Longitudinal Baseline Study to Support Emergency Response Management using 911 Calls Data

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INTRODUCTION

- Analyze severe emergency events to capture deviation in 911 call patterns to support emergency response management.
- Help emergency managers make decisions based on regional specific information.
- Trends and analysis based on call timings, event frequencies and location to support autonomous response decisions.

DATA DESCRIPTION

- 911 calls data obtained from Monroe County Public Safety Department (2006-2016)
- Every year data comprised of 70 attributes and ~1 million instances.
- Additionally new attributes were created for advanced predictive analysis.

METHODOLOGY

- Data Extraction and Transformation performed for every individual case making use of the record description files
- Implications of Large Scale Historic Data on Emergency Response Management

TRENDS & ANALYSIS

- Significant improvement in Random Forest accuracy was seen with increase in number of attributes used for making the trees.
- Fire breakout cases with high priority(1/1P) were most accurately predicted.
- High priority Medical and Fire cases take long time to resolve.
- Rochester City Police Jurisdiction have maximum number of severe emergency cases.

REFERENCES


CONCLUSION

- 911 historical data provides significant information to support emergency response management effectively.
- Call priority tagging would help emergency managers to predetermine probable severity of an event.
- Efficient resource allocation for regions with more number of severe fire and medical emergency cases.
- This model would help to auto prioritize the cases as they come in and also detect the top priority cases for immediate response.

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OVERVIEW

- Different learning models used to identify and auto prioritize severe emergency cases.
- Decision support for regional emergency responses using historical data information.
- Response decision model build to help emergency managers make time efficient decisions for high priority calls.

RESULTS

- Call Category Distribution into Police, Fire and EMS (medical services) Records on sampled data
- Call Frequency Distribution based on Location (county) on sampled data

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