

Road Accidents Awareness Portal using Google Maps API

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Abstract

Life is the most precious asset of humans. The rising trend of motorization and improving socio-economic status of people directly influences the aggravating road safety situation with fatalities and permanently disabled injuries increasing in number day by day. Across the world more and more stress is being laid on the ways & means to avoid accidents and safeguard the human life. A strategy should be formalized, tested & implemented to inform and make people aware of the various dangerous areas on the roads, causes of accidents and other contributory factors in road crashes, along with their severity.

Keywords: Accident awareness, Accident prone area detection, Road awareness portal, Road safety, Road accidents portal

I. INTRODUCTION

Road traffic injuries are a major but neglected global public health problem, requiring concerted efforts for effective and sustainable prevention. Of all the systems that people have to deal with on a daily basis, road transport is the most complex and the most dangerous. Worldwide, the number of people killed in road traffic crashes each year is estimated at almost 1.2 million, while the number injured could be as high as 50 million – the combined population of five of the world's large cities^[1].

Statistics show that more than 3,000 people around the world succumb to death daily due to road traffic injury^[2]. These statistics show why road safety becomes a major public health concern. What is worse, without increased efforts and new initiatives, the total number of road traffic deaths worldwide and injuries is forecast to rise by some 65% between 2000 and 2020 [1, 2], and in low-income and middle-income countries deaths are expected to increase by as much as 80%^[1].

Keeping the global, national and state scenario in mind, we came up with the idea of developing an Accident Prone Awareness Web App. To start off, we have limited the area to the local scenario. Adjoining our institute, runs the national highway NH-144A and it was observed that the road was highly accident prone.

II. PROBLEM DEFINITION

The alarming rate of accidents happening on the Jammu and Kashmir National Highway 144-A, connecting Jammu – Akhnoor - Poonch, was increasing with each passing day. This meant that there was no awareness among people regarding the various dangerous spots, blind curves on the road, other contributory factors in road accidents and that no preventive measures were being taken by the people and the administration to save their lives.

III. IMPLEMENTATION DETAILS

The collection and use of accurate and comprehensive data related to road accidents is very important to road safety management[3]. The road accident data are necessary not only for statistical analysis in setting priority targets but also for in-depth study in identifying the contributory factors to have a better understanding of the chain-of-events.

We started our research by contacting the local authorities to get more specific data about the exact geographical locations of these accidents, the cause of the accidents, the severity of the accident, the age groups of the victims, the type of vehicles etc.

With the definition of Accident Reconstruction by Baker and Frickle^[4] as "...the efforts to determine from whatever information is available, how the accident occurred", in mind and with the coordination of the local authorities, we collected the data and transformed it into a database. This data could be used to reflect the various kinds of information that could be derived from the data in such a form that it could be easily accessed and grasped by the public in general.

After gathering and refining the data, the information that came up was shocking. It represented clearly the lack of awareness among people and how expensive it turned out to be, in terms of human lives that were affected locally.

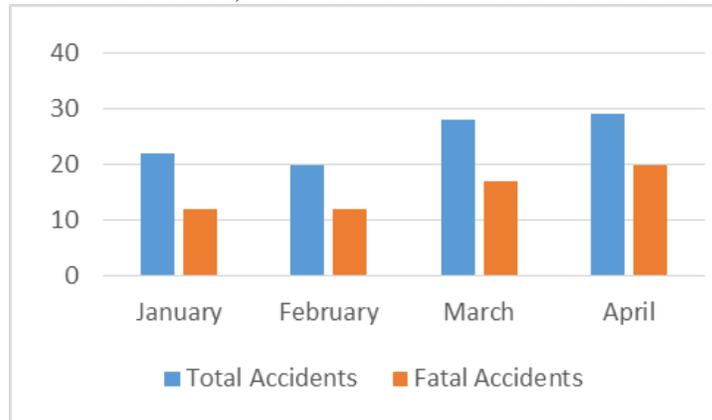


Fig. 1: shows the total and fatal accidents between the months of January and April in the year 2016.

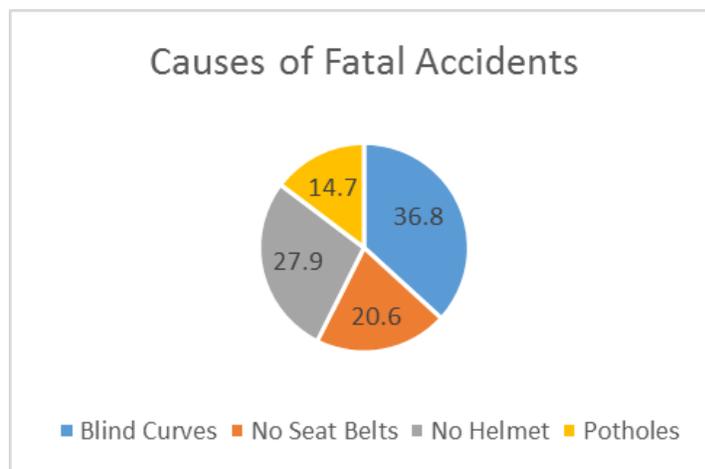


Fig. 2: shows the percentages of accidents that led to deaths due to various causes.

These statistics led us to turn all this information into a web app that depicted visually on map (using geographical coordinates), the various locations of the blind curves and dangerous spots, different color markers depicting the severity of the accidents at those locations, searching and even directly viewing the details of the victims, the type of vehicle of the victim, the cause of the accident; all in one place.

IV. TECHNOLOGIES USED

Our project uses Google Maps JavaScript API^[5] in which JavaScript^[6] is used to load the google map. The center of the map is statically defined in the code. The script fetches the latitude and longitude values of the locations present in the MySQL^[7] database using a PHP^[8] file. The PHP file returns the data as JSON^[9] object. All the locations that need to be highlighted on the google map are fetched with the help of the JSON object. The script then plots the values of JSON object as markers on the google map.

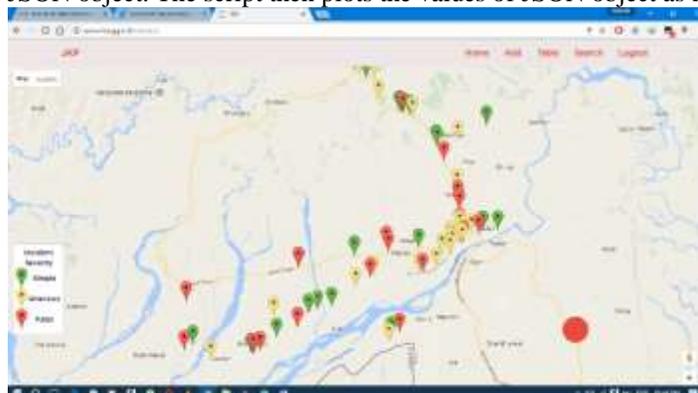


Fig. 3: JSON object as markers on the google map.

V. APPLICATIONS

This web app has the following applications:

- 1) It will help local citizens become aware and cautious on the roads, just by the use of their smartphones.
- 2) It will help the administration to install sign boards at relevant places.
- 3) It will help the administration to create speed breakers wherever majority of accidents are caused due to over speeding.
- 4) It will help the administration fill up the pot-holes and repair roads wherever the cause of majority of accidents is damaged or no roads.
- 5) It will help administration to set up lamp post facilities, adequate lane marking and visibility features that are also major risk factors in severity of crashes.

VI. CONCLUSION

This app is applicable to the local scenario close to our institute and already stands communicated to the local administrative authorities for its further effective and wide spread usage by the local people and travelers at large. It will surely prove beneficial for overcoming the fatality rate and avoiding accidents.

VII. FUTURE SCOPE

As of now, the research and implementation has been done taking into account the local scenario, but this research and development can be scaled to district, state and then national levels to make people aware of the dangerous areas and spots on the roads by just checking on the map. This will help people travel carefully and cautiously anywhere in the country. Also this will help the administrative authorities in fulfilling the applications that can be satisfied using this web app.

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