Swiss Versus-Virus Hackathon

Challenge #146 : “Let's use decentralisation to shield our people at risk”

“SOCIAL CODE AND MEASURES” for protecting citizens at risk during and after the SARS-COV-2 outbreak and epidemic.

A concept to protect the population at risk

Vulnerable people are in need of a way to **protect themselves from infection in the context of a progressively reduced confinement**. These people still need to participate in the society, whether it is for groceries, healthcare, work or general social activities, but at the exception of older people to an extent, their condition is **not obviously visible**.

In that context, the project aims to **distinguish** these people from the rest of the population as a way to warn others that special care should be done to diminish the infection risk for them. Moreover, people who regularly have to stay with vulnerable people, also have to be identified rapidly by the public in the same way.

The following categories would be considered:

- People who are themselves at risk
- People who live under the same roof as vulnerable people
- Medical workers, social workers, elderly houses workers, pharmacists

To make the distinction clear, examples are given of categories whom shall not be in this group:

- People living by themselves and don’t have the responsibility to care for vulnerable people or interact with people in the categories mentioned above.
- People without a severe medical background and who have no immediate concern for the virus.

As clarified by our “Proof of Concept” document, this has the potential to save lives by reducing cases among vulnerable people.

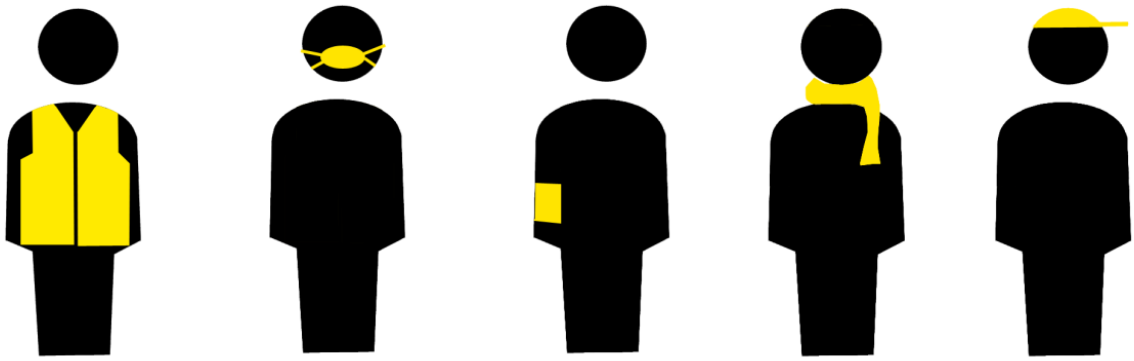
Implementation of specific measures

To protect the people at risk mentioned above, we need to rely on the compliance and sense of responsibility of the entire society. For people at risk, **wearing an easily recognizable piece of clothing** that almost everyone has in their household like a **yellow vest** can help to mitigate the risk of contagion. At the same time, this way everyone in their immediate surroundings is reminded to comply with a set of good practices to ensure that all people can perform day-to-day activities with ease but also minimizing the probability of infecting people at risk as much as possible.

A yellow vest as a piece of easily visible clothing is the ideal candidate for this purpose. It can be found in most households or is even mandatory in people's cars and if not can be **easily purchased or distributed to those who need it**. The barrier to wear a yellow vest in public should be low and should not implicate any social disadvantages of privileges, it is only a clear marker worn by people at risk or in contact with people at risk. The vest stands as a symbol for an associated set of good practices based on common sense which should be adopted by society through extensive communication and education.

Lessons learned from previous pandemics have shown that people will comply with a set of rules like this if they are properly and credibly communicated from the government to the general public. Next to this, the compliance of others drives the adherence of people to this set of practices. The case of people who decide to wear a yellow vest even if they do not belong to a certain risk group are not considered to have adverse effects, they also contribute to public awareness.

As the public is more aware of the project, the yellow vest can easily be substituted with a regular piece of clothing, as long as it has the distinctive yellow color.



Framework of associated good practices

The set of good practices can be divided between open or public spaces and confined spaces. Public transport can be considered as an intermediate.

- In **open or public spaces**, the yellow vest can ensure that people keep 2 m distance at all times and reminds people of their respective responsibilities. Every user should clean up after themselves in public places and ideally disinfect.
- In **closed spaces** we can use the definitions of the different types of contact and restrictions by the Swiss government:
    - a) Close contact: more than 15 minutes face-to-face or more than 2 hours in a closed common space.
    - b) Casual contact: less than 15 minutes face-to-face or less than 2 hours in a closed common space.
    - c) Decree of 25th of March 2020: 4m^2 per person for work reunions.
- Based on this we can define guidelines for **workspaces** specifically:
    - Closed office spaces should be restricted to one person at a time, people going back to work can but there should be a clear schedule to limit the amount of people present at the same time.

    - Open office spaces should stick to the same kind of scheduling with an upper limit of 4m² per person, it is encouraged to wear or have visible a yellow vest also at work so people can be aware when using common spaces or equipment.
- Other closed spaces like **shops or supermarkets** should adhere to the 4m² per person rule as well by limiting the total amount of people present at a given time, not discriminating nor privileging people with yellow vests. The good practices are expected to be empowered through goodwill and good faith of society.
- **Public transportation** is an essential aspect of regular life, that is a relatively closed space involving a large number of people. Moreover, the long duration of the travel increases the risk of transmission greatly. For this reason, special measures can be considered:
    - Reserved cars in trains for yellow vest.
    - Reserved door and separation line in buses which can be marked by an easily recognizable symbol or logo.
    - More frequent disinfection in areas that are “reserved” for people at risk like is now the case for seats for elderly people on the tram or bus.

Data collection for further analysis

Implementing yellow vests guidelines will give us the opportunity to keep track of the population who consider themselves at risk. Using existing technologies it is possible to count the people with and people without yellow vests in public places. These numbers can be used to do statistics and gather more information about the pandemic evolving in time. No severe changes to the current systems need to be made. **Data can be gathered from normal street cameras** who are able to transmit colored images.

A convolutional neural network (CNN) could be trained with a dataset and a fast computer. Later on, this neural network can be used on a normal computer and is able to draw a square around people and distinguish people with and without yellow vests. This real time data can be used to monitor epidemic advancement. Additionally, the pool of gathered would be a valuable asset for further analysis and science.

Developed by: Laure Lemrich, Monica Tio, Adria Gallifa, Andreas Waets, Matthieu de Montmollin, Oriol Riu, Pablo Andreu, Robin Nelen.