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Quality | Quantitative
Measurement | Management

Benefits of measuring organisational rescue time and *sharing data globally*

A cross national initiative between <u>Spain and Denmark</u>

Performance Optimisation Program (POP)

World Conference on Drowning Prevention (WCDP) 2019, Durban

POP is developed and supported by:

Real Federación Española de Salvamento y Socorrismo
www.rfess.es

The Danish Council for Greater Water Safety, Denmark
www.badesikkerhed.dk/en/

The North Zealandic Lifeguard Organisation, Denmark
www.livredningstjenesten.dk/

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www.q2m2.com

Motivation

- Vittone and Pia* (2006) indicates that an instinctive **drowning** incident takes between **20 and 60 seconds**.

- In 2018 **64** people drowned in Spain in lifeguarded areas.**

*Mario Vittone and Francesco A. Pia, 2006. *It Doesn't Look Like They're Drowning - How To Recognize the Instinctive Drowning Response*, Journal of US Coast Guard search and rescue. p. 14.

**RFESS. Drowning Statistics 2018, Spain. Royal Spanish Lifesaving Federation (2019). (By email: escuela2@rfess.es, 12th of September 2019).

Objectives

- ❑ Sharing data on rescue time globally
- ❑ Developing a data based program for cost-efficient operation of lifeguard organisations. In other words:

For X ressources, how can we achieve the lowest possible rescue time?

How do we measure the average rescue time?

- ❑ Test standard published at WCDP in 2017: www.q2m2.com/WCDP2017/proposal
  Based on the Statistical Value Chain*: www.q2m2.com/the-statistical-value-chain

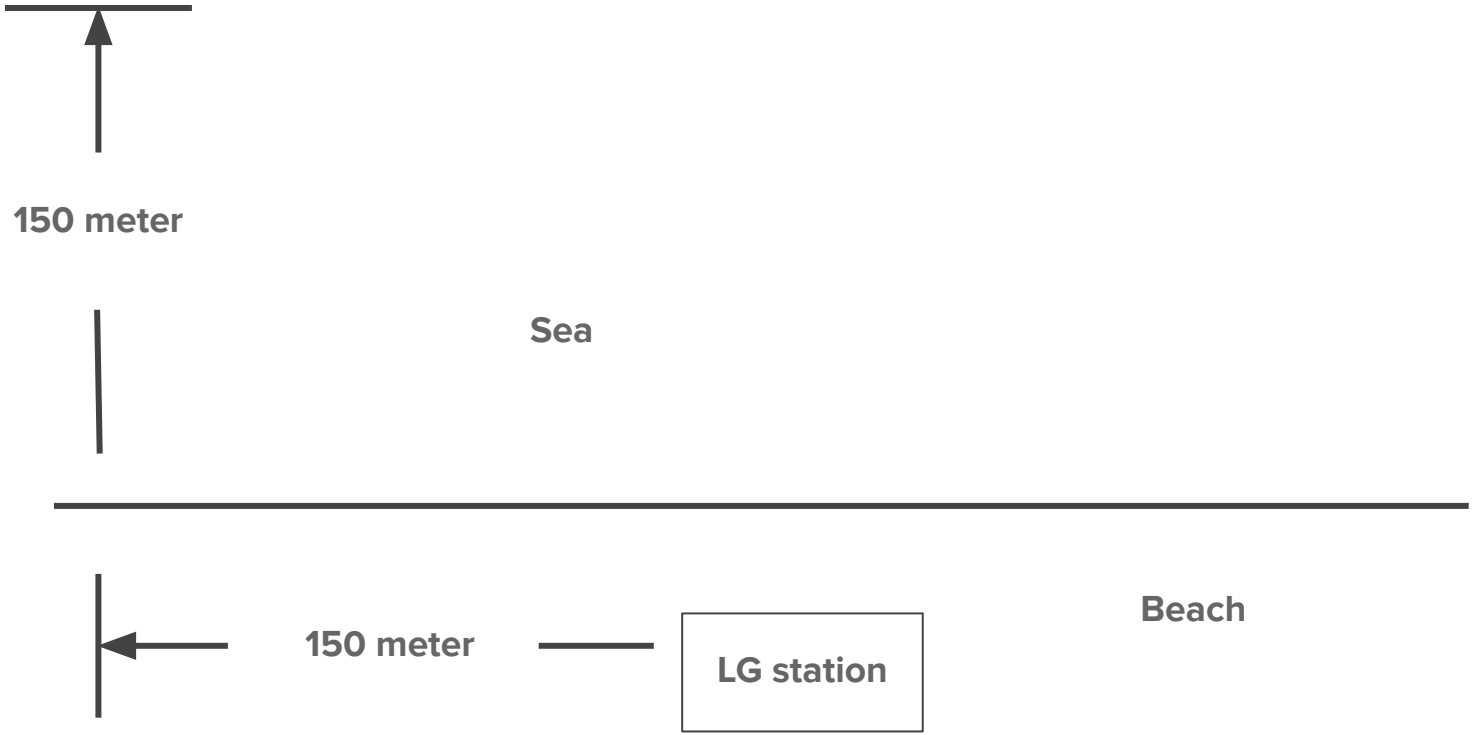
Main features are:

- ❑ **Representative** sampling
- ❑ **Unwarned** tests
- ❑ Sample size is preferable larger than five pct.
- ❑ **Rescue time = observation time + operation time**
- ❑ Measured from an incident occurs until lifeguard is at the position
- ❑ Third-party **verification**

Data collection form: https://form.q2m2.com/dnk-2019-rt/

*Herrmann, I. T., G. Henningsen, C. D. Wood, J. I. R. Blake, J. B. Mortensen, and H. Spliid. 2013. The Statistical Value Chain (SVC)—A Benchmarking Checklist for Decision Makers to Evaluate Decision Support seen from a Statistical Point-of-View. International Journal of Decision Sciences 4(2). July–December 2013.

Area of responsibility = test area

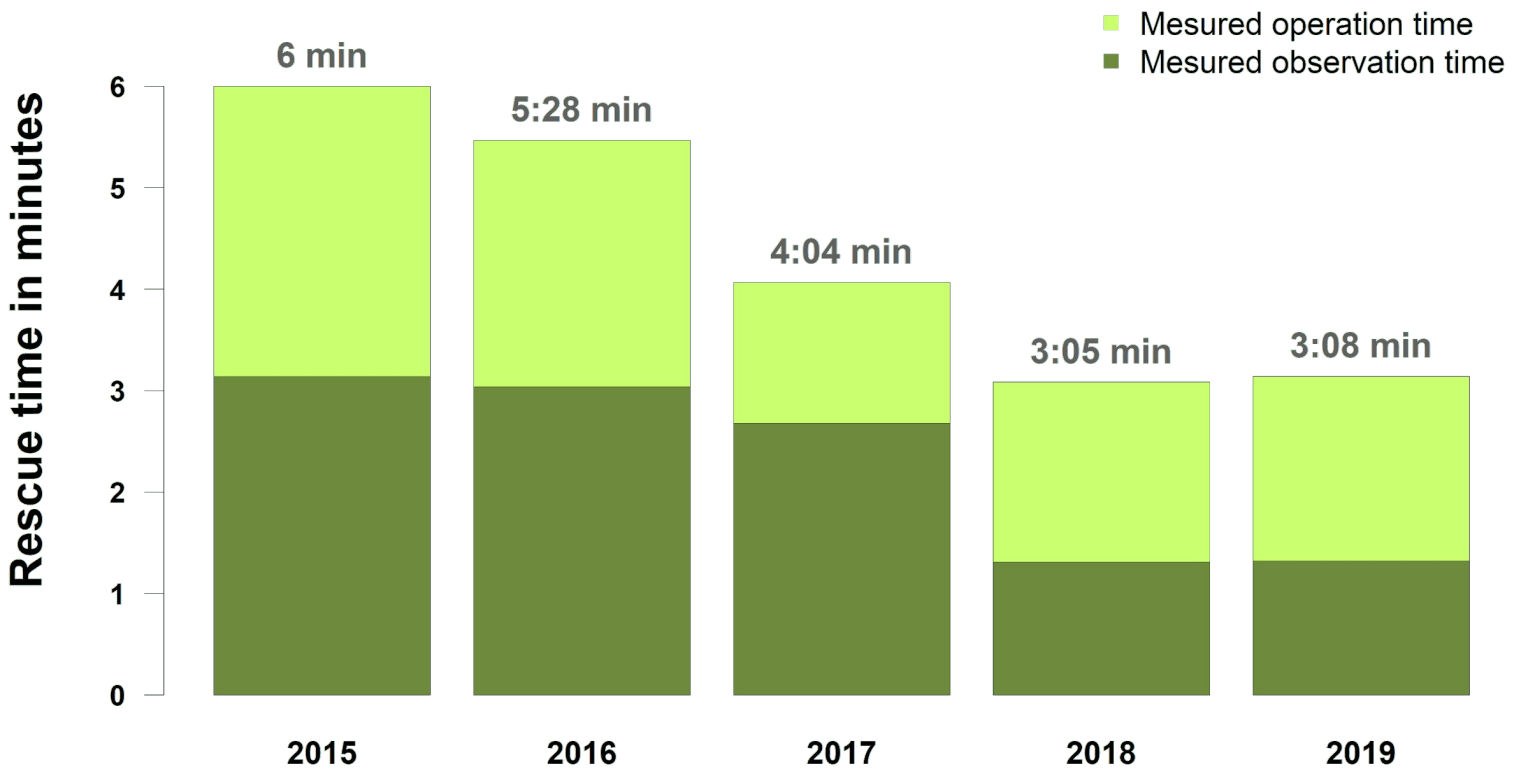


Data sources

Spain

Denmark

Average rescue time, Denmark, NLO (2015 to 2019)



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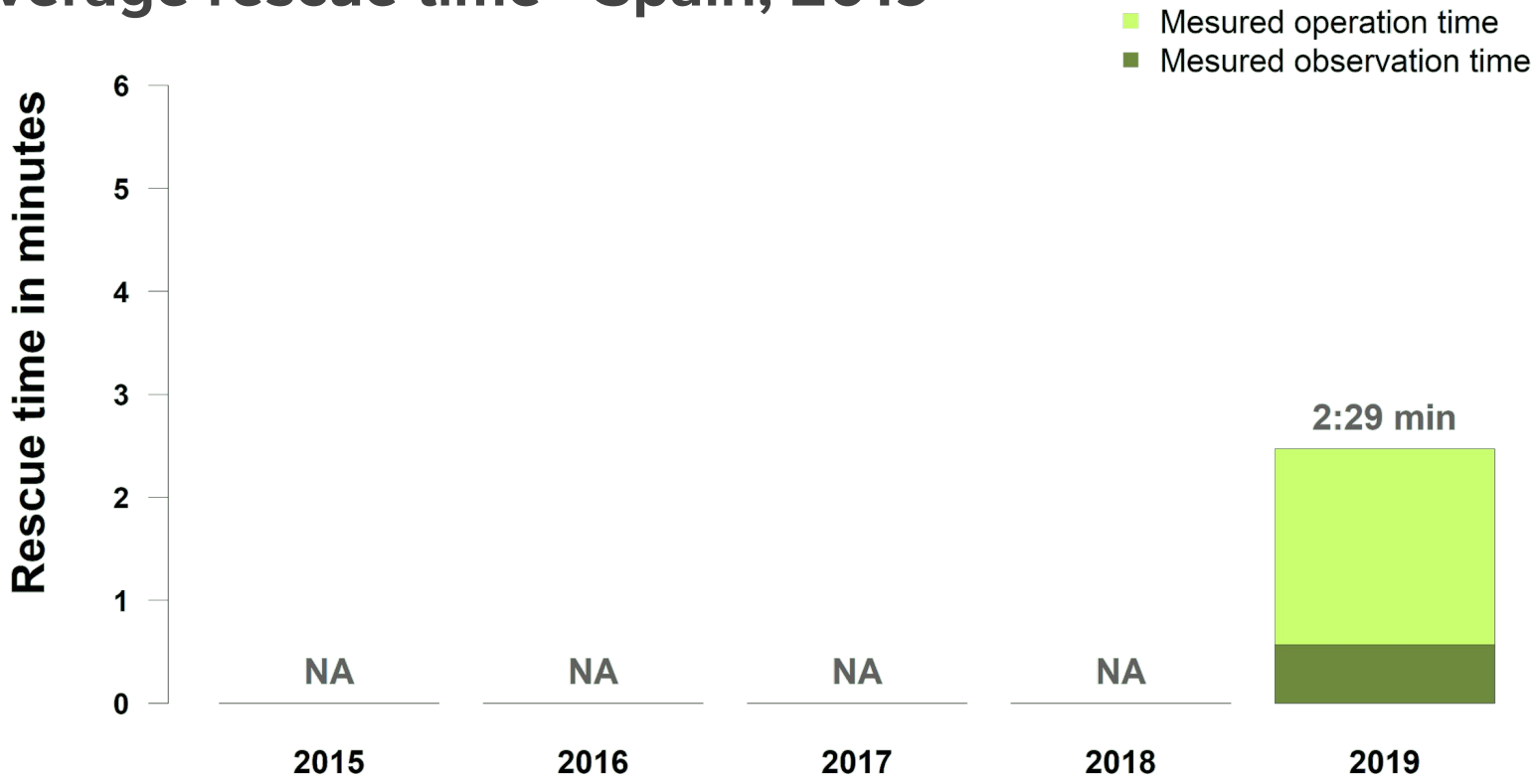
Average rescue time - Spain, 2019



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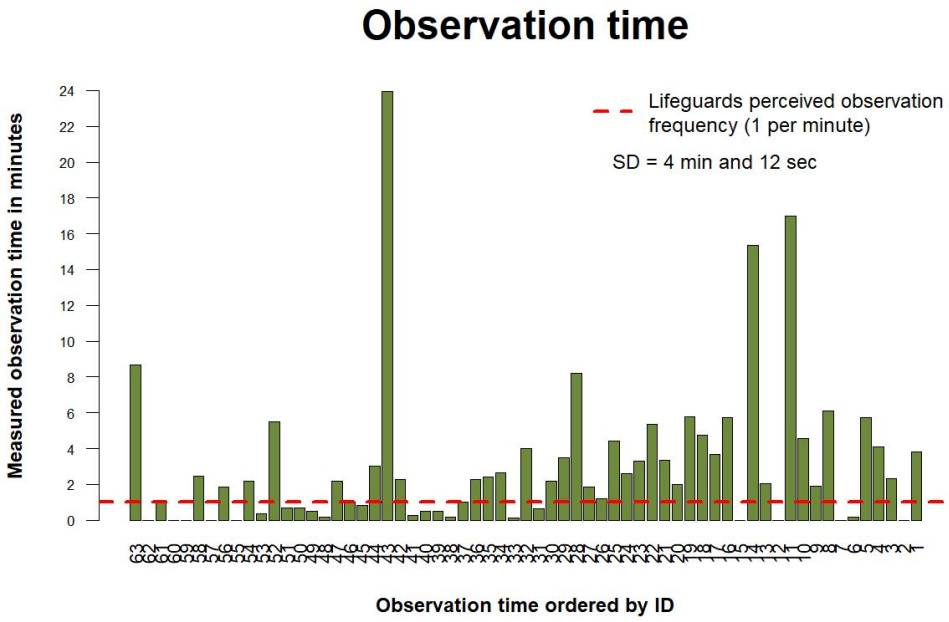
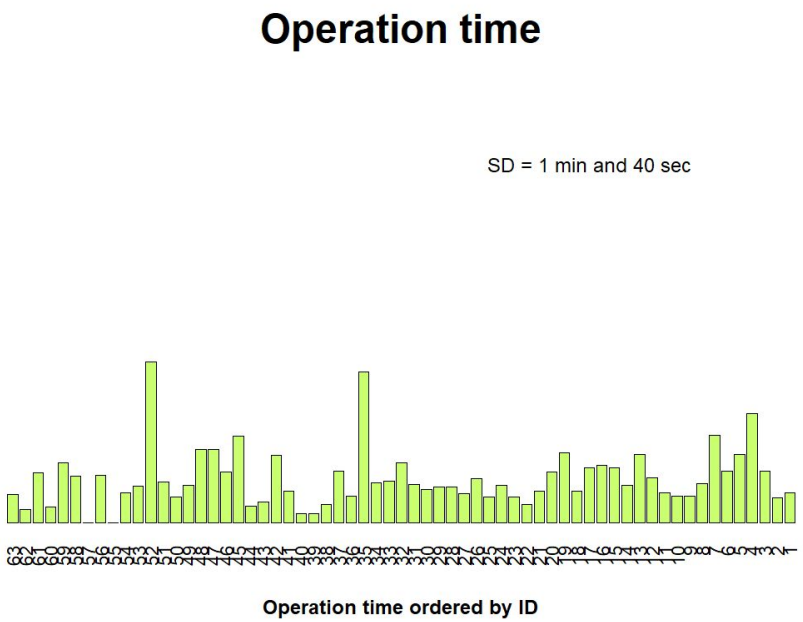
Variation





Data: NLO, 2016

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Standard deviation

	Denmark						Spain
Year	**2015**	**2016**	**2017**	**2018**	**2019**		**2019**
Observation time	2.5	4.2	5.1	1.9	1.7		1
Operation time	1.6	1.6	1.4	0.9	0.9		0.4
Rescue time	3.1	4.7	5.3	2	1.9		1.2

n (Denmark): *2015* = 8, *2016* = 55, *2017* = 126, *2018* = 46, *2019* = 99
n (Spain): *2019* = 26

Difference between lifeguards perceived and measured rescue time

	Denmark	
Year	**2018**	**2019**
Operation time	50 min	6 min
Observation time	71 min	36 min

Sum of total measured operation time - sum of total perceived operation time
Sum of total measured observation time - sum of total perceived observation time

...Based on NLO midway feedback for 2018 and 2019.

n: *2018* = 35, *2019* = 75

Lifeguard stations

Spain

Denmark

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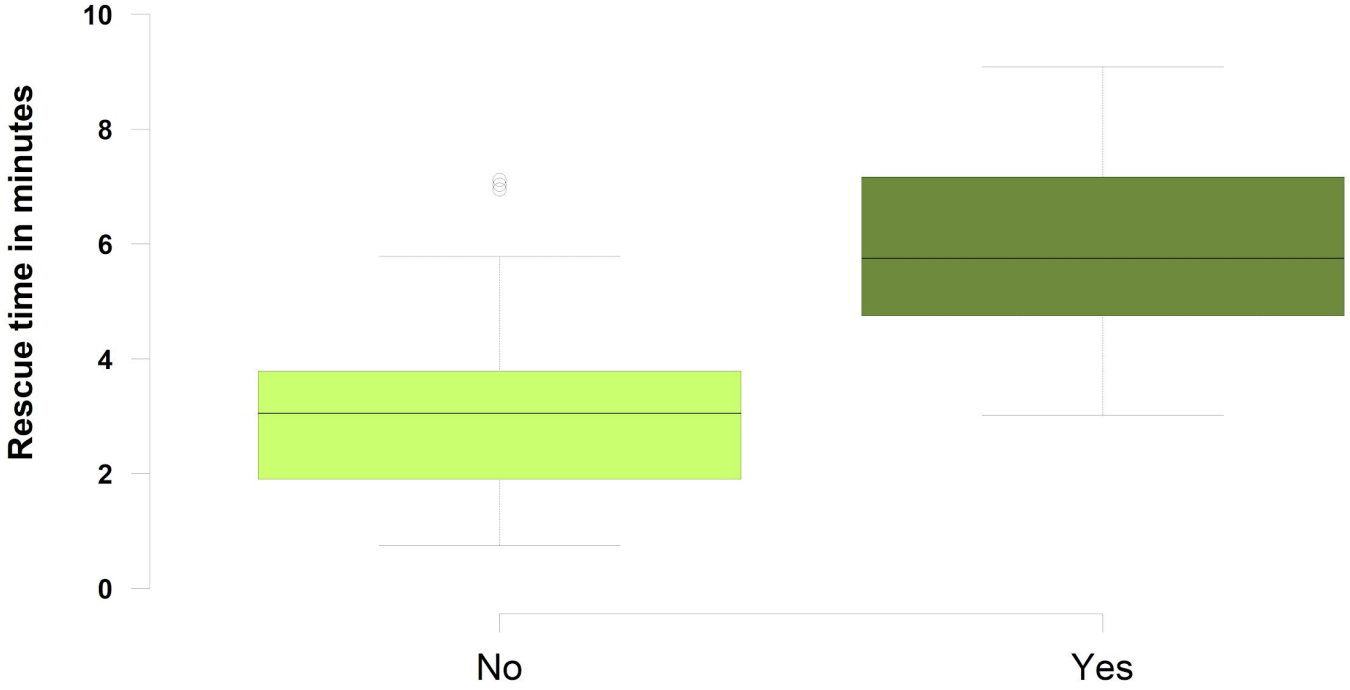
Third party verification or not?



n (No): 97
n (Yes): 17

Data: NLO, 2014

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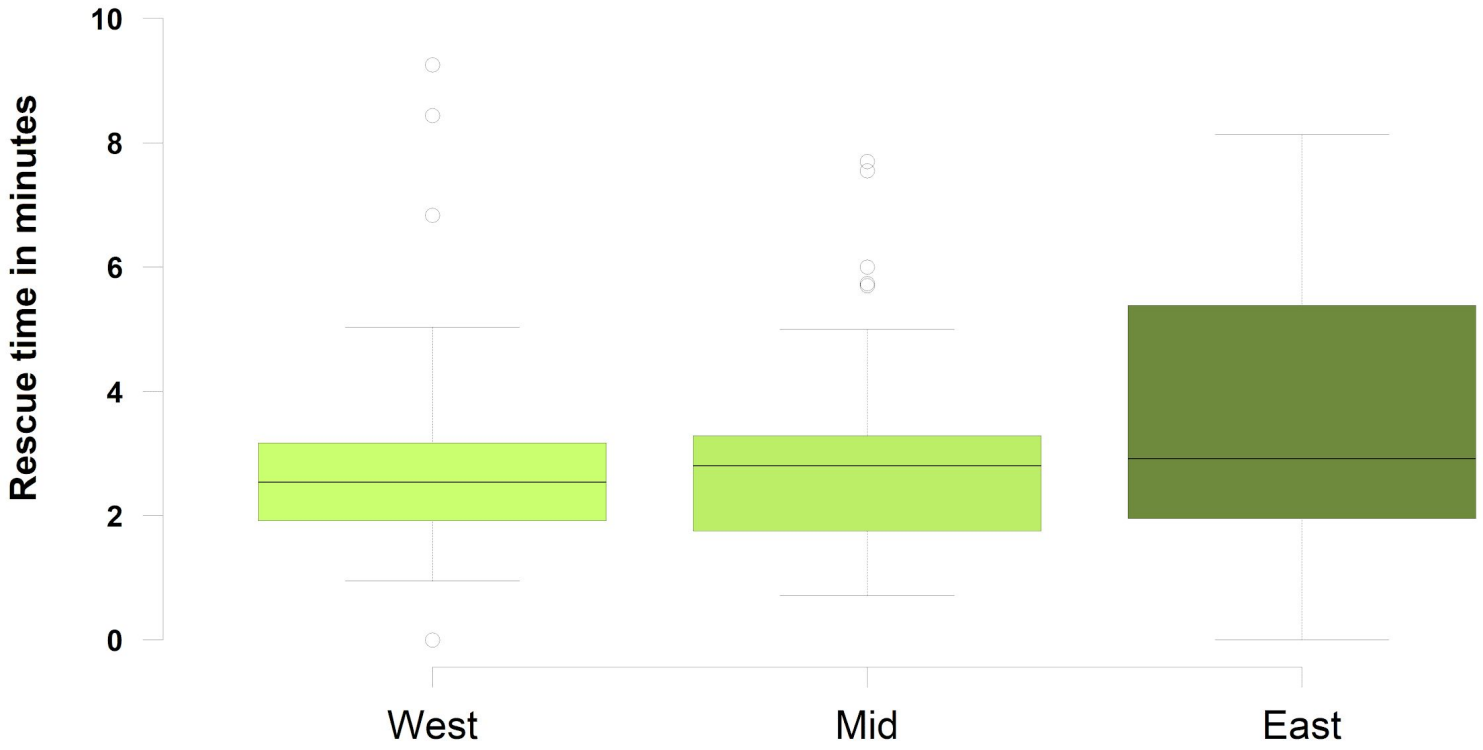
Differences in rescue time <u>within your organisation</u>?



n: *West* = 30, *Mid* = 40, *East* = 29 Data: NLO, 2019

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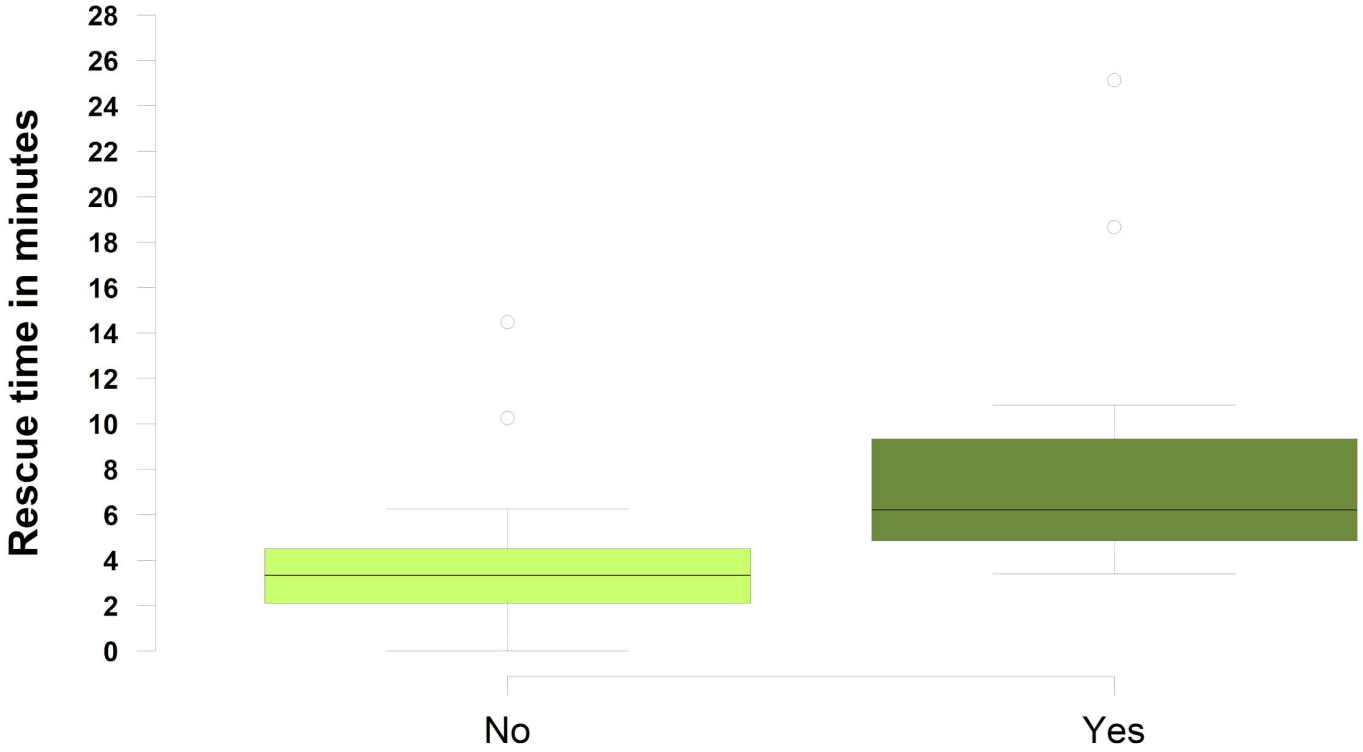
Was it a beach guest that notified the lifeguard about the drowning incident?



n (No): 33
n (Yes): 20
n (NA): 10

Data: NLO, 2016

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What can affect the rescue time?

Variables investigated:

1. Year
2. Date
3. Period
4. Time
5. Time of day
6. GPS for lifeguard station
7. GPS for drowner
8. Distance from lifeguard station to drowner
9. Flag
10. Beach
11. Distance to shoreline from lifeguard station
12. Beach guests
13. Surf size
14. Wind speed
15. INS 1
16. INS 2
17. Visibility above water
18. Seaweed in water
19. Visibility above water
20. Lion's mane jellyfish
21. Calls 112
22. Level of communication and analyzing before action-taking
23. Use of wetsuit
24. Engine starting problems
25. Mode of Transportation
26. Use of wetsuit
27. Pre-warning of lifeguard
28. Third-part control
29. Age of lifeguard
30. Years of experience of lifeguard
31. Lifeguards days on beach current season
32. Experience with real-life emergencies
33. Sharp INSITU
34. Self INSITU
35. Standard INSITU
36. Test time for 50 meter swim
37. Test time for 1200 swim
38. Score in theory test
39. **And more...**

Test index

- Test index = Number of tests / Organisational size
- Organisational size = days in operation x manned lifeguard station in the organisation

Example:

NLO: **60** days in operation **x 25** manned lifeguard stations **= 1500**

No. of tests = 75

Test index = 75/1500 = 5%

Benefits of POP:

- ❑ **Continuously improving** the rescue time
- ❑ Develop methods to achieve **acceptable** rescue time
- ❑ Find the most **cost-efficient** methods to achieve acceptable rescue time

Outlook

- More data is needed.
- We **invite anyone** who is interested in **optimization of rescue time** to participate in this global data collection and analysis program.
- The service is **free-of-charge**.
- Data and results will be shared publicly and in an anonymized form.
- We can also help organisations with **tailored and cost-efficient test programs**.

This presentation can be downloaded from: www.q2m2.com/references