ARE PREFERENCES STATED IN WEB VS. PERSONAL INTERVIEWS DIFFERENT?

Willingness to Pay Results for a Multi-Country Study of the Baltic Sea Eutrophication Reduction

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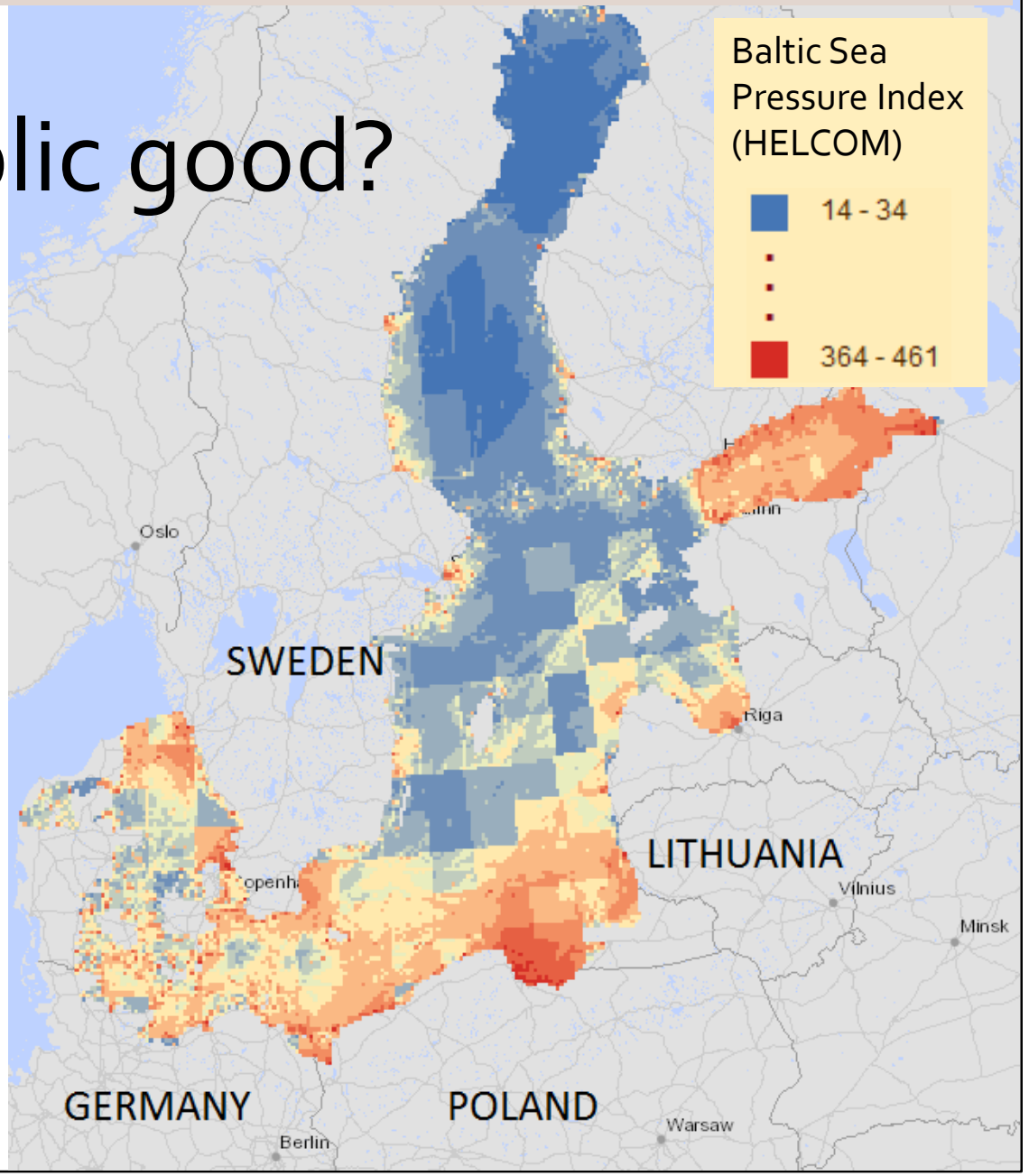
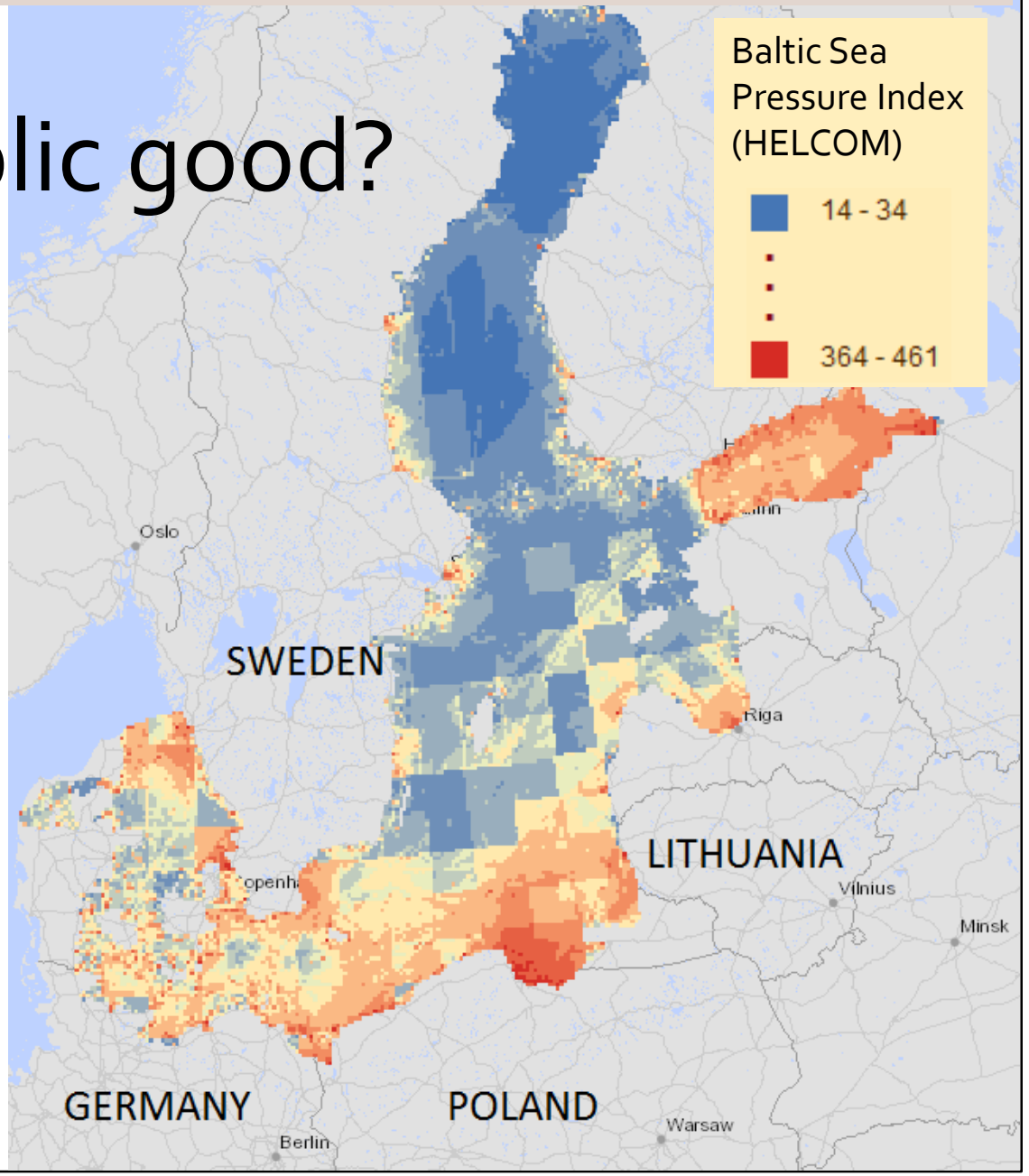
What is the value of a public good?

- The public good here:
  Reduction of eutrophication in the Baltic Sea
- Eutrophication is when a waterbody becomes overly enriched with minerals and nutrients that induce excessive growth of plants and algae.
- It is often caused by discharge of detergents, fertilizers or sewage into a waterbody.
- It is a recognized water pollution problem, leading to many ecological impacts: decreased biodiversity, changes in species composition and toxicity effects.
- It is a serious threat to the Baltic Sea environment.



What is the value of a public good?

- Special policies may help reduce the eutrophication.
- European Union has enforced several governing frameworks to protect marine waterbodies (e.g., HELCOM's Baltic Sea Action Plan).
- Do people want this reduction? Would people value it?
- The costs of such policy actions can be relatively easily estimated. But what are the benefits to the populations?



Stated preference (SP) methods

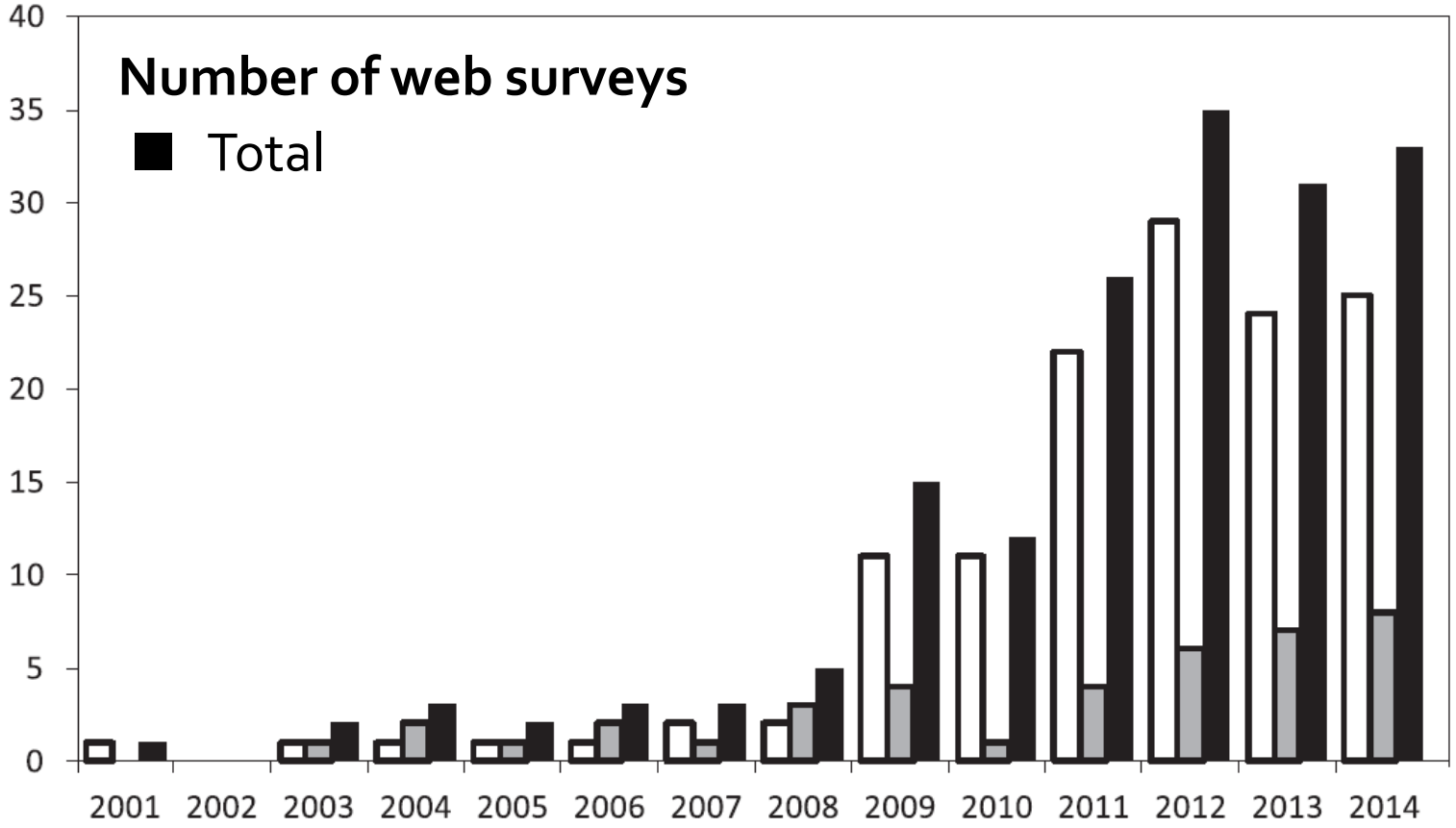
- Used to determine public's preferences, especially towards public goods
- Inform about the value of public goods to the society
- Provide estimates of benefits for cost-benefit analysis
- Survey-based
- Administered by various modes: mail, phone, web, in-person

What are the social benefits from reducing eutrophication of the Baltic Sea?

- A large multi-country study – all Baltic Sea countries; 10,000 observations
- The largest international valuation research about the marine environment
- The first one to include all nine littoral countries
- In different countries, different survey modes were used: web and/or in-person interviews
- **(How) did the data collection mode affect the results?**

Web and in-person SP surveys

- In-person interviews have been long acknowledged as the best practice.
- But Internet allows researchers to administer surveys cheaper and faster.
- Web surveys are gaining more and more popularity.



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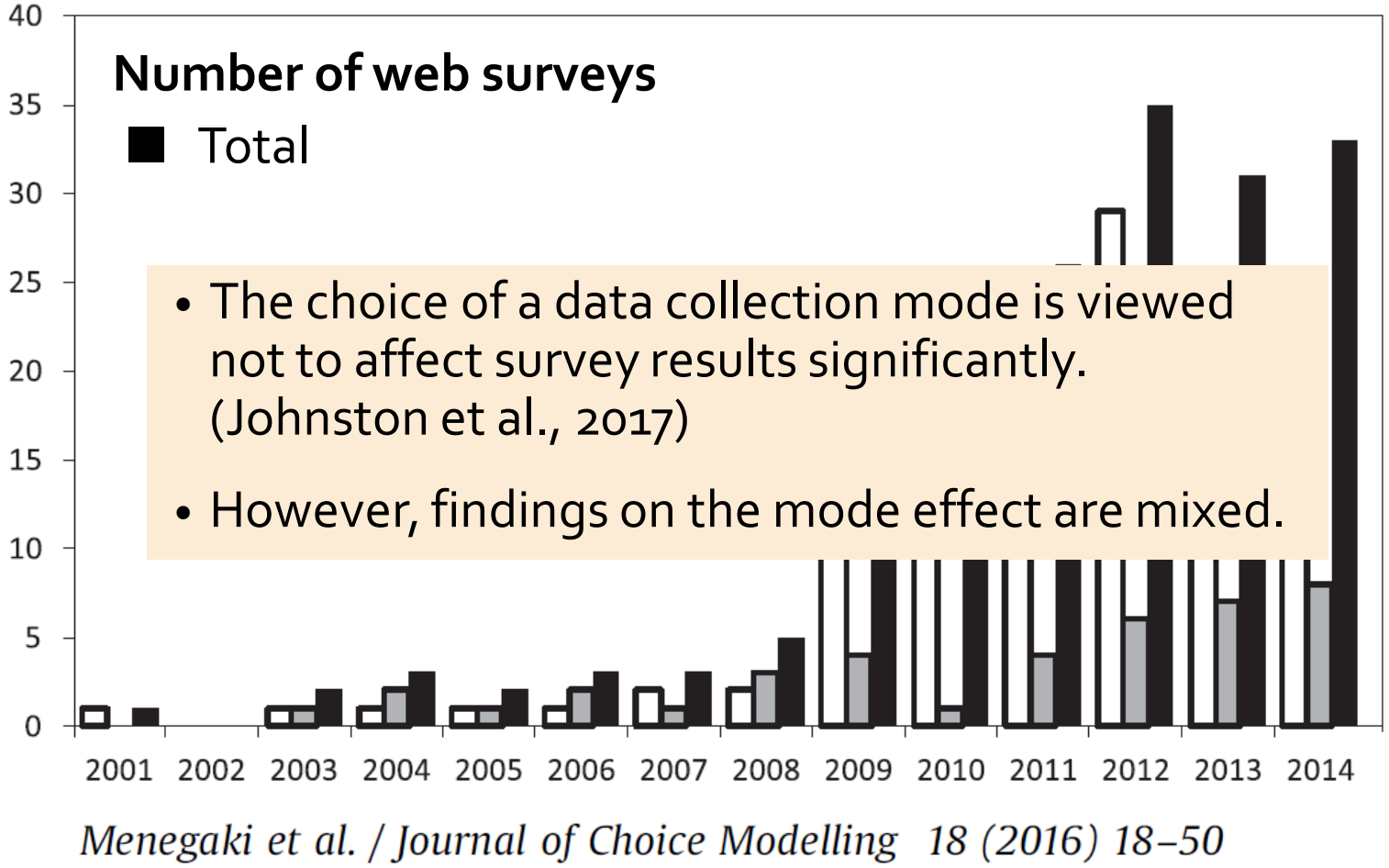

- The choice of a data collection mode is viewed not to affect survey results significantly. (Johnston et al., 2017)
- However, findings on the mode effect are mixed.

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Comparisons of web and in-person SP surveys

Author(s)	Difference in values between modes	
Balderas Torres et al. (2013)	Yes	Web < In-person
Bell et al. (2011)	Yes	Web < In-person
Canavari et al. (2005)	Yes and No (depending on a question format)	Web > In-person
Cardamone et al. (2014)	No	
Covey et al. (2010)	No	
Lee et al. (2016)	Yes	Web < In-person
Lindhjem and Navrud (2011)	No	
Marta-Pedroso et al. (2007)	Yes	Web < In-person
Mjedle et al. (2016)	Yes	Web < In-person
Mulhern et al. (2013)	No	
Nielsen (2011)	No	
Ščasný and Alberini (2012)	No	
van der Heide et al. (2008)	Yes and No (depending on a scenario)	Web < In-person

7 Yeses
8 Noes

Mixed evidence on the mode effect

and

A substantial rise in the use of web surveys for valuation

Importance of investigating the effect of the web mode on respondents' behaviour

Sources of differences between the modes

WHO and HOW respond

Sample selection

(We weigh the observations from web and in-person samples to account for possible socio-demographic differences.)

"Pure" mode effect

- Social desirability
- Information processing
- …

Our research questions

1. Do web and in-person surveys lead to different value estimates?

2. What are the values of the eutrophication reduction of the Baltic Sea for every littoral country if the mode effect is controlled for?

Survey

- Goal: Assessment of benefits from reduced eutrophication in the Baltic Sea
- Two modes:
  - Computer-Assisted **Web** Interviews
  - Computer-Assisted **Personal** Interviews
- Web: Denmark, Estonia, Finland, Germany and Sweden
- Personal: Latvia, Lithuania and Russia
- Both modes: Poland
- Data collected in October-December 2011

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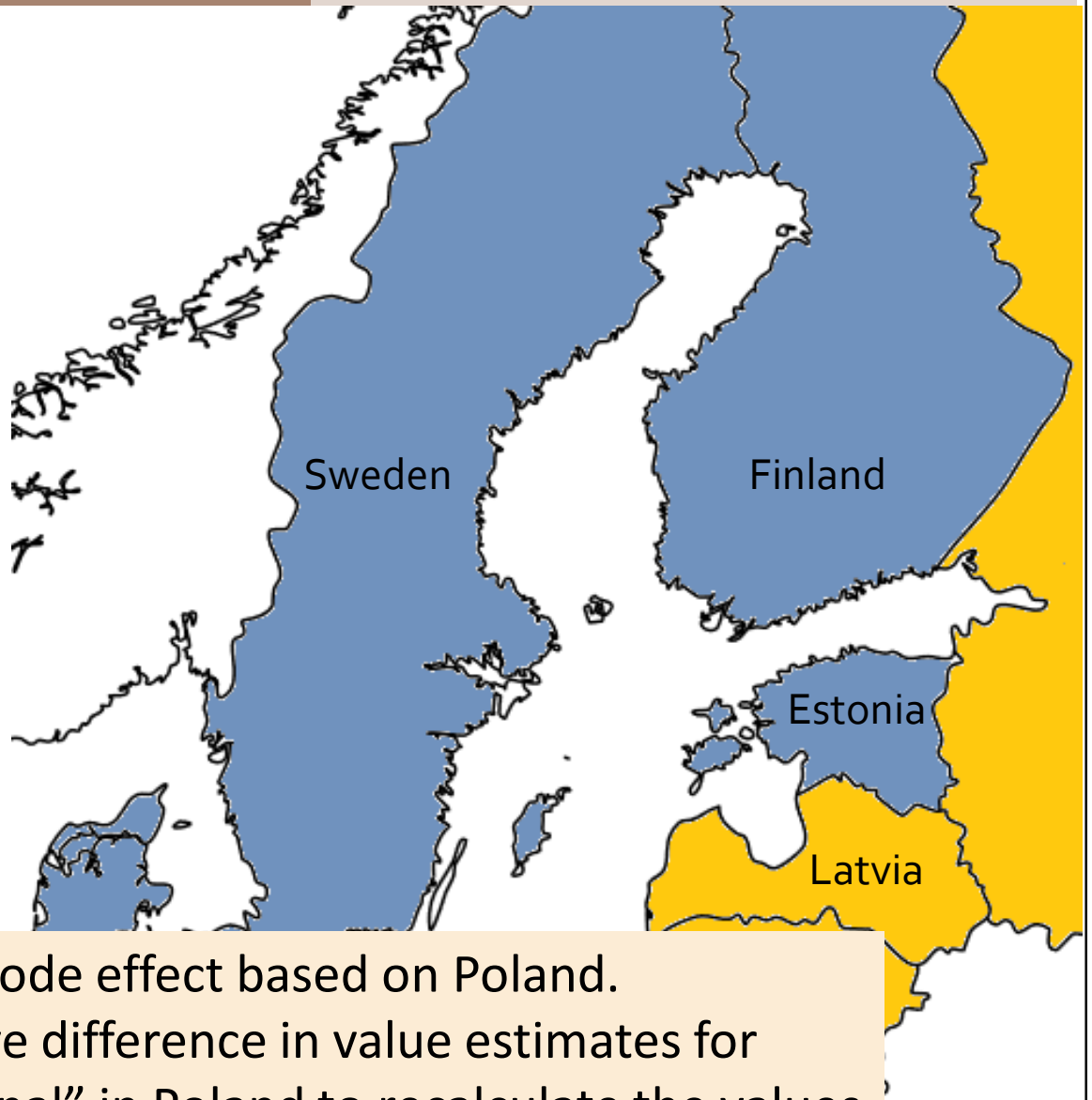
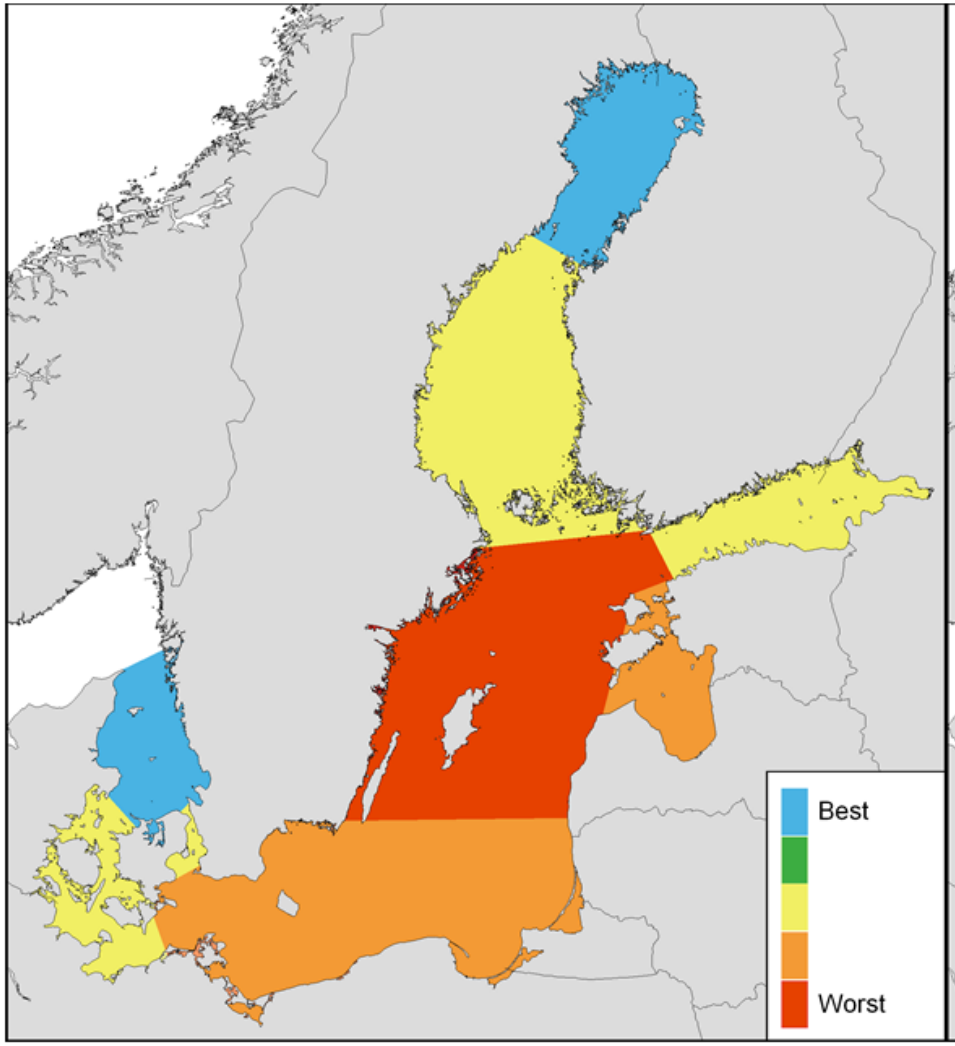


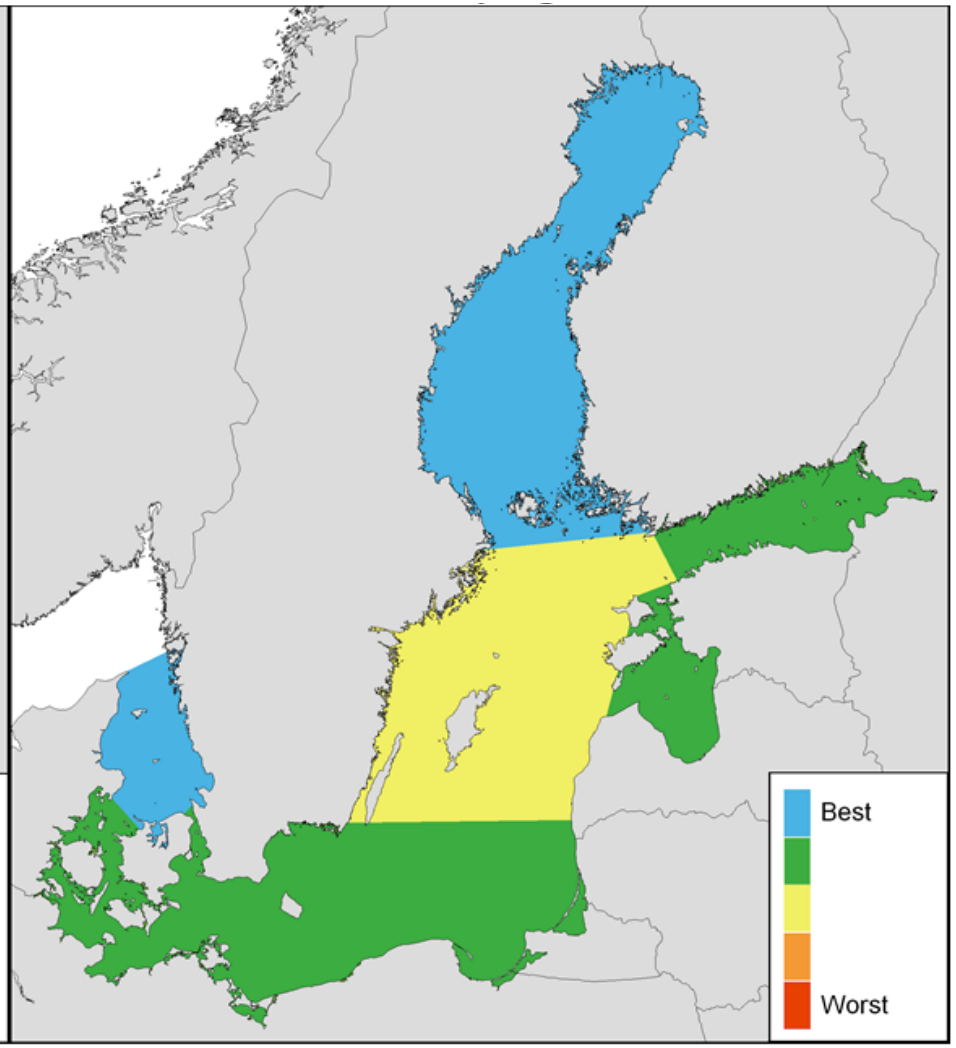
1. We identify the mode effect based on Poland.
2. We use the relative difference in value estimates for "web" and "personal" in Poland to recalculate the values for other countries, accounting for the mode effect.

Survey

Baltic Sea in 2050 without the program



Baltic Sea in 2050 with the program

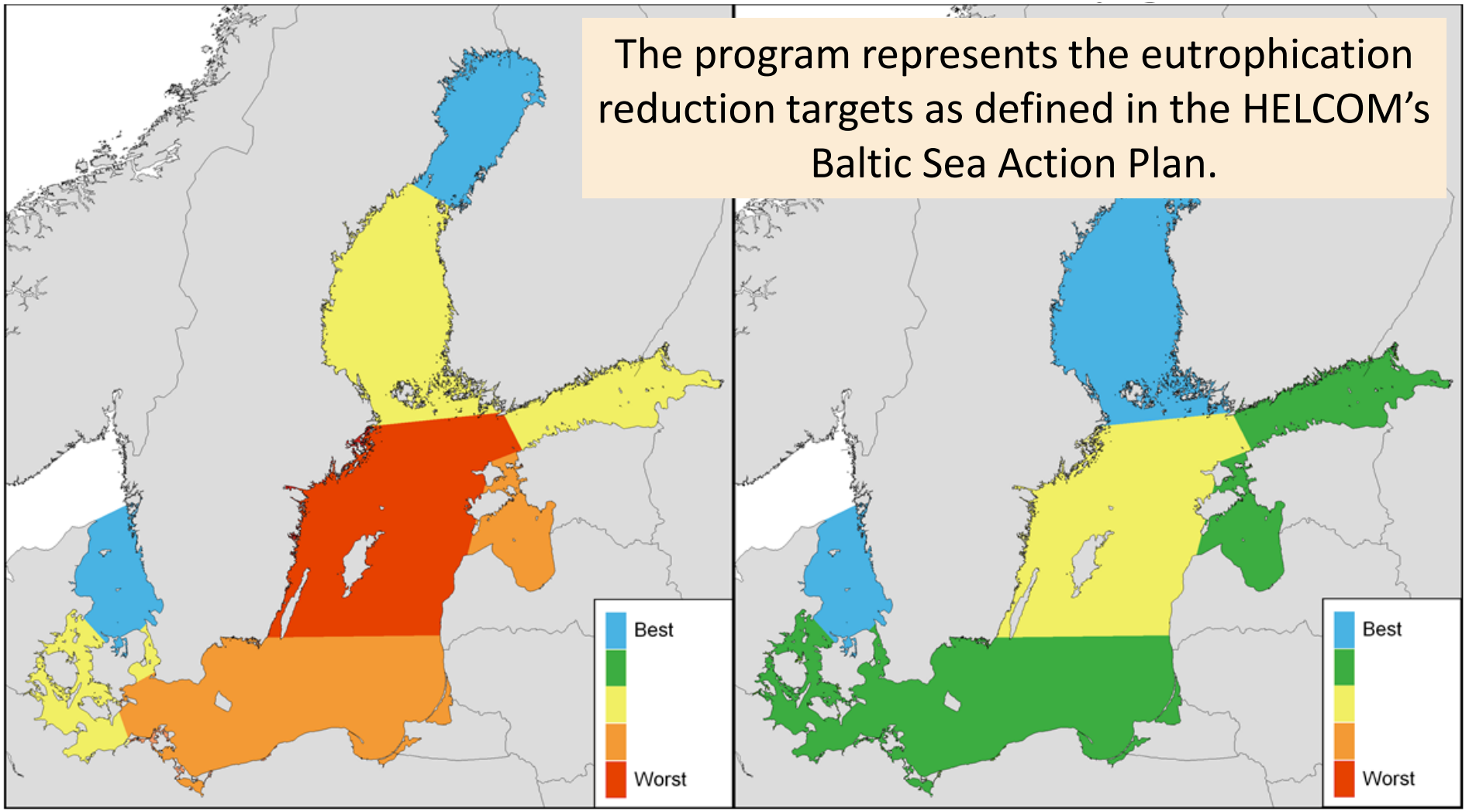


Survey

Baltic Sea in 2050 without the program

Baltic Sea in 2050 with the program

The program represents the eutrophication reduction targets as defined in the HELCOM's Baltic Sea Action Plan.



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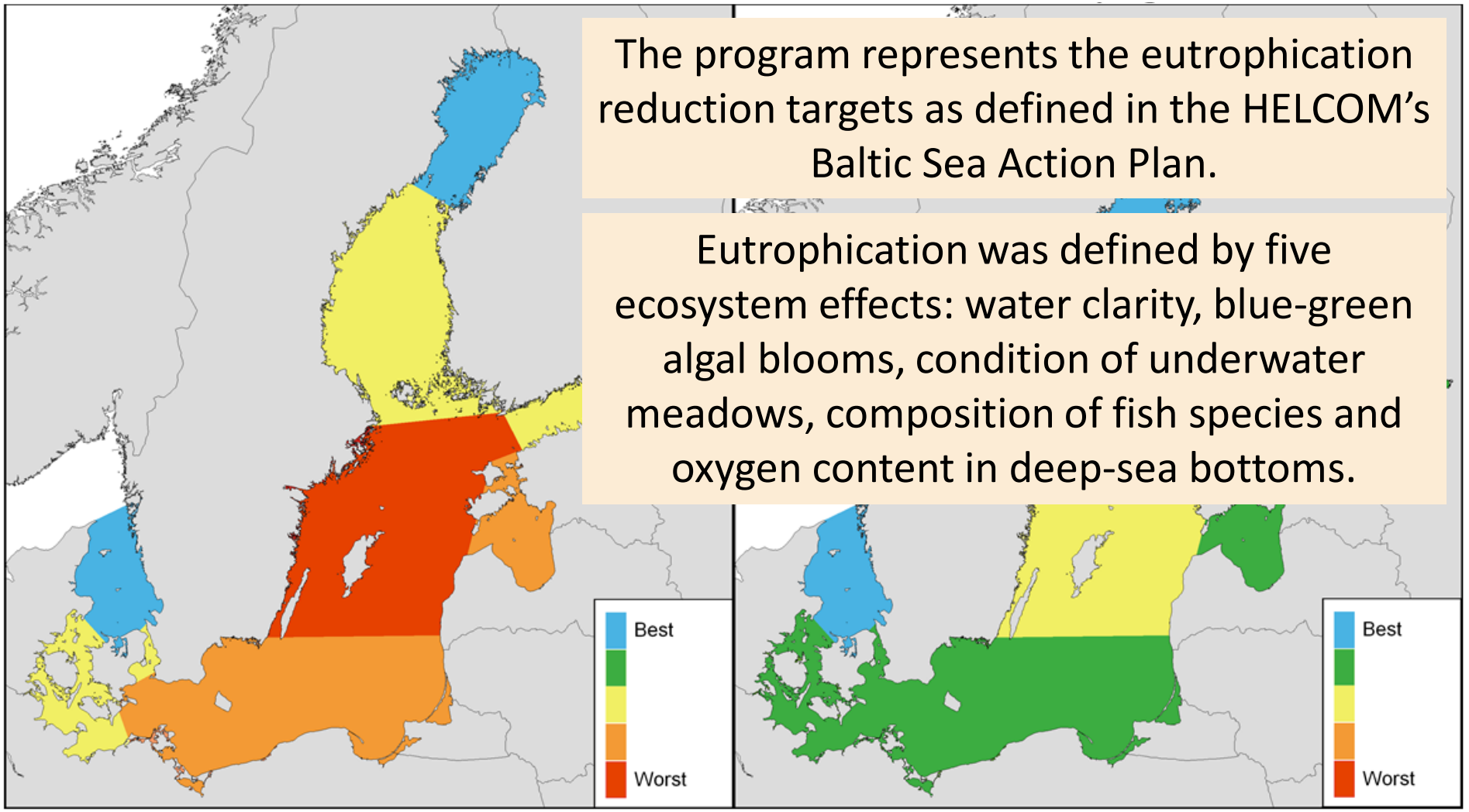

The program represents the eutrophication reduction targets as defined in the HELCOM's Baltic Sea Action Plan.

Eutrophication was defined by five ecosystem effects: water clarity, blue-green algal blooms, condition of underwater meadows, composition of fish species and oxygen content in deep-sea bottoms.

Survey

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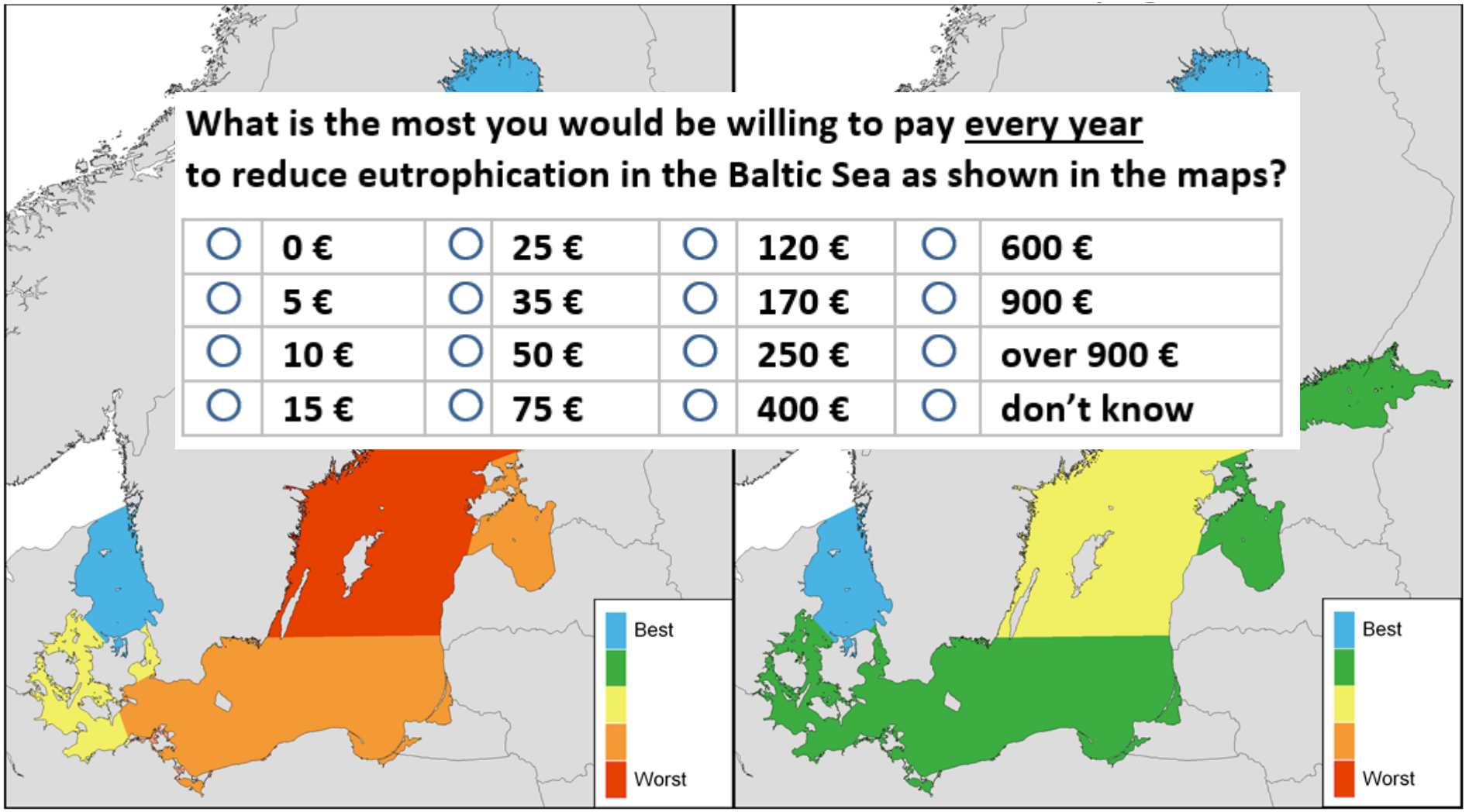

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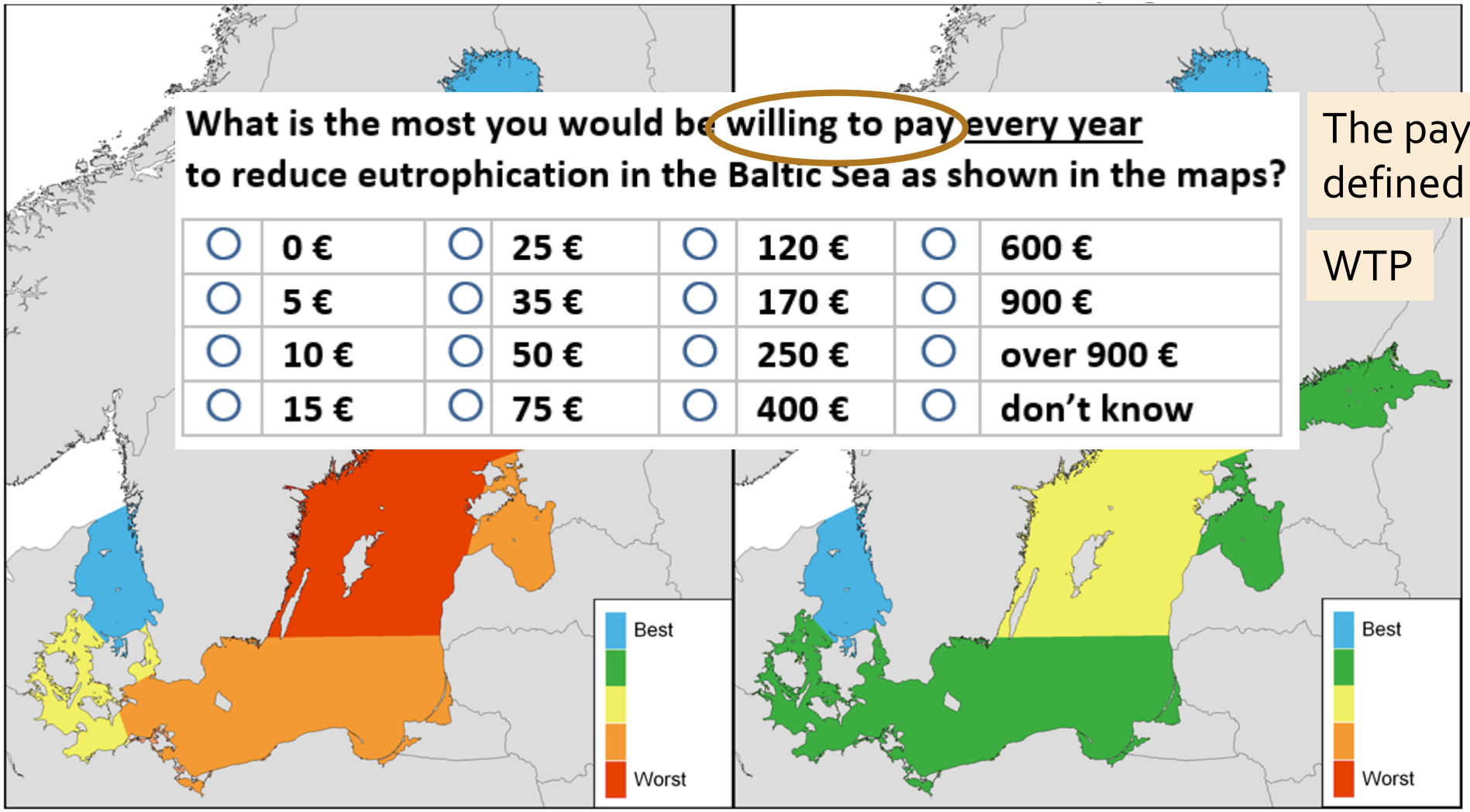

The payment was defined as tax.

WTP

Results

Test of the mode effect

Willingness to pay (WTP) for eutrophication reduction in Poland

(Simulated values for a fitted, Birnbaum-Saunders distribution)

	Personal interviews	**Web interviews**
Annual mean WTP per person (EUR)	6.44 (0.54)	16.10 (0.94)
95% confidence interval for the mean WTP	5.50-7.61	14.28-17.92
Spike probability	0.61 (0.02)	0.32 (0.02)

Note: Standard errors given in brackets.

Results

Values for other countries

- Annual mean WTP in EUR per person (with 95% confidence interval)
- Calibrated results are in brown in italics.
- The two survey modes generate significantly different value estimates.

	Web	Personal
Poland	16.1 14.3-17.9	6.4 5.5-7.6
Denmark	36.4 31.8-41.5	*14.5* *12.2-17.6*
Estonia	28.1 23.5-33.2	*11.2* *9.1-14.1*
Finland	41.8 37.2-46.8	*16.62* *14.3-19.9*
Germany	26.7 23.8-30.1	*10.6* *9.2-12.8*
Sweden	84.3 75.1-94.6	*33.5* *28.9-40.2*
Latvia	*13.1* *11.2-14.8*	5.2 4.3-6.3
Lithuania	*24.4* *21.3-26.9*	9.7 8.2-11.4
Russia	*20.9* *17.4-24.3*	8.3 6.7-10.3

Conclusions

- Significant differences in preferences stated in web and personal interviews
- Larger value estimates derived from the web survey data
- Need for caution when choosing a data collection mode
- Need for accounting for differences between modes
- A potential influence of the choice of a mode on the assessment of benefits from a considered policy → Impact on conclusions from cost-benefit analysis

- A possibly context-specific nature of a relative difference between modes

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