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FEATURE

Urban transport – Cities rethink the basics

The 2020 Deloitte City Mobility Index

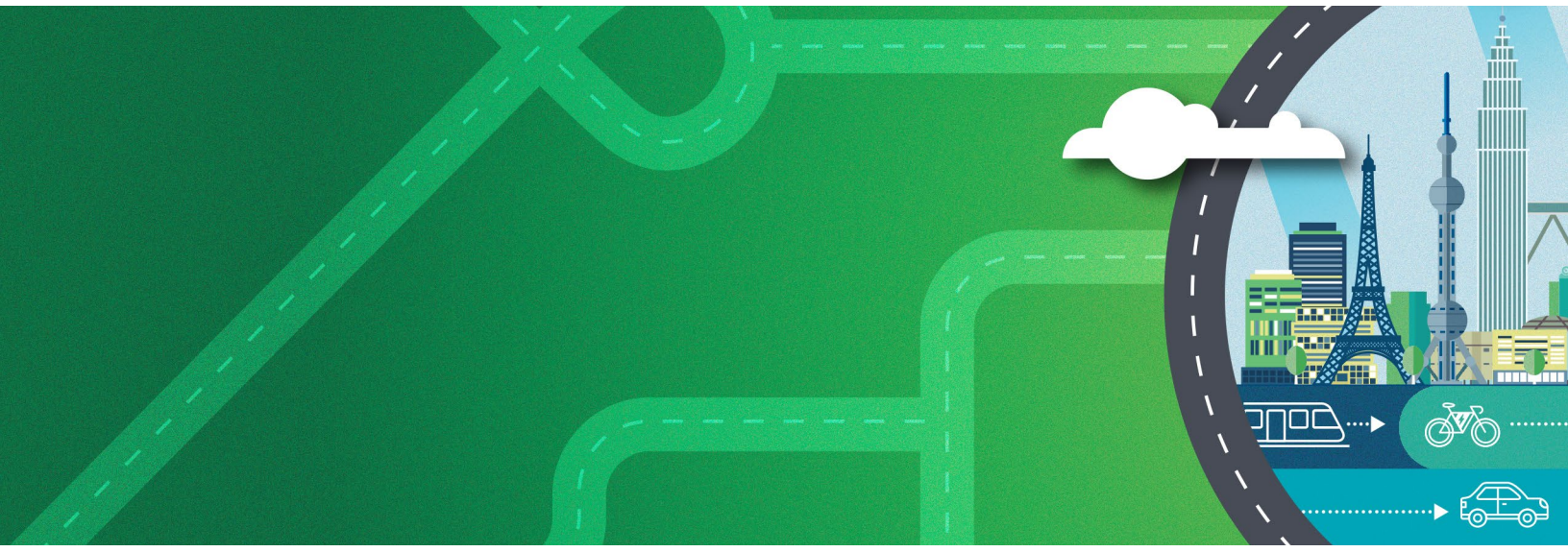
Simon Dixon, Justine Bornstein and Derek Pankratz

"Cities have the capability of providing something for everybody, only because, and only when, they are created by everybody." – Jane Jacobs[1]

Introduction

THE AIM OF the Deloitte City Mobility Index (DCMI) is to develop a holistic understanding of how people move in urban environments. Many long-held conventions about transport are being questioned by major cities. How do you create and sustain foundations, such as sound infrastructure and a safe, clean and efficient service, while also exploring new technologies and solutions? What is the appropriate role for cars (especially private cars) in cities with growing populations? How should data about transport be collected, stored and analysed in a way that balances collective outcomes against individual privacy, cybersecurity, and the competitive concerns of private sector providers? As new transport modes and services show up on city streets, how can they be integrated to enhance the overall transport system?

This article explores four of the most prominent trends we observed in updating the Index for 2020. Our research spanned the two years from March 2018 to March 2020, mostly before the impact of COVID-19 lockdowns on cities and transport around the world. (See sidebar "COVID-19 and urban mobility". See also the accompanying note on methodology for more on this year's Index update.) At the time of writing, it is too early to say how things will play out in the future, and whether COVID-19 represents a temporary disruption to developments already underway or whether it will trigger a fundamental shift to a new reality. We believe, however, that applying lessons learned over the past several years will help cities and their transport systems thrive in a post-coronavirus world.



COVID-19 AND URBAN MOBILITY

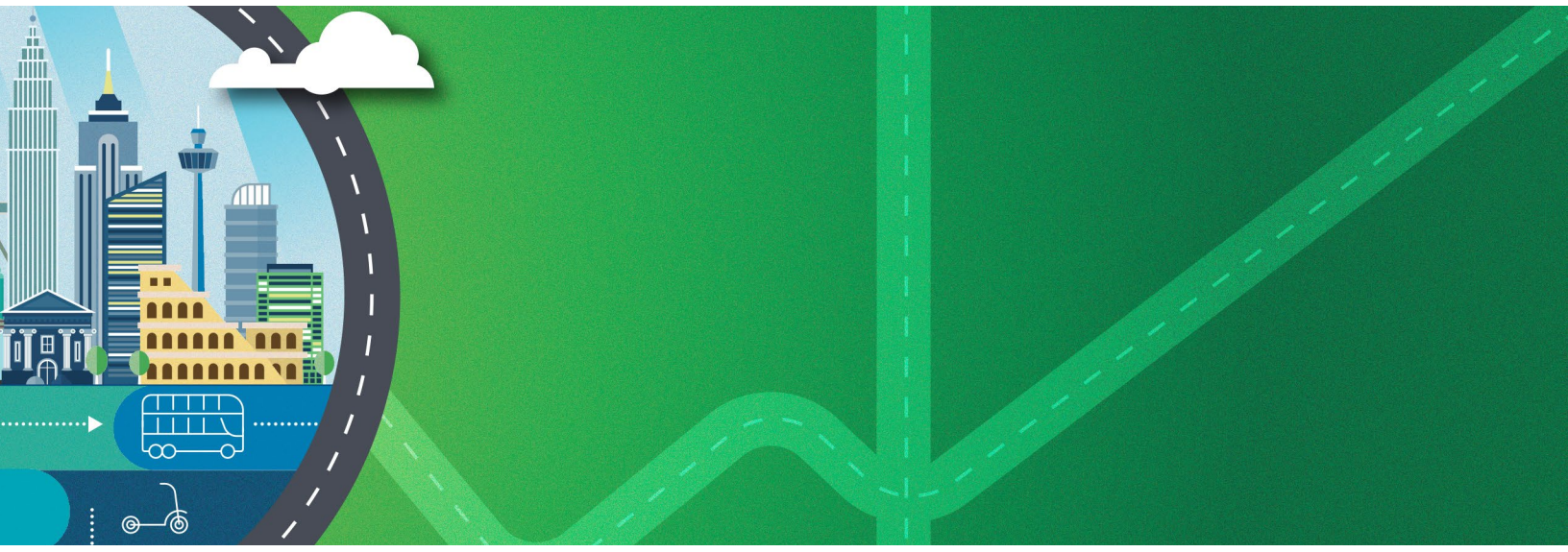
As cities around the world haltingly and unevenly rouse from their pandemic-induced transport hibernation, the orthodoxies of urban mobility, already in a state of flux due to continuing disruption, are being reconsidered to add new dimensions.

In some respects, the COVID-19 lockdowns appear to be accelerating changes that were already being contemplated, such as making city centres friendlier for pedestrians and cyclists. Cities that have reclaimed street space from cars to enable physical distancing for cycling and walking are looking to cement those changes in a post-coronavirus world. Milan is repurposing 35 kilometres of roads in the city centre for bikes and pedestrians.[2] Berlin, Brussels, Rome, Manchester and others are making similar changes.

The pandemic has added an entirely new set of requirements for city authorities to contend with. The definition of 'safety' has been extended to include hygiene. For many years in the past, safety has meant avoiding road accidents and preventing crime on public transport.[3] As passenger numbers pick up after the pandemic, a 'safe' trip is also likely to mean one that is sanitary. For transport operators, that probably means employing a variety of measures, from temperature checks and new vehicle configurations, to more frequent services to reduce passenger loads.

The risks of a return to 'normal' without such measures are clear. In about a dozen countries, Deloitte surveys indicate that between half and three-quarters or more of individuals plan to limit their use of public transport over the coming months.[4] In several regions in China that have 'reopened', road traffic levels have returned to pre-pandemic levels, and in some cases even increased.[5]

There are also issues with the management and sharing of mobility data, which may be extended to include new and potentially more intrusive data collection measures, as the authorities seek to monitor the health and movements of individuals. This data could ultimately be used to improve the operations of the transport system, first for the protection of public health (for example, collecting information about crowding on buses or trains), but eventually with other goals in mind (better matching of supply and demand for transport services).



Cities rethink the basics

We have previously advised that cities need to get the basics right.[6] While it can be tempting to adopt the latest technology, the foundations for a well-functioning transport system in cities remain the less glamorous 'basic' aspects: maintaining the infrastructure; safe, reliable, accessible and affordable transport; and consistent and equal enforcement of the rules.

That remains as true today as when we first wrote it; however, what constitutes 'the basics' for city transport is changing. There is renewed interest in many 'old-fashioned' measures, such as repainting intersections to make them safer[7] and using inexpensive plastic bollards to create protected cycle lanes.[8] In contrast, many promising mobility technologies have not been adopted as quickly as many people (including us!) once thought, such as autonomous vehicles – a cautionary lesson for those tempted to pursue the latest technology at the expense of fundamentals.

Cities rethink the cars

Cities have always had a complex relationship with the motor car. At times symbiotic and parasitic, it is impossible to understand the evolution of city environments without recognising how cars have shaped them.

Yet, despite the integral role of cars in most cities' transportation landscapes – or perhaps because of it – an increasing number of cities are exploring ways to restrict their use and shift people away from private transport. The downsides of a car-centric city are well documented and becoming more acute – congestion,[9] poor air quality,[10] road traffic accidents[11] – and some cities are exploring the use of policies to reclaim streets for people.[12] Amsterdam has announced plans to make it more difficult for motorists to engage in 'rat-running' (using side streets and other short cuts to avoid main roads) by making some roads narrower, and others one way, and by erecting barriers in smaller streets to prevent through traffic.[13] Barcelona's decision in 2016 to ban traffic from three-square-block areas of the city was controversial at the time, but with the success of the 'superblocks' in reducing air and noise pollution and accidents, local residents have supported plans for the creation of a further 12 by 2023.[14] [15] [16]

There is renewed interest in some measures that may be considered more extreme – and politically unpalatable – such as congestion charging. In 2006 a Swedish politician referred to the planned introduction of Stockholm's congestion charging initiative as "the most expensive way ever devised to commit political suicide." But after experiencing the benefits, the electorate voted in 2007 to make it permanent.[17] And in 2019, 12 years after the state assembly initially rejected the idea, New York City announced the introduction of a congestion charge for a large area of lower Manhattan, the first American city to do so.[18]

The negative environmental impact of cars has prompted cities to create stricter standards for the cars that do drive there. London added to its decade-old congestion charging zone in 2019 by putting in place an ultra-low-emission zone that charges drivers of heavier-polluting vehicles for entering the city centre.[19] From the beginning of 2019, Berlin has banned diesel vehicles from areas of the city.[20] Zones such as these not only change the type of car that is driven there; they end up reducing the number of cars on the road, too.

At the same time, cities have sought to encourage the use of alternative modes through better public transport provision (see the sidebar on trams) and more infrastructure for active modes of travel. For example, about 100 cities globally have completely fare-free public transport,[21] and many cities are undertaking initiatives to increase cycle lanes.[22]

TRAMS: BACK TO THE FUTURE

Trams were common on city streets from the end of the 19th and through the mid-20th centuries; however, many systems were shut down in the 1950s and 1960s to make way for car-based urban development.[24]

They are now seeing a comeback in cities all over the world. Europe has more than 210 tram networks – about one-third of them re-introduced since the 1990s. The fastest-growing region for trams is Asia-Pacific, with cities such as Shanghai and Sydney introducing them in designated districts. Melbourne has the largest network in the world, with 250 km of track. Take-off in the North American market has been slower, largely because of the continuing high usage of private cars, but trams form part of integrated mobility systems in cities such as Toronto, Los Angeles and Atlanta.

Not everyone is sold on the idea of trams,[25] but they offer several benefits. Newer tram models can travel at faster speeds, and with segregated lanes, journeys can be quicker than by car and more predictable than by bus. Tram routes are more expensive to build than bus lanes, but a leading European railway manufacturer estimates that it can construct and commission a 10 km line in just 30 months.[26] This is substantially less than for a typical metro line, which means faster payback. And advances in rolling stock technology have seen the development of tram-train systems that repurpose old railway (especially freight) lines. Cities such as Paris and San Diego have used this lower-cost model as a way to connect their city centres to outlying boroughs.

Cities with successful schemes have demonstrated that they can pay for themselves – when passenger numbers are above 50,000 per day. Dublin's tram network handles more than 75,000 passengers per day and the ratio of revenues to operating costs is 118 per cent. (In Paris it is 114 per cent and in Manchester 105 per cent.[27])

The need for dedicated track and signalling systems makes them more fixed and less flexible than bus routes. This can be an issue – if a new tram route is planned badly, a city can end up with a white elephant project. But when it is well planned, a tram network can be a huge benefit to the local community.

Trams can have an important role in mobility systems. Large cities can use them as 'feeder' services that complement traditional modes of transport and connect to new modes, as in Dubai. In mid-sized cities with less traffic density, trams are often the backbone of the public transport network, along with buses. They work best as part of neighbourhood revitalisation projects, such as increased pedestrianisation, park-and-ride facilities, and the introduction of congestion or low-emission zones.

Cities rethink regulation

Cities are also reasserting themselves in another of their 'basic' roles: regulating the mobility environment. Many were caught flat-footed twice in the past decade by new modes of mobility: first by ride-hailing and more recently by e-scooters and other forms of micromobility.[28] While these new mobility services provide value to many, they have unintended adverse consequences: congestion, safety concerns, labour issues and impeding public rights of way. (We note that our thinking about these services has evolved over time and with experience. While we once considered ride-hailing services as a welcome innovation, we now take a more balanced approach that considers both the positive and negative impacts and the need for some regulation of these services on city streets.)

We see cities taking a more assertive and hands-on approach to ensuring that new mobility services contribute to the broader goals of access for under-served communities, environmental sustainability, and reducing road congestion. Paris provides an example. Shared e-scooters were first introduced there in June 2018. By summer 2019, a dozen companies with a combined fleet of 20,000 vehicles were competing for a share of an unregulated market. In response, the city authorities established a code of conduct for riders, restricted e-scooters to bike lanes, set up dedicated parking spots, and limited the number of providers in the city to three with a combined total fleet of 15,000.[29] San Francisco, Atlanta, Washington, DC and others have similar permit systems that limit the numbers of e-scooter vendors and vehicles.[30]

Cities will need to adapt mobility solutions to their specific circumstances. Cycling and e-scooters will be a more suitable option in densely populated cities with small centres, such as Amsterdam (220 square kilometres in the municipal area). But the use of cycles can be adapted in other cities for slightly different purposes, such as using them to get to public transport routes, rather than travelling the whole way, in a city with a wider geographical area, such as Tokyo (2,500 square kilometres in the urbanised area).

The 'new' basics: Cities rethink digital

Increasingly, digital capabilities are becoming an essential element in an efficient, user-friendly transport system, especially as consumer expectations continue to rise. A recent survey of leaders from about 100 cities worldwide found that more than two-thirds are piloting or have deployed smart traffic signals or vehicle-to-infrastructure communication technologies.[31] Cities will need to harness increasing volumes of data produced by connected infrastructure and assets (vehicles, traffic lights) in order to make better-informed and more dynamic decisions about their transport systems.

Contactless ticketing and payments systems, for example, have become increasingly common since they were pioneered by Transport for London.[32] In addition to the convenience for travellers, they also provide valuable data about when and where transport is being used. They can also serve as building blocks for the elusive goal of fully integrated mobility-as-a-service (MaaS) – another innovation that has never quite materialised. Previously, we gave credit to cities for having or piloting MaaS, but it is now clear that this approach lacks sufficient nuance. Many of the cities in our Index are moving towards some form of digital or open-loop payments system, which is an important precondition for MaaS. Every city has a transport app of some sort, although functionality varies, mostly limited to route planning. Likewise, there is not much integration of public and private transport apps. However, as apps become more sophisticated, enabling booking and

payments, and developing into a one-stop service that includes both public and private systems, this will be the manifestation of MaaS and will lead to the adoption of city-wide mobility operating systems.

For cities hoping to generate more comprehensive mobility data, the main barriers are funding and capabilities. Despite the falling cost of sensors and cloud storage, comprehensive coverage of a city's transport system can still be a formidable financial undertaking. San Diego's smart streetlight programme, for example, could cost roughly $30 million to install, even if it eventually results in net savings.[33] At the end of 2019, New York's MTA was budgeting $644 million to convert to its OMNY contactless system, $200 million more than originally estimated in 2016.[34] And finding and retaining the technical talent to analyse and act on all the data will be an additional challenge for city authorities.

The 'new' basics: Cities rethink data

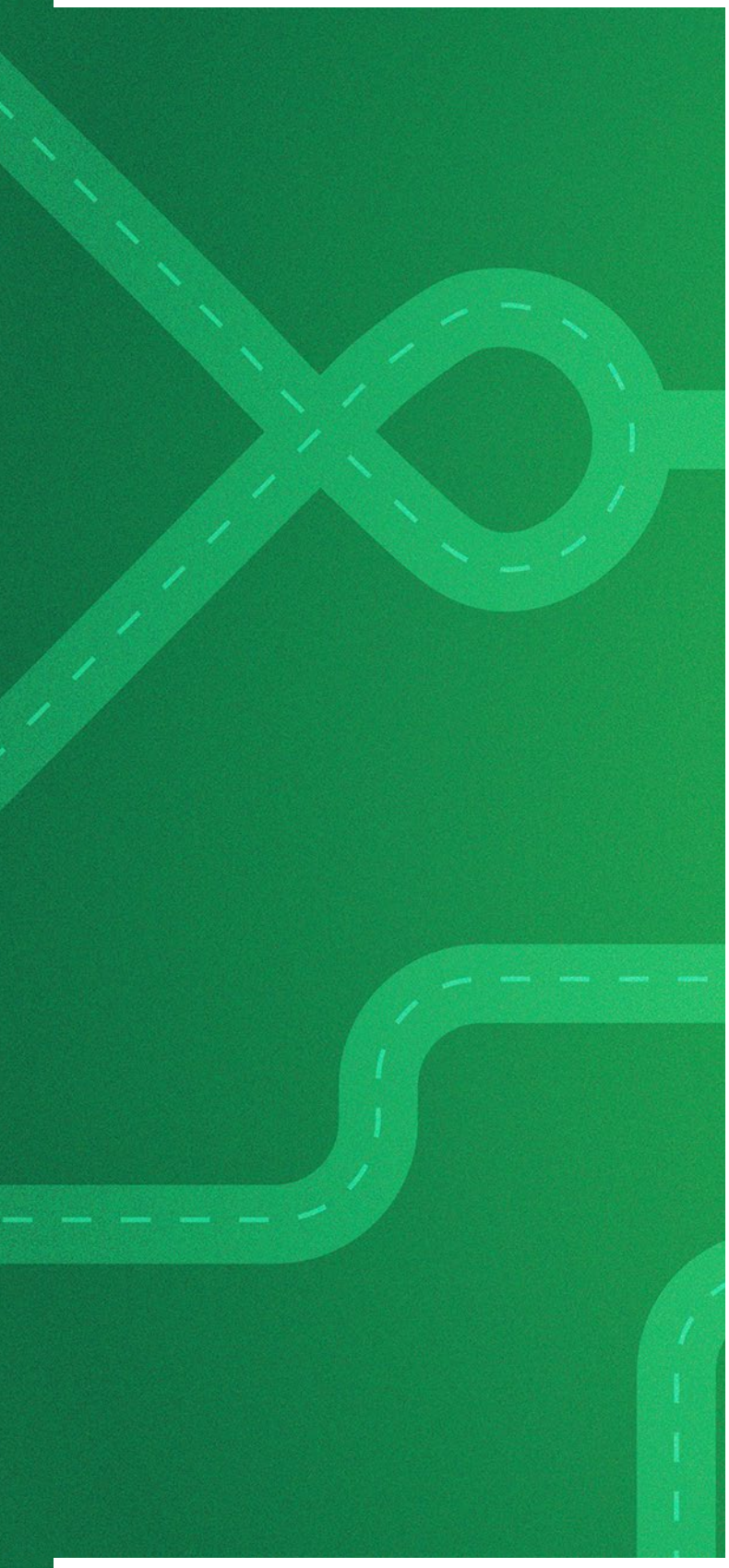
Data has emerged as one of the most important – and challenging – requirements for understanding and managing rapidly evolving mobility landscapes in cities. Increasingly, city authorities are embracing open data and are making their mobility information available to the public. Some have gone so far as to mandate data sharing by government. In Finland, the law requires open APIs for all transport services, both public and private.[35]

There is more difficulty with data flows between the public and private sectors. Private-to-public data sharing is increasingly important for understanding and managing the impact of the proliferation of novel modes of transport and digital services. The Los Angeles Department of Transportation (LADOT) has developed the Mobility Data Specification (MDS) to create a sustainable, replicable and dynamic regulatory mechanism to deal with emerging mobility technologies and services. In addition to creating a standard API for the city to provide information to mobility providers, the MDS also includes oversight and regulatory mechanisms.[36] Dockless scooter providers, for example, are required to share a wide range of data with the city authorities via the MDS about their vehicles' locations, conditions, travel patterns, and usage.

Yet LA's initiative has met with some resistance. Privacy and security concerns, along with reservations about the sharing of data that private operators see as key sources of differentiation, have prompted some providers to move slowly to comply, or to explore legal remedies, leading to the possibility of suspensions of operating licences.[37] In Europe, the General Data Protection Regulation is part of an effort to return control of personal data to the individual. Barcelona is working towards resident-specific dashboards that provide transparency and opt-out capabilities for how data are used.[38] Estonia has instituted a similar system.[39]

Local requirements and regulatory regimes, along with public opinion, will shape the mobility data environment, and we can expect wide variations between cities. This issue is likely to be one of the defining challenges over the next several years as cities, businesses and residents consider how they use the vast amounts of data for decision-making, operating the transport infrastructure and informing citizens' choices – whilst still protecting personal privacy and the competitiveness of private sector companies.

Cities also need to guard against the risks of bias in the data they collect and how this can affect decisions, particularly if biased data feeds into algorithmic decision-making.[40]



Conclusion

When we analysed the data and trends in cities since our last Index update, we could not foresee that mobility systems would be so thoroughly disrupted by COVID-19 and the public health response.

It is difficult to predict with confidence which changes will be temporary responses and which will be permanent. It is possible that the trends over the past decade will be undone by the combined effects of the pandemic and the potential economic fallout. But these crises could act as a catalyst, propelling cities towards a future for mobility that is cleaner, safer, faster, equitable and accessible. The changes will no doubt vary widely between cities.

Transport systems are deeply embedded in the culture of where they operate, the outcome of decades of decisions and influences; and passengers are conservative and disinclined to change their travel habits. Yet mobility has been at an inflection point for years and the current circumstances provide opportunities for a rethink.

Cities are not passive observers of events. While much remains uncertain, city authorities have an array of policies and tools at their disposal to shape their mobility systems in a post-coronavirus world. The path they take will depend, at least to some extent, on the decisions taken in the coming days, weeks and months by city leaders, transport officials, mobility providers and everyday citizens.

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The Deloitte City Mobility Index reviews major cities on key aspects of mobility and the resulting relationship to economic performance. Drawing on publicly available data, client conversations, and bespoke Deloitte analyses, we assess each city's ability to transport its citizens both now and in the future and therefore its potential to bring prosperity to the city.

As we receive feedback, we will update and expand the analysis, which may mean the results shown in this document may change.

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