International Transport Forum

Fare's Fair

Experiences and Impacts of Fare Policies

Mobility Innovation Hub

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The International Transport Forum

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About the ITF Mobility Innovation Hub

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Abbreviations and Acronyms

BRT	bus rapid transit
ITF	International Transport Forum
LRT	light rail transit
MRT	mass rapid transit
OECD	Organisation for Economic Co-operation and Development
TOD	transit-oriented development

Glossary

Concession fare: Reduced fare offered to specific groups, typically based on factors such as age, disability or income level.

Cost recovery: The ability to recuperate (deduct) the costs of investments, ensuring that revenue covers all expenses, thereby making the activity financially sustainable.

Equality: In the context of public transit, equality means that all demographic groups, regardless of factors such as income, ethnicity, age, or physical ability, should have access to the same level of service.

Equity: The fairness and appropriateness of the allocation of resources, along with their benefits and impacts. In transport, equity can be classified into horizontal and vertical equity:

- Vertical equity: The distribution of costs and benefits between unequal units based on one or more attributes, such as income, ability or demographic characteristics
- Horizontal equity: The distribution of costs and benefits between equal units (individuals and groups)

Fare: The price paid by passengers for using public transport services. The fare can be based on different systems, such as flat-rate vs. differentiated, and pay-as-you-go vs. subscription.

Fare elasticity: The user's sensitivity to price changes in fares.

Free-fare policy: In its complete form, a free-fare policy is one where passengers are not required to pay any fare for using public transport.

Functional urban areas: Relying on the concept of functional urban areas (FUAs), OECD defines a metropolitan area as comprising both a city and its surrounding areas, which are socio-economically integrated into the city and represent the extent of the city's labour market ('commuting zone').

Mode split/mode share: The percentage of total passenger-kilometres or trips accounted for by a single mode of transport.

Open-payment system: A payment method where public transport passengers use existing contactless options like credit/debit cards, mobile wallets (e.g. Apple Pay or Google Pay) to directly pay fares – in contrast to closed-payment systems, which can only be accessed with specific smartcards or tickets.

Pay-as-you-go: A payment system where public transport users pay individually for each trip – as opposed to a subscription model, where users pay for a set period.

Peri-urban areas: Less-densely-populated but inhabited peripheral areas that are still within the city's boundaries. Peri-urban areas are also more likely to be single-use areas, typically agricultural or industrial, or residential areas that are close to the greenbelt.

Public transport: Public transport services served by bus, metro, tram, and rail.

Ride-hailing: Ride-hailing involves the provision of a taxi-like service via the use of global positioning system (GPS) enabled software that links drivers and passengers directly, without the need for a dispatch centre.

Teleworking: Carrying out work at a location that is remote from the employer's office while staying connected to the office via network technologies.

Transfer window: The time-period during which a single-trip fare payment is valid

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Executive summary

What we did

Current ITF work on sustainable funding for public transport emphasises the importance of optimising user contributions as part of a combination of funding strategies. This report builds on that work by exploring how fare policies can reduce the cost barrier of public transport to improve access to opportunities and increase public transport use, within the context of growing demands on public budgets. It explores how fare structures can influence usage, and identifies principles for fare-setting that can align with the wider goals for public transport. It then presents case studies that illustrate these principles, discussing the distributive effects of different fare policies. Finally, it identifies what can and cannot be achieved through fare policies alone, to help decision makers develop and implement more effective and equitable fare policies, as part of wider policy packages.

What we found

Multiple factors inform fare-related decisions. Where authorities lack explicit fare-setting principles, it can be difficult to establish the processes necessary to implement fare policies. It can also result in ad hoc changes in response to political pressures or shocks like Covid-19. Comprehensive fare-setting principles can include prioritising transparency, inclusivity, flexibility and integration, better targeting user needs through concession fares, and targeting travel behaviour to achieve climate action goals. Establishing these principles should include public and stakeholder consultation.

Fare policies can be part of improving access to public transport, but they cannot address an absence of public transport services or the physical barriers to accessing the public transport system. Addressing these challenges requires a combination of complementary policies. These can include improving service availability and reliability, increasing spatial coverage and supporting land use policies. Fares cannot be the sole source of funding for public transport systems, and insufficient revenue from fares can lead to underfunding, compromising service quality. Therefore, consistent funding mechanisms for public transport, which can be supported by legislative frameworks at the national and local levels of government, are necessary in addition to fare revenues.

Fare pricing does not play a large role in attracting users to public transport, but different fare structures can influence the usage of public transport. Subscription passes provide discounts for frequent (usually unlimited) use. This may incentivise over-consumption, especially for short trips that can be made using active modes. They also require a higher upfront payment, which can exclude resource-constrained individuals who stand to most benefit from frequent-use discounts. Fare-capping policies can create more efficient usage incentives because until the capping threshold is reached, they eliminate the perception of zero marginal cost for additional trips while also eliminating the high upfront cost of subscription passes. In the long term, fare capping policies can contribute to increased ridership, as the benefits of frequent use become apparent.

What we recommend

Support fare decision-making with regular evaluation

Fare policies should be regularly evaluated to make sure they achieve their objectives. Fare policies can be independently assessed and can include mechanisms to defer fare adjustments under extenuating circumstances to make them more responsive (as demonstrated in Singapore). The results of fare reviews should be communicated to the public. It is also important to consider and address where other policies may limit the effectiveness of fare policies in these evaluations (e.g. free parking, poor transfer facilities) and to work with other decision makers to address such limitations.

Jointly optimise fare pricing and road user charging

When the negative externalities of private motorised modes are not sufficiently accounted for, it also affects public transport fare prices. Setting fares low to attract users from their cars without adequate road use charging and parking pricing can be ineffective because it affects the ability to provide quality services. Considering these factors in tandem when setting fares can lead to better pricing models, more efficient use of transport resources and more sustainable mode choices.

Reduce the cost barrier for those most in need and simplify access to concession fares

Revenue generation must be balanced maintaining affordability and access to public transport. Subscription passes and single-dimension concession fares have been the main tools used to address affordability. Targeting concession fares can be a better strategy to pair with optimised fare levels. Income-targeted subsidies (as found in Bogotá, Colombia) can be more progressive and more cost-effective for public transport networks if the barriers to access subsidies are also reduced.

Importantly, accessing subsidies should not present an additional barrier for those in need. Reducing the burden of means-testing for users who need concession fares makes them more accessible, and reduces the administrative burden for authorities, as evidenced in Los Angeles County, USA. Ticketing technologies can make targeted concession fares more accessible but may require additional strategies to bridge digital divides.

Boost flexibility for existing services

The effectiveness of fare policies can be limited by the availability and quality of the public transport network, as well as by service area boundaries. Fare policies can reduce gaps due to limited service if they offer flexibility and are integrated across services and modes (as well as first- and last-mile services). Strategies can include transfer windows that enable multimodality (like Jak Lingko in Jakarta, Indonesia) or easing transfers across administrative boundaries without requiring multiple payment methods. Authorities in charge of fares can explore reciprocal payment agreements where different operators have overlapping service areas. To be effective, transfer policies should be combined with well-coordinated services, better wayfinding, and the removal of physical barriers.

Promote multimodality to increase public transport use

Integrated payments can help to reduce barriers to mode shift, particularly where there are sufficient service and multimodal options. Shared modes providing first- and last-mile connectivity can extend public transport network coverage. In this context, subscription passes can influence attitudes and disrupt habitual travel choices. Passes can be designed to promote new travel habits, like multimodal travel, and attract users to new mobility options. Importantly, they can be a lever to keep public transport at the core

of a multimodal transport system by allowing for seamless transfers between modes, and easier fare payment (like the bikeshare-inclusive Climate Card pilot in Seoul, Korea). As subscription passes may increase user demand, consideration of the system's capacity to accommodate ridership growth is important (as it happened in Austria with the KlimaTickets).

Consider data needs, transparency and inclusion principles when choosing ticketing technologies

Ticketing technology should prioritise lowering the barriers to access. Technology for its own sake can perpetuate inequalities, introduce security and privacy issues, and create unnecessary complexity for users. Ticketing technology can achieve policy targets, like delivering targeted concession fares and distributing revenue to operators. Ticketing technology and fare collection norms can also provide authorities with the data necessary to evaluate service delivery and fare policies (as demonstrated in Stockholm, Sweden). Authorities should pay particular attention to the management of sensitive datasets, in keeping with the appropriate legal frameworks.

If authorities obtain data from fare technologies to inform service delivery decisions, they should be aware of who their data sources may exclude. For example, if a large share of users has no access to smartcards or mobile payment apps, the data obtained from these fare collection methods may not be representative of the users of the system. Where ticketing technologies and fare validation practices are chosen to improve ease of access and thus reduce the available trip data, authorities will need other data to make up for gaps, ideally combining qualitative and quantitative methods.

Fairer and more efficient fare systems

Many different fare products for public transport exist around the world, each with differing objectives and governance structures. In the years since the COVID-19 pandemic, changing commuting patterns in some countries, combined with the increased importance of climate action on the political agenda, have resulted in a renewed focus on ticketing products that are attractive to new and existing users, with operators and authorities trying to enhance their customer offerings through innovation (ITF, 2023b).

At the same time, for many public transport systems, fares are a primary source of funding for operations. In European metropolitan areas for example, they cover 42% of operating costs on average, while the rate is lower in North America, and typically higher in East Asia (EMTA, 2024; Federal Transit Administration, 2021). However, over time, revenue from fares has been in decline due to a combination of factors such as increasing private car use and the inability of public transport networks to keep pace with development patterns that often prioritise individual modes. (ITF, 2024b)

Current ITF work on sustainable funding for public transport emphasises the importance of well-designed fare policies and fare-setting processes as part of a combination of funding strategies. This report builds on that work by exploring key considerations for developing fare policies that improve access to opportunities and increase public transport use, while optimising user contributions. These objectives are not interchangeable, but it is possible to develop fare policies that both address affordability and increase revenue.

Although access to opportunity using public transport is influenced primarily by network design, fare policies can also play a role in improving access – mainly by reducing cost barriers (Da Silva et al., 2022). Similarly, attracting more people to public transport relies on network coverage and service levels, as well as user perceptions, needs and preferences, which may influence the ability to change modes (de Haas et al., 2023). In addition to improving the availability and quality of public transport, fares can be seen as a complementary instrument to address some barriers to mode shift, and to make choosing public transport easier.

The geographic scope of this study is primarily urban public transport fare policies – that is, fare policies within municipal or metropolitan boundaries when fares are under the jurisdiction of a metropolitan transport authority. In instances where national or regional governments' fare policies apply at the local level, the scope may go beyond municipal and metropolitan boundaries. Where this is the case, it will be indicated in the text.

The primary focus of this report is understanding how fare policies can reduce barriers to accessing public transport, specifically the cost barrier, and identifying the role of technology in facilitating such fare policies. The study also examines fare products aimed at achieving supplementary objectives beyond reducing the cost barrier, such as climate action. The expected outcomes are the key considerations for developing more equitable and effective fare policies. Box 1 describes how the study was conducted in further detail.

Box 1. Scope and Methodology

Many public transport authorities are facing significant funding challenges, even as the role of public transport in meeting decarbonisation and accessibility goals grows. To meet the funding task, current ITF work recommends that all potential revenue streams for public transport should be optimised, including user fares (ITF, 2024b). Building on the role of fare revenues as part of a combination of funding sources for public transport, this report explores how fare policies can also contribute to other wider objectives of public transport.

Importantly, maximising revenue is not the sole purpose of fare policies. As such, this report focuses on how decision makers can balance funding needs with affordability for users, to improve accessibility. Building on the work completed for the ITF Working Groups on Sustainable Accessibility for All (ITF, 2024a) and on Funding Public Transport (ITF, 2024b), this report explores how fare structures can influence usage and principles to consider when setting fares. It also explores the distributive effects of fare policies, exploring who benefits from different fare policies.

Given that a major role of public transport is providing access to opportunities, this report considers a fair fare policy to be one that maximises access to public transport systems for as many people as possible (Lewis et al., 2021). This is in part determined by cost, and in part by the complexity and inclusiveness of fare technologies (e.g. trends towards complete digitalisation and cashless fares). These barriers can perpetuate socio-spatial exclusion (Da Silva et al., 2022). However, if public transport operations rely on fare revenue, then setting fares too low can result in poor service quality and worsen overall accessibility. Similarly, while technology can allow for more targeted subsidies and complex fare policies, it can reduce the legitimately available options for accessing public transport for some users. This report explores how to minimise the potential conflicts that may arise in trying to develop fair fare policy.

To develop this report, a literature review was conducted, covering aspects such as affordability and access, determinants of mode choice, fare elasticity, and the role of technology in fare implementation.

Subsequently, an analysis examined fare policies focused on improving affordability, aiming to identify common practices, explore alternatives, and highlight interesting cases for further investigation. Building on the findings from the literature review and analysis, hour-long semi-structured interviews were conducted with researchers to understand the impact of fare policies on affordability and attracting users to public transport, as well as the role of technology in promoting fairer policies. Tailored questions leveraged each researcher's expertise to inform report recommendations.

Further, policy makers responsible for setting fare policies in selected cases were also interviewed to gain insight as to current fare strategies and priorities, their effectiveness, and the use of technology. In total, six cases comprising seven cities were selected and further studied. The selection was based on several criteria, exploring three dimensions of fare policies: affordability, attractivity and technology incorporation. The selection parameters included cases where authorities actively pursued best practices to increase affordability and/or attractiveness, publicly available data showing fare evaluations over time to understand policy impacts, and innovative uses of technology to enhance fare policies.

Fare structures and fare policy principles

F are policies need to take into consideration access and mobility needs, changing travel patterns, and the available fare technology. These considerations must be balanced with a public transport system's need to ensure funding, maintain ridership, and attract people from private vehicles to reduce emissions and congestion.

Individuals' access and mobility needs, and their ability to shift modes, are influenced by many intersecting factors (Chen & Zhou, 2022). These include their personal characteristics (e.g. physical capabilities, socio-demographic, economic and cultural context), as well as their territorial setting and the modes and opportunities actually available to them (ITF, 2024a). To attract users to public transport, policy makers must then consider the societal and structural barriers to selecting public transport (Da Silva et al., 2022; Liu et al., 2019).

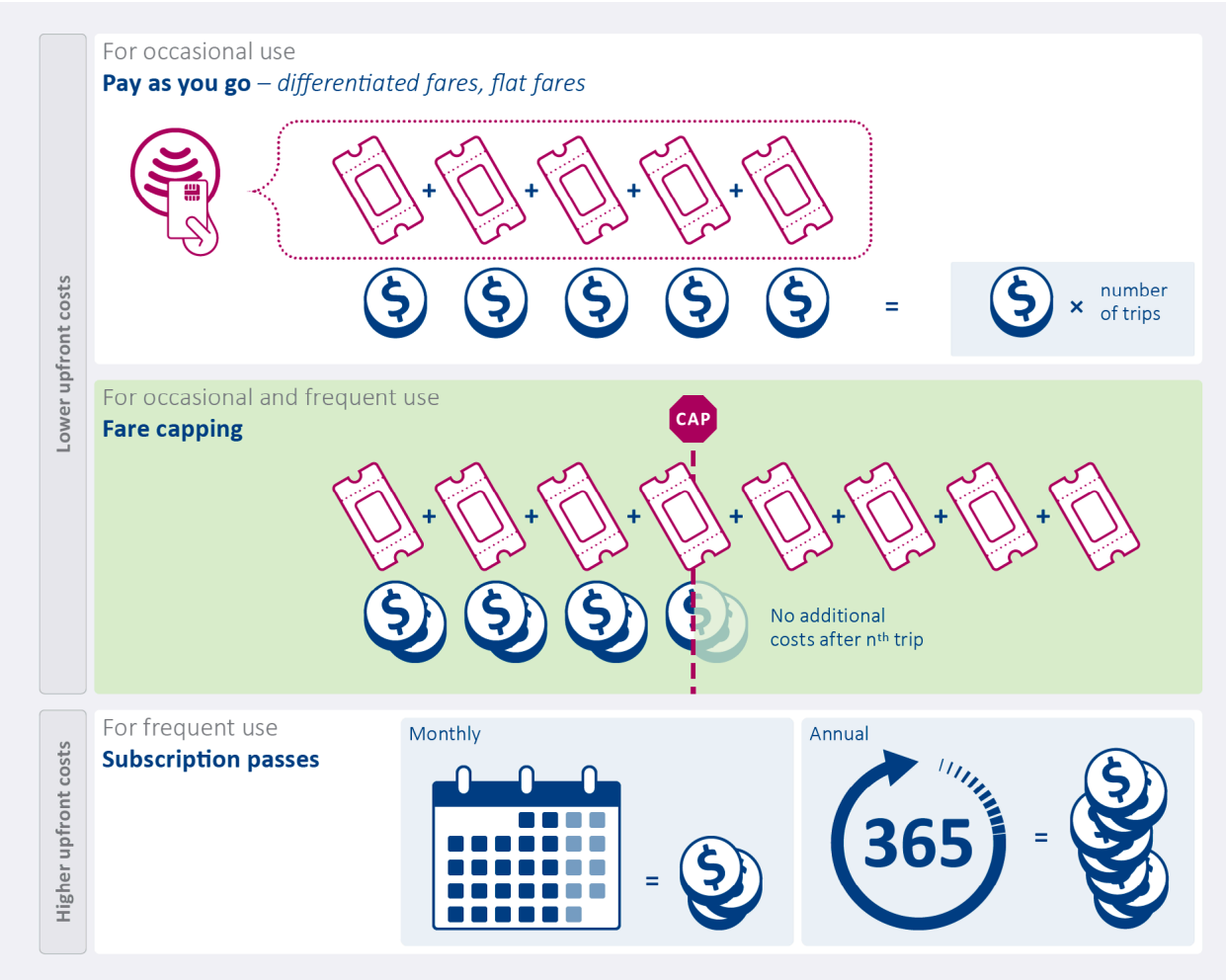
Many barriers to selecting public transport go beyond what can be achieved by fare policies, however, decision makers can explore fare strategies that appeal to the travel needs of individuals and encourage sustainable mode choices. Specifically, fare structures that are simple to understand can ease access to public transport for more people (Popović et al., 2018). Leveraging ticketing technology allows authorities to explore more targeted policies, without increasing complexity for the user (Golub et al., 2022). As such authorities can improve fare policies by exploring principles such as transparency, flexibility and integration, and better targeted concession fares.

Beyond these considerations, fare policy objectives should be compatible with wider goals for public transport, as well as overall mobility (Börjesson et al., 2017). This means that decision makers should identify where fare policies may affect operations (e.g. reduce available revenue for operations), as well as where other policies may contradict fare objectives.

Fare structures and usage incentives

Fares are typically structured to provide separate options for frequent versus occasional users, which can in turn influence usage (see Figure 1). Subscription passes are common among frequent users, allowing for unlimited travel for the duration of the subscription. Fares for frequent users can be significantly lower than those for occasional use, depending on the individual's volume of travel. For occasional users, fares are pay-as-you-go. In general, fares are often set below optimal levels for revenue recovery. This is due to a combination of factors: the need to maintain affordability, ad hoc fare-setting processes, and the pressure for fares to compete with the (often low) user costs for road use and vehicle parking (ITF, 2024b).

Figure 1. Different types of fare structures



Fare structures supporting frequent use

For frequent users, subscription passes are common – they offer discounts for a higher quantity of use (usually unlimited use), if purchased in advance. For authorities, having both subscriptions and pay-as-you-go fares can also allow for higher (and more predictable) potential revenues compared to uniform pricing (e.g. pay-as-you-go fares only). (Hörcher & Graham, 2020) For users, subscription passes can lower the per-trip cost significantly depending on how much they travel and allow flexibility in their travel.

If the subscription passes are affordable, the flexibility they provide may help to reduce socio-spatial exclusion (Plyushteva, 2023). After the upfront payment for the subscription, users can perceive that they incur a zero marginal cost for each trip they take, which can incentivise greater usage. Similarly, if upfront consts are high, usage can increase in order to get better value for money. However, the provision of unlimited-use subscriptions can unlock latent demand, resulting in higher consumption and overcrowding, which can subsequently impact the perception of public transport (ITF, 2024b).

Although subscription passes are typically easy to understand, having too wide a range of subscription options can make it difficult for users to understand which offer represents the best value for their travel needs. Subscription passes also require upfront payment for the subscription, which can be challenging

for lower-income individuals as it ties up their funds well in advance of their actual travel (Plyushteva, 2023). This may then lead them to spend more on pay-as-you-go options, which do not have the same kind of flexibility as subscriptions passes.

Subscription passes are typically a separate fare product, often in the form of stored-value smartcards that users validate when boarding (and when alighting in some cases). Smartcards are a common fare technology that allows users to load their subscriptions onto a reusable card which they buy ahead of time. Smartcards can also be associated with user accounts, easing the process of reloading smartcards, or associating smartcards and facilitating fare discounts based on demographics (e.g. student passes) (Harmony, 2018).

Fares structures supporting occasional use

There are two main fare structures for occasional use of transport: *flat* fares (same fare for a single trip throughout the service area) and *differentiated* fares (based on distance travelled, mode used, or time of day). Flat fares are easy to understand for both regular and occasional users. Flat fare structures most benefit travellers with longer trip durations, whose service consumption is subsidised by people making shorter trips on the system. Flat fares can be considered fair in that all users have the same cost to access public transport, primarily demonstrating the principle of *equality* (Rubensson et al., 2020a). Conversely, differentiated fares, which can be harder to understand, demonstrate the principle of *equity* and can also be considered fair because they take into consideration the distributional effects of service consumption (Brown, 2018; Hörcher & Tirachini, 2021; Liu et al., 2019).

Differentiated fares can also be used to address capacity issues (Hörcher & Graham, 2020). Capacity issues are more likely to arise during peak periods, which can be addressed with fare differentiation targeting lower prices during the off-peak (de Haas et al., 2023). Similarly, addressing capacity issues can be more costly for some modes compared to others: increasing the frequency of a metro service, for example, typically requires more capital investment than increasing bus frequencies. Some systems have adopted mode-differentiated fares, and fares differentiated by time of day (peak, off-peak) to smooth demand peaks (Börjesson et al., 2017; Hörcher & Tirachini, 2021).

When considering personal characteristics, developing more equitable/fairer fare policies becomes more complex. For example, some users are constrained in terms of the time of day when they can travel, or by which modes are available to them (Rubensson et al., 2020a). These factors can influence the fairness of differentiated fare systems.

Various features of fare policies interact with flat and differentiated fare structures to make them fairer. For example, transfer windows (the time period for which a single-trip fare payment is valid) for fares, particularly those that allow return trips, can provide better value for people trip-chaining or making shorter trips. For a transfer policy to be effective for these trips, service levels need to be adequate (Silver et al., 2023). Such a fare structure in the context of adequate service levels can better accommodate travel for people with coupling constraints which can limit their flexibility in terms of travel (Ryan et al., 2023). *Coupling constraints* refer to the need to be in a particular place within a specific time window and can be associated with work trips and care-related activities, which are typically gendered (see Box 2).

Pay-as-you-go fares are flexible in terms of possible ticketing technologies – they can be implemented using smartcards, cash, and open-payment systems with bank cards or mobile wallets. For public authorities, considerations for selecting fare payment options can vary, from providing flexibility to users (through a variety of options), to limiting options in order to reduce costs or improve safety (Golub et al., 2022).

Box 2: Gendered mobility

Unequivocally, scientific research has demonstrated gender-based inequalities in travel patterns and transport mode choices (Hananel & Berechman, 2016; Hanson, 2010). Globally, more men commute by personal vehicles, with two-wheelers being common at lower income levels and four-wheelers at higher income levels. In contrast, higher-income women tend to choose modes such as cabs, prioritising comfort and safety over cost considerations, while lower-income women rely more on public transport and lack modal options. This often leads to longer and more inconvenient commutes, particularly when users are faced with insufficient service, reliability concerns, and transfers (Ryan et al., 2023; Silver et al., 2023).

These differences in mode choice can be attributed to cultural norms and socioeconomics, as well as variations in trip purposes. Typically, women tend to make shorter but more frequent multi-purpose trips compared to men, often due to performing a higher share of caregiving responsibilities (e.g. for children, older adults) and domestic tasks (e.g. grocery shopping).

Gender also intersects with multiple other identity aspects such as class, ethnicity, ability, and age, adding further complexity to travel patterns and potential vulnerabilities with regard to public transport access (Kakar et al., 2021; Ryan et al., 2023; Silver et al., 2023).

Because all of these factors can influence the outcomes of fare policies (as different policies will not have the same effect for different people based on their individual constraints) they should be considered when trying to implement fairer fare policies.

Balancing the needs of frequent and occasional users

Pay-as-you-go fares present an opportunity to recover greater fare revenues because they can be priced to better capture marginal costs. This is particularly the case when the fare structure is differentiated (e.g. by distance, mode, or time of day), which presents greater potential efficiency gains where fares can incentivise certain types of travel (e.g. smoothing demand peaks). However, fare-setting policies that rely too heavily on differentiated fares present issues related to equity (e.g. not everyone can take advantage of shifting travel times). They can also deter usage, and conflict with climate action priorities – particularly when alternative private modes are inadequately priced (i.e. too low) and widely available.

Fare capping policies can be a way to balance the potential efficiency gain of pay-as-you go fare options with the need to ensure equitable access as is provided by subscription passes. Fare caps are similar to subscription passes in that they eliminate the perceived marginal cost (to the user) of an additional trip beyond a certain pre-established price threshold (Hightower et al., 2022). Until the fare cap is reached, they function like pay-as-you-go fares, which can be priced more in line with economic efficiency principles (i.e. to better capture costs and benefits).

Even in a context with differentiated fares, users can budget their fare expenses more easily, based on the fare cap. This can mean that resource-constrained travellers have the same flexibility as they would with a subscription pass, but with lower upfront costs, further reducing socio-spatial exclusion (Plyushteva, 2023). For public transport authorities, fare caps also provide added flexibility because they can set fare caps for different durations (e.g. daily, weekly, monthly) without having to create specific fare products to match these durations (Ziedan et al., 2024). They can also set fare caps to the equivalent of an average number of trips, based on their ridership patterns.

For people with irregular travel patterns, having a variety of fare cap options may be appealing because they can be more cost-effective for users than longer-term subscriptions. However, taking advantage of this benefit requires the individual to calculate which options provide them with the best value (Plyushteva, 2023). These factors can be barriers for some users, especially once other elements of the fare structure that may make calculations more complex are included (e.g. transfer windows, norms around fare validation). Nonetheless, fare capping systems are typically designed to guarantee the best fare for the trips taken (Hightower et al., 2022). For example, although not strictly a fare cap, Oslo provides discounts for single-trip tickets in proportion to how frequently they are purchased. The system no longer provides subscription passes, but the discounted fares can be an incentive for more public transport use.

Nancy, a city in France, provides an example of an innovative approach to balancing the needs of occasional and frequent users through the city's fare structure. It includes a low fee to access the network (higher for regular users), plus a pay-as-you-go fare for each trip (lower for regular users, and lower still for off-peak travel) with a fare cap at the level of the monthly subscription price (STAN, n.d.). This approach also lowers the upfront costs of a subscription pass for users, without incentivising higher consumption. The cap also retains the benefits of a subscription regarding reducing socio-spatial exclusion. In the United States, monthly fare caps (as applied in Nancy) have been found to increase ridership (compared to daily caps especially), potentially because the longer duration allows more trips (Ziedan et al., 2024).

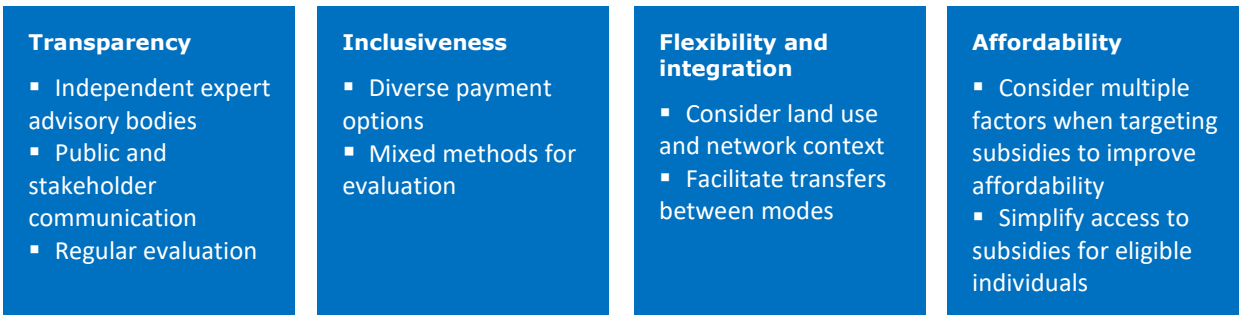
Principles for fare-setting

Beyond improving affordability, the low pricing of public transport fares is a "second best" strategy, due to the difficulty of adopting road use pricing (and in some contexts parking pricing) to minimise the negative externalities of automobility (ITF, 2024b). However, this pricing strategy has little demonstrated effect on mode shift, and is costly for public transport operations. Fare-setting policies should then be considered within the wider context of pricing measures related to the transport system. For effective fare-setting, the ITF recommends jointly optimising fare policies and road user charges.

This approach is an opportunity for public transport authorities to explore targeted fare policies designed to increase affordability, which can be facilitated by ticketing technology such as open-payment systems and account-based ticketing. However, the added complexity of these targeted fare policies and the use of technology can also present new challenges related to equity, as well as added costs related to fare technology and administration for operators and authorities (Golub et al., 2022). This makes it necessary for policy makers to make sure that their fare policies are guided by clear user-focused principles.

This section outlines four key principles that authorities can consider in developing their fare policies and selecting appropriate ticketing technology and fare collection methods: transparency, inclusiveness, flexibility and integration, and affordability (see Figure 2).

Figure 2. Fare-setting principles



Transparency

Fare-setting requires public transport authorities to balance funding needs against affordability and can be prone to political pressures. One common approach is opting for regular inflation-based fare increases, which can be predictable and easy to understand. In the absence of explicit fare-setting principles, fare changes often appear reactive, driven by political pressure, or ad hoc. To make sure that decision-making is consistent in the long term, some authorities (e.g. in Singapore, New York City, and New South Wales in Australia) use independent advisory bodies to provide expert advice on fare-setting processes (ITF, 2024b).

Given the ongoing funding needs of public transport systems and potential for resistance to fare changes, any principles guiding fare-setting (e.g. to meet cost-recovery targets), should be clearly communicated to the public. In Singapore, the Public Transport Council (PTC) reviews their fare adjustment formula every five years but retains the ability to defer fare adjustments during that time period either in part or in full to shield users from steep increases during extenuating circumstances, such as COVID-19. This feature of the fare-setting process is necessary to make sure fare policies can be responsive to shocks. The fare review process also includes both public and stakeholder engagements. The PTC fare-setting principles, and the process and outcomes of the fare review mechanism are publicly available.

The PTC fare adjustment formula includes weighted sums of the consumer price index and wage costs and energy costs; less the productivity gain achieved by operators, plus an adjustment factor based on improvements in network capacity. To encourage operators to continually improve productivity, the productivity gain is fixed until the fare adjustment formula is reviewed. The network capacity factor is intended to account for actual and planned differences in capacity and demand (Public Transport Council, 2023). This approach is similar to the pricing model proposed by Australia's Productivity commission which to some extent includes the social marginal costs in the pricing model (ITF, 2024b).

The process of ensuring equity in fare-setting also requires transparency. In the United States, the Federal Transit Administration requires "fare equity analyses" for transit agencies in urban areas with populations larger than 200 000 and public transport networks operating more than 50 routes during peak periods. This requirement is part of Title VI of the Civil Rights Act and is intended to make sure that such changes do not have a "disparate impact" on or result in "disparate treatment" of minority populations, nor should they place a "disproportionate burden" on low-income populations. The requirement is also tied to federal funding eligibility (Federal Transit Administration, 2012).

The equity analyses require a public engagement process to determine the appropriate definitions for "disparate impact and treatment" as well as "disproportionate burden". Transit agencies can then make the results of these analyses publicly available (Federal Transit Administration, 2012). This approach aims to correct past discriminatory practices over time by examining and addressing the effect of new policies on historically marginalised populations.

Such examples of transparency in fare-setting policies are helpful in informing the public about processes, and are an opportunity to encourage two-way communication, helping to make the adoption of fare changes more acceptable. Importantly, if users perceive the quality of service does not match the fares they are expected to pay, it can affect ridership, and thus revenue (ITDP, 2017; Litman, 2024).

Beyond transparency in fare-setting policies, fare structures and collection methods (i.e. ticketing technology) should also be guided by the principles of transparency (Olivková, 2017). For example, fare caps place the onus on users to verify that charges reflect their actual travel, and to dispute any errors. If the fare validation system requires placing holds on users' bank cards or smartcards for the upper limit of the fare then reimbursing the difference between the fare cap and actual travel, users may face the added burden of verifying charges. Particularly when it comes to smart ticketing technology and open-payment systems, consideration should be made for the transparency of the fare collection methods, and to how accessible a dispute process may be (ITDP, 2017).

Inclusiveness

Ticketing technology and fare collection methods can present a barrier in terms of inclusiveness (e.g. completely cashless systems, costly fare cards, fare cards requiring minimum loads, discounts limited to smartcards). Technology for its own sake can perpetuate inequalities and create complexity for users. For example, the barrier created by cashless systems typically impacts very low-income individuals or unbanked individuals (Golub et al., 2022). Account-based ticketing and fare validation requirements (checking-in and checking-out) also limit the possibility of sharing fare cards, which may affect some users (particularly occasional users) (Olivková, 2017).

For public transport authorities, fare systems can provide a wealth of data that can inform and improve service delivery. For example, the validation of fare cards is a necessary source of boarding data that can be used for adjusting service levels and providing passenger amenities. When checking-out is also required, it provides authorities with origin/destination data of high accuracy, which is useful for improving service and capacity – albeit with a time penalty for users (Arnone et al., 2016). In using this kind of data to inform service design, however, authorities must also consider how fare collection methods might exclude some users – often those who are historically marginalised.

For example, the Washington Metropolitan Area Transit Authority (WMATA) has in the past utilised data from smartcards to improve reliability and customer satisfaction. WMATA used to provide public transport users with reimbursements for delays incurred during rush hour through their "Rush Hour Promise" initiative, which gave registered SmarTrip card users credits for delays longer than 10 minutes. In one study, researchers used this data both to identify delay patterns and to understand delay propagation through the network (Krishnakumari et al., 2020).

In addition to better understanding how delays extend throughout the network, it can be beneficial to combine data from fare validations with operations data to explore the distributional impacts of delays on the population more generally, beyond just the trips more likely represented by rush hour travellers using smartcards.

However, if a large share of users has no access to smartcards or mobile payment apps, the data obtained from these fare collection methods may not be representative of the users of the system and may require additional data collection to address gaps in understanding users of the system.

Flexibility and integration

Some fare structures enable greater flexibility for users (e.g. subscription passes and, to a lesser extent, fare capping and timed transfers with returns on flat fares). The structures that provide the most flexibility are those that offer significant discounts based on frequency of use (i.e. unlimited travel). However, the effectiveness of such fare policies in granting users flexibility largely depends on the design and spatial coverage of the public transport network, the quality of service (span, frequency), and on whether fares are integrated across modes (Liu et al., 2019).

The added flexibility provided by unlimited travel can also result in unintended consequences, particularly with respect to overconsumption and crowding. Given these limitations, fare policies should focus on easing connections to provide flexibility and encourage multimodality through fare integration.

The design and spatial coverage of a public transport network, which is an important factor in providing flexibility, is highly dependent on the land-use context. Transit-oriented development (TOD) principles can link urban forms with public transport to make public transport more convenient and encourage ridership (ITF, 2022). In fact, TOD principles incentivise demand by increasing destinations and density in a form that can support public transport. In such contexts, operations can benefit from scale economies (expanding networks, increasing frequencies) or can realise cost savings (e.g. by increasing vehicle capacity), which then benefit users (Hörcher & Graham, 2020).

Conversely, where land use processes are more driven by automobility, public transport service planning requires trade-offs in terms of efficiency and accessibility. Specifically, providing higher coverage often comes at the cost of frequency, and load factors are typically lower due to the higher dispersion of destinations. In such contexts, the spatial coverage and quality of service of public transport networks are then constrained by funding availability – higher service quality is more costly, and fare revenue is lower.

For authorities who would like to provide a base level of mobility and accessibility to residents of these areas, greater subsidies for public transport operations become necessary. When authorities in charge of service provision are limited in their ability to raise revenue to fund the public transport network to meet these objectives, it is necessary to identify opportunities for efficiency – typically by re-evaluating the role of public transport in the wider context of urban mobility (ITF, 2024b).

Integrating public transport into a multimodal model can allow for higher-order services to operate on trunk lines, fed by shared modes (including on-demand public transport), micromobility and active modes. As such it can be an opportunity for authorities to expand the coverage of public transport networks more cost-effectively (ITF, 2024b). In this context, from an operator's perspective, fares differentiated by mode can provide significant benefits in terms of managing capacity constraints. However, for users, such fares can be more complex, and in some instances can limit users' access to the most efficient modes (Vale, 2020).

To compound this challenge, in many cities, high housing costs in areas that benefit from high public transport accessibility push low-income individuals to peripheral areas, limiting the potential for flexible travel using public transport. Fare policies that then also place a premium on more efficient modes can reduce access, limiting the availability of modes for low-income individuals. A similar challenge can arise in metropolitan areas where cross-boundary travel is not integrated, either through services or with fare policies: access to opportunities can require "double payment" (El-Geneidy et al., 2016). Integrating fare payment across modes or across boundaries in such contexts allows greater flexibility for users and can be accompanied by policies such as low- or no-cost transfers to address affordability.

Integrated fares allow users the option to use the same ticket to transfer across modes and, in some instances, can ease connections to shared modes, such as ride-hailing and bikesharing (Shibayama & Emberger, 2020). Such fares have the added benefits of providing travel alternatives for users and encouraging multimodality, which can facilitate flexibility and increase access to opportunities (Lagrell & Gil Solá, 2021). For users, knowing that transfers between modes can be accommodated within a single payment may influence mode choice (Liu et al., 2019; Sunitiyoso et al., 2022).

Smart ticketing technology can facilitate integrated fare payments, allowing users to transfer between modes and calculating the lowest cost for the duration of the trip, but typically requires check-in and check-out to validate payments (Olivková, 2017). These fare validation practices are also necessary for authorities to determine how revenue is distributed between operators in the event concession agreements require revenue-sharing.

Finally, an important consideration for facilitating integrated fare policies is the physical context of the connections between modes. Fare policies cannot address physical barriers to access, and without adequate transfer facilities, the benefits of integrated fares are nullified. However, fare collection methods and validation practices can provide authorities with the information needed to prioritise the improvement of transfer facilities and improve the experience of passengers.

Affordability

Fare affordability can be considered an element of inclusion, because the failure to consider costs when evaluating accessibility can lead to overestimating actual access to opportunities (Silver et al., 2023; Vale, 2020). As expected, the impacts of fare costs on access are compounded by the quality of service as well as by service integration. While the costs of fares can be a barrier to access to public transport for some users, for operators, insufficient revenue from fares can impact their ability to provide adequate service levels (Hörcher & Tirachini, 2021). These competing factors further emphasise the need to address affordability through targeted and cost-effective concession fares when optimising fare prices for public transport (see Box 1) (ITF, 2024b).

In part, fare revenues are influenced by fare elasticity, or sensitivity to public transport price (Chen & Zhou, 2022; Litman, 2024). Fare elasticity depends on various factors, including income, trip purpose, and the available alternatives. Studies find that fare elasticity is asymmetric: an increase in fares results in a decrease in ridership, but a decrease in fares may not yield an equivalent increase in public transport ridership (Cats et al., 2017). The price elasticity of public transport is in the 0.3 to 0.4 range and tends to increase with distance covered (Kholodov et al., 2021).

This indicates that decreasing the fares charged for urban public transport will not yield equivalent increases in ridership. Conversely, better public transport supply has a much higher effect on ridership – double the effect of price decreases (Expert Group for Urban Mobility, 2024). Better public transport supply relies on sustainable funding from all available sources, including fares (ITF, 2024b). Following this conclusion, and for the reasons detailed in Box 3, system-wide free-fare public transport is not considered in this report.

Box 3: System-wide free-fare policies

Despite their popularity in the public and political debate, system-wide free-fare policies are not recommended for various reasons that have been extensively covered in academic research and evidenced in various contexts (Grzelec & Jagiełło, 2020; Tomeš et al., 2022). Although several cities around the world have implemented such schemes, the results often do not meet the initial idealistic objectives (Kębłowski, 2020; Štraub et al., 2023).

Three key limitations have been identified with respect to system-wide free-fare policies.

First, they pose a risk to the financial viability of public transportation systems, specifically where systems depend on fare revenue for operation funding. A free-fare system does not generate user revenue, and insufficient revenue for public transport can lead to underfunding, compromising the quality and reliability of services in the long term. This directly reduces people's access to opportunities via public transport, contradicting the initial objective of facilitating access to mobility (Martens, 2017; Kębłowski et al., 2019).

Second, free-fare public transport systems do not effectively redirect demand from less sustainable modes. In fact, although cheaper public transport has in various contexts led to increased usage, this increase in demand has had limited success in reducing car usage. Consequently, it does not adequately address the objective of improving air quality and reducing road traffic (de Haas et al., 2023; Grzelec & Jagiełło, 2020).

In Tallinn, Estonia, a travel habit survey indicated a modest decrease in car usage between 2012 and 2013 following the implementation of a free-fare policy. However, Tallinn's results did not demonstrate a significant increase in public transport usage (Cats et al., 2017). Dunkirk, France, had more promising results, with 24% of surveyed public transport users reporting replacing at least one car trip with bus travel in 2019, however, the study found that public transport was still predominantly used by individuals who did not own private vehicles (Huré, 2022). The additional trips, therefore, typically represent induced demand – trips that would not have otherwise been taken, and trips that shifted from active modes (Cats et al., 2017; Fearnley, 2013; Grzelec & Jagiełło, 2020).

Overall, in cities with limited public transport options and a population dependent on cars, free-fare systems may not effectively promote mode shift from cars. While system-wide free fare policies can be beneficial for particularly resource-constrained individuals, targeted concession fares can better balance mobility needs with the funding needs of public transport.

Third, implementing a free-fare system reduces transport authorities' power to influence mobility patterns through pricing strategies. Individual perceptions, motivations, and social beliefs play significant roles in shaping mobility behaviours. Without the ability to set fare levels, authorities can no longer influence traveller demand through differentiated fares. This situation might compromise efforts to improve travel comfort and optimise public transport fleets through demand management policies (ITF, 2024b).

That said, system-wide free-fare policies can be viable in some unique cases. For public transport systems that receive ongoing subsidies or have access to tax funding for long-term improvements, or where ticketing costs surpass revenue (commonly seen in smaller towns), free-fare policies can be feasible. For example, various Polish municipalities in rural or suburban areas have adopted such policies due to the high costs of fare collection compared to the revenue generated (Štraub et al., 2023). In such contexts, funding of the public transport system must come from other sources, usually dedicated taxes.

Nonetheless, public transport authorities aiming to optimise fares must also consider the role of public transport in providing essential access. One way to address this is to better target concession-fare policies so that they reduce the cost barrier for public transport users that need it the most (Cats et al., 2017). Typically, most fare policies include fixed discounts or free fares targeting broad groups (e.g. children, students, older adults). This strategy can exclude individuals in need who are not part of the targeted group and include individuals that may not need the assistance (Harmony, 2018). For example, discounted fares only for older adults can exclude low-income adults who may benefit from the discount and include high-income older adults who have no need for the discount. This results in sub-optimal revenue collection and incomplete inclusiveness.

Targeting concession fares based on income has been demonstrated to be more effective in many contexts. This approach relies on income eligibility and can be fine-tuned further based on income level (W. Darling et al., 2021). Considering the complex socio-spatial interactions that influence travel behaviour, such policies can balance improving affordability and attracting users (Chen & Zhou, 2022).

One key challenge with such targeted concession fares is the potential administrative burden. Often, such programs place the onus on individuals to apply for these benefits, through some form of means-testing. While a necessary part of targeted concession fares, this can become a barrier for some users. One way to address this is by tying eligibility to tax filings or eligibility for other social services, as demonstrated by Los Angeles Metro (see under “Los Angeles: Fare capping and low-income subsidy”). This can also reduce the administrative burden for public transport authorities (W. Darling et al., 2021).

Targeted concession fares do not require separate fare products but may require users to carry some form of identification verifying their eligibility in case of enforcement. If using smart ticketing technology, access to discounts typically requires linking accounts to the smartcards to confirm eligibility (as is the case in Bogotá – see under “Bogotá: Income-targeted fare subsidy”). These measures can reduce fare evasion.

Fare reimbursement programs can be an alternative to concession fares. These programs are usually targeted at specific trip purposes, either to encourage the use of public transport or to provide cost-of-living assistance. Such programs require retroactive application for the reimbursement, and thus do not reduce the upfront fare burden for users. As such, they are typically less flexible than discounted fares. Nonetheless, they achieve the objective of reducing transport costs for users.

One such example is the South Korean K-Pass national initiative, which is a planned targeted fare reimbursement program providing a 20% to 53% refund for people aged 19-34, adults, and low-income individuals. The reimbursement is based on the amount of money spent on public transport, and low-income individuals will be automatically eligible for a higher reimbursement based on tax filings. This approach has the potential to reduce the barrier posed by extensive means-testing. The initiative is intended to both ease the burden of transport costs and encourage public usage. Delivered by the Ministry of Land, Infrastructure and Transport in partnership with local and regional governments, the initiative will encompass all methods of payment (except cash), allowing for partnerships with private payment cards, such as debit and credit cards.

Fare policies in practice

Affordability should be a primary consideration for policy makers setting fares. Whether fares are affordable can determine who can access public transport, and unaffordable fares can perpetuate social exclusion (Plyushteva, 2023).

Fare policies to address this have been explored in different jurisdictions and implemented with a range of ticketing technologies. Whether or not these policies can be considered "fair" is a subject of debate that depends on the context as well as on different notions of fairness (Plyushteva, 2023).

The following focus on whether the policies examined can increase access to public transport by lowering the cost barrier for those that need it most, and by utilising opportunities presented by technology to reach more users. This analysis of fairness is aligned with the "capabilities approach" for equity in transport, which aims to maximise the legitimate opportunities for all (in the context of fares, narrowing the gap between potential and actual travel using public transport) (Lewis et al., 2021; Lucas et al., 2016; Martens, 2017).

These policies presented in the context of complex trade-offs for authorities, including consideration for the role of fare revenues in sustainable funding for public transport. The selected case studies go beyond lowering costs for users to better understand how they can create better mechanisms to target affordability while meeting multiple objectives. The four case studies, described in further detail in the following sections, are summarised below and in Figure 3.

- Stockholm's time-limited flat fare policy, which allows all users access to the entire integrated public transport system at the same rate, regardless of trip distance. This is in keeping with the Swedish model of universal welfare, with reduced fares defined by a single-dimension (e.g. for persons with disabilities, older adults, or students).
- Bogota's time-limited flat fare policy for their integrated transport system (SITP which provides reduced fares for a set number of trips per month for low-income individuals. in contrast to the Swedish fare policy, these targeted, income-based subsidies are intended to reduce cost burdens specifically for low-income individuals through a nationally coordinated program called the System of Identification of Social Program Beneficiaries, currently in its fourth iteration (SISBEN IV).
- Los Angeles Metro's fare capping policy and Low Income Fare is Easy (LIFE) Program, which features daily and weekly fare caps for all users, as well as 20 free rides for low-income individuals. The fare capping policy is intended to simplify the fare structure, and is accompanied by a marketing campaign to convert cash-paying riders to the smartcard system.
- Jakarta's Jak Lingko programme, which caps daily fares and integrates fare payment across participating public transport modes within Jakarta. Jak LingKo also aims for further integration with ride-hailing services, which can provide first- and last-mile connections in areas with limited institutional public transport. The fare program is intended to make transportation more affordable, encourage multimodality, and attract more users.

Figure 3. Case studies

	Stockholm	Bogotá	Los Angeles	Jakarta
Fare structures:				
Integrated fare for all institutional public transport modes	✓	✓	✓	✓
Flat fare with time-transfer window	✓	✓	✓	✓
Distance-based fare				✓
Subscription (monthly, annual)	✓			
Fare-capping:				
→ Per trip				✓
→ Daily, weekly			✓	
Concessionary fare:				
→ Older adults	✓	✓	✓	✓
→ Youth/older children	✓		✓	
→ Students	✓		✓	✓
→ Persons with disabilities		✓	✓	✓
→ Low-income individuals		✓	✓	✓
Payment options for single trips:				
Cash		✓	✓	
Digital payments (mobile ticket, smartcard, bank card)	✓	✓	✓	✓
Ticketing system:				
Open-payment ticketing	✓			✓
Closed-payment ticketing		✓	✓	
Account based		✓	✓	✓
Fare validation:				
Check in	✓	✓	✓	✓
Check out				✓

Stockholm: Time-based flat fare

The Stockholm metropolitan area (Region Stockholm), which comprises 26 municipalities and is partly situated on islands, has a population exceeding 2.4 million, while the urban area is estimated to host 1.7 million residents, with a density of 375 persons per square kilometre (OECD, 2024).

In 2023, Region Stockholm reported 740 million boardings on the public transport system (EMTA, 2024). As of 2019, the public transport mode share in the region is 43% (Figure 4) (Boldrini et al., 2019).

Figure 4. Region Stockholm's modal split (2019)

Source: Boldrini et al., 2019

The Stockholm public transport system is oriented towards its city centre in a radial pattern, and comprises five distinct modes: commuter rail, metro, trams, buses and ferries (Table 1). The city centre is therefore well-connected by public transport. The concentration of activities in the core leads to congestion, particularly during peak commuting hours (Cats et al., 2016).

Table 1. Public transport services in Stockholm

Mode of Transport	Share of public transport trips (2019)	Fare structure	Pricing (single trip)
Commuter rail	13%	Flat fare	SDK 42 with a 75-minute time window
Metro	41%		
Tram	7%		
Bus	38%		
Ferry	0.15%		

Source: Region Stockholm, n.d.

Stockholm's fare policy is decided by the Regional Assembly (formerly the County Council), based on assessments from Trafikförvaltningen, the public transport planning administration of the region (Region Stockholm, 2024). The current fare policy includes a flat fare for the whole region of Stockholm, introduced in January 2017, which replaced a zonal fare for single trip tickets (Kholodov et al., 2021), as well as a 75-minute transfer window, allowing users to complete return trips. Fares are discounted (up to 35%) for children, people under the age of 20, students, and older adults. This reflects the Swedish model of universal welfare, which typically does not differentiate subsidies for individuals within a group (e.g. all older adults are eligible for the same fare deduction, regardless of income).

The operating costs of the public transportation services in Stockholm are funded through a combination of fares, commercial activities and tax revenue. The tax revenue portion includes revenue from the congestion tax applied to vehicles entering the central areas of Stockholm. Part of the revenue from the congestion charge applied to vehicles entering the central areas of Stockholm is earmarked for certain public transport investments, and dispensed as national governmental co-funding when these investments are made.

Given the radial orientation of the public transport network, and the housing costs in the core, residents in the core areas of the city benefit from a better-connected public transport network as well as higher service levels. These residents tend to have average and higher incomes, whereas residents in the urban periphery tend to have lower incomes when they live in the higher-density areas around commuter rail, and higher incomes in the lower-density areas (Rubensson et al., 2020b).

The switch to a flat fare was intended in part to simplify the fare structure, and in part to reflect the land use context of the city. The cost of housing in the urban core where many destinations are located can be restrictive for many residents, particularly those with low incomes, necessitating longer trips or more travel between the previous fare zones to access the destinations. The flat fares are higher than the former fares within a single zone, but lower than the fares formerly charged to cross zones (Rubensson et al., 2020b).

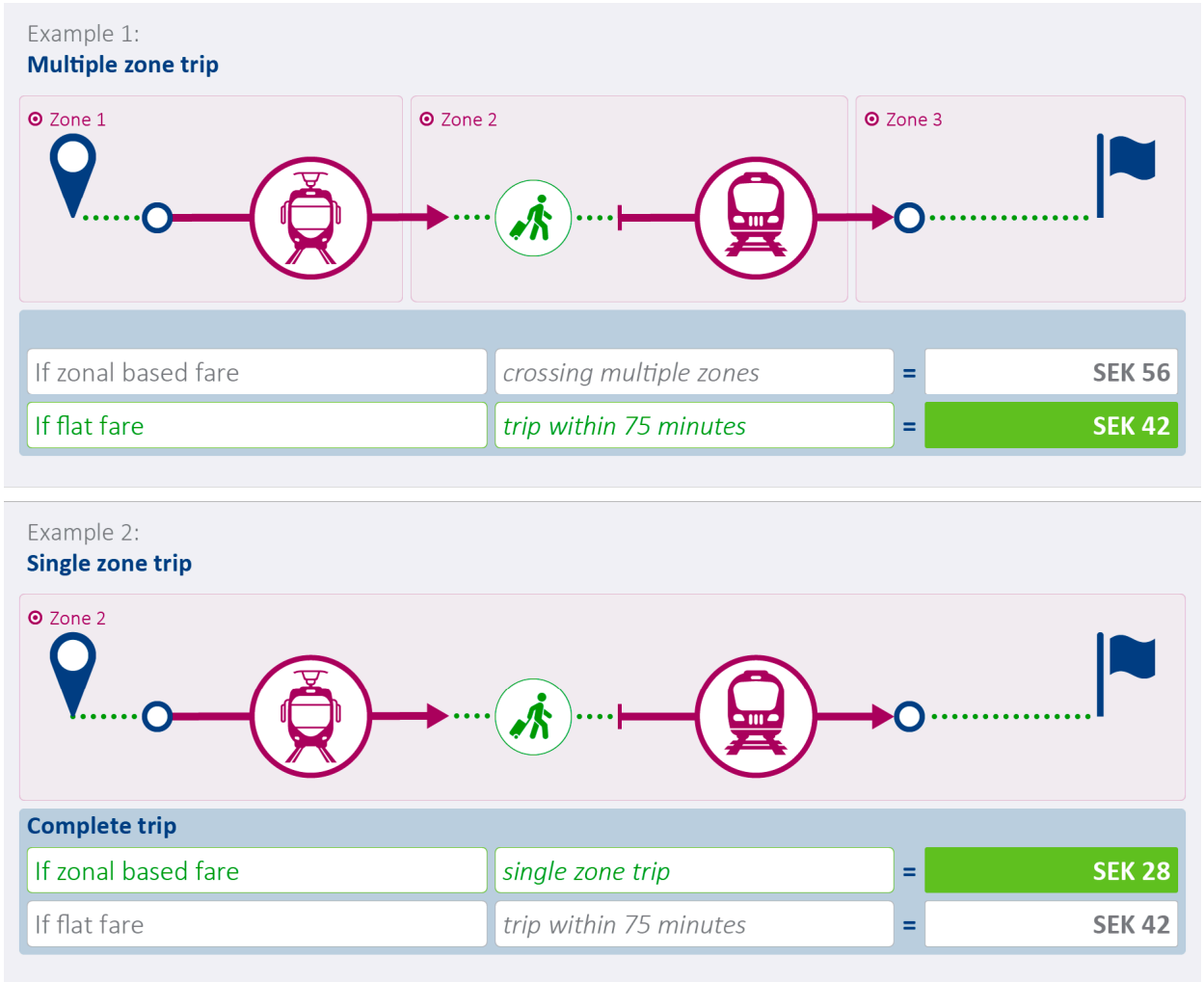
Fare payment and ticketing technology

Stockholm's public transport users benefit from a range of fare payment options that are possible in part due to the simplicity of the fare structure. In addition to single ticket options, travel cards are available for more regular usage, for six periods (24 hours, 72 hours, 7 days, 30 days, 90 days, and 1 year). The travel card fares allow unlimited travel within those time periods, all fare options allow the application of discounted fares (with identification), and a smart phone application can be used for fares. However, 82% of fares are paid for using travel cards, and the average full fare per trip using a fare card is 20 SEK (based on the number of trips for card holders), compared to 28 SEK for a single trip (Börjesson et al., 2020).

Open-payment is possible on the system, and it can accommodate the fare discounts offered. However, an account is required to ascertain eligibility, and the system does not allow for cash payments and can be challenging for occasional users and for the unbanked or underbanked – albeit a negligible rate in Sweden (Golub et al., 2022).

Stockholm's flat fare system can be much simpler for new users of the system, as it does not require knowledge of the system's zones before purchasing fare subscriptions (as with the previous zonal system) (see Figure 5). The system also only requires validation when boarding (check-in), not when alighting (check-out). For public transport authorities, this feature requires some inference regarding destinations and routing, but it can be an acceptable trade-off for systems where there is adequate data regarding travel behaviour (e.g. regular travel surveys) and where there is a potential for delays due to queues for the fare validation machines.

Figure 5. Comparison of zonal and flat fare in Stockholm



Note: Fares estimated based on previous distance-based pricing and current flat fare rates.

Who benefits?

The quality of service of public transport network (including coverage and frequency) and land-use context both play a role in the distributional impacts of fare structures. Frequent and high-capacity modes typically require lower operating subsidies, whereas high-coverage modes in low-density areas require higher operating subsidies. Therefore, the possibility for cost recovery from fare revenues will vary based on these factors (which influence ridership and funding sustainability). In Stockholm, the average subsidy rate is 44%, which varies across trips: 34% of trips generate profit, while 16% of trips receive a subsidy rate exceeding two-thirds (Börjesson et al., 2020).

An analysis of the change to the flat fare system in Stockholm found different fare elasticities for different user groups, based on the system's travelcard data. Specifically, beneficiaries of the discounted fares and lower-income individuals were found to have a lower fare elasticity, indicating that they may have fewer alternatives. The fare elasticity within the region was found to be higher for longer-distance trips and for users of commuter rail (Kholodov et al., 2021) This can be explained by two factors: (a) the more geographically dispersed travel patterns of lower-income groups, which limits the accessibility of the core-

centric public transport network; and (b) the available alternatives: car ownership rates are higher outside the city centre (Lagrell & Gil Solá, 2021; Ryan et al., 2023; Transport Analysis, 2023).

From a user perspective, service quality also influences their experience of public transport and the perception of the value for money (Bashynska et al., 2020). In Stockholm, the flat fares can benefit people travelling shorter distances because they are combined with time-based transfers, provided the service frequencies are adequate (Farber et al., 2014). As such, quality of service should also be considered when evaluating who benefits from fare structures, to the extent that lower fares can provide more flexibility and accessibility for users, and partially compensate for lower service levels by increasing affordability for these types of trips (Silver et al., 2023).

When comparing fares paid to trip-costs from the operator perspective in Stockholm, residents of peripheral areas receive a significantly higher subsidy compared to residents of core areas due to a combination of the land use context and the structure of the public transport network – specifically, the concentration of opportunities in the core, as well as the more-extensive public transport network (Börjesson et al., 2020). Additionally, Stockholm has a congestion charge for its urban core, which influences the mode share for cars for trips into the core, making people more likely to opt for other modes.

In this context, the fare policies in Stockholm can be considered fair, to the extent that they facilitate access to opportunities for people who may have to trade-higher levels of accessibility in the core for lower housing costs in peripheral areas, and are therefore more likely to make longer trips (or risk social exclusion) (Ryan et al., 2023). The fact that the fare policy can support longer trips may also affect the economic outcomes of commuters, who can benefit from a wider range of employment opportunities. (Sandow & Westin, 2010) (Sandow & Westin, 2010). This may also be the case in other cities with similar land use contexts and public transport networks.

However, there are still limitations with the Stockholm fare structure, primarily due to the network itself. Although the radial structure of the network allows for connections to the core within the transfer window for a single ticket, connectivity may be limited for orbital trips (Ryan et al., 2023). Additionally, lower service levels can reduce the effectiveness of the single-ticket transfer window, as it only supports certain trip patterns (e.g. trip chains). For example, experts interviewed for this study noted that for flat fare systems with radial network structures, residents of peripheral areas (the nature of whose work may not require travelling to the core) are doubly penalised by the cost and quality of the service.

Although such trips can still be supported with travel cards in Stockholm, which allow for unlimited travel, it necessitates maintaining the travel cards as an alternative to single-trip fares. However, travel cards may present an additional barrier for some, as they require payment upfront and can be less flexible in accommodating changes to travel needs (Plyushteva, 2023).

Key takeaways

Stockholm has explored the possibility of capping daily fares, which may address the challenge for people who incur additional costs for having trip durations longer than the transfer window. According to experts interviewed for this report, existing technology would allow the implementation of fare capping and would function similarly to the 24-hour travel card, without requiring users to purchase that card ahead of time. This can further simplify the fare structure for occasional users and may encourage additional ridership. Although yet to be implemented, a daily fare cap may be an opportunity to rationalise the number of subscriptions currently offered, which may no longer serve changing travel behaviour after the COVID-19 pandemic.

In the United Kingdom, Transport for London (TfL) has daily and weekly fare caps for their pay-as-you-go fares within a context that is comparable to Stockholm. Since the pandemic, approximately 70% of trips on the system have been made using pay-as-you-go options, specifically contactless cards. This represents a decline in the use of travel cards in London as travel behaviours change owing in part to the pandemic. (Transport for London, 2021)

Notably, London has differentiated fares, and thus more complex fare structures than Stockholm. These include peak and off-peak fares, zone-based fares, and mode-differentiated fares (specifically implemented to make bus and tram travel more affordable by allowing unlimited travel on these modes, with an hour-long transfer window). London also has a congestion charge in place, and recovers a high share of its public transport operating revenues from its fares, in part due to the combination of their (road use and fares) pricing strategy and the benefits of density (Hörcher et al., 2020). The congestion charge already in place in the Stockholm urban core presents a potential opportunity for authorities to jointly optimise fare pricing and road pricing, similar to the London example (ITF, 2024b).

Bogotá: Income-targeted fare subsidy

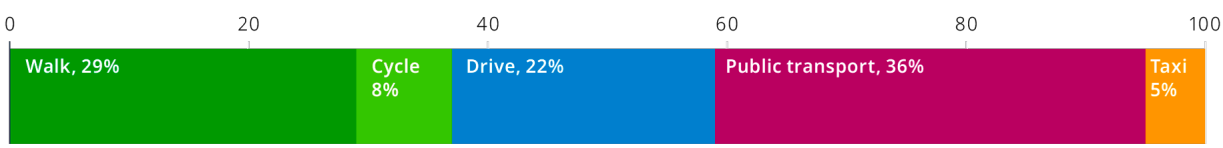
Bogotá, the rapidly growing capital city of Colombia, is estimated to have approximately 8 million inhabitants. With an urban area covering 380 square kilometres, it has a density of almost 5 000 people per square kilometre (DANE, 2024).

Bogotá faces profound socio-spatial inequalities and urban safety issues. The urban structure tends to be centred around job opportunities in central areas, while informal settlements with high densities are mainly prevalent in the outskirts. (ITF & IDB, 2022)

Bogotá is the world's third-largest city without a metro system, and the current public transport network struggles to meet demand adequately. In the coming years however, the city is expected to have a commuter rail line, and by 2028, a metro line. Congestion is very high due to limited road capacities and the growing numbers of private vehicles. Despite the extensive reform process, some informal transport options are still available, particularly in the peripheral urban areas. (ITF & IDB, 2022)

In Bogotá, public transport accounts for 36% of the total mode share (see Figure 6), and low-income individuals are its primary users. Approximately 90% of public transport users live in the city's three poorest areas, and 36-40% of trips by low-income groups are made with official public transport. Among higher-income groups, public transport usage accounts for less than 28% of trips, while 32-46% use their own car (Secretaría Distrital de Movilidad de Bogota D.C., 2019). Private car ownership can symbolise social and economic status, whereas public and active transport is often a necessity, chosen due to financial constraints (Kakar et al., 2021). This trend is also gendered in Bogotá: the 2023 mobility survey found that about 71% of trips by women are made using public transport and on foot, compared to 51% of trips by men, in part due to women's limited access to private vehicles.

Figure 6. Bogota's modal split (2019)



Source: Secretaría Distrital de Movilidad de Bogota D.C., 2019

The District Department of Mobility, under the direction of the Bogotá city government, is responsible for managing public transport fares and transportation systems. In 2010, Bogotá began a reform process to bring all traditional operators into updated concession agreements for service provision under an Integrated Public Transportation System (*Sistema Integrado de Transporte Público*, SITP). The public transport network is hierarchical, with a trunk component served by the bus rapid-transit (BRT) system (TransMilenio), cable cars (TransMiCable), and a zonal/feeder component served by buses. Under the SITP, operations, infrastructure and fares are integrated (ITF & IDB, 2022).

Table 2. Public transport services in Bogota

Mode of transport	Share of public transport trips (2021)	Fare structure	Pricing (single trip)
Trunk lines • TransMilenio (BRT) • TransMiCable (cable car)	49.7%	Flat fare	COP 2950 (with a 110-minute time window allowing two transfers)
Zonal/feeder buses	50.7%		

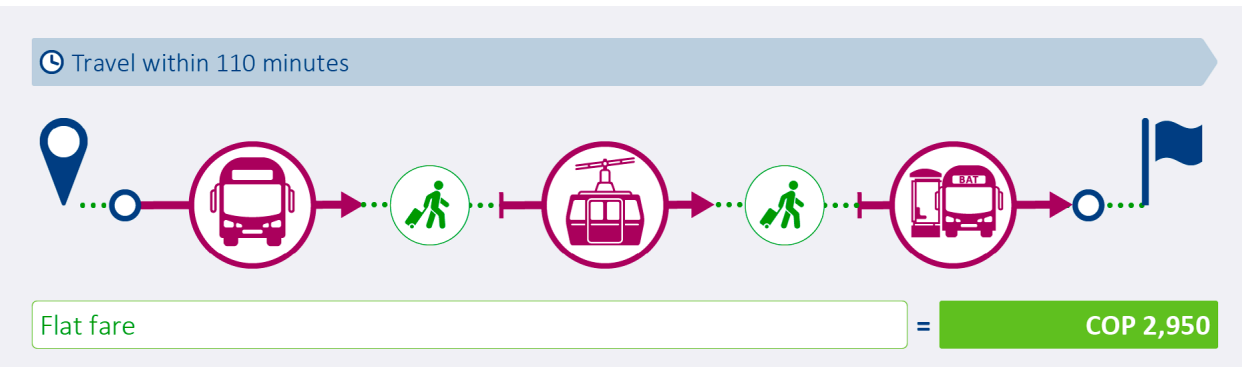
Source: TransMilenio S.A., 2024

As recently as 2016, Bogotá's fare system aimed for near-cost recovery levels (Rodríguez Hernández & Quiros, 2016). Today, with growing deficits, only half of the costs are covered by fares, while the remainder is subsidised by public funds. In 2023, this public transport supply subsidy amounted to approximately USD 730 million. This gap is a barrier to maintaining and improving the operations of the service.

Fare payment and ticketing technology

As part of the SITP reform, all institutional public transport services are now fully integrated within a common flat fare system, with a single ticket priced at COP 2950, valid for 110 minutes and allowing up to two transfers when using a prepaid and registered smartcard (see Figure 7) (TransMilenio, 2024). The transfers have some limitations: if a user exits the BRT system for example, they can only continue their trip on the same fare on a zonal service and return trips on the same fare can also only happen on zonal services. This is because the primary purpose of the transfer window is to facilitate travel for people making long trips in a single direction, rather than to provide unlimited travel within the transfer window.

Figure 7. Bogota's SITP fares



Source: TransMilenio, 2024

To access the services, users must purchase a prepaid smartcard (TuLlave) for COP 8 000 and recharge it, which can be done at multiple points of sale and through the TransMi mobile application. The card requires a minimum load of COP 50. Additionally, cash payments at vending machines are possible (TransMilenio, SITP). Maintaining a physical recharge network with adequate coverage can be a costly endeavour, making the recharge option through the mobile application a useful addition to the more limited physical recharge network. When using TransMilenio or SITP buses, travellers only need to validate fares at boarding, limiting data availability for determining trip destinations, but simplifying the process for users (Diab et al., 2022).

The requirement to pre-purchase a smartcard, and the minimum load can present a barrier for some lower-income individuals when it is the only way to access the institutional public transport services. In Bogotá, registering a personal account for the TuLlave card allows users to take two trips on the zonal/feeder routes on credit, in the event their smartcard does not have enough money. Personalising the TuLlave card also allows users to recover their stored value in the case of loss or theft (TransMilenio, 2024). Personalisation also provides authorities with some additional data regarding service usage, which can inform service planning and delivery.

Discounted fares are available for older adults, persons with disabilities, and low-income individuals. Older adults (above the age of 62) and low-income individuals benefit from a discounted tariff of COP 2 500 for up to 30 tickets per month (equivalent of approximatively 15% discount). Persons with disabilities receive a subsidy of COP 29 500 per month (equivalent to approximately 10 tickets) directly on their smartcard, with regular fares charged for additional trips. In total, in 2022, more than one million individuals requested access to one of these three concession fare types (Scholl et al., 2022; TransMilenio, 2024).

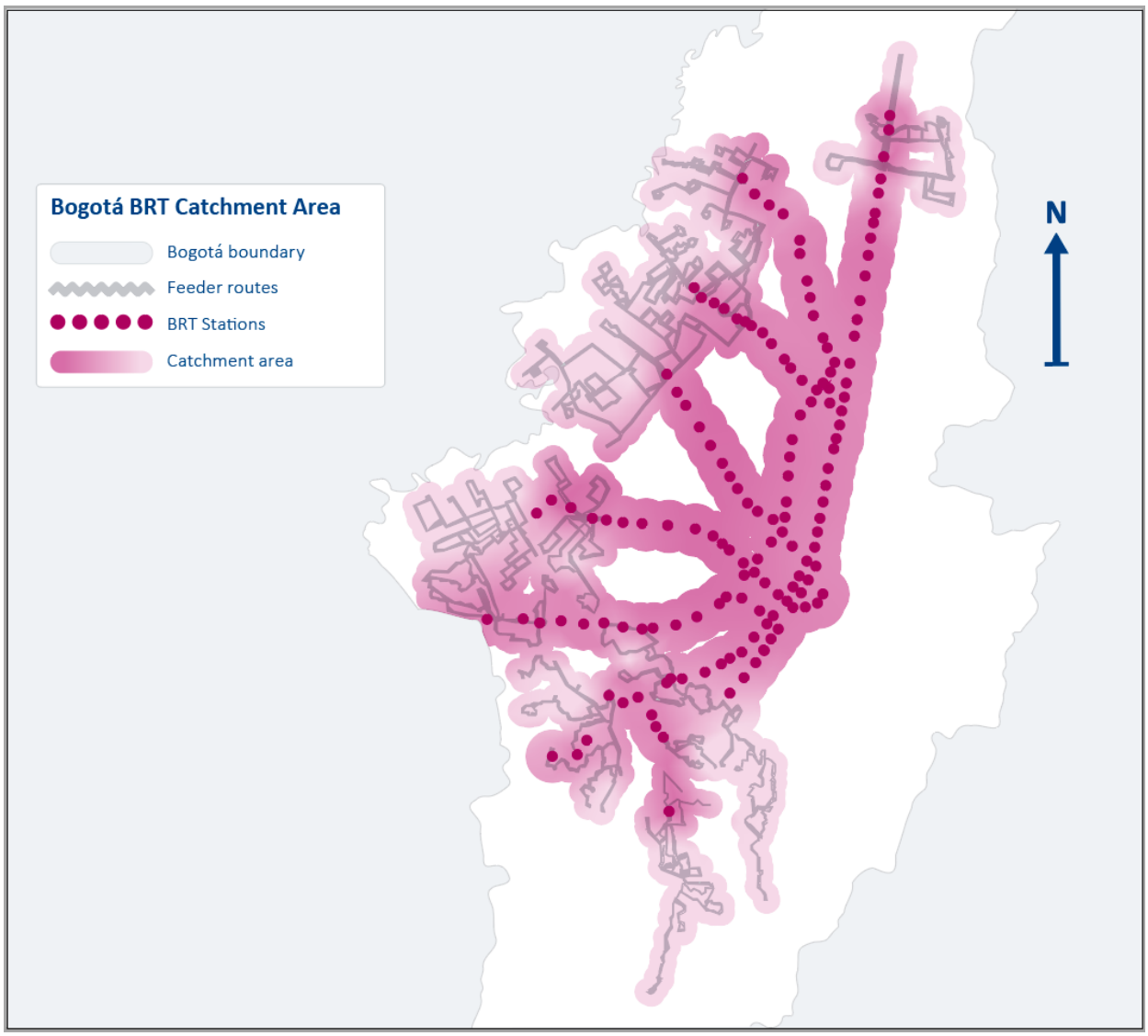
Who benefits?

The integrated flat fare structure has been particularly beneficial for residents in peripheral areas who travel long distances to access employment opportunities in central areas (Vergel-Tovar et al., 2023). It has also been beneficial for people transferring between services, particularly between the trunk and zonal services, as these transfers previously required double payment. As of March 2024, transfers between buses on the zonal component and between trunk lines and the zonal component were fairly evenly split (TransMilenio S.A., 2024). Low-income individuals tend to live in the outskirts, and their commuting trips are longer (on average 90 minutes one way), even on the TransMilenio, compared to other income groups (Guzman et al., 2017).

For people making short trips or attempting to chain trips (typically related to mobilities of care), the fare structure is less advantageous in terms of pricing compared to a differentiated fare structure or more favourable transfer policies. The combination of coupling constraints associated with work commutes, their length, and the fare structure (which benefits longer and multimodal trips) partly explains why most of the trips by public transport, about 87%, are made for work (Guzman, 2022). For shorter trips (primarily non-work trips), the flat fare structure and its associated cost may lead people to opt for active transport out of necessity – even over long distances (Secretaría Distrital de Movilidad de Bogota D.C., 2019).

The lack of coverage in the outskirts by the public transport network, particularly the limited coverage of the higher-speed and -capacity TransMilenio, poses challenges for accessibility and affordability for low-income individuals (see Figure 8) (Guzman & Oviedo, 2018). Zonal buses typically serve local routes, whereas BRT services are primarily limited to main roads and longer distance travel within the city.

Figure 8. Bogota's BRT Coverage



Notes: The catchment area denotes the distance people are willing to walk to access the BRT. Feeder routes expand the catchment area of the BRT outside of the maximum walking distance, but require a transfer. Adapted from Caicedo et al (2021).

Weekly fare validations on zonal buses by people using the low-income fare discounts outnumbered those on trunk lines by over 100 000 on average in 2023 (TransMilenio S.A., 2024). This gap could indicate a higher demand for zonal services, or reflect the lack of coverage of the trunk line services in areas where, on average, lower-income individuals start or end their trips.

Where zonal services are more limited (typically in the most peripheral areas), other modes are needed to complete the first and last miles. In these areas, if travellers opt for alternative modes for first and last miles, such as informal transport, it increases the costs of their trips given these modes are not part of the integrated offer (Rodriguez-Valencia et al., 2023).

The arrival of the commuter rails and the metro in the future highlight efforts to improve public transportation infrastructure in Bogotá. However, the commuter rail fares will not be integrated within

Bogotá, and plans for the metro's integration are still under negotiation. There is a pressing need for better coordination between regional authorities to meet growing demand for efficient, accessible, and affordable public transport (ITF & IDB, 2022).

With the existing fare structure in 2019, low-income individuals spend nearly 35% of their income on public transport fares, compared to 6% for high income individual (Scholl et al., 2022). This expense is part of an ongoing discussion among authorities on transport affordability for low-income individuals (expert interview). To address this challenge and create a process for distributing subsidies, the SISBEN (System for Identifying Potential Beneficiaries) database collects information through a survey that assesses the socio-economic conditions of households. It classifies economically vulnerable individuals based on their income-generating capacity and quality of life.

The SISBEN methodology has evolved since its inception and is currently in its fourth iteration, as described by experts interviewed for this report. SISBEN IV categorises individuals into four groups based on their socio-economic status and overall poverty level based on multiple criteria (education, employment status, housing, demographic composition, and health). The SISBEN classification then allows potential beneficiaries to apply to various social programmes to receive subsidies and benefits. Each municipality in Colombia has a local SISBEN office which is responsible for conducting the surveys and providing the information to entities administering the programmes. In the case of the discounted fares, individuals need to first request the SISBEN authorisation survey (from the District Planning Secretariat in Bogotá), complete it and verify their registration on the SISBEN website, then they can acquire a personalised TuLlave card. (Departamento Nacional de Planeacion (DNP), 2024; Guzman & Oviedo, 2018).

This process of means-testing may discourage potential beneficiaries from applying, especially considering that the discount provides only a modest discount for 30 trips per month, after which all trips are charged at full price. In addition, the effect of this subsidy scheme on public transport usage has decreased steadily over time, raising important questions about its efficiency and effectiveness (Guzman & Hessel, 2022). Based on expert interviews, currently, 234 872 unique users benefit from the SISBEN discount for public transport in Bogotá. This number is relatively low compared to the 2.2 million people living in monetary poverty (as defined by the state) who accounted for about 28% of Bogotá's population (DANE, 2023).

Currently, the public transport network in Bogota requires a subsidy of approximately 40-60%, with fares making up the remainder of the operating costs, indicating a need to optimise revenue from all sources (ITF, 2024b). The cost to provide the discounted fares for low-income individuals, older adults, and persons with disabilities is not significant, accounting for approximately 3% of the gap between revenue and operating costs (Guzman & Hessel, 2022). However, the system's operating deficit has been a growing concern since the implementation of the SITP, especially for the zonal component (Rodriguez-Valencia et al., 2023). This not only impacts service provision and quality; it can also present a risk for continuing to provide the necessary levels of service.

Low-income individuals are heavily dependent on public transport and have an inelastic demand, especially if they live far from job centres. Their reliance on public transport is largely unaffected by ticket prices due to the lack of transport alternatives (Guzman et al., 2021). The lack of affordable fares (given the limitations on the SISBEN benefit) might restrict their mobility to certain trip types, according to experts interviewed. Maintaining the subsidy in the context of the funding constraints presents a challenge for authorities, who must then better target concession fares to make sure the system remains affordable for those that most need it. Box 4 presents a study exploring opportunities to improve on the current system in further detail.

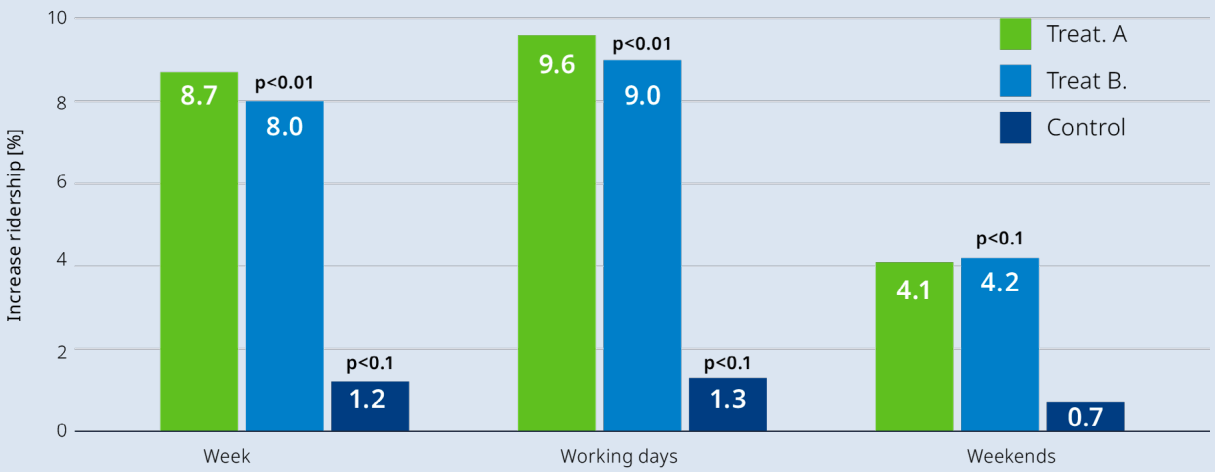
Box 4: Bogotá's public transport voucher study

Recent studies have shown that the impact of the current subsidy on ridership has substantially diminished since 2017, with the effect on trips during weekends becoming insignificant in 2019 (Guzman & Hessel, 2022). Given this context, an alternative subsidy program consisting of cash transfers named public transport vouchers has been studied for its impact on ridership, among other considerations.

This study employed a randomised controlled field experiment involving 1 607 regular public transport users without any type of subsidy. In this intervention, a randomly selected group of users received a cash transfer on their travel cards (the transport voucher) for four months. Half of the participants (801) were randomly chosen to receive monthly vouchers on their travel cards. Participants were divided into three groups: Treatment A (402 participants) received a monthly voucher of USD 7.5 (COP 28 000, equivalent to about 11 trips per month) and Treatment B (399 participants) received a voucher of USD 5.6 (COP 21 000, equivalent to about 9 trips per month). The control group received an a USD 8.0 (COP 30 000) grocery voucher at the end of the experiment if they participated throughout the intervention and continued to use the system at regular fares.

The main results showed that weekly travel increased by 8.7% for the "A" group and by 8.0% for the "B" group (Figure 9). These effects were the result of additional trips made on workdays on average, with no significant effects on the weekends. Additional trips were made predominantly during peak periods (5:30-8:30 and 16:30-19:30), with an increase of between 15.8% and 16.9% during peak hours and an increase of 5.9% during off-peak hours.

Figure 9. Weekly change in ridership among public transport voucher study participants



The ridership increase during peak hours indicates a probable modal substitution, likely from active modes or informal transport to the public transport system. It is also likely that the voucher also unlocked latent demand, potentially among individuals engaged in informal employment. The study found evidence that with the existing discount from the SISBEN benefit, an equivalent increase in ridership would be limited to the wealthy areas of the city. In the rest of the city, where more than 90% of public transport users live, achieving an increase in ridership as was found in the voucher study would require fare discounts ranging from 53% to 75% - in part due to the inelasticity in demand among low-income individuals. This would imply much higher costs for the city.

Voucher recipients also made more trips and spent less of their own money on public transport. Compared to the control group, voucher recipients loaded 14% to 20% less of their own money onto their travel cards each month. This indicates an improvement in affordability, as users previously spent approximately 20% of their income on public transport, which decreased to between 16% and 18% with the voucher, representing an improvement in affordability of 18% to 26%.

Finally, the study found signs of a significant welfare-enhancing impact from the new subsidy delivery scheme: the monthly welfare of participants in the treatment groups increased on average by 12.8 USD (3% of the average household income of our sample) compared to the control group (Table 3).

Table 3. Welfare impact from the new subsidy scheme

	Monthly Welfare Change [USD]				
	Complete Sample	Trip Purpose		Gender	
		Work Trips	Non-Work Trips	Female	Male
Welfare	12.8***	5.6***	26.7***	21.2***	16.6***
Range	[11.4, 14.3]	[3.9, 7.3]	[24.2, 29.3]	[19.8, 22.6]	[14.3, 18.9]

Note: *** p < 0.01, ** p < 0.05, *p < 0.1

Previous results present heterogeneous effects by trip purpose and gender. There is a positive monthly change in welfare for work trips (USD 5.6, 1.4% of average household income), which is statistically lower than the welfare increase for other trips (USD 26.7). This difference represents about five times the welfare produced by work trips. Women experienced a higher average monthly welfare gain than men, with an average difference of USD 4.6. Women benefit less from their modal choices, but more from the travel voucher.

The promising results of this study have led to the inclusion of this new subsidy delivery method in Article 74 of Bogotá's action plan for the next four years (the District Development Plan), targeting "extremely poor people, moderately poor people, persons with disabilities, older people, and economically vulnerable students."

Source: Luis Guzman & Santiago Gomez (2024)

Key Takeaways

Adjusting fares requires balancing access for users with the need for operational funding sustainability for authorities, which carries political and economic consequences. Ensuring access to discounted fares for those that need them supports the mobility of low-income individuals who rely heavily on public transport. However, insufficient revenue from fares can lead to underfunding, which – to the extent it compromises quality and reliability of services – can also affect access and mobility. As such, better-targeted and efficiently delivered subsidies play a fundamental role in balancing affordability and funding needs for public transport operations (ITF, 2024b). Fare policies have a role in both ensuring the optimal setting of fares (to balance these factors) and reducing barriers to accessing subsidies for those that need it most.

Like Bogotá, Buenos Aires has implemented fare integration across multiple public transports modes. However, fares in Buenos Aires are differentiated by distance travelled and by modes used, which better considers the distributional effects of service consumption. Discounts are applied for transfers between modes, which has the potential to minimise some fairness barriers associated with differentiated fares. Discount-eligible users of public transport in Buenos Aires can access fare reductions based on their age or employment status (Ministerio de Economia, 2024). The application process is kept simple, allowing

users to apply online or through a dedicated app with proof of age and employment status, providing discounts of approximately 55% compared to standard smartcard tariffs (Buenos Aires Ciudad, 2024).

In addition to the higher discount, the simpler application process can make the subsidy in Buenos Aires more accessible for more people, reducing the gap between potential and actual subsidy beneficiaries (Guzman & Oviedo, 2018). Importantly, effectively delivered subsidies can unlock latent travel demand, which in both Bogotá and Buenos Aires has implications for gender equality. In both cities, women have a higher share of immobility, in part due to lower incomes and employment opportunities (ITF & IDB, 2022). The income-targeted subsidies, when delivery is simplified, are therefore an opportunity to reduce social exclusion and enhance accessibility and mobility, contributing to economic productivity (Silver et al., 2023).

Los Angeles: Fare capping and low-income subsidy

In 2022, the population of Los Angeles County was estimated to exceed 10 million residents across 10 578 square kilometres. Approximately 14% of the population lives below the poverty line, highlighting a role for accessible and affordable public transport (Los Angeles County Department of Public Health (DPH), 2024).

Despite its relatively extensive public transit network, Los Angeles County remains predominantly car-dependent, with only about 10% of residents commuting by walking, cycling, or using public transport in 2022 (see Figure 10). However, the share of people working from home has doubled since 2019 (U.S. Census Bureau, 2022). Low-income individuals are the main users of public transport, with 63% of riders earning less than USD 25 000 per year (ETC Institute, 2022). They tend to make shorter trips and live in centrally located, densely populated areas, a common trend in U.S. cities (Brown, 2018). Recently, rising housing costs have pushed low-income individuals to peripheral areas, resulting in longer travel times and lower access to adequate public transport infrastructures (Jacobo & Mead-Newton, 2021).

Figure 10. Los Angeles County's commute modal split (2022)

Source: U.S. Census Bureau, 2022

In Los Angeles County, public transport services are managed by various geographic divisions at municipality, county, federal, and national levels, potentially resulting in coordination issues (Garvanne, 2023). This report focuses on the Los Angeles County Metropolitan Transportation Authority (Metro), which is governed by a board of directors representing various authorities. Metro is the principal operator of the six metro lines, commuter rails, most buses (including two BRT lines and on-demand services), and a bikeshare system in Los Angeles County. As of March 2024, Metro reported an average of over 950 000 weekday boardings on all their bus and rail services, representing a 14% increase compared to the same period in 2023 (Metro, 2024b).

Table 4. Public transport services provided by LA Metro

Public transport	Share of public transport trips (April 2023)	Fare structure	Pricing (single trip)
Metro and commuter rails	22%	Flat fare with capping	USD 1.75 with a two-hour transfer window
Bus	78%		

Source: (Metro, 2023a)

For the 2023 fiscal year, Metro's operating costs were over USD 2 billion (Metro, 2024a). Most of the costs are covered by local public subsidies, primarily funded by a local sales tax. Fare revenues accounted for only 5% of the operating budget, a rate that has been in steady decline over the past decade. In fact, in the decade preceding the COVID-19 pandemic (2009-2019), fare revenues declined by over 20%, and the farebox recovery ratio declined by nearly 15 percentage points (Metro, 2024a). This funding structure highlights the reliance on public funding to support and improve public transportation in Los Angeles County.

Nonetheless, fares have a role to play in the sustainable funding of public transport operations, and fare policies can be an opportunity to balance funding needs with mobility access needs. In Los Angeles County, fare policies are decided by the LA Metro Board, which is made up of elected officials of the local jurisdictions that make up the county, as well as by appointees by the Los Angeles Mayor. Changes to fare policies require a public hearing, as well as agreement by two-thirds of the board. This approach instutionalises the process of public consultation in fare decisions, which can help in getting buy-in from public transport users.

In July 2023, Metro transitioned to a unified fare capping policy, applicable to their bus and rail services, excluding commuter rail. This change replaced previous flat fare systems across different modes, and was introduced at the end of a 50% fare discount that was put in place following free fares at the beginning of the COVID-19 pandemic. The fare reductions were a transitionary measure after a fare-waiving policy during the lockdown periods in 2020, and were introduced to support mobility during the cost-of-living crisis following the pandemic. The fare capping policy was implemented to simplify the fare structure, promote equity, and stimulate ridership post-COVID. From July to December 2023, Metro counted 1.2 million riders having used capped fares, either 1-day or 7-day, according to expert interviews.

Fare payment and ticketing technology

The current single trip fare costs USD 1.75 and allows a two-hour transfer window, and can be paid for using stored value cards (such as the TAP smartcard). LA Metro also has subscription passes, such as the GoPass, and has discounted fares for older adults, persons with disabilities and students. The two-hour time window was maintained even with the new fare-capping policy to minimise the inconvenience of fare revisions for users. Notably, this window is designed for one-way trips in a single direction.

To benefit from fare capping, users must pay using a mobile app or the TAP smartcard, which functions like a digital wallet and can be recharged at multiple vendors, or online. Metro is considering integrating credit/debit cards as a future payment method and ticketing solution. While cash payments for public transport are still accepted and account for nearly 40% of fare transactions, they do not allow users to benefit from fare capping, free two-hour transfers, and other discounts available through the TAP card. It should be noted that total digitalisation comes with its own potential limitations in terms of accessibility (Golub et al., 2022; ITF, 2024a).

The LA Metro fare cap currently allows for 1-day and 7-day fare caps. For the daily fare cap, once the cap is reached (USD 5, equivalent to three single fare trips in one day), all subsequent trips on the same day are not charged (see Figure 11). For the weekly fare cap, after seven days, if the number of trips reaches the threshold (USD 18, equivalent to 11 trips across up to seven days), all subsequent trips are not charged.

Figure 11. Comparison of fares with and without the LA Metro daily fare cap

Note: Transfers within a two-hour window do not count towards the fare cap.

The one-day and seven-day fare capping system operates entirely on a pay-as-you-go basis, providing more affordability than purchasing multiple single fares without a pricing cap. For users, it also eliminates both the burden of upfront payment for monthly subscription passes and the need to calculate the benefit in advance. LA Metro has found that there are fewer frequent users compared to the pre-pandemic ridership, in keeping with the growing share of teleworkers. Notably, cash and stored-value cards are the most popular fare payment methods.

Metro collects various data on ridership, despite the limitations of the system's fare validation requirements (check-in only). Information is gathered on users' check-ins, connections with other transport modes, card/app recharges (both online and offline), discount eligibility, and programme participation. Additionally, Metro collects gender and age data when users open accounts on the TAP website to monitor their accounts. Gender data is analysed to observe mobility patterns imbalances between women and men. Age data enables automatic discounts for youth and seniors.

According to experts interviewed for this study, Metro also uses a customer relationship management (CRM) system for user communication and targeted marketing campaigns for specific groups, based on collected datasets (e.g. age, gender, benefits, etc.). To communicate the changing fare options, Metro has also been making a concerted effort to reduce language and informational barriers by providing multilingual promotional and communication materials, and by allowing for customers to provide feedback in nine languages. This strategy takes into consideration both the diversity of the county and the need to effectively communicate changes to users.

Who benefits?

Metro's fare capping system primarily benefits users of the TAP smartcard, who would like the discount benefits of a subscription pass, without the upfront payments subscription passes require. This policy can benefit both frequent and occasional users, as well as people with less predictable travel patterns. Fare capping provides flexibility for people who telework on the occasions where they may have higher trip volumes, as the trend becomes more common in Los Angeles County.

As implemented by Metro, it is an easy-to-understand fare structure that can be beneficial for individual usage patterns. In particular, because frequent commuting has decreased with the increase of teleworking, and fare revenues have been declining, the policy is an opportunity for Metro to balance the potential efficiency gain of pay-as-you go fare options with the need to ensure equitable access as is provided by subscription passes.

Following this idea, such a fare system appears beneficial for low-income individuals as it allows them to avoid paying a large amount of money upfront for a subscription. It also helps in calculating and budgeting public transport costs more effectively, potentially enabling savings, according to the experts consulted. However, it does not necessarily directly reduce the overall financial burden of transportation costs for low-income individuals (Plyushteva, 2023). In response to this limitation, Metro offers a unified reduced fare program for students, older adults, and persons with disabilities, providing fare discounts and a lower fare-capping threshold. Older adults also benefit from off-peak pricing.

Despite these efforts, fare-capping can still create barriers to access. For instance, the system does not permit users to hold a negative balance on their smartcards. This might be an issue for some in the event of an emergency, where a user is unable to recharge their smartcard. This is in contrast to London's "One More Journey" initiative, and Santiago de Chile's "Emergency Journey" initiative, both of which allow users to make one more trip using their smartcards in the event of an emergency, which is then deducted from their next reload.

Critically, limiting fare-capping to TAP smartcard users excludes nearly 40% of Metro users – those rely on cash payments – from the benefits of the program. This can be due to various factors such as poverty or concerns about surveillance (Golub et al., 2022). Metro has made significant efforts to inform the public to increase TAP card adoption, but the resistance to electronic payment methods highlights a societal gap. Thus, preserving cash payment options is crucial at present. However, the incompatibility of fare capping with cash payments is a major equity limitation, given who is more likely to rely on cash payments (Golub et al., 2022). LA Metro, along with the LA Department of Transportation (LADOT), are exploring other ways to reduce this equity gap, notably in the Mobility Wallet (MW) pilot program, described in Box 5.

Box 5: LA Metro and LA DOT Mobility Wallet Pilot

The Mobility Wallet (MW) is a pilot programme that began in May 2023 administered by the Los Angeles County Metropolitan Transportation Authority (Metro) and the Los Angeles Department of Transportation (LADOT). It provides a direct subsidy in the form of a prepaid debit card loaded with USD 150 per month, for 12 months, to assist residents of South Los Angeles with transportation expenses. The objective of the MW initiative is to improve access to opportunities and essential amenities for low-income individuals through the direct subsidy.

The duration of the MW pilot is one year, and its funding comes from a state grant, combined with an investment from LADOT. A second phase is expected to be launched in autumn 2024, for one year. It is part of a larger Universal Basic Mobility programme that aims to reduce functional and/or structural immobility due to systemic marginalisation. The state grant (Sustainable Transportation Equity Project, STEP) also includes in its objectives the need to reduce emissions and improve access to sustainable modes in "climate burdened neighbourhoods". (LADOT, 2024)

The MW allows for unrestricted use of the funds on transport (e.g. public transport, regional trains, intercity buses, shared rides, micromobility services). Any unspent amounts can be carried over to the following month. Residents of qualifying areas in South LA above the age of 18 who can self-certify that their income is below the low-income threshold are eligible for the program. The first year of the programme had over 2000 participants.

Preliminary results of the programme found that all participants would qualify for the LIFE (Low Income Fare is Easy) program, and a majority regularly use public transport and have limited or no access to private cars. Over half of the trips taken by participants used public transport (56.7% on Metro bus and rail), with the next largest share (40.8%) using ridehailing and taxi service, and the remainder primarily using e-scooters (1.6%). Spending on ridehailing and taxi services was seven times higher than spending on public transport due to the significantly higher per-trip cost (Tu, 2024). Spending on active and micromobility modes was significantly lower (2 000 trips on shared bikes and scooters, 132 bike shop purchases).

Beyond improving access to opportunities however, these results largely reflect the effects of car-oriented development and infrastructure investment on mode choice and access. They also highlight a fundamental challenge faced by authorities in trying to prioritise the objectives of accessibility and sustainability: policies targeted at one of these issues do not address the other by default, and actions to address these objectives may vary (ITF, 2024a). The direct subsidy provided by the MW programme enables essential mobility and access, regardless of the mode, but the legacy of land use and transportation decisions results in higher reliance on costlier shared modes.

In addition to these offerings, Metro has a fare programme targeting low-income individuals, called LIFE (Low Income Fare is Easy). The LIFE Programme provides low-income travellers with 90 days of free public transport, after which they have 20 free rides per month. After exceeding the 20-ride limit, standard fare charges apply, subject to the fare cap. Eligibility requires a household income not exceeding a certain threshold per year (Metro, 2023b).

In 2022, 24.6% of concession fare recipients were enrolled in the LIFE programme, while 37.5% were students and 37.8% were older adults or persons with disabilities (ETC Institute, 2022). In September 2023, the LIFE programme had over 250 000 users (Metro, 2023b). Currently, LIFE programme users account for about 6% of active riders, and LIFE card validations account for 2% of total transactions.

LA Metro has made an effort to simplify application to the LIFE programme, mainly requiring self-certification and online applications. Simplifying access to the programme reduces the burden on users applying for the subsidy. It also reduces the administrative burden for Metro, which can be considered a dual win. As an income-targeted subsidy, it can also be considered more progressive than the single-dimension reduced fare programmes.

Key Takeaways

Adopting a new fare system requires users to understand its workings before they can embrace it, and they may perceive that they are losing benefits they previously enjoyed. In Los Angeles, after 18 months of 50% fare discounts, the introduction of the new fare capping system was perceived by many users as a fare increase. Metro has undertaken various efforts to communicate the advantages of the fare policy, producing promotional materials in different languages and providing various options for users to acquire and reload TAP cards in their own neighbourhoods. Their efforts illustrate the importance of comprehensive communication strategies in encouraging acceptance for new fare policies.

New York City's integrated public transport system, including metros and buses, also has a weekly and monthly fare-capping policy. The weekly cap requires at least 12 trips in 7 days (USD 34), while the 30-day cap is USD 132. This offers limited additional pricing benefits compared to the 7-day cap. The LA Metro fare cap is significantly cheaper in comparison.

LA Metro's objective of providing a range of affordable fare options appears to be working, especially with the targeted subsidies for vulnerable groups, including low-income groups. However, providing similar discounts to the large share of cash users is still a barrier for the fare policy.

Regarding payment methods, New York's system is more flexible than Metro's, allowing the use of apps, smartcards, and contactless credit and debit cards (OMNY, 2019). New York's concession fares can also be considered simpler, with a 50% discount for disabled individuals, older adults, and low-income individuals. Students also receive benefits but under a different structure (NYC Mayor's PEU, 2022).

For Metro, with the fare cap in place, there is an opportunity to similarly rationalise their concession fare options to contain revenue impacts and increase ridership. In the long-term, fare capping policies can contribute to increased ridership by encouraging more trips, particularly those related to leisure activities, as the benefits of becoming frequent users become apparent. Specifically, monthly fare capping has been associated with increased annual bus ridership (Ziedan et al., 2024). However, this outcome is contingent upon having a well-established and reliable public transport network.

Integrating land use planning with public transport systems improves mobility across different modes of transportation, and more affordable fares can also enhance access to opportunities (Makarewicz et al., 2020). This can become more significant as higher costs force low-income individuals to move to peripheral areas with limited public transport availability. Looking ahead, Metro aims to achieve more integration with other transportation systems and operators throughout Los Angeles County. To this end, Metro has presented its fare capping programme to other operators in the county, but the decision to join remains independent of Metro. Additionally, Metro has considered integrating the bikeshare system, which, if implemented effectively, could greatly support short-distance mobility and first and last mile connectivity for individuals (Zhang & Liu, 2021).

Jakarta: Integrated fares and fare capping

Jakarta's population exceeds 10 million across 661 square kilometres, resulting in a population density of approximately 15 978 people per square kilometre as of 2021 (BPS-Provinsi, 2024a). Due to rapid urbanisation, leading to expansion and densification, Jakarta's metropolitan area now surpasses 30 million people. These changes present significant mobility challenges, especially as economic activities are largely centralised in the municipality of Jakarta (Farda & al-Rasyid Lubis, 2018).

Public transport coverage is improving with the opening of higher-order public transport services (e.g. metro, LRT, BRT). However, it remains limited, and the growing number of private vehicles contributes to worsening congestion (Andoko et al., 2021; Resdiansyah, 2021). Across the metropolitan area, over 81% of trips are made by private vehicles (motorbikes and cars), while only about 10% are made using public transportation (see Figure 12) (Benita, 2023; BPS-Provinsi, 2024a; Chiu, 2022). In the city of Jakarta, the public transport mode share is expected to be slightly higher; however, clear data is missing (Jauregui-Fung, 2022).

Figure 12. Jakarta Metropolitan Area's modal split (2023)

Source: Jakarta Transport Agency, 2024

The city also experiences major socioeconomic disparities and low-income neighbourhoods are widely distributed (Benita, 2023). These factors highlight the critical need for holistic approaches to enhance transportation accessibility and reduce socioeconomic disparities thereby improving employment and educational opportunities (Da Silva et al., 2022).

The various public transport modes in Jakarta operate under distinct fare systems. Beside the metro, LRT, and BRT operating within Jakarta, there are modes that operate in the entire metropolitan area (KRL commuter lines and LRT Jabodetabek). Additionally, the transport network includes shared modes such as motorbike taxis (e.g. Gojek, Grab), taxicabs (e.g. BlueBird, Grab), autorickshaws, and multiple types of buses.

The Provincial Government of DKI Jakarta is the local government authority that governs Jakarta and determines fares for entities under its ownership. Since 2018, the Provincial Government has integrated fare payment for its public transport modes – initially including its road modes, Transjakarta and Mikrotrans, then expanding to LRT Jakarta, Mass Rapid Transit (MRT) – into the JakLingko digital platform (see Table 5). In the future, the Provincial Government intends to integrate additional transport operators, including shared services such as Grab, and is currently negotiating cost and revenue sharing. It also intends to extend coverage to the metropolitan area using Jak Lingko (ITDP, 2021).

Table 5. Public transport services included in the Jak Lingko programme

Public Transport	Share of public transport trips (April 2024)	Fare structure	Pricing (single trip)	Pricing (single trip) with Jak LingKo card or integrated fare cap
LRT Jakarta (light rail transit)	<1%	Flat fare	IDR 5 000	Intermodal fare capped at IDR 10 000 (three-hour travel window)
Jakarta Mass Rapid Transit (Metro)	6%	Distance-based fare[1]	Approx IDR 3 000 base fare (IDR 1 000 per km); Maximum possible fare is IDR 14 000	IDR 2 500 base fare (IDR 250 per km); Intermodal fare capped at IDR 10 000 (three-hour travel window)
Transjakarta (Bus rapid transit)	66%	Flat fare	IDR 3 500 (IDR 2 000 during early morning hours)	Single-mode fare capped at IDR 5 000 (three-hour travel window); Intermodal fare capped at IDR 10 000 (three-hour travel window)
Mikrotrans (Feeder buses)	27%	Free-fare	Free for all users	

Note: MRT single-trip fares are based on station origin and destination, rather than purely distance-based. The minimum fare possible is IDR 3 000 and the maximum fare possible is IDR 14 000, which is roughly equivalent to a base fare of IDR 2000 plus IDR 1 000 per additional km.
Sources: (BPS-Provinsi, 2024b; JakLingko Indonesia, 2023)

The public transport services included in the Jak Lingko fare programme are those under the jurisdiction of the Provincial Government. The Jak Lingko integrated fare policy includes fare caps for Transjakarta when used alone, and for all modes when combined in a single multimodal trip (LRT, MRT, Transjakarta). The latter is known as the Jak Lingko integrated intermodal fare programme. Although the Jak Lingko card and app can be used on the commuter line, the integrated fare policy is not currently applicable on those services. The integration of transport services aims to enhance connectivity between different transport modes, in addition to harmonising fare payment across the entire network and improving the affordability of multimodal and long trips.

Fare payment and ticketing technology

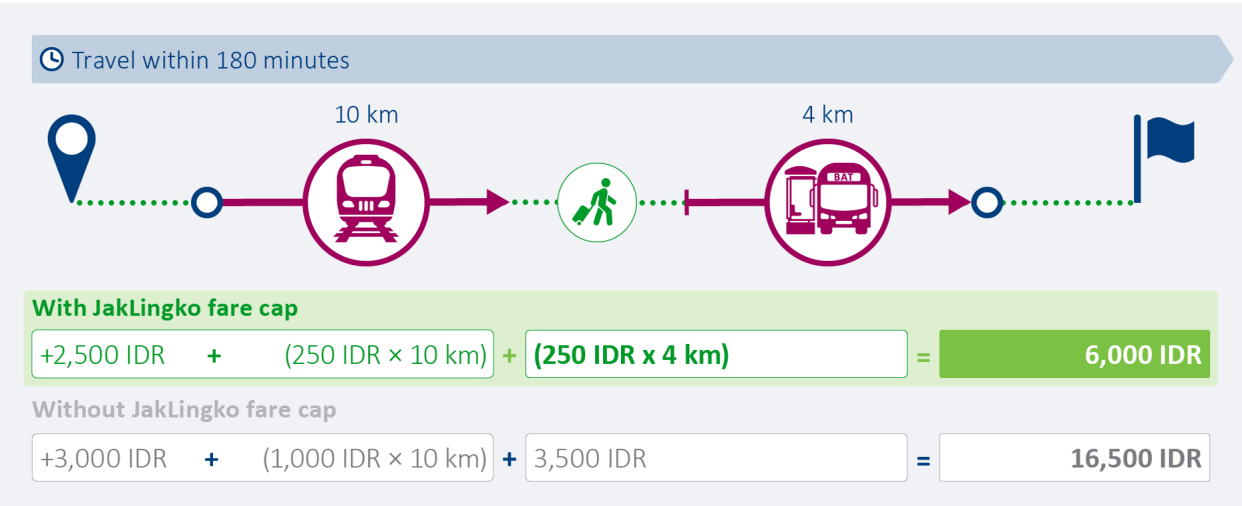
The introduction of the Jak Lingko integrated fares (in 2022) alongside existing fare payment options appear to have resulted in some confusion for users and potential users. There are various smartcards that can be used to pay for public transport in Jakarta, with a range of benefits, such as payment for toll roads, access to tourist attractions, and payment at collaborating retailers. There are also mobile wallets and applications with similar functions, such as LinkAja and AstraPay. As of 2023, the Jak Lingko physical card costs IDR 30 000 (IDR 20 000 for the card, including a starting balance of 10 000 IDR), although prices in 2024 may have increased. This section focuses on Jak Lingko integrated fare-capping policies, for applicable services under the jurisdiction of the Provincial Government.

The Jak Lingko card has a minimum top-up of 20 000 IDR. Additionally, it offers a mobile phone application that can be linked to existing bank cards. To benefit from the Transjakarta fare cap, payment for the trip must be made using prepaid Jak Lingko cards or the Jak Lingko app. Cash is not accepted, potentially creating a barrier to access to very-low-income individuals as they might not have access to smartphones with internet or be able to store money on the prepaid Jak Lingko card (Golub et al., 2022).

Single tickets can be purchased at vending machines but also do not qualify for fare capping, which is designed to support travellers using multiple modes or travelling longer distances. Authorities are currently exploring ticketing options that may include open-payment systems with contactless cards.

For users of Jak Lingko cards, fares are still differentiated by mode, resulting in a mix of flat and distance-based fares. Fares with Jak Lingko are lower because they are capped both for multimodal trips within a three-hour window and for TransJakart-only and MRT-only trips (Jak Lingko, 2024; Jak Lingko Indonesia, 2023). For example, a multimodal trip including the MRT (which has a distance-based fare) is capped at IDR 10 000, whereas a trip on MRT alone is capped at IDR 14 000. Figure 13 illustrates a multimodal trip comparing pricing with and without Jak Lingko.

Figure 13. Comparison of fares with and without the Jak Lingko fare programme



Notes: MRT single-trip fares are based on station origin and destination, rather than purely distance-based. The minimum fare possible is IDR 3 000 and the maximum fare possible is IDR 14 000, which is roughly equivalent to a base fare of IDR 3000 plus IDR 1 000 per additional km.
Sources: (JakLingko Indonesia, 2023)

The integrated fare system's mandatory check-in and check-out fare validation enables it to collect precise data on people's mobility, including origin-destination patterns, real-time information on modes, and the number of travellers. The data provide authorities with valuable insights into public transport demand, allowing them to better plan future infrastructure and manage corridor operations (Diab et al., 2022).

Check-in and check-out procedures a common practice in trains and metro, became mandatory for buses in 2022 with the introduction of the integrated fares. Feedback from experts interviewed highlighted that this change has resulted in complaints from users regarding long queues and multiple delays for both buses and passengers. There is also added confusion regarding the fare validation machines on platforms, which are different for the Jak Lingko integrated fare programme. Nonetheless, off-board fare validation helps to speed up the check-out process and reduce the queues.

The collected data also enable the Provincial Government of DKI Jakarta, which funds the operations with its tax revenues, to distribute revenue to the operators – the amount being proportional to the annual passenger-kilometres travelled for most modes, and to per vehicle-kilometre for Mikrotrans. This arrangement highlights the necessity of reliable data from fare collection and validation methods. The need for verifiable data regarding origins and destinations, as derived from fare validation methods, also limits the type of fare payment options possible, such as cash.

Who benefits?

The main beneficiaries of this fare capping policy are likely public transport users who live or work near LRT or MRT lines who can combine MRT or LRT with Transjakarta buses for their multimodal trips, as well as long distance commuters. A pre-covid survey of commuters in the metropolitan region found that a large share (over 77%) can be considered multimodal, and over 70% of respondents travel between 10 and 40 kilometres per one-way journey (Sunitiyoso et al., 2022). Commuting times in Jakarta commonly range from one and a half to two hours, which makes the three-hour transfer window generous, potentially allowing for trip-chaining.

The coverage of both Jak Lingko integrated fare schemes is limited to Jakarta, despite approximately 60% of the trips in Jakarta starting or ending in the metropolitan areas outside Jakarta, according to experts interviewed for this study. The existing fare system therefore does not benefit commuters living outside Jakarta and working in Jakarta unless they combine LRT, MRT, and/or Transjakarta for the segment of their travel within Jakarta.

With fare capping, multimodal trips, particularly those including metro and trains (which are faster modes of transportation than buses), can now be more affordable. Given the current coverage of the higher-order and more costly services (MRT, LRT), the potential cost-saving benefit can be limited, however, and in some instances, the same trip can be completed without transferring onto these costlier modes. Thus, the main benefit of the current integration and fare cap is in the perception of public transport, particularly in reducing the perceived cost barrier associated with higher-order modes due to the mode-differentiated fares. Extending the fare integration scheme to the metropolitan region could result in greater benefits for regional commuters.

Since the public transport system still has differentiated fares by mode, it might create confusion for travellers planning multimodal trips and calculating the benefits of fare capping. Overall, the lack of price unification between modes, particularly travelling along common corridors, it might create user uncertainties in understanding the cost of a trip. Travellers must also consider adding the cost of a private ride for the first and last miles if Mikrotrans stations are not nearby. Over 42% of the city's population resides within 500 metres of the BRT, but the MRT and LRT systems currently only consist of two lines (Jauregui-Fung, 2022). While typically considered a higher-order service, the Transjakarta BRT is not as fast or efficient as the MRT and LRT, and can have reliability and capacity issues due to congestion (Chiu, 2022).

Transjakarta has fairly high coverage when including the Mikrotrans feeder service. However the existing pedestrian infrastructure can limit its coverage and present access and egress issues for users. Transfer conditions can also be challenging as they often involve significant walking distances (in some cases as long as 600m) and navigating obstacles like stairs and footbridges. These barriers are particularly discouraging for individuals with reduced mobility, people travelling with children, and people carrying items. Experts interviewed for this study noted that authorities are currently working to improve transfer facilities to address these challenges. Nonetheless, these physical barriers limit the effectiveness of the fare policy.

Transjakarta provides free travel for a total of 15 groups (e.g. older adults age 60 years old and over, students, persons with disabilities, low-income individuals, civil servants, police etc.). Eligible individuals must apply and frequently renew for the benefit. For example, older adults need to reapply every six months to continue benefiting from free trips. Individuals with low incomes must possess a letter from local authorities confirming their situation. Despite these concession fare options, less than 1% of eligible travellers benefit from them, this is likely due to the difficulties of requesting the benefit, lack of information regarding the subsidies option, and the challenging physical accessibility of the network – according to experts interviewed.

Enabling interoperable fare systems within an integrated public transport network is a crucial first step to facilitating mobility across modes (Sharaby & Shiftan, 2012). Initiatives such as fare capping can support multimodal travel by improving the affordability of otherwise costly trips involving transfers. However, while a more affordable and integrated fare system can remove connectivity barriers, it cannot address physical barriers such as poor transfer facilities, inadequate pedestrian connections and limited public transport coverage.

In Jakarta, no significant changes in travel behaviour (e.g. increasing multimodal trips or shifting from private vehicles) have yet been observed as a result of the fare integration and fare capping policies. This may be in part due to service coverage limitations as well as the new fare system's lack of clarity given the various payment alternatives that are still available. Nonetheless, early surveys of the fare integration indicate increasing usage of the option (Jak Lingko, 2023).

Key Takeaways

An important takeaway from the Jakarta context is that informing people about public transport options and new fare policies through multiple marketing campaigns and materials (flyers, posters, social media, etc.) is crucial. Such a major shift in the fare policy should be well-communicated to maximise its benefits. A proactive approach, as was taken in the Los Angeles Metro case (see previous section), is necessary when raising awareness of the benefits of new fare policies among a diverse population. This can include (a) simplifying the fare structure to avoid confusion and (b) improving wayfinding both physically and in the digital space (e.g. on the website or app).

Like Jakarta, Santiago de Chile's fare system is integrated, allowing passengers to use a single payment method across buses, metro, and trains. The public transport system also operates on a pay-as-you-go basis without subscriptions, providing flexibility for infrequent users. Travellers can purchase the smartcard or access the service through an app.

However, while Santiago's fare cap is also based on the multimodal usage for each trip, it is priced closer to the cost of a single mode of transport. In contrast, Jakarta sets a higher threshold, which primarily benefits long, multimodal trips. Consequently, Santiago's fare cap system can be considered affordable for more users. Additionally, fare validation is required only at check-in, not at check-out as in Jakarta, because Santiago's fare is differentiated by mode and time of day, not distance. This approach does not require check-out. In lieu of data that would be provided through checking out, Santiago employs an algorithm to calculate destinations and alightings, and this is validated through user surveys.

One potential challenge in Santiago compared to Jakarta is the time-of-day fare differentiation, which can complicate fare calculations for users (Red Movilidad, 2024). To partly address this challenge, in 2023 Santiago introduced a simpler monthly fare cap for users paying with the mobile phone app. This also reduces the costs of the physical top-up network for their smartcard system. Unlike Jakarta, Santiago's current smartcard payment allows multiple people to use the same card, but the switch to app-based payments will eliminate this possibility. This change may be limiting for some users, but it allows the operator to gain a better understanding of individual expenditures on public transport.

Sustainable accessibility: Supplementary objectives of mode shift and climate action

Accessibility and sustainability are distinct policy objectives, although they can be combined through certain interventions. Sustainable travel includes an element of behaviour and choice in addition to the

threshold conditions of actually having the option available to you to access opportunities by sustainable means (ITF, 2024a).

As noted, there are various structural and societal barriers to creating mode shift. Affordability plays a role in addressing some barriers, but the effectiveness of fare pricing in creating mode shift largely depends on the extent to which the negative externalities of private car use are priced, and on the degree of substitution possible between public transport and other modes (Hörcher & Graham, 2020). The former can be limited by public perceptions and political pressures, while the latter mainly depends on service quality (ITF, 2017). To achieve mode shift, fare policies should be part of an approach that combines both push and pull factors (Lagrell & Gil Solá, 2021).

Beyond pricing, fare policies can also explore opportunities for influencing attitudes and disrupting habitual travel choices. Individual attitudes and perceptions of modes can influence mode choice. Often, however, there is little distinction between choice and necessity (Beirão & Sarsfield Cabral, 2007). When some modes offer more flexibility or greater access, necessity can override choice. Additionally, if choices are not evaluated, then they can become habits. Some voluntary behaviour change programmes have found that addressing factors such as perception and habit can yield changes in travel behaviour (Handy et al., 2005).

For example, some studies have found that promotional commuter passes can disrupt habitual travel choices initially (Redman et al., 2013; Thøgersen, 2009). Such promotions can introduce new travel habits by allowing people to try public transport at a reduced rate for a set duration; they can also help to address poor perceptions of the mode. Additionally, as noted earlier, subscription-style passes can make travel using public transport more flexible – a feature usually associated with private modes. Subscriptions also eliminate the perception of an additional travel cost to the user, narrowing the gap between potential and actual travel (Beirão & Sarsfield Cabral, 2007).

Targeted or branded subscription passes, particularly those that have the potential to attract users, have been explored in various contexts. Similar to regular subscription passes, they provide a quantity discount when purchased in advance – but are targeted to a specific audience. For example, the easing of initial COVID-19 restrictions resulted in changes in travel behaviour, and brought about various new subscription structures and promotional offers aimed at capturing these new markets (OECD, 2022; Ton et al., 2022). These included new weekend and off-peak passes and subscriptions aimed at teleworkers. Many of these passes have now been adapted to become more long-term fare products.

Simultaneously, the increasing prominence of climate action and energy security in the political agenda has resulted in the increased popularity of “climate tickets”. The branding of such subscriptions as “environmentally-friendly” complements the other positive externalities associated with increased public transport use.

Climate tickets are of particular interest for this report because they are a fare offer with the objective of being part of a set of instruments for increasing mode shift to public transport and reducing the negative climate effects of private car use. Two applications of climate-branded subscription passes have been explored to understand how such offers can influence mode choice: the KlimaTicket in Austria, focusing on two regional applications in Salzburg and Vienna; and the Seoul Climate Card, a pilot fare offer that can also include the city’s bikeshare system (Figure 14).

The main consideration in evaluating these offers is the flexibility and integration they provide, which can disrupt habitual travel and help create new travel habits. User satisfaction with the fare offers is also an important consideration for sustaining a shift to public transport. Finally, that these offers are provided in the context of sufficient service matters, given the important role service quality plays in attracting users

to public transport. Mechanisms to ensure ongoing funding for service improvements and efficient service delivery will also influence the effectiveness of such offers in creating mode shift.

Figure 14. Overview of two applications of climate tickets: Austria KlimaTicket and Seoul Climate Card

	Austria KlimaTicket	Seoul Climate Card
Fare system:		
Integrated multimodal public transport	✓	✓
Integrated bikeshare		✓
Unlimited trips	✓	✓
Unlimited transfers	✓	
Payment options:		
Monthly	✓	✓
Yearly	✓	
Ticketing system:		
Open payment	✓	✓
Close payment		
Account based ticketing	✓	✓
Ticketing format:		
Stored value card (prepaid)	✓	✓
Digital ticket (mobile ticket)	✓	✓
Fare validation:		
No required validation	✓	
Check in and check out		✓

Austria KlimaTicket

The Austrian Mobility Master plan has a stated objective of reducing private car usage across the country to help meet the Paris Agreement goals, targeting a 16% reduction by 2040 (OECD, 2022). The mode share target established at the national level signals support for local governments exploring strategies to increase public transport use.

The implementation of a new fare product, the "KlimaTicket Ö", is one measure to reach this target. Inititally made available at the national level in October 2021, it was subsequently introduced and adapted at the level of the federal states – except in Vienna, where the initiative originated back in 2012 (Wiener Linien, 2024). The role of the national government in enabling the application of the KlimaTicket to all regions is further described in Box 6.

Box 6: National frameworks enabling local policies

The KlimaTicket Ö is implemented under the "KlimaTicketgesetz", a law that represents the first time the Austrian federal government has been involved in fare-setting, as well as developing a fare offer. The law is implemented through "Verordnung der Klimaschutzministerin" which outlines the application of the fare offer, the obligations of operators, and the compensation models (KlimaTicketgesetz, 2021).

The KlimaTicket Ö is funded through its own revenues, plus an earmarked subsidy from the national government (amounting to EUR 160 million in 2022). The federal state governments are expected to fund their own KlimaTickets, but they also receive approximately EUR 180 million annually in federal funding to expand regional transport services and implement their KlimaTickets. Federal state authorities also determine the design of their respective KlimaTickets, although the national KlimaTicket is required to provide access to the same services included in each regional offer (Follmer & Treutlein, 2023).

This legislative framework has two main benefits: it establishes a national baseline for fares that are easy to understand, integrated across modes, and affordable; and it facilitates the implementation of these fares at a federal state-level, providing dedicated funding both for the fare offer and for the corresponding improvements to the public transport offer. The legal basis and funding stability can ensure more equitable access to transport while facilitating more-efficient prioritisation of the service improvements and capital expenditures needed to move towards a sustainable transport system (OECD, 2024).

Since its introduction, each federal state now has its own defined regional KlimaTicket, including five regions that previously had no existing fare subscriptions. The national and federal state KlimaTicket fare offers, combined with planned service improvements, makes public transport a feasible alternative to driving – at a relatively low cost to users.

The main objective for introducing the KlimaTicket Ö was its potential climate benefits, mainly through mode shift, and cost recovery did not play a major role in the design of the fare offer. The KlimaTicket Ö was part of a dual-pillar approach to making public transport more attractive by (a) improving quality of service and (b) making fares simpler and more affordable (Follmer & Treutlein, 2023). There have been no changes in the fare's pricepoint since its introduction, but annual inflation-based increases are expected to begin in 2025. This approach to adjusting fares can also reduce political pressures on the fare-setting process (ITF, 2024b).

In 2022, the Federal Ministry of Climate (BMK) initiated a continuous customer-satisfaction survey to evaluate the programme and its usage. Among 24 356 online respondents across Austria, 98% expressed satisfaction with the KlimaTicket Ö. Approximately 70% of KlimaTicket Ö trips were long-distance, while 30% were regional. On average, each KlimaTicket Ö holder travelled over 11 000 kilometres annually, with an average trip length of 85 kilometres (Follmer & Treutlein, 2023).

Starting in July 2024, individuals turning 18 can receive a free one-year national KlimaTicket. This offer can be requested for three years thereafter, and aims to foster long-term sustainability practices, in addition to encouraging future adoption of the KlimaTicket (KlimaTicket, 2024). This promotion can be an opportunity to defer car ownership. In general, targeting behaviour change efforts to coincide with major life events has been demonstrated to be effective in various contexts (Ahmed et al., 2020).

Federal State context

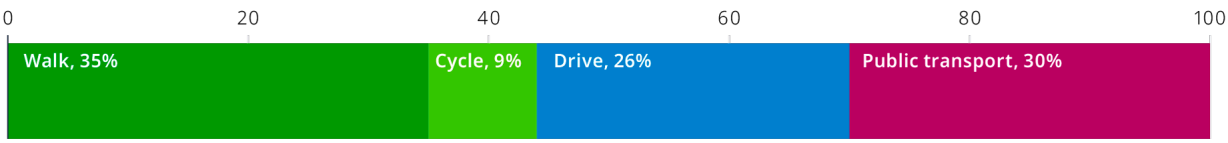
This section focuses on the implementation of the KlimaTicket in Vienna and Salzburg – the former as the originator of the KlimaTicket, and the latter as an adopter of the KlimaTicket following the national program.

Vienna

Vienna, the capital of Austria, has nearly two million people over a surface area of 414 square kilometres, and a population density of approximately 4 800 persons per square kilometre (Stadt Wien, 2023). The KlimaTicket originated in Vienna in 2012 to counter rising car reliance and its associated environmental and congestion problems. It also aimed to promote more sustainable transportation options by increasing public transport affordability (Buehler et al., 2017).

In 2022, more than a third of trips in Vienna were made on foot (35%), 9% by bicycle, 30% by public transport, and 26% by private vehicle (see Figure 15) (Stadt Wien, 2023). The public transport mode share in Vienna is nearly double the national target, in part due to the city's land use context, density, and transport network.

Figure 15. Vienna's Modal Split (2022)



Source: Stadt Wien, 2023

Wiener Linien manages Vienna's public transport network, which features a ring-radial structure, including tram, bus, and metro lines (Table 6). Additionally, shared e-scooters, bicycles, cars, and mopeds are part of the urban transport network but are not included in the KlimaTicket offer (UITP).

Table 6. Public transport services within Vienna

Public transport	Share of public transport trips (2022)	Fare structure	Pricing (single trip)
Metro	47%	Flat fare	EUR 2.40
Buses	20%		
Tram	33%		

Source: Stadt Wien, 2023

Wiener Linien also manages the Vienna KlimaTicket, which receives annual subsidies from both the city government and the national government to support its implementation. Vienna is unique in the Austrian context because it is a city with the devolved powers of a federal state – due to its status as the capital.

Salzburg

Salzburg, the capital of Salzburg federal state, has a population of 156 619 residents as of 2023 over a surface area of 65 square kilometres, and a population density of approximately 2 386 persons per square kilometre (Land Salzburg, 2024).

In the city of Salzburg, nearly 55% of trips are made by car and 27% are made by public transport (see Figure 16) (Land Salzburg, 2023). The state of Salzburg has a per capita disposable income slightly above

the national average and a car ownership rate marginally higher than the national average (1.31 passenger cars per household) (Land Salzburg, 2023). Income and car ownership are correlated, and on a household level, decisions on car ownership are influenced by the costs, as well as the availability and cost of alternative modes (Dargay & Gately, 1999).

Figure 16. City of Salzburg Modal Split (2022)

Source: Land Salzburg, 2023

Salzburg Verkehr manages public transport, including the KlimaTicket, at the federal state level in Salzburg and has the authority to make decisions regarding fare policies (Salzburg Verkehr, 2024). Although this study focuses on the outcomes of the KlimaTicket for the city of Salzburg, its statewide implementation is an opportunity to influence car ownership for residents, and thus mode shift. The city of Salzburg is relatively walkable due to its size; it is also well connected with public transport services (buses, trolleybuses, and regional trains) fully integrated into the ticketing system (Table 7).

Table 7. Public transport services within Salzburg

Public transport	Share of public transport trips (2023)	Fare structure	Pricing (single trip)
Bus	87.5%	Flat integrated fare	EUR 2.30 (flat fare) to 2.40 (flat fare with a 60-minute time window)
Trolleybus			
Regional Train	12.5%		

Source: Land Salzburg, 2023

Ticketing Technology and Implementation

The KlimaTickets are can be either stored-value cards or digital tickets on the various operators' mobile applications. They allow for unrestricted use of most public transport in the country on an annual subscription, including long-distance trains. Adults can obtain the national ticket for EUR 1 095 annually (equivalent to EUR 3 per day), while youth and older adults pay EUR 821. Families also have the option of purchasing a group ticket. Currently, approximately 15% of adults residing in Austria have either a national or regional KlimaTicket (Follmer & Treutlein, 2023).

In Vienna and Salzburg, the KlimaTicket enables access to all public transport services, with local variations within the federal states. For instance, whereas the Vienna KlimaTicket excludes some express bus lines, in Salzburg it includes public transport services from the neighbourhood city of Freilassing in Germany (due to the economic ties between Salzburg city and Freilassing).

In both cities, the KlimaTicket costs EUR 365 a year, equivalent to EUR 1 per day, with residence in the coverage area as its only requirement for eligibility (including residence in Freilassing for the Salzburg KlimaTicket). Users can pay monthly or annually. In case of monthly payments, the cost is slightly higher in Vienna at EUR 33 per month (Wiener Linien, 2024). Once purchased, the regional KlimaTickets are transferable to the national KlimaTicket Ö. Moreover, the KlimaTicket can be cancelled any time, with a straightforward administrative process.

In Vienna, the KlimaTicket offers a 34% discount for older adults only. Young people and students have access to different pass options at low prices. In Salzburg, the KlimaTicket offers a 23% reduction for older adults and young people (up to 26 years old), and 70% reduction for persons with disabilities. In addition, students can purchase the KlimaTicket per semester for a price of EUR 150. In both cities, companies can enjoy tax advantages by purchasing the KlimaTicket for their employees.

Travellers do not have to validate fares to use any mode, and can freely transfer between services, without booking a seat ahead of time. Travellers must only show the KlimaTicket card or the QR code on the app in case of a ticket inspection.

Although this approach significantly simplifies the choice to take public transport, it has three main drawbacks that may arise if applied in other contexts. For riders without reservations, especially on long-distance trains, crowds can form during peak hours, which decreases rider comfort (Hörcher et al., 2020). For authorities, meanwhile, there is a lack of data on usage due to fare validation norms (i.e. no check-in and check-out), compromising the ability to accurately estimate ridership patterns, modal splits and overall effects on mobility practices. Qualitative studies can also provide necessary information on the system, and do not rely on fare validation. However, surveys and interviews can be a costly process for authorities (Lucas et al., 2016). Another downside for authorities is that this approach may necessitate enforcement to prevent fare evasion, which can incur additional costs.

Key Outcomes

The simplified offer and reduced cost-barrier of the KlimaTicket encourages more usage of public transport (Follmer & Treutlein, 2023). Both regional and national tickets can be successful in addressing diverse travel needs, given their full integration across public transport modes and their ease of use (Sharaby & Shiftan, 2012).

Simplifying both the fare offer and the current validation norms make choosing public transport easier. Once they pay for the pass, travellers may not perceive the marginal cost of an additional trip. This parallels studies on car usage, where users often underestimate the true cost of driving, as they do not pay for each trip's fuel and other associated expenses (Handy et al., 2005).

The KlimaTicket pricing is especially advantageous for regular users or long-distance across states for business or leisure. Moreover, targeted discounts for some users further ensure affordability. However, without income-targeted discounts, it might be challenging for very-low-income individuals to pay the upfront monthly or annual cost (Plyushteva, 2023).

The number of KlimaTickets purchased in Vienna more than doubled from 2013 to 2019. Today, approximately half of the Vienna population holds an annual KlimaTicket for Vienna. From 2010 to 2019, the public transport mode share in Vienna increased from 36% to 38%, while the car mode share decreased from 31% to 25% (Mobilitätsagentur Wien, 2019). This decrease in car use cannot be solely attributed to the KlimaTicket, given that the decline in car mode share has been a long running trend in the city due to other policies designed to reduce car use (such as parking management and significant investments in public transport improvements), underlining the importance of adopting fares policies as part of a comprehensive policy package. Nonetheless, the increased adoption of the KlimaTicket indicates the demand for the fare product, and can point to user satisfaction.

In Salzburg, while the actual shift from car use is difficult to measure due to the lack of data, the adoption of the pass and revenue generated point toward a similar trend of general satisfaction with the fare, based on an interview with experts from the region. Approximately 70% of purchasers opt for the Salzburg region KlimaTicket, which aligns with their daily travel needs. In 2024, approximately 100 000 people purchased a KlimaTicket in the state of Salzburg, which totalled around 17.5% of the population. According to the

expert interviewed, the KlimaTicket is popular among students, who represent 15% of residents but account for about 30% of purchasers.

In both cities, the authorities actively promote the adoption of the KlimaTicket, also implementing complementary policies to continually improve the public transport network. In Salzburg, there has been a significant increase in number of buses in operation, which can contribute to the relatively successful adoption of the KlimaTicket according to experts interviewed.

The national KlimaTicket survey found that the highest adoption of the fare offer is among people between the ages of 26 and 34 (23%), followed by people under the age of 25 (21%), similar to what is found in Salzburg. While the higher adoption among younger users, particularly students, may indicate that the fare offer is popular with already frequent users of public transport, it is worth noting that a majority of purchasers of the KlimaTicket Ö have both a driver's license (91%) and access to a car at any time (59%). The same survey also found that 41% of purchasers were occasional public-transport users who switched from single tickets to annual passes (Follmer & Treutlein, 2023). This combination of factors at the national level indicates that the KlimaTicket Ö, in combination with other policies, has the potential to shift people from car to public transport.

Regional KlimaTickets also represent an opportunity to target structural constraints that can limit the effectiveness of mode shift policies for certain trip purposes, provided the public transport offer is sufficient. For example, they are particularly well-suited for commuters who frequently travel long distances to work within regions, given that they allow the use of nearly all public transport modes under one fare.

In Salzburg, residents make approximately 480 000 trips per workday – 79% within the city, 18% crossing the city border, and only 3% with neither origin nor destination in Salzburg (Land Salzburg, 2023). As more people reside in the city's outskirts (where the public transport network is less extensive) and work in Salzburg, they can have significantly longer commuting distances, contributing to high car usage.

Cars are used for half of work trips, while public transport is preferred for 40% of school or education-related journeys (Land Salzburg, 2023). This points to structural constraints that can limit the effectiveness of mode shift policies for certain trip purposes, for example the structure of work-related travel (e.g. the need to be in a particular place within a specific time window) that can make it challenging for individuals to change modes (Ryan et al., 2023).

The KlimaTicket initiative demonstrates how implementing a unified, clear and affordable fare policy can encourage the use of public transport instead of cars, especially when combined with sufficient service provision, and other policies designed to reduce car use. It is necessary to complement such initiatives with additional policies aimed at improving public transport services to accommodate increased demand and ensure travellers benefit from reliable travel times and comfort (Hörcher et al., 2020). In Austria, the national legislative framework that allocates funding for improving public transport provides certainty for authorities implementing regional KlimaTickets, allowing them to plan for sufficient service levels to match the potential demand from the fare offer. Without this funding guarantee, if fare revenues and subsidies fail to cover added operating costs, service supply and quality may be at risk.

Due to the lack of empirical data on usage however, information is missing on the real impact on public transport usage, and on potential unintended consequences. While authorities collect some data on the purchase and satisfaction of the KlimaTicket, complementing this information with quantitative data on usage, transfers between modes, and times of travel can help to facilitate more efficient service delivery (Chen & Zhou, 2022). This is particularly notable because, if such fare offers increase demand without

improvements to service levels to accommodate ridership growth, they can create capacity issues, causing some travellers to seek alternative options.

A qualitative study in Hanover, Germany of the German nine-euro ticket in relation to low-income households with children suggests that the 9-euro fare reduced the cost barrier to public transport use. It also allowed for mode shift and greater accessibility, while reducing the financial burden of their transport needs among the cohort in the study (where other barriers, such as lack of access and lack of viable transport patterns, did not already act as barriers to public transport use). However, the end of the nine-euro flat fare in August 2022 reintroduced the financial barrier (Rozynek, 2024).

From a study based mainly in Munich, Loder et al (2024) concluded that while mode shift was observed during the nine-euro ticket period, the extent to which private cars were still in use suggested that this mechanism on its own was not sufficient to achieve the desired climate action. This reinforces the potential gap between sustainability and accessibility interventions (ITF, 2024a) the need to look at the impacts of fare policies on both, and the importance of a wider package of policy measures designed to reduce car use. Furthermore, financing the nine-euro fare was made possible through a EUR 2.5 billion regional subvention from the federal government (Federal Government of Germany, 2024), emphasising the need for optimised fare-setting, including well designed concession-fares.

Seoul Climate Card

Seoul, the capital of South Korea, has an estimated population of 9.4 million as of 2022, with a high density of about 16 000 persons per square kilometre (KOSIS National Statistical Portal, 2021). The Seoul Metropolitan Area, which includes Incheon and Gyeonggi-do province, has a total population of approximately 26 million inhabitants.

As of 2020 in the city of Seoul, 26% of trips were made by car, 40% by public transport, 24% on foot and by bike, and 6% by taxi (see Figure 17) (Seoul Institute, 2023). In total, an average of 9.42 million of trips per day were taken by public transport in 2022 (Seoul Metropolitan Government, 2023a). While the Seoul Metropolitan Area has multiple city-centres, public transport is predominantly oriented toward the city of Seoul, where most economic activity is concentrated. It takes more than 40 minutes on average to commute in the metropolitan area, and car dependence is higher in peri-urban areas (ITF, 2023a).

Figure 17. City of Seoul Modal Split (2020)

Source: (Seoul Institute, 2023)

The regional public transport network consists of metro lines, buses, and long-distance trains. The public transport network in the city of Seoul is hierarchical: metro lines and rapid buses (red buses) can cross municipal borders, whereas trunk (blue), feeder (green), and circulator (yellow) buses operate within the administrative boundaries of the city of Seoul. A public bikeshare system is also available within the city.

The fare structures vary across transportation modes in the metropolitan area (Table 8). For example, the metro network uses a distance-based system, whereas bus services employ a zonal, distance-based system with single tickets (Seoul Metro, 2024). Bus and metro fares are integrated into a common payment system

despite each following its differentiated pricing to enable transfers and facilitate multimodality, however additional fares can apply beyond five transfers. Long-distance trains have their own ticketing system.

Table 8. Public transport services included in the Seoul Climate Ticket

Public transport	Share of public transport trips (2022)	Fare structure	Pricing (single)
Metro	55%	Differentiated by time and distance and payment method	From KRW 1 250 to 1 500
Buses	44%	Differentiated by time and zone and payment method, up to five transfers	From KRW 900 to 3 000
Bikesharing	1.2%	Time-based	KRW 1 000 for 60 minutes

Sources: Seoul Metropolitan Government, 2023, 2023

Local authorities in Seoul, Incheon, and Gyeonggi-do collaborate on public transport services, necessary necessitated by their interconnected land uses and travel patterns (ITF, 2023a). Bus and metro fares are within the individual jurisdiction of the local authorities and bus operation companies, while the metro is operated by KORAIL (Korea Railroad Corporation).

The Climate Card pilot

The Seoul Climate Card is an ongoing pilot (as of January 2024) within the administrative boundaries of the city of Seoul. The fare offer is a monthly pass priced at KRW 62 000 that provides unlimited access to the metro and buses within the city of Seoul's administrative boundaries. For an additional fee of KRW 3 000, users can access the bikeshare system (see Figure 18) (Seoul Metropolitan Government, 2024b).

Figure 18. Seoul Climate Card Options

Source : Seoul Metropolitan Government, 2024a

The objectives of this pilot programme are to address climate change by promoting modal shift toward public transport and cycling, and to reduce the financial burden of mobility on residents (Ji-min, 2023). The Climate Card can also simplify fare payment for regular users because it allows for unlimited travel within the city. There are potential overlaps between this fare policy and other regional and national efforts towards fare affordability that warrant further examination.

Ticketing Technology and Implementation

In Seoul, public transport tickets can take the form of physical tickets, credit/debit cards, stored-value smartcards (e.g. T-money), and digital and QR code tickets (Seoul Metro, 2024). Currently, frequent metro users can purchase a monthly subscription called a "Commuter Ticket", which allows up to 60 trips within the metro network within a specific price range starting from KRW 61 600 up to KRW 123 400, depending on the daily distance travelled. The pricing is structured to break even after 44 trips (Seoul Metro, 2024). Extra fees apply when transferring to buses.

The introduction of the Climate Card simplifies the fare options for frequent users within the city of Seoul, offering flexibility and integration with the bikeshare system, which can help create new travel habits. Travellers can purchase a physical climate card, then link it to their online T-money account to access the offer. T-money is an existing prepaid smartcard that can also take the form of a digital QR code on the T-money app, allowing access to buses and metros in most cities in South Korea, including Seoul. The physical smartcard can be recharged online or at charging machines at metro stations. Alternatively, travellers can sign up for the offer on the T-money app, allowing them to digitally display and recharge the Climate Card (Seoul Metropolitan Government, 2024b).

If travellers opt for the Climate Card including the bikeshare service, they can access the bikes using only the digital T-money ticket, because of the available payment options on the bike. Before the Climate Card offer, bikeshare access was solely through the Seoul Bike app, so the offer introduces an additional integrated payment option for holders of the Climate Card (Seoul Metropolitan Government, 2024b).

Offering both options – QR code tickets and smartcards – enables a certain flexibility. However, QR code tickets require a functioning smartphone and potentially access to the internet, which involves some limitations for users (e.g. battery life and data connectivity), especially for occasional users (Golub et al., 2022).

As check-in and check-out are mandatory across modes in Seoul, the pilot can be evaluated using empirical data from ticket validations, supplemented by qualitative studies, to assess user satisfaction.

Key Outcomes

One month after the launch of the pilot, approximately 500 000 people started using the Climate Card, a promising start for the fare offer. However, most users shifted from the Commuter Ticket to the Climate Card, indicating popularity among frequent users. The initial results from the preliminary evaluation conducted after one month, surveying 2 823 Climate Card users, revealed that around 4% of Climate Card users now rely on public transport for more than 20 trips per month instead of driving their cars (Seoul Metropolitan Government, 2024a).

Fare integration between buses and the metro has increased affordability for multi-modal travel. By using the Climate Card, individuals could save between KRW 3 000 and 30 000 per month (Ji-min, 2023). Additionally, the Climate Card removes the 60-trip limit of the Commuter Ticket, as well as the transfer limit imposed on frequent travellers. These early indications of increased public-transport use versus car use may point toward an opportunity for fare policies to encourage mode shift, especially when attractive and integrated fares are combined with a robust public transport network (Sharaby & Shiftan, 2012).

Over one-half of Climate Card users responding to a survey conducted in March indicated they owned a vehicle, with nearly 15% of them considering themselves daily users. Of this group, over 56% said they used public transport instead of driving more than 20 times since the introduction of the Climate Card (Seoul Metropolitan Government, 2024a).

Importantly, with the bikeshare offer, there is an opportunity for short trips to be shifted to cycling, which can be beneficial for dealing with potential crowding as a result of the fare offer. Such a step facilitates mobility by providing another option for travellers, especially to cover the first and last mile of their trips and relatively short distances. However, this relies on the coverage of the bikeshare system, as well as the connectivity of cycling facilities and public transport. As of July 2020, the bikeshare system included 2 083 bike stations, with an average daily ridership of 64 768 (Jiao et al., 2022).

The promising results point toward the opportunity to initiate some behavioural change among travellers. To a lesser extent, it might even generate a shift toward active modes if part of the community is willing to shift to riding bikes (Zhang & Liu, 2021). Importantly, with the Climate Card fare offer, public transport remains at the core of a multimodal transport system, allowing for smoother transfers between modes, and easier fare payment.

It is worth noting that the Climate Card is a pilot programme whose scope is currently limited to residents working or studying within the Seoul city boundaries, whereas travel in the region typically crosses such boundaries (Ji-min, 2023). If the Climate Card is made permanent, there will be discussions to extend its geographic coverage. However, doing so may introduce additional complexity for users, given the existing fare offers targeted to different types of travel in the metropolitan region. Options such as the Commuter Ticket and off-peak discounts can reduce the cost benefit of the Climate Card and affect its adoption.

Importantly, in its current format, the Climate Card is not eligible for the planned national K-Pass programme which provides reimbursements to frequent public transport users (defined as a minimum of 15 trips in the period of a month). The K-Pass programme, as is structured, excludes prepaid unlimited passes. As a result, public transport users have to decide which fare offer best suits their needs, which expands their options.

Discussion and conclusions

Multiple factors currently inform fare related decisions. The combination of declining fare revenue, increasing demands on public budgets, and the urgent need to address the climate crisis puts pressure on public transport systems to offer service that is attractive to users while also balancing access and mobility needs.

Addressing funding issues requires a combination of policies in addition to fares. This is also the case when it comes to addressing user needs – which can be varied and complex. To develop more effective and equitable fare policies, it is important for decision makers to distinguish between what can and cannot be achieved with fares.

Fares can be a tool to encourage sustainable mode choices, if jointly considered with other road use pricing options.

Fare prices are linked to other pricing measures in the urban transport context. When the negative externalities of private motorised modes are not sufficiently accounted for, it also affects public transport fare prices. Setting fares low to attract users from their cars without adequate road-use charging and parking pricing has been demonstrated to be ineffective because it will affect the ability to provide quality services. Insufficient revenue from fares can lead to underfunding, compromising the quality and reliability of services and potentially reducing access and mobility. Considering these factors when setting fares can lead to better pricing models, particularly in terms of marginal costs of additional usage, which can lead to more efficient use incentives.

Fare-setting can be optimised to generate revenue while reducing the cost barrier for those who most need it.

Fare-setting must balance revenue generation with the need to maintain affordability for public transport for users who most need it. Historically, subscription passes have been the main means to accommodate the needs of frequent users at lower costs; however, they may incentivise higher consumption and lower use of active modes. Subscription passes also require a higher upfront payment to access the benefits of the fare product, which can exclude the resource-constrained individuals who stand to most benefit from frequent-use discounts.

Better targeting concession fares can be a better strategy to pair with optimised fare levels, because subsidies are targeted at the people who most need them. In particular, income-targeted subsidies can be considered more progressive than blanket reduced-fare programmes, because they can be more cost-effective for public transport networks. Importantly, simplifying access to targeted concession fares reduces the burden of means-testing for users and the administrative burden for authorities, expanding the accessibility and mobility benefits and contributing to social equity and economic productivity.

Similarly, fare-capping policies are becoming increasingly common because they are a way to create more efficient incentives for both frequent and occasional users. In the long term, fare capping policies can contribute to increased ridership by encouraging new mobility behaviours, particularly those related to leisure activities, as the benefits of frequent use become apparent. It also means that the most frequent users benefit from effectively discounted travel, while occasional users pay the full rate, without separate pass or fare products being required. However, this outcome is contingent upon having a well-established and reliable public transport network.

Fare policies cannot compensate for inadequate service levels or address physical barriers to accessing the public transport system.

Fare policies can be part of improving access to public transport, but their efficacy in that regard will also heavily depend on the quality of service, its spatial coverage and supporting land uses. Authorities developing fare policies should then be aware of public transport service planning processes to make sure they design policies that can make the best of the existing services. For fare policies to help reduce the gap created by limited service, they need to increase flexibility for users and integrate public transport modes (as well as first- and last-mile services) as much as possible. However, in the long term, if public transport is to attract users at scales needed for climate action, attractive public transport services will be required – and that will rely on adequate funding.

Fare policies can provide flexibility to allow people to benefit more from existing services.

Increasing flexibility for users can include facilitating transfers, allowing users to use the same fare to complete a trip in a single direction without double payment. This is especially useful when the network design limits certain connections (e.g. orbital trips or trips in the urban periphery). It is necessary to complement such initiatives with additional policies aimed at improving public transport services to accommodate increased demand and ensure travellers benefit from reliable travel times and comfort. This also relies on consistent funding mechanisms for public transport, which can be supported by legislative frameworks at the national and local levels of government.

Transfers can also be designed to provide unrestricted travel within a given temporal window. This can be particularly beneficial for people making trip chains or short trips on networks with flat fares. Importantly, the design of transfer windows should take the physical context into consideration to the extent possible. If transfer facilities are inadequate (e.g. physical barriers, long distances, poor wayfinding) some users may be deterred, and it can disproportionately impact people with limited mobility.

Fare policies can facilitate multimodality, making it easier for people to choose public transport for all, or part of their travel needs.

The role of fares in facilitating multimodality and encouraging people to select public transport also depends on the quality of service. In fact, while fare pricing on its own does not play a large role in attracting users to public transport, where service provision is sufficient, fare policies featuring integrated payments (such as the Seoul Climate Card with bikeshare pilot) can help to reduce barriers to mode shift.

In contexts where there are multiple available public transport modes or operators, allowing integrated payments where the same payment method can be used across services can reduce trip planning complexity. This can also extend to shared modes providing first- and last-mile connectivity. For users, easy-to-understand payment options can encourage trying new modes or taking multimodal trips. The available fare payment methods, such as open-payment systems, can also make it easier for people to opt for public transport.

Authorities in charge of fares can explore reciprocal agreements with service providers for trips to and from public transport in effect, increasing the coverage area of the public transport network cost-effectively. In such contexts, there can be a role for subscription passes in influencing attitudes and disrupting habitual travel choices. Subscription passes that are designed to introduce new travel habits, such as multimodal travel, can help to narrow the gap between potential and actual travel, and help achieve supplementary objectives, such as climate action. Importantly, they can be a lever to keep public transport at the core of a multimodal transport system, by allowing for smoother transfers between modes and easier fare payment. However, it is important for subscription pass offers that may increase demand

to be provided with consideration of the system's capacity to accommodate ridership growth. Offering such passes with peak and off-peak cost differentiation can be an opportunity to manage capacity constraints (since capacity constraints first manifest at peak times) (de Haas et al., 2023).

Implementing fare policies

Where authorities lack explicit fare-setting principles, it can be difficult to establish the processes necessary to implement fare policies. It can also result in ad hoc changes in response to political pressures or shocks like COVID-19. Comprehensive fare-setting principles can include prioritising affordability, transparency, inclusivity, flexibility and integration, better targeting user needs through concession fares and targeting travel behaviour to achieve climate action goals. Establishing these principles should include the public, through stakeholder consultation.

While the final responsibility for approving changes to fare policy may remain political in many contexts, comprehensive fare-setting principles and transparent and inclusive processes can enable fare strategies that consistently balance the need for sustainable revenues with user needs such as affordability and access. Decision-making regarding fare-setting should be supported with a fare evaluation framework, conducted regularly to determine whether policy objectives are met. Independent expert advisory panels and technology choices play an important role in this approach.

Independent expert advisory panels can help ensure rigorous analysis to support decision-making and provide transparent advice regarding fare-setting processes (ITF, 2024b). Regular fare reviews should also be well communicated to the public, and can include mechanisms to defer fare adjustments under extenuating circumstances to allow policies to be responsive, as is demonstrated in the Singaporean context. Authorities can ensure transparent communication with the public and stakeholders.

Given that fare policies are most effective when combined with other measures and tools to achieve the objectives of equitable access, affordability and climate action, it is necessary to consider and address conflicting policies. In particular, policies that make the use of private vehicle more attractive, such as free parking, and actions that limit the efficiency of public transport operations, such as the lack of priority measures for surface routes can render fare policies less effective.

Data needs, transparency and inclusion principles should guide the choice of ticketing technologies.

Ticketing technology can provide necessary functions such as delivering targeted concession fares and distributing revenue to operators. Ticketing technology and fare collection norms can also play a role in providing authorities with the data necessary to evaluate service delivery and fare policies. However, selecting ticketing technology should first prioritise lowering barriers to access. Technology for its own sake can perpetuate inequalities, introduce security and privacy issues, and create unnecessary complexity for users.

Selecting ticketing technologies can be accompanied by strategies to ensure inclusion, such as providing different options for payment and lower costs for smartcards or minimum load amounts. Fare structures and collection methods should also be made transparent and simple for users to understand, to reduce the likelihood of any disputes. Similarly, access to subsidies or concession fares should be made simple for users in order to lower barriers to access. Ticketing technologies can make targeted concession fares more accessible, but if concession fares require extensive means-testing, it can create an additional burden for users, and introduce administrative costs for operators.

Transparency should also guide the selection of ticketing technologies and evaluation frameworks. Authorities should pay particular attention to the management of sensitive datasets, in keeping with the appropriate legal frameworks. If authorities obtain data from fare technologies to inform service delivery decisions, they should be aware of who their data sources may exclude. For example, if a large share of users has no access to smartcards or mobile payment apps, the data obtained from these fare collection methods may not be representative of the users of the system.

In some cases, authorities may opt to prioritise ease of access when selecting ticketing technologies and establishing fare validation practices. In such instances, it is necessary to collect other data related to usage, combining both qualitative and quantitative methods to make up for gaps in data.

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Annex A – Experts Interviewed

Oded Cats (Delft University of Technology)
Daniel Štraub (Jagiellonian University)
Mathijs de Haas (KiM Netherlands Institute for Transport Policy Analysis)
Jan-Jelle Welle (KiM Netherlands Institute for Transport Policy Analysis)
Isak Rubensson (KTH Royal Institute of Technology and Region Stockholm)
Luis A. Guzmán (Universidad de Los Andes)
Anne E. Brown (University of Oregon)
Anna Plyushteva (University of Oxford)
Carol Janeth Palma Oliva (Departamento Nacional de Planeación)
Luis Olmedo Cruz Farak (Departamento Nacional de Planeación)
Mizandaru Wicaksono (Institute for Transportation & Development Policy)
Gonggomtua Sitanggang (Institute for Transportation & Development Policy)
Muhamad Kamaluddin (Jakarta)
Melissa Colman (LA Metro)
Kyle Holland (LA Metro)
David Sutton (LA Metro)
Taehyun Bak (Ministry for Land Infrastructure and Transportation, Korea)
Johannes Gferer (Salzburg)

International Transport Forum

Fare's Fair

Experiences and Impacts of Fare Policies

This report explores how fare policies can make public transport more affordable, improving access to opportunities and increasing ridership. Fares are an important source for funding for operations, but revenues have been declining over time due to a combination of factors, such as increasing private car use and the inability of public transport networks to keep pace with changing travel needs. This report explores how fare structures can influence public transport use and identifies principles for fare-setting that can align with the wider goals for public transport.

Public transport authorities need to consider affordability, transparency, inclusiveness, and flexibility when developing fare policies and selecting fare technologies. This report presents several case studies that illustrate these principles. It discusses the distributive effects of different fare policies and ticketing technologies. By identifying what can and cannot be achieved through fare policies alone, this study supports decision makers in developing and implementing more effective and fair fare policies.

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