

# TSC Cross-Group Benchmarking Newsletter



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## Overview

Welcome to the first TSC Newsletter of 2024! In this edition, we explore the latest developments in public transport ridership and service recovery. We also delve into the ongoing industry challenges of recruitment and retention, and we shine a spotlight on RIAMBiG, our benchmarking group for rail infrastructure asset management.

## Background

Over 100 metro, rail, bus, light rail and airport operators, including many of the largest operators in the world's major cities, participate in the international benchmarking groups managed through the Transport Strategy Centre (TSC) at Imperial College London (see Appendix A for a list of benchmarking groups and members). Initially developed to support transport providers with their response to the COVID-19 pandemic through cross-group knowledge sharing, the newsletter now provides a general update on select research topics from across the benchmarking groups to support wider learning. Content sourced from the groups is anonymised to respect confidentiality rules.

## 2023: Brief Year in Review

As we enter the new year, let's reflect on the milestones that shaped our benchmarking journey in 2023. We expanded into international light rail and tram benchmarking with BOLTS, welcoming systems from Berlin, Brussels, Hong Kong, and Oslo. We also welcomed five new members to the benchmarking groups: Metro Regional Transit Authority in Akron, Ohio (ABBG), the Metropolitan Atlanta Rapid Transit Authority, Atlanta (COMET), Metro Transit in Minneapolis, Minnesota (GOAL), ViaMobilidade Lines 8&9, São Paulo (ISBeRG), and the Elizabeth Line, London (ISBeRG).

Over 25 topics were researched in-depth in case studies and members convened for 19 in-person meetings and 44 online meetings. The COMET Annual Meeting in October 2023 set a new record for attendance with representatives from 27 different members from across the world. We look forward to more growth, learning, and collaboration in 2024 and thank our members for their dedication and support.

**Imperial College  
London**  
Projects

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## Navigating the future: Technology and innovation in public transport

Throughout 2023, the topic of **technology and innovation** was a key area of interest and engagement across the benchmarking groups. As we begin our activities for 2024, we continue to investigate and understand the dynamic landscape of technology and innovation which is shaping the future of the public transport sector. As technology continues to evolve, and public transport organisations are faced with questions on how smarter, more efficient solutions may be used to serve their customers, business and broader goals and expectations.

Technology solutions will always be of vital importance to organisations; under discussion in 2023 were virtual tools (e.g. augmented reality), data tools (e.g. machine learning, predictive tools, digital twin technology) and physical tools (e.g. drones, scanning and inspection capabilities, CBTC) as major opportunities. Amongst many things - technology is helping organisations to connect more closely with a customer's experience (e.g. individualised service/information), improve operational effectiveness (e.g. redistribution of demand, crowd control), manage and maintain their assets more efficiently and thoroughly (e.g. reduced manual input for inspections, real-time asset monitoring) and support technical safety and personal security.

While continuous assessment and adoption of technology are well-regarded as drivers of both positive business change and an improved offer for customers, there are clear **challenges for the industry** to overcome to achieve the best possible outcomes in these areas. Investing in new technologies demands substantial, long-term funding commitment in a competitive landscape for funds and at a time when businesses, authorities and governments may understandably be more risk-averse. As well as investment commitments, cultivating long-term political buy-in, supportive policy and direction are key to enable continuity and contingency.

There is also the **human factor** to consider: organisations can naturally lean towards maintaining a business-as-usual approach that reflects a reluctance to change driven by multiple, interacting factors. In fact - technology and innovation are often referred to in tandem, but the terms have discernible differences. Innovation is becoming a part of organisational culture; where businesses are breaking from naturally using proven concepts and instead seeking solutions that are more effective in the individual organisation's environment, for their needs and intended outcomes. In process design, some of these changes in practice reflect eagerness to speed up and diversify pathways to delivery that traditional

procurement or governance processes have not usually allowed for. Examples are using pilots and trials to test concepts, partnering with the private sector to explore products, refining solutions often, and adopting fresher evaluation approaches. Within a broader leadership culture that supports some willingness to fail, learn and evolve (rather than solely avoiding risk), organisations are shifting towards being more digitally mature, data-centric businesses.

A further challenge is the need for **seamless integration** of emerging technologies into existing infrastructure and systems, which will serve as a strong foundation for future tech projects, products and solutions. All public transport organisations are operational businesses; developing, testing and rolling out technologies while maintaining a promised level of service is extremely challenging. The pace of change and - as highlighted in recent years - the uncertainty that surrounds organisations while they are on the path to implementing new technologies is notable. Public transport organisations, the policies around them, and the assets they rely on, do not have short lifecycles and there is no "completion point" for adopting new technology. Building capability in strong strategic management and analysis is critical - to maintain perspective on the long-term prospects that technology and innovation offer, while ensuring the organisation delivers its core service.

Best practice in adopting technology will also require collaboration. Engaging with industry, research and public entities offers opportunities to continuously inform and influence the tech industry's understanding of public transport organisations' needs and opportunities. Working with stakeholders, aligned partners and third party experts enhances the quality of solutions and products, but also helps to smooth the many interfaces that affect project success. It is important that customers and stakeholders see joined-up strategic thinking between public transport organisations, their governments and the tech industry. **Working collaboratively** will demonstrate organisations' commitment to serving customers' existing, emerging and future needs, rather than adopting "tech for tech's sake".

Whilst this shift towards a tech-driven public transport sector is not without its hurdles, it presents an exciting prospect for the future of the industry. By overcoming challenges and seizing opportunities, and adopting an innovation mindset that is ready for change and learning (accepting the inevitable trial and error), the industry is optimistic about **driving progress and efficiency** using technology and innovation in the coming years and decades. The TSC is looking forward to supporting members on this journey.

## Asia-Pacific region leads PT demand recovery in 2023, closely followed by Europe; steady growth seen globally

### Recent Metro Demand Trends

Average **metro ridership** by region as a proportion of pre COVID-19 demand (*monthly demand indexed to the corresponding 2019 month*) is shown in Figure 1. The graph is based on daily demand data collected in the COMET metro benchmarking group and shows average ridership across all days of the week.

Following strong trends in ridership recovery experienced globally in 2022, 2023 data shows continued growth across all regions, ranging from around 65% of pre-pandemic demand in North America to more than 100% in Asia-Pacific. This trend can be seen in the latest available demand data which is shown in Figure 1 for each region.

- Average metro demand in the **Asia-Pacific** region surpassed European metro demand in February 2023 and remained above levels seen on European metros for the remainder of the year. Demand increased to a high in August 2023 with levels **exceeding pre-pandemic demand in August 2019 by more than 10%**.
- Whilst **European metros** experienced the highest demand globally throughout 2022, average European metro demand remained on a strong upward trend in 2023. Demand remained above 90% of pre-pandemic levels throughout the year.
- In **Latin America** metro demand continues on a gradual incline reaching a high of more than **75%** in September 2023, vs. a 2022 high of just under 75%.
- Similarly, average **North American metro demand** is increasing steadily. Whilst the data shows a decline in demand towards the middle of 2023, there was an uplift in demand in September 2023 when demand reached

close to 70% on average, the highest levels seen since the pandemic for the region. Overall, demand is increasing year-on-year slowly but steadily, but the region continues to experience the lowest levels of demand recovery.

### Comparison of Recent Multi-Modal Demand Trends

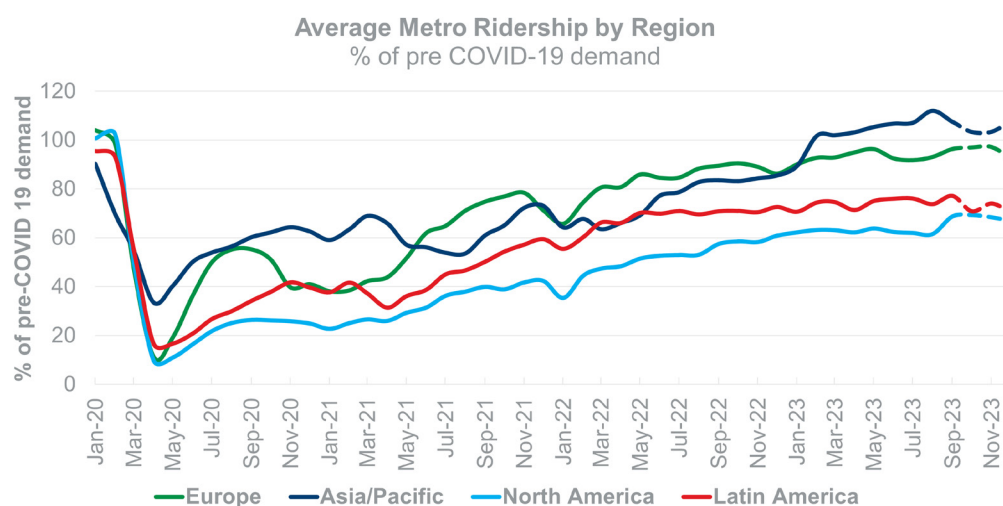
Figure 2 shows average **bus, light rail, suburban rail, and metro ridership** by region (*monthly total demand indexed to pre COVID-19 month, either January/February 2020 or the corresponding 2019 month, depending on the mode*), based on available data in the benchmarking groups and supplemental data from the US National Transit Database for US operators. Figure 2 also includes demand recovery for **European airports** based on available data in the Airports Benchmarking Group (ABG, see Appendix A for the full list of ABG membership) from publicly sourced air traffic statistics.

- Whilst metro ridership in the **Asia-Pacific** region surpassed pre-pandemic levels in 2023, this trend is not mirrored by bus and suburban rail ridership. On average, metro demand has recovered more strongly than bus and rail modes (approximately 30% higher for metro demand), with bus and rail recovery being more incremental and stable. *Note that the suburban rail and bus demand trends are based on a small sample.*
- In **North America**, multimodal demand across bus, light rail, suburban rail, and metro showed signs of flattening out in 2023. However, demand has recovered more strongly in 2023 for bus and light rail.
  - Bus and light rail modes recovered to average levels of around **80%** (December 2023) and between **70-75%** (second half of 2023) of pre-pandemic demand, respectively. Both modes experienced a slight reduction in average demand in the final quarter of the year.
  - Demand for metro and suburban rail recovered to an average of **60-70%** of pre-pandemic demand.
    - » Suburban rail and metro continue to be affected by the change in commuting patterns associated with remote and flexible working. This reflects the different passenger demographics that these modes

**Figure 1:**

Average metro ridership by region as % of pre COVID-19 demand

Source: TSC/COMET



serve, contrasting with bus and light rail modes where recovery has been more robust.

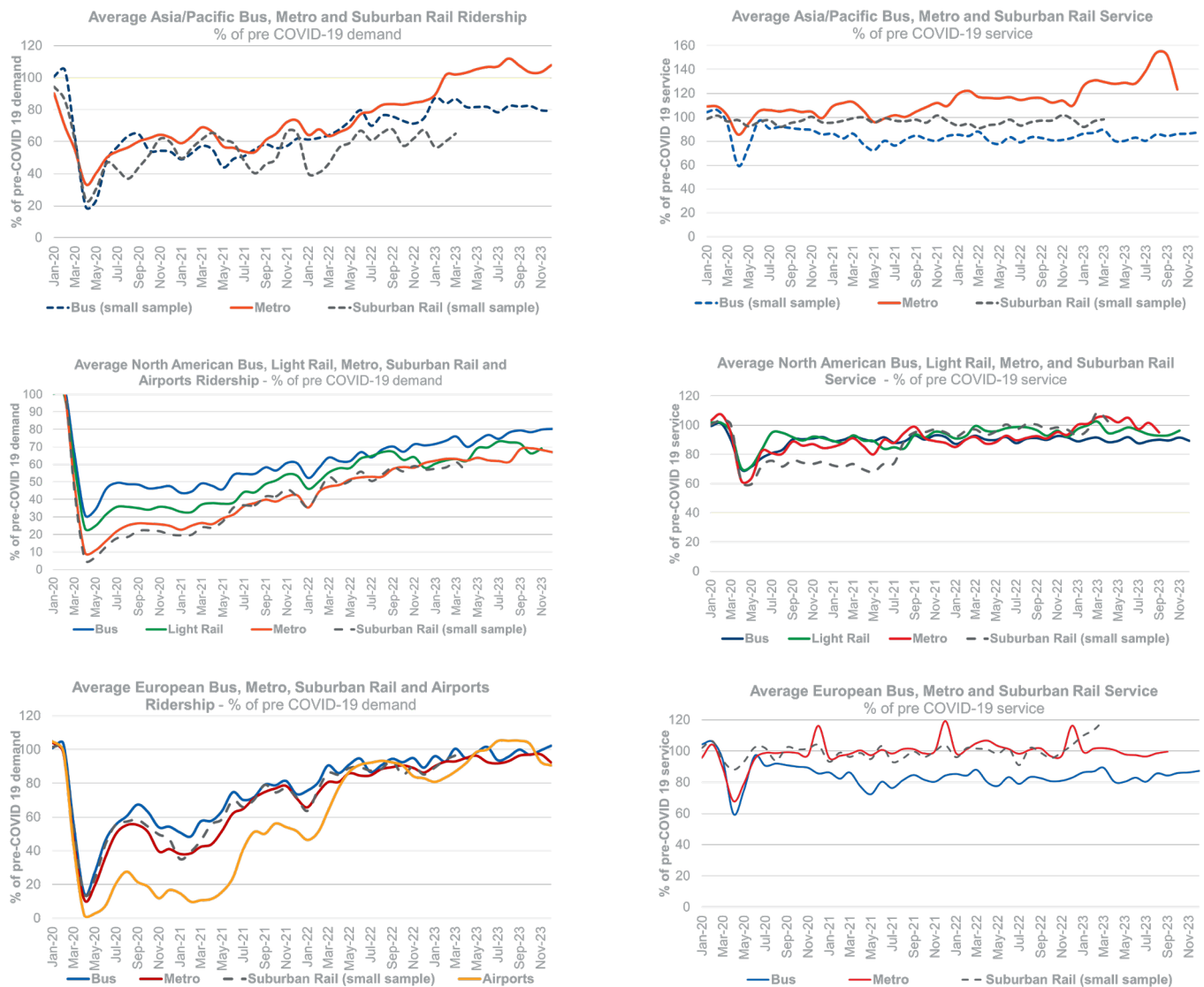
- For airports in the region, 2023 has continued with trends seen in 2022, with average demand boosted to a high of more than **90%** of pre-pandemic levels in August 2023. As a comparison, overall demand averaged around 75% in 2022 vs. approximately 85% in the months January to September 2023.
- Although greater fluctuation in demand can be seen for bus in **Europe**, both bus and metro modes have generally remained above **90%** of pre-pandemic demand throughout 2023. European bus demand surpassed pre-pandemic demand on three occasions, in March, June and December 2023, whereas metro demand was relatively stable above 90%, with a high of **nearly 100%** of pre-pandemic demand towards the middle and end of 2023.

- For airports, demand recovery surpassed bus and metro demand in July 2023, meeting and exceeding pre-pandemic demand for the region in five consecutive months from June to October 2023 (**100-105%**).

### Comparison of Recent Service Level Trends

Figure 2 also shows **average service levels by region by mode** as a proportion of pre COVID-19 service (*monthly total service levels indexed to pre COVID-19 month, either January/February 2020 or the corresponding 2019 month, depending on the mode*). In general, public transport service levels were maintained at high levels throughout the pandemic and the overall picture largely remains unchanged throughout 2023, with continued high service levels.

- In the **Asia/Pacific** region, service levels across bus and



**Figure 2:**

Average ridership/service by mode/region as % of pre COVID-19 demand/service levels

Source: TSC bus, light rail, suburban rail, metro and airports benchmarking groups / National Transit Database (Federal Transit Administration)

rail remained stable, with increases seen for metro service throughout 2023.

- Bus service levels have remained at around **80%** or above since mid-2021.
- Average suburban rail service has remained approximately 10% higher than that for bus, sitting at **90%** or above since June 2022.
- Metro service has been highest in the region, increasing to more than 120% of pre-pandemic levels throughout 2023. As noted previously, a contributing factor to high metro service in the region is network expansion at several metro systems. *Note that the suburban rail and bus demand trends are based on a small sample.*

- Public transport modes in the **North America** region have seen service levels flatten throughout much of 2022 and 2023, although there have been some increases in service levels for metro and suburban rail at the start of 2023 before stabilising and even decreasing slightly towards the middle of the year. This decrease reflects the significant recruitment and retention challenges that the industry is grappling with. Based on latest available data, service levels in the region averaged above **100%** (suburban rail), **95%** (light rail and metro), and around **90%** (bus) of pre-pandemic service.
- In **Europe**, average service levels for bus, metro and rail peaked in March 2023 with more than **100%** of pre-pandemic levels for suburban rail, light rail, and metro, and **90%** for bus. Although slight reductions can be seen in average service levels for all modes thereafter (reflecting recruitment and retention challenges, as also seen for North America), the trend remains relatively stable throughout 2023. Europe continues to show the most stability and consistency between the bus, metro and rail modes when compared to other regions, of which a possible explanation may be the often greater levels of integration between modes (and perhaps service level policies) in Europe.

## Recruitment and retention present major challenges within the context of shifting workforce dynamics

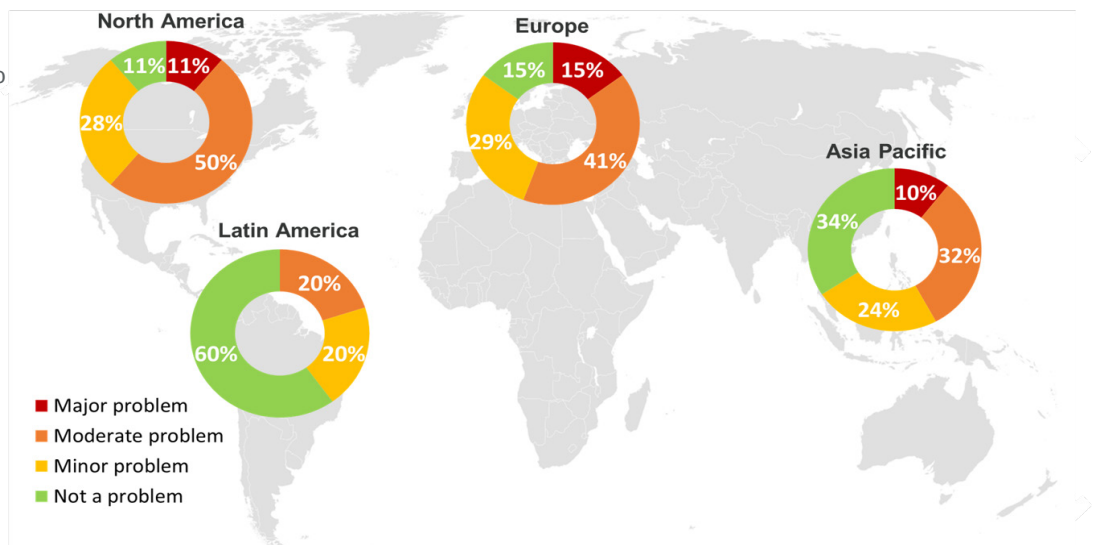
Attracting and retaining staff has been one of the most pressing strategic challenges in the public transport sector in recent years. The industry has become a less attractive place to work due to **pandemic-related impacts and new societal trends** that are changing the landscape of the workforce. Other factors, such as the rising cost of living, changing expectations of younger generations, and aging workforces make recruitment and retention more challenging than ever for the industry. The topic of staff recruitment and retention has been a major talking point across the benchmarking groups in the past year and the challenges the industry is facing will continue to be a priority in the coming years.

In general, there are **two types of workforce planning challenges**: not having enough staff and not having the right mix of staff. In the metro industry, North American and European metros face the greatest challenges in recruiting new staff when compared regionally: a study conducted in COMET, the international metro benchmarking group, identified 61% and 56% of participating metros from North America and Europe respectively experienced at least moderate problems in recruitment, with lengthy screening processes identified as one of the key barriers. Whilst metros in the Asia-Pacific region do not face such extensive recruiting issues, they generally encounter greater problems in retaining staff: the study identified that 43% of participating metros in the region experience at least moderate problems in retention, with many observing increasing turnover rates, thus reflecting fierce competition in job markets.

**Technical and maintenance roles** commonly appear to be the most difficult to recruit for and retain. A study in ISBeRG, the International Suburban Rail Benchmarking Group, found rolling stock maintenance to have the highest average vacancy and staff turnover rates, as well as the fewest

**Figure 3:**  
Regional Differences in Metro Recruitment Issues

Source: TSC / COMET



**MTR Part-Time Recruitment Day**  
 caring for life's journeys

8 January 2024 (Monday)  
 22 January 2024 (Monday) **Part-time Station Assistant**

**Walk-in Interview**  
 Time : 10:00 - 17:30  
 Venue : 5/F, MacPherson Place, 38 Nelson St, Mong Kok (Near Mongkok Station Exit E2)

• Bring along your resume to attend on-site interview  
 • Please visit our corporate website for more career opportunities

**Major Frontline Positions**

**Recruitment Hotline**  
 2993 7170

All information provided by applicants will be treated in strict confidence and used for recruitment purpose only. All personal data of unsuccessful applicants will be retained for 12 months for future recruitment purpose and will then be destroyed.

Source: Hong Kong MTR

applicants per vacancy. Similarly, COMET research identified technical and maintenance skills as being in particular demand, especially in the areas of track, signalling, rolling stock, power and elevator/escalator maintenance.

The negative aspects of working in public transport include shift patterns and unsociable or less flexible hours with little or no remote work options for operational staff, as well as a lack of wellbeing. These, in conjunction with the **evolving expectations** of young people and their careers, such as greater expectations around flexibility, work-life balance and remote work options, are deterring applicants for much-needed positions.

Moreover, whilst staff shortages have a direct impact on the quality and efficiency of operations and service delivery, the impact also extends to the remaining workforce with increases in workload and stress. Increasing awareness and concern about **staff wellbeing and satisfaction** can be addressed through wellbeing measures such as initiatives to improve physical health (e.g. gym facilities), mental health (e.g. psychological support, meditation apps), and community building. Opportunities for staff engagement include measures such as monitoring employee satisfaction, consistent opportunities for staff input and inclusion, or built-in time for communication with senior leadership.

The **competitive nature** of today's labour market is a critical factor, with the public transport industry having to compete with leading companies in the job market whilst also facing

**MTR Recruitment Bus**  
 caring for life's journeys

**Operations Engineering & Railway Operations Recruitment Day**

December 2023 & January 2024 Designated Locations

- Technician/Tradesman
- Station Officer
- Train Captain
- Customer Service Officer
- Customer Service & Revenue Protection Officer

**Staff Benefits and Other Arrangements (Applicable to Full-time Positions)**

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- Retirement Benefits
- Paternity Leave and 16-week Maternity Leave
- Medical Benefits
- Annual Leave, Marriage Leave, Well-being Leave and Family-friendly Practices
- Flexible Benefits On-line Platform
- Further Education Subsidy and Study Leave
- Staff Clubhouses, Recreation & Sports Facilities

**Application:**

- Please make reservation via WhatsApp 2993 7144 on or before 23 January 2024
- Welcome to bring along your resume to attend on-site interview
- Please visit our corporate website for more career opportunities in MTR Corporation Limited

All information provided by applicants will be treated in strict confidence and used for recruitment purpose only. All personal data of unsuccessful applicants will be retained for 12 months for future recruitment purpose and will then be destroyed.

Please Visit: [www.mtr.com.hk](http://www.mtr.com.hk) 2993 7144 2993 7170

Source: Hong Kong MTR

financial constraints and limited scope for offering as much flexibility as other employers. Attracting and retaining skilled drivers in such a competitive environment requires innovative approaches and incentives.

The aspects of public transport roles that attract talent and lead to higher levels of staff satisfaction typically revolve around the perception that the work contributes to the community and improves quality of life, supports a public good and social equity, and is a part of the climate change solution. Furthermore growth and learning opportunities (e.g. access to a wide range of roles within an organisation), the offer of skills training and job security due to the ongoing need for high-capacity urban transport are all **strong attributes for working in the public transport industry**. Organisations can use these strengths to build their profile.

Examples of improvements and initiatives that public transport organisations have adopted to improve recruitment and retention performance include:

- Focus on promoting a **strong employer reputation** and brand as a great place to work, particularly by embracing diversity and inclusion (e.g. campaigns promoting gender equality to encourage women to apply for positions traditionally underrepresented by women).
- Emphasising the **benefits of working for a public transport organisation**.
- **Working with external parties** to increase visibility and

offering multiple routes into an organisation: strategic use of social media (e.g. LinkedIn) and using employee testimonials for recruitment marketing; communities (e.g. outreach using recruitment booths, buses, job fairs); schools (e.g. internship and apprenticeship schemes, campus recruitment events), recruiters (e.g. partnerships with specialist recruitment consultants, social media head-hunters, suppliers).

- **Increasing bonuses** to attract talents (e.g. staff referral programmes and referral bonuses, joining bonuses) and achieve timely recruitment.
- **Utilising latest technologies** to support the recruitment process: online skill assessment testing scheduled by the applicants, pre-recorded videos for initial screening, hybrid interview options offered, recruitment technology and systems (e.g. applicant tracking system and candidate relationship management tool) and digitalising elements of the recruitment process to improve the ease of applying for a role.
- Intentional **over-recruitment** (e.g. in anticipation of future retirement or resignations, or in anticipation of issues related to passing probationary periods)
- More **focused initiatives** for hard to retain roles: targeted salary increases to recognise critical and/or scarce skills and hard to fill roles, and the development of career progression for specific roles to address retention issues (particularly for roles where flexible working arrangements are not possible and this need cannot be met)
- Increased **flexible working arrangements** where possible (e.g. remote working, part-time options, compressed work weeks, staggered working hours, flexible start/finish times, flexible leave)

Typically, public transport organisations do not always have workforce planning strategies in place to plan and prepare for workforce changes and, in some cases, how many (and what type of) staff are likely to be needed in the future. Given the expected changes in the future composition of the workforce due to trends such as digitalisation, automation, and increasing customer self-service, driven by advances in technology and innovation, it is particularly important to consider the required skill mix in workforce planning. Developing mid- to long-term plans for attracting and retaining talent and developing workforce planning tools can support public transport organisations in their **workforce management** and help identify future skill requirements and inform resourcing strategies.



# RIAMBiG

## Railway Infrastructure Asset Management Benchmarking Group

### TSC Spotlight: RIAMBiG

We now turn our attention to the **Railway Infrastructure and Asset Management Benchmarking Group** (RIAMBiG). Established in 2016, **RIAMBiG** provides a unique focus on benchmarking railway infrastructure asset management on an international level: the group's research explores an expansive range of asset classes, including track, signalling, traction power (electrification), switches and crossings, and civil infrastructure. Ongoing development in the group will see asset classes extended to cover telecommunications. The group is currently focused on both **suburban and regional networks (including freight)** and encompasses **10 networks across four members in Australia and New Zealand**: Queensland Rail, Public Transport Authority Perth, Sydney Trains and KiwiRail. Ambitions for future growth would see regional coverage expand globally, with the group open to all types of networks (e.g. light rail, metro, etc.).

The principles that ensure successful performance benchmarking across the family of benchmarking groups managed and facilitated by the TSC also apply to RIAMBiG. The primary aim of the group is to **share knowledge and best practices** in the management of railway infrastructure assets in a confidential environment, with benchmarking activities in the group conducted through a **structured process** of analysis, research and collaborative engagement:

- **Annual performance metrics** to look into the impact of assets on service performance and to explore drivers of performance. For example, performance indicators relating to asset/component reliability, network availability, renewal volumes and inspection frequencies are covered in this element of the benchmarking. The analysis is performed at different levels of detail, such as at asset class level (e.g. track, signalling, etc.), at asset type level (e.g. signals, train protection systems, bridges, catenary, point machines, etc.) and at asset model level (e.g. different models of axle counters, track circuits, point machines, etc.).
- **In-depth research topics** selected by the group members to provide greater depth on specific assets or to deep dive into specific practices. Case studies have been conducted on a range of topics including switches and crossings, access and possession management, obsolescence management, condition monitoring, railway resilience and optimisation of maintenance activities.

For further information on RIAMBiG, please contact **Ben Condry** (b.condry@imperial.ac.uk), Head of Rail Benchmarking at the TSC, or **Oscar Criado** (oscar.criado@imperial.ac.uk), RIAMBiG Project Manager.

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# Contact us



## The TSC at Imperial College London

The Transport Strategy Centre (TSC), previously known as The Railway and Transport Strategy Centre, was established in 1992 as a centre of excellence serving the railway industry on strategic, economic and technology issues. Today, the TSC is a globally recognised team specialising in performance benchmarking, research and policy for industry and government.

The Applied Research Team within the TSC works directly with industry to improve performance in public transport worldwide, based on a systematic process managed and facilitated by the TSC through multi-year international benchmarking projects.

Imperial College London is a global university with a world-class reputation in science, engineering, business and medicine. Well known for its excellence in teaching and research, Imperial College London is consistently rated in the top 10 universities worldwide.

## Thank you for reading this newsletter.

For any enquiries, please contact the TSC.

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# Appendix A

## List of Benchmarking Groups and Members

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### COMET

Community of Metros  
Benchmarking Group

#### American Metros

- Metropolitan Atlanta Rapid Transit Authority (Atlanta – United States)
- Emova (Buenos Aires – Argentina)
- Washington Metropolitan Area Transit Authority (Washington DC – United States)
- Honolulu Rail Transit (Honolulu - United States)
- MTA New York City Transit (New York – United States)
- Port Authority Trans-Hudson (New York - United States)
- Ottawa OC Transpo (Ottawa – Canada)
- Metrô Rio (Rio de Janeiro – Brazil)
- Metro de Santiago (Santiago – Chile)
- San Francisco Bay Area Rapid Transit (San Francisco – United States)
- Sistema de Transporte Colectivo (Mexico City - Mexico)
- Société de transport de Montréal (Montréal – Canada)
- Metro São Paulo (São Paulo – Brazil)
- Toronto Transit Commission (Toronto – Canada)
- Vancouver SkyTrain (Vancouver – Canada)

#### European Metros

- Transports Metropolitans de Barcelona (Barcelona – Spain)
- Berliner Verkehrsbetriebe (Berlin – Germany)
- Société des Transports Intercommunaux de Bruxelles (Brussels – Belgium)
- Docklands Light Railway (London – United Kingdom)
- Metro Istanbul (Istanbul – Turkey)
- Metropolitano de Lisboa (Lisbon – Portugal)
- London Underground Limited (London – United Kingdom)
- Metro de Madrid (Madrid - Spain)
- Tyne and Wear Metro (Newcastle – United Kingdom)
- Oslo Sporveien (Oslo - Norway)
- Régie Autonome des Transports Parisiens Métro (Paris – France)
- Régie Autonome des Transports Parisiens RER (Paris – France)

#### Asian Metros

- Bangalore Namma Metro (Bangalore – India)
- Bangkok Expressway and Metro Public Company (Bangkok – Thailand)
- Beijing Mass Transit Railway Operation Corp. (Beijing – China)
- Delhi Metro Rail Corporation Ltd (Delhi – India)
- Roads and Transport Authority (Dubai – United Arab Emirates)
- Guangzhou Metro Corporation (Guangzhou – China)
- MTR Corporation Limited (Hong Kong)
- MRT Jakarta (Jakarta – Indonesia)
- Nanjing Metro Operation Corp. (Nanjing – China)
- Seoul Metro (Seoul – South Korea)

- Shenzhen Metro Operation Corp. Ltd (Shenzhen – China)
- Singapore Mass Rapid Transit Corporation Ltd (Singapore)
- Shanghai Shentong Metro Group (Shanghai – China)
- Syarikat Prasarana Negara Berhad (Kuala Lumpur – Malaysia)
- Taipei Rapid Transit Corporation (Taipei – Taiwan)
- Tokyo Metro Co., Ltd. (Tokyo – Japan)
- Sydney Metro (Sydney – Australia)
- Sydney Trains (Sydney – Australia)

## ISBERG

### International Suburban Rail Benchmarking Group

- Ferrocarrils de la Generalitat de Catalunya (Barcelona – Spain)
- Queensland Rail (Brisbane – Australia)
- S-Tog, Danish State Railways (Copenhagen – Denmark)
- PRASA – Metrorail (Cape Town – South Africa)
- MTR Hong Kong (East Rail, West Rail, Tuen Ma & Tung Chung Lines – Hong Kong)
- MTA Long Island Rail Road (New York – United States)
- London Overground and London Elizabeth Line (London – United Kingdom)
- Metro Trains Melbourne (Melbourne – Australia)
- MTA Metro-North Railroad (New York – United States)
- S-Bahn Munich, Deutsche Bahn (DB) Regio (Munich – Germany)
- Commuter Rail, Vygruppen (Oslo – Norway)
- San Francisco Bay Area Rapid Transit (San Francisco – United States)
- São Paulo ViaMobilidade (São Paulo - Brazil)
- Sydney Trains (Sydney – Australia)

## IMRBG

### International Mainline Rail Benchmarking Group

- Danish State Railways (Denmark)
- Irish Rail (Ireland)
- Nederlandse Spoorwegen (Netherlands)
- Société nationale des chemins de fer belges (Belgium)
- New South Wales TrainLink (New South Wales, Australia)
- V/Line (Victoria, Australia)

## GOAL

### Benchmarking Group of North American Light Rail Systems

- Niagara Frontier Transportation Authority (Buffalo – United States)
- Maryland Transit Administration (Baltimore – United States)
- Calgary Transit (Calgary – Canada)
- Charlotte Area Transit System (Charlotte – United States)
- Dallas Area Rapid Transit (Dallas – United States)
- Edmonton Transit System (Edmonton – Canada)
- Metro Transit (Minnesota – United States)
- Hampton Roads Transit (Norfolk – United States)
- Ottawa OC Transpo (Ottawa – Canada)
- Pittsburgh Regional Transit (Pittsburgh – United States)
- Tri-County Metropolitan Transportation District (Portland – United States)
- San Diego Metropolitan Transit System (San Diego – United States)
- Santa Clara Valley Transportation Authority (San Jose – United States)
- Sound Transit (Seattle – United States)
- Toronto Transit Commission (Toronto – Canada)
- Utah Transit Authority (Salt Lake City – United States)

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# BOLTS

- Berliner Verkehrsbetriebe (Berlin – Germany)
- Société des Transports Intercommunaux de Bruxelles (Brussels – Belgium)
- MTR Corporation Limited (Hong Kong)
- Oslo Sporveien (Oslo - Norway)

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# IBG

## International Bus Benchmarking Group

- Transports Metropolitans de Barcelona (Barcelona – Spain)
- Berliner Verkehrsbetriebe (Berlin – Germany)
- Société des Transports Intercommunaux de Bruxelles (Brussels – Belgium)
- Washington Metropolitan Area Transit Authority (Washington DC – United States)
- Dublin Bus (Dublin – Ireland)
- İETT İletim ve İşletme Genel Müdürlüğü (Istanbul – Turkey)
- Rapid Bus Sdn Bhd (Kuala Lumpur – Malaysia)
- Companhia Carris de Ferro de Lisboa (Lisbon – Portugal)
- London Buses (London – United Kingdom)
- Societe de Transport de Montréal (Montréal – Canada)
- MTA – New York City Transit & MTA Bus (New York – United States)
- Ottawa OC Transpo (Ottawa – Canada)
- Régie Autonome des Transports Parisiens (Paris – France)
- King County Metro Transit (Seattle – United States)
- SMRT Buses (Singapore)
- Coast Mountain Bus Company (Vancouver – Canada)

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# ABG

## American Bus Benchmarking Group

- Metro Regional Transit Authority (Akron – United States)
- Capital Metropolitan Transportation Authority (Austin – United States)
- Maryland Transit Administration (Baltimore – United States)
- Niagara Frontier Transportation Authority (Buffalo – United States)
- Charlotte Area Transit Systems (Charlotte – United States)
- Dallas Area Rapid Transit (Dallas – United States)
- Des Moines Area Regional Transit Authority (Des Moines – United States)
- Greater Dayton Regional Transit Authority (Dayton – United States)
- Lane Transit District (Eugene – United States)
- Mass Transportation Authority (Flint – United States)
- Foothill Transit (West Covina – United States)
- Hampton Roads Transit (Hampton Roads – United States)
- Jacksonville Transportation Authority (Jacksonville – United States)
- Milwaukee County Transit System (Milwaukee – United States)
- Orange County Transportation Authority (Orange – United States)
- Pittsburgh Regional Transit (Pittsburgh – United States)
- Regional Transit Service (Rochester – United States)
- Rhode Island Public Transit Authority (Rhode Island – United States)
- Greater Richmond Transit Company (Richmond – United States)
- Omnitrans (San Bernardino – United States)
- San Joaquin Regional Transit District (Stockton – United States)
- Pinellas Suncoast Transit Authority (St. Petersburg – United States)

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- Spokane Transit Authority (Spokane – United States)
  - Utah Transit Authority (Salt Lake City – United States)
  - Clark County Public Transportation Benefit Area (Vancouver – United States)



**RIAMBIG**

**Railway Infrastructure Asset Management  
Benchmarking Group**

- Queensland Rail (Brisbane – Australia)
- KiwiRail (New Zealand)
- Public Transport Authority Perth (Perth – Australia)
- Sydney Trains (Sydney – Australia)

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**ABG**

**Airport  
Benchmarking  
Group**

- Amsterdam Airport Schiphol (Amsterdam – the Netherlands)
  - Hong Kong International Airport (Hong Kong)
  - Heathrow Airport (Heathrow – United Kingdom)
  - Los Angeles International Airport (Los Angeles – United States)
  - Munich Airport (Munich – Germany)
  - Charles de Gaulle Airport (Paris – France)
  - Sydney Airport (Sydney – Australia)
  - Toronto Pearson International Airport (Toronto – Canada)
  - Indira Gandhi International Airport (Delhi – India)
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