PROJECT PROPOSAL

**Abstract**

Over the last decade and more the automotive safety standards have considerably gone up. With introduction of collision control and lane departure alert systems, the range of electronic safety systems have added the much-required safety features to ensure less fatal accidents. Considering that, our project aims to analyze all the fatal crashes in US from 2011 -2018. This data is provided by FARS and has extensive data regarding each fatal accident. The project aims to classify these fatal accidents to bring more light on potential causes of accidents that cannot be addressed by current safety standards.

**Research Question**

The Primary objective of conducting this analysis is to classify the probability of fatal crashes at a particular time of the day across all 77 interstates. Determining high risk age groups for fatal accidents across US. The project will analyze various contributing factors like drowsiness, distracted driver, use of alcohol, use of restraint (seat belts) etc that lead to fatalities.

Potential future analysis would include all vehicular crash data involving fatal and non-fatal outcomes. The aim of that analysis would be to determine factors contributing to the increase in the probability of a crash turning fatal.

**Project Data Description**

**Datasource**: Accidental crash data from NHTSA(National Highway Traffic Safety Administration)

**Link:** <ftp://ftp.nhtsa.dot.gov/fars/>

**File Path:** <ftp://ftp.nhtsa.dot.gov/fars/2011/National/FARS2011NationalCSV.zip> (2011-2018)

**Size of data set:**

256631 Observations related to crash from 2011 - 2018

**List of explanatory Variables**

File Name: ACC\_AUX

|  |  |
| --- | --- |
| Variable | Description |
| A\_CRAINJ | Crash Injury Type |
| A\_CT | Crash Type |
| A\_D15\_19 | Crashes Involving a Young Driver (Aged 15-19) |
| A\_D15\_20 | Crashes Involving a Young Driver (Aged 15-20) |
| A\_D16\_19 | Crashes Involving a Young Driver (Aged 16-19) |
| A\_D16\_20 | Crashes Involving a Young Driver (Aged 16-20) |
| A\_D16\_24 | Crashes Involving a Young Driver (Aged 16-24) |
| A\_D21\_24 | Crashes Involving a Young Driver (Aged 21-24) |
| A\_D65PLS | Crashes Involving an Older Driver (Aged 65+) |
| A\_DIST | Involving a Distracted Driver |
| A\_DOW | Day of Week |
| A\_DROWSY | Involving a Drowsy Driver |
| A\_HR | Involving a Hit and Run |
| A\_INTER | Interstate |
| A\_INTSEC | Intersection |
| A\_JUNC | Junction |
| A\_MANCOL | Manner of Collision |
| A\_POLPUR | Involving a Police Pursuit |
| A\_POSBAC | Involving a Driver with a Positive BAC Test Result |
| A\_ROLL | Involving a Rollover |
| A\_SPCRA | Involving Speeding |
| A\_TOD | Time of Day |

File Name: PER\_AUX

|  |  |
| --- | --- |
| A\_EJECT | Ejection |
| A\_LOC | Non-Motorist Location |
| A\_PERINJ | Injury Type |
| A\_PTYPE | Person Type |
| A\_HELMUSE\* | Motorcycle Helmet Use |
| A\_RESTUSE\* | Restraint Use |

**Response Variable:** Risk Level of fatal crash at a certain time of the day and age groups. (Low, Medium, High)

**Broader Impact**

One of the future impacts of this data analysis would be to ascertain the frequency of fatal crashes based on the day of the week and the time of the day from a geolocation data. This could potentially alert the nearby hospitals or emergency services of high-risk locations to anticipate a spike in crashes.

Furthermore, the local counties and police departments can increase safety measures and patrols in high risk locations during accident-prone time periods that includes more patrol cars, speed traps and speed limits.

References:

1. Preusser, D. F., Williams, A. F., & Ulmer, R. G. (2000, January 27). Analysis of fatal motorcycle crashes: crash typing. Retrieved from <https://www.sciencedirect.com/science/article/abs/pii/0001457595000275>
2. Yasmin, S., Eluru, N., & Pinjari, A. R. (2015, November). Pooling data from fatality analysis reporting system (FARS) and generalized estimates system (GES) to explore the continuum of injury severity spectrum. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/26342892>

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