Case presentation: Improving the average rescue time of a Nordic Lifeguard Organisation by 30%

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Aims

- ❏ Improve the rescue time for a specific Nordic Lifeguard Organisation (NLO).
- ❏ Share data to offer inspiration and help other lifeguard organisations to make cost-efficient optimisations of their rescue time performance.

Methodology

The methodologies used to develop the proposed standard for measuring the average rescue time in a lifeguard organisation are the Statistical Value Chain[1], the standard for measuring rescue time in a lifeguard organisation[2], and the Drowning Timeline[3].

Outlook

By collaborating on an open-source data project for average rescue time worldwide, all involved parties can optimise the rescue time in the most cost-effective way for their individual lifeguard organisation.

Motivation

- ❏ It is estimated that at a global level more than 500 million USD is spent annually on surf lifeguarding.
- ❏ A certain part of this money or resources is allocated to the 'rescue phase' of the drowning timeline.
- ❏ According to Pia and Vittone (2006)[4] drowning incidents can take place in less than 40 seconds.
- ❏ Optimised rescue time is essential to all lifeguard organisations.
- ❏ Worldwide collaboration and knowledge-sharing can help everyone with cost-efficient optimisation of their rescue time.

Baseline and results

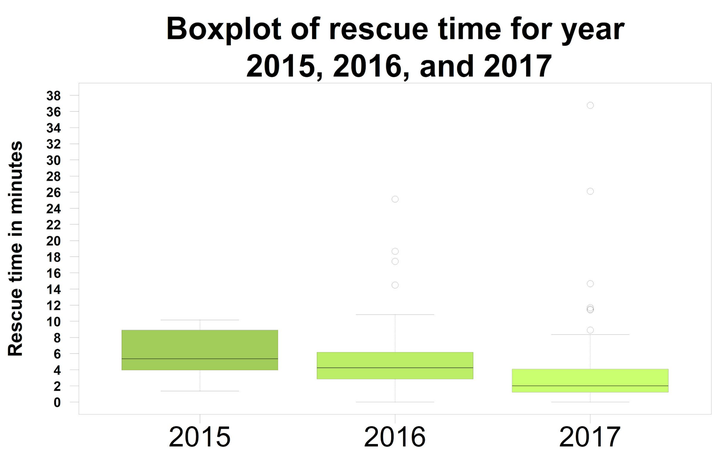

Fig 1: The average rescue time results for NLO in 2015 were "6 min", in 2016 "5 min and 28 sec", and in 2017 "4 min and 4 sec". This is roughly a 30% improvement based on the average measured rescue time between 2015 and 2017.

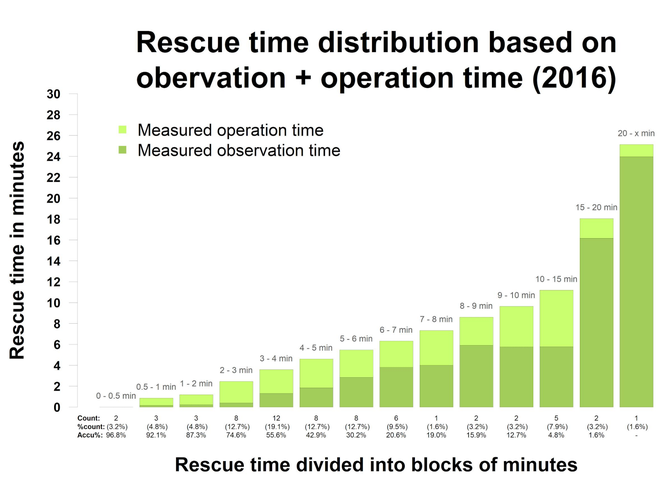

Fig 2: This figure gives the distribution of the rescue time in 2016. On the x-axis the count, the probability, and the cumulative probability are given. On the y-axis the measured rescue time is given distributed on the observation and operation time.

Effects and actions

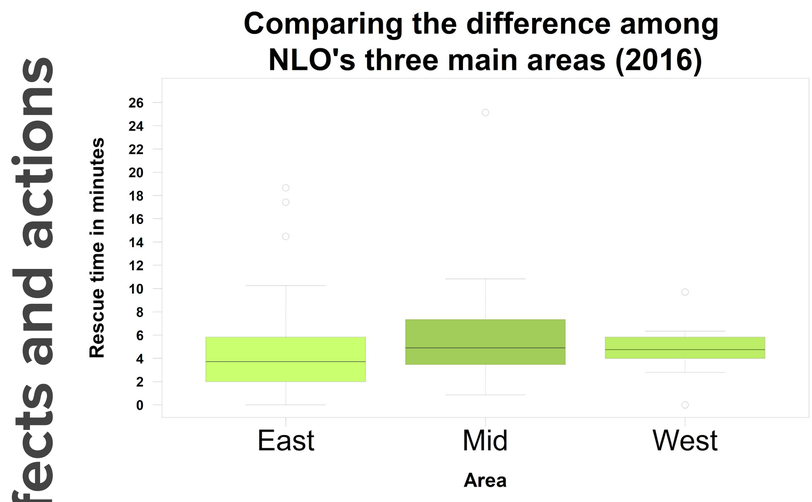

Fig 3: This figure indicates that there is an **effect** from the variable "area" on the rescue time. Running statistical tests does not indicate that the difference is due to the different beaches' physical conditions. The difference is most likely found in the difference in culture among the area teams. This suggests that an **action** for optimisation could be to to explore the different cultures among the three areas.

Effects and actions

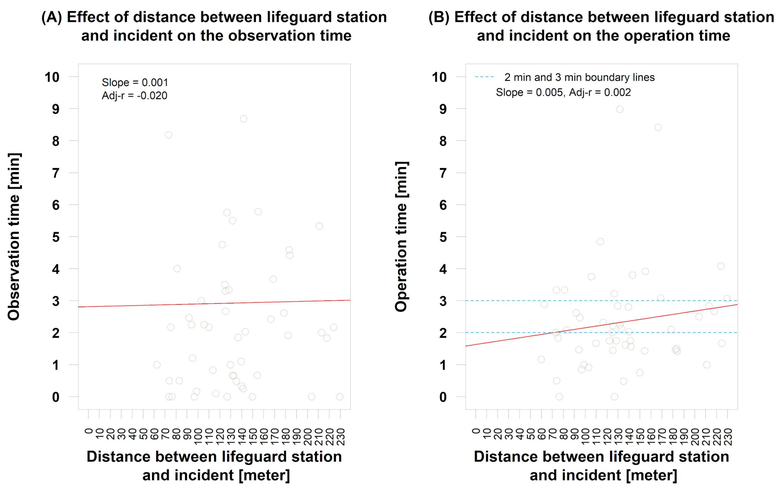

Fig 4: The data (2016) indicate there is an effect on the rescue time from the variable 'distance'. This distance is between the incident and the lifeguard station. The **effect** seems to be greater on the operation time than on the observation time. This suggests an **action** of minimising the distance between the lifeguard's initial position and the incident.

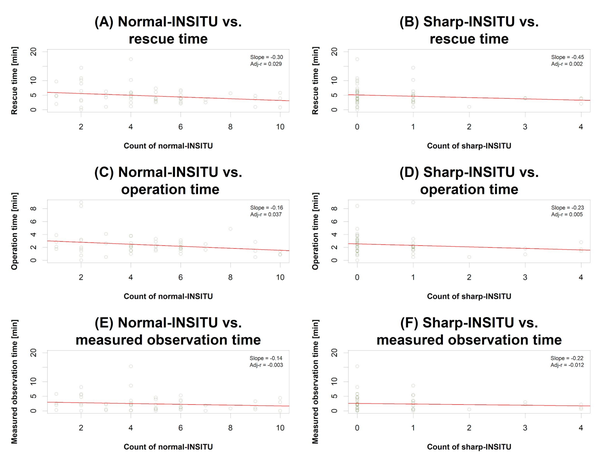

Fig 5: Two types of INSITU training have been tested in 2016: Normal INSITU and Sharp INSITU. 'Sharp INSITU' is basically unwarned tests where an incident is simulated. The data suggest that there is a higher (and more positive) **effect** on the rescue time than from the normal INSITU training. This suggests an **action** to increase the ratio of 'sharp INSITU'.

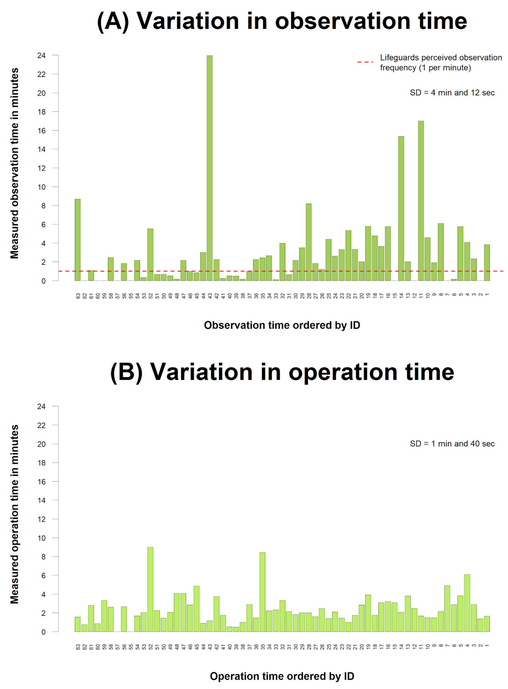

Fig 6: Illustration of the variation in observation time and operation time. It can be seen from the figure that there is a significantly larger variation in the observation time compared with the operation time. In a study by Herrmann (2016)[5], the lifeguards indicated that they would look carefully at the water and surroundings once per minute.

The data suggest that a beneficial **action** could be to investigate why there is such an apparent discrepancy between the lifeguards' perceived observation time and the measured observation time.

Effects and actions

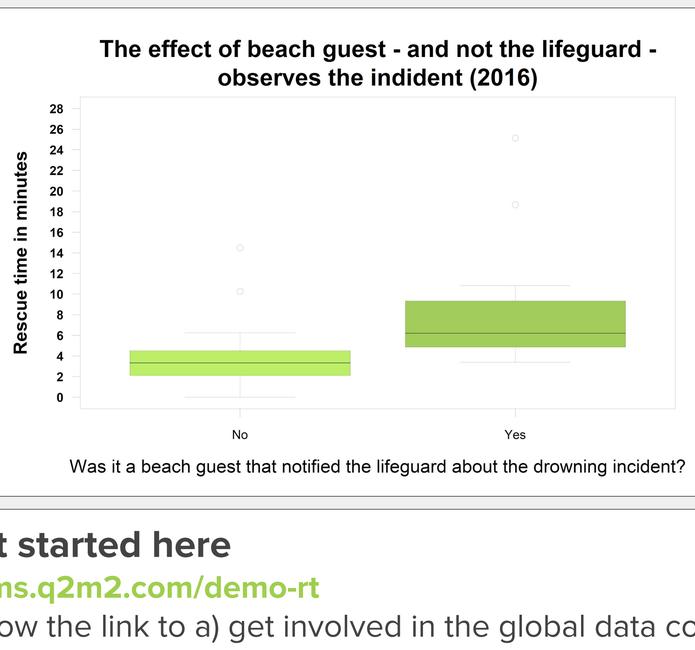

Fig 7: The figure illustrates the **effect** on the rescue time of a beach guest identifying the incident and notifying the lifeguards about it, versus the lifeguard identifying the incident first and acting accordingly.

The data suggest that taking **action** where the lifeguard will be the first to spot the incident can optimise the rescue time.

Concluding remarks

- ❏ In the NLO, average rescue time has been improved by 30% from 2015 to 2017 without increasing NLO's budget.
- ❏ More than 40 variables have been evaluated over the years, including weather condition, water temperature, beach type, mode of transportation, and lifeguard swimming pre-tests.
- ❏ Of all the variables that have been evaluated, it is the observation time that accounts for the largest single impact (50-60%) on the rescue time.
- ❏ All data should be interpreted relative to "no lifeguard organisation".

Get started here

forms.q2m2.com/demo-rt

Follow the link to a) get involved in the global data collecting and sharing project to improve your organisation's average rescue time, and b) see a demo for rescue-time data collection.

Acknowledgements

The Danish Council for Greater Water Safety, Denmark
http://www.badesikkerhed.dk/en/
[b] The North Zealandic Lifeguard Organisation, Denmark
http://livredningstjenesten.dk/
[a] Q2M2, www.q2m2.com

Rådet for Større Badesikkerhed

Den Nordsjællandske Livredningstjeneste Siden 1931

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References

1) Herrmann, I.T., Henningsen, G., Wood, C.D., Blake, J.I., Mortensen, J.B. and Spliid, H., 2013. *The Statistical Value Chain-a Benchmarking Checklist for Decision Makers to Evaluate Decision Support Seen from a Statistical Point-Of-View.* International Journal of Decision Sciences, 4(2), pp.71-83.
2) Herrmann, I.T., Roberton D., Mogensen J., and Hedegaard S., 2017. *Proposal for Standard for Measuring Average Rescue Time for a Surf Lifeguard Organisation*, World Conference on Drowning Prevention, Vancouver, 17-20. October 2017.
3) Szpilman, D., Tipton, M., Sempsrott, J., Webber, J., Bierens, J., Dawes, P., Seabra, R., Barcala-Furelos, R. and Queiroga, A.C., 2016. *Drowning timeline: A new systematic model of the drowning process*. The American journal of emergency medicine, 34(11), pp.2224-2226.
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5) Herrmann, I.T., 2016. *Comparative Study on Observation Time for a Nordic LIfeguard Organisation (NLO)*, Report.

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