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EN ARCHITECTUUR

CORRIDOR PLANNING

CASE OF OXFORD STREET LONDON

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ACRONYMS

LUTI: Land Use Transport Interaction
SUMP: Sustainable Urban Mobility Planning
TOD: Transit Oriented Development
VMT: Vehicle Miles Traveled

SUMMARY

Urban corridors and streets play a significant role in building connections, facilitating safe walking infrastructure, and impacting the overall urban morphology of any area. This role stands useless in absence of LUTI/TOD and SUMP. Analyzing a similar situation in the heart of London is Oxford Street that is an eye-catcher to every other traveler. It shares a central position in the city and is a symbolic representation of all kinds of people including tourists. This street is the busiest shopping street in the world that invites a large number of visitors on a daily. It is clogged with traffic and dangerous with high collision rates and terrible levels of pollution, particularly from bus and taxi emissions. To address this issue, the report intends to see the prospects of LUTI in the context of Oxford Street, and target strategies to ensure safety and manage pedestrian mobility by addressing the four D's of TOD: distance, density, design, diversity for providing a safe pedestrianized environment. The report is divided into 4 chapters. Chapter 1 begins with an introduction about the area, the research aim, and the significance of taking Oxford Street as the case study by establishing a link between safety, TOD & pedestrian flows. Chapter 2 provides deep insight into the problem and diagnosis it in the context of TOD and unsafe pedestrian environment. This section further talks about different theoretical perspectives, past plans & policies and significance of proposing TOD for safe pedestrian mobility. Following this is Chapter 3 that analyses the problem and explains solution assessment in this context. While doing so, the chapter lists down proposed actions and strategies that can be taken up in case of the Oxford Street to address the cited issues. Chapter 4 is the last chapter that generates a holistic discussion and evaluation based on the problem and proposed actions. It further talks about the probable benefits the proposed actions can harness for public and private stakeholders. Towards the end, the report elucidates the conclusion signifying the importance of making Oxford Street pedestrianized by following a TOD-oriented approach.

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CHAPTER 1: INTRODUCTION

The land-use transport interaction has long been considered as two separate entities by public policies and also by private actors. However, it is now a well-recognized aspect to achieve the societal challenge of sustainability (Sepe, 2013) as well as for providing a pedestrian-friendly safe environment. Talking about LUTI, streets play a significant role in building connections, facilitating safe walking infrastructure, and impacting the overall urban morphology of any area. Analyzing a similar situation in the heart of London is Oxford Street that is an eye-catcher to every other traveler. It shares a central position in the city and is a symbolic representation of all kinds of people including tourists. At present, the street is vulnerable to pedestrians because of high vehicular traffic and increased collision rate. Hence, the increased motorized traffic along a retail intensive corridor puts a question mark on the safety of people on foot. Safety is a complex subject and multiple aspects need to be considered when planning for safe mobility (Van der Bijl, 2018). The viewpoint from the story of Bob the Builder is a perfect example to explain safety in the context of Oxford Street. It culminates that a safe situation is not simply the result of built or infrastructural characteristics, but it is the result of how these buildings and infrastructures are used (ibid). Given that, the idea of TOD intervention in case of the Oxford Street, is deemed suitable in envisaging the overall safe mobility of the pedestrians in the area.

Figure 1: Oxford Street an Eye Catcher (source: Author, 2017)

1.1 RESEARCH AIM

The main intent of this research is to see the prospects of LUTI/TOD in context of Oxford Street, and target strategies for ensuring traffic safety and managing mobility by addressing the four D's of TOD: distance, density, design, diversity for providing a safe pedestrianized environment.

1.2 TRAFFIC SAFETY & LINK BETWEEN LUTI & PEDESTRIANS

Traffic safety is the most common health determinant related to the transport sector. It aims at reducing the harm (deaths, injuries, and property damage) resulting from crashes of road vehicles traveling on public roads with the users (Rojas-Rueda, 2020). Typical road users include pedestrians, cyclists, motorists, vehicle passengers, and passengers of on-road public transport. Several measures and methods are involved in ensuring this safety, but there has been a growing emphasis on one of the major planning tools nowadays i.e. TOD also known as LUTI (Zeng, 2014).

The most recent UN-HABITAT Global Report on Human Settlements proclaims that access to destinations, activities, services, and goods lies at the core of urban mobility (ibid). To meet this, transition of urban development patterns towards mixed-use and compact design, combined with high-quality pedestrian infrastructure, is a solution for creating accessible, sustainable yet safe urban spaces.

Today's urban form and travel patterns are a mass production of automobiles which are having a range of negative impacts. This is prompting urban and transport planners to rethink how we design our cities. While car-centric development is still the prevailing urban development paradigm, there is a growing emphasis on designing cities for people in many major metropolises via people oriented streets & spaces.

1.3 WHY OXFORD STREET

Oxford street is the busiest shopping street in the world that invites a large number of visitors on a daily. Around 175,000 people get on or off a bus on Oxford Street every day, as well as 43,000, are the through passengers (TfL, 2014). Taxis are also seen popular in the area, adding to the overall volume of the traffic (ibid). However, for many, it doesn't live up to its reputation, with overcrowding, traffic safety, and pollution major issues. As a result, this thoroughfare is deemed highly vulnerable in terms of traffic safety. There have been 71 accidents involving traffic and pedestrians between 2009 and 2012 (TfL, 2014), and the number and risk associated with such clashes have remained high since then. It is clogged with traffic and, not only, dangerous with high collision rates but also terrible levels of pollution particularly from bus and taxi emissions (Edwards, 2018). This is exposing people to unclean air and is creating a dismal urban experience for the people by posing a great threat to

the health of the people visiting the place (Leak, 2014; Caelia.q, 2014). In 2014, a report by a King's College, London scientist showed that Oxford Street had the world's highest concentration of nitrogen dioxide pollution, at 135 micrograms per cubic meter of air (µg/m3). Because of diesel-powered traffic (buses and taxis), the annual average nitrogen dioxide concentrations are around 180 µg/m3. This is 4.5 times the EU target of 40 µg/m3 (Council Directive 1999/30/EC).

Besides, the typology of the area comprises mixed land uses with dominant high rise retail buildings. All this makes Oxford Street a prime site for TOD (Metro Transit TOD Guide), which is deemed as the most feasible option for providing a pedestrian-friendly environment (by cutting down on vehicular traffic) and for retaining the vitality of the area. The idea of pedestrianizing Oxford street via encouraging TOD development is well supported by many theoretical perspectives as well which includes Jane Jacobs ideology of the safe streets, SUMP, and research of Dumbaugh and Rae (2009) which advocates that pedestrian-scaled retail configurations lead to fewer fatal crashes.

Moreover, there exist several examples that serve as a motivating factor for adopting the strategy of pedestrianization along with transit-oriented development. Times Square New York is one prime example where the city analyzed pedestrian crashes citywide and targeted street design changes towards high-risk corridors of which Times Square remains a significant one (NYC DOT, 2010) Another project of EMBARQ Turkey also identified black spots and recommended design changes within Istanbul Historic Peninsula, that increased road safety and overall development (EMBARQ Turkey, 2014).

Figure 2: Times Square NYC)

Hence, the same, if adopted for Oxford Street London can provide safe pedestrianization, sustainable environment, and economic opportunities for the growing audience.

CHAPTER 2: LITERATURE REVIEW

2.1 PROBLEM DIAGNOSIS

The problems of today's Oxford Street may seem obvious to anyone who has visited the area. It is a major commercial corridor along a horizontal axis that has an intensive pedestrian-vehicle environment, surrounded by a mesh of high buildings. These buildings serve mainly as retail businesses with only a few serving as office and for residential purpose. The entire stretch runs East-West on the A40 and is almost 2 km long (Knight, 2014). See figure 3. Running from the westward side of Marble Arch, it terminates at Tottenham Court Road Station. In between is the Oxford Circus Station that is perpendicular to Regent Street, another conduit of great importance. Bond Street underground station located between Marble Arch and Oxford Circus Station adding to the overall inflow of people.

Figure 3: Locational Map of Oxford Street (source: TfL, 2013)

Oxford Street is made up of two traffic lanes in each direction and two wide pavements for pedestrians. There are four underground stations with almost 470,000 daily travelers, and many bus stops with 23 bus services having a daily ridership of 15000 passengers (ibid). However, this number is expected to get doubled with the coming of Crossrail by mid-2020s (Knight, 2014). Besides, the entire road patch has several streets connecting perpendicularly and adding to the overall volume. Given that, one of the major problems that persist is the exhaustive road capacity which is an issue for both pedestrians and the shopkeepers. Seen as the most polluted street in the world (ibid), it is also recognized as unsafe for pedestrians. With road accidents 80 times higher than the London average (Knight, 2014), it remains major concern to safely cater a large number of people expected over the coming years.

Keeping aside the transport & traffic system problem in the area, the surrounding land uses also seem to be subjected to improvement for ensuring good connectivity at walkable distance. Oxford Street remains a fascinating retail destination, especially for tourists and shoppers. Because of the absence of favorable land uses for different groups of people, it attracts a lower share of old ones and families with children. Buildings are mainly served as retail shops than mixed uses like public spaces, recreation, and others. From Marble Arch, the first stretch of Oxford Street is characterized buildings serving as office and residential purposes on top of retail shops. Some of them include Park House, Amba Hotel and Mariott Hotel. At the end of this stretch, one arrives at the Oxford Circus, ahead of which starts the next stretch which is a little narrowed compared than the preceding one with buildings presenting a weaker picture of the overall built form. Buildings surrounding this patch of the corridor are also largely retail including few banks such as the Lloyd Bank and others. Despite that, the retail identity on this eastern section found weak compared to the preceding road section. Oxford Street is thus seen as a major 'commercial' corridor mainly oriented by shopkeepers and visitors than residents or professionals. A large number of residents travel from vicinity areas to get access to 244 flagship stores and more than 350 other shops (Jan et al., 2016).

Figure 4: Amba Hotel Marble Arch

Amidst traffic chaos, noise and vehicle emission, the Oxford Street is not inducing a pleasing environment for both the visitors and the shop keepers. While there is exists strong transport network, it is seen as a problem for people visiting it, in particular the people on foot. There is weak land use transport relation especially when buildings are only serving as retail shops than multi-purposes, and are not used to their full capacity. There is an absence of public spaces and recreation for people

including children who have no alternate option but to shop around with their families (ibid). This makes the street unfavorable for elderly, disabled and the children. Residential density is also found less that induces more travel demand to this area from the outside. Given this, sustainable planning with respect to LUTI can play a leading role in solving the problems of unsafe pedestrian environment.

Figure 5: Congested and Unsafe Pedestrian Environment at Oxford Street (source: Author, 2017)

2.2 THEORETICAL PERSPECTIVES & SOLUTION ASSESSMENT

Accompanying and supporting land-use policies are essential for creating less car-dependent corridors and a pedestrian-friendly environment. The same can hold true for Oxford street where, besides only banning vehicular traffic, linking existing land uses to a transport system with good accessibility is the need of the hour. Oxford Street has great potential for catering to a TOD which is found almost missing in the current scenario. Thus, a solution towards a mixed-use development could be seen as a viable option. Transforming the existing land uses into mixed development that satisfies businesses, retail activities, recreation, and residential can help rejuvenate the identity of this central axis. To ease the mobility of people and vehicles making it pedestrian-friendly with good planning measures can further help sustain the corridor.

In the same vein, many theoretical perspectives exist which provide a way forward to finding solutions in case of the Oxford Street. Marshall and Banister (2007) agree that to reduce the use of the car, encouraging pedestrianization and the use of public transport, it is also compulsory to support LUTI. He exemplifies this by proposing to increment the cost of the use of the car road pricing, applying parking restrictions/pricing, and/or provision of pedestrian supportive infrastructure. Moreover,

Jacob's (1961) argument on messed urban life and the effect of cars on cities serves as a useful reminder that our rational knowledge may be deviant and science is not always as advanced as we sometimes like to think. She states that the messed up urban corridors are a result of over-specialization of buildings, dysfunctions of pavements, and poor planning of urban roadway. She further remains amazingly on-point about the effect of cars on cities. Her remedy, she calls "car attrition" (making it more difficult for cars to operate in cities, rather than outright banning them), preludes the work of Jan Gehl and ideas like congestion pricing by several decades for promoting the idea of safe streets free of cars and good connections. On the same lines, Van Nes (2017) view on preventing someone from driving a car and making him do so is a great lesson to learn from when planning for Oxford Street.

Given that, the answer to making Oxford street safe for the pedestrians lies in encouraging TOD development with a Sustainable Urban Mobility Plan (SUMP) that provides a new strategic bridge for co-ordinated transport & mobility Planning (EU, 2013). By following the 12 step SUMP guideline shown in Figure 8, solutions can be proposed for the case study. Similarly, the LUTI feedback cycle is another way forward when proposing strategies for safe Oxford Street. (see figure 9)

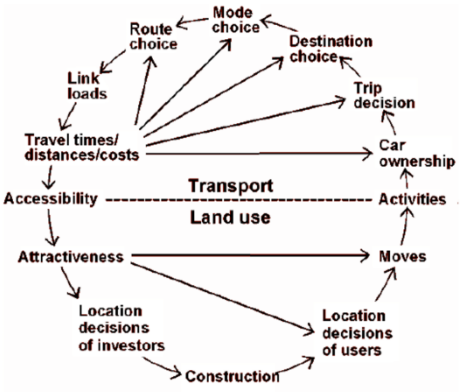

Figure 7: LUTI feedback Cycle (source: Marshall and Banister, 2007)

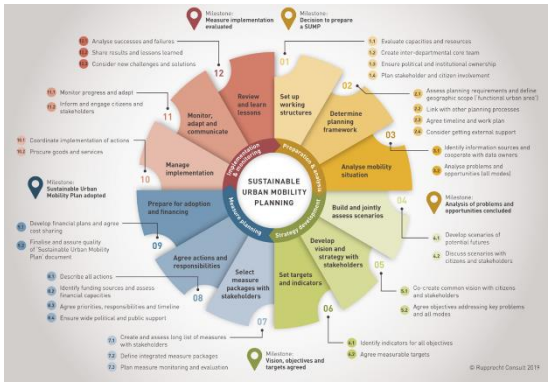

Figure 6: SUMP Guidline Framework (source: EU, 2013)

Besides following the theoretical guidelines, policymakers must ensure the participation of different stakeholders including the community to plan holistically. The presence of only transit does not translate to greater development potentials, but with integrated planning of land uses on Oxford Street, the corridor can act as a thriving axis in terms of a better use of land as well as a pedestrian safe environment. This is

also verified in the context of 5 Es based on network planning (Van der Bijl, Van Oort and Verhoof, 2017) for sustainable urban and mobility planning (see figure 10).

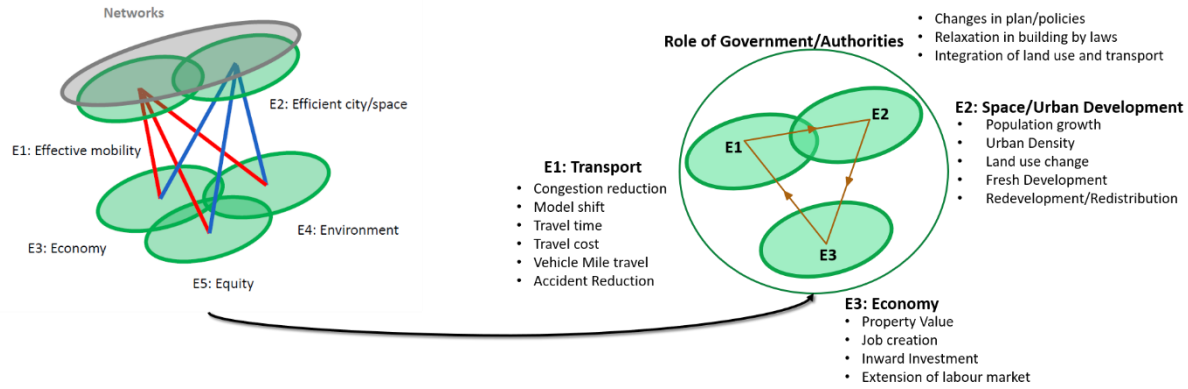

Figure 8: 5Es of Network Planning
(source: Van der Bijl, Van Oort and Verhoof, 2017)

While the impact of each of the 5 Es can be quantified in monetary terms, these 5 indicators can reap benefits in the case of Oxford Street on a larger scale as perceived under:

- E1: Effective mobility – Shorter commute based TOD access, pedestrian friendliness over auto-mobile dependency, safe street
- E2: Efficient city/space – Designing of the corridor with prioritizing pedestrian traffic, low traffic congestion, improved amenities and streetscape, people-centric spaces along transit stations mixed land use
- E3: Economy – Improved access to sites increasing retail and property value, employment opportunities
- E4: Environment – Banning/restricting vehicles with promoting walking will bring a reduction in GHG emissions, increased density reduces VMT, cleaner and safer environment for pedestrians
- E5: Equity – Accessible functions with mixed land uses and transit, health benefits with an improved environment

Hence, formulating strategies that target the aforementioned E's will not only ensure sustainable mobility planning but will also lead to a safe street for pedestrians

2.3 PAST & PRESENT POLICIES/PLANS/IMPROVEMENT STRATEGIES

Focus on people, not the property has always been a headline topic on Oxford Street for years. About a billion investment has been designated, including 150 million pounds by Westminster City Council alone, for the streetscape with two new proposed public piazzas at Oxford Circus and Marble Arch, cleaner air from reduced traffic and zero-emission buses, and vastly wider and more comfortable footpaths. All of which prioritizes pedestrians and turns the street into a far more inviting, cleaner, greener, and safer destination for visitors (Adegeest, 2019).

Oxford street being the busiest shopping street in Europe is seen heavily congested because of the large number of people on foot and vehicular traffic (buses and taxis in particular). There have been several proposals to reduce congestion on Oxford Street to cut down on environmental pollution, traffic accidents, and promoting a safer environment for pedestrians. As part of these proposals, in 1972 designated bus lanes were ensured and a ban was introduced on private vehicles between 7:00 am and 7:00 pm on all days except Sundays (TfL, 2014). However, this still invited buses, taxis, and two-wheeled vehicles in large numbers adding to the traffic woes and hampering the safety of the pedestrians. In 2009, a new diagonal crossing opened at Oxford Circus, allowing pedestrians to cross from one end of Oxford Street to the opposite without needing to cross twice or using an underpass. This, however, doubled the pedestrian capacity at the junction, keeping the volume of other motorized traffic intact (ibid).

From 2005 to 2012, Oxford Street was closed to motor traffic on VIP Day, (Very Important Pedestrians), a Saturday before Christmas (BBC News, 2013). The scheme was popular and boosted sales to a significant figure in 2012 but in 2013, the New West End Company announced that the scheme would not go ahead as it wanted to do something different, and thereafter in 2014, Liberal Democrat members of the London Assembly proposed the street should be pedestrianized by 2020 (BBC News, 2014).

In 2006, the New West End Company and the Mayor of London, Ken Livingstone, proposed to pedestrianize the street with a tram service running end to

end (BBC News, 2006). The next Mayor, Boris Johnson, elected in 2008, announced that the tram scheme was not cost-effective and would not be proceeded. In response to a request from Johnson, Transport for London (TfL) reduced bus flow by 10% in both 2009 and 2010 (Greater London Authority, 2010). The New West End Company called for a 33% reduction in bus movements (ibid).

In 2014, TfL suggested that pedestrianization may not be a suitable long-term measure due to the coming of Crossrail reducing the demand for bus services on the street and proposed banning all traffic except buses and cycles during peak shopping times (TfL, 2014). Optimization of traffic signals, including pedestrian countdown signals, was also proposed. TfL is concerned that long-term traffic problems may affect trade, which competes with major shopping centers. In 2015, Sadiq Khan, the new Mayor, favored pedestrianization, which was supported by other parties. He further pledged the street would be completely pedestrianized by 2020 (BBC News, 2017). In 2017, the project was brought forward to be completed by the end of the following year. It aimed to link the pedestrianization with the opening of Crossrail, which will have stations at Tottenham Court Road and Bond Street. Most cars are currently banned from Oxford Street, while the new plans included buses and taxis in this ban. However, the plan has been disapproved by residents, Westminster City Council, and the Fitzrovia Business Association (Rees, 2017; Prynn, 2018).

2.4 ENSURING PEDESTRIAN SAFETY WITH TOD ON OXFORD STREET

Despite receiving opposition from many, the aim of pedestrianizing Oxford Street remains a hot debate and likely project to be implemented. It is aimed at, not only, providing a better shopping experience but at most the safety of pedestrians who are vulnerable to traffic accidents and vehicular pollution. In the same vein, **this study** proposes intervention strategies in the following sections which intend to target the goal of pedestrianizing this urban street stretched over 1.2 miles with 5 million sq ft retail space. The approach adopted here is with respect to LUTI where understanding TOD with a link between land use and pedestrian flows for safe pedestrian mobility is the key focus. While TOD remains a popular and recognized planning and design tool in creating sustainable yet walkable environments and pedestrianization remains its

one core element (World Bank, 2021); it is evident that with the coming of good LUTI, the safety of pedestrians on Oxford Street can be improved.

However, with these strategies, the big question that remains is what happens to the buses and taxies (Strutt and Parker, 2016) that currently use the street as one of the city's main East/West routes? At present, the following concerns prevail:

- Average bus speeds are little more than walking speed
- Accident rates are 35 times the average of all other London streets
- There's a collision involving a bus in the area every 3.4 days
- Pollution levels are four and a half times the EU target

As there is a strong interrelationship between TOD and road safety, nevertheless, it is envisioned that the following proposals can help address the above concerns more economically, realistically and in a pleasing manner A well-executed TOD scheme has the potential to make far-reaching impacts on the road safety scenario in the city. At the citywide level, TOD influences urban form and mode-choice; two very critical factors for road safety. The mixed-use land use developments with active frontage and accessible services centered within safe walking and cycling distances around transit stations, encourages users to choose for transit combined with a non-motorized commute over the use of cars. This pattern of considerable mode shift minimizes the number of cars on the street thereby reducing the chances of conflicts. At the neighborhood level, TOD promotes more pedestrian-friendly streets with lower traffic speeds, which significantly improves the safety of the most vulnerable road-user group.

The needs and safety of non-motorized transport users have long been ignored in many cities when it comes to designing streets. But recently, there's been a revival of people-oriented street design, while encouraging TOD. Initiated in Europe and spread to the United States, this revival is reflected by the increasing number of pedestrian zones and complete streets worldwide (Zeng, 2014).

Pedestrian zones, or car-free zones, designate certain urban streets or districts as spaces exclusively for the use of pedestrians, in an effort to improve pedestrian

safety and street vitality. The first designated pedestrian zone was in Lijnbaan, Rotterdam, the Netherlands in 1953. From there, the concept gained popularity throughout Europe in the 1960s and 1970s. Today, over 370 cities on all five continents have adopted some form of pedestrian zones (ibid).

Complete streets promote the design, operation, and maintenance of streets for users of all ages and all modes of transport. In the United States, complete streets policies have been widely adopted in the past decade as they exhibit increased accessibility, improved pedestrian safety and enhanced urban vibrance (Zeng, 2014). The first complete streets policy was implemented in Portland, Oregon in 1975, and by July 2013, over 520 regional and local jurisdictions in 27 states had adopted selected complete streets policies.

CHAPTER 3: ANALYSIS & SOLUTION GENERATION

3.1 PROPOSED INTERVENTION STRATEGIES

In light of the problems stated in the preceding section, the key objective is to make Oxford Street a ‘place’ for pedestrians rather than just a road for vehicles. At present, the street is seen to have good accessibility in terms of the four major underground stations. Given that, having an intensive bus service running side by side creates congestion in the case of Oxford Street.

The first intervention is, thus, to lessen the flow of vehicular traffic to ease mobility for all visitors. With regard to the road surface itself, the first action for restore Oxford Street to people is to pedestrianize in part rather than in whole, apart from the junction at Regent Street and other secondary street intersections. It is proposed to have a shuttle service running on the road than the regular bus network with a frequency of six buses per hour in each direction. Lanes are proposed to be reduced to two lanes for buses running on either side with cycle paths adjacent to their sides. With this road, capacity can be increased, and pedestrian pavements can be made wider for easy mobility. Bicycle hire points are also recommended at different locations on the street likewise in other parts of London to encourage their use.

Further to this, it is proposed to restrict the entry of private vehicles and to provide park and ride options at the four main tube stations, and making the street open to pedestrians, shuttle buses, and bicycles. For private cars, park and ride option is suggested to be made available at tube stations. Also, inducing grade separators like medians and pedestrian islands and more strengthened traffic calming techniques are proposed to be incorporated at intersecting points. All of this will result in a stress-free shopping environment.

Besides connecting the transport network efficiently to the surrounding land uses, the idea is to provide mixed uses within the buildings. Although retail (Class A1) floorspace is suitable on all floors in premises in Oxford Street (Westminster City Council, 2006), it is proposed to have dynamic and complementary uses on the upper floors of potential retail frontages which can increase the identity of the street. Suitable

uses at the second-floor level which could be provided include restaurants, indoor leisure activities (including fitness centers), health care facilities, childcare facilities, cinemas, theaters, museums, art galleries, exhibition space, educational use, libraries, and internet cafes. On the third floor level, the appropriate uses which could be provided include the B1 Class category i.e. residential accommodation, office use (including small offices), etc. However, on the eastern end of Oxford Street (the section of Oxford Street between Oxford Circus and Tottenham Court Road), it is proposed to improve retail and supporting facilities to maintain Oxford Street as London's premier shopping street.

This all can be done by preparing a current land use repository by the conduct of a locational land use analysis which would give the feasibility of different land uses to be allocated (Russo and Musolino, 2008). The supply of floor space for every building is to be placed as an input in the land use model, and location choices are to be made. Location choices are also influenced by environmental variables and by accessibility (TfL, 2014) which also need to be catered.

However, the proposed interventions are likely to have certain implications on the freight industry for the delivery of their goods. Restricting the flow of private vehicles creates a problem for freight operators who deliver their commodities to the store.

Considering this, it is important to effectively think about policies that focus on good and pre-defined timetabling for truck service delivery. Another concern that gets raised is as a result of mixed-use intervention increasing the real estate market as have been seen in San Fransisco and Dallas (EPS, 2014). As a result property values tend to increase which is seen as unaffordable for low income groups. Moreover, working with developers, building transport infrastructure is another challenging task. For a TOD along the corridor to thrive, the local jurisdiction needs to provide a planning framework for developers that allows for the type, mix, and density of development supportable by the market and desired by the community (Michaelson, Toth and Espiau, 2008).

3.2 ACTION PLAN & STRATEGIES

In view of the proposals mentioned in the preceding section, there also exists different tools and modeling techniques for the safe integration of transit with the urban space (Metro Transit TOD Guide; TfL LonLUTI, 2014; van der Bijl, van Oort & Bukman, 2018) which can stimulate TOD in case of Oxford street. A few of the proposed ones include ArcGIS, Public Parcel Database, TRICS, Make a Map Application, the Four-step travel model: Trip generation, distribution, mode choice, assignment. In addition to these LonLUTI is also recommended which is a land use transport interaction model that provides a rigorous analysis of the demographic, economic, and transport impacts of land-use proposals in the case of London. All these models inputs data that describes activities and predict suitable locational choices at walking distance.

Hence, the following strategical interventions are proposed in promoting TOD along Oxford Street. These are aimed at making Oxford Street a 'place' for pedestrians rather than for vehicles and promoting a stress-free shopping environment.

- Provision of a shuttle service running on the road than the regular bus network with a frequency of six buses per hour on each direction. Whilst TfL plans to consult on 20%-40% reduction in the existing bus, it can be ascertained that this shuttle service, if proposed, will not only lessen the number of buses on the street but it will also share the burden of detouring the current buses trundling down the Oxford Street (Hill, 2016). With this road, capacity can be increased, and pedestrian pavements can be made wider for easy mobility.
- Bike points are also recommended at different locations on the street likewise in other parts of London to encourage their use
- Inducing grade separators like medians and pedestrian islands and more strengthened traffic calming techniques are proposed to be incorporated at intersecting points.
- To pedestrianize in part rather than in whole, apart from the junction at Regent Street and other secondary street intersections
- To restrict the entry of private vehicles and to provide park and ride option at the four main tube stations
- Even strict congestion pricing
- Reprograming of land uses

Table 1 summarizes the proposals for ensuring a safe pedestrian environment by ascertaining LUTI on Oxford Street, their implementation, probable outcomes, and likely future threats.

Table 1: Action Plan and Strategies

A VISION TOWARDS CORRIDOR PLANNING WITHIN A TRANSIT ORIENTED DEVELOPMENT FRAMEWORK

Area	Policy Area	Proposed Intervention	Implementation	Outcome	Threats
Land Use	Providing mixed-uses by preparing a land use inventory with locational choice survey	Increasing housing density	Identifying buildings with potential spacing on 3rd floor, to be given for apartments, flats, private rooms	More housing, residents getting access to major services along the corridor, reduced travel demand and trips	High property values, unaffordable to low income groups
		Favoring children and elderly	Including places of recreation and indoor leisure activities for children and elderly as well as disabled like cinemas, fitness centers, health service etc. (2nd floor)	Favoring all groups of people, increasing the vitality of the area	High capital investment
		Inducing more employment with office businesses	Offices on 3rd floor like property dealers, estate enterprises, banks, design consultancies etc.	More employment, more economic growth	Increased travel demand in the area
Transport	Lessing the vehicular volume and slowing down the traffic	Shuttle bus service	Designated buses running with a frequency of 6 per hour on each side	Less traffic congestion, quick service, a friendly environment	Diversion of existing bus routes creating congestion on the surrounding areas
		Restricting entry of private vehicles	Provision of park and Ride option at three tube stations (Marble Arch, Oxford Circus, Tottenham Court Road Station)	Encouraging active travelling and by public transport. Increased accessibility to long transit lines	May create congestion at parking lots during peak times
		Widening pedestrian pathways	Reducing lanes to a bus lane on each direction to widen pedestrian pavements	Stress free shopping environment, easy mobility, road safety	High capital investment
		Cycle lanes	Middle cycle lanes alongside bus lanes, and inserting bicycle hire points at different locations	Discouraging private vehicles	
		Traffic calming measures at intersections	Pedestrian islands, speed humps and zebra crossing at intersecting junctions like Oxford Circus	Safe and easy crossing at intersecting points	

CHAPTER 4: DISCUSSION & EVALUATION

The proposition of harnessing LUTI for London's one of the busiest streets is justified by many theories of technical, economic, and social importance. Theory of urban mobility systems, cities as markets, and theories of society and urban spaces which consider residential, employment, and commercial density along with a good public transport accessibility network (ETRAC, 2013), get acknowledged in the light of Oxford Street's improvement interventions.

Corridor planning for Oxford Street relates to the idea of Transit-Oriented Development (TOD) which is one of the fundamental aspects of LUTI. The Street being a major commercial corridor and linked to the long haul transit stations seem to be a significant catalyst for large inflow traffic and people. Given that, integrated planning can work best for the area that has good accessibility to the existing public transport network. Development of new spatial patterns by providing more neutral land uses can further revitalize the area and its surrounding, which is another characteristic of TOD and gets covered under the propositions.

LUTI for Oxford Street through the reconfiguration of existing land use around a strong existing public transport network can do wonders can build local interactions and bring closed systems investment with resilient outcomes (Alsafi, 2014). The proposals consider multiple forms of transportation, adjacent land uses, and connects nearby streets. They provide a good mix of people, activities accessible by a variety of travel modes, including walking, biking, and transit. This makes it the corridor to have a multi-modal transportation network, knit together around a shuttle bus service, encompassing the aspect of public transport centered development.

Another characteristic of TOD is connecting land uses with transport networks taking into account the safety of pedestrians (EU, 2003). The proposition for Oxford Street to make it partially pedestrianized lessens the overall volume of traffic and favors a pedestrian-friendly environment. It aims at combining people, movement, and value with providing multi-used activities within the existing buildings.

TOD defined as catering a mixed-use residential/commercial development within walking distance of a transit station becomes favorable when designing shuttle service, cycling paths, and mixed uses along the way. Furthermore, with such TOD, a major focal point is made around the Oxford Circus transit station. Such development patterns support pedestrian access to and from the station with good sidewalks, connected blocks and streets, and the presence of parking at secondary locations.

Studies over the past decade have proved increasing demand for more compact and transit-accessible housing, workplace, and retail locations (EPS, 2014). Conversely, the demand for large homes and large lot suburban and exurban development is expected to decrease. A quarter of Americans like to be able to walk or cycle to work, yet only 4 percent do. However, when work, shopping, and services are located less than one mile from home, roughly 40 percent of the population will walk or cycle to these locations (ibid). Given that, the provision of residential apartments/flats in building along Oxford Street can stimulate a more sustainable environment considering the cited context.

Moreover, the proposals for Oxford Street for park-&-rides is an organized feature for a residential as well as the retail community. Activities are more centered on the station, connected by a compact street with low vehicular traffic, and with sidewalks and bicycle facilities. The ideas can connect people of all income ranges to opportunities for job training, education, and career advancement, harnessing development equity.

4.1 BENEFITS OF TOD FOR OXFORD STREET

The idea and implementation of TOD in the case of Oxford Street can reap benefits not only for the visitors but for a larger audience both public and private oriented. Table 2 lists some of the potential benefits which TOD can foster for the two stakeholder.

Table 2: Benefits of TOD

Public Sector	Private Sector
▪ Increased ridership and revenues ▪ Joint development opportunities at stations ▪ Increased housing opportunities ▪ Revitalised neighbourhoods ▪ Less traffic congestion and automobile related costs, like pollution and fuel consumption ▪ Reduction in road expenditures and other infrastructure outlays	▪ Increased land values, rents ▪ Increased access to labour pools ▪ Reduced parking costs ▪ Increased retail sales ▪ Increased physical activity lowers medical expenses

CONCLUSION

The integration of land use and transport is seen as central to the achievement of sustainable development not just in terms of transport but also in safe urban space. Oxford Street that carries a large number of vehicular volume despite the presence of a transit network, is creating a highly vulnerable situation for the pedestrians. In wake of this, corridor-wide planning in form of TOD is seen as vital for optimizing the site to meet not only market demands but also to provide safe mobility for pedestrians.

The strategies proposed in the context of Oxford Street are beneficial in harnessing prioritized mobility by providing the access and diversity of people based on the need and want. By restricting car use and encouraging walking will result in reduced emissions by decreasing personal Vehicle Miles Traveled. TOD for Oxford Street will further create a healthy mix of uses with improved and safe mobility.

In a nutshell, it can be said that LUTI for Oxford Street through the reconfiguration of existing land use is vital for ensuring the safety of pedestrians. The proposed interventions for the Oxford Street set well in the theoretical framework of LUTI feedback cycle, SUMP, 5Es model, cities as markets, societal spaces, mobility systems, and a TOD ride, all play a critical role in implementing strategies for making it a place for people than vehicles. This is a way forward to safe pedestrian mobility, sustainable travel patterns, and a planned mixed-use development.

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