

China Railway Station Online Car-hailing Service Report

| Take Didi as an Example | 2020

中国交通报 × 滴滴出行

Summary of the Report

The Report takes the railway station - online hailed car transfer scenario as the research background, and analyzes the problems existing in the general transfer scenarios in the railway station area and the transfer during the pandemic prevention and control period. The Report selects 100 railway stations under “Station and Enterprise Co-construction” involved by Didi Chuxing in 85 cities as samples, and makes an in-depth study on the optimization measures of railway station - online hailed car interchange and transfer under Station and Enterprise Co-construction, analyzes its influence on railway station traffic operation efficiency, online hailed car transfer efficiency, passenger transfer experience and driver service efficiency, and puts forward some suggestions for improving the railway station - online hailed car transfer efficiency and service level, standardizing the online hailed car transfer order and improving the comprehensive management ability and level of surrounding traffic. The main conclusions are as follows:

1. The traffic operation index in the railway station area decreased and the traffic operation efficiency improved by setting up the online hailed car waiting area, driving passage, guidance and pick-up points inside and outside the station. In 2020, the traffic operation efficiency of newly-added railway stations under Station and Enterprise Co-construction increased by 2.9% on average.
2. The pick-up and guidance signs for the online hailed car inside and outside the railway station have been set up to guide passengers to quickly find the pick-up point and improve the online hailed car transfer efficiency in the railway station area. In 2020, the online hailed car transfer time in railway stations under Station and Enterprise Co-construction dropped by 12% on average.
3. It has become more convenient and smoother for passengers to transfer to online hailed car, and the rate of passenger complaints has decreased, while the passenger transfer experience has been further improved. In 2020, the rate of complaints about online car-hailing service orders in the railway station area under Station and Enterprise Co-construction decreased by 58.6% on average.
4. It has become easier for passengers to find waiting points, and for drivers to stop at the station to pick up passengers. The problem of drivers’ response to order cancellation has been alleviated, and their willingness to take orders has increased. In 2020, the rate of response to cancellation of online car-hailing service order in the railway station area under Station and Enterprise Co-construction decreased by 4.3% on average.
5. Suggestions: first, it is to strengthen the inter-departmental coordination and improve the ability and level of comprehensive traffic management. For example, the traffic police departments can interact with each other, and the intelligent level of traffic lights can be improved, while the timing of signal lights around the station area can be optimized to enhance the traffic efficiency of intersections. Secondly, it is to strengthen the cooperation between government and enterprises, improve the dispatching level of online hailed cars, and ensure the transportation capacity. In terms of online hailed car dispatching, it is necessary to formulate a railway station transfer and evacuation guarantee plan, and link the travel platform to improve the online hailed car pick-up during the peak period to better meet the passengers’ demand for cars. Thirdly, it is to integrate data resources, cooperate

with travel platform, improve the supply-demand level, promote the integration of multi-party data resources such as railways, public transportation and road parking, master the travel rules of passengers under the normalization of pandemic prevention and control, and work with service platforms such as Didi Chuxing to achieve accurate coordination between station capacity supply and transfer travel demand. Fourthly, it is to optimize the station facilities, reduce the risk of pandemic spread and ensure public safety. On the basis of ensuring traffic order and pedestrian safety, physical defense facilities such as guardrails should be appropriately simplified and optimized to improve road traffic capacity. Improving mutual recognition of security check in case of pick-up of public transportation can shorten the queuing and travel time of passengers, especially during the pandemic prevention and control period. The mutual recognition of security check can greatly reduce the frequency of public contact and reduce the risk of pandemic spread.

(I) At the beginning of the pandemic, the railway passenger traffic volume fell “like a cliff” and recovered steadily in the middle and late stages

In recent years, benefiting from the increasing investment in railway construction, the increasing mileage of railway operation and the increasing demand for travel quality of residents, the total railway passenger traffic volume has continued to grow, and the proportion of railway passenger transport trips has steadily increased.

From 2014 to 2019, the compound growth rate of dispatched railway passenger number in China reached 9%, showing a continuous growth trend^① (Fig.1). At the same time, the proportion of railway trips also increased. In particular, a number of new high-speed rail lines have been put into operation, and the train groups have been further busy. The railway network has greatly shortened the time and space distance between regions and cities. High-speed railways and other railways have basically covered China’s provincial capitals and cities with a population of over 500,000. The proportion of railway passenger travel has increased from 10.7% in 2014 to 20.8% in 2019 (Fig.2). Railway transportation has become a travel choice for more people because of its advantages of punctual delivery, fast travel and moderate price.



Fig.1 Dispatched railway passenger number in China from 2014 to 2020

^① The statistical scope does not include Hong Kong, Macao Special Administrative Region and Taiwan Province

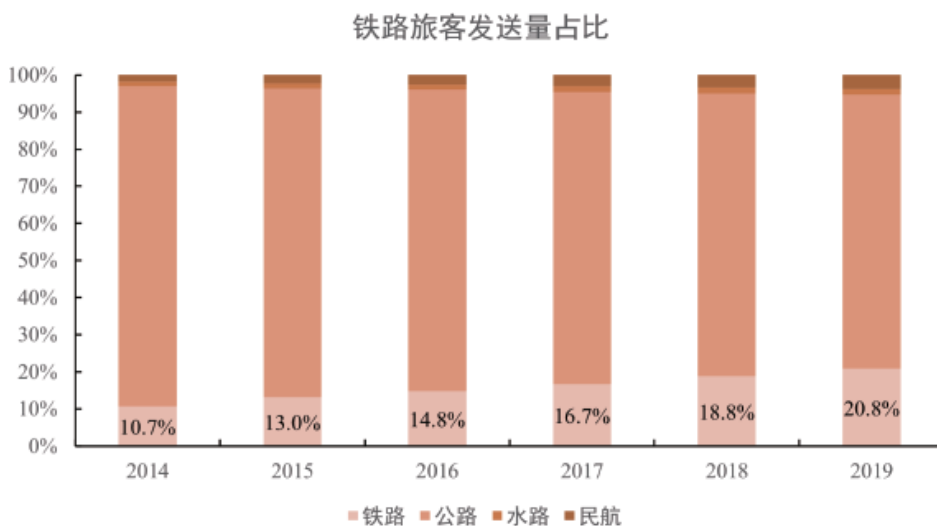


Fig.2 Proportion of dispatched railway passenger number in China from 2014 to 2019

The COVID-19 in early 2020 is “the most serious infectious disease in the world in the past century, and a major public health emergency with the fastest spread, the widest infection range and the most difficult prevention and control in China since the founding of New China”^①, which has had a significant and far-reaching impact on China’s economic and social development. At the beginning of the pandemic, due to the double pressure of low travel demand and shrinking capacity supply, the passenger traffic volumes of railway, highway, waterway and civil aviation all declined significantly, and the station interchange and transfer volume also declined simultaneously. With the effective control of the pandemic situation, the orderly progress of resumption of work and production, and the gradual recovery of residents’ travel demand and railway passenger transport, the recovery resilience of online hailed car transfer demand has become more remarkable. The specific performance is as follows:

1. At the beginning of the pandemic, the railway passenger transport experienced a “cliff” decline

In 2020, due to the impact of COVID-19 pandemic, the railway passenger traffic volume declined sharply. By the end of 2020, the cumulative dispatched railway passenger number was 2.16 billion ^②, a decrease of about 1.5 billion compared with that of the same period of last year and a decrease of 41% year-on-year (Fig.1).

Especially when the pandemic entered the second stage (January 20 - February 20, 2020)^③, the emergency response to major public health event was launched all over the country, and the most comprehensive, strict and thorough national pandemic prevention

^① On September 8, 2020, Xi Jinping delivered an important speech at the National Commendation Conference on Combating COVID-19 Pandemic.

^② From January to November 2020, the dispatched passenger number includes that of national railways and non-holding joint venture railways, and in December 2020, the dispatched passenger number only includes that of national railways. The statistical scope does not include Hong Kong, Macao and Taiwan. 4

^③ State Council Information Office, Chapter 1, Section 2 of the *White Paper on Chinese Action against COVID-19 Pandemic*.

and control plan was officially implemented. On the demand side, residents' willingness to travel was weakened and their travel distance was shortened. On the supply side, residents' travel choices were few, and the supply of highway, waterway, civil aviation and railway capacity was sluggish, while some railway passenger trains were out of service. Comprehensive factors led to the "halving" of railway passenger traffic volume in February, and the cumulative passenger traffic volume decreased by 46% year-on-year. In the following months, the cumulative railway passenger traffic volume remained at around 40% year-on-year (Fig.3).

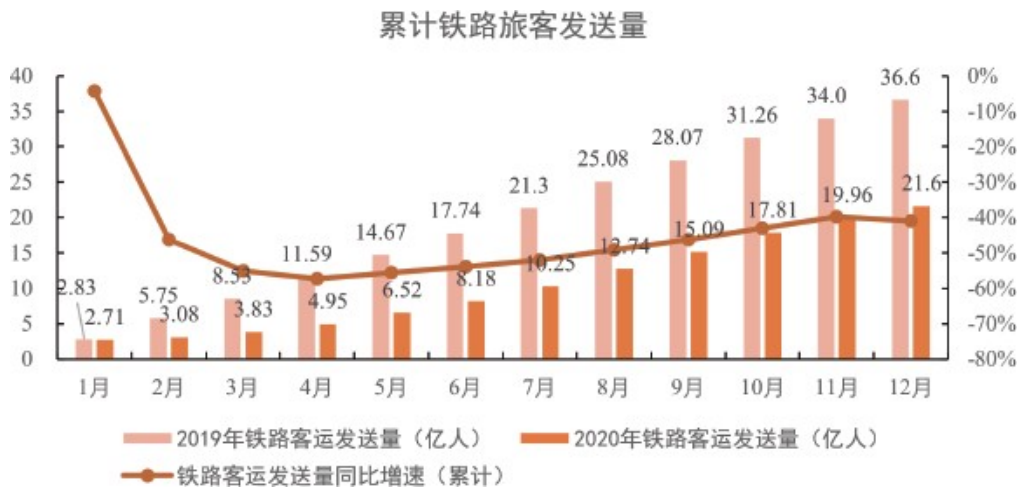


Fig.3 Monthly cumulative dispatched railway passenger number from 2019 to 2020

2. In the middle and late stages of the pandemic, the anti-pandemic effect has become obvious, and the railway travel began to recover

According to the requirements of the overall prevention and control strategy of “guarding against imported cases and preventing a resurgence of the outbreak at home”, the railway department has taken a variety of measures, such as comprehensive body temperature monitoring, dispersed waiting, separated seating, halfway random inspection, and delivery of sick passengers, to strengthen the prevention and control of pandemic situation in the whole process of passengers riding. After the national pandemic prevention and control entered a normal process (after April 29, 2020)^①, the dispatched railway passenger number increased from 37 million in February to 157 million in May, and the year-on-year decline narrowed from 87% to 49%. In particular, in October, under the stimulation of the recovery of travel demand during the Golden Week of the National Day, the decline in dispatched passenger number narrowed to about 15%. Compared with the same period of last year, the decline of monthly dispatched passenger number^② in 2020 Q4 was basically controlled at about 20% (Fig.4). The anti-pandemic measures have achieved results, and passenger travel has gradually recovered.

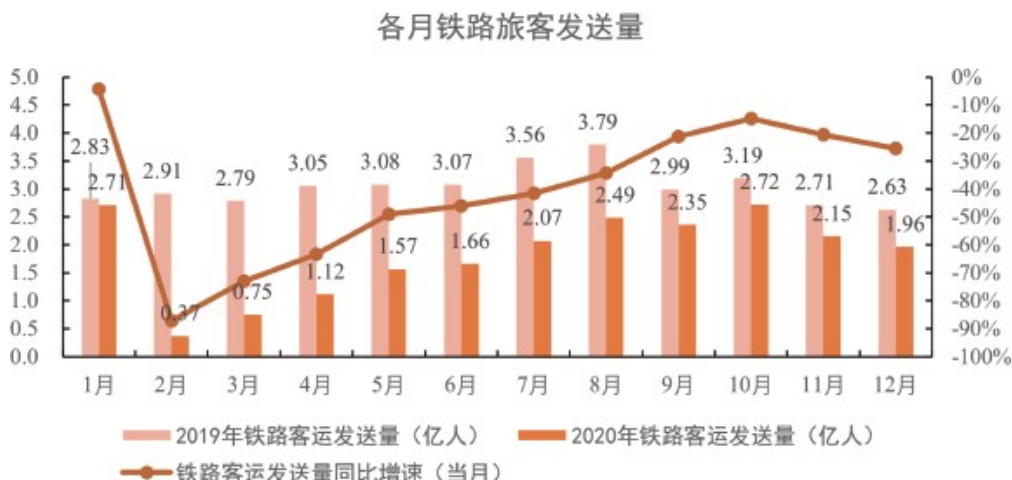


Fig.4 Changes in monthly dispatched railway passenger number from 2019 to 2020

3. After the anti-pandemic situation entered a normal process, railway travel has been tested to highlight its resilience

Due to the characteristics of large flow, thick stream of people, diverse travel purposes and unbalanced travel demand in time and space, the pandemic prevention and control situation in railway passenger transport has become complicated and more difficult. Moreover, because of the “transport during the traditional Spring Festival”, the “May Day”, the summer vacation, the “National Day” and other major holidays, the travel duration was longer, and the transportation intensity was greater, while the passenger flow

^① State Council Information Office, Chapter 1, Section 5 of the White Paper on Chinese Action against COVID-19 Pandemic.

^② In December 2020, the dispatched passenger number only includes that of national railways, excluding that of non-holding joint venture railways. The statistical scope does not include Hong Kong, Macao and Taiwan. 5

concentration was higher, and the safety emergency support task was more arduous. During the pandemic period, the resilience of railway passenger transport faced a major test. In 2020, the “Spring Festival travel rush” was in the early stage of the pandemic, and residents’ travel activities were blocked, while railway passenger transport was in a downturn. The dispatched railway passenger number dropped sharply from 407 million in 2019 to 210 million, down 47.3% year-on-year (Fig.5). After the normalization of pandemic prevention and control, especially during the Golden Week of the National Day, under the influence of factors such as the continuous improvement of pandemic prevention and control situation and the accelerated recovery of tourism, the public’s willingness to travel increased and the railway passenger flow increased significantly. The dispatched railway passenger number was 127 million, which was slightly lower than that in 2019 (Fig.6). The average daily dispatched passenger number was 11.53 million, which has recovered to 84% of the same period in 2019.

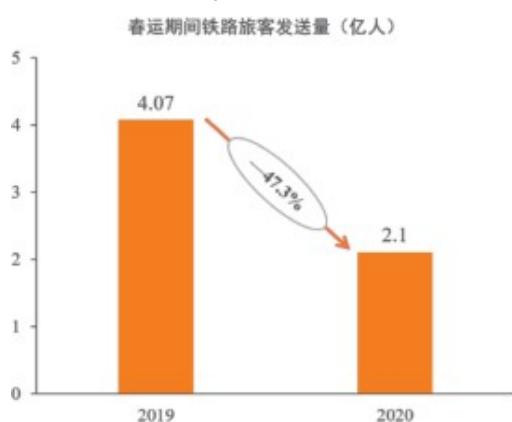


Fig.5 Changes of railway passenger traffic volume during Spring Festival travel rush



Fig.6 Changes of railway passenger traffic volume during the Golden Week of the National Day

(II) The demand for railway station - online hailed car transfer recovered faster and has become more resilient

At present, the railway stations in many large and super-large cities in China have basically realized the interchange with bus, rail transit, taxis and other modes of transportation, forming an integrated transfer and comprehensive transportation hub. Among many transportation vehicles in railway stations, rail transit and buses generally share a higher sharing ratio of passenger flow (Fig.7).

However, there are still many railway stations in small and medium-sized cities with underdeveloped economy and low population base that have not yet opened rail transit, and most of the interchange and transfer functions in these places are still undertaken by public transportation. For public transport interchange, although it has the advantages of strong transportation capacity, dense service network and more people-friendly pricing, there are also many problems such as long departure interval, limited station land, long interchange distance and complex transfer environment. In many cases, it is difficult for public transportation to meet passengers’ needs for transfer efficiency, convenience and comfort.

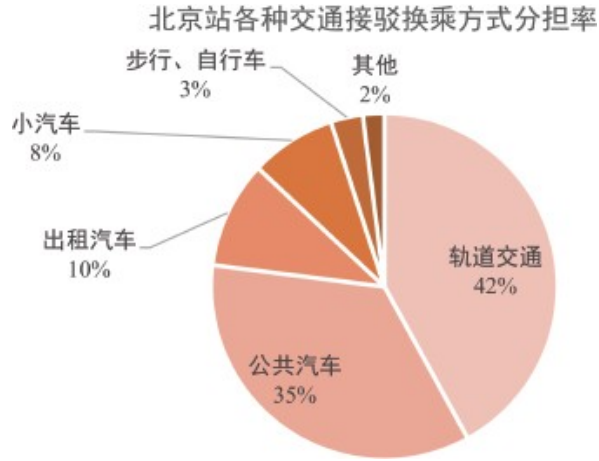


Fig. 7 Sharing rate of various transportation interchange and transfer modes in Beijing Railway Station

In recent years, with its good flexibility, certainty and convenience, the online hailed car has played a very good complementary role to public transportation in the face of some problems such as lack of urban rail transit infrastructure, insufficient public transportation capacity and incomplete transportation coverage network. Especially at night, when the public transportation in remote areas is out of service and the train is busy at the peak, the online hailed car has become an important choice for passengers' transfer, and it is very popular (Fig.8)

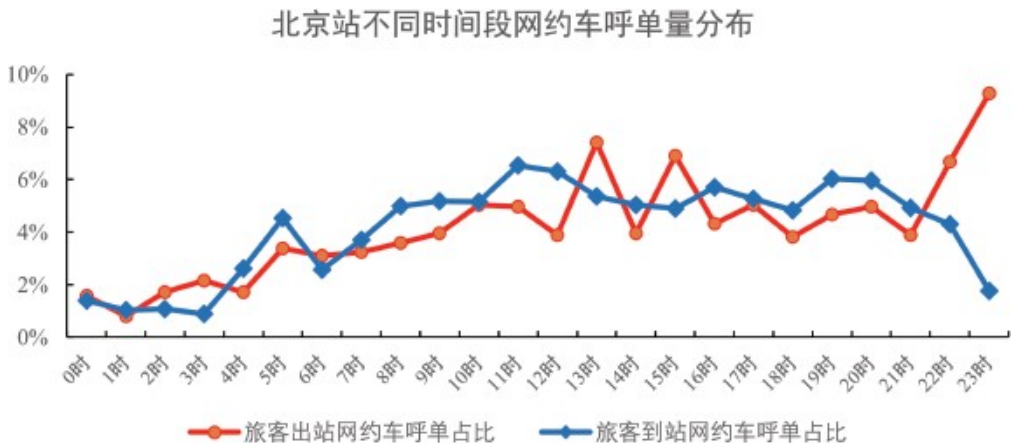


Fig.8 Distribution of online car-hailing orders in different time periods of Beijing Railway Station

After the outbreak of the pandemic in COVID-19 in early 2020, the national dispatched train passenger number dropped significantly, and the demand for passenger interchange and transfer shrank rapidly. In February, the dispatched passenger number dropped to the bottom, while the number of online car-hailing service orders dropped to a freezing

point. After the national pandemic prevention and control entered the normal state (after April 29), the recovery of online hailed car interchange and transfer accelerated, and the demand for taxis recovered more obviously. For example, for Didi, since May, in the railway station with transfer optimization measures where Didi Station was located under the Station and Enterprise Co-construction, the growth rate of online hailed car orders began to deviate from that of dispatched passenger number, and the decline of online hailed car orders narrowed rapidly. After June, the growth rate of leading dispatched passenger number was nearly 20%, showing the stronger resilience of online hailed car format and social and economic value under the Station and Enterprise Co-construction (Fig.9).

2020年旅客发送量与网约车订单量增速对比

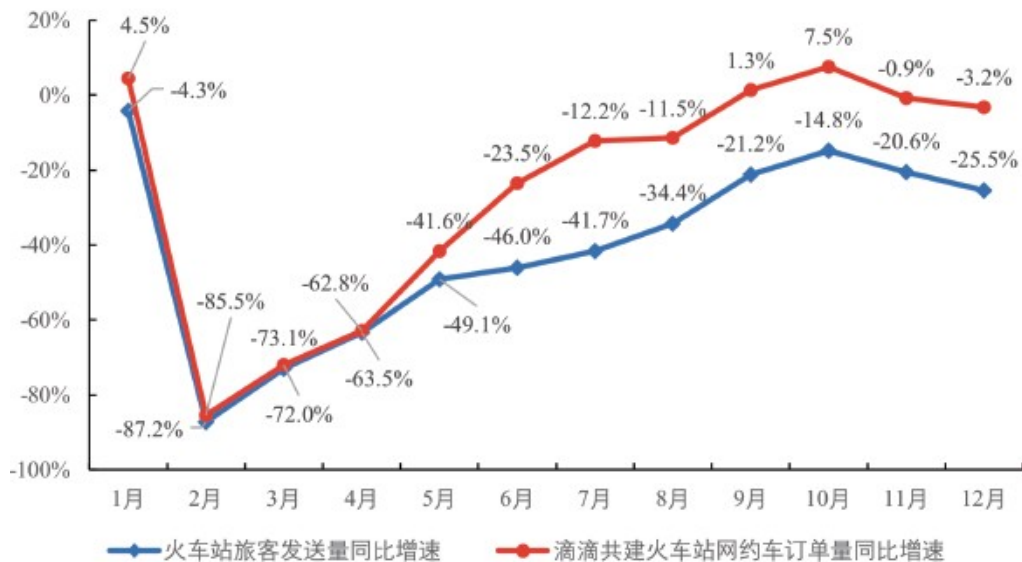


Fig.9 Comparison of growth rate between the dispatched passenger number by railway stations and the number of online hailed car orders in 2020

Due to the problems in and around the railway station area, such as large flow of people and vehicles, complex road environment, obvious tidal characteristics of travel, unbalanced supply and demand of transportation capacity, etc., railway station management departments, passengers and drivers generally faced some problems in traffic order, operation management, riding and waiting, orders receiving at the station, etc., which can be summarized into several aspects:

(I) In general transfer scenarios, problems such as chaotic traffic order, poor passenger riding experience and low willingness of drivers to take orders are common when people take a taxi at the railway station, and there is much room for optimization and improvement of transfer services.

Firstly, in terms of traffic order, there are still illegal problems such as parking and littering of motor vehicles in railway stations, occupation of traffic passages, passengers getting on and off without permission, and all of these would not only affect the overall traffic efficiency, but also seriously disrupt traffic order and damage the image of the city.

Secondly, in terms of passengers riding, many passengers are unfamiliar with the terrain of railway stations, and some railway station interchange guidance signs are old and unclear, which causes great inconvenience when passengers take taxis. In addition, the number of taxi passengers is limited, and outbound passengers generally carry luggage and parcels, so the turnover rate of taxis cannot keep up with the outbound rate of passengers. During peak passenger flow periods such as holidays and nights, it is easy for vehicles to be in short supply, and passengers wait in line for too long, which affects passengers' transfer experience.

Thirdly, in terms of drivers' pick-up, due to the chaotic traffic order in the railway station, especially the difficulty in entry and exit of the online hailed car in and out of the railway station during the peak passenger flow period, the long queue time and the slow turnover rate of vehicles lead to the low enthusiasm of the online hailed car drivers to go to the railway station to receive and take orders.

(II) During the transfer in the outbreak of pandemic, because of pandemic prevention measures at the railway station, the speed of passengers' taxi transfer and evacuation has slowed down, and the traffic order has been affected to some extent.

During the pandemic period, the railway departments took measures such as reducing the entrance and exit passages of stations, adjusting the number of trains, arranging special venues for dispersed waiting, strengthening the inspection of boarding information, and separated seating of passengers to reduce the gathering and flow of people. Under this influence, taxi transfer in railway stations has also encountered some new problems. Due to the need of pandemic prevention, necessary procedures such as safety disinfection, travel code inspection and body temperature measurement were added when passengers entered and exited the railway station, which indirectly delayed the speed of drivers taking orders to enter the station and passengers leaving the station, and had a certain impact on passenger evacuation and traffic order.

3

Optimization measures in railway station - online hailed car transfer under Station and Enterprise Co-construction

(I) Overall situation

In order to improve and solve the traffic order and driver service in and around the railway station hub, enhance passengers' experience in interchange and transfer to online hailed car at the railway station, in 2020, according to the governance concept of "co-construction, co-governance and sharing", the government-enterprise cooperation was carried out with Didi Chuxing and other online hailed car platform enterprises, and by taking optimization measures such as setting up guidance signs inside and outside the railway station and waiting areas for online hailed cars, the order of online hailed cars entering and leaving the railway station has been standardized, and passengers have been guided to quickly find the pick-up points, while passengers' interchange and transfer experience can be improved, which provides a new idea for the management of railway station - online hailed car transfer.

For example, for Didi, by the end of 2020, Didi Chuxing had cooperated with management departments in 100 railway stations across the country to innovate the optimization of online hailed car interchange and transfer (Fig.10). The railway stations involved have covered 85 cities in 22 provinces, municipalities directly under the Central Government or autonomous regions, including more than 140 main railway lines and branch lines such as Beijing-Shanghai Railway, Beijing-Guangzhou Railway, Beijing-Harbin Railway, Harbin-Qiqihar Railway and Shanghai-Kunming Railway, and there have been 8 special stations such as Guangzhou South Railway Station, Shenzhen North Railway Station, Hangzhou East Railway Station, Chengdu East Railway Station, Chongqing West Railway Station and Wuhan Railway Station, 17 large stations such as Hankou Railway Station, Xiamen North Railway Station and Chongqing West Railway Station, 28 medium stations such as Harbin West Railway Station, Tianjin West Railway Station, key railway stations and Xuzhou East Railway Station, and 47 small stations such as Yingkou East Railway Station, Yongchuan East Railway Station and Zhoukou East Railway Station. In the whole year of 2020, Didi provided 2.78 million online hailed car drivers and more than 31 million passengers with convenient services such as guidance signs inside and outside the railway station, driver guidance, passenger waiting, etc., which played a leading role in exploring the management mode of online hailed car interchange and transfer and innovating the service mode in the railway station area.



Fig.10 Distribution map of railway stations where Didi Station is located under the Station and Enterprise Co-construction (figures indicate the number of railway stations jointly built in each province)

(II) Establish a guidance system offline, and optimize the online hailed car parking point and channel resources

1. Passenger side: after the passenger sends out the demand for the car, he/she can walk to online hailed car pick-up point according to the signs on the guide board, and wait for the driver to pick him up in the waiting area.

(1) Online hailed car guide board

The online hailed car guide signs mainly include guide signs, wall stickers, floor stickers, aqueous board, Roll up Banner, etc. All guide signs comply with the unified design and construction standards in the station, and are used to guide passengers to the designated pick-up points and inform the rules and order (Fig.11).



Fig.11 Online hailed car guide board for passengers (①-Kunming Station; ②-Nanchang West Railway Station)

(2) Online hailed car pick-up point

By setting one or more fixed pick-up points at the railway station, passengers place orders within the railway station, and the platform will automatically prompt passengers to choose pick-up points. At the same time, a stop sign is set at the pick-up point outside the railway station to remind passengers to wait for the driver to pick them up (Fig.12).



Fig.12 Online hailed car pick-up point for passengers and stations (①-Nanchang Station; ②-Nanjing South Railway Station)

(3) Passenger waiting area

In the waiting area, convenient service facilities such as seats, charging and entertainment can be provided for passengers who will transfer to the online hailed car (Fig.13).

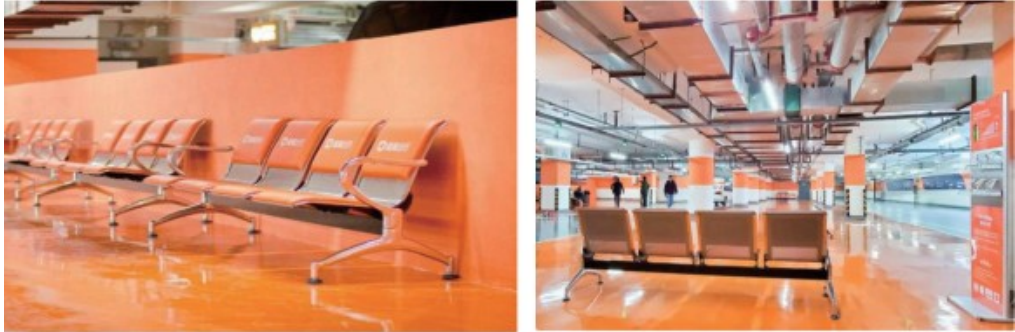


Fig.13 Passenger waiting area for online hailed car (Chengdu East Railway Station)

2. Driver side: after receiving the passenger's demand, the driver drives the car from the parking point, passes through the stop-and-go lane, goes to the pick-up point to pick up the passengers and start the trip

(1) Online hailed car passage

Used in railway stations to standardize the driving routes of online hailed car driver. Follow the design and construction standards in the station, unified in the style, give driving guidance on the road, and guide the driver to reach the pick-up point according to the designated route (Fig.14).



Fig.14 Online hailed car passage (Chengdu East Railway Station)

(2) Online hailed car parking point

Its scale is larger than that of the parking lot, and it can be used by drivers to park their cars. However, passengers cannot be picked up in the parking point (Fig.15).



Fig.15 Online hailed car parking point (Shenyang Station)

(3) Guidelines for drivers outside stations

It mainly includes guide wall stickers and floor stickers in the boarding area, stop signs at pick-up points, parking space signs, knife flags, etc., which can efficiently guide drivers and passengers to meet.

(4) Online hailed car parking lot

The parking lot of the railway station is specially equipped with online hailed car parking space, which is marked clearly with "online hailed car parking space" to remind drivers of parking area and rules and order in conjunction with the guidance outside the station and wall stickers (Fig.16).



Fig.16 Online hailed car parking lot (①-Chengdu East Station; ②-Shenyang Station)

(III) Add a guiding function online to enhance the transfer and interchange experience

Passenger side: after the passenger sends the car demand, the platform APP will trigger the function area according to the user's location, match the best pick-up point, and update the road network and walk guidance for the driver and passenger respectively (Fig.17 and Fig.18).

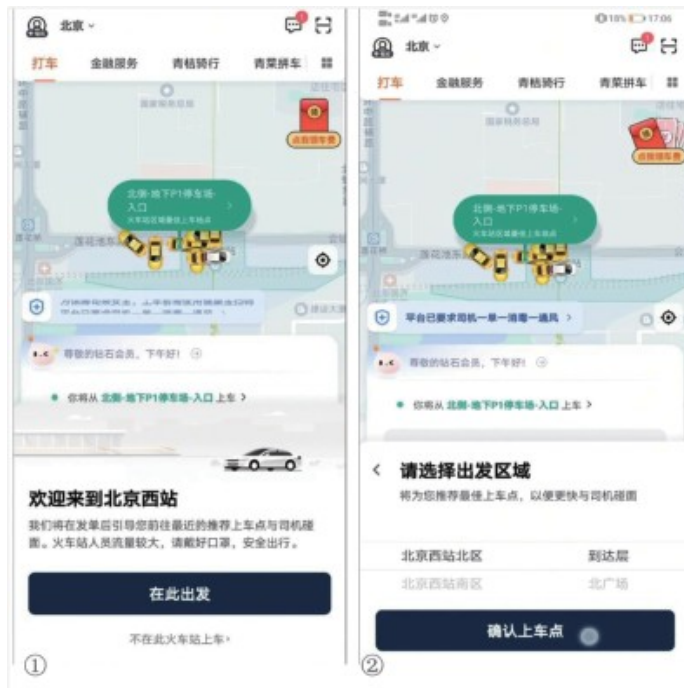


Fig.17 Didi APP online function area (①-trigger function area; ②-Match pick-up point)

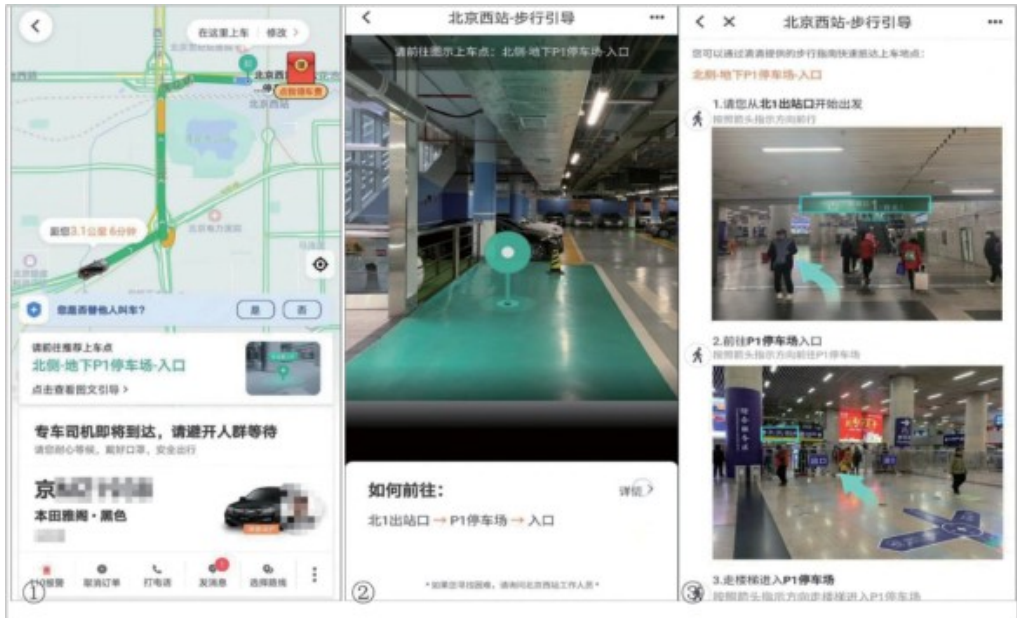


Fig.18 Didi APP online walking guidance (①-waiting for response and pick-up to the top; ② ③-Walking guidance)

Driver side: online station service card function, which can control drivers' driving behavior at railway stations and other stations. Drivers who have obtained service cards through examinations can take orders first at railway stations. At the same time, the function of online hailed car queuing area is set up to prompt drivers to queue in sequence. It not only responds to the policy requirements of taking orders in parking point/electronic fence of railway stations under the Station and Enterprise Co-construction, but also improves the perceived fairness of online hailed car drivers, enhances drivers' willingness to take orders and operational efficiency, and reduces the possibility of online hailed car drivers to drive without passenger (Fig.19).



Fig.19 Didi driver's APP queuing area and station service card

(IV) Strengthen the propaganda of pandemic prevention in stations and implement anti-pandemic safeguard measures

Railway station is the key link and place of COVID-19 pandemic prevention and control. In order to implement the overall prevention and control strategy of “guarding against imported cases and preventing a resurgence of the outbreak at home”, prevention and control should be strengthened in the whole process of passengers’ interchange with and transfer to online hailed car.

For example, for Didi’s behavior, (Fig. 20), from the construction of the first pandemic prevention service station in China at the early stage of the pandemic to the implementation of pandemic prevention and anti-pandemic propaganda, and then to the distribution of pandemic prevention masks to drivers and online launching of “Travel Book” and “Station Guidelines for Holiday Travel”, Didi Chuxing has taken various measures online and offline to strengthen the awareness of pandemic prevention among drivers and passengers, and implemented anti-pandemic and pandemic prevention measures, which lays a solid foundation for the normalization of pandemic prevention and control.



Fig.20 Implementation process of pandemic prevention measures for railway stations where Didi Station is located under the Station and Enterprise Co-construction in 2020

Up to now, for Didi Chuxing, there have been 38 railway stations with which it cooperates for offline pandemic prevention co-construction (Fig.21), and there have more than 130,000 online hailed car drivers, more than 800,000 times of disinfection services for online hailed cars, as well as more than 70,000 pandemic prevention materials distributed. At the same time, the pandemic prevention propaganda was implemented and strengthened online in multiple scenarios and ways, and the awareness of pandemic prevention among drivers and passengers was raised, so more than 7 million drivers and passengers have been involved in total (Fig.22).



Fig.21 Display of Didi's pandemic prevention measures at the railway station

(①-Nanjing South Railway Station; ②-Changzhou North Railway Station; ③-Taiyuan South Railway Station; ④-Hangzhou East Railway Station; ⑤-Chongqing North Railway Station; ⑥-Chengdu East Railway Station)



Fig.22 Pandemic prevention propaganda method and coverage on Didi online

4

Social and economic value

The optimization measures of online hailed car interchange and transfer adopted by railway stations under the Station and Enterprise Co-construction have brought about the promotion and improvement of traffic operation efficiency, transfer efficiency, service efficiency and transfer experience.

(I) The surrounding traffic congestion has been alleviated and the operational efficiency improved

Taking Didi's behavior as an example, this Report makes a comparative analysis of TTI^① in the surrounding areas of 43 newly added railway stations under the Station and Enterprise Co-construction in 2020. The results has shown that the average traffic operation index of the newly added railway stations under the Station and Enterprise Co-construction has decreased, and the traffic operation efficiency has increased by 2.9% on average. Among them, Kunming Station has the most significant improvement in traffic operation efficiency, which has increased by 21.1%, and Yiwu Station, Suqian Station and Qingdao West Railway Station have increased by more than 10%.

^① TTI (Travel Time Index): as a typical index, it is to measure the traffic operation state, and it is defined as the actual travel time/travel time under the condition of free flow. The higher the TTI value is, the more congested the road is, and the lower the traffic operation efficiency becomes. With the help of massive travel data of Didi Chuxing platform, the average TTI index of railway station area can be calculated, and the overall traffic operation status of railway station area can be evaluated.

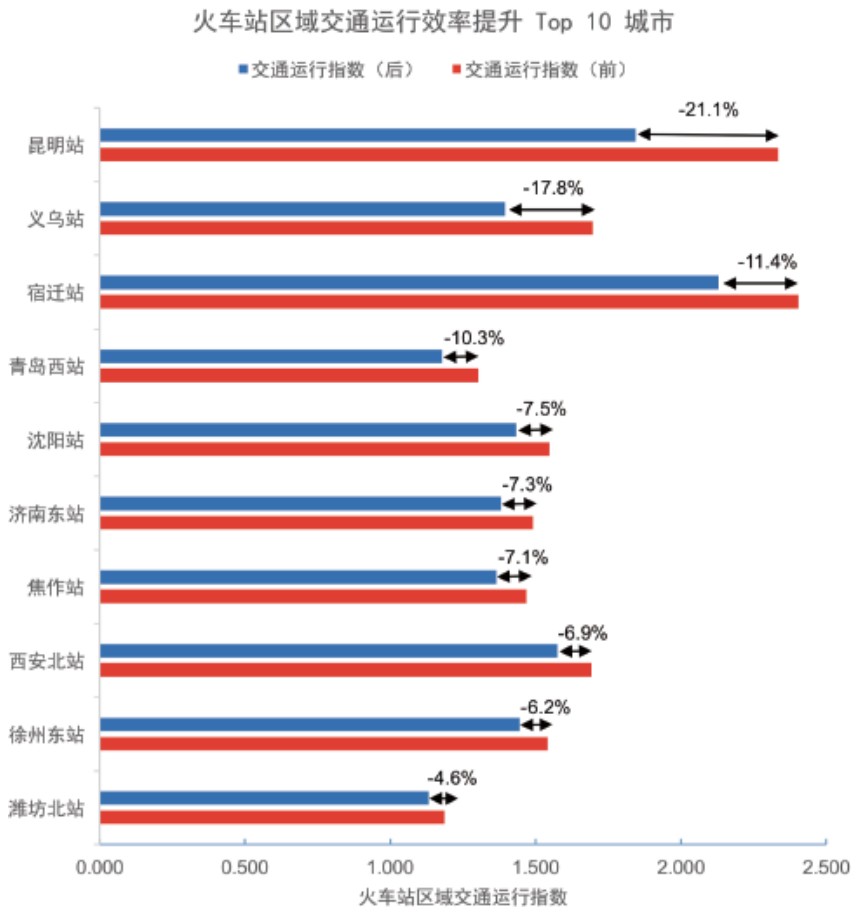


Fig.23 Top 10 railway stations where regional traffic operation efficiency has been improved

(II) Passenger transfer time has decreased and transfer efficiency improved

Taking Didi's behavior as an example, by comparing the situations before and after the implementation of optimization measures of railway station - online hailed car transfer, the Report makes an analysis, which shows that the transfer efficiency^① has been improved after the optimization of interchange and transfer, and the average transfer time of online hailed car has decreased by 12%. The main reason is that the construction of the guidance signs for online hailed car can effectively shorten the arrival time of drivers, reduce the difficulty of communication between drivers and passengers, and reduce the waiting time of drivers, thus shortening the overall transfer time of railway station passengers to online hailed car.

^① Transfer efficiency: mainly reflected by transfer time; the shorter the transfer time is, the higher the transfer efficiency becomes; on the contrary, the lower the transfer efficiency will be. According to the passenger transfer process, the passenger transfer process includes four-time nodes: passenger placing an order, driver receiving an order, driver arriving at the pick-up point and passenger boarding. Therefore, the transfer time can be represented by the addition of three parts: the platform dispatching time, the drivers' arriving time and the drivers' waiting time.

In 2020, more than 31 million passengers quickly found the online hailed car drivers and left the railway station through the guidance signs, saving the transfer cost by more than 270,000 hours annually. Among them, 10 railway stations, including Yingkou East Railway Station, Guilin North Railway Station, Guiyang North Railway Station, Kunming South Railway Station, Weifang North Railway Station, Hefei South Railway Station, Zhengzhou East Railway Station, Hangzhou East Railway Station, Nanchang West Railway Station and Shenzhen North Railway Station, have the most obvious improvement in transfer efficiency, and the average transfer time has decreased by more than 19% (Fig.24).

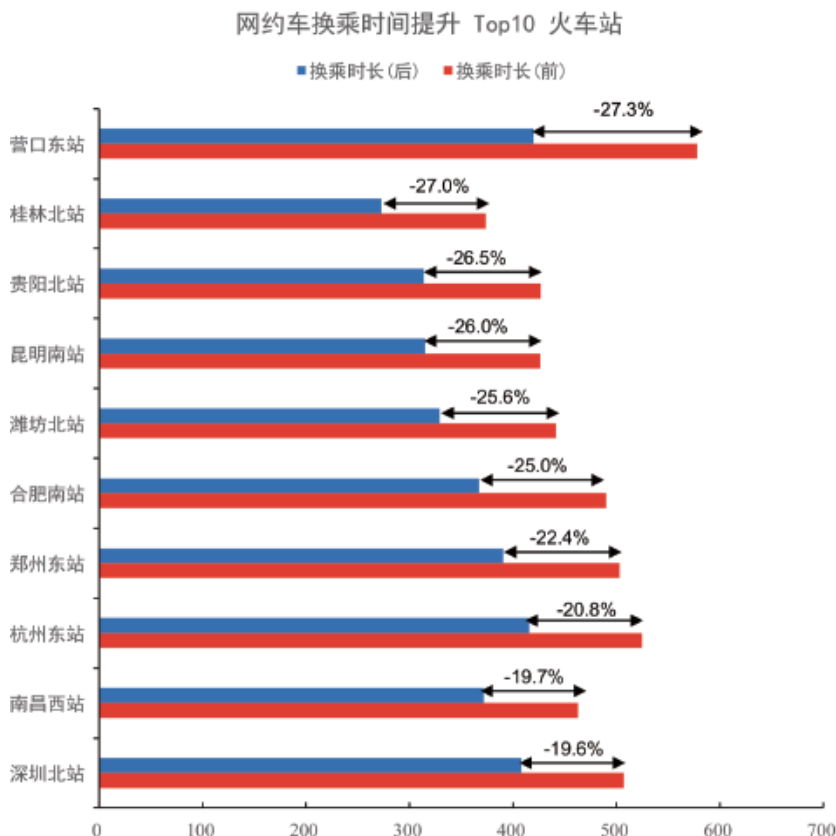


Fig.24 Top 10 railway stations where online hailed car transfer efficiency has been improved

(III) Complaint call from passengers have been reduced and the transfer experience improved

Taking Didi's behavior as an example, this Report makes a comparative analysis of CPO^① in railway stations under the Station and Enterprise Co-construction. The results show

^① CPO (Call Per Order): refers to the average number of complaints incoming from each completed order. Because the complaints are mainly from passengers, the overall experience of passengers when they transfer at the railway station can be reflected to a certain extent by screening out the orders and corresponding complaints from the railway station.

that through the optimization of online hailed car interchange and transfer, the CPO in railway station area decreased by more than 58.6% on average. Among them, 10 railway stations, including Kaili South Railway Station, Weifang North Railway Station, Chaoshan Railway Station, Quanzhou Railway Station, Fuzhou Railway Station, Wuzhou South Railway Station, Taiyuan South Railway Station, Hefei South Railway Station, Chongqing West Railway Station and Changzhou Railway Station, have the most obvious decline, with an average decline of over 66.6% (Fig.25).

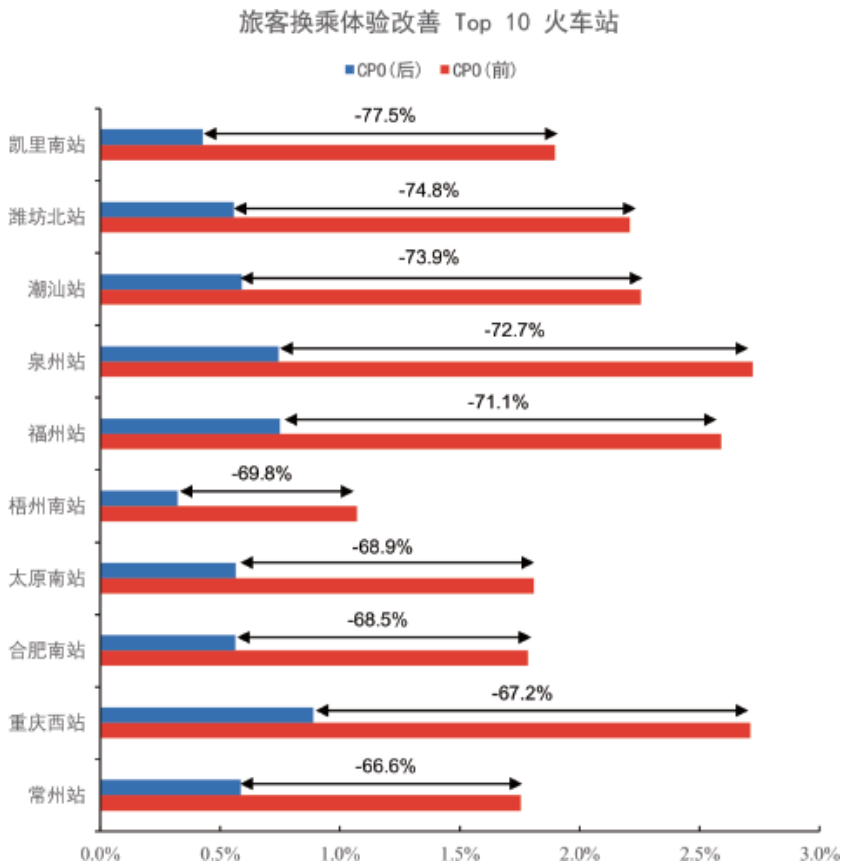


Fig.25 Top 10 railway stations where online hailed car transfer experience has been improved

(IV) The response cancellation problem has improved and the willingness to take orders has increased

Taking Didi's behavior as an example, this Report makes a comparative analysis on situation before and after the transfer optimization of railway stations under the Station and Enterprise Co-construction. The results show that the cancellation rate^① of response to online hailed car order has decreased by 4.3% on average by implementing the optimization measures of online hailed car interchange and transfer. Among them, the call per passenger online hailed car order in 10 railway stations such as Quanzhou Station, Chaoshan Station, Guiyang North Station, Wuhan Station, Zhongshan North Station, Guilin West Railway Station, Foshan West Railway Station, Nanchang West Railway Station, Taiyuan South Railway Station and Huizhou South Railway Station decreased most significantly, with a decline rate of over 19.7% (Fig.26).

^① Cancellation rate of response: the ratio of the number of canceled orders to the number of answered orders. In the process of service in the railway station, the drivers of the online hailed car are often forced to cancel the order because the passengers or drivers cannot find the positions accurately after the order is received, which leads to the cancellation rate of order response in the railway station area being generally higher than that in other areas. Therefore, the cancellation rate of response can reflect the improvement of drivers' work efficiency benefiting from the optimization of railway station interchange and transfer.

司机服务效率提升 Top 10 火车站

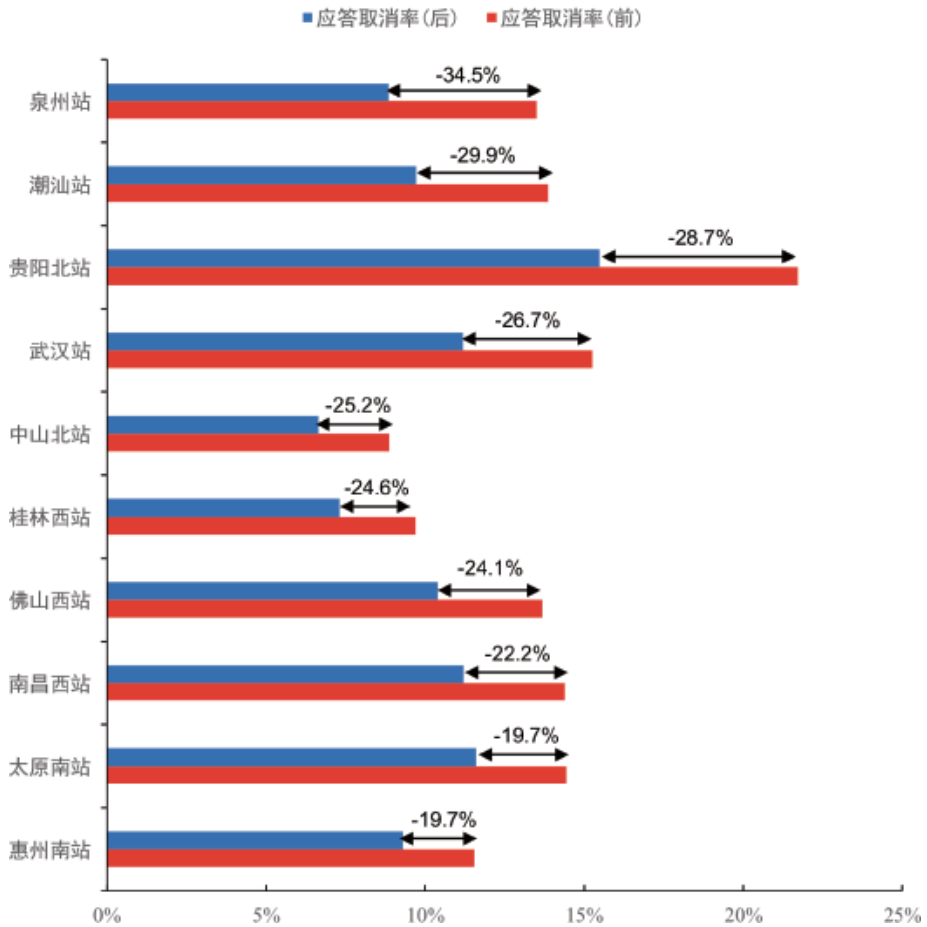


Fig.26 Top 10 railway stations where online hailed car drivers' service efficiency has been improved

With Didi's behavior as an example, it has been found that the optimization of online hailed car interchange and transfer under the Station and Enterprise Co-construction can improve the efficiency of online hailed car interchange and transfer in the railway station area and standardize the order of driving and personnel interchange and evacuation. Through the implementation of optimization measures such as drivers' guidance, parking and waiting, the improvement of transportation efficiency of railway station and surrounding road network, passenger transfer experience and driver service quality have been initially reflected. Similarly, airports, highway passenger stations and other means of transportation connected with railway stations can also learn from the optimization mode of railway station - online hailed car pick and transfer. In accordance with the requirements of "keeping a foothold on the new development stage, implementing the new development concept and building a new development pattern", it is necessary to continue to improve the transfer optimization measures, release the dividend of scientific and technological innovation, and promote the interchange between railway stations and urban transportation to be more convenient, in better order and more satisfactory for drivers and passengers. Therefore, to better enhance and improve the efficiency and service level of car transfer in the railway station network, the following suggestions are put forward:

(I) Strengthen inter-departmental coordination and improve the ability and level of comprehensive traffic management

Strengthening the comprehensive management of urban traffic congestion is the requirement for speeding up the construction of a powerful transportation country and promoting the rapid and convenient travel service. Comprehensive traffic improvement in railway station area is an integral part and an important scenario of urban traffic management. Comprehensive traffic improvement in railway station area should focus on inter-departmental cooperation and coordination, such as linking traffic police departments, improving the intelligent level of traffic signal lights, optimizing the timing of signal lights around the station area, and improving the traffic efficiency of intersections, so as to better provide the support for the supply guarantee of online hailed car capacity and the improvement of passenger evacuation efficiency.

(II) Strengthen the cooperation between government and enterprises, improve the dispatching level of online hailed cars, and do well in ensuring transportation capacity

During the peak period of train departure, especially when it overlaps with the peak period in the morning and evening and the period of insufficient public transport capacity in the evening, personalized travel modes such as online hailed car can be well supplementary to and meet the transfer travel needs of passengers. In the aspect of online hailed car dispatching, it is necessary to strengthen the cooperation between government and enterprises, formulate the railway station transfer and evacuation guarantee plan, and enhance the online hailed car supply by linking the travel platform during the peak period to better meet the passenger car demand.

(III) Integrate data resources, coordinate travel platforms, and improve the level of supply and demand interaction

Promote the integration of multi-party data resources among railway, public transportation and road parking, master the travel rules of passengers under the normalization of pandemic prevention and control, and use the big data of railway station travel in conjunction with Didi Chuxing and other service platforms to realize the accurate interchange between station capacity supply and transfer travel demand, and simultaneously lay a foundation for the improvement of management services in key station areas.

(VI) Optimize station facilities, reduce the risk of pandemic spread, and ensure public safety

In terms of physical defense facilities, make full use of big data, AI and other technical means, and properly optimize physical defense facilities such as guardrails to improve road capacity on the basis of ensuring traffic order and pedestrian safety. In terms of mutual recognition of security check, improve the mutual recognition of security check during the interchange and transfer between trains and public transportation, so as to shorten the queuing and travel time of passengers. Especially during the outbreak of pandemic COVID-19, the mutual recognition of security check can greatly reduce the frequency of public contact and effectively reduce the risk of pandemic spread.