Final Deliverable + HC Explanations + Process Description

Minerva University

FE51: Cornerstone Civic Project (Wellytics)

Prof. Moy

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The Deliverable

The following is a link to a web application where the current state of the Wellytics platform. Since Brothers on The Rise has not conducted an activity with our platform yet, all the data present in the platform is synthetic and was created with the purpose of showcasing the product in Symposium. In addition to this, the link to a Github repository is also attached; this contains the most up-to-date source code of the platform, where the team expects to keep working, developing new features and providing the Civic Partner with technical support. The repository contains a document called "README.md" which explains the state of the project and functionalities, serving as a starting point to navigate the platform's code.

Live website: https://wellytics.vercel.app/.

GitHub repository: https://github.com/Wellytics/wellytics.

HC explanations

#descriptivestats (262 words):

In implementing the web app, we had to incorporate descriptive statistics to help Brothers on The Rise analyze the data from the surveys they created later. Also, we had to abide by the descriptions and the limitations of each statistic when talking with the partner and discussing how the incorporation of these statistics might be helpful.

The main problem that tackled the work of Brothers on The Rise and we worked on was dealing with aggregated data. And here comes the power of descriptive statistics to give insights about the data without describing every single data point we have. It was also vital for us to use

our understanding of these statistics' meaning and intuition to have correct insights about the data without any gaps or flawed interpretations.

We correctly implemented the formulas of descriptive statistics when we integrated them into the app. We chose descriptive statistics like mean, mode, and median, which are easy for people who are not experts in statistics to understand while still providing insightful, actionable information. We are using our understanding of the rationales behind these statistics to help our partner guide their analyses and planning to meet with the partner and offer help with describing the different statistics to get him on the same page on the various uses of them like the difference between the mean and the median and how the gaps between these statistics may provide further insights about the distribution of the data. This is an example of how we use interpretations of the statistics, not only the formulas in the project.

#responsibility (326 words):

We held high levels of responsibility throughout the project. We applied the principles of responsibility at each step, from refining the question all the way to the end of finalizing our deliverable. It was most prominent in abiding by submission deadlines and attending meetings on time which made it evident that we planned well backstage to be responsible enough to do that.

Being responsible was crucial for the project as a group work. Some irresponsible acts usually affect just the individual committing them. However, in group projects, the setbacks affect the whole team. For example, delaying the work by one member will affect the time of submitting for the whole team. Not attending the meetings on time will affect the whole team's performance in that meeting and will require effort to get the absent members on the same page

again. So, applying the principles of responsibility was essential to get the advantage of every team member's skill and provide quality work over the constraints we have, such as time.

The main two principles are grit and self-control.

Throughout the project, there was a lot of short-term happiness or comfort. For example, each team member could have delayed the work to do something fun while others did the work. However, we planned to give everyone the self-control to focus on the long-term goal of having a good project rather than this short-term happiness.

Moreover, some setbacks throughout the work might have resulted in a bad product. However, we had the grit to overcome these setbacks and not let them make us deviate from the overarching goal. For instance, some members did not have enough programming expertise, which is our project's primary focus. We could have given up making the app, but we made meetings to learn and share the expertise between the members who have or do not have expertise in the field which required a lot of mental effort and determination but resulted in quality work.

#differences (264 words):

For the past few months, we have taken our individual differences into account by utilizing specific techniques to guide interpersonal interactions and team role assignments with the primary goal of developing the final deliverable: the web app. Firstly, we assessed everyone's interests and labor preferences to understand unique skills and abilities to leverage our differences by utilizing emotions to assign roles based on each member's interest, leading to greater satisfaction and commitment from team members. Secondly, the team considered the complex interactions between roles by assigning tasks that required collaboration between roles.

For instance, members with programming experience (Alen, Alaa, and George) were assigned to the back-end role, while those with experience in user interface design (Rue and Endriyas) were assigned to the front-end role. This strategy ensured that each member was able to contribute effectively to the project, according to their past experiences and abilities. Finally, the team considered nuances of individual differences by assessing personal characteristics; As a result, since Rue and Alen have good communication skills, they were given the role of communicating directly with our civic partner and David Levi. Alaa has strong time management skills, so he used to set up the appropriate meetings and make sure everyone was attending the meetings on time. On the other hand, because George and Endriyas have good accountability and self-management abilities, they were assigned to asses everyone's progress and ensure each member has completed their assigned tasks by holding every member accountable on biweekly basis. These techniques allowed the team to utilize individual differences to their advantage and promote effective teamwork.

#biasidentification (285 words):

After spending the last three months working on our prototype, we identified optimism bias and planning fallacy. We were way too optimistic about the successful completion of the prototype. Specifically, we were excited about the prototype itself as it was a project that integrated all our computer science interests. This blinded us to accurately estimate the amount of time given the workload of other cornerstone course assignments and the location-based experiences. As a result, our excitement led us to believe that we could successfully complete the prototype within their given timeline, despite evidence to the contrary. Psychologically, the bias can be explained by a number of factors, such as our desire for self-enhancement in addition to

the tendency to focus on positive information. Neurologically, the bias is linked to the brain's reward system. When we engage in optimistic thinking, the reward system is activated, and dopamine is released, reinforcing the bias and encouraging us to continue thinking positively (Sharot et al., 2007). Besides, this bias was compounded by the planning fallacy, which caused the team to underestimate the amount of time and effort needed to complete the project. As a result, the team had to narrow it down into a minimally viable product and choose a less ambitious user interface design for the final web app. The bias is directly associated with the brain's prefrontal cortex, which is responsible for planning and decision-making. Consequently, when the part of our brain cannot accurately estimate the time and effort needed for a task, it can lead to overconfidence and poor judgment (Sharot et al., 2007). These factors can create a sense of shared optimism and enthusiasm that can cloud our judgment and make us more prone to underestimating the challenges ahead.

#communicationdesign (223 words):

The main use of this HC was in creating the slides for the presentation. We applied the appropriate principles to cope with the verbal presentation.

Using these principles helped exploit the limited time we had and also our audience’s limited mental abilities because they were already exhausted this afternoon after listening to a lot of presentations which is mentally exhausting. That helped us communicate the solution and the justification behind each step of it in a clear and simple way.

We applied discriminability in two ways: We used different colors for the content to differentiate it easily from the background, and we used big and small fonts and shapes to indicate important information. We made perceptual organization in the slides by grouping

related things in one slide (e.g., the slides for the before-after processes). Most importantly, we added a little amount of information per slide to make sure that we do not crash with the limited capacity human beings have. Also, we kept the information simple and did not go into the details of the technical process to cope with the principle of appropriate knowledge. You may question not using animations. However, we found out that, in our case, we had very limited time, and our partner is not young, which made the animations increase the confusion and not facilitate the communication.

#interpretivelenses (367 words):

Throughout the development of our web app for Brothers on The Rise, we were mindful of the importance of not incorporating an interpretive lens to ensure that the platform does not prescribe a particular definition of resiliency. We recognized that individuals have diverse experiences and perspectives, which might lead to different interpretations and embodiments of resiliency.

To address this, we designed the platform to be adaptable and flexible in its approach, acknowledging the current feelings and experiences of the users. We were aware that their prior experiences, expectations, and judgments might influence the inferences we draw from different forms of communication, and we reacted accordingly to minimize any biases in our interpretation of the users' needs. For example, we carefully considered the feedback from our Civic Partner and the boys participating in the Brothers on The Rise program, ensuring that we were receptive to their perspectives and ideas. We recognized that prescribing a model to measure resilience in our web app might not align with the actual resilience of the users, and we made an effort to incorporate their input in the development process.

Additionally, we encouraged open-mindedness within our team by promoting the exchange of ideas and alternative solutions. We frequently engaged in discussions and brainstorming sessions, in which we considered various viewpoints and evidence. This approach allowed us to develop a more comprehensive and inclusive understanding of resiliency, which was ultimately reflected in the design of our web app.

In technical details, our platform uses a recently developed technique for machine learning model training called Reinforcement Learning from Human Feedback, so that we could have an expert Human (i.e., our Civic Project Partner) give samples of resiliency levels at a given time, so that our model building system could use those samples as referential frames.

In conclusion, our mindful application of an interpretive lens throughout the project has enabled us to create a platform that is sensitive to the diverse experiences and perspectives of its users. By acknowledging the potential effects of our users' prior experiences and expectations, we have been able to develop a web app that aims to supports and evaluate the resiliency and wellbeing of the Brothers on The Rise participants.

Group Process Description

In the spring semester, Wellytics followed the same process of re-evaluating the Team Agreement, which was in need of adjustment based on successes and challenges from the Fall semester and the new addition of a team member, Endriyas (and removal of another team member, Tjalling). We reallocated roles with the most significant change of Alaa sharing Rue's roles and Endriyas taking over Tjalling's responsibilities.

Throughout this semester, we used the same methods from last semester - dividing and conquering work, meeting online rather than in-person, and starting assignment work a week

within the assignment deadline. Alaa and Rue set-up meetings and communicated times in Telegram and frequently used Telegram polls to find ideal times for all team members. After dividing work a week from the deadline, the team would meet the day of the assignment deadline to synthesize parts.

For the Spring Project plan, we followed the methodology outlined above, but because the assignment was more interactive in terms of brainstorming, we met at WeWork, a coworking space, and brainstormed the MVP (minimal viable product) for the prototype we wanted to build. In the beginning, Alen held a workshop for all team members explaining what services, softwares, and languages would be required to implement the MVP. As Rue and Endriyas were front-end designers of the graphical user interface, they outlined the web flow digitally on an Ipad. At this time, Alen was explaining the mechanisms of Natural Language Processing (NLP) to Alaa and George.

When building the actual prototype, the work allocation was split as:

Front-End:

- Wireframe design
    - Form (Endriyas)
    - Admin interface (Endriyas and Rue)
        - Overall responses view (Rue)
        - Individual response view (Rue)
        - Tracking view (Endriyas)
- Transferring the design to React.js (Endriyas and Rue)

Back-End:

- Designing scheme and database structure (Alen)

- Data analytics (George and Alaa)
    - Design data visualizations (Alaa)
    - Compute descriptive statistics (George)
- Natural Language Processing (Alen)
    - Sentiment Analysis
    - Keyword Extraction
- Connection between both front-end and back-end using Flask (George and Alaa)
    - Design API structure
- Deploy as a serverless service to Google Cloud Run

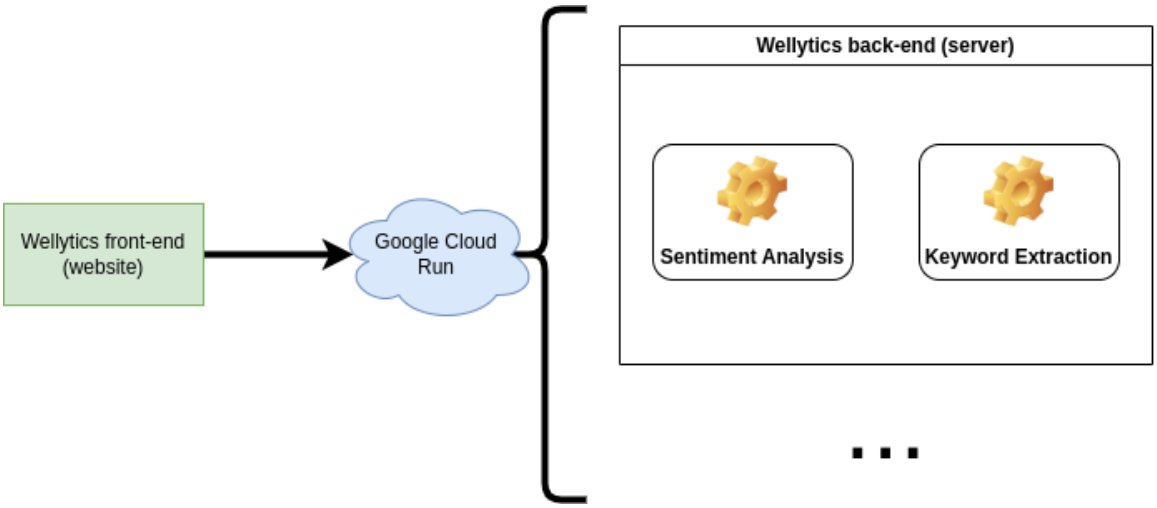

Fig 1. *This is a diagram that showcases the architecture of the Wellytics platform. The green component represents a member from Brothers on The Rise accessing the website and making a compute request (i.e., extract sentiments or keywords) to the backend. Since this is architected as a serverless service, Google Cloud Run can create multiple concurrent instances of the service to satisfy the demand.*

After the Prototype assignment and meeting with Cesar, we implemented #designthinking for the final deliverable. We revised the data visualizations (i.e. added x and y axis labels) and Cesar's feedback of making it user-intuitive as he is not familiar with using

technology.

For the Final Deliverable assignment, Alen, George, and Alaa wrote the final technical write-up (with Alen writing the majority of it). Rue, George, and Endriyas wrote the script for the Symposium presentation. Rue, Alaa, Endriyas, and George created the final slides. Rue wrote the Group Process Description and George, Endriyas, and Alaa wrote two HC footnotes each (six total).

In preparation for Symposium, we split speaking parts and practiced once together two days before Symposium; this was a casual read through and feedback was given on tone, inflection, and volume. The next day, we practiced with the tech demo (Alen) with a borrowed projector to simulate the actual presentation set-up in Symposium. This time, feedback on #expression was given on body language, stance, along with verbal communication.

The team has learned about the importance of individual responsibility to the team as a whole. Specifically, this was relevant because when using the divide-and-conquer approach, the success of this approach was contingent on all team members completing their assigned parts by the day of the assignment deadline in order to submit a high quality assignment on time. During the workshop held by Alen, we learned about:

- The advantages and drawbacks of serverless services versus conventional services.
- The advantages of using React.js as a frontend framework.
    - Reactivity as a user interface design principle
    - Using Typescript over Javascript as a type safe alternative for writing applications
- API design
    - Authentication basics
- Using Python for machine learning

From our CCP Partner, Brothers on the Rise (BoTR) and its Chief Executive Director, Cesar Barragan, we learned how a non-profit organization like BoTR operated within the Oakland area as the entire Wellytics team went on a field trip to meet him and the boys. We also learned about BoTR's approach to wellness and mental health by using positive psychology to nurture healthy masculine traits. Barragan also informed us about the current social climate of educational inequities among minority communities, specifically, Black and Latino students. Overall, we have learned about ourselves (i.e. work and communication style), teamwork, computer science concepts, and LBA-specific information to BoTR and schools in the Oakland area.

Word Count: 2620 words

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[1] **#professionalism**: The paper is presented formally and clearly organized. The APA format is followed throughout the paper. The external sources are cited properly in text and in the references section. The paper was checked for grammatical mistakes. The word limits were adhered to for the section that have word limits.