Road Safety Mass-Media Campaign on Speeding in Karnataka State

Evaluation Report

Title – Road Safety Mass-Media Campaign on Speeding in Karnataka State: Evaluation Report

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Sri Yogeesh A.M, IAS
Commissioner for Transport and Road Safety
Karnataka Transport Department

Message

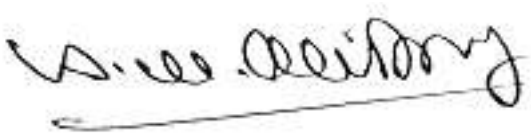
Road traffic injuries and deaths represent a critical public health and economic imperative for Karnataka, where speeding contributed to nearly 92% of the state's 12,390 road fatalities in 2024. Data sources from the Karnataka State Police reports depict a grim picture- over 60,000 lives were lost in more than two lakh crashes. Two-wheeler users bore the brunt, accounting for nearly 60% of deaths and 50% of injuries — statistics that underscore irreplaceable human and societal costs.

The state government, through the Karnataka State Road Safety Authority (KSRSA) has been working with multiple government stakeholders, national and international technical experts to implement multi-pronged evidence-based interventions that are led by data and strengthen the systems to address this crisis. In partnership with Vital Strategies under the Bloomberg Philanthropies Initiative for Global Road Safety (BIGRS), KSRSA rolled out four mass media campaigns grounded in global best practices and proven road safety strategies, three of which specifically targeted speeding as the predominant risk factor. Planning for the speeding campaign commenced with a strategic stakeholder consultation involving the Police, Highways authorities, and subject-matter experts, aimed at aligning campaign launch, media dissemination, monitoring and evaluation frameworks with data insights, enforcement priorities, and the state's broader speed management plans.

In November 2024, the "Motorcycle Reconstruction" media campaign implemented and paired with intensified enforcement to drive behavioural change: elevating knowledge, reshaping attitudes and perceptions, and normalizing safer norms among road users, with a laser focus on speeding's lethal impact.

The accompanying evaluation done by Vital Strategies and NIMHANS, furnishes actionable intelligence on campaign reach, recall, and behavioural outcomes, equipping us to utilise media campaigns coupled with targeted enforcement as an effective road safety intervention.

Through collaboration with international and national experts, we are fortifying road safety systems to transform human error into survivable incidents, not tragedies and making Karnataka's roads safer for all.



Sri J Purushotham
Additional Commissioner and Member Secretary,
Karnataka State Road Safety Authority,
Government of Karnataka

Message

Road traffic injuries continue to be a major public health crisis, with speed being the biggest killer on our roads. As per report on Road Accidents in Karnataka – 2024, two-wheeler riders remain the most vulnerable, accounting for 56.61% of all road traffic fatalities in the state.

The Karnataka State Road Safety Authority, with technical support from Vital Strategies through the Bloomberg Philanthropies Initiative for Global Road Safety, launched 'Motorcycle Reconstruction', a statewide mass-media campaign, in November 2024 as a continued commitment to improving road safety. This instructional-style mass-media campaign visually demonstrates the physics of a crash — how even small increases in speed leads to significantly more injuries even death. Featuring road safety expert and former NIMHANS Director Dr. G. Gururaj, the message underscores that even a slight reduction in speed can mean the difference between life and death. The campaign promoted adherence to speed limits and safe riding/driving practices through a public service announcement aired on television, cinema, radio, print, and billboards, and was further amplified through social media. These communication efforts were augmented by strengthened enforcement to enhance road safety compliance.

The campaign's impact was evaluated by the WHO Collaborating Centre for Injury Prevention and Safety Promotion at NIMHANS, assessing changes in awareness, recall, and speeding behaviour, as well as improvements in knowledge and attitudes toward road safety.

This evaluation report highlights the campaign's impact on these factors, providing evidence to guide future road safety strategies. It also establishes the fact that enforcement coupled with powerful storytelling in a campaign mode can achieve reduction in road traffic injuries.

The Karnataka State Road Safety Authority commends all partners and stakeholders for their collective efforts and reaffirms its commitment to advancing data-driven, evidence-based interventions to curb speeding and save lives on Karnataka's roads.

Dr Pratima Murthy
Director- NIMHANS

Message

Road traffic fatalities in Karnataka continue to be a matter of serious concern. Each fatality represents not only an irreplaceable loss to families and communities but also a reminder of the urgent need for sustained, evidence-based interventions to enhance road safety. When combined, enforcement measures and behaviour change communication strategies are globally recognised as an effective approach to reducing road crashes, fatalities, and injuries.

The Karnataka Road Safety Authority, with support from Vital Strategies, has implemented this mass media campaign aimed at promoting safer road user behaviour. I am pleased that NIMHANS has been entrusted with the responsibility of evaluating this campaign throughout the state. This reflects recognition of our institution's expertise and commitment to generating high-quality, actionable evidence that contributes to improving public health and safety.

The findings of this evaluation report provide valuable insights into campaign awareness levels, the effectiveness of various media channels, and the cost efficiency of interventions. These insights will serve as important inputs for planning and implementing future road safety communication initiatives.

It is my sincere hope that the Government of Karnataka will consider these findings to guide the design and implementation of more impactful and sustained mass media campaigns. NIMHANS remains committed to supporting such evidence-driven efforts in the years ahead.

I would like to congratulate the Karnataka Road Safety Authority, Vital Strategies, and the WHO Collaborating Centre for Injury Prevention and Safety Promotion at NIMHANS for completing this mass media campaign evaluation within a short timeframe and with scientific rigor.

Mr LM Singh
Managing Director India
Global Head – Partnerships and Innovative Finance
Vital Strategies India

Message

The World Health Organization estimates that 1.19 million people die each year due to road crashes, and tens of millions more suffer injuries, many leading to permanent disabilities. This impact extends beyond individuals and families, placing a significant burden on health care systems and economies.

Road traffic injuries continue to impose a significant and preventable burden on public health. Road safety is a public health issue as it encapsulates measures and strategies put in place to prevent all road users—drivers, passengers, pedestrians, and cyclists—from being injured or killed on the road. Road Safety is a shared public responsibility, and preventing crashes requires consistent enforcement, safe infrastructure, responsible behaviour, and evidence-based interventions.

Under the Bloomberg Philanthropies Initiative for Global Road Safety (BIGRS), Vital Strategies works in close collaboration with the States' Transport Departments, as well as other road safety partners, experts, and stakeholders, to design and test strategic communication efforts aimed at reducing road traffic crashes, injuries, and fatalities.

This speeding mass media campaign "Motorcycle Reconstruction" implemented by Karnataka State Road Safety Authority was an instructional style mass media campaign explaining the science of a crash. It focused on how even a slight difference in speed can decide the chance of a crash and its severity. It is imperative to highlight that campaigns paired with enforcement is an integrated road safety strategy where high-visibility communication efforts are implemented alongside intensified and visible enforcement actions.

For the first time, the triangulation study of this speeding campaign brings together multiple data sources— pre–post campaign evaluations on knowledge, attitudes, and practices; speeding observational data collected by National Institute of Mental Health & Neuro Sciences (NIMHANS) in collaboration with Johns Hopkins; and violation and crash records from the Karnataka State Police —to provide a more comprehensive and reliable picture of road safety risks. Vital Strategies supported the Government with the post campaign evaluation and triangulation research study for integrating evidence from diverse datasets. It is anticipated that the evidence generated through this triangulated approach will support policymakers, enforcement agencies, and allied stakeholders in strengthening and refining strategies to reduce road traffic fatalities and injuries, thereby contributing to safer roads for all.

I congratulate all authors, Government of Karnataka, NIMHANS and all contributors for coming together and releasing this triangulation study.

List of Abbreviations

BIGRS: Bloomberg Philanthropies Initiative for Global Road Safety

CI: Confidence Interval

CTRS: Commissioner for Traffic and Road Safety

GBD: Global Burden of Disease

INR: Indian Rupee

JH-IIRU: Johns Hopkins International Injury Research Unit

KSRSA: Karnataka State Road Safety Authority

MCR: Motorcycle Reconstruction

MoRTH: Ministry of Road Transport and Highways

NIMHANS: National Institute of Mental Health and Neuro Sciences

OR: Odds Ratio

PTWs: Powered Two-Wheelers

PU: Pre-University

RA: Recall-to-awareness ratio

RTOs: Regional Transport Offices

SPSS: Statistical Package for the Social Sciences

TEG: Technical Expert Group

WHO: World Health Organization

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Executive Summary

Road traffic injuries remain a pressing national and global public health concern, with speeding being a major contributor to crash risk and severity. About 10,000 to 12,000 people are reportedly killed due to road crashes every year in Karnataka, with speed accounting for significant proportion of these fatalities.

The Karnataka state Road Safety Authority, in collaboration with the Bloomberg Philanthropies Initiative for Global Road Safety (BIGRS) and Vital Strategies, launched a statewide speeding mass-media campaign in November 2024 titled 'Motorcycle Reconstruction'. The campaign used instructional-style messaging to explain crash dynamics and emphasize the importance of speed limit compliance. For its duration, the campaign was accompanied by strengthened enforcement measures.

The WHO Collaborating Centre for Injury Prevention and Safety Promotion at NIMHANS prepared a report based on campaign pre- and post-evaluation data provided by Vital Strategies. A total of 1,413 respondents were interviewed by Kadence International Pvt. Ltd., an outsourced research partner of Vital Strategies, in February 2025. The majority were male (80.2%), aged 18–29 years (39.7%), and primarily used two-wheelers for commuting (53.4%). Their responses formed the basis for analysing awareness, recall, knowledge, attitudes, and self-reported speeding behaviours. Data provided by Vital Strategies was inferred in-conjunction with data of crashes, fatalities, violations sourced from traffic police departments and observational speeding data collected by NIMHANS in Karnataka state.

The evaluation aimed to assess overall campaign awareness and recall; evaluate changes in knowledge, attitudes and self-reported speeding behaviours; correlate campaign awareness, recall findings with observed speeding behaviour, violations and road safety outcomes (crashes, fatalities, injuries). It also sought to assess unit cost for improving awareness and recall in Karnataka state. The methodology involved review of multiple data sources and expert consultations.

Key Findings

Awareness & Recall:

Overall campaign awareness was 58.2%, with higher awareness observed among women, younger respondents, unemployed individuals, and four-wheeler users. Cinema emerged as the primary source of campaign awareness. Despite the campaign targeting powered two-wheeler users, awareness was greater among four-wheeler users.

A total of 41.7% (95% CI: 39.2–44.4%) of respondents were both aware of the campaign and were able to recall at least one campaign message. The most frequently recalled were: 'Late is better than never' (15%); 'Speed kills/leads to death' (13.8%); 'Slow down' (13.7%).

The recall-to-awareness ratio averaged 0.718. Predominant four-wheeler users had 2.39 times higher odds (OR: 1.45–3.94, 95% CI) of recalling campaign messages compared to two-wheeler users. No significant association was found between recall and other factors such as sex, occupation, education, or self-reported speeding behaviour after adjustment.

Speeding Behaviour & Knowledge Changes:

Knowledge of posted speed limits increased by 4.2 percentage points after the campaign. Respondents aware of the campaign demonstrated better knowledge of speed limits.

Self-reported speeding declined from 79.9% in 2024 to 76.6% in 2025—a reduction of 3.8 percentage points. This decrease was consistent across most demographic subgroups.

A statistically significant reduction in observed speeds in Bengaluru city was observed. The average

speed reduced from 45.91 km/h in October 2024 to 36.56 km/h in February 2025. The proportion of speeders dropped from 6.41% in October 2024 to 5.99% in February 2025. Social norms and attitudes toward speeding showed a positive shift among those aware of the campaign.

Correlation between Crash and Enforcement Data post campaign:

Following the campaign, the number of reported fatalities declined by 13, but this reduction was not statistically significant (p=0.67).

Speeding violations increased from 49,717 to 55,311 (approximately 10% increase), reflecting enhanced enforcement efforts. Correspondingly, fines collected rose sharply from ₹49,717,000 to ₹55,311,000. Higher enforcement levels correlated with reductions in fatalities.

While recall levels negatively correlated with crashes, fatalities, and injuries (suggesting that higher recall corresponded with fewer incidents), these associations were not statistically significant.

Logistic regression analysis showed that predominant four-wheeler users had 2.39 times higher odds of recalling campaign messages compared to two-wheeler users (95% CI: 1.45–3.94). No other variables showed significant associations. A multi-linear regression model was applied to test correlation between recall, crashes and fatalities, but the model was not statistically significant (Adjusted R^2 = -0.131; F =0.730; p = 0.585).

The estimated unit cost to raise awareness was ₹6.14 per person. Changes between the pre- and post-campaign periods indicated consistent directional changes—reduced self-reported speeding, increased enforcement, and fewer reported fatalities. However, limitations related to sample size, data availability, and representativeness warrant caution in interpreting these findings. Strengthening data quality and expanding coverage in future evaluations will enable more robust conclusions.

Conclusions and Recommendations

The combination of the 'Motorcycle Reconstruction' mass-media campaign and enhanced enforcement was associated with measurable improvements in both self-reported and observed speeding behaviour. Nearly 6 in 10 individuals were aware of the campaign, and 4 in 10 could recall at least one key campaign message. The campaign period also recorded a significant increase in enforcement activity and a notable reduction in road traffic fatalities.

These findings highlight the usefulness of integrating communication campaigns with enforcement measures to influence driver behaviour and improve road safety outcomes.

For future evaluations of similar initiatives (campaigns), the following measures are recommended:

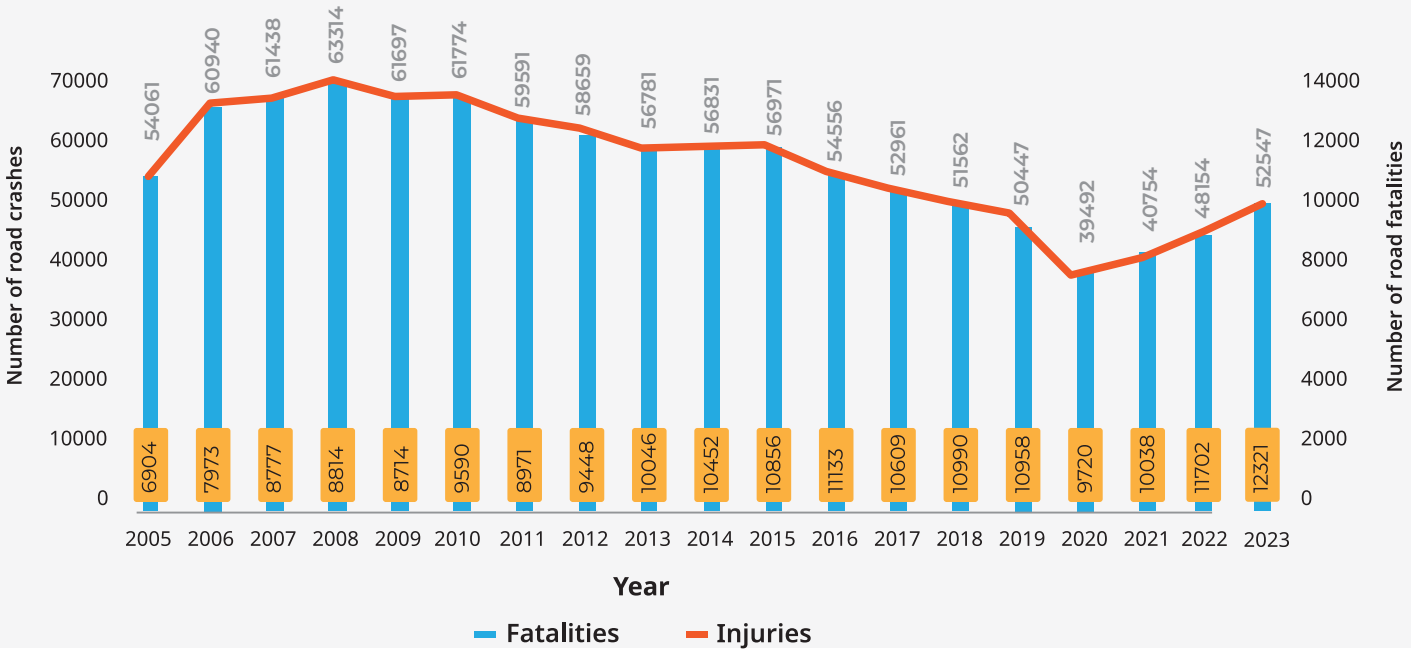
- **Conduct regular evaluations of media campaigns with improved sample size, data quality, and validation mechanisms.**
- **Adopt a multi-source data approach combining behavioural, enforcement, and crash data to generate robust, evidence-based insights.**
- **Ensure multi-sectoral collaboration in campaign evaluation, emphasizing the use of primary data rather than relying solely on secondary or reported metadata.**

Such evidence-driven evaluation frameworks will strengthen policy decisions and enhance the overall impact of road safety communication initiatives in the state.

1. Background

In 2022, Karnataka accounted for 6.9% of all reported road traffic fatalities in India [MoRTH, 2022]. According to official records, 12,321 deaths and 52,547 injuries were reported from 43,440 road traffic crashes in Karnataka in 2023 (1) (See Annexure Table 1). However, the actual figures may be 10–20% higher due to underreporting. Estimates from the Global Burden of Disease study suggest that 9,737 individuals were killed in road traffic crashes in the state. In 2021, road traffic injuries accounted for 1.55% of all causes of mortality in Karnataka (2). That same year, an estimated 502,307 disability-adjusted life years were lost due to road traffic injuries in the state (2).

Figure 1: Road crashes and fatalities in Karnataka: Year 2005-2023



Source- Government of Karnataka Police Department

The existing burden implies the need for stringent implementation of safe systems to prevent road traffic crashes and their adverse outcomes. Mass-media campaigns and strict enforcement constitute a proven strategy to promote safe road use and reduce crashes, injuries and fatalities in diverse populations. Bloomberg Philanthropies Initiative for Global Road Safety (BIGRS) has been working with the Karnataka state government since 2021 to prevent and control road traffic injuries by providing technical support and facilitating interventions.

With technical support from BIGRS implementation partner, Vital Strategies, the Karnataka State Road Safety Authority (KSRSA) launched a statewide speeding mass-media campaign in November 2024, paired with enforcement measures. The pretested campaign, titled 'Motorcycle Reconstruction', used instructional-style messaging to explain the science of crashes, depicting 'before' and 'after' scenarios to create a sense of urgency among drivers to adhere to speed limits (3).

The campaign was broadcasted on various traditional massmedia platforms — Television, cinema theatres, radio, print, and Out-of-Home (OOH) advertising (primarily, hoardings) — and amplified through social media. The aim was to improve driver and road user behaviour by enhancing knowledge, changing attitudes and perceptions, and influencing social norms. The WHO Collaborating Centre for Injury Prevention and Safety Promotion at NIMHANS has been identified to conduct evaluation of the Karnataka speeding campaign (4).

Mass media campaign launch, 19 November, 2024 - Transport & Road Safety Department, Karnataka State Police, Karnataka State Road Safety Authority, KSRSA, NIMHANS team, Vital Strategies and media representatives from print and electronic media.

2. Objectives

1. To assess overall campaign awareness and recall among respondents and sub-groups categorized by type of vehicle user, district, media channel, age group, and sex.
2. To evaluate self-reported changes in knowledge and attitudes toward speeding before and after the campaign.
3. To assess both self-reported and observed changes in speeding behaviours before and after the campaign.
4. To examine the correlation between campaign awareness and recall, and outcomes such as speeding, fatalities, injuries, crashes, and violations, before and after the campaign.
5. To estimate the unit costs associated with campaign awareness and recall in the state of Karnataka.

3. Methodology

Necessary permissions were obtained from NIMHANS and Karnataka Police Department. Ethics exemption was obtained from NIMHANS Ethics Committee. A data use agreement was signed with Vital Strategies.

Data sources and Study design: Before and after the campaign data comparison.

The 2024 campaign evaluation study [conducted by Vital Strategies] was considered as the pre-campaign data. These were compared against post-campaign data for 'Motorcycle Reconstruction' collected in 2025. The de-identified data was provided in Microsoft Excel format to NIMHANS by Vital strategies. Variables in the data provided by Vital Strategies is presented in Figure 2 & 3. The provided data were reviewed and operational definitions made for estimation of campaign awareness and recall. The operational definitions are listed in the statistical analysis plan section. This was used in relation to Karnataka census population data to arrive at a unit cost for campaign awareness and recall.

Johns Hopkins International Injury Research Unit (JH-IIRU) and NIMHANS, in association with Karnataka State Police, have collected three rounds of roadside observational data on speeding in all districts in Karnataka state using standard methodologies. However, observational speeding data for both pre-and post-campaign dates is available only for Bengaluru. Speeding data collection for other Karnataka districts ended in November 2024, before the start of the campaign. Hence, post-campaign speeding observational data were not available for the districts of Ballari, Bidar, Chitradurga, Dakshina Kannada, Dharwad, Gadag, and Mandya, as data collection in these districts had ceased.

Metadata on the number of crashes, injuries and fatalities by district was sourced from the State Crime Records Bureau and compared between year 2024 and 2025 (before and after the 'Motorcycle Reconstruction' campaign) in relation to campaign and speeding data.

Figure 2 : Timeline of data sources

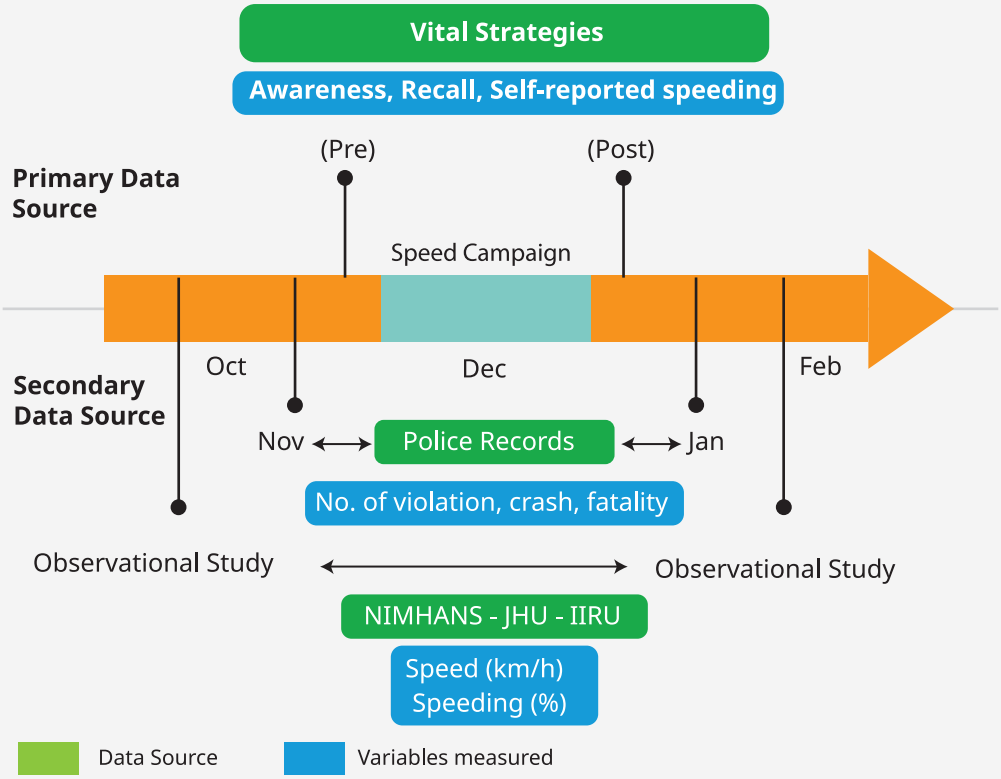
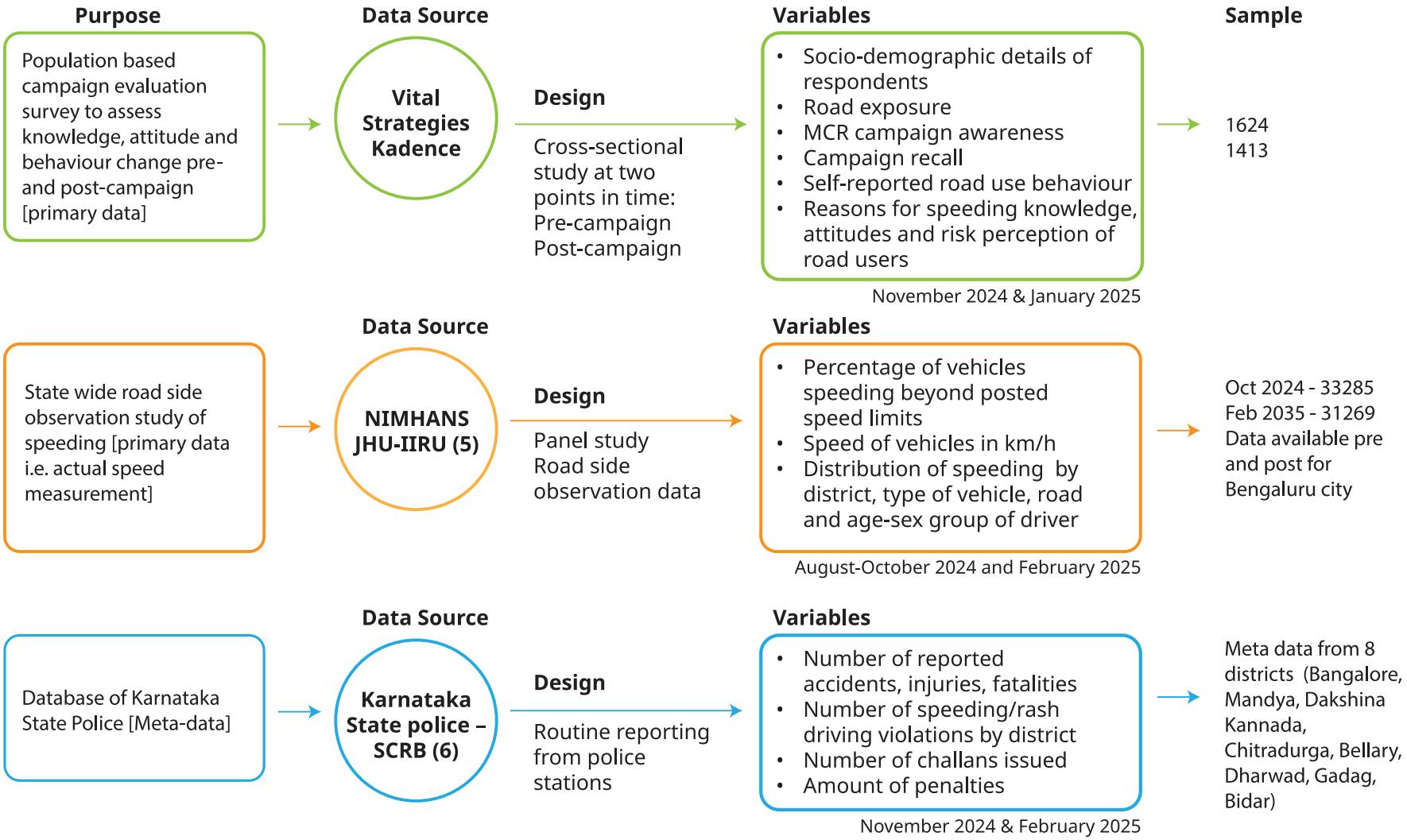


Figure 3: Data sources used in the study



Data from all sources was checked for outliers, coding and consistency. Data was imported from Excel to SPSS, which was used for analysis. Computations were conducted to define awareness and recall. Technical meetings were held to finalize the analysis plan.

Details of sampling strategy, sample size estimation, study instrument, and method of data collection are delineated in report submitted by Kadence to Vital Strategies (7).

3.1 Statistical Analysis Plan

Descriptive statistics (frequency, percentages, mean, median and standard deviation) was used to describe socio-demographic details of study subjects.

3.1.1 Measure of campaign awareness

Box 1: Awareness of campaign is operationally defined as any respondent who has responded affirmatively to **Q5A** – Have you seen or heard this campaign ad anywhere?

The overall campaign awareness percentage along with 95% confidence intervals is provided and stratified according to the subgroups of respondent's district, age, sex, educational qualification, main occupation, type of vehicle predominantly used, type of media where the campaign was seen or heard.

Univariate analysis: Chi-square test of significance was applied to test for significant difference in awareness (%) between year 2024 and 2025, as well as within subgroups in the year 2025. **Effect size (Cramer's V)** is provided. Values of V at 0.1 is considered as small effect size, 0.3 is moderate, and 0.5 or greater is considered as large effect size.

3.1.2 Measure of campaign Recall

Operational definition of recall is depicted in Box 2. Proportion of recall (%) was computed along with 95% confidence intervals and by different sub-groups.

Chi-square test of significance was applied to test for significant difference in recall (%) between year 2024 and 2025, as well as within subgroups in the year 2025. Effect size was calculated and valued as above (3.1.1).

Box 2:

Operational definition of recall: Any respondent who is aware of the media campaign and recalls affirmatively **ANY ONE** of the below messages as asked in Q5C, is defined as **positive** for **recall**.

Question number Q5C – Of this ad that you remember seeing/ hearing in the media, what were the main messages/ call to action you remember? 11 are the key messages for which recall has been sought from the participants.

1. Slow down
2. Follow speed limits
3. Late is better than never
4. Speeding kills/leads to death
5. Someone is waiting for you
6. The faster you drive, the greater the risk of a crash and its severe outcomes
7. We all share the road. Road safety is every-one's responsibility
8. Enforcement aims to prevent crash /save lives/ make city safer
9. 5km/h faster can be fatal
10. Even a slight reduction in speed can decide the chance of a crash
11. Even a slight reduction in speed can decide the severity of the crash

Eleven key messages were expected to be recalled by persons exposed to the mass-media campaign. One point was scored for recall of each message, and the sum of all positive responses was used as the total recall score. More messages recalled produced a higher score, up to a maximum of 11. The mean recall score and standard deviation were calculated overall and by different subgroups. The normal distribution of recall scores was tested using the **Shapiro Wilk test**. If normally distributed, the **independent t test** was applied to assess differences in recall scores between subgroups. The **Mann-Whitney U test** was used if data was not normally distributed. **Effect size (Cohen's D**) is provided. The interpretation of Cohen's d is as follows: d = 0.2: Small effect, d = 0.5: medium effect; d = 0.8: large effect.

3.1.2.1 Factors associated with recall

Binary logistic regression analysis was performed to identify factors associated with recall. Recall (Yes/No) was used as the dependent variable. Age group, sex, type of vehicle used, occupation, and education were used as independent variables. The Hosmer–Lemeshow test was used to measure the model's goodness of fit. Crude and adjusted odds ratios were provided.

3.1.2.2 Recall-to-awareness Ratio (RA Ratio)

is presented in the report, with RA=1 indicating that every person exposed to the campaign recalled at least one message The higher the ratio, the greater the campaign's effectiveness.

3.1.3 Change in speeding behaviour

Speeding behaviour change was assessed by comparing 'self-reported speeding' and 'observed speeding' in the study site before and after the mass media campaign. Self-reported speeding data was sourced from interview of respondents (Kadence data), whereas observed speeding was sourced from an observational study conducted by JH–IIRU and NIMHANS.

Box 3:

Operational definition of self-reported speeding

Any respondent was considered to have self-reported speeding if they either responded:

NEVER, RARELY AND SOMETIMES to Q2B
[When you know the speed limits, how often do you follow those speed limits in these areas?]
OR
OFTEN AND ALWAYS for Q2D
[In the past two months, how often, if at all, did you drive over the speed limit in city?]

The operational definition for self-reported speeding behaviour is depicted in Box 3. Each respondent was classified as either reporting or not reporting speeding based on their responses to two questions: Q2B and Q2D.

In observational study, speed recorded in excess of posted road speed limit is defined as speeding. As part of the JH–IIRU/ NIMHANS observational study, data on roadside speeding was collected at randomly sampled roads in Karnataka. Roads were selected based on these criteria: free flow of traffic, no visible police enforcement, 200 meters of road containing no curves, not a major tourist area, no nearby schools or educational institutions, and no junctions, speed bumps, crosswalks, or rumble strips nearby. Data was collected by two field data collectors—one observer and one recorder—using a handheld Android tablet using the application Kobo Collect. Each site was observed over three days (two weekdays and one weekend) from 7:30 a.m. to midnight, with seven 90-minute sessions conducted daily. Vehicle speed was measured using radar guns.

Observed speeding change data is available only for Bengaluru city. Chi-square test was used to test for the proportion of respondents reporting speeding before and after campaign. The **Independent test**

was applied to assess differences in average speed (km/h) before and after the campaign in Bengaluru city. **Effect size (Cohen's D)** is provided.

3.1.4 Assessing knowledge and attitude of respondents

Box 4:

Operational definition for knowledge: To assess the respondent's knowledge, respondents were asked Q.2A:

How often are you aware of the speed limit on the roads in this city as you drive? (response options never, rarely, sometimes, often, always, don't know what is meant a speed limit, not sure/don't remember)

Responses of 'Often' and 'Always' were categorized as indicating **adequate knowledge** of the speed limit, while responses such as 'Never', 'Rarely', 'Sometimes' were classified as **poor knowledge**.

The operational definition used to categorize respondents' knowledge of speed limits is depicted in Box 4.

Attitudes toward speeding were assessed through statements with these response options: strongly disagree, somewhat disagree, neither agree nor disagree, somewhat agree, strongly agree, and don't remember or don't want to answer.

The operational definition of attitude is depicted in Box 5. Based on responses, attitudes were categorised as favourable or unfavourable toward speeding. "Favourable attitude" is defined by the direction of each statement—reflecting agreement (strongly/somewhat agree) in some cases and disagreement in others.

Box 5:

Operational definition of attitude:

To assess the attitude of respondents towards speeding, the following statements were asked:

Question number Q3A – Now I am going to read to you some statements about road behaviour and traffic issues. Please tell me how much you agree or disagree with each one of them. (Single response)

Social norms: People in my city/ community think it is quite acceptable to drive above posted speed limits. The people important to me think that it is important to follow posted speed limits.

Speed: Higher chance of a road crash when speeding. Faster the speed the more serious injury if crash happens.

Risk perceptions: The risk of driving fast is something I am comfortable living with.

Attitude: It is fine to break the speed limit, as long as I know that I am in control of my vehicle.

3.1.5 Data triangulation

Data from multiple data sources were collated into one single sheet for the specific timelines before and after media campaign.

3.1.6 Comparing change in recall with change in speeding, reported crashes, fatalities and traffic violations

Using data from multiple sources, number of crashes, fatalities, and traffic violations before and after campaign were compared using the Poisson test. Correlation analysis was used to test for association between recall (%), speeding, reported crashes, fatalities and traffic violations post-campaign. A Pearson's correlation coefficient (r) of more than 1 is considered positive correlation; less than 1 is considered negative correlation. The correlation coefficient value is considered significant for p value less than 0.05. Multivariable linear regression was performed to assess relationship between recall (%), speeding, reported crashes, fatalities, and traffic violations post-campaign.

Ethics: The evaluation was approved by the NIMHANS Institutional Ethics Committee; NIMHANS vide NIMHANS/IEC/2025 dated 5-06-2025.

Campaign's Billboard

4. Results

4.1 Socio-demographic profile of respondents

The post-campaign survey of the Motorcycle Reconstruction campaign interviewed 1,413 randomly selected respondents from eight districts in Karnataka. Details of the socio-demographic distribution of respondents are depicted in Annexure Table 2. Key messages are presented below.

Majority of the respondents (66%) were from Bengaluru district.

The survey was conducted throughout eight districts of the state: Bengaluru, Mandya, Dakshina Kannada, Chitradurga, Bellary, Dharward, Gadag, and Bidar. Geographically, a majority of participants were sampled from Bengaluru (66.0%).

A majority of the participants were males and were between 18 and 29 years old. Most respondents were employees.

Nearly 40% of the respondents were between 18 and 55 years of age. Males comprised 80.2% of the sample. Approximately 31% had completed high school, while only 30.3% had completed pre-university (PU) or college education.

The predominant mode of transportation of respondents was four-wheelers.

Regarding vehicle use, 53.4% of respondents reported using only two-wheelers, 1.8% used only four-wheelers, and 44.8% reported using both. However, the predominant mode of transport reported by respondents was four-wheelers (86.3%).

Figure 4: District-wise distribution of respondents (n=1413)

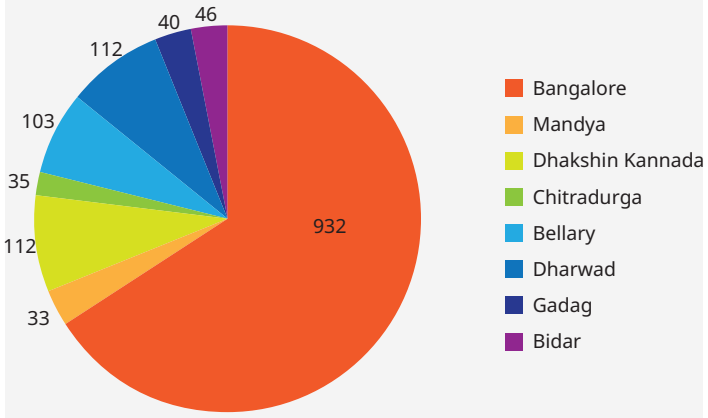


Figure 5: Age-sex distribution of respondents(n=1413)

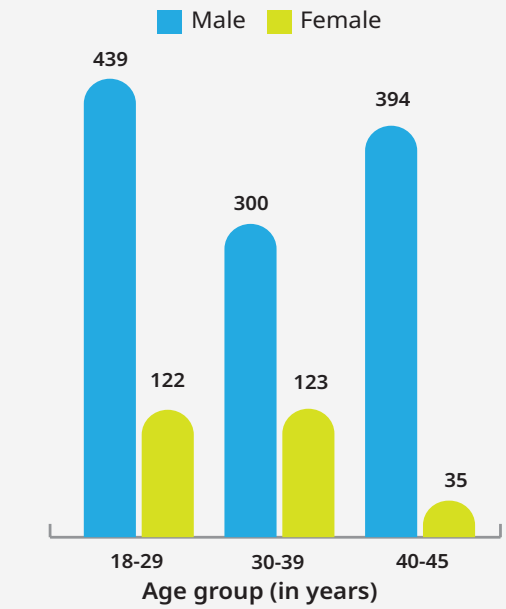
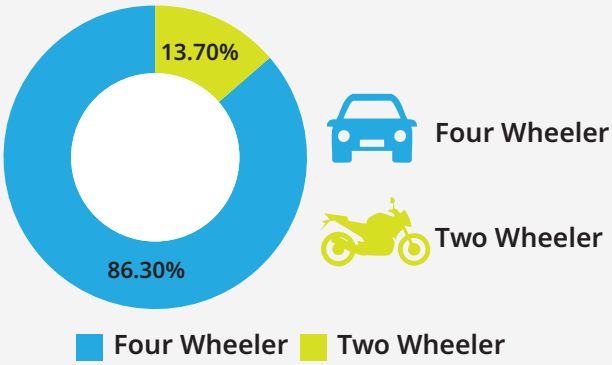


Figure 6: Predominant mode of transport of respondents (n=1413)



4.2. Awareness of mass media campaign

Nearly six out of ten respondents were aware of the mass-media campaign.

Among the 1,413 respondents, 58.2% of participants reported awareness of the mass media reconstruction campaign (implemented between November 2024 to February 2025), irrespective of the source of media.

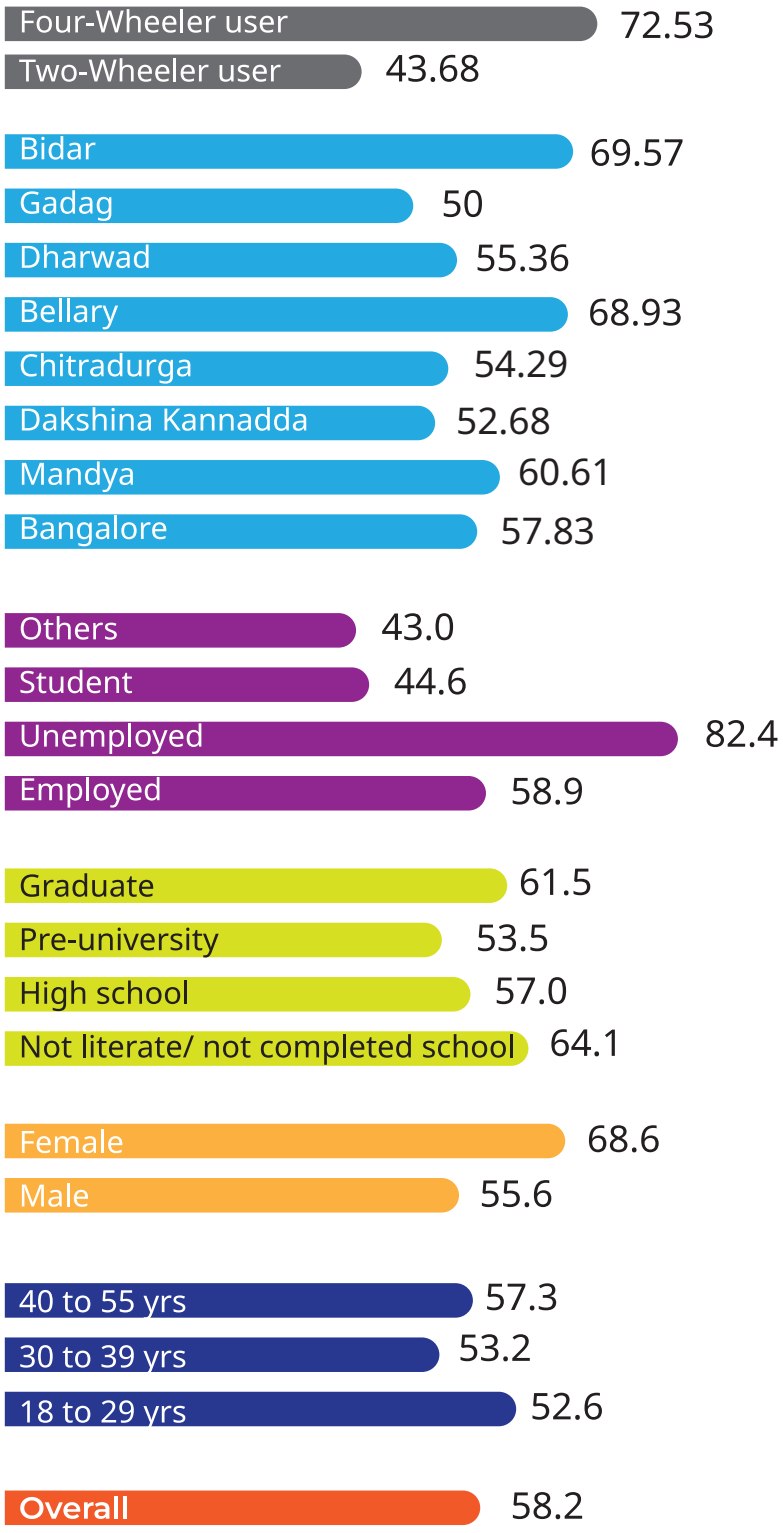
Awareness was significantly greater among females and younger persons (18–29 years).

Awareness was higher among females (68.6%) compared to males (55.6%). Participants aged 18–29 years reported the highest awareness (62.6%). Awareness varied across educational levels, ranging from 53.5% among those who completed PU education to 64.1% among those who had not completed school education.

Awareness is higher among four-wheeler users and unemployed respondents.

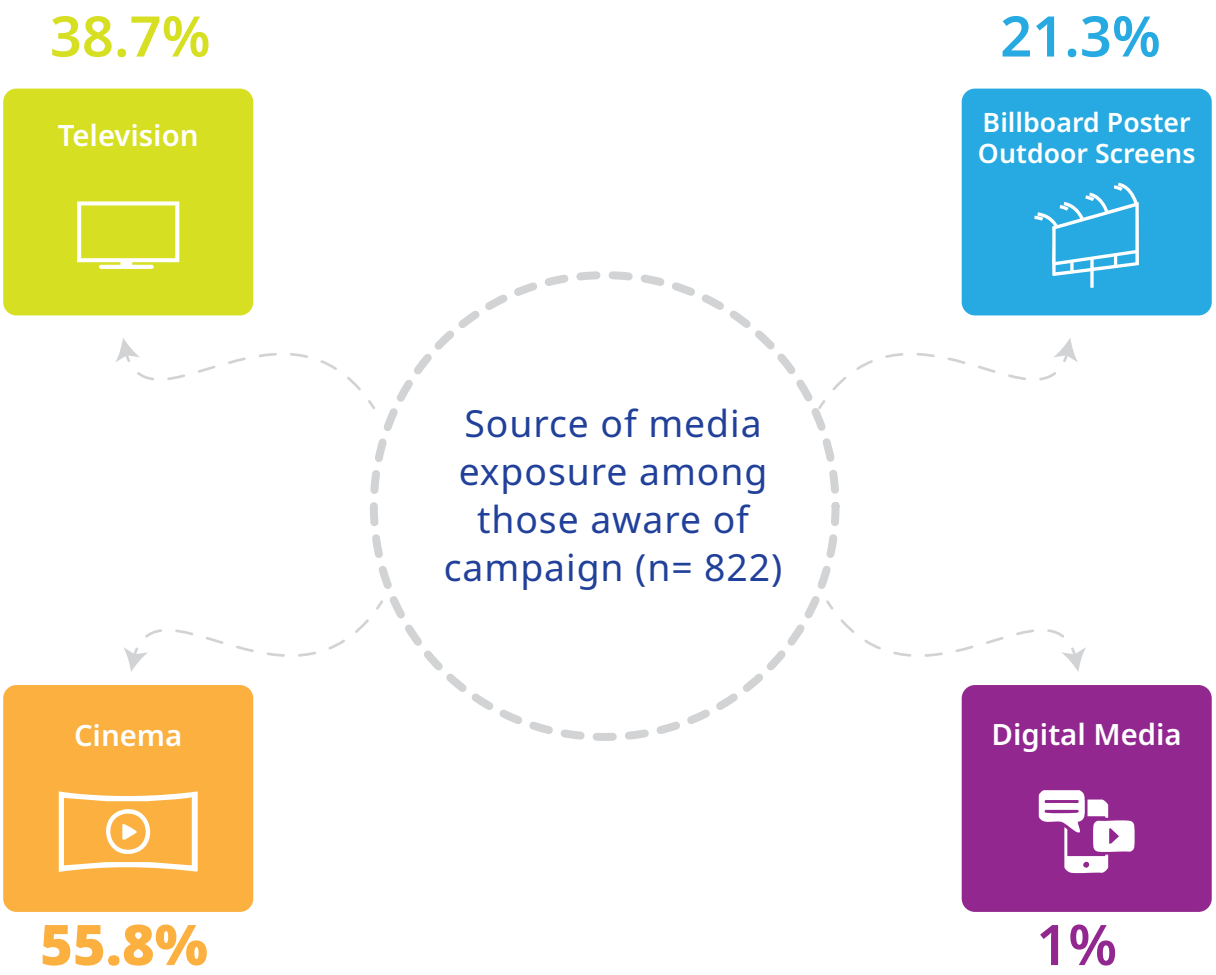
Among districts, awareness was highest in Bidar (69.6%) and Bellary (68.9%), whereas the lowest levels were observed in Gadag (50%) and Dakshina Kannada (52.7%). Among those using only two-wheelers, awareness was 49.2%, compared to 65.4% in those using only four-wheelers and 68.6% in those using both. Among respondents who used both vehicle types, those predominantly using four-wheelers had higher awareness (72.5%) than those using two-wheelers (43.7%). Awareness among the unemployed residents (82.4%) was higher compared to the employed residents (58.9%).

Figure 7: Awareness (%) of respondents (n=1413)



Cinema is the most common source of media exposure among those aware of the campaign.

Figure 8: Source of media exposure among those aware of campaign (n= 822)



In terms of media exposure, cinema was the most commonly reported source of awareness (55.8%), followed by television (38.7%) and billboard posters (21.3%). Digital media contributed minimally (1%), and radio had no reported impact. Although there were no campaign investments in digital media, some participants reported seeing or hearing the campaign there. This could reflect recall confusion or organic dissemination of the content. Among occupational groups, unemployed individuals had the highest awareness (82.4%), while students and those in other categories reported lower awareness levels, at 44.6% and 43.0% respectively. Details of the awareness among respondents are given in Annexure Table 3.

4.3. Recall of mass media campaign

Validated recall of a media campaign is an indicator of how effectively the campaign message has been received and remembered by the target audience. Recall is the catalyst to behaviour change(8). Operational definition of recall in this study is depicted in Box 2.

Nearly 42% of respondents recalled at least one key message of the mass-media campaign.

Of the 1,413 participants, 822 (58%) reported being aware of the mass media speed campaign. Overall, 41.7% (39.21, 44.35; 95% CI) of the total respondents were both aware of the campaign and able to recall at least one of the campaign messages.

Figure 9: Percentage of respondents by number of messages recalled (n=590)

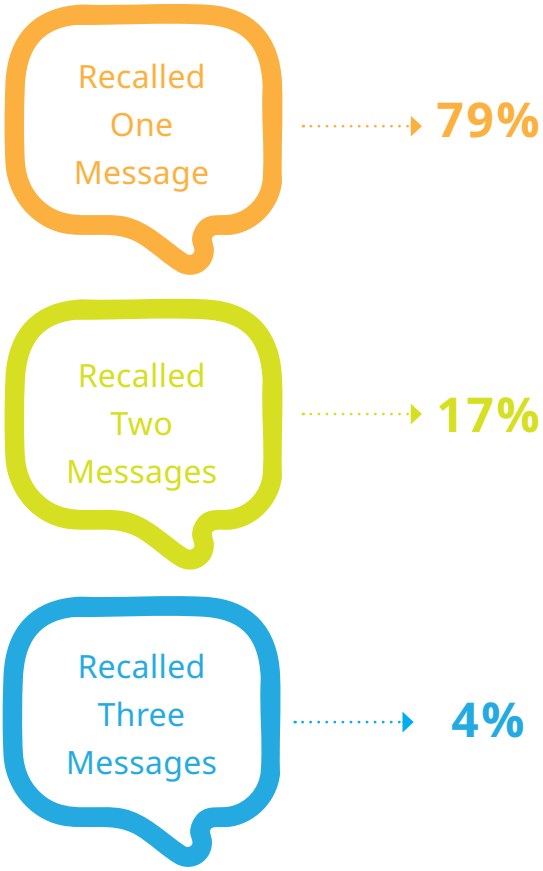
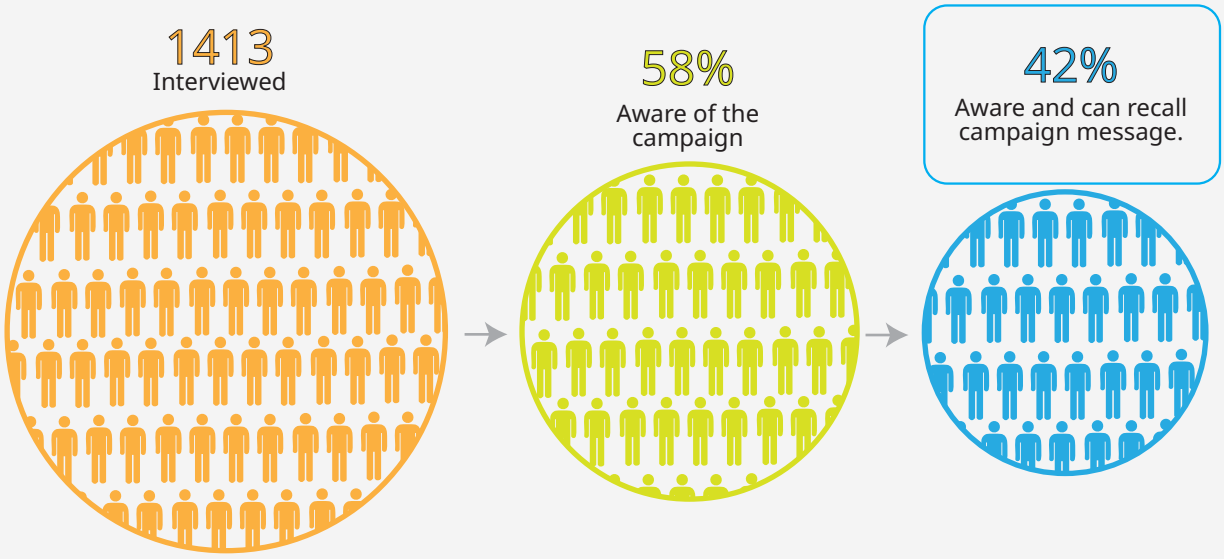


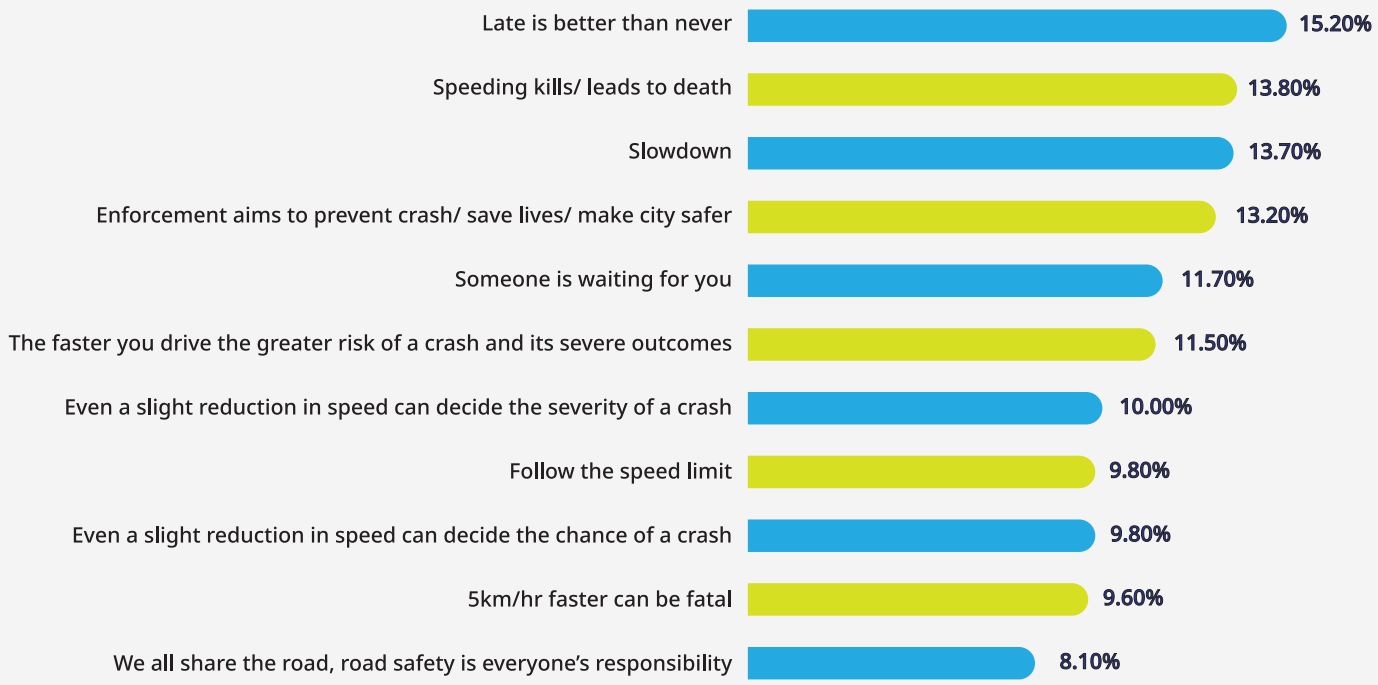
Figure 10: Recall (%) for speed campaign – year 2025



‘Better late than never’; ‘Speeding kills’ are the commonly recalled messages..

Among the 11 key messages of the ‘Motorcycle Reconstruction’ campaign, the most frequently recalled were ‘Late is better than never (15% of respondents)’, ‘Speed kills/leads to death (13.8%)’, and ‘Slow down (13.8%)’. The least recalled message was ‘We all share the road; road safety is everyone’s responsibility’, recalled by 8% of the persons who recalled at least one message. Respondents who were able to recall key campaign messages reported recalling an average of one key message. Only 21% of respondents recalled more than one message.

Figure 11: Recall (%) for mass media campaign messages (n=590)



Note: Multiple responses are possible. Percentages will not add up to 100.

Despite campaign featuring powered two-wheelers, recall (%) was higher among four-wheeler users.

Recall was significantly higher among respondents who predominantly used four-wheelers (54.6%) compared to those using powered two-wheelers (PTWs) (32.2) ($p<0.001$, Cramer's $v=0.154$) (See Annexure Table 4). Although the mass media campaign primarily featured PTW riders, four-wheeler users demonstrated higher recall. This may be attributed to better exposure to campaign materials, such as greater visibility of billboards and increased likelihood of listening to campaign ads while driving.

Campaign recall was highest among respondents in Mandya district.

Recall (%) was highest in Mandya (48.5%) followed by Bellary (47.6%). However, the sample was not drawn to understand differences in respondents' recall rates at the district level.

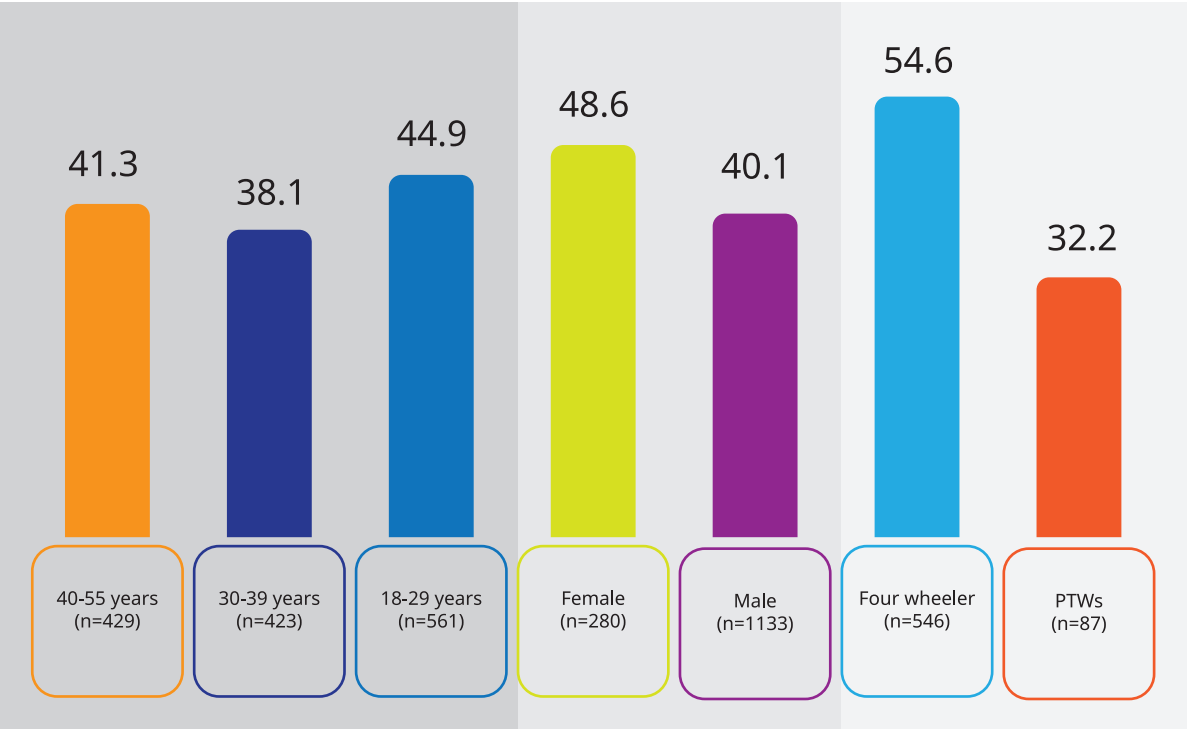
Among those who were aware of the campaign and recalled one message, recall was similar among different media sources.

Among those who were aware of the campaign and recalled one message, 71.3% saw the campaign on television, 71.9% in cinema halls, and 70.3% viewed billboards or outdoor posters ($p = 0.076$). Although no statistically significant differences in recall were observed across these media sources, the findings highlight the need to further explore the cost-effectiveness of different channels. It is important to note that the current sample size may not have sufficient robustness to detect meaningful differences in recall based on the type of media exposure.

Campaign recall is significantly higher in respondents aged 18-29 years and females.

Recall (%) was significantly higher among female respondents (48.6%) ($p<0.01$) than male respondents (40.1%). Recall was higher among persons aged 18-29 years (44.9%). Details of recall among respondents is given in Annexure Table 4.

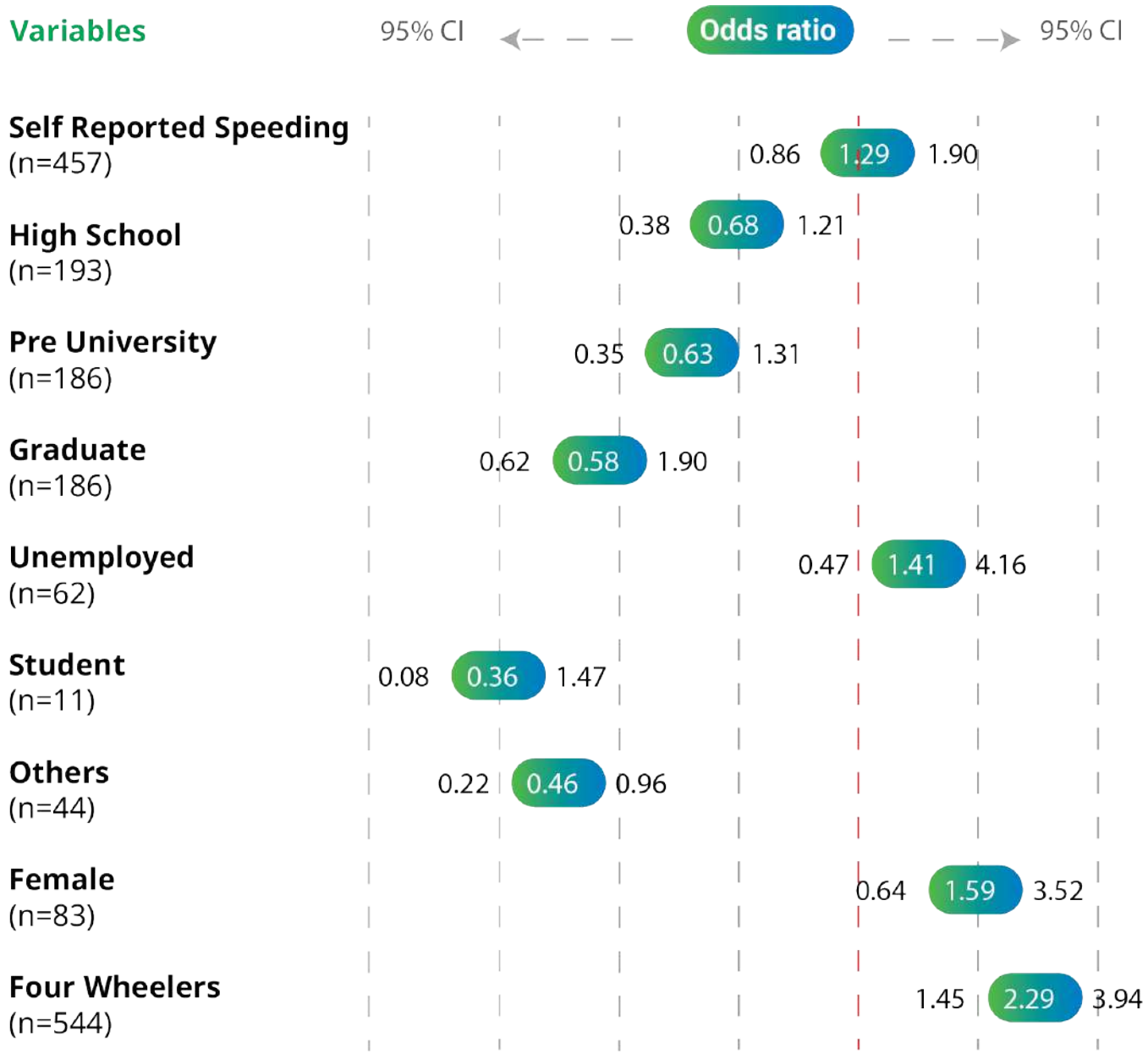
Figure 12: Recall (%) among those aware of the campaign- by different sub-groups



4.3.1 Factors associated with campaign recall

Binary logistic regression analysis for recall was performed. The analysis revealed that predominant users of four-wheelers had 2.39 odds (OR, 95% CI 1.45, 3.94) of recalling the campaign message as compared to two-wheeler users (See Annexure Table 5). There was no significant association with recall for other variables like sex, occupation, education, and self-reported speeding behaviour during adjusted odds ratio estimation.

Figure 13: Factors associated with recall among study respondents



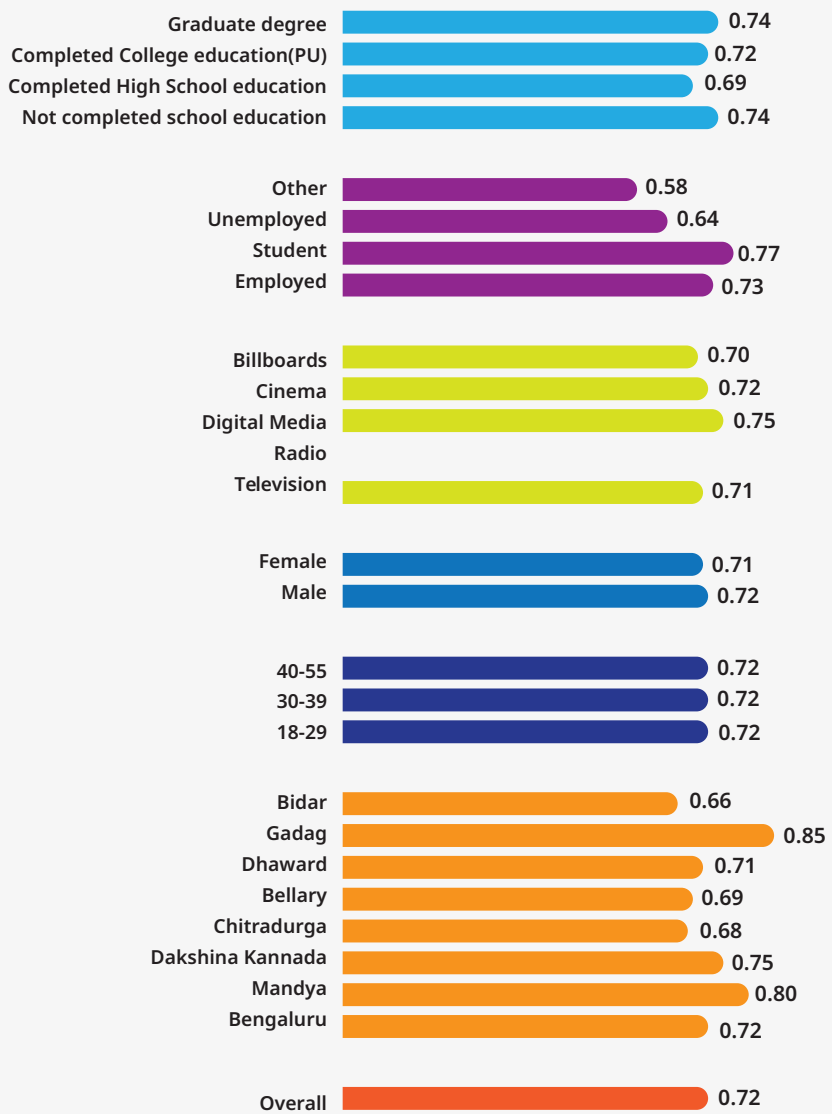
4.3.2 Recall-to-awareness ratio of the speeding campaign

The effectiveness of mass media campaign depends on the extent to which key messages are transferred/ absorbed by the viewers. Hence, the ratio of recall to awareness is an indicator of ability of mass-media campaign to transfer messages to the persons exposed.

Ideally **recall-to-awareness ratio (RA)** as used in this report should be =1, indicating that every person exposed to the campaign recalls its key message. The higher the ratio, the better the campaign's effectiveness at transferring messages.

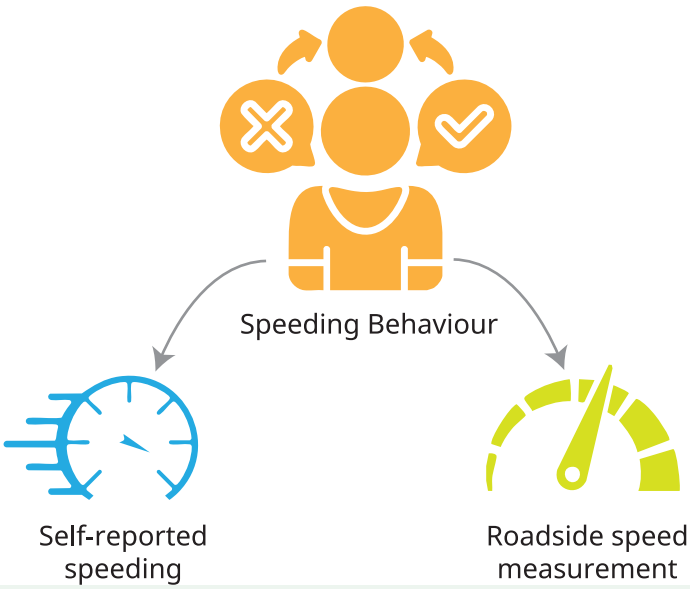
Overall, the recall-to-awareness ratio for normal speeding behaviour was 0.718. RA ratio was higher than average in Gadag (RA=0.85) and Mandya (RA=0.80) districts, among persons exposed to cinema (RA=0.72) and digital media (RA=0.75), and among employees and students. Details are presented in Figure 14 and in Annexure Table 6. RA ratio is proposed for inclusion to evaluate the effectiveness of media campaigns.

Figure 14: Recall-to-awareness ratio of 2025 media campaign (n=1413)



4.4 Change in speeding behaviour

Behaviour change is assessed by two methods: Comparing self-reported speeding and comparing observed speeding behaviour in the study site before and after the mass media campaign.



4.4.1 Self-reported speeding

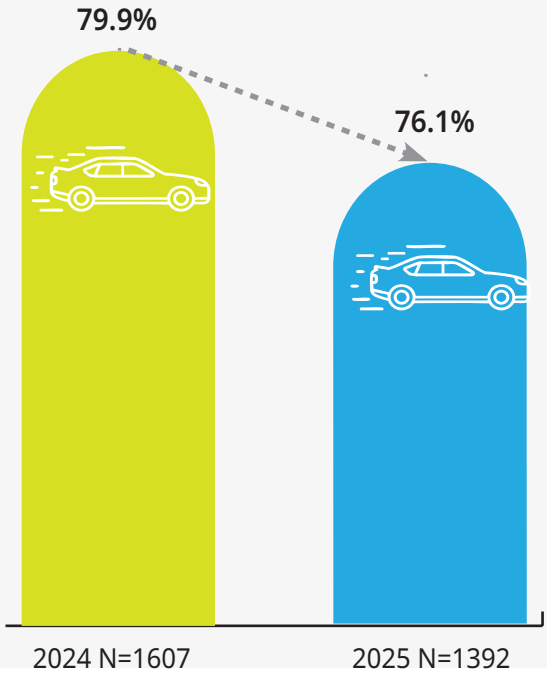
Prevalence of self-reported speeding in Karnataka was 76% in year 2025, reduced by 3.8% percentage points before campaign period.

In 2025, the prevalence of self-reported speeding was 76.1% (95% CI 77.8, 81.7), a 3.8 percentage point reduction from 79.9% in 2024 (pre-campaign period). The campaign, along with other concurrent speed-calming enforcement activities, may have attributed to this decline.

Self-reported speeding was highest in Bengaluru and lowest in Gadag district.

Self-reported speeding was highest in Bengaluru and lowest in Gadag district. In Bengaluru, the prevalence increased slightly from 83.5% in 2024 to 85.1% in 2025. Other districts with high self-reported speeding included Bidar (81.1% in 2024), and Mandya and Dharwad (60.6% in 2025). The lowest prevalence was observed in Chitradurga (57.5% in 2024) and Gadag (52.5% in 2025). A statistically significant association was observed between district and self-reported speeding (Chi-square = 42.03, $p < 0.001$), with an effect size (Cramer's V = 0.162) indicating a small to moderate strength of association. Details regarding self-reported speeding is given in Annexure Table7 and 8.

Figure 15: Self-reported speeding in 2024 and 2025



Self-reported speeding declined across various subgroups in 2025 compared to the 2024 pre-campaign period.

Self-reported speeding was highest in females aged 18 to 29 years, and those using two-wheeler in 2024. Self-reported speeding showed a post-campaign decline across several groups: by 3.5 percentage points among two-wheeler users (82.7% to 79.2%), by 15.8 points among females (86.7% to 70.9%), by 4.5 points among those aged 18–29 years (83.9% to 79.4%), and by 7.9 points among those aged 40–55 years (81.0% to 73.1%). Details of measures of statistical significance and effect size is presented in Annexure Table 7 and 8.

Nearly 60% of those aware of the campaign followed the speed limits compared to 39% among those not aware of the campaign. However, the difference is not statistically significant (Chi-square = 2.41, p=0.12).

Highest compliance with speed limits in school zones and lowest in urban zones (year 2025).

Speed limit compliance is highest in school zones (74.7%) and highways (66.4%), and lowest in urban (41.0%) and peripheral zones (44.9%), as shown in Figure 17 and Annexure Table 9.

This may be due to stricter enforcement or higher perceived risk.

Figure 16:Self-reported speeding (%) by different sub-groups by year

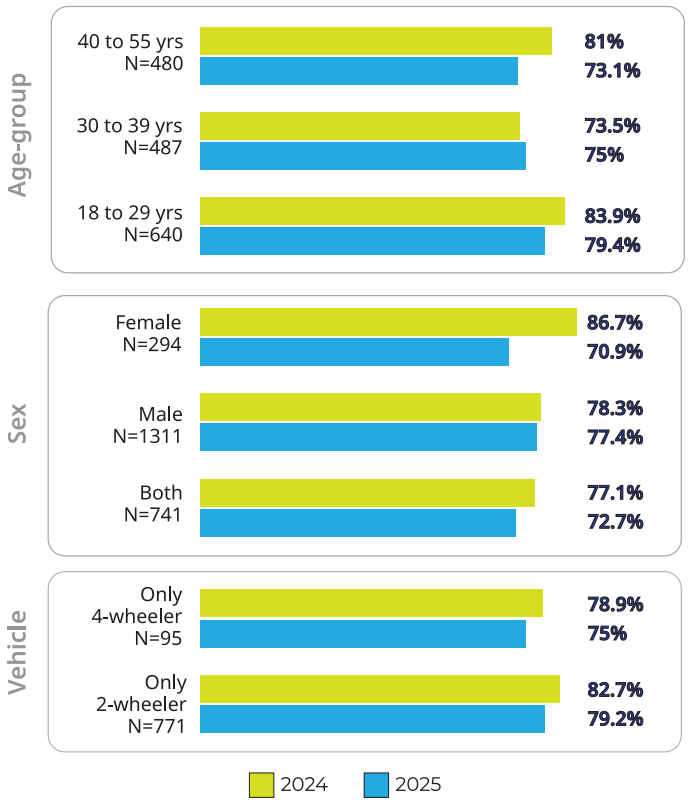
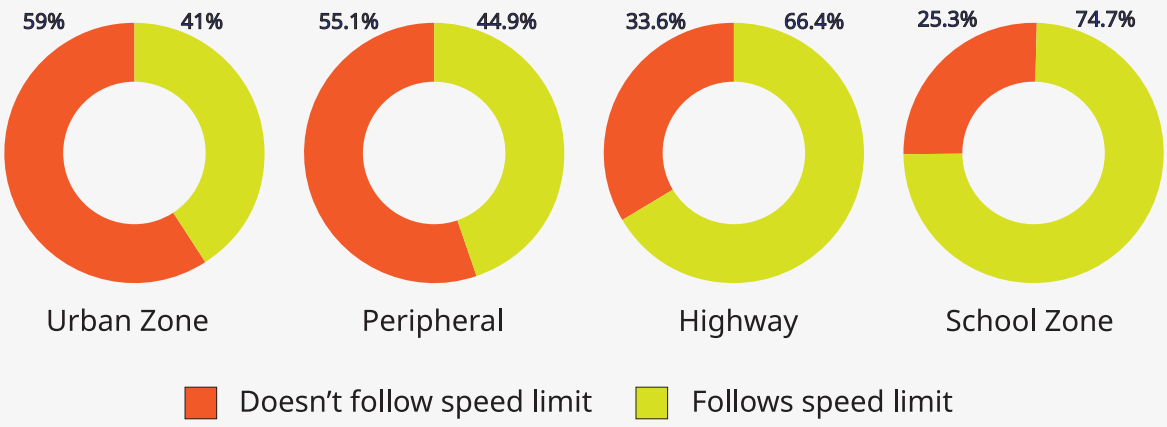


Figure 17: Respondent's behaviour of following speed limits in specific roads



Awareness significantly influences speed limit compliance in most areas.

Aa significant association exists between awareness and following speed limits in urban zones (Chi-square=7.87, p-value=<0.001), peripheral areas (Chi-square=12.35, p-value=<0.001), and highways (Chi-square=5.41, p-value=0.02), with the strongest association observed in peripheral zones (Cramer's V=0.95) (See Table 1).

Table 1: Respondent's behaviour of following speed limits post campaign- By awareness of campaign

2025 (N=1413)				
Follows speed limit (N=1362)	**Aware of campaign**	**Not aware of campaign**	**Chi-square (p-value)**	**Cramer's V**
Urban Zone (N=559)	351 (62.8)	208 (37.2)	7.87 (<0.001)	0.07
Peripheral zone(N=611)	351 (62.8)	208 (37.2)	12.35 (<0.001)	0.95
Highway (N=904)	547 (60.5)	357 (39.5)	5.41 (0.02)	0.06
School zone (N=1017)	598 (58.8)	419 (41.2)	0.41 (0.51)	0.01

4.4.2 Roadside speed measurement [Observational data of speeding in Bengaluru city]

For this analysis, data from Bengaluru city were available for both the pre- and post-media campaign periods. Roadside speed measurements from October 2024 (n = 33285) were compared with those from February 2025 (n = 31,269). The overspeed percentage at each site was calculated by identifying the proportion of vehicles that exceeded the speed limit out of the total number of vehicles observed at that location.

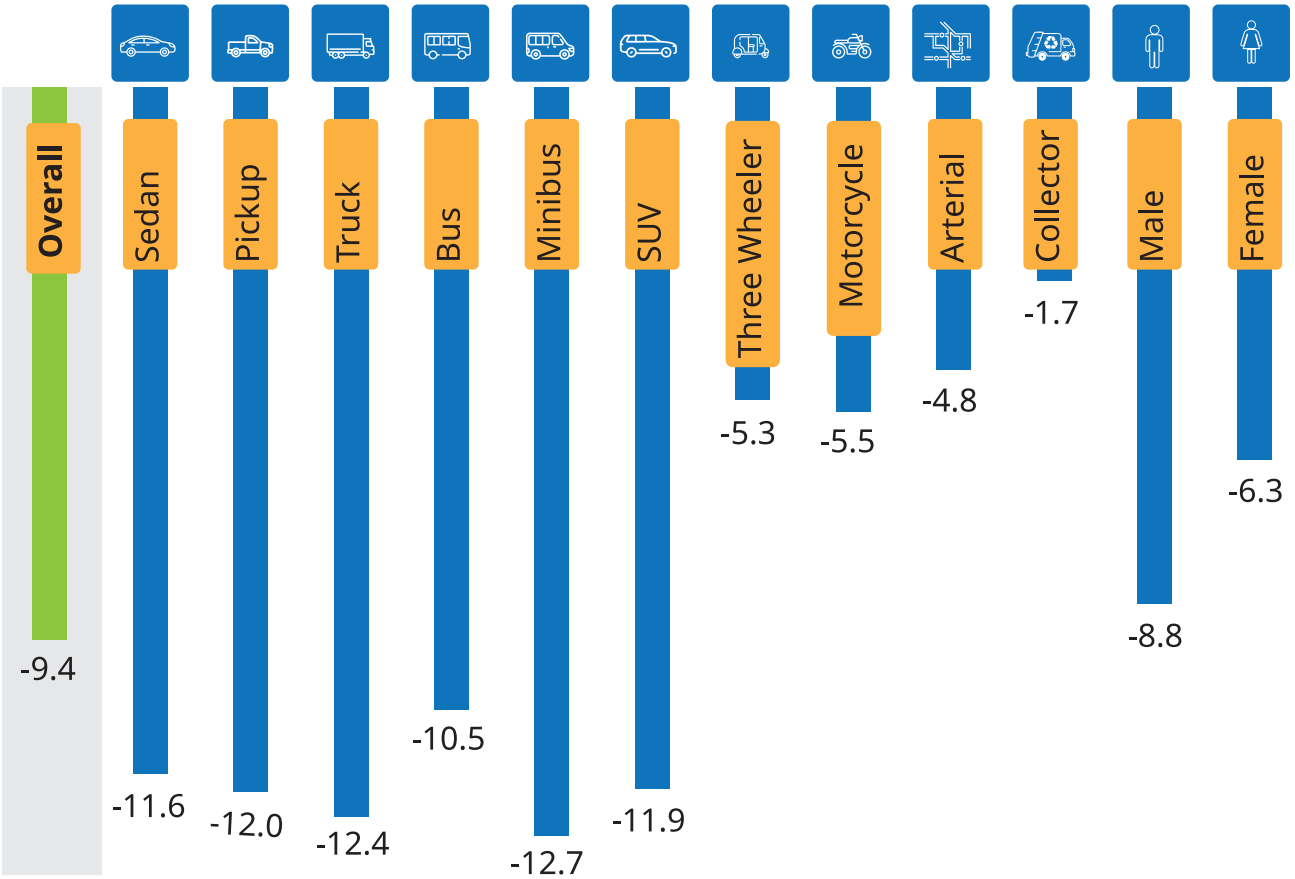
Speeding (%) significantly dropped in Bengaluru city from pre- to post-media campaign.

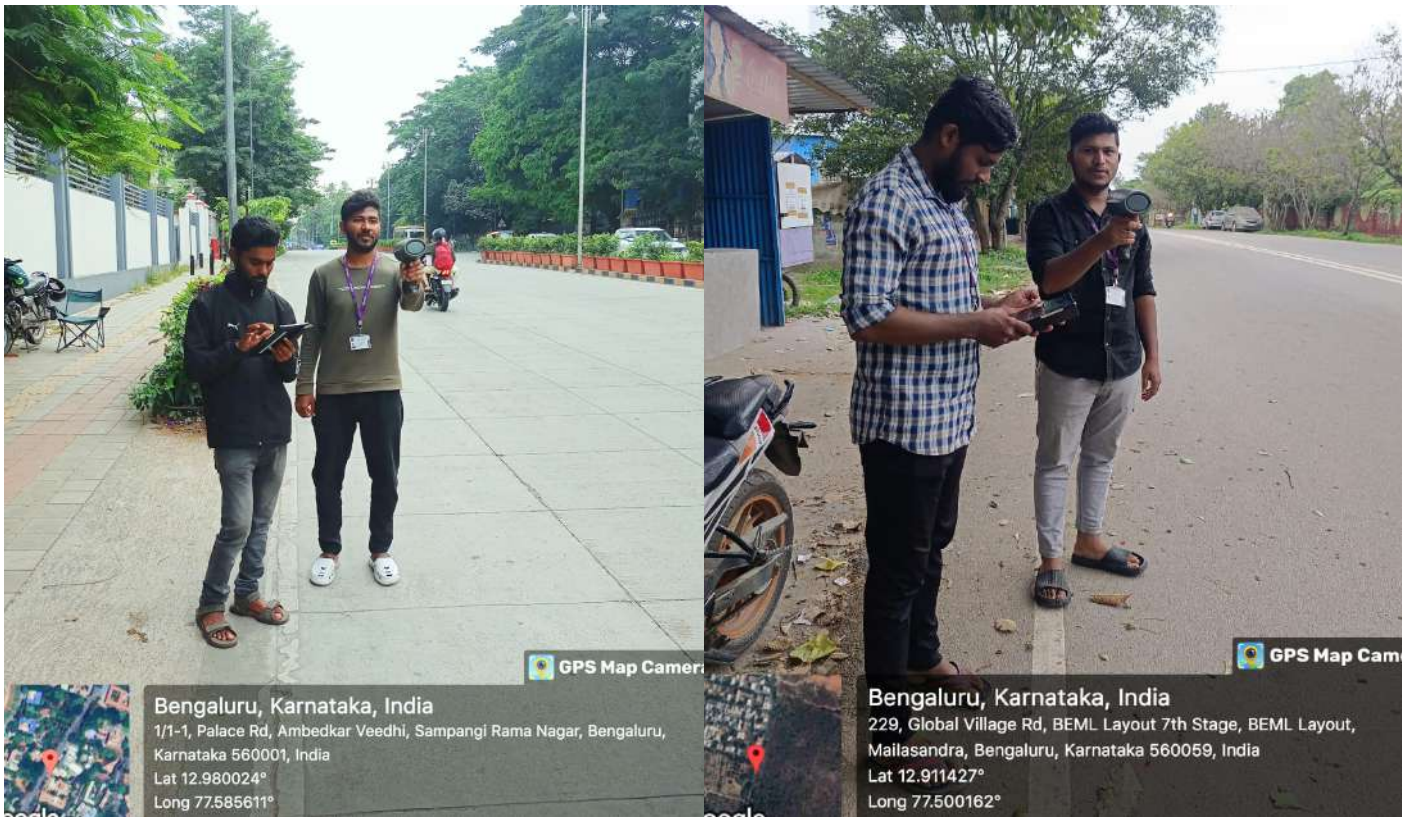
Observed speeding in Bengaluru city in October 2024 was 6.41% with an average speed of 45.91 km/h, which decreased to 5.99% in February 2025 with an average recorded speed of 36.56 km/h. **The average speed decreased nearly 9.35 km/h between the pre- and post-campaign period** in the city, and the decrease is statistically significant (p<0.0001, Independent t test).

Post campaign, average speed reduction was less in powered two-wheelers than in light motor vehicles.

The average speed decline was highest among minibus, pick-up trucks, trucks, SUVs and sedans (11–13 km/h) compared to powered two-wheelers (5.5 km/h) (See Figure 18). However, it is not appropriate to state that the decline in average speed is due to the effect of the media campaign, because the decline in speeding could also have been influenced by such factors as an increase in traffic or systemic differences in roads where data was collected between the two time periods.

Figure 18: Decline in average speed post media campaign in Bengaluru city (km/h)





Field data collectors collecting speeding data in Bengaluru.

Table 2: Observed speeding (%) and average speed in Bengaluru pre- and post-campaign

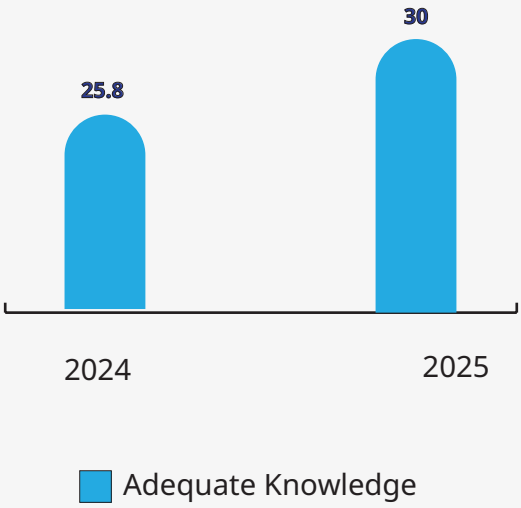
	October-2024 (N=33285)		February-2025 (N=31269)			
	Speeding (%)	**Average speed(km/h)**	**Speeding (%)**	**Average speed(km/h)**	**Change in km/h**	**Chi-square/t-statistic (p- value)**
Overall	6.41	45.91±13.87	5.99	36.56±10.42	-9.4	4.98 (0.026)
Type of vehicle						
Sedan	7.27	50.21±14.02	5.50	38.58±10.56	-11.6	54.05 (<0.0001)
Pickup	2.36	44.19±12.37	0.50	32.24±7.84	-12.0	33.70 (<0.0001)
Truck	0.87	43.38±11.61	0.54	31.00±7.27	-12.4	23.66 (<0.0001)
Bus	1.02	43.45±12.69	0.44	32.81±7.69	-10.5	37.55 (<0.0001)
Minibus	4.88	49.01±13.23	2.51	36.33±9.24	-12.7	22.41 (<0.0001)
SUV	9.82	51.78±14.19	7.98	39.87±11.11	-11.9	45.97 (<0.0001)
Three-Wheeler	0.13	36.76±9.24	0.10	31.48±6.74	-5.3	27.83 (<0.0001)
Motorcycle	9.56	43.30±13.20	10.31	37.80±11.01	-5.5	32.29 (<0.0001)
Type of road						
Arterial	9.44	44.63±11.54	8.48	39.83±10.40	-4.8	42.62 (<0.0001)
Collector	2.50	32.49±8.64	1.54	30.75±7.51	-1.7	13.50 (<0.0001)
Local	9.54	40.83±9.61	-	-	-	-
Expressway	2.54	57.42±11.98	-	-	-	-
Sex						
Male	6.85	45.71±13.39	6.20	36.95±10.62	-8.8	82.64 (<0.0001)
Female	4.74	41.14±11.99	3.12	34.82±8.78	-6.3	15.13 (<0.0001)

4.5 Knowledge and attitude regarding speeding

Knowledge regarding speed limits increased among respondents post-campaign.

Post-campaign knowledge about speed limits increased from 25.8% in year 2024 to 30% in year 2025. This change indicates a positive shift in knowledge of speed limits among respondents. Knowledge increased by 4.2 percentage points post-campaign, and the difference was statistically significant (Chi-square=6.53, p=0.011).

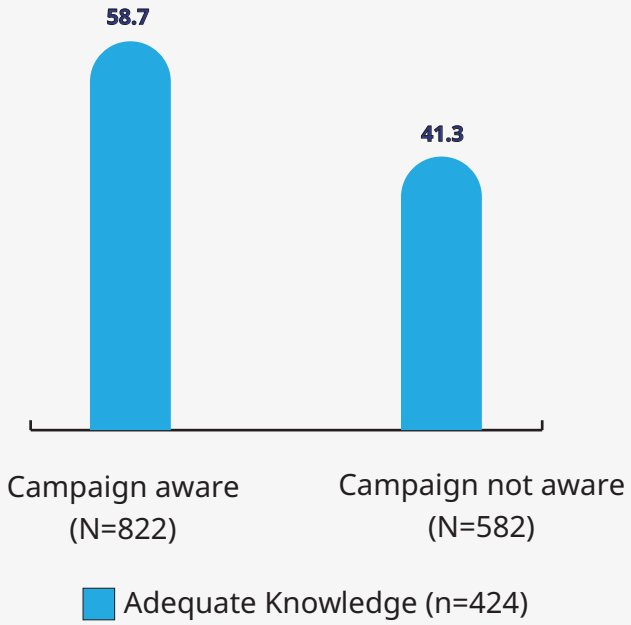
Figure 19: Respondent's knowledge of speed limit (2024)



Those who were aware of the campaign had higher knowledge of speed limits.

Among persons aware of the campaign, 58.7% had adequate knowledge of speed limits compared to 41% in persons not aware of the campaign. There was no statistically significant association (p=0.07) in the difference in knowledge levels between those aware and not aware of the campaign (See Annexure Table 10).

Figure 20: Knowledge of speed limit and Campaign awareness status



The respondents who were aware of the campaign had higher knowledge of speed limits in residential areas as compared to those who were not aware.

Among those aware of the 'Motorcycle Reconstruction' campaign, 64.4% believed the speed limit in residential areas was 50 km/h, followed by 59.0% who thought it was 30 km/h. Among those unaware of the campaign, 49.5% believed the speed limit was 60 to 70 km/h in residential areas. A significant association was found between perceived speed limit and campaign awareness (Chi-square = 11.74, p = 0.019), though the effect was small (Cramer's V = 0.093) (See Table 3).

Table 3: Knowledge of speed limit in residential areas by awareness of the campaign

Q2BA2- What do you think the speed limits is in residential areas?				
2025 (N=1413)				
Speed limit in residential area	**Campaign aware**	**Campaign not aware**	**Chi-square (p-value)**	**Cramer's V**
20 km/h	4(57.1)	3 (42.9)	11.74 (0.019)	0.093
30 km/h	102 (59.0)	71 (41.0)		
40 km/h	372 (55.5)	294 (43.9)		
50 km/h	266(64.4)	143(34.6)		
60 to 70 km/h	50 (50.5)	49 (49.5)		
Total	**822 (58.2)**	**582 (41.2)**		

The campaign had more impact on social norms, risk perception and attitude than on speed.

Favourable attitude of respondents to the statement 'People in my city/community think it is quite acceptable to drive above posted speed limits' increased from 17.2% to 61.3%. For the statement 'The risk of driving fast is something I am comfortable living with', favourable attitude increased from 5.6% pre-campaign to 56.5% post-campaign (See Annexure Table 11).

Respondents who disagreed that people in their community accept speeding were more likely to be aware of the campaign (Chi-square = 25.70, p = <0.001, Cramer's V = 0.13). Those who believed that people important to them think it is important to follow posted speed limits also showed higher awareness (Chi-square = 7.01, p = <0.001, Cramer's V = 0.07) (See Annexure Table 12).

4.6 Correlation between Awareness, Recall, Crashes, Fatalities, Violations [Inference from Multiple Data Sources]

4.6.1 Traffic violations: pre- and post-mass media speeding campaign

The number of speeding and rash driving violations reported by police stations in the study district was compared before and after the campaign. Data were obtained from Traffic Police Department.

Figure 21: Speeding / rash driving violations reported- Karnataka

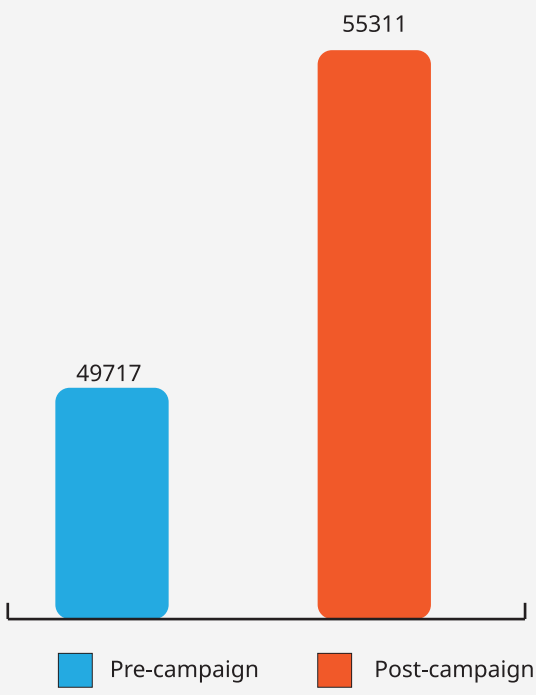
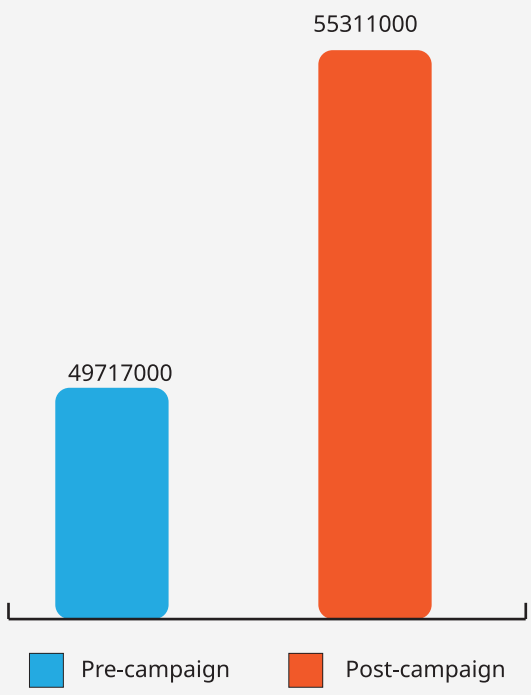


Figure 22: Fine amount collected for traffic offences



The number of reported speeding violations increased from 49,717 to 55,311 (approximately 10%) between pre- and post-campaign, indicating improved enforcement in the state. The campaign design specifies concurrent enforcement during the campaign, hence an increase in enforcement activities is expected, and campaign effectiveness is likely to be boosted by the accompanying enforcement. The number of penalties also increased for all traffic violations during the same period. The details regarding speeding violations are given in Annexure Table 13.

4.6.2 Change in fatalities, injuries, speed, enforcement, awareness and recall – before and after speed campaign

A marginal decline in number of road traffic fatalities was reported post-media campaign.

The number of reported fatalities decreased from 472 in year 2024 to 459 post-campaign (-13) but the difference is not statistically significant. It is well known that speed is significantly related to fatalities and this speed campaign reiterates this relationship. However, we cannot single out the campaign as the cause of the decrease in fatalities, as other factors such as enforcement, vehicle and roads can also contribute to such a reduction.

Post campaign, speeding (%) and average speed reduction decreased significantly in Bengaluru city.

A statistically significant reduction in speeding (%) in Bengaluru city was observed, from 6.41% (October 2024) to 5.99% (February 2025) (Chi-square =4.98, $p<0.026$). Average speed decreased nearly 9.35 km/h between pre- and post-campaign periods in the city, and the decrease is statistically significant ($p<0.0001$, Independent t test).

Fines collected increased dramatically from INR 49717000 to INR 55311000.

Traffic violations saw a sharp increase from 49,717 to 55,311, resulting in expected fine amounts increasing from 49,717,000 to 55,311,000 INR. This increase reflects the concurrent enforcement activities during the campaign period.

We observe that the ecological data indicates a logical direction of change between pre- and post-campaign, as self-reported speeding behaviour decreased, enforcement increased, and the reported number of fatalities decreased. They indirectly indicate that a combination of speed campaign and enforcement has contributed to changes in overall road fatality statistics in Karnataka state.

BTP conducting speed enforcement drive in Bengaluru utilising the campaign messages.

Table 4: Change in crashes, fatalities, campaign awareness, reach: pre- and post- campaign

Variables	2024 Pre-campaign	2025 Post-campaign	Difference/ Change	p- value	Statistical Test
Respondents (N)	1652	1413	NA	NA	NA
Awareness (%)	68.2*	58.2	-	Not relevant	NA
Recall (%)	48.9*	41.7	-	Not relevant	NA
Self -reported speed behavior (%)	79.9%	76.1%	- 3.8	0.013	Chi-Square
Knowledge about speed limits	25.8%	30.1%	+ 4.3	0.011	Chi-Square
N(vehicles observed)	33285	31269	NA	NA	NA
Observed speeding (%)	6.41%	5.99%	- 0.4	< 0.026	Chi-Square
Avg speed(km/h)	45.91	36.56	- 9.4	< 0.0001	T test
N (number of districts)	8	8	NA	NA	NA
Violations detected (enforcement)**	49717	55311	+ 5594	< 0.0001	Poisson
Fines collected (in rupees)**	4917000	55311000	+5594000	< 0.0001	Poisson
Crashes **	1904	1986	+82	0.189	Poisson
Fatalities **	472	459	-13	0.67	Poisson
Injuries **	2272	2359	+87	0.20	Poisson

*This is baseline situation at the end of the 2024 speed campaign. We have not compared awareness and recall as they are two separate campaigns.
** Poisson test used for analysis used to assess difference in counts.
The Poisson test evaluates if the observed count differs significantly from an expected rate (one-sample test) or if two rates of occurrence are significantly different (two-sample comparison). It was used to compare counts of fatalities, violations, and injuries between pre- and post-campaign periods, assuming the counts follow a Poisson distribution.
Observed speeding data is only from Bengaluru city and not from Karnataka.

4.6.3 Correlation between Reach, Recall, Speeding, Crashes, Fatalities and Violations

The Pearson's correlation coefficient was estimated to assess the relationship between the reach, recall, crashes, fatalities, injuries, and violations for 2024 and 2025. All p values less than 0.05 were considered as statistically significant.

The Pearson r value ranges from -1 to 1. A positive value indicates positive correlation (an increase in one variable corresponds to an increase in another variable). A Pearson r value from 0 to -1 indicates negative correlation (a decrease in one variable corresponds to an increase in another variable).

Campaign recall levels are negatively correlated with crashes, fatalities and injuries. But the correlation is not statistically significant.

Table 5: Correlation between reach, recall, speeding, crashes, fatalities and violations, 2025

Correlations							
		Awareness	**Recall**	**Crashes**	**Fatalities**	**Injuries**	**Violations**
Awareness	Pearson Correlation	1	-.587	.021	.166	.008	.108
	Sig. (2-tailed)		.126	.961	.694	.985	.799
	N	8	8	8	8	8	8
Recall	Pearson Correlation	-.587	1	-.119	-.207	-.184	-.418
	Sig. (2-tailed)	.126		.779	.622	.663	.303
	N	8	8	8	8	8	8
Violations	Pearson Correlation	.108	.418	.281	.270	.364	1
	Sig. (2-tailed)	.799	.303	.500	.517	.375	
	N	8	8	8	8	8	8
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

Though recall levels are negatively correlated with number of crashes (-0.119), fatalities (-0.207), injuries (-0.184), and violations (-0.418), indicating a decrease in fatalities, crashes and injuries with an increase in campaign recall levels in 2025, the relationship is not statistically significant. This may be due to the small sample size and ecological nature of the study design.

Table 6: Multi-linear regression between campaign recall and fatalities, violations and crashes

	Unstandardized Coefficients (β)	Standardized Coefficients (β)	p value	95% CI for standardised β		Collinearity Statistics VIF
(Constant)	78.074		.000	60.372	95.776	
Fatalities	-.221	-1.276	.440	-.938	.496	13.761
Violations	.000	.490	.307	.000	.001	1.086
Crashes	.026	.972	.551	-.085	.138	13.849
VIF= Variance Inflation Factor, Adjusted r square = -0.332, F ratio = 0.418 (p=0.750)						

Multi-linear regression was performed, but results were not statistically significant. The adjusted r-squared is -0.131 and F-ratio, F=0.730 (p=0.585), suggesting that the overall model predictivity and goodness of fit is not significant. Hence the variance explained by the model is not significant. Multicollinearity diagnostics revealed that two variables had a variance inflation factor (VIF) > 10, indicating a strong presence of multicollinearity and making the regression model unreliable.

As mentioned earlier, the model suggested an inverse relationship between campaign recall and fatalities and speed violations, but the findings are not statistically significant. The lack of significance, wide confidence intervals, and multicollinearity are probably due to the small sample size of data available for triangulating the relationships between campaign recall, crashes, fatalities, and violations

Police conducting speed enforcement drive paired with Mass-media campaign in Bengaluru.

4.7 Cost estimation for campaign awareness

Understanding unit cost for improving awareness and recall will help in future campaign planning and in evaluating cost-effectiveness. Despite data limitations of full-fledged cost analysis, we conducted estimations of unit cost for increasing awareness and recall for the 2025 mass-media campaign.

The measure of effectiveness is quantified in terms of the estimated number of persons aware of campaign and the unit cost to improve awareness for one person. This can be used as a baseline value to understand changes in unit costs over time in the state, alongside changes in awareness and campaigns.

Steps in estimating unit cost of campaign

Step 1: Estimate the number of adults in Karnataka who are aware of the campaign

Calculate number of adults in Karnataka. Number of adults is sourced from Census Data 2011 (Pop A)

Multiply it with awareness (%) estimated in this study Karnataka.

Estimated number of adults aware of campaign= Campaign awareness (%) * PoP A

Cost for recall was similarly estimated.

Step 2: Estimate unit cost (per person) for awareness and recall.

The cost of campaign (actuals) provided by Vital strategies was used (C)

Unit cost per person (in rupees) for awareness (UcA) = Actual cost of campaign (C) ÷ Number of adults aware of campaign

Unit cost of mass media campaign to increase awareness is around 6 rupees per person.

The awareness and recall percentage estimated from the sample study was multiplied by the adult population of Karnataka to estimate the actual number of individuals who are aware of the mass media campaign in the state. The cost of the campaign was then calculated by dividing the total campaign cost by the estimated number of individuals aware of the campaign. The unit cost for raising awareness per person was estimated at 6.14 rupees (5.7 to 6.4 rupees). The unit cost for achieving recall for one person was estimated at 8.5 rupees (9.16 to 8.11 rupees).

Table 7: Cost-effectiveness of mass media campaign awareness

Variable	Cost of campaign (INR) (C)	Awareness (%)	Karnataka population (above 18 years) (PoP A)	No of persons aware of mass media campaign in Karnataka	Cost per person for creating awareness (INR)
Overall	193,895,136	0.58 (0.55, 0.61)	54,274,903	31,566,283	6.14 (6.43, 5.79)
Type of media					
TV	34,536,240	0.39 (0.35, 0.42)	54,274,903	20,998,959	1.64 (1.79, 1.51)
Movie theatre	44,937,043	0.56 (0.52, 0.59)	54,274,903	30,307,105	1.48 (1.58, 1.39)
Billboards and Newspaper	69,494,218	0.21 (0.18, 0.24)	54,274,903	11,555,126	6.01 (6.88, 5.29)

Cost per person to increase awareness is least in cinema channel.

The cost per unit to improve awareness of the campaign for one adult in Karnataka is around 6.14 rupees. Cinema is the most cost-effective type of mass media, with a cost per unit of 1.48 rupees and an awareness level of 56%. Billboards and newspapers cost nearly 6 rupees to increase the awareness of one person.

5. Strengths

This campaign evaluation report has several key strengths:

- Estimates awareness and recall with 95% confidence intervals.
- Attempts to draw inferences from multiple primary and secondary data sources (respondent survey, speeding observation data, and police records).
- Correlates awareness and recall with outcome parameters like speed behaviour, fatalities, crashes and violations.
- Develops innovative measures such as recall-to-awareness ratio (RA) that can enable comparison across different campaigns.
- Estimates unit cost for raising awareness among public.
- Presents a methodology that can be used for conducting other campaign evaluations.

6. Limitations

- Study evaluation is based on data sources from various departments. However, type of data to be collected for evaluation from those departments was planned post-campaign rather than pre-campaign.
- Secondary data sources are generally not collected from a research perspective and are subject to deficiencies in validity and reliability.
- Awareness, recall, knowledge and self-reported speeding are individual level data collected from a sample of respondents, whereas violations, accident, fatalities and injuries are metadata collected from records. Hence comparisons are limited by the possibility of ecological fallacy.
- Post-campaign observational speed data for 2025 is not available for Karnataka state (except Bengaluru) as state-level data collection was completed before campaign completion.
- Some of the inferences have sample-size limitations because sample sizes are not estimated ahead of time for such a varied analysis.
- Overrepresentation of respondents from Bengaluru was observed but opportunity exists for more focused comparisons of speeding trends within the city.
- The influence of enforcement levels in effecting changes to speed behaviour cannot be quantified because no data exists on hours of enforcement in individual districts.
- We cannot single out the campaign as the cause of the decrease in fatalities, as other factors such as enforcement, vehicle and roads can also contribute to such a reduction.

7. Summary

Key findings are presented below

- The majority of the respondents (66%) were from Bengaluru district, males, employees, and aged between 18 to 29 years.
- Four-wheelers were respondents' predominant mode of transportation.

Awareness of mass-media campaign

- Nearly 6 out of 10 respondents were aware of the mass-media campaign.
- Awareness was significantly greater among females and younger persons (18–29 years).
- Awareness was higher among four-wheeler users. Awareness was higher among unemployed respondents.
- Cinema was the most common source of media exposure among those aware of the campaign.

Recall of mass-media campaign

- Nearly 42% of respondents recalled at least one key message of the mass-media campaign. Campaign recall was significantly higher in respondents aged 18–29 years and females.
- 'Better late than never' and 'Speeding kills' were the most commonly recalled messages.
- Despite the campaign featuring powered two-wheelers, recall percentage was higher among four-wheeler users.
- Campaign recall was highest among respondents in Mandya district.
- The recall percentage was similar among those exposed to a variety of media sources.

Change in speeding behaviour, attitude and knowledge

- Self-reported speeding was highest in Bengaluru and lowest in Gadag district.
- Self-reported speeding declined across various subgroups in 2025 compared to the pre-campaign period of 2024. The highest compliance with speed limits was reported in school zones, and the lowest in urban zones (2025).
- Roadside speeding measurements revealed a reduction of average speeds by 9.35 km/h post-campaign (October 2024 to February 2025).
- The speeding percentage decreased from 6.41% to 5.99% between October 2024 and February 2025).
- An increase in knowledge regarding speed limits was observed among post-campaign respondents. Those aware of the campaign had better knowledge of speed limits.
- Respondents who were aware of the campaign had better knowledge of speed limits in residential areas compared to those who were not aware.

Correlation between campaign recall, speeding, crashes, fatalities, violations

- Fatalities decreased by 13 between pre- and post-media campaign time periods in Karnataka.
- Prevalence of self-reported speeding was 76% in 2025, down 3.8 percentage points from the pre-campaign period.
- A significant reduction in speeding (%) in Bengaluru city was observed, from 6.41% in October- 2024 to 5.99% in February-2025 (Chi-square =4.98, $p<0.0001$). A 9.35 km/h decrease in average speed was observed from pre- to post-campaign periods ($p<0.0001$, Independent t-test).
- Traffic violations saw a sharp increase, from 49,717 to 55,311. Fines collected rose substantially, from INR 49,717,000 to INR 55,311,000.
- Campaign recall levels are **negatively correlated** with crashes, fatalities, and injuries, but association is not statistically significant.
- Unit cost of a mass-media campaign to increase awareness is around 6 rupees per person. Cost per person to increase awareness is lowest when cinemas are used as the channel.

8. Recommendations

These points elaborate further on key recommendations for subsequent campaign evaluations:

- Sustain mass media road safety campaigns alongside ongoing enforcement, as this combined approach reinforces behavior change. Maintaining both components can help translate improvements in speeding behaviour into broader and more consistent safety outcomes.
- Prioritization of cinema halls and digital media platforms as campaign channels and targeting four-wheeler users for sustaining speed campaign awareness and recall in the state.
- **Conduct regular evaluations of media campaigns with improved sample size, data quality, and validation mechanisms.**

  Increase the number of clusters in the state. Selection of the clusters should coincide with locations and timings of speeding observational studies. Involve district medical colleges and public health institutes in both data validation and collection in clusters. As there are analytical objectives to estimating change in various parameters before and after the campaign, the need exists for objective-based sample-size estimation and sampling.

- **Adopt a multi-source data approach combining behavioural, enforcement, and crash data to generate robust, evidence-based insights.**

  Use multi-source data for correlation and triangulation of data pertaining to campaign outcomes for making inferences on campaign effectiveness. Though this has been attempted in this report, it relies on small samples and is more a post hoc design, rather than preplanned evaluation.

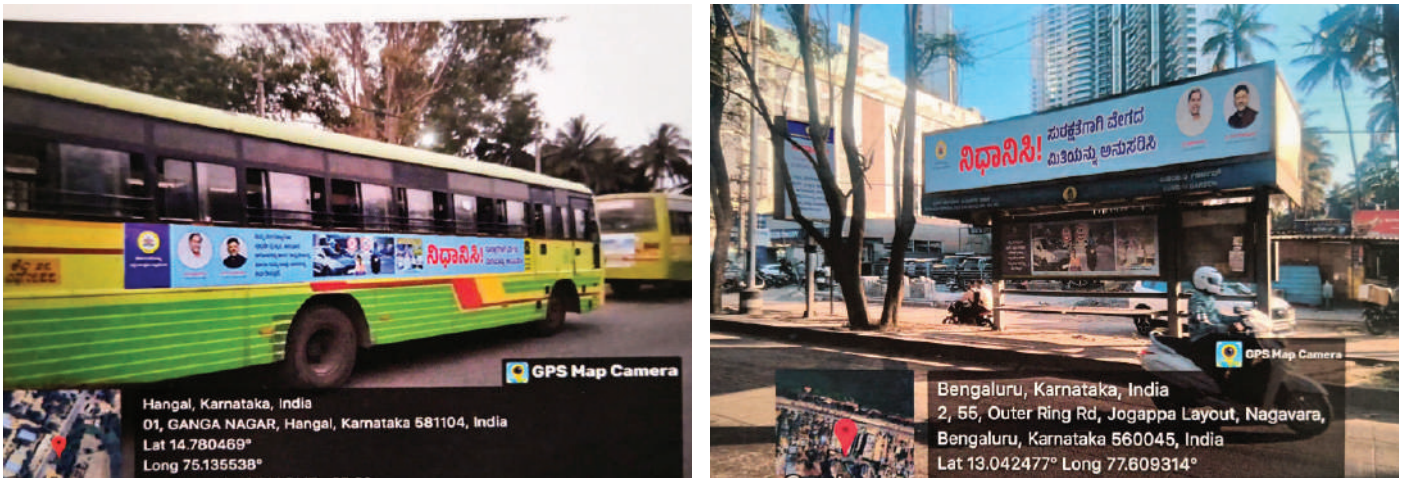
- **Ensure multi-sectoral collaboration in campaign evaluation, emphasizing the use of primary data rather than relying solely on secondary or reported metadata.**

  Identify and involve nodal persons from transport (RTOs) and police departments (CTRS division) prior to campaign design to delineate primary and secondary data sources required for campaign monitoring and evaluation. Develop a multi-sector technical evaluation group (TEG) for media campaigns pertaining to road safety in the state.

These evidence-driven evaluation frameworks will strengthen policy decisions and enhance the overall impact of road safety communication initiatives in the state.

9. Conclusions

The combination of the Motorcycle Reconstruction mass-media campaign and intensified enforcement was associated with reductions in self-reported speeding behaviour, crashes, and fatalities in Karnataka. Though the association between campaign awareness, recall and crash reduction was not statistically significant, this could be due to limitations in design, sample and methods. Odds of campaign recall are increased among four-wheeler users. The cost to raise awareness for the campaign was observed to be reasonable at 6 rupees per unit cost.



Campaign messages displayed on public buses/state transport corporation

Campaign messages displayed on billboards located aroung high speed zones

References

1. Government of Karnataka, Police Department, Police Computer Wing & State Crime Records Bureau. Road accidents in Karnataka - 2023 [Internet]. 2023. Available from: https://data.opencity.in/dataset/28c69fa9-2382-41c5-ad1e-f8aee40567dc/resource/bb476867-f12a-4952-9092-b6b7d988af0a/download/road_accident_report_2023.pdf

2. Global Burden of Disease. GBD Results Tool. Institute of Health Metrics and Evaluation; 2017. [cited 2025 Aug 7] Available from: https://vizhub.healthdata.org/gbd-compare/india

3. Bureau TH. 'Science of crash' campaign to deter speeding in Karnataka. The Hindu [Internet]. 2024 Nov 19 [cited 2025 Aug 7]; Available from: https://www.thehindu.com/news/national/karnataka/science-of-crash-campaign-to-deter-speeding-in-karnataka/article68886087.ece

4. National Institute of Mental Health and Neuro Sciences. Department of Epidemiology. WHO Collaborating Centre for Injury Prevention and Safety Promotion. Available from: https://www.nimhans.ac.in/departments who-collaborating-centre-for-injury-prevention-and-safety-promotion

5. Johns Hopkins International Injury Research Unit. Status summary report 2023: Road safety risk factors in Cali, Colombia, 2021–2023 [Internet]. Baltimore: Johns Hopkins International Injury Research Unit; 2023 [cited 2025 Aug 7]. Available from: https://publichealth.jhu.edu/sites/default/files/2024-02/20230531bigrscali09pages.pdf

6. Bengaluru Traffic Police - Contactless-enforcement [Internet]. [cited 2025 Aug 7]. Available from: https://btp.karnataka.gov.in/105/contactless-enforcement/en

7. Kadence International, Vital Strategies. Speeding campaign "Motorcycle Reconstruction" Karnataka–2025: Post-campaign evaluation [Internet]. Karnataka: Kadence International & Vital Strategies; 2025 Apr 30 [cited 2026 Feb 11]. Available from: https://vital.ent.box.com/s/yg5dwf473godrimm5cw732up962vvga5

8. Keller KJM, Mehrle Elliott D, Britt-Rankin J. Adults' Reaction to Public Health Messaging: Recall, Media Type, and Behavior Change Motivation. Journal of Prevention. 2022 Jan 6;43(1):125–41.

Annexures

Annexure Table 1: Accidents, Injuries and Fatalities in Karnataka State

Year	Accidents	Injuries	Fatalities
2005	40,330	54,061	6904
2006	43,411	60,940	7973
2007	46,363	61,438	8777
2008	46,279	63,314	8814
2009	45,190	61,697	8714
2010	46,250	61,774	9590
2011	44,731	59,591	8971
2012	44,448	58,659	9448
2013	44,020	56,781	10,046
2014	43,713	56,831	10,452
2015	44,011	56,971	10,856
2016	44,403	54,556	11,133
2017	42,542	52,961	10,609
2018	41,707	51,562	10,990
2019	40,658	50,447	10,958
2020	34,178	39,492	9720
2021	34,647	40,754	10,038
2022	39,762	48,154	11,702
2023	43,440	52,547	12,321

Annexure Table 2: Socio-demographic distribution of respondents

Characteristics	2025
	n(%)
Age-group (in years)	**n=1413**
18 to 29	561 (39.7)
30 to 39	423 (29.9)
40 to 55*	429 (30.4)
Sex	**n=1413**
Male	1133 (80.2)
Female	280 (19.8)
Maximum Educational qualification	**n=1413**
Not completed school education	276 (19.5)
Completed High School education	433 (30.6)
Completed College education (PU)	428 (30.3)
Graduate degree	275 (19.5)
Don't know	1 (0.1)
District	**n=1413**
Bengaluru	932 (66.0)
Mandya	33 (2.3)
Dakshina Kannada	112 (7.9)
Chitradurga	35 (2.5)
Bellary	103 (7.3)
Dharwad	112 (7.9)
Gadag	40 (2.8)
Bidar	46 (3.3)
Occupation	**n=1413**
Employed	1123 (79.5)
Student	112 (7.9)
Unemployed	85 (6.01)
Other	93 (6.6)
Type of vehicle used	**n=1413**
Only 2-Wheel vehicle	754 (53.4)
Only 4-Wheel vehicle	26 (1.8)
Both	633 (44.8)
Predominant mode of transport	**n=633**
Two-wheeler	87 (13.7)
Four-wheeler	546 (86.3)

Annexure Table 3: Awareness in respondents

Sl	Variable	N	Aware (n) (%)	95% CI	Chi-square (p value)	Effect size (Cramer's V)
1	Overall	1413	822 (58.17)	55.58, 60.72	-	-
2	**By district**					
	Bengaluru	932	539 (57.83)	54.64, 60.96	10.55 (0.160)	0.086
	Mandya	33	20 (60.61)	43.68, 73.32		
	Dakshina Kannada	112	59 (52.68)	43.50, 61.68		
	Chitradurga	35	19 (54.29)	13.19, 29.14		
	Bellary	103	71 (68.93)	59.45, 77.05		
	Dharwad	112	62 (55.36)	46.13, 64.23		
	Gadag	40	20 (50.00)	35.20, 64.80		
	Bidar	46	32 (69.57)	55.22, 80.92		
3	**Predominant mode of transport used by the respondent**					
	Two-Wheeler	87	38 (43.68)	33.74, 54.15	28.98 (< 0.001)	0.214
	Four-wheeler	546	396 (72.53)	68.64, 76.10		
4	**Source of Media**					
	Television	822	318 (38.69)	35.42, 42.06	NA	NA
	Radio	822	0	0		
	Digital Media	822	8 (0.97)	0.49,1.90		
	Cinema	822	459 (55.84)	52.43, 59.20		
	Billboard/posters	822	175 (21.29)	18.63, 24.22		
5	**Sex of the respondent**					
	Male	1133	630 (55.60)	52.70,58.47	15.15 (< 0.001)	0.105
	Female	280	192 (68.57)	62.91,73.73		
6	**Age group of the respondent**					
	18 to 29 yrs old	561	351 (62.57)	58.49,66.47	8.89 (0.012)	0.079
	30 to 39 yrs old	423	225 (53.19)	48.43,57.90		
	40 to 55 yrs old	429	246 (57.34)	52.62,61.94		
7	**Highest level of education**					
	Not completed education	276	177 (64.10)	58.31, 69.56	11.21 (0.190)	0.062
	High school completed	433	247 (57.04)	52.34, 61.62		
	PU college completed	428	229 (53.50)	48.77, 58.18		
	Graduate	275	169 (61.54)	55.58, 67.01		

Sl	Variable	N	Aware (n) (%)	95% CI	Chi-square (p value)	Effect size (Cramer's V)
8	**Type of Vehicle driven by respondent**					
	Only 2-wheel vehicle	754	371 (49.20)	45.65,52.77	53.56 (< 0.001)	0.195
	Only 4- wheel vehicle	26	17 (65.38)	46.22,80.59		
	Both	633	434 (68.56)	64.84,72.02		
9	**Occupation**					
	Employed	1123	662 (58.94)	56.05, 61.79	11.21 (0.190)	0.064
	Unemployed	85	70 (82.43)	72.91, 89.03		
	Student	112	50 (44.61)	35.77, 53.87		
	Others	93	40 (43.01)	33.42, 53.15		

Annexure Table 4: Recall (%) among respondents (n=1413)

Sl	Variable	Aware (n)	Recall n(%)	95% CI	Chi-square (p-value)	Effect size (Cramer's V)
1	Overall	822	590 (41.7)	39.21, 44.35		
2	**By district**					
	Bangalore	539	386 (41.4)	38.32, 44.61	3.26 (0.860)	0.048
	Mandya	20	16 (48.5)	32.50, 64.78		
	Dakshina Kannada	59	44 (39.3)	30.74, 48.54		
	Chitradurga	19	13 (37.1)	23.17, 53.66		
	Bellary	71	49 (47.6)	38.19, 57.13		
	Dharwad	62	44 (39.3)	30.74, 48.54		
	Gadag	20	17 (42.5)	28.51, 57.80		
	Bidar	32	21 (45.70)	32.16, 59.82		
3	**Predominant mode of transport**					
	Two-Wheeler	38	28 (32.2)	23.30, 42.57	15.06 (<0.001)	0.154
	Four-wheeler	396	298 (54.6)	50.39, 58.71		
4	**Source of Media**					
	Television	318	227 (71.4)	66.18, 76.07	5.16 (0.076)	0.079
	Digital Media	8	6(75.0)	40.93, 92.85		
	Cinema	459	330 (71.9)	67.61, 75.81		
	Billboard/posters	175	123 (70.3)	63.14, 76.56		
5	**Sex of the respondent**					
	Male	630	454 (40.1)	37.26, 42.95	6.67 (0.01)	0.069
	Female	192	136 (48.6)	42.78,54.40		

Sl	Variable	Aware (n)	Recall n(%)	95% CI	Chi-square (p-value)	Effect size (Cramer's V)
6	Age group of the respondent					
	18 to 29 yrs old	351	252 (44.9)	40.85, 49.06	4.73 (0.094)	0.058
	30 to 39 yrs old	225	161 (38.1)	33.56, 42.78		
	40 to 55 yrs old	246	177 (41.3)	36.70, 45.97		
Note: Recall is estimated among those who were aware of the campaign (n=822); Chi-square test of significance was used for univariate analysis						

Annexure Table 5: Factors associated with recall among study respondents

Variables	N	Crude OR	Adjusted OR
Self-reported speeding	457	1.03 (0.81, 1.33)	1.29 (0.86, 1.90)
High school	193	0.71 (0.52, 0.97)	0.68 (0.38, 1.21)
Pre-university	186	0.68 (0.51, 0.93)	0.63 (0.35, 1.31)
Graduate	105	0.92 (0.66, 1.21)	0.58 (0.62, 1.90)
Not employed	62	2.23 (1.47, 3.67)	1.41 (0.47, 4.16)
Student	11	0.53 (0.34, 0.82)	0.36 (0.08, 1.47)
Others	44	0.43 (0.27, 0.71)	0.46 (0.22, 0.96)
Female	83	1.41 (1.08, 1.81)	1.51 (0.64, 3.52)
Four-wheeler is predominant vehicle	544	1.03 (0.81,1.33)	2.39 (1.45, 3.94)
Hosmer–Lemeshow test, Chi-square p=0.771; Nagelkerke R square= 0.084			

Annexure Table 6: Ratio of recall to awareness in respondents

Variable	Awareness	Recall	Recall to Awareness ratio
Overall	822	590	0.718
District			
Bengaluru	539	386	0.716
Mandya	20	16	0.801
Dakshina Kannada	59	44	0.746
Chitradurga	19	13	0.684
Bellary	71	49	0.692
Dharwad	62	44	0.711
Gadag	20	17	0.850
Bidar	32	21	0.656
Age group (in years)			
18 - 29	351	252	0.718
30 - 39	225	161	0.716
40 - 55	246	177	0.720
Sex			
Male	630	454	0.721
Female	192	136	0.708
Type of media			
Television	318	227	0.714
Radio	0	0	-
Digital Media	8	6	0.750
Cinema	459	330	0.719
Billboards	175	123	0.703
Occupation			
Employed	662	481	0.727
Student	70	54	0.771
Unemployed	50	32	0.642
Other	40	23	0.575
Education			
Not completed school education	177	131	0.740
Completed High School education	247	170	0.688
Completed College education(PU)	229	164	0.716
Graduate degree	169	125	0.740

Annexure Table 7: Self-reported speeding among respondents in 2024

Sl	Self-reported speeding	N	Self-reported speeding (%)	95 % C.I.	Chi-Square (p-value)	Effect size (Cramer's V)
	Overall	1607	1284(79.9)	(77.87,81.79)	-	-
By district						
1	Bengaluru	1067	891 (83.5)	(81.16, 85.61)	42.03 (<0.001)	0.162
2	Mandya	40	24 (60.0)	(44.6, 73.65)		
3	Dakshina Kannada	120	90 (75.0)	(66.56, 81.89)		
4	Chitradurga	40	23 (57.5)	(42.2, 71.49)		
5	Bellary	115	89 (77.4)	(68.93, 84.08)		
6	Dharwad	127	95 (74.8)	(66.6, 81.55)		
7	Gadag	45	29 (64.4)	(49.84, 76.78)		
8	Bidar	53	43 (81.1)	(68.64, 89.41)		
Type of Vehicles driven by respondents						
1	Only 2-wheel vehicle	771	638 (82.7)	(79.92, 85.25)	7.67 (0.212)	0.062
2	Only 4-wheel vehicle	95	75 (78.9)	(69.71, 85.94)		
3	Both	741	571 (77.1)	(73.91, 79.94)		
Predominant mode of transport used by respondents						
1	Two-Wheeler	6	5 (83.3)	(43.65,96.99)	0.54 (0.762)	0.013
2	Four-wheeler	2	2 (100.0)	(34.24, 100.00)		
3	Others	1504	1202 (79.9)	(77.82,81.87)		
Sex of the respondent						
1	Male	1311	1027 (78.3)	(76.03,80.48)	11.04 (0.004)	0.083
2	Female	294	255 (86.7)	(82.38,90.14)		
Age group of the respondent (in years)						
1	18 to 29	640	537 (83.9)	(80.86,86.55)	19.16 (<0.001)	0.104
2	30 to 39	487	358 (73.5)	(69.42,77.24)		
3	40 to 55	480	389 (81.0)	(77.29, 84.32)		

Annexure Table 8: Self-reported speeding among respondents in 2025

Sl	Self-reported speeding	N	Self-reported speeding (%)	95 % C.I.	Chi-Square (p-value)	Effect size (Cramer's V)
	Overall	1392	1060 (76.1)	(73.84,78.31)	-	-
By district						
1	Bengaluru	925	787 (85.1)	(82.64,87.23)	122.72 (<0.001)	0.291
2	Mandya	33	20 (60.6)	(43.68,75.32)		
3	Dakshina Kannada	111	66 (59.5)	(50.16,68.13)		
4	Chitradurga	35	19 (54.3)	(38.19,69.53)		
5	Bellary	99	57 (57.6)	(47.74,66.85)		
6	Dharwad	104	63 (60.6)	(50.97,69.43)		
7	Gadag	40	21 (52.5)	(37.5,68.18)		
8	Bidar	45	27 (60.0)	(45.45,72.97)		
Type of Vehicles driven by respondents						
1	Only 2-wheel vehicle	739	585 (79.2)	(76.09,81.93)	7.93 (0.012)	0.073
2	Only 4-wheel vehicle	24	18 (75.0)	(55.1,88)		
3	Both	629	457 (72.7)	(69.04,75.99)		
Predominant mode of transport used by respondents						
1	Two-Wheeler	85	62 (72.9)	(62.66,81.24)	0.004 (0.944)	0.003
2	Four-wheeler	544	395 (72.6)	(68.71,76.19)		
Sex of the respondent						
1	Male	1117	865 (77.4)	(74.9,79.79)	5.18 (0.002)	0.063
2	Female	275	195 (70.9)	(65.28,75.96)		
Age group of the respondent (in years)						
1	18 to 29	549	436 (79.4)	(75.84, 82.59	5.76 (0.053)	0.062
2	30 to 39	416	312 (75.0)	(70.62, 78.92)		
3	40 to 55	427	312 (73.1)	(68.67, 77.06)		

Annexure Table 9: Respondent's behaviour of following speed limits in specific roads

T_Q2BA1_1_Speeding (2025) (N=1413)				
N=1362	**Urban Zone**	**Peripheral**	**Highway**	**School Zone**
Follows speed limit	559 (41.0)	611 (44.9)	904 (66.4)	1017 (74.7)
Doesn't follow speed limit	803 (59.0)	751 (55.1)	458 (33.6)	345 (25.3)

Annexure Table10: Knowledge of speed limit on roads and awareness of the MCR campaign

Q2A -2A. Knowledge of the speed limit on the roads in this city as you drive (N=1413) - 2025				
Knowledge of Speed limit	**Campaign aware (N=822)**	**Campaign not aware (N=582)**	**Chi-square (p-value)**	**Effect size (Cramer's V)**
Adequate Knowledge (424)	249 (58.7)	175 (41.3)	0.07 (0.781)	0.0026
Poor (989)	573(57.9)	416 (42.1)		

Annexure Table 11: Attitude of respondents towards road behaviour and speeding issues by year

Statements on road behaviour and speeding issues	**2024 (N=1629)**	**2025 (N=1413)**
	Favourable attitude	**Favourable attitude**
People in my city/ community think it is quite acceptable to drive above posted speed limits.	280 (17.2)	866 (61.3)
The people important to me think that it is important to follow posted speed limits.	1577 (96.8)	1112 (78.7)
Higher chance of a road crash when speeding.	1595 (97.9)	1368 (96.8)
Faster the speed the more serious injury if crash happens.	1587 (97.4)	1362 (96.4)
The risk of driving fast is something I am comfortable living with.	91 (5.6)	798 (56.5)
It is fine to break the speed limit, as long as I know that I am in control of my vehicle.	0	932 (66.0)

Annexure Table 12: Attitude towards road behaviour and awareness of 'Motorcycle Reconstruction' campaign among respondents (2025)

T_Q3A_1- People in my city/ community think it is quite acceptable to drive above posted speed limits				
Awareness	**Reach**	**Not Reach**	**Chi-square (p-value)**	**Cramer's V**
Favourable (866)	458 (52.9)	408 (47.1)	25.70 (<0.001)	0.131
Unfavourable (547)	364 (66.5)	183 (33.5)		
T_Q3A_2- The people important to me think that it is important to follow posted speed limits				
Favourable (1112)	667 (60.0)	445 (40.0)	7.01 (<0.001)	0.073
Unfavourable (301)	155 (51.5)	146 (48.5)		
T_Q3A_3- There is a higher chance of a road crash when speeding				
Favourable (1368)	795 (58.1)	573 (41.9)	0.06 (0.802)	0.002
Unfavourable (45)	27 (60.0)	18 (40.0)		
T_Q3A_4 – The faster the speed the more serious injury if crash happens				
Favourable (1362)	794 (58.3)	568 (41.7)	0.23 (0.62)	0.012
Unfavourable (51)	28 (54.9)	23 (45.1)		
T_Q3A_5 -The risk of driving fast is something I am comfortable living with				
Favourable (798)	433 (54.3)	365 (45.7)	11.54 (<0.001)	0.093
Unfavourable (615)	389 (63.3)	226 (36.7)		
T_Q3A_6- It is fine to break the speed limit, as long as I know that I am in control of my vehicle				
Favourable (932)	511 (54.8)	421 (45.2)	12.59 (<0.001)	0.09
Unfavourable (481)	311 (64.7)	170 (35.3)		

Annexure Table 13: Speeding Violations: pre and post campaign in study districts

District	Oct-24	Nov-24	Pre-campaign 2024 Total	Jan-24	Feb-24	Post-campaign 2025 Total
Speeding/ rash driving tickets						
Bengaluru	5,516	6,519	12,035	4,416	1,177	5,593
Mandya	28,800	7,576	36,376	14,133	34,961	49094
Dakshina Kannada	4	52	56	19	9	28
Chitradurga	70	313	383	192	23	215
Dharwad	47	35	82	0	0	0
Gadag	74	87	161	1	0	1

District	Oct-24	Nov-24	Pre-campaign 2024 Total	Jan-24	Feb-24	Post-campaign 2025 Total
Bidar	418	125	543	82	58	140
Bellary	25	56	81	116	124	240
Total	34,954	14,763	49,717	18,959	36,352	55,311
Fines collected in Rupees						
Bengaluru	5,51,6000	6,519,000	12,035,000	4416000	1,177,000	5,593,000
Mandya	28,800,000	7,576,000	36,376,000	14,133,000	34,961,000	49,094,000
Dakshina Kannada	4000	52,000	56,000	19,000	9000	28,000
Chitradurga	70,000	31,3000	383,000	192,000	23,000	215,000
Dharwad	47,000	35,000	82,000	0	0	0
Gadag	74,000	87,000	161,000	1,000	0	1
Bidar	418,000	125,000	543,000	82,000	58,000	140,000
Bellary	25,000	56,000	81,000	116,000	124,000	240,000
Total	**34,954,000**	**14,763,000**	**49,717,000**	**18,959,000**	**36,352,000**	**55,311,000**

Road Safety Mass-Media Campaign on Speeding in Karnataka State

Evaluation Report