Incident Analysis From A Multimodal Perspective

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Multimodal Incident Analysis

Why:

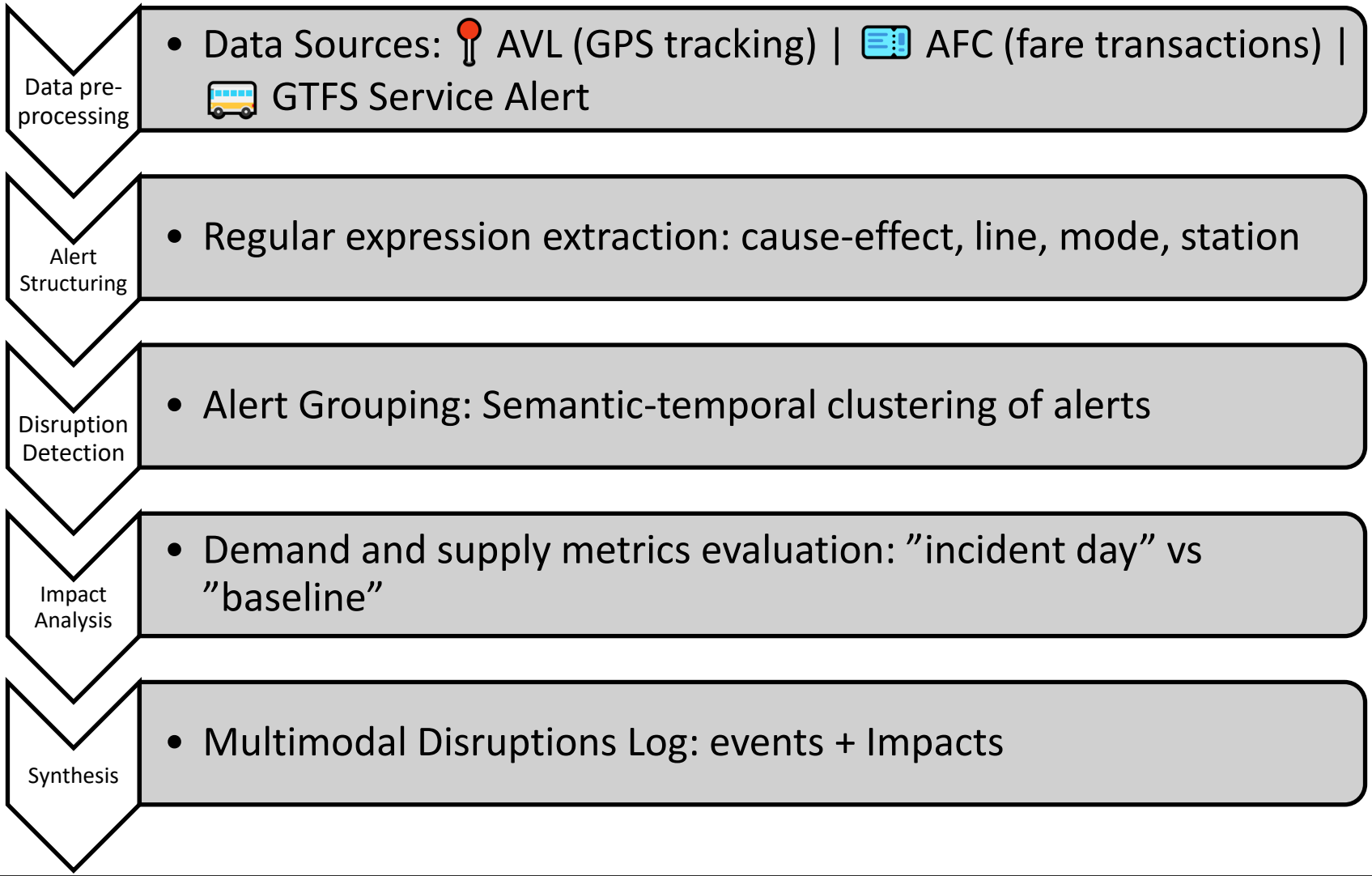
Comprehensive view of incidents and their effects from a traffic management perspective

- What happens in the event of incidents on the road network and in the public transport system – ripple effect and mode choice?
- What is the potential of using different traffic management strategies to reduce the effects of different types of incidents?

Goals:

1. To compile a data set of incidents linked to traffic management to enable analyses linked to modeling and actions in incident management
2. To combine and analyze data related to multimodal traffic management

Methodology



Semantic-Temporal Clustering

Why

Public transport disruptions generate **many overlapping alerts** with different wording. We group them by meaning and time to understand what really happened.

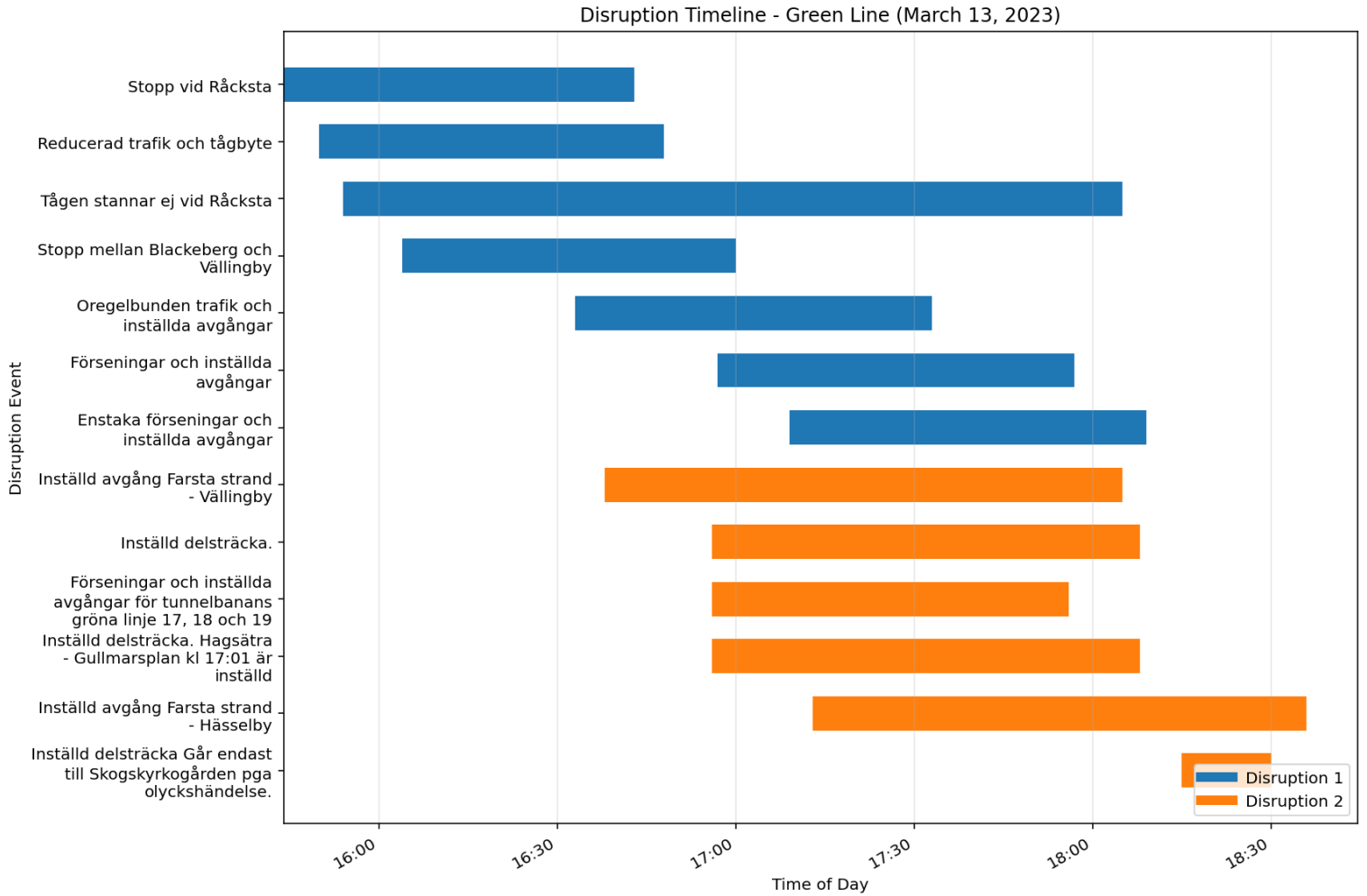
How it works

Step	Description
1. Understand the alert text	Topic Modelling reads what each alert is about, even when worded differently.
2. Group alerts by topic	Alerts with similar meaning are clustered together (“Stopp i trafiken” ≈ “Ingen trafik just nu”).
3. Link alerts in time	Groups alerts from the same incident that happen close in time (within 3 hours).

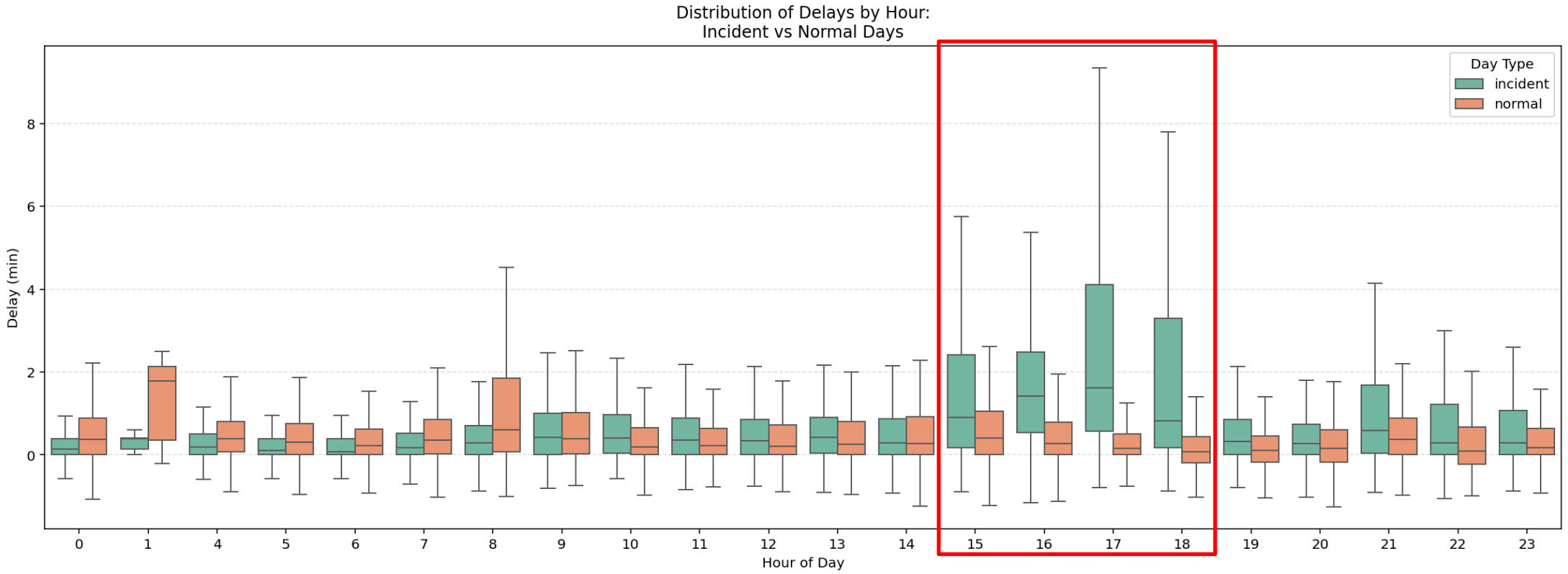
Result

Clearer incident timelines → Better analysis → Clearer, more informed responses

Incident Reconstruction Using Semantic-Temporal Clustering

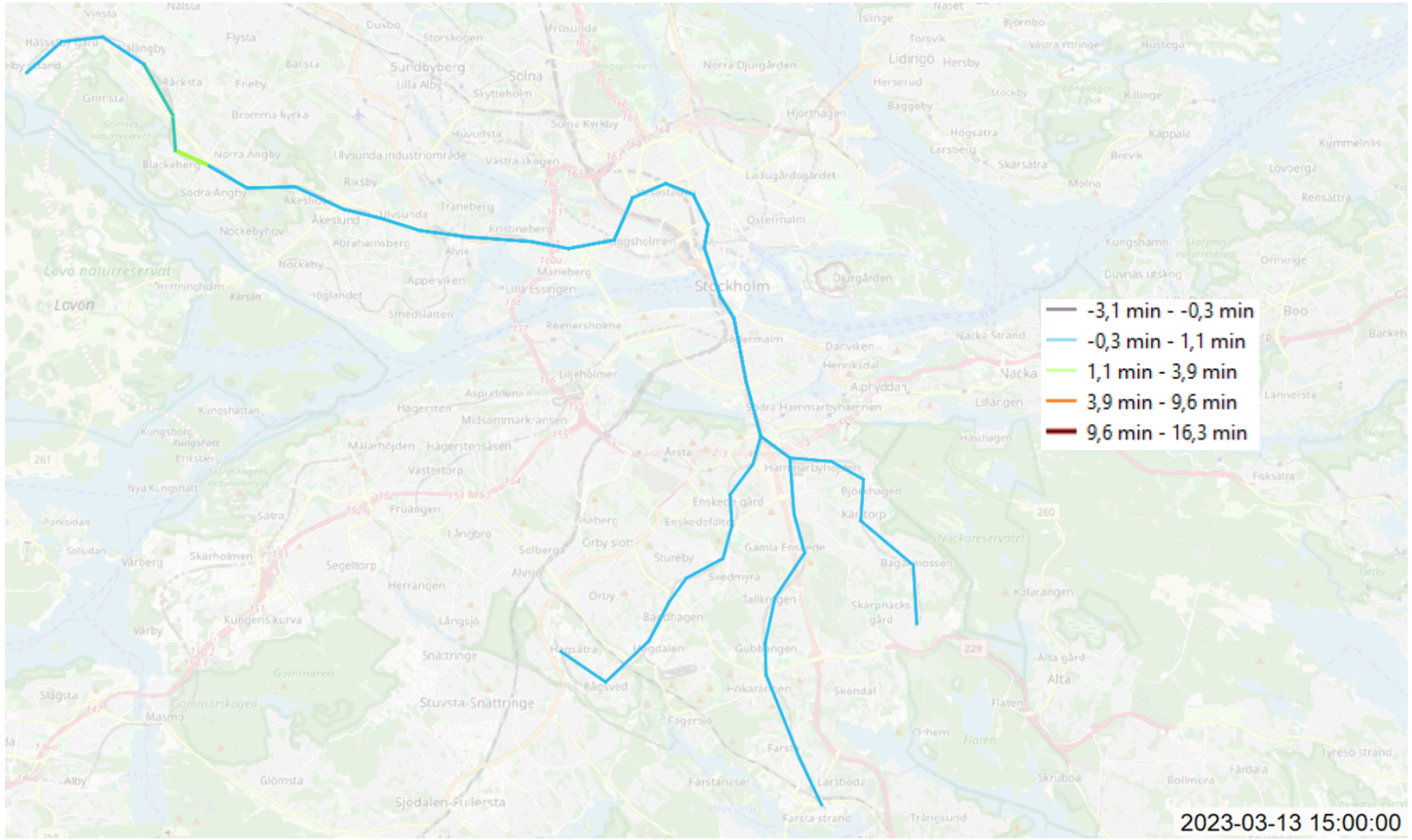


Incident Analysis – Line Level



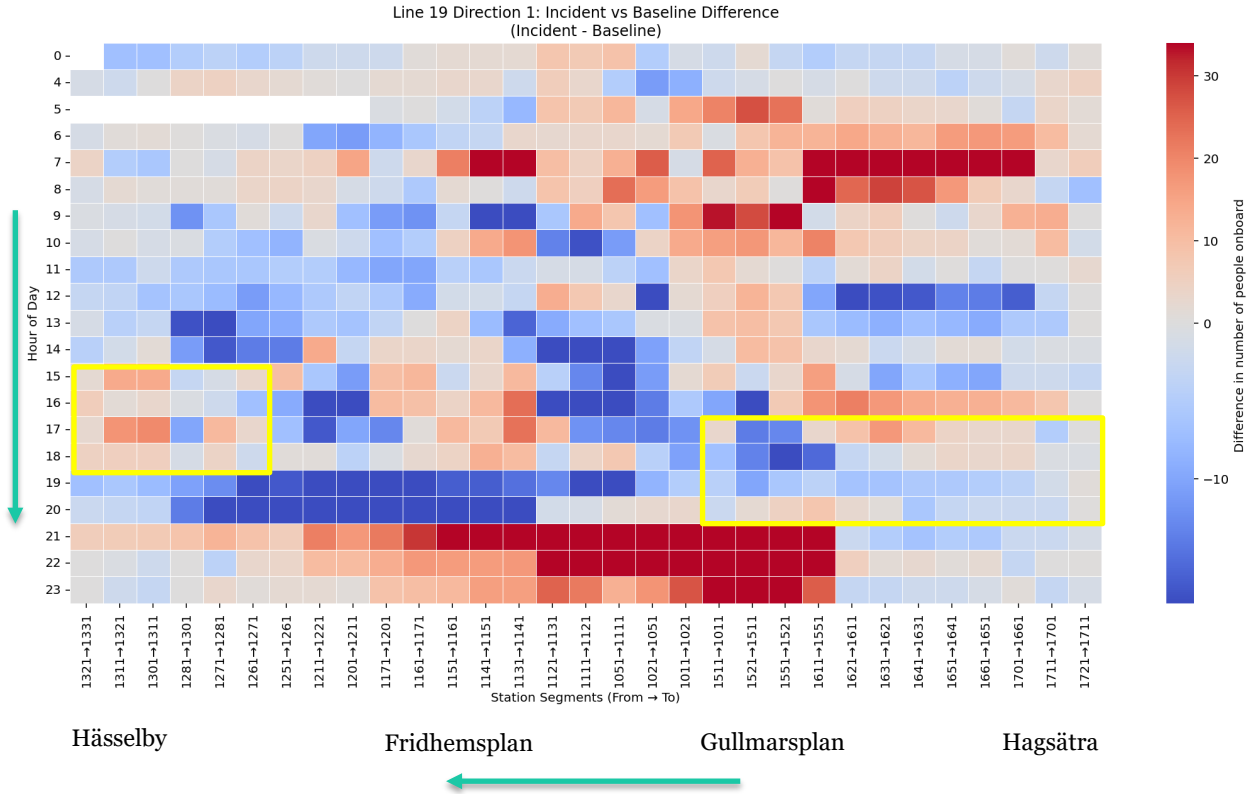
Average delay per hour for lines 17, 18 and 19

Incident Analysis – Line Level

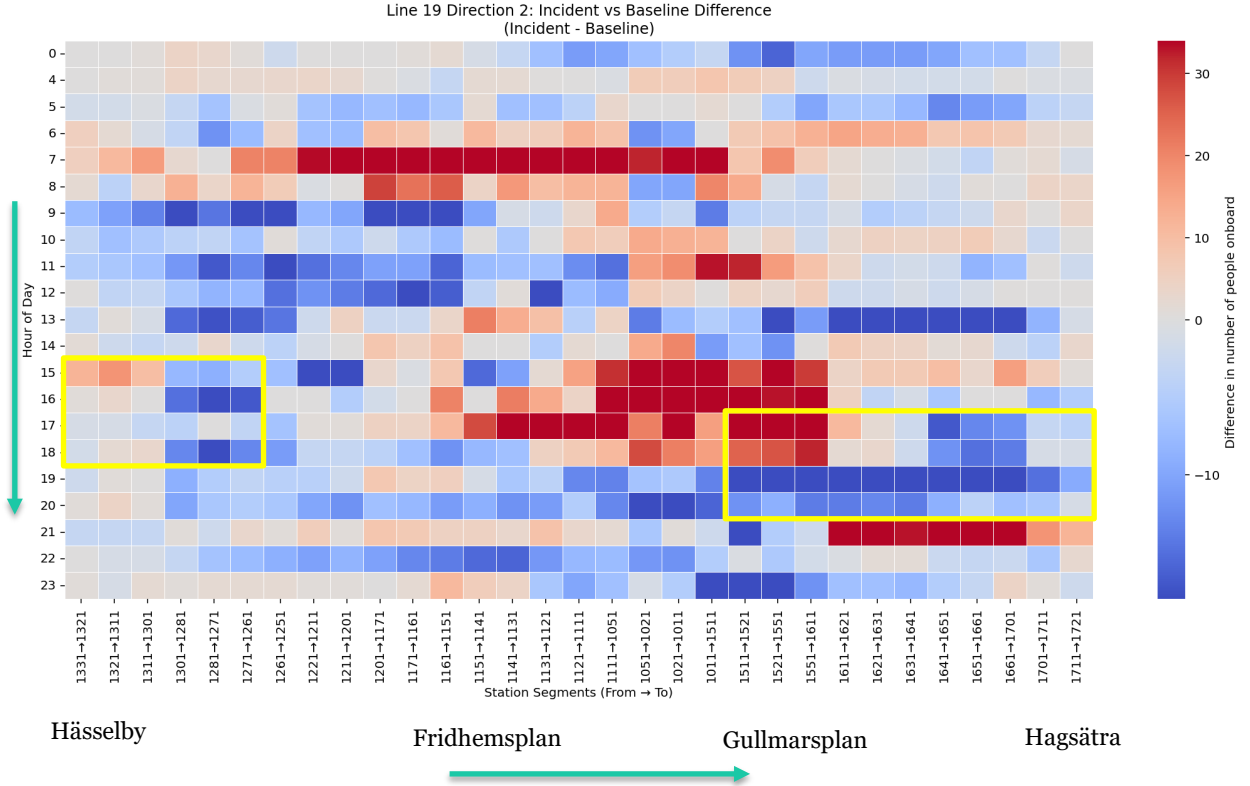


Average delay per hour

Incident Analysis – Load on segment

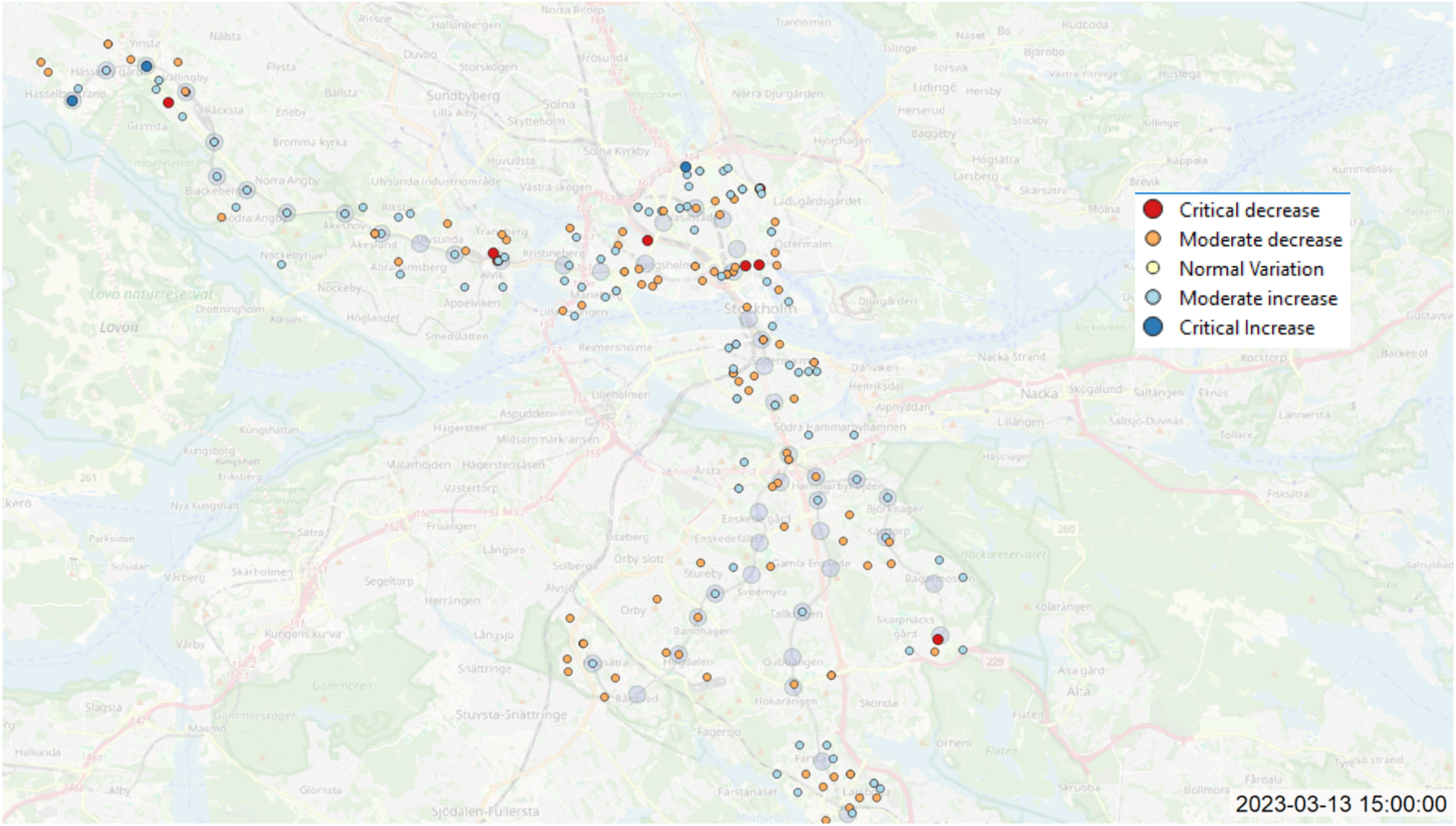


Line 19: Going North



Line 19: Going South

Incident Analysis - Station Level



Variation of tap-ins per line and station

What next?

- Multimodal analysis with road traffic
- Mode choice modeling
- Scenario evaluation – what if?

Questions?

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