

## EMERGENCY PREPAREDNESS CALCULATOR

How you and your family can prepare yourselves

### **Test the web version of the prototype:**

<https://xd.adobe.com/view/73a8a8e5-c79e-417e-7cd2-d15d228d668b-0599/?fullscreen&hints=off>

Video walkthrough of webversion:

[https://drive.google.com/file/d/1AVvizFUxBrfU5XS0I5pU\\_cSrF-pCShEa5/view?usp=sharing](https://drive.google.com/file/d/1AVvizFUxBrfU5XS0I5pU_cSrF-pCShEa5/view?usp=sharing)

### **Test the smartphone version of the prototype:**

*Laget for en iPhone X/XS/11 Pro*

<https://xd.adobe.com/view/34d538e0-3b96-43a1-62e3-4a6aed-2cf84f-42e4/?fullscreen&hints=off>

Video walkthrough of smartphone version:

<https://drive.google.com/file/d/11fiF42QRqyKn56UJMjFZHhGQ-uRFApSBd/view?usp=sharing>

This specification was written as an exam assignment at MIX202 Design for Media Use in the spring of 2020. The course is part of the Bachelor's program Media and Interaction Design at the Department of Information and Media Science at the University of Bergen. The course leader was Professor Lars Nyre. Subject teachers were Professor Andy Opel (Florida State University), senior engineer Zulfikar Fahmy, PhD fellow Fredrik Håland Jensen, PhD fellow Oda Elise Nordberg and master's student Jonathan Lindø Meling. The specification is translated into English by Kristin Eidsheim.

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# Introduction

Never before have so many people been affected by such major climate change and natural disasters as in recent years. In addition, the entire world is fighting the pandemic that recently emerged in 2020. A common denominator is that this creates crisis situations for the entire world, for the home country and for each household. Is the Norwegian population prepared for any power outages, pandemics, natural disasters or other emergency situations that may occur? Does each household have what it takes to manage for at least 72 hours on its own?

## Project background

In module 1 of this course, we conducted a thorough evaluation of selected articles from Bergensavisen's climate journalism, where one article presented the Directorate for Social Security and Emergency Preparedness (DSB)'s preparedness list (Figure 1). We were surprised at how little self-preparedness was taken seriously by the informants, and we found that there was a great potential for improvement regarding how the emergency preparedness list could be presented in a news article. Although this insight is derived from BA's journalism, it will still be very relevant for NRK, as it is mainly about communicating news.

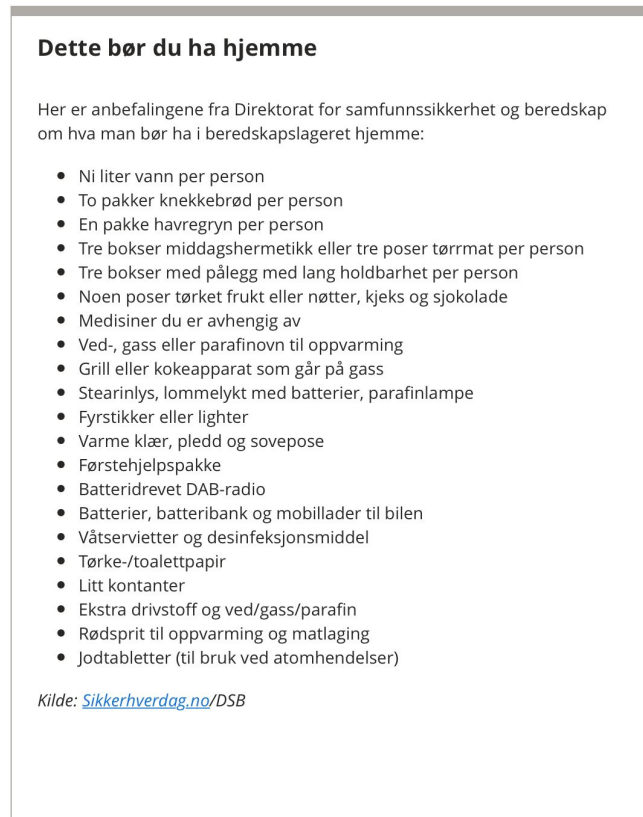


Figure 1. DSB's emergency preparedness list contains the most necessary items one should have at home to manage for 72 hours. This is how the list appeared in BA's article.

## Our idea

We have developed a prototype of a special article which includes a preparedness calculator with NRK as the sender. The calculator is based on DSB's emergency preparedness list. The purpose is to present the topic of self-preparedness in an interactive way that meets the needs of the target group. The prototype clarifies the importance of good self-preparedness, which can lead to engagement and increased sharing culture. We believe that the readiness of the Norwegian population will be improved if readers had access to this product.

## Why is this relevant to NRK?

The prototype is very relevant to NRK, especially as the ongoing covid19-pandemic has led to involvement in self-preparedness. This theme will be relevant today and for many years to come as new emergencies appear.

Although self-preparedness has become more relevant, DSB's survey shows that under half of the representatives have thought through what dangers, accidents and challenges one can face at home (dsb.no, 2019). A full 17% also state that they are not prepared at all. The same survey also shows that online newspapers are the first place one would go for information about a crisis (dsb.no, 2019). NRK has a disclosure responsibility and especially a contingency responsibility (NRK's Statutes, 2019, § 23), and can reach the population with information on national crises and disasters. Thus we believe that our prototype will help NRK reach out with an important topic in a good and credible way, leaving Norwegians with a certain confidence before the crisis occurs.

## Targeted at parents with young children

In module 1, we gained valuable insight about parents with young children, so it became natural to continue with the same target group for this project. The same insight also formed the basis for the prototype development so that it was aimed at the wishes and needs of the parents. Thus the prototype focuses on entire households rather than individuals and the user has the opportunity to add toddlers and pets in their household.

## The prototype

The prototype shows a special article that is intended to be published by NRK. At the bottom of the article one can find the emergency preparedness calculator, which is a brand new and innovative functionality. The entire prototype is made in web format, but the layout can easily be adapted for smartphones. The special article would have been very similar to the web version in smartphone format, but with smaller images and larger body text.

Since the biggest difference would be the layout of the calculator, we have created this in a smartphone format as well. We did this to show that it is well suited on a smartphone, separate from the special article.

## The importance of self-preparedness

In module 1, self-preparedness was not taken seriously among the informants, and DSB's emergency preparedness list was perceived as excessive (Angeltveit et al., 2020).

Therefore, we have chosen to give the contingency calculator context with introductory texts that explain why self-preparedness is important. Thus, readers will understand that good self-preparedness is something everyone should have, and that this is a topic that concerns everyone.

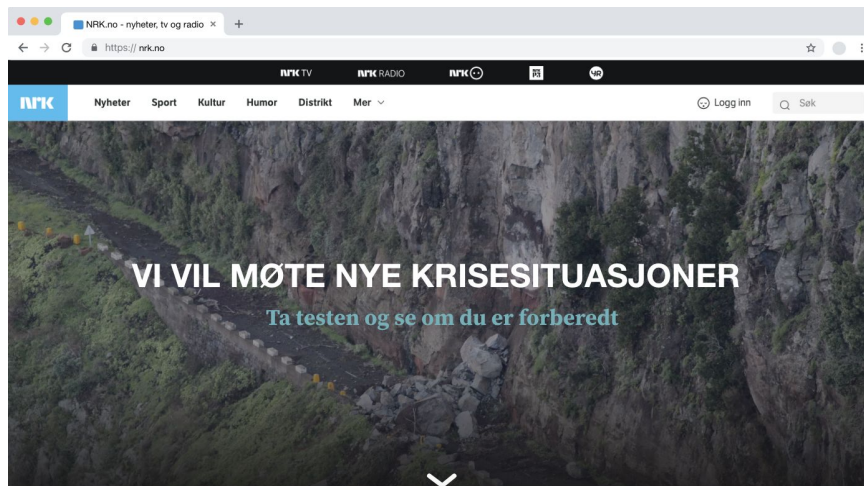


Figure 2. Front cover of the special case.

### Contrasts increase readability

In order to make usability easier, we have consistently followed Donald Norman's design principles for good interaction design. The principle of visibility is applied by darkening the background images in the article and by using white text over the images (Figure 3). In this way, there is greater contrast, so that readability is improved, which is important for the message to be understood (Preece et al., 2015, p. 26).



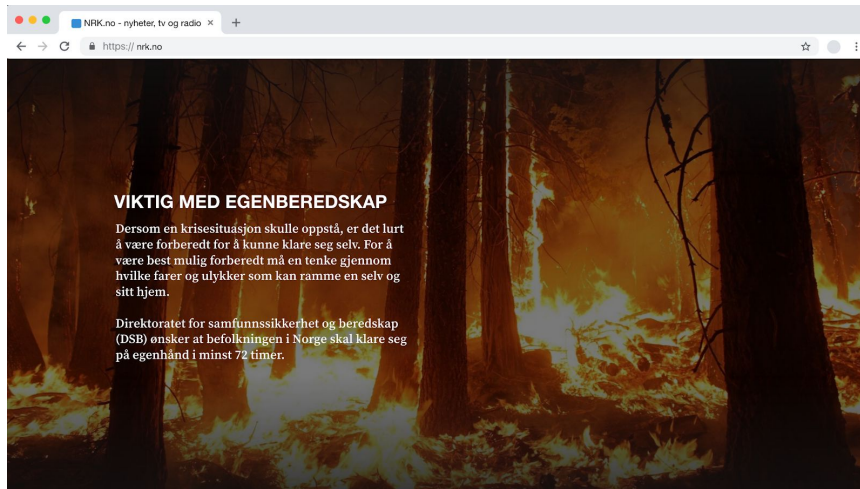


Figure 3. Image with white text for great contrast and good readability.

### Eye-catching images

In order to disseminate climate journalism in the best possible way, we have applied several principles from the research report Seven Principles for Visual Climate Change Communication (Corner et al., 2016). To create an impression and affect the readers to a greater extent, we have chosen to use images of landslide, forest fires and floods to visualize climate consequences. (Figures 2, 3 and 4) (Corner et al., 2016, p.29). We have also used authentic images, rather than staged images, and some of them also contain people (Figures 4 and 5). The readers' preference for such images was confirmed from the insight in Module 1 (Angeltveit et al., 2020, p. 13).

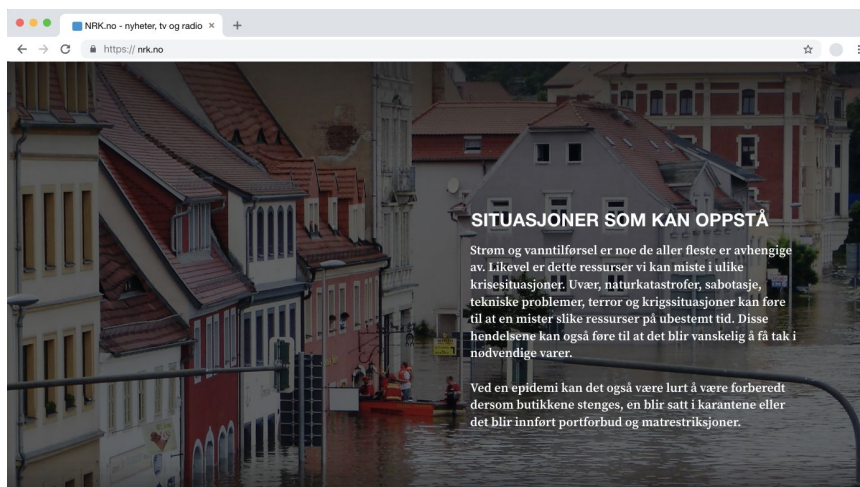


Figure 4. Image visualizing climate impacts.

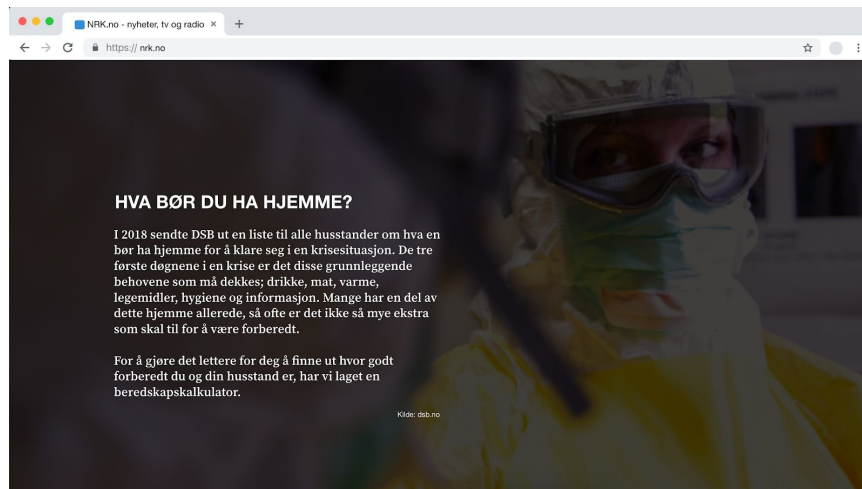


Figure 5. Picture of man in a crisis situation.

### Dangers that threaten immediate areas

The map in the prototype was implemented on the basis of insights from module 1, where it emerged that they thought self-preparedness did not concern them (Angeltveit et al., 2020, p. 14) (Figure 6). Seeing the greatest dangers in their own county makes them feel more real and that it actually pertains to them. We have also applied the principle of visibility using instructive texts (Figure 6) and hover effect (Figure 7), to bring out the functionality of the map.

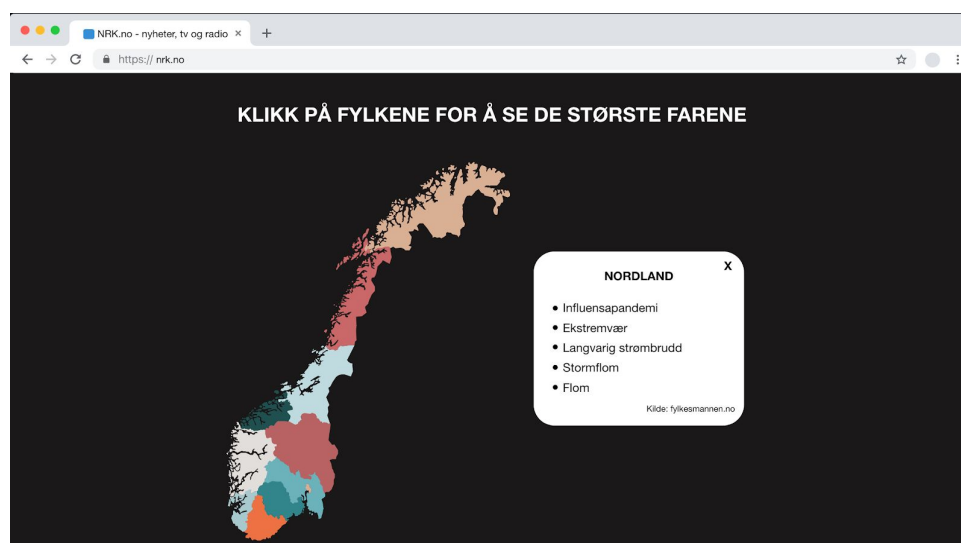


Figure 6. The interactive map with instructive text.



Figure 7. The picture on the left shows what the county looks like, while the picture on the right shows what the county looks like when the cursor hovers over the button.

## The emergency preparedness list presented in a new way

The calculator should inform the readers about what they need to do during a crisis and how the items can be stored. It is presented in a separate box in the article (Figure 8), as it is intended as an element that can easily be placed in other relevant articles later. The calculator can also be presented alone on a separate page.

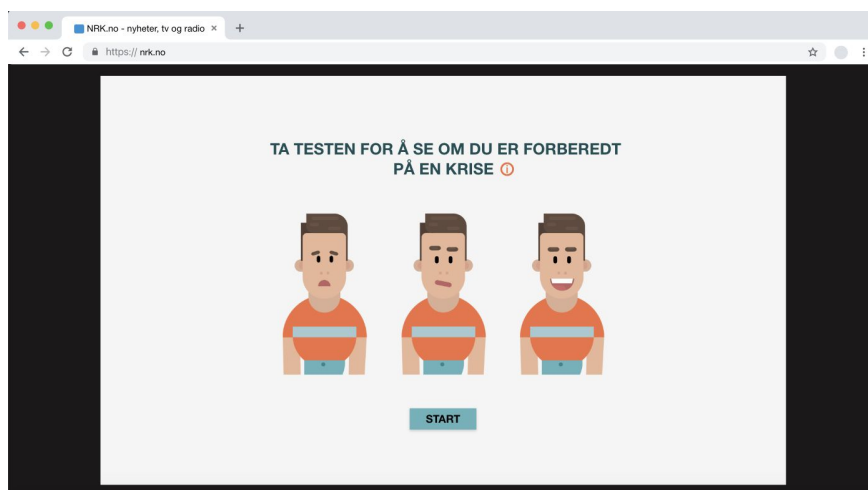


Figure 8. The frontpage of the calculator. Here's how it is placed in a box.

## Calculator as a survey

We present the calculator as a survey to make it fun, but also clear. The information is customized to each readers, based on what answers they give in beginning of the survey (Figure 9). The content and quantity of the list will change based on how many people you are in the household and whether you have toddlers or pets.



The screenshot shows a survey interface with two main sections. The first section is titled "HVOR MANGE ER DERE I HJEMMET?" (How many are in the household?) with a sub-note "Ikke tell med småbarn" (Do not count toddlers). It features a row of eight person icons, each labeled with a number from 1 to 8. The first two icons are dark teal, while the others are light grey. A plus sign icon is to the right of the eighth icon. The second section is titled "HAR DERE SMÅBARN OG/ELLER HUSDYR?" (Do you have toddlers and/or pets?). It has two options: "Småbarn" (Toddlers) with a baby icon and "Husdyr" (Pets) with a cat icon. At the bottom, there is a progress indicator with five dots, the first of which is filled, and a blue button labeled "NESTE" (Next).

Figure 9. Here you can enter how many people are in the household and whether you have toddlers or pets. In this example, the household consists of two people in addition to toddlers and pets.

## Sorted by categories

In Module 1, we received feedback that the emergency preparedness list was boring and too long (Angeltveit et al., 2020, p. 14). By dividing it into five categories and present each on their own page, it appears more feasible (Figure 10). We have presented the elements as icons in addition to text to make it more visual, as was requested by the informants in module 1 (Angeltveit et al., 2020, p. 23). By using icons it is also easier to get a quick overview.

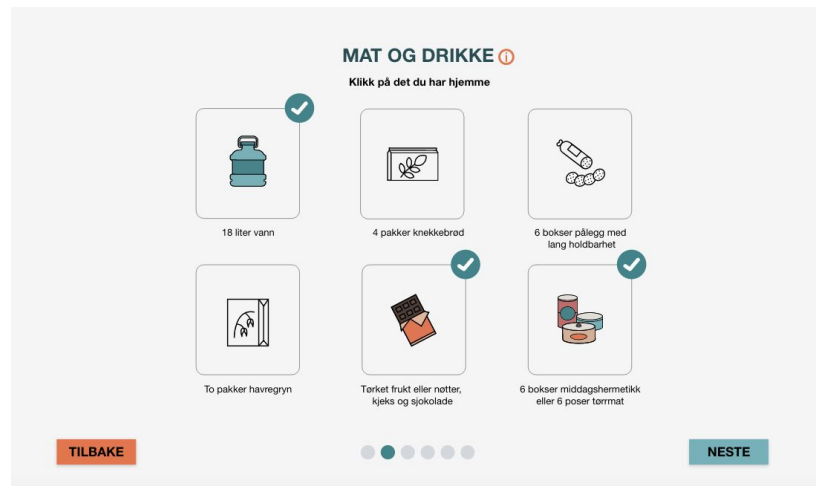


Figure 10. Example of a category page. The amount of foods has changed according to how many they are in the household.

### Completed design

While working on the prototype, we have applied Norman's principle of consistency by allowing similar functions and elements to perform similar tasks (Preece et al., 2015, p. 29). The buttons in the calculator therefore have the same design on all sides with hover effect, and identical buttons have the same location (Figure 11). In addition, we have used the same fonts, colors, sizes, icons, shapes and locations consistently. The prototype's color palette consists of soft colors with several shades where the main colors are blue and orange. These measures make the readiness calculator easier to understand and create good usability. We placed circles at the bottom of each page to indicate how far one has come in the calculator so that one knows where one is in the user flow. That way, the calculator seems more achievable.



Figure 11. At the bottom of each page you can see the dots indicating progression, as well as the "next" and "back" buttons. The figure also shows an example of color use.

## Information boxes

We used information boxes to distribute some of the information (Figures 12 and 13). This allows the user to immerse themselves in the content but also to get through the survey quickly. In this way, the design becomes clearer while information is available.



Figure 12. By clicking on the "i" next to the heading, it provides information on why you need to have the different items at home.



Figure 13. Information box that explains why the various elements are important to have at home.

## Oral language

The language of the calculator is oral and direct to appeal to the target audience (Figure 14). Such wording makes the theme more achievable as the content is more easily presented and the user gets an entertaining experience. This is positive as the insight from module 1 shows that the list was perceived as boring (Angeltveit et al., 2020, p. 14).

## Exit marked with X

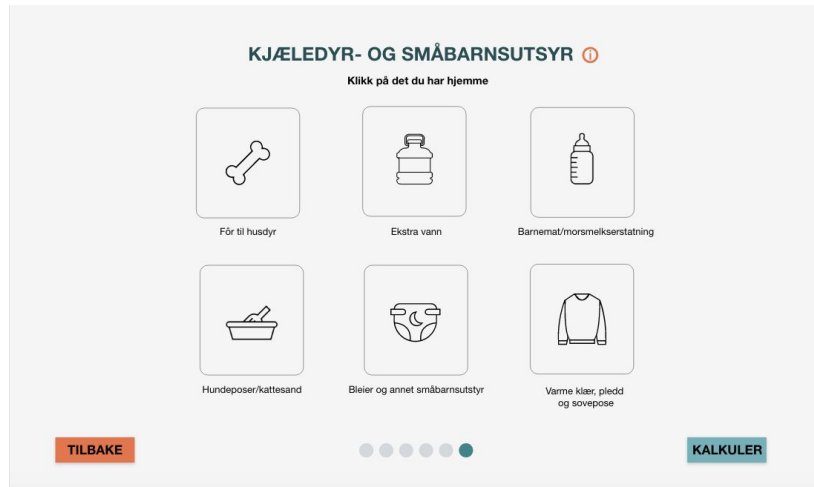
The prototype has visible exits marked with X (Figure 14). This is supported by Jacob Nielsen's principle number three that deals with user control and freedom (Nngroup.no, 1994). It is important to have a visible exit so that you quickly can get back to where you were.



Figure 14. An oral and simple language appeals to the target audience without seeming foolish. There is a visible exit from the information box marked with X.

## Toddlers and pets

DSB's official list contains only general items adapted to adults. In regards to the target group being parents with young children, we have chosen to extend the original list with a separate category page with equipment for toddlers and pets (Figure 15). In this way, all family members are included and everyone has what they need.



Figur 15. Kjæledyr- og småbarnststyr. Kategorien er kun synlig valgt mann har krysset av på småbarn eller kjæledyr. Når man er ferdig med tester trykker man på kalkuler.

## Shopping list

After the user is done with all of the categories and has clicked "calculate", the calculator will finally present how well prepared one is. The calculator puts together the items the user has not checked off, to present what is missing as a shopping list. This makes it easy for the user to improve their self-preparedness (Figure 16).

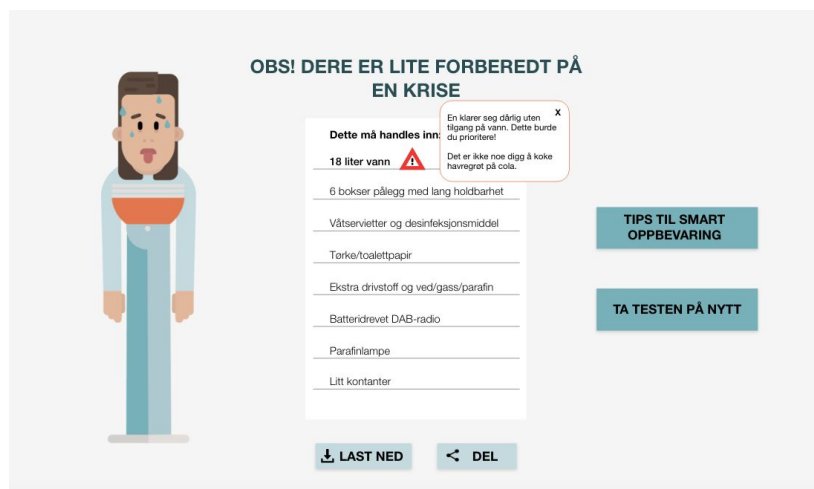


Figure 16. Page with the shopping list. The warning triangle comes up if one is missing something extra important, which in this case is water. Clicking this will display a small information box.



### Faces arouse interest

Next to the shopping list we have placed a figure that will generate interest (Figure 17). The figure will show emotions that reflect how well prepared one is. In Module 1, we learned that the reader's eyes were drawn to faces, and that illustrations without people aroused little interest (Angeltveit et al., 2020, p. 13).



*Figure 17.* If the household is missing water, one will eventually become very thirsty. We illustrate this by showing a figure of a thirsty person. This will change according to what is missing.

### Storage tips

The calculator has its own page for storage tips (Figure 18). This was somewhat more desired in Module 1, since the list is perceived as comprehensive and several believed that the objects would take up a lot of space (Angeltveit et al., 2020, p. 14). The tips are located as a separate button on the page showing the final results (Figure 16), thus it is optional to read.



Figure 18. Storage tips. Here the page describes how you can store enough wood.

## Social media engagement

To create engagement about the calculator, we have added two sharing options (Figure 16). By clicking on the "Download" button, one can download the shopping list as PDF, or send via Mail and Messenger (Figure 19). This way, you can get a shopping list right in your pocket, and the way to the store to buy what is missing is shorter. By clicking the "Share" button, you can share your own test result through Facebook or Messenger (Figure 20). In this way, friends and families can compare with each other, and hopefully this will create engagement around the theme of self-preparedness.

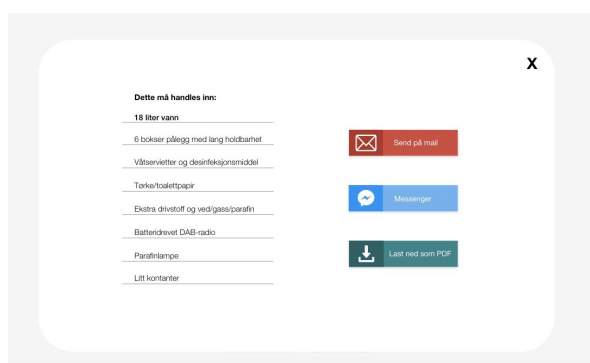


Figure 19. One can choose to download the shopping list as PDF or send by Mail or Messenger.

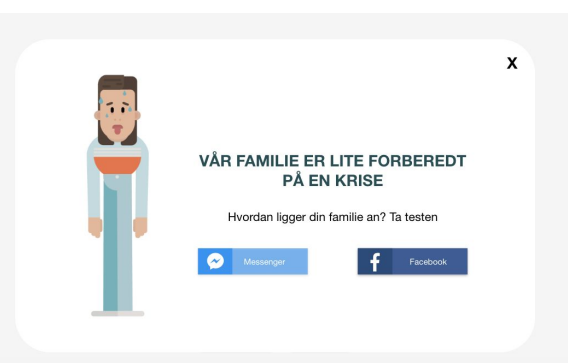


Figure 20. One can share the contingency calculator with friends.

## Smartphone version

In addition to the prototype inside the special article in web format, we chose to create the smartphone calculator to show how the layout will look and work on a phone. This way, we show how the survey would adapt to a responsive design.

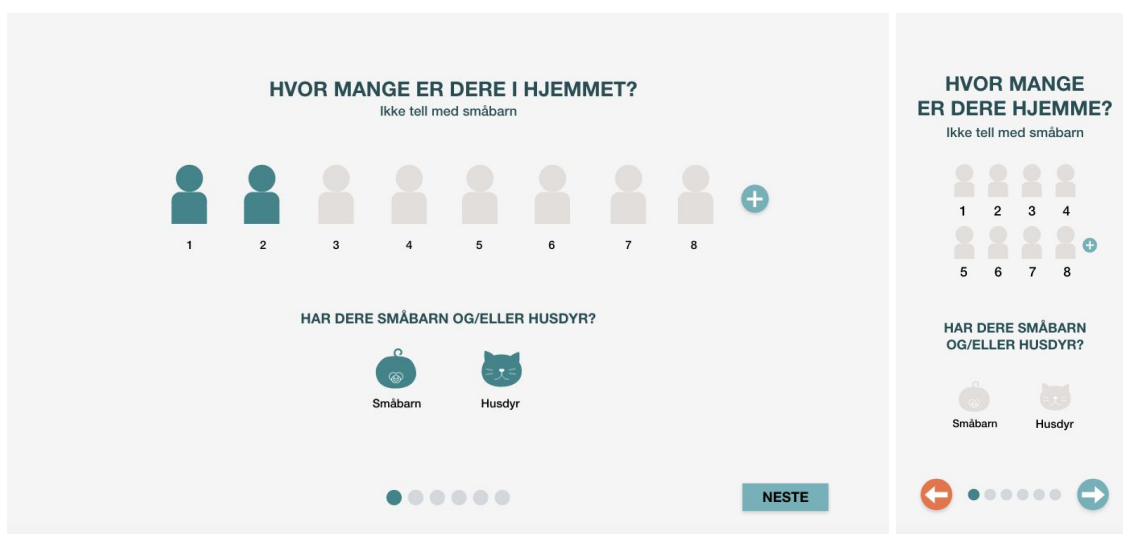


Figure 21. Web-format vs. smartphone version.

## Vertical design

The main difference between the smartphone version and the laptop version is the location of the various elements (Figures 21 and 22). Since there is more space vertically than horizontally on a mobile, we chose to place the items more in height. As illustrated below, we also chose to change the back and next buttons to arrows, as this is better utilization of space.

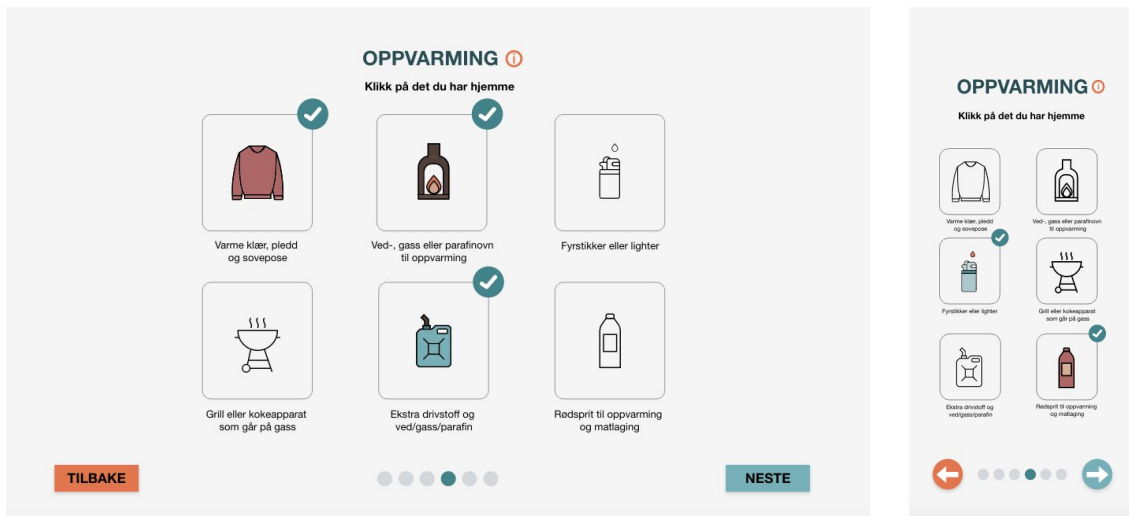


Figure 22. Web-format vs. smartphone version.

## Technical limitations

Since our product is only a prototype developed in Adobe XD, it has some technical limitations. A common limitation is that data is not stored along the way in the user flow. Initially, the calculator would change the category pages according to who is in the household, and made a correct shopping list based on the answers of the user. If the choices had been saved, the results page would also have changed. Here, there would be a scale from “not prepared” to “very well prepared”, where one is placed according to how many items one has ticked off the list (Figure 23).

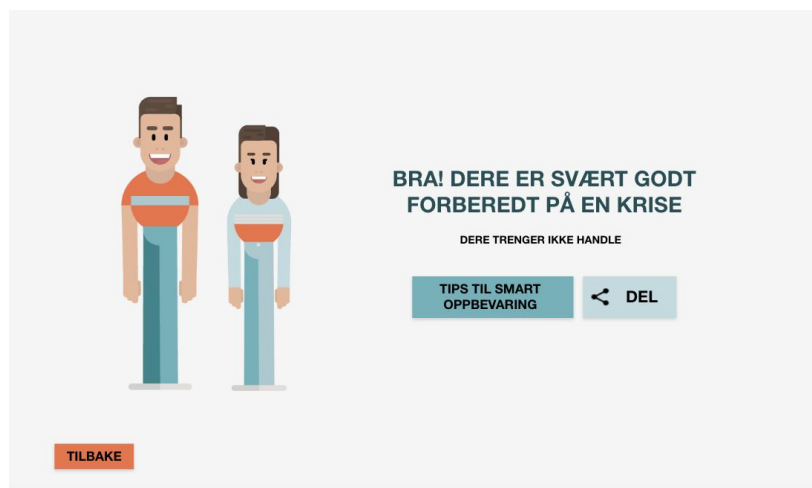


Figure 23. Version where the user has everything one needs from DSB's emergency list.

The items on the page with storage tips are intended to have a hover effect like the other buttons. This also applies to the number of people in the household. Here it should also be possible to press the plus sign to check if one is more than 8 people. The map also has a technical limitation which means that the text boxes in the map do not change automatically when you click on a new county. Therefore, an existing text box must be crossed out before a new county can be clicked on.

## The way forward

The main goal of this project has been to create a valuable and useful tool for NRK that will focus on the importance of self-preparedness. There is a lot of information on the topic, but it is often poorly presented and is not taken seriously. With our idea, we can create an engagement around the theme and increase interest in following DSB's advice on self-preparedness.

The emergency preparedness calculator shows how one can extend DSB's original contingency list so that it can meet specific target groups to a greater extent. The calculator can be further developed where the amount of objects can be increased, and adapted to the different crisis situations or specific groups. These groups can be large and general, but also smaller groups with more specific needs, such as people with disabilities. Another idea could be to add a crisis mode that provided its own tips when the crisis actually occurred.

By making self-preparedness a relevant topic, one has the opportunity to be prepared before the crisis occurs. When a new pandemic comes, we may avoid the hysterical hoarding and lack of toilet paper in store shelves.

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