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EUROCONTROL

Safety II in practice – the positive deviance approach

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Analysis of Safety data can make positive difference in ATM safety

Operational Expertise

Interpret the results
Implement actions

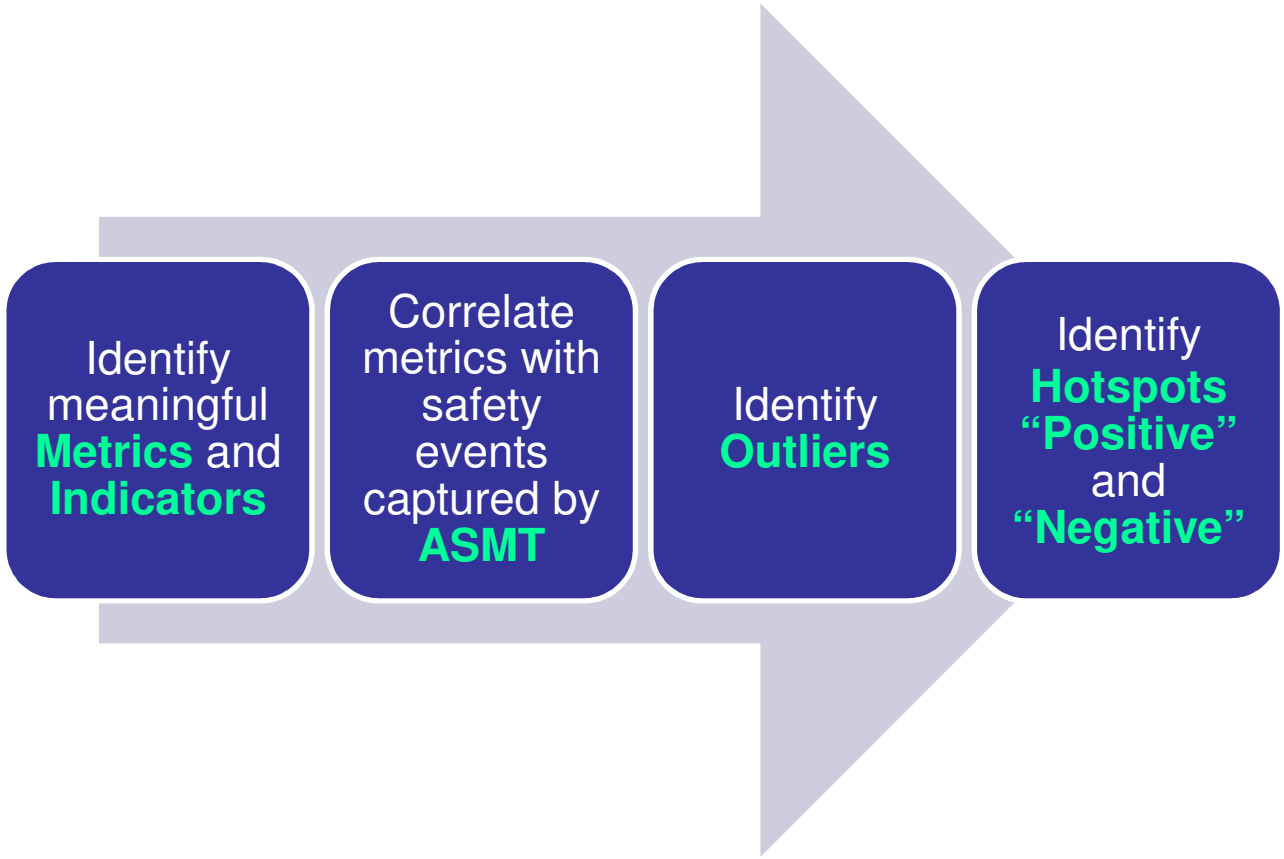
ASMT

Drawn attention
Drive analysis/questions

Safety Performance Monitoring

- Best practices (Safety II)
- Systemic issues (Safety I)

The Positive Deviance Approach



Step 1 – Identify meaningful metrics and indicators

- What are relevant metrics to measure Safety Performance?
  - Traffic load
  - Vertical movements
  - Workload
  - Complexity
  - Capacity Overload
  - …

Operational Expertise

Step 2 – Collect safety data

- What safety data to analyse?
  - SMI
  - STCA
  - ACAS-RA
  - MSAW
  - …

ASMT

Step 3 – Correlate data and identify outliers

- Which metrics and indicators correlate with the collected safety data?
  - Traffic load vs number of events
  - Vertical movements vs number of events
  - Workload vs number of events
  - Complexity vs location of events
  - …

ASMT

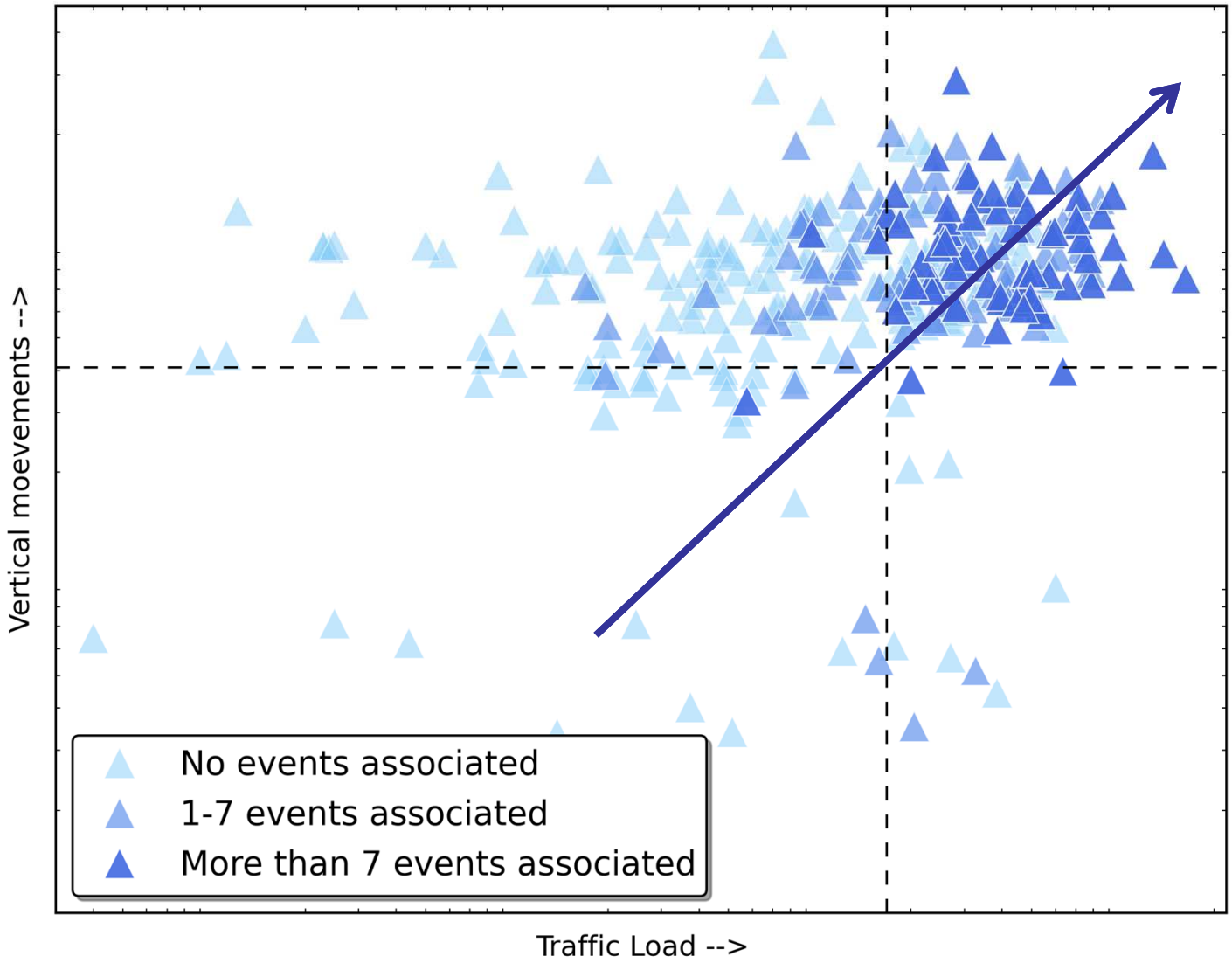
Operational Expertise

Example

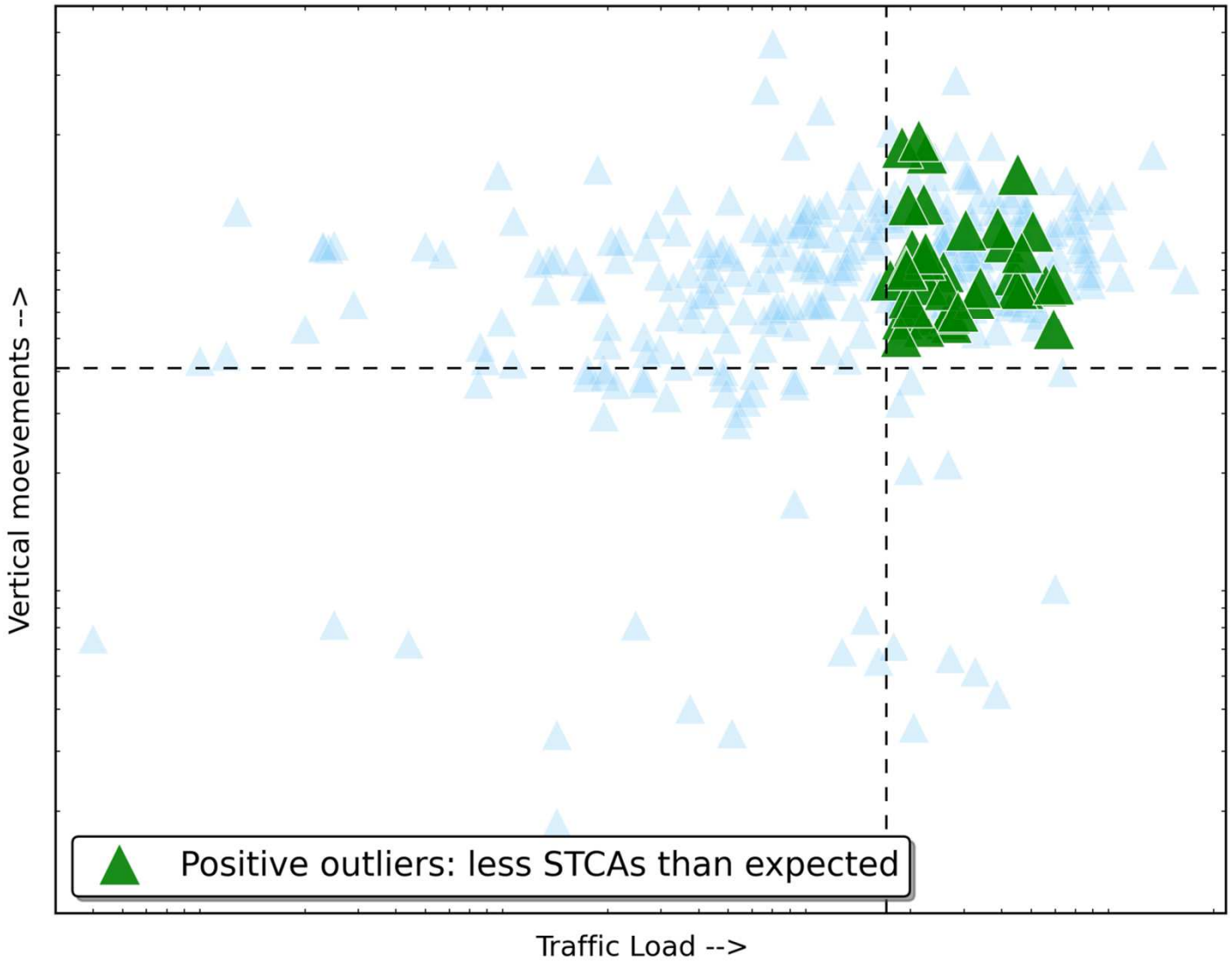
- Correlation between:
  - Traffic load
  - Vertical movements
  - Number of STCA events

What can we learn from this analysis?

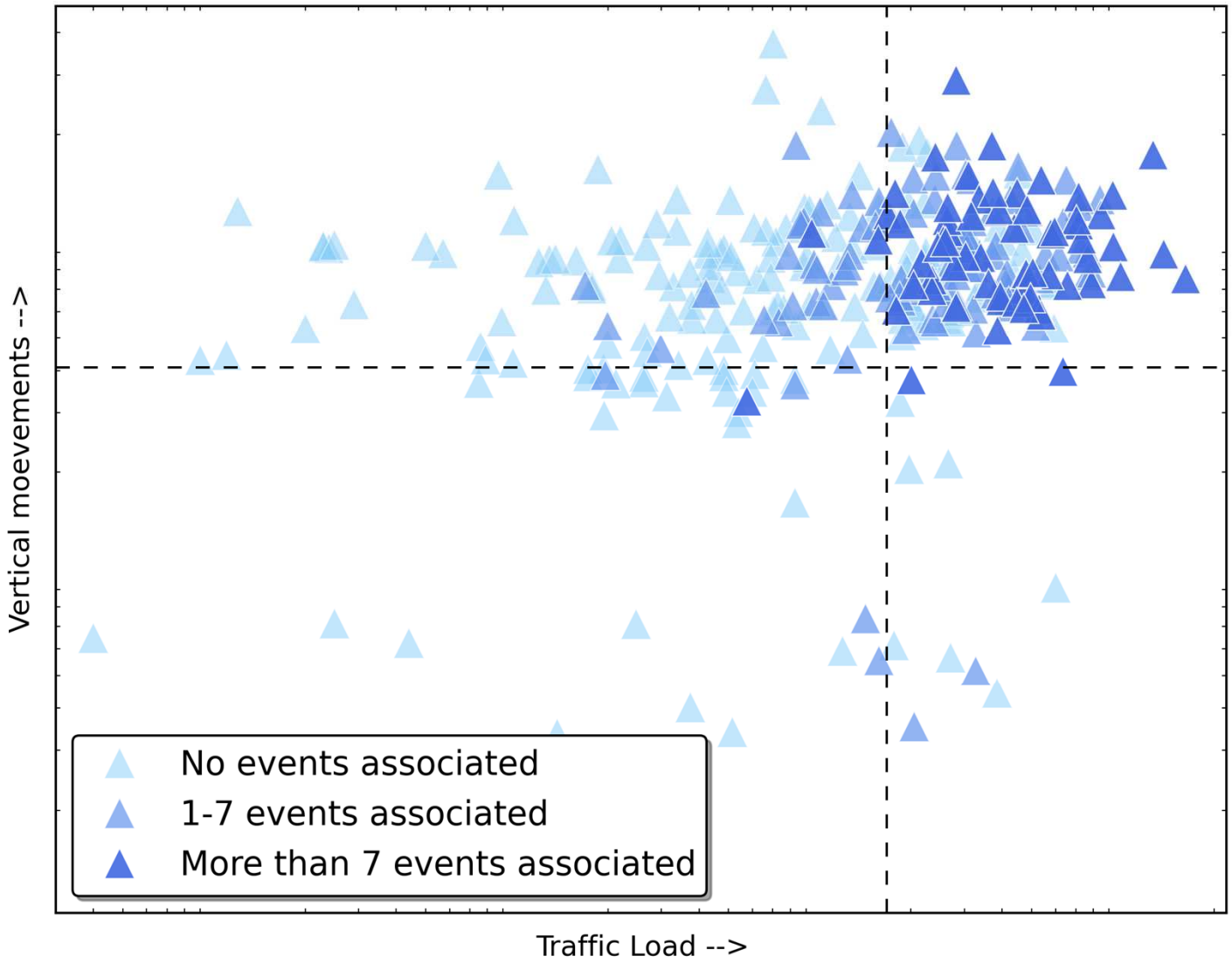
Baseline performance



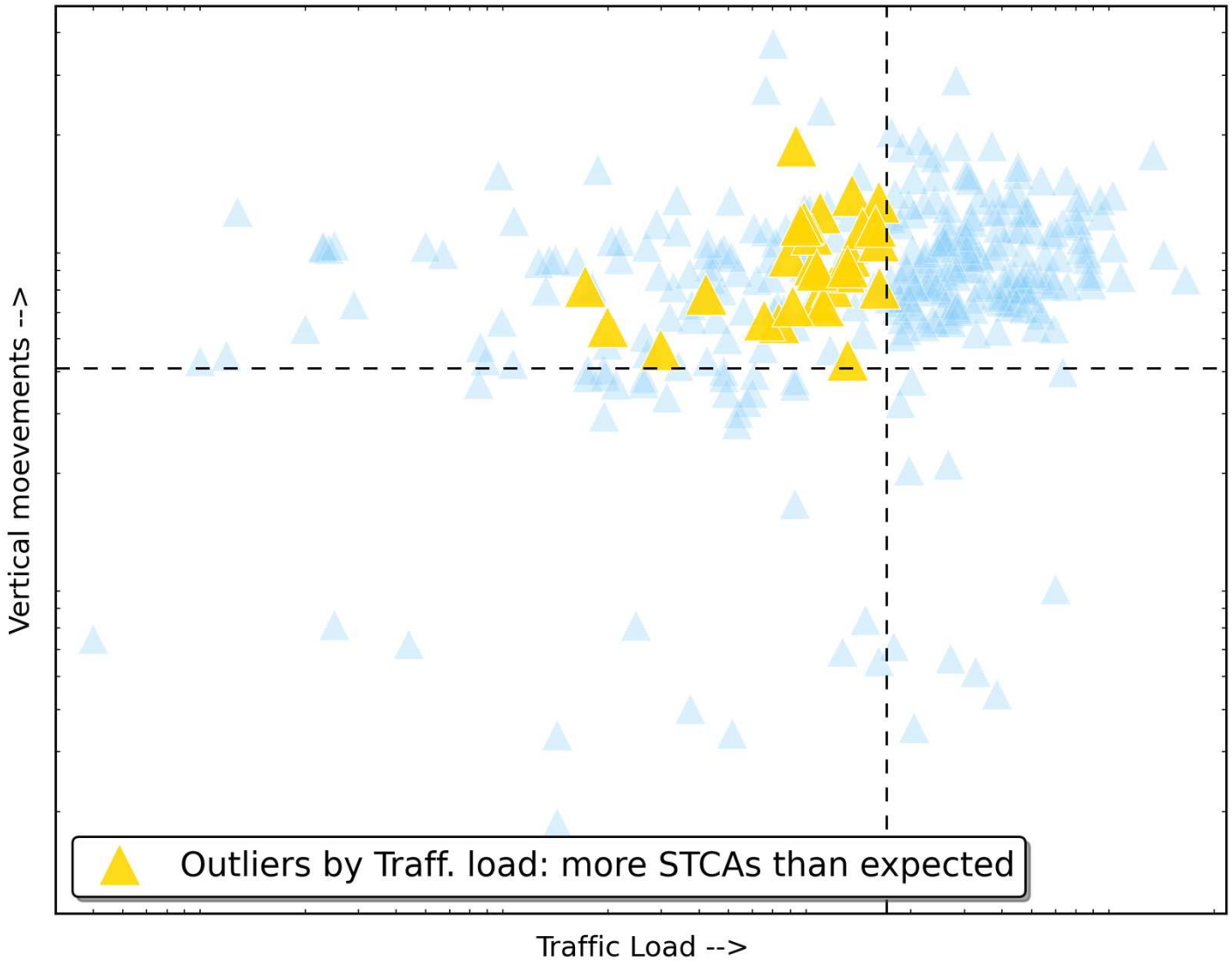
Positive Outliers



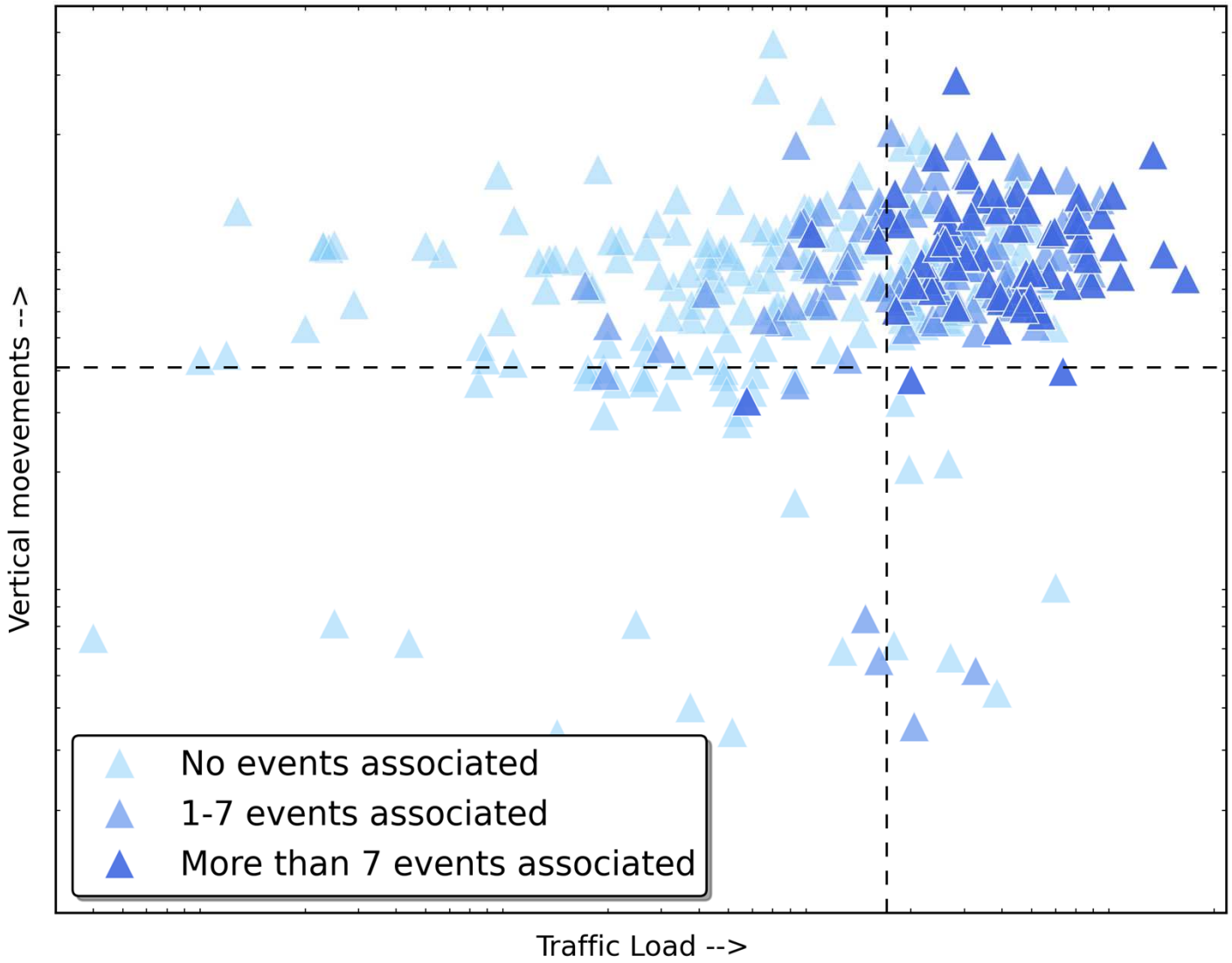
Baseline performance



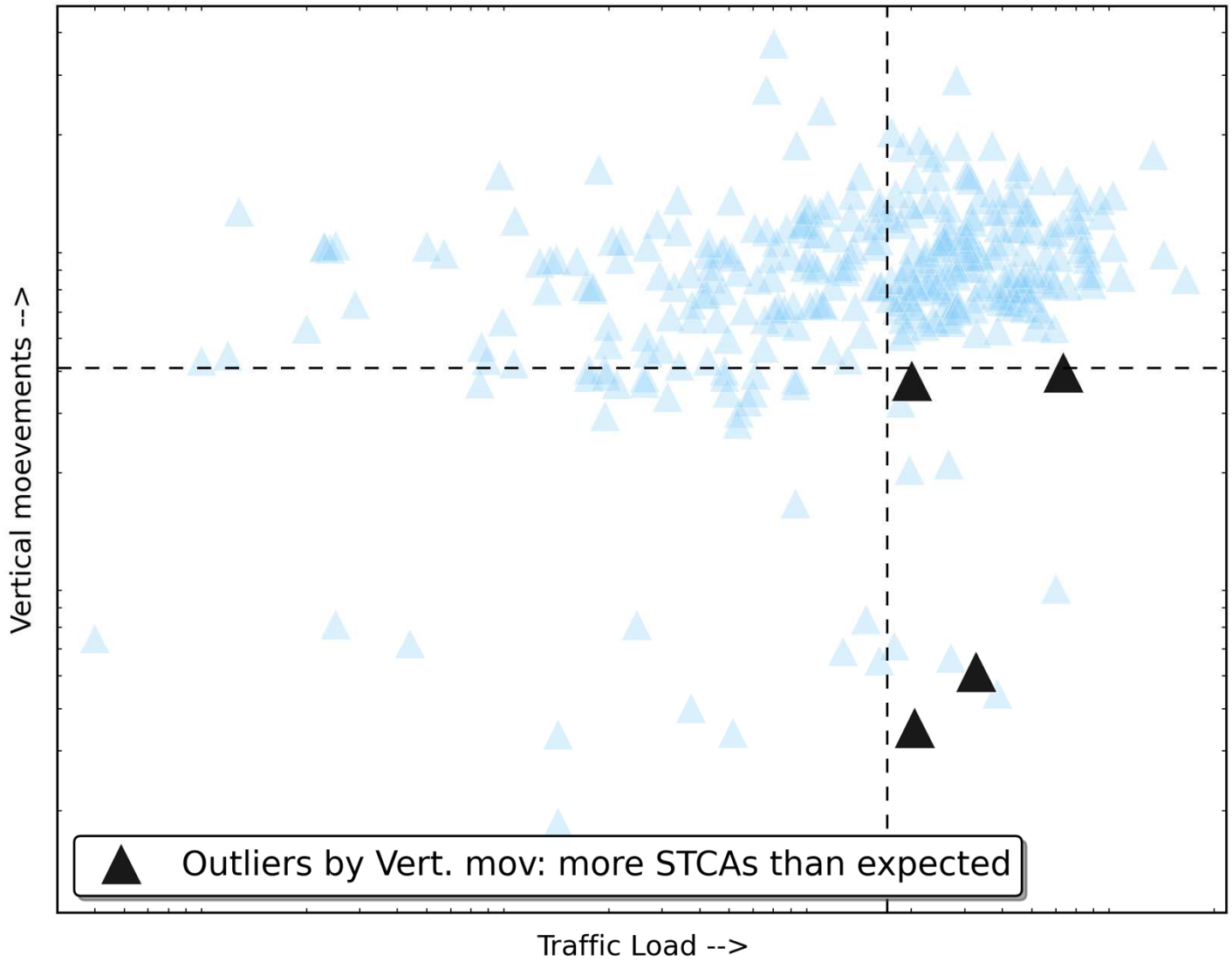
Outliers by Traffic Load



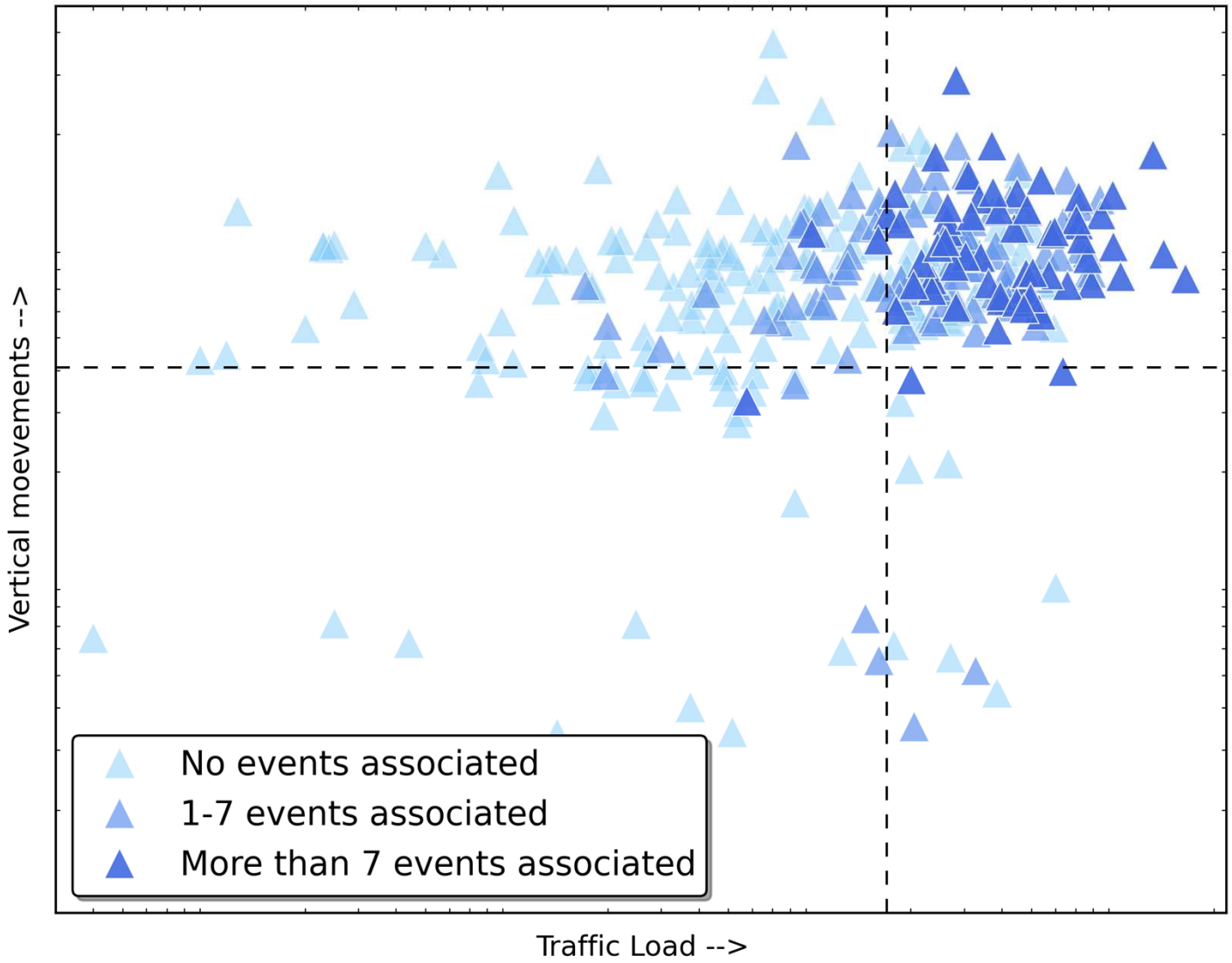
Baseline performance



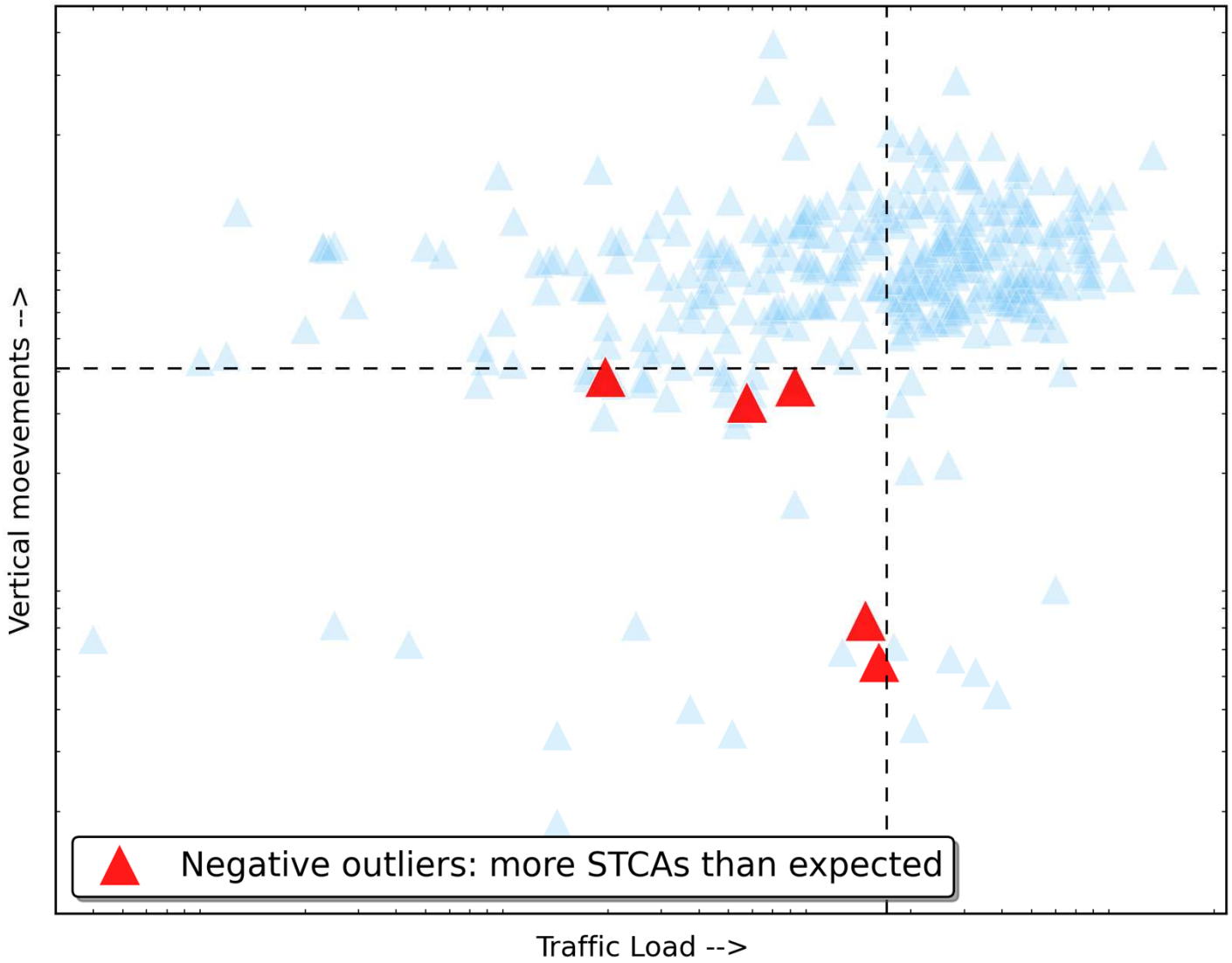
Outliers by Vertical movements



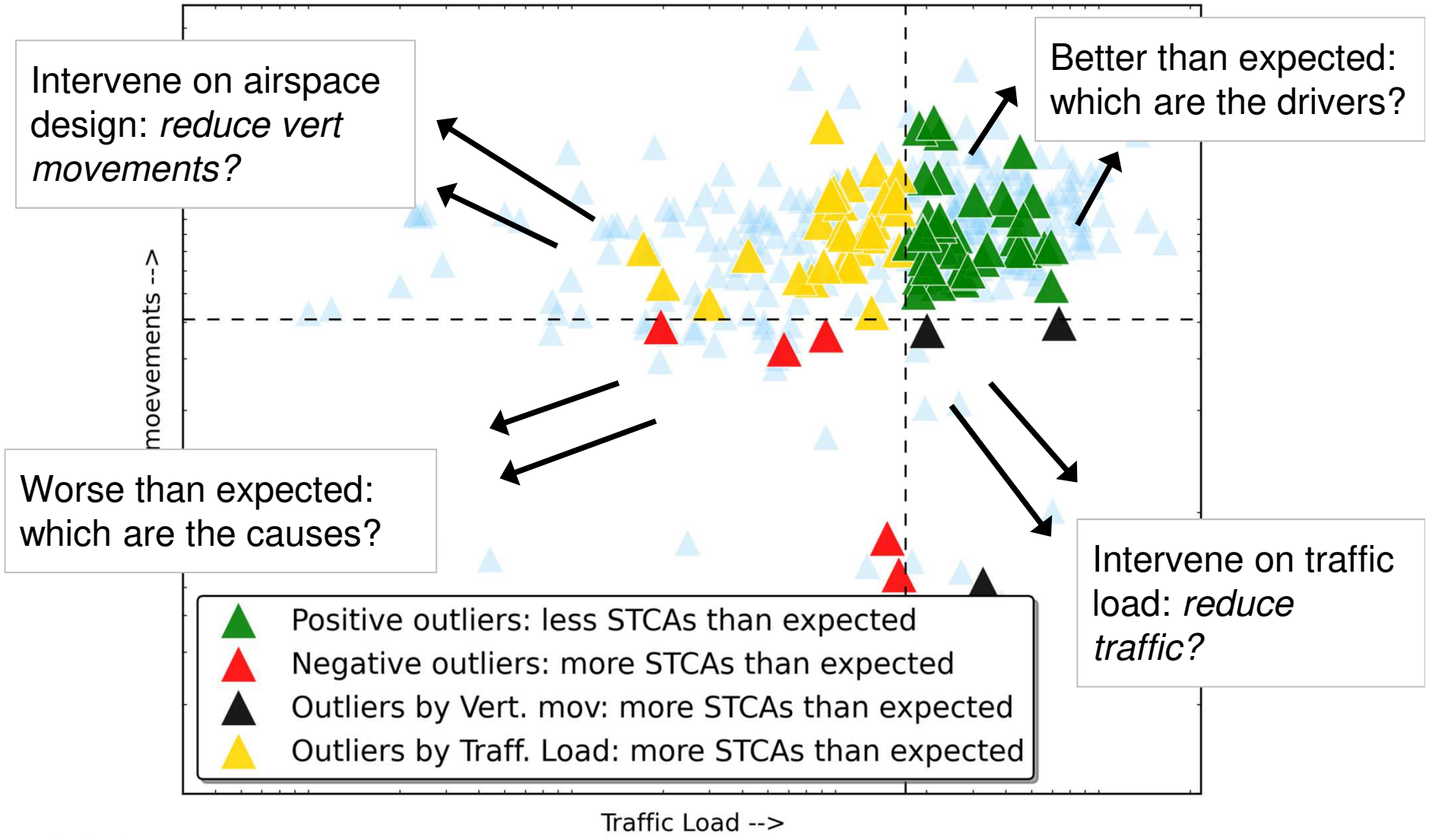
Baseline performance



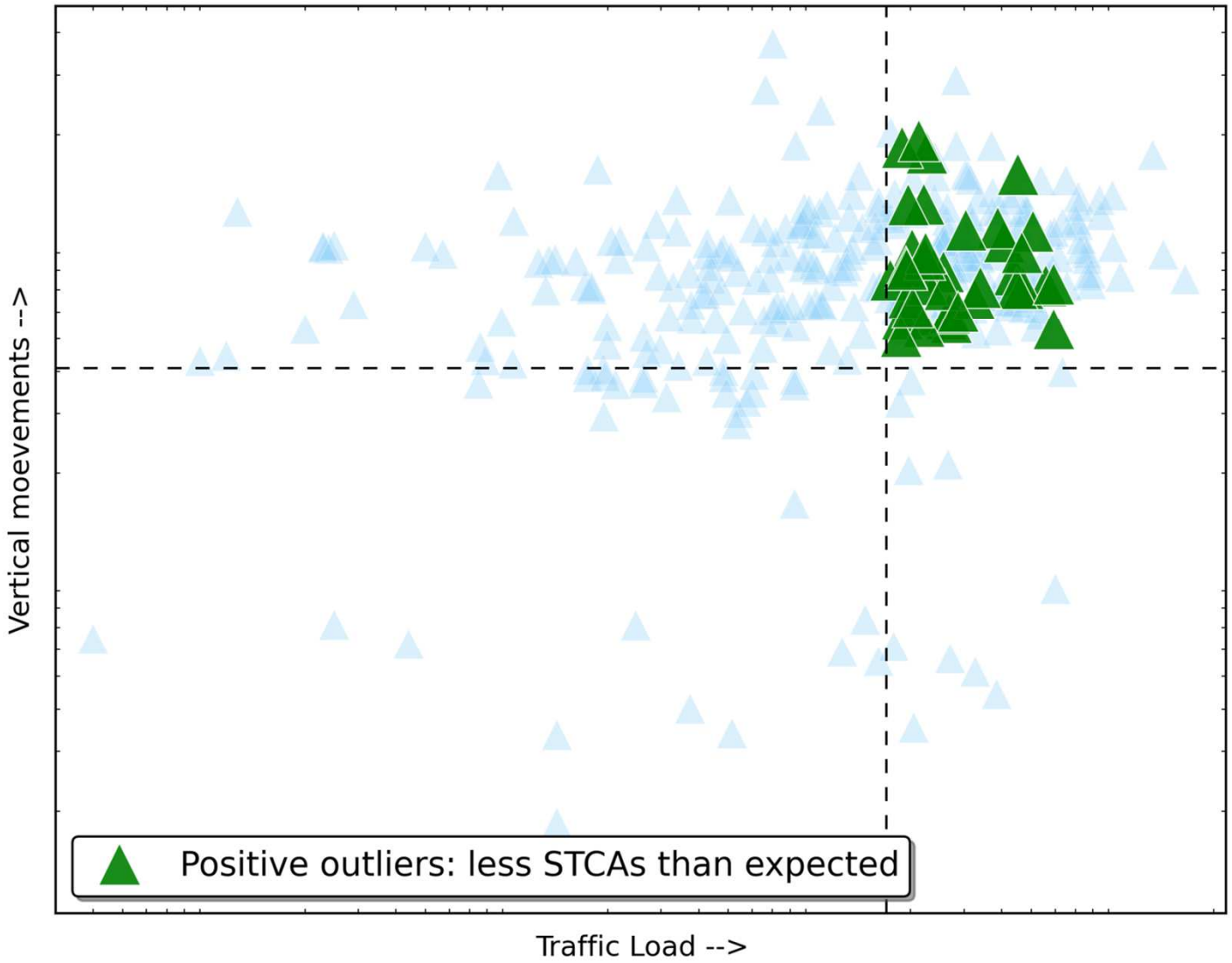
Negative Outliers



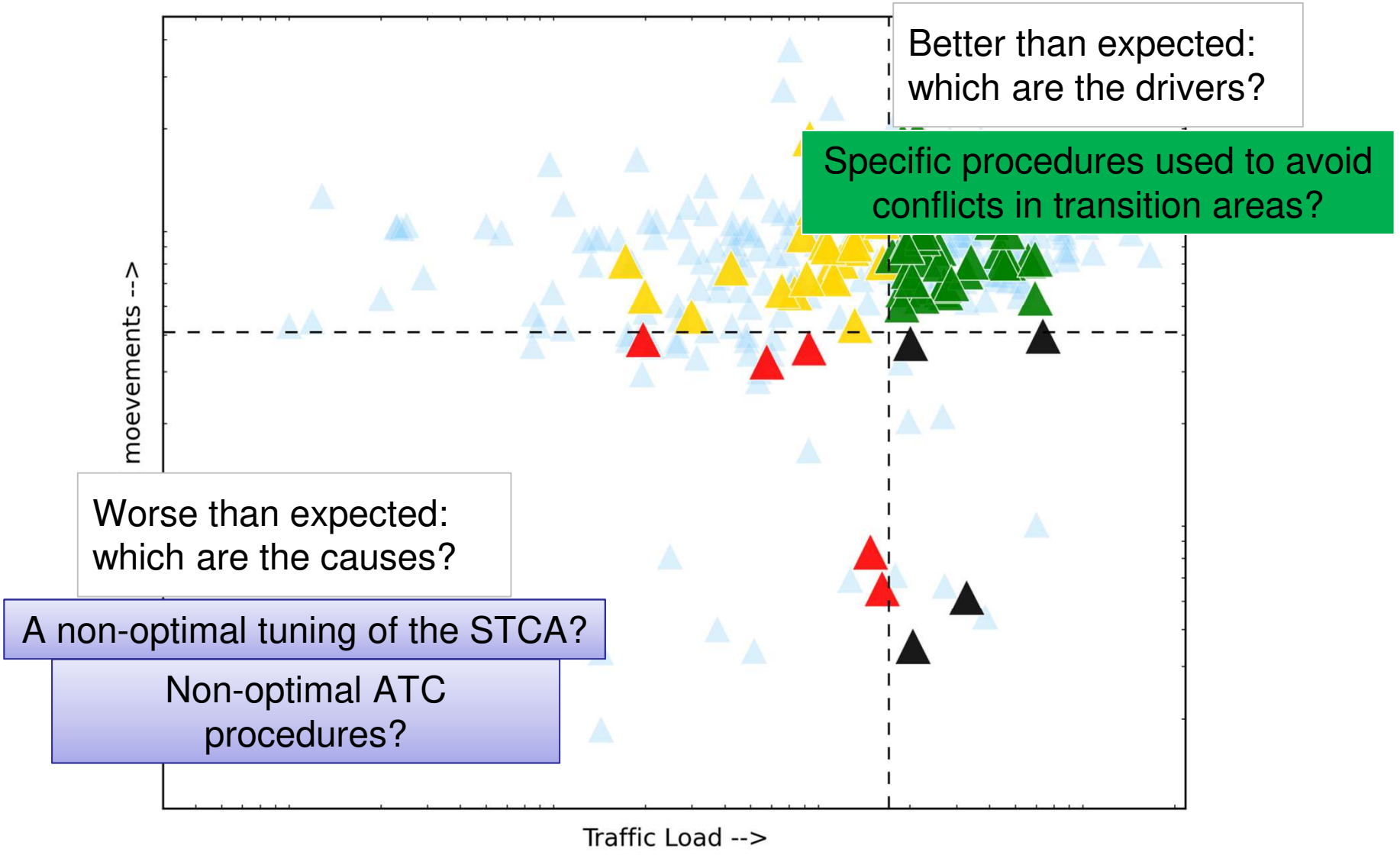
Outliers overview



Positive Outliers



Analysis of outliers: what can we learn?



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Conclusions

- The Positive Deviance Approach relies on operational data and use of ASMT to perform Outliers analysis and make difference in:
  - Understanding how operations work as a whole
  - Measuring and assessing the presence of safety, performing better or worse than the average:
    - **capture best practices** to reproduce (Safety II), as opposed to
    - **identify systemic issues** to be mitigated (Safety I)
- The one presented is an example – more analyses are possible:
  - What metrics and indicators should be considered?
  - What are the **operational issues** to tackle?
  - And the **best practices** to identify?