and inner structure understanding. The combination with GIS enabled the model to tackle the complex structures of road networks and avoid double counting. The result shows that: The node quantity of branch roads and hutongs are the only two parameters that are in negative correlation to the total stock, indicating that the microcirculation structure in road systems may be important for regulating the total stock. Expressways and arterials were excessively emphasized, while minor roads were relatively ignored, which not only led to land resource waste and unnecessary material consumption, but also resulted in high traffic pressure on the main road networks, obstruction in minor roads, and inconvenient for pedestrian crossing.

KEYWORDS: Material stock, Urban metabolism, Road system, Eco-indicator, Beijing

排放控制区约束下集装箱码头海铁联运多阶段调度模型

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摘 要: 随着我国排放控制区的正式设立, 以及“一带一路”战略对多式联运的巨大需求, 集装箱海铁联运将在未来得到快速发展。但与此同时, 海铁联运中的大气污染问题日益严重, 采用何种调度策略, 在保证服务水平的基础上, 减少船舶和机车的大气污染物排放, 对于港口管理者是一个急需解决的问题。本文针对集装箱码头海铁联运调度问题, 考虑岸电应用情况, 构建排放控制区约束下的多阶段调度模型, 目标是最小化船舶等待时间和大气污染物排放量。第一阶段针对动态连续泊位调度问题(DCBAP)建立模型, 第二阶段针对船舶和列车联合调度问题(PISP)建立模型, 采用分支定界法求解模型; 第三阶段针对列车操作问题(LOP)建立模型, 采用改进的小生境遗传算法求解模型。通过对某集装箱码头进行优化, 验证了该算法的有效性, 本文可为港口管理者的海铁联运调度工作提供实际参考意义。

关键词: 水运工程; 排放控制区; 集装箱海铁联运; 一带一路; 节能减排; 调度问题。

中图分类号: U169.6,U692**文献标识码:** A

Multi Stages Scheduling Model of Container Intermodal Transport in Terminal under the Constraint of the Emission Control Area

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Abstract: With the establishment of the Emission Control Areas (ECAs) of China, and the huge demand of the One Belt One Road strategy of multimodal transport, container intermodal transport will be rapid development in the future. Meanwhile, the air pollution problem is increasingly serious,

optimizing the container intermodal transport scheduling in port, reducing the ship and train emissions, and keep the high service level, which, is an urgent problem to the port management. In this study, a multi stages scheduling model is proposed to deal with the problem, in order to minimize the ship-train waiting time and emissions. The first model base on the dynamic continues berth allocate problem(DCBAP), the second model base on port intermodal scheduling problem(PISP), the branch and bound method to solve these model, the third model base on locomotive operation problem (LOP), the improved niching genetic algorithm to solve the model. Experimental results demonstrate that the multi stages model, reflected by the proposed model, is competent to reduce ship and train emissions for container intermodal transport in port, while simultaneously retaining the service level of the terminal. This study can provide practical reference for the port managers.

Keywords: Waterway engineering; Emission control area; Container intermodal transport; One belt one road; Energy saving and emission reduction; Scheduling problem.

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