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Towards Data-driven Blue Light Services

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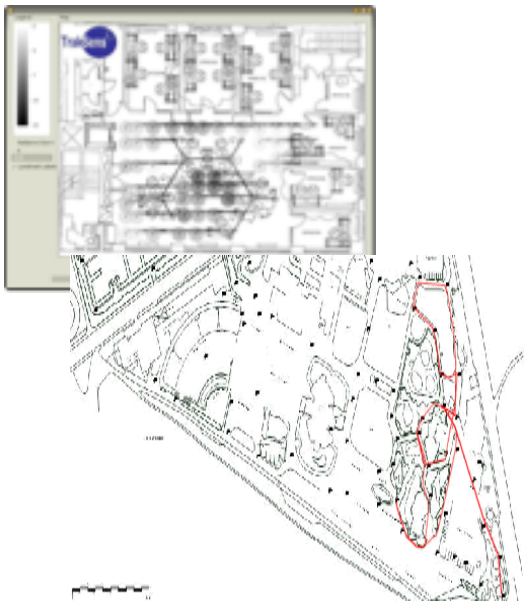
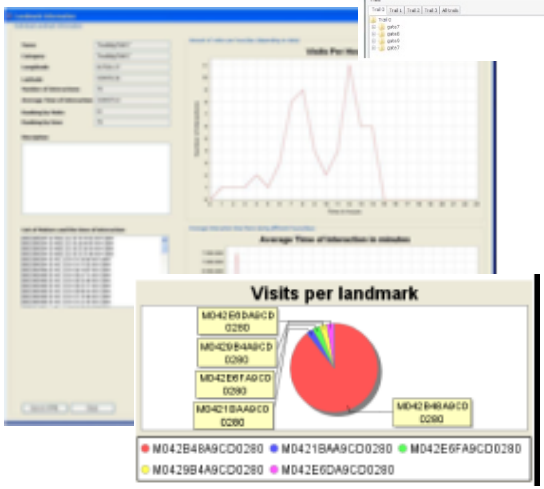
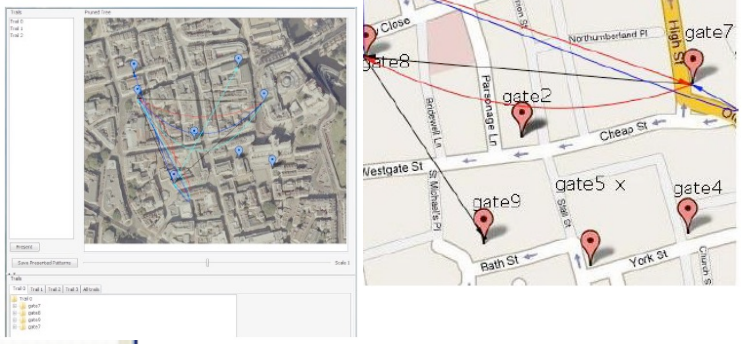
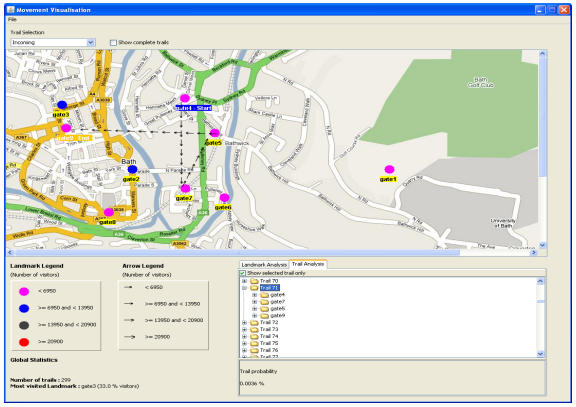
Smart City Analytics

Cellular, GPS, proximity, beacons, RFID
Environmental, body, user-authored
Urban, building, office, exhibition
Since 2003









www.dcs.bbk.ac.uk/~gr

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Significant Places

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Daily Rhythms

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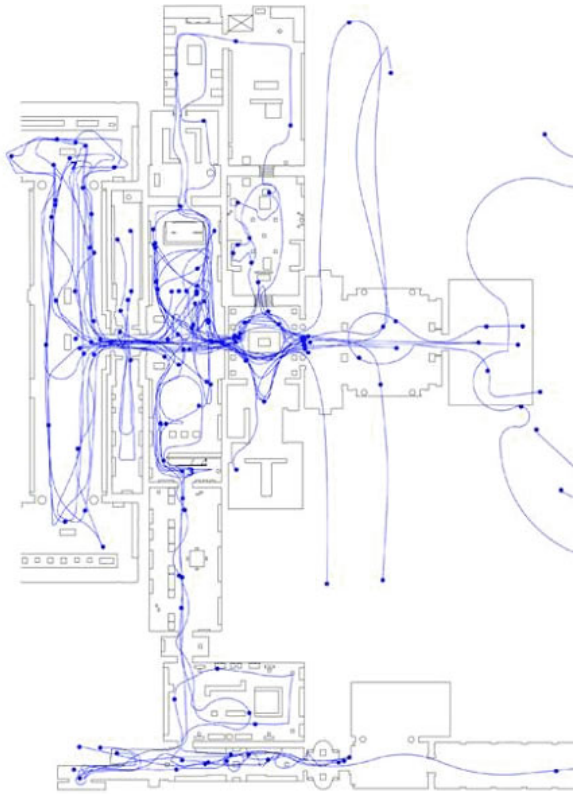
Dynamics



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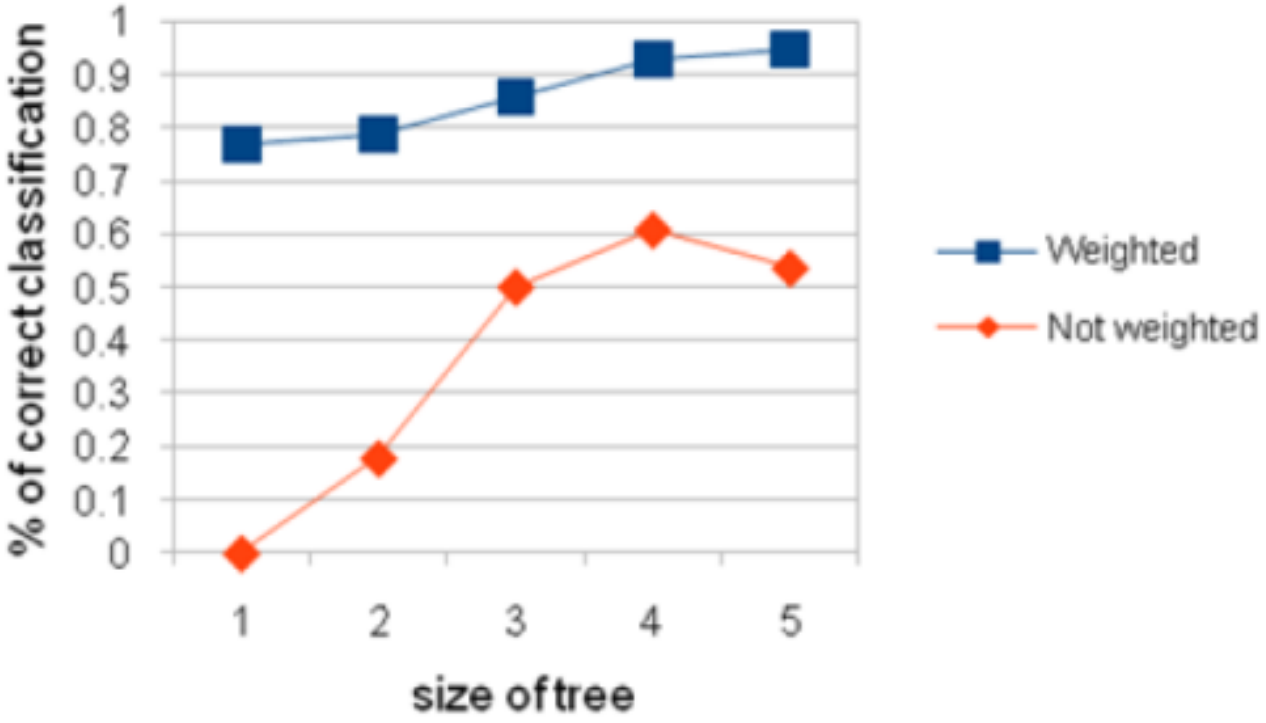
Fingerprinting



Reality-mining data set

Identify user 39 using 2 months for training and test on next month

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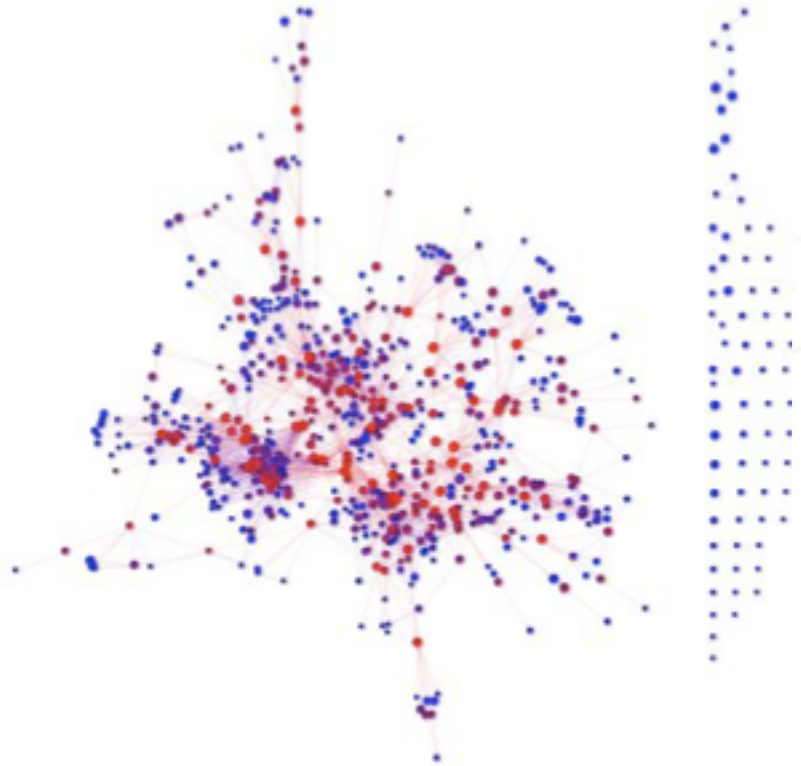
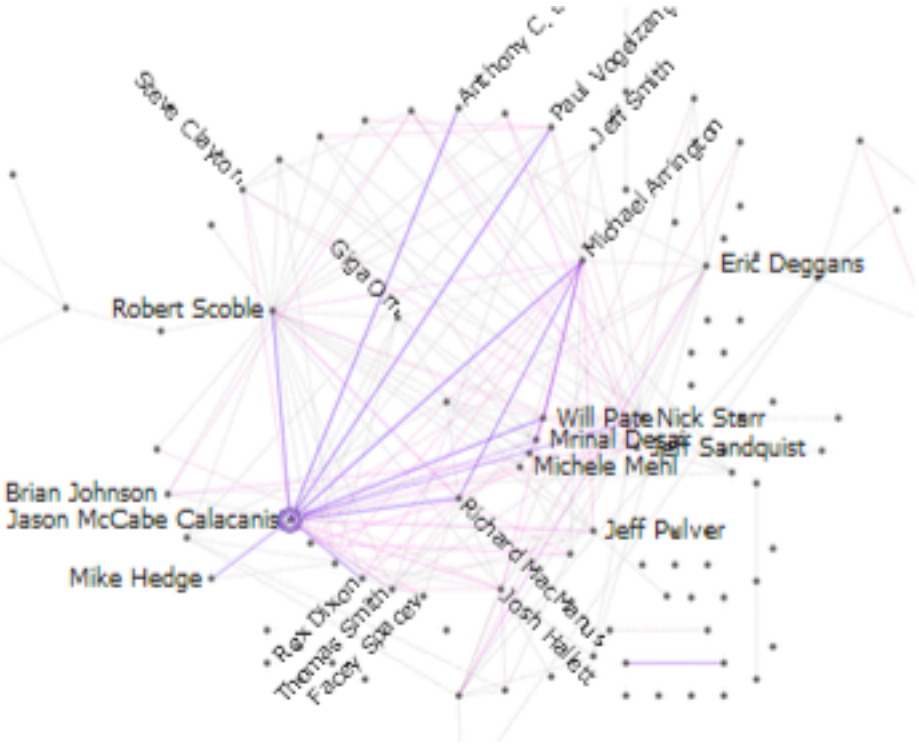
Social Interaction



Real-world social network inferred via BT



Facebook personal social graph

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Emergency response

- 30,000 UK annual cardiac arrest incidents (Class A Red 1)
- Survival rate for OHCA is 7%
- Survival chances reduced by 10% for every minute elapsed
- Regulatory requirement to reach 75% within 8 minutes
- In 2017, only 68% reached within requirements
- Data from LAS:
  - 3 million incidents
  - 2.5 million activations
  - 400 million AVLS records
  - 72 million VLA under Blue Lights

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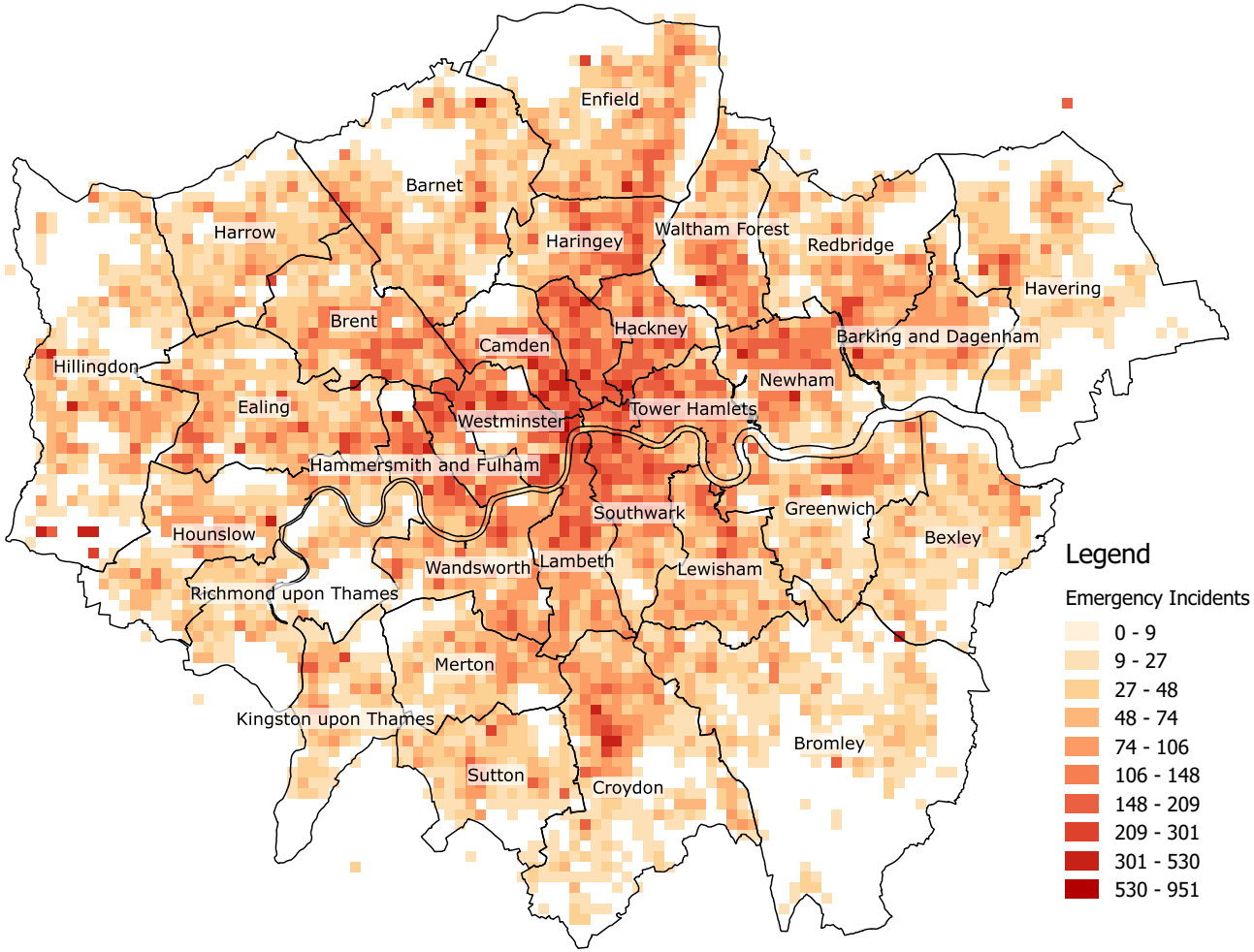
Class A Incidents



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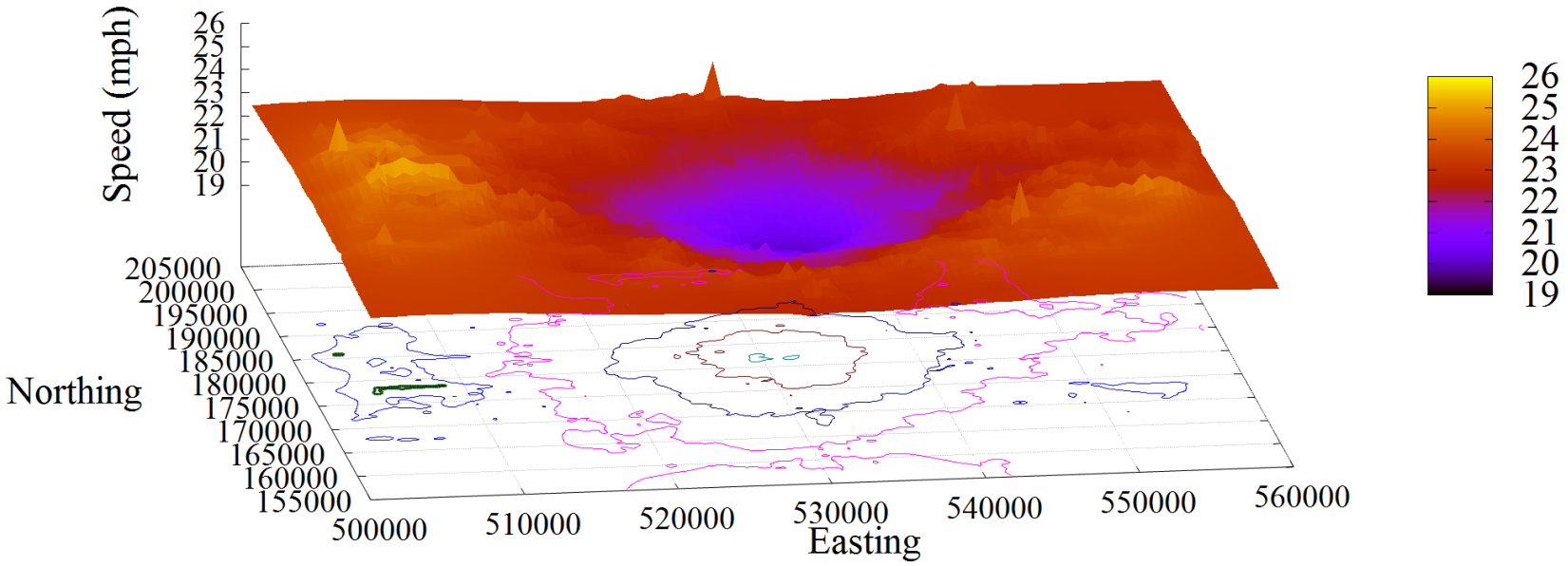
Ambulance Speed



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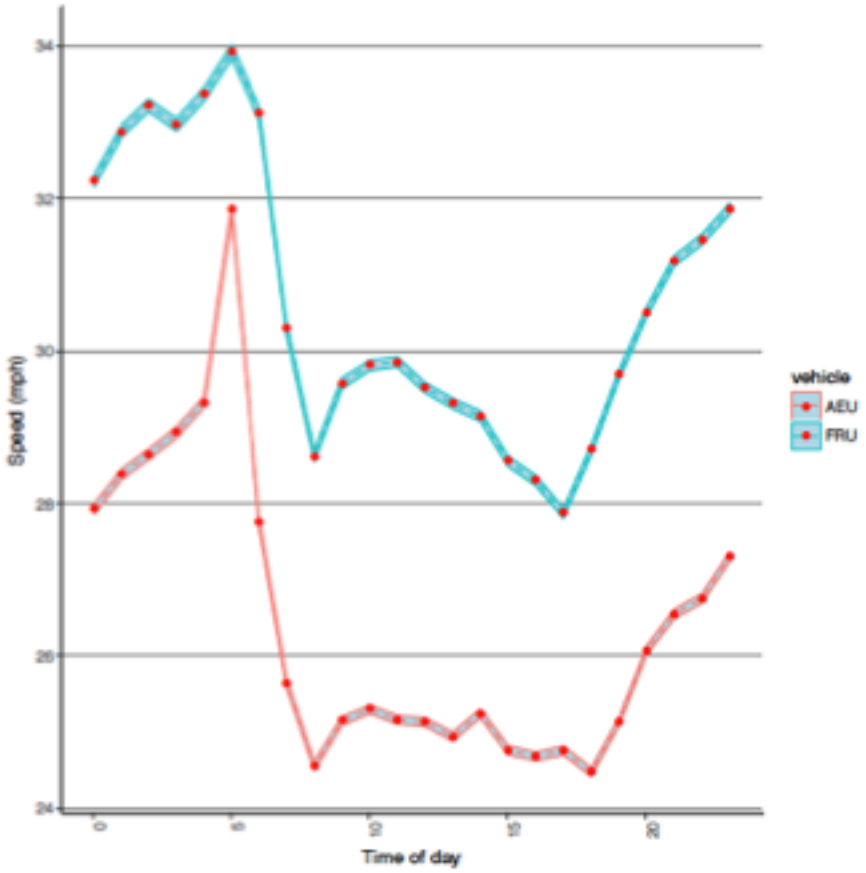
Daily Speed Variation



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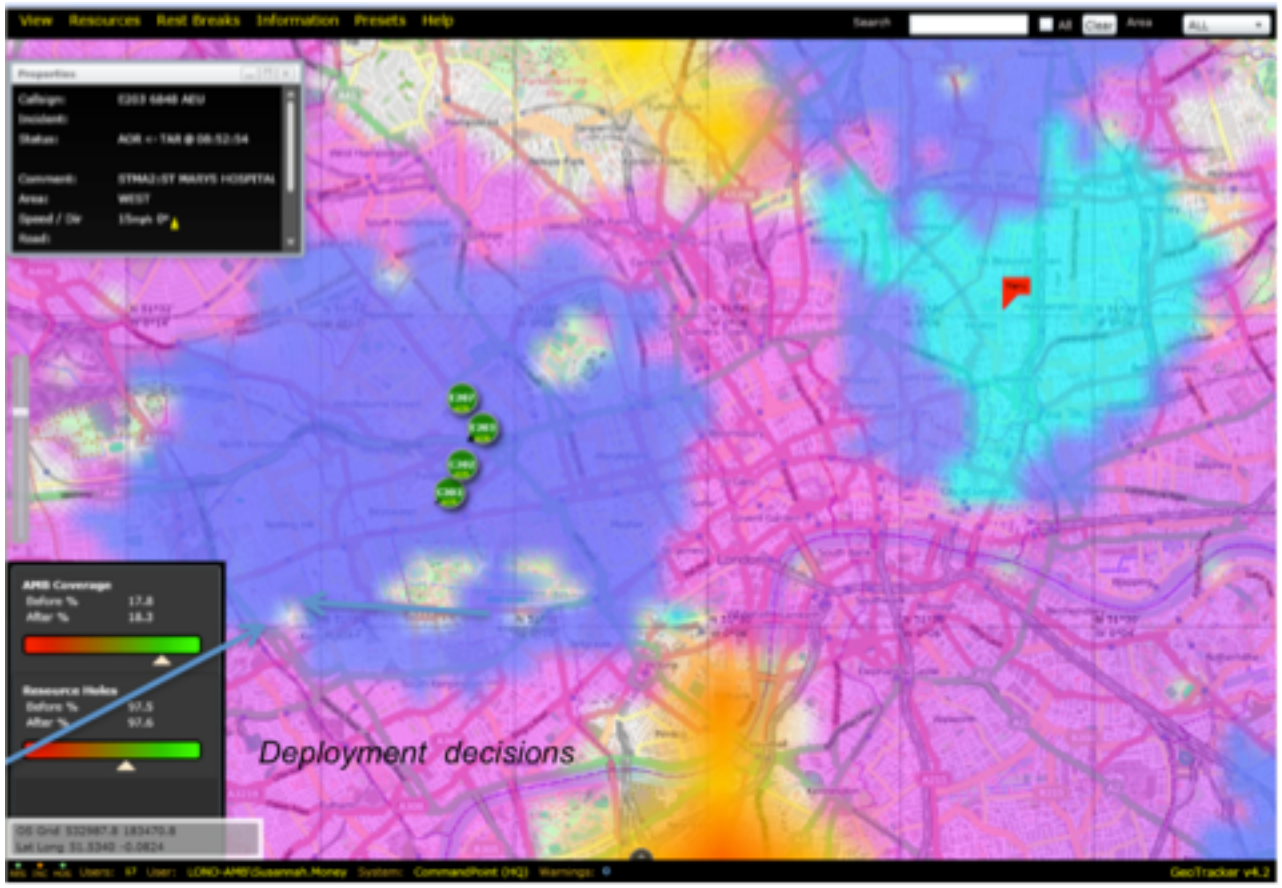
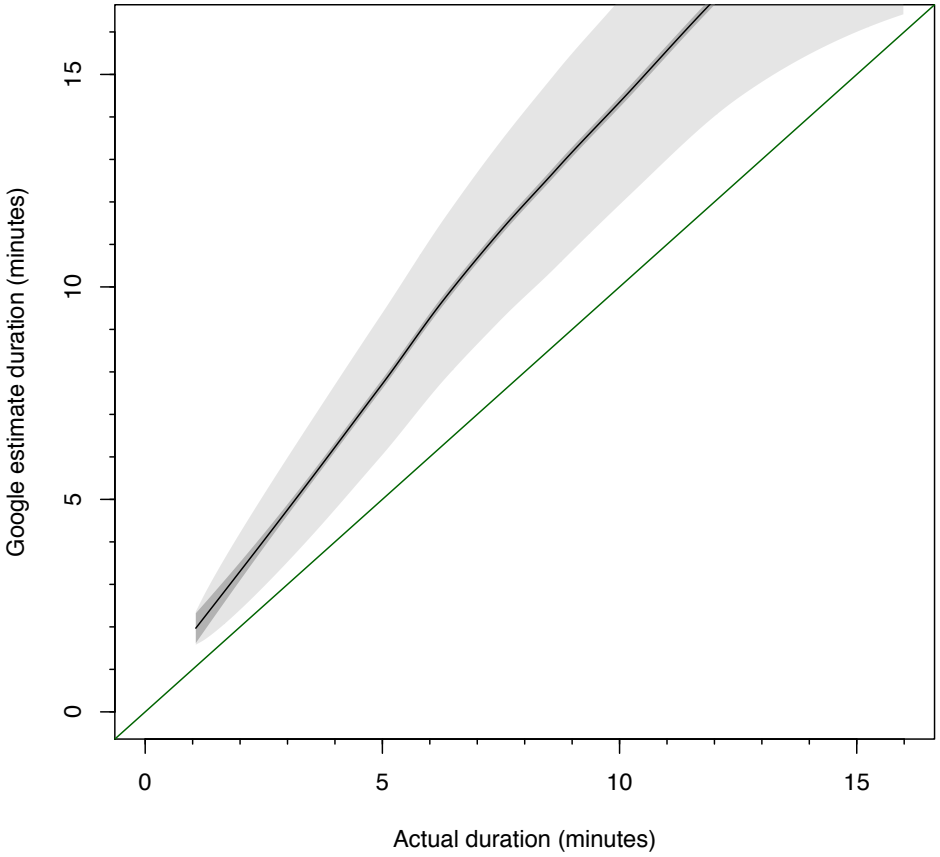
Operational Area Coverage



Geotracker Dashboard © Marcus Poulton, LAS

Ambulances vs. Civilian Traffic



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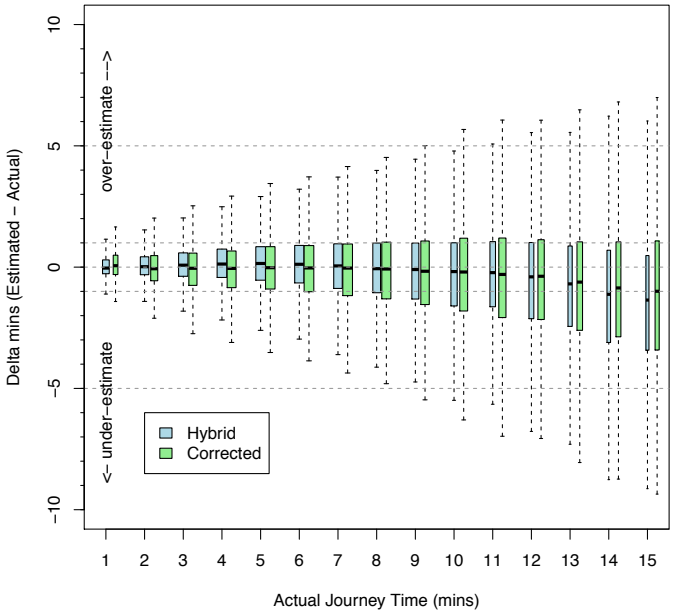
Über for Ambulances

- Historical incident and response route record (3 years)
- Augmented street map (left turns)
- Map-matching GPS traces
- Tested 5 alternative routing metrics
- Hybrid method: first decide route and then estimate travel time (with correction)
- Average accuracy to within 10 seconds for trips up to 11 minutes (limited data beyond that)



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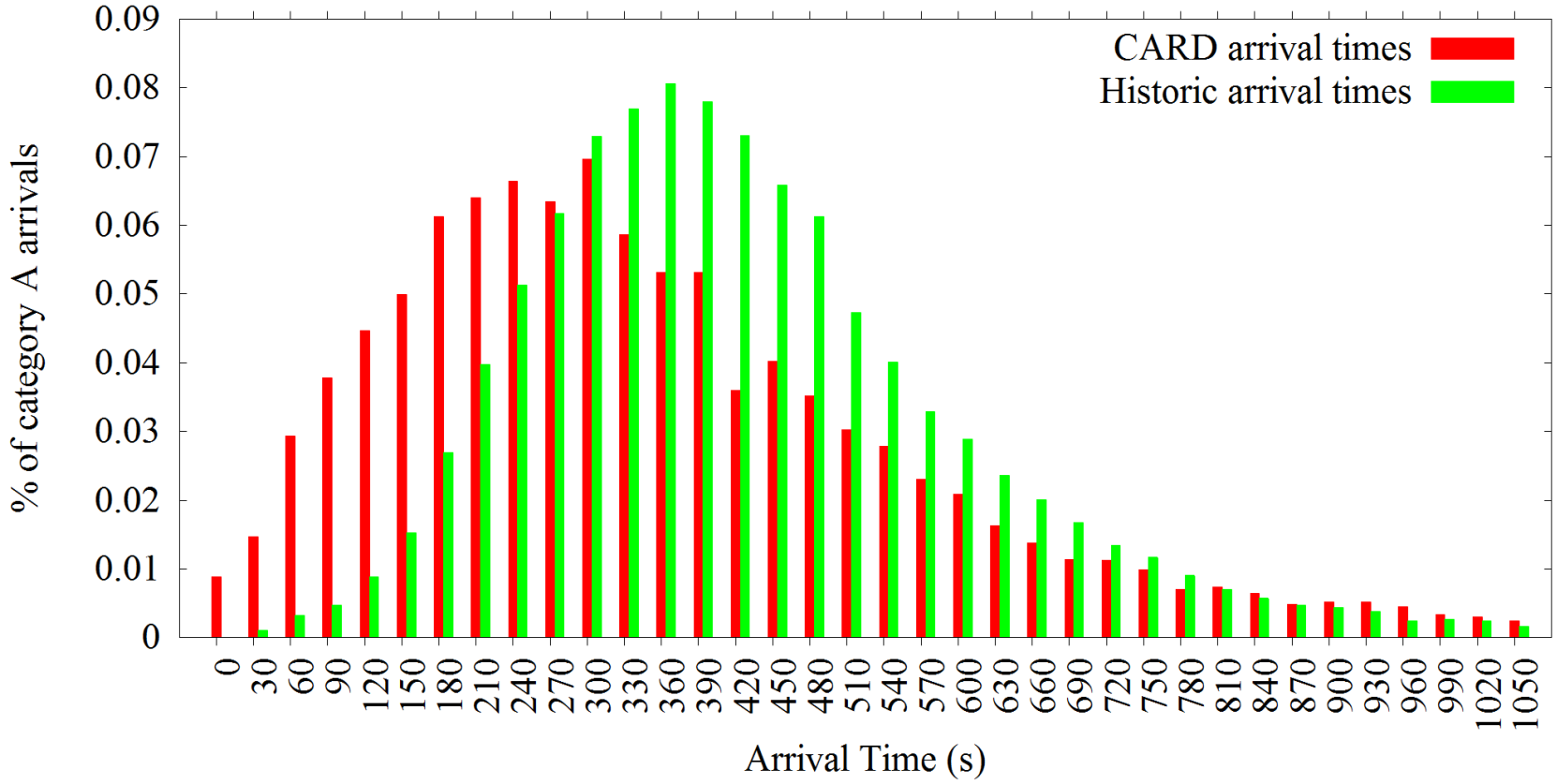
Automated Dispatch



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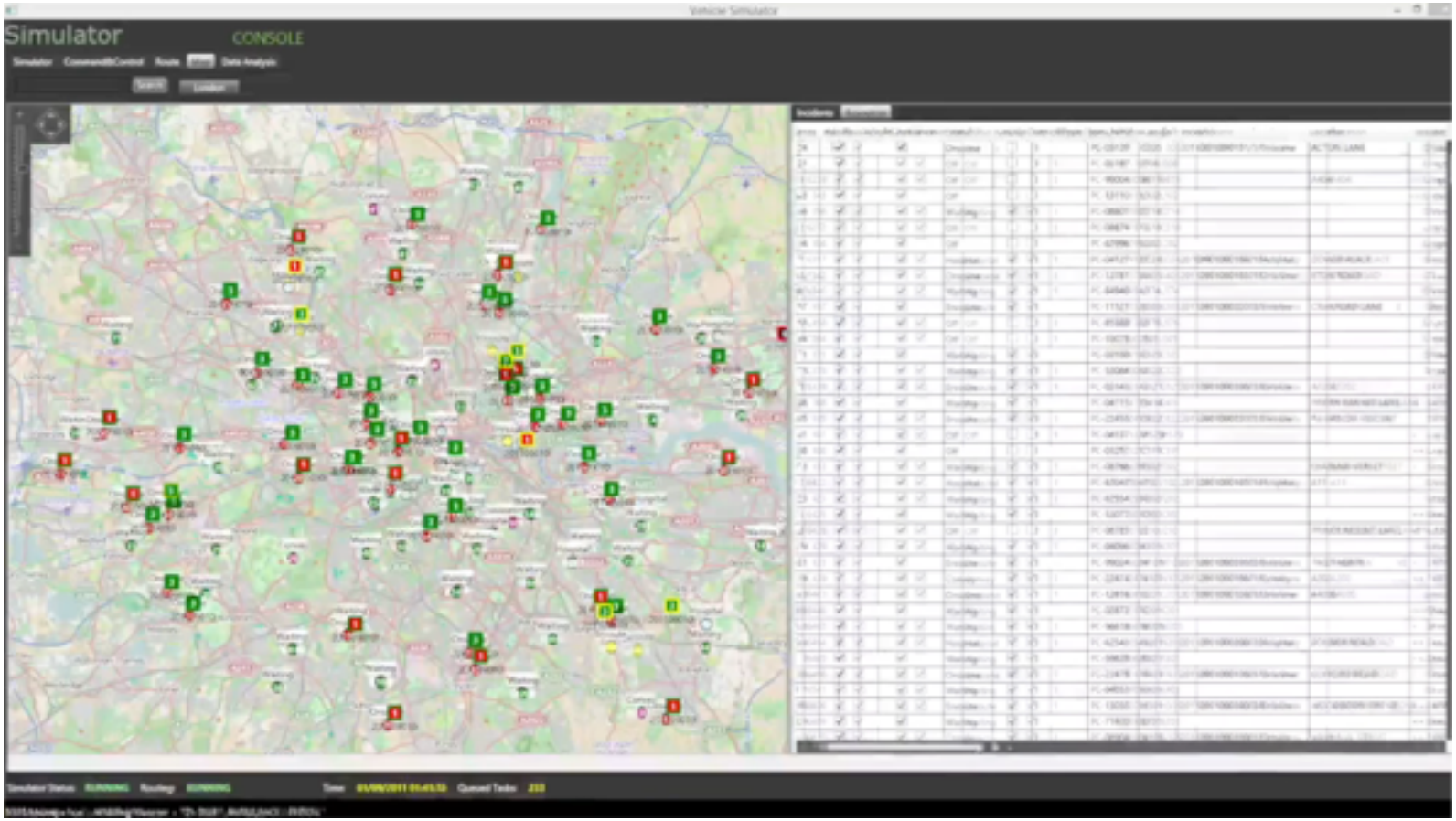
Exploring Strategies



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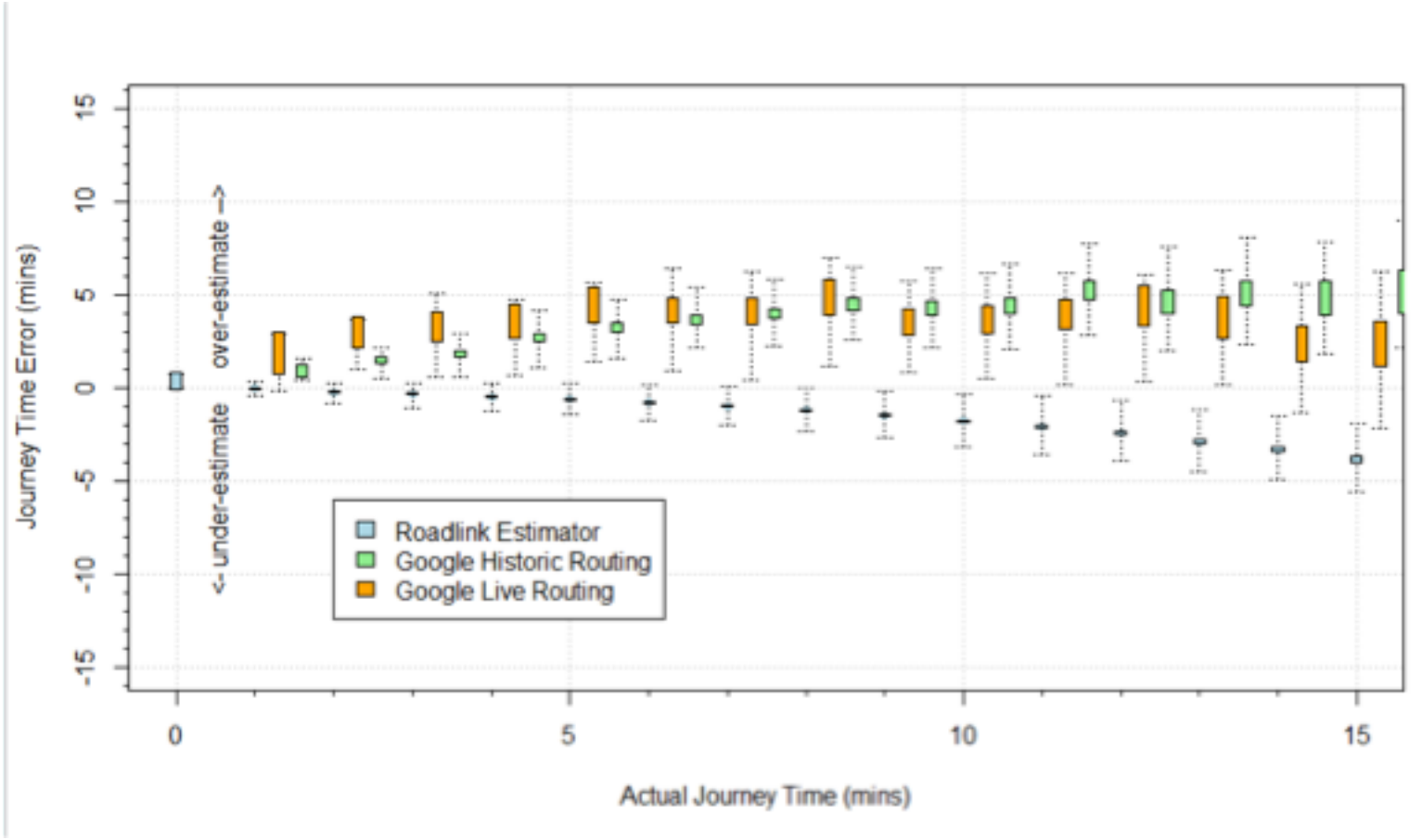
Real-time adaptation



Variation of real-time travel duration estimates with Google routing for civilian traffic.

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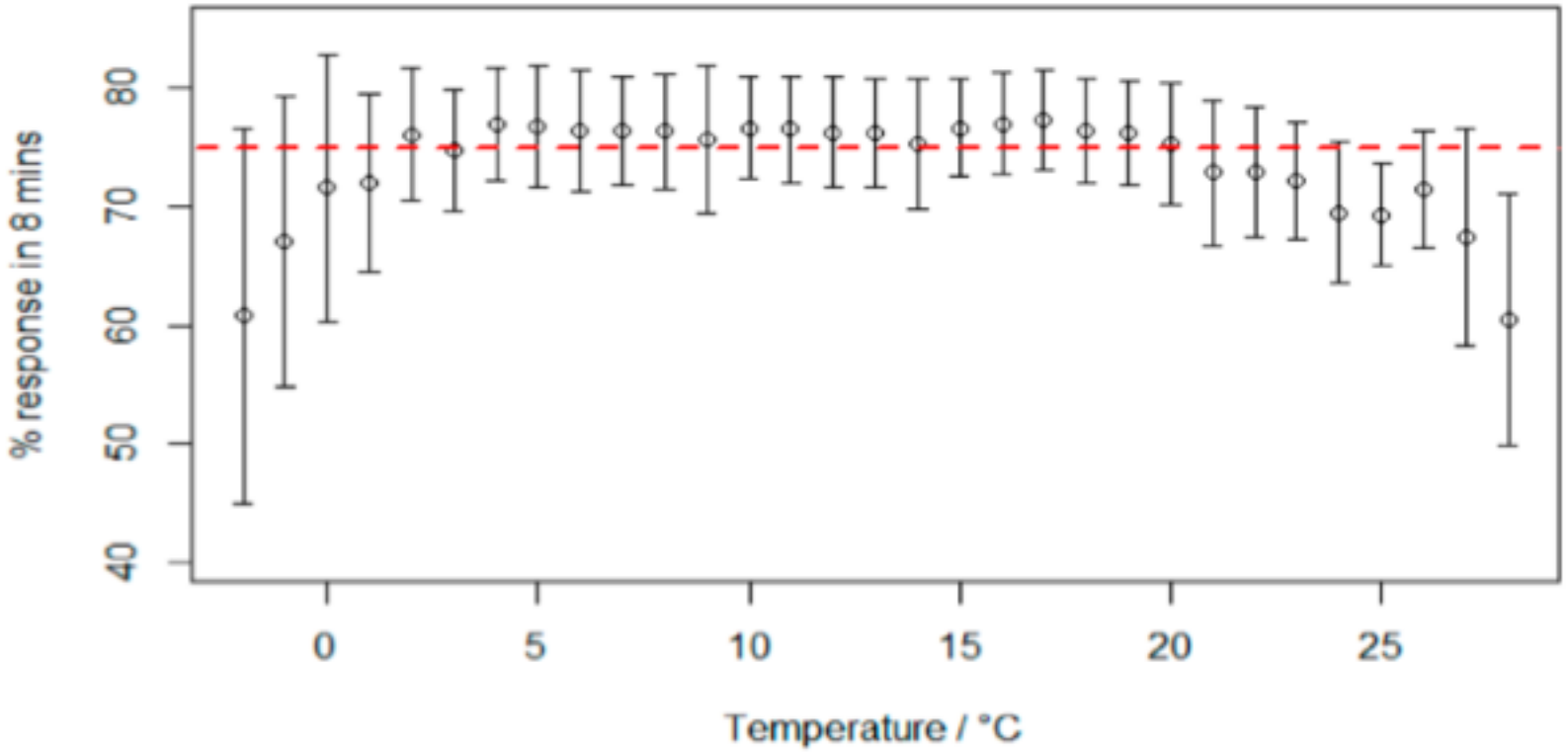
When is rt info valuable?



Mahmood, M.A.; Thornes, J.E.; Pope, F.D.; Fisher, P.A.; Vardoulakis, S. Impact of Air Temperature on London Ambulance Call-Out Incidents and Response Times. *Climate* **2017**, *5*, 61.

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Summary

- A data-driven approach can offer distinct advantages in improving emergency response performance
- Bespoke design needed to reflect the distinct requirements of emergency services (compared to consumer/civilian applications)
- Can provide the basis for the development of both operational and strategic intelligence tools
- Historic data go a long way towards predicting best tactics
- Role for real-time information especially at the extremes
- Much more to be done: integration between Blue Light services, synergies with TfL, synergies with consumer apps

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With thanks to

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LAS

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John Downward

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