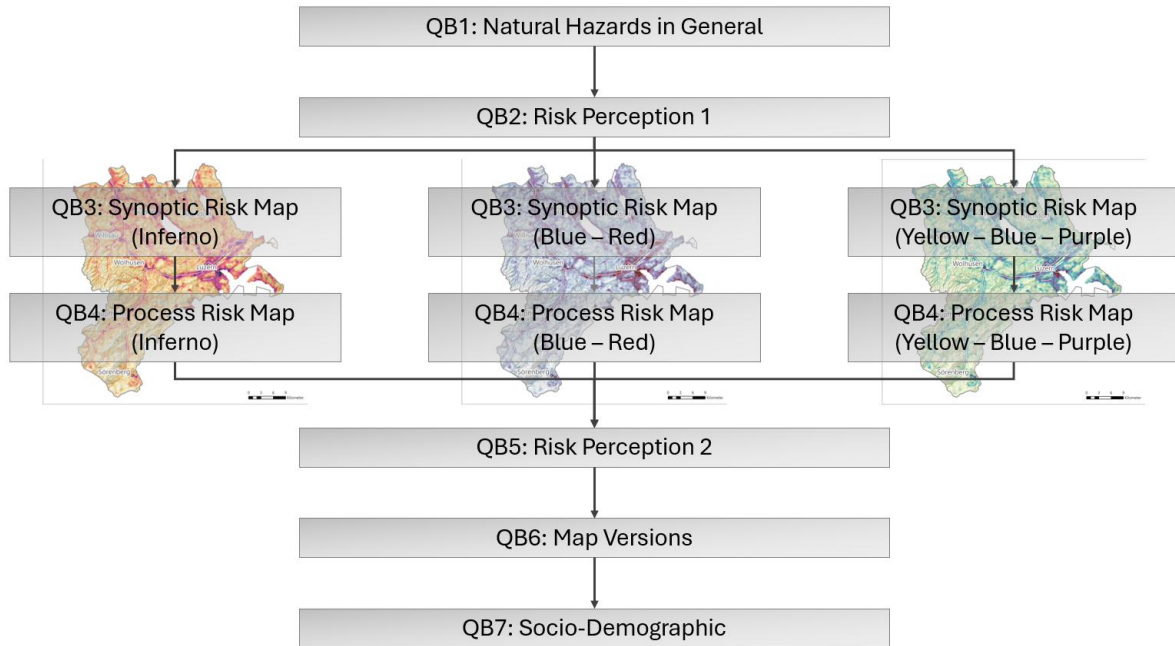


Online questionnaire: Lucerne risk map

Structure

Structure of the questionnaire. QB stands for question block.



Home page

A warm welcome

The canton of Lucerne is currently developing a map that shows the risks of natural hazards on its territory. This will make it possible to better understand the effects of natural hazards in the canton in the future.

In this survey, we, ETH Zurich in collaboration with the Canton of Lucerne, would like to find out how helpful, useful and understandable you find different visualisations of the risk of natural hazards and how we can improve them.

Thank you in advance for your participation!

Declaration of consent

How do we collect and process your data?

It takes around 15 minutes to complete the survey. Your answers will be anonymised and treated in accordance with the Swiss Data Protection Act. This means that your details cannot be linked to you personally and will not be passed on to third parties.

Please note that you cannot return to the previous page during the survey.

How can you contact us?

If you have any questions, you can contact Mika at any time:

mchadzelek@student.ethz.ch

☐ I consent to my personal data being processed in accordance with the information provided here.

Questions for quota fulfilment

1. Gender
 - a. Female
 - b. Male
 - c. Miscellaneous
2. How old are you (in years)?
 - a. [Text field]

Content-related questions

Question block 1 - Natural hazards in general and natural hazards in the canton of Lucerne

As a first step, we are interested in your experiences and assessments of maps and natural hazards in general.

3. How often do you use the following cards?
daily - weekly - monthly - rarely - never - I don't know
 - a. Printed cards
 - b. Google or Apple Maps
 - c. Swisstopo (<https://map.geo.admin.ch/>)
 - d. Geoportal of the Canton of Lucerne (<https://www.geo.lu.ch>)
 - e. Other: [Text field]
4. Have you ever searched specifically for hazard maps?
 - a. Yes
 - b. No
5. If you selected yes before, please indicate:
 - a. Hazard maps (e.g. floods/forest fires/avalanches) on the Swisstopo website (<https://map.geo.admin.ch/>)
 - b. Hazard maps on the geoportal of the Canton of Lucerne (<https://www.geo.lu.ch/map/gefahrenkarte/>)
 - c. Other: [Text field]

6. Have you ever been affected by a natural hazard (e.g. flooding at home or an avalanche on holiday)?
 - a. Yes
 - b. No
7. If yes, please describe: [text field]
8. What natural hazard(s) do you think you are exposed to in your place of residence or municipality? (multiple choice)
 - a. Water processes (flooding and surface runoff)
 - b. Avalanches
 - c. Landslides
 - d. Rockfall
 - e. None
 - f. I don't know
9. Which natural hazard particularly affects the canton of Lucerne?
 - a. Water processes (flooding and surface runoff)
 - b. Avalanches
 - c. Landslides
 - d. Rockfall

Question block 2 - Risk perception of natural hazards

The following section is dedicated to general questions on the risks of natural hazards.

10. Read the following statements on natural hazards carefully and then evaluate them.
 - a. There is a high risk of a specific natural hazard.
 - b. There is a high risk of a specific natural hazard.
 - a) The two statements describe the same thing.
 - b) The two statements describe something different.
 - c) I don't know.
11. Please give reasons for your answer: [text field]
12. How high do you estimate...

1 = Very low risk. 5 = Very high risk

 - a. ... the risk of natural hazards in Switzerland?
 - b. ... the risk of natural hazards for the canton of Lucerne?
 - c. ... the risk of natural hazards for your place of residence?
 - d. ... your personal risk of being affected by natural hazards (in your leisure time, e.g. when pursuing hobbies)?
13. How strongly do the following statements apply to you personally?

1 = I do not agree at all. 5 = I completely agree.

Natural hazards...

 - a. ... threaten my personal safety.
 - b. ... threaten the safety of my family.

- c. ... restrict my quality of life.
- d. ... are difficult for me to control.
- e. ... cause me financial losses.
- f. ... scare me.

14. To be sure that you have read the questions carefully, please tick "I strongly disagree":

- a. I strongly agree.
- b. I agree.
- c. Neither.
- d. I do not agree.
- e. I strongly disagree.

→ Screened out: Thank you for your interest in completing this survey.

Unfortunately, you have not answered the attention question correctly and will therefore be redirected to the end of the survey.

Question block 3 - Synoptic risk map

Below you will find a draft map of the risks of natural hazards (water processes, avalanches, landslides and rockfall) for the canton of Lucerne. Take your time and look at it carefully.

Risiko Naturgefahren

Hochwasser, Oberflächenabfluss,
Lawinen, Rutschung und Steinschlag

sehr tief moderat sehr hoch

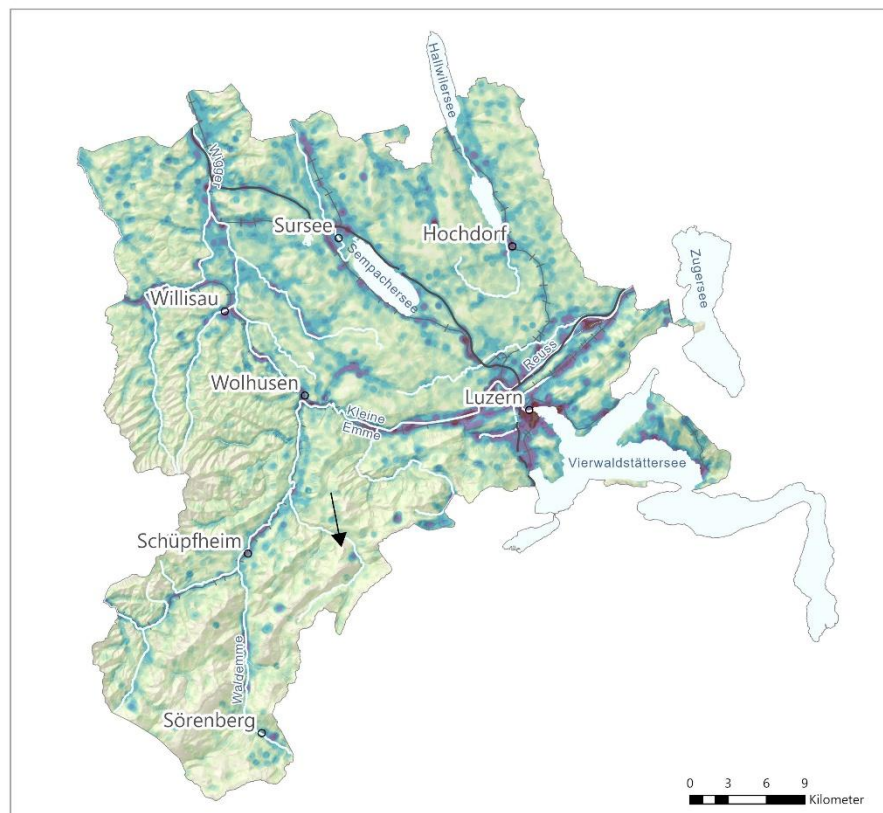


- Eisenbahn
- Strasse
- Fliessgewässer
- Gewässer

Das abgebildete Risiko bezeichnet die Wahrscheinlichkeit, dass eine bestimmte Naturgefahr Schäden anrichtet. Das Ausmass des Schadens hängt davon ab...

- wie häufig und wie stark eine Naturgefahr auftritt,
- wie viele Personen, Sachwerte und andere Güter möglicherweise von einer Naturgefahr betroffen sind,
- wie verletzlich diese Personen, Sachwerte und anderen Güter sind und welche Folgeschäden (z. B. Betriebsausfälle) zu erwarten sind.

ArcGis Pro, Kanton Luzern



15. Imagine that you have to explain to another person what you see on the map.

Describe your answer in keywords.

- a. [Text field]

16. Based on the map, please answer whether the following statements are true or false.

[True - False - I don't know]

- a. The yellow-green areas show where there are forest areas.
- b. The areas around the cities of Lucerne and Sursee a higher risk of natural hazards than the rest of the canton of Lucerne.
- c. In the purple-coloured areas, avalanches that cause major damage must be expected.
- d. The risk of natural hazards is greatest in densely populated areas.
- e. There are areas in the canton of Lucerne where there is no risk of natural hazards.
- f. The greatest risk of natural hazards exists along watercourses.
- g. I can recognise mountains by their yellow-green colour.
- h. The risk of natural hazards is lower in Sörenberg than in Wollhusen.
- i. Natural hazards cannot cause major damage outside densely populated areas.

17. How high do you classify the natural hazard risk for the following locations?

	No risk	1 = Very low	2	3	4	5 = Very high
Luzern						X
Hochdorf					X	
Sursee					X	
Sörenberg				X		
Arrow		X				

18. Based on the map, what is the probability of a natural hazard event causing serious damage in Lucerne's historic centre within the next 100 years?

- a. 10 %-25 %
- b. 25 %-50 %
- c. 50 %-75 %
- d. 75 %-100 %
- e. Not visible on the map

Here is the map again as a basis for the following questions so that you don't have to scroll all the way to the top.

Risiko Naturgefahren

Hochwasser, Oberflächenabfluss,
Lawinen, Rutschung und Steinschlag

sehr tief moderat sehr hoch

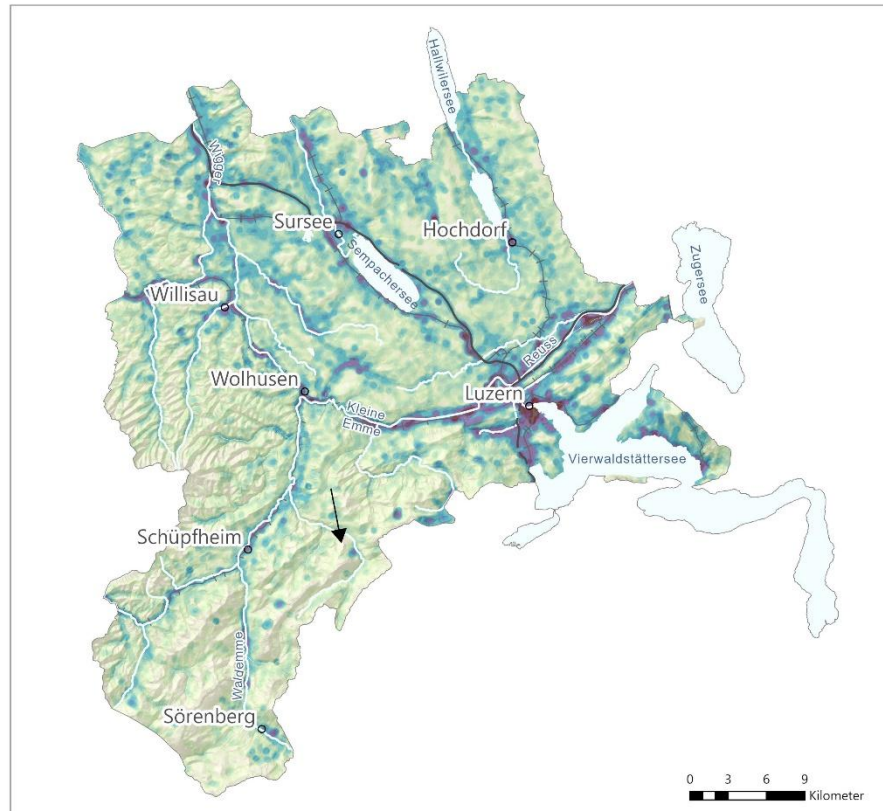


- Eisenbahn
- Strasse
- Fliessgewässer
- Gewässer

Das abgebildete Risiko bezeichnet die Wahrscheinlichkeit, dass eine bestimmte Naturgefahr Schäden anrichtet. Das Ausmass des Schadens hängt davon ab...

- wie häufig und wie stark eine Naturgefahr auftritt,
- wie viele Personen, Sachwerte und andere Güter möglicherweise von einer Naturgefahr betroffen sind,
- wie verletzlich diese Personen, Sachwerte und anderen Güter sind und welche Folgeschäden (z. B. Betriebsausfälle) zu erwarten sind.

ArcGis Pro, Kanton Luzern



19. Please rate below how you feel about the risk map for natural hazards.

1 = Do not agree at all. 5 = Agree completely.

- a. useful
- b. trustworthy
- c. understandable
- d. clear
- e. informative
- f. appealing

20. Indicate how strongly you agree with the following statements.

1 = strongly disagree, 5 = strongly agree

- a. I am amazed that the risk of natural hazards is so high in the canton of Lucerne.
- b. I can understand why certain areas have a high risk of natural hazards and others a lower risk.
- c. Looking at the map has changed my opinion about where natural hazards can cause a lot of damage.
- d. The map motivates me to take a closer look at the possible effects of natural hazards in the canton of Lucerne.

21. How useful do you find the following map elements for understanding the risk map for natural hazards?

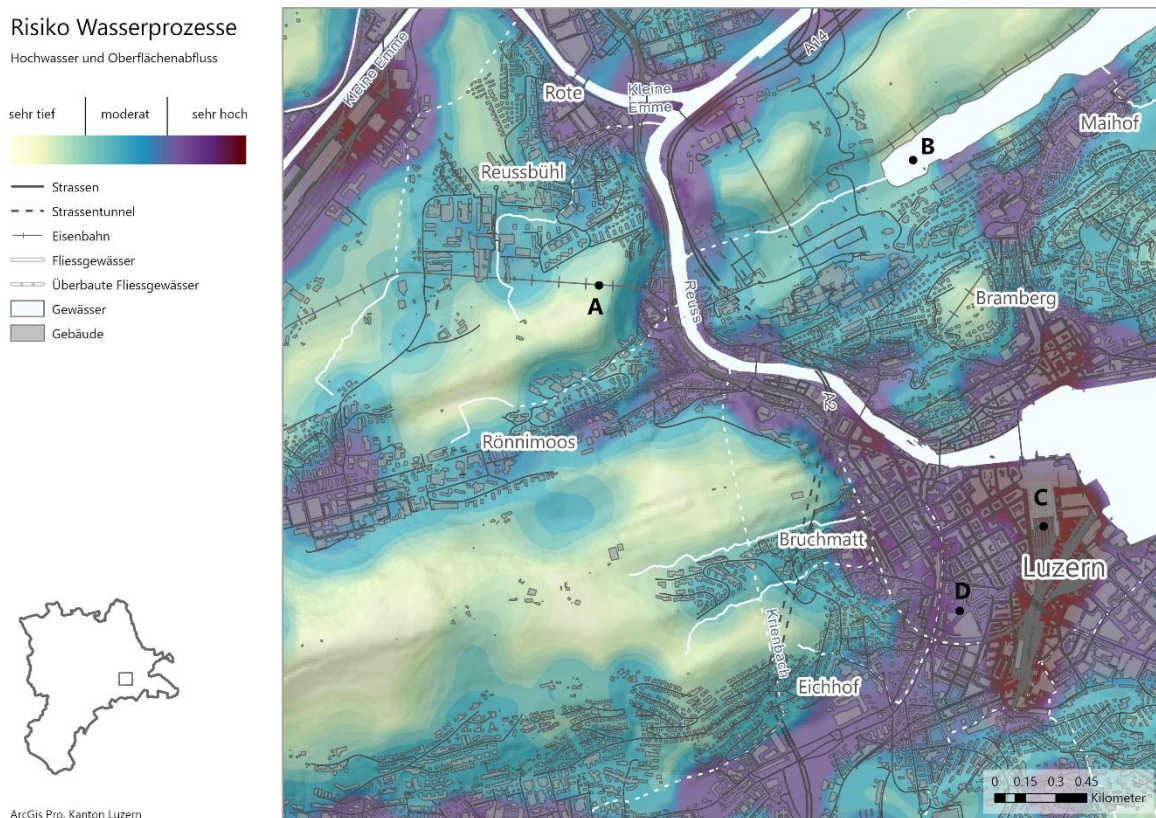
1 = Not at all useful, 5 = Very useful.

- a. Title

- b. Legend
 - c. Labelling the legend
 - d. Background
 - e. Colouring
 - f. Map labelling (localities)
 - g. Further comments on the map/ map elements [Text field]
22. Here you can give more feedback on the map elements. (optional)
[Text field]

Question block 4 - Risk map for individual processes

You will now see the risk map for the water processes (flooding & surface runoff). Take your time and look at it carefully.



23. Based on the map, please answer whether the following statements are **true** or **false**.

- a. There are railway lines at point A.
- b. The white area at point B is an industrial zone.
- c. At point C, the risk of water processes is very high due to the railway station and the associated high potential for damage.
- d. The white lines represent motorways and roads.
- e. In point D I am inside a place.

You will now see the risk map for avalanches. Take your time and look at it carefully.

24. Based on the map, please answer whether the following statements are **true** or **false**.

- a. There is no risk of avalanches at point A.
- b. At point B, the probability of an avalanche causing major damage is very low.
- c. The risk of avalanches is higher for point B than for point C.
- d. With point D, I don't have to worry about an avalanche causing major damage.
- e. The risk of avalanches was not assessed for point E, so it is unclear whether avalanches can cause damage there.

25. How helpful do you find the maps for individual natural hazards (e.g. water processes or avalanches)?

1 = Very helpful ---- 5 = Absolutely not helpful

Question block 5 - Risk of natural hazards without a map

The risk from natural hazards describes the potential impact of natural hazards on buildings and the associated human losses and economic damage. After you have looked at the risk map for natural hazards, we would like to ask you the following questions again.

26. How high do you estimate...

1 = Very low risk. 5 = Very high risk.

- a. ... the risk of natural hazards in Switzerland?
- b. ... the risk of natural hazards in the canton of Lucerne?
- c. ... the risk of natural hazards for your community?
- d. ... your personal risk from natural hazards?

27. How likely is it that you personally will take the following measures based on the information on the risk of natural hazards in the canton of Lucerne?

1 = Not at all likely. 5 = Very likely.

- a. Clarify whether insurance against certain natural hazards makes sense.
- b. Find out what I should do in the event of natural hazards (e.g. flooding, landslides).
- c. Inform myself about the possible consequences of natural hazards.
- d. Build up an emergency stock.
- e. Put together a first aid kit.
- f. Copy important documents such as ID/passport and keep them to hand.
- g. Have torches, battery-operated radios and cash ready.
- h. Take further precautions, such as having sandbags ready.
- i. Other [text field]

28. How helpful do you find the risk map for natural hazards in the canton of Lucerne for...?

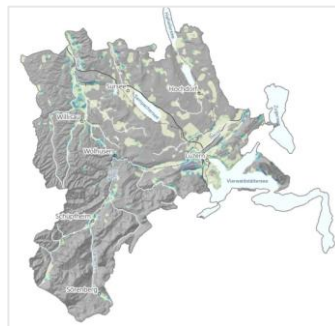
1 = Not at all helpful. 5 = Very helpful.

- a. ... you personally
- b. ... emergency services such as the fire brigade, police, army and civil defence
- c. ... Authorities
- d. ... communities
- e. ... Companies
- f. ... Other [text field]

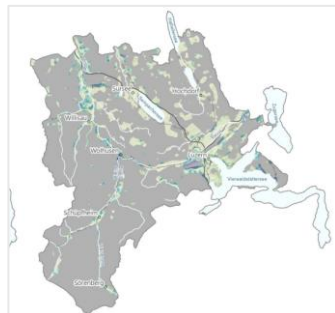
Question block 6 - Map and legend versions

You have already seen on the map for avalanches that there are areas where no risk assessment has been carried out.

29. Please click on the map where it is clearer to you that there are areas where no risk assessment has been carried out.



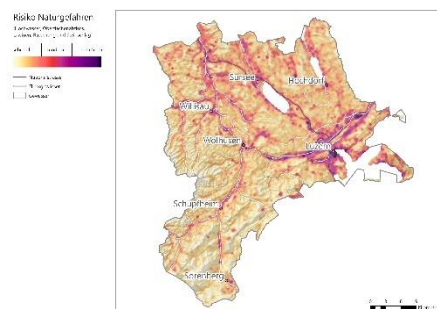
a. Version 1:



b. Version 2:

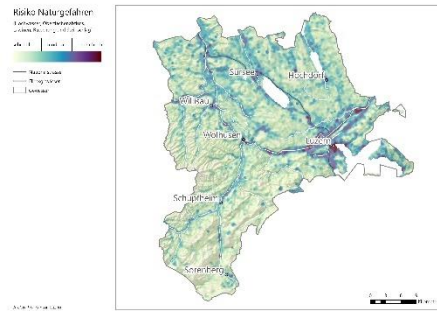
In the following step, we present various cards that have the same content but are shown in different colours.

30. Please click on the colour version of the risk map that you like best. (1= I like best)

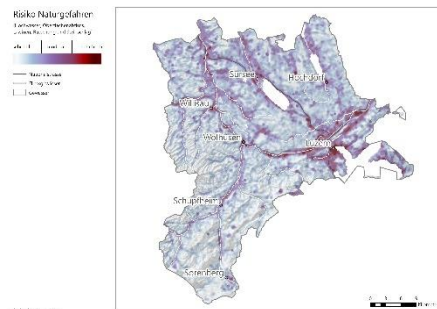


31. Version 1:

32. Version 2:



33. Version 3:



Question block 7 - Socio-demographic questions

You have reached the last block of questions. We will now ask you a few questions about your Person.

34. Do you live in the canton of Lucerne?

- a. Yes
- b. No, in the canton: [text field]

35. If not, do you have a secondary residence in the canton of Lucerne?

- a. Yes
- b. No

36. What is the highest level of training you have completed?

- a. Compulsory schooling
- b. Federal Vocational Certificate
- c. Specialised secondary school certificate
- d. Federal Certificate of Competence
- e. Matura (vocational baccalaureate, specialised baccalaureate, grammar school baccalaureate)
- f. Professional and higher professional examination (Federal Diploma, Federal Certificate)
- g. Higher technical college (HF diploma)
- h. University of Applied Sciences (Bachelor/Master)
- i. University of Education (Bachelor/Master)
- j. University/ETH (Bachelor/Master/PhD/Doctorate)

37. What is your current work situation?

- a. In training without income (e.g. school, university)
- b. In education with income (e.g. apprenticeship, doctorate)
- c. Full-time employee (80-100%)

- d. Part-time employee (less than 80%)
- e. Full-time househusband or housewife
- f. Without employment
- g. Retired
- h. Other [text field]

38. How do you live?

- a. Rented flat or house
- b. Owner-occupied flat or house
- c. Other [text field]

39. Do you deal with natural hazards by profession?

- a. Yes
- b. No

40. To which of the following three terms does your current municipality of residence fit?

- a. City
- b. Countryside
- c. Agglomeration

End page

41. You have already reached the end of the questionnaire. If a topic that is important to you has not been addressed or you have other comments, please feel free to send us your additions, questions or critical remarks

- a. [Text field]

Thank you for participating in this study! Your answers have been successfully saved.

If you have any questions, you can send them to the following address: