

# Staggered work hours may help beat traffic

Changing work schedules and introducing flexi-work hours are low-cost efforts that could reduce peak-hour congestion

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The demand for travel in any urban centre is characterised by a wide temporal variation during the day. This leads to a very high demand for travel in mornings and evenings – the peak hours around the start and end of office hours – causing acute traffic congestion. It has been estimated that vehicles in major metropolitan cities account for 70 per cent of carbon monoxide (CO), 50 per cent of hydrocarbon (HC), 30-40 per cent of nitrogen oxides (NO<sub>x</sub>), 30 per cent of suspended particulate matter (SPM) and 10 per cent of sulphur dioxide (SO<sub>2</sub>) of the total pollution load of these cities – two-third of this is contributed by two wheelers alone.

As per a report titled *Unlocking Cities-the impact of ridesharing across India* released by the Boston Consulting Group in April 2018, on an average, travellers in Delhi, Mumbai, Bengaluru, and Kolkata spend 1.5 hours more on their daily commutes than their counterparts in other Asian cities during peak traffic times, which results into a loss of around \$22 billion annually to traffic congestion on account of the fuel burned, productivity loss, air pollution and accidents.

## Demand and supply

The conventional approach to address traffic congestion is building more roads, flyovers, underpasses and widening of roads to augment the availability of space for smooth movement of vehicles. However, the efficacy of these supply-side solutions is limited by the existing capacity of the system, as creation of additional capacity involves huge capital investment and time. For instance, beyond a limit, widening of the road in a densely populated city would require the acquisition of land, which comes with adjunct social and economic costs.

Further, the additional capacity, if created, would remain underutilised during non-peak hours. Also, studies have found that enhancement in capacity further fuels the

traffic demand. In this context, demand-side measures are increasingly being adopted by developed countries to address peak-hour congestion and consequent pollution. Congestion pricing, control on number of vehicle registrations, parking regulations, fuel tax etc, are some such preferred measures.

Effective compliance of, for instance congestion pricing, requires dedicated and expensive infrastructure (like electronic payment gantries at entry and exit point of defined congested areas and devices in vehicles).

One such experiment in India was the odd-even scheme in Delhi during January 1-15, 2016 wherein private cars with odd registration numbers were allowed on the roads on odd days of the month, alternating with even-numbered cars on even days. Reportedly, the odd-even scheme resulted in a dip of 2-3 per cent in the pollution level. Although it helped reduce peak-period congestion, social acceptability of this measure remained low due to inconvenience faced by people in absence of effective alternatives of public transport.

## Shift in work times

It is, therefore, time to experiment with various innovative options to address this problem. One low-cost option is to adopt alternate work schedules in order to scatter the peak-hour traffic – in other words, the staggering of work hours. Under such a staggered work-hour schedule, employees have sequential or staggered start and end times (An example given in the Table). Studies have shown a reduction of 10-15 per cent in peak-hour traffic as a result of a staggered work schedule, depending on the effectiveness of its implementation. The other potential benefits of staggered working hours are reduction in commuting time, improvement in workers' efficiency, and better health and well-being of community. The staggered timings may help in increased participation of women in workforce, as they may be more convenient.



## Sequential start

A work schedule that may be suited for a city like New Delhi to stagger the current peak hours

Establishment	Proposed work schedule
Educational institutes	Starting from 7:30/8:00 am
Central Government	8:30 am - 5:00 pm
State government/Central government subordinate offices	9:00 am - 5:30 pm
Central and State PSUs	9:30 am - 6:00 pm
Private sector	10:00/10:30 am - 6:30/7:00 pm
Financial institutions	11:00 am - 7:30 pm
Shops*	11:00 am onwards

\*weekly off shall be staggered across the city

The travel demand after implementation of staggered working hours is likely to be more spread out, with reduction in peak demand. There will be better utilisation of city infrastructure for a longer period without straining it beyond its capacity during the peak period.

This can be further extended, once stabilised, to staggered working days with different weekends for various establishments.

However, the experience of its implementation in other cities shows the following: staggering may make car-pooling difficult, reduction in traffic congestion may result in travellers shifting from mass transit to private vehicles, employees and employers could resist a change in their schedule, and difficulty in interaction among companies operating at different hours of the day. Further, the staggering needs to be coordinated with mass transit schedules.

The Delhi government has now announced that it will complement

its odd-even scheme, to be implemented from November 4 to 15, 2019, with staggered work timings for its offices. The State's transport department has also suggested shifting timings of Delhi government offices from the existing 9:30 am-6 pm shift to 11 am-7:30 pm.

It would be interesting to assess the impact of both steps together on traffic congestion and pollution, and it could offer important insights into policy-design for future.

## Working flexibility

The other related options to reduce peak-hour congestion are 'flexi work hours' and the choice to 'work from home'. Under the flexi work hour scheme, employees have the option to choose their work schedules in consultation with the employer. Under the 'work from home' scheme, the employees have option to stay home and work.

However, due to their voluntary nature, the efficacy of these strategies on peak-hour congestion is limited as compared to staggered

working hours, which are generally forced by the city government.

The Ministry of Manpower, Government of Singapore has launched an incentive scheme for companies adopting flexible work arrangements. Under the scheme, the employers offering flexi work hours are entitled to receive financial incentives. The scheme is found to be popular among 15-20 per cent of employees in Singapore. More than one-third of employees in the US work on a flexi-schedule. In the UK, all employees have the legal right to request flexible working hours. Surveys have shown that employees opting for flexi hours take less leave and are more productive.

The 'work from home' strategy not only curtails travel demand but also reduces the requirement of expensive office space by 15-20 per cent (considering five working days a week). The flexibility in working schedule is attributed to improvement in well-being of the employees, their productivity, level of satisfaction, as well as the attracting and retaining of talent. Research suggests that more than 90 per cent of the millennial generation (who reached adulthood in the early 21st century) identify with flexibility as a top priority when job-hunting.

The current level of pollution in cities like New Delhi warrants non-conventional solutions to ease peak-period traffic congestion. The options to enhance capacity for meeting demand have already been utilised, and may have even resulted in further increasing demand. Demand management measures, therefore, have to be experimented.

Staggered working hours, flexi hours and work from home strategies may prove to be game changing if adopted and implemented effectively. The key to success would, of course, be participative decisions and making traffic management strategies inclusive.

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