
Decoding Google map information on travel time to understand travel speed and congestion in Delhi

Centre for Science and Environment has carried out this simple and indicative exercise to assess the impact of congestion on travel time and traffic speed on Delhi's major arterial roads which have been specially designed to give priority and primacy to improve speed of vehicular movement.

This assessment has used the daily real time information of Google Maps for different arterial roads during the month of June in Delhi to calculate average traffic speed during different hours of the day on the roads. There is a rider -- June is not the most representative month as educational institutions remain closed.

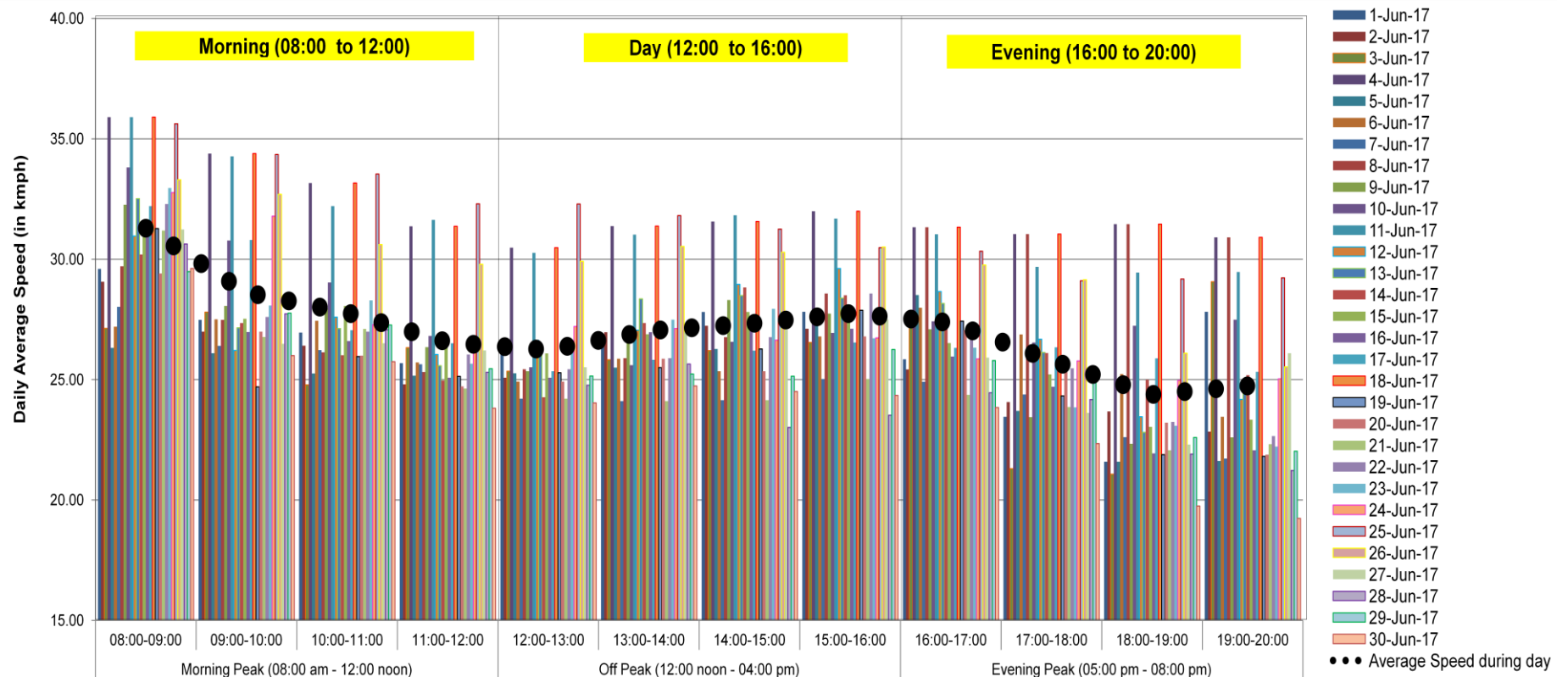
Key stretches on 13 main arterial roads in Delhi have been identified with more than 60,000 passenger car units (measure of traffic volume, based on road space usage by different categories of vehicles) per day, as per a 2010 RITES (Rail India Technical and Economic Service) survey for the study on Transport Demand Forecast in Delhi. These stretches are representative of the geographical spread of the city -- south, north, east, central and Lutyen's zones of Delhi; as well as their connection with national highways and state highways to NCR towns of Gurugram, Faridabad and Ghaziabad.

The data was noted for every hour from 8 am to 8 pm for the month of June. The speeds were then calculated for every hour for all the roads daily. Arterial roads are primary networks that provide long distance travel through multi-modal transportation system connecting all major city-level land uses. They also facilitate inter-city and regional trips by connecting with highways and expressway networks.



Graph 1: Congestion is increasing; non-peak hours are as bad

Daily average speeds (from 8AM to 8PM) from June 1-30, 2017 on 13 key stretches of main arterial roads in Delhi: *During 12 hours, around 75 per cent of the time, the average speed remains between a 25-30 km/hr. About, 17 per cent of time, the average speed remains between 20-25 km/hr. Only 8 per cent of day's time, the speed is more than 30 km/hr. There is barely any difference between peak and non peak hours. Evening peaks are worse than morning peaks.*

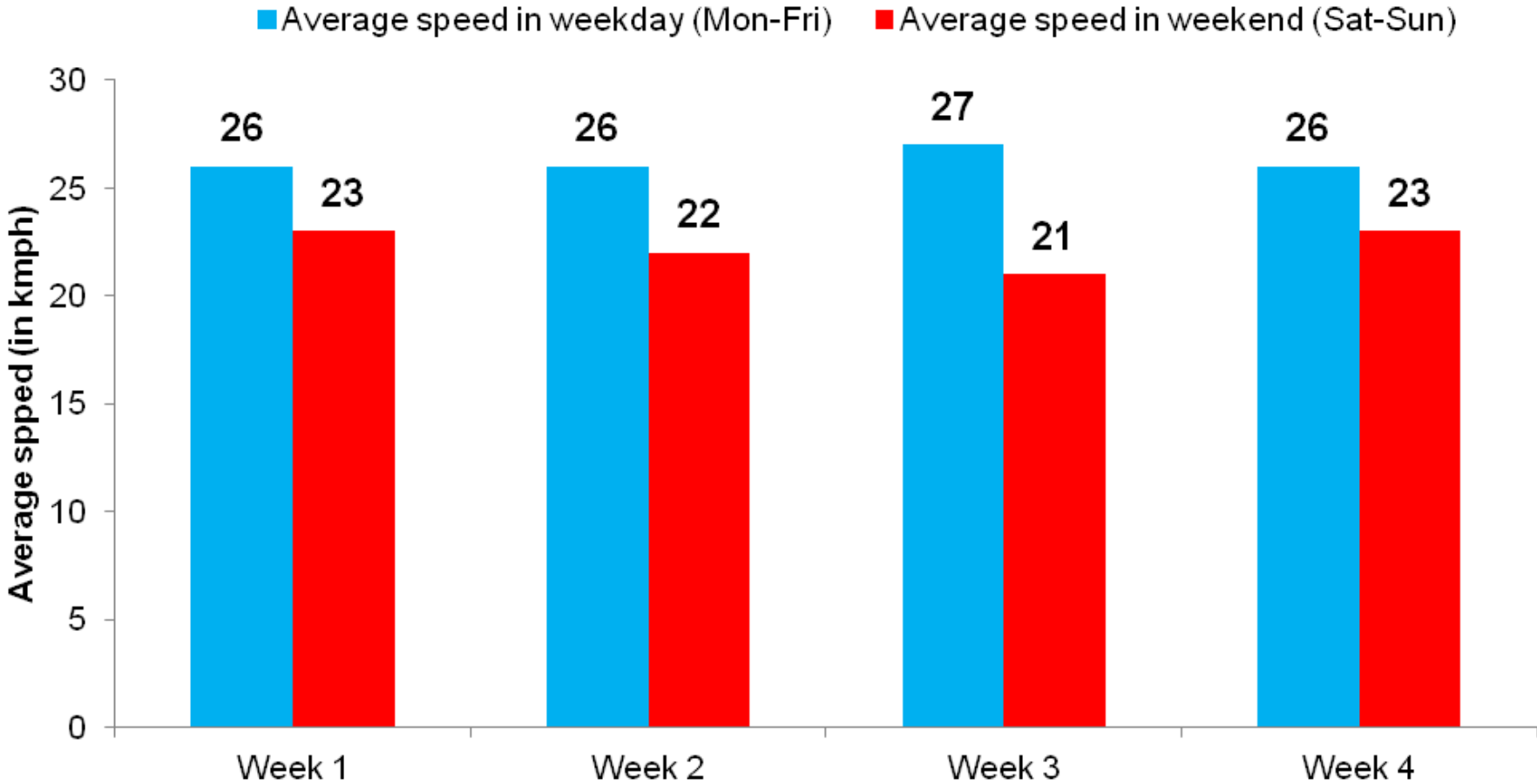


Source: CSE analysis based on Google Maps



Graph 2: Week-end traffic is worse than week-days

(12 hour average speeds in weekdays (Mon-Fri) and weekends (Sat-Sun))

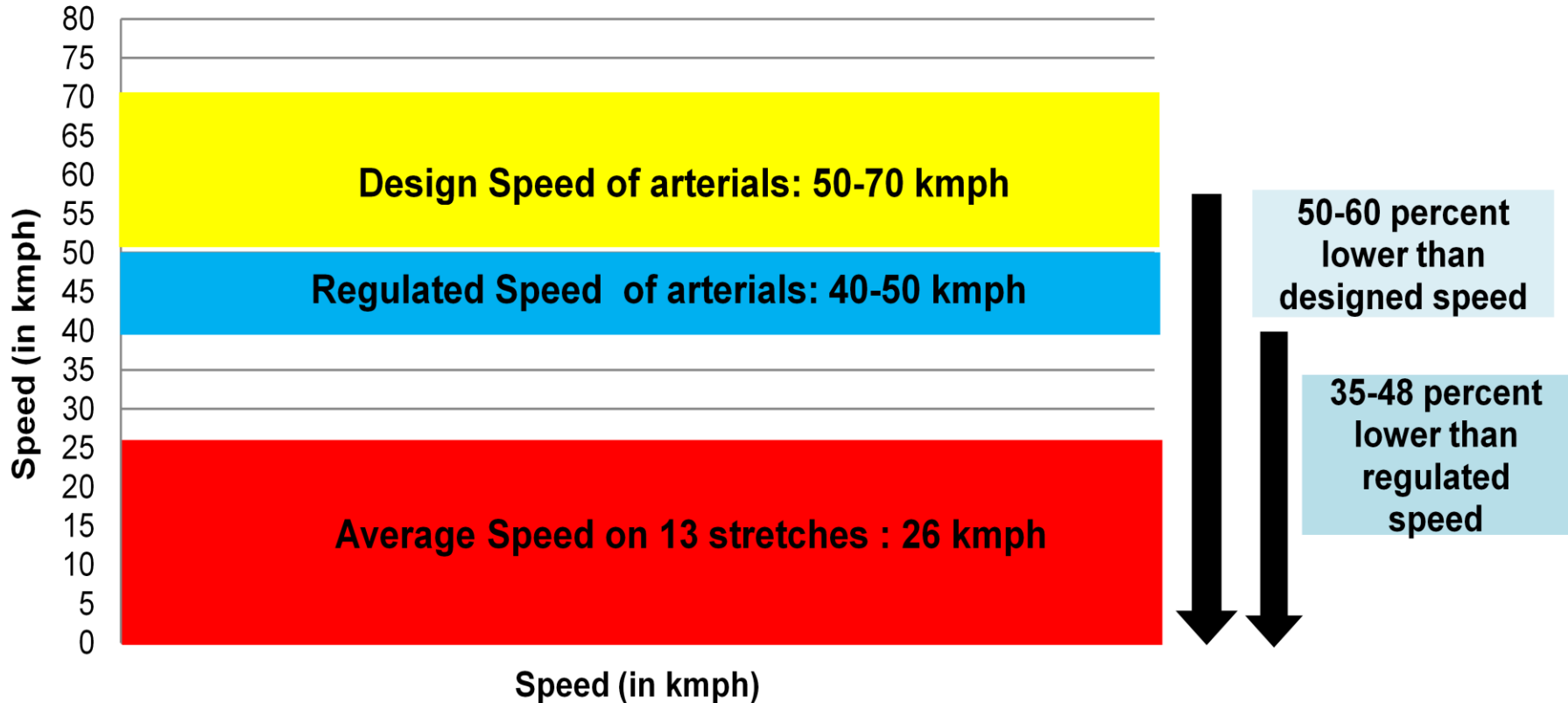


Source: CSE analysis based on Google Maps



Graph 3: Actual average speed is lower than design and regulated speed

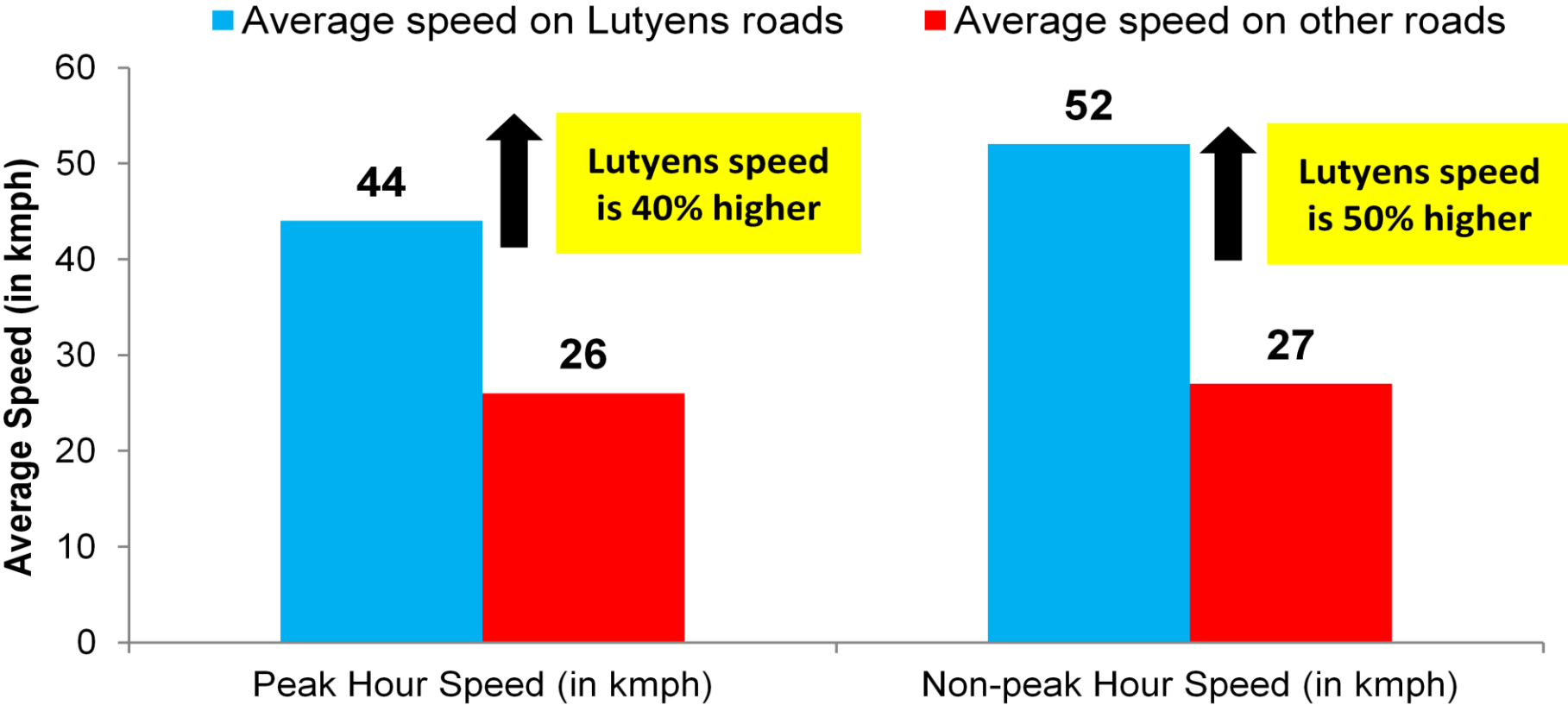
Average speed is significantly lower than the designed speed of the arterial roads as well as regulated speed



Source: CSE analysis based on Google Maps



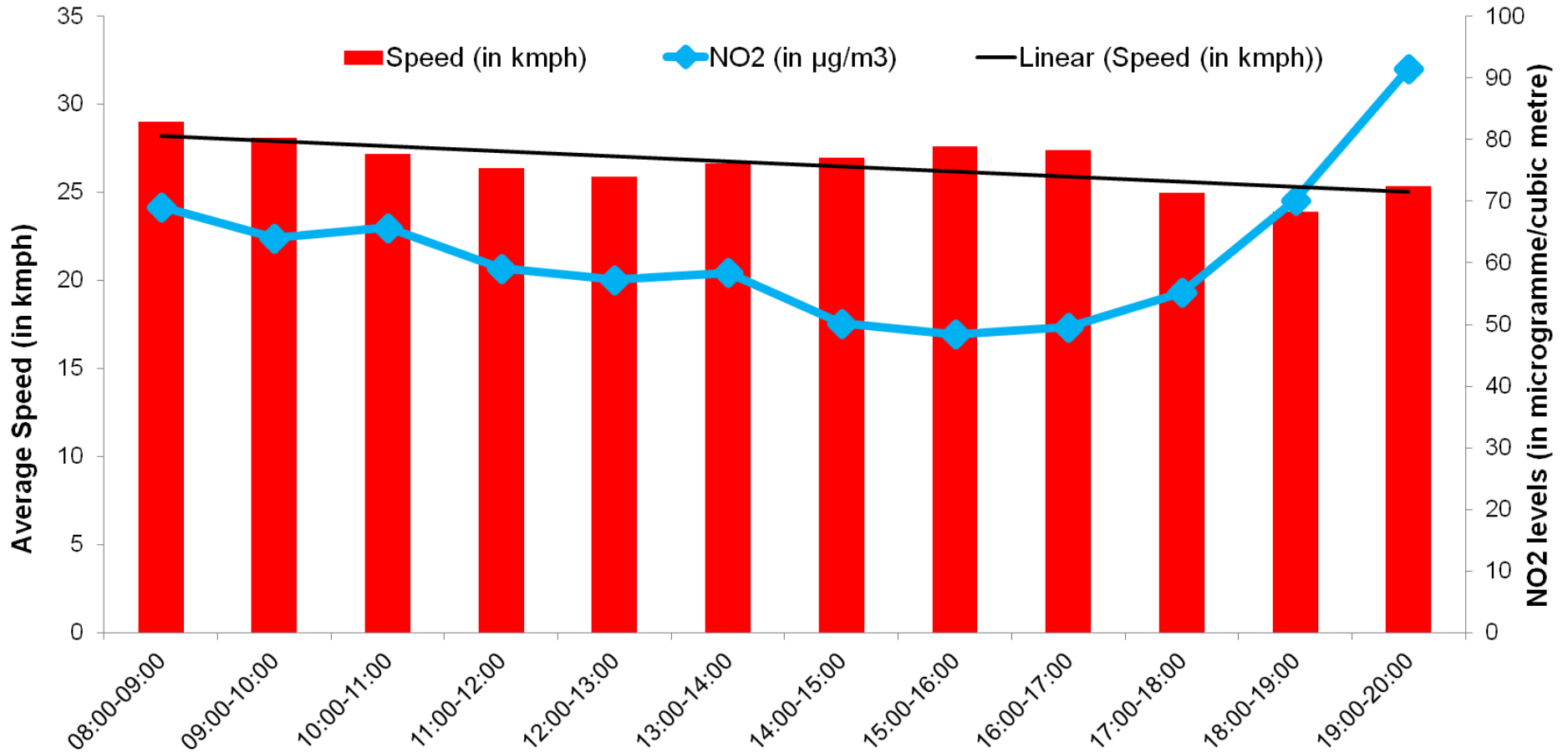
Graph 4: Lutyens zone without arterial roads has less congestion and improved speed and also distinct non-peak hours



Source: CSE analysis based on Google Maps



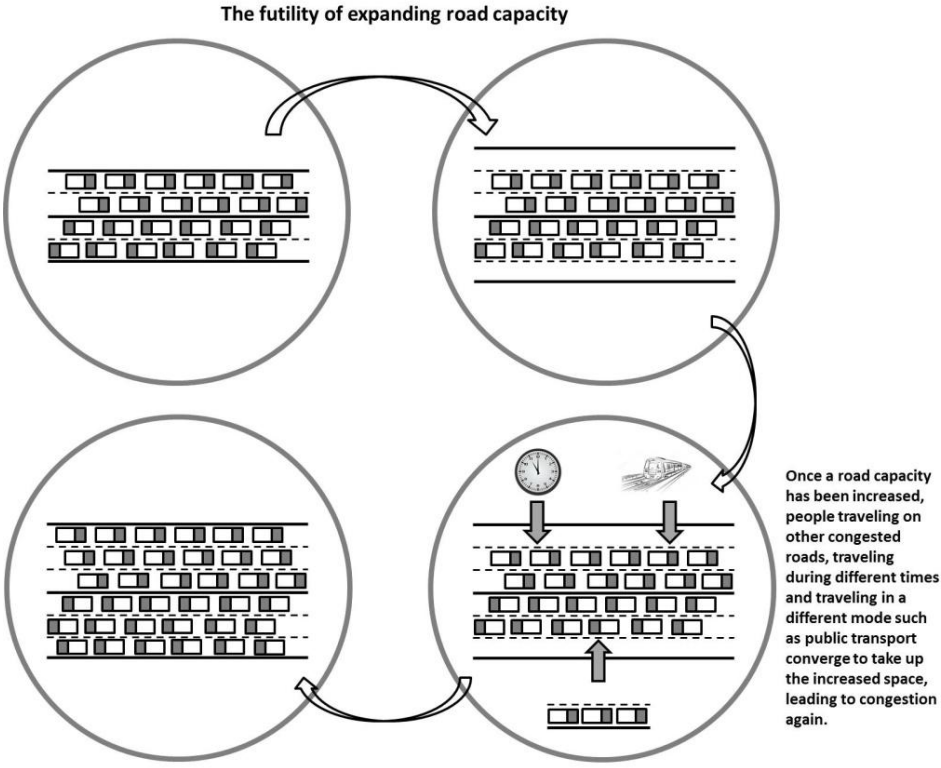
Graph 5: Air pollution increase as traffic speed reduces (NO2 levels and traffic speed)



Source: CSE analysis based Google maps and CPCB air quality data

Making more roads is not the answer

The current obsession with more roads, wider roads, elevated roads and underground roads attract more traffic and aggravate congestion. Studies show more roads induce more traffic. For every 10 per cent increase in lane mile capacity, there is a resulting nine per cent increase in traffic. It is time to change track and adopt restraint measures and scale up alternative to personal transport.



Adapted from the theory of "triple convergence" by Anthony Downs.

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