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Review Article

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Preliminary Study on the Influence of Non-Motorized Transport in a City

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Abstract

Non-Motorized transport alludes to utilize any method of transportation that doesn't rely on the utilization of a motor or an engine to move that can be walking, cycling, wheel barrows, creature drawn carriages. This paper is tied in with walking and bicycling speculations are turning out to be more significant in laying out adjusted transportation frameworks and supporting networks. As people group across the United States consider reviving their non-motorized transportation organizations, transportation organizers and chiefs are progressively anxious to survey the impacts of these ventures. Numerous people group start new framework programs with pilot ventures to test their adequacy prior to carrying out them for a bigger scope. Thus, it is basic to give a specialized asset to networks to assess the different kinds of results from nonmotorized transportation programs. The utilization of Non-Mechanized Transport (NMT) has numerous medical advantages as well as natural advantages. Subsequent to being so significant component of metropolitan transportation framework, NMT is very frequently ignored as a practical portability choice for more capital-and foundation serious methods of transportation.

Keywords: *Pedestrian safety, Pedestrian risk factor, Ile-lfe*

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1. Introduction

Non-Motorized Transport (NMT) modes incorporate walking, bicycling and cycle cart. Prior days Cycle Rickshaw was a method of the majority of working-class public vehicle. With the financial, social mechanical development there is a radical change in method of public vehicle. In India the metropolitan street framework is essentially inclining toward just the utilization of mechanized vehicles. Nowhere in the country we can track down a passerby amicable street framework in India. The current circumstance itself is extremely terrible and perilous for non-drivers on Indian streets. Presently it's the rush hour to make a few measures and remedial activities to make our streets more secure for the time being and future. From the measurement it very well may be perceived that each month there is a 9/11 occurring on Indian streets taking more live than that of a fear monger assault. UNEP Study on fatalities on metropolitan streets tells the filthy image of Indian roads. The justification behind this is the significance given in spending for mechanized vehicles isn't neglected by the strategies and authorities.

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Metropolitan street framework in India is one-sided for motorized vehicles. This is because of absence of a response to incredibly high development in mechanized vehicles in metropolitan India over the most recent 20 years. While the number of inhabitants in India's six significant cities expanded by around 1.9 times during 1981 to 2001, the quantity of engine vehicles went up by over 7.75 times during a similar period ([Ministry of Urban Development, 2007](#)). From the populace enumeration of 2010, somewhere around 35% (27.76 million) metropolitan families had a mechanized bike and 9.7% (7.65 million) metropolitan families had a mechanized four-wheeler. While, overall, the enrolled engine vehicles expanded by 2.4 times during 2002-2011 period or at the pace of 10.2% per annum, in 19 metropolitan urban areas for which the double cross point information is accessible, enlisted an increment at 8.8% per annum in the ten years ([Transport Research Wing, 2012](#)).

2. The Role of Non-motorized Transport

Non-mechanized travel (especially walking) assumes an interesting and significant part in a proficient transportation framework. Walking is a major human action that gives essential portability and serve numerous different capacities. Walking gives associations among different modes, objections and exercises. Structures, parking areas, train stations, travel terminals and air terminals are altogether common conditions that rely upon strolling and cycling for course and associations. Most motorized trips include non-motorized joins. Drivers walk from left vehicles to objections. Most travel trips include non-motorized links, so walking and cycling conditions decide the practical area of travel administration. Air explorers stroll from vehicles to air terminals and inside terminals. Individuals stroll for course at objections. Thus, further developing non-motorized conditions further develops access by different modes. Non-motorized travel can give many advantages. Walking and cycling are reasonable for clients and diminish expenses like blockage, stopping appropriations, energy utilization and contamination discharges.

Networks intended for walking and cycling are smaller (such countless objections are inside helpful distance of one another), associated (with roads that permit direct travel), planned at a human scale, have appealing walkways and ways. This further develops availability, reasonableness and local area liveability. Traditional arranging tends to undercount and underestimate non-motorized travel ([Litman, 2003](#)). Many travel studies show that main 2-5% of movement is by walking and cycling, inferring that non-motorized travel is immaterial. However, such overviews frequently overlook brief excursions, non-work endlessly travel by kids, sporting travel, and non-mechanized connections of mechanized trips. For instance, many travel overviews order walk-drive-walk trips just as auto excursions and bicycle transport walk trips as travel trips, regardless of whether the non-motorized link happen on open walkways, ways and streets. Non-motorized make a trip is regularly three to multiple times more prominent than such studies show ([Rietveld, 2000](#)). A few specialists reason that expanded walking and cycling can do practically nothing to tackle transport issues since they just consider current drive trips that can move totally to these modes ([Comsis, 1993](#); [Apogee, 1994](#)), yet different examinations propose that non-mechanized travel can assume a more significant part by filling in for task trips, supporting different modes and assisting increment with landing use availability ([Mackett, 2000](#); [Socialdata, 2000](#); [Cairns et al., 2004](#)).

The assortment of likely monetary advantages of bike and person on foot foundation and programming ventures include:

1. Commute expense reserve funds for bicyclists and walkers;
2. Direct advantages to person on foot, bike, and the travel industry related organizations;
- 3.. Indirect financial advantages because of changing buyer conduct; and
- 4.. Individual and cultural expense reserve funds related with wellbeing and ecological advantages.

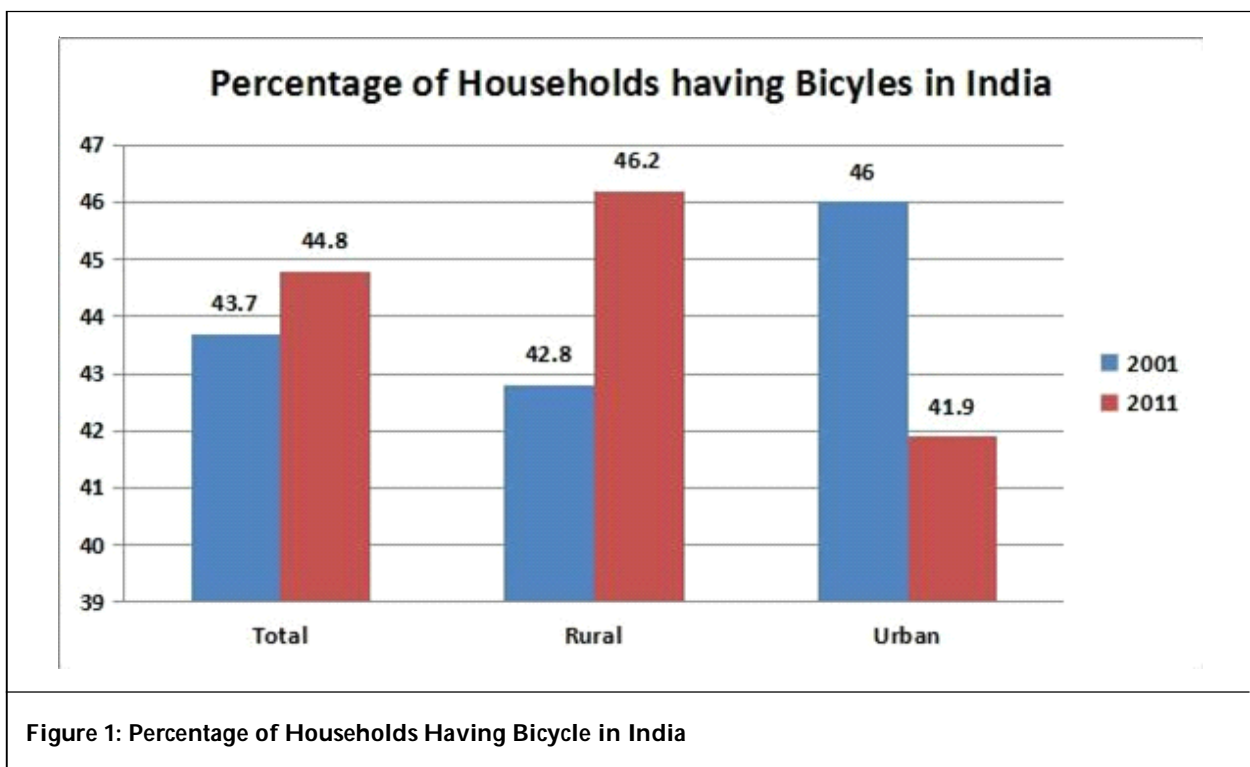
This data gives on the kinds of financial advantages acknowledged from non-mechanized transportation speculations and an audit of estimation and examination procedures to assess them. This investigation additionally inspects the various scales, at which specialists might concentrate their information assortment and examination, including: individual purchaser conduct; monetary effects inside a non-mechanized travel hall; or local area wide financial effects. The objective of this report is to give a specialized asset to networks trying to quantify the monetary effects from person on foot and bike transportation projects from now on.

3. Significance of Non-Motorized Transport (NMT)

NMT for example walk, endlessly cycle cart are green methods of transport that have a place with the low carbon way, don't consume energy or cause contamination, give social value and also gives business. With expanding endless suburbia, non-mechanized transport is losing its previous significance. The subsequent long excursion lengths have made cycling troublesome. Further, non-mechanized modes are presented to take a chance of mishaps as they share a typical option to proceed with mechanized vehicles. In any case, non-mechanized modes are climate cordial and must be given their due place in the vehicle organization of a city. The issues being looked by them would need to be relieved. Administration of India, through monetary measures, would uphold all endeavors toward this path.

Walk: Walk is the most general type of driving. All excursions, particularly PT outings, start and end with walk. Strolling is basic for progress of PT; walking will diminish vehicle use for brief distance driving; for more vulnerable areas of society walk is the main decision; walking upgrades urbanity, way of life, and wellbeing. walk offices ought to be planned and figured out how to oblige a wide scope of purposes. Individuals walk alone and in gatherings, walk pets, push buggies and trucks, run, skate, bike, stop to look and talk, play and eat on walkways and ways. Pathways fill in as both travel-ways and halting regions. Strolling is a zero-outflow method of transport that should be the essential focal point of a feasible environment.

Cycling: After walk, cycle is the second most significant method of transport for metropolitan poor. Cycling ought to be empowered in light of the fact that scope and adequacy of PT can be moved along. Cycling adds to further developing air quality and alleviating environmental change, sound decrease and worked on actual wellbeing and more wellbeing risks (GOI, 2014).



It is obvious from Figure 1 that families having bike in both country to metropolitan 43.7% in absolute India level in 2001. It had expanded prevailing situation with 44.8% in 2011. In country region bike involved 42.8% in 2001, in followed by 46.2% in relating period. The bike like having metropolitan regions involved 41.9% in 2001, and 46% in individually relating period.

4. Literature Review

Jennifer (2009) examines the bike wellbeing related foundation in USA. The review analyzed while most dynamic living has been on strolling bicycling, may have a more noteworthy potential to the power level on bike driving. Creators observed that the most bike travel in the United States especially among grown-ups for diversion not everyday travel. This is rather than bicycling in nations like Netherland, Denmark, and Germany.

The review feature that give knowledge to regular travel on bicycling can help use to grown-up. The review suggested degree of active work and job on open foundation, especially bike paths, ways, and bike streets might play in empowering this movement. This study chosen utilizing irregular inspecting technique, defined by geology, sex, and recurrence of bicycling. A larger part of the members, normal bicyclist and a big part of the member use travel action cycle 5 days in seven days during summer and non-summer month. The review uncovers that many kind of inventive foundation to strong bicycling introduced by the city Portland incorporate unique traffic light way for bike. The review presumed that strolling is a day to day actual work important to all individuals support bicycling for ordinary travel help to permitting more grown-up accomplish dynamic livings objective to everybody.

Fuzhong *et al.* (2005) examine the climate attributes and neighborhood walking movement in more seasoned grown-ups in USA. The review dissected different part of strolling; advancement of actual work has been recognized as one of the most significant demonstrates sound individuals in 2010. The review saw that strolling is the most well known and ordinarily announced recreation time actual work in USA. It features the Behavior of Risk Factor Surveillance System (BRFSS) showed that strolling was the most pervasive of all given an account of relaxation time actual work. The creator viewed that strolling likewise been displayed as nearly normal among more seasoned grown-ups. The new BRFSS information on strolling patterns showed increment 3.5% of US more seasoned grown-up in age 65. The review uncovers that strolling, either for recreation, exercise, or transport; for the most part happens in outside, group environment for parks, shopping centers, trails, and neighborhood street. Strolling likewise turns into a concentration for general wellbeing intercession. The creators saw that strolling both at the local level and the occupant level that particular speculation was neighborhood with undeniable level thickness of spot, work; significant level house hold thickness more prominent number road crossing point and green open space for entertainment, would be emphatically connected with increment strolling action in areas. The review investigated the speculation that inhabitant level geological measure (GIS) neighborhood climate to together impact strolling action at the occupant level. These speculations were inspected utilizing information from local area actual work study of more seasoned grown-ups. The review utilized cross-sectional, group, multistage, testing. The review presumed that advance actual work of strolling ought to underline the significant job on ecological impact that work with amazing open doors and eliminate boundaries for individuals more dynamic.

Francesca *et al.* (2005) examine the strolling, cycling on medical advantages metropolitan regions in India. The creator tracked down that once again introducing on strolling, cycling as a piece of day-to-day existence and adding to all the more truly dynamic way of life. The review features that diminishing weight, control for significant illness like coronary illness hypertension, and diabetes. The review uncovers that in certain nations of strolling and cycling have declined forcefully in late many years. The creators gave model that in the normal miles walked per individual each year by bike declined by 24% to 26% separately. It suggests that cycling and strolling to become sensible choice distance and different objective work place, shops, schools, medical care community, relaxation and different conveniences. It is found that 20% decrease in street traffic wounds including cyclist, regardless of the by and large expanding in cycling way. The review presume that public and global strategy needs are turning out to be more steady, and instruments, for example, wellbeing sway appraisal monetary assessment and worth establish a better conditions.

Dinesh and Dunu (2003) study to examine three wheeled auto cart drivers in Delhi. The creators tracked down that three-wheeled bike cart (TSR) assume a significant part as Para-travel modes in the public vehicle of individuals in many urban communities in India. The investigation discovered that 86,185 three wheeled bike cart enlisted in Delhi in 2001. The gauge shows that the number of inhabitants in Delhi expanded by 20% somewhere in the range of 1996 and 2001 yet three wheeled bike cart expanded by just 7%. The review analyze the better comprehension of the circumstance according to the two viewpoints the suburbanites from three wheel bike cart drivers. The point of study to move towards improvement of strategies that will help the two players and make reasonable in Delhi. It saw that there is a gets need for foundation free from assigned stopping hanging tight regions for three wheel bike cart at helpful area all around the city. The review proposes that empower public vehicle use as one can without much of a stretch arrive at ones objective from end point if in a rush or it is coming down and so on. Accordingly three wheel bike cart ought to be supported a lot of conceivable in Indian metropolitan regions.

Dinesh and Geetham (1999) break down the supportable vehicle linkage on natural issue public and non-mechanized transport wellbeing in India. The review look at maintainable vehicle framework should give

versatility and availability, to all metropolitan occupant in safe ecological amicable vehicle. The creator viewed that as if an enormous extent of populace, can't bear to utilization of non-mechanized transport private vehicle or public transports need to one or the other walk or ride bike to work. The review uncovers that protected foundation for bicyclist on common, need isolation of street space in much the same way to diminish contamination may at time struggle those requirement for decrease in street mishap. The creator saw that security of public vehicle depends on monetary models, trip time, Involved, accommodation, solace, and wellbeing on non-mechanized mode. It feature the review a sum to 1,000,000 bike trips a day in Delhi a wide assortment of vehicle type including bike, and human and creature drawn vehicles share a similar street space in Delhi. The review infers that utilization of public vehicle and furthermore strolling bicycling trips, there ought to be empowered by transport way is exceptionally simple and natural security method for including all.

Vasconcellos (2001) contends that transport isn't an end in itself. The 'end' must be the fair allocation of room and the comparing admittance to social and financial life. It is very certain that street framework in India totally disregards offices for people on foot and bicyclists, and henceforth isn't fair. The National Urban Transport Policy (NUTP) 2007 has likewise recognized that there is a requirement for achieving a more impartial portion of street space with individuals, as opposed to vehicles. This innate imbalance in appropriation of street space has additionally brought about a wild development in number of mishaps. According to Transport Research Wing and Ministry of Road and Transport (2011), 497,686 mishaps happened on Indian streets in 2011 alone, of which 24.4% were deadly mishaps in which 142,485 people were killed. Mishap severity has expanded from 20.8 in 2002 to 28.6 people.

Non-Motorized Transport is an economical method of transport (Massink *et al.*, 2011). This is fundamentally because of the decreased outer expenses and higher worth of advantages (Litman, 2007; Sinnett *et al.*, 2011). The scope of advantages of Non-Motorized Transport is likewise more extensive than the advantages that can be acquired through mechanized transport, particularly on a singular level (Pucher and Buehler, 2010).

Whether the NMT mode is utilized for just a piece of the whole excursion or for the entire excursion, it lessens the quantity of mechanized outings and distance. Thus, lessening mechanized trips is a significant component in bringing down how much non-inexhaustible assets utilized and the outer costs that are produced by mechanized transport trips (Pucher and Buehler, 2010; Murguía, 2004; Elvik, 1999). However, in spite of the different advantages and the worth NMT has for the two individuals and the climate, it is regularly not focused on Hüging *et al.* (2014). This is part of the way because of the regular spotlight on mechanized transport modes in strategy and practice (Macmillian, 2014; Litman, 2007). One more significant issue that ruins the execution of NMT projects is the absence of sufficient instruments to survey these kinds of undertakings (Hüging *et al.*, 2014; Sinnett *et al.*, 2011, Litman, 2007). Because of the absence of data in regards to the potential effect that NMT ventures or single NMT measures can have, chiefs frequently disregard them for drives that accompany more data and additionally proof (Litman, 2007; Pucher and Buehler, 2010).

Motorized transport projects by and large are more straightforward to cost and the advantages thereof are ordinarily simpler to measure both ex-bet and ex-post to the execution. This multitude of elements have added to NMT projects being disregarded and underestimated in non-industrial nations (Pucher and Buehler, 2010; Litman, 2007).

5. Objective of the Review

The review targets on non-mechanized transport sway.

The review analyze advantages of non-mechanized transport in Gwalior.

5.1. A Development Leaving Behind the Non-Motorized Transport (NMT)

Notwithstanding the apparent expanded utilization of individual vehicles in Indian Cities, there is as yet an impressive portion of the populace that drives by walking and cycling. Around 56-72% of the day-to-day trips are short trips 13—beneath 5 km excursion length—in the majority of the medium and enormous urban communities in India, offering a gigantic potential for bike use. Bike use fluctuates from 9-18% in huge urban communities to 13-21% in medium and little cities. Bike possession is extremely high in every Indian city. A large portion of the cycling populace has a place with lower pay classifications that either can't bear to utilize public vehicle or can't observe appropriate public vehicle on the courses they need to go on. Consequently,

justification for NMT framework improvement ought not be just the expanding of a clean and sans carbon transport mode share in the city, yet in addition the reliance on cycling for the occupation of many individuals. In 2006, the NUTP laid immense accentuation on the requirement for expanding the modular portion of non-mechanized and other low-carbon methods of transport in urban areas. In any case, notwithstanding this approach, the solid vehicle, fuel, and street anterooms being exceptionally powerful, keep on overwhelming the metropolitan vehicle situation where more vehicles and bikes get added to streets day-to-day. The vast majority of the customary city level arranging archives stressed on open vehicle and didn't fuse parts that incorporate NMT, because of which cyclists and walkers have been totally ignored in the general course of city improvement. This impression of bikes as a poor man's travel mode obstructed the agreeableness of projects, for example, bicycle sharing. Be that as it may, it is changing, and a few urban areas like Delhi, Ahmedabad, Bangalore, Nanded and Visakhapatnam have begun to present bikes on lease or extraordinary NMT programs. For sure, it first requirements great and safe frameworks for individuals to find out about utilizing bikes all the more routinely. NMT additionally needs mindfulness raising and crusading to advance bicycling use to raise appeal (Marion, 2014).

6. Advantages of Using NMT

Better arranging prompts better (more coordinated) put framework and NMT-Facilites, which bring about better availability, preservation of energy and improved of the traffic stream for causing of gridlock and by involving the NMT administrations for the shorter distance it prompts the movement efficient and further developing the saving in fuel utilization and works on in air in less air contamination and helps lead to the improving of the wellbeing of individual and furthermore saves the climate by lessening the utilization of non-renewable energy sources. With the expansion in vehicular development, commuters worth of time, inclination to quick methods of movement, NMT disregarding its medical advantages has been taken care of from customary travel mode. Yet, in the greater part of nations NMT has created will in general be retrofitted to existing foundation, and to focus on limiting the aggravation that it causes to the progression of mechanized traffic. For different reasons, individuals are currently moving to walk, bike.

7. Impact of Non Motorized

7.1. Pollution Reduction

Walking and bicycling produce no air contamination. Per mile emanation decreases are huge in light of the fact that they generally supplant short, cool beginning outings for which gas powered motors have high discharge rates, so each 1% of auto travel supplanted by strolling or cycling diminishes engine vehicle outflows by 2% to 4% (Komanoff and Roelofs, 1993). Assessed Benefits: Automobile air contamination costs are assessed to average 1¢ to 12¢ per automobile mile, with moderately high qualities under clogged metropolitan circumstances (Small and Kazimi, 1995; McCubbin and Delucchi, 1996). Many adapted gauges incorporate just a restricted piece of all out air contamination costs (for instance, many overlook particulate contamination and air toxics), so a moderately high worth is proper. A modest approximation is 10¢ per mile for metropolitan pinnacle driving, 5¢ for metropolitan off-top and 1¢ for country driving. SQW (2007) gauges that moving from auto to cycling gives air contamination outflow decreases esteemed at 11.1 British Pence per vehicle kilometer in significant urban communities and Pence in country regions. 5.8 pence for petroleum vehicles and 32.2 pence for diesel vehicles in a metropolitan region, and 2.1 pence for petroleum vehicles and 2.0 pence per kilometer for diesel vehicles in country regions.

8. Energy Conservation

Utilization of normal assets, like oil, can force different outside costs, incorporate macroeconomic effects and public safety takes a chance from reliance on imported oil, ecological harms, environmental change impacts, and the deficiency of assets accessible for people in the future. Put another way, asset protection can give different advantages to society. The outside expenses of oil utilization are assessed to be 1-4¢ per vehicle-mile for a normal car (NRC, 2001). These effects will quite often be higher for brief excursions, because of cold beginnings, and under clogged, metropolitan travel conditions. Assessed Benefits: Energy preservation advantages of a shift from heading to strolling or cycling are assessed to average 5¢ per metropolitan pinnacle mile, 4¢ per metropolitan off-top mile, and 3¢ per country mile.

9. Non-Motorized Policy (2014)

A city with an overall feeling of prosperity through the improvement of value and honorable climate where individuals are urged to walk and cycle; evenhanded assignment of public space and foundation; and admittance to potential open doors and versatility for all occupants.

10. Objectives

The Corporation intends to build the utilization of cycling and walking by making a protected and lovely NMT organization of pathways, cycle tracks, scenic routes, and different offices to serve all residents. The plans of roads will be reliable with best practices in common arranged, multi-modular road plan. They will likewise join fitting natural preparation and water the executives strategies. Together, these actions will accomplish the accompanying:

1. Social and financial strengthening through the arrangement of worked on minimal expense portability.
2. Improved access and portability for all inhabitants.
3. Social consideration in making NMT offices that follow standards of all inclusive planned are usable furthest degree conceivable by everybody, no matter what their age, capacity, or status throughout everyday life.
4. Reduced neighborhood and worldwide ecological effects of COC s transport framework through extended utilization of zero contamination modes.
5. A changed culture that acknowledges the utilization of cycling and strolling as acceptable and vaporous means to move around in the city.
6. Gender value through the arrangement of NMT offices that are ok for ladies to utilize.

11. Conclusion

The review infers that the public authority ought to make more mindfulness for individuals and all individuals from our general public. Utilizing non-motorised vehicles rather than customized mechanized vehicles, trailed by a vehicle sharing framework. An appropriately working street foundation should address the issues of all street clients. People on foot can't be overlooked from the metropolitan scene with regards to the present financial real factors. Valid, all of the growth strategies are designed for vehicles, yet blockage gives off an impression of being deteriorating as there are less people on foot. Given the restricted space accessible for growing existing streets. The most effective way to meet future portability needs is to grow the limit of the current street organization. This must be achieved by empowering more effective methods of room usage. On the off chance that passerby ways are worked close by committed public transportation passageways, it will decrease gridlock and make travel more secure. To accomplish the transportation area's manageability objectives, advancing the utilization of NMT in Gwalior is vital. Subsequently, it ought to be made an approach coming soon for any foundation advancement to save 1% for NMT. Each Urban Local Body (ULB) should have a green replacement strategy to advance NMT, as well as an arrangement for executing the approach with sufficient financing and checking administration levels consistently.

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