

Modified March 31st, 2025

### **CovaCare Usability & Peer Testing**

The main functionality of CovaCare is its video processing and machine learning algorithms, designed to detect falls and prolonged inactivity. This operates entirely in the background, and automatically sends a text to emergency contacts if an incident is detected. Therefore, usability testing was not applicable for this part of the system. We plan to conduct different types of testing on that module in the near future. However, CovaCare also includes a mobile application for configuring emergency contacts, setting up cameras, and managing other settings. To test its intuitiveness, we conducted qualitative research with four subjects.

#### **Usability Testing Participants:**

Subject 1: Age 28, medium technical proficiency

Task	Success? (Y/N)	Observations
Add yourself as an emergency contact	Yes	No issues.
Set up a camera that monitors falls 24/7, and inactivity only during the day	Partial Success	User did not know that “Stream URL” was for IP address. Left active time blank for falls (incorrectly assumed blank was 24/7).

Disable yourself as an emergency contact	Yes	No issues.
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General Comments: Confusion around username, password, and stream url fields for camera.

Keyboard was blocking the form when entering inactivity detection active hours.

Overall Comfort Level (1 to 10): 7

Subject 2: Age 22, medium technical proficiency

Task	Success? (Y/N)	Observations
Add yourself as an emergency contact	Yes	No issues.
Set up a camera that monitors falls 24/7, and inactivity only during the day	Partial Success	Entered time without a colon (incorrect format). Confusion surrounding inactivity "duration" field.
Disable yourself as an emergency contact	Yes	No issues.

General Comments: Confusion around username, password, and stream url fields for camera.

Keyboard was blocking the form when entering inactivity detection active hours.

Overall Comfort Level (1 to 10): 8

Subject 3: Age 56, low/medium technical proficiency

Task	Success? (Y/N)	Observations
Add yourself as an emergency contact	Yes	Tried to tap the screen to exit the keyboard, but was forced to hit "return".
Set up a camera that monitors falls 24/7, and inactivity only during the day	Yes	Thought placeholder text was pre-filled data. Did not know how to represent 24/7. Confusion around "Stream URL". Frustration with keyboard covering part of the form.
Disable yourself as an emergency contact	No	Deleted their contact instead of disabling it.

General Comments: Navigation is intuitive. The forms were frustrating to fill out.

Overall Comfort Level (1 to 10): 7

Subject 4: Age 58, low/medium technical proficiency

Task	Success? (Y/N)	Observations
Add yourself as an emergency contact	Yes	Spent considerable time trying to exit the keyboard by tapping the screen.
Set up a camera that monitors falls 24/7, and inactivity only during the day	Yes	Had a hard time filling out the form since part of it was covered by the keyboard, which they consistently struggled to close.
Disable yourself as an emergency contact	Yes	No issues.

General Comments: Similar to previous subjects. Had difficulty with the forms, but otherwise found the application easy to navigate.

Overall Comfort Level (1 to 10): 7

Overall, this testing was insightful, and helped us identify several areas of improvement within our application. Nearly all confusion was a result of poorly designed forms. The keyboard was covering certain fields, and difficult to close. Additionally, some of the field names left the user guessing what it was for. We believe that subtle changes to the text and behaviour of these

pages will help considerably. After some adjustments, we plan to conduct usability testing again, as well as get some opinions on our SMS alert message. Our next phase of testing will include more individuals, with an older average age.

### Peer Testing Activity

In addition to usability testing, we conducted peer testing with two individuals familiar with software development. The goal was to gain feedback from a more technical perspective and identify overlooked usability concerns or edge cases.

Sebastian Lopez Melendrez: Age 23, high technical proficiency

Task	Success? (Y/N)	Observations
Add yourself as an emergency contact	Y	No issues.
Test Alert	Y	No issues.
Set up a camera that monitors falls 24/7, and inactivity only during the day	Y	Noted default to "All Day Off". Suggested tooltips to clarify required fields.
Disable yourself as an emergency contact	Y	No issues.

Cameron Oehler: Age 23, high technical proficiency

Task	Success? (Y/N)	Observations
Add yourself as an emergency contact	Y	No issues.
Test Alert	Y	No issues.
Set up a camera that monitors falls 24/7, and inactivity only during the day	Y	No issues.
Disable yourself as an emergency contact	Y	No issues. Suggested showing “Active/Inactive” in camera item card.

Capstone Facilitator, Adam Tilson:

- Asked how users can tell if a camera is configured correctly. Suggested adding clear indicators to show whether cameras are active or inactive.

Dr. Karim Naqvi:

- Had difficulty exiting the numeric keypad in the phone number fields. Noted the lack of a clear way to return to the standard keyboard, which affected form usability.

Peer testers completed all tasks successfully but offered valuable feedback. Suggestions included adding tooltips for form fields, improving default values (e.g., "All Day"), and showing camera status more clearly (e.g., "Active"/"Inactive" labels). Additional observations emphasized the need for clear visual indicators when a camera is properly configured and improving keyboard transitions on mobile devices. These recommendations will be reviewed by our team and considered for future design updates.