

**Blue
Adapt**

When risk information changes the trip

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THE PROBLEM

Beachgoers see the beach. They do not see the risk.

WHAT BEACHGOERS OBSERVE

Weather and waves

Beach, crowds and amenities

Lifeguards, designation

Maybe water colour, transparency

WHAT THEY CANNOT SEE

Microbial risk in the water

E. coli · enterococci · *Vibrio* · cyanobacteria

Low-probability, high-salience, episodic — and rising with warmer water and heavier rainfall.

So information can influence choices and welfare.

The economic question. If the hazard is invisible, then monitoring, forecasts, warnings and risk education are the levers that move behaviour and welfare. How much, and through which channel?

Three ways information enters the welfare calculus

welfare = f (**what I can do + consequences** , **what I value** , **how I feel**)

1 Current risk signals *changes what I do*

Monitoring, forecasts, warnings, apps and disclosure let me avoid exposure, switch site, or postpone. A timely signal changes recreational value and health consequences.

→ measured as WTT (km) and WTP

2 Education *changes what I value*

Once I understand pathogens, vulnerability and prevention, I update preferences — valuing mitigation and adaptation policies more and adapting behavior.

→ measured as a shift in WTT, WTP and recreational choices

3 Worry / burden *changes how I feel*

The darker possibility: information could lower enjoyment or welfare of the same activities.

→ the channel we search for in recreational choices, and mostly do not find

All three channels are welfare-relevant in theory. Can we measure the effects?
Do education and signals raise welfare, or is this effect eaten away by a worry penalty?

THE DESIGN

One randomized panel, three lenses

Setting Gulf of Gdańsk + Vistula Lagoon — a Baltic Sea bathing-water region with episodic, invisible microbial risk.



THREE MEASUREMENT LENSES

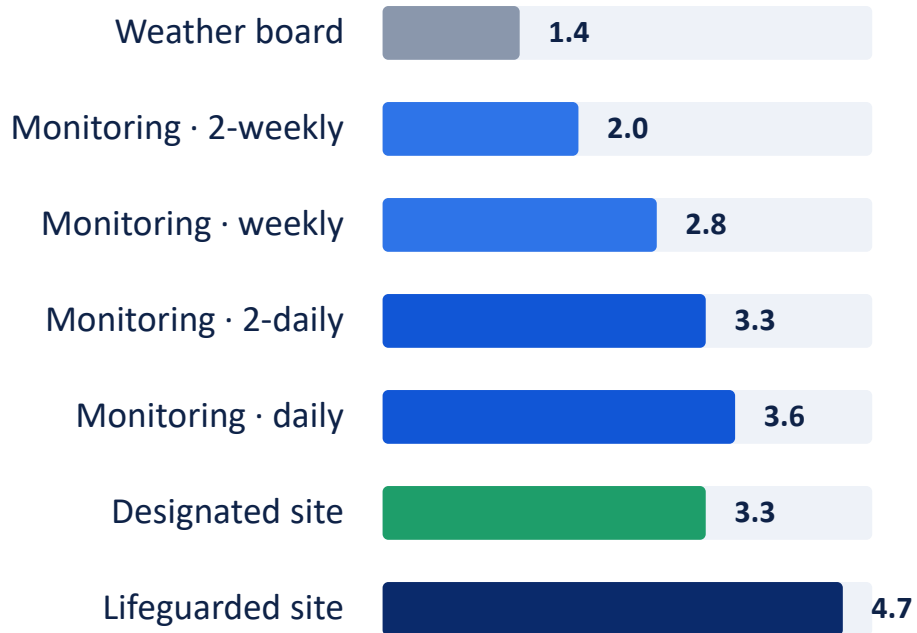


Identification. Randomized education × within-person repeated choices = a difference-in-differences on preferences, netting out fixed heterogeneity and panel conditioning.

RESULT 1

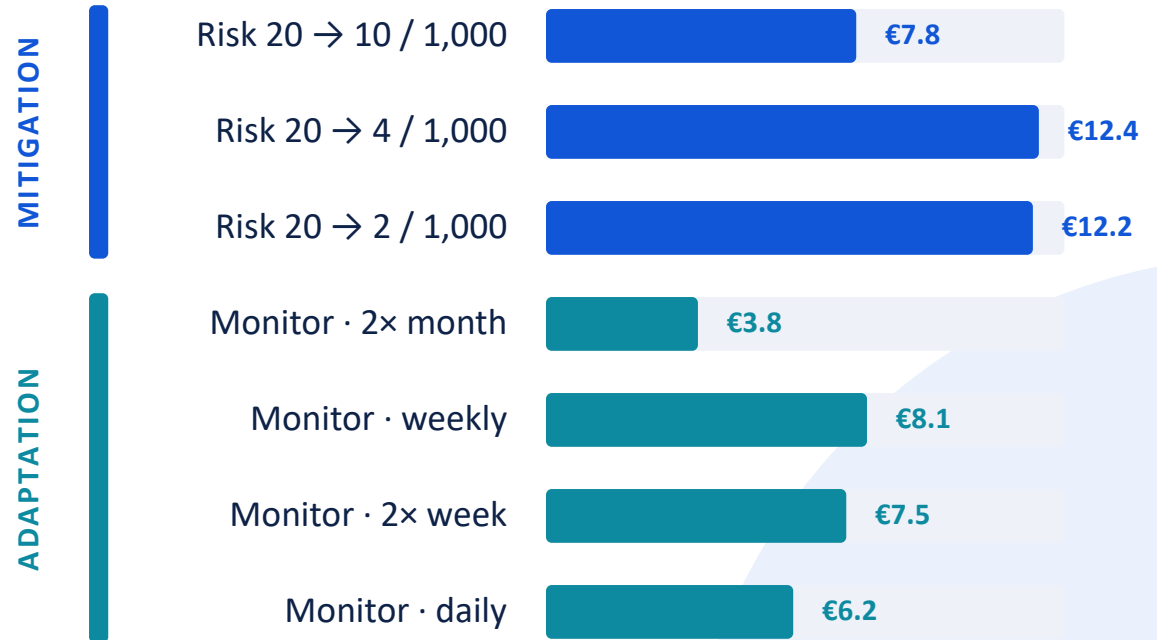
Access to information already carries a price — in km and euros

DCE1 · willingness to travel for a better bathing site (km, baseline)



km further, vs. baseline

DCE2 · willingness to pay per attribute (€ / household / year)



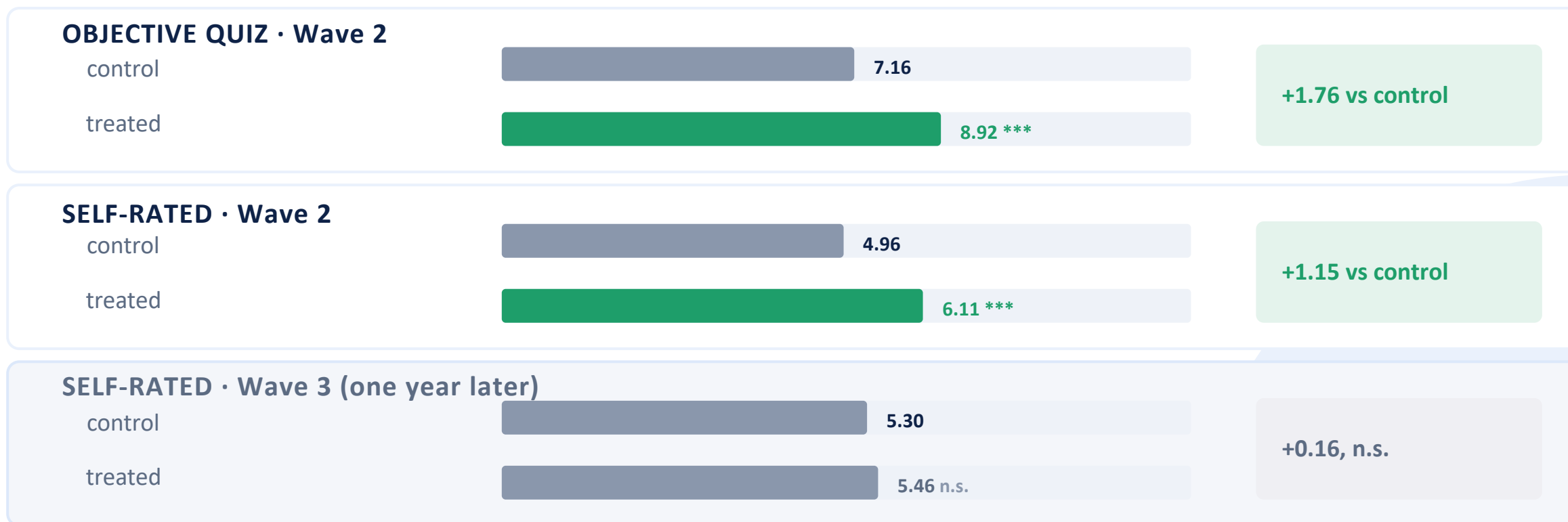
all values significant ($p < 0.01$)

The point. People pay for mitigation (less risk) and, independently, for adaptation (monitoring). Monitoring is valued in its own right.

RESULT 2

The treatment worked — strongly at first, fading within a year

Knowledge: baseline level → level after the information treatment. *** $p < 0.01$.



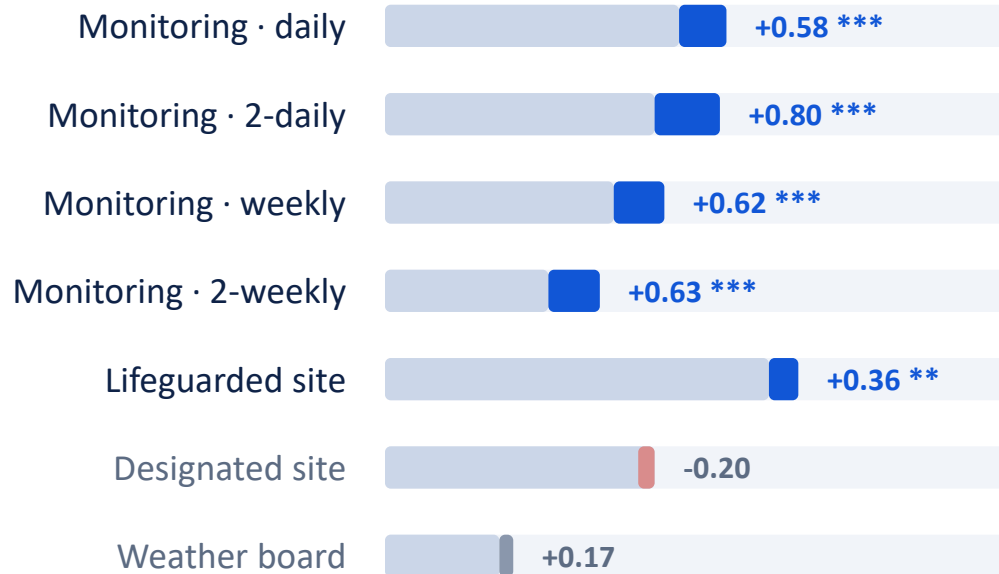
Read. Big, significant jump right after the treatment; one year on the self-rated gap is largely gone (no objective quiz in Wave 3).

RESULT 3

Education changed valuation — selectively, and it stuck

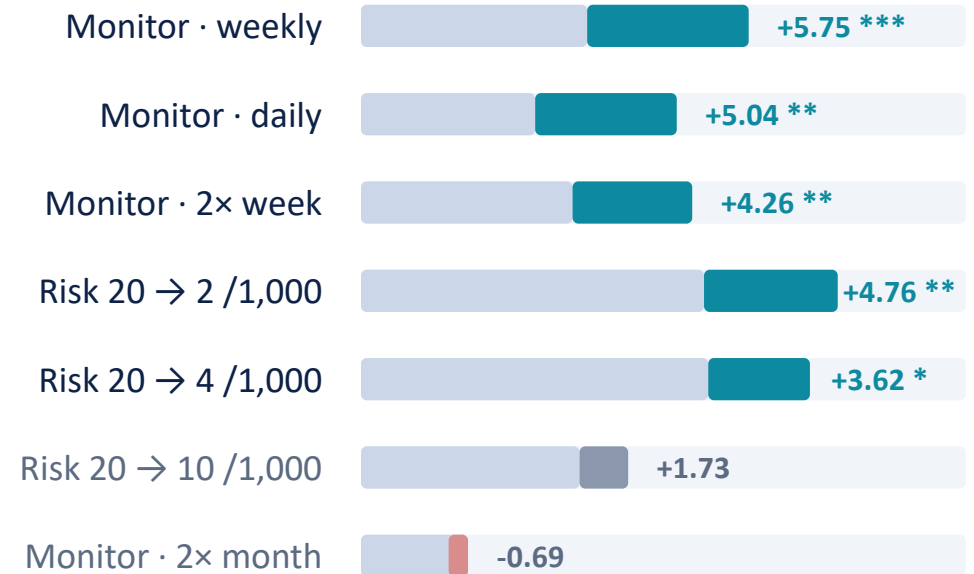
The effect of the information treatment on attributes, in km (beach DCE) and € (policy DCE).

BEACH DCE Δ willingness to travel (km)



light = baseline km, colour = Δ from treatment

POLICY DCE Δ willingness to pay (€)



light = baseline €, colour = Δ from treatment

Selective, not across the board. Education lifts risk-relevant values — monitoring most of all — and leaves amenities flat. A generic “be careful” effect would move everything.



REVEALED CHOICES & WHAT IT ADDS UP TO

Information changes choices — not, it seems, by scaring people off

REVEALED CHOICES *a behavioural check, work in progress*

- ▶ **No broad panic effect.** Across the full panel, information does not cut overall seaside recreation or make per trip CS lower
- ▶ **Some local signals.** In sub-samples nearer the coast, treated users look less cost-sensitive — consistent with valuing monitored sites more.
- ▶ **Two-layer model work in progress.** Coastal trips, then beach outings: the joint demand model and welfare decomposition.

WHAT IT MEANS FOR APPRAISAL

- Information matters through two welfare channels: timely signals, and education that updates preferences.
- Monitoring and forecasts are adaptation tools.
- Welfare measures are information-dependent: low-awareness baselines can undervalue monitoring & risk-reduction benefits.
- Appraise information, monitoring and mitigation jointly.

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Questions on the two-layer demand model and vulnerability heterogeneity especially welcome.



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