LifeBoard®

4 December 2020

A design approach to public rescue equipment

// AGENDA

Introduction: LifeBoard (5min)
- Design for public rescue
- How do we collect data?

Split test of public rescue equipment (25min)
- Rescue Station: Lifebuoy ring
- Public Rescue Tube
- Rescue Board: LifeBoard

Rescue equipment reach

Strategic placement of rescue equipment

Development of tracking system (10 min)
- Further data collection
- GPS data

Knowledge sharing (10min)
- Data collection
- Use of public equipment

Questions & Discussion

// TEAM

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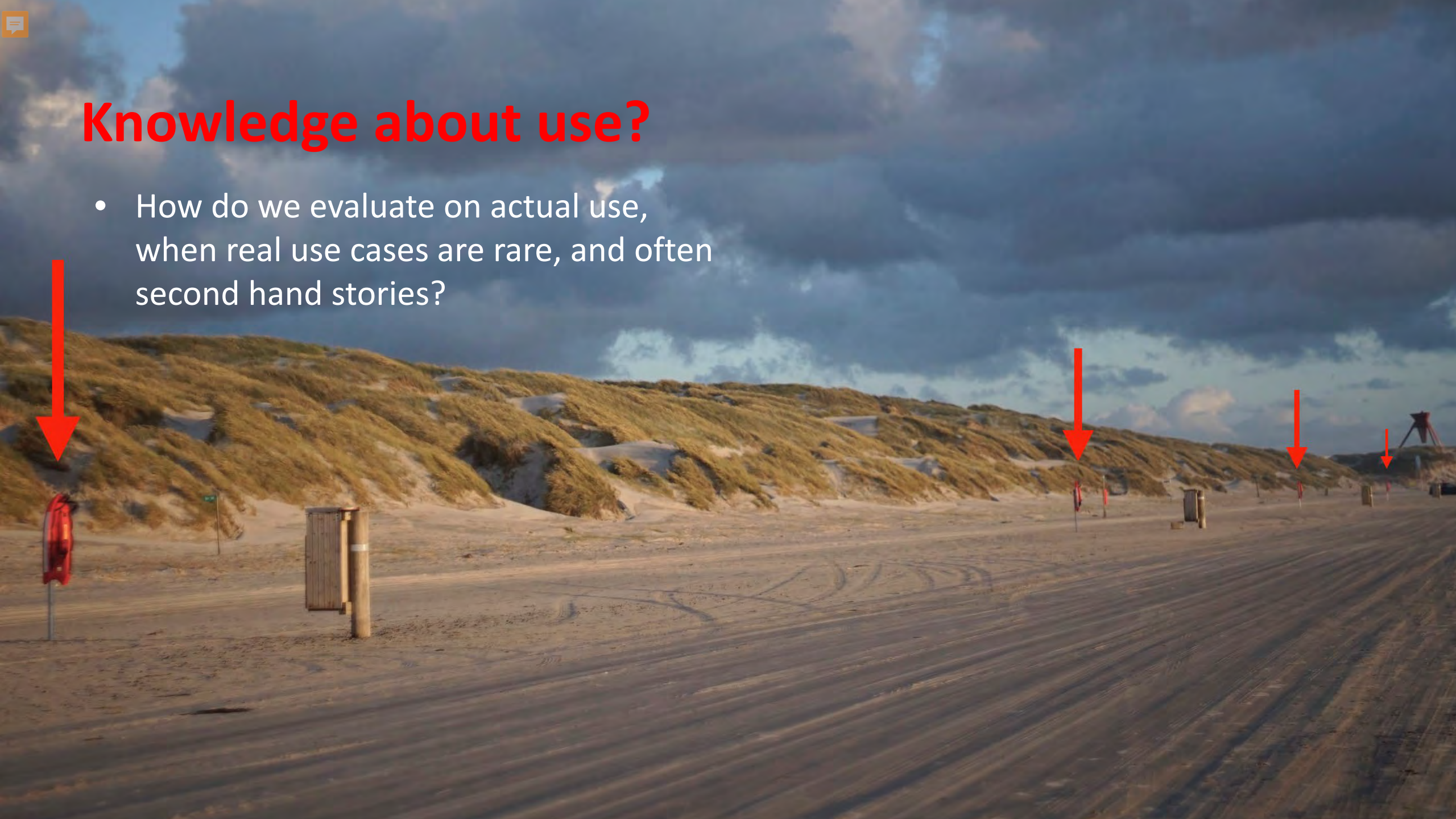
LifeBoard®

In the mindset of a person in panic

- User centred design: How does an untrained person act?
- Intuitive in use: Even simple instructions may not be read.
- Passive safety: Bouyancy is key

Knowledge about use?

- How do we evaluate on actual use, when real use cases are rare, and often second hand stories?



Monitoring

- LifeBoard 2020 -

Aim was to get data collection of rescue actions

Live-feed from GPS

Data every 30 seconds

- Location
- Speed

Alert notifications

- If moved more than 50m
- If battery is low

Challenges

Battery Capacity
Maintenance
Reliability
Cost

But we had no rescues or misuse!

- And if we did; 1 rescue would be an achievement, but not significant for analysis

Split Test

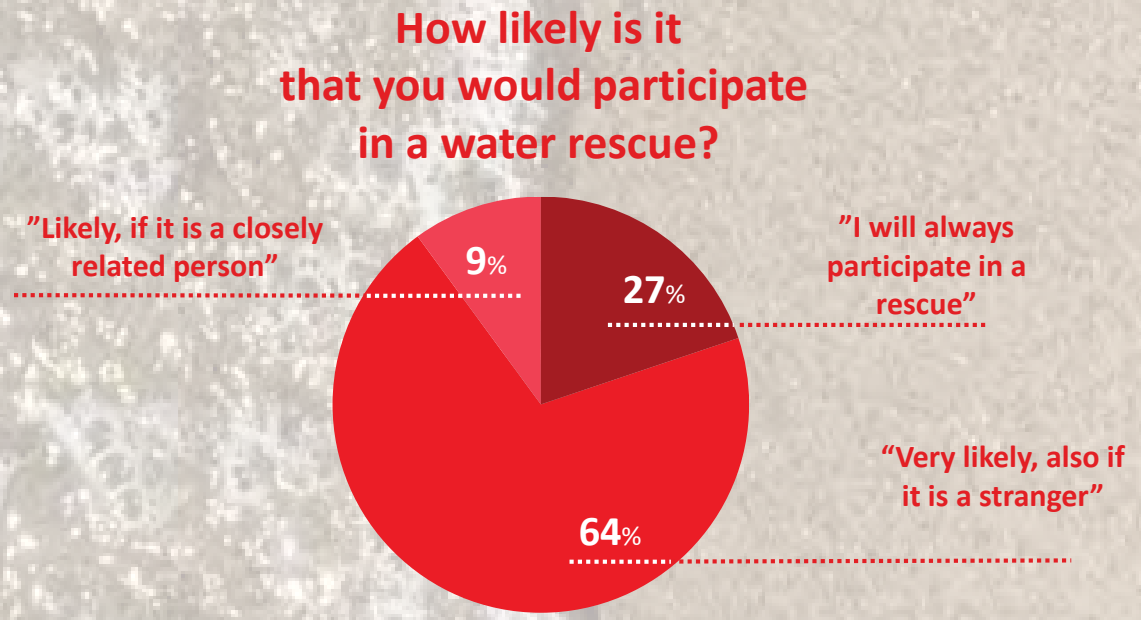
- Results -

Rescue Equipment

- Rescue Tube
- LifeBoard®
- Rescue Station
  (incl. ring, vest (x2), floating line, belt)

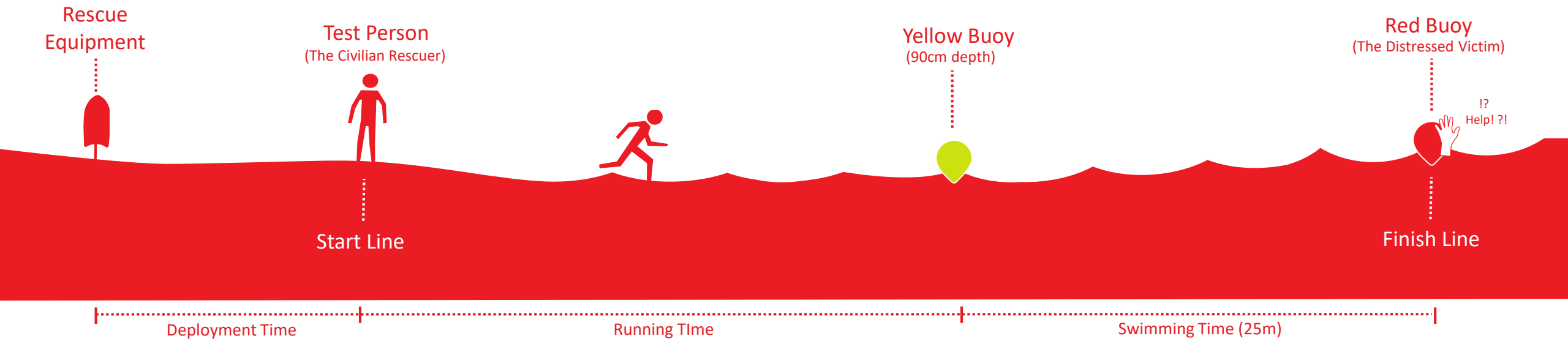
The Danish

- Beachgoers -



Split Test

- Setup -



The Test Persons…

… are testing rescue equipment in the same weather and water condition

… are both male and female in different ages

… are timed when testing equipment for comparison of time

… don't get any instructions before using the different rescue equipment

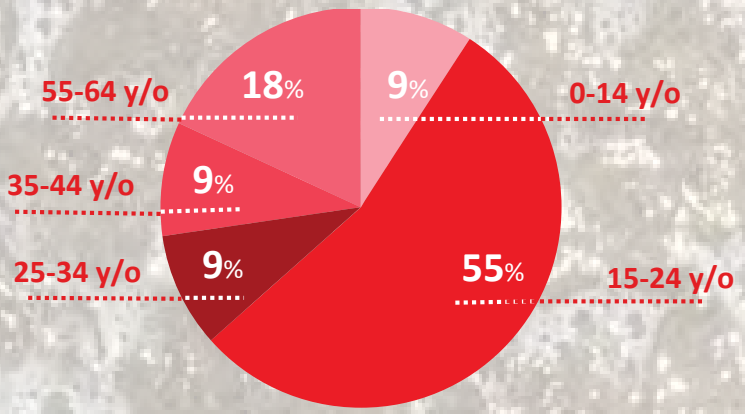
11 out of 19

Tested all rescue equipment

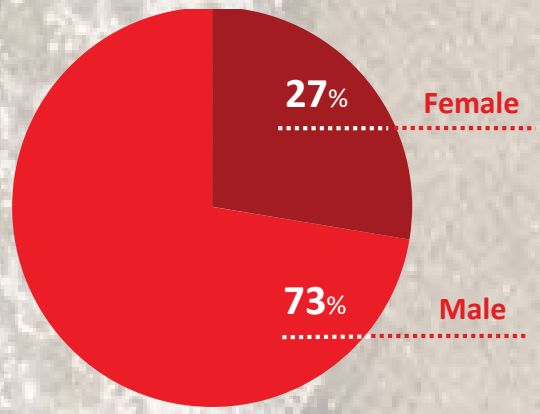
(applicable dataset)

Test Persons
- Demographics -

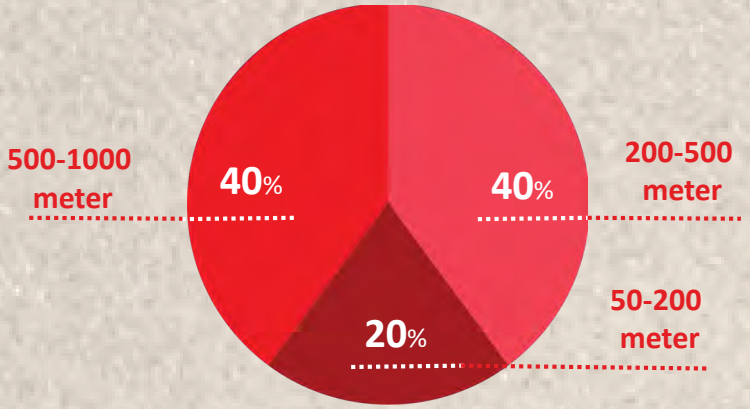
Age



Gender



Longest swim distance the last two years



Rescue Station

- Deployment -

The rescue station has a lot of different part, which makes It difficult to use correctly in a timely matter.

> That just showed all the weaknesses in this system

- Mogens, Test user

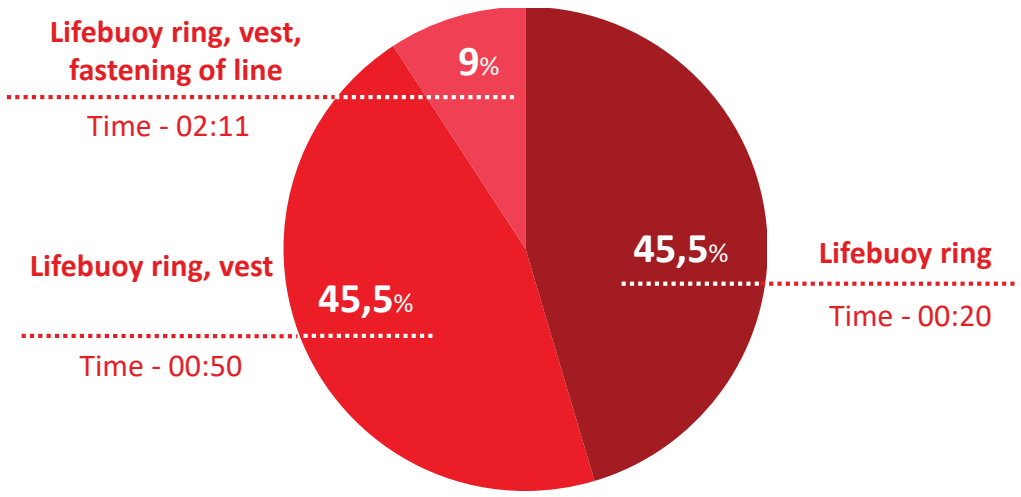
Rescue Station

- Deployment -

Average deployment time: SLOW

46 sec!

Equipment in use

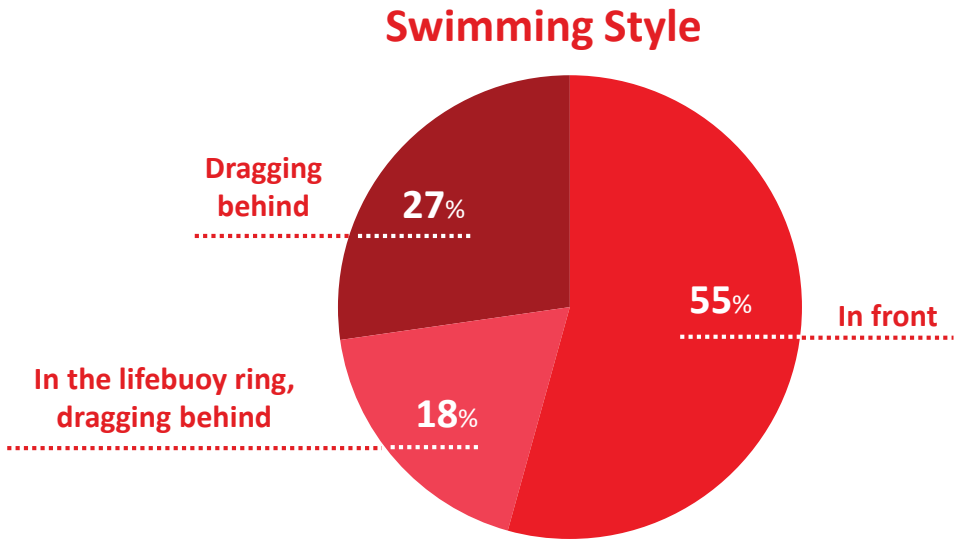


10 out of **11**

are NOT secured to the lifebuoy ring

Rescue Station

- Swimming -



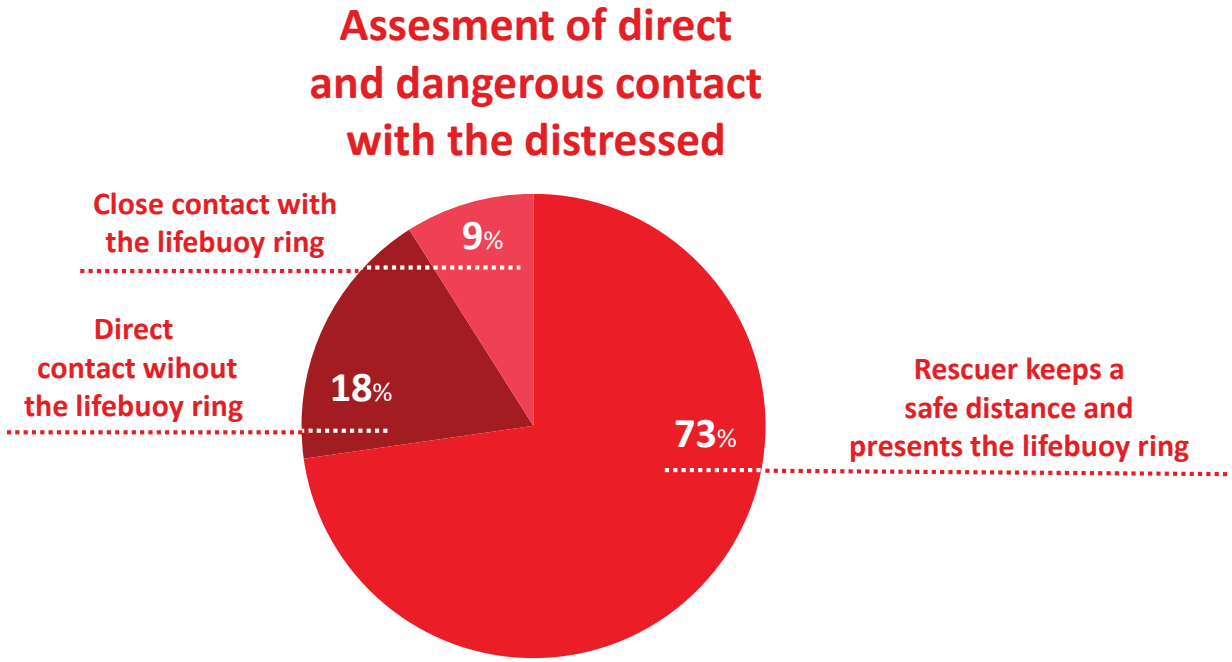

Vest in size XXL


Line tangled around leg while swimming

Average swimming time: 43 sec / 25m

Rescue Station

- Contact with the distressed -



Test persons who drag the lifebuoy ring behind forget to present the ring when meeting the distressed victim.

Rescue Station

+

- Recognizable rescue equipment
- High level of safety if used correctly

-

- Time consuming instructions and deployment
- Very low level of correct use
- Slow to swim with
- Risk of clutching and direct contact with a distressed victim

?

- A symbol of safety
- Limited data of rescues
- What challenges do you see?
- Medium total volume (150N Buoy + 50N Vest)

Rescue Tube

- Deployment -

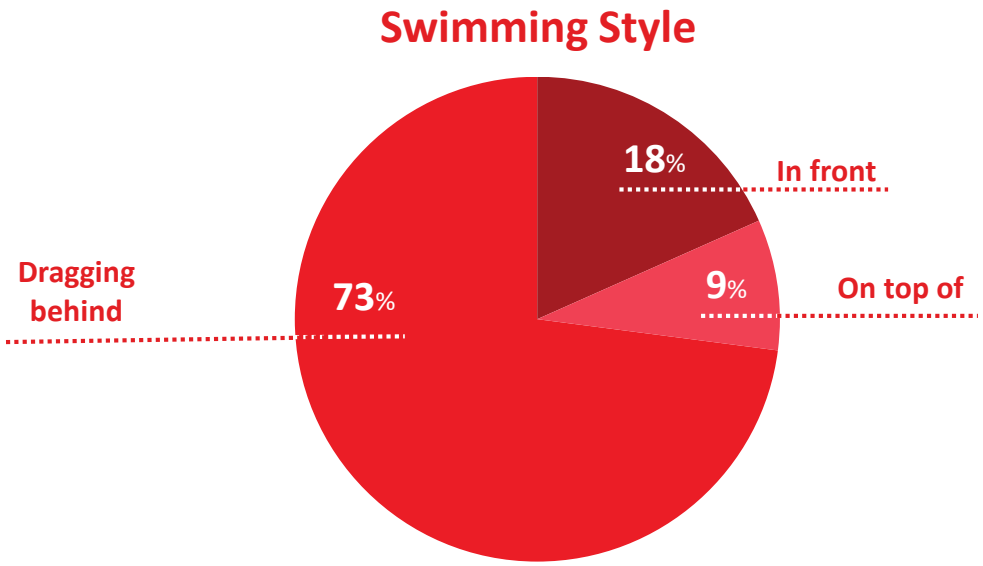
11 out of 11 remember to put the leash on

Average deployment time: FAST

16 sec!

Rescue Torpedo

- Swimming -

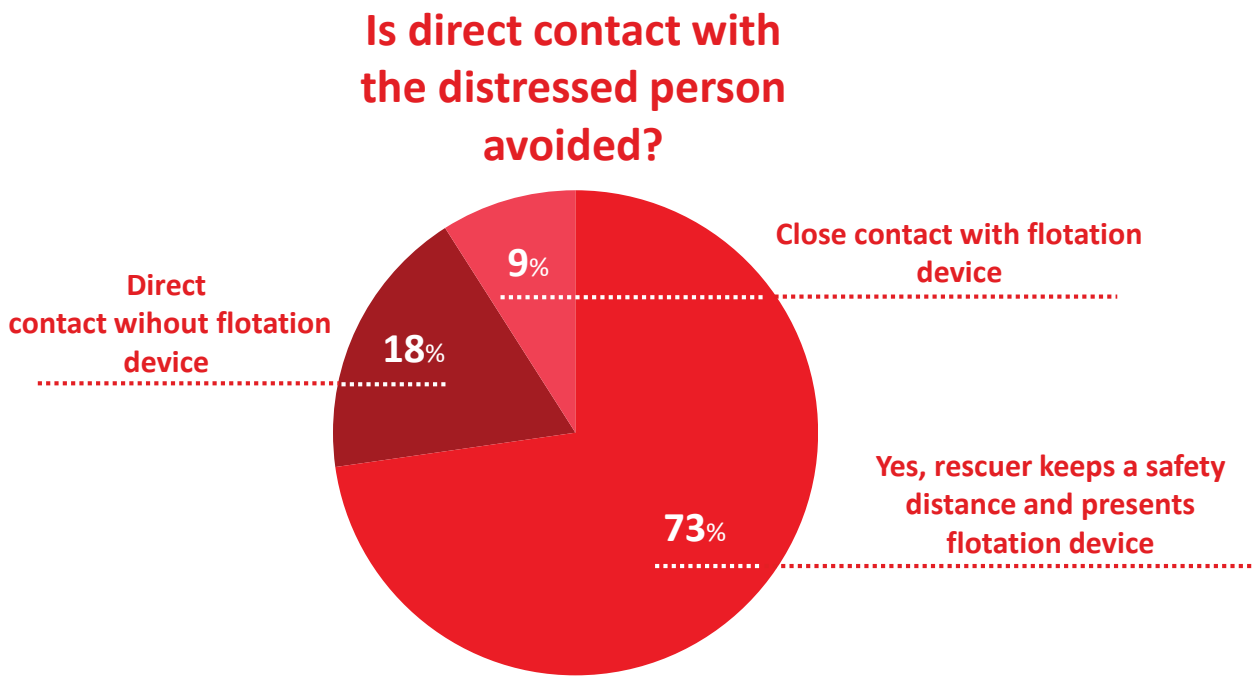


Surprisingly slow average swimming time: 42 sec / 25m

”Wow, that was tough!”
Jonas Lønborg says while he rests on top of the torpedo after swimming 25m.

Rescue Tube

- Contact with the distressed -



Rescue Tube

+

- Fast deployment time
- Easy and intuitive to use
- High level of correct use

-

- The rescuer uses a lot of energy on swimming out to the distressed victim
- Slow to swim with
- Less buoyancy for both the rescuer and the distressed victim
- Risk of clutching and direct contact with a distressed victim

?

- Professional Equipment
- Well-tested and known by trained lifeguards
  - Unknown by most civils
- Low volume (105N)
  - \+ Less resistance when meeting waves
  - Less buoyancy for both the rescuer and distressed vitim

LifeBoard Rescue Board

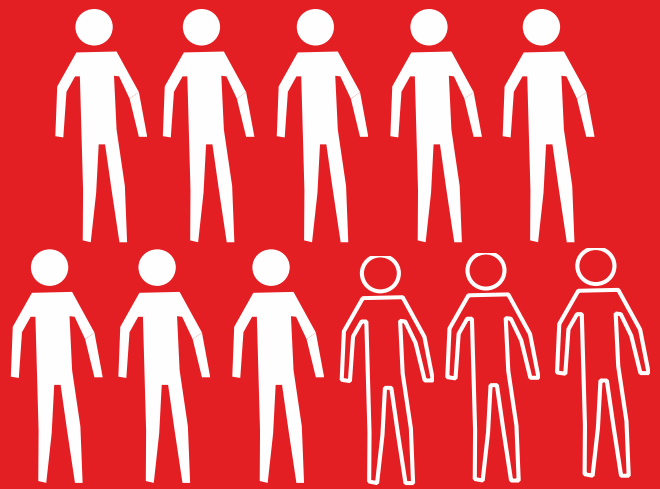
- Deployment -

8 out of 11

Use the safety leash

Average deployment time: FAST

16 sec!



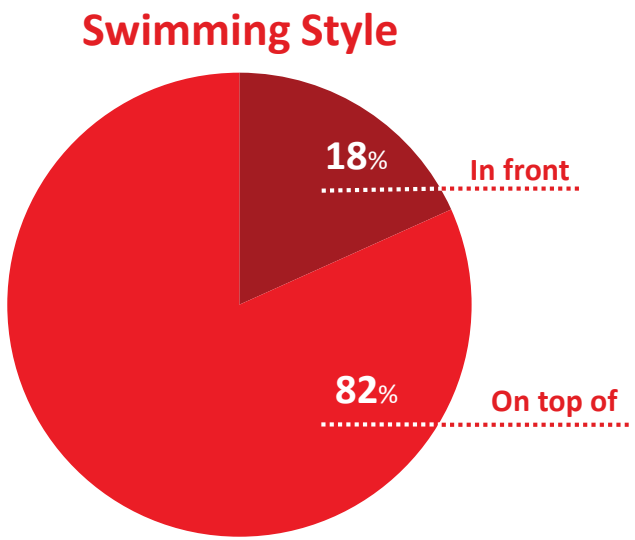
NB!

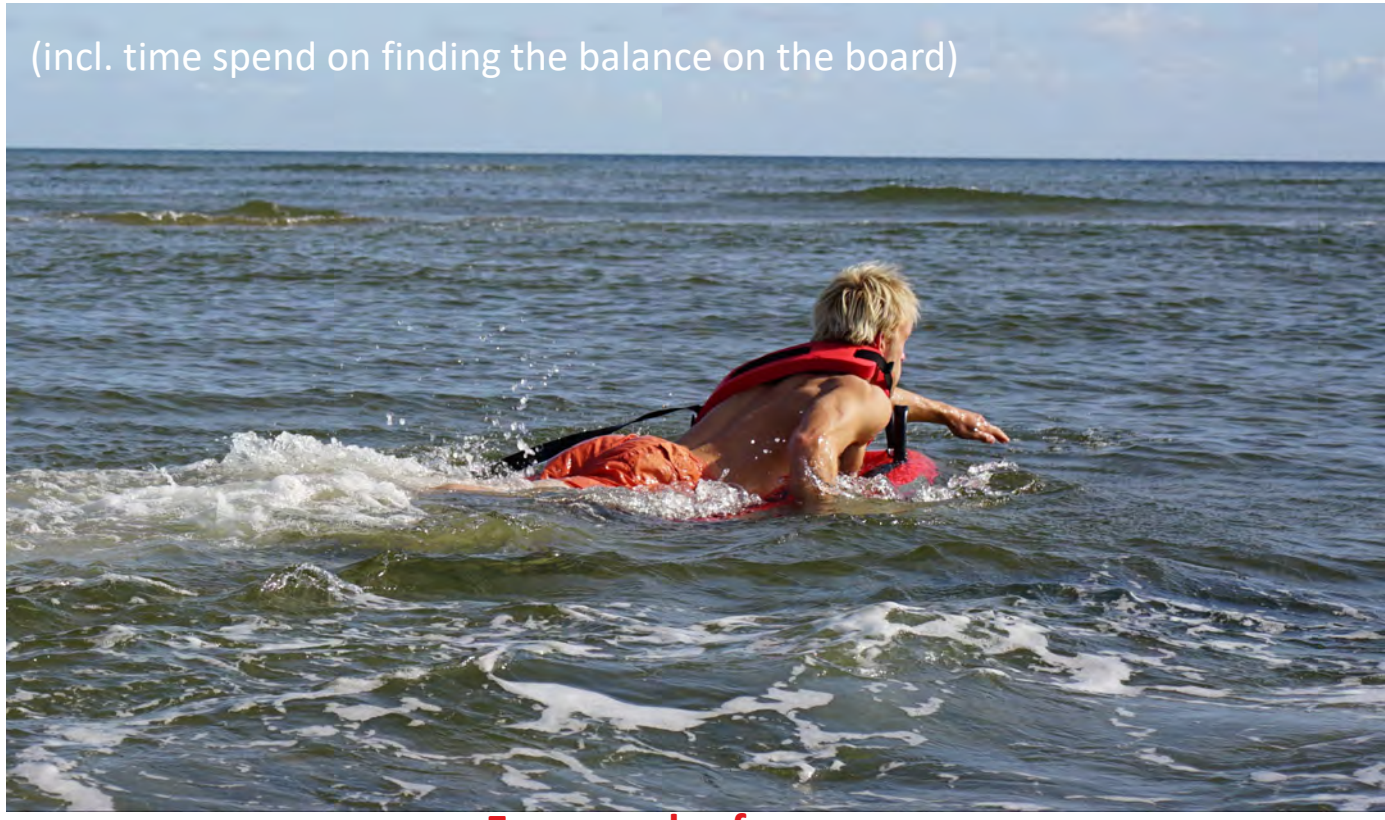
We are currently improving the LifeBoard to make it simple and faster to deploy

LifeBoard Rescue Board

- Swimming -

Average swimming time: 34 sec / 25m



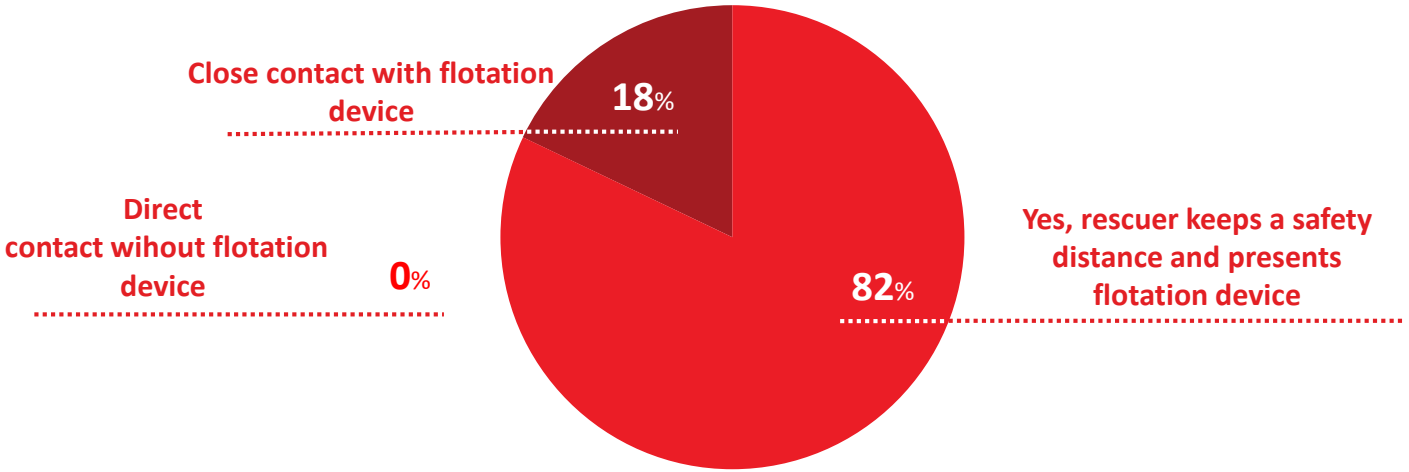


For speed reference:
Coast lifeguards' trials swimming speed: approx. 28 sec / 25m

LifeBoard Rescue Board

- Contact with the distressed -

Is direct contact with the distressed avoided?



NB!

Test persons who don't pay attention to keeping a distance, repeat their mistake with all rescue equipment.
No direct contact happened with the LifeBoard, since the board is always in front of the rescuer.

No dangerous contact in rescues when using the LifeBoard!

LifeBoard Rescue Board

+

- Fast deployment time
- Medium-high level of correct use
- Fast to swim with
- Buoyancy for both the rescuer and distressed swimmer
- Low risk of clutching and direct contact with a distressed victim

-

- Test persons spend time to find their balance
- Optimising correct use of the safety leash

?

- New civil rescue equipment
  - + Designed specific for civils
  - Limited prior knowledge
- Big volume
  - + Buoyancy for +2 persons (450N)
  - Can be challenging to go through surf impact zones

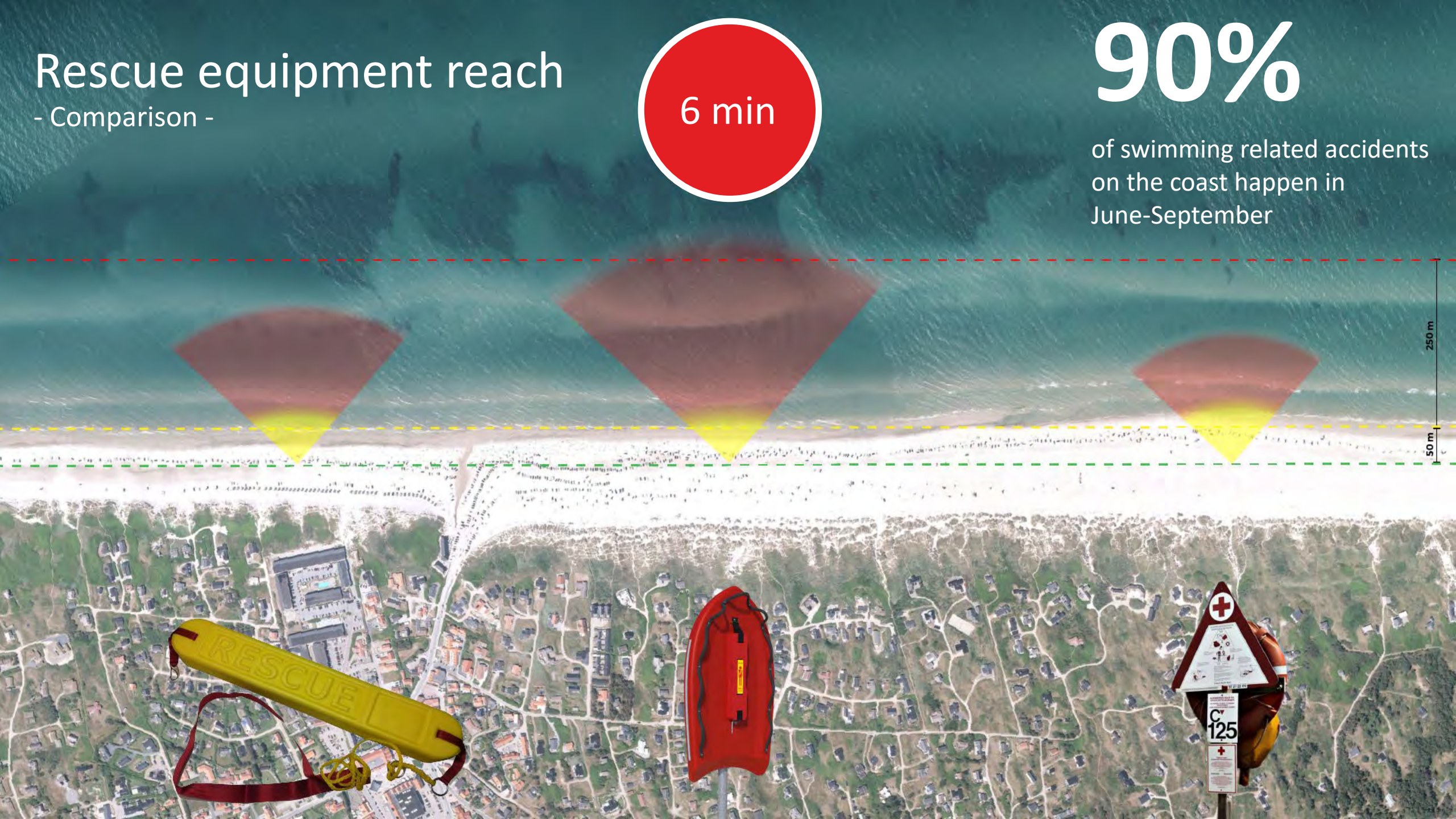
Rescue equipment reach

- Comparison -

6 min

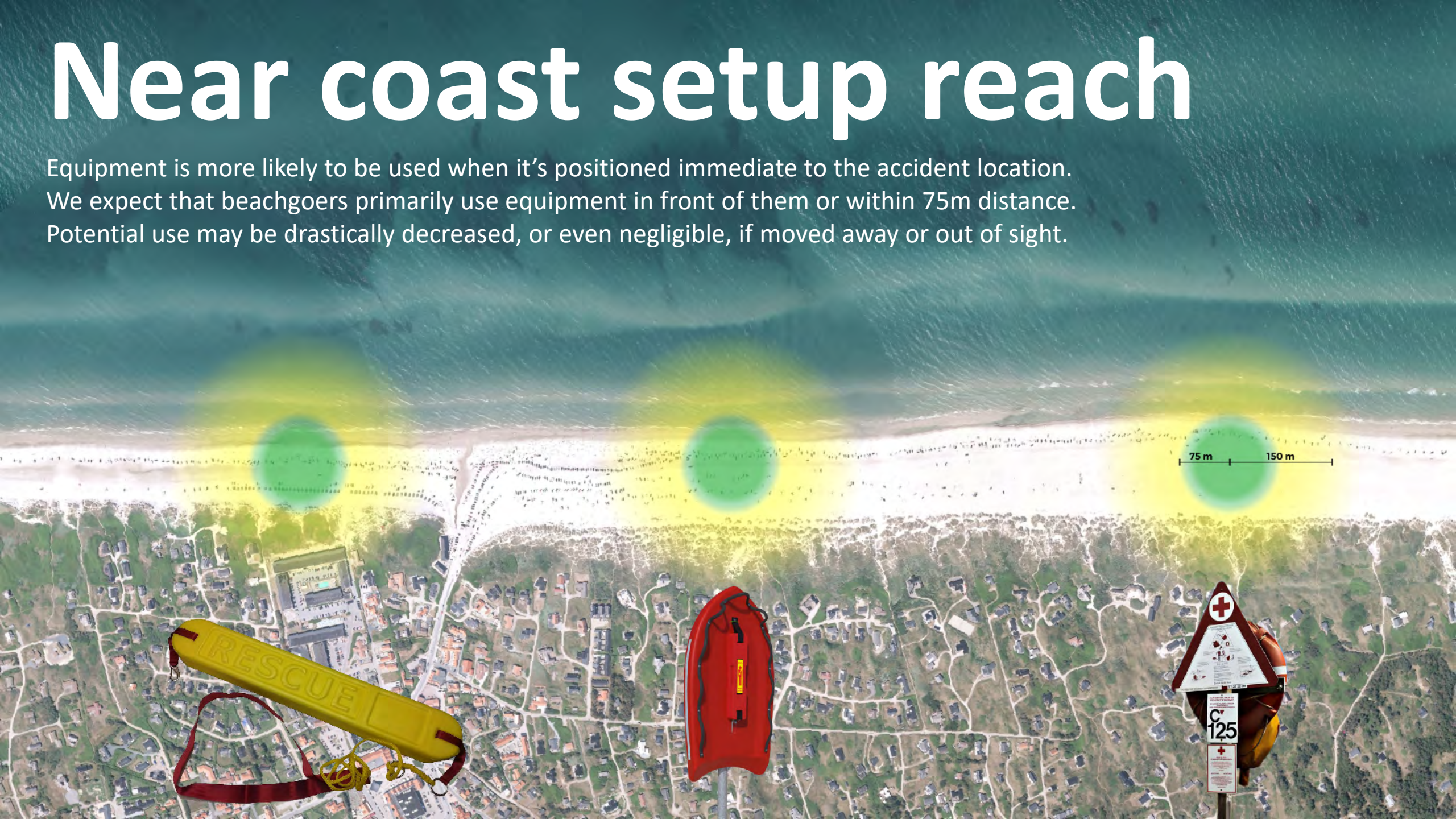
90%

of swimming related accidents on the coast happen in June-September



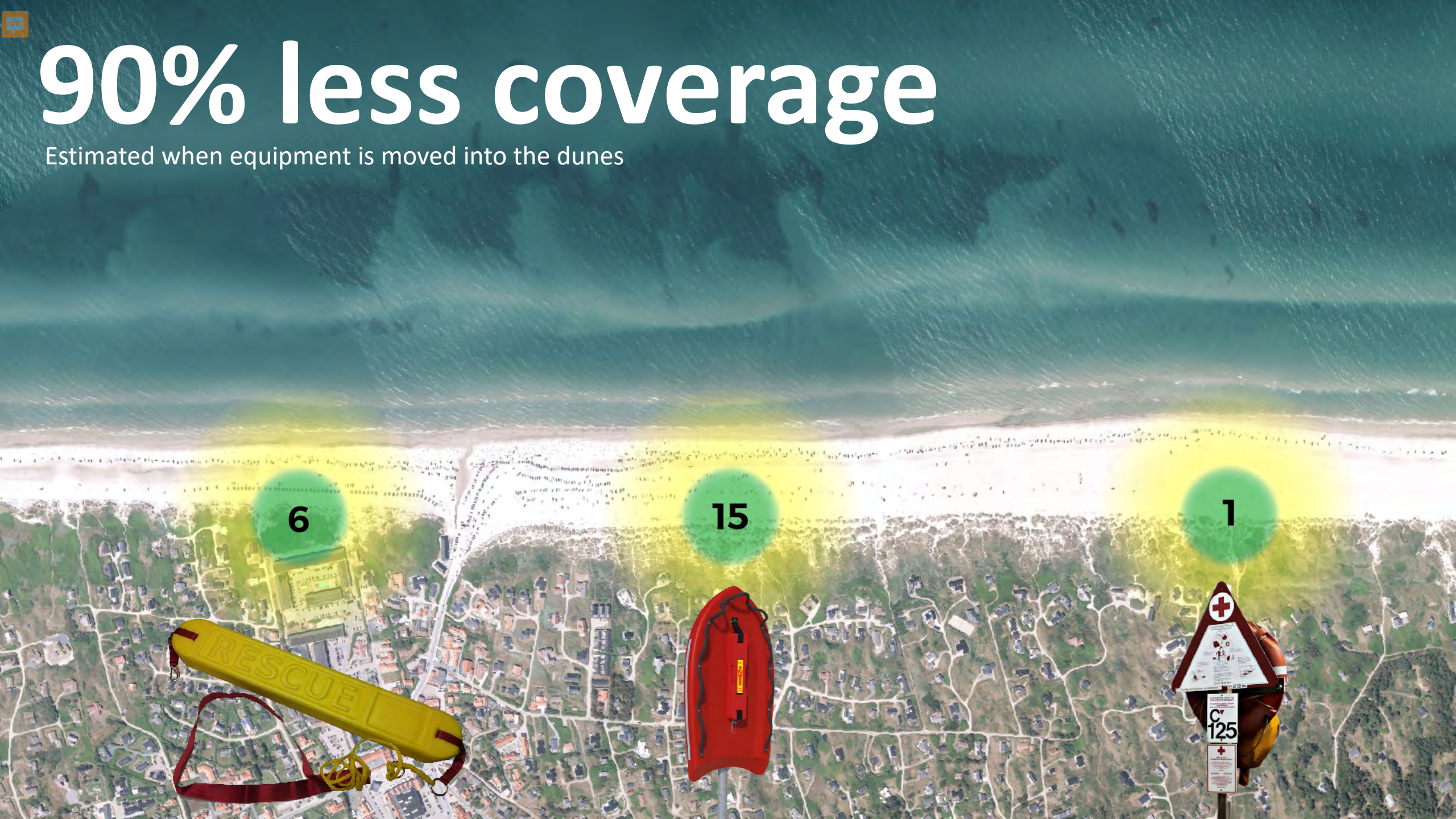
Near coast setup reach

Equipment is more likely to be used when it’s positioned immediate to the accident location.
We expect that beachgoers primarily use equipment in front of them or within 75m distance.
Potential use may be drastically decreased, or even negligible, if moved away or out of sight.



90% less coverage

Estimated when equipment is moved into the dunes



Knowledge sharing

Collecting knowledge

- Use of equipment
- Performance
- User behaviour

Questions
&
Discussion