



General Assembly Vienna

The 25th of November 2021

Experiences on post-crash care KPI

Johannes Mesimäki, VTT

Finland

KPI definition

*”Time elapsed in minutes and seconds **between the emergency call** following a collision resulting in personal injury **and the arrival** at the scene of the collision **of the emergency services.**”*

Data

- **PRONTO-database:** Resource and accident statistics database of the Finnish rescue services
- Contains data on
 - Time of emergency call
 - Time of rescue unit departure and arrival
 - Estimate of casualties (Fatalities, injuries, serious injuries)
 - Road type
 - Geographic coordinates
 - Call type (mobile phone, e-call, etc.)
 - Although very few e-call cases

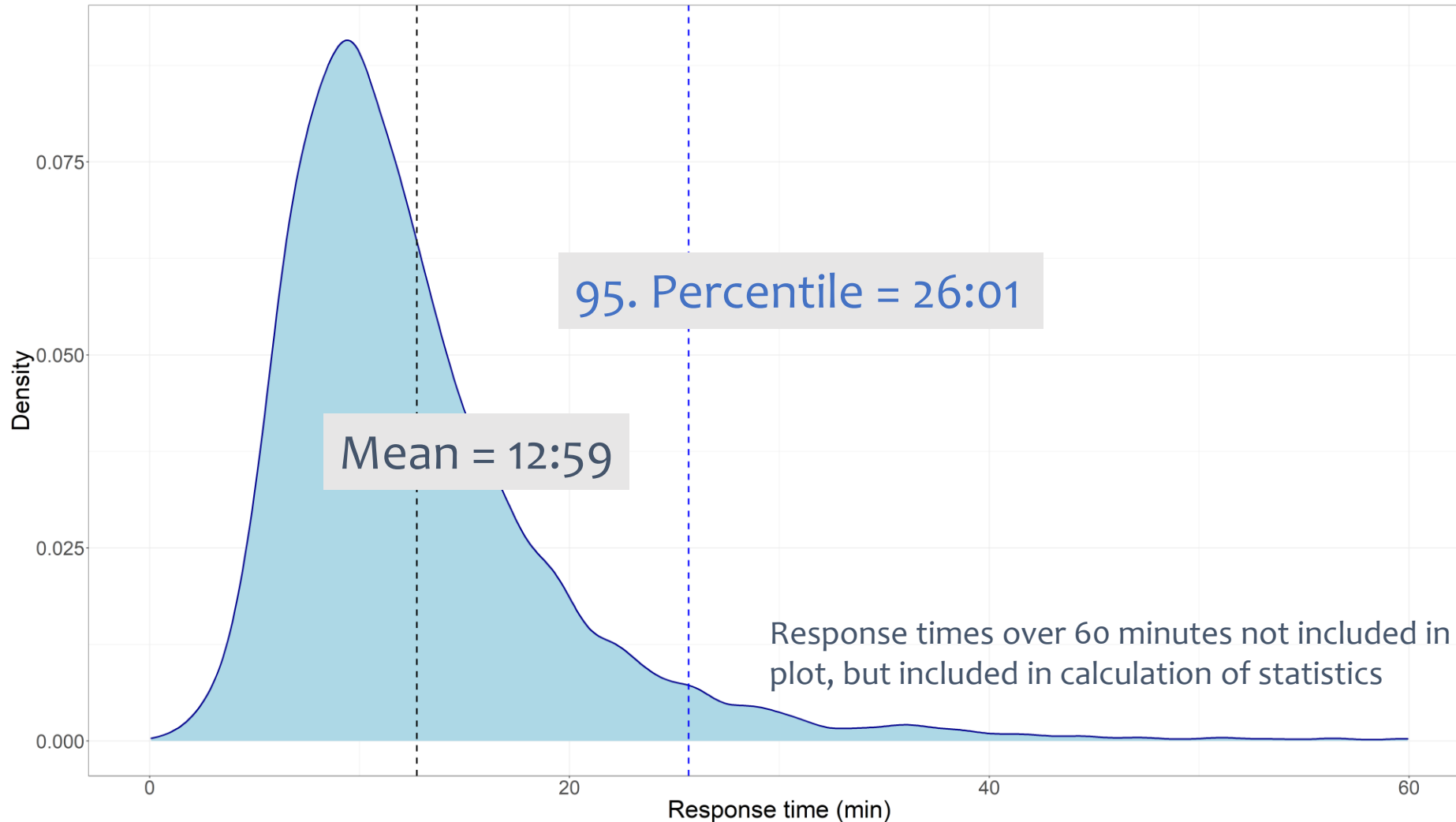
Requirements

- KPI: 95. percentile for response times in 2019 for accidents resulting in personal injury or death
- Breakdowns (e.g.):
 - Crash severity
 - Urban roads, non-urban roads & motorways
 - Time of day, weekday, month
 - Urban–rural level
 - Location

KPI Calculation

- Each record in PRONTO represents a mission (dispatch) for one rescue unit
 - Usually several records (dispatched units) per accident
 - Missions identifiable with unique ID
- Units grouped by mission ID
 - Filtered so only the first unit to arrive is kept
- Calculation of KPI with desired breakdowns: **Difference between time of emergency call and arrival of the first rescue unit**

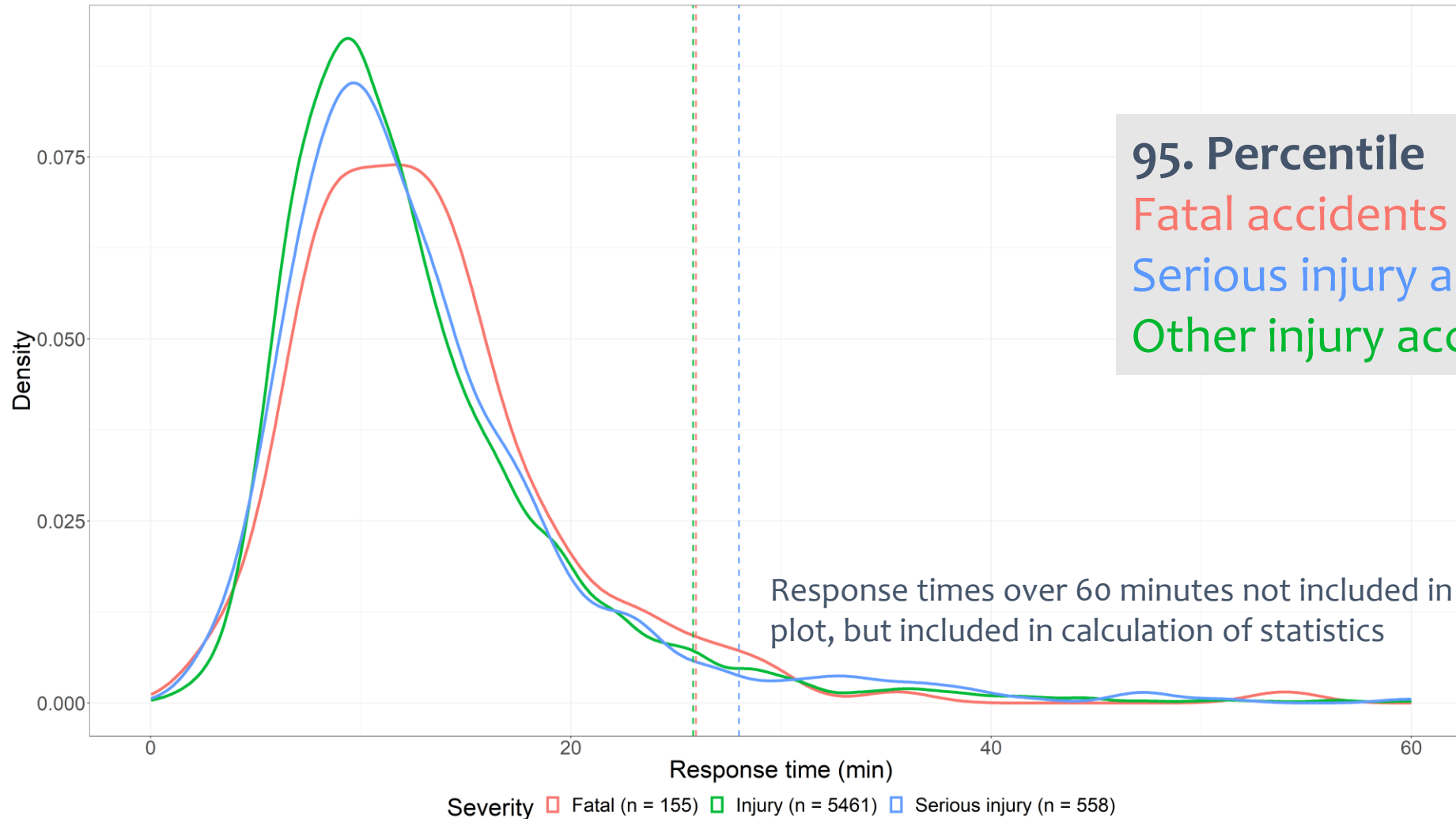
Response time – Injury accidents (2019)



All injury accidents (2019)

- N = 6,174
- Min = 5 s
- Max = 4:44:03
- Median = 11:06
- SD = 8:58

Response times by severity (2019, n= 6,174)



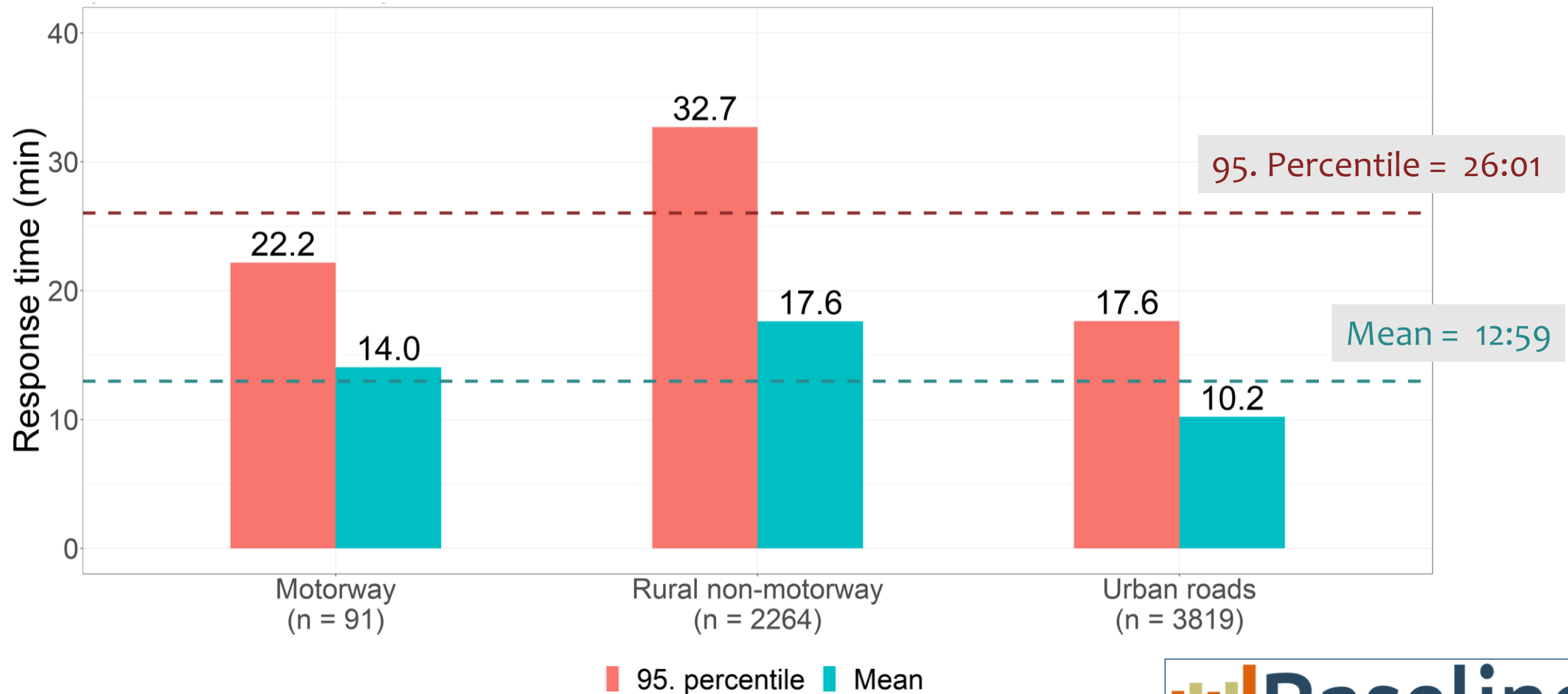
95. Percentile

Fatal accidents = 25:57

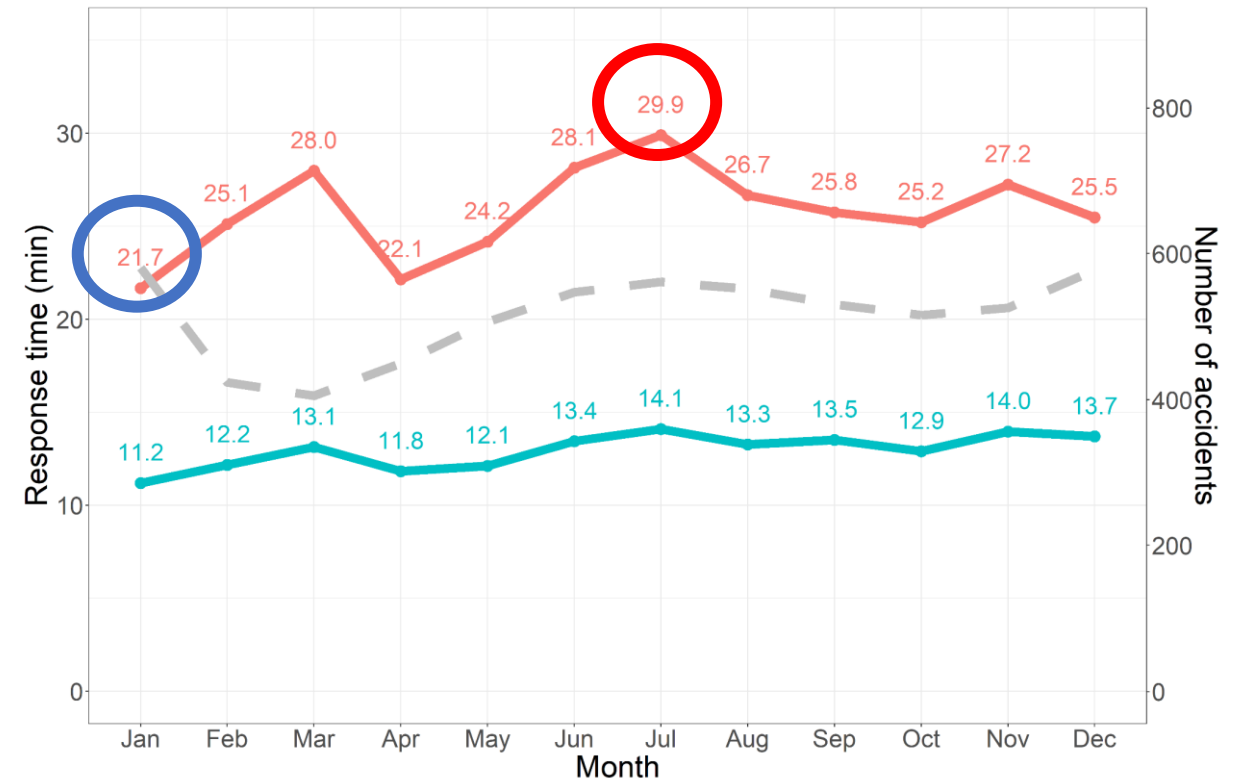
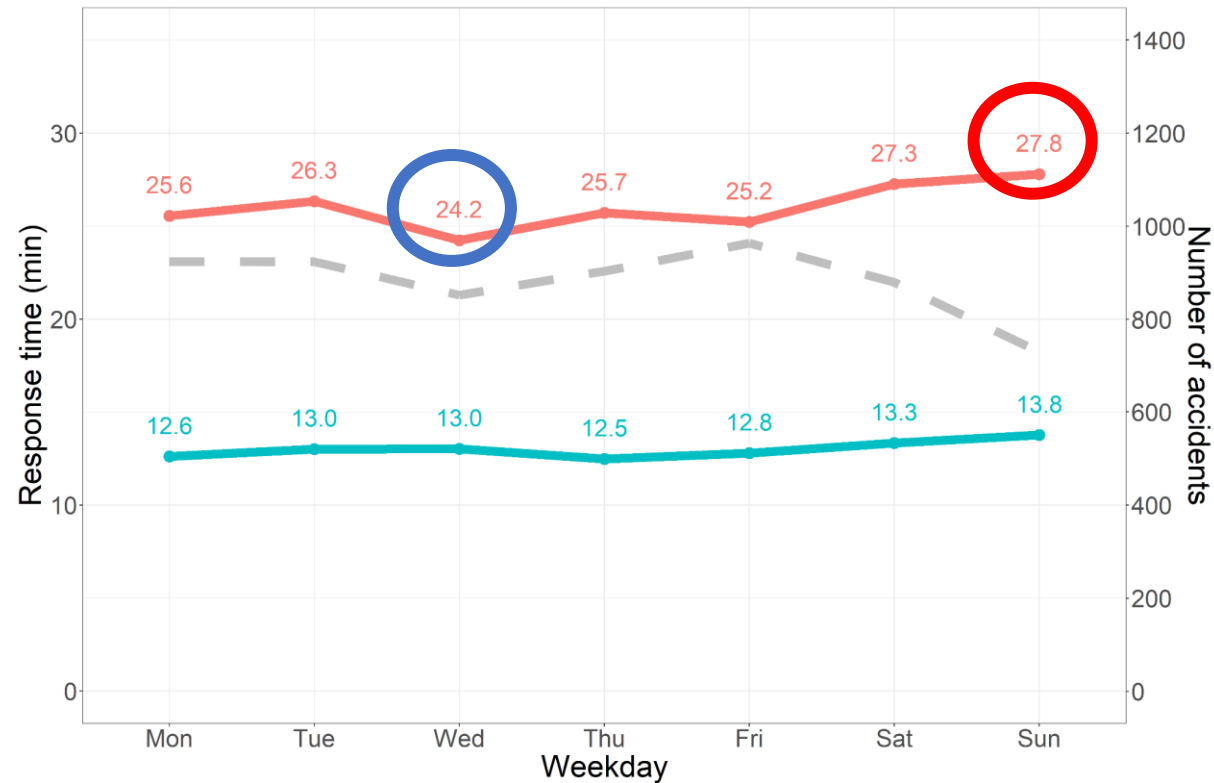
Serious injury accidents = 28:00

Other injury accidents = 25:49

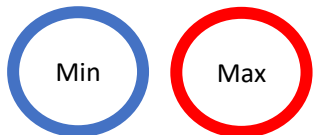
Response times by road type (2019, n = 6,174)



Response times by weekday and month (2019, n = 6,174)

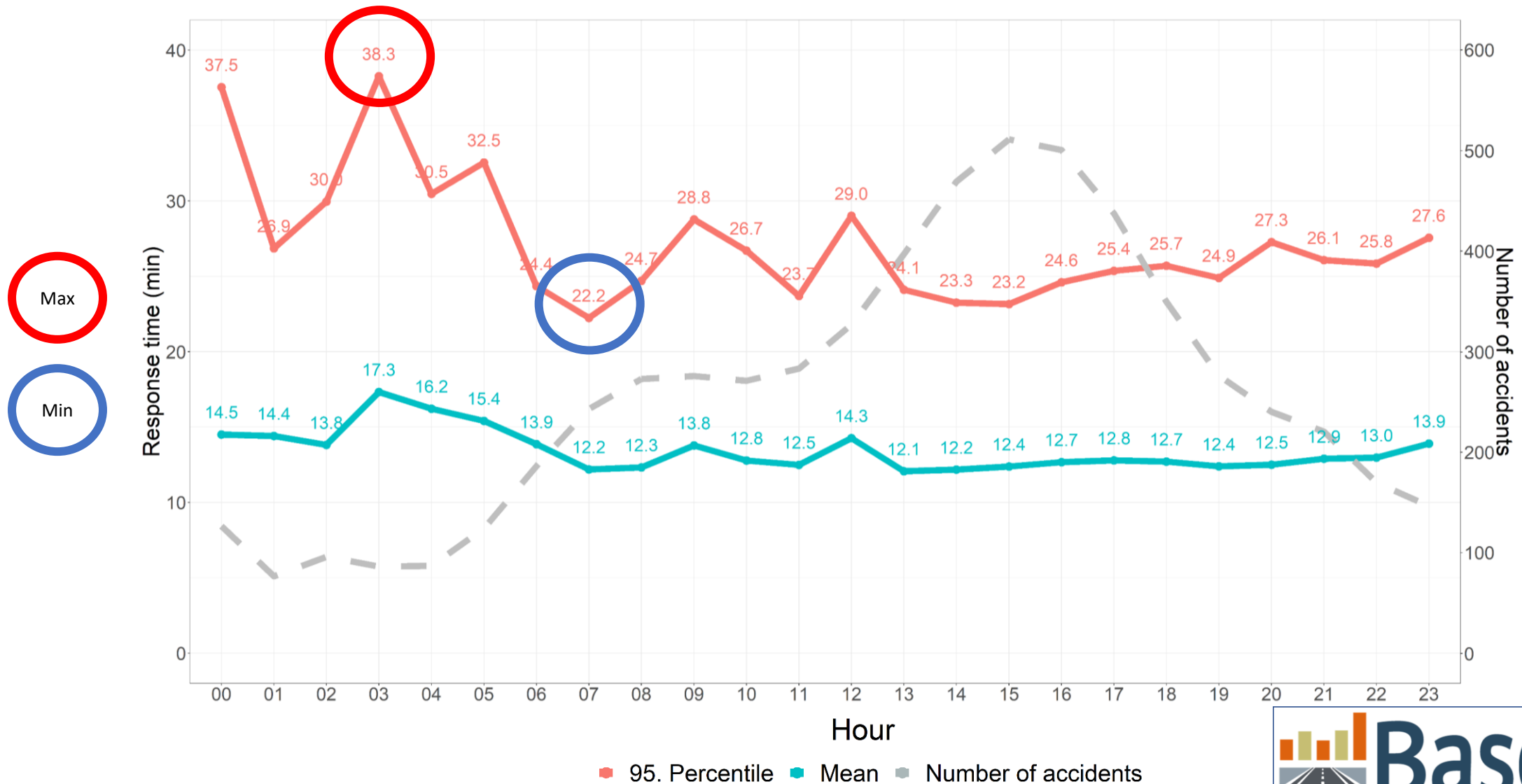


95. Percentile Mean Number of accidents

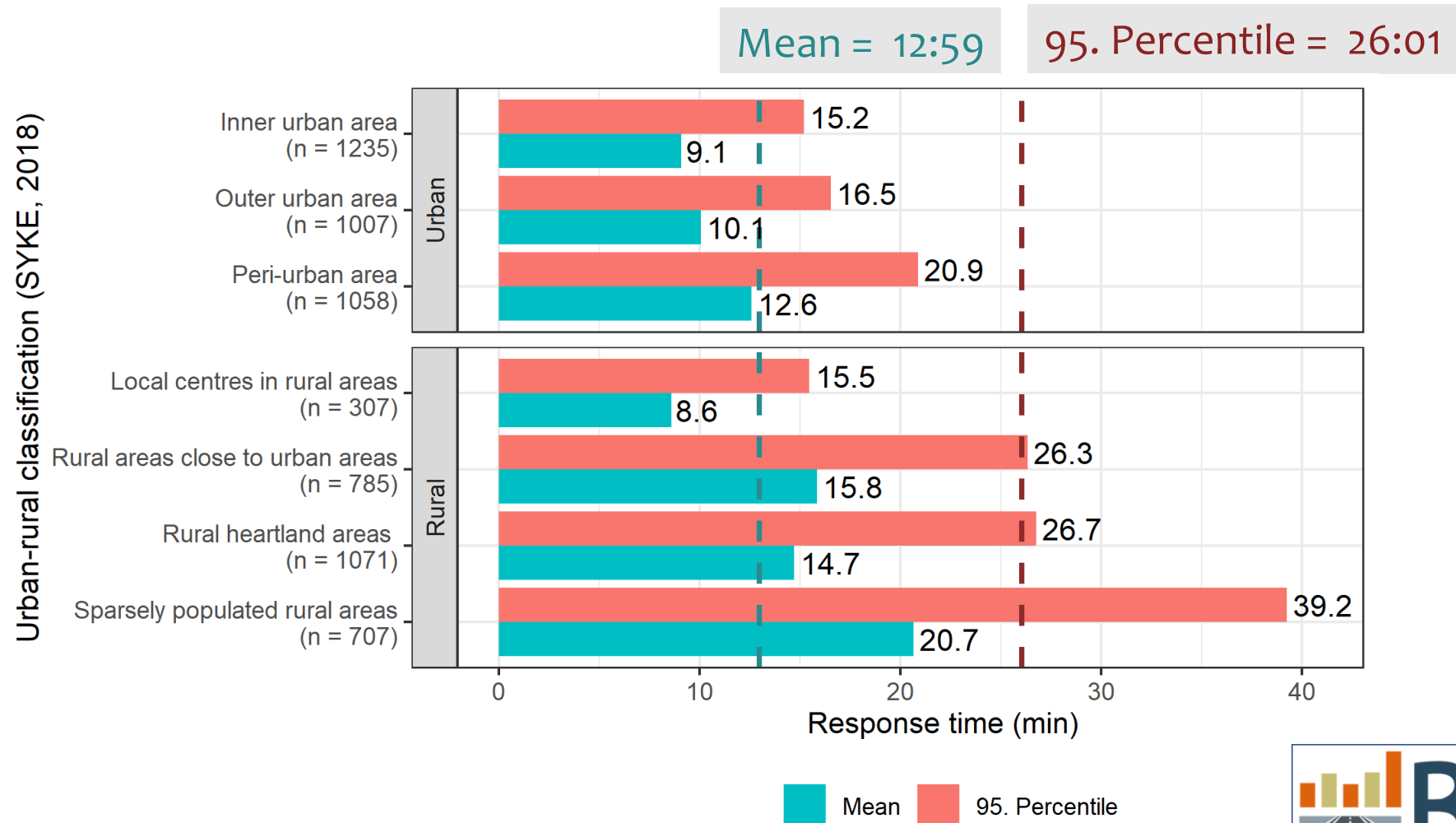


KPI = 26:01 Mean = 12:59

Response times by hour (2019, n = 6,174)



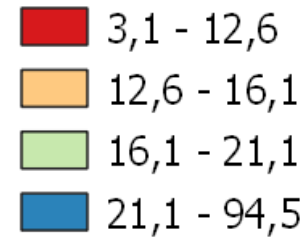
Response times by urban–rural classification (2019, n = 6,174)



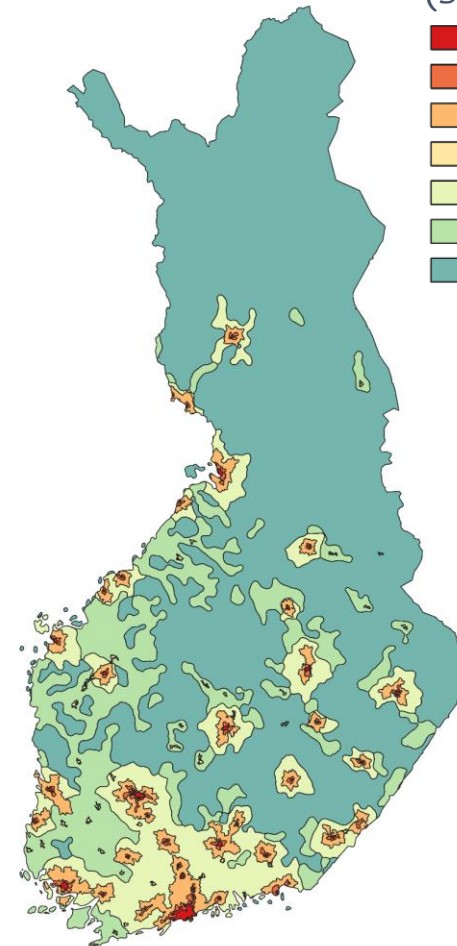
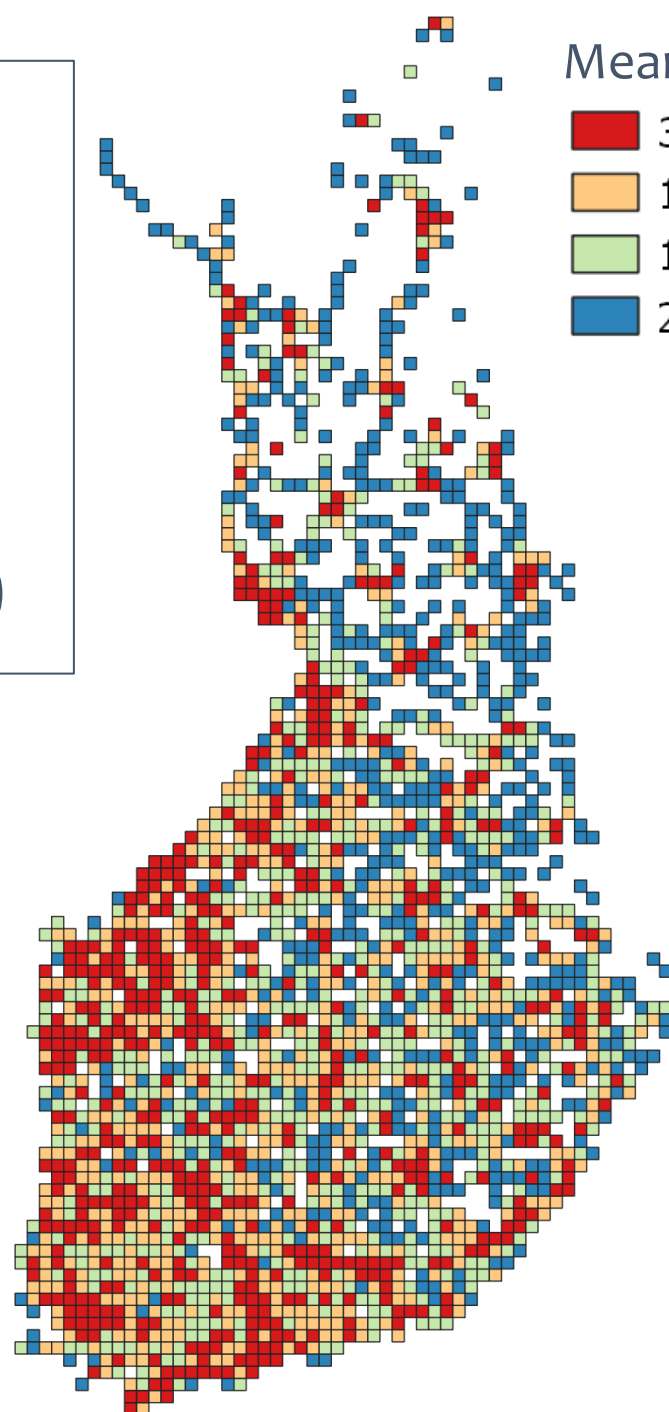
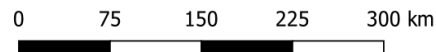
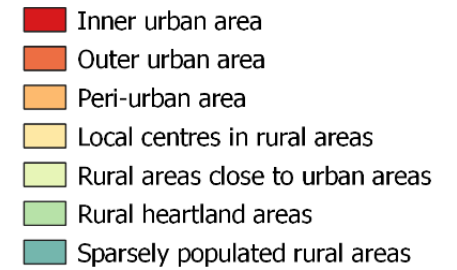
Geographic distribution of response times

Injury accidents
(2016–2020, n = 31,231)

Mean of response times (min)



Urban–rural classification
(SYKE, 2018)



Lessons learned

- PRONTO-database is suitable for calculating post-crash care KPI
- Geographical co-ordinates allow for spatial analyses
- Useful to automate analyses

Thank you!

More information:

johannes.mesimaki@vtt.fi