**INFO310: Human-Centered Design Process & Methods** 

**GDP4: Usability Study with Prototypes** 

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Team 6

INFO 310-901

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# **Section 1: Individual Contribution Breakdown**

## Brandin Bulicki:

- Section 1: Testing Preparation
  - o Amount of Contribution: 70%
  - List of Contributions:
    - Composed the majority of the Heuristic Evaluation
    - Compiled the task checklist for conducting online and virtual face-toface testing
    - Found a participant to be a virtual face-to-face user tester
    - Created the UserTesting account and created the study
- Section 2: User Testing
  - Amount of Contribution: 50%
  - List of Contributions:
    - Ensured the completion of online user testing via usertesting.com
    - Conducted one virtual face-to-face user test by use of Zoom and an interactive PDF
- Section 3: Report
  - o Amount of Contribution: 70%
  - List of Contributions:
    - Formatted the entirety of the document
    - Analyzed the demographics of testers to determine any trends
    - Utilized the feedback to determine high- and low-priority fixes
    - Devised a plan to meet the recommended fixes
    - Constructed the majority of the major sections of the document
    - Analyzed the data and recommendations received through user testing
    - Kept a detailed task sheet to ensure that deliverables were on time.
    - Composed the entirety of the "Usability Issues" Section
    - Merged all pdfs and other documents into appendices

## Harsh Sharma:

- Section 1: Testing Preparation
  - o Amount of Contribution: 30%
  - List of Contributions:
    - Gathered participants for remote face-to-face testing.
    - Devised evaluation factors to add to the heuristic evaluation
- Section 2: User Testing
  - Amount of Contribution: 50%
  - List of Contributions:
    - Conducted 2 semi-formal face-to-face interviews through Zoom
    - Analyzed user experience patterns to document evaluations
    - Acted upon the developed protocol for maintaining consistent user tests
- Section 3: Report
  - o Amount of Contribution: 30%
  - List of Contributions:

- Added upon existing findings mentioned in the Executive Summary Section
- Highlighted summarized points and takeaways from both forms of testing to help in consolidating a list of fixes to be made later
- Added to the "recommendation analysis" lists by adding descriptions to it.
- Described factors that went into devising a differentiated and systematic approach towards prototype testing and feedback gathering.

# **Section 2: Executive Summary**

# Test Highlights:

To gain a better understanding of whether the design requirements from our initial research were met in the DIVOC prototype, user testing was conducted. Methods of online testing and virtual face-to-face testing were used to obtain this data. Testing was conducted in similar manners to maintain consistency across both forms of tests.

Online testing was conducted via usertesting.com. Three participants selected at random were chosen to review the DIVOC prototype. Each participant reviewed the application following the tasks set forth. Responses were vocalized and their interactions were recorded in a screen recording of their session.

Responses recorded from this method gave overall neutral to positive feedback towards our application. It however is clear that there is opportunity for improvements to be made to the application. While the participants were given a brief introduction to the application prior to opening it, when arriving at the landing page they were still uncertain what type of application they were entering. Even after entering the application, once on the menu screen there was confusion as to what to expect on some of the pages. For example, one participant stated in reference to the general information button that it would "give information about how to use the application" and then went further to ask why we would need to have how to use the application at the top of the menu screen. Additionally, another individual noted on the safety of the application. While on the social and communication page, a participant noted that he would be hesitant to select anything from the application due to the uncertainty of safety within the application. He continued to note on the verification process of posted links.

Face-to-face testing was conducted via video calls. Three participants were chosen to review the DIVOC prototype. Again, each participant reviewed the application following the tasks set forth. Unlike the online testing, users were given the tasks directly from the team member conducting the interview. Responses were vocalized and their interactions were seen on a shared screen element of their session.

Responses recorded from this method gave overall positive feedback towards our application. From this method, it, however, is clear that there are improvements to be made to the application. It was noted several times by multiple testers during this process that they were unsure about what certain pages would be used for prior to opening them. For example, one participant stated if they could change one thing, she "would work on making things easy to understand especially in the menu screen." Ratings were in general favorable to the DIVOC application. One tester remarked, "This application, while in response to the pandemic, does so in a way that does not make the user feel overwhelmed with data and can inform and distract depending on the user's desire."

# Recommendation Analysis:

From the user testing experience, we were able to gather recommendations based on their input and experience. These recommendations can be sorted by priority. The high priority fixes would be those that should be corrected prior to the final deliverable. The low priority fixes are those that would be corrected if there is time.

# High Priority Fixes:

- Clarity
  - o Ensure that the screens are named in a clear defining way.
- Usage
  - o Ensure the landing page gives a proper overview of the application.
- Navigation
  - o Ensure there is a clear method of moving through the application.
- Demonstration
  - o Ensure that as many features as possible are demonstrated in the prototype
- Presentation
  - o Ensure that the data is presented in a way to make it easy to understand
- Attractiveness
  - o Ensure that the application is appealing
- Positivity
  - o Ensure that the application promotes uplifting news through success stories

# Low Priority Fixes:

- Data Verification
  - o Ensure posted links have a method of verification in place for user safety.
- Sources
  - o Ensure lists of detailed sources/APIs used for the users are provided
- Individualization
  - o Ensure that the application has features that are specific to each user

# **Section 3: Study Design**

To allow for accurate and unbiased user responses, testing was standardized between the face-to-face testing and online testing.

Testers were first given a brief explanation of the application and circumstances of its use. This description of the application was composed by condensing the original explanation used in the GDP1 report.

To allow for an interactive prototype an interactive PDF of our revised high-fidelity prototype from GDP3 was shared with all participants. Once downloaded, a tester can take advantage of all the program buttons and features of our application.

A guided walkthrough was then conducted to gain insight to initial thoughts on the application. Participants were asked to explain their understanding of specific buttons and features of the application without fully exploring the application. For example, testers were given the instructions such as, "Without leaving the menu screen, describe what you would select first. \*\* Do not select anything yet. \*\* If you would leave without clicking anywhere, please explain why." Once initial data was collected, users were able to fully explore the application for as long as they desired. The users were then asked to rank statements of the heuristic evaluation and provide explanation to their choices. We were able to directly see the participants experiencing interactions and generalize some patterns or trends that would further help in the development.

# **Section 4: Participants**

Participants were of various backgrounds, including age, sex, location of residence, and occupation. In total, six participants partook in the study. To gain an understanding of how the prototype meets the original requirements, set in GDP2, we included multiple participants from that study as testers.

Participants for this study were chosen to meet the planned use case of persons aged 18 to 50 residing within the United States. The ages of the participants that partook in our user testing ranged from 20 to 50, with the mean age being 26. As the DIVOC application is intended for use by both genders, all sexes were involved in the data collection. Of the total participants, half of the participants were female, the remaining were male.

The intended environment for use of this application is within the United States, the participants were of those residing within the United States. For that reason, participants were from a variety of areas in the country. These participants are in a variety of fields including full-time students, electricians, and product management.

While the uses of the general public are the primary function of DIVOC application, in order to account for both the general public and essential worker uses, representation for each party was selected accordingly. For that reason, ensuring that all aspects of our application were in line with the healthcare worker audience, we included that profession in our user testing as well.

# **Section 5: Usability Issues and Design Recommendations**

Based from the problems experienced and raised by the participants of the user testing, the following fixes could be made.

# High Priority Fixes:

- Ensure that the screens are named in a clear defining way.
  - Analyze the initial impressions based off the menu screen. Adjust the titles of any misinterpreted label to ensure that each screen can be understood appropriately.
- Ensure the landing page gives a proper overview of the application.
  - o Rework the landing page to ensure that the user can understand what the application is used for prior to delving into it for themselves.
- Ensure there is a clear method of moving through the application.
  - o Label the menu/back button to make its use more noticeable.
- Ensure that as many features as possible are demonstrated in the prototype
  - o Examine the expected features on each screen of the prototype. Determine if there are any elements that can be added to any one screen.
- Ensure that the data is presented in a way to make it easy to understand
  - O Analyze where the testers found data to be better represented in other forms. Determine whether there is a more preferred way to display the data.
- Ensure that the application is appealing
  - Discuss the design elements currently used and analyze the feedback received.
     Determine if there is a better way to present the application. Reformat accordingly.
- Ensure that the application promotes uplifting news through success stories
  - O Determine a way of bringing these stories to the forefront. Whether it is through the use of a new page or addition to current screen

## Low Priority Fixes:

- Ensure posted links have a method of verification in place for user safety.
  - Develop and implement a verification process to ensure the safety of the links shared between users.
- Ensure lists of detailed sources/APIs used for the users are provided
  - Create a webpage or devoted section of the application to share the sources and APIs used.
- Ensure that the application has features that are specific to each user
  - Utilize machine learning to develop individualized elements to the application. For example, an individualized fitness plan could be provided to users.

In many cases, those testing the DIVOC application had a positive experience while conducting a test. In some cases, however, users found it difficult to properly evaluate the prototype due to various factors. One factor was the general understanding of the purpose of the application. For example, one online tester remarked, "If the application is used to distract from the coronavirus why are you putting so many alerts about the coronavirus." This confusion gave testers a difficult time accurately understanding the design choices implemented. Additionally, due to the prototype being only semi-functional, testers were unable to fully explore the application. One tester noted, "It is easy to use however needs to go through some usability testing because it is missing some major things (e.g. back button, white space, etc.)."

Through both forms of testing, the team has been able to gather insights upon areas for improvement to further the development of the prototype. Through the guided task evaluation, it was seen that most of the users did not quite understand what the application has to offer solely based on the description provided at the welcome page of the application. Furthermore, the majority of the participants across both forms of testing have indicated in some way or another that functional elements such as a "back button", diverse forms of visual representation of data, reference to sources, and vibrant color schemes were deemed missing in the current prototype. Overall, these above-mentioned elements will need to be included in the long run to facilitate the user customization of the app for personalization and further enhance the simplicity or attractiveness as a result.

Interacting with two different methods of user testing allowed us to witness the pros and cons to each method. Given a choice between the two methods, a remote face-to-face user testing is preferred over the online user testing.

Online testing was conducted via usertesting.com. Three participants selected at random were chosen to review the DIVOC prototype. Each participant reviewed the application following the tasks set forth. Responses were vocalized and their interactions were recorded in a screen recording of their session. While having someone who is removed from any bias towards your application can prove itself advantageous, the responses received were not beneficial. Those who reviewed the DIVOC prototype did so without any team member observing them. The responses show a sense of apathy towards their task. Additionally, without the ability to contact a team member, any questions that they had were left unanswered, in turn causing a snowball effect on their understanding of the application.

Face-to-face testing was conducted via video calls. Three participants were chosen to review the DIVOC prototype. Again, each participant reviewed the application following the tasks set forth. Unlike the online testing, users were given the tasks directly from the team member conducting the interview. Responses were vocalized and their interactions were seen on a shared screen element of their session. During the sessions, users were able to avoid being caught up on minute details by asking questions. These questions made it possible to give us feedback as to what confusion might be caused by the application, while allowing the user to continue to explore other elements of the application. In addition, those reviewing the application understood the necessity of a thoughtful and unbiased response. In turn, those participating in the face-to-face user testing devoted more time and thought when reviewing our application.

# **Appendix A: Heuristic Evaluation Survey**

# Introduction:

In this appendix, we include the heuristic evaluation survey used during the testing process. This survey was used in both the face-to-face and online user testing.

# Heuristic Evaluation DIVOC Application

# Participant:

The system presents information that is useful for those currently navigating the pandemic.

Rating (1-7): Explanation:

The system uses the domain specific language.

Rating (1-7): Explanation:

The system provides just the right amount of information regarding the coronavirus pandemic.

Rating (1-7): Explanation:

The information presented is easy to understand and interpret.

Rating (1-7): Explanation:

The information is presented in a clear and readable format. Information is available on national and state-level regulations.

Rating (1-7): Explanation:

The layout of the information is intuitive & appealing.

Rating (1-7): Explanation:

The information presented is accurate and reliable.

Rating (1-7): Explanation:

The interface is easy to use with minimal training

Rating (1-7): Explanation:

The system provides an easy to navigate interface

Rating (1-7): Explanation:

The system improves or supplements the information sources I currently use.

Rating (1-7): Explanation:

The system provides visual representations for important statistical data such as number of cases, hospitalizations, and deaths.

Rating (1-7): Explanation:

The system provides success stories and uplifting news which result in a positive and optimistic environment for the user.

Rating (1-7): Explanation:

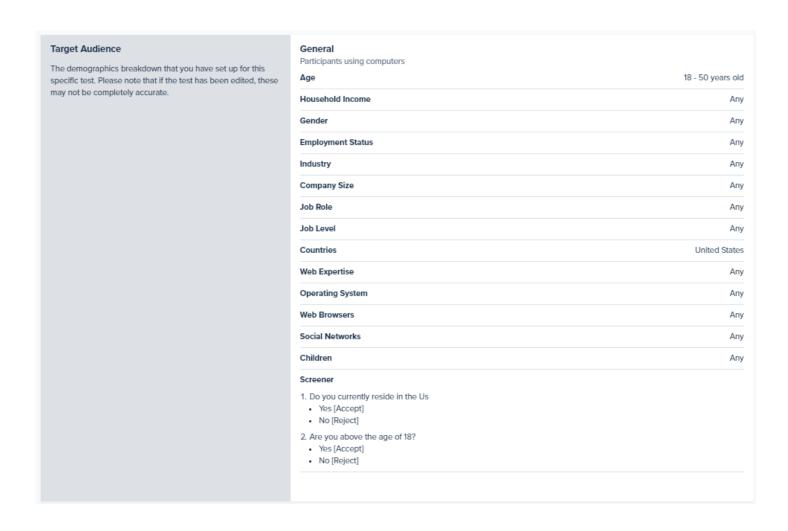
The system provides appropriate resources and aide in areas of fitness and personal well-being

Rating (1-7): Explanation:

# **Appendix B: Testing Set-up**

# **Introduction:**

In this appendix, we include screenshots from usertesting.com. This is what the participants saw when testing our application.



#### Test Plan

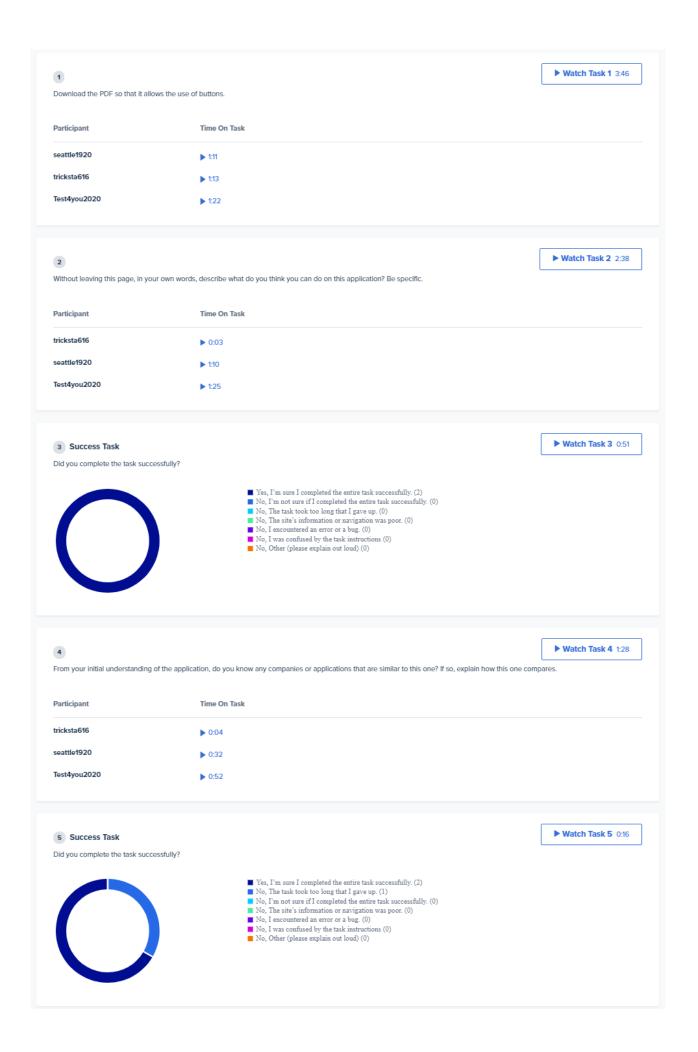
An overview of the tasks and questions included in your test.

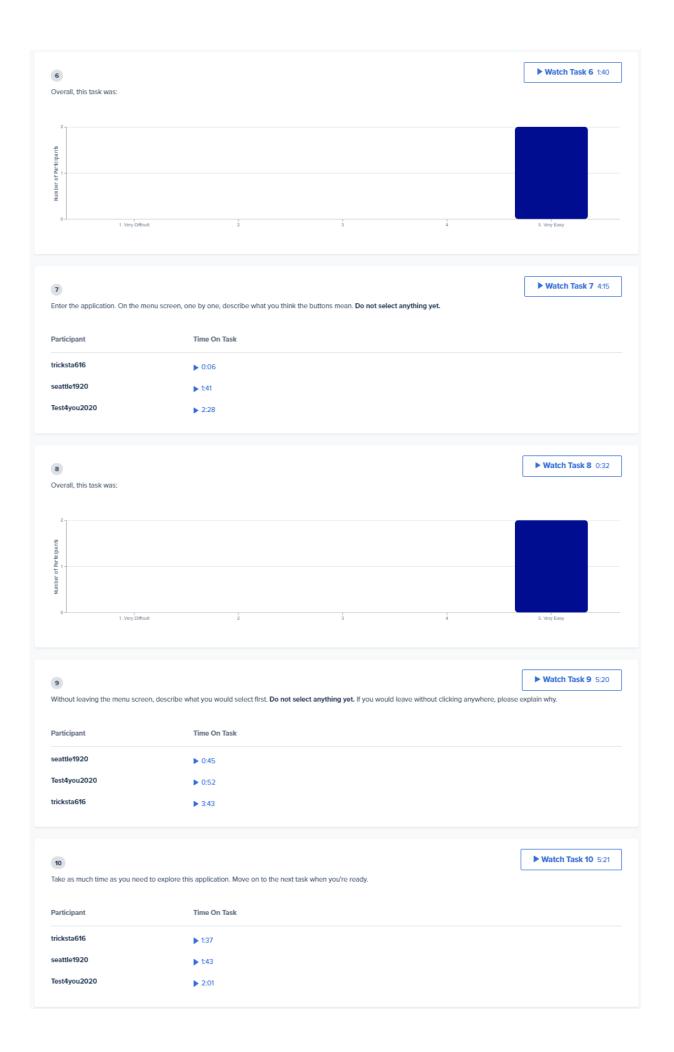
#### Introduction

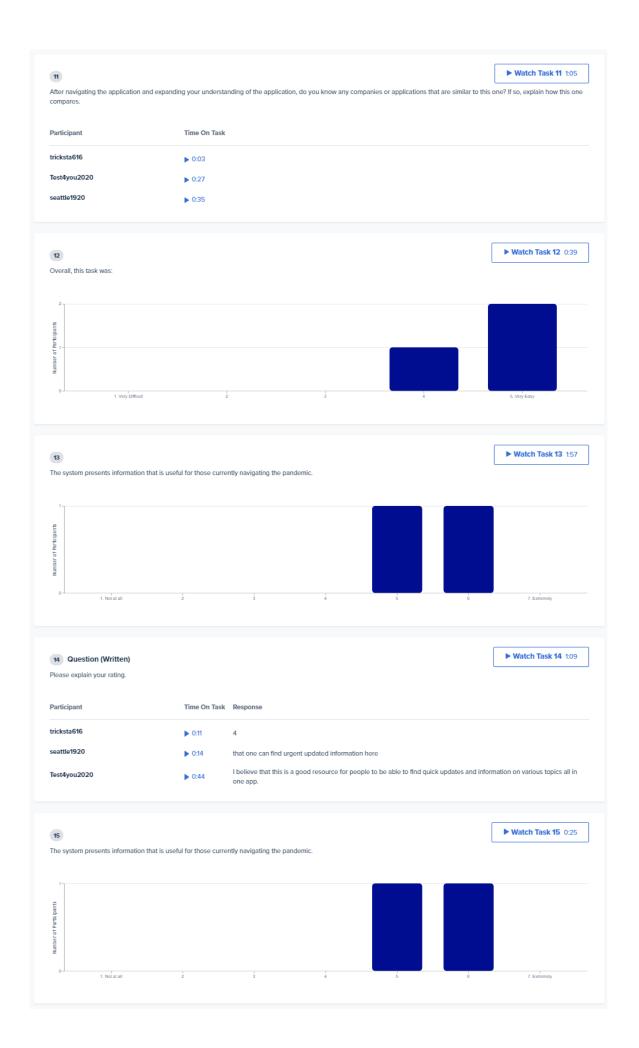
Based on the recent events occurring from the coronavirus outbreak, many Americans have been forced from their normal lives into one of isolation and social distancing. In many cases, these events have caused those affected to struggle to find factual information, maintain social communication, practice healthy living, and support relief efforts, among other things. In extreme conditions, data reports increased suicide cases as a result of the isolation which results in countless number of lives lost apart from the coronavirus pandemic. With the Disaster avoidance Initiative through Virtual Objective Communication (DIVOC) app, those affected from the pandemic will be able to maintain a sense of normalcy in these uncertain times.

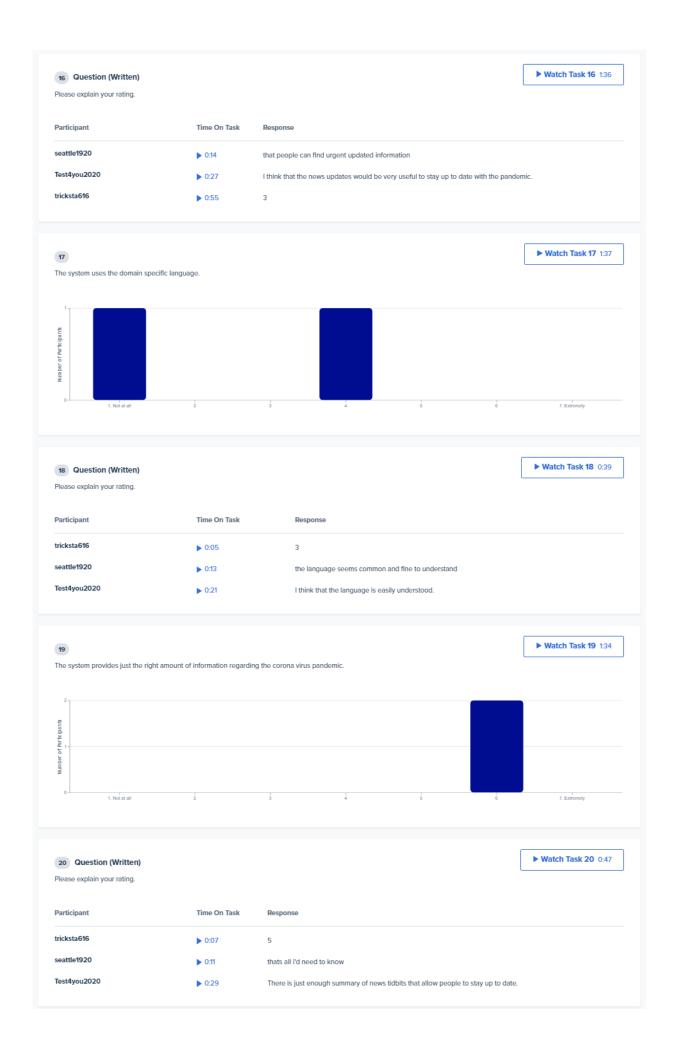
#### Tasks

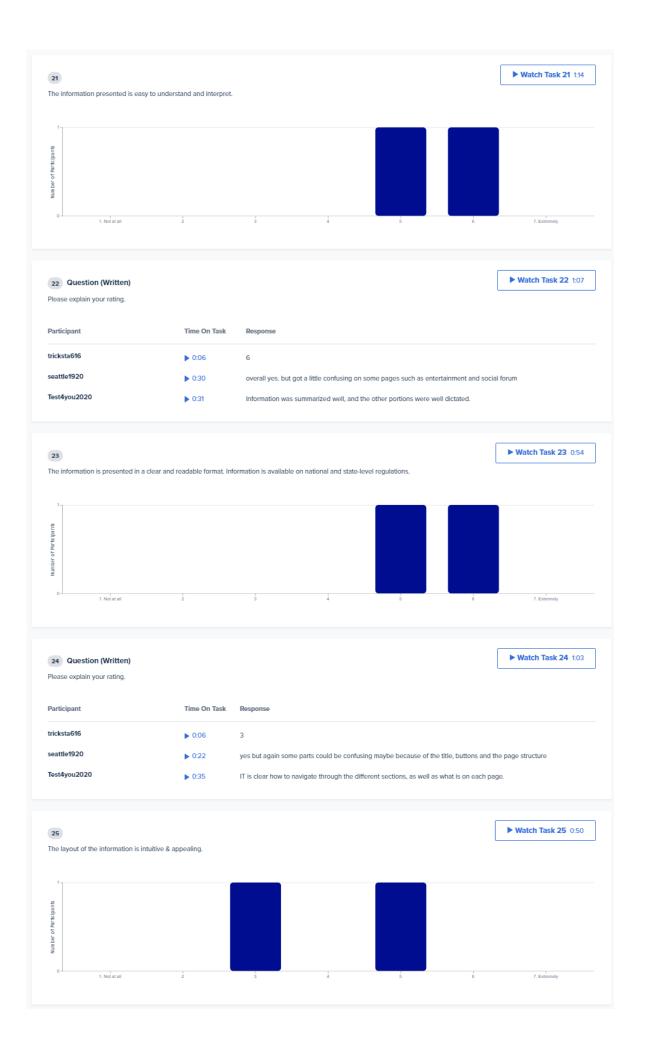
- 1. Download the PDF so that it allows the use of buttons.
- Without leaving this page, in your own words, describe what do you think you can do on this application? Be specific. (Success: Yes, No.)
- From your initial understanding of the application, do you know any companies or applications that are similar to this one? If so, explain how this one compares. [Success: Yes, No]
- 4. Enter the application. On the menu screen, one by one, describe what you think the buttons mean. ""Do not select anything yet."
- Without leaving the menu screen, describe what you would select first. "Do not select anything yet." If you would leave without clicking anywhere, please explain why.
- 6. Take as much time as you need to explore this application. Move on to the next task when you're ready.
- After navigating the application and expanding your understanding of the application, do you know any companies or applications that are similar to this one? If so, explain how this one compares.
- 8. The system presents information that is useful for those currently navigating the pandemic. [7-point Rating Scale: Not at all to Extremely!
- 9. Please explain your rating. [Written Response]
- 10. The system presents information that is useful for those currently navigating the pandemic. [7-point Rating Scale: Not at all to Extremely]
- 11. Please explain your rating. [Written Response]
- 12. The system uses the domain specific language. [7-point Rating Scale: Not at all to Extremely]
- 13. Please explain your rating. [Written Response]
- 14. The system provides just the right amount of information regarding the corona virus pandemic. [7-point Rating Scale: Not at all to Extremely]
- 15. Please explain your rating. [Written Response]
- 16. The information presented is easy to understand and interpret. [7-point Rating Scale: Not at all to Extremely]
- 17. Please explain your rating. [Written Response]
- 18. The information is presented in a clear and readable format. Information is available on national and state-level regulations. [7-point Rating Scale: Not at all to Extremely]
- 19. Please explain your rating. [Written Response]
- 20. The layout of the information is intuitive & appealing. [7-point Rating Scale: Not at all to Extremely]
- 21. Please explain your rating. [Written Response]
- 22. The information presented is accurate and reliable. [7-point Rating Scale: Not at all to Extremely]
- 23. Please explain your rating. [Written Response]
- 24. The interface is easy to use with minimal training [7-point Rating Scale: Not at all to Extremely]
- 25. Please explain your rating. [Written Response]
- 26. The system provides an easy to navigate interface [7-point Rating Scale: Not at all to Extremely]
- 27. Please explain your rating. [Written Response]
- The system improves or supplements the information sources I currently use. [7-point Rating Scale: Not at all to Extremely!
- 29. Please explain your rating. [Written Response]
- 30. The system provides visual representations for important statistical data such as number of cases, hospitalizations, and deaths. [7-point Rating Scale: Not at all to Extremely]
- 31. Please explain your rating. [Written Response]
- The system provides success stories and uplifting news which result in a positive and optimistic environment for the user, [7-point Rating Scale: Not at all to Extremely]
- 33. Please explain your rating. [Written Response]
- 34. The system provides appropriate resources and aide in areas of fitness and personal well-being [7-point Rating Scale: Not at all to Extremely]
- 35. Please explain your rating. [Written Response]



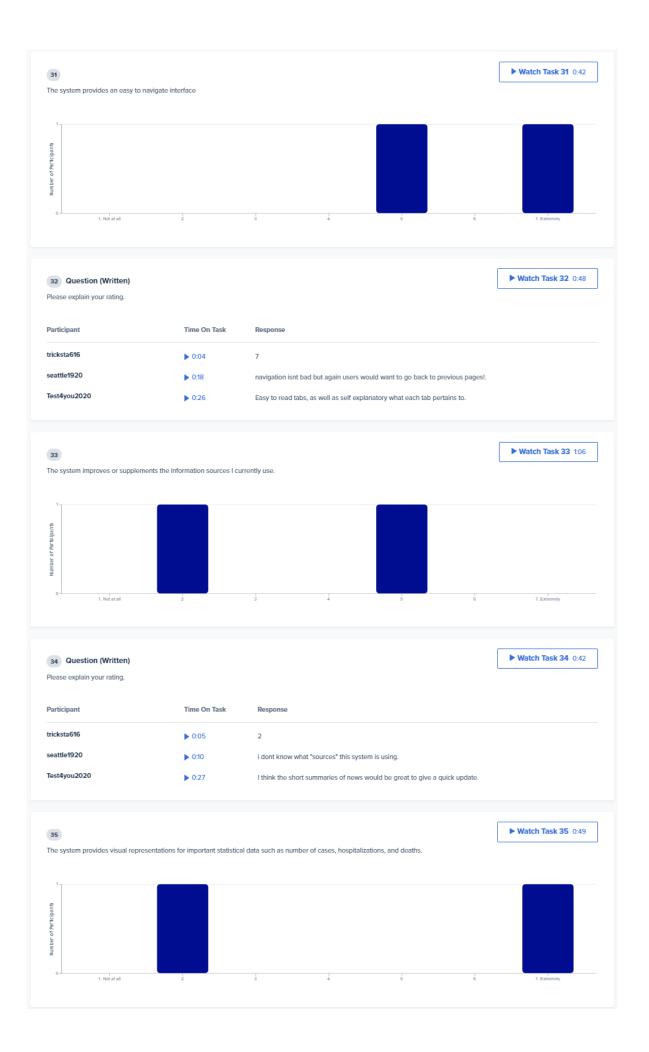














# **Appendix C: Completed Heuristic Evaluations**

# **Introduction:**

In this appendix, we include the completed heuristic evaluation surveys from the remote face-to-face testing. The user ratings and explanations can be seen here.

# Heuristic Evaluation DIVOC Application

Participant: 001

The system presents information that is useful for those currently navigating the pandemic.

Rating: 6
Explanation:

"I believe the app presents well information but it is sometimes mand to final that m. Po."

The system uses the domain specific language.

Rating: **%** Explanation:

"Language is clear to understand and appropriate."

The system provides just the right amount of information regarding the coronavirus pandemic.

Rating: 7
Explanation:

1) I think this app eoners all information needed about the product

The information presented is easy to understand and interpret.

Rating: 6 Explanation:

"I would work on making things easy to understand especially in the

The information is presented in a clear and readable format. Information is available on national and state-level regulations.

Rating: 6
Explanation:

"once found into is clear but getting to the data can be hard due to labeling"

The layout of the information is intuitive & appealing.

Rating: 7
Explanation:

" The apprication is clean and easy to follow. Adding more would unnecessarily elutter the app"

001 Cont.

The information presented is accurate and reliable.

Rating: 7

# **Explanation:**

"I like that the sources are added to the content provided"

The interface is easy to use with minimal training

Rating: 5

# **Explanation:**

"Everything that can be done is easy to do but it is hard to understand where the buttons are."

The system provides an easy to navigate interface

Rating: 6 Explanation:

"Labeling"

The system improves or supplements the information sources I currently use.

Rating: 6 Explanation:

"The systems looks to pull from news sources"

The system provides visual representations for important statistical data such as number of cases, hospitalizations, and deaths.

Rating: 6
Explanation:

"I can see where the graphs would be bot It is not always shown."

The system provides success stories and uplifting news which result in a positive and optimistic environment for the user.

Rating: 6
Explanation:

"while this an app in responge to the purdents Ido not fee! overwhelmed by the presentation of coronains updates"

The system provides appropriate resources and aide in areas of fitness and personal well-being

Rating: 7
Explanation:

" I really liked the challenges section."

# Heuristic Evaluation DIVOC Application

Participant: 002

The system presents information that is useful for those currently navigating the pandemic.

Rating: 7

**Explanation:** This system is very easy to use and extremely informative. It is well-structured and information is readily accessible.

The system uses the domain specific language.

**Rating:** 

**Explanation:** 

The system provides just the right amount of information regarding the coronavirus pandemic

Rating: 7

**Explanation:** Very good information that is relevant and concise

The information presented is easy to understand and interpret.

Rating: 7

Explanation: Information is very much in-tune with various news sites and seems professional

The information is presented in a clear and readable format. Information is available on national and state-level regulations.

Rating: 7

**Explanation:** The format suits this app very well and is exactly what I would want in an app like this

The layout of the information is intuitive & appealing.

Rating: 4

**Explanation:** The color scheme of the app is ok, but certain pages like the alerts should be in red to better connect information with the design

The information presented is accurate and reliable.

Rating: 7

**Explanation:** The information is well cited and is in sync with information from other sites

The interface is easy to use with minimal training

Rating: 7

**Explanation:** The app is fairly simple and even individuals with minimal technical expertise can use it.

The system provides an easy to navigate interface

Rating: 7

**Explanation:** Very straightforward, no complexities

The system improves or supplements the information sources I currently use.

# Rating: 5

**Explanation:** Information is well compiled from different sources and shown in an understandable manner. However, in terms of information and resources, it only seems to provide the same information in a simplified format. There could be addition of more resources or interactions for users who want to use this sort of an app on a daily basis

The system provides visual representations for important statistical data such as number of cases, hospitalizations, and deaths.

# Rating: 4

**Explanation:** Incorporating various types of charts and graphs would enhance the statistical data presentation

The system provides success stories and uplifting news which result in a positive and optimistic environment for the user.

# Rating: 5

**Explanation:** Great vibes overall, users feel connected and optimistic about the coming days. Color scheme could be improved to enhance the tone from the monotonous green. Information can be presented in a much more dynamic fashion to beat the monotonous tone.

The system provides appropriate resources and aide in areas of fitness and personal well-being **Rating:** 4

**Explanation:** Could be improved by matching fitness routines for users with users of similar physical traits to best serve them

# Heuristic Evaluation DIVOC Application

Participant: 003

The system presents information that is useful for those currently navigating the pandemic.

Rating: 7

**Explanation:** The app is simple to use and has information available.

The system uses the domain specific language.

Rating: 7

**Explanation:** The language is appropriate and has the sense of being user friendly.

The system provides just the right amount of information regarding the coronavirus pandemic

Rating: 7

**Explanation:** There are definitely multiple sections which have this information available so yes extremely helpful information is available.

The information presented is easy to understand and interpret.

Rating: 7

**Explanation:** Yes, the information is easy to understand.

The information is presented in a clear and readable format. Information is available on national and state-level regulations.

Rating: 7

**Explanation:** Information is available on county level which is extremely useful.

The layout of the information is intuitive & appealing.

Rating: 4

**Explanation:** The overall layout is extremely simple, so it's intuitive but not extremely appealing, maybe addition of some color or graphics may make it more appealing.

The information presented is accurate and reliable.

Rating: 7 Explanation:

The interface is easy to use with minimal training

Rating: 7 Explanation:

The system provides an easy to navigate interface

Rating: 7 Explanation:

The system improves or supplements the information sources I currently use.

Rating: 7
Explanation:

The system provides visual representations for important statistical data such as number of cases, hospitalizations, and deaths.

## Rating: 7

**Explanation:** The system does this well by providing numbers as well as graphics which show the trends and data, which makes it really useful

The system provides success stories and uplifting news which result in a positive and optimistic environment for the user.

# Rating: 7

**Explanation:** The app provides social content and availability to communicate with others during this time, which makes it great as everyone can stay positive together.

The system provides appropriate resources and aide in areas of fitness and personal well-being

# Rating: 7

Explanation: Yes, there is ample information on fitness and wellness