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Study of Fire Reason, Losses and Safety Method in Road Transportation On Jhunjhunu –Churu Road (SH-37)

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ABSTRACT: India may be a developing country during which the road network plays a crucial role within the development of the country in social, economical and political improvement within the Indian society. As increasing the vehicles population, the numbers of accidents are increasing with a quicker rate. Road accident impacts a negative role within the society by ends up in the unfitness, death, injury to health and property, social suffering and degradation of surroundings. SH-37 is one amongst the foremost property from Jhunjhunu to Churu that deals with carrying of the sunshine merchandise to significant merchandise and traveler by bus, truck, car, taxi, motorcycle, tractors etc. Study space was undertaken on road SH-37 from Jhunjhunu to Churu with stretch kilometer 164 to kilometer 211 in Rajasthan state. Intermediate the jhunjhunu to Churu a city is settled whose name is Bissau. Bissau could be a huddled space having a railway sleeper casting trade, marble cutting industries, garments creating industries. Jhunjhunu, Bissau and Churu is legendary for the historical places having Haveli therefore we will contemplate Churu and Bissau as a traveler places. Risks for automotive fires are often higher within the desert climate, however all vehicle homeowners ought to remember of the risks of car fires and 5439the way to stop them. Decide everything you wish to grasp, as well as what to try to if your automotive catches ablaze.

KEYWORDS: Fire Accident, Fatality, ADT, PCU, TJ and FE.

I. INTRODUCTION

Road safety is a difficulty of national concern, considering its magnitude and gravity and therefore the sequent negative impacts on the economy, public health and therefore the general welfare of the folks. Today Road Traffic Injuries are one in all the leading causes of deaths, disabilities and hospitalizations, with severe socioeconomic prices, across the globe. The international organization has justifiably declared 2011-20 because the decade of action on road safety in order that this rising trend of road accident stabilizes and is reversed by the year 2020. During the year 2013, there was a decline within the range of road accidents and additionally within the range of persons killed and injury in road accidents (Table No. 1.1). With a decline of 2.9 per cent, the reduction within the range of persons injured in road accidents throughout 2013 was the foremost pronounced. Despite the reduction within the range of persons killed throughout 2013, the accident severity (number of persons killed per one hundred accidents) enlarged as compared to the previous year.

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Table No 1.1- Road Accident Parameter (2012 and 2013)

PARAMETER	2012	2013	PERCENTAGE CHANGE OVER PREVIOUS YEAR
Accidents	4,86,384	4,99,628	+2.72
Person Killed	1,25,660	1,34,513	+7.04
Person Injured	5,12,458	5,27,512	+2.93
Accident Severity *	25.8	26.9	+1.1
*Number of person killed per 100 accidents			

Table No 1.2- Number of road accident and number of persons involved 2006-2016

YEAR	NO. OF ACCIDENTS		NO. OF PERSONS		ACCIDENT SEVERITY *
	TOTAL	FATAL	KILLED	INJURED	
2006	406726	73589(18.1)	85998	435122	21.1
2007	429910	79357(18.5)	92618	464521	21.5
2008	439255	83491(19.0)	94968	465282	21.6
2009	460920	93917(20.4)	105749	496481	22.9
2010	479216	106161(21.1)	114444	513340	23.9
2011	484704	106591(22.0)	119860	523193	24.7
2012	486384	110993(22.8)	125660	512458	25.8
2013	499628	119558(23.9)	134513	527512	26.9
2014	497686	121618(24.4)	142485	511394	28.6
2015	490383	123093(25.1)	138258	509667	28.2
2016	486476	122589(25.2)	137572	494893	28.3
Source: Information supplied by states/UTs (Police Department). Figure with parentheses indicate share of fatal accidents of total accidents. Accident Severity: Number of person killed per 100 accidents.					

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II. STUDY AREA

Two-lane road from Jhunjhunu to Churu on SH-37 was chosen. For this study the following stretches were selected for data collection. The study area is shown in fig. 2.1

- (i) Jhunjhunu to Bissau Km 164 to Km 198
- (ii) Bissau to Churu Km 198 to Km 211



Figure 2.1 Study Area

III. DATA COLLECTION

Table 3.1 -Road length in Jhunjhunu District.

S. NO.	CATEGORY OF ROAD	LENGTH (KM'S)
1	NATIONAL HIGHWAY	131.00
2	STATE HIGHWAY	368.30
3	MAJOR DISTRICT ROAD	337.70
4	OTHER DISTRICT ROAD	503.07
5	RURAL ROAD	3047.51
6	URBAN ROAD	71.47
	TOTAL	4459.05

Sources (Office of Executive Engineer P.W.D. Jhunjhunu)

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Table 3.2- Number of Vehicle in Jhunjhunu District

S. NO.	TYPE OF VEHICLE	NO. OF VEHICLE
1	Motorcycle	193194
2	Tractor	19990
3	Car/ Jeep	29681
4	Taxi/ Cab	2950
5	Tempo (Three wheeler)	6209
6	Buses	10856
7	Goods Vehicle (Truck, Pick up, etc.)	14658
8	Other	1575

Table 3.3 - Details of Accidents

YEAR	FATAL	MAJOR INJURY	MINOR INJURY
2006	16	18	37
2007	11	35	48
2008	21	24	39
2009	22	29	43
2010	18	34	49
2011	19	21	41
2012	28	29	55
2013	24	31	48
2014	29	34	59
2015	25	30	62
2016	28	33	68
Total	241	318	549

Source (Police Department, Jhunjhunu)

Table 3.4 -Details of accident stretch wise (S1- Stretch1, S2- Stretch2)

YEAR	FATAL		TOTAL	MAJOR		TOTAL	MINOR		TOTAL
	S1	S2		S1	S2		S1	S2	
2006	11	5	16	10	8	18	20	17	37
2007	6	5	11	23	12	35	22	26	48
2008	15	6	21	12	12	24	29	10	39
2009	12	10	22	16	13	29	20	23	43
2010	9	9	18	12	22	34	25	24	49
2011	10	9	19	11	10	21	14	27	41
2012	15	13	28	13	16	29	25	30	55
2013	13	11	24	15	16	31	28	20	48
2014	19	10	29	17	17	34	39	20	59
2015	15	10	25	18	12	30	45	17	62
2016	18	10	28	22	11	33	48	20	68
Total	143	98	241	169	149	318	315	234	549

Source (Police Department, Jhunjhunu and Churu)

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Table 3.5 - Traffic volume data

Year	ADT (Average Daily Traffic)	Average PCU per day	PCU/Hour
2006	12876	21889.20	912.05
2007	13654	23211.80	967.16
2008	13943	23703.10	987.63
2009	14273	24264.10	1011.00
2010	14453	24570.10	1023.75
2011	15872	27141.12	1130.88
2012	15430	26385.30	1099.39
2013	14831	25509.32	1062.89
2014	15239	26058.69	1085.77
2015	16240	27770.40	1157.10
2016	16558	28148.60	1172.86

Source (PWD, Jhunjhunu)

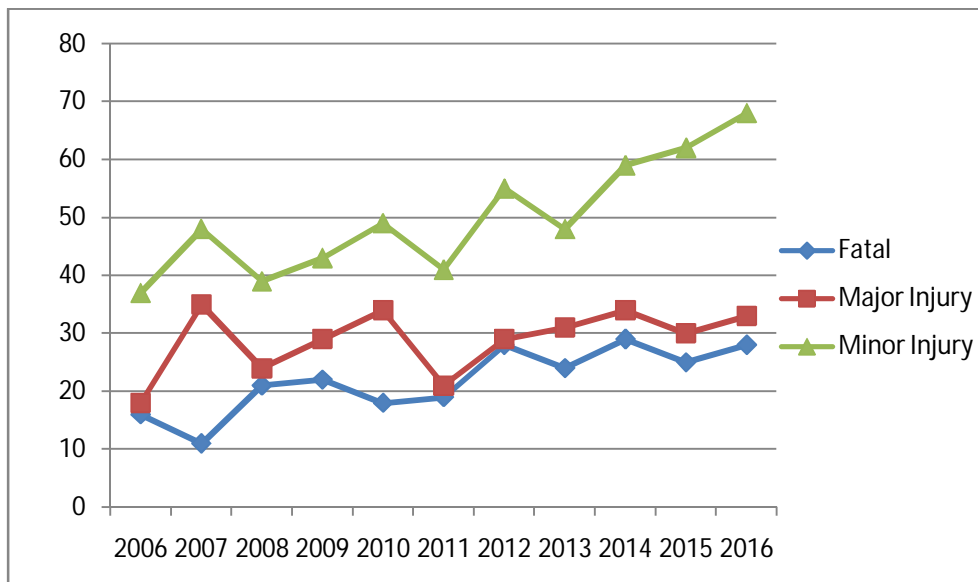


Figure 3.1 Annual Variations in Accidents

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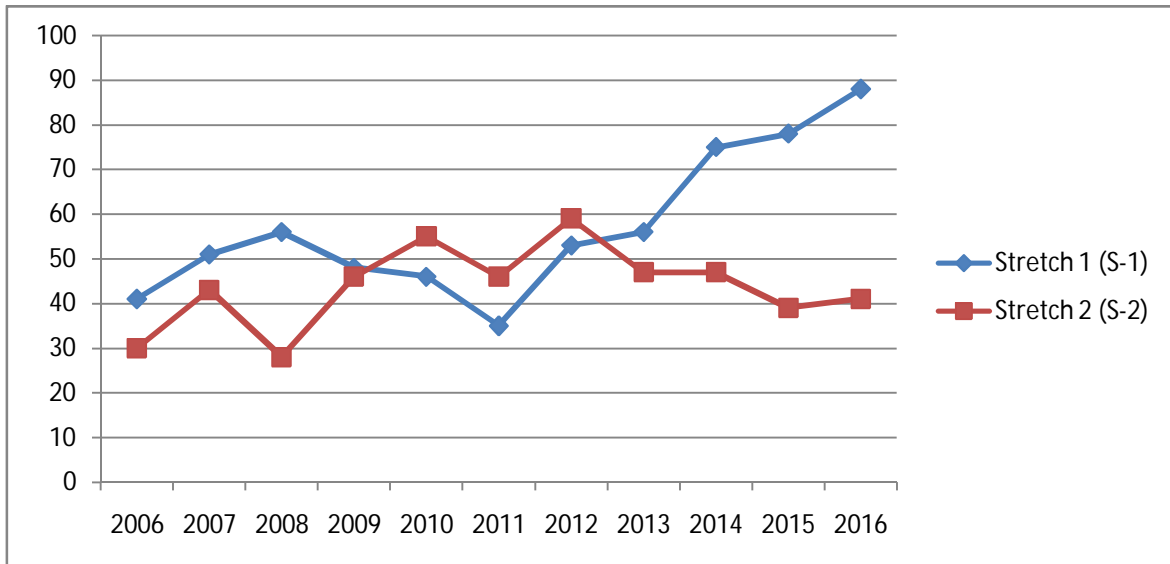


Figure 3.2- Annual Variation in Accidents of S-1 and S-2.

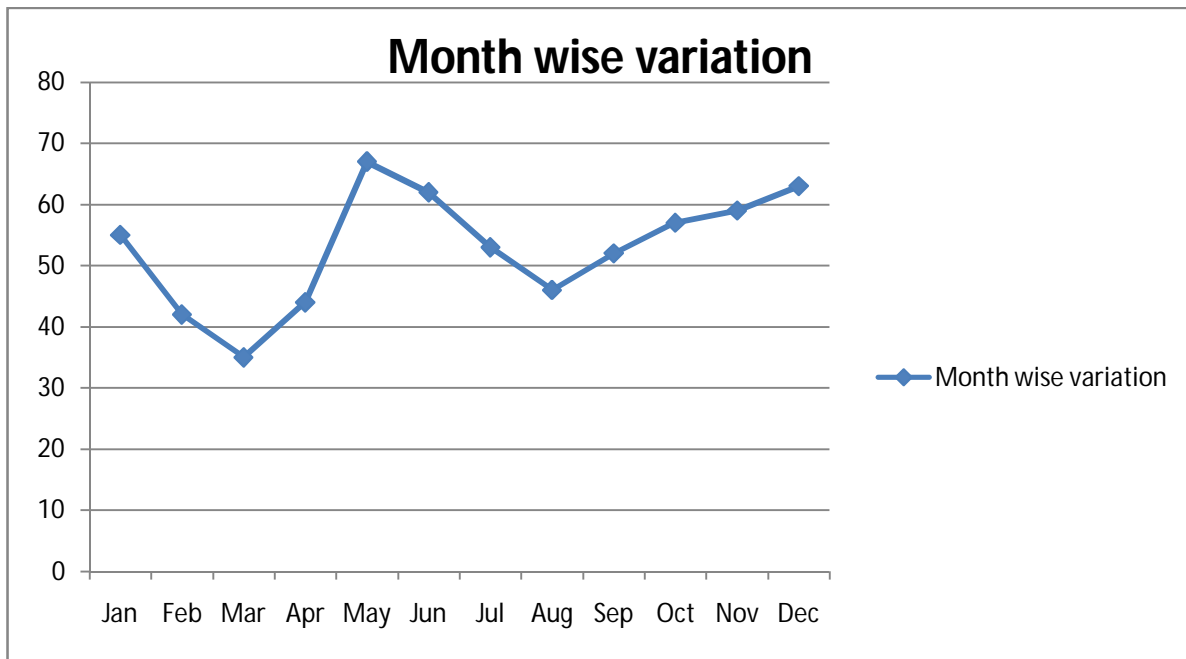


Figure 3.3 Monthly Variations in Accident

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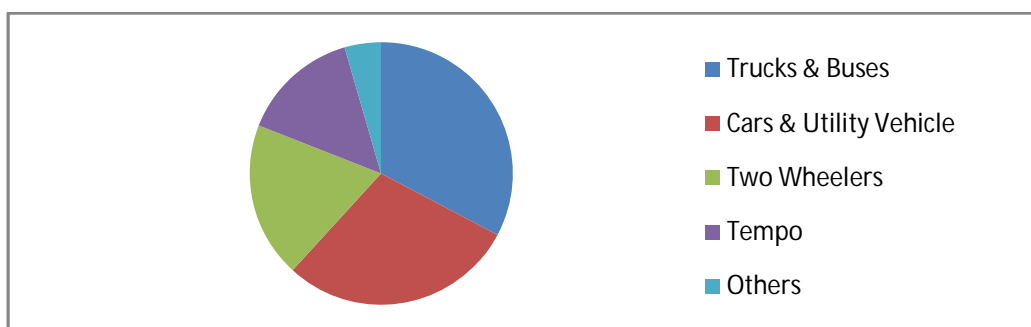


Figure 3.4- Vehicle involved in fatality

Table 3.6- Fire Accident Cases, Injuries and Deaths classified by Place of Occurrence (Cause wise)

SL. NO	CAUSES	NO. OF CASES	PERSON INJURED				PERSON DIED				% IN DEATHS
			M	FE	TJ	T	M	FE	TJ	T	
1	Accident Fire In Vehicle	288	24	3	0	27	156	93	0	249	1.3
1.1	Passenger Vehicle	91	8	2	0	10	43	51	0	94	0.5
1.2	Private Vehicle	143	12	0	0	12	93	27	0	120	0.6
1.3	Goods Carrier	54	4	1	0	5	20	15	0	35	0.2
2	School Building	12	2	2	0	4	4	4	0	8	0.0
3	Commercial Building	179	33	16	0	49	106	51	0	157	0.8
4	Residential Building	3736	71	68	0	139	1258	2536	0	3794	19.4
5	Govt. Building	11	0	1	0	1	4	6	0	10	0.1
6	Mines	4	2	1	0	3	3	2	0	5	0.0
7	Fire in factory manufacturing	143	72	31	0	103	90	58	0	148	0.8
8	Fire in factories (other than above)	143	19	3	0	22	67	67	0	134	0.7
9	Fire in Train	13	0	0	0	0	7	14	0	21	0.1
10	Others	15848	731	810	0	1541	5367	9615	5	14987	76.8
	Total	20377	954	935	0	1889	7062	12446	5	19513	100.0

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Table 3.7- Fire Accident in vehicle (Automobile)

SL. NO	State/ Country	NO. OF CASES	PERSON INJURED				PERSON DIED			
			M	FE	TJ	Total	M	FE	TJ	Total
1	Rajasthan	6	1	0	0	1	4	1	0	5
2	India	288	24	3	0	27	156	93	0	249

Source (NCRB Report, 2014)

Table 3.8- Fire Accident in Passenger Vehicle (E.g. Bus/Taxi/Auto etc)

SL. NO	State/ Country	NO. OF CASES	PERSON INJURED				PERSON DIED			
			M	FE	TJ	T	M	FE	TJ	Total
1	Rajasthan	2	1	0	0	1	0	0	0	0
2	India	91	8	2	0	10	43	51	0	94

Source (NCRB Report, 2014)

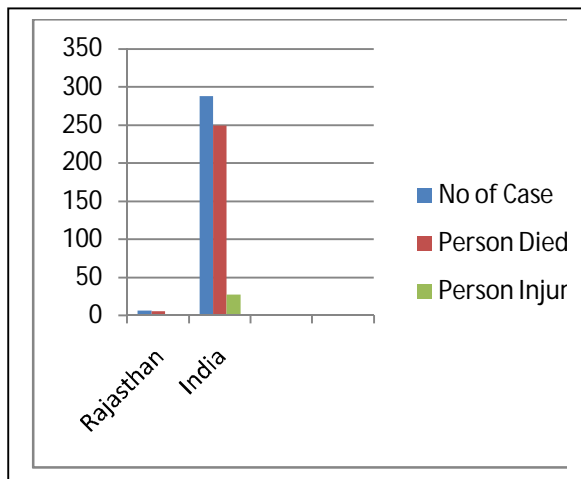


Figure 3.5 -Fire Accident in vehicle (Automobile)

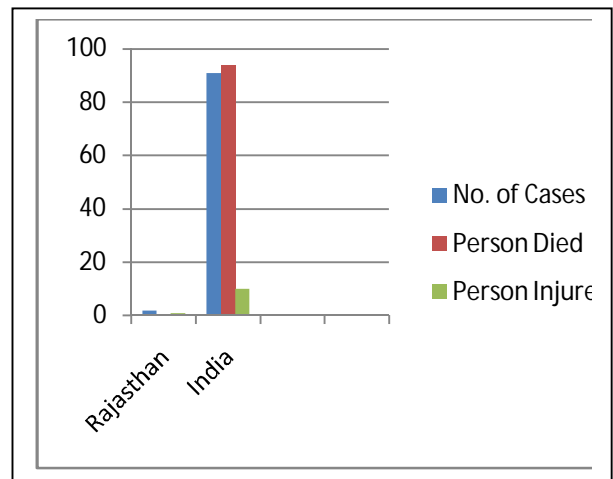


Figure3.6- Fire Accident in Passenger Vehicle (Bus/Taxi/Auto)

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Table 3.9 - Fire Accident in Private Vehicle

SL. NO	State/ Country	NO. OF CASES	PERSON INJURED				PERSON DIED			
			M	FE	TJ	T	M	FE	TJ	Total
1	Rajasthan	3	0	0	0	0	2	1	0	3
2	India	143	12	0	0	12	93	27	0	120

Table 3.10- Fire Accident in Goods Carrier

SL. NO	State/ Country	NO. OF CASES	PERSON INJURED				PERSON DIED			
			M	FE	TJ	T	M	FE	TJ	Total
1	Rajasthan	1	0	0	0	0	2	0	0	2
2	India	54	4	1	0	5	20	15	0	35

Source (NCRB Report, 2014)

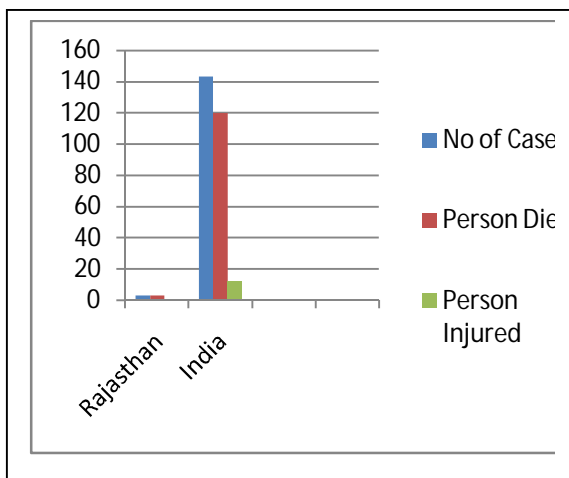


Figure 3.7- Fire accident in Private Vehicle

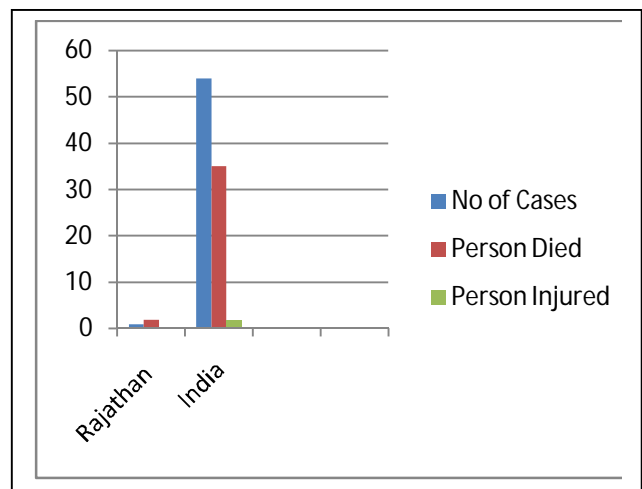


Figure 3.8- Fire accident in Goods Carrier

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Table 3.11- Fire Accident (Other)

SL. NO	State/ Country	NO. OF CASES	PERSON INJURED				PERSON DIED			
			M	FE	TJ	Total	M	FE	TJ	Total
1	Rajasthan	721	6	5	0	11	378	358	0	736
2	India	15848	731	810	0	1541	5367	9615	5	14987

Source (NCRB Report, 2014)

Table 3.12- Total Fire Accident cases, injuries and deaths in Rajasthan and India only related to Vehicles (Including Others)

SL. NO	State/ Country	NO. OF CASES	PERSON INJURED				PERSON DIED			
			M	FE	TJ	Total	M	FE	TJ	Total
1	Rajasthan	727	7	5	0	12	382	359	0	741
2	India	16424	779	816	0	1595	5679	9801	5	15485

Table 3.13-Total Fire Accident cases, injuries and deaths in Rajasthan and India (All type of fire accidents is included)

SL. NO	State/ Country	NO. OF CASES	PERSON INJURED				PERSON DIED			
			M	FE	TJ	Total	M	FE	TJ	Total
1	Rajasthan	1010	67	30	0	97	529	505	0	1034
2	India	20377	954	935	0	1889	7062	12446	5	19513

Table 3.14- Comparison between Total Fire accident and Fire accident in Vehicle (in Rajasthan and India)

SL. NO	State/ Country	Total Fire Accident			Vehicle Fire Accident		
		No of Cases	Person Died	Person Injured	No of Cases	Person Died	Person Injured
1	Rajasthan	1010	1034	97	12	10	2
2	India	20377	19513	1889	576	498	54

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IV. RECOMMENDATION AND CONCLUSION

- The road side features cannot be neglected because the things like hidden signs, damaged edges, bearing course having potholes, improper design of vertical and horizontal curves, boulders at edges etc sometimes results in road accidents. The eroded road markings will affects reaction time to the driver in night times more comparison to day time. The signs and signal must be with hi gloss reflectors instead of red paint. The regulatory, informatory and warning signs must be properly installed as per the requirement of the places. Fire accident in the vehicle is the second most reason of death after the fire in residential buildings.
- In 2014 more than 1.3% fire accident of vehicle happened in India and these are continuously increasing with the number of vehicle increment. In the fire accident of vehicle dead or injury chances are higher of male passenger comparison to female and transgender. Chances of death and injury are higher in vehicle (Automobile) to other mode of transport. Death chances by fire in Private vehicle are higher to passenger vehicle and goods vehicle. Goods vehicle are more dangerous to passenger vehicle.
- The literature work carried out show that the maximum numbers of accidents are caused due to the faulty construction practices on SH-37. Maximum fire accident can be stopped if fire service provided in rural areas. In the maximum cases of fire accident in rural area fire service reached after 30 minutes minimum. The numbers of accidents in stretch S-1 is more with comparison to stretch S-2. This is due to also that length of the stretch S-1 is more than the S-2. The road side features cannot be neglected because the things like hidden signs, damaged edges, bearing course having potholes, improper design of vertical and horizontal curves, boulders at edges etc sometimes results in road accidents.
- Government must be planning for start the fire service in rural areas for stop the fire accidents. Required Fire station must be start as soon as possible by government. Public should be aware to the fire accidents. Fire officers of every district must be given the training to public by the camps in quarterly and yearly basis. Fire accident must be reduce if the fire accident start as per situated population in rural areas but as per present positions fire station are situated only in urban areas. Maximum fire services reached to rural area after the loose everything in the fire.

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