

Case Study on Recent Accident under Mixed Traffic Conditions

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Abstract - Street car crashes are the main general medical issue for which society and leaders despite everything acknowledge demise and incapacity among youngsters on an enormous scale. The segment, epidemiological, and monetary progress in India has changed the wellbeing situation critically during the most recent two decades. This move-in wellbeing issues and needs have brought the whole range of non-transferable maladies to the bleeding edge of the social insurance conveyance framework. Among these developing issues, man-made and conduct connected wounds involve a huge spot. The quick urbanization, industrialization, mechanization, and evolving ways of life of people have offered ascend to plenty of issues, among which wounds top the rundown. Various social elements going with this change like expanding relocation, enormous scope lodging, and development exercises, monetary changes, expanding import of innovation without wellbeing standards, absence of security gauges on street, at home, in the working environment and play locales, developing issue of liquor and medications, expanding viciousness and crime percentages and the general nonattendance and dismissal to wellbeing rehearses by any stretch of the imagination places has added to a disturbing increment of wounds. The steady decrease of transmittable maladies and advances in social insurance innovation has likewise been one of the factors for the rise of wounds as a significant general medical issue.

In this study, the various point is designed to analyze the traffic condition. The present study describes the accidental and non-accidental survey study.

Keywords: Accumulation, traffic congestion, Population

1. INTRODUCTION

Transport plays an important part in the goods/money-making development of any region. Transport infrastructure is tied to every part of the economy. Roads provide a very important means of transport and communication throughout the earth and have a great part to play in the development of nations and people through getting more out of access to information and resources, leading to a better state of being healthy outcomes among groups. Provisions of adequate infrastructure are pre - necessary one for sustained growth and to make a certain price-effective movement of people and goods. Getting to a place where one

is going is usually the main end, the purpose of transport. a good at producing an effect of road infrastructure is, therefore, an essential thing needed with the new developments in the field of ways, means, motive, power, designing and making things techniques and organizations.

1.1 About Rajasthan

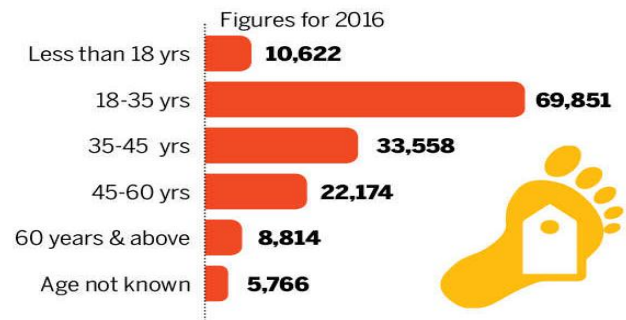
Rajasthan is India's biggest state by area (342,239 rectangular kilometers (132,139 sq mi) or 10. 4% of India's general area). It is positioned on the north-western facet of India, wherein it comprises a maximum of the huge and inhospitable.

Thar Desert (also known as the " Rajasthan Desert" and "Great Indian Desert") and shares a border with the Pakistani provinces of Punjab to the northwest and Sindh to the west, along the Sutlej - Indus river valley.



Fig -1: location map of Jaipur

ROAD DEATHS BY AGE-GROUP



Source: Ministry of Road Transport and Highways

Fig -2: Road death by age group

1.2 Literature View

Garib et al. (2009) offered a regression model for estimating throughway incident congestion. The incident duration prediction model confirmed that 81 percent of a variant in incident length can be anticipated by the number of lanes affected, variety of cars involved, truck involvement, time of day, police reaction time, and climate condition.

Hadi and Aruldas (2011) developed an accident version by way of street-grades. Road length, annual common daily site visitors (AADT), lane and shoulder width, types and width of the median, the existence of curve, grade, and variety of intersections and speed limit had been taken into consideration as unbiased variables. The study concludes that widen the median width on 4-lane roads enhanced safety and roads with -way and left flip median were more secure than non-separation roads.

Hong et al. (2015) developed a twist of fate prediction fashions for 4 forms of city avenue classes which were primarily based on a variety of lanes, avenue levels, and the existence of a median barrier. Traffic volumes, the number of intersections, connecting roads, pedestrian visitors signals, a life of median barrier were selected as impartial variables in a regression analysis. The result reveals that during a case of lane roads, the wide variety of intersections and pedestrian visitors signals had been significant variables whereas in the case of four-lane roads life of median barrier and number of connecting roads have been extensive.

Cela et al. (2015) used a couple of linear regression analyses to discover the most widespread variables related to the street conditions, time, and the main motive which have probably contributed to high prices of injuries in city areas.

Sikdar and Bhavsar (2017) showed that median commencing is one in each of the responsible causes of road injuries because the vehicles travel in the incorrect direction (within the opposite carriageway) for a brief stretch to avoid journeying the extra distance to take a U-flip at the next median commencing.

2. PROBLEM STATEMENT

India holds the dubious difference in registering the best number of road injuries within the world. According to the specialists on the National Transportation Planning and Research Centre (NTPRC), the variety of street accidents in India is three times higher than those winning in advanced countries. The range of accidents for 1000 cars in India is as excessive as 35, whilst the figure stages from four to ten in developed countries. With the growth in street network, motorization and urbanization in the USA, the number of street accidents have surged. Road traffic injury and fatalities have emerged as the predominant fitness subject, with RTIs having come to be one of the main reasons for deaths,

disabilities, and hospitalization which impose severe socioeconomic expenses throughout the world.

3. OBJECTIVES

The look at has been performed with the subsequent objectives.

1. To observe the pattern of road site visitors accidents at Jaipur high ways.
2. To look into the reasons for avenue traffic accidents.
3. To find out the extent of recognition about avenue safety rules /traffic regulations among avenue users.
4. To suggest suitable measures for the prevention and management of road site visitor's injuries.

4. RESEARCH METHODOLOGY

The present take a look at is both descriptive and analytical. Formulation of the methodology of the takes a look at allows the researcher to draw a systematic technique for the studies process. The technique of the present look at has been designed in regards to length and place of study, sources of facts, pilot have a look at and sampling designs, sampling method and statistical gear, and method used for the facts analyses. Here we can facts accumulate in the manner first one is the from Police station avenue accident information and some other one is information collected from pattern survey.

5. ROAD CRASHES IN RAJASTHAN

Not much variant has been observed in terms of road crashes happen each year in Rajasthan in beyond ten years. On the contrary, the fatalities were step by step rising, nearly doubled to 10289 in the year 2014 as compared to 5187 fatalities said in the year 2001. The year 2016 marked a turning point within the country avenue protection crisis for the primary time inside the remaining decade. Against 10510 fatalities in 2015, a marginal reduction of forty-five fatalities have been pronounced in 12 months 2016 with 10465 fatalities.

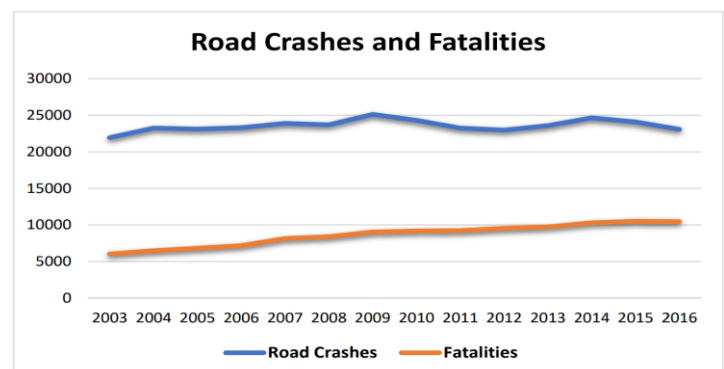


Fig -3: Road Crashes and fatalities

6. STUDY AREA

The selection of look at the place is made based on pattern following on-road twist of fate in Jaipur town. The study region is selected via analyzing the preceding records of avenue coincidence and trend of accident fashion in town. The preceding coincidence report concludes that NH-fifty two has a huge range of unintentional black spots as compared to other a part of the NH device in Jaipur metropolis. NH-52 as part of Jaipur East comes underneath Sanganer police station. The stretch of 6.6 Km of NH-fifty two has selected for evaluation and audit for accidental price analysis. The decided on to have a look at location originated from the junction of two NH i.E. NH 52 and NH 248 also referred to as B-2 skip circle and terminated at India Gate. This circle is also accompanied by way of the foremost arterial road in the west aspect connects the city to NH. The observed vicinity originated from B-2 by using bypass Jaipur Centre Bus Stand to India Gate Sitapura Industrial Area as part of NH-52. The map of the study area is shown in the figure below.

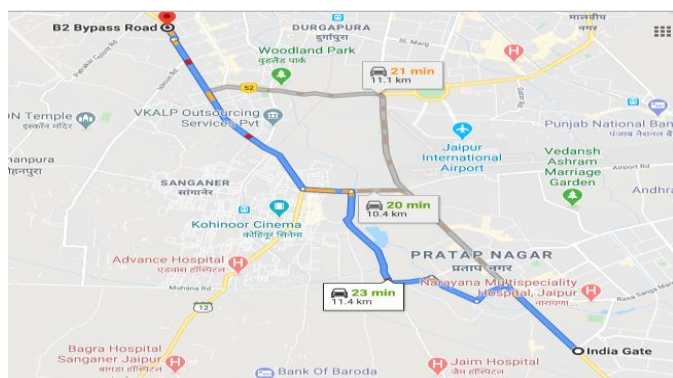


Fig -4: India Gate, Jaipur to B2 bypass

7. ANALYSIS AND INTERPRETATION

Objective data never offers any meaningful results. They emerge as meaningful only whilst interpreted within the mild of accepted requirements and assumptions. In each day's life, the researchers seldom deal with bare information however with interpreted records. This interpretation or evaluation is decided by the cause to which the researcher pertains to the records. Data analysis is a body of methods that allows us to explain statistics, detect styles, and increase all of the sciences. Interpretation is the search for the broader which means of the findings.

This chapter deals with the statistical evaluation of the records collected, interpretations and discussions on the influence, relationship significance of the connection, and prediction of effective visitors management strategies to lessen avenue accidents based on three Es of visitors management.

A complete assessment of literature on street visitors accidents in Jaipur shows avenue visitors accidents are one of the crucial public health problems contributing to a big number of deaths and disabilities in the state. To reduce and control street accidents visitors' control has been strengthened in a holistic technique. Detailed analysis of the collected information has been accomplished as consistent with the objective stated earlier. Hypotheses also are tested based on the findings of the have a look at, interpretation, and conclusions were drawn. In this bankruptcy descriptive evaluation and inferential facts have been used for the analysis of the facts amassed for the present have a look at.

7.1 Descriptive Analysis of Sample

The percentage evaluation is one of the statistical measures used to explain the traits of the sample or populace in totality. Percentage analysis entails computing measures of variables selected of the have a look at and it is locating will give a smooth interpretation for the reader.

7.2 Profile of the Road Users

Understanding the profile of road users enables a better and effective approach to strengthen road traffic management. Therefore, studying the profile is essential in planning strategies and comparing outcomes. This study profile consists of road user's age, gender, marital status, educational qualification, profession, and monthly income. Frequency Distribution of Age group of road users:

Age contributes a significant factor in portability and utilization of vehicles and these two factors together contribute a significant offer in Street Auto collision (RTA). The street clients are ordered into four gatherings based on age.

Table -1: Distribution of Age group

Age group in year	Frequency	Percentage
Below 25	139	27.5
26-35	159	31.4
36-45	132	26.1
Above 45	76	15.0
Total	506	100.0

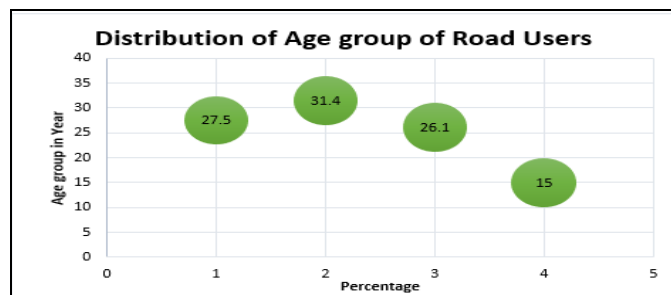


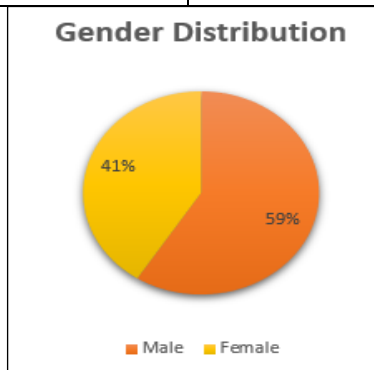
Chart -1: Distribution of age group of Road User

Out of 506 respondents 139 (27.5%) had a place with beneath 25 years, 159 (31.4) fall in the age gathering of 26-35 years, 132 (26.1%) had a place with the age gathering of

36-45 and 76 (15%) go under the age gathering of over 45. 26-35 age bunch is higher in portrayal contrasted with another age gathering.

Table -2: Distribution of Marital status

Gender	Frequency	Percentage
Male	299	59.1
Female	207	40.9
Total	506	100.0



It shows sexual orientation insightful conveyance of street clients. It indicated that the piece of the male is 59.1 rate and female is 40.9 rate. Among the all-out populace of 506 respondents, 299 were male and 207 were female.

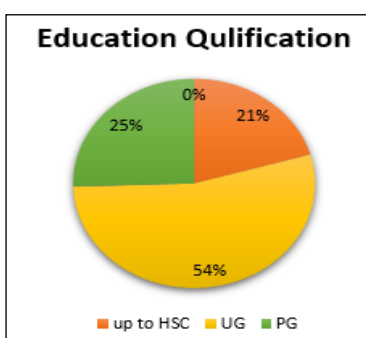
Chart -2: Gender Distribution

Frequency Distribution of Marital status of road users:

Marital status changes the road using a character. The marital status of road users is given in the table below.

Table -3: Distribution of education qualification

Qualification	Frequency	Percentage
Up to 10 th	104	20.6
UG	273	54.0
PG	129	25.5
Total	506	100.0



As presented in the above table, 20.5% of road users are educated up to higher secondary, 54.0% at UG level and 25.5% at PG level. The majority of road users are graduates.

Chart -3: Education Qualification

Frequency Distribution of Occupation of road users:

Occupation provides status and income. It directly influences on lifestyle and all aspects of vehicle and road usage. The occupational wise classification of road users is shown in the below table.

Table -4: Distribution of Occupation

Occupation	Frequency	Percentage
Govt. employed	162	32.0
Private Employed	147	29.1
Self - Employed	63	12.5
Others	134	26.5
Total	506	100

Circulation of Month to month salary of street clients: The salary level impacts the vehicle populace and is a significant factor in buying power. The salary status of the respondent is given underneath.

DISTRIBUTION OF OCCUPATION OF ROAD USER

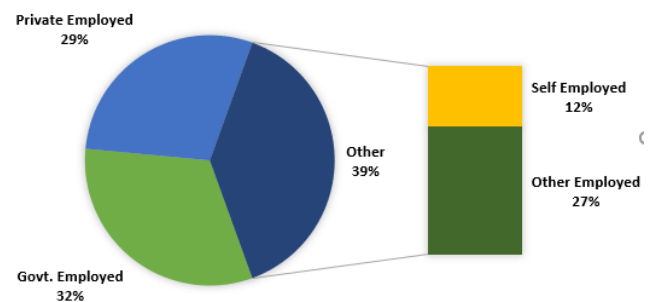


Chart -4: Distribution of Occupation of Road User

Table -4: Distribution of monthly salary

Monthly Income	Frequency	Percentage
Up to Rs. 4,000	54	10.7
Rs. 4,000 - Rs.8,000	90	17.8
Rs. 8,000 - Rs. 12,000	73	14.4
Rs. 12,000 - Rs. 16,000	63	12.5
Above Rs. 16,000	226	44.7
Total	506	100.0

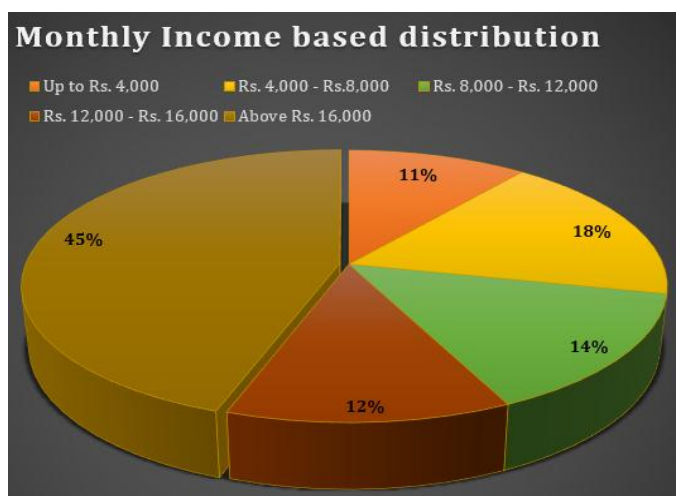


Chart -5: Education Qualification

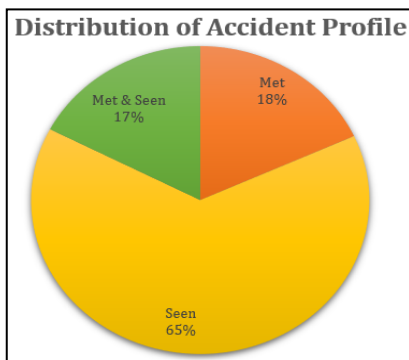
Thinking about month to month profit, 10.7% of the street clients acquire up to Rs.4,000, 17.8% wins between Rs.4,001 - Rs.8,000, 14.4% between Rs.8,001 - Rs.12,000, 12.5% between Rs.12,001 - Rs.16,000 and 44.7% procures above Rs.16,000.

Distribution of Accident profile of road users:

The accident profile and experience of an accident of road users are indicated in the following table.

Table -5: Distribution of accident profile

Accident Exp.	Frequency	Percentage
	92	18.2
	326	64.4
	88	17.4
Total	506	100.0



Among the 506 street clients 326 (64.4%) of the respondents have seen the mishap, 92 (18.2%) met mishaps and 88 (17.4%) have encountered and seen the accident.

Chart -6: Accident Profile distribution

8. CONCLUSIONS

The present study "A take a look at the powerful Traffic Management of Roads to reduce Road accidents in Jaipur" is primarily based on the survey taken from avenue users like a pedestrian, motorcyclist, drivers, car owners, etc. inside the Jaipur. Therefore, there is a need to analyze broader factors and other dimensions of the idea of visitor's management and its impact on avenue injuries. The researcher would love to suggest the following vicinity for further research:

- Impact of substance use on road site visitors' crashes.
- Factors influencing road site visitors' crashes.
- Socio-economic factors for Road visitors crashes.
- Impact of unlawful drug use in Road Traffic Accidents.
- Analysis of causes of street injuries to discover moves for the prevention of injuries and fatalities in injuries.
- Study of site visitor's accident blackspots to lessen accidents
- Traffic management problems like congestions, unlawful parking, protection of different street

users, especially pedestrians and cyclists, can be studied.

REFERENCES

- 1]. [http://sites.ndtv.com/roadsafety/important-feature-to-you-in-your-car-5/\(present rank of Jaipur in road accidents\)](http://sites.ndtv.com/roadsafety/important-feature-to-you-in-your-car-5/(present-rank-of-jaipur-in-road-accidents))
- 2]. [https://en.wikipedia.org/wiki/Jaipur\(present condition of Jaipur in road accidents\)](https://en.wikipedia.org/wiki/Jaipur(present-condition-of-Jaipur-in-road-accidents))
- 3]. <http://morth.nic.in/>, Ministry of Road Transportation and Highway. (total number of vehicles sold) Al-Khateeb, G.G., Obaidat, M.T. and Khedaywi, T.S. 2008. Road Safety Strategies through Excellence in Services, Awareness, and Law Enforcement in Jordan. Proceedings of the 5th International Safety Conference, Road, and Traffic Safety Strategies, Amman, Jordan, April 22-24, 8-22(reasons of road accidents)
- 4]. Fitzgerald, M., Dewan, Y., O'Reilly, G., Mathew, J. & McKenna, C. (2013) India and the management of road crashes: Towards a national trauma system. Indian Journal of Surgery, 68 (4), 226-232. (road accidents data)
- 5]. World Health Organization (2004). World report on road traffic injury prevention. World Health Organization publications. (how to prevent road accidents)
- 6]. National Crimes Record Bureau, Accidental Deaths and Suicides in India, Jaipur, Ministry of Home Affairs, Govt. of India, volume 2001, 2017.(data of road accidents in Jaipur)
- 7]. M. Zaumanis et. al (2019) Performance-based design of 100% recycled hot-mix asphalt and validation using traffic load simulator
- 8]. Joshua Auld et. al (2019) Agent-Based Dynamic traffic Assignment with Information Mixing
- 9]. Katsunori Tanaka et. al (2007) traffic mixing in a deterministic two-lane model of Hurricane evacuation
- 10]. Yong-Rak Kim et. al (2009) Effects of aggregate structure on hot-mix asphalt rutting performance in low traffic volume local pavements
- 11]. Khosla and Ayyala (2013) A Performance-based Evaluation of Superpave Design Gyration for High traffic Surface mixes
- 12]. Gao and Niemeier (2007) The impact of rush hour traffic and mix on the ozone weekend effect in southern California
- 13]. Xue Wang et al (2019) Study on pollutant emissions of mixed traffic flow in a cellular automaton.
- 14]. Jian Zhong et. al (2018) Modelling traffic-induced multicomponent ultrafine particles in urban street canyon compartments: Factors that inhibit mixing
- 15]. Cheolwoo Park et. al (2005) Long-range dependence in a changing Internet traffic mix

- 16]. Ramesh Chandra Majhi et. al (1997) Effective bandwidth dependent of the actual traffic mix an approach for bufferless CAC
- 17]. Ibrahim M. Asi (2007) Performance evaluation of SUPERPAVE and Marshall asphalt mix designs to suit Jordan climatic and traffic conditions
- 18]. Bokui Chen et. al (2019) A future intelligent traffic system with mixed autonomous vehicles and human-driven vehicles
- 19]. E. Alexandra Micu et. al (2019) Evaluation of the extreme traffic load effects on the Forth Road Bridge using image analysis of traffic data
- 20]. Francisco-Javier Moreno Muro et. al (2020) Direct assessment of health impacts on hospital admission from traffic intensity in Madrid
- 21]. Seyedeh Mina Hosseini Ghazvini et. al (2019) Load balancing, multipath routing and adaptive modulation with traffic grooming in elastic optical networks
- 22]. Xin Yang et. al (2019) Real-virtual consistent traffic flow interaction
- 23]. Deyu Wang et. al (2019) Road traffic accident severity analysis: A census-based study in China
- 24]. Hamed and Basel M. Al-Eideh (2019) An exploratory analysis of traffic accident and vehicle ownership decisions using a random parameters logit model with heterogeneity in means
- 25]. T. Lukusa and Frederick Kin Hing Phoa (2020) A Horvitz-type estimation on incomplete traffic accident data analyzed via a zero-inflated Poisson model
- 26]. Ömür Kaygisiz et. al (2017) Influence of urban built environment on traffic accidents: The case of Eskisehir (Turkey)
- 27]. Mark W. Hoglund (2018) Safety-oriented bicycling and traffic accident involvement
- 28]. Randa Oqab Mujalli (2016) Bayes classifiers for imbalanced traffic accidents datasets
- 29]. Li-Lu Sun et. al (2019) Road traffic safety: An analysis of the cross-effects of economic, road and population factors
- 30]. A. Richard A. van der Horst (2017) An evaluation of speed management measures in Bangladesh based upon alternative accident recording, speed measurements, and DOCTOR traffic conflict observations
- 31]. Rune Elvik et. al (2017) An analysis of factors influencing accidents on road bridges in Norway
- 32]. Benoît Depaire et. al (2008) Traffic accident segmentation utilizing latent class clustering
- 33]. C. Pasquale et. al (2019) Traffic control for freeway networks with sustainability-related objectives: Review and future challenges
- 34]. Andrey Korochkin (2018) Impact of rigid pavements with the asphalt-concrete wearing course on-road performance and traffic safety

35]. Sanjay Kumar Singh (2017) Road Traffic Accidents in India: Issues and Challenges

36]. Agarwal A et al. Sociodemographic profile of road traffic accident victims admitted at emergency surgical OPD of a tertiary care hospital.

BIOGRAPHIES



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Hemant Agrawal is working as an assistant professor in the civil engineering department, Graduate from Rajasthan Technical University, Kota with honor's in 2014, he honored with a gold medal in M. tech and published 6 papers in national conference and 2 papers in online journals. He has 5 years teaching experience.



Professor (Dr.) Bharat Nagar is working as a HOD and M. Tech Coordinator in the Civil Engineering Department Jagannath university since last 11 years. He has worked in various engineering colleges and industries in Rajasthan with more than 17 years of total experience. He wrote 4 books and more than 50 research papers in various reputed international and national journals. His area of interest is Environmental Assessment, Concrete application, and earthquake engineering.