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Which Way Must Cycling in India Go?

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A combination of conventional cycles and e-cycles has the potential to transform transportation in India. While factors such as a safer road design and safe parking play an important role, there are multiple upstream interventions that could support the growth of cycling in India.

The Intergovernmental Panel on Climate Change (IPCC) has identified bicycling as one of the ways to help save the planet. Earlier this year, the European Parliament, representing 27 countries of the continent, recognised cycling "as a fully fledged mode of transport," and asked the European Commission "to develop a dedicated European cycling strategy with the aim of doubling the number of kilometres cycled in Europe by 2030". Meanwhile, with an investment of 250 million euros, Paris is well on its way to becoming a 100% cycling city by 2026.

Why has cycling suddenly taking centre stage at international and supranational levels and in cities? And what importance does it have from an Indian perspective?

Transport and health

Road traffic has made urban areas in India close to unliveable. The streets are noisy due to persistent honking. The air is filled with dust that vehicles stir up from the road or with the pollution they emit through tailpipes. Thousands are injured or killed on the roads every day. Parked vehicles line residential streets, leaving hardly any space for people to stand and talk. Children do not play on the roads and older adults are too scared to go out of the house. An activity as basic to human life as walking has become a torturous ordeal.

The damage that transport inflicts on society is not always that visible. As motorcycles and cars replace walking or cycling on a daily basis, fossil fuels compensate for the energy humans would spend going from A to B. As this fuel is burnt in internal combustion engines, a toxic mix of nitrogen dioxide, carbon monoxide, sulphur dioxide, and fine particulate matter makes its way into our lungs.

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Reduced levels of physical activity and a cocktail of pollutants in our bodies are making us sick with several non-communicable diseases, ranging from cardiovascular diseases to diabetes and cancers. In addition to giving us a poor quality of life, many of these diseases can lead to early death.

The burning of fossil fuels for transport also threatens the health of our planet. The transport sector contributes about 14% to global greenhouse gas emissions every year. These emissions are warming up the earth, leading to unpredictable weather patterns and a rise in sea levels. All of which threatens the existence of humans as well as many other species.

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Just like walking, cycling is a healthy physical activity. A recent review of nearly 200 scientific studies from across the world found that 75 minutes of cycling a week (or only 11 minutes a day) can reduce the likelihood of one dying earlier than average population by 23%. Besides a longer lifespan, the chances of suffering from cardiovascular diseases, cancers, and type-II diabetes are reduced. In other words, cycling is a medicine that is quite effective even in small doses.

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The benefits are not limited to just cyclists. Indeed, cycling benefits everyone. Cycling can take us a much longer distance than walking—as far as 7 km in just half an hour. So cycling has the potential to replace a large majority of trips by motor vehicles, and this is the key to its increasing importance. As the number of cars, motorcycles, and buses fall, so do the levels of air and noise pollution and greenhouse gas emissions. Cycles rarely cause injuries to other road users and they also free up the space taken up by parking lots.

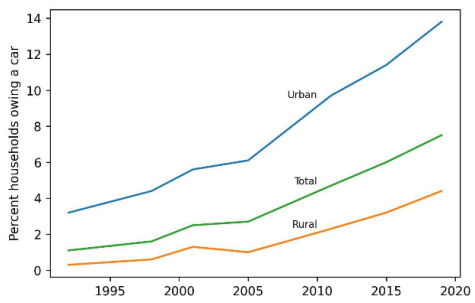
Now, let us look at where bicycles stand in India.

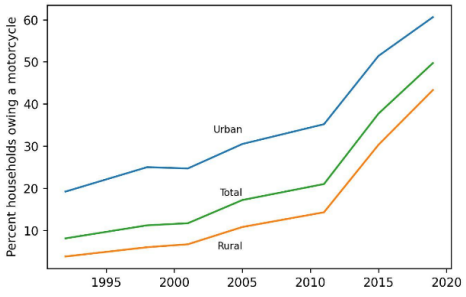
Who cycles in India?

There are two sources of data on cycling in India: the census and the sample surveys conducted by the National Statistical Organisation.

According to the 2011 Census of India, nationally, one in five workers reported cycling to work – 21% in rural areas and 17% in urban areas. The highest levels of cycling were in Chhattisgarh, Odisha, and Uttar Pradesh, where close to one in every three workers reported cycling to work. Other states with high levels of cycling include West Bengal (30% of workers used cycles), Punjab (29%), Bihar (29%), Jharkhand (29%), and Assam (27%). As far as commuting to work was concerned, these levels were higher than in the Netherlands, the country with the highest level of cycling in the world.

The cities with high levels of cycling were spread across the country. In Bikaner, Chandigarh, Nagpur, Raipur, Varanasi, and Durg-Bhilainagar, cycling levels were more than 30%. Amongst the metropolises, nearly a quarter of Kolkata's workers cycled to work. These numbers are now more than a decade old, and given the rapid rise of vehicle ownership, the use of cycles in many of these cities may have plummeted.





Contrary to popular perception, the distance covered by cycles in India can hardly be described as short. According to census data, nationally, one in six cycling trips to work was longer than 10 km, with an overall average of 5.4 km. Workers in Uttar Pradesh reported the longest trips on cycle – 25% of the trips they made were longer than 10 km, followed by Odisha and Bihar, with 20% of trips that long. It is likely that much of this was because of a lack of public transport.

The second source is the National Sample Survey rounds of expenditure on education in India. Similar to the census, these surveys report on the mode of travel to school or college, and the distance. (In a working paper (Agarwal and Goel 2023), an associate and I have analysed three rounds of these surveys – 2007, 2014, and 2017.)

> The data indicate that cycling is common in many parts of India. However, it is far from a normal, widespread activity.

Nationally, the surveys found that while cycling to school fell slightly in urban areas to 8% in 2017 from close to 9% in 2007, the levels almost doubled in rural areas over this period.

Bihar was a shining example, where cycling amongst schoolgirls increased seven fold and amongst boys, three fold. Further, the number of students cycling to school doubled in the rural areas of West Bengal, Odisha, Assam, and Chhattisgarh. These are also the states that provided free bicycles to children attending secondary schools in rural areas. Bihar was the first state in the country to implement such a scheme aimed at female students in 2005.

The data indicate that cycling is common in many parts of India. However, it is far from a normal, widespread activity. It can be termed 'normal' only when children, the elderly, and women also engage in it. In an international analysis led by me across 17 countries, we found that these three groups are highly underrepresented in India compared with many other countries. We also found that the cities with high levels of cycling tend to have a good representation of these population subgroups.

But how do we get to high levels of cycling?

How safe is it?

Multiple research studies show that the danger from motor traffic is the major reason that discourages people from cycling. In a study conducted in Delhi, cyclists were found to be 40 times more likely to die in a road accident than passengers in a car. For a large section of the population to take up cycling voluntarily, this safety gap must be bridged.

The solution here is simple – provide safe infrastructure for cyclists. That should solve the problem, right?

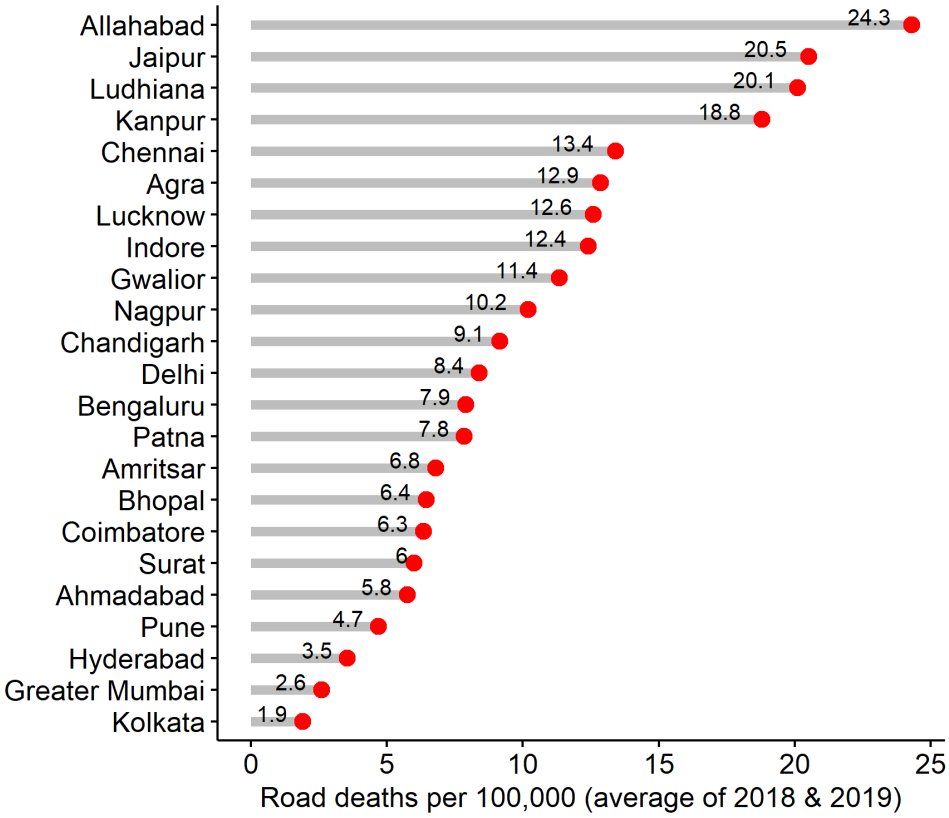
It is a bit more complex.

After the coronavirus pandemic, many European cities have witnessed a growth in cycling because more cycles were used during the pandemic and cities responded to it with dedicated infrastructure. However, even before the pandemic, Barcelona, Brussels, Paris, London, and Zurich had much safer roads than any city in India today. The number of road deaths per 100,000 population is on an average 1.6 in these five European cities. In comparison, every large city in India, except Kolkata, has much higher death rates. For example, the death rate in Delhi is more than five times the average of the five cities, in Jaipur, it is more than 12 times, and in Allahabad, 15 times.

> In Delhi […] cycle tracks have been built on some major roads [...] it is like building a swimming pool in the middle of a shark-infested ocean.

The reason European cities could successfully increase the use of cycles and continue to do so is that their streets were already safe and were made even safer for cyclists with infrastructure tailored to their needs. In other words, we cannot fix cycling safety through isolated measures aimed at cyclists alone. The streets should be made safe for all road users.

In Delhi, for example, cycle tracks have been built on some major roads, and plans are in place to have more than 500 km of them. However, such measures alone are not likely to succeed. To put it bluntly, it is like building a swimming pool in the middle of a shark-infested ocean.



Car-oriented road features such as flyovers, wide roads with four lanes each way, and large traffic junctions, which are increasingly becoming common in Indian cities, are threats to cycling. They encourage speeding and rash driving amongst motor vehicle drivers. There is also an increasing trend of closing crossings with signals to provide seamless movement to motorised traffic. Unless we fix these features of our road infrastructure, all our efforts to improve cycling are bound to fail.

Electricity in transport

Let us talk about the elephant in the room. The transition to electric vehicles is now inevitable. Major countries in Europe and the Americas, as well as India, have set targets over the next 15 years to phase out the sale of vehicles running on fuels such as petrol, diesel, or gas. The goal of this global push towards electric vehicles is to decarbonise the transport sector. However, the ability of electric vehicles to reduce carbon emissions will be limited in India as electricity is largely produced by coal.

The electric vehicle phenomenon is sweeping across many countries in Europe and in North America because it is backed by their domestic climate policies and an automobile industry that has aligned itself accordingly. However, unlike in India, e-bikes are an important part of this transition to electric vehicles in these places.

E-bikes (or e-cycles in India), also called electric-assist pedal cycles or pedelecs, have a battery that provides electric power when the rider is pedalling.An e-bike is a two-wheeled vehicle that uses electricity as one of the sources of energy to propel forward. The word “bike” refers to bicycles in most parts of the world, while it often means motorcycles in India. They can run solely on electricity using a throttle but doing so only achieves a low speed. The user must pedal to attain high speeds on these bicycles.

The partial support of electric motors while pedalling has made e-cycles increasingly popular. They can be used for much longer trips than traditional bicycles without added exertion, and at the same time – and this is the key – users can be physically active. They are also useful in hilly terrains where traditional bicycles are inconvenient to use.

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Indeed, the regional variation in the use of cycles in India is, to some extent, a reflection of geography. The districts or regions in India that have high levels of cycling to work or to school are often topographically flat. A case in point is Tripura. Among the seven north-eastern states, it has the flattest topography. With a quarter of its workers cycling to work, it has a usage of cycles that is more than 10 times the average of 2% in Meghalaya, Mizoram, Nagaland, and Sikkim.

A combination of conventional cycles and e-cycles has the potential to transform transportation in India. While many downstream factors such as safer road design and safe parking play an important role, there are multiple upstream interventions that could go a long way towards supporting the growth of cycling in India.

According to an assessment by the United Nations Industrial Development Organization (UNIDO), the bicycle industry in India is stuck in the past with the type of material it continues to use and the processes that are used in manufacturing. As a result, it does not produce globally competitive premium-quality bicycles, which greatly limits their potential for export. Even within India, up to 40% of the demand for bicycles is met by government tenders for schemes such as bicycle distribution to students.

The high level of bicycle uptake when governments freely distribute them indicates that a large section of India's population cannot afford to buy bicycles even if they need one. Adults riding pillion with other cyclists, a common sight in Delhi, for example, is an indication of unaffordability.

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A 2014 study by the Energy and Resources Institute (TERI) reported that the low-income population in rural as well as urban areas in India cannot afford to buy cycles. The cost of the cheapest bicycle relative to per capita income is high in India – this ratio is about five times greater than it is in China.

While India is the second largest bicycle producer in the world, its share in global bicycle production (10%) is far behind that of China (70%). The UNIDO report recommends, amongst other things, greater research and development (R&D) in the bicycle industry. Similar

efforts can be directed towards e-cycles that have the added demand of batteries.

While the government provides Faster Adoption of and Manufacturing of Electric Vehicles in India (FAME) subsidies for the electric motor vehicle industry, including electric motorcycles, these are not extended to e-cycles because they are not classified as vehicles according to central motor vehicle rules.

As the most populated country in the world, the choices India makes in transportation have planetary implications due to climate change. Aiming for mass cycling in the country serves many purposes besides bringing us closer to saving the planet. These include a healthier population, equitable access to transport, and social justice. As we have argued earlier, the need is to re-imagine the future of transport where privately owned cars cease to be a dominant idea.

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