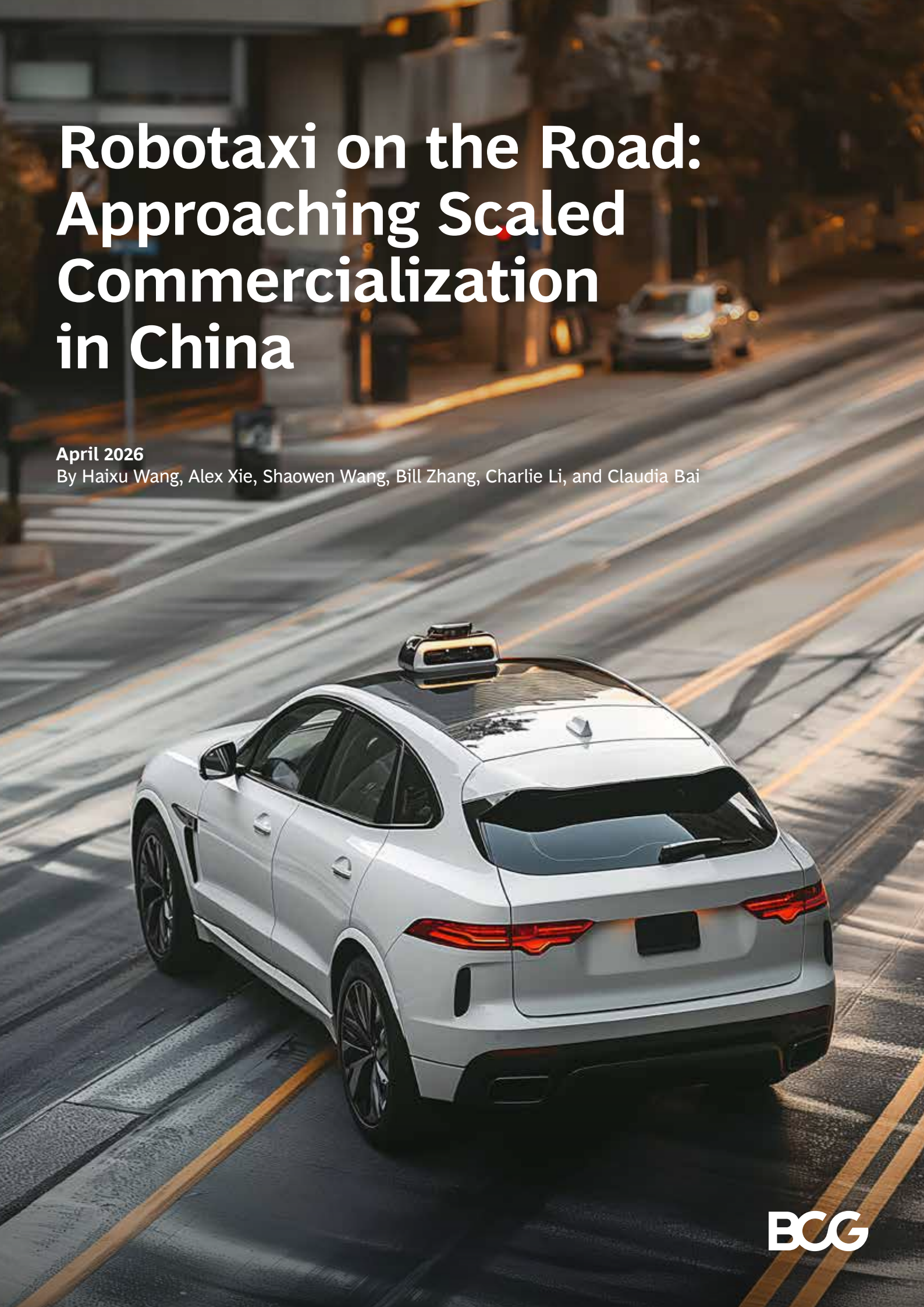
Robotaxi on the Road: Approaching Scaled Commercialization in China



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BCG

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Contents

Preface

Robotaxi, as one of the most important applications of autonomous driving, has recently gained significant traction in the Chinese market.

Proactive moves by leading robotaxi players, including expanded deployments and commercialization initiatives, have fired up interest and discussion among a broader range of industry participants. This renewed momentum has once again raised fundamental questions about market readiness, consumer acceptance, technological maturity, and the real-world performance of robotaxi services.

Building on years of deep engagement in the autonomous driving sector, our recent research has surfaced some compelling and exciting insights into the current evolution of the robotaxi market in China. Drawing on a combination of outside-in analysis, consumer surveys covering several hundred respondents nationwide, and extensive road testing across multiple cities, we see clear signals that the market is moving toward a new phase of development.

In this report, we share our latest findings on how consumers are responding to robotaxi services, how robotaxis perform in the real world, and how market dynamics are evolving. We hope these insights will contribute to a more grounded and refreshed understanding of the current robotaxi market in China.

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BCG Managing Director and Partner

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Consumer Survey Insights: Consumers Are Overwhelmingly Positive Toward Robotaxi

To obtain firsthand, real-world consumer feedback on robotaxi services, we conducted a large-scale consumer survey. The survey covered close to 500 respondents across most of the cities in China where public-facing fare-charging driverless robotaxi services are currently in operation, including tier 1 cities such as Beijing, Guangzhou, and Shenzhen, with Wuhan as a representative tier 2 city. The survey included both existing robotaxi users and new participants invited to experience the service and spanned a wide range of demographic profiles in terms of age, gender, and income levels.

These authentic consumer insights indicate that overall sentiment toward robotaxis is highly positive, underscoring strong user acceptance and enthusiasm for this emerging mobility paradigm. They provide empirical evidence of strong demand for robotaxi in China. (See **"Key Consumer Insights"**.)

Key consumer insights

- Traditional ride-hailing services suffer from clear experience pain points, many of which are related to drivers. These issues create strong substitution opportunities for driverless robotaxi services.

- Consumers perceive driverless robotaxi services to significantly outperform traditional ride-hailing across most experience dimensions, including vehicle quality, in-car environment, safety, and ride smoothness. Enhanced privacy and the appeal of advanced technology further strengthen their attractiveness.

- Consumer acceptance of robotaxis is already high. After their first ride, more than half of the users indicate a stronger preference for driverless robotaxi services. This high level of acceptance is broadly consistent across demographic groups.

- Driverless robotaxi services could substitute a large share of existing ride-hailing demand while also converting trips currently made via public transportation or private cars, thereby unlocking incremental mobility demand.

- The main current limitations lie in relatively limited service coverage and longer waiting times. As operating areas expand and fleet sizes grow, user adoption and acceptance are expected to increase further.

Consumers Are Not Satisfied with Traditional Human-Driven Shared Mobility Services

There are a number of problems with traditional human-driven shared mobility services in terms of ride experience. Although these services are mature, the service model involves multiple pain points that are closely associated with human drivers. According to our respondents, the top three pain points with traditional human-driven services are unpleasant in-car environment, poor driver attitude, and unsafe driving behavior. (See **Exhibit 1**.)

The Robotaxi Ride Experience Far Outclasses Current Modes

Robotaxi represents a new paradigm within the shared mobility ecosystem. Consumer feedback indicates that robotaxi delivers a significantly superior ride experience across almost all dimensions compared with traditional human-driven ride-hailing services. Most users believe that robotaxi outperforms traditional human-driven services in terms of higher vehicle quality, better in-car environment, smoother and safer ride experience, and more comfortable interactions. (See **Exhibit 2**.) The only notable shortcomings are lower service efficiency and limited service coverage due to the current fleet size and service area. Robotaxi's advantages position it as a compelling alternative to traditional human-driven shared mobility services when available.

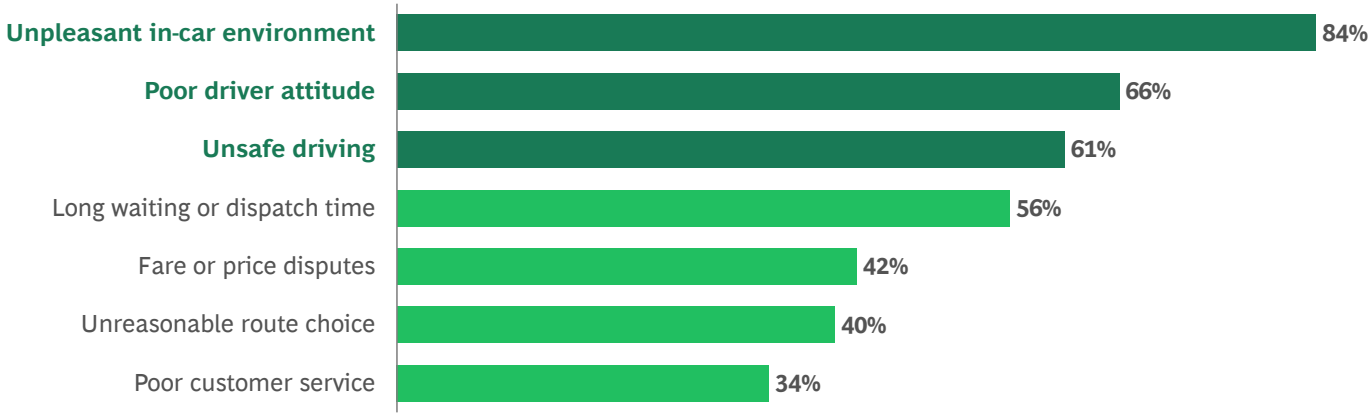
In addition, robotaxi offers some unique value propositions for consumers, the majority of whom agree that enhanced privacy, the appeal of new technology, and robotaxi's safer and more stable experience are the key reasons they prefer driverless rides over human-driven services. (See **Exhibit 3**.)

EXHIBIT 1

Pain Points Associated with Traditional Human-Driven Services

Q: Which of the following situations made you feel the most unpleasant in your past ride-hailing and taxi experiences? [multiple choice]

(n=462)[1]



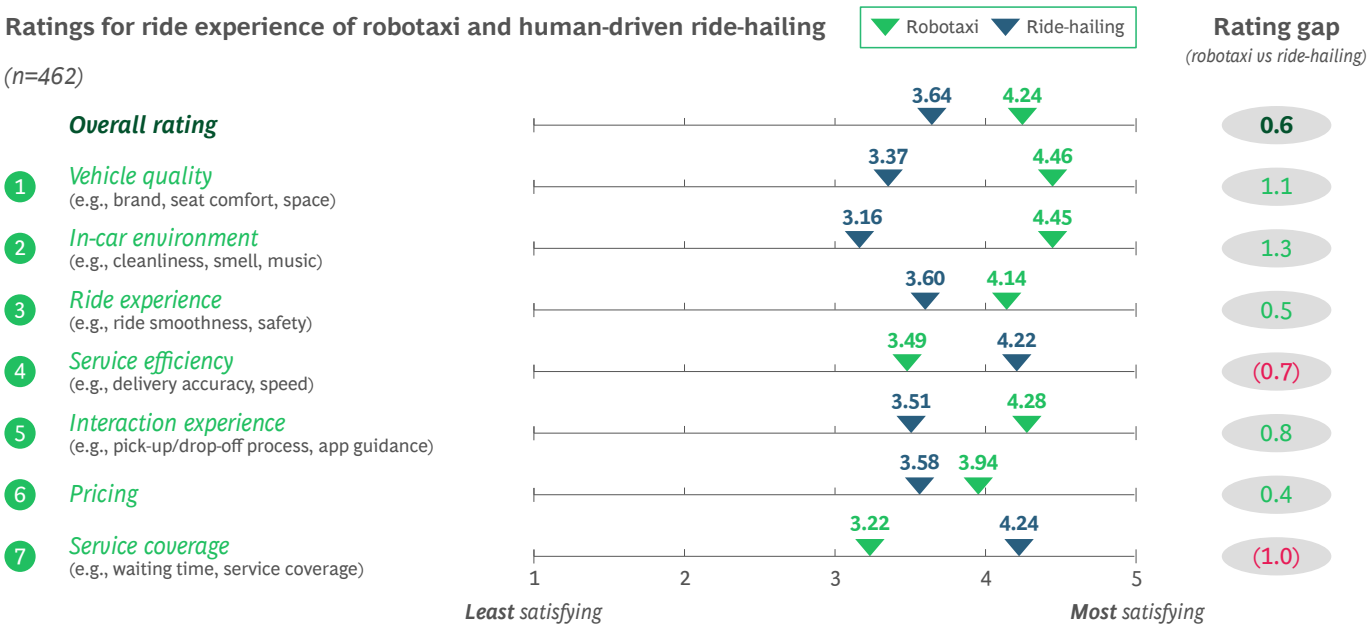
Source: BCG Robotaxi Consumer Survey (n=462).
[1] The total survey sample consists of 462 respondents, including 252 early robotaxi adopters and 210 new robotaxi users (the basis for Exhibit 4). Almost all early adopters prefer driverless rides. Among the 210 new users, 108 (51%) indicate a preference for driverless rides over human-driven services, as shown in Exhibit 4. These 108 respondents form the basis for Exhibit 3.

EXHIBIT 2

Robotaxi Outperforms Ride-Hailing Across Most Dimensions

Ratings for ride experience of robotaxi and human-driven ride-hailing

(n=462)



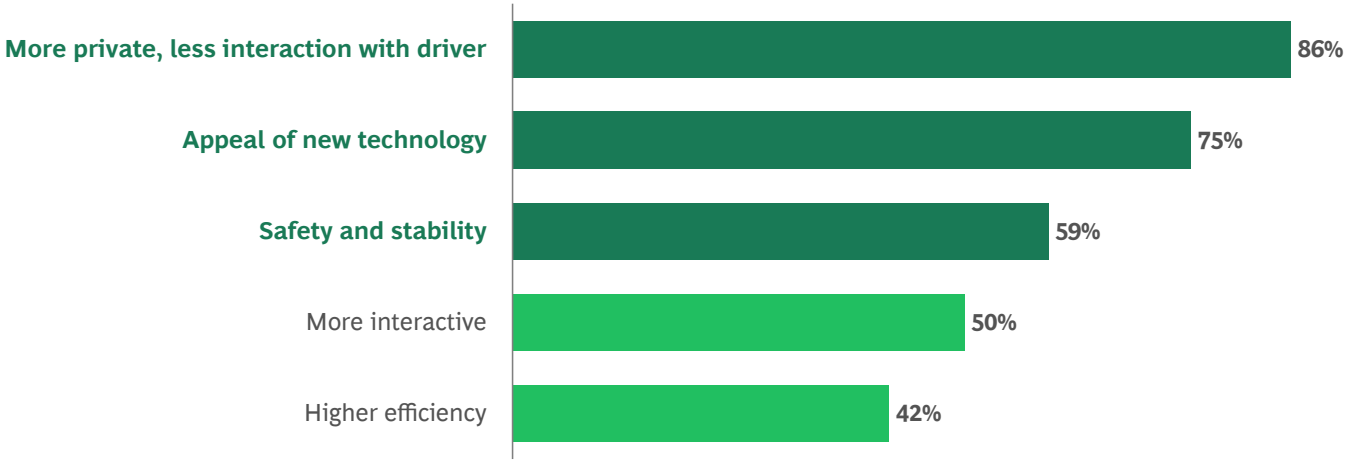
Source: BCG Robotaxi Consumer Survey (n=462).

EXHIBIT 3

The Preference for Driverless Rides Is Largely Driven by the Need for Privacy, the Appeal of Future Mobility, and Higher Safety and Stability

Q: Why do you prefer driverless rides over human-driven services? [multiple choice]

(n=108)



Source: BCG Robotaxi Consumer Survey (n=108, new users preferring driverless rides).

Consumers Demonstrate Strong Acceptance of Robotaxi

Current consumer acceptance of robotaxi is already high. Despite the limited service area and small scale, more than 50% of respondents indicated a higher preference for driverless rides compared with human-driven services after taking their first robotaxi rides. (See **Exhibit 4**.)

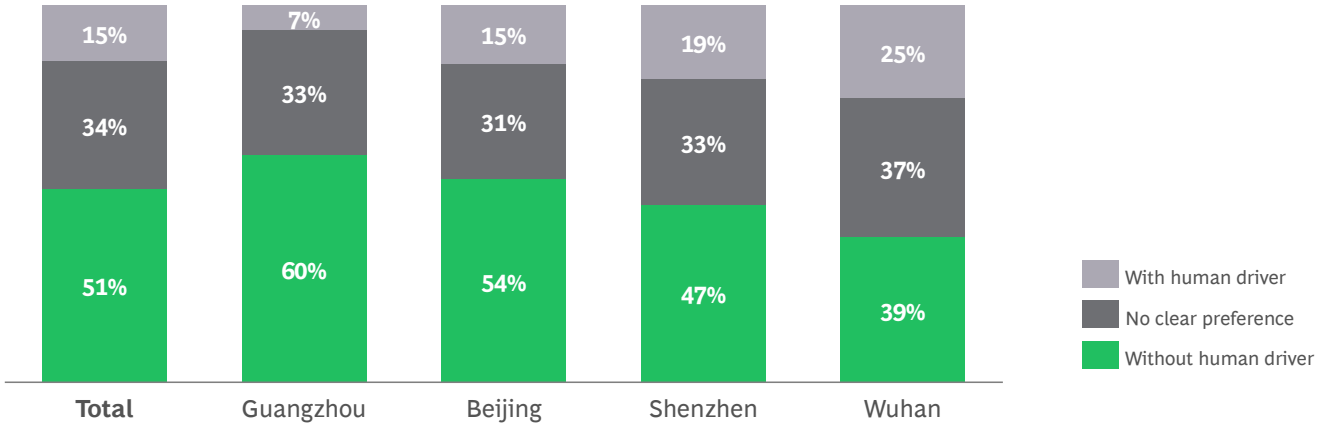
Given the current performance of robotaxi, consumers across different cities are willing to replace approximately 59% to 76% of their current ride-hailing trips with robotaxis. With the prospect of improved operational performance in the future, consumers demonstrate even stronger receptiveness to robotaxi services, and the proportion of replaced journeys could further increase, exceeding 80% in tier 1 cities. (See **Exhibit 5**.)

EXHIBIT 4

More Than 50% of New Users Indicate a Preference for Driverless over Human-Driven Services After Taking Robotaxi Rides

Q: If everything else were the same, would you prefer a ride with or without a human driver? [single choice]

(n=210)[1]



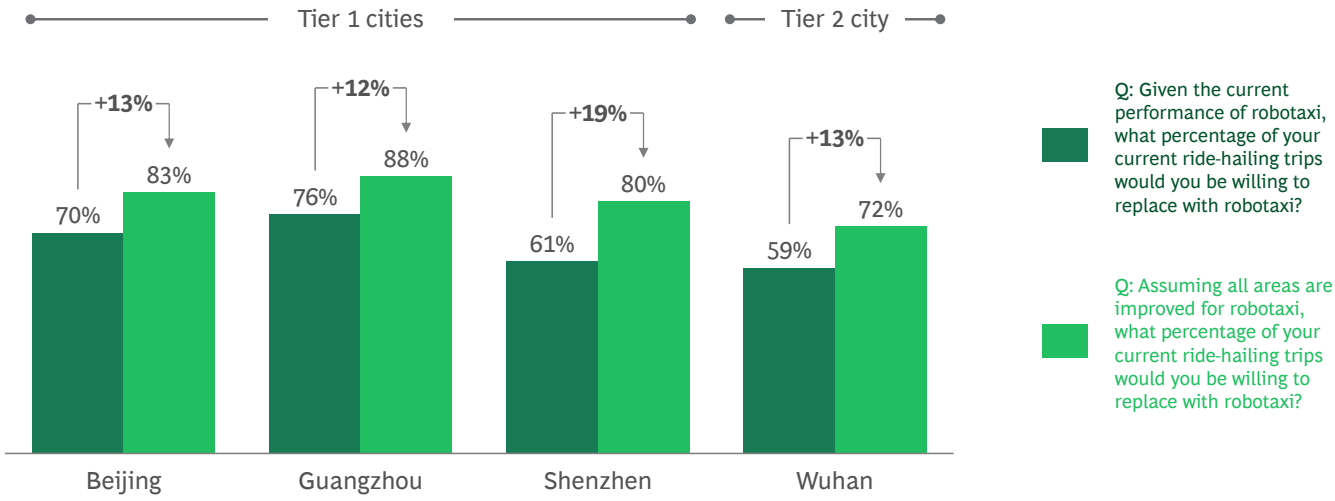
Source: BCG Robotaxi Consumer Survey (n=210, new robotaxi users).
[1] The 210 new users as the sample for this question to obtain a more conservative estimate.

EXHIBIT 5

Acceptance of Robotaxi Is Already High with Current Performance; Can Exceed 80% in Tier 1 Cities with Improved Performance

Robotaxi adoption/replacement rate of ride-hailing by city

(n=210)[1]



Source: BCG Robotaxi Consumer Survey (n=210, new robotaxi users).
[1] The 210 new users as the sample for this question to obtain a more conservative estimate.

This high acceptance is observed across all demographics. Regardless of gender, age, usage frequency, income level, or occupation, most consumers show a strong willingness to switch from traditional ride-hailing to robotaxi services, indicating significant mass market potential. Among all demographic groups, high-income users with monthly disposable income above RMB 20,000 (such as business owners) demonstrate the highest acceptance. (See **Exhibit 6**.)

Besides ride-hailing, robotaxi can unlock additional demand by converting users from other means of transportation. In addition to traditional human-driven ride-hailing, around 39% of users are willing to switch from other means of transportation to robotaxi, including public transportation such as buses and subways, as well as private cars. For these users, robotaxi can unlock additional demand of 3.6 trips per user per week on average. (See **Exhibit 7**.)

From a city-level perspective, consumers in tier 1 cities are generally more willing to use robotaxi as a substitute for other means of transportation, as they tend to have higher expectations for trip experience and service quality. In other cities (such as Wuhan), fewer consumers are willing to switch from other means of transportation to robotaxi, indicating that, for now in these places, robotaxi is primarily seen as a replacement for traditional ride-hailing services.

EXHIBIT 6

The High Willingness to Adopt Robotaxi Is Observed Across All Demographic Groups

Q: What percentage of your current ride-hailing trips would you be willing to replace with robotaxi?

Demographics		Sample size	Robotaxi adoption rate (given current performance)	Robotaxi adoption rate (all areas improved)
Gender	Female	242	78%	89%
	Male	220	77%	87%
Age	18–24	111	75%	88%
	25–34	222	79%	89%
	35–44	103	76%	88%
	45+	26	75%	87%
Frequency of using ride-hailing	1–10 times per week	452	77%	88%
	11–20 times per week	10	79%	84%
Monthly disposable income (RMB)	below 5,000	76	79%	92%
	5,000–10,000	207	76%	87%
	10,001–20,000	112	74%	85%
	20,001–30,000	40	86%	93%
	above 30,000	27	83%	97%
Occupation	Student	53	71%	91%
	Engineer	82	77%	90%
	White collar	203	79%	88%
	Business owner	24	80%	89%
	Self-employed and others	100	77%	86%

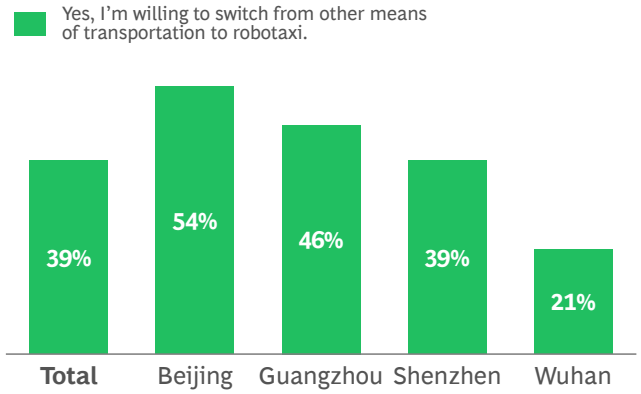
Source: BCG Robotaxi Consumer Survey (n=462).

EXHIBIT 7

Besides Ride-Hailing, Robotaxi Can Unlock Additional Demand by Converting Users from Other Means of Transportation

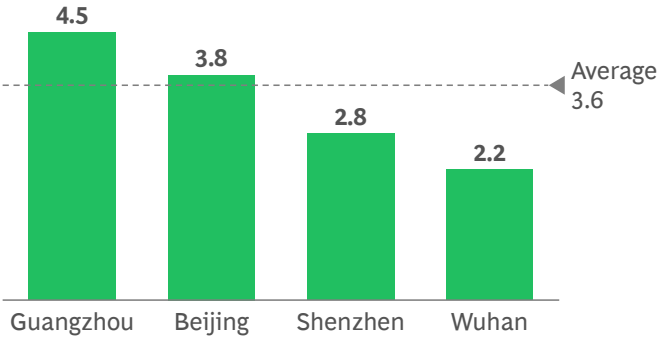
Q: Based on your current experience, are you willing to switch from other means of transportation to robotaxi?

(n=462)



Q: How many additional rides per week would you expect if you switch other means of transportation to robotaxi?

(n=462)



Source: BCG Robotaxi Consumer Survey (n=462).
Note: Other means of transportation mainly include public transportation (e.g., buses and subways) and private cars.

Currently, the primary concerns with robotaxi are its relatively limited service coverage and longer waiting times compared with traditional ride-hailing services. These issues are mainly driven by constraints on operating areas and limited fleet size. More than 60% of consumers identify these two factors as the top pain points. (See **Exhibit 8**.) Based on test ride experience, currently the average waiting time for a robotaxi is approximately 11 minutes, notably longer than typical ride-hailing services. Moving forward, the top priority for robotaxi operators is to expand service areas and fleet size to address coverage limitations and improve responsiveness, which is critical for long-term consumer adoption.

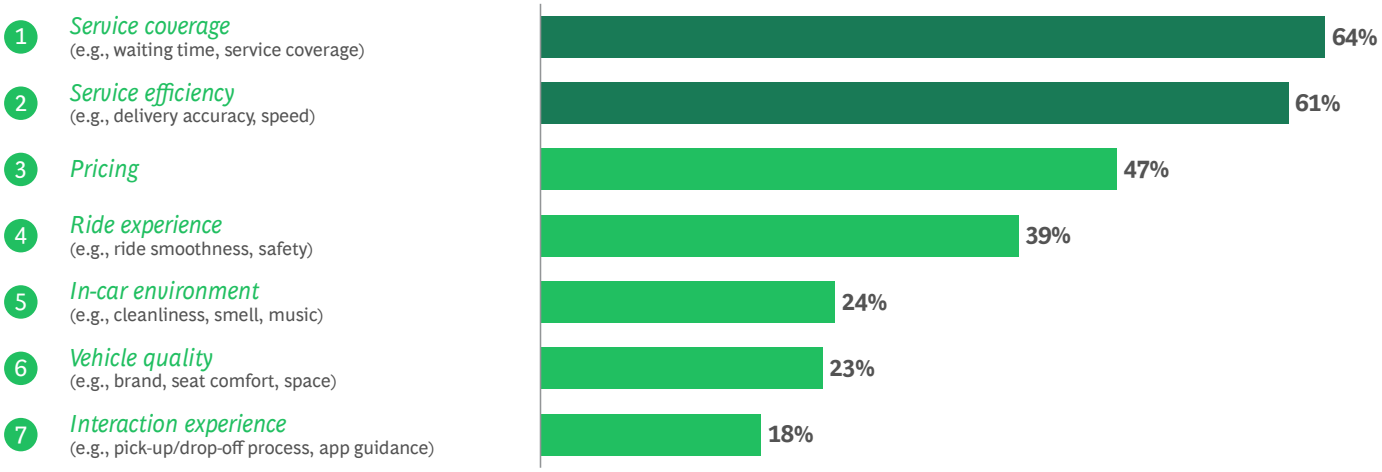
Consumers have also expressed interest in additional in-vehicle features for next-generation robotaxi models. The most cited features relate primarily to comfort and privacy, including seat massage, one-way sound-insulating glass, flexible seats, and in-car entertainment options. (See **Exhibit 9**.)

EXHIBIT 8

Users Believe Their Adoption Rate Could Further Increase If Robotaxi Improves on Key Dimensions such as Service Coverage and Efficiency

Q: Based on your recent experience, improvements in which of the following aspects would increase your usage frequency of robotaxi in the future? [multiple choice]

(n=210)[1]



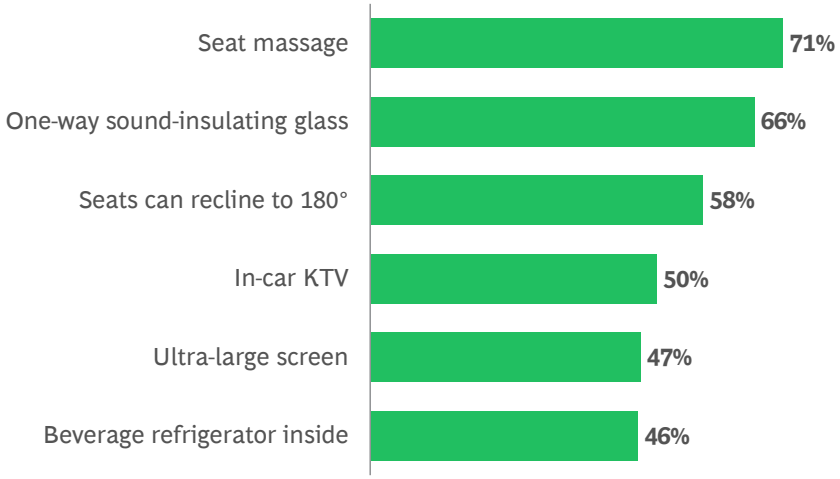
Source: BCG Robotaxi Consumer Survey (n=210, new robotaxi users).
[1] The 210 new users as the sample for this question to obtain a more conservative estimate.

EXHIBIT 9

Consumers Expect the Next-Generation Robotaxi to Offer Greater Privacy, Comfort, Entertainment, and Safety

Q: What features would you most like to see in the next-generation robotaxi?

(n=462)



Other features cited:

Safety & Hygiene
- Disinfection function
- Emergency safety protection measures
- Air purification
- More frequent cleaning

Entertainment
- Free Wi-Fi
- More music options
- Gold ambient lighting for premium members
- AI conversation

Comfort
- Sun-shading glass
- Pets allowed on board

Privacy
- Darker car windows

Source: BCG Robotaxi Consumer Survey (n=462).

Road Test Observations: Tech Readiness Is Strong Enough for Scaled Commercialization

As robotaxi services transition into commercial operations, firsthand evaluation of their real-world performance through a consumer-centric lens becomes increasingly important. To this end, we conducted on-road test rides with four major L4 robotaxi players in China within their operational domains. The assessment covered Beijing, Shanghai, Guangzhou, and Shenzhen, comprising 79 test rides over 786 kilometers.

To enable a more comprehensive evaluation, we designed routes covering a broad range of scenarios (e.g., complex intersections, congested roads, narrow roads near urban villages, multi-lane roads, large-curvature bends) and vehicle maneuvers (e.g., lane changes, overtaking, ramp entry/exit).

The test drive results reinforce our confidence in the technological readiness of L4 robotaxi for large-scale commercial deployment. During testing, leading L4 robotaxi players demonstrated sustained driverless operations even in highly complex urban environments, indicating two notable improvements compared with previous years' road testing experience:

1. **Driverless operation dominates with improved driving performance.** Across players, most trips are completed in driver-out mode, with passengers now barely perceiving any intervention during individual rides.

2. **Ability to manage more complex road conditions.** Deployment now spans multiple cities and transitions from suburban areas to dense CBD areas, demonstrating strong generalization potential.

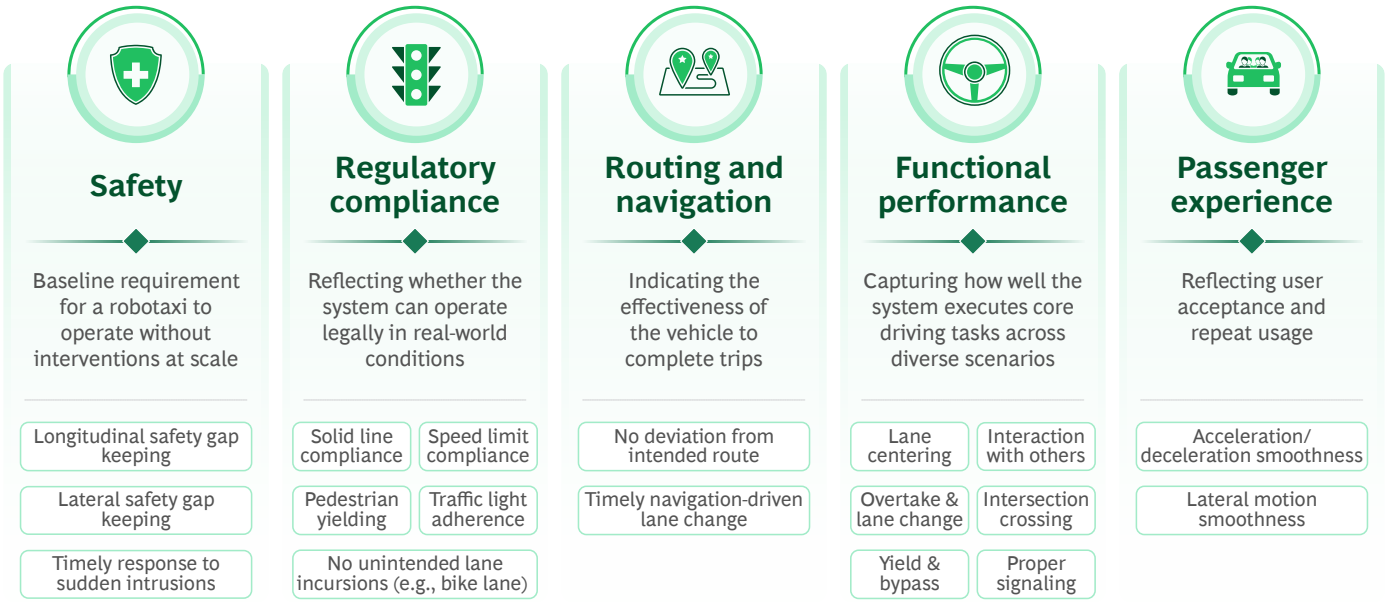
Leading Players Have Achieved Sustained Driverless Operations Within Operating Areas

On-road testing confirms that major L4 players have achieved sufficient technical maturity for driverless operations within current operating domains. Despite operating areas expanding into more complex scenarios, out of the 79 test rides, only five involved an in-vehicle safety driver, and only three involved suspected takeovers[1].

Beyond intervention frequency, the overall driving performance of L4 robotaxis becomes increasingly critical as commercialization scales. To assess whether systems meet safety and regulatory requirements, complete trips efficiently, and deliver comfortable passenger experience, we developed a five-dimensional evaluation framework. Each dimension is further broken down into sub-dimensions, with 18 in total across the framework, enabling a granular and comprehensive assessment of robotaxi performance. (See **Exhibit 10**.)

EXHIBIT 10

A Five-Dimensional Framework to Assess Driving Performance of L4 Robotaxi



Source: BCG analysis.

1. A suspected takeover is defined as a situation in which, under remote supervision, the vehicle stops abruptly for no clear reason and remains stationary for tens of seconds to minutes before suddenly resuming, or in which an in-car safety driver manually takes control of the vehicle.

Based on our road tests, leading players demonstrate strong performance across all five dimensions, highlighting the maturity and well-rounded nature of their system capabilities. (See **Exhibit 11**.) Robotaxis already outperform human drivers in safety and compliance, smoothly driving at 60–100 kilometers per hour (km/h) on elevated highways while strictly observing the 40 km/h speed limit on more complex sections, such as ramp curves. In terms of functional performance, they achieve efficiency comparable to skilled human drivers, for example, applying slight acceleration when exiting roundabouts to optimize driving flow.

Overall, the technical maturity reflected in the L4 robotaxi's real-world driving performance forms the foundation for both consumer adoption and robotaxi operating efficiency. On the supply side, continued technical progress that increases the share of driverless operations directly supports a lower human-to-vehicle ratio, thereby improving unit economics. On the demand side, as ride experience is one of the top criteria for passengers when choosing a mobility option, strong driving performance is a prerequisite for higher penetration and repeat usage.

EXHIBIT 11

Leading Robotaxi Players' Performance Across the Five Evaluation Dimensions

Safety	• **No collision-risk interventions:** Vehicles consistently maintained safe distances from surrounding traffic and exhibited adaptive behavior • **Handled sudden events with composure:** e.g., promptly braking for unexpected vulnerable road user intrusions • **Adopted defensive driving strategies:** e.g., early deceleration in occluded or low-visibility scenarios
Regulatory compliance	• **Adhere to traffic regulations:** No violations observed, such as running yellow lights, crossing solid lines, entering non-motorized lanes, or speeding (e.g., strictly kept within the 40 km/h speed limit on ramp curves) • **Exhibited courteous driving behavior:** e.g., slowing appropriately in school zones and yielding to pedestrians
Routing and navigation	• **Followed intended routes:** Lane changes anticipated and executed in a timely manner, avoiding late maneuvering that could result in consecutive lane changes or forced rerouting
Functional performance	• **Executed core driving functions smoothly:** e.g., lane changes, bypassing and nudging, and stable lane centering • **Demonstrated better driving efficiency:** e.g., overtaking slow-moving vehicles and accelerating smoothly when exiting roundabouts while maintaining safety margins • **Handled complex edge cases effectively:** e.g., U-turns on narrow roads, prompt responses to reversing vehicles
Passenger experience	• **Executed smooth acceleration and deceleration** with few abrupt maneuvers • **Maintained comfortable lateral motion** during lane changes

Sources: BCG road tests; BCG analysis.

L4 Robotaxi Has the Generalization Potential to Scale Faster Beyond Current Areas

Alongside its driving performance, today's L4 robotaxi also demonstrates consistent performance across a broad spectrum of real-world driving conditions, indicating strong generalization potential for faster scaling beyond the current service area.

Current L4 robotaxi operations already cover a broad and representative set of urban driving scenarios. Operations are established across tier 1 cities (Beijing, Shanghai, Guangzhou, and Shenzhen). Within these cities, operating areas span diverse road geometries, traffic complexity, and road-user behaviors, including downtown areas in peak hours with heavy traffic and occasional rule-breaking behaviors from other road users. (See **Exhibit 12**.)

The ability to perform consistently across the breadth of scenarios underscores robotaxi's readiness for further scaling. On the supply side, a proven operating record across diverse, high-complexity environments establishes a solid technical foundation for future city launches, potentially enabling a faster rollout pace as deployments scale. On the demand side, as service coverage is critical to driving broader adoption, expansion of operating areas is expected to translate into higher robotaxi penetration.

The ability to perform consistently across the breadth of scenarios underscores robotaxi's readiness for further scaling.

EXHIBIT 12

Current L4 Robotaxi Operations Already Cover a Broad and Representative Set of Urban Driving Scenarios

Source: BCG road tests.

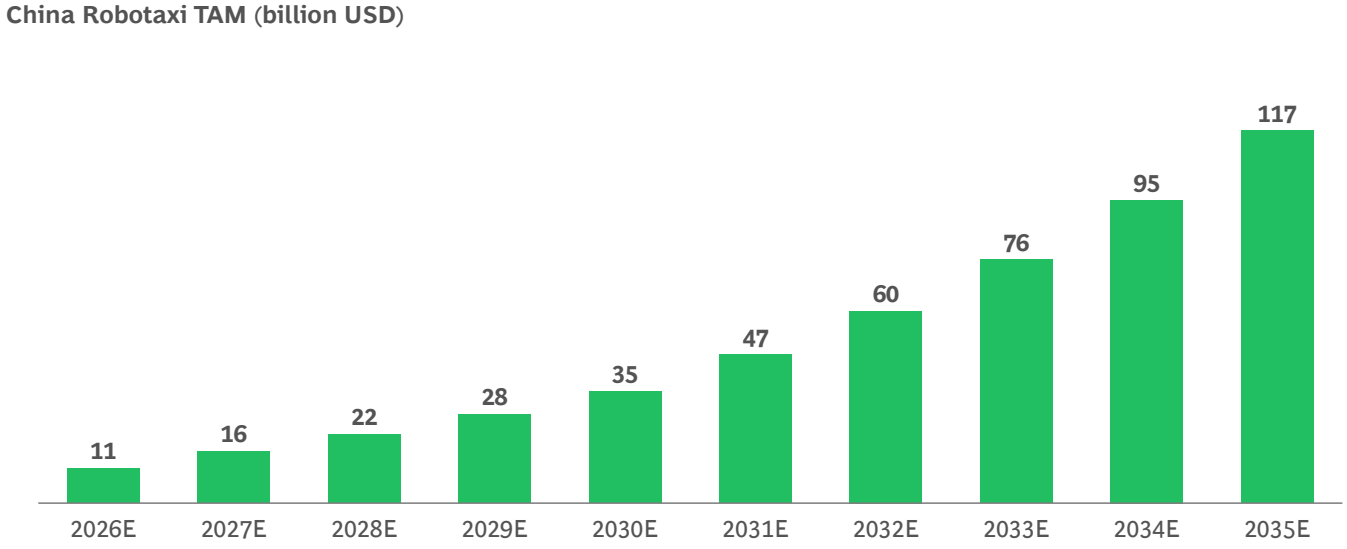
Robotaxi Has Huge Market Potential in China

Supported by overwhelmingly positive consumer feedback and the impressive performance demonstrated in real-world road tests, we have strong confidence in the market potential of robotaxi in China. Based on our estimates, the total addressable market (TAM) for robotaxi in China is expected to reach approximately USD 35 billion by 2030 and USD 117 billion by 2035. (See **Exhibit 13**.)

The TAM for robotaxi is estimated based on a structured approach: using the overall ride-hailing fleet as the foundation, applying robotaxi penetration based on demand-side adoption, and then multiplying by the expected revenue per robotaxi. The key drivers are outlined below:

EXHIBIT 13

TAM for Robotaxi in China Is Expected to Reach USD 117 Billion by 2035 Based on the Current Demand Side Forecast



Sources: Desktop research; BCG analysis.
Note: TAM = total addressable market. The TAM is estimated from the demand side only and does not consider supply-side expansion cadence or regulatory constraints on final market size. Exchange rate based on 1 USD = 7.0288 RMB.

1 **Growing demand for ride-hailing.** Ride-hailing has become widely accepted across China after years of development, with approximately 800 million[2] monthly orders currently. As most consumers have not yet adopted it as their primary means of transportation, future growth potential remains substantial, providing a solid market foundation for robotaxi development.

2 **Increasing robotaxi penetration.** Positive consumer feedback and convincing road test performance indicate strong penetration potential for robotaxi. Our analysis suggests that by 2035, approximately 42% of the total shared mobility fleet in China could potentially be addressable by robotaxi, equivalent to roughly 3.7 million vehicles.

3 **Growing revenue-generation capability of robotaxi.** With improvements in driving technology, service quality, and expanded serviceable areas, robotaxi order volume and trip distance are expected to increase, further uplifting revenue per vehicle.

The estimate focuses exclusively on the demand side and does not take into account potential regulatory constraints, supply-side expansion strategies, or deployment cadence.

2. Data sourced from the Ministry of Transport of the People's Republic of China.

Robotaxi Players Have Made Significant Progress

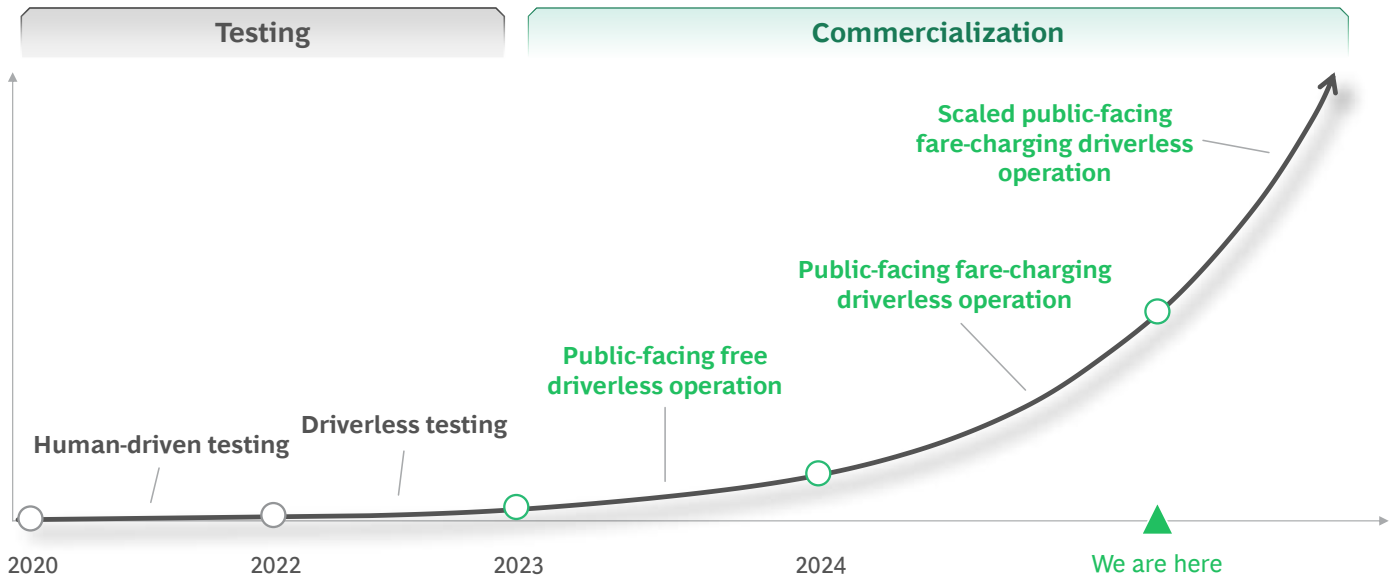
The robotaxi industry in China is already taking shape. Established players, including publicly listed companies and subsidiaries backed by listed groups, are actively driving the market. The commercialization of L4 robotaxi follows a relatively clear and structured roadmap, which can be broadly divided into five sequential stages, ranging from early-stage technology validation to full-scale commercial operations. Each stage represents not only increasing technical maturity but also progressive expansion in operational scope, fleet size, and business sophistication.

Established L4 Robotaxi Players Are at the Dawn of Scaled Commercial Operations

Over the past few years, established L4 robotaxi players in China have reached an advanced level of safety that is well beyond what most consumers can intuitively perceive through individual rides. They are now entering the final stage of scaled commercial operations. (See **Exhibit 14**.)

EXHIBIT 14

Robotaxi Market in China Is at the Dawn of Scaled Commercial Driverless Operations



Sources: Desktop research; BCG analysis.

A structural shift in the industry is already underway. The future development focus of L4 robotaxi is increasingly centered on commercialization. Existing players have already made significant progress in China across several key dimensions:

Urban footprint

The urban footprint of robotaxi operations in China has expanded rapidly in recent years, marking a meaningful step toward commercialization at scale. Notably, all four tier 1 cities—Beijing, Shanghai, Guangzhou, and Shenzhen—have now introduced regulatory frameworks that support public-facing, fare-charging driverless robotaxi operations. Other cities have also emerged as early adopters, such as Wuhan and Chongqing. More cities are expected to follow as regulatory frameworks continue to evolve.

Fleet size

The combined fleet size of leading players in China reached several thousand vehicles by the end of 2025. Looking ahead, fleet scaling is expected to further accelerate, supported by multiple reinforcing factors: continued regulatory opening enables broader deployment of driverless vehicles; expansion into additional cities and operating areas with stronger demand; and ongoing cost optimization improves the economic viability of larger fleets. A larger fleet size will further enable higher utilization, faster technology and operational improvement, and higher service levels.

Economics

Due to both technical immaturity and regulatory restrictions in earlier stages, robotaxi operations typically required the presence of in-vehicle or remote safety operators, limiting the cost advantages of autonomous driving. In recent years, however, although remote safety operators remain a standard requirement for robotaxi services, the human-to-vehicle ratio has declined significantly as technology has improved.

In addition, most leading L4 robotaxi players have introduced a new generation of robotaxi models with a substantial reduction in vehicle bill of materials (BOM). As a result, some players have announced that they have achieved breakeven in selected regions and operating scenarios in China. The strengthening economic foundation is expected to further stimulate supply-side expansion and support the next phase of scaled commercialization.

Building on the progress described above, Chinese robotaxi players are rapidly closing the gap with leading US players. China's robotaxi commercialization has even surpassed the US in terms of city and population coverage. By the end of 2025, robotaxi fleets in China reached several thousand vehicles, while fully driverless commercial operations had been launched in at least seven cities (for all major robotaxi operators), including both tier 1 metros and lower-tier cities, encompassing a total population of over 100 million[3].

Chinese operators are also capable of handling the most challenging scenarios, such as peak-hour traffic in downtown urban areas, comparable to conditions seen in cities such as San Francisco and Los Angeles in the US. (See **Exhibit 15**.) At present, China and the US remain the global leaders in robotaxi development. As fleet sizes in the US are expected to scale rapidly, Chinese players will need to expand their fleets at a comparable pace to avoid losing ground in the commercialization race. This underscores the importance of accelerating supportive policies, particularly with respect to licensing and other deployment constraints.

EXHIBIT 15

Chinese Robotaxi Players Are Rapidly Closing the Gap to the US

	China	the US
Operating fleet size	• Combined several thousand vehicles in operation	• 2,000–3,000 robotaxis in operation
City coverage	• 7 cities with scaled driverless public-facing fare-charging operations (including all 4 tier 1 cities), with a combined population of over 100 million	• 5 serviceable cities[1] by Waymo by 2025, including Phoenix, San Francisco, Los Angeles, Austin, and Atlanta, with a combined population of around 14 million
Driving conditions	• Covered the most complex scenarios in peak-hour traffic in downtown urban areas (in Shenzhen and Guangzhou)	• Covered the most complex scenarios in metro cities such as San Francisco and Los Angeles

Sources: Desktop research; BCG analysis.
[1] Five cities with scaled operation. Waymo has begun driverless trials in Orlando, Dallas, Houston, and San Antonio in late 2025; however, the scale remains small.

3. Data sourced from the statistical bureaus of each city.

Robotaxi Momentum Pulls in L2 Entrants, Yet L4 Robotaxi Remains a Long Way Off

Alongside established L4 robotaxi players, China's thriving robotaxi market is attracting a wave of new entrants, mainly OEMs and L2 Advanced Driver Assistance Systems (ADAS) suppliers.

In recent years, ADAS has achieved remarkable commercial and technological progress in China, establishing some of the world's leading assisted-driving capabilities. Commercially, advanced features have moved from "unavailable" to "accessible," with L2 systems expanding into entry-level vehicles below RMB 100,000 and penetration of Urban Navigation on Autopilot (NOA) steadily increasing. Technologically, leading OEMs and tier one suppliers have elevated L2 functions from "usable" to "user-friendly," offering broader scenario coverage, differentiated features, and an enhanced human–machine co-driving experience.

However, as latecomers with fundamentally different backgrounds and technological maturity, players with an L2 background face a long journey toward meaningful L4 robotaxi operations.

In terms of technology, L2 ADAS is designed primarily for driver assistance, focusing on broader utilization and differentiated features, while continuing to rely on human takeover in complex scenarios. In contrast, robotaxi systems prioritize full driver replacement, system-level safety, and long-tail scenario coverage. Based on our test drive results of leading city NOA offerings in the urban areas of Shanghai and Shenzhen, L2 systems from top players can handle simple scenarios with near-zero interventions, but human drivers are still required to take over in more complex situations (e.g., dense cut-ins, sudden pedestrian emergence). For example, during evening rush hours in downtown Shenzhen, we observed at least four human interventions over a 50-minute trip across all leading L2 solutions tested. Moving toward L4, players with an L2 background must elevate safety to levels at least comparable with human drivers.

Beyond technology, new entrants moving from L2 to L4 must also develop operational capabilities and meet regulatory requirements. Today, even the fastest-moving players remain in early testing stages, with L4 technologies still to be validated and lacking real-world experience in robotaxi operations. Building regulatory-grade safety records could take years, as accumulated miles are required at each development stage (i.e., in-vehicle testing, driverless testing, and pilot operations) before advancing to public-facing, fare-charging driverless services. In comparison, leading L4 robotaxi players already accumulate several hundred thousand kilometers of driverless mileage per day with fleets of around one thousand vehicles.

Going forward, new entrants must establish hands-on operational capabilities such as fleet dispatch, intervention processes design, ground support, and secure permits for driverless testing and commercial operations. Moreover, L4 robotaxi is a system-level endeavor that requires meaningful resource commitment. Effectively allocating resources under a cost-driven L2 business model remains a key challenge for these new entrants.

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Conclusion: Robotaxi Is on the Road in China

Evidence from consumer feedback, real-world road test performance, and progress made by leading players all point to a clear inflection point for robotaxis in China. It is no longer a distant concept; the transformative mobility paradigm has become a tangible and accessible experience for the market.

Robotaxi vehicles are already on the road. Leading players are actively scaling operations across multiple cities, expanding both geographic footprint and fleet size, and steadily moving from pilot programs toward replicable commercial operations. Robotaxi is no longer confined to closed tests or limited demonstrations—it is increasingly visible in everyday urban mobility.

Consumer attitudes provide strong validation of the transition. Users are willing to try robotaxi services and demonstrate high levels of satisfaction and preference. This broad-based acceptance suggests that robotaxi is moving beyond early adopters and beginning to resonate with mass-market users.

Technical maturity has reached a level sufficient to support scaled commercialization. Real-world road tests demonstrate stable performance, strong generalization across complex urban scenarios, and safety benchmarks that extend well beyond what consumers can perceive in daily rides. From a technological standpoint, robotaxi is well-prepared for scaled commercial operations.

With these key building blocks now in place, robotaxi in China is poised to take off, reshaping urban mobility over the coming decade. As a revolutionary technology and operational model, robotaxi benefits all market participants—from ride-hailing platforms and service operators to the broader consumer base—while further unlocking the trillion-RMB-level market across the entire shared mobility ecosystem.

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