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# Black Spot Analysis from Pune to New Mumbai Expressway

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***ABSTRACT***
*Mains factors for the development of country are national highways and expressways. As per the observation it has been observe that per hour 13 people are dying on road accident all over the world. Government of India establish Accidental Prevention Committee (APC) in the year of 1997 for knowing accidental prone areas on the highways and expressways of the state and country and to suggest the remedial measures for reducing the accidents on highways and expressways. The YashwantraoChavan Expressway (Mumbai - Pune Expressway) has witnessed large number of accidents since it became fully operational. The Public Works Department(PWD) Maharashtra Government had undertaken the improvement of such accidental prone areas which generally designated as the black spots on highways.*
***Key Words:-*** *(Accidental prone areas, remedial measures)*

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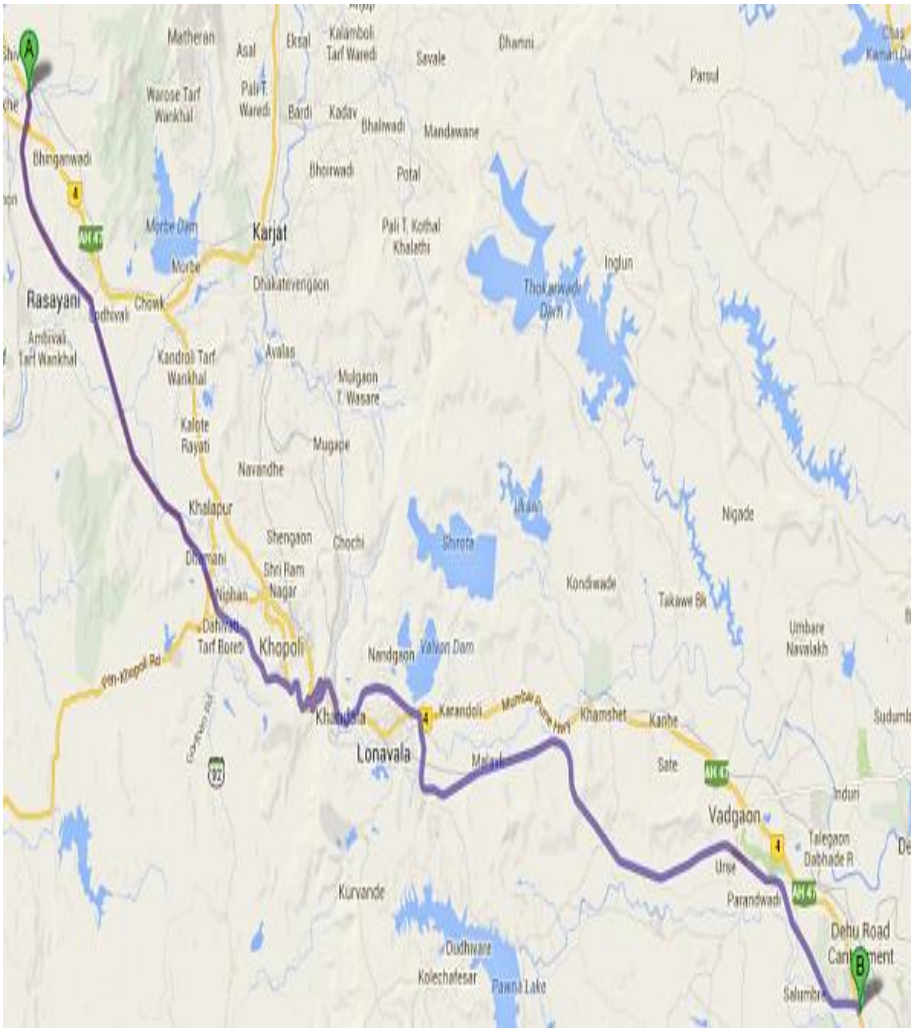
## I. INTRODUCTION

The Pune-New Mumbai Expressway is also known as YashwantraoChavanexpressway.It connects Mumbai with minimum time and distance, which is the commercial capital of India, to the neighboring city of Pune, an educational and information technology hub. The Pune-New Mumbai expressway is divided into six lane roadway is an another option to the old Pune-Mumbai highway and it helps to reduce travel time and distance between Pune and Mumbai cities. The speed limit on this expressway is 80 kmph.Two wheelers and Three wheelers are not allowed in major part of the expressway. Common vehicle types plying the expressway are cars, trucks and buses.The length of YashwantraoChavan expressway is 94 km and on this expressway there is large number of traffic crashes, fatalities and serious injuries.
This project gives results for accidents occurring on YashwantraoChavan expressway.




The **Mumbai–Pune Expressway** (officially **YashwantraoChavan Expressway**) is India's first 6-lane wide concrete, access-controlled tolled expressway. It is one of India's busiest roads.

The expressway starts at Kalamboli in Navi Mumbai and ends at Kiwale in Pune. It cleaves through the scenic Sahyadri mountain ranges through passes and tunnels. It has five interchanges: Kon (Shedung), Chowk, Khalapur, Kusgaon and Talegaon. The expressway has two carriageways, each with three concrete lanes, separated by a central divider and a tarmac or concrete shoulder on either side. Pedestrians, two-wheelers, three-wheelers, bullock carts and tractors are not permitted, although

## II. METHEDOLOGY

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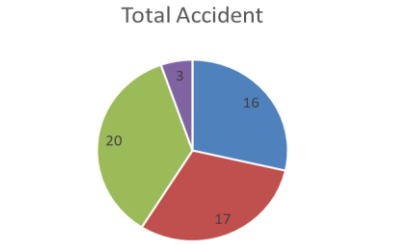
|---|
| **Reconaissance Survey** |
| **Data Collection** |
| **Data Analysis** |
| **Identification of accident causing factor** |
| **Decision Making** |
| **Analysis of Black Spot** |
| **Remedial Measures** |

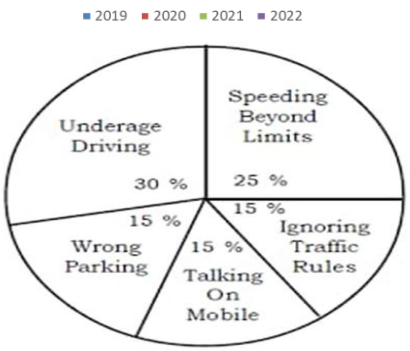
## III. RESULT

| Accidental data from Dehu-road Police station | | | | |
|---|---|---|---|---|
| Date of accident | Time | Injured | Dead | Reason |
| 17-12-2018 | 9.30 PM | | 1 Male | Drive vehicle at Fast Speed |
| 09-02-2020 | 12.30 AM | 1 Female | 1 Male | Suddenly Truck parked on expressway |
| 26-09-2021 | 8.30 AM | | 1 Male | Walking man hit by unknown vehicle |

JANUARY TO DECEMBER

| SR. NO. | Year | NATIONAL HIGHWAY NUMBER | FATAL ACCIDENTS | | | | SERIOUSLY INJURED ACCIDENTS | | | | MINOR INJURY ACCIDENTS | | | | WITHOUT INJURY ACCIDENTS | TOTAL ACCIDENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | No. of Accident | Male Killed | Femal e Killed | Total Killed | No. of Accident | Male Seriously Injured | Female Seriously Injured | Total Seriously Injured | No. of Accident | Male Minor Injured | Femal e Minor Injured | Total Minor Injured | | |
| 1 | 2019 | Expressway | 5 | 5 | 1 | 6 | 10 | 28 | 7 | 35 | 1 | 1 | 0 | 1 | 0 | 16 |
| 2 | 2020 | Expressway | 10 | 10 | 1 | 11 | 6 | 11 | 0 | 11 | 1 | 2 | 0 | 2 | 0 | 17 |
| 3 | 2021 | Expressway | 6 | 5 | 1 | 6 | 10 | 20 | 2 | 22 | 2 | 2 | 1 | 3 | 2 | 20 |
| 4 | AT APRIL 2022 | Expressway | 1 | 3 | 1 | 4 | 1 | 1 | 0 | | 0 | 0 | 0 | 0 | 1 | 3 |




**1.Roadside/median concrete structure**
**2.Roadside steep slope/drop-offs**
**3.Poor/ineffective road signage**
**4.Sharp road curvature**
**5.Gaps-in-median**

**6.Unguarded bridge/jersey wall**
**7.Entry/Exit road**
8. **Roadside trees**
**9. Curb stones**
**10.Guardrail end taper**

## IV. COCLUSION

Based on the identification of the infrastructure factors that influence the occurrence of road accidents and injuries, quantifying their occurrence on the Mumbai-Pune Expressway, and determination implementing the safety measures to mitigate accidents and injuries that are influenced by these infrastructure factors, the following conclusions can be drawn:

1. Of the 16 factors identified (including human factor: driver sleep/fatigue), 6 of the factors have safety measures that result in greater than 1 in the 1st year of implementation.

2. All the recommended safety measures that indicates that the benefit will be realized early in all the recommended safety measures, including those safety measures

3. The following high safety measures can be implemented immediately.

a. Installation of effective road signage to reduce ambiguity and helps driver make decisions in advance.

4. The following safety measures can be implemented with proper planning and preparation:

a. Installation of guardrail end treatment.

b. Installation of adequate advance warning signage for sharp road curvatures.

5. The following can be implemented with proper engineering design and specifications:

a. Creation of an additional acceleration/deceleration lane at gaps-in-median, entry and exit roads.

b. Installation of impact attenuators (water/sand filled barrels) in front of roadside/median concrete structures and overhead bridge pillars.

c. Installation of guardrail/wire rope safety barrier extension at areas such as open bridge/jersey walls, road side steep slopes and drop offs, underpasses and areas where the road sides have lot of trees.

d. Widening of shoulder areas which are narrow (mostly toward the median side) or are not available (in the ghat section).

e. Installation of continuous longitudinal rumble strips on both sides of the roadway to alert sleepy drivers.

6. In addition, the creation of a truck rest area and brake check area is recommended in the area between Lonavala and Urse Toll Plaza where truckers can park their vehicles and allow the brakes to cool off before starting the descent down the ghat section towards Mumbai.

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