



# Focus on the people

## Top 5 Public Transportation Industry and Technology Trends for 2023

Based on our survey of hundreds of public transportation professionals across the globe, Optibus has identified the key challenges and priorities for the industry for the coming year (and beyond).

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# About Optibus

**A** cloud-native SaaS company founded in 2014, Optibus is an end-to-end software solution for public transportation planning, scheduling, rostering, operations and passenger information. Public agencies, private operators, cities, and consultancies in 2,000 cities across 28 countries use our software platform to plan and manage complex public transportation networks, leveraging our robust combination of artificial intelligence, advanced optimization algorithms and distributed cloud computing to improve service quality, promote transportation equity and access, reduce emissions and costs, and modernize operations.

Optibus powers 3 billion passenger trips annually for public and private sector clients including TransDev, RATP, Arriva, Abellio UK, Stagecoach, and AVTA, the



US's largest electric bus fleet. In 2022, Optibus was valued at \$1.3 billion, making us the first unicorn start-up dedicated to the public transportation industry.

Optibus was selected by the World Economic Forum as a 2020 Technology Pioneer and has more than 350 employees across the globe throughout Europe, the Middle East, and Africa (EMEA), Latin America, North America, and Asia Pacific (APAC).

[www.optibus.com](http://www.optibus.com)



# Introduction

To assess advanced technology adoption and the top trends and priorities across the public transportation industry in 2023 (and beyond), Optibus conducted a survey of professionals across the industry in December 2022.

Overall, the results show that the biggest challenges of recent years still persist in 2023 and will continue to play a role in the coming years. At the same time, it was clear which factors will drive the industry in 2023 and where there are opportunities for improvement. Without revealing too much about the survey results, the biggest emerging trend is to place greater emphasis on people – both passengers and drivers.

## Top 5 Industry Trends in 2023 (and Beyond)

Our industry survey revealed that the public transportation industry has 5 main priorities for the year to come (as well as over the next few years):



In the following sections, we look at the results in more detail, and highlight the differences between this year and subsequent years, as well as between the different regions and priorities.



The challenges that society is facing are also impacting public transport.

Whether that is the ongoing battle for action on climate change, the energy crisis impacting millions of people, labour shortages across sectors or the rise in inflation causing economical harm.

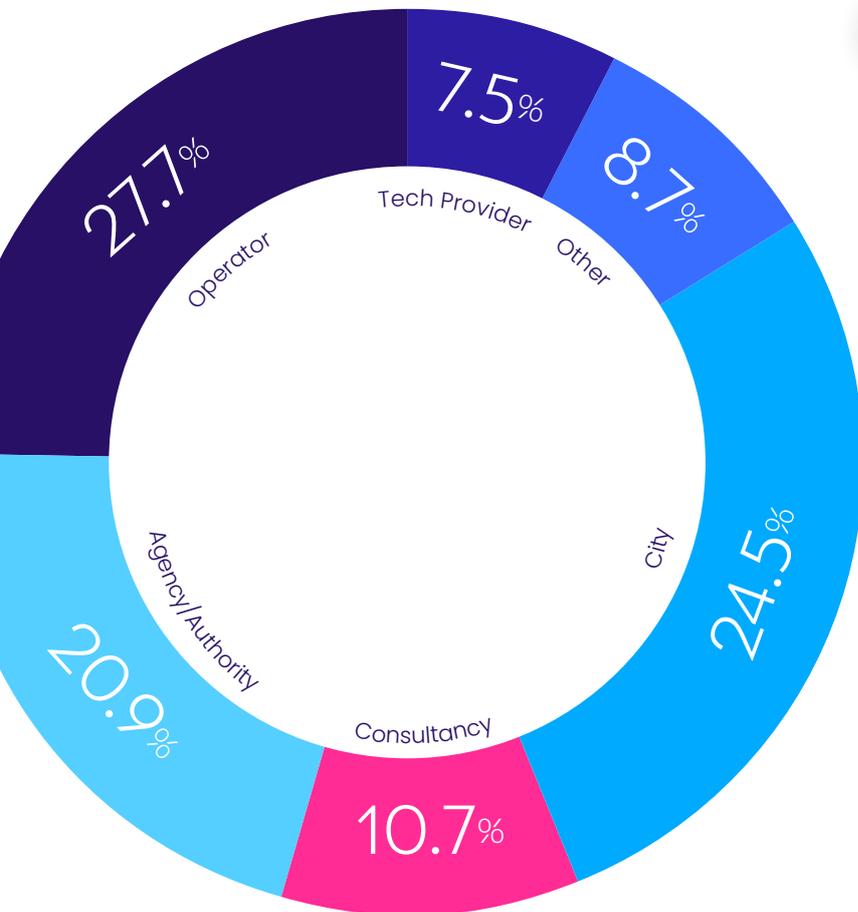


**Mohamed Mezghani**

Secretary General of the International Association of Public Transport (UITP) for intelligent transport

# Survey Participants

Over 250 planners, schedulers, executives, dispatchers, IT professionals, and more from diverse employer backgrounds participated in the survey, representing 24 countries worldwide.



# Biggest Trends For 2023

The most important, prevalent topic for the upcoming year was improving the overall user experience. **People should be at the center.** With the increasing reliance on technology in everyday life, passengers have come to expect the same level of convenience and predictability from public transportation. As such, providing a seamless, digital experience is now more crucial than ever.

**Passenger experience and predictability of services for passengers was the number one priority for 64% of respondents.** This prioritization indicates the industry's focus not only on business matters – like cost savings and efficiency – but also on making public transportation more attractive to passengers. The industry is also facing a global shortage of drivers, which can cause service disruptions and makes it more difficult to meet the increasing demand for public transportation services. Therefore, it came as no surprise that **hiring and retaining drivers tied for second place in terms of improvement priorities, for 51% of respondents, alongside the need to shift to electric and zero-emissions vehicles.**

Many public transportation operators are now seeing the benefits associated with electric vehicles (EVs), and are looking to make the switch over to fully- or partially-electric fleets. This is likely due to the environmental benefits associated with EVs compared to traditional fuel-powered vehicles.

## Which of the following areas is your organization looking to improve in 2023?



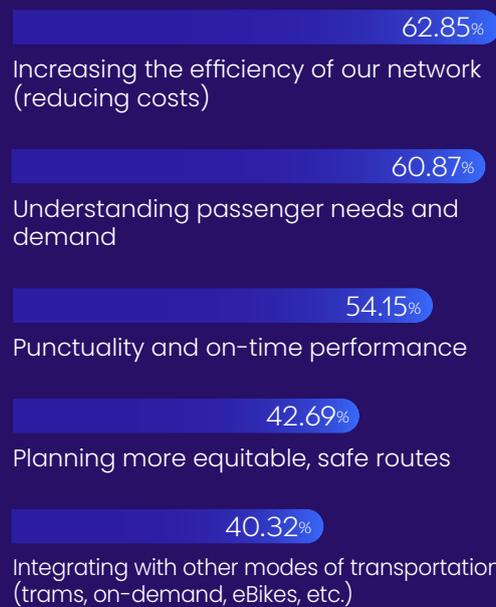


# Trends in Network Planning



Network planning is a highly complicated process that involves the designing and organizing of routes, schedules, and infrastructure of a public transportation system in order to efficiently and effectively serve the needs of the community.

When it comes to network planning, which of the following would your organization like to improve in 2023?

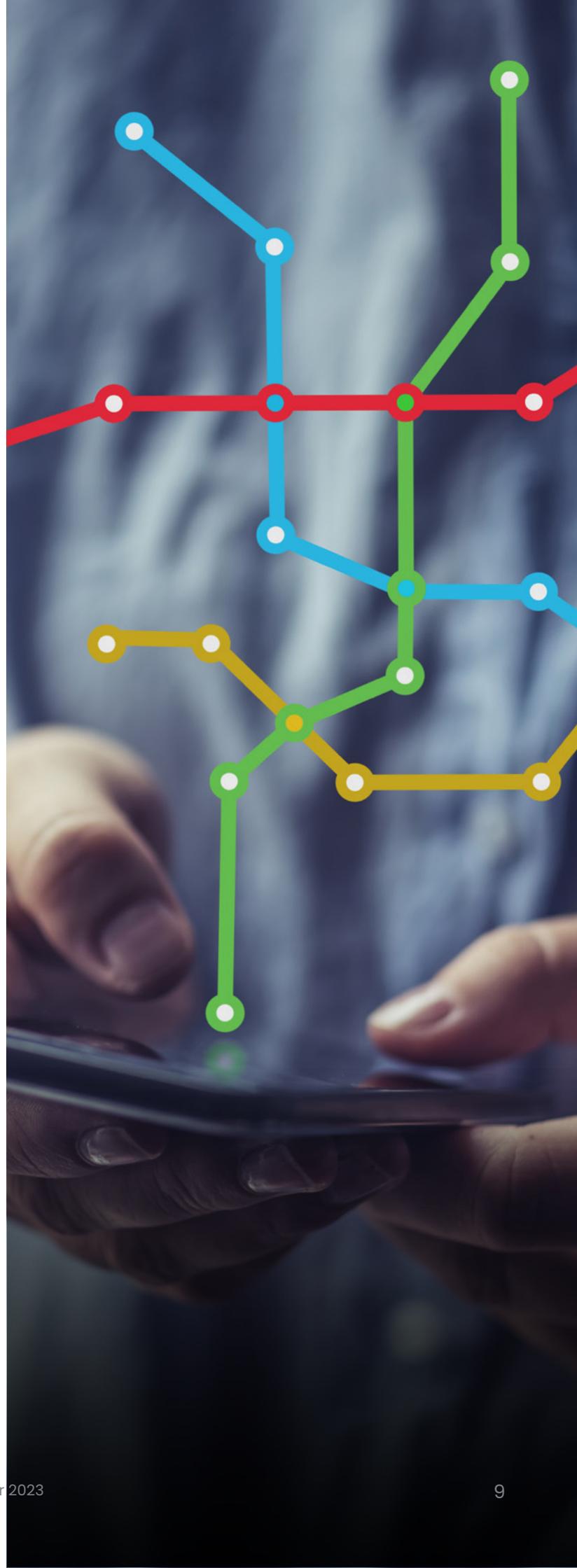


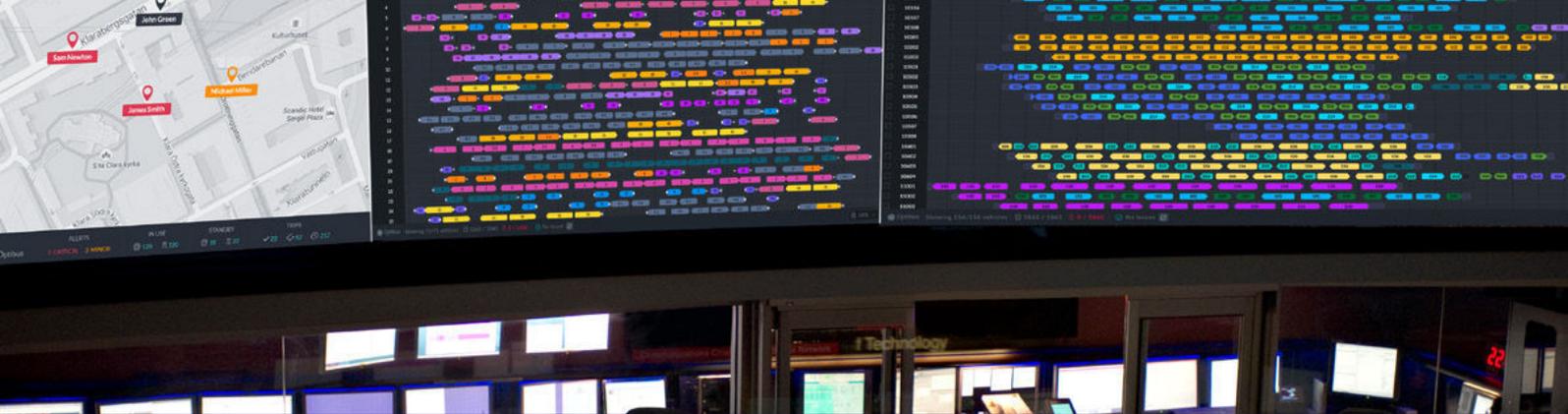
Public transportation providers want to create routes that are as safe and accessible as possible – while also minimizing the operational costs involved, and improving on-time performance and service quality to provide the best overall experience for passengers.

Given the nature of network planning, it came as no surprise that **increasing efficiency and reducing costs was identified as a top priority for 63% of respondents. At a close second, 61% of respondents selected understanding passenger needs and demand.**

This indicates that respondents clearly care quite a bit about the passenger experience and meeting passengers’ needs and preferences, but at the same time, given the financial situation and market, they felt that reducing costs was even more important.

Fortunately, with the right tools at hand, public transportation providers can do both of these initiatives – reduce costs and increase operational efficiency, while also providing a service that truly matches the “supply” to the “demand” of passengers.



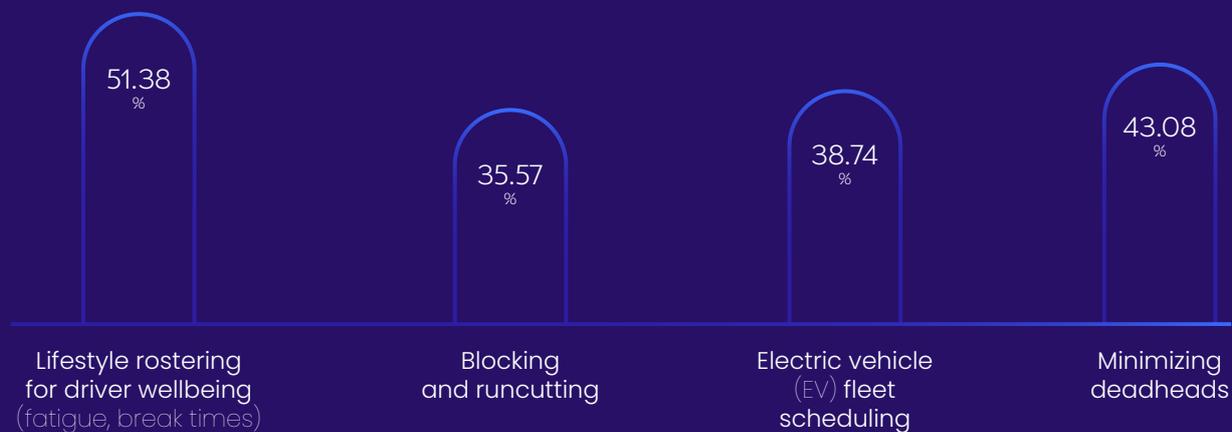


# Trends in Scheduling and Rostering

Scheduling is another complex process that involves determining the optimal timing of when buses, trains, or other vehicles should operate on specific routes, taking into account factors such as passenger demand, traffic congestion, and available resources to optimize the efficiency and effectiveness of the transportation network.

The rostering process is just as convoluted. In order to create work schedules and assignments for individual drivers or operators to work on specific routes, vehicles, and times, schedulers must take into account factors such as hours of service laws, labor agreements, and available resources to ensure the efficient and effective operation of the transportation network.

When it comes to scheduling and rostering (rotas), which of the following would your organization like to improve in 2023?





Given the mass level of driver shortages that many companies face across the globe, it was expected that, when asked about scheduling and rostering (rotas), **driver wellbeing was the top priority, listed by 51% of participants.**

Tailoring rosters to drivers' unique needs and preferences can solve major challenges, such as reducing fatigue and increasing the long-term retention of drivers. Through more flexible scheduling, schedulers can accommodate not just union rules and regulations (for things such as break times and overtime) but also drivers' availability, work-life balance, and personal constraints.

All of this, in turn, leads to higher job satisfaction, better quality of life, and less turnover among drivers. **Minimizing deadheads came in second place,** reinforcing the need to cut costs and increase vehicle efficiency.

Electric vehicle scheduling was also of concern to respondents, tying into concerns around fuel-related costs as well as the movement to reduce carbon footprints and transition to full or partial EV fleets. This is becoming a mandate across a number of countries, with laws already in place to have a certain percentage of their fleets be exclusively zero-emissions buses.

Therefore, it came as no surprise that transitioning to **EV fleets came in as the number 3 priority, with approximately 39% of respondents interested in EV fleet scheduling.**

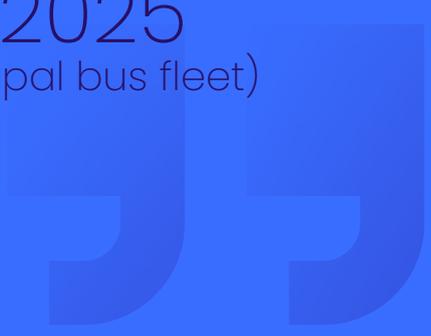


Deployment of e-buses in the municipal environment continues to increase. We now expect municipal buses to go electric faster than any other segments of road transport, with e-buses comprising over 67% of the global bus fleet in 2040.

(...) We expect municipal e-buses to rise from 417,000 units in 2019 to over 645,000 units in 2025 (about 39% of the global municipal bus fleet)

**Aleksandra O'Donovan**

Head of Electrified Transport at BloombergNEF,  
Sustainable Bus





## Trends in Depot Operations and Allocation

Depot allocation is the process of determining the location and size of depots, or maintenance facilities, for a public transportation system. This complex, mission-critical process involves evaluating factors such as vehicle storage and maintenance requirements, traffic patterns, and accessibility to routes in order to optimize the efficiency and cost-effectiveness of the transportation network.

When it comes to improving your depot operations/ allocation, which of the following would your organization like to improve in 2023?





When it comes to day-to-day driver and vehicle allocation, many respondents definitely still see opportunities for improvement. Depot allocators and dispatchers often need to make quick, frequent updates on the fly and react in real-time. Given the urgency and last-minute nature of depot allocation, real-time solutions were very much in focus, with 57% of respondents concerned about real-time issue resolution.

About **46% of respondents were looking to improve their long-term planning processes for upcoming work weeks** — as this can save them tremendous time and effort, and minimize the need for last-minute, reactive changes.

Although this was not listed as one of the options above, it's also worth noting the need for EV fleet integration across depot operations — they will be crucial for reducing emissions, saving on fuel costs, and meeting environmental regulations, but present new operational challenges.

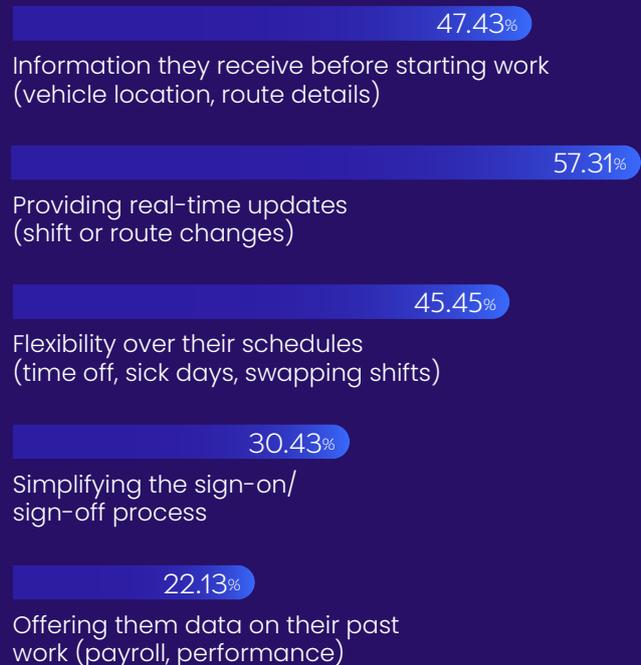
Depot managers need to make sure they have adequate charging infrastructure, range and battery management planning, proper maintenance knowledge, financial considerations and employee training in place to make the transition smooth and successful — and all of this must be factored into depot operations and allocation processes.

# Trends in Driver Communication



Driver communication is critical for the overall success of the public transportation system, as it enables the sharing of vital information between drivers, dispatchers, and depot management. Real-time communication is essential for ensuring the safety of passengers, drivers, and pedestrians, as well as the efficiency and cost-effectiveness of the transportation system.

Which of the following would your organization like to improve in communicating with drivers in 2023?





**The need for real-time information re-emerges as a top priority, with 57% of respondents wanting to inform drivers in real time about shift or route changes.** Additional top driver communication needs included improving the accuracy of information given to drivers before shifts begin (47%) and increasing schedule flexibility (45%).

Currently, dispatchers rely on traditional methods (such as radios, intercoms, etc.) to communicate with drivers in real-time. While these methods can be effective, they may have limitations in terms of range and clarity, and can be prone to interference or technical issues.

More modern communication systems, such as dedicated mobile apps or web-based platforms, can provide several benefits over traditional methods, including better range, clarity, and reliability, as well as advanced features such as GPS tracking and location-based messaging.

These real-time, two-way driver communication systems can quickly provide drivers with more accurate and up-to-date information, efficiently and reliably. This helps to reduce stress and improve job safety and satisfaction.

Real-time communication with drivers on the ground can also support more informed decision making about routes, schedules, and other operational issues. This can lead to cost savings, a better overall passenger experience, and **better insights into how scheduling and planning decisions impact services, particularly with regard to electric fleets and charging management.**

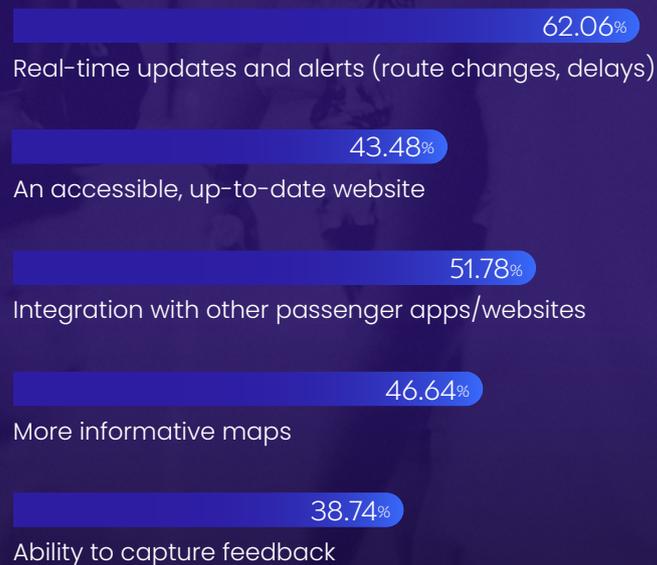
# Trends in Passenger Information



New technologies are revolutionizing passenger communication by utilizing real-time data, multi-modal integrations, personalization, multi-channel communication, and real-time monitoring and analytics.

Operators strive to ensure the safety and satisfaction of passengers, increase efficiency and cost-effectiveness of the public transportation system, and provide passengers with accurate and up-to-date information on a regular basis.

## Which of the following would your organization like to improve in communicating with passengers in 2023?





Again, real-time information came up as a key priority when it comes to communicating with passengers. **62% of respondents want to provide passengers with real-time updates about route changes or delays. Over half of respondents also want to better relay that information on passenger apps and websites (52%) and nearly half want to create more informative maps (47%).**

Phone hotlines, website updates, and in-station signage are still common methods of communicating with passengers. However, these methods can be slow, and the information may not remain accurate or up-to-date.

Precise, current service information improves the passenger experience by setting expectations about when the bus or train will arrive, enabling customers to make informed travel decisions and plan for service disruptions or delays, which can greatly impact travel plans.

Real-time notifications through a mobile app or website, along with integration with platforms like Google Maps and social media, allow for real-time information sharing and updates, improving the experience for both passengers and operators.



The more you lose  
a ridership base,  
the more difficult it  
becomes to maintain  
a level of service that  
people are used to...

It's becoming a vicious  
cycle.

**P.S. Sriraj**

Director of the Urban Transportation Center  
at the University of Illinois, Chicago,  
The Wall Street Journal, January 2023



A woman with dark hair in a ponytail, wearing a white sweater and a black shoulder bag, is seen from the back, looking out a window. The window shows a blurred cityscape. The text is overlaid on the left side of the image.

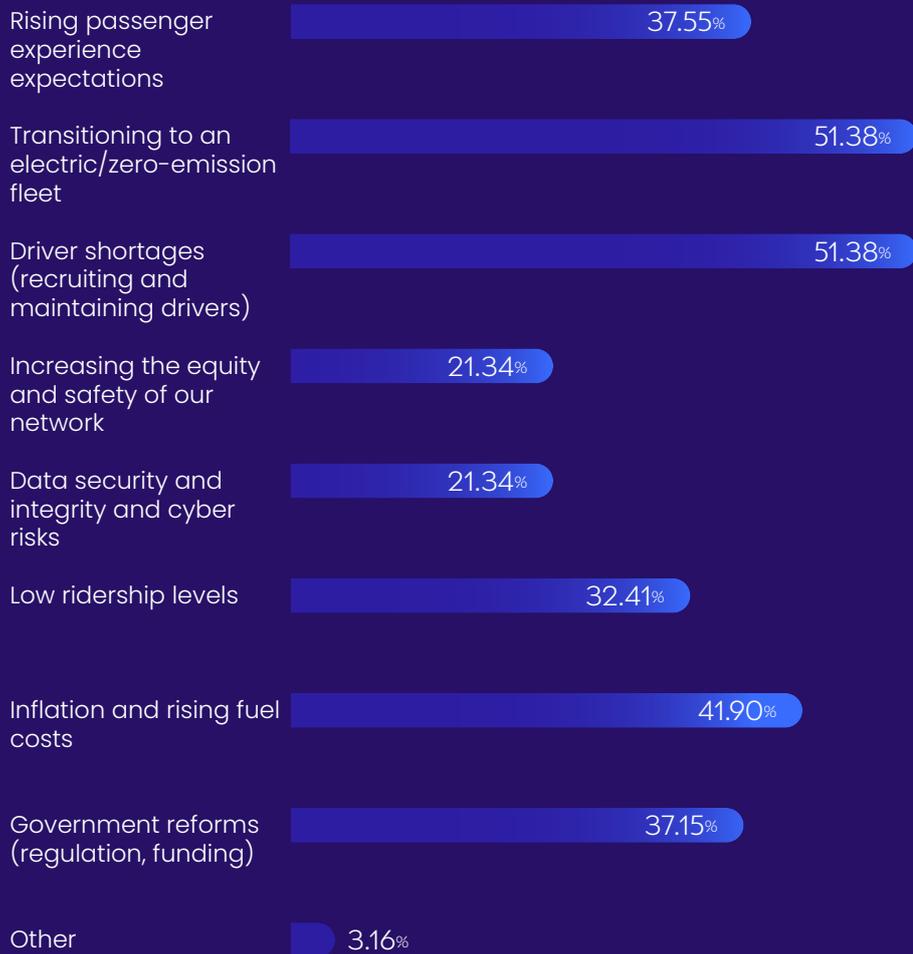
# Beyond 2023: Long-Term Outlook and Regional Trends

In order to gain a deeper understanding of the industry's priorities for the longer term, we asked respondents to select which trends would have the most impact on their organization over the next 3 years.

This provides a forward-looking perspective on the industry's plans and objectives, while helping identify potential challenges and opportunities for the industry to address over a longer timeframe, rather than just in a single year.



## Which of the following trends will have the most impact on your organization in the next 3 years?

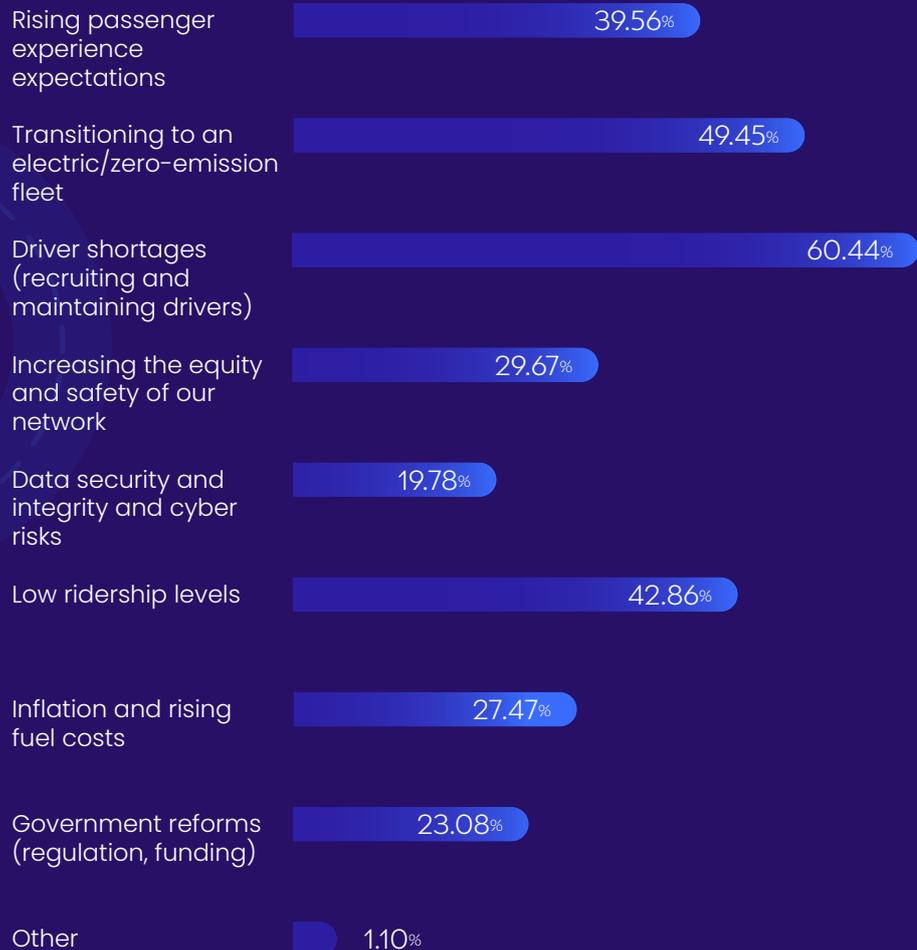


The results were that the industry is facing many challenges at once, with different focuses in different regions. Globally, the longer-term focus is on two issues that have been among the industry's biggest challenges in recent years: **transitioning to electric, zero-emissions fleets and driver shortages, which tied as the number one factor** impacting respondents' organizations.

Rising costs related to inflation and fuel, higher expectations from passengers, and changes in regulation and funding are also the top global concerns. We also wanted to take a closer look at the priorities on a regional level for the following regions: North America, Europe, Middle East, and Africa (EMEA), Asia Pacific (APAC) and Latin America (LATAM).

## North America

Which of the following trends will have the most impact on your organization in the next 3 years?



In North America, two key topics emerged: **Driver shortages and electrification.**

Accelerated by the pandemic, driver shortages are at record highs worldwide and across every aspect of the transportation industry. North America is particularly affected by this problem. The number of bus drivers across the US is declining as many drivers retire or switch industries. In 2021, there were 55,000 fewer bus drivers in the US than there were two years before<sup>1</sup>. As such, it came as no surprise that **60% of respondents believe driver shortages will have the greatest long-term impact on their organization.**

**Electrification was the second-most common concern (at nearly 50%)** in terms of long-term impact. With the passage of the US's [Bipartisan Infrastructure Law](#), there has been more funding than ever to help support the transition to electric buses. In 2022 alone, the Department of Transportation awarded more than \$1 billion to transit agencies for low- and no-emission buses. Governmental support aside, there are significant technical challenges impacting operations, schedules, drivers, and passengers.

1. <https://www.coshoctontribune.com/story/news/local/2021/09/21/coshocton-impacted-school-bus-driver-shortage/8383943002/>

Mass transit  
is like air and  
water for New  
Yorkers—we  
cannot live  
without it.

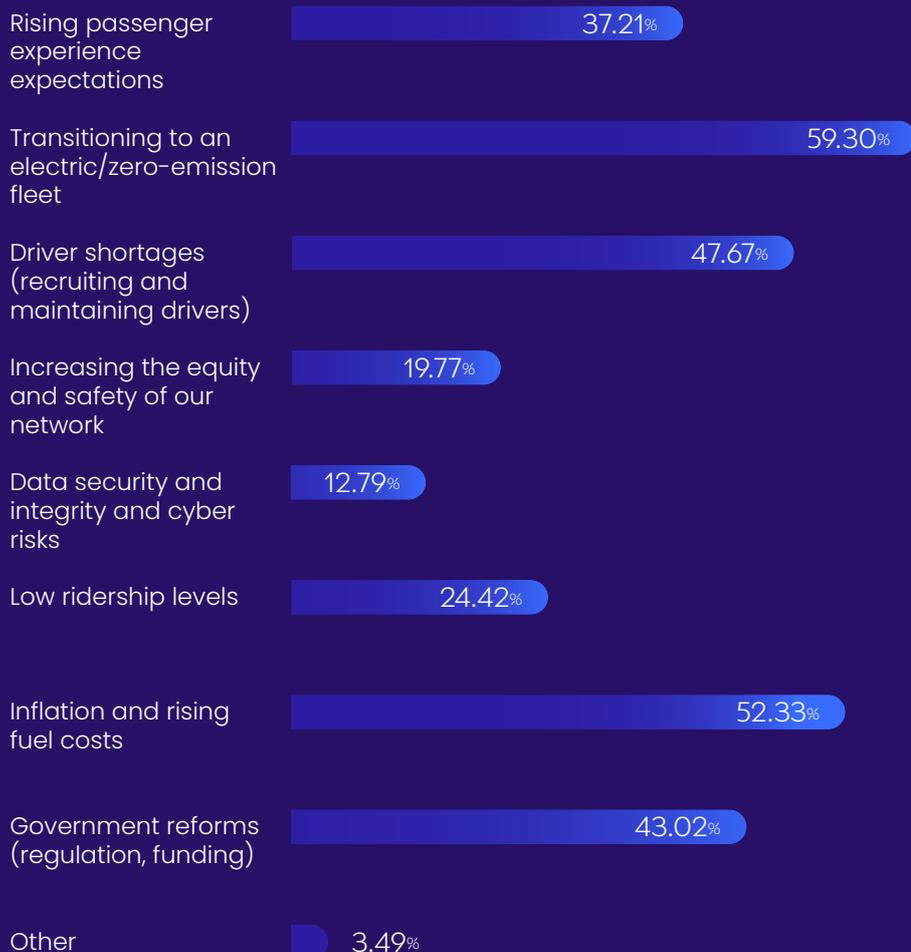
**Janno Lieber**

The MTA's Chair and Chief Executive, The Wall Street  
Journal, January 2023



## EMEA (Europe, Middle East, Africa)

Which of the following trends will have the most impact on your organization in the next 3 years?





In EMEA, **electrification topped the list of priorities in the coming years for almost 60% of respondents**. Urban bus fleets in Europe are moving towards a full transition to zero-emissions vehicles. By 2030, a third of the 200,000 buses across European public transportation will be electric. By then, zero-emissions buses will cover two thirds of the new city bus registrations<sup>2</sup>.

The initiative is supported by public transportation operators and national and city governments. In the past five years alone, the number of electric buses across Europe rose from around 200 to more than 2,500 vehicles. Large cities lead the way in adopting electric buses to curb air and noise pollution, and can eventually save significant operational costs.

Electrification is also becoming increasingly important in the Middle East and Africa. Projects such as the creation of the [first public bus system in Kampala, Uganda](#), show that the combination of electric buses and the introduction of formal public transportation can bring major benefits for the population.

At the same time, the EMEA region has been hit hard by **inflation and rising fuel prices, reflected by 52% of respondents**. As of November 2022, the inflation rate in the European Union was 11.1%.

The war in Ukraine and the EU's dependence on Russia for fuel play a particularly important role in rising fuel prices, as do efforts to end this dependence. In 2021, 45% of the oil used in the EU was imported from Russia. By mid-2022, the price of fuel had exceeded previous year many times over.

As such, the transition to fully- or partially-electric fleets is now becoming even more imperative across the region — and we anticipate this to accelerate further over these next few years.

2. <https://www.sustainable-bus.com/news/electric-bus-market-ing-europe-forecast/>



From successes in Europe and Asia, we know governments can reduce emissions by operating good, frequent, reliable, and equitable public transit.



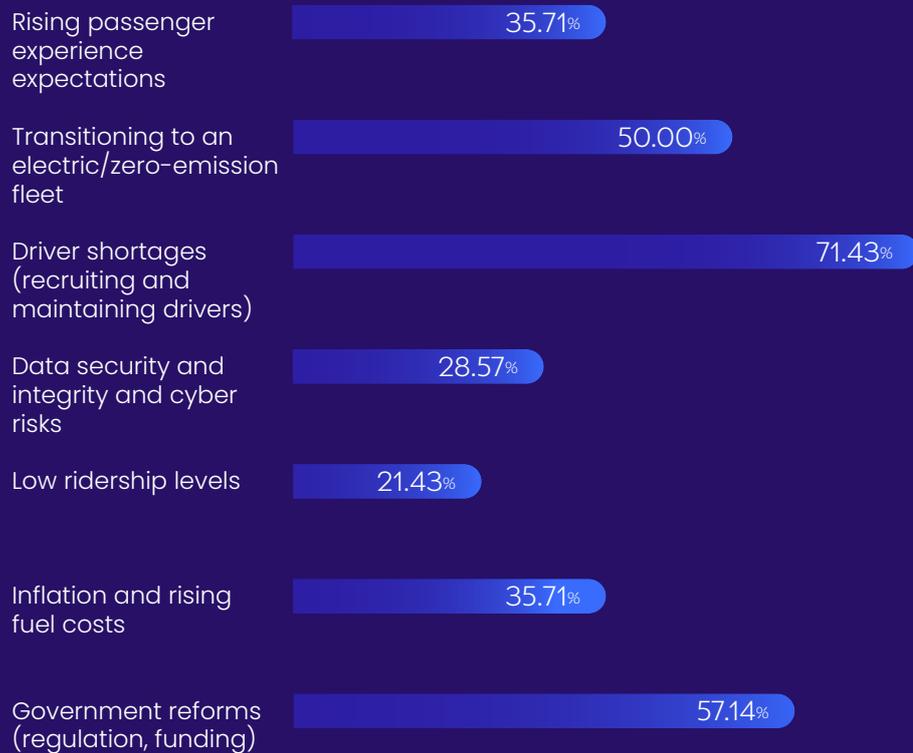
**Leann Hall**

Newsweek, January 2023



## APAC (Asia Pacific)

Which of the following trends will have the most impact on your organization in the next 3 years?



In APAC, as in North America, **the driver shortage was the biggest long-term challenge for 71% of respondents.**

While globally, the driver shortage crisis is caused by a lack of drivers, according to the latest International Road Transport Union's (IRU) annual driver shortage survey, in APAC, work conditions and perception of the profession play a major role in this crisis.

The **second most common long-term concern in Asia Pacific is government reforms (57%)**. For example, in the fourth Ministerial Conference on Transport, held in Bangkok in December 2021, delegates discussed strategies and plans to increase sustainable transport activities in the area and strengthen regional cooperation<sup>3</sup>.

At the conference, the [Regional Action Programme on Sustainable Transport Development & Ministerial Declaration on Sustainable Transport Development in Asia and the Pacific \(2022-2026\)](#) was adopted, putting a focus on low-carbon mobility and logistics.

Additionally, in recent years, the region has seen a dramatic ideological shift in transportation promotion and policy, from promoting car travel through massive road construction to recognizing that cars and motorcycles are the cause of traffic congestion and major environmental problems.<sup>4</sup>

Almost every country in APAC has made significant efforts to expand public transportation and reduce automobile traffic. For example, in 2005, the Indian government launched the Jawaharlal Nehru National Urban Renewal Mission (JNNURM). One of the goals of this mission was “Improving the Sustainability and Inclusiveness of Passenger Transportation” and it kicked off Bus Rapid Transit (BRT) in Indian cities.<sup>5</sup>

Major investment into public transportation can also be seen in China<sup>6</sup> and Indonesia, which is making huge strides in developing systems for commuter trains and light rail and expanding their BRT system<sup>7</sup>. Similar initiatives can be seen in Vietnam.

To reiterate, mitigating driver shortages and navigating government regulations and reforms will be of the utmost importance for the APAC region over the course of the next few years.

3. ESCAP 75. (n.d.). Ministerial conference on transport, Fourth Session. ESCAP. Retrieved January 26, 2023, from <https://www.unescap.org/events/2021/ministerial-conference-transport-fourth-session>

4. Enhancing Sustainability and Inclusiveness of Urban Passenger Transport in Asian Cities Ms. Dorina Pojani ([https://www.unescap.org/sites/default/d8files/event-documents/Enhancing\\_Sustainability\\_and\\_Inclusiveness\\_0.pdf](https://www.unescap.org/sites/default/d8files/event-documents/Enhancing_Sustainability_and_Inclusiveness_0.pdf))

5. Rathi, S. 2017. India. In Pojani, D., Stead, D (eds.) The urban transport crisis in emerging economies, ch. 5. Berlin: Springer.

6. Gao, Y., Kenworthy, J. 2017. China. In Pojani, D., Stead, D (eds.) The urban transport crisis in emerging economies, ch. 3. Berlin: Springer.

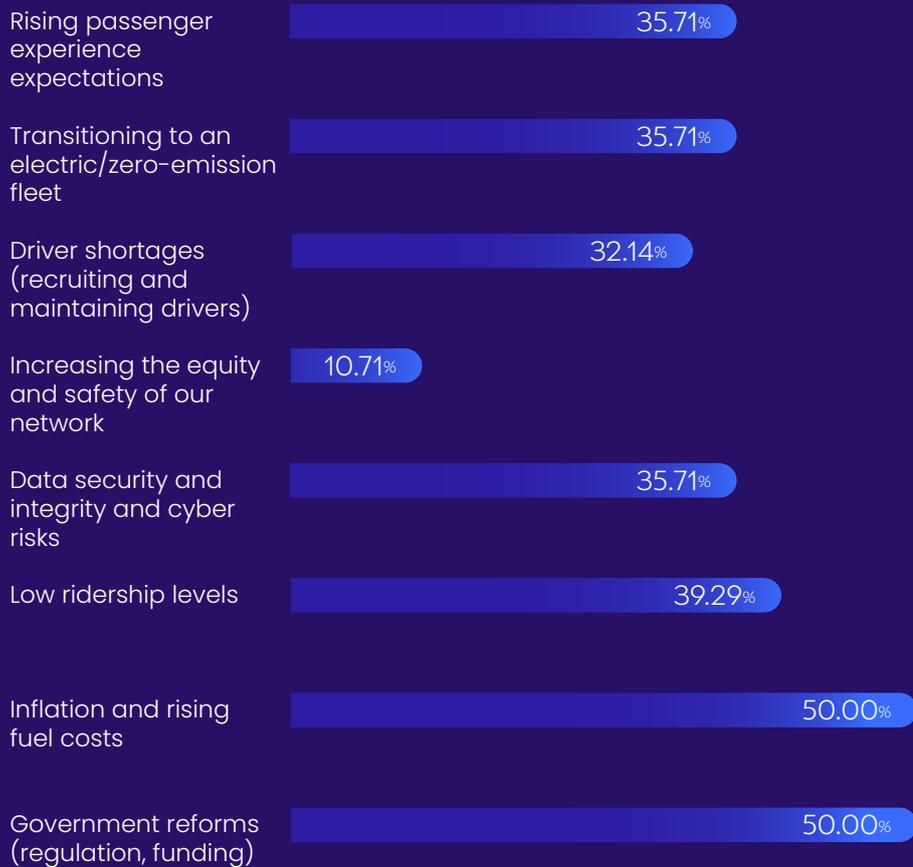
7. SUSTAINABLE ASSESSMENT OF URBAN TRANSPORT SYSTEM IN GREATER JAKARTA Resdiansyah., Ph.D, 2021 ([https://www.unescap.org/sites/default/d8files/event-documents/5.%20Sustainability%20Assessment\\_Greater%20Jakarta.pdf](https://www.unescap.org/sites/default/d8files/event-documents/5.%20Sustainability%20Assessment_Greater%20Jakarta.pdf))

By 2025,  
Interact Analysis  
[a market research  
company] forecasts  
that India will account  
for more than 10%  
of the total annual  
demand for electric  
buses globally, which  
is more than Europe  
and North America  
combined.



## LATAM (Latin America)

Which of the following trends will have the most impact on your organization in the next 3 years?





**In LATAM, inflation and rising fuel costs were tied as top priorities (at 50%).**

Given the high inflation levels – currently hitting 12.5% in Argentina and 5.8% in Brazil – it certainly comes as no surprise that cost savings were a top priority. The International Trade Outlook for Latin America and the Caribbean 2022 reports that 25 of the 33 countries in the region suffered a negative shock in terms of trade in 2022 (e.g. the price of imported products increased more than that of exported products)<sup>8</sup>. This situation reflects the rise in food, fuel, and fertilizer prices since 2021, which rose even higher in 2022 due to the conflict in Ukraine.

With regard to government reforms, in recent decades, many Latin American cities have not seen sufficient government action and public policies to encourage public transportation usage over private vehicles. This ultimately results in traffic jams, poor mobility across cities, and significant pollution from vehicle emissions.

Based on a UITP study<sup>9</sup> that ranked mobility in 87 major cities in the world on a scale of 0 to 100 – where 100 is considered the highest possible score – cities across the Latin American region had an average score of 43.9, only ahead of 2 regions: Asia Pacific (average score of 42.8) and the Middle East and Africa (average score of 36).

**UITP's mobility ranking for cities across the LATAM region, on a scale of 0 to 100:**



8. <https://www.cepal.org/en/infographics/international-trade-outlook-latin-america-and-caribbean-2022>

9. [https://www.adlittle.com/sites/default/files/viewpoints/2014\\_ADL\\_UITP\\_Future\\_ofUrban\\_Mobility\\_2.0\\_Full\\_study.pdf](https://www.adlittle.com/sites/default/files/viewpoints/2014_ADL_UITP_Future_ofUrban_Mobility_2.0_Full_study.pdf)

In light of this study, mobility is now at the center of the public agenda, and the region is undergoing a much-needed transition. Many large cities across LATAM have initiated reforms to modernize their public transportation systems and make public transportation more attractive than using personal vehicles.

Bus Rapid Transit (BRT) has been one of the most effective initiatives. Large cities including Rio de Janeiro, Belo Horizonte, Mexico City, and Bogotá have already adopted BRT systems – which consist of exclusive corridors for bus routes, making travel faster and more attractive. This system of public transportation has become a model for cities worldwide.

The conclusions about BRT are mixed, but some studies indicate that increasing transport accessibility could have positive effects on both the environment and on employment by increasing access to jobs<sup>10</sup>.

Another key trend in Latin American urban mobility is the shift towards electric bus fleets, as noted by 35.7% of respondents in our survey. Santiago, Chile, which has the largest electric bus fleet in the region, is a notable example. The city was one of the most polluted capitals in Latin America, which encouraged the Chilean government to monitor air pollution and regulate emissions across the transportation industry.

An important economic center in the region, Brazil takes the first steps towards electrification. At the end of 2022, the City Hall of São Paulo, which operates the largest bus system in Latin America, prohibited the purchase of new diesel buses. City Hall aims for 20% of the fleet, or approximately 2,600 vehicles, to be electrified by 2024. Mexico is also taking steps towards electrifying its public transportation, with an expected addition of 73 new e-buses in Mexico City in 2023<sup>12</sup>.

10. Yañez-Pagans, Patricia (IDB Invest); Martínez, Daniel; Scholl, Lynn (Inter-American Development Bank); Vázquez, Antonia (Universidad de San Andrés) in [Urban Transport Systems in Latin America and the Caribbean: Lessons and Challenges](#) - pg 26, 2018

11. [Agência Brasil](#) - article updated in 01/22/2023

12. Article - [Mexican Government](#) - August 2021



Undoubtedly...there is a huge job to be done in terms of urban mobility, where parameters such as service quality, cost and environmental efficiency must be taken into account if we want to achieve service levels comparable to the best in the world, such as Hong Kong.

So how do we make this transition? Because surely the infrastructure in LATAM will not be ready in 2030 for the upcoming technologies – autonomous driving and electric vehicles. The answer is simple.

We have to start from the bottom up. The region will be ready for flexible trip planners and a transit data structure like GTFS Flex, which allows consumer applications to list and combine transportation alternatives without fixed routes, stops or schedules.

**Joaquín Di Mario**

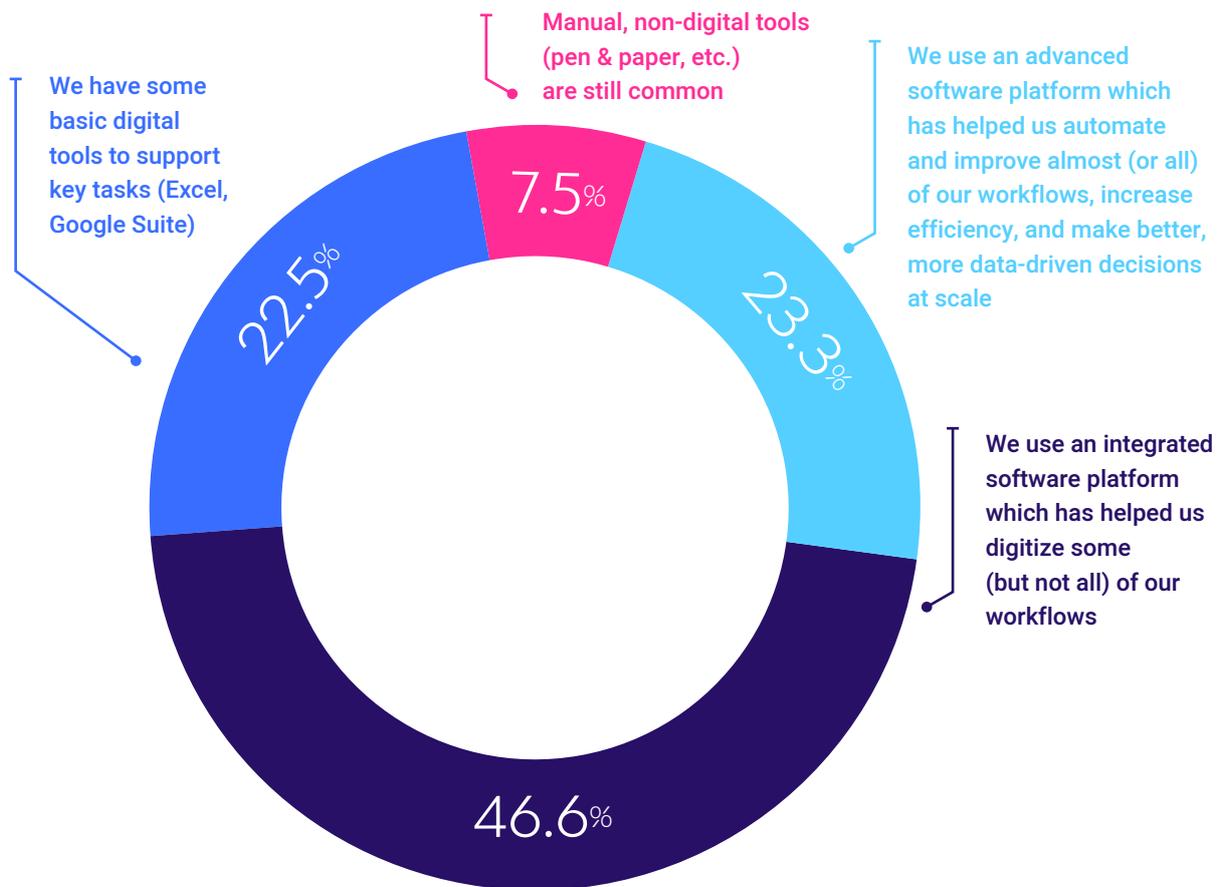
CoMotion News, September 2022

# Technology Adoption and Usage

In the following sections, we explore how the use and adoption of technology can ameliorate many issues that the public transportation industry is facing in 2023, and beyond.

Ultimately, the use of technology can help public transportation operators to save costs while improving service efficiency and reliability, creating a better experience for passengers.

## Technology Use Across All Regions





It's surprising that despite today's advancements in technology, **30% of survey participants still manage their services without any software support and only 23% use an advanced platform.** This represents a significant opportunity for public transportation providers to tap into, as advanced software platforms can play a major role in overcoming the challenges outlined in previous chapters. In the sections below, we will explore how the public transportation industry can utilize advanced technology to mitigate and alleviate some of the challenges they're facing now, as well as in years to come.

### Passenger Experience

By using advanced transportation planning and management software platforms, public transportation agencies, operators, and cities can plan new routes and/or service changes with a complete understanding of their transportation needs, including popular destinations and various mobility modes.

This makes transportation networks more passenger-friendly, with the ability to consider factors such as bike and scooter paths, as well as key local areas of interest that passengers access, such as shopping districts, schools, health clinics, and commercial centers. Additionally, these platforms promote public transportation equity and inclusivity by enabling easy access to important demographic data and evaluating the effects of route changes on residents' access to transportation.

All of this results in data-driven decisions that greatly improve the accessibility, reliability, and performance of transportation networks, positively impacting the lives of millions (and ultimately, billions) of passengers.

On-time performance in transit systems is defined by the percentage of trains and/or buses arriving at their destined terminals as scheduled.

However, this does not take into account consumer attitudes regarding frequency and on-time performance...there is a disconnect between consumer perceptions of service and the service provided by transit systems.

**Christopher Wolf**

Review, January 2021



### **Providing Real-Time Information**

Advanced software systems that utilize real-time analytics provide organizations across the public transportation industry with the ability to delve into service data and gain deeper insights into the reasons behind service issues. By identifying exactly when and where these issues occur, they allow for better prediction of on-time performance (OTP) and improvement of the overall passenger experience.

In addition, this advanced analysis provides them with valuable insights into operational efficiencies, enabling service providers to make data-driven decisions to streamline processes and improve the overall quality of their services. Instead of operating in a reactive, last-minute manner, they can be more proactive and plan ahead.

The result is improved reliability and efficiency of service, leading to a better overall experience for passengers and a more streamlined operation for the transportation provider.

### **Increasing Driver Satisfaction and Retention**

Attracting and retaining a strong workforce of drivers is essential for the success of public transportation operators. To achieve this, it is crucial to consider drivers' preferences when scheduling and creating rosters. This can be a complex task, but advanced software platforms simplify the process by offering a more flexible and customizable solution.

With these platforms, it is possible to account for a wider range of parameters that are specific to individual drivers, such as preferences around shifts, days off, and routes. This level of customization accommodates drivers' preferences and improves job satisfaction, leading to less turnover and a bigger pool of available drivers.

The result is more motivated and productive drivers, leading to better services and more efficient operations.



# Electric Bus

## Supporting Fleet Electrification

An advanced transportation planning and management software that is specifically designed for EVs can help organizations overcome the challenges associated with the deployment and operation of EVs.

With software that uses EV-specific metrics – for components such as charging times, charging locations, and battery levels – to create an optimal operational and charging plan, public transportation organizations can minimize downtime, maximize the utilization of EVs, and ensure that EVs are fully charged when needed.

Utilizing advanced software for this purpose can also help organizations plan charging infrastructure and manage the scheduling of EVs to minimize the impact of charging on overall operations and to ensure that there is sufficient capacity for charging when it is needed.

With a well-designed and integrated software solution, organizations can ensure that their transition to EVs is as seamless and efficient as possible, ultimately leading to lower costs and a more sustainable transportation network.

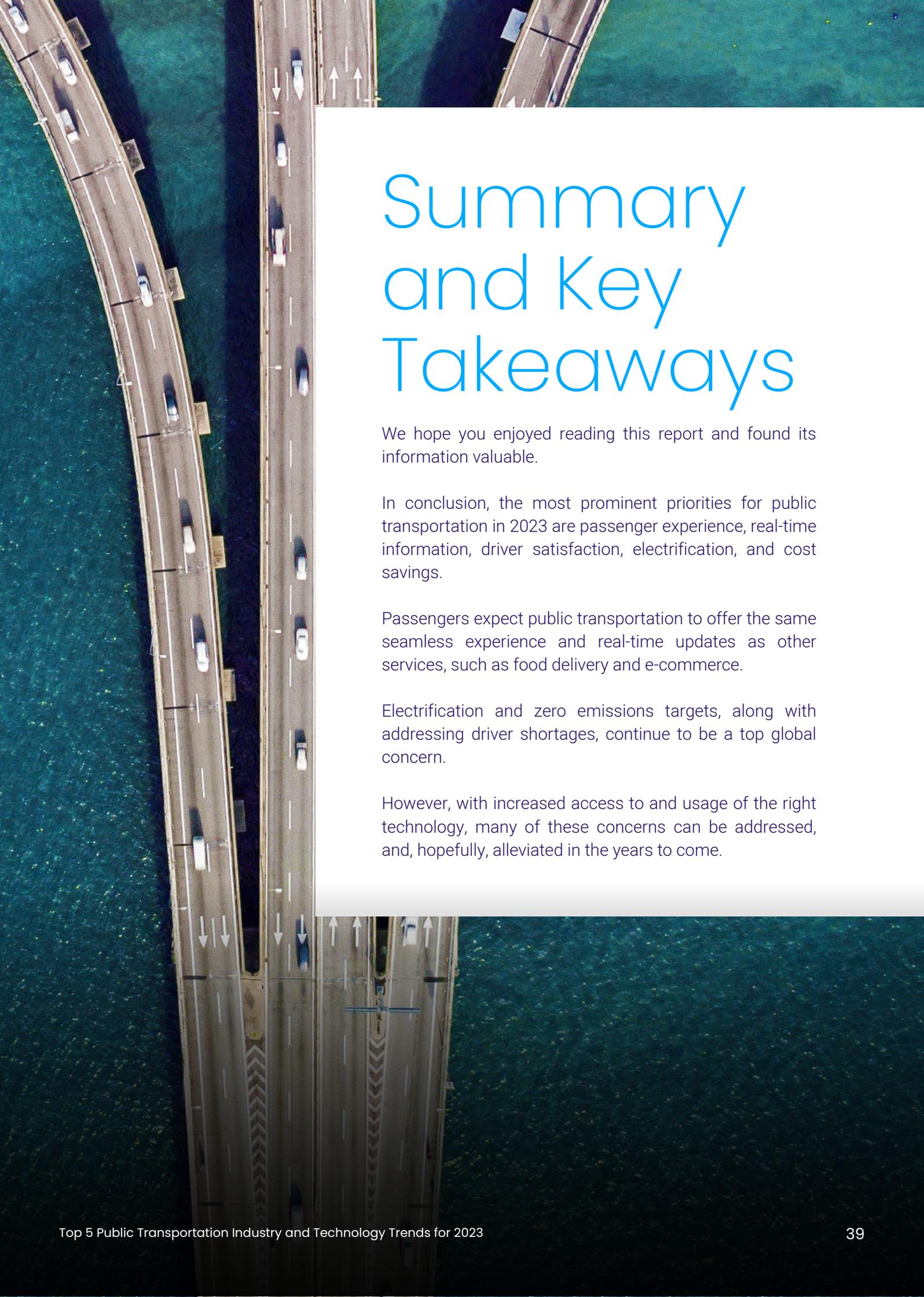
## Reducing Costs

To effectively reduce the cost of a bus operation, peak vehicle requirements (PVR) and the total vehicle distance traveled must be optimized – while still providing the required level of service to passengers. Compromising on service quality to reduce costs is not a sustainable business strategy, as dissatisfied passengers will inevitably look for alternative transportation options.

The process of planning, organizing, and scheduling a transportation network is extremely complex and near impossible to perfect manually. Yet in order to minimize costs and achieve a sustainable reduction in vehicle distance traveled, organizations must analyze and optimize their plans and schedules to identify and address inefficiencies.

Thanks to advancements in artificial intelligence (AI), machine learning, and big data analysis, public transportation companies can now easily increase efficiency across their routes, schedules, and overall operations – by using fewer vehicles (PVR) and traveling less distance.

Advanced planning and management software can help companies leverage AI and algorithms to gain visibility into areas of waste and inefficiency, and then optimize the use of labor, fuel, emissions, and costs. All this, while also improving services and increasing ridership.



# Summary and Key Takeaways

We hope you enjoyed reading this report and found its information valuable.

In conclusion, the most prominent priorities for public transportation in 2023 are passenger experience, real-time information, driver satisfaction, electrification, and cost savings.

Passengers expect public transportation to offer the same seamless experience and real-time updates as other services, such as food delivery and e-commerce.

Electrification and zero emissions targets, along with addressing driver shortages, continue to be a top global concern.

However, with increased access to and usage of the right technology, many of these concerns can be addressed, and, hopefully, alleviated in the years to come.



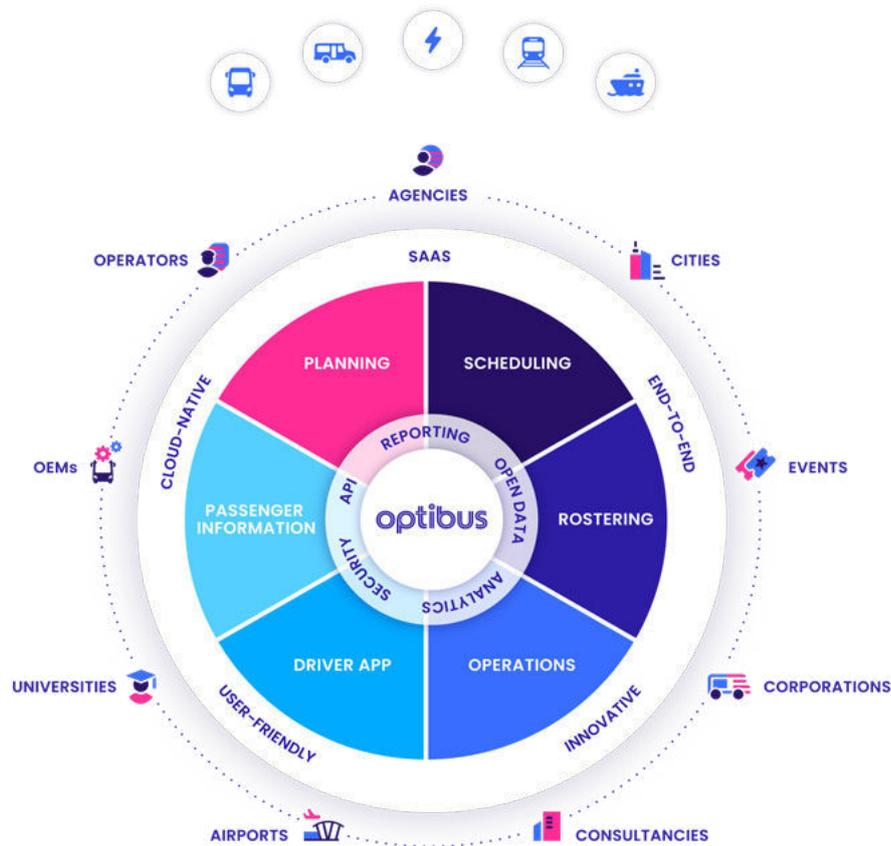
After all, public transport is a people-centric sector. Built around people, and for the people. No matter the challenges, it should always be the beating heart of our cities.

**Mohamed Mezghani**

Secretary General of the International Association of Public Transport (UITP),  
Intelligent Transport, January 2023

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