Transport DTU

# Anomalies detection and explanation on traffic networks

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**In some occasions, unexpected and unwanted demand patterns develop that lead to system failures and cost implications for current and future mobility services. We present a methodology that identifies anomalies on a large trip database. and correlates them with special events using internet data.**

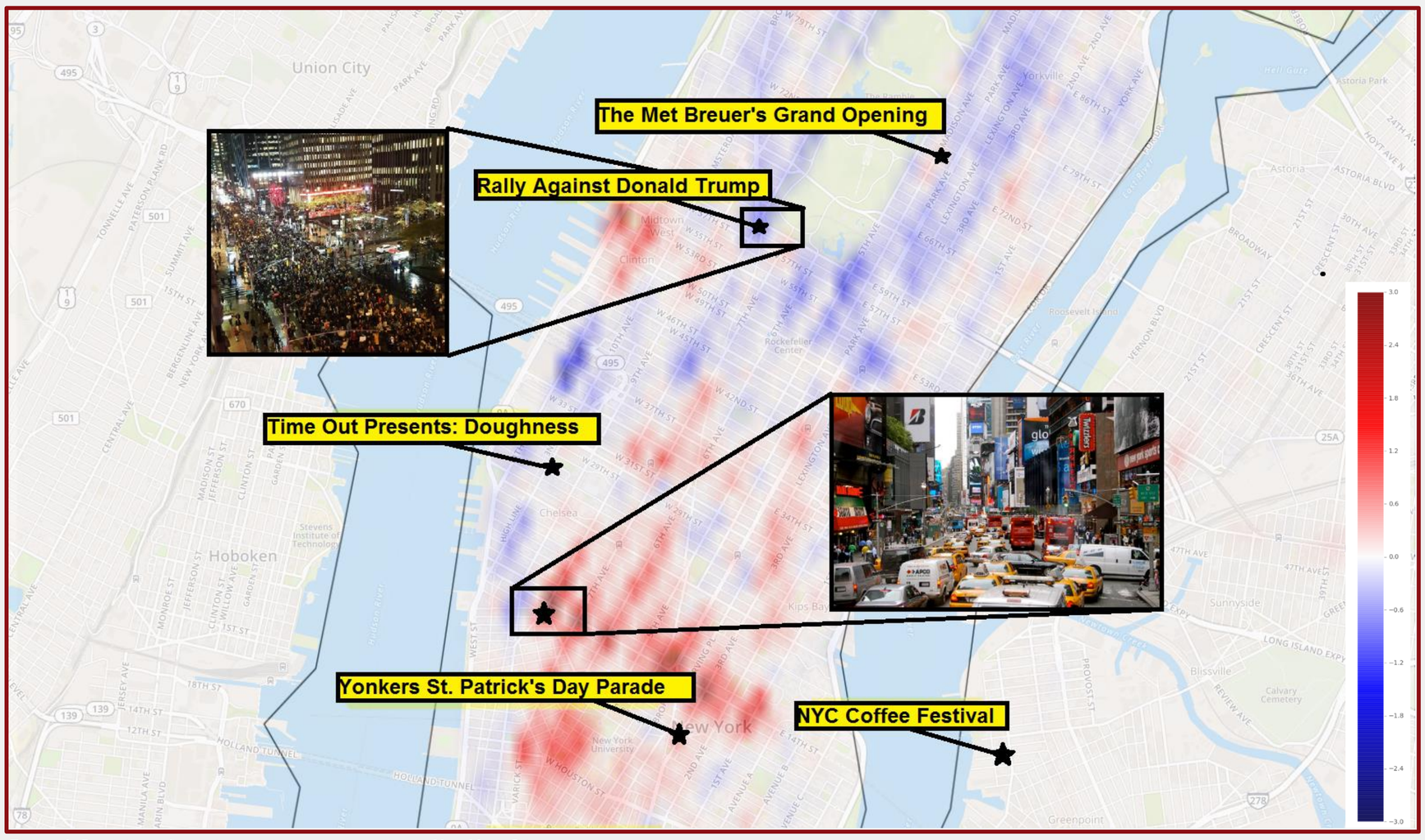



*Figure 1: Depiction of events and demand anomalies in New York City*

**Accidents, protests, celebrations, concerts, sport events define crowds, disruptions, road closures, etc., which subsequently cost time, money and urban pollution. Social Media (i.e. Facebook, Twitter, Google+ and Flickr) are rich in local context information generated by large online crowds. Information about public special events from social networks and other platforms that have dynamic context content (e.g. news feeds), can help discerning explanations about real-world phenomena.**

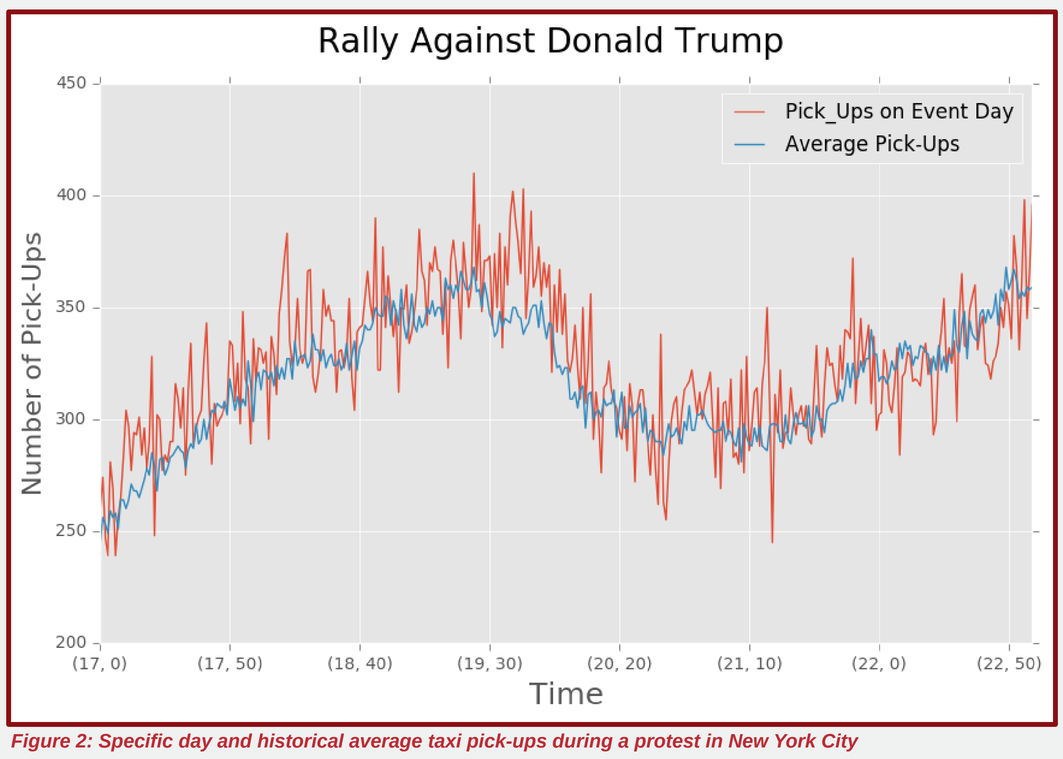
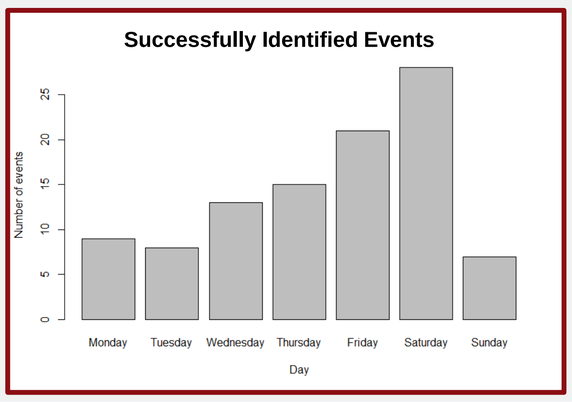



*Figure 2: Specific day and historical average taxi pick-ups during a protest in New York City*



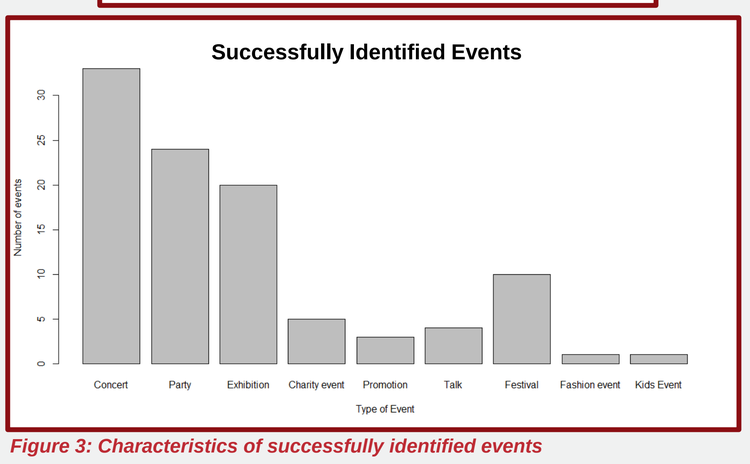




*Figure 3: Characteristics of successfully identified events*

**Through the correlation evaluation of traffic data and semantic information, 104 events were found that caused anomalies around its venue.**

**Their main characteristics:**

- ✓ **Concerts and parties**
- ✓ **Ending time evening or later**
- ✓ **The majority had less than 1000 people attending**
- ✓ **83% of them had participation fee.**

## Future Work

- ❖ **Correlation investigation of taxi pick-ups and drop-offs for knowledge propagation.**
- ❖ **Formulation of a prediction model that identifies future hotspots**

## Main References

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Pereira, F.C., Rodrigues, F., Ben-Akiva, M., 2015a. Using data from the web to predict public transport arrivals under special events scenarios. Journal of Intelligent Transportation Systems 19, 273–288.

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