

# Investigation and Countermeasures of Public Transportation Civilization Construction in Wuhan City

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**Abstract:** *The civilization of public transportation in Wuhan is an important part of the revitalization of Wuhan, and is the cornerstone of the efficient and normal operation of the city. The exploration of the civilization of public transportation in Wuhan is also the value of the concept of "Wuhan, every day is different" in the new era of Wuhan city development. In this study, a comprehensive analysis of the background, current situation and significance of the civilized construction of public transportation in Wuhan was carried out by comprehensively using various survey methods such as questionnaires, field surveys, and network surveys. In view of the problems of unreasonable structure of public transportation construction, uncoordinated development of transportation modes, low service level, imperfect system, and continuous growth of pollutants brought by public transportation in the process of civilization construction of public transportation in Wuhan, and in view of the unprecedented historical development opportunities faced by Wuhan and favorable conditions such as the thoroughfare of nine provinces and scientific and educational bases, we mainly focus on the construction of material civilization, spiritual civilization, institutional civilization and ecological civilization of public transportation in Wuhan.*

**Keywords:** Public transportation civilization, Construction concept, Civilized city, Urban construction, Harmonious society.

## 1. Introduction

### 1.1 Research Background

Transportation civilization is an important symbol of the modernization degree of human civilization. The construction of transportation is a comprehensive embodiment of the level of human material civilization, spiritual civilization and institutional civilization and ecological civilization [1]. Wuhan is the capital of Hubei Province, a national historical and cultural city and the central city of China, located in the eastern part of Jianghan Plain, where the confluence of the Yangtze and Han rivers.

Wuhan is a city of rivers, lakes and harbors, with the Yangtze River and Han River intersecting in the center of the city, and accepting tributaries from the north and south into the confluence, with many large and small lakes on both sides of the river, forming a network of lakes and marshes. In addition, Wuhan is traditionally known as the "thoroughfare of nine provinces" and is the largest water, land and air transportation hub in China's interior. It is about 1000 KM from Beijing, Shanghai, Guangzhou, Chengdu, Xi'an and other major cities in China, the commuting time can be controlled to less than 5 hours. Call the "Heart" of China's economic geography, with the role of bearing east and west, communicating north and south, and maintaining the four directions [2]. At the same time, Wuhan is an important industrial base, and the hometown of fishing and rice. In recent years, Wuhan has been facing a series of historic development opportunities - the national strategy for the rise of central China. The approval of Wuhan as a pilot zone for the construction of "Resource-saving and Environment-friendly society", "National comprehensive transportation hub", "National

civilized city", and the first "National demonstration zone of independent innovation" in East Lake High-tech district [3,4]. In order to maintain the sustainable, rapid and healthy development of Wuhan, this study has carried out a series of problems facing the civilized construction of public transportation in Wuhan and proposed targeted countermeasures in order to provide a reference for the construction of public transportation in Wuhan.

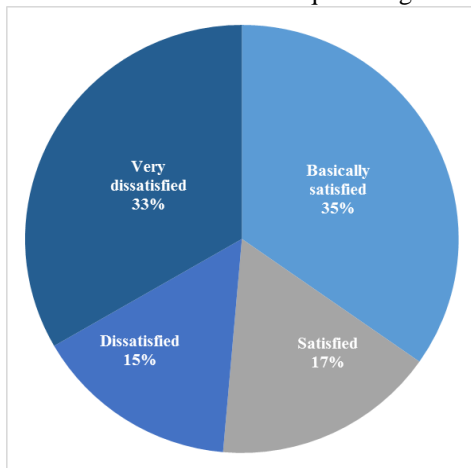
### 1.2 Research Methodology

In this study, a variety of research methods such as questionnaires, field surveys, and literature reading were used to analyze the results of the investigation and research, and integrate the results into the research. A more in-depth analysis is made on the background, current situation and significance of the civilized construction of public transportation in Wuhan.

### 1.3 Current Status of Research

In Wuhan, the construction of public transportation civilization is not only an external manifestation of its own civilization process, but also an urgent need to implement the scientific development concept, build a "Harmonious Wuhan" and serve the general public, so its importance is self-evident. However, the pace of civilization construction of public transportation in Wuhan is lagging behind, not keeping pace with the material development of Wuhan and the improvement of citizens' living standard [5]. The results of our survey (Figure 1) show that only 17% of the respondents are "Satisfied" with the current situation of public transportation civilization in Wuhan, which shows that the

situation of public transportation civilization in Wuhan is not optimistic and the road ahead is still quite long.



**Figure 1:** Survey on Satisfaction of Public Transportation Civilization Construction in Wuhan

With the rapid physical development of Wuhan city and the increasing expansion of the city scale and the booming urban population, Wuhan city has fostered many problems in the process of the construction of public transportation material civilization because of the weak overall strength and infrastructure of public transportation, unreasonable structure of public transportation construction, uncoordinated development of transportation modes, and traffic information management system to be optimized [6,7], and the existence of these problems has seriously affected the rapid, healthy and sustainable development of urban transportation. Therefore, it is necessary to actively explore practical countermeasures to cross the bottleneck of public transportation development in Wuhan. At present, there are mainly problems such as low awareness of public transportation civilization, low standard of public transportation service, and poor education of public transportation norms. Although the awareness of Wuhan people of transportation civilization has been improved in recent years, there is still a certain gap with the requirements of Wuhan public transportation spiritual civilization construction. The government should stand in the overall development of the transportation business, change the concept, innovative ideas, improve the quality of service, explore the establishment of a new mechanism for the construction of spiritual civilization, and widely carry out mass civilization creation activities to provide a strong spiritual impetus and solid moral support for the construction of the city of Wuhan.

The main problems in the construction of public transportation system civilization in Wuhan are reflected in the unreasonable urban layout planning, imperfect management system and poor construction coordination planning. In the construction and development of a city, the civilization of public transportation system will play an indispensable role in the sustainable development of the city. Facing the opportunities and challenges of the new era, Wuhan can no longer follow the old path of "Pollution first, treatment later", and currently has to overcome two major problems--The continuous increase of public transport

emissions and the poor greening of urban roads [8]. Currently, Wuhan has been awarded as a "National Civilized City", which should reflect the appearance of a civilized city and try to make Wuhan a garden city by combining air optimization, road greening and ecological protection.

#### 1.4 Significance for the Civilization of Public Transportation in Wuhan

The civilized construction of public transportation in Wuhan City gives full play to its advantages in all aspects, responds positively to the important resolutions of building a harmonious society and the rise of central China, takes advantage of the historical development opportunities, and gives priority to the civilized construction of public transportation, which is closely related to the daily life of citizens and the sustainable development of the city.

##### 1.4.1 Significance for the citizens of Wuhan City

Public transportation obstruction and slow travel speed have become prominent problems in Wuhan. With the continuous improvement of public transportation civilization in Wuhan, it is believed that it will improve the travel efficiency of citizens, enhance the happiness index of the city, improve the living environment and save personal expenses.

##### 1.4.2 Significance for the sustainable development of Wuhan City

The civilized construction of public transportation in Wuhan is not enough to meet the current situation. The current civilized construction of public transportation can improve the utilization of road resources, suppress environmental pollution, reduce traffic accidents, enhance the charm of the city, attract foreign investment, and increase the sense of identity of the citizens, etc. Therefore, the civilized construction of public transportation is crucial for Wuhan to effectively solve traffic problems such as traffic congestion and slow traffic speed. Therefore, the civilization of public transportation is crucial to Wuhan city, which can effectively solve traffic problems such as traffic congestion and slow traffic speed.

##### 1.4.3 Significance for the rise of China's central region

The award of Wuhan as a "National Civilized City" has further strengthened its role as a benchmark in the central region of China. As the largest water, land and air transportation hub in China's interior, Wuhan City is the pulse of the entire central region, which in turn radiates to the whole country [9]. The civilized construction of public transportation is equivalent to the blood and bones of Wuhan, and its perfection will affect the success or failure of the city. The results of the civilized construction of public transportation in Wuhan can make the city transform its bones and embark on a revival path of sustainable, rapid and healthy development, steadily ranking at the forefront of the central region and catching up with the first-tier cities in China.

## 2. Wuhan Public Transportation Material Civilization Construction

Transportation civilization is an external manifestation of urban civilization, closely linked to the daily life of the public, an important guarantee for the material development of society, and a major means to promote social harmony. With the material development of society and the improvement of people's living standard, citizens have higher and higher demands on the material civilization of public transportation and attach more and more importance to the material applicability and convenience of the civilization of public transportation.

### 2.1 Current Situation of the Construction of Public Transportation Material Civilization in Wuhan

Urban public transportation is a public transportation system composed of multiple modes of transportation, which is an important part of urban infrastructure. The construction of public transportation material civilization is the top priority of urban public transportation construction, and it directly presents the level of civilization of a city [10]. Wuhan city government and related departments attach great importance to the construction of urban public transportation material civilization, which makes Wuhan's urban public transportation business achieve certain achievements and maintain the smooth development of urban material and society. With the rapid development of Wuhan's material and the increasing expansion of the city's scale, and the booming expansion of the city's population, Wuhan has bred many problems in the process of the construction of public transportation material civilization because of the unreasonable construction structure and the uncoordinated development of transportation means, and the existence of these problems has seriously affected the healthy development of urban transportation.

#### 2.1.1 Weakness of the overall strength and infrastructure of public transportation

First, the current overall strength of public transportation in Wuhan is not enough, the main body of public transportation is only limited to the bus transportation group, while the ratio of urban population to bus vehicles is getting larger and larger, and the share of bus trips is far from enough [11]. Second, the layout and distribution of bus stops are uneven. Some places have too few bus stops, and many buses or cabs can only borrow narrow public roads for temporary parking, which can easily lead to traffic congestion and difficult access. But there are also places where the bus stops are not set in accordance with the national requirements for the distance between the bus stops, set too much, too close or not standardized. This has led to many bus vehicles into the station when parking can only occupy the road parking, which is also easy to cause congestion at intersections, for the city's overall traffic to bring serious impact, and even laid a security risk, has seriously restricted the further development of public transport in Wuhan [12]. Furthermore, the urban areas of Wuhan have not been able to synchronize the public transport-related infrastructure facilities such as bus

dispatching houses and comprehensive cab service stations with the overall urban development and road planning. In addition, many urban areas have not been able to build a signal system in time to meet the requirements of rapid development and expansion of the city, which is specifically designed to provide priority access for public transport vehicles.

#### 2.1.2 Public transportation construction structure is not reasonable

At present, the structure of public transportation in Wuhan is too homogeneous, and the construction of public transportation is mainly focused on traditional buses and cabs, while the construction of public transportation systems that can take on large capacity still needs to be accelerated, such as the construction of the subway and the construction of urban rail transit, etc. [13].

#### 2.1.3 Uncoordinated development of public transportation

Wuhan has put a large number of cabs and buses to ease the traffic pressure, but it is not enough for the city with a large population. The current rail transit development still has some limitations, the bus line coverage is not high, and the public bicycle is not put to use. In response to the current problems, Wuhan should increase the coordinated development of various modes of transportation.

#### 2.1.4 Public transportation information management system to be optimized

With the rise of the Internet, many traditional fields, represented by transportation, have begun to integrate with Internet technology, showing the characteristics of convenience and efficiency. Wuhan should be developed into a smart transportation city by creating an "Internet+city transportation" model to manage Wuhan's public transportation easily and quickly and provide a quality public transportation environment for citizens. Due to the imperfect transportation service system, most citizens are dissatisfied with the public transportation system in Wuhan, so it is possible to establish a sound and optimized public transportation information service management system to improve the transportation service system in Wuhan.

## 2.2 Countermeasures for the Construction of Public Transport Material Civilization in Wuhan

With the development of Wuhan's economy and the expansion of the city's scale, the problem of public transportation has become increasingly prominent, so the construction of Wuhan's public transportation material civilization has become more and more important. In this regard, the Wuhan government should scientifically plan and improve the construction of stations and their supporting facilities, improve the intelligent public system, develop the public bicycle system, upgrade the traffic management system, promote the leapfrog development of rail transit and other aspects to speed up the construction of public transportation

material civilization, so as to lay a solid economic foundation for the revival of Great Wuhan.

### 2.2.1 Scientific planning of public transportation infrastructure construction

First of all, the construction of urban public transport stations and their supporting facilities should be incorporated into the overall planning of the city, and the relationship between the construction of urban public transport stations and their supporting facilities and the overall planning of the city should be handled on the basis of scientific research and careful analysis of the current situation of urban traffic, urban public transport demand and urban public transport development, and efforts should be made to achieve synchronous planning and synchronous construction of both [14]. Secondly, urban public transportation stations and their supporting facilities are the most basic facilities of urban public transportation, and they must be built in strict accordance with unified planning and unified management and operation, and the government should increase the investment in this area. The construction of urban public transport stations and their supporting facilities must be incorporated into the planning of urban infrastructure construction, in which the construction of urban public transport stations should be synchronized with the design of major projects related to the people's livelihood, such as new residential areas, newly developed business districts and new large event venues, and efforts should be made to synchronize their construction and delivery [15].

### 2.2.2 Improve intelligent public transportation system

First of all, with the continuous expansion of the city and the rapid increase of the urban population, public transportation in Wuhan can no longer meet the travel needs of the general public. In order to fundamentally solve this problem and make the public transportation in Wuhan city to play the most efficient role, it is necessary to actively introduce advanced urban public transportation management technology, that is to say, to vigorously introduce and develop urban intelligent public transportation system, only in this way can we thoroughly improve the service for the citizens who choose public transportation, thoroughly improve the operation and management of urban public transportation, and fundamentally improve the safety and reliability of public transportation service. The safety and reliability of public transportation services can be fundamentally improved. Secondly, we should actively build and improve a large-capacity public transportation system. For example, bus trains can be developed gradually.

### 2.2.3 Development of public bicycle system

The public bicycle system, as a project for the benefit of the people, was set up to test the civilized quality of a city's citizens. In addition to the procedures of civilized renting, civilized riding and civilized returning, it is also reflected in the order maintenance, peak service and vehicle cleaning that are consciously and voluntarily put into the public bicycle

outlets, which better solve the tide problem of using bicycles during peak hours and are also more economical and environmental friendly. The government should increase the number of bicycle putting outlets in the city and increase the number of bicycles, especially near the subway stations, the end of buses. The government should increase the number of bicycle outlets throughout the city, especially near subway stations, at the end of bus routes, or in suburban areas. The government should also increase the number of bicycle outlets in the city, especially near subway stations, bus terminals, and suburbs, so that the bicycle can be used more effectively. The government should learn from the advanced progressive billing system in coastal areas, such as free bicycle rental for one hour, and reasonable price control by time points thereafter [16].

### 2.2.4 Upgrade public transportation management system

"Intelligent traffic management" upgrade project, will promote electronic station signs, mobile payment and unified settlement platform, the construction of intelligent traffic signal control system, intelligent traffic guidance system, intelligent parking, public transport driving information guidance pilot application, to achieve intelligent identification of transport elements, command and control and emergency response, and in Public transportation and freight traffic to promote intelligent applications such as vehicle networking, vehicle intelligent terminals, built multimedia integrated application platform, with the Internet, cell phones, radio, television, navigation, etc., to send the public road network traffic congestion, traffic safety, traffic management, parking and other real-time information.

### 2.2.5 Promote the leapfrog development of rail transportation

The opening of Wuhan subway is a milestone of Wuhan city construction, which is of great significance in relieving traffic congestion, constructing public transportation arteries, improving the quality of public travel, expanding the scale of the city, optimizing the layout of the city, and enhancing the internationalization of the city. A convenient metro transportation network can change the lifestyle of citizens and add to the pride of civilization of the city [17]. At present, there are still limitations in the development of metro transportation in Wuhan, which is far from meeting the rapid development of the city, and the government should develop ideas to span the development of more rail transit construction to promote faster, better and sustainable development of Wuhan.

## 2.3 Future Prospects for the Construction of Public Transport Material Civilization in Wuhan

According to the above intelligent bus management system, traffic service system, road station planning system and public bicycle delivery system, we believe that we can solve the problems of insufficient public transportation capacity, backward stations, slow information update and poor quality of transportation service in Wuhan. At the same time, the development of rail transit and bicycle system makes the city's

public transportation development more robust. All these are better to promote the development of Wuhan's public transportation civilization, benefiting millions of Wuhan citizens.

### 3. Wuhan Public Transportation Spiritual Civilization Construction

Wuhan public transportation spiritual civilization construction work, should stand in the overall development of the transport business, change the concept, innovative ideas, improve the quality of service, explore the establishment of a new mechanism for the construction of spiritual civilization, widely carry out mass civilization creation activities, and strive to cultivate an innovative and efficient, clean and self-disciplined, loving and dedicated cadres and workers, in order to further improve the transport environment, optimize the image of the industry, and promote the transport business Continuous, stable and healthy development, to provide strong spiritual impetus and solid moral support for the construction of Wuhan city.

#### 3.1 The Significance of the Construction of Public Transportation Spiritual Civilization in Wuhan

The spiritual civilization construction of public transportation in Wuhan is closely related to the production and life of citizens, and is in line with the strategic decision of urban development and transportation development in Wuhan; it is an inevitable requirement for improving urban living environment, promoting sustainable urban development and building a harmonious society; it is an important measure to accelerate the urbanization process and guarantee the economic and social development of the city; and it is a concrete embodiment of implementing the scientific concept of development and building a conservation-oriented society. The new situation and new problems faced by the current spiritual civilization construction of urban public transportation in Wuhan city require establishing the important position of the spiritual civilization construction of public transportation in the development of Wuhan city and promoting the coordinated development of public transportation and urban economy and society in Wuhan city [18].

3.1.1 It is conducive to the formation of a conscious awareness of public transportation norms among citizens

With the rapid growth of Wuhan's economy, the people's living standards continue to improve, the rapid development of motor vehicles, full of cars running down the street to let the public feel the modern and convenient life at the same time, but also make the construction of relatively lagging urban road traffic congestion problem is increasing. Roads, red light, overtaking, arbitrary parking vehicles, etc. caused by road congestion has become a difficult to cure a traffic "persistent problem" in Wuhan. In recent years, the government has been increasing road construction efforts, but

still can not keep up with the demand for vehicle development. "Difficult to drive, difficult to park" has become the most important concern of the public. Wuhan City needs to strengthen the spiritual civilization of public transportation through the joint efforts of all sectors of society, through the education of citizens on traffic norms, to raise the awareness of the general public of traffic norms, to further regulate the traffic behavior of participants in traffic activities, to strengthen the spiritual civilization of public transportation, to maintain a good road traffic order in Wuhan City, to prevent and reduce road traffic accidents, to ensure road traffic safety, to build civilized city, will play an active and important role.

3.1.2 It is conducive to the formation of a good moral ethos and social environment

Good moral ethics is a healthy and upward social atmosphere promoted and advocated by the whole society, which is an important symbol of social civilization and one of the criteria to measure whether social development is orderly and harmonious. Cultivating and forming a good moral culture is not only an objective requirement to promote the construction of socialist spiritual civilization, but also an important channel for social individuals to improve their moral quality and refine their willpower. The convergence of individuals constitutes the whole of society. The improvement of individual moral quality is the cornerstone of the moral cultivation of the whole society. Strengthen the spiritual civilization of public transportation in Wuhan and guide people to consciously fulfill their legal obligations, social responsibilities and family responsibilities. Deeply carry out mass spiritual civilization creation activities and improve the social volunteer service system. When everyone forms a moral character by observing traffic rules, a good social morality will gradually take shape, thus producing a good environment that promotes the observance of traffic norms. Therefore, strengthening the construction of public transportation spiritual civilization is conducive to the further formation of a good moral ethos that promotes harmony and optimizes the social environment [19].

3.1.3 Contribute to the sustainable and healthy development of the city

Urban public transportation is the "Artery" of the material development of the city, the link between social production, circulation and people's life, the basic support for the normal functioning of the city and the key to enhance the comprehensive competitiveness of the city. The level of public transportation development in Wuhan can show the development quality and civilization of Wuhan, and also reflect the government's ability to govern and the happiness index of residents. Relevant departments in Wuhan should take the initiative to adapt to the new situation of urban public transportation development, actively respond to the new tasks of urban public transportation development, and promote the construction of an urban public transportation system that is satisfactory to the people and convenient for residents to travel.

### 3.2 Current Status of the Construction of Public Transport Civilization in Wuhan

3.2.1 Poor awareness of civilization in public transportation  
Although the traffic civilization awareness of Wuhan people has improved in recent years, there is still a gap with the requirements of Wuhan public transportation spiritual civilization. Vehicle drivers and passengers parking at random, illegal U-turns, forced overtaking, overloading and speeding, driving motorcycles without helmets, etc. are common, cyclists crossing red lights, competing with motor vehicles, pedestrians not walking on the sidewalk, crossing the traffic barrier, driving and talking on the phone, throwing things out of the car window, spitting and throwing, etc. These problems have become an important cause of traffic accidents in Wuhan [1]. In addition, some citizens do not understand, support and obey the traffic management work, do not take the lead to obey the traffic rules, and regularly appear to violate the rules, which brings negative impact to the traffic management work in Wuhan city.

#### 3.2.2 The standard of public transportation services is not high

Public transportation service is not high. As the public's demand for public transport travel is getting higher and higher, public transport complaints are also increasing day by day. Wuhan City cab management is chaotic, cab contracting fees year by year "rising ship", rising operating costs, some places have become the driver does not want to run places, cab refusal, picking passengers serious problems. Drive to answer the phone, found passengers smoking without advice; bus stopping at will, refusing to take the elderly, illegal horn honking, bus red light phenomenon is not uncommon.

#### 3.2.3 Inadequate education on public transportation norms

Road traffic management involves thousands of households, and people's lives are closely related, the need for government coordination, departmental participation, and joint management. But the reality of the situation is that some functional departments should not be in place to implement their responsibilities. In order to Wuhan City, the sustained, rapid and healthy development, traffic norms safety publicity and education projects, it is imperative.

The establishment of the city, governments at all levels and traffic norms involved in public security traffic police, safety supervision, education and administrative departments, the establishment of a sound unified traffic norms publicity mechanism, and gradually realize the traffic norms publicity work standardized, institutionalized, publicity form humane, content specific. A large number of popular traffic norms publicity knowledge, so that the general public traffic norms to enhance awareness, travel norms to improve awareness of law-abiding, deepen the awareness of the majority of traffic participants of traffic norms publicity, a large number of curb the incidence of major traffic accidents, so that governments at all levels to pay attention to traffic norms publicity and education. Actively mobilize the vast propaganda forces of society to further promote rural traffic norms publicity and

education. At the same time in the city and county areas at all levels of the community, units, schools and families in the traffic norms publicity and education, and constantly improve the quality of civilization of the traffic norms of the whole population, in the traffic norms education penetrate into every corner of society, to create a more harmonious traffic norms environment.

### 3.3 Analysis of the Educational Causes of the Problems of Public Transportation Spiritual Civilization Construction in Wuhan

#### 3.3.1 Lack of knowledge education on traffic regulations in schools

Students' awareness of traffic norms and safety protection is lacking, and schools place the responsibility of students' traffic safety entirely on families and society, and schools basically do not have a grasp of students' compliance with traffic laws and regulations and lack the necessary guidance and assistance. There are not many channels for elementary and middle school students to gain knowledge of traffic norms and safety, let alone participate in practical activities of traffic norms and safety. On the other hand, the educational approach is old-fashioned, mostly staying in the do or do not do, rather than consider why so, the lack of an effective approach to safety education, can not effectively solve the problem of traffic norms safety for primary and secondary school students. In recent years, despite the joint efforts of the relevant departments and urban schools, primary and secondary school students traffic regulation education work is generally good, but also found that some schools still have some loopholes. In order to enhance the majority of primary and secondary school students traffic law and traffic safety awareness, standardize the good culture of primary and secondary school students consciously comply with traffic regulations, minimize the occurrence of student traffic violations and traffic accidents, the schools should regularly carry out traffic regulation safety education for students to eliminate the appearance of traffic violations.

#### 3.3.2 Lack of social traffic knowledge education

In the process of traffic norms education, traffic norms education and publicity for adults is the most difficult, and it is difficult to play a good effect with adults as the preaching target. Harmonious and smooth road environment can not be separated from the participation of you and me, the lack of social traffic norms education, but also the cause of traffic norms. Road traffic norms publicity and education can not rely solely on public security police singing "one-man show", to take the road of socialization [20]. Therefore, to prevent traffic accidents at the source, we must strengthen the education of the general public on traffic safety laws and regulations, improve the awareness of traffic norms, so that the majority of traffic participants consciously comply with road safety laws and regulations.

#### 3.3.3 Lack of traffic knowledge education by government and traffic management departments

Overall, the traffic norms publicity and education work as a whole, there is a low degree of socialization, the lack of long-term mechanism, the work is formal, poorly targeted, poor financial security, low degree of specialization and other issues. Seriously hinder the development of traffic norms publicity and education work, and become a persistent problem that restricts the development of modern transportation. To establish traffic norms publicity and education supervision and management mechanism. Traffic norms publicity and education work to introduce market-based mechanisms does not mean laissez-faire, the government, traffic management departments to establish a strict monitoring and restraint mechanism, the content of publicity and education, the form of strict control, to avoid contradicting existing laws and regulations, while establishing a comprehensive assessment index system for publicity activities, the implementation of various traffic norms publicity and education activities held to track the evaluation, to achieve the process of light results to the process and results of the model change. To establish the traffic norms publicity and education effect evaluation mechanism. Can effectively solve the enterprise "investment" government departments publicity activities "value for money" problem, for the promotion of traffic norms publicity and education market-oriented construction is significant.

### **3.4 Countermeasures for the Construction of Spiritual Civilization in Public Transportation in Wuhan**

Urban public transportation has the advantages of intensive and efficient, energy-saving and environmental protection, etc. The priority development of public transportation in Wuhan City and the strengthening of the construction of public transportation spiritual civilization are the inevitable requirements for alleviating urban traffic congestion, transforming the mode of transportation development, improving people's quality of life, and improving the level of basic public services of the government, as well as the strategic choice for strengthening the work of energy conservation and emission reduction and building a resource-saving and environment-friendly society [21]. Specifically, the following initiatives can be taken for the spiritual civilization of public transportation in Wuhan.

#### **3.4.1 Improve public awareness and quality of road safety**

Traffic management departments should actively explore and reform traffic management methods and service mode, strengthen the publicity of traffic safety knowledge. First, is to try to broaden the propaganda channels, multi-faceted, multi-faceted road safety knowledge publicity and education work. Second, is to carry out in-depth publicity and education on traffic laws and regulations, and improve people's awareness of law-abiding. Put the "Road Traffic Safety Law" publicity and education work on the important agenda. Actively carry out publicity and education on traffic laws and regulations, and cultivate the general public's consciousness of law-abiding and civilized traffic. Third, is to further strengthen the publicity and education of primary and secondary school students, so that they grow up to comply

with traffic safety regulations, pay attention to the concept of traffic safety. The news media should also use safety analysis, public service announcements and other popular forms, vigorously promote and popularize traffic safety regulations and road safety knowledge.

#### **3.4.2 Enhancement of public transportation education management**

To achieve urban road traffic safety, smooth and orderly, the key lies in education and management. First, to strengthen urban traffic management. Traffic management departments should actively explore and reform traffic management methods and duty patterns, strengthen the traffic guidance, control and rectification of key complex sections, and strictly correct and punish all kinds of violations, especially to strengthen the control of key intersections during peak traffic periods, to ensure that traffic is safe and smooth and orderly. To implement a large public building traffic impact evaluation system, to prevent indiscriminate investment and disorderly construction, and damage the urban traffic environment. Second, to strengthen road traffic education. Vigorously carry out traffic publicity work, so that road traffic safety laws and regulations into the community, into schools, into enterprises, into the unit, improve the national awareness of traffic safety and the legal concept, enhance the consciousness of the public to comply with traffic rules, to fundamentally prevent and reduce the occurrence of traffic accidents. Can use a variety of news media, the violation of traffic rules of people and vehicles to expose the matter, to carry out universal traffic safety exhortation education, enhance the effect of traffic publicity and education. Third, to strengthen the construction of traffic management team. Increase the efforts to fight for the top, and appropriately increase the staffing of urban traffic management departments, especially to increase the number of urban traffic police, to provide manpower to maintain urban traffic order.

#### **3.4.3 Improve the quality of public transportation services**

Urban public transport is an important window for the construction of urban spiritual civilization, is also an important area to strengthen the construction of urban spiritual civilization, to strengthen the professional skills and professional ethics training of drivers and passengers, improve their business level and service consciousness, and actively implement the urban public passenger transport civilized service conventions, listen to the views of passengers, improve and adjust the service content, improve service quality.

Deeply carry out civilized services in the public transport industry and the creation of advanced cities, civilized units and advanced model figures, vigorously advocate love of work, service to the masses, passenger-oriented, safety first industry ethos, promote respect for the elderly, helping people, civilized and polite social virtues. Strengthen vocational skills training and professional ethics education, encourage the development of job training and skills competition activities, improve the quality of employees. Improve the quality of

service, achieve high quality service, excellent order and beautiful environment, so that public transportation becomes a window to show the civilization of the city [22].

#### 3.4.4 Enhancing the soft power of public transportation

Increase public transportation publicity, vigorously advocate modern transportation concepts and civilized transportation activities. Make full use of newspapers, radio, television and the Internet, as well as public service announcements, to carry out in-depth publicity on green travel and environmental protection knowledge, etc., to raise the modern traffic awareness of traffic participants and guide the transformation of traffic consumption patterns. Take traffic civilization as an important indicator of civilized citizenship and carry out traffic civilization propaganda activities in the community. Most people do not care about the public state of affairs, and many people lack the sense of ownership of the city for the construction of public transportation spiritual civilization. Therefore, the government and public transportation-related departments should strengthen the publicity of public transportation spiritual civilization construction, and call on the general public to actively participate in it and work together for a better tomorrow of Wuhan.

#### 3.4.5 Promote the creation of spiritual civilization in the public transport industry

The government is increasing financial support and policy support for public transport enterprises at the same time, we should actively carry out the creation of civilization in the bus industry, through the implementation of civilized bus improvement planning, improve the quality of drivers and passengers, play its role in the construction of public transport spiritual civilization persuasion, counseling, advocacy, better quality service, enhance the credibility and attractiveness of public transport. To supervise and strengthen the internal system management of enterprises, business skills training and ideological and political education work. To establish a mechanism for public transport enterprises to enter and exit the market, by improving market access conditions, strengthen the management of business qualifications, promote a reasonable division of labor in the market, promote the scale of enterprises, intensive, standardized operations, and gradually standardize the operation of dependency, contracting, leasing and other business practices. To encourage competition, so that poor service quality of enterprises and individual operators in a reasonable competition out of the market.

## 4. Wuhan Public Transportation System Civilization Construction

The degree of civilization of a country is concentrated on its institutional civilization, which often reflects and regulates the degree of material and spiritual civilization that the country can achieve. In the construction and development of a city, the public transportation system plays an indispensable role as an important part of the institutional civilization.

## 4.1 Problems and Analysis of Civilized Construction of Public Transportation System in Wuhan

### 4.1.1 Irrational urban layout planning

Throughout the urban planning layout of Wuhan, the construction of urban transportation lacks an overall, scientific development plan. There exists a large number of old urban areas in the main urban area of Wuhan, and the layout form of the old urban land should be adjusted in due course. In planning, many cross roads and dingzhi roads are planned unreasonably, which is difficult to meet the traffic demand for Wuhan city with a population level of ten million [23].

### 4.1.2 Inadequate management system

The rapid growth of the number of private cars, the pressure on the roads of Wuhan is becoming more and more severe. To control the rapid growth of private cars, and to address the problem of chaotic travel by private cars during peak hours, measures should be taken to reduce traffic pressure by staggering commuting to and from work, or to implement a single or double number restriction policy for important road sections during peak hours. The construction and management of parking spaces should be implemented simultaneously. According to the public parking construction planning, vigorously build off-street public parking lots and increase the number of public parking spaces. For the frequently congested lots, a certain parking fee should be charged according to the demand to restrict the access of private cars and regulate the parking location to reduce the traffic congestion [24]. The results of the survey (Figure 2) showed that the public transport mode that has the greatest adverse impact on air quality was indicated by 56% of the respondents, followed by the subway with 23%. Public transportation trips should be promoted and private transportation trips should be reduced.

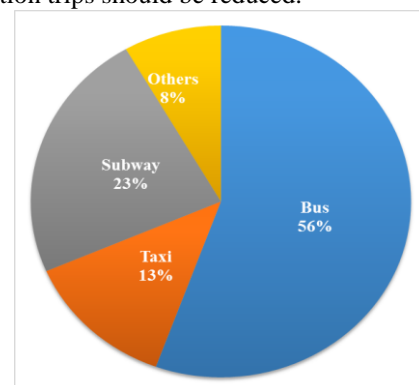


Figure 2: Air quality impact of public transport in Wuhan

## 4.2 Countermeasures for the Civilization of Public Transportation System in Wuhan

### 4.2.1 Scientific planning of public transportation

(1) Timely revision of road public transport specifications

The urban road public transportation sector in China should draw on the successful experiences at home and abroad to



compile, modify and supplement the corresponding norms in a timely and reasonable manner, so as to provide legal guarantee for the development of urban public transportation in keeping with the times. The government should strongly support and cooperate with the planning and preparation of public transportation, and subsidize the funds required for the preparation of the plan by means of financial budget in a timely manner to ensure the successful completion of the preparation work. At the same time, the government should also take strong measures to prevent encroachment on public transportation infrastructure and construction land.

## (2) Scientific planning of public transportation roads

The road planning and design department should start from the actual situation, fully investigate and study the land information of the city, and combine the scale of the city, the layout of the land, as well as the travel habits of the public and the flow direction of the passenger flow, etc., to scientifically allocate and utilize the transportation resources, reasonably plan the public transportation route network and configure the planning stations [25].

### 4.3.2 Improve public transportation related policies and regulations

#### (1) Legislative protection and financial support

The proper functioning of public transportation requires the guarantee of public policy support and public financial subsidies. The government should increase its investment in public transportation, provide preferential policies to public transportation enterprises, and provide special funds for the development of public transportation according to the law. At the same time, it is necessary to establish an agency for issuing and supervising special funds for public transportation, supplemented by an evaluation system for financial compensation of public transportation enterprises, to account for, evaluate and supervise financial compensation funds to ensure that financial subsidies can play their proper role.

#### (2) Reasonable guidance for small motor vehicles

The state can gradually reduce the incentives for purchasing small cars, restrict some of the private rights, increase the amount of fuel tax, vehicle purchase surcharge and appropriately levy vehicle congestion fee to control the increase of private cars and road congestion. At the same time, the government can increase subsidies for public transportation to increase the interest and motivation of the public to take public transportation and indirectly discourage people from buying private cars. Encourage cooperation between bus groups and business units to replace private car trips with commuter buses to ensure smooth road traffic and on-time bus trips.

#### (3) Enhancement of public transportation service quality management

The public transport sector should increase the investment in operating vehicles, increase the frequency of vehicles and departures. Public transport enterprises should firmly establish the public service consciousness, change the operation and management mechanism, strengthen cost control, and improve operation efficiency; strengthen safety production and service quality management, improve the business quality and safety awareness of drivers and passengers, and realize the standardization and standardization of services [26].

### 4.3.3 Strengthen road construction supervision

In the process of coordinating large-scale municipal construction, the construction process should be reasonably arranged to shorten the time of public transport road construction as much as possible. On the premise of ensuring high quality and accident-free construction, the project construction should be pushed forward at full speed and its impact on traffic should be reduced as much as possible [27]. Meanwhile, the construction time of the road construction project should be reasonably arranged to stagger the peak traffic period and arrange the construction of the road construction project at night as far as possible to minimize the traffic congestion caused by the construction of the road construction project.

## 5. Wuhan Public Transport Ecological Civilization Construction

### 5.1 Current Situation of Public Transportation Ecological Civilization Construction in Wuhan

Wuhan, the largest city in central China, is a national pilot area for comprehensive supporting reforms in building a resource-saving and environment-friendly society. Wuhan is committed to building a national central city, a national innovation center, an advanced manufacturing center and a trade and logistics center. Facing the opportunities and challenges of the new era, Wuhan can no longer follow the old path of "pollution first, treatment later", and the construction of ecological civilization for public transportation in Wuhan must be placed among the city's key construction projects [28]. Only by doing a good job of ecological civilization construction can we form a good interaction of economic, social and ecological benefits, and make Wuhan a developed, green, harmonious, beautiful and livable ecological civilization city.

#### 5.1.1 Continued increase in public transport exhaust emissions

The urbanization of Wuhan has led to a dramatic increase in the number of public transport vehicles deployed due to the rapid increase in population [29]. The respirable particulate matter PM 2.5 (Particulate Matter with an atmospheric aerodynamic particle size less than or equal to 2.5  $\mu\text{m}$ ) emitted by public transport has a serious impact on the air in Wuhan (Figure 3, 4), which will bring a great danger to the general

public.

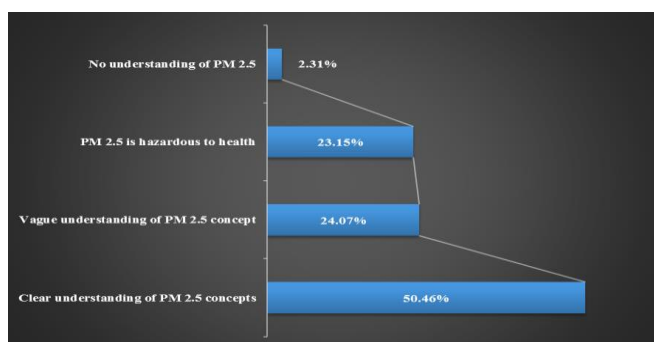


**Figure 3:** "Yellow Crane Tower", a famous attraction in Wuhan in hazy weather



**Figure 4:** "Yellow Crane Tower", a famous attraction in Wuhan on a clear day

According to the questionnaire survey (Figure 5), 50.46% of the respondents clearly understand the concept of PM 2.5, while 2.31% of the respondents still do not understand PM 2.5 at all. The higher the concentration in the air, the more serious the air pollution is. Although PM 2.5 is only a small component of the Earth's atmosphere, it has an important impact on air quality and visibility. Compared with coarser atmospheric particles, PM 2.5 has a small particle size, large area, and strong activity, and is easily accompanied by toxic and harmful substances (Heavy metals, Microorganisms), and has a long residence time and long transport distance in the atmosphere, thus having a greater impact on human health and the quality of the atmospheric environment.



**Figure 5:** Survey respondents' awareness of PM 2.5

The causes of PM 2.5 are complex and numerous, and one of the more important ones is the emission of motor vehicle exhaust [30]. According to the Wuhan traffic "big data" disclosed by the Wuhan traffic management department, by the end of 2020, the number of motor vehicles in the city was 4 million, of which 3.2 million were cars, and private cars accounted for 2.8 million, growing rapidly, with a current average daily increase of 2,000 units; the total number of motorcycles was 170,000, and more than 10,000 other motor vehicles. The development of public transportation in Wuhan, the city's motor vehicle population is growing rapidly, and this phenomenon has directly caused a large number of exhaust emissions, so that the air quality in Wuhan is declining, becoming a roadblock on the road to Wuhan's ecological civilization.

## 5.2 Countermeasures for the Construction of Public Transportation Ecological Civilization in Wuhan

Wuhan was awarded as a "National Civilized City", and it should reflect the appearance of a civilized city, and try to become a garden city, and take air pollution control and urban greening as an important part of the construction of an "environment-friendly society". It is urgent to promote the combination of air optimization, road greening and ecological protection to create an ecological civilization system for public transportation in Wuhan [31].

### 5.2.1 Improving air quality

The government attaches great importance to the prevention and control of air pollution to effectively improve air quality and protect public health. The Wuhan Action Plan for Improving Air Quality (2013~2017), the Assessment and Evaluation Measures for the Implementation of Wuhan Action Plan for Improving Air Quality (for trial implementation), and the Wuhan Urban Ambient Air Quality Achievement Plan (2013~2017) have been issued successively to clarify the objectives, tasks, measures, and guarantee mechanisms for improving air quality and to start the city's air pollution prevention and control. In order to respond to the call of the Wuhan Municipal Government, in order to respond to the call of Wuhan government, the author proposed the following specific programs.

Program 1: The city launched a bicycle travel campaign with the slogan: I ride, I am healthy, I am happy.

The government could cooperate with well-known bicycle brands to promote cycling in Wuhan with the slogan "I ride, I am healthy, I am happy". Bicycle manufacturers could reduce the price of bicycles through a series of special offers, while the city government could launch a "People's campaign" to subsidize the purchase of bicycles by residents. Include bicycle lanes in public transportation plans to facilitate bicycle travel. The relevant legislation should be enacted to ensure the safety of bicycling, so that the public has a law to follow.

Program 2: Implement corresponding measures to reduce the number of private cars and increase the cost of driving.

For congestion road congestion charges and the like, high-speed long-distance scanning type of technology can be adopted; increase the parking fees in the central busy area and the road occupation parking fees, which many cities have already started; according to the number of tail number restrictions, this one also has a certain effect, but I personally think it is not very reasonable; administrative and public institutions to strengthen the management of public transport travel; accelerate the construction of public transport system, the government from the macro level to ensure The government should ensure the low price of public transportation to solve the transportation problem of most citizens.

### 5.2.2 Improve road greening program

In many cities, while increasing greening efforts, local soil and climate conditions and cultural and historical factors are not taken into account, and the greening varieties are monotonous, the appearance of each neighborhood is similar, and the greening of neighboring cities is similar, obscuring the landscape characteristics of the city itself. The introduction of a large number of exotic plants and the lack of use and protection of native species have damaged the original urban ecosystem [33]. In response to these problems, the city of Wuhan should take reasonable countermeasures to improve the road greening scheme in Wuhan.

#### (1) Suitable for the land and trees

In garden planting planning, "Suitable for the land and trees" is a basic planning principle. The so-called "Suitable land" means that when planting garden plants, a comprehensive understanding of the ecological and human environment factors of the planting area, such as climate, soil, biology, human activities, and the surrounding environment, should be obtained first, and on this basis, the correct "Suitable trees" should be obtained, the biological habit of each species or On the basis of this, the correct "Suitable trees", understanding the biological habit of each species or variety, can be made for the correct selection of the plant to be adapted to the area [34]. On both sides of open urban trunk roads, street trees are required to be strongly sunny and not afraid of the hot sun; on both sides of rivers with low terrain, street trees are required to have a certain degree of moisture and flood tolerance. In general, street trees are required to be highly adaptable to soil, tolerant to drought and infertile, or through local soil exchange can basically meet the requirements of the soil acidity for tree growth. Such "Suitable for the land and trees" principle can make the plants in the area grow lush and can give full play to their respective ornamental characteristics (Figure 6).

In the process of implementing the principle of "Suitable for the land and trees", we should also pay careful attention to the interspecies relationship between plant species, community location, and landscape interrelationship. Must consider the

new changes due to the age of trees, seasons, etc. So that the plants can be healthy growth, but also to make the species beneficial to each other, the landscape is integrated and complementary. Then from the ornamental point of view, according to different lots and different ecological conditions, with a variety of trees adapted to the ecological conditions, each with its own characteristics, so that it presents or four seasons of green, or the next flowering, or three seasons of flowers, or autumn leaves, vibrant, colorful plant landscape [35].



**Figure 6:** Greening Achievements of "Suitable for the land and trees" in Wuhan City

#### (2) Native tree species dominate

Native tree species have the strongest ability to adapt to local terroir, and the abundant seed source and easy availability of seedlings can reduce the cost of public transportation road greening and maintenance costs. At the same time, biological habits are different and can be planned in large quantities under different environmental conditions to maximize the local plant characteristics of local road greening. In addition, the number of plants in the "Native tree species dominate" based on the principle of planting plants, can avoid direct competition between a large number of species, easy to form a reasonable structure, functional stability of the complex community structure, both to achieve a good ecological effect of road greening, but also to achieve a good road greening art effect.

#### (3) Ensuring biodiversity

Different plants possess different ornamental characteristics and ecological effects, which provide conditions for the greening of the public transport road environment. Therefore, we need to pursue the abundance and balance of species in the rational configuration of trees, shrubs, flowers, grasses and groundcovers, highlighting the application of local native plants and forming a stable community structure [34].

### 5.3 Prospects for the Construction of Public Transportation Ecological Civilization in Wuhan

#### 5.3.1 Increase policy promotion and build a diversified input system

The construction of public transportation ecological civilization has certain externalities, and is a systematic project with a lot of work to be done and a lot of problems to be solved, and requires strong material strength to support [36].

One is the policy support in the construction of public transportation ecological civilization, which is determined by its externality. Resources are wasted because they are a shared resource and no cost is required to use them; environmental pollution is inevitable because pollution is only one of the results of behavior, when the benefit gained is much higher than the benefit lost by producing pollution. Therefore, the Wuhan government should increase its policy promotion in the construction of public transportation ecological civilization and use material means such as price, tax, finance, and credit to achieve coordinated development of economic construction and environmental protection [37].

Second, open up various channels to ensure financial investment. In the construction of public transportation ecological civilization, the Wuhan municipal government increases the financial budget as much as possible with reference to the national requirements and the investment ratio of the neighboring counties and cities; tries to get the provinces and municipalities to implement the compensation of public transportation ecological environment benefits; encourages private investment, and establishes the public transportation ecological environmental protection and construction according to the principle of "whoever invests, whoever benefits". We encourage private investment, establish an investment and financing system for public transportation ecological environmental protection and construction based on the principle of "Whoever invests, Whoever benefits", and adopt various material forms and investment channels to jointly protect and construct the public transportation ecological environment [38,39]; Collect environmental protection deposits, explore the system of trading the rights and interests of public transportation ecological environmental protection and development and construction based on the principle of "Whoever benefits, Whoever compensates and Whoever destroys, restores". The problem of investment guarantee of public transportation ecological construction funds.

### 5.3.2 Insist on the coordinated development of economic construction and ecological construction

In the practice of promoting the construction of ecological civilization of public transportation in Wuhan, it is necessary to achieve coordinated promotion of economic construction and ecological construction, and simultaneous improvement of industrial competitiveness and environmental competitiveness [40]. The ecological index is the main assessment, and the material index is weakened appropriately, and the status of spiritual civilization and institutional civilization in the ecological civilization assessment is strengthened. While maintaining stable economic growth, we will try our best to maximize the achievements of public transportation ecological civilization construction. In

environmental protection and ecological construction, we should always insist on "standard" leadership, from protection-oriented ecological construction to the development of ecological economy, and gradually construct a complete ecological economic system with the lowest cost of resources and environment in exchange for relatively high material development speed, so as to embark on a virtuous cycle of sustainable development [41, 42]. Practice has proved that as long as we strengthen the coordination, get rid of the idea of GDP (Gross Domestic Product) omnipotence, try to control the economic development activities within the scope of environmental sustainability, accelerate the transformation of economic development, develop circular economy, green environment protection and low carbon "zero" pollution, optimize the economic development by environmental protection, and promote the harmony between human and nature. We can achieve a win-win situation for both material and ecological construction if we optimize economic development and promote the harmonious development of human and nature with environmental protection [43].

## 6. Conclusion

Transportation is a huge problem in the construction of urban and rural areas in modern society, not only is it the basic form of modern human social activities and human interaction, but also fundamentally it is one of the essential contents of modern human existence. Transportation civilization is an important symbol of the modernization of human civilization. Public transportation civilization is the core and focus of the construction of urban transportation civilization. Wuhan traffic civilization construction must grasp this core [44].

As China's economy continues to grow, the country's public transportation is booming and the tremendous value it brings is attracting attention. In recent years, Wuhan has become the only city in China to be listed in National Geographic's "Top 10 Cities in the World" list. Wuhan ranks among the top ten cities in China in terms of total economic volume, built-up area and population in the central city. Wuhan is materially prosperous and dynamic, and the civilization of public transportation in Wuhan has great socioeconomic value [45].

In recent years, Wuhan adheres to the spirit of "Dare to be the first, pursue excellence", not only has the construction of high-tech parks, strengthen financial and other policy support, but also the construction of public transportation in Wuhan City has introduced a number of policy measures. We are actively exploring the development mode of public transportation civilization and accelerating the development of public transportation civilization in Wuhan. Under such a favorable environment, "public transportation civilization construction" has unique advantages and development momentum [46, 47].

The in-depth exploration of "public transportation civilization construction" is to put the construction of public transportation ecological civilization in an important position in the construction of public transportation civilization in

Wuhan, and to implement an innovative strategy through the in-depth development of the values contained in "public transportation civilization construction", so as to come out of a green and sustainable development path. The aim of the project is to put the construction of public transportation ecological civilization at the forefront of the construction of public transportation civilization in Wuhan, and to implement innovative strategies to develop a green and sustainable development path through the in-depth development of the values contained in public transportation civilization.

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