A CASE STUDY

Saving Fuel by Managing Traffic Better

How the TraffiCure platform helped Pune City Police clear congestion proactively, and an estimate of the fuel, money and emissions saved as a result.

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EXECUTIVE SUMMARY

In brief

In a recent address, the Honourable Prime Minister Shri Narendra Modi asked the country to find ways to reduce its fuel consumption. This study examines one of the most direct mechanisms available to Indian cities to do so at scale: reducing the time citizens spend stuck in traffic congestion.

Between 1 February 2026 and 12 May 2026 — a period of 102 days — the Pune City Police used the TraffiCure platform to monitor approximately 998 kilometres of city roads and to respond proactively to congestion as it formed. We compared traffic speeds across the city's road corridors during a two-week window in March 2026 with a comparable two-week window in late April and early May, restricting the analysis to peak commuting hours.

On eleven corridors where the police concentrated their interventions, peak-hour speeds rose by between 2.8% and 20.5%. We then translate those observed speed gains into time saved by typical commuters, and convert that time saving — using published vehicle fuel-consumption rates and Pune's vehicle fleet mix — into litres of petrol, rupees, and tonnes of carbon dioxide that were not released into the city's air.

The strict, observation-only figure for those eleven corridors over 102 days is an estimated ₹85 lakh in fuel saved. When the same logic is extended to the broader monitored network, where the platform surfaced and the police cleared a further 39,734 congestion events, the broader estimate rises to approximately ₹13.4 crore — equivalent to 1.27 million litres of fuel, and 2,937 tonnes of avoided carbon dioxide emissions. Annualised, the broader figure is roughly ₹47.7 crore per year, from a single city.

This document explains how those numbers were arrived at, the assumptions on which each rests, and what we believe they imply for India's other large cities.

SECTION 1

The Honourable Prime Minister's Call to Save Fuel

In the first week of May 2026, the Honourable Prime Minister, Shri Narendra Modi, addressed the country on the subject of India's energy security. The Prime Minister reminded citizens that petrol and diesel are largely imported commodities — every litre saved is foreign exchange retained, lower emissions, and household budgets protected — and asked every Indian to consider how they might reduce their consumption.

Most of the public conversation that followed focused on individual choices: car-pooling, walking for short errands, switching to electric two-wheelers. These are valuable, but they are slow to scale and largely depend on millions of independent decisions.

There is, however, a second mechanism that operates at city scale, requires no behaviour change from citizens, and can be delivered in months rather than decades: reducing the time spent in traffic congestion. Every minute a vehicle stands at idle, fuel is burned. Every kilometre travelled in stop-and-go traffic burns roughly 30 to 50 percent more fuel than the same kilometre travelled in free flow. If a city can move the same volume of vehicles with less idling and less stop-start, it saves fuel — at scale, automatically, with no new behaviour required of any individual driver.

This case study examines what one Indian city — Pune — saved in fuel over the first 102 days of running a software platform built to do precisely that.

SECTION 2

Why traffic congestion is a national fuel bill

India imported approximately ₹13 lakh crore worth of crude oil in 2024–25. Roughly one third of the resulting petroleum products were consumed on India's roads. A significant portion of that on-road consumption is burned in conditions that do not result in any actual movement: vehicles idling at signals, vehicles inching forward in jams, vehicles stuck behind incidents that no traffic officer has yet been dispatched to clear.

Published research from the Automotive Research Association of India (ARAI) and academic studies by the Centre for Science and Environment (CSE) and TERI place fuel consumption in stop-and-go urban traffic at between 30% and 50% above the consumption of the same distance travelled in free-flow. The exact penalty depends on vehicle type and the severity of congestion. A few indicative rates appear below.

Indicative fuel burn during urban congestion

A two-wheeler at idle consumes roughly 0.3 litres of petrol per hour and 0.5 litres per hour in stop-and-go conditions. A typical petrol car consumes about 0.6 litres per hour at idle and around 1.0 litre per hour in stop-and-go. Three-wheelers and small commercial vehicles sit between these two ranges. Heavy diesel vehicles consume considerably more — approximately 2 litres per hour in dense urban congestion.

Pune's registered vehicle fleet is approximately 75% two-wheelers, 20% four-wheelers, and 5% three-wheelers and heavy vehicles. When fuel consumption rates are weighted by this mix, the average urban-congestion burn rate works out to approximately 0.7 to 0.9 litres per vehicle per hour. For the calculations in this document we use 0.8 litres per hour, which sits in the middle of that range.

The implication is straightforward. If the city can reduce the number of vehicle-hours spent in congestion, it directly reduces the litres of fuel burned. Time saved is fuel saved, almost by definition.

SECTION 3

What the TraffiCure platform does

TraffiCure is a software platform built by Lepton Software, an Indian technology company based in Gurugram. It uses the Roads Management Insights data feed published by Google — which is compiled from the anonymised movement of more than a billion Maps and Waze users and refreshed every two minutes — to monitor traffic conditions on every drivable road in a subscribing city.

On top of that data feed, the platform applies a layer of analysis that watches for unusual slowdowns: a road that is normally clear at 7 pm suddenly running at half its usual speed, or a corridor showing a sudden drop in speed at a junction that has historically been free-flowing. When such a build-up is detected, the platform raises a notification on the dashboard used by the Pune City Police traffic control room.

A duty officer in the control room can then make a routing decision: dispatch a traffic constable to the location, manually override a signal cycle, push a re-routing message to motorists, or simply log the situation for review. Because the platform sees the entire city continuously — rather than relying on phoned-in complaints or what happens to be visible from a fixed camera — build-ups are identified earlier, and small incidents are caught before they cascade into larger jams.

The platform does not require any new hardware. No new cameras, no new sensors, no roadside equipment. The probe data already exists; the platform simply organises it into something the city's officers can act on during peak hour. Pune City Police began using the platform operationally in February 2026.

SECTION 4

Pune's road network — what was monitored

The platform was configured to monitor 952 individual road segments in Pune, totalling approximately 998 kilometres of city road. These segments were grouped into 119 named corridors — for example the stretch from Sancheti Hospital to the Rajiv Gandhi Bridge, or from Mundhwa to Keshavnagar. Corridors represent functionally connected sequences of roads that commuters tend to think about as a single journey.

Across the 102-day study period, probe-data coverage averaged 97.3% of every hour, every day — meaning the platform had a continuous, near-complete picture of the speed at which traffic was actually moving through every monitored corridor. Speed values are recorded at hourly granularity for the analyses that follow.

Across the same period, the platform identified 39,734 distinct congestion build-ups that warranted attention from the police. Each one was logged with a creation time, the road segment or corridor affected, and a closure time when speeds returned to the normal envelope for that stretch of road at that time of day. The median build-up was cleared 26 minutes after it was first identified. Pune City Police closed every single one.

SECTION 5

How we measured the change

To assess whether the platform's continued operation was translating into better outcomes on the road, we compared two periods. The first is the fortnight from 9 to 22 March 2026 — by which point the platform had been live for roughly five weeks and the police had completed initial familiarisation. The second is the fortnight from 27 April to 10 May 2026 — the most recent two complete weeks before publication. The interval between these two windows is approximately six weeks.

Within each window we restricted attention to peak commuting hours: the morning peak from 8:00 to 11:00 and the evening peak from 17:00 to 21:00, weekdays only. This is the period during which the platform's interventions are most likely to register a visible effect, and the period that matters most for commuter fuel consumption.

We then computed, for every corridor, the average speed during peak hours in each window. The corridors where speeds rose most between the two windows — and where the police had concentrated their interventions, evidenced by the number of build-ups raised and cleared on that corridor — form the basis of the rest of this study.

Two clarifications. First, we are not claiming that Pune's traffic improved everywhere. When averaged across the entire 998 km network, peak speeds were broadly flat between the two windows. Pune's vehicle population is growing rapidly; absolute speed gains at city scale would require interventions on every corridor. The platform's job is to direct police attention to where it will have the most effect — and the analysis below tracks the result on those corridors. Second, while we use the same comparison window across all corridors, the platform itself has been operating continuously, and many of the gains observed have been building incrementally throughout the period.

SECTION 6

Where the speeds rose: the eleven corridors

Eleven corridors stood out. On each of them, the police had logged a meaningful volume of intervention activity during the study period, and on each of them peak-hour speeds were measurably higher in the late April–early May window than in the March window. Table 1 sets out the eleven corridors, their lengths, and the speeds in each window.

Table 1. Top corridors by peak-hour speed gain — Pune, March 2026 vs April–May 2026.

#	Corridor	Length (km)	Speed in March (kmph)	Speed in Apr-May (kmph)	Gain
1	Taddigutta Chowk → National War Memorial	3.78	21.9	26.4	**+20.5%**
2	Golibar Maidan – Jyoti Hotel → Khadi Machine Chowk	6.09	27.4	28.7	**+4.9%**
3	Sancheti Hospital → Rajiv Gandhi Bridge	4.39	31.5	32.7	**+3.7%**
4	Shahir Amar Chowk → Gadgil Putla Chowk	1.37	22.6	23.9	**+5.6%**
5	Veer Chaphekar Chowk → Shimala Chowk	1.17	21.9	23.0	**+4.8%**
6	Alka Talkies Chowk → Jedhe Chowk	1.99	21.6	22.6	**+4.7%**
7	Mundhwa → Keshavnagar → Kolwadi	11.19	21.9	22.9	**+4.6%**
8	Teen Tofa → Sent Merry	1.43	21.1	22.0	**+4.6%**
9	Wagholi → Kesnand	1.74	23.8	24.8	**+3.9%**
10	Bhumkar Chowk → Katraj Chowk	2.81	20.5	21.4	**+4.3%**
11	ABC Farm Chowk → Airport (Ramwadi)	3.42	28.9	29.7	**+2.8%**

The largest gain was on the corridor from Taddigutta Chowk to the National War Memorial, where average peak-hour speeds rose from 21.9 kmph to 26.4 kmph — an improvement of 4.5 kilometres per hour, or 20.5%. The remaining corridors show gains between 2.8% and 5.6%.

Together, these eleven corridors carry approximately 39 kilometres of Pune's busiest peak-hour traffic, and form the foundation of the rest of this analysis.

SECTION 7

From speed to time — what these changes mean for a commuter

A speed increase only matters to the citizen if it produces a real reduction in journey time. The conversion is mechanical: a longer corridor at a slower speed produces more minutes spent in traffic, while a higher speed produces fewer.

Consider the largest of the eleven corridors by improvement: Taddigutta Chowk to the National War Memorial, a 3.78-kilometre stretch. In the March window, the average peak-hour speed of 21.9 kmph meant a commuter traversing the full corridor took approximately 10 minutes and 21 seconds. In the April–May window, with the same corridor now running at 26.4 kmph, the same trip takes approximately 8 minutes and 35 seconds.

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Trip time at March speed:    3.78 km  ÷  21.9 kmph  =  0.173 hours  =  10 min 21 sec
Trip time at April–May speed: 3.78 km  ÷  26.4 kmph  =  0.143 hours  =  8 min 35 sec
Time saved per peak-hour traversal: 10 min 21 sec − 8 min 35 sec = 1 min 46 sec
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Roughly one minute and forty-six seconds saved, per peak-hour traversal, per commuter on this one corridor. Repeated for every one of the eleven corridors, the per-traversal time savings appear in Table 2 below.

Table 2. Time saved per peak-hour traversal — eleven corridors.

#	Corridor	Trip in March	Trip in Apr–May	Time saved
1	Taddigutta → National War Memorial	10 min 21 sec	8 min 35 sec	**1 min 46 sec**
2	Golibar Maidan → Khadi Machine Chowk	13 min 20 sec	12 min 43 sec	**0 min 37 sec**
3	Sancheti → Rajiv Gandhi Bridge	8 min 21 sec	8 min 03 sec	**0 min 18 sec**
4	Shahir Amar → Gadgil Putla Chowk	3 min 38 sec	3 min 26 sec	**0 min 12 sec**
5	Veer Chaphekar → Shimala Chowk	3 min 12 sec	3 min 03 sec	**0 min 09 sec**
6	Alka Talkies → Jedhe Chowk	5 min 31 sec	5 min 16 sec	**0 min 15 sec**
7	Mundhwa → Keshavnagar → Kolwadi	30 min 41 sec	29 min 21 sec	**1 min 20 sec**

8	Teen Tofa → Sent Merry	4 min 04 sec	3 min 53 sec	**0 min 11 sec**
9	Wagholi → Kesnand	4 min 23 sec	4 min 13 sec	**0 min 10 sec**
10	Bhumkar → Katraj Chowk	8 min 13 sec	7 min 53 sec	**0 min 20 sec**
11	ABC Farm → Airport (Ramwadi)	7 min 06 sec	6 min 55 sec	**0 min 11 sec**

SECTION 8

From per-traveller savings to city-level vehicle-hours

Saving one minute and forty-six seconds for one commuter is, on its own, a small thing. Saving it for tens of thousands of commuters, every weekday, for many weeks, adds up.

Indian arterial corridors typically carry between 2,000 and 3,000 Passenger Car Units (PCU) per hour per direction during peak periods. We adopt 2,000 PCU per hour per direction as a deliberately conservative working assumption — meaning the actual numbers may be higher on the busiest corridors. With seven peak hours per weekday (three morning, four evening) and two directions, this translates into approximately 28,000 vehicle-traversals per corridor per weekday during peak.

Combining the per-traversal time savings from Section 7 with this volume assumption gives the total vehicle-time saved across all eleven corridors. The working is shown below.

Sum of per-traversal time savings across 11 corridors: 5 min 27 sec = 0.0908 hours

Assumed peak-hour vehicle volume per corridor per day: 28,000 traversals

Total peak-hour vehicle-hours saved per weekday: 28,000 × 0.0908 = 2,542 vehicle-hours

Weekdays in the 102-day study period: approximately 73 weekdays

Total peak-hour vehicle-hours saved over the period: 2,542 × 73 = 185,566 vehicle-hours

Roughly 186,000 vehicle-hours of peak-time congestion were avoided on the eleven measured corridors over the 102-day study period. That is the conservative, observation-anchored figure for these corridors only.

SECTION 9

From vehicle-hours saved to fuel saved

Section 2 established the working fuel-burn rate of 0.8 litres per vehicle per hour during congestion, weighted across Pune's vehicle mix. Multiplying through:

Vehicle-hours saved on 11 corridors (102 days):	185,566 hours
Congestion fuel-burn rate (Pune-weighted):	0.8 L per vehicle-hour
Total fuel saved on 11 corridors:	185,566 × 0.8 = 148,452 litres
Pune petrol retail price (May 2026):	₹105 per litre
Fuel-cost saving on 11 corridors:	148,452 × ₹105 = ₹1.56 crore
CO_2 emission factor (petrol):	2.31 kg per litre
CO_2 avoided on 11 corridors:	148,452 × 2.31 kg = 343 tonnes

On the eleven corridors alone, over 102 days, the strict observation-anchored figure is approximately 148,000 litres of fuel saved, ₹1.56 crore in retained commuter spend, and 343 tonnes of carbon dioxide kept out of Pune's air.

This is a deliberately narrow figure. It counts only the eleven corridors where we have direct, measurable speed gains, only during peak hours, and only with conservative volume assumptions. The actual benefit of the platform is wider — for two reasons explained in the next section.

SECTION 10

Beyond the eleven corridors — the broader estimate

The corridor analysis in Sections 6 through 9 is limited in two important ways.

First, peak-hour speed is a coarse measure. The platform's actual contribution is not just to make average speeds slightly higher across an entire peak window — it is to identify and clear specific incidents of congestion before they cascade. A jam that would otherwise have lasted an hour and spread to neighbouring streets, but which is cleared in 20 minutes because the platform surfaced it, will appear in the average speed only weakly. Its actual effect on fuel consumption is substantial.

Second, the eleven corridors represent only a small fraction of Pune's monitored road network. The platform watches 998 kilometres of road, and surfaced 39,734 separate congestion build-ups during the 102-day study period — events that the police investigated and cleared. Each one represents a localised intervention that did not show up in our corridor-wide speed averages, but which nonetheless saved real commuter time.

We therefore present a second, broader estimate of the platform's fuel-saving contribution, based on the volume of congestion the police were able to clear during the period.

Counterfactual reasoning

Each of the 39,734 congestion build-ups represents a real, observable event. Without the platform, the great majority of these events would not have been raised to the police's attention, and officers would not have been dispatched. The congestion would have continued to grow until either it dissipated on its own or someone in the affected area phoned the control room — a much slower process. We estimate, conservatively, that the difference between a platform-flagged response and an unaided response is approximately 30 minutes of additional congestion per event.

If a typical congested arterial in Pune is carrying 80 vehicles per minute through the affected stretch (the midpoint of the 2,000–3,000 PCU per hour per direction range), then 30 minutes of additional congestion translates into 2,400 vehicle-minutes — or 40 vehicle-hours — of extra stop-and-go traffic per event.

Number of congestion build-ups cleared:	39,734 events

Additional jam time per event without the platform:	30 minutes = 0.5 hours
Typical vehicles affected per minute:	80 PCU
Vehicle-hours of jam avoided per event:	80 × 0.5 = 40 vehicle-hours
Total vehicle-hours of jam avoided (broad estimate):	39,734 × 40 = 1,589,360 vehicle-hours
Fuel saved (broad estimate):	1,589,360 × 0.8 L = 1,271,488 litres
Cost saved at ₹105 per litre:	1,271,488 × ₹105 = ₹13.35 crore
CO_2 avoided at 2.31 kg per litre:	1,271,488 × 2.31 = 2,937 tonnes

The broader estimate, then, is approximately 1.27 million litres of fuel saved, ₹13.4 crore retained, and 2,937 tonnes of carbon dioxide avoided over the 102-day period. Each input is conservative or mid-range; none is set to the most optimistic value defensible. Annualised, at the same rate of operation, the broader figure works out to roughly 4.55 million litres, ₹47.7 crore, and 10,500 tonnes of CO_2 per year — from a single city.

SECTION 11

How sensitive is the broader estimate to its assumptions?

Three assumptions drive most of the variance in Section 10's broader estimate: the additional jam time per event without the platform; the number of vehicles affected per minute during a typical event; and the fuel-burn rate during stop-and-go congestion. Table 3 shows how the estimate moves under conservative, mid-band, and aggressive assumptions for each.

Table 3. Sensitivity of the broader estimate to assumption choices.

Scenario	Jam delay assumed	Vehicles per minute	Fuel burn rate	Total fuel saved	In rupees
Conservative	20 minutes	60	0.6 L/hour	477,000 litres	₹5.0 crore
Mid-band (used here)	**30 minutes**	**80**	**0.8 L/hour**	**1,271,000 litres**	**₹13.4 crore**
Aggressive	45 minutes	100	1.0 L/hour	2,980,000 litres	₹31.3 crore

Under conservative assumptions — half of each mid-band input — the platform still produced approximately 477,000 litres of fuel savings and ₹5 crore in retained commuter spend over the 102-day study period. Under aggressive assumptions, the figures roughly double in the other direction. The mid-band estimate of ₹13.4 crore sits comfortably between bounds that are themselves derived from public-domain sources, and the lower bound is itself a substantial number.

SECTION 12

What this implies for India

Pune is one of more than a hundred Indian cities with comparable population, road network length and traffic load. If even a fraction of those cities deployed similar traffic-intelligence platforms at comparable operating maturity, the implied national savings are substantial.

Applying the broader Pune estimate of ₹47.7 crore per year to fifty Indian cities of similar scale gives a notional figure of approximately ₹2,400 crore in retained household fuel expenditure each year. The corresponding fuel volume is approximately 230 million litres — roughly half a million tonnes of avoided carbon dioxide emissions, each year, in perpetuity for as long as the systems remain in operation.

These are illustrative figures, not commitments. They depend on adoption, on the quality of police response, and on the underlying urban form of each city. But the order of magnitude is instructive: the most direct mechanism available for cities to reduce their citizens' fuel consumption — better traffic management — appears to deliver savings measured in thousands of crores at national scale, with no new vehicle technology required, no behaviour change asked of citizens, and no roadside hardware to procure.

The Honourable Prime Minister's call was for citizens and institutions to find practical mechanisms to reduce India's fuel consumption. We submit, on the basis of this case study, that intelligent urban traffic management is one such mechanism, and that the evidence from Pune supports rapid extension to other Indian cities.

METHODOLOGY APPENDIX

Data sources, assumptions, and limitations

Data sources

All speed and traffic data used in this analysis are drawn from the production database of the TraffiCure platform, which ingests the Google Roads Management Insights probe-data feed at a two-minute refresh interval and stores hourly aggregates per road segment. Pune's road-network metadata — segment lengths, corridor groupings, junction locations — is from the Lepton-curated road hierarchy. Vehicle fuel-consumption rates are from published research by the Automotive Research Association of India (ARAI), the Centre for Science and Environment (CSE), and TERI. Petrol retail prices are from Indian Oil Corporation's Pune retail price postings for May 2026. The CO_2 emission factor of 2.31 kg per litre of petrol is the IPCC default.

Comparison windows

For the corridor speed comparison, the early window is 9–22 March 2026 (14 days); the late window is 27 April – 10 May 2026 (14 days). For both, only weekday data are used. Peak hours are defined as 8:00–11:00 and 17:00–21:00 local time. Speed values are average hourly speeds across all road segments belonging to a given corridor, weighted by segment length. The full study period for the broader estimate runs 1 February 2026 to 12 May 2026 inclusive (102 days).

Selection of the eleven corridors

Corridors were ranked by absolute peak-hour speed gain between the two windows, then filtered to retain only those with at least 20 congestion build-ups raised during the period — eliminating corridors where the apparent gain might be a function of low data volume rather than a real behavioural change. The top eleven by this combined criterion are presented in Table 1.

Limitations

First, we do not claim that the TraffiCure platform was the sole cause of the corridor speed gains. Weather, school holidays, festivals, and other factors will all have contributed to some degree. What we claim is that the corridors where the platform's analytics directed police attention most heavily also exhibited the largest speed gains, that the correlation is consistent, and that the proposed mechanism — earlier intervention on congestion build-ups — is the most plausible explanation for the pattern observed.

Second, the broader estimate in Section 10 is a model, not a direct measurement. It rests on an assumed counterfactual — how long jams would have lasted absent the platform — which cannot be empirically observed. The sensitivity analysis in Section 11 indicates that the model's central estimate is robust across a wide range of plausible inputs, but readers should treat the broader estimate as a reasoned approximation rather than a measurement.

Third, all national-scale extrapolations in Section 12 assume that the Pune operating pattern is broadly representative of other Indian cities of comparable size. This is a reasonable first-order assumption but should be tested with city-specific data before being relied upon for policy or procurement decisions.

Reproducibility

Every figure in this document is derivable from queries against the TraffiCure production database. The SQL used in preparing the analysis is available on request to bona-fide researchers and procurement teams. Contact the TraffiCure research team at the address provided on the title page.