

Beyond Mobility: IISc Study Highlights Public Health Benefits Of Bengaluru Metro Yellow Line

An IISc study finds Bengaluru's Yellow Line Metro could improve health, mobility and well-being. Meanwhile, affordability and last-mile connectivity remain key challenges.



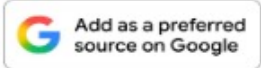
IISc conducted a first-of-its-kind longitudinal study on Metro line's Mobility, Health, and Urban Transformation (File Photo: IANS)



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8 Min Read



Bengaluru: As part of the Namma Metro expansion project, the Bengaluru Yellow Line was commissioned in phases in 2025 to enhance connectivity between residential neighbourhoods and key employment centres across the city. This line is especially significant as it runs through the Electronics City Corridor—one of Bengaluru's largest IT and industrial hubs—stretching approximately 19 km and featuring several elevated stations. By improving access along this corridor, the Yellow Line is expected to ease road traffic and provide seamless integration with other modes of transport.

Operated by the Bangalore Metro Rail Corporation Limited (BMRCL), the Yellow Line has already attracted significant ridership from commuters who previously relied on other modes of transport, indicating a clear modal shift.



A close-up view of the tracks of the Yellow Line Metro (File Photo: IANS)

Against this backdrop, the Bengaluru Science and Technology (BeST) Cluster hosted the release of a first-of-its-kind longitudinal research report titled, “Assessing the Impact of the Yellow Line Mass Rapid Transit System on Public Health and Quality of Life: A Sustainable Urban Mobility Perspective.”

Published by the Indian Institute of Science (IISc) Sustainable Transportation Lab, the study highlights the strategic value of the Namma Metro Yellow Line, which connects RV Road to Bommasandra. Using a robust mixed-methods approach, the research surveyed 600 commuters and household residents along the Yellow Line corridor, offering comprehensive insights into its impact on urban mobility, public health, and quality of life.



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Prof. Ashish Verma

Prof Ashish Verma talks about IISc study on Bengaluru Metro's Yellow Line (ETV Bharat Creative)

The findings reveal that a modal shift to the metro can deliver substantial benefits—including increased physical activity, improved mental well-being, reduced exposure to polluted air, and stronger social connectivity. At the same time, the report highlights the urgent need for policy action to address critical barriers such as last-mile connectivity, fare affordability, and supporting parking infrastructure.

KEY FINDINGS OF THE STUDY	
HIGH WILLINGNESS TO SHIFT	83% of respondents expressed willingness to switch to the Yellow Line Metro once operational.
PHYSICAL ACTIVITY CRISIS	58% reported no physical activity, far below WHO's 600 MET minutes/week recommendation. Metro use could add 10–15 minutes of walking per commute, equating to 50–75 minutes of moderate activity weekly.
REDUCED POLLUTION & HEAT EXPOSURE	Walkers and two-wheeler riders face high PM2.5 exposure exceeding WHO/CPCB limits. Metro commuters benefit from minimal pollution exposure and air-conditioned comfort similar to private cars.
IMPROVED MENTAL WELLBEING	Travel satisfaction and accessibility strongly drive mental well-being. Metro commuters reported less fatigue, more control over routines, and better work-life balance.
ENHANCED SOCIAL CONNECTIVITY & PRODUCTIVITY	Metro commuters experienced greater social interaction, stronger community ties, reduced travel fatigue, and more energy for work, family, and personal responsibilities.
LOWER ROAD ACCIDENT RISK	Shifting from two-wheelers (highest-risk mode) to metro is expected to reduce both frequency and severity of road accidents along the Yellow Line corridor.

Well-being Framework: Physical, Mental, and Social Dimensions

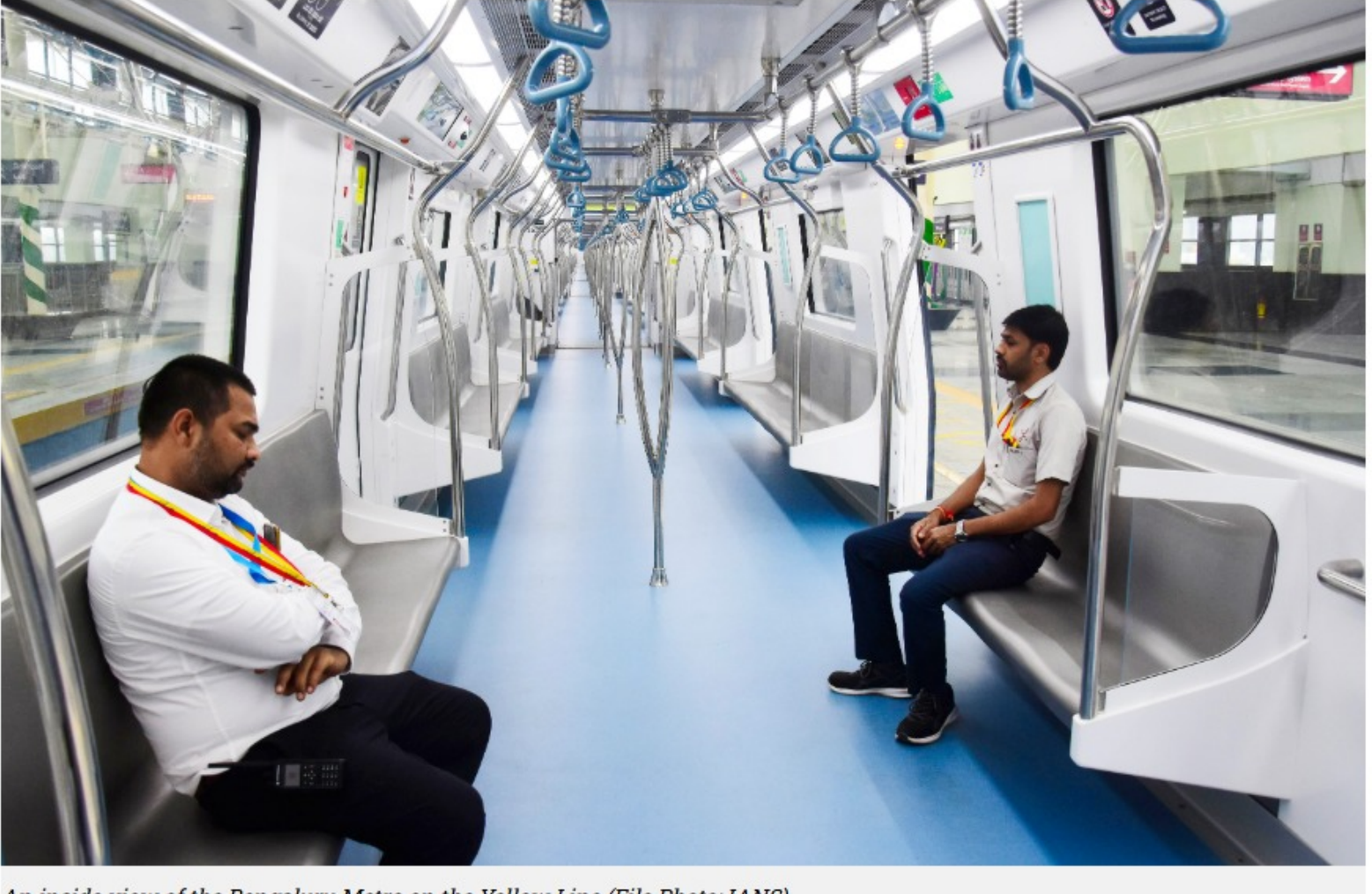
The research report, led by Prof. Ashish Verma, Professor of Transportation Engineering at IISc and Convenor of the IISc Sustainable Transportation Lab, Bengaluru, with support from various stakeholders, underscores the transformative potential of the Yellow Line metro. The report evaluated the effect of the Yellow Line Metro across three key aspects of well-being, which include physical, psychological and social well-being.

- For physical well-being, the changes considered included physical activity (walking and biking), exposure to heat and pollution levels and road safety, among others.
- In terms of psychological well-being, the factors considered were stress, journey reliability, reduction in time taken to travel and the amount of additional useful time acquired by commuters to pursue personal interests.
- The aspect of social well-being entailed measuring the degree to which public transportation increases interactions, improves social connections and creates common places that are able to minimise feelings of isolation usually attributed to private vehicle travel.

Quantitative and qualitative data sources, such as surveys and measurements of various factors like pollutants and heat levels, were used in the study to provide a holistic understanding of how metro connectivity influences commuter well-being.

“The report represents India's first rigorous longitudinal evaluation of a metro rail corridor and its impact on commuters. The study aims to review the impact of metro usage on dimensions of well-being,” said Prof. Ashish Verma.

In an exclusive interview with ETV Bharat, Prof. Ashish Verma highlighted the significance of the research and shared detailed insights into its findings and broader implications for sustainable urban transport planning.



An inside view of the Bengaluru Metro on the Yellow Line (File Photo: IANS)

Prof. Ashish Verma emphasised the importance of longitudinal tracking to distinguish between temporary behavioural adjustments and sustained urban transformation. He explained that such studies allow researchers to assess not only the immediate impact of introducing a new metro line but also whether those behavioural changes remain stable over time. In this case, the focus was on evaluating the long-term influence of the Yellow Line Metro on public health and overall well-being. Baseline data on physical, mental, and social well-being were collected before the line became operational, and the same participants were surveyed again after six to seven months, providing sufficient time for commuters to adapt their travel behaviour.

This helps to examine how metro adoption influences different dimensions of well-being over time. It provides strong evidence on whether regular use of public transport can lead to lasting improvements in public health, lifestyle patterns, and overall quality of life, rather than merely producing short-term behavioural shifts, he added.

Bengaluru’s Mobility Gap and Infrastructure Priorities

Speaking about the key challenges of the Yellow Line, he noted that these include inadequate first- and last-mile connectivity, limited parking facilities at certain stations, poor pedestrian and cycling infrastructure, and accessibility issues caused by waterlogging and road congestion around metro stations. Despite these challenges, the metro offers several clear advantages. Its travel time is far more reliable since it is unaffected by road traffic congestion. During peak hours, it often provides faster travel, along with greater comfort through air-conditioned coaches and a smoother, uninterrupted ride, Prof. Verma pointed out.



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On Bengaluru’s biggest mobility gap, Prof. Verma highlighted that the city urgently needs a denser and better-integrated metro network, as large parts of the city still remain beyond comfortable walking distance from metro stations. He stressed from the commuters’ perspective that the simultaneous expansion of the metro and the planned 149-km suburban rail network, with seamless integration at transfer points, could create a 450-km-plus rapid transit network capable of transforming urban mobility.

Prof. Verma cautioned against continued overdependence on road infrastructure projects such as tunnel roads and double-decker corridors, arguing that such measures have historically only shifted congestion rather than solved it. He warned that misplaced transport planning priorities and budget allocation could prove counterproductive, and called for greater focus on expanding and integrating mass transit systems to deliver long-term benefits for the city and its citizens.

CRITICAL BARRIERS TO METRO ADOPTION	The study identifies three critical barriers that policymakers must urgently address to unlock the full health dividend of the Yellow Line
1) FARE AFFORDABILITY	For 10–20 km journeys, metro fares of Rs. 60–70 are 4–5 times higher than Kolkata Metro. This is a significant burden for the 27% of commuters with monthly family incomes below Rs. 30,000, and often costs more than two-wheeler travel.
2) LAST-MILE CONNECTIVITY	Inadequate feeder services, limited route awareness, and insufficient station parking discourage commuters living more than 2 km from a metro station, despite recognising its benefits.
3) PEDESTRIAN SAFETY & INFRASTRUCTURE	Waterlogged and broken footpaths, along with a lack of covered walkways, force pedestrians onto roads. This increases accident risk and discourages metro access, especially for women, the elderly, and persons with disabilities.

Template for Other Indian Cities

Replying to whether the Yellow Line study could serve as a template for evaluating metro projects in other Indian cities, Prof. Verma agreed and said the methodology and tools developed through this research could become a standard template for similar studies nationwide. He revealed that his team is already working with Kochi Metro to undertake a similar assessment, including studying the impact of Kochi’s Water Metro on commuter well-being. Such studies can help build a broader national agenda, highlighting that metro and public transport systems are not merely solutions to traffic congestion, but critical drivers of improved quality of life in urban India, he added.

Mobility-Led Urban Transformation in the Electronics City Corridor

As the Yellow Line connects Bengaluru’s most critical employment and residential zones, particularly the Electronics City corridor, Prof. Ashish Verma highlighted its uniqueness and significance in studying mobility-led urban transformation and the demographic shifts anticipated among its users. He explained that the corridor is especially important because it serves as a major employment hub for Bengaluru’s white-collar workforce while simultaneously linking key residential clusters.



An inside view of the Bengaluru Metro on the Yellow Line (File Photo: IANS)

He noted that heavy private vehicle dependence had turned the Electronics City corridor into one of the city’s most congested stretches. The Yellow Line, he said, offers a strong opportunity to demonstrate how metro connectivity can drive a meaningful shift from private vehicles to public transport, promoting more sustainable travel behaviour and improving commuters’ quality of life.

He added that improved connectivity could also trigger broader demographic and urban shifts, making the corridor more attractive for both employment and residential choices, while influencing long-term land-use and housing patterns.

Public Transport as Health and Climate Infrastructure

Responding to whether India should begin evaluating metro investments as health infrastructure rather than purely transport infrastructure, Prof. Verma said public transport and sustainable mobility must be viewed as integral to clean air, public health, and climate action plans, given their strong and direct impact on all three areas. Lastly, he noted that the study highlights the broader benefits of public transport investments on people’s well-being and quality of life, and should serve as a strong template for shaping policies aimed at expanding and improving public transport systems across Indian cities.