Revitalising London's Transport System: Addressing Challenges and Proposing Sustainable Solutions for an Inclusive and Greener Future

Table of Contents

1 History and Overview

1.1   An introduction to London transport

As a pioneer for modern technology, the UK owns the earliest developed transport system in the world — the London transport system. In particular, London has the oldest underground railway network in the world — the Tube, with services running since 1861 between Paddington and Farringdon, which still operates today. Other than the Tube, there's also the Overground, the Docklands Light Railway (the DLR), the Tramlink, the Elizabeth Line, and various National Rail commuter train services all over London. We also have taxis, and river transport along the Thames. We have bus services all around London, which offer great connection to places unreachable by railway.

London's transport system was built impromptu (Travers, 2009), partly because the ownership of train lines was private, which could result in a complex and confusing network of tube and train lines today. This is one of the key issues with London's transport system — its lack of integration, which can make it challenging to navigate for commuters. Moreover, different modes of transport can be operated by different companies, which results in disparities in pricing and ticketing. Additionally, the system is often plagued by delays and overcrowding, particularly during peak hours.

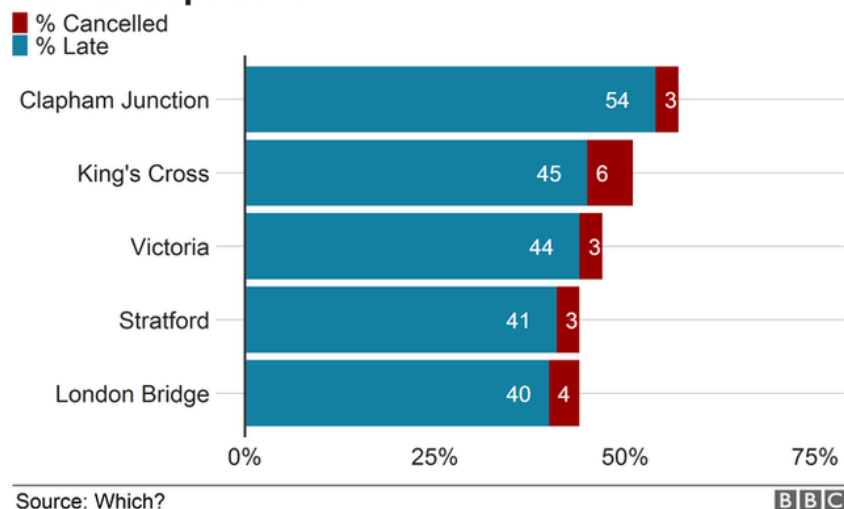Fig. 1 Services late or cancelled at London stations, Jan to Sept 2018 (UK's railway stations with most train delays revealed, n.d.)

In order to tackle these problems, we need a more coordinated and integrated transport system in London. To make this happen, collaboration between stakeholders and legislation are necessary. In this essay, we will dive into the outstanding issues of London transport and possibilities of improvements.

1.2   How important is public transport to us

Public transport has always been an important system of a modern-day society. It benefits the society in certain ways.

Public transport is essential for accessibility. For people with mobility issues, step-free access is available on most public transport. There are ramps on buses, allowing wheelchair users to enter the bus hassle-free. Many railway stations in London have step-free access, which is a relief for people with mobility issues. It also allows people to travel without owning a vehicle. Even for people owning a vehicle, sometimes travelling with public transport would be even faster than with cars, making commuting more efficient. Well-developed transport links creates opportunities, while not limited by locational factors.

Passenger Capacity of different Transport Modes

Passengers per hour
on 3.5m wide lanes in the city

👤 = 1,000 average passengers / hour

👤 = 1,000 potential passengers / hour

mixed traffic: 1,500 - 2,000
regular bus: 5,000
BRT single lane: 9,000
cyclists: 12,000
pedestrians: 15,000
light rail: 18,000 - 20,000
BRT double lane: 43,000
heavy rail: 40,000 - 60,000
suburban rail: 60,000 - 90,000

Illustration based on: Breithaupt based on Botma & Papendrecht (1991). Traffic operation of bicycle traffic, TU Delft. http://www.uncrd.or.jp/content/documents/5594Presentati-on%203%20-%20Module%201%20-%20Mr.%20Breithaupt.pdf (accessed 20.09.2018)

TUMI
Transformative Urban Mobility Initiative

@TUMInitiative
transformative-mobility.org

Fig. 2 Passenger capacity of different transport modes (Breithaupt)

Public transport makes a city more sustainable. Transport by privately owned cars (POV) would densify the amount of pollution per person. Any form of public transport would be able to hold more passengers than any POVs (Breithaupt). This means public transport would produce less pollution per person than POVs. Many fossil fuel-powered public transport in Britain is replaced with electric counterparts as well, which an average household might not be able to afford. The

continuous development of public transport improves the environment and allows London to become more inclusive and prosperous.

1.3 Comparison with other cities

Comparing London Transport to other cities', we can see that the latter offer a lot more.

Hong Kong is one of the few regions in the world to have a profit in the operation of their metro — the MTR (Mass Transit Railway). This is because their operation model — Rail + Property Scheme — allows the railway network to be owned by the government while being profitable. This scheme prohibits the MTR from having freehold of land, but instead leasehold at market rates, along with development rights. The MTR generates most of its income from land development, housing, shopping malls around the city. However, in the UK, it is seldom seen that railway related land use is utilised. This deters a lot of potential income. Instead of issuing government subsidy or nationalise railway companies to save cost, the transport department decided to shift the costs to passengers amidst the cost-of-living crisis.
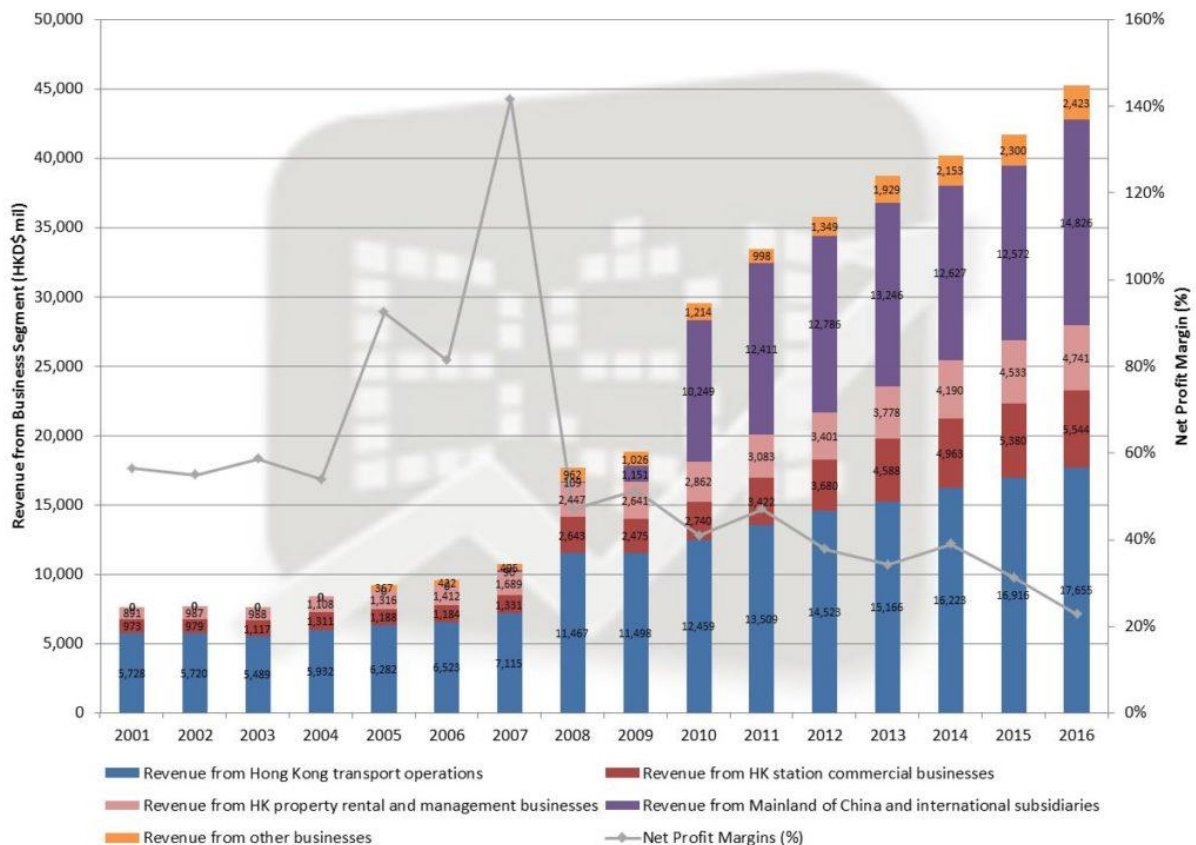
Fig. 3 Earning distribution of MTR Hong Kong (MTR Corp Ltd (Analysis), n.d.)

In Hong Kong, discount is offered when you change modes of transport, for example, changing from trains/metros to buses. There are air conditioners and network services in trains, creating an outstanding user experience. Stations are spacious with clear signage. However, in London, people usually only stick with one mode of transport to avoid extra charges, such as only taking the bus or the Tube

6

only. This would hinder the efficiency of the transport network, as in most times combining two or more modes of transport would be faster.

2 Problems, issues and their causes

2.1 Small expandability

London's early transport modernisation presents challenges in terms of expandability.

Originally, the city's streets were designed for horse-drawn omnibuses, accommodating both horses and people. Due to the transportation being accessible primarily to the wealthy, roads were built too narrow, with limited foresight for the growing demands of affordable and accessible public transportation. This lack of forward-thinking has created issues regarding expandability.

A key example is the limited ability to expand existing roads. Early roads were narrow and segmented, rather than continuous and consistent. Widening them would necessitate demolishing buildings, leading to legal disputes and other complications, making it nearly impossible to accomplish.

Similarly, underground development also faces expandability challenges. The construction of the Elizabeth Line serves as a prime example. The project faced significant delays and went over budget due to unexpected issues such as the discovery of historical artefacts and a disorganised web of subsurface infrastructure. According to a Crossrail report, programme delays due to archaeology on enabling works packages may cost the project £20–40k per week (CARVER). These challenges contributed to delays totalling four and a half years.
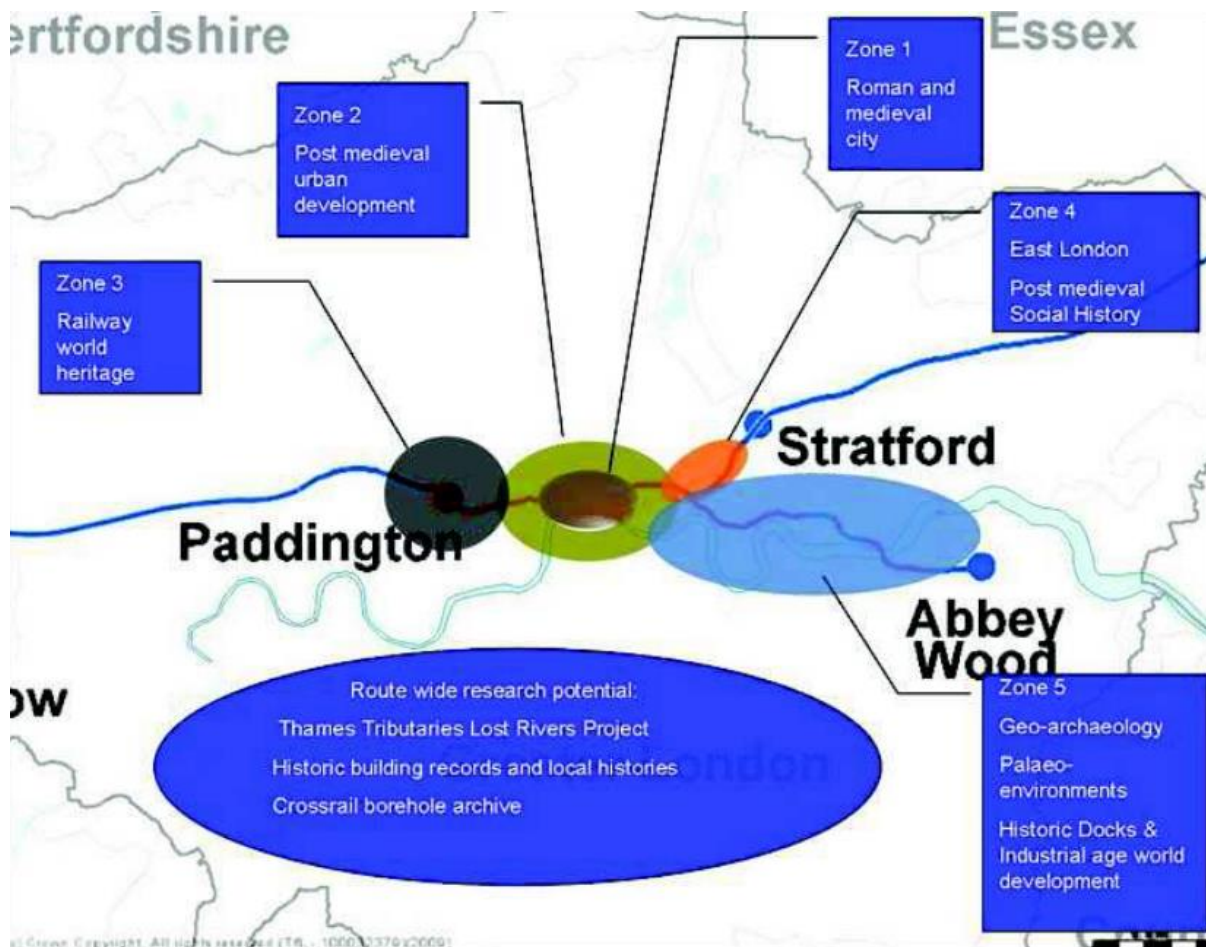
Fig. 4 Geographic zones along Crossrail, which contributed to the delays[Error! Bookmark not defined.]

2.2   Social inequality in transport

There is a notable disparity in transport opportunities between North and South London. While the Central, Bakerloo, Piccadilly, Metropolitan, Jubilee, and Northern Line services cater to North London, only the Northern Line serves South London. In fact, all six London boroughs without Tube services (Bexley, Bromley, Croydon, Kingston upon Thames, Lewisham, and Sutton) are located in South London, out of its 11 boroughs. Interestingly enough, the population density of South London is similar to that of North London.

According to an enquiry reply from TfL (Reply from TfL), they confirmed that there are disparities between faring of different railway companies. It is observed that train services serving South London, such as Southern, Southeastern, and Southwestern, tend to have higher fares compared to those serving North London.

A document (Dr Shivonne Gates) states that transport links can significantly impact one's employability. Providing better transport to wealthier areas perpetuates a vicious cycle, causing less privileged areas to become even poorer. To address this issue, the government must prioritise developing transport links in less developed areas.

2.3   Low incentive to go green

Another challenge within London's transport system revolves around the ridiculously overpriced fares. Often, it proves to be more economical to travel by car than by train, particularly for longer distances. This pricing structure puts off individuals from utilising public transportation, nudging them toward personal

vehicles. This shift contributes to heightened greenhouse gas emissions and aggravates traffic congestion in the city.
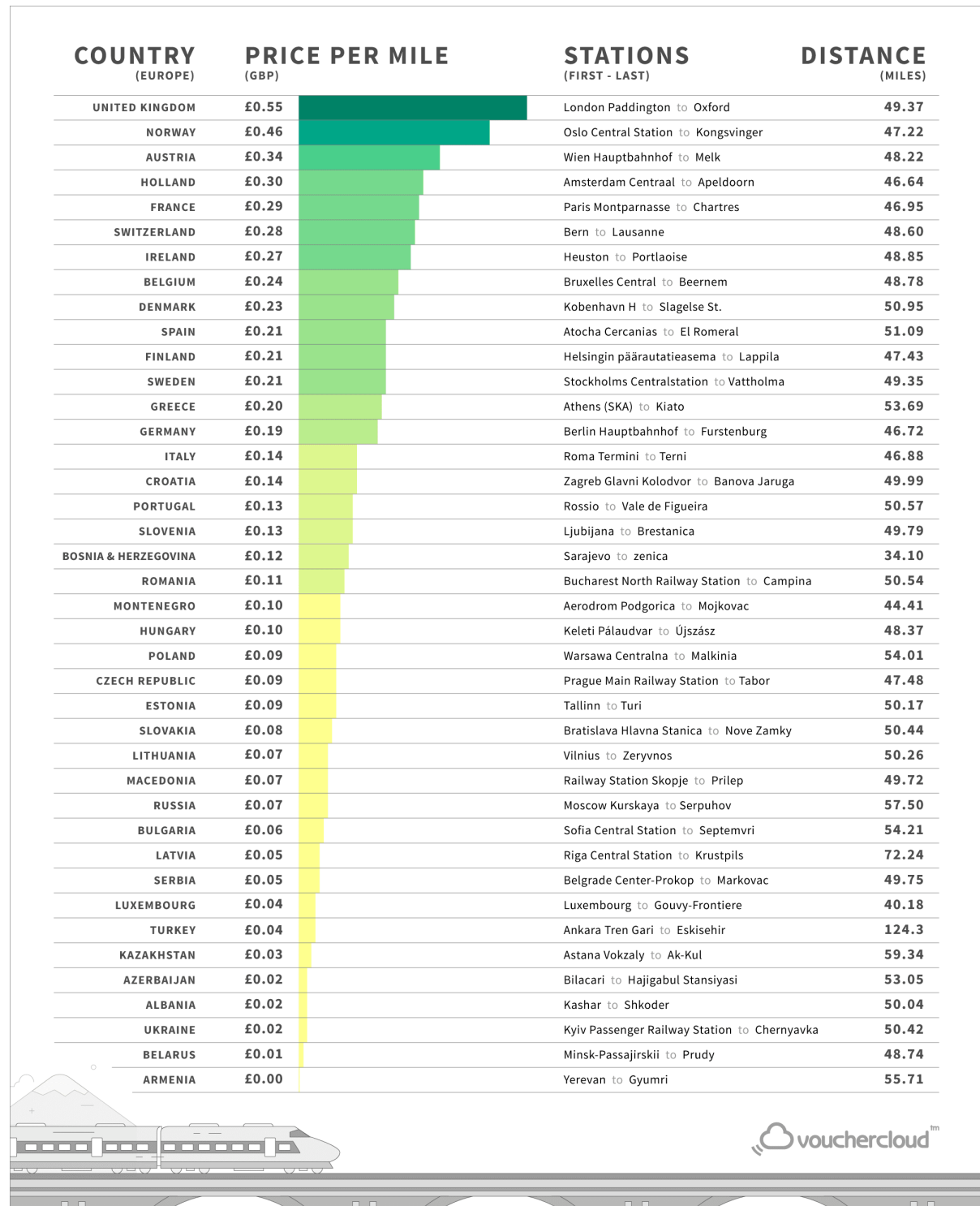
COUNTRY (EUROPE)	PRICE PER MILE (GBP)	STATIONS (FIRST - LAST)	DISTANCE (MILES)
UNITED KINGDOM	£0.55	London Paddington to Oxford	49.37
NORWAY	£0.46	Oslo Central Station to Kongsvinger	47.22
AUSTRIA	£0.34	Wien Hauptbahnhof to Melk	48.22
HOLLAND	£0.30	Amsterdam Centraal to Apeldoorn	46.64
FRANCE	£0.29	Paris Montparnasse to Chartres	46.95
SWITZERLAND	£0.28	Bern to Lausanne	48.60
IRELAND	£0.27	Heuston to Portlaoise	48.85
BELGIUM	£0.24	Bruxelles Central to Beernem	48.78
DENMARK	£0.23	Kobenhavn H to Slagelse St.	50.95
SPAIN	£0.21	Atocha Cercanias to El Romeral	51.09
FINLAND	£0.21	Helsingin päärautatieasema to Lappila	47.43
SWEDEN	£0.21	Stockholms Centralstation to Vattholma	49.35
GREECE	£0.20	Athens (SKA) to Kiato	53.69
GERMANY	£0.19	Berlin Hauptbahnhof to Furstenburg	46.72
ITALY	£0.14	Roma Termini to Terni	46.88
CROATIA	£0.14	Zagreb Glavni Kolodvor to Banova Jaruga	49.99
PORTUGAL	£0.13	Rossio to Vale de Figueira	50.57
SLOVENIA	£0.13	Ljubijana to Brestanica	49.79
BOSNIA & HERZEGOVINA	£0.12	Sarajevo to zenica	34.10
ROMANIA	£0.11	Bucharest North Railway Station to Campina	50.54
MONTENEGRO	£0.10	Aerodrom Podgorica to Mojkovac	44.41
HUNGARY	£0.10	Keleti Pálaudvar to Újszász	48.37
POLAND	£0.09	Warsawa Centralna to Malkinia	54.01
CZECH REPUBLIC	£0.09	Prague Main Railway Station to Tabor	47.48
ESTONIA	£0.09	Tallinn to Turi	50.17
SLOVAKIA	£0.08	Bratislava Hlavna Stanica to Nove Zamky	50.44
LITHUANIA	£0.07	Vilnius to Zeryvnos	50.26
MACEDONIA	£0.07	Railway Station Skopje to Prilep	49.72
RUSSIA	£0.07	Moscow Kurskaya to Serpuhov	57.50
BULGARIA	£0.06	Sofia Central Station to Septemvri	54.21
LATVIA	£0.05	Riga Central Station to Krustpils	72.24
SERBIA	£0.05	Belgrade Center-Prokop to Markovac	49.75
LUXEMBOURG	£0.04	Luxembourg to Gouvy-Frontiere	40.18
TURKEY	£0.04	Ankara Tren Gari to Eskisehir	124.3
KAZAKHSTAN	£0.03	Astana Vokzaly to Ak-Kul	59.34
AZERBAIJAN	£0.02	Bilacari to Hajigabul Stansiyasi	53.05
ALBANIA	£0.02	Kashar to Shkoder	50.04
UKRAINE	£0.02	Kyiv Passenger Railway Station to Chernyavka	50.42
BELARUS	£0.01	Minsk-Passajirskii to Prudy	48.74
ARMENIA	£0.00	Yerevan to Gyumri	55.71

vouchercloud™

Fig. 5 Comparison between train prices across Europe shows that UK has the most expensive train prices within Europe (Train Prices Across Europe – UK Train Prices Compared to Europe)

While congestion charges have been introduced to dissuade short car journeys within central areas, it has little to do with discouraging long city to city car rides. This insufficiency in promoting environmentally friendly options weakens the city's efforts to diminish its carbon footprint and air pollution.

To alleviate these issues, a critical step involves the government and transport authorities reassessing fare structures to make public transportation more affordable and attractive to the average Londoner. For instance, adopting successful practices implemented in other UK cities, such as "park & ride," could significantly help. This approach facilitates seamless transitions between personal automobiles and public transport, encouraging a greater inclination toward using public transportation. Notably, this strategy has been successful in numerous train stations where adjacent car parks are provided, illustrating the potential to enhance the appeal and utilisation of public transportation. Furthermore, introducing new incentives like subsidies for electric vehicles and enhancing cycling infrastructure could further stimulate the adoption of greener transportation options, effectively addressing London's environmental and congestion concerns.

2.4   Poorly designed infrastructure

2.4.1 Step-free access

Step-free access facilities have faced criticism from numerous sources. In a user's perspective (Accessibility on the tube – 'step-free' but not step free), many stations are marked as step-free but do not actually offer seamless accessibility. For example, the gap between the platform and the Tube can be too wide, creating challenges for individuals with mobility impairments. Additionally, overcrowding on Tube trains often makes it difficult to accommodate wheelchair users. I have personally witnessed situations where a mother with a buggy had to leave the bus to make way for a wheelchair user.

Furthermore, it is striking to see the limited number of Tube stations offering step-free access. Only approximately one-third of the stations provide step-free facilities, and among these, just half are fully accessible from street to train, while the rest only offer step-free access from street to platform (Step-free Access on Tube and Train, n.d.) (Quick Project: Accessibility on the London Underground, n.d.). In comparison, 96 out of 98 metro stations in Hong Kong have step-free access (Caring for our Customers with Special Needs, n.d.).

The issues surrounding step-free access facilities in London's transport system are deeply tied to the historical development of the UK's earliest transport system, specifically the London transport system, mentioned in the first section. The historic nature of the infrastructure poses significant challenges in retrofitting it to be more accessible for individuals with mobility issues. The high costs and complexities associated with upgrading aged infrastructure present a major hurdle in enhancing accessibility across the network. This results in a situation where modern standards of inclusivity struggle to integrate seamlessly with the constraints of antiquated infrastructure.
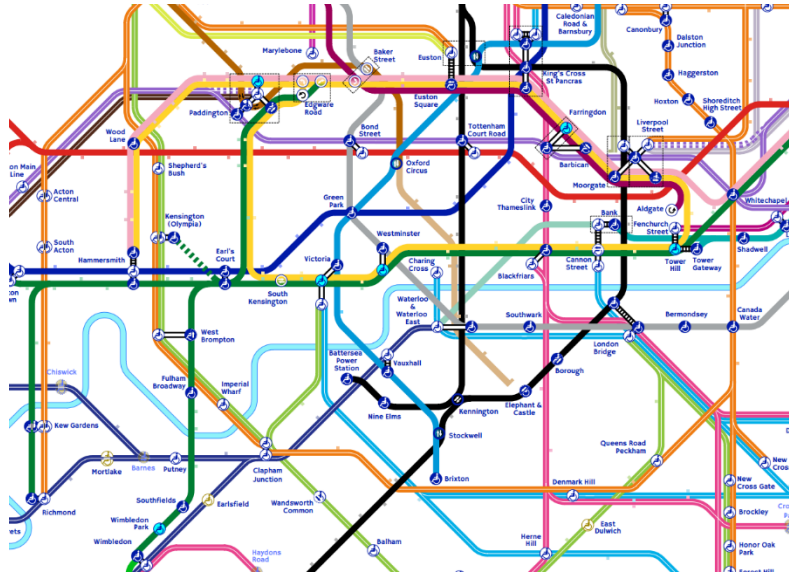
Fig. 6 A Tube map of Central London showing only stations with step-free access (Step-Free Map and Future Access, n.d.)

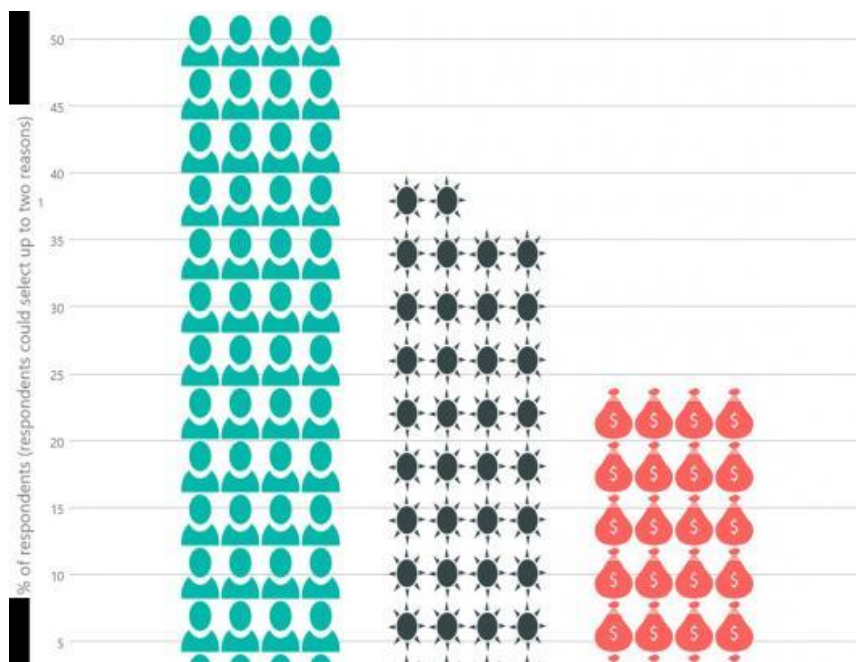## 2.4.2 Subpar user experience

Fig. 7 Reasons Londoners dislike travelling on public transport: Too busy/overcrowded: 52%; Too hot/humid: 38%; Too expensive: 24%

In public transport, user experience also plays a huge role on the pull factors. As seen in the graph, many Londoners dislike travelling on public transport because they are overcrowded or hot/humid, which are factors related to infrastructure.

For instance, seats on the Tube and buses are made out of moquette. Despite the aesthetics, it could absorb sweat from bodies easily and accumulate bacteria. When there are spillages, it could be difficult to detect and clean as well.

In contrary, seats in Hong Kong metro trains use metal seats, which wick sweat easily. Trams use plastic seats, while buses have phased out all velvet seats by

2017 and replaced them with man made leather seats. All materials used are easy to clean and not absorbent.

3 Potential Solutions for the Problems

3.1 New Infrastructure

3.1.1 Extend London Tramlink

The Tramlink in London serves similarly as an orbital light rail network. It currently covers the boroughs of Merton and Croydon, providing seamless transport links between them. Trams have always been a well-praised network. For London's case, most of the Tramlink network was built on existing railways, so the government could simply focus on renewing old infrastructure instead of taking time to bore tunnels and build railways. Moreover, most of the network are on ground level, making it easy to maintain. It is also cheap to build and could be built in a short period. For instance, tramways can be directly built on streets in the neighbourhood, while viaducts and underground tunnels used in the Tube are not needed for trams. It does not require a large population to maintain operational costs. Designed for transportation in less populated areas, trams serving in the Tramlink are lighter and shorter than Tube trains. The maintenance costs are therefore considered to be lower. The trams can also be fitted in shorter platforms, implying that more stops can be set up in a neighbourhood, and a more extensive transportation network can be provided to the population. It could also be potentially extended to the suburbs of London other than south London.

TfL's current view is that extending Tramlink from the existing branches to reach new destinations including Sutton, Mitcham, and Bromley has a better business case than options to serve new corridors (Borough Transport Strategy, n.d.). However as of 2023, no further plans has been made for the construction of these new links, despite promises from Boris Johnson, Sadiq Kahn and TfL (Croydon's tram extensions that have never happened despite Boris Johnson, Sadiq Khan and TfL promises, n.d.). The government should be more proactive to improve transport links in poorly served areas.

3.1.2 Build more deep-level railways in central London

The Elizabeth Line was opened in May 2022, immediately being a large hit among London commuters. It actively reduces passenger flow in Central London, relieving the crowdedness of overlapping lines like the Central Line and the Jubilee Line.
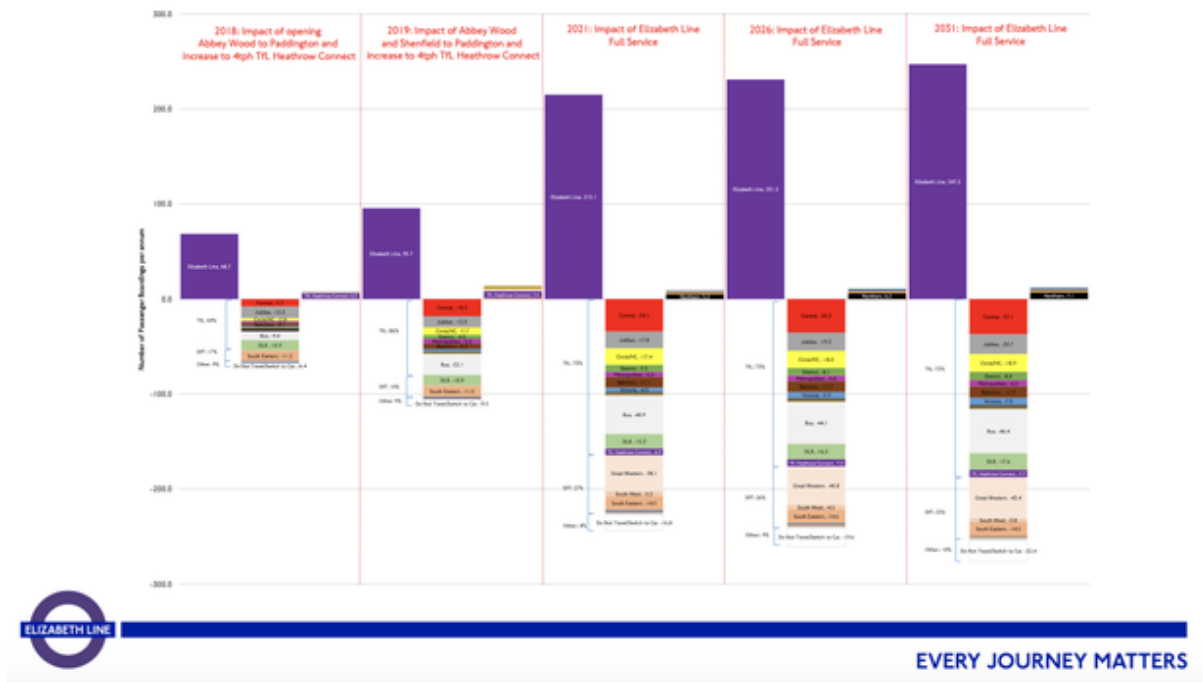
Fig. 8 Where TfL thinks Elizabeth Line customers will come from (Croydon's tram extensions that have never happened despite Boris Johnson, Sadiq Khan and TfL promises, n.d.)
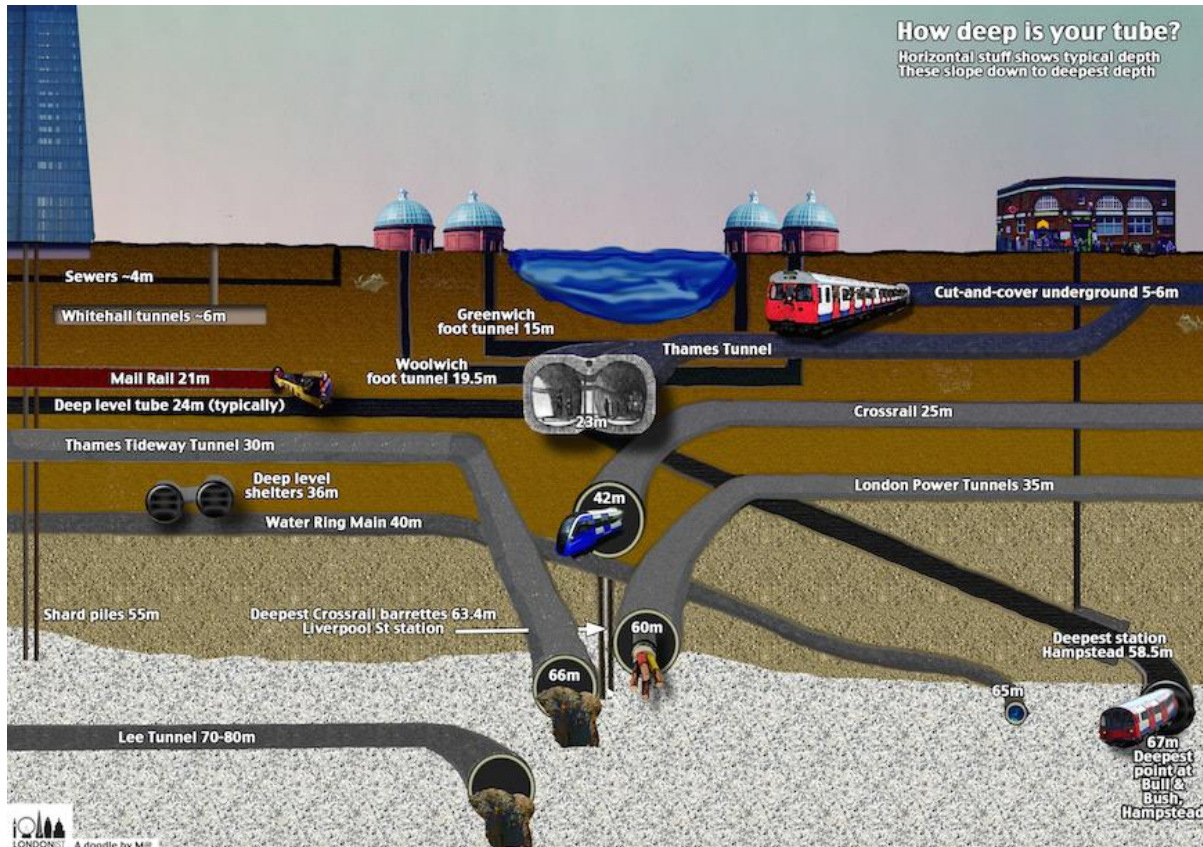

Fig. 9 How deep does London go? (How Deep Does London Go?, n.d.)

As seen above, London's underground is full of different infrastructures. We should build more deep level railway lines like the Elizabeth Line, such as projects like the Crossrail 2, would help out a lot with diverting traffic flow, especially when the areas covered by it is currently underserved by the National Rail network.

3.1.3 Introduce parkway stations in Zone 2-6 stations to promote greener transportation

In recent years, the concept of a parkway has gained significant attention (New parkway railway station planned off A5 near Hinckley, n.d.) (Plans for Bristol Parkway station redevelopment approved, n.d.) (Whittlesford Parkway station in Cambridgeshire to see upgrade work carried out, n.d.) as an effective way to make urban areas like London greener. A parkway is a railway station, normally o   n the outskirts of a regional or city centre which can also serve as a park and ride interchange allowing further onward travel (New Parkway Stations). Currently, there are no parkway stations in London, but there are quite a few of them in other regions. For example, Luton Airport Parkway station is on the Midland Main Line, mainly serving traffic to London Luton Airport. By having a light rail system, the DART, and a few regularly operated buses, it helps reduce the traffic into the airport.

Fig. 10 Luton Airport Parkway

According to Network Rail (New Parkway Stations), the benefits of building parkway stations include more efficient access into local and regional urban centres,

relieving pressure on the railway network and lowering the carbon agenda set by the government.

To incorporate parkway stations into our current London transportation system, we can launch projects to rebuild popular interchanges to accommodate cars, for example, building a car park on top of or next to the station. In this way, we could prevent the flow of cars into Central London and therefore reduce air pollution. Those stations could be strategically located on the outskirts of city centres, such as within Zones 2–6, to provide convenient access for commuters traveling from suburban areas.

3.1.4 Enhance London transport by utilising current transport links: river transport

London is a big city with many transportation modes, but river transport is often overlooked and underutilised. The Thames is like a natural motorway, avoiding congested roads and dense buildings which allows boats to get to their destinations quickly. As the Thames does not carry as much traffic flow than underground trains and overground vehicles, it could help alleviate congestion on London's road and rail network. It is also more environmentally friendly than road transport (Why river transport is making waves , n.d.), by emitting less greenhouse gases such as CO_2.

One of the current river boat services is the Uber boat. It runs roughly every 20 minutes per direction, which might not be enough for the number of daily commuters. Unfortunately, the Uber boat does not have any discount schemes for interchanges with the TfL[1] network and journeys made on the Uber boat do not count towards the daily cap. A single journey costs £5.20, which is higher than a £3.40 peak London Underground journey from Zone 1 to Zone 2, or a £1.75 single bus journey. Although Thames Clippers, the operator of Uber boats, did target towards commuters, the pull factor simply isn't big enough.

Fig. 11 London's river boat

To further promote river boat transport, TfL and Thames Clippers could start offering joint ticketing options or joint discount schemes. TfL could also help provide real-time information about connections, such as the ETA[2] of buses and the Tube at river boat docks. Thames Clippers could improve the frequency of riverboat services during peak commuting hours and offer larger vessels to accommodate higher passenger volumes. This will make river commuting more convenient and appealing to potential users. TfL could help promote the service, such as posting advertisements about discounts in Tube stations.

3.2 Improving current infrastructure

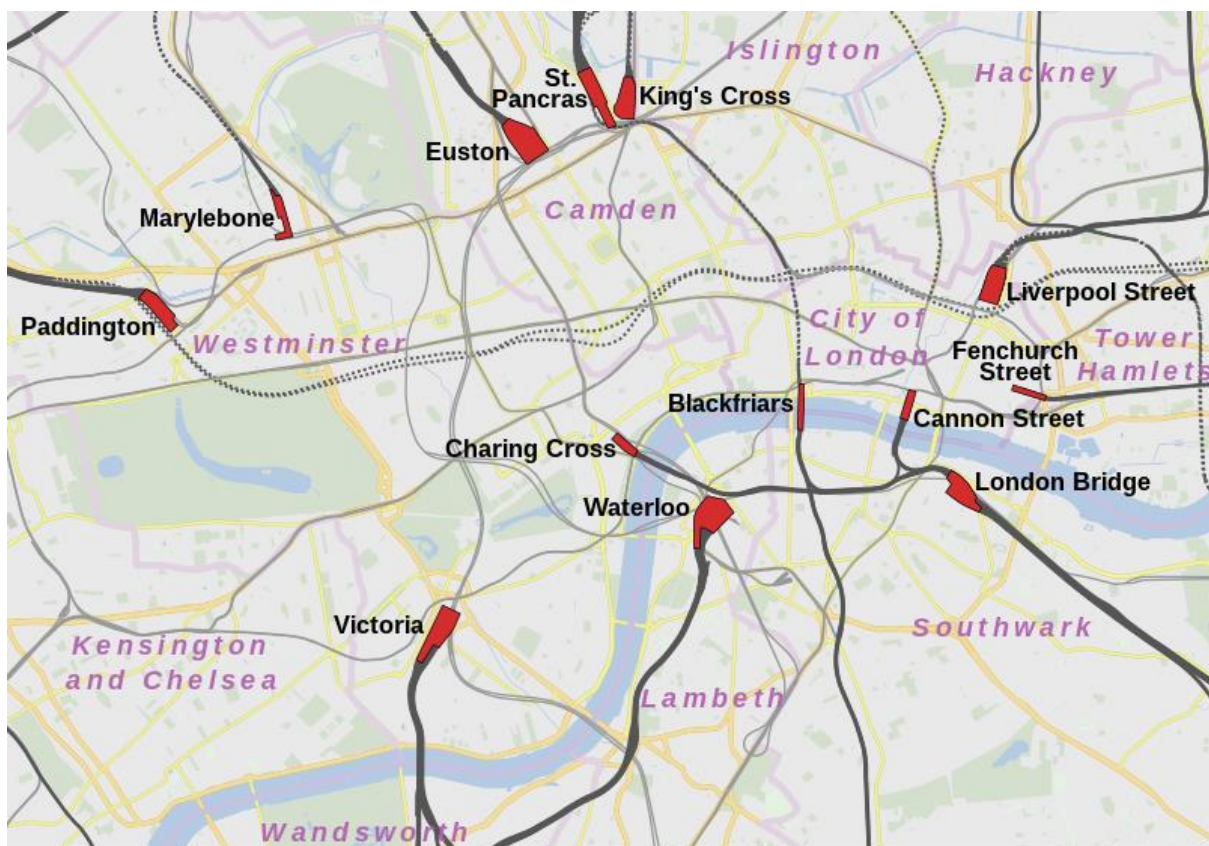### 3.2.1 Introduce stops and transport hubs in Zone 2-6 for long haul railways

Fig. 12 National Rail terminals in London, all clustered in Zone 1

Many long-distance trains end their journey at central London stations, such as London Euston and London King's Cross St. Pancras. However, not all passengers need to go to Zone 1 as their final destination. These passengers must currently transfer trains in Zone 1, which is time-consuming for them and inefficient for the railway network. In this way, passengers traveling to destinations other than Zone 1 would have the option to switch trains at transport hubs other than Zone 1 ones, reducing their overall travel time and reducing stress at the Zone 1 hubs.

Furthermore, integrating these new stops and hubs with existing transport services such as Thameslink and the Elizabeth Line would further streamline journeys for passengers. By offering seamless connections between long haul railways and

other modes of transport, passengers can easily transfer to their desired destinations without needing to rely on the Tube after leaving the train. This can lead to a more user-friendly and efficient transport system and would also echo the overall goal of promoting sustainable and environmentally friendly travel options.

3.2.2 Further utilise and develop the superloop bus network in London suburbs
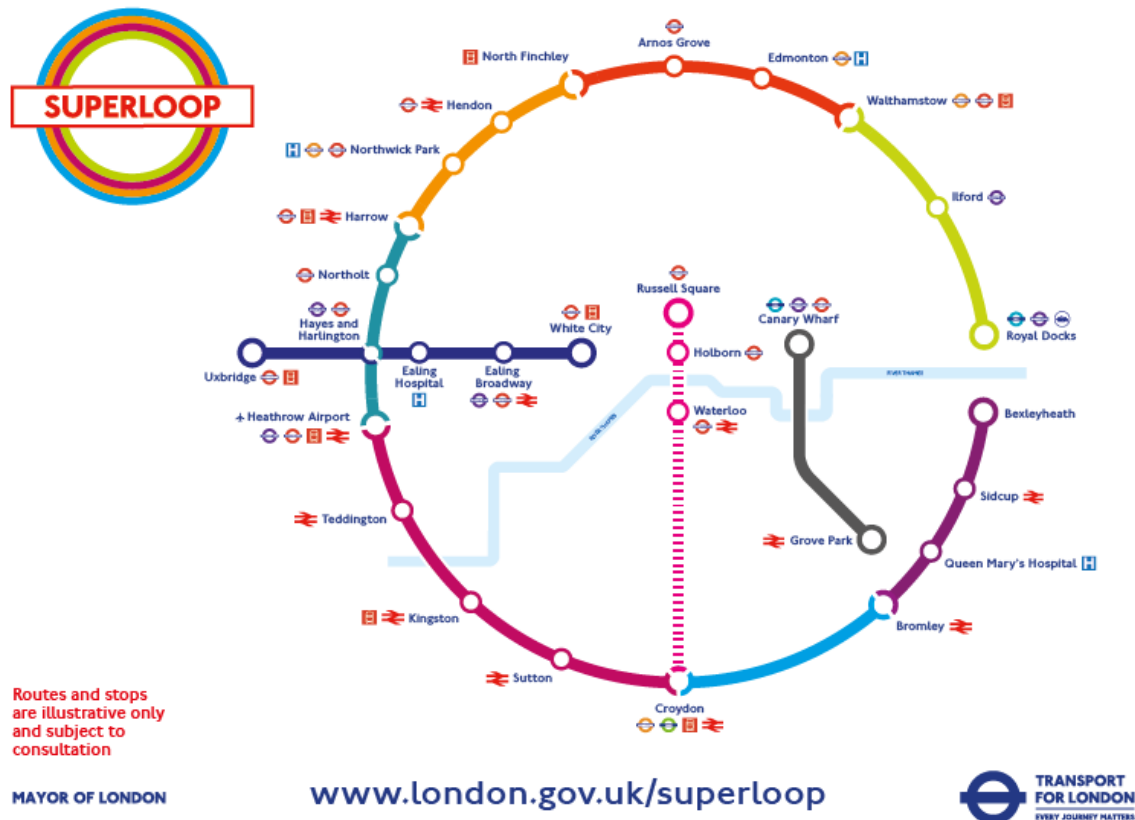

Fig. 13 The proposed Superloop in London (The Superloop, n.d.)

As seen in this article (Sadiq Khan unveils 'Superloop' bus network for London suburbs, n.d.), there are currently plans to develop a superloop network in Outer London, which is encouraging, and it presents an excellent opportunity to integrate this initiative with the existing orbital light rail system mentioned earlier. By combining the superloop bus network with the orbital light rail, a comprehensive and seamless transportation network can be created for the London suburbs.

The superloop buses, with their limited-stop service and speedier connections between major suburban hubs, can complement the orbital light rail by providing convenient first and last-mile connectivity to the rail stations. Passengers traveling to and from areas underserved by the Tube network, such as Sutton, can benefit greatly from this integrated system.

Residents in Outer London now have access to a more efficient commute system, thanks to the integration of superloop buses and orbital light rail. By thoughtfully coordinating schedules and routes, passengers can now travel across different parts of Outer London without any inconvenience. With this integration, not only will

it improve transportation options, but it can also significantly decrease traffic congestion, increase air quality, and promote sustainable travel.

Encouraging commuters to choose public transportation over cars is key in managing traffic congestion and its environmental effects. The combined network of superloop buses and the orbital light rail provides the perfect opportunity to easily switch modes of transport according to preference and need. This promotes flexibility and convenience, increasing the likelihood of more people choosing public transport.

To ensure the success of this integrated system, careful planning, coordination, and investment would be required. Collaborative efforts between Transport for London (TfL), local authorities, and other stakeholders would be essential in designing the routes, optimising schedules, and providing necessary infrastructure such as dedicated bus lanes and well-designed interchange stations.
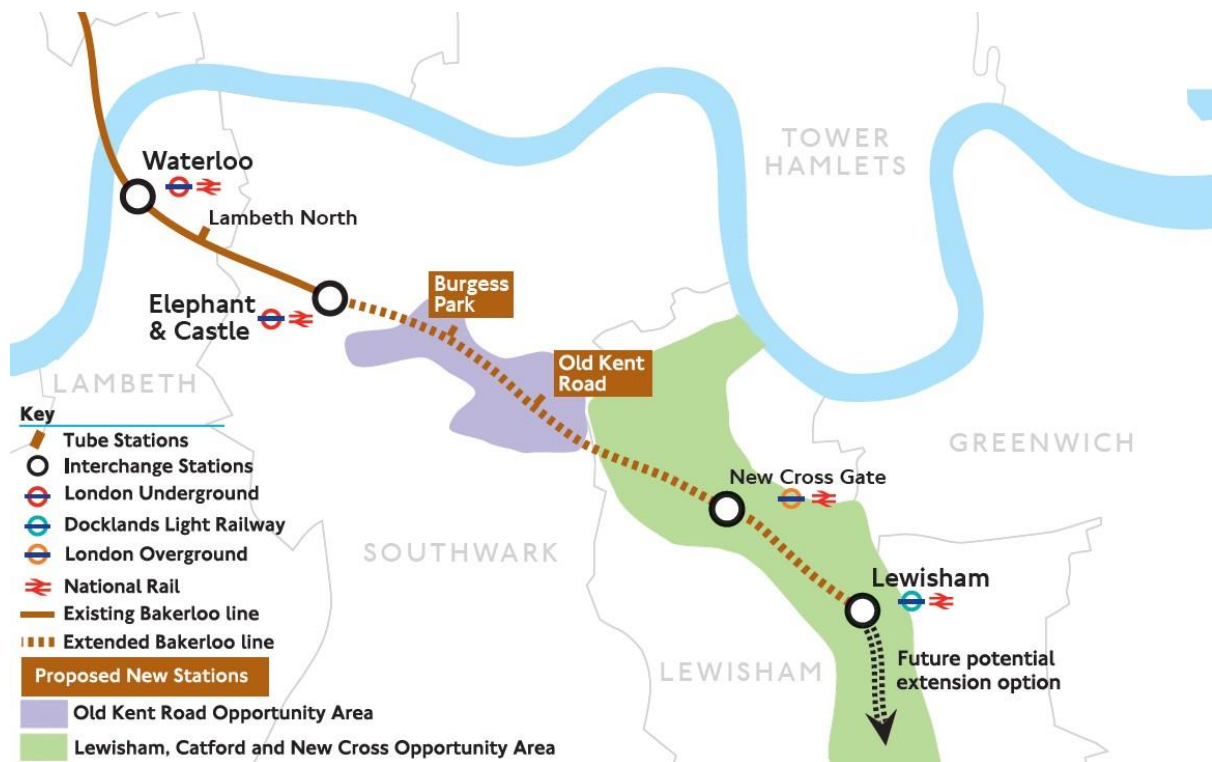
3.2.3 Bakerloo Line extension

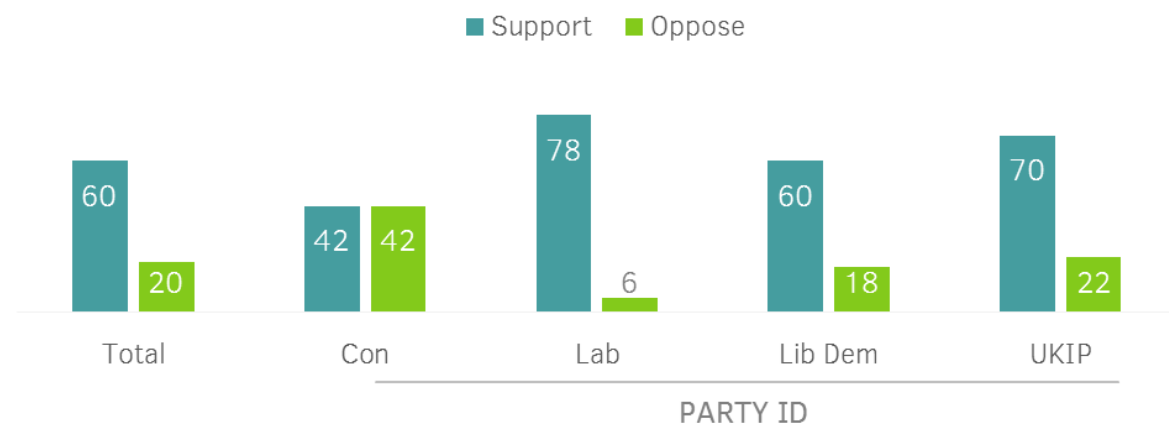Fig. 14 Bakerloo Line extension (Bakerloo line extension, n.d.)

The Bakerloo Line extension project aims to extend the line from Elephant & Castle to Lewisham, providing better transport connections to South East London. This extension would not only improve access to jobs, education, and leisure facilities but also support new housing developments and regeneration in the area. The project is currently in the planning stages, with TfL conducting consultations and seeking funding. Once completed, the Bakerloo Line extension is expected to significantly enhance the transport network in South East London and contribute to reducing congestion on other lines.

3.3 Hard measures

3.3.1 Nationalising transport operators, expanding business and develop upper level of train stations

Support for rail nationalisation

Would you support or oppose renationalising the railways, so they are run in the public sector rather than by private companies? %
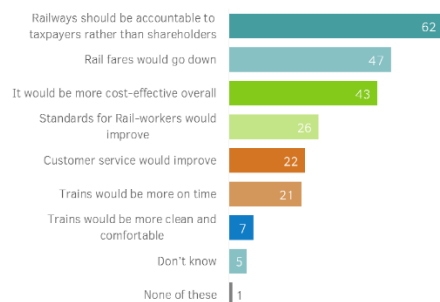
■ Support   ■ Oppose

	Total	Con	Lab	Lib Dem	UKIP
Support	60	42	78	60	70
Oppose	20	42	6	18	22

PARTY ID

YouGov | yougov.com   May 8-9, 2014

Why people support rail nationalisation
Arguments people who support re-nationalisation find most persuasive. %

Railways should be accountable to taxpayers rather than shareholders	62
Rail fares would go down	47
It would be more cost-effective overall	43
Standards for Rail-workers would improve	26
Customer service would improve	22
Trains would be more on time	21
Trains would be more clean and comfortable	7
Don't know	5
None of these	1

Why people oppose rail nationalisation
Arguments people who oppose re-nationalisation find most persuasive. %

There would be more strikes	43
Railways should be paid for by passengers rather than all taxpayers	37
It would be less cost-effective overall	33
Customer service would get worse	31
Rail fares would be more expensive	31
Trains would be less on time	21
Trains would be less clean and comfortable	11
Don't know	7
None of these	5
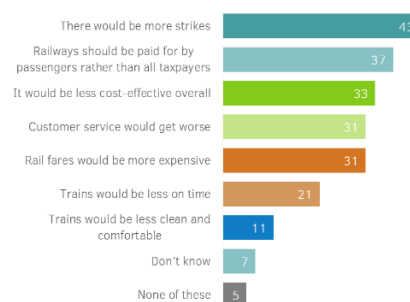
YouGov | yougov.com   May 8-9, 2014   YouGov | yougov.com   May 8-9, 2014

Fig. 15 The public support for and against railway nationalisation (Dahlgreen, n.d.)

Traditionally, transport undertakings have attempted to cover their costs by a combination of:

1. Fare discrimination
2. Fares high enough to cause some wasteful under-utilisation of services
3. Cross-subsidies from services with revenue (Turvey, 1975)

Hong Kong's "Rail plus Property" model (Leong, n.d.) could potentially bring more benefit to the government. By developing properties above newly-built railway stations or incorporating them into urban planning. This approach integrates property development with railway infrastructure, creating a symbiotic relationship between transportation hubs and real estate projects, helping finance railway construction and maintenance while promoting public transport usage.

Incorporating this approach into the capital city of London could result in a substantial boost to the government's financial resources, as well as promoting growth in urban areas. Constructing buildings above railway stations, including residential, commercial, and retail spaces, provides an opportunity to stimulate alternative revenue streams and supports the trend towards denser living in well-connected locations.

To standardise the fare in London, nationalisation of railway companies is necessary. Labour has pledged to do so, with polls indicating strong support. The nationalisation would involve the train operating companies like CrossCountry and Virgin Trains, but not the infrastructure, which is already owned by Network Rail under the Department for Transport. Franchises, which have varying expiration dates, would naturally end without needing to be bought up. Critics argue that private companies prioritise shareholder interests over customer needs, leading to increased ticket fares and poor performance. In terms of finances, franchised train companies brought in £12.4bn in 2015/16, mostly from ticket fares, and made a combined operating profit of £343m. However, the rail system still relies on significant government investment. Nationalised trains could improve transparency and accountability, but service quality would still depend on investment and management. Comparisons with the pre-privatisation British Rail are difficult due to factors such as technological advancements and changes in car usage. While train fares have increased, punctuality has improved, though it is unclear how much credit private companies deserve for these changes. Nationalisation might not address all rail problems, as many issues are related to outdated infrastructure (Williams, n.d.).

Despite the large amount of support for railway nationalisation, opposition to rail nationalisation in the UK is rooted in several key concerns. Firstly, there's the fear of increased strikes, as evidenced by the partly public London Underground's history of sustained strikes. Secondly, nationalisation could impose a significant financial burden on taxpayers, as opposed to the current system where the cost is primarily borne by the passengers who use the service. Thirdly, the cost-effectiveness of nationalisation is uncertain. While the publicly-run East Coast mainline has been cited as a successful example, critics argue that its lower costs are due to specific factors and may not be sustainable in the long run. Furthermore, the competitive environment fostered by private ownership can drive innovation and efficiency, which could be stifled under nationalisation. Lastly, while nationalisation might increase accountability to taxpayers, it could also introduce bureaucratic inefficiencies, lack of competition, and political interference, potentially leading to poor service and high costs. Therefore, while nationalisation has its advocates, these concerns present a compelling case against it.

However, I think rail companies in London should be nationalised still, to provide a fair fare for commuters. While there are valid arguments both for and against nationalising British rail, proponents of nationalisation believe that it could lead to fairer fares for commuters. By removing the profit motive and shareholder interests, a nationalised rail system might be more focused on providing an affordable and reliable service for its customers. The success of the East Coast rail under public ownership serves as an example of how nationalisation can improve

service quality and customer satisfaction. However, it is crucial to acknowledge that the quality of the service would still depend on the level of investment and management. Nationalisation alone may not solve all rail problems, but it could potentially create an environment where the needs of commuters are prioritised over profits.

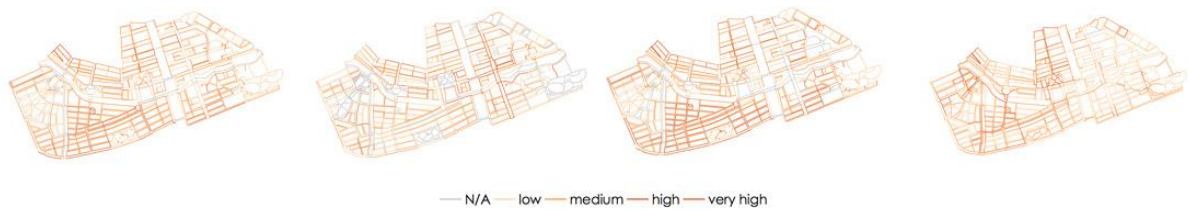### 3.3.2 Create pedestrian zones in Central London

N/A — low — medium — high — very high

Fig. 16 Different levels of sidewalk use in central Amsterdam (from left to right): general, work-related, recreational and tourist (Amsterdam Walkability Mapped, n.d.)

The Netherlands, especially its capital Amsterdam (Policy: Pedestrians, n.d.), is world renowned for its implementation of pedestrian-friendly zones, which I think London can learn from. A main point of their urban design is to prioritise pedestrians. By implementation of traffic reduction measures, expansion of sidewalk and creating dedicated pedestrian zones, the Netherlands has successfully encouraged green transportation modes such as walking and cycling as primary modes of transportation. London can enhance its pedestrian zones by adopting similar strategies, focusing on redesigning public spaces to prioritise pedestrians over vehicles. (Pedestrian priority introduced as part of London's drive to be the world's most walkable city, n.d.) (Treasure, n.d.)

Successful attempts at easy and effortless transportation can be achieved through cautious planning and coordination of various modes of transit. Streamlined transit hubs, as mentioned, create interchange points to walking, biking, and public transport.

3.4 Soft measures

3.4.1 Reduce train and bus prices to encourage the use of public transport

One effective way to encourage the use of public transport is to reduce train and bus fares. Lower fares would make public transportation more attractive to potential users, particularly those who may be deterred by the current costs. To achieve this, the government could consider offering subsidies or implementing fare caps for certain routes or travel times. Additionally, the introduction of more flexible ticketing options, such as discounted off-peak or advance tickets, could encourage more people to use public transport and alleviate congestion during peak hours.

The ongoing cost of living crisis has placed the government in a deficit, leading to a nationwide cap on bus fares at £2. This cap benefits long-distance travellers, it may be expensive for those taking shorter journeys, which is the primary purpose of bus

travel. Public transport is predominantly used by commuters from lower socio-economic backgrounds, students, and the elderly.

Middle-class families often own cars and use them for short journeys as well. However, they also seek ways to minimise costs. Commuters in this category are more likely to switch to public transport due to the expenses associated with parking and petrol.

3.4.2 Improve tube station conditions as new trains are being built

When London tube stations were first built, they didn't expect people in the future would rely so much on the Underground.

As new trains are being built, it is crucial to ensure that tube station conditions are also improved to provide a better user experience. This could include upgrading lighting, installing modern ventilation systems, and ensuring stations are well-maintained and clean. Furthermore, providing better amenities such as comfortable seating areas, reliable Wi-Fi access, and convenient retail options can also contribute to a more enjoyable experience for passengers.

3.4.3 Build cycle highways: a green, fast, low emission solution

Building cycle highways can surely help with reducing carbon emissions. However, to adopt it all over London might face challenges such as vandalism and the significant maintenance costs associated with such initiatives.

The presence of established bike-sharing companies like Lime Bike often competes with the more recognisable but less-promoted Boris bikes. In the United Kingdom, the government's policy framework emphasizes entrepreneurship, wealth creation, and market-driven approaches, which prioritise profit motives over public interests. Consequently, this inclination may result in the government's hesitancy to actively promote or invest in bike-sharing programs.

Another considerable challenge to address is the risk of theft. Bicycles can be expensive assets and are vulnerable to theft, which poses a substantial hurdle to the successful implementation of cycle highways and bike-sharing schemes. Thus, while these initiatives hold undeniable advantages, overcoming these various obstacles is essential to making them widespread and effective solutions for modern transportation needs.

To lessen the risk of theft in privately owned bikes is essential to promote cycling to the general public. The government should encourage cyclists invest in bike locks that are resistant to tampering. Centrally registering bikes with a unique identifier can deter theft and aid in recovery if the bike is stolen. Provision of secure locations, such as locked garages or designated bike storage areas, can also help prevent theft.

4 Conclusion

As a foreigner with a deep passion for transportation systems, I embarked on a journey to explore London's intricate and historically rich transport network. London, often regarded as the pioneer in urban transportation, boasts the world's oldest metro system. Through extensive research, I extracted both the challenges that hinder its development and the numerous opportunities that lie within our grasp to enhance it.

London's transport system, with the iconic Tube at its core, has evolved and expanded over 160 years, shaping the city's very identity. However, the relentless growth of population and the transformation of London into a densely populated financial hub have brought it to a point where it operates at or near capacity. The pressing question arises: can it sufficiently serve the current demand of a vibrant metropolis?

In my exploration, I have discovered that, indeed, there are pathways to overcome these physical constraints. It requires solid dedication and rigorous efforts to rethink and decentralise the flow of traffic within this modern city. By studying successful approaches from other cities across the UK and around the globe, I have identified a series of solutions that hold promise in making London's transport system more efficient, sustainable, and accessible.

One pivotal aspect of this transformation lies in fostering collaboration among government agencies, private transport operators, and local communities. These key stakeholders must unite to not only envision but also implement the proposed solutions. In doing so, we can ensure that the benefits are widespread, catering to the needs and aspirations of all Londoners and visitors alike.

In conclusion, I think that London has the potential to establish a transport network that meets the demands of its current population, which aligns with the principles of user-friendliness and environmental sustainability. As our world progresses and urbanisation continues to reshape our cities, it becomes imperative for London to adapt and revolutionise its transportation systems. This adaptation isn't merely about managing growth but about embracing it as an opportunity to maintain efficiency, sustainability, and accessibility for everyone. London's unique transport system, steeped in history, can and will continue to inspire and lead the way into a more promising future of urban mobility.

5 Bibliography

(n.d.). Retrieved from https://www.channel4.com/news/factcheck/factcheck-qa-should-we-nationalise-the-railways

Why river transport is making waves . (n.d.). Retrieved from Leonard: https://leonard.vinci.com/en/why-river-transport-is-making-waves/

Accessibility on the tube - 'step-free' but not step free. (n.d.). Retrieved from https://www.reddit.com/r/london/comments/123nvr7/accessibility_on_the_tube_stepfree_but_not_step/

Amsterdam Walkability Mapped. (n.d.). Retrieved from urbanNext: https://urbannext.net/amsterdam-walkability-mapped/

Bakerloo line extension. (n.d.). Retrieved from TfL: https://tfl.gov.uk/corporate/about-tfl/how-we-work/planning-for-the-future/bakerloo-line-extension

Borough Transport Strategy. (n.d.). Retrieved from https://www.croydon.gov.uk/sites/default/files/2022-01/bwts-section-11-tramlink-services.pdf

Breithaupt, M. (n.d.). *Environmentally Sustainable Transport - Main Principles and Impacts*. Retrieved from United Nations Centre for Regional Development: https://www.uncrd.or.jp/content/documents/5594Presentation%203%20-%20Module%201%20-%20Mr.%20Breithaupt.pdf, https://transformative-mobility.org/multimedia/passenger-capacity-of-different-transport-modes/

Caring for our Customers with Special Needs. (n.d.). Retrieved from MTR: https://www.mtr.com.hk/archive/ch/services/caring_for_our_customer_booklet.pdf

CARVER, J. (n.d.). *The urban archaeology of the London Crossrail Project.* Retrieved from https://learninglegacy.crossrail.co.uk/wp-content/uploads/2016/02/The-urban-archaeology-of-the-London-Crossrail-Project-J.J.-Carver-WS15-Vienna-Paper-2010.pdf

Croydon's tram extensions that have never happened despite Boris Johnson, Sadiq Khan and TfL promises. (n.d.). Retrieved from MyLondon: https://www.mylondon.news/news/south-london-news/croydons-tram-extensions-never-happened-27028448

Croydon's tram extensions that have never happened despite Boris Johnson, Sadiq Khan and TfL promises. (n.d.). Retrieved from MyLondon: https://www.mylondon.news/news/zone-1-news/elizabeth-line-5m-journeys-made-24434421

Dahlgreen, W. (n.d.). *Why the public want to nationalise the railways*. Retrieved from YouGov: https://yougov.co.uk/topics/politics/articles-reports/2014/05/11/why-do-people-support-rail-nationalisation

Dr Shivonne Gates, F. G. (n.d.). *Transport and inequality: An evidence review for the Department for Transport.* Retrieved from

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/953951/Transport_and_inequality_report_document.pdf

How Deep Does London Go? (n.d.). Retrieved from Londonist: https://londonist.com/2015/10/how-deep-does-london-go

Leong, L. (n.d.). *The 'Rail plus Property' model: Hong Kong's successful self-financing formula*. Retrieved from McKinsey: https://www.mckinsey.com/capabilities/operations/our-insights/the-rail-plus-property-model

MTR Corp Ltd (Analysis). (n.d.). Retrieved from Byte Sized Investments: http://www.bytesizedinvestments.com/mtr-corp-ltd-analysis/

New parkway railway station planned off A5 near Hinckley. (n.d.). Retrieved from LeicestershireLive: https://www.leicestermercury.co.uk/news/local-news/new-parkway-railway-station-planned-7813751

(n.d.). *New Parkway Stations*. Retrieved from Network Rail: https://www.networkrail.co.uk/wp-content/uploads/2020/09/New-parkway-stations-guidance.pdf

Pedestrian priority introduced as part of London's drive to be the world's most walkable city. (n.d.). Retrieved from TfL: https://tfl.gov.uk/info-for/media/press-releases/2021/may/pedestrian-priority-introduced-as-part-of-london-s-drive-to-be-the-world-s-most-walkable-city

Plans for Bristol Parkway station redevelopment approved. (n.d.). Retrieved from BBC: https://www.bbc.co.uk/news/uk-england-bristol-63885736

Policy: Pedestrians. (n.d.). Retrieved from City of Amsterdam: https://www.amsterdam.nl/en/policy/policy-traffic/policy-pedestrians/

Quick Project: Accessibility on the London Underground. (n.d.). Retrieved from https://transitmap.net/accessibility-on-the-tube/

Sadiq Khan unveils 'Superloop' bus network for London suburbs. (n.d.). Retrieved from Evening Standard: https://www.standard.co.uk/news/transport/superloop-bus-network-route-map-launch-date-london-sadiq-khan-ulez-b1070372.html

Smith, C. (2020). *Moving Edmonton to efficient, low-carbon, urban freight delivery: How to reduce "last-mile" vehicle emissions in the new online-to-doorstep economy.*

Step-free Access on Tube and Train. (n.d.). Retrieved from Independent Living: https://www.independentliving.co.uk/step-free-access-tube-map/#:~:text=According%20to%20campaigning%20group%20Transport%20for%20All%2C%2078%20tube%20stations%20have%20step%2Dfree%20access%2C%20although%20about%20half%20of%20these%20still%20have%20a%20step

Step-Free Map and Future Access. (n.d.). Retrieved from https://stepfreelondon.uk/map/

The Superloop. (n.d.). Retrieved from Mayor of London: https://www.london.gov.uk/programmes-strategies/transport/superloop-connecting-outer-london-boroughs-quicker

(n.d.). *Train Prices Across Europe - UK Train Prices Compared to Europe.* Retrieved from https://www.vouchercloud.com/resources/train-prices-across-europe

Travers, T. (2009). Transport infrastructure in London.

Treasure, M. (n.d.). *How does a Dutch environment work for pedestrians?* . Retrieved from Cycling Embassy of Great Britain: https://www.cycling-embassy.org.uk/blog/2013/07/03/how-does-a-dutch-environment-work-for-pedestrians

Turvey, R. (1975). A Simple Analysis of Optimal Fares on Scheduled Transport Services. *The Economic Journal, vol. 85, no. 337*, pp. 1-9.

UK's railway stations with most train delays revealed. (n.d.). Retrieved from BBC: https://www.bbc.co.uk/news/uk-england-45864908

Whittlesford Parkway station in Cambridgeshire to see upgrade work carried out. (n.d.). Retrieved from Rail Advent: https://www.railadvent.co.uk/2023/02/whittlesford-parkway-station-in-cambridgeshire-to-see-upgrade-work-carried-out.html

Williams, M. (n.d.). *FactCheck Q&A: Should we nationalise the railways?* Retrieved from Channel4: https://www.channel4.com/news/factcheck/factcheck-qa-should-we-nationalise-the-railways

---

[1] TfL, abbreviation for Transport for London

[2] ETA, abbreviation of Estimated Time of Arrival